City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE
SKinnear
03/03/2025
8:22:48 AM

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

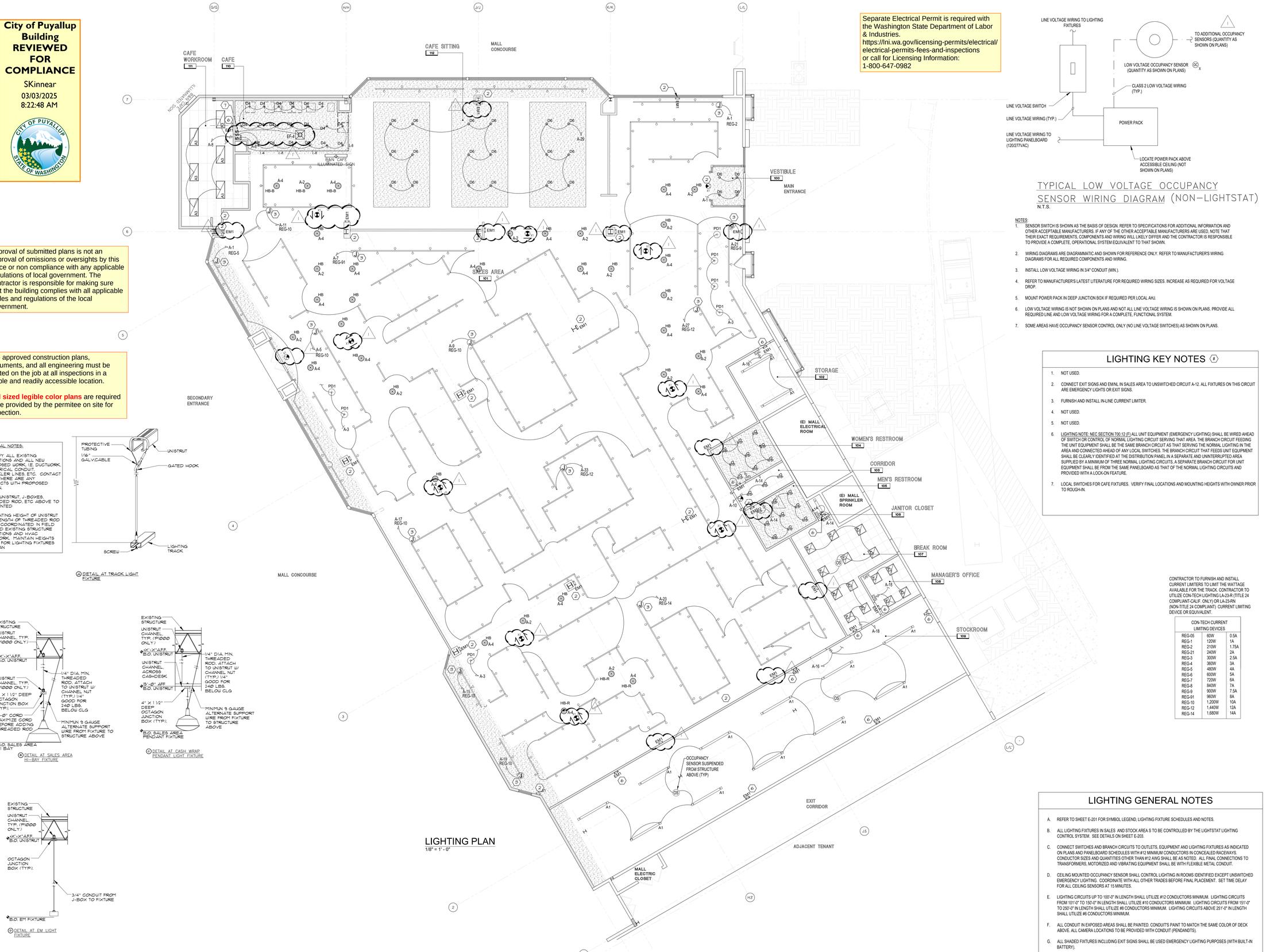
The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permitee on site for inspection.

Separate Electrical Permit is required with the Washington State Department of Labor & Industries.
https://lni.wa.gov/licensing-permits/electrical/electrical-permits-fees-and-inspections
or call for Licensing Information:
1-800-647-0982

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE



LIGHTING PLAN
1/8" = 1'-0"

GENERAL NOTES:

1. VERIFY ALL EXISTING CONDITIONS AND ALL NEW PROPOSED WORK, IE. DUCTWORK, ELECTRICAL CONDUIT, SPRINKLER LINES, ETC. CONTACT RM IF THERE ARE ANY CONFLICTS WITH PROPOSED DESIGN.

2. ALL UNISTRUT, J-BOXES, THREADED ROD, ETC ABOVE TO BE PAINTED

3. MOUNTING HEIGHT OF UNISTRUT AND LENGTH OF THREADED ROD TO BE COORDINATED IN FIELD AROUND EXISTING STRUCTURE CONDITIONS AND HVAC DUCTWORK. MAINTAIN HEIGHTS SHOWN FOR LIGHTING FIXTURES ON PLAN.

A DETAIL AT TRACK LIGHT FIXTURE

B DETAIL AT SALES AREA HI-BAY FIXTURE

C DETAIL AT CASH WRAP PENDANT LIGHT FIXTURE

D DETAIL AT EM LIGHT FIXTURE

TYPICAL LOW VOLTAGE OCCUPANCY SENSOR WIRING DIAGRAM (NON-LIGHTSTAT)
N.T.S.

NOTES:
1. SENSOR SWITCH IS SHOWN AS THE BASIS OF DESIGN. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND OTHER ACCEPTABLE MANUFACTURERS. IF ANY OF THE OTHER ACCEPTABLE MANUFACTURERS ARE USED, NOTE THAT THEIR EXACT REQUIREMENTS, COMPONENTS AND WIRING WILL LIKELY DIFFER AND THE CONTRACTOR IS RESPONSIBLE TO PROVIDE A COMPLETE, OPERATIONAL SYSTEM EQUIVALENT TO THAT SHOWN.
2. WIRING DIAGRAMS ARE DIAGRAMMATIC AND SHOWN FOR REFERENCE ONLY. REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR ALL REQUIRED COMPONENTS AND WIRING.
3. INSTALL LOW VOLTAGE WIRING IN 3/4" CONDUIT (MIN.).
4. REFER TO MANUFACTURER'S LATEST LITERATURE FOR REQUIRED WIRING SIZES. INCREASE AS REQUIRED FOR VOLTAGE DROP.
5. MOUNT POWER PACK IN DEEP JUNCTION BOX IF REQUIRED PER LOCAL AHJ.
6. LOW VOLTAGE WIRING IS NOT SHOWN ON PLANS AND NOT ALL LINE VOLTAGE WIRING IS SHOWN ON PLANS. PROVIDE ALL REQUIRED LINE AND LOW VOLTAGE WIRING FOR A COMPLETE, FUNCTIONAL SYSTEM.
7. SOME AREAS HAVE OCCUPANCY SENSOR CONTROL ONLY (NO LINE VOLTAGE SWITCHES) AS SHOWN ON PLANS.

LIGHTING KEY NOTES (#)

1. NOT USED.
2. CONNECT EXIT SIGNS AND EM/NL IN SALES AREA TO UNSWITCHED CIRCUIT A-12. ALL FIXTURES ON THIS CIRCUIT ARE EMERGENCY LIGHTS OR EXIT SIGNS.
3. FURNISH AND INSTALL IN-LINE CURRENT LIMITER.
4. NOT USED.
5. NOT USED.
6. LIGHTING NOTE: NEC SECTION 700.12 (F) ALL UNIT EQUIPMENT (EMERGENCY LIGHTING) SHALL BE WIRED AHEAD OF SWITCH OR CONTROL OF NORMAL LIGHTING CIRCUIT SERVING THAT AREA. THE BRANCH CIRCUIT FEEDING THE UNIT EQUIPMENT SHALL BE THE SAME BRANCH CIRCUIT AS THAT SERVING THE NORMAL LIGHTING IN THE AREA AND CONNECTED AHEAD OF ANY LOCAL SWITCHES. THE BRANCH CIRCUIT THAT FEEDS UNIT EQUIPMENT SHALL BE CLEARLY IDENTIFIED AT THE DISTRIBUTION PANEL IN A SEPARATE AND UNINTERRUPTED AREA SUPPLIED BY A MINIMUM OF THREE NORMAL LIGHTING CIRCUITS. A SEPARATE BRANCH CIRCUIT FOR UNIT EQUIPMENT SHALL BE FROM THE SAME PANELBOARD AS THAT OF THE NORMAL LIGHTING CIRCUITS AND PROVIDED WITH A LOCK-ON FEATURE.
7. LOCAL SWITCHES FOR CAFE FIXTURES. VERIFY FINAL LOCATIONS AND MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN.

CONTRACTOR TO FURNISH AND INSTALL CURRENT LIMITERS TO LIMIT THE WATTAGE AVAILABLE FOR THE TRACK. CONTRACTOR TO UTILIZE CON-TECH LIGHTING LA-23-R (TITLE 24 COMPLIANT-CALIF. ONLY) OR LA-23-RN (NON-TITLE 24 COMPLIANT) CURRENT LIMITING DEVICE OR EQUIVALENT.

CON-TECH CURRENT LIMITING DEVICES		
REG-05	60W	0.5A
REG-1	120W	1A
REG-2	210W	1.75A
REG-21	240W	2A
REG-3	300W	2.5A
REG-4	360W	3A
REG-5	480W	4A
REG-6	600W	5A
REG-7	720W	6A
REG-8	840W	7A
REG-9	900W	7.5A
REG-91	960W	8A
REG-10	1,200W	10A
REG-12	1,440W	12A
REG-14	1,680W	14A

LIGHTING GENERAL NOTES

A. REFER TO SHEET E-201 FOR SYMBOL LEGEND, LIGHTING FIXTURE SCHEDULES AND NOTES.

B. ALL LIGHTING FIXTURES IN SALES AND STOCK AREA S TO BE CONTROLLED BY THE LIGHTSTAT LIGHTING CONTROL SYSTEM. SEE DETAILS ON SHEET E-203.

C. CONNECT SWITCHES AND BRANCH CIRCUITS TO OUTLETS, EQUIPMENT AND LIGHTING FIXTURES AS INDICATED ON PLANS AND PANELBOARD SCHEDULES WITH #12 MINIMUM CONDUCTORS IN CONCEALED RACEWAYS. CONDUCTOR SIZES AND QUANTITIES OTHER THAN #12 AWG SHALL BE AS NOTED. ALL FINAL CONNECTIONS TO TRANSFORMERS, MOTORIZED AND VIBRATING EQUIPMENT SHALL BE WITH FLEXIBLE METAL CONDUIT.

D. CEILING MOUNTED OCCUPANCY SENSOR SHALL CONTROL LIGHTING IN ROOMS IDENTIFIED EXCEPT UNSWITCHED EMERGENCY LIGHTING. COORDINATE WITH ALL OTHER TRADES BEFORE FINAL PLACEMENT. SET TIME DELAY FOR ALL CEILING SENSORS AT 15 MINUTES.

E. LIGHTING CIRCUITS UP TO 100'-0" IN LENGTH SHALL UTILIZE #12 CONDUCTORS MINIMUM. LIGHTING CIRCUITS FROM 101'-0" TO 150'-0" IN LENGTH SHALL UTILIZE #10 CONDUCTORS MINIMUM. LIGHTING CIRCUITS FROM 151'-0" TO 250'-0" IN LENGTH SHALL UTILIZE #8 CONDUCTORS MINIMUM. LIGHTING CIRCUITS ABOVE 251'-0" IN LENGTH SHALL UTILIZE #6 CONDUCTORS MINIMUM.

F. ALL CONDUIT IN EXPOSED AREAS SHALL BE PAINTED. CONDUITS PAINT TO MATCH THE SAME COLOR OF DECK ABOVE. ALL CAMERA LOCATIONS TO BE PROVIDED WITH CONDUIT (PENDANDTS).

G. ALL SHADED FIXTURES INCLUDING EXIT SIGNS SHALL BE USED EMERGENCY LIGHTING PURPOSES (WITH BUILT-IN BATTERY).

H. X INDICATES AN ELECTRICAL BREAK IN TRACK. (TYPICAL) AN ELECTRICAL BREAK IN THE TRACK INDICATES AN I-FEED TRACK ACCESSORY, AN ELECTRICAL BREAK AT THE END OF THE TRACK INDICATES A LIVE END TRACK ACCESSORY.

I. LOCATE EXIT SIGNS AS REQUIRED BY LOCAL CODE.

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com
KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

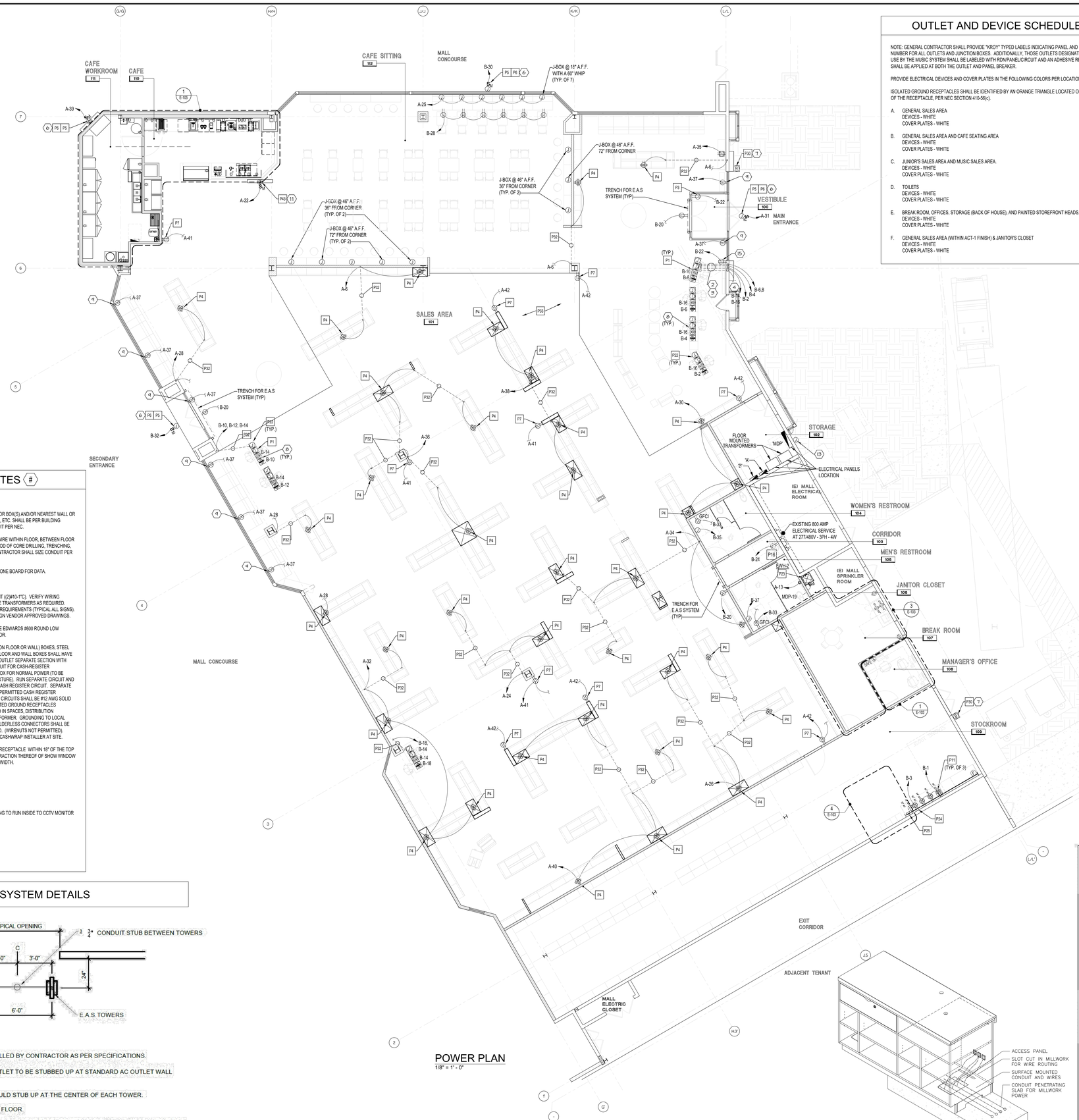
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
LIGHTING PLAN

Drawing Number:
E-101



POWER PLAN
1/8" = 1'-0"

OUTLET AND DEVICE SCHEDULE

NOTE: GENERAL CONTRACTOR SHALL PROVIDE "KROY" TYPED LABELS INDICATING PANEL AND CIRCUIT NUMBER FOR ALL OUTLETS AND JUNCTION BOXES. ADDITIONALLY, THOSE OUTLETS DESIGNATED FOR USE BY THE MUSIC SYSTEM SHALL BE LABELED WITH RDN/PANEL/CIRCUIT AND AN ADHESIVE RED DOT SHALL BE APPLIED AT BOTH THE OUTLET AND PANEL BREAKER.

PROVIDE ELECTRICAL DEVICES AND COVER PLATES IN THE FOLLOWING COLORS PER LOCATION:

ISOLATED GROUND RECEPTACLES SHALL BE IDENTIFIED BY AN ORANGE TRIANGLE LOCATED ON THE FACE OF THE RECEPTACLE, PER NEC SECTION 410-56(c).

A. GENERAL SALES AREA
DEVICES - WHITE
COVER PLATES - WHITE

B. GENERAL SALES AREA AND CAFE SEATING AREA
DEVICES - WHITE
COVER PLATES - WHITE

C. JUNIOR'S SALES AREA AND MUSIC SALES AREA.
DEVICES - WHITE
COVER PLATES - WHITE

D. TOILETS
DEVICES - WHITE
COVER PLATES - WHITE

E. BREAK ROOM, OFFICES, STORAGE (BACK OF HOUSE), AND PAINTED STOREFRONT HEADS.
DEVICES - WHITE
COVER PLATES - WHITE

F. GENERAL SALES AREA (WITHIN ACT-1 FINISH) & JANITOR'S CLOSET
DEVICES - WHITE
COVER PLATES - WHITE

POWER PLAN KEY NOTES P#

P1	CASHWRAP: SURFACE MOUNT FLOOR POWER DEVICES SET BELOW FIXTURE ACCESS PANEL ALL CONDUIT FOR TELEPHONE, DATA SYSTEM CABLE AND EMPTY CONDUIT FOR SPARE SHALL RUN IN FLOOR CHASE TO NEAREST WALL. RUN UP WALL AND OVERHEAD TO TELEPHONE BOARD. VERIFY REQUIREMENTS IN FIELD AND WITH SYSTEM SUPPLIER. METHOD OF CORE DRILLING, TRENCHING, ETC. SHALL BE PER BUILDING REQUIREMENTS. PROVIDE A 109" WHIP TO EXTEND BELOW FIXTURE TOE-KICK. ALL WIRING TO BE RUN IN CONDUIT FOR THE ENTIRE RUN BACK TO PANEL. SEE SHEET A-413 FOR MORE INFO.
P2	NOT USED.
P3	SECURITY SYSTEM CONTROL PAD: AT 48" AFF. SEE DWG. A-210. DEDICATED OUTLET ABOVE VESTIBULE FOR KEYPAD.
P4	FIXTURE SHELF LIGHTING: PROVIDE 1 QUAD OUTLET WITHIN EACH DESIGNED FILLER PANEL. FLUSH MOUNTED ON WALL AT 91-1/8" A.F.F. TO CENTER OF OUTLET (HORIZONTALLY MOUNTED) THERE WILL BE NO WHIPS LEFT HANGING FOR TERMINATION POWER SHOULD BE EXTENDED UP FROM EXISTING SURFACE MOUNTED OUTLET IN RIGID CONDUIT.
P5	BUILDING SIGNS: JUNCTION BOXES WITH 20 AMP CIRCUITS (120V/60HZ) FOR BARNES & NOBLE SIGN (MOUNT WITHIN CANOPY BULKHEAD -OR- BEHIND WALL ABOVE FINISHED CEILING). VERIFY EXACT QUANTITY & LOCATION WITH SHOP DRAWINGS PROVIDED BY B&N SIGN VENDOR PRIOR TO INSTALLATION. VERIFY ALL SIGN LOCATIONS WITH SIGN VENDOR DRAWINGS. ALL WIRING, CONNECTIONS, AND TRANSFORMERS SHALL BE CONCEALED ON THE INTERIOR PORTION OF THE TENANT STOREFRONT AREA.
P6	SIGN CONTROLS: BUILDING SIGNS TO BE CONTROLLED ON/OFF BY PHOTOCELL LIGHTSTAT PANEL WITH MANUAL OVERRIDE ON LIGHTSTAT PANEL. PHOTOCELL TO BE LOCATED IN 'WIDE OPEN' LOCATION AND SET TO MAXIMUM SENSITIVITY. VERIFY PHOTOCELL LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. USE WEATHERHEAD ON ROOF FOR EXTERIOR PHOTOCELL.
P7	UTILITY OUTLET: AT 18" AFF (TYPICAL)
P11	PDT CHARGERS: INSTALL THREE (3) QUAD RECEPTACLES AT 64" A.F.F. ABOVE FIRST SHELF OF THE RECEIVING TABLE SHELVING SPACED AS SHOWN ON A-413, DETAIL 7A.
P16	DRINKING FOUNTAIN: JUNCTION BOX AT 18" AFF (CORRIDOR).
P22	36" WHIP AND J-BOX - SEE CASHWRAP ISOMETRIC DETAIL ON THIS SHEET E-102
P23	NEW ELECTRIC WATER HEATER: (JANITORS CLOSET) PROVIDE 30 AMP DISCONNECT SWITCH
P24	TELEPHONE SYSTEM: OUTLET AT 48" A.F.F. IN STOCK ROOM. GENERAL CONTRACTOR SHALL PROVIDE CONDUIT AS REQUIRED FROM LL TERMINATION POINT TO PANEL AS SHOWN. VERIFY DISTANCE IN FIELD.
P25	TELEPHONE: AT 48" AFF WITHIN BREAK ROOM (SEE DWG A-412) AND STOCK ROOM (SEE DWG A-413) (SEE DWG A-222).
P28	DELIVERY BUZZER ACTUATOR: AT EXTERIOR STOCK ROOM DOORS. PROVIDE J-BOX WITH WEATHER PROOF, SPRING LOADED COVER.
P30	EMPLOYEE BUZZER ACTUATOR: AT EXTERIOR ENTRY DOORS MOUNTED AT 45° AFF. PROVIDE RECESSED J-BOX WITH WEATHER PROOF, SPRING LOADED COVER. VERIFY EXACT LOCATION (HIDDEN FROM PLAIN VIEW) WITH B&N DEVELOPMENT MANAGER / ARCHITECT.
P31	NOT USED.
P32	ROUTE CONDUIT AND WIRE CONCEALED TO WALL. ROUTE CONDUITS BELOW FLOOR. TRENCH & PATCH FLOOR AS REQUIRED. ROUTE TO NEAREST WALL OR COLUMN AND THEN UP TO ACCESSIBLE CEILING SPACE FOR CONTINUATION.
P33	20 NEW CONDUITS WITH SQUARE J-BOX AT BOTTOM WITH PULL STRING FROM DECK TO 12'-0" A.F.F., COORDINATE LOCATION WITH BN VENDOR.
P34	NOT USED.
P35	NOT USED.
P43	B&N CAFE ILLUMINATED LETTER SIGN: JUNCTION BOX MOUNTED ON SOFFIT AT 10'-4" A.F.F. TO CENTER OF SIGN (BO SIGN AT 9'-7" A.F.F.) WITH 20 AMP CIRCUIT POWERED BY LIGHTING CONTACTOR. ILLUMINATED SIGN SUPPLIED BY B&N FIXTURE VENDOR, GENERAL CONTRACTOR SHALL INSTALL AND MAKE FINAL CONNECTIONS.

GENERAL NOTES

1. COORDINATE FIXTURE GANGBOX LOCATIONS WITH FIXTURE VENDOR PRIOR TO INSTALLATION.
2. COORDINATE FIXTURE JUNCTION BOX LOCATIONS AND REQUIREMENTS WITH FIXTURE VENDOR.
3. PROVIDE CHASE IN FLOOR SLAB FOR ELECTRICAL CONDUITS REQUIRED. COORDINATE WITH ARCHITECTURAL AND ELECTRICAL DRAWINGS. PATCH FLOOR AS REQUIRED FOR FINISHED FLOOR INSTALLATION.
4. NOT USED.
5. GENERAL CONTRACTOR SHALL COORDINATE ALL HOLES/GROMMET LOCATIONS IN COUNTERS WITH MILLWORK AND EQUIPMENT SUPPLIER. HOLES PREDRILLED BY MILLWORK VENDOR. GROMMETS FURNISHED AS WELL.
6. REFER TO A-101 FOR DIMENSIONAL INFORMATION.
7. GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUIT & PULL STRINGS AS SPECIFIED.
8. B&N VENDOR TO PROVIDE AND INSTALL ALL CATEGORY 6 CABLE, RJ45 TERMINATIONS, HUBS, TRANSFORMERS, AND SURGE PROTECTORS AS REQUIRED.
9. GENERAL CONTRACTOR SHALL PROVIDE JUNCTION BOXES AND CONDUIT STUBS (ABOVE CEILING) AS REQUIRED FOR HVAC THERMOSTATS, REMOTE T-STAT SENSORS, MUSIC VOLUME CONTROLS, FIRE ALARM DEVICES, AND SECURITY SYSTEM DEVICES. COORDINATE WITH MECHANICAL DOCUMENTS, BARNES & NOBLE VENDORS, AND LANDLORD (IF APPLICABLE) FOR QUANTITY AND LOCATIONS.

DUCT SMOKE DETECTOR RESET/TEST STATIONS SHALL BE LOCATED AS FOLLOWS:

LOCATE IN MANAGER'S OFFICE OR LOCATE ON REAR FACE OF COLUMN NEAREST TO ASSOCIATED HVAC UNIT.

CODED NOTES

1. NOT USED.
2. POWER CONDUIT(S) WITHIN FLOOR, BETWEEN FLOOR BOX(S) AND/OR NEAREST WALL OR COLUMN. METHOD OF CORE DRILLING, TRENCHING, ETC. SHALL BE PER BUILDING REQUIREMENTS. CONTRACTOR SHALL SIZE CONDUIT PER NEC.
3. DATA/TELECOMMUNICATION CONDUIT WITH PULL WIRE WITHIN FLOOR, BETWEEN FLOOR BOX(S) AND/OR NEAREST WALL OR COLUMN. METHOD OF CORE DRILLING, TRENCHING, ETC. SHALL BE PER BUILDING REQUIREMENTS. CONTRACTOR SHALL SIZE CONDUIT PER NEC.
4. 1-1/2" CONDUITS WITH PULL WIRE BACK TO TELEPHONE BOARD FOR DATA.
5. NOT USED.
6. BARNES & NOBLE SIGN WITH A TOTAL OF (1) CIRCUIT ((2)#10-1"C). VERIFY WIRING ARRANGEMENT WITH SIGN SUPPLIER AND PROVIDE TRANSFORMERS AS REQUIRED. PROVIDE LOCAL DISCONNECT MEANS AS PER NEC REQUIREMENTS (TYPICAL ALL SIGNS). VERIFY MOUNTING HEIGHT AND LOCATION WITH SIGN VENDOR APPROVED DRAWINGS.
7. IF NOT EXISTING, BUZZER (PUSH BUTTON) SHALL BE EDWARDS #600 ROUND LOW VOLTAGE PUSH BUTTON MOUNTED 45° ABOVE FLOOR.
8. RECESSED MOUNTED MULTIPLE GANG (MOUNTED ON FLOOR OR WALL) BOXES, STEEL CITY, HUBBELL, OR LEW (OR APPROVED EQUAL). FLOOR AND WALL BOXES SHALL HAVE SEPARATE SECTIONS FOR DATA AND TELEPHONE OUTLET SEPARATE SECTION WITH HUBBELL 1G5362 RECEPTACLE ON SEPARATE CIRCUIT FOR CASH-REGISTER CONNECTION AND ONE SECTION WITH JUNCTION BOX FOR NORMAL POWER (TO BE CONNECTED TO RECEPTACLE FURNISHED WITH FIXTURE). RUN SEPARATE CIRCUIT AND GROUND WIRE IN SEPARATE CONDUIT FOR EACH CASH REGISTER CIRCUIT. SEPARATE HOMERUN REQUIRED AND CONDUIT GROUND NOT PERMITTED CASH REGISTER CIRCUITS. THE GROUND WIRE ON CASH REGISTER CIRCUITS SHALL BE #12 AWG SOLID GREEN ISOLATED. RUN CONTINUOUS FROM ISOLATED GROUND RECEPTACLES THROUGH LOCAL PANEL(S) MUST BE TERMINATED IN SPACES. DISTRIBUTION PANELBOARD OR AT THE DERIVED SYSTEM TRANSFORMER. GROUNDING TO LOCAL PANEL(S) NOT PERMITTED. TAPED SPLIT-BOLTS SOLDERLESS CONNECTORS SHALL BE USED TO ENSURE CONTINUOUS ISOLATED GROUND. (WIRENUTS NOT PERMITTED). VERIFY EXACT LOCATIONS AND CONDITIONS WITH CASHWRAP INSTALLER AT SITE.
9. SHOW WINDOW RECEPTACLE. E.C. SHALL INSTALL RECEPTACLE WITHIN 18" OF THE TOP OF THE SHOW WINDOW FOR EACH 12' OR MAJOR FRACTION THEREOF OF SHOW WINDOW AREA MEASURED HORIZONTALLY AT ITS MAXIMUM WIDTH.
10. NOT USED.
11. NOT USED
12. NOT USED.
13. JUNCTION BOX MOUNTED ON EXTERIOR OF BUILDING TO RUN INSIDE TO CCTV MONITOR LOCATION.
14. NOT USED.
15. KEY PAD RECEPTACLE AT 80".
16. NOT USED.

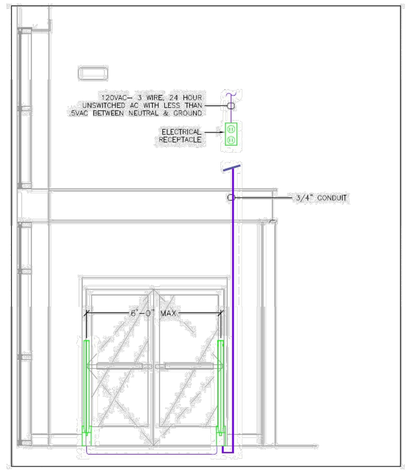
EAS SYSTEM DETAILS

NOTES:

1. E.A.S. SYSTEM ROUGHED-IN AND INSTALLED BY CONTRACTOR AS PER SPECIFICATIONS.
2. 3/4" CONDUIT FROM TOWER TO AC OUTLET TO BE STUBBED UP AT STANDARD AC OUTLET WALL HEIGHT.
3. 1/2" CONDUIT BETWEEN TOWERS SHOULD STUB UP AT THE CENTER OF EACH TOWER.
4. ALL CONDUIT STUBS TO BE FLUSH WITH FLOOR.
5. SYSTEM IS POWERED BY 20 AMP, 3 WIRE, WITH LESS THAN .5V BETWEEN NEUTRAL AND GROUND. 24 HOUR DEDICATED CIRCUIT. CIRCUIT SHOULD BE LABELED "E.A.S. TOWERS".

EAS SECURITY TOWER
SCALE: 1/4"=1'-0"

CASHWRAP ISOMETRIC DETAIL



ANTENNAS - FRONT VIEW INTERIOR

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

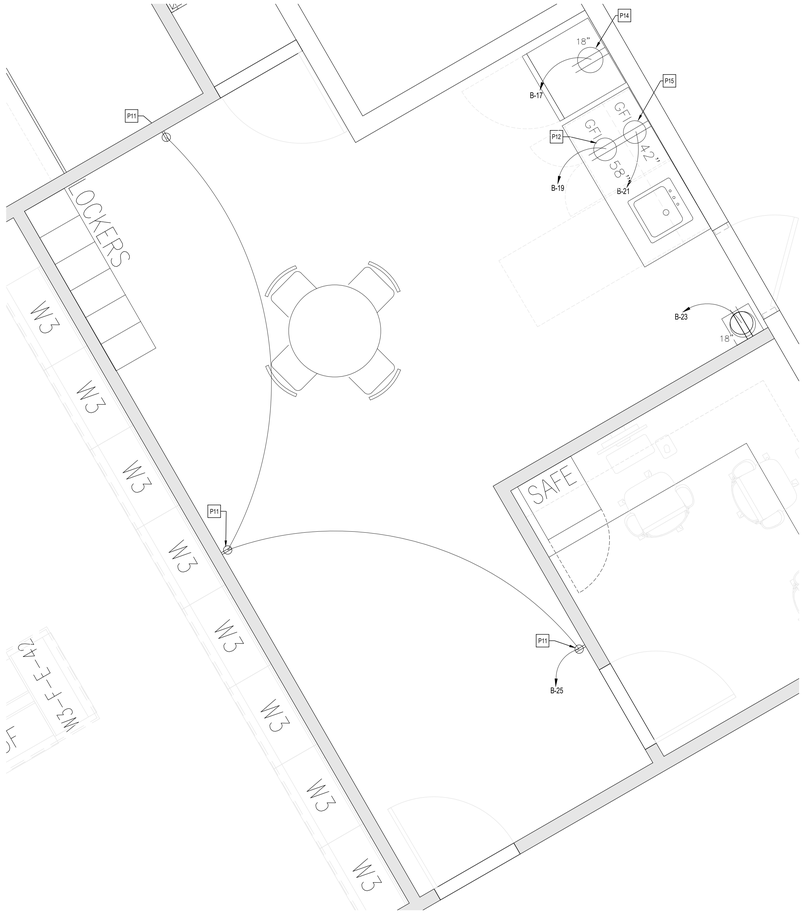
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
POWER PLAN

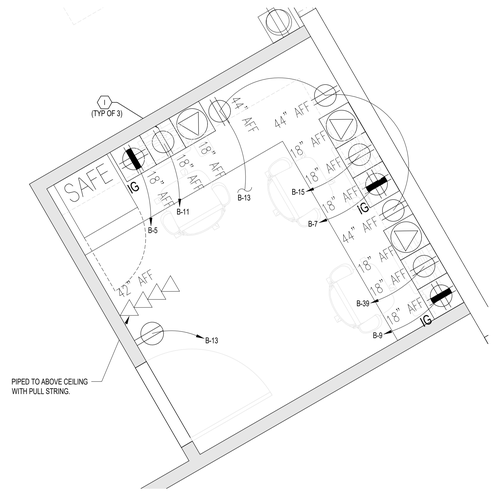
Drawing Number:
E-102



1 / E-103

ENLARGED BREAK ROOM POWER PLAN

1/2" = 1' - 0"



3 / E-103

ENLARGED MGR. OFFICE POWER PLAN

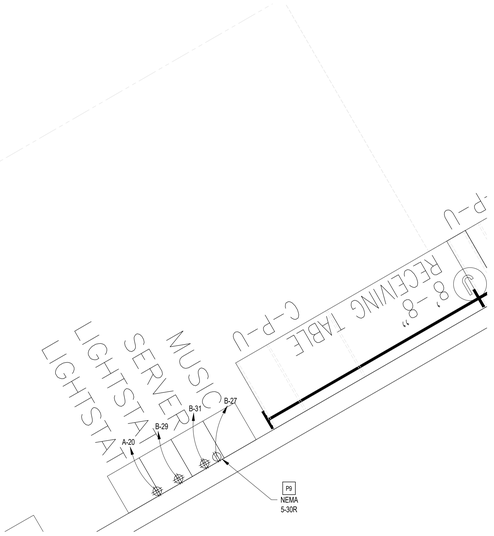
1/2" = 1' - 0"

REFERENCE ARCHITECTURAL ELEVATION SHEETS FOR ADDITIONAL INFORMATION.

CODED NOTES ⟨#⟩

1. FURNISH AND INSTALL RECESSED MOUNTED MULTIPLE GANG (MOUNTED ON FLOOR OR WALL) BOXES, STEEL CITY, HUBBELL OR LEW (OR APPROVED EQUAL). FLOOR AND WALL BOXES SHALL HAVE SEPARATE SECTION FOR TELEPHONE OUTLET, SEPARATE SECTION WITH HUBBELL 1S362 RECEPTACLE ON SEPARATE CIRCUIT, ONE SECTION WITH (2) HUBBELL 5362 (QUAD RECEPTACLE) FOR NORMAL POWER, ONE SECTION WITH 6"x6" JUNCTION BOX FOR NETWORK, ONE SECTION WITH 4"x4" JUNCTION BOX FOR A SPARE. SEPARATE HOMERUN REQUIRED AND CONDUIT GROUND NOT PERMITTED ON CLEAN POWER CIRCUITS. THE GROUND WIRE ON CLEAN POWER CIRCUITS SHALL BE #12 AWG SOLID GREEN ISOLATED, RUN CONTINUOUS FROM ISOLATED GROUND RECEPTACLES THROUGH LOCAL PANEL(S) MUST BE TERMINATED IN SPACES, DISTRIBUTION PANELBOARD OR AT THE DERIVED SYSTEM TRANSFORMER. GROUNDING TO LOCAL PANEL(S) NOT PERMITTED. TAPE SPLIT-BOLTS SOLDERLESS CONNECTORS SHALL BE USED TO ENSURE CONTINUOUS ISOLATED GROUND. (WIRENUTS NOT PERMITTED). VERIFY EXACT LOCATIONS AND CONDITIONS AT SITE.
2. NOT USED.
3. NOT USED.

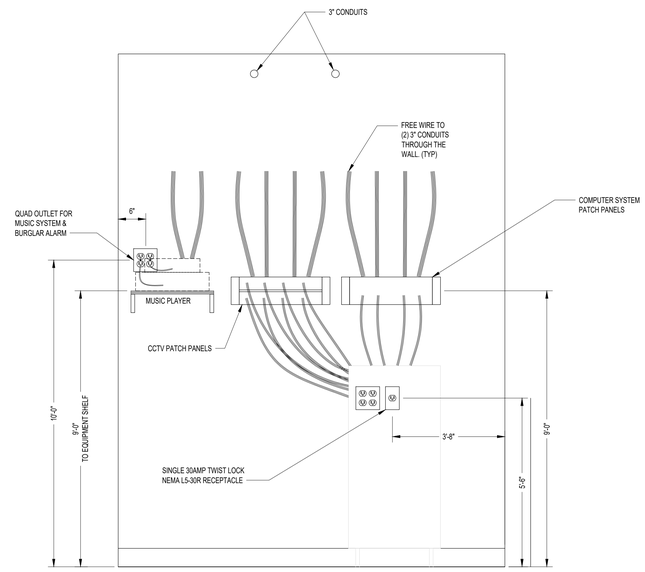
	POWER PLAN KEY NOTES
P9	POS SERVER RACK: DEDICATED 30AMP CIRCUIT WITH TWIST LOCK NEMA L5-30R RECEPTACLE
P11	UTILITY OUTLET: AT 18" AFF (TYPICAL)
P12	MICROWAVE: RECESSED/CLOCK GFI OUTLET (BREAK ROOM) SEE DWG A-412.
P14	REFRIGERATOR: GFI DUPLEX RECEPTACLE (BREAK ROOM)
P15	GENERAL CONVENIENCE: GFI OUTLET ABOVE COUNTER (BREAK ROOM), SEE DWG. A-412.



4 / E-103

ENLARGED PART STOCK ROOM POWER PLAN

1/2" = 1' - 0"



2 / E-103

SERVER ROOM DETAIL

1/2" = 1' - 0"

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, P.E.
WA LICENCE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BID COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
ENLARGED
POWER PLANS

Drawing Number:
E-103

ELECTRICAL HVAC PLAN

1/8" = 1' - 0"

EXAMPLE HVAC STAT SET UP

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, P.E.
WA LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

ELECTRICAL
HVAC PLAN

Drawing Number:

E-104

GENERAL NOTE:

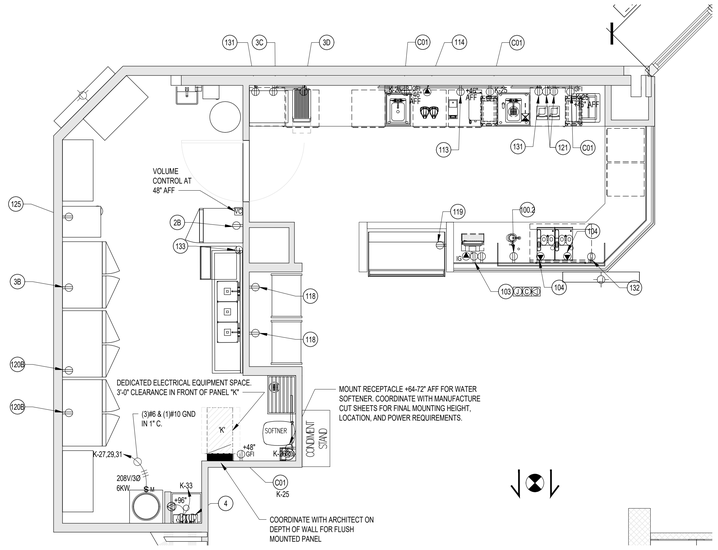
VERIFY FINAL LOCATIONS WITH KITCHEN DRAWINGS PRIOR TO ROUGH-IN.

GENERAL NOTE:

VERIFY ALL KITCHEN EQUIPMENT, SPECIFICATIONS, REQUIREMENTS, ETC. WITH KITCHEN VENDOR DRAWINGS & OWNER PRIOR TO BID.

ELECTRICAL KITCHEN SYMBOL LEGEND

SYMBOL	DESCRIPTION
	WALL/FIXTURE MOUNTED DUPLEX OUTLET
	SPECIAL OUTLET. SEE CAFE EQUIPMENT POWER SCHEDULE FOR PLUG TYPE.
J	WALL MOUNTED JUNCTION BOX



1 E-105

ENLARGED KITCHEN POWER PLAN

1/4" = 1' - 0"

GENERAL NOTES:

1. ALL DEVICES IN FOOD PREP AREA SHALL BE GFI.
2. FOR LOCATION OF ELECTRICAL DEVICES, REFER TO ARCHITECTURAL EQUIPMENT/CABINET PLANS (A-227 & A-227a). ALL DEVICES TO ALIGN WITH DESIGNATED EQUIPMENT AND CABINET LOCATIONS AS SHOWN. NO EXCEPTIONS SHALL BE TAKEN.
3. GENERAL CONTRACTOR SHALL COORDINATE ELECTRICAL INSTALLATION WITH PLUMBING FOR INSTALLATION OF CARLON. SCHEDULE 40 CONDUIT CHASE FOR FILTER TUBING AS REQUIRED.
4. SERVICE COUNTER MILLWORK NOTE: EACH ELECTRICAL DEVICE WITHIN REAR COUNTER OF SERVICE AREA SHALL BE STUBBED-OUT WITH M.C. CONDUIT. GENERAL CONTRACTOR SHALL PROVIDE AND COORDINATE FINAL RECESSED INSTALLATION OF JUNCTION BOXES WITH MILLWORK INSTALLATION.

KITCHEN ELECTRICAL NOTES

1. ALL COVERPLATES AND DISCONNECT SWITCHES IN KITCHEN AREA SHALL BE STAINLESS STEEL.
2. ALL ELECTRICAL WORK FOR FOOD SERVICE EQUIPMENT SHALL BE COMPLETELY INTERWIRED BY ELECTRICAL CONTRACTOR. FINAL CONNECTIONS TO EQUIPMENT JUNCTION BOX OR PULL BOX, AND ALL ELECTRICAL WORK FROM PANEL BOARDS, TO BE BY THE ELECTRICAL CONTRACTOR.
3. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL ROUGH-IN AND FINAL CONNECTION TO THE FOOD SERVICE EQUIPMENT. ALL WORK TO BE IN COMPLIANCE WITH ALL NATIONAL, STATE AND LOCAL CODES APPLICABLE.
4. VERIFY OUTLET RATING AND CONFIGURATION WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
5. VERIFY EXACT LOCATION AND MOUNTING HEIGHTS OF ALL OUTLETS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN.
6. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL PLUGS AND CORDS REQUIRED. ALL CORDS SHALL BE NEMA RATED AND UL APPROVED FOR MANUFACTURER AND EQUIPMENT.
7. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL JUNCTION BOXES, PVC OR METAL CONDUIT, CONVENIENCE OUTLETS WITH COVERS, SWITCHES CONNECTORS, CONTROLS, AND OTHER ACCESSORIES THAT ARE NOT AN INTEGRAL PART OF THE FOOD SERVICE EQUIPMENT AS REQUIRED TO MAKE FINAL CONNECTIONS TO THE FOOD SERVICE EQUIPMENT FOR A COMPLETE AND FUNCTIONAL OPERATION MEETING ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND ORDINANCES.
8. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ALL DISCONNECTS OR CIRCUIT BREAKERS AS REQUIRED BY CODES FOR EACH CONNECTION. COORDINATE LOCATION WITH THE KITCHEN EQUIPMENT CONTRACTOR.
9. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL WALL SWITCH FOR FACTORY INSTALLED LIGHTING FIXTURES IN EXHAUST VENTILATOR HOODS PER APPLICABLE STATE AND LOCAL CODES APPLICABLE. ELECTRICAL CONTRACTOR SHALL PROVIDE WIRE AND CONNECTION TO EACH LIGHT FIXTURE. THE ELECTRICAL CONTRACTOR SHALL FULLY CONCEAL ALL WIRING BETWEEN POWER SOURCE, WALL SWITCH, AND JUNCTION BOX ON HOOD. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ANY INNER WIRING OF LIGHT FIXTURES BETWEEN VENTILATOR HOOD SECTIONS AS REQUIRED. ALL WIRING WITHIN HOOD AND POWER SOURCE TO BE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, NFPA #96 AND ALL OTHER APPLICABLE CODES.
10. IN ACCORDANCE WITH NFPA #96 AND MANUFACTURER'S RECOMMENDATIONS. THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A PUSH BUTTON STATION WITH PILOT LIGHT FOR VENTILATOR FAN MOTOR(S). THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR, AND TO PROVIDE ALL REQUIRED WIRING FROM POWER SUPPLY THROUGH FAN SWITCH TO FAN MOTOR(S) AND PROVIDE MAGNETIC STARTERS AND FULLY INTERWIRE SYSTEM WITH ALL POWER INTERRUPTION DEVICES(S) BUILT INTO HOOD AND FIRE PROTECTION SYSTEM AS REQUIRED BY NFPA #96, NATIONAL, STATE AND/OR LOCAL CODES APPLICABLE. ELECTRICAL CONTRACTOR TO PROVIDE LOCK-OUT DEVICES ON CONTROL BOXES FOR EXHAUST HOOD FANS, SYSTEM AND FIRE PROTECTION SYSTEM.
11. ELECTRICAL CONTRACTOR TO PROVIDE, INSTALL AND FULLY WIRE SHUNT-TRIP BREAKERS FOR SHUT DOWN OF FUEL AND POWER TO COOKING EQUIPMENT AS REQUIRED BY NFPA #96 AND ALL OTHER NATIONAL, STATE, OR LOCAL CODES APPLICABLE. THE HOLDING COILS FOR SHUNT-TRIP BREAKERS SHALL BE WIRED TO A 120 VOLT/SINGLE PHASE CONTROL CIRCUIT BY THE ELECTRICAL CONTRACTOR AND EXTENDED THROUGH A CONTACTOR AND MAINTAINED BY A PRESSURE SWITCH LOCATED AT THE MOUNTING BRACKET OF THE CHEMICAL CYLINDER FOR HOOD PROTECTION. THE ELECTRICAL CONTRACTOR SHALL ALSO PROVIDE, INSTALL, AND FULLY INTERWIRE WITH POWER SHUTDOWN RELAY SWITCH, AND ADDITIONAL RELAY OR SWITCHES REQUIRED TO INTERFACE FIRE PROTECTION SYSTEM WITH FAN VENTILATOR MOTORS AND BUILDING ALARM SYSTEMS AS REQUIRED BY NFPA #96, NATIONAL, STATE, AND LOCAL CODES APPLICABLE. COORDINATE WITH FIRE SUPPRESSION CONTRACTOR FOR LOCATION OF FIRE SUPPRESSION SYSTEM, AND GAS SHUT-OFF VALVE AS PART OF THE COMPLETE SYSTEM AS APPLICABLE.
12. AT THE REMOTE FIRE CABLE PULL ELECTRICAL TRADES TO PROVIDE EMPTY JUNCTION BOX AT 54" AFF AND CONDUIT CONCEALED IN WALL TO 6" ABOVE FINISHED CEILING. COORDINATE EXACT REQUIREMENTS WITH FOOD SERVICE EQUIPMENT TRADE AND FIRE SUPPRESSION CONTRACTOR.
13. ELECTRICAL CONTRACTOR SHALL INTERWIRE DISPOSER CONTROL SWITCH AND TO TIME DELAY/RELAY, MAGNETIC STARTER, DISPOSER MOTOR, AND SOLENOID VALVE WITH WATER TIGHT CONDUIT AS REQUIRED PER LOCAL CODES.
14. ELECTRICAL CONTRACTOR SHALL INTERWIRE THROUGH TIME CLOCK FOR LOW TEMPERATURE COMPRESSOR AND WALK-IN COMPARTMENT BLOWER COIL FAN MOTORS AND DEFROST ELEMENT POWER SOURCE AS PART OF MAIN POWER SOURCE. PROVIDE ALL WIRING AND CONDUIT WITH DISCONNECT. (VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER)
15. ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL CONNECTION TO A JUNCTION BOX MOUNTED ON TOP OF A PREFABRICATED REFRIGERATOR AND/OR FREEZER WALL AT APPROXIMATELY 8'-6" AFF. INTERWIRE THE LIGHT ADJACENT TO THE DOOR WITH THE FACTORY MOUNTED LIGHT SWITCH. ALL CONDUIT SHALL BE RUN EXPOSED ON TOP OF WALK-IN. NO EXPOSED CONDUIT WILL BE ALLOWED ON INSIDE OF WALK-IN. ELECTRICAL SERVICE REQUIRED FOR WALK-IN SHALL BE AS SHOWN FOR LIGHTS, DOOR AND DOOR FRAME HEATER, THRESHOLD PLATE HEATERS (WHERE SPECIFIED), HEATED PRESSURE RELIEF PORT (ON FREEZERS) AND ALARM SYSTEMS (WHERE SPECIFIED). (VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER)
16. ELECTRICAL CONTRACTOR TO PROVIDE THE REQUIRED POWER SUPPLY AND FINAL CONNECTIONS TO THE TERMINAL BLOCK AT THE CONDENSING UNIT AND TO FULLY INTERWIRE TO ANY ADDITIONAL COMPONENTS, INCLUDE THE PROPER SIZE DISCONNECTS OR CIRCUIT BREAKERS. ALL WIRING FOR LOW AND MEDIUM TEMPERATURE CONDENSING UNIT TO BE ROUTED THROUGH DEFROST TIME CLOCK AND THEN WIRED TO EVAPORATOR COIL FOR PROPER POWER SUPPLY WITH THE REQUIRED QUANTITY OF WIRES. THE EVAPORATOR COIL DEFROST HEATER AND FAN MOTOR VOLTAGES AND LOADS ARE AS NOTED ON PLAN. VERIFY LOCATION OF COMPRESSORS AND COORDINATE WITH REFRIGERATION CONTRACTOR FOR FINAL CONNECTIONS. (VERIFY REQUIREMENTS WITH EQUIPMENT SUPPLIER)
17. ALL 50AMP OR LESS - SINGLE PHASE AND 100AMP OR LESS - THREE PHASE, RECEPTACLES IN KITCHEN AREAS SHALL BE GFCI PROTECTION PER N.E.C. 210-8(B).

FOOD SERVICE EQUIPMENT / UTILITIES SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SINK BOWL, WELD-IN, DUMP SINK	N. WASSERSTROM & SONS	F4480234	1
1A	SINK BOWL, WELD-IN, HAND WASH	N. WASSERSTROM & SONS	F4480234	1
3C	BLODGETT OVEN	BLODGETT	CTB SGL	1
3D	RAPID COOK OVEN	MERRYCHEF USA	E2S HIGH CLASSIC	1
100.1	PANTRY FAUCET	T&S BRASS	KL45-4000-WH	1
100.2	HOT WATER DISPENSER	IN SINK ERATOR	C1300	1
103	POS SYSTEM	-	-	1
104	ESPRESSO MACHINE	MELLITA	CT8	2
105	PASTRY CASE	RUBBERMAID COMMERCIAL	-	1
108	GARBAGE CAN	PRODUCTS	FG354060BLA	3
111	TOUCH-FREE SOAP DISPENSER	GOJO INDUSTRIES, INC.	PURELL CS6	1
112	SURFACE-MOUNTED PAPER TOWEL DISPENSER	BOBRICK	B-2621	1
112.1	BLENDER RINSER	BLENDTEC	JRE-610	1
113	COFFEE GRINDER	GRINDMASTER-UNIC-CRATHCO	890BS	1
114	COFFEE BREWER	BUNN	53100.0100	1
115	MANIFOLD	-	-	1
116	GLASS FILLER	T&S BRASS	B-1210	-
117	AIRPOT	SERVICE IDEAS	ECALS22SS	2
118	SELF-SERVICE REFRIGERATED CASE	STRUCTURAL CONCEPTS	B3424	2
120	DROP-IN ICE BIN	KROWNE	D278	0
121	BLENDER	VITAMIX	36019-ABAB	2
123	DIPPER WELL	T&S BRASS	B-2282-01-F05	1
131	SINGLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TUC-27-HC	2
132	DOUBLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TWT-48-HC	1

WORKROOM EQUIPMENT / UTILITIES SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1A	R.O. WATER FILTRATION SYSTEM MANIFOLD BOARD	-	-	1
1B	R.O. WATER FILTRATION SYSTEM - ACCUMULATOR TANK	-	-	1
1C	R.O. WATER FILTRATION SYSTEM - WATER SOFTENER	-	-	1
1D	R.O. WATER FILTRATION SYSTEM - BRINER	-	-	1
2B	FREEZER, REACH-IN, SINGLE DOOR	-	-	1
3B	FREEZER, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2F-2S-HC	1
4	WATER HEATER	-	-	1
5	MOP SINK	-	-	1
5.1	SERVICE FAUCET	-	-	1
6	WALL SHELF	-	-	1
8	SOAP DISPENSER	GOJO INDUSTRIES, INC.	TFX	1
9	HAND SINK - WALL MOUNTED	HAND SINK, PARTS & ACCESSORIES	DH-17-NO FAU	1
14	C-FOLD PAPER TOWEL DISPENSER	-	-	1
15	WASTE CONTAINER	-	-	1
16	THREE COMPARTMENT SINK	AMTEKCO INDUSTRIES LTD.	D724-03-74	1
16.1	PRE-RINSE FAUCET & ADD ON FAUCET	T&S BRASS	B-5110-12-CRB8P	1
16.4	LEVER WASTE	T&S BRASS	B-3950	3
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2R-2S-HC	1
125	ICE MAKER, CUBE-STYLE	ITV ICE MAKER	SPIKA MS 500	1
127	WIRE SHELVING	1880 HOSPITALITY	FF2472C	3
133	DISHWASHER, UNDERCOUNTER	JACKSON WWS	DISHSTAR HT	1

CAFE EQUIPMENT POWER SCHEDULE

EQUIPMENT NO. (#)	DESCRIPTION	QUANTITY	VOLTAGE AND PHASE	AMPS	HP	KVA	PANEL	CIRCUIT(S)	BREAKER SIZE	WIRE SIZE	CONDUIT	AFF	NEMA	REFERENCE NOTES
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	2	115V/1Ø	5.9	1/2	0.679	K	6 19	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	72"	5-15P	1
2B	FREEZER, REACH-IN, SINGLE DOOR	1	115V/1Ø				K	32	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"			1
3B	FREEZER, REACH-IN, DOUBLE DOOR	1	115V/1Ø	9.4	1-1/4	1.081	K	14	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	72"	5-15P	1
3C	BLODGETT OVEN	1	208V/3Ø	24.0		5.6	K	36,38,40	20A-3P	(3)#12 THWN & (1)#12 GND	3/4"			1
3D	RAPID COOK OVEN	1	208V/1Ø	20.0		4.5	K	39,41	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"		6-20P	1
133	DISHWASHER, UNDERCOUNTER	1	208V/1Ø	37.2	-	7.74	K	21,23	40A-2P	(2)#8 THWN & (1)#10 GND	3/4"	18"	DIRECT	1,3
125	ICE MAKER, CUBE STYLE	1	115V/1Ø	16.0	-	1.289	K	1	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"			1
100.2	HOT WATER DISPENSER	1	115V/1Ø	11.3	-	1.300	K	22	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	18"	5-15P	1
103	POS SYSTEM	1	115V/1Ø	-	VERIFY	VERIFY	K K	37 35	20A-1P	(2)#12 THWN & (1)#12 GND & (1)#12 ISO. GND	3/4"	18"	5-15P	1,2
104	ESPRESSO MACHINE	2	208V-220V/1Ø	30.0	-	6.240	K K	5,7 9,11	30A-2P	(2)#10 THWN & (1)#10 GND	3/4"	30"	L6-30P	1
131	REFRIGERATOR, UNDERCOUNTER	2	115V/1Ø	2.0	1/6	0.24	K K	8 13	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	18"	5-15P	1
121	BLENDER	2	120V/1Ø	15.0	3.0	1.800	K K	18 20	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	48"	5-15P	1
113	COFFEE GRINDER	1	120V/1Ø	8.0	1/2	0.920	K	15	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	48"	5-15P	1
114	COFFEE BREWER	1	208V/1Ø	14.0	-	2.912	K	10,12	20A-2P	(2)#12 THWN & (1)#12 GND	3/4"	48"	VERIFY WITH MANUFACTURER	1
118	SELF-SERVICE REFRIGERATED CASE	2	120V/1Ø	15.6	-	1.198	K K	2 4	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	18"	5-15P	1
119	DISPLAY CASE, REFRIGERATED, SELF SERVE	1	208V/1Ø	10.0	1/2	2.08	K	32,34	20A-2P	(2)#12 THWN & (1)#12 GND	3/4"	18"	6-15P	1
132	SINGLE UNDER COUNTER REFRIGERATOR	2	TBD	-	-	-	K	30	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	48"		1
C01	CONVENIENCE RECEPTACLE	-	120V/1Ø	1.5	-	0.180	SEE PLANS	SEE PLANS	20A-1P	(2)#12 THWN & (1)#12 GND	3/4"	48"	5-15P	1

REFERENCE NOTES:

1. OWNER/VENDOR PROVIDED ITEM. VERIFY ALL UTILITY REQUIREMENTS AND LOCATIONS PRIOR TO ROUGH-IN.
2. POS SYSTEM. PROVIDE ISOLATED, DEDICATED, GROUNDED CIRCUIT. PROVIDE 3/4" CONDUIT WITH PULL WIRE. GENERAL CONTRACTOR TO COORDINATE WITH SYSTEM INSTALLER.
3. THE ELECTRICAL CONTRACTOR SHALL BE REQUIRED TO FURNISH AND INSTALL A CODE-COMPLIANT DISCONNECTING MEANS FOR EACH PIECE OF EQUIPMENT IDENTIFIED IN THE ELECTRICAL CONNECTION SCHEDULE AS REQUIRING A DIRECT CONNECTION OR PROVIDE A LOCK-OFF TYPE BREAKER AS SHOWN IN THE PANEL SCHEDULE ON SHEET E202. ALL DISCONNECTS SHALL BE NEMA 4X. DISCONNECTS SHALL BE FUSED WHERE REQUIRED BY N.E.C. (TYPICAL).

