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ELEVATION MARK FINISH TAG

WINDOW TAG DOOR TAG

WALL TAG KEYED NOTE

ARCO BP WEST COAST PRODUCTS, LLC

ARCO 3400 am/pm 1402 S MERIDIAN PUYALLUP, WA 98371

GENERAL PROJECT NOTES

- ALL CONSTRUCTION SHALL COMPLY WITH APPLICABLE BUILDING CODES AND LOCAL RESTRICTIONS. CONTRACTORS MUST COMPLY WITH CONTRACTOR REGISTRATION REQUIREMENTS OF ALL GOVERNING AUTHORITIES. THE GENERAL BUILDING PERMITS SHALL BE PAID FOR BY THE OWNER UNLESS AGREED OTHERWISE. ALL OTHER PERMITS SHALL BE SECURED AND PAID FOR BY THE SUBCONTRACTOR DIRECTLY RESPONSIBLE, ALL REQUIRED CITY, COUNTY AND/OR STATE LICENSES SHALL BE ACQUIRED AND PAID FOR BY THE INDIVIDUAL SUBCONTRACTOR
- IT IS THE INTENT OF THE OWNER, THE ARCHITECT AND THEIR CONSULTANTS, THA ALL WORK DEPICTED IN THESE DRAWINGS AND SPECIFICATIONS IS TO BE PROVIDED BY THE GENERAL CONTRACTOR. ANY REFERENCES TO THE CONTRARY THROUGHOUT THE CONSTRUCTION DOCUMENTS OR SPECIFICATIONS IS NOT INTENDED. ADDITIONALLY CONTRACTOR IS TO REFER TO THE BID DOCUMENT PACKET AND/OR OWNER'S SCOPE OF WORK DOCUMENT(S) WHICH SHALL TAKE PRECEDENCE OVER SCOPE THAT MAY E PRESENTED IN THIS SET OF CONSTRUCTION DOCUMENTS OR SPECIFICATIONS. THE SCOPE OF WORK DOCUMENT IS INTENDED TO IDENTIFY ALL OWNER SUPPLIED ITEMS OR WORK PROVIDED BY OTHERS. ABSENCE OF THESE DOCUMENTS MEANS ALL WORK NOTED IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR UNLESS THE OWNER HAS SPECIFIED OTHERWISE DURING THE BID PROCESS
- APPROVED PLANS SHALL BE KEPT IN A PLAN BOX AND SHALL NOT BE USED BY WORKMEN. ALL CONSTRUCTION SETS SHALL REFLECT SAME INFORMATION AS THE APPROVED PLANS. CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF PLANS ON THE PREMISES IN GOOD CONDITION AT ALL TIMES. THIS SHALL INCLUDE ALL ADDENDA AND CHANGE ORDERS
- DISCREPANCIES BETWEEN PORTIONS OF THE CONTRACT DOCUMENTS, DRAWINGS AND SPECIFICATIONS ARE NOT INTENDED. THE CONTRACTOR IS TO CLARIFY ANY SUCH DISCREPANCIES WITH THE ARCHITECT OR PROJECT MANAGER PRIOR TO COMMENCIN WORK. STATED DIMENSIONS TAKE PRECEDENCE OVER GRAPHICS, DO NOT SCALE DRAWINGS TO DETERMINE LOCATIONS. THE ARCHITECT OR PROJECT MANAGER SHAL BE NOTIFIED OF ANY SUCH DISCREPANCIES PRIOR TO CONTINUING WITH WORK. IT IS THE INTENT OF THE ARCHITECT THAT THIS WORK BE IN CONFORMANCE WITH

ALL REQUIREMENTS OF THE BUILDING AUTHORITIES HAVING JURISDICTION OVER THIS

- TYPE OF CONSTRUCTION AND OCCUPANCY. THE CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY OF CONFLICTS WITH GOVERNING CODE REQUIREMENTS BEFORE PROCEEDING FURTHER WITH THE AFFECTED WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES AND TO PROTECT THEM FROM DAMAGE. CONTRACTOR SHALL BEAR THE
- EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE WORK. THE CONTRACTOR TO PROVIDE FIRE SPRINKLER SYSTEM AND ALARM SYSTEM (WHEN REQUIRED BY CODE AND NOTED AS REQUIRED BY THESE PLANS) IN ACCORDANCE WITH NFPA REQUIREMENTS. FIRE SPRINKLER CONTRACTOR IS TO SUBMIT COMPLETE SHOP DRAWINGS, LAYOUT AND RELATED DATA TO BUILDING DEPARTMENT AND FIRE
- MARSHAL FOR APPROVAL PRIOR TO INSTALLATION. B. FOR CONSTRUCTION DETAILS NOT SHOWN, USE THE MANUFACTURER'S APPROVED SHOP DRAWINGS/DATA SHEETS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSEWHERE IN THE
- WORK EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL FOOD SERVICE EQUIPMENT AND COORDINATE LOCATION OF ALL UTILITIES INCLUDING FLOOR SINKS. FLOOR DRAINS. SLOPES/SLAB DEPRESSIONS AND RAISED CURBS, ELECTRICAL AND PLUMBING AND STUBOUTS FOR FUTURE EQUIPMENT WHERE NOTED
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE SITE WHILE JOB IS IN PROGRESS AND UNTIL BUILDING IS OCCUPIED. 11. ALL DEBRIS SHALL BE REMOVED FROM PREMISES REGULARLY AND ALL AREAS SHALL BE LEFT IN A CLEAN (BROOM) CONDITION AT ALL TIMES.
- 12. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE SAFETY OF THE OCCUPANTS AND WORKERS AT ALL TIMES.
- 13. CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER, TELEPHONE, FACSIMILE OR METHOD TO RECEIVE E-MAIL, PRINTER AND TOILET FACILITIES AS REQUIRED. GENERAL CONTRACTOR IS RESPONSIBLE FOR RECEIVING, UNLOADING, UN-CRATING, INSTALLATION AND HOOKUP OF ALL FOOD SERVICE EQUIPMENT AND OTHER OWNER OR VENDOR FURNISHED ITEMS.
- GENERAL CONTRACTOR IS REQUIRED TO LABEL ALL ELECTRICAL PANELS, PLUMBING VALVES, AND ROOF TOP EQUIPMENT WITH PLASTIC PHENOLIC ENGRAVED PLATES ATTACHED TO IDENTIFY THE EQUIPMENT USE OR PURPOSE CONTRACTOR SHALL SUPPLY, LOCATE AND BUILD INTO THE WORK ALL INSERTS,
- ANCHORS, ANGLES, PLATES, OPENINGS, SLEEVES, HANGERS, SLAB DEPRESSIONS AND PITCHES AS MAY BE REQUIRED TO ATTACH AND ACCOMMODATE OTHER WORK. SPECIAL INSPECTION REQUIREMENTS MAY APPLY TO ALL STRUCTURAL EMBEDMENTS OR POST INSTALLED ANCHORS. CONTRACTOR SHALL CONFIRM REQUIREMENTS PRIOR
- I7. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE MEANS AND METHODS FOR ERECTION PROCEDURE AND SEQUENCE OF THE CONSTRUCTION. CONTRACTOR TO INSURE THE SAFETY OF ALL INSTALLED IMPROVEMENTS, BUILDINGS AND THEIR
- COMPONENT PARTS DURING ERECTION. 18. MATERIALS LISTED IN DRAWINGS ARE BASED ON DESIGN INTENT. ALTERNATE SPECIFICATIONS MAY BE ACCEPTED PROVIDED THEY CLOSELY MATCH AND ARE DEEMED EQUAL TO SPECIFIED MATERIAL. GENERAL CONTRACTOR IS TO SUBMIT PROPOSED SAMPLES OF SUBSTITUTIONS, ALONG WITH SAMPLE OF THAT SPECIFIED IN DRAWINGS FOR REVIEW BY THE ARCHITECT OR PROJECT MANAGER. SUBSTITUTIONS WILL ONLY BE APPROVED IF SPECIFIED MATERIAL IS PROVEN TO BE UNAVAILABLE WITHIN A REASONABLE TIME FRAME OR THE SUBSTITUTION IS A BENEFIT TO THE OWNER RELATED TO COST OR SCHEDULE TIME SAVINGS.
- 19. THE PROJECT BOUNDARIES SHALL BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE OWNERS ATTENTION
- IMMEDIATELY BEFORE PROCEEDING WITH CONSTRUCTION 20. ALL LABOR, MATERIALS AND INSTALLATIONS MUST COMPLY WITH THE CODES AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION. ANY DISCREPANCY WHICH EXISTS BETWEEN THE REQUIREMENTS BY THE PLANS, SPECIFICATIONS, SAID CODES, RULES AND REGULATIONS, SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT, IN WRITING FOR RESOLUTION. IF ANY CHANGE IN THE PLANS AND OR SPECIFICATIONS OCCURS AS A RESULT OF THE REQUIREMENTS OF THE LIFE SAFETY CODE (NFPA 101) OR ANY OTHER AUTHORITIES HAVING JURISDICTION AFTER THE SUBMISSION OF BIDS, THEN THE BIDDERS WILL BE GIVEN THE OPPORTUNITY TO ADJUST THEIR BIDS, IF NECESSARY, ONLY FOR THE CHANGE
- 21. THE CONTRACTOR SHALL COORDINATE THE WORK WITH MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR ALL NECESSARY OPENINGS AND PENETRATIONS THROUGH WALLS, CEILING AND FLOORS.
- 22. ALL EXPOSED PIPES, CONDUITS OR DUCTS IN FINISHES AREAS, WHETHER SHOWN ON DRAWINGS OR NOT. SHALL BE FURRED OUT WITH GYPSUM BOARD. 23. LOCATION OF ACCESS DOORS SUPPLIED BY MECHANICAL TRADES AND INSTALLED BY OTHERS SHALL BE DETERMINED IN THE FIELD THROUGH COORDINATION OF TRADES, LOCATION OF LIGHT FIXTURES SHALL GOVERN POSITION OF DUCTS AND PIPES FOR WHICH ACCESS DOORS ARE REQUIRED. ACCESS DOORS SHALL NOT BE PLACED IN INACCESSIBLE POSITIONS OR IN THE WAY OF LIGHTS, GRILLS, REGISTERS, CONCEALED BY CASEWORK, ECT.

PROJECT DATA

<u>PROJECT ADDRESS:</u> 1402 SOUTH MERIDIAN PUYALLUP, WA 98371

<u> SSESSOR'S PARCEL NUMBER:</u> 73000-028-1 & 773000-028-8: TITLE PARCEL / 773000-003-1 & 773000-002-1: TITLE PARCEL E

GENERAL COMMERCIAL (GC)

SITE AREA: 51,520 S.F. (1.18 AC)

BUILDINGS: CONVENIENCE STORE

CONSTRUCTION TYPE: V-B (NON SPRINKLERED) USE GROUP: M

GROSS AREA: 3,349 S.F. <u>CANOPY</u>

CONSTRUCTION TYPE: II-B USE GROUP: M GROSS AREA: 6,321 S.F. CAR WASH

CONSTRUCTION TYPE: V-B USE GROUP: B GROSS AREA: 1,158 S.F.

PARKING REQUIREMENTS

NO. OF SPACES REQUIRED: 1 SPACE PER 300 SQUARE FEET 3,349/300 = 11.16

NO. OF SPACES PROVIDED: 21

NO. OF ACCESSIBLE PARKING: 1 VAN ACCESSIBLE PER 1-25 AUTO STALLS

NO. OF BICYCLE PARKING: 1 PER 25 AUTO STALLS (2 PROVIDED)

PER IBC WA AMENDMENT 429. M-OCCUPANCY IS EXEMPT FROM PROVIDING EV CHARGING INFRASTRUCTURE WHEN IT DOES NOT DESIGNATE EMPLOYEE PARKING. HOWEVER, TWO (2) EV PARKING SPACES ARE PROVIDED.

OCCUPANCY LOAD CALCULATION SEE SHEET G1.3

PROJECT DIRECTORY

SITE VICINITY MAP

BP PRODUCTS, NA PO BOX 696049 SAN ANTONIO, TX 78269-9931 CONTACT: RANDALL ARNOLD RANDALL.ARNOLD@BP.COM PHONE

<u>ARCHITECT</u> BARGHAUSEN CONSULTING ENGINEERS, INC. 18215 72ND AVE. SOUTH KENT. WA 98032 CONTACT: MONIKA UEHLIN

PHONE: 425-251-6222 EXT. 7491 <u>CIVIL ENGINEER</u> BARGHAUSEN CONSULTING ENGINEERS, INC. 18215 72ND AVE. SOUTH KENT, WA 98032 CONTACT: ALEX WHITE PHONE: 425-251-6222

LANDSCAPE ARCHITECT BARGHAUSEN CONSULTING ENGINEERS, INC. 18215 72ND AVE. SOUTH KENT, WA 98032 CONTACT: JEFF VARLEY PHONE: 425-251-6222

STRUCTURAL ENGINEER PCS STRUCTURAL SOLUTIONS 811 FIRST AVENUE, SUITE 620 SEATTLE, WA CONTACT: JACK PINKARD PHONE: 206.292.5076

DEVELOPMENT CONTACTS SOUTH PIERCE COUNTY

902 7TH STREET N.W.

PUYALLUP, WA 98371

<u>ENVIRONMENTAL — FUEL</u>

OLYMPIA, STATE 98504

WASHINGTON STATE

P.O. BOX 47655

360-407-7382

AIR QUALITY

FIRE & RESCUE

253-538-6402

STRUCTURAL ENGINEER (CANOPY)

PERRY BUILDERS

AUBURN, CA

12405LOCKSLEY LANE

CONTACT: LOGAN GRAVES

PHONE: 530-745-0580

<u>PLUMBING, MECHANICAL</u>

ABOSSEIN ENGINEERING LLC.

<u>ELECTRICAL ENGINEER</u>

2100 11TH AVE NE

BELLEVUE, WA 98004

CONTACT: ALEX ABOSSEIN

BARGHAUSEN CONSULTING

18215 72ND AVE. SOUTH

CONTACT: OMAR VASQUEZ

PHONE: 425.251.6222

PHONE: 425.462.9441

FUEL TANKS

ENGINEERS, INC.

CITY OF PUYALLUP PLANNING SERVICES 333 SOUTH MERIDIAN PUYALLUP, WA 98371 253-864-4165 <u>BUILDING</u> CITY OF PUYALLUP BUILDING SERVICES/FIRE PROTECTION DEPARTMENT OF ECOLOGY 333 SOUTH MERIDIAN PUYALLUP, WA 98371 253-864-4165 ENVIRONMENTAL - FOOD TACOMA-PIERCE COUNTY HEALTH DEPARTMENT 3629 S. D STREET TACOMA, WA 98418

253-649-1706 STORMWATER, WATER QUALITY, SANITARY SEWER CITY OF PUYALLUP

PUGET SOUND CLEAN AIR AGENCY 1904 THIRD AVENUE SEATTLE, WA 98101 206-689-4063 **ELECTRIC** WASHINGTON STATE DEPARTMENT OF LABOR AN INDUSTRIES (L&I) P.O. BOX 44000 OLYMPIA, STATE 98504 360-902-5800

PERMITTED SEPERATELY PERMIT SUBMITTAL DATES

PUBLIC WORKS

253-841-5505

1100 39TH AVENUE S.E.

PUYALLUP, WA 98371

10/04/2023

C-STORE C-STORE ------FUELING CANOPY i õ õ ١-----١

SITE KEY PLAN

INDEX OF DRAWINGS

C-STORE

ACCESSIBILITY DETAILS C-STORE CODE ENERGY PLAN ALTA & NSPS LAND TITLE SURVE ALTA & NSPS LAND TITLE SURVE LANDSCAP LANDSCAPE NOTES AND PLANT SCHEDUI LANDSCAPE DETAILS IRRIGATION PLAN IRRIGATION DETAILS

ARCHITECTURAL ARCHITECTURAL SITE PLAN CONSTRUCTION FLOOR PLAN FLOOR FINISH PLAN EXTERIOR ELEVATIONS INTERIOR ELEVATIONS

INTERIOR ELEVATIONS INTERIOR ELEVATIONS AND ENLARGED RESTROOM PLAN GRAPHIC ELEVATIONS AND SCHEDUL **BUILDING SECTIONS** WALL SECTIONS

ARCHITECTURAL SPECIFICATION

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UNDERGROUND STORAGE TANK PLAN AND DETAILS EV CHARGING STATION DETAILS

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MECHANICAL DETAILS MECHANICAL CONTRO LEGEND, NOTES AND SCHEDUL **SPECIFICATIONS** LIGHTING PLAN LUMINAIRE SCHEDULE **EQUIPMENT & RECEPTACLE SCHEDUL** ELECTRICAL ROUGH-IN PLAN

SINGLE LINE DIAGRAM ELECTRICAL PANEL SCHEDULE **ELECTRICAL PANEL SCHEDULE** DIAGRAMS & DETAILS PART DIAGRAMS & DETAILS PART 2 **FAULT CURRENT & ARC FLASH SCHEDULES** ELECTRICAL SITE PLAN ELECTRICAL SITE DETAIL

PLUMBING LEGEND. SCHEDULES & CALCULATION **GENERAL NOTES & CALCULATIONS** PLUMBING SPECIFICATIONS PLUMBING ROUGH-IN PLAN SANITARY DRAINAGE & VENT PLUMBING PLA PLUMBING ROOF PLAN RISER DIAGRAMS

PLUMBING DETAILS I PLUMBING DETAILS I TITLE SHEET AND DRAWING INDEX UNDERGROUND TANK AND PIPING SITE PLAN AND INSTALLATION NOTES TANK & PIPING SCOPE OF WORK & GENERAL NOTES (FRP 1 OF 2) TANK & PIPING SCOPE OF WORK & GENERAL NOTES (FRP 2 OF 2) DESIGN INTENT MISCELLANEOUS DETAILS DESIGN INTENT: NEW VENT STACK INSTALLATION DETAIL

TANK FILL & VAPOR RISER STATIC GROUNDING DETAILS TANK AND PIPING MATERIALS LIST (1 OF 2) TANK AND PIPING MATERIALS LIST (2 OF 2) TYPICAL 10' DIA. 25,000 GALLON DOUBLE WALL FIBERGLASS TANK INSTALLATION DETAILS

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ELECTRICAL FUELING SITE PLAN & CLASS 1, DIVISION 1 AND 2 FUEL SYSTEM ELECTRICAL CONDUIT POINT TO POINT PLAN WAYNE DISPENSER SCHEMATICS LEAK DETECTION AND CAT 5 NOTES VEEDER ROOT 450 AND FE PETRO INTERFACE FIELD WIRING DIAGRAM

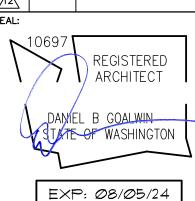
M.5.1.48 ELECTRICAL PANEL E-STOP CONTROL WIRING SCHEMATIC AND TYPICAL FUELING ELEVATION ELECTRICAL LOW VOLTAGE DISCONNECT FOR DATA/INTERCOM/MEDIA EMERGENCY SHUTDOWN SCHEMATIC FUELING CONTROLS W/VFC's



Consulting Engineers, Inc

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO.	DATE	REVISION DESCRIPTION
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DEVELOPMENT INFORMATION: **ARCO NTI**

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: 1402 S MERIDIAN

PUYALLUP, WA 98371

FACILITY #7184 ALLIANCE Z&DM:

CHECKED BY: BP REPM: ALLIANCE PM: PROJECT NO: 21730 DRAWING TITLE:

COVER SHEET

APPLICABLE CODES

SCOPE OF WORK

CAR WASH AND ASSOCIATED SITE IMPROVEMENTS.

SIGNAGE UNDER SEPARATE PERMIT

CONSTRUCTION OF NEW 3,349 S.F. ARCO AM/PM CONVENIENCE STORE

PRODUCT DISPENSERS, AND TWO (2) UNDERGROUND STORAGE TANKS.

ELECTRICAL SHEETS ARE FOR REFERENCE ONLY - PERMIT WILL BE

WITH 4,607 S.F. FUEL CANOPY (49'x94') WITH EIGHT (8) MULTI

BUILDING CODE 2018 INTERNATIONAL BUILDING CODE* PLUMBING CODE: 2018 UNIFORM PLUMBING CODE* **ELECTRICAL CODE:** 2018 NATIONAL ELECTRICAL CODE MECHANICAL CODE: 2018 INTERNATIONAL MECHANICAL CODE AND INTERNATIONAL FUEL GAS CODE*

ENERGY CODE: 2018 WASHINGTON STATE ENERGY CODE FIRE CODE: 2018 INTERNATIONAL FIRE CODE*

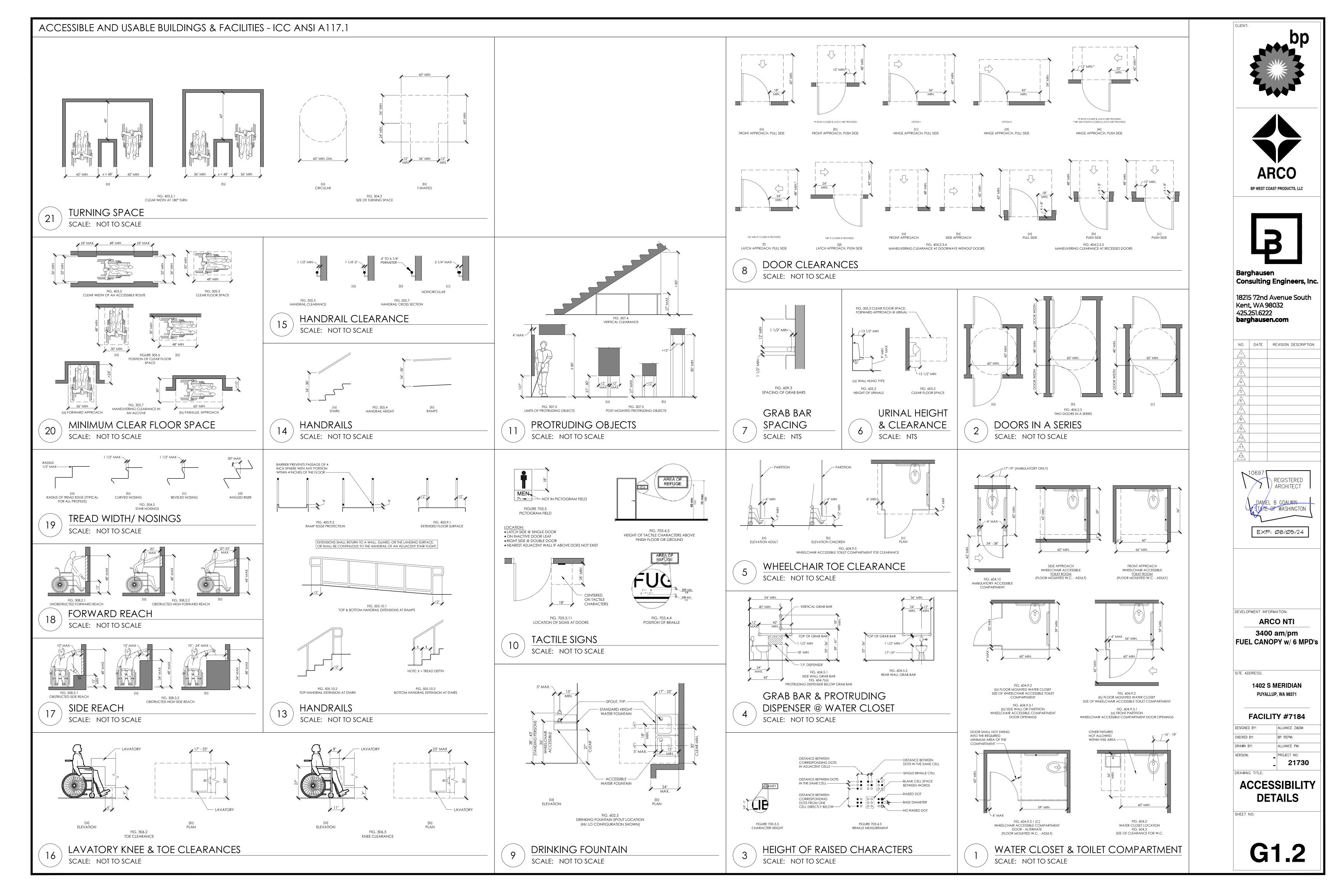
ICC/ANSI A117.1-2009

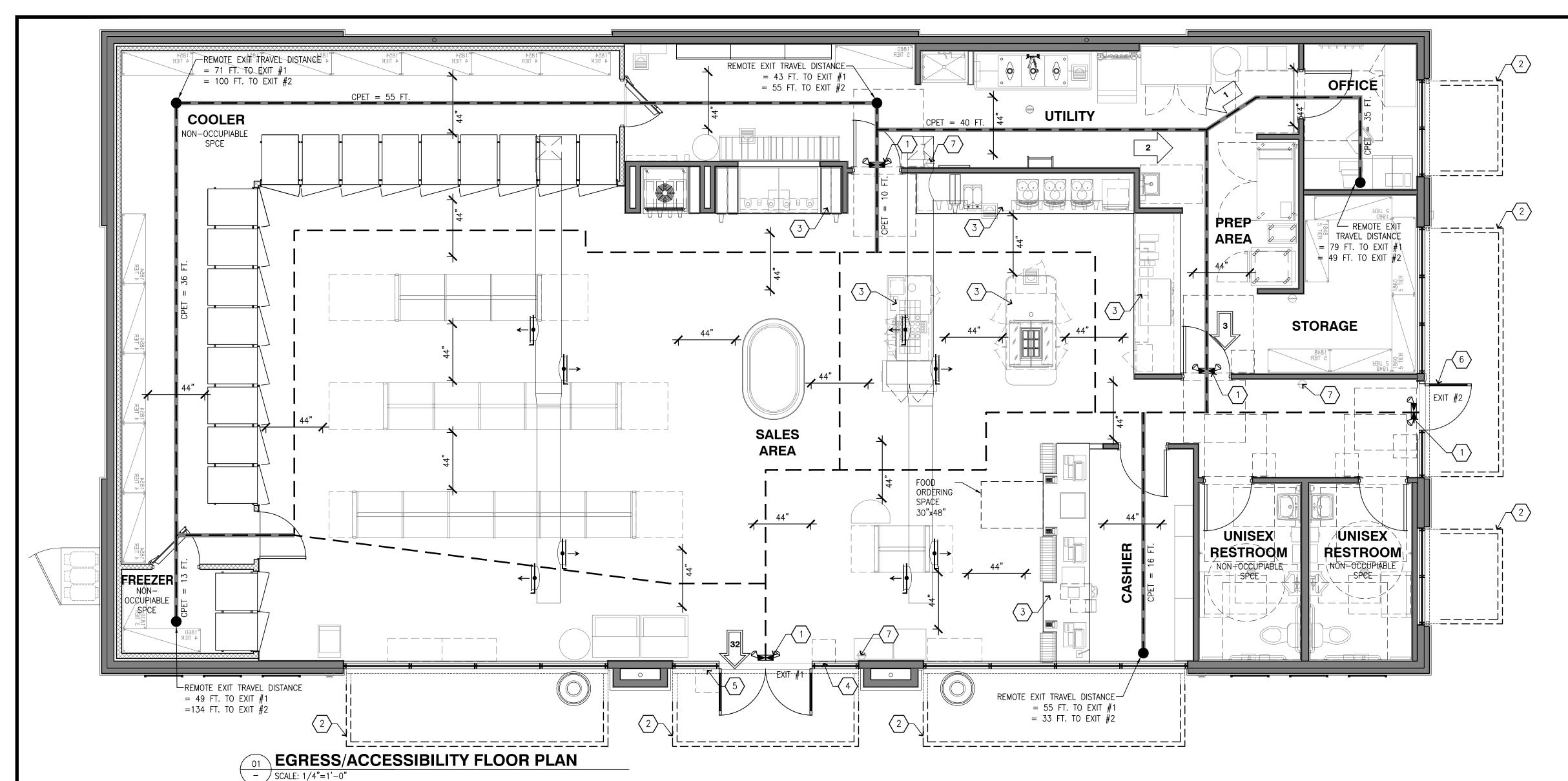
LOCAL CODES: PUYALLUP MUNICIPAL CODE *AS AMENDED BY STATE AND LOCAL JURISDICTION

ACCESSIBILITY CODE:

PERMIT ISSUE DATES

ARCO APPROVAL DATES





EXIT REQUIREMENTS

1.EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED.

2.EXIT SIGNS ILLUMINATED BY AN EXTERNAL SOURCE SHALL HAVE AN INTENSITY OF NOT LESS THAN 5 FOOT CANDLES. 3.INTERNALLY ILLUMINATED SIGNS SHALL BE LISTED AND LABELED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE

4.EXIT SIGNS SHALL BE ILLUMINATED AT ALL TIMES

MANUFACTURER'S INSTRUCTION AND CBC SECTION 2702.

5.EXIT SIGNS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM THAT WILL PROVIDE AN ILLUMINATION OF NOT LESS THAN 90 MIN. IN CASE OF PRIMARY POWER LOSS.

6.EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. SEE 1008.1.8.3 FOR EXCEPTIONS.

7.DOOR HANDLES, LOCK AND OTHER OPERATING DEVICES SHALL BE INSTALLED AT A MIN. 34" AND A MAX. 48" ABOVE THE FINISHED

8.THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED

9.ALL EGRESS DOOR OPERATION SHALL ALSO COMPLY WITH SECTION 1008.1.8 - 1008.1.8.6.

10. THE MEANS OF EGRESS, INCLUDING THE EXIT DISCHARGE, SHALL BE ILLUMINATED AT ALL TIMES THE BUILDING SPACE SERVED BY THE MEANS OF EGRESS IS OCCUPIED.

11. THE MEANS OF EGRESS ILLUMINATION LEVEL SHALL NOT BE LESS THAN 1 FOOT-CANDLE AT THE WALKING SURFACE

12. THE POWER SUPPLY FOR MEANS OF EGRESS ILLUMINATION SHALL NORMALLY BE PROVIDED BY THE PREMISES' ELECTRICAL SUPPLY. IN THE EVENT OF POWER SUPPLY FAILURE, AN EMERGENCY ELECTRICAL SYSTEM SHALL AUTOMATICALLY ILLUMINATE THE

FOLLOWING AREAS: a. AISLES AND UNENCLOSED EGRESS STAIRWAYS IN ROOMS AND SPACES THAT REQUIRE TWO OR MORE MEANS OF EGRESS

b. CORRIDORS, EXIT ENCLOSURES AND EXIT PASSAGEWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.

c.EXTERIOR EGRESS COMPONENTS AT OTHER THAN THE LEVEL OF EXIT DISCHARGE UNTIL EXIT DISCHARGE IS ACCOMPLISHED FOR BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.

d.INTERIOR EXIT DISCHARGE ELEMENTS, AS PERMITTED IN SECTION 1024.1, IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS. e.EXTERIOR LANDINGS, AS REQUIRED BY SECTION 1008.1.5, FOR EXIT DISCHARGE DOORWAYS IN BUILDINGS REQUIRED TO HAVE TWO OR MORE EXITS.

13. THE EMERGENCY POWER SYSTEM SHALL PROVIDE POWER FOR A DURATION OF NOT LESS THAN 90 MINUTES AND SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR. THE INSTALLATION OF THE EMERGENCY POWER SYSTEM SHALL BE IN ACCORDANCE WITH SECTION 2702.

14.EMERGENCY LIGHTING FACILITIES SHALL BE ARRANGED TO PROVIDE INITIAL ILLUMINATION THAT IS AT LEAST AN AVERAGE OF 1 FOOT-CANDLE (11 LUX) AND A MINIMUM AT ANY POINT OF 0.1 FOOT-CANDLE (1 LUX) MEASURED ALONG THE PATH OF EGRESS AT FLOOR LEVEL. ILLUMINATION LEVELS SHALL BE PEMLITTED TO DECLINE TO 0.6 FOOT—CANDLE (6 LUX) AVERAGE AND A MINIMUM AT ANY POINT OF 0.06 FOOT-CANDLE (0.6 LUX) AT THE END OF THE EMERGENCY LIGHTING TIME DURATION. A MAXIMUM-TO-MINIMUM ILLUMINATION UNIFORMITY RATIO OF 40 TO 1 SHALL NOT BE EXCEEDED.

EMERGENCY EGRESS LIGHTING

ELECTRICAL CONTRACTOR SHALL VERIFY THE FOLLOWING PRIOR TO INSTALLING NEW EMERGENCY LIGHTING AND PROVIDE THIS INFORMATION ON THEIR PERMIT SUBMITTAL PLANS: EMERGENCY LIGHTING SHALL BE ARRANGED TO PROVIDE AN INITIAL ILLUMINATION THAT IS AT LEAST AVERAGE OF 1 FOOT-CANDLE AND A MINIMUM AT ANY POINT OF 0.1 FOOT—CANDLE MEASURED ALONG THE PATH OF EGRESS AT FLOOR LEVEL. ILLUMINATION LEVELS SHALL BE PERMITTED TO DECLINE TO 0.6 FOOT-CANDLES AVERAGE AND A MINIMUM AT ANY POINT OF 0.06 FOOT-CANDLES AT THE END OF THE EMERGENCY LIGHTING TIME DURATION. A MAXIMUM-TO-MINIMUM ILLUMINATION UNIFORMITY RATIO OF 40:1 SHALL NOT BE EMERGENCY POWER SYSTEM SHALL BE PROVIDED FOR A DURATION OF NOT LESS THAN 90 MINUTES AND SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT, OR AN ON-SITE GENERATOR.

CODE ANALYSIS:

IBC CHAPTER 2, OCCUPIABLE SPACE A ROOM OR ENCLOSED SPACE DESIGNED FOR HUMAN OCCUPANCY IN WHICH THE INDIVIDUALS CONGREGATE FOR AMUSEMENT, EDUCATIONAL OR SIMILAR PURPOSES OR IN WHICH OCCUPANTS ARE ENLARGED IN LABOR.

IBC SECTION 504.1, BUILDING HEIGHT AND NUMBER OF STORIES

ALLOWABLE BUILDING HEIGHT AND NUMBER OF STORIES SHALL BE DETERMINED BASED ON THE TYPE OF CONSTRUCTION, OCCUPANCY CLASSIFICATION AND AUTOMATIC SPRINKLERS.

ASSUME AN OCCUPANCY WITH GROUP "M", MERCANTILE, WITH TYPE VB CONSTRUCTION AND NON-SPRINKLERED

IBC TABLE 504.3, ALLOWABLE BUILDING HEIGHT MAXIMUM ALLOWABLE HEIGHT, GROUP M: 40 FEET

IBC TABLE 504.4, ALLOWABLE STORIES

MAXIMUM NUMBER OF STORIES, GROUP M: 1 STORY IBC SECTION 506.1, BUILDING AREA

ALLOWABLE BUILDING AREA SHALL BE DETERMINED BASED ON THE TYPE OF CONSTRUCTION, OCCUPANCY CLASSIFICATION, AUTOMATIC SPRINKLERS AND THE AMOUNT OF BUILDING FRONTAGE ON A PUBLIC WAY.

IBC TABLE 506.2, ALLOWABLE BUILDING AREA MAXIMUM ALLOWABLE AREA, GROUP M: 9,000 SQUARE FEET

* TOTAL PROPOSED BUILDING AREA: 3,216 SQUARE FEET

IBC SECTION 602.5, TYPE V TYPE V CONSTRUCTION IS THAT TYPE OF CONSTRUCTION IN WHICH THE STRUCTURAL ELEMENTS. EXTERIOR WALLS AND INTERIOR WALLS ARE OF ANY MATERIALS PERMITTED BY

TABLE 601, FIRE RESISTANCE RATING FOR BUILDING ELEMENTS FOR TYPE V-B CONSTRUCTION IN HOURS PRIMARY STRUCTURAL FRAME: 0 EXTERIOR BEARING WALLS: 0 INTERIOR BEARING WALLS: 0 EXTERIOR NON-BEARING WALLS: INTERIOR NON-BEARING WALLS: 0

IBC TABLE 1004.1.2, FLOOR AREAS PER OCCUPANT SEE PLAN ABOVE FOR OCCUPANCY CALCULATIONS.

FLOOR CONSTRUCTION: 0

ROOF CONSTRUCTION: 0

IBC SECTION 1006.2.1, EGRESS BASED ON OCCUPANT LOAD TWO EXITS OR EXIT ACCESS DOORWAYS SHALL BE PROVIDED WHERE THE DESIGN OCCUPANT LOAD OR COMMON PATH OF EGRESS TRAVEL EXCEEDS THE VALUES IN TABLE

IBC TABLE 1006.2.1, SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY A SPACE IN AN "M" OCCUPANCY WITH AN OCCUPANT LOAD OF 49 OR LESS AND A COMMON PATH OF EGRESS TRAVEL OF 75 FEET IS ALLOWED TO HAVE ONLY ONE EXIT.

* THE TOTAL OCCUPANT LOAD FOR THE C-STORE IS 32 OCCUPANTS. THE COMMON PATH OF EGRESS TRAVEL IS LESS THAN 75 FEET. ONE EXIT IS ALLOWED

CODE ANALYSIS cont.:

IBC SECTION 1008.2.1, ILLUMINATION LEVEL UNDER NORMAL POWER THE MEANS OF ILLUMINATION LEVEL SHALL NOT BE LESS THAN 1 FOOTCANDLE AT THE WALKING SURFACE.

IBC SECTION 1008.3.1, EMERGENCY POWER FOR ILLUMINATION IN THE EVENT OF POWER FAILURE, AN EMERGENCY ELECTRICAL SYSTEM SHALL ILLUMINATE THE FOLLOWING AREAS: AISLES, CORRIDORS, EXIT ACCESS STAIRWAYS AND RAMPS.

IBC SECTION 1009.1, ACCESSIBLE MEANS OF EGRESS ACCESSIBLE SPACES SHALL BE PROVIDED WITH NOT LESS THAN ONE ACCESSIBLE MEANS OF EGRESS. WHERE MORE THAN ONE MEANS OF EGRESS ARE REQUIRED, EACH ACCESSIBLE PORTION OF THE SPACE SHALL HAVE NOT LESS THAN TWO ACCESSIBLE MEANS OF EGRESS.

IBC SECTION 1010.1.1, SIZE OF DOORS THE MINIMUM WIDTH OF EACH DOOR OPENING SHALL BE SUFFICIENT FOR THE OCCUPANT LOAD AND SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES

IBC SECTION 1010.1.2.1, DIRECTION OF SWING DOORS SHALL SWING IN THE DIRECTION OF TRAVEL WHERE SERVING A ROOM OR AREA CONTAINING AN OCCUPANT LOAD OF 50 OR MORE PERSONS.

IBC SECTION 1010.1.9, DOOR OPERATIONS EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.

IBC SECTION 1013.1, EXIT SIGNS, WHERE REQUIRED EXITS AND EXIT ACCESS DOORS SHALL BE MARKED BY AN APPROVED EXIT SIGN READILY VISIBLE FROM ANY DIRECTION OF TRAVEL. EXCEPTION 1: EXIT SIGNS ARE NOT REQUIRED IN ROOMS OR AREAS

IBC SECTION 1013.4, RAISED CHARACTER AND BRAILLE EXIT SIGNS A SIGN STATING "EXIT" IN RAISED CHARACTERS AND BRAILLE AND COMPLYING WITH ICC ANSI A117.1 SHALL BE PROVIDED ADJACENT TO EACH EXIT DISCHARGE DOOR.

IBC TABLE 1017.2, EXIT ACCESS TRAVEL DISTANCE

THAT REQUIRE ONLY ONE EXIT OR EXIT ACCESS.

OCCUPANCY WITHOUT SPRINKLER 200 FEE<u>T</u>

IBC SECTION 1103.2.9 EQUIPMENT SPACES SPACES FREQUENTED ONLY BY SERVICE PERSONNEL FOR MAINTENANCE. REPAIR OR OCCASSIONAL MONITORING OF EQUIPMENT ARE NOT REQUIRED TO COMPLY WITH THIS CHAPTER

IBC SECTION 1103.2.14 WALK-IN COOLERS & FREEZERS WALK-IN COOLERS AND FREEZERS INTENDED FOR EMPLOYEE USE ONLY ARE NOT REQUIRED TO COMPLY WITH THIS CHAPTER

IBC SECTION 1104.1 SITE ARRIVAL ROUTE ACCESSIBLE ROUTES WITHIN THE SITE SHALL BE PROVIDED FROM PUBLIC TRANSPORTATION STOPS, ACCESSIBLE PARKING, ACCESSIBLE PASSENGER LOADING ZONES, AND PUBLIC STREETS OR SIDEWALKS TO THE ACCESSIBLE BUILDING ENTRANCE.

EXCEPTION: AN ACCESSIBLE ROUTE IS NOT REQUIRED BETWEEN ACCESSIBLE BUILDINGS, FACILITIES, ELEMENTS AND ACCESSIBLE SPACES THAT HAVE AS THE ONLY MEANS OF ACCESS BETWEEN THEM, A VEHICULAR WAY NOT PROVIDING FOR PEDESTRIAN ACCESS.

CODE ANALYSIS cont.

IBC SECTION 1104.2, WITHIN A SITE IT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDINGS, FACILITIES, ELEMENTS AND ACCESSIBLE SPACES THAT ARE ON THE SAME SITE. EXCEPTION: AN ACCESSIBLE ROUTE IS NOT REQUIRED BETWEEN ACCESSIBLE BUILDINGS, FACILITIES, ELEMENTS AND ACCESSIBLE SPACES THAT HAVE AS THE ONLY MEANS OF ACCESS THEM, A VEHICULAR WAY NOT PROVIDING FOR PEDESTRIAN ACCESS.

IBC TABLE 29	02.1, MINIMUM	NUMBER	OF REQU	<u>JIRED PLUMBI</u>	NG FIXTURES
OCCUPANCY	WA [¬]	TER CLOS	SETS	LAVA	TORIES
	MAI	LE FEN	<i>M</i> ALE	MALE	FEMALE
М	1/50	00 1/5	500	1/750	1/750

OCCUPANTS:

M 32 OCCUPANTS = 16 MALE AND 16 FEMALE

TOTAL REQUIRED PLUMBING FIXTURES EACH SEX: MALE = 1 WATER CLOSET AND 1 LAV FEMALE = 1 WATER CLOSET AND 1 LAV

PLUMBING FIXTURES PROVIDED: MALE = 1 WATER CLOSET AND 1 LAV FEMALE = 1 WATER CLOSET AND 1 LAV

IFC 505.1, ADDRESS IDENTIFICATION

NEW BUILDINGS SHALL BE PROVIDED WITH APPROVED ADDRESS IDENTIFICATION. IT SHALL BE LEGIBLE AND PLACED IN A POSITION THAT IS VISIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. CHARACTERS SHALL CONTRAST WITH THEIR BACKGROUND, BE ARABIC NUMBERS (NOT SPELLED OUT) AND NOT LESS THAN 4" HIGH WITH A MINIMUM STROKE OF 1/2". WHERE REQUIRED BY THE FIRE OFFICIAL, ADDRESS IDENTIFICATION SHALL BE PROVIDED IN ADDITIONAL APPROVED LOCATIONS. ADDRESS IDENTIFICATION SHALL BE MAINTAINED.

IFC 906, PORTABLE FIRE EXTINGUISHERS

PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED IN ACCORDANCE WITH IFC 906 AND NFPA 10, WITH A MAXIMUM TRAVEL DISTANCE OF 75 FEET.

IFC 1008.3.3. EMERGENCY POWER FOR ROOMS AND SPACES

IN THE EVENT OF POWER SUPPLY FAILURE, AN EMERGENCY ELECGTRICAL SYSTEM SHALL AUTOMATICALLY ILLUMINATE ELECTRICAL EQUIPMENT ROOMS, FIRE COMMAND CENTERS, FIRE PUMP ROOMS, GENERATOR ROOMS AND PUBLIC RESTROOMS GREATER THAN 300 SQUARE FEET.

IFC 1010.1.9.4, LOCKS AND LATCHES

LOCKS AND LATCHES ARE PERMITTED TO PREVENT OPERATION OF DOORS IN GROUP B AND M OCCUPANCIES. THE MAIN DOOR(S) ARE PERMITTED TO BE EQUIPPED WITH KEY-OPERATED LOCKING DEVISES FROM THE EGRESS SIDE PROVIDED:

* THE LOCKING DEVISE IS READILY DISTINGUISHABLE AS LOCKED * A READILY VISABLE SIGN IS POSTED ON THE EGRESS SIDE STATING "THIS DOOR TO REMAIN UNLOCKED WHEN SPACE IS OCCUPIED"

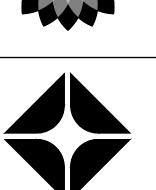
SEE IFC SECTION 1010.1.9.4 FOR ADDITIONAL REQUIREMENTS.

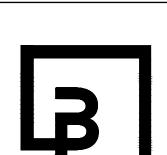
IFC 6109.15, LP GAS CYLINDER FOR RESALE

IN ADDITION TO OTHER APPLICABLE REQUIREMENTS, FACILITIES OPERATING LP-GAS CYLINDER EXCHANGE STATIONS THAT ARE OPEN TO THE PUBLIC SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS: 1. CYLINDERS SHALL BE SECURED IN A LOCKABLE, VENTILATED METAL CABINET OR OTHER APPROVED

- CYLINDERS SHALL BE AVAILABLE ONLY BY AUTHORIZED PERSONNEL OR BY USE OF AN AUTOMATIC
- EXCHANGE SYSTEM IN ACCORDANCE WITH IFC 6109.15.1. 3. A SIGN SHALL BE POSTED ON THE ENTRY DOOR OF THE BUSINESS STATING "DO NOT BRING LP GAS CYLINDERS INTO THE BUILDING"
- 4. AN EMERGENCY CONTACT INFORMATION SIGN SHALL BE POSTED WITHIN 10 FEET OF THE CYLINDER STORAGE CABINET. CONTENT, LETTERING, SIZE, COLOR AND LOCATION SHALL BE AS REQUIRED BY THE CODE OFFICIAL.





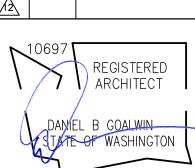


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= 40 OCCUPANTS	12		



CODE PLAN KEYED NOTES

2 > EXTERIOR AWNING OVERHEAD 34" A.F.F. MAXIMUM COUNTER HEIGHT, SEE INTERIOR ELEVATIONS

4 RAISED BRAILLE EXIT SIGN

(1) EMERGENCY EXIT LIGHTING

EXITING NOTES

CONSTRUCTION TYPE: V-B, NON-SPRINKLED

SEE OCCUPANCY LOAD CALCULATION ON THIS SHEET

PROVIDED DISTANCE = 48'-3" (REQUIREMENTS MET)

CBC 11B-403.5.1 - ACCESSIBLE ROUTE CLEAR WIDTH

TO AN EXIT

(M OCCUPANCY)

SALES - 1,906 S.F.(1906/60) OFFICE - 69 S.F. (69/100)

UTILITY - 254 S.F. (254/200)

TOTAL (NET): 3,238 S.F.

EXITS REQUIRED: 1

EXITS PROVIDED: 2

TOTAL (GROSS): 3,349 S.F.

RESTROOMS - 172 S.F. (EXEMPT) STORAGE - 101 S.F. (101/300)

PREP AREA - 206 S.F. (206/200)

COOLER/FREEZER - 530 S.F. (EXEMPT)

INTERIOR WALLS- 111 S.F. (EXEMPT)

CBC 1017 - EXIT ACCESS TRAVEL DISTANCE = 200' MAX.

REFER TO PLAN FOR DISTANCES (REQUIREMENTS MET)

REFER TO PLAN FOR DISTANCES (REQUIREMENTS MET)

AISLE WIDTH SERVING ELEMENTS ON ONE SIDE = 36" MIN. AISLE WIDTH SERVING ELEMENTS ON BOTH SIDES = 44" MIN. REFER TO PLAN FOR CLEAR WIDTHS (REQUIREMENTS MET)

ROUTE FROM MOST REMOTE POINT WITHIN SPACE

MOST REMOTE POINT WITHIN THIS AREA

OCCUPANCY LOAD

FOOD ORDERING AREA - 10 S.F. (10/5 NET) = 2

COMMON PATH OF EGRESS TRAVEL (CPET) WITHIN OVERALL TRAVEL DISTANCE FROM REMOTE LOCATION TO EXIT

CBC 1018.4 - COMMON PATH OF EGRESS TRAVEL (CPET) = 75' MAX.

USE GROUP: M (CONVENIENCE STORE)

OVERALL DIAGONAL DISTANCE = 93'-0"

ONE-HALF DISTANCE = 46'-6"

LEGEND

ACTUAL GROSS AREA: 3,349 S.F.

OCCUPANCY AND EGRESS:

CONVENIENCE STORE

EXITS REQUIRED: EXITS PROVIDED: 2

(5) INTERNATIONAL SYMBOL OF ACCESSIBILITY

(6) EXIT DOOR SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT. NO SPECIAL FEATURES SHOULD ADDED THAT WOULD AFFECT THE EXITING OPERATION

 $\langle 7 \rangle$ FIRE EXTINGUISHER

EXP: 08/05/24

DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

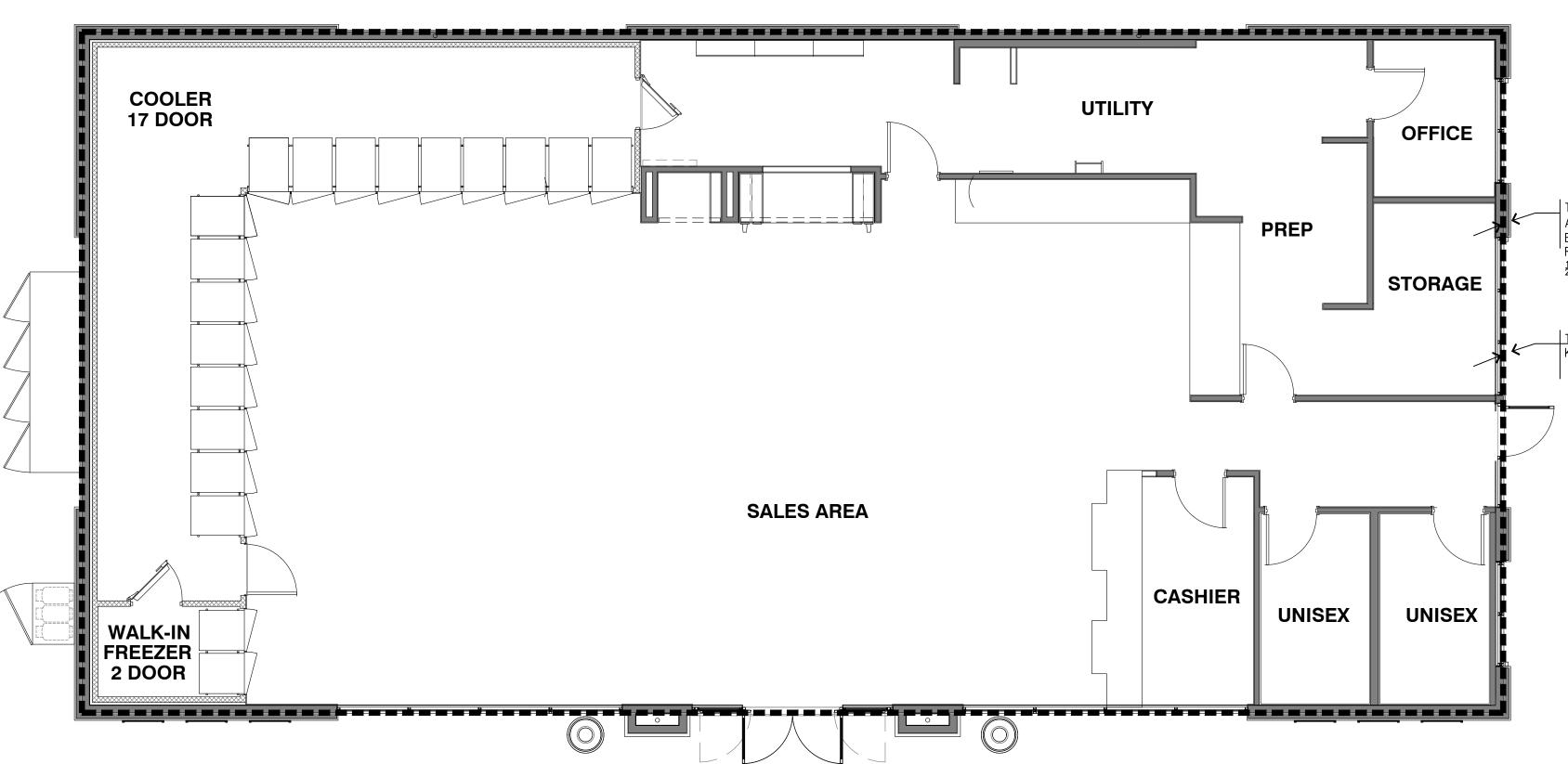
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PUYALLUP, WA 98371

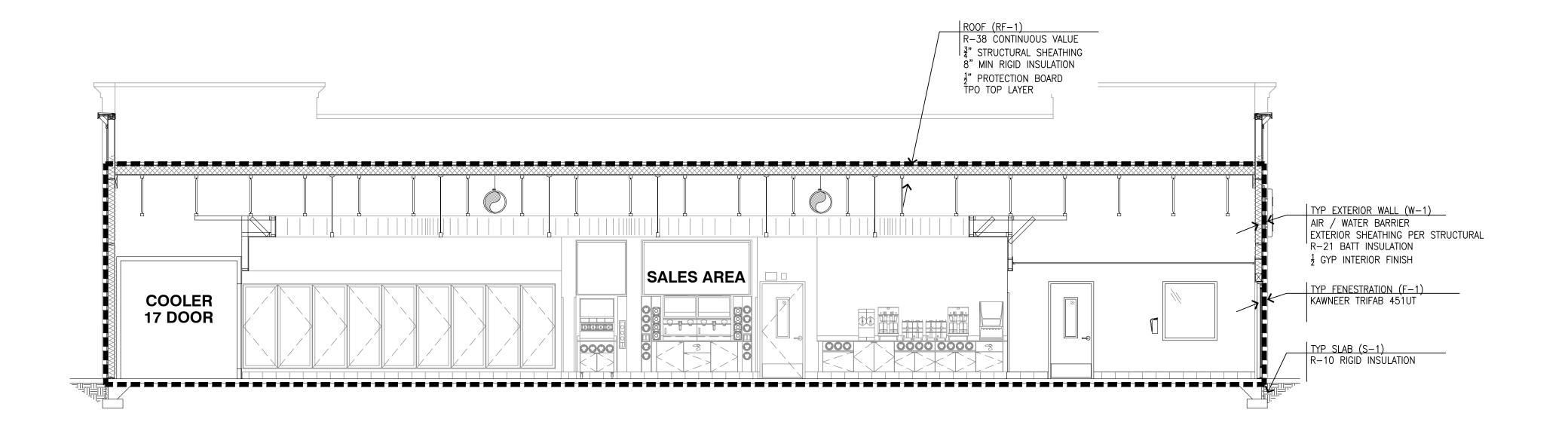
FACILITY #7184 ALLIANCE Z&DM: CHECKED BY: BP REPM:

ALLIANCE PM: PROJECT NO: 21730 DRAWING TITLE:

ACCESSIBILITY FLOOR PLAN







THERMAL ENVELOPE SECTION 、G2.1丿SCALE: 3/16"=1'-0"

GENERAL NOTES (cont.)

ENERGY CODE COMPLIANCE PATH IS COMPONENT PERFORMANCE

ENVELOPE SUMMARY:

ROOF (R-1) WILL HAVE CONTINUOUS MINIMUM 8" RIGID INSULATION ABOVE ROOF DECK TO MAINTAIN A CONTINUOUS R-VALUE OF 38

WALLS (W-1) WILL HAVE R-21 ASSEMBLY WITH 5 $\frac{1}{2}$ " BATT INSULATION.

FRAMING METHOD IS STANDARD FRAMING

SLAB ON GRADE (S-1) WILL HAVE R-10 VERTICAL RIGID INSULATION FROM THE TOP OF SLAB TO TOP OF FOOTING, OR 24" DOWN, WHICHEVER IS LESS

TYP EXTERIOR WALL (W-1)AIR / WATER BARRIER EXTERIOR SHEATHING PER STRUCTURAL R-21 BATT INSULATION $\frac{1}{2}$ GYP INTERIOR FINISH

KAWNEER TRIFAB 451UT

TYP FENESTRATION (F-1)

GENERAL NOTES

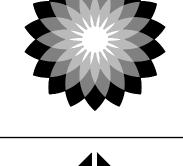
- 1. INSULATION IDENTIFICATION MARK SHALL BE APPLIED TO ALL INSULATION AND READILY OBSERVABLE. SEE WALL TYPE SCHEDULE FOR EXTERIOR WALL INSULATION.
- 2. ALL EXTERIOR FENESTRATION PRODUCTS ARE TO BE LABELED WITH NFRC U-FACTOR, SHGC, VT AND LEAKAGE RATING.
- 3. WHERE TWO OR MORE LAYERS OF RIGID INSULATION WILL BE USED, EDGE JOINTS BETWEEN LAYERS MUST BE STAGGERED.
- 4. ALL WOOD FRAMING AT THERMAL ENVELOPE SHALL BE STANDARD FRAMING.
- 5. EQUIPMENT CURBS THAT INTERRUPT THE ABOVE ROOF INSULATION SHALL BE INSULATED TO A MINIMUM OF R-13 IN ALL LOCATIONS WHERE THERE ARE NOT ROOF OPENINGS FOR DUCTWORK. THE SPACE BETWEEN THE ROOF OPENING AND THE DUCTWORK SHALL BE SEALED TO MAINTAIN THE BUILDING AIR BARRIER.
- 6. SEE A3.# SECTIONS AND A4.# DETAILS FOR LOCATIONS AND THICKNESS OF INSULATION. ALL INSULATION SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ROOF INSULATION, WHEN TAPERED WILL MAINTAIN 8" MINIMUM THICKNESS.
- 7. ALL VERTICAL WINDOWS WITHIN THE THERMAL ENVELOPE SHALL HAVE AN NFRC U-FACTOR OF 0.38 MINIMUM AND A SHGC OF 0.38 MINIMUM.
- 8. WINDOWS TO THE SOUTH HAVE PERMANENT SHADING DEVICES WITH A PF OF 0.46.
- 9. ALL GLAZED STOREFRONT DOORS WITHIN THE THERMAL ENVELOPE SHALL HAVE AN NFRC U-FACTOR OF 0.60 MINIMUM AND A SHGC OF 0.38
- 10. ALL RELIEF, OUTSIDE AIR INTAKE AND EXHAUST OPENINGS SHALL BE PROVIDED WITH DAMPERS IN ACCORDANCE WITH MECHANICAL SECTION C403.7.8.
- 11. RECESSED LIGHTING FIXTURES SHALL COMPLY WITH C402.5.8. WHERE OBJECTS PENETRATE THE AIR BARRIER, MAINTAIN THE INTEGRITY OF THE AIR BARRIER.
- 12. RECESSED LIGHTING INSTALLED IN THE BUILDING ENVELOPE SHALL BE IC RATED, HAVE AN AIR LEAKAGE RATE OF NOT MORE THAN 2.0 CFM AND CAULKED OR GASKETED.
- 13. A CONTINUOUS AIR BARRIER SHALL BE PROVIDED THROUGHOUT THE BUILDING THERMAL ENVELOPE PER WSEC C402.5.1, AIR BARRIERS.
- 14. PER WSEC 402.5.1.2, BUILDING TEST, THE COMPLETED BUILDING SHALL BE TESTED IN ACCORDANCE WITH ASTM E779, ASTM E1827 OR AN EQUIVALENT METHOD APPROVED BY THE CODE OFFICIAL. TARGET LEAKAGE RATE IS 0.25 CFM/FT2.
- 15. THE AIR BARRIER SHALL BE CONTINUOUS FOR ALL ASSEMBLIES THAT ARE WITHIN THE THERMAL ENVELOPE OF THE BUILDING AND ACROSS JOINTS AND ASSEMBLIES.
- 16. JOINTS AND SEAMS SHALL BE SEALED.
- 17. PENETRATIONS SHALL BE CAULKED OR GASKETED.

FENESTRATION NFRC RATING CERTIFICATES.

- 18. SUBMIT BUILDING ENCLOSURE AIR LEAKAGE TEST REPORTS TO THE LOCAL JURISDICTION AND OWNER;
- 18.1. IF THE INITIAL TEST RESULTS EXCEED 0.25 CFM/FT2 INDICATE THAT INSPECTION AND ALL PRACTICAL CORRECTIVE ACTIONS BE COMPLETED AND DOCUMENTED IN THE AIR LEAKAGE REPORT.
- 18.2. IF INITIAL TEST RESULT EXCEEDS 0.40 CFM/FT2, INDICATE THAT CORRECTIVE ACTIONS SHALL ALSO INCLUDE TRE-TESTING.
- 18.3. INDICATE THAT CORRECTIVE MEASURES AND RETESTING MUST BE
- REPORTED UNTIL THE TEST RESULT IS 0.40 CFM/FT2 OR LESS 18.4. INCLUDE AIR BARRIER TEST REPORT IN PROJECT CLOSE OUT
- DOCUMENTATION PROVIDED TO BUILDING OWNER. 19. PROJECT CLOSEOUT DOCUMENTATION IS REQUIRED INCLUDING APPLICABLE CALCULATIONS, WSEC ENVELOPE COMPLIANCE REPORTS, AND
- 20. ENERGY EFFICIENCY PACKAGE CREDITS PER WSEC ARE TO BE ACHIEVED PER MECHANICAL AND ELECTRICAL.
- 21. PERIMETER FOUNDATION STEM WALLS TO HAVE R-10 RIGID INSULATION/FROM T.O. SLAB DOWN 24" OR TO TO T.O. FOOTING, WHICHEVER IS LESS

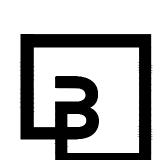
LEGEND

AIR BARRIER TO MEET WSEC C402.5.1 AT THERMAL ENVELOPE





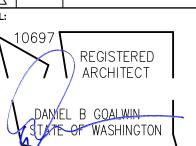
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EXP: 08/05/24

DEVELOPMENT INFORMATION:

3400 am/pm FUEL CANOPY w/ 6 MPD's

ARCO NTI

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

	-	21730
VERSION:	-	PROJECT NO:
DRAWN BY:	DJ	ALLIANCE PM:
CHECKED BY:		BP REPM:
DESIGNED BY:		ALLIANCE Z&DM:

DRAWING TITLE:

C-STORE ENERGY **CODE PLAN**

9TH AVE SW 3 10TH AVE SE BLUE RIBBON AVE 13TH AVE SE VICINITY MAP (N.T.S.)

TWP. 20N R.4E

INDEXING INFORMATION

ALTA/NSPS LAND TITLE SURVEY

SURVEY INFORMATION:

HORIZONTAL DATUM - BASIS OF BEARINGS:

NAD 83/2011 WASHINGTON STATE COORDINATE SYSTEM, SOUTH ZONE, ESTABLISHED BY GPS OBSERVATION UTILIZING THE WASHINGTON STATE REFERENCE NETWORK. THE BASIS OF BEARINGS IS N 00°33'46" E BETWEEN THE FOUND 2" BRASS DISK AT THE INTERSECTION OF S. MERIDIAN ST. & 15TH AVE SW AND THE FOUND 2" IRON PIPE W/TACK IN MONUMENT CASE AT THE INTERSECTION OS S. MERIDIAN ST. & THE ON/OFF RAMP TO SR 512.

VERTICAL DATUM VERTICAL DATUM FOR THIS SURVEY IS NAVD88 ESTABLISHED FROM WSDOT MONUMENT ID NO. 247. ELEVATION = 80.449' (NAVD88)

LOT AREA

52,078± SF (1.20± AC)

1402 S. MERIDIAN, PUYALLUP, WA 98371

773000-028-1 & 773000-028-8: TITLE PARCEL A

773000-003-1 & 773000-002-1: TITLE PARCEL B

REFERENCE SURVEYS:

PIERCE COUNTY SHORT PLAT OF MERIDIAN CENTER - AFN 77-315 (1977) PLAT OF SOURWINE'S ACRE LOTS - VOL 8 PLATS, PAGE 10 (1905) PIERCE COUNTY SHORT PLAT - AFN 8706010381 (1987)

WSDOT SR 512 96TH ST TO JCT. SR 167, DATED MAY 23, 1968

THIS SURVEY REPRESENTS VISIBLE PHYSICAL IMPROVEMENT CONDITIONS EXISTING ON MARCH 22, 2022 & JULY 14, 2023. ALL SURVEY CONTROL INDICATED AS "FOUND" WAS RECOVERED FOR THIS PROJECT IN MARCH OF 2022 & JULY OF 2023.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) INFORMATION: FIRM (FLOOD INSURANCE RATE MAP) MAP NO. 53053C0341E PANEL 341 OF 1375, DATED MARCH 7 2017. THE SUBJECT PROPERTY IS IN ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.

ZONING INFORMATION:

(A ZONING REPORT WAS NOT FURNISHED FOR THIS SITE)

SURVEYOR'S NOTES:

- ALL DISTANCES SHOWN HEREON ARE GROUND MEASUREMENTS IN U.S. SURVEY FEET.
- THE BOUNDARY CORNERS AND LINES DEPICTED ON THIS MAP REPRESENT DEED LINES. ONLY, AND DON'T PURPORT TO SHOW OWNERSHIP LINES THAT MAY OTHERWISE BE DETERMINED BY A COURT OF LAW. NO GUARANTEE OF OWNERSHIP IS EXPRESSED OR
- UNDERGROUND UTILITIES AND FEATURES DEPICTED HEREON ARE BASED ON FIELD OBSERVATION, MARKINGS, DEVELOPMENT PLANS, AND/OR AVAILABLE RECORD DOCUMENTS ONLY. THE TRUE LOCATION, NATURE AND/OR EXISTENCE OF BELOW GROUND FEATURES, DETECTED OR UNDETECTED, SHOULD BE VERIFIED.
- THE LEGAL DESCRIPTION AND SPECIAL EXCEPTIONS SHOWN HEREON ARE PER THE ABOVE REFERENCED TITLE REPORT UNLESS OTHERWISE NOTED.
- THIS SURVEY HAS DEPICTED ALL VISIBLE OCCUPATIONAL INDICATORS (IE. FENCE LINES, BUILDINGS, WALLS, ETC. - SEE MAP FOR PARTICULARS) PER W.A.C. 332-130. LINES OF OCCUPATION, AS DEPICTED, MAY INDICATE AREAS OF POTENTIAL CLAIMS OF UNWRITTEN OWNERSHIP. THIS SURVEY HAS ONLY DEPICTED THE RELATIONSHIP BETWEEN LINES OF OCCUPATION AND DEEDED LINES OF RECORD. NO RESOLUTION OF OWNERSHIP BASED ON UNWRITTEN RIGHTS HAS BEEN MADE BY THIS SURVEY OR BY ANY PERSONNEL OF BARGHAUSEN CONSULTING ENGINEERS, INC.
- THIS IS A FIELD TRAVERSE SURVEY. TOPCON GT AND TOPCON HYPER HR GPS AND DELL TABLET DATA COLLECTOR WERE USED TO MEASURE THE ANGULAR AND DISTANCE RELATIONSHIPS BETWEEN THE CONTROLLING MONUMENTATION AS SHOWN. CLOSURE RATIOS OF THE TRAVERSE MET OR EXCEEDED THOSE SPECIFIED IN W.A.C. 332-130-090. ALL INSTRUMENTS AND EQUIPMENT HAVE BEEN MAINTAINED IN ADJUSTMENT ACCORDING TO MANUFACTURERS' SPECIFICATIONS AND USED BY APPROPRIATELY TRAINED PERSONNEL.
- THIS SURVEY MEETS OR EXCEEDS THE "RELATIVE POSITIONAL PRECISION" REQUIREMENTS SET FORTH IN THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS IN SECTION 3(E).
- THE RECORD DESCRIPTION FOR THE SUBJECT PROPERTY MATHEMATICALLY CLOSES.
- ELEMENTS AND FEATURES DEPICTED HEREON SATISFY THE REQUIREMENTS STATED WITHIN W.A.C. 332-130-145 FOR TOPOGRAPHIC MAPS, INCLUDING THE FOLLOWING: THE SOURCE OF THE CONTOURS SHOWN HEREON ARE BASED UPON DIRECT FIELD OBSERVATIONS. THE CONTOUR ACCURACY IS PER NATIONAL MAPPING STANDARDS, ONE HALF OF THE CONTOUR INTERVAL (1'). THE PURPOSE OF THIS SURVEY IS TO MAP THE CURRENT CONDITIONS FOR ENGINEERING DESIGN.
- BARGHAUSEN CONSULTING ENGINEERS, INC. SURVEY CREWS DETECTED NO OBSERVABLE EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING
- BARGHAUSEN CONSULTING ENGINEERS, INC. SURVEY CREWS DETECTED NO OBSERVABLE EVIDENCE OF SITE USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.
- THERE IS NO VISIBLE EVIDENCE OF ANY CEMETERIES OR BURIAL GROUNDS.
- THERE IS EVIDENCE OF PHYSICAL ACCESS TO PUBLIC RIGHT-OF-WAY.

TITLE INFORMATION:

ALL TITLE INFORMATION SHOWN ON THIS MAP HAS BEEN EXTRACTED FROM STEWART TITLE GUARANTY COMPANY COMMITMENT NO. 21000200719, DATED JULY 29, 2021 AT 8:00 AM. INCLUDED ARE APPURTENANT EASEMENTS AND ADJOINING DEEDS FOR UNPLATTED LOTS, IF ANY. IN PREPARING THIS MAP, BARGHAUSEN CONSULTING ENGINEERS, INC. HAS CONDUCTED NO INDEPENDENT TITLE SEARCH NOR IS BARGHAUSEN CONSULTING ENGINEERS, INC. AWARE OF ANY TITLE ISSUES AFFECTING THE SURVEYED PROPERTY OTHER THAN THOSE SHOWN ON THE MAP AND DISCLOSED BY SAID COMMITMENT. BARGHAUSEN CONSULTING ENGINEERS, INC. HAS RELIED WHOLLY ON SAID TITLE COMPANY'S REPRESENTATIONS OF THE TITLE'S CONDITION TO PREPARE THIS SURVEY AND THEREFORE BARGHAUSEN CONSULTING ENGINEERS, INC. QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.

(PER ABOVE REFERENCED TITLE REPORT) PARCEL A: (773000-028-1 & 773000-028-8) LOT 1 AND THE NORTH 15 FEET OF THE EAST 178.33 FEET OF "COMMON ACCESS TRACT A", OF PIERCE COUNTY SHORT PLAT RECORDED UNDER RECORDING NO. 77-315, RECORDS OF PIERCE COUNTY WASHINGTON, FORMERLY BEING DESCRIBED AS THE NORTH 161.5 FEET OF THE WEST 178.33 FEET OF THE EAST 188.33 FEET OF LOT 20, SOURWINE'S ACRE LOTS, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 8 OF PLATS, PAGE 10, RECORDS OF PIERCE COUNTY, WASHINGTON; TOGETHER WITH THAT PORTION OF 14TH AVENUE SW, VACATED BY ORDINANCE NO. 2304 ABUTTING THEREON AND ATTACHED THERETO, RECORDED UNDER RECORDING NO.

RIGHTS TO USE THAT PORTION OF THE WITHIN DESCRIBED PROPERTY LYING WITHIN COMMON ACCESS TRACT "A" OF SIDE SHORT PLAT, FOR INGRESS, EGRESS, AND INSTALLATION AND MAINTENANCE OF UTILITIES, AS SET FORTH AND DELINEATED ON PIERCE COUNTY SHORT PLAT NO. 77-315;

EXCEPT ANY PORTION LYING WITHIN PARCEL A ABOVE. AN EASEMENT FOR INGRESS AND EGRESS AS SET FORTH IN DOCUMENTS ENTITLED "STATUTORY WARRANTY DEED" AS RECORDED UNDER RECORDING NUMBERS 2741876 AND

PARCEL B: (773000-003-1 & 773000-002-1) LOT 2, SOURWINE'S ACRE LOTS, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 8 OF PLATS, PAGE 10, RECORDS OF PIERCE COUNTY, WASHINGTON; EXCEPT THAT PORTION LYING WITHIN STATE HIGHWAY NO. SR-512, 96TH STREET TO TOGETHER WITH THAT PORTION OF 14TH AVENUE SW, VACATED BY ORDINANCE NO. 2304 ABUTTING THEREON AND ATTACHED THERETO, RECORDED UNDER RECORDING NO.

(PER ABOVE REFERENCED TITLE REPORT)

ITEMS 1 THOUGH 18 ARE NOT SURVEY RELATED.

SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

19. TEMPORARY RIGHT, PERMIT, LICENSE AND EASEMENT TO USE AND OCCUPY A PORTION OF SAID LOT 20 FOR THE PURPOSE OF CONSTRUCTING HIGHWAY SLOPES AND OPERATING ALL NECESSARY MACHINERY AND FOUIPMENT THEREON AT ANY AND ALL TIMES UNTIL COMPLETION OF CONSTRUCTION FOR STATE RAD NO. 512 AS APPROPRIATED BY THE STATE OF WASHINGTON IN PIERCE COUNTY SUPERIOR COURT CAUSE NO. 198127. AFTER COMPLETION OF CONSTRUCTION, ALL RIGHTS OF

PARCEL A (BLANKET IN NATURE)(POTENTIALLY EXTINGUISHED)

EASEMENT SHALL BE EXTINGUISHED.

20. RELINQUISHMENT OF ACCESS TO STATE HIGHWAY AND OF LIGHT, VIEW AND AIR BY DEED TO THE STATE OF WASHINGTON: NOVEMBER 19, 1966 RECORDING NO .: 2321816

AFFFCTS: PARCFI A (APPLIES TO OFFSITE ADJACENT PROPERTY)

21. RELINQUISHMENT OF ACCESS TO STATE HIGHWAY AND OF LIGHT, VIEW AND AIR BY DEED TO THE STATE OF WASHINGTON: OCTOBER 20, 1975 RECORDING NO .: 2632004

PARCEL B

2667305

AFFECTS: (BLANKET IN NATURE)

RECORDING NO .:

22. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: PUGET SOUND POWER AND LIGHT COMPANY ELECTRIC TRANSMISSION AND/OR DISTRIBUTION SYSTEM PURPOSE: AFFECTS: EAST 10 FEET OF PARCEL A AND INCLUDES OTHER PROPERTY MAY 26, 1976

(PLOTTED HEREON)

23. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: GRANTEE: PUGET SOUND POWER AND LIGHT COMPANY ELECTRIC TRANSMISSION AND/OR DISTRIBUTION SYSTEM PURPOSE: PORTION OF PARCEL A AND INCLUDES OTHER PROPERTY RECORDED: MAY 26, 1976 RECORDING NO .:

(BLANKET IN NATURE)

24. COVENANTS, CONDITIONS AND RESTRICTIONS AND EASEMENTS CONTAINED IN SHORT RECORDED: MAY 25, 1977 RECORDING NO.: 77-315

(PLOTTED HEREON)(COMMON ACCESS TRACT "A")

25. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: INGRESS, EGRESS AND UTILITIES PORTION OF TRACT A LYING WITHIN PARCEL A JANUARY 16, 1958 RECORDING NO.: 2792268

(PLOTTED HEREON)

26. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: PURPOSE: INGRESS AND EGRESS TRACT A OF SHORT PLAT 77-315 RECORDED 2741876

RECORDING NO.: (PLOTTED HEREON)

27. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: CITY OF PUYALLUP GRANTEE: CONSTRUCTING, INSTALLING, REPAIRING AND MAINTAINING STREET IMPROVEMENTS ACCORDING TO THE PLAN

28. MUTUAL MAINTENANCE AGREEMENT AND THE TERMS AND CONDITIONS THEREOF:

ENTITLED "SOUTH MERIDIAN STREET IMPROVEMENTS" RECORDED:

8706100397 RECORDING NO.: (PLOTTED HEREON)

RECORDED: RECORDING NO .: 9105170239 (NOT SURVEY RELATED)

29. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:

WASHINGTON NATURAL GAS PURPOSE GAS PIPELINE OR PIPELINES NORTHERLY PORTION OF PARCEL A MARCH 30, 1992 RECORDED RECORDING NO.: 9203300111

(PLOTTED HEREON)

30. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:

STORMWATER, SANITARY AND WATERMAIN PIPE LINE AND PURPOSE: APPURTENANCES SOUTH 30 FEET OF PARCEL B RECORDED

RECORDING NO .: (PLOTTED HEREON)

PURPOSE:

RECORDED

31. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: CITY OF PUYALLUP GRANTFF

9206040382

JUNE 4, 1992

STORMWATER, SANITARY AND WATERMAIN PIPE LINE AND **APPURTENANCES** NORTH 30 FEET OF PARCEL A

9206040383 RECORDING NO.: (PLOTTED HEREON)(OFFSITE ADJACENT EASEMENT)

32. EASEMENT AND THE TERMS AND CONDITIONS THEREOF:

GRANTEE: CITY OF PUYALLUF STORMWATER, SANITARY AND WATERMAIN PIPE LINE AND PURPOSE: APPURTENANCES NORTH 30 FEET OF PARCEL A

RECORDED: RECORDING NO .: 9206040384

(PLOTTED HEREON)

(PLOTTED HEREON)

33. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: PUGET SOUND POWER AND LIGHT COMPANY GRANTEE: ELECTRIC TRANSMISSION AND/OR DISTRIBUTION SYSTEM AFFECTS: PORTION OF PARCEL B RECORDED JULY 28, 1992

RECORDING NO.: 9207280563 (PLOTTED HEREON)(OFFSITE ADJACENT EASEMENT)

34. EASEMENT AND THE TERMS AND CONDITIONS THEREOF: PUGET SOUND POWER AND LIGHT COMPANY GRANTEE: ELECTRIC TRANSMISSION AND/OR DISTRIBUTION SYSTEM PURPOSE: PORTION OF PARCEL A RECORDED: JULY 28, 1992 RECORDING NO.: 9207280564

SURVEYOR'S CERTIFICATION:

TO: BP PRODUCTS NORTH AMERICA INC., A MARYLAND CORPORATION AND STEWART TITLE GUARANTY COMPANY

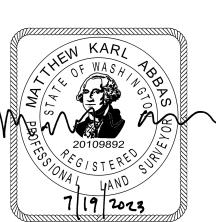
THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS AND INCLUDES ITEMS 2, 3, 4, 7(a), 7(b)(1), 7(c), 8, 9, 11, 13, 14, 16, 17, 18, AND 19 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED ON MARCH 22, 2022.

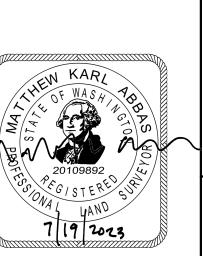
7/19/2023

DATE OF PLAT OR MAP: JULY 19, 2023.

MABBAS@BARGHAUSEN.COM

Mm MATTHEW K. ABBAS, PLS WASHINGTON REGISTRATION NO. 20109892

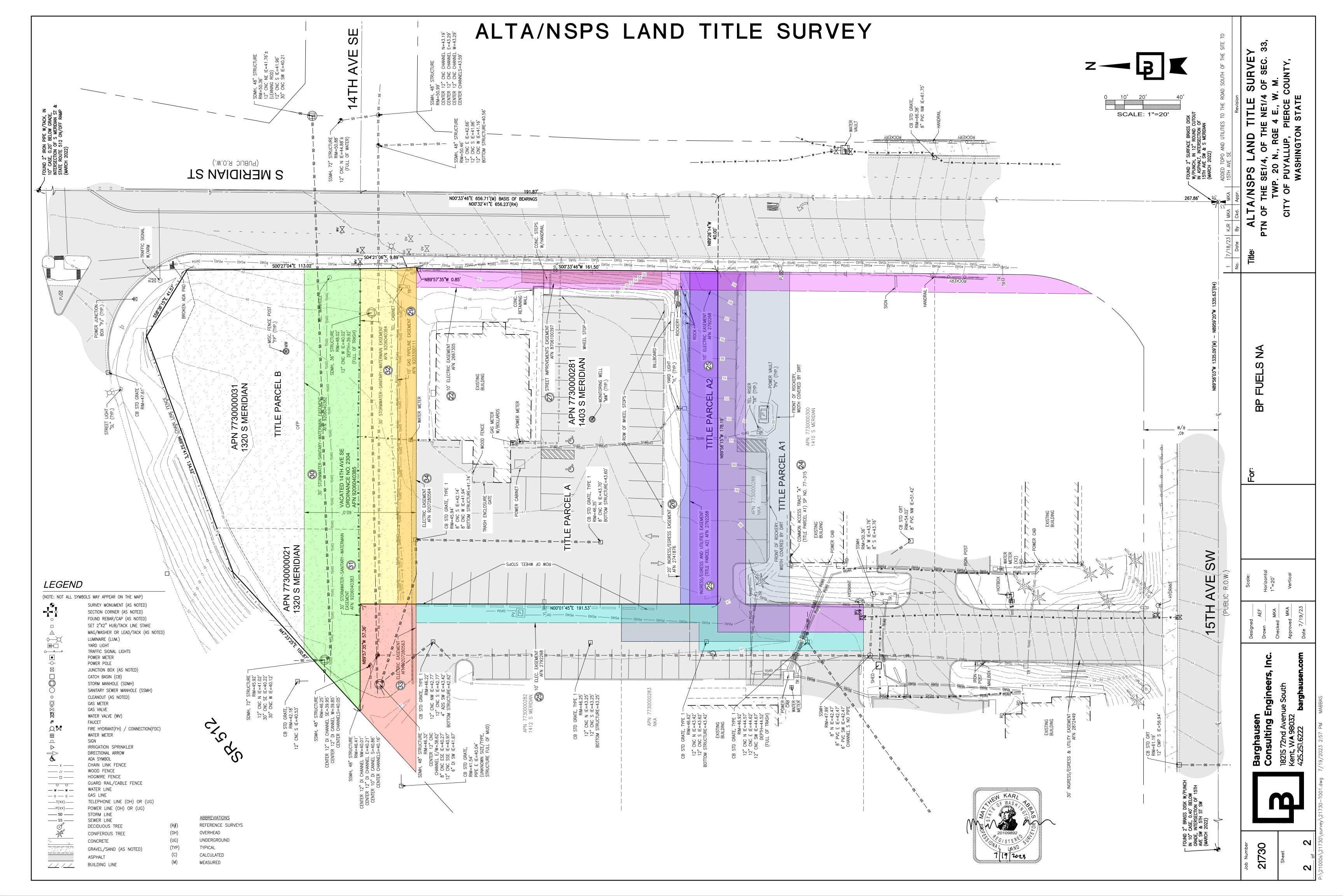


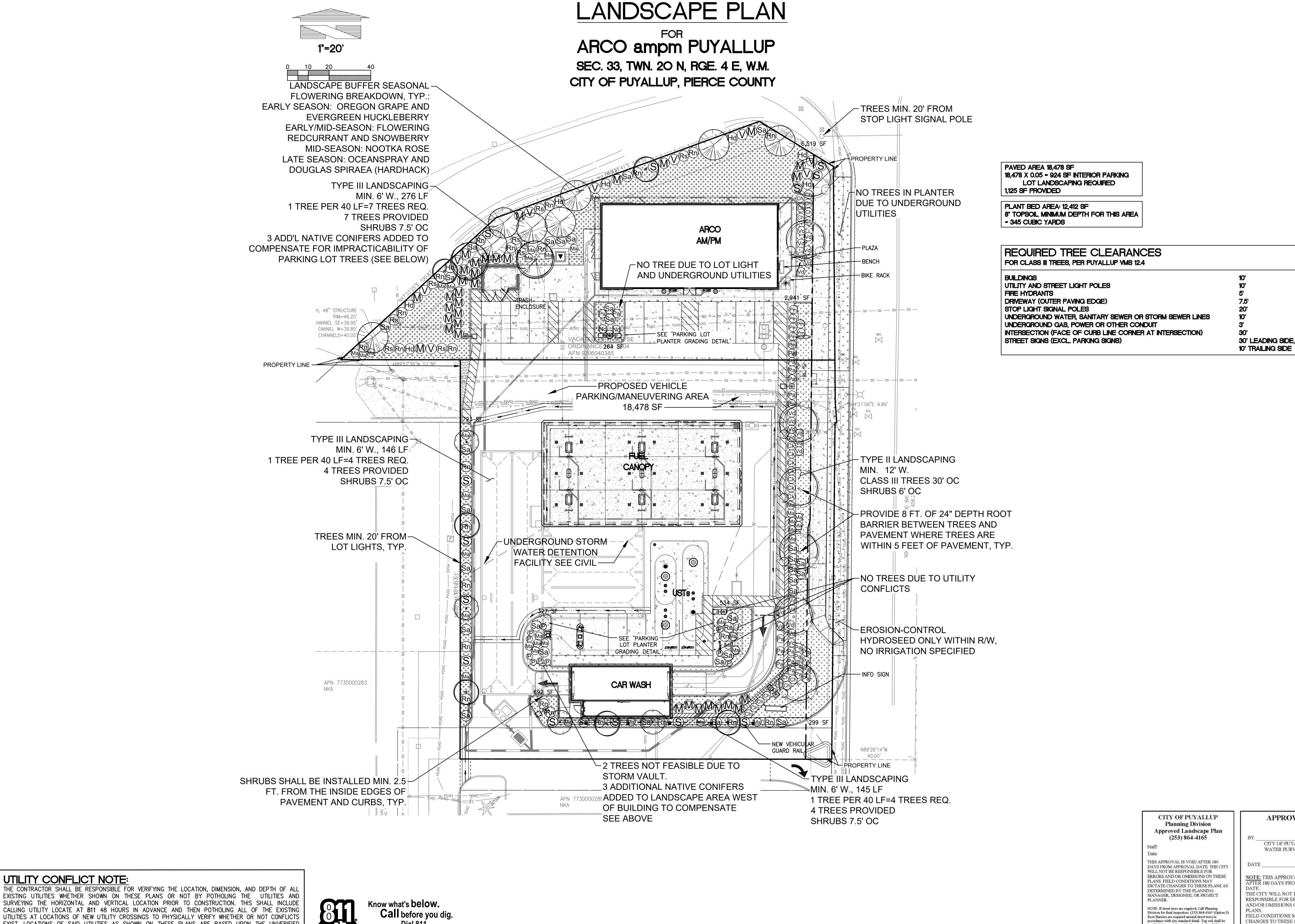


21730

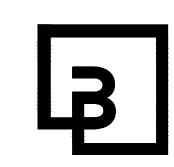
SURVI OF SEC

/NSP









Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO.	DATE	REVISION DESCRIPTION
1		
2		
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SEAL:		



DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

APPROVED

CITY OF PUYALLUP WATER PURVEYOR

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL

THE CITY WILL NOT BE

installed in accordance with city standards - field verification required. Failure to install top soil and root

barriers in accordance with city standards may result in rejection of installation.

RESPONSIBLE FOR ERRORS

AND/OR OMISSIONS ON THESE

CHANGES TO THESE PLANS AS

DETERMINED BY THE WATER

FIELD CONDITIONS MAY DICTATE

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD

DESIGNED BY:	ALLIANCE Z&DM:
CHECKED BY:	BP REPM:
DRAWN BY:	ALLIANCE PM:
VERSION:	PROJECT NO:
	21730
	- 21/30
DRAWING TITLE:	-

LANDSCAPE

UTILITY CONFLICT NOTE:

PROCEEDING WITH CONSTRUCTION.

CALLING UTILITY LOCATE AT 811 48 HOURS IN ADVANCE AND THEN POTHOLING ALL OF THE EXISTING

UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS

EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED

PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR

SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO

Know what's below. Call before you dig.

ARCO ampm PUYALLUP SEC. 33, TWN. 20 N, RGE. 4 E, W.M. CITY OF PUYALLUP, PIERCE COUNTY

QUANTITY NATIVE SHRUBS AND GROUNDCOVERS: QUANTITY NON-NATIVE SHRUBS AND GROUNDCOVERS: 7.6% TOTAL SHRUBS AND GROUNDCOVERS:

PLANT SCHEDULE **BOTANICAL / COMMON NAME TREES** <u>FOLIAGE</u> CONT. SIZE WATER USE ORIGIN ACER CIRCINATUM / VINE MAPLE **NATIVE DECIDUOUS** 2" TOTAL CAL. IF MULTI-STEM. NURSERY GROWN. STAKE AND GUY ONE GROWING SEASON. CALOCEDRUS DECURRENS / INCENSE CEDAR EVERGREEN FULL TO BASE; SINGLE, STRAIGHT UN-CUT LEADER; STAKE AND GUY ONE GROWING SEASON GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE' / SKYLINE HONEY LOCUST **ADAPTIVE DECIDUOUS** NURSERY GROWN FOR STREET TREE USE; BRANCHING AT 5'; STAKE AND GUY ONE GROWING SEASON **EVERGREEN** THUJA PLICATA 'EXCELSA' / EXCELSA CEDAR FULL TO BASE; SINGLE, STRAIGHT UN-CUT LEADER; STAKE AND GUY ONE GROWING SEASON STREET TREES BOTANICAL / COMMON NAME **FOLIAGE** ZELKOVA SERRATA 'VILLAGE GREEN' / SAWLEAF ZELKOVA **DECIDUOUS** 1" CAL ADAPTIVE CLASS III MEDIUM STREET TREE PER VMS 12.9. NURSERY GROWN FOR STREET TREE USE; BRANCHED AT FIVE (5) FEET; STAKE AND GUY ONE GROWING SEASON 9 NON-NATIVE **SHRUBS FOLIAGE** BOTANICAL / COMMON NAME Ch CHAENOMELES X SUPERBA 'JET TRAIL' / DWARF FLOWERING QUINCE **MEDIUM ADAPTIVE DECIDUOUS** CORNUS SERICEA 'KELSEYI' / DWARF REDTWIG DOGWOOD **DECIDUOUS NATIVE** HOLODISCUS DISCOLOR / OCEAN-SPRAY **DECIDUOUS** NATIVE **EVERGREEN** MAHONIA AQUIFOLIUM / OREGON GRAPE LOW MAHONIA AQUIFOLIUM 'COMPACTA' / COMPACT OREGON GRAPE **EVERGREEN** NANDINA DOMESTICA 'GULF STREAM' / HEAVENLY BAMBOO **EVERGREEN** PINUS MUGO 'PUMILIO' / DWARF MUGO PINE EVERGREEN RIBES SANGUINEUM / RED FLOWERING CURRANT LOW NATIVE DECIDUOUS ROSA NUTKANA / NOOTKA ROSE **MEDIUM** NATIVE DECIDUOUS

SEE SHEET L1 FOR ADDITIONAL PLANTING SPECIFICATIONS. CONFORM TO THE SPECIFICATIONS AND DRAWINGS IN THESE LANDSCAPE PLANS AND THE REQUIREMENTS OF CITY OF PUYALLUP VEGETATION MANAGEMENT STANDARDS (VMS). WHERE THERE IS A CONFLICT CONFORM TO THE MORE STRINGENT REQUIREMENTS.

CITY OF PUYALLUP MINIMUM SOIL REQUIREMENTS: SOIL PREPARATION IN ALL DISTURBED AREAS WITH NEW LANDSCAPING SHALL CONFORM TO SPECIFICATIONS PROVIDED IN BMP T5.13 - THE "STORM WATER MANAGEMENT MANUAL OF WESTERN WASHINGTON". DEPARTMENT OF ECOLOGY. DATED AUGUST 2012, OR AS SUBSEQUENTLY AMENDED. COMPACTION OF LANDSCAPED AREAS FROM VEHICLES AND HEAVY EQUIPMENT SHALL BE AVOIDED AFTER TILLING.

SOIL AMENDMENT NOTES

ALL SOILS IN ALL LANDSCAPE INSTALLATIONS SHALL CONFORM TO THE FOLLOWING SOIL DEPTH AND QUALITY REQUIREMENTS. PLEASE REFER TO APPENDIX 20.9 FOR FURTHER INSTALLATION GUIDANCE:

5% ORGANIC MATTER CONTENT IN TURF AREAS, AND A pH FROM 6.0 TO 8.0 OR MATCHING THE pH OF THE ORIGINAL UNDISTURBED SOIL. THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF EIGHT INCHES (8") EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET TH CRITERIA. SUBSOILS BELOW THE TOPSOIL LAYER SHOULD BE SCARIFIED AT LEAST 6 INCHES WITH SOME INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS, WHERE FEASIBLE. INSTALLATION OF THE EIGHT INCHES (8") OF TOPSOIL, AS DESCRIBED ABOVE, SHALL GENERALLY BE ACHIEVED BY PLACING FIVE INCHES (5") OF IMPORTED SANDY-LOAM SOIL INTO PLANNED LANDSCAPE AREAS (SUB-BASE SCARIFIED FOUR INCHES (4") WITH A THREE INCH (3") LAYER OF COMPOST TILLED INTO THE ENTIRE DEPTH.

RELATION TO SOIL DEPTH, SOIL AMENDMENTS AND INSTALLATION OF NEW STREET TREES. THE FOLLOWING NOTES SHALL BE SHOWN ON THE FACE OF THE PRELIMINARY AND FINAL LANDSCAPE PLAN SHEETS: (1) FOR NEW CONSTRUCTION: IN AREAS WHERE A NEW PLANTER STRIP AND STREET TREE SHALL BE ESTABLISHED OR RECONSTRUCTED DUE TO A STREET CONSTRUCTION PROJECT, THE PLANTER STRIP AREA SHALL BE EXCAVATED TO A DEPTH OF 24" AND BACKFILLED FOLLOWING THE STANDARD ABOVE TO ACHIEVE A TOPSOIL MIX WITH 40 PERCENT COMPOST BY VOLUME, THE CONTRACTOR OR INSTALLER SHALL: (1)1) REVIEW THE CITY STANDARD PLANTING DETAIL - ALL CONTRACTORS/INSTALLERS AREA REQUIRED TO FOLLOW

CITY STANDARD #01.02.07 (STREET TREE PLANTING) AND #01.02.03 (ROOT BARRIER INSTALLATION). THE CONTRACTOR/INSTALLER SHALL REVIEW THE PLANTING STANDARD DETAIL PRIOR TO INSTALLATION TO UNDERSTAND THE CITY'S REQUIREMENTS. FAILURE TO FOLLOW THE STANDARD MAY RESULT IN REJECTION OF

INSPECTOR AND PLANNING DEPARTMENT 48 HOURS IN ADVANCE OF THE INSTALLATION OF STREET TREE(S) FOR A FIELD PRE-CONSTRUCTION MEETING ON-SITE TO REVIEW THE APPROVED PLAN SET AND CITY STANDARD DETAILS. IF STREET TREES ARE TO BE INSTALLED OVER A LONGER TIMELINE (SUCH AS A RESIDENTIAL PLAT WHERE TREES MAY BE INSTALLED OVER A MULTI-MONTH PERIOD OF TIME). THE CONTRACTOR/INSTALLER SHALL HOLD ONE CONSOLIDATED PRE-CON TO REVIEW PLANS, ALL STREET TREES

(1)3) EXCAVATE ALL CONSTRUCTION MATERIALS - EXCAVATE ALL CONSTRUCTION MATERIALS, REMNANT SOIL, GRAVEL, PIT RUN, CONSTRUCTION DEBRIS, ETC. FROM THE PLANTER STRIP AREA TO A DEPTH OF 24" PRIOR TO PLANTING. DISCARD THIS MATERIAL AS THE PLACEMENT OF NEW COMPOST AMENDED TOP SOIL IS

(1)4) PREPARE THE PLANTING STRIP - AFTER EXCAVATING ALL MATERIALS FROM THE PLANTER STRIP, SCARIFY AND RIP THE SUB-BASE WITH THE TEETH OF A BACKHOE BUCKET (OR OTHER MECHANICAL MEANS OR HAND TOOLS) TO A DEPTH OF 6" WITH MULTIPLE PASSES, 90-DEGREES TO EACH OTHER. PRIOR TO PLANTING THE TREE, RE-COMPACT THE TREE BASE WHERE THE STREET TREE WILL BE PLANTED TO AVOID BACKFILLED WITH AMENDED TOPSOIL. THE CONTRACTOR/INSTALLER SHOULD MEASURE THE DEPTH OF THE ROOT BALL TO DETERMINE WHEN TO PLACE THE TREE IN THE PIT DURING THE BACKFILLING PROCESS. IF THE ROOTBALL OR ROOT MASS (IN THE CASE OF BARE ROOT TREES) IS LESS THAN 24". THE STREET TREI SHALL BE PLANTED IN A MANNER IN WHICH THE ROOT FLARE IS LEVEL WITH OR AT LEAST 1" ABOVE GRADE AT THE TIME OF FINISHED PLANTING. THE MAY REQUIRE THE ROOTBALL BE PLACED ON A

COMPACTED SUB-BASE OF THE COMPOST AMENDED TOPSOIL AS BACKFILLING IS OCCURRING (1)5) INSTALL ROOT BARRIER PANELS - AT THIS STAGE THE CONTRACTOR/INSTALLER SHALL PLACE 24" DEEP ROOT BARRIER PANELS (UB-24) ALONG THE EDGE OF THE SIDEWALK AND CURB LINE FOR A TOTAL OF EIGHT FEET (8') OF LINEAL PROTECTION ALONG EITHER SIDE OF THE PLANTING AREA. THE PANELS SHALL BE INSTALLED PERPENDICULAR TO THE EDGE OF THE PLANTING AREA. THE PANELS SHALL BE INSTALLED PERPENDICULAR TO THE DGE OF PAVED SURFACE IN ACCORDANCE WITH THE MANUFACTURER'S STSANDARDS FOR A 'LINEAR' APPLICATION; THE ROOT BARRIER PANELS SHALL NOT BE INSTALLED IN THE PLANTING PIT AS A 'SURROUND' APPLICATION, UNLESS SPECIFIED ON THE FINAL LANDSCAPE PLANS. THE TOP OF THE ROOT BARRIER PANEL SHALL BE INSTALLED SUCH THAT 1/2" OF THE ROOT BARRIER IS ABOVE THE FINISHED

(1)6) COMPOST AMENDED TOP SOILS REQUIRED - TOPSOIL SOURCE SHALL BE REVIEWED AND APPROVED DURING THE PRE-CONSTRUCTION MEETING; ALL TOPSOIL SHALL BE A TOP QUALITY SANDY-LOAM MIX, OR DURING INSTALLATION WITH COMPOST TO ACHIEVE A 40 PERCENT BY VOLUME TOPSOIL MIX IN THE RIGHT-OF-WAY PLANTER STRIP, IMPORTED TOPSOIL MAY BE USED BY THE CONTRACTOR IF DATA 'CUT SHEFTS' ARE AVAILABLE FROM THE SUPPLIER CERTIFYING COMPOST AMENDMENT FOUALING 40 PERCENT BY

> WASHINGTON 98499, OR RETAIL/WHOLESALE LANDSCAPE MATERIAL SUPPLIERS) -TAGRO COMPOST MIX (AVAILABLE THROUGH CITY OF TACOMA, 2201 EAST CEDAR GROVE ROAD SE, MAPLE VALLEY, 98038, OR RETAIL/WHOLESALE

LANDSCAPE MATERIAL SUPPLIERS) (1)7) INSTALL AND AMEND TOPSOILS - TO AVOID STRATIFIED LAYERS, FIRST PLACE SEVEN INCHES (7") OF APPROVED TOPSOIL IN THE PREPARED/SCARIFIED PLANTING STRIP AREA AND MECHANICALLY TILL IN FIVE INCHES (5") OF APPROVED COMPOST; FOLLOW THIS PROCEDURE TWICE TO ACHIEVE THE TOTAL 24" TOPSOIL DEPTH. FINISHED GRADE OF TOPSOIL SHOULD BE $rac{1}{2}"$ BELOW THE EDGE OF SIDEWALK TO ALLOW ROOT BARRIER PANEL TO BE PROPERLY INSTALLED ABÔVE FINISHED GRAI (1)8) INSTALL TREE STAKES AND FINISH MULCH - PLACEMENT OF FOUR INCHES (4") OF WOOD CHIP MULCH.

CITY STANDARD #01.02.07

B. FOR STREET TREES IN THE RIGHT OF WAY PLANTER STRIP. THE FOLLOWING STANDARDS SHALL APPLY IN

THE WORK BY THE INSPECTOR AND/OR PLANNING DEPARTMENT. (1)2) SCHEDULE A FIELD PRE-CONSTRUCTION MEETING - THE CONTRACTOR/INSTALLER SHALL CONTACT THE SITE

SHALL BE INSPECTED AFTER PLANTING BY THE PLANNING DEPARTMENT.

SETTING OF THE ROOT BALL. AT THIS STAGE, IF THE TREE IS TO BE PLANTED WHEN THE PLANTER STRIP IS

VOLUME USING ONE OF THE APPROVED COMPOST SOURCES BELOW. COMPOST SHALL ONLY BE SOURCED

-CASCADE COMPOST (ALSO KNOWN AS PREP/LRI) (AVAILABLE THROUGH PIERCE COUNTY RECYCLING, COMPOSTING & DISPOSAL, 10308 SALES ROAD, TACOMA, PORTLAND AVENUE, GATE 6, TACOMA, WA 98421, OR RETAIL/WHOLESALE LANDSCAPE MATERIAL SUPPLIERS) -CEDAR GROVE COMPOST (AVAILABLE THROUGH CEDAR GROVE COMPOST. 17825

WATER BASIN RINGS, TREE STAKING AND TEMPORARY IRRIGATION BAGS (WHERE REQUIRED) SHALL FOLLOW

LANDSCAPE PLANTING NOTES AND MATERIALS

FURNISH ALL MATERIALS, LABOR, EQUIPMENT AND RELATED ITEMS NECESSARY TO ACCOMPLISH TOPSOIL, TREATMENT AND PREPARATION OF SOIL, FINISH GRADING. PLACEMENT OF SPECIFIED PLANT MATERIALS, FERTILIZER, STAKING, MULCH, CLEAN-UP, DEBRIS REMOVAL, AND 30-DAY MAINTENANCE.

LANDSCAPE CONTRACTOR TO BE SKILLED AND KNOWLEDGEABLE IN THE FIELD OF WORK AND HAVE A MINIMUM OF FIVE (5) YEAR'S EXPERIENCE INSTALLING SIMILAR WORK.

CONTRACTOR TO BE LICENSED TO PERFORM THE WORK SPECIFIED WITHIN THE PRESIDING JURISDICTION

IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW THE SITE AND REPORT ANY DISCREPANCIES TO THE OWNER OR THE OWNER'S REPRESENTATIVES. ALL PLANT MATERIAL AND FINISH GRADES ARE SUBJECT TO APPROVAL BY THE OWNER.

SAVE AND PROTECT ALL EXISTING PLANTINGS SHOWN TO REMAIN AND ALL ON-SITE AND OFF-SITE TREES TO BE RETAINED. DO NOT PLANT UNTIL OTHER CONSTRUCTION OPERATIONS WHICH CONFLICT HAVE BEEN COMPLETED. IF AN IRRIGATION SYSTEM IS TO BE INSTALLED DO NOT PLANT UNTIL THE SYSTEM HAS BEEN INSTALLED, TESTED, AND APPROVED BY THE OWNER. HANDLE PLANTS WITH CARE - DO NOT DAMAGE OR BREAK ROOT SYSTEM, BARK, OR BRANCHES. REPAIR AND/OR REPLACE ITEMS DAMAGED AS A RESULT OF WORK, OR WORK NOT IN COMPLIANCE WITH PLANS AND SPECIFICATIONS, AS DIRECTED BY OWNER AT NO ADDITIONAL COST TO THE OWNER.

REPAIR OF EXISTING PLANTINGS DURING THE COURSE OF WORK, REPAIR ALL EXISTING PLANTING AREAS BY PRUNING DEAD

GROWTH, RE-ESTABLISHING FINISH GRADE AND RE-MULCHING TO SPECIFIED DEPTH.

DURING THE COURSE OF WORK, REPAIR ANY DAMAGE TO THE IRRIGATION SYSTEM TO MATCH CONDITIONS PRIOR TO THE DAMAGE.

GUARANTEE ALL PLANT MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE JOB BY OWNER.

CONTRACTOR TO PROVIDE OWNER WITH A SCOPE OF WORK AT TIME OF INITIAL PROJECT BID TO PROVIDE LANDSCAPE AND IRRIGATION MAINTENANCE FOR 30 DAYS FOLLOWING OCCUPANCY. WORK TO INCLUDE MAINTENANCE AS DESCRIBED BELOW, IN PLANTING AND IRRIGATION MAINTENANCE.

SUBMIT THE FOLLOWING TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO THE START OF ANY WORK: A) DOCUMENTATION THAT ALL PLANT MATERIAL HAS BEEN ORDERED.

B) TOPSOIL ANALYSIS AND RECOMMENDED AMENDMENTS. C) TREE STAKING AND GUYING MATERIALS. D) ONE (1) QUART SIZE OF TOPSOIL AND MULCH. E) PLANTING SCHEDULE INCLUDING DATES AND TIMES.

F) MAINTENANCE INSTRUCTIONS FOR ONE (1) FULL YEAR

MATERIALS:

PLANT MATERIALS: PLANT MATERIALS TO BE GRADE NO. 1. SIZED IN ACCORDANCE WITH (AAN) AMERICAN STANDARDS FOR NURSERY STOCK (ANSI 7-60-2014) PRUNE PLANTS RECEIVED FROM THE NURSERY ONLY UPON AUTHORIZATION BY THE LANDSCAPE ARCHITECT. "B & B" INDICATES. BALLED AND BURLAPPED: "CONT." INDICATES CONTAINER: "BR" INDICATES BARE ROOT: "CAL

INDICATES CALIPER AT 6" ABOVE SOIL LINE: "GAL" INDICATES GALLON. A) SPECIFIED PLANT CANOPY SIZE OR CALIPER IS THE MINIMUM ACCEPTABLE CONTAINER OR BALL SIZE AND ESTABLISHES MINIMUM PLANT CONDITION TO BE PROVIDED.

PLANT MATERIAL TO COMPLY WITH STATE AND FEDERAL LAWS FOR DISEASE INSPECTION, PLANTS TO BE FULLY LIVE, VIGOROUS, WELL FORMED, WITH WELI DEVELOPED FIBROUS ROOT SYSTEMS. ROOT BALLS OF PLANTS TO BE SOLID AND FIRMLY HELD TOGETHER, SECURELY CONTAINED AND PROTECTED FROM INJURY AND DESICCATION. PLANTS DETERMINED BY LANDSCAPE ARCHITECT TO HAVE BEEN DAMAGED; HAVE DEFORMITIES OF STEM, BRANCHES, OR ROOTS; LACK SYMMETRY, HAVE MULTIPLE LEADERS OR "Y" CROTCHES LESS THAN 30 DEGREES IN TREES, OR DO NOT MEET SIZE OR ANSI STANDARDS WILL BE REJECTED. PLANT MATERIAL TO BE

FROM A SINGLE NURSERY SOURCE FOR EACH SPECIFIED SPECIES/HYBRID. NURSERY SOURCES TO BE THOSE LOCATED IN THE SAME REGION AS THE JOB SITE. , NO SUBSTITUTION OF PLANT MATERIAL, SPECIES OR VARIETY, WILL BE PERMITTED UNLESS WRITTEN EVIDENCE IS SUBMITTED TO THE OWNER FROM TWO QUALIFIED PLANT BROKERAGE OFFICES. SUBSTITUTIONS WHICH ARE PERMITTED TO BE IN WRITING

FROM THE OWNER AND LANDSCAPE ARCHITECT. THE SPECIFIED SIZE, SPECIES AND NEAREST VARIETY, AS APPROVED, TO BE FURNISHED. SUBSTITUTIONS MAY REQUIRE SUBMITTAL TO REVISED LANDSCAPE PLAN TO CITY FOR APPROVAL. D) LABEL AT LEAST ONE (1) TREE, SHRUB, AND GROUNDCOVER OF EACH VARIETY WITH A

SECURELY ATTACHED WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL AND COMMON NAMES. E) DELIVER PLANT MATERIAL AFTER PREPARATION OF PLANTING AREAS HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN SIX (6) HOURS AFTER DELIVERY, SET MATERIAL IN SHADE, PROTECT FOR WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOT BALLS MOIST BY COVERING WITH MULCH, BURLAP

TOPSOIL, AMENDMENT, AND BACKFILL, ARE GENERAL REQUIREMENTS FOR ALL LANDSCAPE AREAS, UNLESS NOTED OTHERWISE ON THE PLANS. FOR SOIL PREPARATION AND INSTALLATION REQUIREMENTS, SEE CITY OF PUYALLUP VEGETATION MANAGEMENT STANDARDS SECTION 8.2, SOIL QUANTITY AND QUALITY STANDARDS. SOIL AMENDMENTS AND FERTILIZER ARE TO BE USED FOR BID PRICE BASIS ONLY. SPECIFIC AMENDMENTS AND FERTILIZERS WILL BE MADE AFTER SOIL SAMPLES ARE LABORATORY TESTED BY THE CONTRACTOR. PROVIDE CHANGE ORDER FOR ADDITIONAL OR REDUCTION OF MATERIALS REQUIRED OR NOT REQUIRED BY THE SOILS

SOIL FERTILITY AND AGRICULTURAL SUITABILITY ANALYSIS: AFTER ROUGH GRADING AND PRIOR TO SOIL PREPARATION, CONTRACTOR TO OBTAIN TWO REPRESENTATIVE SOIL SAMPLES, FROM LOCATIONS AS DIRECTED BY THE LANDSCAPE ARCHITECT. TO AN ACCREDITED SOIL TESTING LABORATORY FOR TESTING. SUBMIT RESULTS TO LANDSCAPE ARCHITECT FOR REVIEW. TESTS TO INCLUDE FERTILITY AND SUITABILITY ANALYSIS WITH WRITTEN RECOMMENDATIONS FOR SOIL AMENDMENT, FERTILIZER, CONDITIONERS, APPLICATION RATES, AND POST-CONSTRUCTION MAINTENANCE PROGRAM. TESTS TO BE CONTRACTED WITH AND PAID FOR BY THE CONTRACTOR.

ORGANIC MULCH (TOPDRESSING): EMENT STANDARDS SECTION 8.3, MULCHING, ALL PLANTING AREAS SHALL BE MULCHED WITH A UNIFORM FOUR INCH (4") LAYER OF ORGANIC COMPOST MULCH MATERIAL OR WOOD CHIPS OVER A PROPERLY CLEANED, AMENDED AND GRADED SUBSURFACE. FOUR INCHES (4") OF MULCH IN PLANTING AREAS SHALL BE MAINTAINED THROUGH THE LIFE OF THE PROJECT.

2-INCH DIAMETER BY 8-FOOT MINIMUM LODGEPOLE PINE STAKES.

OR OTHER ACCEPTABLE MEANS OF RETAINING MOISTURE

1-INCH WIDE POLYETHYLENE CHAIN LOCK TYPE TIES; OR, 3/8" DIAMETER RUBBER. NO WIRE.

EXECUTION:

VERIFY THAT ALL SOIL CONTAMINANTS (E.G., PAINT, SEALANTS, SOLVENTS, OILS, GREASES, CONCRETE/ASPHALT SPOILS, ETC.) HAVE BEEN SATISFACTORY REMOVED FROM ALL PLANTING AREAS. DO NOT BEGIN WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

FINE GRADE AND REMOVE ROCKS, DEBRIS, AND FOREIGN OBJECTS OVER 2 INCHES DIAMETER FROM TOP SURFACE OF PREPARED LANDSCAPE AREAS. FINISH ELEVATIONS TO BE DEFINED AS 3 INCHES BELOW CURBS, WALKS AND/OR OTHER ADJACENT HARDSCAPE FOR ALL PLANTING BED AREAS AND 1-INCH BELOW CURBS, WALKS AND/OR OTHER ADJACENT HARDSCAPE FOR ALL LAWN AREAS. FINISH GRADE REFER TO GRADES PRIOR TO INSTALLATION OF MULCH OR LAWN. ALL FINISH GRADES TO BE SMOOTH EVEN GRADES, LIGHTLY COMPACTED, AS SHOWN ON THE PLAN AND DETAILED. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AND STRUCTURES. SITE CIVIL DRAWINGS IDENTIFY FINAL ELEVATIONS. MOISTEN PREPARED AREAS BEFORE PLANTING IF SOIL IS DRY. WATER THOROUGHLY AND ALLOW SURFACE TO DRY BEFORE PLANTING. DO NOT CREATE MUDDY SOIL

ARRANGE TREES AND SHRUBS ON SITE IN PROPOSED LOCATIONS PER DRAWINGS. EXCAVATE PIT, PLANT AND STAKE OR GUY, AS CALLED OUT AND DETAILED. ALL TREES, SHRUBS, AND SUPPORTS TO STAND VERTICAL. BACKFILL SHALL BE PIT SPOILS. SETTLE BACKFILL USING WATER ONLY. NO MECHANICAL COMPACTION.

EXCAVATE PITS TO A MINIMUM OF 3 INCHES BELOW, AND TWICE THE ROOT BALL DIAMETER. WATER THOROUGHLY AND TAKE CARE TO ENSURE THAT ROOT CROWN IS AT

PROPER GRADE, AS DETAILED.

FIELD ADJUST PLANT LOCATIONS FOR 5-FOOT SEPARATION OF TREES/SHRUBS AND 2-FOOT SEPARATION FOR GROUNDCOVER FROM FIRE HYDRANTS AND UTILITY VAULTS.

DURING LANDSCAPE WORK, KEEP ALL PAVEMENT CLEAN AND WORK AREAS IN AN ORDERLY CONDITION. PROTECT LANDSCAPE WORK AND MATERIALS FROM DAMAGE DUE TO LANDSCAPE OPERATIONS AND TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION AND MAINTENANCE PERIOD. TREAT, REPAIR, OR REPLACE DAMAGE

PROVIDE FULL MAINTENANCE BY SKILLED EMPLOYEES OF LANDSCAPE INSTALLERS. CONTRACTOR TO MAINTAIN PLANTINGS THROUGH COMPLETED INSTALLATION, AND UNTIL ACCEPTANCE OF LANDSCAPE INSTALLATION. PLANTING MAINTENANCE TO INCLUDE WATERING, WEEDING, CULTIVATING, TIGHTENING AND REPAIRING OF TREE GUYS, RESETTING PLANTS TO PROPER GRADES OR POSITION, RE-ESTABLISHING SETTLED GRADES; AND MOWING LAWNS WEEKLY AFTER LAWN ESTABLISHMENT. HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION. INCLUDED IS REPLACEMENT OF DEAD PLANTS AND PLANTS SHOWING LOSS OF

THE IRRIGATION SYSTEM TO BE MAINTAINED INCLUDING ADJUSTMENTS FOR BALANCED WATER DISTRIBUTION AND PRECIPITATION. FAILED OR MALFUNCTIONING IRRIGATION EQUIPMENT SHALL BE REPLACED AND/OR CORRECTED. PLANTING AND IRRIGATION MAINTENANCE TO INCLUDE THOSE OPERATIONS NECESSARY TO THE PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR TO PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.

> CITY OF PUYALLUP Planning Division Approved Landscape Plan (253) 864-4165

THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS, FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS A MANAGER, DESIGNEE, OR PROJECT PLANNER.

NOTE: If street trees are required, Call Planning Division for final inspection: (253) 864-4165 (Option 3 Root Barriers are required around street trees in accordance with city standard detail. Top soil shall be verification required. Failure to install top soil and root barriers in accordance with city standards may result in

APPROVED

CITY OF PUYALLUP WATER PURVEYOR

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL THE CITY WILL NOT BE

RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE WATER PURVEYOR.

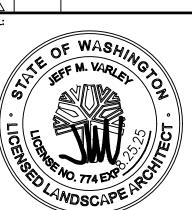




Consulting Engineers, Inc

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

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SEAL:		



DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SWC S MERIDIAN

@ HIGHWAY 512 **PUYALLUP, WASHINGTON**

FACILITY #TBD

LANDSCAPE NOTES/SCHEDULE

UTILITY CONFLICT NOTE:

FERNS AND GRASSES

GROUND COVERS

181 NATIVE

69 NON-NATIVE

0 NON-NATIVE 742 742 NATIVE

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE AT 811 48 HOURS IN ADVANCE AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

SPIRAEA DOUGLASII / HARDHACK

SYMPHORICARPOS ALBUS / SNOWBERRY

VIBURNUM DAVIDII / DAVID VIBURNUM

BOTANICAL / COMMON NAME

BOTANICAL / COMMON NAME

2,156 SF EROSION-CONTROL HYDROSEED

VACCINIUM OVATUM / EVERGREEN HUCKLEBERRY

POLYSTICHUM MUNITUM / WESTERN SWORD FERN

ARCTOSTAPHYLOS UVA-URSI / KINNIKINNICK

PENNISETUM ALOPECUROIDES 'HAMELN' / FOUNTAIN GRASS

WA. ST. D.O.T. EROSION CONTROL MIX OAE, 80-120 LBS. PER ACRE



Call before you dig

MEDIUM

NATIVE

NATIVE

ORIGIN

NATIVE

ADAPTIVE

DECIDUOUS

DECIDUOUS

EVERGREEN

EVERGREEN

FOLIAGE

DECIDUOUS

EVERGREEN

EVERGREEN

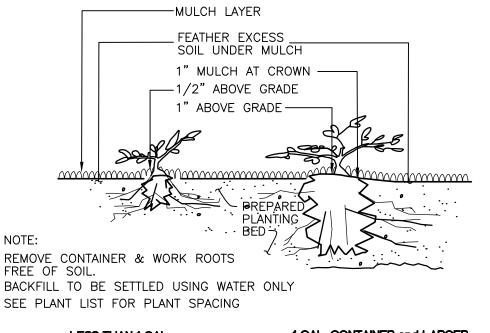
SPACING

36" o.c.

FOLIAGE

DECIDUOUS TREE PLANTING/STAKING DETAIL

NOT TO SCALE

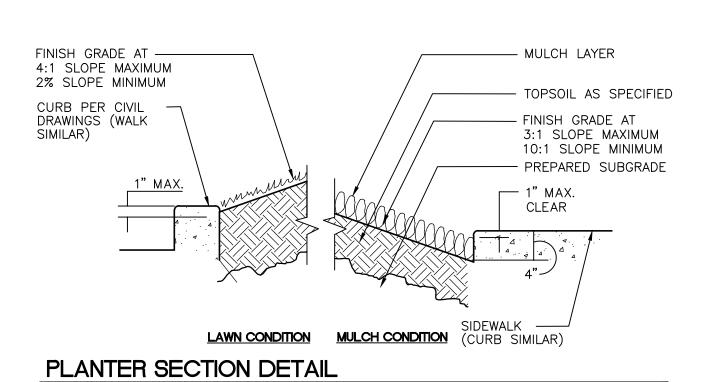


LESS THAN 1 GAL.

1 GAL. CONTAINER and LARGER (PLANTED BEFORE MULCH)

GROUNDCOVER PLANTING DETAIL

NOT TO SCALE



UTILITY CONFLICT NOTE:

PROCEEDING WITH CONSTRUCTION.

NOT TO SCALE

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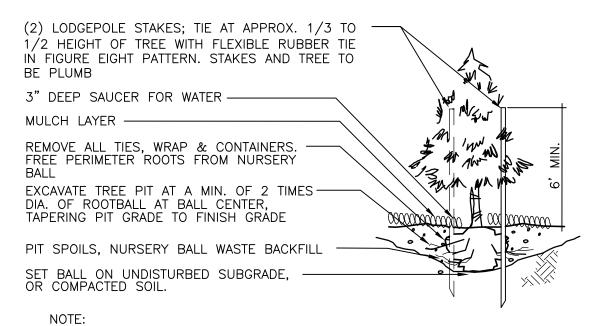
LANDSCAPE DETAILS

ARCO ampm PUYALLUP

SEC. 33, TWN. 20 N, RGE. 4 E, W.M.

CITY OF PUYALLUP, PIERCE COUNTY

SHRUB - PRUNE AS DIRECTED BY LANDSCAPE ARCHITECT



NOTE:
LIGHT FERTILIZER OVER PLANTING BED AFTER BACKFILL
ONLY; NO FERTILIZER IN PLANTING PIT.
WORK PERIMETER ROOTS FREE OF NURSERY BALL.
BALL & PIT TO BE COURSELY SCARIFIED.

PLANT MATERIAL SPACING DETAIL

EVERGREEN TREE PLANTING/STAKING DETAIL

NOT TO SCALE

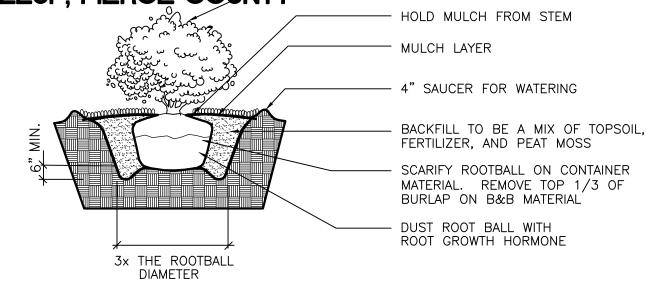
HOLD PLANTS FROM —

AS NOTED ON PLANT LIST

EDGE OF PLANTER

BED LINE EDGE -

CURB/WALK



NOTE:

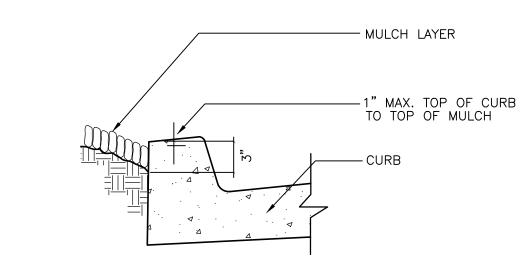
APPLY ADDITIONAL 4 OZ. 8-32-16 FERTILIZER INTO TOP
2" OF PLANTING MIX.

PLANT SHRUB HIGH ENOUGH TO ALLOW POSITIVE DRAINAGE AWAY FROM ROOTBALL. ROUGHEN ALL SURFACES OF PIT.

CUT AND REMOVE BURLAP FROM ROOT BALL

SHRUB PLANTING DETAIL

NOT TO SCALE



MULCH AT CURB DETAIL

SPACING AS CALLED OUT ON PLAN/PLANT LIST

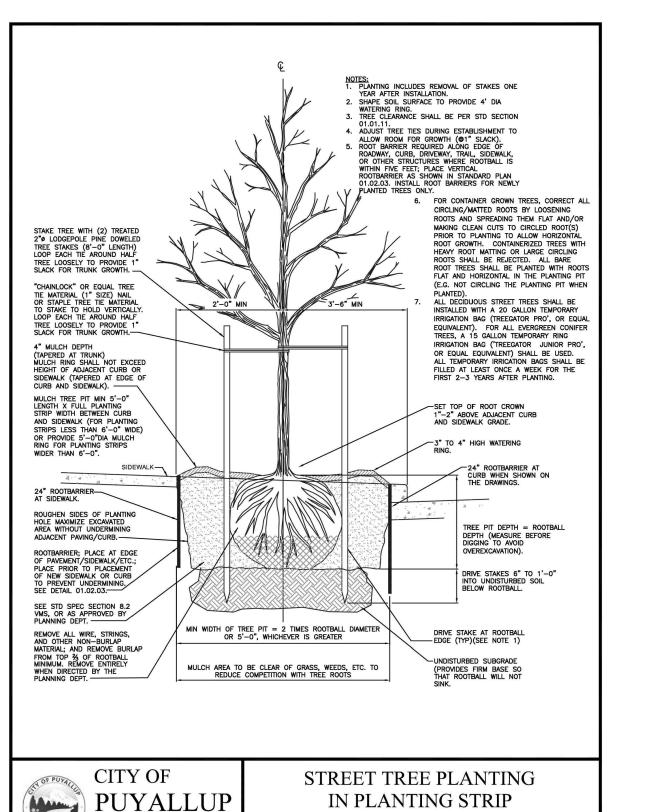
AS NOTED ON PLANT LIST

-HOLD PLANTS FROM EDGE OF PLANTER

THIS SPACING APPLIES TO

GROUNDCOVER AND FORMAL

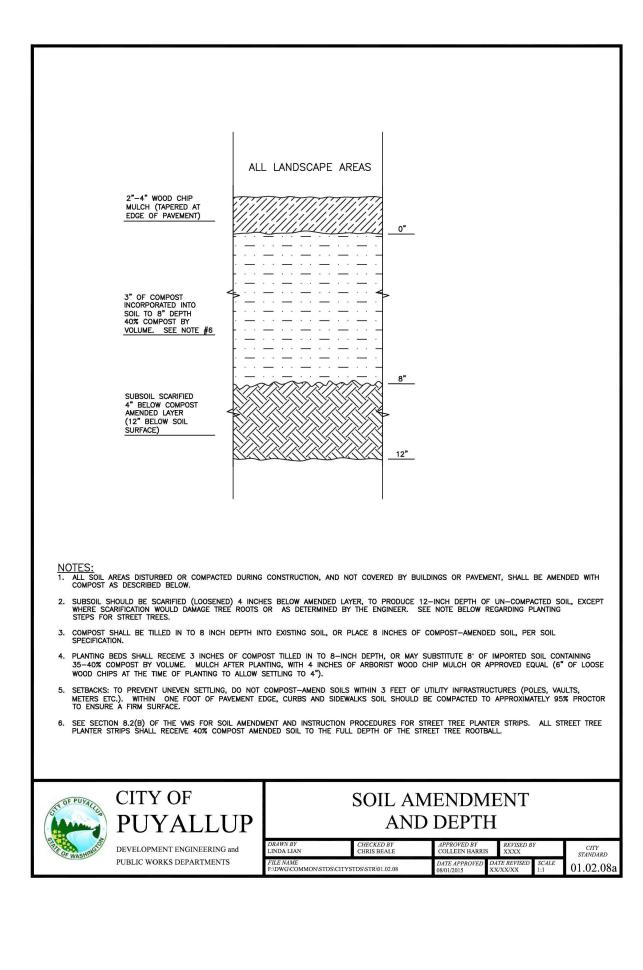
SHRUB ROW PLACEMENT.

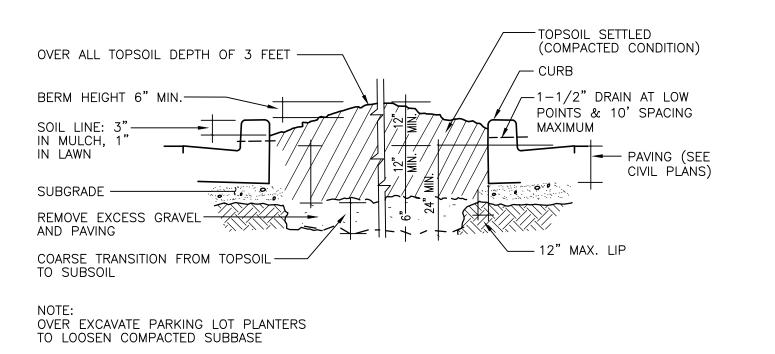


PUBLIC WORKS DEPARTMENTS

Know what's **below**.

Call before you dig

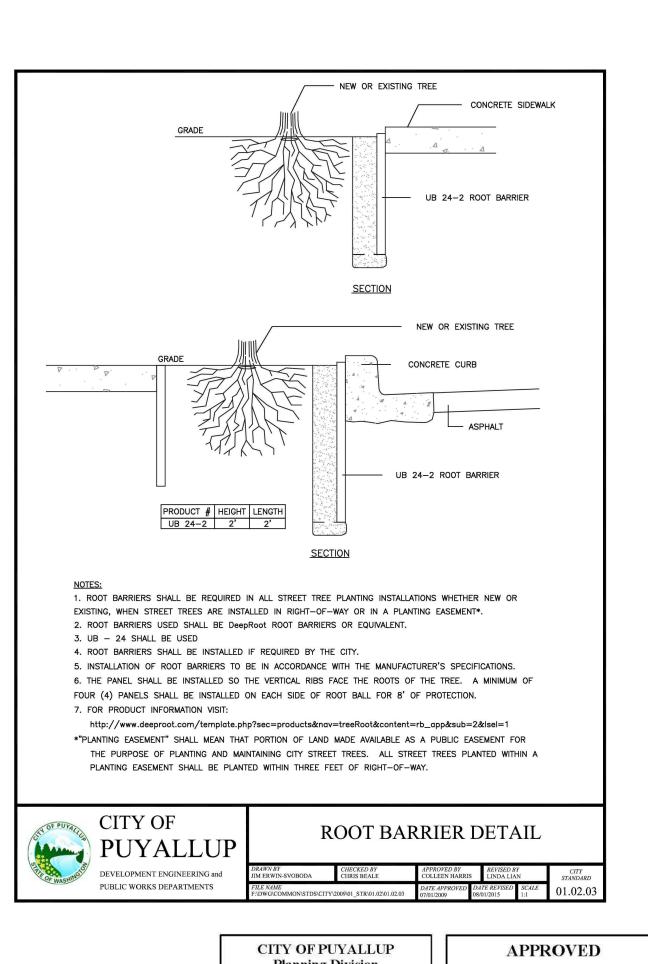




PARKING LOT PLANTER GRADING DETAIL

NOT TO CO

DEDUCT ALT #1: IF LANDSCAPE CONTRACTOR CAN DEMONSTRATE THAT PLANTER ISLANDS ARE NOT FULL OF NON-SOIL MATERIALS (CONCRETE WASTE, LUMBER, ROAD BASE, GRAVEL), FULL EXCAVATION AND REPLACE WITH 18"-21" OF TOPSOIL CAN BE ELIMINATED AND IN ITS PLACE, 6" OF COMPOST CAN BE PLACED ON SUB-GRADE AND CULTIVATED INTO TOP 12" OF EXISTING SOIL. TOP OF FINISH GRADE AND DEPTH OF MULCH STILL APPLIES





Root Barriers are required around street trees in accordance with city standard detail. Top soil shall be

verification required. Failure to install top soil and root

barriers in accordance with city standards may result in rejection of installation.

CITY OF PUYALLUP
WATER PURVEYOR

DATE

NOTE: THIS APPROVAL IS VOID
AFTER 180 DAYS FROM APPROVAL
DATE.
THE CITY WILL NOT BE
RESPONSIBLE FOR ERRORS

AFTER 180 DAYS FROM APPROVAL DATE.
THE CITY WILL NOT BE
RESPONSIBLE FOR ERRORS
AND/OR OMISSIONS ON THESE
PLANS.
FIELD CONDITIONS MAY DICTATE
CHANGES TO THESE PLANS AS
DETERMINED BY THE WATER







Consulting Engineers, Inc.
18215 72nd Avenue South

Kent, WA 98032 425.251.6222 **barghausen.com**

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #TBD

DESIGNED BY:

CHECKED BY:

DRAWN BY:

VERSION:

ALLIANCE Z&DM:

BP REPM:

ALLIANCE PM:

PROJECT NO:

21730

LANDSCAPE DETAILS

ID SHEET NO:

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IRRIGATION PLAN

ARCO ampm PUYALLUP SEC. 33, TWN. 20 N, RGE. 4 E, W.M. CITY OF PUYALLUP, PIERCE COUNTY

PROPERTY LINE

04°21'06"E 9.89'

N89°26'14"W

PROPERTY LINE

IRRIGATION LEGEND

DESCRIPTION DRIP IRRIGATION:

HUNTER LANDSCAPE DRIPLINE COMPONENTS

HDL-06-12-250-CV SUB-SURFACE DRIPLINE TUBING 0.6 GPH PRESSURE COMPENSATING EMITTERS WITH CHECK VALVE AT 12" ON-CENTER SPACING - ALL TUBING SHALL BE INSTALLED ON GRADE W/ 9" WIRE STAKES FOUR (4) FEET ON-CENTER: VERIFY THE LAYOUT AND 18" ON-CENTER SPACING IN THE FIELD PRIOR TO STARTING WORK. INSTALL ALL COMPONENTS PER MANUF. SPECIFICATIONS.

USE HUNTER PLD-LOC FITTINGS FOR CONNECTION BETWEEN PVC LATERAL LINES AND INLINE DRIP TUBING

DRIP IRRIGATION: ICZ-101/151-XL REMOTE CONTROL DRIP ZONE KIT WITH FILTER AND PRESSURE REGULATOR MAXIMUM 2 VALVES PER BOX

HUNTER SOLAR SYNC WIRE RAIN SENSOR COMBO

HUNTER PRO-C CONTROLLER 3 TO 15 STATIONS, (HARDWIRE CONNECTION); PROVIDE GROUND AND BATTERIES PER

WILKINS 950 XLT- 1-1/4" DOUBLE CHECK VALVE (STATE APPROVED); TEST AND CERTIFICATION BY LICENSED WILKINS 850 - BALL VALVE, SIZE TO MATCH PIPE

CARSON INDUSTRIES #1730 (TWO AT P.O.C.) GRADE LEVEL VAULT WITH BOLT LOCK LID

PLASTIC BALL VALVE, MATCH LINE SIZE, IN VALVE BOX

HUNTER HQ-33DLRC 3/4" QUICK COUPLING VALVE, IN VALVE BOX, PROVIDE TWO KEYS AND SWIVELS

· - · - · - MAINLINE - SCH 40 PVC (18" COVER); SIZE PER PLAN, 1-1/2" SIZE MINIMUM

LATERAL - SCH 40 PVC (12" COVER); SIZE PER PLAN. 3/4" SIZE MINIMUM

======== SLEEVE - SCH 40 PVC; 24" MINIMUM COVER AT VEHICLE CROSSINGS AND 18" MINIMUM COVER IN LANDSCAPE AREAS, 6" SIZE WHERE IRRIGATION MAINLINE TRAVELS THROUGH PIPE. 4" SIZE WHERE ONLY LATERALS TRAVEL THROUGH PIPE

> IRRIGATION SHOWN DIAGRAMATICALLY FOR PLAN CLARITY. COMMON TRENCH AND PLACE EQUIPMENT IN LANDSCAPE; MANIFOLD GROUPED VALVES IN ADJACENT SHRUB AREAS WHERE FEASIBLE.

SCH 40 PIPE SIZING CHART

PIPE SIZE	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"		
FLOW	•		,	,		,		
GPM	1-8	8.1–13	13.1-23	23.1-32	32.1-53	53.1-74	GPM ((MAX.)

LANDSCAPE IRRIGATION NOTES

- 1. GENERAL CONTRACTOR AND LANDSCAPE CONTRACTOR TO COORDINATE:
- A) INSTALLATION OF 110V ELECTRICAL SERVICE FROM ELECTRICAL SOURCE TO AUTOMATIC CONTROLLER, INCLUDING WIRE HOOK-UP INTO MOUNTED CONTROLLER. IRRIGATION CONTRACTOR WILL MOUNT CONTROLLER PER DESIGN AND COORDINATE WITH GENERAL CONTRACTOR.
- INSTALLATION OF IRRIGATION/SERVICE METER AND STUB TO IRRIGATION POINT OF CONNECTION, PER UTILITY PLAN(S). PROVIDE STANDARD THREADED STUB-OUT WITH THREADED CAP ON DISCHARGE SIDE OF METER. STUB-OUT TO BE INSTALLED APPROXIMATELY 18 INCHES BELOW
- VERIFICATION OF STATIC WATER PRESSURE AT POINT-OF-CONNECTION (P.O.C.) CONTRACTOR SHALL NOTIFY OWNER AND BARGHAUSEN CONSULTING ENGINEERS. INC., OF ANY VARIATION IN STATIC PRESSURE OVER 5 PSI GREATER/LESS THAN DESIGN PRESSURE.
- D) INSTALLATION OF SLEEVING.
- PROVIDE ALL LABOR, MATERIALS, TRANSPORTATION, AND SERVICES NECESSARY TO FURNISH AND INSTALL A COMPLETE IRRIGATION SYSTEM AS INDICATED ON THE DRAWINGS AND/OR NOTES. PROVIDE A ONE (1) YEAR WARRANTY/GUARANTEE FROM FINAL ACCEPTANCE AGAINST ALL DEFECTS IN MATERIALS, EQUIPMENT, AND WORKMANSHIP.
- COORDINATE IRRIGATION INSTALLATION WITH GENERAL CONTRACTOR, ELECTRICAL CONTRACTOR, LANDSCAPE CONTRACTOR, OWNER, ARCHITECT, AND LANDSCAPE ARCHITECT.
- LANDSCAPE CONTRACTOR TO TEST AVAILABLE WATER PRESSURE PRIOR TO BEGINNING ANY WORK. PROVIDE LANDSCAPE ARCHITECT WITH WRITTEN PSI RESULTS.
- 5. ALL WORK PER LOCAL CODE. INSTALLATION PER MANUFACTURER'S WRITTEN SPECIFICATIONS. CONTRACTOR TO OBTAIN AND PAY FOR ALL PERMITS, FEES, AND REQUIRED CITY INSPECTIONS.
- SUBMITTALS:
 - A) SUBMIT EACH ITEM LISTED BELOW FOR LANDSCAPE ARCHITECT'S REVIEW AND APPROVAL,
 - PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED,
 - C) CONTROL WIRING PATH DIAGRAM, "AS-BUILT" DRAWINGS.
 - E) OPERATION AND MAINTENANCE MANUALS.
 - PROVIDE AND KEEP UP TO DATE A COMPLETE "AS-BUILT" RECORD SET OF PRINTS WHICH ARE TO BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS AND NOTES AND EXACT "AS-BUILT" LOCATIONS, SIZES AND KIND OF EQUIPMENT. THIS SET OF DRAWINGS. ARE TO BE KEPT ON SITE AND ARE TO BE USED ONLY AS THE RECORD SET. ALL WORK IS TO BE NEAT AND LEGIBLE ANNOTATIONS THEREON DAILY AS THE WORK PROCEEDS, SHOWING WORK

DIMENSION FORM TWO (2) PERMANENT POINTS OF REFERENCE, BUILDING CORNERS, WALKS, OR ROAD INTERSECTIONS, ETC., THE LOCATION OF THE FOLLOWING:

- A) CONNECTION TO WATER LINES (P.O.C.),
- CONNECTIONS TO ELECTRICAL POWER,
- C) GATE VALVE, QUICK COUPLERS, AND REMOTE CONTROL VALVE,
- ROUTING OF MAINLINE (DIMENSION MAXIMUM 100' ALONG ROUTING),
- E) ROUTING OF CONTROL WIRING,
- F) OTHER RELATED EQUIPMENT AS DIRECTED BY THE LANDSCAPE ARCHITECT.

- PREPARE AND PROVIDE PRIOR TO COMPLETION OF CONSTRUCTION, A THREE RING BINDER CONTAINING THE FOLLOWING INFORMATION:
- A) INDEX SHEET STATING CONTRACTOR'S ADDRESS, TELEPHONE NUMBER, FAX, E-MAIL AND A, LIST OF EQUIPMENT WITH NAME AND ADDRESS OF LOCAL MANUFACTURER'S REPRESENTATIVES,
- B) CATALOG AND PARTS SHEETS ON EVERY MATERIAL AND EQUIPMENT INSTALLED UNDER THIS,
- C) GUARANTEE STATEMENT,
- D) COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS ON ALL MAJOR EQUIPMENT.
- E) CONSTRUCTION DETAILS FROM THE PROJECT,
- F) COMPLETE TROUBLE-SHOOTING GUIDE TO COMMON IRRIGATION PROBLEMS,
- G) WINTERIZATION AND SPRING START-UP PROCEDURES,
- H) CHART OF APPROXIMATE WATERING TIMES FOR SPRING, SUMMER, AND FALL,
- I) A COPY OF THE "AS-BUILT" DRAWINGS AND CONTROLLER CHART.
- 10. ALL VALVES TO BE PLACED IN "CARSON" GRADE LEVEL BOXES WITH BOLT-LOCK LIDS (OR APPROVED EQUIVALENT). SET BOXES 2 INCHES HIGHER THAN FINISH GRADE IN MULCH AREAS AND FLUSH WITH FINISH GRADE IN LAWN AREAS. JUMBO BOX FOR CHECK VALVE, 10" ROUND BOX FOR GATE/QUICK COUPLER/WIRE SPLICES, AND 12" STANDARD FOR CONTROL VALVES. PROVIDE BOX EXTENSIONS AS REQUIRED
- MAINLINE PIPE TO BE BURIED 18 INCHES, LATERALS 12 INCHES, AND SLEEVES 24" INCHES BELOW FINISH GRADE. NO ROCK OR DEBRIS TO BE BACKFILLED OVER PIPE.
- HEAD AND LINE POSITIONING IS DIAGRAMMATIC ON PLAN. ADJUST IN FIELD AS NECESSARY FOR 100 PERCENT COVERAGE. VALVES TO BE POSITIONED ADJACENT TO PAVEMENT/CURBS, IN SHRUB BEDS WHERE POSSIBLE.
- 13. FAMILIARIZE OWNERS FACILITY OPERATOR WITH IRRIGATION SYSTEM FUNCTION, CONTROLLER PROGRAMMING, SYSTEM OPERATION AND MAINTENANCE REQUIREMENTS.
- 14. SPRINKLERS ON RISERS WILL NOT BE ALLOWED UNLESS NOTED ON PLANS.
- 15. RADIUS REDUCTION TO BE MADE BY USE OF PRESSURE ADJUSTMENT, SCREENS, AND/OR ALTERNATE NOZZLES. IN-NOZZLE ADJUSTMENT IS LIMITED TO 10 PERCENT FOR SPRAY HEADS AND PER MANUFACTURER'S LIMITS FOR OTHER SPRINKLERS. SPRINKLER SPACING NOT EXCEED 60% OF THE DIAMETER OF THE PUBLISHED DATA.
- 16. ALL CONTROL WIRE SPLICES TO BE MADE AT VALVE BOXES WITH WATER TIGHT ELECTRICAL SPLICES, 3M, SCOTT'S LOCK SEAL TACK 3576-78, OR EQUIVALENT.
- 17. EACH VALVE BOX TO CONTAIN A MINIMUM OF TWO (2) SPARE ORANGE CONTROL WIRES FOR JACKETED WIRE. ROUTE SPARE WIRES FROM THE CONTROLLER TO THE LAST VALVE OF EACH MAINLINE BRANCH. COMMON WIRE TO BE WHITE. SINGLE STRAND WIRE TO BE A MINIMUM OF 14 GAUGE.
- 18. ALL ELECTRICAL EQUIPMENT TO BE U.L. TESTED AND APPROVED, AND BEAR THE U.L. LABEL.
- CROSS CONNECTION PROTECTION INSPECTION REQUIRED. THE BACKFLOW DEVICE TO BE TESTED UPON THE ORIGINAL INSTALLATION. THE TESTING TO BE PERFORMED BY A PERSON HOLDING A CURRENT CERTIFICATE AS A BACKFLOW TESTER. THE TEST REPORT TO BE SUBMITTED TO THE LOCAL WATER DISTRICT, OR PURVEYOR, AND OWNER WITH A COPY TO BARGHAUSEN CONSULTING ENGINEERS, INC. CONTRACTOR TO INCLUDE TESTING IN THE SCOPE OF WORK. OWNER IS RESPONSIBLE FOR ANNUAL INSPECTIONS AFTER THE INTIAL
- 20. CONTRACTOR TO PROVIDE SYSTEM WINTERIZATION/SPRING SERVICE WHEN INSTALLATION HAS BEEN COMPLETED WITHIN 90 DAYS OF NOVEMBER 1 FOR WINTERIZATION, OR MAY 15 FOR SPRING SERVICE. SERVICE TO BE PERFORMED AS NEAR AS PRACTICAL

CITY OF PUYALLUP Planning Division Approved Landscape Plan (253) 864-4165

THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS, FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS MANAGER, DESIGNEE, OR PROJECT PLANNER.

NOTE: If street trees are required, Call Planning Division for final inspection: (253) 864-4165 (Option: Root Barriers are required around street trees in accordance with city standard detail. Top soil shall be verification required. Failure to install top soil and root barriers in accordance with city standards may result in

APPROVED

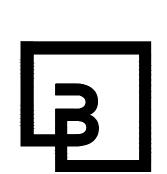
CITY OF PUYALLUP

WATER PURVEYOR

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE FIELD CONDITIONS MAY DICTATE

CHANGES TO THESE PLANS AS DETERMINED BY THE WATER



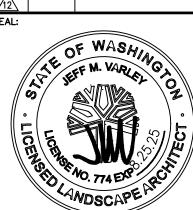


BP WEST COAST PRODUCTS, LLC

Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD LIANCE PM: 21730

IRRIGATION

PLAN

UTILITY CONFLICT NOTE: THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND

H, 48" STRUCTURE

HANNEL SE=39.95'

CANNEL W=39.85'

CHANNELS=40.0

PROPERTY LINE -

RIM=46.25'

MOUNT CONTROLLER ON EXTERIOR -

Hz. OUTPUT: 26.5 VAC, 1.5 A.

FOR 24V ELECTRICAL WIRING

FROM THE CONTROLLER TO

TO MATCH BUILDING COLOR.

WALL. INPUT: 117VAC +/-10%, 60

INSTALL 1" DIAMETER PVC CONDUIT

LANDSCAPE AREA. PAINT CONDUIT

APN 7730000282

1412 S MERIDIAN

APN 7730000283

UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE

CALLING UTILITY LOCATE AT 811 48 HOURS IN ADVANCE AND THEN POTHOLING ALL OF THE EXISTING



APN 7730000288

Know what's **below**. Call before you dig.

N89°58'15"W 178.19'

ARCO

3.349 SF

IRRIGATION POINT OF -

CITY STANDARD DETAIL.

INSTALL NEW 1-1/4"

DOUBLECHECK BACKFLOW

CONNECTION WITH NEW 1"

WATER METER. INSTALL PER

DEVICE. SEE DETAIL THIS SET

- MOUNT RAIN SENSOR' ON

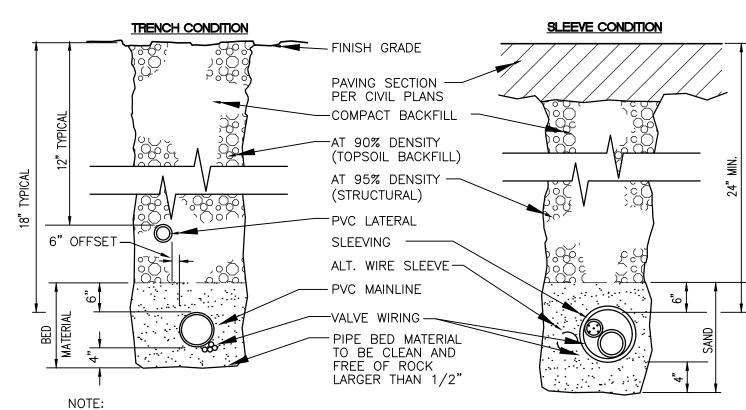
PORTION OF EXTERIOR

WEATHER EXPOSED

HEIGHT.

IRRIGATION DETAILS

ARCO ampm PUYALLUP SEC. 33, TWN. 20 N, RGE. 4 E, W.M. CITY OF PUYALLUP, PIERCE COUNTY

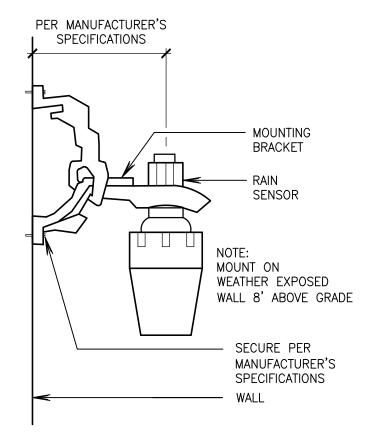


SLEEVING MATERIAL SHALL BE PVC CLASS 160(SDR-26). DIMENSIONS ARE MIN. CLEARANCES.

ALL IRRIGATION SLEEVING TRENCH BACKFILL MATERIAL SHALL BE CLASS "B" OR BETTER (MAX. OF 10% PASSING NO.40 SCREEN) AND BE COMPACTED TO MIN. 95% OPTIMUM DENSITY PER ASTM D-1557-70

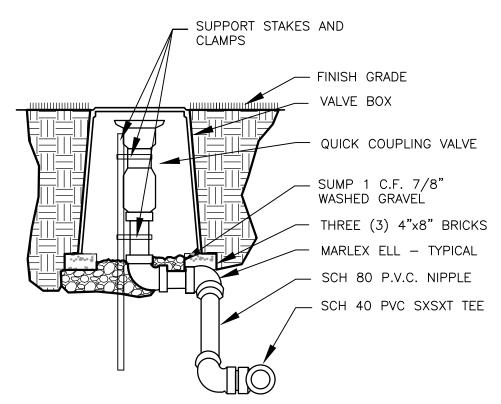
SLEEVE/TRENCHING DETAIL

NOT TO SCALE



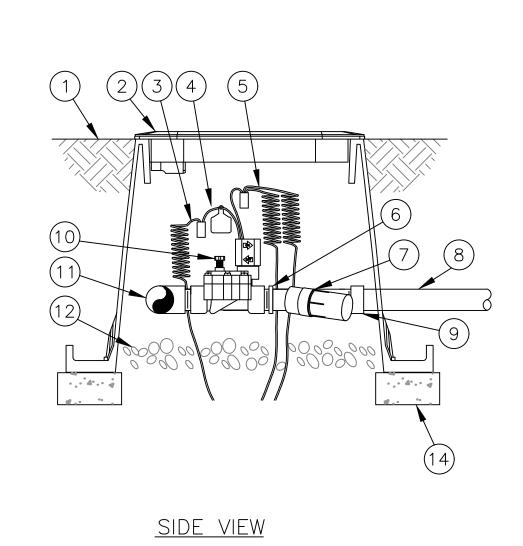
RAIN SENSOR DETAIL

NOT TO SCALE



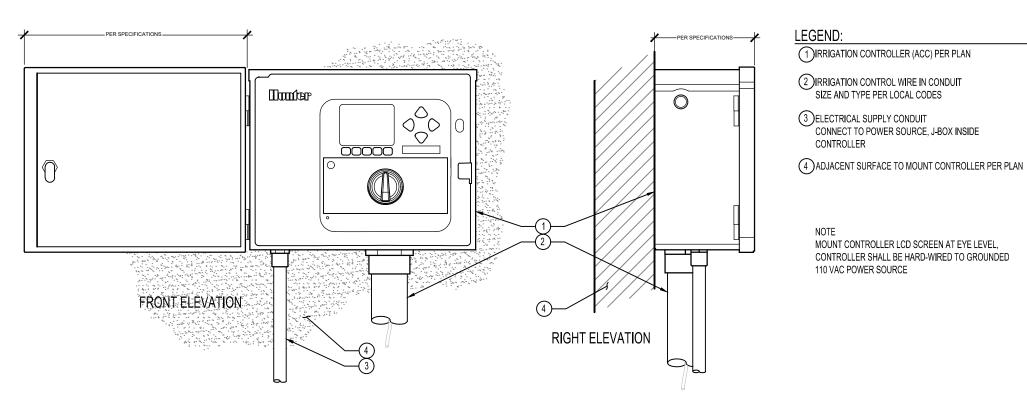
QUICK COUPLING VALVE DETAIL

NOT TO SCALE



DRIP IRRIGATION VALVE

NOT TO SCALE



IRRIGATION CONTROLLER, WALL MOUNT

NOT TO SCALE



STANDARD VALVE BOX WITH COVER:

RAIN BIRD VB-STD WATERPROOF CONNECTION: RAIN BIRD DB SERIES

(4) VALVE ID TAG

(5) 30-INCH LINEAR LENGTH OF WIRE, COILED

1" X 34" REDUCING COUPLING

(INCLUDED IN XCZ-LF-100-PRF KIT) (7) PRESSURE REGULATING FILTER: RAIN BIRD PRF-100-RBY (INCLUDED IN XCZ-LF-100-PRF KIT)

(8) LATERAL PIPE

(9) PVC SCH 40 FEMALE ADAPTOR OR REDUCER

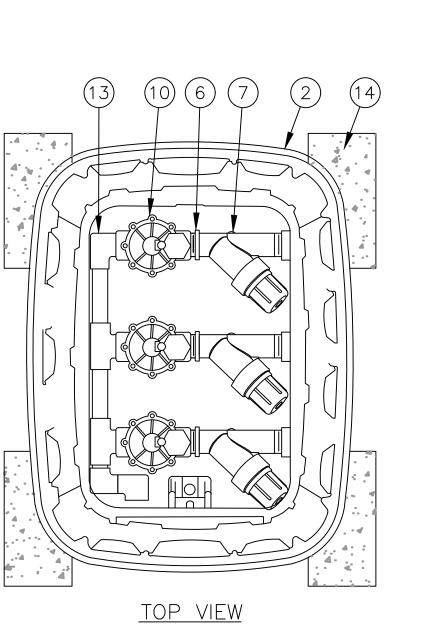
(10) REMOTE CONTROL VALVE: RAIN BIRD LFV-100 (INCLUDED IN XCZ-LF-100-PRF KIT)

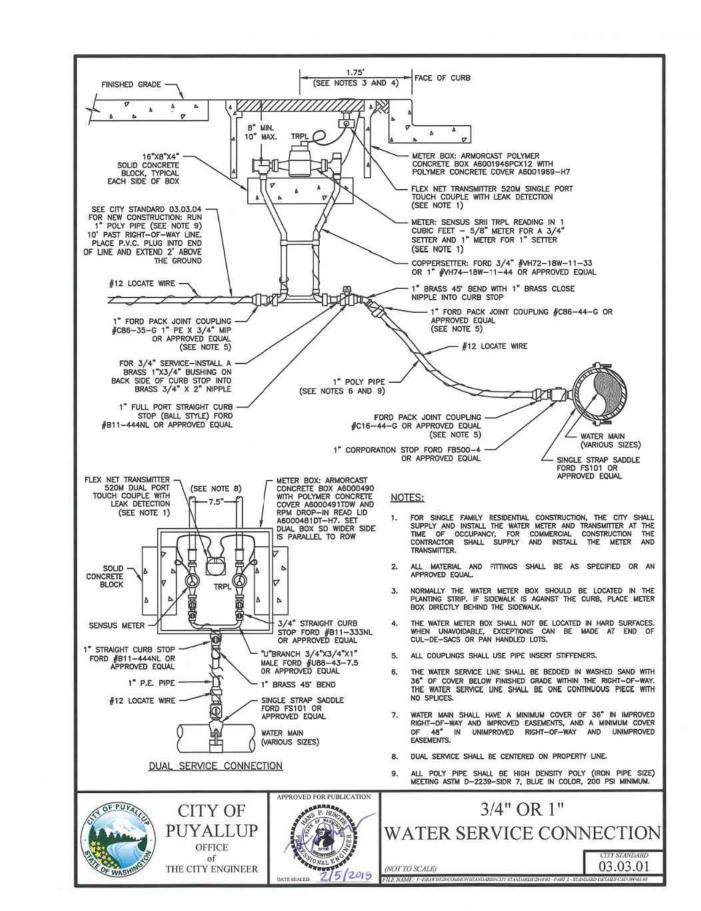
(11) PVC SCH 40 TEE OR ELL TO MANIFOLD

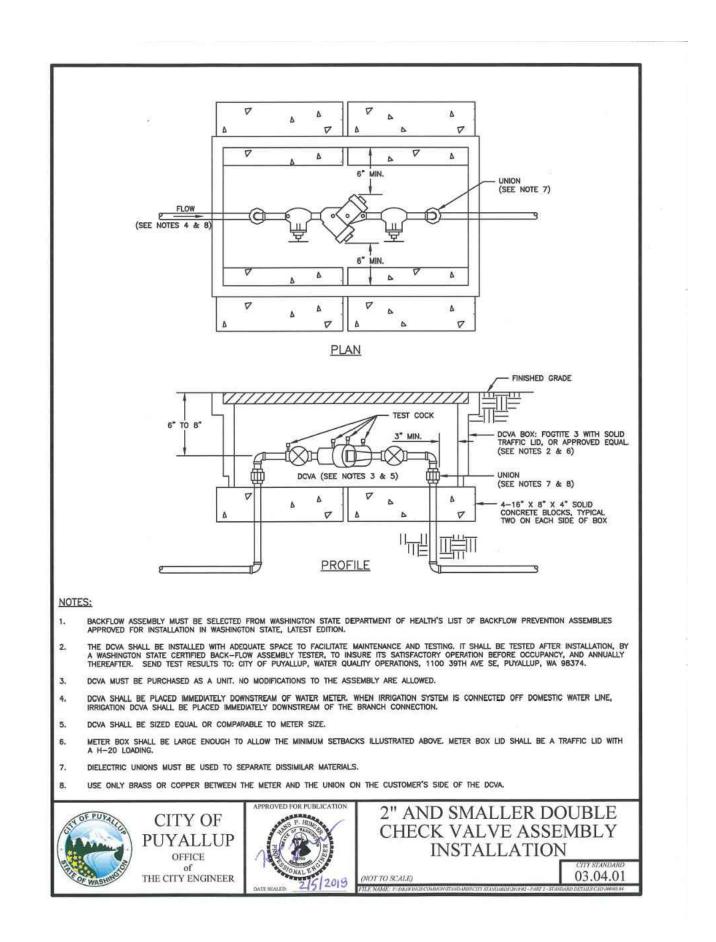
(12) 3-INCH MINIMUM DEPTH OF 3/4-INCH

WASHED GRAVEL (13) MANIFOLD PIPE AND FITTINGS

(14) MINIMUM FOUR (4) 4"x8" BRICKS







CITY OF PUYALLUP Planning Division Approved Landscape Plan (253) 864-4165

THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS, FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS MANAGER, DESIGNEE, OR PROJECT PLANNER.

NOTE: If street trees are required, Call Planning Division for final inspection: (253) 864-4165 (Option 3) Root Barriers are required around street trees in accordance with city standard detail. Top soil shall be installed in accordance with city standards - field verification required. Failure to install top soil and root barriers in accordance with city standards may result in rejection of installation.

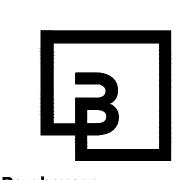
APPROVED

CITY OF PUYALLUP WATER PURVEYOR

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL

THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE WATER





Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: **SWC S MERIDIAN**

@ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD		
DESIGNED BY:	ALLIANCE Z&DM:	
CHECKED BY:	BP REPM:	
DRAWN BY:	ALLIANCE PM:	
VERSION:	PROJECT NO:	

IRRIGATION

21730

DETAILS



THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE AT 811 48 HOURS IN ADVANCE AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.



Know what's below. Call before you dig.

IRRIGATION DETAILS

CITY OF PUYALLUP, PIERCE COUNTY

ARCO ampm PUYALLUP 12 3 4 5 SEC. 33, TWN. 20 N, RGE. 4 E, W.M.

(1) PVC EXHAUST HEADER (2) PVC SCH 40 TEE OR EL (TYPICAL) (3) BARB X MALE FITTING

(4) FLUSH POINT (TYPICAL) (5) PERIMETER OF AREA

1) EASY FIT COMPRESSION TEE

(2) SUB-SURFACE DRIPLINE

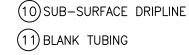
(3) INLINE DRIP EMITTER

(5) TURF/FINISH GRADE OR SHRUB BED

(4) TIE DOWN STAKE

(6) PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA (7) PVC SUPPLY PIPE FROM CONTROL ZONE KIT (SIZED TO MEET LATERAL FLOW DEMAND) (8) PVC SUPPLY MANIFOLD

(9) CONNECTION FROM SUPPLY MANIFOLD TO DRIPLINE (TYPICAL) - SEE INSET A



(12) BARB X BARB INSERT TEE OR CROSS: (13) 1/3" AIR RELIEF VALVE

(14) BARB X FEMALE FITTING

(15) 34" PVC NIPPLE, LENGTH AS NECESSARY

(16) DRIPLINE INDICATOR, SEE DETAIL FOR ADDITIONAL INFORMATION

Dri	pline Ma	ximum L	ateral L	engths (Feet)		
		pacing		pacing	24" Sp		
Inlet Pressure psi	Nominal Flow N			Nominal Flow (gph)		Nominal Flow (aph)	
po.	0.6	0.9	0.6	0.9	0.6	0.	
15	273	155	314	2 50	424	3 2	
20	3 18	169	353	294	508	36	
30	3 60	2 30	413	350	586	41	
40	395	255	465	402	652	47	
50	417	285	528	420	720	48	
60	460	290	596	455	780	51	

1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION. SEE IRRIGATION SCHEDULE FOR SPACING. 2. LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE MAXIMUM LENGTH SHOWN IN THE ACCOMPANYING TABLE

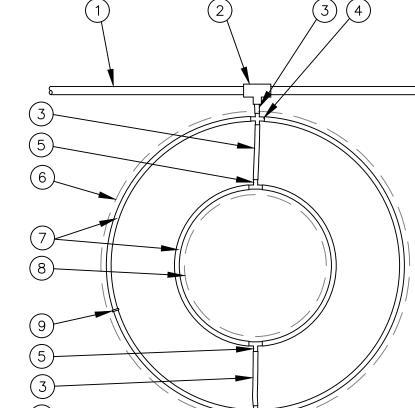
3. AIR RELIEF VALVE TO BE INSTALLED AT HIGH POINT OF AREA. 4. WHEN USING 17MM INSERT FITTINGS WITH DESIGN PRESSURE OVER 50PSI, IT IS RECOMMENDED THAT STAINLESS STEEL CLAMPS BE INSTALLED ON EACH FITTING.

DRIPLINE CENTER FEED LAYOUT

NOT TO SCALE

FIVE FEET IN CLAY.

DRIPLINE BURIAL



(1) PVC DRIP MANIFOLD PIPE (2) PVC SCH 40 TEE OR EL

(3) BLANK TUBING

(4) BARB CROSS INSERT FITTING

(5) BARB TEE INSERT FITTING

(6) PROJECTED CANOPY LINE OF TREE (7) SUB-SURFACE DRIPLINE:

SEE IRRIGATION SCHEDULE

(8) PLACE AS SHOWN (LENGTH AS REQUIRED) ROOT BALL

(9) TIE DOWN STAKE: QUANTITY AS REQUIRED, SEE NOTES 2-3

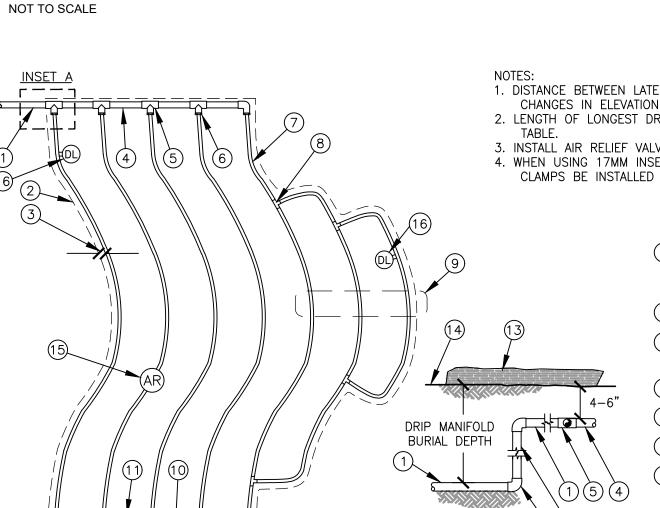
1. DISTANCE BETWEEN LATERAL RINGS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, AND TREE CANOPY. SEE MANUFACTURER DRIPLINE INSTALLATION GUIDE FOR SUGGESTED

2. PLACE TIE DOWN STAKES EVERY THREE FEET IN SAND, FOUR FEET IN LOAM, AND FIVE

FEET IN CLAY. 3. AT FITTINGS WHERE THERE IS A CHANGE OF DIRECTION SUCH AS TEES OR ELBOWS, USE TIE-DOWN STAKES ON EACH LEG OF THE CHANGE OF DIRECTION.

DRIPLINE AROUND TREE

NOT TO SCALE



<u>INSET A</u>

1. PLACE TIE DOWN STAKES EVERY THREE FEET IN SAND, FOUR FEET IN LOAM, AND

ELBOWS, USE TIE-DOWN STAKES ON EACH LEG OF THE CHANGE OF DIRECTION.

2. AT FITTINGS WHERE THERE IS A CHANGE OF DIRECTION SUCH AS TEES OR

3. INSERTION PLOW AND TRENCHED INSTALLATIONS DO NOT REQUIRE TIE DOWN

1. DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION. SEE INSTALLATION SPECIFICATIONS FOR SPACING 2. LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE MAXIMUM SPACING SHOWN IN THE ACCOMPANYING

3. INSTALL AIR RELIEF VALVE AT HIGH POINTS IN DRIP LATERAL. 4. WHEN USING 17MM INSERT FITTINGS WITH DESIGN PRESSURE OVER 50PSI, IT IS RECOMMENDED THAT STAINLESS STEEL CLAMPS BE INSTALLED ON EACH FITTING.

> (1) PVC SUPPLY PIPE FROM RAIN BIRD CONTROL ZONE KIT (SIZED TO MEET LATERAL FLOW DEMAND)

(2) PERIMETER OF AREA

(3) PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA (4) PVC SUPPLY MANIFOLD

(5) PVC SCH 40 TEE OR EL (TYPICAL) (6) BARB X MALE FITTING

(7) SUB-SURFACE DRIPLINE: SEE IRRIGATION SCHEDULE (8) ARB X BARB INSERT TEE

(9) TOTAL LENGTH OF SELECTED DRIPLINE SHOULD NOT EXCEED LENGTH SHOWN IN TABLE

(10) PVC FLUSH HEADER 11) FLUSH POINT SEE DETAIL

(12) PVC RISER PIPE

(13) TURF OR MULCH (14) FINISH GRADE

(15) 1/2" AIR RELIEF VALVE: SEE DETAIL

(16) DRIPLINE INDICATOR. SEE DETAIL FOR ADDT'L INFO

INSET A

DRIPLINE IRREGULAR SHAPED LAYOUT NOT TO SCALE

NOT TO SCALE

OR BLANK TUBING - TYPICAL 1 C.F. 7/8" WASHED GRAVEL SUMP — BRICK SUPPORTS 2. VAN NOZZLE MAY BE SET TO CLOSED, OR IF IT IS DESIRED TO SEE SPRAY FROM AIR/VACUUM RELIEF VALVE CANNOT BE CONNECTED LOWER THAN DRIPLINE LATERALS. THE NOZZLE, SET THE ARC TO 1/4 PATTERN. THE FLOW FROM THE NOZZLE, 0.3 FOR USE ON ZONES OF 7 GPM OR LESS ONLY (PLUMBED TO TUBING).

1) PVC EXHAUST HEADER

(3) BARB X MALE FITTING:

(4) FLUSH POINT (TYPICAL)

(7) SUB-SURFACE DRIPLINE

(10)½" AIR RELIEF VALVE

(11) PVC SUPPLY HEADER

(13) PVC SCH 40 RISER PIPE

(14) DRIPLINE INDICATOR. SEE DETAIL FOR ADDT'L INFO

(9) BARB X BARB INSERT TEE OR CROSS:

MEET LATERAL FLOW DEMAND)

FINISH GRADE

(8) BLANK TUBING

5 PERIMETER OF AREA

DISTANCE BETWEEN LATERAL ROWS AND EMITTER

SPACING TO BE BASED ON SOIL TYPE, PLANT

MATERIALS AND CHANGES IN ELEVATION. SEE

DRIPLINE INSTALLATION GUIDE FOR SUGGESTED

LENGTH OF LONGEST DRIPLINE LATERAL SHOULD

• AIR RELIEF VALVE TO BE INSTALLED AT HIGH

WHEN USING 17MM INSERT FITTINGS WITH

DESIGN PRESSURE OVER 50PSI, IT IS

BE INSTALLED ON EACH FITTING.

THE ACCOMPANYING TABLE.

POINT OF AREA.

(1) FINISH GRADE/TURF

(2) OPERATION INDICATOR

(3) SUB-SURFACE DRIPLINE:

SEE IRRIGATION SCHEDULE

(1) PVC EXHAUST HEADER

(3) FLUSH POINT (TYPICAL)

SEE DETAIL

(4) BARB X MALE FITTING

(5)PERIMETER OF AREA

(8) SUB-SURFACE DRIPLINE:

(11) PVC SUPPLY MANIFOLD

(14) PVC SCH 40 RISER PIPE

(9) BLANK TUBING

(2)PVC SCH 40 TEE OR EL (TYPICAL)

(6)BARB X BARB INSERT TEE OR CROSS

FROM PERIMETER OF AREA

SEE IRRIGATION SCHEDULE

(10)½" AIR RELIEF VALVE: SEE DETAIL

7) PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4"

(12) PVC SUPPLY PIPE FROM CONTROL ZONE KIT (SIZED

(13) TOTAL LENGTH OF SELECTED DRIPLINE SHOULD NOT

(15) DRIPLINE INDICATOR. SEE DETAIL FOR ADDT'L INFO

TO MEET LATERAL FLOW DEMAND)

EXCEED LENGTH SHOWN IN TABLE

DRIPLINE END FEED LAYOUT

4" - 6"

1. INSERT BARB TRANSFER FITTING DIRECTLY INTO DRIPLINE TUBING

GPM, SHOULD BE ACCOUNTED FOR IN THE SYSTEM DESIGN.

DRIP IRRIGATION DRIPLINE INDICATOR

NOT EXCEED THE MAXIMUM LENGTH SHOWN IN

RECOMMENDED THAT STAINLESS STEEL CLAMPS

(2) PVC SCH 40 TEE OR EL (TYPICAL)

SEE RAIN BIRD DETAIL 'FLUSH POINT WITH BALL VALVE'

(12) PVC DRIP MANIFOLD FROM CONTROL ZONE VALVE KIT (SIZED TO

Dripline Maximum Lateral Lengths (Feet)

0.6 0.9 0.6 0.9 0.6 0.9

- 6" ROUND VALVE BOX

1/2" PVC TEE

AIR/VACUUM RELIEF VALVE

COMPRESSION ADAPTER

DRIPLINE - TYPICAL

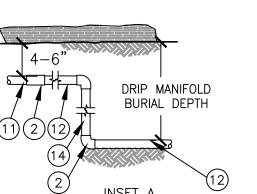
6 PERIMETER DRIPLINE PIPE TO BE INSTALLED 2"-4" FROM PERIMETER OF AREA

1/2" AIR/VACUUM RELIEF VALVE DETAIL

NOT TO SCALE

 DISTANCE BETWEEN LATERAL ROWS AND EMITTER SPACING TO BE BASED ON SOIL TYPE, PLANT MATERIALS AND CHANGES IN ELEVATION. SEE MANUFACTURER DRIPLINE INSTALLATION GUIDE FOR SUGGESTED SPACINGS LENGTH OF LONGEST DRIPLINE LATERAL SHOULD NOT EXCEED THE ACCOMPANYING TABLE.

MAXIMUM LENGTH SHOWN IN THE AIR RELIEF VALVE TO BE INSTALLED AT HIGH POINT OF AREA. WHEN USING 17MM INSERT FITTINGS WITH DESIGN PRESSURE OVER 50PSI, IT IS RECOMMENDED THAT STAINLESS STEEL CLAMPS BE INSTALLED ON EACH FITTING.



CITY OF PUYALLUP Planning Division Approved Landscape Plan (253) 864-4165

THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE. THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS, FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS A MANAGER, DESIGNEE, OR PROJECT

PLANNER. NOTE: If street trees are required, Call Planning Division for final inspection: (253) 864-4165 (Option Root Barriers are required around street trees in accordance with city standard detail. Top soil shall b verification required. Failure to install top soil and root barriers in accordance with city standards may result in rejection of installation.

APPROVED

CITY OF PUYALLUP WATER PURVEYOR

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE WATER





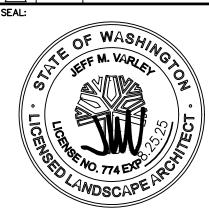
BP WEST COAST PRODUCTS, LLC



Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

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ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: SWC S MERIDIAN @ HIGHWAY 512

PUYALLUP, WASHINGTON **FACILITY #TBD**

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DESIGNED BY:	ALLIANCE Z&DM:
CHECKED BY:	BP REPM:
DRAWN BY:	ALLIANCE PM:
VERSION:	PROJECT NO:
	21730
-	2.700
DRAWING TITLE:	-

IRRIGATION **DETAILS**

UTILITY CONFLICT NOTE:

NOT TO SCALE

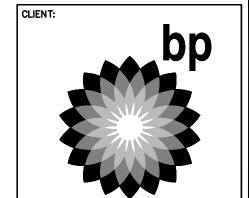
DRIPLINE ODD CURVES LAYOUT

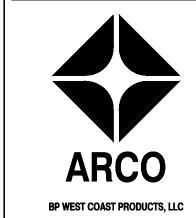
THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POTHOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE AT 811 48 HOURS IN ADVANCE AND THEN POTHOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VERIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

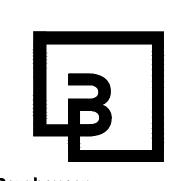


Know what's **below**. Call before you dig. **Dial 811**

GENERAL NOTES ARCHITECTURAL SITE PLAN **© CONSTRUCTION NOTES:** SEE CIVIL FOR ADDITIONAL INFO SEE ELECTRICAL FOR ADDITIONAL INFO 1. CONVENIENCE STORE. 2. CAR WASH. 3. FUEL CANOPY. 4. UNDERGROUND STORAGE TANKS. SEE FUEL PLANS FOR DETAILS. 5. TRASH ENCLOSURE AND CONCRETE TRASH ENCLOSURE SLAB. REFER TO 6. ON-SITE ASPHALT PAVEMENT. SEE CIVIL DRAWINGS. 7. ON-SITE CONCRETE PAVEMENT. SEE CIVIL DRAWINGS. PROVIDE EXPANSION AND CONTROL JOINTS PER CIVIL DRAWINGS. 8. BARRIER CURB. SEE CIVIL DRAWINGS. 9. CURB AND GUTTER. SEE CIVIL DRAWINGS. SCALE: 1"=20' 10. CONCRETE SIDEWALK, WIDTH VARIES. SEE CIVIL DRAWINGS. 11. ACCESSIBLE PARKING STALL AND AISLE. SEE CIVIL DRAWINGS. 12. BOLLARD MOUNTED ACCESSIBLE PARKING STALL SIGNAGE. SEE CIVIL DRAWINGS. 13. PARKING STALL WITH 4" WIDE WHITE REFLECTIVE PAINT STRIPE (TYP.). SEE CIVIL DRAWINGS. 14. BOLLARD (TYP.). SEE CIVIL DRAWINGS. (1) **3400 ARCO** 15. LOT LIGHT. SEE DETAIL ON-SITE PHOTOMETRIC PLANS FOR MORE DETAILS. COORDINATE ALL CONDUIT RUNS, WIRING REQUIREMENTS, LOT LIGHT BASE, ETC. WITH ELECTRICAL PLANS. SEE CIVIL DRAWINGS. 3.349 S.F. 16. AIR/WATER UNIT. ARCHITECTURAL PLANS FOR MORE DETAILS. 17. BICYCLE STORAGE. SEE CIVIL DRAWINGS. 18. SEATING BENCH. 19. LANDSCAPING. SEE LANDSCAPE PLANS. 20. CONCRETE TANK FUEL SLAB. SEE FUEL PLANS FOR DESIGN. 21. UNDER CANOPY CONCRETE SLAB. SEE ARCHITECTURAL PLANS FOR DETAILS. 22. FUEL DISPENSERS WITH HOOP BOLLARDS (TYP.). SEE FUEL PLANS FOR 23. PAVEMENT MARKINGS - 4" WIDE WHITE PAINTED STRIPES @ 2' O.C/45" ANGLE. SEE CIVIL DRAWINGS. 24. VACUUM UNIT. REFER TO ARCHTIECTURAL CAR WASH DRAWINGS, 01/CWA4.2. 25. VAN ACCESSIBLE AND STANDARD EV CHARGING STATION, SEE CIVIL DRAWINGS. 26. TRASH RECEPTACLE (TYP). 27. CONCRETE DRIVEWAY PER CITY OF PUYALLUP STANDARD DRAWING NO. 01.02.17. CIVIL DRAWINGS. 28. CONCRETE DRIVEWAY PER CITY OF PUYALLUP STANDARD DRAWING NO. 34.1 01.02.16. CIVIL DRAWINGS. 29. CONCRETE SIDEWALK PER CITY OF PUYALLUP STANDARD DRAWING NO. 01.02.01. SEE CIVIL DRAWINGS. 44.6' 30. TYPE I CURB RAMP PER CITY OF PUYALLUP STANDARD DRAWING NO. 31. OFF-SITE CURB AND GUTTER PER CITY OF PUYALLUP STANDARD DRAWING NO. 01.02.09. SEE CIVIL DRAWINGS. APN 7730000282 32. PROTECT EXISTING CURB/CURB AND GUTTER TO REMAIN. 1412 S MERIDIAN 33. ACCESSIBLE PATH. REFER TO CIVIL GRADING PLAN FOR SLOPE 34. FREEWIRE EV CHARGING STATION TO BE INSTALLED 35. GREASE INTERCEPTOR. REFER TO CIVIL AND PLUMBING DRAWINGS. Ω̈ 36. WATER RECLAIM TANKS AND SEPARATOR. REFER TO CAR WASH, PLUMBING AND CIVIL DRAWINGS FOR CONTINUATION 37. SAND-OIL-WATER SEPARATOR. REFER TO CIVIL DRAWINGS. 38. VEHICLE GUARD RAIL. REFER TO CIVIL AND STRUCTURAL DRAWINGS. 39. RETAINING WALL. REFER TO CIVIL AND STRUCTURAL DRAWINGS. ဟ 40. CAR WASH OVERHEAD HEIGHT WARNING BAR. REFER TO ARCHITECTURAL CAR WASH DRAWINGS AND STRUCTURAL DETAILS. 41. CAR WASH PAY STATION. REFER TO ARCHITECTURAL CAR WASH DRAWINGS. APN 7730000283 NKA 42. DRYER COUNT DOWN DISPLAY. REFER TO CAR WASH DRAWINGS. 43. PROPANE EXCHANGE CAGE 44. ELECTRICAL SWITCHGEAR. REFER TO ELECTRICAL DRAWINGS. 45. PROPOSED NEW MONUMENT SIGN. PERMITTED SEPARATELY. 46. EXISTING POLE SIGN TO BE RESURFACED WITH ARCO/AMPM SIGNAGE. PERMITTED N89°26'14"W EXISTING BUILDING ///////// APN 7730000300 1410 S MERIDIAN EXISTING BUILDING



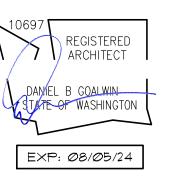




Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com**

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FUEL CANOPY w/ 6 MPD's

FACILITY #7184

NED BY: ALLIANCE Z&DM:

CHECKED BY:	BP REPM:
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VERSION:	PROJECT NO:
_	2173

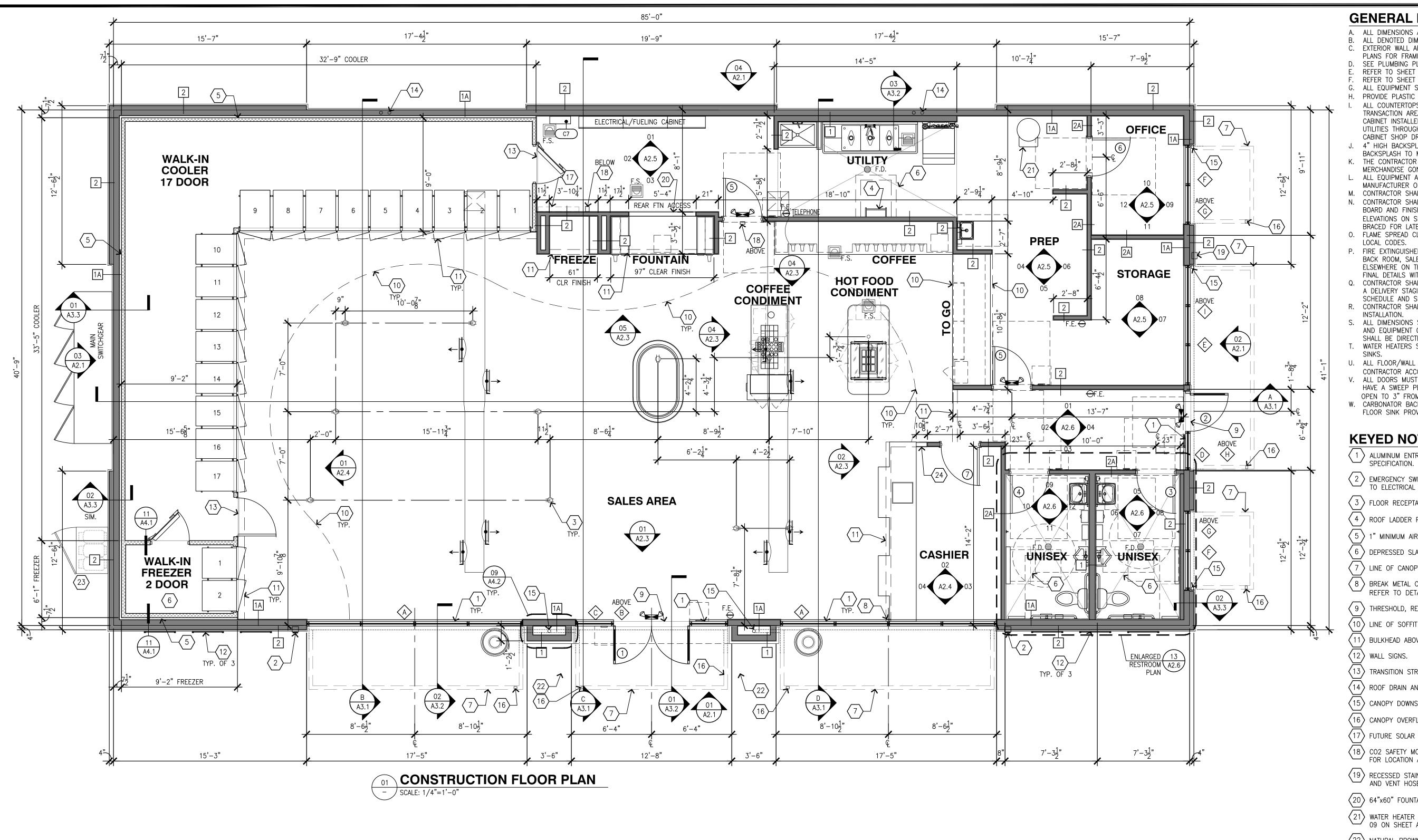
DRAWING TITLE:

ARCHITECTURAL

SITE PLAN

ET NO:

AS1.0



ROOM FINISH SCHEDULE						
INTERIOR FINISHES	SALES	CASHIER	RESTROOMS	OFFICE	PREP/UTILITY	WALK-IN
FLOOR	GLAZED PORCELAIN TILE REFER TO FINISH CALLOUT	ON A1.2.	QUARRY TILE REFER TO FINISH CALLOUT ON A1.2.			CLEAR CONCRETE SEALER REFER TO FINISH CALLOUT ON A1.2.
BASE	CERAMIC SANITARY COVE B. REFER TO FINISH CALLOUT		PORCELAIN COVE BASE REFER TO FINISH CALLOUT ON A1.2.	REFER TO FINISH CALLOUT ON A1.2.		INTEGRAL METAL COVE BASE WITH 3/8" RADIUS, BY COOLER MFR. REFER TO SPECIFICATION ON Q1.2.
WALLS	PAINTED SMOOTH FINISH 5/8" GYPSUM BOARD. REFER TO CALLOUT ON SHEET A2.3 — A2.6.		WALL TILE OVER 5/8" WATER RESISTANT GYPSUM BOARD. REFER TO CALLOUT ON A2.6.	PAINTED SMOOTH FINISH 5/8" GYPSUM BOARD. REFER TO CALLOUT ON SHEET A2.6.	FRP OVER 5/8" WATER RESISTANT GYPSUM BOARD. REFER TO CALLOUT ON A2.5.	STUCCO-GALVALUM. BY COOLER MFR. REFER TO SPECIFICATION ON Q1.2.
FASCIA/SOFFIT	FASCIA PAINTED SMOOTH FINISH 5/8" GYPSUM BOARD. REFER TO CALLOUT ON A2.3 & A2.4. SOFFIT PAINTED SMOOTH FINISH 5/8" WATER RESISTANT GYPSUM BOARD. REFER TO CALLOUT ON A1.3.		NOT APPLICABLE			
CEILING	PAINTED PLYWOOD AND OPEN WEB TRUSSES. REFER TO CALLOUT ON A1.3. WASHABLE SUSPENDED WHITE CEILING TILE REFER TO CALLOUT ON A1.3.					STUCCO-GALVALUM. BY COOLER MFR. REFER TO CALLOUT ON Q1.2 AND A1.3.

GENERAL NOTES

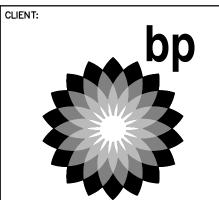
- A. ALL DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE. B. ALL DENOTED DIMENSIONS ARE TO BE USED. PLANS SHALL NOT BE SCALED. C. EXTERIOR WALL ARE 2x6, INTERIOR WALLS 2x4 U.N.O., SEE STRUCTURAL PLANS FOR FRAMING REQUIREMENTS.
- D. SEE PLUMBING PLANS FOR DIMENSIONS TO PLUMBING FIXTURES
- REFER TO SHEET Q1.1 FOR FOR EQUIPMENT PLAN. REFER TO SHEET Q2.1 FOR EQUIPMENT SCHEDULE.
- ALL EQUIPMENT SHALL MEET ACCESSIBILITY REACH RANGE REQUIREMENTS. H. PROVIDE PLASTIC CORNER GUARDS AT EDGES BELOW 6'-0".
- ALL COUNTERTOPS SHALL BE MAX. 34" A.F.F. WITH A 3-FOOT WIDE TRANSACTION AREA AT CASHIER. CONTRACTOR SHALL COORDINATE WORK WITH CABINET INSTALLER FOR CABINET INSTALLATION. CONTRACTOR TO ROUTE UTILITIES THROUGH CABINETS. CONTACT CABINET INSTALLER FOR SITE SPECIFIC CABINET SHOP DRAWINGS.
- J. 4" HIGH BACKSPLASH AT ALL COUNTERTOPS THAT TERMINATE AT WALL. BACKSPLASH TO MATCH COUNTERTOP MATERIAL.
- K. THE CONTRACTOR SHALL ASSIST STORE PERSONNEL BY ASSEMBLING MERCHANDISE GONDOLAS AND SHELVING AS SHOWN ON Q1.1.
- ALL EQUIPMENT AND CABINETS SHALL BE FREE OF SHARP EDGES. CONTACT MANUFACTURER OR PREP EDGES FOR SAFETY.
- M. CONTRACTOR SHALL ROUTE ALL CONDENSATE DRAIN LINES TO FLOOR SINKS. N. CONTRACTOR SHALL INSTALL NEW PARTITIONS/WALLS WITH GYPSUM WALL BOARD AND FINISHES AS NOTED ON FINISH SCHEDULE AND INTERIOR ELEVATIONS ON SHEET A2.3 THRU A2.7. ALL PARTITIONS/WALLS SHALL BE BRACED FOR LATERAL FORCES, PER BUILDING CODE REQUIREMENTS.
- O. FLAME SPREAD CLASSIFICATIONS FOR INTERIOR WALLS SHALL COMPLY WITH LOCAL CODES. P. FIRE EXTINGUISHERS (2A:10B:C) SHALL BE INSTALLED AT SALES COUNTER, BACK ROOM, SALES AREA, & FUEL CANOPY LOCATIONS IF NOT SHOWN
- ELSEWHERE ON THESE DRAWINGS. VERIFY WITH OWNER FOR DETAILS, CONFIRM FINAL DETAILS WITH LOCAL FIRE INSPECTOR. Q. CONTRACTOR SHALL ASSIST THE OWNER WITH STORE EQUIPMENT TO PREPARE A DELIVERY STAGING AREA. COORDINATE WITH OWNER FOR THE DELIVERY
- SCHEDULE AND SHIPPING DAMAGES, AS APPLICABLE. R. CONTRACTOR SHALL PROVIDE A CLEAN, SMOOTH SURFACE FOR GRAPHICS
- S. ALL DIMENSIONS SHALL BE FIELD VERIFIED BY CONTRACTOR FROM CABINET AND EQUIPMENT CLEARANCES PRIOR TO WALL ERECTION. DISCREPANCIES SHALL BE DIRECTED TO OWNER.
- WATER HEATERS SHALL BE CAPABLE OF DELIVERING MIN. 120° WATER TO ALL U. ALL FLOOR/WALL TILE AND COVE BASE SHALL BE INSTALLED BY THE GENERAL
- CONTRACTOR ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. V. ALL DOORS MUST HAVE <u>NO MORE</u> THAN 5 LBS OPENING FORCE AND MUST HAVE A SWEEP PERIOD OF 3 SECONDS TO CLOSE FROM 70° OPEN TO 3" FROM THE LATCH.
- W. CARBONATOR BACK-FLOW PREVENTOR DRAIN LINE OUTLET SHALL BE TO FLOOR SINK PROVIDED FOR THIS AREA.

KEYED NOTES

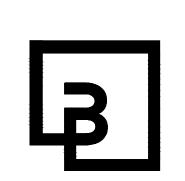
- \langle 1 \rangle ALUMINUM ENTRANCE AND STOREFRONT SYSTEM, REFER TO SHEET A5.1 &
- (2) EMERGENCY SWITCH OFF, VERIFY LOCATION PRIOR TO INSTALLATION. REFER
- TO ELECTRICAL PLANS FOR SPECIFICATION. (3) FLOOR RECEPTACLES, REFER TO ELECTRICAL PLANS.
- 4 ROOF LADDER PER DETAIL 07/A4.1.
- (5) 1" MINIMUM AIR GAP AT PREFABRICATED COOLER/FREEZER.
- (6) DEPRESSED SLAB, REFER TO FOUNDATION PLAN.
- $\langle 7 \rangle$ LINE OF CANOPY ABOVE.
- \langle 8 \rangle break metal closure at bulkhead and storefront vertical mullion. REFER TO DETAIL 11/A4.2
- (9) THRESHOLD, REFER TO DOOR SCHEDULE ON SHEET A5.1.
- $\langle 10 \rangle$ LINE OF SOFFIT ABOVE.
- 11) BULKHEAD ABOVE.
- 12 WALL SIGNS.
- $\langle 13 \rangle$ Transition Strip.
- $\langle 14 \rangle$ roof drain and overflow, refer to civil plans for continuation.
- $\langle 15 \rangle$ canopy downspout, refer to civil plans for continuation.
- $\langle 16 \rangle$ CANOPY OVERFLOW ABOVE, REFER TO DETAIL 09/A4.2.
- $\langle 17 \rangle$ FUTURE SOLAR EQUIPMENT.
- (18) CO2 SAFETY MONITORING EQUIPMENT, REFER TO SHEETS Q1.1 AND Q2.1 FOR LOCATION AND SPECIFICATION.
- RECESSED STAINLESS STEEL FILL BOX WITH QUICK-DISCONNECT MALE FILL AND VENT HOSE CONNECTION FOR CO2 TANK.
- $\langle 20 \rangle$ 64"x60" FOUNTAIN ACCESS OPENING @ 34" A.F.F.
- WATER HEATER PLATFORM, REFER TO DETAIL 06/A4.2 & ELEVATIONS 08 & 09 ON SHEET A2.5.
- NATURAL BROWN STONE AGGREGATE TRASH RECEPTACLE WITH BROWN FLAT LID, 35 GAL. CAPACITY, SUPPLIER: TREETOP PRODUCTS, MODEL: 4CR5127, PLASTIC LINER MODEL: 4CR5128. VERIFY LOCATION WITH CIVIL PLANS.
- PORTABLE PROPANE TANK DISPLAY, REFER TO SHEETS Q1.1 AND Q2.1 FOR SPECIFICATION.
- 24 PARTIAL HEIGHT WALL, REFER TO THE INTERIOR ELEVATIONS

LEGEND

- WOOD FRAMED WALL
- PREFABRICATED COOLER/FREEZER WALL
- 1 2x6 STUDS @ 16"o.c.
- 1A 2x6 STUDS @ 16"o.c. W/ THERMAL INSULATION
- 2 2x4 STUDS @ 16"o.c.
- 2x4 STUDS @ 16"o.c. W/ SOUND BATT INSULATION DOOR SYMBOL, REFER TO SHEET A5.1 FOR DETAILS
- WINDOW SYMBOL, REFER TO SHEET A5.1 FOR DETAILS





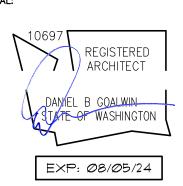


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Consulting Engineers, Inc.

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DEVELOPMENT INFORMATION:

ARCO NTI 3400 am/pm **FUEL CANOPY w/ 6 MPD's**

SITE ADDRESS: 1402 S MERIDIAN

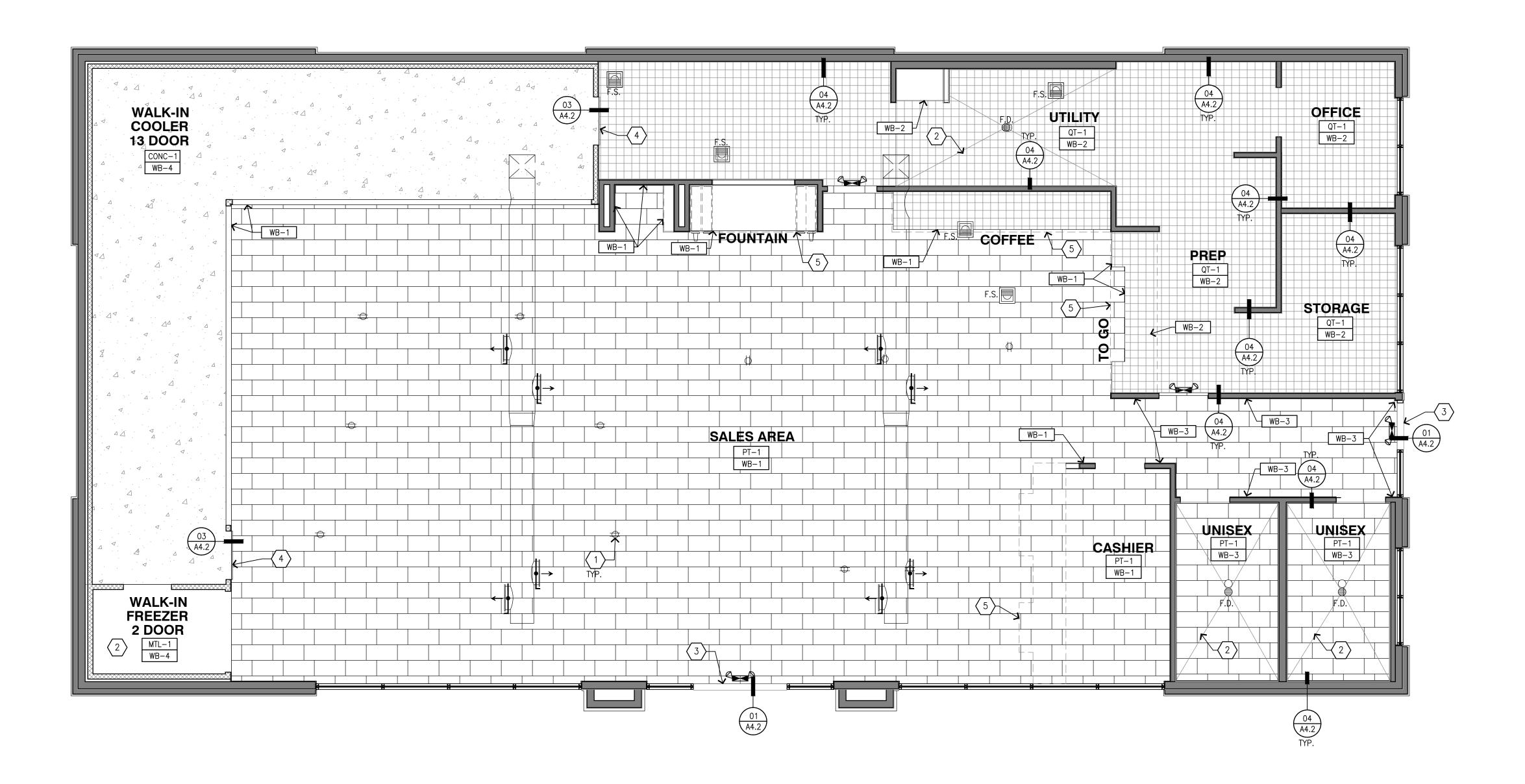
PUYALLUP, WA 98371

FACILITY #7184 ALLIANCE Z&DM: BP REPM: CHECKED BY:

ALLIANCE PM: PROJECT NO: 21730

DRAWING TITLE:

CONSTRUCTION FLOOR PLAN





FLOOR FINISH NOTES

- A. FLOOR FINISH TRANSITIONS BETWEEN ROOMS SHALL OCCUR UNDER CENTER
- OF DOOR WHERE APPLICABLE. B. ALL FLOORS SHALL BE CLEANED AND SEALED PER MANUFACTURERS RECOMMENDATIONS. ALL FLOORS UNDER SALES SHELVING SHALL BE CLEANED PRIOR TO SHELF PLACEMENT. THE CONTRACTOR SHALL ARRANGE A SECOND CLEANING JUST PRIOR TO STORE OPENING.
- C. CONTINUOUS TILE COVE BASE TYPICAL THROUGHOUT FOOD SERVICE AREAS AND RESTROOMS. REFER TO PLAN FOR SPECIFIC LOCATIONS. D. PREFERRED FULL TILE FLOORING AT CENTER OF STOREFRONT ENTRANCE.
- PRIOR TO TILE INSTALLATION, REMOVE DUST, CURING COMPOUNDS, OIL AND OTHER FOREIGN SUBSTANCES FROM SURFACES.
- F. FLOOR J-BOXES AND CLEANOUTS THROUGHOUT THE STORE ARE TO BE FLUSH WITH FINISH FLOOR MATERIAL.

KEYED NOTES

- 1) FLOOR RECEPTACLES, REFER TO ELECTRICAL PLANS.
- $\langle 2 \rangle$ DEPRESSED SLAB, REFER TO FOUNDATION PLAN.
- HEAVY DUTY THRESHOLD,
 REFER TO DOOR SCHEDULE ON SHEET A5.1
- 4 HEAVY DUTY TRANSITION STRIP, MFR: NGP, MODEL: 325HDx37"L, FINISH: ALUMINUM MILL
- 5 EDGE OF COUNTER

FLOOR FINISH

PT-1 PORCELAIN TILE MFR: DALTILE PRODUCT: PORTFOLIO COLOR: PF08 CHOCOLATE SIZE: 12"x24" PATTERN: 33% STAGGERED BRICK-JOINT, VERTICAL ORIENTATION GROUT: 1/8" NON- SANDED #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS TILE & GROUT SEALER: AQUA MIX SEALER'S CHOICE GOLD BY CUSTOM BUILDING PRODUCTS INSTALLATION: PREFERRED START POINT AT CENTER OF ENTRY. ADJUST AS NEEDED SO NO LESS THAN 3" TILE AT WALLS.

CONC-1 CONCRETE SEALER MFR: L.M. SCOFIELD COMPANY PRODUCT: CURESEAL-W (SEMI-GLOSS) COLOR: CLEAR

*TILES TO BE BACK BUTTERED

QT-1 QUARRY TILE MFR: DALTILE PRODUCT: ABRASIVE GRAIN FIELD TILE COLOR: 0Q40 RED BLAZE SIZE: 6"x6" GROUT: 3/8" SANDED #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS CLEANING PRODUCTS: FILA-DETERDEK 5 LITER (INITIAL CLEANING BY GC) *TILES TO BE BACK BUTTERED *SMOOTH TILE UNDER EQUIPMENT

CLEANING PRODUCTS: FILA-DETERDEK 5 LITER (INITIAL CLEANING BY GC)

MTL-1 .05" SMOOTH ALUMINUM W/ NON-SKID STRIP

WALL BASE

WB-1 CERAMIC SANITARY COVE BASE MFR: DALTILE

PRODUCT: PORTFOLIO COLOR: PF08 "CHOCOLATE" SHAPE: P36C9T (CORNER- PC36C9T) SIZE: 6"x12"

GROUT: 1/8" NON-SANDED #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS CLEANING PRODUCTS: FILA-DETERDEK 5 LITER (INITIAL CLEANING BY GC) *TILES TO BE BACK BUTTERED

WB-2 QUARRY COVE BASE

MFR: DALTILE PRODUCT: QUARRY COLOR: 0Q40 SHAPE: Q-3565 SIZE: 5"x6"

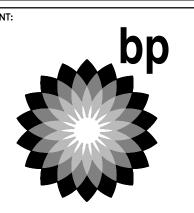
GROUT: 3/8" SANDED #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS CLEANING PRODUCTS: FILA-DETERDEK 5 LITER (INITIAL CLEANING BY GC) *TILES TO BE BACK BUTTERED

WB-3 PORCELAIN COVE BASE

MFR: DALTILE PRODUCT: PORTFOLIO COLOR: PF11 "NOCE" SHAPE: P36C9T (CORNER- PC36C9T) SIZE: 6"x12"

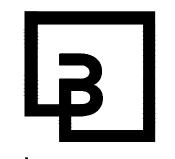
GROUT: 1/8" NON-SANDED #386 OYSTER GRAY BY CUSTOM BUILDING PRODUCTS CLEANING PRODUCTS: FILA-DETERDEK 5 LITER (INITIAL CLEANING BY GC) *TILES TO BE BACK BUTTERED

WB-4 INTEGRAL METAL COVE BASE WITH 3/8" RADIUS





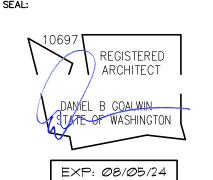
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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

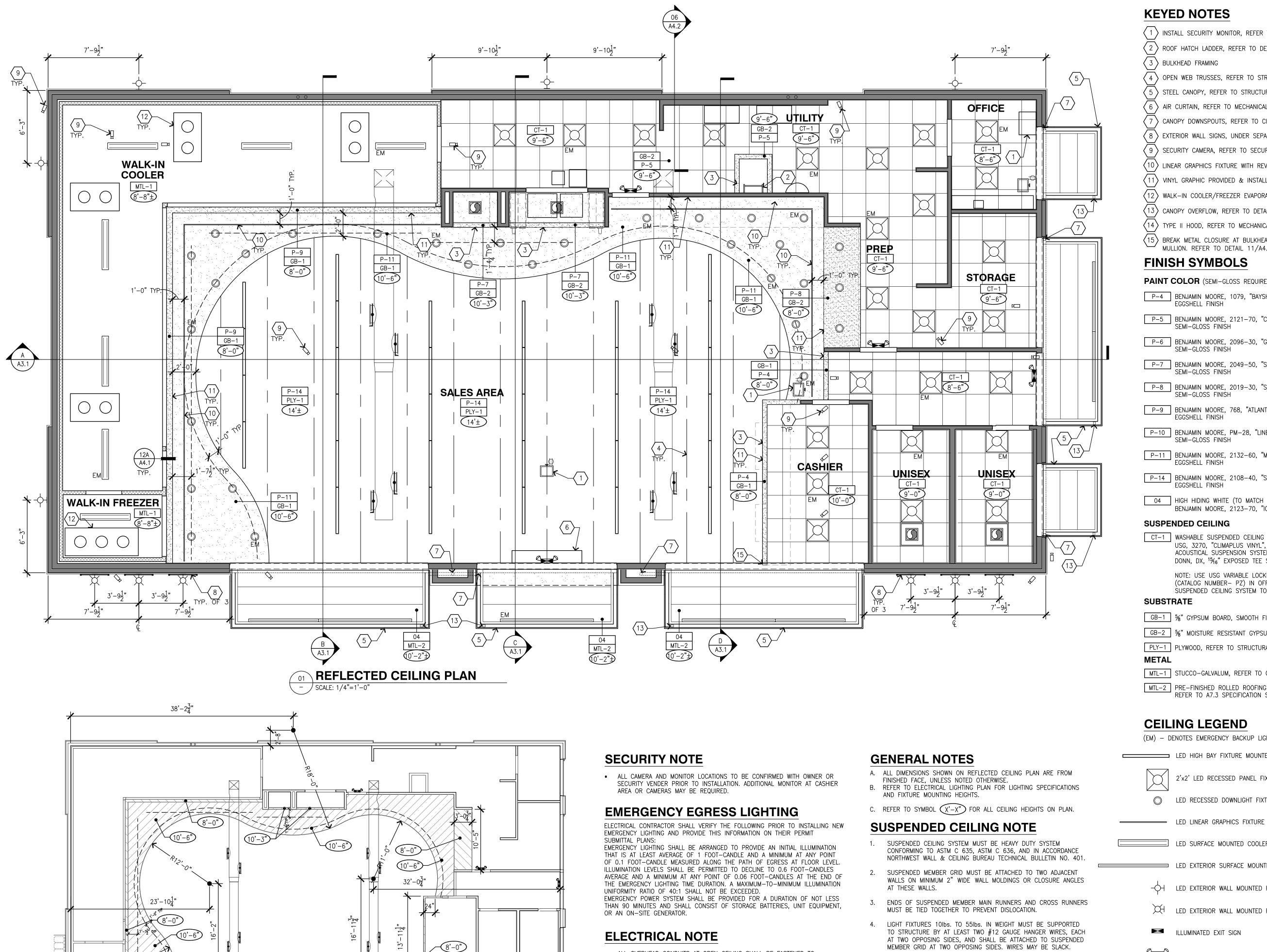
SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

DRAWING TITLE:

FLOOR FINISH PLAN



ALL OVERHEAD CONDUITS AT OPEN CEILING SHALL BE FASTENED TO

UNDERSIDE OF ROOF DECKING.

9'-0<u>3</u>"

SOFFIT LAYOUT

- SCALE: 1/8"=1'-0"

- MEMBER GRID AT TWO OPPOSING SIDES. WIRES MAY BE SLACK.
- HVAC TERMINALS OR REGISTERS 20lbs. TO 56lbs. IN WEIGHT SHALL BE POSITIVELY ATTACHED TO SUSPENDED MEMBER MAIN RUNNERS, OR TO CROSS RUNNERS WITH EQUAL CARRYING CAPACITY, AND MUST ALSO BE SUPPORTED TO STRUCTURE BY AT LEAST TWO #12 GAUGE HANGER WIRES AT TWOOPPOSING SIDES. WIRES MAY BE
- 6. EMT CONDUIT SIZE AND LENGTHS: 1/2" EMT CONDUIT UP TO 5'-10"; 3/4" EMT CONDUIT - UP TO 7'-8"; 1" EMT CONDUIT -UP TO 9'-9" OR METAL STUDS - SIZE AND LENGTH: SINGLE 1%" METAL STUD (20GA) - UP TO 12'-0"

KEYED NOTES

- \langle 1 \rangle INSTALL SECURITY MONITOR, REFER TO SECURITY NOTE
- $\langle 2 \rangle$ ROOF HATCH LADDER, REFER TO DETAIL 07/A4.1
- (3) BULKHEAD FRAMING
- 4 OPEN WEB TRUSSES, REFER TO STRUCTURAL PLANS
- (5) STEEL CANOPY, REFER TO STRUCTURAL PLANS
- (6) AIR CURTAIN, REFER TO MECHANICAL PLANS
- 7 > CANOPY DOWNSPOUTS, REFER TO CIVIL PLANS FOR CONTINUATION
- \langle 8 \rangle EXTERIOR WALL SIGNS, UNDER SEPARATE PERMIT
- (9) SECURITY CAMERA, REFER TO SECURITY NOTE (10) LINEAR GRAPHICS FIXTURE WITH REVEAL, REFER TO DETAIL 07/A4.2
- (11) VINYL GRAPHIC PROVIDED & INSTALLED BY SIGN CONTRACTOR
- (12) WALK-IN COOLER/FREEZER EVAPORATOR, REFER TO SHEET Q1.2
- $\langle 13 \rangle$ CANOPY OVERFLOW, REFER TO DETAIL 09/A4.2
- $\langle 14 \rangle$ TYPE II HOOD, REFER TO MECHANICAL PLANS
- (15) BREAK METAL CLOSURE AT BULKHEAD AND STOREFRONT VERTICAL MULLION. REFER TO DETAIL 11/A4.2

FINISH SYMBOLS

PAINT COLOR (SEMI-GLOSS REQUIRED OVER ALL FOOD SERVICE AREAS AND RESTROOM)

- P-4 BENJAMIN MOORE, 1079, "BAYSHORE BEIGE" EGGSHELL FINISH
- P-5 BENJAMIN MOORE, 2121-70, "CHANTILLY LACE" SEMI-GLOSS FINISH
- P-6 BENJAMIN MOORE, 2096-30, "GRANDFATHER CLOCK BROWN"
- P-7 BENJAMIN MOORE, 2049-50, "SPECTRA BLUE" SEMI-GLOSS FINISH
- P-8 BENJAMIN MOORE, 2019-30, "SUNFLOWER" SEMI-GLOSS FINISH
- P-9 BENJAMIN MOORE, 768, "ATLANTIS BLUE" EGGSHELL FINISH
- P-10 BENJAMIN MOORE, PM-28, "LINEN WHITE" SEMI-GLOSS FINISH
- P-11 BENJAMIN MOORE, 2132-60, "METALLIC SILVER" EGGSHELL FINISH
- P-14 BENJAMIN MOORE, 2108-40, "STARDUST" EGGSHELL FINISH
- 04 HIGH HIDING WHITE (TO MATCH FORECOURT CANOPY PANELS) BENJAMIN MOORE, 2123-70, "ICE MIST" - P28 DTM

SUSPENDED CEILING

CT-1 WASHABLE SUSPENDED CEILING TILE USG, 3270, "CLIMAPLUS VINYL", 24"x48"x1/2" (WHITE) ACOUSTICAL SUSPENSION SYSTEM DONN, DX, 15/16" EXPOSED TEE SYSTEM (WHITE)

> NOTE: USE USG VARIABLE LOCKING HOLD-DOWN CLIP (CATALOG NUMBER- PZ) IN OFFICE AND RESTROOM SUSPENDED CEILING SYSTEM TO SECURE CEILING TILE.

SUBSTRATE

- GB-1 %" GYPSUM BOARD, SMOOTH FINISH
- GB-2 %" MOISTURE RESISTANT GYPSUM BOARD, SMOOTH FINISH
- PLY-1 PLYWOOD, REFER TO STRUCTURAL FOR SPECIFICATION
- MTL-1 STUCCO-GALVALUM, REFER TO Q1.2 SHEET
- MTL-2 PRE-FINISHED ROLLED ROOFING PANELS, REFER TO A7.3 SPECIFICATION SHEET.

CEILING LEGEND

(EM) - DENOTES EMERGENCY BACKUP LIGHTING

LED HIGH BAY FIXTURE MOUNTED 10'-6" A.F.F. 2'x2' LED RECESSED PANEL FIXTURE

LED RECESSED DOWNLIGHT FIXTURE

LED SURFACE MOUNTED COOLER FIXTURE

LED EXTERIOR SURFACE MOUNTED AWNING FIXTURE

— LED EXTERIOR WALL MOUNTED FIXTURE @ 9'-6" A.F.F.

LED EXTERIOR WALL MOUNTED FIXTURE @ 8'-0" A.F.F.

ILLUMINATED EXIT SIGN

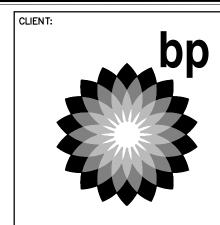
ILLUMINATED EXIT SIGN W/ EMERGENCY LIGHTING

SECURITY MONITOR

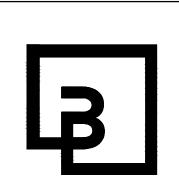
SECURITY CAMERA

OVERHEAD WALL RECEPTACLES

EXHAUST FAN







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DEVELOPMENT INFORMATION:

ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

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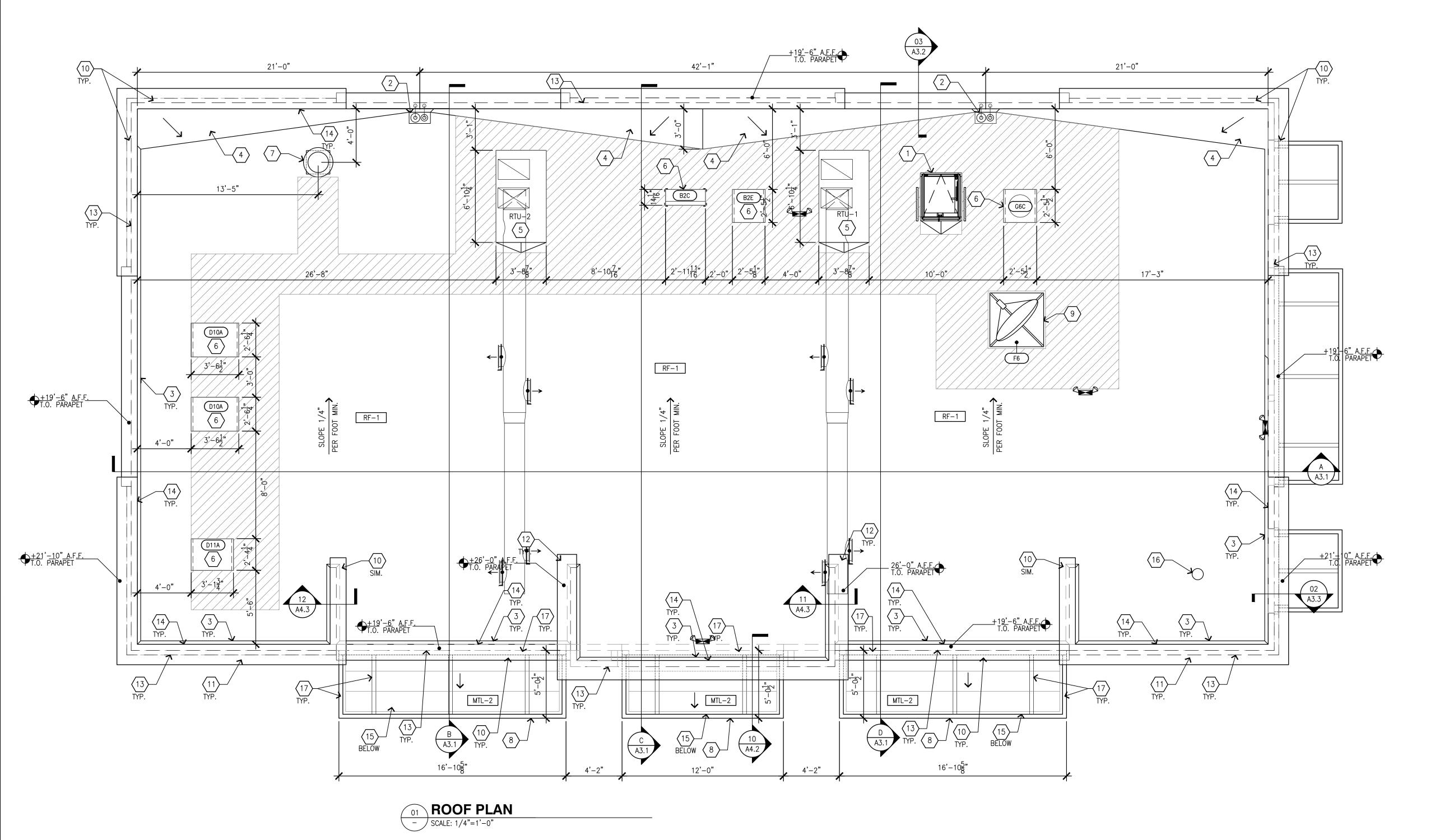
1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

ALLIANCE Z&DM: CHECKED BY: BP REPM: ALLIANCE PM: PROJECT NO: 21730

DRAWING TITLE:

REFLECTED **CEILING PLAN**



GENERAL NOTES

- A. REFER TO SPECIFICATION SHEETS A7.3 & A7.4 FOR ROOF SYSTEM, INCLUDING GUARANTEES, CURBS, FLASHING, AND ETC.
- B. REFER TO ROOFING MANUFACTURERS WRITTEN INSTRUCTIONS AND DETAILS FOR ROOFING SYSTEM INSTALLATION. CONTRACTOR TO PROVIDE COMPLETE ROOFING PACKAGE PER MANUFACTURERS RECOMMENDATIONS.
- C. ROOF ASSEMBLY SHALL COMPLY WITH U.L. I—90 AND FM CLASS "B" RATINGS INCLUDING COPING, FLASHING, PARAPET WALL, AND ROOF
- D. DO NOT STOCKPILE EQUIPMENT OR MATERIALS ON THE ROOF STRUCTURE, UNLESS APPROVED IN WRITING BY THE ARCHITECT, STRUCTURAL ENGINEER, AND THE TRUSS MANUFACTURER.
- E. FOR EQUIPMENT COMPRESSOR & CONDENSER REFER TO EQUIPMENT PLAN ON SHEET Q1.1 AND EQUIPMENT SCHEDULE ON SHEET Q2.1.
 F. GENERAL CONTRACTOR IS TO PROVIDE TEMPORARY CONSTRUCTION PERIMETER GUARDRAIL TO COMPLY WITH CODE OF FEDERAL

REGULATIONS 29 CFT 1926, SUBPART M (OSCA), GUARDRAIL TO BE 42" HEIGHT AND BE ABLE TO WITHSTAND 200 POUNDS AT TOP EDGE.

- H. REFER TO MECHANICAL PLANS FOR VENT PIPE PENETRATION AND CURB DETAILS. ALL ROOF PENETRATIONS SHALL BE THROUGH THE CURBS, UNLESS NOTED OTHERWISE.
- I. PARAPET ADJACENT TO MECHANICAL EQUIPMENT / ROOF ACCESS TO BE MINIMUM 42" HIGH WHEN WITHIN 10 FEET OF ROOF EDGE.

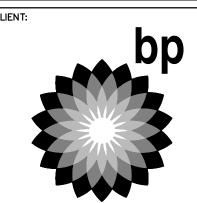
KEYED NOTES

- 1 36"x30" ROOF ACCESS HATCH, BILCO, S-20, WITH BIL-GUARD 2.0 MODEL RL2-S PER DETAIL 07/A4.1
- $\overline{\left\langle 2\right\rangle}$ ROOF DRAIN AND OVERFLOW, REFER TO PLUMBING PLANS
- 3 CANT STRIP PER DETAIL 08/A4.1
- 4 TAPERED INSULATION CRICKET
- _
- 5 ROOFTOP UNIT, REFER TO MECHANICAL PLANS.

 6 CONDENSER, REFER TO EQUIPMENT AND ELECTRICAL PLAN
- 7 EXHAUST FAN, REFER TO MECHANICAL PLANS
- \langle 8 \rangle steel awning below, refer to sheet a1.3 for downspout location
- $\langle 9 \rangle$ SATELLITE ON BALLASTED CURB
- (10) SHOP FORMED PRE-FINISHED METAL COPING, REFER TO DETAIL 01/A4.1
- $\langle 11 \rangle$ SHOP FORMED PRE-FINISHED METAL COPING, REFER TO DETAIL 01A/A4.1
- (12) SHOP FORMED PRE-FINISHED METAL COPING, REFER TO DETAIL 01/A4.3
- $\langle 13 \rangle$ FACE OF EXTERIOR WALL BELOW
- $\langle 14 \rangle$ FACE OF PARAPET WALL
- \$\langle 15 \rangle \text{STEEL AWNING GUTTER, REFER TO SHEET A1.3 FOR DOWNSPOUT LOCATION AND DETAIL 09/A4.2}
- (16) ROOF JACK, REFER TO PLUMBING AND MECHANICAL PLANS
- (17) "L" SHAPE STEEL ANGLE FRAME, REFER TO STRUCTURAL PLANS

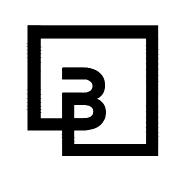
ROOFING

- RF-1 TPO ROOFING MEMBRANE WITH PROTECTION BOARD AND R-40 RIGID INSULATION.
 REFER TO SPECIFICATIONS
- MTL-2 PRE-FINISHED ROLLED ROOFING PANELS, REFER TO A7.3 SPECIFICATION SHEET
- EQUIPMENT MAINTENANCE PATH





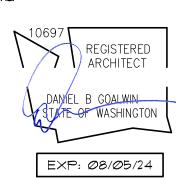
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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm
FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

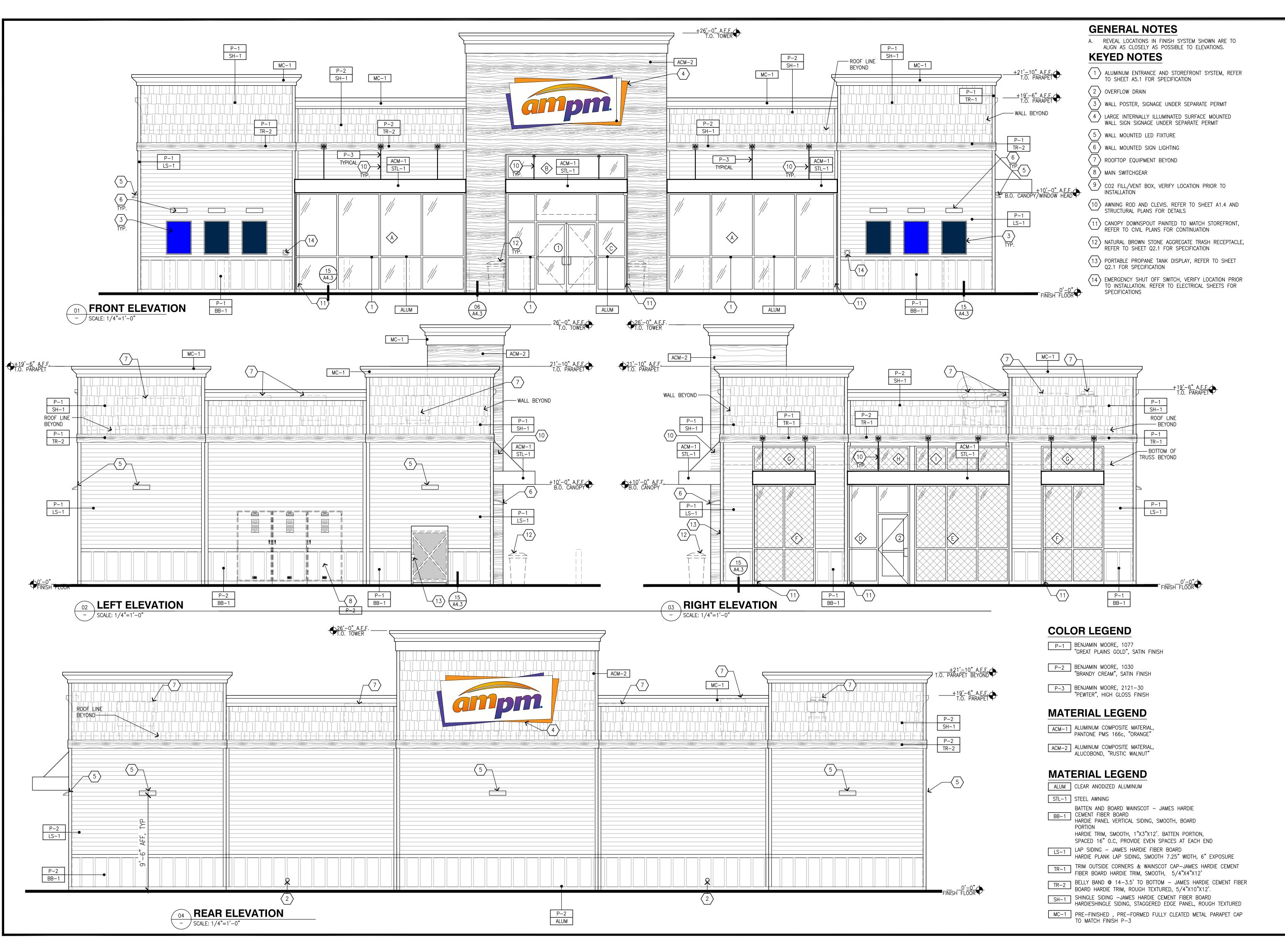
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DRAWN BY:	ALLIANCE PM:
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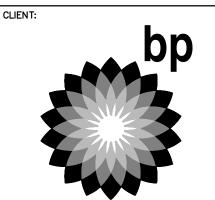
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ROOF PLAN

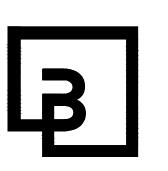
HEET NO:

A1.4









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REGISTERED ARCHITECT DAMEL B GOALWIN STATE OF WASHINGTON EXP: 08/05/24

DEVELOPMENT INFORMATION: **ARCO NTI**

SITE ADDRESS:

3400 am/pm

FUEL CANOPY w/ 8 MPD's

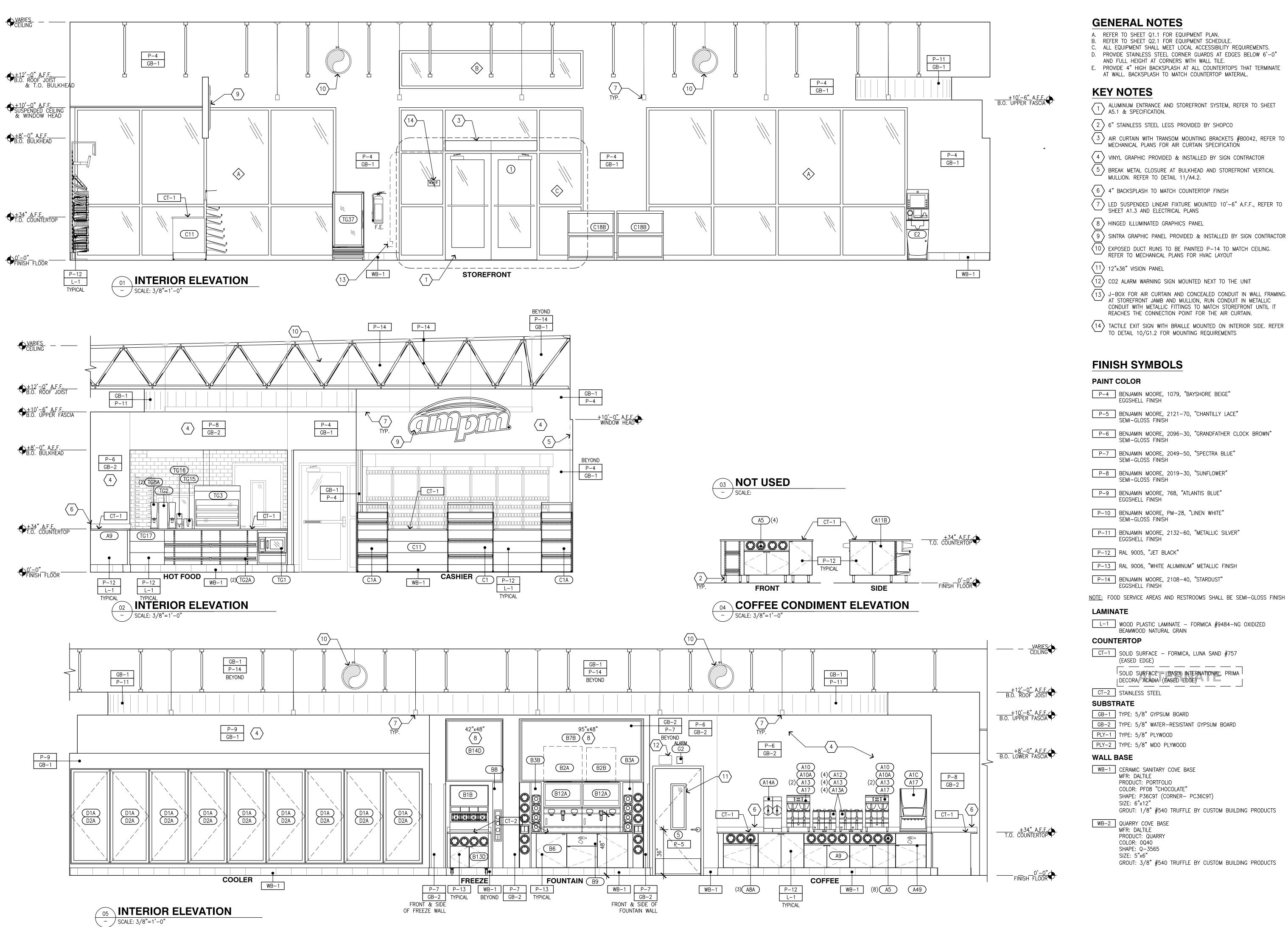
SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD ALLIANCE Z&DM: BP REPM: CHECKED BY: ALLIANCE PM: PROJECT NO: 21730

DRAWING TITLE: **EXTERIOR**

ELEVATIONS

A2.1



GENERAL NOTES

A. REFER TO SHEET Q1.1 FOR EQUIPMENT PLAN.

B. REFER TO SHEET Q2.1 FOR EQUIPMENT SCHEDULE.

ALL EQUIPMENT SHALL MEET LOCAL ACCESSIBILITY REQUIREMENTS. D. PROVIDE STAINLESS STEEL CORNER GUARDS AT EDGES BELOW 6'-0"

AND FULL HEIGHT AT CORNERS WITH WALL TILE. E. PROVIDE 4" HIGH BACKSPLASH AT ALL COUNTERTOPS THAT TERMINATE AT WALL. BACKSPLASH TO MATCH COUNTERTOP MATERIAL.

KEY NOTES

ALUMINUM ENTRANCE AND STOREFRONT SYSTEM, REFER TO SHEET A5.1 & SPECIFICATION.

2 6" STAINLESS STEEL LEGS PROVIDED BY SHOPCO

3 AIR CURTAIN WITH TRANSOM MOUNTING BRACKETS #B0042, REFER TO MECHANICAL PLANS FOR AIR CURTAIN SPECIFICATION

4 VINYL GRAPHIC PROVIDED & INSTALLED BY SIGN CONTRACTOR

 \langle 5 \rangle break metal closure at bulkhead and storefront vertical MULLION. REFER TO DETAIL 11/A4.2.

6 4" BACKSPLASH TO MATCH COUNTERTOP FINISH

 $\begin{array}{c} \hline 7 \end{array}$ LED SUSPENDED LINEAR FIXTURE MOUNTED 10'-6" A.F.F., REFER TO SHEET A1.3 AND ELECTRICAL PLANS

(8) HINGED ILLUMINATED GRAPHICS PANEL

EXPOSED DUCT RUNS TO BE PAINTED P-14 TO MATCH CEILING. REFER TO MECHANICAL PLANS FOR HVAC LAYOUT

 $\langle 11 \rangle$ 12"x36" VISION PANEL

 $\langle 12 \rangle$ co2 alarm warning sign mounted next to the unit

(13) J-BOX FOR AIR CURTAIN AND CONCEALED CONDUIT IN WALL FRAMING. AT STOREFRONT JAMB AND MULLION, RUN CONDUIT IN METALLIC CONDUIT WITH METALLIC FITTINGS TO MATCH STOREFRONT UNTIL IT REACHES THE CONNECTION POINT FOR THE AIR CURTAIN.

 $\overline{\langle 14 \rangle}$ TACTILE EXIT SIGN WITH BRAILLE MOUNTED ON INTERIOR SIDE. REFER TO DETAIL 10/G1.2 FOR MOUNTING REQUIREMENTS

FINISH SYMBOLS

PAINT COLOR

P-4 BENJAMIN MOORE, 1079, "BAYSHORE BEIGE" EGGSHELL FINISH

P-5 BENJAMIN MOORE, 2121-70, "CHANTILLY LACE"

P-6 BENJAMIN MOORE, 2096-30, "GRANDFATHER CLOCK BROWN" SEMI-GLOSS FINISH

P-7 BENJAMIN MOORE, 2049-50, "SPECTRA BLUE" SEMI-GLOSS FINISH

P-8 BENJAMIN MOORE, 2019-30, "SUNFLOWER" SEMI-GLOSS FINISH

P-9 BENJAMIN MOORE, 768, "ATLANTIS BLUE" EGGSHELL FINISH

P-10 BENJAMIN MOORE, PM-28, "LINEN WHITE"

SEMI-GLOSS FINISH P-11 BENJAMIN MOORE, 2132-60, "METALLIC SILVER"

EGGSHELL FINISH

P-12 RAL 9005, "JET BLACK" P-13 RAL 9006, "WHITE ALUMINUM" METALLIC FINISH

P-14 BENJAMIN MOORE, 2108-40, "STARDUST" EGGSHELL FINISH

NOTE: FOOD SERVICE AREAS AND RESTROOMS SHALL BE SEMI-GLOSS FINISH

LAMINATE

L-1 WOOD PLASTIC LAMINATE - FORMICA #9484-NG OXIDIZED

BEAMWOOD NATURAL GRAIN

COUNTERTOP CT-1 SOLID SURFACE - FORMICA, LUNA SAND #757 (EASED EDGE)

| SOLID SURFACE - BASIX INTERNATIONAL, PRIMA | DECORA, ACADIA (EASED EDGE)

CT-2 STAINLESS STEEL

SUBSTRATE GB-1 TYPE: 5/8" GYPSUM BOARD

GB-2 TYPE: 5/8" WATER-RESISTANT GYPSUM BOARD

PLY-1 TYPE: 5/8" PLYWOOD

PLY-2 TYPE: 5/8" MDO PLYWOOD

WALL BASE

WB-1 CERAMIC SANITARY COVE BASE MFR: DALTILE

PRODUCT: PORTFOLIO COLOR: PF08 "CHOCOLATE"

SHAPE: P36C9T (CORNER- PC36C9T) SIZE: 6"x12"

GROUT: 1/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS

WB-2 QUARRY COVE BASE MFR: DALTILE

PRODUCT: QUARRY

COLOR: 0Q40 SHAPE: Q-3565

GROUT: 3/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS





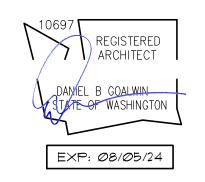
BP WEST COAST PRODUCTS, LLC



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DEVELOPMENT INFORMATION: **ARCO NTI**

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

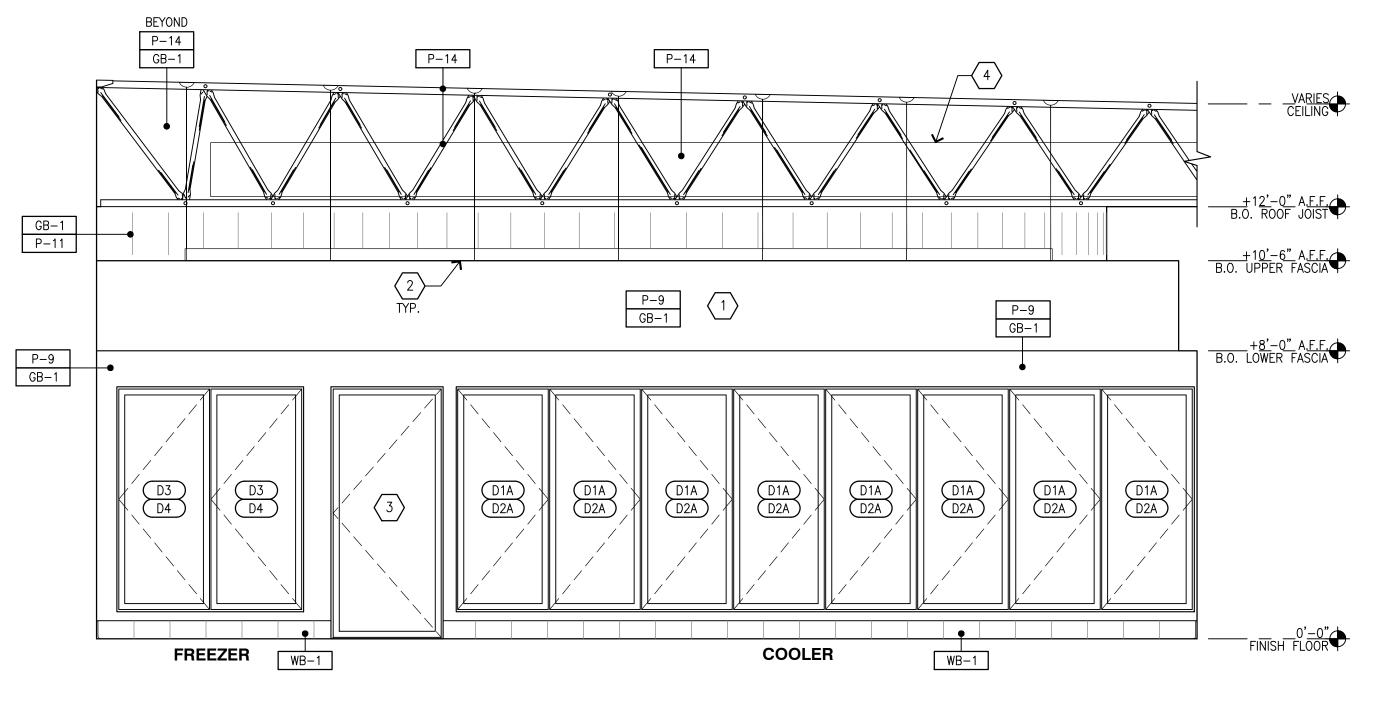
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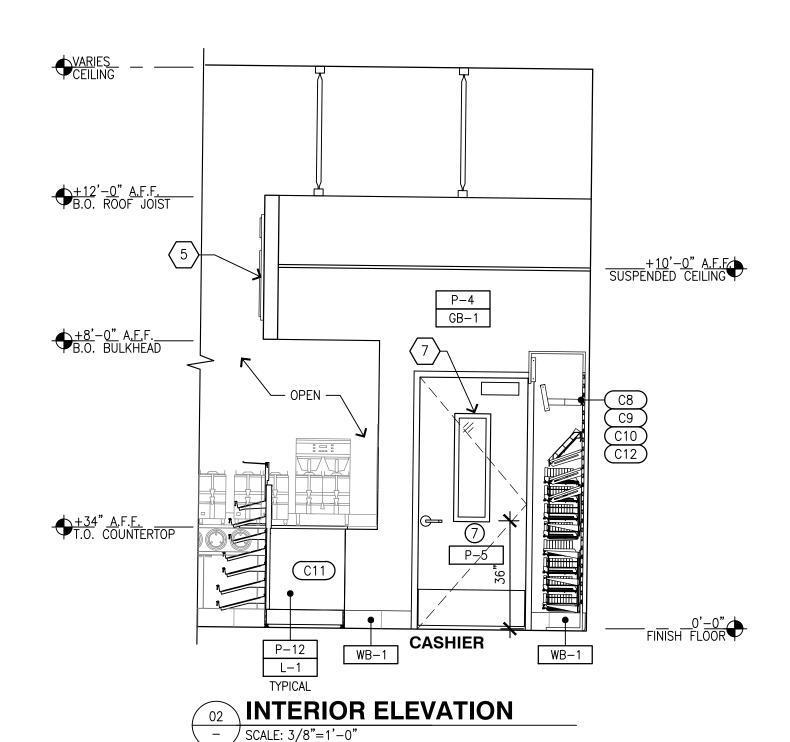
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DESIGNED BY:	ALLIANCE Z&DM:

DRAWING TITLE: **INTERIOR**

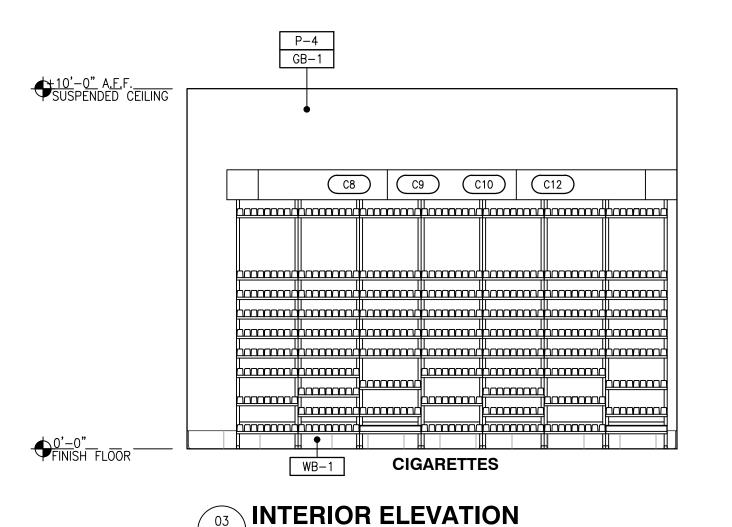
ELEVATIONS

A2.3

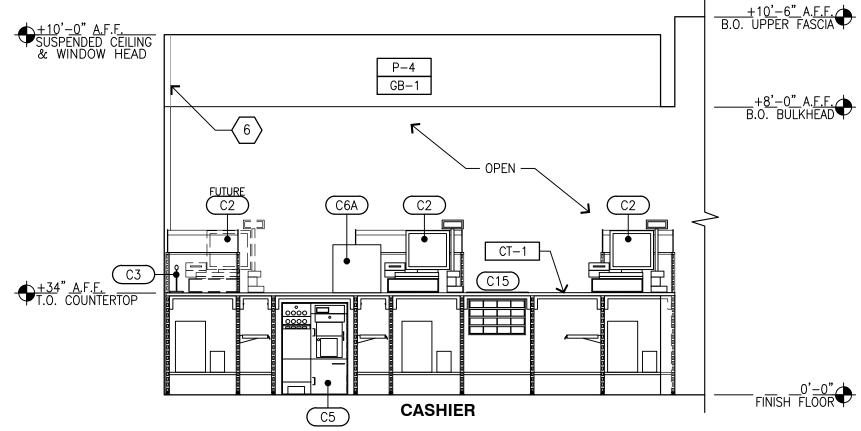




INTERIOR ELEVATION - / SCALE: 3/8"=1'-0"



- ∫ SCALE: 3/8"=1'-0"



1NTERIOR ELEVATION - SCALE: 3/8"=1'-0"

GENERAL NOTES

A. REFER TO SHEET Q1.1 FOR EQUIPMENT PLAN.

3. REFER TO SHEET Q2.1 FOR EQUIPMENT SCHEDULE. ALL EQUIPMENT SHALL MEET LOCAL ACCESSIBILITY REQUIREMENTS.

D. PROVIDE STAINLESS STEEL CORNER GUARDS AT EDGES BELOW 6'-0" AND FULL HEIGHT AT CORNERS WITH WALL TILE.

E. PROVIDE 4" HIGH BACKSPLASH AT ALL COUNTERTOPS THAT TERMINATE AT WALL. BACKSPLASH TO MATCH COUNTERTOP MATERIAL.

KEY NOTES

(1) VINYL GRAPHIC PROVIDED & INSTALLED BY SIGN CONTRACTOR

2 LED SUSPENDED LINEAR FIXTURE MOUNTED 10'-6" A.F.F., REFER TO SHEET A1.3 AND ELECTRICAL PLANS

3 WALK-IN COOLER GLASS ACCESS DOOR, REFER TO SHEET Q1.2

4 EXPOSED DUCT RUNS TO BE PAINTED P-14 TO MATCH CEILING. REFER TO MECHANICAL PLANS FOR HVAC LAYOUT

5 SINTRA GRAPHIC PANEL PROVIDED & INSTALLED BY SIGN CONTRACTOR

6 BREAK METAL CLOSURE AT BULKHEAD AND STOREFRONT VERTICAL MULLION. REFER TO DETAIL X/X.

 $\sqrt{7}$ 12"x36" VISION PANEL

FINISH SYMBOLS

PAINT COLOR

P-4 BENJAMIN MOORE, 1079, "BAYSHORE BEIGE" EGGSHELL FINISH

P-5 BENJAMIN MOORE, 2121-70, "CHANTILLY LACE" SEMI-GLOSS FINISH

P-6 BENJAMIN MOORE, 2096-30, "GRANDFATHER CLOCK BROWN" SEMI-GLOSS FINISH

P-7 BENJAMIN MOORE, 2049-50, "SPECTRA BLUE" SEMI-GLOSS FINISH

P-8 BENJAMIN MOORE, 2019-30, "SUNFLOWER" SEMI-GLOSS FINISH

P-9 BENJAMIN MOORE, 768, "ATLANTIS BLUE" EGGSHELL FINISH

P-10 BENJAMIN MOORE, PM-28, "LINEN WHITE" SEMI-GLOSS FINISH

P-11 BENJAMIN MOORE, 2132-60, "METALLIC SILVER" EGGSHELL FINISH

P-12 RAL 9005, "JET BLACK"

P-13 RAL 9006, "WHITE ALUMINUM" METALLIC FINISH

P-14 BENJAMIN MOORE, 2108-40, "STARDUST" EGGSHELL FINISH

NOTE: FOOD SERVICE AREAS AND RESTROOMS SHALL BE SEMI-GLOSS FINISH

LAMINATE

L-1 WOOD PLASTIC LAMINATE - FORMICA #9484-NG OXIDIZED BEAMWOOD NATURAL GRAIN

COUNTERTOP

CT-1 SOLID SURFACE - FORMICA, LUNA SAND #757 (EASED EDGE)

SOLID SURFACE — BASIX INTERNATIONAL, PRIMA DECORA, ACADIA (EASED EDGE)

CT-2 STAINLESS STEEL

SUBSTRATE

GB-1 TYPE: 5/8" GYPSUM BOARD

GB-2 TYPE: 5/8" WATER-RESISTANT GYPSUM BOARD

PLY-1 TYPE: 5/8" PLYWOOD

PLY-2 TYPE: 5/8" MDO PLYWOOD

WALL BASE

WB-1 CERAMIC SANITARY COVE BASE MFR: DALTILE PRODUCT: PORTFOLIO

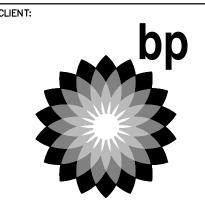
> COLOR: PF08 "CHOCOLATE" SHAPE: P36C9T (CORNER- PC36C9T)

SIZE: 6"x12" GROUT: 1/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS

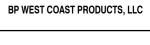
WB-2 QUARRY COVE BASE MFR: DALTILE PRODUCT: QUARRY COLOR: 0Q40 SHAPE: Q-3565

SIZE: 5"x6"

GROUT: 3/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS





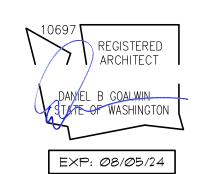




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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm **FUEL CANOPY w/ 6 MPD's**

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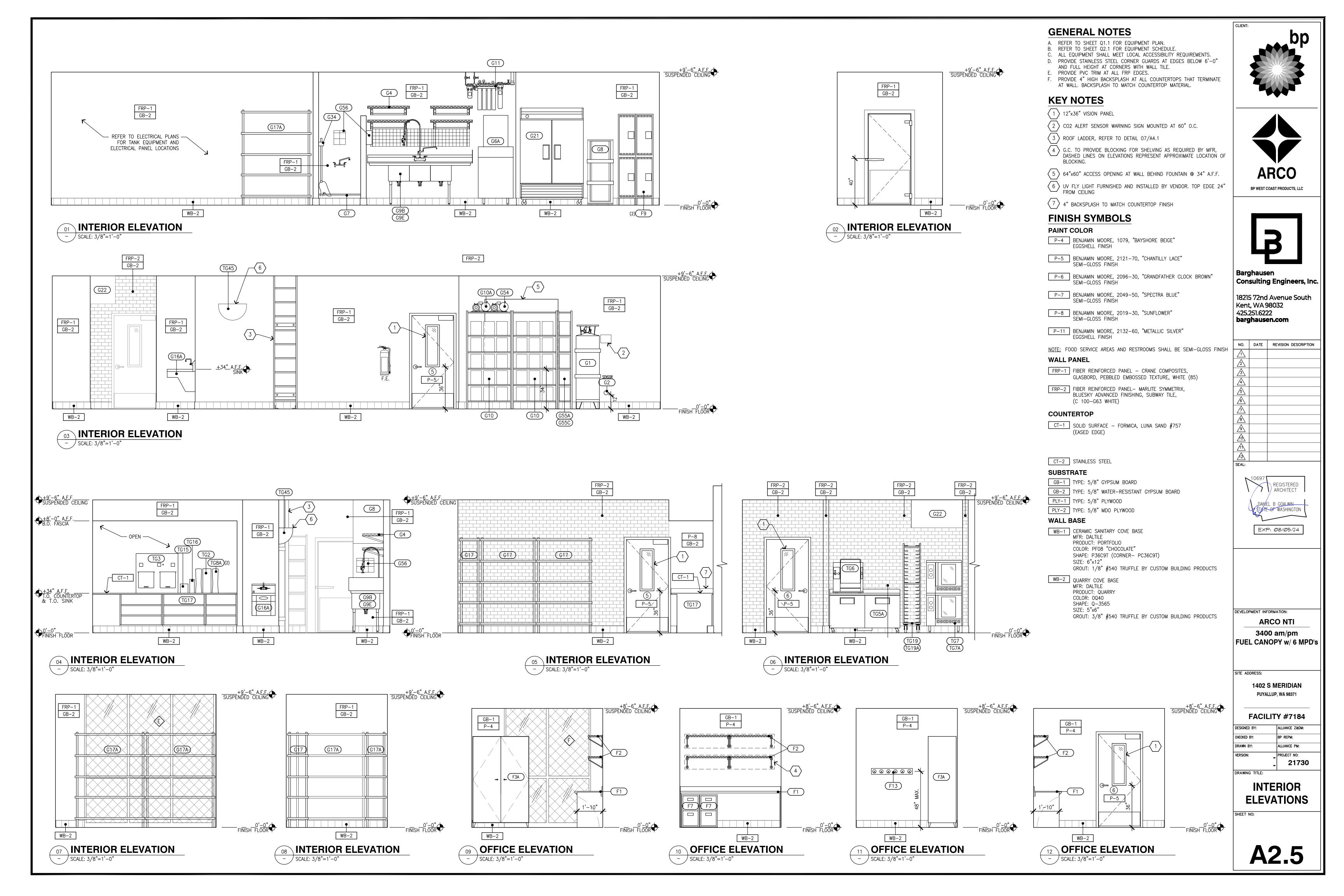
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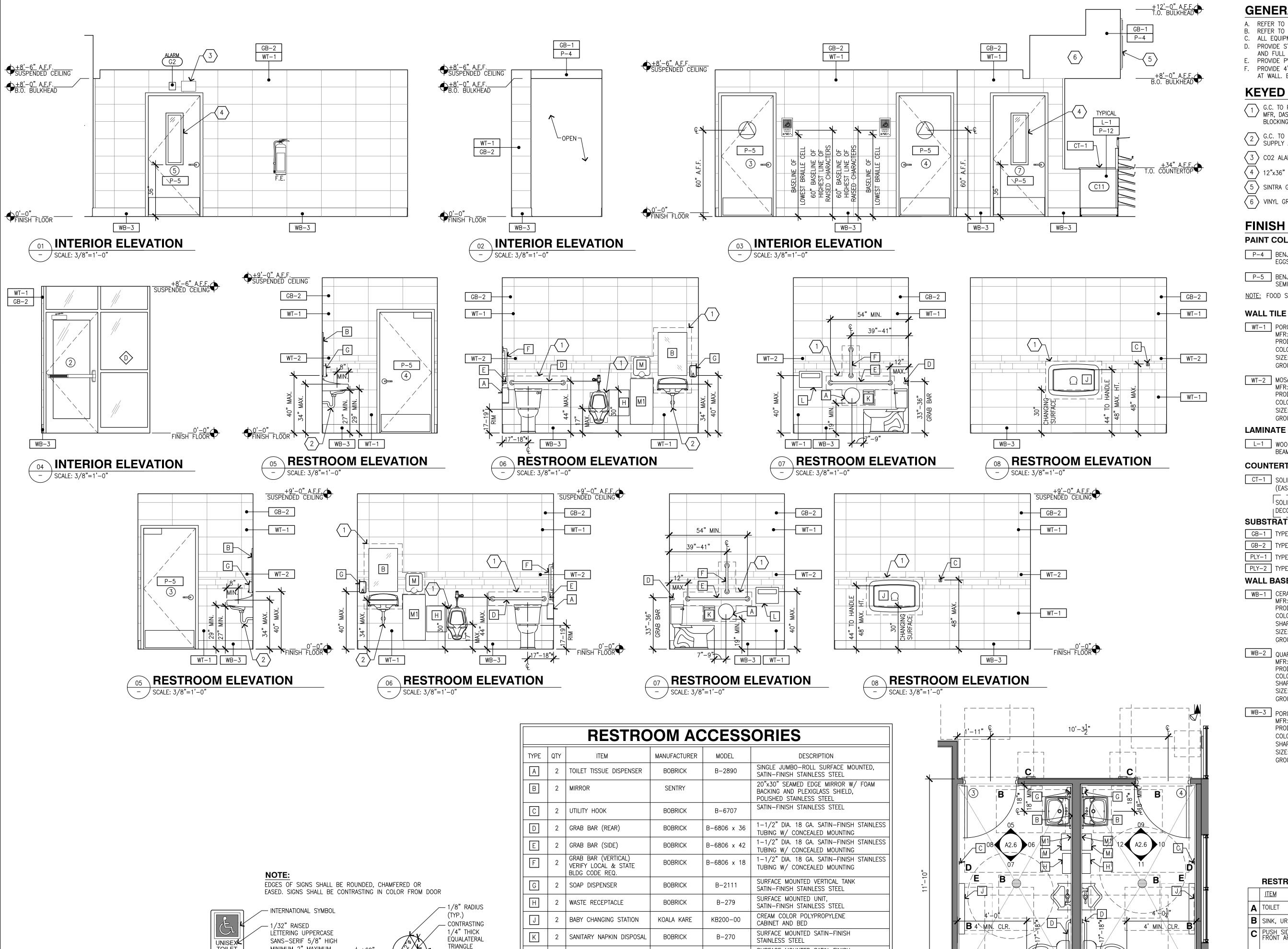
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CHECKED BY:	BP REPM:
DESIGNED BY:	ALLIANCE Z&DM:

DRAWING TITLE:

INTERIOR ELEVATIONS





SEAT COVER DISPENSER

HAND DRYER WALL GUARD

HAND DRYER

CONTRASTING

DIA. CIRCLE

DOOR SYMBOL

1/4" THICK 12'

SURFACE MOUNTED SATIN-FINISH

XLERATOR, BRUSHED STAINLESS STEEL;

6'-8"

- $\int SCALE: 3/8"=1'-0"$

ENLARGED RESTROOM PLAN

* DENOTES THE FACE OF FINISH

XLERATOR, SURFACE MOUNTED

BRUSHED STAINLESS STEEL

STAINLESS STEEL

31.75" x 15.75"

B-4221

XL-SB

BOBRICK

NEWTON

EXCEL

MINIMUM 2" MAXIMUM

- GRADE 2 BRAILLE

ROOM IDENTIFICATION SIGN

TOILET

GENERAL NOTES

A. REFER TO SHEET Q1.1 FOR EQUIPMENT PLAN.

B. REFER TO SHEET Q2.1 FOR EQUIPMENT SCHEDULE.

ALL EQUIPMENT SHALL MEET LOCAL ACCESSIBILITY REQUIREMENTS. D. PROVIDE STAINLESS STEEL CORNER GUARDS AT EDGES BELOW 6'-0"

AND FULL HEIGHT AT CORNERS WITH WALL TILE.

E. PROVIDE PVC TRIM AT ALL FRP EDGES.

F. PROVIDE 4" HIGH BACKSPLASH AT ALL COUNTERTOPS THAT TERMINATE AT WALL. BACKSPLASH TO MATCH COUNTERTOP MATERIAL.

KEYED NOTES

G.C. TO PROVIDE BLOCKING FOR RESTROOM ACCESSORIES AS REQUIRED BY MFR, DASHED LINES ON ELEVATIONS REPRESENT APPROXIMATE LOCATION OF

2 G.C. TO INSTALL TRUEBRO LAVGUARD— UNDERSINK PIPE COVERS FOR SUPPLY AND DRAIN VALVE.

(3) CO2 ALARM WARNING SIGN MOUNTED NEXT TO THE UNIT.

 $\langle 4 \rangle$ 12"x36" VISION PANEL.

 \langle 5 \rangle SINTRA GRAPHIC PANEL PROVIDED & INSTALLED BY SIGN CONTRACTOR

(6) VINYL GRAPHIC PROVIDED & INSTALLED BY SIGN CONTRACTOR

FINISH SYMBOLS

PAINT COLOR

P-4 BENJAMIN MOORE, 1079, "BAYSHORE BEIGE" EGGSHELL FINISH

P-5 BENJAMIN MOORE, 2121-70, "CHANTILLY LACE" SEMI-GLOSS FINISH

NOTE: FOOD SERVICE AREAS AND RESTROOMS SHALL BE SEMI-GLOSS FINISH

WALL TILE

WT-1 PORCELAIN TILE MFR: DALTILE PRODUCT: PORTFOLIO

COLOR: PF11 "NOCE" SIZE: 12"x24"

GROUT: 1/8" #386 OYSTER GRAY BY CUSTOM BUILDING PRODUCTS

WT-2 MOSAIC TILE MFR: DALTILE

PRODUCT: PORTFOLIO COLOR: PF13 "SEASON BLEND"- RANDOM LINEAR MOSAIC SIZE: 12"x27" SHEET (MECH MOUNTED)

GROUT: 1/8" #386 OYSTER GRAY BY CUSTOM BUILDING PRODUCTS

L-1 WOOD PLASTIC LAMINATE - FORMICA #9484-NG OXIDIZED BEAMWOOD NATURAL GRAIN

| DECORA, ACADIA (EASED EDGE)

COUNTERTOP

CT-1 SOLID SURFACE - FORMICA, LUNA SAND #757 (EASED EDGE) SOLID SURFACE - BASIX INTERNATIONAL, PRIMA

SUBSTRATE

GB-1 TYPE: 5/8" GYPSUM BOARD

GB-2 TYPE: 5/8" WATER-RESISTANT GYPSUM BOARD

PLY-1 TYPE: 5/8" PLYWOOD PLY-2 TYPE: 5/8" MDO PLYWOOD

WALL BASE

WB-1 CERAMIC SANITARY COVE BASE

MFR: DALTILE PRODUCT: PORTFOLIO COLOR: PF08 "CHOCOLATE"

SHAPE: P36C9T (CORNER- PC36C9T) SIZE: 6"x12"

GROUT: 1/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS

WB-2 | QUARRY COVE BASE

MFR: DALTILE PRODUCT: QUARRY COLOR: 0Q40 SHAPE: Q-3565

SIZE: 5"x6" GROUT: 3/8" #540 TRUFFLE BY CUSTOM BUILDING PRODUCTS

WB-3 PORCELAIN COVE BASE

MFR: DALTILE PRODUCT: PORTFOLIO

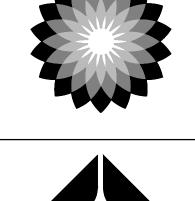
> COLOR: PF11 "NOCE" SHAPE: P36C9T (CORNER- PC36C9T)

SIZE: 6"x24" GROUT: 1/8" #386 OYSTER GRAY BY CUSTOM BUILDING PRODUCTS

RESTROOM CLEAR FLOOR SPACE

	ITEM	SPACE REQUIRED, MIN CLR
Α	TOILET	60" X 59"
В	SINK, URINAL, BABY CHANGER	30" X 48"
С	PUSH SIDE OF 3'-0" DOOR FRONT APPROACH	48" X 48" 12" MIN CLR ON PUSH SIDE
D	PULL SIDE OF 3'-0" DOOR LATCH SIDE APPROACH	60" X 54" 18" MIN CLR ON PULL SIDE
E	TURNING SPACE	60" DIA.

THIS DRAWING IS PROTOTYPICAL AND MUST BE REVIEWED AND ADAPTED FOR LOCAL & STATE BUILDING CODES, TYP.





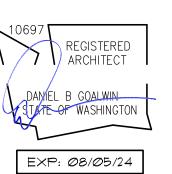




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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

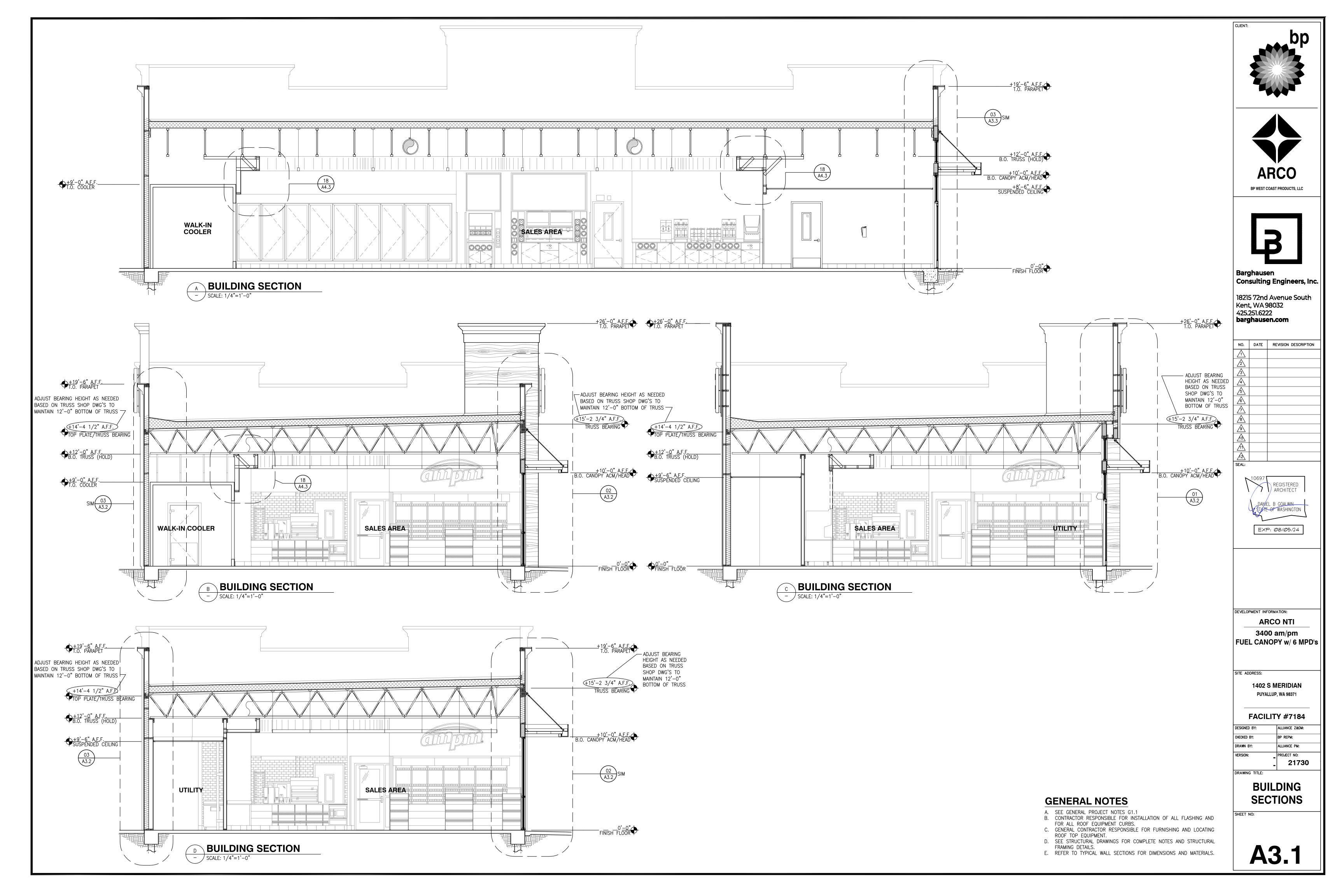
FACILITY #7184

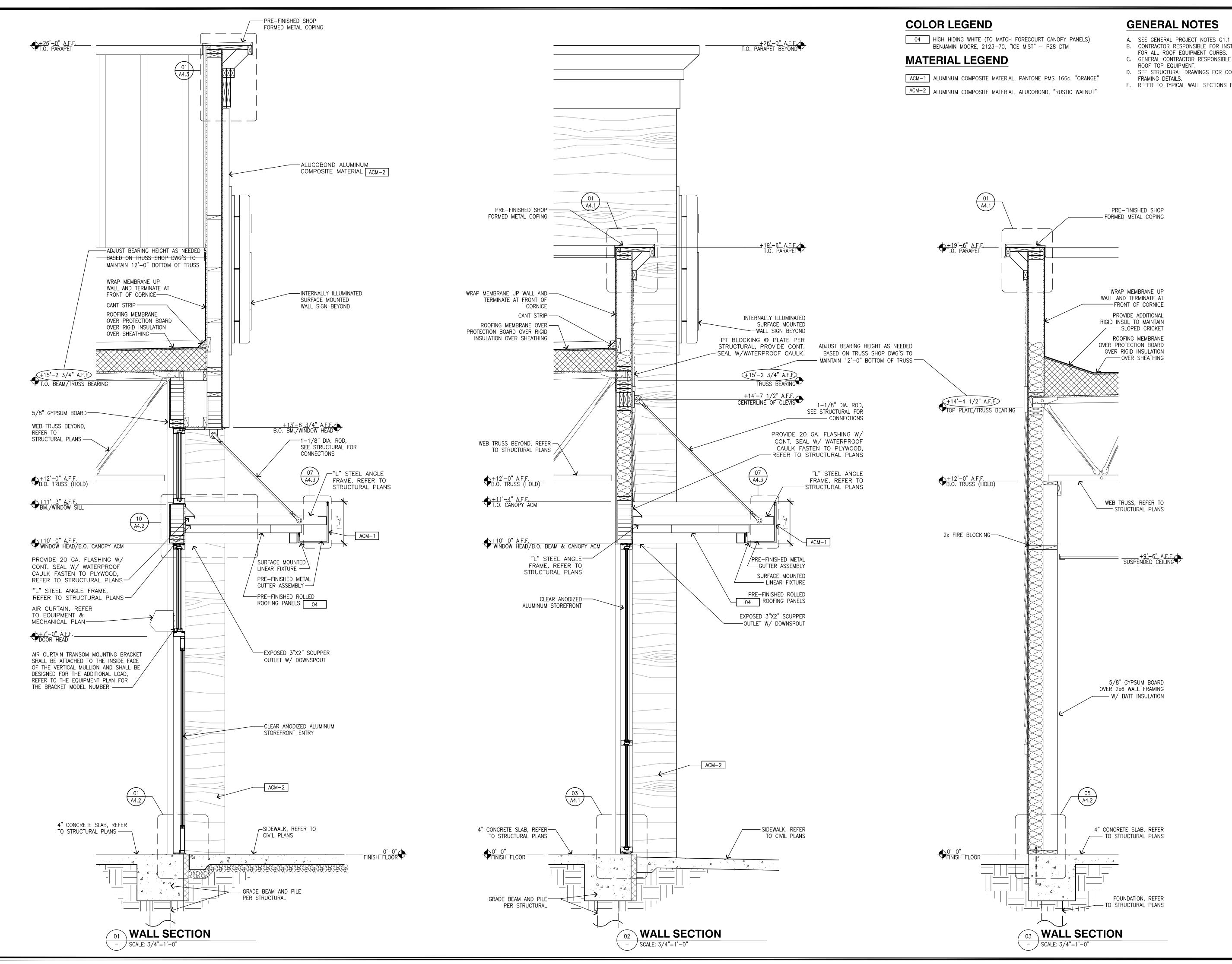
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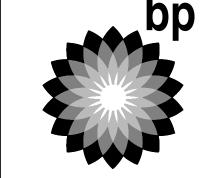
ELEVATIONS

A2.6





- B. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL FLASHING AND
- C. GENERAL CONTRACTOR RESPONSIBLE FOR FURNISHING AND LOCATING
- D. SEE STRUCTURAL DRAWINGS FOR COMPLETE NOTES AND STRUCTURAL
- E. REFER TO TYPICAL WALL SECTIONS FOR DIMENSIONS AND MATERIALS.



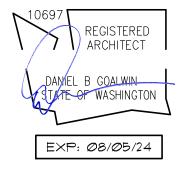




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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

ALLIANCE Z&DM: BP REPM: CHECKED BY: ALLIANCE PM:

PROJECT NO:

21730 DRAWING TITLE: **WALL**

SECTIONS

A3.2

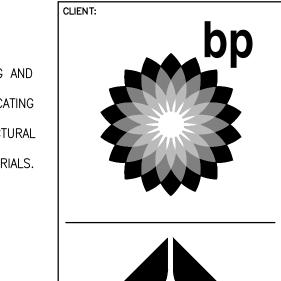
GENERAL NOTES

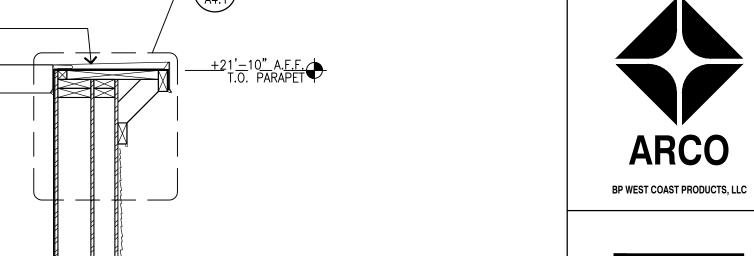
- A. SEE GENERAL PROJECT NOTES G1.1
 B. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL FLASHING AND
- FOR ALL ROOF EQUIPMENT CURBS.

 C. GENERAL CONTRACTOR RESPONSIBLE FOR FURNISHING AND LOCATING ROOF TOP FOLIPMENT
- ROOF TOP EQUIPMENT.

 D. SEE STRUCTURAL DRAWINGS FOR COMPLETE NOTES AND STRUCTURAL
- FRAMING DETAILS.

 E. REFER TO TYPICAL WALL SECTIONS FOR DIMENSIONS AND MATERIALS.



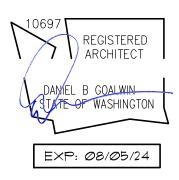




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

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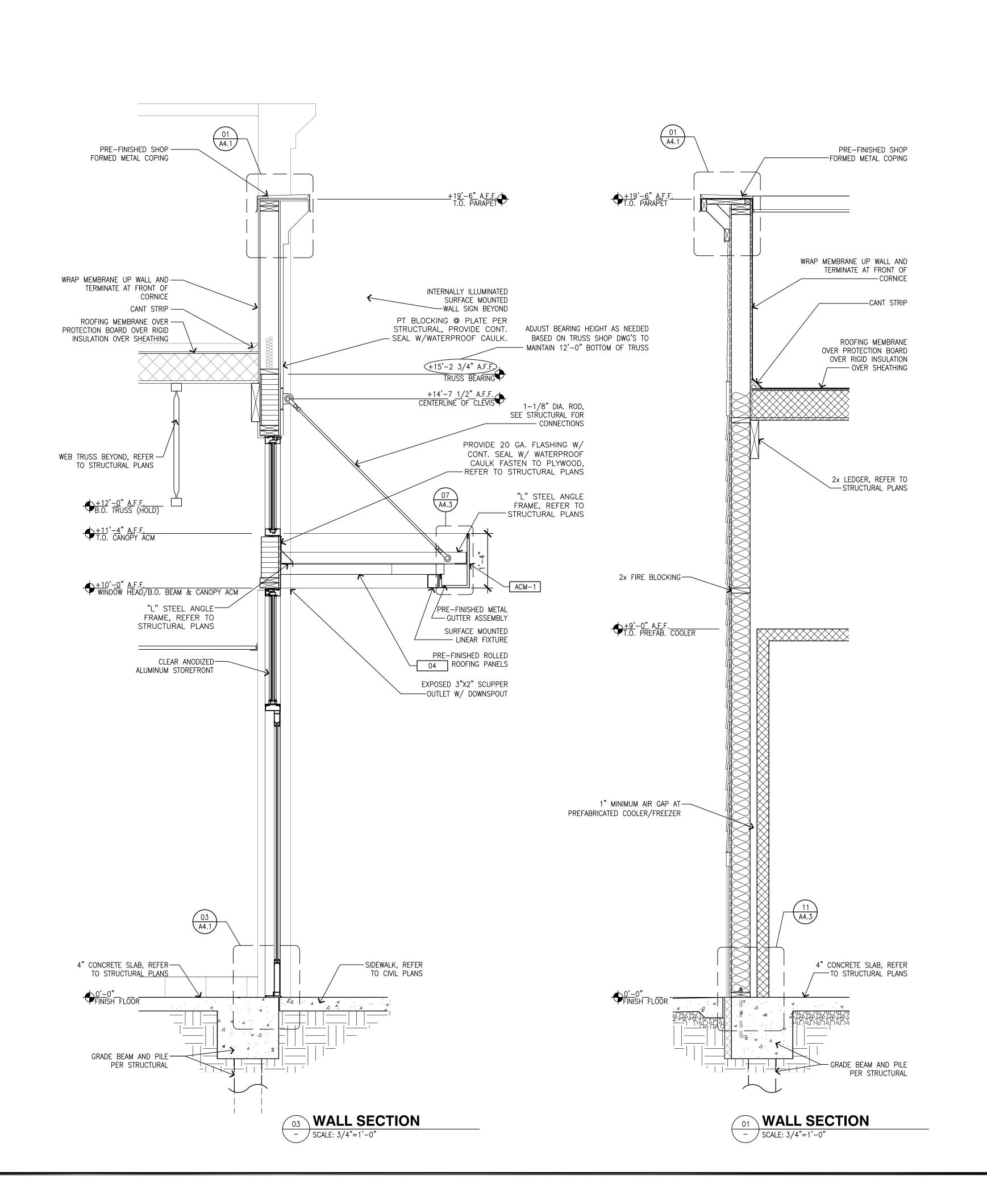
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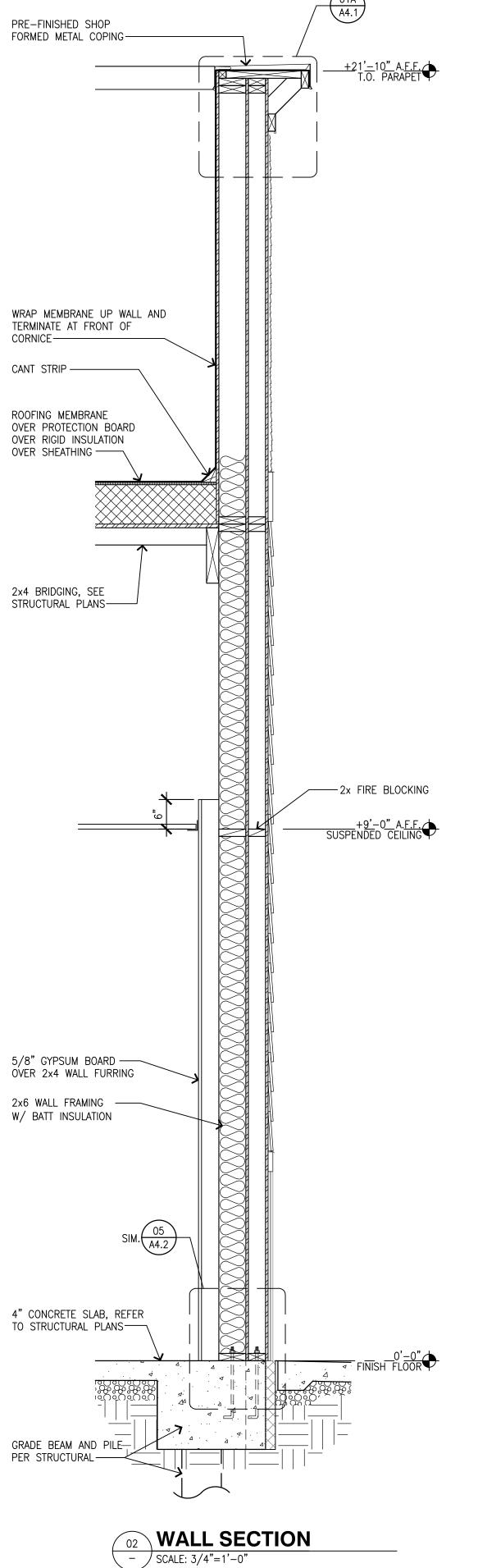
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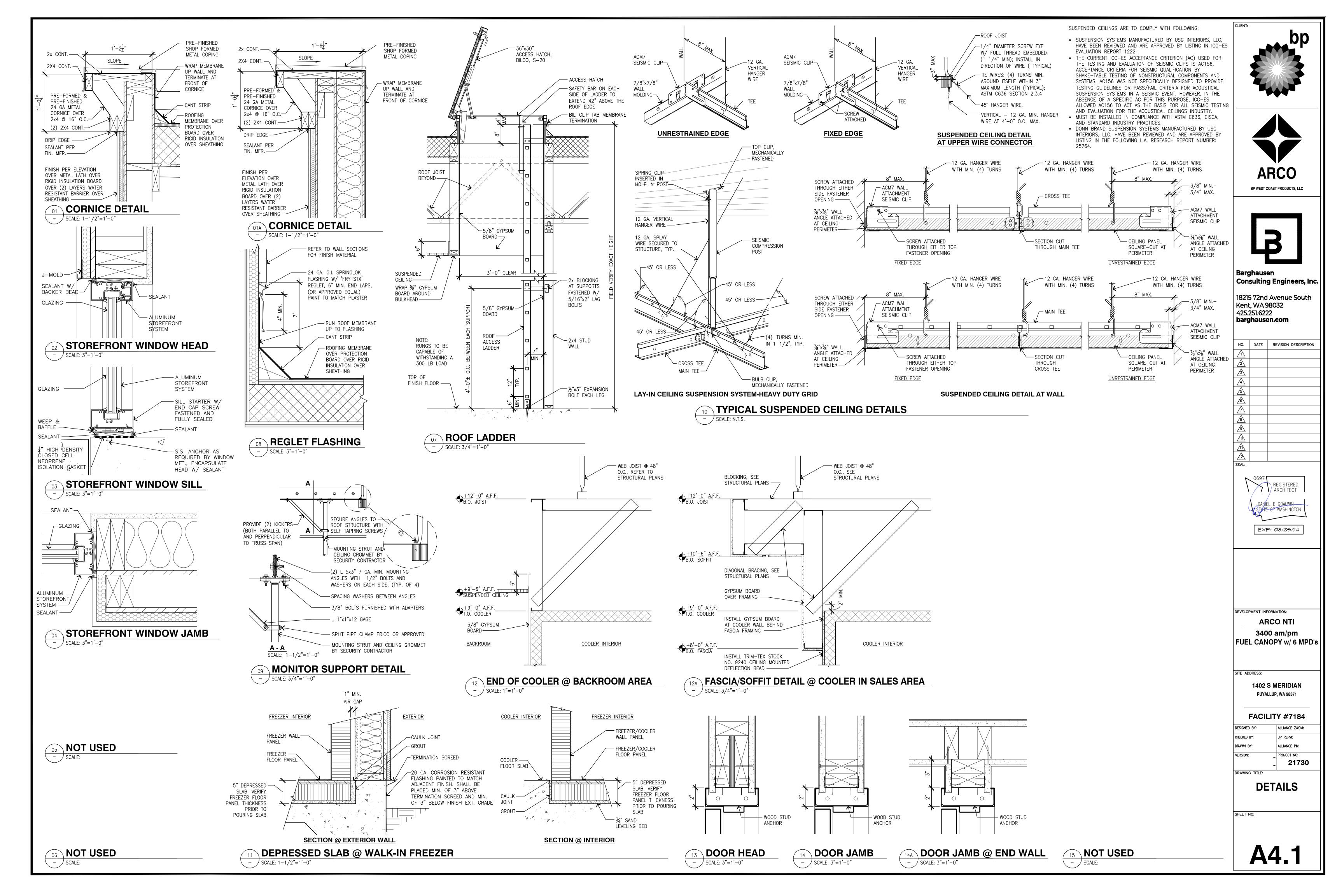
WALL SECTIONS

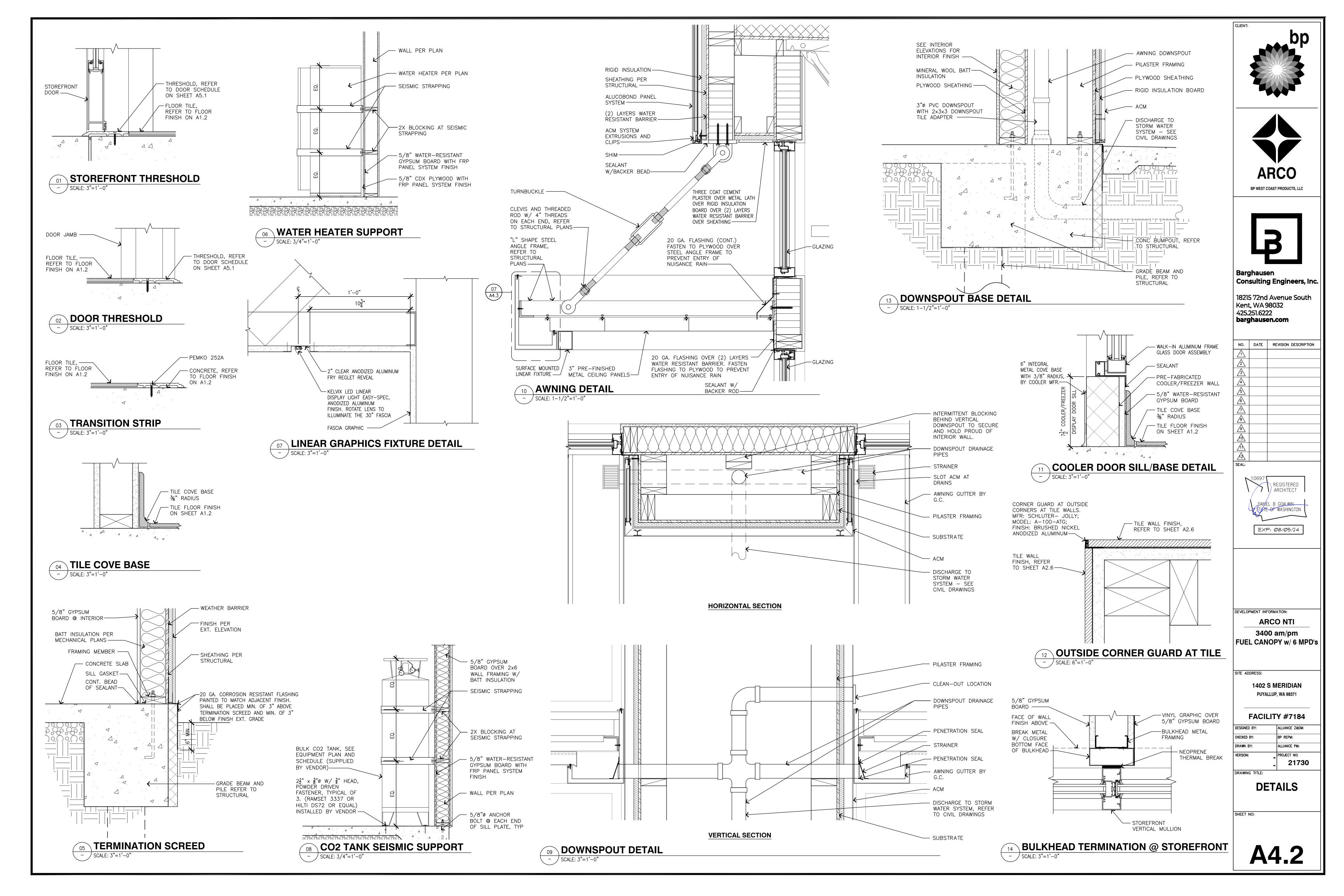
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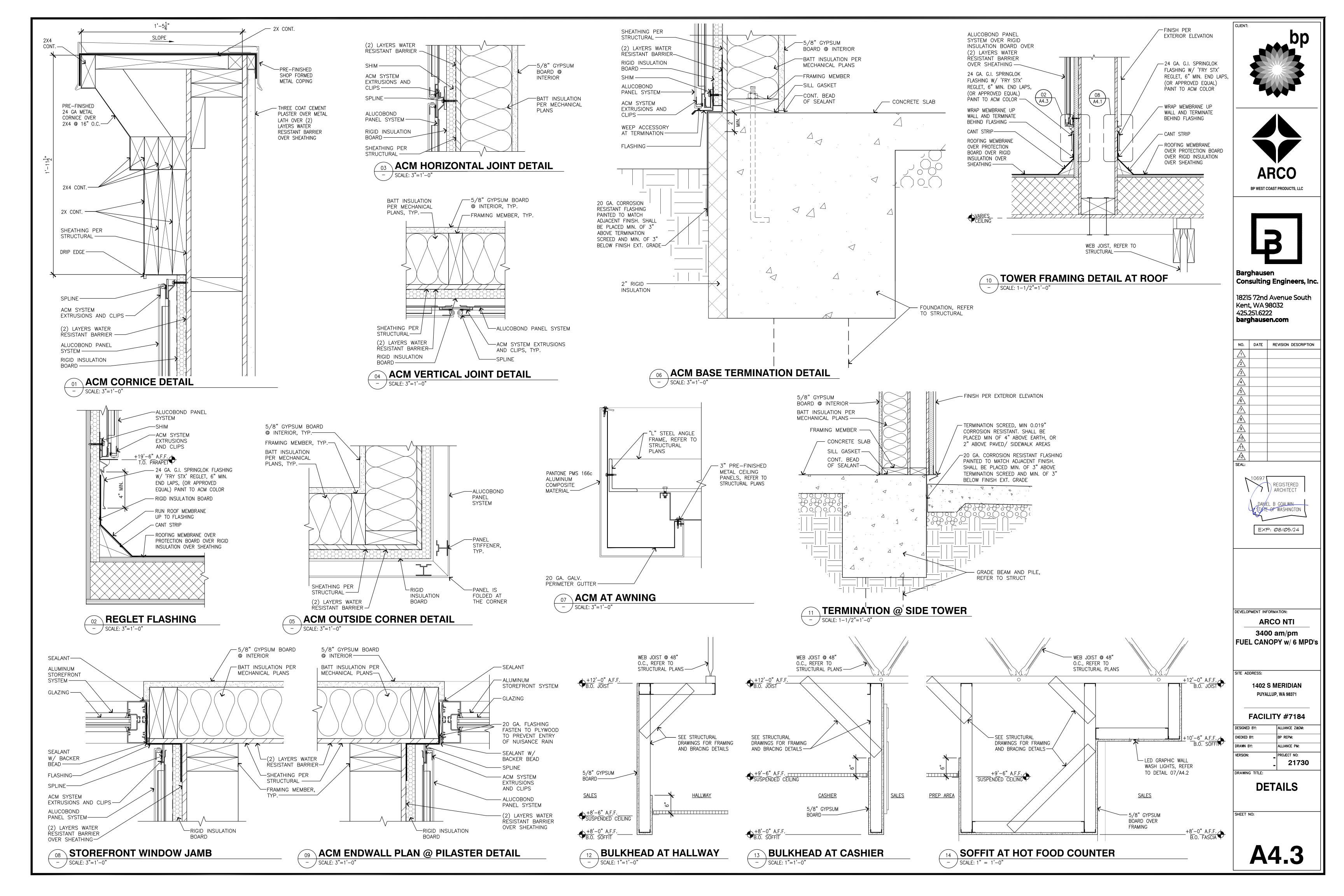
A3.3

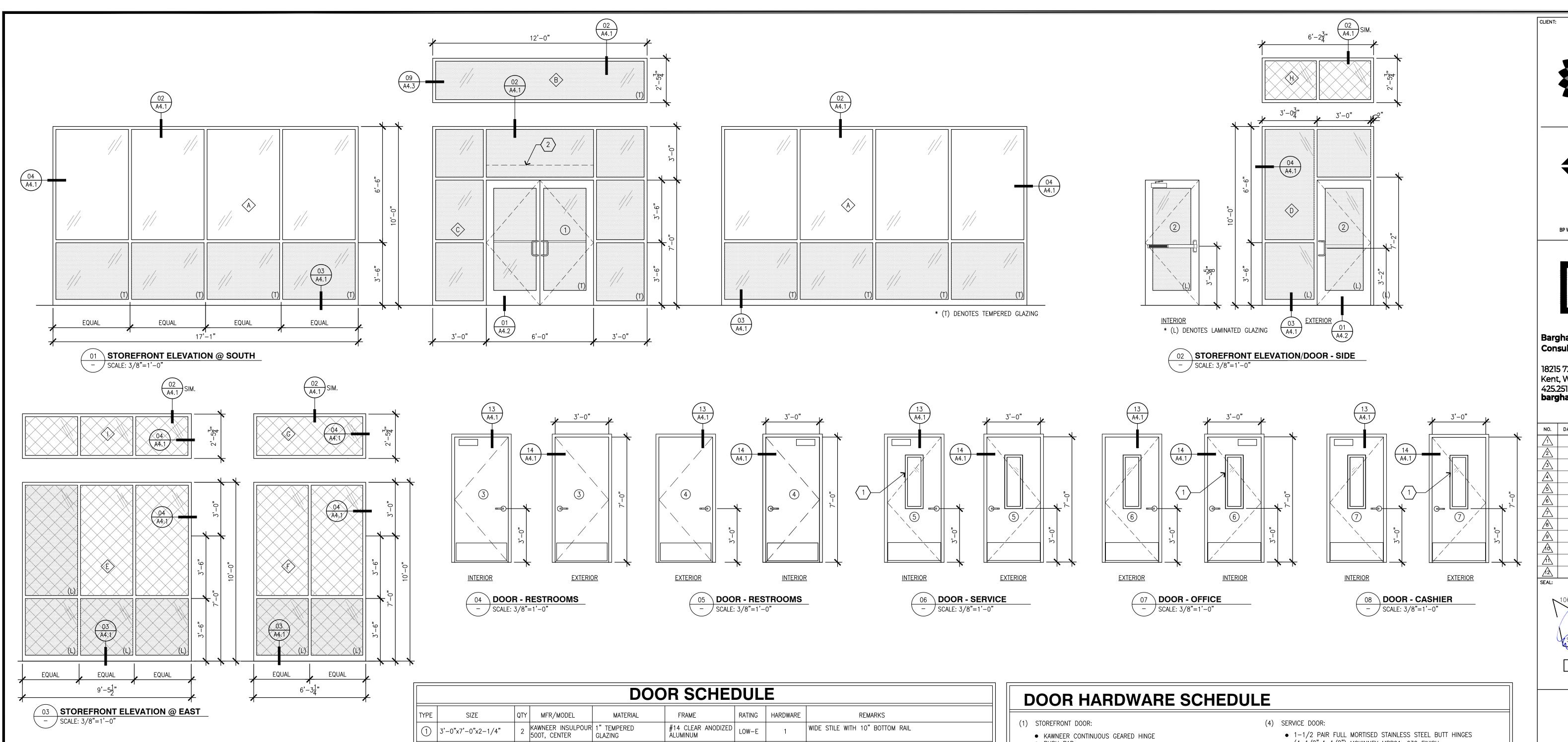












GENERAL NOTES

A. CONTRACTOR SHALL VERIFY ALL ROUGH OPENING SIZES PRIOR TO

KEYED NOTES

(1) TEMPERED VISION PANEL

2 AIR CURTAIN, REFER TO SHEET A2.3 AND MECHANICAL PLANS

TYPE	SIZE	QTY	MFR/MODEL	MATERIAL	FRAME	RATING	HARDWARE	REMARKS
1)	3'-0"x7'-0"x2-1/4"	2	KAWNEER INSULPOUR 1" 500T, CENTER GL	TEMPERED AZING	#14 CLEAR ANODIZED ALUMINUM	LOW-E	1	WIDE STILE WITH 10" BOTTOM RAIL
2	3'-0"x7'-0"x2-1/4"	1	KAWNEER INSULPOUR 1" 500T, CENTER	LAMINATED GLAZING	#14 CLEAR ANODIZED ALUMINUM		2	WIDE STILE WITH 10" BOTTOM RAIL
3	3'-0"x7'-0"x1-3/4"	1	1	GA. HOLLOW ETAL	16 GA. HOLLOW METAL	N/A	3	DOOR AND FRAME FACTORY PRIMED
4	3'-0"x7'-0"x1-3/4"	1		GA. HOLLOW ETAL	16 GA. HOLLOW METAL	N/A	3	DOOR AND FRAME FACTORY PRIMED
(5)	3'-0"x7'-0"x1-3/4"	2	1	GA. HOLLOW ETAL	16 GA. HOLLOW METAL	N/A	4	12"x36" VISION PANEL, DOOR AND FRAME FACTORY PRIMED
6	3'-0"x7'-0"x1-3/4"	1	1	GA. HOLLOW ETAL	16 GA. HOLLOW METAL	N/A	5	12"x36" VISION PANEL, DOOR AND FRAME FACTORY PRIMED
7	3'-0"x7'-0"x1-3/4"	1	1	GA. HOLLOW TAL	16 GA. HOLLOW METAL	N/A	4	12"x36" VISION PANEL, DOOR AND FRAME FACTORY PRIMED

			W	INDOW SC	HEDULE		
TYPE	SIZE	QTY	MFR/MODEL	GLAZING	FRAME	RATING	REMARKS
A	17'-1"W x 10'-0"H	2	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 CLEAR W/ ARGON, BOTTOM PANELS TEMPERED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING
B	12'-0"W x 2'-5 3/4"H	1	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 CLEAR W/ ARGON, TEMPERED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING
⟨C⟩	12'-0"W x 10'-0"H	1	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 CLEAR W/ ARGON, TEMPERED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING, VERTICAL MULLIONS AT DOOR SHALL SUPPORT AIR CURTAIN SIDE MOUNT MULLION BRACKET
(D)	6'-2 3/4"W x 10'-0"H	1	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 CLEAR W/ ARGON, LAMINATED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING
E	9-5 1/2"W x 10'-0"H	1	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 SPANDREL W/ ARGON, BOTTOM PANELS & 1 TOP PANEL LAMINATED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING
F	6'-3 1/4"W x 10'-0"H	2	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 SPANDREL W/ ARGON, BOTTOM PANELS LAMINATED	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING
G	6-3 1/4"W x 2'-5 3/4"H	2	KAWNEER TRIFAB 451UT FRAMING	SOLARBAN 70 SPANDREL W/ ARGON	#14 CLEAR ANODIZED ALUMINUM	LOW-E	G.C. SHALL VERIFY ROUGH OPENING SIZE PRIOR TO ORDERING

#14 CLEAR ANODIZED

#14 CLEAR ANODIZED

ALUMINUM

LOW-E

SOLARBAN 70 SPANDREL

SOLARBAN 70 SPANDREL

W/ ARGON

|W/ ARGON

KAWNEER TRIFAB

KAWNEER TRIFAB

451UT FRAMING

451UT FRAMING

 $| 6'-2 3/4"W \times 2'-5 3/4"H |$

9-5 1/2"W x 2'-5 3/4"H

- PUSH BAR PULL HARDWARE
- LCN 4040XP, DOOR MOUNT CLOSER, HEAVY DUTY WITH CUSH ARM ADAMS RITE DEAD BOLT W/ KEY BOTH SIDES
- MORTISE CYLINDER, SCHLAGE #20-013, 626 FINISH
- PAIR FLUSH BOLTS IN IN-ACTIVE LEAF
- SADDLE THRESHOLD, PEMKO #255Ax72" DOOR BOTTOM SEAL, PEMKO #222AVx36"

FURNISH AND INSTALL IMPACT RESISTANT GLASS AND SASH TO COMPLY W/ LOCAL STATE CODE REQUIREMENTS.

(2) SIDE EXTERIOR DOOR:

PULL HARDWARE

- KAWNEER CONTINUOUS GEARED HINGE VON DUPRIN 9947-RSS-ALK CONCEALED VERTICAL ROD EXIT DEVICE W/ ALARM EXIT KIT, 626 FINISH
- MORTISE CYLINDER, SCHLAGE #20-013, 626 FINISH
- LCN 4040XP, DOOR MOUNT CLOSER, HEAVY DUTY WITH CUSH ARM SADDLE THRESHOLD, PEMKO #255Ax72"
- DOOR BOTTOM SEAL, PEMKO #222AVx36"
- FURNISH AND INSTALL IMPACT RESISTANT GLASS AND SASH TO COMPLY W/ LOCAL STATE CODE REQUIREMENTS.

(3) RESTROOM DOORS:

G.C. SHALL VERIFY ROUGH OPENING

G.C. SHALL VERIFY ROUGH OPENING

SIZE PRIOR TO ORDERING

SIZE PRIOR TO ORDERING

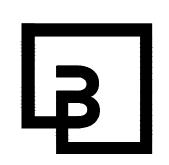
- 1-1/2 PAIR FULL MORTISED STAINLESS STEEL BUTT HINGES
- (4-1/2"x4-1/2") MCKINNEY MPB91, 630 FINISH HEAVY DUTY OVERHEAD CLOSER, LCN 1461
- LEVER HANDLE WITH KEY OUTSIDE AND PUSH BUTTON INSIDE LOCKSET (ANSI F82/SCHLAGE ND50PD LESS CORE, RHODES
- LEVER 626, BEST CORE W/ 626 FINISH • FALCON OCCUPANCY INDICATOR DEADBOLT D271, 626 FINISH
- 12"x34" STAINLESS STEEL KICK PLATE (BOTH SIDES) • FLOOR STOP, TRIMCO 1211 DOME STOP, 626 FINISH

- (4-1/2"x4-1/2") MCKINNEY MPB91, 630 FINISH
- HEAVY DUTY OVERHEAD CLOSER, LCN 1461 LEVER HANDLE WITH KEY OUTSIDE AND PUSH BUTTON INSIDE LOCKSET (ANSI F82/SCHLAGE ND50PD LESS CORE, RHODES
- LEVER 626, BEST CORE W/ 626 FINISH
- 12"x34" STAINLESS STEEL KICK PLATE (BOTH SIDES)
- FLOOR STOP, TRIMCO 1211 DOME STOP, 626 FINISH • 12"x36"x1/4" TEMPERED VISION PANEL

(5) OFFICE DOOR:

- 1-1/2 PAIR FULL MORTISED STAINLESS STEEL BUTT HINGES
- (4-1/2"x4-1/2") MCKINNEY MPB91, 630 FINISH HEAVY DUTY OVERHEAD CLOSER, LCN 1461
- LEVER HANDLE WITH KEY OUTSIDE AND PUSH BUTTON INSIDE LOCKSET (ANSI F82/SCHLAGE D50PD LESS CORE, RHODES LEVER 626, BEST CORE W/ 626 FINISH, KEY SHALL BE
- SEPARATE FROM ALL OTHER LOCKS • 12"x34" STAINLESS STEEL KICK PLATE (BOTH SIDES)
- FLOOR STOP, TRIMCO 1211 DOME STOP, 626 FINISH
- 12"x36"x¼" TEMPERED VISION PANEL





Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com



DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

	21730
VERSION:	PROJECT NO:
DRAWN BY:	ALLIANCE PM:
CHECKED BY:	BP REPM:
DESIGNED BY:	ALLIANCE Z&DM:

DOOR & WINDOW SCHEDULE

A5.1

	SPECIFICATIONS TABLE OF CONTENTS DRA	AWING #	 Testing firm, laboratory or agency. Geotechnical (soils or foundation) engineer. Coordination of tests and inspections.
	DIVISION 1 - GENERAL REQUIREMENTS	AMINO #	Tests costs and reports. Inspections, continuous and special.
	01095 - PROJECT COORDINATION 01300 - SUBMITTALS 01400 - TESTING AND QUALITY CONTROL	A7.1 A7.1 A7.1	8. Contractor furnished assistance.9. Verification of conditions.10. Individual sections of the Specification may contain specific test procedures to be performed in
	01500 - TEMPORARY FACILITIES AND CONTROLS 01600 - MATERIALS AND EQUIPMENT	A7.1 A7.1 A7.1	accordance with this section. Refer to each specific section.
	01620 - STORAGE AND PROTECTION 01710 - CLEANING AND TEMPORARY SERVICES	A7.1 A7.1	1.02 GENERAL QUALITY CONTROL
	<u>DIVISION 2 — SITE WORK</u> 02010 — SUBSURFACE INVESTIGATION	A7.1	A. General test requirements: materials and products provided under the contract are subject to testing and inspection for compliance with requirements of Contract Documents.
	02282 - TERMITE CONTROL (OPTIONAL)	A7.1	B. Testing firm, laboratory or agency: licensed organization meeting the requirements of ASTM E329, an referred to in sections of the Specification. Perform all testing under supervision and control of the geotechnical engineer who performed the initial geotechnical report.
	<u>DIVISION 3 - CONCRETE</u> 03300 - CAST-IN-PLACE CONCRETE	A7.1/A7.2	C. Disqualified materials: any material shipped or delivered to the site by the Contractor from the
	<u>DIVISION 4 – MASONRY</u> 04200 – UNIT MASONRY	A7.2	source of supply prior to having satisfactorily passed the required testing and inspection, prior to the receipt of a notice from the Architect or Owner that such testing and inspection will not be required shall not be incorporated in the work.
	04700 - SIMULATED MASONRY DIVISION 5 - METALS	A7.2	1.03 COORDINATION OF TESTS AND INSPECTIONS
	05500 - METAL FABRICATIONS DIVISION 6 - WOOD AND PLASTIC	A7.2	A. Contractor shall initiate and coordinate testing and inspections required by Contract Documents and public authorities having jurisdiction of the work.
	06100 - ROUGH CARPENTRY 06192 - PREFABRICATED WOOD TRUSSES	A7.2/A7.3 A7.3	B. Notification: Contractor shall notify the Owner sufficiently in advance of the manufacture of materials
	<u>DIVISION 7 - THERMAL AND MOISTURE PROTECTION</u> 07210 - BUILDING INSULATION	A7 7	or products to be supplied by him, which, by requirements of the Contract Documents, must be tested at the source of supply in order that the Owner may arrange for the testing.
	07410 - BOILDING INSULATION 07410 - PREFORMED METAL ROOF PANELS 07420 - ALUMINUM COMPOSITE METAL PANEL SYS.	A7.3 A7.3 A7.3	1.04 TESTS SAMPLES AND PROCEDURES
	07542 - TPO MEMBRANE ROOFING 07600 - FLASHING AND SHEET METAL 07901 - JOINT SEALERS	A7.3/A7.4 A7.4 A7.4	A. Test samples: provide and deliver samples of materials and products to be tested at no extra cost to Owner. Test samples will be selected by the Architect, inspector or testing firm and not by the Contractor.
	DIVISION 8 - DOORS AND WINDOWS		B. Test procedures: testing firm shall perform testing in accordance with ASTM or other methods of testing specified for the various materials and products specified. If no procedure or test method is
	08111 - STANDARD STEEL DOORS AND FRAMES 08410 - ALUMINUM ENTRANCES AND STOREFRONT	A7.4 A7.4/A7.5	specified, testing shall conform to material or product specification referenced unless otherwise directed by Owner. The testing firm shall tag, seal, label, record or otherwise suitably identify the
	08710 — FINISH HARDWARE 08716 — AUTOMATIC DOOR OPERATOR 08800 — GLAZING	A7.5 A7.5 A7.5	materials and products for testing and no such materials and products shall be used in the work until the test result reports are submitted and approved, excepting only the materials and products specified to be placed or installed prior to testing.
	<u>DIVISION 9 - FINISHES</u> 09200 - GYPSUM DRYWALL	A7.5	C. Repetition of test: repeat applicable tests at specified intervals, whenever the source of supply is
	09220 - PORTLAND CEMENT PLASTER (STUCCO) 09250 - METAL SUPPORT ASSEMBLIES	A7.5 A7.5/A7.6	changed, or whenever the characteristics of the materials and products change or vary in opinion of Owner or Architect.
	09300 - TILE 09511 - ACOUSTICAL PANEL CEILINGS	A7.6 A7.6	1.05 TEST REPORTS:
	09540 — FIBER REINFORCED PANELS (FRP) 09650 — RESILIENT FLOORING 09900 — PAINTING	A7.6 A7.6 A7.6	A. Provide copies of each test result report, signed and certified by the testing firm's supervising engineer. Copies shall be provided as follows:
	<u>DIVISION 10 - SPECIALTIES</u> 10800 - TOILET ACCESSORIES	A7.6	1. Owner — 1 copy. 2. Architect — 1 copy.
	<u>DIVISION 11 – EQUIPMENT</u>		 Structural engineer (structural tests only) — 1 copy Contractor — 2 copies. Building department — 1 copy, if required.
	11400 - FOOD SERVICE EQUIPMENT (SEE SHEET Q2.1 DIVISION 12 - FURNISHINGS)	1.06 INSPECTIONS, CONTINUOUS AND SPECIAL
	NOT USED		A. Perform by registered deputy or special inspectors (hereinafter termed inspector) as required by Contract Documents and building codes. During the course of work under inspection, each inspector
	<u>DIVISION 13 - SPECIAL CONSTRUCTION</u> NOT USED		shall submit detailed reports relative to progress and condition of work including variances from the Contract Documents, and stipulating dates, hours and locations of the inspections.
	<u>DIVISION 14 - CONVEYING SYSTEMS</u> NOT USED		B. Approvals required by others: if the laws, ordinances, rules, regulations or orders of any public agency having jurisdiction require any of the work to be specifically inspected, tested and approved
	<u>DIVISION 15 - MECHANICAL</u> SEE PLUMBING AND MECHANICAL DRAWINGS		by authority other than the Owner, Architect or Contractor, the Contractor shall give all required notices and make arrangements, shall deliver to the Architect the certificates of inspection, testing, or approval of such agency and shall pay all costs therefore unless provided in the Contract
	SEE FUEL SYSTEM DRAWINGS		Documents.
	<u>DIVISION 16 - ELECTRICAL</u> SEE ELECTRICAL DRAWINGS		C. All costs for special inspections shall be included in base bid. 1.07 CONTRACT FURNISHED ASSISTANCE
	END OF SECTION		A. Whenever requested, Contractor shall provide access, facilities and labor assistance as necessary for
	01095 - PROJECT COORDINATION		duties to be performed at the site by testing firm and inspector including providing ladders, hoisting temporary utilities and like services at no cost to Owner.
	PART 1 — GENERAL 1.01 SUMMARY		1.08 VERIFICATION OF CONDITIONS
	A. This section specifies administrative and supervisory r		A. Prior to installation of any portion of the work, the Contractor shall arrange for correction of defect in existing workmanship, materials and products, or conditions that may adversely affect the work to be installed. Installation of materials and products on work in—place constitutes acceptance by
	including, but not necessarily limited to general instal PART 2 - PRODUCTS - NOT USED	liation provisions, cleaning and protection.	Contractor as being in proper condition to receive the materials and products to be applied and waiver of claim that work in—place is defective as pertains to warranty requirements, excluding unascertainable or concealed conditions. Where the specification requires a material or product to be
	PART 3 - EXECUTION		installed under supervision of the material or product manufacturer or his representative, manufacturer or his representative also shall inspect the work in-place and issue a letter of approvi
	3.01 GENERAL INSTALLATION PROVISIONS		to Owner. 1.09 MECHANICAL
	A. Inspection of conditions: require the installer of each and conditions under which work is to be performed. have been corrected in an acceptable manner.		A. Ten working days prior to final acceptance by Owner, all mechanical systems shall be one hundred
	B. Manufacturer's instructions: comply with manufacturer	's installation instructions and recommendations,	percent completed and shall be inspected and approved by the Owner or his authorized representatives. Contractor shall submit copies of air balance report to Owner with close out package
	to the extent that those instructions and recommend requirements contained in Contract Documents.	lations are more explicit or stringent than	PART 2 - PRODUCTS - NOT USED PART 3 - EXECUTION - NOT USED
	C. Inspect materials or equipment immediately upon deli- damaged and defective items.	very and again prior to installation. Reject	END OF SECTION
	D. Provide attachment and connection devices and meth true to line and level. Allow for expansion and buildir		01500 - TEMPORARY FACILITIES AND CONTROLS
	Visual effects: provide uniform joint widths in exposer the best visual effect. Refer questionable choices to	d work. Arrange joints in exposed work to obtain	PART 1 – GENERAL
	F. Recheck measurements and dimensions, before starting		1.01 STORAGE A. The Contractor shall supply an over the road double door type minimum 8' x 40' well secured.
	G. Install each component during weather conditions and results. Isolate each part of the completed constructi	I project status that will ensure the best possible	cleaned, weather—tight, safe storage trailer with pin lock for his use to store new Owner furnished items (equipment, decor, furniture, etc.).
	prevent deterioration.	, ,	1.02 TEMPORARY TELEPHONE
	H. Coordinate temporary enclosures with required inspect uncovering completed construction for that purpose.	tions and tests, to minimize the necessity of	A. The Contractor shall set up temporary telephone and fax service by line or cellular, and the Contractor shall be responsible for temporary telephone costs and charges. Temporary service shall and the discontinued wat
 Mounting heights: where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer 			not be discontinued until project is completed and Contractor leaves the site. 1.03 TEMPORARY LIGHTING AND POWER:
	questionable mounting height decisions to the Archite 3.02 CLEANING AND PROTECTION	ct for final decision.	A. Provide adequate lighting at all points of construction areas where natural or existing lighting is
	A. During handling and installation, clean and protect coplace. Apply protective covering where required to ensure the covering of the co		insufficient for the proper performance of the work. B. Provide and pay for electrical service and include temporary poles, transformers, meters, wiring,
	substantial completion.		panels, circuits and ground fault protection, and fittings at locations requiring power, until occupancy by Owner.
	U Clean and maintain completed construction as former	ath, as assessed through the remainder of the	

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging

C. Limiting exposures: supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION

01300 - SUBMITTALS

PART 1 - GENERAL 1.01 DESCRIPTION

A. This section describes the process for submitting documents and samples to the Architect of Record, Engineer of Record and/or Client Construction Project Manager for their review and approval prior to

3. In general, submittals will not be required for those items which conform precisely to the products and/or manufacturers specified herein. Alternative manufacturers or substituted materials will require submittal for approval by the Architect of Record, Engineer of Record, and/or Client Construction Project Manager. Submittals for alternative manufacturers or materials shall indicate, on the submittal, that they are submitted as a requested substitution and shall indicate how the alternative meets or exceeds the characteristics of the specified item.

. Items noted as "Deferred Submittal" such as roof trusses, prefabricated structures, and other structural items require submittal for review and approval by the Engineer or Record, and the local

D. Items noted "Submit to <u>X</u> for verification of <u>Y"</u>, require submittal for approval by Architect of Record or Engineer of Record.

E. Provide four copies of drawings, calculations, product data, certifications, and test reports.

. Provide three material samples, approximately 3"x5" showing color range and textures, when requested

PART 2 - NOT USED PART 3 - NOT USED

END OF SECTION

01400 - TESTING AND QUALITY CONTROL PART 1 - GENERAL

Inspection procedures.

Requirements:

1.01 DESCRIPTION

A. This section covers general requirements for quality control and testing of the work, including:

the Architect for further instructions. Do not proceed with work without clear instructions.

instructions and in conformity with specified requirements.

Verification of conditions. Individual sections of the Specification may contain specific test procedures to be performed in accordance with this section. Refer to each specific section.

ed to in sections of the Specification. Perform all testing under supervision and control of the chnical engineer who performed the initial geotechnical report. ialified materials: any material shipped or delivered to the site by the Contractor from the ce of supply prior to having satisfactorily passed the required testing and inspection, prior to the PART 2 - PRODUCTS - NOT USED pt of a notice from the Architect or Owner that such testing and inspection will not be required.

to installation of any portion of the work, the Contractor shall arrange for correction of defects risting workmanship, materials and products, or conditions that may adversely affect the work to stalled. Installation of materials and products on work in-place constitutes acceptance by ractor as being in proper condition to receive the materials and products to be applied and r of claim that work in-place is defective as pertains to warranty requirements, excluding certainable or concealed conditions. Where the specification requires a material or product to be lled under supervision of the material or product manufacturer or his representative, Ifacturer or his representative also shall inspect the work in-place and issue a letter of approval

C. Provide generators to meet needs of construction in the event commercial power is unavailable. 1.04 TEMPORARY TOILET FACILITIES:

A. Provide and pay for temporary toilet facilities on site in compliance with requirements of the department of health. Maintain toilet facilities in good working order and remove at the end of

1.05 TEMPORARY WATER: A. Provide and pay for all water required for work and including piping, hoses, and valves from source

to points on the site where needed. Regardless of source, there will be no additional cost to Owner.

A. General Contractor is responsible for all on site safety from ground—breaking until occupancy. PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

<u>01600 - MATERIALS AND EQUIPMENT</u> PART 1 - GENERAL

A. Materials and equipment incorporated into the work. Conform to applicable specifications, standards

1. Comply with size, make, type and quality specified or as may be otherwise specifically approved in writing by the Architect. 2. Manufactured and fabricated products: design, fabricate and assemble in accordance with the

est engineering and shop practices Two or more items of the same kind shall be identical, by the same manufacturer. I. Do not use materials or equipment for any purpose other than that for which it was designed or is specified.

C. Handle, install, connect, clean, condition and adjust products in strict accordance with such

D. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with

1.02 MANUFACTURER'S INSTRUCTIONS

A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain copies of such instructions from the manufacturer of the product. B. Maintain one set of complete instructions at jobsite during installation and until completion and

PART 3 - EXECUTION

A. Contractor shall read and otherwise become completely familiar with contents of soil report, including but not limited to its recommendations for preparation of subsoil, bases, sub-bases and fill and construction of building foundations and parking surfaces in compliance with recommendations in report. Should discrepancy be found between the requirements of soil report and the Drawings and/or Specifications, notify Owner in writing prior to beginning work. Contractor to use soils

engineer of record per section 01400

A. Submit manufacturer's technical data and application instructions for each product.

this section, including preparation of substrate and application.

except as otherwise required in construction operations

one of following chemical elements and concentrations:

"Dursban TC" (chloropyrifos); 1.0 percent in water solution.

C. Use only soil treatment solutions which are not injurious to planting.

Remove signs when greas are covered by other construction.

other construction activities following application.

A. Comply with manufacturer's instructions and recommendations for work in addition to requirements of

B. Engage a professional pest control operator, licensed in accordance with regulations of the State for

C. Use only pesticides, which bear a federal registration number of the U.S. environmental protection

A. Do not apply soil treatment solution until excavating, filling and grading operations are completed,

A. Furnish written warranty certifying that applied soil termiticide treatment will prevent infestation of

C. Provide a renewable service agreement option to provide inspections and re— treatment after the

A. Use an emulsible concentrate termiticide for dilution with water, specially formulated to prevent

2. "Pryfon 6" (methylethyl-benzoate); 1.3 oz. of product per 10 sq. ft. in water solution.

approved for intended application by manufacturer and jurisdictional authorities.

B. Other solutions may be used as recommended by applicator if also approved by the Architect and

A. Remove foreign matter which could decrease effectiveness of treatment on areas to be treated.

C. Mix chemicals (from sealed containers) with water at the jobsite, then apply soil treatment solution

D. Post signs in areas of application to warn workers that soil termiticide treatment has been applied.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, landscape grading, or

A. This section includes provisions and procedures governing the installation of cast-in-place concrete,

A. Product data for proprietary materials and items, including reinforcement and forming accessories,

admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish

B. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement.

showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete

reinforcement. Include special reinforcing required for openings through concrete structures.

A. Codes and standards: comply with provisions of the following codes, specifications, and standards

American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."

B. Concrete testing service: engage a testing agency acceptable to Building Official to perform material

C. Materials and installed work may require testing and retesting at any time during progress of work.

Tests, including retesting of rejected materials for installed work, shall be done at Contractor's

A. Forms for unexposed finish concrete: plywood, lumber, metal, or another acceptable material. Provide

B. Form release agent provide commercial formulation form release agent with compounds that will not

C. Form ties: factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to

prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will

1. Provide ties that, when removed, will leave holes not larger than 1 inch in diameter in the

E. Supports for reinforcement: bolsters, chairs, spacers, and other devices for spacing, supporting, and

2. For exposed—to—view concrete surfaces where legs of supports are in contact with forms,

A. Portland cement: ASTM C LSO, type I. Use one brand of cement throughout project unless otherwise

B. Fly ash: ASTM C 618, type F, except that loss on ignition of class f fly ash shall not exceed 6%.

C. Normal-weight aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for

1. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances

2. Local aggregates not complying with ASTM C 33 that have been shown to produce concrete of

adequate strength and durability by special tests or actual service may be used when acceptable

fastening reinforcing bars and welded wire fabric in place. Use wire bar—type supports complying with

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will

provide supports with legs that are protected by plastic (CRSI, class 1) or stainless steel (CRSI,

leave no metal closer than 1-1/2 inches to the plane of the exposed concrete surface.

bond with, stain, or adverse effect concrete surfaces and will not impair subsequent treatments of

Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures"

including formwork, reinforcing, design, placement procedures, curing, and finishes.

materials, sealers, hardeners, and other material if requested by Architect

C. Laboratory test reports for concrete materials and design strengths

except where more stringent requirements are shown or specified:

lumber dressed on at least two edges and one side for tight fit.

2.02 REINFORCING MATERIALS (Refer to Structural Drawings)

B. Ties and stirrups: ASTM A-615, grade 40 or 60, deformed.

D. Welded wire fabric: ASTM A-185, welded steel wire fabric

A. Reinforcing bars: ASTM A-615, grade 60, deformed.

C. Steel wire: ASTM A-82, plain, cold drawn steel

acceptable to Architect and Structural Engineer.

to Architect and Structural Engineer.

evaluation tests and to test concrete mixes.

2. ACI 318. "Building Bode Requirements for Reinforced Concrete."

Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Cast—in—place concrete includes, but is not limited to the following:

only at rates described by the manufacturer on the product label and in compliance with local, state

B. Loosen, rake and level soil to be treated, except previously compacted areas under slabs and

foundations. Toxicants may be applied before placement of compacted fill under slabs, if

initial warranty period expires, the service agreement shall further state that in the event of damage

during the warranty period, the Contractor shall make repairs to structurally damaged surfaces due

infestation by termites. Fuel oil will not be permitted as a diluent. Provide a solution consisting of

Contractor will re-treat soil and repair or replace damage caused by termite infestation

B. Provide warranty for a period of 5 years from date of treatment, signed by applicator and

to the infestation of subterranean termites up to and including a cost of \$25,000.

subterranean termites and, that if subterranean termite activity is discovered during warranty period,

B. Do not apply soil treatment to excessively wet soils or during inclement weather.

C. Comply with handling and application instructions of the soil toxicant manufacturer.

02282 - TERMITE CONTROL

1.03 QUALITY ASSURANCE

1.04 PROJECT CONDITIONS

1.05 SPECIFIC PRODUCT WARRANTY

PART 2 - PRODUCTS

PART 3 - EXECUTION

recommended by toxicant manufacturer.

3.01 APPLICATION

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

1.02 SUBMITTALS

1.03 QUALITY ASSURANCE

PART 2 - PRODUCTS

concrete surface.

CRSI specifications.

2.03 CONCRETE MATERIALS

exposed concrete.

D. Water. Potable.

that cause spalling.

03300 - CAST-IN-PLACE CONCRETE

Foundations and footings.

Slabs-on-grade (interior)

Equipment pads and bases.

2.01 SOIL TREATMENT SOLUTION

application of soil treatment solution

PART 1 – GENERAL

1.03 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accordance with construction schedules; coordinate to avoid conflict with work and conditions at site. B. Deliver products in manufacturer's original sealed containers or packaging, with identifying labels

E. Do not omit any preparatory step or installation procedure unless specifically modified or exempted

intact and leaible. A. This section includes provisions and procedures governing the furnishing and installation of soil treatment for termite control. This section is applicable ONLY WHEN REQUIRED BY LOCAL BUILDING 1. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract REGULATIONS. Documents and approved submittals, and that products are properly protected and undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling and damage to products and packaging. D. General Contractor shall use Subcontractor or supplier name as consignee on all shipments to job site. Neither Owner's corporate name nor trade name shall be used as consignee.

PART 3 - EXECUTION - NOT USED

by Contract Documents.

END OF SECTION

<u>01620 - STORAGE AND PROTECTION</u> PART 1 - GENERAL

1.01 REQUIREMENTS A. Provide secured storage and protection for products to be incorporated into the work (see section

01500 part 1.01). 1.02 STORAGE

A. Store products immediately on delivery, and protect until installed in the work. B. Store in accordance with manufacturer's instructions, with seals and labels intact and legible.

C. Store products subject to damage by elements in substantial weather tight enclosures. D. Maintain temperatures within ranges required by manufacturer's instructions.

Provide humidity control for sensitive products, as required by manufacturer's instructions. Store unpacked products on shelves, in bins, or in neat piles, accessible for inspection Provide substantial platforms, blocking or skids to support fabricated products above ground and

to prevent soiling and staining. 4. Cover products, subject to discoloration or deterioration from exposure to the elements. with impervious sheet coverings. Provide adequate ventilation to avoid condensation. 5. Store loose granular materials on solid surfaces such as paved areas, or provide plywood or

sheet materials to prevent mixing with foreign matter. Provide surface drainage to prevent flow or ponding of rainwater. Prevent contamination with chemically injurious matter or liquid. Arrange storage in a manner to provide easy access.

Materials not stored on jobsite shall be stored in a bonded warehouse 1.03 MAINTENANCE OF STORAGE

A. Maintain periodic system of inspection of stored products on scheduled basis to assure that: B. State of storage facilities is adequate to provide required conditions.

Required environmental conditions are maintained on continuing basis. Surfaces of products exposed to elements are not adversely affected.

C. Any weathering of products, coatings or finishes is unacceptable under the requirements of Contract). Mechanical and electrical equipment which requires servicing during long term storage shall have

complete manufacturer's instructions for servicing accompanying each item, with notice of enclosed

instructions shown on exterior of package. Comply with manufacturer's instructions on scheduled

1.04 PROTECTION AFTER INSTALLATION:

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of work.

Control traffic to prevent damage to equipment and surfaces. Provide coverings to protect finished surfaces from damage. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

PART 1 - GENERAL

1.01 REQUIREMENTS A. Maintain premises and public properties free from accumulations of waste, debris and rubbish, by operations.

1. At completion of work, remove waste material, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for public occupancy and health department inspection.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Cleaning for a specified product or work specifically specified in the Specification's section for that

PART 2 - PRODUCTS

2.01 MATERIALS A. Use only cleaning materials recommended by the manufacturer of the product to be cleaned. B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION A. Execute cleaning to ensure that grounds and public properties are maintained free from accumulations of waste materials and rubbish. Wet down dry materials and rubbish to lay dust and prevent blowing dust. At reasonable intervals during progress of work, clean site and public properties and dispose of waste materials, debris and rubbish. Provide on site containers for collection of waste materials, debris and rubbish. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.

B. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as needed basis until building is ready for occupancy.

1. Handle materials in a controlled manner with as few handlings as possible. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces. Remove all visible manufacturer's labels, nameplates, or other identifying devices.

Once building is enclosed, maintain design temperature as set forth on mechanical plan. 3.02 FINAL CLEANING

A. Employ experienced workman for final cleaning. In preparation for substantial completion or public occupancy and health department inspection, conduct final inspection of sight-exposed interior and exterior surfaces and of concealed spaces.

B. Remove grease, dust, dirt, stains and protective coverings from equipment and materials, from sight exposed in interior and exterior finished surfaces; polish surfaces so designed to shine on actual

C. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces. D. Pressure clean all concrete and asphalt surfaces; rake clean other surfaces on grounds E. Replace air conditioning filters at construction completion. Clean ducts, blowers and coils, if air

conditioning units were operated without filters during construction. Maintain cleaning until project or portion thereof, is occupied by Owner.

F. Clear all roof drains and overflow drains. END OF SECTION

<u>02010 - SUBSURFACE INVESTIGATION</u> PART 1 - GENERAL 1.01 DESCRIPTION

A. Geotechnical investigation (subsurface soils tests) for the project site has been performed and a report of that investigation has been completed

PART 2 - PRODUCTS 2.01 SUBSURFACE INFORMATION

A. Log of borings indicates materials penetrated at specific locations. Owner and/or Architect assume no responsibility for any conclusions or interpretations made by Contractor related to information included in the report. Should Contractor require additional information concerning subsurface conditions, he may without cost to Owner, make additional investigations. Should additional investigations produce information different from that in soil report, notify Owner in writing.

E. Admixtures, general: provide concrete admixtures that contain no more than 0.1 percent chloride ions. D. Provide temporary openings for clean—outs and inspections where interior area of formwork is END OF SECTION F. Air-entraining admixture: ASTM C 260, certified by manufacturer to be compatible with other required

admixtures. Subject to compliance with requirements, provide one of the following: Air-mix or Perma-air, Euclid Chemical Co Darex Aea or Daravair, W.R. Grace & Co.

MB-VR or Small-air, Master Builders, Inc Sealtiaht Aea, W.R. Meadows, Inc.

G. Water—reducing admixture: ASTM C 494, type A. Subject to compliance with requirements, provide one of the following:

Eucon WR-75, Euclid Chemical Co. WRDA, W.R. Grace & co.

Pozzolith Normal or Polyheed, Master Builders, Inc. Plastocrete 161, Sika Corp

H. High-range water-reducing admixture: ASTM C 494, type F or type G. Subject to compliance with requirements, provide one of the following:

Eucon 37, Euclid Chemical co WRDA 19 or Daracem, W.R. Grace & co. Rheobuild or Polyheed, Master Builders, Inc. Sikament 300, Sika Corp.

provide one of the following: Accelauard 80. Euclid Chemical Co

Daraset, W.R. Grace & Co. Pozzutec 20. Master Builders, Inc

J. Water-reducing, retarding admixture: ASTM C 494, type D. Subject to compliance with requirements, provide one of the following:

Eucon Retarder 75, Euclid Chemical Co. Daratard-17, W.R. Grace & Co. Pozolith R, Master Builders, Inc Plastiment, Sika Corporation.

2.04 RELATED MATERIALS A. Gravel sub base: washed 3/4" gravel.

B. Vapor barrier: provide vapor retarder that is resistant to deterioration when tested according to ASTM

1. Polyethylene sheet not less than 6 mils thick. C. Moisture—retaining curing cover: one of the following, complying with ASTM C 171.

Polyethylene film Polyethylene-coated hurlan

D. Water-based membrane curing compound: ASTM C 309, type 1, class B, with a maximum volatile organic compound (VOC) rating of 350 mg per liter. Moisture loss not more than 0.55 kg/sq. meter when applied at 200 sa. ft./aal.

E. Liquid membrane-forming curing compound: liquid-type membrane-forming curing compound with minimum solids content of 22% on resin material, complying with ARM C 309, type 1, class B. Moisture loss not more than 0.55 kg/sq. meter when applied at 200 sq. ft./gal.

F. Liquid membrane-forming curing compound: liquid-type membrane-forming curing compound with minimum of 18% solids-content on resin material, complying with ARM C-309, type 1, class B. Moisture loss not more than 0.55 kg/sq. meter when applied at 200 sq. ft/gal. 1. Product: Provide crystal clear seal by Lambert Corp; Orlando, FL; (407) 41-2940 or (800)

G. Bondina agent: ASTM C-1059. Where concrete placement will be protected (interior) or delayed, use re-wettable type 1 bonding agent. Where concrete will be applied immediately after application of bonding agent, use non-re-wettable acrylic type ii.

841-2940 or (800)432-4746. Non-re-wettable type: provide acrylic type; Acrylbond by Lambert Corp; Orlando, fl; (407) 841-2940 or (800) 432-4746. H. Epoxy adhesive: ASTM C 881, two-component, 100% solids material suitable for use on dry or damp

Re-wettable type: provide polyvinyl acetate type; Hibond by Lambert Corp; Orlando, FL; (407)

Sealer/Hardener; Liquid type penetrating sealer / hardeners of manufacturer noted on Drawings. Apply materials per manufacturer's directions. 2.05 PROPORTIONING AND DESIGNING MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field

experience methods as specified in ACI 301. For the trial batch method, use an independent testing

surfaces. Provide material type, grade, and class to suit project requirements.

agency acceptable to Architect for preparing and reporting proposed mix designs

Do not use the same testing agency for field auglity control testing. Limit use of fly ash to not exceed 25 percent of cement content by weight B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15

C. Design mixes to provide normal weight concrete with properties as follows: as specified in structural

D. Slump limits: proportion and design mixes to result in concrete slump at point of placement as Ramps, slabs, and sloping surfaces: not more than 3 inches Reinforced foundation systems: not less than 3 inches and not more than 5 inches.

inches after adding admixture to site-verified 2-3 inch slump concrete. Masonry fill concrete only: not less than 8", or more than 11". All other concrete not less than 3 inches or more than 5 inches Slumps for pumped concrete shall be taken at the discharge end of the hose. Addition of water at the site to increase slump is prohibited

E. Adjustment to concrete mixes: mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

Concrete containing high—range water—reducing admixture (superplasticizer): not more than 8

A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.

B. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 Deg F (10 C. Use high-range water-reducing admixture in pumped concrete, concrete for industrial slabs, Architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.

D. Use air—entraining admixture in exterior exposed concrete unless otherwise indicated. Add air—entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 5_{to} 7 percent with a tolerance of plus or minus 1-1/2 percent.

E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with

2.07 CONCRETE MIXING A. Job-site mixing: mix concrete materials in appropriate drum-type batch machine mixer. For mixers of 1 cu. yd. Or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5

minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than 1 cu. yd., increase minimum 1-1/2 minutes of mixing time by 15 seconds for each additional cu. vd. 1. Provide batch ticket for each batch discharged and used in the work indicating project

identification name and number, date, mix type, mix time, quantity, and amount of water

mixing and delivery time from 1-1/2 hours to 75 minutes and when air temperature is above

introduced. B. Ready—mixed concrete: comply with requirements of ASTM C 94, and as specified. 1. When air temperature is between 85 Deg F (30 Deg C) and 90 Deg F (32 Deg C), reduce

90 Deg F (32 Deg C), reduce mixing and delivery tune to 60 minutes.

A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel. Before proceeding with concrete foundation work structural fill under building slab shall be complete and approved by the approved testing laboratory.

A. General: design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the

Provide class a tolerances for concrete surfaces exposed to view.

Provide class c tolerances for other concrete surfaces. B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment. location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide

wood inserts for forming keyways, reglets, recesses, and the like for easy removal

crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top

orms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf

E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips

fabricated to produce uniform smooth lines and tight edge joints. F. Provisions for other trades: provide openings in concrete formwork to accommodate work of other

trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

inaccessible before and during concrete placement. Securely brace temporary openings and set tightly

to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous

G. Cleaning and tightening; thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips. wood. sawdust. dirt. or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.03 VAPOR RETARDER/BARRIER INSTALLATION A. General: place vapor retarder/barrier sheeting in position with longest dimension parallel with direction

B. Lap joints 6 inches and seal with manufacturers recommended mastic or pressure-sensitive tape.

C. Seal all penetrations through vapor barrier. D. Repair all punctures or tears prior to concrete placement.

. Water-reducing, accelerating admixture: ASTM C 494, type E. Subject to compliance with requirements, 3.04 PLACING REINFORCEMENT

3.06 INSTALLING EMBEDDED ITEMS

manufacturer's instructions.

A. General: comply with concrete reinforcing steel institute's recommended practice for "placing reinforcing bars," for details and methods of reinforcement placement and supports and as specified.

1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or

concreting operations. Repair damages before placing concrete

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.

D. Place reinforcement to maintain minimum coverage as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete

F. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either 3.05 JOINTS

A. Construction joints: locate and install construction joints so they do not impair strength or

appearance of the structure, as acceptable to Architect . Provide keyways at least I-1/2 inches deep in construction joints in wall and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of

strip placements. 3. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete. B. Contraction (control) joints in slabs-on-grade: construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch wide by one-fourth of slab depth or

. Form contraction joints by inserting pre-molded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. After concrete has cured, remove inserts and clean groove of loose debris Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate

inserts 1/4 inch wide by one—third of slab depth, unless otherwise indicated.

A. General: set and build into formwork anchorage devices and other embedded items required for ot work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by supplier of items to be attached.

3. If joint pattern is not shown, provide joints not exceeding 15 feet in either direction and located

to conform to bay spacing wherever possible (at column centerline, half bays, third days).

B. Forms for slabs: set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting -type screeds. 3.07 PREPARING FORM SURFACES

A. General: coat contact surfaces of forms with an approved, form-coating compound before placing B. Do not allow excess form-coating material to accumulate in forms or come into contact with

in-place concrete surfaces against which fresh concrete will be placed. Apply according to

3.08 CONCRETE PLACEMENT A. Inspection: before placing concrete, inspect and complete formwork installation, reinforcing steel, ar

items to be embedded or cast in. Notify other trades to permit installation of their work.

B. General: comply with ACI 304, "guide for measuring, mixing, transporting, and placing concrete", a Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section

cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location C. Placing concrete in forms: deposit concrete in forms in horizontal layers no deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers,

place each layer while preceding layer is still plastic to avoid cold joints. 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not

duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate. D. Placing concrete slabs: deposit and consolidate concrete slabs in a continuous operation, within limits

Consolidate concrete during placement operations so concrete is thoroughly worked around

insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit

reinforcement, other embedded items and into corners. E. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not a disturb slab surfaces prior to beginning finishing

Maintain reinforcing in proper position on chairs during concrete placement.

of construction joints, until completing placement of a panel or section.

from physical damage or reduced strength that could be caused by frost, freezing actions, or low When air temperature has fallen to or is expected to fall below 40 Deg F (4 Deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 Deg F (10 Deg C) and not more than 80 Deg F (27 Deg C) at point of placement.

Cold-weather placement comply with provisions of ACI 306 and as follows. Protect concrete work

accelerators unless otherwise accepted in mix designs. G. Hot-weather placement when hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified

2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical

Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 Deg F (32 Deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's ontion. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.

3. Fog spray forms, reinforcing steel and subgrade just before placing concrete. Keep subgrade

isture uniform without puddles or dry areas. 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

3.09 FINISHING FORMED SURFACES A. Rough-formed finish: provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

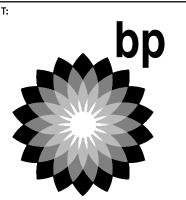
B. Related unformed surfaces: at tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

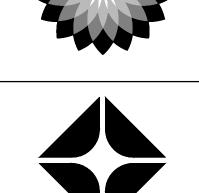
3.10 MONOLITHIC SLAB FINISHES

. Scratch finish: apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious fini looring material, and where indicated. After placing slabs, finish surface to tolerances of f(f) 15 (floor flatness) and f(I) 13 (floor levelness) measured according to ASTM E 1155. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set with stiff brushes,

B. Trowel finish: apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tie, paint, or another thin film—finish coating system.

After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface.







Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

NO. DATE REVISION DESCRIPTION

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REGISTERED

ARCHITECT

DAMEL B GOALWIN

EXP: Ø8/Ø5/24

STATE OF WASHINGTON

DEVELOPMENT INFORMATION:

SITE ADDRESS:

DESIGNED BY

FUEL CANOPY w/ 6 MPD's

ARCO NTI

3400 am/pm

1402 S MERIDIAN PUYALLUP, WA 98371

ALLIANCE Z&DM

FACILITY #7184

BP REPM: CHECKED BY: ALLIANCE PM: PROJECT NO: 21730 DRAWING TITLE:

ARCHITECTURA SPECIFICATIONS

- Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of f(f) 20 (floor flatness) and f(l) 17 (floor levelness) measured according to ASTM E 1155. Grind smooth any surface defects that would telegraph through applied floor covering system.
- D. Trowel and fine broom finish: where ceramic or quarry tile is to be installed with thin—set mortar, apply a trowel finish as specified, then immediately follow by slightly scarifying the surface with a
- E. Non—slip broom finish: apply a non—slip broom finish to exterior concrete platforms, steps, and
- Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before
- 3.11 MISCELLANEOUS CONCRETE ITEMS
- A. Fillina in: fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix. place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Equipment bases and foundations: provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment to template at correct elevations. complying with diagrams or templates of manufacturer furnishing machines and equipment.
- 3.12 CONCRETE CURING AND PROTECTION A. General: protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's
- instructions after screeding and bull floating, but before power floating and troweling. 3. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- c. Curing methods: cure concrete by curing compound, by moist curing, by moisture—retaining cover curing, or by combining these methods as specified below Curing compound: apply on exposed interior slabs and on exterior slabs, walks, and curbs as
- a. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of
- coating and repair damage during curing period. b. Use membrane type curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- Moisture curing: one of the following methods:
- Use continuous water-fog spray Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water,

using cover material and waterproof tape.

- and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a 4_inch lap over adjacent absorptive covers. Moisture-retaining cover curing: cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period
- D. Chemically—hardened exposed concrete slabs: apply concrete hardener only to moisture—cured concrete slabs. Do not apply on uncured slabs, colored concrete, or over membrane-cured slabs. After slabs are a minimum of 10-days old, spray apply or pour hardener evenly to slabs with squeegee. Puddles of excess hardener should be mopped up.
- . Curing formed surfaces: cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as
- . Curing unformed surfaces: cure unformed surfaces, including slabs, floor topping, and other flat surfaces, by applying the appropriate curing method.
- 1. Final cure concrete surfaces to receive finish flooring with a moisture—retaining cover, unless
- 3.13 REMOVING FORMS
- A. General: formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 Dea F (10 Deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form—removal operations, and provided curing and protection operations are maintained.
- 3. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive

strength of in—place concrete by testing field cured specimens representative of concrete location or

- . Form—facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports
- 3.14 CONCRETE SURFACE REPAIRS
- Patching defective areas: repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect
- B. Mix dry-pack mortar, consisting of one part portland cement to 2-1/2 parts fine aggregate passing
- a no. 16 mesh sieve, using only enough water as required for handling and placing. 1. Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and

brush-coat the area to be patched with bonding agent. Place patching mortar before bonding

- For surfaces exposed to view, blend white portland cement and standard portland cement so when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- Repairing unformed surfaces: test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
- Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01 inch wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
- Correct high greas in unformed surfaces by grinding after concrete has cured at least 14 days. Correct low greas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low greas and replacing with patching mortar. Finish repaired greas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable
- Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cuffing out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- . Repair isolated random cracks and single holes 1 inch or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bondina agent has dried. Compact dry-pack mixture in place and finish to match adiacent concrete. Keep patched area continuously moist for at least 72 hours.

3.15 QUALITY CONTROL TESTING DURING CONSTRUCTION

- Q. General: the Contractor will employ the geotechnical engineer of record to perform tests and to submit test reports.
- . Sampling and testing for quality control during concrete placement may include the following, as directed by Architect
- 1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
- Air content: ASTM C 173, volumetric method for lightweight or normal weight concrete: ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of
- air entrained concrete. . Concrete temperature: ASTM C 1064; one test hourly when air temperature is 40 Deg F (4 Deg C) and below, when 80 Deg F (27 Deg C) and above, and one test for each set of
- compressive-strength specimens. Compression test specimen: ASTM C 31: one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required
- Compressive-strength tests: ASTM C 39; one set for each day's pour exceeding 5 cu.yd. Plus additional sets for each 50 cu. Yd. More than the first 25 cu. Yd. Of each concrete class placed in any one day, one specimen tested at 7 days, two specimens tested at 28 days, and
- one specimen retained in reserve for later testing if required. Masonry fill concrete: ASTM C-1019 in accordance with ACI 530.1 specifications for masonry
- . When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than fiv
- . When total quantity of a given class of concrete is less than 50 cu. Yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
- l. When strength of field—cured cylinders is less than 85 percent of companion laboratory—cured
- cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete 1. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive

strength test results equal or exceed specified compressive strength and no individual strength test

result falls below specified compressive strength by more than 500 PSI

W. Test results will be reported in writing to Architect, structural engineer, ready—mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

- X. Nondestructive testing: impact hammer, sonoscope, or other nondestructive device may be permitted
- . Additional tests: the testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored complying with ASTM C 42, or by other methods as directed.
- 04200 UNIT MASONRY
- PART 1 GENERAL
- 1.01 SUMMARY
- A. This section includes the following: 1. Concrete unit masonry

including specified strength requirements.

- 1.02 SYSTEM PERFORMANCE REQUIREMENTS
- A. Provide unit masonry that develops the following installed compressive strengths (f'm)
- For concrete unit masonry: as follows:. F'm = 1900 PSI...
- A. General: submit the following in accordance with conditions of contract and Division 1 Specification
- B. Product data for each different masonry unit, accessory, and other manufactured product indicated,
- C. Shop drawings for reinforcing detailing fabrication, bending, and placement of unit masonry reinforcing bars. Comply with ACI 315 details and detailing of concrete reinforcing" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement
- D. Samples for initial selection purposes of the following: 1. Unit masonry samples in small—scale form showing full extent of colors and textures available
- for each different exposed masonry unit required. E. Material certificates for the following signed by manufacturer and Contractor certifying that each
- material complies with requirements Each different cement product required for mortar and grout including name of manufacturer, brand, type, and weight slips at time of delivery.
- Each material and grade indicated for reinforcing bars Each type and size of joint reinforcement. Each type and size of anchors, ties, and metal accessories
- F. Material test reports from a qualified independent testing laboratory employed and paid by Contractor indicating and interpreting test results relative to compliance of the following proposed masonry
- Mortar complying with property requirements of ASTM C 270. . Grout mixes. Include description of type and proportions of grout ingredients. See concrete specifications for masonry arout. Masonry units.
- Cold-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.
- H. Hot-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard. Qualification data for firms and persons specified in "auglity assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, telephone numbers, names of Architects and Owners, and other information specified. K. Results from

to Architect and Contractor. 1.04 QUALITY ASSURANCE

- A. Unit masonry standard: comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures," except as otherwise indicated.
- 1. Revise ACI 530.1/ASCE 6 to exclude sections and articles 15.1.2, 15.1.3, and to modify article 2.1.1.4 by deleting requirement for installing vent pipes and conduits built into masonry.

tests and inspections performed by Owner's representatives will be reported promptly and in writing

B. Inspecting laboratory qualifications: to qualify for employment in performing tests and inspection specified in this section, an independent testing laboratory must demonstrate to Architect's satisfaction, based on evaluation of laboratory-submitted criteria conforming to ASTM C 1093, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying the progress of the work.

1.05 PROJECT CONDITIONS

- A. Protection of masonry: during erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in
- 1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place. Where one with of multi-wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- B. Stain prevention; prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove immediately any grout, mortar, and soil that come in contact with
- . Protect base of walls from rain-splashed mud and mortar splatter by means of coverings
- spread on ground and over wall surface. Protect sills, ledges, and projections from mortar droppings. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes from mortar droppings.
- C. Cold-weather construction: comply with referenced unit masonry standard for cold-weather construction and the following:
- 1. Do not lay masonry units that are wet or frozen. 2. Remove masonry damaged by freezing conditions.
- D. Hot-weather construction: comply with referenced unit masonry standard.
- A. Comply with referenced unit masonry standard and other requirements specified in this section applicable to each material indicated.

- A. General: comply with requirements indicated below applicable to each form of concrete masonry unit
- Provide special shapes where indicated and as follows: a. For lintels, corners, jambs, sash, control joints, headers, bonding, and other special
- Bullnose units for outside corners unless otherwise indicated. Square—edged units for outside corners, except where indicated as bullnose. Size: provide concrete masonry units complying with requirements indicated below for size that are manufactured to specified face dimensions within tolerances specified in the applicable
- referenced ASTM specification concrete masonry units. 3. Concrete masonry units: manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on Drawings. I. Provide Type II, non-moisture-controlled units.
- B. Hollow load—bearing concrete masonry units: ASTM C 90, grade N and as follows:
- 1. Unit compressive strength: provide units with minimum average net area compressive strength indicated below.
- 2.03 MORTAR AND GROUT MATERIALS
- A. Portland cement: ASTM C 150, type I or II, except type III may be used for cold-weather construction. Provide natural color or white cement as required to produce required mortar color
- 1. For colored pigmented mortars use premixed colored masonry cements of formulation required to produce color indicated, or if not indicated, as selected from manufacturer's standard ormulations.