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

ENLARGED
KITCHEN
POWER PLANS

Drawing Number:

E-105

LIGHT FIXTURE SCHEDULE (LIGHT CONCEPT)

SYMBOL	TAG	LOAD (VAE)	DESCRIPTION	AREA
	HB	15	HIGH BAY HALOGEN LIGHTINGS NUVO SF76-283, L16A19N1530K FINISH : WHITE	SUSPENDED IN SALES FLOOR AT 10'-6" A.F.F.
	HB-B	15	HIGH BAY HALOGEN LIGHTINGS NUVO SF76-283, L16A19N1530K FINISH : BLACK	SUSPENDED ABOVE CAFE SEATING AREA AT 8'-0" A.F.F.
	HB-R	15	HIGH BAY HALOGEN LIGHTINGS NUVO SF76-283, L16A19N1530K FINISH : RED	SUSPENDED IN SALES FLOOR AT 10'-6" A.F.F.
	LW-01	22	NEW TRACK HEADS MANUFACTURER: ATTAIN LED TRACK HEAD HP MODEL: AT-25-35-95-24-WH-J	TRACK MOUNTED IN SALES AREA
	LWT-01 TRACK	-	NEW PENDANT MOUNTED MANUFACTURER: CONTECH SINGLE CIRCUIT LINE VOLTAGE TRACK VARIOUS LENGTHS- WHITE UNISTRUT AND HANGING HARDWARE	SUSPENDED IN SALES FLOOR AT 12'-0" A.F.F.
	A1	68	BOH LIGHTING MANUFACTURER: LITHONIA LIGHTING MODEL: TZL1N LED L96 10000LM FST MVOLT 30K 80CRI PLR E7W WH	SUSPENDED AT 12'-0" A.F.F. IN STOCK ROOM
A2	A2	-	OFFICE AND BREAK ROOM LIGHTING MANUFACTURER: DT BY TCP MODEL:DTF2UZD3835K	LAY-IN CEILING
A3	A3	46	ATTAIN 2 FT. X 4 FT. INTEGRATED LED 4000 LUMENS 4000K 120V COMMERCIAL GRADE RECESSED TROFFER W/ PRISMATIC LENSES	LAY-IN CEILING
	A14	34	MANUFACTURER: LITHONIA LIGHTING MODELS: ZL1N LED STRIPLIGHT L48 5000LM FST MVOLT 30K 80CRI PLR E7W WH	SURFACE MOUNTED TO CEILING OR SUSPENDED AT 12FT A.F.F.
X1	X1	3.8	THERMOPLASTIC LED EXIT SIGN MANUFACTURER: BEST LIGHTING MODEL: EZXTEU-2RW-EM	SUSPENDED OR WALL MOUNTED AT 8'-0" A.F.F. MIN. B.O. SIGN
X2	X2	5	LED EXIT SIGN AND EMERGENCY LIGHT, THERMOPLASTIC COMBO MANUFACTURER: BEST LIGHTING MODEL: LEDCXTEU-2-R-W-RC	SUSPENDED OR WALL MOUNTED AT 8'-0" A.F.F. MIN. B.O. FIXTURE
EM1	EM1	5	EMERGENCY LIGHT MANUFACTURER: ASTRALITE MODEL: EU-5-LED	SUSPENDED OR WALL MOUNTED AT 8'-0" A.F.F. MIN. B.O. FIXTURE
	D4	12	4" DIAMETER LED DOWNLIGHT MANUFACTURER: ATTAIN LED MODEL: AT-DL4-12-35-WH	RECESSED IN CAFE CEILING
	D6	32	6" DIAMETER LED DOWNLIGHT MANUFACTURER: MAXI LUME MODEL: H6-LED-2000L-DIM10-120+ MD-35K-90/ L607 SHZ WH	RECESSED IN RESTROOM CEILING
	PD1	60	22" DIAMETER LED PENDANT MANUFACTURER: WAYFAIR MODEL: METAIRIE 1 LIGHT SINGLE DOME PENDANT	SUSPENDED ABOVE CASHWRAP AT 7'-8" AFF
	L-8 L-6 L-4 L-2	80 60 40 20	LED TUBE PENDANT ADJUSTABLE MANUFACTURER: CORONET LED MODEL: 8ft: CRD3-8-30-HIGH-UNV-DB-BLK -AC-SD 6ft: CRD3-6-30-HIGH-UNV-DB-BLK -AC-SD 4ft: CRD3-4-30-HIGH-UNV-DB-BLK -AC-SD 2ft: CRD3-2-30-HIGH-UNV-DB-BLK -AC-SD	SUSPENDED ABOVE COUNTER AT 9'-0" AFF
	(E)EM		EXISTING EMERGENCY LIGHT	EXITING IN SALES FLOOR. VERIFY EXACT LOCATION AND COVERAGE ON SITE
SP	SP	-	SPEAKER	OFFICE
	-	-	2X2 DIFFUSER PAINTED TO MATCH ADJACENT CEILING	-

LIGHTING FIXTURE SCHEDULE NOTES:

1. PROVIDE WITH INTEGRAL EMERGENCY BATTERY PACK. EMERGENCY BATTERY PACKS SHALL PROVIDE A MINIMUM OF NINETY (90) MINUTES OF CODE REQUIRED EMERGENCY LIGHTING. EACH BATTERY PACK PROVIDED SHALL PRODUCE THE MAXIMUM LUMEN OUTPUT AVAILABLE WITH THE MAXIMUM NUMBER OF LAMPS. BODINE OR APPROVED EQUAL. CIRCUIT BATTERY PACK AHEAD OF ALL LIGHTING CONTROLS.
2. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND/OR ROOM FINISH SCHEDULE TO DETERMINE PROPER TYPE OF LIGHT FIXTURE REQUIRED FOR THE CEILING CONSTRUCTION PRIOR TO ORDERING THE FIXTURES & PROVIDE FIXTURES THAT ARE COMPATIBLE WITH THE CEILING SYSTEM.
3. NOT USED
4. NOT USED
5. NOT USED
8. VERIFY ALL INFORMATION MARKED AS "TBD" WITH BARNES & NOBLE PROJECT MANAGER AND THE ARCHITECT PRIOR TO PURCHASE.
9. VERIFY ALL MOUNTING HEIGHTS AND METHODS WITH ARCHITECT PRIOR TO INSTALLATION / ROUGH-IN.

LOW VOLTAGE SCHEDULE

SYMBOL	TAG	DESCRIPTION	MOUNTING HEIGHT
CC LS	OCCUPANCY SENSOR (LIGHTSTAT)	DECK MOUNTED J-BOX WITH 3/4" CONDUIT DROP	10'-6" AFF
S1	SPEAKER	-	LAY -IN CEILING
S2	SPEAKER	PROVIDE J-BOX MOUNTED TO DECK	MATCH HEIGHT BOTTOM OF LIGHT GRID
CC P	CCTV	PROVIDE SURFACE MOUNTED J-BOX WITH 3/4" CONDUIT AND SWIVEL MOUNTED J-BOX	MATCH HEIGHT BOTTOM OF LIGHT GRID
CC C	CCTV	PROVIDE 3/4" CONDUIT THROUGH CEILING TO ABOVE VESTIBULE	CEILING MOUNTED
CC W	CCTV	PROVIDE 3/4" CONDUIT SLEEVE THRU WALL 12"-15" ABOVE CENTRE OF DOOR FRAME	WALL MOUNTED
M	MOTION DETECTOR	DECK MOUNTED J-BOX WITH 3/4" CONDUIT DROP	10'-6" AFF
KP	KEYPAD	PROVIDE 3/4" CONDUIT FLUSH AND CENTERED 48" AFF TO ABOVE VESTIBULE WITH PULL STRING. SEE ELECTRICAL DRAWINGS FOR OUTLET	48" AFF
CBA	CELL BOOST ANTENA	DUPLEX OUTLET MOUNTED IN THE CEILING. SEE ELECTRICAL DRAWINGS FOR OUTLET.	MATCH HEIGHT BOTTOM OF LIGHT GRID
AP	ACCESS POINT	PROVIDE SURFACE MOUNTED J-BOX WITH 3/4" CONDUIT AND SWIVEL MOUNTED J-BOX	MATCH HEIGHT BOTTOM OF LIGHT GRID
ECT	ANTENNA	PROVIDE SURFACE MOUNTED J-BOX WITH 3/4" CONDUIT AND SWIVEL MOUNTED J-BOX, FOR BN INTERNAL PHONE SYSTEM, 2-TOTAL, 1-FRONT, 1-BACK SALES ONLY	MATCH HEIGHT BOTTOM OF LIGHT GRID
EAS-WM	SECURITY PADDLE	PROVIDE 3/4" CONDUIT FLUSH AND CENTERED ON WOOD FRAME FROM 48" AFF TO ABOVE CEILING IN CORRIDOR. SEE ELECTRICAL DRAWINGS FOR OUTLET	WALL MOUNTED 48" AFF
EAS-FM	SECURITY PADDLE	PROVIDE 1" CONDUIT FROM SLAB TO ABOVE VESTIBULE CEILING. BOTH OUTLETS ON SAME CIRCUIT. SEE ELECTRICAL DRAWINGS FOR OUTLET	FLOOR MOUNTED 24" FROM VESTIBULE TO CENTRELINE
GB	-	-	WALL MOUNTED

LOW VOLTAGE GENERAL NOTES

1. GENERAL CONTRACTOR SHALL COORDINATE FINAL LOCATIONS FOR LOW VOLTAGE DEVICES WITH INDIVIDUAL LV VENDORS.
2. CAMERAS SHOULD NOT BE PLACED WHERE NOT OBSTRUCTED BY AWNING, STOREFRONT ETC.

NOTE: AS PER LANDLORD SPECIFICATIONS ALL MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENTS BE PROPERLY SUPPORTED FROM STEEL STRUCTURE, NOT ROOF DECK.

GENERAL NOTES

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATION OF LIGHT FIXTURES. CONTRACTORS TO COORDINATE LOCATIONS OF LIGHTING, SPEAKERS, AIR DIFFUSERS, GRILLES, SPRINKLER HEADS & THE LIKE, WITH REFLECTED CEILING LAY-OUTS AS REQUIRED & DIRECTED BY THE ARCHITECT.
2. ALL DEVICES, EQUIPMENT, FIXTURES, & THE LIKE, MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL ALSO BE MAINTAINED.
3. REFER TO MECHANICAL, PLUMBING, AND FIRE PROTECTION PLANS FOR EXACT LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT. COORDINATE LOCATION OF DISCONNECT SWITCH ASSOCIATED WITH EACH PIECE OF EQUIPMENT WITH RESPECTIVE CONTRACTOR AND INSTALL IN ACCORDANCE WITH THE NEC.
4. REFER TO DIVISION 15 (21, 22 & 23) SPECIFICATIONS, HVAC, PLUMBING AND FIRE PROTECTION PLANS FOR ADDITIONAL ELECTRICAL WORK REQUIREMENTS & COORDINATION.
5. ALL RECEPTACLES SHOWN BACK-TO-BACK IN WALLS SHALL BE SEPARATED HORIZONTALLY BY 8" MINIMUM.
6. WHERE OPEN WIRING METHODS FOR LOW VOLTAGE SYSTEMS ARE PERMITTED BY THE CONTRACT DOCUMENTS AND LOCAL AUTHORITY, THE CONDUCTOR INSULATION MUST BE PLENUM RATED.
7. BRANCH CIRCUIT CONDUCTOR SIZES (& CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL & THE LOADS DO NOT EXCEED A LIMIT OF 3%.
8. REGARDLESS OF THE TEMPERATURE RATING OF THE CONDUCTOR INSULATION. ALL CONDUCTOR AMPACITY RATINGS FOR THIS PROJECT SHALL BE DETERMINED FROM THE 75°C CONDUCTOR TEMPERATURE RATINGS INDICATED IN THE NEC TABLES. WHERE EQUIPMENT OR DEVICES ARE PROVIDED WITH TERMINALS/LUGS RATED FOR 60°C, THE AMPACITY RATING OF THE 75°C CONDUCTOR SHALL BE LIMITED TO ITS ASSOCIATED 60°C RATING AS INDICATED IN THE NEC TABLES. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO INCREASE THE CONDUCTORS AND CONDUIT SIZE AS REQUIRED.
9. ALL 120V AND 277V BRANCH CIRCUITS SHALL BE PROVIDED WITH SEPARATE NEUTRAL CONDUCTORS. SHARED NEUTRALS WILL NOT BE PERMITTED FOR MULTI-CIRCUIT INSTALLATIONS. WHERE MULTIPLE CIRCUITS ARE RUN IN A COMMON RACEWAY, THE AMPACITY OF THE CONDUCTORS SHALL BE PROPERLY DERATED & CONDUIT SHALL BE SIZED PER CODE. UNDER NO CIRCUMSTANCES SHALL MORE THAN SIX (6) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT. REFERENCE NEC ARTICLE AND TABLE 310.15(B)(2)(a).
10. ALL CONDUITS SHALL CONTAIN A GROUND CONDUCTOR SIZED PER NEC TABLE #250.122. IN ADDITION, WHERE AN ISOLATED, INSULATED GROUND IS REQUIRED, A SEPARATE GROUND CONDUCTOR WITH GREEN INSULATION SHALL BE RUN FROM THE PANEL GROUND BUS TO THE ISOLATED GROUND CONNECTION OF THE DEVICE. IN NO CASE SHALL THE SYSTEM GROUND (CONDUCTOR & ASSOCIATED OUTLET BOXES, CONDUIT & BUILDING STEEL) BE ALLOWED TO CONTACT THE ISOLATED GROUND (CONDUCTOR & DEVICE). WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE FOR VOLTAGE DROP, THE GROUND CONDUCTOR SIZE SHALL BE INCREASED PROPORTIONATELY (ACCORDING TO CIRCULAR MIL AREA) FROM THE SIZE REQUIRED BY NEC TABLE #250.122.
11. ELECTRICAL INSTALLATION REQUIREMENTS FOR ALL HVAC, PLUMBING, FIRE PROTECTION, SPECIAL SYSTEMS AND OWNER EQUIPMENT BEING FURNISHED BY OTHERS SHALL BE REVIEWED AND COORDINATED WITH OTHER TRADES PRIOR TO ROUGH-IN. OBTAIN EQUIPMENT SHOP DRAWINGS FROM INSTALLER/SUPPLIER/CONTRACTOR/OWNER FURNISHING EQUIPMENT, AS REQUIRED, FOR REVIEW AND COORDINATION. CONTACT ARCHITECT/ENGINEER WITH ANY DISCREPANCIES FOUND BETWEEN CONSTRUCTION DRAWINGS AND EQUIPMENT BEING FURNISHED PRIOR TO ROUGH-IN.
12. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL ACCESS PANELS, AS REQUIRED FOR SERVICING AND TESTING, FOR EQUIPMENT AND/OR DEVICES FURNISHED UNDER HIS CONTRACT. THE GENERAL CONTRACTOR SHALL INSTALL ACCESS PANELS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE SIZE AND LOCATION OF EACH ACCESS PANEL WITH THE ARCHITECT AND GENERAL CONTRACTOR PRIOR TO ROUGH-IN.
13. ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BID ALL CUTTING, TRENCHING AND PATCHING ASSOCIATED WITH THE ELECTRICAL INSTALLATION.
14. ALL PENETRATIONS THROUGH FIRE RATED WALLS ASSOCIATED WITH THE ELECTRICAL INSTALLATION SHALL BE SLEEVED AND FIRE-STOPPED USING A UL APPROVED METHOD. UL APPROVED METHOD SHALL MEET OR EXCEED FIRE RATING OF STRUCTURE BEING PENETRATED. REFERENCE ARCHITECTURAL PLANS FOR FIRE RATED STRUCTURES.
15. NO CONDUIT, BOXES, WIRING, OR CABLES SHALL BE INSTALLED WITHIN 1 1/2" OF THE LOWEST POINT OF THE UNDERSIDE OF THE ROOF DECKING, NOR SHALL THEY BE INSTALLED CONCEALED WITHIN METAL-CORRUGATED ROOF DECKING. FOR EXISTING INSTALLATIONS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE AND/OR REWORK EXISTING CONDUIT, BOXES, WIRING, AND CABLING THAT IS NOT IN COMPLIANCE WITH THIS REQUIREMENT.
16. ALL ELECTRICAL EQUIPMENT AND DEVICES FOR THIS PROJECT MUST BE UL LISTED. DEVICES, EQUIPMENT, SYSTEMS SHALL BE INSTALLED PER N.E.C. REQUIREMENTS AND MANUFACTURER'S INSTRUCTIONS.
17. ALL CONDUIT AND CABLING SHALL BE PROPERLY SUPPORTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE. FOR EXISTING INSTALLATIONS, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE AND/OR REWORK EXISTING CONDUIT AND/OR CABLING THAT IS NOT IN COMPLIANCE WITH THIS REQUIREMENT.
18. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

ELECTRICAL ABBREVIATIONS

A	AMPS
AC	AIR CONDITIONING UNIT
AFC	ABOVE FINISH COUNTER
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
AIC	ASYMMETRICAL INTERRUPTING CURRENT
ARCH.	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAGE
BKR	BREAKER
BLDG.	BUILDING
C	CONDUIT
CATV	CABLE TELEVISION
CCTV	CLOSED CIRCUIT TELEVISION
CH	CHILLER
CONTR	CONTRACTOR
CT	COOLING TOWER
CU	COPPER
CUH	CABINET UNIT HEATER
DE	DUAL ELEMENT
DN	DOWN
DS	DISCONNECT SWITCH
DWG.	DRAWING
(E) or EXIST.	EXISTING
EBB	ELECTRIC BASEBOARD
E.C.	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EH	ELECTRIC HEATER
ELEC.	ELECTRICAL
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EQ.	EQUAL
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FUSE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FC	FAN COIL UNIT
FLUOR	FLUORESCENT
FPB	FAN POWER BOX (VAV)
F.P.C.	FIRE PROTECTION CONTRACTOR
FS	FLOW SWITCH
FT.	FOOTFEET
G.C.	GENERAL CONTRACTOR
GFI	GROUND FAULT INTERRUPTING PROTECTION
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATION, AIR CONDITIONING
IG	ISOLATED GROUND
INCAND.	INCANDESCENT
JB	JUNCTION BOX
KCMIL	ONE THOUSAND CIRCULAR MILS
K.E.C.	KITCHEN EQUIPMENT CONTRACTOR
KVA	KILOVOLT AMPERE
KW	KILOWATT
LTG	LIGHTING
MATV	MASTER ANTENNA TV
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
M.C.	MECHANICAL CONTRACTOR
MECH.	MECHANICAL
MFR	MANUFACTURER
MH	METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MSB	MAIN SWITCHBOARD
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NF	NON-FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHTLIGHT
NTS	NOT TO SCALE
Ø or PH	PHASE
P	POLE
PB	PULL BOX
P.C.	PLUMBING CONTRACTOR
PNL	PANEL
PRE	POWER ROOF EXHAUSTER
PVC	POLYVINYL CHLORIDE
RTU	ROOF TOP UNIT
SPKR	SPEAKER
SPST	SINGLE POLE SINGLE THROW
TIE	MULTIPLE OUTLETS WIRED ON SAME BRANCH CICRUIT
TS	TAMPER SWITCH
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP.	TYPICAL
UH	GAS FIRED UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
V	VOLTS
W	WATTS
WP	WEATHER-PROOF
WR	WEATHER-RESISTANT TYPE DEVICE (NEMA 3R RATED)
XFMR	TRANSFORMER

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	CONDUIT WITH WIRING RUN CONCEALED IN OR ABOVE CEILING OR WALL. OR RUN EXPOSED IN UNFINISHED AREAS. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINIMUM). PROVIDE A CODE-SIZED GROUND WIRE IN ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN. SHADED DOT INDICATES CODE-SIZED ISOLATED GROUND WIRE IN CONDUIT.
	CONDUIT WITH WIRING RUN CONCEALED BELOW FLOOR. CROSS HATCHING INDICATES NUMBER OF CONDUCTORS (#12 AWG - MINIMUM). PROVIDE A CODE-SIZED GROUND WIRE IN ALL CONDUITS IN ADDITION TO THE CONDUCTORS SHOWN. SHADED DOT INDICATES CODE-SIZED ISOLATED GROUND WIRE IN CONDUIT.
	PANELBOARD MOUNTED 6'-6" TO TOP. SEE PANEL SCHEDULES & ELECTRICAL ONE-LINE DIAGRAM.
	DISCONNECT SWITCH - TYPE & RATING AS SHOWN ON PLANS
S_X	20A - 120V/277V SINGLE POLE TOGGLE SWITCH MOUNTED 48" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE. IF APPLICABLE, LOWER CASE SUBSCRIPT "x" - KEYS SWITCH TO FIXTURES BEING CONTROLLED (TYPICAL OF ALL SWITCH SYMBOLS)
S_{OC}	LINE VOLTAGE PASSIVE INFRARED WALL SWITCH OCCUPANCY SENSOR MOUNTED 48"AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE (OC2 = DUAL RELAY). MANUFACTURER SHALL BE WATTSTOPPER, HUBBELL, SENSOR SWITCH, COOPER CONTROLS, OR LUTRON)
OS TYPE	LOW VOLTAGE CEILING MOUNTED OCCUPANCY SENSOR. LOCATE AS DIRECTED PER MANUFACTURER AND PROVIDE STANDARD VS. EXTENDED COVERAGE RANGE AS DIRECTED BY MANUFACTURER. REFER TO TYPICAL LOW VOLTAGE OCCUPANCY SENSOR WIRING DIAGRAM ON SHEET E101. (1 = DUAL TECHNOLOGY 360° COVERAGE PATTERN, 2 = DUAL TECHNOLOGY CORNER MOUNTED WITH WIDE VIEW COVERAGE PATTERN, 3 = PIR NARROW HALLWAY COVERAGE PATTERN). MANUFACTURER SHALL BE WATTSTOPPER, HUBBELL, SENSOR SWITCH, COOPER CONTROLS, OR LUTRON.)
	20A - 125V GROUNDING TYPE SIMPLEX RECEPTACLE MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
	20A - 125V GROUNDING TYPE DUPLEX RECEPTACLE MOUNTED 18" AFF, UNLESS NOTED OTHERWISE
	20A - 125V GROUNDING TYPE QUADRAPLEX RECEPTACLE MOUNTED 18" AFF, UNLESS NOTED OTHERWISE
IG	20A - 125V ISOLATED GROUND TYPE DUPLEX RECEPTACLE MOUNTED 18" AFF, UNLESS NOTED OTHERWISE
GFI WP	20A - 125V GROUND FAULT INTERRUPTING TYPE DUPLEX RECEPTACLE, WEATHER RESISTANT LISTED WITH DIE-CAST ALUMINUM "WHILE IN-USE COVER" AND MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
GFI	20A - 125V GROUND FAULT INTERRUPTING TYPE DUPLEX RECEPTACLE MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
USB	20A - 125V GROUNDING TYPE DUPLEX RECEPTACLE WITH (2) USB PORTS MOUNTED 18" AFF TO TOP OF BOX, UNLESS NOTED OTHERWISE
USB	20A - 125V GROUNDING TYPE DUPLEX RECEPTACLE WITH (4) USB PORTS MOUNTED 18" AFF, UNLESS NOTED OTHERWISE
	FURNISH AND INSTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: SINGLE GANG, CAST IRON, FULLY ADJUSTABLE FLOOR BOX RECESSED IN CONCRETE FLOOR SLAB WITH (1) 20A DUPLEX RECEPTACLE. FLUSH ALUMINUM FINISHED CARPET FLANGE AND COVER. FOR TILE FLOOR INSTALLATION, PROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLUSH WITH TILE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. COORDINATE BRACKET AND TELE/DATA DEVICE REQUIREMENTS WITH TECHNOLOGY INSTALLER PRIOR TO ORDERING MATERIALS. FLOOR BOX IS CAPABLE OF ACCEPTING (6) 1"CONDUITS. FURNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. WIREMOLD #880CS2-1, #828TCAL, #828R-TCAL, #828COMTCAL
	FURNISH AND INSTALL A COMPLETE FLOOR BOX SYSTEM WHICH INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING: 2-GANG, CAST IRON, FULLY ADJUSTABLE MULTI-SERVICE FLOOR BOX RECESSED IN CONCRETE FLOOR SLAB WITH (1) 20A DUPLEX RECEPTACLE, (1) 6-PORT TELE/DATA MOUNTING BEZEL, FLUSH ALUMINUM FINISHED CARPET FLANGE AND COVERS, AND VOLTAGE DIVIDER. THE FURNISHED FLOOR BOX SHALL BE SIZED TO ACCEPT THE QUANTITY AND SIZE OF CONDUITS REQUIRED FOR THE TELE/DATA CABLING. FOR TILE FLOOR INSTALLATION, PROVIDE APPROPRIATE FLANGE SO THAT TOP COVER OF FLOOR BOX IS FLUSH WITH TILE. COORDINATE EXACT LOCATION WITH ARCHITECT PRIOR TO INSTALLATION. COORDINATE BRACKET AND TELE/DATA DEVICE REQUIREMENTS WITH TECHNOLOGY INSTALLER PRIOR TO ORDERING MATERIALS. FLOOR BOX IS CAPABLE OF ACCEPTING (6) 1"CONDUITS. FURNISH AND INSTALL SYSTEM PER MANUFACTURER'S INSTRUCTIONS. WIREMOLD #880CS2-1, #828TCAL, #828R-TCAL, #828COMTCAL
C C J S	STANDARD GANG BOX REFER TO TERMINAL LIST BELOW FOR INDIVIDUAL DEVICES: T TELEPHONE S SPARE CONDUIT (RAN UP TO CEILING) D DATA J J-BOX WITH GENERAL POWER DP DUPLEX JC J-BOX POWER FROM LIGHTING CONTACTOR C DEDICATED DUPLEX WITH ISOLATED GROUND Q QUAD
B	DOOR BELL ASSEMBLY. MOUNTING, TYPE, RATINGS AS INDICATED ON PLANS. MAKE CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.
CH	CHIME ASSEMBLY. MOUNTING, TYPE, RATINGS AS INDICATED ON PLANS. MAKE CONNECTIONS PER MANUFACTURER'S INSTRUCTIONS.
B	PUSH-BUTTON ASSEMBLY MOUNTED AT 48" AFF TO TOP OF BOX. TYPE AND RATINGS PER LOAD BEING SERVED. MAKE CONNECTIONS TO EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
J	JUNCTION BOX - SIZE AS REQUIRED BY NEC
▼	TELEPHONE OUTLET MOUNTED 18" AFF UNLESS NOTED OTHERWISE. PROVIDE 1"C WITH PULLWIRE TO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHING.
▽	DATA OUTLET MOUNTED 18" AFF. UNLESS NOTED OTHERWISE, PROVIDE 1"C WITH PULLWIRE TO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHING.
▼▽	COMBINATION TELEPHONE/DATA OUTLET MOUNTED 18" AFF. UNLESS NOTED OTHERWISE. 1"C WITH PULLWIRE TO ACCESSIBLE CEILING SPACE. PROVIDE CONDUIT BUSHING.
	PLUG MOLD MNTD. ABOVE COUNTERTOP.

NOTE: NOT ALL SYMBOLS MAY APPLY TO PROJECT.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, P.E.
VA. LICENCE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

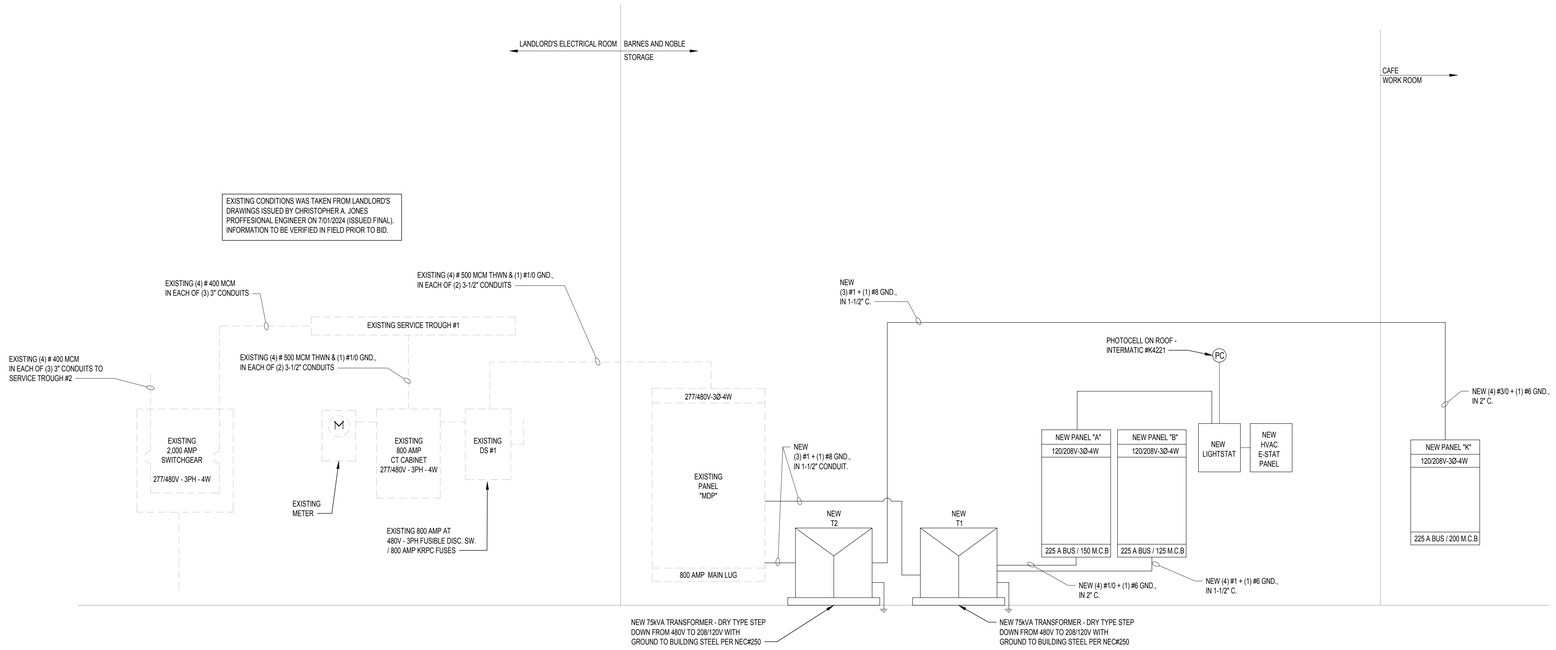
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

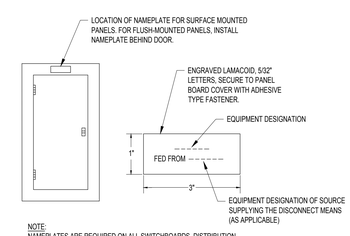
Drawing Description:
ELECTRICAL SCHEDULES & DETAILS

Drawing Number:
E-201



ELECTRICAL ONE-LINE DIAGRAM

N.T.S. 277/480V-3Ø-4W

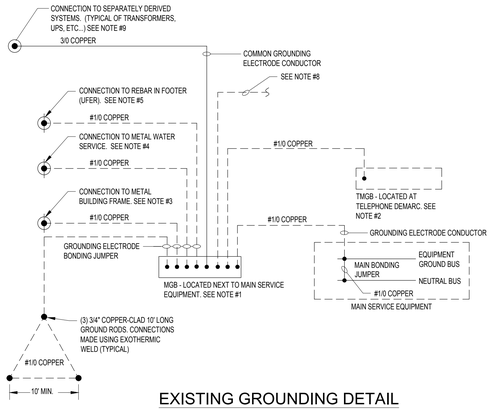


NOTE:
NAMEPLATES ARE REQUIRED ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, ENCLOSURES AND ELECTRICAL CABINETS, ACCESS DOORS/PANELS FOR CONCEALED ELECTRICAL EQUIPMENT, EMERGENCY SYSTEMS/BOXES, MOTOR CONTROL CENTERS, ENCLOSED SWITCHES/CIRCUIT BREAKERS/CONTROLLERS, POWER-TRANSFER DEVICES, PUSH-BUTTONS, CONTACTORS, LIGHTING CONTROL SYSTEMS, INVERTERS, GENERATORS, UPS, MONITORING EQUIPMENT, STARTERS, DISCONNECT SWITCHES, METER SOCKETS, RELAYS, TRANSFORMERS, AND JUNCTION BOXES GREATER THAN 4 1/16" SQUARE. ALSO PROVIDE NAMEPLATES ON BRANCH SWITCHES/BREAKERS OF SWITCHBOARDS AND DISTRIBUTION PANELS.

STANDARD COLORS:
1. NORMAL POWER - WHITE BACKGROUND, BLACK LETTERS
2. EMERGENCY POWER - RED BACKGROUND, WHITE LETTERING
3. IN ADDITION TO THE FUNCTION NAMEPLATE, PROVIDE NAMEPLATES IDENTIFYING ALL "MAIN SERVICE NAMEPLATE DISCONNECTS" - RED BACKGROUND - WHITE LETTERING

NAMEPLATE DETAIL

N.T.S.



EXISTING GROUNDING DETAIL

N.T.S.

REFERENCED DETAIL NOTES:

1. MGB (MAIN GROUND BAR) SHALL BE ERICO #EGBA1412- - (INCLUDES MOUNTING BRACKET AND INSULATORS; HOLE PATTERN AS REQUIRED FOR INSTALLATION, INCLUDING SPARE HOLES FOR FUTURE USE.) OR EQUAL BY HARGER. USE COMPRESSION CONNECTORS (LISTED FOR GROUNDING) TO CONNECT COPPER WIRE TO MGB.
2. TMGB (TELECOMMUNICATION MAIN GROUND BAR) SHALL BE ERICO #TMGBA12L15PT (INCLUDES MOUNTING BRACKET AND INSULATORS) OR EQUAL BY HARGER. USE COMPRESSION CONNECTORS (LISTED FOR GROUNDING) TO CONNECT COPPER WIRE TO TMGB.
3. METAL BUILDING FRAME MUST BE USED AS A GROUNDING ELECTRODE WHERE IT IS EFFECTIVELY GROUNDED PER NEC SECTION 250.52. PROVIDE #3/0 BONDING JUMPERS AS REQUIRED TO PROVIDE CONTINUOUS CONDUCTIVITY WHERE BUILDING FRAME IS SEPARATED INTO ELECTRICALLY ISOLATED SECTIONS AS MAY OCCUR FROM EXPANSION JOINTS, BUILDING ADDITIONS, BUILDING ELEVATION CHANGES, AND THE LIKE.
4. WHERE A WATER METER, FILTERING EQUIPMENT, OR NON-METAL PIPING IS IN THIS METAL WATER PIPING SYSTEM, IT MUST BE BONDED AROUND TO MAINTAIN CONTINUITY EVEN IF THE WATER METER OR FILTER IS REMOVED PER NEC SECTION 250.52.
5. THE REBAR MUST NOT BE LESS THAN 20 FEET IN LENGTH AND 1/2" IN DIAMETER OR 20 FEET OR MORE OF BARE COPPER CONDUCTOR NOT SMALLER THAN NO. 4 IN THE BOTTOM OF THE FOOTER PER NEC SECTION 250.52.
6. IF INSTALLED IN OR ATTACHED TO A BUILDING OR STRUCTURE, METAL PIPING SYSTEM(S), INCLUDING GAS PIPING, THAT IS LIKELY TO BECOME ENERGIZED SHALL BE BONDED PER NEC 250.104 (B). THE BONDING CONDUCTOR(S) OR JUMPER(S) SHALL BE SIZED IN ACCORDANCE WITH TABLE 250.102(C)(1) OR 250.122, AND EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TABLE 250.102(C)(1) OR 250.122 USING THE RATING OF THE CIRCUIT THAT IS LIKELY TO ENERGIZE THE PIPING SYSTEM(S). THE POINTS OF ATTACHMENT OF THE BONDING JUMPER(S) SHALL BE ACCESSIBLE
7. THE METAL FRAME OF THE BUILDING SHALL BE USED AS A COMMON GROUNDING ELECTRODE CONDUCTOR. IF BUILDING DOES NOT HAVE A METAL FRAME, A #3/0 COMMON GROUNDING ELECTRODE CONDUCTOR SHALL BE RUN FROM THE MAIN GROUND BAR FOR ALL SEPARATELY DERIVED SYSTEMS. MULTIPLE SEPARATELY DERIVED SYSTEMS MAY BE CONNECTED TO THE GROUNDING ELECTRODE SYSTEM BY INDIVIDUAL CONDUCTORS OR A COMMON CONDUCTOR WITH TAPS. THE GROUNDING ELECTRODE TAP CONDUCTOR FOR EACH SYSTEM SHALL BE CONNECTED TO THE COMMON GROUNDING ELECTRODE CONDUCTOR WITH THE CONNECTION IN AN ACCESSIBLE LOCATION.
8. GROUNDING CONDUCTORS TO ADDITIONAL EQUIPMENT AS REQUIRED BY NEC 250 AND SPECIFICATIONS.

GENERAL GROUNDING DETAIL NOTES:

1. ALL GROUNDING WORK AND MATERIALS SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH REQUIREMENTS IN NEC 250.
2. ALL GROUNDING CONDUCTORS SHALL BE COPPER. PROVIDE INSULATED CONDUCTORS FOR INTERIOR INSTALLATIONS AND BARE COPPER FOR EXTERIOR INSTALLATIONS.
3. ALL UNDERGROUND CONNECTIONS TO ELECTRODES AND CONDUCTORS SHALL BE MADE BY EXOTHERMIC WELDING.
4. CONDUCTOR CONNECTIONS TO MAIN GROUND BAR SHALL BE MADE WITH COMPRESSION CONNECTORS LISTED FOR GROUNDING.
5. GROUNDING ELECTRODE AND BONDING JUMPERS SHALL BE INSTALLED SO THAT THEY ARE NOT ANY LONGER THAN NECESSARY AND ANY UNNECESSARY BENDS AND LOOPS ARE AVOIDED.
6. REFERENCE ONE-LINE DIAGRAM FOR CONDUCTOR SIZE OF THE SUPPLY SIDE BONDING JUMPER AND GROUNDING ELECTRODE TAP CONDUCTOR SERVING SEPARATELY DERIVED SYSTEM(S).
7. REFERENCE ONE-LINE DIAGRAM FOR CONDUCTOR SIZE OF THE EQUIPMENT GROUNDING CONDUCTOR SERVING ELECTRICAL DISTRIBUTION EQUIPMENT.
8. INSTALL SLEEVES, SLEEVE SEALS, FIRE STOPPING, RACEWAYS TO PROTECT AGAINST PHYSICAL DAMAGE AND ENVIRONMENTAL CONDITIONS WHERE REQUIRED. FURNISH AND INSTALL BONDING BUSHINGS WHERE FERROUS METALLIC RACEWAYS ARE UTILIZED.

ONE-LINE DIAGRAM NOTES

1. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL POWER COMPANY REQUIREMENTS PRIOR TO BIDDING & INCLUDE THE COST OF ALL ASSOCIATED LABOR, MATERIALS, & CHARGES IN HIS BID.
2. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY PRIOR TO BIDDING AND PROVIDE EQUIPMENT RATED ACCORDINGLY. SUBMIT FAULT CURRENT CALCULATIONS WITH SHOP DRAWING SUBMITTAL.
3. ALL BUSSING SHALL BE COPPER.
4. PROVIDE FULL LENGTH VERTICAL BUSSING IN ALL SWITCHBOARDS, DISTRIBUTION PANELS, & PANELBOARDS.
5. PROVIDE FULL SIZE HORIZONTAL BUSSING IN ALL SWITCHBOARDS.
6. ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.
7. ALL WALL-MOUNTED EQUIPMENT SHALL BE MOUNTED ON 3/4" FIRE RATED BACKBOARD.
8. ALL FLOOR-MOUNTED EQUIPMENT SHALL BE MOUNTED ON 4" HIGH CONCRETE HOUSEKEEPING PAD.
9. PROVIDE NAMEPLATES PER NAMEPLATE DETAIL.
10. COORDINATE SPACE WITH ALL OTHER TRADES TO MAINTAIN ALL CODE-REQUIRED CLEARANCES.
11. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
12. THE ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL SETTINGS REQUIRED FOR ALL ADJUSTABLE/ELECTRONIC TYPE CIRCUIT BREAKERS WITH LONGTIME, SHORT TIME, GF, INSTANTANEOUS, ETC. THE ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL COORDINATION STUDY.
13. THE ELECTRICAL CONTRACTOR SHALL COMPLY WITH NEC ARTICLE 110.16 FOR LABELING OF PANELS FOR ARC FLASH HAZARD WARNING AS WELL AS FOLLOWING REQUIRED SAFETY PRECAUTIONS WHEN SERVICING OR MAINTAINING ELECTRICAL EQUIPMENT.
14. HVAC CIRCUIT BREAKERS TO BE "HACR" TYPE WHERE REQUIRED BY EQUIPMENT NAMEPLATE PER N.E.C
15. ELECTRICAL CONTRACTOR SHALL BALANCE PANELS AND ELECTRICAL EQUIPMENT TO ±10% BETWEEN PHASES: A/B, B/C, A/C REGARDLESS OF CIRCUITING INDICATED.
16. PROPER CLEARANCE MUST BE MAINTAINED ABOUT ELECTRICAL EQUIPMENT PER N.E.C.. FIELD VERIFY EXACT MOUNTING SPACE AVAILABLE IN ELECTRICAL ROOM / AREA PRIOR TO INSTALLATION OF ELECTRICAL EQUIPMENT.
17. ELECTRICAL CONTRACTOR SHALL MAKE FINAL ELECTRICAL CONNECTIONS FOR A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM.
18. EXTERIOR MOUNTED ELECTRICAL EQUIPMENT SHALL BE NEMA 3R RATED AND BE FURNISHED WITH HEATERS, THERMOSTAT AND DISCONNECTING MEANS INTEGRAL TO EQUIPMENT.
19. DRY TYPE TRANSFORMERS SHALL BE GROUNDED TO THE BUILDING GROUNDING ELECTRODE SYSTEM PER NEC.
20. GROUNDING ELECTRODE SYSTEM CONDUCTORS SHALL BE COPPER.
21. CONDUCTORS SHALL BE COPPER, UNLESS NOTED OTHERWISE.
22. FEEDER ROUTING IS DIAGRAMMATIC ONLY. ACTUAL ROUTING OF FEEDERS (OVERHEAD OR UNDERGROUND) IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENCE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

These plans are an instrument of service and the property of the Architect. Infringements will be prosecuted.

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
ELECTRICAL
ONE-LINE DIAGRAM
& LOAD SUMMARY

Drawing Number:
E-202

ELECTRICAL PANEL SCHEDULE

PANELBOARD			MDP	VOLTAGE		277 / 480 V	PHASE		3	WIRE		4											
PANEL TYPE			EXIST.	MAINS		MLO	BUS RATING		800	AIC RATING		30,000											
NEMA TYPE ENCLOSURE			EXIST.	MOUNTING		SURFACE	OPTIONS			NOTE													
CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.
1							6366	A	6,920							2															2
3	E		RTU-4	3	10	25	6366	B	6,920	25	10	3	RTU-5		E	4														E	4
5							6366	C	6,920							6															6
7							9965	A	23,805							8															8
9	E		RTU-6	3	8	40	9965	B	23,805	90	2	3	RTU-1		E	10														E	10
11							9965	C	23,805							12															12
13							23805	A	23805							14															14
15	E		RTU-2	3	2	90	23805	B	23805	90	2	3	RTU-3		E	16														E	16
17							23805	C	23805							18															18
19	N	LO	WATER HEATER	1	12	20	4000	A	24,866							20															20
21			SPARE	1		20		B	23,970	100	1	3	75kVA TRANSFORMER (PANEL 'A' & 'B')		N	22														N	22
23			SPARE	1		20		C	25,854							24															24
25								A	18,974							26															26
27			200 AMP SPACE					B	22,420	100	1	3	75kVA TRANSFORMER (PANEL 'K')		N	28														N	28
29								C	23,661							30															30

ALL PHASES TO BE BALANCED TO WITHIN 7%

A=	142,606	WATTS	
B=	141,056	WATTS	
C=	144,181	WATTS	

E	EXISTING TO REMAIN
N	NEW LOAD / CIRCUIT BREAKER
LO	CIRCUITS WITH HANDLE LOCK-OFF DEVICE

TOTAL CONNECTED LOAD	427743	WATTS	514	AMPS
TOTAL DEMAND LOAD	403746	WATTS	486	AMPS

ELECTRICAL PANEL SCHEDULE

PANELBOARD			A	VOLTAGE		120 / 208 V	PHASE		3	WIRE		4											
PANEL TYPE			NQ	MAINS		150	BUS RATING		225	AIC RATING		25,000											
NEMA TYPE ENCLOSURE			NEMA 1	MOUNTING		SURFACE	OPTIONS			NOTE													
CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.
1		LCP	S/W TRACK/VEST. LIGHTS	1	12	20	818	A	210	20	12	1	SALES HIGH BAY LTS	LCP		2															2
3		LCP	SALES PENDANT LIGHTS	1	12	20	360	B	285	20	12	1	SALES HIGH BAY LTS	LCP		4															4
5		LCP	SALES TRACK LIGHTING	1	12	20	1200	C	1440	20	12	1	PERIMETER SHELF REC	LCP		6															6
7		LCP	SALES TRACK LIGHTING	1	12	20	960	A	800	20	12	1	CAFÉ/WORKRM LIGHTS			8															8
9		LCP	SALES TRACK LIGHTING	1	12	20	1200	B	125	20	12	1	CORRIDOR LIGHTS	LCP		10															10
11		LCP	SALES TRACK LIGHTING	1	12	20	1200	C	1000	20	12	1	EM LIGHTS/EXIT SIGNS	LO		12															12
13		LO	RE-CIRCULATION PUMP	1	12	20	300	A	1,560	20	12	1	JAN CL. / RESTRM LTS / EF-1,2,3			14															14
15		LCP	SALES TRACK LIGHTING	1	12	20	1200	B	1,100	20	12	1	STOCK / STORAGE LTG			16															16
17		LCP	SALES TRACK LIGHTING	1	12	20	1200	C	700	20	12	1	OFFICE / BREAK RM LTS			18															18
19		LCP	SALES TRACK LIGHTING	1	12	20	1200	A	500	20	12	1	LCP			20															20
21		LCP	SALES TRACK LIGHTING	1	12	20	900	B	500	20	12	1	CAFÉ SIGN	LCP		22															22
23		LCP	CAFE SEATING TRACK	1	12	20	1680	C	720	20	12	1	FLOOR MILLWORK REC	LCP		24															24
25			CAFÉ SEATING J-BOX	1	12	20	1080	A	1440	20	12	1	PERIMETER SHELF REC	LCP		26															26
27		LCP	SALES TRACK LIGHTING	1	12	20	1440	B	1080	20	12	1	PERIMETER SHELF REC	LCP		28															28
29		LCP	SALES RECESSED LIGHTS	1	12	20	576	C	1080	20	12	1	PERIMETER SHELF REC	LCP		30															30
31		LCP	SIGN	1	12	20	1200	A	1440	20	12	1	PERIMETER SHELF REC	LCP		32															32
33		LCP	SALES TRACK LIGHTING	1	12	20	1440	B	1440	20	12	1	FLOOR MILLWORK REC	LCP		34															34
35		LCP	STOREFRONT CAFÉ SIGN	1	12	20	1000	C	1440	20	12	1	FLOOR MILLWORK REC	LCP		36															36
37		LCP	S/W OUTLETS	1	12	20	1440	A	1440	20	12	1	FLOOR MILLWORK REC	LCP		38															38
39		LCP	SIGN	1	12	20	1200	B	1800	20	12	1	PERIMETER SHELF REC	LCP		40															40
41			FIXTURE UTILITY OUTLETS	1	12	20	720	C	1080	20	12	1	FIXTURE UTILITY OUTLETS			42															42

ALL PHASES TO BE BALANCED TO WITHIN 7%

A=	14,388	WATTS	
B=	14,070	WATTS	
C=	15,036	WATTS	

LO	CIRCUITS WITH HANDLE LOCK-OFF DEVICE
IG	CIRCUITS WITH ISOLATED GROUND
LCP	CIRCUITS ON LIGHTING CONTROL PANEL

TOTAL CONNECTED LOAD	43494	WATTS	121	AMPS
TOTAL DEMAND LOAD	46618	WATTS	130	AMPS

ELECTRICAL PANEL SCHEDULE

PANELBOARD			B	VOLTAGE		120 / 208 V	PHASE		3	WIRE		4											
PANEL TYPE			NQ	MAINS		125	BUS RATING		225	AIC RATING		25,000											
NEMA TYPE ENCLOSURE			NEMA 1	MOUNTING		SURFACE	OPTIONS			NOTE													
CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.			DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION			CKT. NO.
1			PDT CHARGERS	1	12	20	1080	A	400	20	12	1	CASHWRAP RECEPTACLE	IG		2															2
3			RECEIVING TABLE	1	12	20	900	B	400	20	12	1	CASHWRAP RECEPTACLE	IG		4															4
5		IG	OFFICE RECEPTACLE	1	12	20	180	C	400	20	12	1	CASHWRAP RECEPTACLE	IG		6															6
7		IG	OFFICE RECEPTACLE	1	12	20	180	A	400	20	12	1	CASHWRAP RECEPTACLE	IG		8															8
9		IG	OFFICE RECEPTACLE	1	12	20	180	B	400	20	12	1	CASHWRAP RECEPTACLE	IG		10															10
11			OFFICE RECEPTACLE	1	12	20	360	C	400	20	12	1	CASHWRAP RECEPTACLE	IG		12															12
13			OFFICE RECEPTACLE	1	12	20	540	A	540	20	12	1	CASHWRAP OUTLET			14															14
15			OFFICE RECEPTACLE	1	12	20	360	B	720	20	12	1	CASHWRAP OUTLET			16															16
17			BREAKRM REFRIGERATOR	1	12	20	1000	C	400	20	12	1	CASHWRAP RECEPTACLE	IG		18															18
19			BREAKRM MICROWAVE	1	12	20	1500	A	1000	20	12	1	E.A.S RECEPTS	LO		20															20
21			BREAKRM COUNTER REC	1	12	20	180	B	360	20	12	1	KEYPAD OUTLET			22															22
23			WATER COOLER	1	12	20	500	C	500	20	12	1	DRINKING FOUNTAIN			24															24
25			BREAK RM OUTLETS	1	12	20	540	A	1080	20	12	1	DUCT DETECTORS	LO		26															26
27		LO	IT RACK	1	10	30	2000	B	1080	20		1	CAFÉ SEATING OUTLETS			28															28
29			POS SERVER RECEPT	1	12	20	360	C	1200	20	12	1	SIGN	LCP		30															30
31			MUSIC SYSTEM	1	12	20	360	A	1200	20	12	1	SIGN	LCP		32															32
33			TOILET OUTLETS	1	12	20	360	B		20		1	SPARE			34															34
35			HAND DRYER	1	12	20	1450	C	208	15	12	2	AHU-1	HACR		36															36
37			HAND DRYER	1	12	20	1450	A	208							38															38
39			OFFICE RECEPTACLE	1	12	20	360	B	2600	30	10	2	CU-1	HACR		40															40
41			ROOFTOP OUTLETS	1	12	20	1260	C	2600							42															42

ALL PHASES TO BE BALANCED TO WITHIN 7%

A=	10,478	WATTS	
B=	9,900	WATTS	
C=	10,818	WATTS	

LO	CIRCUITS WITH HANDLE LOCK-OFF DEVICE
IG	CIRCUITS WITH ISOLATED GROUND

TOTAL CONNECTED LOAD	31196	WATTS	87	AMPS
TOTAL DEMAND LOAD	26656	WATTS	74	AMPS

ELECTRICAL PANEL SCHEDULE

PANELBOARD			K	VOLTAGE		120 / 208 V	PHASE		3	WIRE		4											
PANEL TYPE			NQ	MAINS		200	BUS RATING		225	AIC RATING		25,000											
NEMA TYPE ENCLOSURE			NEMA 1	MOUNTING		SURFACE	OPTIONS			NOTE													
CKT. NO.		ITEM #	DESCRIPTION	POLE	WIRE SIZE	BKR. SIZE	TOTAL WATTS	PHASE	TOTAL WATTS	BKR. SIZE	WIRE SIZE	POLE	DESCRIPTION	ITEM #		CKT. NO.															
1		125	ICE MAKER, CUBE STYLE	1	12	20	1289	A	1198	20	12	1	SELF-SERVICE REF. CASE	118	GFCI	2															
3			SPARE	1		20		B	1198	20	12	1	SELF-SERVICE REF. CASE	118	GFCI	4															
5	GFCI	104	ESPRESSO MACHINE	2	10	30	3120	C	679	20	12	1	REACH-IN FRIDGE	120B		6															
7							3120	A	240	20	12	1	REFRIGERATOR U/C	131	GFCI	8															
9	GFCI	104	ESPRESSO MACHINE	2	10	30	3120	B	1456	20	12	2	COFFEE BREWER	114		10															
11							3120	C	1456							12															
13	GFCI	121	REFRIGERATOR U/C	1	12	20	240	A	1081	20	12	1	REACH-IN FREEZER	3B	GFCI	14															
15	GFCI	113	COFFEE GRINDER	1	12	20	920	B		20		1	SPARE			16															
17			SPARE	1		20		C	1800	20	12	1	BLENDER	112	GFCI	18															
19		120B	REACH-IN FRIDGE	1	12	20	679	A	1800	20	12	1	BLENDER	112	GFCI	20															
21		133	DISHWASHER, U/C	2	8	40	3869	B	1300	20	12	1	HOT WATER DISPENSER	100.2	GFCI	22															
23							3869	C		20		1	SPARE			24															
25			KITCHEN CONVEN. REC.	1	12	20	720	A	1000	20	12	1	WATER SOFTENER			26															
27							4100	B	1000	20	12	1	REACH-IN FREEZER	2B		28															
29	LO	4	WATER HEATER	3	6	45	4100	C	1000	20	12	1	U/C REFRIGERATOR	132		30															
31							4100	A	1040	20	12	2	DISPLAY CASE, REFRIG.	119		32															
33		LO	RE-CIRCULATING PUMP	1	12	20	300	B	1040							34															
35	IG	103	CAFÉ POS CASHWRAP	1	12	20	400	C	1867							36															
37		103	CAFÉ POS CASHWRAP	1	12	20	600	A	1867	20	12	3	BLODGETT OVEN	3C		38															
39		3D	RAPID COOK OVEN	2	10	30	2250	B	1867							40															
41							2250	C		20		1	SPARE			42															

ALL PHASES TO BE BALANCED TO WITHIN 7%

A=	18,974	WATTS	
B=	22,420	WATTS	
C=	23,661	WATTS	

LO	CIRCUITS WITH HANDLE LOCK-OFF DEVICE
IG	CIRCUITS WITH ISOLATED GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER

TOTAL CONNECTED LOAD	65055	WATTS	181	AMPS
TOTAL DEMAND LOAD	68130	WATTS	190	AMPS

ELECTRICAL LOAD SUMMARY

DESCRIPTION	NEC CONNECTED kW	VOLT	PHASE	NEC DEMAND FACTOR	NEC DEMAND kW
LIGHTING- 120V	6.7	120	1	1.25	8.4
INTERIOR SIGN	1.5	120	1	1.25	1.9
TRACK LIGHTS	14.4	120	1	TRACK LENGTH=	14.4
RECEPTACLES	40.3	120	1	>10kW=10+[0.5*(kW-10)]	25.2
STOREFRONT SIGN	4.8	120	1	1.25	6.0
S/W OUTLETS	1.4	120	1	1.25	1.8
HAND DRYER	2.9	120	1	1.00	2.9
AHU-1 / CU-1	5.6	208	1	1.00	5.6
WATER HEATER "EWH-1"	12.3	208	3	1.25	15.4
CAFÉ EQUIPMENT (208V,3PH)	5.6	208	3	1.00	5.6
EXISTING RTU-1,2,3,4,5 AND RTU-6	284.0	480	3	1.00	284.0
WATER HEATER "EWH-2"	4.0	277	1	1.25	5.0
CAFÉ EQUIPMENT (208V,1PH)	29.7	208	1	1.00	29.7
CAFÉ EQUIPMENT	14.4	120	1	1.00	14.4
ADD'L TO MEET NEC 220.12 ****	40.22	120	1	1.00	40.2
TOTALS	468.0				460.5

NOTES:

*	USE GREATER VALUE OF THE TWO CATEGORIES.
**	125% OF THE LARGEST MOTOR OR COMPRESSOR IN SYSTEM APPLIED ONLY ON ONE UNIT.
***	N.E.C. ARTICLE 220-12 REQUIREMENT (200 VA PER FOOT OF SHOW WINDOW)
****	MINUS ACTUAL SHOW WINDOW LIGHTING kVA.
*****	N.E.C. 2014 ARTICLE 220.43(B) EXCEPTION (CURRENT LIMITERS)

N.E.C. DEMAND kVA x 1,000 / SYSTEM VOLTAGE x 1.732 — MINIMUM FEEDER AMPERAGE

460.5	x 1000 =	460,504	553.9 AMPS	USE (EXIST) 800 AMP SERVICE
480	x 1.732 =	831		

PROJECT DESIGNER:
WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com
KENNETH A FULLER, P.E.
VA LICENCE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

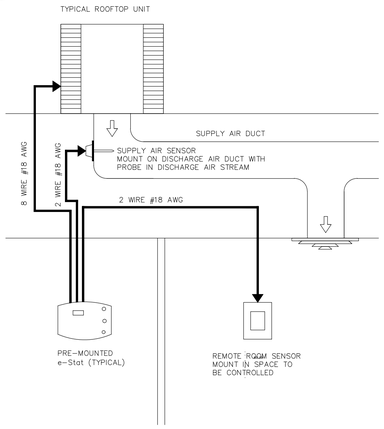
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

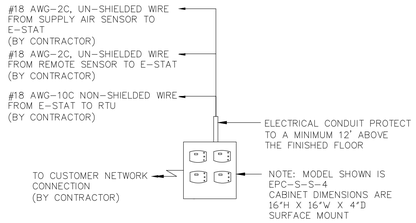
LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
ELECTRICAL
PANEL SCHEDULES

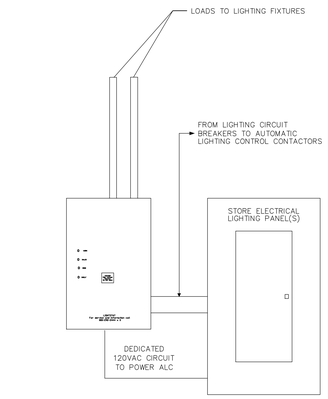
Drawing Number:
E-202.1



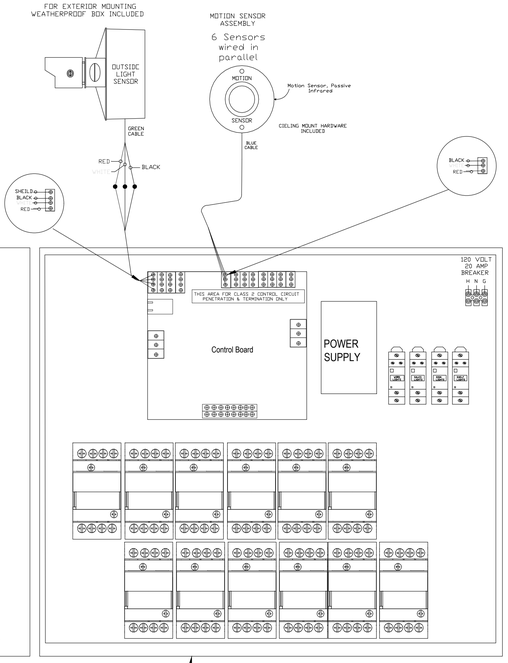
TYPICAL E-STAT WIRING SCHEMATIC



TYPICAL E-STAT PRE MOUNTED ON CABINET



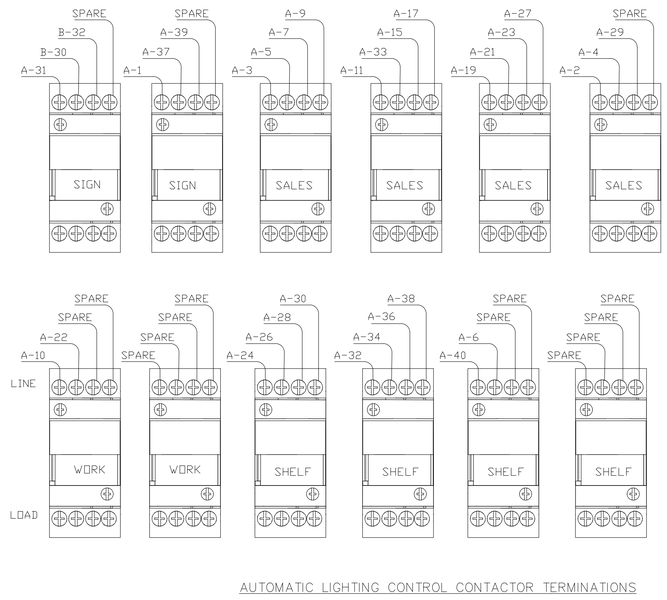
LCC CONTROL RISER DIAGRAM



DOOR EXTERIOR

INTERIOR

32"H X 24"W X 6"D



AUTOMATIC LIGHTING CONTROL CONTACTOR TERMINATIONS

General Notes

No.	Revision/Issue	Date

Firm Name and Address

LIGHTSTAT INC.
22 W. WEST HILL ROAD
BARKHAMSTED, CT. 06063
800-292-2444

Project Name and Address

BARNES & NOBLE

Project	Sheet
Date 10-2-24	
Scale	

DRAWINGS FOR INFORMATION ONLY - BN VENDOR TO VERIFY ALL INFORMATION PRIOR TO WORK

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, PE
WA LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

ELECTRICAL
DETAILS

Drawing Number:

E-203

ELECTRICAL SPECIFICATIONS

Section 260010 - General Provisions

A. General
1. Requirements specified in Division 1, instructions to bidders, supplemental general conditions, special conditions, addenda, alternates, contract and proposal, along with Division 26, 27, 28 and all its sections, comprise the contract documents for the electrical contract, along with these specifications as though they were one, and anything implied by the specifications shall be interpreted as also implied by the drawings and vice versa. Provide necessary items for a complete installation of all electrically operated equipment listed in the specifications or shown on the contract drawings.
2. The architectural, structural, mechanical, plumbing and equipment drawings and specifications are incorporated into, and become a part of this division. This contractor shall examine all such drawings and specifications and become thoroughly familiar with the provisions contained therein. The submission of his bid shall indicate such knowledge.
3. Electrical drawings are diagrammatic. They are intended to show the approximate locations of equipment and conduit. Dimensions given on the plans, in figures, shall take precedence over scaled dimensions and shall be verified in the field. The electrical contractor shall layout all equipment rooms to make sure the equipment, as purchased, fits in the room or space shown. Exact location of all equipment shall be verified in the field and routing of conduits shall suit field conditions.
4. Until the time of installation, the architect reserves the right to make minor changes in the location of conduit and equipment without additional cost to the contract.
5. The electrical drawings and specifications are intended to supplement each other. Material and labor necessary to the project shall be furnished and installed even though not specifically mentioned in both. Labor and/or materials neither shown nor specified, but obviously necessary for the completion and proper functioning of the system, shall be furnished and installed by the electrical contractor.
6. Arrange all equipment substantially as shown on the drawings. Make deviations only where necessary to avoid interference. Check all equipment sizes against available space prior to shipment to avoid interference.
7. Examine the work of other trades insofar as their work comes in contact with or is covered by this work in no case attach to, or finish against any defective work or install work in a manner which will prevent proper installation of the work of other trades.
8. Electrical contractor shall verify with other trades all electrical characteristics of equipment requiring electrical connections, contractor shall verify voltage, phase and horsepower and shall notify engineer of any discrepancies prior to start of work. Electrical contractor shall provide disconnecting means and overload protection for all equipment, unless furnished integral with equipment package.
9. It is the intent of these drawings that this be a complete electrical job, any errors or omissions shall be brought to the attention of the engineer prior to bidding the job.
10. Should any of the general notes, specifications, details or instructions on plans conflict, the strictest provision shall govern.
11. The existing conditions of these documents are based upon existing drawings prepared by Cortland Morgan Architect dated 12/13/2011 and may not reflect current installations or as-built conditions. Prior to initiating material procurement and construction, it is the contractor's responsibility to verify existing conditions are consistent with the contract documents. This may require removal of existing finishes and possible selective demolition to verify as-built conditions.
12. Do NOT scale drawings.
13. The contractor shall make provisions for the delivery and safe storage of his/her materials and equipment in coordination with the work of other trades. Materials and equipment shall be delivered at such stages of the work as will expedite the work as a whole and shall be marked and stored in such a way as to be easily checked and inspected. The arrival and placing of large equipment items shall be scheduled early enough to permit entry and setting when there is no restriction or problem due to size and weight. Protection of all finishes during delivery is the responsibility of the contractor.