C. Ready—mixed mortar: cementitious materials, water, and aggregate complying with requirements

- 2. For colored aggregate mortars use masonry cement of natural color or white as required to produce mortar color indicated.
- specified in this article, combined with set-controlling admixtures to produce a ready-mixed mortar complying with ASC 1142 . Hydrated lime: ASTM C 207, type S
- . Aggregate for mortar: ASTM C 144, except for joints less than 1/4 inch use aggregate graded with
- 100 percent passing the no. 16 sieve.
- 1. White mortar aggregates: natural white sand or ground white stone. F. Agaregate for grout: ASTM C 404.
- H. Compressive strength of mortar and grout: 2500 psi minimum or as indicated on structural drawings.
- 2.04 REINFORCING STEEL (Refer to Structural Drawings)
- A. General: provide reinforcing steel complying with requirements of referenced unit masonry standard
- . Steel reinforcing bars: material and grade as follows 1. Billet steel complying with ASTM A 615, grade 60.
- C. Deformed reinforcing wire: ASTM A 496. D. Plain welded wire fabric: ASTM A 185.
- 2.05 JOINT REINFORCEMENT

- A. General: provide joint reinforcement complying with requirements of referenced unit masonry standard and this article, formed from the following:
- 1. Galvanized carbon steel wire, coating class as required by referenced unit masonry standard for application indicated.
- with requirements indicated below:

- into straight lengths of not less than 10 feet, with prefabricated corner and tee units, and complying
- B. Description: welded-wire units prefabricated with deformed continuous side rods and plain cross rods
- . Wire diameter for side rods: 0.1483 inch (9 gauge).
- Wire diameter for cross rods: 0.1483 inch (9 gauge) For single—with masonry provide type as follows with single pair of side rods: Ladder design with perpendicular cross rods spaced not more than 16 inches o.c. Truss design with continuous diagonal cross rods spaced not more than 16 inches o.c.
- C. Available manufacturers: subject to compliance with requirements, manufacturers offering join reinforcement that may be incorporated in the work include, but are not limited to, the following:
- AA Wire Products Co. Dur-o-wal, Inc.
- Heckman Building Products, Inc Hohmann & Barnard, Inc. Masonry Reinforcing Corp. of America. National Wire Products Industries
- Southern Construction Products, Inc. 2.06 TIES AND ANCHORS, GENERAL
- A. General: provide ties and anchors specified in subsequent articles that comply with requirements for metal and size of referenced unit masonry standard and of this article.
- B. Galvanized carbon steel wire: ASTM A 82, coating class as required by referenced unit masonry
- standard for application indicated. C. Steel plates and bars: ASTM A 36, shop painted with 2 coats of coal—tar epoxy—polyamide paint
- complying with SSPC Paint-16 to comply with SSPC-PA1 ("Paint Application Specification No. 1") and SSPC—SP6 ("Commercial Blast Cleaning") for surface preparation. D. Steel plates and bars: ASTM A 36, hot-dip galvanized to comply with ASTM A 123 or ASTM A 153,
- Class B3, as applicable to size and form indicated. E. Stainless steel plates and bars: ASTM A 666, Type 304, temper as required to support loads imposed without exceeding allowable design stresses.
- within 1/2" to 3/4" of face of masonry in which ties are placed. G. Available manufacturers: subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

F. Wall ties: rectangular or z-shaped fabricated of 3/16" steel wire. Length to extend across wythe to

- AA Wire Products Co. Dur-o-wal, Inc.
- Heckman Building Products, Inc. Hohmann & Barnard, Inc. Masonry Reinforcing Corp. of America
- National Wire Products Industries. Southern Construction Products, Inc
- 2.07 POST-INSTALLED ANCHORS A. Anchors as described below, with capability to sustain, without failure, load imposed within factors of safety indicated, as determined by testing per ASTM E 488, conducted by a qualified independent
- testing laboratory. Type: expansion anchors (sleeve anchors)
- Corrosion protection: carbon steel components zinc-plated to comply with ASTM B 633, Class FE/ZN 5 for class SC 1 service condition (mild). Use stainless steel anchors for exterior
- 3. For cast-in-place and post-installed anchors in concrete: capability to sustain, without failure, a load equal to 4 times loads imposed by masonry.
- 2.08 MASONRY CLEANERS A. Job-mixed detergent solution: solution of trisodium phosphate (1/2-cup dry measure) and laundry detergent (1/2-cup dry measure) dissolved in one gallon of water.
- B. Job-mixed muriatic solution: solution of 1 part muriatic acid and 10 parts clean water, mixed in a C. Proprietary acidic cleaner: manufacturer's standard—strength, general—purpose cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry
- surfaces of type indicated below without discoloring or damaging masonry surfaces; expressly approved for intended use by manufacturer of masonry units being cleaned: 1. For masonry not subject to metallic oxidation stains, use formulation consisting of a
- concentrated blend of surface-acting acids, chelating, and wetting agents. For dark colored masonry not subject to metallic oxidation stains, use formulation consisting of I liquid blend of surface—acting acids and special inhibitors. 3. For masonry subject to metallic oxidation stains, use formulation consisting of a liquid blend of
- 4. Available products: subject to compliance with requirements, a product that may be used to clean unit masonry surfaces includes, but is not limited to, the following: a. "Sure Klean No. 600 Detergent," Prosoco, Inc o. "Sure Klean No. 101 Lime Solvent." Prosoco., Inc.

organic and inorganic acids and special inhibitors.

c. "Sure Klean Vana Trol," Prosoco, Inc. 2.09 MORTAR AND GROUT MIXES

A. General: do not add admixtures including coloring pigments, air—entraining agents, accelerators

- retarders, water repellent agents, antifreeze compounds, or other admixtures, unless otherwise 1. Do not use calcium chloride in mortar or grout
- B. Mortar for unit masonry: Type S, complying with ASTM C 270, proportion specification.
- C. Mortar for unit masonry: comply with ASTM C 270, property specification for job-mixed mortar and ASTM C 1142 for ready-mixed mortar, of types indicated below:
- Limit cementitious materials in mortar to Portland cement-lime. 2. For all masonry unless otherwise indicated:

D. Grout for unit masonry see concrete specifications.

- 2.10 SOURCE QUALITY CONTROL A. Concrete masonry unit tests: for each type, class, and grade of concrete masonry unit indicated,
- units will be tested by qualified independent testing laboratory for strength, absorption, and moisture content per ASTM C 140 PART 3 - EXECUTION
- 3.01 EXAMINATION A. Examine conditions, with installer present, for compliance with requirements for installation tolerances and other specific conditions, and other conditions affecting performance of unit masonry.
- For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to
- C. Do not proceed until unsatisfactory conditions have been corrected.
- 3.02 INSTALLATION, GENERAL A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in project.
- B. Thickness: build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal C. Leave openings for equipment to be installed before completion of masonry. After installation of
- equipment, complete masonry to match construction immediately adjacent to the opening. D. Cut masonry units with motor—driven saws to provide clean, sharp, unchipped edges. Cut units as
- required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting where possible. 3.03 CONSTRUCTION TOLERANCES

prior to laying fresh masonry.

- A. Comply with construction tolerances of referenced unit masonry standard. 3.04 LAYING MASONRY WALLS
- for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less than-half-size units at corners, jambs, and where possible at other locations. B. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and

- C. Bond pattern for exposed masonry: lay exposed masonry in the following bond pattern; do not use units with less that nominal 4-inch horizontal face dimensions at corners or jambs. . One—half running bond with vertical joint in each course centered on units in courses above and
- D. Lay concealed masonry with all units in a wythe in running bond. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions E. Stopping and resuming work: in each course, rake back I/2-unit length for one-half running bond or 1/3-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set

masonry, wet clay masonry units lightly (if required), and remove loose masonry units and mortar

F. Built-in work: as construction progresses, build-in items specified under this and other sections of the Specifications. Fill in solidly with masonry around built—in items 1. Where built-in items are to be embedded in cores of hollow masonry "F" units, place a layer of metal lath in the joint below and rod mortar or grout into core.

2. Fill cores in hollow concrete masonry units with grout 3 courses (24 inches) under bearing

plates, beams, lintels, posts, and similar items, unless otherwise indicated.

3.05 MORTAR BEDDING AND JOINTING A. Lay hollow concrete masonry units as follows:

- With full mortar coverage on horizontal and vertical face shells Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with aout.
- For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.
- B. Cut joints flush for masonry walls to be concealed or to be covered by other materials, unless
- otherwise indicated.
- C. Mortar joints: tooled concave joints.
- 3.06 HORIZONTAL JOINT REINFORCEMENT
- A. General: provide continuous horizontal pint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcing a minimum of 6 inches.
- B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by use of prefabricated "I" and "t' sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.
- 3.07 MOVEMENT (CONTROL AND EXPANSION) JOINTS A. General: install control and expansion joints in unit masonry where indicated. Build in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows
- 1. Fit bond breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces. Install preformed control joint aaskets designed to fit standard sash block Install special shapes designed for control joints. Install bond breaker strips at joint. Keep head joints free and clear of mortar or rake joint.
- 3.08 FIELD QUALITY CONTROL A. Testing frequency: tests and evaluations listed in this article will be performed during construction for
- each 5000 sa. Ft. of wall area or portion thereof. Mortar properties will be tested per property specification of ASTM C 270. Mortar composition and properties will be evaluated per ASTM C 780.
- Grout compressive strength will be sampled and tested per ASTM C 1019. B. Evaluation of quality control tests: in absence of other indications of noncompliance with requirements, masonry will be considered satisfactory if results from construction quality control tests comply with minimum requirements indicated.
- 3.09 REPAIRING, POINTING, AND CLEANING A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar
- or grout, pointed to eliminate evidence of replacement B. Pointing: during the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings, and adjacent construction to provide a neat, uniform appearance, prepared for application of sealants.
- C. Final cleaning: after mortar is thoroughly set and cured, clean exposed masonry as follows: 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or
- 2. Test cleaning methods on sample wall panel; leave 1/2 panel un-cleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them
- with liquid strippable masking agent, polyethylene film, or waterproof masking tape. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water. 5. Clean brick by means of bucket and brush hand-cleaning method described in BIA "technical
- b. Job-mixed acidic solution. D. Proprietary acidic cleaner; apply in compliance with directions of acidic cleaner manufacturer E. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 45 applicable to type
- F. Protection: provide final protection and maintain conditions, in a manner acceptable to installer, that ensure unit masonry is without damage and deterioration at time of substantial completion.

A. Submit the following in accordance with Section 01300:

of stain present on exposed surfaces.

Job-mixed detergent solution

note no. 20 revised" using the following masonry cleaner:

<u>04700 - SIMULATED MASONRY</u>

END OF SECTION

A. Section includes materials and procedures for installation of lightweight manufactured simulated stone

and masonry veneers, which are adhered to the exterior of the structure, and serve as the exterior

1.02 SUBMITTALS

- 1. Manufacturer's product data for simulated masonry veneer, accessories, setting materials, and 2. Manufacturer's detailed installation instructions, and evidence of minimum of five year's experience
- in the production of simulated masonry veneer. 1.03 PROJECT CONDITIONS A. Environmental Requirements: Minimum air temperature of 40 F degrees prior to, during, and for 48
- hours after completion of work. Store delivered stone in a dry place above 40 F degrees minimum for a minimum of 24 hours before installation
- PART 2 PRODUCTS 2.01 ACCEPTABLE MANUFACTURERS
- A. Provide simulated masonry veneer products as indicated on the drawings.
- A. Provide installation pattern and color as indicated on the drawings. Provide corner pieces, sills, and B. Setting materials
- 1. Moisture Barrier a. Tyvek Stucco Wrap, by E.I. Dupont. Provide manufacturer's approved tape at joints and b. 30 lb/100 s.f. ASTM D226, non-perforated asphalt saturated organic felt.
- Metal Lath: ASTM C847, 18 gauge self furring, galvanized 3.4 lb expanded metal lath. Fasteners: Galvanized staples, nails or screws of size, spacing and type as recommended by the simulated masonry manufacturer. 4. Mortar/Grout: a. Type S Mortar, complying with ASTM C270, using ASTM C150 cement, Type1 or 2.
- b. Masonry sand, complying with ASTM C144 c. Mortar/Grout color: As indicated on Drawings
- PART 3 EXECUTION
- 3.01 EXAMINATION AND PREPARATIONS A. Examine site conditions: Verify that all substrates are clean and securely installed.
- Verify that exterior wall receptacles, junction boxes, and projecting structural items have been 3. Do not commence work until defective conditions have been corrected

A. Moisture Barrier: Install per manufacturer's instructions.

B. Metal Lath: Install metal lath over moisture barrier per manufacturer's instructions C. Mortar scratch coat: Apply 3/8" scratch coat of mortar to metal lath and allow to dry for 48

D. Install simulated masonry per manufacturer's instruction in pattern indicated on Drawings. Joints to be

hours. Apply bonding agent to back side of simulated masonry per manufacturer's instructions

- A. Remove excess mortar and smears using a wire brush or steel wool within 1 to 2 hours of
- C. Leave surfaces thoroughly clean and free of mortar or other soiling. 05500 - METAL FABRICATIONS

B. Do not use acid cleaners.

Rough hardware.

PART 1 - GENERAL

A. This section includes provisions and procedures governing the design, engineering, fabrication, furnishing and installation of metal fabrications

B. Metal fabrications for the work include, but are not limited to, the following:

Applications where framing and supports are not specified in other sections. Miscellaneous steel trim. Shelf and relieving angles

Loose bearing and leveling plates.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

- A. Design, engineer, fabricate, and install the metal fabrications to withstand the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each respective component of each metal fabrication.
- B. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans. elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other

A. Product data for products used in miscellaneous metal fabrications, including paint products and

- . Where installed metal fabrications are indicated to comply with certain design loadings, include structural computations, material properties, and other information needed for structural analysis that has been signed and sealed by the qualified professional engineer who was responsible for their
- D. Samples representative of materials and finished products as may be requested by Architect.
- E. Welder certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" article. F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their
- capabilities and experience. Include list of completed projects with project name, addresses, names of Architects and Owners, and other information specified. 1 04 QUALITY ASSURANCE
- A. Fabricator shall be a firm experienced in successfully producing metal fabrications similar to that indicated for this project, with sufficient production capacity to produce required units without causing
- B. Qualify welding processes and welding operators in accordance with AWS D1.1 Structural Welding Code -- Steel," D13 "Structural Welding Code - Sheet Steel".

C. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes

- involved and, if pertinent, has undergone re-certification. D. Engineering shall be provided by a professional engineer licensed to practice in the state where the project is located and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal fabrications similar in material, design, and extent to that indicated for this project.
- A. Field measurements: check actual locations of walls and other construction to which metal fabrications must fit, by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of

Where field measurements cannot be made without delaying the work, the contractor shall

quarantee dimensions and may proceed with fabrication of products without field measurements.

Coordinate construction to ensure that actual opening dimensions correspond to the guaranteed dimensions. Allow for trimming and fitting.

standards for stretcher-leveled sheet.

PART 2 - PRODUCTS

2.01 FERROUS METALS A. Metal surfaces, general; for metal fabrications exposed to view upon completion of the work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do

not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade

names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference

B. Steel plates, shapes, and bars: ASTM A 36.

1. Cold—rolled structural steel sheet: ASTM A 611, grade as follows:

C. Steel tubing: product type (manufacturing method) and as follows:

- 1. Cold-formed steel tubing: ASTM A 500, grade as indicated below. a. Grade A, unless otherwise indicated or required for design loading. D. Uncoated structural steel sheet product type (manufacturing method), quality, and grade, as follows
- Grade A, unless otherwise indicated or required by design loading. E. Galvanized steel sheet: quality as follows:
- G90 coating designation unless otherwise indicated. 2. Commercial quality. ASTM A 526, G90 coating designation unless otherwise indicated. F. Brackets, flanges and anchors: cast or formed metal are to be of the same type material and finish

G. Concrete inserts: threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A

47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per

grout complying with CE CRD- C 621. Provide grout specifically recommended by manufacturer for

Structural quality: ASTM A 446; Grade A, unless another grade required for design loading, and

H. Welding rods and bare electrodes: select in accordance with AWS specifications for the metal alloy to 2.02 GROUT AND ANCHORING CEMENT

A. Non-shrink nonmetallic grout: premixed, factory-packaged, non-staining, non-corrosive, nongo

interior and exterior applications of type specified in this section. B. Products: subject to compliance with requirements, provide one of the following non-shrink

2.03 FASTENERS

"Masterflow 713"; Master Builders. "Five Star Grout": Five Star Products, Inc "Vibropruf #11": Lambert Corp.

"Euco NS Grout"; Euclid Chemical Co.

as supported rails, unless otherwise indicated.

A. Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

E. Wood screws: flat head carbon steel, FS FF-S-111.

F. Plain washers: round, carbon steel, FS FF-W-92.

C. Lag bolts: square head type, FS FF-B-561. D. Machine screws: cadmium plated steel, FS FF&92.

B. Bolts and nuts: regular hexagon head type, ASTM A 307, Grade A.

G. Drilled-in expansion anchors: expansion anchors complying with FS FF-S-325, group VIII (anchors expansion, non-drilling), type I (internally threaded tubular expansion anchor); and machine bolts

H. Toggle bolts: tumble—wing type, FS FF-B-588, type, class, and style as required.

I. Lock washers: helical spring type carbon steel, FS FF-W-84. 2.04 PAINT

2.05 FABRICATION, GENERAL

complying with FS FF-B-575, grade 5.

compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field—applied topcoats despite prolonged exposure complying with performance requirements of FS B. Zinc chromate primer: FS TT-P-645.

universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for

A. Shop primer for ferrous metal: manufacturer's or fabricator's standard, fast-curing, lead-free,

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp

D. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent_metal corners to smallest radius possible without causing grain separation or otherwise impairing

resistance of base metals.

and similar items.

Obtain fusion without undercut or overlap.

anchoring devices to provide adequate support for intended use.

C. Shear and punch metals cleanly and accurately. Remove burrs.

- F. Remove sharp or rough areas on exposed traffic surfaces. G. Weld corners and seams continuously to comply with AWS recommendations and the following: 1. Use materials and methods that minimize distortion and develop strength and corrosion
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips set-head (countersunk) screws or bolts. Locate joints where least conspicuous. I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space

J. Shop assembly: pre-assemble items in shop to areatest extent possible to minimize field splicing and

assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections

At exposed connections, finish exposed welds and surfaces smooth and blended so that no

roughness shows after finishing and contour of welded surface matches those adjacent.

- that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated K. Cut. reinforce. drill and tap miscellaneous metal work as indicated to receive finish hardware, screws,
- L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes

- 2.06 ROUGH HARDWARE
- A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in division 6 sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.
- 2.07 LOOSE BEARING AND LEVELING PLATES A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete
- construction, made flat, free from warps or twists, and of required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.
- 2.08 LOOSE STEEL LINTELS
- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated
- D. Galvanize loose steel lintels located in exterior walls. 2.09 MISCELLANEOUS FRAMING AND SUPPORTS
- A. Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work . Fabricate units to sizes, shapes, profiles indicated or as required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and
- steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items. C. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.

A. Provide shapes and sizes indicated for profiles shown. Unless otherwise indicated, fabricate units from

edges. Use concealed field splices wherever possible provide cutouts, fittings, and anchorages as

structural steel shapes, plates, and steel bars, with continuously welded joints and smooth exposed

- . Except as otherwise indicated, space anchors $\dot{24}$ inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inches wide x 1/4 inch x 8 inches long. D. Galvanize miscellaneous framing and supports in exterior locations.
- 2.10 MISCELLANEOUS STEEL TRIM
- B. Galvanize miscellaneous framing and supports in the following locations:
- 1. Exterior locations. 2. Interior locations where indicated 2.11 FINISHES, GENERAL

1. Exteriors (SSPC Zone 1B): SSPC—SP6 "Commercial Blast Cleaning."

required for coordination of assembly and installation with other work.

A. Comply with NAAMM metal finishes manual for recommendations relative to application and designations of finishes.

conditions of installed metal fabrications:

Coordinate delivery of such items to project site.

- B. Finish metal fabrications after assembly. 2.12 STEEL AND IRON FINISHES
- A. Galvanizing: apply zinc-coating by the hot-dip process compliance with the following requirements: ASTM A 153 for galvanizing iron and steel hardware. 2. ASTM A 123 for galvanizing both fabricated and un-fabricated iron and steel products made of
- B. Preparation for shop priming: prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure

uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and

- 2. Interiors (SSPC Zone 1A): SSPC—SP3 "Power Tool Cleaning: C. Apply shop primer to uncoated surfaces of metal fabrications, except those with aglyanized finish or
- PART 3 EXECUTION 3.01 PREPARATION A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions

for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous

items having integral anchors that are to be embedded in concrete or masonry construction.

with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.

3.02 INSTALLATION, GENERAL A. Fastening to in-place construction: provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through—bolts, lag bolts, wood screws, and other

miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation;

with edges and surfaces level, plumb, true, and free of rack; and measured from established lines

weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after

B. Cuffing, fitting, and placement: perform cutting, drilling, and fitting required for installation of

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction. D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not

fabrication, and are intended for bolted or screwed field connections.

- E. Field welding: comply with AWS code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following: 1. Use materials and methods that minimize distortion and develop strength and corrosion
- 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches those adjacent. F. Corrosion protection: coat concealed surfaces of aluminum that will come into contact with arout.

concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc

1. Coat interior as well as exterior surfaces of tubular items, or "dip" to ensure proper corrosion

areas of shop paint, and paint exposed areas with same material as used for shop painting to

3.03 ADJUSTING AND CLEANING A. Touch-up painting: immediately after erection, clean field welds, bolted connections, and abraded

comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.

B. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

C. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

<u>06100 - ROUGH CARPENTRY</u> (Refer also to Structural Drawings)

carpentry including, but not limited to, the following:

1.01 SUMMARY

FND OF SECTION

1.02 DEFINITIONS

resistance of base metal

Remove welding flux immediately.

Obtain fusion without undercut or overlap.

Framing with dimension lumber. Wood grounds, nailers, and blocking. Wood furring. . Sheathing.

A. This section includes provisions and procedures governing the furnishing and installation of rough

exposed, unless otherwise specified. A. Material certificates for dimensional lumber specified to comply with minimum allowable unit stresses.

Indicate species and grade selected for each use as well as design values approved by the board of

A. Rough carpentry includes carpentry work not specified as part of other sections and generally not

B. Wood treatment data as follows including chemical treatment manufacturer's instructions for handling, storing, installation, and finishing of treated material: . For each type of preservative treated wood product include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards

2. For water-borne treated products include statement that moisture content of treated materials

was reduced to levels indicated prior to shipment to project site.

3. Warranty of chemical treatment manufacturer for each type of treatment.

- Research reports or evaluation reports of the model code organization acceptable to authorities having jurisdiction evidencing compliance of the following wood products with specified requirements and building code in effect for project.
- Board sheathina. Air infiltration barriers Metal framing anchors. Power driven fasteners

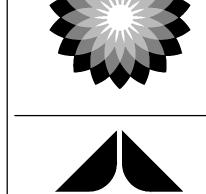
review of American Lumber Standards Committee.

1.04 QUALITY ASSURANCE

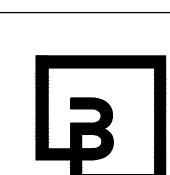
Engineered wood products.











Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South

Kent. WA 98032

barghausen.com

425.251.6222

NO. DATE REVISION DESCRIPTION to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply

> STATE OF WASHINGTON EXP: Ø8/Ø5/24

REGISTERED

ARCHITECT

DAMEL B GOALWIN

SEAL:

DEVELOPMENT INFORMATION:

SITE ADDRESS:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

FACILITY #7184 DESIGNED BY ALLIANCE Z&DM

BP REPM:

ALLIANCE PM:

CHECKED BY:

ARCHITECTURA SPECIFICATIONS

1402 S MERIDIAN PUYALLUP, WA 98371

PROJECT NO: 21730

A. Single-source responsibility for engineered wood products: obtain each type of engineered wood products from one source from a single manufacturer

B. Testing laboratory qualifications: to qualify for acceptance, an independent testing laboratory must demonstrate to Architect's satisfaction, based on evaluation of laboratory—submitted criteria conforming to ASTM E 699, that it has the experience and capability to conduct satisfactorily the testing indicated without delaying the progress of the work.

PART 2 - PRODUCTS 2.01 LUMBER, GENERAL

A. Lumber standards: furnish lumber manufactured to comply with PS 20 "American Softwood Lumber Standard" and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) board of review.

B. Inspection agencies: inspection agencies and the abbreviations used to reference them with lumber grades and species include the following:

. WCLIB _ West Coast Lumber Inspection Bureau. WWPA _ Western Wood Products Association.

C. Grade stamps: provide lumber with each piece factory—marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species,

1. For exposed lumber furnish pieces with grade stamps applied to ends or back of each piece; omit grade stamps entirely and provide certificates of grade compliance issued by inspection

D. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required

by PS 20, for moisture content specified for each use E. Provide dressed lumber, S4S, unless otherwise indicated.

F. Provide seasoned lumber with 19 percent maximum moisture content at time of dressina and shipment for sizes 2 inches or less in nominal thickness, unless otherwise indicated

A. For light, non-load bearing, framing provide "stud," "no. 3," or "standard" grade lumber for stud framing (2 to 4 inches thick, 2 to 4 inches wide, 10 feet and shorter) and "stud" or "no. 3" grade for other light framing (2 to 4 inches thick, 2 to 6 inches wide), any species.

B. For structural light framing (2 to 4 inches thick, 2 to 4 inches wide), provide the following grade

1. "No. 2" grade. 2. Same species as indicated for structural framing grade below.

C. For structural framing (2 to 4 inches thick, 5 inches and wider), provide the following grade and

1. "No 2" grade 2. Douglas Fir graded under WWPA rules, or approved equal of the same properties as indicated

2.02 DIMENSION LUMBER

3. Any species and grade that complies with the following requirements for species group as defined in table 8.1a of N.F.P.A national design specification, for extreme fiber stress in bending "fb" for single and repetitive members, and for modules of elasticity "e": a. Group II species, "fb" of 900 PSI and fv of 180 PSI

D. For exposed framing lumber provide material complying with the following requirements:

1. Definition: exposed framing refers to dimension lumber that is not concealed by other

construction and is indicated to receive a stained or natural finish. 2. Grading: material hand—selected at factory from lumber of species and grade indicated below that complies with "Appearance" grade requirements of ALSC national grading rule; issue inspection certificate of inspection agency for selected material.

3. Interior exposed framing: no. 2 hemfir graded under WWPA rules. 4. Exterior exposed framing: no. 1 western red cedar.

2.03 MISCELLANEOUS LUMBE

A. Provide lumber for support or attachment of other construction including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar

B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown. C. Moisture content: 19 percent maximum for lumber items not specified to receive wood preservative

). Grade: "standard" grade light-framing-size lumber of any species or board-size lumber as required. "No. 3 common" or "standard" grade boards per WCLIP or WWPA rules or "no. 2 boards" per WWPA

2.04 ENGINEERED WOOD PRODUCTS

A Provide engineered wood products for which current model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance for the application indicated with specified requirements and the building code in effect for this project. B. Laminated veneer lumber: lumber manufactured by laminating wood veneers in a continuous press

using an exterior-type adhesives complying with ASTM D 2559 to produce members with arain of veneers parallel with their lengths and complying with the following requirements:

Veneer characteristics: Douglas Fir or Southern Pine veneers of varying thickness by widths and lengths standard with manufacturer, end—jointed with a lap—joint, butt joint, or scarf joint. Allowable design stresses: as follows, determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing

3. Extreme fiber stress in bending (fb): 2800 PSI (for12-inch deep members). 4. Modules of elasticity (e): 2,000,000 PSI

5. Tension parallel to arain (ft): 1850 PSI

Compression parallel to grain (fc): 2700 PSI

Compression perpendicular to grain: 400 PSI and 500 PSI perpendicular and parallel to glue line. 8. Horizontal shear (fv): 285 PSI and 190 PSI perpendicular and parallel to glue line.

9. Sizes: 1-3/4 inches thick by depth and length indicated. 10. Sizes: as indicated.

Available products: subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

1. Laminated Veneer Lumber. (L.V.L.), headers and beams," a. Micro — Lam, Truss Joist Mcmillen

GP Lam, Georgia Pacific c. Gana Lam, Louisiana Pacific

2.05 CONSTRUCTION PANELS, GENERAL

2.06 CONSTRUCTION PANELS, SPECIFIC

A. Construction panel standards: comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood construction panels and, for products not manufactured under PS 1

provisions, with APA PRP-108. 3. Trademark: furnish construction panels that are each factory—marked with APA trademark evidencing compliance with grade requirements.

A. Provide APA performance—rated panels complying with requirements designated under each application for grade designation, span rating, exposure durability classification, edge detail (where applicable), and thickness where construction panels are indicated for concealed types of applications.

. Wall sheathing: for use as typical wall sheathing, provide (osb) oriented strand board with grade. Designation, APA rated sheathing exterior, in thickness indicated, or, if not otherwise indicated, not less than 5/8" nominal thickness.

Wall sheathing: for use as shear wall sheathing, provide plywood panels with grade designation, APA rated structural 1 rated sheathing exterior, in thickness indicated, or, if not otherwise indicated, not less than 5/8" nominal thickness.

Roof sheathing: for use as roof decking, provide plywood panels with grade designation, APA sturd-i-floor exterior, tongue and groove, sized for span, in thickness indicated, or, if not otherwise indicated, not less than 5/8" nominal thickness. 4. Plywood backing panels: for kitchen shelving, provide plywood panels with grade designation, APA

C-D plugged exposure exterior, in thickness indicated, or, if not otherwise indicated, not less than 5/8" nominal thickness. Electrical backing panels: for mounting electrical or telephone equipment, provide

fire-retardant-treated plywood panels with grade designation. APA C-D plugged Exposure 1. in thickness indicated, or, if not otherwise indicated, not less than 1/2" nominal thickness. 6. Millwork panels: for all interior finish millwork, provide hardwood plywood panels with grade designation, APA A Exposure 1, in thicknesses indicated on construction documents, but in no

2.07 AIR INFILTRATION BARRIER / WATER-RESISTANT MEMBRANE

case less than 5/8" nominal thickness.

A. Woven polyolefin sheet, 0.005 inch thick, with a moisture vapor transmission rate of 70 grams/sa Meter/24 hours per ASTM E 96, procedure and a flame spread rating not exceeding 25 per ASTM E

B. Available products: subject to compliance with requirements, air infiltration barriers / water-resistant membranes that may be incorporated in the work include, but are not limited to, the following:

. "Barricade Building Wrap," Simplex Products Division, Anthony Industries, Inc. 2. Tyvek Housewrap," Fibers Department, du Pont Company.

2.08 FASTENERS

A. Provide fasteners of size and type indicated that comply with requirements specified in this article

B. Provide fasteners with a hot-dip zinc coating per ASTM A 153 or of AISI Type 304 stainless steel, where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity. C. Nails, wire and brads: FS FF-N-105

D. Power driven fasteners: national evaluation report NER-272.

E. Wood screws: ANSI B18.6.1

F. Lag bolts: ANSI B18.2.1. G. Bolts: steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where

indicated, flat washers galvanize for exterior applications.

2.09 METAL FRAMING ANCHORS

A. General: provide metal framing anchors of type, size, metal, and finish indicated that comply with requirements specified including the following:

1. Current evaluation/research reports: provide products for which model code evaluation/research reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with the building code in effect for this

2. Allowable design loads; provide products for which manufacturer publishes allowable design loads that are determined from empirical data or by rational engineering analysis and that are demonstrated by comprehensive testing performed by a qualified independent testing laboratory

fabrication to comply with ASTM A 525 for coating designation g60 and with ASTM A 446, Grade A

(structural quality); ASTM A 526 (commercial quality); or ASTM A 527 (lock-forming quality); as

standard with manufacturer for type of anchor indicated. 1. Use adjusted steel framing anchors and bolts for rough carpentry exposed to weather, in ground contact, or in area of high relative humidity, and where indicated.

B. Galvanized steel sheet: steel sheet zinc-coated by hot-dip process on continuous lines prior to

C. Acceptable manufacturer: Simpson Strong-tie Company

2.10 MISCELLANEOUS MATERIALS

. Adhesives for field gluing panels to framing: formulation complying with APA AFG-01 that is approved for use with type of construction panel indicated by both adhésive and panel manufacturer. 2.11 PRESERVATIVE WOOD TREATMENT BY PRESSURE PROCESS

A. Comply with applicable requirements of AWPA Standards C2 (lumber) and C9 (plywood) where lumber or plywood is indicated as preservative—treated wood or is specified herein to be treated. Mark each treated item with the AWPB or SPIB quality mark requirements

B. Pressure-treat above-ground items with water-borne preservatives to a minimum retention of 0.25 pcf for interior uses, after treatment, kiln-dry lumber and plywood to a maximum moisture content, respectively, of 19 percent and 15 percent. Treat indicated items and the following: C. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in

connection with roofing, flashing, vapor barriers, and waterproofing. D. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with

E. Wood framing members less than 8 inches above grade.

F. Wood floor plates installed over concrete slabs directly in contact with earth

preservatives to a minimum retention of 0.40 pcf H. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces to comply with AWPA M4. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

G. Pressure-treat wood members in contact with the ground or fresh water with water-borne

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of rough carpentry construction and that are too small to use in fabricating rough carpentry with minimum joints or optimum joint arrangement

B. Set rough carpentry to required levels and lines, with members plumb and true to line and cut and

C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other

D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated.

E. Countersink nail heads on exposed carpentry work and fill holes. F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Use galvanized nails and screws for all exterior exposed framing. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attachment of other work; form to shapes as shown and cut as required for true line and level o

work to be attached. Coordinate location with other work involved.

B. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

C. Install permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2 inches wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

A. Framing standard: comply with N.F.P.A. "Manual for Wood Frame Construction," unless otherwise

B. Framing with engineered wood products: install framing composed of engineered wood products to comply with manufacturer's directions

C. Install framing members of size and spacing indicated

E. Do not splice structural members between supports.

or anchor plates to supporting construction.

spaced 16 inches o.c., as indicated.

A. Cover sheathing with air infiltration barrier as follows:

width of studs. Set headers on edge and support on jamb studs.

1. Apply plastic sheet to comply with manufacturer's printed directions.

<u>06192 - PREFABRICATED WOOD TRUSSES</u> (Refer also to Structural Drawings)

truss-to-truss connections, and truss-to-framing connections

requirements and building code in effect for project.

2. Apply air infiltration barrier to cover upstanding flashing with 4-inch overlap.

B. Standards: comply with N.F.P.A. "National Design Specification for Wood Construction"

C. Submittals: in addition to product data for truss components submit the following

wood trusses supplied for project comply with specified requirements.

testing agency acceptable to Architect and authorities having jurisdiction.

A. General: furnish and install open—web trusses consisting of wooden top and bottom chords and

tubular steel web members as indicated on the Drawings and as specified herein, including all

1. Shop drawings showing sizes, design values, materials, and dimensional relationships of

components as well as bearing and anchorage details. Provide shop drawings that have been

Design calculations for all trusses and truss-to-truss connections that indicate design loadings

allowable stresses, and connection capacities. Calculations shall be signed and stamped by a

professional engineer legally authorized to practice in the jurisdiction where project is located.

Product certificate, signed by officer of fabricating firm, certifying that metal-plate-connected

4. Research reports or evaluation reports of the model code organization acceptable to authorities

having jurisdiction evidencing compliance of fire-retardant-treated wood with specified

D. Single-source engineering responsibility: provide trusses engineered by the truss manufacturer to

support superimposed dead and live loads indicated, with design approved and certified by a

E. Fabricator's auglifications: a firm that participates in a recognized auglity assurance program that

involves inspection by SPIB; Timber Products Inspection, Inc. or other independent inspection and

professional engineer legally authorized to practice in jurisdiction where project is located.

signed and stamped by a professional engineer legally authorized to practice in jurisdiction where

Building Code.

6 inches o.c.

3.05 AIR INFILTRATION BARRIER

PART 1 - GENERAL

1.01 REQUIREMENTS

project is located.

D. Anchor and nail as shown, and to comply with the following: 1. National evaluation report no. NER-272 for pneumatic or mechanical driven staples, P-nails, and 2.01 INSULATING MATERIALS, GENERAL

Published requirements of manufacturer of metal framing anchors. "Recommended nailing schedule" of referenced framing standard and with N.F.P.A. "National Design Specifications for Wood Construction."

Table 2304.10.1 - Fastening Schedule of the International Building Code. 6. Table 2306.2 (2) - Allowable Shear for Wood Structural Panel Blocked Diaphragms of the International Building Code.

closely fitted wood blocks of nominal 2-inch-thick lumber of the same width as framing members.

A. Arrange studs so that wide face of stud is perpendicular to direction of wall or partition and narrow

face is parallel install single bottom plate and double top plates using 2-inch-thick members whose

2. For interior partitions and walls install 2-inch by 4-inch or 2-inch by 6-inch wood studs

B. Construct corners and intersections with not less than 3 studs. Install miscellaneous blocking and

framing as shown and as required for support of facing materials, fixtures, specialty items, and trim.

C. Frame openings with multiple studs and headers. Install nailed header members of thickness equal to

For non-bearing partitions, install double-jamb study and headers not less than 4 inches deep

For load-bearing partitions, install triple-jamb studs for all openings unless otherwise indicated.

Install headers of depth shown, or if not shown, as recommended by N.F.P.A. "Manual for House

for openings 3 feet and less in width, and not less than 6 inches deep for wider openings.

C. Foundation perimeter insulation and underslab rigid insulation: Extruded polystyrene closed cell, boards 7. Table 2306.3 (1) - Allowable Shear for Wood Structural Panel Shear Walls of the International

15-lbs. per cu. ft. minimum density comply with Fed. Spec. HH-I-530,Type I Grade 2; manufacturer's standard sizes. (Expanded polystyrene will not be accepted. D. Faced mineral fiber blanket/batt insulation: 6 1/4" R-21 value for wall insulation. Wall insulation to be foil faced in areas not covered by gypsum board., all other areas to be kraft paper faced. F. Firestop concealed spaces of wood framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 forType III, Class A (blankets with reflective vapor-retarder membrane facing with flame spread of 25 or less); foil-scrim-kraft or foil-scrim-polyethylene

F. Handle and store trusses with care to avoid damage from bending, overturning or other cause.

A. Lumber: provide dressed lumber S4S, grade marked, complying with PS 20 and requirements

8.1a of N.F.P.A national design specification: Group II species, "FB" of 1200/1400 PSI for

single/repetitive member use. "E" of 1.600.000 PSI.

Nails, wire, brads, and staples: FS FF-N-105.

comply with requirements specified including the following:

Power driven fasteners: national evaluation report NER-272.

153 or AISI type 304 stainless steel fasteners.

Wood screws: ANSI B18.6.1.

independent testing laboratory.

2.02 FARRICATION

2.03 INSTALLATION

END OF SECTION

PART 1 - GENERAL

1.02 DEFINITIONS

1.04 QUALITY ASSURANCE

widths, and lengths.

07210 - BUILDING INSULATION

insulation including, but not limited to, the following:

Concealed building insulation in batt form.

Roof insulation is specified in Section 07531.

C. Interior Acoustical Insulation is specified in Section 09200

A. Product data for each type of insulation product specified.

of applicable testing and inspecting organization

Fire resistance ratings: ASTM E 119.

Combustion characteristics: ASTM E 136

Surface burning characteristic, ASTM E 84

Lag bolts: ANSI B18.2.1.

indicated. Moisture content: seasoned, with 19 percent maximum moisture content at time of dressing

and shipment. Any species and grade complying with the following species group as defined in table

B. Fasteners: of size and type indicated that comply with the following requirements. Where trusses are

exposed to weather or to high relative humidity, provide hot-dip zinc-coated fasteners per ASTM A

Bolts: steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and where

Current evaluation/research reports: provide products for which model code evaluation/research

reports exist that are acceptable to authorities having jurisdiction and that evidence compliance

Allowable design loads: as published by manufacturer and determined from empirical data or by

of metal framing anchors for application indicated with the building code in effect for this

Galvanized steel sheet: zinc-coated by hot-dip process to comply with ASTM A 525, coating

designation G60, and complying with ASTM A 446, Grade A; ASTM A 526; or ASTM A 527.

A. Fabricate and assemble trusses to provide units of configuration indicated, with closely fitted joints

angles, and sizes to produce close-fitting joints with wood-to-wood bearing in assembled units

and connector pins securely fastened to wood members. Cut truss members to accurate lengths,

Fabricate metal connector pins to size, configuration, thickness, and anchorage details required to

configuration indicated using iigs or other means to ensure uniformity and accuracy of assembly with

Where trusses do not fit, return them to fabricator and replace with trusses of correct size: do not

alter trusses in the field. Erect trusses with plane of truss webs vertical (plumb) and parallel to each

members or joints by out-of- plane bending or other causes. Anchor trusses securely at all bearing

components to enable trusses to maintain design spacing, withstand live and dead loads including

lateral loads, and to comply with other indicated requirements. Do not cut or remove truss member

A. This section includes provisions and procedures governing the furnishing and installation of building

A. Thermal resistivity: where the thermal resistivity of insulation products are designated by "R-values,

they represent the reciprocal of thermal conductivity (K-values). Thermal conductivity is the rate of

heat flow through a homogenous material exactly 1 inch thick. Thermal resistance is expressed by

the temperature difference in degrees F between the two exposed faces required to cause one BTU

A. Provide insulation materials identical to those whose indicated fire performance characteristics have

B. Obtain each type of building insulation from a single source with resources to provide products of

consistent quality in appearance and physical properties without delaying progress of the work

A. Provide insulating materials that comply with specified requirements and with referenced standards.

B. Preformed units: sizes to fit applications indicated, selected from manufacturer's standard thicknesses.

of thicknesses indicated, with aged K-value of 0.17, (aged at 50% R.H. and 73-deg. For 180 days),

been determined per the ASTM test method indicated below, by U.L. or other testing and inspecting

organizations acceptable to authorities having jurisdiction. Identify products with appropriate markings

Board-type rigid insulation for underslab installation at walk-in freezer

to flow through one square foot per hour at mean temperatures indicated.

Board type rigid insulation for below-grade foundation perimeter installation.

withstand design loadings for types of joint designs indicated. Assemble truss members in design

ioints closely fitted to comply with tolerances specified to produce design camber indicated

A. General: erect and brace trusses to comply with applicable requirements of referenced standards.

other, located accurately at design spacing indicated. Hoist trusses in place by means of lifting

equipment suited to sizes and types of trusses required, exercising care not to damage truss

points to comply with methods and details indicated. Install permanent bracing and related

rational engineering analysis and verified through comprehensive testing by a qualified

C. Metal framing anchors: provide metal framing anchors of type, size, metal, and finish indicated that

PART 2 - PRODUCTS

vapor-retarder membrane on one face, and as follows: 1. Mineral fiber type: fibers manufactured from glass or slag.

widths equal that of studs; except single top plate may be used for non-load-bearing partitions. Nail 1. For exterior walls and load-bearing structural walls install 2-inch by 6-inch wood studs spaced A. Extruded Polystyrene board insulation: subject to compliance with requirements, provide insulation products of the following manufactures:

> Dow Corporation Atlas Energy Corporation Owens/Corning

B. Glass fiber insulation: subject to compliance math requirements, provide insulation products of one of

Certain Teed Corp. Owens/Corning Fiberglass Corp

A. Corrosion resistant fasteners as recommended by insulation manufacturer for insulation and substrate

2.03 ACCESSORIES

2.04 VAPOR RETARDERS A. Polyethylene vapor retarder: ASTM D 4397, 6.0 mils thick, with a maximum permeance rating of 0.13

B. Tape for vapor retarder: pressure sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

3.01 FXAMINATION

PART 3 - EXECUTION

A. Examine substrates and conditions with installer present, for compliance with requirements of the sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

3.02 PREPARATION A. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections that might puncture vapor retarders.

3.03 INSTALLATION, GENERAL A. Comply with insulation manufacturer's instructions applicable to products and application indicated. If printed instructions are not available or do not apply to project conditions, consult manufacturer's

technical representative for specific recommendations before proceeding with installation of insulation.

B. Extend insulation full thickness as indicated to envelop entire area to be insulated. Cut and fit tightly

around obstructions, and fill voids with insulation. Remove projections that interfere with placement. 3.04 UNDERSLAB INSTALLATION A. Install underslab insulation around building foundation perimeter in locations indicated on drawings.

recommendations. If no specific method is indicated, bond units to substrate with adhesive or use

mechanical anchorage to provide permanent placement and support of units.

B. Install recessed insulation at walk-in freezer locations as indicated on drawings. 3.05 INSTALLATION OF GENERAL BUILDING INSULATION A. Apply insulation units to substrate by method indicated, complying with manufacturer's B. Seal joints between closed-cell (non-breathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

A. General: extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose fiber insulation

B. Seal overlapping joints in vapor retarders with adhesives or tane per vapor retarder manufacturer's printed directions. Seal butt joints and fastener penetrations with tape of type recommended by vapor retarder manufacturer. Locate all joints over framing members or other solid substrates.

C. Firmly attach vapor retarders to substrates with mechanical fasteners or adhesives as recommended

D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with tape of type recommended by vapor retarder manufacturer to create an airtight seal between penetrating objects and vapor retarder.

E. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with tape or another layer of vapor retarder.

A. Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION

07410 - PREFORMED METAL ROOF PANELS

Part 1 - GENERAL 1.01 SECTION INCLUDES

A. Furnish and install metal wall and/or roof panels and accessories in accordance with applicable drawings and this specification. Alternate products to be considered equal must be approved by the Architect via an addendum 10 days prior to bid date.

1.02 RELATED SECTIONS A. 07210 Building Insulation B. 07600 Flashing and Sheet Meta

C. 07901 Sealants (Joint Sealers)

A. Shop drawings shall be prepared for architect's approval and shall show metal panel wall and/or roof system, including fastening (attachment) methods, joinery, sealing methods, accommodations of thermal movement, accessories required and erection procedures.

1. If required, 3 samples of panel material shall be furnished for approval of gauge, color, finish

C. Two copies of manufacturer's literature for the metal panel wall or roof system. D. A manufacturer's Certificate of Compliance certifying that the metal panel to be supplied meets or exceeds the requirements specified

1.04 QUALITY ASSURANCE A. Taylor Metal - Versa-Span products establish the level of quality required.

B. Panel system installer shall be experienced with the installation of metal wall and roof systems on projects with similar scope and complexity, and acceptable to panel manufacturer. C. Panel supplier shall furnish calculations confirming structural adequacy if requested.

D. Painted surfaces of metal panels shall meet all specified criteria printed in the manufacturer's literature. Where possible, field measurements shall be taken prior to metal panel and flashing

A. Protect panel finish per panel manufacturer's recommendations. Store materials in accordance with panel manufacturer's recommendations.

Part 2 - PRODUCTS

1.05 - Product Delivery, Handling and Storage

2.01 PANEL SYSTEM A. The panel system shall be of such profile and gauge to withstand a load requirement of 25 psf, with a deflection limitation of L/60 for aluminum and L/180 for steel

B. All metal panels required to complete the installation shall consist of: Panel profile shall be 24 gauge Versa-Span 18" flat pan. The outside exposed surface of all exterior panels shall receive a two-coat factory color finish of Kyngr 500 per ASTM A 653-94.

C. Flashings and Closures - Metal flashings shall be fabricated from the same metal, gauge and finish as the exterior panels, unless shown otherwise on the drawings. Profile closure strips shall be placed D. Fasteners - Exterior panels shall be fastened with concealed clip system in accordance with the manufacturer's recommendations for exposure, snow loading, and uplift.

A. All exposed fasteners shall be self—tapping 300 series stainless steel.

B. All self-drilling fasteners shall be protected with a corrosion resistant finish. C. All Seglants (caulking) shall be compatible with panel materials.

A. Structural steel (or substructure) required for metal panel attachment shall be level and plumb. B. Structural steel (or substructure) shall be structurally sound as determined by Architect/Engineer

C. Structural steel (or substructure) shall be free of defects detrimental to metal panel work. D. The contractor shall examine the alignment of the structural steel (or substructure) before installing any metal panels and shall not proceed with installation if the structural steel (or substructure) is not aligned to the tolerances established by the AISC Code of Standard Practice.

A. Field erection of all metal panels and accessories to be accomplished using qualified field mechanics

(or substructure) and established lines. Panel erection must be started correctly and held true to C. Metal panel and accessory erection shall be in accordance with an approved set of shop drawings.

B. Metal panels should be erected level and plumb, in proper alignment and relation to structural steel

D. Panel and accessory attachments (anchorage) shall be structurally sound, and per engineering recommendations, if required 3.03 ADJUSTING AND CLEANING

A. Replace panels that have received irreparable damage. B. Repair panels with minor damage.

C. Clean all foreign material from panel (building) gutter system when applicable. D. Remove strippable film coating (if used) as soon as possible after surrounding material has been

<u>07420 – ALUMINUM COMPOSITE METAL PANEL SYSTEM</u>

PART 1 GENERAL

A. This section includes Aluminum faced composite panels with mounting system. Panel mounting system including anchorages, shims, furring, fasteners, gaskets and sealants, related flashing adapters, and masking (as required) for a complete watertight installation. 1.02 References and standards

A. Aluminum Association Construction Manual - Aluminum sheet metal work and building construction B. ASTM B 117: Method of salt spray (fog) testing

C. ASTM D 1781: Climbing drum peel test for adhesives D. ASTM D 3359: Methods for measuring adhesion by tape test. E. ASTM D 3363: Method for film hardness by pencil test.

I. ASTM D 1735: Method for water fog testing of organic coatings.

F. ASTM D 2794: Resistance of organic coatings to the effects of rapid deformation (impact) G. ASTM D 1308: Effect of household chemicals on clear and pigmented organic finishes. H. ASTM D 2247: Practice for testing water resistance or coatings in 100% relative humidity.

J. ASTM D 1929: Standard test method for determining ignition temperature of plastics. K. ASTM D 635: Standard test method for rate of burning and/or extent and time of burning of plastics in a horizontal position.

L. ASTM D 822: Practice for operating light and water exposure apparatus (carbon-arc type) for testing paint, varnish, lacquer and related products.

M. ASTM E 84: Surface burning characteristics of building materials.

1.03 Submittals A. Shop drawings: indicate layout, configuration, unit identification marks, connection details, support items, dimensions, openings, edge details, and relationship to adjacent components. Indicate locations for blocking and embedded items

B. Samples: submit two panels approximately 4"x 6"illustrating surface finish, color, texture and gloss, These samples may include evaluation reports and/or test reports supporting the use of the product.

1.04 Product delivery, handling and storage

A. Panel finish and edges shall be protected in transit by crates and interleafed coated paper. Panels 2.04 Accessories shall have a protective film over the finish to be removed after installation is complete

B. Materials shall be stored in an area safe from damage and protected from the weather

A. Panels shall be Alucobond material manufactured by Federal Heath Visual Communications, 1840 Oakdale Avenue, Racine, WI (262-636-0070).

B. Panels shall be 4mm thick (.157") C. Product Performance

> When tested for bond integrity, in accordance with ASTM D1781 (simulating resistance to panel delamination), there shall be no adhesive failure of the bond a) between the core and the skin nor b) cohesive failure of the core itself below the following values: Peel Strength: 115 N mm/mm (22.5 in lb/in) as manufactured

ASTM E 84 Flame Spread Index must be less than 25, Smoke Developed Index must be less ASTM D 1929 A self ignition temperature of 650oF or greater ASTM D 635 Requires a CC1 classification

115 N mm/mm (22.5 in lb/in) after 21 days soaking in water at 70°F

D. Finishes: Coil coated KYNAR 500 or HYLAR 5000 based polyvinylidence fluoride (PVDF) or fluoro ethylene-alkyl vinyl ehter (FEVE) resin in conformance with the following general requirements of

- Standard color as selected by the architect. - Custom color to be match by the panel supplier.

2. Coating thickness:

- Colors: 1.0 mil (+/-0.2 mil). - Clear: 0.50 mil (+/-0.05 mil). 3. Hardness: ASTM D 3363; HB minimum using Eagle Turquoise Pencil

- Test method: ASTM D 2794: Gardner variable impact tester with 5/8" mandrel. Coating shall withstand reverse impact of 1.5"/pounds per mil substrate thickness. - Coating shall adhere tightly to metal when subjected to #600 scotch tape pick-off test. Slight minute cracking permissible. No removal of film to substrate.

- Test method: ASTM D 3359

- Coating shall not pick off when subjected to an 11"x11"x 1/16" grid and taped with #600 scotch tape. 6. Humidity resistance: - Test method: ASTM D 2247

- No formation of blisters when subject to condensing water fog at 100% relative humidity and 100 degree Fahrenheit for 4000 hours. 7. Salt spray resistance: - Test method: ASTM B 117; Expose coating system to 4000 hours, using 5% NaCl solution.

- Corrosion creepage from scribe line: 1/16" max. - Minimum blister rating of 8 within the test specimen field. 8. Outdoor Weather exposure:

- Ten-year exposure at 45 degree angle facing south Florida exposure.

 Maximum color change of 5 delta E units as calculated in accordance with ASTM D - Maximum chalk rating of 8 in accordance with ASTM D 4214 - No checking, crazing, adhesion loss.

- ASTM D 1308 utilizing 10% muriatic acid for an exposure time of 15 minutes. No loss of film adhesion or visual change when viewed by the unaided eye. ASTM D 1308 utilizing 20% sulfuric acid for an exposure time of 18 hours. No loss of film adhesion or visual change when viewed by the unaided eye. - AAMA 2605 utilizing 70% reagent grade nitric acid vapor for an exposure time of 30 minutes. Maximum color change of 5 delta E units as calculated in accordance with ASTM

2.03 Panel Fabrication

A. Composition: Two sheets of aluminum sandwiching a solid core of extruded thermoplastic material B. Repair panels with minor damage formed in a continuous process with no glues or adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Products laminated sheet by sheet in a batch process using glues or adhesives between materials shall not be acceptable

B. Aluminum face sheets: Thickness: 0.50mm (0.0197") (nominal), Alloy: AA300 series (painted material) AA5000 series (anodized material).

C. Panel weight: 4mm (0.157"): 1.12 lbs./ft2

D. Tolerances

1. Panel Bow: Maximum 0.8% of any 1828mm (72") panel dimension.

requirements, and material/performance standards.

2. Panel Dimensions: Field fabrication shall be allowed where necessary, but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when poss . Panel lines, breaks, and angles shall be sharp, true, and surfaces free from warp and buckle. 4. Maximum deviation from panel flatness shall be 1/8" in 5'0" on panel in any direction for

assembled units. (Non-accumulative - No Oil Canning)

Plans, elevations, details, characteristics, and other requirements indicated are based upon standards by one manufacturer. It is intended that other manufacturers, receiving prior approval, may be acceptable, provided their details and characteristics comply with size and profile

2. System must not generally have any visible fasteners, telegraphing or fastening on the panel faces or any other compromise of a neat and flat appearance 3. System shall comply with the applicable provisions of the "Metal Curtain Wall, Window, Storefront, and Entrance Guide Specifications Manual" by AAMA and ANSI/AAMA 302.9 requirements for aluminum windows.

regardless of temperature change and at all times remain air and water tight.

6. The finish side of the panel shall have a removable plastic film applied prior to fabrication,

4. Fabricate panel system to dimension, size, and profile indicated on the drawings based on a design temperature of 70°F. 5. Fabricate panel system so that no restraints can be placed on the panel, which might result in compressive skin stresses. The installation detailing shall be such that the panels remain flat

which shall remain on the panel during fabrication, shipping, and erection to protect the surface

F. System type

following minimum standards:

1. Rout and return dry: System must provide a perimeter aluminum extrusion with integral weather-stripping as detailed on drawings. No field sealant required in joints unless specifically

G. System performance: Composite panels shall be capable of withstanding building movements and

building code. 1. Wind load: If system tests are not available, mock-ups shall be constructed and tests performed under the direction of an independent third party laboratory, which show compliance to the

weather exposures based on the following test standards required by the Architect and/or the local

Panels shall be designed to withstand the Design Wind Load based upon the local building C. General: code, but in no case less than 20 pounds per square foot (psf) and 30 psf on parapet and corner panels. Wind load testing shall be conducted in accordance with ASTM E330 to obtain the following results.

Normal to the plane of the wall between supports, deflection of the secured perimeter-framing members shall not exceed L/175 or 3/4", whichever is less. Normal to the plane of the wall, the maximum panel deflection shall not exceed L/60 of

Maximum anchor deflection shall not exceed 1/16". At 1-1/2 times design pressure, permanent deflections of framing members shall not exceed L/100 of span length and components shall not experience failure or gross

permanent distortion. At connection points of framing members to anchors, permanent set

2. Air/water system test: If system tests are not available, mock-ups shall be constructed and tests performed under the direction of an independent third party laboratory, which show compliance to the following minimum standards:

Air Infiltration - When tested in accordance with ASTM E283, air infiltration at 1.57 psf must not exceed 0.06 cfm/ft² of wall area.

Water Infiltration - Water infiltration is defined as uncontrolled water leakage through the exterior face of the assembly. Systems not using a construction sealant at the panel joints (i.e. Rout and Return Dry and Rear Ventilated Systems) shall be designed to drain any water leakage occurring at the joints. No water infiltration shall occur in any system under a differential static pressure of 6.24 psf after 15 minutes of exposure in

A. Extrusions, formed members, sheet, and plate shall conform with ASTM B209 and the recommendations of the manufacturer

B. Panel stiffeners, if required, shall be structurally fastened or restrained at the ends and shall be secured to the rear face of the composite panel with silicone of sufficient size and strength to maintain panel flatness. Stiffener material and/or finish shall be compatible with the silicone.

C. Sealants and gaskets within the panel system shall be as per manufacturer's standards to meet performance requirements.

D. Fabricate flashing materials from 0.030" minimum thickness aluminum sheet painted to match the adjacent curtain wall / panel system where exposed. Provide a lap strap under the flashing at abutted conditions and seal lapped surfaces with a full bed of non-hardening sealant.

E. Fasteners (concealed/exposed/non-corrosive): Fasteners as recommended by panel manufacturer. Do not expose fasteners except where unavoidable and then match finish of adjoining metal

accordance with ASTM E331

PART 3 - EXECUTION

defects detrimental to worl

A. Erect panels plumb, level, and true.

A. Panel substructure shall be level and plumb within 1/4" over 20ft.

B. Panel substructure shall be within agreed upon dimensions ± 1 . C. Panel substructure shall be structurally sound as determined by Architect/Engineer and be free of

D. Cutouts for signs and power stub outs shall be ready for connection to signs as required.

E. Waterproofing shall be completed on all frame and masonry surfaces.

F. Parapet caps and flashing shall be complete. G. Panel installer shall inspect substructure and shall not proceed with work until any deviations are

3.02 INSTALLATION

B. Attachment system shall allow for the free and noiseless vertical and horizontal thermal movement due to expansion and contraction for a material temperature range of -20°F to +180°F. Buckling of panels, opening of joints, undue stress on fasteners, failure of sealants or any other detrimental effects due to thermal movement will not be permitted. Fabrication, assembly, and erection procedure

D. Anchor panels securely per engineering recommendations and in accordance with approved shop drawings to allow for necessary thermal movement and structural support.

E. Conform to panel fabricator's instructions for installation of concealed fasteners

C. Panels shall be erected in accordance with an approved set of shop drawings.

shall account for the ambient temperature at the time of the respective operation.

F. Do not install component parts that are observed to be defective, including warped, bowed, dented,

component parts which require alteration to shop for refabrication, if possible, or for replacement H. Separate dissimilar metals and use gasketed fasteners where needed to eliminate the possibility of

the finish, decrease strength, or result in visual imperfection or a failure in performance. Return

3.03 ADJUSTING AND CLEANING

corrosive or electrolytic action between metals.

A. Remove and replace panels damaged beyond repair as a direct result of the panel installation. After installation, panel repair and replacement shall become the responsibility of the general contractor.

C. Remove masking (if used) as soon as possible after installation. Masking intentionally left in place after panel installation on an elevation, shall become the responsibility of the general contractor.

D. Any additional protection, after installation, shall be the responsibility of the general contractor. E. Make sure weep holes and drainage channels are unobstructed and free of dirt and sealants.

F. Final cleaning shall not be part of the work of this section.

07542 - TPO MEMBRANE ROOFING

END OF SECTION

PART 1 - GENERAL 1.01 SUMMARY

A. This section includes fully adhered thermoplastic TPO membrane roofing system including roof membrane, sheet

and metal flashings, insulation, and other auxiliary materials as specified. All items are to be provided by the

B. The following types of work are specified, but not limited to:

Rigid insulation

2. Tapered insulation

4. Flashina materials

Protective walkway pads . Wood nailers 7. Pourable sealer

8. Adhesives and sealants

C. Related work specified elsewhere:

3. Insulation protection board

1. 07600 Flashing and Sheet Metal 1.02 REFERENCES

A. Standard Reference: The NRCA Roofing and Waterproofing Manual published by the National Roofing Contractors Association, latest edition.

B. Regulatory Requirements: 1. Factory Mutual Engineering Corporation (FM): Roof covering must conform with FMRC Approval Standards to resist wind, hail, leakage, corrosion, ultraviolet weathering and expected foot traffic. A copy of the roofing manufacturer's FM Approval Report showing compliance shall be provided to the Architect of Record and/or Owner prior to acceptance of bid. FM wind uplift classification. UL Class 1, and all other manufacturer or regulatory requirements shall be as indicated on drawings.

. Final Payment: To assure all punch list items are complete to owner's satisfaction, final

B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized,

application for payments will be accompanied with a punch list. Upon completion of the punch ist items, and written acknowledgment from the Architect of Record that all items are complete, the retained portion of the final payment will be processed.

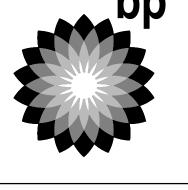
1.03 SUBMITTALS

1. Roof plan showing dimensions, slope, and typical detailed locations. 2. Perimeter and penetration details and flashing details.

or licensed by manufacturer to install their roofing system.

A. Shop Drawings: Complete installation details showing the following:

3. Roof membrane sheet layout and fastening system.







Consulting Engineers, Inc 18215 72nd Avenue South

Barghausen

Kent. WA 98032

barghausen.com

425.251.6222

NO. DATE REVISION DESCRIPTION G. Do not cut, trim, weld, or braze component parts during erection in a manner which would damage

REGISTERED

ARCHITECT

DAMEL B GOALWIN

STATE OF WASHINGTON

EXP: Ø8/Ø5/24

SEAL:

DEVELOPMENT INFORMATION:

3400 am/pm

FUEL CANOPY w/ 6 MPD's

PUYALLUP, WA 98371

FACILITY #7184 DESIGNED BY ALLIANCE Z&DM BP REPM: CHECKED BY: ALLIANCE PM:

ARCHITECTURA SPECIFICATIONS

ARCO NTI

SITE ADDRESS: 1402 S MERIDIAN

PROJECT NO:

21730 DRAWING TITLE:

- C. Manufacturer Certificates:
- . Material Certificate: Signed by roofing manufacturer certifying that retained and new materials and components comply with Project Specifications and that materials furnished are compatible with one another and the adjacent work and are new and first quality.
- System Design Certificate: Signed by roofing manufacturer certifying that roofing system design complies with requirements specified in "Performance Requirements" Article for the geographic location of the
- 3. Include manufacturer's written approval of project details, materials, fastener pattern for insulation and membrane, and warranty requirements for the specific project substrate and location.
- Maintenance Data: Manufacturer's complete recommended maintenance procedures for the roofing system. including precautions and warnings to prevent damage and deterioration to the roof system.
- . Warranty: Roof manufacturer's Limited Warranty with Product Data Submittal, including evidence of application

. Manufacturer's Reports:

- Manufacturer's pre-installation notice
- 2. Roof manufacturer's review of contract documents and written acceptance of application for warrants 3. Inspection Reports: At completion of each inspection, two copies of manufacturer's field quality control reports of field inspections, including two copies of warranty shop drawing and manufacturer's final
- G. The Contractor shall submit a letter stating that he has reviewed all conditions of installation and installation details, and that installation is in compliance with manufacturers recommendations. Also that all materials used for the roof installation are acceptable to the roofing manufacturer.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:

- 1. A gualified firm that is approved, authorized, or licensed by the roofing system manufacturer to install the manufacturer's product and that is eligible to receive manufacturer's warranty. a. When installing roofing membrane utilizing induction welding (Firestone Building Products; InvisiWeld
- System) installers shall have successfully completed a training course provided by the roofing membrane manufacturer prior to welding. 2. A single applicator with a minimum of five years previous successful experience in installations of similar
- 3. Job Superintendent Requirements: a. Present at the job site at all times when work is being performed.
- b. Supervise workers as required to ascertain workmanship, progress and adherence to details c. Responsible for schedule and coordination.
- d. Authority to make binding commitments upon Contractor at the Project site.

B. Pre-Installation Notification

- 1. Two weeks prior to commencement of roofing installation, contact manufacturer to verify fastener types/frequency and a secured approval of the system design to ensure that the roofing system is
- a. Utilize manufacturer's standard pre-installation notification form (PIN). b. Form must be completed and submitted to manufacturer to obtain warranty.
- c. Complete the pre-installation notification form (PIN) online. Go to manufacturer's website
- www.firestonebpco.com/contractors and log into contractor area using contractor license number and

C. Pre-installation Conference: Conduct conference at Project site.

- 1. Prior to roofing installation, conduct a pre-installation conference at the project site. 2. Attendance: Contractor, Roofing installer, job superintendent and roof manufacturer's technical
- Agenda:
- a. Maintaining water tightness of the building during roof installation, including night seal procedures.

1.05 DELIVERY AND STORAGE

- A. All materials provided by the membrane manufacturer shall be delivered with appropriate packaging labels indicating appropriate warnings, storage conditions, lot numbers and usage instructions.
- B. Materials shall be delivered dry in manufacturer's original, unopened package and be properly stored off the ground on pallets, minimum 4" high and off the roof. Completely cover all material with canyas tarpaulins to prevent the intrusion of water. Plastic covers will not be acceptable.

1.06 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

- . Owner's standard form covering repairs required to correct defects due to faulty materials or workmanship, and to otherwise maintain the roof in a watertight condition and to correct all other defects without regard to watertightness. Any repair shall be done at the expense of the Contractor . Warranty Work against the following:
- a. Leakage of water or moisture through roofing and flashing. b. Leakage of water or moisture inside the building or within the construction.
- c. Leakage of roofing material inside or outside the building.
- d. Blistering, tearing, alligatoring and other defects. e. Other objectionable defects.
- f. Any failure in roofing and flashing causing the roof system to become unserviceable in any manner. 3. In event that any of the work does not perform as warranted, provide the following without cost to the
- a. Immediate repair and correction of defective work using roof manufacturer's compatible materials and approved installation methods. Match original Work.
- b. Immediate repair to other building construction or furnishings damaged as a result of defective work. c. Full warranty for not less than two years on repairs from the date of completion of such repairs. 4. The Owner reserves the right to make emergency repairs to protect the building contents from damage without invalidating manufacturer's warranty and guarantee. Written notice of such repairs shall be made
- 5. Warranty Period: 2 years from date of Owner's final acceptance

B. Roofing System Manufacturer:

- Roofing manufacturer must provide the Owner with their standard warranty or better. Warranty shall cover workmanship and materials required to maintain a watertight condition and a roof system free of defects.
- 2. Submit a Material Certification Form to certify that materials made available by the membrane manufacturer are used throughout the project where needed.
- 3. Warranty Period: 20 years from date of Owner's final acceptance.

C. Deliver warranties to Owner before final payment is made

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain components including roof insulation and fasteners for roofing system from the same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.02 PERFORMANCE REQUIREMENTS

- A. Installed roofing and components shall be in accordance with the roofing system manufacturer's current published application procedures, the general recommendation of the NRCA, and requirements of the Authority Having Jurisdiction (AHJ), for the specific building location, building height, substrate type, and roofing system manufacturer's specified warranty.
- B. Installed roof system must comply with all codes and regulations of authorities having jurisdiction including but not limited to wind uplift, flame spread, and hail resistance.
- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according
- D. Exterior Fire—Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing
- by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

A. Fabric-Reinforced Thermoplastic Polyolefin Sheet: ASTM D 6878, internally scrim reinforced, uniform, flexible

- 1. Products: a. Firestone Building Products Company; Ultra-Ply TPO.
- b. No substitutions allowed Membrane:
- a. Exposed Face Color: White. b. Thickness (ASTM D751 & ANSI/RMA IPR-1): 60 mils minimum.
- d. Tearing Strength (ASTM D751), Tongue Tear: 120 lbf.

c. Breaking Strength (ASTMD751, Grab Method): 200 lb. minimum.

- e. Dimensional stability (ASTM D 1204): 6 hours at 158 deg. F, 1.0 percent maximum.
- f. Low Temperature Bend: ASTM D 2136: -40 degrees F Maximum. g. Ply Adhesion: ASTM D 413, Strip specimen, Type A, Machine Method, 8.0 lbs per inch minimum.

2.04 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible

- B. Sheet Flashing: Manufacturer's standard unreinforced thermoplastic polyolefin sheet flashing, 60 mils thick,
- C. Coated Metal: G90 galvanized steel, TPO coated on one side, color to match roofing membrane, as supplied by the roof system manufacturer, minimum 24 gauge, 0.028-inch for flashed metal details.
- D. Bonding Adhesive: Roofing membrane manufacturer's standard TPO bonding adhesive.
- E. Insulation Fastening Plates: Manufacturer's approved corrosion resistant plates as furnished and approved by roof system manufacturer for specific application

F. Fasteners (Insulation and membrane): Manufacturer's approved #15 heavy duty, self tapping series 300, screws as furnished and/or warranted in writing by roofing system manufacturer.

G. Induction Welding Plates: Firestone Building Products; InvisiWeld plates.

- H. Water Cutoff Mastic: As furnished by membrane manufacturer for this system.
- I. Inside Corners and Outside Corners and Molded Pipe Flashings: Pre—molded components as furnished by
- J. Night Seal: As furnished by membrane manufacturer for this system.
- K. Other miscellaneous materials shall be manufacturer's best grade available and approved in writing by the roof

- 1. General Construction Sealants: One-part non-priming gun-grade urethane sealant.
- 2. Roofing Sealants: Sealants used in contact with roofing system shall be roofing membrane manufacturer's approved sealant used to seal penetrations through the membrane system or

miscellaneous sealant applications that come in contact with roofing system.

3. Backer Rod: Where required for sealant joints.

2.05 ROOF INSULATION

- A. Polyisocyanurate Board Insulation: Rigid closed cell polyisocyanurate foam ASTM C 1289, Type II, glass-fiber mat facer on both major surfaces. Manufactured or approved by TPO membrane roofing manufacturer. Se Drawings for total insulation thickness or required R-value
- Products: a. Firestone Building Products Company; ISO 95+
- h No substitutions allowed 2. Compressive Strength: ASTM D 1621, minimum 20 psi.
- Density: Minimum 2 lbs/pcf. 4. Insulation thickness: Insulation shall be built up to the thickness indicated using a minimum of 2 layers
- a. Minimum Thickness per Laver: 1 inch. 5. Tapered insulation where indicated on roof plan. Minimum thickness 1/2 inch, factory sloped at 2 times

2.06 PROTECTION BOARD

with staggered joints.

A. Materials recommended by roofing system manufacturer for intended use and compatible with membrane

2.07 WALKWAYS

A. Flexible Walkways: Minimum of 30-inches by 30-inches factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway pads, approximately 3/16 inch thick as furnished by roofing system

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine roof areas for conditions that would prevent the proper application of new roofing and verify the
- 1. Decking, curbing, renovation, and wall substrate construction has been completed. 2. Deck and substrates are clean, smooth and free from depressions, waves, projections, defects and
- 3. Wood nailers are properly installed to receive roofing system. 4. Surfaces in contact with any single ply material are free from bitumen, grease, oil or other foreign
- 5. Surfaces in contact with roofing membrane are free from sharp edges, fins or projections. 6. Materials are completely dry and free from ice and snow, including substrate, deck, insulation and roofing
- membrane as applicable. Confirm dryness by moisture meter. 7. Roof equipment, openings, curbs, pipes, sleeves, ducts, vents and blocking members are solidly and
- 8. Work has been completed where possible for other trades that require work or traffic on the roofing
- B. Correct or complete any conditions requiring correction or completion prior to the installation of the roofing system. Notify the Owner in writing of any unacceptable conditions.
- C. Verify the location of interior ducts, electrical lines, piping, conduit, and/or similar obstructions. Perform work to avoid contact with the above—mentioned items.

D. Start of work constitutes acceptance of deck substrate and site conditions.

A. Broom clean roof surface immediately prior to roofing application. Debris under roof membrane is

3 03 INSULATION INSTALLATION

- A. Primary Insulating Layer 1. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation Fully adhere the insulation to the substrate in accordance with roofing system manufacturer's criteria for
- wind uplift in Project location to meet roofing system manufacturer's specified warranty. Install roof insulation directly over the substrate except where otherwise indicated.
- 4. Stagger the end joints of the primary insulating layer; stagger joints top to bottom on multiple layer 5. Butt joints tight allowing no more than 1/4-inch wide gap between units. Fill any gaps larger than
- 1/4-inch. 6. Do not rupture or deform the surface, facer, or structure of the insulation by handling.
- 7. Do not use warped or bent insulation boards. 8. Cut and fit insulation neatly at roof perimeter and roof penetrations to reduce openings to a minimum. Fill openings 1/4-inch or larger with insulation.
- 9. Prior to application of membrane, secure loose areas so that no board movement or warpage exist 10. Prior to application of membrane, remove foreign matter, gravel, etc. from the substrate. Gravel or debris between the substrate and the roof membrane is not acceptable.
- 11. Install temporary water cut off at completion of each day's work and remove upon resumption of work. B. Tapered Insulation

Install tapered insulation as required.

- 3. Install tapered crickets along the high side of all penetrations greater than 6 feet in width. Slope of minimum of 2 times the roof slope. Crickets are not required at skylight curbs.
- 4. Taper insulation a minimum of 24-inches in each direction around scuppers and drains to provide for proper drainage.

3.04 PROTECTION BOARD INSTALLATION A. Install protection board according to manufacturer's installation instructions.

3.05 MEMBRANE INSTALLATION, GENERAL

- 1. Install roofing membrane in accordance with the manufacturer's installation instructions. Cut sheets to maximum size possible in order to minimize seams. Position membrane over substrate without stretching membrane. Allow membrane to relax one-half hour before bonding and flashing.
- point. Prevent moisture migration into the roof system. Complete flashings, terminations, and seals in area on a daily basis. 4. Execute work so membrane can be temporarily sealed on a down slope surface at the end of each day

Begin installation of roofing system at the highest point of the Project area and work to the lowest

- with night seal. Tie off with a water stop to the structural deck to prevent water flow into the new
- 5. Secure perimeter in accordance with manufacturer's recommended procedures for building height and location to meet roofing system manufacturer's specified warranty. Do not use induction welding plates for edge securement.
- B. Roof system manufacturer's representative shall be on site at the start of project to supervise operations and D. Sealant joints: where movable, non-expansion type joints are indicated or required for proper to inspect and approve seams.

C. Ensure that the installed roofing will not be marked, spotted, stained, or damaged. Power washing of the membrane may be required if surface staining is deemed unacceptable to the Owner. 3.06 ADHERED MEMBRANE ROOFING INSTALLATION

- A. Bonding Adhesive: Apply to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane
- B. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and
- A. Membrane Lap Splices: 6 inches wide, minimum. Locate field splices at roof drains outside drain sump.

C. Apply membrane roofing with side laps shingled with slope of roof deck where possible

B. Allow top sheet to fall freely into place over bottom ply without wrinkling or stretching

A. Walls, Parapets, Mechanical Equipment Curbs,

is any change of direction.

corner or change in plane.

B. Other Penetrations

3. Pipes, Round Supports:

Provide removable tops.

3.09 WALKWAY INSTALLATION

field membrane.

3.10 FIELD QUALITY CONTROL

unacceptable by the Owner.

07600 - FLASHING AND SHEET METAL

END OF SECTION

PART 1 - GENERAL

umbrellas/hoods for pitch pans.

installation on completion and submit report to Owner.

Interior: Work related dirt, debris, drippage, spills, etc.

indicate that they do not comply with specified requirements

C. Submit manufacturer's Letter of Acceptance (refer to attached sample).

Metal counter flashing and base flashing (if any).

Metal wall flashing and expansion joints

Exposed metal trim/fascia units.

1.02 PROJECT CONDITIONS

and finishes.

PART 2 - PRODUCTS

section "Joint Sealers."

2.02 FABRICATED UNITS

4. Miscellaneous sheet metal accessories.

2.01 SHEET METAL FLASHING AND TRIM MATERIALS

thick (20 gauge) except as otherwise indicated.

seaming and adhesive application of flashing sheet.

size and gage required for performance.

compliance with SMACNA standards.

2.03 ELASTIC EXPANSION JOINTS

separation as recommended by manufacturer/fabricator.

rubber or plastic not less than 3/8-inch thick.

1. Zinc-coated steel: 0.0179 inch (26 gage).

B. Solder: provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.

A General: Do not install flexible walkways within 6 feet of a roof perimeter

fasteners as shown on Drawings.

behind or into the flashing or roofing system.

- C. Insure that surfaces to be spliced are cleaned, primed and dirt free. Use automatic hot air welding equipment approved by the roof system manufacturer for field seams. Seam small work and repairs with hand
- 1. Install minimum 1-1/2 inch wide weld.
- D. Probe laps each day to verify seams are bonded. In addition, perform random lap test sample checks
- (including checks at start of each day) to verify peel strength. Caulk cut edges by applying manufacturer's

1. Install flashing at roof penetrations, interruptions, and any roof intersection including roof edges with

2. Curbs, projections and risewall conditions require a minimum 8-inch height for base flashings and

bonded, at a rate of approximately 1 gallon per 50 sq.ft of surface coverage.

3. Apply manufacturer's bonding adhesive to both underside of flashing and surface to which it is to be

4. Do not apply bonding adhesive to portion of flashing that overlaps onto itself. Use seam tape where

5. Allow bonding adhesive to dry to a finger touch until it does not string or stick to a dry finger. Roll

Mechanically fasten top all of flashing under or through appropriate counter flashing with approved

9. Waterproof and positively secure flashings with termination bar at the top and sides to prevent seepage

1. Flash penetrations passing through membrane in accordance with the manufacturer's recommended

4. Pipe Clusters and Unusually Shaped Penetrations: Flash pipe clusters and unusually shaped penetrations

which prohibit the installation of field fabricated pipe seals with hooded sheet metal boxes. Provide

penetration boxes with solid sheet metal face closures. Slope piping away from the penetration flashing

a. Limit the use of pitch pans and sealer to specific Owner-approved locations. Provide rain-tight

B. Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing

B. Repair or remove and replace components of membrane roofing system where test results or inspections

A. Exterior: Remove debris, adhesives and sealant from surfaces including removal of marks, spots, stains, and

sediment from the finished roof surface and power washing of the membrane if the surfaces are deemed

A. This section includes provisions and procedures governing the fabrication, furnishing and installation of

flashing, sheet metal, and integral accessories, including but not limited to, the following:

A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each

A. Zinc-coated steel: commercial quality with 0.20 percent copper, ASTM A 526 except ASTM A 527 for

lock-forming, G90 hot-dip galvanized, mill phosphatized where indicated for painting; 0.0359-inch

C. Fasteners: same metal as flashing/sheet metal or other non-corrosive metal as recommended by

components being sealed and complying with requirements for joint sealants as specified in Division 7

sheet manufacturer. Match finish of exposed heads with material being fastened.

D. Mastic sealant: polyisobutylene; nonhardening, nonskinning, non-drying, nonmigrating sealant.

E. Elastomeric sealant: generic type recommended by manufacturer of metal and fabricator of

F. Adhesives: type recommended by flashing sheet manufacturer for waterproof/weather-resistant

G. Reglets: metal units of type and profile indicated, compatible with flashing indicated, noncorrosive.

A. Shop fabricate work to greatest extent possible. Comply with details shown and with applicable

true to line and levels indicated, with exposed edges folded back to form hems.

not less than 1 inch deep, filled with mastic sealant (concealed within joints).

requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices.

Fabricate for waterproof and weather-resistant performance, with expansion provisions for running

fit substrates. Comply with material manufacturer instructions and recommendations for forming

B. Fabricate non-moving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form

C. Expansion provisions: where lapped or bayonet-type expansion provisions in work cannot be used or

performance of work, form metal to provide for proper installation of elastomeric sealant, in

E. Separations: provide for separation of metal from noncompatible metal or corrosive substrates by

coating concealed surfaces at locations of contact, with bituminous coating or other permanent

A. Provide factory—fabricated units of size and profile indicated, complete with prefabricated corner units.

intersection unit, and splicing materials. Provide complete with elastic sheet flashing forming the

primary joint membrane, in a supported, "bellows" arrangement designed for securement to both

B. Type: metal flanged edges, 3 to 4 inches wide, formed to profiles as indicated to fit curbs and

designed for nailing to curb substrate. Provide metal flanges in the following thicknesses:

sides of expansion joints. Underside of bellows insulated with adhesively applied, flexible, closed-cell

would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges,

material. Form exposed sheet metal work without excessive oil-canning, buckling, and tool marks,

work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to

H. Metal accessories: provide sheet metal clips, straps, anchoring devices, and similar accessory units as

required for installation of work, matching or compatible with material—being installed, noncorrosive,

installation. Ensure best possible weather resistance and durability of work and protection of materials

or seam tape according to roofing system manufacturer's written instructions. Hot air weld perimeters to the

2. Seal flashing directly to the penetration passing through the membrane system

a. Flash pipes with pre-moulded pipe flashings where their installation is possible.

b. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.

the flashing into dry adhesive. Care must be taken to assure that flashing does not bridge where there

vertical or sloped surfaces in accordance with manufacturer's recommended procedures and Drawings.

- C. Looped bellows vs width: 5 to 6 inches, exclusive of flanges.
 - D. Manufacturers: subject to compliance with requirements, provide products by one of the following:
 - 1. AFCO Products, Inc.
 - 2. Celotex Corporation 3. International Permalite/Roofing Components Group.

 - 4. Manville/Roofing Systems Division (#EJ-4).
 - 5. York Manufacturing, Inc.

A. All sheetmetal and flashings to have a 2 year material and workmanship warranty.

PART 3 - EXECUTION

2.04 WARRANTY

3.01 INSTALLATION REQUIREMENTS A. Comply with manufacturer's installation instructions and recommendations and with SMACNA "Architectural Sheet Metal Manual" except as otherwise indicated. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where

possible, and set units true to line and level as indicated. Install work with laps, joints, and seams

- that will be permanently watertight and weatherproof 7. Install flashings for vents, pipe, soil vents and other round projections in accordance with manufacturer's B. Install realets to receive counter flashing in a manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections
- Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of 8. Install uncured or preformed flashing membrane as required to form a continuous membrane seal in each
 - C. Install counter flashing in reglets, either by snap-in seal arrangement or by welding in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree

D. Nail flanges of expansion joint units to curb nailers, at maximum spacing of 6 inches o.c. fabricate

seams at joints between units with minimum 3-inch overlap, to form a continuous, waterproof

<u>07901 – JOINT SEALANTS</u>

END OF SECTION

- PART 1 GENERAL
- A. This section includes provisions and procedures governing the furnishing and installation of joint sealers for the following locations:
- 1. Exterior joints in vertical surfaces

c. Other joints as indicated.

2. Non-traffic harizontal surfaces as indicated below a. Joints between different materials listed above. b. Perimeter joints between materials listed above and frames of doors and windows.

1.02 SYSTEM PERFORMANCES

A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.03 PROJECT CONDITIONS

- A. Joint width conditions: do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.
- B. Joint substrate conditions: do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

2.01 MATERIALS, GENERAL

2.02 ELASTOMERIC JOINT SEALANTS

- A. Compatibility: provide joint sealers, joint filers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: provide color of exposed joint sealers as selected to match adjacent materials from manufacturer's standard colors.
- A. Elastomeric sealant standard: ASTM C 920. Subject to compliance with requirements, provide one o the following:
- 1. One part nonsag urethane sealant for use nt: a. "Dynatrol L"; Pecora Corp.
- b. "Sonolastic NP 1"; Sonneborn Building Products Div.
- c. "Dymonic"; Tremco Inc.
- 2. One part pourable urethane sealant for use T: a. "NR 201 Urexpan"; Pecora Corp.
- b. "Sonolastic SL 1"; Sonneborn Building Products Div. 3. Butyl polyisobutylene tape sealant:
- a. "Extru Seal Tape"; Pecora Corp. b. "Shim Seal Tape"; Pecora Corp.

sealant manufacturer based on field experience and laboratory testing.

c. "PTI 606"; Protective Treatments, Inc

d. Tremco 440 Tape"; Tremco Inc.

2.03 JOINT SEALANT BACKING A. Provide sealant backings of material and type which are nonstaining; are compatible with joint

substrates, sealants, primers and other joint fillers; and are approved for applications indicated by

B. Plastic foam joint fillers: preformed, compressible, resilient, nonwaxing, nonextruding strips of flexible,

- nongassing plastic foam of material indicated below, nonabsorbent to water and gas; and of size. shape and density to control sealant depth and otherwise contribute to producing optimum sealan erformance. Either open cell polvurethane foam or closed cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer, for cold applied sealants only. C. Elastomeric tubing joint fillers: neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056,
- nonabsorbent to water and gas, capable of remaining resilient at temperatures down to -26 Deg F (-15 Deg C). Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance. D. Bond breaker tape: polyethylene tape or other plastic tape as recommended by sealant manufacturer

for preventing sealant from adhering to rigid, inferable joint filler materials or joint surfaces at back

of joint where such adhesion would result in sealant failure. Provide self adhesive tape where

- 2.04 MISCELLANEOUS MATERIALS A. Primer: provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer substrate tests
- B. Cleaners for nonporous surfaces: provide nonstaining, chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.
- C. Masking tape: provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces

A. Examine joints indicated to receive joint sealers, with installer present, for compliance with

PART 3 - EXECUTION

3.01 FXAMINATION

performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been 3.02 PRFPARATION

requirements for joint configuration, installation tolerances and other conditions affecting joint sealer

A. Surface cleaning of joints: clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers. B. Joint priming: prime joint substrates where indicated or where recommended by joint segler manufacturer based on preconstruction joint sealer substrate tests or prior experience. Apply primer

bond, do not allow spillage or migration onto adjoining surfaces.

2. Masking tape: use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint

to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer

3.03 INSTALLATION OF JOINT SEALERS

- A. Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- 1. Elastomeric sealant standard: ASTM C 962.
- B. Installation of sealant backings: install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross sectional shapes and depths of nstalled sealants relative to joint widths which allow optimum sealant movement capability.
- C. Installation of sealants: install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configurations and providing uniform, cross sectional shapes and depths relative to joint widths which allow optimum
- 1. For exterior joints: provide appropriate "elastomeric" sealant.
- D. Tooling of nonsag seglants: immediately after seglant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration per figure 6a in ASTM C 962, unless otherwise indicated.
- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints

FND OF SECTION

08111 - STANDARD STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUMMARY

3.04 CLEANING

- A. This section includes provisions and procedures governing the furnishing and installation of steel
- doors, frames, and integral accessories. B. Doors: seamless, hollow or composite construction standard steel doors.
- C. Frames: pressed steel frames and interior glazed panels of welded unit type. D. Assemblies: provide standard steel door and frame assemblies as required for thermal rated
- E. Provide factory primed doors and frames to be field painted.

Steel Doors and Frames" ANSI/SDI-100 and as herein specified.

1.02 SUBMITTALS

(insulated) applications.

- A. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications Standard

1.03 QUALITY ASSURANCE

- PART 2 PRODUCTS 2.01 ACCEPTABLE MANUFACTURERS
- A. Available manufacturers: subject to compliance with requirements, manufacturers offerina standard steel doors and frames which may be incorporated in the work include; but are not limited to
- 1. Amweld Building Products, Inc.
- 3. Steelcraft Manufacturing Co.

Ceco Corp.

- 2.02 MATERIALS A. Cold rolled steel sheets: commercial quality carbon steel, complying with ASTM A 366 and ASTM A
- B. Galvanized steel sheets; zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized.
- aalvanized frames. D. Inserts, bolts, and fasteners: manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize in compliance with ASTM A 153, class C or C as applicable.

C. Supports and anchors: fabricate of not less than 18-gauge sheet steel; galvanized where used with

F. Shop applied primer paint: rust—inhibitive enamel or paint, either air drying or baking, suitable as a base for specified finish paints complying with ANSI a224.1, test procedure and acceptance criteria

- for prime painted steel surfaces for steel doors and frames." apply after fabrication.
- 1. Exterior doors: ANSI/SDI 100, Grade III, extra heavy duty, model 4, minimum 16 gauge aalvanized steel faces.

B. Provide metal frames for doors and other openings, of types and styles as shown on Drawings and

schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 18 gauge cold rolled steel.

Comply with ANSI/SDI -100 requirements.

Fabricate frames with mitered, coped, or welded corners. 2. Form exterior frames from 16 gauge galvanized steel.

C. Plaster guards: provide minimum 26 gauge steel plaster guards or mortar boxes at back of hardware

A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that

cannot be permanently factory—assembled before shipment, to assure proper assembly at project site.

1. Clearances: not more than 1/8 inch at jambs and heads. Not more than 3/4 inch at bottom.

B. Tolerances: comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames.'

- C. Fabricate exterior doors, panels, and frames from galvanized sheet steel in accordance with SDI-112. Close top and bottom edges of exterior doors as integral part of door construction or by addition of D. Exposed fasteners: unless otherwise indicated, provide countersunk flat or oval heads for exposed
- E. Thermally rated (insulating) assemblies: at exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236 or ASTM C 976 on fully operable door assemblies.

1. Provide thermally rated assemblies with u factor of 0.41 BTU/(hr x sq ft x deg F) or better

accordance with final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI a115 series specifications for door and frame preparation for Locate hardware as indicated on final shop drawings or, if not indicated, in accordance with

"Recommended Locations for Builder's Hardware on Standard Steel Doors and Frames," published by

F. Hardware preparation: prepare doors and frames to receive mortised and concealed hardware in

materials before application of paint. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint. Glazing stops: minimum 20 gauge steel. Provide non-removable stops on secure side of interior

panels. Provide screw applied removable glazing beads on inside of glass panels.

H. Shop painting: clean, treat, and paint exposed surfaces of steel door and frame units, including

galvanized surfaces. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign

PART 3 - EXECUTION

the Door and Hardware Institute.

A. Install standard steel doors, frames, and accessories in accordance with final shop drawings,

- manufacturer's data, and as herein specified.
- B. Placing frames: comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames," unless otherwise indicated. Install at least 3 wall anchors per jamb at hinge and strike levels. Attach wall anchors to study with screws
- C. Door installation: fit hollow metal doors accurately in frames, within clearances specified in ANSI/SD
- END OF SECTION
- 08410 ALUMINUM ENTRANCES AND STOREFRON
- 1.01 Summary
- A. Section Includes: Architectural Aluminum Storefront Systems, including perimeter trims, stools,

accessories, shims and anchors, and perimeter sealing of storefront units.

B. Related Sections:

1.02 System Description

- 1. Section 08800 Glazing

their clear spans shall occur.

A. Storefront System Performance Requirements:

- 1. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf.
- 2 Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501. 3. Uniform Load: A static air design load of 20 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of

1.05 Warranty

A. General: Prepare, review, approve, and submit specified submittals in accordance with "Conditions of the Contract" and Division 1 - Submittals Sections. Product data, shop drawings, samples, and similar

A. Project Warranty: Refer to "Conditions of the Contract" for project warranty provisions.

1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

submittals are defined in "Conditions of the Contract." Quality Assurance/Control Submittals:

B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for

. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided

however that the Limited Warranty shall begin in no event later than six months from date of

shipment by storefront system manufacturer. 1.06 Quality Assurance

- A. Qualifications
- this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer. 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- 1.07 Delivery, Storage, and Handling A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid

conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact

1. Material Standard: Extruded Aluminum, ASTM B 221; 6063—T5 alloy and temper.

storefront members are nominal and in compliance with AA Aluminum Standards and Data.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions.

andle storetront material and components to avoid damage. Protect storetront mo damage from elements, construction activities, and other hazards before, during and after storefront

PART 2 - PRODUCTS

2.01 Manufacturers (Acceptable Manufacturers/Products)

or approved equal

- 1. Kawneer Company, Inc.
- 2.02 Materials A. Provide metal doors of SDI grades and models specified below or as indicated on Drawings or

A. Aluminum (Storefront and Components):

- 2. Member Wall Thickness: Each framing member shall provide structural strength to meet specified 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of
- A. Fasteners: Where exposed, shall be Stainless Steel B. Gaskets: Glazing gaskets shall be extruded EPDM rubber.

2.03 Accessories

C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

B. Glass: Refer to Glass and Glazing Section.

A. Sealants: Refer to Joint Treatment (Sealants) Section

2.04 Related Materials

- 2.05 Fabrication

2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.

1. Fabricate components per manufacturer's installation instructions and with minimum clearances

and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement

2.06 Finishes

1. Architectural Class II Clear Anodic Coating (Standard).

3. Prepare components to receive anchor devices. Fabricate anchors.

4. Arrange fasteners and attachments to conceal from view.

1. Building Enclosure System: When gluminum storefronts are part of a building enclosure system. including entrances, entrance hardware, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

A. Source Quality: Provide aluminum storefronts specified herein from a single source.

PART 3 - EXECUTION

A. Shop Finishing:

Verify openings are sized to receive storefront system and sill plate is level in accordance with manufacturer's acceptable tolerances.

A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under

other sections) are acceptable for product installation in accordance with manufacturer's instructions.











Consulting Engineers, Inc 18215 72nd Avenue South Kent. WA 98032

425.251.6222

barghausen.com

NO. DATE REVISION DESCRIPTION 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate

SEAL:

EXP: 08/05/24

REGISTERED

/ ARCHITECT

DAMEL B GOALWIN

STATE OF WASHINGTON

ARCO NTI 3400 am/pm

DEVELOPMENT INFORMATION:

SITE ADDRESS: 1402 S MERIDIAN

FUEL CANOPY w/ 6 MPD's

PUYALLUP, WA 98371

FACILITY #7184 ALLIANCE Z&DM BP REPM: CHECKED BY: ALLIANCE PM: PROJECT NO: 21730

ARCHITECTURA

SPECIFICATIONS SHEET NO:

DRAWING TITLE:

08410 - ALUMINUM ENTRANCES AND STOREFRONT, PART 3 - EXECUTION (CONTINUED) 1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays 3.02 Installation

A. General: Install storefront systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place

1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action 2. Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler o gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of

a. Refer to Division 7 Joint Treatments (Sealants) for installation requirements.

B Related Products Installation Requirements

Sealants (Perimeter): Refer to Division 7 Joint Treatment (Sealants) Section. 2. Glass: Refer to Division 8 Glass And Glazing Section.

C. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03 Field Quality Control

A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

Testing: Testing shall be performed by a qualified independent testing agency. Refer to Division 1 Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test. a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.

B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's

3.04 Protection and Cleaning

not less than 6.24 psf.

A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other

B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of

END OF SECTION

08710 - FINISH HARDWARE

indicating "fire exit hardware"

PART 1 - GENERAL

1.01 SUMMAR

A. Furnish labor and material to complete hardware work indicated, as specified herein, or as may be required by

B. The work in this section shall include the furnishing of all items of finish hardware as herein after specified or necessary to complete the building, except those items which are specifically excluded from this section of the specification. label indicating fire door to be equipped with fire exit hardware and provide UL label on exit device

1.03 SUBMITTALS

A. Provide product data for each type of product shown in the Door Hardware Schedule.

B. Where multiple models, finishes or other descriptive information is indicated on the contractor's product submittal, indicate which items shown are to be provided.

C. The finish hardware supplier shall prepare and submit to the Architect four (4) copies of a complete schedule identifying each door and each set number, following the door numbering system. Supplier shall submit the schedule for review, make corrections as directed and submit the corrected schedule for final approval. Approv of schedule will not relieve Contractor of the responsibilities for furnishing all necessary hardware, and correct

A. Coordination: coordinate hardware with other work. Tag each item or package separately with identification related to the final hardware schedule and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thicknesses, profile, swing, security and simile requirements indicated, as necessary for proper installation and function. Deliver individually packaged hardware items at the proper times to the proper locations for installation.

B. Templates: furnish hardware templates to each fabricator of doors, frames, and other work to be y—prepared for the installation of hardware. Coordinate with the shop drawings of other work to confi that adequate provisions are made for the proper installation of hardware.

PART 2 - PRODUCTS

2.01 MATERIALS AND FABRICATION

A. Fasteners: provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.

B. Furnish all necessary screws, bolts, expansion shields and other devices, as required for proper hardware installation. The hardware supplier shall assume all responsibility for correct quantities.

C. Provide phillips flat head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.

D. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.02 MANUFACTURERS

A. Provide the products indicated in the Door Hardware Schedule.

1. Screws: provide Phillips flat head screws complying with the following requirements: a. For metal doors and frames install machine screws into drilled and tapped hole. b. For wood doors and frames install wood screws.

c. Finish screw heads to match surface of hinges or pivots. Hinge pins: except as otherwise indicated, provide hinge pins as follows:

a. Out-swing exterior doors: non-removable pins.

b. Out-swing corridor doors with locks: non-removable pins. c. Interior doors: non-rising pins

A. Provide the products indicated in the Door Hardware Schedule.

Tips: flat button and matching plug, finished to match leaves. 4. Number of hinges: provide number of hinges indicated but not less than 3 hinges per door leaf for doors inches or less in height and one additional hinge for each 30 inches of additional height.

2.03 LOCK CYLINDERS AND KEYING

B. Standard system: except as otherwise indicated, provide new master key system for project. Review the keying

system with the Owner and provide the type required.

1. Equipment locks with manufacturer's special 5-pin tumbler cylinder with construction master key feature tha permits voiding of construction keys without cylinder removal.

C. Key material: provide keys of nickel silver only.

D. Key quantity furnish 2 change keys for each lock, 4 master keys for each master system. Stamp all permanent master keys with key set number and "do not duplicate". Identify permanent keys in envelopes and send directly to Owner by registered mail.

2.04 LOCKS, LATCHES, AND BOLTS

A. Provide the products indicated in the Door Hardware Schedule.

B. Strikes: provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extender to protect frame, finished to match hardware set, unless otherwise indicated.

Provide flat lip strikes for locks with 3-piece, anti-friction latch bolts as recommended by manufacturer.

C. Lock throw provide 1/2 inch minimum throw of latch for bored and pre-assembled types of locks and 3/4 inch minimum throw of latch for mortise locks. Provide 1 inch minimum throw for all dead bolts

A. Provide the products indicated in the Door Hardware Schedule. 2.06 TRIM AND PLATES

B. Countersink holes and furnish S.S screws

A. Provide the products indicated in the Door Hardware Schedule

2.07 WEATHERSTRIPING

A. Provide Weatherstriping which is durable and appropriate for the location and use.

A. Provide the products indicated in the Door Hardware Schedule

2.09 EXIT DEVICES

2.08 THRESHOLDS

A. All devices shall be in types and functions specified in the Door Hardware Schedule. All devices must be listed under "Panic Hardware" in accident equipment list of Underwriters Laboratories. All labeled doors with "Fire Exit

B. Thresholds shall be supplied at all exterior doors and other locations shown on the door schedule, or as called

2.10 DOOR STOPS

B. Door stops shall be furnished for all doors to prevent damage to doors or hardware from striking adjacent walls

2.12 HARDWARE FINISHES

A. Provide the finishes indicated in the Door Hardware Schedule.

A. Provide the products indicated in the Door Hardware Schedule.

Hardware" must have labels attached and be in strict accordance with UL.

B. Match items to the manufacturer's standard color and texture finish for the latch and lock sets (or push-pull units if no latch or lock sets).

C. Provide auglity of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for

D. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain

PART 3 - EXECUTION b. Water Penetration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but

3.01 INSTALLATION

A. Mount hardware units at heights indicated in following applicable publications except as specifically indicated or required to comply with governing regulations and except as otherwise directed by the Architect.

1. "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and NWWDA industry standard I.S.1.7. "Hardware Locations for Wood Flush Doors."

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 sections. Do not install surface mounted items until finishes have been completed on

C. Set units level plumb, and true to line and location. Adjust and reinforce the attachment substitute as necessary for proper installation and operation

D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant.

F. Weatherstripping and seals: comply with manufacturer's instructions and recommendations

3.02 ADJUSTING, CLEANING, AND DEMONSTRATING

A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the

Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating

B. Clean adjacent surfaces soiled by hardware installation.

C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

08716 - AUTOMATIC DOOR

PART 1 - GENERAL 1.01 SECTION INCLUDES

A. Automatic bi-parting sliding door operator is overhead concealed, electro-mechanical microprocessor controlled manufactured by Besam Inc. Local certified Besam distributor to perform installation. Besam Program Module to be used by installer during installation. For the name and number of your local Besam distributor, contact the

factory at (800) 752-9290 or (609) 443-5800.

B. Related Sections Section 08410 - Aluminum entrances and storefronts

Section 08710 - Door hardware Division 1600 - Electrical Section 08800 - Glazing

Section 07910 - Joint Sealants 1.02 REFERENCES - (Codes & Approvals)

A. Unit described complies with current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors. Unit is listed with ANSI/UL 325-1997 standard for Door, Drapery, Gate, Louver, and Window Operators

A. Automatic door equipment accommodates medium to heavy pedestrian traffic and up to the following weights for active leaf doors: 175 pound (80 kg) for bi-part.

B. Motion and presence detection system capable of operations within - 20°F (-28°C) and 125°F (52°C), and is unaffected by ambient light or ultrasonic frequencies. C. Manufacturer has tested bi-parting sliding door operator at full load for over 4,000,000 cycles.

D. Standard bi-parting door package header capable of spanning 15'0" (4572mm) without intermediate supports. For packages without transom over 15'0" (4572mm), provide two equally spaced supports. For packages with transom over 15'0" (4572mm), provide sag rods through transom.

A. Product Data: Submit manufacturer's product data and standard details for automatic doors.

B. Shop Drawings: Submit shop drawings for the fabrication and installation of automatic door, sidelites, operators and associated components of the work. Include anchors, hardware and other components not included in manufacturer's standard data.

1.05 OPERATION AND MAINTENANCE DATA

A. Spare parts list and owners manual are available from the manufacturer

ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors.

1.04 SUBMITTALS

A. Local certified Besam distributor to install operator in accordance with current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors and local applicable codes.

1.07 QUALIFICATIONS A. Company specializing in manufacturing the products specified in this section shall have minimum ten years' experience and be a member of the American Association of Automatic Door Manufacturers (AAADM). Prior to

placing door(s) in operation, an AAADM technician should inspect the doors for compliance with current

B. Manufacturer to provide FACTORY owned central dispatch system for warranty service throughout North America. System to be available 24 hours a day, 365 days per year with a factory employee (not an answering service) to obtain malfunction information and dispatch appropriate service agency to the customer location. Toll free 1-800-95-BESAM to be prominently displayed on header of each operator. To insure quality service dispatching, outside contractors or answering services will not be accepted.

A. Besam's automatic door components are warranted to be free of defects in materials or workmanship under normal use for a period of one year from the date of shipment from Besam's factory when the components have been installed by an authorized Besam distributor. Abuse, misuse, modification or improper repair or service by unauthorized technicians negates this warranty. During the period of this warranty Besam, at its sole option, will repair or replace any Besam automatic door component or parts thereof found to be defective in material or workmanship if any necessary return charges are prepaid. Components repaired or replaced under this warranty are warranted only for the remainder of the period covered by this warranty. For expanded warranty terms see Besam's warranty certificate

PART 2 PRODUCTS

A. Provide Series SL 500 automatic overhead concealed, fixed sidelites, medium stile, bi-parting sliding door system as manufactured by Besam, Inc. Hightstown, N.J. 08520. Perform installation by the local certified Besam

2.02 EQUIPMENT A. SL 500 overhead operator automatic bi-parting sliding door package consisting of: Aluminum frames, with sidelites and active door leafs. Bi-parting door operator with microprocessor electronic controls.

Operator housing, door carriers

2.03 AUTOMATIC SLIDING DOOR PACKAGE

Operating unit is a microprocessor control and electro-mechanical operator. The unit consists of a 1/8 hp, DC motor and a mechanical drive assembly. The microprocessor system automatically defines and sets the opening and closing speeds and checks of the door system. Mechanical limit switches will not be accepted. The control includes an adjustable time delay (1 to 30 seconds). Software incorporates a self diagnosing system for easy serviceability. Microprocessor control capable of accepting options such as electric locks, battery back-up units, etc. without the need for additional control mechanisms (such as, relays, power supplies, etc.).

B. Aluminum Frames and Door:

uminum frames and doors for the Besam system fabricated of 6063-T5 alloy. Header capable of spanning 15'0" (4572mm) without intermediate supports. With header in place, doors are height of 82 3/4" (2102mm). Vertical jambs are 1 3/4" (44mm) x 4 1/2" (114mm) extruded aluminum. The header is 8 1/4"W (206mm) 7"H (178mm) and incorporates a hinge point which locks cover in place or allows access for adjustments. Doo leaf fabrication is narrow (or medium) stile extrusions. Extrusion used for exterior glass stops to be non-removable security type glazing bead to prevent unauthorized entry.

Automatic sliding doors shall be powered by means of an electric motor and mechanical gear assembly transmitted to the active leaf(s) by a fiberglass reinforced tooth drive belt. Signals received by the motor from actuation controls shall power the door(s) to the open position. The opening cycle shall be slowed by means of opening at slow speed until the door encounters the mechanical stop.

The door(s) are powered closed after remaining in the open position for the pre-set time delay. The door(return at the normal closing speed until they encounter a signal from the microprocessor at which point, speed is reduced, slowing the doors to creep speed until they reach the fully closed position. EMERGENCY BREAKAWAY: The system shall be equipped with emergency release hardware which allows for the active leaf(s) to swing out in the direction of egress. On active leaf(s) only packages, the exterior active leaf(s) shall swing out 90 degrees from any position. Breakaway pressure shall be field adjustable to local Building Code requirements, but will be factory set at 50 pounds maximum in accordance with current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors.

4. WATCHDOG MONITORING: Microprocessor software is designed to constantly monitor system operations. Should

supervisory circuit monitors the main Watchdog control circuit every 255 door cycles, ready to perform as a backup.

door(s) speed, motor function or operations deviate from design criteria ranges, the Watchdog control circuit

assumes command of the system and shuts down the automatic function by holding door(s) open. A secondar

2.04 MOTION SENSOR CONTROL DEVICE

Automatic swinging door package is equipped with a doorway monitoring system to control door opening, closing and hold open functions. The system is center-mounted above the doorway threshold on both sides of the automatic swinging door header and provides both motion and presence detection. The automatic door equipment contains an additional integral sensing device that automatically reverse the door(s) should an obstruction be encountered during the closing cycle, returning the door(s) to the full open position. When an obstruction is encountered in the opening cycle, the door comes to a complete stop.

A. Activating Devices:

Built into the sensing system is an adjustable motion detection field running the complete width of the doorway (max. 84" [2134mm]) and up to 60" (1524mm) out from the doorway.

The presence zone runs the complete width of the door opening (max. 84") and extends up to 24" on either side of the active leaf. The system shall detect motionless people or equivalent. The detector remains energized ind monitors the doorway at all times. The presence detection zone shall not be turned off before or during the door closing cycle. Microprocessor software controlling presence detection is programmed to provide a 'learn mode' so that self—adjustment to changes in floor conditions will be made automatically. The entire system will not be false impulsed by rain, snow, or frost and complies with current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors for detection field sizes and function. Functions are de-activated through the Besam position switch system when doors are not in use.

2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: The D.C. motor shall not exceed 5 amps current draw. Electrical: dedicated 115V. 60 Hz, 10 amp incoming power with a solid earth ground connection for each automatic door package (two packages on a 20 amp circuit). Provide two low voltage 18 gauge stranded wires from automatic operator to remote (50 feet max.) activation devices (if required).

PART 3 EXECUTION

A. All exposed aluminum surfaces are clear anodized (AAC22A31), unless noted otherwise in the drawings.

3.01 EXAMINATION

A. Verify the openings are plumb and are dimensioned properly. Insure adequate support has been provided at the operator header. Proceed with the installation only after conditions are deemed satisfactory. 3.02 INSTALLATION & ADJUSTMENT

A. Install equipment in accordance with manufactures installation instructions. Adjust equipment per instructions and current ANSI/BHMA 156.10 American National Standard for Power Operated Pedestrian Doors.

<u>08800 - GLAZING</u> PART 1 - GENERAL

A. This section includes glazing for the following products including those specified in other sections where glazing requirements are specified by reference to this section:

Window units. Vision lites. Entrances and other doors

1.02 SYSTEM PERFORMANCE REQUIREMENTS A. Glass design: glass thicknesses indicated on drawings are for detailing only. Contractor is to confirm glass thickness by analyzing project loads and in-service conditions. Provide glass lites for the various size openings in the thickness and strength (annealed or heat-treated) to meet or exceed the following criteria:

Minimum glass thickness, nominally, of lites in exterior walls is 6.0 mm (0.23 inch). B. Normal thermal movement results from the following maximum change (range) in ambient and surface

temperatures acting on glass-framing members and glazing components. Base engineering calculation on materials' actual surface temperatures due to both solar heat gain and nighttime sly heat loss. 1. Temperature change (range): 120 deg F(67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

A. Product data for each glass product and glazing material indicated. A. Glazing publications: comply with published recommendations of glass product manufacturers and organizations below, except where more stringent requirements are indicated. Refer to these publications for glazing terms not

otherwise defined in this section or in referenced standards. FGMA publications: "FGMA Glazing Manual."

Sigma publications: TM-3000 "Vertical Glazing Guidelines". B. Safety glass: products complying with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials. Provide safety glass permanently marked with certification label of safety glazing certification council (SGCC) or other certification agency acceptable to authorities having jurisdiction.

and visible reflectance.

2.03 HEAT-TREATED (TEMPERED) FLOAT GLASS

2.01 MANUFACTURERS A. Available products: subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the products specified

C. Insulating glass certification program: provide insulating glass units permanently marked either on spacers or at

least one component lite of units with appropriate certification label of Insulating Glass Certification Council (IGCC).

A. Float glass: ASTM C 1036, Type I (transparent glass, flat), class as indicated below, and quality (glazing select), B. Refer to requirements for sealed insulating glass units for performance characteristics of assembled units composed of clear glass, coated or uncoated, relative to visible light transmittance, U-values, shading coefficient,

A. Uncoated, clear, heat-treated float glass: ASTM C 1048, condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), quality (glazing select), kind FT (fully tempered) unless otherwise indicated. B. Uncoated, clear, heat-treated float glass: ASTM C 1048, condition A (uncoated surfaces). Type I (transparent alass, flat). Class 2 (clear heat-absorbing and light-reducing), quality Q3 (alazing select), performance characteristics for 6.0-mm t hick (0.23-inch thick) glass matching those indicated for annealed primary float C. Manufacturers: subject to compliance with requirements, provide heat-treated glass by one of the following

AFG Industries, Inc.

2. Cardinal IG. . Falconer Glass Industries

Tempglass.

Guardian Industries Corp . PPG Industries, Inc

2.04 INSULATING GLASS PRODUCTS

A. Sealed insulating glass units: preassembled units consisting of organically sealed lites of glass separated by dehydrated air spaces complying with ASTM E774 and with other requirements indicated.

For properties of individual glass lites making up units, refer to requirements specified previously, applicable to types, classes, kinds, and conditions of glass products comprising lites of insulating glass units. 2. U-values are expressed as BTU/hour x sq. ft. x deg F.

2.05 ELASTOMERIC GLAZING SEALANTS

A. Compatibility: select glazing sealants and tapes of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.

B. Suitability: comply with sealant and glass manufacturer's recommendations for selecting glazing sealants and tapes

that are suitable for applications indicated and conditions existing at time of installation C. Colors: provide color of exposed joint sealants selected to match adjacent materials from manufacturer's full range of standard colors for products of type indicated.

D. Elastomeric glazing sealant standard: ASTM C 920.

A. Products: subject to compliance with requirements, provide one of the following:

a. PTI 303 glazing tape (without shim), Protective Treatments, Inc. b. Tremco 440 Tape, Tremco Inc Back-bedding mastic glazing tape with spacer rod: a. PTI 303 glazing tape (with shim), Protective Treatments, Inc. b. Pre-shimmed Tremco 440 Tape, Tremco, Inc.

Back-bedding mastic glazing tape without spacer rod:

2.07 GLAZING GASKETS

A. Dense compression gaskets: molded or extruded gaskets of material selected by installer, compatible with adjacent materials and complying with applicable standards of elastomer, and of profile and hardness required to maintain B. Soft compression gaskets: extruded or molded closed cell integrally skinned gaskets of material selected by installer, compatible with adjacent materials, and complying with ASTM C 509, Type II, black, and of profile and

C. Manufacturers: subject to compliance with requirements, provide products by one of the following companies.

Advanced Elastomer Systems, L.P. 2. Tremco, Inc.

2.08 MISCELLANEOUS GLAZING MATERIALS A. General: provide products of material, size, and shape complying with referenced glazing standard, requirements of B. Portland cement plaster system (stucco) nanufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven

B. Cleaners, primers and sealers: type recommended by sealant or gasket manufacturer

C. Setting blocks: elastomeric material with a shore a durometer hardness of 85 plus or minus 5.

record of compatibility with surfaces contacted in installation.

manufacturer to maintain glass lites in place for installation indicated. E. Edge blocks: elastomeric material of hardness needed to limit glass lateral movement (side-walking)

D. Spacers: elastomeric blocks or continuous extrusions with a shore a durometer hardness required by glass

Plastic foam joint fillers: preformed, compressible, resilient, nonstaining, nonextruding, nonoutgassing, strips of closed-cell plastic foam of density, size, and shape to control sealant depth and otherwise contribute to produce optimum sealant performance. 2.09 FABRICATION OF GLASS AND OTHER GLAZING PRODUCTS

A. Fabricate alass and other alazina products in sizes required to glaze openings indicated for project, with edge

and face clearances, edge and surface conditions, and bite complying with recommendations of product

manufacturer and referenced glazing standard as required to comply with system performance requirements. PART 3 - EXECUTION

3.01 GLAZING, GENERAL A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials,

during installation. C. Protect glass from edge damage during handling and installation as follows:

damage or other imperfections that, when installed, weaken glass and impair performance and appearance.

except where more stringent requirements are indicated, including those in referenced glazing publica

B. Glazing channel dimensions as indicated on drawings provide necessary bite on glass, minimum edge and face

1. Use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate alass lites with flares or bevels on bottom horizontal edges so edges are located at top of opening, unless otherwise indicated by manufacturer's label. 2. Remove damaged glass from project site and legally dispose of off site. Damaged glass is glass with edge

D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testina. E. Install elastomeric setting blocks in sill rabbets, sized and located to comply with referenced glazing standard,

unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel

F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

G. Provide spacers for glass sizes larger than 50 united inches (length plus height)

END OF SECTION <u> 09200 - GYPSUM DRYWALL</u>

PART 1 - GENERAL 1.01 WORK INCLUDED

A. Interior walls of wood studs or metal studs and aypsum board B. Suspended interior gypsum board ceilings and soffits

C. Acoustical insulation in gypsum board walls.

D. Install all blocking concealed in gypsum board walls as required for items which require blocking.

A. Requirements, abbreviations and acronyms for reference standards are defined in section 01090. B. GA-GA-216 recommended specifications for the application and finishing of gypsum board C. ASTM C754 — installation of steel framing members to receive screw-attached gypsum wallboard, backing board,

D. S HH-I-521D- installation blankets, thermal mineral fiber for ambient temperatures.

A. Provide gypsum wallboard materials in accordance with recommendations of GA-216. B. Acceptable manufacturers:

2.01 GYPSUM BOARD

Georgia Pacific

C. For interior work:

U.S. Gypsum National Gypsum

C. Interior avpsum board: Standard gypsum board: square cut ends, tapered edges; maximum permissible lengths; thickness as indicated 2. Fire rated gypsum board: USG's Firecode "C" or Gold Bond's "Fire Shield", maximum permissible lengths; tapered edges, type "X" thickness as indicated on drawings.

3. Moisture-resistant gypsum board: chemically treated multi-layered face and back paper and water-resistant

Tile backer board: maximum permissible lengths, thickness and indicated on the drawings. Georgia-Pacific "DensShield" for 1/2" thickness and Georgia-Pacific "DensShield" "firestop" type "X" for 5/8" thickness 2.02 GYPSUM BOARD ACCESSORIES

A. Provide gypsum wallboard accessories in accordance with Gypsum Association GA-216. B. Screws: Self-drilling, self-tapping, type "S". Sizes are recommended by gypsum board manufacturer for wall and ceiling applications

gypsum core; maximum permissible lengths; thickness as indicated on drawings.

1. Corner beads: Galvanized steel with paper tape wings, 1-3/4" wide.

2. Edge trim: Galvanized metal. 3. Reinforcing tape, joint compound, adhesive, water, fasteners: in accordance with gypsum association GA-216.

PART 3 - EXECUTION

3.01 INSTALLATION OF FRAMING FOR GYPSUM BOARD CEILINGS

A. Coordinate locations of hangers with other work B. Install ceiling furring independent of walls, columns, and above ceiling work.

C. Space main carrying channels at maximum 48" on center, not more than 6" from perimeter walls. Lap splices minimum 12" and secure together 2" from each end of splice.

D. Place furring channels perpendicular to carrying channels at spacings indicated on drawings not more than 12" from perimeter walls. Lap splices 8" and secure together 1" from each end of splice

E. Reinforce openings in ceiling suspension system, which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24" past each end of openings.

F. Laterally brace entire suspension system where required.

A. Install gypsum board in accordance with recommendations of gypsum association GA-216. B. For non-rated walls: Erect single layer standard gypsum board in direction most practical and economical, with ends and edges occurring over firm bearing.

C. For fire rated walls: 1. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing. For double layer applications, erect first layer vertically, with edges and ends occurring over firm bearings. Place second layer perpendicular to first layer 3. Items built into fire rated walls (i.e. fire extinguisher cabinets) shall be "boxed" in or enclosed with the same

E. Corner beads: Place at outside corners. Use longest practical lengths. Place edge trim where gypsum board

D. Treat cut edges and holes in moisture resistant gypsum board with sealant.

F. Tape, fill and sand joints, edges, corners, openings and fixings, to produce surface ready to receive surface

3.02 INSTALLATION OF INTERIOR GYPSUM BOARD

09220 - PORTLAND CEMENT PLASTER (STUCCO) PART 1 - GENERAL

1.01 SECTION INCLUDES

construction as the rated wan.

abuts dissimilar materials.

A. Metal furring and lathing.

C. Smooth and special rendered surface finish 1.02 RELATED SECTIONS A. Unit Masonry: Section 04200

B. Rough Carpentry: Section 06100 C. Joint Sealants: Section 07901 D. Gypsum Drywall: Section 09200

1.03 REFERENCES A. ASTM C150 - portland cement.

B. ASTM C206 - finishing hydrated lime.

C. ASTM C631 - bonding compounds for interior plastering D. ASTM C897 - aggregate for job-mixed portland cement based plasters.

E. PCA (Portland Cement Association) - plaster (stucco) manual

A. Fabricate vertical elements to limit finish surface to 1/180 deflection under lateral point load of 100 lbs.

1.06 QUALITY ASSURANCE

1.08 MOCKUP

1.04 SYSTEM DESCRIPTION

E. Tile: Section 09300

B. Product data: provide data on plaster materials, characteristics and limitations of products specified. C. Samples: submit two samples, 12 x 12 inch in size illustrating finish color and texture

A. Submit under provisions of Section 01300 Submittals.

1. Perform work in accordance with PCA Plaster (stucco) Manual 1.07 QUALIFICATIONS

A. Applicator: company specializing in performing the work of this section with minimum three years experience

B. Fabricate horizontal elements to limit finish surface to 1/240 deflection under superimposed dead load and wind

A. Provide mockup of plaster system with accessories B. Construct mockup, 4 feet long by 4 feet wide, illustrating surface finish and color.

C. Locate where directed.

and/or approved by manufacturer.

D. Mockup may remain as part of the work. 1.09 ENVIRONMENTAL REQUIREMENTS

A. Do not apply plaster when substrate or ambient air temperature is less than 50 degrees F or anticipated to drop B. Maintain minimum ambient temperature of 50 degrees F during installation of plaster and until cured.

PART 2 - PRODUCTS

2.02 PLASTER BASE MATERIALS

2.03 PLASTER FINISH MATERIALS

2.04 FURRING AND LATHING

B. Lime: as specified for plaster base coa

2.01 MANUFACTURER A. The drawings were prepared and this specification written on the basis of using the products of United States Gypsum Company, Chicago, Illinois. Such is intended to establish minimum quality standards, not to limit competitive bidding. Products with equal or superior characteristics, by other manufacturers, are acceptable under

A. Cement: ASTM C150, Type 1 Portland cement. B. Lime: special finishing hydrated lime, ASTM C-206-68, Type S

conditions of the specifications and approval by the architect.

D. Water: clean, fresh, potable and free of mineral or organic matter which can affect plaster. E. Bonding agent: ASTM C631; type recommended by manufacturer for bonding plaster to concrete masonry surfaces.

C. Aggregate: natural or manufactured sand, ASTM-C-144 graded in accordance with ANSI spec. A42-2 for stucco

C. Color pigment: mineral oxide type, color as shown on the Drawings. D. Water: clean, fresh, potable and free of mineral or organic matter which can affect plaster.

C. Underlayment: asphalt saturated no. 30 felt, non-perforated

A. Cement: as specified for plaster base coat, white color.

A. Metal lath at walls ASTM C847; flat diamond self furring mesh, galvanized, 2.5 lb/yd. Of weight to suit B. Metal lath at soffits ASTM C847; flat diamond non-furred and non-backed mesh, galvanized, 3.4 lb/yd.

D. Casing bead formed zinc; minimum 26 gage thick; depth governed by plaster thickness; maximum possible

E. Corner bead formed zinc; minimum 26 gage thick; depth governed by plaster thickness; maximum possible lengths; expanded metal flanges, with bullnosed edge.

lengths; expanded metal flanges, with square edges.

F. Base screed formed zinc; minimum 26 gage thick; depth governed by plaster thickness; maximum possible lengths; expanded metal flanges, with beveled edge.

G. Corner mesh formed zinc minimum 26 gage thick; expanded flanges shaped to permit complete embedding in plaster; minimum 2 inches wide; galvanized finish

H. Anchorage methods nails, staples, or other approved metal supports, of type and size to suit application, galvanized to rigidly secure lath and associated metal accessories in place. 2.05 CEMENT PLASTER MIXES

A. Proportion and mix cement plaster in accordance with PCA Plaster (stucco) Manual and ANSI A42-2-1971.

C. Mix only as much plaster as can be used prior to initial set.

D. Add color pigments to finish coat in accordance with manufacturer's instructions. Ensure uniformity of mix and

E. Mix materials dry, to uniform color and consistency, before adding wate F. Add air entrainment admixtures to all coats to provide 5-7 percent entrainment

B. Finish coat: premix in accordance with manufacturer's instructions.

G. Protect mixtures from freezing, frost, contamination, and evaporation. H. Do not re-temper mixes after initial set has occurred

3.01 EXAMINATION

A. Verify surfaces and site conditions are ready to receive work under this section. B. Masonry: verify joints are cut flush and surface is ready to receive work of this section. Verify no bituminous or

3.02 PREPARATION

water repellent coatings exist on masonry surface.

A. Dampen masonry surfaces to reduce excessive suction.

Use vented screed at perimeter.

reinforcement; fasten at perimeter edges only.

3.03 INSTALLATION — LATHING MATERIALS

A. Apply one ply of felt underlayment over substrate; weather lap edges 4 inches minimum. Fasten in place

B. Apply metal lath taut, with long dimension perpendicular to supports.

C. Lap ends minimum 1 inch. Secure end laps with tie wire where they occur between supports.

D. Lap sides of diamond mesh lath a minimum 1-1/2 inches. E. Attach metal lath to supports using fastening method recommended by manufacturer to suit back-up material

F. All openings, plaster edges or where plaster edges terminate against dissimilar materials, provide plaster screeds.

3.04 INSTALLATION - ACCESSORIES A. Continuously reinforce internal angles with corner mesh, return metal lath 3 inches from corner to form the angle

B. Place corner bead at external wall corners; fasten at outer edges of lath only.

shoved through the metal reinforcement to completely embed the reinforcement.

C. Place strip mesh diagonally at corners of lathed openings. Secure rigidly in place. D. Place 4 inch wide strips of metal lath centered over junctions of dissimilar backing materials. Secure rigidly in

E. Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.

A. Apply Portland cement plaster (stucco) in a three-coat application over metal lath with thickness not less than 7/8" in locations as indicated on drawings. Scratch, brown and finish coat shall be applied as follows: 1. First (scratch) coat: shall be applied to metal reinforcement with sufficient material and pressure so that it is

scratched with a standard scratcher to provide good mechanical key for the second or brown coat.

b. Surface shall be brought to a true, even surface by floating or rodding and left rough, ready to receive

b. Scratch coat shall be continuously moist cured for not less than 48 hours after application. 2. Second (brown) coat; shall be applied not sooner than 48 hours after application of scratch coat. Before applying the brown coat, the surfaces of scratch coat shall be dampened evenly to obtain uniform suction. a. Thickness of brown coat shall be a minimum of 3/8" total thickness and shall be applied in two applications or coats, one immediately following the other.

c. Brown coat shall be continuously moist for 48 hours after application and then allowed to dry.

finish coat, the surface of preceding coat shall be dampened evenly to obtain uniform suction.

3. Finish coat of cement plaster work shall be laid out to permit completion of an entire surface in one operation. If this is impracticable, the plastering shall be carried to some natural breaking point as approved by the a. Finish coat shall be applied not sooner than 7 days after the application of preceding coat. Before applying

A. Maximum variation from true flatness: 1/8 inch in 10 feet 3.07 CLEAN-UP

A. Upon completion of the work of this section, remove related debris from premises.

END OF SECTION 09250 METAL SUPPORT ASSEMBLIES

3.06 TOLERANCES

PART 1 - GENERAL

1.02 QUALITY ASSURANCE

American Studco Inc.

A. Section includes: Formed metal stud framing, furring, and accessories as shown on drawings and as specified.

PART 2 - PRODUCTS 2.01 MANUFACTURERS A. Furnish products of one of the following manufacturers, except as approved by the Client representative, subject

2. Gold Bond Building Products Div., National Gypsum 4. Manufacturing members of the Metal Stud Manufacturer's Association, Corvallis, Oregon, (503) 757-8991

2. Thickness: 20 gage (.80mm) gage for studs and runners.

C. Ceiling runners: Cold or hot-rolled steel, meet ASTM C 754.

F. Primer: FS TT-P-645, for touch-up of galvanized surfaces

A. Perform work in accordance with ASTM C 754 requirements

2.02 FRAMING MATERIALS A. Load-bearing studs, runners and furring channels: ASTM C 645, electro-galvanized to meet ASTM A 591, manufactured from steel supplied in accordance with

B. Non-load-bearing Studs: C-shaped, non-load bearing rolled steel, punched for utility access, of size shown of

D. Furring and bracing members: Of same gauge, material and finish as studs, thickness to suit purpose

E. Miscellaneous: Clips, brackets: shall be galvanized wire or sheet metal designed for attachment of furring

members. Fasteners: to be GA 203, self-drilling, self-tapping screws. Anchorage devices: power driven, powder actuated, drilled expansion bolts or screws with sleeves as required for positive anchorage.

ASTM A 653, Structural Quality Grade 33; G60 designation galvanized sheet stee

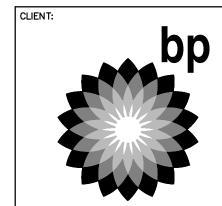
PART 3 - EXECUTION 3.01 EXAMINATION

3.02 METAL STUD ERECTION

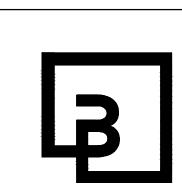
rough-in utilities are in proper location C. Beginning of installation means acceptance of substrate

B. Verify that conditions are ready to receive work, field measurements are as shown on drawings, and that

A. Install stud framing in accordance with ASTM C 754. B. Align and secure top and bottom runners to substrate at 24 inches (600mm) o.c.







Barghausen

425.251.6222

barghausen.com

Consulting Engineers, Inc 18215 72nd Avenue South Kent. WA 98032

NO. DATE REVISION DESCRIPTION

a. Thickness of scratch coat shall be approximately 3/8". Before scratch coat has hardened, it shall be evenly SEAL:

REGISTERED

/ ARCHITECT

DAMEL B GOALWIN

STATE OF WASHINGTON

EXP: Ø8/Ø5/24

DEVELOPMENT INFORMATION:

SITE ADDRESS:

1402 S MERIDIAN

PUYALLUP, WA 98371

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

FACILITY #7184 ALLIANCE Z&DM CHECKED BY: BP REPM: ALLIANCE PM:

DRAWING TITLE:

ARCHITECTURA SPECIFICATIONS

ROJECT NO:

21730

C. Fit runners under and above openings; secure intermediate studs at spacing of wall studs.

D. Install studs vertically at 16 inches (400mm) O.C.; unless indicated otherwise on drawings. Install

felt strips between wall and stud where studs abut exterior walls.

F. Door opening framing: Install double studs at doorframe jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.

to studs. Install backing and blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, and hardware. F. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work placed in or behind

G. Splice studs with 8 inch (200mm) nested lap, secure each stud flange with flush head screw.

H. Construct corners using minimum three studs.

E. Connect studs to tracks using fastener method.

Brace stud-framing system and make rigid.

J. Coordinate erection of studs with requirements of door and window frame supports and attachments.

K. Alian stud web openings.

.. Refer to drawings for indication of partitions extending to ceiling only and for partitions extending through ceiling to structure above. Maintain clearance under structural building members to avoid deflection transfer to studs. Provide nested extended lea ceiling runners or proprietary slip track.

M. Coordinate placement of insulation in multiple stud spaces made inaccessible after stud framing

3.03 WALL FURRING INSTALLATION

A. Erect wall furring for direct attachment to concrete, brick masonry and concrete walls.

B. Erect furring channels vertically. Secure in place to substrate on alternate channel flanges at maximum 24 inches (600mm).

C. Space furring channels maximum 16 inches (400mm) on centers.

D. Install furring channels directly attached to concrete and brick masonry and concrete walls, as applicable in accordance with manufacturer's instructions.

END OF SECTION

<u>09300 - TILE</u>

PART 1 - GENERAL 1.01 SUMMARY

A. This section includes the following:

1. Wall tile Floor tile.

1.02 SUBMITTALS

A. General: submit the following in accordance with conditions of contract and Division 1 specification

B. Product data for each type of product specified.

C. Shop drawings indicating tile patterns and locations and widths of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces. 1. Locate precisely each joint and crack in tile substrates by measuring, record measurements on shop drawings, and coordinate them with tile joint locations.

D. Samples for initial selection purposes in form of manufacturer's color chart consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and

composition of tile indicated. Include samples of grout and accessories involving color selection. E. Samples for verification purposes of each item listed below, prepared on samples of size and construction indicated, products involve color and texture variations, in sets showing full range of 1. Each type and composition of tile and for each color and texture required, at least 12 inches

2. Full size units of each type of trim and accessory for each color required

square, mounted on plywood or hardboard backing and grouted.

F. Master grade certificates for each shipment, type, and composition of tile, signed by tile

G. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Architects and Owners, plus other information specified.

1.03 QUALITY ASSURANCE

A. Single source responsibility for tile: obtain each color, grade, finish, type, composition, and variety of tile from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work.

B. Single source responsibility for setting and grouting materials: obtain ingredients of a uniform quality from one manufacturer for each cementitious and admixture component and from one source or producer for each aggregate.

C. Installer qualifications: engage an experienced installer who has successfully completed tile installations similar in material, design, and extent to that indicated for project.

D. Provide master grade certificate for all materials used.

1.04 PROJECT CONDITIONS

A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Maintain temperatures at 50 deg F (10 deg C:) or more in tiled areas during installation and for 7 days after completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Tile: as listed on Drawings.

B. Mortar bed: thinset bond coat, dry-set cementitious mortar, ANSI A118.1.

C. Sill sealer: latex Portland cement mortar; ANSI A118.4, composition as follows: 1. Latex additive (water emulsion) of type described below, serving as replacement for part or all

2. Latex type: manufacturer's standard D. Control joint membrane: use Mapei plasti/lastic crack isolation membrane over all control joints and

of gauging water, combined at job site with prepackaged dry mortar mix supplied or specified by

other floor slab gaps over 1/16"

2.02 PRODUCTS, GENERAL

09300 - TILE, PART 2 - PRODUCTS

latex additive manufacturer.

A. ANSI standard for ceramic tile: comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types, compositions, and grades of tile indicated.

B. ANSI standard for tile installation materials: comply with ANSI standard referenced with products and materials indicated for setting and grouting.

1. Mounting: where factory mounted tile is required, provide back or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.

2.03 TILE PRODUCTS

A. Wall tile: provide flat tile complying with the following requirements:

1. Nominal facial dimensions: as indicated on the drawings. 2. Nominal thickness as indicated on the drawings.

3. Face as indicated on the drawings.

B. Trim units: provide tile trim units to match characteristics of adjoining flat tile and to comply with

1. Size: as indicated, coordinated with sizes and coursing of adjoining flat tile where applicable. 2. Shapes: as follows, selected from manufacturer's standard shapes:

designed to member with stretcher shapes.

a. Base for thinset mortar installations; cove base with bullnose b. External corners for thinset installations: surface bullnose. c. Internal corners: field-butted square corners, except use covered base and cap angle pieces

3.01 MIXING MORTARS AND GROUT E. Backing and blocking: Provide backing and blocking attached to studs. Bolt or screw steel channels

> A. Mix mortars and grouts to comply with requirements of referenced standards and manufacturers including those for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

3.02 EXAMINATION

A. Examine substrates and areas where the will be installed, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

B. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing

C. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.

D. Do not proceed with installation until unsatisfactory conditions have been corrected.

A. Blending: for tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. not factory blended, either return to manufacturer or blend tiles at project site before installing.

3.04 INSTALLATION, GENERAL

A. ANSI tile installation standard: comply with parts of ANSI 108 series of tile installation standards included under "American national standard specifications for the installation of ceramic tile" that apply to type of setting and grouting materials and methods indicated.

B. TCA installation guidelines: TCA "handbook for ceramic tile installation": comply with TCA installation methods indicated.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully arind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars or covers overlap tile.

E. Jointing pattern: unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so extent of each sheet is not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion joints: locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.

H. Grout tile to comply with the requirements of the following installation standards:

1. For ceramic tile grouts (sanded Portland cement, dry-set, commercial Portland cement, and latex Portland cement grouts), comply with ANSI A108.10. 2. For chemical resistant epoxy grouts, comply with ANSI A108.6.

3.05 WATERPROOFING FOR THINSET TILE INSTALLATIONS

. Install waterproofing in compliance with waterproofing manufacturer's instructions to produce o waterproof membrane of uniform thickness bonded securely to substrate.

B. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that

3.06 WALL TILE INSTALLATION METHODS

A. Install types of tile designated for wall application to comply with requirements indicated below for setting bed methods, TCA installation methods related to subsurface wall conditions, and grout types:

1. Organic adhesive: ANSI A108.4.

a. Gypsum board, interior: TCA W242. b. Grout: latex Portland cement.

with clean water before and after cleaning.

3.07 CLEANING AND PROTECTION

A. Cleaning: upon completion of placement and grouting, clean all ceramic tile surfaces so they are

Remove latex Portland cement grout residue from tile as soon as possible. 2. Unalazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface

B. Finished tile work: leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of substantial completion.

1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. 2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09511 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1 01 SUMMARY

A. This section includes acoustical panel ceilings installed with exposed suspension systems.

1.02 QUALITY ASSURANCE

A. Installer qualifications: engage an experienced installer who has successfully completed acoustical ceilings similar in material, design, and extent to those indicated for project.

B. Single source responsibility for ceiling units: obtain each type of acoustical ceiling unit from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work.

C. Single source responsibility for suspension system: obtain each type of suspension system from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the work. 1. Obtain suspension system from same manufacturer that produces acoustical ceiling units.

D. Coordination of work: coordinate layout and installation of acoustical ceiling units and suspension

system components with other construction that penetrates ceilings or is supported by them. including light fixtures, HVAC equipment, fire—suppression system components (if any), and partition

1.03 PROJECT CONDITIONS

A Space enclosure: do not install interior acoustical ceilinas until space is enclosed and weatherproof. wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.04 EXTRA MATERIALS

B. Deliver extra materials to Owner. Furnish extra materials described below that match products nstalled, are packaged with protective covering for storage, and are identified with appropriate labels.

1. Acoustical ceiling units: furnish quantity of full-size units equal to 2.0 percent of amount

2. Exposed suspension system components: furnish quantity of each exposed component equal to

A. Standard for acoustical ceiling units: as scheduled on drawings. Ceiling tile installed in food

A. Standard for metal suspension systems: provide manufacturer's standard metal suspension systems of

1. High humidity finish: comply with ASTM C 635 requirements for "Coating Classification for Severe

C. Attachment devices: size for 5 times the design load indicated in ASTM C 635, Table 1, direct hung

1. Gage: provide wire sized so stress at 3 times hanger design load (ASTM C 635, Table 1

E. Edge moldings and trim; metal or extruded aluminum of types and profiles indicated or, if not

direct-hung), will be less than yield stress of wire, but provide not less than 0.106-inch

indicated, manufacturer's standard moldings for edges and penetrations that fit type of edge detail

1. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of

2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit

3. For narrow faced suspension systems, provide suspension system manufacturer's standard edge

A. Concealed acoustical sealant: nondrying, nonhardening, nonskinning, nonstaining, nonbleeding, gunnable

. Examine substrates and structural framing to which ceiling system attaches or abuts, with installe

A. Coordination: furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is

opposite edges of each ceiling. Avoid use of less than half width units at borders, and comply with

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at

A. General: install acoustical ceiling systems to comply with installation standard referenced below, per

B. Arrange acoustical units and orient directionally patterned units in a manner shown by reflected

Install hangers plumb and free from contact with insulation or other objects within ceiling plenum

that are not part of supporting structural or ceiling suspension system. Splay hangers only where

required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying,

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that

interfere with the location of hangers at spacings required to support standard suspension

Secure wire hangers by looping and wire-tying, either directly to structures or to inserts,

will not cause them to deteriorate or otherwise fail due to age, corrosion, or elevated

system members, install supplemental suspension members and hangers in form of trapezes or

equivalent devices. Size supplemental suspension members and hangers to support ceiling loads

eyescrews, or other devices that are secure and appropriate for substrate, and in a manner that

Space hangers not more than 4'-0" along each member supported directly from hangers, unless

otherwise shown, and provide hangers not more than 8 inches from ends of each member.

D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and where necessary

1. Sealant bed: apply continuous ribbon of acoustical sealant, concealed on back of vertical leg

Screw-attach moldings to substrate at intervals not over 16 inches o.c. and not more than 3

inches from ends, leveling with ceiling suspension system to tolerance of 1/8 inch in 12'-0'.

F Install accustical panels in coordination with suspension system, with edges concealed by support of

members. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage.

Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate

suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension

A. Section includes application of fiber reinforced plastic (FRP) wall panels, including trim moldings.

A. Fire performance characteristics: provide FRP wall panels, with surface burning characteristics as

indicated below, which have been determined by testing assemblies of identical materials and

construction according to ASTM E 84 by a testing organization acceptable to authorities having

A. Do not begin installation until spaces to receive FRP wall panels have been enclosed and maintained

B. FRP panels: provide the manufacturer's standard size USDA approved, mold and mildew resistant

panels; fabricated from fiberglass reinforced plastic, minimum thickness required for UL Class 3

B. Accessories: provide the manufacturer's standard color matched high impact resistant PVC moldings

temperature and humidity as recommended by panel manufacturer.

fire-resistance rating, with embossed surface and integral color.

at approximately the same humidity and temperature conditions as planned for occupancy. Maintain

1. Standard for installation of ceiling suspension systems: comply with ASTM C 636.

manufacturer's instructions and CISCA "Ceiling Systems Handbook."

C. Suspend ceiling hangers from building structural members and as follows:

within performance limits established by referenced standards.

or other equally effective means.

4. Do not attach hangers to steel deck tabs.

Miter corners accurately and connect securely.

to conceal edges of acoustical units.

before installina moldinas

<u>09540 - FIBER REINFORCED PANELS (FRP)</u>

Flame spread: 25 or less.

Smoke developed: 450 or less.

Extent of FRP wall panels is shown on drawings.

END OF SECTION

PART 1 - GENERAL

1.02 QUALITY ASSURANCE

1.03 PROJECT CONDITIONS

PART 2 - PRODUCTS

Manufacture

a. See drawinas

b. Or approved equal

2.01 FRP WALL PANELS, GENERAL

1.01 SUMMARY

present, for compliance with requirements specified in this and other sections that affect installation

and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have

same depth and width as that formed between edge of panel and flange at exposed suspension

types, structural classifications, and finishes indicated that comply with applicable ASTM C 635

B. Finishes and colors: provide manufacturer's standard factory-applied finish for type of system

Environment Performance" where high humidity finishes are indicated.

D. Wire for hangers and ties: ASTM A 641, class 1 zinc coating, soft temper.

moldings that match width and configuration of exposed runners.

sealant complying with requirement specified in Division 7 Section "Joint Sealers."

preparation areas shall be non-water-absorbent and washable.

2.0 percent of amount installed

2.02 METAL SUSPENSION SYSTEMS, GENERAL

diameter (12 gage).

2.03 MISCELLANEOUS MATERIALS

been corrected.

3.02 PREPARATION

3.03 INSTALLATION

reflected ceiling plans.

and suspension system indicated.

PART 2 - PRODUCTS

2.01 ACOUSTICAL CEILING UNIT

C. Adhesives: provide manufacturer's recommended adhesive, primer, and sealer, produced expressly for use with FRP panels on substrate as shown on drawings. Provide materials which are mildew-resistant and nonstaining.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install FRP wall panels in locations indicated with vertical surfaces and edges plumb, top edges level, and in alignment with other panels, scribed to fit adjoining work accurately at borders and at penetrations. Comply with panel manufacturer's printed instructions for installation of panels using type of mounting accessories as recommended by manufacturer.

B. Anchor paneling to supporting substrate with adhesive; install splined-connection strips and similar

1. Cut units to be at least 50 percent of unit width. Butt joints tightly.

associated trim to comply with manufacturer's recommendations. Do not face nail unless otherwise C. Remove and replace panels which are damaged and are unacceptable to Architect.

09650 - RESILIENT FLOORING

PART 1 - GENERAL 1.01 DESCRIPTION

A. This section includes inspection and surface preparation of substrate and installation of resilient floor finish materials.

END OF SECTION

B. Submit three 6"x6" samples to Architect or Construction Project manager for color, pattern, and texture confirmation.

A. Submit manufacturer's product data, installation instructions, and maintenance instructions.

1.03 PROJECT/SITE CONDITIONS

a. Store delivered materials in a dry conditioned (minimum 70 F degree) space for a minimum of 48 hours prior to installation. Verify concrete floor slabs are cured and dry, via moisture testing, per manufacturer's directions

PART 2 - PRODUCTS

2.01 FLOORING MATERIAL

PART 3 - EXECUTION

3.02 INSTALLATION

with installation of flooring.

A. Provide flooring material by the manufacturer, in the color, pattern, texture, and sizes as indicated

3.01 EXAMINATION AND PREPARATION OF SUBSTRATE A. Inspect areas where tile is to be installed. Concrete is to be dry and free of cracks, ridges, paint, curing compounds, drywall compound, dirt, and other foreign deposits whose presence would interfere

B. Repair cracks, holes, and depressions with approved trowelable leveling compounds as required.

. Test concrete substrate for moisture and bond adhesion where required per manufacturer's

D. Vacuum clean all substrates to be covered with tile immediately before tile installation. E. Apply slab primer if recommended by flooring manufacturer, prior to applying adhesive.

A. Install tile per manufacturer's instructions. Install tile parallel with axis of room unless otherwise

B. Install square directional tile using "Quarter Turn" method where each tile is rotated 90 degrees from its adjoining tile, unless otherwise indicated.

C. Adhere tiles to substrate without producing gaps, bumps, telegraphing of substrate, or other visible

3.03 CLEANING AND PROTECTING A. Remove visible adhesive and other surface blemishes. Do not wash floor until after interval

B. Protect flooring against damage from subsequent construction foot traffic.

D. Barricade tiled area from foot traffic for duration recommended by manufacturer.

recommended by manufacturer.

<u>09900 – PAINTING</u> PART 1 - GENERAL

A. This section includes surface preparation, painting, and finishing of exposed interior and exterior items

1. Surface preparation, priming, and finish coats specified in this section are in addition to shop priming and surface treatment specified under other sections.

B. Paint exposed surfaces whether or not colors are designated in the drawings, except where a surface

or material is specifically indicated not to be painted or is to remain natural. Where an item or

surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. It color or finish is not designated, the Architect will select from standard colors or finishes available Painting includes field painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and

electrical equipment. C. Painting is not allowed on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels,

D. "Paint" includes coating systems materials, primers, emulsions, enamels, stains, sealers and fillers,

and other applied materials whether used as prime, intermediate, or finish coats.

1.02 QUALITY ASSURANCE

A. Single source responsibility: provide primers and undercoat paint produced by the same manufacturer

B. Coordination of work: review other sections in which primers are provided to ensure compatibility of the total systems for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

C. Field samples: on wall surfaces and other exterior and interior components, duplicate finishes of prepared samples. Provide full coat finish samples on at least 100 sq. ft. of surface until required sheen, color and texture are obtained; simulate finished lighting conditions for review of in-place

1. Notify the Architect of problems anticipated using the materials specified.

1. Final acceptance of colors will be from job-applied samples.

coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable

D. Material auglity: provide the manufacturer's best auglity trade sale paint material of the various

1.03 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 deg F (10 deg C) and 90 deg F (32 deg C).

B. Apply solvent thinned paints only when the temperature of surfaces to be painted and surrounding air

C. Do not apply paint in rain, fog, or mist, when the relative humidity exceeds 85 percent, at temperatures less than 5 deg F (3 deg C) above the dew point, or to damp or wet surfaces. 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and "conditioned" within temperature limits specified by the manufacturer during application and

temperatures are between 45 deg F (7 deg C) and 95 deg F (35 deg C).

drying periods.

2.01 MANUFACTURERS

A. Paint manufacturer: See drawings

B. Stain manufacturer: See drawings

2.02 PRIMERS

A. Masonry: Alkyd masonry sealer from manufacturer shown on drawings

B. Wood: Alkyd enamel underbody from manufacturer shown on drawings

C. Plaster/drywall: Provide from manufacturer shown on drawings

D. Alkyd-type zinc chromate primer: primers used for priming ferrous metals on the exterior under

1. Zinc chromate primer

2.03 MISCELLANEOUS MATERIALS

E. Galvanized metal primer: primer used to prime interior and exterior zinc-coated (galvanized) metal

1. Galvanized metal latex primer.

interior wood surfaces: PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected. Start of painting will be construed as the applicator's acceptance of surfaces and conditions within a particular area.

3.02 PREPARATION

A. General procedures: remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface applied protection prior to surface preparation and painting. Remove these items if necessary for complete painting of the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

1. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, new painted surfaces.

B. Surface preparation: clean and prepare surfaces to be painted in accordance with the manufacturer's instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and re-prime. Notify Architect in writing of problems anticipated with using the specified finish-coat material with substrates 2. Cementitious materials: prepare concrete, concrete masonry block, and cement plaster surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove alaze. If hardeners or sealers have been used to improve curing, use

mechanical methods of surface preparation. a. Use abrasive blast cleaning methods if recommended by the paint manufacturer. b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause blistering and burning of finish paint, correct this

condition before application. Do not paint surfaces where moisture content exceeds that

c. Clean concrete floors to be painted with a 5 percent solution of muriatic acid or other etching cleaner. Flush the floor with clean water to remove acid, neutralize with ammonia, and rinse; allow to dry and vacuum before painting.

1. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of primer. After priming, fill holes and imperfections

sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

3. When transparent finish is required, backprime with spar varnish.

with requirements of SSPC specification SSPC SP 10.

permitted in manufacturer's printed directions.

n finish surfaces with putty or plastic wood filer. Sand smooth when dried. 2. Prime, stain, or seal wood to be painted immediately upon delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling

C. Wood: clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and

4. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction 10800 - TOILET ACCESSORIES 5. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer PART 1 - GENERAL immediately upon delivery.

oil. arease, dirt. loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the Steel Structures Painting Council. 1. Blast steel surfaces clean as recommended by the paint system manufacturer and in accordance

D. Ferrous metals: clean nonadvanized ferrous metal surfaces that have not been shop coated; remove

2. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before 3. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

E. Galvanized surfaces: clean galvanized surfaces with non-petroleum based solvents so that the surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

F. Materials preparation: carefully mix and prepare paint materials in accordance with manufacturer's 1. Maintain containers used in mixing and application of paint in a clean condition, free of foreign

2. Stir material before application to produce a mixture of uniform density stir as required during

application. Do not stir surface film into material. Remove film and, if necessary, strain material

before using. 3. Use only thinners approved by the paint manufacturer, and only within recommended limits. s. Tinting: tint each undercoat a lighter shade to facilitate identification of each coat where multiple

coats of the same material are applied. Tint undercoats to match the color of the finish coat, but

provide sufficient differences in shade of undercoats to distinguish each separate coat.

for substrate and type of material being applied.

A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited

A. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film. 1. Provide finish coats that are compatible with primers used

2. The number of coats and film thickness required is the same regardless of the application

4. The term "exposed surfaces" includes areas visible when permanent or built—in fixtures,

smooth surface in accordance with the manufacturer's directions 3. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

method. Do not apply succeeding coats until the previous coat has cured as recommended by

the manufacturer. Sand between applications where sanding is required to produce an even

Extend coatings in these areas as required to maintain the system integrity and provide desired 5. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat only before final installation of equipment.

connector covers, covers for finned tube radiation, grilles, and similar components are in place

6. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, nonspecular 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces. 8. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.

10. Sand lightly between each succeeding enamel or varnish coat. 11. Omit primer on metal surfaces that have been shop-primed and touch up painted. B. Scheduling painting: apply first coat to surfaces that have been cleaned, pretreated, or otherwise

prepared for painting as soon as practicable after preparation and before subsequent surface

1. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint

has dried to where it feels firm, and does not deform or feel sticky under moderate thumb

pressure and where application of another coat of paint does not cause lifting or loss of

9. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.

adhesion of the undercoat. D. Minimum coating thickness: apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the

. Mechanical and electrical work: painting mechanical and electrical work is limited to items exposed in D. Baby changer: Contractor furnished and installed. mechanical equipment rooms and in occupied spaces.

F. Prime coats: before application of finish coats, apply a prime coat of material as recommended by the manufacturer to material that is required to be painted or finished and has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to assure a finish coat with no burn through or other defects due to insufficient sealina.

G. Stipple enamel finish: roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

H. Pigmented (opaque) finishes: completely cover to provide an opaque, smooth surface of uniform

finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable. I. Transparent (clear) finishes: use multiple coats to produce a glass smooth surface film of even

. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail

1. Provide satin finish for final coats.

holes, or other surface imperfections

J. Completed work: match approved samples for color. Texture, and coverage. Remove, refinish, or repaint work not in compliance with specified requirements.

3.04 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the

Owner deems necessary during the period when paint is being applied: B. The Owner will engage the services of an independent testing laboratory to sample the paint material being used. Samples of material delivered to the project will be taken, identified, sealed, and certified

A. Paste wood filler: solvent-based, air-drying, paste-type wood filler for use on open-grain wood on C. The testing laboratory will perform appropriate tests for the following characteristics as required by

1. Quantitative materials analysis.

in the presence of the Contractor.

2. Abrasion resistance 3. Apparent reflectivity.

4. Flexibility. 5. Washability.

6. Absorption. Accelerated weathering. 8. Dry opacity.

Recoating. Shining 12. Color retention.

9. Accelerated yellowness

13. Alkali and mildew resistance

D. If test results show material being used does not comply with specified requirements, the Contractor may be directed to stop painting, remove noncomplying paint, pay for testing, repaint surfaces coated with rejected paint, and remove rejected paint from previously painted surfaces if, upon

repainting with specified paint, the two coatings are noncompatible.

A. Cleanup: at the end of each work day, remove empty cans, rags, rubbish, and other discarded paint

B. Upon completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by

A. Protect work of other trades, whether to be painted or not, against damage by painting. Correct

1. At completion of construction activities of other trades, touch up and restore damaged or

damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

washing and scraping, using care not to scratch or damage adjacent finished surfaces. 3.06 PROTECTION

B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

3.07 SCHEDULED PAINTING

defaced painted surfaces.

A. Provide painting as scheduled in architectural drawings.

END OF SECTION

A. This section includes toilet accessory items scheduled and indicated on the drawings

A. Coordination: Coordinate accessory locations, installation and sequencing with other work to avoid interference and to assure proper installation, operation, adjustment, cleaning and servicing of toilet

PART 2 - PRODUCTS

accessory items.

2.01 ACCEPTABLE MANUFACTURERS

detailed on the Drawings. 2.02 FABRICATION

A. Surface mounted toilet accessories, general: except where otherwise indicated, fabricate units with

steel piano hinge. Provide concealed anchorage wherever possible.

tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless

A. Manufacturers: subject to compliance with requirements, toilet accessories are as scheduled and

B. Recessed toilet accessories, general: except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.

C. Framed mirror units, general: fabricate frames for glass mirror units to accommodate wood, felt,

permit rigid, tamper proof glass installation and prevent accumulation of moisture, as follows:

plastic, or other glass edge protection material. Provide mirror backing and support system that will

1. Provide galvanized steel backing sheet, not less than 22 gauge (.034 inch) and full mirror size, with non-absorptive filler material. Corrugated cardboard is not an acceptable filler material.

D. Mirror unit hangers: provide system of mounting mirror units that will Pin it rigid, tamper-proof, and

1. One-piece galvanized steel wall hanger device with spring action locking mechanism to hold

mirror unit in position with no exposed screws or bolts. PART 3 - FXECUTION

theft proof installation, as follows:

A. Install toilet accessory units in accordance with manufacturers' instructions, using fasteners

appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level,

B. Secure mirrors to walls in concealed, tamper-proof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, in accordance with manufacturer's instructions for type of substrate involved C. Provide backing plates and anchors for grab bars as required by wall construction, to withstand a

3.02 ADJUSTING AND CLEANING A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace

B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after

3.03 SCHEDULE OF ACCESSORIES

B. Soap dispenser: Contractor furnished and installed

removing temporary labels and protective coating.

damaged or defective items.

A. Toilet tissue dispenser: Contractor furnished and installed.

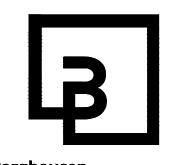
firmly anchored in locations and at heights indicated.

downward load of at least 250 LBF, complying with ASTM F 446.

C. Recessed paper towel dispenser and waste receptacle: Contractor furnished and installed.

END OF SECTION

BP WEST COAST PRODUCTS, LLC



Barghausen Consulting Engineers, Inc

18215 72nd Avenue South

Kent. WA 98032

barghausen.com

425.251.6222

NO. DATE REVISION DESCRIPTION

SEAL: REGISTERED ARCHITEC1

DAMEL B GOALWIN

STATE OF WASHINGTON

EXP: Ø8/Ø5/24

DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

> 1402 S MERIDIAN PUYALLUP, WA 98371 **FACILITY #7184**

> > ALLIANCE Z&DM

BP REPM:

ALLIANCE PM:

ARCHITECTURA

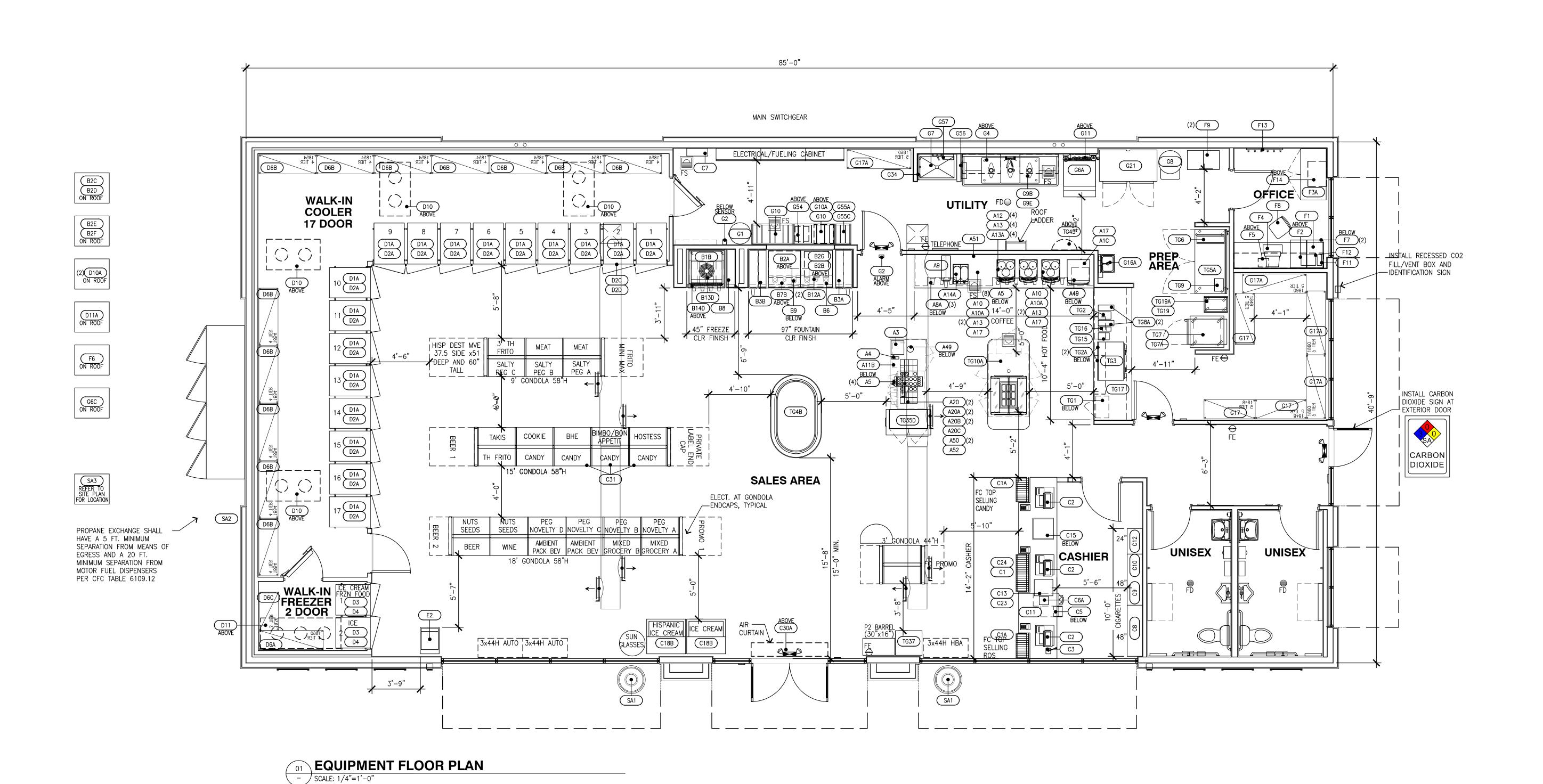
SITE ADDRESS:

DESIGNED BY

CHECKED BY:

ROJECT NO: 21730

SPECIFICATIONS



bp bp

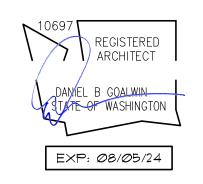




Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com**

NO.	DATE	REVISION DESCRIPTION
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ARCO NTI

3400 am/pm
FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

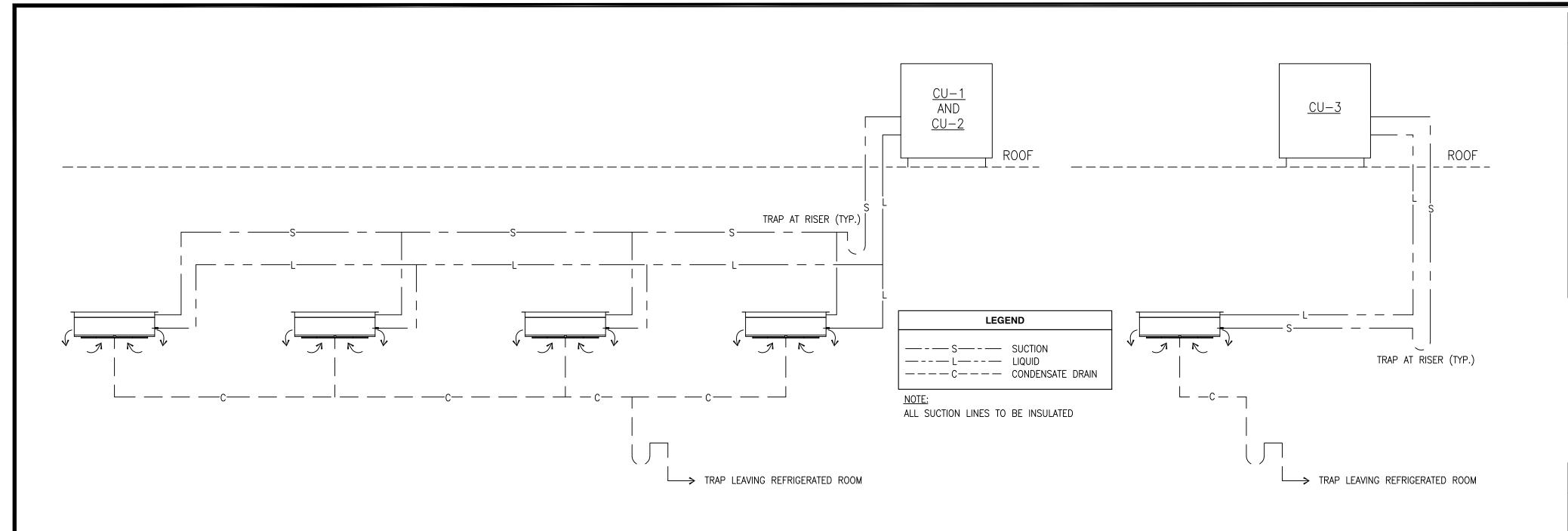
FACILITY #7184

DESIGNED DT.	ALLIANCE ZOLDM.
CHECKED BY:	BP REPM:
DRAWN BY:	ALLIANCE PM:
VERSION:	PROJECT NO:
-	21730
DRAWING TITLE:	

EQUIPMENT

FLOOR PLAN

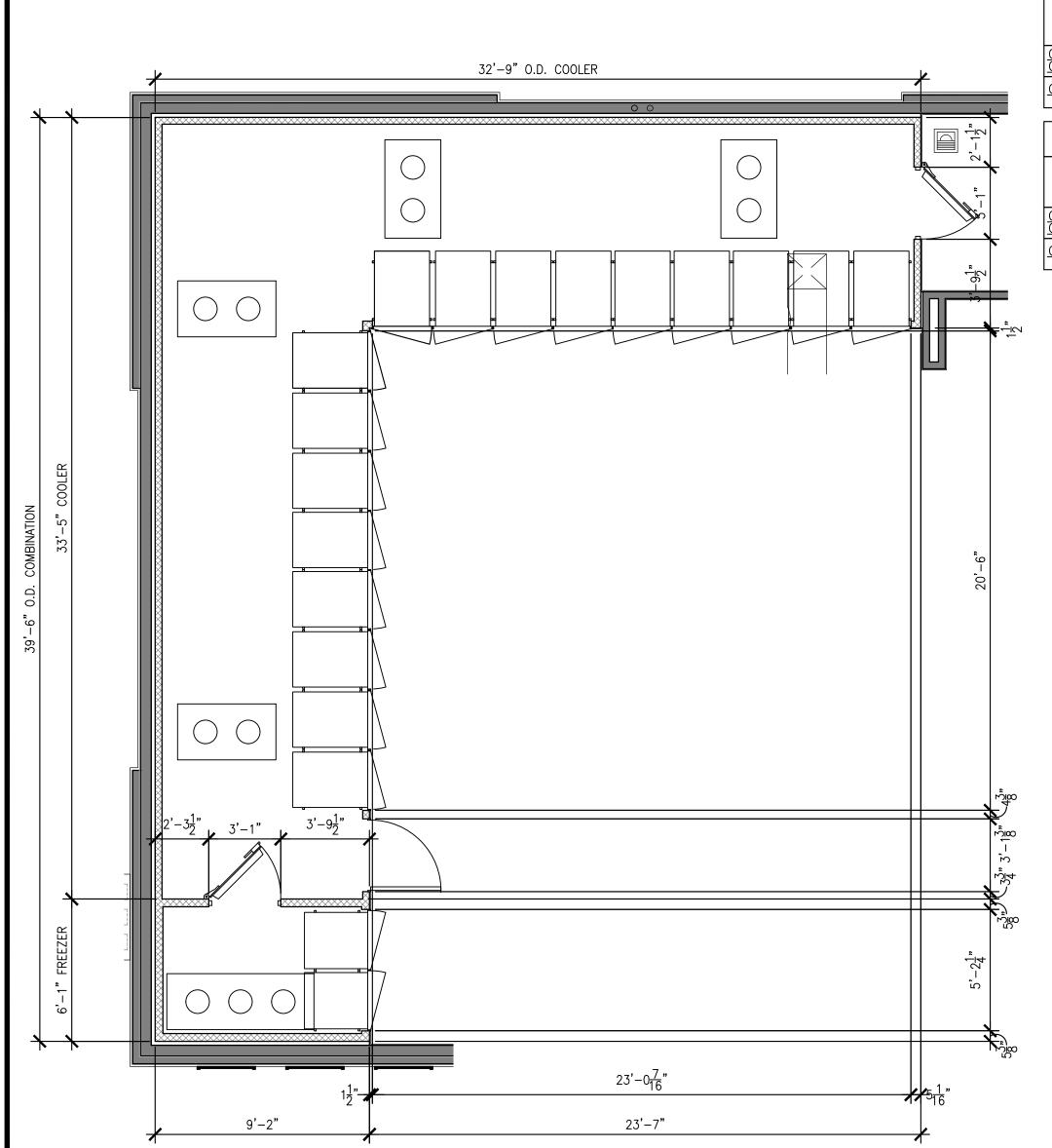
Q11



O1 EVAPORATION PIPING SYSTEM SCALE: N/A

COOLER DIMENSION PLAN

∫ SCALE: 1/4"=1'-0"



	EVAPORATOR COILS												
		BOX LOAD Q-		HEATCRAFT	QTY.	FANS	REFG. TYPE	REFG. CHG.	CAPACITY B.T.U.'S	POWER SUPPLY	BOX TEMP.	DEFROST HEATER	FAN MOTOR
	REQUIREMENTS		QII.	MODEL #		CFM	R	LBS.	1 HR. EACH	3011 21	*F	MCA	MCA
CU- CU-	COOLER	42,737 BTU/H	4	LEC0130AS7AMAB0200	2	1,300	448A/ 449A		11,000	115/1/60	+35		1.8
<u>CU</u> –	REACH-IN FREEZER	6,623 BTU/H	1	LEC0120BS6EMAB0200	2	1,300	448A/ 449A		7,448	208/230/1/60	-10		1

	CONDENSING UNITS											
		BOX LOAD REQUIREMENTS	QTY.	HEATCRAFT MODEL #	SUCTION TEMP.	REFG. TYPE R	REFG. CHG. LBS.	CAPACITY B.T.U.'S 1 HR. EACH	POWER SUPPLY	DEFROST TIMER	MIN. CCT. AMP.	MAX. FUSE SIZE
CU- CU-		42,737 BTU/H	2	MOZ030M63C	+23°	448A/449A		24,752 @95° AMB.	208/230/3/60	AIR		
<u>CU-</u>	REACH-IN FREEZER	6,623 BTU/H	1	MOZ025L63C	-22°	448A/449A		7,597 @95°AMB.	208/230/3/60	AIR		

CODES AND STANDARDS

NSF STANDARDS: COMPLY WITH APPLICABLE NATIONAL SANITATION FOUNDATION (NSF) STANDARDS AND RECOMMENDED CRITERIA. PROVIDE EACH PRINCIPAL ITEM OF FOOD SERVICE EQUIPMENT WITH A NSF "SEAL OF APPROVAL"

UL LABEL: WHERE AVAILABLE, PROVIDE UL LABELS ON PRIME ELECTRICAL COMPONENTS OF FOOD SERVICE EQUIPMENT. PROVIDE UL "RECOGNIZED MARKING" ON OTHER ITEMS WITH ELECTRICAL COMPONENTS SIGNIFYING LISTING BY UL, WHERE AVAILABLE.

HEALTH CODE: INSTALL FOOD SERVICE EQUIPMENT IN ACCORDANCE WITH LOCAL HEALTH DEPARTMENT APPLICABLE REGULATIONS.

- SHOP DRAWINGS UPON APPROVAL OF BID, SUBMIT 3 SETS OF COMPLETE DETAILS, MECHANICAL AND ELECTRICAL REQUIREMENTS, AND INSTALLATION INSTRUCTIONS OF EACH ITEM. INCLUDE INFORMATION ON ROUGHING IN DIMENSIONS, SERVICE CONNECTION REQUIREMENTS, OPENINGS, DISPLAY AND LATCH DOOR MANUFACTURER'S INFORMATION, COMPLETE FLOOR PLANS AND EQUIPMENT SPECIFICATIONS.
- 2. TAKE FIELD MEASUREMENTS TO ASSURE ACCURATE FIT OF FABRICATED
- 3. INCLUDE WARRANTY INFORMATION ON ALL EQUIPMENT.

COOLER/FREEZER ALARMS

COOLER/FREEZER ALARMS AS MANUFACTURED BY:

NATIONAL CONTROLS CORPORATION 1725 WESTERN DRIVE WEST CHICAGO, IL. 60185 (800) 323-2593

PROVIDE THE FOLLOWING:

(1) DUAL KIT #TNC-TM100-KT2/

- (1) DUAL KIT #TNC-TM100-KT2A
 KIT INCLUDES:
- (1) STAINLESS STEEL TWIN ENCLOSURE
 ADDITIONAL PROBE WIRE #X02-22GN0-820

INSTALLATION:

- INSTALL THERMOMETER UNITS IN CASHIER AREA.
- INSTALL TEMPERATURE PROBE IN EACH RESPECTIVE COOLER/FREEZER COMPARTMENT. SPLICE THE 6'-0" PROBE WIRE WITH ADDITIONAL PROBE WIRE AS REQUIRED TO RETURN TO CASHIER AREA.
- COMPLETELY SEAL ANY AND ALL INTRUSIONS TO COOLER/FREEZER
 COMPARTMENTS
- LABEL ALL THERMOMETER UNITS PER RESPECTIVE COOLER/FREEZER COMPARTMENTS.
- SET ALARM TEMPERATURE AS FOLLOWS:
 WALK-IN COOLER: +35° F.
- WALK—IN FREEZER: 0° F.
- LOCATE TEMP. PROBES A MIN 2'-0" FROM WALL AND 5'-0" FROM DOOR.

WALK-IN COOLER NOTES

- 1.0 GENERAL NOTES:
- 1.1 WALK-IN COOLER SHALL BE PREFABRICATED METAL CLAD PANELS BY CUSTOM COOLERS INC. OR EQUAL. DESIGNED IN MODULAR CONCEPT TO FACILITATE ACCURATE JOB SITE ASSEMBLY.
- 2.0 PANEL CONSTRUCTION:
- 2.1 ALL PANELS SHALL BE FOAMED-IN-PLACE CLASS 1, POLYURETHANE CONSTRUCTION WITH 3 1/2" COMPOSITE PANEL. THE "R" VALUE TO BE 30 WITH A DENSITY OF 2.2 POUNDS PER CUBIC FOOT.
- 2.2 THE PERIMETER OF ALL PANELS SHALL BE BUTT JOINT
- 2.3 PANELS TO BE JOINED TOGETHER BY ENGAGING A CAM—ACTION LOCKING DEVICE. THE CAM ACTION DEVICE WILL DRAW THE SECTIONS TOGETHER TO FORM A TIGHT SEAL.
- 2.4 STANDARD PANEL FINISH SHALL BE 26 GAUGE STUCCO EMBOSSED GALVANIZED STEEL SKIN EXTERIOR WITH WHITE INTERIOR.
- 2.5 PROVIDE 7-1/2" DOOR SILL HEIGHTS FOR GLASS DISPLAY DOORS.
- 2.6 INSULATION IS CLASS 1, POLYURETHANE FOAM WITH A FLAME SPREAD LESS THAN 25 AND A SMOKE DEVELOPMENT OF LESS THAN 450.
- 2.7 CERTIFICATIONS: UL AND NSF APPROVED
- 2.8 MEASUREMENTS AND CONFIGURATIONS REFER TO THIS SHEET.
- 3.0 <u>COOLER WALK-IN DOOR</u>

 MANUFACTURED BY CUSTOM COOLERS, INC. OR EQUAL.
- 3.1 36" x 82" CUSTOM *ANTHONY 103NT (HEAVY DUTY) ALL GLASS PASS—THRU DOOR, SLIMLINE BLACK HANDLE, PRO LEDS, NO THRESHOLD, CYLINDER DOOR LOCK, ALL BLACK FINISH DOOR & FRAME, STAINLESS STEEL INTERIOR/EXTERIOR 10" KICKPLATES.
- 3.2 LOCATION AND SWING AS SHOWN ON THIS SHEET.
- 3.3 <u>FREEZER WALK-IN DOOR</u>
 MANUFACTURED BY CUSTOM COOLERS, INC. OR EQUAL.
- 3.4 DOOR SHALL BE NOMINAL 3 1/2" FOAMED-IN-PLACE CLASS 1, POLYURETHANE CONSTRUCTION.
- 3.5 DOOR TO BE HINGED, IN-FIT, AND HAVE 36" HIGH DIAMOND PLATE KICK PLATES FOR INTERIOR AND EXTERIOR.
- 3.6 HINGES SHALL BE CAM-RISE WITH BRIGHT SILVER ANODIZED FINISH ON FRAME AND DOOR TRIM, TWO HINGES PER DOOR.
- 3.7 LATCH AND STRIKE TO HAVE A SATIN SURFACE CHROME FINISH WITH
- PROVISION FOR PADLOCK. LATCH TO HAVE INSIDE SAFETY RELEASE
 TO PREVENT ENTRAPMENT.
- 3.8 DOOR TO HAVE REPLACEABLE GASKETS FOR A POSITIVE SEAL AND AN ADJUSTABLE VINYL WIPER GASKET FOR SEAL AT DOOR FRAME
- 3.9 A FLUSH MOUNTED 2" DIAL THERMOMETER OF CORRECT TEMPERATURE RANGE SHALL BE PROVIDED AT THE DOOR. THE THERMOMETER SHALL BE EASILY CALIBRATED. THE THERMOMETER SENSING BULB ON THE INTERIOR OF THE DOOR SECTION TO HAVE PROTECTIVE COVER.
- 3.10 LIGHTING SHALL CONSIST OF THREE VAPOR—PROOF LIGHT FIXTURES TO BE FURNISHED LOSE, AND A LIGHT SWITCH WITH PILOT LIGHT FLUSH MOUNTED ON EXTERIOR. THE WIRING SYSTEM SHALL BE APPROVED BY UNDERWRITERS LABORATORY.
- 3.11 PROVIDE LOCKS ON DOORS AS INDICATED ON COOLER PLAN.
- 3.12 PROVIDE WALL BUMPER GUARD
- 4.0 GLASS DISPLAY DOORS:

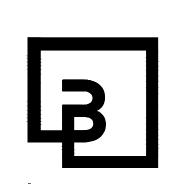
 MANUFACTURED BY ANTHOL
- MANUFACTURED BY ANTHONY OR EQUAL
 4.1 30" X 75" H. DISPLAY DOORS (SILL AT 7-1/2" A.F.F.)
- 4.2 ENERGY SAVER CONTROLS
- 4.3 FINISH TO BE SMOOTH BLACK.
- 4.4 COOLER DISPLAY DOORS SHALL HAVE 3—PANE KRYPTON GAS FILLED NON—HEATED INSULATED SAFETY GLASS
- 4.5 LED LIGHTING
- 4.6 36" DEEP SHELVES, (7) PER DOOR
- 4.7 KEY CYLINDER LOCK AT EACH DOOR.
- 4.8 FREEZER DISPLAY DOORS SHALL HAVE 3—PANE KRYPTON GAS FILLED HEATED SAFETY GLASS

- 5.0 <u>REFRIGERATION:</u>
- 5.1 ALL EQUIPMENT MUST CONFORM TO CONDENSING UNITS AND UNIT COOLERS SCHEDULE AS OUTLINED ON THIS SHEET. EQUIPMENT MUST HAVE UL LISTING FOR THE APPLICATION AS SPECIFIED.
- 5.2 CONDENSING UNIT AS SPECIFIED SHALL HAVE THE FOLLOWING:
 - HIGH EFFICIENCY ALUMINUM FIN. COPPER TUBE CONDENSER.
 COMPRESSOR CONTRACTOR.
- 3. HIGH AND LOW PRESSURE CONTROLS
 4. WEATHER RESISTANT HOUSING WITH WEATHER—PROOF ELECTRICAL CONTROL BOX.
 5. ACCESS GUARD.
- LOW AMBIENT CONTROL VALVE (CVP II) FPR FLOATING HEAD.
 CRANKCASE HEATER.
 LIQUID LINE FILTER DRIER, SIGHT GLASS AND SERVICE VALVE.
 ELECTRIC DEFROST TIMER.
- 10. EXPANSION VALVES. 11. THERMOSTAT AND SOLENOID.
- 5.3 EVAPORATOR COILS SPECIFIED IN EVAPORATOR COIL SCHEDULE.
- 5.4 EXPANSION VALVE SHALL BE SIZED BY UNIT COOLER MANUFACTURER FOR PROPER REFRIGERATION. AS HEAD PRESSURE IS ALLOWED TO DROP DURING LOW AMBIENT CONDITIONS, EXPANSION VALVE NEEDS TO BE OVERSIZED TO ALLOW FLOW AT LOWER PRESSURE DIFFERENTIAL
- 5.5 THERMOSTATS SHALL BE FURNISHED LOOSE FOR EACH SYSTEM AND SHALL BE WHITE RODGERS MODEL #1609-101 OR EQUAL, TAMPER-PROOF WITH PROPER TEMPERATURE RANGE, AS REQUIRED ON THIS DRAWING. OPTIONAL MANUFACTURERS: JOHNSON OR RANCO OR EQUAL.
- 5.6 SOLENOIDS SHALL BE FURNISHED LOOSE FOR EACH SYSTEM AS RECOMMENDED BY CONDENSING UNIT MANUFACTURER.
- 5.7 CONDENSATE PIPING SHALL BE COPPER OR PVC AND TRAPPED AFT WALL PENETRATION. HEAT TAPE AND INSULATE WHERE REQUIRED TO PREVENT FREEZE UP.
- 5.8 REFRIGERATION WARRANTY SHALL BE A MINIMUM OF ONE (1) YEAR PARTS FOUR (4) YEAR COMPRESSOR WARRANTY AND NINETY (90) DAYS SERVICE.
- 5.9 HEAT SENSOR TO BE LOCATED 1'-2" ABOVE DOOR FRAME TO ALLOW FOR GRAPHICS INSTALLATION.
- 6.0 <u>REFRIGERATION INSTALLATION</u>
- 6.1 EVAPORATOR COILS SHALL BE MOUNTED FROM CEILING WITH 5/16" MINIMUM FASTENERS.
- 6.2 CONDENSING UNITS ARE MOUNTED ON THE ROOF AND MUST BE LEVEL WITH IT'S BASE ANCHORED TO PREVENT MOVEMENT. ALLOW PROPER CLEARANCE FOR AIR SUPPLY TO AND FROM UNIT AND FOR PROPER MAINTENANCE ACCESS
- 6.3 SUCTION LINES AT TOP OF RISER ON ROOF SHALL BE SLOPED 1" PER TEN (10) FEET TO COMPRESSOR. ALL SUCTION LINES SHALL BE SIZED AND TRAPPED. INSULATE TO PREVENT SWEATING.
- 6.4 LIQUID LINES AND SOLENOID VALVE SHOULD BE INSTALLED IN THE LIQUID LINE JUST AHEAD OF EXPANSION VALVE IN COOLER.
- 6.5 BRAZING SHALL BE SILVER BEARING SOLDER HIGH TEMPERATURE OR EQUIVALENT ALLOY SUITABLE FOR THIS APPLICATION. NO "SOFT SOLDERS" PERMISSIBLE. NITROGEN IS TO BE PURGED THROUGH THE SYSTEM DURING BRAZING.
- 6.6 LEAK TEST THE ENTIRE SYSTEM AFTER ALL REFRIGERATION CONNECTIONS HAVE BEEN COMPLETED. LEAK TESTING SHALL BE PERFORMED WITH AN ELECTRONIC LEAK DETECTOR.
- 6.7 THE SYSTEM MUST BE EVACUATED WITH A VACUUM PUMP, HAVING THE CAPABILITY OF PULLING A VACUUM OF 50 MICRONS OR LESS. THE PUMP SHOULD BE CONNECTED TO BOTH THE HIGH AND LOW SIDES OF THE SYSTEM
- 6.8 DURING CHARGING AND START-UP MAKE SURE SHIPPING RESTRAINTS ARE REMOVED AND ALL ELECTRICAL AND MECHANICAL CONNECTIONS ARE TIGHT. SET HIGH LOW PRESSURE SWITCH AS REQUIRED.
- 6.9 INSTALLATION AND SERVICE OF THIS EQUIPMENT SHOULD BE PERFORMED BY QUALIFIED AND EXPERIENCED REFRIGERATION MECHANICS. INSTALL ALL EQUIPMENT, PIPING IN ACCORDANCE WITH LOCAL AND NATIONAL CODES AND IN CONFORMANCE WITH GOOD PRACTICE REQUIRED FOR PROPER OPERATION.





BP WEST COAST PRODUCTS, LLC

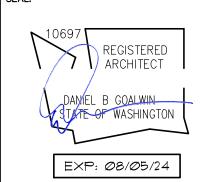


Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO. DATE REVISION DESCRIPTION

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

DESIGNED BY:

CHECKED BY:

BP REPM:

DRAWN BY:

ALLIANCE PM:

VERSION:

PROJECT NO:

21730

DRAWING TITLE:

COOLER PACKAGE

01.2

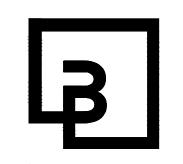
EQUIPMENT SCHEDULE

		EC	QUIPMENT		ELECTR	RICAL PLU	MBING				EQUIPMENT		E	ELEC	TRICAL	PLUMB	ING	
	NO. Q1	TY ITEM / DESCRIPTION	VENDOR	MODEL NUMBER	V DH AMI	P KVA HP SUPP	PLY WASTE REM	IARKS	NO	. QTY ITEM / DESCRIPTION	VENDOR	MODEL NUMBER	V	рн л	AMP KVA HF	SUPPLY	WASTE REMARKS	
		·				COLD I	HOT SIZE	A NEW 5 45 DUID	NO.	·				PHA	AIVIP KVA FI	COLD HOT	SIZE	
	A1C 1 A3 1	1 CAPPUCCINO MACHINE (6 HEAD) 1 WHIPPED TOPPING DISPENSER	CURTIS RICH'S	G3 PRIMO PCGT63099 (LIFT DOOR) MYTOP	120V 1 15	1.800 1/4"	UNII WITH CORD 8	& NEMA 5-15 PLUG	F1 F2	1 LOT MANAGER'S DESK 1 LOT SHELVING ABOVE DESK	SHOPCO METRO	MULTIPLE #'S — SEE CUT SHEET SUPER ERECTA SHELF DIRECT WALL MOUNT	1				PROVIDE BLOCKING FOR MOUNTING	1G
	A4 1	BOTTLE DRIZZLE HOLDER	PLASTICS & PRODUCTS SHOPCO	HDW-CUPDISP-C2410C18					F3A	LOCKING METAL STORAGE CABINET COMPUTER SYSTEM	TENNSCO/STAPLES	J2478SU (SAND 214) 48"x24"x78" COMPUTER XP BKO	1001/		1.7 0.300		ASSEMBLED (WELDED)	DILLO
	AS 12	COFFEE CUP HOLDERS (UNDER COUNTER) ICED COFFEE CUP & LID DISPENSER (COUNTERTOP)) PLASTICS & PRODUCTS	CLSBP-718					F4 F5	1 CCTV—RECORDER/DVR/MONITOR	BOS NAVCO	MCS16-10E-16 CAMERA SYSTEM.	120V 120V		7.0 0.300		UNIT WITH CORD & NEMA 5-15 F	PLUG
	A8A 3	ICED COFFEE CUP HOLDERS (UNDER COUNTER)	SHOPCO	MULTIPLE #20 OFF OUT CHEFTS					<u> </u>	1 CATCLLITE INTEDEACE	HIGHES	2016ARM-1TB-POS 16 RECORDER; 4800 CAMERA; CLINTON CE-VT988 LCD MONITOR						
_	A9 1 L A11B 1	LOT COFFEE CABINETS 1 SKINNY SHORT COFFEE CONDIMENT ISLAND (66"x34.5")	SHOPCO SHOPCO	MULTIPLE #'S - SEE CUT SHEETS MULTIPLE #'S - SEE CUT SHEETS					F6 F7	1 SATELLITE INTERFACE 2 FILE CABINET (2 DRAWER)	HUGHES TENNSCO/STAPLES	V282 (SAND 214) 15"x28"x27"						
ш	A14A 1	FROZEN BEVERAGE MACHINE (2 BARREL)	BUNN	34000.0081- ULTRA 2 HP BLK/SST	120V 1 12		UNIT WITH CORD &	& NEMA 5-15 PLUG	F8 50	1 MANAGER CHAIR	STAPLES TENNICOO (CTAPLES	DTI/ 454070 4 (CAND 044) 45" 40" 70"					ACCEMBLED (MELDED)	
	A17 1 A20 2	MINERAL REDUCTION FILTER SYSTEM (10K GAL) COFFEE CONDIMENT ORGANIZER	3M, SUPPLIED BY DUKES PLASTICS & PRODUCTS	CCBP-16			FOR REGULAR CON	NDIMENT	F9 F10	2 EMPLOYEE LOCKER (DOUBLE TIER W/ LEGS) 1 WALL-MOUNTED NETWORK SECURITY RACK	TENNSCO/STAPLES TRIPP-LITE	DTK-151836-1 (SAND 214) 15"x18"x78" SMART RACK SRW6U 14.5"x23.63"x17.5"					ASSEMBLED (WELDED) PROVIDE BLOCKING FOR MOUNTING	1 <u>C</u>
\mathcal{S}	A20A 2	2 LID HOLDER AND CREAMER SHELF	PLASTICS & PRODUCTS	BPLH-3			FOR REGULAR CON		F11	1 UPS BATTERY BACKUP			120V					
	A20B 2 A20C 1	SYRUP RACK BRIDGE	PLASTICS & PRODUCTS PLASTICS & PRODUCTS	SFP-916FS SRB-55			FOR REGULAR CON		F12 F13	1 PRINTER 1 COAT RACK (WALL MOUNT)	PETER PEPPER/STAPLES	2085AL 22"x5"x4"	120V					
	A33 3	COFFEE BEAN-TO-CUP GRINDER	SCHAERER	COFFEE ART C TOUCH 3G; 040381-00051EU	S 208V 1 20	3/8"	1-1/2" UNIT WITH CORD 8	& NEMA L6-20R										
	A49 2 A50 2	TRASH RECEPTACLE (UNDER COUNTER) ONE SIDED COUNTERTOP NAPKIN HOLDER	SHOPCO TRAEX/VOLLRATH	19 GALLON (14"x14"x24") 612-06					G1 G2	1 BULK CO2 FOR POST MIX 1 CO2 SAFETY MONITORING	CHART/NUCO2 LOGICO2/NUCO2	CARBO-MIZER 450 W/ 6" LEGS CO2 ALERT MK10 DETECTOR SET 2 A					W/ REMOTE FLUSH MOUNT FILL/VEN SENSOR AND ALARM	NT BOX
	A52 1	1 COFFEE SMALLWARES PACKAGE	CHEFS' TOYS	SEE SHEET Q2.3					G4	2 DRYING RACK	METRO SMARTWALL G3	TASK STATION (MEDIUM DUTY) #SWK36-1 ACCESSORY PACK - SINK #SWA1					40"x31"	
									 G6A	1 ICE MACHINE	SCOTSMAN	REMOTE PACKAGE					C0630MR32-A REMOTE CUBER ICE I	MAKER
																	800 LB, B530S STORAGE BINS 550	D LB Ba
	B1B 1 B2A 1	FROZEN BEVERAGE DISPENSER (4 FLAVOR) FOUNTAIN TOP MOUNT ICE MAKER 850 LB (CUBED)	CORNELIUS HOSHIZAKI	621460041 VIPER SHORT MERCHANDISER KMD-860MRJ, REMOTE AIR-COOLED	230V 1 30.0 208-230V 1 12.5	 	UNIT WITH CORD N	NEMA L6-30P	G6C G7	1 ICE MAKER REMOTE CONDENSING UNIT 1 MOP SINK	SCOTSMAN FIAT	ERC311-32A REMOTE CONDENSER MSB-3624	208V			1/2" 1/2"	3/4"	Co
	B2B 1	1 FOUNTAIN TOP MOUNT ICE MAKER 900 LB (NUGGET)	SCOTSMAN	N0922R-32, REMOTE	208-230V 1 15	3/8"	3/4" W/ KVS ICE LEVEL	L CONTROL BOARD	G8	1 ELECTRIC WATER HEATER	A.O. SMITH	DRE-52-12	208V	3	33.3 12	1/2		18
	B2C 1 B2D 1	1 ICE MAKER REMOTE CONDENSING UNIT (CUBED) 1 55' REFRIGERATION LINE SET	HOSHIZAKI HOSHIZAKI	URC-9F R404-5568-2	115V 1	+ + + +	FOR ITEM #B2A FOR ITEM #B2A		S G9B	1 3 COMPARTMENT SINK/ 18"x24" BOWLS & (2) 18" DRAIN BOARDS (90"x30")	ADVANCE TABCO	FC-3-1824-18RL W/					3" W/ LEVER DRAIN	Ke
	B2E 1	1 ICE MAKER REMOTE CONDENSING UNIT (NUGGET)	SCOTSMAN	ERC311-32	208-230V 1 60		FOR ITEM #B2B		O G9E	1 PRE-RINSE FAUCET	FISHER	2210				1/2" 1/2"	WITH #2910-12 ADD-ON FAUCET	42 ⊺
	B2F 1 B2G 1	40' REFRIGERATION LINE SET ICE MACHINE THERMOSTAT (NUGGET)	SCOTSMAN SCOTSMAN	BRTE40			FOR ITEM #B2B INCLUDED W/NUGGET	I ICE MACHINE PACKAGE	G10 G10A	2 BAG-IN-BOX 1 WATER BOOSTER DUAL SURGE TANK KIT	MANITOWOC McCANNS	5026343 (20 HEAD) 16-1517	115V	1	7 03	3		
A	B3A 1	FOUNTAIN CUP AND LID DISPENSER (LEFT)	SHOPCO	BP-PR-F00-VCD-L			in the second of	TOTAL TROUBLE	G11	1 WATER PURIFICATION SYSTEM	EVERPURE	EV9437-10	, 104		. 0.0	-		NO
Z	B3B 1	FOUNTAIN CUP AND LID DISPENSER (RIGHT) FOUNTAIN CABINETRY	SHOPCO SHOPCO	BP-PR-F00-VCD-R MULTIPLE #'S - SEE CUT SHEETS		+ + + +			G16A G21	1 HAND SINK 1 2 DOOR REACH—IN REFRIGERATOR	ADVANCE TABCO TRUE	7-PS-51 T-49-HC	115V	1	5.4	1/2" 1/2"	2" W/HANDS FREE FAUCET & SPLASH UNIT WITH CORD & NEMA 5-15P	
00	B7B 1	GRAPHIC DISPLAY BOARD (ILLUMINATED)	RED ROOSTER	95"x48"					G21 G34	1 MOP RACK	RUBBERMAID	1992	1104		J. 1			3
ĭ	B8 1	1 LID AND STRAW DISPENSER 1 CABINET TRASH RECEPTACLE	SHOPCO SHOPCO	8"Wx73"H 19 GALLON (14"x14"x24")					G54 G55A	1 CARBONATOR 1 4-BARREL FCB BAG N BOX/INSTALL KIT	McCANNS CORNELIUS	"BIG MAC" E-SERIES E400397 560391	115V	1	6.5 0.90 0.3	3 3/8"	UNIT WITH CORD & NEMA 5-15 F	PLUG 2
	B12A 2	2 INTERACTIVE POST—MIX ICE DRINK DISPENSER	CORNELIUS	621058578, IDC PRO WITH DRIP TRAY	120V 8.5	1/2"	3/4"		G55A G55C	1 4-BARREL FCB BAG N BOX/INSTALL KIT 1 4-BARREL BUCK N BOOST TRANSFORMER	CORNELIUS	788742						
	B13D 1	1 36" FCB CART 1 FCB GRAPHIC FOR 36" CART (ILLUMINATED)	SHOPCO RED ROOSTER	#BP-F00-FCB36 42"x48"			ON CASTERS		G56	2 CLEANING CHEMICALS	SIGNET							——————————————————————————————————————
	B14D 1	1 F'REAL BLENDER	F'REAL	42 x48 FRLB6	120V 1 15	1/4"	3/4" NEMA 5-15P						1					
	B15A 1	1 MINI F'REAL FREEZER	F'REAL		120V 1 6.5		NEMA 5-15P											
	<u>C1</u> 1	1 CASHIER CABINET W/ IMPULSE SHELVING - 3'-0"	SHOPCO	SEE CUT SHEET					<u> </u>									
	C1A 2	CASHIER CABINET W/ IMPULSE SHELVING - 2'-0"	SHOPCO RADIANT	SEE CUT SHEET STANDARD	1201/ 1 45		LIMIT WITH CORD 1	RONEMA 5 15 DUIG	TG1 TG2	1 MICROWAVE OVEN 1 COUNTERTOP NACHO RACK	TURBO AIR	TMW-1100E 21"H x 7"W x 12"D	120V	1	15 1.68		UNIT WITH CORD & NEMA 5-15 F	PLUG /
	C3 1	CASH REGISTERS/POS INTERCOM TO FUEL POSITIONS	RADIANT 3M	D-120V W/4 STATION CARD	120V 1 15 120V		UNII WITH CORD &	& NEMA 5-15 PLUG	TG2A		GEHL'S SHOPCO	LI	1	_				SEA
	C5 1	1 SAFE	TIDEL STATE LOTTEDY COMMISSION	SERIES 4XL W/ STORAGE VAULT & TUBE VEN	 			0. NICHA C 45 5	TG3	1 FOOD WARMER	HATCO STRUCTURAL CONCERTS	FS3HAC-3626 AIR CURTAIN	120/208		13.8		UNIT W/ CORD & NEMA #L14-20P PL	
	C6A 1 C7 1	1 LOTTO TERMINAL 1 TANK MONITOR EQUIPMENT	STATE LOTTERY COMMISSION VEEDEROOT	VR-TLS 350	120V 1 15 120V 1 15	+ + + +	UNII WITH CORD &	& NEMA 5-15 PLUG	TG4B TG5A		STRUCTURAL CONCEPTS TRUE	OASIS FS1656R 6' CASE TWT-60-ADA-HC	208/204 115V		4.0 0.2	5	SELF-CONTAINED REFRIGERATION, NEMA 6 UNIT WITH CORD & NEMA 5-15	
		OT CICAR INDIVIDUAL SPRING LOAD	AMERICAN DISPLAY	VENDOR					TG6	1 BUN TOASTER 1 MULTI COOK CONVECTION OVEN W/TOLICH CONTROL	PRINCE CASTLE	297-T40	120V		13		UNIT WITH CORD & NEMA 5-15 F	
		LOT CIGAR INDIVIDUAL SPRING LOAD LOT FLAT CARTON SHELVES FOR OTP STORAGE AREA	AMERICAN DISPLAY AMERICAN DISPLAY	VENDOR VENDOR					TG7 TG7B	MULTI-COOK CONVECTION OVEN W/TOUCH CONTRO OVEN STAND TABLE	DLS ALTO-SHAAM ALTO-SHAAM	VECTOR VMC-H3HW; UL LISTED 50333384; 36"H x 29.5"W x 31"D; S.S.	208-240	UV 3			W/CORD & NEMA 15-50P; LEFT I W/ CASTERS	TINGED
	C9 1 L	LOT 2' E-CIG	AMERICAN DISPLAY	VENDOR					TG8A	2 NACHO CHEESE DISPENSER	GEHL'S	2.0 DISPENSER (21"H x 5.25"W x 14.75"E) 110V		2.5		·	
	 	LOT E-CIG INDIVIDUAL SPRING LOAD LOT 2' E-CIG FLIP UP STRIPS WITH INSERTS	AMERICAN DISPLAY AMERICAN DISPLAY	VENDOR VENDOR		+ + +			TG10B	1 FOOD LABEL PRINTER 1 MEDIUM REFRIGERATED CONDIMENT ISLAND	AVERY DENNISON SHOPCO	FRESHMARX CENTRAL 9418 84-3/4" x 39-3/8"	100-240 115V		5.5 0.2	5	UNIT WITH CORD & PLUG 1" W/ LIGHTING & NEMA 5-15 PLUG	ıG
~	C9 1 L	OT 2' SQUARE VUSE SHELVING	AMERICAN DISPLAY	VENDOR					TG14C	1 BARE FRUIT PRODUCE DISPLAY	FRITO LAY	·						
=		LOT 2' MOIST SHELVING LOT MOIST INDIVIDUAL SPRING LOAD	AMERICAN DISPLAY AMERICAN DISPLAY	VENDOR VENDOR					TG15 TG16	1 TO GO BOX HOLDER 1 UTENSIL HOLDER	CALIFORNIA QUALITY PLASTICS CALIFORNIA QUALITY PLASTICS		1					
\SH	C11 1 L	LOT CASHIER CABINETS	SHOPCO	MULTIPLE #'S - SEE CUT SHEETS					T TG17	1 LOT TO GO CABINETRY	SHOPCO							
S	—	LOT 2' AND 4' CIGARETTE SHELVING LOT 4 AND 5 WIDE CIGARETTE SPRING LOADS	AMERICAN DISPLAY AMERICAN DISPLAY	VENDOR VENDOR					TG19 TG19A		CHEFS' TOYS CHEFS' TOYS	GSW ASR-1915KD (68"H x 15"W x 22"D) SEE SHEET Q2.3	1	++			W/CASTERS	
	C12 1 L	OT 2' FLAT CARTON SHELVES FOR CIGARETTE STORAGE	AMERICAN DISPLAY	VENDOR					TG35D	1 FREE STANDING BAKERY CASE	HUSSMANN	DCA244262	120V				UNIT WITH CORD & PLUG	DEV
		LOT 2' AND 4' CIGARETTE HEADERS LIT LOT 2' FLIP UP DOORS FOR STORAGE	AMERICAN DISPLAY AMERICAN DISPLAY	VENDOR VENDOR					TG37 TG45		TRUE ECOLAB	GDM-10-HC-LD STEALTH- MAXIMA	115V 115V		2 1.39 0.1	7	UNIT WITH CORD & NEMA 5-15 F TOP EDGE: 24" FROM CEILING	PLUG
	C13 1	1 LOTTO FORM HOLDER	LSI	385174									1				J. L. T. T. SELLING	
	C15 1 C18B 2	1 UNDERCOUNTER SCRATCH TICKET DISPENSER 2 ICE CREAM NOVELTY CASE	SHOPCO HUSSMANN	3' CASE (UNILEVER/TROPICAL/HELADOS DE MEXICO)) 120V		UNIT WITH CORD 8	% NEMA 5-15P PLUG					1					FU
	C23 1	1 LOTTO SHROUD	LSI	701190			3 Sono 0											
	C24 1 C30A 1	1 MEAT SNACK RACK 1 AIR CURTAIN	IDL MARS	LPN2-72-1UA-0B w/99-014 DOOR LIMIT SWIT	CH 115V 1 26	0.17	INSTALL AT STOREF	FRONT ENTRANCF	G 17 G17A	4 SHELVING 3 SHELVING	WASSERSTROM WASSERSTROM	METRO SUPER ERECTA 1848NC METRO SUPER ERECTA 1860NC		++				SITE
	-	DT LED SHELF LIGHTING	SHOPCO	wy 65 511 5550 Emil 5000	2.0		AT CANDY SERVING					,255.10	1					
						+ + + +			│ 🛱 ├─	BULK GONDOLA (BLACK)/ STRIP (BLACK)	SHOPCO		1					
		7 WALK-IN COOLER GLASS DOOR ASSEMBLY DISPLAY	ANTHONY INTERNATIONAL	101NT HH, 3-PANE KRYPTON GAS FILLED				NISH, LED LIGHTING	ᄷ									
	D2A 17	 7 WALK-IN COOLER SHELVING 1 COOLER/FREEZER SHELF TAG MOULDING STRIPS 	ANTHONY INTERNATIONAL IDL	GRAVITY FEED SLIDE TRAC BLACK		+ + + +	STEEL POST W/ B	LACK FINISH	SA1 SA2	2 EXPOSED AGGREGATE ROUND CEMENT TRASH RECEPTAGE 1 LOT PORTABLE PROPANE TANK DISPLAY	CLE TREETOP PRODUCTS BLUE RHINO	4CW5010-SN/CL; W/ ALUMINUM LID (COLOR: CLAY) 44"W x 30"D x 70"H; (1) HINGED DOOR W/	1				39 GAL.; LINER INCLUDED FOOT ANCHORS AS REQUIRED	DESIG
	D2D 1	1 COOLER DOOR LED LIGHTS	ANTHONY INTERNATIONAL	OPTIMAX					<u>μΕ</u>			LOCK; (3) SHELVES; 18 TANK CAPACITY	1					CHECK
	D3 2 D4 2	WALK-IN FREEZER GLASS DOOR ASSEMBLY DISPLAY WALK-IN FREEZER SHELVING	ANTHONY INTERNATIONAL ANTHONY INTERNATIONAL	101LT, 3—PANE KRYPTON GAS FILLED GRAVITY FEED SLIDE TRAC 30"x30"			30"x75" BLACK FIN		SA3 SA4	1 AIR/ WATER UNIT 2 VACUUM UNIT	CSC SERVICE WORKS/ AIR-SERV CSC SERVICE WORKS/ AIR-SERV	LEGACY II	1	1 1	20 20		VAULT ASSEMBLY SYSTEM IN CONC	
		1 COOLER SHELVING SYSTEM	TITAN	METRO A1860NK3			SHOWN IN FREEZE				555 SERVICE HORROY AIR SERV	,						VERS
	D6B 12	2 COOLER SHELVING SYSTEM 1 COOLER SHELVING SYSTEM	TITAN TITAN	METRO A1854NK3 METRO A1836NK3			SHOWN IN FREEZE		A B1A	2 FROZEN BEVERAGE DISPENSER (3 FLAVOR)	CORNELIUS	621360041 VIPER SHORT MERCHANDISER	230V	1	30.0	3/8"	UNIT WITH CORD NEMA #L6-30P	DRA
ŏ	D10 4	WALK-IN COOLER EVAPORATOR	LARKIN	LEC0130AS7AMAB0200			SEE SHEET Q1.2		B13E	 	SHOPCO	BP-F00-FCB52	2301	'	00.0	5,0	ON CASTERS	
S	D10A 2	WALK-IN COOLER CONDENSING UNIT WALK-IN FREEZER EVAPORATOR	LARKIN LARKIN	MOZ030M63C LEC0120BS6EMAB0200			SEE SHEET Q1.2		B14E	1 FCB GRAPHIC FOR 52" CART (ILLUMINATED) 1 INTERCOM TO FUEL POSITIONS	RED ROOSTER	59"x48" D-120V W/4 STATION CARD	1201]
	D11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 WALK-IN FREEZER EVAPORATOR 1 WALK-IN FREEZER CONDENSING UNIT	LARKIN	MOZ025L63C			SEE SHEET Q1.2 SEE SHEET Q1.2		C3 C5	1 INTERCOM TO FUEL POSITIONS 1 SAFE - CASH VALIDATOR	NKL NKL	V2RC15	120V 120V		15		UNIT WITH CORD & NEMA 5-15 F	PLUG SHF
	DI	ILK DDICE DAILS & OLIDES	TDION / DIODI AV TEOURIS COSES	CURRUED TO VERIEV EVICE PLOVICE					2 C5A	1 SAFE - COIN DROP	NKL	D8C AUTOBANK	120V		15		UNIT WITH CORD & NEMA 5-15 F	
	BUI	ILK PRICE RAILS & GLIDES	TRION/ DISPLAY TECHNOLOGIES	SUPPLIER TO VERIFY EXACT PACKAGE					C5B C5D	1 KEYPAD 1 PRINTER	NKL NKL	OM-100	120V	1	15		UNIT WITH CORD & NEMA 5-15 F	PLUG
MO	E2 1	1 ATM	NCR	SELFSERV 16					G55	2 3-BARREL FCB BAG N BOX/INSTALL KIT	CORNELIUS	560392						
\mathcal{S}									G55B	1 3-BARREL BUCK N BOOST TRANSFORMER	CORNELIUS	788742		$\perp \perp$				





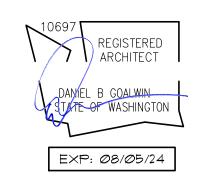
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P WEST COAST PRODUCTS, LLC



Barghausen Consulting Engineers, Inc.

215 72nd Avenue South ent, WA 98032 25.251.6222 arghausen.com

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ARCO NTI

3400 am/pm
UEL CANOPY w/ 6 MPD's

DDRESS:
1402 S MERIDIAN

PUYALLUP, WA 98371

FACILITY #7184

SIGNED BY:	ALLIANCE Z&DM:
CCKED BY:	BP REPM:
AWN BY:	ALLIANCE PM:
RSION:	PROJECT NO:
-	21730
AWING TITLE:	

EQUIPMENT SCHEDULE

HEET NO:

Q2.1

GENERAL NOTES

THE FOUNDATION HAS BEEN DESIGNED TO RESIST CODE REQUIRED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, AND BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEI/ASCE STANDARD NO. 37–02 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION." ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ARCHITECT, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION.

<u>STANDARDS</u>

ALL METHODS, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

DESIGN CRITERIA

VERTICAL LOADS: ACTUAL DEAD LOAD OF SIGN

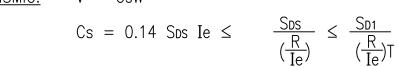
LATERAL FORCES

WIND: 97 MPH EXP. B

 $F=qzGC_fA_f$

- VELOCITY PRESSURE, qz = 18.4 psf
- GUST EFFECT FACTOR, G = 0.85- EXTERNAL PRESSURE COEFFICIENT, $C_f = 1.80$
- A_f=AREA OF COMPONENT

SEISMIC: V = CsW



- Cs MIN. FROM SEI/ASCE 7-16 SECTION 15.4
- SEISMIC IMPORTANCE FACTOR, Ie = 1.0
- OCCUPANCY CATEGORY = I
- SPECTRAL RESPONSE ACCELERATIONS Ss = 1.27 S1 = 0.44
- SITE CLASS PER TABLE 1615.1 = D
 SPECTRAL RESPONSE COEFFICIENTS SDS = 0.85 & SD1 = 0.54
- SEISMIC DESIGN CATEGORY = D
- W = DEAD LOAD OF COMPONENT
 ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE ANALYSIS
- RESPONSE MODIFICATION FACTOR PER SEI/ASCE 7-16 TABLE 15.4-2 R = 2.0
- Cs = 0.42

<u>CONCRETE</u>

<u>CONCRETE</u>: SHALL BE MADE WITH PORTLAND CEMENT ASTM C-150 TYPE II OR TYPE I AND SHALL BE READY MIXED PER ASTM C-94.

MIX DESIGNS: THE CONTRACTOR SHALL DESIGN CONCRETE MIXES THAT, MEET OR EXCEED THE REQUIREMENTS OF THE CONCRETE MIX TABLE. THE MIX DESIGNS SHALL FACILITATE ANTICIPATED PLACEMENT METHODS, WEATHER, REBAR CONGESTION, ARCHITECTURAL FINISHES, CONSTRUCTION SEQUENCING, STRUCTURAL DETAILS, AND ALL OTHER FACTORS REQUIRED TO PROVIDE A STRUCTURALLY SOUND, AESTHETICALLY ACCEPTABLE FINISHED PRODUCT. WATER REDUCING ADMIXTURES MAY BE USED TO MEET THESE REQUIREMENTS. MAXIMUM SLUMP SHALL BE 5".

ADMIXTURES: ADMIXTURES SHALL BE BY MASTER BUILDERS, W.R. GRACE, OR PRE-APPROVED EQUAL. ALL MANUFACTURERS RECOMMENDATIONS SHALL BE FOLLOWED.

WATER: SHALL BE CLEAN AND POTABLE.

ITEM	DESIGN f'c (PSI) (1)	MAX. W/C RATIO	MIN. (3) FLYASH (PCY)	MAX. AGGREGATE SIZE (IN)	NOTES	MIN. CEMENTITOUS (2) MATERIAL (SACKS/YARD)
FOUNDATIONS	2500 @ 28 DAYS	0.45		3/4		5-1/2"

CONCRETE MIX NOTES:

1. CONCRETE SHALL BE AIR ENTRAINED. TOTAL AIR CONTENT (PERCENT BY VOLUME OF CONCRETE) SHALL NO BE LESS THAN 5% OR MORE THAN 7%.

- 2. TOTAL CEMENTITOUS MATERIAL IS THE SUM OF ALL CEMENT PLUS FLYASH.
- 3. AT THE CONTRACTORS OPTION FLYASH MAY BE SUBSTITUTED FOR CEMENT BUT SHALL NOT EXCEED 25% BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL.

NON-SHRINK GROUT: MASTER BUILDERS "MASTERFLOW 555" OR PRE-APPROVED EQUAL. GROUT SHALL CONFORM TO CRD-C621 AND ASTM C1107 GRADE B WHEN TESTED AT A FLUID CONSISTENCY PER CRD- C611-85 FOR 30 MINUTES. GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. NO GROUTING SHALL BE DONE BELOW 40° F.

METAL REINFORCEMENT (CONCRETE):

REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 40 OR 60. PLACE PER ACI 315 AND ACI 318. LAP SPLICES SHALL BE 48 BAR DIAMETERS UNLESS NOTED OTHERWISE.

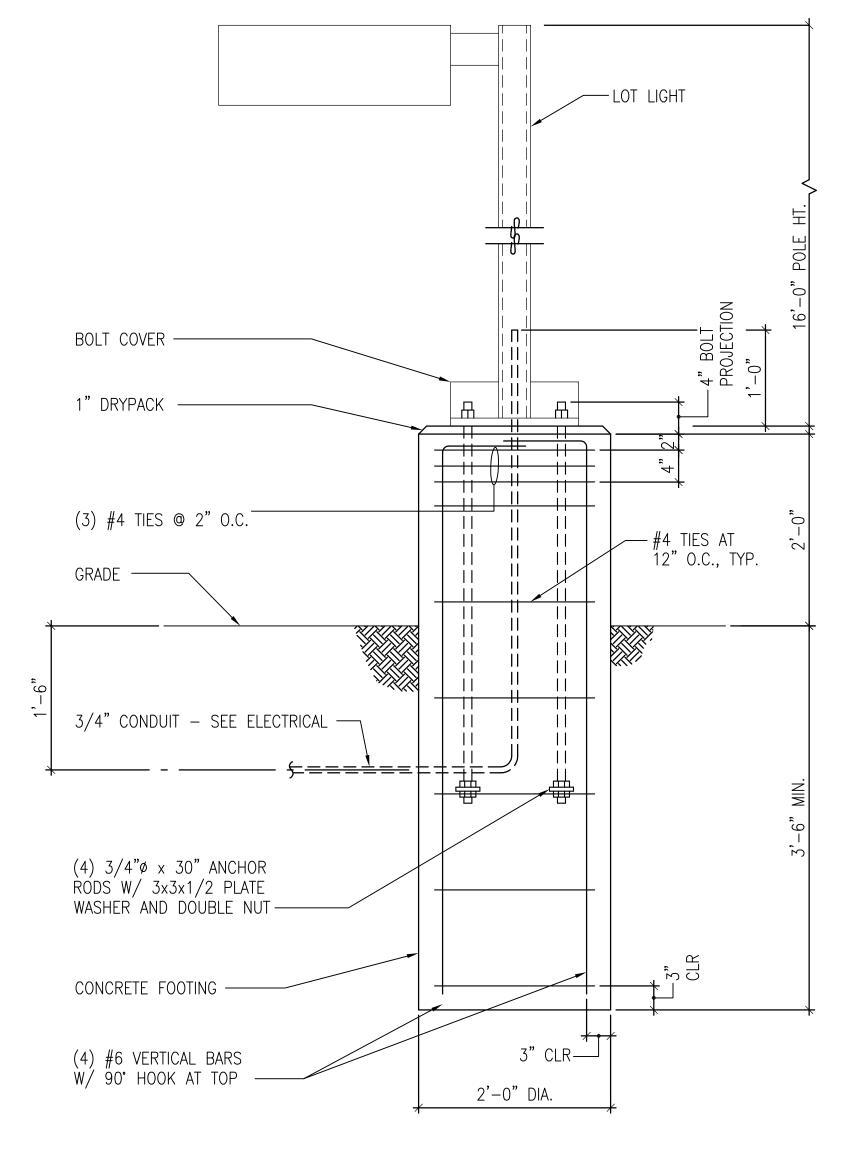
STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

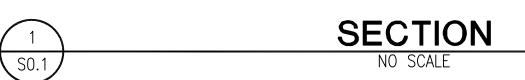
MATERIAL PROPERTIES

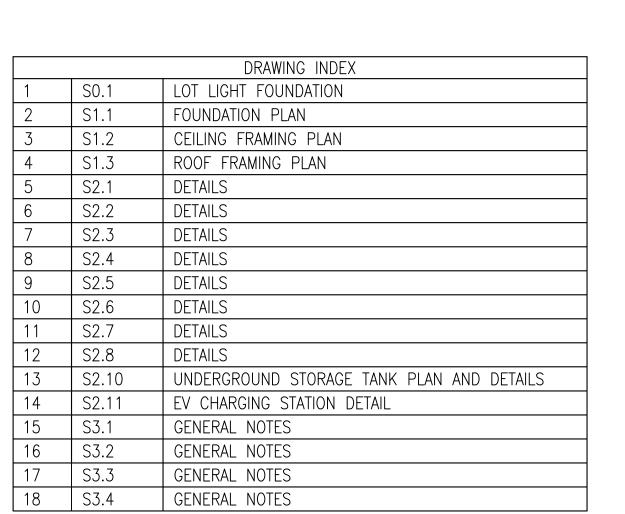
OTHER SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI)

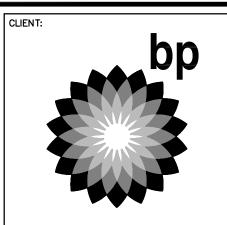
ANCHOR RODS (A.B.): ASTM F1554, GRADE 36, CLASS 2A



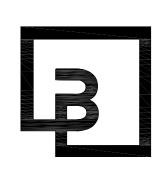
HIGH LEVEL LOT LIGHT











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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm
FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN
PUYALLUP, WA 98371

FACILITY #7184

DESIGNED BY: SJW ALLIANCE Z&DM:

CHECKED BY: SJW BP REPM:

DRAWN BY: SAA ALLIANCE PM:

VERSION: PROJECT NO:

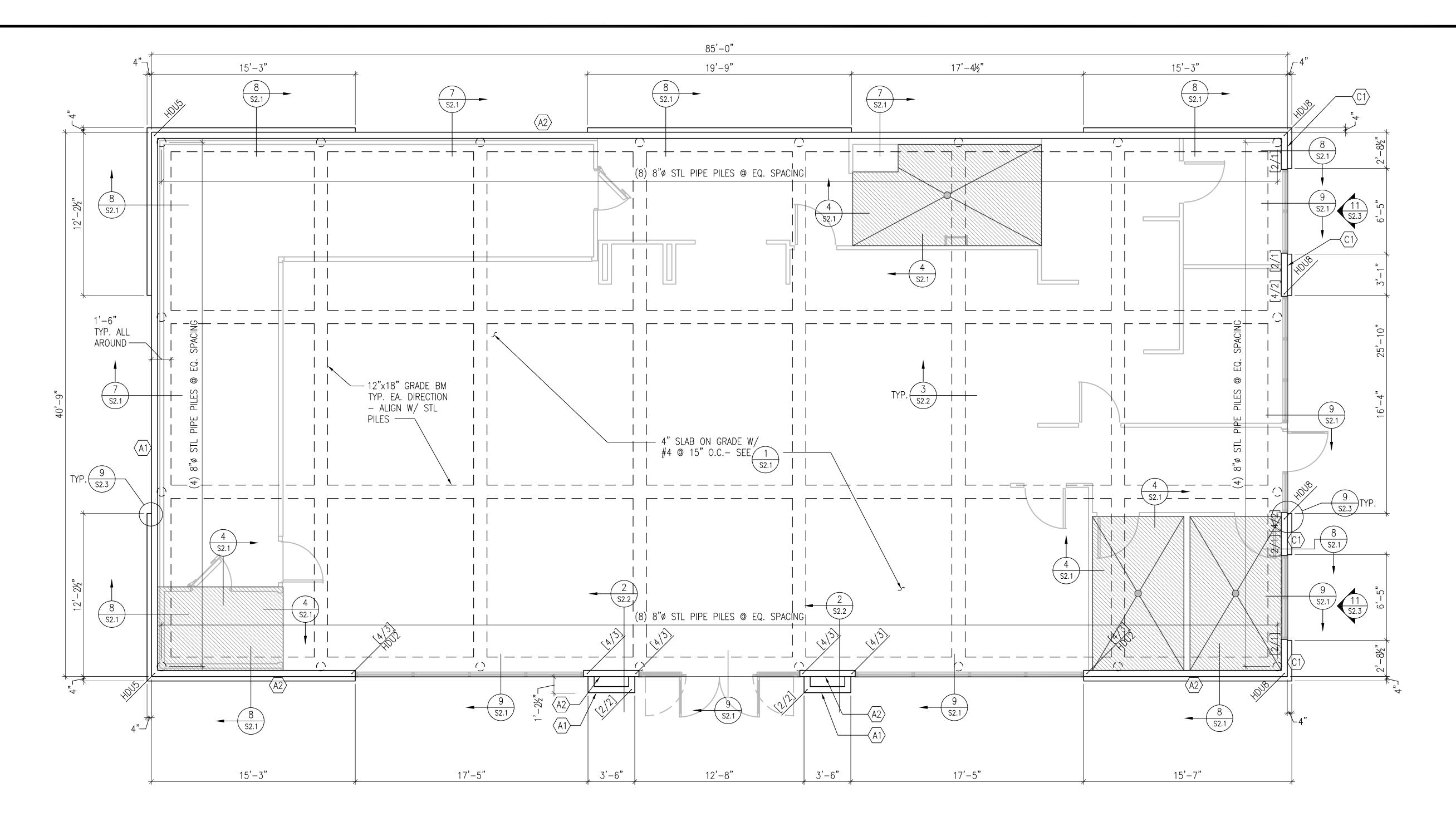
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DRAWING TITLE:

LOT LIGHT

FOUNDATION

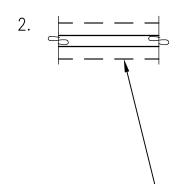
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FOUNDATION PLAN

FOUNDATION NOTES

COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 0'-0" A.F.F. UNLESS NOTED OTHERWISE.



├──── INDICATES WOOD STUD WALL. WOOD STUDS SHOULD ALIGN WITH TRUSS LAYOUT AND BE SPACED @ 16" O.C. MAXIMUM UNLESS NOTED OTHERWISE. PROVIDE 15/32" WOOD SHEATHING AT ALL EXTERIOR WALLS NAILED WITH 8d @ 6" O.C. AT ALL PANEL EDGES (PROVIDE 2x BLOCKING AT UNSUPPORTED PANEL EDGES) AND 8d @ 12" O.C. AT INTERMEDIATE FRAMING TYPICAL UNLESS NOTED OTHERWISE. SEE NOTE 11 FOR ADDITIONAL SHEAR WALL NAILING.

INDICATES CONCRETE GRADE BEAM 1'-6" UNLESS NOTED OTHERWISE. SEE S2.1 FOR TYPICAL FOUNDATION DETAILS.

INDICATES HOLDOWN. SEE 1/S2.2 AND 4/S2.3.

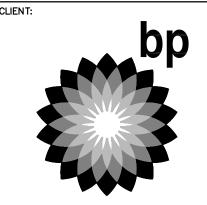
INDICATES DEPRESSED SLABS. FOR EXACT LOCATION SEE ARCHITECTURAL DRAWINGS.

FOR TYPICAL CONCRETE SLAB-ON-GRADE DETAILS SEE S2.1.

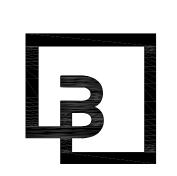
FOR TYPICAL STEPS IN FOOTING AND FOUNDATION CONSTRUCTION JOINTS SEE DETAILS 5/S2.1 AND 2/S2.1.

FOR TYPICAL EXCAVATION LIMITATIONS IN THE PROXIMITY OF FOUNDATIONS SEE 6/S2.1.

- NON-STRUCTURAL STUD WALLS ARE NOT SHOWN OR SHOWN SCREENED. FOR LOCATION SEE ARCHITECTURAL DRAWINGS. FOR BRACING AT TOPS OF WALLS SEE S2.4.
- INDICATES SPECIAL WOOD STUD SHEAR WALL. SEE 6/S2.3 FOR SCHEDULE.
- 11. INDICATED WOOD STUD BUILT-UP COLUMN - SEE 10/S2.3 FOR TYPICAL DETAIL
 - INDICATES NUMBER OF FULL HEIGHT AND NUMBER OF CRIPPLE STUDS AT END OF HEADER SEE 5/S2.3.
- FOR SITE TRASH ENCLOSURE SEE S2.9 FOR PLAN AND DETAILS. FOR LOCATION SEE ARCHITECTURAL DRAWINGS.
- INDICATES 8"Ø STEEL PIPE PILE BELOW. SEE GENERAL NOTES FOR PILE DETAILS AND INSTALLATION REQUIREMENTS.
- FOR UNDERGROUND STORAGE TANK FOUNDATION DETAILS SEE S2.10. FOR LOCATION SEE ARCHITECTURAL DRAWINGS.
- 16. FOR EV CHARGING STATION FOUNDATION DETAIL SEE S2.11. FOR LOCATION SEE ARCHITECTURAL DRAWINGS.







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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm **FUEL CANOPY w/ 6 MPD's**

SITE ADDRESS:

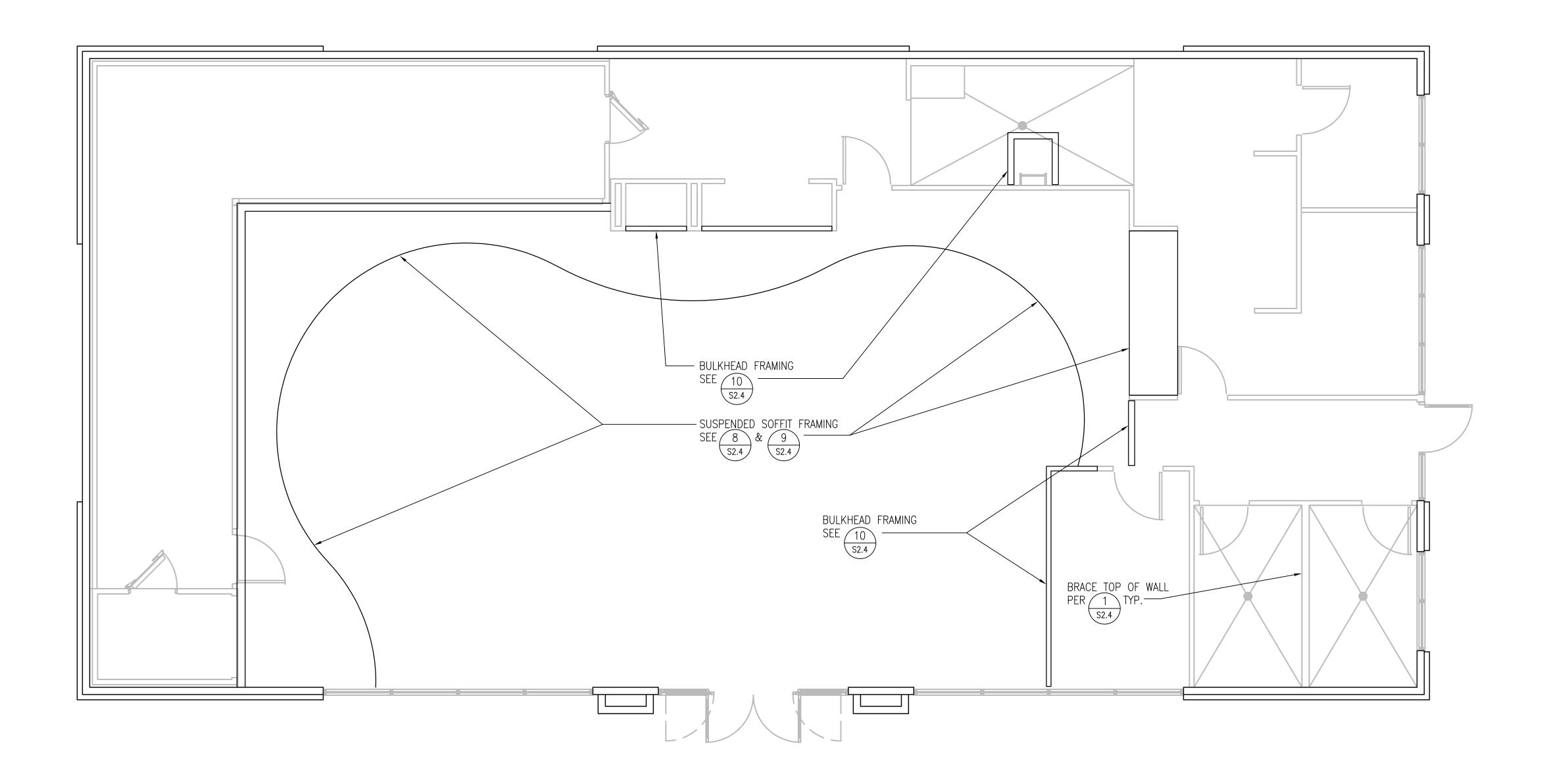
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FACILITY #7184

VERSION:	_	PROJECT NO:
DRAWN BY:	SAA	ALLIANCE PM:
CHECKED BY:	SJW	BP REPM:
DESIGNED BY:	SJW	ALLIANCE Z&DM:
(CHECKED BY:	CHECKED BY: SJW

DRAWING TITLE: **FOUNDATION**

PLAN

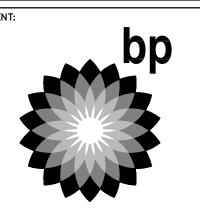




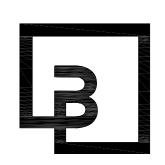
CEILING FRAMING PLAN 1/4"=1'-0"

NOTES

- 1. FOR ADDITIONAL DIMENSIONS, CEILING ELEVATIONS, FINISHES AND DETAILS SEE ARCHITECTURAL DRAWINGS.
- 2. SEE S2.4 FOR TYPICAL CEILING AND BRACING DETAILS.
- 3. INDICATES SPAN OF CEILING JOISTS. PROVIDE 2x6 @ 24" O.C. CEILING JOISTS, UNLESS NOTED OTHERWISE.
- 4. SUSPENDED SOFFIT FRAMING SHALL BE CONSTRUCTED WITH 350S137-33 JOISTS & STUDS @ 24" O.C. OR EQUAL SEE 8 & 9
- 5. SEE $\frac{6}{\text{S2.4}}$ & $\frac{7}{\text{S2.4}}$ FOR TOP OF WALL CONNECTION.







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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

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FACILITY #7184

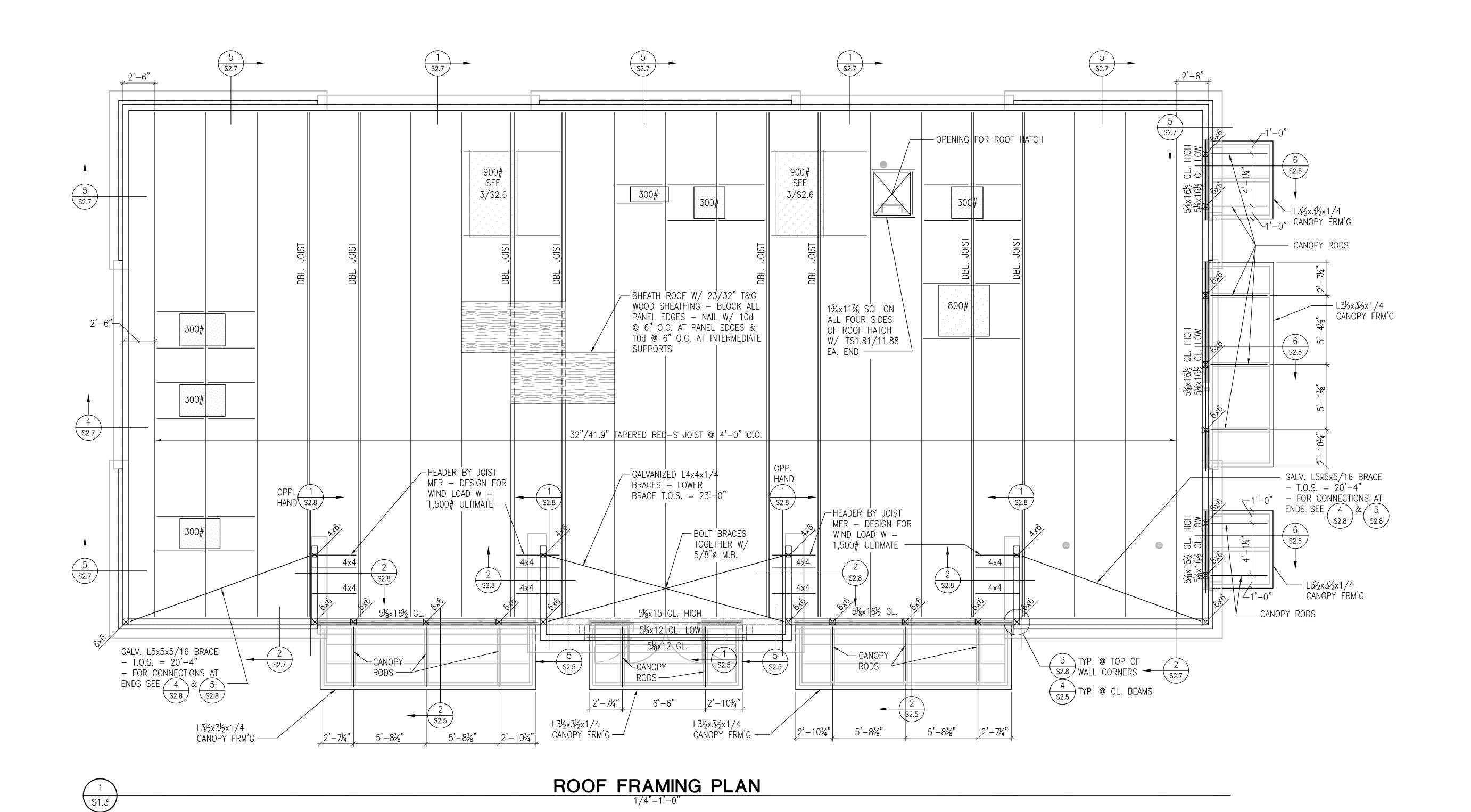
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CEILING FRAMING PLAN

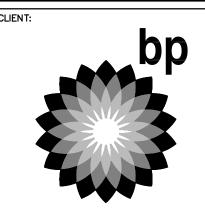
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ROOF FRAMING NOTES

- 1. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS. FINISH FLOOR = 0'-0'' A.F.F. UNLESS NOTED OTHERWISE.
- 2. ===== INDICATES STRUCTURAL WALL EXTENDING TO ROOF STRUCTURE.
- 3. INDICATES PENETRATION IN ROOF STRUCTURE.
- 4. PROVIDE 23/32" T&G WOOD SHEATHING OVER ENTIRE ROOF STRUCTURE. NAIL WOOD ROOF SHEATHING WITH 10d @ 6" O.C. AT ALL SUPPORTED PANEL EDGES AND 10d @ 6" O.C. AT INTERMEDIATE FRAMING. TYPICAL UNLESS NOTED OTHERWISE.
- 5. FOR SUPPORT OF MISCELLANEOUS MECHANICAL EQUIPMENT AND PIPES FROM ROOF STRUCTURE SEE S2.6.
- 6. ROOF TRUSSES ARE A DEFERRED SUBMITTAL ITEM, SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE PROJECT STATE, AND THE PACKAGE SHALL BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. SEE GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.



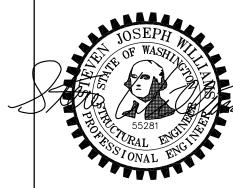




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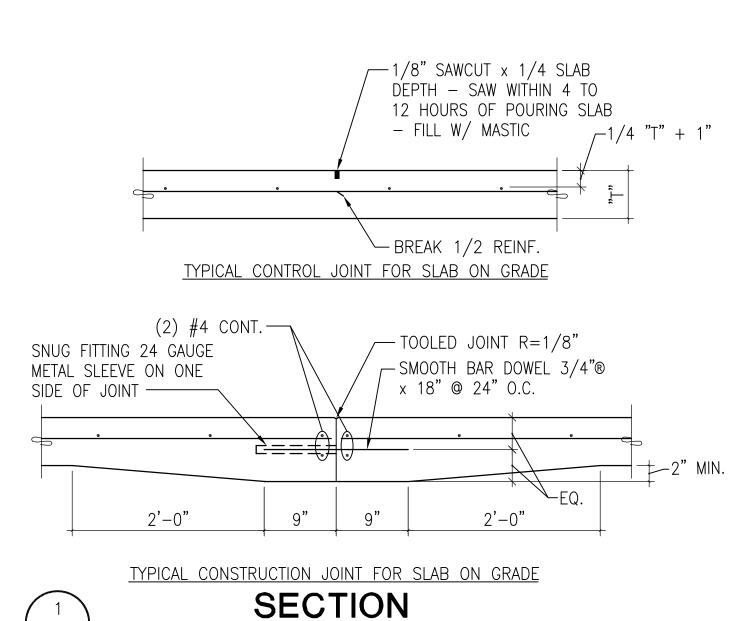
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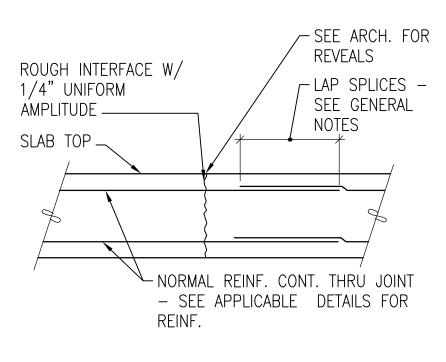
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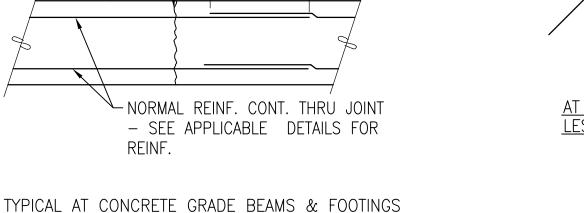
FRAMING PLAN

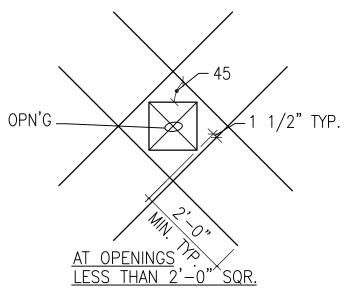
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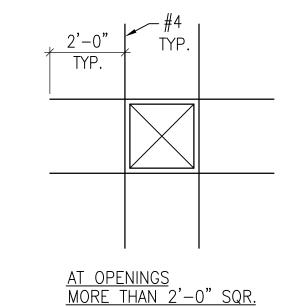
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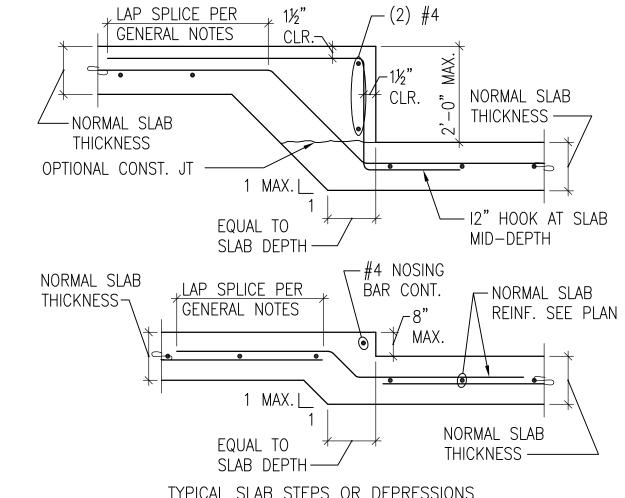




NOTES:

1. AROUND OPENINGS 6"Ø OR LESS NO ADD'L REINF. REQ'D

2. REINF. SHOWN IS #4 @ SLAB MID-DEPTH HOOK BARS THAT CANNOT BE EXTENDED



TYPICAL SLAB STEPS OR DEPRESSIONS

DETAIL S2.1 NO SCALE

SECTION NO SCALE

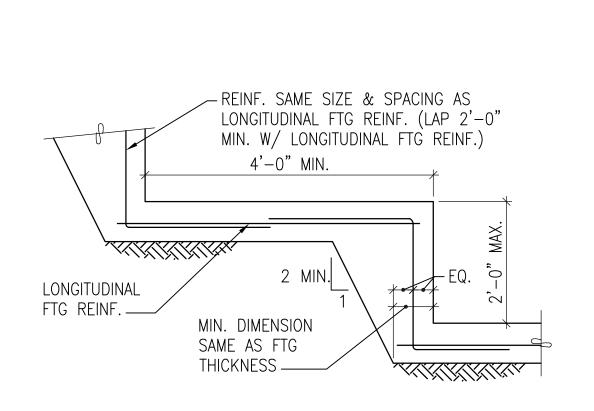


OBTAIN APPROVAL OF ENGINEER FOR

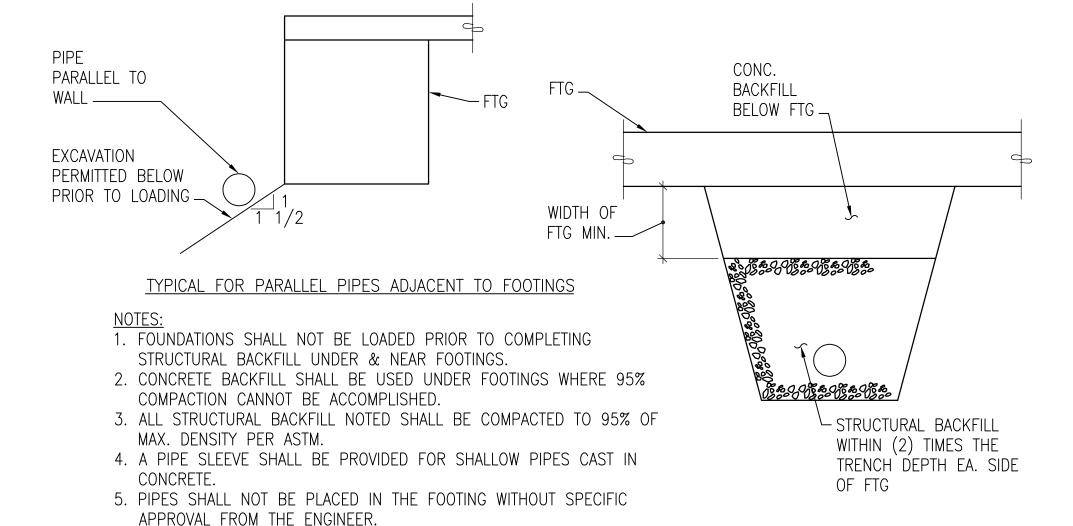
LOCATION OF ANY CONST. JOINTS.

TYPICAL SLAB ON GRADE DISCONTINUITY REINFORCEMENT PLAN DETAILS NO SCALE

TYPICAL FOR PERPENDICULAR PIPES UNDER FOOTINGS

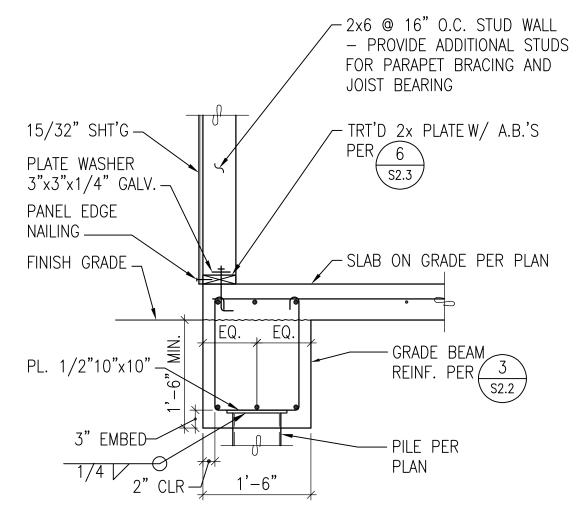


S2.1



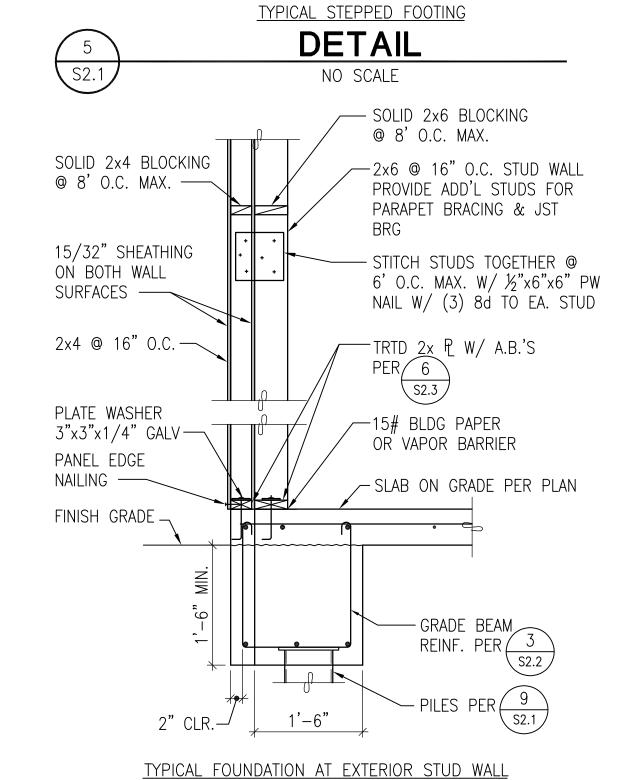
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TYPICAL FOUNDATION AT EXTERIOR STUD WALL

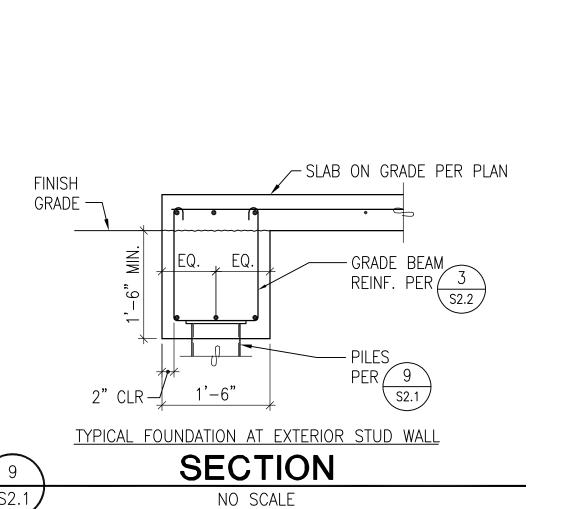




SECTION

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6. FOR VARIATIONS CONTACT ENGINEER.

S2.1

DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's SITE ADDRESS:

> **FACILITY #7184** DESIGNED BY: SJW ALLIANCE Z&DM: SJW BP REPM: SAA ALLIANCE PM: 21730 DRAWING TITLE:

DETAILS

1402 S MERIDIAN

PUYALLUP, WA 98371

ARCO

BP WEST COAST PRODUCTS, LLC

Consulting Engineers, Inc.

18215 72nd Avenue South

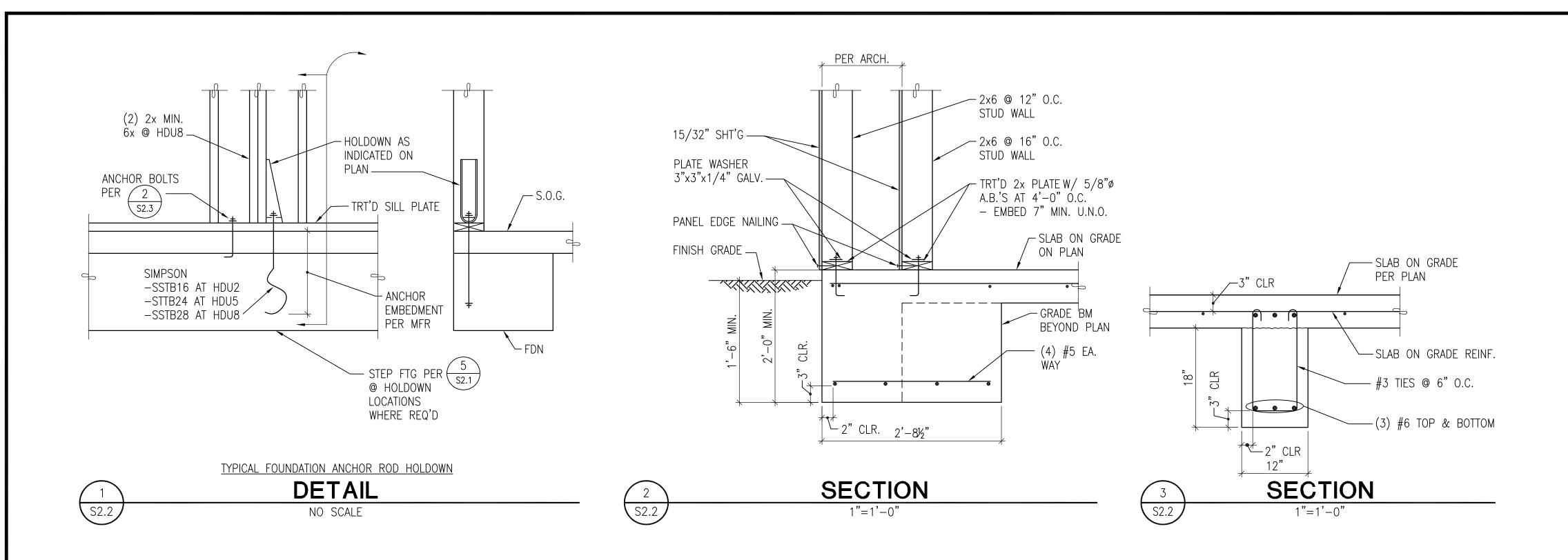
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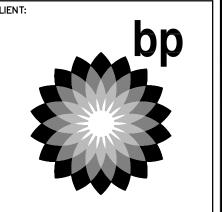
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Kent, WA 98032 425.251.6222

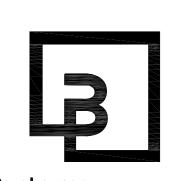
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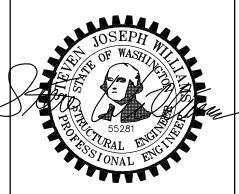






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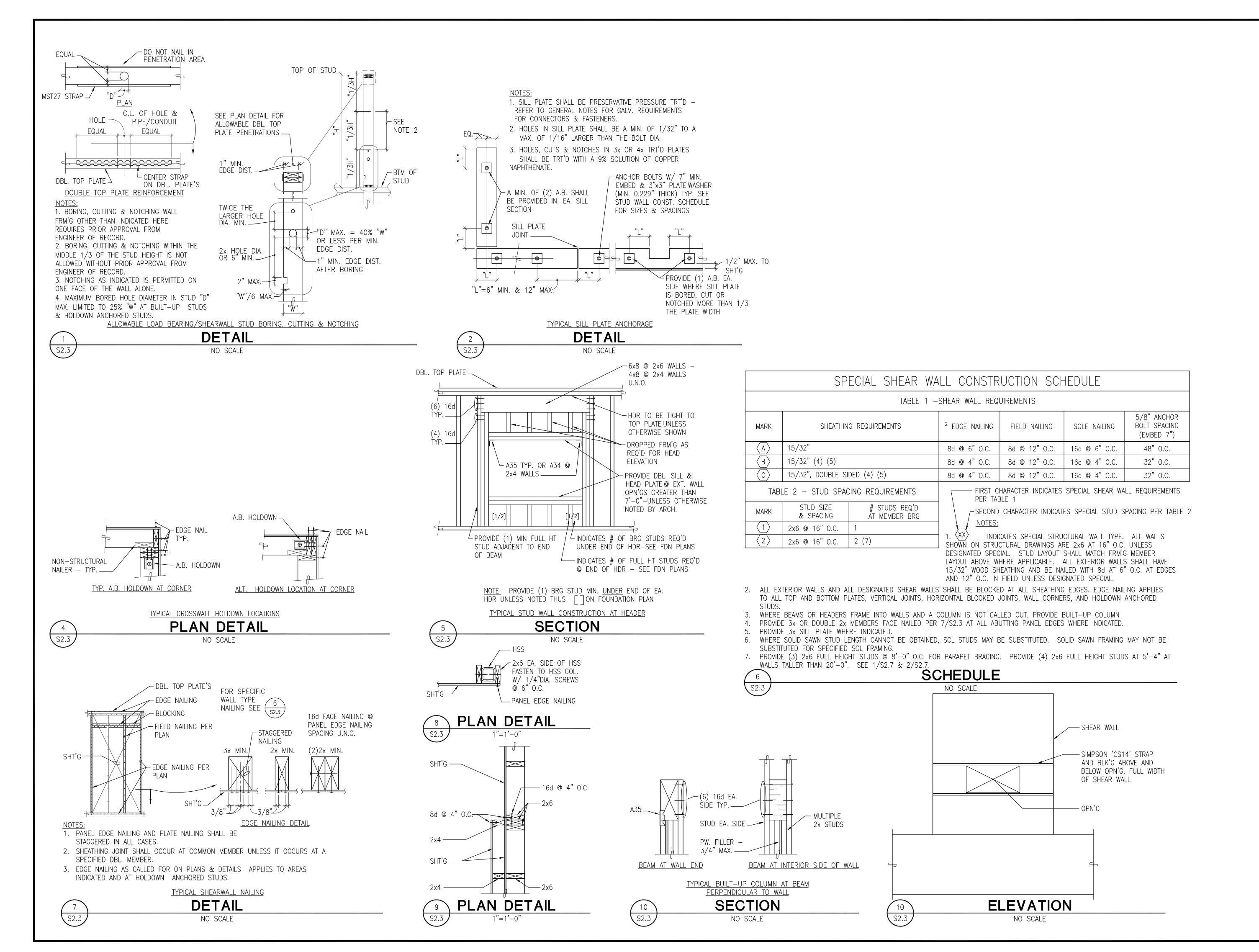
FACILITY #7184

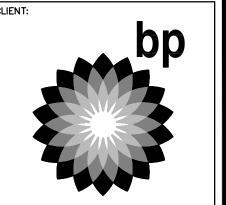
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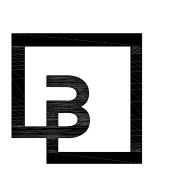
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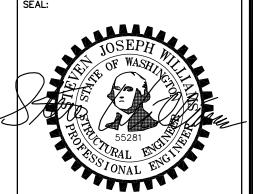






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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

DESIGNED BY: SJW ALLIANCE Z&DM:

CHECKED BY: SJW BP REPM:

DRAWN BY: SAA ALLIANCE PM:

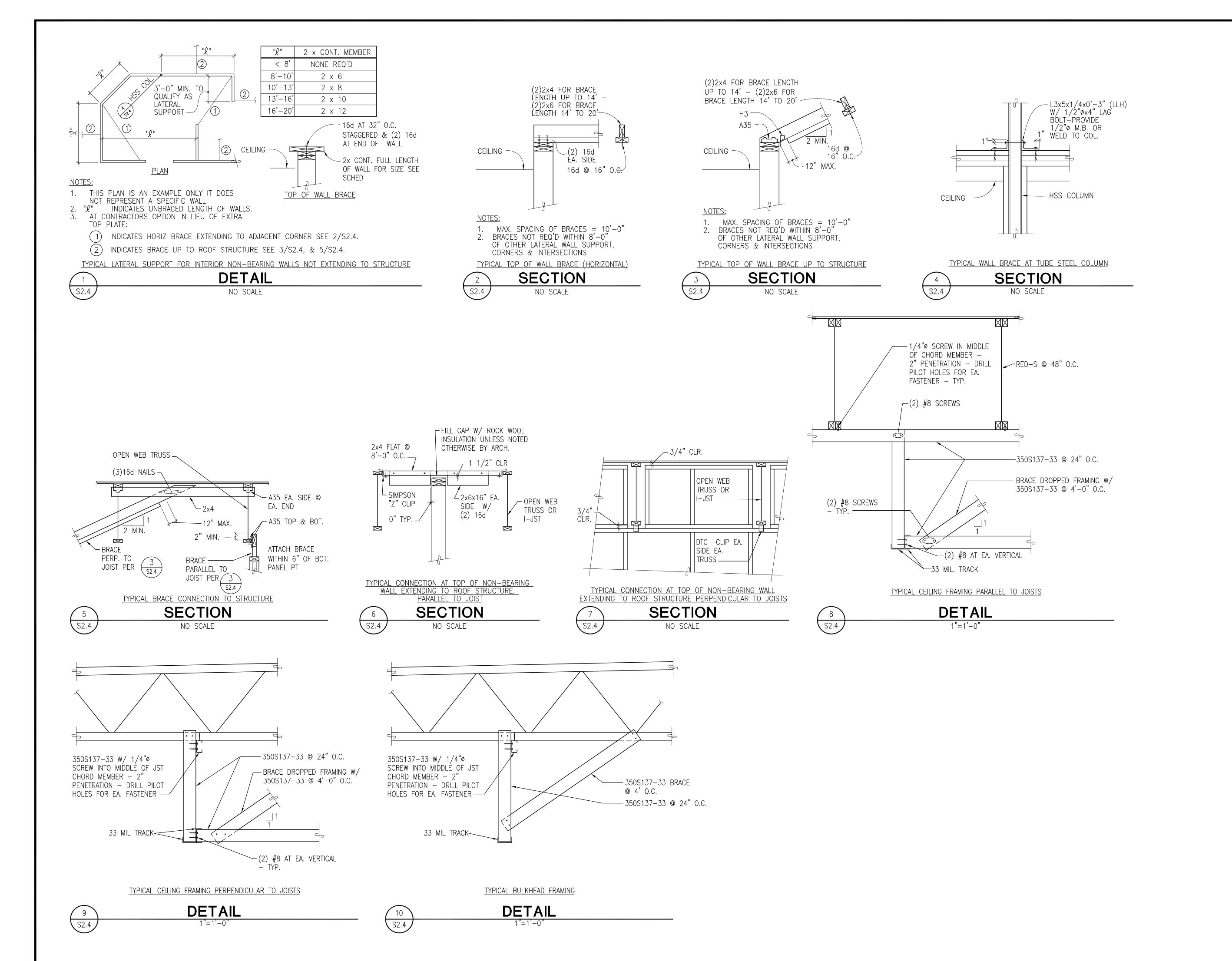
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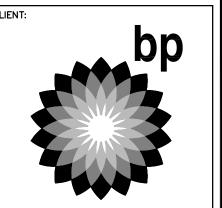
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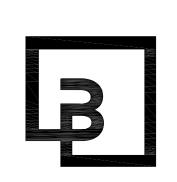
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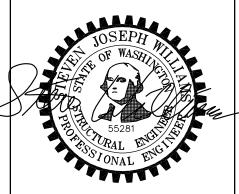






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3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

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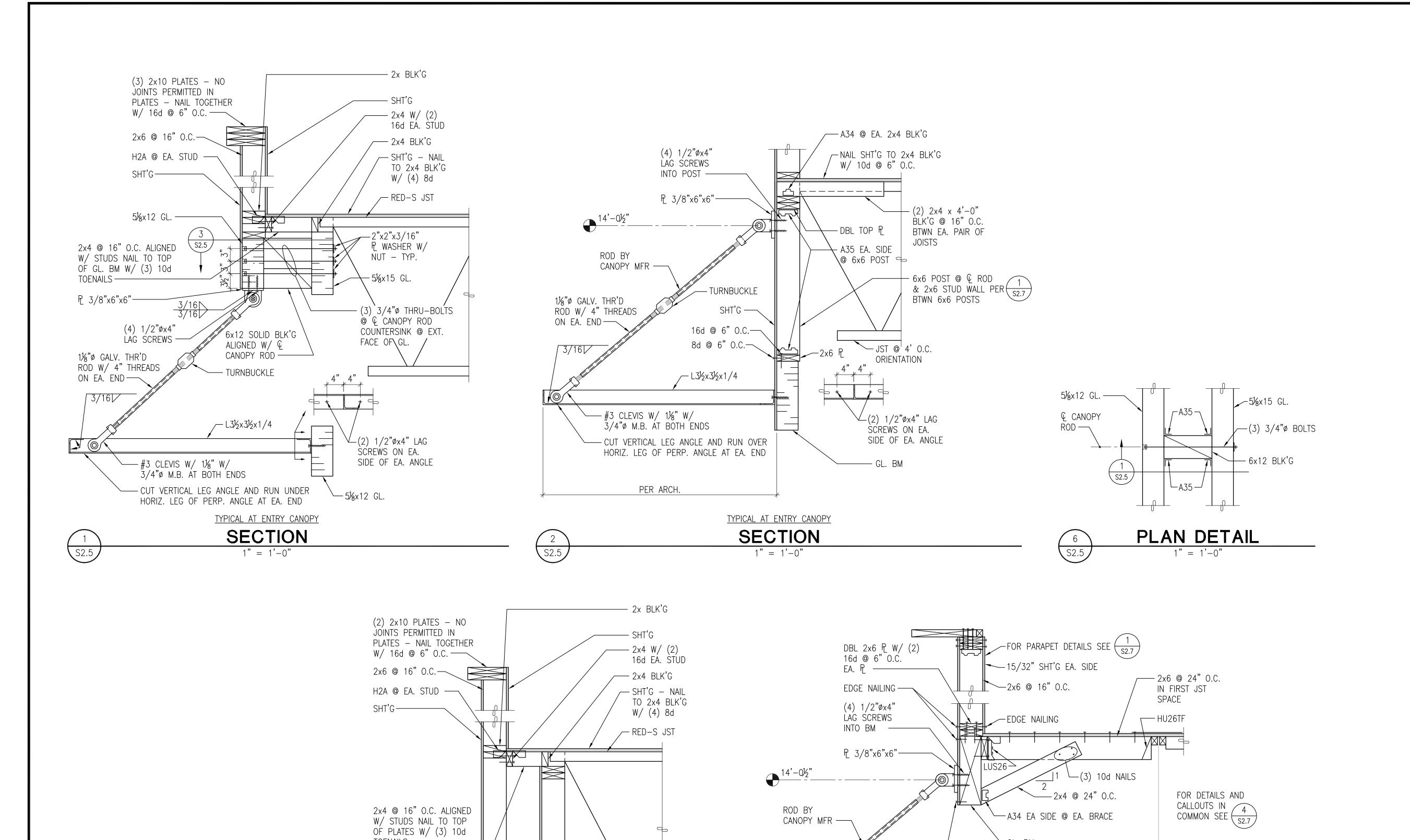
FACILITY #7184

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DETAILS

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DRAWING TITLE:



1½"ø GALV. THR'D

ON EA. END —

S2.5

ROD W/ 4" THREADS

-EDGE NAILING

TYPICAL AT SIDE CANOPY

SECTION

1" = 1'-0"

 $\frac{1}{2}$ (2) 1/2"øx4" LAG

SCREWS ON EA. SIDE OF EA. ANGLE

- GL. BM

- TURNBUCKLE

8d @ 6" O.C

— L3½x3½x1/4

-#3 CLEVIS W/ 1½" W/

3/4"ø M.B. AT BOTH ENDS

PER ARCH.

 CUT VERTICAL LEG ANGLE AND RUN OVER HORIZ. LEG OF PERP. ANGLE AT EA. END

TOENAILS -

S2.5

2x6 STUD WALL —

SECTION

1" = 1'-0"

BRG STUDS WHERE

BM OCCURS ABOVE

— BRG STUDS

PER PLAN

DETAIL

1" = 1'-0"

(6) 1/2"øx8" LAG SCREWS INTO END

OF BM ---

FULL HT STUDS

PER PLAN —

S2.5

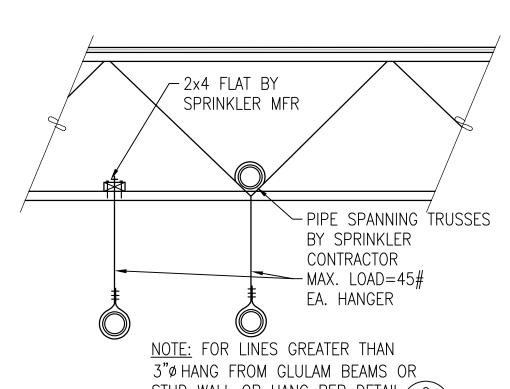


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DETAILS

SHEET NO:



NOTE: FOR LINES GREATER THAN

3"Ø HANG FROM GLULAM BEAMS OR

STUD WALL OR HANG PER DETAIL

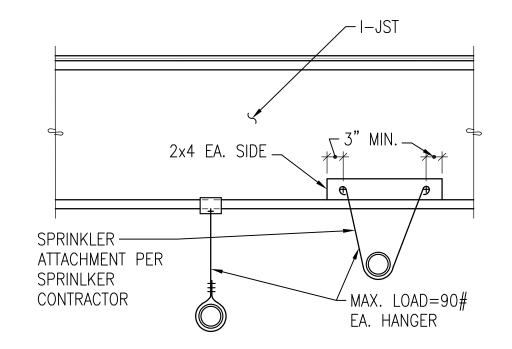
OR SUPPORT OFF WALLS WHEN

SPECIFICALLY APPROVED BY

STRUCTURAL ENGINEER

TYPICAL SPRINKLER LINE ATTACHMENT FOR LINES 3"Ø OR SMALLER

SECTION
S2.6
NO SCALE

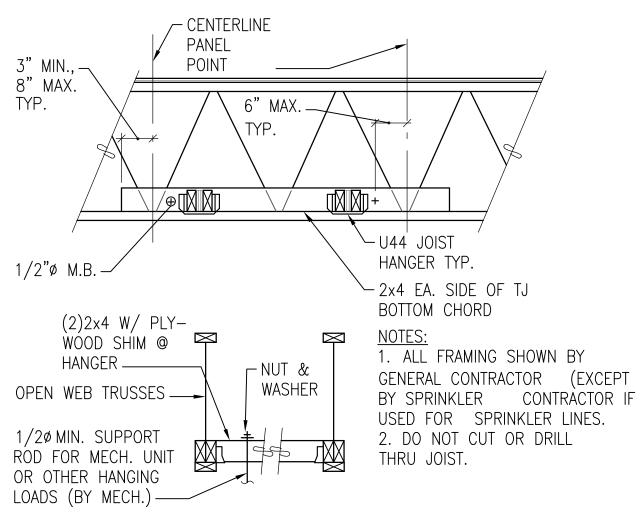


NOTE: FOR LINES GREATER THAN 3"Ø HANG FROM GLULAM BEAMS OR STUD WALL OR HANG PER DETAIL OR SUPPORT OFF WALLS WHEN SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER.

TYPICAL SPRINKLER LINE ATTACHMENT FOR LINES 3"Ø OR SMALLER



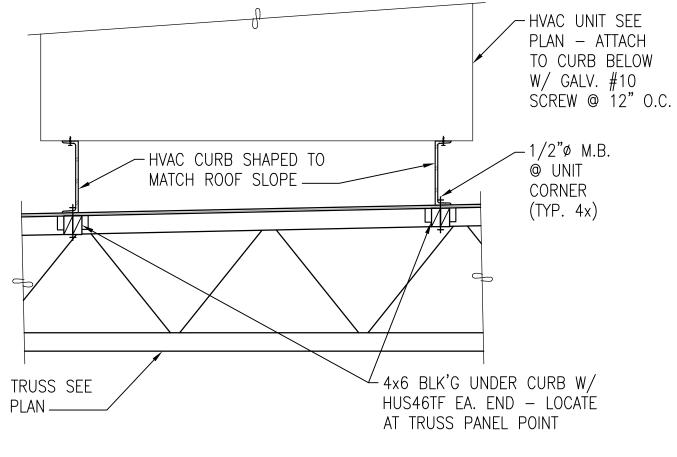
SECTION NO SCALE



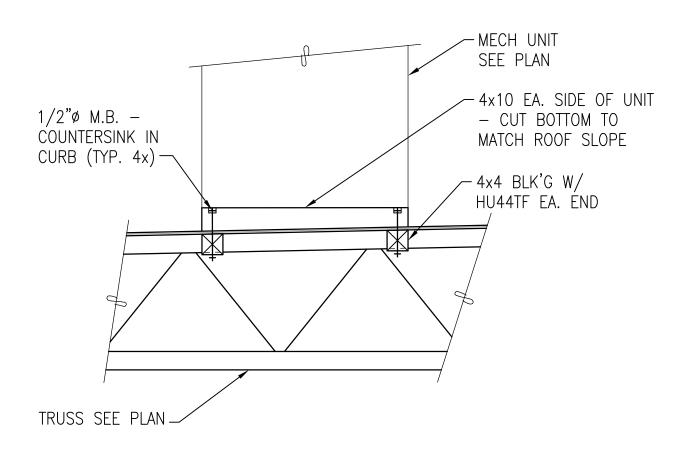
TYPICAL DETAIL FOR HANGING LOADS FROM OPEN WEB TRUSSES

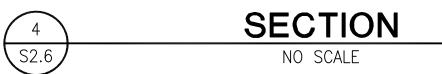
(ALL HEAT PUMPS, R FANS OR E FANS OVER 90#)

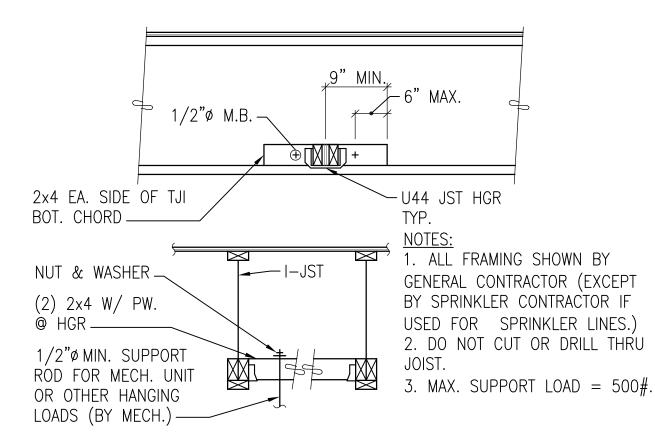
SECTION
NO SCALE







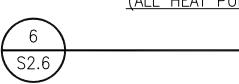


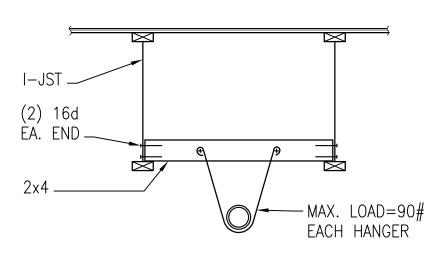


TYPICAL DETAIL FOR HANGING LOADS FROM I-JOIST (ALL HEAT PUMPS, R FANS OR E FANS OVER 90#)

SECTION

NO SCALE

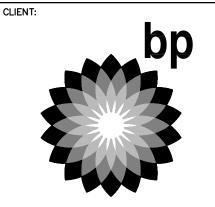




NOTE: FOR LINES GREATER THAN 3"Ø HANG FROM GLULAM BEAMS OR STUD WALL OR HANG PER 6
DETAIL OR SUPPORT OFF WALLS WHEN SPECIFICALLY APPROVED BY STRUCTURAL ENGINEER

TYPICAL SPRINKLER LINE ATTACHMENT FOR LINES 3"Ø OR SMALLER





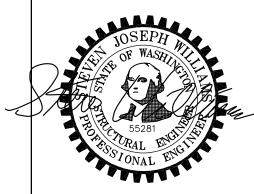




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

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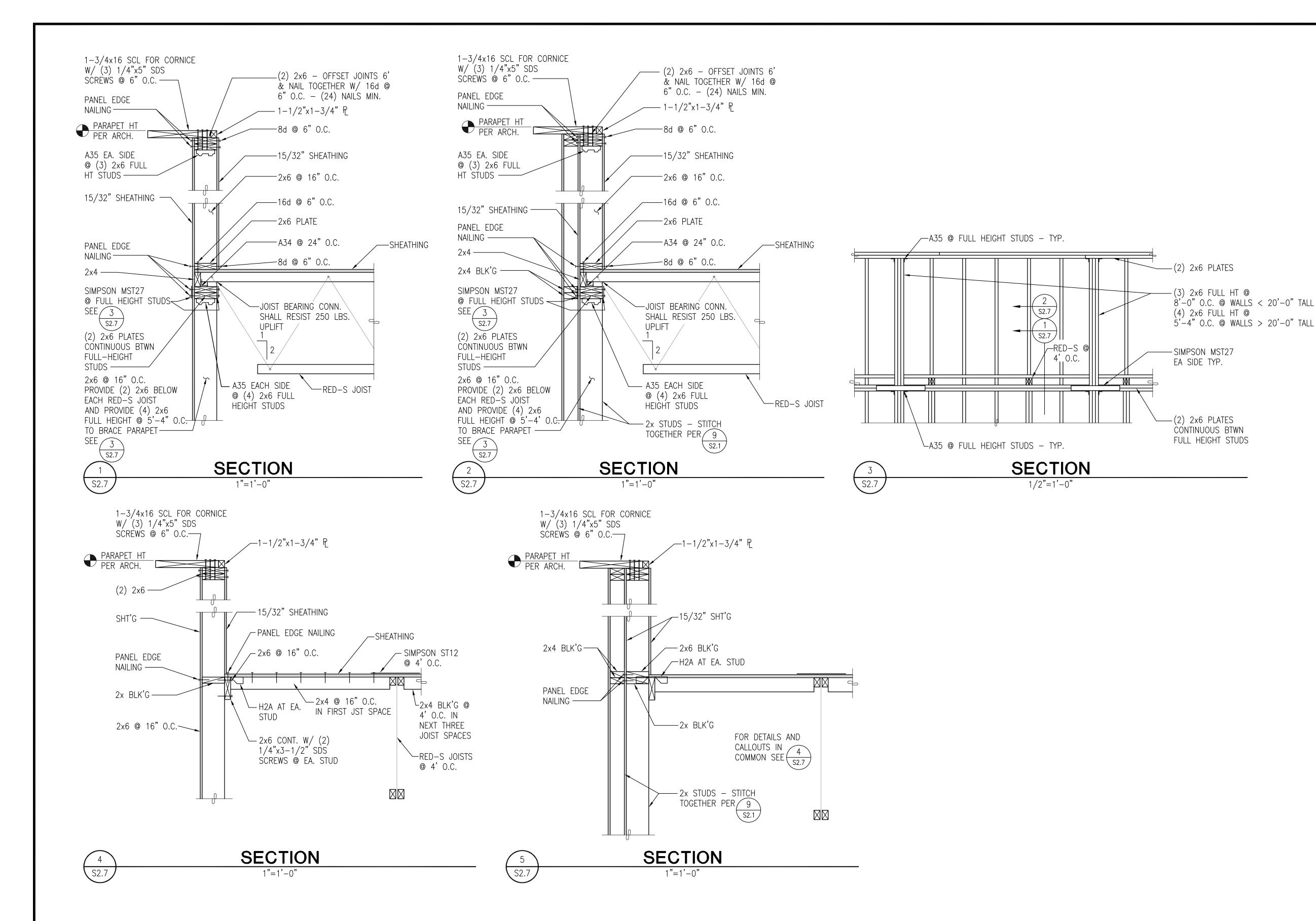
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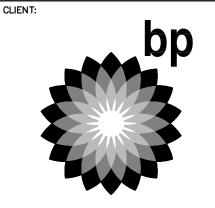
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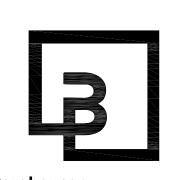
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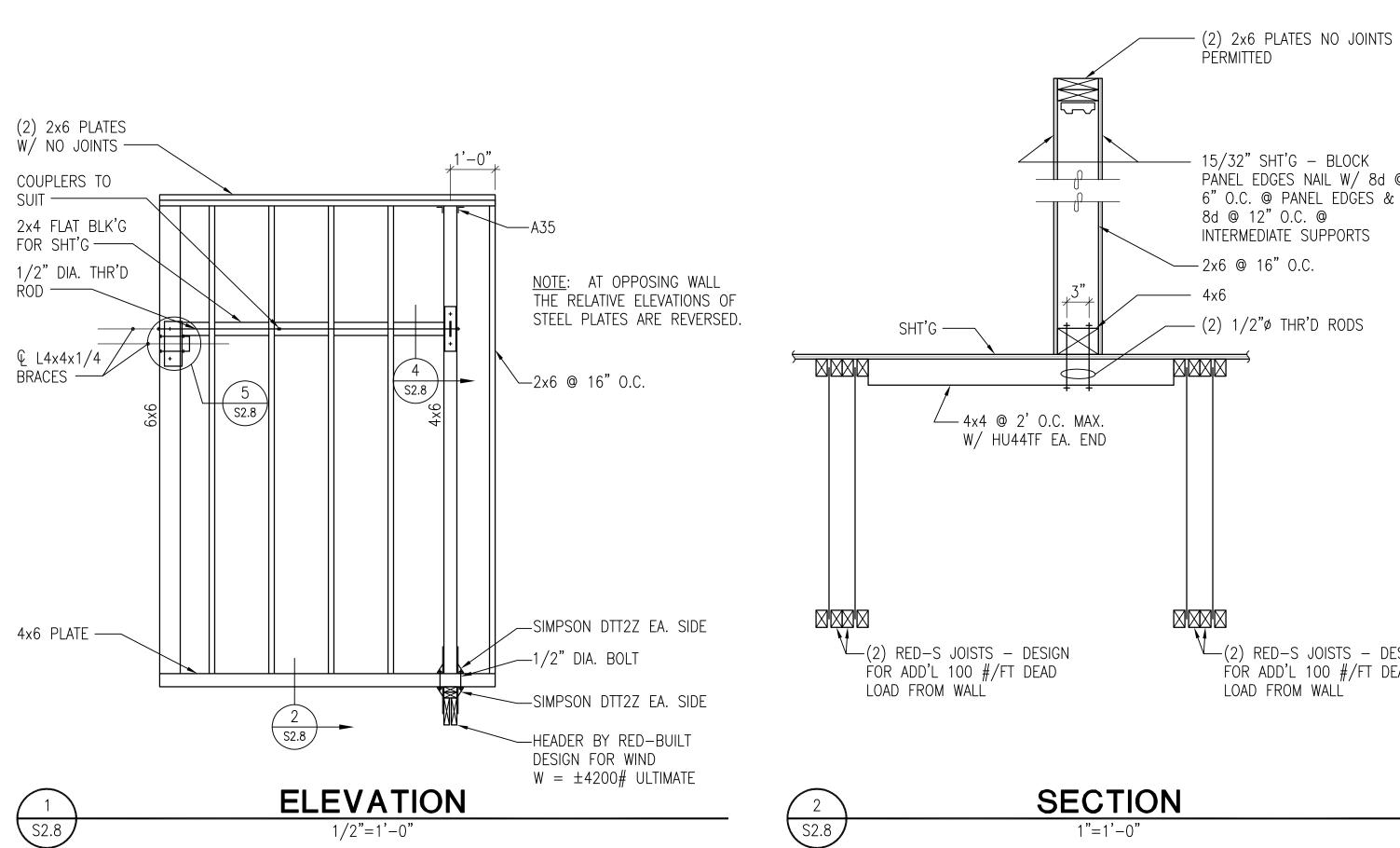
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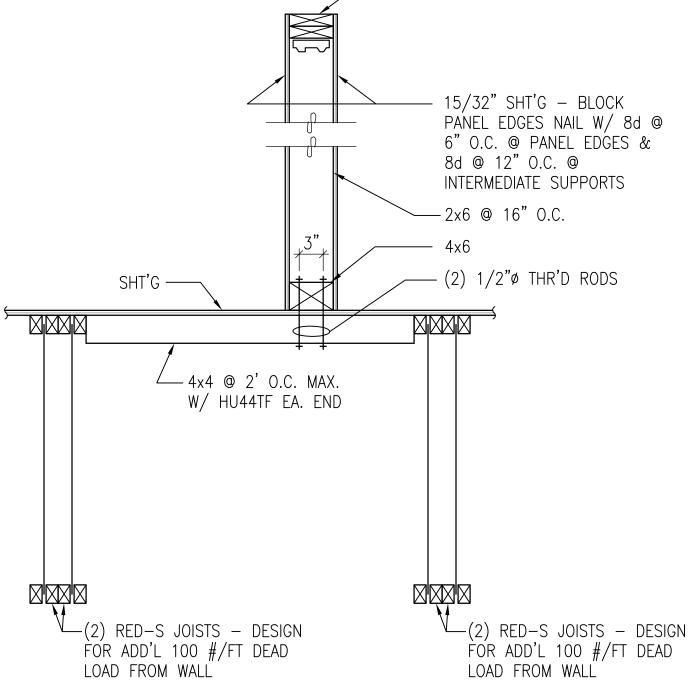
FACILITY #7184

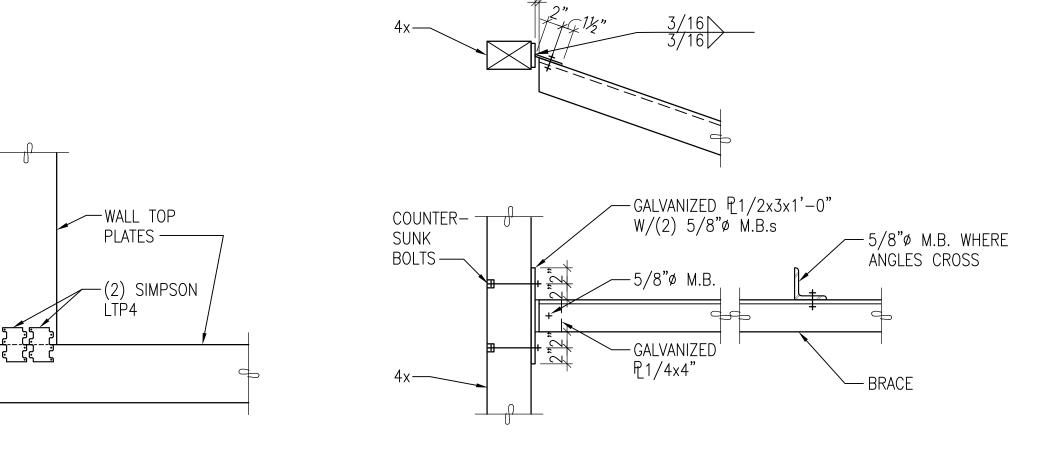
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CHECKED BY:	SJW	BP REPM:

DETAILS







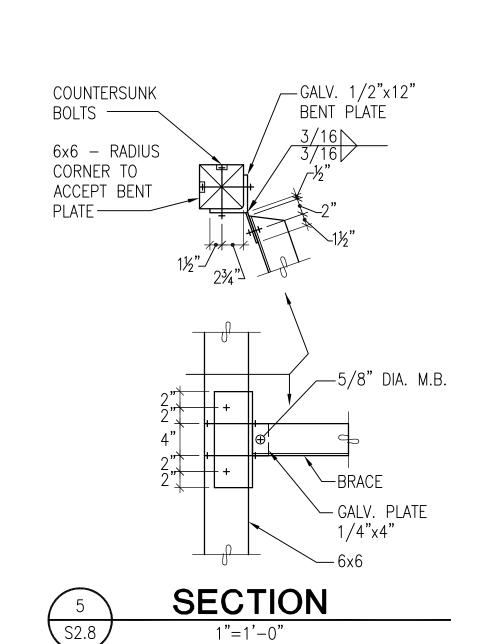
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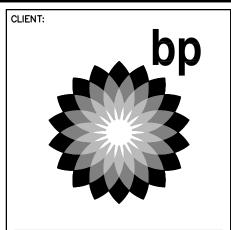
SECTION

|"=|'-0"

PLAN DETAIL

1"=1'-0"





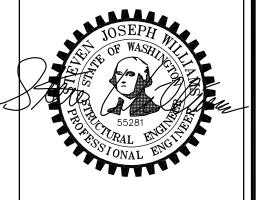




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DEVELOPMENT INFORMATION: **ARCO NTI**

3400 am/pm FUEL CANOPY w/ 6 MPD's

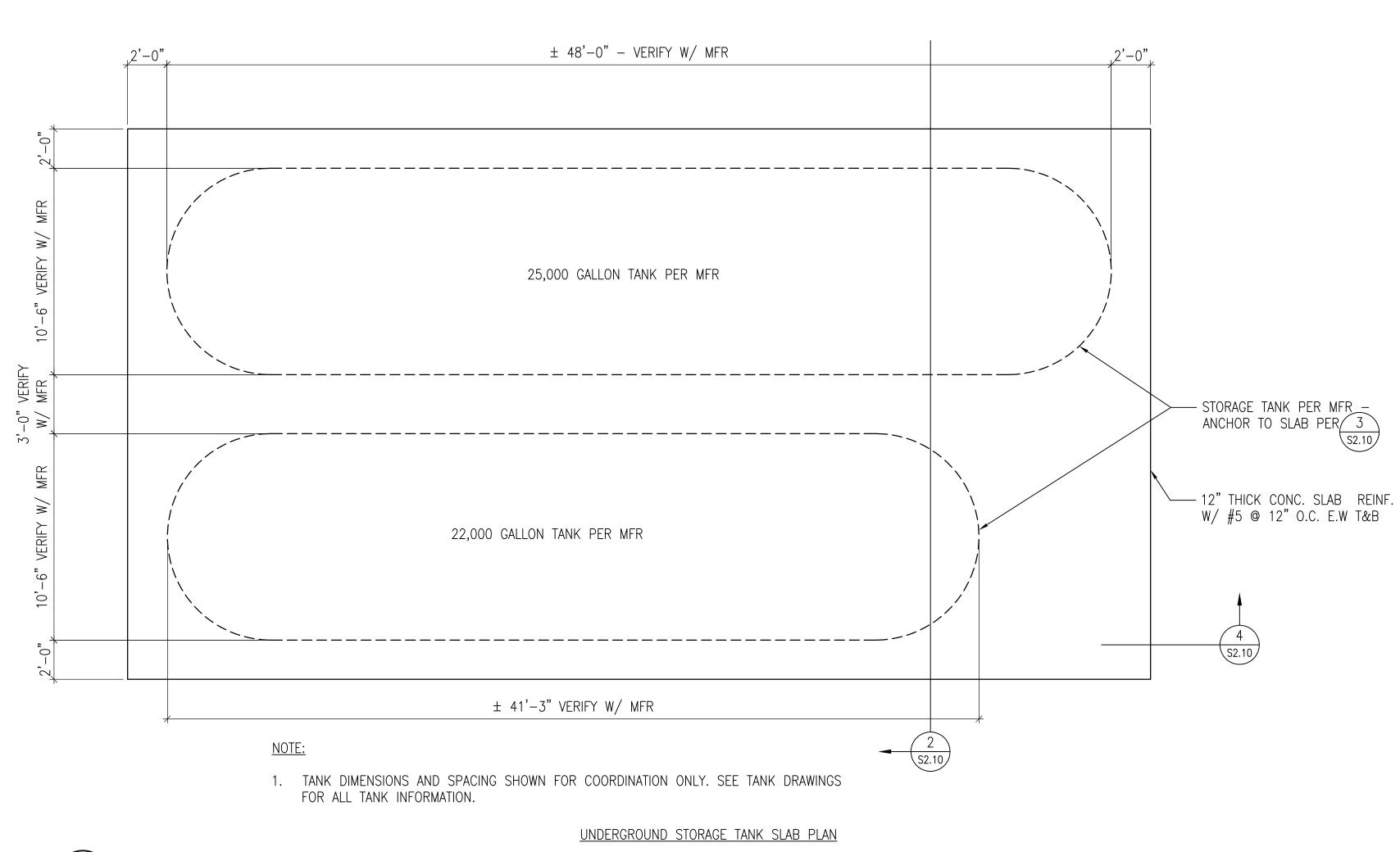
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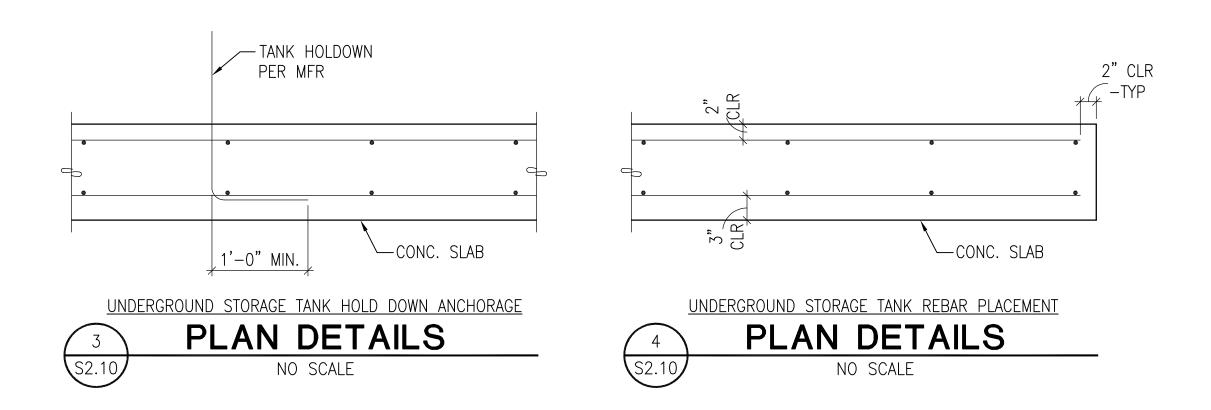
FACILITY #7184

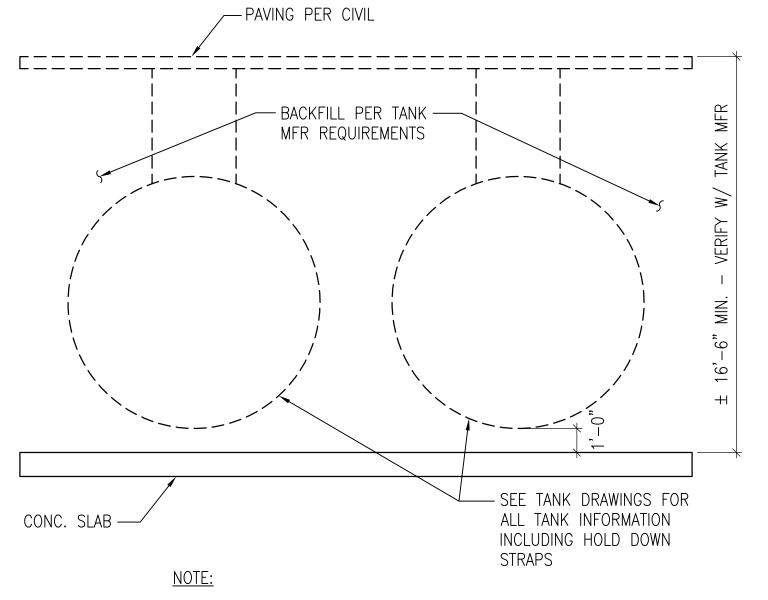
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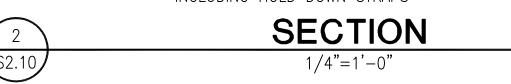


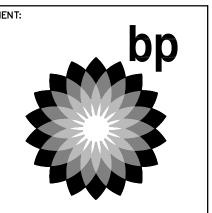
PARTIAL PLAN 1/4"=1'-0"



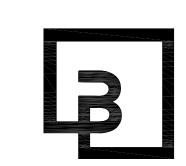


SEE TANK DRAWINGS FOR ALL TANK INFORMATION INCLUDING HOLD DOWN STRAPS









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DEVELOPMENT INFORMATION: **ARCO NTI**

3400 am/pm FUEL CANOPY w/ 6 MPD's

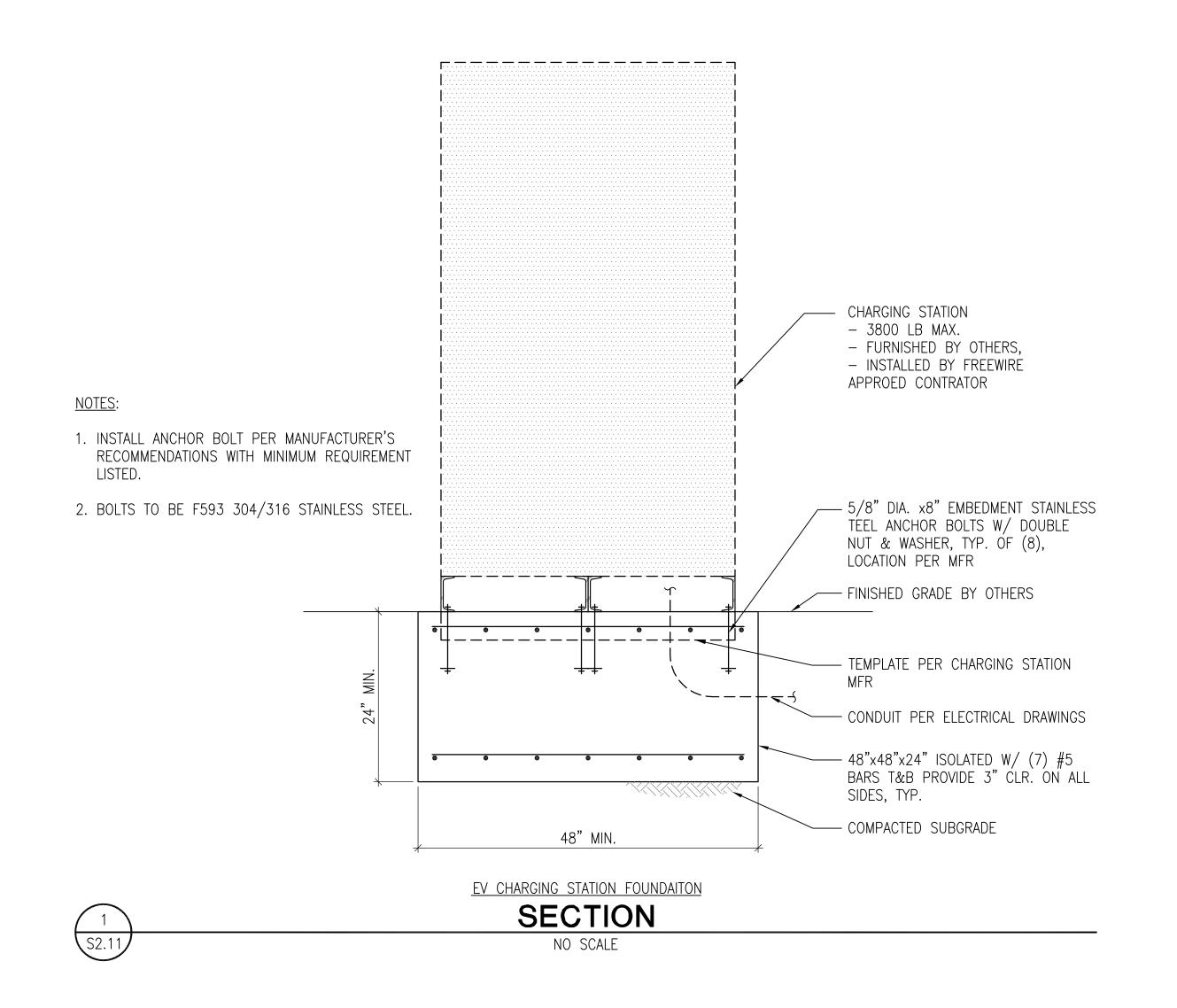
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VERSION:	_	PROJECT NO:
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UNDERGROUND STORAGE TANK PLAN AND DETAILS



bp

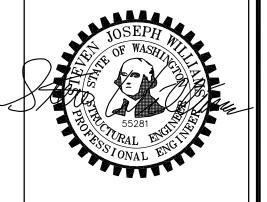




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DEVELOPMENT INFORMATION:

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FACILITY #7184

DRAWING TITLI

RETAINING WALL AND EV CHARGING STATION DETAILS

SHEET NO:

GENERAL NOTES

THESE GENERAL NOTES ARE TO BE USED AS A SUPPLEMENT TO THE SPECIFICATIONS. ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATIONS, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO THE ARCHITECT, WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK. THE GENERAL CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS AMONG ALL DRAWINGS PRIOR TO PROCEEDING WITH ANY WORK OR FABRICATION. THE STRUCTURE HAS BEEN DESIGNED TO RESIST CODE SPECIFIED VERTICAL AND LATERAL FORCES AFTER THE CONSTRUCTION OF ALL STRUCTURAL ELEMENTS HAS BEEN COMPLETED. STABILITY OF THE STRUCTURE PRIOR TO COMPLETION IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THIS RESPONSIBILITY INCLUDES BUT IS NOT LIMITED TO JOB SITE SAFETY; ERECTION MEANS, METHODS, AND SEQUENCES; TEMPORARY SHORING, FORMWORK, BRACING; USE OF EQUIPMENT AND CONSTRUCTION PROCEDURES. PROVIDE ADEQUATE RESISTANCE TO LOADS ON THE STRUCTURES DURING CONSTRUCTION PER SEI/ASCE STANDARD NO. 37–14 "DESIGN LOADS ON STRUCTURES DURING CONSTRUCTION."

CONSTRUCTION OBSERVATION BY THE STRUCTURAL ENGINEER IS FOR GENERAL CONFORMANCE WITH DESIGN ASPECTS ONLY AND IS NOT INTENDED IN ANY WAY TO REVIEW THE CONTRACTOR'S CONSTRUCTION PROCEDURES.

STANDARDS

ALL METHODS, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE (IBC) AS AMENDED AND ADOPTED BY THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION.

CONTRACT DRAWINGS/DIMENSIONS

ARCHITECTURAL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. CONSULTANT DRAWINGS BY OTHER DISCIPLINES ARE SUPPLEMENTARY TO ARCHITECTURAL DRAWINGS. REPORT DIMENSIONAL OMISSIONS OR DISCREPANCIES BETWEEN ARCHITECTURAL DRAWINGS AND STRUCTURAL, MECHANICAL, ELECTRICAL OR CIVIL DRAWINGS TO ARCHITECT PRIOR TO PROCEEDING WITH WORK.

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS. PRIMARY STRUCTURAL ELEMENTS ARE DIMENSIONED ON STRUCTURAL PLANS AND DETAILS AND OVERALL LAYOUT OF STRUCTURAL PORTION OF WORK. SOME SECONDARY ELEMENTS ARE NOT DIMENSIONED, SUCH AS WALL CONFIGURATIONS, INCLUDING EXACT DOOR AND WINDOW LOCATIONS, ALCOVES, SLAB SLOPES AND DEPRESSIONS, CURBS, ETC. VERTICAL DIMENSIONAL CONTROL IS DEFINED BY ARCHITECTURAL WALL SECTIONS AND BUILDING SECTIONS. STRUCTURAL DETAILS SHOW DIMENSIONAL RELATIONSHIPS TO CONTROL DIMENSIONS DEFINED BY ARCHITECTURAL DRAWINGS. DETAILING AND SHOP DRAWING PRODUCTION FOR STRUCTURAL ELEMENTS WILL REQUIRE DIMENSIONAL INFORMATION CONTAINED IN BOTH ARCHITECTURAL AND STRUCTURAL DRAWINGS.

DESIGN CRITERIA

VERTICAL LOADS

AREA	DESIGN DEAD LOAD (1)	LIVE LOAD	CONCENTRATED LOADS
ROOF	20 PSF	25 PSF	300#

1. INCLUDES UP TO 5 PSF OF ADDITIONAL DEAD LOAD FOR SOLAR READINESS

LATERAL FORCES

LATERAL FORCES ARE TRANSMITTED BY DIAPHRAGM ACTION OF ROOF TO SHEAR WALLS. LOADS ARE THEN TRANSFERRED TO FOUNDATION BY SHEAR WALL ACTION WHERE ULTIMATE DISPLACEMENT IS RESISTED BY PASSIVE PRESSURE OF EARTH AND/OR SLIDING FRICTION. OVERTURNING IS RESISTED BY DEAD LOAD OF THE STRUCTURE.

<u>WIN[</u>

THE BUILDING MEETS THE CRITERIA TO USE THE "ENCLOSED, PARTIALLY ENCLOSED, AND OPEN BUILDINGS OF ALL HEIGHTS PROCEDURE" PER ASCE 7-16.

- EXPOSURE CATEGORY = B
- BASIC WIND SPEED (3 SEC. GUST), VULT = 97 MPH
- RISK CATAGORY PER TABLE 1.5-1 = II
- TOPOGRAPHIC FACTOR Kzt = 1.0
- INTERNAL PRESSURE COEFFICIENT (ENCLOSED) = \pm 0.18
- COMPONENTS AND CLADDING LOADS, SEE THÉ FOLLOWING TABLES:

		ROOF SUR	FACES 1			
EFFECTIVE WIND	POSITIVE PRESSURES	NEGATIVE PRESSURES (PSF)				
AREA	(PSF)		ZON	NE ³		
	ALL ZONES	1'	1	2	3	
10 SF	16.0	-16.0	-21.9	-28.9	-39.4	
20 SF	16.0	-16.0	-20.5	-27.0	-35.7	
50 SF	16.0	-16.0	-18.5	-24.6	-30.7	
100 SF	16.0	-16.0	-17.1	-22.7	-27.0	
	WALL SURFACES	S AND ROOF O	VERHANGS ¹			
	POSITIVE PRE	SSURE (PSF) NEGATIVE PRESSURE (PSF)				
EFFECTIVE WIND AREA		ZONE ²				
	4	5	4	5		
10 SF	16.0	16.0	-16.0	-18.4		
20 SF	16.0	16.0	-16.0	-17.2		
50 SF	16.0	16.0	-16.0	-16.0		
100 SF	16.0	16.0	-16.0	-16.0		
500 SF	16.0	16.0	-16.0	-16.0		

- 1. VALUES SHOWN IN TABLE ARE GROSS ULTIMATE WIND PRESSURES.
- 2. WALL ZONES ARE AS DEFINED BY FIGURE 30.3-1 FOR ASCE 7-16 IN LOW RISE BUILDINGS.
- 3. ROOF ZONES ARE AS DEFINED BY FIGURES 30.3-2 THROUGH 30.3-7 IN ASCE 7-16 FOR LOW RISE BUILDINGS.

SEISMIC: (ASCE 7-16) V = CsW

WHERE
$$Cs = \frac{Sps}{(\frac{R}{Ie})}$$
; WITH
 Cs MINIMUM = 0.044 SpsIe \geq 0.01 OR OR Cs MINIMUM = $\frac{0.5S1}{\frac{R}{Ie}}$ FOR S1 > 0.6g
 Cs MAXIMUM = $\frac{Sp1}{T(\frac{R}{Ie})}$ FOR T \leq TL OR Cs MAXIMUM = $\frac{Sp1TL}{T2(\frac{R}{Ie})}$ FOR T > TL

SEISMIC IMPORTANCE FACTOR, Ie = 1.0 RISK CATEGORY OF BUILDING PER TABLE 1.5-1=II SPECTRAL RESPONSE ACCELERATIONS $Ss=1.268\ S1=0.437$ SITE CLASS PER TABLE 20.3-1=F DESIGN SPECTRAL RESPONSE ACCELERATIONS $Sds=0.845\ \&\ Sd1=0.543$ SEISMIC DESIGN CATEGORY = D $W=EFFECTIVE\ SEISMIC\ WEIGHT\ OF\ BUILDING=109.2\ KIPS$ ANALYSIS PROCEDURE USED = EQUIVALENT LATERAL FORCE PROCEDURE RESPONSE MODIFICATION FACTOR PER TABLE 12.2-1, R=6.5

Cs = 0.130DESIGN BASE SHEAR V = 12.6 KIPS

PIPES, DUCTS AND MECHANICAL EQUIPMENT SUPPORTED OR BRACED FROM STRUCTURE. CONFORM TO SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC. PUBLICATION "SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS". SPRINKLER LINE ATTACHMENTS SHALL CONFORM TO NFPA PAMPHLET 13.

FOUNDATION DESIGN CRITERIA (REFER TO GEOTECHNICAL ENGINEERING REPORT BY KRAZAN AND ASSOCIATES, INC. DATED MAY 6, 2023).

SOIL BEARING PRESSURE: 1500 PSF

PASSIVE RESISTANCE: 300 PCF (INCLUDES F.O.S. ≥ 1.5) COEFFICIENT OF FRICTION: 0.35 (INCLUDES F.O.S. ≥ 1.5) *1/3 INCREASE ALLOWED FOR SEISMIC OR WIND LOADING

ALL FOOTINGS SHALL BEAR ON DEEP FOUNDATIONS EXTENDING BELOW THE DEEPER LIQUEFIABLE SOILS. CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EXCAVATION TO AVOID DAMAGE TO BURIED LINES, TANKS, AND OTHER CONCEALED ITEMS. UPON DISCOVERY, DO NOT PROCEED WITH WORK UNTIL RECEIVING WRITTEN INSTRUCTIONS FROM ARCHITECT. A COMPETENT REPRESENTATIVE OF THE OWNER SHALL INSPECT ALL FOOTING EXCAVATIONS FOR SUITABILITY OF BEARING SURFACES PRIOR TO PLACEMENT OF REINFORCING STEEL. PROVIDE DRAINAGE AND DEWATERING AROUND ALL WORK TO AVOID WATER—SOFTENED FOOTINGS.

SITE STRUCTURES BEARING ON SHALLOW FOUNDATIONS SHALL HAVE BEARING SOILS PREPARED PER THE GEOTECHNICAL REPORT. UNDOCUMENTED FILL AND SOFT NATIVE SOILS SHALL BE REMOVED TO A MINIMUM DEPTH OF TWO BELOW SPREAD FOOTINGS AND BACKFILLED WITH PROPERLY COMPACTED STRUCTURAL FILL.

STEEL PIPE PILES

PIPE PILES: 8" NOMINAL DIAMETER GALVANIZED SCHEDULE 40 = 25K ALLOWABLE AXIAL COMPRESSION.

4' MINIMUM EMBED INTO UNDERLYING DENSE TO VERY DENSE SAND AND GRAVEL OR AS OTHERWISE APPROVED BY GEOTECHNICAL ENGINEER BASED ON OBSERVATIONS DURING PILE DRIVING, WHICHEVER IS DEEPER.

TESTING: ALLOWABLE LOADS TO BE VERIFIED BY LOAD TESTS IN ACCORDANCE WITH ASTM D-1143 "QUICK LOAD TEST". A MINIMUM OF 3% OF THE TOTAL PILES SHALL BE TESTED A MINIMUM OF ONE TIME AND MAXIMUM OF 5 TIMES PER PILE.

MATERIAL: PIPE PILES – ASTM A252 GR3 (Fy = 45 KSI).

TIP DESIGN: TIP DESIGN SHALL BE PER CONTRACTOR AND TAKE INTO CONSIDERATION INSTALLATION REQUIREMENTS.

INSTALLATION: INSTALL IN A TRUE VERTICAL POSITION. REFER TO THE GEOTECHNICAL REPORT TO DETERMINE THE GENERALIZED SUBSURFACE PROFILES, DRIVEABILITY, SOIL PROPERTIES, CONSTITUENTS, EXISTING SITE FEATURES AND CONDITIONS. AND LOAD TESTING PROTOCALS.

INDICATOR PILES: THE LENGTH OF THE PILE REQUIRED AND THE PILE INSTALLATION SHALL BE VERIFIED IN THE FIELD BY A QUALIFIED INSPECTOR WHO WILL EVALUATE THE CONTRACTOR'S OPERATION AND COLLECT, INTERPRET AND RECORD DATA. A MINIMUM OF TWO INDICATOR PILES SHALL BE DRIVEN BEFORE ORDERING PRODUCTION PILES TO ESTIMATE THE TRUE PILE LENGTHS AND DETERMINE DRIVING CHARACTERISTICS AND PROBLEMS. A QUALIFIED INSPECTOR SHALL EVALUATE INSTALLATION OF INDICATOR PILES.

<u>CONCRETE</u>

CAST-IN-PLACE CONCRETE

MIX DESIGNS: THE CONTRACTOR SHALL DESIGN CONCRETE MIXES THAT MEET OR EXCEED THE REQUIREMENTS OF THE CONCRETE MIX TABLE. THE MIX DESIGNS SHALL FACILITATE ANTICIPATED PLACEMENT METHODS, WEATHER, REBAR CONGESTION, ARCHITECTURAL FINISHES, CONSTRUCTION SEQUENCING, STRUCTURAL DETAILS, AND ALL OTHER FACTORS REQUIRED TO PROVIDE A STRUCTURALLY SOUND, AESTHETICALLY ACCEPTABLE FINISHED PRODUCT. WATER REDUCING ADMIXTURES WILL LIKELY BE REQUIRED TO MEET THESE REQUIREMENTS. CONCRETE MIX DESIGNS SHALL CLEARLY INDICATE THE TARGET SLUMP. SLUMP TOLERANCE SHALL BE \pm 1–1/2 INCHES.

AGGREGATE: COARSE AND FINE AGGREGATE SHALL CONFORM TO ASTM C33

CEMENT: CEMENT SHALL CONFORM TO ASTM C150, TYPE II PORTLAND CEMENT, UNLESS NOTED OTHERWISE.

FLYASH: SHALL CONFORM TO ASTM C618 CLASS C OR F, MAXIMUM LOSS OF IGNITION SHALL BE 1.0%.

<u>SLAG</u>: GROUND GRANULATED BLAST-FURNACE (GGBF) SLAG SHALL CONFORM TO ASTM C989 GRADE 100 OR 120.

ALTERNATE MIX DESIGNS: VARIATIONS TO THE MIX DESIGN PROPORTIONS MAY BE ACCEPTED IF SUBSTANTIATED IN ACCORDANCE WITH ACI 318, CHAPTER 19. PROVIDE SUBMITTALS A MINIMUM OF TWO WEEKS PRIOR TO BID FOR DETERMINATION OF ACCEPTABILITY.

<u>ADMIXTURES</u>: ADMIXTURES SHALL BE BY MASTER BUILDERS, W.R. GRACE, OR PRE-APPROVED EQUAL. ALL MANUFACTURERS RECOMMENDATIONS SHALL BE FOLLOWED.

WATER: SHALL BE CLEAN AND POTABLE.

MAXIMUM CHLORIDE CONTENT: THE MAXIMUM WATER SOLUBLE CHLORIDE CONTENT SHALL NOT EXCEED 0.15% BY WEIGHT OF CEMENTITIOUS MATERIAL UNLESS NOTED OTHERWISE.

CONCRETE EXPOSED TO WEATHER: PROVIDE 5.0% TOTAL AIR CONTENT FOR ALL CONCRETE EXPOSED TO WEATHER. TOTAL AIR CONTENT IS THE SUM OF ENTRAINED AIR PROVIDED BY ADMIXTURES AND NATURALLY OCCURRING ENTRAPPED AIR. AIR CONTENT SHALL BE TESTED PRIOR TO BEING PLACED IN THE PUMP HOPPER OR BUCKET; IT IS NOT REQUIRED TO BE TESTED AT THE DISCHARGE END OF THE PUMP HOSE. THE TOLERANCE ON ENTRAPPED AIR SHALL BE +2.0% AND -1.5% WITH THE AVERAGE OF ALL TESTS NOT LESS THAN THE SPECIFIED AMOUNT.

TOTAL CEMENTITIOUS MATERIAL: THE SUM OF ALL CEMENT PLUS FLYASH AND SLAG. AT THE CONTRACTORS OPTION FLYASH OR SLAG MAY BE SUBSTITUTED FOR CEMENT BUT SHALL NOT EXCEED 25% BY WEIGHT OF TOTAL CEMENTITIOUS MATERIAL. IN NO CASE SHALL THE AMOUNT OF FLYASH OR SLAG BE LESS THAN REQUIRED BY THE CONCRETE MIX DESIGN TABLE. FOOTING MIXES SHALL CONTAIN NOT LESS THAN 5 SACKS OF CEMENTITIOUS MATERIAL PER CUBIC YARD, ALL OTHER MIXES SHALL CONTAIN NOT LESS THAN 5-1/2 SACKS OF CEMENTITIOUS MATERIAL PER CUBIC YARD, UNLESS NOTED OTHERWISE.

ITEM	DESIGN f'c (PSI) (AT 28 DAYS U.N.O.)	MAX. W/C RATIO	MIN. FLYASH OR SLAG (PCY)	AGGREGATEG RADING ASTM AASHTO	NOTES
SLABS ON GRADE - UNO	4000	0.45	100	57 OR 67	1
ARCHITECTURALLY EXPOSED SLABS ON GRADE	4000	0.45	100	57 OR 67	1, 2
FOUNDATIONS - UNO	3000	0.50		57 OR 67	
STEM WALLS AND OTHER WALLS EXPOSED TO EARTH OR WEATHER	4500	0.45	100	57 OR 67	
ALL OTHER CONCRETE	4000	0.50		57 OR 67	

CONCRETE MIX NOTES:

1. MAXIMUM WATER CONTENT 240 PCY.

2. THIS MIX SHALL CONTAIN 1 GALLON PER CY OF 'ECLIPSE' SHRINKAGE REDUCING ADD MIXTURE BY W.R. GRACE OR APPROVED ALTERNATE. FOR CONCRETE REQUIRING AN AIR ENTRAINMENT ADMIXTURE, "ECLIPSE PLUS" SHALL BE USED.

CONCRETE PLACEMENT

PLACE CONCRETE FOLLOWING ALL APPLICABLE ACI RECOMMENDATIONS. CONCRETE SHALL BE PROPERLY CONSOLIDATED PER ACI 309 USING INTERIOR MECHANICAL VIBRATORS, DO NOT OVER—VIBRATE. CONCRETE SHALL BE POURED MONOLITHICALLY BETWEEN CONSTRUCTION OR EXPANSION JOINTS. IF CONCRETE IS PLACED BY THE PUMP METHOD, HORSES SHALL BE PROVIDED TO SUPPORT THE HOSE, THE HOSE SHALL NOT BE ALLOWED TO RIDE ON THE REINFORCING. WEATHER FORECASTS SHALL BE MONITORED AND ACI RECOMMENDATIONS FOR HOT AND COLD WEATHER CONCRETING SHALL BE FOLLOWED AS REQUIRED. CONCRETE SHALL NOT FREE FALL MORE THAN 5 FEET DURING PLACEMENT WITHOUT WRITTEN APPROVAL OF STRUCTURAL ENGINEER.

FLOATING & FINISHING OPERATIONS:

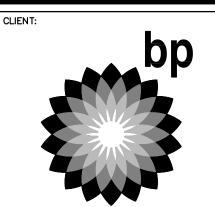
WATER SHALL NOT BE ADDED TO THE CONCRETE SURFACE DURING FLOATING & FINISHING OPERATIONS. PRE-APPROVED EVAPORATION RETARDER SPECIFICALLY DESIGNED FOR FLOATING & FINISHING OPERATIONS ARE ACCEPTABLE.

FORMED SURFACES:

FORMWORK CLASS OF SURFACE PER ACI TABLE 347 TA	BLE 3.1
ITEM	CLASS OF FINISH
ALL SURFACES EXPOSED TO PUBLIC VIEW, UNLESS NOTED OTHERWISE	А
ALL SURFACES RECEIVING A COURSE TEXTURED COATING SUCH AS PLASTER OR STUCCO, UNLESS NOTED OTHERWISE	В
ALL OTHER SURFACES, UNLESS NOTED OTHERWISE	С

COLD WEATHER PLACEMENT

- 1. COLD WEATHER IS DEFINED BY ACI 306 AS "A PERIOD WHEN FOR MORE THAN 3 SUCCESSIVE DAYS THE MEAN DAILY TEMPERATURE DROPS BELOW 40° F."
- 2. NO CONCRETE SHALL BE PLACED ON FROZEN OR PARTIALLY FROZEN GROUND. THAWING THE GROUND WITH HEATERS IS PERMISSIBLE.
- 3. CONCRETE MIX TEMPERATURES SHALL BE AS SHOWN BELOW. HEATING OF WATER AND/OR AGGREGATES MAY BE REQUIRED TO ATTAIN THESE TEMPERATURES.
- 4. THE CONCRETE MAY REQUIRE PROTECTION FOR 4-7 DAYS AFTER POURING. IF TEMPERATURES REMAIN BELOW FREEZING, INSULATING BLANKET COVERAGE IS REQUIRED. IF TEMPERATURES ARE SLIGHTLY BELOW FREEZING (30° F MIN.) AT NIGHT AND ABOVE FREEZING DURING THE DAY, KRAFT PAPER WITH COMPLETE COVERAGE MAY BE USED IN LIEU OF INSULATED BLANKETS.
- 5. NO ADDITIVES CONTAINING CHLORIDES SHALL BE USED. USE "POZZUTEC 20+" BY MASTER BUILDERS OR "POLARSET" BY W.R. GRACE OR PRE-APPROVED FOUAL.



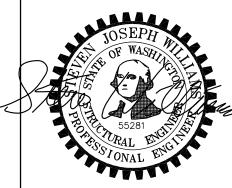




Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

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3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

DESIGNED BY:	SJW	ALLIANCE Z&DM:
CHECKED BY:	SJW	BP REPM:
DRAWN BY:	SAA	ALLIANCE PM:
VERSION:		PROJECT NO:
		21730

RAWING TITLE:

GENERAL NOTES

SHEET NO:

S3.1

CONDITION OF PLACEMENT AND CURING		WALLS & SLABS	FOOTINGS
MIN. TEMP. FRESH CONCRETE AS MIXED FOR WEATHER INDICATED. DEGREES F.	ABOVE 30° F. O TO 30° F. BELOW O° F.	60° 65° 70°	55° 60° 65°
MIN. TEMP. FRESH CONCRETE AS PLACED A DEGREES F.	55°	50°	
MAX. ALLOWABLE GRADUAL DROP IN TEMP. HOURS AFTER END OF PROTECTION, DEGREE	50°	40°	

HOT OR WINDY WEATHER PLACEMENT

HOT WEATHER IS DEFINED BY ACI 305 AS "ANY COMBINATION OF HIGH AIR TEMPERATURE, LOW RELATIVE HUMIDITY, AND WIND VELOCITY, TENDING TO IMPAIR THE QUALITY OF FRESH HARDENED CONCRETE.. ACI 305 FIGURE 2.1.5 SHALL BE USED BY THE CONTRACTOR TO ESTIMATE THE RATE OF EVAPORATION. WHEN THE ESTIMATED RATE OF EVAPORATION IS GREATER THAN 0.2 PSF/HOUR THE PLACEMENT SHALL BE CONSIDERED A HOT WEATHER PLACEMENT. PRECAUTIONS AGAINST PLASTIC SHRINKAGE CRACKING ARE NECESSARY. PRECAUTIONS TAKEN BY THE CONTRACTOR VARY DEPENDING UPON THE FACTORS ASSOCIATED WITH WATER EVAPORATION AND INCLUDE BUT ARE NOT LIMITED TO:

- 1. LIMITING CONCRETE TEMPERATURE TO 100°F AT TIME OF PLACEMENT.
- 2. APPLICATION OF AN EVAPORATION RETARDER.
- 3. USE OF FOG SPRAY.
- 4. REDUCTION OF POUR SIZE.
- 5. PLACING CONCRETE AT NIGHT.

CONTROL AND CONSTRUCTION JOINTS

CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF ACI 301 SECTIONS 2.2.2.5 AND 5.3.2.6. SPECIAL BONDING METHODS PER SECTION 5.3.2.6 SHALL BE SATISFIED BY ITEM 4 BELOW UNLESS OTHERWISE DETAILED ON THE STRUCTURAL DRAWINGS. WHERE CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN OR ADDITIONAL CONSTRUCTION JOINTS ARE REQUIRED SUBMIT PROPOSED JOINTING FOR STRUCTURAL ENGINEERS APPROVAL. PROVIDE CONSTRUCTION JOINTS AS INDICATED BELOW UNLESS NOTED OTHERWISE ON THE PLANS

- 1. SLABS ON GRADE. PROVIDE CONSTRUCTION AND/OR CONTROL JOINTS AT 16 FEET O.C. MAXIMUM FOR UNEXPOSED SLABS ON GRADE AND 12 FEET O.C. FOR EXPOSED SLABS ON GRADE. COORDINATE JOINTS WITH ARCHITECTURAL DRAWINGS.
- 2. BONDING AGENT. WHERE BONDING AGENT IS SPECIFICALLY CALLED OUT ON THE STRUCTURAL DRAWINGS USE "WELD CRETE" BY LARSON PRODUCTS CORPORATION OR PRE-APPROVED EQUAL. FOLLOW ALL MANUFACTURERS RECOMMENDATIONS.
- 3. ATTACHMENT OF NEW CONCRETE TO EXISTING: WHERE SHOWN, ROUGHEN CONCRETE TO A MINIMUM AMPLITUDE OF 1/4" USING IMPACT HAMMER. REMOVE ALL LOOSE OR DAMAGED CONCRETE. THOROUGHLY FLUSH ALL SURFACES WITH POTABLE WATER, AIR BLAST WITH OIL FREE COMPRESSED AIR TO REMOVE ALL WATER.

EMBEDDED ITEMS

- 1. NO ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE.
- 2. ALL EMBED PLATES SHALL BE SECURELY FASTENED IN PLACE.
- 3. ALL EMBEDDED STEEL ITEMS EXPOSED TO EARTH SHALL BE GALVANIZED.
- 4. ALL EMBEDDED STEEL ITEMS EXPOSED TO WEATHER SHALL BE PAINTED UNLESS NOTED AS GALVANIZED. SEE DRAWINGS AND SPECIFICATIONS FOR PAINT, PRIMER, AND GALVANIZING REQUIREMENTS.

CONCRETE CURING AND SEALING

CURING PROCEDURES SHALL COMMENCE IMMEDIATELY AFTER FINISHING CONCRETE TO MAINTAIN CONCRETE IN A MOIST CONDITION. VERIFY CURING AND/OR SEALING PRODUCTS ARE COMPATIBLE WITH FLOOR COVERINGS SHOWN ON THE ARCHITECTURAL DRAWINGS. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS. SLABS ARE DEFINED AS SLABS ON GRADE, CONCRETE ON METAL DECK, ELEVATED POST-TENSIONED OR MILD REINFORCED DECKS, AND TOPPING SLABS

ITEM	CONCRETE CURING NOTES
SLABS EXPOSED TO EARTH OR WEATHER OR VEHICLE OR FORKLIFT TRAFFIC INCLUDING LOADING DOCKS	1, (3 OR 4 OR 5), 6
ALL OTHER SLABS	1, (3 OR 4 OR 5)
FORMED SURFACES EXCLUDING FOUNDATIONS	2
ALL OTHER CONCRETE	NONE

CONCRETE CURING NOTES:

- 1. WHEN THE ESTIMATED EVAPORATION RATE IS GREATER THAN 0.2 PSF/HOUR, PROVIDE A SPRAY APPLIED EVAPORATION RETARDER IMMEDIATELY AFTER CONCRETE PLACEMENT. THE EVAPORATION RATE MAY BE CALCULATED PER ACI 305 FIGURE 2.1.5.
- 2. APPLY A LIQUID MEMBRANE FORMING CURING COMPOUND, CONFORMING TO ASTM C309 TYPE 1 CLASS B SPECIFICATIONS, PER MANUFACTURERS RECOMMENDATIONS TO ALL FORMED SURFACES IMMEDIATELY AFTER FORM REMOVAL. NOT REQUIRED IF FORMWORK REMAINS IN PLACE FOR MORE THAN 7 DAYS.
- 3. PROVIDE PRE-APPROVED CONTINUOUS WET CURE METHOD FOR A MINIMUM OF 14 DAYS.
- 4. APPLY A LIQUID MEMBRANE FORMING CURING COMPOUND, CONFORMING TO ASTM C309 TYPE 1 CLASS B SPECIFICATIONS OR ASTM C1315 TYPE 1 CLASS A SPECIFICATIONS, PER MANUFACTURERS RECOMMENDATIONS IMMEDIATELY AFTER FINAL FINISHING. CURING COMPOUND SHALL BE COMPATIBLE WITH ARCHITECTURAL FLOOR COVERINGS AND SEALERS.
- 5. PROVIDE 'ULTRACURE MAX' MOISTURE RETAINING COVER BY MCTECH GROUP. OR APPROVED EQUAL. FOR A MINIMUM OF 14 DAYS.
- 6. APPLY A SILANE SEALER WITH MINIMUM SOLIDS CONTENT OF 40% PER MANUFACTURERS RECOMMENDATIONS.

<u>GROUT</u>

NON-SHRINK GROUT: MASTER BUILDERS "MASTERFLOW 928" OR PRE-APPROVED EQUAL. GROUT SHALL CONFORM TO CRD-C621 AND ASTM C1107 WHEN TESTED AT A FLUID CONSISTENCY PER CRD- C611-85 FOR 30 MINUTES. GROUT MAY BE PLACED FROM A 25 SECOND FLOW TO A STIFF PACKING CONSISTENCY. FILL OR PACK ENTIRE SPACE UNDER PLATES OR SHAPES. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR PREPARATION, INSTALLATION, AND CURING.

REINFORCING STEEL

REINFORCING STEEL SHALL CONFORM TO:

- ASTM A615, GRADE 60 TYPICAL UNLESS NOTED OTHERWISE.
- DETAIL FABRICATE AND PLACE PER ACI 315 AND ACI 318.

WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A185. LAP ONE FULL MESH ON SIDES AND ENDS, BUT NOT LESS THAN 8 INCHES. WELDED WIRE REINFORCING SHALL BE SUPPORTED TO WITHSTAND CONCRETE PLACEMENT. PULLING OF MESH INTO PLACE AFTER PLACEMENT IS NOT ALLOWED.

<u>RE</u>	REINFORCING SPLICE AND DEVELOPMENT LENGTH SCHEDULE, Fy=60 KSI (UNLESS NOTED OTHERWISE)						
BAR	MINIMUM LAP SPLICE LENGTHS ("Ls") BAR		MINIMUM DEVELOPMENT LENGTHS ("Ld")		MINIMUM EMBEDMENT LENGTH FOR		
SIZE	TOP BARS (1)	OTHER BARS	TOP BARS (1)	OTHER BARS	STANDARD END HOOKS ("Ldh")		
#3	2'-0"	1'-6"	1'-6"	1'-3"	0'-7"		
#4	2'-8"	2'-0"	2'-0"	1'-7"	0'-9"		
#5	3'-4"	2'-7"	2'-7"	2'-0"	1'-0"		
#6	4'-0"	3'-1"	3'-1"	2'-4"	1'-2"		
#7	5'-10"	4'-6"	4'-6"	3'-6"	1'-5"		
#8	6'-8"	5'-2"	5'-2"	3'-11"	1'-7"		

SPLICE TABLE NOTE:

1. "TOP BARS" ARE HORIZONTAL BARS WITH MORE THAN 12" DEPTH OF CONCRETE CAST BELOW THEM.

REINFORCING STEEL COVER

PROVIDE CONCRETE COVER OVER REINFORCEMENT AS FOLLOWS, UNLESS NOTED OTHERWISE.

CONCRETE CAST AGAINST EARTH ----- 3" EXPOSED TO WEATHER OR EARTH ----- 2" WALLS AND SLABS NOT EXPOSED TO WEATHER---- 3/4"

POST-INSTALLED ANCHORS

POST-INSTALLED ANCHORS: SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE STRUCTURAL ENGINEER PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH REBAR. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS. INSTALLER SHALL BE QUALIFIED AND TRAINED BY THE MANUFACTURER. HOLES SHALL BE HAMMER DRILLED ONLY (ROTARY DRILLED ONLY AT UNREINFORCED MASONRY - NO HAMMER TOOLS).

SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW, SHALL BE SUBMITTED FOR APPROVAL A MINIMUM OF 2 WEEKS PRIOR TO BID, ALONG WITH CALCULATIONS THAT ARE PREPARED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER (LICENSED IN THE STATE IN WHICH THE PROJECT OCCURS) DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE.

CONCRETE ANCHORS:

- ADHESIVE ANCHORS: HILTI HIT-HY 200 (ICC-ESR-3187), HILTI HIT-RE 500 V3 (ICC-ESR-3814), DEWALT PURE 110+ (ICC-ESR-3298) OR SIMPSON SET-3G (ICC-ESR-4057) OR PRE-APPROVED EQUAL.
 - *CONCRETE SHALL BE A MINIMUM OF 21 DAYS OLD AT TIME OF INSTALLATION. *CONCRETE SHALL BE IN THE TEMPERATURE RANGE AS REQUIRED BY THE CONCRETE MANUFACTURER.
 - *HOLE SHALL BY HAMMER-DRILLED ONLY. *DO NOT INSTALL IN WATER-FILLED HOLES. *INSTALLER OF HORIZONTAL OR UPWARDLY INCLINED (ANY POSITION EXCEPT DIRECTLY DOWNWARD) ANCHORS SHALL ALSO BE CERTIFIED BY THE ACI/CRSI ADHESIVE ANCHOR INSTALLER CERTIFICATION PROGRAM.
- EXPANSION ANCHORS: KWIKBOLT TZ (ICC ESR-1917) BY HILTI, INC., OR PRE-APPROVED EQUAL.
- SCREW ANCHORS: KWIK HUS-EZ (ICC ESR-3027) BY HILTI, INC., OR PRE-APPROVED EQUAL.

STRUCTURAL STEEL

DETAILING, FABRICATION AND ERECTION

ALL WORKMANSHIP SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION, 15TH EDITION, THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS JULY 7, 2016, THE AISC CODE OF STANDARD PRACTICE, JUNE 15, 2016 AND THE AISC SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS, JULY 12, 2016.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERECTION AIDES AND JOINT PREPARATIONS THAT INCLUDE BUT ARE NOT LIMITED TO, ERECTION ANGLES, LIFT HOLES, AND OTHER AIDES. WELDING PROCEDURES. REQUIRED ROOT OPENINGS, ROOT FACE DIMENSIONS, GROOVE ANGLES, BACKING BARS, WELD EXTENSION TABS, COPES, SURFACE ROUGHNESS VALUES AND TAPERS OF UNEQUAL PARTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLIANCE WITH ALL CURRENT OSHA REQUIREMENTS.

HOLES, COPES OR OTHER CUTS OR MODIFICATIONS OF THE STRUCTURAL STEEL MEMBERS SHALL NOT BE MADE IN THE FIELD WITHOUT WRITTEN APPROVAL FROM THE STRUCTURAL ENGINEER.

MATERIAL PROPERTIES

SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI) TYP. U.N.O.; ASTM A572 (Fy = 50 KSI) WHERE INDICATED

HOLLOW STRUCTURAL SECTIONS: RECTANGULAR & SQUARE - ASTM A500 GRADE C (Fy = 50 KSI) ROUND - ASTM A500 GRADE C (Fy = 46 KSI)

STRUCTURAL STEEL PIPES: ASTM A53, GRADE B, TYPE E OR S (Fy = 35 KSI)

MACHINE BOLTS (M.B.): ASTM A307, GRADE A

ANCHOR BOLTS (A.B.): ASTM F1554, GRADE 55, UNLESS NOTED OTHERWISE, ASTM F1554, GRADE 105 WHERE INDICATED.

<u>WELDING</u>

STRUCTURAL STEEL: WELD IN ACCORDANCE WITH "STRUCTURAL WELDING CODE" AWS D1.1.

CERTIFICATION: ALL WELDING SHALL BE PERFORMED BY WABO/AWS CERTIFIED WELDERS. WELDERS SHALL BE PREQUALIFIED FOR EACH POSITION AND WELD TYPE WHICH THE WELDER WILL BE PERFORMING.

WELD TABS (ALSO KNOWN AS WELD "EXTENSION" TABS OR "RUN OFF" TABS) SHALL BE USED. AFTER THE WELD HAS BEEN COMPLETED THE WELD TABS SHALL BE REMOVED AND THE WELD END GROUND TO A SMOOTH CONTOUR. WELD "DAMS" OR "END DAMS" SHALL NOT BE USED.

THE PROCESS CONSUMABLES FOR ALL WELD FILLER METAL INCLUDING TACK WELDS, ROOT PASS AND SUBSEQUENT PASSES DEPOSITED IN A JOINT SHALL BE COMPATIBLE.

ALL WELD FILLER METAL AND WELD PROCESS SHALL PROVIDE THE TENSILE STRENGTH AND CHARPY V-NOTCH RATINGS AS FOLLOWS:

GRAVITY FRAME

WELD TYPE FILLER METAL TENSILE STRENGTH		CHARPY V-NOTCH (CVN) RATING
FILLET	70 KSI	
PARTIAL PENETRATION	70 KSI	
COMPLETE PENETRATION	70 KSI	20 FT-LBS @ 40 DEG F

WELDED CONNECTIONS INSPECTION:

1. ALL WELDING SHALL BE CHECKED BY VISUAL MEANS AND BY OTHER METHODS DEEMED NECESSARY BY THE WELDING INSPECTOR.

THE STANDARDS OF ACCEPTANCE FOR WELDS TESTED BY ULTRASONIC METHODS SHALL CONFORM TO AWS

ALL WELDS FOUND TO BE DEFECTIVE SHALL BE REPAIRED AND REINSPECTED BY THE SAME METHODS ORIGINALLY USED. AND THIS REPAIR AND REINSPECTION SHALL BE PAID FOR BY THE CONTRACTOR

GENERAL REQUIREMENTS

BOLTED CONNECTIONS INSPECTION: CONNECTIONS MADE WITH BEARING TYPE BOLTS SHALL BE INSPECTED PER SECTION 9.1.

ADHESIVE ANCHOR RODS: ASTM F1554, GRADE 36 UNLESS NOTED OTHERWISE.

HEADED STUDS: SHALL BE "H4L HEADED CONCRETE ANCHORS" FOR STUDS 5/8" DIAMETER AND SMALLER AND "S3L SHEAR CONNECTORS" FOR STUDS 3/4" DIAMETER AND LARGER AS MANUFACTURED BY NELSON STUD WELDING, INC. OR PRE-APPROVED EQUAL AND SHALL CONFORM TO AWS D1.1. ALL HEADED STUDS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS USING A NELSON WELD GUN, UNLESS NOTED OTHERWISE ON DETAILS. ALL WELDS SHALL BE MADE AND INSPECTED IN ACCORDANCE WITH AWS D1.1.

FINISH: STRUCTURAL STEEL SHALL BE PRIMER PAINTED, UNLESS NOTED OTHERWISE, AND SHALL BE CLEAN OF LOOSE RUST, LOOSE MILL SCALE, OIL, GREASE AND OTHER FOREIGN SUBSTANCES AND SHALL MEET THE REQUIREMENTS OF SSPC-SP1. WHERE STRUCTURAL STEEL IS NOTED TO BE PAINTED, ALL AREAS COMPRISING THE FAYING SURFACES OF BOLTED CONNECTIONS MADE WITH SLIP-CRITICAL TYPE BOLTS (A325SC OR A490SC) SHALL COMPLY WITH THE REQUIREMENTS OF THE RCSC SPECIFICATION. WHERE STRUCTURAL STEEL IS NOTED TO BE GALVANIZED, IT SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123, A384, AND A385. ALL SURFACES WITHIN TWO INCHES OF ANY FIELD WELD LOCATION SHALL BE FREE OF MATERIALS THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES. FIELD TOUCH-UP OF PRIMED, PAINTED, AND GALVANIZED SURFACES SHALL BE PERFORMED TO REPAIR COATING ABRASIONS, AS WELL AS TO PROTECT ALL AREAS AT CONNECTIONS.

CARPENTRY:

NAILS: CONNECTION DESIGNS ARE BASED ON NAILS WITH THE FOLLOWING PROPERTIES:

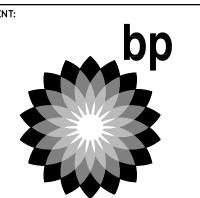
PENNYWEIGHT	DIAMETER (INCHES)	LENGTH (INCHES)
8d	0.131	2-1/2
10d	0.148	3
16d	0.148	3-1/2
20d	0.192	4

ALL NAILS AND STAPLES SHALL CONFORM TO ASTM F1667 INCLUDING SUPPLEMENT 1. FOR DIAPHRAGM OR SHEAR WALL NAILING THE FOLLOWING FASTENER TYPES MAY BE USED AT EQUIVALENT SPACING TO THAT SPECIFIED ON PLANS.

FASTENER TYPE	DIAMETER (INCHES)	LENGTH (INCHES)	EQUIV	ALENT SP (INCHES)	ACING
8d COMMON WIRE	0.131	2-1/2	6	4	3
8d "DIPPED GALV. BOX" 8d "SHINY BOX" 14 GA. STAPLES 16 GA STAPLES	0.131 0.113 0.080 0.072	2-1/2 2-1/2 1-1/2* 1-1/2*	6 4-1/2 6 5	4 3 4 3	3 2-1/2 3 -
10d COMMON WIRE	0.148	3	6	4	3
10d "HOT DIPPED GALV. BOX" 10d "SHINY BOX"	0.148 0.131	3 3	6 4-1/2	4	3 2-1/4
16d COMMON WIRE	0.162	3-1/2	6	4	3
16d SINKER NAIL	0.148	3-1/4	5	3-1/4	2-1/2

* BASED ON 15/32" PLYWOOD OR OSB.

WOOD SHEATHING (STRUCTURAL): SHEATHING ON ROOF SURFACES SHALL BE PLYWOOD ONLY. SHEATHING ON FLOOR AND WALLS SHALL BE PLYWOOD OR ORIENTED STRAND BOARD (OSB). PLYWOOD SHEATHING SHALL BE 5-PLY MINIMUM WHERE INDICATED AS PERFORMANCE CATAGORY 3/4" OR THICKER. WOOD SHEATHING SHALL BE "STRUCTURAL I" CONFORMING TO PS1-09 AND/OR PS2-10. ALL PANELS SHALL BEAR THE STAMP OF AN APPROVED GRADING AGENCY. SPAN RATING SHALL BE PROVIDED AS FOLLOWS: ROOF FRAMING AT 48" O.C. (48/24); ROOF FRAMING AT 24"O.C. (32/16); WALLS (32/16); ALL WOOD SHEATHED WALLS SHALL BE BLOCKED AT ALL PANEL EDGES UNLESS NOTED OTHERWISE.



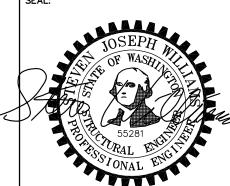




Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO.	DATE	REVISION	DESCRIPTION
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SEAL:			



DEVELOPMENT INFORMATION:

ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN **PUYALLUP, WA 98371**

FACILITY #7184

	_	21730
VERSION:	_	PROJECT NO:
DRAWN BY:	SAA	ALLIANCE PM:
CHECKED BY:	SJW	BP REPM:
DESIGNED BY:	SJW	ALLIANCE Z&DM:

GENERAL NOTES

<u>GLUE-LAMINATED MEMBERS</u>: CONFORM TO ANSI/AITC A190.1. MEMBERS SHALL BE COMBINATION 24F-V4 DOUGLAS FIR (DF) FOR SIMPLE SPANS; AND 24F-V8 DF FOR CANTILEVERED AND/OR CONTINUOUS SPANS (Fb=2400 PSI, Fv=265 PSI, E=1.8X10^6 PSI); AND DF COMBINATION 2 FOR COLUMNS.

ARCHITECTURAL APPEARANCE GRADE WHERE EXPOSED TO VIEW; INDUSTRIAL APPEARANCE WHERE NOT EXPOSED TO VIEW. ALL MEMBERS TO HAVE EXTERIOR GLUE AND HAVE AN APPROVED GRADE STAMP. CAMBER AS SHOWN ON STRUCTURAL DRAWINGS.

FRAMING LUMBER: STANDARDS. EACH PIECE SHALL BEAR THE GRADE TRADEMARK OF THE WEST COAST LUMBER INSPECTION BUREAU (WCLIB), WESTERN WOOD PRODUCTS ASSOCIATION (WWPA), OR OTHER AGENCY ACCREDITED BY THE AMERICAN LUMBER STANDARD COMMITTEE (ALSC) TO GRADE UNDER ALSC CERTIFIED GRADING RULES.

SPECIES AND GRADE (BASE DESIGN VALUE)

1. 6x BEAMS AND HEADERS. "DOUG FIR-LARCH" NO. 1 (Fb=1350 PSI, Fv=170 PSI)

- 2. 2x TO 4x JOISTS, PURLINS AND HEADERS. "DOUG FIR-LARCH" NO. 2 (Fb=900 PSI, Fv=180 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fv=150 PSI)
- 3. 6x POSTS AND COLUMNS. "DOUG FIR-LARCH" NO. 1 (Fc=1000 PSI)
- 4. EXTERIOR STUDS, INTERIOR BEARING WALLS AND 4x COLUMNS. "DOUG FIR-LARCH" NO. 2 (Fb= 900 PSI, Fc=1350 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI).
- 5. INTERIOR NON-BEARING STUD WALLS. "DOUG FIR-LARCH" NO. 2 (Fb=900 PSI. Fc=1350 PSI) OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI)
- 6. 2x & 3x T&G DECKING: "DOUG FIR-LARCH" COMMERCIAL (Fb=1450 PSI, E=1700 KSI)
- 7. THE MINIMUM GRADE OF ALL OTHER STRUCTURAL FRAMING. "DOUG FIR-LARCH" NO. 2 (Fb= 900 PSI, Fc=1350 PSI), OR "HEM-FIR" NO. 1 (Fb=975 PSI, Fc=1350 PSI).
- 8. UTILITY & STANDARD GRADES NOT PERMITTED.

STRUCTURAL COMPOSITE LUMBER (SCL): SHALL BE MANUFACTURED BY REDBUILT LLC., OR PRE-APPROVED EQUAL IN ACCORDANCE WITH APPROVED SHOP AND INSTALLATION DRAWINGS CONFORMING TO A CURRENT EVALUATION REPORT.

MIINIMUM DESIGN VALUES:

- 1. 2x SCL: Fb = 1700 PSI, Fv = 285 PSI, E = 1300 KSI
- 2. 1-3/4" SCL: Fb = 2600 PSI, Fv = 285 PSI, E = 1800 KSI 3. 3-1/2" SCL: Fb = 2900 PSI, Fv = 285 PSI, E = 2000 KSI
- 4. 5-1/4" SCL: Fb = 2900 PSI, Fv = 285 PSI, E = 2000 KSI
- 5. RIMBOARD: APA/EWS PERFORMANCE RATED RIM (PRR-401)

MEMBERS HAVE BEEN DESIGNED TO SERVICEABILITY AND OTHER PERFORMANCE BASED REQUIREMENTS, WHICH MAY EXCEED MINIMUM DESIGN LOADS AND CODE REQUIREMENTS. SUBSTITUTIONS MUST MEET OR EXCEED MOMENT, SHEAR, AND STIFFNESS OF THOSE MEMBERS SPECIFIED AT THE SAME DEPTH AND SPACING.

PRESERVATIVE TREATED WOOD REQUIREMENTS:

TREATMENTS OTHER THAN THOSE LISTED BELOW ARE NOT PERMITTED.

		APPLICATION	SPECIFIED MATERIAL	PRESERVATIVE TREATMENT (1)	CONNECTORS & FASTENERS (2)(3)
			2x, 4x, 6x (FIR), OR GLULAM (SP)	SBX	GALV (G60)
JRE	1 1				GALV (G185)
)SO	WALLS (4) FRAMING, DECKING, POSTS & LEDGERS		2x, & 4x (FIR)	ACQ, CBA, CA	GALV (G185)
	1	LEDGERS	2x, & 4x (CEDAR)	NONE	GALV (G90)
	WET	BEAMS & COLUMNS	6x (FIR), OR GLULAM (SP)	ACQ, CBA, CA	GALV (G185)
			6x OR GLULAM (CEDAR)	NONE	GALV (G90)

1. CCA: CHROMATED COPPER ARSENATE NOT PERMITTED SBX: DOT SODIUM BORATE

FIR: DOUG-FIR OR HEM-FIR SP: SOUTHERN PINE

- ACQ: ALKALINE COPPER QUAT CBA & CA: COPPER AZOLE
- 2. CONNECTORS: JOIST HANGERS, STRAPS, FRAMING CONNECTORS, COLUMN CAPS AND BASES, ETC. FASTENERS: MACHINE BOLTS, ANCHOR BOLTS AND LAG SCREWS WITH ASSOCIATED PLATE WASHERS AND NUTS. NAILS, SPIKES, WOOD SCREWS, ETC.
- 3. G60, G90 & G185 PER ASTM A653 FOR COLD-FORMED STEEL CONNECTORS. BATCH/POST HOT-DIP GALVANIZED PER ASTM A123 FOR CONNECTORS AND ASTM A153 STRUCTURAL STEEL CONNECTORS. HOT-DIP GALVANIZED PER ASTM A153 FOR FASTENERS OR MECHANICALLY GALVANIZED FASTENERS PER ASTM B695, CLASS 55 OR GREATER.
- 4. AT CONTRACTORS OPTION, LEDGERS AND TOP PLATES A MINIMUM OF 8 FEET ABOVE GRADE ON CONCRETE OR MASONRY WALLS MAY BE UN-TREATED IF COMPLETELY SEPARATED FROM THE WALL BY A SELF ADHERING ICE & WATER SHIELD BARRIER (40 MIL MINIMUM).

GENERAL REQUIREMENTS: PROVIDE MINIMUM NAILING PER IBC TABLE 2304.10.1 OR MORE, AS OTHERWISE SHOWN. STAGGER ALL NAILING TO PREVENT SPLITTING OF WOOD MEMBERS. ALL WOOD IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESERVATIVE TREATED WITH THE EXCEPTION OF INTERIOR CONCRETE TOPPINGS ON WOOD FLOOR SYSTEMS. HOLES AND CUTS IN 3x OR 4x PLATES SHOULD BE TREATED WITH A 9% SOLUTION OF COPPER NAPHTHENATE. BOLT HOLES IN WOOD MEMBERS SHALL BE A MINIMUM OF 1/32" TO A MAXIMUM OF 1/16" LARGER THAN THE BOLT DIAMETER. PROVIDE CUT WASHERS WHERE BOLT HEADS, NUTS AND LAG SCREW HEADS BEAR ON WOOD. PROVIDE A MINIMUM 3"x3"x0.229" PLATE WASHER ON ALL ANCHOR BOLTS WHICH CONNECT MUD SILLS TO FOUNDATION. DO NOT NOTCH OR DRILL STRUCTURAL MEMBERS, EXCEPT AS ALLOWED BY IBC SECTIONS 2308.4.2.4, 2308.5.9, 2308.5.10 AND 2308.7.4 OR AS RESTRICTED BY PLANS OR DETAILS, OR AS APPROVED PRIOR TO INSTALLATION. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

WOOD SHRINKAGE AND CONSOLIDATION: SHRINKAGE OF WOOD MEMBERS AND CONSOLIDATION OF BEARING WALLS IS EXPECTED FROM TIME OF FRAMING UNTIL AFTER BUILDING IS PUT IN SERVICE. MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS SHALL BE CONSTRUCTED TO ACCOMODATE 1/4" OF TOTAL SETTLEMENT PER STORY.

FRAMING CONNECTORS: SHALL CONFORM TO CURRENT EVALUATION REPORT AND BE MANUFACTURED BY SIMPSON STRONG—TIE COMPANY, SAN LEANDRO, CA., OR PRE—APPROVED EQUAL. PROVIDE MAXIMUM SIZE AND QUANTITY OF NAILS OR BOLTS PER MANUFACTURER, EXCEPT AS NOTED OTHERWISE. PROVIDE LEAD HOLES AS REQUIRED TO PREVENT SPLITTING OF WOOD MEMBERS. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

LAG SCREWS: SHALL CONFORM TO ANSI/ASME STANDARD B18.2.1. LAG SCREWS SHALL BE OF A DIAMETER INDICATED ON DRAWINGS WITH A MINIMUM OF 8x DIA. EMBEDMENT IN SUPPORTING MEMBER UNLESS NOTED OTHERWISE. CLEARANCE HOLE FOR THE SHANK SHALL BE THE SAME DIAMETER AS THE SHANK AND THE SAME DEPTH OF PENETRATION AS THE UNTHREADED PORTION OF THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION SHALL HAVE A DIAMETER EQUAL TO 60 TO 75 PERCENT OF THE SHANK DIAMETER AND A LENGTH EQUAL TO AT LEAST THE LENGTH OF THE THREADED PORTION. THE THREADED PORTION OF THE SCREW SHALL BE INSERTED IN ITS LEAD HOLE BY TURNING WITH A WRENCH. SOAP OR OTHER LUBRICANT SHALL BE USED ON THE SCREWS OR IN THE LEAD HOLE TO FACILITATE INSERTION AND PREVENT DAMAGE TO THE SCREW. LAG SCREWS SHALL NOT BE DRIVEN WITH A HAMMER. REFER TO PRESERVATIVE TREATED WOOD REQUIREMENTS IN THESE GENERAL NOTES FOR GALVANIZING REQUIREMENTS FOR CONNECTORS AND FASTENERS.