B. Visit to the Site
1. This contractor shall visit the site of the work and familiarize himself with all conditions affecting his work. The submission of his proposal shall indicate such knowledge. No additional payment shall be made on claims that arise from a lack of knowledge of the existing conditions

C. Code and Permits
1. Installation shall be in full accordance with all codes, rules and regulations of municipal, city, county, state and public utilities and all other authorities having jurisdiction over the premises.
2. Comply with any specification requirements that are in excess but not in conflict with code requirements.
3. The contractor shall secure and pay for all permits, plan reviews and certificates of inspection in connection with his work, required by the foregoing authorities. Before final payment of the contract is allowed, all certificates shall be delivered to the architect in duplicate.
4. Electrical material and equipment shall bear the UL label except where UL does not label such types of material and equipment.

D. Shop Drawings Submittals
1. The electrical contractor shall submit product data and shop drawings. Each submittal shall be identified using the respective specification numbering system and titles. Each submittal shall clearly identify which products and options are applicable. The submittals shall be submitted through the architect to the engineer and then, if necessary, resubmitted for final approval. Submittals shall be submitted for the following items:
   - D.a. Wiring devices
   - D.b. Switchboards, Panelboards, transformers and safety switches including fault current study based on equipment being supplied.
   - D.c. Lighting control system and devices
   - D.d. Lighting fixtures
   - D.e. Fire alarm system
2. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
3. Each submittal shall be provided with a cover identifying the following:
   - D.a. Name of the job
   - D.b. Location of the job, address, city and state.
   - D.c. Name and address of the company issuing the submittal.
   - D.d. Date of the submittal
4. All submitted product data and shop drawings (manufacturers' equipment descriptive sheets or vendors' prepared drawings) shall have the general contractor's or subcontractor's "stamp of approval" indicating that the item submitted is as called for on the plans and specifications, is approved by the general contractor or subcontractor, the date of approval and initialed by the person approving the submittal and the name of the company submitting said equipment for approval.
5. Any submittal not as specified shall be returned without review for corrections and re-submittal.
6. Every effort shall be made, in checking the shop drawings, to detect and correct all errors, omissions and inaccuracies. Failure to do this will not relieve the electrical contractor of the responsibility for the proper and complete installation in accordance with the contract documents.

E. As-built Drawings
1. Submit three paper-copy set(s) of marked-up record prints to the architect. Contractor shall use red ink for all contractor mark-ups on record prints.
2. Submit PDF electronic files of scanned record prints. Scanned record prints shall be in color.
3. Print and scan each drawing, whether or not changes and additional information were recorded.

F. Standards and Substitutions
1. Wherever the words "approved by", "approved equal", "as directed" or similar phrases are used in the following specifications, they shall be understood to refer to the owner as the approving agency. The name or make of any equipment or materials named in this specifications (whether or not the words "or approved equal" are used) shall be known as the "standard".
2. These specifications establish quality standard of materials and equipment to be provided. Specific items are identified by manufacturer, trade name or catalog designation. This contractor shall submit his base bid price based upon standard specified equipment described herein and as detailed on drawings and associated contract documents. These specifications are not to be considered proprietary. The contractor may submit information on materials and manufacturers (other than those listed) for review by the architect and engineer no later than ten (10) days before bids are submitted. Manufacturers of products accepted by the architect and engineer will be listed in an addendum to the specifications as an acceptable substitution equipment accepted as detailed below and shall be shown as a separate add or deduct price to be factored into the base bid price by the architect and owner if accepted.
3. Should the contractor propose to furnish materials and equipment other than those specified or approved by addendum, submit a written request for substitutions to the architect at the bid opening. The request shall be an alternate to the original bid; be accompanied with complete descriptive (manufacturer, brand name, catalog number, etc.) and technical data for all items. Failure by this contractor to submit the requisite documentation detailed above shall be understood by the architect and engineer to indicate that substitute equipment will not be presented by the contractor for consideration. Such substitutions will not be considered after the bid opening date and delay of project will not be permitted for further inspection and evaluation after this date.
4. Where such substitutions alter the design or space requirements indicated on the drawings, include all items of cost for the revised design and construction including cost of all allied trades involved.
5. Acceptance or rejection of the proposed substitutions shall be subject to approval of the architect and engineer. If requested, the contractor shall submit (at his cost) inspection samples of both the specified and proposed substitute items.
6. In all cases where substitutions are permitted, the contractor shall bear any extra cost of evaluating the quality of the material and equipment to be provided.

G. Testing and Placing in Service
1. Any material or equipment failing a test shall be repaired or replaced at the contractor's expense.
2. Tests shall include the following:
   - G.a. Measure the load on each phase of the main service and each phase of every feeder under full load conditions.
   - G.b. Measure the no-load and full-load voltages (phase to phase, phase to neutral and phase to ground for each phase of each service, of each separately derived system, and at each panelboard or transformer).
   - G.c. Measure the ground resistance of the main service grounding electrode and the ground resistance of each separately derived system's grounding electrode.
   - G.d. Make insulation resistance tests on all dry type transformers and motors.
3. Provide performance testing as required per N.E.C. or local authority having jurisdiction.

H. Interferences
1. Before the installation of any item begins, the electrical contractor shall carefully ascertain that it does not interfere with clearances for the erection of finish beams, columns, pilasters, walls or other structural or architectural members as shown on the architectural drawings. If any work is installed and the architectural design cannot be followed, this contractor shall, at his own expense, make changes in his work as directed by the architect to permit the completion of the architectural work in accordance with drawings and specifications.
2. It shall be the duty of this contractor to report any interferences between his work and that of any of the other contractors as soon as they are discovered. The architect shall determine which equipment will be relocated, regardless of which was installed first. His decision will be final.

I. Quality Assurance
1. All products shall be new and of the type and quality specified. Where materials, equipment, apparatus or other products are specified by manufacturer, brand name, type of catalog number, such designation shall establish the standards of the desired quality and style. It is the intent of these specifications to establish a standard of quality of materials and equipment installed.

J. Special Inspections
1. Special Inspection (as applicable) is to be provided in addition to inspections conducted by the department of building safety and shall not be construed to relieve the owner or his/her authorized agent from requesting periodic and called inspections required by the building code. Special Inspection shall be paid by the owner.
2. Special Inspector shall meet the qualifications as stated in the applicable building code and shall perform the duties and responsibilities as outlined in the applicable building code.
3. The electrical contractor shall provide access to areas requiring testing or inspections, and provide requested documentation (if required by the Special Inspector).

Section 260050 - Basic Electrical Materials and Methods

A. Nameplates
1. General: furnish and mount on each panelboard, switchboard (including branch devices), large junction box, safety switch, starter, remote control, push button station, and all similar controls, a nameplate descriptive of the equipment or equipment controlled.
2. Provide black and white nameplates constructed from laminated phenolic with a white center core. Letters shall be engraved in the phenolic to form white letters 3/8" high. Fasten the nameplates with an adhesive type fastener.

B. Mounting Accessories
1. This contractor shall furnish and install all angle iron, channel iron, rods, supports, hangers, concrete or plywood required to install, mount and support any electrical equipment or device called for on the plans.
2. Supporting material shall be complete with hangers, connectors, bolts, clamps and necessary accessories to make a complete installation. Supporting material shall be galvanized, painted or otherwise suitably finished. Products by Binkley, Steel City, or Raco will be acceptable.
3. All surface-mounted equipment on block walls shall be mounted on 3/4" plywood backboard. All floor-mounted equipment shall be installed on a 4" high concrete housekeeping pad.

C. Execution
1. The electrical work for construction proposed shall conform to all federal (OSHA), state, all specific safety requirements and the requirements of the current edition of the NEC.
2. Review the HVAC and plumbing specifications for electrical requirements and include the same in the contract cost.
3. Equipment connections, starters, disconnect switches, control transformers and pushbutton stations for the equipment furnished by the owner or under a separate contract shall be installed and connected under this division, as indicated on the contract drawings.
4. All cutting, patching, excavating, backfilling and concrete work related to this contract will be the responsibility of the electrical contractor. This contractor shall assume the responsibility of providing the sleeves, chases and openings necessary for the electrical installation and for their repair in an acceptable manner, as determined by the architect. All holes shall be core-drilled. Provide fire stopping materials, UL Listed for application, in all openings created through fire-rated walls, floors or ceilings. Contractor shall field verify slab on grade floor construction type prior to cutting. Under no circumstances shall the contractor cut a structural floor slab thicker than four (4") inches without prior written approval from Engineer of Record. Notify Engineer of Record of any slab thickness greater than four (4") inches prior to proceeding with any saw cutting.
5. This contractor shall be responsible for providing all required access panels necessary for his work, coordinate with architect prior to installation.

D. Materials and Workmanship
1. All work shall be installed in a practical and workmanlike manner, by mechanics skilled in the several trades necessary.
2. All materials shall be new and free from defects and shall be the best of their several kinds unless specified or indicated on the drawings to the contrary.
3. During each phase and at the completion of the construction, this contractor shall remove all debris and excess materials caused by his work. He shall leave the area of operation broom clean.
4. All electrical equipment shall bear the underwriters laboratories label or ETL label.
5. This contractor shall guarantee his workmanship and material (lamps excepted) for a period of one year from the date of building opening and leave his work in perfect order at the completion. Should defects develop within the guarantee period, the contractor shall, upon notice of the same, remedy the defects and have all damages to other work or furnishings caused by the repairs corrected at his expense to the condition before such damage.

E. Scope of Work
1. The electrical contractor shall provide all labor, material, storage, unpacking and placement; to include but not be limited to, the following items:
   - E.a. Demolition
   - E.b. Emergency lighting and power.
   - E.c. Complete electrical distribution system including, but not limited to, switchboards, distribution and appliance panelboards, transformers, safety switches and feeders.
   - E.d. Complete branch circuit wiring system.
   - E.e. Complete power wiring for all air conditioning equipment, plumbing equipment, heating equipment, ventilating and exhaust equipment.
   - E.f. Complete lighting fixture installation, including all lamps.
   - E.g. Complete communications conduit system including but not limited to, back boxes, plates, j-hooks, cable trays, etc., as specified on the drawings and as required by the local service provider and/or owner.
   - E.h. Temporary electrical power and lighting, as required for construction.
   - E.i. Testing of all cables and circuit wiring after installation.
   - E.j. Exit light system.
   - E.k. Wiring devices, floor boxes, multi-outlet assemblies.
   - E.l. Lighting control system and devices
   - E.m. Grounding and Bonding of the electrical system.
   - E.n. Outdoor lighting and controls.
   - E.o. Fire alarm system.
   - E.p. Communication service
   - E.q. Electric service.

F. Temporary Service
1. The electrical contractor shall furnish, install and remove as required all temporary power and temporary lighting in all areas and individual rooms when needed by the individual trades in the performance of their work. This contractor shall provide a minimum of twenty (20) footcandles of illumination for temporary lighting. Any additional lighting required by individual trades shall be provided by the individual trades including power for the lighting. The electrical work for construction purposes shall conform to all federal (OSHA), state, specific safety requirements, as well as the requirements of the national electric code and national electrical safety code. The electrical contractor shall obtain and pay for all required applications, permits and inspections pertaining to this work. This cost shall be included in the contractor's price.
2. New light fixtures shall not be used for temporary lighting.

G. Electric Service
1. Provide trenching and backfill to the power company specifications.
2. Provide conduit for primary service where required by the power company.
3. Concrete encase conduits where required by the power company and where indicated on the plans.
4. Provide metering to power company specifications.
5. Make provisions for the pad-mount transformer as required by the power company including the transformer pad and grounding.
6. Pay the cost of all power company charges connected with permanent electric service to the building.
7. Coordinate all work with the power company and perform any work necessary to assure a complete, working installation. The entire service installation shall be in complete conformance with the power company's requirements.
8. Verify the exact routing of the primary and secondary services, and all service requirements, with the power company prior to bidding.

Section 260519 - Wiring and Cable

A. Color code conductors (except control and instrumentation conductors) as follows:

	208/120 System	480/277 System
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green

1. #12 and #10 conductors shall have continuous insulation color, as listed above.
2. Color code conductors larger than above, which do not have continuous insulation color by application of at least two laps of colored tape on each conductor at all points of access including junction boxes. Color tape shall be the equal of 3M products Scotch #35.
3. Conductors shall be soft annealed copper insulated for 600 volts unless specifically indicated otherwise. Aluminum conductors are not allowed on this project.

B. Insulation type shall be type THWN for wire sizes #8 AWG and larger and THHN or THWN for #10 AWG and smaller. THHN shall not be used in wet or damp locations.

C. Flexible cord shall be heavy duty type so with an equipment ground conductor in addition to the current carrying conductors.

D. Provide #12 conductors, unless otherwise indicated.
1. Control conductors shall be #14 minimum for NEC class I and #16 for NEC class II.

E. Conductors #8 AWG and larger shall be stranded.

F. Conductors #10 AWG and smaller shall be solid.

G. Install wiring in conduit.

H. Connect #10 and smaller wires with constant pressure expandable spring type connectors, "Scotchlok" by 3M or B-Cap by Buchanan.

I. Connect #8 and larger wires with compression connectors or splices as manufactured by Burndy or T&B.

J. Insulate splicing connectors to at least 200% of the wire insulation. Use pre-stretched tubing connector insulators, 3M PST for #2 and larger conductors.

K. Pull conductors using recognized methods and equipment leaving at least 6" wire at all junction boxes for connections.
1. Clean out each conduit system before pulling wire.

L. Form and tie all wiring in panelboards.

M. There shall be no wirenut joints or splices made inside switchboards/panelboards.

N. Branch circuit wire sizes (and conduits) shall be increased from those indicated on the plans to prevent excessive voltage drop. Branch circuits shall be installed with wires of sufficient size so that voltage drop between the panel and the loads does not exceed limit of 3%.

O. Regardless of the temperature rating of the conductor insulation, all conductor ampacity rating for this project shall be determined from the 75°C conductor temperature ratings indicated in the NEC tables. Where equipment or devices are provided with terminals/lugs rated for 60°C, the ampacity rating of the 75°C conductor shall be limited to its associated 60°C rating as indicated in the NEC tables. The electrical contractor shall be responsible to increase the conductors and conduit size as required.

P. Circuits may be multi-plexed in conduit provided wire is properly derated and conduit sized per code. Under no circumstances shall more than six (6) current carrying conductors be run in a single conduit.

Section 260526 - Grounding and Bonding

A. Ground all equipment per N.E.C.

B. Ground each outside lighting pole separately with one ground rod and a #6 ground wire.

C. Ground all dry type transformers as per drawings and NEC #450-10.

Section 260526 (cont.)

D. All conduits shall contain a code-sized ground wire size per N.E.C. in addition to the conductors shown on the plans. Where circuit conductors are increased in size for any reason (i.e. voltage drop, derating, etc.), the ground wire size shall be increased proportionately (according to circular mil area).

E. Where an isolated, insulated ground is required a separate isolated green ground shall be run from the panel isolated ground bus to the isolated ground connection of the device served. In no case shall the system ground (green wire and associated outlet boxes, conduit and building steel) be allowed to contact the isolate ground (green wire with white stripe).

Section 260533 - Raceways and Boxes

A. Raceways
1. All wire shall be run in accordance with code in corrosion resistant, rigid, threaded, metal conduit or electrical metallic tubing (E.M.T.) unless otherwise specifically stated herein.
   - A.a. Conduit in exterior walls, below floor slab, or underground shall be rigid, threaded, galvanized, heavy wall type.
   - A.b. Carlon PVC type 40 heavy wall conduit with ground wire may be used below floor slab or underground in lieu of rigid, threaded, galvanized conduit. PVC 40 conduit shall not be run in or above floor slab. PVC conduit shall terminate below floor slab with rigid, threaded metal conduit adapter. Conduit above slab shall be metal.
   - A.c. Conduit run exposed to the weather shall be heavy wall, metal threaded type.
2. Conduit size shall be 3/4" minimum.
3. Conduit shall be securely fastened in place.
4. All conduit shall be concealed in walls, floors and ceilings wherever possible. Exposed conduit in finished areas will not be permitted. Exposed conduit will be permitted in the unfinished areas with the specific approval of the architect.
5. Use flexible conduit for the connection to recessed or semi-recessed lighting fixtures (6' length maximum). Use liquid tight metal conduit for all connections to motors and other equipment subject to vibration and in areas subject to moisture.
6. Use watertight joints with buried and concrete encased conduit. All buried conduits outside of buildings shall have a minimum of 24" of cover. Metal conduits buried in earth shall be painted (two coats) with heavy asphaltum paint.
7. Support runs of conduit as detailed in the appropriate table of the national electrical code (NEC).
8. Installed exposed runs of conduit and conduit above lay-in ceilings parallel or perpendicular to the walls, structural members of intersections of vertical planes and ceilings. Provide right angle turns using fittings or symmetrical bends. Support conduits within 1" of all changes in direction.
9. If a conduit is suspended, it shall be supported on trapeze hangers which use "all-thread" rods from the structural steel. The use of ceiling support wire or similar material will not be accepted.
10. Install empty conduit for future use as indicated on the drawings. Conduit shall be complete with jetline or pull rope, junction/outlet boxes, tile rings and appropriate cover plates.
11. Provide pitch pockets where conduits penetrate the roof.
12. Thread lubrication/sealant is required on outdoor and underground threaded metal joints.
13. Install fire seal fittings where conduits penetrate concrete floor slabs or masonry walls required to be fire rated.
14. Horizontal portion of conduit exposed on the roof and feeding equipment shall not be more than 5'-0" unless the written approval from architect or engineer is obtained.

B. Pull and Junction Boxes
1. Install pull and junction boxes where shown on the drawings, and where required for changes in direction, at junction points, and to facilitate wire pulling. Furnish box sizes in accordance with NEC unless larger boxes are indicated.
2. Provide steel boxes and removable covers of code gauge, hot rolled sheet steel, hot dipped galvanized inside and outside, for above ground work. Furnish weatherproof boxes when installed above ground outside.
3. Provide cast iron boxes, hot dipped galvanized inside and outside where shown on the drawings. Furnish removable covers with gaskets and stainless steel, brass or bronze screws.
4. Provide concrete boxes for underground work unless otherwise indicated on the drawings. Furnish steel frames and covers with the cover attached to the frame with hexagon head, brass or bronze cap screws, 3/8" in diameter. Provide a rubber gasket for sealing between the cover and the frame. Paint the cover with two coats of heavy asphaltum.

C. Outlet Boxes
1. Use sheet steel boxes, zinc coated or cadmium plated, for concealed interior work.
2. Use cast boxes, zinc-cadmium finish malleable iron, for exposed interior work, and for exposed or concealed work in wet, damp or exterior locations. Cast boxes shall be series FD by Crouse Hinds or Appleton.
3. Wall box sizes (minimum) shall be 4" square X 2-1/2" deep where wall construction permits. Where wall construction dictates, the depth may be reduced to 2-1/8" or 1-1/2" under special conditions.
4. Fixture outlets in ceilings (minimum) shall be 4" octagonal X 1-1/2" deep (4-11/16" octagonal X 2-1/2" deep where required to accommodate larger conduit or larger number of wires).
5. Ganged boxes shall be one piece (minimum), 2-1/8" deep.
6. Provide cast iron, concrete-tite floor boxes with adjustable covers set flush and level with the finished floor, with outlets as indicated on the drawings. Provide Hubbell #B-2400, 4200, or 4300 series boxes with leveling screws. Flush type covers and openings to serve outlets used. Furnish flush caps for closing off box when not in use.
7. Flush mount boxes in all finished walls, install the plaster rings in drywalled plastered walls and raised covers as required in walls with other finishes so that the cover plates fit tightly against boxes or rings, 3/16" maximum gaps are allowed for noncombustible walls.
8. Adjust location of outlets in masonry or tile construction to occur in the nearest joint to the height specified. Heights shall meet A.D.A. requirements.
9. Support all boxes to maintain proper alignment and rigidity.
10. Clean boxes of all foreign matter prior to the installation or wiring of devices.
11. Mounting heights on the drawings are to the centerline of the box unless otherwise noted.

Section 260923 - Lighting Control Devices

A. Sensor Layout: Utilizing project-specific floor plans, manufacturer shall produce a CAD layout of their recommended locations for all occupancy sensors and daylight sensors. Indicate where additional sensors are recommended or where any sensors can be eliminated. Contractor shall use this layout for rough-in of sensor locations.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Acuity Controls
2. Hubbell Control Solutions
3. Wattstopper
4. Lutron
5. Greengate
6. Douglas Lighting Controls
7. Crestron
8. Steinel Professional
9. Touché Lighting Control
10. B.E.G. Controls

C. Daylight Harvesting Controls
1. Sequence of Operation: A daylight harvesting lighting control system shall be furnished and installed complete in rooms indicated on plans. The control sequence shall be as follows:
   a. General Mode: Occupants shall have the ability to turn on/off and dim all lighting fixtures in the room to a desired light level via the wall dimmer switch(es). Refer to plans for the quantity of zones required.
   b. Occupancy Detection (where indicated): The occupancy sensor shall turn off all lighting fixtures in the room if occupancy is not detected within 20 minutes. Sensor shall function as off only (manual on).
   c. Daylight Harvesting: The daylight sensor shall measure lighting levels within the space and automatically dim lighting fixtures according to their daylight zones. Daylight zones shall be dimmed independently to maintain a consistent lighting level across the space. Note: Some rooms may have fixtures that are not on daylight zones. Confirm lighting level setpoints with the Architect prior to programming.
   d. Emergency Mode (rooms with lighting fixtures on an emergency circuit): Upon loss of normal power, any lighting fixtures on emergency circuits shall be forced on to full light output. All such rooms shall either have UL924 power packs as part of the lighting controls or UL924 devices furnished and installed as required.
2. Dimming Control Module
   a. Provide an open loop continuous dimming daylight harvesting control module with three individually adjustable zones of control.
   b. Module shall have pushbutton programming and automated setup.
   c. LCD display shall provide “real-time” light-level readings.
   d. Compatible with 2-wire 0-10 volt dimming ballasts, 50 ballasts per channel.
   e. Module shall be capable of integrating with occupancy sensors and manual override control stations.
   f. DIN rail mounting.
   g. Shall have standard 2 year warranty and shall be UL listed.
3. On/Off Control Module
   a. Provide an open loop on/off daylight harvesting stepped control module with three individually adjustable zones of control.
   b. Module shall have pushbutton programming and automated setup.
   c. LCD display shall provide “real-time” light-level readings.
   d. Module shall be capable of integrating with occupancy sensors and manual override control stations.
   e. DIN rail mounting.
   f. Shall have standard 2 year warranty and shall be UL listed.
4. Power Pack (with 3 Relays)
   a. Provide a 120/277VAC to +24VDC power pack to power the dimming control module with three individually controlled relays for ON/OFF control.
   b. Built-in overload protection.
   c. Quick connect.
   d. DIN rail mounting.
   e. Shall have standard 2 year warranty and shall be UL listed.
5. Power Pack (with 1 Relay)
   a. Provide a 120/277VAC to +24VDC power pack with one relay for ON/OFF control.
   b. Built-in overload protection.
   c. Quick to install connector.
   d. Plenum rated for mounting inside or outside a junction box or inside a fluorescent ballast cavity.
   e. Shall have standard 5 year warranty and shall be UL listed.
6. Relay
   a. Provide a 10 amp single-pole double-throw relay with 10-30 VAC/DC/120 VAC coil or 10-30 VAC/DC/208-277 VAC coil.
   b. Normally open and normally closed isolated contacts.
   c. LED status indicator.
   d. Plenum rated housing.
   e. Shall have standard 1 year warranty and shall be UL listed.
7. UL924 Relay
   a. Provide a 10 amp single-pole double-throw relay with 10-30 VAC/DC/120 VAC coil or 10-30 VAC/DC/208-277 VAC coil.
   b. Normally open and normally closed isolated contacts.
   c. LED status indicator.
   d. Plenum rated housing.
   e. UL924 listed for emergency use.
   f. Shall have standard 1 year warranty and shall be UL listed.

Section 260923 (cont.)

8. Photosensor
   a. Provide an open loop photosensor that continuously measures footcandle levels using a photodiode element to provide input to the dimming control module.
   b. Foot-candle range of 3 to 6,000 fc.
   c. Sensor shall be capable of mounting both horizontally and vertically.
   d. User selectable foot-candle range setting via jumper beneath front cover.
   e. Shall have standard 2 year warranty and shall be UL listed.
9. Occupancy Sensor
   a. Provide a digital dual-technology ultrasonic and passive infrared occupancy sensor to turn lighting ON/OFF based on occupancy via the dimming control module.
   b. Automatic self-adaptive technology with no manual adjustment required.
   c. Non-volatile memory for sensor settings.
   d. 1,600 square-foot coverage area.
   e. Auxiliary relay for building automation system integration.
   f. Shall have standard 5 year warranty and shall be UL listed.
10. 4-Button Wall Dimmer Switch
   a. Provide a low voltage four button wall switch for manual override control of the dimming control module.
   b. Four buttons provide ON/OFF, dim up, dim down and automatic controls with LED indicators.
   c. Mounts in standard single-gang box.
   d. Contractor shall provide decorator style wall plate (not included).
   e. Buttons shall have engraved labels.
   f. Standard finish as selected by architect.
   g. Shall have standard 2 year warranty and shall be UL listed.
11. 1-Button Wall Switch
   a. Provide a low voltage one button latching wall switch for manual override control of lighting fixtures.
   b. Single button provides ON/OFF control with LED indicator.
   c. Mounts in standard single-gang box.
   d. Contractor shall provide decorator style wall plate (not included).
   e. Button shall have engraved label.
   f. Standard finish as selected by architect.
   g. Shall have standard 2 year warranty and shall be UL listed.

D. Occupancy Sensors, Line Voltage, Wall Switch Type
1. Shall use passive infrared motion detection.
2. Shall be compatible with incandescent, magnetic or electronic low voltage, and magnetic or electronic fluorescent, as well as motor loads.
3. Switch shall be microprocessor controlled.
4. Shall be capable of detecting occupancy with true, 180º field of view.
5. Shall utilize zero crossing circuitry, which increases relay life, protects from the effects of inrush current, and increases sensor longevity.
6. Wall switch shall have integral shutters that narrow the field of view from 180º.
7. Shall feature pushbutton for manual on and off, which times out based upon occupancy detection.
8. An LED shall indicate occupancy status.
9. Internal timer shall be factory set at 10 minutes, shall be push-button programmable from 30 seconds to 20 minutes and shall reset every time occupancy is re-detected. Requires no field calibration or sensitivity adjustments.
10. Manual range, photocell, and time settings shall be user-configurable.
11. Switch shall be rated at 120/277V in one unit.
12. Unit shall fit in a standard box and use a standard wallplate, which is gangable.
13. Wall switch shall not protrude more than .4 inches from box.
14. Shall be a Decora style unit with a matching wallplate available.
15. Shall have standard 5 year warranty and shall be UL listed.
16. Two-pole devices shall provide switching for 2 separate banks from a single unit.

E. Occupancy Sensors, Low Voltage, Ceiling Mount
1. Shall incorporate dual-technology passive infrared and ultrasonic motion detection.
2. Shall mount on ceiling.
3. Shall have 360° coverage with at least a 28 ft coverage pattern (when mounted at 9 ft) in all directions for walking motions.
4. Shall automatically adapt to changing room conditions--including background PIR levels and continuous airflow not less than 6 feet from sensor.
5. Shall incorporate a real-time motion indicator LED, which is visible from the front of unit.
6. Shall have mask inserts for PIR rejection to prevent false tripping.
7. Internal timer shall be factory set at 10 minutes, shall be push-button programmable from 30 seconds to 20 minutes and shall reset every time occupancy is re-detected. Requires no field calibration or sensitivity adjustments.
8. Shall be included with a low voltage relay for tie-in to building automation system.
9. Shall have standard 5 year warranty and shall be UL listed.

F. Power Pack
1. Transforms 120 or 277V to class 2, 15 to 24V DC, to power remote sensors.
2. Shall be compatible with incandescent, magnetic or electronic low voltage, and magnetic or electronic fluorescent, as well as motor loads.
3. Ratings: 20A incandescent, 20A fluorescent, 120 or 277V.
4. Shall be plenum rated. Mount in deep junction box where required per local AHJ.
5. Shall have elongated mounting nipple which can be mounted either directly through a ½” knockout in a junction box or to be located inside an adjacent box for specific local code requirements, contractor to verify.
6. Shall be capable of powering up to 14 sensors.
7. Shall have self-contained relays with relay circuit protection.
8. Provide 2-pole version for rooms with two levels of lighting control including inboard/outboard switching.
9. Shall have standard 5 year warranty and shall be UL listed.

G. Wall Timer Switches
1. The timer shall be an electronic interval timer with a manually operated toggle switch.
2. The timer switch shall be capable of 3-way operation.
3. Switch contacts shall break the current at the end of a preset time which is user adjustable from 1 minute to 18 hours. Timer adjustment shall be hidden after wallplate is installed.
4. Flicker feature shall be provided to provide a flick warn of the load controlled two minutes before the end of the timed cycle and again one minute before the end of the timed cycle.
5. Unit shall fit into a standard 2-1/2 inch deep wall box, single or multi-gang installation, and accept a standard toggle switchplate.
6. Unit shall be capable of switching fluorescent lights with electronic or electromagnetic ballasts, incandescent lights, or motor loads. Unit shall accept input of 24, 120, 208-240, or 277 volts AC at 50/60 Hz.
7. Time switch shall have 5 year warranty and shall be UL listed.

H. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and assist in field testing. Report results in writing. Remove and replace lighting control devices where test results indicate that they do not comply with specified requirements.

I. Adjusting
1. Final occupancy sensor locations shall be determined in accordance with manufacturer's recommendations and locations adjusted as required prior to rough-in. Refer to sensor layout submittal provided by manufacturer. All sensors shall have non-adjustable factory calibrated sensitivity for maximum performance. A factory-authorized service representative shall be engaged to meet on-site with the contractor to determine proper device locations prior to rough-in.
2. Once lighting fixtures and occupancy sensors have been installed, a factory-authorized service representative shall be engaged to set-up and program occupancy sensors and photosensors. Contractor and service representative shall meet on-site with the Owner to determine appropriate set points and programming.
   a. All occupancy sensors shall be field adjusted/aimed to effectively detect motion and eliminate nuisance tripping.
   b. Time Delay settings for occupancy sensors shall be factory set at 10 minutes, and shall not be field adjusted unless specifically instructed by Architect. This delay selection is based on lamp life vs. energy savings and sensor performance.
3. Once all occupancy sensors have been set-up, adjusted and programmed, contractor shall meet again with factory-authorized service representative and Owner to test operation of systems. Service representative shall be engaged to make adjustments to sensors, set points and programming as necessary for proper operation.

J. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, a factory-authorized service representative shall be engaged to provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to site outside normal occupancy hours for this purpose.

K. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting controls. Refer to Division 1 Section "Closeout Procedures." Provide a minimum of four (4) hours of Owner training.

Section 262726 - Wiring Devices

A. Wiring device color shall be selected by architect, unless otherwise indicated.

B. Provide totally enclosed, 20 ampere, 120/277 volt, quiet A/C general use snap switches.

C. Switches shall be specification grade as manufactured by Hubbell, P&S, or Leviton.

D. Provide NEMA configuration 5-20R Duplex 125 volt grounding type receptacles rated for 20 amperes unless otherwise indicated on the drawings.

E. Receptacles shall be specification grade as manufactured by Hubbell, P&S or Leviton.

F. Receptacles requiring amperages, voltages or configurations different from the duplex convenience receptacles above shall be as indicated on the drawings.

G. Provide other receptacles of a quality, material and workmanship equal to that specified for duplex convenience receptacles.

H. Provide cover or device plates for outlet boxes as follows unless otherwise noted:
1. Finished areas: Thermoplastic - color to match device.
2. Unfinished areas: Zinc coated sheet metal, aluminum, or cast metal as appropriate for the type of box.
3. Exterior areas: Copper free aluminum with gray, powder epoxy finish, gasket, weatherproof, Crouse-Hinds "WLRD" for duplex receptacles and WLRS for single receptacles or equal.
4. Telephone, communication, and signal outlet plates, shall match those used for receptacles and switches. All outlet and/or junction boxes shall be complete with a cover plate by this contractor.
5. Where devices are ganged, they shall be installed under a common cover plate.

I. Locate the switches approximately 4'-0" above the finished floor elevation or nearest block course (within A.D.A. requirements), unless otherwise indicated. The long dimension of the switches shall be vertical.

J. Locate receptacles approximately 1'-6" above the finished floor elevation or nearest block course (within A.D.A. requirements), unless noted otherwise. The long dimension of receptacles shall be vertical.

Section 262816 - Safety Switches

A. Safety switches shall be the enclosed heavy-duty type (type HD) with quick-make, quick-break mechanism and external pad lockable operating handle.

B. Safety switches shall be rated for 240 or 600 volts as applicable. They shall be horsepower rated when used in motor circuits.

C. Safety switches shall be fusible or non-fusible 2, 3, or 4 pole as indicated on the drawings.

D. Safety switches shall be single throw unless otherwise indicated on the drawings.

E. Enclosures shall be NEMA 1 indoors and NEMA 3R outdoors unless otherwise indicated on the drawings.

F. Manufacturer shall be Square D, Siemens, G.E., or Cutler-Hammer. All safety switches shall be by one manufacturer.

G. Mount the safety switches securely between 3' X 6' levels above the floor unless otherwise indicated on the drawings.

H. Switches on block walls shall be mounted on a 3/4" plywood backboard, where located indoors.

Section 265119 - Lighting Fixtures

A. LED lighting fixtures:
1. Recessed Fixtures: Comply with NEMA LE 4.
2. Bulb shape complying with ANSI C79.1.
3. Lamp base complying with ANSI C81.61.
4. CRI of minimum 80.
5. CCT of 3500K, unless noted otherwise on the plans or fixture schedule.
6. Rated lamp life of 50,000 hours, minimum at 70 percent lumen maintenance.
7. Lamps dimmable from 100 percent to 10 percent of maximum light output, unless noted otherwise on the plans or fixture schedule.
8. Integral driver. Driver power factor shall be 40 percent or greater. Harmonic distortion shall be less than 10% THD. Drivers shall be equipped with automatic thermal protection and 20 KA surge protection with end of life LED indicator.
9. Nominal Operating Voltage: as indicated on plans and schedules.
10. Efficiency minimum of 80 lumens per watt.
11. Each LED luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.
12. Fixtures shall comply with UL 1598 and UL 8750.

B. Linear fluorescent lighting fixtures:
1. Lamps for new light fixtures shall be T8, 3500K, minimum 80 CRI of the following manufacturers:
   a. General Electric "Starcoat" SPX35 Series
   b. Sylvania "Octron" 835 Series
   c. Phillips TLD835 Series
2. Ballasts shall be electronic, parallel, instant-start, normal output type, less than 10% THD, CBM and ETL certified, as manufactured by Sylvania, Philips Advance, Universal Lighting Technologies and Robertson.
3. All lamps shall be furnished and installed by electrical contractor. Lamps shall be of the same manufacturer for all types.
4. Fixtures shall comply with UL 1598.

C. Compact fluorescent lighting fixtures:
1. Lamps for new light fixtures shall be 3500K, minimum 80 CRI of the following manufacturers:
   a. General Electric "Biax" SPX35 Series (4 pin base)
   b. Sylvania "Dulux" 835 Series (4 pin base)
   c. Phillips "PL-T" 3500K Series (4 pin base)
2. Ballasts for "T5" compact fluorescent lamps shall be electronic, parallel, instant-start, normal output type, less than 10% THD, CBM and ETL certified, as manufactured by Sylvania, Philips Advance, Universal Lighting Technologies and Robertson.
3. Ballasts for "T4" compact fluorescent lamps shall be electronic, parallel, rapid-start, normal output type, less than 10% THD, CBM and ETL certified, as manufactured by Sylvania, Philips Advance, Universal Lighting Technologies and Robertson.
4. All lamps shall be furnished and installed by electrical contractor. Lamps shall be of the same manufacturer for all types.
5. Fixtures shall comply with UL 1598.

D. Exit Signs:
1. Comply with UL 924; for sign colors and lettering size, comply with authorities having jurisdiction.
2. Internally Lighted Signs: Lamps for AC Operation: Light-emitting diodes, 70,000 hours minimum of rated lamp life.
3. NFPA 101 Compliance: Comply with visibility and luminance requirements for exit signs.

E. All lighting fixtures shall be furnished and installed by electrical contractor as indicated on the lighting fixture schedule. Other acceptable manufacturers shall be at the discretion and approval of the architect and engineer.

F. All fixtures shall bear the underwriter's laboratories (UL) label, be listed and approved for the purpose intended and installed according to manufacturer's instructions.

G. Existing fixtures noted to be reused shall be cleaned and relamped.

H. Electrical contractor shall confirm that all lighting fixtures and associated drivers, ballasts, etc. are coordinated with the lighting/dimming controls being provided. Contractor shall verify if and where Generator Transfer Devices (GTDs) are required prior to ordering lighting fixtures.

I. Electrical contractor shall confirm that all lighting fixture mounting options and hardware are coordinated with the ceiling height and construction. Contractor shall verify fixture mounting heights with architect prior to ordering and rough-in.

J. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

K. Set all lighting fixtures level, plumb, and square with ceilings and walls.

L. This contractor shall provide and install all necessary support media for all lighting fixtures including structural steel, angle, rods, etc. and shall be supported in a manner acceptable to the local inspection authorities. All fixtures shall be firmly supported from beams or joists.
1. Provide all necessary backing, blocking and supports for wall mounted fixtures.
2. Fixtures shall not be supported from roof deck.
3. Support for Fixtures in or on Grid-Type Suspended Ceilings:
   a. Install a minimum of four ceiling support system rods or wires for each fixture. Locate not more than 6 inches (150 mm) from fixture corners.
   b. Support Clips: Fasten to fixtures and to ceiling grid members at or near each fixture corner with clips that are UL listed for the application.
   c. Fixtures of Sizes Less Than Ceiling Grid: Install as indicated on reflected ceiling plans or center in acoustical panel, and support fixtures independently with at least two 3/4-inch (20-mm) metal channels spanning and secured to ceiling tees.
4. Suspended Fixture Support: Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.

M. If required by code, light fixtures shall be Chicago Plenum or New York City rated. If required by code or project requirements, light fixtures shall be CALGREEN, DC Green, Title 24 and/or Energy Star compliant/certified.

N. Recessed fixtures recessed in air plenums shall be approved for the purpose intended and installed according to manufacturer's instructions. Fixtures shall be air-tight rated and/or provide air-tight gaskets to seal around openings.

O. Recessed fixtures in direct contact with insulation shall be IC (Insulated Ceiling) rated. Insulation shall be kept away from Non-IC rated fixtures as required by code and manufacturer's instructions. Provide barriers as required.

P. All penetrations associated with the electrical installation located in or passing through fire rated assemblies shall be fire-stopped using a UL approved method. Furnish and install UL listed fire rated materials and equipment such as boxes, puddy pads, endothermic mat, lighting fixtures with rated enclosures, fire rated covers for lighting fixtures, etc. to comply with code for project conditions. UL approved method for fire stopping shall meet or exceed fire rating of structure being penetrated. Reference architectural plans for fire ratings.

Q. All adjustable fixtures shall be aimed and adjusted during evening hours to the satisfaction of the architect.

R. Submittals: In accordance with other sections of these specifications, provide shop drawings for lighting fixtures containing the following information (as applicable):
1. Project specific luminaire designation
2. All features, options, accessories, mounting, etc. clearly marked
3. Luminaire dimensions
4. Delivered lumen output, CCT and CRI
5. Lamp life
6. Energy efficiency data
7. Photometric data
8. Listings (NRTL, IC, IP, etc.)
9. Lighting controls compatibility
10. Emergency batteries (integral or remote) including the capacity and lumen output
11. Factory shop drawings indicating project specific lengths and layouts for all continuous linear products

Section 270528 - Telephone System

A. Electrical contractor to provide telephone service conduit or duct to telephone board as shown on plans. Service conduit size and quantity shall be as determined by local telephone company.

B. This contractor shall provide and install all conduits with pull wires, outlet boxes, metal cabinets and pull boxes. Provide a complete conduit system with pull wire as indicated on drawings.

C. All plates shall be standard telephone type with jack. Provide plates of same material and finish as specified for receptacles. Wall phone plates shall have mounting studs.

D. Provide fire-rated plywood terminal board as shown on drawings.

E. A conduit run shall have not more than three (3) bends in a run between outlet boxes or between outlet box and a metal cabinet or pull box. When a run requires more than three (3) bends, a pull box of suitable size shall be placed in suitable location to meet the above conditions.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA LICENSE NUMBER: 44523
EXPIRES 09-22-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	
02-20-25	LANDLORD & BD COMMENTS	1

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

ELECTRICAL SPECIFICATIONS

Drawing Number:

E-301

ELECTRICAL SPECIFICATIONS (cont.)

Section 284621 - Alarm System

A. Fire Alarm System (addressable analog type)

1. This contractor shall submit fire alarm system drawings and specification to the local fire department for their approval before installation of any fire alarm components or wiring.
2. Equipment: all devices, combinations of devices, appliances and equipment shall be listed for the purpose for which they are used and shall be installed in compliance with applicable codes and standards.
3. Provide a complete, supervised, power-limited, fire alarm system. All equipment herein specified is that of Simplex Time Recorder Co. Equipment supplied by listed acceptable alternate manufacturers shall meet or exceed the quality of the Simplex equipment specified.
4. The fire alarm system shall be an electrically supervised system, which shall monitor the integrity of circuit conductors and power supplies.
5. The installation organization shall be a company specializing in the installation of fire alarm systems. This organization shall have a minimum of five years experience with installation of such systems.
6. The contractor shall provide and maintain on the site an up-to-date record set of approved shop drawings.
7. Record drawings shall include location of end-of-line device locations.
8. Upon completion of the work, and final acceptance by the local authority, the contractor shall submit record drawings to the owner.
9. A remote monitoring facility output circuit, selectable for interface to remote station reverse polarity, local energy master box, shunt master box, digital alarm communicator, or radio transmitter monitoring systems, shall be provided. The equipment supplier must contact the local authorities prior to bidding and supply all required equipment in the base bid.
10. Control panel shall be simplex 4010-9101 with Simplex Type 4010-9810 Internal D.A.C.T. The power supply shall be adequate to serve control panel modules, relays and alarm indicating appliances. Include a secondary emergency power supply with capacity for operating system for a period of time as specified per NFPA, the local authorities having jurisdiction and or Owner/Building Standards. The strictest provision shall govern.
11. LCD annunciator panel shall be Simplex #4606-9101 with Simplex #4603-9111 brushed aluminum trim plate.
12. Addressable pull stations shall be semi-flush, action push/pull type, simplex #4099-9003.
13. Smoke detectors shall be analog photoelectric type, Simplex #4098-9710.
14. Analog heat detectors shall be 135 degrees F fixed temperature with rate-of-rise type, Simplex #4098-9733 with addressable base, Simplex #4098-9788.
15. Duct-mounted smoke detectors shall have a base with auxiliary relay (Simplex Type 4098-9756), analog photoelectric detector (Simplex Type 4098-9714), and sampling tubes (length as required).
16. Duct detector remote key reset/test station with alarm LED shall be Simplex Type 2098-9806.
17. Semi-flush audio/visual unit shall be Simplex Type 4903-9301 Series with A.D.A. complying 15/75 Candela strobe and horn. All strobe lights shall be synchronized.
18. Visual only unit shall be Simplex Type 4904-9307 with A.D.A complying 15/75 Candela strobe. All strobe lights shall be synchronized.
19. Waterflow and tamper switches shall be furnished and installed by the sprinkler contractor. The electrical contractor shall connect each device to the fire alarm system using an individual addressable module (IAM) Simplex #4090-9001.
20. Magnetic door holders shall be electrically operated and magnetically hold smoke doors in an open position. Provide a flush, surface or floor mounted as required:
    - B.a. Flush mounting - Simplex Type: 2088-9579
    - B.b. Surface mounting - Simplex Type: 2088-9582
    - B.c. Floor mounting - Simplex Type: 2088-9573
21. Provide and install wiring per manufacturers' specifications. All wiring shall be in conduit (3/4" minimum).
22. The completed fire alarm system shall be fully tested in accordance with NFPA-72H, and local fire department requirements, by the installer, in the presence of the owner's representative and the local fire marshal. Upon completion of a successful test, the installer shall so certify, in writing, to the owner and general contractor.
23. Include on-site services of a certified technician to provide technical installation support for panel start up, program editing, troubleshooting of the fire alarm system control panel, and assistance to the installer for one complete final system checkout in accordance with the field quality control section of these specifications.
24. Acceptable manufacturers/suppliers shall be Simplex, Notifier (as supplied by a certified Nesco affiliate) or Siemens.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, PE
WA LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

ELECTRICAL
SPECIFICATIONS

Drawing Number:

E-302

GENERAL NOTES

DESIGN CRITERIA

1. ASHRAE Design Requirements
   - A. Heating/Cooling Loads
     - 1) Heating
       - a) Outside air temperatures: 20 degrees F DB (ASHRAE 99.6%).
     - 2) Cooling
       - a) Outside air temperatures: 86 degrees F DB / 65 degrees F WB (ASHRAE 99%).
   - B. Building Design
     - 1) ASHRAE and Energy Code guidelines.
     - 2) Indoor relative humidity at 50 percent RH for cooling loads only.
       - a) Humidity is not being controlled or maintained in the heating or cooling equipment modes.
3. Design Ventilation
   - A. Use ASHRAE 62 Standard or 2021 Washington State Mechanical Code.
   - B. See Ventilation Schedule on drawings.
   - C. See floor plans for rooms that need to be in a positive or negative relation to other rooms shown by the difference in supply and return or exhaust air quantities.

GENERAL

1. The term General Contractor (G.C.) as used in these documents refers to the Contractor / Construction Manager in responsible charge of the project in terms of coordination, scheduling, subcontractor coordination, etc. this term refers to, but is not limited to, General Contractor, Construction Manager, Design Build Contractor, Prime Contractor, etc. The term is referencing the entity that coordinates the work of other trades.
2. These drawings are diagrammatic and indicate the general extent of the work. The contractor shall be responsible for the coordination and proper installation of all mechanical systems. The contractor shall provide all necessary offsets and fitting which may be required due to space constraints or other conditions.
3. Existing building HVAC, Plumbing and Fire Protection systems shown on these drawings which are to be removed or modified where taken from the original drawings dated 2010 and may not show current installations or conditions. Each contractor shall field verify all existing systems.
4. The mechanical systems or its modifications are designed to be a complete operating system and stable after the building or its modifications are fully completed. It is solely the contractor's responsibility to determine construction, installation, and programming procedures and sequences to have a complete and working system and to insure the safety of the construction personnel, public, building and its component parts, and adjacent buildings and properties. This includes the addition of whatever temporary or permanent bracing, etc. that may be necessary to brace new or existing construction, walls, and framing to remain so that the structure is braced for construction loads, etc. and that no horizontal or vertical settlement or any damage occurs to the adjacent new or permanent supports and bracing that are installed. Design of these supports shall be provided by the contractor. Provide all materials, labor, equipment, and accessories required to furnish and install the systems identified in specifications and drawings.
5. It is the contractor's responsibility to enforce all applicable safety codes and regulations during all phases of construction.
6. Construction loads shall not exceed structural design live loads. The contractor shall be responsible for all design required to support construction equipment used in constructing this project. Verify and coordinate with structural drawings.
7. The contractor shall perform all construction for the project in a manner and sequence that are based on accepted industry standards that recognize the interaction of the components that comprise the systems, without causing distress, unanticipated movements or irregular load paths as a result of the construction means and methods employed.
8. The contractor shall provide all miscellaneous supporting steel, etc. for the proper installation of all mechanical systems.
9. Before fabrication and/or installing any work, contractor shall see that it does not interfere with clearance required for finish on beams, columns, plasters, walls, or other structural or architectural members, as shown on architectural drawings. If any work is so installed and it later develops that architectural design cannot be followed, contractor shall, at his own expense, make such changes in his work as architect may direct to permit completion of architectural work in accordance with plans and specifications.
10. All piping shall be protected as required by the applicable Mechanical, Plumbing, Fire Protection and Building Codes: " General Regulations" and other Code Chapters.
11. Pipes passing through or under walls shall be protected from breakage. Pipes passing through studs, joist, rafters or similar members less than 1 1/2" from the nearest edge of the members shall be protected by steel shield plates.
12. Piping shall be installed to prevent strains and stresses that exceed the structural strength of the pipe. Where necessary, provisions shall be made to protect piping from the damage resulting from pipe expansion and contraction and structural/soil settlement. Expansion joint fittings shall be used where necessary to provide for expansion and contraction of the pipes. Sleeved openings shall be sized appropriately to accommodate pipe movement and structural/soil settlement. Expansion joint fittings shall be of the typical material suitable for use with the type of piping in which fittings are installed. At a minimum install rubber mechanical joint couplings or CSA-certified expansion joints on all vertical piping at every other floor of the building and rigidly support the stack pipe on alternating floors to direct any movement into the appropriate expansion compensator. Design of these expansion fittings shall be provided by the contractor. Any analysis which requires additional support or expansion detailing shall be shared with the mechanical design professional and any stresses or point loads created by the engineered system shall be shared with the structural designer for review.
13. Install additional offsets on piping or ductwork where required to obtain maximum headroom or to avoid conflict with other work without additional cost to owner.
14. Report any interferences between work under this division and that of any other contractors to architect as soon as they are discovered. Architect will determine which equipment shall be relocated, regardless of which was first installed, and his decision shall be final.
15. The contractor shall coordinate floor, wall, and roof penetrations, louver sizes, etc. with general trades.
16. Principal openings on these drawings through the framing are shown on the structural drawings. The mechanical contractor shall examine the structural and mechanical drawings for the required openings and shall verify size and location of all openings with the general contractor. General contractor shall provide all openings required through the framing by the mechanical, electrical, plumbing, or other trades, whether or not shown on the structural drawings. Any deviation from the openings shown on the structural drawings shall be brought to the engineer's attention for review.
17. All mechanical and electrical work: Ductwork, plumbing, piping, wiring, lighting, etc. and all architectural items that need to be removed during the modification of or reinforcing of, existing structure shall be replaced in kind by the respective contractor. The contractors shall keep all existing systems in operation during the construction phase of the project.
18. All contractors are required to examine the drawings and specifications carefully, visit the site and fully inform themselves as to all existing conditions and limitations, prior to agreeing to perform the work. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the contractor from furnishing any materials or performing any work in accordance with drawings and specification without additional cost to the owner to have a complete and working system.
19. Details labeled "Typical Details" or "Typical" on drawings apply to situations occurring on the whole project that are the same or similar to those specifically detailed. Such details apply whether or not details are referenced at each location on drawings. Notify engineer for clarifications regarding applicability of "Typical Details".
20. Work and coordinate these drawings with architectural, civil, structural, mechanical, plumbing, fire protection, electrical, and technology drawings.
21. Do not scale drawings.
22. Any discrepancies between mechanical and architectural drawings shall be brought to the attention of the architect and mechanical engineer.
23. Should any of the general notes conflict with any details or instructions on plans, or in the specifications, the strictest provision shall govern.
24. Shop drawings and submittals
    - A. Shop drawings and submittals shall be checked and coordinated with other materials and contracts by the general, mechanical and electrical contractors and shop drawings and submittals shall bear the prime contractor's review stamp with the checker's initials before being submitted to the architect for approval.
    - B. When the contractor has been authorized to use the architect and engineer's drawings as construction coordination drawings, the contractor must remove all title blocks, professional seals and any other references to the architect and engineer from those drawings. The contractors name and title shall be placed on the drawings.
    - C. Where voltage, amp draw, dimensions and elevations of existing construction could affect the new construction, it is the contractor's responsibility to make field verifications and measurements in time for their incorporation into the shop drawings.
24. Refer to architectural and electrical reflected ceiling plans for exact location of light fixtures. Contractors to coordinate locations of lighting, speakers, air diffusers, grilles, sprinkler heads and the like, with reflected ceiling lay-outs as required and directed by the architect.
25. Ductwork or piping shall not be located over the top of any electrical panels or equipment.
26. Contractor shall include in his bid all cutting, trenching, and patching associated with the installation of this projects work.
27. Cutting, Patching and Drilling
    - A. All cutting and patching of the building construction required for this work shall be by this contractor unless shown on architectural drawings and confirmed as to size and location prior to new construction. Cutting shall be in a neat and workmanlike manner.
    - B. Neatly saw cut all rectangular openings, set sleeve through opening, and finish patch or provide trim flange around opening.
    - C. Neatly saw cut floors and patch floor to match existing, including floor covering.
    - D. Contractor shall field verify slab-on-grade or supported floor construction type prior to cutting. Under no circumstances shall this contractor cut a floor thicker than 4 inches, a structural floor slab, whether on grade or supported, without prior written approval from the architect. If floor slab indicated to be cut on mechanical plans is found to be structural in nature, do not cut. Contact architect immediately for further directions.
    - E. Core drill and sleeve all round openings.
    - F. Do not cut any structural components without architect's written approval, including, but not limited to roof joists, columns, floor joists, beams, girders, structural floor slabs, rebar, etc.
    - G. Patch, and finish to match adjacent areas that have been cut, damaged or modified as a result of the installation of the mechanical systems. Fire-stop all penetrations of fire rated construction in a code approved manner.
    - H. All contractors shall confirm with owner, prior to bid, times available for noise producing work such as cutting and core drilling of floors, walls, etc. as well as times for work which requires access into adjoining tenant spaces. Include any premium time in bid.
    - I. Exact location of roof top air conditioning units shall be approved by the structural engineer. Mechanical contractor shall furnish and install all supplemental support steel for equipment and roof penetrations after approval of structural engineer.
    - J. The mechanical contractor shall coordinate work with the general contractor prior to construction. The mechanical contractor shall provide information regarding openings in walls, floors, etc., concrete equipment pads and foundations to the general contractor. If the mechanical contractor fails to comply with this request, or if incorrect information is given, the necessary cutting and patching will be performed by the general contractor, the mechanical contractor's expense.
    - K. All openings required for this branch of work shall be accomplished in time to be incorporated in, and be compatible with the construction program; otherwise this contractor shall be responsible and pay for all changes made necessary for his failure to do so. Pipe holes in floors and walls shall be core drilled if not sleeved during construction.
28. Refer to mechanical, plumbing, fire protection, and electrical plans for location of mechanical, plumbing, and electrical equipment. Coordinate location of disconnect switch associated with each piece of mechanical and plumbing equipment with electrical contractor.
29. Installation requirements for all HVAC, plumbing, and fire protection systems shall be reviewed and coordinated with all other trades involved prior to rough-in. Give equipment shop drawings from installer/supplier/contractor equipment, as required, for review and coordination to all other trades involved. Contact architect/engineer with any discrepancies found between construction drawings and equipment being furnished prior to rough-in.
30. The contractor shall furnish all access panels or doors in hard ceilings and walls with a size as required for servicing and testing, for equipment, valves and/or devices furnished under this contract. The general contractor shall install access panels. The contractor shall coordinate the size and location of each access panel with the architect and general contractor prior to rough-in.
31. Firestopping
    - A. All penetrations through fire rated walls associated with the installation shall be sleeved and fire-stopped using a UL approved method. UL approved method shall meet or exceed fire rating of structure being penetrated. Reference architectural plans for fire rated structures. If shown, reference architectural, mechanical and electrical drawings for penetration details.
    - B. All openings through fire rated walls, floors, and/or roofs for ductwork, piping, conduit, etc., shall be fire sealed with a calcium sallicate, silicone "RTV" foam, "3M" fire rated sealants, Hilti Firestop Systems, or approved equal to maintain the intended fire rating and associated UL ratings as recommended by the architect and/or sealant manufacturer.
    - C. All fire stopping sealants shall be thixotropic so as not so slump or sag and shall be trowelable. Fire stopping sealants shall be intumescent and shall be free of asbestos, halogens, and volatile solvents.
    - D. Fire stopping materials shall be classified in the Underwriters Laboratories (UL) fire resistance directory or listed in the Warnock Hersey International Directory.
32. All equipment and devices for this project must be UL listed. Devices, equipment, systems shall be installed per National Electrical Code requirements and manufacturer's instructions.
33. All conduit and cabling shall be properly supported as required by the National Electrical Code. For existing installations, the contractor shall be responsible to replace and/or rework existing conduit and/or cabling that is not in compliance with this requirement.
34. All materials and work in the ceiling return air plenum shall be approved for plenum rated application in accordance to the current building code. Where open wiring methods for low voltage systems is permitted by the contract documents and local authority, the conductor insulation must be plenum rated.
35. All hot water heating supply and return branch run-out piping shall be 3/4 inches unless otherwise noted on drawing.
36. Shop Areas and Material Storage
    - A. No plumbing or mechanical trade is permitted to use as shop working area, any concrete slab that is to receive metallic waterproofing, asphalt tile, plastic tile, etc., except by express permission of the architect.
    - B. The contractor shall make provisions for the delivery and safe storage of his materials and equipment in coordination with the work of others. Materials and equipment shall be delivered at such stages of the work as will expedite the work as a whole and shall be marked and stored in such a way as to be easily checked and inspected. The arrival and placing of large equipment items shall be scheduled early enough to permit entry and setting when there is no restriction or problem due to size and weight.
37. Temporary Heat
    - A. The HVAC contractor under this division shall set up temporary heat and other services as may be required and/or requested by the general contractor. See "General Conditions" and "Special Conditions." This contractor shall pay expenses resulting from temporary heat and services used solely by him.