OPEN-WEB TRUSSES: SHALL BE MANUFACTURED BY REDBUILT LLC, OR PRE-APPROVED EQUAL IN ACCORDANCE WITH APPROVED SHOP AND INSTALLATION DRAWINGS. MEMBERS SHALL BE DESIGNED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF PROJECT. THE ENTIRE OPEN-WEB TRUSS ASSEMBLY SHALL BE AS APPROVED BY CURRENT EVALUATION REPORT. MEMBERS SHALL BE DESIGNED TO CARRY THE LOADS LISTED IN THE DESIGN CRITERION AND ANY ADDITIONAL LOADS INDICATED ON THE FRAMING PLANS AND DETAILS. THE TRUSS ENGINEER SHALL ASSUME ALL RESPONSIBILITY FOR THE WORK OF ALL SUBORDINATES INVOLVED IN THE PREPARATION OF THE TRUSS PLACEMENT PLANS AND TRUSS DESIGN DRAWINGS. TRUSSES SHALL BE PROVIDED TO COMPLETE THE ROOF AND/OR FLOOR FRAMING FROM THE SHEATHING TO THE SUPPORTING MEMBERS BELOW. MEMBER DESIGNATIONS ON PLANS ARE FOR TYPICAL UNIFORMLY LOADED CONDITIONS. MANUFACTURER SHALL PROVIDE ADDITIONAL MEMBERS AS REQUIRED TO SUPPORT SPECIAL LOADING CONDITIONS INDICATED ON DRAWINGS.

PROVIDE INSTALLATION DRAWINGS AND CALCULATIONS PRODUCED UNDER THE SUPERVISION OF AND BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF PROJECT. DETAIL DRAWINGS TO INDICATE MEMBER TYPES, SIZE, SPACING, BRIDGING, BLOCKING, CONNECTIONS, ANCHORING, BEARING PLATE AND OTHER PERTINENT DETAILS.

MEMBER DESIGN CALCULATIONS SHALL BE PROVIDED FOR STANDARD LOADING ALONG WITH DESIGN CHECKS FOR SPECIAL LOADING CONDITIONS WHICH INCLUDE FREE BODY DIAGRAMS, LOADING BREAK DOWN, DESCRIPTION OF LOADS (I.E. MECH UNIT, SUSPENDED WALL, ETC.) AND THE RATIONALE FOR LOADING DISTRIBUTION ON MULTIPLE MEMBERS. SUBMITTAL SHALL ALSO PROVIDE ANY DOCUMENTATION NECESSARY TO INTERPRET DATA INDICATED ON CALCULATIONS.

MEMBERS HAVE BEEN DESIGNED TO MEET SERVICEABILITY AND OTHER PERFORMANCE BASED REQUIREMENTS, WHICH MAY EXCEED MINIMUM DESIGN LOADS AND CODE REQUIREMENTS. SUBSTITUTIONS MUST MEET OR EXCEED MOMENT, SHEAR, AND STIFFNESS OF THOSE MEMBERS SPECIFIED AT THE SAME DEPTH AND SPACING.

REFER TO THE <u>FRAMING CONNECTORS</u> SECTION OF THESE GENERAL NOTES FOR REQUIREMENTS PLACED UPON CONNECTOR HARDWARE SPECIFIED BY TRUSS ENGINEER AND/OR PROVIDED BY TRUSS MANUFACTURER.

SPRINKLER LINE ATTACHMENTS SHALL CONFORM TO NFPA 13 AND COMMERCIAL PUBLICATION "SPRINKLER SYSTEM INSTALLATION WITH GUIDELINES FOR REDBUILT OPEN-WEB TRUSSES AND I-JOISTS". LOADS HUNG FROM JOIST NOT SPECIFICALLY IDENTIFIED ON STRUCTURAL DRAWINGS SHALL NOT EXCEED 30 POUNDS AT ANY ONE POINT, NOR SHALL TOTAL LOADS IN POUNDS ON ANY ONE JOIST EXCEED 8 TIMES THE JOIST SPAN IN FEET, UNLESS DETAILED OTHERWISE ON THE DRAWINGS. ATTACHMENT OF LOADS EXCEEDING 90 POUNDS SHALL BE APPROVED PRIOR TO INSTALLATION. DO NOT NOTCH OR DRILL THRU TRUSS MEMBERS.

MISCELLANEOUS:

PRE-APPROVED SUBSTITUTIONS: SUBSTITUTIONS MAY BE ALLOWED ONLY IF THEY MEET THE REQUIREMENTS OF THESE GENERAL NOTES AND THE SPECIFICATIONS, AND IF COMPLETE WRITTEN ENGINEERING DATA FOR EACH CONDITION REQUIRED FOR THIS PROJECT IS PROVIDED TO THE STRUCTURAL ENGINEER TWO WEEKS PRIOR TO BID DATE AND APPROVED IN WRITTEN ADDENDA BY THE ARCHITECT. DATA IS TO INDICATE CODE BASIS BY YEAR, AUTHORITY FOR STRESSES AND STRESS INCREASES, IF ANY, AND AMOUNT OF EXPECTED DEFLECTION FOR FLEXURAL MEMBERS UNDER (1) TOTAL LOAD AND (2) LIVE LOAD ONLY. ALL INCREASED COSTS IN MECHANICAL, SPRINKLER, ELECTRICAL OR GENERAL INSTALLATION AND ANY ARCHITECTURAL OR STRUCTURAL REDESIGN RESULTING FROM SUBSTITUTION SHALL BE BORNE BY THE GENERAL CONTRACTOR.

SHOP DRAWINGS/SUBMITTALS

THE FOLLOWING SHOP DRAWINGS/SUBMITTALS SHALL BE PROVIDED FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION OR DELIVERY.

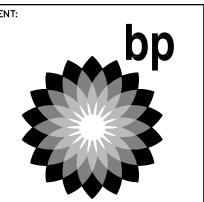
		STRUCTURAL ENGR.	BLDG. DEPT.
1.	CONCRETE MIX DESIGNS	X	X
2.	REINFORCING STEEL SHOP DRAWINGS	X	
3.	STRUCTURAL STEEL	X	Χ
4.	GLU-LAMINATED MEMBERS	X	Χ
5.	WOOD OPEN WEB TRUSSES	X	Χ
6.	CONTRACTOR'S STATEMENT OF RESPONSIBILITY	X	Χ

<u>DEFERRED SUBMITTALS</u>

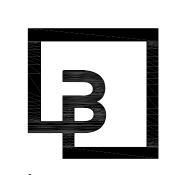
THE FOLLOWING ARE NOT INCLUDED WITH THE BUILDING PERMIT DRAWINGS AND SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL AS A DEFERRED SUBMITTAL. SUBMITTALS SHALL BE STAMPED BY AN ENGINEER LICENSED IN THE STATE OF THE PROJECT AS NOTED.

		ENGINEER STAMP REQUIRED
1.	WOOD OPEN-WEB TRUSSES AND I-JOISTS	PE

SPECIAL INSPECTION: SPECIAL INSPECTION SHALL BE PROVIDED BY AN INDEPENDENT TESTING LABORATORY PER THE REQUIREMENTS OF IBC CHAPTER 17 AND THE LOCAL BUILDING OFFICIAL OR APPLICABLE JURISDICTION AND THE CONTRACT DOCUMENTS. THE SPECIAL INSPECTOR SHALL SUBMIT INSPECTION REPORTS AND A FINAL SIGNED REPORT TO THE BUILDING OFFICIAL FOR THE ITEMS LISTED IN THE QUALITY ASSURANCE/SPECIAL INSPECTION SECTION:



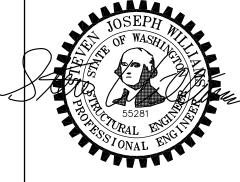




Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com**

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN

PUYALLUP, WA 98371

FACILITY #7184

DESIGNED BY: SJW ALLIANCE Z&DM:

CHECKED BY: SJW BP REPM:

DRAWN BY: SAA ALLIANCE PM:

VERSION: PROJECT NO:

21730

DRAWING TITLE:

GENERAL NOTES

SHEET NO:

S3 3

STATEMENT OF SPECIAL INSPECTIONS:

STRUCTURAL SYSTEM	VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	COMMENTS	REFERENCES
SOILS	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X		IBC 1705.6
	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		Χ		
	PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS		X		
	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X			
	PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		Χ		
STRUCTURAL STEEL	MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X		AISC 360 CHAPTER N5
	HIGH-STRENGTH BOLTING A. SNUG-TIGHT JOINTS		Χ		AISC 360 CHAPTER N5
	MATERIAL VERIFICATION OF STRUCTURAL STEEL A. FOR STRUCTURAL STEEL, IDENTIFICATION		X	MANUFACTURER TO PROVIDE CERTIFIED MILL TEST REPORTS	AISC 360 CHAPTER N5 AISC 341 CHAPTER J6
	MARKINGS TO CONFORM TO AISC 360 B. MANUFACTURER'S CERTIFIED MILL TEST REPORTS		Χ		
	MATERIAL VERIFICATION OF WELD FILLER MATERIALS A. IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATIONS LISTED IN GENERAL NOTES		X	MANUFACTURER TO PROVIDE CERTIFICATE OF COMPLIANCE	AISC 360 CHAPTER N5
	B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE		X		
	INSPECTION OF WELDING A. COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS B. MULTI-PASS FILLET WELDS C. SINGLE-PASS FILLET WELDS > 5/16" D. PLUG AND SLOT WELDS E. SINGLE-PASS FILLET WELDS ≤ 5/16" F. FIELD-INSTALLED WELDED STUDS G. WELDING OF STAIRS AND RAILING SYSTEMS	X X X	X X X	SPECIAL INSPECTIONS IN THIS SECTION ARE WAIVED WHERE FABRICATION IS PERFORMED ON THE PREMISES OF A FABRICATOR REGISTERED AND APPROVED IN ACCORDANCE WITH IBC SECTION 1704.2.5	AISC 360 CHAPTER N5 AISC 341 CHAPTER J6 AWS D1.1
	INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS		X		
STEEL PIPE PILES	GEOTECHNICAL ENGINEER TO MONITOR INSTALLATION AND LOAD TESTING	X			
CONCRETE	INSPECT REINFORCEMENT, INCLUDING PRE-STRESSING TENDONS, AND VERIFY PLACEMENT		X		ACI 318: CH 20, 25.2, 25.3 26.6-1 TO 26.6-3, IBC 1908.4
	ANCHORS CAST IN CONCRETE-PRIOR TO AND DURING PLACEMENT OF CONCRETE		X		ACI 318: 17.8.2 AISC 360 SECTION N7
	VERIFY USE OF REQUIRED DESIGN MIX		Χ		ACI 318, CH 19
	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X			ASTM C172, C31 ACI 318: 26.4, 26.12 IBC 1908.10
	MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		Χ		ACI 318: 26.5.3 TO 26.5.5 IBC 1908.9
	MATERIAL VERIFICATION OF REINFORCEMENT STEEL FOR ASTM A615 REINFORCING		X	MANUFACTURER SHALL PROVIDE MILL TEST REPORTS. CONTINUOUS INSPECTION FOR ALL WELDS GREATER THAN 5/16" FILLET. PERIODIC INSPECTION FOR FILLET WELD 5/16" AND SMALLER	ACI 318: 26.6.4 AWS D1.4 IBC 1705.3.1
	ANCHORS POST-INSTALLED IN HARDENED CONCRETE (MECHANICAL ANCHORS INSTALLED IN ANY DIRECTION AND ADHESIVE ANCHORS INSTALLED DOWNWARD)		Χ	PERIODIC INSPECTION TO INCLUDE A QUANTITY OF 10% WITH A MINIMUM OF (5) ANCHORS INSPECTED PER INSTALLER ON A DAILY BASIS	ACI 318: 17.8.2 MFR EVAL REPORT MFR PUBLISHED INSTALLATION INSTRUCTIONS
	ANCHORS POST—INSTALLED IN HARDENED CONCRETE (ADHESIVE ANCHORS INSTALLED HORIZONTAL OR UPWARDLY INCLINED)	X			ACI 318: 17.8.2 MFR EVAL REPORT MFR PUBLISHED INSTALLATION INSTRUCTIONS
	TESTING OF MATERIALS		Χ		IBC 1705.3.2

TESTING AND SPECIAL INSPECTION REPORTS SHALL BE PREPARED FOR EACH INSPECTION ITEM ON A DAILY BASIS WHENEVER WORK IS PERFORMED ON THAT ITEM. REPORTS SHALL BE DISTRIBUTED TO OWNER, CONTRACTOR, BUILDING OFFICIAL, ARCHITECT AND STRUCTURAL ENGINEER.

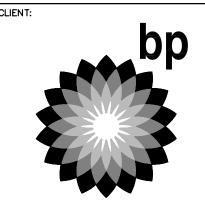
STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY THE STRUCTURAL ENGINEER OF RECORD OR DESIGNATED REPRESENTATIVE IN ACCORDANCE WITH IBC 1704.6.
STRUCTURAL OBSERVATION SHALL BE PERFORMED AS FOLLOWS:

- » PERIODIC VISUAL OBSERVATION OF STRUCTURAL SYSTEMS FOR GENERAL CONFORMANCE TO CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES.
- » REVIEW OF TESTING AND INSPECTION REPORTS.
- » REPORTS SHALL BE PREPARED FOR EACH SITE VISIT AND SHALL BE DISTRIBUTED TO ARCHITECT.

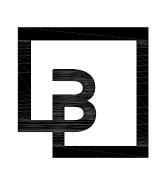
GENERAL CONTRACTOR SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK.

THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL INSPECTION REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

0	AT	ELEV.	ELEVATOR	MTL	METAL
A.B.	ANCHOR BOLT	ENGR.	ENGINEER	N.F.	NEAR FACE
ADD'L	ADDITIONAL	EQ.	EQUAL	N.S.	NEAR SIDE
A.F.F.	ABOVE FINISH FLOOR	E.W.	EACH WAY	NTS	NOT TO SCALE
ALT.	ALTERNATE	EXP.	EXPANSION	0.C.	ON CENTER
ARCH.	ARCHITECTURAL	EXT.	EXTERIOR	OPN'G	OPENING
BLD'G	BUILDING	FDN	FOUNDATION	OPP.	OPPOSITE
BLK'G	BLOCKING	F.F.	FAR FACE	P.A.F.	POWDER ACTUATED FASTENER
BM	BEAM	FLR	FLOOR	PERP.	PERPENDICULAR
B.O.F.	BOTTOM OF FOOTING	F.O.M.	FACE OF MASONRY	PL	PLATE
B.O.T.	ВОТТОМ	F.0.S.	FACE OF STUD	P.P.	PARTIAL PENETRATION
BRG	BEARING	FRM'G	FRAMING	P.P.T.	PRESERVATIVE PRESSURE TREATED
BTWN	BETWEEN	F.R.T.	FIRE RETARDANT TREATED	P.S.F.	POUNDS PER SQUARE FOOT
B.U.	BUILT UP	F.S.	FAR SIDE	PSL	PARALLAM
(C=)	CAMBER	FTG	FOOTING	P.T.	POST TENSION
CANT.	CANTILEVER	GA.	GAGE/GAUGE	PW.	PLYWOOD
C.F.S.	COLD-FORMED STEEL	GALV.	GALVANIZED	REINF.	REINFORCING
C.J.	CONTROL/CONSTRUCTION JOINT	GL.	GLULAM	REQ'D	REQUIRED
Ę.	CENTERLINE	GR.	GRADE	SCHED.	SCHEDULE
CLR.	CLEARANCE	GWB	GYPSUM WALL BOARD	S.C.L.	STRUCTURAL COMPOSITE LUMBER
CMU	CONCRETE MASONRY UNIT	HDR	HEADER	SHT'G	SHEATHING
COL.	COLUMN	HGR	HANGER	SIM.	SIMILAR
CONC.	CONCRETE	HORIZ.	HORIZONTAL	S.O.G.	SLAB ON GRADE
CONN.	CONNECTION	HSS	HOLLOW STRUCTURAL SECTION	SQ.	SQUARE
CONST.	CONSTRUCTION	HT	HEIGHT	STD	STANDARD
CONT.	CONTINUOUS	INT.	INTERIOR	STIFF.	STIFFENER
CONTR.	CONTRACTOR	JST	JOIST	STL	STEEL
COORD.	COORDINATE	JT	JOINT	STRUCT.	STRUCTURAL
C.P.	COMPLETE PENETRATION	L	ANGLE	T&B	TOP & BOTTOM
CTR'D	CENTERED	L.L.	LIVE LOAD	T&G	TONGUE AND GROOVE
C.Y.	CUBIC YARD	LLH	LONG LEG HORIZONTAL	THR'D	THREADED
DBL.	DOUBLE	LLV	LONG LEG VERTICAL	T.O.F.	TOP OF FOOTING
D.F.	DOUGLAS FIR	LOC.	LOCATION	T.O.S.	TOP OF STEEL
NA. OR Ø	DIAMETER	LSL	LAMINATED STRAND LUMBER	TRT'D	TREATED
DIAG.	DIAGONAL	LVL	LAMINATED VENEER LUMBER	TYP.	TYPICAL
DIM.	DIMENSION	MAX.	MAXIMUM	U.N.O.	UNLESS NOTED OTHERWISE
D.L.	DEAD LOAD	M.B.	MACHINE BOLT	U.T.	ULTRASONIC TESTED
DWG	DRAWING	MECH.	MECHANICAL	VERT.	VERTICAL
DWL	DOWEL	MEZZ.	MEZZANINE	W/	WITH
(E)	EXISTING	MFR	MANUFACTURER	W.P.	WORK POINT
EA.	EACH	MIN.	MINIMUM	WT	WEIGHT
E.F.	EACH FACE	MISC.	MISCELLANEOUS	W.W.R.	WELDED WIRE REINFORCING



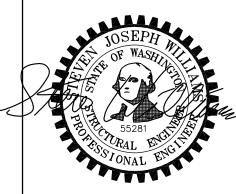




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NO.	DATE	REVISION DESCRIP	TION
-	10/17/23	BID SET	
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/11			



DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

1402 S MERIDIAN PUYALLUP, WA 98371

FACILITY #7184

		21730
VERSION:	_	PROJECT NO:
DRAWN BY:	SAA	ALLIANCE PM:
CHECKED BY:	SJW	BP REPM:
DESIGNED BY:	SJW	ALLIANCE Z&DM:

DRAWING TITLE:

GENERAL NOTES

SHEET NO:

S_{3.4}

								HE	AT F	PUMP	PAC	CKA	GE RO	OOF	TO	ΡU	NIT SC	HE	DUI	_E								
	COOLING									CONDENSING	ŀ	HEATING		IN	IDOOR F	AN	HEATER			ELECT	RICAL DA	ATA			WEIGHT	MIN OUTCIDE		
MARK	MANUFACTURER/MODEL #	SERVICE	NOMINAL TONS	TOTAL MBH	SENSIBLE MBH	ENT. AIR DB, *F	ENT. AIR WB, *F	EER	SEER	TEMP., 'F	47°F MBH	17°F MBH	HSPF (COP)	CFM	ESP IN.WG.	HP	KW	VOLTS	PHASE	FREQ. (Hz)	COMPR. RLA	COMPR. LRA	MCA	моср	(LBS.)	MIN. OUTSIDE AIR CFM	LOCATION	REMARKS
RTU 1	"TRANE" WHC060	STORE	5.0	61.0	50.9	75.0	61.0		16.4	95	57.8	34.4	9.0	2,000	0.6	1.0	9	208	3	60	25.0	164	63	70	900	300	ROOF	1\(\)2\(\)3\(\)4\(\)5\(\)6\(\)7\(\)8\(\)9\(\)10\(\)11\(\)12\(\)13\(\)
RTU 2	"TRANE" WS090	STORE	7.5	84.5	78.1	75.0	61.0	11.8		95	86.0	30	12.0	3,100	0.6	1.0	13.5	208	3	60	17.5	110	85	100	820	300	ROOF	1\2\3\4\5\6\7\8\9\10\11\12\13\

1 ELECTRIC HEATING/ELECTRIC COOLING PACKAGED HEAT PUMP ROOFTOP UNIT.

3 SET MINIMUM OSA DAMPER FOR 300 CFM

2 HIGH EFFICIENCY, STANDARD INDOOR FAN. BELT DRIVE

5 PROVIDE WSEC PROGRAMMABLE THERMOSTAT & SENSORS.

4 DUCT SMOKE DETECTOR IN RETURN AIR

6 R-410 REFRIGERANT. 7 MERV 13 FILTERS

8 PROVIDE THE FOLLOWING FACTORY INSTALLED OPTIONS:

A. 14" HIGH ROOF CURB. B. COMPRESSOR HARD START KIT. C. CRANKCASE HEATER.

D. FILTER RACK KIT.

9 FULLY MODULATING LOW LEAK ECONOMIZER

10 FACTORY INSTALLED POWER EXHAUST.

11) DISCONNECT SWITCH.

SINGLE POINT ELECTRICAL CONNECTION, UNIT WITH DEFROST CYCLE.

13 PROVIDE FAULT DETECTION & DIAGNOSTICS.

	ENERGY RECOVERY VENTILATOR (DOAS)																
MARK	MANUFACTURER &		FAN				ELECT	RICAL							SERVICE	WEIGHT	REMARKS
MARK	MODEL	SUPPLY CFM	EXHAUST CFM	MOTORS HP	ESP W.G.	FLA	VOLTAGE	PHASE	Hz	MCA	MOCP	SENSIBLE RECOVERY	HEATER KW	SUPPLY TEMP	SERVICE	(LBS)	REMARKS
ERV 1	SOLER & PALAU TRC 500	400	400		.50"		120	1ø	60	8.8	15	77%		57°F	STORE	141	1

1 WITH MOUNTING HARDWARE (ALL THREAD ROD, UNI STRUT, SPRING ISOLATORS), FILTER RACK AND FILTER.

EXHAUST FAN SCHEDULE

MARK	SERVICE	LOCATION					ELECTRICA	L DATA		MEIOLIT	MANUEACTURER & MOREL #	DEMARKS
IVICALVIX	SERVICE	LOCATION	AIR CFM	PRESSURE IN. W.G.	RPM	MOTOR WATTS (HP)	VOLTS	PHASE	Hz	WEIGHT LBS.	MANUFACTURER & MODEL #	REMARKS
EF 1	RESTROOMS	CEILING	220	0.250	_	48	115	1	60	24	"GREENHECK" SP-A200	1\2\3\4\
EF 2	SLUSH MACHINE	ROOF	500	0.375	936	(1/4)	115	1	60	11	"CAPTIVEAIRE" DR30HFA	3X4X5X6X7X8 THERMOSTAT CONTROLLED

- (1) CEILING MOUNTED EXHAUST FAN.
 - 5 MUSHROOM TYPE FAN.
- 2 INTERLOCK WITH LIGHT FIXTURE.
- 6 SPEED CONTROLLER.

7 PROVIDE WITH 12" ROOF CURB.

- 3 WITH BACKDRAFT DAMPER. 4 WITH FLEXIBLE DUCT CONNECTION.
- 8 DISCONNECT SWITCH.

AIR DEVICE SCHEDULE

								,	<u> </u>		• • •					
		DIFFUSER FACE				TYPE		MOL	JNTING		DL	JTY				
MARK	NECK SIZE	OR CEILING GRID SIZE (INCHES)	CFM RANGE	DIFFUSER	REGISTER	GRILLE	LOUVER	LAY-IN	SURFACE	SUPPLY	RETURN	EXHAUST	TRANSFER	MFR.	MODEL NO.	REMARKS
SD-1	8"ø	12"x12"	0-190	X	_	_	_	Х	_	Х	_	_	_	TITUS	PAS	1\2\3
SD-2	12 " ø	24"×24"	200-470	X	_	_	_	Х	_	Х	_	_	_	TITUS	PAS	1\2\3
SD-3	18x12	19.75×13.75	325-550	_	Х	_	_	_	Х	Х	_	_	_	TITUS	301 FL	(1)(2)
RG-1	_	PER DWGS	PER DWGS	_	_	Х	_	Х	_	_	X	_	_	TITUS	50-F	2\3>
TG-1	_	PER DWGS	PER DWGS	_	_	Х	_	Х	_	_	X	_	_	TITUS	50-F	3
	SD-1 SD-2 SD-3 RG-1	SIZE SD-1 8"ø SD-2 12"ø SD-3 18x12 RG-1 -	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) SD-1 8"ø 12"x12" SD-2 12"ø 24"x24" SD-3 18x12 19.75x13.75 RG-1 - PER DWGS	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE SD-1 8"ø 12"x12" 0-190 SD-2 12"ø 24"x24" 200-470 SD-3 18x12 19.75x13.75 325-550 RG-1 - PER DWGS PER DWGS	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE SE SIZE (INCHES) SD-1 8"ø 12"x12" 0-190 X SD-2 12"ø 24"x24" 200-470 X SD-3 18x12 19.75x13.75 325-550 - RG-1 - PER DWGS PER DWGS -	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE WEARINGE WEAR	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE Y SO LEIST SIZE SIZE (INCHES) CFM RANGE Y SO LEIST SIZE SIZE SIZE SIZE SIZE SIZE SIZE SIZE	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE SD-1 8"ø 12"x12" 0-190 X - - -	MARK NECK NECK SIZE OR CFM RANGE NECK SIZE (INCHES) SIZE (INCH	MARK NECK NECK SIZE OR CEILING GRID SIZE (INCHES) CFM RANGE SIZE SIZE (INCHES) SIZE SIZE (INCHES) SIZE (INCHES	MARK NECK NECK SIZE DIFFUSER FACE OR CEILING GRID SIZE (INCHES) NECK SI	MARK NECK NECK SIZE (INCHES) NECK	MARK NECK NECK CEILING GRID SIZE (INCHES) NECK SIZE (I	MARK NECK NECK OR CFM RANGE NECK SIZE (INCHES) NEC	MARK NECK SIZE OR CEILING GRID SIZE (INCHES) D-190 X - - X - X - X - -	MARK NECK SIZE OR CFM RANGE NECK SIZE (INCHES) O-190 X - - X - X - X - -

- 1 PROVIDE OPPOSED BLADE DAMPER.
- 2 TYPE AND CFM SHALL BE AS INDICATED ON DRAWING M1.0 AT EACH AIR DEVICE. NC SHALL BE 35 OR LESS.
- $\overline{\langle 3 \rangle}$ SELECTION OF THE FINISHES OF AIR DISTRIBUTION

DEVICES BY INTERIOR DESIGNER/ARCHITECT.

AIR CURTAIN SCHEDULE

												''		
	MAANUUFA OTU DED. 0.		FA	۸N		ELECT	RICAL			ACOUSTICS	DIMENSI	ONS (in)	WEIGHT	
MARI	1 M()()+1	MAX. FPM	MAX. CFM	MOTORS HP	FLA	VOLTAGE	PHASE	Hz	SERVICE	MEASURE 10' FROM NOZZLE dBA	LENGTH	DEPTH	(LBS)	REMARKS
ACN 1	MARS LPN2-72-1UA-0B	1,800	1,800	1/6	2.6	115	1	60	MAIN DOOR	53	72	9	58	1

1) MICROSWITCH CONTROL. MOUNT SWITCH SUCH THAT AIR CURTAIN STARTS WHEN DOOR OPENS. PROVIDE (2) MAGNETIC SWITCHES (ONE PER EACH DOOR), MODEL

#99018.

			Ventilati	on Rate per 2018 I	MC 403 (based o	on ASHRAE Std. 6	2.1)						
					Zone			Breathing	Zone Air		System		Proposesd
				People Outdoor	Population.	Area Outdoor		Zone	Distribution	Zone	Ventilation	Minimum	Design
				Air Rate	Number of	Air Rate	Occupant	Outdoor Air	Effectiveness	Outdoor Air	Efficiency Ev	Outdoor Air	Outdoor Ai
		Occupancy		(cfm/person)	people in	(cfm/sf)	Density	Flow	Ez (Table	Flow	(Table	Intake Flow	Intake Flow
Equip. Tag	Zone	Category	Area (sf)	Table 403.3	space.*	(Table 403.3)	(#/1000 sf)	Vbz/(CFM)	403.3.1.2)	(Voz/(CFM)	403.3.2.3.2	Vot/(CFM)	Vot/(CFM)
ERV-1	Sales	Retail	1344	7.5	20	0.12	15	311.28	1.00	311.28	0.90	280	300
	Prep/Utility Rm	Storage Rms	444	0.0	0	0.12	0	53.28	1.00	53.28	0.90	48	50
	Office	Office spaces	64	5.0	1	0.06	7	8.84	1.00	8.84	0.90	8	10
	Hall	Corridors	93	NA	NA	0.06	NA	NA	NA	NA	NA	6	10
											Total	342	370

GENERAL NOTES

- CONSTRUCTION TO CONFORM WITH:
- 2018 WASHINGTON STATE BUILDING CODE, WITH LOCAL AMENDMENTS - 2018 WASHINGTON STATE MECHANICAL CODE, WITH LOCAL AMENDMENTS
- 2018 WASHINGTON STATE PLUMBING CODE. WITH LOCAL AMENDMENTS - 2018 WASHINGTON STATE ELECTRICAL CODE, WITH LOCAL AMENDMENTS
- 2018 WASHINGTON STATE FIRE CODE, WITH LOCAL AMENDMENTS - 2018 WASHINGTON STATE ENERGY CODE, WITH LOCAL AMENDMENTS
- THE CONTRACTOR IS RESPONSIBLE FOR PERMIT' FEES.
- THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR COMPLETION OF THE WORK. ALL MATERIALS AND WORK SHALL COMPLY WITH APPLICABLE CODES AND GOVERNING REGULATIONS AND MEET THE APPROVAL OF THE LOCAL
- ANY MATERIAL, ARTICLE OR PIECE OF EQUIPMENT OTHER THAN THAT INDICATED SHALL NOT BE USED UNLESS APPROVED IN WRITING BY THE ENGINEER AND ANY CHANGES IN MECHANICAL, ELECTRICAL AND/OR OTHER SYSTEMS REQUIRED DUE TO SUCH SUBSTITUTION SHALL BE THE RESPONSIBILITY OF THE HVAC CONTRACTOR; AND AT NO ADDITIONAL COST TO
- TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE MATERIALS BEFORE, DURING AND AFTER INSTALLATION. IN THE EVENT OF DAMAGE, IMMEDIATELY REPAIR ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
- THREE SETS OF OPERATING AND MAINTENANCE MANUALS SHALL BE SUBMITTED UPON COMPLETION OF PROJECT.
- IN ADDITION TO EQUIPMENT WARRANTIES, FURNISH A WRITTEN GUARANTEE AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR ONE YEAR. GUARANTEE SHALL INCLUDE REPAIR OF DAMAGE TO, OR REPLACEMENT OF, ANY PART OF EQUIPMENT OR PREMISES CAUSED BY EQUIPMENT PROVIDED.

	RA/RET	RETURN AIR DUCT (RISE/DROP)
	EA/EXH	EXHAUST AIR DUCT (RISE/DROP)
__\	CD/SR	CEILING DIFFUSER/SUPPLY REGISTER (ARROWHEAD REPRESENTS NUMBER OF THROW) (4-WAY TYPICAL IF NO ARROWS)
\(\sqrt{ \rightarrow} \)	RR/RG	RETURN REGISTER/GRILLE
ছ →	ER/EG	EXHAUST REGISTER/GRILLE
		RECTANGULAR DUCT ELBOW WITH TURNING VANES
	FC	FLEXIBLE CONNECTION
¶_	(L)	DUCT LINING (1" THICK UNLESS OTHERWISE NOTED)
		SINGLE LINE DUCT BRANCH TAKE-OFF
F F		DUCT TRANSITION (RECTANGULAR TO ROUND)
<u> </u>	FLEX	FLEXIBLE DUCT (4'-0 MAXIMUM)
T	T-STAT	PROGRAMMABLE THERMOSTAT
S		TEMPERATURE SENSOR
<u></u>		CO ₂ SENSOR
SD	SD	DUCT SMOKE DETECTOR
M/ /	MD	MECHANICAL DAMPER
Ø	DIA.	DIAMETER
M		FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR.
E		FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
ME		FURNISHED BY MECHANICAL CONTRACTOR AND INSTALLED BY ELECTRICAL CONTRACTOR.
•	P.O.C.	POINT OF CONNECTION
·····		FLEXIBLE DUCT
SD-1-	<u>-</u>	- (SD-SUPPLY DIFFUSER, RD-RETURN DIFFUSER, E-EXHAUST)
100 -		- AIR QUANTITY IN CFM
/AC \	•	— MECHANICAL FOUIPMENT DESIGNATION

LEGEND

SA/SUP | SUPPLY AIR (RISE/DROP)

SYMBOL

ABBREVIATION

DESCRIPTION

100	—— AIR QUANTITY IN CFM
AC	MECHANICAL EQUIPMENT DESIGNATION
1	—— DESIGNATED NUMBER
A/C , AC	AIR CONDITIONING
BDD	BACK DRAFT DAMPER
СВ	CIRCUIT BREAKER
CLG.	CEILING
CONN.	CONNECT/CONNECTION
CONT.	CONTINUATION
CONT'R	CONTRACTOR
CFM	CUBIC FEET PER MINUTE
CU	CONDENSING UNIT
DET.	DETAIL
DISC.	DISCONNECT
DTR	DOWN THRU ROOF
EF	EXHAUST FAN
(E)	EXISTING
E.A.T.	ENTERING AIR TEMPERATURE
GA.	GAGE/GAUGE
GC	GENERAL CONTRACTOR
GF	GAS FURNACE
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
MCA	MINIMUM CIRCUIT AMPACITY
MFR.	MANUFACTURER
MECH.	MECHANICAL
MOCP	MAXIMUM OVERCURRENT PROTECTION
(N)	NEW
OA/OSA	OUTSIDE AIR
PH	PHASE
RAD	RETURN AIR DUCT
SAD	SUPPLY AIR DUCT
s/s	STAINLESS STEEL
TYP.	TYPICAL
UON	UNLESS OTHERWISE NOTED
UTR	UP THRU ROOF
V	VOLTS

DRAWING SCHEDULE

	DRAWING SCHEDULE				
SHEET NUMBER DESCRIPTION					
M0.1	EQUIP.SCHED.LEGEND,NOTES				
M0.2	MECHANCIAL SPECIFICATIONS				
M1.0	MECHANCIAL FLOOR PLAN				
M1.1	MECHANICAL ROOF PLAN				
M2.0	MECHANICAL DETAILS				
M2.1	MECHANICAL CONTROLS				
M3.0	ENERGY FORMS				

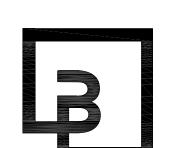
ABOSSEIN #223054

Abossein Engineering. MECHANICAL - ELECTRICAL CIVIL - LEED

FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com



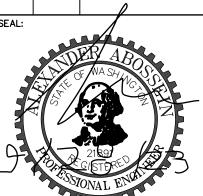




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DEVELOPMENT INFORMATION:

ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

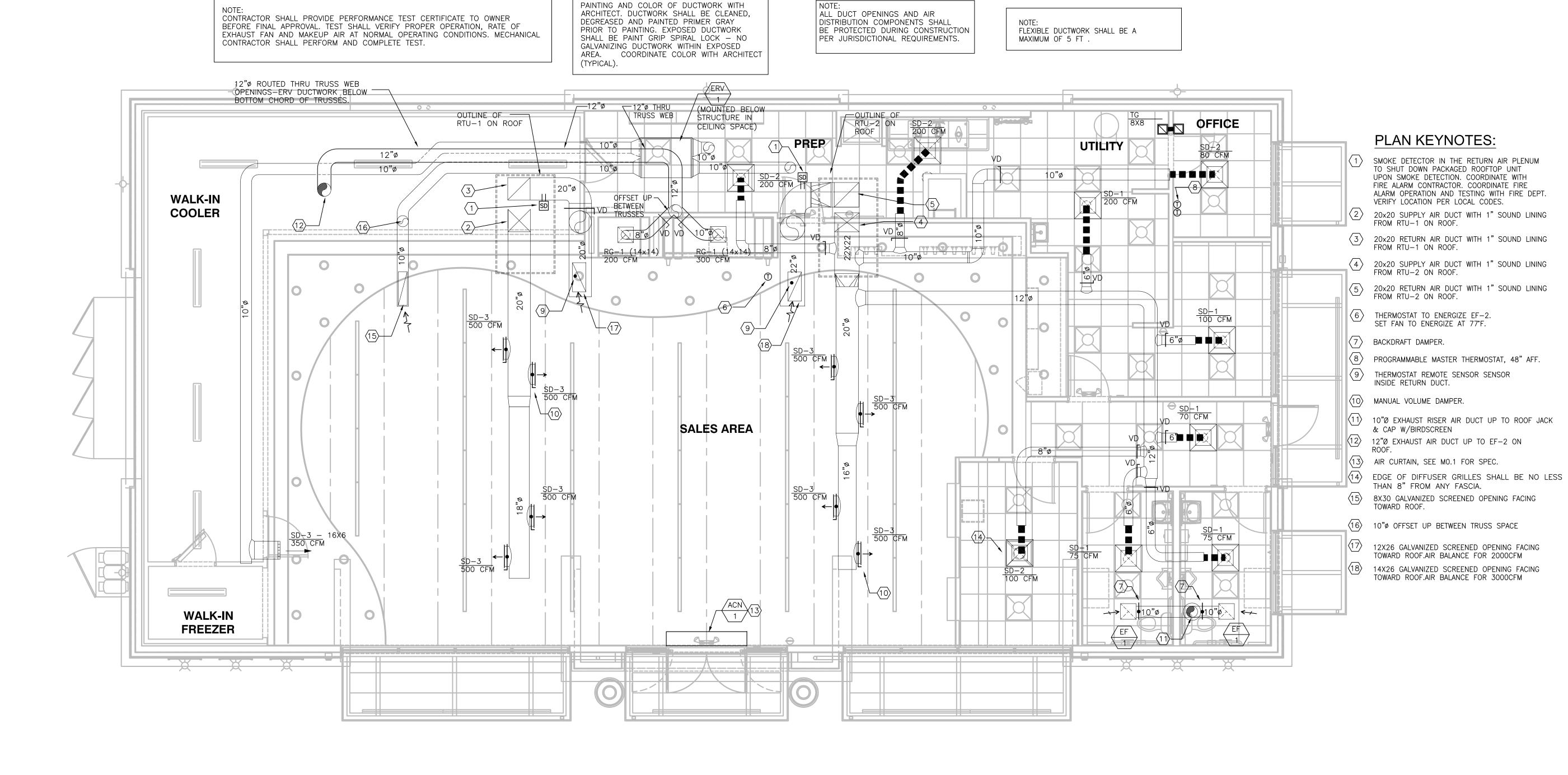
SITE ADDRESS: **SWC S MERIDIAN**

@ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD

	DRAWING TITLE:	261155
	-	21730
	VERSION:	PROJECT NO:
	DRAWN BY:	ALLIANCE PM:
	CHECKED BY:	BP REPM:
ᅦ	DESIGNED BT:	ALLIANCE Z&DM:

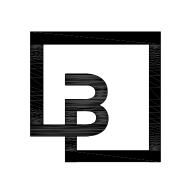
EQUIP. SCHED. LEGEND, NOTES



EXPOSED DUCTWORK BETWEEN OR

THRU WEB TRUSS OPENINGS. COORDINATE

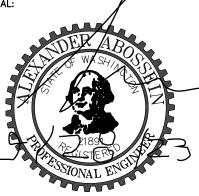




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SEAL:		



DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

JN #223025

Abossein

Engineering

MECHANICAL - ELECTRICAL

PIRE PROTECTION - ENERGY, CIVIL

18465 NE 68th ST #200 REDMOND, WA 98052

PH: (425) 462–9441
FAX: (425) 462–9451
E-Mail: general@abossein.com
Website: www.abossein.com

1105 MARVIN ROAD NE

@ MARTIN WAY E
LACEY, WASHINGTON

FACILITY #7190

IGNED BY: ALLIANCE Z&DM:

CHECKED BY:

DRAWN BY:

VERSION:

PROJECT NO:

22349

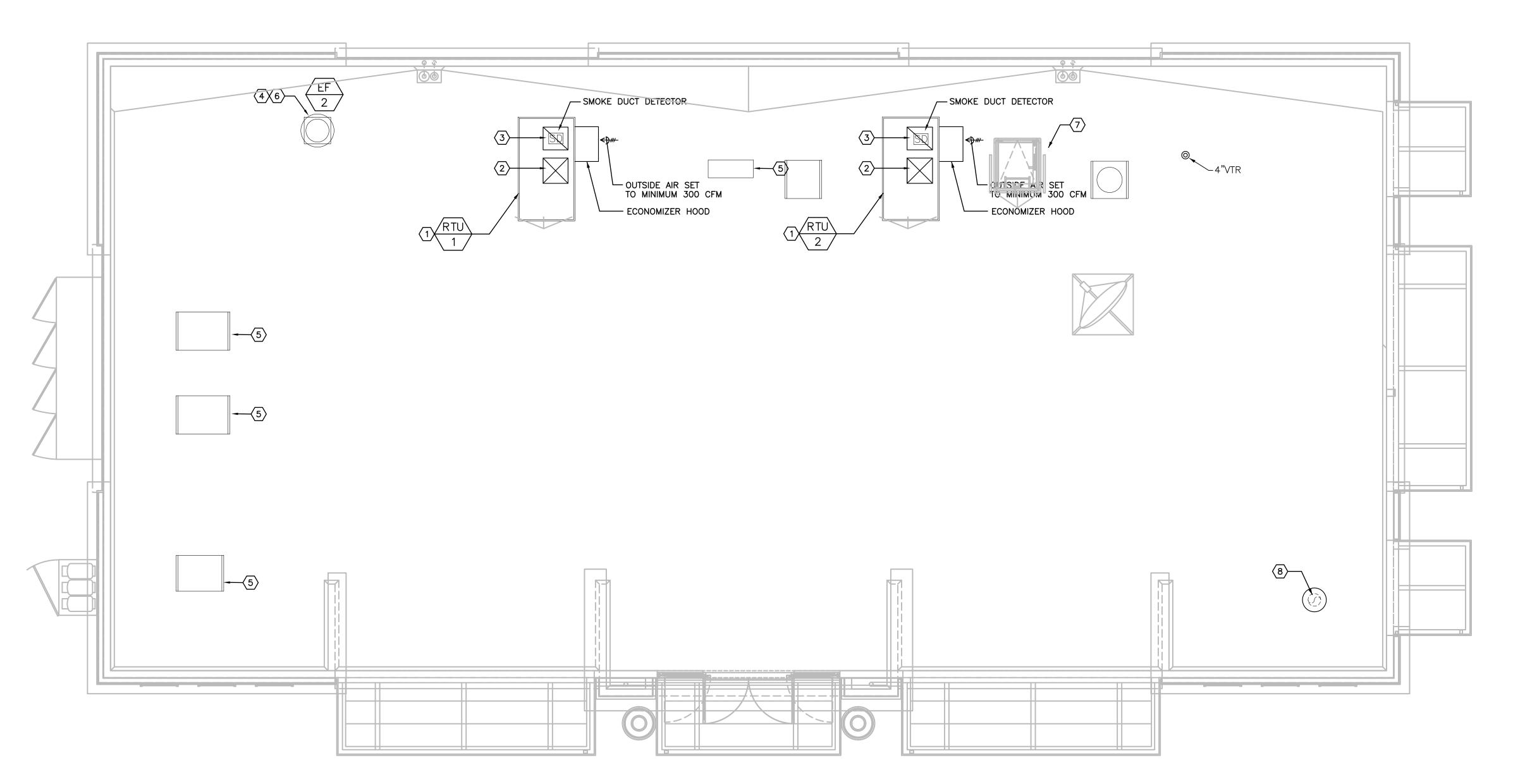
MECHANICAL
FLOOR PLAN

HEET NO:

M1.0

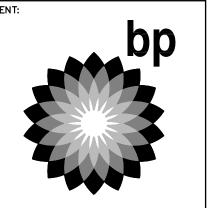
O1 FLOOR PLAN - HVAC
- SCALE: 1/4"=1'-0"





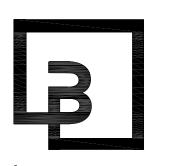
PLAN KEYNOTES:

- 1 HEAT PUMP ROOF TOP UNIT W/CURB ATTACHMENT TO ROOF, SEE DETAIL 1/M2.0.
- 2 FULL SIZE SUPPLY AIR OPENING WITH TRANSITION PER DWGS. ACOUSTICAL LINED SA DUCT DOWN.
- FULL SIZE RETURN AIR OPENING ACOUSTICAL LINED RA DUCT DOWN, TERMINATE 12" BELOW ROOF.
- 4 CURB MOUNTED MUSHROOM TYPE (DOWN BLAST) EXHAUST FAN. SEE DETAIL 6/M2.0 INSTALL 10 FEET MINIMUM AWAY FROM ANY FRESH AIR INTAKE OPENINGS.
- FEFRIGERATION EQUIPMENT REMOTE CONDENSER (BY OTHERS). SHOWN FOR REFERENCE ONLY.
- 6 EXHAUST FAN W/ROOF CURB, INSTALL 10 FEET MINIMUM AWAY FROM ANY FRESH AIR INTAKE OPENINGS.
- 7 ROOF HATCH, FOR DETAIL SEE ARCHITECTURAL PLANS.
- 8 10"ø TOILET EXHAUST WITH ROOF CAP.





BP WEST COAST PRODUCTS, LLC



Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com**

NO.	DATE	REVISION DESCRIPTION

AL:

OER ABOS

OF VASHINGS

OTTO STONAL ENGINE

DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

Abossein

Engineering,

MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
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REDMOND, WA 98052

PH: (425) 462-9441

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www.abossein.com

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #TBD

DESIGNED BY: ALLIANCE Z&DM:

CHECKED BY: BP REPM:

DRAWN BY: ALLIANCE PM:

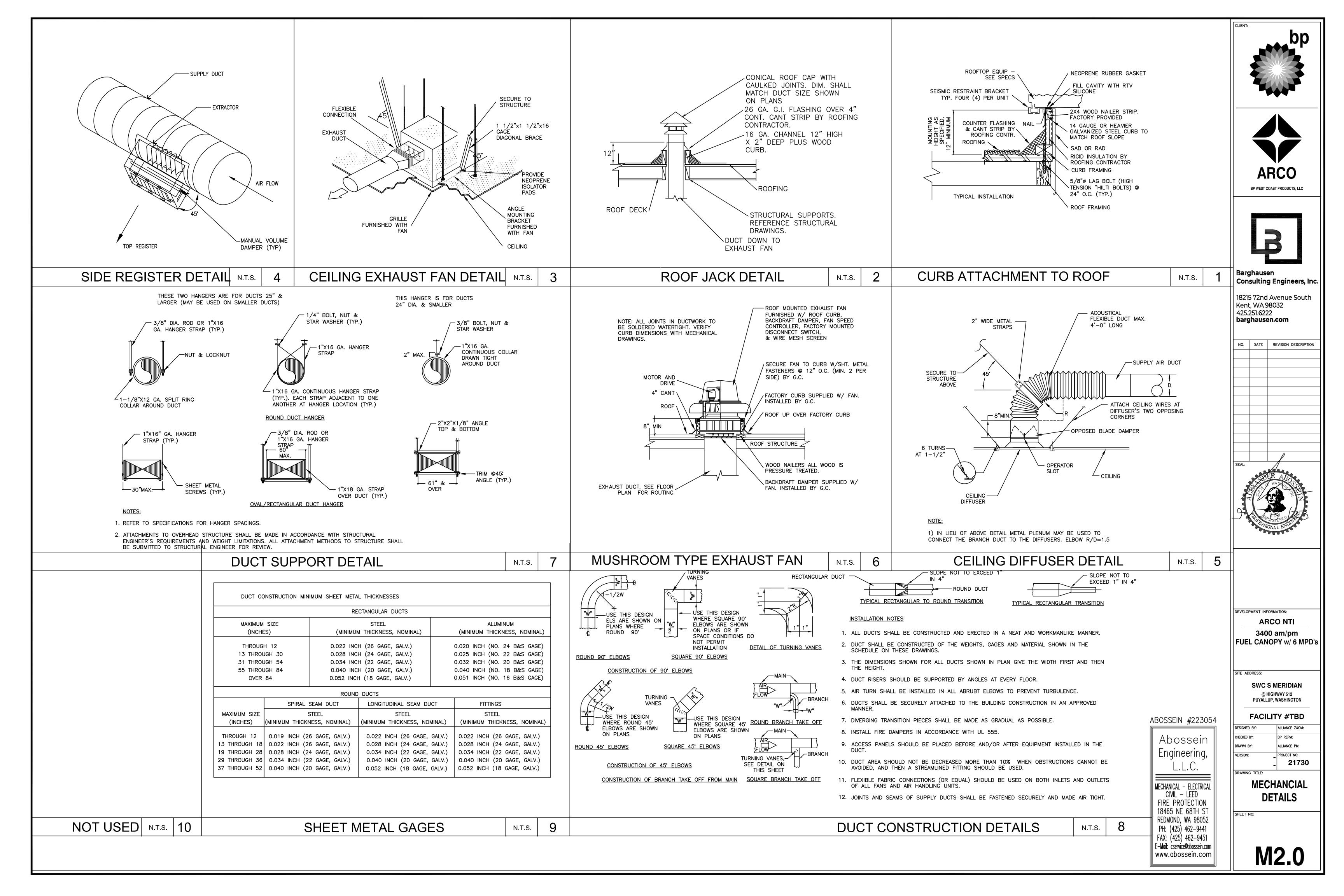
VERSION: PROJECT NO:

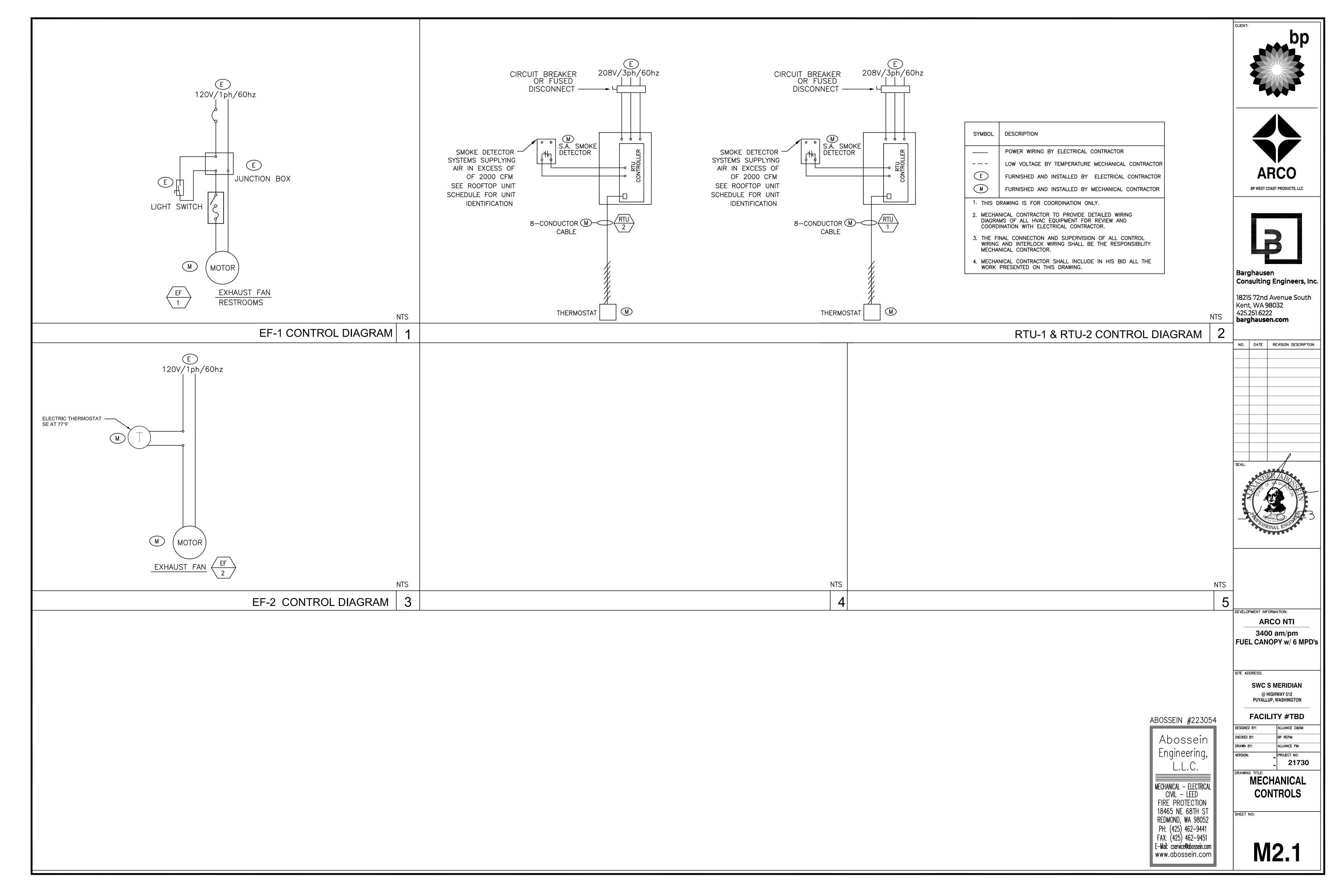
MECHANICAL ROOF PLAN

M1₋1

O1 ROOF PLAN - HVAC
- SCALE: 1/4"=1'-0"







Chvac - Full Commercial H ¹ Abossein Engineering LLC	VAC LOAGS CAICU	ation Program	' I			EI	ite Software Devel	opment, ind
Redmond, WA 98052	ani Laada							Page
Building Summa Building peaks in July at								
Bldg Load	Area	Sen	%Tot		_at	Sen	Net	%Ne
Descriptions Descriptions	Quan	Loss	Loss	G	ain	Gain	Gain	Gair
Roof Wall	3,771 3,877	7,18 4 15,56 4	7.50 16.24		0	2,103 6,492	2,103 6,492	1.69 5.20
Glass	482	11,806	12.32		Ö	19,221	19,221	15.49
Floor Slab	0	0	0.00		0	0	0	0.00
Skin Loads		34,554	36.06		0	27,816	27,816	22.42
Lighting	3,771	0	0.00		0	16,084	16,084	12.96
Equipment	9,600	Ö	0.00	2	500	40,946	41,146	33.16
Pool Latent	0	Ö	0.00		0	0	0	0.00
People	30	0	0.00	6,0	000	9,375	15,375	12.39
Partition	0	0	0.00		0	0	0	0.00
Cool. Pret.	0	0	0.00		0	0	0 0	0.00
Heat. Pret. Cool. Vent.	0 65 0	0	0.00 00.0	E 0	0	8,457	_	0.00 11.49
Heat, Vent.	650		38.99	9,0	304 0		14,261	0.00
Cool. Infil.	330	37,363	0.00	2.0	о 366	5,465	0 8,330	6.71
	330 330	22 000	24.94	2,0		5,465	6,330 0	0.00
Heat, Infil.		23 898	0.00		0	_		
Draw-Thru Fan Blow-Thru Fan	0	0	0.00		0	1,072 0	1,072 0	0.88
	Ö	0	0.00		0	Ö	Ů	0.00 0.00
Reserve Cap. Reheat Cap.	0	0	0.00		0	Ö	Ö	0.00
Supply Duct	Ö	Ö	0.00		Ö	Ö	ő	0.00
Return Duct	ŏ	Ö	0.00		Ö	ŏ	ő	0.00
Misc. Supply	ŏ	ŏ	0.00		ŏ	ŏ	ŏ	0.00
Misc. Return	ŏ	ŏ	0.00		Ö	ŏ	ŏ	0.00
Building Totals		95,816	100.00	14,8	370	109,214	124,084	100.00
Duilding	C	0/-	Г_+	1 -+		000	NI=+	0/ N/ =
Building	Sen		Γot	Lat		Sen	Net	%Ne
Summary	Loss)SS	Gain		Gain	Gain	Gair
Ventilation	37,363		.99	5,804		8,457	14,261	11.49
In filtration	23,898		.94	2,866		5,465	8,330	6.71
Pretreated Air	0.4554		.00	0		0	0	0.00
Room Loads	34,554		.06	6 200		94 220	100,420	80.93
Plenum Loads Fan/Duct/Misc Loads	0		.00 .00	0		0 1,072	0 1,072	0.00 0.80
Building Totals	95,816	100	.00	14,870		109 214	124 _, 084	100.00
Check Figures	. /hd 7.1	0 TDV:		4.500	OEM			
Total Building Supply Air Total Building Vent. Air (4,539 650	CFM			
	• • • • • • • • • • • • • • • • • • • •	97						
Total Conditioned Air Sp Supply Air Per Unit Area				3,771				
Area Per Cooling Capac	i ito:			1,2038 364,7				
Cooling Capacity Per An	ity. oo:			0.0027		rron Æaft		
Heating Capacity Per An				25.41				
Total Heating Required \	With Outside Air			95,816	Btuh			
Total Cooling Required \					Tons			
 C:\\ARCO_PUYALLUP WA	MAIN STORE CH	 18				Monda	y, September 25, 20	023, 04:1 7 Pi

MECHANICAL COMPLIANCE SUMMARY 2018 WSEC Compliance Forms for Commercial Buildings including Group R2, R3 & R4 over 3 stories and all R1 Administered by: ©2023 NEEA, All rights reserved Project Title ARCO NTI - 2018 WSEC

Project Address SWC S MERIDIAN @ HIGHWAY 512
PUYALLUP, WA 98371

Applicant Name Gary Womack
Applicant Fhone 426-462-9441
Applicant Email gary, womack@abossein.com

For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com Date: Sep 25, 2023 Project Address Applicant Name
Applicant Phone
Applicant Email General Building Use Type Retail, Convenience/Fuel Dispensing Building Cond. Floor Area

Single Zone Systems & Equipment Alteration Mechanical Scope Floor Above Grade
Compliance Method General Project Types Mechanical Project Description ROOFTOP PACKAGED HEAT PUMPS WITH DOAS Mechanical Compliance Scope and Method Additional Efficiency
Credits Included (AEC)
Does building include occupancy classifications requiring DOAS?
Based on project scope do TSPR requirements apply? Does project include DOAS equipment?

Do all systems comply with Appendix D standard reference design or qualify for an exception to TSPR? Scope & Space Conditioning NEW BUILDING - SINGLE ZONE SYSTEMS & EQUIPMENT Air Systems Summary Information

System/Equip ID Quantity of Items Control Ventilation Standard (Total if Multiple Items) Air Source Paired with DOAS Ventilation energy recovery Efficiency (%)

RTU-2 Constant volume IMC Ventilation 400 Separate DOAS ERV-1 Yes per C403.7.6 Energy Recovery 77

RTU-1 Variable air volume IMC Ventilation 400 Separate DOAS ERV-1 Yes per C403.7.6 Energy Recovery 77 Air Systems & Equipment - Cooling

System/
Equip ID

Cooling System/Equip Type

Specific S Air Systems & Equipment Details

System/Equip ID Area(s) Served Location In Project Documents - Plan/Detail #

RTU-2{{detail-2289}} ALL SPACES{{detail-2255}} M1.0{{detail-2272}}

System/Equip ID for a single or multiple items?: Single item

Heating Section/Auxiliary Heating Type: Other source

WSEC Equip Efficiency Reference Table - Cooling: Table C403.3.2(2) - Unitary and Applied Heat Pumps

Proposed Low OSA Temp Efficiency: 2.3

WSEC Equip Efficiency Reference Table - Heating: Table C403.3.2(2) - Unitary and Applied Heat Pumps

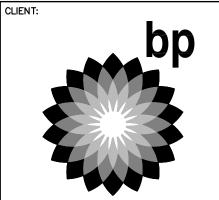
RTU-1{{detail-2289}} ALL SPACES{{detail-2255}}

System/Equip ID for a single or multiple items?: Single item Heating Section/Auxiliary Heating Type: Other source

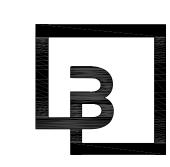
WSEC Equip Efficiency Reference Table - Cooling: Table C403.3.2(2) - Unitary and Applied Heat Pumps

Proposed Low OSA Temp Efficiency:

WSEC Equip Efficiency Reference Table - Heating: Table C403.3.2(2) - Unitary and Applied Heat Pumps Economizer Compliance Method: Air-side economizer provided LTH Units: COP



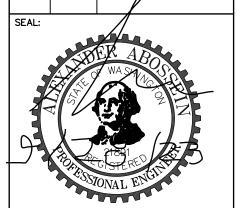




Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO.	DATE	REVISION DESCRIPTION



DEVELOPMENT INFORMATION: **ARCO NTI**

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

3400 am/pm FUEL CANOPY w/ 6 MPD's

FACILITY #TBD

	DESIGNED D1.		ALLIANOL ZODINI.
Abossein	CHECKED BY:		BP REPM:
	DRAWN BY:		ALLIANCE PM:
Engineering,	VERSION:		PROJECT NO:
L.L.C.		-	21730
	DRAWING TITLE:		

MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
18465 NE 68TH ST
REDMOND, WA 98052 **MECHANICAL ENERGY FORMS** PH: (425) 462-9441
FAX: (425) 462-9451
E-Mail: cservice@abossein.com
www.abossein.com

ABOSSEIN #223054

GENERAL NOTES

DESIGN CODES:

ALL CODES WITH WASHINGTON STATE AMENDMENTS

2018 WASHINGTON STATE BUILDING CODE

2018 WASHINGTON STATE ENERGY CODE -

2020 NATIONAL ELECTRICAL CODE

COMMERCIAL PROVISIONS

2018 WASHINGTON STATE FIRE CODE

- 1. GENERAL CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE SUBMITTING BID.
- 2. ALL WORK SHALL BE DONE IN ACCORDANCE WITH NEC, AND ANY ADDITIONAL STATE OR LOCAL CODES WHICH MAY APPLY.
- 3. GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CERTIFICATES, ETC. REQUIRED.
- 4. GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR BOTH ROUGH AND FINAL UNDER-WRITERS OR OTHER APPROVED INSPECTION AGENCY CERTIFICATES "ELECTRICAL INSPECTION". THESE CERTIFICATES SHALL BE PRESENTED WITH REQUEST FOR FINAL PAYMENT.
- 5. IT IS THE INTENT OF THESE PLANS TO PROVIDE A COMPLETE OPERATING ELECTRICAL SYSTEM. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING, EQUIPMENT, MATERIAL. ETC. REQUIRED, EXCEPT WHERE SPECIFICALLY NOTED AS BEING FURNISHED BY OTHERS. SHOULD THERE BE ANY QUESTIONS CONCERNING RESPONSIBILITY, THEY SHALL BE ADDRESSED TO ARCHITECT PRIOR TO BID. NO EXTRA CHARGES WILL BE ALLOWED.
- 6. ELECTRICAL SERVICE SHALL BE COORDINATED WITH THE EXISTING FIELD CONDITIONS.
- 7. CONSULT WITH CONTRACTORS FURNISHING HVAC EQUIPMENT AND REFRIGERATION TO VERIFY LOADS AND SECURE EXACT LOCATIONS (REFER TO HVAC DRAWINGS). WIRE AND CONNECT TO ALL HVAC EQUIPMENT. INCLUDING CONTROLS AND THERMOSTATS.
- 8. CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO ALL CONTROLS, OWNER-SUPPLIED EQUIPMENT MECHANICAL AND PLUMBING EQUIPMENT AS REQUIRED.
- 9. REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATION DETAILS. ALL EXTERIOR WALL MOUNTED LIGHT FIXTURE AND SIGN LOCATIONS SHOWN ON ARCHITECTURAL DRAWINGS SUPERSEDE THOSE SHOWN ON ELECTRICAL PLANS.
- 10. CIRCUIT NUMBER ON THE DRAWINGS ARE FOR IDENTIFICATION ONLY AND DO NOT INDICATE THE POSITION ON THE PANEL BOARD. CONNECT THE CIRCUITS WITH THE LIGHTEST LOADS AND THE RECEPTACLE CIRCUITS NEAR THE TOP OF THE PANEL, AND THE MORE HEAVILY LOADED CIRCUITS NEAR THE BOTTOM. BALANCE ALL CIRCUITS EVENLY BETWEEN PHASE SO THAT FEEDER WIRES CARRY APPROXIMATELY EQUAL CURRENT. ALL PHASES MUST BE BALANCED WITHIN 10% OR LESS. G.C. SHALL REBALANCE IF NECESSARY.
- 11. BRANCH CIRCUIT CONDUCTORS SHALL NOT BE LESS THAN #2AWG. THE INSULATION SHALL BE COLOR CODED. AND SHALL BE 600 VOLT. TYPE THHN/THWN COPPER.
- 12. CABLES IN HIGH TEMPERATURE AREAS SHALL HAVE INSULATION TYPE SUITABLE FOR THE TEMPERATURE. CABLES USED IN SPACES FOR ENVIRONMENTAL AIR SHALL CONFORM WITH APPLICABLE N.E.C
- 13. ALL WIRING USED IN RETURN OR DISCHARGE AIR PLENUMS SHALL BE PLENUM RATED OR INSTALLED PER METHODS APPROVED BY THE LATEST EDITION OF THE N.E.C. FOR SUCH APPLICATION.
- METHODS APPROVED BY THE LATEST EDITION OF THE N.E.C. FOR SUCH APPLICATION.

 14. ALL WIRE AND CABLE CONDUCTORS SHALL BE COPPER WITH INSULATION RATED 600V. CONDUCTORS
- BE STANDARD WIRE.

 15. BRANCH CIRCUITS FOR POWER AND LIGHTING SHALL NOT BE LESS THAN #12 AWG. OR AS NOTED. WIRES

SIZED #10 AWG AND SMALLER SHALL BE SOLID, AND CONDUCTORS SIZED LARGER THAN #10 AWG SHALL

- ARE TO BE SIZED FOR THE APPROPRIATE VOLTAGE DROPS.

 16. ALL EQUIPMENT AND LIGHT FIXTURES WIRING SHALL NOT BE LESS THAN #12 AWG TYPE SFF-2. AND
- FLEXIBLE CORDS SHALL NOT BE LESS THAN #12 AWG TYPE S.
- 17. CONTROL WIRING SHALL NOT BE LESS THAN #14 AWG UNLESS OTHERWISE NOTED.
- 18. HOMERUNS SHOWN ARE SCHEMATIC. CONTRACTOR MAY ORIGINATE HOMERUNS FROM DIFFERENT LOCATIONS. ALL WIRE INCLUDING HOMERUNS SHALL BE DELINEATED ON AS-BUILT DRAWINGS.
- 19. ALL WIRING INSTALLED UNDER THIS CONTRACT SHALL BE TESTED FOR PROPER CONNECTIONS AND SHORT CIRCUITS PRIOR TO THE TURNING OVER OF WORK AS A COMPLETE UNIT.
- 20. PROVIDE ALL ELECTRICAL SYSTEM GROUNDING IN ACCORDANCE WITH N.E.C. REQUIREMENTS EVEN IF IT IS NOT SHOWN ON THE DRAWINGS. INCLUDE ADDITIONAL GROUNDING CONDUCTORS IN NONMETALLIC RACEWAYS EVEN THOUGH THE DRAWINGS SHOW ONLY CIRCUIT AND/OR NEUTRALS CONDUCTORS. THE PLUMBING AND PIPING SYSTEM SHALL NOT BE USED AS A GROUND. ALL TRANSFORMER NEUTRALS SHALL BE GROUNDED TO BUILDING STEEL IN ACCORDANCE WITH NEC 250-70.
- 21. ALL CONDUITS PASSING THROUGH PARTITIONS ARE TO BE APPROPRIATELY SLEEVED AND SEALED.
- 22. FURNISH AND INSTALL ALL CONDUIT WITH PULL WIRES AS REQUIRED. ALL OUTLET BOXES SHALL BE STEEL, EXTRA DEEP WITH GROUNDING PIGTAILS. GROUNDING PUSH—CLIPS ARE NOT ACCEPTABLE.
- 23. ALL SLAB PENETRATIONS SHALL BE INSTALLED AND FIRE RATED PER NATIONAL STATE AND LOCAL CODES
- 24. DO NOT MAKE ANY CHANGES OR SUBSTITUTIONS WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE ARCHITECT OR ENGINEER.
- 25. GUARANTEE ALL WORK, MATERIAL AND EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATED OF APPROVAL AND FINAL ACCEPTANCE.
- 26. THIS DESIGN IS BASED ON INITIAL DESIGN DATA. GENERAL CONTRACTOR TO SUPPLY AND INSTALL FEEDERS, FUSES AND CIRCUIT BREAKERS TO MATCH THE NAMEPLATE RATING OF ALL EQUIPMENT. THIS SHALL BE INCLUDED IN THE INITIAL BID PROPOSAL AND NO EXTRAS SHALL BE ENTERTAINED.
- 27. THE G.C. SHALL PROVIDE ALL EQUIPMENT. MATERIALS AND LABOR TO COMPLETE ALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD COMMERCIAL PRACTICE INCLUDING THE INSTALLATION OF ALL THE EQUIPMENT MATERIALS AND SYSTEMS AND THE FINAL CONNECTIONS TO THE OWNER'S EQUIPMENT AND FIXTURES AS REQUIRED BY THE OWNER. THE G.C. SHALL ALSO FURNISH TEMPORARY WIRING AND LIGHTING TO PROVIDE A MINIMUM OF 25 FC IN WORK AREAS FOR USE OF ALL THE TRADES DURING CONSTRUCTION AND THE INSTALLATION OF THE OWNERS FIXTURES. THE G.C. IS RESPONSIBLE TO REMOVE ALL TEMPORARY WIRING UPON COMPLETION OF CONSTRUCTION OF ALL TRADES.

- 28. G.C. SHALL LABEL ALL JUNCTION BOX, OUTLETS, LIGHT SWITCH, ETC. WITH CIRCUIT NUMBER ON INTERIOR OF COVER PLATE.
- 29. GENERAL CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINTS AND SUPPORTS FOR ALL FLOOR AND CEILING MOUNTED ELECTRICAL EQUIPMENT TO RESIST EARTHQUAKE EFFECTS DETERMINED IN ACCORDANCE WITH THE BUILDING CODE.
- 30. THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL SUPPLEMENTARY SUPPORT, INCLUDING SUPPORT STEEL AS REQUIRED TO HANG ALL EQUIPMENT AND LIGHTING FROM THE STRUCTURE IN ACCORDANCE WITH THE ARCHITECTURAL/STRUCTURAL SUPPORT AND APPLICABLE CODE CRITERIA.
- 31. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE FULLY DIMENSIONED COORDINATION DRAWINGS FOR ALL OF HIS RESPECTIVE WORK. THESE DRAWINGS MUST BE FULL COORDINATED WITH ALL CONDITIONS. ALL HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL, LIGHTING, STRUCTURAL AND ARCHITECTURAL SYSTEMS PRIOR TO PREPARING COMPOSITE MULTI DISCIPLINE COORDINATION DRAWINGS.
- 32. ALL DISCONNECTING MEANS AND EQUIPMENT INDICATED ON THE DRAWING SHALL BE IDENTIFIED BY NAMEPLATE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE 110-22.
- 33. ALL WIRING FOR THE EMERGENCY LIGHTING AND EMERGENCY SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 700.
- 34. THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 300.
- 35. THE ELECTRICAL SERVICE AND DISTRIBUTION SYSTEM AS INDICATED ON THE RISER DIAGRAM AND MATERIALS INDICATED IN THE SPECIFICATIONS SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE ARTICLE 230.
- 36. ALL GROUNDING REQUIREMENTS OF THE COMPLETE ELECTRICAL DISTRIBUTION SYSTEM AND AS INDICATED IN THE SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 250.
- 37. ALL OVER CURRENT PROTECTION SHALL BE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE SECTION 240.
- 38. PRIOR TO ANY REQUIRED CUTTING AND PATCHING OF CONCRETE FLOOR AND/OR CUTTING OF ROOF CONTRACTOR SHALL COORDINATE WITH BUILDING ENGINEER. SEAL ALL EXTERIOR AND FIREWALL PENETRATIONS.
- 39. FOR ALL LIGHTING FIXTURES MOUNTED IN SUSPENDED CEILING THE GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL INDIVIDUAL SUPPORT AT EACH CORNER OF RECESSED LIGHTING TROFFER CONNECTED TO BUILDING STRUCTURE ABOVE ALL CONDUIT AND MC CABLE MOUNTED ABOVE SUSPENDED CEILING SHALL BE INDIVIDUALLY SUPPORTED IN THE SAME FASHION AS PER NEC REQUIREMENTS.
- 40. NO "DOUBLING UP" ON CIRCUIT BREAKERS OR CONDUCTOR SPLICES WITH IN PANEL BOARDS SHALL BE PERMITTED. THE CONTRACTOR SHALL PROVIDE JUNCTION BOXES ADJACENT TO PANELBOARDS AS REQUIRED TO SPLICE COMMON CIRCUITS CONNECTORS.
- 41. DO NOT SCALE FROM THESE DRAWINGS.
- 42. PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUITS NUMBERS. PROVIDE AND INSTALL ALL CONDUITS. CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOME RUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH SPECIFICATIONS AND N.E.C.
- 43. IN COMPLIANCE WITH 2018 WASHINGTON STATE ACCESSIBILITY REQUIREMENTS, THE BOTTOM OF RECEPTACLE OUTLETS SHALL NOT BE LESS THAN 15"AFF. THE TOP OF SWITCHES AND OTHER DEVICES SHALL BE NOT MORE THAN 48"AFF OR 44"AFF IF REACHING OVER OBJECT EXCEEDING 20" DEEP. FOR SITES IN OTHER STATES, ACCESSIBILITY REQUIREMENTS ARE TO BE MODIFIED AND FOLLOWED ACCORDINGLY.
- 44. NATIONALLY RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH NEC ART. 110.3.
- 45. ALL EQUIPMENT LISTED IN SCHEDULES SHALL BE PROVIDED WITH REQUIRED POWER CONNECTION, U.O.N.
- 46. ELECTRICAL CONTRACTOR SHALL FOLLOW LOCK OUT/TAG OUT PROCEDURE PER CAL-OSHA STANDARDS DURING CONSTRUCTION.
- 47. DUCT DETECTORS SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM TO INITIATE SUPERVISION. THE DUCT DETECTORS SHALL REQUIRE AN ACCEPTANCE FUNCTION TEST AND TEST SHALL BE WITNESSED BY THE FIRE INSPECTOR FOR AUTOMATIC SHUTDOWN. TESTING SHALL BE IN ACCORDANCE WITH 2018 WASHINGTON STATE FIRE CODE AND MANUFACTURER'S INSTRUCTIONS. ALL SUBCONTRACTORS SHALL BE PRESENT HVAC, FIRE ALARM AND ELECTRICAL.
- 48. GENERAL CONTRACTOR IS TO PROVIDE THE CAROLINA PRODUCTS, INC. UNITIZED PANEL SYSTEM.

ABBREVIATIONS AND TAGS ABB. DESCRIPTION ABB. DESCRIPTION WP | WEATHERPROOF ΑE APPROVED EQUIVALENT | ELECTRICAL CONTRACTOR AFF ABOVE FINISHED FLOOR MC MECHANICAL CONTRACTOR EF **EXHAUST FAN** GENERAL CONTRACTOR NTS NOT TO SCALE MECHANICAL UNIT TAG. SEE PROVIDE FURNISH, INSTALL AND CONNECT. MECHANICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS. GFCI GROUND FAULT CKT. INTERRUPTER DETAIL TAG. REFER TO DETAIL 4 SMD SEE MECHANICAL DRAWINGS (4 *)* ON SHEET NUMBER E-4. UAC UNDER ANOTHER CONTRACT UON UNLESS OTHERWISE NOTED EQUIPMENT UNIT TAG, SEE EQUIPMENT SCHEDULE. LCP LIGHTING CONTROL PANEL ELECTRICAL LIGHTING EQUIPMENT UNIT TAG/TYPE SEE LIGHT FIXTURE SCHEDULE.

WIRE SIZING SCHEDULE

20 AMPS, 120V LTG & RECEPTACLE CIRCUITS		
DISTANCE WIRE SIZE		
1' TO 100'	#12 AWG	
101' - 150'	#10 AWG	
151' - 200'	#10 AWG	
201' - 250'	#8 AWG	
251' - 300'	#8 AWG	
301' & UP	#6 AWG	

NOTE:

LINE CONDUCTOR SIZE IS INCREASED TO COMPENSATE FOR VOLTAGE DROP. GROUND CONDUCTOR SIZE SHALL BE INCREASED PROPORTIONATELY WITH THE LINE CONDUCTOR PER NEC 250.122(B)

SWITCH & LOW VOLTAGE SCHEDULES

SWITCH SCHEDULE					
CALLOUT SYMBOL NOTES					
CEILING OCCUPANCY SENSOR	(OS)	LOW VOLT			
PHOTOSENSOR	PS	ILC OR EQUAL, LOW VOLTAGE			
SINGLE POLE SWITCH	SINGLE POLE SWITCH \$				
THREE WAY SWITCH	\$ _3	3-WAY CAPABLE, 120V			
WALL SWITCH WITH OCCUPANCY SENSOR	\$ os	1-POLE WITH OCCUPANCY SENSOR, LEVITON OR EQUAL, 120V			

TELEPHONE AND DATA SCHEDULE

CALLOUT	SYMBOL	NOTES			
COMPUTER OUTLET	◁	(1) CAT 6 CABLE, (1) CAT 6 DATA PORT			
DUPLEX TELEPHONE / COMPUTER	•	(2) CAT 6 CABLE, (1) CAT 6 DATA PORT, (1) CAT 6 TELEPHONE PORT			

SINGLE POLE SINGLE THROW SWITCH, +44" AFF U.O.N. X MEANS: a - CONTROLLING FIXTURE OR OUTLET "a" 2 - DOUBLE POLE 3 - THREE WAY D - DIMMER (RATING AS REQUIRED) LOW VOLTAGE SWITCH FOR LIGHTING CONTROL PANEL DOUBLE OR THREE POLE HP RATED TOGGLE SWITCH SWITCH OCCUPANCY SENSOR WITH MANUAL ON/OFF OVERRIDE BUTTON PHOTOCELL FOR DAYLIGHT ZONING SMOKE DETECTOR DIMMER, ACCESSIBLE TYPE CONTROL COMPATIBLE WITH FIXTURE DUPLEX RECEPTACLE 20A, 125V, NEMA 5-20R WALL MOUNTED. (WP= WEATHERPROOF, D= DEDICATED, GFI=GROUND FAULT INTERRUPTER) DUPLEX RECEPTACLES 20A, 125V, NEMA 5-20R HALF SWITCHED. DOUBLE DUPLEX RECEPTACLES, NEMA 5-20R. CEILING DUPLEX RECEPTACLE 20A, 125V, NEMA 5-20R (WP= WEATHERPROOF, D= DEDICATED, GFI=GROUND FAULT INTERRUPTER) DOUBLE DUPLEX RECEPTACLES, NEMA 5-20R. (FLOOR MOUNTED) SPECIAL RECEPTACLE, RATING AS SHOWN. JUNCTION OR OUTLET BOX WALL MOUNTED JUNCTION BOX (3) CAT-5 DATA OUTLETS. PROVIDE OUTLET BOX AND COVERPLATE WITH CABLING TO TERMINATION POINT. FUSED DISCONNECT SWITCH, RATING AS SHOWN NON FUSED DISCONNECT SWITCH, RATING AS SHOWN MOTOR OUTLET AND FLEX CONNECTION TO MOTOR. LV INGROUND TRANSFORMER \sim FLEXIBLE CONDUIT WITH CONNECTION TO EQUIPMENT PANELBOARD/LOAD CENTER, SURFACE, FLUSH. BRANCH CIRCUIT WIRING IN CONDUIT CONCEALED IN CEILING OR WALL. BRANCH CIRCUIT WIRING IN CONDUIT CONCEALED UNDER FLOOR OR ____ UNDERGROUND.

ELECTRICAL LEGEND

DESCRIPTION

SYMBOL



CONDUIT STUBBED OUT IN ACCESSIBLE LOCATION, CAP AND

BRANCH CIRCUIT HOMERUN TO PANEL

CONDUIT UP.

~~~

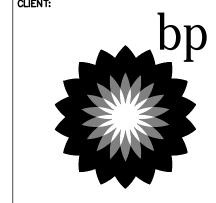
CONDUIT DOWN

FLEXIBLE CONDUIT

MARK LOCATION.

| SHEET NUMBER | DESCRIPTION                         |                  |  |  |  |
|--------------|-------------------------------------|------------------|--|--|--|
| E0.1         | LEGEND, NOTES & SCHEDULES           |                  |  |  |  |
| E0.2         | SPECIFICATIONS                      |                  |  |  |  |
| E1.0         | LIGHTING PLAN                       |                  |  |  |  |
| E1.1         | LUMINAIRE SCHEDULE                  |                  |  |  |  |
| E1.2         | POWER PLAN                          |                  |  |  |  |
| E1.3         | EQUIPMENT & RECEPTACLE SCHEDULES    | 3                |  |  |  |
| E1.4         | ELECTRICAL ROUGH-IN PLAN            |                  |  |  |  |
| E1.5         | ELECTRICAL ROOF PLAN                |                  |  |  |  |
| E1.6         | COMMUNICATION PLAN                  |                  |  |  |  |
| E2.0         | SINGLE LINE DIAGRAM                 |                  |  |  |  |
| E2.1         | ELECTRICAL PANEL SCHEDULES          |                  |  |  |  |
| E2.2         | ELECTRICAL PANEL SCHEDULES          |                  |  |  |  |
| E3.0         | DIAGRAM & DETAILS - PART 1          |                  |  |  |  |
| E3.1         | DIAGRAM & DETAILS - PART 2          |                  |  |  |  |
| E4.0         | FAULT CURRENT & ARC FLASH SCHEDULES |                  |  |  |  |
| E5.0         | ENERGY CODE FORMS                   |                  |  |  |  |
| E5.1         | ENERGY CODE FORMS                   | ABOSSEIN #223054 |  |  |  |
| ES1.0        | ELECTRICAL SITE PLAN                | Abossis          |  |  |  |
| ES1.1        | ELECTRICAL SITE DETAILS             | Abossein         |  |  |  |
| CWE1.0       | CARWASH LIGHTING PLAN               | Engineering,     |  |  |  |
| CWE2.0       | CARWASH POWER PLAN                  | L.L.C.           |  |  |  |

CARWASH PANEL SCHEDULE





BP WEST COAST PRODUCTS, LLC



Barghausen
Consulting Engineers, Inc

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

| NO.                     | DATE | REVISION DESCRIPTION |
|-------------------------|------|----------------------|
| $\Lambda$               |      |                      |
| 2                       |      |                      |
| 3                       |      |                      |
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| ⚠                       |      |                      |
| 12                      |      |                      |
| SEAL:                   | _    | A                    |
|                         |      |                      |



DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

| DESIGNED BY:   | ALLIANCE Z&DM: |
|----------------|----------------|
| CHECKED BY:    | BP REPM:       |
| DRAWN BY:      | ALLIANCE PM:   |
| VERSION:       | PROJECT NO:    |
|                | _ 21730        |
| DRAWING TITLE: |                |

LEGEND, NOTES & SCHEDULES

FIRE PROTECTION
18465 NE 68TH ST
REDMOND, WA 98052
PH: (425) 462-9441
FAX: (425) 462-9451

MECHANICAL — ELECTRICAL CIVIL — LEED

E-Mail: cservice@abossein.com www.abossein.com

A. FURNISH AND INSTALL ALL MATERIALS AND EQUIPMENT AND PROVIDE ALL LABOR, TOOLS, TRANSPORTATION, SUPERINTENDENCE AND SERVICES REQUIRED AND NECESSARY TO COMPLETE THE WORK SHOWN ON THE DRAWINGS AND/OR SPECIFIED HEREIN. ALSO INCLUDE ALL OTHER WORK AND MISCELLANEOUS ITEMS, NOT SPECIFICALLY MENTIONED, BUT REASONABLY INFERRED FOR A COMPLETE INSTALLATION INCLUDING ALL ACCESSORIES AND APPURTENANCES REQUIRED FOR TESTING THE SYSTEM. IT IS THE INTENT OF THE DRAWINGS AND SPECIFICATIONS THAT ALL SYSTEMS BE COMPLETE, AND READY FOR OPERATION.

#### .02 REGULATORY REQUIREMENT

- A. CODE COMPLIANCE IS MANDATORY. NOTHING IN THESE DRAWINGS AND SPECIFICATIONS PERMITS WORK NOT CONFORMING TO THESE CODES. WHERE WORK IS SHOWN TO EXCEED MINIMUM CODE REQUIREMENTS, COMPLY WITH DRAWINGS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH THE LATEST RULES, CODES AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
- 1. OCCUPATIONAL SAFETY AND HEALTH ACT STANDARDS (OSHA).
- 2. NFPA #70: NATIONAL ELECTRIC CODE (NEC)
- 4. STATE BUILDING CODE
- 5. NFPA #101: LIFE SAFETY CODE 6. STATE FIRE MARSHAL 7. LOCAL UTILITY COMPANIES

#### 1.03 LICENSE, FEES, AND PERMITS

A. ELECTRICAL CONTRACTOR SHALL PAY FOR ALL LICENSES, PERMITS AND INSPECTION FEES REQUIRED BY THE AUTHORITY HAVING JURISDICTION AND SHALL ARRANGE FOR ALL REQUIRED INSPECTIONS.

A. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. NO ACT, SERVICE, DRAWING REVIEW OR CONSTRUCTION REVIEW BY THE OWNER, THE ENGINEERS OR THEIR CONSULTANTS, IS INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES, IN, ON, OR NEAR THE CONSTRUCTION SITE.

A. ALL DRAWINGS AND ALL DIVISIONS OF THESE SPECIFICATIONS SHALL BE CONSIDERED AS A WHOLE AND WORK OF THIS DIVISION SHOWN ANYWHERE THEREIN SHALL BE FURNISHED UNDER THIS DIVISION. DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERA ARRANGEMENT OF EQUIPMENT AND WRING. MOST DIRECT ROUTING OF CONDUITS AND WRING IS NOT ASSURED. EXACT REQUIREMENTS SHALL BE GOVERNED BY CONDITIONS OF THE JOB. CONSULT ALL OTHER DRAWINGS IN PREPARATION OF THE BID. EXTRA LENGTHS OF WIRING OR ADDITION OF PULL OR JUNCTION BOXES, ETC., NECESSITATE BY SUCH CONDITIONS SHALL BE INCLUDED IN THE BID.

A. VISIT SITE OF THE WORK, COMPARE IT WITH THE DRAWINGS AND SPECIFICATIONS AS TO THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, ASCERTAIN AND CHECK ALL CONDITIONS AND ELEVATIONS AND TAKE ALL MEASUREMENTS WHICH MAY AFFECT THE WORK, NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE FOR ANY EXTRA EXPENSE OR CLAIMS DUE TO FAILURE OR NEGLECT UNDER THIS REQUIREMENT TO MAKE SUCH EXAMINATION, INCLUDING EXAMINATION OF RESTRICTED WORKING CONDITIONS OR SUCH OTHER DIFFICULTIES VISUALLY OBSERVED DURING SITE VISIT. CONTRACTOR IS RESPONSIBLE FOR BECOMING COMPLETELY FAMILIAR WITH THE ARCHITECTURAL AND STRUCTURAL CONDITIONS AND LIMITATIONS WHICH WILL EXIST IN THE BUILDING AND TO PROVIDE ALL LABOR, TOOLS AND MATERIALS REQUIRED TO PRODUCE A COMPLETELY CONCEALED INSTALLATION AS INDICATED ON THE PLANS,

#### SPECIFICATIONS, AND REQUIRED BY THE CODE. 1.07 WORKMANSHIP AND CONTRACTOR'S QUALIFICATIONS

A. ONLY QUALITY WORKMANSHIP WILL BE ACCEPTED. HAPHAZARD OR POOR INSTALLATION WILL BE CAUSE FOR REJECTION OF WORK.

A. SUBMITTALS, UNLESS OTHERWISE NOTED, SHALL BE A SINGLE PACKAGE OF SIX (6) COPIES SUBMITTED TO OWNER FOR REVIEW. WORK

SHALL NOT COMMENCE UNLESS SUBMITTALS HAVE BEEN APPROVED. B. SUBMIT CUTSHEETS, MATERIAL DATA, AND SHOP DRAWINGS, AS NOTED BELOW. FOR REVIEW WITHIN FIFTEEN (15) DAYS AFTER AWARD

#### OF CONTRACT. SUBMITTALS REQUIRED AS FOLLOWS: 1. BASIC ELECTRICAL MATERIALS INCLUDING BUT IS NOT LIMITED TO:

- A.) WIRING DEVICES RECEPTACLES, SWITCHES, FACEPLATES
- B.) WIRES, CONNECTORS, TAPES, SPLICES, TERMINATIONS, AND ACCESSORIES
- C.) RACEWAYS AND ACCESSORIES
- D.) DEVICE IDENTIFICATION 2. ELECTRICAL EQUIPMENT
- A.) POWER DISTRIBUTION EQUIPMENT PANELBOARDS, SWITCHBOARDS, DISCONNECT SWITCHES, CIRCUIT BREAKERS,
- POWER DISTRIBUTION UNITS, ETC. B.) SERVICE ENTRANCE EQUIPMENT - TERMINATION CANS, METERED SWITCHBOARDS, ETC.

- A.) LIGHT FIXTURES AND SUPPORT DEVICES
- B.) LAMPS AND BALLASTS INCLUDE BALLASTS CERTIFICATION. BALLAST SHALL HAVE LOCAL DISCONNECTS.
- C.) CONTROLS OCCUPANCY SENSORS, PHOTOCELL, LIGHTING CONTACTORS, LIGHTING CONTROL PANELS, DIMMERS, ETC.
- E.) FOR PROJECTS THAT ARE SUBJECT TO STATE ENERGY CODES, PROVIDE SUBMITTALS CONFIRMING THAT PRODUCTS SUBMITTED MEET THE REQUIRED MANDATORY MEASURES AS WELL AS MEETS MAXIMUM STATED ENERGY
- CONSUMPTIONS SHOWN IN TITLE 24 LIGHTING COMPLIANCE CALCULATIONS. C. SUBMIT COMPLETE TEST REPORTS AND ANALYSIS FOR REVIEW WITHIN FIFTEEN (15) DAYS AFTER TESTING.
- D. SUBMIT TITLE 24 LIGHTING COMPLIANCE FORMS AT VARIOUS STAGES OF THE PROJECTS, OR AS REQUESTED. E. SUBMIT VERIFIED PUNCHLIST TWO (2) WEEKS AFTER ISSUANCE DATE. INDICATE PUNCHLIST ITEMS THAT HAVE BEEN COMPLETED BY CONTRACTOR. INCLUDE DATE FOR REPUNCH.

- A. ONE OR MORE MAKES OF MATERIALS OR METHODS MAY HAVE BEEN SPECIFIED TO ESTABLISH THE STANDARD OF QUALITY, WORKMANSHIP, FINISH, AND DESIGN REQUIRED, BUT OTHER MATERIALS OR METHODS EQUAL OR BETTER IN QUALITY, WORKMANSHIP, FINISH, DESIGN, AND GUARANTEED PERFORMANCE, MAY BE SUBMITTED FOR REVIEW AND APPROVAL AS SUBSTITUTION. ALL SUBSTITUTIONS ARE SUBJECT TO REVIEW AND APPROVAL BY ARCHITECT, ENGINEER, AND OWNER.
- B. SUBSTITUTIONS SHALL BE REQUESTED IN A WRITTEN FORM AND SHALL BE ACCOMPANIED WITH A SIGNED STATEMENT THAT PROPOSED SUBSTITUTION IS EQUAL, OR BETTER THAN SPECIFIED. ADDITIONAL DOCUMENTATION TO SUBSTANTIATED PROPOSED SUBSTITUTION MAY
- BE REQUIRED BY OWNER, ARCHITECT, AND ENGINEER. CONTRACTOR SHALL SUBMIT AS DIRECTED. C. CONTRACTOR SHALL ACCOMPANY REQUEST FOR SUBSTITUTION LETTER WITH A COMPLETED CSI SUBSTITUTION FORM
- INCLUDE THE COMPARISON FOR FOLLOWING: 1. ELECTRICAL RATING
- 2. FINISHES 3. SPARE PARTS
- 4. PERFORMANCE DATA
- 5. COSTS AND SCHEDULE
- D. A WRITTEN SIGNED STATEMENT FROM THE GENERAL CONTRACTOR SHALL ACCOMPANY SUBSTITUTION REQUEST FORM ASSURING THAT: 1. HE HAS VERIFIED DIMENSIONS WITH PROJECT CONDITIONS AND HAS COORDINATED WITH OTHER TRADES. SUBSTITUTION DOES NOT AFFECT DIMENSIONS SHOWN ON DRAWINGS.
- 2. HE SHALL PAY AND BURDEN THE COSTS FOR CHANGES TO THE PROJECT INCLUDING RE-DESIGN, RE-ENGINEERING AND REVIEW OF SUBSTITUTION. ONLY ONE (1) ENGINEERING REVIEW TIME IS ALLOWED FOR EACH PRODUCT SUBSTITUTION. CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL REVIEW TIME AND SHALL PAY ARCHITECT AND ENGINEER'S TIME AT THEIR PROFESSIONAL RATE
- 3. HE HAS CONFIRMED THAT THE PROPOSED SUBSTITUTION WILL HAVE NO ADVERSE AFFECT ON OTHER TRADES, THE CONSTRUCTION SCHEDULE, OR SPECIFIED WARRANTY REQUIREMENTS.
- 4. HE HAS CONFIRMED THAT MAINTENANCE AND SERVICE PARTS WILL BE LOCALLY AVAILABLE FOR THE PROPOSED SUBSTITUTION.
- E. COST SAVINGS RESULTING FROM SUBSTITUTION SHALL BE RETURNED TO THE CONTRACT OR THE OWNER IF THE SUBSTITUTION IS F. NO WORK INVOLVING MATERIALS SUBMITTED FOR SUBSTITUTION SHALL PROCEED UNTIL WRITTEN ACCEPTANCE IS RECEIVED FROM THE
- OWNER. THE OWNER IS THE FINAL JUDGE OF ACCEPTABILITY OF PREFERRED SUBSTITUTIONS.

#### A. COORDINATE WORK WITH OTHER TRADES TO AVOID CONFLICT AND TO PROVIDE CORRECT ROUGH-IN AND CONNECTION FOR EQUIPMENT FURNISHED UNDER OTHER TRADES THAT REQUIRE ELECTRICAL CONNECTIONS. INFORM CONTRACTORS OF OTHER TRADES OF THE

REQUIRED ACCESS TO AND CLEARANCES AROUND ELECTRICAL EQUIPMENT TO MAINTAIN SERVICE ABILITY AND CODE COMPLIANCE. B. VERIFY EQUIPMENT DIMENSIONS AND REQUIREMENTS WITH PROVISIONS SPECIFIED UNDER THIS SECTION. CHECK ACTUAL JOB CONDITIONS BEFORE FABRICATING WORK, REPORT NECESSARY CHANGES IN TIME TO PREVENT NEEDLESS WORK, CHANGES OR ADDITIONS, SUBJECT TO ADDITIONAL COMPENSATION, WHICH ARE MADE WITHOUT WRITTEN AUTHORIZATION AND AN AGREED PRICE,

#### SHALL BE AT THE CONTRACTOR'S RISK AND EXPENSE. 1.11 CUTTING AND PATCHING

A. ALL CUTTING AND PATCHING REQUIRED FOR WORK OF THIS DIVISION IS INCLUDED HEREIN. COORDINATION WITH GENERAL CONTRACTOR AND OTHER TRADES IS IMPERATIVE. CONTRACTOR SHALL BEAR THE RESPONSIBILITY FOR AND THE ADDED EXPENSE OF ADJUSTING FOR IMPROPER HOLES, SUPPORTS, ETC

# 1.12 ACCEPTANCE AND DEMONSTRATION

- A. UPON COMPLETION OF THE WORK, AT A TIME TO BE DESIGNATED BY THE OWNER, THE CONTRACTOR SHALL DEMONSTRATE FOR THE OWNER THE OPERATION OF THE ELECTRICAL INSTALLATION, INCLUDING ANY AND ALL SPECIAL ITEMS INSTALLED BY HIM OR INSTALLED
- B. PROPERLY SET LIGHTING CONTROL PANELS, AUTOMATIC TIME SWITCHES, ETC. TO PERFORM SWITCHING OPERATIONS IN ACCORDANCE WITH SCHEDULES PROVIDED BY THE OWNER'S REPRESENTATIVE, AND DEMONSTRATE (USING THE MANUFACTURER'S OPERATING INSTRUCTIONS) HOW TO OVERRIDE CONTROLS AND/OR TEST TIME SWITCHES PROGRAMMING.

#### 13 RECORD DRAWINGS AND EQUIPMENT DATA

- A. MAINTAIN ONE SET OF CLEAN WORKING DRAWINGS AT THE JOB SITE AND ENTER DAILY SUCH "AS-BUILT" INFORMATION AS FEEDER AND SERVICE ROUTES, PULL BOX LOCATIONS AND CHANGES IN LAYOUT OR ARRANGEMENT WHICH OCCUR DURING CONSTRUCTION. DELIVER COMPLETED "RED LINE AS-BUILTS" DRAWINGS TO THE OWNER
- B. SUBMIT TO THE OWNER'S REPRESENTATIVE A SET OF "AS BUILT" DRAWINGS IN VELLUM AND CAD FILE. AS BUILT COMMENTS SHALL BE WRITTEN IN A LEGIBLE MANNER IN THE SAME STYLE AS THE CONTRACT DOCUMENTS. ALSO SUBMIT THREE COPIES OF DATA SHEETS OR OTHER CURRENT MANUFACTURERS' PUBLICATIONS FOR EACH ITEM OF ELECTRICAL EQUIPMENT FURNISHED FOR THE
- PROJECT INCLUDING AT LEAST THESE DATA: 1. TECHNICAL DESCRIPTION AND REPLACEABLE PARTS LIST.
- 2. PHYSICAL DESCRIPTION AND INSTALLATION INSTRUCTIONS. 3. USER'S MANUAL AND OPERATING INSTRUCTIONS.

#### 4. MANUFACTURER'S WARRANTY.

- A. RID THE PREMISES OF SCRAP MATERIALS, TRASH AND DEBRIS BOTH DURING CONSTRUCTION AND AT COMPLETION OF THE PROJECT. LEAVE THE BUILDING AND SURROUNDING AREA IN A CLEAN AND ORDERLY CONDITION.
- A. GUARANTEE THE INSTALLATION FREE FROM DEFECTS OF WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER DATE OF CERTIFICATION OF FINAL PAYMENT AND PROMPTLY REMEDY ANY DEFECTS DEVELOPING DURING THIS PERIOD, WITHOUT CHARGE.

- A. PROVIDE ADEQUATE AND SAFE TEMPORARY ELECTRICAL POWER AND LIGHTING THROUGHOUT THE CONSTRUCTION AND FINISHING OF THE PREMISES. IN ADDITION TO SPECIAL OR UNUSUAL REQUIREMENTS, PROVIDE AT LEAST THESE ITEMS: 1. THREE (3) 20-AMP CIRCUITS FOR CONSTRUCTION POWER TOOLS. PROVIDE GFI TEMPORARY CIRCUITS WITH COVERPLATES TO MEET
- 2. THREE OR MORE LIGHT STRINGS SUSPENDED APPROXIMATELY ONE FOOT BELOW THE HEIGHT OF FINISH CEILING WITH LAMPS SPACED NOT MORE THAN TWELVE FEET ON CENTERS. STRINGS SHALL BE RUN THE LENGTH OF THE STORE SPACE PARALLEL TO THE DEMISING WALLS, WITH ONE STRING WITHIN EIGHT FEET OF EACH WALL AND ONE (OR MORE) INTERMEDIATE STRING(S) ARRANGED TO LIMIT THE SPACING BETWEEN ROWS TO SIXTEEN FEET OR LESS.

A. ALL MATERIALS MUST BE NEW AND BEAR UNDERWRITER'S LABORATORIES LABEL. MATERIALS THAT ARE NOT COVERED BY UL TESTING STANDARDS SHALL BE TESTED AND APPROVED BY AN INDEPENDENT TESTING LABORATORY OR A GOVERNMENTAL AGENCY. MATERIAL NOT IN ACCORDANCE WITH THESE SPECIFICATIONS MAY BE REJECTED EITHER BEFORE OR AFTER INSTALLATION.

#### D2 BASIC ELECTRICAL MATERIALS

- A. CONDUITS AND RACEWAYS 1. RIGID STEEL: HOT-DIPPED GALVANIZED.
- 2. INTERMEDIATE METAL CONDUIT (IMC): HOT-DIPPED GALVANIZED.
- 3. ELECTRICAL METALLIC TUBING (EMT): ELECTRO—GALVANIZED.
- 4. RIGID NON METALLIC CONDUIT (PVC SCHEDULE 40)
- 5. WREWAY: CODE GAUGE STEEL, WITH KNOCKOUTS AND HINGED COVER, CORROSION RESISTANT GRAY BAKED ENAMEL FINISH. 6. PROVIDE FITTINGS AND ACCESSORIES APPROVED FOR THE PURPOSE EQUAL IN ALL RESPECTS TO THE CONDUIT OR RACEWAY. EMT CONNECTORS AND COUPLINGS SHALL BE STEEL SET SCREW OR STEEL COMPRESSION TYPE INDOORS AND STEEL COMPRESSION TYPE

#### B. WIRES AND CABLES:

1. FOR POWER AND LIGHTING SYSTEM 600V OR LESS:

IN WET LOCATIONS AND OUTDOORS.

- A.) CONDUCTOR: MINIMUM SIZE #12 AWG.
- i. #12 AND #10 AWG SOLID COPPER ii. #8 AWG AND LARGER SHALL BE STRANDED COPPER OR ALUMINUM.
- B.) INSULATION TYPE:

- i. #12 to #1 awg: thwn for wet or underground and thhn for dry locations.
- ii. #1/0 THROUGH #4/0 AWG: XHHW (55 MILS). iii. #250 MCM AND LARGER: XHHW (65 MILS).
- iv. Grounding wire: Tw.
- v.) METAL CLAD (MC) CABLES

#### 2. FOR SIGNAL AND COMMUNICATIONS CIRCUIT:

- A.) SPECIAL CABLES SHALL BE AS SPECIFIED ON DRAWINGS. B.) CONDUCTORS FOR GENERAL USE SHALL BE STRANDED COPPER CONDUCTOR, #16 AWG MINIMUM, WITH THWN INSULATION FOR
- UNDERGROUND OR WET LOCATIONS AND THHN INSULATION FOR DRY LOCATIONS.
- 3. ACCEPTABLE PRODUCTS: GENERAL ELECTRIC, ANACONDA, OKONITE, PARANITE OR TRIANGLE PRODUCTS CONFORMING OR EXCEEDING APPLICABLE IPCEA STANDARDS.
- C.) OUTLET BOXES, JUNCTION AND PULLBOXES
- 1. OUTLET BOXES: 4" SQUARE X 1-1/2" DEEP (OR LARGER) GALVANIZED SHEET STEEL KO-TYPE WITH PLASTER RING AND COVER FOR GENERAL INTERIOR USE AND CAST METAL TYPE FS OR FD WITH MATCHING SCREW COVERS FOR EXTERIOR AND EXPOSED INTERIOR LOCATIONS (GASKETED IN DAMP OR WET LOCATIONS).

2. JUNCTION BOXES (FLOOR BOX NOT INCLUDED) SHALL BE SAME AS OUTLET BOXES UP TO 42 CU. IN. AND CODE-GAUGE

- STEEL IN LARGER SIZES WITH SURFACE OR FLUSH-TYPE SCREW-MOUNTED TRIMCOVERS, BOTH BOXES AND COVERS INHIBITOR-PRIMED AND PAINTED INSIDE OUT.
- 3. PULL BOXES SHALL BE SAME AS JUNCTION BOXES UNLESS INDICATED OTHERWISE ON THE DRAWINGS, WITH COVERS.
- 4. TELEPHONE OUTLET BOXES SHALL BE THE TYPE AND SIZE REQUIRED BY THE SERVING TELEPHONE COMPANY BUT NOT SMALLER THAN 4-11/16" SQUARE X 2-1/8" DEEP WITH SINGLE-GANG RING AND SIERRA #S-754N SPLIT PLATE BUSHING. 5. UNDERGROUND AND SITE JUNCTION BOXES, HANDHOLES, AND MANHOLES
- A.) SHALL BE MADE UP OF PRECAST CONCRETE WITH TRAFFIC RATED STEEL COVERS. EXTENSIONS SHALL BE PROVIDED AS NECESSARY TO MAIN REQUIRED COVERAGE FOR DUCT BANKS.
- B.) PROVIDE 10" X 17' (MIN) FOR PULLBOXES, 36" X 60" (MIN) FOR HANDHOLES, AND 6'X8'X6' (MIN) MANHOLES.

# D. WIRING DEVICES AND PLATES

- WIRING DEVICES AND PLATES SHALL BE LISTED FOR SPECIFIC USE.
- 2. ALL POWER RECEPTACLES AND SWITCHES FOR GENERAL PURPOSE CIRCUITS SHALL BE NEMA SPECIFICATION GRADE, RATED AS
- A.) GENERAL PURPOSE RECEPTACLES: NEMA 5-15R OR 5-20R
- B.) DEDICATED RECEPTACLES: NEMA 5-20R

# 3. SWITCHES: TWENTY (20) AMPERE.

- A.) IN MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS, ILLUMINATED LIGHT SWITCHES SHALL BE PROVIDED.
- 4. ALL GENERAL PURPOSE TWENTY (20) A, 125/250 V RECEPTACLES AND 120/277V SWITCHES SHALL CONFORM TO NEMA WD-1
- 5. UNLESS OTHERWISE INDICATED, WIRING DEVICES AND COVER PLATES SHALL BE FURNISHED AND INSTALLED IN COLOR TO MATCH FINISH SURFACE WHERE IT IS LOCATED ON, I.E., DARK BROWN, BEIGE, WHITE OR STAINLESS STEEL.

1. FOR INDIVIDUAL CONDUIT RUNS NOT DIRECTLY FASTENED TO THE STRUCTURE, USE ROD HANGERS MANUFACTURED BY CADDY, UNISTRUT OR POWERSTRUT. FOR MULTIPLE CONDUIT RUNS, USE UNISTRUT OR POWERSTRUT TRAPEZE TYPE CONDUIT SUPPORT DESIGNED FOR MAXIMUM DEFLECTION NOT GREATER THAN 1/8".

#### A. FURNISH AS DESCRIBED IN THE LIGHTING FIXTURE SCHEDULE.

- B. SUPPORTS: PROPER SUPPORTS AND MOUNTING ACCESSORIES, SUCH AS HANGERS, STEMS, YOKES, PLASTER FRAMES, ETC. SHALL BE PROVIDED AS REQUIRED BY THE TYPE OF CEILING INSTALLED. WHERE SWIVEL CANOPIES OR BALL ALIGNERS ARE SPECIFIED, THEY SHALL CAUSE FIXTURE TO HANG PLUMB REGARDLESS OF CEILING SLOPE.
- C. FIXTURE DESIGNATION: FIXTURE TYPES ARE DESIGNATED ON DRAWINGS. WHERE ONLY ONE FIXTURE DESIGNATION IS SHOWN, IT APPLIES TO ALL FIXTURES IN THAT ROOM OR AREA. FOR EXACT FIXTURE COUNT AND LOCATION REFER TO REFLECTED CEILING
- D. WIRE 1-LAMP AND 3-LAMP FLUORESCENT FIXTURES IN TANDEM WHERE REQUIRED BY CODE.
- E. BALLASTS: ADVANCE, GE, OR APPROVED HIGH FREQUENCY ELECTRONIC, FULL LIGHT OUTPUT, ENERGY SAVING, CLASS "P", HIGH POWER FACTOR, ETL CERTIFIED, SOUND RATING "A" OR AS INDICATED ON DRAWINGS. F. G. G.
- EMERGENCY LIGHTING SHALL PROVIDE INITIAL ILLUMINATION OF AT LEAST AN AVERAGE OF 1 FOOT-CANDLE AND A MINIMUM AT ANY POINT OF 0.1 FOOT-CANDLE MEASURED ALONG THE PATH OF EGRESS AT FLOOR LEVEL. ILLUMINATION LEVELS MAY DECLINE TO 0.6 FOOT-CANDLE AVERAGE AND A MINIMUM OF 0.06 FOOT-CANDLE AT THE END OF 90 MINUTES. THIS COMMENT ALSO APPLIES TO SHEET A6.0. THIS SHALL BE VERIFIED DURING ONSITE INSPECTIONS
- ELECTRICAL CONTRACTOR SHALL PROVIDE, TO THE LOCAL CITY FIRE MARSHAL'S OFFICE, DOCUMENTATION OF EMERGENCY LIGHTING LEVEL COMPLIANCE BY WAY OF AFTER-HOURS LIGHT METER TEST OR PHOTOMETRIC DOCUMENTATION IN ACCORDANCE WITH CBC § 1008.3.2, PRIOR TO SCHEDULING THE FINAL LIFE SAFETY INSPECTION. PLEASE ADD THIS REQUIREMENT TO THE GENERAL NOTES. AWAITING DOCUMENTATION FROM ELECTRICAL CONTRACTOR UPON INSTALLATION, BALANCING, AND COMMISSIONING. THIS SHALL BE VERIFIED DURING ONSITE INSPECTIONS.

EXIT SIGNS SHALL BE PROVIDED WHERE THE EXITS AND/OR EXIT PATHS OF EGRESS TRAVEL THAT ARE NOT IMMEDIATELY VISIBLE TO THE

OCCUPANTS SO THAT ALL ACCESS TO EXITS ARE READILY VISIBLE IN ACCORDANCE WITH IBC 1013. THIS SHALL BE VERIFIED DURING ONSITE

# 2.04 FIRE ALARM SYSTEM: (WHEN REQUIRED)

- DESIGN/BUILT BY LICENSED FIRE ALARM CONTRACTOR AS REQUIRED BY THE CITY. A. IT SHALL BE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND HIS FIRE ALARM CONTRACTOR TO OBTAIN THE REQUIREMENTS AND
- APPROVAL FROM THE LOCAL FIRE MARSHAL ON ALL FIRE ALARM DEVICES AND WIRING REQUIRED. B. THE CONTRACTOR SHALL SUBMIT DRAWINGS TO THE CITY FOR DEFERRED APPROVAL OF THE COMPLETE FIRE ALARM SYSTEM DESIGN.

- A. ELECTRIC SYSTEM LAYOUTS INDICATED ON THE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. GOVERN EXACT ROUTING OF CABLE AND WIRING AND THE LOCATIONS OF OUTLETS BY THE STRUCTURE AND EQUIPMENT SERVED. TAKE ALL DIMENSIONS FROM ARCHITECTURAL DRAWINGS.
- B. CONSULT ALL OTHER DRAWINGS, VERIFY SCALES AND REPORT ANY DIMENSIONAL DISCREPANCIES OR OTHER CONFLICTS WITH OWNER BEFORE SUBMITTING BID. C. ALL HOME RUNS TO PANELBOARDS ARE INDICATED AS STARTING FROM THE OUTLET NEAREST THE PANEL AND CONTINUING IN THE GENERAL DIRECTION OF THAT PANEL. CONTINUE SUCH CIRCUITS TO THE PANEL AS THOUGH THE ROUTES WERE COMPLETELY
- INDICATED. TERMINATE HOMERUNS OF SIGNAL, ALARM, AND COMMUNICATION SYSTEMS IN A SIMILAR MANNER. D. AVOID CUTTING AND BORING HOLES THROUGH STRUCTURE OR STRUCTURAL MEMBERS WHEREVER POSSIBLE. OBTAIN PRIOR APPROVAL OF OWNER AND CONFORM TO ALL STRUCTURAL REQUIREMENTS WHEN CUTTING OR BORING THE STRUCTURE IS NECESSARY AND
- E. FURNISH AND INSTALL ALL NECESSARY HARDWARE, HANGERS, BLOCKING, BRACKETS, BRACING, RUNNERS, ETC. REQUIRED FOR EQUIPMENT SPECIFIED UNDER THIS SECTION. INSTALLATION SHALL MEET SEISMIC 4 REQUIREMENTS.
- F. PROVIDE NECESSARY BACKING REQUIRED TO INSURE RIGID MOUNTING OF OUTLET BOXES. G. ELECTRICAL INSTALLATION IN PUBLIC LOCATIONS SHALL BE ACCESSIBLE AND INSTALLATION SHALL COMPLY WITH AMERICAN DISABILITIES ACT (ADA) REQUIREMENTS. ELECTRICAL INSTALLATION SHALL COMPLY WITH APPLICABLE CODES AS LISTED IN
- A. WHEN CONDITIONS DETERMINED IN "A" ABOBE ARE NOT MET, INSTALL ALL WIRING IN RACEWAY, OR USE MC CABLE WHERE APPROVED BY ALL APPLICABLE CODES AND REGULATIONS. CONDUIT SHALL BE RIGID STEEL, IMC OR EMT AS FOLLOWS:
- 1. ABOVE GROUND: USE RIGID STEEL, IMC OR EMT. 2. WET LOCATIONS: RIGID STEEL OR IMC ONLY.
- 3. LOCATIONS SUBJECT TO MECHANICAL INJURY (0 TO 3 FT ABOVE FINISH FLOOR): RIGID STEEL OR IMC ONLY.
- 4. DRY LOCATIONS AND NOT SUBJECT TO MECHANICAL INJURY: EMT, IMC OR RIGID STEEL CONDUIT.
- 5. UNDERGROUND: USE PVC SCH. 40 WITH RIGID STEEL AT LAST TRANSITION TO ABOVE GROUND.
- 6. IN SLAB & INSIDE WALLS PVC SCH. 40. B. USE FLEXIBLE CONDUITS OR MC CABLE IN THE FOLLOWING APPLICATIONS:
- 1. FINAL CONNECTIONS TO MOTOR.
- 2. FINAL CONNECTIONS INTO AND OUT OF THE TRANSFORMER.
- 3. FINAL CONNECTIONS TO VIBRATING EQUIPMENT. 4. INTER-CONNECTIONS BETWEEN ALL LIGHT FIXTURES (NOT TO INCLUDE HOMERUN FROM FIXTURE OR DEVICE TO PANELBOARD, WHICH MUST BE RIGID)
- 5. FINAL CONNECTIONS WHERE RIGID CONDUIT IS NOT PRACTICAL. 6. IN WALLS (FOR LIGHT SWITCHES AND 120V POWER RECEPTACLES AND HVAC CONTROL EQUIPMENT).
- 3.03 INSTALLATION OF CONDUITS:

CONSTRUCTION DOCUMENTS.

- RUN ALL CONDUIT CONCEALED UNLESS OTHERWISE NOTED OR SHOWN. RUN ALL CONDUIT PARALLEL TO OR AT RIGHT ANGLES TO CENTER LINES OF COLUMNS AND BEAMS. CONDUITS ABOVE CEILINGS SHALL NOT OBSTRUCT REMOVAL OF CEILING TILES, LIGHTING FIXTURES, AIR
- DIFFUSERS, ETC. CONDUITS SHALL NOT CROSS ANY DUCT SHAFT OR AREA DESIGNATED AS FUTURE DUCT SHAFT HORIZONTALLY. CONDUIT RISERS WHEN ALLOWED IN DUCT SHAFT MUST BE COORDINATED WITH MECHANICAL WORK TO AVOID ANY CONFLICT.

- CONDUIT SUPPORTS: SUPPORT CONDUITS WITH UNDERWRITER'S LABORATORIES LISTED STEEL CONDUIT SUPPORTS AT INTERVALS REQUIRED BY THE NATIONAL ELECTRIC CODE. WIRES OR SHEET METAL STRIPS ARE NOT ACCEPTABLE FOR CONDUIT SUPPORT. USE CONDUIT HANGERS FOR ALL CONDUITS NOT DIRECTLY FASTENED TO STRUCTURE
- AND FOR ALL MULTIPLE CONDUIT RUNS. DO NOT ATTACH ANY CONDUIT TO MECHANICAL DUCTS OR PIPES. INDIVIDUAL CONDUITS 1/2" AND 3/4" SIZE FOR LIGHTING MAY BE SUPPORTED FROM CEILING SUPPORT WIRES WITH CADDY CLIPS ONLY IF ACCEPTABLE TO LOCAL CODE. ONLY ONE CONDUIT IS PERMITTED TO BE ATTACHED TO ANY CEILING SUPPORT WIRE. HANG SUCH CONDUIT SO AS NOT TO AFFECT LEVEL OF CEILING

AVOID ATTACHING CONDUIT TO FAN PLENUMS. WHEN IT IS NECESSARY TO SUPPORT CONDUIT FROM FAN

PLENUM, PROVIDE A LENGTH OF FLEXIBLE CONDUIT BETWEEN PORTION ATTACHED FAN PLENUM AND PORTION

# ATTACHED TO THE BUILDING TO MINIMIZE TRANSMISSION OF VIBRATION TO THE BUILDING STRUCTURE.

- CONDUIT PENETRATION: PENETRATING FIRE RATED FLOOR OR WALL: INSTALL CONDUIT IN CONDUIT SLEEVE OR FRAMED OPENING.
- SEAL PENETRATION WITH FIRE RETARDANT SEALANT SPECIFIED HEREIN.
- PENETRATING ROOF OR EXTERIOR WALL: AVOID PENETRATING ROOF OR EXTERIOR WALL WHERE POSSIBLE. WHERE PENETRATIONS ARE NECESSARY, BUILDING WEATHERPROOF INTEGRITY MUST BE PRESERVED.
- PENETRATING SOUND INSULATED OR AIR PLENUM WALL: INSTALL CONDUIT IN CONDUIT SLEEVE AND SEAL PENETRATION AS DETAILED ON THE DRAWINGS. PENETRATING NON-FIRE RATED DRY WALL: CONDUIT SLEEVES ARE NOT REQUIRED. PENETRATIONS MUST BE SEALED WITH PLASTER PRIOR TO PAINTING. PENETRATIONS MADE AFTER WALL FINISH IS APPLIED MUST
- BE AS SMALL AS POSSIBLE AND PROVIDED WITH ESCUTCHEONS, ONE ON EACH SIDE OF WALL. PENETRATING SUSPENDED CEILING: CUT HOLE AS SMALL AS POSSIBLE TO PERMIT CONDUIT PENETRATION. PROVIDE ESCUTCHEON FOR EACH CONDUIT BELOW CEILING.

#### 3.04 CONNECTIONS TO EQUIPMENT

- FURNISH AND INSTALL REQUIRED POWER SUPPLY CONDUIT AND WIRING TO ALL EQUIPMENT. SEE BELOW FOR OTHER WIRING REQUIRED. FURNISH AND INSTALL A DISCONNECT SWITCH IMMEDIATELY AHEAD OF AND ADJACENT TO EACH MAGNETIC MOTOR STARTER OR APPLIANCE UNLESS THE MOTOR APPLIANCE IS LOCATED ADJACENT AND WITHIN SIGHT OF THE SERVING PANELBOARD, CIRCUIT
- BREAKER OR SWITCH. VERIFY ALL EQUIPMENT NAMEPLATE CURRENT RATINGS PRIOR TO INSTALLATION. INSTALL ALL ROUGH-IN WORK FOR EQUIPMENT FROM APPROVED SHOP DRAWINGS TO SUIT THE SPECIFIC REQUIREMENTS OF THE
- FURNISH AND INSTALL MANUAL THERMAL PROTECTION FOR ALL MOTORS NOT INTEGRALLY EQUIPPED WITH THERMAL PROTECTION. FURNISH 120 VOLT POWER TO EACH CONTROL PANEL AND TIME SWITCH REQUIRING A SOURCE OF POWER TO OPERATE.

- PULL NO WIRE INTO ANY PORTION OF THE CONDUIT SYSTEM UNTIL ALL CONSTRUCTION WORK WHICH MIGHT DAMAGE THE WIRE HAS
- INSTALL ALL WIRE CONTINUOUS FROM OUTLET TO OUTLET OR TERMINAL TO TERMINAL. SPLICES IN CABLES WHEN REQUIRED SHALL BE MADE IN HANDHOLES, PULL BOXES OR JUNCTION BOXES. MAKE BRANCH CIRCUIT SPLICES IN OUTLET BOXES WITH 8" OF
- CORRECTLY COLOR-CODED TAILS LEFT IN THE BOX. C. SPLICES IN WIRES AND CABLES SHALL BE MADE UTILIZING MATERIALS AND METHODS DESCRIBED HEREIN BEFORE.
- MAKE ALL GROUND, NEUTRAL AND LINE CONNECTIONS TO RECEPTACLE AND WIRING DEVICE TERMINALS AS RECOMMENDED BY MANUFACTURER. PROVIDE GROUND JUMPER FROM OUTLET BOX TO GROUND TERMINAL OF DEVICES WHEN THE DEVICE IS NOT APPROVED FOR GROUNDING THROUGH THE MOUNTING SCREWS
- PROVIDE BRADY WIRE MARKERS WHERE NUMBER OF CONDUCTORS IN A BOX EXCEEDS FOUR. MEGGER AND RECORD INSULATION RESISTANCE OF ALL 600 VOLT INSULATED CONDUCTORS SIZE #4/0 AND LARGER USING 500 VOLT MEGGER FOR ONE MINUTE. MAKE TESTS WITH CIRCUITS ISOLATED FROM SOURCE AND LOAD.

# 3.06 INSTALLATION OF RECESSED LIGHT FIXTURES AND DEVICES

BLACK

A. ALL RECESSED LIGHT FIXTURES, BOXES, RECEPTACLES & OTHER DEVICES MOUNTED IN THE FIRE RATED CEILINGS OR WALLS SHALL BE PROVIDED WITH AN APPROVED ENCLOSURE CARRYING THE SAME FIRE RATING AS THE CEILING OR WALL. B. OUTLET BOXES THAT OCCUR ON OPPOSITE SIDES OF THE WALL WITHIN 24 INCH HORIZONTAL DISTANCE OF ONE ANOTHER SHALL BE PROTECTED BY AN APPROVED FIRESTOP MATERIAL OR DETAIL TO MAINTAIN THE FIRE RATING OF

#### THE WALL. 3.07 WIRE COLOR CODE:

COLOR CODING SHALL BE CONTINUOUS FOR WIRE #12 THROUGH #10 AWG. PHASE CONDUCTORS #8 AND LARGER AND CONDUCTORS OF ANY SIZE IN CABLE ASSEMBLIES MAY HAVE COLORED PHASING TAPE AT TERMINATIONS. COLOR CODE WIRES AS FOLLOWS: PHASE B PHASE C NEUTRAL

# 120/208V

PROVIDE NAMEPLATES FOR SWITCHBOARDS, PANELBOARDS, AND ALL SIMILAR DEVICES. NAMEPLATES SHALL BE SCREWED (NO ADHESIVES) ENGRAVED BAKELITE OR PHOTO-ETCHED METALLIC NAMEPLATE IDENTIFICATION SHOWING PANEL DESIGNATION, VOLTAGE AND PHASE IN MINIMUM 1/4" HIGH LETTERS.

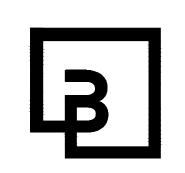
BLUE

- PROVIDE DYMO LABELS ON ALL LIGHTING SWITCHES AND CONVENIENCE AND SPECIAL PURPOSE RECEPTACLES TO SHOW PANEL AND CIRCUIT NUMBER TO WHICH THE DEVICE IS CONNECTED.
- C. EACH PANELBOARD SHALL CONTAIN A METAL-FRAMED CIRCUIT DIRECTORY INSIDE COVER, WITH PLASTIC PROTECTOR. PANELBOARD SCHEDULE: AFTER COMPLETION OF WORK, PROVIDE TYPEWRITTEN UPDATED PANELBOARD SCHEDULES FOR ALL

# PANELBOARDS.

- ELECTRICAL SERVICE AND SEPARATELY DERIVED ALTERNATING CURRENT SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH NEC
- ARTICLE 250-3 TO 250-26, INCLUSIVE. GROUND NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT ENCLOSURES, FRAMES, CONDUCTOR RACEWAYS OR CABLE TRAYS TO PROVIDE A LOW IMPENDANCE PATH FOR LINE-TO-GROUND FAULT CURRENT AND TO BOND ALL NON-CURRENT CARRYING METAL PARTS TOGETHER. PROVIDE GROUND CONDUCTOR IN EACH RACEWAY SYSTEM IN ADDITION TO CONDUCTORS SHOWN. EQUIPMENT GROUND CONDUCTOR SHALL BE ELECTRICALLY AND MECHANICALLY CONTINUOUS FROM THE ELECTRICAL CIRCUIT SOURCE TO THE EQUIPMENT TO BE GROUNDED. SIZE GROUND CONDUCTORS PER NEC ARTICLE 250-95 UNLESS LARGER CONDUCTORS ARE
- GROUNDING CONDUCTORS SHALL BE IDENTIFIED WITH GREEN INSULATION. WHERE GREEN INSULATION IS NOT AVAILABLE ON LARGER SIZES, BLACK INSULATION SHALL BE USED SUITABLY IDENTIFIED WITH GREEN TAPE AT EACH JUNCTION BOX OR DEVICE ENCLOSURE.





BP WEST COAST PRODUCTS, LLC

Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

NO. | DATE | REVISION DESCRIPTION

DEVELOPMENT INFORMATION: ARCO NTI

ABOSSEIN #223054

MECHANICAL - ELECTRICA

CIVIL – LEED

FIRE PROTECTION 18465 NE 68TH S

REDMOND, WA 98052

PH: (425) 462-9441 FAX: (425) 462-9451 L-Mail: cservice@abossein.com www.abossein.com

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

3400 am/pm

FUEL CANOPY w/ 6 MPD's

ALLIANCE Z&DM: ALLIANCE PM:

FACILITY #7184

**SPECIFICATIONS** 

21730



**ELECTRICAL SPECIFICATIONS** 

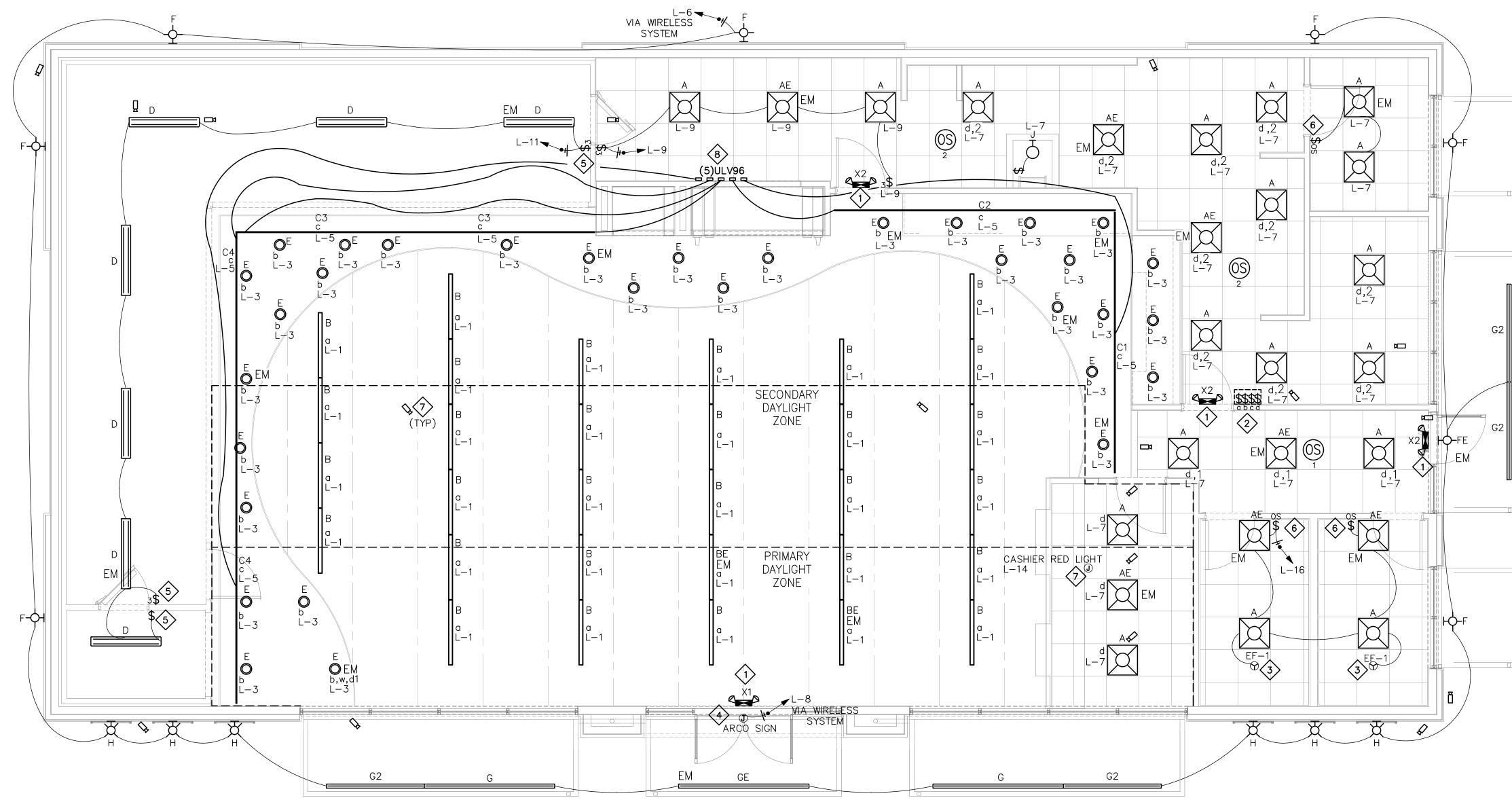
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# SHEET NOTES

- 1) ALL EMERGENCY AND EXIT LIGHTING FIXTURES TO BE CONNECTED TO LOCAL LIGHTING CIRCUIT, AHEAD OF ANY AND ALL SWITCHING.
- $\stackrel{\sim}{2}$  provide locking light switches. Field verify switch bank location with store manager.
- 3 USE LOCAL LIGHTING CIRCUIT FOR EXHAUST FAN. FAN TO RUN WHILE LIGHTS ARE IN USE.
- JUNCTION BOX PLACED FOR STORE SIGN. COORDINATE EXACT LOCATION WITH SIGN PROVIDER AND OWNERS REPRESENTATIVE PRIOR TO INSTALLATION.
- (5) INSTALL TIMER SWITCH FOR FREEZER/COOLER LIGHTS PER MANUFACTURERS REQUIREMENTS. FIELD VERIFY EXACT LOCATIONS.
- 6 PROVIDE DUAL TECHNOLOGY MULTI-WAY WALL SWITCH SENSOR. WATTSTOPPER DW-103 OR EQUAL.
- SECURITY CAMERA AND MONITOR WIRING SHALL BE PROVIDED BY OWNER'S SECURITY CONTRACTOR. PROVIDE 1/2"
  CONDUITS TO HEADEND RECORDER WITH PULL WIRE IF REQUIRED BY LOCAL CODE. SECURITY EQUIPMENT LOCATION SHOWN FOR REFERENCE ONLY. FINAL LOCATION TO BE DETERMINED BY SECURITY CONTRACTOR. COORDINATE LOCATION OF CAMERAS AND MONITORS WITH SECURITY CONTRACTOR.
- 8 KELVIX GRAPHIC SIGN LIGHTING TRANSFORMERS FOR FIXTURE "C".

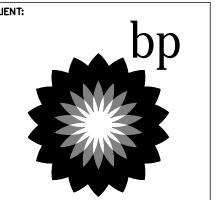
# **GENERAL NOTES**

- 1. SEE MECHANICAL EXHAUST FAN SCHEDULE ON SHEET MO.1.
- 2. ALL OCCUPANCY AND TIMER SWITCHES TO BE PROGRAMMED TO SHUT-OFF CONTROLLED FIXTURES WITHIN 15-MINUTES OF
- 3. 'EM' AT LIGHT FIXTURE INDICATES LIGHT FIXTURE WITH EMERGENCY BACK UP. ALL EMERGENCY LIGHT FIXTURES SHALL BE SERVED FROM BATTERY BACKUP. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES (INSTALL A CENTRAL BATTERY SYSTEM WHERE THE USE OF INDIVIDUAL BATTERY UNITS ARE PROHIBITED BY LOCAL CODES). ALL EMERGENCY FIXTURES AND EXIT SIGNS SHALL BE CONNECTED TO UN—SWITCHED HOT LEG OF THE LOCAL LIGHTING CIRCUIT.
- 4. GENERAL CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY IF CONFLICT OCCURS BETWEEN LIGHTING AND ANY OTHER TRADE. DO NOT PROCEED WITH INSTALLATION IN THAT AREA UNTIL CONFLICT HAS BEEN RESOLVED TO THE SATISFACTION OF THE ARCHITECT AND ENGINEER.
- 5. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING INSTRUCTIONS FOR ALL LIGHT FIXTURES. ELECTRICAL CONTRACTOR'S BID SHALL INCLUDE THE INSTALLATION OF ALL LIGHT FIXTURES AND ASSOCIATED LAMPS INCLUDING ALL NECESSARY HARDWARE AND SUPPORT PER SEISMIC REQUIREMENTS.
- 6. ALL WIRES SHALL BE #12 AWG UNLESS NOTED OTHERWISE.
- 7. WHERE WIRE SIZES ARE NOTED ON DRAWINGS, THAT SIZE SHALL BE THROUGH THE ENTIRE RUN UNLESS NOTED OTHERWISE.
- 8. ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
- 9. REFER TO BUILDING GUIDANCE STANDARDS FOR MATERIAL SELECTION CRITERIA, FINISHED AND GENERAL WORK RULES.
- 10. ELECTRICAL DESIGN BASED ON THE REQUIREMENTS OF 2018 WASHINGTON STATE ENERGY CODE. THE FOLLOWING STRATEGIES WERE
- USED:
   COMPLETE DESIGN SHALL COMPLY WITH 2018 WASHINGTON STATE ENERGY CODE.
- 11. GENERAL CONTRACTOR TO PROVIDE PHOTOMETRIC SURVEY REPORT OF BUILDING INTERIOR AREAS TO CONFIRM THAT AT LEAST 50 FOOT—CANDLE LIGHT INTENSITY IS PROVIDED DURING HOURS OF OPERATION IN THE KITCHEN AND FOOD HANDLING AREAS. OTHER AREAS (INCLUDING WALK—IN REFRIGERATOR AND FREEZER UNITS) MAY OPERATE WITH A LIGHT INTENSITY OF AT LEAST 10 FOOT—CANDLES, EXCEPT DURING CLEANING ACTIVITIES WHEN AT LEAST 50 FOOT—CANDLE INTENSITY MUST BE PROVIDED.
- 12. ALL EMERGENCY LIGHTS SHALL BE PROVIDED WITH UN-SWITCHED CIRCUIT IN ADDITION TO THE SWITCH CIRCUIT SHOWN, SWITCHED AND UN-SWITCHED CIRCUIT SHALL BE SUPPLIED FROM THE SAME BREAKER.
- 13. EXPOSED CONDUIT TO LIGHT FIXTURES SHALL BE MINIMIZED BUT WHERE EXPOSED SHALL BE STRAIGHT RUNS JUNCTION TO JUNCTION, ORGANIZED AND CONSISTENT IN APPEARANCE.
- 14. ALL EXTERIOR LIGHT FIXTURES TO BE CONTROLLED THROUGH THE LSI AIRLINK BLUE COMPLETE OUTDOOR LIGHTING WIRELESS MESH SYSTEM. AIRLINK BLUE SYSTEM INCLUDES DAYLIGHT AND MOTION SENSORS WITH DIMMING CONTROL CAPABLE OF AUTOMATICALLY SHUTTING OFF OUTDOOR LIGHTING WHEN DAYLIGHT IS AVAILABLE, EMPLOY AUTO FUNCTIONALITY WHEN AREA BECOMES OCCUPIED, AND CAPABLE OF PROVIDING CONTINUOUS DIMMING THROUGH A 50%-90% RANGE PER 2018 WSEC C405.2.4.1.1. AIRLINK BLUE SYSTEM TO INCLUDE ASTRONOMICAL CLOCK AND TIME KEEPER AIRLINK BLUE COMPONENT FOR SCHEDULING CONTROLS SET PER 2018 WSEC C405.2.6.4. ALL EXTERIOR LUMINAIRES TO INCLUDE FACTORY INTEGRATED BLUETOOTH RADIO/SENSOR CONTROLLERS. AIRLINK BLUE SYSTEM TO BE INITIALIZED VIA WEB APP AND FIELD COMMISSIONED VIA MOBILE APP TO THE OWNER'S REQUIREMENTS. ANY CHANGES OR UPDATES TO BE ACCOMPLISHED ON SITE VIA MOBILE APP.
- 15. ALL SHOWN WALL LIGHTS SWITCHED TO BE MOUNTED AT +44" A.F.F. UNLESS OTHERWISE STATED.
- 16. LIGHTING WITHIN SALES AREA EXEMPT FROM 2018 WSEC C405.2.4 DAYLIGHT RESPONSIVE CONTROLS REQUIREMENT DUE TO BEING A GROUP M OCCUPANCY.



LIGHTING PLAN

1/4" = 1'-0"





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18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

ABOSSEIN #223054

Abossein

Engineering

MECHANICAL — ELECTRICAL CIVIL — LEED

FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com

www.abossein.com

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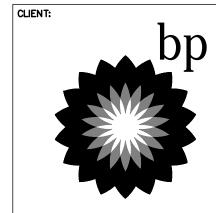
LIGHTING PLAN

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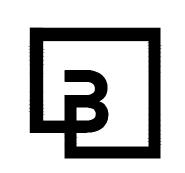
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| CALLOUT      | SYMBOL    | LAMP           | DESCRIPTION                                            | BALLAST                                        | MOUNTING  | MODEL                                                                                          | INPUT<br>WATTS | VOLTS      | LOCATION                                                                                                                                      | QUANTITY |
| A            |           | (1) 30W LED    | LED 2x2 RECESSED PANEL LIGHT                           | 0-10V DIMMABLE                                 | RECESSED  | LSI SFP22 LED 30 UE DIM 40                                                                     | 30             | 120V 1P 2W | BACKROOM/UTILITY ELECTRICAL, OFFICE RESTROOMS, 4000K COLOR TEMP (NEUTRAL)                                                                     | 18       |
| AE           |           | (1) 30W LED    | LED 2x2 RECESSED PANEL LIGHT WITH EMERGENCY BATTERY    | 0-10V DIMMABLE<br>WITH<br>EMERGENCY<br>BATTERY | RECESSED  | LSI SFP22 LED 30 UE DIM 40 EM                                                                  | 30             | 120V 1P 2W | BACKROOM/UTILITY ELECTRICAL, OFFICE RESTROOMS, W/EMERGENCY BATTERY PACK FOR 90 MINUTE ILLUMINATION, 4000K COLOR TEMP (NEUTRAL)                | 7        |
| В            |           | (1) 22.8W LED  | 4' LED SUSPENDED LINEAR FIXTURE                        | 0-10V DIMMABLE                                 | SUSPENDED | LSI 3RSS-4-LED-06L-LF-UE-30-BLK                                                                | 22.8           | 120V 1P 2W | SALES AREA                                                                                                                                    | 29       |
| BE           |           | (1) 22.8W LED  | 4' LED SUSPENDED LINEAR FIXTURE WITH EMERGENCY BATTERY | 0-10V DIMMABLE<br>WITH<br>EMERGENCY<br>BATTERY | SUSPENDED | LSI 3RSS-4-LED-06L-LF-UE-30-BLK-EM                                                             | 22.8           | 120V 1P 2W | SALES AREA W/EMERGENCY BATTERY PACK FOR 90 MINUTE ILLUMINATION                                                                                | 2        |
| C1           |           | (1) 96W LED    | LED LINEAR GRAPHICS FIXTURE WITH POWER SUPPLY          | ELECTRONIC                                     | CEILING   | KELVIX 502-I-163-DK-40K-WH-PV-SV-ULV (51.5W) WITH 96W-24V POWER SUPPLY ULV96                   | 96             | 120V 1P 2W | SALES AREA, FIXTURE TO INCLUDE A PERMANENT FACTORY—INSTALLED ENERGY VERIFIED LABEL CERTIFIED BY UL OR COMPARIBLE.                             | 1        |
| C2           |           | (1) 96W LED    | LED LINEAR GRAPHICS FIXTURE WITH POWER SUPPLY          | ELECTRONIC                                     | CEILING   | KELVIX 502-I-166-DK-40K-WH-PV-SV-ULV (51.5W) WITH 96W-24V POWER SUPPLY ULV96                   | 96             | 120V 1P 2W | SALES AREA, FIXTURE TO INCLUDE A PERMANENT FACTORY—INSTALLED ENERGY VERIFIED LABEL CERTIFIED BY UL OR COMPARIBLE.                             | 1        |
| C3           |           | (1) 96W LED    | LED LINEAR GRAPHICS FIXTURE WITH POWER SUPPLY          | ELECTRONIC                                     | CEILING   | KELVIX 502-I-132-DK-40K-WH-PV-SV-ULV (43.2W) WITH 96W-24V POWER SUPPLY ULV96 FOR (2) 132" RUNS | 96             | 120V 1P 2W | SALES AREA, FIXTURE TO INCLUDE A PERMANENT FACTORY—INSTALLED ENERGY VERIFIED LABEL CERTIFIED BY UL OR COMPARIBLE.                             | 2        |
| C4           |           | (1) 96W LED    | LED LINEAR GRAPHICS FIXTURE WITH POWER SUPPLY          | ELECTRONIC                                     | CEILING   | KELVIX 502-I-145-DK-40K-WH-PV-SV-ULV (48.9W) WITH 96W-24V POWER SUPPLY ULV96                   | 96             | 120V 1P 2W | SALES AREA, FIXTURE TO INCLUDE A PERMANENT FACTORY—INSTALLED ENERGY VERIFIED LABEL CERTIFIED BY UL OR COMPARIBLE.                             | 2        |
| D            |           | (1) 31.59W LED | REFRIGERATION LIGHT                                    | O-10V DIMMABLE                                 | CEILING   | LSI EG3-4-LED-4L-DA-S-UNV-DIM-50-80                                                            | 31.59          | 120V 1P 2W | WALK-IN COOLER, FREEZER W/ EMERGENCY BATTERY PACK FOR 90 MINUTE ILLUMINATION, 4508 LUMENS, 143.42 LUMENS/WATT                                 | 7        |
| E            | 0         | (1) 14W LED    | LED RECESSED DOWNLIGHT FIXTURE                         | O-10V DIMMABLE                                 | RECESSED  | LSI LAD6-LED-14L-UNV-DIM1-40-WF-TR6R-HAZ                                                       | 14             | 120V 1P 2W | SALES AREA, CASHIER, W/EMERGENCY BATTERY PACK FOR 90 MINUTE ILLUMINATION                                                                      |          |
| F            | -ф-       | (1) 47W LED    | WALL MOUNTED LED LIGHT                                 | 0-10V DIMMABLE                                 | WALL      | LSI XWM-3-LED-06L-50                                                                           | 47             | 120V 1P 2W | EXTERIOR SIDE & REAR WALLS                                                                                                                    | 7        |
| FE           | -ф-       | (1) 59W LED    | WALL MOUNTED LED LIGHT WITH EMERGENCY BATTERY BACKUP   | 0-10V DIMMABLE<br>WITH EM<br>BACKUP            | WALL      | LSI XWM-3-LED-06L-50-UE-MSV-IMSBT1-BB                                                          | 59             | 120V 1P 2W | EXTERIOR SIDE & REAR WALLS, INCLUDES INTEGRAL MOTION AND PHOTOCELL SENSOR AND BATTERY BACKUP CAPABLE OF 90 MINUTES OF EMERGENCY ILLUMINATION. | 3        |
| G            |           | (1) 96W LED    | AWNING FIXTURE LED                                     | ELECTRONIC                                     | AWNING    | LSI 3RWM-8-LED-13L-LF-50                                                                       | 96             | 120V 1P 2W | FRONT ENTRANCE                                                                                                                                | 2        |
| G2           |           | (1) 72W LED    | AWNING FIXTURE LED                                     | ELECTRONIC                                     | AWNING    | LSI 3RWM-6-LED-13L-LF-50                                                                       | 72             | 120V 1P 2W | FRONT ENTRANCE                                                                                                                                | 4        |
| GE           |           | (1) 96W LED    | AWNING FIXTURE LED WITH EMERGENCY BATTERY BACKUP       | ELECTRONIC                                     | AWNING    | LSI 3RWM-8-LED-13L-LF-50-EM                                                                    | 96             | 120V 1P 2W | FRONT ENTRANCE, INCLUDES BATTERY BACKUP CAPABLE OF 90 MINUTES OF EMERGENCY ILLUMINATION.                                                      | 1        |
| Н            | ÞX        | (1) 23W LED    | WALL MOUNTED LED GRAPHICS FIXTURE                      | ELECTRONIC                                     | WALL      | LSI XWM-2-LED-03L-50                                                                           | 23             | 120V 1P 2W | FRONT EXTERIOR                                                                                                                                | 6        |
| J            | $\mapsto$ | (1) 12W LED    | WALL MOUNTED LED PERMANENT LIGHT<br>FOR ROOF ACCESS    | ELV DIMMING                                    | WALL      | WAC LIGHTING FM-05RN-930-FINISH BY OTHERS                                                      | 12             | 120V 1P 2W | ROOF ACCESS HATCH                                                                                                                             | 1        |
| X1           |           | (1) 1.1W LED   | EXIT SIGN WITH BATTERY BACKUP                          | ELECTRONIC                                     | UNIVERSAL | LSI LPRX-R-U-WH-LD11                                                                           | 1.1            | 120V 1P 2W | SALES AREA,<br>W/EMERGENCY<br>BATTERY PACK FOR 90<br>MINUTE ILLUMINATION                                                                      | 1        |
| X2           |           | (1) 0.7W LED   | EXIT SIGN W/ BATTERY BACKUP W/O SIGN                   | ELECTRONIC                                     | UNIVERSAL | LSI EX-R-U-WB-WH-SD2                                                                           | 0.7            | 120V 1P 2W | BACKROOM, SIDE EXIT,<br>W/EMERGENCY<br>BATTERY PACK FOR 90<br>MINUTE ILLUMINATION                                                             | 3        |

NOTE: FOR KELVIX FIXTURES "C1", "C2", "C3", AND "C4", UTILIZE THE FOLLOWING CONTACT INFORMATION FOR ORDERING:

DJ DIAMOND-GONZALEZ DDIAMOND-GONZALEZ@KELVIX.COM 800-789-3810 EXT 145 6285 LAKEVIEW BLVD LAKE OSWEGO, OR 97035



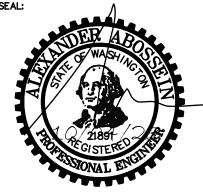




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DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #7184 ABOSSEIN #223054 ALLIANCE Z&DM: ALLIANCE PM: PROJECT NO:

Engineering, LUMINAIRE MECHANICAL — ELECTRICAL CIVIL — LEED SCHEDULE FIRE PROTECTION 18465 NE 68TH ST

REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com

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21730

# SHEET NOTES

- (1) COORDINATE ALL STUB-UP LOCATIONS WITH REFRIGERATION CONTRACTOR AND REFRIGERATION
- EQUIPMENT INSTALLATION DRAWINGS.
- $\langle 2 \rangle$  STUB UP CONDUITS UNDER THE CHECK STAND AND TERMINATE IN SEPARATE 8"x8"x6" BOXES FOR POWER AND LOW VOLTAGE SYSTEMS, MOUNTED 4" ABOVE FINISHED FLOOR COIL 10' OF ALL POWER
- 3 INSTALL (2) 1 1/2"C UNDER FLOOR CONDUITS FOR LOW VOLTAGE ONE TO THE TELEPHONE BOARD AND ONE TO THE SECURITY PANEL INSIDE OFFICE.
- <4> RECEPTACLE FOR DVR LOCKING RACK ENCLOSURE MOUNTED AT +94" A.F.F. AT ENCLOSURE CENTER.
- CONDUIT "STEEL CITY" CATHERDA COVER 3000 (TYP) LOCATE 1' O" IN EDOME OF CONDUIT OF CONDUIT OF CONDUIT OF CONDUIT OF CONDUITS. CONDUIT "STEEL CITY" CAT#88DA COVER 3P90 (TYP.). LOCATE 1'-0" IN FRONT OF GONDOLAS, TYP.
- FOR SECURITY SYSTEM INSTALL CONDUIT WITH PULL BOX AS SHOWN. STANDARD OUTLET BOXES AND PULL BOX WIRING BY OTHER COORDINATE LOCATION WITH A STANDARD OUTLET BOXES AND PULLBOX WIRING BY OTHER COORDINATE LOCATION WITH MECHANICAL CONTRACTOR.
- $\langle au 
  angle$  security alarm equipment. Coordinate final location with security contractor.
- \( 8 \right) TELEPHONE BACKBOARD. INSTALL 2" CONDUIT BETWEEN TELEPHONE BOARD AND SECURITY PANEL.
- (9) COORDINATE THE SCOPE OF WORK, EQUIPMENT RATING, WIRING REQUIREMENT AND CONTROLS WITH REFRIGERATION EQUIPMENT CONTRACTOR/VENDOR PRIOR TO PROCEEDING WITH WORK. REFER TO KITCHEN/REFRIGERATION EQUIPMENT FOR ADDITIONAL INFORMATION. NOTIFY GENERAL CONTRACTOR IF ANY DISCREPANCY EXISTS BETWEEN EQUIPMENT RATING, WIRING REQUIREMENT ETC. AND THE CURRENT
- SHOW WINDOW RECEPTACLE TO BE LOCATED WITHIN 18" ABOVE STORE WINDOW. FACE PLATES TO BE PAINTED TO MATCH ADJACENT WALLS.
- CONNECT TO RESTROOM SWITCHED LIGHTING CIRCUIT, SEE E1.0, E5.0 AND MECHANICAL EQUIPMENT SCHEDULE FOR MORE INFORMATION.
- PROVIDE J-BOX & ONE 4 PAIR CAT 5/6 TEL. FOR CONNECTION OF ATM MACHINE. COORDINATE EXACT LOCATION AND OTHER REQUIREMENTS WITH OWNER.
- (13) COORDINATE EXACT LOCATION AND REQUIREMENTS FOR ELECTRIC WATER HEATER WITH PLUMBING
- (14) J-BOX FOR EVAPORATOR COILS. (PRE-FAB COOLER MANUFACTURER TO DETERMINE EXACT LOCATION.)
- (15) ELECTRICAL PROVISION FOR AIR CURTAIN CONNECTION. (EXACT LOCATION AND HEIGHT TO BE DETERMINED AT SITE)
- (16) HOT WATER CIRCULATION PUMP 120V 0.8A. FIELD COORDINATE EXACT LOCATION.
- $\langle 17 \rangle$  PROVIDE (2) 2" CONDUIT FROM ROOF FOR FUTURE SOLAR PANELS. ROUTE CONDUITS TO MAIN DISTRIBUTION SERVICE MSB.
- (18) PANEL G IS PROVIDED WITH CPI (CAROLINA PRODUCTS, INC.) UNITIZED PANEL SYSTEM. PROVIDE WIREWAYS AS NEEDED TO ENTER CPI PANEL WITH BRANCH CIRCUITING. REFER TO PANEL SCHEDULE ON
- 19 PROVIDE OCCUPANCY CONTROLLED RECEPTACLE FOR HALF OF ALL DUPLEX RECEPTACLES IN THE
- CPI UTILIZED ALL-IN-ONE PANEL SYSTEM COMBINING PANELS A, B, C, G, L AND CPI UNITIZED MAIN SWITCHBOARD MDP-1.
- (21) JBOX FOR HARD WIRED LOW VOLTAGE LAVATORY FAUCET SYSTEM WITH TRANSFORMER.

# **GENERAL NOTES**

A. PROVIDE GFCI PROTECTION FOR ALL 120V 1PH RECEPTACLES AND ALL 208V 3PH RECEPTACLES IN KITCHEN AREA AND FOOD SERVICE AREA PER NEC 210.8(B).

B. ALL WIRES SHALL BE #12 AWG UNLESS NOTED OTHERWISE. PROVIDE SEPARATE NEUTRAL WIRE FOR ALL LIGHTING CIRCUITS BACK TO LIGHTING CONTROL PANEL.

C. ALL 120V. RUNS LONGER THAN 100' SHALL BE #10 WIRE SIZE UNLESS NOTED OTHERWISE ON PLANS. . WHERE WIRE SIZES ARE NOTED ON DRAWINGS, THAT SIZE SHALL BE THROUGH THE ENTIRE RUN UNLESS

NOTED OTHERWISE. E. ELECTRICAL CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS AS REQUIRED FOR A FULLY COMPLETE AND OPERABLE SYSTEM.

F. THE CONTRACTOR SHALL COORDINATE THE EXACT MOUNTING LOCATION OF ALL LIGHT FIXTURES, LIGHT SWITCHES, RECEPTACLES, TELEPHONE/DATA OUTLETS, AND ANY OTHER DEVICE LOCATIONS SHOWN ON THIS PLAN WITH THE ARCHITECTURAL FLOOR PLAN, ARCHITECTURAL REFLECTED CEILING PLAN, AND ARCHITECTURAL INTERIOR ELEVATIONS. DEVICES NOT LOCATED ON THE ARCHITECTURAL DRAWINGS SHALL BE COORDINATED WITH THE ARCHITECT IN THE FORM OF RFI (REQUEST FOR INFORMATION). CONTRACTOR SHALL ASSUME THAT DEVICES ARE TO BE MOUNTED CENTERED ON THE WALLS, SECTION OF WALLS, WINDOWS, ETC. AND THAT ADDITIONAL MOUNTING BRACKETS AND ACCESSORIES SHALL BE A PART OF THE BID PROPOSAL.

G. REFER TO MECHANICAL CONTROLS DIAGRAM FOR ADDITIONAL SCOPE OF WORK, SUCH AS POWER FOR THERMOSTATS, AND OTHER WORK REQUIRED BY ELECTRICAL CONTRACTOR AND NOT SPECIFICALLY MENTIONED IN ELECTRICAL DRAWINGS.

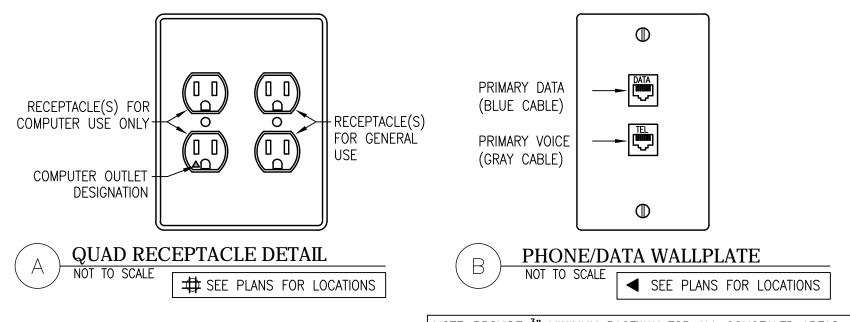
H. REFER TO ARCHITECTURAL DETAILS FOR INSTALLATION OF OUTLETS IN FIRE RATED WALLS.

I. ALL PERMANENTLY CONNECTED (HARD-WIRED) APPLIANCES SHALL BE SERVED WITH DISCONNECTING MEAN WITHIN SIGHT OF THE UNIT, OR THE SERVING CÍRCUIT BREAKER IN THE PANEL SHALL BE CAPABLE OF BEING LOCKED IN OPEN POSITION AS REQUIRED PER NEC 422.31.

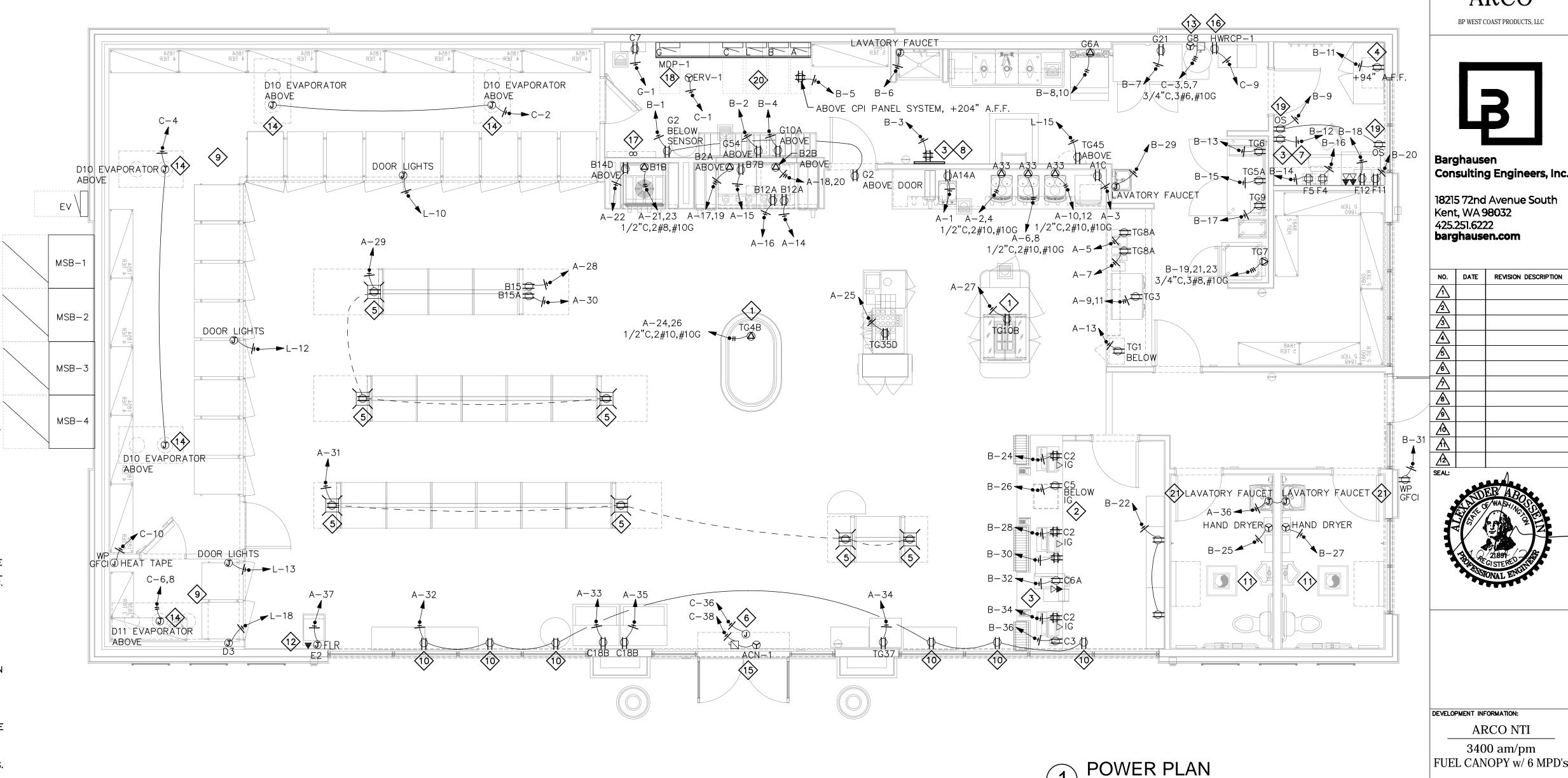
J. REFER TO EQUIPMENT SCHEDULE DRAWING SHEET E2.2 FOR POWER AND OUTLET REQUIREMENTS.

K. FINAL EQUIPMENT LOCATION SHALL BE COORDINATED WITH ARCHITECT. REFER TO DWG. Q1.1 FOR FIXTURE

L. ELECTRICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR FOR BUILDING WALL FINISH ACCOMMODATIONS TO ENSURE EARLY INSTALLATION OF THE MAIN SWITCH BOARD, METER AND CT SECTIONS.



NOTE: PROVIDE  $\frac{3}{4}$  MINIMUM RACEWAY FOR ALL CONCEALED AREAS. STUB CONDUIT INTO ACCESSIBLE AREA. PROVIDE CONNECTOR AND PROTECTIVE BUSHING.



BP WEST COAST PRODUCTS, LLC

ARCO NTI

3400 am/pm

SWC S MERIDIAN @ HIGHWAY 512

PUYALLUP, WASHINGTON

FACILITY #7184

POWER PLAN

ALLIANCE Z&DM:

ALLIANCE PM:

PROJECT NO:

21730

SITE ADDRESS:

ABOSSEIN #223054

Abossein

Engineering

MECHANICAL — ELECTRICAL

CIVIL — LEED

FIRE PROTECTION

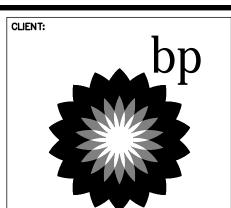
18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com

| CALLOUT                                            | SYMB0L        | VOLTS             | AMPS  | MCA   | MOCP | KVA  | HP     | CIRCUIT    | WIRE CALLOUT         | LOAD TYPE  | DISCONNECT         |
|----------------------------------------------------|---------------|-------------------|-------|-------|------|------|--------|------------|----------------------|------------|--------------------|
| A1C — CAPPUCCINO<br>MACHINE (6 HEAD)               | <b>#</b>      | 120V 1P 2W        | 15    | 18.75 | 20   | 1.8  |        | A-3        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| A14A — FROZEN<br>BEVERAGE MACHINE 92<br>BARREL)    | <del>-</del>  | 120V 1P 2W        | 12    | 15    | 20   | 1.44 |        | A-1        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| A33 — COFFEE<br>BEAN—TO—CUP<br>GRINDER             | <b>©</b>      | 208V 2P 2W        | 20    | 25    | 30   | 4.16 |        | A-10,12    | 1/2"C,2#10,#10G      | KITCHEN    | SPECIAL RECEPTACLE |
| A33 — COFFEE<br>BEAN—TO—CUP<br>GRINDER             | <b>Ø</b>      | 208V 2P 2W        | 20    | 25    | 30   | 4.16 |        | A-6,8      | 1/2"C,2#10,#10G      | KITCHEN    | SPECIAL RECEPTACLE |
| A33 — COFFEE<br>BEAN—TO—CUP<br>GRINDER             | <b>Ø</b>      | 208V 2P 2W        | 20    | 25    | 30   | 4.16 |        | A-2,4      | 1/2"C,2#10,#10G      | KITCHEN    | SPECIAL RECEPTACLE |
| ARCO SIGN                                          | <b>J</b>      | 120V 1P 2W        | 2.5   | 3.13  | 20   | 0.3  |        | L-8        | 1/2"C,1#12,#12N,#12G | LIGHTING   | JUNCTION BOX       |
| B1B — FROZEN<br>BEVERAGE DISPENSER<br>(4 FLAVOR)   | <b>(</b>      | 208V 2P 2W        | 30    | 37.5  | 40   | 6.24 |        | A-21,23    | 1/2"C,2#8,#10G       | KITCHEN    | SPECIAL RECEPTACLE |
| B2A — FOUNTAIN TOP<br>MOUNT ICE MAKER              | 0             | 208/120V 2P<br>3W | 12.5  | 15.62 | 20   | 2.6  |        | A-17,19    | 1/2"C,2#12,#12N,#12G | KITCHEN    | SPECIAL RECEPTACLE |
| B2B FOUNTAIN ICE<br>MAKER                          | 0             | 208/120V 2P<br>3W | 15    | 18.75 | 20   | 3.12 |        | A-18,20    | 1/2"C,2#12,#12N,#12G | KITCHEN    | SPECIAL RECEPTACLE |
| B12A ICE DRINK<br>DISPENSER                        | <del>-</del>  | 120V 1P 2W        | 5.25  | 6.56  | 20   | 0.63 |        | A-16       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| B12A ICE DRINK<br>DISPENSER                        | <b>‡</b>      | 120V 1P 2W        | 5.25  | 6.56  | 20   | 0.63 |        | A-14       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| B14D — FCB GRAPHIC<br>FOR 36" CART                 | <del>-</del>  | 120V 1P 2W        | 8.33  | 10.41 | 20   | 1    |        | A-22       | 1/2"C,1#12,#12N,#12G | LIGHTING   | DUPLEX RECEPTACLE  |
| 315 — F'REAL<br>BLENDER                            | <del>-</del>  | 120V 1P 2W        | 6.5   | 18.75 | 20   | 0.78 |        | A-28       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |
| 315A – F'REAL<br>FREEZER                           | <del>-</del>  | 120V 1P 2W        | 6.5   | 8.12  | 20   | 0.78 |        | A-30       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |
| C18B — ICE CREAM<br>CASE                           | <del>-</del>  | 120V 1P 2W        | 12    | 15    | 20   | 1.44 |        | A-33       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |
| C18B — ICE CREAM<br>CASE                           | <del>\$</del> | 120V 1P 2W        | 12    | 15    | 20   | 1.44 |        | A-35       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| G6A ICE MACHINE                                    | <b>Ø</b>      | 208V 2P 2W        | 18    | 18    | 20   | 3.74 |        | B-8,10     | 1/2"C,2#12,#12G      | KITCHEN    | SPECIAL RECEPTACL  |
| G10A – WATER<br>BOOSTER                            | <del>-</del>  | 120V 1P 2W        | 7.2   | 9     | 20   | 0.86 | 1/3 HP | B-4        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| G21 — 2—DOOR<br>REACH—IN<br>REFRIGERATOR           | <del></del>   | 120V 1P 2W        | 7     | 8.75  | 20   | 0.84 |        | B-7        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| G54 — CARBONATOR                                   | <del></del>   | 120V 1P 2W        | 7.2   | 9     | 20   | 0.86 | 1/3 HP | B-2        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| TG1 — MICROWAVE<br>OVEN                            | <b>\$</b>     | 120V 1P 2W        | 15    | 19    | 20   | 1.8  |        | A-13       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |
| TG3 — FOOD WARMER                                  | <del>**</del> | 208/120V 2P<br>3W | 7.96  | 9.95  | 20   | 1.66 |        | A-9,11     | 1/2"C,2#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |
| TG4B — REFRIGERATED<br>SELF—SERVICE ISLAND         | <b>Ø</b>      | 208V 2P 2W        | 23.73 | 29.66 | 30   | 4.94 |        | A-24,26    | 1/2"C,2#10,#10G      | KITCHEN    | SPECIAL RECEPTACL  |
| TG5A — WORKTOP<br>REFRIGERATOR                     | <del>-</del>  | 120V 1P 2W        | 7.2   | 9     | 20   | 0.86 | 1/3 HP | B-15       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| TG6 — BUN TOASTER                                  | <del></del>   | 120V 1P 2W        | 13    | 16.25 | 20   | 1.56 |        | B-13       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| TG7 - VENTLESS OVEN                                | <b>Ø</b>      | 208V 3P 3W        | 29.42 | 36.77 | 40   | 10.6 |        | B-19,21,23 | 3/4"C,3#8,#10G       | KITCHEN    | SPECIAL RECEPTACL  |
| TG8A NACHO CHEESE<br>DISPENSER                     | <del>-</del>  | 120V 1P 2W        | 1.67  | 2.08  | 20   | 0.2  |        | A-5        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| TG8A NACHO CHEESE<br>DISPENSER                     | <del>=</del>  | 120V 1P 2W        | 1.67  | 2.08  | 20   | 0.2  |        | A-7        | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| TG9 – FOOD LABEL<br>PRINTER                        | <del>-</del>  | 120V 1P 2W        | 8.33  | 10.41 | 20   | 1    |        | B-17       | 1/2"C,1#12,#12N,#12G | RECEPTACLE | DUPLEX RECEPTACLI  |
| TG10B — MEDIUM<br>REFRIGERATED<br>CONDIMENT ISLAND | <del></del>   | 120V 1P 2W        | 8.33  | 10.41 | 20   | 1    |        | A-27       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLI  |
| TG35D — FREE<br>STANDING BAKERY<br>CASE            | <del>-</del>  | 120V 1P 2W        | 8.33  | 10.41 | 20   | 1    |        | A-25       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACLE  |
| TG37 — ENERGY ZONE<br>COOLER                       | <del></del>   | 120V 1P 2W        | 11.58 | 14.47 | 20   | 1.39 |        | A-34       | 1/2"C,1#12,#12N,#12G | KITCHEN    | DUPLEX RECEPTACL   |

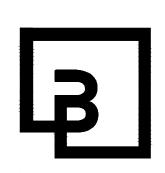
|                                       |               | 'HEDULE |            |
|---------------------------------------|---------------|---------|------------|
| CALLOUT                               | SYMBOL        | NEMA    | VOLTS      |
| C2 - CASH<br>REGISTERS/POS            | #             | 5-20R   | 120V 1P 2W |
| C3 - INTERCOM<br>TO FUEL<br>POSITIONS | <del>\$</del> | 5-20R   | 120V 1P 2W |
| C5 - SAFE                             | <del>-</del>  | 5-20R   | 120V 1P 2W |
| C6A — LOTTO<br>TERMINAL               | <del>-</del>  | 5-20R   | 120V 1P 2W |
| CASHIER RED<br>LIGHT                  | <b>①</b>      |         | 120V 1P 2W |
| CONTROLLED<br>RECEPTACLE              | <del>\$</del> | 5-20R   | 120V 1P 2W |
| GFCI                                  | <del>-</del>  |         | 120V 1P 2W |
| HEAT TAPE                             | <del></del>   |         | 120V 1P 2W |
| HWRCP-1                               | <del>-</del>  | 5-20R   | 120V 1P 2W |
| QUAD                                  | #             | 5-20R   | 120V 1P 2W |
| RPBA HOT BOX                          | <del>-</del>  |         | 120V 1P 2W |
| STANDARD                              | <del>-</del>  | 5-20R   | 120V 1P 2W |
| WP GFCI                               | <del>\$</del> | 5-20R   | 120V 1P 2W |

| CALLOUT | SYMBOL       | VOLTS      | AMPS | MCA  | MOCP | KVA   | HP     | CIRCUIT    | WIRE CALLOUT         | LOAD TYPE                 | DISCONNECT              |
|---------|--------------|------------|------|------|------|-------|--------|------------|----------------------|---------------------------|-------------------------|
| ACN-1   | <b>&amp;</b> | 120V 1P 2W | 4.4  | 5.5  | 20   | 0.53  | 1/6 HP | C-38       | 1/2"C,1#12,#12N,#12G | MOTOR                     | FUSED                   |
| EF-1    | 9            | 120V 1P 2W | 3.9  | 4.25 | 20   | 0.47  | 1/8 HP | L-16       | 1/2"C,1#10,#10N,#10G | MOTOR                     | HARDWIRED<br>CONNECTION |
| EF-1    | 9            | 120V 1P 2W | 3.9  | 4.25 | 20   | 0.47  | 1/8 HP | L-16       | 1/2"C,1#10,#10N,#10G | MOTOR                     | HARDWIRED CONNECTION    |
| EF-2    | <b>9</b> \$  | 120V 1P 2W | 5.8  | 7.25 | 20   | 0.7   | 1/4 HP | C-12       | 1/2"C,1#10,#10N,#10G | MOTOR                     | TOGGLE SWITCH           |
| ERV-1   | 9            | 120V 1P 2W | 6    | 6    | 15   | 0.72  |        | C-1        | 1/2"C,1#12,#12N,#12G | HEATING AND COOLING MOTOR | HARDWIRED CONNECTION    |
| RTU-1   | <b>♥</b> ~□  | 208V 3P 3W | 50.4 | 63   | 70   | 18.16 |        | C-19,21,23 | 1"C,3#4,#8G          | HEATING AND COOLING MOTOR | FUSED                   |
| RTU-2   | <b>♥</b> ~□  | 208V 3P 3W | 68   | 85   | 100  | 24.5  |        | C-25,27,29 | 1-1/4°C,3#2,#8G      | HEATING AND COOLING MOTOR | FUSED                   |

| CALLOUT                                             | SYMBOL       | VOLTS      | AMPS  | MCA    | MOCP | KVA    | HP      | CIRCUIT    | WIRE CALLOUT         | LOAD TYPE     | DISCONNECT              |
|-----------------------------------------------------|--------------|------------|-------|--------|------|--------|---------|------------|----------------------|---------------|-------------------------|
| AIR/WATER UNIT                                      | 9            | 120V 1P 2W | 12.5  | 15.625 | 20   | 1.5    |         | CW-3       | 3/4"C,1#8,#8N,#8G    | NONCONTINUOUS | HARDWIRED CONNECTION    |
| B2C - ICE MAKER REMOTE CONDENSING UNIT              |              | 120V 1P 2W | 13    | 16.25  | 20   | 1.56   |         | C-15       | 1/2"C,1#12,#12N,#12G | KITCHEN       | NON-FUSED               |
| B2E - ICE MAKER REMOTE CONDENSING UNIT              |              | 208V 2P 2W | 7.5   | 9.37   | 25   | 1.56   |         | C-14,16    | 1/2"C,2#12,#12G      | KITCHEN       | NON-FUSED               |
| B7B — ILLUMINATED DISPLAY BOARD                     | <del></del>  | 120V 1P 2W | 8.33  | 10.41  | 20   | 1      |         | A-15       | 1/2"C,1#12,#12N,#12G | LIGHTING      | DUPLEX RECEPTACLI       |
| C7 — TANK MONITOR EQUIPMENT                         | <del></del>  | 120V 1P 2W | 15    | 18.75  | 20   | 1.8    |         | G-1        | 1/2"C,1#12,#12N,#12G | CONTINUOUS    | DUPLEX RECEPTACLI       |
| D3 — WALK—IN FREEZER GLASS DOOR<br>ASSEMBLY DISPLAY | J J          | 120V 1P 2W | 7.17  | 8.96   | 20   | 0.86   |         | L-18       | 1/2"C,1#10,#10N,#10G | LIGHTING      | JUNCTION BOX            |
| D10A - CU-1                                         | <b>♥</b> □   | 208V 3P 3W | 11.08 | 13.84  | 20   | 3.99   | 3 HP    | C-18,20,22 | 1/2"C,3#12,#12G      | KITCHEN       | FUSED                   |
| D10A - CU-2                                         |              | 208V 3P 3W | 11.08 | 13.84  | 20   | 3.99   | 3 HP    | C-24,26,28 | 1/2"C,3#12,#12G      | KITCHEN       | FUSED                   |
| D10 EVAPORATOR COILS                                | <b>J</b>     | 120V 1P 2W | 3.5   | 4.37   | 20   | 0.42   | 1/10 HP | C-2        | 1/2"C,1#12,#12N,#12G | KITCHEN       | JUNCTION BOX            |
| D10 EVAPORATOR COILS                                | (J)          | 120V 1P 2W | 3.5   | 4.37   | 20   | 0.42   | 1/10 HP | C-2        | 1/2"C,1#12,#12N,#12G | KITCHEN       | JUNCTION BOX            |
| D10 EVAPORATOR COILS                                | <b>J</b>     | 120V 1P 2W | 3.5   | 4.37   | 20   | 0.42   | 1/10 HP | C-4        | 1/2"C,1#10,#10N,#10G | KITCHEN       | JUNCTION BOX            |
| D10 EVAPORATOR COILS                                | <b>J</b>     | 120V 1P 2W | 3.5   | 4.37   | 20   | 0.42   | 1/10 HP | C-4        | 1/2"C,1#10,#10N,#10G | KITCHEN       | JUNCTION BOX            |
| D11A - CU-3                                         |              | 208V 3P 3W | 11.08 | 13.85  | 20   | 3.99   | 3 HP    | C-30,32,34 | 1/2"C,3#10,#10G      | KITCHEN       | FUSED                   |
| D11 EVAPORATOR COILS                                | J J          | 208V 2P 2W | 2.02  | 2.52   | 20   | 0.42   | 1/10 HP | C-6,8      | 1/2"C,2#10,#10G      | KITCHEN       | JUNCTION BOX            |
| DIESEL TURBINE #1                                   | 8            | 208V 3P 3W | 7.49  | 9.37   | 20   | 2.7    | ,       | G-14,16,18 | 1/2"C,3#10,#10G      | MOTOR         | HARDWIRED CONNECTION    |
| DISPENSER #1                                        | 0            | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-3        | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| DISPENSER #2                                        | 0            | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-9        | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| DISPENSER #3                                        | 0            | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-15       | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| DISPENSER #4                                        | 0            | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-21       | 1/2"C,1#10,#10N,#10G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| DISPENSER #5                                        | 0            | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-27       | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| DISPENSER #6                                        | 0            | 120V 11 2W | 12.5  | 15.62  | 20   | 1.5    | 1       | G-33       | 1/2"C,1#10,#10N,#10G | NONCONTINUOUS | SPECIAL RECEPTACL       |
| COOLER DOOR LIGHTS                                  | <b>D</b>     | 120V 11 2W | 2.08  | 2.6    | 20   | 0.25   |         | L-10       |                      | LIGHTING      | JUNCTION BOX            |
| COOLER DOOR LIGHTS  COOLER DOOR LIGHTS              | <b>J</b>     | 120V 1P 2W | 2.08  | 2.6    | 20   | 0.25   |         | L-10       | 1/2"C,1#12,#12N,#12G | LIGHTING      | JUNCTION BOX            |
| COOLER DOOR LIGHTS  COOLER DOOR LIGHTS              |              |            |       |        |      |        |         |            | 1/2"C,1#12,#12N,#12G | _             |                         |
|                                                     | <b>J</b>     | 120V 1P 2W | 2.08  | 2.6    | 20   | 0.25   |         | L-13       | 1/2"C,1#10,#10N,#10G | LIGHTING      | JUNCTION BOX            |
| E2 ATM                                              | <b>3</b>     | 120V 1P 2W | 8.33  | 10.41  | 20   | 1 0 75 | 1       | A-37       | 1/2"C,1#10,#10N,#10G | NONCONTINUOUS | JUNCTION BOX            |
| ESO SWITCH                                          | 0            | 120V 1P 2W | 6.25  | 7.81   | 20   | 0.75   | 1       | G-22       | 3/4"C,1#8,#8N,#8G    | NONCONTINUOUS | SPECIAL RECEPTACE       |
| ESO SWITCH                                          | <b>O</b>     | 120V 1P 2W | 6.25  | 7.81   | 20   | 0.75   |         | G-22       | 3/4"C,1#8,#8N,#8G    | NONCONTINUOUS | SPECIAL RECEPTACL       |
| F4 COMPUTER SYSTEM                                  | #            | 120V 1P 2W | 2.53  | 3.16   | 20   | 0.3    |         | B-16       | 1/2"C,1#12,#12N,#12G | RECEPTACLE    | QUAD RECEPTACLE         |
| F5 CCTV-RECORDER/DVR/MONITOR                        | #            | 120V 1P 2W |       | 8.75   | 20   | 0.84   | 1       | B-14       | 1/2"C,1#12,#12N,#12G | RECEPTACLE    | QUAD RECEPTACLE         |
| F11 BATTERY BACKUP                                  | <del></del>  | 120V 1P 2W | 3     | 3.75   | 20   | 0.36   |         | B-20       | 1/2"C,1#12,#12N,#12G | RECEPTACLE    | DUPLEX RECEPTACLI       |
| F12 PRINTER                                         | <del></del>  | 120V 1P 2W | 8.33  | 10.41  | 20   | 1      |         | B-18       | 1/2"C,1#12,#12N,#12G | RECEPTACLE    | DUPLEX RECEPTACLI       |
| FUTURE VENT DIAGNOSTICS                             | <b>①</b>     | 120V 1P 2W | 12.5  | 15.62  | 20   | 1.5    |         | G-20       | 3/4"C,1#8,#8N,#8G    | NONCONTINUOUS | JUNCTION BOX            |
| G6C - ICE MAKER REMOTE CONDENSING UNIT              |              | 208V 2P 2W | 12.5  | 15.62  | 25   | 2.6    |         | C-11,13    | 1/2"C,2#12,#12G      | KITCHEN       | NON-FUSED               |
| G8 - WH-1                                           |              | 208V 3P 3W | 33.31 | 41.64  | 50   | 12     |         | C-3,5,7    | 3/4°C,3#6,#10G       | HEATING       | NON-FUSED               |
| HAND DRYER                                          | 9            | 120V 1P 2W | 11.67 | 14.58  | 20   | 1.4    |         | B-27       | 1/2"C,1#12,#12N,#12G | MOTOR         | HARDWIRED<br>CONNECTION |
| HAND DRYER                                          | 9            | 120V 1P 2W | 11.67 | 14.58  | 20   | 1.4    |         | B-25       | 1/2"C,1#12,#12N,#12G | MOTOR         | HARDWIRED<br>CONNECTION |
| LLUMINATED LOGO SIGN                                | 0            | 120V 1P 2W | 4.17  | 5.21   | 20   | 0.5    |         | L-24       | 1/2"C,1#10,#10N,#10G | LIGHTING      | SPECIAL RECEPTACE       |
| LLUMINATED LOGO SIGN                                | <b>Q</b>     | 120V 1P 2W | 4.17  | 5.21   | 20   | 0.5    |         | L-28       | 1/2"C,1#10,#10N,#10G | LIGHTING      | SPECIAL RECEPTACE       |
| ILLUMINATED LOGO SIGN                               | 0            | 120V 1P 2W | 4.17  | 5.21   | 20   | 0.5    |         | L-26       | 1/2"C,1#10,#10N,#10G | LIGHTING      | SPECIAL RECEPTACE       |
| LAVATORY FAUCET                                     | (J)          | 120V 1P 2W | 1.5   | 1.9    | 20   | 0.18   |         | B-6        | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | JUNCTION BOX            |
| LAVATORY FAUCET                                     | J)           | 120V 1P 2W | 1.5   | 1.9    | 20   | 0.18   |         | B-29       | 1/2"C,1#12,#12N,#12G | NONCONTINUOUS | JUNCTION BOX            |
| LAVATORY FAUCET                                     | <b>J</b>     | 120V 1P 2W | 1.5   | 1.9    | 20   | 0.18   |         | A-36       | 1/2"C,1#10,#10N,#10G | NONCONTINUOUS | JUNCTION BOX            |
| LAVATORY FAUCET                                     | <b>I</b>     | 120V 1P 2W | 1.5   | 1.9    | 20   | 0.18   |         | A-36       | 1/2"C,1#10,#10N,#10G | NONCONTINUOUS | JUNCTION BOX            |
| MONUMENT SIGN                                       | 0            | 120V 1P 2W | 2     | 2.5    | 20   | 0.24   |         | L-23       | 3/4"C,1#8,#8N,#8G    | LIGHTING      | SPECIAL RECEPTACE       |
| MONUMENT SIGN                                       | 0            | 120V 1P 2W | 2     | 2.5    | 20   | 0.24   |         | L-21       | 1/2"C,1#10,#10N,#10G | LIGHTING      | SPECIAL RECEPTACE       |
| TG45 — UV FLY LIGHT                                 | <del>-</del> | 120V 1P 2W | 8.33  | 10.41  | 20   | 1      |         | L-15       | 1/2"C,1#12,#12N,#12G | LIGHTING      | DUPLEX RECEPTACL        |
| UNLEADED PREMIUM TURBINE #1                         | 8            | 208V 3P 3W | 7.49  | 9.37   | 20   | 2.7    |         | G-8,10,12  | 1/2"C,3#10,#10G      | MOTOR         | HARDWIRED CONNECTION    |
| UNLEADED TURBINE #1                                 | 9            | 208V 3P 3W | 7.49  | 9.37   | 20   | 2.7    | 1       | G-2,4,6    | 1/2"C,3#10,#10G      | MOTOR         | HARDWIRED               |







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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

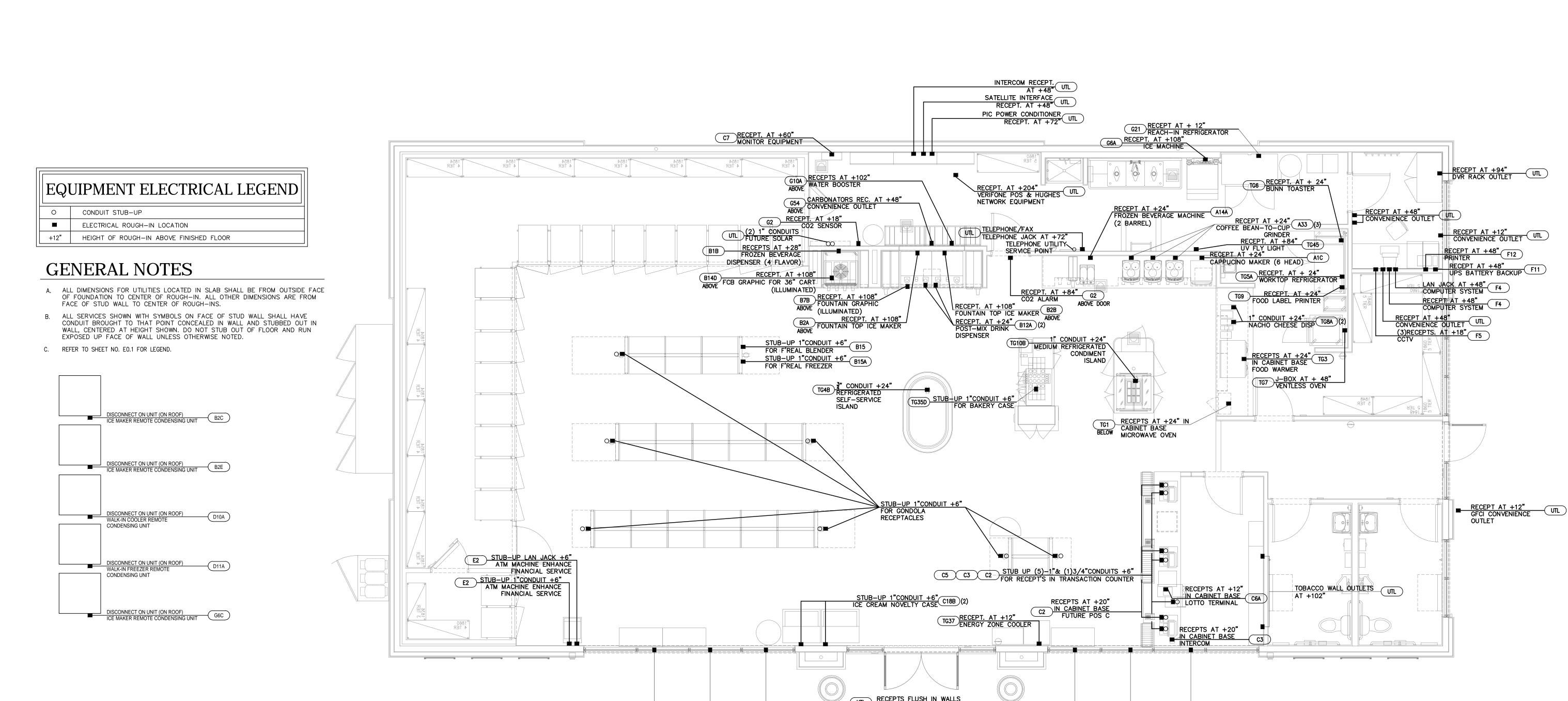
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SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

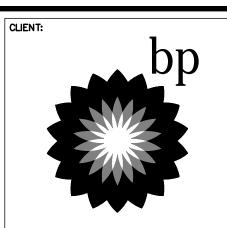
FACILITY #7184

| DESIGNED BY:   | ALLIANCE Z&DM: |
|----------------|----------------|
| CHECKED BY:    | BP REPM:       |
| DRAWN BY:      | ALLIANCE PM:   |
| VERSION:       | PROJECT NO:    |
|                | 21730          |
| DRAWING TITLE: |                |

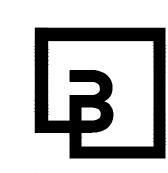
Engineering, L.L.C. EQUIPMENT MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
18465 NE 68TH ST
REDMOND, WA 98052
PH: (425) 462-9441
FAX: (425) 462-9451
E-Mail: cservice@abossein.com
www.abossein.com & RECEPTACLE SCHEDULES SHEET NO:



1 ELECTRICAL ROUGH-IN PLAN
1/4" = 1'-0"







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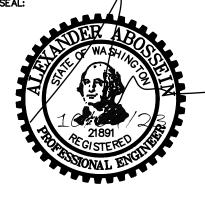
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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

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@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

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VERSION:

PROJECT NO:

21730

ELECTRICAL ROUGH-IN PLAN

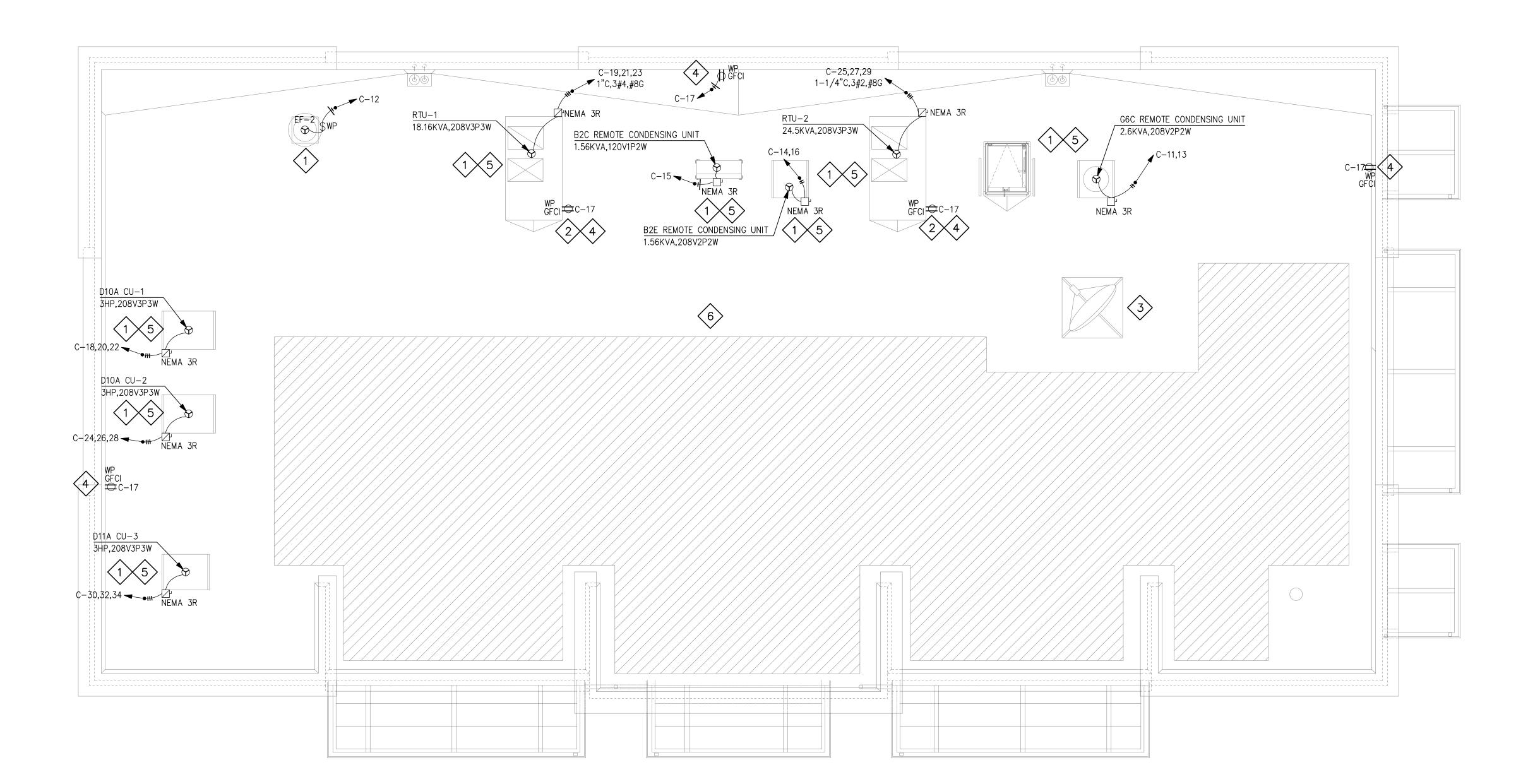
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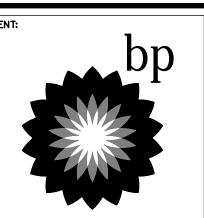
# SHEET NOTES:

- REFER TO DRAWING NOS. E1.3 & MO.1 FOR ELECTRICAL AND MECHANICAL EQUIPMENT SCHEDULE FOR EQUIPMENT RATING REFERENCES.
- PROVIDE DEDICATED RECEPTACLE OUTLET WITH IN-USE COVER AT THE RTU UNITS ONLY. LOCATION TO BE DETERMINED AT SITE.
- REFER TO DWG. E3.0 FOR SATTELITE ROOF JACK-SIGNAL CABLE CONDUIT DETAIL.
- PROVIDE DEDICATED RECEPTACLES FOR GENERAL ROOF MAINTENANCE.

  MAINTAIN 25 FOOT RADIUS FOR EXACT LOCATION.
- 5 ALL CONDUIT TO BE ROUTED BELOW ROOF LINE AND STUBBED DIRECTLY INTO EQUIPMENT.
- PROPOSED ALLOCATED SOLAR ZONE PER 2018 WSEC C411 SOLAR READINESS REQUIREMENTS. PER C411.2 CALCULATIONS: 3,543 SQ FT GROSS ROOF AREA 127 SQ FT OCCUPIED SPACES SOLAR ZONE IS 40% OF ROOF AREA: 0.4 \* 3,543 SQ FT = 1,417 SQ FT







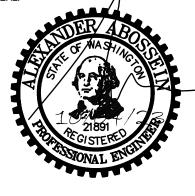




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

Abossein

Engineering,

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FACILITY #7184

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DRAWN BY:

VERSION:

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ALLIANCE PM:

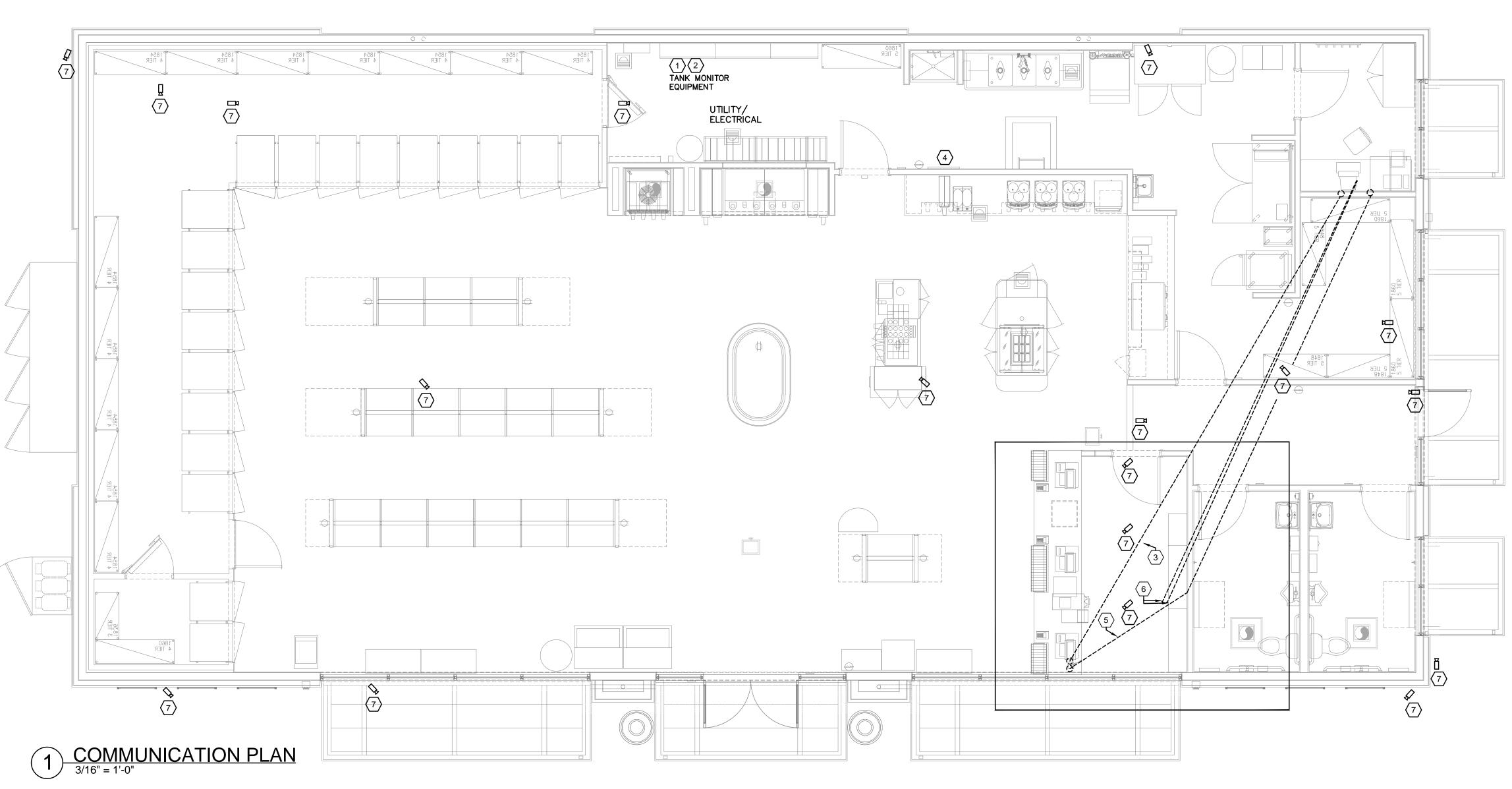
PROJECT NO:

21730

ELECTRICAL ROOF PLAN

SHEET NO:

E1.5



VIDEO

**OPTIONAL** 

RECORDER

REQUIREMENTS

DIGITAL

2 ENLARGED CASHIER COMMUNICATION / POS PLAN
3/8" = 1'-0"

#### **DESCRIPTION** 20" COLOR PUBLIC VIEW MONITOR SHOULD BE CEILING MOUNTED AT THE ENTRANCE OF STORE. AS THE CUSTOMER ENTERS THE FACILITY, THE IMAGE SHOULD BE READILY SEEN. A MINIMUM 0F 15" COLOR MONITOR SHOULD BE PLACED IN THE BACK OFFICE FOR VIEWING AND MONITORING. WHERE BACK OFFICE SPACE IS LIMITED, A SMALLER COLOR MONITOR MAY BE APPROPRIATE. ROBOT / SENSORMATIC COLOR (16 PORT) MULTIPLEXER. APPROVED TIME LAPSE VIDEO RECORDER (BEST RESULTS ARE OBTAINED IN 24-HOUR RECORDING MODE). **REQUIRED** 24-HOUR REAL TIME AUDIO RECORDING (RECORDED ON 24-HOUR VIDEO TAPE). **EQUIPMENT** APPROVED SECURE CABINET FOR RECORDING EQUIPMENT. A MINIMUM OF FIVE-COLOR VIDEO CAMERAS WITH PROPER LENSES MOUNTED IN-STORE. A MINIMUM OF TWO EXTERIOR MOUNTED CAMERAS WITH ENVIRONMENTAL HOUSINGS TO COVER OPERATIONS AT THE FUELING FACILITIES WITH CASH ACCEPTING PIC UNITS MUST HAVE CAMERA COVERAGE FOR EACH OPERABLE SIDE OF THE UNIT. IF A SINGLE CAMERA CANNOT VIEW BOTH SIDES OF A DUAL UNIT, THEN ADDITIONAL CAMERAS MUST BE INSTALLED TO COMPLETE COVERAGE. **OPTIONAL**

SAFETY & SECURITY / VIDEO

SURVEILLANCE SYSTEM

(PROVIDED BY GENERAL CONTRACTOR)

ADDITIONAL VIDEO CAMERAS (INTERIOR AND EXTERIOR). 13" COLOR MONITOR SHOULD BE CEILING MOUNTED NEAR CASH REGISTER AREA. MONITOR MUST SEQUENCE THE EXTERIOR CAMERA IMAGES AND MUST BE READILY VIEWED BY CASHIER. **EQUIPMENT** INTERACTIVE AUDIO / VIDEO MONITORING SERVICE PROVIDED BY APPROVED VENDOR FOR 24-HOUR INTERACTIVE OFF-FACILITY SECURITY MONITORING SYSTEM. DIGITAL CCTV RECORDING SYSTEM: SUFFICIENT HARD DRIVE SPACE TO SUPPORT 12 COLOR CAMERAS AT  $5\frac{1}{2}$  FRAMES PER SECOND,

PER CAMERA, FOR 31 DAYS. AUDIO RECORDING IS REQUIRED AT THE SALES COUNTER AREA.

AN AUDIO PROCESSING KIT (LOUROE PREFERRED) IS REQUIRED TO SYNCHRONIZE THE AUDIO WITH THE VIDEO IMAGE.

DATA, COMMUNICATION CABLING AND DEVICE REQUIREMENTS

- A. DATA CABLING SHALL BE CATEGORY 5E OR CATEGORY 5 ( CAT 5 UTP SHIELDED CABLE). CATEGORY 5 TO BE USED IF CATEGORY 5E IS COST PROHIBITIVE. PROVIDE LINE ITEM COST ON BID.
- B. CAT 6E AND 6 CABLE SHALL BE 4- PAIR, 8 CONDUCTORS, EACH PAIR SHALL BE INDIVIDUALLY FOIL SHIELDED, FOIL OUT, INSULATION COLORS SHALL BE BLUE, ORANGE, GREEN, BROWN AND WHITE IN ACCORDANCE WITH WITH IEC 708. CABLE TO BE RATED FOR 300 MHz TRANSMISSION.
- C. CABLE JACKET COLOR TO BE BLACK IN ACCORDANCE WITH RAL COLOR REGISTER NO. 840-HR.
- D. ALL CABLING SHALL BE ROUTED IN CONDUIT. CONDUIT SHALL BE LIMITED TO 40% FILL.
- E. ALL MODULAR CONNECTORS AND TERMINATIONS SHALL BE RJ-45.
- F. PATCH PANELS SHALL BE 24 PORT, CAPABLE OF EXPANSION, AMP T568A OR EQUAL, FOR DATA AND TELEPHONE COMMUNICATIONS.
- G. PROVIDE ANALOG TELEPHONE JACKS AS SHOWN ON PLAN AS FOLLOWS: PAY PHONES, FORE COURT CONTROLLER, E-POS BACK-UP, TANK GAUGE AND DATA CARD POS.

### **KEYED NOTES:**

PER NEC ARTICLE 250.

- 1" CONDUIT W/PULLWIRE FROM TLS-350 TANK MONITOR PANEL TO MANAGER'S COMPUTER LOCATION.
- 2 1" CONDUIT W/ CABLE FOR INTERCOM COMMUNICATION ABOVE CEILING TO THE (3) INTERCOM LOCATIONS. FROM (1) OFFICE, TO (1) COOLER AND (1) STORAGE ROOM. REFER TO SHEET E2.0 FOR POWER INFORMATION.
- 3 1-1/4" CONDUIT W/PULLWIRE FROM MANAGERS COMPUTER TO 12" X 12" SLAB OPENING FOR POS DATA CABLING.
- TELEPHONE BOARD, PROVIDE 3/4" PLYWOOD MOUNTED TO WALL FOR TELEPHONE/ISDN EQUIPMENT MOUNTING. COORDINATE WITH UTILITY COMPANY. MOUNT BOARD 7'-0" A.F.F. PAINT WITH FIRE RETARDANT PAINT AND PROVIDE GROUND FROM TELEPHONE BOARD TO MAIN SERVICE GROUND
- 2-1-1/4" CONDUIT WITH PULL WIRE FROM DISPENSER INTERFACE TO 12"X12" SLAB OPENING.
- 4" CONDUIT W/PULLWIRE MOUNTED 8" A.F.F. IN MANAGER'S OFFICE. ROUTE CONDUIT OVERHEAD AT STUB OUT OVER CASHIER COUNTER.
- MINIMUM CAMERA SHOWN, EXACT LOCATION TO BE DETERMINED BY SECURITY CONSULTANT INSTALLED BY SECURITY CONSULTANT INSTALLER.

# DRAWING LEGEND DESCRIPTION SYMBOL

OUBLE GANG J-BOX WITH SINGLE GANG PLASTER RING SHALL BE PROVIDED BY AND INSTALLED BY ELECTRICAL CONTRACTOR. PROVIDE SIEMON CT4-FP-20 FACE PLATE W/ 2 SIEMON CT-AK-20 INSERTS. SEE RJ-45 RECEPTACLE WIRING DIAGRAM DETAIL FOR PROPER WIRING ORDER. ELECTRICAL CONTRACTOR SHALL NUMBER EACH CONNECTION AS SHOWN TO COORDINATE WITH PATCH PANEL NUMBERS. PROVIDE WRITE-ON LABEL UNDER CLEAR PLASTIC COVER INDICATING PATCH PANEL IDENTIFIER. PROVIDE PRINTED INSERTS FOR ALL LABELS (HANDWRITTEN NOT ACCEPTABLE)

DOUBLE GANG TELEPHONE OUTLET WITH SINGLE GANG PLASTER RING SHALL BE PROVIDED BY AND INSTALLED BY ELECTRICAL CONTRACTOR. PROVIDE SIEMON CT4-FP-20 FACE PLATE W/ 2 SIEMON CT-AK-20 INSERTS. SEE RJ-45 RECEPTACLE WIRING DIAGRAM DETAIL FOR PROPER WIRING ORDER. ELECTRICAL CONTRACTOR SHALL NUMBER EACH CONNECTION AS SHOWN TO COORDINATE WITH PATCH PANEL NUMBERS. PROVIDE WRITE-ON LABEL UNDER CLEAR PLASTIC COVER INDICATING PATCH PANEL IDENTIFIER. PROVIDE PRINTED INSERTS FOR ALL LABELS (HANDWRITTEN NOT ACCEPTABLE). C-STORE TO HAVE (5) PHONE LINES. (1) LINE FOR EACH OF

THE FOLLOWING: MAIN TELEPHONE **LOTTERY** 

SPARE

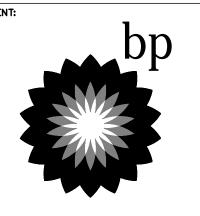
CONDUIT ROUTED UNDER SLAB.

CONDUIT ROUTED ABOVE CEILING.

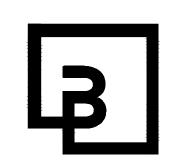
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Abossein Engineering,

MECHANICAL — ELECTRICAL CIVIL - LEED FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com





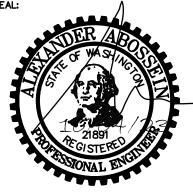


BP WEST COAST PRODUCTS, LLC

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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #7184

ALLIANCE PM: PROJECT NO: 21730

COMMUNICATION PLAN

GROUNDING BUS

CONCRETE. NEC 250.52 (3)

-1/2" MIN. REBAR

20' OF #4 BARE COPPER MIN. ENCASED IN

BONDING JUMPER

**GROUNDING DETAIL** 

SCALE: NONE

#3/0 AWG CU.

SIZED PER 250-122 -

GROUND CLAMP (TYP)

MAIN SERVICE EQUIPMENT - 1200A

SERVICE NEUTRAL

(GROUNDED CONDUCTOR)

NEUTRAL DISCONNECT

NEUTRAL BUS • • • • • •

MEANS. SECTION 230-75

RACEWAY/CONDUIT

BONDING BUSHING

SECTION 250-94

MAIN BONDING JUMPER

GROUNDING ELECTRODE

CPI, INC. UNITIZED PANEL SYSTEM IS TO BE PROVIDED BY THE GENERAL CONTRACTOR.

#500kcmil

MAIN OVERCURRENT DEVICE, 1000A X 1.25 = 1250A

FUTURE PV OUTPUT,  $30A \times 1.25 = 38A$ 

MSB-4 BUS RATING = 1200A x 1.2 = 1440A

SECTION 250-50

\_\_\_\_\_ 3/0 AWG CU.

\* EQUIPMENT BONDING CONDUCTORS

SECTION 250-102, 250-122

SECTION 250-102, 250-94, 250-92, 250-122

SECTION 250-66, 250-68, 250-62, 250-70

WATER SERVICE TO BUILDING

RTU-1

208V 3P 3W

RTU-2

208V 3P 3W

3"C

GROUNDING ELECTRODE CONDUCTOR

(4) SETS OF 500 KCMIL ALUMINUM

ALL SECTIONS OF SWITCHBOARD MUST BE BONDED TOGETHER

SIZED PER 250-122~

HOT WATER PIPE

SECTION 384-3(c)

GROUNDING ELECTRODE CONDUCTOR

EXOTHERMIC WELD

OR CONTINUOUS 20'

WATER PIPE GROUND SECTION 250-50(a)(2)

POWER RISER FLAG NOTES:

5 SERVICE DISCONNECT

8

REFER TO CALCULATION ON THIS SHEET.

SCHEDULES FOR BREAKER PROVISIONS

UTILITY APPROVED SWITCHBOARD WITH PULL SECTION AND METERING COMPARTMENT.

SWITCHBOARD BUS INCREASED FOR PHOTOVOLTAIC SYSTEM NEC 705.12 COMPLIANCE.

PROVIDE PHOTOVOLTAIC INPUT BREAKER AT BOTTOM OF BUS. REFER TO PANEL

(4)3"C,3#500kcmil AL,#500kcmil AL N

CAROLINA POWER, INC. UNITIZED PANEL SYSTEM PROVIDED BY ARCO.

ENCASED IN CONCRETE -

SUPPLEMENTAL ELECTRODE

REQUIRED IN ADDITION TO

SECTION 250-66, 250-68, 250-62, 250-70

3/0 AWG CU. —

(2) 5/8" X 8' GALVANIZED

SPACED MIN OF 12' APART. #3/0 AWG CU.

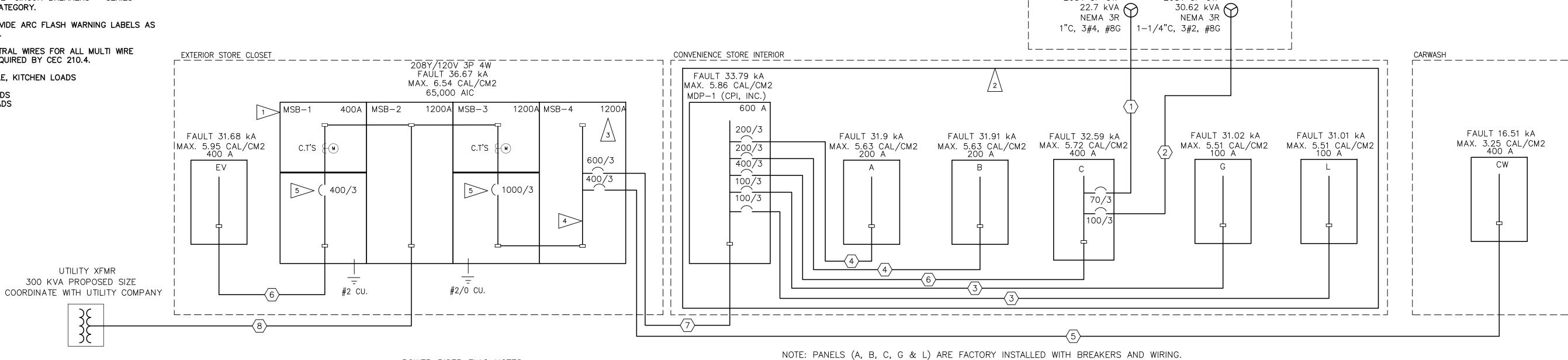
STEEL GROUND RODS

### NOTES:

- 1. ALL SERVICE EQUIPMENT, INCLUDING METER & CURRENT TRANSFORMER CABINET TERMINATION BOXES, DISCONNECT SWITCHES, AND MAIN CIRCUIT BREAKERS SHALL BE RATED FOR THE MAXIMUM AVAILABLE SHORT CIRCUIT CURRENT AS DETERMINED BY THE SERVING UTILITY CO.
- DESIGNED AIC RATINGS BASED ON PROPOSED 300KVA UTILITY TRANSFORMER WITH 1.8% IMPEDANCE. ELECTRICAL CONTRACTOR TO CONFIRM ACTUAL AVAILABLE FAULT CURRENT WITH LOCAL UTILITY AND MAKE REVISIONS TO EQUIPMENT AIC RATINGS PRIOR TO ORDERING AND INSTALLATION. ELECTRICAL CONTRACTOR SHALL NOTIFY ENGINEER OF CHANGES.
- 3. ALL SWITCHGEAR (MSB & MDP) CONDUCTORS SHALL BE STRANDED COPPER TYPE THHN/THWN.
- 4. GROUNDING ELECTRODE CONNECTIONS SHALL BE MADE WITH A U.L. LISTED AND APPROVED BOLTED PRESSURE OR

COMPRESSION TYPE CONNECTOR.

- 5. GROUND RODS (IF NEEDED) SHALL BE 3/4" DIA. X 10' LONG COPPERWELD. RESISTANCE TO GROUND MUST BE 25 OHMS OR
- 6. CONCRETE ENCASED (UFER) GROUNDING ELECTRODES SHALL CONSIST OF AT LEAST 20 FEET OF ONE OR MORE STEEL REINFORCING BARS OR RODS OF NOT LESS THAN 1/2 INCH DIAMETER, OR CONSISTING OF AT LEAST 20 FEET OF BARE COPPER CONDUCTORS NOT SMALLER THAN #2/0 AWG, ENCASED BY AT LEAST 2 INCHES OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH.
- 7. CONNECT GROUNDING WIRE DIRECTLY TO GROUND ROD. MINIMIZE CONDUCTOR RIGHT ANGLE BENDS. MAXIMUM LENGTH OF CONDUCTOR SHALL BE 10 FEET.
- 8. SUPPLY EXACT NUMBER OF DEDICATED ISOLATED GROUND RECEPTACLES FOR LINE CONDITIONED EQUIPMENT. NO UNUSED DEDICATED ISOLATED GROUND RECEPTACLE SHALL BE INSTALLED. IF A RECEPTACLE IS INSTALLED THEN NOT USED. CONTRACTOR SHALL REMOVE RECEPTACLE AND INSTALL BLANK COVER ON JUNCTION BOX.
- 9. USE OF SERIES-CONNECTED INTERUPTING RATINGS FOR CIRCUIT BREAKERS IS ACCEPTABLE PROVIDED THE CIRCUIT BREAKER COMBINATIONS ARE RECOGNIZED BY UNDERWRITERS LABORATORIES UNDER THE "CIRCUIT BREAKERS - SERIES CONNECTED" PRODUCT CATEGORY.
- 10. CONTRACTOR SHALL PROVIDE ARC FLASH WARNING LABELS AS REQUIRED BY CEC 110.16.
- 11. PROVIDE DEDICATED NEUTRAL WIRES FOR ALL MULTI WIRE BRANCH CIRCUITS AS REQUIRED BY CEC 210.4.
- 12. PANEL A,B RECEPTACLE, KITCHEN LOADS PANEL C - HVAC LOADS PANEL G - FUELING LOADS PANEL L - LIGHTING LOADS



NEC 705.12 B (3) (2)

TOTAL = 1,288A

1,288A < 1440A

#500kcmil | 1

# POWER DISTRIBUTION RISER DIAGRAM

UTILITY XFMR 300 KVA PROPOSED SIZE

PRIMARY 12.47kV 3P 3W

FAULT 47.45 kA

IMPEDANCE 1.8%

8.37 (cal)

CONNECTED kVA 402

CALCULATED kVA 401

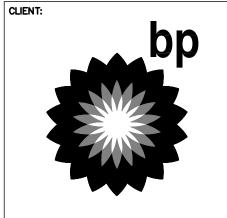
SECONDARY 208Y/120V 3P 4W

SCALE: NONE

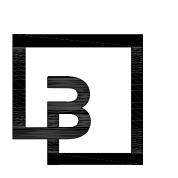
FEEDER SCHEDULE  $|\mathit{CONDUCTOR}|\mathit{CONDUCTOR}|$   $|\mathit{NEUTRAL}|$ NEUTRALIDFEEDERCONDUIT AND FEEDER FEEDINGTOTALGROUND | NUMBER | CONDUIT AMPSTHESEWIREWIREWIREWIREWIREWIREOF RUNS SIZEDEVICESCOUNTCOUNTSIZECOUNTSIZESIZE1"C 1"C,3#4,#8G RTU-1 1-1/4"C,3#2,#8G RTU-2 1-1/4°C 1-1/2°C 1-1/2"C,3#1,#1N,#8G 2"C 2"C,3#3/0,#3/0N,#6G 2-1/2°C (2)2-1/2°C,3#250kcmil AL,#250kcmil AL N,#1/0 | CW #250kcmil | 1 #250kcmil | #1/0 AL 3-1/2°C 3-1/2"C,3#600kcmil,#600kcmil N,#2G C, EV #600kcmil #600kcmil (2)3"C,3#500kcmil AL,#500kcmil AL N,#2/0 AL MDP-1 3"C #500kcmil #500kcmil | #2/0 AL

SIZING METHOD: COPPER, 60°C #12 THROUGH #1, 75°C 1/O AND ABOVE, ALUMINUM, 75°C #12 ONWARD EQUIPMENT GROUND WIRE SIZED WITH COPPER. ELECTRICAL CONTRACTOR MAY OPT TO USE ALUMINUM WIRE SIZED PER CEC ALUMINUM DENOTED BY "AL", ALL WIRES NOT DENOTED WITH "AL" ARE COPPER.

MSB-2



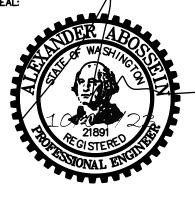




Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

| NO.         | DATE | REVISION DESCRIPTION |
|-------------|------|----------------------|
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| SEAL:       |      |                      |



**DEVELOPMENT INFORMATION:** ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

CIVIL - LEED

18465 NE 68TH ST REDMOND, WA 98052

PH: (425) 462-9441 FAX: (425) 462-9451

E-Mail: cservice@abossein.com

www.abossein.com

**SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

**FACILITY #7184** 

| FAC          | FACILITY # / 184                   |  |
|--------------|------------------------------------|--|
| DESIGNED BY: | ALLIANCE Z&DM:                     |  |
| CHECKED BY:  | BP REPM:                           |  |
| DRAWN BY:    | ALLIANCE PM:                       |  |
| VERSION:     | PROJECT NO:                        |  |
|              | _ 21730                            |  |
|              | DESIGNED BY: CHECKED BY: DRAWN BY: |  |

SINGLE LINE MECHANICAL - ELECTRICAL DIAGRAM FIRE PROTECTION

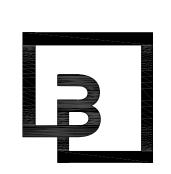
DRAWING TITLE:

| JTILITY XFMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MSB-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MSB-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------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| ROOM VOLTS 208Y/120V 3P 4W AIC 50,000 MOUNTING BUS AMPS MAIN BKR FED FROM UTILITY NEUTRAL 100% LUGS STANDARD NOTE PROPOSED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FED FROM MSB-2 NEUTRAL 100% LUGS STANDARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ROOM VOLTS 208Y/120V 3P 4W AIC 65,000  MOUNTING SURFACE BUS AMPS 1200 MAIN BKR MLO  FED FROM UTILITY XFMR NEUTRAL 100% LUGS STANDARD  NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| BREAKER   CIRCUIT DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CKT # TRIP/POLES         BREAKER TRIP/POLES         CIRCUIT DESCRIPTION         LOAD KVA         A B C         FEEDER RACEWAY AND CONDUCTORS           1 -/3 PANEL EV         27 27 27 3-1/2"C,3#600kcmil,#600kcmil N,#2G           2 20/3 SPACE         0 0 0         0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CKT # TRIP/POLES         BREAKER TRIP/POLES         CIRCUIT DESCRIPTION         LOAD KVA         FEEDER RACEWAY AND CONDUCTORS           1         -/3         SWITCHBOARD MSB-1         27         27         27         (2)2-1/2"C,3#250kcmil AL,#250kcmil AL, W           2         -/3         SWITCHBOARD MSB-3         109         115         96.9         (4)3"C,3#500kcmil AL,#500kcmil AL, W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| TOTAL CONNECTED KVA BY PHASE 136 142 124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2   20/3   SPACE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TOTAL CONNECTED KVA BY PHASE 136 142 124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| LIGHTING 15.8 19.7 (125%) CONTINUOUS 82.8 104 (125%) LARGEST MOTOR 33.3 41.6 (125%) HEATING 55.6 55.6 (100%) OTHER MOTORS 28.9 28.9 (100%) COOLING 43.4 0 (0%) RECEPTACLES 19.3 14.6 (50%>10) NONCONTINUOUS 81.9 81.9 (100%) KITCHEN EQUIP 84.7 55 (65%) DIVERSE 0 0 0 (N/A) METERED DEMAND 0 0 (125%)  TOTAL KVA 402 401 BALANCED 3-PHASE AMPS 1,110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | TOTAL CONNECTED KVA BY PHASE 27 27 27    CONN KVA   CALC KVA   CONTINUOUS   CONTINU | CONN KVA   CALC KVA   CALC KVA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| $\begin{array}{cccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ROOM ELECTRICAL BACKROOM VOLTS 208Y/120V 3P 4W AIC 65,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MOUNTING SURFACE  BUS AMPS 1200  MAIN BKR 1000  FED FROM MSB-2  NEUTRAL 100%  LUGS STANDARD  NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | MSB-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | MOUNTING SURFACE  BUS AMPS 600  MAIN BKR MLO  LUGS STANDARD  NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| BREAKER   TRIP/POLES   CIRCUIT DESCRIPTION   A   B   C   FEEDER RACEWAY AND CONDUCTORS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | MOUNTING SURFACE  BUS AMPS 1200  MAIN BKR MLO  LUGS STANDARD  NOTE  CKT BREAKER  # TRIP/POLES CIRCUIT DESCRIPTION  A B C FEEDER RACEWAY AND CONDUCTORS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CKT # TRIP/POLES         BREAKER TRIP/POLES         CIRCUIT DESCRIPTION         LOAD KVA         A B C         FEEDER RACEWAY AND CONDUCTORS           1         200/3 PANEL A         17.4 17.1 16.8 2"C,3#3/0,#3/0N,#6G         2"C,3#3/0,#3/0N,#6G           2         200/3 PANEL B         14.3 13.6 9.87 2"C,3#3/0,#3/0N,#6G           3         400/3 PANEL C         26.6 25.7 25.5 3-1/2"C,3#600kcmil,#600kcmil N,#2G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 4 20/3 SPACE 0 0 0 0 0 5 20/3 SPACE 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1     600/3     SWITCHBOARD MDP-1     68.8     74.4     59     (2)3"C,3#500kcmil AL,#500kcmil AL, N,#2/0 AL G       2     400/3     PANEL CW     40.1     41.1     37.9     (2)2-1/2"C,3#250kcmil AL,#250kcmil AL, N,#1/0 AL G       3     20/3     SPACE     0     0     0       4     20/3     SPACE     0     0     0       5     20/3     SPACE     0     0     0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 4 100/3 PANEL G 5 100/3 PANEL L 6 13.2 2.7 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G 1-1/2"C,3#1,#1N,#8G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CONN KVA   CALC KVA   CONTINUOUS   1.8   2.25   (125%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TOTAL CONNECTED KVA BY PHASE   109   115   96.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CONN KVA   CALC KVA   CALC KVA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| ROOM ELEC ROOM  WOUNTING SURFACE  BUS AMPS 200  MEUTRAL 100%  MEUTRAL 100%  MIC 42,000  MAIN BKR MLO  LUGS STANDARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | METERED DEMAND 0 0 (125%)  TOTAL KVA 321 300  BALANCED 3-PHASE AMPS 832                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ROOM ELEC ROOM VOLTS 208Y/120V 3P 4W AIC 42,000 MOUNTING SURFACE BUS AMPS 400 MAIN BKR MLO FED FROM MDP-1 NEUTRAL 100% LUGS STANDARD NOTE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CKT CRCUIT DESCRIPTION  A B C # CIRCUIT DESCRIPTION  A B C A | ROOM ELEC ROOM VOLTS 208Y/120V 3P 4W AIC 42,000 MOUNTING SURFACE BUS AMPS 200 MAIN BKR MLO FED FROM MDP-1 NEUTRAL 100% LUGS STANDARD NOTE  CKT CKT LOAD KVA CKT CKT LOAD KVA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CKT # BKR         CKT BKR         CIRCUIT DESCRIPTION         CKT BKR         CKT BKR         CIRCUIT DESCRIPTION         LOAD KVA           1 15/1 ERV-1 3 50/3 G8 - WH-1 5   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3   20/1   A1C - CAPPUCCINO MACHINE (6 HEAD) 5   20/1   TG8A NACHO CHEESE DISPENSER 7   20/1   TG8A NACHO CHEESE DISPENSER 9   20/2   TG3 - FOOD WARMER 11     0.828   10   30/2   A33 - COFFEE BEAN-TO-CUP GRINDER 2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08   2.08    | # BKR CIRCUIT DESCRIPTION  A B C # BKR CIRCUIT DESCRIPTION  A B C  1 20/1 SPACE  3 20/1 TELEPHONE BACKBOARD QUAD RECEPTACLE  5 20/1 QUAD RECEPTACLE FOR VERIFONE POS & HUGHES NETWORK EQUIPMENT  BKR CIRCUIT DESCRIPTION  A B C  4 20/1 G54 - CARBONATOR G10A - WATER BOOSTER  0.864  0.18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7                   4         4         8                   0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.21         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22         0.22 |
| 13       20/1       TG1 - MICROWAVE OVEN       1.8       1       14       20/1       B12A ICE DRINK DISPENSER       0.63       0.63         15       20/1       B7B - ILLUMINATED DISPLAY BOARD       1       16       20/1       B12A ICE DRINK DISPENSER       0.63       0.63         17       20/2       B2A - FOUNTAIN TOP MOUNT ICE MAKER       1.3       18       20/2       B2B FOUNTAIN ICE MAKER       1.56         19       I CE MAKER       1.3       1.3       20       B1B - FROZEN BEVERAGE DISPENSER (4 FLAVOR)       1.3       3.12       3.12       B14D - FCB GRAPHIC FOR 36" CART       1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 11   20/1   DVR RACK RECEPTACLE   0.18   12   20/1   OFFICE RECEPTACLE   0.18   13   20/1   TG6 - BUN TOASTER   1.56   14   20/1   F5   0.84   0.84   0.84   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   0.86   | 31   20/1   SPACE   0     32         1.33                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 33         20/1         SPACE         0         34                   DOOR SHUTTER AND SECURITY SYSTEM JBOX         0.18           37         20/1         SPACE         0         38         20/1         ACN-1         0.528         0           39         20/1         SPACE         0         40         20/1         SPACE         0           41         20/1         SPACE         0         0         42         20/1         SPACE         0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 29       20/1       SALES AREA RECEPTACLE       0.54       30       20/1       B15A - F'REAL FREEZER       1.08       0.78         31       20/1       SALES AREA RECEPTACLE       0.72       32       20/1       SHOW WINDOW RECEPTACLE       1.08       1.39         35       20/1       C18B - ICE CREAM CASE       1.44       36       20/1       LAVATORY FAUCET       0.36         37       20/1       E2 ATM       1       38       20/1       SPACE       0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | TOTAL CONNECTED KVA BY PHASE   26.6   25.7   25.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 33   20/1   RPBA HOT BOX   0.1   34   20/1   C2 - CASH REGISTERS/POS   1.8   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OTHER MOTORS 1.22 1.22 (100%) COOLING 43.4 0 (0%) RECEPTACLES 1.08 1.08 (50%>10) NONCONTINUOUS 0.1 0.1 (100%) KITCHEN EQUIP 19.8 12.9 (65%) DIVERSE 0 0 (N/A) METERED DEMAND 0 0 (125%)  TOTAL KVA 77.8 77                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| LIGHTING       2       2.5       (125%)       CONTINUOUS       0       0       (125%)         LARGEST MOTOR       0       0       (N/A)       HEATING       0       0       (N/A)         OTHER MOTORS       0       0       (100%)       COOLING       0       0       (N/A)         RECEPTACLES       2.34       2.34       (50%>10)       NONCONTINUOUS       1.36       1.36       (100%)         KITCHEN EQUIP       45.6       29.6       (65%)       DIVERSE       0       0       (N/A)         METERED DEMAND       0       0       (125%)         TOTAL KVA       51.3       35.8         BALANCED 3-PHASE AMPS       99.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 41   20/1   SPACE   0   42   20/1   SPACE   0   0   0   0   0   0   0   0   0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | BALANCED 3-PHASE AMPS 214                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

TOTAL KVA 37.8 30.6
BALANCED 3-PHASE AMPS 85







Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

| NO.                     | DATE | REVISION DESCRIPTION |
|-------------------------|------|----------------------|
| $\overline{\mathbb{A}}$ |      |                      |
| 2                       |      |                      |
| 3                       |      |                      |
| 4                       |      |                      |
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| 12                      |      |                      |
| SEAL:                   |      | <b>A</b>             |



DEVELOPMENT INFORMATION: **ARCO NTI** 

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

Abossein Engineering, L.L.C.

MECHANICAL - ELECTRICAL CIVIL - LEED FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052

PH: (425) 462-9441

FAX: (425) 462-9451

E-Mail: cservice@abossein.com

www.abossein.com

**SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #7184

| DESIGNED BY:  | ALLIANCE Z&DM: |
|---------------|----------------|
| CHECKED BY:   | BP REPM:       |
| DRAWN BY:     | ALLIANCE PM:   |
| VERSION:      | PROJECT NO:    |
|               | 21730          |
| DRAWING TITLE |                |

ELECTRICAL PANEL SCHEDULES

|                |                                          | 23.5)                                                                                                                                           |                  |                                        |         |                |                      |                                                                                                                                                |        |                                    |      | E                    |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|----------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------------------------|---------|----------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------------|------|----------------------|------------------------------|----------------------------------|-----------|----------------------------|-------------------|------|----------------------|------------------------------|-----------------------------------|------------|------------|
| MOUN<br>FED    | M ELEC I<br>NTING SU<br>FROM MI<br>SMART | JRFACE                                                                                                                                          | BUS AM<br>NEUTRA | 208Y/1:<br>IPS 100<br>L 100%<br>& SITE | 1       |                | /ARY BA              | AIC 42,000<br>MAIN BKR MLO<br>LUGS STANDARD<br>SED ON PROJECT                                                                                  |        |                                    |      |                      | NTING S<br>FROM M            |                                  |           | VOLTS<br>BUS AM<br>NEUTRAI | PS 400            | )    | 9 4W                 |                              | AIC 42,<br>MAIN BK<br>LUGS S      | R MLO      |            |
| CKT<br>#       | CKT<br>BKR                               | CIRCUIT DESCRIPTION                                                                                                                             | A                | OAD KV                                 | 'A<br>C | CKT<br>#       | CKT<br>BKR           | CIRCUIT DESCRIPTION                                                                                                                            | A      | OAD KV                             | /A C | CKT<br>#             | CKT<br>BKR                   | CIRCUIT DESCRIPTION              | N         | A                          | OAD KV            | /A C | CKT<br>#             | CKT<br>BKR                   | CIRCUIT DESCRIF                   | TION       |            |
| 1              | 20/1                                     | SALES AREA EM LIGHTING,<br>LIGHTING, LIGHTING (WITH<br>EMERGENCY BATTERY)                                                                       | 0.708            |                                        |         | 2              | 20/1                 | LIGHTING CONTACTOR                                                                                                                             | 0.5    |                                    |      | 1<br>3<br>5          | 100/3                        | EV CHARGER                       |           | 9                          | 9                 | 9    | 2<br>4<br>6          | 100/3                        | EV CHARGER INF                    | FRASTRUC   | TURE       |
| 3<br>5         | 20/1<br>20/1                             | SALES AREA LIGHTING SALES AREA LIGHTING                                                                                                         |                  | 0.448                                  | 0.576   |                | 20/1<br>20/1         | WALK-IN COOLER, FREEZER EXTERIOR STORE LIGHTING                                                                                                |        | 0                                  | 1.1  | 7<br>9               | 100/3                        | EV CHARGER INFRA                 | STRUCTURE | 9                          | 9                 |      | 8 10                 | 20/1<br>20/1                 | SPACE<br>SPACE                    |            |            |
| 7              | 20/1                                     | PREP/UTILITY/STORAGE/OFFICE EM BACKUP, LIGHTING, LIGHTING (WITH EMERGENCY BATTERY)                                                              | 0.553            |                                        |         | 8              | 20/1                 | EXTERIOR ARCO SIGN                                                                                                                             | 0.3    |                                    |      | 11<br>13<br>15       | 20/1 20/1                    | SPACE<br>SPACE                   |           | 0                          | 0                 | 9    | 12<br>14<br>16       | 20/1<br>20/1<br>20/1         | SPACE<br>SPACE<br>SPACE           |            |            |
| 9              | 20/1                                     | ELECTRICAL ROOM EM BACKUP, LIGHTING, LIGHTING (WITH EMERGENCY BATTERY)                                                                          |                  | 0.091                                  |         | 10             | 20/1                 | WALK-IN COOLER DOOR<br>LIGHTS                                                                                                                  |        | 0.25                               |      | 17<br>19<br>21       | 20/1<br>20/1<br>20/1         | SPACE<br>SPACE<br>SPACE          |           | 0                          | 0                 | 0    | 18<br>20<br>22       | 20/1<br>20/1<br>20/1         | SPACE<br>SPACE<br>SPACE           |            |            |
| 11             | 20/1                                     | WALK-IN COOLER/FREEZER DOOR, FOOD SERVICE EQUIPMENT COUNTER EM LIGHTING, LIGHTING                                                               |                  |                                        | 0.221   | 12             | 20/1                 | WALK-IN COOLER DOOR<br>LIGHTS                                                                                                                  |        |                                    | 0.25 | 23<br>25<br>27<br>29 | 20/1<br>20/1<br>20/1<br>20/1 | SPACE<br>SPACE<br>SPACE<br>SPACE |           | 0                          | 0                 | 0    | 24<br>26<br>28<br>30 | 20/1<br>20/1<br>20/1<br>20/1 | SPACE<br>SPACE<br>SPACE<br>SPACE  |            |            |
| 13             | 20/1                                     | WALK-IN COOLER DOOR<br>LIGHTS                                                                                                                   | 0.25             |                                        |         | 14             | 20/1                 | CASHIER RED LIGHT JUNCTION BOX                                                                                                                 | 0.18   |                                    |      | 31                   | 20/1                         | SPACE<br>SPACE                   |           | 0                          |                   |      | 32                   | 20/1                         | SPACE<br>SPACE                    |            |            |
| 15             | 20/1                                     | TG45 - UV FLY LIGHT                                                                                                                             |                  | 1                                      |         | 16             | 20/1                 | RESTROOM EF-1, LIGHTING,<br>LIGHTING (WITH EMERGENCY<br>BATTERY)                                                                               |        | 1.06                               |      | 33<br>35<br>37       | 20/1<br>20/1<br>20/1         | SPACE<br>SPACE                   |           | 0                          | 0                 | 0    | 34<br>36<br>38       | 20/1<br>20/1<br>20/1         | SPACE<br>SPACE                    |            |            |
| 17             | 20/2                                     | SITE POLE LIGHTING                                                                                                                              |                  |                                        | 0.347   | 18             | 20/1                 | D3 — WALK—IN FREEZER<br>GLASS DOOR ASSEMBLY<br>DISPLAY                                                                                         |        |                                    | 0.86 | 39<br>41             | 20/1 20/1                    | SPACE<br>SPACE                   |           |                            | 0                 | 0    | 40<br>42             | 20/1<br>20/1                 | SPACE<br>SPACE<br>TAL CONNECTED F | /\/A BY DI | HASE       |
| 19             | 1                                        |                                                                                                                                                 | 0.347            |                                        |         | 20             | 20/1                 | FUEL CANOPY JUNCTION BOX LIGHTING, LIGHTING                                                                                                    | 1.02   |                                    |      |                      |                              | CONN                             | N KVA CAL | L<br>C KVA                 |                   |      |                      | 10                           |                                   | ONN KVA    |            |
| 21<br>23       | 20/1<br>20/1                             | MONUMENT SIGN<br>MONUMENT SIGN                                                                                                                  |                  | 0.24                                   | 0.24    | 22<br>24       | 20/1<br>20/1         | FUEL CANOPY LIGHTING ILLUMINATED LOGO SIGN, JUNCTION BOX LIGHTING                                                                              |        | 0.918                              | 0.6  |                      | LAR                          | HTING 0 GEST MOTOR 0             | 0 0       |                            | (125%)<br>(N/A)   |      |                      | HEA                          | TINUOUS 81                        |            | 101        |
| 25             | 20/1                                     | TRASH ENCLOSURE LIGHTING                                                                                                                        | 0.063            |                                        |         | 26             | 20/1                 | ILLUMINATED LOGO SIGN, JUNCTION BOX LIGHTING                                                                                                   | 0.6    |                                    |      |                      | REC                          | ER MOTORS 0<br>EPTACLES 0        | 0<br>0    |                            | (100%)<br>(50%>10 | 0)   |                      | NON                          | LING 0<br>CONTINUOUS 0            |            | 0          |
| 27             | 20/1                                     | TRASH ENCLOSURE EXTERIOR LIGHTING                                                                                                               |                  | 0.118                                  |         | 28             | 20/1                 | ILLUMINATED LOGO SIGN, JUNCTION BOX LIGHTING                                                                                                   |        | 0.6                                |      |                      | KITO                         | CHEN EQUIP 0                     | 0         |                            | (N/A)             |      |                      | DIVE<br>MET                  | RSE 0<br>ERED DEMAND 0            |            | 0          |
| 29<br>31<br>33 | 20/1<br>20/1<br>20/1                     | SPACE<br>SPACE<br>SPACE                                                                                                                         | 0                | 0                                      | 0       | 30<br>32<br>34 | 20/1<br>20/1<br>20/1 | SPACE<br>SPACE<br>SPACE                                                                                                                        | 0      | 0                                  | 0    |                      |                              |                                  |           |                            |                   |      |                      |                              | AL KVA 81<br>ANCED 3—PHASE        |            | 101<br>281 |
| 35<br>37       | 20/1<br>20/1                             | SPACE<br>SPACE                                                                                                                                  | 0                |                                        | 0       | 36<br>38       | 20/1<br>20/1         | SPACE<br>SPACE                                                                                                                                 | 0      |                                    | 0    |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
| 39<br>41       | 20/1<br>20/1                             | SPACE<br>SPACE                                                                                                                                  |                  | 0                                      | 0       | 40 42          | 20/1<br>20/1         | SPACE<br>SPACE                                                                                                                                 |        | 0                                  | 0    |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|                |                                          |                                                                                                                                                 |                  |                                        |         |                | TC                   | OTAL CONNECTED KVA BY PHASE                                                                                                                    | 4.52   | 4.72                               | 4.2  |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|                |                                          | CONN KVA CAL                                                                                                                                    | C KVA            |                                        |         |                |                      | CONN KVA CAL                                                                                                                                   | .C KVA |                                    |      |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|                | LAR<br>OTH                               | HTING       12.5       15.6         GEST MOTOR       0.468       0.58         ER MOTORS       0.468       0.46         EPTACLES       0       0 | 35               | (125%)<br>(125%)<br>(100%)<br>(50%>10  | ))      |                | HE/                  | NTINUOUS         0         0           ATING         0         0           OLING         0         0           NCONTINUOUS         0         0 |        | (125%)<br>(N/A)<br>(N/A)<br>(100%) |      |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|                |                                          | CHEN EQUIP 0 0                                                                                                                                  |                  | (N/A)                                  | ,       |                | DIV<br>ME            | ERSE         0         0           TERED DEMAND         0         0                                                                            |        | (N/A)<br>(125%)                    |      |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |
|                |                                          |                                                                                                                                                 |                  |                                        |         |                |                      | TAL KVA 13.4 16.7<br>LANCED 3—PHASE AMPS 46.3                                                                                                  |        |                                    |      |                      |                              |                                  |           |                            |                   |      |                      |                              |                                   |            |            |

CONN KVA CALC KVA

ROOM ELEC ROOM

FED FROM MDP-1

NOTE

A B C

MOUNTING SURFACE

CKT CKT CIRCUIT DESCRIPTION

3 | 20/1 | DISPENSER #1

9 20/1 DISPENSER #2

15 | 20/1 | DISPENSER #3

21 20/1 DISPENSER #4 23 20/1 SPACE 25 20/1 SPACE

5 | 20/1 | SPACE

7 | 20/1 | SPACE

11 | 20/1 | SPACE

13 | 20/1 | SPACE

17 | 20/1 | SPACE

19 20/1 SPACE

0 27 20/1 DISPENSER #5

**29** | 20/1 | SPACE **31** 20/1 SPACE

0 33 20/1 DISPENSER #6

35 20/1 SPACE 37 20/1 SPACE

41 | 20/1 | SPACE

LIGHTING

OTHER MOTORS

RECEPTACLES

LARGEST MOTOR 2.7

KITCHEN EQUIP 0

5.4

0

0 **39** 20/1 SPACE

27

(125%)

(N/A)

(N/A)

(100%)

(N/A)

(125%)

1 | 20/1 | C7 - TANK MONITOR

EQUIPMENT

VOLTS 208Y/120V 3P 4W

A B C

1.5

BUS AMPS 100

NEUTRAL 100%

CONN KVA CALC KVA

3.38

5.4

0

(125%)

(100%)

(N/A)

(50%>10)

AIC 42,000

CKT CKT | CIRCUIT DESCRIPTION

| 14 | 20/3 | DIESEL TURBINE #1

22 | 20/1 | ESO SWITCH

10 | | #1

0 | **24** | 20/1 | SPACE

26 | 20/1 | SPACE

28 | 20/1 | SPACE 0 **30** 20/1 SPACE

32 | 20/1 | SPACE

**34** 20/1 SPACE

40 20/1 SPACE

CONTINUOUS

NONCONTINUOUS 12

METERED DEMAND 0

HEATING

COOLING

DIVERSE

0 | **36** | 20/1 | SPACE **38** 20/1 SPACE

0 | **42** | 20/1 | SPACE

0 | 12 |

2 20/3 UNLEADED TURBINE #1

8 20/3 UNLEADED PREMIUM TURBINE

20 20/1 FUTURE VENT DIAGNOSTICS

TOTAL CONNECTED KVA BY PHASE

TOTAL KVA 21.9 23

BALANCED 3-PHASE AMPS 63.9

1.8

CONN KVA CALC KVA

2.25

12

MAIN BKR MLO

LUGS STANDARD

A B C

0.9

0.9

0.9

6 | 13.2 | 2.7

(125%)

(N/A)

(N/A)

(100%)

(N/A)

(125%)

0.9

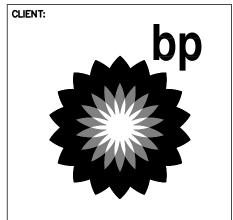
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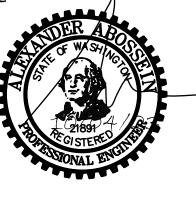




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DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #7184

| DESIGNED BY:   | ALLIANCE Z&DM: |
|----------------|----------------|
| CHECKED BY:    | BP REPM:       |
| DRAWN BY:      | ALLIANCE PM:   |
| VERSION:       | _ PROJECT NO:  |
|                | 21730          |
| DRAWING TITLE: |                |

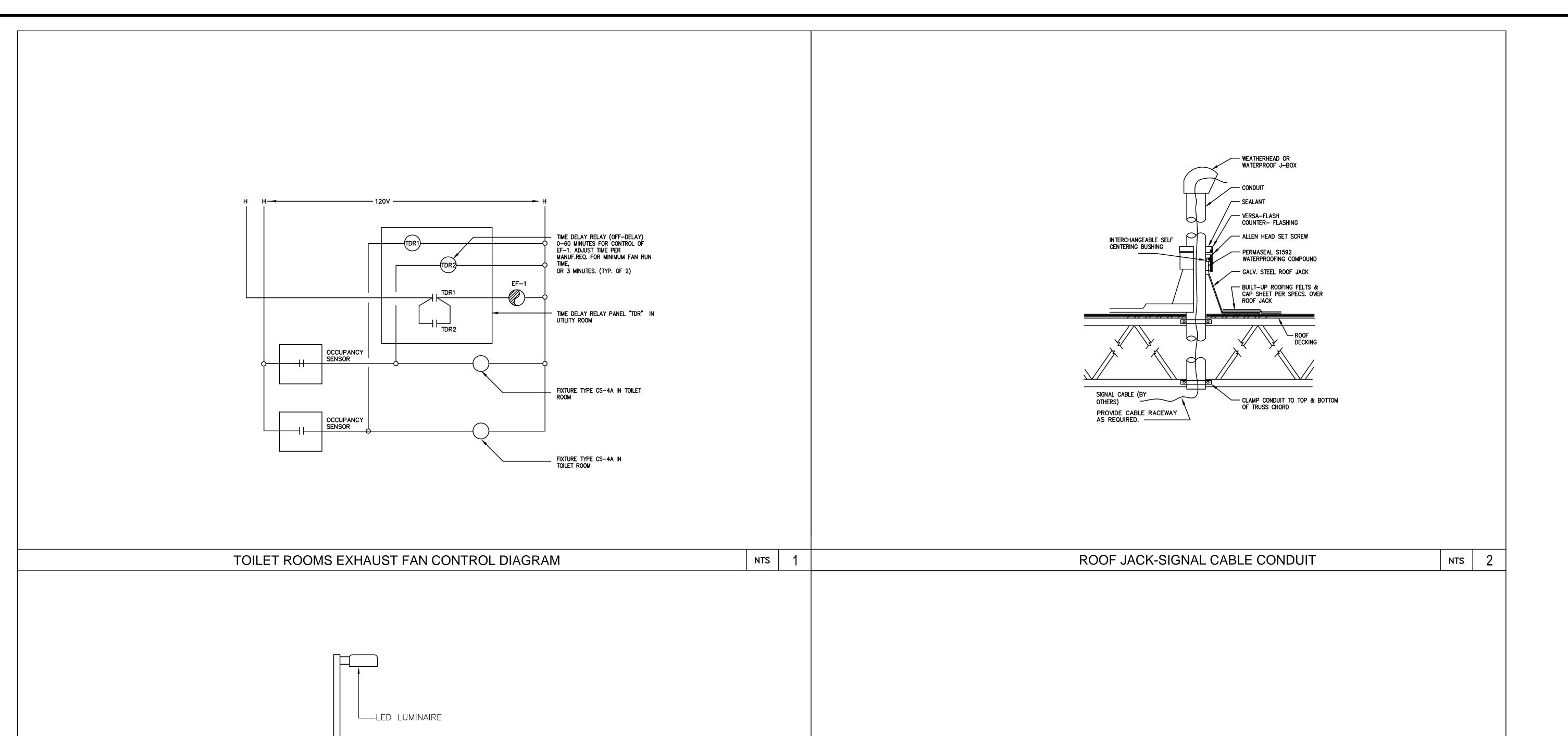
**ELECTRICAL** PANEL SCHEDULES

E2.2

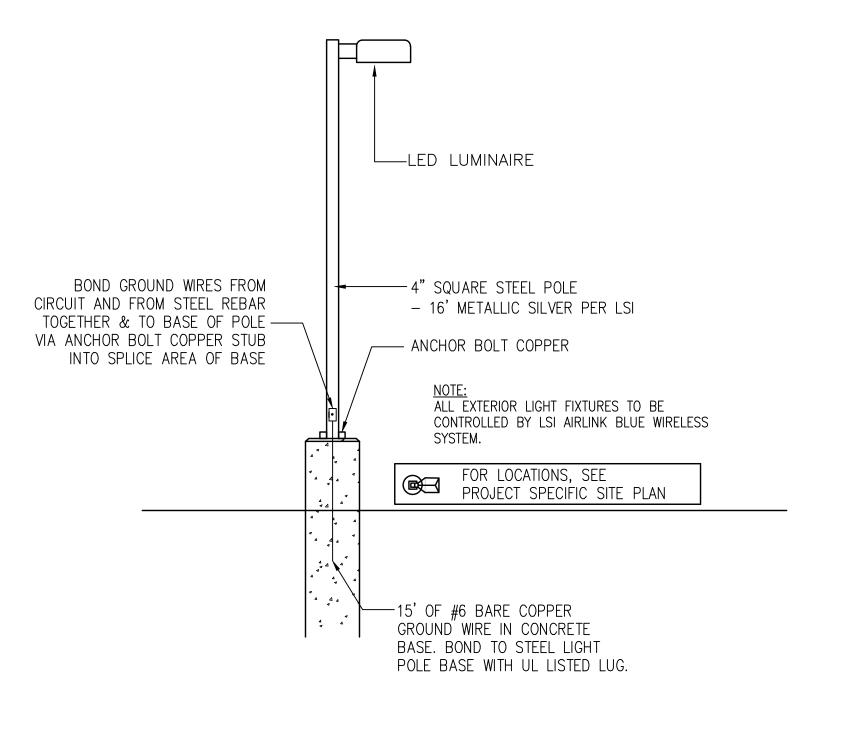
ABOSSEIN #223054

Abossein Engineering,

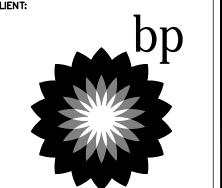
MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com



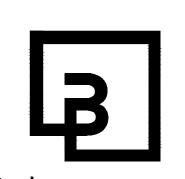
NTS 3



SITE LIGHT POLE BASE GROUNDING DETAIL



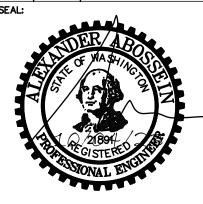




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

| DESIGNED BY:   | ALLIANCE Z&DM: |
|----------------|----------------|
| CHECKED BY:    | BP REPM:       |
| DRAWN BY:      | ALLIANCE PM:   |
| VERSION:       | PROJECT NO:    |
|                | 21730          |
| DRAWING TITLE: |                |

DIAGRAM + DETAILS
- PART 1

\_\_\_\_

E3.0

ABOSSEIN #223054

Abossein Engineering, L.L.C.

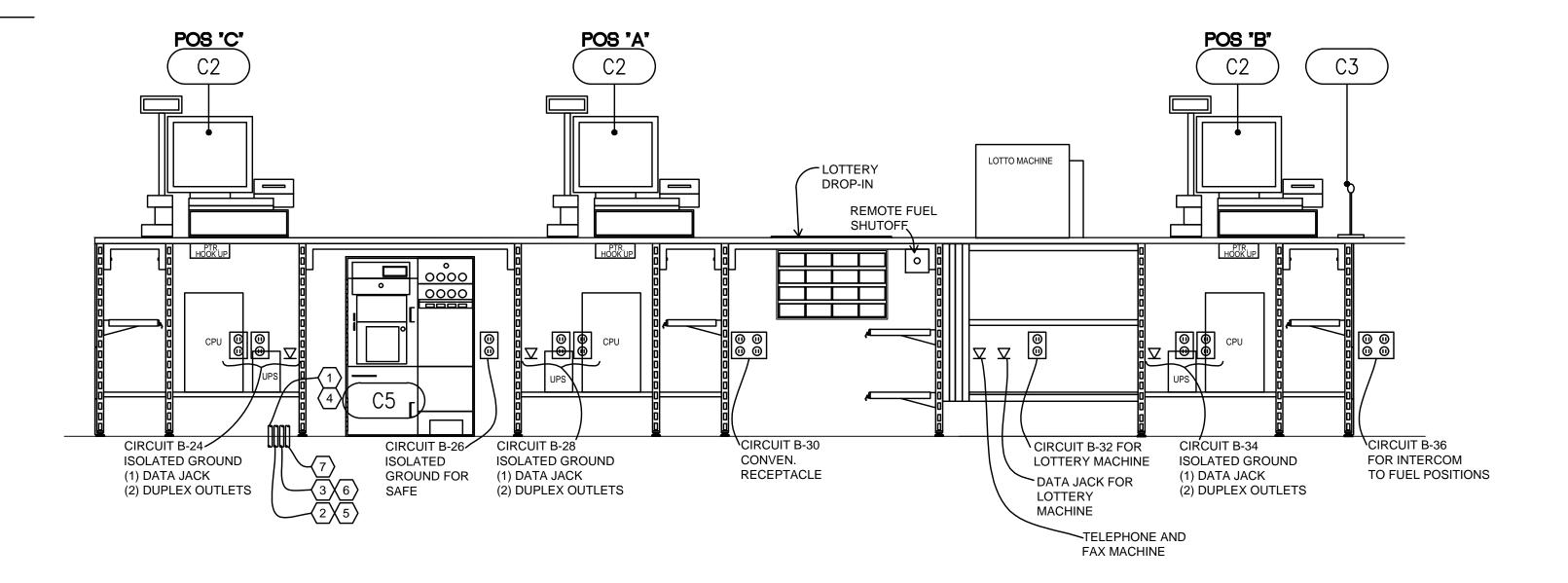
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PH: (425) 462-9441
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A. CASHIER ELEVATION IS FOR DESIGN INTENT ONLY. E.C. TO COORDINATE EXACT MILLWORK CONFIGURATION WITH MILLWORK MANUFACTURER PRIOR TO INSTALLATION OF ANY DEVICES.

### **KEYED NOTES:**

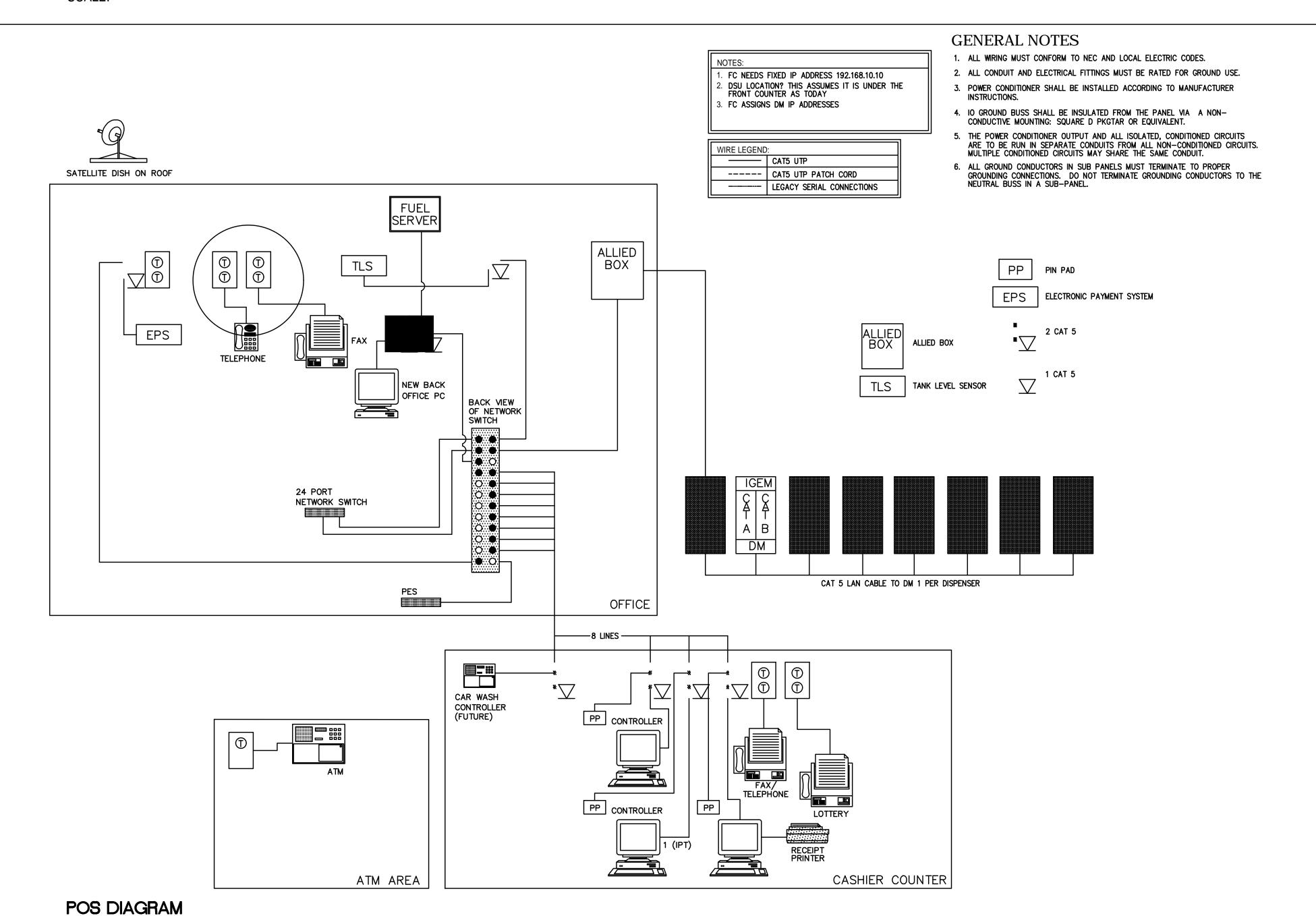
- 1-1/4" CONDUIT FROM MANAGERS CPU FOR DATA CABLES.
- 2 1-1/4" CONDUIT FROM DISPENSER INTERFACE.
- 3 5-1" CONDUIT FROM PANEL C. (CLEAN POWER)
- 4 3/4" CONDUIT FROM OPTIONAL AUTOMATIC DOOR CONTROLLER.
- 1-3/4" CONDUIT UNDER SLAB FOR GENERAL POWER.
- 1-1/4" CONDUIT UNDER SLAB TO INTERCOM TROUGH.
   3/4" CONDUIT UNDER SLAB TO MANAGERS DESK IN OFFICE FOR SECURITY.



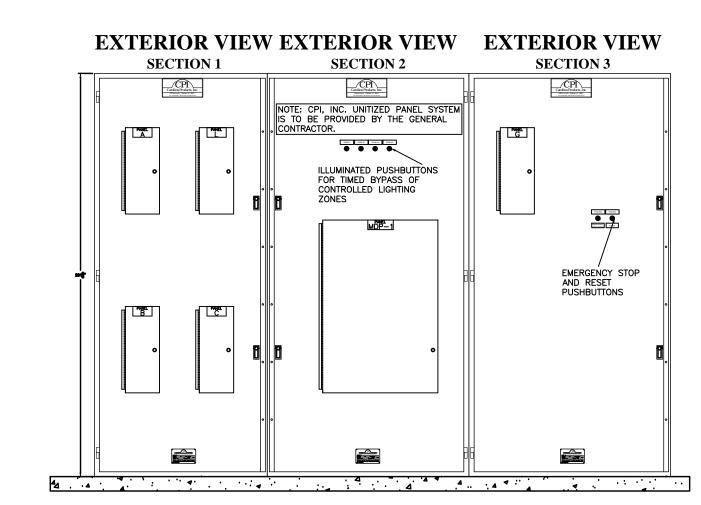
### SALES COUNTER DETAIL

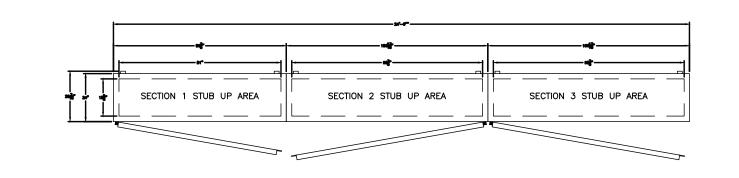
SCALE: 3/4"=1'-0"

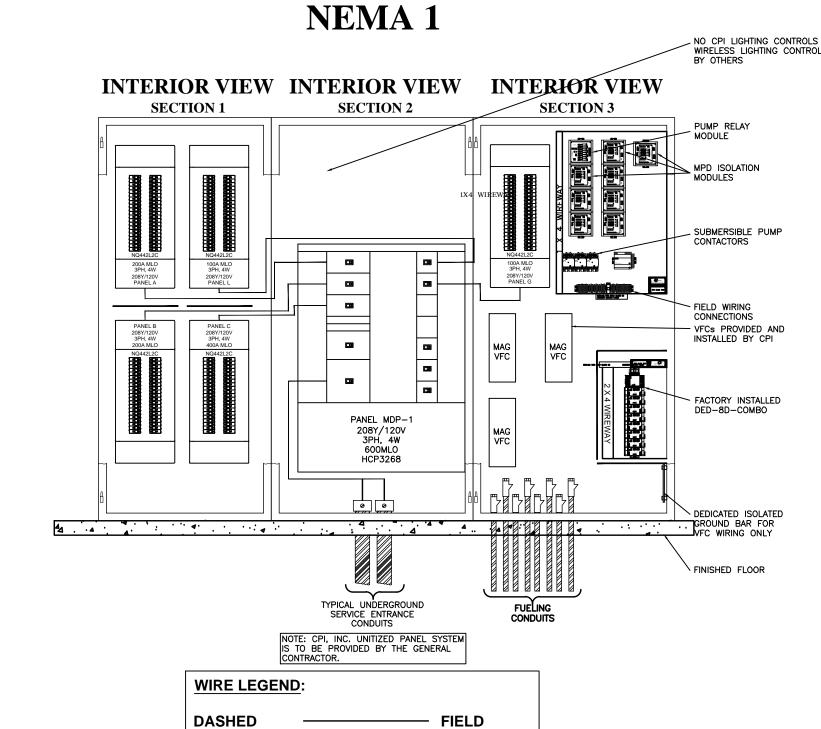
SCALE: N.T.S.



### NEMA 1







FACTORY

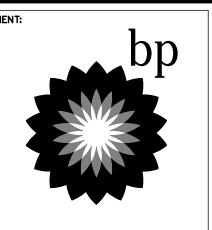
ELEVATION DETAIL - UNITIZED PANEL SYSTEM

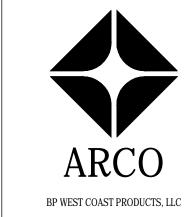
SCALE: N.T.S.

ABOSSEIN #223054

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Engineering,
L.L.C.

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

DESIGNED BY: ALLIANCE Z&DM:

CHECKED BY: BP REPM:

DRAWN BY: ALLIANCE PM:

JERSION:

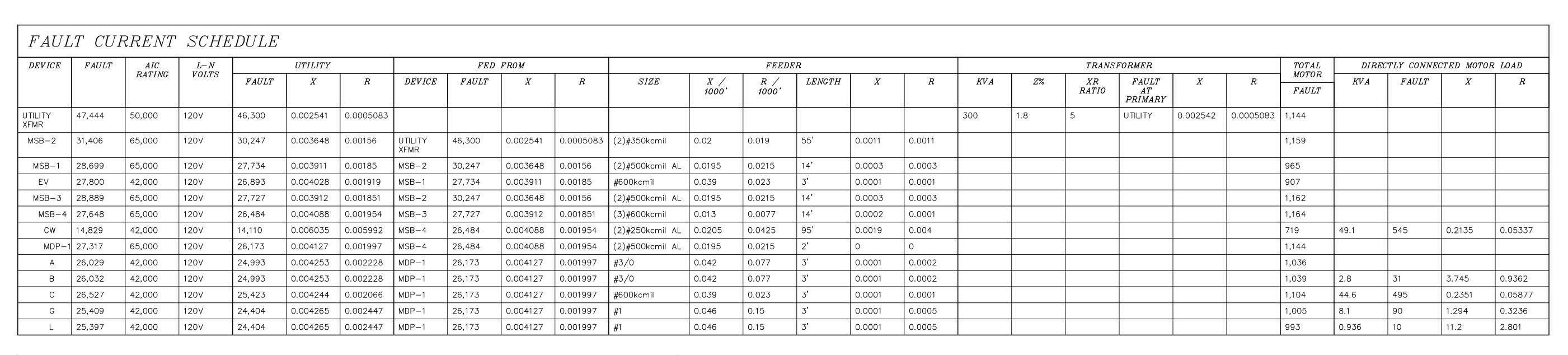
PROJECT NO:

21730

DIAGRAM + DETAILS
- PART 2

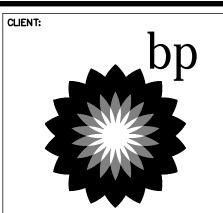
SHEET NO:

E3.1

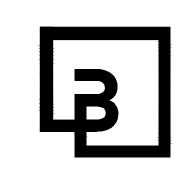


| ARC-FLASH SCHEDULE |      |                                                           |        |         |                                      |             |                                    |                              |          |
|--------------------|------|-----------------------------------------------------------|--------|---------|--------------------------------------|-------------|------------------------------------|------------------------------|----------|
| DEVICE             |      | INCIDENT                                                  | ARCING | CURRENT |                                      | ARCING TIME |                                    | ARC-FLASH                    | WORKING  |
|                    |      | $ \begin{array}{c c} ENERGY \\ (J/CM^2) \end{array} MAX $ |        | REDUCED | @ MAX BASIS ARCING CURRENT (SECONDS) |             | @ REDUCED ARCING CURRENT (SECONDS) | BOUNDARY<br>DISTANCE<br>(MM) | DISTANCE |
| UTILITY<br>XFMR    | 208V | 45.53                                                     | 16,147 | 13,911  | 0.2                                  |             | 0.3                                | 1,817                        | 18"      |
| MSB-2              | 208V | 35.59                                                     | 13,095 | 11,282  | 0.2                                  |             | 0.3                                | 1,557                        | 18"      |
| MSB-1              | 208V | 33.21                                                     | 12,308 | 10,604  | 0.2                                  |             | 0.3                                | 1,491                        | 18"      |
| EV                 | 208V | 32.37                                                     | 12,026 | 10,361  | 0.2                                  |             | 0.3                                | 1,468                        | 18"      |
| MSB-3              | 208V | 33.39                                                     | 12,366 | 10,654  | 0.2                                  |             | 0.3                                | 1,496                        | 18"      |
| MSB-4              | 208V | 32.22                                                     | 11,977 | 10,319  | 0.2                                  |             | 0.3                                | 1,463                        | 18"      |
| CW                 | 208V | 17.67                                                     | 6,863  | 5,913   | 0.2                                  |             | 0.3                                | 1,005                        | 18"      |
| MDP-1              | 208V | 31.91                                                     | 11,870 | 10,227  | 0.2                                  |             | 0.3                                | 1,454                        | 18"      |
| А                  | 208V | 30.64                                                     | 11,440 | 9,856   | 0.2                                  |             | 0.3                                | 1,418                        | 18"      |
| В                  | 208V | 30.64                                                     | 11,441 | 9,857   | 0.2                                  |             | 0.3                                | 1,418                        | 18"      |
| С                  | 208V | 31.13                                                     | 11,609 | 10,002  | 0.2                                  |             | 0.3                                | 1,432                        | 18"      |
| G                  | 208V | 30.01                                                     | 11,226 | 9,672   | 0.2                                  |             | 0.3                                | 1,400                        | 18"      |
| L                  | 208V | 30                                                        | 11,222 | 9,668   | 0.2                                  |             | 0.3                                | 1,399                        | 18"      |

| DEVICE          |              | FEEDER          |        | BRANCH CIRCUIT       | TOTAL        | FEEDER       |  |
|-----------------|--------------|-----------------|--------|----------------------|--------------|--------------|--|
|                 | VOLTAGE DROP | WIRE SIZE       | LENGTH | MAX VOLTAGE DROP     | VOLTAGE DROP | VOLTAGE DROP |  |
| UTILITY<br>XFMR | 0%           | #12             | -      | -                    | 0%           | 0%           |  |
| MSB-2           | 1.37%        | (2)#350kcmil    | 55'    | -                    | 1.37%        | 1.37%        |  |
| MSB-1           | 1.46%        | (2)#500kcmil AL | 14'    | -                    | 1.46%        | 0.09%        |  |
| EV              | 1.49%        | #600kcmil       | 3'     | -                    | 1.49%        | 0.03%        |  |
| MSB-3           | 1.64%        | (2)#500kcmil AL | 14'    | -                    | 1.64%        | 0.27%        |  |
| MSB-4           | 1.76%        | (3)#600kcmil    | 14'    | -                    | 1.76%        | 0.13%        |  |
| CW              | 3.08%        | (2)#250kcmil AL | 95'    | 1.59% (CKT 33)       | 4.67%        | 1.32%        |  |
| MDP-1           | 1.79%        | (2)#500kcmil AL | 2'     | -                    | 1.79%        | 0.02%        |  |
| А               | 1.81%        | #3/0            | 3'     | 2.19% (CKT 13)       | 4%           | 0.02%        |  |
| В               | 1.8%         | #3/0            | 3'     | 2.84% (CKT 34)       | 4.64%        | 0.02%        |  |
| С               | 1.81%        | #600kcmil       | 3'     | 1.12% (CKT 24,26,28) | 2.93%        | 0.02%        |  |
| G               | 1.81%        | #1              | 3'     | 2.24% (CKT 20)       | 4.05%        | 0.02%        |  |
| L               | 1.8%         | #1              | 3'     | 1.56% (CKT 24)       | 3.36%        | 0.02%        |  |



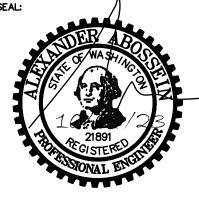




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

Abossein

Engineering,

MECHANICAL — ELECTRICAL CIVIL — LEED

FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052

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SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

| DESIGNED BY: | ALLIANCE Z&DM: |
|--------------|----------------|
| CHECKED BY:  | BP REPM:       |
| DRAWN BY:    | ALLIANCE PM:   |
| VERSION:     | PROJECT NO:    |
| -            | 21730          |

FAULT CURRENT
+ ARC FLASH
SCHEDULES

SHEET NO:

E4.0

#### **GENERAL NOTES:**

- 1. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER COMPANY FOR EXACT SERVICE CONNECTION REQUIREMENTS AND INCLUDE ALL NECESSARY COST IN BID.
- 2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH TELEPHONE COMPANY FOR EXACT SERVICE CONNECTION REQUIREMENTS AND INCLUDE ALL NECESSARY COST IN BID.
- 3. ALL ELECTRICAL EQUIPMENT SHALL HAVE AIC RATINGS EQUIVALENT OR HIGHER THAN AVAILABLE FAULT CURRENTS PROVIDED BY POWER COMPANY.
- 4. A UTILITY LOCATE SHALL BE PERFORMED PRIOR TO COMMENCEMENT OF TRENCHING.
- 5. LIGHTING CONTACTOR (INTERIOR LIGHTING ONLY) IS LOCATED WITHIN CPI CABINET
- 6. ALL LIGHTING FIXTURES TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
- 7. 'EM' AT LIGHT FIXTURE INDICATES LIGHT FIXTURE WITH EMERGENCY BACK UP. ALL EMERGENCY LIGHT FIXTURES SHALL BE SERVED FROM BATTERY BACKUP. EMERGENCY AND EXIT LIGHTS SHALL BE INSTALLED AND CIRCUITED PER THE LATEST CALIFORNIA ELECTRICAL CODE AND ALL LOCAL CODES (INSTALL A CENTRAL BATTERY SYSTEM WHERE THE USE OF INDIVIDUAL BATTERY UNITS ARE PROHIBITED BY LOCAL CODES). ALL EMERGENCY FIXTURES AND EXIT SIGNS SHALL BE CONNECTED TO UN-SWITCHED HOT LEG OF THE LOCAL LIGHTING CIRCUIT.
- 8. ALL EXTERIOR LIGHT FIXTURES TO BE CONTROLLED THROUGH THE LSI AIRLINK BLUE COMPLETE OUTDOOR LIGHTING WIRELESS MESH SYSTEM. AIRLINK BLUE SYSTEM INCLUDES DAYLIGHT AND MOTION SENSORS WITH DIMMING CONTROL CAPABLE OF AUTOMATICALLY SHUTTING OFF OUTDOOR LIGHTING WHEN DAYLIGHT IS AVAILABLE. EMPLOY AUTO FUNCTIONALITY WHEN AREA BECOMES OCCUPIED, AND CAPABLE OF PROVIDING CONTINUOUS DIMMING THROUGH A 50%-90% RANGE PER 2018 WSEC REQUIREMENTS. AIRLINK BLUE SYSTEM TO INCLUDE ASTRONOMICAL CLOCK AND TIME KEEPER AIRLINK BLUE COMPONENT FOR SCHEDULING CONTROLS SET PER 2018 WSEC REQUIREMENTS. ALL EXTERIOR LUMINAIRES TO INCLUDE FACTORY INTEGRATED BLUETOOTH RADIO/SENSOR CONTROLLERS. AIRLINK BLUE SYSTEM TO BE INITIALIZED VIA WEB APP AND FIELD COMMISSIONED VIA MOBILE APP TO THE OWNER'S REQUIREMENTS. ANY CHANGES OR UPDATES TO BE ACCOMPLISHED ON SITE VIA MOBILE APP.

#### SHEET NOTES:

- 1) PROVIDE NEW LIGHT FIXTURE. INSTALL 3/4" PVC UNDERGROUND CONDUIT CONTAINING: (2) #10 THWN CU. AND (1) #10 CU EGC. FOR PARKING LOT LIGHTING. EXTEND CONDUIT BACK TO AIRLINK BLUE CONTROLS.
- 2 PROVIDE AND INSTALL ESO SWITCH. INCLUDE ALL ASSOCIATED CONDUIT AND WIRE FOR COMPLETE INSTALLATION PER CEC 514.11 AND NFPA 30A SECTION 6.7. RUN WIRE IN 1" PVC-COATED RGS CONDUIT AND STUB UP WITH RGS. SEE DETAIL 3/E2.3. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION. SEE DETAIL IN TANK DRAWINGS FOR ELEVATION.
- 3 PROVIDE AND INSTALL ESO SWITCH. COORDINATE EXACT LOCATION(S) WITH OWNER PRIOR TO INSTALLATION.
- (4) PROVIDE 3/4" PVC UNDERGROUND CONDUIT AND (3) #10 THHN CU. WIRE (U.O.N.) FOR NEW AIR STATION. MAKE CONNECTION WITH WATER TIGHT FLEX, BOXES AND COVERS AS REQUIRED BY MANUFACTURER. FIELD VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
- 5 PROVIDE (1) 3" PVC CONDUIT WITH 1/4" PULL STRING FOR TELEPHONE. FIELD VERIFY EXACT VAULT LOCATION WITH SERVICE PROVIDER PRIOR TO INSTALLATION.
- (6) PROVIDE (1) 1-1/2" CONDUIT FOR INSTALLATION OF ELECTRIC VEHICLE CHARGING STATION. 100A 208 VOLT 3Ø MIN. CAP AND MARK CONDUIT AS REQUIRED FOR ACCESS.
- 7 PROVIDE (2) 1" PVC-COATED RGS SPARE UNDERGROUND CONDUITS TO FOR FUTURE VENT DIAGNOSTICS TO INTRINSICALLY SAFE AND POWER WIREWAYS INSIDE STORE (NEXT TO EPC CABINET).
- (8) ALL SITE LIGHT POLE FIXTURES TO INCLUDE LSI AIRLINK BLUE LIGHTING SYSTEM MOTION DETECTOR MOUNTED ON LIGHT POLE. UPON ACTIVATION OF EITHER MOTION DETECTOR, ALL SITE POLE LIGHTS TO TRIGGER AT FULL BRIGHTNESS AND RETURN TO 50% BRIGHTNESS AFTER 15 MINUTES OF VACANCY.
- (9) 60W HEAT TRACER LOCATED IN RPBA HOT BOX, REFER TO CIVIL UTILITY PLANS FOR EXACT LOCATION.
- (10) PROPOSED SOLAR ZONE PER 2018 WSEC REQUIREMENTS.
- PROVIDE (1) 3/4" CONDUIT AND CONTROL WIRE TO CLOSEST EMERGENCY STOP BUTTON FOR CONNECTION TO VEHICLE CHARGING STATION.
- (12) PROPOSED UTILITY TRANSFORMER EXACT LOCATION TO BE VERIFIED.

#### N.E.C HAZARDOUS AREA NOTES

- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (UNDERGROUND TANK FILL OPENING) EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION: Any pit, box, or space below grade level, any part of which is within the Division 1
- or 2 classified location. EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:
- Up to 18 inches above grade level within a horizontal radius of 10 feet from a loose fill connection and within a horizontal radius of 5 feet from a tight fill connection.
- EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION: Within 3 feet of open end of vent, extending in all directions. EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:

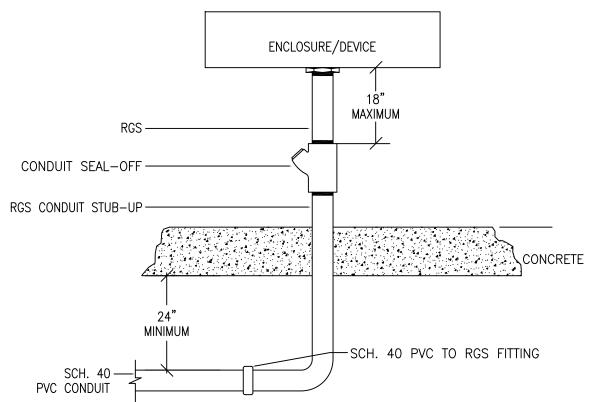
SCALE: NTS

- Space between 3 feet and 5 feet of open end of vent, extending in all directions.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (REMOTE PUMP OUTDOOR) EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION: Any pit, box, or space below grade level if any part is within a horizontal distance of 10 feet from any edge of pump.
- EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:
- Within 3 feet of any edge of pump, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of pump.

- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE PITS) EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION: Any pit, box, or space below grade level, any part of which is within the Division 1 or 2 classified location.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE DISPENSER) EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  - Space classification inside the dispenser enclosure is covered in ANSI/UL 87, "Power Operated Dispensing Devices for Petroleum Products."
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE DISPENSER) (F) EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION: Within 18 inches horizontally in all directions extending to grade from (1) the dispenser enclosure or (2) that portion of the dispenser enclosure containing liquid handling components. Space classification inside the dispenser enclosure

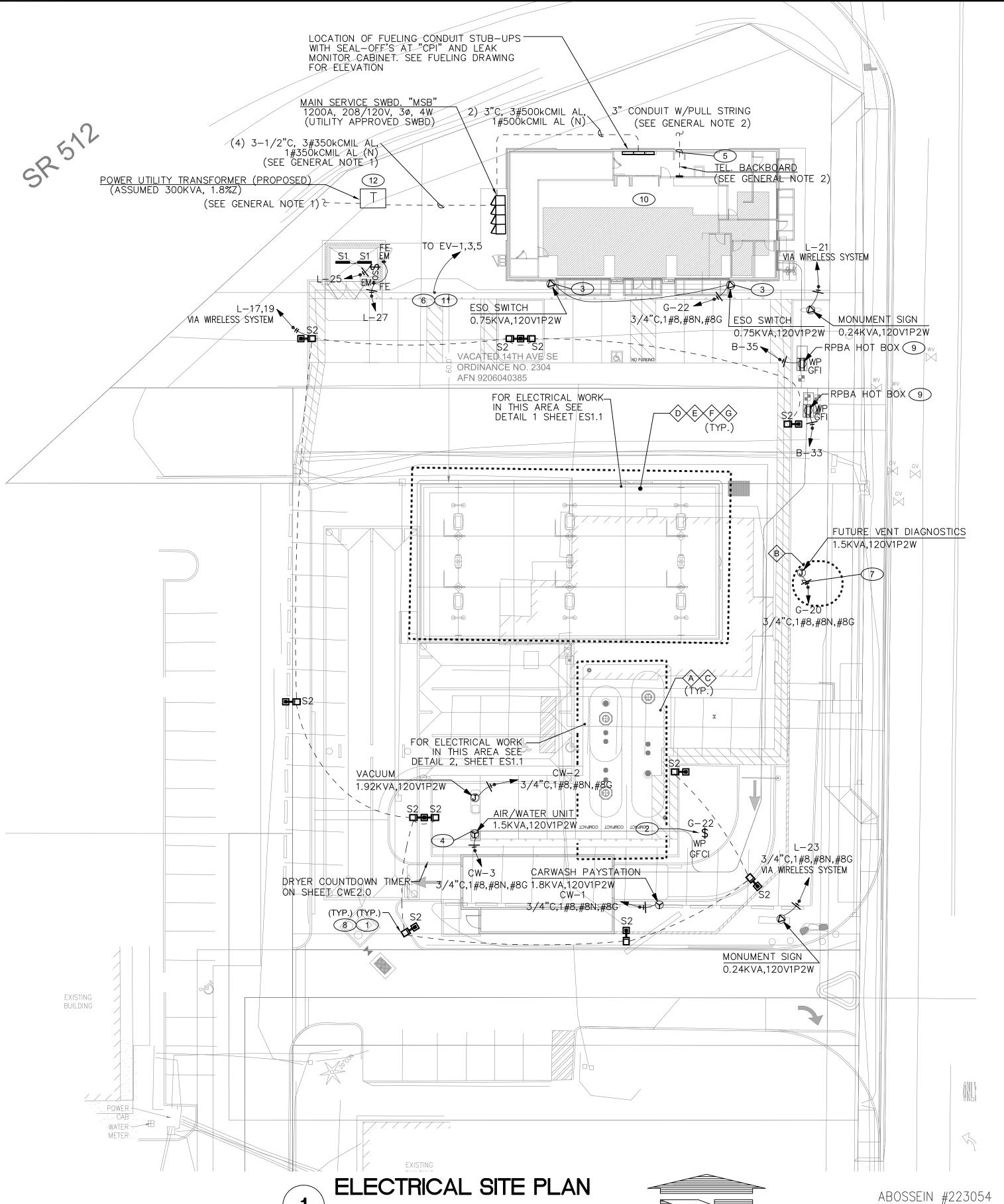
is covered in ANSI/UL 87, "Power Operated Dispensing Devices for Petroleum

(G) TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE - OUTDOOR) EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION: Up to 18 inches above grade level within 20 feet horizontally of any edge



# TYPICAL RGS STUB-UP W/ SEAL OFF

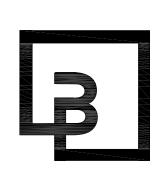
SITE LUMINAIRE SCHEDULE INPUT VA TOTAL VA *LUMENS* SYMBOL**DESCRIPTION** MOUNTINGMODELVOLTS| QUANTITY CALLOUTLAMPBALLASTNOTES/ LAMP LSI EG3-4-LED-4L-DA-S-UNV-DIM-50-80 (1) 31.59W LED SURFACE MOUNTED STRIP LIGHT 0-10V DIMMABLE | SURFACE 31.59 31.59 4508 120V 1P 2W TRASH/RECYCLE ROOM 2 W/ EMERGENCY BATTERY PACK FOR 90 MINUTE ILLUMINATION, 4508 LUMENS, 143.42 LUMENS/WATT LED POLE LIGHT ELECTRONIC POLE 63 9657 208V 2P 2W PARKING LOT, INCLUDE | 6 (1) 63W LED SLM-LED-09L-SIL-FT-50-70CRI-SINGLE-16'POLE+2'BASE LSI AIRLINK BLUE



SENSOR.



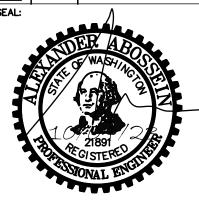




Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

**SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

**FACILITY #7184** 

ALLIANCE Z&DM: Abossein BP REPM: ALLIANCE PM: Engineering PROJECT NO: 21730

MECHANICAL - ELECTRICAL CIVIL - LEED FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451

E-Mail: cservice@abossein.com

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Call before you dig.

**ELECTRICAL** SITE PLAN

#### **GENERAL NOTES:**

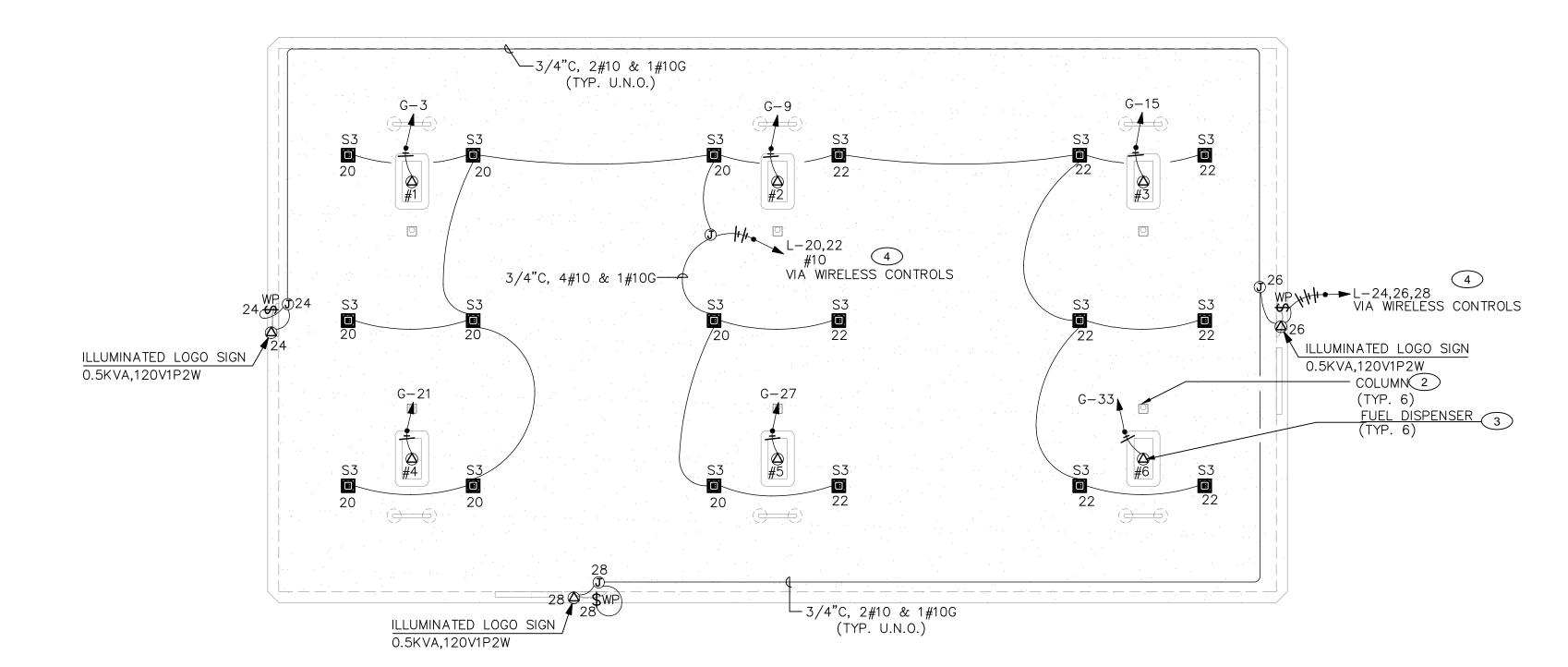
- 1. ALL EXTERIOR LIGHTING TO BE CONTROLLED BY LSI AIRLINK BLUE WIRELESS BLUETOOTH MESH OUTDOOR LIGHTING CONTROL SYSTEM. REFER TO LSI AIRLINK BLUE SPECIFICATION SHEETS FOR EXACT INFORMATION ON SYSTEM.
- 2. REFER TO TANK ELECTRICAL DRAWINGS FOR FUELING CONDUIT FILL AND WIRE TYPES.
- 3. SEE TANK ELECTRICAL DRAWINGS FOR FURTHER REQUIREMENTS.
- 4. ALL LIGHTING FIXTURES TO BE FURNISHED AND INSTALLED BY CONTRACTOR.
- 5. ALL EXTERIOR LIGHT FIXTURES TO BE CONTROLLED THROUGH THE LSI AIRLINK BLUE COMPLETE OUTDOOR LIGHTING WIRELESS MESH SYSTEM. AIRLINK BLUE SYSTEM INCLUDES DAYLIGHT AND MOTION SENSORS WITH DIMMING CONTROL CAPABLE OF AUTOMATICALLY SHUTTING OFF OUTDOOR LIGHTING WHEN DAYLIGHT IS AVAILABLE, EMPLOY AUTO FUNCTIONALITY WHEN AREA BECOMES OCCUPIED, AND CAPABLE OF PROVIDING CONTINUOUS DIMMING THROUGH A 50%-90% RANGE PER 2018 WSEC REQUIREMENTS. AIRLINK BLUE SYSTEM TO INCLUDE ASTRONOMICAL CLOCK AND TIME KEEPER AIRLINK BLUE COMPONENT FOR SCHEDULING CONTROLS SET PER 2018 WSEC REQUIREMENTS. ALL EXTERIOR LUMINAIRES TO INCLUDE FACTORY INTEGRATED BLUETOOTH RADIO/SENSOR CONTROLLERS. AIRLINK BLUE SYSTEM TO BE INITIALIZED VIA WEB APP AND FIELD COMMISSIONED VIA MOBILE APP TO THE OWNER'S REQUIREMENTS. ANY CHANGES OR UPDATES TO BE ACCOMPLISHED ON SITE VIA MOBILE APP.

#### FLAG NOTES:

- 1) PROVIDE (6) 1" PVC-COATED RGS UNDERGROUND CONDUITS TO LEAK DETECTION PANEL.
  - (3) 1" CONDUITS FOR TURBINE POWER(3) 1" INTRINSICALLY SAFE CONDUITS FOR TANK MONITORING
- PROVIDE (3) 1" PVC—COATED RGS UNDERGROUND CONDUITS FOR MUSAK AND SECURITY SYSTEMS. STUB IN COLUMN AND EXTEND CONDUITS BACK TO MUSAK AND SECURITY SYSTEMS LOCATED PER ARCO REPRESENTATIVE. ALL CONDUIT STUB—UPS SHALL BE RGS WITH SEAL OFFS AND MEET THE REQUIREMENTS SPECIFIED IN ARTICLE 514 OF THE NEC. FIELD VERIFY EXACT LOCATIONS.