DEMOLITION

1. The architectural drawings are to be used only as a guideline for demolition. The contractor must visit the site prior to bidding to verify all work required for a complete job and include the cost of such work in his bid.
2. The mechanical drawings are intended to show only the general existing building construction within the area of demolition. The drawings do not show all systems, quantities, sizes, obstructions, etc., and are not intended to be used by the contractor to define the complete scope of demolition. The contractor must field verify the actual building and systems conditions to define all elements within the scope of demolition.
3. Examine areas and conditions under which demolition work must be performed. This contractor shall coordinate his work with other trades performing demolition work and/or demolition work performed by the owner. In every instance of demolition and/or remodeling, the contractor shall figure a complete job as none other shall be accepted.
4. The extent of work shown or not shown shall include removal and legally dispose off site, all the items and systems being removed.
5. Where temperature controls are indicated for demolition, retain the services of a temperature control contractor to perform such demolition.
6. This contractor shall retain on the premises in neatly stacked piles where instructed for selection by the owner, all material, wire, fixtures and/or equipment which are specified to be removed or replaced. All such items, not selected for salvage by the owner, shall become the property of this contractor and shall be removed from the premises and legally disposed.
7. Conform to all applicable codes for demolition of items and systems, safety of adjacent systems, dust control, legal run-off control, disposal and all items necessary to complete the work completely.
8. Demolition shall be done in a manner so as not to damage adjacent work and not affect the operation of systems to remain in use. Any item to remain that is damaged by the contractor shall be replaced and/or repaired at the contractor's expense.
9. Demolition and cutting shall be done in a manner which does not deform or apply loads to the existing framing and equipment of the building to remain.
10. All walls, ceilings, floors, etc., being disturbed by the work shall be returned to finished conditions to match existing by the contractor and contractor shall do his own cutting and patching as necessary under his contract.
11. The contractor shall maintain existing services to and in the existing area as required.
12. The existing systems to remain are to be supported as required until the modified elements are installed and supported.
13. If necessary, the contractor shall provide temporary services in the existing areas.
14. Existing slabs shall be saw-cut in a manner that does not cause the steel framing or the rebar supporting the slab to be cut. Contractor shall field verify slab thickness and rebar spacing.
15. Existing slabs shall be core drilled at reentrant corners of new floor openings to prevent over cutting.
16. The demolished systems shall be reduced to pieces of a weight, and transported across the remaining structure in a manner, such that the remaining structure is not overstressed.
17. The electrical contractor shall disconnect and remove electric service to all mechanical equipment being removed as a result of the renovation.
18. Equipment and devices shall be removed complete including hangers, supports, controls, conduit, wire, pipes, ductwork, etc. Wiring shall be disconnected at circuit breakers, removed and breakers marked "spare."
19. All open ended piping and ductwork that is to remain shall be capped and property secured.
20. Any existing pipes, ductwork, conduit, low voltage control, wiring and/or electrical and mechanical devices being disturbed by the work shall be reworked by this contractor as required to return to its former existing operating condition.
21. Any pipes or ductwork, or control wiring, or tubing feeding through devices or equipment being relocated, reworked, or abandoned and serving other devices, and/or equipment shall be maintained in working condition.
22. Mechanical contractor shall remove and reclaim any refrigerant in existing systems prior to demolition of any equipment according to federal requirements.
23. All asbestos removal will be handled by the owner and is not a part of this work.
24. Use of explosives shall not be permitted.
25. Existing architectural, mechanical and electrical equipment and systems shall be protected from damage resulting from demolition.
26. Contractor shall submit a proposed deconstruction sequence to the owner and architect for review prior to commencement of work.

EXCAVATING/BACKFILLING

1. The contractor shall familiarize himself with the survey and the geotechnical investigation report before starting construction. All underground work shall be in accordance with the recommendations of the geotechnical report except where noted otherwise on drawings or specifications.
2. All building pad preparation and patching shall follow the recommendations of the geotechnical report and the structural drawings and architectural drawings (uno).
3. All objectionable materials encountered are to be removed from excavated areas of the site per the geotechnical report.
4. If unstable subgrade sectors cannot be stabilized by excavation and re-compaction, then crushed stone or similar coarse aggregate materials shall be rolled into the subgrade until a firm subgrade reaction is achieved.
5. The geotechnical engineer shall determine on site or off site imported material that can be used for engineered fill. All fill material shall be approved by the geotechnical engineer.
6. The proposed engineered fill materials are to be placed in lifts not exceeding eight (8) inches in loose measured thickness. Each lift is to be compacted as follows:
   - A. Slab on grade: Minimum of 95 percent maximum density by ASTM D698.
7. All fill materials shall be free of organic contaminations and other deleterious matter.
8. For back fill against basement walls, retaining walls, footings, etc., place in 8 inch thick layers, with each lift compacted at near optimum moisture content, until a minimum in place density of 95 percent of the maximum density as determined by ASTM D698 is achieved.
9. All soil surrounding and under footing shall be protected from frost action and freezing during the course of construction.
10. Notify structural engineer of any unusual soil conditions that are in variance with the geotechnical report.

CONCRETE PADS

1. This contractor shall provide to the general contractor, dimensions for the concrete foundations or bases under all equipment that rests on floors in mechanical equipment rooms or outside on grade. He shall follow drawings and/or manufacturer's literature with regard to design and construction of same. In the absence of more specific information, either on drawings or manufacturer's literature, the bases shall be level, shall have a minimum height above finished floor of 4 inches and extend 3 inches beyond the skids, feet or bed plate of the item of equipment.
2. Concrete pedestals and/or saddles for support of piping and/or tanks shall be designed to withstand stresses to which they may be subjected and to distribute properly the load and impact over building areas.
3. Concrete shall be a of mix producing compressive strength after 28 days of 3,000 psi minimum reinforcing and bolts shall be provided as required and work shall be done in accordance with applicable articles covering concrete work.
4. Space approximately 1 inch thick between bottom of equipment and top of concrete foundation or base which remains after shimming, shall be filled completely with grouting. Grout shall be made up with sand and cement designed for the purpose which does not shrink on setting up. Exposed surface of grouting shall be finished to make a neat appearance.

ABBREVIATIONS

A	AMPS
ACU	AIR CONDITIONING UNIT
AD	AREA DRAIN
ADDL	ADDITIONAL
AF	AIRFOIL BLADE FAN
AFC	ABOVE FINISH COUNTER
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
ARCH	ARCHITECTURAL
B	BOILER
BLDG	BUILDING
BOT	BOTTOM
BT	BATHTUB
C	CONDENSER
CB	CATCH BASIN
CC	COOLING COIL
CD	CEILING DIFFUSER
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CI	CAST IRON
CJ	CONTROL JOINT
CL (C)	CENTERLINE
CLG	CEILING
CO	CLEANOUT
COL	COLUMN
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONTR	CONTRACTOR
CONV	CONVECTOR
CS	CLINIC SINK
CT	COOLING TOWER
CTX	CONNECT TO EXISTING
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
D	DAMPER
DCBP	DOUBLE CHECK BACKFLOW PREVENTER
DCDA	DOUBLE CHECK DETECTOR ASSEMBLY
DE	DISHWASHER EXHAUST
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA (Ø)	DIAMETER
DN	DOWN
DS	DOWN SPOUT
DSW	DISCONNECT SWITCH
DT	DRAIN TILE
DWDI	DOUBLE WIDTH DOUBLE INLET FAN
DWG	DRAWING
DWH	DOMESTIC WATER HEATER
EA	EXHAUST AIR
EBB	ELECTRIC BASEBOARD
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EH	ELECTRIC HEATER
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EQ	EQUIPMENT
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST (E)	EXISTING
EXP	EXPANSION
F	FURNACE
FA	FIRE ALARM
FBD	FACE & BYPASS DAMPER
FC	FORWARD CURVE BLADE FAN
FCO	FLOOR CLEAN-OUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN / FIRE DAMPER
FFE	FINISH FLOOR ELEVATION
FPB	FAN POWER BOX
FPC	FIRE PROTECTION CONTRACTOR
FS	FLOW SWITCH
FT	FIN TUBE RADIATION / FEET
G	GRILLE (EXHAUST, RETURN, OR TRANSFER)
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GND	GROUND
GRE	GRAVITY ROOF EXHAUSTER
GUH	GAS UNIT HEATER
GWH	GAS WATER HEATER
H	HUMIDIFIER
HB	HOSE BIBB
HC	HEATING COIL
HE	HOOD EXHAUST
HOA	HAND-OFF-AUTOMATIC
HORIZ	HORIZONTAL
HP	HORSEPOWER
HVAC	HEATING, VENTILATION, AIR CONDITIONING
HX	HEAT EXCHANGER
IE	INVERT ELEVATION
JB	JUNCTION BOX
KEC	KITCHEN EQUIPMENT CONTRACTOR
KHE	KITCHEN HOOD EXHAUST
KVA	KILOVOLT AMPERE
KW	KILOWATT
L	LOUVER
LAV / L	LAVATORY
LT	LAUNDRY TUB
LTG	LIGHTING
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MB	MOP BASIN
MBH	1,000 BTUH
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MTD	MOUNTED
MXB	MIXING BOX
N	NEW
NEC	NATIONAL ELECTRIC CODE
NF	NON FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAI	OUTSIDE AIR INTAKE
OC	ON CENTER
OD	OVERFLOW DRAIN
P	PUMP
PC	PLUMBING CONTRACTOR
PH (ϕ)1 PHASE	
PNL	PANEL
PRE	POWER ROOF EXHAUSTER
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS/SQUARE FOOT
PSI	POUNDS/SQUARE INCH
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAD	RADIUS
RD	ROOF DRAIN
RE	RETURN EXHAUST
REF	RETURN EXHAUST FAN
REQ'D	REQUIRED
RF	RETURN FAN
RG	RETURN GRILLE
RHC	REHEAT COIL
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY
RPZ	REDUCED PRESSURE ZONE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SECT	SECTION
SG	SUPPLY GRILLE
SF	SUPPLY FAN
SH	SHOWER
SK	SINK
SOVB	SHUT-OFF VALVE BOX
SQ	SQUARE
SS	SERVICE SINK
STL	STEEL
STRUCT	STRUCTURAL
SW	SAFE WASTE
SWSI	SINGLE WIDTH SINGLE INLET FAN
SYM	SYMMETRICAL
TA	TRANSFER AIR
TC	TEMPERATURE CONTROL
TCC	TEMPERATURE CONTROL CONTRACTOR
TD	TRENCH DRAIN
TG	TRANSFER GRILLE
TPV	TRAP PRIMER VALVE
TS	TAMPER SWITCH
TYP OR T/	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITER'S LABORATORY
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
UV	UNIT VENTILATOR
V	VOLTS
VAV	VARIABLE AIR VOLUME BOX
VD	VOLUME DAMPER
VERT	VERTICAL
VT	VITRIFIED TILE
VTR	VENT THRU ROOF
W	WATTS
W/	WITH
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WALL HYDRANT
WP	WEATHERPROOF
YH	YARD HYDRANT
XFMR	TRANSFORMER

MECHANICAL LEGEND

CD	CONDENSATE DRAIN PIPING
CW	DOMESTIC COLD WATER PIPING
HW	DOMESTIC HOT WATER PIPING
RHW	DOMESTIC RECIRCULATING HOT WATER PIPING
HW (120°)	DOMESTIC HOT WATER PIPING - 120° F
RHW (120°)	DOMESTIC RECIRCULATING HOT WATER PIPING - 120° F
HW (140°)	DOMESTIC HOT WATER PIPING - 140° F
RHW (140°)	DOMESTIC RECIRCULATING HOT WATER PIPING - 140° F
G	GAS PIPING
GW	GREASE WASTE
GV	GREASE WASTE VENT
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
FCW	FILTERED COLD WATER PIPING
SROCW	SOFT REVERSE OSMOSIS WATER PIPING
RO	REVERSE OSMOSIS WATER PIPING
SAN	SANITARY SEWER PIPING
SCW	SOFT COLD WATER PIPING
SHW	SOFT HOT WATER PIPING
SHW(120°)	SOFT HOT WATER PIPING
SHW(140°)	SOFT HOT WATER PIPING
V	VENT PIPING
	PIPING ABOVE GRADE/FLOOR
	PIPING BELOW GRADE/FLOOR
	EXISTING PIPING TO BE REMOVED
	EXISTING PIPING TO REMAIN
	2-WAY MODULATING VALVE
	3-WAY MODULATING VALVE
[St]	AUTOMATIC CONTROL VALVE
	BALANCE VALVE
	CHECK VALVE
	MODULATING VALVE
	PRESSURE REGULATING / REDUCING VALVE
	RELIEF VALVE
	SHUTOFF VALVE
	PRESSURE GAUGE W/COCK
	STRAINER
	THERMOMETER
	PIPE UNION
M	UTILITY METER
	DIRECTION OF DOWNWARD PITCH
	DIRECTION OF FLOW
DTS	DUCT TEMPERATURE SENSOR
	NEW DUCTWORK
(E)	EXISTING DUCTWORK TO REMAIN
MFSD	MOTORIZED FIRE/SMOKE DAMPER
FD	FIRE DAMPER
SD	SMOKE DAMPER
MOD	MOTOR OPERATED DAMPER
BDD	BACKDRAFT DAMPER

ROOMS OR AREAS SHOWN SHADED ON THIS PLAN, WITH THE FOLLOWING SHADING TYPE ARE DEDICATED FOR A SPECIFIC USE. EXAMPLES INCLUDE ELECTRICAL ROOMS, TECHNOLOGY/DATA CLOSETS, EXIT STAIRWELLS, AND ELEVATOR EQUIPMENT ROOMS. UNDER NO CIRCUMSTANCES SHALL PIPING, DUCTWORK, OR EQUIPMENT BE INSTALLED IN OR ROUTED THROUGH THESE ROOMS OR AREAS EXCEPT FOR BRANCH PIPING OR DUCTWORK SPECIFICALLY SERVING THE ROOM OR AREA. DEDICATED SPACE SHALL EXTEND VERTICALLY FROM FLOOR TO STRUCTURAL CEILING.

DUCT-TYPE SMOKE DETECTOR WITH REMOTE TEST STATION AND AUXILIARY RELAY FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR; INSTALLED IN DUCTWORK BY MECHANICAL CONTRACTOR PER CODE. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR AND MANUFACTURER. PROVIDE CONDUIT AND WIRING NECESSARY TO SHUT DOWN HVAC UNIT UPON ACTIVATION OF SMOKE DETECTOR.

TEMPERATURE CONTROL 120V JUNCTION BOX FOR LOW VOLTAGE CONTROL TRANSFORMER. POWER WIRING, BOX, AND 120V POWER BY ELECTRICAL CONTRACTOR. TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE TRANSFORMER AND LOW VOLTAGE POWER AND WIRING

CO2	CARBON DIOXIDE DETECTOR
CO	CARBON MONOXIDE DETECTOR
H RTU-1	HUMIDISTAT
T RTU-1	THERMOSTAT
S	SENSOR
TS	TEMPERATURE SENSOR
HS	HUMIDITY SENSOR
	POINT OF CONNECTION
XX / XX	EQUIPMENT TAG
CUH-1	CABINET UNIT HEATER DESIGNATION CUH-1 = SEE SCHEDULE
UH-1	UNIT HEATER DESIGNATION UH-1 = SEE SCHEDULE
	SUPPLY OR OUTDOOR AIR DUCT
	RETURN OR RELIEF DUCT
	EXHAUST DUCT
	DUCT LINING
SA-1	DUCT SOUND ATENUATOR SA-1 = SEE SCHEDULE
	DUCT UP
	DUCT DOWN
	AIRFLOW DIRECTION
UC	3/4" DOOR UNDERCUT
or	DUCT RISE
T	TRANSFER AIR
	DIFFUSER WITH BLANK -OFF SECTION
℄	CENTERLINE

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building · Planning · Engineering · Public Works · Fire · Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENCE NUMBER: 44523
EXPIRES: 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

These plans are an instrument of service and the property of the Architect. Infringements will be prosecuted.

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
MECHANICAL
NOTES & LEGENDS

Drawing Number:
M-100

MECHANICAL DEMOLITION NOTES

A. IN EVERY INSTANCE OF DEMOLITION AND/OR REMODELING, THE M.C. SHALL FIGURE A COMPLETE JOB AS NONE OTHER SHALL BE ACCEPTED.

B. THE DRAWINGS ARE TO BE USED ONLY AS A GUIDELINE FOR DEMOLITION. THE M.C. MUST VISIT THE SITE PRIOR TO BIDDING TO VERIFY ALL WORK REQUIRED FOR A COMPLETE JOB AND INCLUDE THE COST OF SUCH WORK IN HIS BID.

C. EXISTING MATERIALS SHALL BE TURNED OVER TO THE OWNER. IF NOT REQUIRED BY OWNER, THE MECHANICAL CONTRACTOR SHALL REMOVE THESE MATERIALS FROM THE PREMISES.

D. VERIFY ALL DEMOLITION WORK REQUIRED WITH THE LANDLORD'S REPRESENTATIVE, PRIOR TO BID.

E. VERIFY ANY WORK REQUIRED TO PROTECT FIRE ALARM/SAFETY SYSTEM WIRING AND DEVICES, SPRINKLER PIPING, LANDLORD DUCTWORK, ETC. DURING DEMOLITION AND NEW CONSTRUCTION.

F. CONTRACTOR SHALL MAINTAIN EXISTING SERVICES TO AND IN THE EXISTING AREA AS REQUIRED BY OWNER. IF NECESSARY, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES IN THE EXISTING AREAS.

G. THE CONTRACTOR SHALL VISIT THE SITE & BECOME FAMILIAR WITH ALL EXISTING SYSTEMS & MATERIALS WHICH MUST BE REMOVED TO ACCOMMODATE NEW CONSTRUCTION. REMOVE ALL AIR TERMINALS, EXHAUST FANS, DUCTWORK, CONTROLS, HANGERS, INSERTS, GRILLES, ETC., UNLESS INDICATED TO REMAIN. PATCH ALL EXISTING WALLS OR FLOORS WHERE DUCT OR PIPE PENETRATIONS HAVE BEEN REMOVED TO MATCH EXISTING, UNLESS SPECIFICALLY NOTED TO BE PATCHED BY OTHERS. LEGALLY DISPOSE OF ALL EQUIPMENT, DUCTWORK, PIPING, ETC., WHICH IS REMOVED, EXCEPT ANY ITEMS SPECIFICALLY DESIGNATED BY OWNER TO BE SALVAGED. REMOVE & PLACE DESIGNATED SALVAGED EQUIPMENT IN A LOCATION DIRECTED BY THE OWNER.

H. REMOVE MECHANICAL EQUIPMENT AS INDICATED, NOT OTHERWISE INDICATED TO REMAIN, INCLUDING ALL PIPING, CONTROLS & MOUNTING BRACKETS. CAP CONCEALED PIPING BEYOND EXISTING FINISHED SURFACES. PATCH & SEAL ALL PENETRATIONS TO MATCH EXISTING.

I. EXISTING EQUIPMENT, PIPING OR OTHER PLUMBING RELATED EQUIPMENT THAT CONTAIN PCB'S, MERCURY, OR OTHER HAZARDOUS WASTE SHALL BE DISPOSED OF PROPERLY PER ALL EPA AND OTHER APPLICABLE GUIDELINES. CONTRACTOR SHALL NOTIFY ARCHITECT IF ASBESTOS IS FOUND.

J. LOTS AND STREETS SHALL BE MAINTAINED FREE OF DIRT AND DEBRIS DURING CONSTRUCTION.

K. MECHANICAL CONTRACTOR TO CONFIRM ALL EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF DEMOLITION - REPORT ANY DISCREPANCIES TO THE ARCHITECT IMMEDIATELY.

CODED NOTES: (#)

1. EXISTING ROOFTOP UNIT TO REMAIN. REFER SHEET #M-102 AND M-201 FOR MORE INFORMATION.
2. EXISTING ELECTRICAL INCOMING SERVICE TO REMAIN AS SHOWN ON SHEETS #E-102 & #E-202. VERIFY EXACT LOCATION IN FIELD PRIOR TO BID.

1 M-101A Demolation Plan
SCALE: 1/8" = 1'-0"

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, P.E.
WA. LICENCE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

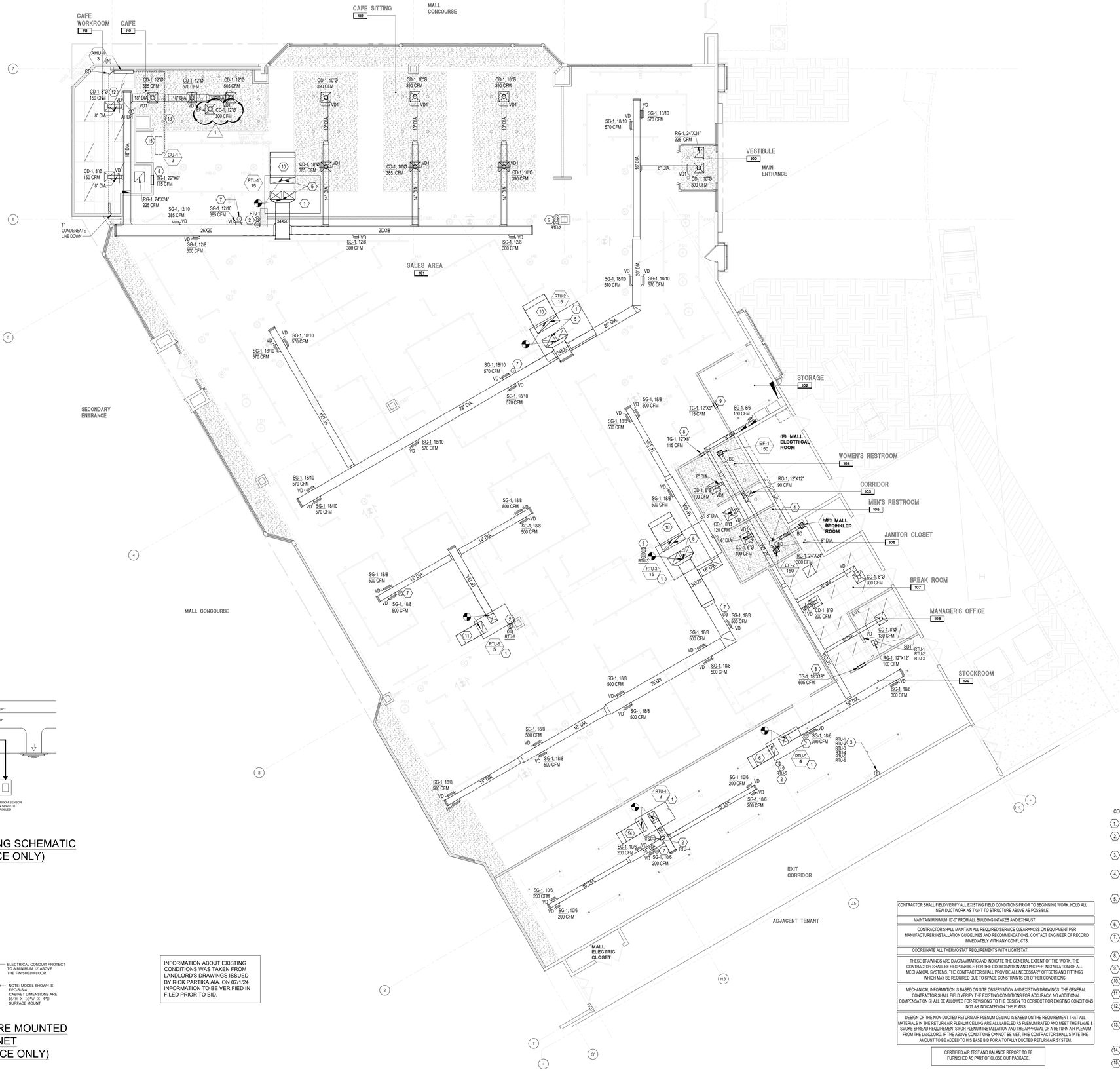
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

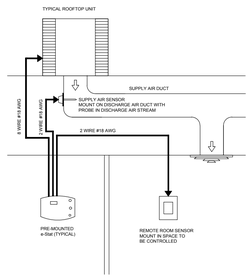
Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

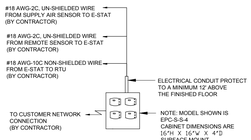
Drawing Description:
DEMOLITION PLAN

Drawing Number:
M-101





TYPICAL E-STAT WIRING SCHEMATIC
(FOR REFERENCE ONLY)



TYPICAL E-STAT PRE MOUNTED
ON CABINET
(FOR REFERENCE ONLY)

INFORMATION ABOUT EXISTING CONDITIONS WAS TAKEN FROM LANDLORD'S DRAWINGS ISSUED BY RICK PARTIKA,AIA. ON 07/1/24 INFORMATION TO BE VERIFIED IN FILED PRIOR TO BID.

WORK RESPONSIBILITY

TENANT'S MECHANICAL CONTRACTOR SHALL ACCOMPLISH THE FOLLOWING:

1. REFURBISH THE EXISTING ROOFTOP UNITS TO "LIKE NEW" CONDITION. REPLACE FILTERS, BELTS, MOTORS AND ALL OTHER SERVICEABLE PARTS AS REQUIRED. POWER WASH COILS THOROUGHLY TO REMOVE ALL FOREIGN MATTER. UNITS MUST PERFORM TO NAMEPLATE SPECIFICATIONS. REPLACE IF REQUIRED.

A. CONTRACTOR TO CONFIRM THAT THE EXISTING SYSTEM MEETS OR EXCEEDS THE REQUIREMENTS AS SHOWN ON THE HVAC CALCULATIONS. CONTRACTOR TO CONFIRM THAT ALL ITEMS INDICATED ARE PRESENT AND IN GOOD WORKING ORDER. ITEMS MISSING OR NOT FUNCTIONING MUST BE REPLACED AT THIS CONTRACTOR'S EXPENSE.

TENANT'S MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL THE FOLLOWING:

1. THIS CONTRACTOR SHALL FURNISH AND INSTALL THREE (3) EXHAUST FANS, ONE (1) SPLIT SYSTEM UNIT (3 TON), DUCTWORK, DIFFUSERS, REGISTERS, HANGERS, PROGRAMMABLE THERMOSTAS, SMOKE DETECTOR TEST STATION AND ALL ITEMS REQUIRED TO PRODUCE A COMPLETE AND OPERABLE HVAC SYSTEM.

2. DUCTWORK: THE MECHANICAL CONTRACTOR IS TO FURNISH AND INSTALL, IN COMPLIANCE WITH THE MOST RECENT SMACNA STANDARDS FOR LOW AND MEDIUM PRESSURE, NEW DUCTWORK, INSULATION, FLEX DUCT, GRILLES, REGISTERS, DIFFUSERS, VOLUME DAMPERS, FIRE DAMPERS, SMOKE DETECTORS, SECONDARY CONDENSATE DRAIN, ETC. NECESSARY TO RENDER THE SYSTEM OPERATIONAL AS DESCRIBED IN THESE PLANS AND SPECIFICATIONS AND AS REQUIRED BY THE LANDLORD, LOCAL AND STATE CODES.

3. ALL DUCTWORK SHALL BE HUNG AS HIGH AS POSSIBLE TO MAINTAIN ARCHITECTURAL CEILING HEIGHT REQUIREMENTS.

4. ALL OUTSIDE AIR AND UNEXPOSED DUCTWORK WITHIN BUILDING, EXCEPT WHERE ACOUSTICALLY LINED, SHALL HAVE 3 INCH IN CLIMATE ZONES 1-4 AND 4" IN CLIMATE ZONES 5-8, FIBERGLASS DUCT WRAP INSULATION WITH FSK FACING EQUIVALENT TO JOHNS MANVILLE "MICROLITE EQ TYPE 75" (INSTALLED "R VALUE" = 8.3 FOR 3" AND 12 FOR FOR 4").

5. FIRE DAMPERS MUST BE INSTALLED AT ALL LOCATIONS WHERE DUCTWORK PENETRATES A FIRE RATED WALL. PROVIDE ACCESS DOORS AS REQUIRED. FIRE DAMPERS TO BE OF THE TYPE APPROVED BY THE AGENCIES HAVING JURISDICTION.

6. WHEN NEW DUCTWORK CONFLICTS WITH EXISTING DUCTWORK, PIPING, ETC., NEW DUCTWORK SHALL BE SET UP OR DOWN AS REQUIRED.

7. PROVIDE VOLUME DAMPERS ON ALL NEW SUPPLY AIR DUCT SPLITS AND TAPS.

8. POWER WIRING:

A. THE ELECTRICAL CONTRACTOR IS TO FURNISH AND INSTALL ALL EQUIPMENT AND MATERIAL REQUIRED TO PROVIDE POWER TO THE ROOFTOP UNITS FROM THE TENANT'S POWER SUPPLY.

B. THE ELECTRICAL CONTRACTOR IS TO FURNISH AND INSTALL A DISCONNECT SWITCH ON THE ROOFTOP UNITS AND SPLIT SYSTEM UNIT.

C. THE ELECTRICAL CONTRACTOR IS TO PROVIDE POWER WIRING TO THE EXHAUST FANS.

9. CONTROL WIRING AND CONTROLS: THE MECHANICAL CONTRACTOR IS TO FURNISH AND INSTALL ALL NECESSARY WIRING (IN CONDUIT IF REQUIRED) AND CONTROLS REQUIRED TO PROVIDE A COMPLETE AND OPERATING SYSTEM.

10. WHEN THE SMOKE DETECTOR, IN SUPPLY & RETURN DUCTWORK, ACTIVATES IT SHALL SHUT DOWN THE ROOFTOP UNIT.

11. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF ALL CEILING DIFFUSERS AND REGISTERS.

12. THE MECHANICAL CONTRACTOR IS TO FURNISH AND INSTALL A CONDENSATE DRAIN SYSTEM PER THE MANUFACTURERS RECOMMENDATIONS AND THE LANDLORD'S REQUIREMENTS. INTERIOR CONDENSATE DRAIN LINE SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX, PITCH 1/4" PER FOOT.

13. TENANT'S MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL THE LANDLORD'S SPECIFICATIONS FOR THIS INSTALLATION.

14. THIS CONTRACTOR IS TO HIRE LANDLORD'S SPECIFIED CONTRACTOR FOR ALL ROOF PENETRATIONS.

15. THE MECHANICAL CONTRACTOR, AS PART OF THEIR WORK, IS TO STENCIL THE TENANT NAME AND SPACE NUMBER ON ALL ROOFTOP EQUIPMENT WITH 4" HIGH BLOCK LETTERS (2" HIGH BLOCK LETTERS ON ALL SMALL EQUIPMENT WHERE 4" WILL NOT FIT) IN A COLOR APPROVED BY THE BUILDING MANAGER / CONSTRUCTION INDIVIDUAL.

16. IF STRUCTURAL DRAWINGS FOR HVAC EQUIPMENT SUPPORTS ARE NOT ALREADY INCORPORATED INTO THIS SET OF PLANS AND SPECIFICATIONS, THE MECHANICAL CONTRACTOR, AT THEIR OWN COST AND EXPENSE, AND AS PART OF THE BID TO THE G.C., IS TO HIRE A STRUCTURAL ENGINEER TO DESIGN THE SUPPORTS FOR THE NEW HVAC UNITS AND A STRUCTURAL SUBCONTRACTOR TO FURNISH AND INSTALL SUCH HANGERS / SUPPORTS, COLUMNS, BEAMS, BRACING, ETC. TO HANG FROM THE STRUCTURAL AND / OR SUPPORT AT THE ROOF TOP FOR ALL NEW HVAC EQUIPMENT. G.C. TO SUBMIT AS REQUIRED ALL STRUCTURAL SHOP DRAWINGS TO THE LANDLORD'S ARCHITECT, AS REQUIRED, FOR APPROVAL, PRIOR TO STARTING WORK.

GENERAL NOTES:

A. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.

B. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.

C. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS, LOUVER SIZES, ETC. WITH GENERAL TRADES.

D. THE CONTRACTOR SHALL VERIFY ALL CLEARANCES PRIOR TO FABRICATION OF ANY WORK.

E. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF CEILING GRILLES, REGISTERS AND DIFFUSERS WITH THE ARCHITECTURAL REFLECTED CEILING PLANS.

F. DUCTWORK AND PIPING SHALL NOT BE LOCATED OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.

G. THE CONTRACTOR SHALL COORDINATE AND PROVIDE ACCESS DOORS IN HARD CEILINGS FOR ALL EQUIPMENT WHICH REQUIRES ACCESS, SUCH AS: FIRE AND SMOKE DAMPERS, SMOKE DETECTORS, BALANCING DAMPERS, VAV BOXES, ETC.

H. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK. HOLD ALL NEW DUCTWORK AS TIGHT TO STRUCTURE ABOVE AS POSSIBLE.

MAINTAIN MINIMUM 10'-0" FROM ALL BUILDING INTAKES AND EXHAUST.

CONTRACTOR SHALL MAINTAIN ALL REQUIRED SERVICE CLEARANCES ON EQUIPMENT PER MANUFACTURER INSTALLATION GUIDELINES AND RECOMMENDATIONS. CONTACT ENGINEER OF RECORD IMMEDIATELY WITH ANY CONFLICTS.

COORDINATE ALL THERMOSTAT REQUIREMENTS WITH LIGHTSTAT.

THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS

MECHANICAL INFORMATION IS BASED ON SITE OBSERVATION AND EXISTING DRAWINGS. THE GENERAL CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITIONS FOR ACCURACY. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR REVISIONS TO THE DESIGN TO CORRECT FOR EXISTING CONDITIONS NOT AS INDICATED ON THE PLANS.

DESIGN OF THE NON-DUCTED RETURN AIR PLENUM CEILING IS BASED ON THE REQUIREMENT THAT ALL MATERIALS IN THE RETURN AIR PLENUM CEILING ARE ALL LABELLED AS PLENUM RATED AND MEET THE FLAME & SMOKE SPREAD REQUIREMENTS FOR PLENUM INSTALLATION AND THE APPROVAL OF A RETURN AIR PLENUM FROM THE LANDLORD. IF THE ABOVE CONDITIONS CANNOT BE MET, THIS CONTRACTOR SHALL STATE THE AMOUNT TO BE ADDED TO HIS BASE BID FOR A TOTALLY DUCTED RETURN AIR SYSTEM.

CERTIFIED AIR TEST AND BALANCE REPORT TO BE FURNISHED AS PART OF CLOSE OUT PACKAGE.

CODED NOTES:

1. EXISTING ROOFTOP UNITS.
2. PROVIDE NEW REMOTE TEMPERATURE SENSOR AT 96" A.F.F. SENSOR FURNISHED BY LIGHTSTAT. COORDINATE FINAL LOCATION WITH OWNER.
3. PROVIDE NEW THERMOSTAT ON LIGHTSTAT PANEL. THERMOSTAT FURNISHED BY LIGHTSTAT. COORDINATE FINAL LOCATION WITH OWNER.
4. 12" DIA. EXHAUST DUCT UP THROUGH ROOF. PROVIDE WITH ROOF CURB AND CAP. VERIFY ROUTING AND ROOF PENETRATION LOCATION IN FIELD PRIOR TO BID. COORDINATE ROOF WORK WITH LANDLORD'S ROOFING CONTRACTOR.
5. PROVIDE SMOKE DETECTOR LOCATED IN SUPPLY AND RETURN AIR DUCT TO SHUT DOWN UNIT UNDER ALARM. DETECTORS SHALL BE FURNISHED AND WIRED BY ELECTRICAL CONTRACTOR, INSTALLED BY MECHANICAL. ALL WIRING SHALL BE IN CONDUIT PER N.E.C.
6. 1,190 CFM FULL SIZE RETURN WITH WIRE MESH SCREEN.
7. CARBON MONOXIDE DETECTOR TO BE MOUNTED NEAR BY FIRST SUPPLY DIFFUSER. VERIFY EXACT MOUNTED LOCATION IN FIELD PRIOR TO BID.
8. RETURN AIR GRILLE TO BE MOUNTED AS HIGH AS POSSIBLE ABOVE CEILING..
9. RETURN AIR GRILLE TO BE MOUNTED AS HIGH AS POSSIBLE.
10. 4,475 CFM FULL SIZE RETURN WITH WIRE MESH SCREEN.
11. 1,490 CFM FULL SIZE RETURN WITH WIRE MESH SCREEN.
12. 1" COPPER CONDENSATE FROM AIR HANDLING UNIT TO MOP SINK. MATERIALS TO CONFORM TO NFPA90A. PIPE TO PITCH 1/4" PER FOOT.
13. REFRIGERANT PIPING FROM CONDENSING UNIT TO AIR HANDLING UNIT. SIZE AND INSULATE PIPE PER MANUFACTURER'S RECOMMENDATIONS. NOTIFY ARCHITECT IMMEDIATELY IF LENGTH OF RUN EXCEEDS MANUFACTURERS RECOMMENDATIONS.
14. 895 CFM FULL SIZE RETURN WITH WIRE MESH SCREEN.
15. CONDENSING UNIT TO BE LOCATED ON ROOF. VERIFY WITH OWNER REPRESENTATIVE EXACT LOCATION IN FIELD.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, P.E.
VA LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

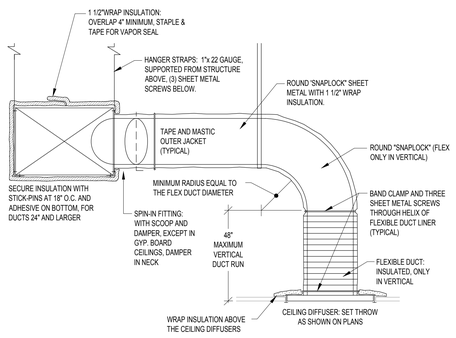
Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

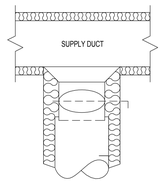
Professional Seal:

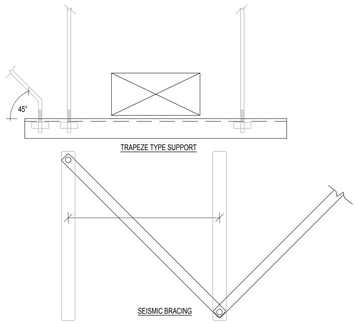
LIC.# : 22005563
EXP. DATE : 10/02/25

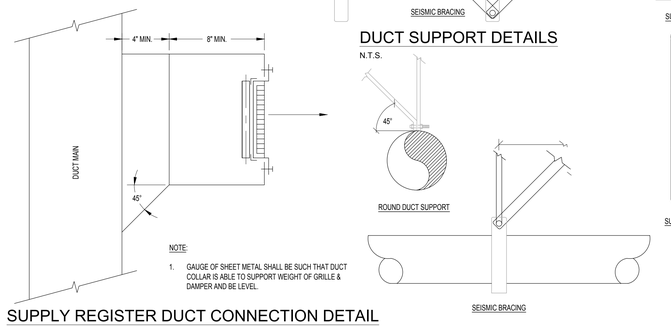
Drawing Description:
HVAC PLAN

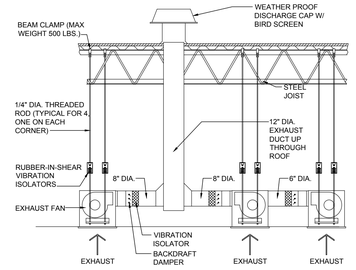
Drawing Number:
M-102

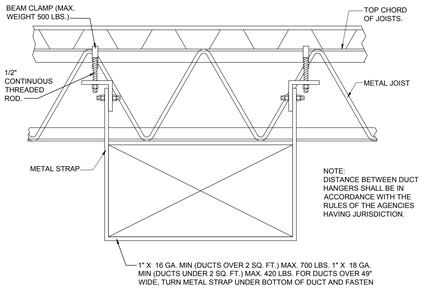


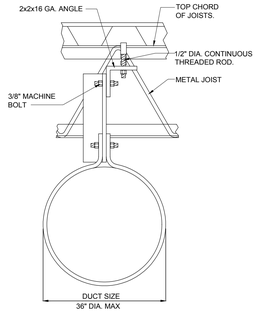


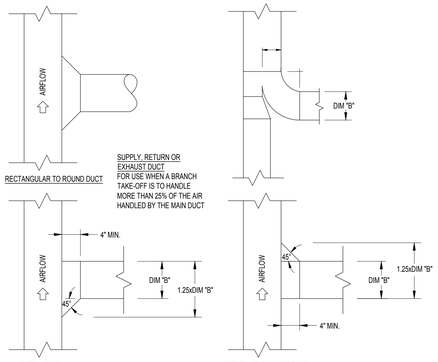


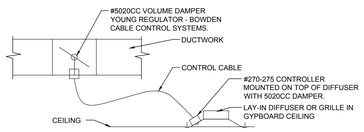












CEILING DIFFUSER CONNECTION DETAIL

N.T.S.

EXHAUST FANS DETAIL

N.T.S.

DUCTWORK SUPPORT DETAIL

N.T.S.

MAX. SIDE INCHES	RECTANGULAR DUCTS MIN. GALV. SHT. GAUGE	ALUMINUM MIN. B & S GAUGE
THROUGH 12	26 (0.022 IN.)	24 (0.020 IN.)
13 THROUGH 30	24 (O.028 IN.)	22 (0.025 IN.)
31 THROUGH 54	22 (0.034 IN.)	20 (0.032 IN.)
55 THROUGH 84	20 (0.040 IN.)	18 (0.040 IN.)
OVER 84	18 (0.052 IN.)	16 (0.051 IN.)

ROUND DUCT SUPPORT DETAIL

N.T.S.

DIAMETER INCHES	SPIRAL SEAM DUCT STEEL MIN. GALV. SHT. GAUGE	ROUND DUCTS LONGITUDINAL SEAM DUCT STEEL MIN. GALV. SHT. GAUGE	FITTINGS STEEL MIN. GALV. SHT. GAUGE
THROUGH 12	26 (0.019 IN.)	26 (0.022 IN.)	26 (0.022 IN.)
13 THROUGH 18	26 (0.022 IN.)	24 (0.028 IN.)	24 (0.028 IN.)
19 THROUGH 28	24 (0.028 IN.)	22 (0.034 IN.)	22 (0.034 IN.)
29 THROUGH 36	22 (0.034 IN.)	20 (0.040 IN.)	20 (0.040 IN.)
37 THROUGH 52	20 (0.040 IN.)	18 (0.052 IN.)	18 (0.052 IN.)

ROUND DUCT TAKE-OFF DETAIL

N.T.S.

DUCT SUPPORT DETAILS

N.T.S.

DUCT BRANCH TAKE-OFF DETAILS

N.T.S.

NOTE:

1. GAUGE OF SHEET METAL SHALL BE SUCH THAT DUCT COLLAR IS ABLE TO SUPPORT WEIGHT OF GRILLE & DAMPER AND BE LEVEL.

SUPPLY REGISTER DUCT CONNECTION DETAIL

N.T.S.

REMOTE VOLUME DAMPER DETAIL

N.T.S.

HEAT GAIN CALCULATIONS

	ITEM	ROOM NUMBER:					
		NAME					
	1	AREA (SQ. FT.)	19,129	DESIGN CONDITIONS		DRY BULB	WET BULB
	2	CEILING HEIGHT (FT.)	22'-0"		OUTSIDE	86 F	65 F
	3	VOLUME (CU. FT.)	420,838		INSIDE	78 F	50% RH
SENSIBLE GAINS			FACTOR	QUANTITY	BTUH	QUANTITY	BTUH
ABOVE CEILING	4	ROOF	4.72				
	5	WALL					
	6	LIGHTS	3.41				
	7						
	8	SUB-TOTAL (4 THRU 7)					
BELOW CEILING	9	ROOF	4.72	19,129	90,241		
	10	WALL	4.18	2,156	9,018		
	11	GLASS	69.31	320	22,179		
	12	PEOPLE	250	287	71,734		
	13	INFILTRATION					
	14	LIGHTS	3.41	13,857	47,294		
	15	OUTSIDE AIR	8.60	5,800	49,878		
	16	EQUIPMENT	138	75	10,358		
	17	SUB-TOTAL (9 THRU 16)			300,702		
LATENT GAINS							
BELOW CEILING	18	PEOPLE	200	287	57,387		
	19	INFILTRATION					
	20	EQUIPMENT					
	21	OUTSIDE AIR	-8.75	5,800	-50,774		
	22	SUB-TOTAL (18 THRU 21)			6,613		
ROOM CONDITION							
BELOW CEILING	23	TOTAL LOAD (17 + 22)			301,315		
	24	SENSIBLE HEAT FACTOR (1 - (22 / 17))			0.98		
	25	SUPPLY AIR TEMP. DIFF.					
	26	SUPPLY AIR CFM (17 / (1.08 X 25))			22,800		
	27	CFM PER SQ. FT. (26 / 1)			1.19		
	28	AIR CHANGES PER HOUR ((26 X 60) / 3)			3.3		
	29	ROOM GRAND TOTAL (8 + 17 + 22)			301,315		
	30	AVG. ROOM LOAD BTUH PER SQ. FT. (29 / 1)			16		
	31	TOTAL TENANT AREA (1)				19,129	
	32	TENANT GRAND TOTAL LOAD (29)					301,315
	33	AVG. TENANT LOAD BTUH PER SQ. FT. (32 - 31)					16
	34	AVG. TENANT CFM PER SQ. FT. (26 / 31)					1.19

HEAT LOSS CALCULATIONS

	ITEM	ROOM NUMBER:					
		NAME					
	1	AREA (SQ. FT.)	19,129	DESIGN CONDITIONS		DRY BULB	
	2	CEILING HEIGHT (FT.)	22'-0"		OUTSIDE	20 F	
	3	VOLUME (CU. FT.)	420,838		INSIDE	70 F	
EXTERIOR LOSSES			FACTOR	QUANTITY	BTUH	QUANTITY	BTUH
DAY CYCLE	4	ROOF	5.02	19,129	96,028		
	5	WALL	6.53	2,156	14,070		
	6	GLASS	32.13	320	10,281		
	7	INFILTRATION					
	8	OUTSIDE AIR	54.22	5,800	314,453		
	9	SUB-TOTAL (4 THRU 8)			434,881		
NIGHT CYCLE	10	ROOF	5.02	19,129	96,028		
	11	WALL	6.53	2,156	14,070		
	12	GLASS	32.13	320	10,281		
	13	OUTSIDE AIR	54.22				
	14	SUB-TOTAL (10 THRU 13)			120,379		
INTERIOR GAINS							
DAY CYCLE	15	LIGHTS 50% CREDIT	3.41	6,929	23,626		
	16	OTHER					
	17	SUB-TOTAL (15 + 16)			23,626		
NET HEAT LOSS							
DAY CYCLE	18	ROOM LOAD (9 - 17)			411,205		
	19	AVG. LOAD PER SQ. FT. (18 / 1)			21		
	20	TOTAL TENANT AREA (1)				19,129	
	21	TENANT GRAND TOTAL LOAD (18)					411,205
	22	AVG. TENANT LOAD BTUH PER SQ. FT. (21 / 20)					21
NIGHT CYCLE	23	AVG. ROOM LOAD BTUH PER SQ. FT. (14 / 1)					6.3
	24	TENANT GRAND TOTAL LOAD (14)					120,379
	25	AVG. TENANT LOAD BTUH PER SQ. FT. (24 / 20)					6.3

VENTILATION CALCULATIONS PER 2021 WASHINGTON STATE MECHANICAL CODE

Description	Area (Ft_2) Az	People Outdoor Air Rate CFM/person Table 403.3 Rp	Area Outdoor Airflow Rate CFM/Ft2 Table 403.3 Ra	Default Occupant Density Per Table 403.3 (People/ 1000 ft2) O	Area Outdoor Air Ra*Az	Zone Population O * Az/1000 Pz	Occupant Outdoor Air Rp*Pz	Breathing Zone Outdoor Air Vbz= RpPz + RaAz	Zone Air Distribution Effectiveness Ez	Zone Outdoor Air Req'd Voz = Vbz/Ez	Zone Outdoor Air Provided	Supply Air Design Vpz	Outdoor Air Percent Zp = Voz/Vpz
Sales	12678	7.50	0.12	15	1521	190	1426	2948	0.80	3685	3714	14600	25%
Storage	216	N/R	0.12	N/R	26			26	0.80	32	38	150	25%
Stock Room	2060	N/R	0.12	N/R	247			247	0.80	309	458	1800	25%
Café Work Room	391	N/R	0.12	N/R	47			47	0.80	59	76	300	25%
Café	354	7.50	0.18	100	64	35	266	329	0.80	412	432	1700	25%
Main Entrance	73	5.00	0.06	10	4	1	4	8	0.80	10	76	300	25%
Sitting Café	2458	7.50	0.12	15	295	37	277	571	0.80	714	789	3100	25%
Janitor Closet	24	N/R	N/R	N/R					0.80				
Breakroom	385	5.00	0.06	25.00	23	10	48	71	0.80	89	102	400	25%
Manager's Office	119	5.00	0.06	5.00	7	1	3	10	0.80	13	33	130	25%
Corridor	77	N/R	0.06	N/R	5			5	0.80	6	31	120	25%
Toilet Room	294	N/R	N/R	N/R					0.80		51	200	25%
Totals	19,129				2,239		2,023	4,262		5,328	5,800	22,800	25%

ROOFTOP UNIT SCHEDULE (EXISTING)

(FURNISHED BY LANDLORD AND INSTALLED BY THIS CONTRACTOR)

UNIT TAG	RTU–1	RTU–2	RTU–3	RTU–4	RTU–5	RTU–6
AREA SERVED	SALES	SALES	SALES	RRs/OFFICES	STOCK AREA	CAFE
MANUFACTURER	LENNOX	LENNOX	LENNOX	LENNOX	LENNOX	LENNOX
MODEL NUMBER	LHT180H4M	LHT180H4M	LHT180H4M	LHT036H4E	LHT048H4E	LHT060H4E
TYPE	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP
NOMINAL CAPACITY (TON)	15	15	15	3	4	5
EER/IEER	11.1 EER	11.1 EER	11.1 EER	12.3 EER	12.8 EER	12.2 EER
MIN OUTSIDE AIR CFM	1,525	1,525	1,525	305	410	510
SUPPLY FAN						
CFM	6000	6000	6000	1200	1600	2000
ESP	0.80"	0.80"	0.80"	0.80"	0.80"	0.80"
HP	5.0	5.0	5.0	0.5 W/ MSAV	1.0 W/ MSAV	1.5
TYPE	BELT MSAV	BELT MSAV	BELT MSAV	ECM	ECM	DIRECT MSAV
FILTERS						
TYPE	THROWAWAY	THROWAWAY	THROWAWAY	THROWAWAY	THROWAWAY	THROWAWAY
DEPTH	2"	2"	2"	2"	2"	2"
MERV	8	8	8	8	8	8
MEAN APD	0.03"	0.03"	0.03"	0.03"	0.04"	0.05"
HEAT PUMP PERFORMANCE						
HEATING CAP. @ DESIGN	111,700 BTUH	111,700 BTUH	111,700 BTUH	22,000 BTUH	29,500 BTUH	37,400 BTUH
C.O.P. HI/LO	3.4/2.1	3.4/2.1	3.4/2.1	3.8/2.3	3.9/2.4	3.7/2.3
AUXILIARY ELECTRIC HEATING COIL						
CFM	6000	6000	6000	1200	1600	2000
KW	30.0	30.0	30.0	7.5	7.5	15.0
DX COOLING COIL						
CFM	6000	6000	6000	1200	1600	2000
EAT DB/WB	76.0/61.4	76.0/61.4	76.0/61.4	76.0/61.4	76.0/61.4	76.0/61.4
LAT DB/WB	51.7/50.7	51.7/50.7	51.7/50.7	52.6/51.2	52.7/51.3	42.2/42.2
COND. EAT	85.0	85.0	85.0	85.0	85.0	85.0
SENSIBLE/TOTAL MBH	161.1/180.0	161.1/180.0	161.1/180.0	31.1/34.9	41.9/46.7	74.0/83.2
REFRIGERANT TYPE	R–410A	R–410A	R–410A	R–410A	R–410A	R–410A
COMPRESSOR						
TYPE	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL
QUANTITY	2	2	2	1	1	1
STAGES	3	3	3	2	2	2
ECONOMIZER	0–100%	0–100%	0–100%	0–100%	0–100%	0–100%
ELECTRICAL						
* MCA/MFS	86/90	86/90	86/90	23/25	25/25	36/40
* V–PH–CY	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
DISCONNECT	FACTORY	FACTORY	FACTORY	FACTORY	FACTORY	FACTORY
OPERATING WEIGHT (LBS)	2636	2636	2636	877	873	918
REMARKS	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, WITH POWER EXHAUST, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, WITH POWER EXHAUST, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, WITH POWER EXHAUST, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION	PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER, BAROMETRIC RELIEF, CONDENSER COIL HAIL GUARDS & 14" SEISMIC CURB. 5 YEAR COMPRESSOR WARRANTY, NON-POWERED CONVENIENCE OUTLET, PROVIDE UNIT WITH CARBON DIOXIDE (CO2) SENSOR/CONTROLLER, FACTORY INSTALLED MODEL DH400 SMOKE DETECTOR IN RETURN AIR SYSTEM AND ALL AN RTS451KEY REMOTE KEY OPERATED TEST STATION
CONTROLS	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION	PROGRAMMABLE CONTROL PANEL W/ HEATING/COOLING ZONE LOCKOUT, ECONOMIZER DEFAULT DETECTION, AND AUXILIARY HEAT USE VISUAL INDICATION

NOTES:
1. MECHANICAL CONTRACTOR IS TO PROVIDE ALL CONTROLLERS, PANELS, RELAYS, ETC. AS REQUIRED FOR OPERATION OF UNITS
2. CONTACT KRAG MERCER WITH LENNOX COMMERCIAL PRODUCT APPLICATIONS @ (972) 497-7738 FOR ADDITIONAL INFORMATION

NEW EXHAUST FAN SCHEDULE

TAG	LOCATION	SERVICE	CFM	SP " W.C.	RPM	DRIVE	TYPE	WHEEL DIA.	WATTS	VOLTAGE PH. / HZ.	MANUFACTURER MODEL NO.	REMARKS
EF-1 150	TOILET ROOM	EXHAUST	166	0.25"	1,550	DIRECT	BI	-	108	120/1/60	PENNBARRY Z6H	1,3,4
EF-2 150	TOILET ROOM	EXHAUST	166	0.25"	1,550	DIRECT	BI	-	108	120/1/60	PENNBARRY Z6H	1,3,4
EF-3 80	JANITOR'S ROOM	EXHAUST	83	0.125"	1,550	DIRECT	BI	-	39	120/1/60	PENNBARRY Z3H	1,2,3
EF-4 300	CAFE	EXHAUST	315	0.375"	1,060	BELT	BI	-	1/4HP	120/1/60	PENNBARRY DX06B	1,3,5

1

NOTES:
1) FAN SHALL BE MOUNTED IN CEILING WITH VIBRATION ISOLATORS.
2) FAN SHALL BE CONTROLLED BY LIGHT SWITCH.
3) FAN SHALL BE PROVIDED WITH LOW LEAKAGE BACKDRAFT DAMPER.
~~4) FAN SHALL BE CONTROLLED BY THE TOILET ROOM LIGHT SWITCH.~~
5) FAN SHALL BE CONTROLLED BY INDEPENDANT LIGHT SWITCH.

1

NEW AIR HANDLING UNIT SCHEDULE

UNIT:			FAN:							ELECTRICAL:			COOLING:					MANUFACTURER MODEL NO.
TAG	LOCATION	TONS:	CFM	W	R.P.M.	E.S.P. "W.C.	TYPE	NO.	DIA.	VOLTS-PH-Hz	MCA	MOCP	MBHT	MBHS	EDB	EWB	OPER. WT.	
AHU-1 3	CAFE WORK ROOM	3	920	56	-	-	BI	1	-	208-1-60	2	15	36.0	31.0	80	67	46#	MITSUBISHI ELECTRIC PKA-A36KA7
REMARKS:	BASIS OF DESIGN: AIR HANDLING UNIT WITH BUILT-IN CONDENSATE LIFT MECHANISM AND PROGRAMMABLE THERMOSTAT.																	

NEW CONDENSING UNIT SCHEDULE

UNIT:			ELECTRICAL:			COMPRESSOR:									MANUFACTURER MODEL NO.
							FAN:		COMP:						
TAG	LOCATION	TONS:	VOLTS-PH-Hz	MCA	MOCP	REFRIG.	NO.	WATT	NO.	kW	SST	EAT	MIN. OSA TEMP	OPER. WT.	
CU-1 3	ROOF	3	208-1-60	25	30	R410A	1	74	1	-	45	95	-40	211#	MITSUBISHI ELECTRIC PUY-A36NKA7(-BS)
REMARKS: SEER = 18.8	BASIS OF DESIGN: CONDENSING UNIT WITH WIND BAFFLES AND 120 VOLT CONVENIENCE OUTLET.														

NOTES:
1. CONTRACTOR TO UTILIZE LANDLORD'S ROOFING CONTRACTOR FOR ALL ROOF PENETRATIONS. REUSE EXISTING ROOF OPENINGS IF POSSIBLE.
2. CONTRACTOR TO HIRE STRUCTURAL ENGINEER TO VERIFY STRUCTURAL INTEGRITY OF STRUCTURE. ADDITIONAL STRUCTURAL REQUIREMENTS ARE THE RESPONSIBILITY OF THIS CONTRACTOR.
3. RUN 1" CONDENSATE DRAIN LINE TO APPROVED INTERIOR LOCATION. CONDENSATE DRAIN LINE SHALL BE INSULATED WITH 1/2" THICK ARMAFLEX.

NEW VOLUME DAMPER CABLE CONTROLS

TYPE	DESCRIPTION
"VD1"	THE VOLUME DAMPER SHALL BE ADJUSTABLE FROM THE FACE OF THE DIFFUSER BY USE OF THE BOWDEN CABLE CONTROL SYSTEM (#270-275 CONTROLLER) MANUFACTURED BY YOUNG REGULATOR COMPANY OR APPROVED EQUIVALENT. DAMPER MUST BE INSTALLED WITHIN 30 FEET FROM THE FACE OF THE DIFFUSER. COORDINATE INSTALLATION WITH GENERAL CONTRACTOR. YOUNG REGULATOR (440) 232-9700.

NEW SMOKE DETECTOR TEST STATION

SDT	REMOTE TEST STATION WITH AUDIBLE AND VISUAL ALARM FOR DUCT SMOKE DETECTOR MANUFACTURED BY SIMPLEX MODEL 4098-9842.

NEW GRILLE AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FRAME OR BOARDER TYPE	MODULE SIZE	DAMPER MODEL NO.	FINISH	REMARKS
CD-1	TITUS	OMNI	LAY-IN	SEE PLANS	AG-100	MATCH CEILING CONDITION	1,2
RG-1	TITUS	350 RL	LAY-IN	SEE PLANS	AG-15		
TG-1	TITUS	350 RL	SURFACE	SEE PLANS	-		1
SG-1	TITUS	300FS	DUCT MOUNTED	SEE PLANS	AG-15		1

REMARKS:
1. ACCEPTABLE MANUFACTURERS: ANEMOSTAT, KRUEGER, NAILOR, PRICE, TITUS, OR TUTTLE AND BAILEY.
2. ALL CEILING DIFFUSERS ARE 4-WAY THROW UNLESS INDICATED OTHERWISE ON PLAN.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER: 44523
EXPIRES 09-22-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12–19–24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	
02–20–25	LANDLORD & BD COMMENTS	1

These plans are an instrument of service and the property of the Architect, infringements will be prosecuted.

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

MECHANICAL
DETAILS
AND SCHEDULES

Drawing Number:

M-201

Section 200500 - General Requirements

A. General

1. Specifications are applicable to all contractors and/or subcontractors for all mechanical systems in Divisions 01, 20, 21, 22, and 23.
2. This contractor is also referred to the architectural, structural, electrical and all other drawings and specifications pertinent to this project and fully coordinate with all other trades, owner and architect requirements. All of the above mentioned drawings and specifications are considered a part of the contract documents.
3. Conform to all Instructions to Bidders, general and special conditions of contract as specified by architect and/or owner.
4. Refer to "Alternate Proposals" for possible changes affecting the extent of this section of work.
5. Before submitting a bid, each contractor is requested to visit the job site to familiarize themselves with construction condition, check facilities and conditions and make all necessary observations and measurements. Note conditions under which work is to be performed and take all items into consideration in bid. No consideration will be given for his failure to do so.
6. Systems are to be complete and workable in all respects, placed in operation and properly adjusted.
7. Each contractor shall provide for his own clean-up, removal and legal disposal of all rubbish daily.
8. Each contractor shall protect his work, his existing and adjacent property against weather.
9. Each contractor shall protect his work, materials, apparatus and fixtures from damage. Any work damaged by failure to provide protection required, shall be removed and replaced with new material at the contractor's expense.
10. Each contractor must confirm all utility company requirements and connection points in field, prior to starting work. Each contractor shall include cost of utility companies work in their bid.
11. Each contractor must confirm size, location and materials at point of tie in connections in the field prior to rough-in of new work.
12. Arrange for and obtain owner's and insurance representative's permission for any service shutdowns.
13. Each contractor shall be solely responsible for construction means, methods, sequences of construction and the safety of workmen.
14. No piping, ductwork, wiring, etc., shall be installed or routed above or below electrical panels and equipment, through elevator equipment rooms or elevator shafts or stairways unless these items serve these areas only.
15. All contractors shall coordinate with the electrical contractor and obtain a written approval identifying the electrical characteristics of all mechanical equipment prior to ordering of equipment. No additional payment will be made for lack of contractor coordination of electrical characteristics.
16. Each contractor shall include modifying existing conditions to complete the project. During construction the contractors may uncover an existing condition that will have to be modified. Any such work which comes under the jurisdiction of this contractor shall be done by this contractor without extra cost to the owner and project.
17. Work related to the existing building shall be coordinated to minimize interference or interruption of normal building use by the owner. Refer to architectural plans for phasing requirements.
18. Ceiling grid systems shall not be supported from ductwork, heating or plumbing lines or any other utility lines, and vice versa. Each utility and the ceiling grid system shall be a separate installation and each shall be independently supported from the building structure - concrete, steel or masonry. Where interferences occur, in order to support ductwork, piping, ceiling grid systems, etc., trapeze type hangers or supports shall be employed which shall be located so as not to interfere with access to such mechanical equipment as valves, regulators, mixing boxes, fire dampers, etc.

B. Work Coordination and Scope

1. Each contractor under this division shall familiarize himself with the work to be done under other divisions of this specification and their related drawings and shall so coordinate and schedule his work as not to cause delays or interference with the work of others. Such coordination and scheduling shall accomplish the installation of mechanical and plumbing equipment and piping with a minimum of cutting through masonry and other adjustments.
2. Work included under this division shall consist of furnishing all materials, supplies, equipment, tools, transportation and facilities and performing all labor and services necessary for the complete installation of the mechanical systems of plumbing, fire protection, heating, ventilating, air conditioning, and specialty systems.
3. The contractor under this division shall report discrepancies in the work of others which affect his work. Any changes made necessary by failure or neglect to report such discrepancies shall be made by and at the expense of the contractor of this division. Obtain written instructions for changes necessary to accommodate work of others.
4. The contractor under this division shall be responsible for proper size and location of anchors, chases, recesses, opening, etc., required for the proper installation of his work.
5. The division of responsibility under separate mechanical, fire protection and plumbing contracts for tie-in points shall be as follows:
   a. The plumbing contractor shall provide domestic water and gas to within five feet (5'-0") of equipment connection furnished by the mechanical or electrical contractor, final connection by mechanical or electrical contractor. On the water lines, the plumbing contractor shall provide the shut-off valve, check valve, backflow preventor and pressure regulator. On the gas lines, the plumbing contractor shall provide the shut-off valve and pressure regulator.
   b. Plumbing contractor shall run the gas, water, sanitary and storm to 5'-0" outside the building or to points as noted on the drawings.
   c. Fire protection, plumbing and mechanical contractor shall provide sleeves to the general contractor for placement in floors, walls, etc. and coordinate such location. The plumbing contractor shall be responsible for flashing at vent roof terminals.
   d. The fire protection, plumbing and mechanical contractor shall check with the architectural drawings concerning the test borings to determine areas of rock which should be included in his excavation work. Failure to adjust for rock conditions shall not warrant cause for additional compensation.
   e. The plumbing contractor shall rough-in and connect all other fixtures and equipment where shown on the drawings but not previously mentioned. Provide with shut-off valves and p-traps with clean-out plug.
   f. The plumbing contractor shall provide gas, cold water and drain for the emergency generator and install valves, etc. Generator furnished by the electrical contractor.
   g. Unless responsibility to provide or furnish is otherwise stated on the electrical or mechanical drawings and electrical and mechanical specifications the contractor, under these divisions shall provide motors, special controls, disconnects, transformers, starters and relays as required for the proper operations of all equipment furnished under this division. All electrical equipment shall conform to requirements set forth under the electrical division and be suitable for operation on 60 cycle current available at the site.
   h. All motors 1/3 HP and smaller shall be single phase motors, 1/2 HP and larger, shall be three phase motors except where otherwise specified. Thermal overload protection for all motors shall be provided. Combination fused disconnect and magnetic line starters with auto-off-test switch shall be provided for all three-phase motors. Thermal overload relays shall be sized for 115 percent of full load motor current. For motors with VFD; motors shall be inverter duty motors that meets current "MG 1 Part 31" specifications. Motors to have a minimum of 20:1 turn down ratio. Motors over 20 Hp shall have shaft ground rings. The installation of all motors, starters and other electrical work under this mechanical division shall be done so as to conform with the National Electric Code. Each motor shall be of squirrel cage type, open-drip proof, normal starting torque, having ball bearings unless otherwise specified. For manufacturers that use PMAC motors, this contractor shall supply VFD's to operate motor.
6. Each contractor shall provide OSHA approved handrail (Guard) system for all roof mounted equipment within 10'- 0" of roof edge where the roof edge does not have a 42" high parapet or higher.

C. Codes, Permits, Standards and Regulations

1. Contractors shall install work in full accordance with rules and regulations of all applicable codes (local, city, county, state, national codes, NFPA, OSHA, etc.), government regulations, utility company requirements, and applicable standards having jurisdiction over premises. This shall include safety requirements of the state department. Do not construe this as relieving contractor from compliance with any requirements of specifications which are in excess of code requirements and not in conflict therewith.
2. Contractors shall secure and pay for all fees, permits, and certificates of inspection incidental to this work required by foregoing authorities. Arrange for all required inspections and approvals.
3. Contractor shall be responsible for payments to all public utilities for work performed by them in connection with provision of service connections required under this division of specifications.
4. Deliver all permits and certificates to architect in duplicate.

D. Design Drawings

1. The design drawings, as submitted, are diagrammatic and are not intended to show exact location of equipment, piping and ductwork unless dimensions are given. Piping and ductwork are to be installed along the general plans shown on the drawings while conforming to actual building conditions. Each contractor shall confirm all dimensions by field measurement.
2. Before entering into a contract, the successful bidder may be required to submit satisfactory evidence to show that the manufacturer of all parts of the equipment offered have been regularly engaged in the manufacture of such equipment for three (3) years and have not less than three (3) installations of a similar type which have been in successful operation under conditions similar to those specified for not less than two (2) years.
3. All equipment, piping and material specified herein after as shown on the drawings shall be furnished and installed by the contractor, unless specifically indicated to the contrary. Installation shall comply with all required "Building Codes" and "Reference Standards."
4. If this contractor proposes to install equipment requiring space conditions other than those as specified and/or shown on the design drawings, or to rearrange the equipment, he shall assume full responsibility and submit drawings for the rearrangement of the space and shall obtain the full approval of the architect prior to start of any work.
5. The exact locations for fixtures, equipment and piping which is not covered by drawings shall be obtained from the architect or his representative in the field and the work shall be laid out accordingly.
6. Drawings and specifications are intended to supplement one another. Any materials or labor called for in one but not the other shall be furnished as if both were mentioned in the specifications and shown on the drawings.

E. Base Bid Equipment, Materials and Substitutions

1. All equipment and materials shall be new, free of defects and UL labeled.
2. Base bid manufacturers are included in the specification or listed in schedules on the drawings. All other manufacturers are considered substitution.
3. The name or make of any article, device, material, form of construction, fixture, etc., stated in this specification, whether or not the words "or approved equal" are used, shall be known as a "standard".
4. All cost shall be based on "standards" specified.
5. The equipment schedules on the drawings indicate manufacturer and their equipment model numbers that this design has been based on. Each contractor is required to bid upon the basis of design and furnish the makes specified.
6. Where more than one make or name is mentioned as being acceptable, it shall be understood that only the name or make referring to the manufacturers model numbers or sizes shall be considered the "Specified Standards." It shall be further understood that other makes and names, even though mentioned, have not been checked for detail and that their size and arrangement are the contractor's responsibility the same as a proposed substitute item. The use of other manufacturer's equipment that is listed as acceptable alternates that entails general trades, structural, mechanical, electrical, etc., revisions is this contractor's responsibility to provide revisions. Any additional cost of such changes shall be paid by the contractor submitting the acceptable alternates which necessitates changes in installing such submitted alternate equipment, even though such costs may be part of another division of work.
7. Bids concerning the use of substitute products must be accompanied by complete specifications and performance characteristic covering these products. Contractor shall provide all available test data and experience records which may be helpful to the architect in evaluating the quality and/or suitability of alternate products.
8. Contractor is also invited to bid on any other similar products the contractor desires to propose as substitutions, stating any difference in cost (add or deduct from base bid cost) for each proposed substitution on the substitution sheet. If the architect decides to accept any of the proposed substitutions, proper notations thereof shall be made in the written contract. Where several makes are mentioned in the specifications and the contractor fails to state that he prefers a particular make in his bid, the owner shall have the right to choose any of the makes mentioned without change in price. No consideration will be given to proposals for alternative products unless submitted with the original bids.
9. Substitutions are subject to the approval of the owner. If a substitution is submitted, it is the contractor's responsibility to evaluate it and certify that the substitution is equivalent in all respects to the base specifications.
10. If substitutions are approved, notify all other contractors, subcontractors, etc., affected by the substitution and fully coordinate with them. Any costs resulting from substitution, whether by this contractor or others, shall be the responsibility of and paid for by the substituting contractor. Approved shop drawings do not absolve this contractor from this responsibility.
11. All equipment shall be installed in full accordance with the manufacturer's data and installation instructions and service clearances. It is this contractor's responsibility to check and confirm these requirements prior to starting of any work.

F. Warranty

1. Fully warrant all materials, equipment and workmanship and the successful operation of all equipment and apparatus installed by this contractor for one (1) year from date of final acceptance.
2. Extend all manufacturers' warranties to owner; including five (5) year compressor and ten (10) year heat exchanger extended warranty on HVAC equipment to include material and labor.
3. Repair or replace without material and labor charge to the owner all items found defective during the warranty periods. In the case of replacement or repair due to failure within the warranty period, the warranty on that portion of the work shall be extended for a minimum period of one (1) year from the date of such replacement or repair.

G. Shop Drawing Submittals

1. Submit shop drawings for mechanical, plumbing, fire protection, and control systems; including but not limited to sheetmetal, plumbing fixtures and equipment with adequate details and scales to clearly show construction. Indicate the operating characteristics for each required item. Clearly identify each item on the submittal as to mark, location and use, using the same identification as provided on the construction documents.
2. Sheetmetal and fire protection shop drawings shall be fully dimensioned and coordinated based on field verified building dimensions and clearances and architectural ceiling layouts. Indicate structural systems, lighting, ductwork and piping at all critical locations.
3. Contractor shall review and indicate his approval of each shop drawing prior to submittal for review. Shop drawings will not be reviewed by the engineer unless the contractor's approval is noted. Do not start work or fabrication until shop drawings have been reviewed by the engineer and returned to the contractor.
4. Submittals will be reviewed only for general compliance with the contract documents and not for dimensions or quantities. The architect and engineer will make every effort to detect and correct errors, omissions, and inaccuracies in such drawings, but the failure to detect errors, omissions, and inaccuracies shall not relieve the contractor of responsibility for the proper and complete installation in accordance with the intent of the contract documents. The submittal review shall not relieve the contractor of responsibility for purchase of any item in full compliance with the contract documents or its complete and proper installation.
5. Where submittals vary from the contract requirements, the contractor shall clearly indicate on submittal or accompanying documents the nature and reason for the variations.
6. Each manufacturer or his representative must check the application of his equipment and certify at time of shop drawing submittal that the equipment specified has been properly applied and can be installed, serviced and maintained where indicated on the drawings. Advise engineer in writing with submittal drawings of any potential problems. The manufacturer shall be responsible for any changes that might be necessary because of physical characteristics of equipment that have not been called to the engineer's attention at the time of submittal.
7. Submit a minimum of one (1) print and an electronic "pdf" of shop drawings to the architect. The architect and engineer shall review and return a pdf. The contractor shall distribute copies as required to properly conduct the work, including requirements of the operating manual.

H. Record Drawings

1. Each contractor or subcontractor shall keep one (1) complete set of the contract drawings and equipment submittals on the job site on which he shall regularly record any deviations or changes from such contract drawings made during construction. All recording shall be done in color ink.
2. These drawings shall record the installed location of all concealed equipment, piping, electric service, sewers, wastes, vents, ducts, conduit, etc., by measure dimensions to each such item from column centerlines or readily identifiable and accessible walls or corners of the building. Plans also shall show invert elevation of sewers and top elevation of all other below-grade lines.
3. Record drawings shall be kept clean and undamaged and shall not be used for any purpose other than recording deviations from working drawings and exact locations of concealed work.
4. After the project is completed, these drawings shall be scanned to an electronic "pdf" format and pdf and hard drawings shall be delivered to the architect in good condition, as a permanent record of the installation as actually constructed.

I. Supervision

1. The contractor shall have in charge of work at all times during construction a competent foreman or superintendent whose experience and background shall qualify him for the work to be performed under this division. Once assigned, the foreman or superintendent shall be retained until completion of the project and any consideration as to his removal on grounds of incompetence shall either be initiated by or referred to the architect for decision.

SECTION 200510 - BASIC MATERIALS AND METHODS

A. GENERAL

1. PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND ACCESSORIES REQUIRED TO FURNISH AND INSTALL THE MECHANICAL ITEMS IDENTIFIED IN THIS SECTION.
2. THIS SECTION INCLUDES BASIC MECHANICAL MATERIALS AND METHODS TO COMPLEMENT OTHER DIVISION SECTIONS IN THIS SPECIFICATION AND REQUIREMENTS INDICATED ON THE MECHANICAL DRAWINGS.

B. INTERFERENCES

1. BEFORE INSTALLING ANY WORK, CONTRACTOR SHALL SEE THAT IT DOES NOT INTERFERE WITH CLEARANCE REQUIRED FOR FINISH ON BEAMS, COLUMNS, PILASTERS, WALLS, OR OTHER STRUCTURAL OR ARCHITECTURAL MEMBERS, AS SHOWN ON ARCHITECTURAL DRAWINGS. IF ANY WORK IS SO INSTALLED AND IT LATER DEVELOPS THAT ARCHITECTURAL DESIGN CANNOT BE FOLLOWED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, MAKE SUCH CHANGES IN HIS WORK AS ARCHITECT MAY DIRECT TO PERMIT COMPLETION OF ARCHITECTURAL WORK IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.
2. INSTALL ADDITIONAL OFFSETS ON PIPING OR DUCTWORK WHERE REQUIRED TO OBTAIN MAXIMUM HEADROOM OR TO AVOID CONFLICT WITH OTHER WORK WITHOUT ADDITIONAL COST TO OWNER.
3. REPORT ANY INTERFERENCES BETWEEN WORK UNDER THIS DIVISION AND THAT OF ANY OTHER CONTRACTORS TO ARCHITECT AS SOON AS THEY ARE DISCOVERED. ARCHITECT WILL DETERMINE WHICH EQUIPMENT SHALL BE RELOCATED, REGARDLESS OF WHICH WAS FIRST INSTALLED, AND HIS DECISION SHALL BE FINAL.

C. PROTECTION OF WORK AND PROPERTY

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING WORK, PROPERTY, AND FACILITIES AGAINST DAMAGE, BOTH HIS OWN AS WELL AS OTHERS WITH WHICH HE MAY COME INTO CONTACT IN THE PERFORMANCE OF HIS WORK.
2. STORED MATERIALS SHALL BE PROTECTED AGAINST DAMAGE FROM WEATHER. PIPE, AND DUCT OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS DURING INSTALLATION. ALL FIXTURES AND EQUIPMENT SHALL BE COVERED AND PROTECTED AGAINST DAMAGE. ANY MATERIALS OR EQUIPMENT DAMAGED AT ANY STAGE IN THE CONSTRUCTION SHALL BE REPLACED OR REPAIRED. FINAL COMPLETION, ALL WORK SHALL BE IN A CLEAN AND UNBLEMISHED CONDITION.
3. DURING CONSTRUCTION, ALL RETURN AIR DUCTWORK AND TRANSFER AIR OPENINGS SERVING NEW AND EXISTING AIR HANDLING EQUIPMENT AND/OR ADJACENT TENANT SPACES SHALL BE PROTECTED. OPENINGS WHICH NEED TO REMAIN ACTIVE SHALL BE COVERED AND PROTECTED WITH MERV 8 FILTRATION MEDIA; OPENINGS WHICH CAN REMAIN INACTIVE DURING CONSTRUCTION SHALL BE COVERED WITH PLASTIC SHEATHING AND SEALED AIR TIGHT. FILTER MEDIA SHALL BE REPLACED REGULARLY AS REQUIRED DURING CONSTRUCTION IN ORDER TO ENSURE ADEQUATE AIRFLOW THROUGH ALL REQUIRED ACTIVE OPENINGS. IN ADDITION, AT THE END OF EACH PHASE OF CONSTRUCTION AND AT THE END OF THE CONSTRUCTION PROJECT, ALL FILTRATION MEDIA WITHIN EACH PIECE OF EQUIPMENT SERVING THE SPACE SHALL BE REPLACED.

D. EXCAVATION AND BACKFILL

1. PERFORM ALL EXCAVATION AND BACKFILL REQUIRED FOR INSTALLATION OF BELOW-GRADE PIPING AND DUCTWORK.
2. EXCAVATE AS REQUIRED TO INSTALL PIPING AT REQUIRED DEPTH AND PITCH. PIPE TO BE LAID ON SAND BEDDING TO GIVE UNIFORM BEARING ALONG LENGTH OF PIPE (SAND INSIDE BUILDING AND INTERLOCKING AGGREGATE OUTSIDE BUILDING).
3. BACKFILL WITH BEDDING MATERIAL TO A MINIMUM OF 12" ABOVE TOP OF PIPE AND COMPACT. BALANCE OF BACKFILL IN OUTDOOR GRASS AREAS SHALL BE CLEAN EARTH UP TO 6" ABOVE SURROUNDING GRADES. BACKFILL BELOW FINISHED FLOORS SHALL BE SAND. BACKFILL OUTDOORS UNDER PAVING SHALL BE INTERLOCKING AGGREGATE AND SHALL BE COMPACTED IN MAXIMUM 10" LAYERS.
4. ALL OTHER EXCAVATIONS SHALL BE BACKFILLED WITH CLEAN EARTH, EXCLUDING RUBBISH AND BOULDERS. BACKFILL SHALL BE THOROUGHLY TAMPED AND PUDDLED.
5. PATCH FLOOR AND PAVING TO MATCH EXISTING ADJACENT SURFACES.
6. BACKFILLING SHALL NOT BE DONE UNTIL PIPE LINES ARE PROPERLY TESTED IN THE PRESENCE OF THE ARCHITECT AND/OR INSPECTION OF THE GOVERNMENT AGENCY HAVING JURISDICTION.
7. CONTROL TRENCH SOIL COMPACTION DURING CONSTRUCTION FOR COMPLIANCE WITH THE MAXIMUM DENSITY SPECIFIED FOR THE FOLLOWING AREAS:
   a. BUILDING SLABS, WALKWAYS, ROADWAYS, OR PUBLIC THOROUGH-FARES; COMPACT TOP 12" OF SUBGRADE AND EACH LAYER OF BACKFILL FOR FILL MATERIAL AT 95 PERCENT DENSITY FOR COHESIONLESS SOILS, AND 90 PERCENT DENSITY FOR COHESIVE SOIL MATERIAL. TESTS TO BE PERFORMED BY AN INDEPENDENT TESTING SERVICE, WITH THE COMPLIANCE REPORT SUBMITTED TO THE ARCHITECT.
8. PIPE SHALL NOT BE LAID IN WATER. FURNISH ALL PUMPING EQUIPMENT, POWER, TEMPORARY CONNECTIONS, ETC., AND DO ALL PUMPING NECESSARY TO REMOVE GROUND OR CASUAL WATER.
9. WHERE TRENCHES CROSS ROADS, WALKS, OR PUBLIC THOROUGHFARES, PROVIDE SUITABLE BARRICADES AND BRIDGES ADEQUATELY PROTECTED BY SIGNS OR RED FLAGS DURING DAY AND LIGHTS AS NIGHT.
10. REPAVE ALL STREETS OR SIDEWALKS DISTURBED AT THIS CONTRACTOR'S EXPENSE TO RECOMMENDATIONS, PROCEDURES AND SATISFACTION OF ARCHITECT AND AUTHORITIES HAVING JURISDICTION.

E. SUPPORTS AND HANGERS

1. HANGERS AND SUPPORTS ARE TO BE PROVIDED TO PROPERLY SUPPORT, SECURE AND ALIGN PIPING AND TO MEET FIELD CONDITIONS AND AS MANUFACTURED BY GRINNELL, MICHIGAN HANGER OR CADDY.
2. ALL HANGERS, BRACKETS, CLAMPS, ETC., SHALL BE OF STANDARD WEIGHT STEEL. PERFORATED STRAP HANGERS SHALL NOT BE USED IN ANY WORK. WHEN TWO OR MORE PIPES ARE RUN PARALLEL, THEY MAY BE SUPPORTED ON UNISTRUT-TYPE TRAPEZE HANGERS. OTHER HANGERS FOR PIPE 3" IN SIZE AND SMALLER SHALL BE CLEVIS. FOR PIPE TRANSPORTING MEDIUM ABOVE 150 DEGREES F AND 4" IN SIZE AND ABOVE, USE PIPE ROLL. EACH HANGER IS TO BE SIZED TO INCLUDE PIPE INSULATION SADDLE FOR PROTECTION.
3. WHERE BUILDING SERVICE LINES ENTER OR LEAVE BUILDING SUCH AS WATER, SEWER, GAS, ETC., AND ARE INSTALLED ON FILLED EARTH, PROVIDE CONTINUOUS SUPPORT ON A REINFORCED CONCRETE BEAM FURNISHED AND INSTALLED UNDER THIS DIVISION. SUPPORT BEAM ON BUILDING AND WITH VERTICAL SUPPORT DOWN TO FOUNDATION FOOTING AND ON UNDISTURBED EARTH AT OTHER END. GAS MAIN SHALL ENTER BUILDING ABOVE GRADE.
4. ALL VERTICAL PIPING PASSING THROUGH FLOORS SHALL BE SUPPORTED AT THE FLOOR BY A RISER CLAMP.
5. ISOLATE ALL COPPER LINES FORM FERROUS HANGERS OR SUPPORTS BY USING FOIL FILLER OR VINYL TAPE.
6. SPACING TO COMPLY WITH ASHRAE STANDARDS AND CODE REQUIREMENTS.

F. PIPE SLEEVES, FLOOR AND CEILING PLATES

1. ALL PIPES PASSING THROUGH FLOORS OR MASONRY WALLS SHALL BE PROVIDED WITH MACHINE-CUT SCHEDULE 40 PIPE STEEL SLEEVES. THE SLEEVES SHALL BE SO SIZED TO ALLOW AT LEAST 1/4" CLEARANCE BETWEEN THE INSIDE SLEEVE WALL AND THE PIPE OR INSULATION SURFACE. SHEET METAL SLEEVES SHALL NOT BE USED IN THIS WORK. PIPE SLEEVES ARE TO EXTEND 2" ABOVE FINISHED FLOOR AND SEALED. PIPE SLEEVES ARE TO BE FULL WALL THICKNESS AND SEALED.
2. UNUSED SLEEVES SHALL BE PLUGGED AND FINISHED TO MATCH ADJOINING SURFACE.

G. ESCUTCHEONS

1. FIT ALL PIPE PASSING THROUGH WALLS, FLOORS OR CEILINGS IN FINISHED ROOMS WITH STEEL OR BRASS ESCUTCHEONS. WHERE SURFACE IS TO RECEIVE A PAINT FINISH, MAKE ESCUTCHEONS PRIME PAINTED; OTHERWISE, MAKE ESCUTCHEONS NICKEL OR CHROME PLATED. WHERE PIPING IS INSULATED, FIT ESCUTCHEONS OUTSIDE INSULATION.

H. PIPE IDENTIFICATION AND TAGS

1. IDENTIFY EACH PIPE, VALVE AND CONTROLS IN EQUIPMENT ROOMS, ABOVE ACCESSIBLE CEILINGS AND IN ACCESSIBLE SHAFTS.
2. COLOR CODE IDENTIFICATION BANDS OR MARKER BACKGROUNDS TO IDENTIFY CONTENTS OF PIPE WITH INITIALS AND DIRECTION OF FLOW LOCATED NEAR EACH VALVE AND FITTING, ON BOTH SIDES OF PIPE PASSING THROUGH WALLS AND ON LONG RUNS AT NOT OVER 20'-0" INTERVALS.
3. AT PLACE WHERE PIPE IS TO HAVE MARKING, COVERED PIPE SHALL BE PROPERLY PRIMED WITH CLEAR LACQUER. AFTER MARKING IS APPLIED, COAT WITH LACQUER. APPLY MARKING ADJACENT TO VALVES AND EQUIPMENT AT MAJOR CHANGES IN DIRECTIONS, WHERE PIPES PASS THROUGH WALLS OR FLOORS.
4. EACH PIECE OF EQUIPMENT SHALL BE IDENTIFIED BY A NUMBER, TOGETHER WITH A BRIEF DESCRIPTION OF ITS PURPOSE, E.G. "AIR HANDLING UNIT - EAST LOBBY." IDENTIFICATION SHALL BE EMBOSSED OR ENGRAVED PLASTIC OR STAMPED BRASS STRIPS FIRMLY ATTACHED TO THE EQUIPMENT OR ADJACENT WALL AT THE OBVIOUS LOCATION. THE LETTERING FOR SUCH STRIPS SHALL BE NOT LESS THAN 1/2" HIGH.
5. ALL VALVES SHALL BE PROVIDED WITH BRASS NUMBERED TAGS ATTACHED TO HANDLE WITH A BRASS CHAIN OR RING. WIRING OF TAGS WILL NOT BE ACCEPTABLE. AT THE COMPLETION OF THE WORK, A REPRODUCIBLE VALVE SCHEDULE SHALL BE PROVIDED. THREE (3) COPIES OF THIS SHALL BE MOUNTED IN METAL, GLASS COVERED FRAMES WHERE REQUESTED BY THE ARCHITECT. THE SCHEDULE SHALL GIVE A DESCRIPTION OF THE LINE OR EQUIPMENT CONTROLLED; THE NORMAL POSITION, EMERGENCY AND/OR SHUTDOWN POSITION AND LOCATION GIVEN EITHER BY DESCRIPTION OR DIAGRAM.
6. ALL CONTROLS, STARTERS, SWITCHES, ETC, SHALL BE IDENTIFIED BY EMBOSSED STENCIL OR ENGRAVED PLATE AS TO PURPOSE AND/OR EQUIPMENT CONTROLLED. CONTROL WIRING SHALL BE IDENTIFIED WITH PROGRAM NUMBER AND DEVICE IT SERVICES.

I. ACCESS PANELS

1. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL REQUIRED ACCESS PANELS NECESSARY FOR HIS WORK. THIS INCLUDES ANY ACCESS PANELS REQUIRED FOR HVAC, PLUMBING AND FIRE PROTECTION. EACH CONTRACTOR SHALL ALSO PROVIDE ACCESS PANELS FOR ANY EXISTING CONDITIONS AS REQUIRED.
2. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR TYPE OF ACCESS PANEL AND COORDINATE LOCATIONS PRIOR TO ANY WORK.
3. CONTRACTOR SHALL MARK LAY-IN CEILING TILES, IN A METHOD APPROVED BY THE ARCHITECT, WHERE ACCESS IS REQUIRED TO SUCH MECHANICAL, PLUMBING, AND FIRE PROTECTION EQUIPMENT, VALVES, REGULATORS, MIXING BOXES, FIRE DAMPER, ETC.

J. NOISE AND VIBRATION ISOLATION

1. FURNISH AND INSTALL VIBRATION ISOLATING MOUNTINGS TO ISOLATE FROM THE STRUCTURE, BY MEANS OF RESILIENT VIBRATION AND NOISE ISOLATORS, ALL MECHANICAL EQUIPMENT OVER 1 HP HAVING ROTATING OR REICPROCATING PARTS. ISOLATORS SHALL BE SUPPLIED BY A SINGLE SOURCE, AND SHALL BE GUARANTEED BY THE MANUFACTURER TO PROVIDE ISOLATION EFFICIENCIES IN ACCORDANCE WITH THIS SPECIFICATION. SELECTION SHALL BE BASED ON EQUIPMENT PURPOSED, POWER DISSIPATED, FREQUENCY, WEIGHT DISTRIBUTION AND NATURE OF THE BUILDING STRUCTURE. MOUNTINGS SHALL BE DESIGNED TO PERMIT ATTACHMENT TO THE EQUIPMENT BASE OR PAD AND TO THE STRUCTURE AND SHALL BE SELECTED FOR UNIFORM DEFLECTION ALLOWING FOR UNEQUAL WEIGHT DISTRIBUTION.
2. SELECTION SHALL BE MADE BY THE MANUFACTURER OF THE MOUNTINGS TO PROVIDE A TRANSMISSIBILITY NOT EXCEEDING 10 PERCENT. THIS CONTRACTOR SHALL PROVIDE INERTIA PADS FOR EQUIPMENT WHERE CALLED FOR ON DRAWINGS OR RECOMMENDED BY THE MANUFACTURER OF THE MOUNTINGS. THESE SHALL CONSIST OF REINFORCED CONCRETE PADS OF SUITABLE SHAPE, OF WEIGHT 1-1/2 TIMES THE WEIGHT OF THE EQUIPMENT AND PROVIDED WITH WELD PLATES OR CHANNELS AT THE CORNERS TO WHICH THE MOUNTINGS MAY BE SECURED.
3. VIBRATION OR NOISE CREATED IN ANY PART OF THE BUILDING BY THE OPERATION OF ANY EQUIPMENT FURNISHED AND/OR INSTALLED UNDER THIS CONTRACT WILL BE PROHIBITED, AND THIS CONTRACTOR SHALL TAKE ALL PRECAUTIONS BY ISOLATING THE VARIOUS ITEMS OF EQUIPMENT, PIPE AND SHEET METAL WORK FORM THE BUILDING STRUCTURE. THE MAJOR ITEMS OF EQUIPMENT SHALL BE ISOLATED AS CALLED FOR ON THE PLANS AND SPECIFIED HEREIN. THE MINOR ITEMS SHALL BE HELD THE RESPONSIBILITY OF THIS CONTRACTOR.
4. MECHANICAL EQUIPMENT NOT INTERNALLY ISOLATED BY THE MANUFACTURER SHALL BE ISOLATED AS FOLLOWS:
   a. CONNECTIONS FROM PUMP OUTLET AND DISCHARGE NOZZLES TO PIPING SHALL BE MADE WITH FLEXIBLE CONNECTORS.
   b. ISOLATE EACH BASE MOUNTED PUMP FROM THE PIPING SYSTEMS BY USE OF APPROPRIATE SIZE CORRUGATED BELLOWS, TYPE 347 STAINLESS STEEL COUPLINGS WITH CONTROL RODS AS MANUFACTURED BY KEFLEX MFG. OR FLEXONICS FOR 300 PSIG DESIGN PRESSURE AT 800 DEGREES F. DESIGN TEMPERATURE.
   c. CENTRIFUGAL FANS, AIR CONDITIONING AND/OR HEATING AND VENTILATING UNITS UP TO 3"STATIC PRESSURE ON GRADE SHALL BE MOUNTED ON PRECOMPRESSED MOLDED FIBERGLASS, RUBBER-IN-SHEAR, OR STEEL SPRING ISOLATORS. IF THE DRIVE MOTOR IS NOT SUPPORTED DIRECTLY ON THE FAN, BOTH UNITS SHALL BE MOUNTED ON AN INTEGRAL STRUCTURAL STEEL BASE SUPPLIED BY THE ISOLATOR MANUFACTURER, OR SUFFICIENT RIGIDITY TO MAINTAIN ALIGNMENT BETWEEN THE FAN AND THE DRIVE MOTOR. THE BASE SHALL IN TURN BE MOUNTED ON PRECOMPRESSED MOLDED FIBERGLASS, RUBBER-IN-SHEAR, OR STEEL SPRING ISOLATORS.

      THE FANS' ISOLATORS SHALL PROVIDE ISOLATION EFFICIENCIES AS FOLLOWS:

FAN SPEED OVER 700 RPM	95 PERCENT
FAN SPEED BETWEEN 450 AND 700 RPM	90 PERCENT
FAN SPEED BELOW 450 RPM, FAN WHEEL OVER 48" DIAMETER	80 PERCENT
FAN SPEED BELOW 450 RPM, FAN WHEEL UNDER 48" DIAMETER	NOISE ISOLATION ONLY

   d. CENTRIFUGAL FANS, AIR CONDITIONING AND/OR HEATING AND VENTILATING UNITS UP TO 3" STATIC PRESSURE ABOVE GRADE SHALL BE MOUNTED ON STEEL SPRING VIBRATION ISOLATORS IN COMBINATION WITH PRECOMPRESSED MOLDED FIBERGLASS NOISE ISOLATION PADS. IF THE DRIVE MOTOR IS NOT SUPPORTED DIRECTLY ON THE FAN, BOTH UNITS SHALL BE MOUNTED ON AN INTEGRAL CONCRETE INERTIA BASE, SUPPLIED BY THE ISOLATOR MANUFACTURER, OF SUFFICIENT RIGIDITY TO MAINTAIN ALIGNMENT BETWEEN THE FAN AND ISOLATORS IN COMBINATION WITH PRECOMPRESSED MOLDED FIBERGLASS NOISE ISOLATION PADS. SEE "C" ABOVE FOR ISOLATION EFFICIENCIES.
   e. CENTRIFUGAL FANS, AIR CONDITIONING AND/OR HEATING AND VENTILATING UNITS UP TO 3" STATIC PRESSURE CEILING SUSPENDED SHALL BE MOUNTED ON A SUITABLE

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
NJ LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

MECHANICAL SPECIFICATIONS

Drawing Number:

M-301

PLATFORM AND THE PLATFORM IN TURN, SUSPENDED BY THREADED RODS FROM THE OVERHEAD STRUCTURE. RESILIENT HANGERS INCORPORATING STEEL SPRINGS AND PRECOMPRESSED MOLDED INSERTS SHALL BE INCORPORATED INTO EACH SUPPORTING ROD. SEE "C" ABOVE FOR ISOLATION EFFICIENCIES.

f. CENTRIFUGAL FANS, AIR CONDITIONING AND/OR HEATING AND VENTILATING UNITS OVER 3" STATIC PRESSURE SHALL BE MOUNTED ON A REINFORCED CONCRETE INERTIA BLOCK WHOSE WEIGHT IS EQUAL TO OR GREATER THAN THAT OF THE SUPPORTED EQUIPMENT. THE CONCRETE SHALL BE POURED INTO A WELDED STEEL CHANNEL FRAME WITH WELDED-IN REINFORCING BARS AND PRELOCATED EQUIPMENT ANCHOR BOLTS, ALL SUPPLIED BY THE ISOLATOR MANUFACTURER. THE INERTIA BLOCK SHALL BE MOUNTED ON STEEL SPRING VIBRATION ISOLATORS IN COMBINATION WITH PRECOMPRESSED MOLDED FIBERGLASS NOISE ISOLATION PADS.

SEE "C" ABOVE FOR ISOLATION EFFICIENCIES.

g. PUMPS UP TO 5 HP SHALL BE MOUNTED ON RAILS, INCORPORATING PRECOMPRESSED MOLDED FIBERGLASS, RUBBER-IN-SHEAR, OR STEEL SPRING ISOLATORS. THE ISOLATORS SHALL PROVIDE 90 PERCENT ISOLATION EFFICIENCY.

5. PIPING AND DUCTWORK SHALL BE SUPPORTED INDEPENDENTLY OF THE MECHANICAL EQUIPMENT AND SHALL BE ISOLATED AS FOLLOWS:
   a. ALL SUSPENDED PIPING IN THE MECHANICAL EQUIPMENT AND AIR HANDLING ROOMS SHALL BE SUPPORTED FROM THE OVERHEAD STRUCTURE BY THREADED RODS INCORPORATING RESILIENT HANGERS. THE RESILIENT HANGERS SHALL CONTAIN STEEL SPRINGS AND PRECOMPRESSED MOLDED FIBERGLASS INSERTS, DESIGNED FOR STATIC DEFLECTIONS OF BETWEEN 1" AND 1-3/4" UNDER OPERATING CONDITIONS.
   b. ALL FLOOR SUPPORTED PIPING AND PIPE HANGERS IN THE MECHANICAL EQUIPMENT ROOMS SHALL BE MOUNTED ON STEEL SPRING VIBRATION ISOLATORS IN COMBINATION WITH PRECOMPRESSED MOLDED FIBERGLASS NOISE ISOLATORS, DESIGNED FOR MINIMUM STATIC DEFLECTIONS OF 1".
   c. SUSPENDED PIPING ENTERING OR LEAVING MECHANICAL OR AIR HANDLING EQUIPMENT OUTSIDE THE EQUIPMENT ROOMS SHALL BE SUPPORTED FOR THE FIRST THREE HANGERS AWAY FROM THE EQUIPMENT BY THREADED RODS INCORPORATING RESILIENT HANGERS FROM THE OVERHEAD STRUCTURE. THE RESILIENT HANGERS SHALL CONTAIN STEEL SPRINGS AND PRECOMPRESSED MOLDED FIBERGLASS INSERTS, DESIGNED FOR STATIC DEFLECTIONS BETWEEN 1" AND 1-3/4" UNDER OPERATING CONDITIONS.
   d. FLOOR SUPPORTED PIPING ENTERING OR LEAVING MECHANICAL EQUIPMENT OUTSIDE THE EQUIPMENT ROOM SHALL BE MOUNTED ON STEEL SPRING VIBRATION ISOLATORS IN COMBINATION WITH PRECOMPRESSED MOLDED FIBERGLASS NOISE ISOLATORS, DESIGNED FOR MINIMUM STATIC DEFLECTIONS OF 1" FOR THE FIRST THREE SUPPORTS.
   e. FLEXIBLE CONNECTIONS SHALL BE USED BETWEEN AIR HANDLING EQUIPMENT AND DUCTWORK.
   f. ALL DUCTWORK WITHIN THE MECHANICAL EQUIPMENT AND AIR HANDLING ROOMS SHALL BE SUSPENDED WITH ROD AND RUBBER-IN-SHEAR HANGERS.
6. ISOLATION EFFICIENCY SHALL BE BASED ON THE LOWEST OPERATING SPEED OF THE SUPPORTED EQUIPMENT. THE ISOLATOR MANUFACTURER SHALL PROVIDE, AS A PART OF HIS SUBMITTAL DATA, AND ISOLATING EFFICIENCIES FOR THE ISOLATORS SUPPORTING EACH PIECE OF EQUIPMENT. ISOLATORS SHALL BE MANUFACTURED BY CONSOLIDATED KINETICS CORP., 401 DUBLIN AVENUE, COLUMBUS, OHIO, OR MASON INDUSTRIES, INC., HOLLIS, NEW YORK.

K. EXPANSION JOINTS
1. EXPANSION JOINTS IN PIPING FOR HEATING AND DOMESTIC WATER SYSTEM 2-1/2" AND BELOW SHALL BE FLEXICRAFT ML LOOP STAINLESS STEEL FOR STEEL AND COPPER PIPE OR FLEXONICS MODEL H, STAINLESS STEEL BELLOWS, INTERNAL GUIDES, ANTI-TORQUE DEVICE FOR STEEL PIPE AND MODEL HB, BRONZE BELLOWS, INTERNAL GUIDES, ANTI-TORQUE DEVICE FOR COPPER PIPE; END CONNECTIONS TO MATCH CORRESPONDING PIPE CONSTRUCTION.
2. EXPANSION JOINTS IN HEATING AND DOMESTIC WATER SYSTEMS 3" PIPE SIZE AND ABOVE SHALL BE FLEXONICS CORRUGATED BELLOWS TYPE WITH MATED NECK RINGS AND CONTROL RINGS; ALLOWABLE WORKING PRESSURE TO BE 300 PSIG AT 850 DEGREES F. END CONNECTIONS TO BE FLANGED.
3. PIPE ALIGNMENT GUIDE TO BE STEEL SPIDER (COPPER CLAD FOR COPPER PIPE) HOUSED IN A STEEL SLEEVE WITH FEET FOR ATTACHMENT TO STRUCTURE.
4. EXPANSION LOOPS SHALL BE PROVIDED ON ALL PIPE RUNS OVER 100 FT IN LENGTH. SIZE LOOP PER MANUFACTURER'S RECOMMENDATIONS OR AS SCHEDULED.

L. THERMOMETERS AND GAUGES
1. PRESSURE GAUGES SHALL BE PROVIDED IN PIPE LINES AND AT INLETS AND OUTLETS TO EQUIPMENT AS CALLED FOR OR SPECIFIED. THESE SHALL BE INSTALLED TO INDICATE PRESSURE CHANGES ACROSS EQUIPMENT ONLY. THIS MEANS THAT THEY MUST HAVE CONNECTIONS INSTALLED AS CLOSE AS POSSIBLE TO EQUIPMENT FLANGES. THESE SHALL BE BOURDON TUBE TYPE WITH 3" MINIMUM DIAL 1/4 MALE NPT CONNECTION, STEEL CAGES WITH PRESSURE RANGES SUITABLE FOR INDICATING THE NORMAL OPERATING PRESSURE AT THE TWO-THIRD POINT OF THE SCALE RANGE. ASHCROFT, 3M OR TAYLOR. CONNECTIONS SHALL BE MADE WITH SHUT-OFF COCK AND SURGE SNUBBER.
2. THERMOMETERS SHALL BE A RED MERCURY IN GLASS-TYPE WITH ADJUSTABLE ANGLE FEATURE, 7" MINIMUM SCALE LENGTH WITH RANGE AND BULB LENGTH SUITABLE FOR THE APPLICATION AND INSERTION WELL. THESE SHALL BE LOCATED WHERE THEY SENSE A TRUE TEMPERATURE AND WHERE THEY CAN BE EASILY READ AND BE INSTALLED WITH HEAT TRANSFER GREASE.

M. MISCELLANEOUS STEEL
1. FURNISH AND INSTALL ALL MISCELLANEOUS STEEL REQUIRED FOR SUPPORTS, HANGERS, ANCHORS, GUIDES, ETC., REQUIRED FOR INSTALLATION OF EQUIPMENT AND MATERIALS FURNISHED AND INSTALLED UNDER THIS DIVISION.

N. PAINTING
1. THIS CONTRACTOR SHALL PERFORM ALL PAINTING INCIDENTAL TO THIS WORK.
2. ALL INSULATION SHALL BE PAINTED AT THE TIME OF INSTALLATION WITH ONE COAT OF BENJAMIN FOSTER "LAGTONE" WATER BASE PAINT. AT THE COMPLETION OF THE WORK, ALL SUCH INSULATION SHALL BE GIVEN AN ADDITIONAL COAT OF ALKYD RESIN PAINT OF A COLOR TO MATCH EXISTING BUILDING STRUCTURE OR AS SELECTED BY THE ARCHITECT.
3. ALL UNCOVERED BLACK IRON PIPE, FITTINGS, IRON PORTIONS OF VALVES, HANGERS, STRUCTURAL STEEL, EXPANSION TANKS, COOLING TOWER SUMPS AND ALL OTHER BLACK IRON WORK SHALL BE THOROUGHLY CLEANED AND GIVEN TWO COATS OF ALKYD RESIN PAINT OF A COLOR TO MATCH EXISTING BUILDING STRUCTURE OR AS SELECTED BY THE ARCHITECT.
4. ALL UNCOVERED EXPOSED SHEET METAL SHALL BE THOROUGHLY CLEANED AND NEUTRALIZED AND GIVEN TWO (2) COATS OF ALKYD RESIN PAINT OF A COLOR TO MATCH EXISTING BUILDING STRUCTURE OR AS SELECTED BY THE ARCHITECT.
5. ALL PAINTING SHALL BE DONE WITH A BRUSH OR ROLLER. SPRAY PAINTING WILL BE PROHIBITED.
6. ALL FINISHING MATERIALS, THINNERS, ETC., SHALL BE THE BEST QUALITY, FIRST LINE MATERIALS AS MANUFACTURED BY:
   a. E.I. DUPONT DE NEMOURS AND COMPANY
   b. PRATT AND LAMBERT, INC.
   c. THE GLIDDEN COMPANY
   d. THE SHERWIN-WILLIAMS COMPANY
   e. THE PITTSBURGH PLATE GLASS COMPANY
7. ALL PAINT MATERIALS SHALL BE DELIVERED TO THE JOB IN THE MANUFACTURER'S ORIGINAL UNOPENED AND LABELED CONTAINERS, AND THEY SHALL BE USED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS.
8. THIS CONTRACTOR SHALL SUBMIT A LIST OF MATERIALS TO THE ARCHITECT. THE LIST SHALL STATE THE BRANCH NAMES OF THE MATERIALS THAT THE CONTRACTOR INTENDS TO USE. THIS LIST SHALL BE SECURED FROM THE PAINT MANUFACTURER AND SHALL BE ON HIS STATIONERY.
9. THE ARCHITECT'S APPROVAL MUST BE SECURED BEFORE ANY PAINTING WORK IS STARTED.

O. CLEAN-UP
1. INSOFAR AS THIS CONTRACT IS CONCERNED, AT ALL TIMES KEEP PREMISES AND BUILDING IN A NEAT AND ORDERLY CONDITION: FOLLOW EXPLICITLY ANY INSTRUCTIONS OF ARCHITECT IN REGARD TO STORING OF MATERIALS, PROTECTIVE MEASURES, CLEANING-UP OF DEBRIS, ETC.
2. UPON COMPLETION OF WORK, THIS CONTRACTOR SHALL THOROUGHLY CLEAN ALL APPARATUS FURNISHED BY HIM, PACK ALL VALVES AND THOROUGHLY CLEAN PIPING, FIXTURES AND EQUIPMENT REMOVING ALL DIRT, GREASE AND OIL.
3. AIR SYSTEMS SHALL NOT BE OPERATED WITHOUT FILTERS. UPON COMPLETION OF WORK, REPLACE ALL FILTERS.

P. OPERATING AND MAINTENANCE
1. THIS CONTRACTOR SHALL FURNISH COMPETENT PERSONAL INSTRUCTION TO THE OWNER'S OPERATING PERSONNEL FOR A PERIOD OF TWO (2) DAYS IN THE PROPER OPERATION OF THE HEATING AND AIR CONDITIONING EQUIPMENT. HE SHALL ALSO SUPPLY THE OWNER WITH COPIES OF AN OPERATION MANUAL CONTAINING THE FOLLOWING:
   a. STEP-BY-STEP PROCEDURES FOR START-UP AND SHUT-DOWN FOR EACH SYSTEM AND PIECE OF EQUIPMENT.
   b. PERFORMANCE DATA, CURVES, RATINGS.
   c. WIRING DIAGRAMS.
   d. MANUFACTURER'S DESCRIPTIVE LITERATURE.
   e. AUTOMATIC CONTROLS WITH DIAGRAMS AND WRITTEN DESCRIPTION OF OPERATION.
   f. MANUFACTURER'S MAINTENANCE AND SERVICE MANUALS.
   g. PLUMBING FIXTURES.
   h. SPARE PARTS AND REPLACEMENT PARTS LIST FOR EACH PIECE OF EQUIPMENT.
   i. NAME OF SERVICE AGENCY AND INSTALLER.
   j. FINAL APPROVED SHOP DRAWINGS.

Q. ROOF CURBS (AS MANUFACTURED BY PATE, ROOF PRODUCTS AND SYSTEMS AND THYCURB)
1. CURB SHALL BE 18 GAUGE GALVANIZED STEEL WITH CONTINUOUS WELDED SEAMS, WOOD NAILER, COUNTERFLASHING, R-8 MINIMUM AND LINER INSULATION. TOP OF CURB SHALL BE A MINIMUM SIZE AS SHOWN IN DETAIL ON DRAWINGS, BUT NOT LESS THAN 14" ABOVE THE HIGH POINT OF ROOF WHERE CURB ATTACHES.
2. PROVIDE CURB FOR ALL ROOF PENETRATIONS OF DUCTS AND PIPING.
3. ALL CUTTING AND PATCHING OF EXISTING ROOF SHALL BE BY THE OWNER'S ROOFING CONTRACTOR AND PAID FOR BY THE MECHANICAL CONTRACTOR.
4. CURB SHALL BE INSTALLED WITH TOP LEVEL. CURB BASE TO MATCH ROOF PITCH.

SECTION 200523 - PIPING AND VALVES

A. GENERAL
1. FURNISH ALL MATERIAL, LABOR, EQUIPMENT, AND ACCESSORIES AS REQUIRED TO INSTALL COMPLETE FIRE PROTECTION, PLUMBING, AND HVAC PIPING SYSTEMS AS INDICATED ON DRAWINGS AND IN THESE SPECIFICATIONS.
2. INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, SEE OTHER SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS AND INSTALL IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS.

B. CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS
1. PROVIDE VALVED WATER AND/OR GAS CONNECTION FOR EQUIPMENT FURNISHED BY OTHER CONTRACTORS OR OWNER.
2. INCLUDE ACCESSORIES REQUIRED BY CODE, DRAWINGS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. FULLY COORDINATE WITH LAB EQUIPMENT, POOL EQUIPMENT, KITCHEN EQUIPMENT, AND LAUNDRY EQUIPMENT SUPPLIERS AND CONFIRM ALL ROUGH-IN REQUIREMENTS PRIOR TO STARTING WORK.

C. INSTALLATION
1. ALL PIPING SHALL BE INSTALLED PARALLEL WITH OR PERPENDICULAR TO THE BUILDING WALLS. ALL VERTICAL RISERS SHALL BE INSTALLED PLUMB AND STRAIGHT. ALL PIPING ABOVE ACCESSIBLE CEILINGS SHALL BE INSTALLED AS HIGH AS POSSIBLE AND AT HEIGHT TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.
2. ALL PIPING SHALL BE INSTALLED WITH PITCH IN THE DIRECTION OF FLOW OF NOT LESS THAN 1" IN FORTY FEET, EXCEPT AS OTHERWISE SHOWN. IT MUST BE POSSIBLE TO DRAIN EVERY PORTION OF THE PIPING SYSTEM.
3. RUN LINES AS DIRECT AS POSSIBLE AND AVOID UNNECESSARY OFFSETS. HOWEVER, IF OFFSETS ARE REQUIRED IN ORDER TO OBTAIN MAXIMUM HEADROOM OR TO AVOID CONFLICT WITH OTHER WORK, THEY SHALL BE MADE AS REQUIRED OR AS REQUESTED BY THE ARCHITECT WITHOUT ADDITION COST TO THE OWNER. THE ARCHITECT RESERVES THE RIGHT TO MAKE MINOR CHANGES IN THE LOCATION OF PIPING AND EQUIPMENT DURING THE ROUGHING-IN, WITHOUT ADDITIONAL COST TO THE OWNER. ALL CHANGES PROPOSED BY OTHERS SHALL BE APPROVED BY THE ARCHITECT.
4. LINES SHALL BE CUT ACCURATELY TO MEASUREMENT AT THE SITE AND WORKED INTO PLACE WITHOUT SPRINGING OR FORCING. SUFFICIENT OFFSETS, PIPE LOOPS OR EXPANSION JOINTS BETWEEN ANCHOR POINTS SHALL BE PROVIDED AS NEEDED, WHETHER OR NOT SHOWN, TO LIMIT STRESSES AND CONTROL MOVEMENT OF LINES SUBJECT TO THE THERMAL EXPANSION.
5. BEFORE ANY PIPING IS INSTALLED, IT SHALL BE UP-ENDED AND POUNDED TO REMOVE ANY FOREIGN MATTER PRESENT, AND SHALL BE SWABBED, IF NECESSARY, FOR THOROUGH CLEANING. AFTER INSTALLATION AND BEFORE FINAL CONNECTIONS MADE, ALL PIPING SYSTEM SHALL BE FLUSHED WITH A MATERIAL THAT IS NOT INJURIOUS TO EITHER PIPE OR EQUIPMENT. (SEE ALSO "TESTS AND ADJUSTMENTS.")
6. PIPE TO BE THREADED SHALL BE CUT SQUARE AND FULL THREADED WITH CLEAN-CUT TAPERED THREADS AND SHALL BE REAMED AFTER THREADING. THREADED CONNECTIONS SHALL BE MADE WITH PIPE THREAD COMPOUND APPLIED TO THE WALL THREADS ONLY.
7. THE EDGES OF PIPE TO BE WELDED SHALL BE MACHINE BEVELED WHEREVER POSSIBLE. BEFORE WELDING, THE SURFACES SHALL BE THOROUGHLY CLEANED. THE PIPING SHALL BE CAREFULLY ALIGNED. NO METAL SHALL PROJECT WITHIN THE PIPE. MITERED JOINTS ARE PROHIBITED. ONLY FACTORY FORMED FITTINGS SHALL BE USED. ELBOWS SHALL BE LONG RADIUS TYPE. FLANGES SHALL BE WELDING NECK TYPE. MITERING OF THE PIPE TO FORM ELBOWS OR THE NOTCHING OF STRAIGHT RUNS TO FORM THE TEE CONNECTION WILL NOT BE PERMITTED.
8. UNIONS OR COMPANION FLANGES SHALL BE INSTALLED IN ALL CONNECTIONS TO EQUIPMENT, AUTOMATIC VALVES, ETC., AS NECESSARY TO PERMIT REMOVAL OF EQUIPMENT AND SPECIALTIES FOR SERVICING, REPAIRING OR CLEANING. IT SHALL BE POSSIBLE TO REMOVE ANY PIECE OF EQUIPMENT BY REMOVING ONLY ONE OR TWO SECTIONS OF PIPING.
9. VALVES SHALL BE PROVIDED IN SUITABLE LOCATIONS AT EACH ITEM OF EQUIPMENT, BRANCH CIRCUIT, RISER, OR SECTION OF PIPING AS INDICATED OR REQUIRED FOR PROPER AND SAFE OPERATION OF THE SYSTEM AND TO FACILITATE MAINTENANCE AND/OR REMOVAL OF ALL EQUIPMENT AND APPARATUS. ON HORIZONTAL PIPE RUNS, INSTALL ALL VALVE STEMS VERTICALLY UP WHERE POSSIBLE AND IN NO CASE SHALL THE STEMS BE TURNED MORE THAN 90 DEGREES FROM THE VERTICALLY UP POSITION.
10. DRAIN VALVES SHALL BE PROVIDED AT ALL LOW POINTS, TRAPPED SECTION, AND ON THE EQUIPMENT SIDE OF ALL BRANCH VALVES TO PERMIT DRAINING OF ALL PARTS OF ALL LIQUID PIPING SYSTEMS. DRAIN VALVES SHALL HAVE THREADED HOSE ENDS WITH CAP AND CHAIN. DRAIN PIPING SHALL BE PROVIDED FROM PUMP GLANDS, RELIEF VALVES, ETC., TO SPILL AT THE FLOOR OVER FLOOR DRAINS OR OTHER ACCEPTABLE DISCHARGE POINTS. THE DRAIN LINE SHALL TERMINATE WITH PLAIN, UNTHREADED END WITH A MINIMUM 2" AIR GAP AT FLOOR DRAIN.
11. TAPS (HALF COUPLINGS OR TEES) SHALL BE PROVIDED AS NECESSARY TO PERMIT THE INSTALLATION OF TEMPERATURE CONTROL INSTRUMENTS, THERMOMETERS, PRESSURE GAUGES, AIR VENTS, ETC.
12. CONNECTIONS BETWEEN COPPER PIPING AND SCREWED FERROUS EQUIPMENT CONNECTIONS OR SCREWED FERROUS PIPING SYSTEMS SHALL BE MADE AS FOLLOWS:
   a. FOR STATIONARY NON-ROTATING, NON-VIBRATING EQUIPMENT CONNECTIONS: DIELECTRIC UNIONS.
   b. FOR ROTATING OR VIBRATING EQUIPMENT CONNECTION: CAST BRASS ADAPTER AND BRONZE FLANGES WITH DIELECTRIC SEPARATION OF FLANGES AND BOLTS.
   c. CONNECTIONS BETWEEN COPPER PIPING AND FERROUS EQUIPMENT FLANGES OR FLANGED FERROUS PIPING SYSTEMS SHALL BE MADE USING BRONZE COMPANION FLANGE WITH DIELECTRIC SEPARATION OF FLANGES AND BOLTS.
   d. BRASS OR BRONZE VALVES IN FERROUS PIPING WILL NOT REQUIRE DIELECTRIC SEPARATION.
   e. NIPPLES BETWEEN COPPER PIPING AND EQUIPMENT OR FIXTURE CONNECTION FITTINGS SHALL BE BRASS, NOT GALVANIZED STEEL.
13. ALL PRESSURE PIPING SYSTEMS SHALL BE INSTALLED TO CONFORM TO THE REQUIREMENTS OF THE LOCAL AHJ OR STATE'S PRESSURE PIPING SYSTEM CODE.
14. ALL EXCAVATIONS FOR INSTALLATION OF PIPE SHALL BE OPEN TRENCH WORK AND SHALL BE KEPT OPEN UNTIL PIPING HAS BEEN INSPECTED, TESTED, AND ACCEPTED.
15. ALL PIPING PASSING THRU CAST-IN PLACE CONCRETE CONSTRUCTION SHALL BE SLEEVED TO PROVIDE A MINIMUM OF 1/2"ANNULAR SPACE AROUND ENTIRE PIPE TO BE SLEEVED. SPACE BETWEEN SLEEVE AND PIPES IN FOUNDATION WALLS SHALL BE TIGHTLY CAULKED OR MECHANICAL SEAL TO GIVE A WATERPROOF PENETRATION.
16. ANY PIPING RESTING ON OR COMING IN CONTACT WITH BUILDING STRUCTURE SHALL BE INSULATED AT THAT POINT TO PREVENT TELEGRAPHING OF SOUND.
17. METAL PIPING LAID IN CORROSIVE FILL SHALL BE ENCASED IN CONCRETE OR IN SPLIT TILE.
18. ALL SEWERS 14 FEET -0" BELOW FINISH GRADE SHALL BE ENCASED IN CONCRETE.
19. THREADED JOINTS SHALL CONFORM TO AMERICAN TAPER PIPE THREAD ASA-B2.1-1960. ALL BURRS SHALL BE REMOVED, PIPE ENDS SHALL BE REAMED OR FILED TO SIZE OF BORE AND ALL CHIPS REMOVED. PIPE CEMENT SHALL BE USED ONLY ON MALE THREADS.
20. UNIONS SHALL HAVE METAL SEATS FOR DRAINAGE SYSTEMS AND METAL TO METAL GROUND SEATS ON WATER SYSTEM.
21. FURNISH AND INSTALL VALVE IN BRANCHES TO SILL COCKS, TOILET ROOMS AND OTHER FIXTURE GROUPS. PLUMBING FIXTURES SHALL HAVE WHEEL OR SCREWDRIVER STOPS AS SPECIFIED.
22. ALL PIPING SHALL BE RIGIDLY SUPPORTED AND SHALL NOT BE LOOSE OR SHAKY.