  - (2) 1" CONDUITS FOR MUSAK AND CAMERA WITH PULL ROPE
    (1) 1" CONDUIT FOR MUSAK LOOP TO EACH COLUMN
- PROVIDE (3) 1" PVC-COATED RGS UNDERGROUND CONDUITS FOR FUEL DISPENSER. ALL CONDUIT TO STUB-UP SHALL BE RGS WITH SEAL OFFS AND MEET THE REQUIREMENTS SPECIFIED IN ARTICLE 514 OF THE NEC. FIELD VERIFY EXACT LOCATION OF STUB-UPS. FIELD WRAP STEEL CONDUIT WITH A 100 MIL. COATING OF COAL TAR EPOXY.
  - (1) 1" CONDUIT FOR POWER & DATA
  - (1) 1" CONDUIT FOR MONITORING
  - (1) 1" CONDUIT FOR INTERCOM
- PROVIDE (1) 3/4" PVC-COATED RGS UNDERGROUND CONDUITS FOR CANOPY LIGHTING AND SIGNS. ALL CONDUIT TO STUB-UP SHALL BE RGS WITH SEAL OFFS AND MEET THE REQUIREMENTS SPECIFIED IN ARTICLE 514 OF THE NEC. FIELD VERIFY EXACT LOCATIONS. EXTEND CONDUIT BACK TO LIGHTING CONTACTOR AND ASTRONOMIC TIME CLOCK. USE #10 CONDUCTORS FOR CANOPY LIGHTING AND SIGNS CIRCUITS.

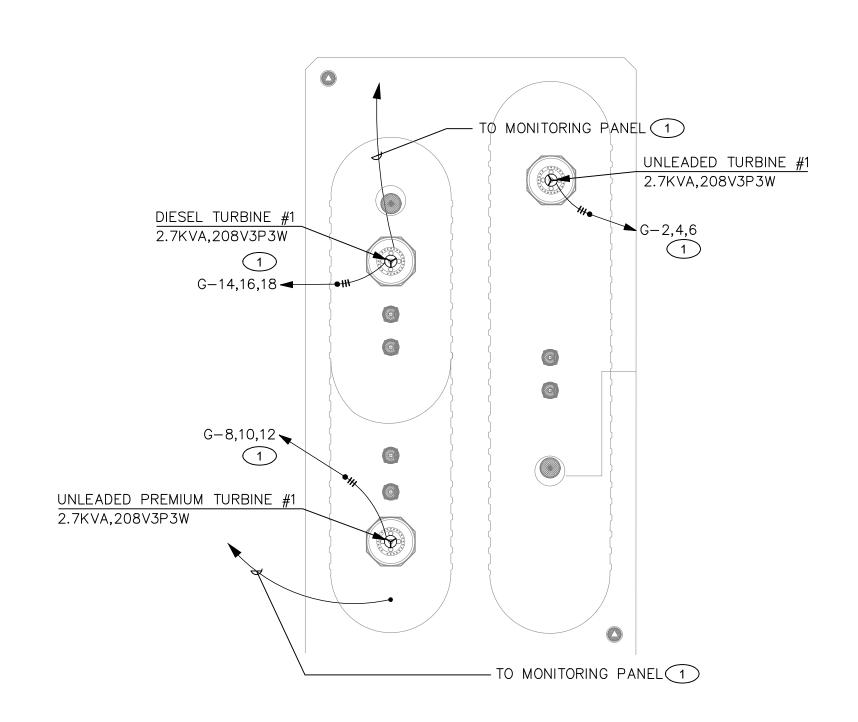
| UEL               | CANOPY  | LUMINAIRE | SCHEDULE |
|-------------------|---------|-----------|----------|
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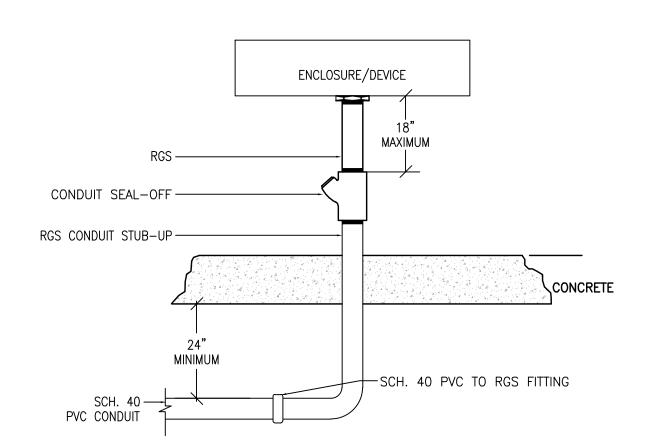
| CALLOUT | SYMBOL | LAMP         | DESCRIPTION                                | BALLAST    | MOUNTING | MODEL                 | INPUT VA | TOTAL VA | TOTAL<br>LUMENS | VOLTS      | NOTES                   | QUANTITY |
|---------|--------|--------------|--------------------------------------------|------------|----------|-----------------------|----------|----------|-----------------|------------|-------------------------|----------|
| S3      | 8      | (1) 102W LED | LED SURFACE MOUNT CANOPY FIXTURE;<br>5000K | ELECTRONIC | SURFACE  | LSI SCV-LED-15L-SC-50 | 102      | 102      | 14963           | 120V 1P 2W | FUEL CANOPY, DIMMED 80% | 18       |



1 CANOPY ELECTRICAL PLAN

SCALE: 1/8" - 1'-0"





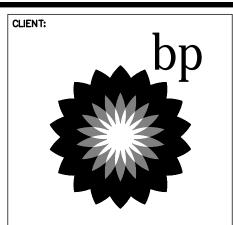
TYPICAL RGS STUB-UP WITH SEAL OFF

SCALE: NTS

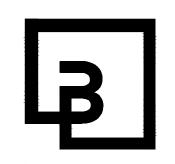
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Abossein Engineering,
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MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
18465 NE 68TH ST
REDMOND, WA 98052
PH: (425) 462-9441
FAX: (425) 462-9451
E-Mail: cservice@abossein.com
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ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

FACILITY #7184

CNED BY: ALLIANCE Z&DM:

KED BY: BP REPM:

DRAWN BY:

VERSION:

PROJECT NO:

21730

DRAWING TITLE:

ELECTRICAL SITE DETAILS

ES1.1



# WATER HAMMER ARRESTER SCHEDULE

| MARK  | MANUFACTURER/<br>MODEL # | FIXTURE<br>UNITS | INLET<br>SIZE | REMARKS                        |
|-------|--------------------------|------------------|---------------|--------------------------------|
| WHA-A | PPP SC-500               | 1-11             | 1/2"          | PER PDI STANDARD<br>PDI-WH 201 |
| WHA-B | PPP SC-750               | 12-32            | 3/4"          | PER PDI STANDARD<br>PDI-WH 201 |
| WHA-C | PPP SC-1000              | 33-60            | 1"            | PER PDI STANDARD<br>PDI-WH 201 |
|       |                          |                  |               |                                |

### **ELECTRIC WATER** HEATER SIZING

|          |     |                    | 10     |        |
|----------|-----|--------------------|--------|--------|
| FIXT. ID | QTY | DESCRIPTION        | DEMAND | TOTAL  |
| LV-1     | 2   | LAVATORY           | 5 GPH  | 10 GPH |
| G16A     | 1   | HANDSINK           | 5 GPH  | 5 GPH  |
| G7       | 1   | MOP SINK           | 15 GPH | 15 GPH |
| G9B      | 1   | 3-COMPARTMENT SINK | 45 GPH | 45 GPH |

SUBTOTAL = 75 GPH

DESCRIPTION

WC-1 WATER CLOSET(F.T.)

MANUFACTURER

AMERICAN

STANDARD

MODEL

CHAMPION PRO 3195A.101

DEMAND FACTOR: 0.8

HOT WATER DEMAND: 0.8 X 75 GPH = 60 GPH ENERGY INPUT CALCULATIONS:  $60 \text{ GPH } \times 0.149 = 8.94 \text{ KW}$ 

MODEL A.O. SMITH, DRE-52-12 RECOVERY RATE 74 GPH @ 100°F ELECTRICAL INPUT TEMPERATURE RISE STORAGE CAPACITY 12 KW

50 GALLONS

# **DOMESTIC HOT WATER**

| CIRCULATING F  | PUMP SCHEDULE |
|----------------|---------------|
| DESIGNATION:   | HWCP-1        |
| ZONE:          | BUILDING      |
| MANUFACTURER:  | GRUNDFOS      |
| MODEL:         | UP15-18B7     |
| TYPE:          | INLINE        |
| G.P.M.:        | 3             |
| HEAD (FT-H20): | 12            |
| RPM:           | 2940          |
| MOTOR FLA:     | 0.74          |
| VOLTAGE:       | 115           |
| PHASE:         | 1             |
| WEIGHT (LBS):  | 6.7           |
|                |               |

REMARKS: (1)(2)(3) (1) ALL BRONZE PUMP, 125 PSI MIN. RATED.

(2) WITH 1" FLANGE CONNECTION.

(3) COORD. WITH ELEC'L CONTRACTOR FOR POWER TO PUMP.

### GREASE INTECEPTOR SIZING.

|     | SIZING      |                    |                 |
|-----|-------------|--------------------|-----------------|
|     |             | WASTE              | PIPING          |
| QTY | DESCRIPTION | F.U.PER<br>FIXTURE | TOTAL<br>SS F.U |
| 1   | MOP SINK    | 3                  | 3               |
| 1   | 3-COMP SINK | 3                  | 3               |
| 1   | HAND SINK   | 2                  | 2               |
| 1   | FLOOR DRAIN | 2                  | 2               |
| 7   | FLOOR SINK  | 2                  | 14              |
|     | TOTAL       |                    | 26              |

UPC TABLE 10-3
GRAVITY GREASE INTERCEPTOR SIZING DFU'S INTERCEPTOR VOLUME 500 GALLONS

750 GALLONS 1000 GALLONS 1250 GALLONS

### PLUMBING FIXTURE SCHEDULE

ADA COMFORT HEIGHT, TWO—PEICE TANK TYPE TOILET, VITREOUS CHINA, ELONGATED BOWL, WHITE # 4225A.164 TANK, 1.25 GPF, WITH AMERICAN STANDARD 5901.100SS WHITE OPEN FRONT SEAT LESS COVER.

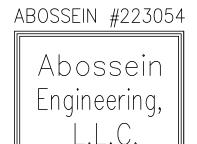
ROUGH-IN REMARKS

|        |                                      |                      | 3195A.101                        |        |         |         |         |                                                                                                                                                                                                                                                                                                                                  |
|--------|--------------------------------------|----------------------|----------------------------------|--------|---------|---------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LV-1   | LAVATORY                             | AMERICAN<br>STANDARD | LUCERNE<br>0355.012.020          | 2"     | 1-1/2"  | 1/2"    | 1/2"    | WALL MOUNTED, WHITE VITREOUS CHINA, 3 FAUCET HOLES, CONCEALED ARMS SUPPORT, AMERICAN STANDARD<br>6053.205.V035 SENSOR FAUCET SET FOR MAXIMUM 0.2 GALLONS PER CYCLE. PROVIDE UNDER DECK THERMOSTATIC<br>MIXING VALVE; AND FLAT GRID DRAIN, WITH TRUEBRO LAVGUARD 102                                                              |
| A1C    | CAPPUCCINO MACH                      | CURTIS               | G3 PRIMO<br>PCGT63099            | _      | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| A33    | BEAN-TO-CUP                          | SCHAERER             | 040381-<br>00051EUS              | 1-1/2" | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| BIB    | FROZEN BEVERAGE<br>DISPENSER         | CORNELIUS            | 621460041<br>VIPER SHORT         | _      | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| B2A    | FOUNTAIN TOP ICE MAKER (CUBED)       | HOSHIZAKI            | KMD-<br>860MRJ                   | 1/4"   | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| B2B    | FOUNTAIN TOP ICE MAKER (NUGGET)      | SCOTSMAN             | NO922R<br>-32                    | 3/4"   | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| B12A   | INTERACTIVE DRINK DISPENSER          | CORNELIUS            | 621058578,<br>IDC PRO            | 3/4"   | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| B15    | F'REAL BLENDER                       | F'REAL               | FRLB6                            | 3/4"   | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| D10    | WALK-IN COOLER<br>EVAPORATOR COIL    | HEATCRAFT            | LEC0130AS7<br>AMAB0200           | 3/4"   | _       | _       | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| D11    | WALK-IN FREEZER EVAPORATOR COIL      | HEATCRAFT            | LEC0120BS6<br>EMAB0200           | 3/4"   | _       | _       | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| G6A    | ICE MAKER                            | SCOTSMAN             | ERC311<br>-32A                   | 3/4"   | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| G7     | MOP SINK                             | FIAT                 | MSB-3624                         | 3"     | 2"      | 1/2"    | 1/2"    | 24"X 36" X 10", SHIPPING WEIGHT 50LBS. PROVIDE WIHT FIAT # 830-AA FAUCET                                                                                                                                                                                                                                                         |
| G8     | ELECTRIC WATER HEATER                | A.O.SMITH            | DRE-52-12                        | 3/4"ID | _       | 3/4"    | 3/4"    | COMMERCIAL ELECTRIC WATER HEATER, ELECTRIC INPUT 18KW, 3PH, 50A. RECOVERY RATE 74 @ 100°F TEMPERATURE RISE, STORAGE CAPACITY 50 GALLONS. WATER HEATER SHALL HAVE A MINIMUM EFFICIENCY OF 0.93                                                                                                                                    |
| G9B    | 3-COMPARTMENT<br>SINK                | ADVANCE TABCO        | FC-3-1824                        | 3"     | 2"      | 1/2"    | 1/2"    | 18''X24'' STAINLESS STEEL. WITH G9E FAUCET FISHER # 2210 RATED FOR 1.15 GPM @ 60 PSI                                                                                                                                                                                                                                             |
| G11    | WATER PURICIFATION                   | EVERPURE             | -18RL<br>EV9437-10               | _      | _       | 1"      | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
|        | SYSTEM                               | LVLINI ONL           | L V 3 + 3 / 10                   |        |         | '       |         |                                                                                                                                                                                                                                                                                                                                  |
| 04.04  | LIANDOINIK                           | ADVANCE TABOO        | 7 50 44                          | 0,"    | 1 1 /0" | 4 /0"   |         | OVERALL SINK DIMENSION IS 20"x24", BOWL IS 14"X16" STAINLESS STEEL. WELDED 7'-3/4" HIGH SIDE SPLASHES. 2.2 GPM                                                                                                                                                                                                                   |
| G16A   | HANDSINK                             | ADVANCE TABCO        | 7-PS-41 "BIG MAC"                |        | 1-1/2"  | - / -   | 1/2"    | <u> </u>                                                                                                                                                                                                                                                                                                                         |
| G54    | CARBONATOR  MED. CONDIMENT           | McCANNS              | E400397                          |        | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| TG10B  | ISLAND                               | SHOPCO               | _                                | 1"     | _       | 1/2"    | _       | SEE ARCHITECTURAL PLANS                                                                                                                                                                                                                                                                                                          |
| FD-1   | FLOOR DRAIN                          | ZURN                 | Z-415S                           | 2"     | 1-1/2   | _       | _       | 6"X6" SQUARE STRAINER, WITH 1/2" TRAP PRIMER. CONNECTION OR APPROVED EQUAL.                                                                                                                                                                                                                                                      |
| FS-1   | FLOOR SINK                           | ZURN                 | Z-1901                           | 3"     | 2"      | _       | _       | 12" X 12" RECEPTOR 8" SUMP DEPTH. OR APPROVED EQUAL.                                                                                                                                                                                                                                                                             |
| FS-2   | FLOOR SINK                           | ZURN                 | Z-1901                           | 2"     | 2"      | _       | _       | 12" X 12" RECEPTOR 8" SUMP DEPTH. OR APPROVED EQUAL.                                                                                                                                                                                                                                                                             |
| ET-1   | EXPANSION TANK                       | AMTROL               | ST-5                             | _      | _       | 1/2"    | -       | MODEL ST-5, 2.0 GALLONS, STEEL SHELL, POLYPROPYLENE LINER, BUTYL DIAPHRAGM, FACTORY PRECHARGE AT 40 PSIG, MAXIMUM OPERATING TEMPERATURE = 200°F, MAXIMUM WORKING PRESSURE = 150 PSIG.                                                                                                                                            |
| HWCP-1 | HOT WATER RETURN<br>CIRCULATING PUMP | GRUNDFOS             | UP15-18B7                        | _      | _       | _       | 3/4"    | 3 GPM © 12 FTHD, 115V/1PH/60Hz, 1/25HP, 25 WATTS, WITH TIME CLOCK AND AQUASTAT. COORDINATE WITH OWNER FOR TIMER SETTINGS. MOUNT PUMP 5FT ABOVE FINISHED FLOOR.                                                                                                                                                                   |
| MV-1   | THERMOSTATIC<br>MIXING VALVE         | WATTS                | LFMMV-M1                         | _      | _       | 3/4"    | 3/4"    | POINT—OF—USE MIXING VALVE, BRONZE BODY CONSTRUCTION.<br>SET OUTLET TEMPERATURE AT 105°F.                                                                                                                                                                                                                                         |
| TP-1   | TRAP PRIMING VALVE                   | PPP                  | PR-500                           | _      | _       | 1/2"    | _       | PRESSURE DROP ACTIVATED TRAP PRIMER.                                                                                                                                                                                                                                                                                             |
| WCO-1  | FLOOR CLEAN OUT                      | ZURN                 | Z1443-ZB                         | VRY    | _       | _       | _       | WALL CLEANOUT, DURA — COATED CAST IRON BODY, GAS AND WATERTIGHT ABS TAPERED THREAD PLUG, AND NICKEL BRONZE SECURED SQUARE, SMOOTH WALL ACCESS COVER AND FRAME. OR APPROVED EQUAL.                                                                                                                                                |
|        | 5,000,015,111,017                    |                      |                                  |        |         |         |         | "LEVEL—TROL" ADJUSTABLE FLOOR CLEANOUT, DURA—COATED CAST IRON BODY WITH GAS AND WATERTIGHT ABS TAPERED THREAD PLUG                                                                                                                                                                                                               |
| FCO-1  | FLOOR CLEAN OUT                      | ZURN                 | Z1440-ZB                         | VRY    | _       | _       | _       | AND ROUND SCORIATED CAST IRON EXTRA—HEAVY—DUTY SECURED TOP ZB, ADJUSTABLE TO FINISHED FLOOR, OR APPROVED EQUAL.                                                                                                                                                                                                                  |
| COTG-1 | CLEANOUT<br>TO GRADE                 | ZURN                 | Z1474                            | 4"     | _       | _       | _       | HEAVY DUTY CLEANOUT HOUSING. DURA—COATED CAST IRON BODY WITH INTEGRAL ANCHOR FLANGE, SECURED SCORIATED COVER WITH LIFTING DEVICE. W/ Z1400, OR APPROVED EQUAL.                                                                                                                                                                   |
| WHA-1  | WATER HAMMER<br>ARRESTOR             | ZURN                 | Z170                             | _      | _       | 3/4"    | _       | SHOKTROL WATER HAMMER ARRESTOR, STAINLESS STEEL CONSTRUCTION. OR APPROVED EQUAL.                                                                                                                                                                                                                                                 |
| RD-1   | ROOF/OVERFLOW<br>DRAIN               | ZURN                 | Z165-NH,<br>-Z-G-SS,<br>-VP-SC-E | 3"     | _       | _       | _       | Ø8-3/8 COMBINATION MAIN ROOF &OVERFLOW DRAIN W/ LOW SILHOUETTE DOMES DOUBLE TOP-SET® DECK PLATE.<br>OUTLET NO-HUB, PIPE SIZE 4"Ø, BODY WITH DOME 4-1/2" DOME HEIGHT, GALVANIZED CAST IRON, STAINLESS STEEL MESH<br>SCREEN OVER DOME, SECONDARY CLAMPING COLLAR W/ STATIC EXTENSION. VANDAL PROOF SECURED TOP. OR APPROVED EQUAL. |
| OD-1   | OVERFLOW DRAIN                       | ZURN                 | Z198-G                           | 3"     | _       | _       | _       | PARAPET SCUPPER SLEEVE, DURA-COATED CAST IRON BODY WITH FIXED POSITION COMBINATION MEMBRANE FLASHING FLANGE AND CLAMP AND PARAPET WALL FACE CLOSING, GALVANIZED CAST IRON. OR APPROVED EQUAL.                                                                                                                                    |
| HB-1   | HOSE BIB                             | ACORN                | 8151                             |        | _       | 3/4"    | _       | WITH ANTI-SIPHON VACUUM BREAKER. INTEGRAL STOP, LOCKING DOOR, S.S. BOX MOUNT HOSE BIBB. MOUNT 24" ABOVE GRADE                                                                                                                                                                                                                    |
| HB-2   | HOSE BIB                             | ACORN                | 8121 LF                          |        | _       | 3/4"    | _       | WITH VACUUM BREAKER, MOUNT HOSE BIBB 12" ABOVE FINISHED FLOOR                                                                                                                                                                                                                                                                    |
| HB-3   | POST HYDRANT                         | WOODFORD             | SRH-MS                           |        | _       | 3/4"    | _       | WITH DUAL CHECK SPOUT, 3/4" HOSE CONNECTION AND GALVANIZED STEEL STANDPIPE WITHOUT DRAIN OUTLET.                                                                                                                                                                                                                                 |
| NOTE:  | •                                    | ,                    | •                                | •      |         |         |         |                                                                                                                                                                                                                                                                                                                                  |
|        | NG CONTRACTOR TO VER                 | RIFY ALL EQUIPME     | NT CONNECTION                    | SIZES  | AND PR  | OVIDE A | LL REDU | ICERS, INCREASER, AND ADAPTORS AS REQUIRED.                                                                                                                                                                                                                                                                                      |

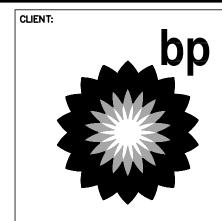
| PLUMBING LEGEND                |              |                                     |  |  |  |  |  |  |  |
|--------------------------------|--------------|-------------------------------------|--|--|--|--|--|--|--|
| SYMBOL                         | ABBREVIATION | DESCRIPTION                         |  |  |  |  |  |  |  |
|                                | CW           | COLD WATER PIPING                   |  |  |  |  |  |  |  |
| —— —— FCW ——                   | FCW          | FILTERED COLD WATER PIPING          |  |  |  |  |  |  |  |
|                                | HW           | HOT WATER PIPING (140°F)            |  |  |  |  |  |  |  |
|                                | HWR          | HOT WATER RETURN PIPING             |  |  |  |  |  |  |  |
| //                             | SS OR W      | SOIL OR WASTE PIPING BELOW GRADE    |  |  |  |  |  |  |  |
|                                | SS OR W      | SOIL OR WASTE PIPING ABOVE GRADE    |  |  |  |  |  |  |  |
|                                | GW           | GREASE WASTE BELOW GRADE            |  |  |  |  |  |  |  |
|                                | V            | VENT PIPING                         |  |  |  |  |  |  |  |
| CD                             | CD           | CONDENSATE DRAIN PIPING             |  |  |  |  |  |  |  |
|                                | ID           | INDIRECT DRAIN PIPING               |  |  |  |  |  |  |  |
| <del></del>                    | WHA          | WATER HAMMER ARRESTOR               |  |  |  |  |  |  |  |
| •                              | P.O.C.       | POINT-OF-CONNECTION                 |  |  |  |  |  |  |  |
| <b>→</b>   <b>+</b> √ <b>-</b> |              | GAS COCK WITH UNION                 |  |  |  |  |  |  |  |
| <del></del> ]                  |              | CAPPED                              |  |  |  |  |  |  |  |
| ⊣ ⊢                            |              | UNION                               |  |  |  |  |  |  |  |
| <del></del> 0                  | UP           | PIPE UP                             |  |  |  |  |  |  |  |
| <del></del>                    | DN           | PIPE DOWN                           |  |  |  |  |  |  |  |
| <del></del>                    | DN           | PIPE TEE DOWN                       |  |  |  |  |  |  |  |
| <u> </u> б                     | BV           | BALL VALVE                          |  |  |  |  |  |  |  |
| <b>→</b>                       | CV           | CHECK VALVE                         |  |  |  |  |  |  |  |
| <b>—</b>                       | RED          | REDUCER                             |  |  |  |  |  |  |  |
| <b>—</b>                       | PUMP         |                                     |  |  |  |  |  |  |  |
| <b>I</b>                       | FCO/GCO      | FLOOR CLEANOUT OR GRADE CLEANOUT    |  |  |  |  |  |  |  |
| ⊩                              | WCO          | WALL CLEANOUT                       |  |  |  |  |  |  |  |
|                                | AFF          | ABOVE FINISHED FLOOR                |  |  |  |  |  |  |  |
|                                | BFF          | BELOW FINISHED FLOOR                |  |  |  |  |  |  |  |
|                                | BG           | BELOW GROUND                        |  |  |  |  |  |  |  |
|                                | (E)          | EXISTING                            |  |  |  |  |  |  |  |
|                                | (N)          | NEW                                 |  |  |  |  |  |  |  |
|                                | NTS          | NOT TO SCALE                        |  |  |  |  |  |  |  |
|                                | IE           | INVERT ELEVATION                    |  |  |  |  |  |  |  |
|                                | QTY.         | QUANTITY                            |  |  |  |  |  |  |  |
|                                | V.I.F.       | VERIFY IN FIELD                     |  |  |  |  |  |  |  |
|                                | FU           | FIXTURE UNIT                        |  |  |  |  |  |  |  |
|                                | RPBP         | REDUCED PRESSURE BACKFLOW PREVENTER |  |  |  |  |  |  |  |

|                    |                |                     |                       | PF                    | REVEN         | ITER          |               |                                   |
|--------------------|----------------|---------------------|-----------------------|-----------------------|---------------|---------------|---------------|-----------------------------------|
| N                  | //ATERIA       | 1 9                 | <u> </u>              | <u> </u>              | ,IE           |               | <u></u>       | LIUNIS                            |
|                    |                |                     | רכ                    |                       | /11           |               | <u> </u>      |                                   |
| <u>S</u>           | <u>ERVICES</u> | CAST IRON<br>NO-HUB | GALV. STEEL<br>SCH 40 | BLACK STEEL<br>SCH 40 | TYPE M COPPER | TYPE L COPPER | ТҮРЕ К СОРРЕК | REMARKS                           |
| COLD               | ABOVE GROUND   | 102                 | 007                   | ШО                    |               | •             |               |                                   |
| WATER              | BELOW GROUND   |                     |                       |                       |               |               | •             |                                   |
| HOT                | ABOVE GROUND   |                     |                       |                       |               | •             |               |                                   |
| WATER              | BELOW GROUND   |                     |                       |                       |               |               | •             |                                   |
| WASTE              | ABOVE GROUND   | •                   |                       |                       |               |               |               |                                   |
| WASIE              | BELOW GROUND   | •                   |                       |                       |               |               |               |                                   |
| VENT               | ABOVE GROUND   | •                   |                       |                       |               |               |               |                                   |
| VLINI              | BELOW GROUND   | •                   |                       |                       |               |               |               |                                   |
| INDIRECT           | INDOOR         |                     |                       |                       | •             |               |               |                                   |
| WASTE              | OUTDOOR        |                     |                       |                       | •             |               |               |                                   |
| NATURAL            | INDOOR         |                     |                       | •                     |               |               |               | PAINTED WITH RUST                 |
| GAS                | OUTDOOR        |                     | •                     |                       |               |               |               | INHIBITING PAINT                  |
| STORM              | ABOVE GROUND   | •                   |                       |                       |               |               |               |                                   |
| DRAIN              | BELOW GROUND   | •                   |                       |                       |               |               |               |                                   |
| C02                | ABOVE GROUND   |                     |                       |                       |               | •             |               | SILVER BRAZED;<br>NITROGEN PURGED |
| CO2 VENT           | ABOVE GROUND   |                     |                       |                       |               | •             |               | SILVER BRAZED;<br>NITROGEN PURGED |
| CONDENSATE<br>PIPE | ABOVE GROUND   |                     |                       |                       | •             |               |               |                                   |

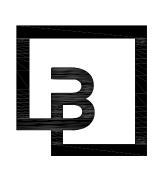
| DR       | DRAWING SCHEDULE                          |  |  |  |
|----------|-------------------------------------------|--|--|--|
| SHT. NO. | DESCRIPTION                               |  |  |  |
| P0.1     | PLUMBING LEGEND, SCHEDULES & CALCULATIONS |  |  |  |
| P0.2     | GENERAL NOTES & CALCULATIONS              |  |  |  |
| P0.3     | PLUMBING SPECIFICATIONS                   |  |  |  |
| P1.0     | PLUMBING ROUGH-IN PLAN                    |  |  |  |
| P1.1     | SANITARY DRAINAGE & VENT PLUMBING PLAN    |  |  |  |
| P1.2     | DOMESTIC WATER SUPPLY PLUMBING PLAN       |  |  |  |
| P1.3     | PLUMBING ROOF PLAN                        |  |  |  |
| P2.0     | RISER DIAGRAMS                            |  |  |  |
| P3.0     | CARWASH WASTE AND VENT PLANS              |  |  |  |
| P3.1     | CARWASH WATER AND ROOF PLAN               |  |  |  |
| P3.2     | CARWASH RISER DIAGRAMS                    |  |  |  |
| P4.0     | PLUMBING DETAILS — I                      |  |  |  |
| P4.1     | PLUMBING DETAILS — II                     |  |  |  |
| P4.2     | PLUMBING DETAILS — III                    |  |  |  |
|          |                                           |  |  |  |



MECHANICAL — ELECTRICAL CIVIL — LEED FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com www.abossein.com



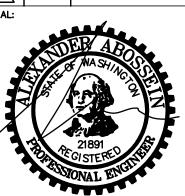




Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

| N                              | Э. | DATE | REVISION DESCRIPTION |
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| SEA                            | ۱. |      |                      |



DEVELOPMENT INFORMATION: **ARCO NTI** 

3400 am/pm FUEL CANOPY w/ 6 MPD's

**SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

SITE ADDRESS:

FACILITY #7184

| DESIGNED BY:   | ALLIANCE Z&DM: |
|----------------|----------------|
| CHECKED BY:    | BP REPM:       |
| DRAWN BY:      | ALLIANCE PM:   |
| VERSION:       | PROJECT NO:    |
| -              | 21730          |
| DRAWING TITLE: |                |

PLUMBING LEGEND, **SCHEDULES & CALCULATIONS** 

#### PIPE SIZING INFORMATION City main (source) water pressure 55.0 psi <== Information provided by: Puyallup 253-841-5512 Water meter loss (psi) 3.0 psi Backflow preventer loss 10.0 psi Pressure losses between meter and bldg. (psi) 0.0 psi Explanation: losses to bldg. If water pressure exceeds 80PSI, pressure regulator is req'd Water pressure at building entry: 42.0 psi Regulator Required: Maximum available water pressure for distribution: PRV Set Point: 42.0 psi BUILDING WATER PRESSURE LOSS: Max. fixture height from source: 10 ft at 0.433 psi/ft Elevation loss 4.3 psi psi (include all devices downstream of PRV) Backflow preventer loss Min. fixture pressure 30.0 psi (at most remote fixture) Total pressure loss 34.3 psi (maximum available water pressure for distribution) 42.0 psi -34.3 psi (minus total pressure loss) 7.7 psi Remaining available pressure:

7.7 psi x 100 ft

200 ft

#### COLD WATER PIPE SIZING TABLE

Max. allowable pressure loss for pipe sizing

Longest piping run

x add'l fitting factor of

|           |              |   |               | Flow        |          |
|-----------|--------------|---|---------------|-------------|----------|
|           | FIX. UNITS   | ] | FIX. UNITS    | Rate        | Velocity |
| PIPE SIZE | (flush tank) | ( | (flush valve) | (gpm)       | (ft/s)   |
| 1/2"      | 1            |   | -             | 2.4         | 3.2      |
| 3/4"      | 7            |   | -             | 6. <i>1</i> | 4.0      |
| 1"        | 18           |   | -             | 13          | 4.7      |
| 1-1/4"    | 32           |   | -             | 21          | 5.3      |
| 1-1/2"    | 60           |   | 16            | 33          | 5.9      |
| 2"        | 215          |   | 102           | 68          | 7.0      |
| 2-1/2"    | 479          |   | 365           | 120         | 8.0      |
| 3"        | 748          |   | 700           | 171         | 8.0      |
| 4"        | 1755         |   | 1755          | 300         | 8.0      |
| 6"        | 4480         |   | 4480          | 670         | 8.0      |

1.33

200 ft

3.845 psi/100ft

#### HOT WATER PIPE SIZING TABLE

| 1101111 | VIEIX I II E OI | E1110 1712 |          |
|---------|-----------------|------------|----------|
|         |                 | Flow       |          |
| PIPE    | FIX. UNITS      | Rate       | Velocity |
| SIZE    | (flush tank)    | (gpm)      | (ft/s)   |
| 1/2"    | 1               | 2.5        | 3.4      |
| 3/4"    | 7               | 6.5        | 4.2      |
| 1"      | 18              | 13         | 5.0      |
| 1-1/4"  | 30              | 20         | 5.0      |
| 1-1/2"  | 49              | 28         | 5.0      |
| 2"      | 123             | 49         | 5.0      |
| 2-1/2"  | 245             | 75         | 5.0      |
| 3"      | 406             | 107        | 5.0      |
| 4"      | 840             | <i>187</i> | 5.0      |
| 6"      | 2765            | 419        | 5.0      |

| EIVT ID           |       |                               | W                  | ATER PIPI        | ING              | WASTE              | PIF |
|-------------------|-------|-------------------------------|--------------------|------------------|------------------|--------------------|-----|
| FIXT ID<br>(ITEM) | QTY   | DESCRIPTION                   | F.U.PER<br>FIXTURE | TOTAL<br>CW F.U. | TOTAL<br>HW F.U. | F.U.PER<br>FIXTURE | SS  |
| PLUME             | ING F | TIXTURES                      |                    |                  |                  |                    |     |
| WC-1              | 2     | WATER CLOSET (FLUSH TANK)     | 2.5                | 5                | _                | 4                  |     |
| LV-1              | 2     | LAVATORY                      | 1                  | 1.5              | 1.5              | 1                  |     |
| A1C               | 1     | CAPPUCCINO MACHINE            | 0.5                | 1                | _                | 0.5                |     |
| A33               | 3     | BEAN-TO-CUP                   | 0.5                | 1.5              | _                | 0.5                |     |
| B1B               | 1     | FROZEN BEVERAGE DISPENSER     | 0.5                | 0.5              | _                | _                  |     |
| B2A               | 1     | FOUNTAIN ICE MAKER (CUBED)    | 0.5                | 0.5              | _                | 0.5                |     |
| B2B               | 1     | FOUNTAIN ICE MAKER (NUGGET)   | 0.5                | 0.5              | _                | 0.5                |     |
| B12A              | 2     | INTERACTIVE DRINK DISPENSER   | 1                  | 2                | _                | 0.5                |     |
| B15               | 1     | F'REAL BLENDER                | 1                  | 0.5              | _                | 0.5                |     |
| G7                | 1     | MOP SINK                      | 3                  | 2,25             | 2.25             | 3                  |     |
| G6A               | 1     | ICE MAKER                     | 1                  | 1                | _                | 1                  |     |
| G9B               | 1     | 3-COMPARTMET SINK             | _                  | _                | _                | 6                  |     |
| G9E               | 1     | 3-COMP. SINK PRE-RINSE FAUCET | 3                  | 2.25             | 2.25             | _                  |     |
| G16A              | 1     | HAND SINK                     | 2                  | 3.0              | 3.0              | 2                  |     |
| G54               | 1     | CARBONATOR                    | 1                  | 1                |                  | _                  |     |
| TG10B             | 1     | MEDIUM REFRIGERATED CONDIMENT | _                  | _                |                  | 2                  |     |
| FD-1              | 3     | FLOOR DRAIN                   | _                  | _                | _                | 2                  |     |
| FS-1              | 1     | FLOOR SINK                    |                    | _                | _                | 9                  |     |
| FS-2              | 6     | FLOOR SINK                    |                    | _                | _                | 2                  |     |
| HB-1              | 2     | HOSE BIBB                     | 2.5                | 5                | _                | _                  |     |
| HB-2              | 2     | HOSE BIBB                     | 2.5                | 5.0              | _                | _                  |     |
| HB-3              | 1     | HOSE BIBB                     | 2.5                | 2.5              | _                | _                  |     |
|                   |       |                               | TOTAL              | 30.75            | 9.00             |                    |     |

. WATER SUPPLY FIXTURE UNITS ARE BASED ON CPC, APPENDIX A. 2. DRAINAGE FIXTURE UNITS ARE BASED ON CPC, CHAPTER-7 TABLE 7-3.

#### **BACKFLOW PREVENTER NOTES**

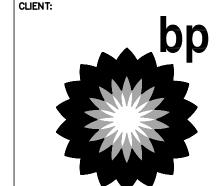
- AS MANUFACTURED BY "WATTS" OR EQUAL: RPBA = REDUCED PRESSURE #009QT DCVA = DOUBLE CHECK #007QT AVB = VACUUM BREAKER
- VALVES TO BE LINE SIZE.
- INSTALL AT THE FOLLOWING LOCATIONS (MINIMUM): A. DCVA AT ICE MAKER B. RPBA AT COFFEE BREWER/ESPRESSO
  - MACHINE (IF INSTALLED) C. RPBA AT BEVERAGE BAR/CARBONATOR (POP MACHINE PIPING DOWNSTREAM OF CARBONATOR SHALL BE PLASTIC IN ORDER TO AVOID CARBONIC POISONING.
  - D. BACKFLOW PREVENTERS SHALL BE MOUNTED MAXIMUM 5 FEET ABOVE FLOOR PER UPC 2015, SEC. 603.4.3. DISCHARGE DRAINS WITH AIRGAP, TYP.
- BACKFLOW PREVENTERS SHALL BE FULLY INSTALLED AND TESTED PRIOR TO PRE-OPENING INSPECTION

### **GENERAL NOTES**

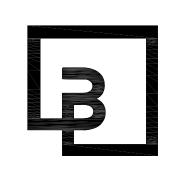
- PLUMBING CONTRACT DRAWINGS ARE IN PART DIAGRAMMATIC, COVERING THE SCOPE OF WORK AND GENERAL ARRANGEMENT OF THE EQUIPMENT, PIPING, ETC., AND THE APPROXIMATE SIZE OF EQUIPMENT AND MATERIALS. THE CONTRACTOR SHALL FOLLOW THESE DRAWINGS IN LAYING OUT THE PLUMBING WORK. PLUMBING CONTRACTOR SHALL CONSULT GENERAL, SPRINKLER, HEATING/VENTILATING/AIR CONDITIONING CONTRACT AND ELECTRICAL DRAWINGS TO FAMILIARIZE HIMSELF WITH THAT WORK AND TO VERIFY THE SPACES IN WHICH THE PLUMBING WORK WILL BE INSTALLED.
- BECAUSE OF THE NATURE AND SCALE OF THE DRAWINGS, CERTAIN BASIC PLUMBING ITEMS SUCH AS UNIONS, FITTINGS, ELBOWS, ETC., MAY NOT BE SHOWN. WHERE SUCH ITEMS ARE REQUIRED BY OTHER SECTIONS OF THE SPECIFICATIONS, OR WHERE THEY ARE REQUIRED BY THE NATURE OF THE WORK OR BY CODES AND REGULATIONS, THEY SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST TO THE OWNER. THE DRAWINGS INDICATE GENERAL LOCATIONS OF PIPING, EQUIPMENT, DUCTWORK AND SIMILAR. THE EXACT LOCATION TO BE DETERMINED BY THE CONTRACTOR TO BEST FIT THE LAYOUT OF
- ALL EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT, WATER, AND CHEMICAL OR MECHANICAL INJURY OR THEFT. PLUMBING FIXTURES SHALL BE COVERED WITH HEAVY PAPER COVERINGS AFTER INSTALLATION AND SHALL BE THOROUGHLY CLEANED AFTER COMPLETION OF THE PROJECT.
- ALL MATERIALS SUCH AS VALVES, FITTINGS, PIPING, EQUIPMENT, PUMPS, COILS, ETC., SHALL BE PROPERLY PROTECTED, AND ALL PIPING OPENINGS SHALL BE TEMPORARILY CLOSED BY THE CONTRACTOR FOR THE WORK UNDER HIS CHARGE, ON A DAILY BASIS, AT THE END OF EACH WORKING DAY, SO AS TO PREVENT OBSTRUCTION AND DAMAGE. THE ABOVE REQUIREMENTS ARE MANDATORY.
- THE CONTRACTOR SHALL SEE THAT ALL MATERIALS, INSTALLATION AND WORKMANSHIP IS PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF ALL APPLICABLE CODES, LAWS, OR ORDINANCES OF THE STATE, AND ALL COUNTY AND LOCAL CITY CODES OR ORDINANCES, INCLUDING ALL STATE OR LOCAL BOARD OF HEALTH, FEDERAL AND STATE ENVIRONMENTAL PROTECTION REGULATIONS, STATE ENERGY CODES AND UTILITY REGULATORY AGENCIES.
- ALL WORK SHALL BE FURTHER PERFORMED IN ACCORDANCE WITH THE NATIONAL BOARD OF FIRE UNDERWRITERS, THE PLUMBING AND BUILDING CODES, NATIONAL ELECTRICAL CODE, THE OCCUPATIONAL SAFETY AND HEALTH ACT, THE AMERICAN GAS ASSOCIATION, AND ALL SUCH OTHER SPECIFIC CODES AS MAY BE REFERRED TO IN THE INDIVIDUAL SECTIONS OF THE SPECIFICATIONS.

MINIMUM, EXCEPT WHEN THE CODE MINIMUM SIZE IS LARGER THAN THAT SHOWN.

- PIPE SIZES SHOWN ON THE DRAWINGS ARE THE MINIMUM SIZES ALLOWED REGARDLESS OF THE CODE
- THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONTRACT PRINTS ON THE CONSTRUCTION SITE AT ALL TIMES. ON WHICH HE SHALL ACCURATELY RECORD THE ACTUAL INSTALLATION OF ALL PLUMBING WORK. AS WORK PROGRESSES, MARK CHANGES MADE WHETHER RESULTING FROM JOB CONDITIONS, ADDENDA, FORMAL CHANGE ORDERS OR OTHER INSTRUCTIONS ISSUED BY THE ENGINEER.
- THE PLUMBING CONTRACTOR SHALL INDICATE PROGRESS BY COLORING IN VARIOUS PIPES, FIXTURES, AND ASSOCIATED APPURTENANCES EXACTLY AS THEY ARE ERECTED AND INSTALLED.
- MARK ALL PIPE SIZES AND LOCATIONS DURING CONSTRUCTION. ALSO, MARK LOCATIONS OF ALL VALVES AND VARIOUS EQUIPMENT, APPARATUS, AND ASSOCIATED APPURTENANCES AS ERECTED WEEKLY DURING
- AT THE COMPLETION OF THE JOB THESE PRINTS, INCORPORATING CHANGES, ADDENDA AND ADDED DATA NOTED ON MARKED-UP PRINTS, INCLUDING DIMENSIONED LOCATIONS OF UNDERGROUND PIPING BEYOND LIMITS OF BUILDING, SHALL BE SUBMITTED TO THE ENGINEER FOR FINAL REVIEW AND COMMENT. THE PRINTS WILL BE RETURNED WITH APPROPRIATE COMMENTS AND RECOMMENDATIONS. THESE CORRECTED PRINTS TOGETHER WITH CORRELATED PRINTS INDICATING ALL THE REVISIONS, ADDITIONS AND DELETIONS OF WORK, SHALL FORM THE BASIS FOR PREPARING A SET OF RECORD DRAWINGS.
- WHERE PIPING, AND OTHER PLUMBING APPURTENANCES PASS THROUGH FIRE PARTITIONS, FIRE WALLS, OR FLOORS, INSTALL A FIRE-STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE AND GASES. FIRE-STOP MATERIAL SHALL BE UL APPROVED, PACKED TIGHT AND COMPLETELY FILL CLEARANCES BETWEEN RACEWAYS AND OPENINGS. FLOOR, EXTERIOR WALL, AND ROOF SEALS SHALL ALSO BE MADE WATERTIGHT AS APPROVED BY THE ADMINISTRATIVE AUTHORITY.
- ARRANGE AND INSTALL PIPING APPROXIMATELY AS INDICATED, STRAIGHT, PLUMB AND AS DIRECT AS POSSIBLE. FORM RIGHT ANGLES OR PARALLEL LINES WITH BUILDING WALLS. KEEP PIPES CLOSE TO WALLS, PARTITIONS AND CEILINGS, OFFSETTING ONLY WHERE NECESSARY TO FOLLOW WALLS AND AVOID INTERFERENCE WITH OTHER MECHANICAL ITEMS. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER; SPACE THEM AT A DISTANCE TO PERMIT ACCESS FOR SERVICING VALVES.
- 14 WATER PIPING SHALL BE PITCHED TO POINTS OF DRAINAGE WITH CONSTANT UNIFORM SLOPE.
- 15 INSTALL HORIZONTAL PIPING AS HIGH AS POSSIBLE WITHOUT SAGS OR HUMPS.
- GRADE DRAINAGE AT UNIFORM SLOPE OF NOT LESS THAN 1/4" PER FOOT TOWARD THE POINT OF DISPOSAL. WHEN APPROVED BY ADMINISTRATIVE AUTHORITY, PIPE SIZE 4" AND LARGER MAY HAVE A SLOPE OF NOT LESS
- WHERE CHANGES IN PIPE SIZES OCCUR. USE ONLY REDUCING FITTINGS.
- FOR DRAINAGE PIPING CHANGES IN DIRECTION, USE LONG SWEEP WHERE POSSIBLE, OTHERWISE, SHORT SWEEP 1/4 BENDS, OR COMBINATION WYE AND 1/8 BENDS; USE SANITARY TEE BRANCHES ONLY FOR HORIZONTAL BRANCHES DISCHARGING TO STACKS.
- 19 INSTALL SECTIONALISING VALVES AND ON EACH BRANCH LINE TO MULTI-FIXTURE GROUPS. LOCATE VALVES IN A READILY ACCESSIBLE LOCATION, DO NOT CONCEAL. DO NOT LOCATE VALVE SYSTEMS BELOW HORIZONTAL UNLESS INDICATED ON PLANS. LOCATE ANGLE STOP VALVES BELOW THE SINK OR WATER CLOSET.
- WATER SUPPLY TO ALL FIXTURES AND CONTAINERS SHALL BE SO INSTALLED AS TO PREVENT POSSIBLE BACK SIPHONAGE OF POLLUTED WATER. ALL SUPPLIES SHALL BE EITHER ABOVE THE FLOOD RIM OF THE FIXTURE OR SEPARATED FROM THE DRAINAGE END BY MEANS OF AN APPROVED VACUUM BREAKERS.
- PROVIDE PIPING AND FIXTURE TRAPS. CONNECT TO FIXTURES AND OTHER EQUIPMENT INDICATED OR SPECIFIED AS REQUIRING SOIL, WASTE, DRAIN AND VENT FACILITIES.
- LAY ALL PIPING TRUE TO LINE AND GRADE, FIT ENDS TOGETHER, MATCH SO THAT SEWER OR DRAIN WILL HAVE SMOOTH AND UNIFORM INSERT. FOLLOW LOCATIONS AND ELEVATIONS AT SITE. AS THE PIPE LAYING PROGRESSES, CLEAR PIPE INTERIOR OF CEMENT, DIRT, AND OTHER FOREIGN MATERIALS. DURING WORK STOPPAGE PERIODS, PROVIDE EFFECTIVE PLUGS OR COVERS FOR OPEN ENDS OF PIPE AND DRAINS.
- PROVIDE CLEANOUTS WHERE INDICATED AND AT INTERVALS OF 100' OR AS REQUIRED BY LOCAL PLUMBING CODE AND WHERE REQUIRED AT CHANGES OF DIRECTIONS OF SOIL AND WASTE STACKS. INSTALL CLEANOUTS SO AS TO BE ACCESSIBLE FOR EASY REMOVAL AND TO PROVIDE CLEARANCE FOR RODDING. CLEANOUTS SHALL BE THE SAME SIZE AS PIPE SERVED EXCEPT THAT NO CLEANOUT NEED BE LARGER THAN
- 24 EXTEND VENT PIPES 12 INCHES ABOVE ROOF AND 10FT MINIMUM AWAY FROM ANY FRESH AIR INTAKES AND AT LEAST 48 INCHES AWAY FROM A PARAPET WALL.
- SANITARY VENT PIPING SHALL BE GRADED SO THAT THE AIRFLOW TO THE OUTSIDE WILL BE CONTINUOUSLY UPWARD AND SO THAT NO LOW POINTS WILL BE DRAINED.
- 26 MAKE TIGHT CONNECTION BETWEEN WATER CLOSET FLANGES AND EARTHENWARE FIXTURE BY MEANS OF AN APPROVED MOLDED WAX RING OR SETTING COMPOUND AND BOLTING.
- 27 VENTS: PROVIDE FLASHING FOR STACKS PASSING THROUGH ROOF. MAKE WATER-TIGHT AT ROOF. DO NOT LOCATE VENT THROUGH ROOF LESS THAN 24 INCHES FROM A PARAPET WALL.
- 28 ALL PLUMBING FIXTURES AND PIPING ARE TO BE LISTED BY AN APPROVED LISTING AND TESTING AGENCY AND PROPERLY LABELED.
- 29 COORDINATE ALL LOCATIONS, SIZES, AND ELEVATIONS OF ALL SLEEVES THROUGH WALLS, BEAMS, SLABS AND FOOTING WITH STRUCTURAL AND ARCHITECTURAL DRAWINGS. ALL PIPES SLEEVING THROUGH FOOTINGS SHALL HAVE A SLEEVE DIAMETER OF TWO PIPE SIZES OVER THE PIPE PASSING THROUGH THE FOOTING. NO PIPE TO BE PLACED THROUGH FOOTING UNLESS APPROVED BY THE STRUCTURAL ENGINEER.
- 30 ALL PIPES SHALL BE PROTECTED AT THE POINT THEY CROSS BUILDING EXPANSION JOINT, EITHER WITH AN EXPANSION FITTINGS OR IN ANOTHER MANNER ACCEPTABLE TO THE ENGINEER.
- 31 PLUMBING CONTRACTOR SHALL CONNECT ALL GAS PIPING TO ALL GAS RELATED UNITS PER PLAN WITH LISTED AND APPROVED GAS SHUT-OFF VALVE, SEDIMENT TRAP, AND UNION.
- 32 FAUCET CONTROLS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER
- 33 PENETRATION OF FLOOR/CEILING ASSEMBLIES AND ASSEMBLIES REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL BE PROTECTED IN ACCORDANCE WITH THE BUILDING CODE.
- 34 WHERE WATER PRESSURE WITHIN A BUILDING EXCEEDS 80 PSI, AN APPROVED WATER-PRESSURE REDUCING VALVE CONFORMING TO ASSE 1003 WITH STRAINER SHALL BE INSTALLED TO REDUCE THE PRESSURE IN THE BUILDING WATER DISTRIBUTION PIPING TO 80 PSI STATIC OR LESS.
- 35 DISINFECTION OF POTABLE WATER SYSTEM SHALL COMPLY WITH THE LOCAL AND THE STATE PLUMBING
- 36 PROPER ACCESS MUST BE PROVIDED FOR THE TESTING AND MAINTENANCE OF THE BACKFLOW PREVENTER. IF THE BACKFLOW PREVENTER IS INSTALLED MORE THAN 5'-0" ABOVE THE FLOOR, SPECIAL PROVISIONS
- 37 PROVIDE AND INSTALL A SINGLE GAS ISOLATION VALVE FOR THE MULTIPLE GAS METER BANKS FOR THE ENTIRE BLDG.
- 38 ALL PIPING SHALL MAINTAIN AT LEAST 5'-0" CLEARANCE IN FRONT OF THE HVAC SUPPLY AND RETURN
- 39 PLASTIC PIPES ARE NOT PERMITTED TO BE INSTALLED WITHIN THE AIR PLENUM SPACE.
- 40 HUNG WASTE PIPING SHALL BE STRUCTURALLY SUPPORTED AS TIGHT AS POSSIBLE BELOW THE STRUCTURAL BEAMS TO GAIN MORE HEAD SPACE AS IT PITCH TOWARDS THE LOWEST POINT TO KEEP WASTE PIPING WITHIN THE CEILING SPACE.
- 41 CONTRACTOR TO PROVIDE AND INSTALL QUICK DISCONNECT GAS LINES AT ALL COOKING EQUIPMENT.
- 42 NO NON-METALLIC PIPING IS ALLOWED WITHIN THE RETURN-AIR PLENUMS.
- 43 AIR BARRIER TESTING REPORTS SHALL BE SUBMITTED TO THE CITY OF LACEY BUILDING DEPARTMENT PRIOR TO CALLING FOR FINAL INSPECTION.



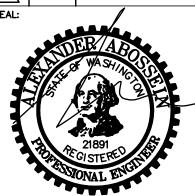




Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent. WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN @ HIGHWAY 512 PUYALLUP, WASHINGTON

**FACILITY #7184** ABOSSEIN #223054

ngineering

MECHANICAL - ELECTRICAL CIVIL — LEED FIRE PROTECTION 18465 NE 68TH ST REDMOND, WA 98052 PH: (425) 462-9441 FAX: (425) 462-9451 E-Mail: cservice@abossein.com | www.abossein.com

BP REPM: ALLIANCE PM: PROJECT NO: 21730 DRAWING TITLE:

ALLIANCE Z&DM:

**GENERAL NOTES** & CALCULATIONS

### SPECIFICATIONS

1.00 - GENERAL <u>SECTION 15400 - PLUMBING</u>

1.01 DESCRIPTION OF WORK

Furnish all labor, materials, equipment and services required for and/or reasonably incidental to the completion of the following work.

A. Sanitary waste and vent piping system including connections to building sewer as shown.

B. Domestic hot and cold water systems including water heater, and related accessories and controls.

Connection to building water as shown.

C. Plumbing fixtures, trim and accessories including installation and support.

D. Flashing and sealing of roof and exterior wall penetrations for water tightness.

E. Caulking and sealing of floor and wall penetrations and formed shaft penetrations.

F. Backing for securing fixtures, trim and piping.
G. Access doors where shown or required by code.

H. Hangers, supports, and guides.I. Cleanup of debris and final cleanup of drains, fixtures and equipment.

J. Record drawings and operating manuals.
K. License, permits and associated fees.

L. Cutting, drilling and patching for all surfaces in relation to plumbing work.

M. Condensate drains from HVAC equipment, and gas piping

1.02 RELATED WORK INCLUDED UNDER OTHER SECTIONS

A. HVAC and Electrical Work. 15500 and 16000 B. Fire Protection Work 153000 (if applicable)

1.03 EXAMINATION OF SITE

A. Visit site before submitting bid and check location of all existing conditions which will affect this work, verify dimensions and locations shown on drawings and cover all costs. Contractor shall assume reasonable variations or minor omissions and shall complete proposed work without additional cost. Failure to visit site will not lessen responsibility or entitle additional compensation for work not included in proposal.

B. Visit site of the work, compare it with the drawings and specifications as to the conditions under which work is to be performed, ascertain and check all conditions and elevations and take all measurements which may affect the work. No allowance shall subsequently be made for any extra expense or claims due to failure or neglect under this requirement to make such examination, including examination of restricted working conditions or such other difficulties visually observed during site visit. Contractor is responsible for becoming completely familiar with the architectural and structural conditions and limitations which will exist in the building and to provide all labor, tools and materials required to produce a completely concealed installation as indicated on the plans, specifications, and required by the code.

1.04 DRAWINGS

The accompanying drawings shall be considered part of these specifications. Work and materials shown on the drawings and not mentioned in the specifications and vice versa shall be executed as if specifically mentioned or shown in both. The drawings shall be considered as schematic in nature and minor modifications of the work to comply with the structure as found shall be made.

1.05 RULES AND REGULATIONS

A. All work and material shall be in full accordance with the latest rules and regulations of the State Fire Marshal and other applicable State and local rules and regulations. Nothing in these drawings or specifications shall be construed to permit work not conforming to these codes.

B. Furnish without any extra charge any additional material and labor when required to comply with these laws, ordinances and codes regardless of whether shown or mentioned in these specifications of drawings.

C. All work and material shall be in accordance with the Landlord's Mech/Elect. Design Criteria. All contractors shall obtain a copy from the Lndlord's Tenant Coordinator or Mall Operations manager and become familiar with the requirements contained within prior to bidding the job. Where Landlord's requirements conflict with Codes or Ordinances the strictest interpretation shall apply.

1.06 SUBMITTALS

A. Submit for review to the Owner a complete and all—inclusive list of equipment and materials proposed for use (6 copies), accompanied by manufacturer's data sheets. Data shall be forwarded in a single package written 15 days after award of contract. Submit six blackline prints and one reproducible shop drawing showing proposed plumbing installation. Include sizes, locations and other required information to coordinate installation with other trades.

B. Within 5 days after award of contract, submit 6 copies of a letter stating any materials that contractor wishes to substitute, to the Owner for approval. Include such information as manufacturer's name, type of material, certified ratings, overall appearance, and necessary information to explain function and operation of material. All proposed substitutions shall be equal in quality, design, utility and appearance to material, equipment or method specified.

1.07 AS-BUILT DRAWINGS

A set of plumbing plans will be furnished to the Contractor on which he shall indicate the installation "as—built" as the work progresses. Upon completion of the work, a set of reproducible drawings shall be obtained from the Owner at cost, and all changes as noted on the record set of prints shall be incorporated thereon. This set of reproducibles, along with one set of blueprints, shall be delivered to the Owner upon completion and before final acceptance of the project.

1.08 GUARANTEE

The Contractor shall leave the entire installation in complete working order free from any defective material, workmanship or finish. He shall guarantee to repair or replace, without charge, defects due to faulty workmanship or material for a period of one year from the date of filing of the Notice of Completion.

1.09 OPERATION MANUALS AND OWNER INSTRUCTIONS

A. Provide complete operation and maintenance manuals covering all Plumbing systems and equipment that have been installed. Three (3) copies of the manual shall be bound in hardback binders.

B. Provide instructions to owner as to operation of all equipment. Instruction period to commence for minimum of (2) hours and shall be scheduled at owner's convenience.

1.10 CUTTING AND PATCHING

A. The contractor shall do all cutting, drilling and patching which may be required for the installation of the work under this Section of the Specifications.

B. Patching shall be of the same workmanship, material, and finish and shall match accurately all surrounding construction in a manner satisfactory to the Owner. No cutting of the structure shall be permitted without written approval of the Owner.

2.00 - MATERIALS - PIPING

overlap required.

Building drain and vent piping materials shall comply with the local authority having jurisdiction. All sanitary system materials shall be listed by an approved listing agency.

A. Interior Underground Sanitary and Waste Piping: No—Hub C.I. pipe and fittings or ABS DWV sch. 40. Where cast iron pipe, fittings and stainless steel couplings are used they shall be listed and tested in accordance with standards referenced in the 2019 CPC Table 701.2. Pipes and fitting shall be marked with country of origin, manufacture's name or registered trademark as defined in the product standards, the third party certifier's mark, and the class of the pipe or fitting.

B. Interior Suspended Sanitary and Vent Piping:
1. 3" and Larger — No—Hub C.I. or ABS DWV sch 40.

2. 2" and Smaller — Schedule 40 galvanized steel pipe with screwed durham cast iron fittings for waste and vent

C. Interior Domestic Water Piping Above Ground:

3" and Smaller — Type L hard tempered copper with solder end fittings. 95—5 tin and antimony solder jointing (lead—free).

c.2" and smaller: Products shall be 10 mil plastic sleeve protector.

D. Outdoor Above Ground Domestic Water Piping: 3" and Smaller — Type L hard tempered copper with solder end fittings. 95—5 tin and antimony solder jointing (lead—free).

E. Domestic Water Piping Below Ground:

Type K copper pipe shall be used. When piping is installed within a building and under a concrete slab, it shall be installed without joints. When joints are unavoidable, they shall be brazed.

a.Protective pipe covering shall be factory or field applied accordingly to manufacturers written instructions.

b.2 ½" or larger: Products shall be Polyken No. 1027 primer and Polyken No. 910 tape coating, 10 mil, minimum

F. Condensate Drain Piping:

Copper water tube ASTM B88. Type "M". solder with 95-5 solder, lead-free type.

2.01 PIPE FLASHINGS

AS APPROVED BY ROOF MEMBRANE MANUFACTURER.

2.02 VALVES

A. Gate Valves: Red & White 204 or equal, 3" and smaller.
B. Check Valves: Red & White 238 or equal, 3" and smaller.
C. Ball Valves: Nibco 580-70 or equal, 3" and smaller.

2.03 PLUMBING FIXTURES AND TRIM:

Plumbing fixtures to be furnished and installed under this contract. See plumbing fixture schedule.

2.04 PIPE HANGERS AND SUPPORTS

A. Superstrut, Grinnell, or approved equal.

B. Installation per manufacturer's recommendations.

C. Pipe hangers shall have non—metallic felt or elastomeric liner or wrap applied to the pipe for electrolytic protection where hangers and supports are used to support copper tubing or pipe. The liner or wrap shall be designed to allow expansion or contraction of the piping.

2.05 PIPE SLEEVES

Shall be provided to protect all piping through concrete and masonry walls.

Annular spaces between sleeves and pipes shall be filled or caulked in an approved manner. Annular spaces between sleeves and pipes in fire—resistance—rated assemblies shall be filled or tightly caulked in accordance with the building code. All underslab cast iron piping shall be covered with polyethylene sleeve (polywrap) and contractor must follow manufacturer's manual for proper installation.

2.06 TEMPERATURE AND PRESSURE RELIEF VALVE

Temperature & pressure relief valve shall discharge full line size to an approved waste receptor through an air gap as indicated on plans or 6" minimum, 24" maximum.

2.07 SCALD GUARD PROTECTION

Provide and install lavatory scald protection for waste piping and hot water piping.

2.08 DOMESTIC PIPING INSULATION

A. Provide and install "insulation protection shield" for piping with foam or fiberglass insulation.

B. Insulate all rainwater piping with 1" thick fiberglass insulation below the deck up to 25 feet of horizontal run.

C. Insulate all horizontal waste piping (Hung) with 1—1/2" thick fiberglass insulation above noise sensitive areas ONLY.

D. Insulate all domestic water piping to meet California Energy Code Table 120.3—A. Pipes less than 1" diameter require 1" of insulation if operating between  $105-140^{\circ}F$ , and 1.5" of insulation if operating over  $140^{\circ}F$ . All piping outside the building or on roof shall be insulated with 1-1/2" thick Armstrong Armaflex or approved equal, and sections butted firmly together.

E. Insulate all condensate drain piping with 1/2" thick Armstrong Armaflex or equal, and sections butted firmly together.

F. Insulate all hot water piping with 1" thick fiberglass insulation.
G. Provide and install scald guard protection/insulation under sinks with exposed p—traps and hot water

supplies.

H. Minimum R—values for hot water piping insulation having pipe diameter of less than or equal to 2" is R—4, for larger than 2" diameter is R—6.

I. All outdoor insulation shall be protected with aluminum jacket.

2.09 CLEANOUT

A. Accessible cleanout shall be provided at the base of each waste stack and rainwater leaders. Additional cleanout shall be provided in a drainage line for each horizontal change of direction exceeding 135 degrees. Cleanout must be provided on a horizontal drain line exceeding 5ft or more in length serving sinks or urinals. An approved type of 2—way cleanout fitting shall be installed outside of a building at the lower end of a building drain and extended to grade.

2.10 WATER HEATER

A. Provide anchors and straps to resist horizontal displacement due to earthquake motion. B. Strapping shall be located upper 1/3 and lower 1/3 of its vertical dimensions. Straps shall be a minimum 2"x16 gage properly secured to wall studs. Elevate water heater at least 4" minimum above the finished floor with an approved base. Provide a 22 gage water tight drain pan, corrosion resistant, at the bottom of the water heater. Drain pan shall have a 3/4" drain line to be discharged into an approved receptor by means of an air gap. A properly sized thermal expansion tank shall be provided at the water heater. Hot water supply for the lavatories and hand sinks shall not exceed 110°F temperature.

2.11 TRENCHING

A. All trenches deeper than the footing of any building or structure and paralleling the same shall be at least 45 degrees therefrom.

3.00 - INSTALLATION AND EXECUTION

3.01 GENERAL

A. Cast—Iron Hubless with stainless steel shielded coupling shall be supported horizontally at every other joint, unless over 4 feet, then support each joint adjacent to joint, not to exceed 18", brace at not more than 40ft intervals, support at each horizontal branch connection. Hangers shall not be placed on the coupling. Support vertical pipes at the base and each floor not to exceed 15ft. Hangers and Supports for all piping shall comply with the CPC 2010 Table 3—2.

3.02 SPECIAL REQUIREMENTS, RESPONSIBILITIES AND TESTING

A. Install piping generally level, free of traps and unnecessary bends, to conform with building requirements. Pipe to be free of defects, and installed to avoid any possible galvanic action by isolating dissimilar metals.

B. Test and record available domestic water pressure in static and dynamic conditions For dynamic testing record pressure and flow rate in gallons per minute.

Transmit this information to the engineer before proceeding with the work.

C. Provide all tests specified hereinafter and as otherwise required. Provide all test equipment, including test pumps, gauges, instruments and other equipment required. Pressure gauges used shall be graduated in increments not greater than 5 pounds per square inch.. No plumbing or drainage system or part thereof shall be covered, concealed, or put into use unless it has been specified. Conduct all tests in the presence of the Owner's representative, and obtain the necessary jurisdictional authority inspections.

D. Apply a water test to the waste, and vent systems whether in its entirety or in sections; if applied to the entire system, tightly close all openings in the piping except the highest opening, and fill the system with water to the point of overflow.

If the system is tested in sections, tightly plug each opening except for the highest opening of the section under test, and fill each section with water, but test with no less than a 10' head of water. In testing successive sections, test at least the upper 10' of the next preceding section so that no joint or pipe in the building (except the uppermost 10' of the system) shall have been submitted to a test of less than a 10' head of water. Keep water in the system or in the portion under test for at least 24 hours before inspection starts, with the system tight at all points.

E. Domestic water system shall be tested and proved tight under a pressure of not less than 120 PSI. Piping must stand the test for a period of 24 hours without leaking.

F. Chlorination of the domestic cold and hot water piping systems in accordance with standard testing procedures and local health department requirements. Testing by a firm such as Bennet-Marine or equal. Submit certificate of satisfactory test results.

G. Upon completion of testing, certify to the Architect, in writing that the specified tests have been performed and that the installation complies with the specified requirements.

3.03 PIPING INSTALLATION

A. Make changes in size of pipe with reducing fittings; bushings will not be permitted except for bell shaped copper bushings.

B. Install dielectric insulating unions in water piping between copper piping and ferrous piping or equipment — Epco, or equal.

C. Install exposed polished chrome connections from fixtures or equipment with special care. Show no tool marks or threads at fittings.

D. Cap openings in piping during construction.

H. Support piping independently of equipment to which it is connected.

E. Provide 85% red brass pipe IPS, in connection to faucets, flush valves, hose bibbs or similar items requiring rigid piping. Extend brass pipe from fixture to point where piping can be securely fastened to building construction. All exposed piping and stop valves in connection to fixtures shall be chrome plated brass. F. Install unions adjacent to valves and where necessary to facilitate disassembly

G. Escutcheons: Fit exposed pipes passing through floors, walls or ceilings with escutcheons. Manufacture special sizes of escutcheons from steel and prime coat same. Cut in round, rectangular or square space to provide a clean appearance acceptable to the Architect.

I. Make copper solder joints with 95/5 solder, or silfos; clean surfaces to be joined free of oil, grease, rust or oxides and apply Flux to each joint before heating assembly.

J. Rough—in and make final connections to all other equipment furnished under other Divisions, requiring plumbing connections.

3.04 SUBSTITUTIONS

A. One or more makes of materials and methods may have been specified to establish the standard of quality, workmanship, finish and design required, but other materials or methods equal or better in quality, workmanship, finish, design, and guaranteed performance, may be submitted for review and approval as substitution. All substitutions are subject to review and approval by Architect, Engineer, and Owner.

B. Substitutions shall be requested in a written form and shall be accompanied with a signed statement that proposed substitution is equal, or better than specified. Additional documentation to substantiated proposed substitution may be required by Owner, Architect, and Engineer. Contractor shall submit as directed.

C. Contractor shall accompany request for substitution letter with a completed CSI Substitution

Form include the comparison for following:
1. Performance Data

Dimensions
 Costs and Delivery Schedule

3. Costs and Delivery Schedule4. Listed and Approved

D. A written signed statement from the General Contractor shall accompany substitution request form assuring that:

1. Dimensions has been verified with project conditions and has coordinated with other trades. Substitution does not affect dimensions shown on drawings.

2. He shall pay and burden the costs for changes to the project including redesign, reengineering and review of substitution. Only one engineering review time is allowed for each product substitution. Contractor shall be responsible for additional review time and shall pay Architect and Engineer's time at their professional rate schedule.

3. He has confirmed that the proposed substitution will have no adverse affect on other

3. He has confirmed that the proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
4. He has confirmed that maintenance and service parts will be locally available for the proposed substitution.

F. No work involving materials submitted for substitution shall proceed until written acceptance is received from the Owner. The Owner is the final judge of acceptability of preferred substitutions.

E. Cost savings resulting from substitution shall be returned to the contract or the Owner if

COORDINATION

A. Coordinate work with other trades to avoid conflict and to provide correct rough—in and connection for equipment furnished under other trades that require plumbing connections. Inform Contractors of other trades of the required access to and clearances around equipment to maintain service ability and code compliance.

B. Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions, subject to additional compensation, which are made without written authorization and an agreed price, shall be at the Contractor's risk and expense

3.06 MARKING AND IDENTIFICATION

the substitution is permitted.

A. All domestic cold water, hot water, sanitary sewer, sanitary vent, condensate drain, and natural gas piping shall have visible permanent labels at every 20 feet, the direction of normal flow shall be clearly shown, at least once per room, and shall be visible from the floor level. The minimum size of the letters shown on table 6—1 below. Valves shall be labeled with stenciled or stamped metal tags bearing the name of the system they carry.

TABLE 6-1

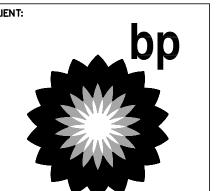
 PIPE SIZE (INCHES)
 SIZE OF LETTER (INCHES)

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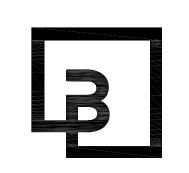
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 8 - 10
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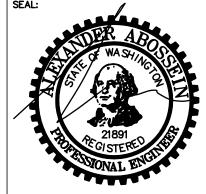
BP WEST COAST PRODUCTS, LLC



Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

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DEVELOPMENT INFORMATION:

3400 am/pm FUEL CANOPY w/ 6 MPD's

ARCO NTI

@ HIGHWAY 512

SWC S MERIDIAN

SITE ADDRESS:

PUYALLUP, WASHINGTON

FACILITY #7184

Abossein Engineering, L.L.C.

MECHANICAL - ELECTRICAL
CIVIL - LEED
FIRE PROTECTION
18465 NE 68TH ST
REDMOND, WA 98052
PH: (425) 462-9441
FAX: (425) 462-9451
E-Mail: cservice@abossein.com
www.abossein.com

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DESIGNED BY:

CHECKED BY:

BP REPM:

DRAWN BY:

ALLIANCE PM:

VERSION:

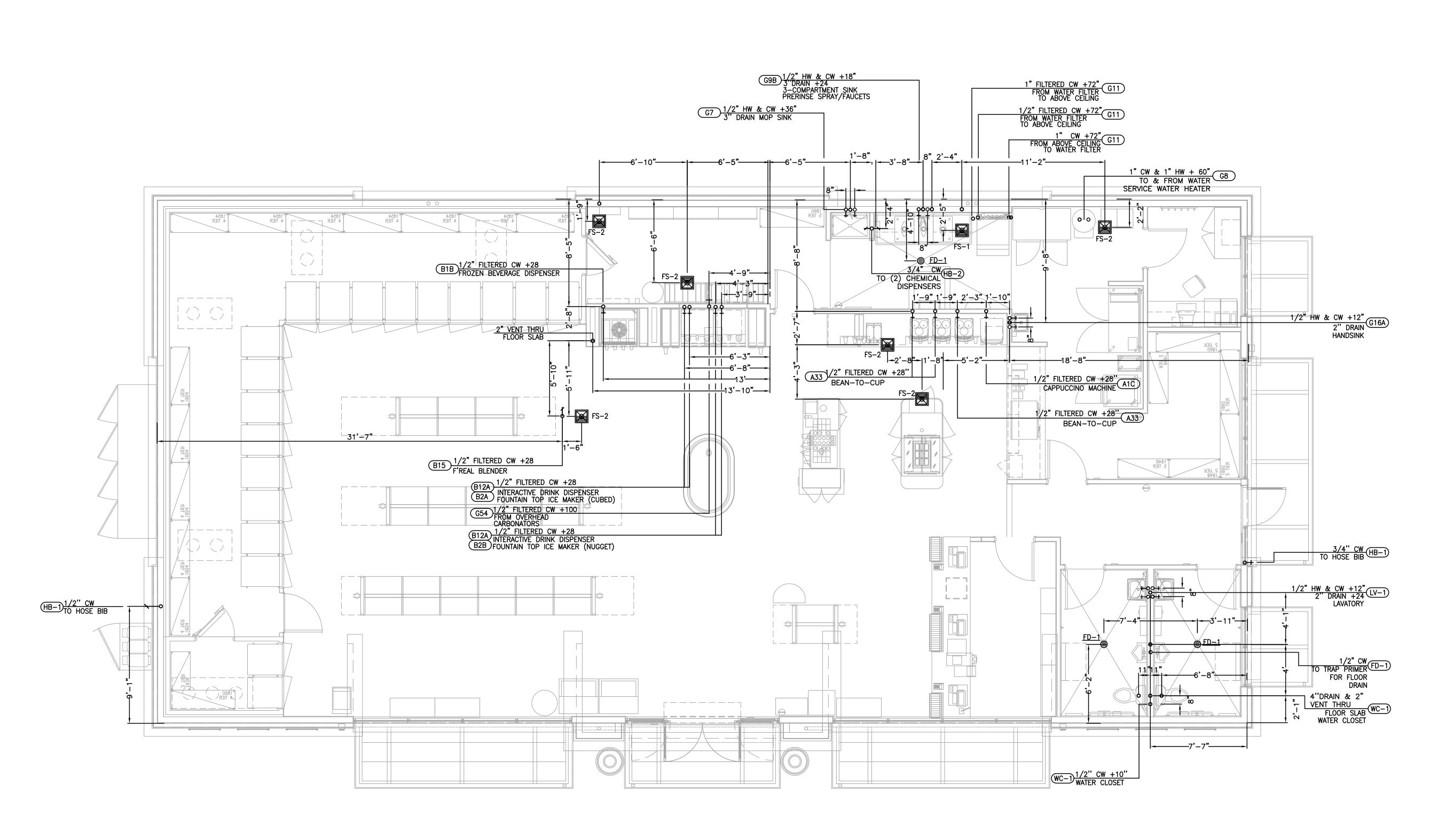
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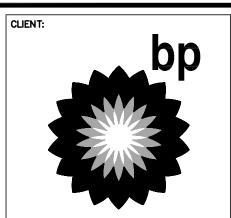
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PLUMBING
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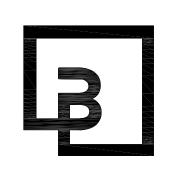
P0 3



1 PLUMBING ROUGH-IN PLAN P1.0 SCALE: 1/4" = 1'-0"



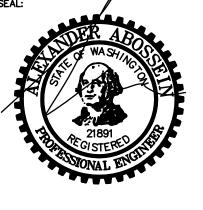




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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

ABOSSEIN #223054

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FAX: (425) 462-9451 E-Mail: cservice@abossein.com

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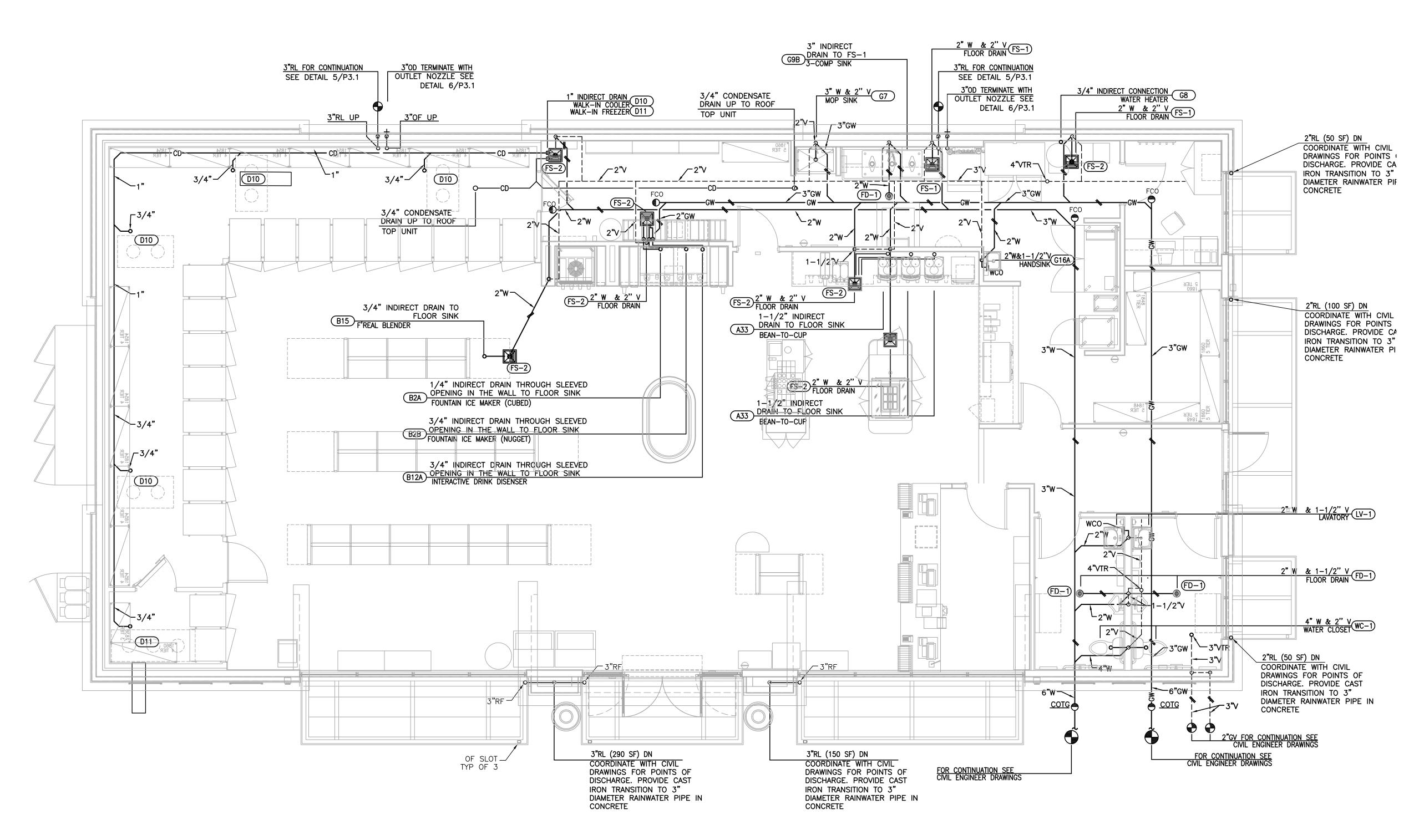
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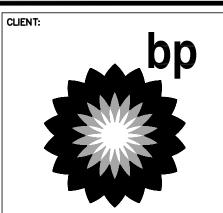
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PLUMBING ROUGH-IN PLAN

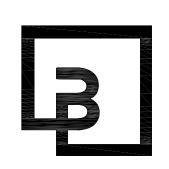
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1 SANITARY DRAINAGE & VENT PLUMBING PLAN P1.1 SCALE: 1/4" = 1'-0"







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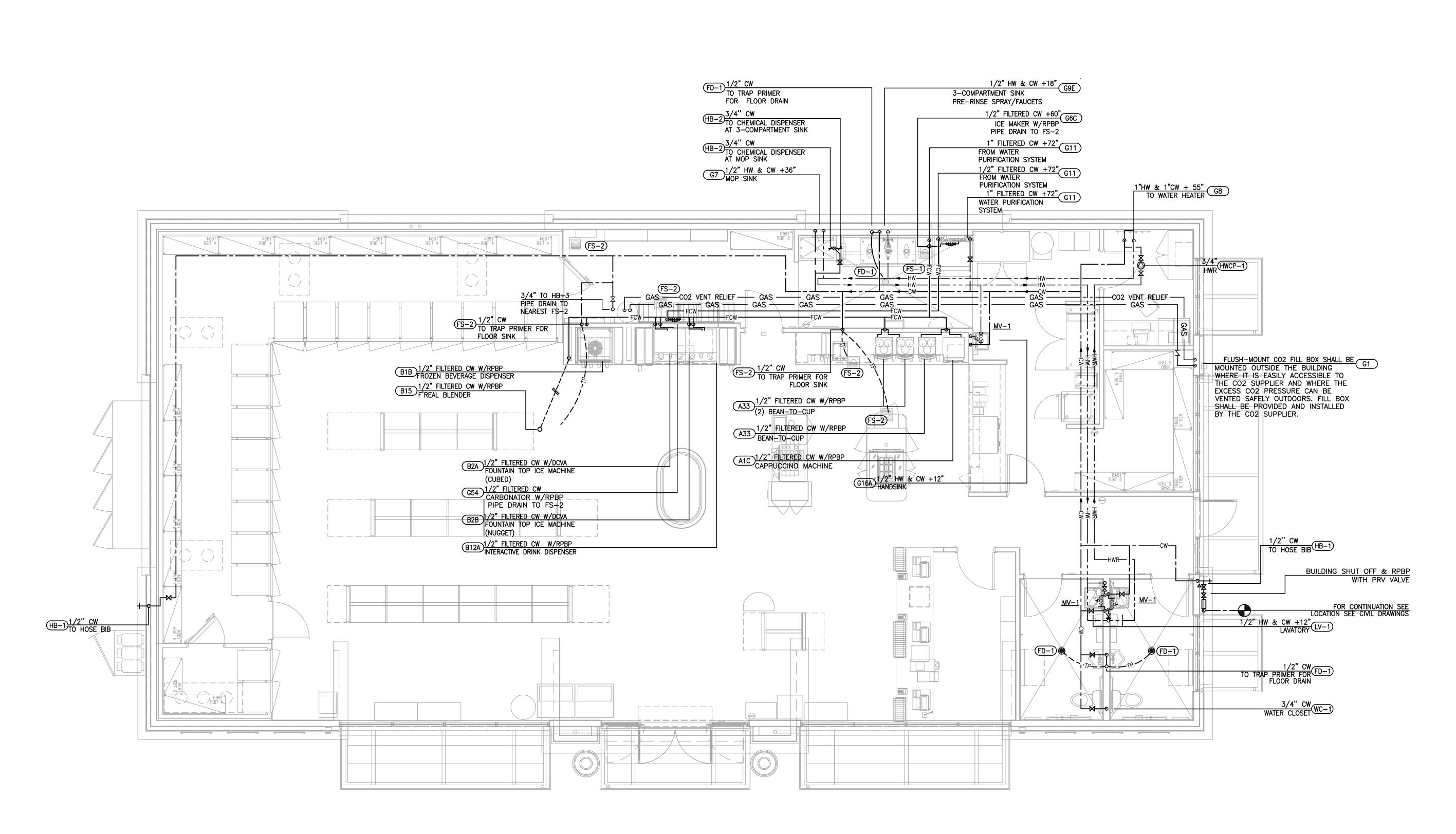
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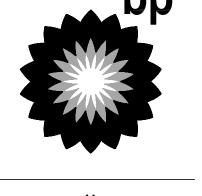
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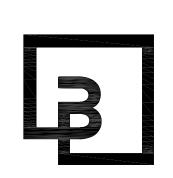
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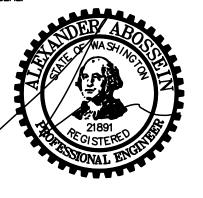




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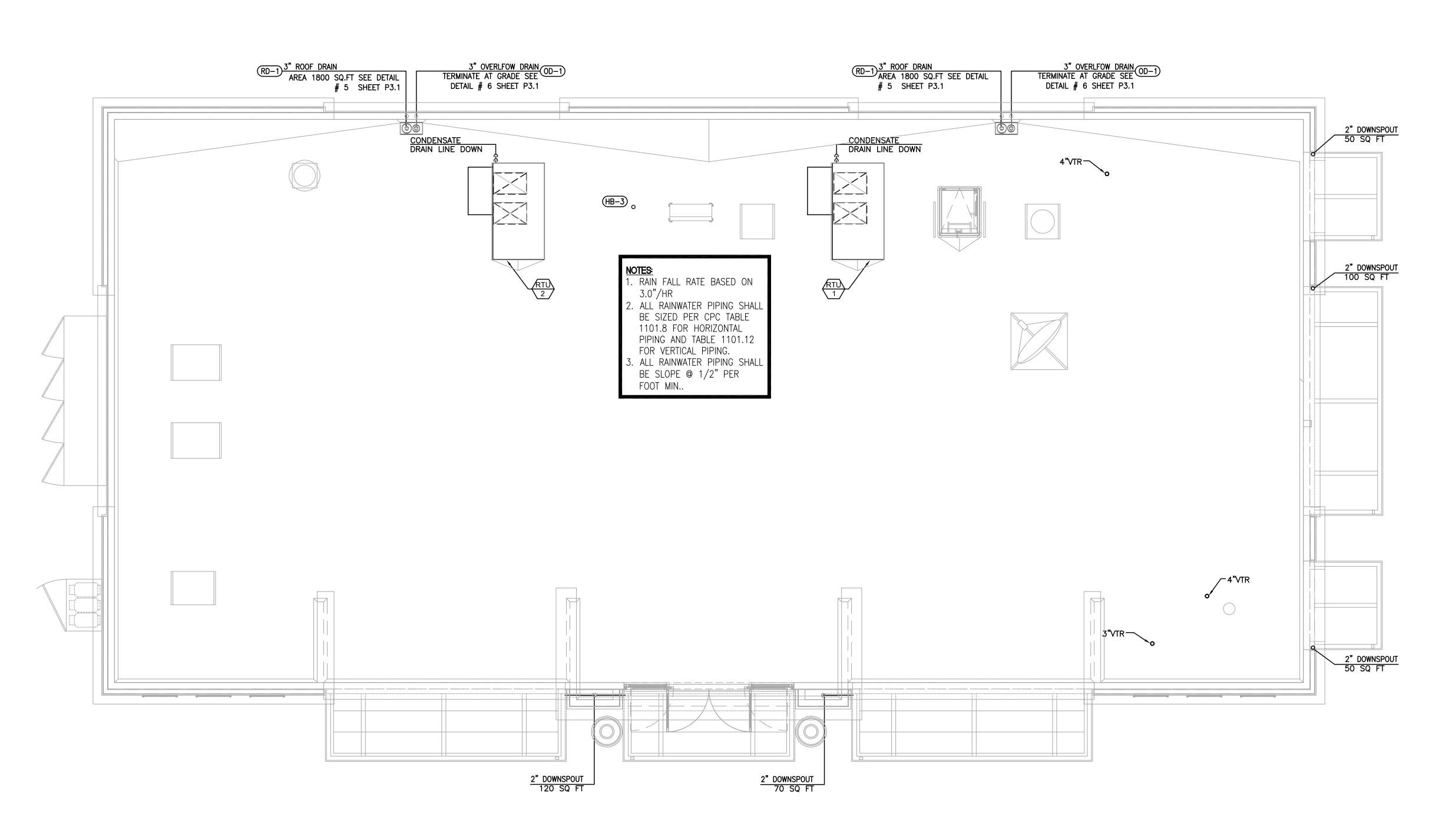
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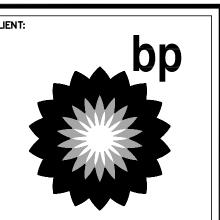
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DOMESTIC WATER
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PLAN

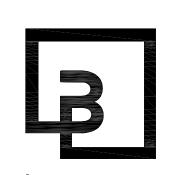
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1 PLUMBING ROOF PLAN P1.3 SCALE: 1/4" = 1'-0"



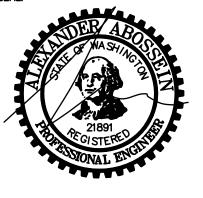




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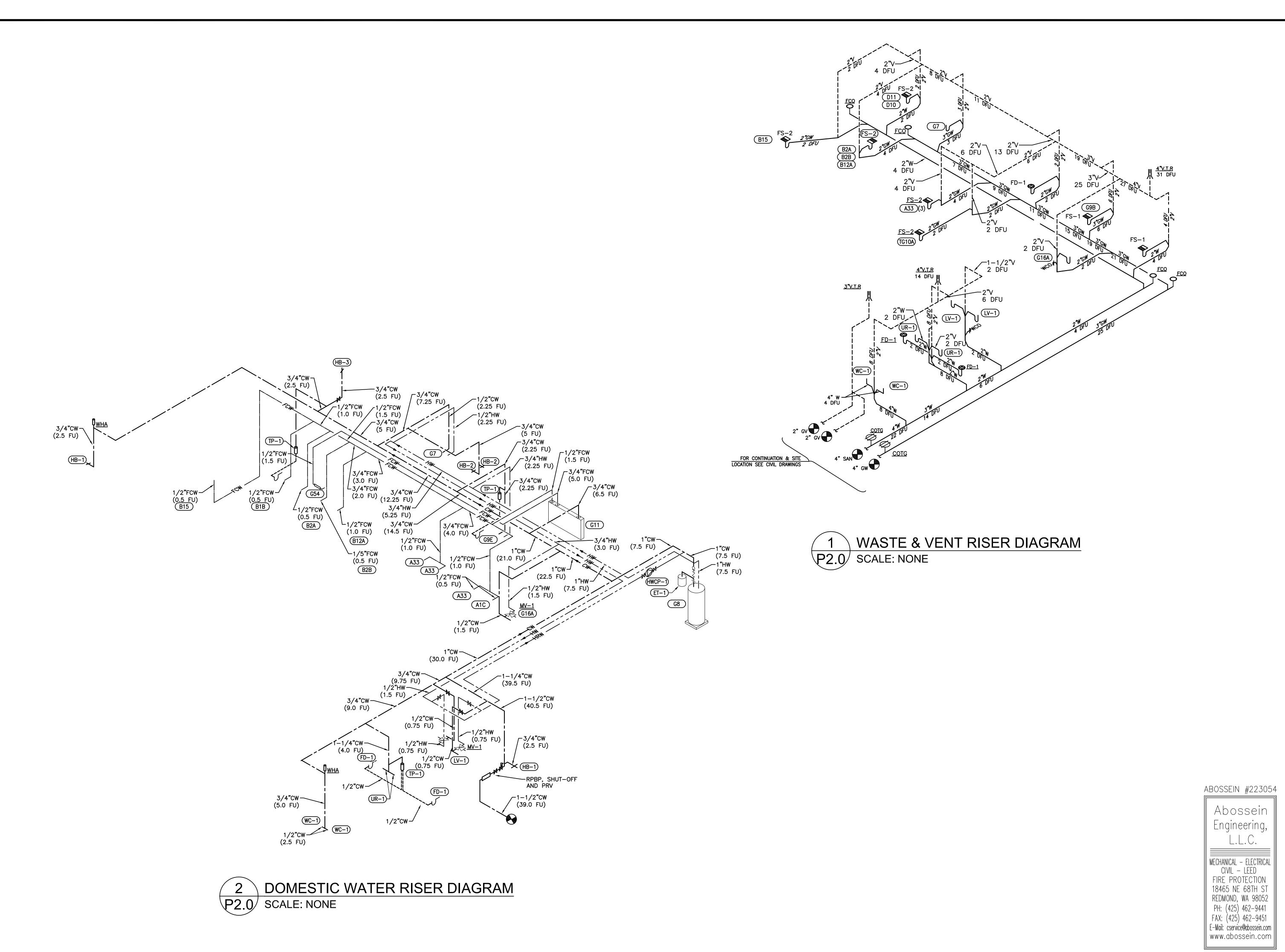
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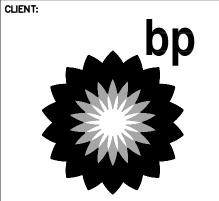
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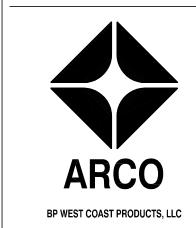
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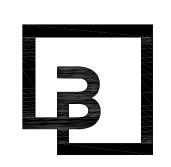
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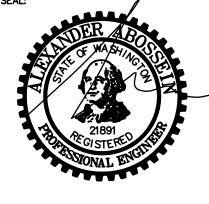




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3400 am/pm

FUEL CANOPY w/ 6 MPD's

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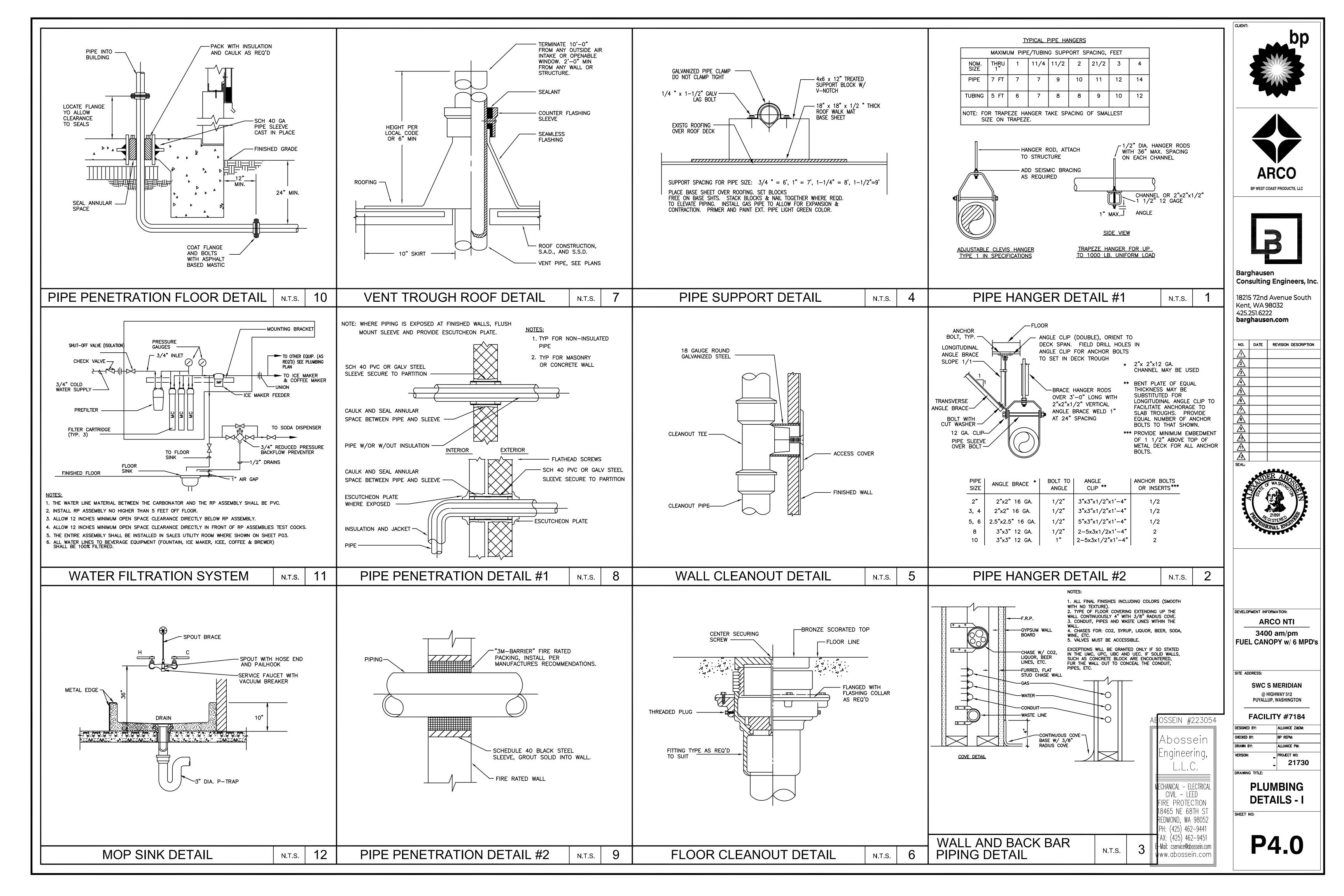
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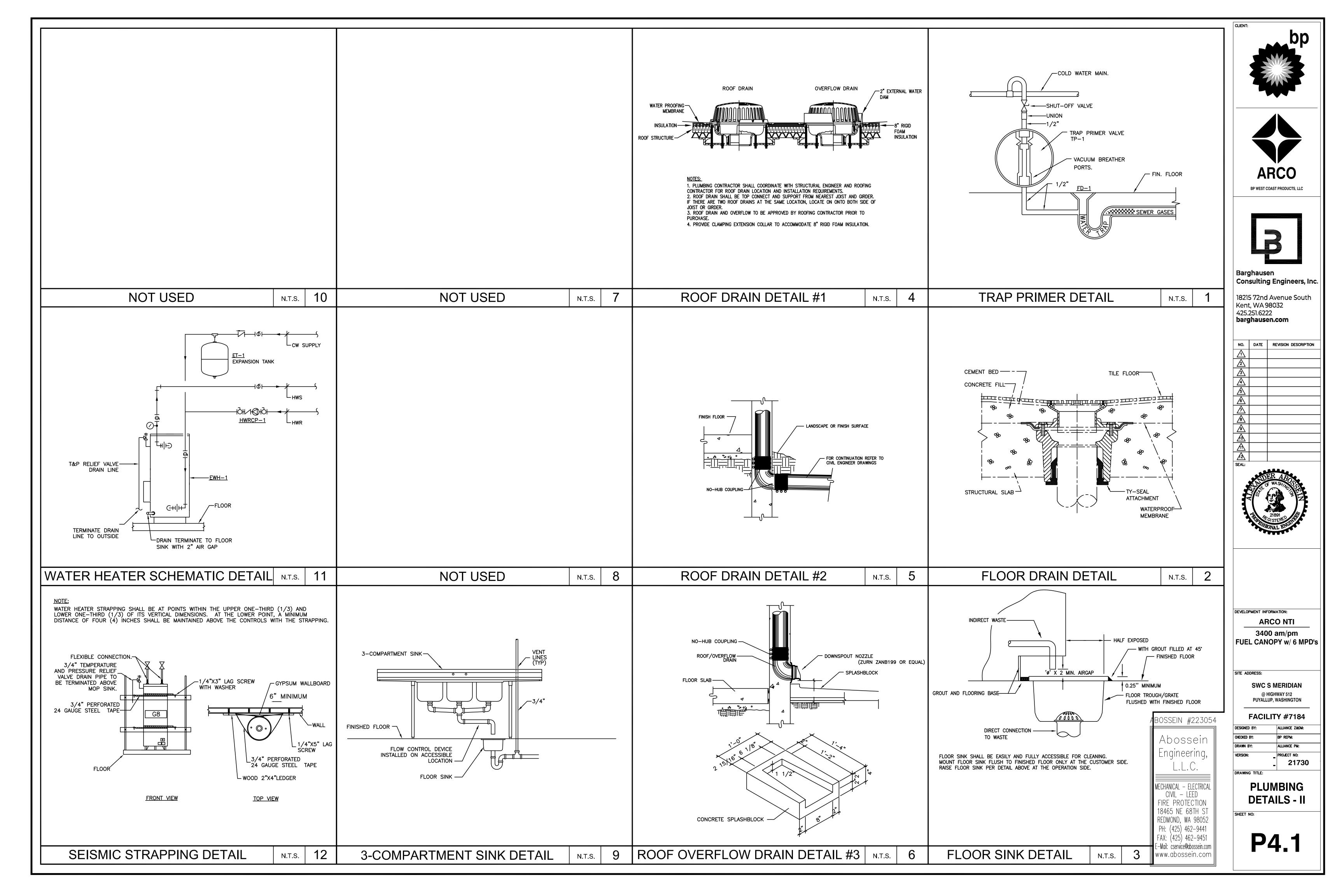
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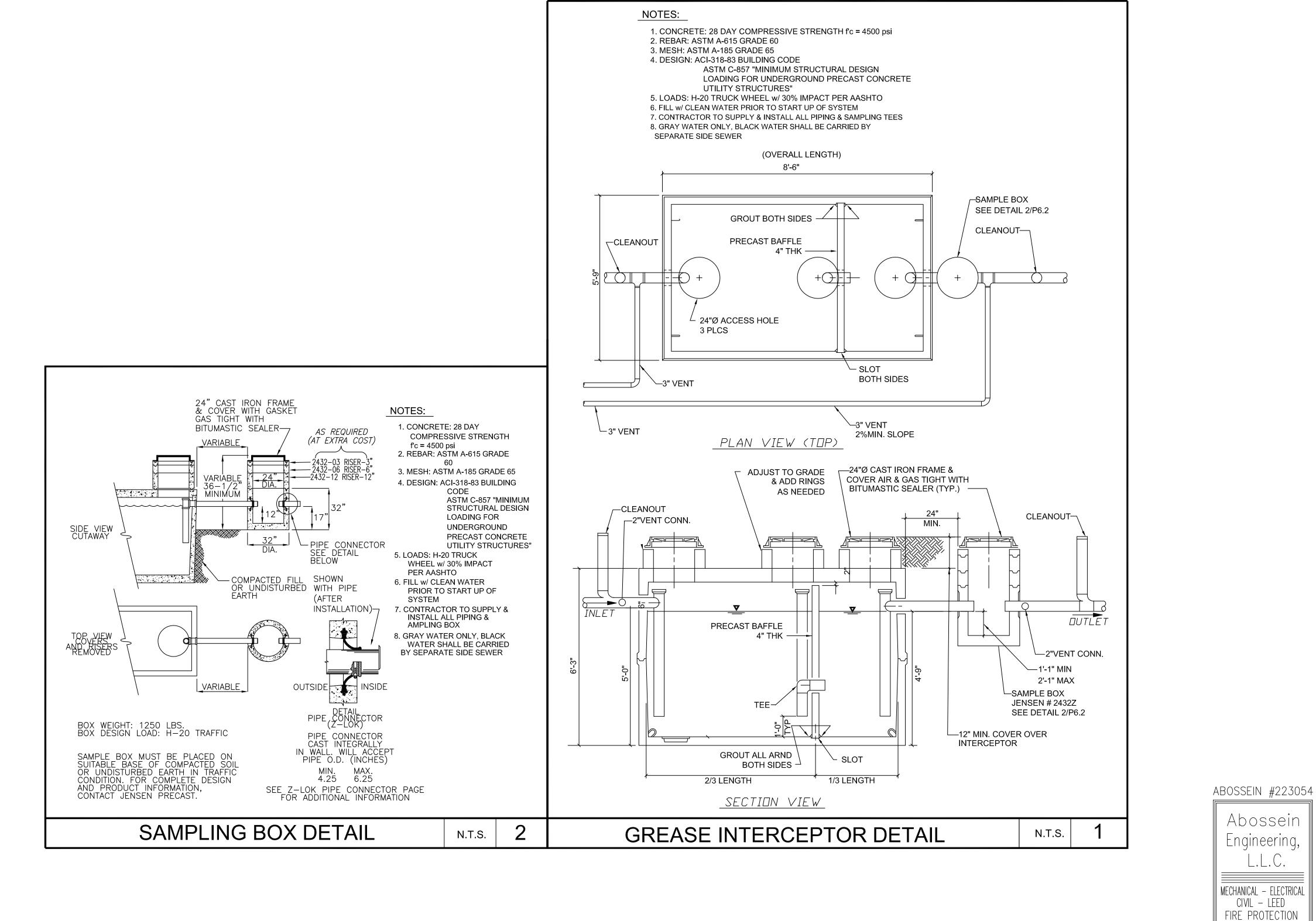
RISER DIAGRAMS

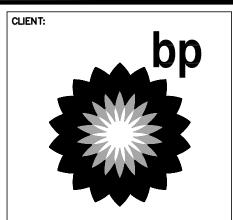
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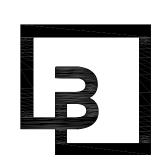








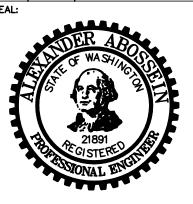




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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm **FUEL CANOPY w/ 6 MPD's** 

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**FACILITY #7184** 

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P4.2



# FUELING CANOPY W/6 MPDs SWC S MERIDIAN

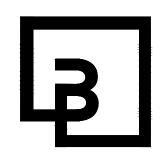
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| G.0.0    | TITLE SHEET AND DRAWING INDEX                                                             |  |  |
|----------|-------------------------------------------------------------------------------------------|--|--|
| G.0.2.0  | UNDERGROUND TANK AND PIPING SITE PLAN AND INSTALLATION NOTES                              |  |  |
| G.0.2.1  | TANK & PIPING SCOPE OF WORK & GENERAL NOTES (FRP 1 OF 2)                                  |  |  |
| G.0.2.2  | TANK & PIPING SCOPE OF WORK & GENERAL NOTES (FRP 2 OF 2)                                  |  |  |
| G.0.5    | DESIGN INTENT MISCELLANEOUS DETAILS                                                       |  |  |
| G.0.6.1  | DESIGN INTENT: NEW VENT STACK INSTALLATION DETAILS                                        |  |  |
| G.0.7.1  | TANK FILL & VAPOR RISER STATIC GROUNDING DETAILS (STANDARD)                               |  |  |
| M.5.1.01 | TANK AND PIPING MATERIALS LIST (1 OF 2)                                                   |  |  |
| M.5.1.02 | TANK AND PIPING MATERIALS LIST (2 OF 2)                                                   |  |  |
| M.5.1.04 | TYPICAL 10' DIA. 25,000 GALLON DOUBLE WALL FIBERGLASS TANK INSTALLATION DETAILS           |  |  |
| M.5.1.15 | TYPICAL 10' DIA. 12,000/10,000 GALLON DOUBLE WALL FIBERGLASS TANK INSTALLATION DETAILS    |  |  |
| M.5.1.28 | UST INSTALLATION (2) 10' DIA. 25K/22K BLENDING                                            |  |  |
| M.5.1.30 | SINGLE UST GASOLINE TANK SUMP FITTING DETAILS                                             |  |  |
| M.5.1.33 | DIESEL TANK SUMP & FITTING INSTALLATION DETAILS (STANDARD OPW)                            |  |  |
| M.5.1.34 | FILL\VAPOR II INSTALLATION DETAILS (STANDARD OPW)                                         |  |  |
| M.5.1.38 | DISPENSER DETAILS: WAYNE OVATION (3+0) BLENDING DISPENSER INSTALLATION DETAILS ON ISLANDS |  |  |
| M.5.1.40 | DISPENSER DETAILS: WAYNE OVATION (3+1) BLENDING DISPENSER INSTALLATION DETAILS ON ISLANDS |  |  |
| M.5.1.41 | TANK SLAB CONCRETE SPECIFICATIONS & IDENTIFICATION MARKING DETAILS                        |  |  |
| M.5.1.42 | ELECTRICAL FUELING SITE PLAN & CLASS 1, DIVISION 1 AND 2 HAZARDOUS AREA PLAN              |  |  |
| M.5.1.43 | FUEL SYSTEM ELECTRICAL CONDUIT POINT TO POINT PLAN                                        |  |  |
| M.5.1.44 | WAYNE DISPENSER SCHEMATICS LEAK DETECTION AND CAT 5 NOTES                                 |  |  |
| M.5.1.45 | VEEDER ROOT 450 AND FE PETRO INTERFACE FIELD WIRING DIAGRAM (SINGLE MASTER)               |  |  |
| M.5.1.47 | ELECTRICAL UNITIZED FUELING MANAGER CABINET ELEVATIONS AND DETAILS                        |  |  |
| M.5.1.48 | ELECTRICAL PANEL E-STOP CONTROL WIRING SCHEMATIC AND TYPICAL FUELING ELEVATION            |  |  |
| M.5.1.49 | ELECTRICAL LOW VOLTAGE DISCONNECT FOR DATA/INTERCOM/MEDIA WIRING DIAGRAMS                 |  |  |



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DEVELOPMENT INFORMATION:

ARCO NTI

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN

@ HIGHWAY 512
PUYALLUP, WASHINGTON

3400 am/pm

FACILITY #TBD

DESIGNED BY: NP/RF ALLIANCE Z&DM:

CHECKED BY: OV BP REPM:

DRAWN BY: NP/RF | ALLIANCE PM:

VERSION: V-15.0 | PROJECT NO: 21730 |

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TITLE SHEET &
DRAWING INDEX

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————— FIBERGLASS PRODUCT PIPING FIBERGLASS VAPOR RECOVERY PIPING ---- FIBERGLASS VENT PIPING

- CONTRACTOR ASSUMES RESPONSIBILITY TO ASSURE THAT THE OPERABLE SYSTEM MEETS THE DESIGN INTENT AND THE CONTRACTOR IS PERMITTED TO ADJUST PIPING LOCATIONS BASED ON ACTUAL FIELD CONDITIONS AND INSTALLATION TECHNIQUES. \* PRODUCT, VAPOR AND VENT PIPING IS TO SLOPE TOWARD TANK 1/8" PER FOOT MINIMUM, 1/4" PER FOOT PREFERRED. IF
- INSTALLED, SIPHON PIPING TO SLOPE 1/4" PER FOOT. \* SECONDARY CONTAINMENT PIPING IS SHOWN BY NOTE ONLY, NOT GRAPHICALLY. ALL PRODUCT PIPING TO BE DOUBLE CONTAINMENT PIPE. VENT AND VAPOR RECOVERY SHALL BE SINGLE WALL

#### **GENERAL NOTES**

- ) INSTALL (1) 25K REGULAR UNLEADED, ONE (1) 12K/10K PREMIUM UNLEADED/DIESEL DUAL COMPARTMENT "CONTAINMENT SOLUTIONS" DOUBLE WALL FIBERGLASS TANKS WITH CONTINUOUS MONITORING OF HYDROSTATIC ANNULAR SPACES BY "VEEDER ROOT" TLS-450 PLUS TANK AND PIPING MONITOR AND ALARM SYSTEM. ALL TANK. SUMPS SHALL BE INDIVIDUALLY CONTINUOUSLY MONITORED BY "VEEDER ROOT" LIQUID SENSORS TIED INTO THE TLS-450 PLUS TANK & PIPING MONITOR SYSTEM. TANKS TO BE SET MIN. 60" BELOW FINISH GRADE. TANK INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S
- 2 INSTALL A CONCRETE SLAB OVER TANKS. SURFACE WATER SHALL BE DIVERTED AWAY FROM EACH MANHOLE BY FORMING A CONCRETE CROWN WITH A 1-1/2" DROP IN 18" FROM THE EDGE OF THE MANHOLE RING TO THE SURROUNDING SLAB ELEVATION. CONSTRUCT SLAB PER CIVIL SLAB INSTALLATION DETAILS AND SPECIAL REQUIREMENTS SHOWN ON DETAILS.
- 3 INSTALL DIRECT BURY FILL SPILL BUCKET 5 GALLON WITH ADAPTERS AND CAPS.
- 4 INSTALL DIRECT BURY VAPOR SPILL BUCKET 5 GALLON WITH ADAPTERS AND CAPS.
- 5 INSTALL ONE (1) 2HP VARIABLE SPEED TURBINES IN UNLEADED TANK, ONE (1) 2HP IN PREMIUM TANK & ONE (1) 2HP IN DIESEL TANK. TURBINE SYSTEMS TO BE EQUIPPED WITH 3 GPH ELECTRONIC LINE LEAK DETECTION. LEAK DETECTORS ARE TO BE TESTED FOR THE 3 GPH LEAK DETECTION PRIOR TO START UP. CONTRACTOR TO PROVIDE TEST DATA AT THE TIME OF PUNCH LIST AS WELL AS INCLUDE IN CLOSE OUT BINDER. SET TURBINE INTAKES AT 5" FROM BOTTOM OF TANKS. TURBINES TO BE EQUIPPED WITH INTAKE FILTER SCREENS. CONTRACTOR IS TO LABEL TURBINES AND CONTROLLERS AS TO WHICH PRODUCT THEY SERVE. GREEN CONTROLLER LIGHTS ARE TO GO OUT WHEN TURBINES ARE OFF OR LOSE POWER.
- 6 INSTALL 2" INSIDE 3" DOUBLE WALL FIBERGLAS PRODUCT SUPPLY LINES TO DISPENSERS. PIPING SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS. PIPING SHALL BE INSTALLED WITH A MINIMUM SLOPE OF 1/8" PER FOOT FROM THE FURTHEST DISPENSER SUMP DOWN TO THE TURBINE SUMPS. CONTRACTOR TO INSTALL TRACER TAPE WITH PRODUCT PIPING. TESTING OF PRODUCT LINES SHALL BE PERFORMED PRIOR TO BACKFILL, PRIOR TO PAVING AND BEFORE
- 7 INSTALL 3" FIBERGLASS STAGE II VAPOR RECOVERY HEADER FOR VAPOR RECOVERY SYSTEM. SLOPE 1/8" PER FOOT MINIMUM TO TANKS. INSTALL 3" TO 2" REDUCING TEES WHERE HEADERS BRANCH TO DISPENSERS. CONTRACTOR TO INSTALL TRACER TAPE WITH VAPOR PIPING. TESTING OF VAPOR LINES SHALL BE PERFORMED PRIOR TO BACKFILL, PRIOR TO PAVING AND BEFORE STATION OPERATION. SECONDARY CONTAINMENT TO BE INSTALLED, WHEN REQUIRED BY LOCAL JURISDICTION ONLY. SEE DETAILS AND SCOPE OF WORK ON SHEETS G.O.2.1 & G.O.2.2 FOR PIPE SIZING AT UNDERGROUND STORAGE TANKS.
- 8 INSTALL "VEEDER ROOT" TANK AND LINE ALARM CONTROL PANEL MODEL # TLS-450PLUS IN BUILDING AT NORMALLY OCCUPIED LOCATION IN BUILDING. SEE ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR EXACT LOCATION.
- 9 INSTALL A SINGLE 2" FRP VENT LINE FOR EACH UNDERGROUND STORAGE TANK. SLOPE 1/4" PER FOOT (1/8" PER FOOT MINIMUM) TO TANKS AS SHOWN. CONTRACTOR TO INSTALL TRACER TAPE WITH VENT PIPING.
- 10 TERMINATION POINT OF TANK VENTS TO BE A MINIMUM OF 12' ABOVE GRADE AND NOT WITHIN 5' FROM ANY BUILDING OPENING OR PROPERTY LINE THAT CAN BE BUILT UPON. VENT RISERS SHALL BE INSTALLED IN ACCORDANCE WITH UNIFORM FIRE CODE REQUIREMENTS. VERIFY LOCAL REGULATIONS FOR ADDITIONAL EQUIPMENT OR INSTALLATION REQUIREMENTS.
- (1) INSTALL A SINGLE 1" RIGID GALVANIZED CONDUIT FOR EACH NEWLY INSTALLED TURBINE PUMP.
- 12 INSTALL DUAL FLOAT TANK ANNULAR SPACE HYDROSTATIC MONITORING SENSORS. SEE DETAILS FOR CONDUIT LOOPING BETWEEN ANNULAR RISER AND SUMPS.
- (13) INSTALL .1 GPH MAG PROBE TANK LEVEL GAUGES AT TURBINE SUMP AS SHOWN.
- (14) TANKS SHALL BE PROPERLY MARKED AND TAGGED WITH STANDARD API IDENTIFICATION MARKINGS AT FILL MANHOLES.
- 15 INSTALL (4) FOUR WAYNE OVATION SERIES 3+1 & (2) TWO 3+0 DISPENSERS TO BE FITTED WITH STAGE II HOSES, NOZZLES ) INSTALL (4) FOUR WATNE OVATION SERIES 3+1 & (2) IWO 3+0 DISPENSERS TO BE FITTED WITH STAGE IT HOSES, NOZZLES AND BREAKAWAY VALVES PER LOCAL REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING HOSES, NOZZLES AND BREAKAWAYS. INSTALL UNDER DISPENSER CONTAINMENT INCLUDING PRODUCT SHEAR VALVES AND MONITORING SENSORS. START UP BY MANUFACTURER REPRESENTATIVE. GENERAL CONTRACTOR TO PURGE LINES WITH A MINIMUM OF 200 GALLONS THROUGH EACH HOSE/NOZZLE. ANY AIR POCKETS OR START UP PROBLEMS DUE TO IMPROPER INSTALLATION OR INCORRECT WRING THAT DESTROYS ELECTRONICS WILL BE BILLED BACK TO THE CONTRACTOR. AFTER PURGING THE PRODUCT LINES OF AIR AND BEFORE VAPOR RECOVERY TESTING, CONTRACTOR IS TO REPLACE THE FACTORY INSTALLED GASOLINE FILTERS WITH NEW FILTERS.
- (16) FILL AND STAGE I VAPOR RECOVERY RISERS & ANNULAR RISER SHALL BE GROUNDED TO PREVENT STATIC DISCHARGE DURING FILLING OPERATIONS. SEE DWG. G.O.7.1 FOR STANDARD DETAILS
- all new piping and tanks to be installed per manufacturers recommendations and installation instructions.
- 18 INSTALL OVERFILL ALARM & ACKNOWLEDGMENT SWITCH, AND ESO IN LOCATION SHOWN. ALARM AND SWITCH TO BE LOCATED TO PROVIDE AN UNOBSTRUCTED VIEW TO TRUCK DRIVER. PROVIDE BOLLARD PROTECTION OF FREE STANDING POLE. SEE WIRING DIAGRAM AND DETAIL FOR MOUNTING REQUIREMENTS.
- 19 FINAL FACILITY EQUIPMENT LOCATIONS TO BE APPROVED BY DISTRIBUTION TERMINAL MANAGER PRIOR TO SUBMITTAL FOR PERMITS TO ENSURE CLEAR AND SAFE ACCESS TO THE UNDERGROUND TANKS FOR UNLOADING OPERATIONS.
- 20 INSTALL (2) TWO OBSERVATION WELL

#### GENERAL COMPLIANCE NOTES

- 1. ARCHITECTURAL AND CIVIL DRAWINGS SHALL TAKE PRECEDENCE FOR REFERENCING ALL DIMENSIONS, PROPERTY LINES, ELEVATIONS AND EQUIPMENT LOCATIONS
- 2. ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BEFORE STARTING ANY WORK. ANY DISCREPANCY SHALL BE CALLED TO THE ATTENTION OF THE OWNERS ENGINEER FOR HIS DECISION BEFORE PROCEEDING WITH
- 3. GENERAL CONTRACTOR SHALL OBTAIN NECESSARY PERMIT FROM APPLICABLE AGENCIES FOR EXCAVATIONS OF TRENCHES 5'-0"
- OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND. 4. AN UNAUTHORIZED RELEASE RESPONSE PLAN MUST BE SUBMITTED AND APPROVED BY GOVERNING AGENCY PRIOR TO TANK
- 5. ALL MATERIALS SHALL BE COMPATIBLE WITH USE FOR THE INTENDED PURPOSE AS PER NATIONALLY RECOGNIZED CODES, LOCAL CODES AND GOVERNING AUTHORITIES.
- 6. THE UNDERGROUND STORAGE TANK SYSTEM SHALL BE COMPATIBLE WITH THE PRODUCT STORED.
- 7. ALL MONITORING DEVICES SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
- 8. GENERAL CONTRACTOR IS REQUIRED TO PROVIDE 72 HOUR (TYPICAL) NOTIFICATION TO GOVERNING AGENCY PRIOR TO TANK
- 9. TANK AND PIPING SYSTEM TO BE INSPECTED BY OWNER'S THIRD PARTY INSPECTOR & GOVERNING AGENCY AT FOUR (4) SEPARATE CONSTRUCTION PHASES (SEE SPECIFICATIONS): A. TANK AIR TEST BEFORE SETTING IN HOLE AND SOAP TEST.
- B. TANKS AND PRIMARY PIPING HYDROSTATICALLY OR PNEUMATICALLY TESTED FOR 30 MINUTES. C. INSPECTION OF ALL SECONDARY CONTAINMENT, INCLUDING TESTING, IN ACCORDANCE WITH
- MANUFACTURER'S GUIDELINES. D. FINAL INSPECTION INCLUDING ALL PORTIONS OF THE LEAK DETECTION SYSTEM.
- 10. ALL TANK SUMPS AND UNDER DISPENSER CONTAINMENT SUMPS SHALL BE HYDROSTATICALLY TESTED (LAKE TEST) WITH
- STANDING WATER TO TOP OF REDUCING COLLAR FOR A PERIOD OF 24 HOURS TO INSURE THAT THE SUMPS ARE WATERTIGHT. RECORD THE TEST RESULTS AND SUBMIT TO OWNER.
- 11. TANK SYSTEM, LEAK DETECTORS AND MONITORING SYSTEM INTEGRITY TESTS FORWARDED AND APPROVED BY GOVERNING AGENCY PRIOR TO TANK SYSTEM BEING PLACED IN OPERATION.
- 12. PRIOR TO FUEL BEING PUMPED, STATION MUST HAVE VEEDER ROOT FUNCTIONAL AND MONITORING ANNULAR SPACES OF TANK AND DISPENSER SUMPS.
- 13. PAYMENT OF ALL APPLICABLE UST OPERATING FEES SHALL BE SUBMITTED TO THE GOVERNING JURISDICTION
- WITHIN 30 DAYS OF THE FINAL INSPECTION.
- 14. EVIDENCE OF FINANCIAL RESPONSIBILITY SHALL BE SUBMITTED TO GOVERNING AGENCY (BY BP). 15. MEASUREMENTS OF BRINE LEVELS IN TANKS SHALL BE TAKEN BY BP REPRESENTATIVE DURING THREE SEPARATE VISITS TO SITE
- AND PRIOR TO FUELING OPERATIONS. REFER TO TANK MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR REQUIREMENTS.

#### UTILITY CONFLICT NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, DIMENSION, AND DEPTH OF ALL EXISTING UTILITIES WHETHER SHOWN ON THESE PLANS OR NOT BY POT HOLING THE UTILITIES AND SURVEYING THE HORIZONTAL AND VERTICAL LOCATION PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE CALLING UTILITY LOCATE @ 1 (800) 227-2600 AND THEN POT HOLING ALL OF THE EXISTING UTILITIES AT LOCATIONS OF NEW UTILITY CROSSINGS TO PHYSICALLY VÉRIFY WHETHER OR NOT CONFLICTS EXIST. LOCATIONS OF SAID UTILITIES AS SHOWN ON THESE PLANS ARE BASED UPON THE UNVERIFIED PUBLIC INFORMATION AND ARE SUBJECT TO VARIATION. IF CONFLICTS SHOULD OCCUR, THE CONTRACTOR SHALL CONSULT THE OWNERS CIVIL ENGINEER TO RESOLVE ALL PROBLEMS PRIOR TO PROCEEDING WITH CONSTRUCTION.

POTENTIAL UTILITY CONFLICT. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING AND NEW UTILITIES PRIOR TO CONSTRUCTION. SEE UTILITY CONFLICT NOTE THE EXISTING WATER, STORM, AND SANITARY SEWER SERVICE SHOWN IS APPROXIMATE, BASED ON FIELD SURVEYS AND "AS-BUILT" RECORDS. THE GENERAL CONTRACTOR SHALL "POTHOLE" THE EXISTING UTILITIES TO VERIFY THE DIAMETER AND LOCATION (INCL. ELEVATIONS) PRIOR TO CONSTRUCTION. ANY DISCREPANCIES IN THE LOCATION OF THE EXISTING PIPE OR INCOMPATIBILITY OF THE DESIGN SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE OWNERS REPRESENTATIVE, AND OWNERS

### TANK EXCAVATION NOTE:

TANK EXCAVATIONS SHALL BE PER OSHA REQUIREMENTS AND BE PERFORMED FOLLOWING THE RECOMMENDATIONS OF THE SOILS REPORT. TANKS EXCAVATIONS THAT REQUIRE SHORING SHALL BE ENGINEERED AND PERMITTED SEPARATELY AND SHALL BE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR. HIGH WATER TABLE IS ANTICIPATED. CONTRACTOR TO SHORE AND DEWATER TANK HOLE EXCAVATION. FOLLOW TANK MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR WET HOLE TANK INSTALLATION.

### **DEWATERING NOTE**

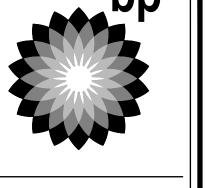
THE GENERAL CONTRACTOR SHALL REVIEW PLANS. NOTES. AND GEOTECHNICAL ENGINEER RECOMMENDATIONS FOR IF DEWATERING MEASURES REQUIRED FOR EXCAVATIONS. COSTS FOR PROVIDING AND IMPLEMENTING THESE MEASURES ON THIS PROJECT SHALL BE SPECIFICALLY INCLUDED IN THE CONTRACTOR'S BID PROPOSALS.

#### GEOTECHNICAL ENGINEER:

KRAZAN & ASSOCIATES, INC. 825 CENTER STREET, STE A

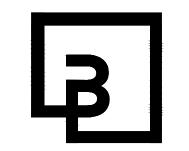
TACOMA, WASHINGTON 98409

PHONE: (253) 939-2500 CONTACT: THERESA R. NUNAN





BP WEST COAST PRODUCTS, LLC



Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

| NO.      | DATE     | REVISION DESCRIPTION |
|----------|----------|----------------------|
| 1        | 10/04/23 | PERMIT RELEASE       |
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| SEAL:    |          |                      |



DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: **SWC S MERIDIAN** 

@ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD DESIGNED BY: NP/RF ALLIANCE Z&DM:

CHECKED BY: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO:

01/01/2023 21730 DRAWING TITLE: UNDERGROUND TANK AND PIPING SITE PLAN

AND INSTALLATION NOTES

**GROUND WATER LEVEL NOTE:** 

A SOILS REPORT OF THIS SITE LOCATION HAS

REVEALED THAT GROUNDWATER WAS ENCOUNTERED

RETWEEN 1.2 AND 3.7 FEET **below the ground** 

SURFACE WITH A MAXIMUM EXPLORED DEPTH OF 7.1

FEET. TANKS SHALL BE INSTALLED WITH CONCRETE

DEADMEN AND FILTER FABRIC PER MANUFACTURERS'



SCALE: 1"=20'

SCOPE OF WORK: UNLESS SPECIFIED OTHERWISE ON THESE DRAWINGS, THE GENERAL CONTRACTOR SHALL FURNISH ALL WORK AND MATERIALS TO COMPLETE THE INSTALLATION OF THE SYSTEMS AND EQUIPMENT SHOWN IN THESE DRAWINGS AND AS REQUIRED BY PROJECT DOCUMENTS PROVIDED

WHERE THESE DRAWINGS DIFFER FROM LOCAL REGULATIONS, LOCAL REGULATIONS WILL SUPERSEDE THESE DRAWINGS IF THEY ARE MORE STRINGENT.

NOTE: THESE GUIDELINES APPLY ONLY TO UNDERGROUND STORAGE TANKS AND PRODUCT PIPING. REFER TO BALANCE OF SITE SPECIFIC DOCUMENTS/ DRAWINGS FOR SPECIFICATIONS REGARDING CONCRETE/ASPHALT INSTALLATION, ELECTRICAL REQUIREMENTS, AND SANITARY & STORM SEWERS

> \*\*\* WHERE MULTIPLE VERSIONS OF THE SAME SHEET EXIST, INSERT \*\*\* THE SHEET APPROPRIATE FOR THE SPECIFIC STATION LAYOUT.

ARCHITECTURAL AND CIVIL DRAWINGS SHALL TAKE PRECEDENCE FOR REFERENCING ALL DIMENSIONS, PROPERTY LINES, ELEVATIONS AND

**EQUIPMENT LOCATIONS** ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BEFORE STARTING ANY WORK. ANY DISCREPANCY SHALL BE CALLED TO THE ATTENTION OF THE OWNERS ENGINEER FOR HIS DECISION BEFORE PROCEEDING WITH THE WORK.

ALL REQUESTS TO ADD, DELETE, OR SUBSTITUTE MATERIAL AND EQUIPMENT SHOWN ON THESE DRAWINGS MUST BE REVIEWED AND APPROVED BY THE OWNER'S REPRESENTATIVE OR HIS AGENT, THE BP PROJECT MANAGER, IN CHARGE OF THE PROJECT. ALL CHANGES MUST BE REVIEWED WITH THE MARKETING FUELS MANAGER.

THE CONTRACTOR IS REQUIRED TO FURNISH AS-BUILT DRAWINGS TO LOCATE TANKS AND PIPING AS INSTALLED AFTER THE COMPLETION OF THE

#### (1) TANK INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL DOUBLE WALL FIBERGLASS TANKS WITH COMPLETE "VEEDER ROOT PANEL" TANK AND PIPING MONITORING AND ALARM SYSTEM. TANKS TO BE SET MIN. 60" BELOW FINISH GRADE. SEE SITE SPECIFIC INSTALLATION DETAILS FOR TANK SIZES AND LOCATIONS.

NYC VARIANT: INSTALL TOP AND BOTTOM SLAB AND SLAB PIER SUPPORT SYSTEM PER NYC STANDARDS.

TANK SIZING GUIDELINES: SPECIFIC BUSINESS UNIT TANK SIZE REQUIREMENTS ARE RECOMMENDED. TANK SIZING MODELS CAN BE RUN BY CONTACTING FUEL SYSTEM DESIGN MANAGER - AMERICAS.

LOCATION OF TANKS AND ASSOCIATED EQUIPMENT ON PROPERTY: FINAL FACILITY EQUIPMENT LOCATIONS INCLUDING PLACEMENT AND ORIENTATION OF TANKS, EMERGENCY SHUTOFF SWITCHES, OVERFILL ALARMS (IF PRESENT) TO BE APPROVED BY BP DISTRIBUTION PRIOR TO SUBMITTAL FOR PERMITS TO ENSURE CLEAR AND SAFE ACCESS TO THE UNDERGROUND TANKS FOR UNLOADING OPERATIONS. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONFIRMING APPROVED TANK AND EQUIPMENT LOCATIONS HAS BEEN DOCUMENTED W/ BP DISTRIBUTION, THE SITE ENGINEER AND/OR OWNER'S REPRESENTATIVE OR HIS AGENT, THE BP PROJECT MANAGER PRIOR TO THE COMMENCEMENT OF WORK.

"TANK EXCLUSION ZONE NOTE" THE UST STRUCTURAL EXCLUSION ZONE SHALL BE ESTABLISHED AS 16'-0" AS MEASURED FROM THE EXTERIOR FACE OF ANY UNDERGROUND STORAGE TANKS LOCATED WITHIN THE SITE PLAN. THE PURPOSE OF THIS ZONE IS TO ACT AS AN ENGINEERING BARRIER TO PREVENT THE RISK OF DAMAGE TO OUR UST'S FROM STRUCTURAL ELEMENTS THAT ARE TOO CLOSE TO THE EXCAVATION WALLS, RESULTING IN LATERAL INSTABILITY AND TRANSFER OF LOADS INTO THE TANK HOLE AND POTENTIALLY DAMAGING OUR TANKS

SHALL BE UNDERWRITERS LABORATORY APPROVED LISTED FOR THE UNDERGROUND STORAGE OF ALL FLAMMABLE AND COMBUSTIBLE MOTOR FUELS AS CALLED FOR ON THE SITE SPECIFIC DRAWING OR AS DESIGNATED ON THE SUPPLEMENTAL CONDITIONS AND SHALL BE DOUBLE WALL TANKS OF FIBERGLASS REINFORCED PLASTIC (FRP). INSTALLATION OF TANKS AND PIPING SHALL BE IN ACCORDANCE WITH U.L. LISTED MANUFACTURER'S INSTRUCTIONS. INSTALLATION SHALL CONFORM TO NFPA-30/30A AND ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. TANKS SHALL ONLY BE INSTALLED BY QUALIFIED INSTALLERS CERTIFIED BY THE STATE IN WHICH THE TANKS ARE TO BE INSTALLED AND BY THE TANK MANUFACTURER.

THE UNDERGROUND STORAGE TANK SYSTEM SHALL BE COMPATIBLE WITH THE PRODUCT STORED. ALL CONTINUOUS MONITORING DEVICES SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

ALL MATERIALS USED IN THE INSTALLATION SHALL BE COMPATIBLE WITH USE FOR THE INTENDED PURPOSE AS PER NATIONALLY RECOGNIZED CODES, LOCAL CODES AND GOVERNING AUTHORITIES.

METHANOL COMPATIBILITY: FOR ALL METHANOL COMPATIBLE STORAGE SYSTEMS, ALL READILY ACCESSIBLE COMPONENTS SHALL BE METHANOL COMPATIBLE FOR THE IMMEDIATE INTENDED SERVICE.

#### BIO-DIESEL COMPATIBILITY: CURRENTLY AT THIS TIME. NO TANKS ARE LISTED FOR BIO-DIESEL SERVICE APPLICATIONS **INITIAL TANK TESTING**

NEW TANKS SHALL BE INSPECTED UPON ARRIVAL AT SITE, AFTER UNLOADING FROM THE TRUCK, FOR VISUAL DAMAGE PRIOR TO INSTALLATION. - FOR DRY ANNULAR SPACE TANKS AIR/SOAP TESTS MUST BE PERFORMED AT THE JOB SITE PRIOR TO INSTALLATION TO VERIFY THE ABSENCE

OF DAMAGE. FOR LIQUID FILLED ANNULAR SPACE TANKS — AIR/SOAP TESTS ON ACCESSORIES AND FITTINGS CAN BE PERFORMED AFTER THE TANK IS IN THE EXCAVATION BEFORE OR AFTER BACKFILLING.

CONTRACTOR SHALL COMPLETE ALL TESTING ACCORDING TO MANUFACTURER'S INSTRUCTIONS FOR THE TANKS. CONTRACTOR SHALL COMPLETE ALL WARRANTY VALIDATION TESTING AND PROVIDE DOCUMENTATION TO OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER.

#### HYDROSTATICALLY MONITORED DOUBLE WALL TANKS SHALL BE TESTED ACCORDING TO MANUFACTURER'S INSTRUCTIONS BY:

INSPECT AND ADJUST RESERVOIR LEVEL OF THE MONITORING FLUID (TO COVER THE RIBE INSIDE THE RESERVOIR. REMOVE ENOUGH TANK FITTING PLUGS TO SEE INSIDE THE PRIMARY TANK. VISUALLY INSPECT THE TANK INTERIOR FOR COLORED MONITORING

CONNECT TANK TEST MANIFOLD AND PRESSURIZE THE PRIMARY TANK TO 5 PSIG MAX. (3 PSIG MAX. FOR 12' TANKS). MONITOR THE

PRESSURE FOR 30 MINUTES FOR ANY LOSS IN PRESSURE THAT MAY INDICATE A LEAK. DO NOT PRESSURIZE THE ANNULAR SPACE. DOING SO MAY DAMAGE THE PRIMARY TANK OR CAUSE TANK FAILURE.

WHILE UNDER PRESSURE, COVER FITTINGS AND MANWAY(S) WITH SOAP SOLUTION AND INSPECT.

AFTER COMPLETING AIR TEST, RELEASE PRESSURE; REMÒVE ALL GAUGES, VALVES, AND HOSE ASSEMBLIES; REPLACE AND TIGHTEN FITTING PLUGS: AND REPLACE THE PLASTIC VENT PLUG IN THE OPEN FITTINGS.

\*\*\*NOTE\*\*\* HYDROSTATIC FLUID RESERVOIR LEVEL MUST BE RECHECKED TO VERIFY TANK INTEGRITY PRIOR TO INTRODUCING BALLAST INTO TANKS.

FIELD REPAIR OF TANKS: IT IS ALLOWABLE TO FIELD REPAIR DAMAGED TANKS AFTER APPROVAL BY BP FILED ENGINEER. ALL TANKS DAMAGED IN TRANSPORT OR OFF LOADING OPERATIONS SHALL BE FIELD REPAIRED BY A TANK MANUFACTURER'S CERTIFIED FIELD SERVICE REPRESENTATIVE. TANK MANUFACTURER SHALL RE-CERTIFY REPAIRED TANKS FOR USE. ALL FIELD SERVICE WORK SHALL BE DOCUMENTED. COPIES OF ANY AND ALL FIELD SERVICE DOCUMENTATION SHALL BE PLACED IN THE PROJECT FILE AND INTO OWNERS OPERATING FILE.

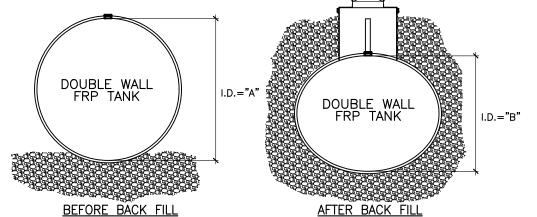
THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION OF THE FOLLOWING TANK MEASUREMENT ACTIVITIES:

. VERIFY THE EXTERNAL SIZE OF THE TANK TO MATCH WITH MANUFACTURER SUPPLIED SHOP MEASUREMENTS.

TRANSFER THE SIZE, SERIAL NUMBER, AND PRODUCT INSTALLED, AND POSITION OF TANK TO THE AS-BUILT PLAN. 2. TRANSFER TANK DIMENSIONAL AND PRODUCT INFORMATION TO THE DATA SHEET IN THE TANK GAUGE CONSOLE. 3. PROVIDE THE TOP OF TANK ELEVATION READING AT BOTH ENDS OF EACH TANK.

#### TANK DEFLECTION MEASUREMENT PROCEDURE:

DEFLECTION MEASUREMENT BEFORE AND AFTER TANK INSTALLATION SHALL BE ACCORDING TO MANUFACTURER'S REQUIREMENTS AND SHALL BE WITHIN MANUFACTURER'S TOLERANCES. ALL INFORMATION SHALL BE COMPLETED AS PER THE MANUFACTURER'S WARRANTY DOCUMENTATION.



#### TANK INSPECTION AND INSTALLATION - DEFLECTION MEASUREMENT

DIPSTICK PREPARATION

DRIVE A SMALL HEADED, NON-SPARKING (E.G. BRASS) NAIL HALFWAY INTO A WOODEN DIPSTICK, 1 INCH ABOVE ITS BASE.

FIRST DIAMETER READING (PRIOR TO BACK FILL) 1. PLACE THE DIPSTICK INTO A SERVICE FITTING

 $^{
m 2.}$  MEASURE AND RECORD THE DISTANCE FROM THE TANK BOTTOM TO THE TOP OF THE FITTING.

3. PULL THE DIPSTICK UP UNTIL THE EXPOSED NAIL CATCHES ON THE INSIDE TOP OF TANK. 4. MEASURE THE DISTANCE FROM THE TANK TOP (INSIDE) TO THE TOP OF THE FITTING. SUBTRACT 1 INCH FROM THIS MEASUREMENT AND

RECORD THE DISTANCE. 5. SUBTRACT THE SECOND DISTANCE FROM THE FIRST AND RECORD THIS VALUE AS READING "A" ON THE INSTALLATION CHECKLIST.

SECOND DIAMETER READING (AFTER BACKFILL)

1. PLACE THE DIPSTICK INTO A SERVICE FITTING WITH A STANDPIPE INSTALLED TO SUBGRADE.

2. MEASURE AND RECORD THE DISTANCE FROM THE TANK BOTTOM TO THE TOP OF THE STANDPIPE.

3. PULL THE DIPSTICK UP UNTIL THE EXPOSED NAIL CATCHES ON THE INSIDE TOP OF TANK. 4. MEASURE THE DISTANCE FROM THE TANK TOP (INSIDE) TO THE TOP OF THE STANDPIPE. SUBTRACT 1 INCH FROM THIS MEASUREMENT AND

RECORD THE DISTANCE. 5. SUBTRACT THE SECOND DISTANCE FROM THE FIRST AND RECORD THIS VALUE AS READING "B" ON THE INSTALLATION CHECKLIST.

CALCULATION AND COMPARISON 1. SUBTRACT READING "B" FROM READING "A".

2. COMPARE THIS VALVE TO THE TABLE OF "MAXIMUM ALLOWABLE DEFLECTIONS" SHOWN ON THE "INSTALLATION CHECKLIST".

3. VERTICAL DEFLECTION IN EXCESS OF THESE VALUES INDICATES IMPROPER INSTALLATION AND VOIDS THE TANK WARRANTY.

MAXIMUM DEFLECTION FOR 8'-0" TANKS = 1-1/4" MAXIMUM DEFLECTION FOR 10'-0" TANKS = 1-1/2" CONTRACTOR TO CALCULATE TOP OF TANK ELEVATION. START WITH 18" MINIMUM DEPTH OF VAPOR RECOVERY LINE AT THE FARTHEST DISPENSER AND SLOPE 1/4" PER FOOT MAXIMUM TO 1/8" PER FOOT MINIMUM. ADD 12" AT THE TANK. ADD 13" (FOR 3" PIPE) OR 8" (FOR 2") FOR A CHANGE IN PIPING DIRECTION OTHER THAN 90 OR 45 DEGREES. SET TANKS 6" DEEPER THAN CALCULATED AS PRECAUTION. IN NO EVENT SHALL

THE TANK BE BURIED LESS THAN 4'-0" BELOW FINISHED GRADE OR DEEPER THAN 7'-0" BELOW FINISHED GRADE. SEE MANUFACTURERS INSTALLATION INSTRUCTIONS FOR MINIMAL TANK BURY WHEN DEADMEN ANCHORING IS NOT PROVIDED. ANY VARIATIONS IN SLOPE FROM 1/4" PER FOOT SHALL BE REPORTED TO OWNER'S ENGINEER. TANK EXCAVATION:

CONTRACTOR TO EXCAVATE TANK HOLE. CONTRACTOR SHALL ADHERE TO O.S.H.A. STANDARDS ON EXCAVATIONS. CONTRACTOR MAY SELECT ANY OF THE RECOMMENDED PRACTICES FOR TANK EXCAVATION AND MUST PROVIDE ALL NECESSARY PROTECTIVE BARRICADES.

SLOPE SIDES OF TANK HOLE (USE OF SLOPING MUST BE RECEIVE PRIOR APPROVAL ON INDIVIDUAL SITE BASIC FROM "BP") OR USE SHORING FOR ALL TANK EXCAVATIONS IN ACCORDANCE WITH OSHA 1926 SUBPART P, OSHA STANDARDS - EXCAVATIONS; FINAL RULE OCTOBER 1, 1989. WHEN ENGINEERED SHORING IS REQUIRED DUE TO SITE CONDITIONS AN ENGINEERED SHORING PLAN UTILIZING INTERLOCKING STEEL SHEET PILING SHALL BE PROVIDED AND SHALL INCLUDE SUPPORTING ENGINEERING CALCULATIONS BY A STATE CERTIFIED ENGINEER AND SHALL BE THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR.

GENERAL CONTRACTOR SHALL OBTAIN NECESSARY PERMIT FROM APPLICABLE AGENCIES FOR EXCAVATIONS OF TRENCHES 5'-0" OR MORE IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND. TANK EXCAVATIONS SHALL BE THE MINIMUM SIZE REQUIRED TO PROVIDE FOR BEDDING AND CLEARANCES INDICATED IN THESE DRAWINGS. TANK

BURIAL DEPTH FIELD DETERMINED TO PROVIDE FOR 1/4" (1/8" PER FOOT MIN.) PER FOOT FOR STAGE II VAPOR RECOVERY PIPING & 1/8" MINIMUM PER FOOT FOR PRODUCT PIPING SLOPE BACK FROM DISPENSERS TO TANK. TANK STABILITY BUOYANCY CALCULATIONS:

REGULATIONS, OR SPECIFIED BY SITE ENGINEER/DESIGNER AND/OR OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER. WHEN

TANK STABILITY SHALL BE RE-CHECKED AGAINST FLOATATION BY INSTALLING CONTRACTOR. SEE BUOYANCY CALCULATIONS ON TANK DETAILING SHEETS. CONTRACTOR TO INSTALL MANUFACTURER SUPPLIED TANK HOLD DOWN STRAPS & ANCHORS WHEN REQUIRED DUE TO HIGH WATER TABLE, LOCAL

REQUIRED. THE ANCHORING SYSTEM SHALL BE IN COMPLIANCE WITH AUTHORITY HAVING JURISDICTION. ANCHOR & STRAPS TO BE INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS \*\* ALTERNATE ANCHORING BY USE OF A CONCRETE ANCHORING SLAB IS PERMITTED. WHEN GROUNDWATER LEVEL IS ANTICIPATED TO BE WITHIN 5 FT. OF GRADE CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE FOR DIRECTION ON ANCHORING METHOD TO BE USED

\*\* THIS PROCEDURE IS REQUIRED IN NYC AND CONSIDERED PART OF SCOPE OF WORK WHEN INSTALLING TANKS IN NYC. NYC VARIANT: IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE FOR THE INSTALLATION OF A 12" CONCRETE ANCHORING SLAB. 4,000 PSI AT 28 DAYS WITH (2) LAYERS OF 6x6-w5.5xw5.5 ON 2" STEEL CHAIRS TOP & BOTTOM

(DEADMAN OR ANCHORING SLAB) AND SUCH SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATION.

FILTER FABRIC: IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE FOR THE INSTALLATION OF FILTER FABRIC (DUPONT TYPAR OR MIRAFI 500X ) WHICH IS REQUIRE FOR WET HOLE INSTALLATIONS OR UNSUITABLE SOILS. (NOTE: A WET HOLE/ UNSUITABLE AREA REQUIRING FILTER FABRIC IS ANY TANK EXCAVATION IN WHICH THE AREA IS SUBJECT TO: TIDAL INFLUENCES, OR AREAS SUBJECT TO FREQUENTLY CHANGING GROUND WATER LEVELS, OR WATER CONDITIONS WITH SILTY SOIL, OR MUCK, BOG, PEAT, SWAMP, LANDFILL TYPE AREAS OR ANY OTHER SITUATION WHERE THE SOIL IS INHERENTLY UNSTABLE, OR SOILS WITH LESS THAN 250 LBS./SQ. FT. COHESION, OR WITH ULTIMATE BEARING CAPACITY OF LESS THAN 500 LBS./SQ. FT., OR AT THE REQUEST OF THE TANK OWNER. ALL WET HOLE BALLAST INSTALLS (AS DESCRIBED IN SECTION BELOW) SHALL USE FILTER FABRIC.

FILTER FABRIC SHALL EXTEND 1 FOOT ABOVE MAX HIGH WATER TABLE AND SEAMS SHALL BE OVERLAPPED BY 1 FOOT, MATERIAL SHALL BE PINNED OR OTHERWISE SECURED ALLOW BACKFILL WITHOUT DISTURBANCE. USE OF PLASTIC, OR ANY OTHER MATERIAL THAT MAY TEAR, OR DEGRADE OVERTIME IS PROHIBITED.

WATER IS THE SUITABLE MEDIUM FOR BALLAST DURING WET HOLE TANK INSTALLATIONS. A PROPERLY INSTALLED 12 FOOT HIGH TEMPORARY VENT PIPE MUST BE INSTALLED BY THE CONTRACTOR. IF WATER IS USED TO BALLAST TANKS, THE WATER IS TO BE COMPLETELY PUMPED OUT & MOPPED DRY IN ORDER TO PROTECT FUEL INTEGRITY. CONTRACTOR IS REQUIRED TO COORDINATE BALLASTING OPERATIONS WITH OWNER'S REPRESENTATIVE OR HIS AGENT, THE BP PROJECT MANAGER. IT IS THE INSTALLING CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE JURISDICTIONAL REQUIREMENTS AND ACCEPTANCE FOR BALLASTING THE TANKS AND TO PROVIDE FOR PROPER DISPOSAL OF THE BALLASTING MEDIUM UNDER THE REGULATIONS OF THE GOVERNING AUTHORITY.

CONTRACTOR TO PROVIDE ALL BACK FILL REQUIRED FOR THE PROJECT SCOPE. PEA GRAVEL SHALL CONSIST OF NATURALLY ROUNDED AGGREGATE, MINIMUM 1/8" AND MAXIMUM 3/4" SIZE. FREE OF CLAY, SLAG, CINDERS, OR DEBRIS. ALL SUBSTITUTES MUST BE APPROVED BY MANUFACTURER AND OWNERS FIFLD REPRESENTATIVE.

NO MORE THAN 5% (BY WEIGHT) MAY PASS THE #8 SIEVE FOR BACK FILLING NONMETALLIC TANKS WITH A 96% TO 98% FREE FALL COMPACTION. DRY PEA GRAVEL DENSITY MINIMUM OF 95 POUNDS PER CUBIC FOOT IS REQUIRED. SUPPLY QUARRY CERTIFICATION MEETING ASTM C-33, PARAGRAPH 9.1

BACK FILLING OF TANK EXCAVATIONS SHALL BE PROVIDED IN LIFTS AS PER TANK MANUFACTURER'S INSTALLATION INSTRUCTIONS.

PRODUCT, VENT, AND VAPOR PIPING SHALL BE LAID AND CONTINUOUSLY SUPPORTED ON A 6" BED OF COMPACTED PEA GRAVEL. BLOCKS, PLANKS, OR OTHER DEBRIS SHALL NOT BE USED TO SUPPORT PIPING IN FINAL INSTALLATION.

NOTE: UNDER NO CIRCUMSTANCES SHALL DIRT, PAVING MATERIALS, WOOD, OR OTHER CONSTRUCTION DEBRIS BE ALLOWED TO REMAIN IN TANK AND

#### (2) ANNULAR SPACE HYDROSTATIC MONITOR AND RISER INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL 4" FIBERGLASS RISER AND VEEDER ROOT HYDROSTATIC SENSOR AT TANK ANNULAR SPACE LOCATION NOTED ON THE PLANS PER MANUFACTURERS INSTRUCTIONS.

#### (3) TANK SUMP INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL 42" OR 48" DIAMETER TURBINE SIDE FIBERGLASS POLYSIDED SUMPS ON TANKS PER MANUFACTURER'S INSTRUCTIONS. NOTE THAT THE ORIENTATION OF THE TANK SUMPS MUST BE CORRECT IN ORDER TO FACILITATE CORRECT PIPING INSTALLATION INTO THE SUMPS. SEE ACCOMPANYING DETAILS IN PLAN SET AND NOTE SIZES OF SUMPS PER PROJECT DEMOGRAPHICS.

NYC VARIANT: 42" DIAMETER TURBINE SUMPS ARE INSTALLED.

LONG ISLAND/NY VARIANT: ON TANKS INSTALLED IN LONG ISLAND, FILL SUMPS ARE REQUIRED. SEE ENCLOSED DRAWINGS FOR DETAILS

ARCO BRANDED VARIANT: 48" DIAMETER TURBINE SUMPS ARE INSTALLED.

CALIFORNIA VARIANT: 42" DIAMETER FILL SUMPS TO BE DOUBLE WALLED AND INSTALLED WITH CONTINUOUS HYDROSTATIC MONITORING DEVICE PER AB-2481 REQUIREMENTS.

#### (4) TANK LEVEL GAUGE / OVERFLOW PROTECTION:

STANDARD: CONTRACTOR TO INSTALL VEEDER ROOT MAGNOSTRICTIVE PROBE LEVEL GAUGE AT LOCATION NOTED ON PLANS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

OVERFLOW PROTECTION: UST OVERFLOW COMPLIANCE IS ACHIEVED BY USE OF OVERFLOW PREVENTION DROP TUBE FLAPPER VALVE SET AT 95% AND IS IN ACCORDANCE WITH FEDERAL AND STATE GUIDELINES FOR UST OVERFILL REQUIREMENTS.

AN OVERFILL ALARM AND ACKNOWLEDGE SWITCH TIED INTO THE VEEDER ROOT AUTOMATIC TANK GAUGE SYSTEM. THE MONITORING SYSTEM PROVIDES AN AUDIBLE AND VISUAL ALARM WHEN THE TANK(S) ARE FILLED TO THE 90% LEVEL.

#### (5) FILL AND STAGE I VAPOR RECOVERY INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL 4" GALVANIZED FILL AND STAGE I VAPOR RECOVERY RISERS. CONTRACTOR TO INSTALL DROP TUBE ASSEMBLY. WITH OVERFILL PREVENTION DROP TUBE. CONTRACTOR TO INSTALL VENT AND STAGE II FLEX CONNECTORS AND FRP ADAPTERS. LOCATE AND CUT PENETRATIONS INTO SUMPS FOR THE ROUTING OF VENT AND STAGE II VAPOR PIPING INTO TURBINE SUMPS AND MAKE CONNECTIONS TO VENT AND VAPOR PIPING FIBERGLASS PIPING. CONTRACTOR TO INSTALL DOUBLE SIDED PENETRATION ENTRY BOOTS FOR ALL ENTRIES INTO SUMPS. CONTRACTOR TO INSTALL STATIC GROUNDING SYSTEM AT ALL FILL AND VAPOR RISERS PER INSTALLATION DETAILS SHOWN ON SHEET G.O.7.

CONTRACTOR TO INSTALL CARB APPROVED STAGE I MANHOLES WITH 5 GALLON SPILL COLLECTION BUCKETS. INSTALL PRODUCT AND FILL ADAPTERS AND CAPS. SEE ACCOMPANYING DETAILS IN SITE SPECIFIC PLAN SET FOR MANUFACTURER AND INSTALLATION REQUIREMENTS.

NYC VARIANT: CONTRACTOR TO PROVIDE THE INSTALLATIONS OF A SEPARATE UNOBSTRUCTED VENT CONNECTION AT EACH TANK AT THE TURBINE SIDE OF THE TANK AS PER PLANS AND PER NYC CODE REQUIREMENTS. A 15 GALLON PRODUCT SPILL COLLECTION BUCKET IS REQUIRED BY NYC FIRE CODE. FILL SPILL BUCKETS MUST HAVE A NYC CERTIFICATE OF APPROVAL FROM FIRE DEPARTMENT.

#### (6) TURBINE INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL FE PETRO IST 2 HP VARIABLE SPEED TURBINES AND PIPING CONNECTION VALVES AND FITTINGS IN TANK SUMPS AS SHOWN ON SITE SPECIFIC DETAIL DRAWINGS. ALL PRODUCT LINES TO TURBINES TO BE EQUIPPED WITH 3 GPH ELECTRONIC LINE LEAK DETECTION. LEAK DETECTORS ARE TO BE TESTED FOR THE 3 GPH LEAK DETECTION PRIOR TO START UP. CONTRACTOR TO PROVIDE TEST DATA AT THE TIME OF PUNCH LIST AS WELL AS INCLUDE IN CLOSE OUT BINDER. ALL TURBINES ARE EQUIPPED WITH STANDARD "R" CHECK VALVE AS A STANDARD FROM FACTORY. SET TURBINE INTAKES AT 5" FROM BOTTOM OF TANKS. TURBINES TO BE EQUIPPED WITH INTAKE FILTER SCREENS. CONTRACTOR TO INSTALL 1" RIGID STEEL CONDUITS FOR SUBMERSIBLE PUMP POWER. (ONE FOR EACH TURBINE). CONTRACTOR IS TO LABEL TURBINES AND CONTROLLERS AS TO WHICH PRODUCT THEY SERVE. GREEN CONTROLLER LIGHTS ARE TO GO OUT WHEN TURBINES ARE OFF OR LOSE POWER. IST PUMP CONTROLS ARE TIED TO VEEDER ROOT CONTROL PANEL. SEE APPROPRIATE TURBINE CONFIGURATION AND PROGRAMMING SHEETS.

#### SINGLE MASTER TURBINE CONFIGURATIONS - EQUIPPED AS NOTED ABOVE. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

NYC VARIANT: STAGE II VAPOR RECOVERY IS CURRENTLY NOT REQUIRED IN NYC & NEW JERSEY MARKET MASTER-SATELLITE TURBINE CONFIGURATIONS - EQUIPPED AS NOTED ABOVE EXCEPT: ONLY THE MASTER TURBINE SHALL HAVE THE PLLD LEAK DETECTOR INSTALLED. CONTRACTOR TO REMOVE THE STANDARD "R" CHECK VALVE OUT OF THE SATELLITE TURBINE. THE BALL VALVE ON MANIFOLD LINE NOTE: CONTACT BP FUEL SYSTEM DESIGN MANAGER FOR CURRENT STATES NO LONGER REQUIRING STAGE II VAPOR RECOVERY BETWEEN TURBINES SHALL BE SET IN THE "OPEN" POSITION AND A SINGLE PLLD PART #848-480-001 (TLS350) OR DPLLD PART #859080-001 (TLS450) IS TO BE INSTALLED ON THE MASTER IST WITH AN FE. PETRO NON-VENTED PRECISION CHECK VALVE (PART #65 PSI) INSTALLED ON THE SATELLITE IST PREVENTING BACKFILLING OF USTs. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

MASTER-MASTER TURBINE CONFIGURATIONS - EQUIPPED AS NOTED ABOVE EXCEPT: THE BALL VALVE ON MANIFOLD LINE BETWEEN TURBINES SHALL BE SET IN THE "CLOSED" POSITION DURING NORMAL OPERATION. SEPARATE LINES & (2) PLLDs PART #848-480-001 (TLS350) OR (2) DPLLDs PART #859080-001 (TLS450) SHALL BE INSTALLED. IN CASE OF FAILURE OF AN INDIVIDUAL IST. THE PRODUCT CROSS-OVER LINE CAN BE PLACED INTO OPERATION BY OPENING THE CROSS CONNECTING VALVE. THE FAILED IST MUST HAVE ITS PLLD DISABLED & DISPENSER SIGNAL WIRES NEED TO BE MODIFIED FOR THIS TEMPORARY SET-UP. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

ARCO LARGE SITE VARIANT - IF SITE HAS 9 OR MORE MPD'S, TWO (2) 2 HP VARIABLE SPEED TURBINES ARE TO BE INSTALLED IN THE PRIMARY REGULAR UNLEADED TANK. THE REGULAR UNLEADED TURBINES SHALL BE SET UP AS "MASTER/SATELLITE/SATELLITE" AND THE CROSS CONNECTION MANIFOLD BETWEEN TANKS SHALL BE OPENED ALLOWING ALL THREE TURBINES TO SERVE THE ENTIRE SITE.

NYC VARIANT: MASTER-MASTER TURBINE CONFIGURATION W/ ROTATING STARTS - EQUIPPED AS NOTED ABOVE FOR MASTER-SATELLITE CONFIGURATION EXCEPT WITHOUT SIPHON LINE BETWEEN TANKS: THE UST PRODUCT LEVEL BALANCING IS ACHIEVED BY ROTATING THE STARTING OF INDIVIDUAL IST'S WITH CONTROL LOGIC LINKED TO THE VEEDER ROOT ATG. THE PRODUCT LINES ARE CONNECTED BY A CROSS OVER MANIFOLD BETWEEN TURBINES. ONE IST, THE MASTER, SHALL HAVE A PLLD LEAK DETECTION DEVICE INSTALLED PLLDs PART #848-480-001 (TLS350) OR (2) DPLLDs PART #859080-001 (TLS450) AND THE SATELLITE SHALL HAVE AN FE PETRO NON-VENTED PRECISION CHECK VALVE (PART #65 PSI) INSTALLED. THE BALL VALVE ON MANIFOLD LINE BETWEEN TURBINES SHALL BE SET IN THE "OPEN" POSITION DURING NORMAL OPERATION. IN CASE OF FAILURE OF AN INDIVIDUAL IST. NO ADJUSTMENT TO THE DISPENSER SIGNAL WIRES WILL BE REQUIRED AS THE IST CONTROLLERS WILL ACCOMMODATE THE IST STARTING VIA THE VEEDER ROOT ATG LINK. THE PRODUCT IN THE UST WITH THE FAILED IST WILL HAVE THE PRODUCT LEFT IN A STATIC STATE AND NOT AVAILABLE FOR DISPENSING UNTIL A REPAIR IS MADE. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

#### (7) SIPHON LINE INSTALLATION

STANDARD: WHEN SITE SPECIFIC TANK CONFIGURATION SHOWS MULTIPLE TANKS FOR IDENTICAL PRODUCTS, CONTRACTOR TO INSTALL 4" OVER 3" DOUBLE WALL FIBERGLASS SIPHON LINES AND PIPING CONNECTION VALVES AND FITTINGS BETWEEN TANKS. INSTALL SIPHON PIPING AS LOW AS POSSIBLE IN SUMP. NOTE LIMITATION ON MAXIMUM SIPHON PIPING SYSTEM HEIGHT ON DETAILS. ADJUST HEIGHT DOWN FOR SMALLER DIAMETER TANKS. CONTRACTOR TO INSTALL VEEDER ROOT SIPHON BREAK, IF APPROPRIATE FOR MARKET CONDITIONS. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

NYC VARIANT: SIPHON PIPING IS NOT INSTALLED. SEE TURBINE INSTALLATION NOTE ABOVE. SEE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

ARCO BRANDED VARIANT: CONTRACTOR TO INSTALL 4" OVER 3" DOUBLE WALL FIBERGLASS SIPHON PIPING. SIPHON BREAK IS NOT INSTALLED. INSTALL SIPHON PIPING AS LOW AS POSSIBLE IN SUMP. NOTE LIMITATION ON MAXIMUM SIPHON PIPING SYSTEM HEIGHT ON DETAILS. ADJUST HEIGHT DOWN FOR SMALLER DIAMETER TANKS. SEE APPROPRIATE SITE SPECIFIC DRAWINGS FOR INSTALLATION DETAILS.

CALIFORNIA VARIANT: SIPHON PIPING TO BE INSTALLED WITH CONTINUOUS VACUUM MONITORING DEVICE PER AB-2481 REQUIREMENTS (8) PRODUCT PIPING INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL DOUBLE WALL FIBERGLASS PRODUCT PIPING, CONNECTORS, VALVES AND FITTINGS IN TANK AND DISPENSER SUMPS AS SHOWN ON SITE SPECIFIC DETAIL DRAWINGS TO SUPPLY DISPENSERS, PRODUCT PIPING TO BE N.O.V. RED THREAD IIA, 2" INSIDE 3" DIAMETER AS INDICATED ON SITE SPECIFIC FUELING PLAN. ALL PIPING AND FITTINGS SHALL BE UL-971 LISTED IN COMPLIANCE WITH THE JULY 2005 PERFORMANCE STANDARDS, AND SHALL BE COMPATIBLE WITH ETHANOL, INCLUDING BUT NOT LIMITED TO "E25/B20" (25% ETHANOL 75% GASOLINE). PRODUCTS LINES TO BE EQUIPPED 3 GPH PRESSURE LINE LEAK DETECTORS (PLLD) ON TURBINES AND WITH LIQUID LEAK MONITORING SENSORS LOCATED IN TURBINE PIPING SUMPS ATTACHED TO TANKS WIRED FOR TURBINE SHUT DOWN. PRODUCT PIPING IN TURBINE SUMPS, PRODUCT PIPING CROSS CONNECTION MANIFOLDS BETWEEN SUMPS AND SIPHON PIPING PENETRATIONS ARE TO ENTER THE SAME SIDE OF THE SUMP IF POSSIBLE. IF PRODUCT PENETRATION ENTERS ON BOTH SIDES OF SUMP DUE TO FIELD CONDITIONS, THEN DUAL SENSORS AT TURBINE SUMP MAY BE REQUIRED TO BE INSTALLED BY LOCAL REGULATIONS. IF THE BP PROJECT MANAGER DETERMINES THAT THE ALL THE PIPING ENTRIES NOTED ABOVE COULD HAVE BEEN MADE TO THE SAME SIDE OF THE SUMP, THEN ANY COSTS ASSOCIATED WITH EXTRA SENSORS SHALL BE BORNE BY THE INSTALLING CONTRACTOR. PIPING TO BE INSTALLED WITH A SLOPE OF 1/8" PER FOOT MINIMUM TO TANKS UNLESS APPROVED BY OWNER. CONTRACTOR TO INSTALL TRACER TAPE WITH PRODUCT PIPING PER TRENCHING DETAILS. PENETRATIONS INTO ALL SUMPS SHALL BE MADE WITH DOUBLE WALL FRP ENTRY FITTINGS. TESTING OF PRODUCT LINES SHALL BE PERFORMED PRIOR TO BACK FILL, PRIOR TO PAVING AND BEFORE STATION OPERATION. SEE SITE SPECIFIC DETAIL SHEETS FOR INSTALLATION DETAILS.

\*\*\*NOTE\*\*\* "FIBERCAST SYSTEMS" PIPING TO BE INSTALLED PER MANUFACTURER'S INSTALLATION MANUAL AND SHALL ONLY BE INSTALLED BY QUALIFIED INSTALLERS CERTIFIED BY THE MANUFACTURER. CALIFORNIA VARIANT: IN ADDITION TO THE ABOVE, PIPING TO BE INSTALLED WITH CONTINUOUS VACUUM MONITORING DEVICE PER AB-2481

#### REQUIREMENTS (9) VENT PIPING INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL 2" INDIVIDUAL SINGLE WALL FIBERGLASS VENT PIPING, CONNECTORS, VALVES AND FITTINGS ON TANKS AS INDICATED ON SITE SPECIFIC FUELING PLAN AND ACCOMPANYING DETAILS. CONTRACTOR TO PROVIDE AT LEAST 4 FEET OF PIPING RUN BEFORE A CHANGE OF DIRECTION OF 30 DEGREES OR MORE IN ORDER TO PROVIDE MECHANICAL FLEXIBILITY PER CODE REQUIREMENTS. CONTRACTOR TO INSTALL TRACER TAPE WITH VENT PIPING PER TRENCHING DETAILS. PENETRATIONS INTO ALL SUMPS SHALL BE MADE WITH SINGLE WALL ENTRY FITTINGS. VENT PIPING SHALL BE DESIGNED AND INSTALLED FOR SLOPE 1/4" PER FOOT MINIMUM BACK TO TANKS. FOR LONG PIPING RUNS 1/8" PER FOOT IS ACCEPTABLE.

CONTRACTOR TO INSTALL ABOVE GROUND RISERS AND MOUNTING RACK AS DETAILED ON THESE PLANS. TERMINATION POINT OF TANK VENTS TO BE A MINIMUM OF 12' ABOVE GRADE AND NOT WITHIN 5' FROM ANY BUILDING OPENING OR PROPERTY LINE THAT CAN BE BUILT UPON. VENT RISERS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA-30, INTERNATIONAL AND UNIFORM FIRE CODE REQUIREMENTS AND CARB EVR REQUIREMENTS.

CONTRACTOR TESTING OF VENT LINES SHALL BE PERFORMED PRIOR TO BACK FILL, PRIOR TO PAVING AND BEFORE STATION OPERATION. SEE SITE SPECIFIC DETAIL SHEETS FOR INSTALLATION DETAILS. SEE FIBERGLASS PIPING MANUFACTURER SPECIFICATION BELOW.

#### VENT PIPING SPECIFICATION:

REQUIREMENTS

FIBERCAST SYSTEMS: RED THREAD II PIPE AND FITTINGS (USED FOR SINGLE WALL). WHERE DOUBLE WALL SYSTEMS ARE REQUIRED FOR ALL VENT AND VAPOR PIPING, USE SIZE OVER SIZE RED THREAD II PIPING AND FITTINGS. USE ONLY FIBERCAST SYSTEMS ALCOHOL COMPATIBLE ADHESIVES. ALL PIPING AND FITTINGS SHALL BE UL-971 LISTED IN COMPLIANCE WITH THE JULY 2005 PERFORMANCE STANDARDS

PIPING TO BE INSTALLED PER MANUFACTURER'S LISTED INSTRUCTIONS AND SHALL ONLY BE INSTALLED BY QUALIFIED INSTALLERS CERTIFIED BY THE MANUFACTURER. PROVIDE AT LEAST 4' OF STRAIGHT PIPING RUN BEFORE A CHANGE OF DIRECTION OF MORE THAN 30 DEGREES AND INSTALL FLEXIBLE CONNECTORS AT THE VENT AND VAPOR CONNECTION AT THE TANK SUMPS, AND DISPENSER SUMPS.

NYC VARIANT: SAME AS ABOVE EXCEPT: VENT CONNECTIONS ARE ROUTED TO A SEPARATE UNOBSTRUCTED EXTRACTOR FITTING LOCATED IN THE TURBINE SIDE. VENT TERMINATION TO BE A MINIMUM OF 15' ABOVE GRADE.

JURISDICTIONAL VARIANT: INSTALL DOUBLE WALL SIZE OVER SIZE FIBERGLASS PIPING WHEN REQUIRED BY AUTHORITY HAVING JURISDICTION. CALIFORNIA VARIANT: VENT PIPING TO BE DOUBLE WALLED AND INSTALLED WITH CONTINUOUS VACUUM MONITORING DEVICE PER AB-2481

#### (10) STAGE II VAPOR RECOVERY PIPING INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL 3" SINGLE WALL FIBERGLASS STAGE II VAPOR RECOVERY HEADER, CONNECTORS, VALVES AND FITTINGS TO THE LOWEST OCTANE GRADE AS INDICATED ON SITE SPECIFIC FUELING PLAN AND ACCOMPANYING DETAILS. NOTE THAT THE 1ST CONNECTION FROM STAGE II VAPOR RECOVERY HEADER TO LOWEST OCTANE TANK SHALL BE 3". ALL OTHER CONNECTIONS TO ADDITIONAL TANKS SHALL BE MADE WITH 2". CONTRACTOR TO INSTALL 3" TO 2" REDUCING TEES WHERE HEADERS BRANCH TO DISPENSERS. MAXIMUM (2) DISPENSERS PER 2" BRANCH. CONTRACTOR TO PROVIDE AT LEAST 4 FEET OF STRAIGHT PIPING RUN BEFORE A CHANGE OF DIRECTION OF 30 DEGREES OR MORE IN ORDER TO PROVIDE MECHANICAL FLEXIBILITY PER CODE REQUIREMENTS. CONTRACTOR TO INSTALL TRACER TAPE WITH VAPOR PIPING PER TRENCHING DETAILS. PENETRATION'S INTO ALL SUMPS SHALL BE MADE WITH DOUBLE WALL ENTRY FITTINGS. STAGE II VAPOR RECOVERY PIPING SHALL BE DESIGNED AND INSTALLED FOR 1/4" PER FOOT MINIMUM SLOPE BACK TO TANKS. AT LARGE SITE LAYOUTS, 1/8" PER FOOT MINIMUM IS ACCEPTABLE IF IT AVOIDS USING A KNOCK OUT SUMP (VAPOR POT) OR HAVING EXCESSIVE TANK DEPTH. CONSULT OWNER'S REPRESENTATIVE OR HIS AGENT, THE BP PROJECT MANAGER, WHERE DISCREPANCIÉS OCCUR.

CONTRACTOR TESTING OF STAGE II VAPOR LINES SHALL BE PERFORMED PRIOR TO BACK FILL, PRIOR TO PAVING AND BEFORE STATION OPERATION. SEE SITE SPECIFIC DETAIL SHEETS FOR INSTALLATION DETAILS. SEE FIBERGLASS PIPING MANUFACTURER SPECIFICATION BELOW.

#### STAGE II PIPING SPECIFICATION:

FIBERCAST SYSTEMS: RED THREAD II PIPE AND FITTINGS (USED FOR SINGLE WALL). WHERE DOUBLE WALL SYSTEMS ARE REQUIRED FOR ALL VENT AND VAPOR PIPING, USE SIZE OVER SIZE RED THREAD II PIPING AND FITTINGS. USE ONLY FIBERCAST SYSTEMS ALCOHOL COMPATIBLE ADHESIVES. ALL PIPING AND FITTINGS SHALL BE UL-971 LISTED IN COMPLIANCE WITH THE JULY 2005 PERFORMANCE STANDARDS

PIPING TO BE INSTALLED PER MANUFACTURER'S LISTED INSTRUCTIONS AND SHALL ONLY BE INSTALLED BY QUALIFIED INSTALLERS CERTIFIED BY THE MANUFACTURER, PROVIDE AT LEAST 4' OF STRAIGHT PIPING RUN BEFORE A CHANGE OF DIRECTION OF MORE THAN 30 DEGREES AND INSTALL FLEXIBLE CONNECTORS AT THE VENT AND VAPOR CONNECTION AT THE TANK SUMPS, AND DISPENSER SUMPS.

JURISDICTIONAL VARIANT: INSTALL DOUBLE WALL SIZE OVER SIZE FIBERGLASS PIPING WHEN REQUIRED BY AUTHORITY HAVING JURISDICTION.

CALIFORNIA VARIANT: STAGE II VAPOR PIPING TO BE DOUBLE WALLED AND INSTALLED WITH CONTINUOUS VACUUM MONITORING DEVICE PER AB-2481 REQUIREMENTS. ALL CONNECTIONS TO THE TANKS SHALL BE MADE WITH 3".

THERE ARE (4) FOUR STAGE II EVR WITH ISD DESIGN CHOICES THAT MAY BE INCORPORATED INTO THE UST SYSTEMS IN CALIFORNIA. VEEDER ROOT CARBON CANISTER VAPOR POLISHER WITH VST BALANCE HANGING HARDWARE AND VEEDER ROOT ISD COMPONENTS.

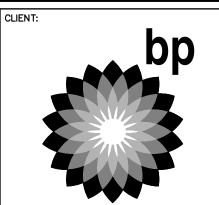
HEALY CLEAN AIR SEPARATOR WITH HEALY VACUUM ASSIST HANGING HARDWARE AND VEEDER ROOT ISD COMPONENTS. . VST ECS VAPOR PROCESSOR WITH VST BALANCE HANGING HARDWARE AND VEEDER ROOT ISD COMPONENTS.

4. VST BALANCE HANGING HARDWARE WITH FRANKLIN FUELING/HEALY CLEAN AIR SEPARATOR AND VEEDER ROOT ISD COMPONENTS.

SEE GENERAL SHEETS G.O.6 SERIES DRAWINGS FOR DESIGN INTENT DETAILS ON THE ABOVE SYSTEMS.

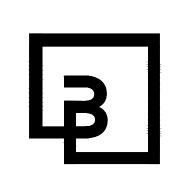
#### (10A) DECOMMISSIONING STAGE II VAPOR RECOVERY:

STANDARD: FOR PROJECTS INVOLVING THE DECOMMISSIONING OF STAGE II VAPOR RECOVERY SYSTEMS. G.C. IS TO VERIFY WITH THE AUTHORITY HAVING JURISDICTION THAT STAGE II IS NO LONGER REQUIRED AT A SPECIFIC FACILITY BEFORE INITIATING THE DECOMMISSIONING WORK AND WHICH DECOMMISSIONING PROCEDURES ARE REQUIRED TO BE IMPLEMENTED. SEE SHEET G.O.6.15. FOR GENERAL REQUIREMENTS AND PROCEDURES. CONSULT OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER. WHERE DISCREPANCIES OCCUR BETWEEN THE CONTRACT DOCUMENTS AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.





BP WEST COAST PRODUCTS, LLC



Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

| NO.         | DATE     | REVISION DESCRIPTION |
|-------------|----------|----------------------|
| 1           | 10/04/23 | PERMIT RELEASE       |
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DEVELOPMENT INFORMATION: ARCO NTI

3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: **SWC S MERIDIAN** 

**FACILITY #TBD** 

@ HIGHWAY 512 **PUYALLUP, WASHINGTON** 

DESIGNED BY: NP/RF ALLIANCE Z&DM: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM:

01/01/2023 TANK AND PIPING SCOPE OF WORK

AND GENERAL NOTES

(FRP 1 OF 2)

SHEET NO:

## TANK AND PIPING INSTALLATION SCOPE OF WORK:

#### (11) METAL PIPE AND FITTINGS:

STANDARD: STEEL PIPE SHOWN ON THESE DRAWINGS TO BE MINIMUM SCHEDULE 40. METAL PRODUCT LINE FITTINGS TO BE MALLEABLE IRON CLASS 150, GALVANIZED. ALL MALLEABLE IRON FITTINGS SHALL BE SUPPLIED BY "ANVIL" (FORMERLY "GRINNELL") OR EQUAL SPECIFICATIONS AS FOLLOWS:

| M.I. FITTINGS                         | DIMENSIONS  | MATERIAL_  | GALVANIZING | THREAD        | PRESSURE RATING |
|---------------------------------------|-------------|------------|-------------|---------------|-----------------|
| (TEES, ELBOWS)<br>CLASS 150/PN 20     | ASME B16.3  | ASTM A-197 | ASTM A-153  | ASME B.1 20.1 | ASME B16.3      |
| M.I. UNIONS<br>CLASS 150/PN 20        | ASME B16.39 | ASTM A-197 | ASTM A-153  | ASME B.1 20.1 | ASME B16.3      |
| STEEL PIPE NIPPLES<br>CLASS 150/PN 20 | ASTM A733   | ASTM A-53  | ASTM A-153  | ASME B.1 20.1 | ASME B16.3      |
| STEEL PIPE                            |             | (F OR E)   |             |               |                 |
| CLASS 150/PN 20<br>SCHEDULE 40        | N/A         | ASTM A-53  | ASTM A-153  | ASME B.1 20.1 | ASME B16.3      |

GASOLINE/ALCOHOL COMPATIBLE THREAD SEALANT LIKE LOCTITE 567 SHALL BE USED ON ALL THREADED PIPE CONNECTIONS

ANY METAL PIPE OR FITTING USED FOR PRODUCT, VENT, OR VAPOR RECOVERY WHICH CONTACTS SOIL OR BACK FILL MUST BE 100% COVERED WITH A 3M SCOTCHRAP PRIMER AND 3M TEMFLEX 10 MIL. OR 10 MIL. SELF-PRIME PROSELECT PIPE TAPE.

#### (12) PIPING SUMP PENETRATION INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL SUMP PENETRATION FITTINGS. ALL PENETRATIONS OF THE SUMPS TO BE ON A LINE TOWARD THE CENTER OF THE SUMP, NOT TO EXCEED MANUFACTURERS RECOMMENDED ANGLE IN ANY DIRECTION, TO ENSURE THE PROPER INSTALLATION OF ALL BULKHEAD AND COMPRESSION FITTINGS AND RESULTANT WATER TIGHTNESS. ALL PIPING, CONDUIT AND GROUNDS THAT PENETRATE THE SUMP SIDE WALLS MUST BE SEALED WITH DOUBLE SIDED BULKHEAD FITTINGS IN SUMPS. SUMPS SHALL BE HYDROSTATICALLY TESTED WITH STANDING WATER FOR A PERIOD OF 24 HOURS OR CERTIFIED USING SUMP MANUFACTURERS APPROVED TESTING PROCEDURE TO INSURE THAT SUMPS ARE WATERTIGHT. THE OWNER'S ENGINEER, THE BP PROJECT MANAGER MUST SIGN OFF ON THIS TESTING ON THE TANK INSTALLATION CHECK LIST.

MANUFACTURER ENTRY BOOT TYPE VARIANT: THE MAKE AND MODEL NUMBERS OF THE PIPING PENETRATION FITTINGS SHOWN IN THE DETAILS ARE NOT SUBJECT TO CHANGE. N.O.V. FRP BONDED ENTRY FITTINGS ARE REQUIRED FOR ALL PIPING PENETRATIONS. CONDUIT PENETRATIONS INTO SUMPS SHALL BE AS SPECIFIED ON THE PLANS.

CALIFORNIA VARIANT: CONTRACTOR TO INSTALL SUMP PENETRATION FITTINGS THAT MEET THE ADDITIONAL CRITERIA REQUIREMENT FOR CONTINUOUS HYDROSTATIC AND VACUUM MONITORING.

#### (13) DISPENSER INSTALLATION:

STANDARD: CONTRACTOR TO INSTALL "WAYNE OVATION" STYLE DISPENSERS WITH INTEGRATED CARD READERS AND INTERCOM SYSTEM AS SHOWN ON SITE SPECIFIC DESIGN DETAIL SHEETS. DISPENSERS TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALLATION TO INCLUDE DISPENSER ISLANDS, SINGLE WALL DISPENSER CONTAINMENT SUMPS, AND THE INSTALLATION OF ALL SHEAR VALVES, RISERS, PIPING CONNECTIONS AND ALL PENETRATIONS INTO THE SUMPS. SEE TANK ELECTRICAL DRAWINGS FOR CONDUIT AND WIRING REQUIREMENTS.

DISPENSER START UP: - START UP BY MANUFACTURERS REPRESENTATIVE. CONTRACTOR TO PURGE LINES WITH 200 GALLONS PER HOSE MINIMUM. ANY AIR POCKETS OR START UP PROBLEMS DUE TO IMPROPER INSTALLATION OR INCORRECT WIRING THAT DESTROYS ELECTRONICS WILL BE BILLED BACK TO THE CONTRACTOR

NYC VARIANT: DISPENSER SUMPS SHALL BE BACK FILLED WITH PEA GRAVEL PER NYC CODE. DISPENSER ISLAND SHALL BE EQUIPPED WITH A FIRE SUPPRESSION SYSTEM. SEE FIRE SUPPRESSION DETAILS FOR INSTALLATION REQUIREMENTS.

ARCO BRANDED VARIANT: DISPENSERS INSTALLED WITHOUT CARD READERS IN DISPENSERS. CONTRACTOR TO INSTALL TWO (2) DOUBLE SIDED PAYMENT ISLAND CASHIERS (PIC UNITS) AS SHOWN ON SITE SPECIFIC PLANS. START UP BY MANUFACTURERS REPRESENTATIVE. START UP PROBLEMS DUE TO IMPROPER INSTALLATION OR INCORRECT WIRING THAT DESTROYS ELECTRONICS WILL BE BILLED BACK TO THE CONTRACTOR. REFER TO ARCHITECTURAL CANOPY DRAWINGS FOR ADDITIONAL SITE PREP AND CONDUIT REQUIREMENTS.

CALIFORNIA VARIANT: DISPENSER SUMPS TO BE DOUBLE WALL AND INSTALLED WITH CONTINUOUS HYDROSTATIC MONITORING DEVICE PER AB-2481 REQUIREMENTS

#### INSTALLATION OF HANGING HARDWARE:

STANDARD: - CONTRACTOR TO INSTALL VAPOR ASSIST HOSES, NOZZLES, SWIVELS AND BREAK AWAY VALVES PER '96' CARB EXECUTIVE ORDER G-70-153-AD. SITES WHERE ORVR COMPATIBLE SYSTEMS ARE NOT REQUIRED

ARCO BRAND VARIANT - CONTRACTOR TO INSTALL ORVR COMPATIBLE BALANCE HOSES, NOZZLES, SWIVELS AND BREAK AWAY VALVES PER CARB EXECUTIVE ORDER G-70-52-AM PER LOCAL STATUES.

CALIFORNIA VARIANT - CONTRACTOR TO INSTALL ORVR/PHASE II EVR COMPATIBLE HOSES, NOZZLES, SWIVELS AND BREAK AWAY VALVES PER APPLICABLE CARB EXECUTIVE ORDER WITH IN SYSTEM DIAGNOSTICS (ISD) PER LOCAL JURISDICTIONAL REQUIREMENTS.

NEW JERSEY VARIANT - CONTRACTOR TO INSTALL LOW PERMEATION HOSE AND COMPATIBLE HARDWARE. SEE SHEET G.O.6.15

#### (14) SUMP SENSOR INSTALLATION:

CONTRACTOR TO INSTALL ALL FILL SUMP, TURBINE SUMP AND DISPENSER SUMP SENSORS PER VEEDER ROOT INSTALLATION INSTRUCTIONS. SUMP SENSORS TO BE INSTALLED IN SUMP HOLDERS MOUNTED TO SIDE OF SUMP WALLS SEE TANK DETAIL SHEETS FOR LIQUID SENSOR DETAILS. TURBINE SIDE SUMP SENSORS TO BE MOUNTED AT SIDE OF TANK WHERE PRODUCT PENETRATION INTO SUMP IS MADE AND BELOW LOWEST PENETRATION FITTING WITHIN SUMP AREA AT BOTTOM OF SUMP, SEE TANK ELECTRICAL DRAWINGS FOR MONITORING CONDUIT DETAILS AND SENSOR AND PROBE WIRING DETAILS.

#### (15) OVERFILL ALARM AND ACKNOWLEDGE SWITCH INSTALLATION

CONTRACTOR TO INSTALL OVERFILL ALARM & ACKNOWLEDGMENT AS SHOWN. ALARM AND SWITCH TO BE LOCATED TO PROVIDE AN UNOBSTRUCTED VIEW TO TRUCK DRIVER. PROVIDE BOLLARD PROTECTION OF FREE STANDING POLE. SEE SITE SPECIFIC WIRING DIAGRAM AND DETAILS FOR MOUNTING REQUIREMENTS.

### (16) VEEDER ROOT CONSOLE INSTALLATION:

CONTRACTOR TO INSTALL "VEEDER ROOT TLS-450 PLUS" TANK AND LINE ALARM CONTROL PANEL IN BUILDING. INSTALL PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SEE ARCHITECTURAL AND ELECTRICAL DRAWINGS FOR EXACT LOCATION IN BUILDING.

CALIFORNIA VARIANT: TLS-350 PLUS CONSOLE TO BE EQUIPPED WITH ADDITIONAL SENSOR MODULES TO ADDRESS AB-2481 AND CARB ISD REQUIREMENTS. TLS-450 PLUS WILL BE REQUIRED ONCE APPROVED BY CALIFORNIA

NYC VARIANT: CONSOLE TO BE PROGRAMMED FOR MASTER/MASTER ALTERNATE START

#### (17) CONCRETE SLAB INSTALLATION: REFER TO PROJECT GENERAL SPECIFICATIONS FOR ADDITIONAL CONCRETE REQUIREMENTS NOT INDICATED ON THESE DRAWINGS.

STANDARD:

- 1. CONCRETE SLAB OVER TANKS WITH A MINIMUM 8" THICK FIBER REINFORCEMENT TO BE USED. REINFORCE CONCRETE SLAB AROUND MANHOLES WITH (4) #4 REBAR, 60" IN LENGTH FOR THE LARGE MANHOLES AND 30" FOR SMALL MANHOLES PLACE REBAR 6" FROM SIDES OF BOX. SEE RECIPE BELOW.
- 2. CONCRETE DRIVE SLAB AT CANOPY FUELING AREA WITH A MINIMUM 6" THICK FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW.
- 3. CONCRETE FORMLESS ISLAND WITH A 6" HEIGHT ABOVE FINISHED GRADE FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW.

#### NYC VARIANT:

- CONCRETE SLAB OVER TANKS WITH A MINIMUM 10" THICKNESS REINFORCED WITH C#5 REBARS @ 12" O.C. EACH WAY TOP & BOTTOM. REINFORCE CONCRETE SLAB AROUND MANHOLES WITH (4) #4 REBAR, 60" IN LENGTH FOR THE LARGE MANHOLES AND 30" FOR SMALL MANHOLES PLACE REBAR 6" FROM SIDES OF BOX. SEE RECIPE BELOW.
- 2. CONCRETE SLAB BELOW TANKS WITH A MINIMUM 12" THICKNESS, REINFORCED WITH TWO LAYERS OF 6X6-W7.4.XW7.4 ON 2" STEEL CHAIRS TOP & BOTTOM. SEE RECIPE BELOW.
- 3. LOAD BEARING 12"X16" CONCRETE BLOCK PIERS FILLED WITH TYPE "M" MORTAR SPACED NO MORE THAN 3'-2" APART. FOR ALTERNATE SONOTUBE PIER CONFIGURATION A MINIMUM 16" DIAMETER CONCRETE PIER WITH #3 REBAR HORIZONTAL
- TIES SPACED EVERY 2' VERTICALLY AND (5) #5 VERTICAL REBARS SPACE EQUALLY 4. CONCRETE DRIVE SLAB AT CANOPY FUELING AREA WITH A MINIMUM 6" THICK, REINFORCED WITH TWO LAYERS OF 6X6-W5.5XW5.5 ON 2" STEEL CHAIRS TOP & BOTTOM.
- 5. CONCRETE FORMLESS ISLAND WITH A 6" HEIGHT ABOVE FINISHED GRADE FIBER REINFORCED CONCRETE TO BE USED. SEE
- RECIPE BELOW.
- 6. CONCRETE WALKWAY WITH A MINIMUM 4" THICK FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW. 7. CONCRETE DRIVEWAY WITH A MINIMUM 7" THICK FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW.

#### CALIFORNIA VARIANT:

- 1. CONCRETE SLAB OVER TANKS WITH A MINIMUM 8" THICK FIBER REINFORCEMENT TO BE USED. REINFORCE CONCRETE SLAB AROUND MANHOLES WITH (4) #4 REBAR, 60" IN LENGTH FOR THE LARGE MANHOLES AND 30" FOR SMALL MANHOLES PLACE REBAR 6" FROM SIDES OF BOX. SEE RECIPE BELOW.
- 2. THICKEN CONCRETE SLAB AT DISPENSER SUMPS AND TANK FILL AND TURBINE SUMPS SUCH THAT THE BOTTOM OF CONCRETE IS BELOW THE TOP OF THE TERMINATION OF THE SECONDARY CONTAINMENT OF THE SUMPS PER AB-2481
- 3. CONCRETE DRIVE SLAB AT CANOPY FUELING AREA WITH A MINIMUM 6" THICK FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW.
- 4. CONCRETE FORMLESS ISLAND WITH A 6" HEIGHT ABOVE FINISHED GRADE FIBER REINFORCED CONCRETE TO BE USED. SEE RECIPE BELOW.

- CONCRETE MIX RECIPE. PREMIX UNIFORMLY THROUGHOUT CONCRETE. REINFORCEMENT BARS TO BE NO LESS THAN 2" AND NO MORE THAN 4" FROM SURFACE.
- UNLESS OTHERWISE NOTED ON THESE DRAWINGS:
- a. CONCRETE REGULAR WEIGHT HARD ROCK CONCRETE (150 LBS/CU FT)
- TYPE I/II, SULFATE RESISTANT
- c. AGGREGATES ASTM C33, (MAXIMUM SIZE 3/4 INCHES) d. 28 DAY CONCRETE STRENGTH (f'c):
- 4,000 PSI SLAB (DESIGN BASED ON 2,000 PSI NO SPECIAL INSPECTION REQUIRED) SLUMP - 3"+ 1" - 4" MAXIMUM AT POINT OF PLACEMENT
- SHRINKAGE 0.05% MAXIMUM ENTRAINED AIR RANGE - 2% TO 4%
- CONCRETE SHALL BE NORMAL WEIGHT WITH A MIX OF 1 : 2 1/2 : 3 1/2, WITH A MAXIMUM 7 1/2 GALLONS OF WATER PER SACK. ADD 3.0 LB MACRO (STRUCTURAL) FIBER PER CU. YD. REINFORCING CONCRETE.

#### REINFORCING STEEL FOR TANK SUMP CAGES SHALL BE #4 REBAR.

MAINTAIN CONCRETE IN A MOIST CONDITION FOR AT LEAST 7 DAYS AFTER PLACEMENT.

PLACE CONCRETE DIRECTLY FROM TRUCK INTO FORMS. DO NOT PUMP CONCRETE UNLESS SPECIAL INSPECTION, IN ACCORDANCE WITH CHAPTER 3 OF THE IBC, IS PROVIDED.

SUBMIT MIX DESIGNS, WITH STRENGTH AND SHRINKAGE TEST RESULTS, TO OWNER'S ENGINEER AT LEAST 7 DAYS BEFORE PLACING CONCRETE. CONSOLIDATE CONCRETE IN PLACE USING A MECHANICAL VIBRATOR.

BEFORE PLACING CONCRETE, SECURE REINFORCING STEEL, ANCHOR BOLTS, DOWELS, AND OTHER INSERTS IN POSITION TO PREVENT MOVEMENT.

MATERIALS AND WORKMANSHIP SHALL CONFORM TO A.C.I. - 318 (SPECIFICATIONS OF THE DESIGN AND PLACEMENT OF CONCRETE). MANHOLE CROWNS: ALL MANHOLE OPENINGS ON THE TANK SLAB SHALL BE INSTALLED WITH A 1-1/2" CROWN (1" RISE OVER 12" RUN) OF

CONCRETE TO PREVENT WATER INTRUSION INTO THE MANHOLE, THE OWNER'S ENGINEER, THE BP PROJECT MANAGER WILL BE REQUIRED TO SIGN OFF ON THIS ITEM ON THE TANK INSTALLATION CHECKLIST.

#### PRODUCT IDENTIFICATION MARKINGS:

CONTRACTOR TO INSTALL PRODUCT IDENTIFICATION TAGS AT ALL MANHOLE OPENING PER SITE SPECIFIC DETAIL DRAWINGS.

CONTRACTOR SHALL COMPLETE ALL TESTING ACCORDING TO MANUFACTURER'S INSTRUCTIONS FOR TANKS AND PIPING AND PER INDUSTRY RECOMMENDED PRACTICES (API & PEI). CONTRACTOR SHALL COMPLETE ALL WARRANTY VALIDATION TESTING AND PROVIDE DOCUMENTATION TO OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER.

#### ISOLATE THE PRODUCT TANKS AND DISPENSERS DURING PRESSURE TESTING OF LINES IN ORDER TO PREVENT DAMAGE.

THE DESIGN, ASSEMBLY, AND TESTING OF THE PIPING SYSTEM SHALL BE IN CONFORMANCE WITH THE APPLICABLE SECTION OF ANSI-B31, AMERICAN NATIONAL STANDARD CODE FOR PRESSURE PIPING, NFPA 30, FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE, AND AMERICAN PETROLEUM INSTITUTES RECOMMENDED PRACTICE 1615.

DURING CONSTRUCTION, BEFORE BACK FILLING, PIPING SHOULD BE ISOLATED FROM THE TANKS AND SUBJECTED TO A PIPE TIGHTNESS TEST. OTHER TESTING METHODS MAY ALSO BE ACCEPTABLE IF APPROVED BY THE AUTHORITY HAVING JURISDICTION. A CONSTRUCTION PIPE TEST IS CONDUCTED AS FOLLOWS:

A. THE PRODUCT PIPING TO BE TESTED IS ISOLATED AND PRESSURIZED WITH COMPRESSED AIR TO 150 PERCENT OF THE MAXIMUM SYSTEM OPERATING PRESSURE (OR A MINIMUM OF 50 POUNDS PER SQUARE INCH GAUGE; MAXIMUM AS RECOMMENDED BY COMPONENT MANUFACTURER)

FOR AT LEAST 30 MINUTES AND NOT MORE THAN 1 HOUR. B. ALL PIPING SURFACES INCLUDING VALVES, FITTINGS, JOINTS, AND SO FORTH ARE WETTED WITH A SOAP SOLUTION AND INSPECTED FOR

C. LEAKS, AS INDICATED BY BUBBLES, ARE REPAIRED OR REPLACED, AND THE PIPING RE-TESTED AS NECESSARY. D. THE INNER PIPE WALLS SHALL BE TESTED FOR TIGHTNESS BEFORE CLOSING THE OUTER PIPE. THE OUTER PIPE MUST BE TESTED AT A 5 POUNDS PER SQUARE INCH GAUGE MAXIMUM BEFORE BACKFILLING. CARE SHOULD BE TAKEN TO PREVENT OVER PRESSURIZATION OF THE INTERSTICE. IT IS IMPORTANT THAT THE MANUFACTURER'S INSTRUCTIONS BE FOLLOWED. REPEAT BOTH TESTS AFTER BACKFILLING.

WHEN THE PIPING IS INSTALLED AND OPERATIONAL, A HYDROSTATIC TEST OF THE PIPING, AS SPECIFIED IN NFPA 329, MAY BE REQUIRED BY CODES.

CAUTION: EXTREME CARE SHOULD BE EXERCISED IN CONDUCTING PIPE TIGHTNESS TEST. PRESSURIZED PIPING IS POTENTIALLY DANGEROUS BECAUSE OF THE POSSIBILITY OF VIOLENT RUPTURE. THIS TEST SHOULD BE CONDUCTED WITH MINIMUM EXPOSURE OF PERSONNEL AND WITHOUT MOVING OR DISTURBING THE PIPING BEING TESTED. WHEN THE TEST IS COMPLETED, THE PIPING PRESSURE CAN BE REDUCED OR RELEASED

COMPLETELY FOR THE REMAINDER OF CONSTRUCTION. REFER TO THE PIPING MANUFACTURER'S RECOMMENDATIONS.

N.O.V. PIPING SHALL BE TESTED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

VAPOR RECOVER PIPING MUST PASS ALL CARB BLOCKAGE TESTING RELATIVE TO TIGHTNESS, PRESSURE DECAY, & BLOCKAGE RATES. A/L TESTING IS REQUIRED FOR "ASSISTED" STAGE II SYSTEMS (IF INSTALLED). NOTIFY THE BP PROJECT MANAGER TO COORDINATE.

#### CONTAINMENT SUMP TESTING:

ALL TANK SUMPS AND UNDER DISPENSER CONTAINMENT SUMPS SHALL BE HYDROSTATICALLY TESTED (LAKE TEST) WITH STANDING WATER ABOVE THE LEVEL OF THE HIGHEST PIPE OR CONDUIT PENETRATION FOR A PERIOD OF 24 HOURS AFTER ALL WORK IS COMPLETED TO INSURE THAT THE SUMPS ARE WATERTIGHT OR CERTIFIED USING SUMP MANUFACTURER'S APPROVED TEST PROCEDURE TO INSURE THAT SUMPS ARE WATERTIGHT PER UST REGULATIONS. THE OWNER'S ENGINEER MUST SIGN OFF ON THIS TESTING ON THE TANK INSTALLATION

CALIFORNIA VARIANT: ALL DOUBLE WALL SUMPS SHALL BE BRINE FILLED AND INSPECTED FOR TIGHTNESS THROUGHOUT THE INSTALLATION PROCESS ONCE SUMPS HAVE BEEN FILLED WITH BRINE SOLUTION.

AFTER COMPLETE INSTALLATION OF THE ENTIRE FUEL SYSTEM AND ALL PAVING, THE OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER, SHALL ARRANGE FOR A PRECISION TANK AND LINE TEST TO BE PERFORMED ON THE COMPLETE SYSTEM. SUCCESSFUL COMPLETION OF THIS TEST WILL BE REQUIRED FOR FINAL APPROVAL. THIS TEST SHALL ENSURE THAT ALL NEW TANK & PIPING SHALL MEET ALL FEDERAL, STATE, & LOCAL REQUIREMENTS FOR TIGHTNESS INTEGRITY, PRIOR TO START-UP OF SYSTEM, OPERATIONALLY TEST ALL OTHER EQUIPMENT, INCLUDING IMPACT (SHEAR) VALVES, LINK LEAK DETECTORS, LEAK DETECTOR ALARMS, AND EMERGENCY SHUTDOWN SWITCHES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL PROVIDE (3) COPIES OF ALL CERTIFICATIONS & TEST RESULTS TO OWNER'S REPRESENTATIVE OR HIS AGENT. THE BP PROJECT MANAGER.

### TANK SYSTEM TEST METHOD CALIFORNIA ONLY AB-2481:

BEFORE THE UNDERGROUND STORAGE TANK IS PLACED INTO USE, THE UNDERGROUND STORAGE TANK SHALL BE TESTED AFTER INSTALLATION USING ONE OF THE FOLLOWING METHODS TO DEMONSTRATE THAT THE TANK IS PRODUCT TIGHT:

1) ENHANCED LEAK DETECTION (ELD) BY TRACER CORPORATION.

2) AN INERT GAS PRESSURE TEST THAT HAS BEEN CERTIFIED BY A THIRD PARTY AND APPROVED BY THE BOARD. 3) A TEST METHOD DEEMED EQUIVALENT TO ENHANCED LEAK DETECTION OR AN INERT GAS PRESSURE TEST BY THE BOARD IN REGULATIONS ADOPTED PURSUANT TO THE APPLICABLE CHAPTER IN THE CODE. AN UNDERGROUND STORAGE TANK INSTALLED AND TESTED IN ACCORDANCE WITH THIS SECTION IS EXEMPT FROM THE REQUIREMENTS OF SECTION 25292.5.

#### <u> 19) CHECKING FOR PRODUCT QUALITY: INITIAL SITE COMMISSIONING RECOMMENDED PRACTICES</u> BEFORE OPENING YOUR STORE. IT IS APPROPRIATE AND PROPER PROCEDURE TO CHECK YOUR FUELING EQUIPMENT TO MINIMIZE POSSIBLE PRODUCT QUALITY ISSUES. THIS GUIDANCE MUST BE FOLLOWED TO ENSURE THAT PRODUCT QUALITY HAS BEEN MAINTAINED. AND IS

THE UNDERLYING ASSUMPTION IS THAT THE GENERAL CONTRACTOR, WHO WAS RESPONSIBLE FOR BUILDING YOUR STATION, HAS PROPERLY PERFORMED THEIR JOB AND CHECKED THAT TANKS AND PIPING HAVE BEEN PROPERLY INSTALLED, TESTED, CLEANED, AND LABELED AT A MINIMUM. ANY BP AREA MAINTENANCE MANAGER, OR BP PROJECT MANAGER, HAS A CHECKLIST SHOWING KEY POINTS TO LOOK FOR BEFORE ACCEPTING A SITE AS "COMPLETE" FROM THE CONTRACTOR. SOME KEY AREAS ARE AS FOLLOWS:

1. CONFIRM THAT APPROPRIATE PRODUCT TAGS HAVE BEEN INSTALLED AT THE FILL RISERS.

2. PERFORM A FINAL INSPECTION FOR THE PRESENCE OF WATER IN THE PIPING TO THE DISPENSERS BY OPENING THE TURBINE DISCHARGE CONNECTION AT EACH TURBINE SUMP, AND OPENING/REMOVING THE BLEEDER/TEST PLUG ON IMPACT VALVE. ANY TRAPPED LIQUIDS SHOULD DRAIN BACK TO THE TURBINE SUMP FOR REMOVAL.

3. CONFIRM THAT BOTH GASOLINE AND DIESEL DISPENSERS ARE INSTALLED WITH A MINIMUM (MEANING A MESH SIZE NOT GREATER THAN) 10 MICRON FILTER. ANY FACTORY INSTALLED FILTER AFTER STARTUP MUST BE DISCARDED IN ACCORDANCE WITH USED FUEL FILTER WASTE MANAGEMENT ENVIRONMENTAL GUIDELINES.

4. CONFIRM THAT PROPER DECALS, TAX NUMBERS, AND OTHER SIGNAGE REQUIRED PER PLANS, REGULATORY REQUIREMENTS, AND CONTRACTUAL AGREEMENTS ARE INSTALLED.

5. PERFORM A FINAL INSPECTION FOR THE PRESENCE OF WATER WITHIN THE UNDERGROUND STORAGE TANKS, OR IN THE PIPING GOING TO THE DISPENSERS. INSPECTION FOR WATER IN THE TANK SHALL BE PERFORMED USING SARGEL'S WATER FINDING PASTE (OR EQUAL), AND CONDUCTED AT BOTH ENDS OF THE TANK. IF LEVELS OF WATER GREATER THAN 1/4" ARE DETECTED, PROCEED WITH WATER ELIMINATION PROCEDURES. AND REQUEST THAT THE CONTRACTOR DO THIS AS PART OF THEIR SCOPE OF WORK.

6. THE BP REPRESENTATIVE (REGIONAL ACCOUNT EXECUTIVE OR FRANCHISE CONSULTANT) SHALL BE INFORMED OF ALL MAJOR MILESTONES LEADING UP TO SITE START-UP. BP RESERVES THE RIGHT TO REQUEST COPIES OF INSPECTION REPORTS BEFORE INITIAL SITE START-UP.

7. AFTER DELIVERY OF THE FIRST LOAD OF PRODUCTS, EACH PRODUCT MUST BE TESTED AND THE RESULTS PROVIDED TO THE BP AREA MAINTENANCE MANAGER AND TO THE BP PROJECT MANAGER, PRIOR TO ANY SALE.

COSTS OF THE SAMPLING AND ANALYSIS ARE TO BE INCLUDED IN THE CONTRACTOR'S SCOPE OF WORK. A LABORATORY CERTIFIED TO CONDUCT FUELS SAMPLING AND TESTING MUST BE USED

#### (20) TANK ELECTRICAL SPECIFICATIONS

ACCEPTABLE FOR OUR CUSTOMERS.

ALL MATERIALS AND WORKMANSHIP WILL CONFORM TO THE MOST RECENT EDITIONS OF THE NATIONAL ELECTRICAL CODE, N.E.T.A., B.I.C.S.I., U.B.C. & NFPA AS REQUIRED BY THE ENGINEER, LOCAL AND STATE CODES AND ORDINANCES, AMERICANS WITH DISABILITIES ACT, E.P.A.,

THE CONTRACTOR WILL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS WHICH MAY AFFECT HIS BID OR WORK. NO ALLOWANCES WILL BE MADE AFTER THE BID FOR EXISTING CONDITIONS OR THE CONTRACTORS FAILURE TO VERIFY EXISTING CONDITIONS.

ALL DRAWINGS ARE SCHEMATIC IN NATURE AND ALL APPURTENANCES NOT INDICATED TO MAKE A WORKING SYSTEM MUST BE INCLUDED

FURNISH AND INSTALL A COMPLETE ELECTRICAL SYSTEM AS DEPICTED FROM THE PLANS AND SPECIFICATIONS HEREIN - AS NOTED OR IMPLIED - NOT LIMITED TO WHAT IS SHOWN.

IN CONTRACTOR'S BID. IF THERE APPEARS TO BE ANY ITEMS IN CONFLICT WITH THE DRAWINGS, INCONSISTENCIES WITH DESIGN OR INTENT, OR NEED FOR CLARIFICATION, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CLARIFY THESE ITEMS PRIOR TO BID IN WRITING WITH THE ENGINEER. IF

THE CONTRACTOR FAILS TO CLARIFY ANY QUESTIONS OR INCONSISTENCY, THEY ACCEPT RESPONSIBILITY TO CORRECT AT THEIR COST ANY SUCH ITEM SO AS TO MEET INTENT AS DEFINED BY ENGINEER.

CONTRACTOR WILL SUPPLY INFORMATION AS REQUIRED TO ALL SERVING UTILITIES IN A TIMELY MANNER TO PROVIDE SERVICE REQUIRED.

RGS FITTINGS MUST BE STEEL COMPRESSION TYPE; EACH WITH CODE SIZED COPPER BOND WIRE. MINIMUM CONDUIT 1" C. EXCEPT AS NOTED. ALL WORK WILL BE IN CONDUIT; COMPLETED SYSTEM REAMED, AND SWABBED PRIOR TO CONDUCTOR INSTALL.

CONDUIT ARE NOT ACCEPTABLE SUPPORTS. NO TIE WIRE WILL BE ALLOWED ON PROJECT. CALIFORNIA VARIANT - THE LAST 2 FEFT (MINIMUM) OF ALL CONDUITS THAT ARE ROUTED TO AND PENETRATE TANK SUMPS. DISPENSER SUMPS AND VENT TRANSITION SUMPS SHALL BE PVC COATED RIGID STEEL GALVANIZED WHERE PENETRATIONS TO THE BRINE FILLED

ALL CONDUITS TO BE CONCEALED EXCEPT TO SURFACE MOUNTED PANELS TIE WIRE, PERFORATED STRAPS, OR OTHER PIPING OR

### SUMPS ARE MADE. ROBROY CONDUIT MUST BE USED WITH THE BRAVO PENETRATION FITTING - NO SUBSTITUTE PERMITTED.

**CONDUCTORS** CONDUCTORS TO BE 600V., COPPER (98% CONDUCTIVITY). BRANCH CIRCUITS TO HAVE THHN/THWN GAS & OIL RESISTANT INSULATION. CONDUCTORS WILL BE STRANDED, HYDRAULIC CRIMP ALL CONNECTIONS. CONDUCTOR INSULATION WILL BE CONTINUOUSLY COLOR COATED. ALL GROUNDING/BUILDING CONDUCTORS WILL BE MULTI-CONDUCTOR TYPE (U.L. LABELED - ROPE STRAND BUILDING WIRE CLASS 'M')

BARE OR INSULATED AS NOTED OR REQUIRED. MINIMUM LINE VOLTAGE WIRE SIZE IS #12 AWG (STRANDED) FOR LINE VOLTAGE WIRING DEVICES TO BE SPECIFICATION GRADE. MINIMUM 20 AMPS FOR RECEPTACLES. HUBBELL OR ENGINEER APPROVED. ALL SPECIAL RECEPTACLES AND GROUND FAULT

### PROTECTED DEVICES MUST BE PERMANENTLY MARKED WITH ENGRAVED COVER PLATES.

FILL RISER GROUNDING: ALL RISERS IN THE FILL SUMP SHALL BE GROUNDED AND BONDED.

INSTALL 1/2" x 10'-0" LONG CONTINUOUS COPPER CLAD GROUND ROD IN NATIVE SOIL FOR TANK SYSTEM GROUNDING. PROVIDE

ENSURE THAT THE E-STOP DISCONNECTS THE HOT AND NEUTRAL WIRES TO THE DISPENSERS

MANHOLE ACCESS TO GROUND ROD AND COPPER GROUND WIRE, SEE DETAILS ON SHEET G.O.7

ENSURE THAT THE E-STOP DISCONNECTS THE HOT AND NEUTRAL WIRES TO THE TURBINES ENSURE THAT THE TURBINE PUMPS ARE ISOLATED TO AVOID FEEDBACK VOLTAGE ENSURE THAT THE E-STOP DISCONNECTS THE LOW VOLTAGE WIRES TO THE DISPENSER (I.E. DATA, INTERCOM, MEDIA)

ENSURE THAT THE TURBINE AND DISPENSER BREAKERS ARE CLEARLY IDENTIFIED / LABELED ENSURE THAT EACH DISPENSER HAS ITS OWN DEDICATED CIRCUIT

ENSURE THAT EACH PUMP HAS ITS OWN DEDICATED CIRCUIT ENSURE THAT THE DISPENSING EQUIPMENT IS GROUNDED PER NEC

#### ENSURE THAT ALL OF THE DISPENSING EQUIPMENT MEETS NEC LOCK OUT/TAG OUT CODES.

CONTRACTOR PERFORMANCE: THE CONTRACTOR WILL GUARANTEE ALL MATERIALS AND WORKMANSHIP FURNISHED BY HIM UNDER THIS CONTRACTOR FOR A PERIOD OF TWO YEARS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK OF THIS CONTRACT BY THE OWNER AND THE ENGINEER AND PROVIDE A BOND TO VALIDATE THIS GUARANTEE. ANY DEFECTS DEVELOPING WITHIN THE PERIOD TRACEABLE TO MATERIALS OR WORKMANSHIP PERFORMED HERE UNDER, WILL BE MADE GOOD AT THE EXPENSE OF THE CONTRACTOR NOT THE OWNER OR ENGINEER. THE CONTRACTOR WILL ACCEPT AND FULLY UNDERSTAND THIS PROVISION PRIOR TO CONTRACT BEING AWARDED, AS NO CLAIM FOR EXTRA COMPENSATION WILL BE ALLOWED FOR CORRECTION OF FAULTY WORK OR DEFECTIVE MATERIALS. ANYTIME DURING THE CONSTRUCTION PERIOD, THE OWNERS REPRESENTATIVES AND THE ENGINEER RETAIN THE RIGHT TO REQUIRE THE CONTRACTOR TO REMOVE AND REINSTALL ANY EQUIPMENT OR MATERIALS NOT FOLLOWING THE STANDARDS AS

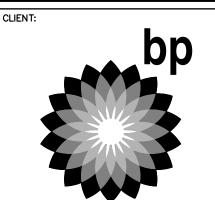
CONTRACTOR WILL PROVIDE PROOF OF PERFORMANCE BOND WITH SHOP DRAWINGS

PRESENTED HEREIN OR ON THE DRAWINGS WITHOUT COST TO THE OWNER OR ENGINEER.

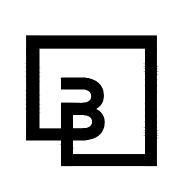
PROVIDE 3 SETS OF SHOP DRAWINGS & SAMPLES FOR ALL EQUIPMENT, PRIOR TO ORDERING AND IN A TIMELY MANNER (AS DETERMINED BY THE ENGINEER) SO NOT TO DELAY WORK, TO THE ENGINEER FOR APPROVAL. (CONDUIT, SWITCHES, CONDUCTORS, ECT.) WHERE SUBSTITUTIONS ARE MADE. CONTRACTOR WILL INCLUDE COMPARISON DATA & SAMPLES FOR BOTH THE SUBSTITUTE AND SPECIFIED ITEMS FOR REFERENCE PURPOSES.

CONTRACTOR WILL PROVIDE LETTER TO ENGINEER CONFIRMING ALL EQUIPMENT AND TERMINATIONS ARE PROPERLY TORQUED - SIGNED BY LICENSED CONTRACTOR.

CONTRACTOR WILL PROVIDE ACCURATE AND COMPLETE "AS BUILT" DRAWINGS TO OWNER AND ENGINEER AT TIME OF OWNER ACCEPTANCE. ALL "AS BUILT" DRAWINGS TO BE 4 SETS OF "BLUELINES" OR PHOTO COPY PRINTS 24" X 36" AND TWO SETS (OWNER/ENGINEER) ON MAGNETIC MEDIA & AUTOCAD 2010 (BY AUTODESK) COMPATIBLE. FAILURE TO DO SO WILL CONSTITUTE FORFEITURE OF ALL PAYMENTS DUE AND HOURLY RATES OR \$99.00/HOUR/MAN MINIMUM TO ENGINEER PAID BY CONTRACTOR FOR "AS BUILT" DEVELOPMENT.







Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

| NO.                            | DATE     | REVISION     | DESCRIPTION |
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DEVELOPMENT INFORMATION: ARCO NTI

SITE ADDRESS: SWC S MERIDIAN

3400 am/pm

FUEL CANOPY w/ 6 MPD's

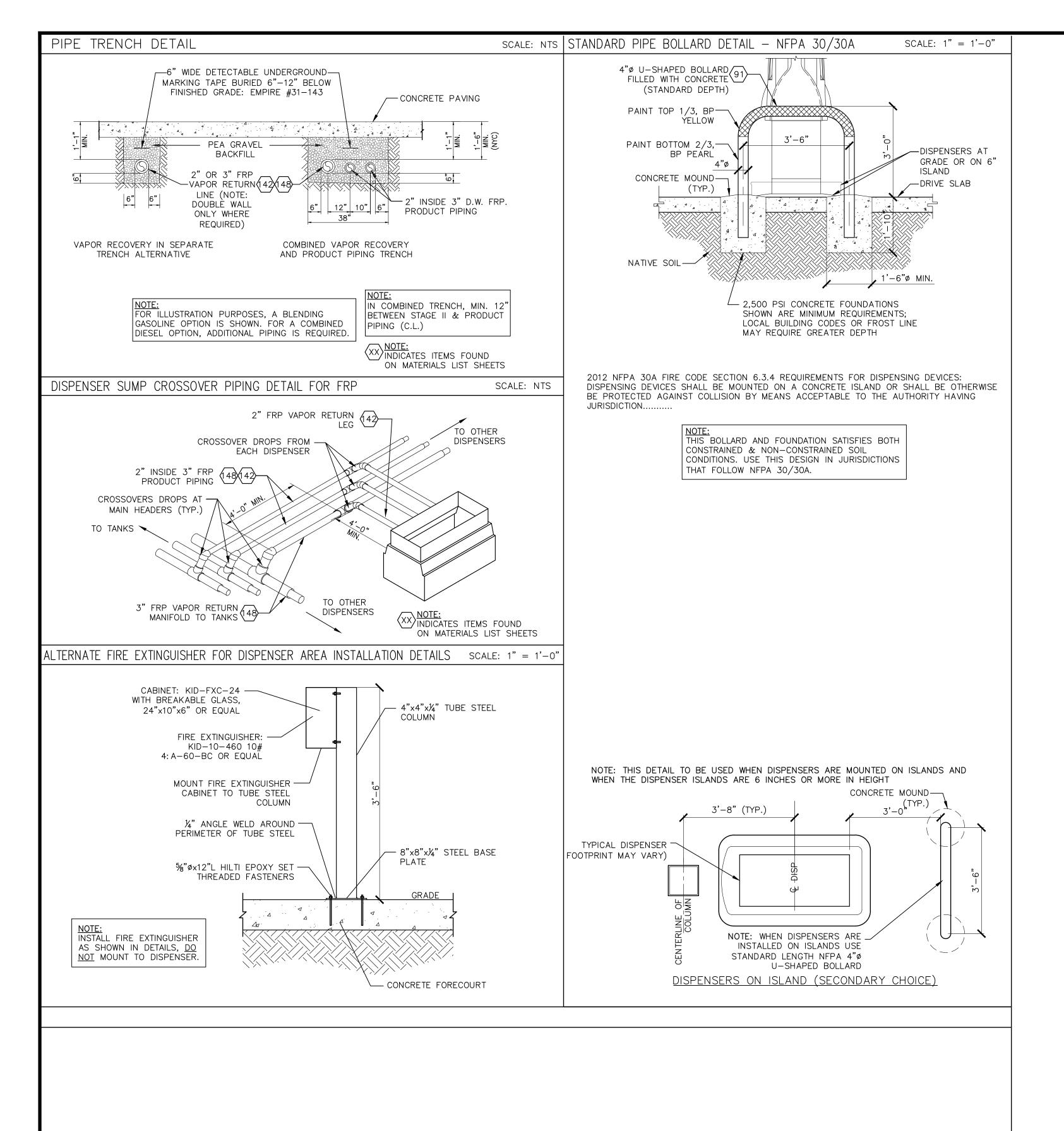
@ HIGHWAY 512 **PUYALLUP, WASHINGTON** 

**FACILITY #TBD** DESIGNED BY: NP/RF ALLIANCE Z&DM:

OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM: 01/01/2023

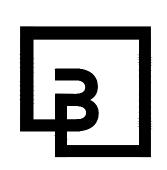
DRAWING TITLE: TANK AND PIPING SCOPE OF WORK AND GENERAL NOTES

(FRP 2 OF 2) TLS-450 SHEET NO:









Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

| NO.   | DATE     | REVISION DESCRIPTION |
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| 1     | 10/04/23 | PERMIT RELEASE       |
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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SWC S MERIDIAN

@ HIGHWAY 512 PUYALLUP, WASHINGTON

**FACILITY #TBD** 

DESIGNED BY: NP/RF ALLIANCE Z&DM:
CHECKED BY: OV BP REPM:

DRAWN BY: NP/RF ALLIANCE PM:

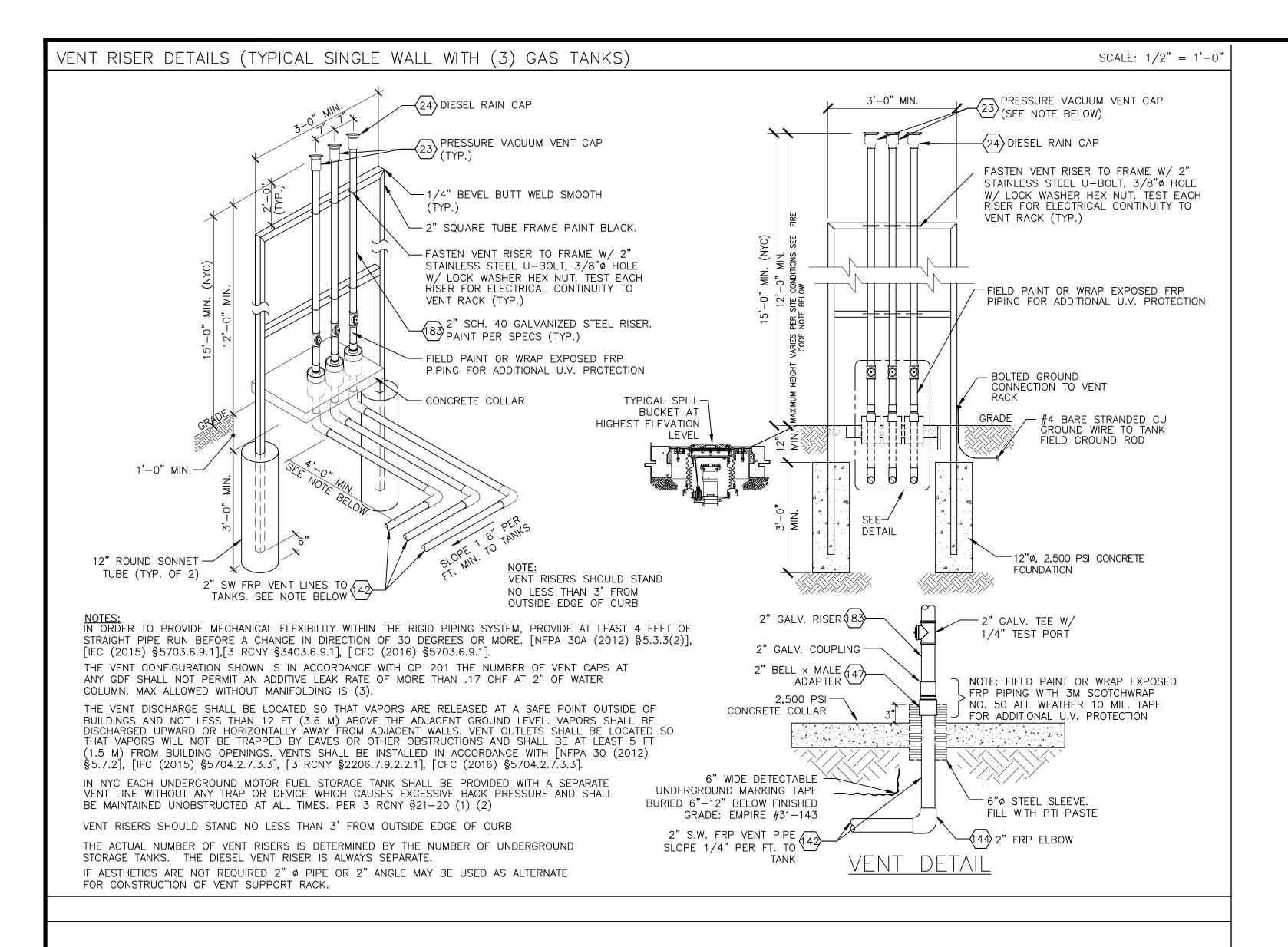
VERSION: V-15.0
01/01/2023 PROJECT NO:
21730

DRAWING TITLE:

DESIGN INTENT
MISCELLANEOUS DETAILS

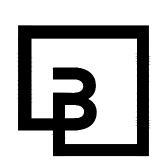
SHEET NO

G.0.5









Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

| NO.        | DATE     | REVISION DESCRIPTION |
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| 1          | 10/04/23 | PERMIT RELEASE       |
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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

SWC S MERIDIAN
@ HIGHWAY 512
PUYALLUP, WASHINGTON

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CHECKED BY: OV BP REPM:

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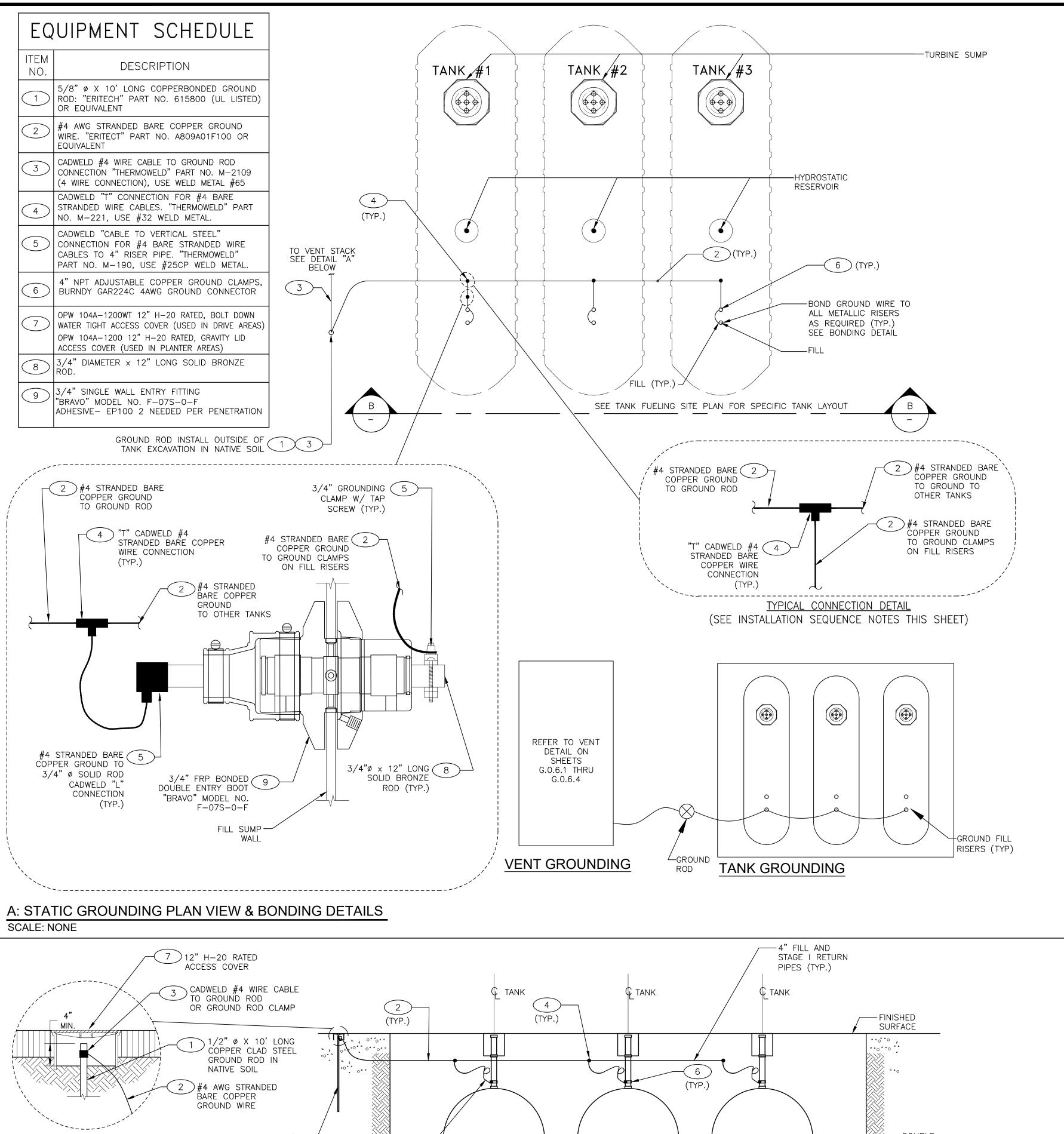
VERSION: V-15.0
01/01/2023 PROJECT NO:
21730

DRAWING TITLE:

DESIGN INTENT VENT STACK INSTALLATION DETAILS (STANDARD)

SHEET NO.

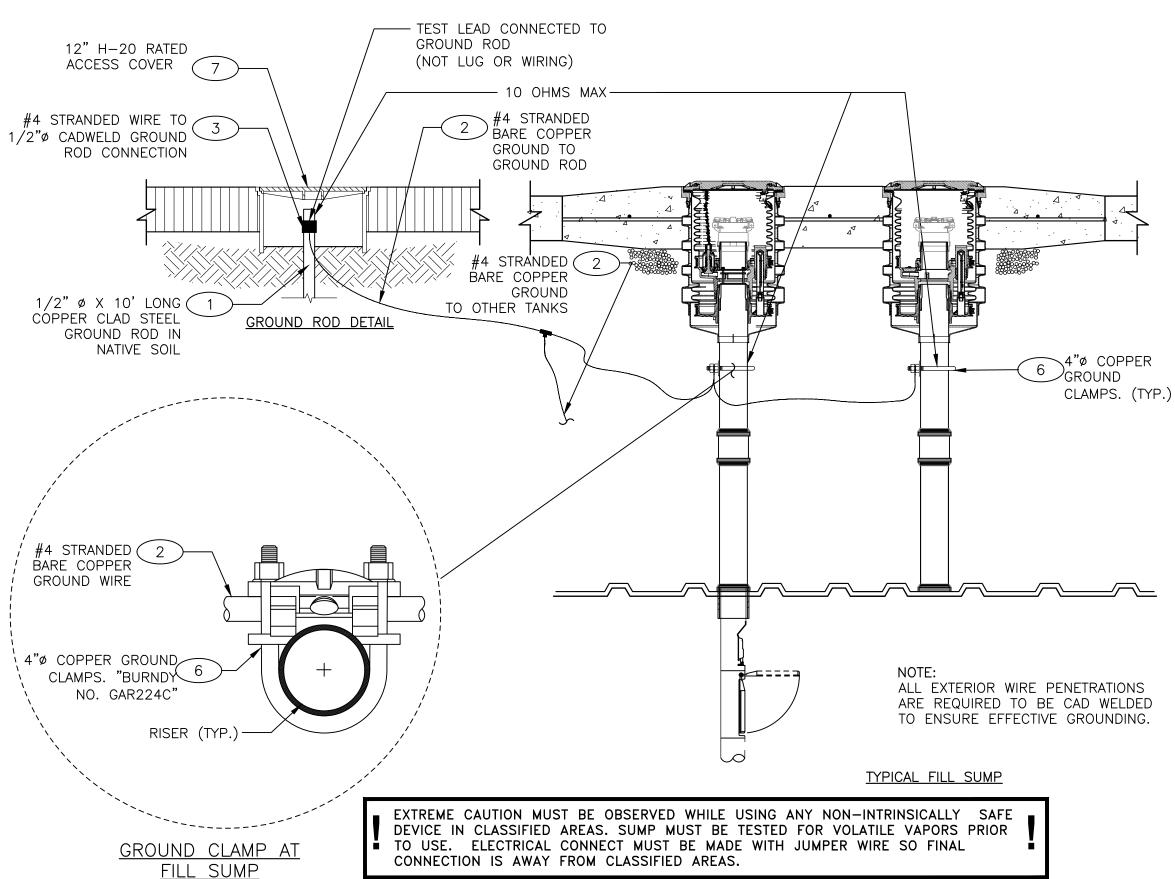
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**GROUND ROD DETAIL** DOUBLE 1/2" Ø X 10'( L WALL TANKS LONG COPPER CLAD STEEL + PEAGRAVEL GROUND ROD IN BACKFILL NATIVE SOIL COIL STATIC GROUND WIRE 2 CABLE UP 3' & SECURE TO SIDE OF GALVANIZED STEEL – EARTH — (GROUND ROD INSTALLED IN SOIL NOT PEAGRAVEL BACKFILL)

B: STATIC GROUNDING SECTION & BONDING DETAILS

SCALE: NONE



#### C: TESTING EXPOSED GROUND SYSTEM & BONDING DETAILS SCALE: NONE

GENERAL SHEET NOTES

NOTES:

ALL STAGE I FILL AND VAPOR RISER ADAPTERS SHALL BE ELECTRICALLY GROUNDED TO

THE BONDING AND GROUNDING FOR STATIC ELECTRICITY PROTECTION SHALL BE IN COMPLIANCE PER ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES INCLUDING NFPA 30. FLAMMABLE AND COMBUSTIBLE LIQUIDS CODE, NFPA 77. RECOMMENDED PRACTICE ON STATIC ELECTRICITY, NFPA 70, NATIONAL ELECTRIC CODE, AND THE CALIFORNIA CODE OF REGULATIONS, SUBCHAPTER 15, PETROLEUM SAFETY ORDERS-REFINING, TRANSPORTATION AND HANDLING, ARTICLE 5, FIRE AND EXPLOSIONS.

PER SECTION 6.4.1.3 OF NFPA 77, THE MEASURED TOTAL RESISTANCE IN THE GROUND PATH TO EARTH SHALL BE LESS THAN 1 MEGAOHM WHICH IS CONSIDERED ADEQUATE FOR RELAXATION OF STATIC CHARGE. THE MAXIMUM ALLOWABLE GROUND PATH TO EARTH RESISTANCE FOR STATIC ELECTRICITY GROUNDING APPLICATIONS SHALL NOT EXCEED 100,000 OHMS.

PER SECTION 6.4.1.3 OF NFPA 77, THE RESISTANCE IN METALLIC BONDING AND OR GROUNDING SYSTEMS SHALL BE LESS THAN 10 OHMS. RESISTANCE HIGHER THAN 10 OHMS INDICATES INADEQUATE CONNECTIONS.

A GROUNDING SYSTEM PER NEC CODE FOR CURRENT CARRYING CONDUCTORS SHALL BE CONSIDERED MORE THAN ADEQUATE FOR A STATIC ELECTRICITY GROUNDING SYSTEM.

PER THE NFPA 30, SECTION 5-6.3.4 ALL PARTS OF THE FILL PIPE ASSEMBLY, INCLUDING

THE DROP TUBE, SHALL FORM A CONTINUOUS ELECTRICALLY CONDUCTIVE PATH.

ANY UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF THE GROUND.

THE MINIMUM WIRE SIZE FOR BONDING AND GROUNDING SHALL BE COPPER AWG #4 A 1/2" Ø BY 10' LONG COPPER CLAD STEEL GROUND ROD SHALL BE DRIVEN INTO NATIVE SOIL ONLY. PLACING THE GROUND ROD INTO TANK PIT PEA GRAVEL SHALL NOT BE

PERMITTED UNDER ANY CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR CLEARING

THE GROUND ROD TO GROUND WIRE CONNECTION SHALL BE ACCESSIBLE THROUGH A H-20 RATED 12" DIAMETER MINIMUM ACCESS COVER TO ASSIST INSPECTION, MAINTENANCE AND TESTING. THE SCREW TYPE GROUND ROD CLAMP SHALL BE UL LISTED FOR DIRECT

ONE MAIN STRANDED #4 THHN CONDUCTOR SHALL BE RUN PAST EACH FILL RISER. ONE STRANDED #4 THHN CONDUCTOR SHALL BE ROUTED FROM EACH FILL AND STAGE I RISER. INSTALLATION SHALL BE AS FOLLOWS AND MUST BE COMPLETED IN ORDER NOTED AS FOLLOWS:

OUT OF HOLE INSTALLATION SEQUENCE: NOTE:

ALL CAD WELDS W/ EXCEPTION OF "T" CONNECTIONS AT EACH TANK AND FINAL CAD WELD @ GROUND ROD NOTED IN SCHEDULE ON THIS SHEET MAY BE PREFABRICATED OUTSIDE THE TANK AREA AND BROUGHT TO SITE.

1. MAKE "CABLE TO PIPING STEEL SURFACE" CADWELD CONNECTION CONNECTION WITH #4 STRANDED WIRE TO EACH FILL AND STAGE I RISER OUTSIDE THE SUMP AREA. TO ASSURE A COMPLETE CONNECTION, ANY PAINT OR COATING ON THE RISER SHALL BE REMOVED PRIOR TO INSTALLATION OF THE CADWELD CONNECTION.

2. APPLY "THERMOCAP" CATHODIC PROTECTION TO EACH OF THE CADWELDS ON RISERS. 3. FOR EACH TANK RISER MAKE #4 STRANDED TO #4 STRANDED "T" CADWELD CONNECTIONS TO MAIN GROUND WIRE BACK TO GROUND ROD. THE CONDUCTORS SHALL HAVE 18" MINIMUM COVER. EACH TANK SHALL HAVE SEPARATE GROUND WIRE TO GROUND ROD

3. MAKE #4 STRANDED WIRE TO GROUND ROD CADWELD CONNECTION. CADWELD CONNECTION MODEL NUMBER PER NUMBER OF TANKS.

ELECTRICAL CONDUIT, FUELING SYSTEM HARDWARE OR THE STATION ELECTRICAL GROUNDING SYSTEM SHALL NOT BE USED FOR GROUNDING OR BONDING FILL AND VAPOR RISERS.

**TESTING:** 

CAUTION: AVOID CONNECTING ANY ELECTRICAL TEST LEAD TO THE FILL OR VAPOR RISER IN A MANNER THAT WOULD POTENTIALLY PRODUCE STATIC DISCHARGE OR SPARKS OF ANY

THE FILL AND VAPOR RISERS SHALL BE TESTED AFTER INSTALLATION AND PERIODICALLY TO VERIFY BONDING AND GROUNDING COMPETENCY.

THE MAXIMUM RESISTANCE FROM ANY FILL OR VAPOR ADAPTER TO THE BODY OF THE GROUND ROD SHALL NOT EXCEED 10 OHMS FOR A METALLIC RISER PIPE, SPILL CONTAINMENT AND ADAPTER ASSEMBLIES.

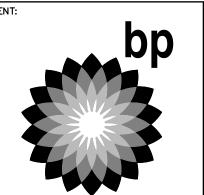
THE RESISTANCE THROUGH ANY COMPOSITE OR NONMETALLIC STAGE I CONTAINMENT FITTING SHALL BE MEASURED WITH A OHMMETER CAPABLE OF READING UP TO 10 MEGAOHMS. THE SUM COLLECTIVE RESISTANCE OF THESE SEMI-CONDUCTIVE ELEMENTS SHALL NOT EXCEED 100.000 OHMS. FOR THESE SYSTEMS, THE GROUND RESISTANCE TESTER MUST BE CONNECTED TO THE GROUND CONDUCTOR CONNECTION ON THE COMPOSITE CONTAINMENT SYSTEM OR RISER PIPE.

FOR INSTALLATIONS WITHOUT AN EXPOSED GROUND ROD CONNECTION, TOTAL SYSTEM RESISTANCE SHALL BE MEASURED WITH A GROUND RESISTANCE TESTER BY A QUALIFIED ELECTRICIAN FAMILIAR WITH GROUND TESTING. THE TWO POINT METHOD MAY BE USED WITH THE SITE ELECTRICAL GROUNDING AS THE SECOND TEST POINT.

THE NEC MAXIMUM GROUND PATH RESISTANCE FOR CURRENT CARRYING APPLICATIONS IS 25 OHMS. HOWEVER, GROUND ROD TO EARTH RESISTANCE UP TO 100 OHMS SHALL BE ACCEPTABLE FOR STATIC ELECTRICITY PROTECTION OF THE FILL AND VAPOR RISERS.

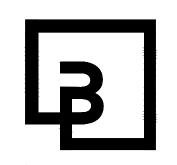
GROUNDING OHMS NOTE:

TEST GROUNDING IMPEDANCE AT THE FILL RISERS. GROUNDING IMPEDANCE SHALL BE BELOW 25 OHMS PER CURRENT NEC CODE. IF IMPEDANCE IS OVER 25 OHMS, PLACE ANOTHER GROUND ROD A MINIMUM 10 FEET AWAY FROM THE FIRST GROUND ROD AND TIE THE RODS TOGETHER WITH SAME WIRE SIZE AND CONNECTIONS. MAKE SURE GROUND ROD IS INSTALLED INTO NATIVE SOIL.





BP WEST COAST PRODUCTS, LLC



Barghausen Consulting Engineers, Inc.

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DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO: 01/01/2023 DRAWING TITLE:

TANK FILL AND VAPOR RISER STATIC GROUNDING DETAIL (STANDARD)

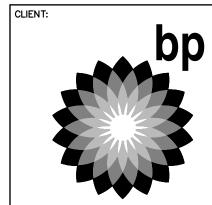
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|           | TANKS                                                              |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                 |  |  |  |  |
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| ITEM      | BY                                                                 | DESCRIPTION (BP CORE CONFIGURATIONS)                                                                                                                                                                                                        | MANUFACTURER                                                                                                                                                                                                                                    |  |  |  |  |
| (11)      | BP                                                                 | TANK: 12,000,10,000 GALLON, 10' DIA. NOMINAL DOUBLE WALL FIBERGLASS TANK, (w/ (2) 42" 8-SIDED TURBINE SUMPS SINGLE STP DESIGN, STEEL STRIKE PLATES AND TIE DOWN GUIDES. TANK SHALL BE UL 1316 APPROVED AND METHANOL APPROVED. (CORE DESIGN) | "CONTAINMENT SOLUTIONS" MODEL NO. DWT-6 TYPE II; (10) 12,000/10,000 GAL. w/ HYDROSTATIC RESERVOIR, w/ SINGLE WALL SUMP PKG. AS REQUIRED, w/ DEADMEN PKG. AS REQUIRED CSI-PRODUCT CODE XWDCSD303                                                 |  |  |  |  |
| (13)      | DOWN GUIDES. TANK SHALL BE UL 1316 APPROVED AND METHANOL APPROVED. |                                                                                                                                                                                                                                             | "CONTAINMENT SOLUTIONS" MODEL NO.  DWT-6 TYPE II; (10) 25,000 GALLON  w/ HYDROSTATIC RESERVOIR, w/ SINGLE  WALL SUMP PKG. AS REQUIRED, w/  DEADMEN PKG. AS REQUIRED  CSI-PRODUCT CODE XW25SD131(42" SUMP)  CSI-PRODUCT CODE XW25SD144(48" SUMP) |  |  |  |  |
|           |                                                                    | STAGE I EQUIPMENT - (ALL AREAS)                                                                                                                                                                                                             |                                                                                                                                                                                                                                                 |  |  |  |  |
| ITEM      | BY                                                                 | DESCRIPTION                                                                                                                                                                                                                                 | MANUFACTURER                                                                                                                                                                                                                                    |  |  |  |  |
| (19)      | BP                                                                 | 4"x4"x3"x2" EXTRACTOR CROSS FITTING W/ CAGE.                                                                                                                                                                                                | "OPW" MODEL NO. 233-4432                                                                                                                                                                                                                        |  |  |  |  |
| 20        | BP                                                                 | 4"x4"x2" EXTRACTOR TEE FITTING W/ CAGE                                                                                                                                                                                                      | "OPW" MODEL NO. 233-4420                                                                                                                                                                                                                        |  |  |  |  |
| 21>       |                                                                    |                                                                                                                                                                                                                                             | "OPW" MODEL NO. 723V-2203                                                                                                                                                                                                                       |  |  |  |  |
| 22        | BP                                                                 | 4" GALVANIZED RISER — LENGTH AS REQUIRED                                                                                                                                                                                                    | "ANVIL" OR EQUAL                                                                                                                                                                                                                                |  |  |  |  |
| 23        | BP                                                                 | 2" PRESSURE VACUUM VENT-(GASOLINE)                                                                                                                                                                                                          | "OPW" MODEL NO. 723V-2203                                                                                                                                                                                                                       |  |  |  |  |
| 24        | BP                                                                 | DIESEL VENT CAP                                                                                                                                                                                                                             | "OPW" MODEL NO. 23-0033                                                                                                                                                                                                                         |  |  |  |  |
| <u>25</u> | G.C.                                                               | PRODUCT IDENTIFICATION MARKERS                                                                                                                                                                                                              | "OPW" MODEL NO.<br>1TAG-1000 & 1TAG-1010 (UNLEADED)<br>1TAG-3000 & 1TAG-3010 (PREMIUM)<br>1TAG-4200 & 1TAG-4210 (ULTRA LOW DIESEL)                                                                                                              |  |  |  |  |

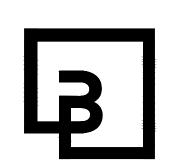
|                                                       | BY<br>BP | STAGE I EQUIPMENT - (STANDARD OPW S  DESCRIPTION  "EDGE" DIRECT-BURY 5-GALLON REPLACEABLE DOUBLE WALL FILL SIDE SPILL                                                                                                                                                    | MANUFACTURER                                                                                                                                                                    |
|-------------------------------------------------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul><li>√28</li><li>B</li><li>√31</li><li>B</li></ul> |          |                                                                                                                                                                                                                                                                          | MANUFACTURER                                                                                                                                                                    |
| 31) B                                                 | BP       | "FDGE" DIRECT-RURY 5-GALLON REPLACEABLE DOUBLE WALL FILL SIDE SPILL                                                                                                                                                                                                      |                                                                                                                                                                                 |
| $\rightarrow$                                         |          | BUCKET CAST IRON BASE WITH SEALABLE COVER WITH PLUG & INSTALLATION TOOL                                                                                                                                                                                                  | "OPW" MODEL NO. 1C-3112P "OPW" MODEL NO. 61SA-TOOL                                                                                                                              |
| $\overline{\langle 32 \rangle}$ B                     | BP       | FILL SWIVEL ADAPTOR - PER CARB EVR EXEC ORDER VR-102                                                                                                                                                                                                                     | "OPW" MODEL NO. 61SALP-1020-EVR                                                                                                                                                 |
| \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\                | BP       | PRODUCT TOP SEAL FILL CAP — PER CARB EVR EXEC ORDER VR-102                                                                                                                                                                                                               | "OPW" MODEL NO. 634TT-7085-EVR                                                                                                                                                  |
| (33) B                                                | BP       | VAPOR RECOVERY SWIVEL ADAPTOR - PER CARB EVR EXEC ORDER VR-102                                                                                                                                                                                                           | "OPW" MODEL NO. 61VSA-1020-EVR                                                                                                                                                  |
| <b>√34</b> B                                          | BP       | VAPOR TOP SEAL CAP - PER CARB EVR EXEC ORDER VR-102                                                                                                                                                                                                                      | "OPW" MODEL NO. 1711T-7085-EVR                                                                                                                                                  |
| (35) E                                                | BP       | 4"x13' DROP TUBE W/ OVERFILL PREVENTION VALVE 4"x19.5' DROP TUBE W/ OVERFILL PREVENTION VALVE W/ JACK SCREW LOCK DOWN DEVICE W/ FACE SEAL ADAPTER (NOT NEEDED FOR "EDGE 1" SPILL BUCKETS) W/ TANK BOTTOM PROTECTOR W/ INSTALLATION TOOL — PER CARB EVR EXEC ORDER VR—102 | "OPW" MODEL NO. OPW-71SO-400C-EVR "OPW" MODEL NO. OPW-71SO-410C-EVR "OPW" MODEL NO. 61JSK-44CB-EVR "OPW" MODEL NO. FSA-400 "OPW" MODEL NO. 6111-1400 "OPW" MODEL NO. 71SA-TOOLC |
| OONTAGT D                                             | DDECCE   | DISPENSERS                                                                                                                                                                                                                                                               | /TRIDLE DEC DOC FOLIDATAT FOR MARKET                                                                                                                                            |
|                                                       | BY       | TR WAYNE AGENT TO ENSURE THAT DISPENSERS ARE ORDERED WITH THE CORRECT PCI/  DESCRIPTION (BLENDERS)                                                                                                                                                                       | MANUFACTURER                                                                                                                                                                    |
|                                                       | RD       | "OVATION" H_FRAME BLENDING MULTI_PRODUCT DISPENSED: 3_CRADE 2_SIDED                                                                                                                                                                                                      | "WAYNE" OVATION SERIES<br>MODEL NO. B12/322XD6/K/N<br>(3+0 GASOLINE ONLY)<br>"X"=1 BALANCE                                                                                      |
| (52) B                                                | BP       |                                                                                                                                                                                                                                                                          | "WAYNE" OVATION SERIES MODEL NO. B23/422XD6/K/N (3+1 GASOLINE/DIESEL) "X"=1 BALANCE                                                                                             |
| E                                                     | EQU      | IPMENT SOLUTION FOR CARB LISTED ORVR "BALANG                                                                                                                                                                                                                             | CE" AREAS                                                                                                                                                                       |
| ITEM B                                                | BY       | DESCRIPTION                                                                                                                                                                                                                                                              | MANUFACTURER                                                                                                                                                                    |
| 61 ≥ E                                                | ВР       | G2 BLACK EVR BALANCE SYSTEM NOZZLE                                                                                                                                                                                                                                       | "VST" MODEL # VST-EVR-NB-2                                                                                                                                                      |
| (62) B                                                | ВР       | SWIVEL (INCORPORATED INTO VST HOSE DESIGN)                                                                                                                                                                                                                               |                                                                                                                                                                                 |
| (63) B                                                |          | 8 FOOT ENVIRO-LOC EVR BALANCE VAPOR<br>RECOVERY HOSE WITH VENTURI                                                                                                                                                                                                        | "VST" MODEL NO. VDV-EVR-096                                                                                                                                                     |
| $\langle 64 \rangle$                                  | BP I     | BALANCE COAXIAL FUEL WHIP HOSE 12" LONG                                                                                                                                                                                                                                  | "VST"MODEL NO. VSTA-EVR-012                                                                                                                                                     |
|                                                       |          | BALANCE COAXIAL FUEL WHIP HOSE 5' LONG FOR SITE USING RETRACTORS/LAZY "J" STYLE                                                                                                                                                                                          | "VST"MODEL NO. VSTA-EVR-060                                                                                                                                                     |
| (65) B                                                | BP       | COAXIAL BREAKAWAY VALVE - NON REUSABLE                                                                                                                                                                                                                                   | "VST" MODEL # VSTA-EVR-SBK                                                                                                                                                      |
| (66) B                                                | BP       | INCLUDE SAFETY BREAKAWAY SCUFF GUARD                                                                                                                                                                                                                                     | "VST" MODEL # VSTA-BBSG-100                                                                                                                                                     |

| ITEM                     | BY | DESCRIPTION                                                                                                                                                                                    | MANUFACTURER                                                                 |
|--------------------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 70                       | BP | DIESEL PRESSURE—SENSING AUTOMATIC PREPAY NOZZLE WITH 3/4 INCH NPT INLET 2—PIECE HAND INSULATOR ALUMINUM SPOUT AND 2—POSITION HOLD—OPEN RACK. UL 2586 LISTED. WITH NOZZLE FILLGARD SPLASH GUARD | "OPW" MODEL NO. 11B-0400-BLACK "OPW" MODEL NO. 8BL-0400-BLACK (BP/AMOCO)     |
|                          |    |                                                                                                                                                                                                | "OPW" MODEL NO.11B-0100-GREEN "OPW" MODEL NO. 8G-0100-GREEN (THORNTONS/ARCO) |
| 71                       | BP | DIESEL 3/4 INCH MALE X 3/4 INCH FEMALE TWO PLANE SWIVEL                                                                                                                                        | "OPW" MODEL NO. 241TPS-0241<br>(BP/AMOCO/ARCO)                               |
| 72                       | BP | DIESEL FUEL HOSE 5/8 INCH X 8 FOOT BLACK HARDWALL HOSE 3/4 INCH MALE SWIVEL X MALE SWIVEL ENDS. UL330 AND ULC LISTED.                                                                          | "SOURCE" MODEL NO. GY5/8X8MSXMS (BP/AMOCO/ARCO)                              |
| 73                       | BP | DIESEL 5/8 INCH X 12 INCH BLACK HARDWALL WHIP HOSE 3/4 INCH MALE X MALE SWIVEL ENDS. UL330 AND ULC LISTED.                                                                                     | "SOURCE" MODEL NO. GY5/8X1MXMSWHIP (BP/AMOCO/ARCO)                           |
| <del>\( \)</del>         | BP | DIESEL 3/4 INCH RECONNECTABLE BREAKAWAY                                                                                                                                                        | "OPW" MODEL # 66REC-1000<br>(BP/AMOCO/ARCO)                                  |
| <del>\(\frac{75}\)</del> | BP | DIESEL FILTER                                                                                                                                                                                  | "CIMTEK" MODEL NO. 260-HS-10 (BP/ARCO                                        |

NOTE: THIS MATERIALS EQUIPMENT SCHEDULE IS NOT A COMPLETE LIST OF MATERIALS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MISCELLANEOUS EQUIPMENT, FITTINGS, MATERIALS AND DEVICES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM. CONTRACTOR TO COORDINATE MATERIALS DELIVERY SCHEDULE AND VERIFY EQUIPMENT COUNTS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL EQUIPMENT ARRIVES AT SITE IN UNDAMAGED CONDITION.







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3400 am/pm
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VERSION: V-15.0 PROJECT NO: 21730

DRAWING TITLE:

TANK AND PIPING MATERIALS LIST (1 OF 2)

SHEET NO

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                                               |                                                                     | D)/                           | OTHER EQUIPMENT AT DISPENSERS (ALL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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OPW-10P-0152                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (136)                                                                                                                                                   | G.C.                                                                           | 6" (SECONDARY) FIBERGLASS PIPE, 22'-25' LENGTH &                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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OPW-10P-0152EB5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (137)                                                                                                                                                   | G.C.                                                                           | 6" COUPLING (SECONDARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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                                               | 90                                                                  |                               | (NOTE ISLAND FORMS USED ONLY WHERE REQUIRED BY LOCAL JURISDICTION) 5'-0"x3'-0" (STANDARD) 7'-6"x3'-0" (FOR COLUMN WRAP) (REFER TO SPECIFIC MARKET REQUIREMENTS W/ BP PM BEFORE ORDERING)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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ROUND MONITORING MANHOLE, WATER TIGHT AND TRAFFIC RATED WITH IDENTIFICATION TRIANGLE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | "OPW" MODEL NO. 104AOW-1200 (BOLT DOWN & WATER TIGHT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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ROUND MANHOLE, BOLT DOWN, WATER TIGHT AND TRAFFIC RATED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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              | (154)                                                                                                                                                   | G.C.                                                                           | 3" 90 DEGREE ELBOW (SECONDARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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                                               |                                                                     |                               | W/ STICK LIFT KEY PLATE & STICK LIFT ASSEMBLY (AT DUAL TURBINES ONLY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 04                                                                  | BP                            | 40" COMPOSITE MANHOLEWATER TIGHT GASKET. TRAFFIC RATED W/ STICK LIFT KEY PLATE & STICK LIFT ASSEMBLY (AT TURBINES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | "FIBRELITE" 40" HEAVY DUTY FLAT SEALED COMPOSITE COVER WITH COMPOSITE FRAME MODEL # FL100GRAY-HD-SK12 W/LIFTING HANDLE MODEL # FL7A (1 ONLY PER SITE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (157)                                                                                                                                                   | G.C.                                                                           | 3" TEE (SECONDARY CROSSOVER)  4" (SECONDARY) FIBERGLASS PIPE, 22'-25' LENGTH &                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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781-485-12GRY W/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (158)                                                                                                                                                   | G.C.                                                                           | 4" (PRIMARY) FIBERGLASS PIPE, 22'-25' LENGTH & GL<br>4" COUPLING (SECONDARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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                                                                                                                                                                                                                                                                                                                                                                                                            | SLIDE ACTION HANDLE (1 ONLY PER SITE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (159)                                                                                                                                                   | G.C.                                                                           | 4" COUPLING (PRIMARY)  4" 90 DEGREE ELBOW (SECONDARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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                                               |                                                                     |                               | TURBINES (ALL AREAS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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                                                                                                                                                                              | (160)                                                                                                                                                   |                                                                                | 4" 90 DEGREE ELBOW (PRIMARY) 4" 45 DEGREE ELBOW (SECONDARY FLAT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| ITI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ЕМ                                                                  | BY                            | DESCRIPTION  VARIABLE SPEED SUBMERSIBLE TURBINE PUMPS -2 H.P. W/O PISTON LEAK DETECTION,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MANUFACTURER GASOLINE MODELS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 (100)                                                                                                                                                 | G.C.                                                                           | 4" 45 DEGREE ELBOW (SECONDARY CROSSOVER)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 05                                                                  | BP                            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | (161)                                                                                                                                                   |                                                                                | 4" 45 DEGREE ELBOW (PRIMARY)  4" TEE (SECONDARY FLAT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 05                                                                  | BP                            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  ———————————————————————————————————                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (161)                                                                                                                                                   | G.C.                                                                           | ` '                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  ———————————————————————————————————                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (162)                                                                                                                                                   | G.C.                                                                           | 4" TEE (SECONDARY FLAT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  ———————————————————————————————————                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                         | G.C.                                                                           | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  —— DIESEL AND FLEXFUEL MODELS  "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (162)                                                                                                                                                   | G.C.                                                                           | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  ———————————————————————————————————                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | (162)<br>(163)                                                                                                                                          | G.C.<br>G.C.                                                                   | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| (10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 06                                                                  | BP                            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  —— DIESEL AND FLEXFUEL MODELS  "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (162)<br>(163)<br>(164)<br>(165)                                                                                                                        | G.C. G.C. G.C.                                                                 | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REDUCED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| \(\frac{10}{10}\)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 06)<br>07)<br>08)<br>09)                                            | BP                            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  —— DIESEL AND FLEXFUEL MODELS  "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | (162)<br>(163)<br>(164)<br>(165)                                                                                                                        | G.C. G.C. G.C.                                                                 | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| \(\frac{10}{10}\)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 06 \ 07 \ 08 \ 09 \ 09                                              | BP<br>BP                      | M/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  —— DIESEL AND FLEXFUEL MODELS "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931  MANUFACTURER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 162<br>163<br>164<br>165<br>ITEM                                                                                                                        | G.C. G.C. G.C. G.C.                                                            | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MA (FOR HYDROSTATIC TANK MONITOR)  1-1/2" BALL VALVE-FULL PORT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| (10)<br>(10)<br>(10)<br>(11)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 06) 07) 08) 09)                                                     | BP<br>BP                      | M/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS  3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)  VENT TRANSITION CONTAINMENT SUMP AND VENT RACK (SINGLE WALL FRP)  (CONTRACTOR TO PLUMB ALL FITTINGS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | "FE PETRO" MODEL NO. FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214") —— DIESEL AND FLEXFUEL MODELS "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931  MANUFACTURER  "BRAVO" MODEL NO. B501-S-222 (3 RISERS) "BRAVO" MODEL NO. B501-S-2220(4 RISERS) ORDER W/ E0-EBS ELECTRICAL OFFSET ORDER W/ RS-501 SUPPORT RACK (3 RISER)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | (162)<br>(163)<br>(164)<br>(165)                                                                                                                        | G.C. G.C. G.C.                                                                 | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06 07 08 09 09 11 1 1 1 2 12                                        | BP BY                         | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)  VENT TRANSITION CONTAINMENT SUMP AND VENT RACK (SINGLE WALL FRP)  (CONTRACTOR TO PLUMB ALL FITTINGS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | "FE PETRO" MODEL NO. 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G.C. G.C. BY GC BP                                                        | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06) 07) 08) 09) EM 11)                                              | BP BY                         | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. 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FE-IST-2R (89" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214")  —— DIESEL AND FLEXFUEL MODELS  "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931  MANUFACTURER  "BRAVO" MODEL NO. B501-S-222 (3 RISERS) "BRAVO" MODEL NO. B501-S-2220(4 RISERS) ORDER W/ E0-EBS ELECTRICAL OFFSET ORDER W/ RS-501 SUPPORT RACK (3 RISER) ORDER W/ RS-503 SUPPORT RACK (4 RISER)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 162<br>163<br>164<br>165<br>ITEM<br>166<br>167<br>168                                                                                                   | G.C. G.C. G.C. BY GC BP BP                                                     | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06) 07) 08) 09) EM 11) 12)                                          | BP<br>BY<br>BP                | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E—COATED FINISHED 2 H.P. 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VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)  VENT TRANSITION CONTAINMENT SUMP AND VENT RACK (SINGLE WALL FRP) (CONTRACTOR TO PLUMB ALL FITTINGS)  TION FITTINGS (ALL AREAS - DESIGNER TO CONFIRM WITH 1" CONDUIT ENTRY FITTING  2" SINGLE WALL FRP BONDED PENETRATION FITTING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | "FE PETRO" MODEL NO. 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F-10S-0-F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 162<br>163<br>164<br>165<br>ITEM<br>166<br>167<br>168<br>169<br>171                                                                                     | G.C. G.C. G.C. BY GC BP                                                        | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06 07 08 09 09 09 09 09 09 09 09 09 09 09 09 09                     | BP BY BP                      | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. 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F-10S-0-F WITH EP100 ADHESIVE AS NEEDED "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 162<br>163<br>164<br>165<br>ITEM<br>166<br>167<br>168<br>169<br>171<br>172                                                                              | G.C. G.C.  BY GC BP BP BP BP                                                   | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06 07 08 09 09 09 09 09 09 09 09 09 09 09 09 09                     | BP BY  BP BP BP BP            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. 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G.C. G.C. BY GC BP BP BP BP BP BP                                         | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REDUCED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. 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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 06 07 08 09 09 09 09 09 09 09 09 09 09 09 09 09                     | BP BY  BP BP BP BP            | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E—COATED FINISHED 2 H.P. 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WITH 4" NPT BELL X MAY (FOR HYDROSTATIC TANK MONITOR)  1-1/2" BALL VALVE-FULL PORT (IF REQUIRED)  2" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT LINES E-85 APPLICATIONS ONLY) 3" BALL VALVE-FULL PORT (FOR SIPHON LINE IF USED)  1-1/2"x12" LONG FLEX CONNECTOR - MALE X MALE  2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE  2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE  2"x24" LONG FLEX CONNECTOR - 2" FEMALE X MALE  2"x24" LONG FLEX CONNECTOR - 2" FEMALE X MALE  2"x24" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  2"x24" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE  1"X18" LONG FLEX CONNECTOR - 3" MALE X 3" UNION (AT STAGE II VAPOR)  (NOT USED)  6" LOCKING TEST WELL PLUG  6" FACTORY SLOTTED PVC-1 PIPE, 0.02 SLOTS OR AS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| THE USE OF ALTERNATE PENETRATION FITTINGS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 06   07   08   09   09   09   01   01   02   02   02   02   02   02 | BP BP BP BP BP BP BP BP       | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BLENDS AND ALL ETHANOL BISENDS 3/4 H.P. VARRABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)  VENT TRANSITION CONTAINMENT SUMP AND VENT RACK (SINGLE WALL FRP)  (CONTRACTOR TO PLUMB ALL FITTINGS)  TION FITTINGS (ALL AREAS - DESIGNER TO CONFIRM WITH  1" CONDUIT ENTRY FITTING  2" SINGLE WALL FRP BONDED PENETRATION FITTING  (SW FRP PIPING)  3" SINGLE WALL FRP BONDED PENETRATION FITTING  (SW FRP PIPING)  4" SINGLE WALL FRP BONDED PENETRATION FOR GROUNDING PENETRATION  3" DOUBLE WALL FRP BONDED FITTING  (USED FOR 3" OVER 2" DW PIPING  4"X3" CONCENTRIC REDUCER (SECONDARY)  (USED FOR 3" OVER 2" DW PIPING)  4" DOUBLE WALL FRP BONDED PENETRATION FITTING  (USED FOR 3" OVER 2" DW PIPING)  5"X4" CENCENTRIC REDUCER (SECONDARY)  (USED FOR 4" OVER 3" DW PIPING)  5"X4" CENCENTRIC REDUCER (SECONDARY)  (USED FOR 4" OVER 3" DW PIPING)  5"X4" CENCENTRIC REDUCER (SECONDARY)                             | "FE PETRO" MODEL NO. 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FE-IST-3R (121" to 214") ————————————————————————————————————                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 162<br>163<br>164<br>165<br>ITEM<br>166<br>167<br>168<br>171<br>172<br>173<br>174<br>175<br>176<br>177<br>178<br>179                                    | G.C.  G.C.  G.C.  BY  GC  BP  BP  BP  BP  BP  BP  BP  BP  BP  B                | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE FOR PROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MAY (FOR HYDROSTATIC TANK MONITOR)  1-1/2" BALL VALVE-FULL PORT (IF REQUIRED)  2" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT LINES E-85 APPLICATIONS ONLY)  3" BALL VALVE-FULL PORT (FOR SIPHON LINE IF USED)  1-1/2"x12" LONG FLEX CONNECTOR - MALE X MALE SIMPLY AND SITE OF THE AND SITE O |
| ORK FOR THE USE OF ALTERNATE PENETRATION FITTINGS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 06   07   08   09   09   09   01   01   02   02   02   02   02   02 | BP | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESEL BILENDS AND ALL ETHANOL BLENDS  3/4 H.P. VARIABLE SPEED SUBMERSIBLE TURBINE FOR SINGLE DISPENSER USE  (NOT USED)  SIPHON CHECK VALVE FOR TURBINE PUMP (ALL TURBINES)  65 PSI CHECK VALVE (FOR SLAVE TURBINE ONLY)  (NOT USED)  MISCELLANEOUS TRANSITION SUMPS  DESCRIPTION  (NOT USED)  VENT TRANSITION CONTAINMENT SUMP AND VENT RACK (SINGLE WALL FRP)  (CONTRACTOR TO PLUMB ALL FITTINGS)  TION FITTINGS (ALL AREAS - DESIGNER TO CONFIRM WITH  1" CONDUIT ENTRY FITTING  2" SINGLE WALL FRP BONDED PENETRATION FITTING (SW FRP PIPING)  3" SINGLE WALL FRP BONDED PENETRATION FITTING (SW FRP PIPING)  4" SINGLE WALL FRP BONDED PENETRATION FITTING (SW FRP PIPING ONLY WHEN REQUIRED)  3/4" ENTRY FITTING — STANDARD VERSION FOR GROUNDING PENETRATION  3" DOUBLE WALL FRP BONDED FITTING (USED FOR 3" OVER 2" DW PIPING  4"33" CONCENTRIC REDUCER (SECONDARY) (USED FOR 3" OVER 2" DW PIPING  4" DOUBLE WALL FRP BONDED PENETRATION FITTING (USED FOR 4" OVER 3" DW PIPING)  5"X4" CENCENTRIC REDUCER (SECONDARY) (USED FOR 4" OVER 3" DW PIPING)  FIBERGLASS PIPING AND FITTINGS (ALL  DESCRIPTION (NOT USED) | "FE PETRO" MODEL NO. FE-IST-2R (88" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214") —— DIESEL AND FLEXFUEL MODELS — "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-IST-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931  "FE PETRO" MODEL NO. 402459931  "BRAVO" MODEL NO. B501-S-222 (3 RISERS) "BRAVO" MODEL NO. B501-S-22220(4 RISERS) ORDER W/ E0-EBS ELECTRICAL OFFSET ORDER W/ RS-501 SUPPORT RACK (3 RISER) ORDER W/ RS-503 SUPPORT RACK (4 RISER)  BP PM FITTINGS TO BE USED)  "BRAVO" MODEL NO. 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G.C.  G.C.  BY  GC  BP  BP  BP  BP  BP  BP  BP  GC  G.C.  G.C.           | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY)  2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY)  ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE REPROVIDED BY THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MAY (FOR HYDROSTATIC TANK MONITOR)  1-1/2" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT 2" STAINLESS STEEL BALL VALVE FOR E-85 FUEL, FULL FOR TURBINE PRODUCT LINES E-85 APPLICATIONS ONLY)  3" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT 1-1/2"x12" LONG FLEX CONNECTOR - MALE X MALE 1-1/2"x12" LONG FLEX CONNECTOR - MALE X MALE 2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE 2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE 2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 2"x24" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 2"x12" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 2" FEMALE X MALE 3"X18" LONG FLEX CONNECTOR - 3" MALE X 3" UNION (AT STAGE II VAPOR)  (NOT USED)  6" LOCKING TEST WELL PLUG  6" FACTORY SLOTTED PVC-1 PIPE, 0.02 SLOTS OR AS REGULATIONS W/ CAPPED BOTTOM (LENGTH AS REQUIR 6" PVC COUPLER. PRESS FIT WITH NO SOLVENT GLUES 6" SCH 40 SOLID PVC PIPING  4" NPT X 3" NPT DOUBLE TAP BUSHING-PLATED CAST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| OF WORK FOR THE USE OF ALTERNATE PENETRATION FITTINGS.  The part of the part o | 06   07   08   09   09   09   09   09   09   09                     | BP | W/ MAGVFC CONTROLLER PANEL 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. VARIABLE SPEED "AG" PUMPS, SUITABLE FOR ALL DIESSE BLENDS AND ALL ETHANOL BLENDS 3/4 H.P. 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| COPE OF WORK FOR THE USE OF ALTERNATE PENETRATION FITTINGS.  The property of the USE of Alternate Penetration Fittings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 06   07   08   09   09   09   01   01   02   02   02   02   02   02 | BP | W/ MAGVFC CONTROLLER PANEL. 208/230V, W/ 26" RISER, W/ "R" CHECK VALVE  ADVANCED PROTECTION E-COATED FINISHED 2 H.P. 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FE-IST-2R (88" to 151") "FE PETRO" MODEL NO. FE-IST-3R (121" to 214") —— DIESEL AND FLEXFUEL MODELS — "FE PETRO" MODEL NO. FE-IST-AP-2R (89" TO 151") "FE PETRO" MODEL NO. FE-IST-AP-3R (121" TO 214") "FE PETRO" MODEL NO. FE-IST-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. FE-STP-AP-75-VL2-R (89" TO 151")  "FE PETRO" MODEL NO. 400137908  "FE PETRO" MODEL NO. 402459931  "FE PETRO" MODEL NO. 402459931  "BRAVO" MODEL NO. B501-S-222 (3 RISERS) "BRAVO" MODEL NO. B501-S-22220(4 RISERS) ORDER W/ E0-EBS ELECTRICAL OFFSET ORDER W/ RS-501 SUPPORT RACK (3 RISER) ORDER W/ RS-503 SUPPORT RACK (4 RISER)  BP PM FITTINGS TO BE USED)  "BRAVO" MODEL NO. F-10S-0-F WITH EP100 ADHESIVE AS NEEDED  "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012020-622-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-622-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012030-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012030-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012030-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-628-3 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL NO. 012040-626-0 | 162<br>163<br>164<br>165<br>ITEM<br>166<br>167<br>168<br>171<br>172<br>173<br>174<br>175<br>176<br>177<br>178<br>179<br>180<br>181<br>182               | G.C.  G.C.  G.C.  BY  GC  BP  BP  BP  BP  BP  BP  C.C.  G.C.  G.C.  G.C.  G.C. | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)  4"X3" CONCENTRIC REDUCER (SECONDARY) 2" CAP  3"x2" REDUCER BUSHING (PRIMARY) 2"x1-1/2" FEMALE NPT REDUCER BUSHING (PRIMARY) ADDITIONAL SIMILAR FRP FITTING TYPES MAY BE FIND FROM THE CONTRACTOR.  MISCELLANEOUS EQUIP  DESCRIPTION  4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MAY (FOR HYDROSTATIC TANK MONITOR)  1-1/2" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT 2" STAINLESS STEEL BALL VALVE FOR E-85 FUEL, FULL FOR TURBINE PRODUCT LINES E-85 APPLICATIONS ONLY) 3" BALL VALVE-FULL PORT (FOR TURBINE PRODUCT (FOR SIPHON LINE IF USED)  1-1/2"x12" LONG FLEX CONNECTOR - MALE X MALE SECULATIONS ONLY)  2"X12" LONG FLEX CONNECTOR - 2" FEMALE X MALE SECULATIONS FLEX CONNECTOR - 2" FEMALE X MALE SECULATIONS ONLY)  (NOT USED)  6" LOCKING TEST WELL PLUG  6" FACTORY SLOTTED PVC-1 PIPE, 0.02 SLOTS OR AS REGULATIONS W/ CAPPED BOTTOM (LENGTH AS REQUIR 6" PVC COUPLER. PRESS FIT WITH NO SOLVENT GLUES  6" SCH 40 SOLID PVC PIPING  4" NPT X 3" NPT DOUBLE TAP BUSHING-PLATED CAST 1-1/2" OR 2" OR 3" GALVANIZIED STEEL PIPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

| (135)                 |      | (NOT USED)                                                                                                                                                    |                                                                                                                             |
|-----------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| (136)                 | G.C. | 6" (SECONDARY) FIBERGLASS PIPE, 22'-25' LENGTH & GLUE KITS                                                                                                    | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                                     |
| (137)                 | G.C. | 6" COUPLING (SECONDARY)                                                                                                                                       | MODEL #011060-120-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (138)                 | G.C. | 6" 90 DEGREE ELBOW (SECONDARY)                                                                                                                                | MODEL #012060-101-9 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (139)                 | G.C. | 6" 45 DEGREE FLBOW (SECONDARY)                                                                                                                                | MODEL #012060-360-9 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (140)                 | G.C. | 4" BELL X MALE THREADED ADAPTER                                                                                                                               | MODEL #012060-310-9 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| $\langle 141 \rangle$ | G.C. | 4" X 6" CONCENTRIC REDUCER                                                                                                                                    | MODEL #002040-191-7 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
|                       | G.C. | 4" X 6" CONCENTRIC REDUCER (WITH TEST PORT)                                                                                                                   | MODEL #012060-235-9 #012060-234-7 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                   |
| (142)                 |      |                                                                                                                                                               | MODEL #011020-069-2  "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                |
| (143)                 |      |                                                                                                                                                               | MODEL #012020-101-8 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (144)                 | G.C. |                                                                                                                                                               | MODEL #012020-360-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| \(\frac{145}{146}\)   | G.C. | 2" TEE (DDIMADY)                                                                                                                                              | MODEL #012020-310-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (147)                 | G.C. | 2" THREADED ADAPTER BELL x MALE FRP                                                                                                                           | MODEL #120020-410-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (148)                 | G.C. | 3" (PRIMARY) FIRERCIASS PIPE 22'-25' LENGTH & CLUE KITS                                                                                                       | MODEL #012020-191-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
|                       | 9.0. | 3" (SECONDÁRY) FIBERGLASS PIPE, 22'-25' LENGTH & GLUE KITS                                                                                                    | PRIMARY MODEL #011030-069-2 SECONDARY MODEL #011030-069-5 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                           |
| (149)                 | G.C. | 3" COUPLING (PRIMARY) 3" COUPLING (SECONDARY)                                                                                                                 | PRIMARY MODEL #012030-101-8 SECONDARY MODEL #012030-101-9                                                                   |
| (150)                 | G.C. | 3" 90 DEGREE ELBOW (PRIMARY)                                                                                                                                  | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL #012030-360-4                                                                 |
| (151)                 | G.C. | 3" 45 DECREE ELDOW (DRIMARY)                                                                                                                                  | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL #012030-310-4                                                                 |
| (152)                 | G.C. | 3" TEE (PRIMARY)                                                                                                                                              | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL #120030-410-4                                                                 |
| (153)                 | G.C. | 3" THREADED ADAPTER BELL x MALE FRP                                                                                                                           | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A<br>MODEL #012030-191-4                                                              |
| (154)                 | G.C. | 3" 90 DEGREE ELBOW (SECONDARY)                                                                                                                                | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL #012030-360-3                                                                 |
| (155)                 | G.C. | 3" 45 DEGREE ELBOW (SECONDARY FLAT) 3" 45 DEGREE ELBOW (SECONDARY CROSSOVER)                                                                                  | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A FLAT MODEL #012030-310-3                                                            |
| (156)                 | G.C. | 3" TEE (SECONDARY FLAT) 3" TEE (SECONDARY CROSSOVER)                                                                                                          | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A FLAT MODEL #120030-410-3                                                            |
| (157)                 | G.C. | 4" (SECONDARY) FIBERGLASS PIPE, 22'-25' LENGTH & GLUE KITS                                                                                                    | CROSSOVER MODEL #120030-411-3 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A MODEL #011040-069-5                                   |
| (158)                 | G.C. | 4" (PRIMARY) FIBERGLASS PIPE, 22'-25' LENGTH & GLUE KITS                                                                                                      | MODEL #011040-069-2 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
|                       | G.C. | l '                                                                                                                                                           | MODEL #012040-101-3<br>MODEL #012040-101-4<br>"NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                       |
| (159)                 | G.C. | 4" 90 DEGREE ELBOW (PRIMARY)                                                                                                                                  | MODEL #012040-360-3<br>MODEL #012040-360-4                                                                                  |
| 160                   | G.C. |                                                                                                                                                               | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A<br>FLAT MODEL #012040-310-3<br>CROSSOVER MODEL #012040-311-3<br>MODEL #012040-301-4 |
| (161)                 | G.C. | 4" TEE (SECONDARY FLAT) 4" TEE (SECONDARY CROSSOVER)                                                                                                          | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A FLAT MODEL #120040-410-3                                                            |
|                       |      |                                                                                                                                                               | CROSSOVER MODEL #120040-411-3 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                       |
| \(\frac{162}{163}\)   | G.C. |                                                                                                                                                               | MODEL #012040-238-3 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| (164)                 | G.C. | 2" CAP  3"x2" REDUCER BUSHING (PRIMARY)                                                                                                                       | MODEL #012020-180-4 "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                 |
| 104/                  | G.C. | , , , , , , , , , , , , , , , , , , ,                                                                                                                         | 3X2 MODEL #012030-231-4<br>2X1.5 MODEL #012020-231-4                                                                        |
| (165)                 | G.C. | BE THOUBED BY THE CONTINUE ON.                                                                                                                                | "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                                     |
| ITEM                  | ВҮ   | MISCELLANEOUS EQUIPMENT (ALL AREA DESCRIPTION                                                                                                                 | MANUFACTURER                                                                                                                |
| (166)                 | GC   | 4" DIA. PIPE 7'-0" LG. MAX. WITH 4" NPT BELL X MALE ADAPTER (FOR HYDROSTATIC TANK MONITOR)                                                                    | 4" SINGLE WALL FRP "NOV FIBERGLASS SYSTEMS" RED THREAD 11A                                                                  |
| (167)                 | BP   | 1-1/2" BALL VALVE-FULL PORT<br>(IF REQUIRED)                                                                                                                  | "JOMAR" MODEL NO. 100-707                                                                                                   |
| 168                   | BP   | 2" BALL VALVE—FULL PORT (FOR TURBINE PRODUCT LINES) 2" STAINLESS STEEL BALL VALVE FOR E—85 FUEL, FULL PORT (FOR TURBINE PRODUCT LINES E—85 APPLICATIONS ONLY) | "JOMAR" MODEL NO. 100-708 "JOMAR" MODEL NO. 100-968                                                                         |
| (169)                 | BP   | 3" BALL VALVE—FULL PORT (FOR SIPHON LINE IF USED)                                                                                                             | "JOMAR" MODEL NO. 100-710                                                                                                   |
| (171)                 | BP   | 1-1/2"x12" LONG FLEX CONNECTOR - MALE x MALE SWIVEL                                                                                                           | "HOSE MASTER" MODEL # FSMS120150<br>(U.L. LISTED)                                                                           |
| (172)                 | BP   | 1-1/2"x18" LONG FLEX CONNECTOR - MALE x MALE SWIVEL                                                                                                           | "HOSE MASTER" MODEL # FSMS180150<br>(U.L. LISTED)                                                                           |
| 173                   | BP   | 2"x12" LONG FLEX CONNECTOR — 2" FEMALE x MALE SWIVEL                                                                                                          | "HOSE MASTER" MODEL # FSFS120200 (U.L. LISTED)                                                                              |
| 174                   | BP   | 2"x18" LONG FLEX CONNECTOR — 2" FEMALE x MALE SWIVEL                                                                                                          | "HOSE MASTER" MODEL # FSFS180200 (U.L. LISTED)                                                                              |
| (175)                 | BP   | 2"x24" LONG FLEX CONNECTOR — 2" FEMALE x MALE SWIVEL                                                                                                          | "HOSE MASTER" MODEL # FSFS240200 (U.L. LISTED) "HOSE MASTER" MODEL # ESMU180300                                             |
| (176)<br>(177)        | BP   | 3"x18" LONG FLEX CONNECTOR — 3" MALE x 3" UNION (AT STAGE II VAPOR)  (NOT USED)                                                                               | "HOSE MASTER" MODEL # FSMU180300<br>(U.L. LISTED)                                                                           |
| (178)                 | BP   | 6" LOCKING TEST WELL PLUG                                                                                                                                     | "EBW" MODEL NO. 772-109-01                                                                                                  |
| (179)                 | BP   | 6" FACTORY SLOTTED PVC-1 PIPE, 0.02 SLOTS OR AS REQUIRED FOR LOCAL REGULATIONS W/ CAPPED BOTTOM (LENGTH AS REQUIRED)                                          | "ATLANTIC SCREEN" OR EQUAL                                                                                                  |
| (180)                 | G.C. | 6" PVC COUPLER. PRESS FIT WITH NO SOLVENT GLUES                                                                                                               | BY G.C.                                                                                                                     |
| (181)                 | G.C. | 6" SCH 40 SOLID PVC PIPING                                                                                                                                    | BY G.C.                                                                                                                     |
| 182                   | G.C. | 4" NPT x 3" NPT DOUBLE TAP BUSHING-PLATED CAST IRON (SIPHON STINGERS)                                                                                         | "OPW" MODEL NO. 53-0038                                                                                                     |
| (183)                 | G.C. | 1-1/2" OR 2" OR 3" GALVANIZIED STEEL PIPE                                                                                                                     | "ANVIL" OR EQUAL                                                                                                            |
| (184)                 | G.C. | 1-1/2" OR 2" OR 3" 90° OR 45° GALVANIZIED STEEL ELBOW                                                                                                         | "ANVIL" OR EQUAL                                                                                                            |

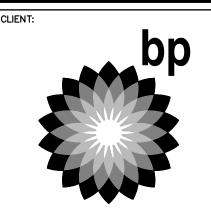
"ANVIL" OR EQUAL

| (1       | 86   | G.C. | 1-1/2" OR 2" OR 3" GALVANIZIED STEEL PIPE UNION                                                                                                                                                                                                                                                                    | "ANVIL" OR EQUAL                                                                                                                                                                                                                    |
|----------|------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1       | 187  | G.C. | 1" RIGID CONDUIT                                                                                                                                                                                                                                                                                                   | BY G.C.                                                                                                                                                                                                                             |
| (1       | 188  | G.C. | J-BOX "NEMA" 3R 4X4 OR 16" SQ.                                                                                                                                                                                                                                                                                     | "CROUSE HINDS" GUP215                                                                                                                                                                                                               |
| (1       | 189  | G.C. | J-BOX EXP. PROOF                                                                                                                                                                                                                                                                                                   | "CROUSE HINDS" 1" GUA SERIES                                                                                                                                                                                                        |
| (1       | 190  | G.C. | (NOT USED)                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
| (1       | 191  | G.C. | SEAL OFF W/ DRAIN                                                                                                                                                                                                                                                                                                  | "CROUSE HINDS" 1" EYS3 (VERTICAL) OR EYS31 (VERTICAL OR HORIZONTAL) W/ ECD15 UNIVERSAL DRAIN                                                                                                                                        |
| (1       | 192  | G.C. | SEAL OFF                                                                                                                                                                                                                                                                                                           | "CROUSE HINDS" 1" EYS3 (VERTICAL) OR EYS31 (VERTICAL OR HORIZONTAL)                                                                                                                                                                 |
|          |      |      | VEEDER ROOT EQUIPMENT (ALL AREA                                                                                                                                                                                                                                                                                    | S)                                                                                                                                                                                                                                  |
| I        | ТЕМ  | BY   | DESCRIPTION                                                                                                                                                                                                                                                                                                        | MANUFACTURER                                                                                                                                                                                                                        |
| 4        | 200  | BP   | TLS-450 PLUS ENVIRONMENTAL & INVENTORY MANAGEMENT SYSTEM WITH INTEGRAL PRINTER (W/ ALL REQUIRED SENSOR MODULES REQUIREMENTS, DIM MODULE, RS232 PORT, V-27 SOFTWARE)                                                                                                                                                | "VEEDER-ROOT" MODEL NO. 860091-302                                                                                                                                                                                                  |
| (2       | 201  | BP   | MAG SUMP LIQUID SENSOR, 12" MODEL, DISCRIMINATING, POSITION SENSITIVE (FOR ALL CORE AND NYC EAST OF ROCKIES - ALL SUMPS)                                                                                                                                                                                           | "VEEDER-ROOT" MODEL NO. 857080-111                                                                                                                                                                                                  |
| 4        | 202  | BP   | SUMP LIQUID SENSOR, POSITION SENSITIVE (FOR ALL CORE AND CA LOCATIONS WEST OF ROCKIES — ALL SUMPS)                                                                                                                                                                                                                 | "VEEDER-ROOT" MODEL NO. 794380-208 (PREFERRED) "VEEDER-ROOT" MODEL NO. 794380-323                                                                                                                                                   |
| (2       | 203  | BP   | HYDROSTATIC SENSOR-DUAL FLOAT (ALL LOCATIONS) (INCLUDES 4" RISER PIPE CAP MODEL 329992-002)                                                                                                                                                                                                                        | "VEEDER-ROOT" MODEL NO. 794380-303                                                                                                                                                                                                  |
| Ž        | 204  | BP   | TANK LEVEL 8' MAGNETOSTRICTIVE PROBE-0.1 GPH (USE 4" FLOAT IN KIT) TANK LEVEL 10' MAGNETOSTRICTIVE PROBE-0.1 GPH (USE 4" FLOAT IN KIT) TANK LEVEL 11' MAGNETOSTRICTIVE PROBE-0.1 GPH (USE WITH 10'Ø W/ MANWAY)  (ALCOHOL COMPATIBLE)                                                                               | "VEEDER-ROOT" MODEL NO. VR-846397-107 "VEEDER-ROOT" MODEL NO. VR-846397-109 "VEEDER-ROOT" MODEL NO. VR-846397-111 "VEEDER-ROOT" MODEL NO. VR-846397-407 "VEEDER-ROOT" MODEL NO. VR-846397-409 "VEEDER-ROOT" MODEL NO. VR-846397-410 |
| (2       | 205  | BP   | 2" FLOAT PROBE KIT (GASOLINE) (ONLY WHEN ATG BUNG NOT ON CENTER OF TANK) 4" FLOAT PROBE KIT W/ WATER/PHASE DETECTION FOR TANK LEVEL PROBE (GASOLINE) 2" FLOAT PROBE KIT (DIESEL) (ONLY WHEN ATG BUNG NOT ON CENTER OF TANK)                                                                                        | "VEEDER-ROOT" MODEL NO. VR-846400-100 "VEEDER-ROOT" MODEL NO. VR-886100-010 "VEEDER-ROOT" MODEL NO. VR-846400-111                                                                                                                   |
| 4        | 206  | BP   | 4" FLOAT PROBE INSTALL KIT FOR TANK LEVEL PROBE (ALCOHOL COMPATIBLE)                                                                                                                                                                                                                                               | "VEEDER-ROOT" MODEL NO. VR-846400-011 "VEEDER-ROOT" MODEL NO. VR-846400-004                                                                                                                                                         |
| 4        | 207  | BP   | TANK GAUGE PORT CAP AND RING KIT PER CARB EVR EXEC ORDER VR—101 & VR—102                                                                                                                                                                                                                                           | "VEEDER ROOT" MODEL NO. VR-312020-952                                                                                                                                                                                               |
| (Z       | 208  | BP   | DIGITAL 3 GPH PRESSURE LINE LEAK DETECTION AT TURBINES                                                                                                                                                                                                                                                             | "VEEDER-ROOT" MODEL NO. 859080-001                                                                                                                                                                                                  |
| 4        | 209  | BP   | OVERFILL ALARM WITH HORN/STROBE 120VAC                                                                                                                                                                                                                                                                             | "VEEDER-ROOT" MODEL NO. 790091-001                                                                                                                                                                                                  |
| 4        | 210  | BP   | ACKNOWLEDGEMENT SWITCH                                                                                                                                                                                                                                                                                             | "VEEDER-ROOT" MODEL NO. 790095-001                                                                                                                                                                                                  |
| 4        | 211) | BP   | MANIFOLD SIPHON BREAK VALVE KIT                                                                                                                                                                                                                                                                                    | "VEEDER-ROOT" MODEL NO. 330020-031                                                                                                                                                                                                  |
|          | 212  |      |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                     |
| 4        | 213  |      |                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                     |
| 4        | 214  |      | (NOT USED)                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
| 4        | 215  |      | (NOT USED)                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
| $\vdash$ | 216  |      | (NOT USED)                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
|          | 217  |      | (NOT USED)                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                     |
|          |      |      | MATERIAL LIST AT BUILDING (ALL AREAS                                                                                                                                                                                                                                                                               | <b>5)</b>                                                                                                                                                                                                                           |
| 17       | TEM  | ВҮ   | DESCRIPTION                                                                                                                                                                                                                                                                                                        | MANUFACTURER                                                                                                                                                                                                                        |
|          | 220  |      | ELECTRICAL POWER AND CONTROL CABINET "EPC" PREFABRICATED WITH ALL ELECTRICAL PANELS, BREAKERS, TURBINE CONTROLLERS, ISOLATION RELAYS, DISPENSER LOW VOLTAGE DISCONNECT (DATA/CRIND/INTERCOM/ETHERNET) AND FIELD WIRING TERMINAL BLOCKS. SITE SPECIFIC CONFIGURATION PROVIDED AND U.L. LISTED FOR THIS APPLICATION. | "PER BP REQUIREMENTS" (SUPPLIED DIRECTLY TO SITE)                                                                                                                                                                                   |
| (2       | 221  | BP   | POWER CONDITIONER                                                                                                                                                                                                                                                                                                  | "ONEAC" MODEL NO. CB1115 OR EQUAL W/ HARD WIRE PART #011-002                                                                                                                                                                        |
| (2       | 223  | BP   | VERIFONE SITE COMMANDER SITE CONTROLLER                                                                                                                                                                                                                                                                            | "VERIFONE" COMMANDER SITE CONTROLLER                                                                                                                                                                                                |
| (2       | 224  | BP   | TOKHEIM INTERCONNECT/ISOLATION MODULE FOR PIC UNITS (ARCO BRANDED SITES ONLY)                                                                                                                                                                                                                                      | "TOKHEIM" SAM PIC INTERFACE UNIT<br>(SUPPLIED DIRECTLY FROM TOKHEIM)                                                                                                                                                                |
|          | 225  | BP   | TOKHEIM SAM CONTROLLER BOX FOR PIC UNITS (ARCO BRANDED SITES ONLY)                                                                                                                                                                                                                                                 | "TOKHEIM" SAM CONTROLLER BOX<br>(SUPPLIED DIRECTLY FROM TOKHEIM)                                                                                                                                                                    |
| 2        | 228  | BP   | POS MODULE (POINT OF SALE)                                                                                                                                                                                                                                                                                         | POS SYSTEM BP CONFIGURATION (SOFTWARE SUPPLIED DIRECTLY FROM MANUFACTURER)                                                                                                                                                          |
|          | 229  | BP   | INTERCOM TO DISPENSERS (CONSOLE MOUNTED AT SALES COUNTER)                                                                                                                                                                                                                                                          | "3M" INTERCOM MASTER MODEL # 3M-D-120 (12 CHANNEL) DISPENSER MOUNTED SPEAKERS BY DISP. MANF.                                                                                                                                        |
| 2        | 230> | BP   | EMERGENCY PUMP SHUT OFF SWITCH (INDOOR/OUTDOOR)                                                                                                                                                                                                                                                                    | "SQUARE D" CLASS 9001 KR3RH6 PUSH-BUTTON N.C. WITH BOX AND COVER. (FOR OUTDOOR NEMA 3R ENCLOSURE REQUIRED) (OR EQUAL)                                                                                                               |
| (2       | 231> | BP   | EMERGENCY PUMP SHUT OFF RESET SWITCH (INDOOR AT SALES COUNTER)                                                                                                                                                                                                                                                     | "SQUARE D" CLASS 9001 KR3RH5 PUSH-BUTTON N.C. WITH BOX AND COVER. (FOR OUTDOOR NEMA 3R ENCLOSURE REQUIRED) (OR EQUAL)                                                                                                               |
| 1 /      | , ¬\ |      | 1                                                                                                                                                                                                                                                                                                                  | "HUBBELL" SPECIFICATION GRADE                                                                                                                                                                                                       |

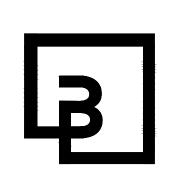
NOTE: THIS MATERIALS EQUIPMENT SCHEDULE IS NOT A COMPLETE LIST OF MATERIALS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MISCELLANEOUS EQUIPMENT, FITTINGS, MATERIALS AND DEVICES NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM. CONTRACTOR TO COORDINATE MATERIALS DELIVERY SCHEDULE AND VERIFY EQUIPMENT COUNTS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THAT ALL EQUIPMENT ARRIVES AT SITE IN UNDAMAGED CONDITION.

G.C. MAINTENANCE RECEPTACLE

"HUBBELL" SPECIFICATION GRADE RECEPTACLE GFCI IN WEATHERPROOF COVER







Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: **SWC S MERIDIAN** 

@ HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD DESIGNED BY: NP/RF ALLIANCE Z&DM: CHECKED BY: OV BP REPM:

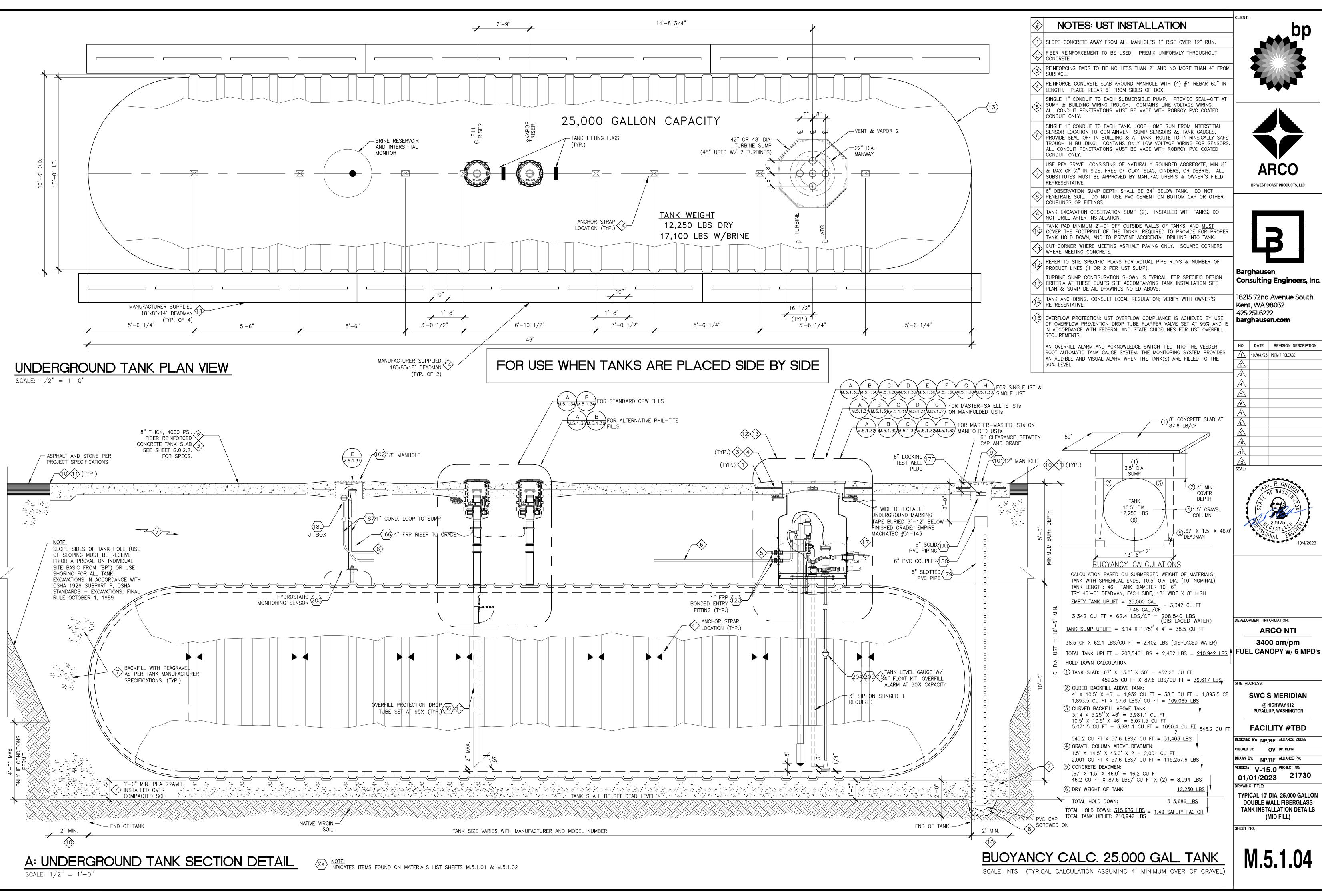
DRAWN BY: NP/RF ALLIANCE PM:

VERSION: V-15.0

01/01/2023

DRAWING TITLE:

TANK AND PIPING MATERIALS LIST



Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 barghausen.com

| NO.                      | DATE     | REVISION DESCRIPTION |
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|                          | 10/04/23 | PERMIT RELEASE       |
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**ARCO NTI** 

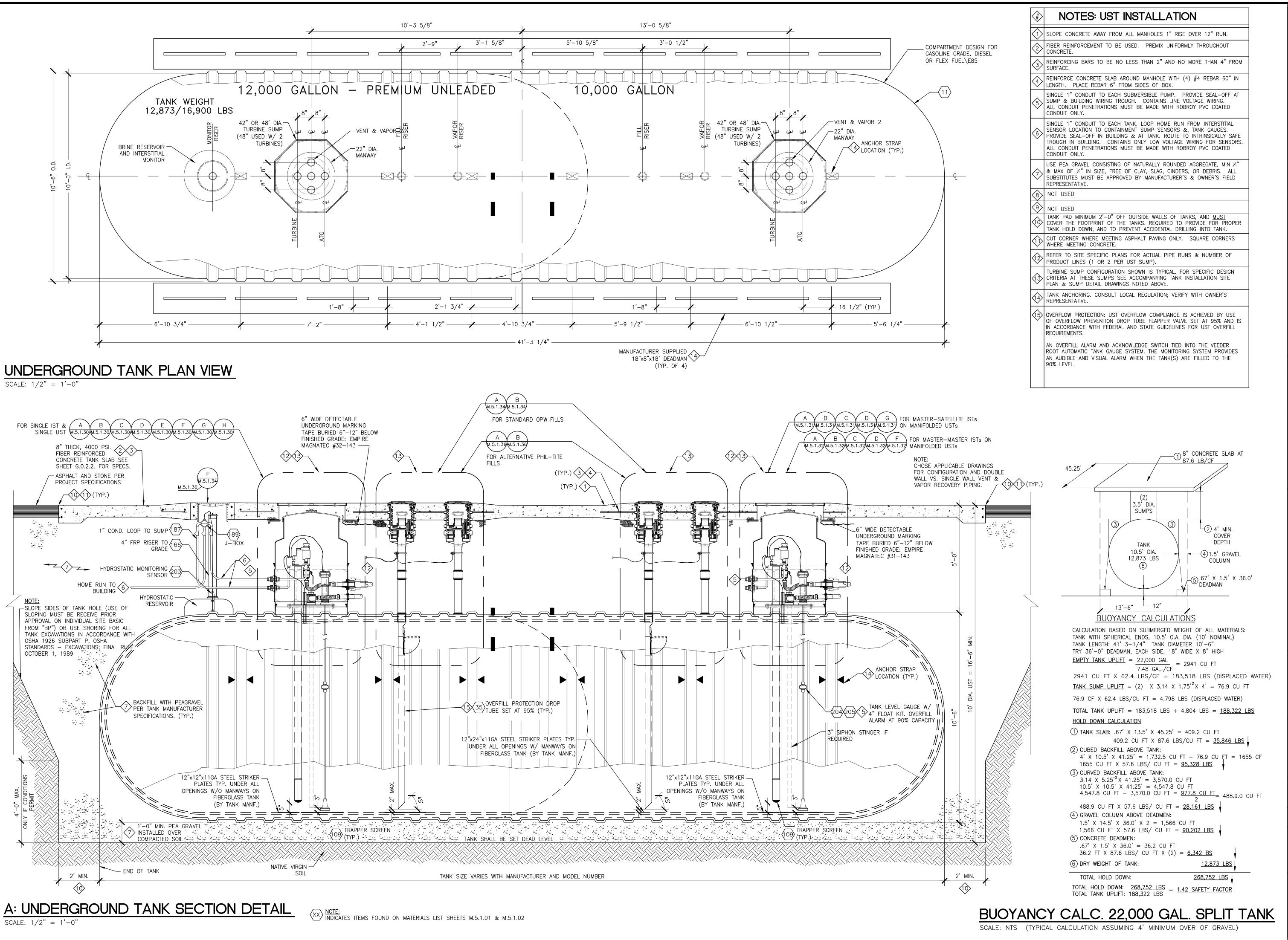
3400 am/pm

**SWC S MERIDIAN** @ HIGHWAY 512 **PUYALLUP, WASHINGTON** 

**FACILITY #TBD** DESIGNED BY: NP/RF ALLIANCE Z&DM:

CHECKED BY: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO:

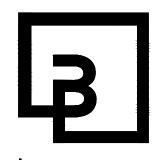
TYPICAL 10' DIA. 25,000 GALLON DOUBLE WALL FIBERGLASS TANK INSTALLATION DETAILS



bp



BP WEST COAST PRODUCTS, LLC



Barghausen
Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 **barghausen.com** 

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DEVELOPMENT INFORMATION:

ARCO NTI

3400 am/pm FUEL CANOPY w/ 6 MPD's

> © HIGHWAY 512 PUYALLUP, WASHINGTON

FACILITY #TBD

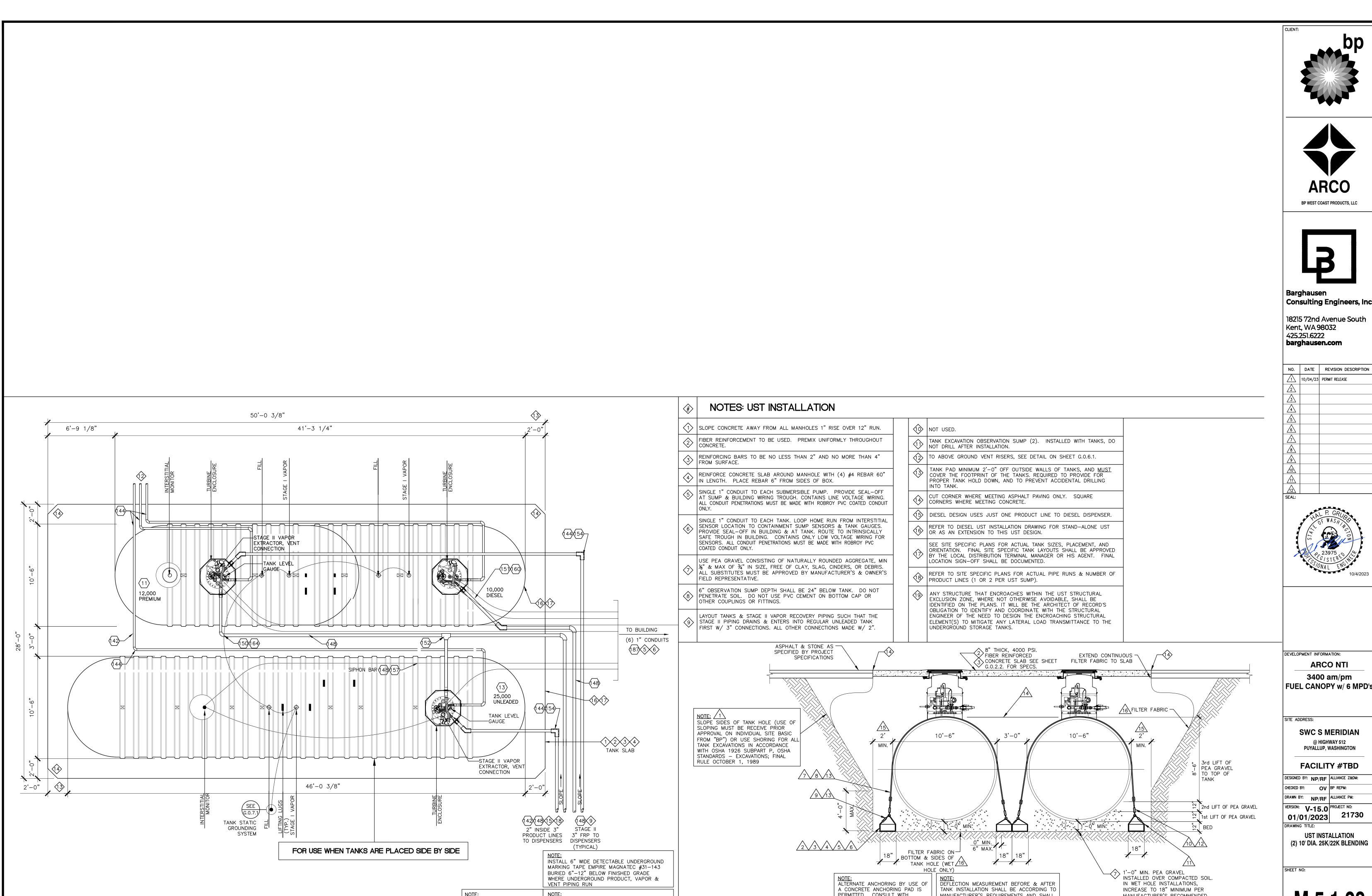
DESIGNED BY: NP/RF ALLIANCE Z&DM:

TYP. 10' DIA.12,000/10,000 GALLON DOUBLE WALL FIBERGLASS TANK INSTALLATION DETAILS

SHEET NO:

SITE ADDRESS:

M.5.1.15



VENT PIPING RUN

TANKS ARE USED, ALIGN THE WALL FIBERGLASS PIPING BY N.O.V. RED

ALL VENT AND VAPOR PIPING SHALL BE SINGLE

THREAD IIA. DOUBLE WALL VENT AND VAPOR

RECOVERY ONLY TO BE INSTALLED WHEN

REQUIRED BY LOCAL JURISDICTION.

NOTE: WHERE DIFFERENT SIZED

FILL PORTS TO FACILITATE

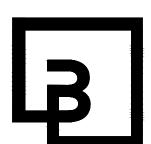
TANKER DELIVERIES

A: TANK INSTALLATION - PLAN VIEW - BLENDING

**ADJACENT LAYOUT** 

SCALE: 1/4" = 1'-0"





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| NO.                      | DAIL     | REVISION DESCRIPTION |
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DEVELOPMENT INFORMATION: ARCO NTI 3400 am/pm FUEL CANOPY w/ 6 MPD's

> **SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

**FACILITY #TBD** DESIGNED BY: NP/RF ALLIANCE Z&DM:

DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO: 01/01/2023 21730

**UST INSTALLATION** (2) 10' DIA. 25K/22K BLENDING

M.5.1.28

TANK INSTALLATION SHALL BE ACCORDING TO

MANUFACTURER'S REQUIREMENTS AND SHALL

ALL INFORMATION SHALL BE COMPLETED AS

BE WITHIN MANUFACTURER'S TOLERANCES.

PER THE MANUFACTURER'S WARRANTY

DOCUMENTATION.

PERMITTED. CONSULT WITH

SUCH SHALL BE INSTALLED

RECOMMENDATION.

C: TYPICAL TANK ANCHORING DETAIL

SCALE: 1/4" = 1'-0"

OWNER'S REPRESENTATIVE AND

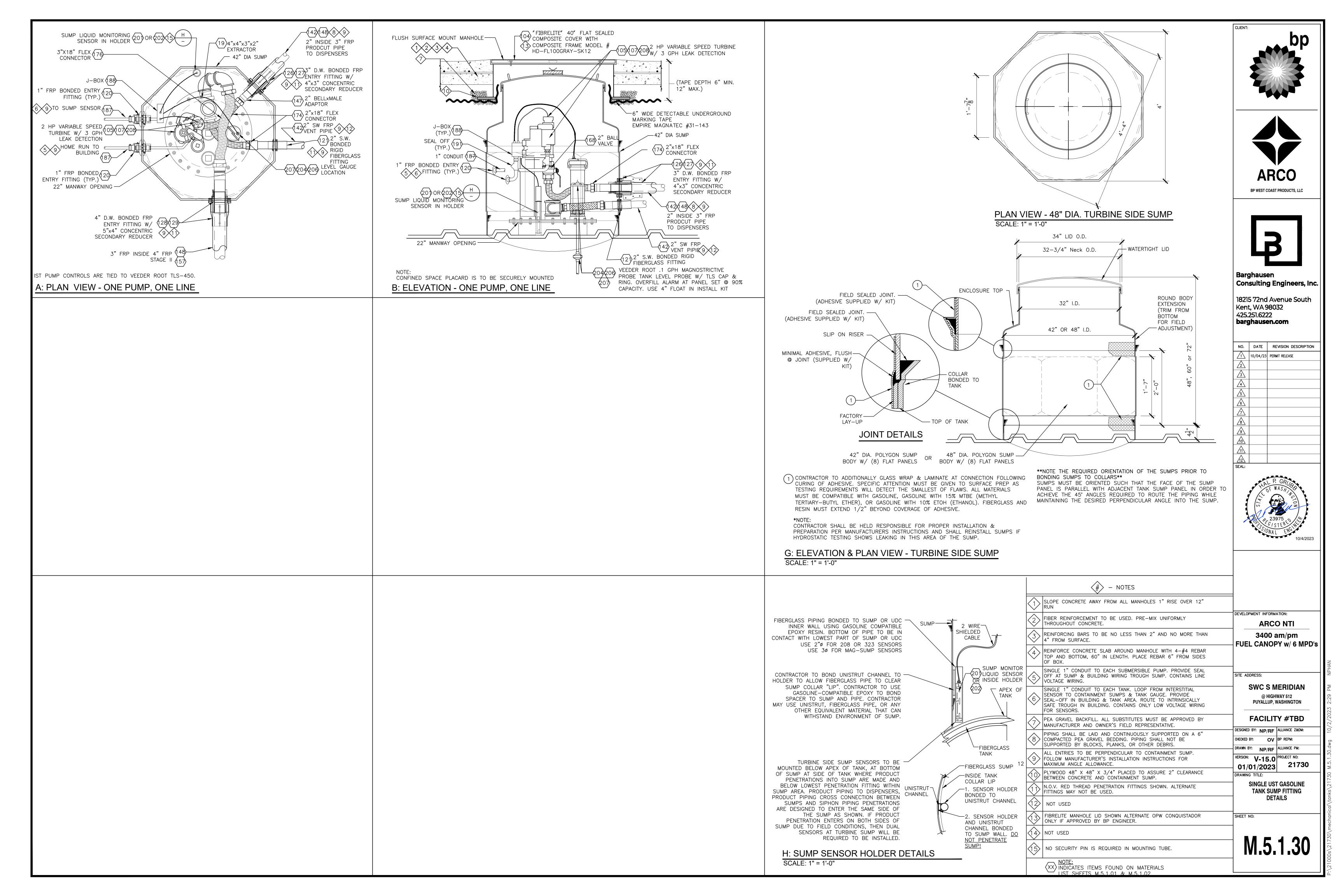
ACCORDING TO MANUFACTURER'S

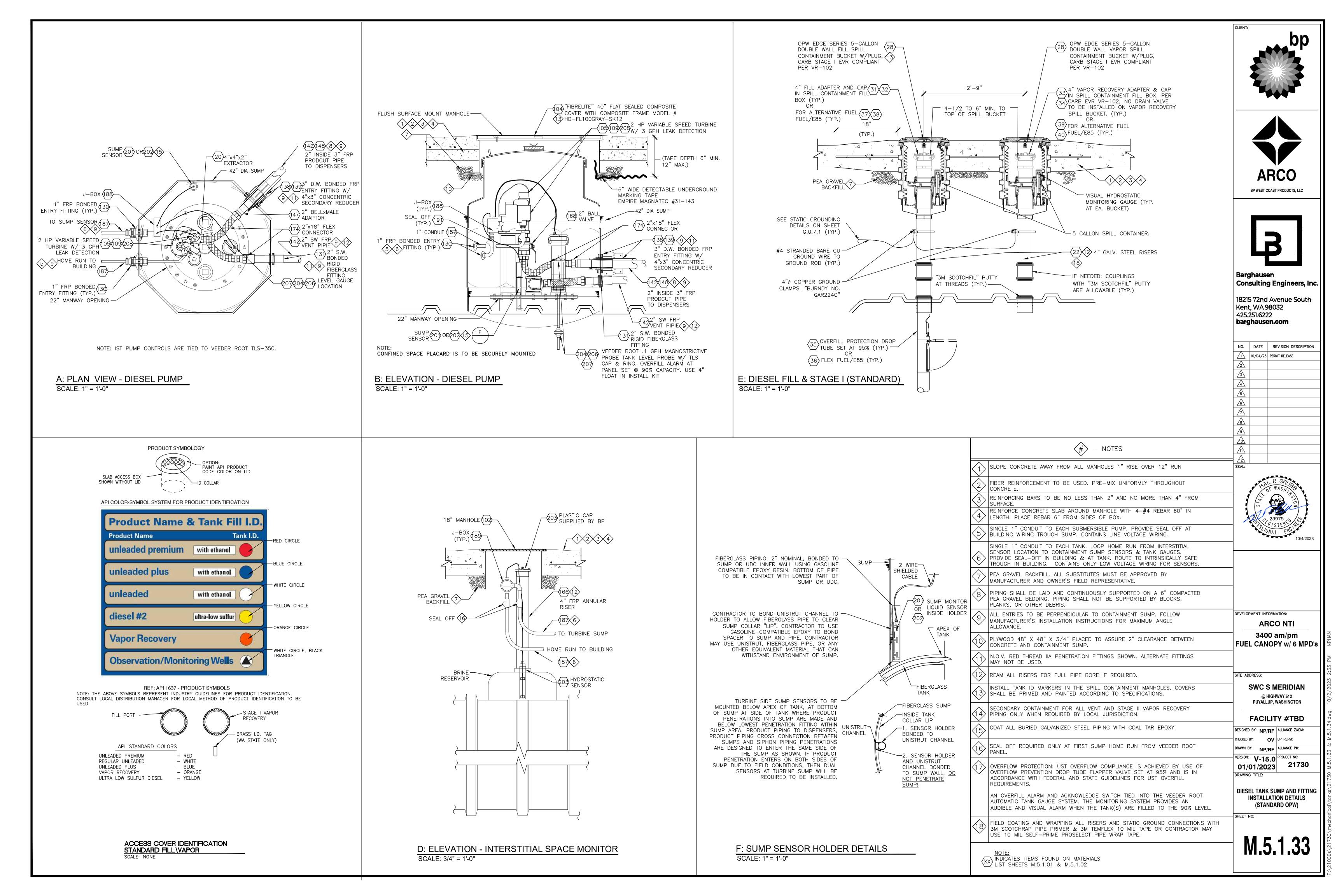
INCREASE TO 18" MINIMUM PER

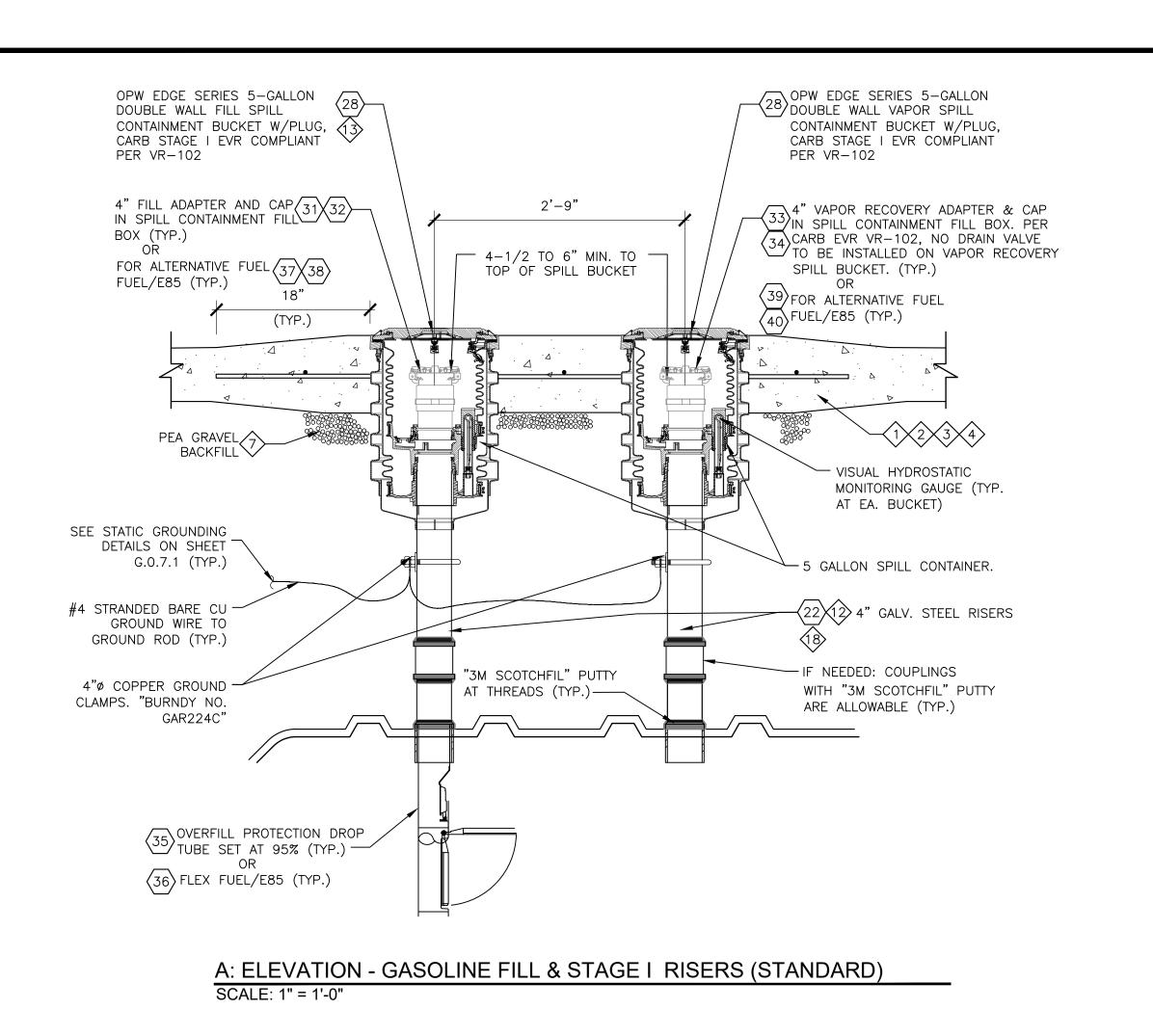
MANUFACTURER'S RECOMMENDED INSTALLATION GUIDELINES.

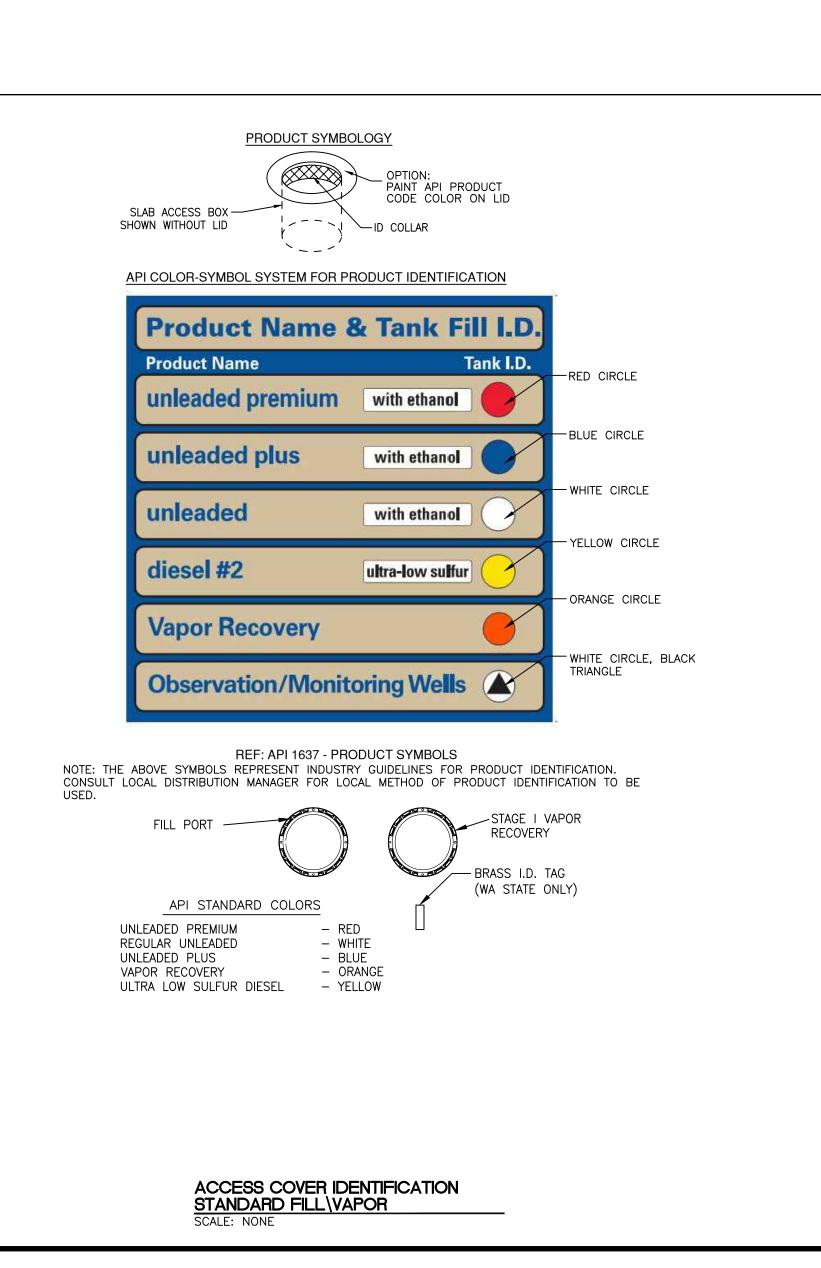
NOTE:
INDICATES ITEMS FOUND ON MATERIALS

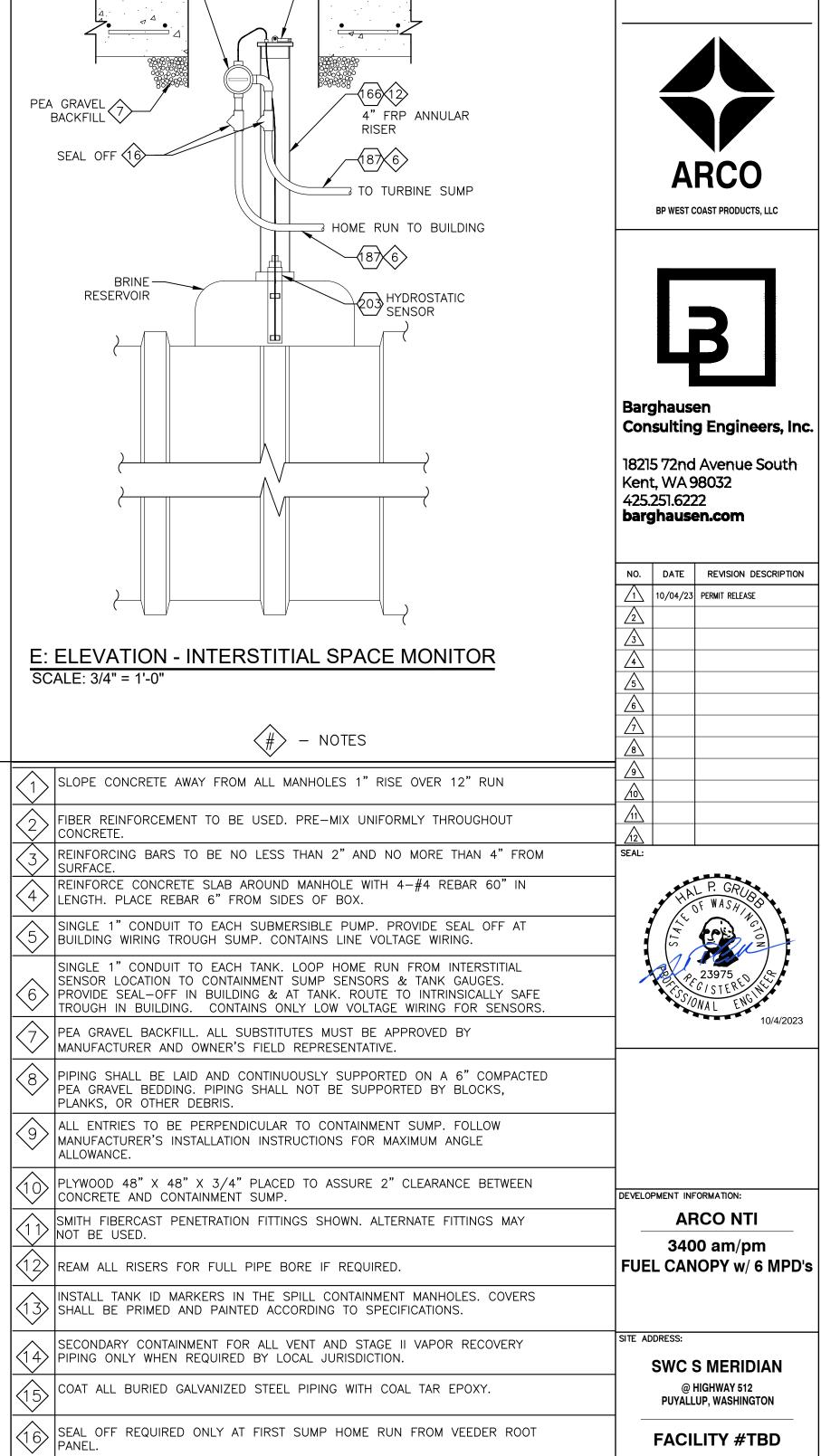
LIST SHEETS M.5.1.01 & M.5.1.02











|OVERFLOW PROTECTION: UST OVERFLOW COMPLIANCE IS ACHIEVED BY USE OF

AN OVERFILL ALARM AND ACKNOWLEDGE SWITCH TIED INTO THE VEEDER ROOT

(18) 3M SCOTCHRAP PIPE PRIMER & 3M TEMFLEX 10 MIL TAPE OR CONTRACTOR MAY

USE 10 MIL SELF-PRIME PROSELECT PIPE WRAP TAPE.

NOTE:
INDICATES ITEMS FOUND ON MATERIALS
LIST SHEETS M.5.1.01 & M.5.1.02

AUDIBLE AND VISUAL ALARM WHEN THE TANK(S) ARE FILLED TO THE 90% LEVEL.

FIELD COATING AND WRAPPING ALL RISERS AND STATIC GROUND CONNECTIONS WITH

AUTOMATIC TANK GAUGE SYSTEM. THE MONITORING SYSTEM PROVIDES AN

OVERFLOW PREVENTION DROP TUBE FLAPPER VALVE SET AT 95% AND IS IN

ACCORDANCE WITH FEDERAL AND STATE GUIDELINES FOR UST OVERFILL

REQUIREMENTS.

**FACILITY #TBD** 

DESIGNED BY: NP/RF ALLIANCE Z&DM:

CHECKED BY: OV BP REPM:

DRAWN BY: NP/RF ALLIANCE PM:

VERSION: V-15.0 PROJECT NO:

DRAWING TITLE:

01/01/2023 21730

FILL /VAPOR II

**INSTALLATION DETAILS** 

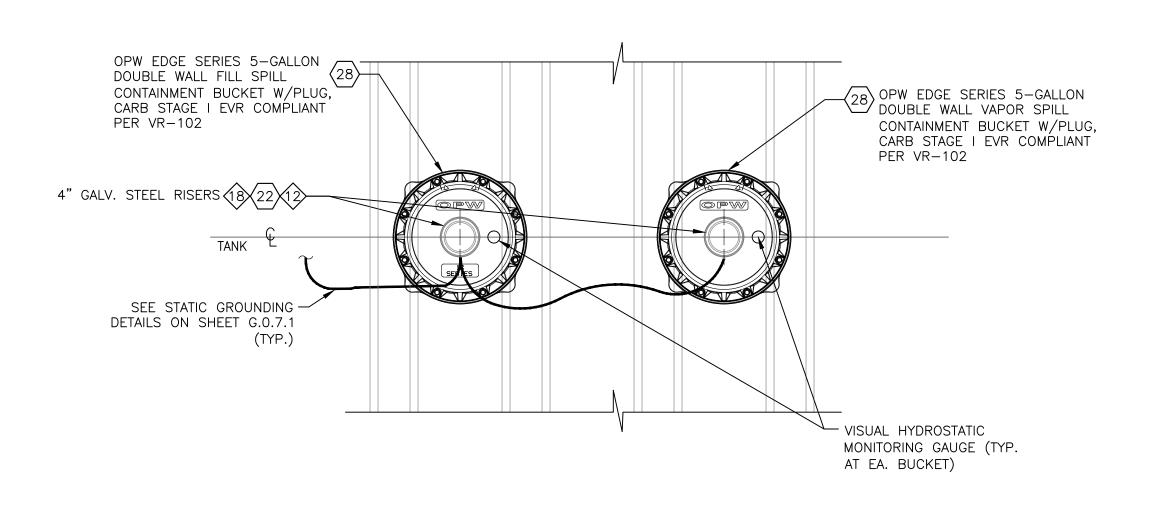
(STANDARD OPW)

PLASTIC CAP SUPPLIED BY BP

 $\sqrt{1}\sqrt{2}\sqrt{3}\sqrt{4}$ 

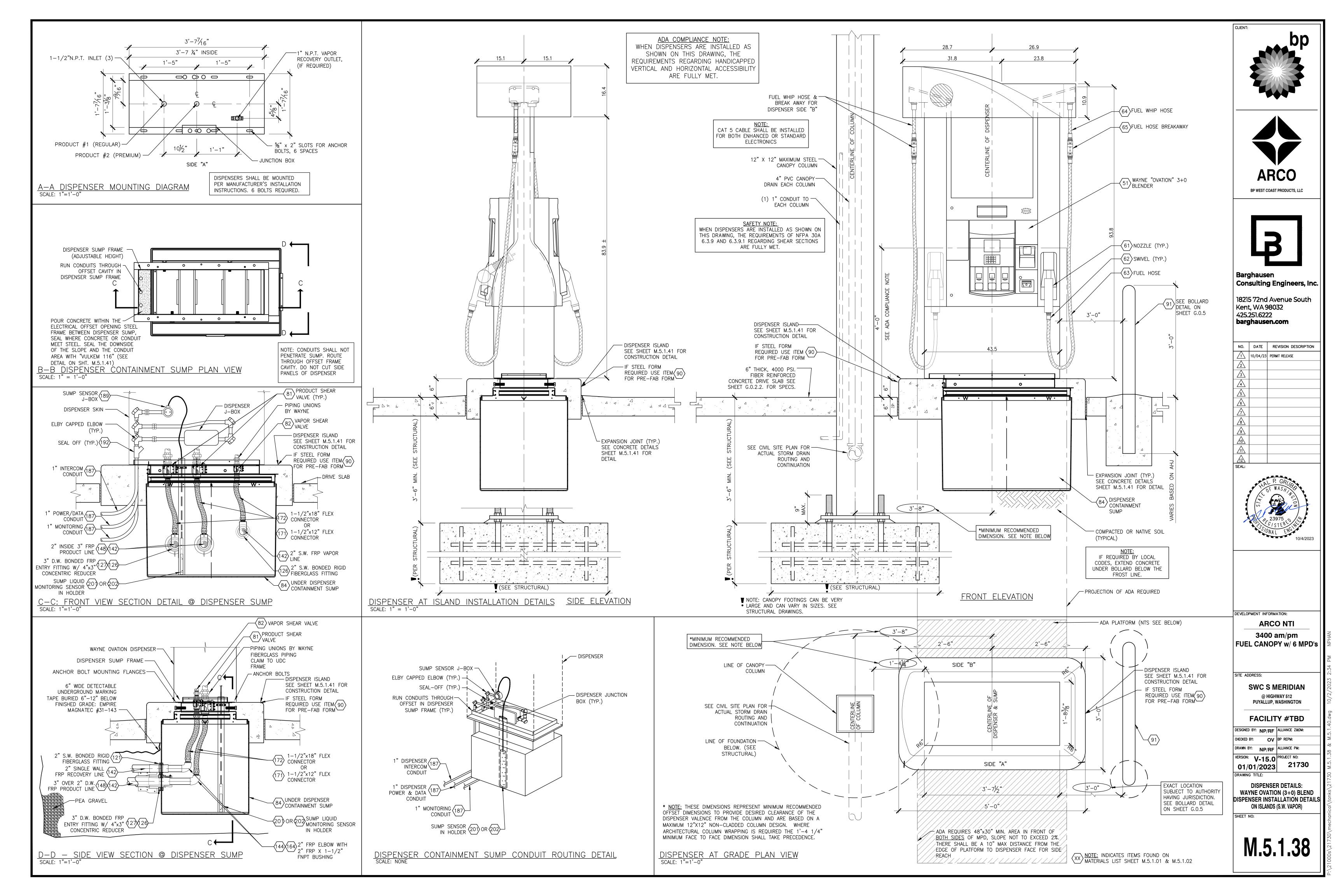
18" MANHOLE (102)-

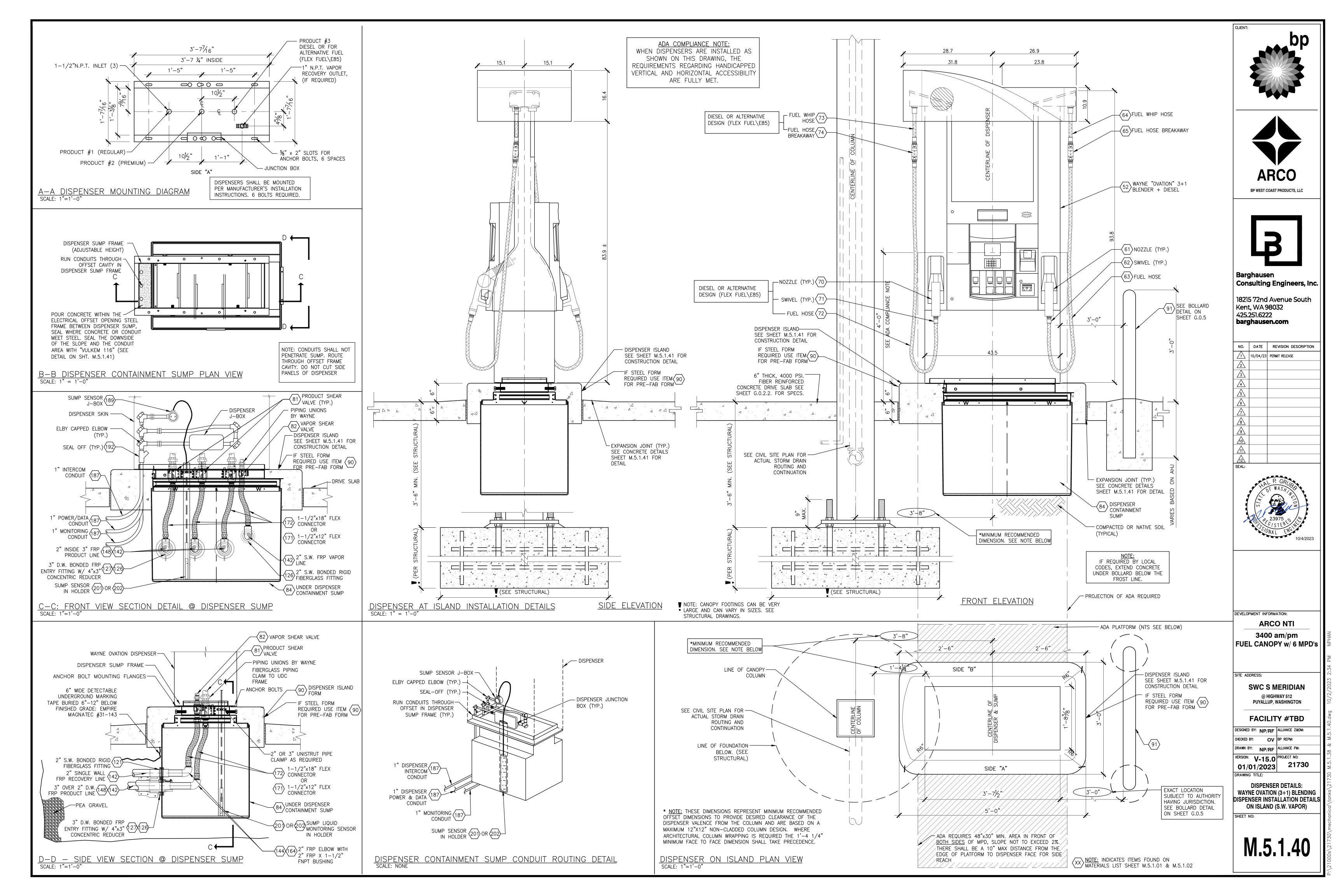
J-BOX (TYP.) (189)-

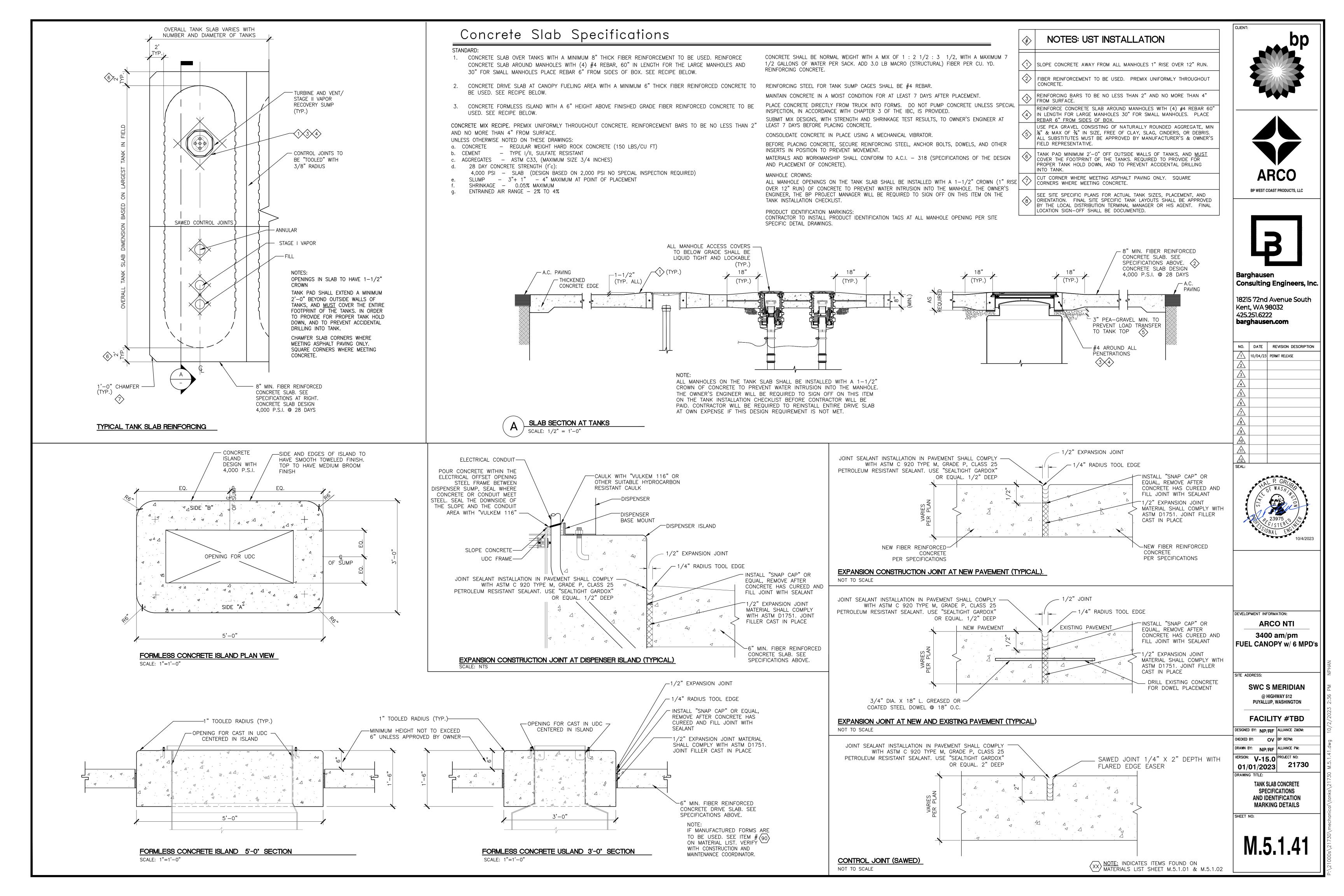


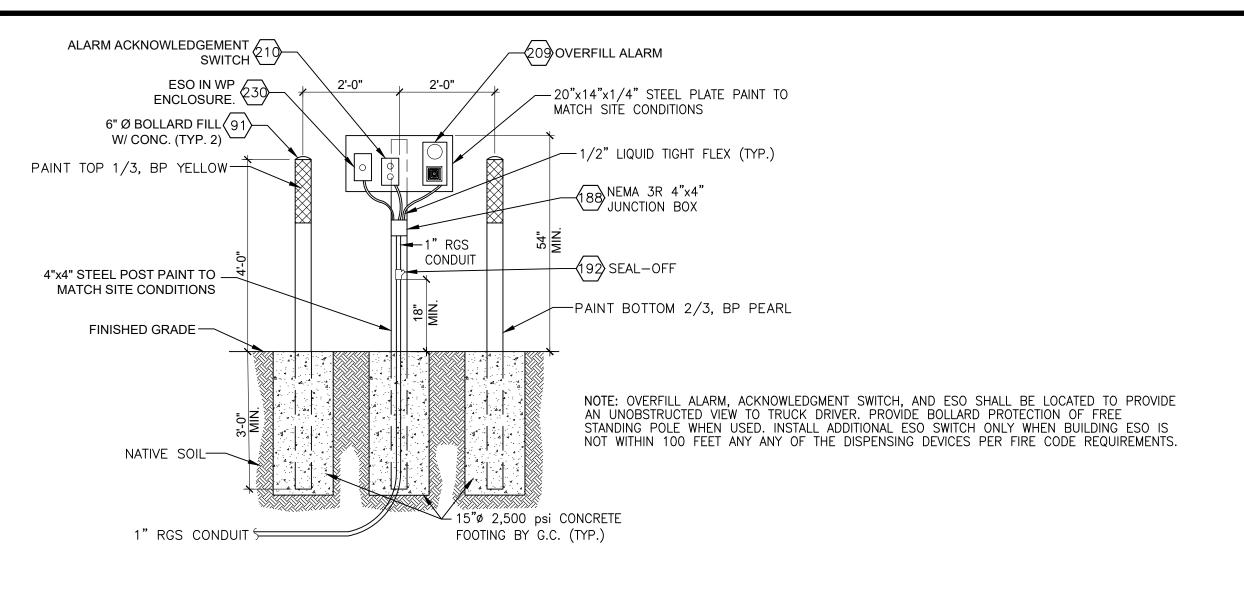
B: TYPICAL TANK TOP DETAIL AT FILL & STAGE I RISERS

SCALE: 1" = 1'-0"

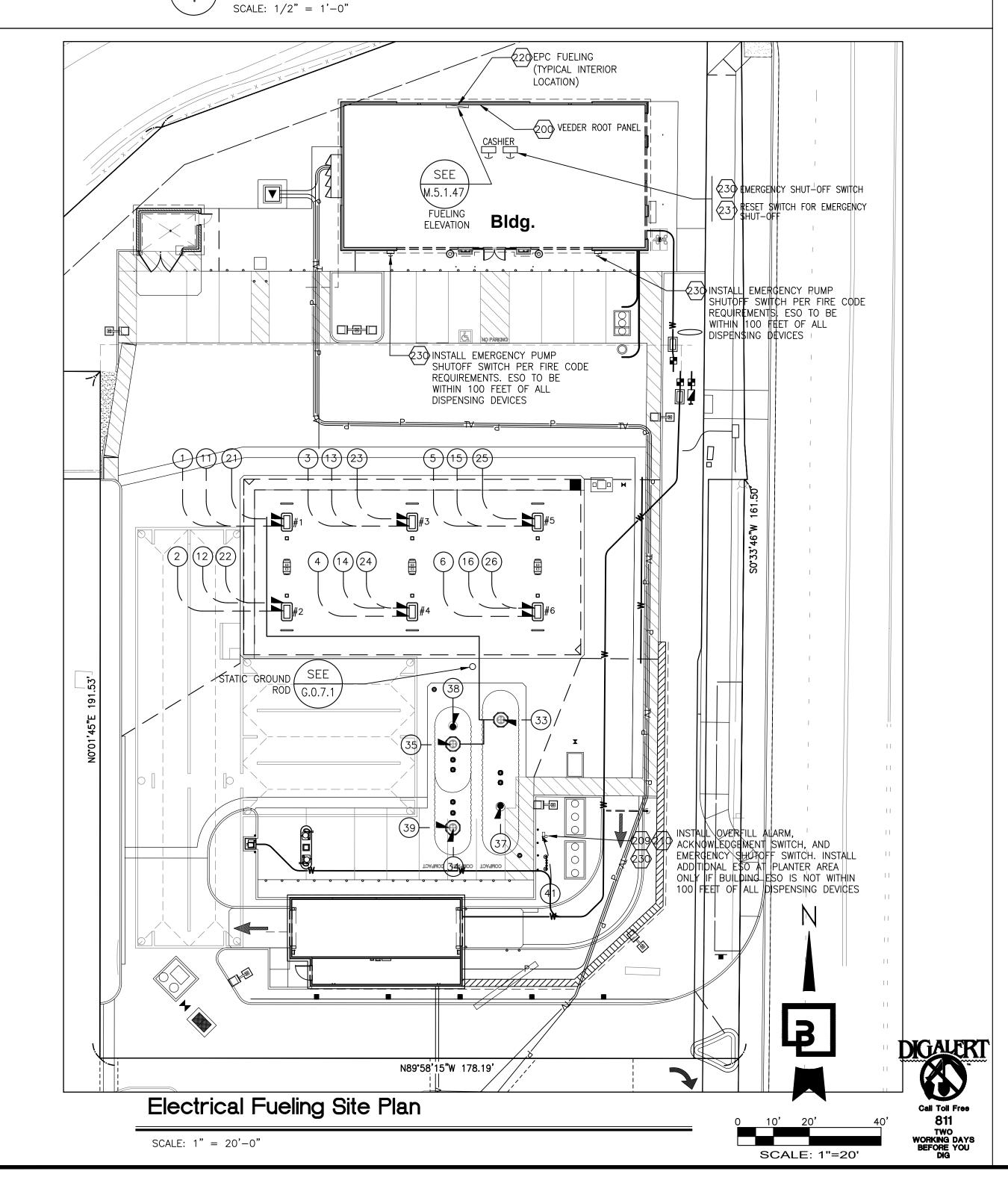








# Overfill Alarm, Acknowledgment Switch and ESO



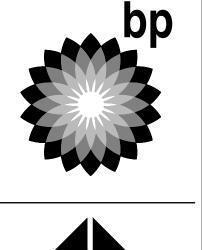
### N.E.C. HAZARDOUS AREA NOTES

- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (UNDERGROUND TANK FILL OPENING) EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN THE DIVISION 1 OR 2 CLASSIFIED LOCATION.

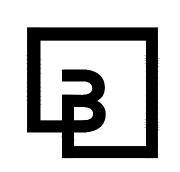
  EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:
  UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN A HORIZONTAL RADIUS OF 10 FEET FROM A LOOSE FILL CONNECTION AND WITHIN A HORIZONTAL RADIUS OF 5 FEET FROM A TIGHT FILL CONNECTION.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (UNDERGROUND TANK VENT-DISCHARGING UPWARD)
  EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  WITHIN 5 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS. EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION: SPACE BETWEEN 5 FEET AND 10 FEET OF OPEN END OF VENT, EXTENDING IN ALL DIRECTIONS.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (REMOTE PUMP OUTDOOR)
  EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL IF ANY PART IS WITHIN A
  HORIZONTAL DISTANCE OF 10 FT. FROM ANY EDGE OF PUMP.
  EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:
  WITHIN 3 FEET OF ANY EDGE OF PUMP, EXTENDING IN ALL DIRECTIONS. ALSO
  UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 10 FEET HORIZONTALLY FROM ANY
  EDGE OF PLIMP

- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE PITS)
  EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  ANY PIT, BOX, OR SPACE BELOW GRADE LEVEL, ANY PART OF WHICH IS WITHIN
  THE DIVISION 1 OR 2 CLASSIFIED LOCATION.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE DISPENSER)
  EXTENT OF CLASS 1, GROUP D, DIVISION 1 LOCATION:
  SPACE CLASSIFICATION INSIDE THE DISPENSER ENCLOSURE IS COVERED IN ANSI/UL 87,
  "POWER OPERATED DISPENSING DEVICES FOR PETROLEUM PRODUCTS."
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE DISPENSER)
  EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:
  WITHIN 18 INCHES HORIZONTALLY IN ALL DIRECTIONS EXTENDING TO GRADE FROM
  (1) THE DISPENSER ENCLOSURE OR (2) THAT PORTION OF THE DISPENSER
  ENCLOSURE CONTAINING LIQUID HANDLING COMPONENTS.
- TYPICAL N.E.C. ARTICLE 514 CLASS 1 LOCATION (DISPENSING DEVICE OUTDOOR) EXTENT OF CLASS 1, GROUP D, DIVISION 2 LOCATION:

  UP TO 18 INCHES ABOVE GRADE LEVEL WITHIN 20 FEET HORIZONTALLY OF ANY
  EDGE OF ENCLOSURE.







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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm FUEL CANOPY w/ 6 MPD's

SITE ADDRESS:

**SWC S MERIDIAN** @ HIGHWAY 512 **PUYALLUP, WASHINGTON** 

**FACILITY #TBD** DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO:

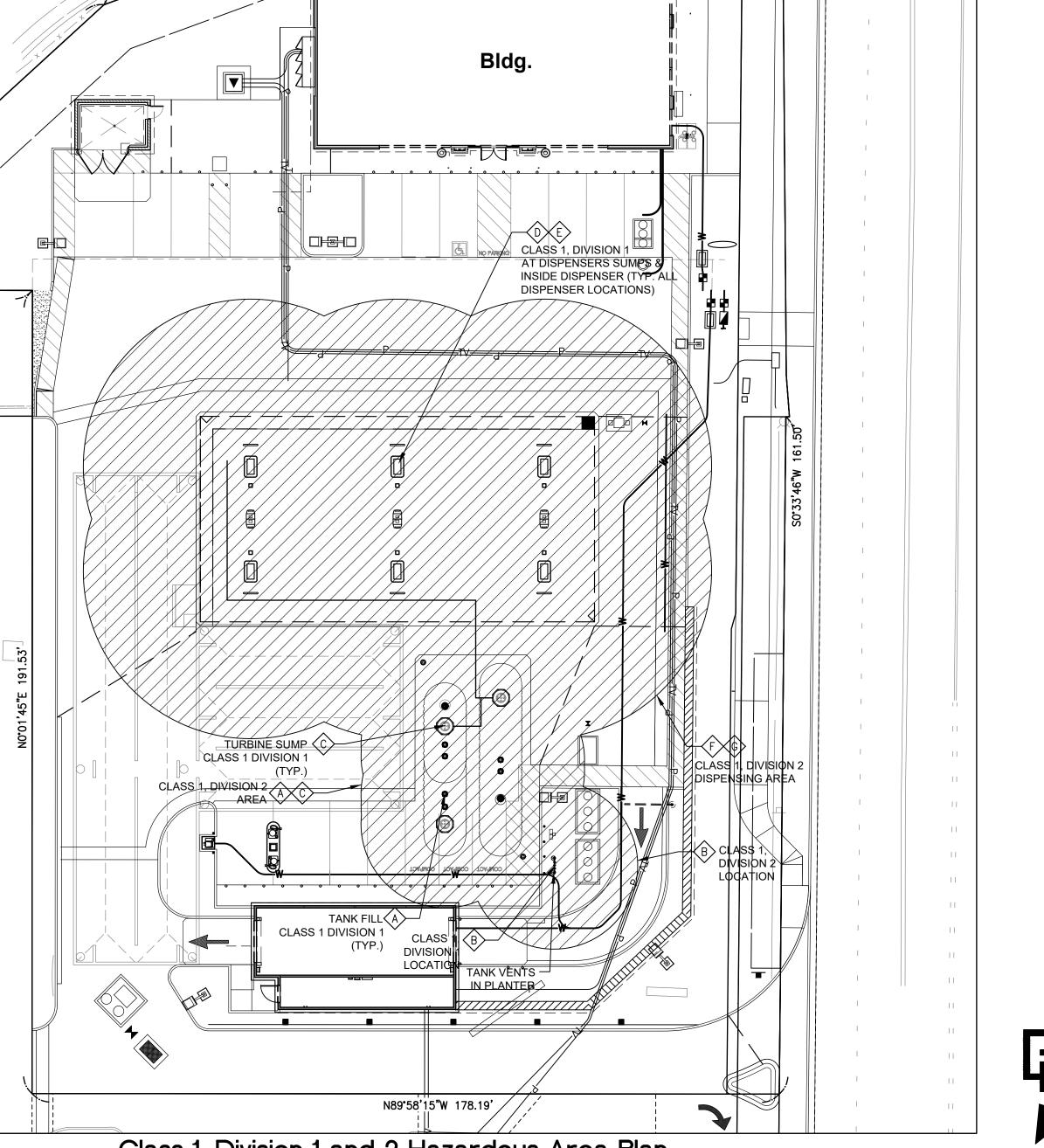
01/01/2023 21730

DRAWING TITLE: **FUEL SYSTEM ELECTRICAL SITE PLAN** 

M.5.1.42

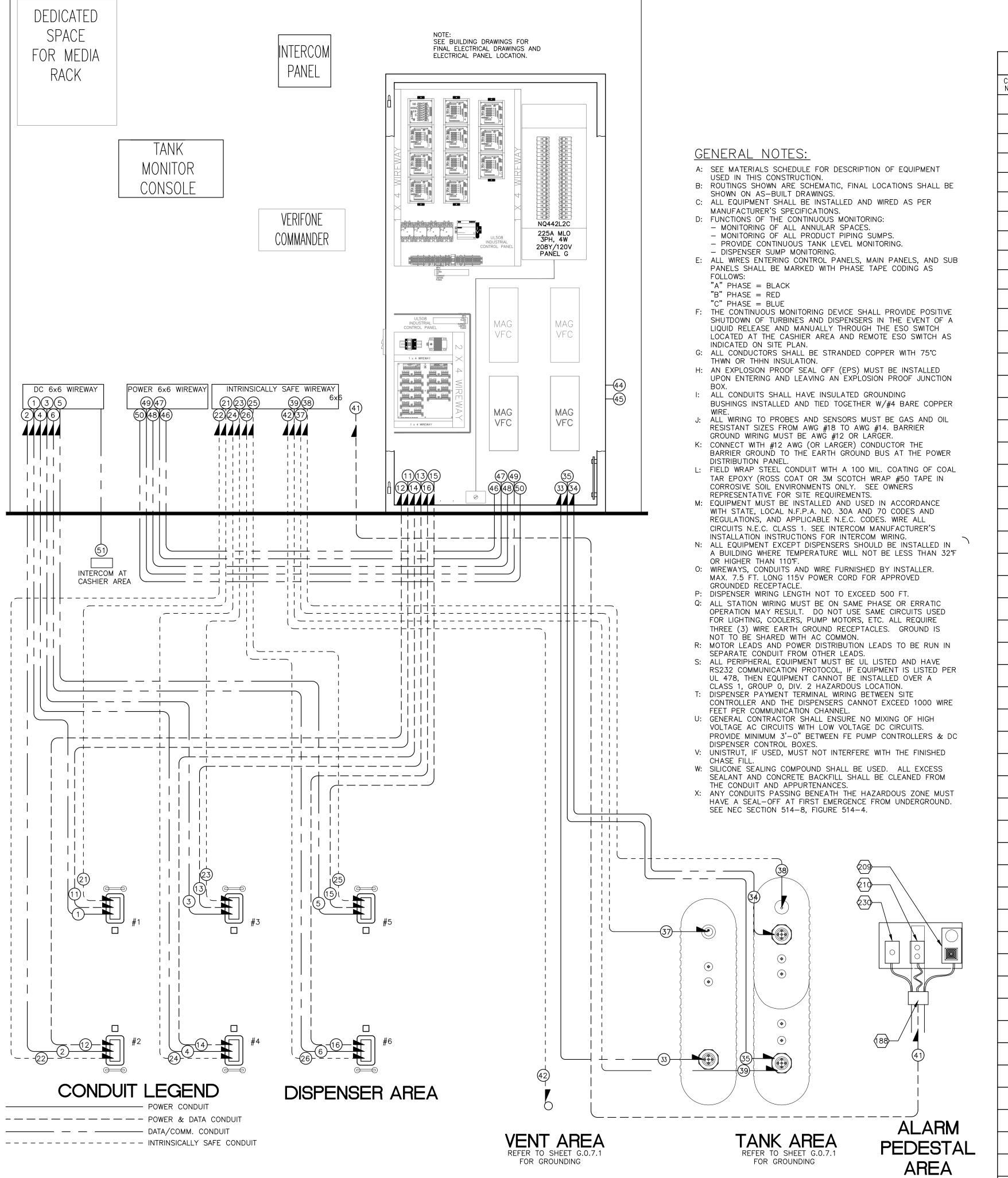


SCALE: 1"=20'



Class 1, Division 1 and 2 Hazardous Area Plan

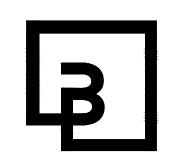
SCALE: 1" = 10'-0"



| CONDUIT                   | CONDUIT          | CONDU                                                                                                 | IT SCHED                          | CONDUIT                                             | CONDUIT                                                                                    |
|---------------------------|------------------|-------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------|
| NUMBER 1                  | SIZE & TYPE      | FILL (2) BELDEN CABLE 88760*                                                                          | START                             | END INTERCOM PANEL AT                               | DESCRIPTION                                                                                |
| (2)                       | 1" RGS<br>1" RGS | + CAT 5 BELDEN CABLE #7928A FOR MEDIA (2) BELDEN CABLE 88760*                                         | DISPENSER #1  DISPENSER #2        | MANAGER'S OFFICE INTERCOM PANEL AT                  | INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE  INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE |
| (3)                       | 1" RGS           | + CAT 5 BELDEN CABLE #7928A FOR MEDIA  (2) BELDEN CABLE 88760*                                        | DISPENSER #3                      | MANAGER'S OFFICE INTERCOM PANEL AT                  | INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE                                               |
| (4)                       | 1" RGS           | + CAT 5 BELDEN CABLE #7928A FOR MEDIA  (2) BELDEN CABLE 88760*                                        | DISPENSER #4                      | MANAGER'S OFFICE INTERCOM PANEL AT MANAGER'S OFFICE | INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE                                               |
| (5)                       | 1" RGS           | + CAT 5 BELDEN CABLE #7928A FOR MEDIA  (2) BELDEN CABLE 88760*  + CAT 5 BELDEN CABLE #7928A FOR MEDIA | DISPENSER #5                      | INTERCOM PANEL AT MANAGER'S OFFICE                  | INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE                                               |
| <u>(6)</u>                | 1" RGS           | (2) BELDEN CABLE 88760* + CAT 5 BELDEN CABLE #7928A FOR MEDIA                                         | DISPENSER #6                      | INTERCOM PANEL AT MANAGER'S OFFICE                  | INTERCOM (SPEAKER & CALL BUTTON) ON DISPENSE                                               |
| 7                         | NOT USED         | TOTAL OF SEEDEN OF SEED IN FOR THE SITE                                                               |                                   |                                                     |                                                                                            |
| 8                         | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 9                         | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 10                        | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 11)                       | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER) (2) BELDEN CABLE #88760* — (DATA & CRIND)                             | DISPENSER #1                      | EPC PANEL AT ELECTRICAL CLOSET                      | POWER & DATA FOR DISPENSER                                                                 |
| (12)                      | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER)<br>(2) BELDEN CABLE #88760* – (DATA & CRIND)                          | DISPENSER #2                      | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER & DATA FOR DISPENSER                                                                 |
| 13                        | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER)<br>(2) BELDEN CABLE #88760* – (DATA & CRIND)                          | DISPENSER #3                      | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER & DATA FOR DISPENSER                                                                 |
| 14)                       | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER)<br>(2) BELDEN CABLE #88760* – (DATA & CRIND)                          | DISPENSER #4                      | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER & DATA FOR DISPENSER                                                                 |
| 15)                       | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER)<br>(2) BELDEN CABLE #88760* - (DATA & CRIND)                          | DISPENSER #5                      | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER & DATA FOR DISPENSER                                                                 |
| 16)                       | 1" RGS           | 5 #12 THWN & 1 #12 GRD. (POWER)<br>(2) BELDEN CABLE #88760* - (DATA & CRIND)                          | DISPENSER #6                      | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER & DATA FOR DISPENSER                                                                 |
| (17)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (18)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (19)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (20)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| $\stackrel{\smile}{\sim}$ | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DICDENCED #4                      | INTRINSICALLY SAFE WIREWAY                          |                                                                                            |
| (21)                      |                  |                                                                                                       | DISPENSER #1                      | AT MANAGER'S OFFICE  INTRINSICALLY SAFE WIREWAY     | DISPENSER SUMP MONITORING                                                                  |
| (22)                      | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DISPENSER #2                      | AT MANAGER'S OFFICE  INTRINSICALLY SAFE WIREWAY     | DISPENSER SUMP MONITORING                                                                  |
| (23)                      | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DISPENSER #3                      | AT MANAGER'S OFFICE  INTRINSICALLY SAFE WIREWAY     | DISPENSER SUMP MONITORING                                                                  |
| (24)                      | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DISPENSER #4                      | AT MANAGER'S OFFICE                                 | DISPENSER SUMP MONITORING                                                                  |
| (25)                      | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DISPENSER #5                      | INTRINSICALLY SAFE WIREWAY AT MANAGER'S OFFICE      | DISPENSER SUMP MONITORING                                                                  |
| 26)                       | 1" RGS           | (1) BELDEN CABLE 88760*                                                                               | DISPENSER #6                      | INTRINSICALLY SAFE WIREWAY AT MANAGER'S OFFICE      | DISPENSER SUMP MONITORING                                                                  |
| 27)                       | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 28)                       | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 29                        | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 30)                       | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (31)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (32)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (33)                      | 1" RGS           | 3 #10 THWN & 1 #10 GRD.                                                                               | TANK AREA — TURBINE               | EPC PANEL                                           | TURBINE POWER                                                                              |
| (34)                      | 1" RGS           | 3 #10 THWN & 1 #10 GRD.                                                                               | TANK AREA — TURBINE               | AT ELECTRICAL CLOSET  EPC PANEL                     | TURBINE POWER                                                                              |
| (35)                      | 1" RGS           | 3 #10 THWN & 1 #10 GRD.                                                                               | TANK AREA — TURBINE               | AT ELECTRICAL CLOSET  EPC PANEL                     | TURBINE POWER                                                                              |
| (36)                      | NOT USED         | 3 #10 111111 & 1 #10 OND.                                                                             | TANK AKEA TOKBINE                 | AT ELECTRICAL CLOSET                                | TORDINE FOWER                                                                              |
| $\frac{\circ}{\circ}$     |                  |                                                                                                       | TANK ADEA ANNU AD                 | INTRINSICALLY SAFE WREWAY                           | TANK MONITORING (TYP.)                                                                     |
| (37)                      | 1" RGS           | (4) BELDEN CABLE 88760*                                                                               | TANK AREA — ANNULAR               | AT MANAGER'S OFFICE  INTRINSICALLY SAFE WIREWAY     | (VARIES BASED ON PLLÓ REQUIREMENTS) TANK MONITORING (TYP.)                                 |
| (38)                      | 1" RGS           | (4) BELDEN CABLE 88760*                                                                               | TANK AREA – ANNULAR               | AT MANAGER'S OFFICE                                 | (VARIES BASED ON PLLD REQUIREMENTS)  TANK MONITORING (TYP.)                                |
| (39)                      | 1" RGS           | (3) BELDEN CABLE 88760*                                                                               | TANK AREA — TURBINE               | INTRINSICALLY SAFE WIREWAY AT MANAGER'S OFFICE      | (VARIES BASED ON PLLD REQUIREMENTS)                                                        |
| (40)                      | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 41)                       | 1" RGS           | 6 #12 THWN & 1 #12 GRD.                                                                               | TANK AREA<br>OVERFILL ALARM       | EPC PANEL<br>AT ELECTRICAL CLOSET                   | POWER FOR OVERFILL ALARM AND ESO                                                           |
| 42                        | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| 43)                       | NOT USED         |                                                                                                       |                                   |                                                     |                                                                                            |
| (44)                      | 1" RGS           | 4 #12 THWN & 1#12 GRD                                                                                 | EPC PANEL<br>AT ELECTRICAL CLOSET | CASHIER AREA                                        | EMERGENCY SHUT OFF SWITCH AND RESET SWITCH                                                 |
| <u>(45)</u>               | 1" RGS           | 2 #12 THWN & 1#12 GRD                                                                                 | EPC PANEL<br>AT ELECTRICAL CLOSET | EXTERIOR BUILDING WALL                              | EMERGENCY SHUT OFF SWITCH                                                                  |
| 46)                       | 1" RGS           | (6) BELDEN CABLE #88760* - (DATA)                                                                     | EPC PANEL AT ELECTRICAL CLOSET    | WAYNE DATA DISTRIBUTION AT MANAGER'S OFFICE         | DATA & CRIND WIRES FOR DISPENSER COMM.                                                     |
| <u>(47)</u>               | 1" RGS           | (6) BELDEN CABLE #88760* - (DATA)                                                                     | EPC PANEL                         | WAYNE DATA DISTRIBUTION                             | DATA & CRIND WIRES FOR DISPENSER COMM.                                                     |
| (48)                      | 1" RGS           | (4) BELDEN CABLE #88760* - (DATA)                                                                     | AT ELECTRICAL CLOSET  EPC PANEL   | AT MANAGER'S OFFICE WAYNE DATA DISTRIBUTION         | DATA & CRIND WIRES FOR DISPENSER COMM.                                                     |
| (49)                      | 2" RGS           | 28 #12 THWN & 2 #12 GRD                                                                               | AT ELECTRICAL CLOSET  EPC PANEL   | AT MANAGER'S OFFICE  VEEDER ROOT PANEL              | CONTROL FOR OVERFILL ALARM; PLLD WIRES AND                                                 |
| $\stackrel{\smile}{\sim}$ | 2" RGS<br>       | <u>"</u>                                                                                              | AT ELECTRICAL CLOSET  EPC PANEL   | AT MANAGER'S OFFICE                                 | CONTROL FROM DM-EX MODULES                                                                 |
| (50)                      | 1 10/20          | SPARE W/ PULL ROPE                                                                                    | AT ELECTRICAL CLOSET              | MANAGER'S OFFICE                                    | FUTURE                                                                                     |



BP WEST COAST PRODUCTS, LLC



Barghausen Consulting Engineers, Inc.

18215 72nd Avenue South Kent, WA 98032 425.251.6222 barghausen.com

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DEVELOPMENT INFORMATION: **ARCO NTI** 

SITE ADDRESS:

3400 am/pm FUEL CANOPY w/ 6 MPD's

> **SWC S MERIDIAN** @ HIGHWAY 512 PUYALLUP, WASHINGTON

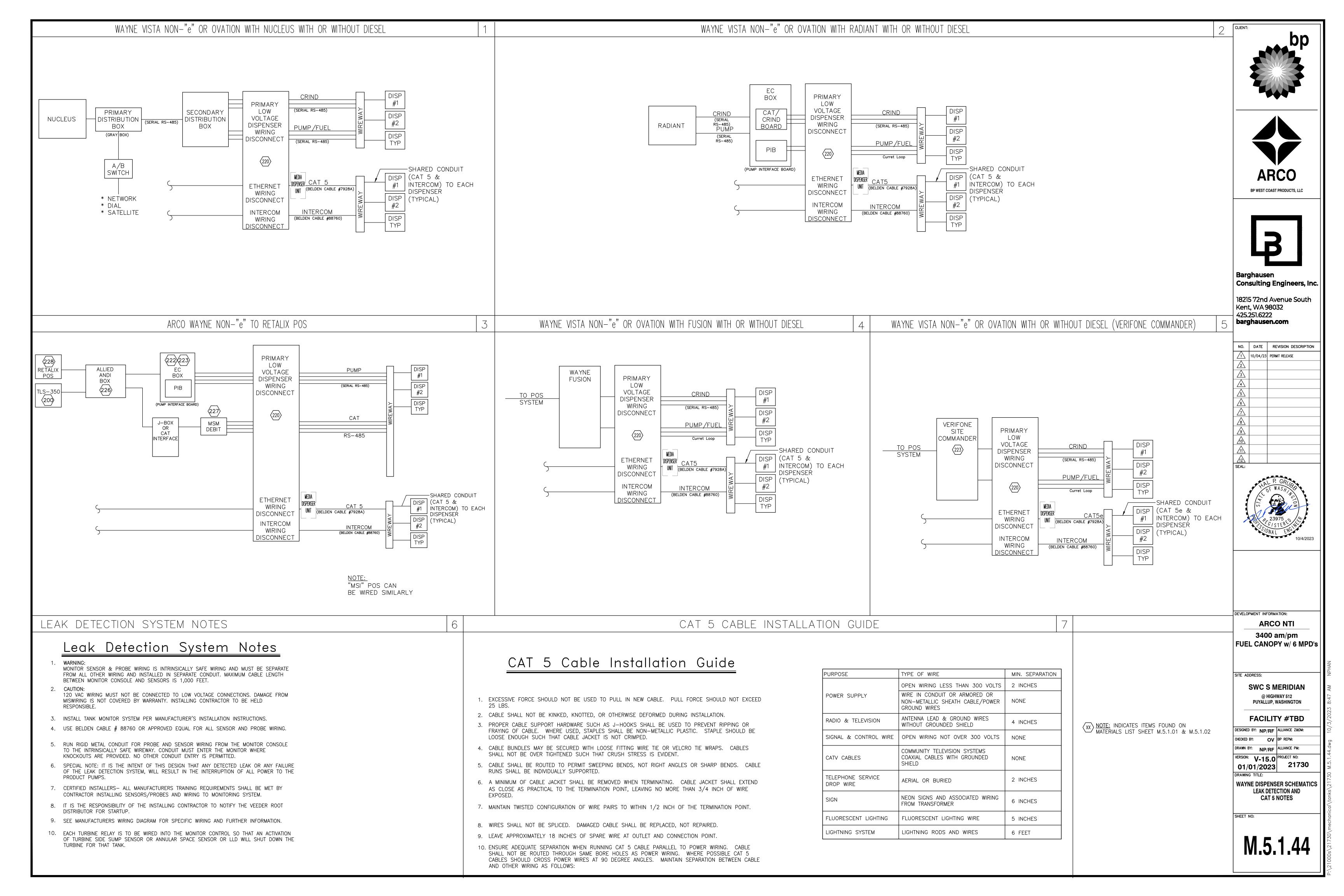
**FACILITY #TBD** DESIGNED BY: NP/RF ALLIANCE Z&DM:

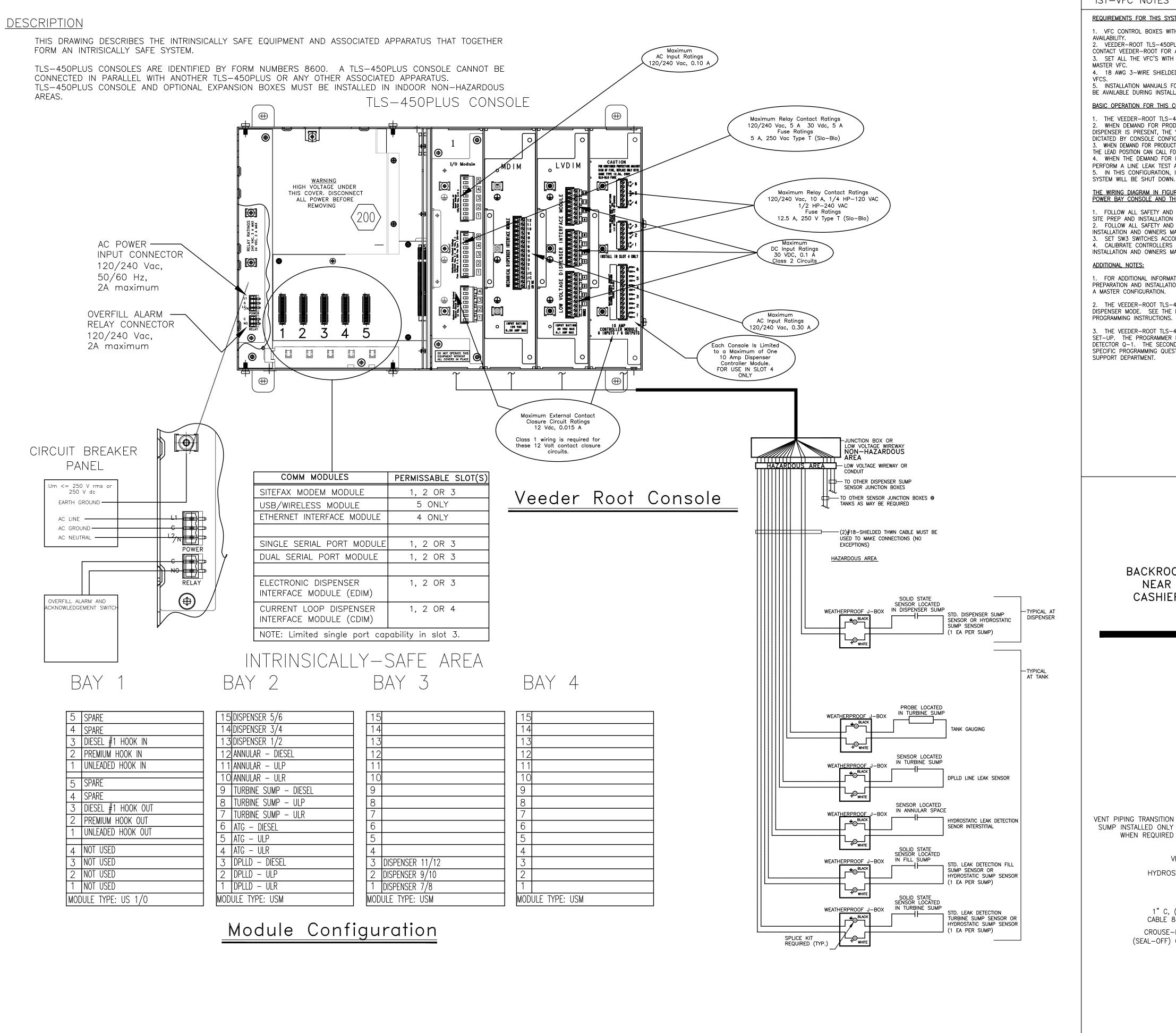
CHECKED BY: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO: 01/01/2023 21730

DRAWING TITLE:

FUEL SYSTEM ELECTRICAL CONDUIT POINT TO POINT PLAN (SPLIT TANK VERSION)

M.5.1.43





IST-VFC NOTES

#### REQUIREMENTS FOR THIS SYSTEM:

I. VFC CONTROL BOXES WITH LATEST SOFTWARE. PLEASE CONTACT FE PETRO FOR . VEEDER-ROOT TLS-450PLUS WITH LATEST VERSION OF TLS SOFTWARE. PLEASE CONTACT VEEDER-ROOT FOR AVAILABILITY. 3. SET ALL THE VFC'S WITH DPLLD TRANSDUCER INSTALLED IN ITS PUMP TO BE THE

4. 18 AWG 3-WIRE SHIELDED COMMUNICATION CABLE (300 V MINIMUM) CONNECTING 5. INSTALLATION MANUALS FOR BOTH VEEDER-ROOT TLS-450PLUS & FE PETRO VFC WILL BE AVAILABLE DURING INSTALLATION.

#### BASIC OPERATION FOR THIS CONFIGURATION:

THE VEEDER-ROOT TLS-450PLUS SYSTEM MONITOR THE TANK PRODUCT LEVELS. . WHEN DEMAND FOR PRODUCT IS CALLED FOR. A 120 VAC HOOK SIGNAL FROM DISPENSER IS PRESENT, THE VEEDER-ROOT TLS-450PLUS SYSTEM WILL TURN ON A PUMP, DICTATED BY CONSOLE CONFIGURATION. 3. WHEN DEMAND FOR PRODUCT RISES, MORE PEOPLE DISPENSING PRODUCT, WHICHEVER VFC IS IN THE LEAD POSITION CAN CALL FOR ADDITIONAL VFC TO TURN ON. 4. WHEN THE DEMAND FOR PRODUCT GOES AWAY, THE VEEDER-ROOT SYSTEM WILL PERFORM A LINE LEAK TEST ACCORDING TO VEEDER-ROOT'S LINE TEST PROTOCOL. 5. IN THIS CONFIGURATION, IF THERE ARE ANY FAULTS IN THE SYSTEM THE WHOLE SYSTEM WILL BE SHUT DOWN.

### THE WIRING DIAGRAM IN FIGURE 1 SHOWS THE CONNECTIONS BETWEEN THE VEEDER-ROOT POWER BAY CONSOLE AND THE MASTER VFCS.

. FOLLOW ALL SAFETY AND INSTALLATION INSTRUCTIONS IN THE LATEST VEEDER-ROOT SITE PREP AND INSTALLATION INSTRUCTIONS FOR THE VEEDER-ROOT TLS-450PLUS. . FOLLOW ALL SAFETY AND INSTALLATION INSTRUCTIONS IN THE LATEST IST-VFC INSTALLATION AND OWNERS MANUAL FOR WIRING NOT SHOWN IN FIGURE 1. 3. SET SW3 SWITCHES ACCORDING TO MASTER CONFIGURATION.

#### CALIBRATE CONTROLLERS ACCORDING TO CALIBRATION INSTRUCTIONS IN IST-VFC INSTALLATION AND OWNERS MANUAL.

#### **ADDITIONAL NOTES:**

I. FOR ADDITIONAL INFORMATION, REFERENCE THE LATEST VEEDER-ROOT SITE PREPARATION AND INSTALLATION MANUAL FOR INSTALLATION INSTRUCTIONS OF DPLLD USING A MASTER CONFIGURATION.

. THE VEEDER-ROOT TLS-450PLUS SYSTEM MUST BE PROGRAMMED USING THE CORRECT DISPENSER MODE. SEE THE LATEST VEEDER-ROOT SYSTEM SET-UP MANUAL FOR SPECIFIC

VEEDER ROOT TLS-450PLUS

LEAK DETECTION MONITOR

1" C, (3) BELDEN / CABLE 88760 EACH /

TURBINE SUMP

FILL (TYP.)

VENT STACK. ——

HYDROSTATIC RESERVOIR -

1" C, (3) BELDEN — CABLE 88760 EACH

CROUSE-HINDS EYS -

(SEAL-OFF) OR EQUAL.

NFAR

CASHIER

3. THE VEEDER-ROOT TLS-450PLUS MUST BE PROGRAMMED USING THE CORRECT TANK SET-UP. THE PROGRAMMER MUST ASSIGN THE FIRST MASTER TANK T-1 TO LINE LEAK DETECTOR Q-1. THE SECOND MASTER TANK T-2 TO LINE LEAK DETECTOR Q-2. SPECIFIC PROGRAMMING QUESTIONS SHOULD BE DIRECTED TO VEEDER-ROOT TECHNICAL SUPPORT DEPARTMENT.

#### VEEDER-ROOT TLS-450PLUS NOTES

WARNING: IN INSTALLATION AND USE OF THIS PRODUCT, COMPLY WITH THE NATIONAL ELECTRICAL CODE: FEDERAL, STATE AND LOCAL CODES. IN ADDITION, TURN OFF POWER AND TAKE OTHER NECESSARY PRECAUTIONS DURING INSTALLATION, SERVICE AND REPAIR TO PREVENT PERSONAL INJURY, PROPERTY LOSS AND EQUIPMENT

WARNING: DISCONNECT ALL POWER BEFORE MAKING AN CONNECTIONS O PREVENT DEATH, SERIOUS INJURY, EXPLOSION OR ELECTRICAL SHOCK. MONITOR MUST NEVER BE OPERATED UNLESS THE FRONT COVER IS CLOSED OVER THE BARRIER TERMINALS IN THE

INTRINSICALLY SAFE AREA.

TLS-450PLUS MONITOR.

A - SENSOR IN HYDROSTATIC RESERVOIR

(ANNULAR SPACE OF TANKS)

-1" C, (3) BELDEN CABLE 88760 -1" C, (4) BELDEN CABLE 88760

-1" C, (4) BELDEN CABLE 88760

ULP

DIESEL

A,B,D,C

C - TANK LEVEL GAUGE IN TURBINE SUMPS

B - STANDARD LIQUID SENSOR IN TURBINE SUMPS

D - PRESSURIZED LINE LEAK DETECTOR IN TURBINE SUMP

TURBINE SUMP

TURBINE SUMP

WIRING TO PROBES, SENSORS, & DPLLD MUST BE SHIELDED MULTI-STRAND, GAS AND OIL RESISTANT SIZES FROM AWG #18 TO AWG #14. BARRIER GROUND WIRING MUST BE AWG #12 OR LARGER.

- CONNECT WITH #12 AWG (OR LARGER) CONDUCTOR THE BARRIER GROUND TO THE EARTH GROUND BUS AT THE POWER DISTRIBUTION PANEL.
- 3. DENOTES FIELD WIRING CONNECTION USING WATERPROOF CONNECTORS SUPPLIED WITH THE PROBE(S) AND SENSOR(S).
- 4. INTRINSICALLY SAFE WIRING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 504-20 OF THE NEC AND NFPA 70 (CURRENT VERSIONS).
- 5. TO MAINTAIN INTRINSIC SAFETY AND PROPER SYSTEM OPERATION, PROBE AND SENSOR WIRING MUST BE INSTALLED WITHIN SEALED CONDUIT.
- 6. ELECTRICAL RATING POWER INPUT 120VAC, 50/60 HZ, 600 WATTS MAX. 7. REFER TO THE LATEST "SITE PREPARATION AND INSTALLATION INSTRUCTIONS," MANUAL FOR ACTUAL LOCATION OF CONDUIT ENTRY INTO
- 8. REFER TO LINE LEAK DETECTOR IN THE LATEST "SITE PREPARATION AND INSTALLATION."
- 9. RS-232 MODULE IS LOCATED IN THE COMMUNICATIONS COMPARTMENT AND MUST BE ORDERED SEPARATELY.
- 10. BONDING LOCKNUTS AND OR BONDING BUSHINGS SHALL BE USED AT ALL CONDUIT ENTRANCES TO THE TLS-450PLUS ENCLOSURE AND AT ANY JUNCTION BOX/WIREWAYS IN THE NON-HAZARDOUS AREA TO ENSURE POSITIVE CONDUIT
- 11. FOR 2 PUMPS IN SINGLE TANK OPERATION, AN ADDITIONAL I/O MODULE REQUIRED AND MUST BE ORDERED SEPARATELY.
- 12. NO SPLICING OF PROBE/SENSOR WIRE EXCEPT AT THE DEVICE ITSELF. 13. CONTRACTOR MUST COMPLY WITH ALL THE TRAINING REQUIREMENTS OF VEEDER-ROOT.
- 14. SPECIFIC PROGRAMMING FOR VEEDER ROOT TLS-450PLUS CONSOLE SHALL BE OBTAINED FROM THE LOCAL ENVIRONMENTAL COMPLIANCE MANAGER.





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DEVELOPMENT INFORMATION: **ARCO NTI** 

SITE ADDRESS:

3400 am/pm FUEL CANOPY w/ 6 MPD's

> **SWC S MERIDIAN** @ HIGHWAY 512

**PUYALLUP, WASHINGTON FACILITY #TBD** 

DESIGNED BY: NP/RF ALLIANCE Z&DM: CHECKED BY: OV BP REPM:

DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO: 01/01/2023 21730 DRAWING TITLE:

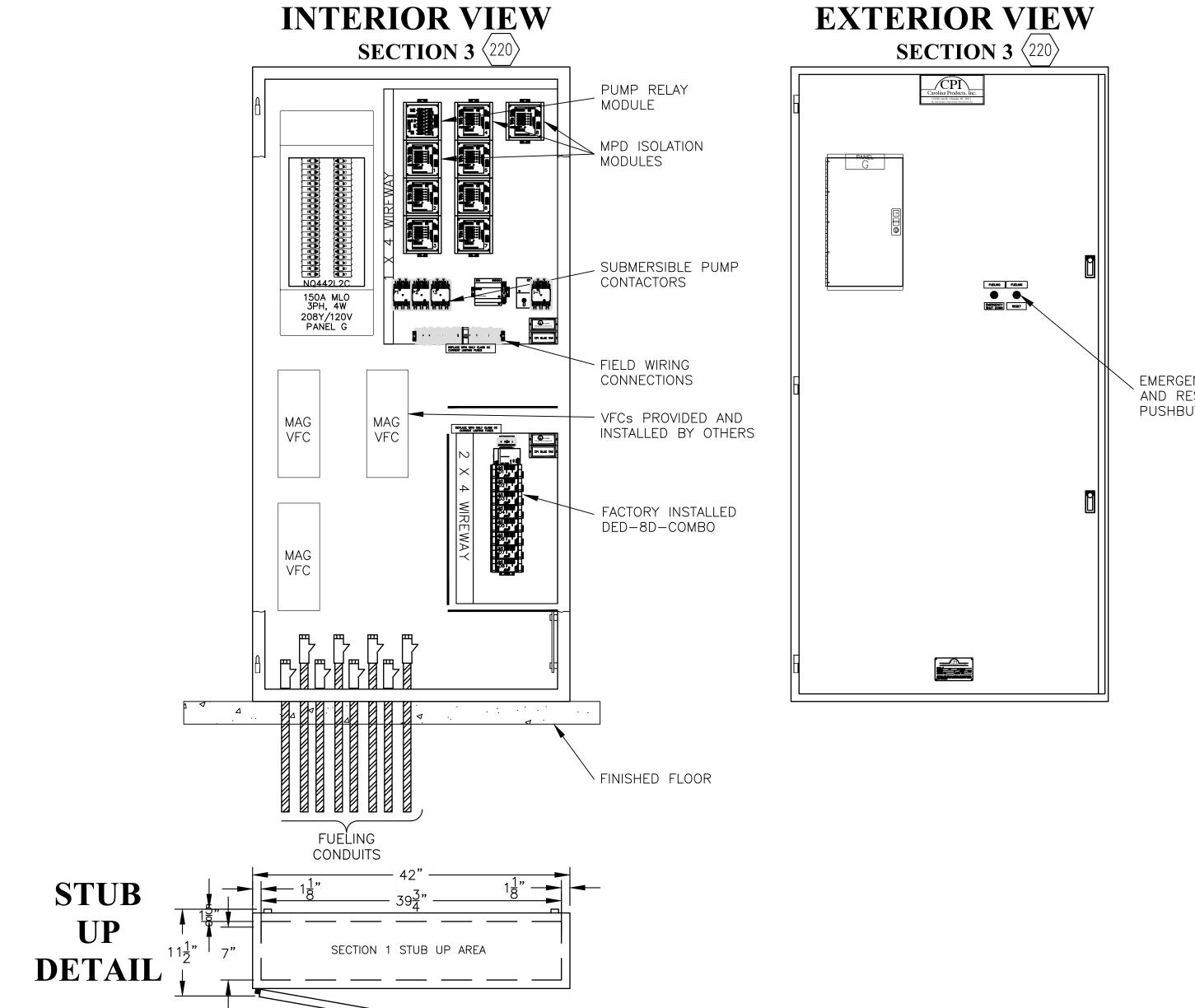
**VEEDER ROOT 450 AND FE PETRO** INTERFACE FIELD WIRING DIAGRAM (SINGLE MASTER) (SPLIT TANK VERSION)

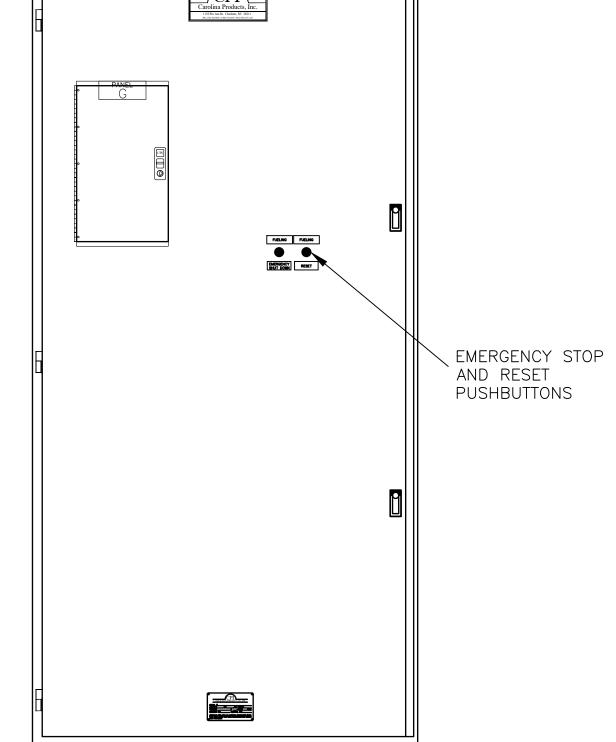
M.5.1.45

SEE TANK FUELING SITE PLAN FOR SPECIFIC TANK LAYOUT Tank Monitoring Conduit Schematic

SCALE: N.T.S.

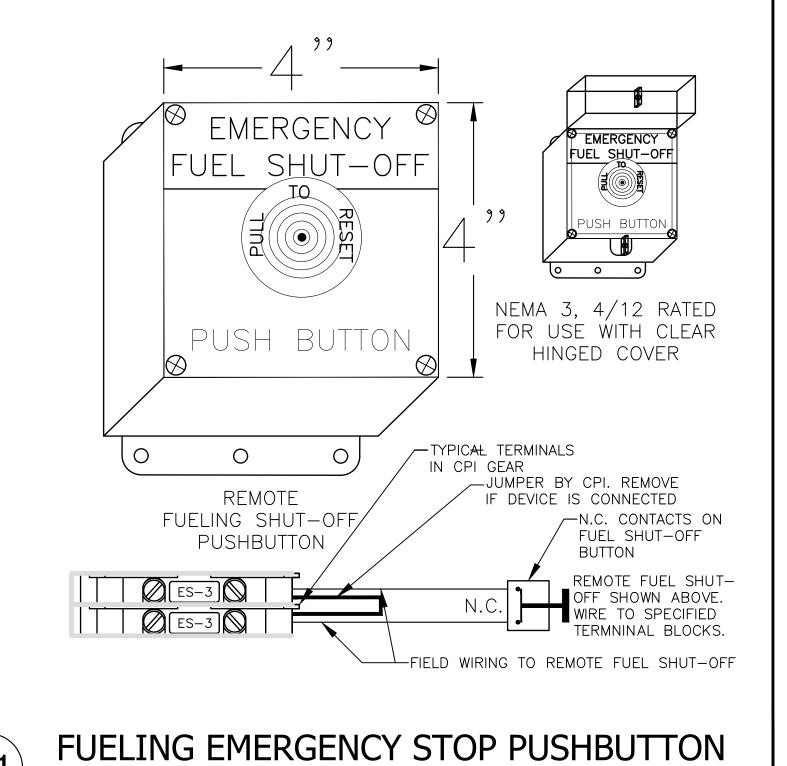
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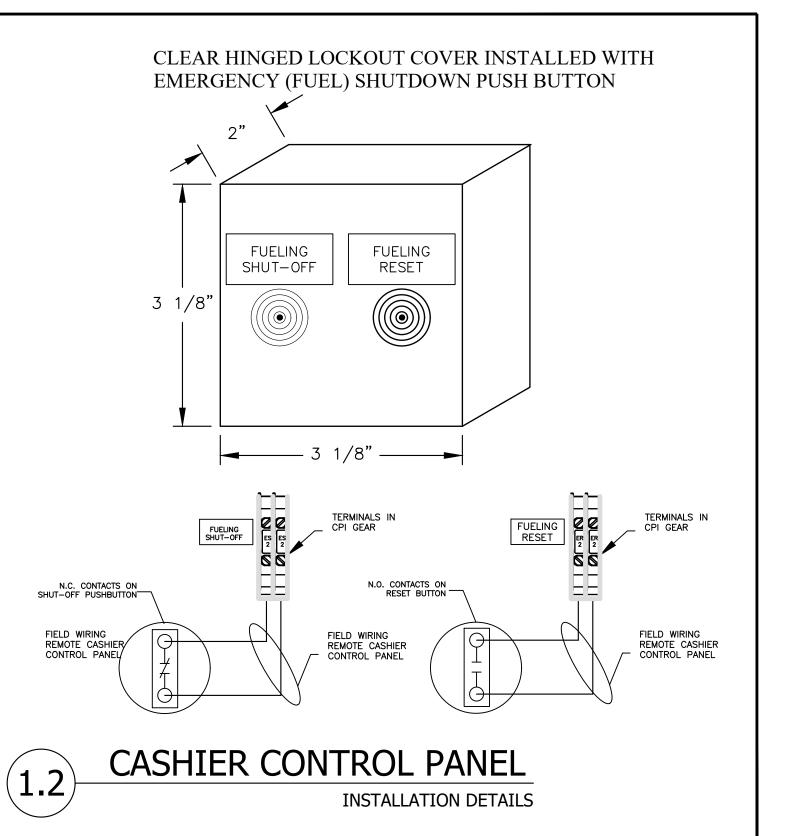


SEE BUILDING DRAWINGS FOR FINAL ELECTRICAL DRAWINGS AND ELECTRICAL PANEL LOCATION.

CONTACT: BRYAN STRYKER CAROLINA PRODUCTS INCORPORATED (704) 441-4048 BRYANS@CPIPANELS.COM



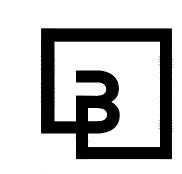
INSTALLATION DETAILS



XXX NOTE: INDICATES ITEMS FOUND ON MATERIALS LIST SHEET M.5.1.01 & M.5.1.02



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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm FUEL CANOPY w/ 6 MPD's

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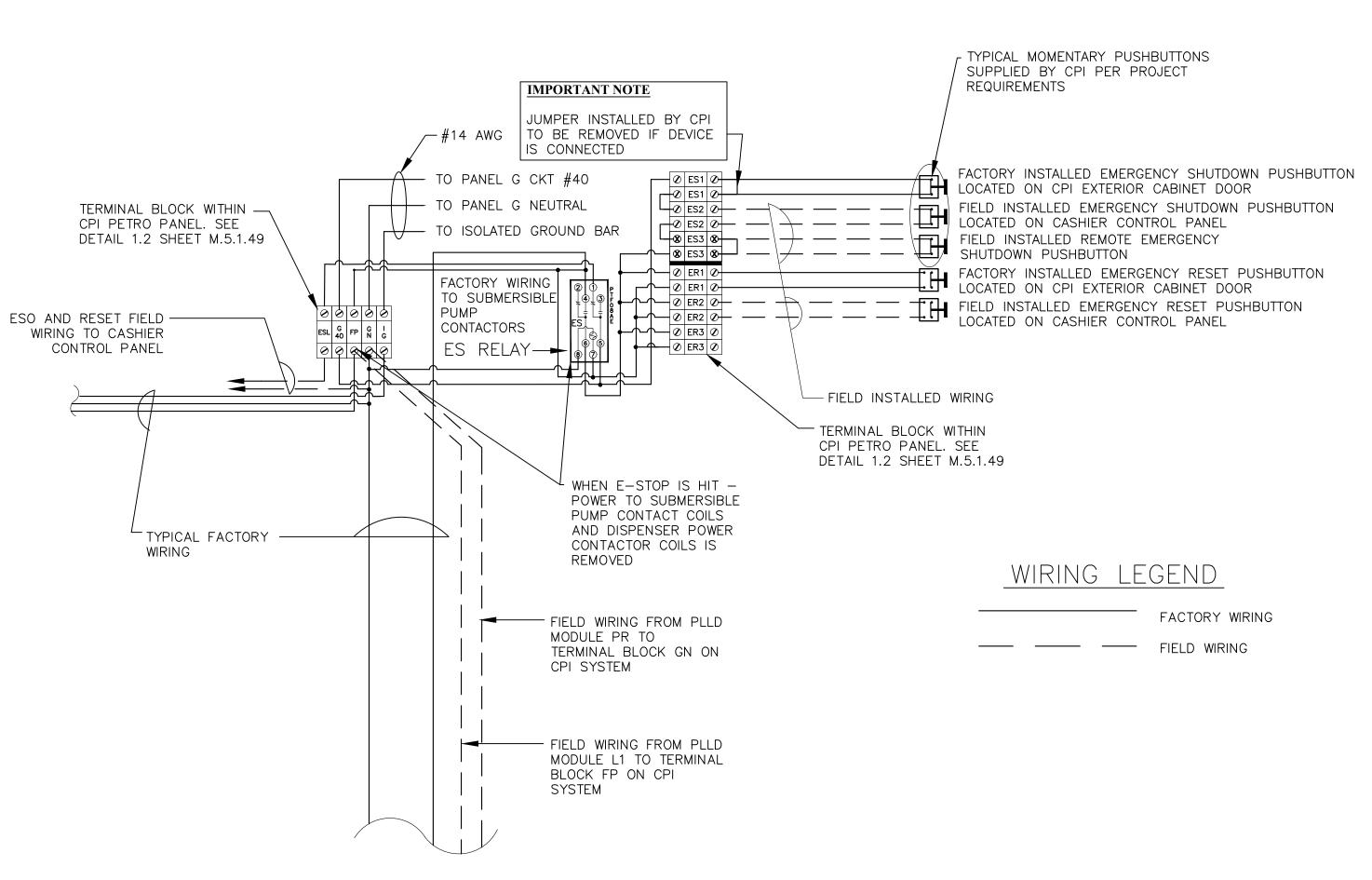
PUYALLUP, WASHINGTON FACILITY #TBD

DESIGNED BY: NP/RF ALLIANCE Z&DM: CHECKED BY: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM:

VERSION: V-15.0 PROJECT NO: 21730 DRAWING TITLE:

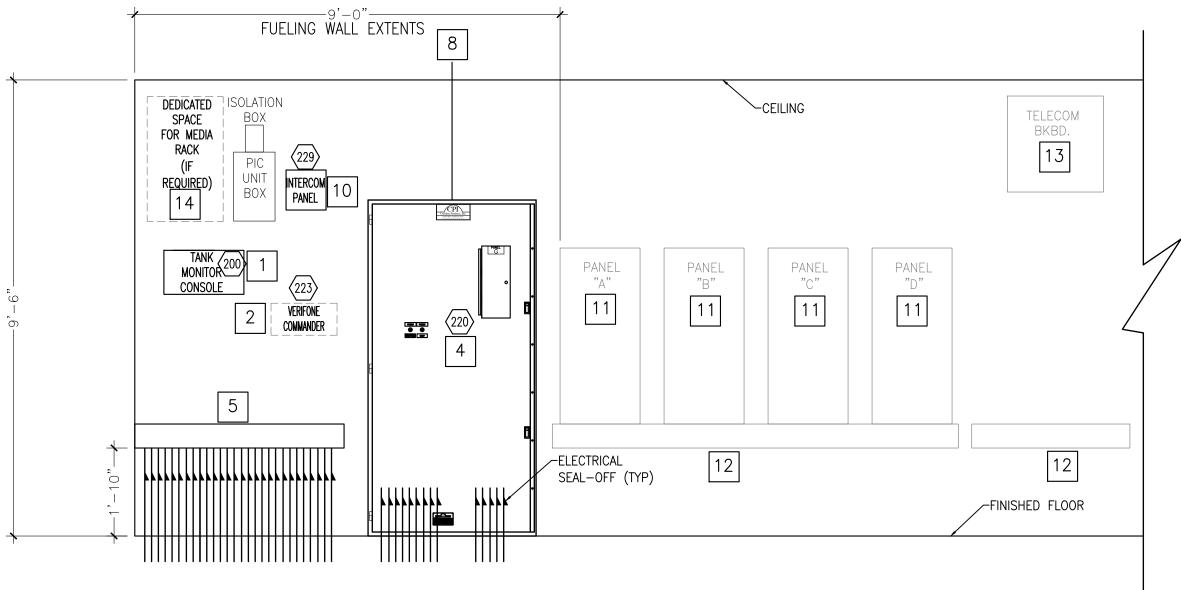
**ELECTRICAL UNITIZED FUELING** MANAGER CABINET ELEVATIONS AND DETAILS

M.5.1.47



### F: EMERGENCY STOP WIRING SCHEMATIC DETAIL

NOT TO SCALE:



#### G: TYPICAL BACKROOM ELEVATION IN C-STORE SEE BUILDING DRAWINGS FOR FINAL ELECTRICAL DRAWINGS NOT TO SCALE: AND ELECTRICAL PANEL

LOCATION. 1 TANK/DISPENSER MONITORING CONSOLE

- 4 FUELING DISPENSER MANAGER CABINET (42"Wx84"H FLOOR MOUNTED):
  - 1) FUELING ELECTRICAL PANEL "G" 2) DISPENSER RELAYS/MAINTENANCE SWITCH 3) DISPENSER DATA/CRIND/INTERCOM/ETHERNET DISCONNECT
  - 4) TURBINE CONTROLS AND VFC UNITS 5) EMERGENCY SHUT-OFF SYSTEM

2 VERIFONE SITE COMMANDER UNIT (OPTIONAL LOCATION)

3 VERIFONE SITE COMMANDER UNIT (PREFERRED LOCATION)

- 5 6x6 WIREWAY WITH DIVIDERS
- 6 3KVA SURGE SUPRESSOR



(221) 6

PANEL

H: TYPICAL MANAGER OFFICE ELEVATION

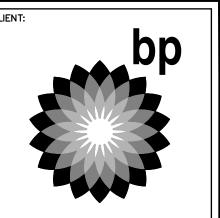
VERIFONE COMMANDER

7 ELECTRICAL FUELING PANEL "S" (SECURE)

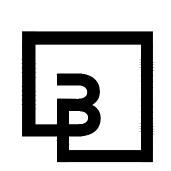
- 8 CONDUIT ROUTED ABOVE CEILING TO POWER CONDITIONER
- 9 CONDUIT ROUTED ABOVE CEILING TO PANEL "G"
- 10 INTERCOM PANEL
- 11 C-STORE ELECTRICAL PANELS (LOCATION TO BE DETERMINED)

NOT TO SCALE:

- 12 C-STORE WIREWAY (LOCATION TO BE DETERMINED)
- 13 C-STORE COMMUNICATION BACKBOARD (LOCATION TO BE DETERMINED)
- DEDICATED AREA FOR DISPENSER MEDIA RACK/CABINET, IF REQUIRED. CHECK WITH BP CONSTRUCTION AND MAINTENANCE COORDINATOR







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DEVELOPMENT INFORMATION: **ARCO NTI** 3400 am/pm

FUEL CANOPY w/ 6 MPD's

SITE ADDRESS: **SWC S MERIDIAN** 

@ HIGHWAY 512 **PUYALLUP, WASHINGTON** 

**FACILITY #TBD** DESIGNED BY: NP/RF ALLIANCE Z&DM:

CHECKED BY: OV BP REPM: DRAWN BY: NP/RF ALLIANCE PM: VERSION: V-15.0 PROJECT NO: 01/01/2023 21730 DRAWING TITLE:

**ELECTRICAL PANEL E-STOP** CONTROL WIRING SCHEMATIC AND TYPICAL FUELING ELEVATION

M.5.1.48

XX NOTE: INDICATES ITEMS FOUND ON MATERIALS LIST SHEET

M.5.1.01 & M.5.1.02