D. SANITARY, WASTE, VENT AND STORM SEWERS
1. INSTALL SEWERS, STACKS, VENTS, DRAINS, ETC., AS INDICATED ON THE DRAWINGS.
2. ALL DRAINAGE AND VENT PIPING SHALL BE CONSTRUCTED AND RUN AS DIRECT AS POSSIBLE, PROTECTED FROM CONTACT WITH SLAG OR CINDERS AND WHEREVER PRACTICABLE, SHALL BE LOCATED SO AS TO BE ACCESSIBLE FOR INSPECTION. THE ACTUAL RUNS AND LOCATIONS OF DRAINS, SOIL WASTE, AND LEADER PIPING SHALL BE INSTALLED AS TO MEET WITH THE VARIOUS CONDITIONS AT THE BUILDING AND ANY WORK NECESSARY TO CONCEAL PIPES OR CLEAR PIPES OF OTHER TRADES SHALL BE DONE AS DIRECTED BY THE ARCHITECT.
3. SEWERS TO BE PITCHED A MINIMUM OF 1/4" PER FOOT FOR 3" SIZES AND UNDER AND 1/8" PER FOOT FOR 4" SIZES AND LARGER OR TO SLOPE AS INDICATED ON DRAWINGS. KITCHEN SANITARY WASTE SHALL BE SLOPED ¼" PER FOOT FOR ALL PIPE SIZES.
4. ALL PIPING SHALL BE CORRECTLY ALIGNED BEFORE JOINS ARE MADE. ALL CHANGES OF DIRECTION IN DRAINAGE AND VENT PIPING SHALL BE MADE BY MEANS OF "Y" BRANCHES AND 1/6, 1/8 OR 1/16 BENDS. NO LINES SHALL BE RUN WITH UNNECESSARY BENDS OR OFFSETS AND WHERE CHANGES IN DIRECTION ARE UNAVOIDABLE; THEY SHALL BE MADE BY USE OF PROPER FITTINGS. SINGLE AND DOUBLE SANITARY TEES, 1/4 BENDS AND 1/8 BENDS MAY BE USED IN VERTICAL SECTIONS WHEN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. CHANGES IN DIRECTION AND BRANCH CONNECTIONS SHALL BE MADE WITH APPROVED DRAINAGE FITTINGS COMPATIBLE WITH THE PIPING SYSTEM MATERIAL IN WHICH IT IS INSTALLED.
5. INSTALL CLEANOUTS AT BASE OF EACH VERTICAL WASTE AND RAINWATER STACK, EACH CHANGE IN A DIRECTION OF PIPING GREATER THAN 45 DEGREES, WITHIN FIVE FEET (5'-0") OF MAIN SEWER AFTER EXITING THE BUILDING, OR AS SHOWN ON DRAWINGS. CLEANOUTS ON UNDERGROUND LINES SHALL EXTEND UP FLUSH WITH FINISHED FLOOR OR GRADE. PROVIDE CLEANOUTS NOT OVER 50'- 0" ON CENTER ALONG STRAIGHT RUNS. CLEANOUTS SHALL BE SIZE OF PIPE TO WHICH IT IS INSTALLED UP TO 6" IN DIAMETER. PIPE OVER 6" IN DIAMETER SHALL HAVE A 6" CLEANOUT.
6. VENT TERMINALS SHALL BE TERMINATED AT LEAST 18" ABOVE ROOF. EACH VENT TERMINAL SHALL BE MADE WATER TIGHT WITH THE ROOF BY USING SHEET COPPER (8 OUNCES PSF) WITH BASE NOT LESS THAN 16" DIAMETER AND COLLAR FULL HEIGHT OF PIPE OR RUBBER BOOT PIPE FLUSHING. WHERE VENTS ARE 4" OR LARGER, FLASHING MAY BE TURNED OVER INTO TOP OF PIPE WITHOUT GAP. FURNISH FLASHING TO GENERAL CONTRACTOR FOR BUILDING INTO ROOFING MATERIAL.
7. ALL FIXTURES AND SANITARY DRAINS SHALL BE VENTED AS INDICATED ON DRAWINGS AND IN ACCORDANCE WITH CODE. VENT PIPES, WHERE NOT VERTICAL SHALL HAVE CONTINUOUS SLOPE UP TO VENT THROUGH ROOF.
8. OPENINGS IN PIPES SHALL BE PROPERLY PLUGGED WHEN WORK IS NOT IN PROGRESS
9. ROOF DRAINS SHALL BE PROVIDED WITH A FLASHING RING AND A 30" X 30" X 12 OZ./S.F. -COPPER SHEET ASTM B152/B, 152 M FLASHING PROPERLY FASTENED TO THE FLASHING RING.
10. SEWERS SHALL BE LAID WITH FULL LENGTH OF EACH SECTION RESTING ON A SOLID BED. WHERE NECESSARY TO OBTAIN A FIRM SUPPORT, THE PIPE SHALL BE BEDDED ON SELECT MATERIAL AND THOROUGHLY TAMPED. AS PIPE IS LAID, CARE SHALL BE EXERCISED TO KEEP INTERIOR OF PIPE CLEAR OF FOREIGN MATTER. WHERE TRENCHING FOR PIPE IS EXCESSIVELY WIDE, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, EMBED THE PIPE IN CONCRETE TO SUPPORT THE ADDED LOAD OF BACKFILLING.
11. PIPE SCHEDULE:
   a. BELOW GRADE INSIDE BUILDING
      1) SERVICE WEIGHT - CAST IRON PIPE ASTM A-74-82 WITH ASTM C-564-80 NEOPRENE COMPRESSION JOINTS OR NO-HUB CISPI WITH CLAMPS. ALL KITCHEN SANITARY SHALL BE CAST IRON ONLY.
      2) PVC-DWV SCH. 40 SOLID CORE PIPE, ASTM D-1785 WITH ASTM D-2665 DWV SOLVENT WELD SOCKET FITTINGS.
   b. ABOVE GRADE AND VENT MATERIAL SHALL BE AS FOLLOWS:
      1) NO-HUB CAST IRON PIPE CISPI 1-301-78.
      2) PVC-DWV SCH. 40 SOLID CORE PIPE, ASTM D-1785 WITH ASTM D-2665 DWV SOLVENT WELD SOCKET FITTINGS.
      3) 1-1/4" AND SMALLER, SCH. 40 GALVANIZED STEEL PIPE ASTM A-53/A53M, TYPE E WITH SCREWED FITTINGS ASME B-16.4, CLASS 125.
   c. SITE BELOW GRADE SEWERS
      1) NO-HUB CAST IRON PIPE CISPI 1-301-78.
      2) PVC-DWV SCH. 40 SOLID CORE PIPE. ASTM D-1785 WITH ASTM D-2665 DWV SOLVENT WELD SOCKET FITTINGS.
      3) UP TO 15" - PVC PIPE, ASTM D-3034 SDR 35 WITH ASTM F477 GASKET JOINTS.
      4) 18" AND OVER - REINFORCED CONCRETE PIPE (RCP) ASTM C 76-83 WITH ASTM C 443-79 RUBBER GASKET JOINTS.
   d. FORCED MAIN BELOW GRADE
      1) SOFT COPPER TUBE, TYPE L; COPPER PRESSURE FITTINGS AND SOLDERED JOINTS FOR 4" AND SMALLER PIPE.
      2) DUCTILE IRON AWWA C 110/A21.10, MECHANICAL JOINT PIPING, FITTINGS AWWA C153/A21.53, AND MECHANICAL JOINTS AWWA C111/A21.11.
      3) HARD COPPER TUBE, TYPE L; COPPER PRESSURE FITTINGS; AND SOLDERED JOINTS FOR 5" AND LARGER PIPE.
   e. FORCED MAIN ABOVE GRADE
      1) HARD COPPER TUBE, TYPE L; COPPER PRESSURE FITTINGS AND SOLDER JOINTS.
      2) GALVANIZED STEEL PIPE, PRESSURE FITTINGS AND THREADED JOINTS.
   f. EXPANSION JOINTS AND DEFLECTION FITTINGS
      1) DUCTILE-IRON, FLEXIBLE EXPANSION JOINTS; AWWA C110 OR AWWA C153 WITH TWO GASKETED BALL-JOINT SECTIONS AND ONE OR MORE GASKETED SLEEVE SECTIONS RATED FOR 250 PSIG MINIMUM.
      2) DUCTILE-IRON EXPANSION JOINTS; THREE-PIECE ASSEMBLY OF TELESCOPING SLEEVE WITH GASKETS AND RESTRAINED-TYPE, BALL-AND-SPIGOT END SECTIONS; AWWA C110 OR AWWA C153; RATED FOR 250 PSIG MINIMUM.
      3) DUCTILE-IRON DEFLECTION FITTINGS; COMPOUND COUPLING FITTING WITH BALL JOINT, FLEXING SECTION, GASKETS, AND RESTRAINED JOINT ENDS; AWWA C110 OR AWWA C153; RATED FOR 250 PSI MINIMUM AND UP TO 15 DEGREES OF DEFLECTION.
12. PVC PIPING SHALL NOT BE INSTALLED UNLESS PERMITTED BY CODE AND SHALL NOT BE INSTALLED IN RETURN AIR PLENUMS.

E. DOMESTIC WATER PIPING
1. INSTALL DOMESTIC WATER PIPING AS INDICATED ON DRAWINGS. INCLUDE ALL FITTINGS, VALVES, HANGERS, AND OTHER ACCESSORIES INCLUDING WATER METER AND BACKFLOW PREVENTER. EXTEND DOMESTIC WATER PIPING TO ALL FIXTURES AND EQUIPMENT REQUIRED FOR COMPLETE INSTALLATION.
2. INCLUDE UNIONS, OR OTHER DISCONNECT MEANS, STOPS OR VALVES FOR ISOLATION OF FIXTURES AND EQUIPMENT. VALVES TO BE FULLY COMPATIBLE WITH PIPING FOR SERVICE INTENDED AS MANUFACTURED BY NIBCO, CRANE OR MILWAUKEE. INCLUDE HOSE OR DRAIN VALVES AT LOW POINTS WHERE FIXTURES CANNOT BE USED FOR DRAINAGE.
3. INSTALL SHOCK ABSORBERS AT EACH QUICK CLOSING FIXTURE AND WHERE REQUIRED TO PREVENT WATER HAMMER AS MANUFACTURED BY J.R. SMITH, SIOUX CHIEF OR ZURN. ABSORBERS SHALL BE INSTALLED IN VERTICAL UPRIGHT POSITION.
4. HANGERS ON INSULATED PIPE TO BE OUTSIDE OF INSULATION, SIZED ACCORDINGLY WITH A SUFFICIENT SADDLE TO PROTECT INSULATION AS MANUFACTURED BY GRINNELL OR MICHIGAN.
5. PIPE SCHEDULE:
   a. BELOW GRADE OUTSIDE BUILDING (2-1/2" AND LESS).
      1) SOFT COPPER ASTM B88, TYPE "K" WITHOUT JOINTS.
      2) PEX TUBE AND FITTINGS WITH STAINLESS STEEL CRIMP RINGS. NO JOINTS FOR BELOW GRADE INSTALLATION.
      3) PP, SDR11 SOCKET FITTINGS; AND FUSION-WELD JOINTS.
      4) PIPING MAY BE ROUTED INSIDE A LARGER CONDUIT SO PIPE CAN BE REMOVED WITHOUT EXCAVATION.
      5) IF MAXIMUM LENGTH OF PIPE AVAILABLE IS NOT LONG ENOUGH AND FITTING NEEDS TO BE INSTALLED UNDERGROUND, ALL FITTINGS SHALL BE STAINLESS STEEL MECHANICAL FITTINGS WRAPPED WITH POLYETHYLENE ENCASEMENT AND ENCASED IN CONCRETE.
   b. BELOW GRADE OUTSIDE BUILDING (2-1/2" AND LARGER)
      1) DUCTILE IRON CEMENT LINED IRON CEMENT LINED PIPE, AWWA H3-C1.2 DUCTILE FITTINGS, AND COMPRESSION OR MECHANICAL JOINT.
      2) PE, AWWA PIPE; PE, AWWA FITTINGS, AND HEAT-FUSION JOINTS.
      3) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
   c. BELOW GRADE INSIDE BUILDING (2-1/2" AND LESS)
      1) SOFT COPPER ASTM B88, TYPE "K" WITHOUT JOINTS.
      2) PEX TUBE AND FITTINGS WITH STAINLESS STEEL CRIMP RINGS. NO JOINTS FOR BELOW GRADE INSTALLATION.
      3) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
      4) PIPING MAY BE ROUTED INSIDE A LARGER CONDUIT SO PIPE CAN BE REMOVED WITHOUT EXCAVATION.
   d. BELOW GRADE INSIDE BUILDING (2-1/2" AND LARGER)
      1) SOFT COPPER ASTM B88, TYPE "K" WITHOUT JOINTS.
      2) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
      3) PP, SDR 11 SOCKET FITTINGS; AND FUSION-WELDING JOINTS.
   e. ABOVE GRADE (2" AND LESS)
      1) TYPE "L" HARD COPPER ASTM B 88-832 WITH WROUGHT COPPER FITTINGS ASTM B 16.22 1980 AND NON-LEAD OR ANTIMONY SOLDER JOINTS.
      2) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
      3) PEX TUBE AND FITTINGS WITH STAINLESS STEEL CRIMP RINGS.
   f. ABOVE GRADE (2-1/2" - 4")
      1) TYPE "L" HARD COPPER ASTM B 88-832 WITH WROUGHT COPPER FITTINGS ASTM B 16.22 1980 AND NON-LEAD OR ANTIMONY SOLDER JOINTS.
      2) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
      3) PEX TUBE AND FITTINGS WITH STAINLESS STEEL CRIMP RINGS.
      4) PP, SDR 11 SOCKET FITTINGS; AND FUSION-WELDING JOINTS.
   g. ABOVE GRADE (4" AND LARGER)
      1) GALVANIZED STEEL PIPE, GALVANIZED C.1 OR M.1 FITTINGS OR STAINLESS STEEL PIPE AND FITTINGS, AND SCREWED OR MECHANICAL JOINT.
      2) TYPE "L" HARD COPPER ASTM B 88-832 WITH WROUGHT COPPER FITTINGS ASTM B 16.22 1980 AND NON-LEAD OR ANTIMONY SOLDER JOINTS.
      3) CPVC, SCHEDULE 40; SOCKET FITTINGS AND SOLVENT CEMENT JOINTS.
      4) STAINLESS-STEEL SCHEDULE 10 PIPE, GROOVED-JOINT FITTINGS, AND GROOVED JOINTS.
6. FLUSH, VENT AND SANITIZE ALL WATER PIPING WITH CHLORINE AS REQUIRED PER AWWA, LOCAL BUILDING DEPARTMENT AND HEALTH DEPARTMENT CODES.
7. DOMESTIC HOT AND COLD WATER PIPING UNDER CONCRETE FLOOR TO BE COVERED WITH SAND SO THAT PIPING WILL NOT BECOME EMBEDDED IN THE FLOOR SLAB.
8. ALL PIPING UNDER CONCRETE FLOOR SHALL BE TYPE "K" SOFT COPPER, CONTINUOUS. SPLICES OR FITTINGS WILL NOT BE ALLOWED.
9. EXTREME CAUTION MUST BE TAKEN SO THAT NO COPPER PIPING AND INSULATION UNDER CONCRETE FLOORS BECOMES CRUSHED, CUT, SPLIT OR DEFORMED DURING THE POURING OF THE FLOOR SLAB.
10. ALLOW 1-1/4" PER 100 FEET OF LENGTH FOR EXPANSION IN DOMESTIC HOT WATER LINES.
11. ALL PIPING IN RETURN AIR CEILING PLENUMS OR WALLS SHALL BE PLENUM RATED MATERIALS.

F. GAS PIPING
1. INSTALL GAS PIPING IN ACCORDANCE TO THE LATEST VERSION OF THE NATIONAL FUEL AND GAS CODE, NFPA AND LOCAL GAS COMPANIES' REQUIREMENTS AND STATE AND LOCAL CODES.
2. INCLUDE METER, REGULATORS, VALVES AND CONNECT TO ALL GAS USING EQUIPMENT.
3. EQUIPMENT CONNECTIONS AT EACH UNIT SHALL INCLUDE GAS COCK, UNION, DIRT LEG, AND REDUCER TO UNIT CONNECTION SIZE. FOR ABOVE LOW PRESSURE GAS SYSTEMS, PROVIDE PRESSURE REDUCING VALVE AT EQUIPMENT OR LOW PRESSURE BRANCHES.
4. CONSTRUCT CONCRETE BASE TO BELOW FROST LINE FOR LARGE METER INSTALLATION.
5. PIPE SCHEDULE:
   a. BELOW GRADE, OUTSIDE BUILDING (<60 PSI)
      1) POLYETHYLENE PLASTIC ASTM D-2513 WITH STAB COUPLINGS OR FUSION WELD JOINTS.
      2) BLACK STEEL SCHEDULE 40 PIPE WITH WROUGHT-STEEL FITTINGS AND WELDED JOINTS, OR MECHANICAL COUPLINGS. COAT PIPE AND FITTINGS WITH PROTECTIVE COATING FOR STEEL PIPE. INSTALL CATHODIC PROTECTION ANODE ON SERVICE LINE.
   b. BELOW GRADE, OUTSIDE BUILDING (≥ 60 PSI)
      1) POLYETHYLENE PLASTIC ASTM D-2513 WITH STAB COUPLINGS OR FUSION WELD JOINTS.
      2) SCHEDULE 40 BLACK STEEL COATED AND WRAPPED WITH WELDED BLACK STEEL FITTINGS. INSTALL CATHODIC PROTECTION ANODE ON SERVICE LINE.
   c. ABOVE GRADE, LOW PRESSURE (≤ 2 PSI)
      1) SCHEDULE 40 SEAMLESS BLACK STEEL PIPE, BEVELED ENDS.
         a) 2" AND SMALLER - SCREWED FITTINGS, WROUGHT IRON.
         b) 2-1/2" AND LARGER - WELDED FITTINGS, BLACK STEEL.
   d. ABOVE GRADE, MEDIUM PRESSURE (2 - 10 PSI)
      1) SCHEDULE 40 BLACK STEEL WITH WELDED BLACK STEEL FITTINGS.
   e. UNDERGROUND, BELOW BUILDING
      1) BLACK STEEL SCHEDULE 40 PIPE WITH WROUGHT-STEEL FITTINGS AND WELDED JOINTS. PIPE IN CONTAINMENT CONDUIT WHICH IS STEEL PIPE WITH WROUGHT-STEEL FITTINGS AND WELDED JOINTS COATED WITH PROTECTIVE COATING FOR STEEL PIPE. CONDUIT TO BE VENTED TO ATMOSPHERE AT BOTH ENDS. INSTALL CATHODIC PROTECTION ANODE ON CONDUIT.
   f. VALVES SHALL NOT BE LOCATED ABOVE CEILING SPACES USED AS A RETURN AIR PLENUM.
   g. EXTERIOR EXPOSED BARE STEEL PIPE SHALL BE PAINTED WITH A PRIMER COAT AND TWO (2) COATS OR RUST INHIBITIVE PAINT, COLOR AS SELECTED BY ARCHITECT.
   h. ALL WELDING SHALL BE PERFORMED BY STATE CERTIFIED WELDERS.
   i. ALL PIPING IN NON-ACCESSIBLE SPACES SHALL HAVE WELDED JOINTS.

G. CONDENSATE DRAIN PIPING
1. TRAP SHALL BE INSTALLED NEAR EQUIPMENT IF NOT INTEGRAL WITH EQUIPMENT. INSTALL PIPING AT A UNIFORM SLOPE OF 1" IN FORTY FEET DOWNWARD INDIRECTION TO DRAIN.
2. PIPE SCHEDULE:
   a. PIPING OF ALL SIZES SHALL BE TYPE L HARD COPPER PIPE WITH BRASS OR COPPER FITTINGS AND SOLDERED JOINT.
   b. PIPING OF ALL SIZE FOR MECHANICAL ROOMS, ROOF AND NON-RETURN AIR PLENUM RATED CEILING SPACE SHALL BE TYPE PVC, SCHEDULE 40 WITH SOLVENT WELD SOCKET FITTINGS.

H. GENERAL HYDRONIC AND DOMESTIC VALVES AND STRAINERS
1. BALL VALVES 2" AND SMALLER SHALL BE 600# WOG, 150# SWP, TWO-PIECE, FULL PORT CAST BRONZE OR FORGED BRASS BODY, CHROME PLATED BRASS BALL, REPLACEABLE "TEFLON" OR "TFE" SEATS AND SEALS, BLOWOUT-PROOF STEM, VINYL-COVERED STEEL HANDLE AND HAVE THREADED ENDS. VALVES SHALL BE HAMMOND 8901, MILWAUKEE BA-125, STOCKHAM S-207, NIBCO T-585, OR APOLLO 77-100.
2. GATE VALVES 2" AND SMALLER SHALL BE 150# W.S.P., BRONZE, SCREWED PATTERN WITH RISING STEM, UNION BONNET, SOLID WEDGE DISC. VALVES SHALL CONFORM TO MSS SP-80. VALVES SHALL BE CRANE 431-UB, HAMMOND IB-629, LUNKENHEIMER 3151, JENKINS 47-U, STOCKHAM B-120, MILWAUKEE 1151, OR NIBCO T-135.
3. GATE VALVES 2-1/2" AND LARGER SHALL BE 125# W.S.P., CAST IRON, OUTSIDE SCREW AND YOKE, FLANGED PATTERN WITH BOLTED BONNET, RISING STEM, BRONZE SEATS, STEM AND DISC FACES. VALVES SHALL CONFORM TO MSS SP-70. VALVES SHALL BE CRANE 465-1/2, HAMMOND IR 1140, LUNKENHEIMER 1430, JENKINS 651-A, STOCKHAM G-623, MILWAUKEE F2885, OR NIBCO F-617-0.
4. GLOBE VALVES 2" AND SMALLER SHALL BE 150# W.S.P., BRONZE, SCREWED PATTERN WITH RISING STEM, AND UNION BONNET, AND ANSI 420-S STAINLESS STEEL TAPERED PLUG AND SEAT. VALVES SHALL CONFORM TO MSS SP-80. VALVES SHALL BE CRANE 14-1/2P, HAMMOND B-433, JENKINS 546-P, STOCKHAM B-29, MILWAUKEE 591 A, OR NIBCO T-235.
5. GLOBE VALVES 2-1/2" AND LARGER SHALL BE 125# W.S.P., CAST IRON, OUTSIDE SCREW AND YOKE, FLANGED PATTERN, WITH BOLTED BONNET, RISING STEM, BRONZE SEAT, STEM, AND DISC. VALVES SHALL CONFORM TO MSS SP-85 SPECIFICATION A-126, CLASS B. VALVES SHALL BE CRANE 351, HAMMOND IR 116, LUNKENHEIMER 1123, STOCKHAM G-512, MILWAUKEE F2981, OR NIBCO F-718-B.
6. CHECK VALVES 2" AND SMALLER SHALL BE 150# W.S.P. BRONZE, SWING CHECK, BRONZE SEAT, SCREWED PATTERN. VALVES SHALL CONFORM TO MSS SP 80, TYPE 4. VALVES SHALL BE CRANE 141, HAMMOND IB-946, MILWAUKEE 510, NIBCO T-43, STOCKHAM B-331B, LUNKENHEIMER 230, OR JENKINS 352.
7. CHECK VALVES 2-1/2" AND LARGER SHALL BE 125# W.S.P., CAST IRON, FLANGED PATTERN WITH ALL BRONZE TRIM. VALVES SHALL CONFORM TO MSS SP-71. VALVES SHALL BE CRANE 373, HAMMOND IR-1124, LUNKENHEIMER 1790, JENKINS 624, STOCKHAM G-931, MILWAUKEE F2974, OR NIBCO F-918-B.
8. BUTTERFLY VALVES (ALL SIZES) SHALL BE LUG STYLE DUCTILE IRON BODY AND EXTENDED NECK, DESIGNED FOR BUBBLE TIGHT SHUT-OFF AT 150 PSI. DISCS SHALL BE BRONZE OR ALUMINUM BRONZE AND ATTACHED TO STAINLESS STEEL STEM. SEAT MATERIAL SHALL BE EPDM (EPT) SUITABLE TO 275 DEGREES F. STANDARD VALVE MUST BE CAPABLE OF 200 PSI BI-DIRECTIONAL DIFFERENTIAL PRESSURE (DEAD-END SERVICE). MANUFACTURER MUST CERTIFY VALVES (SIZES 2" THRU 16") THAT SHALL BE CAPABLE OF PROVIDING BUBBLE TIGHT SEAL AT 200 PSI WHEN USED FOR END OF LINE SERVICE WITHOUT THE NEED OF A FLANGE ON THE DOWN STREAM SIDE. VALVES 18" AND LARGER MUST BE CAPABLE OF 150 PSI BI-DIRECTIONAL DIFFERENTIAL PRESSURE AND 150 PSI END OF LINE SERVICE AS STATED ABOVE. VALVES THRU 6" SHALL HAVE 10 POSITION LEVERLOCK HANDLE. VALVES 8" AND LARGER SHALL HAVE GEAR OPERATORS WITH HAND WHEELS. VALVES SHALL CONFORM TO MSS SP-67 AND MSS SP-25. VALVES SHALL BE CRANE 44 BXZ, DESURIK, MILWAUKEE ML 133E, NIBCO LD 2000, OR STOCKHAM LD-7.
9. ECCENTRIC PLUG (BALANCE) VALVES 2" AND SMALLER, SHALL BE 175#, CAST IRON BODY, BRONZE TRIM, SCREWED PATTERN WITH OPEN POSITION STOP. VALVES TO BE DEZURIK FIGURE 425 OR DRESSER WITH FIGURE 487 MEMORY STOP AND RESILIENT PLUG SEAL RATED AT 250 DEGREES F.
10. BALANCE VALES 2" AND SMALLER SHALL BE 125#, BRONZE BODY SCREWED PATTERN BALL TYPE CIRCUIT SETTER VALVES WITH MEMORY STOP, STRAIGHT PATTERN WITH SCHRADER VALVE CONNECTION FOR DIFFERENTIAL PRESSURE GAUGE. VALVES TO BE TACO OR BELL & GOSSETT.
11. BALANCE VALVES 2-1/2" THRU 4"SHALL BE 175#, CAST IRON BODY, BRONZE TRIM, FLANGED WITH OPEN POSITION STOP AND DRIP CAP. VALVES TO BE DEZURIK FIGURE 425 WITH FIGURE 487 MEMORY STOPS AND RESILIENT PLUG SEAL RATED AT 250 DECREES F.
12. BALANCE VALVES 6" AND LARGER SHALL BE 175#, CAST IRON, RESILIENT FACED PLUG, FLANGED WITH HAND WHEEL ACTUATOR. VALVES TO BE DEZURIK 118F WITH RESILIENT PLUG FACING RATED AT 250 DEGREES F.
13. STRAINERS 2" AND SMALLER SHALL BE 250#, CAST IRON BODY, SCREWED PATTERN WITH 20 MESH STAINLESS STEEL OR MONEL SCREENS, STRAINERS TO BE MUESSCO NO. 11, ARMSTRONG, CRANE, SARCO, OR HAYWARD.
14. STRAINERS 2-1/2" AND LARGER SHALL BE 125#, CAST IRON BODY, FLANGED PATTERN WITH PERFORATED BRASS SCREENS WITH 1/16" OPENINGS. SCREEN RETAINERS TO BE DRILLED TO RECEIVE 1-1/4" OR LARGER DRAIN VALVES, STRAINERS TO BE MUESSCO NO. 751 THRU 8" SIZE, NO. 751-NC - 10" AND LARGER; ARMSTRONG, CRANE, SARCO, OR HAYWARD.
15. AIR VENTS AND DRAINS FOR MAIN WATER LINES AND COILS SHALL BE BRONZE, SCREWED PATTERN, BALL VALVES WITH A 3/4" MALE HOSE THREAD ADAPTOR.
16. AIR VENTS FOR MAIN WATER LINES SHALL BE 200#, BRONZE, SCREWED PATTERN, NON-RISING STEM ANGLE VALVES WITH UNION BONNET AND 3/4" CHICAGO STANDARD HOSE THREAD VALVES TO BE CRANE 117, WALWORTH 24, OR JENKINS 112.
17. AIR VENT PET COCKS (LOCATED INSIDE UNITARY EQUIPMENT) SHALL BE 125# BRONZE "TRY-COCK" SIMILAR TO CRANE 730.
18. PUMP DISCHARGE CHECK VALVES SHALL BE 125#, SEMI-STEEL BODY, BRONZE TRIM, FLANGED SILENT CHECK VALVES. VALVES 2-1/2" AND SMALLER SHALL BE MUESSCO 101-AP, WILLIAMS-HAGER 329 OR METRAFLEX. VALVES 3" AND LARGER SHALL BE MUESSCO 105-AP, WILLIAMS-HAGER 636 OR METRAFLEX #900 SERIES.
19. PURGE VALVES AND MISCELLANEOUS DRAIN VALVES SHALL BE 200#, BRONZE, SCREWED PATTERN, NON-RISING STEM ANGLE VALVES WITH UNION BONNET AND 3/4" CHICAGO STANDARD HOSE THREAD. VALVES TO BE CRANE 117, WALWORTH 24, OR JENKINS 112.
20. PRESSURE REDUCING VALVES SHALL BE AS SPECIFIED ON DRAWINGS OR AN APPROVED EQUAL BY CONBRACO, WATTS OR ZURN.

I. REFRIGERANT PIPING
1. MECHANICAL REFRIGERATION EQUIPMENT INCLUDING REFRIGERANT PIPING, VALVES, AND RELIEF VALVES, SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE AMERICAN STANDARDS ASSOCIATION'S "SAFETY CODE FOR MECHANICAL REFRIGERATION."
2. ALL REFRIGERANT PIPE USED IN THIS INSTALLATION SHALL BE SEALED AND CONTAIN A HOLDING CHARGE OF NITROGEN. IT SHALL REMAIN SEALED UNTIL IMMEDIATELY BEFORE INSTALLATION: REFRIGERANT PIPING SHALL BE CUT WITH A TUBE CUTTER ONLY AND SHALL BE REAMED AFTER CUTTING. HACK SAW CUTS ARE PROHIBITED.
3. AFTER INSTALLATION, THE REFRIGERANT PIPING SHALL BE PRESSURIZED TO 75 PSIG WITH NITROGEN. ALL JOINTS MUST THEN BE THOROUGHLY LEAK TESTED USING AN ELECTRONIC LEAK DETECTOR, A HALIDE TORCH, OR SOAP BUBBLES. AFTER THE REFRIGERANT PIPING HAS BEEN LEAK CHECKED, IT SHOULD BE EVACUATED TWICE BY EITHER THE DEEP EVACUATION OR THE TRIPLE EVACUATION METHOD. THE UNIT MANUFACTURER WILL RECOMMEND THE METHOD TO BE FOLLOWED. AFTER THE EVACUATION, THE PIPING SHALL THEN BE CHARGED WITH THE SYSTEM REFRIGERANT.
4. ISOLATE PIPING FROM STRUCTURE WITH 1" INSULATION BETWEEN ALL PIPING AND SUPPORT POINTS.
5. INSTALL PIPING IN AS SHORT AND DIRECT ARRANGEMENT AS POSSIBLE TO MINIMIZE PRESSURE DROP.
6. INSTALL ISOLATION VALVES AND UNIONS TO ALLOW REMOVAL OF SOLENOID VALVES, PRESSURE-REDUCING VALVES, EXPANSION VALVES, AND AT CONNECTIONS TO COMPRESSORS AND EVAPORATORS.
7. INSTALL FLEXIBLE CONNECTORS AT INLET AND DISCHARGE CONNECTION OF COMPRESSORS.
8. FILL THE PIPE AND FITTINGS DURING BRAZING WITH NITROGEN OR CARBON DIOXIDE TO PREVENT FORMATION OF SCALE.
9. PIPE SCHEDULE:
   a. PIPING SHALL BE REFRIGERANT GRADE TYPE "L" COPPER WITH SILVER SOLDERED JOINTS OR BRAZED JOINTS. PIPE PER MANUFACTURER'S PIPING DIAGRAMS AND RECOMMENDATIONS. COPPER TO COPPER REFRIGERANT PIPING JOINTS SHALL BE MADE USING A PHOSPHORUS BEARING ALLOY SUCH AS "SIL-PHOS" WITHOUT FLUX. COPPER TO BRASS AND COPPER TO STEEL JOINTS SHALL BE MADE USING A 45 PERCENT SILVER ALLOY SUCH AS "EASY-FLO" WITH FLUX.

J. GAS VALVES
1. GAS COCKS 2" AND SMALLER SHALL BE 175# WOG, CAST IRON, SCREWED BODY PATTERN. VALVES SHALL BE UL LISTED FOR GAS SERVICE. VALVES SHALL BE DEZURIK SERIES 425 WITH "RS-49" PLUG, SEALS AND LEVER HANDLE.
2. GAS COCKS 2-1/2" THRU 4" SHALL BE 175# WOG, CAST IRON, FLANGED BODY PATTERN. VALVES SHALL BE UL LISTED FOR GAS SERVICE. VALVES SHALL BE DEZURIK SERIES 425 WITH "RS-49" PLUG, SEALS AND LEVER HANDLE.
3. PRESSURE REDUCING VALVES SHALL BE LINE SIZE AND TO REDUCE PRESSURE FROM SUPPLIED SIDE TO EQUIPMENT PRESSURE REQUIREMENTS. VALVES SHALL BE AS SPECIFIED ON DRAWINGS OR AN APPROVED EQUAL BY AMERICAN METER COMPANY, FISHER CONTROL VALVES OR INVENSYS.

SECTION 200593 - TESTING, ADJUSTING AND BALANCING

A. GENERAL
1. AFTER INSTALLATION, CHECK ALL EQUIPMENT AND PERFORM START UP IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
2. ALL PIPING SHALL BE TESTED AND FREE OF LEAKS AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION.
3. WORK THAT IS SCHEDULED TO BE CONCEALED OR INSULATED SHALL REMAIN UNCOVERED UNTIL REQUIRED TESTS HAVE BEEN COMPLETED. IF THE CONSTRUCTION SCHEDULE REQUIRES, ARRANGE FOR TESTS ON SECTIONS OF THE SYSTEM AT A TIME.
4. BALANCE ALL SYSTEMS, CALIBRATE CONTROLS, CHECK FOR PROPER OPERATION AND SEQUENCE UNDER ALL CONDITIONS AND MAKE ALL NECESSARY ADJUSTMENTS.
5. INSTRUCT OWNER IN OPERATION OF SYSTEMS AND SUBMIT OPERATING AND MAINTENANCE MANUAL FOR ALL EQUIPMENT AND SYSTEMS.
6. SUBMIT AIR AND WATER BALANCE REPORT FROM INDEPENDENT AABC OR NEBB CERTIFIED SUBCONTRACTOR FOR ALL AIR AND WATER SYSTEMS PER AABC OR NEBB STANDARDS.
7. SUBMIT DUCT LEAKAGE TEST REPORT FROM INDEPENDENT AABC OR NEBB CERTIFIED CONTRACTOR.
8. WHEN THE CONTRACTOR IS READY TO RUN CAPACITY TESTS, HE SHALL NOTIFY THE ARCHITECT. WHEN THIS NOTICE IS GIVEN, THE ARCHITECT WILL ASSUME THAT THE CONTRACTOR HAS MADE PRELIMINARY TESTS AND IS SATISFIED THAT THE PLANT WILL DEVELOP SPECIFIED AND GUARANTEED CAPACITIES. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH ANY AND ALL INSTRUMENTS REQUIRED TO OBTAIN TEST DATA WHICH SHALL INCLUDE THERMOMETERS, ELECTRIC METERS, PRESSURE GAUGES, ETC.
9. WORK UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL NOT BE CONSIDERED COMPLETE UNTIL THE CONTRACTOR HAS OBTAINED REQUIRED INSPECTION, PERFORMANCE TESTS, MADE NECESSARY ADJUSTMENTS AND HAS SUBMITTED SATISFACTORY EVIDENCE OF THE ARCHITECT OR HIS REPRESENTATIVE WILL MAKE SPOT CHECKS TO DETERMINE THE ACCURACY AND COMPLETENESS OF FINAL ADJUSTMENTS. SHOULD SPOT CHECKS INDICATE MORE THAN A REASONABLE DEVIATION FROM DESIGN REQUIREMENTS, THE CONTRACTOR SHALL REPEAT TESTS AND ADJUSTMENTS TO THE SATISFACTION OF THE ENGINEER.
10. DURING ONE COMPLETE HEATING AND ONE COMPLETE COOLING SEASON, THE CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS THAT MAY BE NECESSARY TO ENSURE UNIFORM TEMPERATURES THROUGHOUT THE SPACES.
11. TEST RESULTS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.
12. THE TEST AND BALANCING CONTRACTOR SHALL ADJUST ALL SHEAVES OR PROVIDE NEW SHEAVES AND BELTS AS REQUIRED IN ORDER TO PROPERLY BALANCE ALL AIR HANDLING EQUIPMENT.

B. BALANCING, START UP AND INSTRUCTIONS
1. AFTER EQUIPMENT IS PLACED IN OPERATION, SYSTEMS SHALL BE BALANCED TO WITHIN 10% OF DESIGN FLOW WITH REPORT SUBMITTED TO OWNER. BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AABC OR NEBB CERTIFIED CONTRACTOR.
2. BALANCE THE AIR SYSTEMS PRIOR TO BALANCING HYDRONIC, STEAM, AND REFRIGERANT SYSTEMS.
3. TEST, ADJUST AND BALANCE COOLING SYSTEMS DURING SUMMER SEASON AND HEATING SYSTEMS DURING WINTER SEASON. BALANCE SYSTEMS WHEN THE OUTSIDE AIR CONDITIONS ARE WITHIN 5 DEGREES F WET BULB TEMPERATURE OF THE MAXIMUM SUMMER DESIGN CONDITION AND WITHIN 10 DEGREES F DRY BULB TEMPERATURE OF THE MINIMUM WINTER DESIGN CONDITION.
4. START UP AND PLACE ALL SYSTEMS IN OPERATION AND TAG ALL SWITCHES AND CONTROLS WITH PERMANENT LABELS.
5. TRAIN AND INSTRUCT OWNER ON PROPER OPERATION AND PREVENTATIVE MAINTENANCE OF SYSTEM.

C. PIPING: TESTING TO BE DONE BY THE CONTRACTOR.
1. ALL PIPING SHALL BE GIVEN THE FOLLOWING PRESSURE TEST WITHOUT APPRECIABLE PRESSURE DROP: CONTRACTOR SHALL USE RECORDING LINE CHARTS TO RECORD ALL PRESSURE TESTING OUTCOMES.

SERVICE	TEST MEDIUM	MIN. PRESSURE	TIME (HOURS)
Fire	Water	125 psi	6
Main Water Service	Water	125 psi	AWWA Procedure
Cold Water	Water	125 psi	24
Hot Water	Water	125 psi	24
Re-circulated Hot Water	Water	125 psi	24
*Gas, Natural	Natural Gas Co. Rules		24
Air	Air	125 psi	12
Sanitary and Storm Sewer	As per State Plumbing Code or Local Authority		
Water Service Piping	Water	150 psi	24
Fire Protection	See Fire Protection Section		
Condensate	Water	125 psi	6

*A MINIMUM NOTICE OF 48 HOURS SHALL BE GIVEN THE ARCHITECT PRIOR TO PURGING OF ANY GAS LINES. PURGING SHALL BE TO THE OUTSIDE OF BUILDING AT A SAFE LOCATION.

2. DURING THE FINAL INSPECTION OF THE BUILDING, THE CONTRACTOR MAY BE ASKED TO REMOVE AT LEAST ONE WATER CLOSET IN THE PRESENCE OF THE ARCHITECT SO THAT IT CAN BE CHECKED FOR A PROPER INSTALLATION. IF THE ONE TOILET IS FOUND TO BE INSTALLED IN A DEFECTIVE MANNER, THE CONTRACTOR SHALL REMOVE AND PROPERLY REINSTALL ALL TOILETS.
3. CARE SHALL BE EXERCISED IN INSTALLATION OF AIR PIPING SO AS NOT TO ALLOW CONTAMINATION.
4. MINOR LEAKS IN WELDED JOINTS SHALL BE CORRECTED BY CHIPPING OUT THE WELD AND REWELDING. A GENERAL SWEATING OF A WELD JOINT WILL BE CONSIDERED SUFFICIENT CAUSE FOR REJECTION. DEFECTS THAT MAY DEVELOP IN SCREWED JOINTS UNDER TEST SHALL BE CORRECTED BY REPLACING THE FITTING OR THREAD OR BOTH. CAULKING OF DEFECTIVE THREADED JOINTS WILL NOT BE PERMITTED.
5. DURING THE TESTING PERIOD, THIS CONTRACTOR SHALL MAINTAIN ON THE JOB A COMPETENT INDIVIDUAL THOROUGHLY FAMILIAR WITH ALL PHASES OF PLUMBING FOR AS LONG AS MAY BE REQUIRED TO THOROUGHLY ADJUST ALL OF THE SYSTEMS AND TO DEMONSTRATE TO THE ARCHITECT THAT THEY ARE FUNCTIONING PROPERLY.
6. ADJUST ALL FLUSH VALVES AND BALANCING VALVES FOR PROPER FLOW.
7. ALL HYDROSTATIC AND/OR AIR TESTS SHALL BE MADE BEFORE PIPING IS CONCEALED OR COVERED. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETELY DRAINING THE SYSTEMS AFTER HYDROSTATIC TESTS ARE PERFORMED. ANY DAMAGE FROM FREEZING PRIOR TO ACCEPTANCE OF THE COMPLETED INSTALLATION SHALL BE REPAIRED AT THE SOLE EXPENSE OF THIS CONTRACTOR.
8. ALL MATERIALS AND INSTALLATIONS UNDER THE PLUMBING SYSTEM SHALL BE INSPECTED BY THE INSPECTOR TO ENSURE COMPLIANCE WITH REQUIREMENTS OF THE PLUMBING CODE.
9. THIS CONTRACTOR SHALL NOTIFY THE PLUMBING INSPECTOR WHENEVER WORK IS READY FOR TEST AND INSPECTION.
10. WHEN WORK FOR THE PLUMBING PERMIT IS ISSUED AND COMPLETED, THIS CONTRACTOR SHALL REQUEST FINAL INSPECTION. SUCH REQUEST SHALL BE MADE BEFORE THE BUILDING IS OCCUPIED OR USED BUT NOT MORE THAN 30 DAYS AFTER COMPLETION OF THE WORK.
11. BEFORE APPROVING THE PLUMBING SYSTEM, THE PLUMBING INSPECTOR MAY REQUIRE THAT THE SYSTEM IN WHOLE OR PART BE TESTED TO PROVE SUFFICIENCY. ALL EQUIPMENT, MATERIAL, POWER AND LABOR NECESSARY FOR INSPECTIONS AND TEST SHALL BE SUPPLIED BY THE PLUMBING CONTRACTOR.
12. ALL PIPING OF PLUMBING SYSTEM SHALL BE TESTED WITH WATER OR AIR PER TESTING SCHEDULE.
   a. DRAINAGE SYSTEM WATER TEST: PROVIDE FITTING AT PROPERTY LINE OR TERMINATION POINT FOR PURPOSE OF TEST PLUG. WATER TEST SHALL BE APPLIED TO ENTIRE SYSTEM OR BY SECTION. WHEN TESTED IN SECTIONS, AT LEAST THE LOWER 20 FEET OF THE NEXT SECTION ABOVE SHALL BE RETESTED SO THAT EVERY SECTION TESTED SHALL HAVE AT LEAST A 20-FOOT HEAD TEST. HOLD WITHOUT PRESSURE LOSS FOR 15 MINUTES.
   b. DRAINAGE SYSTEM AIR TEST - ATTACH AIR APPARATUS TO SUITABLE OPENING, CLOSE ALL OTHER INLETS AND OUTLETS, AND THEN FORCE AIR INTO THE SYSTEM UNTIL THERE IS UNIFORM PRESSURE, SUFFICIENT TO BALANCE A COLUMN OF MERCURY 10" IN HEIGHT OR 5 POUNDS GAUGE PRESSURE ON THE ENTIRE SYSTEM. HOLD WITHOUT PRESSURE LOSS FOR 15 MINUTES.
   c. NO PART OF SYSTEM SHALL BE COVERED BEFORE INSPECTION IS MADE AND APPROVED. IF COVERED BEFORE TEST, CONTRACTOR SHALL PAY FOR COST OF UNCOVERING SO TEST CAN BE MADE AND ACCEPTED.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:
WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER: 44523
EXPIRES 09-22-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	
02-20-25	LANDLORD & BD COMMENTS	1

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
MECHANICAL SPECIFICATIONS

Drawing Number:
M-302

d. DEFECTIVE WORK OR MATERIALS SHALL BE REPLACED AND INSPECTION AND TESTS REPEATED WITHIN THREE DAYS.

13. CERTIFICATES OF APPROVAL OF SATISFACTORY COMPLETION AND FINAL INSPECTION SHALL BE OBTAINED BY THE PLUMBING CONTRACTOR. ONE COPY OF EACH APPROVAL SHALL BE GIVEN TO THE ARCHITECT.
14. DAMAGES WHICH RESULT FROM BREAKAGE OR FAULTY INSTALLATION SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR.
15. AFTER THE SYSTEM HAS BEEN IN SERVICE FOR A TWO-WEEK PERIOD AND AGAIN BEFORE THE SYSTEM IS TURNED OVER TO THE OWNER, ALL DIRT POCKETS, TRAPS, AND STRAINERS SHALL BE CLEANED, REMOVED, AND REINSTALLED.

D. WATER USING EQUIPMENT: ALL WATER USING EQUIPMENT, SUCH AS BUT NOT LIMITED TO, COOLING COILS AND CONVERTORS, SHALL BE BALANCED TO OBTAIN THE REQUIRED WATER PRESSURE DROP AND FLOW. THIS CONTRACTOR SHALL LIST THE FLOW RATE AND REQUIRED PRESSURE DROP AND THE OBSERVED PRESSURE DROP FOR EACH PIECE OF EQUIPMENT.

E. AIR HANDLING EQUIPMENT: FOR EACH PIECE OF AIR HANDLING EQUIPMENT, THIS CONTRACTOR SHALL LIST THE DATA OF THE FAN, MOTOR AND DRIVE AND SHALL OBTAIN BY MEASUREMENT AND FURNISH TO THE ARCHITECT/ENGINEER THE FAN SPEED, MOTOR VOLTAGE, OPERATING AMPS, FOR CFM AND STATIC PRESSURE AS DETERMINED FROM THE MANUFACTURER'S FAN CURVES. THIS CONTRACTOR SHALL ALSO DETERMINE THE FAN CFM BY MEANS OF A VELOCITY TRAVERSE WHICH SHALL BE TAKEN A MINIMUM OF THREE FAN DIAMETERS FROM FAN OUTLET. BEFORE RUNNING ANY TESTS, THE CONTRACTOR SHALL HAVE INSTALLED ALL THE COMPONENTS OF THE SYSTEM AND SHALL ENSURE THE CLEANLINESS OF THE FILTERS.

F. DIFFUSERS, REGISTERS, GRILLES: AFTER COMPLETION OF THE AIR DISTRIBUTION SYSTEMS AND FINAL ADJUSTMENTS, THE CONTRACTOR SHALL ADJUST ALL DAMPERS AND AIR SUPPLY, RETURN AND EXHAUST OUTLETS SO THAT EACH OUTLET HANDLES ITS PROPER QUANTITY OF AIR. SUPPLY REGISTERS AND DIFFUSERS SHALL BE ADJUSTED TO PROVIDE FOR THE PROPER THROW AND A UNIFORM DISTRIBUTION PATTERN.
1. FOR SUPPLY, RETURN AND EXHAUST AIR OUTLETS, THE VELOCITY SHALL BE MEASURED WITH A HEATED WIRE RESISTANCE TYPE ANEMOMETER HELD 1" FROM THE FACE OF THE OUTLETS; THE AIR VELOCITY SHALL BE THE AVERAGE OF VELOCITY READINGS TAKEN AT POINTS NO MORE THAN 6" APART. THE AREA SHALL BE THE NET CORE AREA OF THE OUTLET.
2. TEST READINGS SHALL BE TAKEN FOR EACH REGISTER, GRILLE AND DIFFUSER. FOR EACH OF THESE UNITS, OBTAIN AND FURNISH INFORMATION ON MANUFACTURER, TESTING EQUIPMENT USED, PROCEDURE FOLLOWED, LOCATION, SIZE, AVERAGE, VELOCITY, GROSS AND NET CORE AREAS, OBSERVED CFM AND SPECIFIED CFM. SEPARATE TABULATIONS SHALL BE FURNISHED FOR EACH MANUFACTURER, EACH SYSTEM AND EACH TYPE OF REGISTER, GRILLE AND DIFFUSER.

G. MIXING DAMPERS: MIXING DAMPERS SHALL BE ADJUSTED ON THE BASIS OF THE TEMPERATURE OF THE MIXED OUTSIDE AND RETURN AIRSTREAMS.
1. THE MINIMUM FRESH AIR DAMPER POSITION SHALL BE SET TO OBTAIN A MIXED AIR TEMPERATURE DETERMINED FROM THE FOLLOWING EQUATION:

MIXED AIR TEMPERATURE =

(OUTSIDE AIR TEMP.) X (MIN. PERCENT OUTSIDE AIR) +

(RETURN AIR TEMP.) X (1 - MIN. PERCENT OUTSIDE AIR)

2. PERCENTAGE OF AIR QUANTITY SHALL BE EXPRESSED AS A FRACTION OF THE TOTAL AIR SUPPLY.

H. HOLES IN DUCTS AND CASINGS USED FOR STATIC PRESSURE AND VELOCITY READINGS SHALL BE PROVIDED WITH REMOVABLE CLOSURES.

I. DURING THE TESTING PERIOD, THIS CONTRACTOR SHALL MAINTAIN ON THE JOB A COMPETENT INDIVIDUAL THOROUGHLY FAMILIAR WITH ALL PHASES OF AIR CONDITIONING, INCLUDING REFRIGERATION, TEMPERATURE CONTROL AND DISTRIBUTION, FOR AS LONG A PERIOD AS MAY B REQUIRED TO THOROUGHLY ADJUST ALL OF THE SYSTEMS AND TO DEMONSTRATE TO THE ARCHITECT THAT THEY ARE FUNCTIONING PROPERLY.

J. THE TESTING AND BALANCING ENGINEER SHALL, AS PART OF HIS WORK, PERFORM A "SPOT" RE-CHECK BALANCING CONDITIONS BETWEEN 30 TO 90 DAYS AFTER BOTH SUMMER AND WINTER BALANCING OPERATIONS AT WHICH TIME A REPRESENTATIVE OF THE TEMPERATURE CONTROL MANUFACTURER CAPABLE OF PERFORMING ADJUSTMENTS TO HIS SYSTEM SHALL ACCOMPANY THE BALANCING ENGINEER. THIS OPERATION SHALL INCLUDE A CHECK OF SPACE TEMPERATURE, CALIBRATION OF CONTROLS, PUMP AND FAN PERFORMANCE AND THE NECESSARY ADJUSTMENTS THERETO.

SECTION 200700 - INSULATION

A. GENERAL
1. FURNISH ALL MATERIAL, LABOR AND EQUIPMENT AS REQUIRED TO INSTALL COMPLETE PLUMBING AND HVAC INSULATION AS INDICATED ON MECHANICAL DRAWINGS AND IN THESE SPECIFICATIONS.
2. INSTALL IN FULL ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

B. SCOPE: THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL INSULATION NECESSARY TO THE PROJECT AND IN ACCORDANCE WITH THE FOLLOWING REQUIREMENTS. ALL INSULATION AND ACCESSORIES USED IN AN AIR PLENUM SPACE, AND ALL DUCT COVERING AND LINING, REGARDLESS OF PHYSICAL LOCATION, SHALL HAVE A COMPOSITE (INSULATION, JACKET, AND ADHESIVE) FIRE AND SMOKE HAZARD RATING AS TESTED UNDER PROCEDURE ASTM E-84, NFPA 255 AND UL 723, NOT EXCEEDING A FLAME SPREAD 25 AND SMOKE DEVELOPED 50. ALL OTHER AREAS SHALL HAVE INSULATING MATERIALS AND ACCESSORIES ON PIPES AND VESSELS RATED AT A FLAME SPREAD 25 AND SMOKE DEVELOPED 150 AS TESTED BY THE SAME PROCEDURE. ALL CALCIUM SILICATE SHALL BE ASBESTOS FREE.

C. WORKMANSHIP:
1. ALL INSULATION SHALL BE INSTALLED OVER CLEAN, DRY SURFACES. INSULATION MUST BE DRY AND IN GOOD CONDITION. WET OR DAMAGED INSULATION WILL NOT BE ACCEPTABLE. NO INSULATION SHALL BE APPLIED PRIOR TO PRESSURE TEST COMPLETION OF THE RESPECTIVE PIPING AND/OR DUCT SYSTEM.
2. ALL PIPE INSULATION SHALL BE INSTALLED WITH JOINTS BUTTED FIRMLY TOGETHER. ALL VALVES AND FITTINGS SHALL BE INSULATED USING MITERED SECTIONS OF INSULATION EQUAL IN DENSITY AND THICKNESS TO THE ADJOINING INSULATION, OR WITH AN INSULATION CEMENT EQUAL IN THICKNESS TO THE ADJOINING INSULATION OR PREMOLDED INSULATED FITTINGS. THE INSULATION APPLIED TO THE VALVES AND FITTINGS SHALL BE COVERED WITH THE SAME TYPE OF COVERING AS USED ON THE PIPE INSULATION. NO STAPLES.
3. ALL INSULATION ENDS SHALL BE TAPERED AND SEALED REGARDLESS OF SERVICES.
4. ALL INSULATED, EXPOSED PIPING 8'-0" AND BELOW TO THE FINISHED FLOOR SHALL INCLUDE A 0.020" THICK VINYL JACKET. THIS JACKET IS IN ADDITION TO THE NORMAL FINISH FOR THE RESPECTIVE SERVICE.
5. RIGID DUCT INSULATION SHALL BE IMPALED OVER WELDED PINS AND SECURED WITH WHITE INSULATION CAPS. ALL SEAMS SHALL BE FIRMLY BUTTED AND SEALED WITH WHITE PRESSURE SENSITIVE VAPOR BARRIER TAPE. NO STAPLES.
6. WRAP AROUND DUCT INSULATION SHALL BE APPLIED WITH ALL JOINTS BUTTED FIRMLY TOGETHER. INSULATION SHALL BE CEMENTED TO THE SURFACE WITH FIREPROOF ADHESIVE APPLIED IN 6" WIDE STRIPS ON 12" CENTERS. ALL JOINTS IN THE INSULATION COVERING SHALL BE SEALED WITH ADHESIVE. WHERE DUCTS ARE OVER 24" WIDE, THE DUCTWRAP SHALL BE ADDITIONALLY SECURED TO BOTTOM OF RECTANGULAR OR OVAL DUCTS WITH MECHANICAL FASTENERS ON 16" CENTERS TO PREVENT SAGGING. VAPOR BARRIER SHALL BE LEGIBLY PRINTED BY THE MANUFACTURER TO SHOW NOMINAL THICKNESS AND TYPE OF INSULATION. ALUMINUM CORNER ANGLES SHALL BE USED TO PREVENT OVER COMPRESSING INSULATION DURING INSTALLATION.
7. DUCTLINER INSULATION SHALL BE APPLIED WITH JOINTS PRECOATED WITH ADHESIVE AND BUTTED FIRMLY TOGETHER. LINING SHALL BE CEMENTED TO DUCTWORK WITH A MINIMUM OF 75 PERCENT COVERAGE OF FIRE RESISTANT ADHESIVE. MECHANICAL FASTENERS ON 16" CENTERS AND ADHESIVE SHALL BE USED WHEN DUCT WIDTH EXCEEDS 12" OR WHEN DUCT HEIGHT EXCEEDS 24".
8. ALL DUCTWORK IN THE MECHANICAL ROOMS IS TO BE CONSIDERED AS "EXPOSED DUCTWORK," I.E. SUPPLY, RETURN, RELIEF, AND OUTDOOR AIR.
9. ALL ROUND DIFFUSER DUCT DROPS CONNECTED TO LINED DUCTWORK SHALL BE INSULATED THE SAME AS "DUCTWORK" SCHEDULE NON-LINED.
10. ALL FLEXIBLE ELASTOMERIC INSULATION SHALL HAVE ALL FITTINGS, BUTT ENDS, AND SEAMS SEALED WITH VAPOR BARRIER ADHESIVE.
11. PROVIDE REMOVABLE INSULATION SECTIONS TO COVER PARTS OF EQUIPMENT WHICH MUST BE OPENED PERIODICALLY FOR MAINTENANCE INCLUDING METAL VESSEL COVERS, FASTENERS, FLANGES, CHILLED WATER PUMPS, FRAMES AND ACCESSORIES.
12. REPAIR ALL DAMAGED SECTIONS OF THE EXISTING PIPING AND MECHANICAL INSULATION DAMAGED DURING THIS CONSTRUCTION PERIOD. USE INSULATION OF SAME THICKNESS AS EXISTING INSULATION. INSTALL NEW JACKET LAPPING AND SEAL OVER EXISTING.
13. REPLACE DAMAGED INSULATION WHICH CANNOT BE REPAIRED SATISFACTORILY, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.

D. PLUMBING INSULATION (AS MANUFACTURED BY OWENS CORNING, KNAUF OR SCHULLER)
1. INSULATE ALL ABOVE-GRADE HOT WATER, HOT WATER RETURN AND COLD WATER PIPING WITH 1" THICK MOLDED FIBERGLASS HAVING AN ALL SERVICE JACKET.
2. INSULATE ALL ABOVE-GRADE, HORIZONTAL AIR CONDITIONING CONDENSATE FLOOR DRAINS AND WASTE LINES, OVERFLOW ROOF DRAINS AND PIPING, ROOF DRAINS AND PIPING AND ROOF DRAIN SUMPS WITH 1" THICK MOLDED FIBERGLASS HAVING AN ALL SERVICE JACKET.
3. INCLUDE INSULATION OF FITTINGS AND VALVES. KEEP VAPOR BARRIERS INTACT. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
4. INSULATE ALL EXPOSED WASTE AND WATER SUPPLY PIPING UNDER LAVATORY WITH SAFETY COVERS PER ADA REQUIREMENTS (AS MANUFACTURED BY PLUMBEREX SPECIALTY PRODUCTS, MCGUIRE OR TRUEBRO).

E. HVAC INSULATION (AS MANUFACTURED BY OWENS CORNING, KNAUF)
1. ALL INSULATION TO BE APPLIED IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND COMPLY WITH 25/50 FLAME AND SMOKE HAZARD RATINGS PER ASTM E-84, NFPA 255 AND UL 723.
2. INSULATE ALL SUPPLY, RETURN, OUTSIDE AND EXHAUST AIR DUCTS WITH 3/4" THICK LINED INSULATION OR LESS TO NONE WITH 1-1/2" THICK, 1.5 PCF, R-6, FOIL FACED REINFORCED KRAFT JACKET FIBERGLASS DUCT WRAP FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS. EXPOSED DUCTWORK IN CONDITIONED SPACES WITHOUT CEILINGS SHALL NOT BE INSULATED, UNLESS OTHERWISE NOTED TO BE INSULATED. DUCTWORK IN CEILING PLENUM SPACE SHALL BE INSULATED.
3. INSULATE ALL SUPPLY, RETURN, OUTSIDE AND EXHAUST AIR DUCTS LINED OR NOT LINED LOCATED IN THE ATTIC SPACE WITH 3" THICK, 0.75 PCF NOMINAL DENSITY, R-10, FOIL FACED REINFORCED KRAFT JACKET, FIBERGLASS DUCT WRAP FULLY SECURED TO DUCT. LAP AND TAPE SEAMS AND SECURE TIGHTLY TO THE DUCTS WITH WIRE OR STICK PINS.
4. INSULATE ALL SUPPLY, RETURN, OUTSIDE AND EXHAUST AIR DUCTS LINED OR NOT LINED EXPOSED TO WEATHER OUTSIDE WITH 3" THICK MINERAL-FIBER BOARD, 3 PCF NOMINAL DENSITY, R-13. PROVIDE A VENTURE CLAD INSULATION JACKETING, COLOR AS SELECTED BY ARCHITECT, FIELD-APPLIED JACKET.
5. INSULATE ALL AIR CONDITIONING CONDENSATE DRAIN PIPING WITH 1" THICK MOLDED FIBERGLASS INSULATION, C = 0.22.
6. INSULATE EXHAUST DUCTS FOR KITCHEN HOODS WITH TWO (2) LAYERS OF FIRE RATED 1" THICK INSULATING WOOL RATED FOR 1000 DEGREES F OR FIREMASTER DUCTWRAP AS MANUFACTURED BY 3M FOR A MINIMUM OF 2 HR RATING. PROVIDE REMOVABLE SECTIONS AT DUCT CLEANOUT PANELS.
7. INSULATE ALL SINGLE WALL BOILER BREECHING INSIDE THE BUILDING WITH A 3" TICK CALCIUM SILICATE WITH FIELD APPLIED 8-1/2 OZ. GLASS CLOTH LAGGING WRAP.
8. INSULATE ALL SINGLE WALL HOT WATER FLUES INSIDE THE BUILDING WITH A 2" THICK CALCIUM SILICATE WITH FIELD APPLIED 8-1/2 OZ. GLASS CLOTH LAGGING WRAP.
9. INSULATE ALL HOT WATER TANKS, CONVERTERS, COLD WATER STORAGE TANKS, CHILLED WATER PUMPS AND CHILLED WATER AIR SEPARATORS WITH A 2" THICK FIBERGLASS SERVICE BOARD 6 PCF NOMINAL DENSITY, R-10, WITH FIELD APPLIED 8-1/2 OZ. GLASS CLOTH LAGGING WRAP. DEVICES MAY BE INSULATED WITH 2" THICK FLEXIBLE ELASTOMERIC INSULATION, C = 0.24. ALL COLD WATER DEVICES SHALL HAVE A VAPOR SEAL.
10. INSULATE ALL REFRIGERANT SUCTION AND HOT GAS LINES WITH 1" ELASTOMERIC FOAM INSULATION, C = 0.24 WITH JOINTS AND SEAMS SEALED VAPOR TIGHT. INSULATION OUTSIDE SHALL BE PAINTED WITH TWO COATS OF PROTECTIVE COATINGS PER MANUFACTURER FOR PROTECTION TO WEATHER (AS MANUFACTURED BY AEROFLEX, ARMOCELL, OR K-FLEX).

SECTION 211000 - FIRE PROTECTION SYSTEMS

A. GENERAL
1. FURNISH ALL LABOR, MATERIALS AND EQUIPMENT AS REQUIRED TO INSTALL A COMPLETE FIRE PROTECTION SYSTEM FOR PROJECT.
2. FIELD-VERIFY SIZES AND LOCATION OF EXISTING SPRINKLER PIPING BEFORE FABRICATION OF NEW.
3. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL AND REINSTALLATION OF EXISTING CEILING TILES, AS REQUIRED, FOR THE INSTALLATION OF WORK SHOWN IN AREAS WHERE EXISTING CEILINGS ARE TO REMAIN. SEE ARCHITECTURAL DRAWINGS FOR AREAS WHERE EXISTING CEILINGS ARE TO REMAIN.
4. THIS REMOVAL AND REINSTALLATION OF EXISTING LAY-IN CEILING TILES SHALL BE THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR (UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR) AS REQUIRED TO PERFORM HIS WORK. ANY DAMAGE TO EXISTING CEILING TILES OR SUPPORTS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. CEILING TILES MAY BE LEFT OUT OF THE CEILING AREAS UNDER CONSTRUCTION ONLY IF STORED IN AREAS AS DIRECTED BY THE OWNER SO AS NOT TO HINDER THE DAILY OPERATIONS OF THE BUILDING'S OCCUPATIONS.
5. THIS CONTRACTOR SHALL MODIFY AND RELOCATE SPRINKLER PIPING AND PROVIDE NEW SPRINKLER PIPING AND HEADS, AS REQUIRED, TO ACCOMMODATE NEW MECHANICAL WORK IN FULL COMPLIANCE WITH NFPA 13. THIS CONTRACTOR SHALL ALSO PERFORM HYDRAULIC CALCULATIONS FOR SPRINKLER PIPING IN THE REMODELED AREAS IN ACCORDANCE WITH NFPA 13.

B. DESIGN BASIS
1. DESIGN BASIS FOR SYSTEM SHALL BE PER NFPA 13 (LATEST EDITION) BUILDING CODE REQUIREMENTS, LOCAL WATER DEPARTMENT, LOCAL FIRE DEPARTMENT, STATE FIRE MARSHAL, LOCAL CODE, AND OWNER AND OWNER'S FIRE INSURANCE UNDERWRITER REQUIREMENTS.
2. SYSTEM SHALL BE HYDRAULICALLY CALCULATED AS REQUIRED BY CODE.
3. PIPE SIZES INDICATED ON DRAWING ARE APPROXIMATE AND SHALL BE VERIFIED PER THE CONTRACTOR'S HYDRAULIC CALCULATIONS.

C. DRAWINGS AND CALCULATIONS
1. CONTRACTOR SHALL PREPARE SUBMITTAL DRAWINGS AND HYDRAULIC CALCULATIONS WITH A 10% FACTOR OF SAFETY FOR BUILDING IN ACCORDANCE WITH OWNER'S INSURANCE COMPANY BUILDING DEPARTMENT, AND LOCAL FIRE AUTHORITY REQUIREMENTS, TENANT'S REQUIREMENTS FOR DESIGN DENSITY, WHICHEVER IS MOST STRINGENT.
2. CONTRACTOR SHALL PERFORM A FLOW TEST DATA ON WATER MAIN AND SUBMIT DATA WITH CALCULATIONS.
3. IT IS THE FIRE PROTECTION CONTRACTOR'S RESPONSIBILITY TO VERIFY EACH TENANT'S DESIGN DENSITY WITH AGREED UPON LEASE DOCUMENTATION AND THAT TENANT'S PROTOTYPE OR INSURANCE UNDERWRITERS REQUIREMENTS.
4. PROVIDE WET STANDPIPE SYSTEM FOR PROJECT IN ACCORDANCE WITH NFPA 14 REQUIREMENTS.
5. CONTRACTOR AND DESIGNER SHALL BE STATE CERTIFIED.
6. COORDINATE LAYOUT AND INSTALLATION OF SPRINKLERS WITH DUCTWORK AND EQUIPMENT ABOVE CEILINGS AND OTHER CONSTRUCTION THAT PENETRATES CEILINGS, INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, SPEAKERS, HVAC EQUIPMENT, DOORS AND PARTITION ASSEMBLIES. NO SPRINKLER PIPING SHALL BE ROUTED BENEATH EQUIPMENT ABOVE ANY CEILINGS THAT MUST BE DROPPED DIRECTLY DOWN FOR SERVICE, REPAIR, OR REPLACEMENT.
7. EXAMINE AREAS AND CONDITIONS UNDER WHICH FIRE PROTECTION MATERIALS AND PRODUCTS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER. SCHEDULE ROUGH-IN INSTALLATIONS WITH INSTALLATIONS OF OTHER BUILDING COMPONENTS.
8. SHOP DRAWINGS REVIEW DOES NOT RELIEVE FIRE PROTECTION CONTRACTOR FROM RESPONSIBILITY TO MEET EACH TENANT'S REQUIREMENTS FOR SPRINKLER COVERAGE.
9. FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR VERIFYING ANY HIGH PILE STORAGE REQUIREMENTS OF FUTURE TENANTS AND PROVIDING AN INCOMING SPRINKLER SERVICE SIZE AND RISERS TO MEET THE REQUIREMENTS FOR ADEQUATE SPRINKLER COVERAGE.

D. PIPING
1. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13, 14 (LATEST EDITION) AND LOCAL CODE REQUIREMENTS.
2. FIRE PROTECTION PIPING SHALL BE AS FOLLOWS:
a. BELOW-GRADE OUTSIDE BUILDING - DUCTILE IRON, CEMENT LINED. CLASS OF PIPE AS DIRECTED BY LOCAL WATER PURVEYOR WITH MECHANICAL OR PUSH-ON TYPE JOINTS.
b. INSIDE BUILDING - PIPE AND TUBING SHALL BE STEEL OR COPPER IN ACCORDANCE WITH NFPA REQUIREMENTS.
c. PIPING SHALL MATCH EXISTING BUILDING STANDARDS.
d. CONTRACTOR SHALL ARRANGE WITH OWNER AND INSURANCE UNDERWRITER PRIOR TO SHUT DOWN OF EXISTING SYSTEMS.
e. FLUSH ALL PIPING UPON COMPLETION OF PROJECT AND TEST PER NFPA REQUIREMENTS.
f. NO PIPING SHALL BE INSTALLED AT LOCATIONS SUBJECT TO FREEZING.
3. EXCAVATION AND BACKFILL - SEE SECTION 200510, BASIC MATERIALS AND METHODS.

E. SPRINKLER HEADS
1. SPRINKLER HEADS SHALL BE UL LISTED, MATCH EXISTING BUILDING STANDARDS AND BE MANUFACTURED BY CENTRAL, STAR OR VIKING.
2. SPRINKLER HEADS SHALL BE AS FOLLOWS:
a. AREAS WITH EXPOSED STRUCTURE
3. UPRIGHT - ROUGH BRASS.
b. AREAS WITH CEILINGS
4. RECESSED PENDENT - CHROME PLATED WITH MATCHING TWO (2) PIECE, FLUSH ESCUTCHEON.
5. CONCEALED - BRASS FINISH WITH OFF-WHITE CEILING COVER PLATE.
6. SIDEWALL - CHROME PLATED WITH OFF-WHITE, TWO (2) PIECE, SEMI-RECESSED ESCUTCHEON.
7. INSTALL CONCEALED HEADS WITH WHITE FLUSH MOUNTED COVER PLATE IN (SALES AREA).
8. INSTALL HIGHER TEMPERATURE SPRINKLER HEADS WHERE REQUIRED BY CODE OR APPLICATION.
9. SPRINKLER HEADS SHALL BE LOCATED IN THE CENTER OF CEILING TILES OR THE CENTER OF AN AREA OF A 24" X 24" TILE SECTION. SEE ARCHITECTURAL REFLECTED CEILING PLANS.
10. SUBMIT SAMPLES OF SPRINKLER HEADS TO ARCHITECT PRIOR TO FABRICATION OF ANY PIPING.
11. INSTALL INSPECTOR'S TEST CONNECTION WITH VALVE AND TERMINATE DRAIN THROUGH EXTERIOR WALL WITH TEXT FITTING AND SPLASH BLOCK.

F. VALVES
1. INSTALL ALL VALVES AS REQUIRED BY NFPA 13, UL OR FM LISTED AND AS MANUFACTURED BY GRINNELL, HAMMOND OR MILWAUKEE.
2. ALL SHUT-OFF VALVES SHALL BE FITTED WITH TAMPER SWITCHES BY FIRE PROTECTION CONTRACTOR AND WIRED BY ELECTRICAL CONTRACTOR. TAMPER SWITCHES SHALL BE AS MANUFACTURED BY NOTIFIER, POTTER OR VIKING.
3. INSTALL FLOW SWITCH IN RISER AS MANUFACTURED BY NOTIFIER, POTTER OR VIKING AND WIRED BY ELECTRICAL CONTRACTOR.
4. INSTALL UL LISTED ALARM CHECK VALVE WITH ALL REQUIRED TRIM, INCLUDING WATER MOTOR ALARM BELL AND DRAINS AS MANUFACTURED BY CENTRAL STAR OR VIKING.
5. INSTALL WALL MOUNTED INDICATOR VALVE AS MANUFACTURED BY POTTER ROEMER, CROKER OR ELKHART AND APPROVED BY LOCAL AUTHORITIES.
6. INSTALL DOUBLE CHECK DETECTOR ASSEMBLY BACKFLOW PREVENTER, AS REQUIRED BY LOCAL WATER PURVEYOR AND AS MANUFACTURED BY WATTS, ZURN OR CONBRACO.

G. FIRE DEPARTMENT CONNECTION
1. WALL TYPE SIAMESE CONNECTIONS SHOULD BE POLISHED CAST BRASS WALL TYPE WITH WALL ESCUTCHEON AND TWO-WAY CONNECTIONS. CONNECTION SIZES SHALL BE 4" OUTLET AND TWO - 2-1/2" FEMALE INLETS, HAVING NH (STORZ) STANDARD THREADS FOR THE CONNECTION SIZE INDICATED AS SPECIFIED IN NFPA. . PROVIDE THE QUANTITY, SIZE AND TYPE OF CONNECTIONS AS REQUIRED BY THE LOCAL FIRE DEPARTMENT. EACH INLET SHALL HAVE A CLAPPER VALVE AND PLUG AND CHAIN. EACH INLET SHALL HAVE AN ESCUTCHEON OF CAST BRASS, FINISH TO MATCH CONNECTIONS, WITH WORDS "AUTO SPKR - FIRE DEPT. CONNECTION" IN RAISED LETTERS.
2. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE WALL TYPE SIAMESE CONNECTION OF ONE OF THE FOLLOWING:
a. POTTER-ROEMER
b. GUARDIAN FIRE EQUIPMENT, INC.
c. CROKER
d. ELKHART

H. EXTRA MATERIALS
1. VALVE WRENCHES: FURNISH TO OWNER, 2 VALVE WRENCHES FOR EACH TYPE OF SPRINKLER HEAD INSTALLED.
2. SPRINKLER HEADS AND CABINETS: FURNISH 2 EXTRA SPRINKLER HEADS OF EACH STYLE INCLUDED IN THE PROJECT. FURNISH EACH STYLE WITH ITS OWN SPRINKLER HEAD CABINET AND SPECIAL WRENCHES.
3. OBTAIN RECEIPT FROM OWNER THAT EXTRA STOCK HAS BEEN RECEIVED AND GIVE ARCHITECT A COPY OF THIS RECEIPT.

SECTION 224000 - PLUMBING FIXTURES AND EQUIPMENT

A. GENERAL
1. FURNISH ALL FIXTURES AND EQUIPMENT INDICATED AND SCHEDULED ON DRAWINGS, COMPLETE WITH ALL ACCESSORIES, CONTROLS, ETC., AS REQUIRED.
2. PROVIDE FACTORY-FABRICATED FIXTURES OF TYPE, STYLE AND MATERIAL INDICATED. FOR EACH TYPE FIXTURE, PROVIDE FIXTURE MANUFACTURER'S STANDARD TRIM, CARRIER, SEATS AND VALVES AS SHOWN BY THEIR PUBLISHED PRODUCT INFORMATION AND INDICATED IN THE PLUMBING FIXTURES SCHEDULE; EITHER AS DESIGNED AND CONSTRUCTED OR AS RECOMMENDED BY MANUFACTURER AND AS REQUIRED FOR COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE IS INDICATED, SELECTION IS INSTALLER'S OPTION, BUT ALL FIXTURES OF SAME TYPE MUST BE FURNISHED BY SINGLE MANUFACTURER. WHERE TYPE IS NOT OTHERWISE INDICATED, PROVIDE FIXTURES COMPLYING WITH GOVERNING REGULATIONS.
3. WHERE FITTINGS, TRIM AND ACCESSORIES ARE EXPOSED OR SEMI-EXPOSED, PROVIDE BRIGHT CHROME-PLATED OR POLISHED STAINLESS STEEL UNITS. PROVIDE COPPER OR BRASS WHERE NOT EXPOSED.
4. WATER OUTLETS: AT LOCATIONS WHERE WATER IS SUPPLIED (BY MANUAL, AUTOMATIC OR REMOTE CONTROL), PROVIDE COMMERCIAL QUALITY FAUCETS, VALVES OR DISPENSING DEVICES OF TYPE AND SIZE INDICATED AND AS REQUIRED TO OPERATE AS INDICATED. INCLUDE MANUAL SHUT-OFF VALVES AND CONNECTING STEM PIPES TO PERMIT OUTLET SERVICING WITHOUT SHUT-DOWN OF WATER SUPPLY PIPING SYSTEMS.
5. VACUUM BREAKERS: PROVIDE WITH FLUSH VALVES WHERE REQUIRED BY GOVERNING REGULATIONS, INCLUDING LOCATIONS WHERE WATER OUTLETS ARE EQUIPPED FOR HOSE ATTACHMENT.
6. WATER HAMMER ARRESTORS: PROVIDE WATER HAMMER ARRESTORS WHERE SHOWN ON THE DRAWINGS AND AS REQUIRED TO PREVENT WATER HAMMER AND EXCESSIVE VIBRATION IN THE DOMESTIC WATER SYSTEM. ARRESTORS TO BE OF SIZE INDICATED OR AS RECOMMENDED BY THE MANUFACTURER.
7. P-TRAPS: INCLUDE REMOVABLE P-TRAPS (WITH CLEAN OUT PLUG) WHERE DRAINS ARE INDICATED FOR DIRECT CONNECTION TO DRAINAGE SYSTEM.
8. CARRIERS: PROVIDE CAST IRON SUPPORTS FOR FIXTURES OF EITHER GRAPHITIC GRAY IRON, DUCTILE IRON OR MALLEABLE IRON AS INDICATED.
9. FIXTURE BOLT CAPS: PROVIDE MANUFACTURER'S STANDARD EXPOSED FIXTURE BOLT CAPS FINISHED TO MATCH FIXTURE FINISH.
10. ESCUTCHEONS: WHERE FIXTURE SUPPLIES AND DRAINS PENETRATE WALLS IN EXPOSED LOCATIONS, PROVIDE CHROME-PLATED SHEET STEEL ESCUTCHEONS WITH FRICTION SLIPS.
11. AERATORS: PROVIDE AERATORS OF TYPES APPROVED BY HEALTH DEPARTMENT HAVING JURISDICTION.
12. COMPLY WITH ADDITIONAL FIXTURE REQUIREMENTS CONTAINED IN FIXTURE SCHEDULE ON DRAWINGS.

B. BACKFLOW PREVENTER (IF REQUIRED)
1. PROVIDE REDUCED PRESSURE BACKFLOW PREVENTER CONSISTING OF ASSEMBLY INCLUDING ABUTTING SHUTOFF VALVES ON INLET AND OUTLET, AND DISCHARGE FUNNEL. BACKFLOW PREVENTER SHALL INCLUDE A MINIMUM OF FOUR (4) TEST COCKS AND PRESSURE-DIFFERENTIAL RELIEF VALVE LOCATED BETWEEN TWO (2) POSITIVE SEATING CHECK VALVES. BACKFLOW PREVENTER AND SHUTOFF VALVES SHALL BE THE SAME SIZE AS THE UPSTREAM PIPE.
2. BACKFLOW PREVENTERS SIZES 2" AND SMALLER SHALL HAVE NPT CONNECTIONS, BE OF BRONZE BODY CONSTRUCTION WITH BRONZE BALL TYPE SHUT-OFF VALVES AS SPECIFIED IN SECTION 15100 AND TEST COCK AND BRONZE BODY RELIEF VALVES WITH STAINLESS STEEL TRIM.
3. BACKFLOW PREVENTERS SIZES 2-1/2" AND LARGER SHALL HAVE FLANGED CONNECTIONS, BE OF EPOXY COATED CAST OR DUCTILE IRON BODY CONSTRUCTION WITH BRONZE TRIM, RESILIENT SEAT OS&Y SHUT-OFF GATE VALVES, EPOXY COATED RELIEF VALVE WITH STAINLESS STEEL TRIM AND BRONZE BODY-BALL VALVE TEST COCKS.
4. COMPLETE BACKFLOW PREVENTER ASSEMBLY SHALL BE RATED TO 150 PSI WORKING PRESSURE AND WATER TEMPERATURE RANGE FROM 32º F TO 140º F.
5. PROVIDE EACH BACKFLOW PREVENTER WITH A DRAIN FUNNEL FURNISHED BY THE MANUFACTURER. EXTEND DRAIN FROM FUNNEL TO NEAREST FLOOR DRAIN.
6. BACKFLOW DEVICES MUST MEET ASSE STANDARDS 1013, 1015 AND 1020 AND SHALL BE TESTED AT THE TIME OF INSTALLATION BY A PERSON CERTIFIED BY THE OHIO DEPARTMENT OF HEALTH. THE PLUMBING CONTRACTOR SHALL PAY FOR ALL COSTS ASSOCIATED WITH THIS TEST.
7. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE BACKFLOW PREVENTERS OF ONE OF THE FOLLOWING:
a. CLA-VAL COMPANY
b. CONBRACO INDUSTRIES, INC.
c. FEBCO SALES, INC., SUB. OF CHARLES M. BAILEY CO., INC.
d. HERSEY PRODUCTS, INC.
e. WATTS REGULATOR COMPANY

SECTION 230900 - INSTRUMENTATION AND CONTROLS

GENERAL
1. FURNISH AND INSTALL COMPLETE TEMPERATURE CONTROL FOR ALL HVAC SYSTEMS.
2. PROVIDE NEW CONTROL DEVICES INCLUDING THERMOSTATS, HUMIDISTATS, DAMPER OPERATORS, MOTORS, TEMPERATURE SENSORS, STAGING RELAYS, AND OTHER RELATED DEVICES FOR A COMPLETE OPERATIONAL SYSTEM PER THE OPERATING SEQUENCE AND INDUSTRY STANDARDS.
3. MOUNT ALL CONTROLS FURNISHED AS ACCESSORIES TO EQUIPMENT AND PROVIDE ALL CONTROL WIRING REQUIRED FOR PROPER OPERATION. ALL WIRING SHALL BE IN CONDUIT PER N.E.C. AND LOCAL CODE REQUIREMENTS.
4. MECHANICAL CONTRACTOR SHALL INSTALL ALL DUCT-MOUNTED SMOKE DETECTORS. ELECTRICAL CONTRACTOR SHALL FURNISH AND WIRE PHOTO-ELECTRIC DUCT SMOKE DETECTORS AT EACH UNIT TO SHUT DOWN FAN UPON ACTIVATION. DETECTOR SHALL BE LOCATED IN THE SUPPLY/RETURN AIR DUCT DOWNSTREAM/UPSTREAM OF THE UNIT CONNECTION. DETECTOR WILL HAVE MANUAL RESET AND WILL ACTIVATE A LOCAL ALARM PANEL.

SECTION 233000 - AIR DISTRIBUTION SYSTEMS

A. GENERAL
1. FURNISH ALL MATERIALS, LABOR, EQUIPMENT AND ACCESSORIES REQUIRED TO INSTALL COMPLETE AIR DISTRIBUTION SYSTEMS.
2. CONTRACTORS BIDDING THIS PROJECT SHALL VISIT THIS SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITION AFFECTING THEIR WORK. SUBMISSION OF A BID ON THIS PROJECT SHALL BE CONSTRUED AS HAVING SUCH KNOWLEDGE.
3. VERIFY EXACT CONDITIONS IN FIELD AND COORDINATE WITH THESE DRAWINGS AND OTHER TRADES BEFORE BEGINNING NEW WORK.
4. DETERMINE EXACT LOCATIONS FOR ALL NEW AND RELOCATED DUCTWORK AND ACCESSORIES IN FIELD.
5. COORDINATE WORK OF THIS CONTRACT WITH OTHER TRADES.
6. ANY DISCREPANCIES BETWEEN WHAT IS SHOWN ON DRAWINGS OR SPECIFIED AND THE ACTUAL CONDITIONS IN THE FIELD SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING.
7. BUILDING AND SURFACES DAMAGED DURING INSTALLATION SHALL BE REPAIRED, REPLACED, AND/OR RESTORED TO ORIGINAL CONDITION AFTER COMPLETION OF WORK AND BEFORE ACCEPTANCE BY OWNER.
8. THIS CONTRACTOR IS ALSO REFERRED TO THE APPROPRIATE MECHANICAL AND PLUMBING SPECIFICATION SECTIONS THE ITEMS OF EQUIPMENT TO BE BID AS A PART OF THIS PROJECT.

B. DUCTWORK
1. FABRICATE AND ERECT ALL DUCTWORK TO ASHRAE AND SMACNA STANDARDS FROM GALVANIZED STEEL. COMPLY WITH NFPA 90A REQUIREMENTS.
2. DUCTWORK SHALL BE SMACNA LOW PRESSURE CONSTRUCTION 2" STATIC PRESSURE RATING WITH SEAL CLASS B SEAMS AND JOINTS, UNLESS OTHERWISE NOTED.
3. INCLUDE ALL ACOUSTIC, AIRFOIL SHAPED PERFORATED ALUMINUM TURNING VANES, MANUAL DAMPERS, FLEXIBLE CONNECTORS, GRILLES AND DIFFUSERS, ACOUSTIC LINING, AND OTHER SHEET METAL ACCESSORIES FOR THE PROJECT.
4. CHANGES IN DIRECTION, IN LOW VELOCITY SUPPLY AIR RECTANGULAR DUCTWORK, SHALL BE MADE WITH FULL RADIUS ELBOWS WITH RADIUS EQUAL TO 1_1/2 TIMES THE HORIZONTAL WIDTH OF THE DUCT, OR WITH SQUARE ELBOWS WITH TURNING VANES. TURNING VANES SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE SURROUNDING DUCTWORK AND TWO (2) GAUGE NUMBERS HEAVIER.
5. FURNISH AND INSTALL ALL MANUAL BALANCING DAMPERS, SPLITTER DAMPERS, EXTRACTORS, AND DEFLECTORS REQUIRED TO PROPERLY DISTRIBUTE THE AIR. ALL DAMPERS, EXTRACTORS AND DEFLECTORS SHALL BE CONSTRUCTED OF THE SAME MATERIAL AS THE SURROUNDING DUCTWORK, UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL MANUAL BALANCING DAMPERS SHALL BE THE OPPOSED BLADE TYPE.
6. FURNISH AND INSTALL ALL AUTOMATIC CONTROL DAMPERS UNLESS NOTED OTHERWISE ON THE DRAWINGS, ALL CONTROL DAMPERS SHALL BE OPPOSED BLADE TYPE AND SHALL HAVE LEAKAGE OF LESS THAN 1 PERCENT WHEN CLOSING AGAINST 4" WATER COLUMN STATIC PRESSURE AND WHEN SIZED FOR 2000 FPM VELOCITY.
7. ALL MANUAL BALANCING DAMPERS, SPLITTER DAMPERS, EXTRACTORS AND DEFLECTORS SHALL BE CONTROLLED BY YOUNG NO. 1 OR VENTLOCK NO. 688 REGULATORS. IF DUCTWORK IS ACCESSIBLE, MOUNT THE REGULATOR ON THE DUCTWORK. IF DUCTWORK WILL BE INACCESSIBLE AFTER THE INSTALLATION OF THE CEILING OR WALLS, MOUNT THE REGULATOR IN A STEEL, FLUSH MOUNTED BOX SPECIFICALLY DESIGNED FOR THIS PURPOSE. PROVIDE ALL LINKAGE, TOP BEARINGS AND/OR GEAR DRIVES REQUIRED FOR THE REMOTE INSTALLATION OF THE REGULATOR.
8. ALL BRANCH CONNECTION FITTINGS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE TRANSITION TYPE, CONICAL FITTINGS OR SPIN-IN FITTINGS WITH INTEGRAL AIR SCOOPS. BUTT FITTINGS ARE NOT ACCEPTABLE.
9. EXHAUST DUCT OUTLETS SHALL BE INSTALLED A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
10. ALL EXPOSED ROUND DUCTWORK SHALL BE SPIRAL SEAM DUCTWORK AND PAINTED A COLOR AS SELECTED BY THE ARCHITECT.

C. DRAIN PANS
1. INSTALL 2" DEEP SECONDARY DRAIN PAN BELOW ALL FURNACES, HOT WATER GENERATORS, AND DOMESTIC WATER HEATERS. PIPE 3/4" DRAIN TO FLOOR DRAIN INDEPENDENTLY OFF ALL THE OTHER DRAINS.

D. DUCT LINER
1. ACOUSTIC LINE ALL RECTANGULAR DUCTS INDICATED ON DRAWINGS WITH 1" THICK NON-FLAKING, COATED MEDIUM DENSITY LINER, APPLY TO MANUFACTURER'S RECOMMENDATIONS.
2. DUCT DIMENSIONS INDICATED ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS (FREE AREA).
3. DUCT LINER SHALL COMPLY WITH NFPA 90A AND 90B (LATEST EDITION) REQUIREMENTS.

E. DUCT ACCESSORIES
1. FLEXIBLE DUCTWORK (AS MANUFACTURED BY CLEVAFLEX, FLEXMASTER OR WIREMOLD).
a. FLEXIBLE DUCTS SHALL BE INDEPENDENTLY SUPPORTED FROM THE STRUCTURE AND CONNECTED WITH PLASTIC DRAW BANDS AND TIGHTENED. FLEXIBLE DUCTS SHALL BE LIMITED TO 48" MAXIMUM STRAIGHT LENGTH. FLEXIBLE DUCTS SHALL BE CONSTRUCTED OF 1 1/2" INSULATION WITH VINYL VAPOR BARRIER JACKET AND RATED AT 10" W.C. FOR SIZES THOUGH 12", UL LISTED, AND MEET 25/50 FLAME AND SMOKE TEST. FLEXIBLE DUCTS ARE NOT PERMITTED IN ROOMS WITHOUT CEILING.
2. DAMPERS (AS MANUFACTURED BY RUSKIN, NAILOR OR SAFE-AIR)
a. FABRICATE IN ACCORDANCE WITH SMACNA STANDARDS. PROVIDE END BEARINGS AND LOCKING, INDICATING QUADRANT REGULATORS. BLADE TO BE SINGLE THICKNESS WITH CONTINUOUS HINGE OR ROD.
3. CONTROL DAMPERS (AS MANUFACTURED BY RUSKIN, NAILOR OR SAFE-AIR)
a. FABRICATE BLADE OF DOUBLE THICKNESS SHEET METAL, OPPOSED BLADE TYPE WITH SELF-ALIGNING ROD AND END BEARING SUITABLE FOR USE WITH AN ACTUATOR.
4. BACKDRAFT DAMPERS (AS MANUFACTURED BY RUSKIN, NAILOR OR SAFE-AIR)
a. MULTIPLE BLADE, PARALLEL TYPE DAMPER CONSTRUCTED OF GALVANIZED STEEL WITH FELT OR FLEXIBLE VINYL SEALED EDGES, BALL BEARINGS, PIVOT PIN AND ADJUSTMENT DEVICE FOR VARYING PRESSURES.
5. FIRE DAMPERS (AS MANUFACTURED BY RUSKIN, NAILOR OR SAFE-AIR)
a. FABRICATE IN ACCORDANCE WITH NFPA 90A AND UL555. DAMPERS SHALL BE SUITABLE FOR USE IN THE VERTICAL OR HORIZONTAL POSITION AS INDICATED ON THE DRAWINGS, BE TYPE 'B' WITH BLADES OUT OF AIRSTREAM, AND BE RATED FOR 1-1/2 HOURS MINIMUM (UNLESS NOTED OTHERWISE).
b. PROVIDE DUCT MOUNTED ACCESS DOORS AT ALL FIRE DAMPER LOCATIONS.
6. ACCESS DOORS (AS MANUFACTURED BY RUSKIN, NAILOR OR SAFE-AIR)
a. FABRICATE IN ACCORDANCE WITH SMACNA STANDARDS. DOORS TO BE FABRICATED OF GALVANIZED STEEL WITH SEALING GASKET AND QUICK LOCKING DEVICE.
b. FOR INSULATED DUCTWORK, DOORS SHALL HAVE MINIMUM 1" INSULATION WITH SHEET METAL COVER.

F. HIGH EFFICIENT BOILERS AND DOMESTIC WATER HEATERS SHALL HAVE STAINLESS STEEL OR PVC COMBUSTION AIR INTAKES AND FLUE GAS OUTLETS AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

G. DOMESTIC WATER HEATER FLUES SHALL CONFORM TO THE SPECIFICATION FOR LOW PRESSURE DUCTWORK.

H. ALL GRILLES, REGISTERS, DIFFUSERS AND LOUVERS SHALL BE OF THE SIZES, TYPE, ETC., AS SHOWN ON THE PLAN AND SCHEDULES.

I. GRILLES, REGISTERS, LOUVERS AND DIFFUSERS AS MANUFACTURED BY KRUEGER, ANEMOSTAT OR TITUS COMPANY WILL BE CONSIDERED PROVIDED DIMENSIONS, CAPACITIES, CONSTRUCTION AND SOUND CHARACTERISTICS ARE COMPATIBLE AND SO SHOWN BY SHOP DRAWINGS AND PERFORMANCE SPECIFICATIONS. ALL GRILLES, REGISTERS AND DIFFUSERS SHALL BE FINISHED A COLOR AS SELECTED BY THE ARCHITECT.

J. FURNISH AND INSTALL, AS SHOWN ON THE DRAWINGS AND SCHEDULE, THE CENTRIFUGAL ROOF EXHAUST FANS. THE FAN WHEELS, HOUSING AND CURB CAPS SHALL BE CONSTRUCTED OF ALUMINUM. THE FANS SHALL BE COMPLETE WITH BIRD SCREENS, DISCONNECT SWITCHES, BACKDRAFT DAMPERS AND PREFABRICATED CURBS. THE PREFABRICATED CURBS SHALL BE CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL WITH BUILT_IN CANT AND WOOD NAILER STRIP AT TOP OF CURB.

K. FURNISH AND INSTALL THE INTAKE AND RELIEF VENTS AS SHOWN ON THE DRAWINGS AND SCHEDULE. THESE VENTS SHALL BE CONSTRUCTED OF ALUMINUM. EACH RELIEF VENT SHALL BE COMPLETE WITH BIRD SCREEN, BACKDRAFT DAMPER AND PREFABRICATED CURB.

L. CENTRIFUGAL ROOF EXHAUST FANS, INTAKE, AND RELIEF VENTS AS MANUFACTURED BY LOREN COOK OR GREENHECK WILL BE CONSIDERED PROVIDED SIZE, PERFORMANCE RATINGS AND DIMENSIONS ARE COMPATIBLE AND SO SHOWN BY SHOP DRAWINGS AND PERFORMANCE SPECIFICATIONS.

M. ROOF MOUNTED EQUIPMENT SHALL BE SUPPORTED USING PATE CURBS.

SECTION 235000 - HEAT GENERATION EQUIPMENT

A. GENERAL
1. FURNISH ALL MATERIAL, LABOR, EQUIPMENT, AND ACCESSORIES AS REQUIRED TO INSTALL EQUIPMENT AS INDICATED ON MECHANICAL DRAWINGS.
2. INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, OTHER SPECIFICATION SECTION REQUIREMENTS, AND MANUFACTURER RECOMMENDATIONS.

B. SEE EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS.

SECTION 236000 - REFRIGERATION EQUIPMENT

A. GENERAL
1. FURNISH ALL MATERIAL, LABOR, EQUIPMENT, AND ACCESSORIES AS REQUIRED TO INSTALL EQUIPMENT AS INDICATED ON MECHANICAL DRAWINGS.
2. INSTALL IN FULL ACCORDANCE WITH LOCAL CODE REQUIREMENTS, OTHER SPECIFICATION SECTION REQUIREMENTS, AND MANUFACTURER RECOMMENDATIONS.

B. SEE EQUIPMENT SCHEDULES ON MECHANICAL DRAWINGS.

SECTION 237000 - HVAC SYSTEMS AND EQUIPMENT

A. GENERAL
1. FURNISH ALL EQUIPMENT, MATERIAL, LABOR, TOOLS, ETC., FOR THE COMPLETE HVAC SYSTEM. INSTALL COMPLETE AND PLACE IN OPERATION.
2. CONTRACTORS BIDDING THIS PROJECT SHALL VISIT THIS SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THEIR WORK. SUBMISSION OF A BID ON THIS PROJECT SHALL BE CONSTRUED AS HAVING SUCH KNOWLEDGE.
3. VERIFY EXACT CONDITIONS IN FIELD AND COORDINATE WITH THESE DRAWINGS AND OTHER TRADES BEFORE BEGINNING NEW WORK.
4. DETERMINE EXACT LOCATIONS FOR ALL NEW AND RELOCATED EQUIPMENT, PIPING, CONDUITS AND DUCTWORK IN FIELD.
5. COORDINATE WORK OF THIS CONTRACT WITH OTHER TRADES. CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT. ARCHITECT'S RESOLUTION TO CONFLICTS SHALL BE FINAL.
6. ANY DISCREPANCIES BETWEEN WHAT IS SHOWN ON DRAWINGS OR SPECIFIED AND THE ACTUAL CONDITIONS IN THE FIELD SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING.
7. BUILDING AND SURFACES DAMAGED DURING INSTALLATION SHALL BE REPAIRED, REPLACED, AND/OR RESTORED TO ORIGINAL CONDITION AFTER COMPLETION OF WORK AND BEFORE ACCEPTANCE BY OWNER.

B. EQUIPMENT
1. MECHANICAL CONTRACTOR TO FURNISH ALL HVAC EQUIPMENT INDICATED AND/OR SCHEDULED ON THE DRAWINGS COMPLETE WITH BASES, ISOLATORS, SUPPORTS AND OTHER REQUIRED ACCESSORIES.
2. INSTALL COMPLETE AND PLACE IN PROPER OPERATION PER MANUFACTURER'S RECOMMENDATIONS, LUBRICATE AND ADJUST AS REQUIRED. FURNISH AND INSTALL CLEAN SET OF FILTERS PRIOR TO BALANCING.
3. EQUIPMENT TO BE MAKE AND MODEL AS SCHEDULED UNLESS ALTERNATE EQUIPMENT OF EQUIVALENT QUALITY AND PERFORMANCE IS SUBMITTED AS A SUBSTITUTION PRIOR TO BIDDING. ALL SUBSTITUTIONS ARE SUBJECT TO ACCEPTANCE WITHOUT QUALIFICATION BY OWNER, ENGINEER AND ARCHITECT.
4. CONTRACTOR SHALL PERFORM ROUTINE SERVICE INSPECTION OF ALL EXISTING HVAC EQUIPMENT TO REMAIN. LUBRICATE BEARING, SERVICE CONTROL SYSTEMS, REPLACE FAN BELTS AND INSTALL NEW FILTERS IN EACH ROOFTOP UNIT.
5. CONTRACTOR SHALL FIELD VERIFY REFRIGERANT CHARGE AND ADD REFRIGERANT IF THE CHARGE IS LESS THAN MANUFACTURER'S SPECIFICATIONS.
6. SUBMIT SERVICE REPORT TO ANY MAJOR COMPONENT FAILURES OR MALFUNCTIONS. REPORT SHALL INCLUDE COST TO SERVICE ALL MALFUNCTIONING OR DAMAGED ITEMS LISTED. COST SHALL INCLUDE PARTS AND LABOR. EQUIPMENT SHALL BE PLACED IN FULL OPERATION WITH CONTROLS CALIBRATED UPON COMPLETION OF PROJECT.

Sequence of Operations

WATER HEATERS

1. DOMESTIC HOT WATER
a. A SENSOR WITH ITS BULB LOCATED IN THE HOT WATER STORAGE TANK SHALL, THROUGH A DDC CONTROLLER, MODULATE A TWO (2) WAY STEAM SUPPLY VALVE TO MAINTAIN 120 DEG F (ADJUSTABLE) IN THE TANK. A SECOND SENSOR LOCATED IN THE STORAGE TANK SHALL, THROUGH THE DDC CONTROLLER, CLOSE A TWO (2) POSITION REDUNDANT STEAM SUPPLY VALVE IF THE TEMPERATURE IN THE TANK EXCEEDS 140 DEG F (ADJUSTABLE).
b. ALARMS SHALL BE PROVIDED AT THE DDC CONTROLLER FOR HIGH OR LOW WATER TEMPERATURE.

A. EXISTING ROOFTOP UNITS

1. EXISTING GAS FIRED ROOFTOP UNIT - CONSTANT VOLUME
a. LIGHTSTAT COMPATIBLE PROGRAMMABLE THERMOSTAT SHALL SEQUENCE HEATING AND COOLING. PROVIDE WITH SUB-BASE TO MANUALLY SELECT HEATING, COOLING, FAN ON-OFF, AUTO OPERATION.
b. UNIT SHALL OPERATE IN OCCUPIED OR UNOCCUPIED MODES BASED UPON LIGHTSTAT SCHEDULING SEQUENCE AS DETERMINED BY OWNER.
c. UNOCCUPIED MODE - THE SUPPLY FAN WILL BE OFF, THE ENERGY RECOVERY VENTILATOR (ERV) WILL GO TO 100% CLOSED POSITION AND UNIT WILL CYCLE ON WITH A CALL FOR HEATING OR COOLING. DURING THE UNOCCUPIED MODE, RTU SHALL REMAIN OFF DURING THE COOLING SEASON; DURING THE HEATING SEASON, RTU SHALL CYCLE ON WITH OUTSIDE AIR DAMPERS REMAINING CLOSED TO MAINTAIN A SPACE SET-BACK TEMPERATURE OF 60 DEG F (ADJUSTABLE) AS SENSED BY A NIGHT SETBACK SPACE TEMPERATURE SENSOR.
d. OCCUPIED MODE - THE SUPPLY FAN SHALL RUN CONTINUOUSLY, THE ENERGY RECOVERTY VENTILATOR (ERV) WILL MODULATE TO THE REQUIRED POSITION BASED ON VENTILATION SEQUENCING AND THE UNIT WILL GO INTO THE HEATING AND COOLING MODE BASED UPON ROOM THERMOSTAT SETPOINTS.
1) UPON A CALL FOR HEATING, THE GAS BURNER SHALL FIRE. STAGE 1 HEATING SHALL BE ENABLED WHEN THE ZONE TEMPERATURE DROPS 1.5 DEGREE (ADJUSTABLE) BELOW SETPOINT. STAGE 2 HEATING SHALL BE ENABLED WHEN THE ZONE TEMPERATURE DROPS 3 DEGREES (ADJUSTABLE) BELOW SETPOINT.
2) UPON A CALL FOR COOLING, THE STAGE 1 COMPRESSOR SHALL ENERGIZE. STAGE 1 COOLING SHALL BE ENABLED WHEN THE ZONE TEMPERATURE RISES 1.5 DEGREE (ADJUSTABLE) ABOVE SETPOINT. STAGE 2 COOLING SHALL BE ENABLED WHEN THE ZONE TEMPERATURE RISES 3 DEGREES (ADJUSTABLE) ABOVE SETPOINT.
e. ENTHALPY ECONOMIZER
1) THE ECONOMIZER SHALL BE ENABLED WHENEVER:
THE OUTSIDE AIR DRY-BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY-BULB TEMPERATURE AND THE FAN STATUS IS ON.
2) WHEN THE OUTSIDE AIR DEW POINT IS LESS THAN THE RETURN AIR DEW POINT BY AN ADJUSTABLE DEAD BAND (3 DEG F), THE ENERGY RECOVERY VENTILATOR (ERV) SHALL BE SET FOR 100% OUTDOOR AIR.
3) WHEN THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE SUPPLY AIR TEMPERATURE SET POINT THE OUTDOOR AIR DAMPER, EXHAUST AIR DAMPER, AND RETURN AIR DAMPER WILL MODULATE, AS APPROPRIATE, BETWEEN THE ADJUSTABLE MINIMUM POSITION AND FULL OPEN POSITION TO MAINTAIN A MIXED AIR TEMPERATURE SETPOINT (55 DEG F ADJUSTABLE) UNTIL ROOM COOLING SETPOINT IS REACHED.
4) WHEN THE RETURN AIR DEW POINT IS GREATER THAN THE OUTDOOR AIR DEW POINT OR THE OUTDOOR AIR TEMPERATURE IS GREATER THAN THE RETURN AIR TEMPERATURE THE EXHAUST AIR DAMPER, RETURN AIR DAMPER AND OUTSIDE AIR DAMPER SHALL BE POSITIONED TO THE MINIMUM CONTROL AIR POSITION AND THE UNIT SHALL OPERATE IN MECHANICAL COOLING.
5) THE ECONOMIZER SHALL CLOSE TO 0% (OUTSIDE AIR AND EXHAUST DAMPERS SHALL BE CLOSED AND RETURN AIR DAMPER SHALL BE OPEN) WHENEVER:
SUPPLY FAN OR RETURN FAN IS OFF
OR MIXED AIR TEMPERATURE IS LESS THAN 40°F
OR ON LOSS OF FAN STATUS
OR THE DISCHARGE AIR TEMPERATURE SENSOR HAS FAILED
OR THE RTU IS IN THE MORNING WARM-UP OR COOL-DOWN MODE
OR THE UNIT IS IN UNOCCUPIED MODE
6) THE ENERGY RECOVERY VENTILATOR (ERV) SHALL BE SET TO ITS MINIMUM POSITION IF THE ECONOMIZER FUNCTION IS DISABLED. MAINTAIN MINIMUM OUTSIDE AIR BY SETTING THE OUTDOOR AIR DAMPER TO THE MINIMUM POSITION AS ADJUSTED BY THE T&B CONTRACTOR TO MEET THE SCHEDULED MINIMUM OSA QUANTITY.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:

JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER: 44523
EXPIRES 09-22-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	
02-20-25	LANDLORD & BD COMMENTS	1

General Contractor to verify all conditions and dimensions at the premises. Discrepancies shall be reported to the Architect prior to the commencement of any work.

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

MECHANICAL SPECIFICATIONS

Drawing Number:

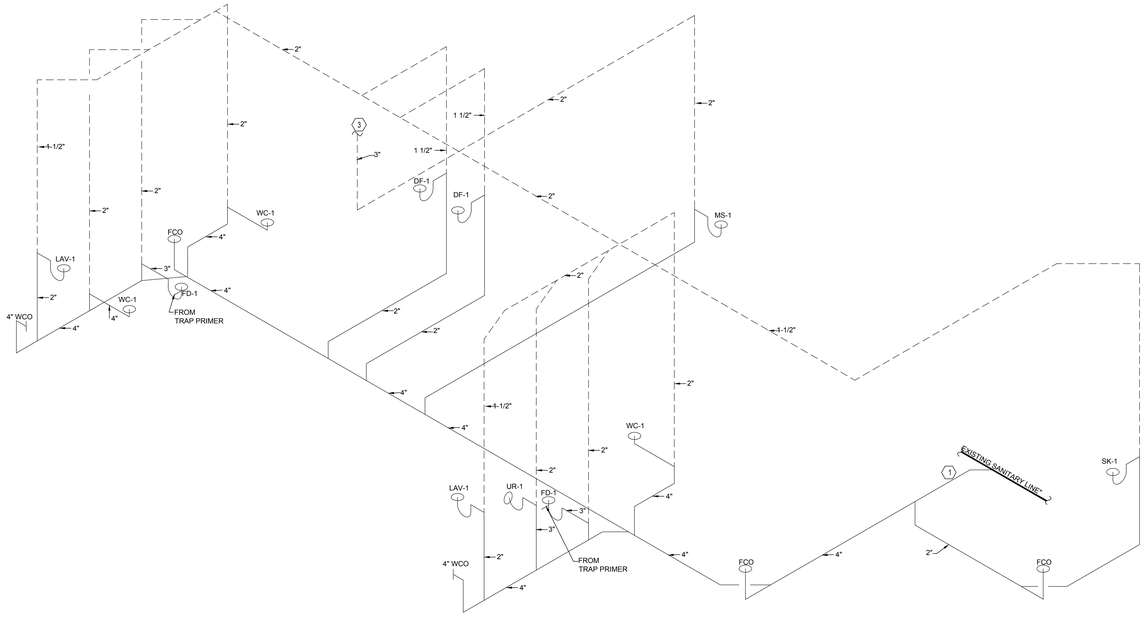
M-303

FOOD SERVICE EQUIPMENT / UTILITIES SCHEDULE

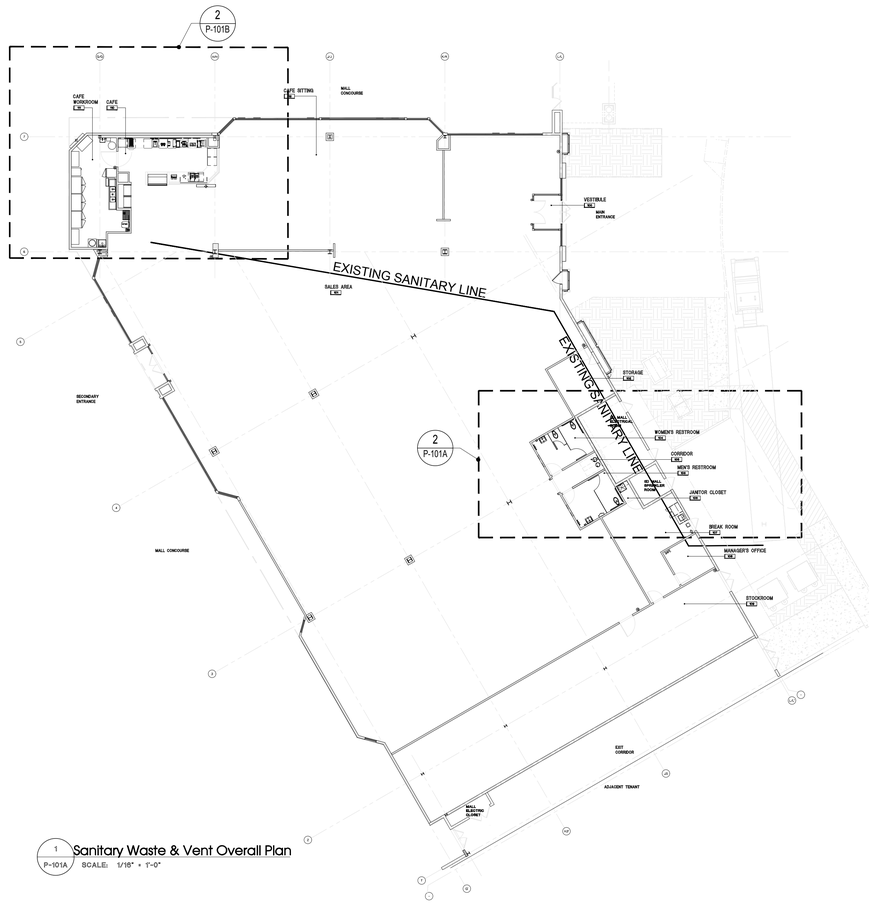
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SINK BOWL, WELD-IN, DUMP SINK	N. WASSERSTROM & SONS	F4480234	1
1A	SINK BOWL, WELD-IN, HAND WASH	N. WASSERSTROM & SONS	F4480234	1
3C	BLODGETT OVEN	BLODGETT	CTB SGL	1
3D	RAPID COOK OVEN	MERRYCHEF USA	E2S HIGH CLASSIC	1
100.1	PANTRY FAUCET	T&S BRASS	KL45-4000-WH	1
100.2	HOT WATER DISPENSER	IN SINK ERATOR	C1300	1
103	POS SYSTEM	-	-	1
104	ESPRESSO MACHINE	MELLITA	CT8	2
108	GARBAGE CAN	RUBBERMAID COMMERCIAL PRODUCTS	FG354060BLA	3
111	TOUCH-FREE SOAP DISPENSER	GOJO INDUSTRIES, INC.	PURELL CS6	1
112	SURFACE-MOUNTED PAPER TOWEL DISPENSER	BOBRICK	B-2621	1
112.1	BLENDER RINSER	BLENDTEC	JRE-610	1
113	COFFEE GRINDER	GRINDMASTER-UNIC-CRATHCO	890BS	1
114	COFFEE BREWER	BUNN	53100.0100	1
115	MANIFOLD	-	-	1
116	GLASS FILLER	T&S BRASS	B-1210	1
117	AIRPOT	SERVICE IDEAS	ECALS22SS	2
118	SELF-SERVICE REFRIGERATED CASE	STRUCTURAL CONCEPTS	B3424	2
119	PASTRY CASE, CURVED GLASS	FEDERAL INDUSTRIES	CGR5948DZ	0
120	DROP-IN ICE BIN	KROWNE	D278	0
121	BLENDER	VITAMIX	36019-ABAB	2
123	DIPPER WELL	T&S BRASS	B-2282-01-F05	1
131	SINGLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TUC-27-HC	2
132	DOUBLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TWT-48-HC	1

WORKROOM EQUIPMENT / UTILITIES SCHEDULE

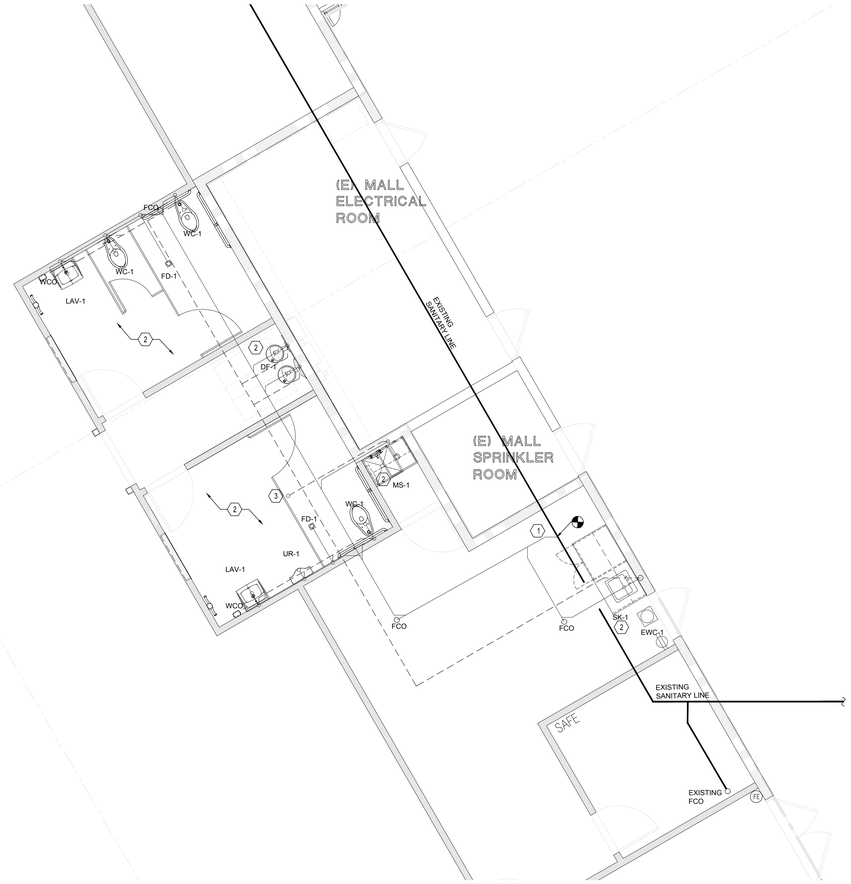
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1A	R.O. WATER FILTRATION SYSTEM MANIFOLD BOARD	-	-	1
1B	R.O. WATER FILTRATION SYSTEM - ACCUMULATOR TANK	-	-	1
1C	R.O. WATER FILTRATION SYSTEM - WATER SOFTENER	-	-	1
1D	R.O. WATER FILTRATION SYSTEM - BRINER	-	-	1
2B	FREEZER, REACH-IN, SINGLE DOOR	-	-	1
3B	FREEZER, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2F-2S-HC	1
4	WATER HEATER	-	-	1
5	MOP SINK	-	-	1
5.1	SERVICE FAUCET	-	-	1
6	WALL SHELF	-	-	1
8	SOAP DISPENSER	GOJO INDUSTRIES, INC.	TFX	1
9	HAND SINK - WALL MOUNTED	HAND SINK, PARTS & ACCESSORIES	DH-17-NO FAU	1
14	C-FOLD PAPER TOWEL DISPENSER	-	-	1
15	WASTE CONTAINER	-	-	1
16	THREE COMPARTMENT SINK	AMTEKCO INDUSTRIES LTD.	D724-03-74	1
16.1	PRE-RINSE FAUCET & ADD ON FAUCET	T&S BRASS	B-5110-12-CRB8P	1
16.4	LEVER WASTE	T&S BRASS	B-3950	3
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2R-2S-HC	1
125	ICE MAKER, CUBE-STYLE	ITV ICE MAKER	SPIKA MS 500	1
127	WIRE SHELVING	1880 HOSPITALITY	FF2472C	3
133	DISHWASHER, UNDERCOUNTER	JACKSON WWS	DISHSTAR HT	1
134	DISCONNECT SWITCH	-	-	1
135	RECIRCULATION PUMP	-	-	1



3 P-101A **Isometric Riser Diagram** SCALE: N.T.S.



1 P-101A **Sanitary Waste & Vent Overall Plan** SCALE: 1/16" = 1'-0"



2 P-101A **Plumbing Plan** SCALE: 1/4" = 1'-0"

[2021 Uniform Plumbing Code, section 901.2]
Vents Required.
Each plumbing fixture trap, except as otherwise provided in this code, shall be protected against siphonage and backpressure, and air circulation shall be ensured throughout all parts of the drainage systems by means of vent pipes installed in accordance with the requirements of this chapter and as otherwise required by this code.

[2021 Uniform Plumbing Code, section 402.1]
Cleaning.
Plumbing fixtures shall be installed in a manner to afford easy access for repairs and cleaning. Pipes from fixtures shall be run to the nearest wall.

[2021 Uniform Plumbing Code, section 402.2]
Joints.
Where a fixture comes in contact with the wall or floor, the joint between the fixture and the wall or floor shall be made watertight.

Provide cross connection in accordance with the 2021 Uniform Plumbing Code w/ Washington State amendments for all applicable water connections

GENERAL NOTES: (PLUMBING)

A. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. REFERENCE FOOD SERVICE DRAWINGS WHEN INSTALLING FOR EXACT LOCATIONS AND HEIGHTS.

B. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.

C. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR.

D. PIPING SHALL NOT BE LOCATED IN ELECTRICAL ROOMS OR OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.

E. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

CODED NOTES: (#)

1. EXTEND AND CONNECT NEW 4 " SANITARY LINE TO EXISTING SANITARY LINE. FIELD VERIFY EXACT SIZE, LOCATION, INVERT ELEVATION, DIRECTION OF FLOW, AND POINT OF CONNECTION PRIOR TO ANY WORK.
2. CONTRACTOR PROVIDE PLUMBING FIXTURES AS SPECIFIED ON SHEET #P-201. RECONNECT TO EXISTING SANITARY LINE AND EXISTING VENT LINE LINE AS REQUIRED.
3. NEW 3" VENT LINE UP THROUGH ROOF. VERIFY LOCATION PRIOR TO BID.
4. 1-1/2" VENT LINE TO CONNECT TO EXISTING VENT LINE. VERIFY EXACT LOCATION AND POINT OF CONNECTION IN FIELD.
5. 2" VENT LINE TO CONNECT TO EXISTING VENT LINE. VERIFY EXACT LOCATION AND POINT OF CONNECTION IN FIELD.
6. 3" SANITARY LINE TO CONNECT TO EXISTING SANITARY LINE. FIELD VERIFY EXACT SIZE, LOCATION, INVERT ELEVATION, DIRECTION OF FLOW, AND POINT OF CONNECTION PRIOR TO ANY WORK.

THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
SANITARY WASTE & VENT PLAN

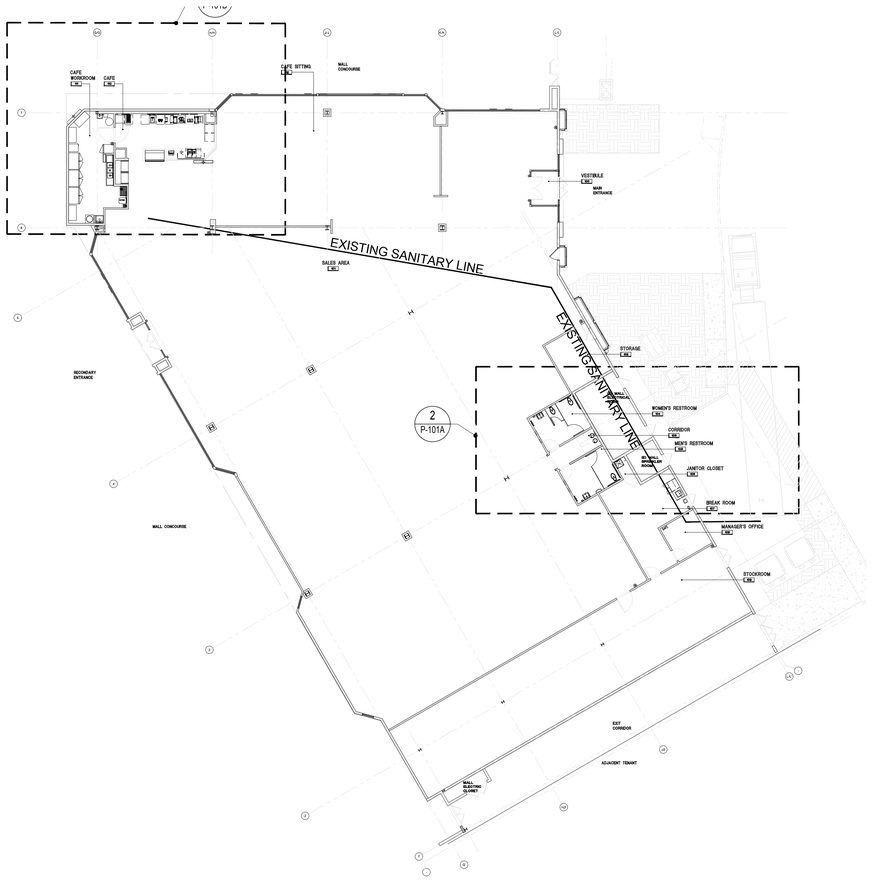
Drawing Number:
P-101A

FOOD SERVICE EQUIPMENT / UTILITIES SCHEDULE

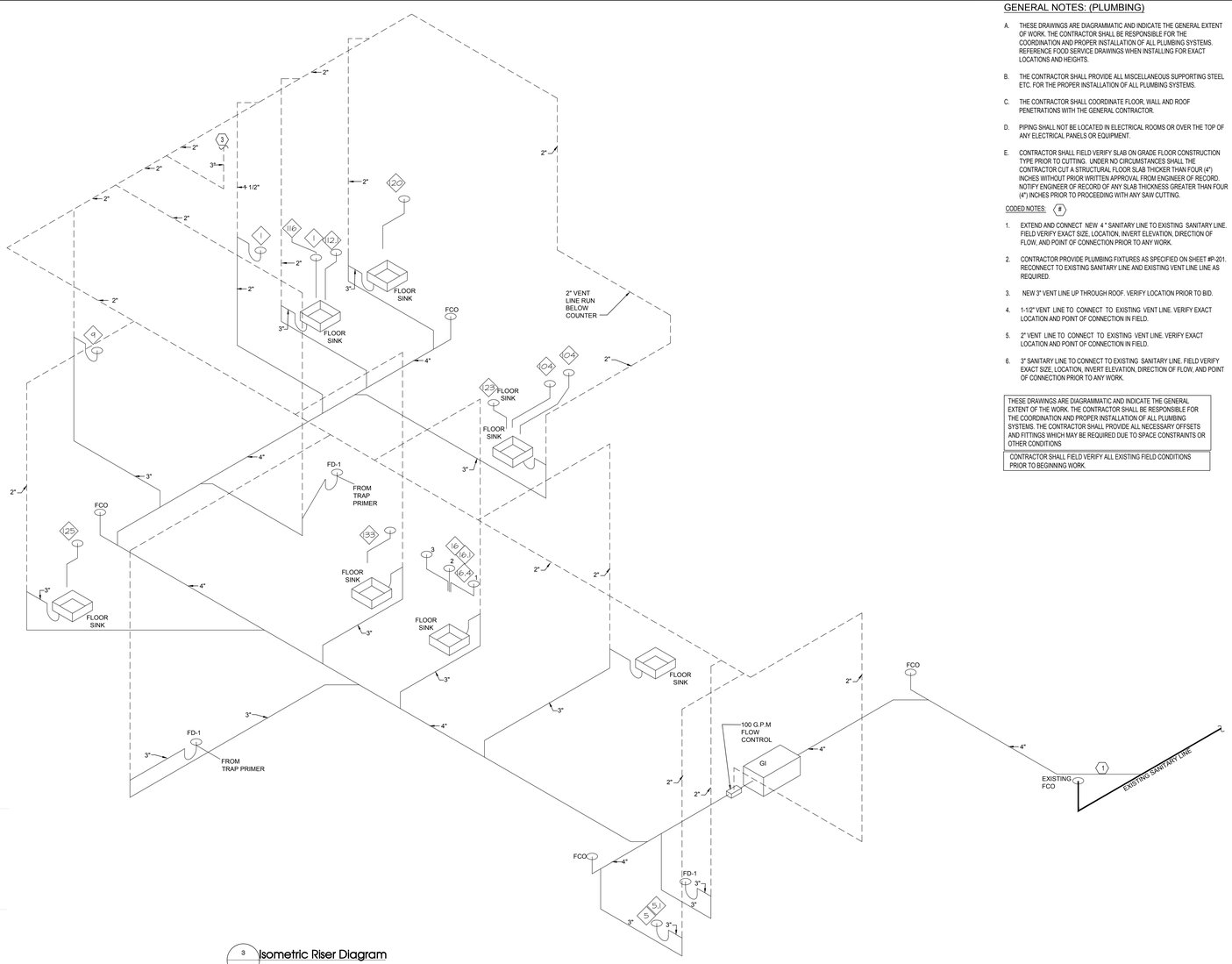
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SINK BOWL, WELD-IN, DUMP SINK	N. WASSERSTROM & SONS	F4480234	1
1A	SINK BOWL, WELD-IN, HAND WASH	N. WASSERSTROM & SONS	F4480234	1
3C	BLODGETT OVEN	BLODGETT	CTB SGL	1
3D	RAPID COOK OVEN	MERRYCHEF USA	E2S HIGH CLASSIC	1
100.1	PANTRY FAUCET	T&S BRASS	KL45-4000-WH	1
100.2	HOT WATER DISPENSER	IN SINK ERATOR	C1300	1
103	POS SYSTEM	-	-	1
104	ESPRESSO MACHINE	MELLITA	CT8	2
108	GARBAGE CAN	RUBBERMAID COMMERCIAL PRODUCTS	FG354060BLA	3
111	TOUCH-FREE SOAP DISPENSER	GOJO INDUSTRIES, INC.	PURELL CS6	1
112	SURFACE-MOUNTED PAPER TOWEL DISPENSER	BOBRICK	B-2621	1
112.1	BLENDER RINSER	BLENDTEC	JRE-610	1
113	COFFEE GRINDER	GRINDMASTER-UNIC-CRATHCO	880BS	1
114	COFFEE BREWER	BUNN	53100.0100	1
115	MANIFOLD	-	-	1
116	GLASS FILLER	T&S BRASS	B-1210	1
117	AIRPOT	SERVICE IDEAS	ECALS22SS	2
118	SELF-SERVICE REFRIGERATED CASE	STRUCTURAL CONCEPTS	B3424	2
119	PASTRY CASE, CURVED GLASS	FEDERAL INDUSTRIES	CGR5948DZ	0
120	DROP-IN ICE BIN	KROWNE	D278	0
121	BLENDER	VITAMIX	36019-ABAB	2
123	DIPPER WELL	T&S BRASS	B-2282-01-F05	1
131	SINGLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TUC-27-HC	2
132	DOUBLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TWT-48-HC	1

WORKROOM EQUIPMENT / UTILITIES SCHEDULE

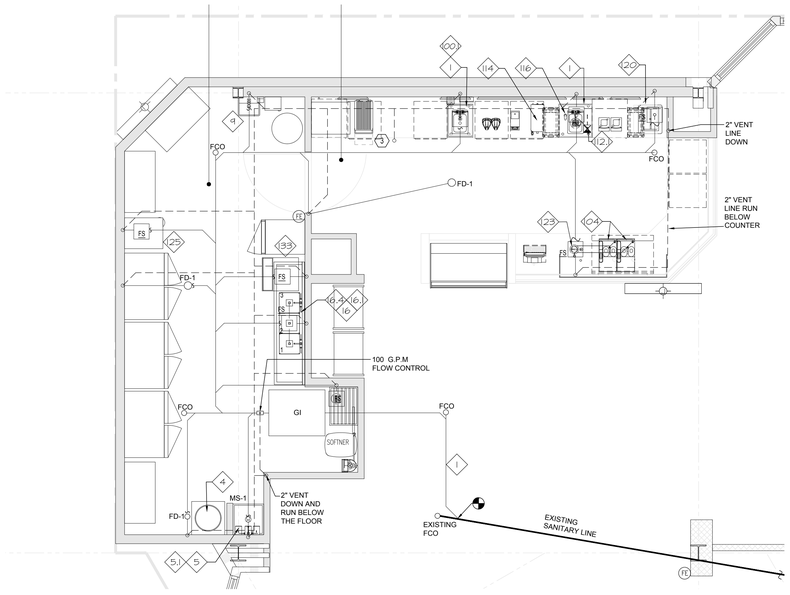
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1A	R.O. WATER FILTRATION SYSTEM MANIFOLD BOARD	-	-	1
1B	R.O. WATER FILTRATION SYSTEM - ACCUMULATOR TANK	-	-	1
1C	R.O. WATER FILTRATION SYSTEM - WATER SOFTENER	-	-	1
1D	R.O. WATER FILTRATION SYSTEM - BRINER	-	-	1
2B	FREEZER, REACH-IN, SINGLE DOOR	-	-	1
3B	FREEZER, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2F-2S-HC	1
4	WATER HEATER	-	-	1
5	MOP SINK	-	-	1
5.1	SERVICE FAUCET	-	-	1
6	WALL SHELF	-	-	1
8	SOAP DISPENSER	GOJO INDUSTRIES, INC.	TFX	1
9	HAND SINK - WALL MOUNTED	HAND SINK, PARTS & ACCESSORIES	DH-17-NO FAU	1
14	C-FOLD PAPER TOWEL DISPENSER	-	-	1
15	WASTE CONTAINER	-	-	1
16	THREE COMPARTMENT SINK	AMTEKCO INDUSTRIES LTD.	D724-03-74	1
16.1	PRE-RINSE FAUCET & ADD ON FAUCET	T&S BRASS	B-5110-12-CRB8P	1
16.4	LEVER WASTE	T&S BRASS	B-3950	3
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2R-2S-HC	1
125	ICE MAKER, CUBE-STYLE	ITV ICE MAKER	SPIKA MS 500	1
127	WIRE SHELVING	1880 HOSPITALITY	FF2472C	3
133	DISHWASHER, UNDERCOUNTER	JACKSON WWS	DISHSTAR HT	1
134	DISCONNECT SWITCH	-	-	1
135	RECIRCULATION PUMP	-	-	1



1 P-101B Sanitary Waste & Vent Overall Plan
SCALE: 1/16" = 1'-0"



3 P-101B Isometric Riser Diagram
SCALE: N.T.S.



2 P-101B Plumbing Plan
SCALE: 1/4" = 1'-0"

GENERAL NOTES: (PLUMBING)

A. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. REFERENCE FOOD SERVICE DRAWINGS WHEN INSTALLING FOR EXACT LOCATIONS AND HEIGHTS.

B. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.

C. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR.

D. PIPING SHALL NOT BE LOCATED IN ELECTRICAL ROOMS OR OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.

E. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

CODED NOTES: (#)

1. EXTEND AND CONNECT NEW 4 " SANITARY LINE TO EXISTING SANITARY LINE. FIELD VERIFY EXACT SIZE, LOCATION, INVERT ELEVATION, DIRECTION OF FLOW, AND POINT OF CONNECTION PRIOR TO ANY WORK.
2. CONTRACTOR PROVIDE PLUMBING FIXTURES AS SPECIFIED ON SHEET #P-201. RECONNECT TO EXISTING SANITARY LINE AND EXISTING VENT LINE LINE AS REQUIRED.
3. NEW 3" VENT LINE UP THROUGH ROOF. VERIFY LOCATION PRIOR TO BID.
4. 1-1/2" VENT LINE TO CONNECT TO EXISTING VENT LINE. VERIFY EXACT LOCATION AND POINT OF CONNECTION IN FIELD.
5. 2" VENT LINE TO CONNECT TO EXISTING VENT LINE. VERIFY EXACT LOCATION AND POINT OF CONNECTION IN FIELD.
6. 3" SANITARY LINE TO CONNECT TO EXISTING SANITARY LINE. FIELD VERIFY EXACT SIZE, LOCATION, INVERT ELEVATION, DIRECTION OF FLOW, AND POINT OF CONNECTION PRIOR TO ANY WORK.

THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A FULLER, PE
WA LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
SANITARY WASTE & VENT PLAN

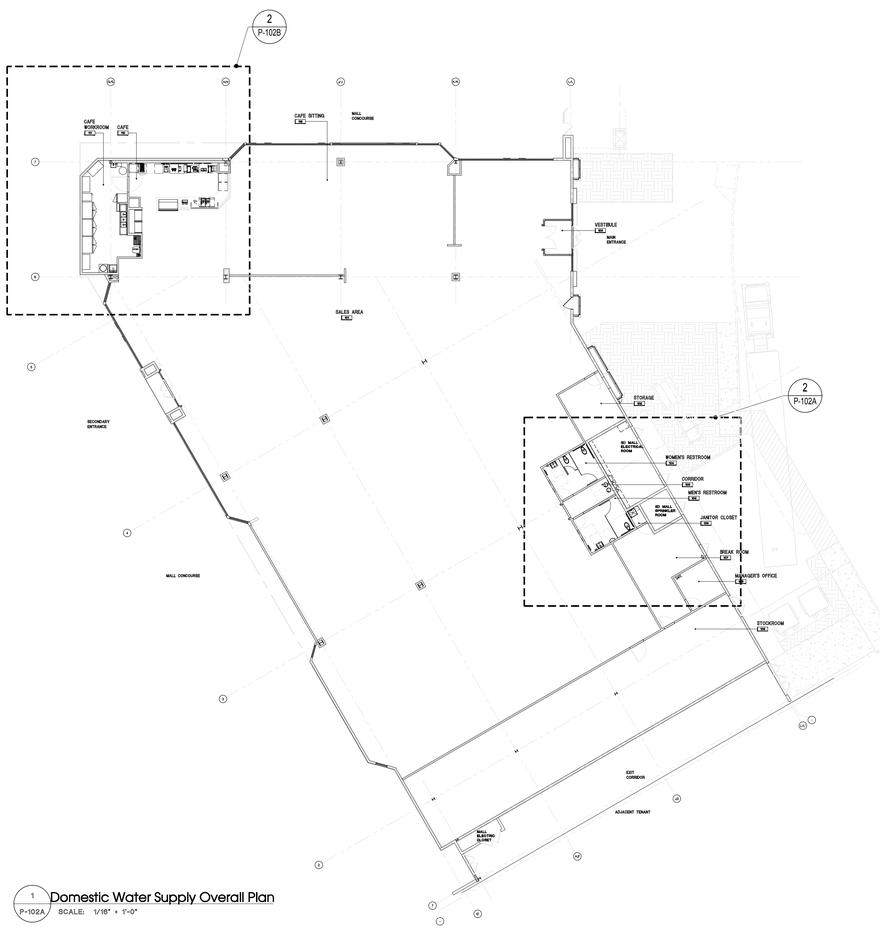
Drawing Number:
P-101B

FOOD SERVICE EQUIPMENT / UTILITIES SCHEDULE

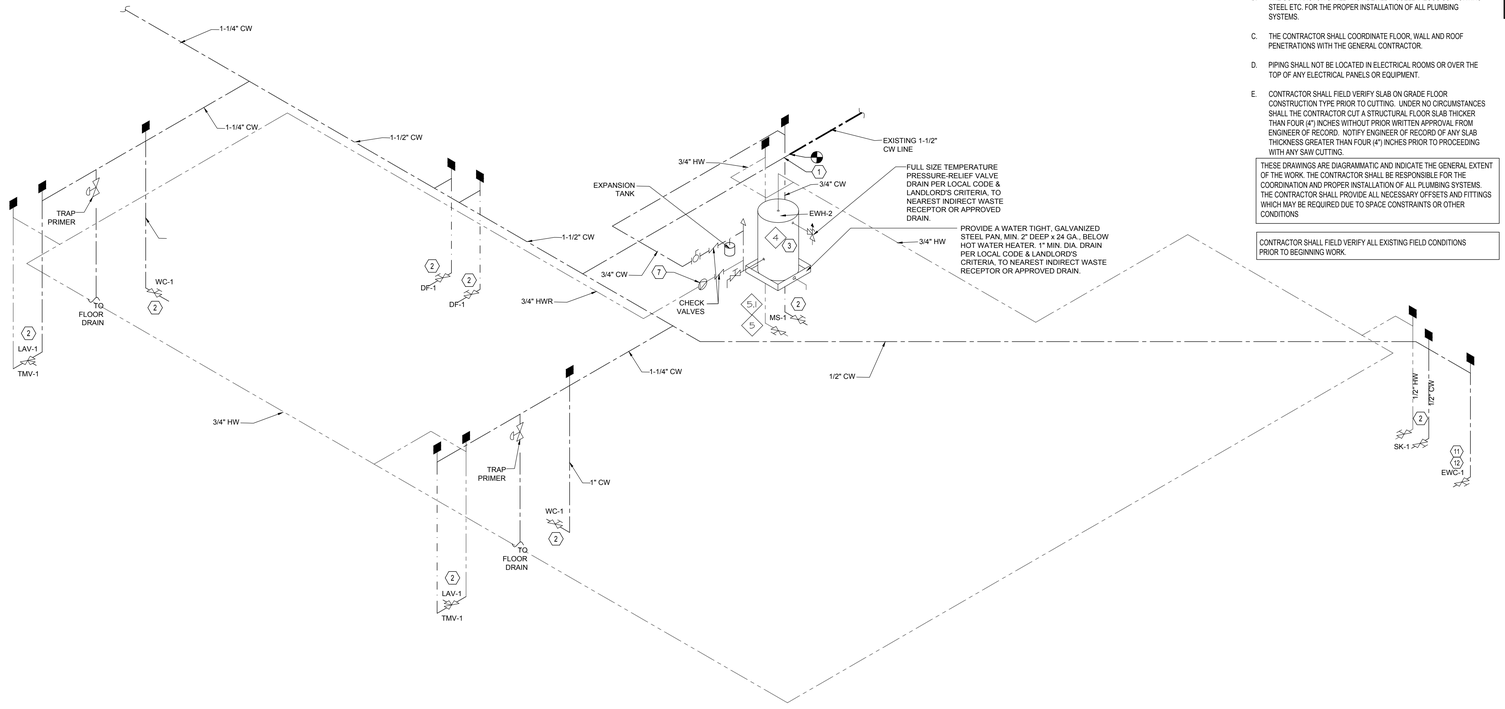
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SINK BOWL, WELD-IN, DUMP SINK	N. WASSERSTROM & SONS	F4480234	1
1A	SINK BOWL, WELD-IN, HAND WASH	N. WASSERSTROM & SONS	F4480234	1
3C	BLODGETT OVEN	BLODGETT	CTB SGL	1
3D	RAPID COOK OVEN	MERRYCHEF USA	E2S HIGH CLASSIC	1
100.1	PANTRY FAUCET	T&S BRASS	KL45-4000-WH	1
100.2	HOT WATER DISPENSER	IN SINK ERATOR	C1300	1
103	POS SYSTEM	-	-	1
104	ESPRESSO MACHINE	MELLITA	CT8	2
108	GARBAGE CAN	RUBBERMAID COMMERCIAL PRODUCTS	FG354060BLA	3
111	TOUCH-FREE SOAP DISPENSER	GOJO INDUSTRIES, INC.	PURELL CS6	1
112	SURFACE-MOUNTED PAPER TOWEL DISPENSER	BOBRICK	B-2621	1
112.1	BLENDER RINSER	BLENDTEC	JRE-610	1
113	COFFEE GRINDER	GRINDMASTER-UNIC-CRATHCO	890BS	1
114	COFFEE BREWER	BUNN	53100.0100	1
115	MANIFOLD	-	-	1
116	GLASS FILLER	T&S BRASS	B-1210	1
117	AIRPOT	SERVICE IDEAS	ECALS22SS	2
118	SELF-SERVICE REFRIGERATED CASE	STRUCTURAL CONCEPTS	B3424	2
119	PASTRY CASE, CURVED GLASS	FEDERAL INDUSTRIES	CGR5948DZ	0
120	DROP-IN ICE BIN	KROWNE	D278	0
121	BLENDER	VITAMIX	36019-ABAB	2
123	DIPPER WELL	T&S BRASS	B-2282-01-F05	1
131	SINGLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TUC-27-HC	2
132	DOUBLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TWT-48-HC	1

WORKROOM EQUIPMENT / UTILITIES SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1A	R.O. WATER FILTRATION SYSTEM MANIFOLD BOARD	-	-	1
1B	R.O. WATER FILTRATION SYSTEM - ACCUMULATOR TANK	-	-	1
1C	R.O. WATER FILTRATION SYSTEM - WATER SOFTENER	-	-	1
1D	R.O. WATER FILTRATION SYSTEM - BRINER	-	-	1
2B	FREEZER, REACH-IN, SINGLE DOOR	-	-	1
3B	FREEZER, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2F-2S-HC	1
4	WATER HEATER	-	-	1
5	MOP SINK	-	-	1
5.1	SERVICE FAUCET	-	-	1
6	WALL SHELF	-	-	1
8	SOAP DISPENSER	GOJO INDUSTRIES, INC.	TFX	1
9	HAND SINK - WALL MOUNTED	HAND SINK, PARTS & ACCESSORIES	DH-17-NO FAU	1
14	C-FOLD PAPER TOWEL DISPENSER	-	-	1
15	WASTE CONTAINER	-	-	1
16	THREE COMPARTMENT SINK	AMTEKCO INDUSTRIES LTD.	D724-03-74	1
16.1	PRE-RINSE FAUCET & ADD ON FAUCET	T&S BRASS	B-5110-12-CRB8P	1
16.4	LEVER WASTE	T&S BRASS	B-3950	3
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2R-2S-HC	1
125	ICE MAKER, CUBE-STYLE	ITV ICE MAKER	SPIKA MS 500	1
127	WIRE SHELVING	1880 HOSPITALITY	FF2472C	3
133	DISHWASHER, UNDERCOUNTER	JACKSON WWS	DISHSTAR HT	1
134	DISCONNECT SWITCH	-	-	1
135	RECIRCULATION PUMP	-	-	1



1 P-102A Domestic Water Supply Overall Plan
SCALE: 1/16" = 1'-0"



3 P-102A ISOMETRIC RISER DIAGRAM
SCALE: N.T.S.

CODED NOTES: (#)

1. 1-1/2" COLD WATER LINE TO CONNECT TO EXISTING COLD WATER LINE. VERIFY LOCATION AND POINT OF CONNECTION IN FILED PRIOR TO BID.
2. NEW PLUMBING FIXTURE AS SPECIFIED ON SHEET #P-201.
3. NEW 20 GALLON ELECTRIC WATER HEATER TANK (EWH-2). REFER TO SHEET #P-201 FOR SPECIFICATIONS.
4. ROUTE 1/2" SROCW BELOW COUNTER AND CONNECT TO EQUIPMENT AS REQUIRED.
5. DROP 1/2" CW DOWN BELOW SLAB AT THIS LOCATION.
6. 3/4" FCW TO ICE MAKER FILTER BOARD. REFER TO GENERAL KITCHEN PLUMBING SCHEMATIC FOR MORE DETAIL.
7. NEW RE-CIRCULATION PUMP. REFER TO SHEET #P-201 FOR SPECIFICATIONS.
8. SOFTENED COLD WATER TO REVERSE OSMOSIS FILTER BOARD. REFER TO GENERAL KITCHEN PLUMBING SCHEMATIC FOR MORE DETAIL
9. DROP 3/4" SROCW DOWN BELOW SLAB AT THIS LOCATION. PROVIDE WATER SEALED PIPE SLEEVE AS REQUIRED. TRANSITION TO TYPE 'K' COOPER PIPE BELOW ROUTE PIPING BELOW SLAB TO BAR AREA AS SHOWN. NO FITTINGS FOR CHANGE OF DIRECTION SHALL BE INSTALLED IN PIPING BELOW SLAB.
10. SROCW CONNECTION TO ITEM # 114 @ 46" A.F.F.
11. 1/2" COLD WATER LINE TO THE BOTTLEFREE WATER COOLER MANUFACTURED BY QUENCH. "QUENCH Q3" MODEL #Q3FS.
12. SINGLE WATER BOX FOR WATER COOLER'S WATER SUPPLY PIPE. SINGLE WATER BOX TO BE MANUFACTURES BY WATER-TITE IPS CORPORATION , ITEM # 87967 MODEL # AB9700 OR EQUIVALENT.
13. SROCW CONNECTION TO ITEM # 116.
14. ROUTE 1/2" CW BELOW COUNTER AND CONNECT TO EQUIPMENT AS REQUIRED.
15. 1-1/4" CW LINE.
16. WATER SOFTENER
17. NEW 30 GALLON ELECTRIC WATER HEATER TANK (EWH-1). REFER TO SHEET #P-201 FOR SPECIFICATIONS.

2 P-102A Enlarged Domestic Water Supply Plan
SCALE: 1/4" = 1'-0"

GENERAL NOTES: (PLUMBING)

A. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. REFERENCE FOOD SERVICE DRAWINGS WHEN INSTALLING FOR EXACT LOCATIONS AND HEIGHTS.

B. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.

C. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR.

D. PIPING SHALL NOT BE LOCATED IN ELECTRICAL ROOMS OR OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.

E. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
VA. LICENCE NUMBER: 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
DOMESTIC WATER PLAN

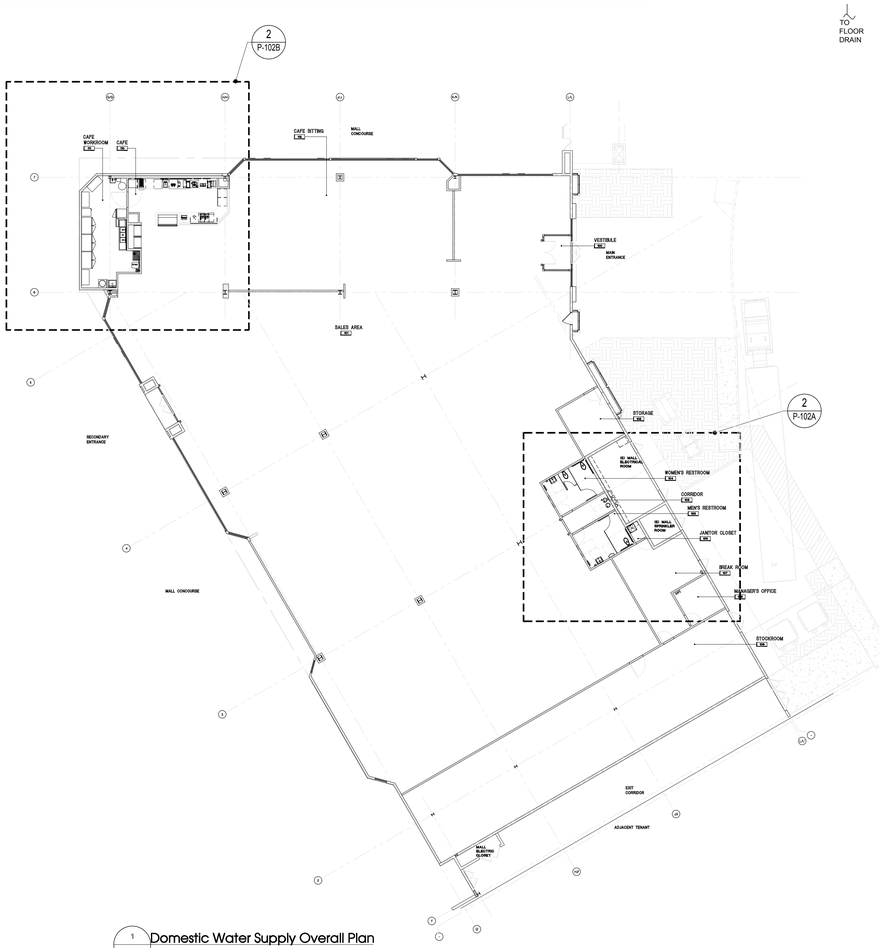
Drawing Number:
P-102A

FOOD SERVICE EQUIPMENT / UTILITIES SCHEDULE

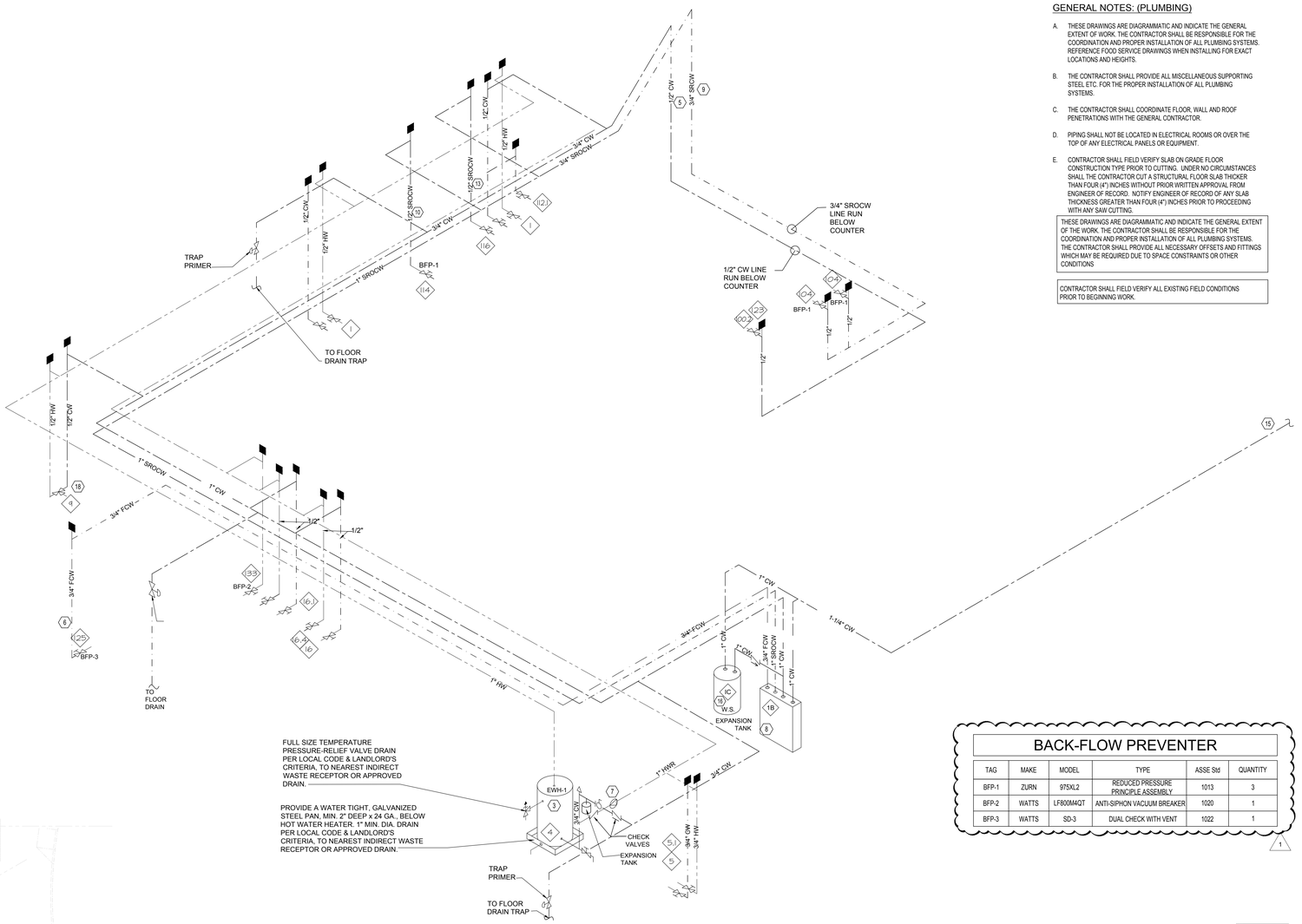
ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1	SINK BOWL, WELD-IN, DUMP SINK	N. WASSERSTROM & SONS	F4480234	1
1A	SINK BOWL, WELD-IN, HAND WASH	N. WASSERSTROM & SONS	F4480234	1
3C	BLODGETT OVEN	BLODGETT	CTB SGL	1
3D	RAPID COOK OVEN	MERRYCHEF USA	E2S HIGH CLASSIC	1
100.1	PANTRY FAUCET	T&S BRASS	KL45-4000-WH	1
100.2	HOT WATER DISPENSER	IN SINK ERATOR	C1300	1
103	POS SYSTEM	-	-	1
104	ESPRESSO MACHINE	MELLITA	CT8	2
108	GARBAGE CAN	RUBBERMAID COMMERCIAL PRODUCTS	FG354060BLA	3
111	TOUCH-FREE SOAP DISPENSER	GOJO INDUSTRIES, INC.	PURELL CS6	1
112	SURFACE-MOUNTED PAPER TOWEL DISPENSER	BOBRICK	B-2621	1
112.1	BLENDER RINSER	BLENDTEC	JRE-610	1
113	COFFEE GRINDER	GRINDMASTER-UNIC-CRATHCO	890BS	1
114	COFFEE BREWER	BUNN	53100.0100	1
115	MANIFOLD	-	-	1
116	GLASS FILLER	T&S BRASS	B-1210	1
117	AIRPOT	SERVICE IDEAS	ECALS22SS	2
118	SELF-SERVICE REFRIGERATED CASE	STRUCTURAL CONCEPTS	B3424	2
119	PASTRY CASE, CURVED GLASS	FEDERAL INDUSTRIES	CGR5948DZ	0
120	DROP-IN ICE BIN	KROWNE	D278	0
121	BLENDER	VITAMIX	36019-ABAB	2
123	DIPPER WELL	T&S BRASS	B-2282-01-F05	1
131	SINGLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TUC-27-HC	2
132	DOUBLE UNDER COUNTER REFRIGERATOR	TRUE MGF.	TWT-48-HC	1

WORKROOM EQUIPMENT / UTILITIES SCHEDULE

ITEM #	DESCRIPTION	MANUFACTURER	MODEL #	QTY
1A	R.O. WATER FILTRATION SYSTEM MANIFOLD BOARD	-	-	1
1B	R.O. WATER FILTRATION SYSTEM - ACCUMULATOR TANK	-	-	1
1C	R.O. WATER FILTRATION SYSTEM - WATER SOFTENER	-	-	1
1D	R.O. WATER FILTRATION SYSTEM - BRINER	-	-	1
2B	FREEZER, REACH-IN, SINGLE DOOR	-	-	1
3B	FREEZER, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2F-2S-HC	1
4	WATER HEATER	-	-	1
5	MOP SINK	-	-	1
5.1	SERVICE FAUCET	-	-	1
6	WALL SHELF	-	-	1
8	SOAP DISPENSER	GOJO INDUSTRIES, INC.	TFX	1
9	HAND SINK - WALL MOUNTED	HAND SINK, PARTS & ACCESSORIES	DH-17-NO FAU	1
14	C-FOLD PAPER TOWEL DISPENSER	-	-	1
15	WASTE CONTAINER	-	-	1
16	THREE COMPARTMENT SINK	AMTEKCO INDUSTRIES LTD.	D724-03-74	1
16.1	PRE-RINSE FAUCET & ADD ON FAUCET	T&S BRASS	B-5110-12-CRB8P	1
16.4	LEVER WASTE	T&S BRASS	B-3950	3
120B	REFRIGERATOR, REACH-IN, DOUBLE DOOR	TRUE MGF.	STG2R-2S-HC	1
125	ICE MAKER, CUBE-STYLE	ITV ICE MAKER	SPIKA MS 500	1
127	WIRE SHELVING	1880 HOSPITALITY	FF2472C	3
133	DISHWASHER, UNDERCOUNTER	JACKSON WWS	DISHSTAR HT	1
134	DISCONNECT SWITCH	-	-	1
135	RECIRCULATION PUMP	-	-	1



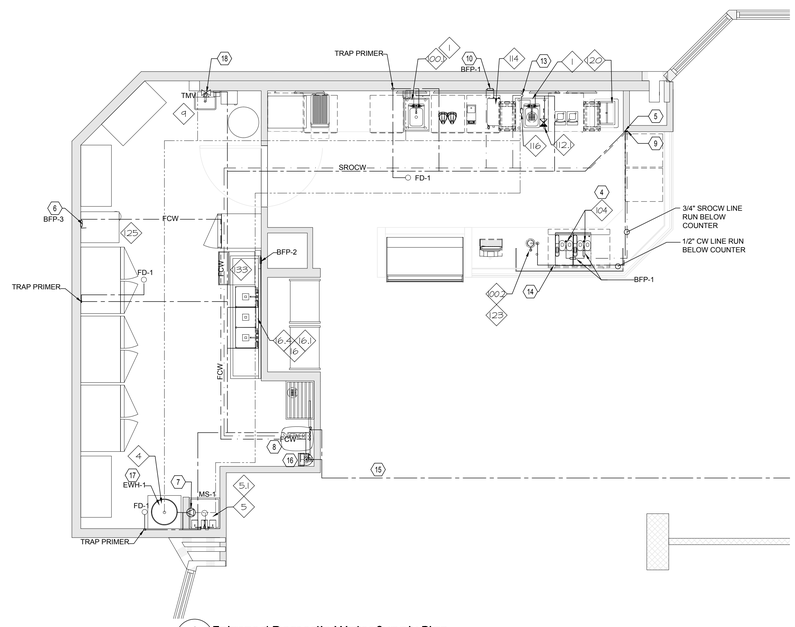
1 P-102B Domestic Water Supply Overall Plan
SCALE: 1/16" = 1'-0"



3 P-102B ISOMETRIC RISER DIAGRAM
SCALE: N.T.S.

CODED NOTES: (#)

1. 1-1/2" COLD WATER LINE TO CONNECT TO EXISTING COLD WATER LINE. VERIFY LOCATION AND POINT OF CONNECTION IN FILED PRIOR TO BID.
2. NEW PLUMBING FIXTURE AS SPECIFIED ON SHEET #P-201.
3. NEW 20 GALLON ELECTRIC WATER HEATER TANK (EWH-2). REFER TO SHEET #P-201 FOR SPECIFICATIONS.
4. ROUTE 1/2" SROCW BELOW COUNTER AND CONNECT TO EQUIPMENT AS REQUIRED.
5. DROP 1/2" CW DOWN BELOW SLAB AT THIS LOCATION.
6. 3/4" FCW TO ICE MAKER FILTER BOARD. REFER TO GENERAL KITCHEN PLUMBING SCHEMATIC FOR MORE DETAIL.
7. NEW RE-CIRCULATION PUMP. REFER TO SHEET #P-201 FOR SPECIFICATIONS.
8. SOFTENED COLD WATER TO REVERSE OSMOSIS FILTER BOARD. REFER TO GENERAL KITCHEN PLUMBING SCHEMATIC FOR MORE DETAIL
9. DROP 3/4" SROCW DOWN BELOW SLAB AT THIS LOCATION. PROVIDE WATER SEALED PIPE SLEEVE AS REQUIRED. TRANSITION TO TYPE 'K' COOPER PIPE BELOW ROUTE PIPING BELOW SLAB TO BAR AREA AS SHOWN. NO FITTINGS FOR CHANGE OF DIRECTION SHALL BE INSTALLED IN PIPING BELOW SLAB.
10. SROCW CONNECTION TO ITEM # 114 @ 45" A.F.F.
11. 1/2" COLD WATER LINE TO THE BOTTLEFREE WATER COOLER MANUFACTURED BY QUENCH. "QUENCH Q3" MODEL #Q3FS.
12. SINGLE WATER BOX FOR WATER COOLER'S WATER SUPPLY PIPE. SINGLE WATER BOX TO BE MANUFACTURES BY WATER-TITE IPS CORPORATION , ITEM # 87967 MODEL # AB9700 OR EQUIVALENT.
13. SROCW CONNECTION TO ITEM # 116.
14. ROUTE 1/2" CW BELOW COUNTER AND CONNECT TO EQUIPMENT AS REQUIRED.
15. 1-1/4" CW LINE.
16. WATER SOFTENER
17. NEW 30 GALLON ELECTRIC WATER HEATER TANK (EWH-1). REFER TO SHEET #P-201 FOR SPECIFICATIONS.
18. THERMOSTATIC MIXING VALVE . WATTS SERIES LFMMV, ASPE 1017, 1069 & 1070 APPROVED.



2 P-102B Enlarged Domestic Water Supply Plan
SCALE: 1/4" = 1'-0"

GENERAL NOTES: (PLUMBING)

A. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. REFERENCE FOOD SERVICE DRAWINGS WHEN INSTALLING FOR EXACT LOCATIONS AND HEIGHTS.

B. THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL ETC. FOR THE PROPER INSTALLATION OF ALL PLUMBING SYSTEMS.

C. THE CONTRACTOR SHALL COORDINATE FLOOR, WALL AND ROOF PENETRATIONS WITH THE GENERAL CONTRACTOR.

D. PIPING SHALL NOT BE LOCATED IN ELECTRICAL ROOMS OR OVER THE TOP OF ANY ELECTRICAL PANELS OR EQUIPMENT.

E. CONTRACTOR SHALL FIELD VERIFY SLAB ON GRADE FLOOR CONSTRUCTION TYPE PRIOR TO CUTTING. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR CUT A STRUCTURAL FLOOR SLAB THICKER THAN FOUR (4") INCHES WITHOUT PRIOR WRITTEN APPROVAL FROM ENGINEER OF RECORD. NOTIFY ENGINEER OF RECORD OF ANY SLAB THICKNESS GREATER THAN FOUR (4") INCHES PRIOR TO PROCEEDING WITH ANY SAW CUTTING.

THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION AND PROPER INSTALLATION OF ALL PLUMBING SYSTEMS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY OFFSETS AND FITTINGS WHICH MAY BE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS

CONTRACTOR SHALL FIELD VERIFY ALL EXISTING FIELD CONDITIONS PRIOR TO BEGINNING WORK.

BACK-FLOW PREVENTER

TAG	MAKE	MODEL	TYPE	ASSE Std	QUANTITY
BFP-1	ZURN	975XL2	REDUCED PRESSURE PRINCIPLE ASSEMBLY	1013	3
BFP-2	WATTS	LF800M4QT	ANTI-SIPHON VACUUM BREAKER	1020	1
BFP-3	WATTS	SD-3	DUAL CHECK WITH VENT	1022	1

1

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com

KENNETH A. FULLER, P.E.
WA. LICENSE NUMBER: 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

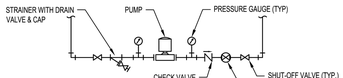
LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:
DOMESTIC WATER PLAN

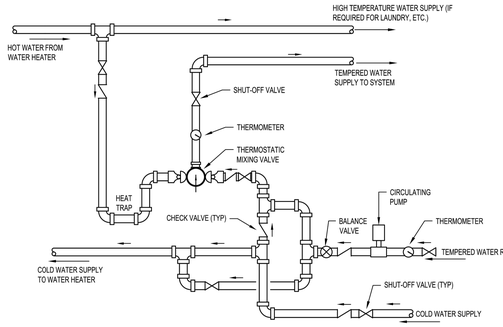
Drawing Number:
P-102B

LANDLORD'S COMMENT:

SLAB ON GRADE REQUIREMENTS: TENANT'S GENERAL CONTRACTOR SHALL ADVISE THE TENANT COORDINATOR PRIOR TO ANY SLAB MODIFICATIONS OR REMOVAL. TENANT'S GC SHALL VERIFY THAT WORK SHALL NOT CONFLICT WITH ANY EXISTING STRUCTURAL, UTILITY, OR OTHER UNDER-SLAB CONDITION. (NONDESTRUCTIVE VERIFICATION MAYBE REQUIRED). ANY DAMAGE OR DOWNTIME CAUSED BY TENANT'S WORK SHALL BE REPAIRED AND REIMBURSED AT TENANT'S EXPENSE.



IN-LINE PUMP PIPING DIAGRAM
N.T.S.



NOTE:
1. CONTRACTOR SHALL VERIFY EXACT PIPING REQUIREMENTS WITH MANUFACTURER.

THERMOSTATIC MIXING VALVE DETAIL WITH RECIRCULATING PUMP
N.T.S.

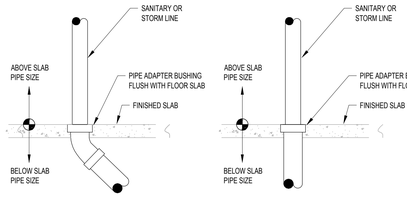
LEGEND

	CONNECT TO EXISTING
CW	DOMESTIC COLD WATER PIPING
SCW	SOFTENED COLD WATER PIPING
FCW	FILTERED COLD WATER PIPING
SROCW	SOFTENED REVERSE OSMOSIS COLD WATER PIPING
SHW (120°)	DOMESTIC HOT WATER PIPING
RHW (120°)	RECIRCULATING HOT WATER (120°) PIPING
SHW (140°)	DOMESTIC HOT WATER (140°) PIPING
RHW (140°)	RECIRCULATING HOT WATER (140°) PIPING
V	VENT PIPING
SAN	SANITARY PIPING
GW	GREASE WASTE PIPING
D	EQUIPMENT INDIRECT DRAIN PIPING
COND.	CONDENSATE DRAIN PIPING
	SHUT-OFF VALVE
	PRESSURE REGULATING VALVE
	PIPE UNION
	BALANCING VALVE
	CHECK VALVE
	KITCHEN/BAR EQUIP. TAG
XX	CODED NOTE
XX / XX	EQUIPMENT TAG
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
CW	COLD WATER
SAN	SANITARY
ST	STORM PIPING
GW	GREASE WASTE
FP	FIRE PROTECTION PIPING
G	GAS PIPING
CO	CLEANOUT
EX. (E)	EXISTING
FD	FLOOR DRAIN
VTR	VENT THROUGH ROOF

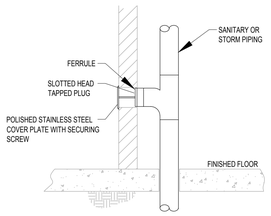
PLUMBING FIXTURE SCHEDULE

FIXTURE NO.	FIXTURE DESCRIPTION	WASTE	VENT	C.W.	H.W.	
FD-1	FLOOR DRAIN	3"	2"	-	-	DUCO CAST IRON BODY WITH FLASHING COLLAR AND ADJUSTABLE ROUND NICKEL BRONZE STRAINER HEAD, TRAP PRIMER CONNECTION.
FS-1	FLOOR SINK	4"	2"	-	-	JOSAM #49324A (12"x12") ENAMELED CAST IRON FLOOR SINK W/INTERNAL DOME STRAINER, NO HUB OUTLET, AND 1/2 GRATE. SEE ARCHITECTURAL AND PLUMBING LOCATION PLAN.
MS-1	MOP SINK	3"	1-1/2"	1/2"	1/2"	FIAT MODEL #MSB2424 WITH CHICAGO FAUCET #897. SERVICE SINK FITTING WITH RIGID VACUUM BREAKER, 3/4" HOSE THREADED OTULET. PAIL HOOK AND WALL BRACE, FAUCET HOSE & CLAMP. MOUNT FAUCET 48" AFF. PROVIDE WITH A&J WASHROOM UJ12A MOP HOLDER.
WC-1	TOILET ROOM WATER CLOSET	4"	2"	1"	-	FLOOR MOUNTED, AMERICAN STANDARD 3461.001, 16-1/2" MTD. AT HANDICAPPED HT. #6065.111 FLUSHOMETER 1.1 GPF, COMMERCIAL OPEN FRONT TOILET SEAT. WHITE.
LAV-1	TOILET ROOM H.C. LAVATORY	1-1/2"	1-1/2"	1/2"	1/2"	AMERICAN STANDARD DECORUM WALL-HUNG LAVATORY WITH EVERCLEAN MODEL 9024.001EC. AMERICAN STANDARD SERIN MONOBLOCK BATHROOM FAUCET MODEL 2064.131.002, POLISHED CHROME. THERMOSTATIC MIXING VALVE (#TLT10R) FOR SINGLE FAUCET (NOTE: THERMOSTATIC MIXING VALVE TO BE ASSE 1070 COMPLIANT). MOUNT UNDER PUBLIC HAND WASHING SINK/LAVATORY AND SET TO 105°F.
TP	TRAP PRIMER	-	-	1/2"	-	EQUAL TO PPP INC. MODEL OREGON #1 TRAP PRIMER VALVE.
SK-1	BREAK ROOM DROP-IN SINK	1-1/2"	1-1/2"	1/2"	1/2"	ELKAY #LRAD2252150 25" x 21-1/4" x 5" SINGLE BOWL DROP-IN ADA SINK, 18 GA STAINLESS STEEL, SELF-RIMMING BOWL. KOHLER TRITON BOWE 0.5 GPM DECK MOUNTED BATHROOM FAUCET WITH WRISTBLADE HANDLES, MODEL K-400T70-5AKA. P-TRAP, SUPPLIES, STOPS, GRID DRAIN, (LESS SPRAY) WITH OPTIONAL 4" DECK PLATE AND MIXING VALVE.
FCO-1	FLOOR CLEANOUT	-	-	-	-	J.R. SMITH 4020 DUCO CAST IRON CLEANOUT WITH ADJUSTABLE SCORIATED TOP. COLOR AS SELECTED BY ARCHITECT.
WCO-1	WALL CLEANOUT	-	-	-	-	J.R. SMITH 4402 DUCO CAST IRON CLEANOUT WITH ADJUSTABLE SCORIATED TOP.
EWC-1	ELECTRIC WATER COOLER	3"	2"	1/2"	-	*QUENCH Q3* MODEL #Q3FS.
DF-1	DRINKING FOUNTAIN	3"	2"	1/2"	-	OASIS MMRSL RADII, BI-LEVEL MODULAR FOUNTAIN, ADA.
UR-1	URINAL	3"	2"	1"	-	TO BE SPECIFIED BY OTHERS. COORDINATE WITH CLIENT'S REPRESENTATIVE.
GT-1	GREASE TRAP	3"	2"	-	-	ZURN MODEL GMC100, PROCEPTOR, GREASE INTERCEPTOR WITH EXTENSION COLLARS AS REQUIRED. CONTRACTOR TO INSTALL FOR TRAFFIC LOADING AS REQUIRED BY LOCAL CODES AND PROVIDE WITH TRAFFIC LOAD RATED COVER.

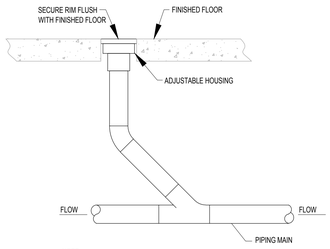
PLUMBING FIXTURE NOTES
- ALL SIZES SHOWN ABOVE ARE FIXTURE CONNECTION SIZES. USE INCREASER WHERE APPLICABLE SEE ISOMETRIC RISER DIAGRAMS.
- ALL FIXTURES DENOTED AS HANDICAPPED SHALL BE INSTALLED PER APPLICABLE HANDICAPPED CODE OR ANSI A117.1.
- HOT WATER SUPPLY PIPING FOR LAVATORIES SHALL INCLUDE A FLOW RESTRICTING DEVICE LIMITING THE FLOW OF 0.5 GPM MAXIMUM. HOT WATER SUPPLY TEMPERATURE SHALL NOT EXCEED 105°F.
- ALL SUBSTITUTIONS WILL BE REJECTED OUTRIGHT. THERE ARE NO EXCEPTIONS.



PIPE SLAB PENETRATION DETAIL
N.T.S.



WALL CLEANOUT DETAIL
N.T.S.



NOTE:
1. CLEANOUT SHALL BE THE SAME SIZE AS THE PIPE TO WHICH IT IS CONNECTED UP TO 4". FOR PIPES LARGER THAN 4", THE MINIMUM SIZE OF THE CLEANOUT IS 4".

FLOOR CLEANOUT DETAIL
N.T.S.

GREASE INTERCEPTOR SIZING

TAG	FIXTURE	QUANTITY	CUBIC OF FIXTURE (L X W X D)	GALLONS OF FIXTURE (1 GAL = 231 CUBIC INCHES)	ACTUAL DRAINAGE LOAD (=75% OF FIXTURE CAPACITY)	FLOW RATE=ACTUAL DRAINAGE LOAD DRAINAGE PERIOD (1 OR 2 MINUTE DRAINAGE PERIOD)
16	THREE COMPARTMENT SINK	1	3(16"x18"x12") = 10,368 CUBIC INCHES	10,368 / 231 = 44.8 GALLONS	.75 x 44.8 GALLONS = 33.7 GALLONS	33.7 / 1 = 33.7 GPM FLOW RATE
9	HAND SINK - WALL MOUNTED	1	13.75"x9.88"x5.38" = 730.8 CUBIC INCHES	730.8 / 231 = 3.16 GALLONS	.75 x 3.16 GALLONS = 2.37 GALLONS	2.37 / 1 = 2.37 GPM FLOW RATE
5	MOP SINK	1	24"x24"x10" = 5,760 CUBIC INCHES	5,760 / 231 = 24.9 GALLONS	.75 x 24.9 GALLONS = 18.7 GALLONS	18.7 / 1 = 18.7 GPM FLOW RATE
1	SINK BOWL, WELD-IN, DUMP SINK	1	12"x16"x10" = 1,920 CUBIC INCHES	1,920 / 231 = 8.3 GALLONS	.75 x 8.3 GALLONS = 6.2 GALLONS	6.2 / 1 = 6.2 GPM FLOW RATE
1	SINK BOWL, WELD-IN, DUMP SINK	1	12"x16"x10" = 1,920 CUBIC INCHES	1,920 / 231 = 8.3 GALLONS	.75 x 8.3 GALLONS = 6.2 GALLONS	6.2 / 1 = 6.2 GPM FLOW RATE
25	ICE MAKER, (FLOOR SINK)	1				= 1 GPM FLOW RATE
33	DISHWASHER, UNDERCOUNTER (FLOOR SINK)	1				= 2 GPM FLOW RATE
	FLOOR DRAIN (FD)	3				= 0 GPM FLOW RATE
20	DROP-IN ICE BIN (FLOOR SINK)	1				= 1 GPM FLOW RATE
	FLOOR SINK (FS)	2				= 1 GPM FLOW RATE
	TOTAL GPM					= 72.17 GPM

DOMESTIC WATER HEATER SCHEDULE (ELECTRIC)

MARK	EWH-1	EWH-2
MANUFACTURER	AO SMITH	AO SMITH
MODEL No.	DSE-30	DEL-20
TYPE	TANK	TANK
RECOVERY AT 80°F (GPH)	62	30
STORAGE (GAL)	30	20
No. OF ELEMENTS	1	1
HEATING KW	12.3	4
ELECTRICAL (VOLT/PH)	208 / 3 / 60	277 / 1 / 60
REMARKS	1, 2	1, 2

REMARKS:
1. RECOVERY RATE BASED ON 40° ENTERING WATER TEMPERATURE.
2. FURNISH AND INSTALL VACUUM RELIEF VALVE ON COLD WATER SUPPLY LINE ABOVE HIGHEST POINT IN THE TANK. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

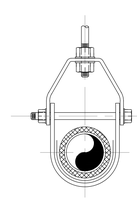
RECIRCULATING PUMP SCHEDULE

MARK	P-1
MANUFACTURER	BELL & GOSSETT
MODEL No.	NBF-25
SIZE	3/4"
TYPE	IN-LINE
SERVICE	HOT WATER
GPM	2
TOTAL HEAD (FT.)	16.5
NPSH	-
IMPELLER DIA. (")	2 1/2
WATTS	125
RPM	2950
ELECTRICAL (VOLT/PH)	115 / 1
OPER. WT. (LBS.)	10.4
REMARKS	1

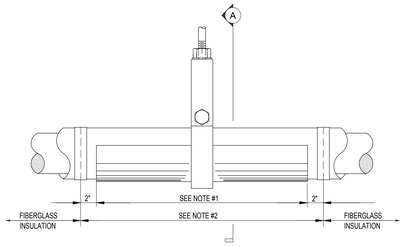
REMARKS:
1. ACCEPTABLE MANUFACTURERS: ARMSTRONG, PACO, TACO, WEINMAN, PATTERSON, GUNDFOS.

BACK-FLOW PREVENTER

TAG	MAKE	MODEL	TYPE	ASSE Std	QUANTITY
BFP-1	ZURN	975XL2	REDUCED PRESSURE PRINCIPLE ASSEMBLY	1013	3
BFP-2	WATTS	LF800M4QT	ANTI-SIPHON VACUUM BREAKER	1020	1
BFP-3	WATTS	SD-3	DUAL CHECK WITH VENT	1022	1



SECTION "A"



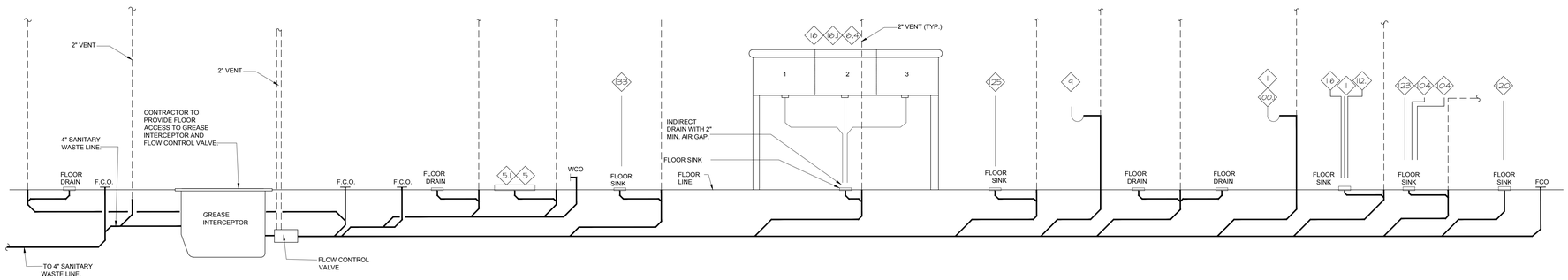
NOTES:
1. SADDLE FOR PIPE SIZES OF 3" OR SMALLER SHALL BE 18 GAUGE, 12" LONG. SADDLE FOR PIPE SIZES OF 4" OR LARGER SHALL BE 16 GAUGE., AND 3 TIMES PIPE DIAMETER LONG.
2. FIBERGLASS INSULATION FOR PIPES 2 1/2" IN DIAMETER AND SMALLER. HIGH DENSITY INSULATION INSERT FOR PIPES 3" IN DIAMETER AND LARGER.

INSULATED PIPE SADDLE DETAIL
N.T.S.

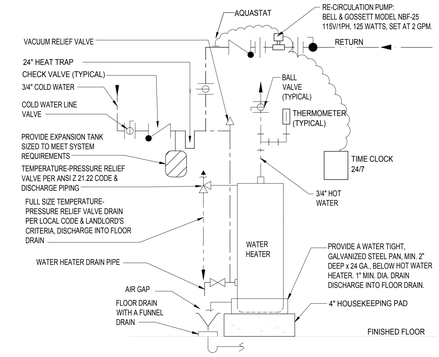
THERMOSTATIC MIXING VALVE SCHEDULE

MARK	TMV-1
MANUFACTURER	POWERS
MODEL No.	LFMM431
SERVICE	KITCHEN
GPM	14
PRESSURE DROP (PSI)	5
INLET TEMPERATURE (COLD WATER °F)	45
OUTLET TEMPERATURE (HOT WATER °F)	105
REMARKS	1

REMARKS:
1. ACCEPTABLE MANUFACTURERS: LAWLER, LEONARD, SYMMONS, WATTS.



GREASE INTERCEPTOR DETAIL
NOT TO SCALE



WATER HEATER DETAIL
N.T.S.

City of Puyallup
Development & Permitting Services
ISSUED PERMIT
Building | Planning | Engineering | Public Works | Fire | Traffic

BARNES&NOBLE

PROJECT DESIGNER:

WJCA
BUILDING VALUE SINCE 1994

ARCHITECT:
JOEL TORIELLI
422 BOGERT AVE
RIDGEWOOD, NJ 07450

Kenneth A. Fuller, P.E.
153 East Main St.
Rockaway, NJ 07866
Tel: 973-784-4258
kfullerpe@msn.com
KENNETH A FULLER, P.E.
WA. LICENSE NUMBER 44523
EXPIRES 09-02-26

SOUTH HILL MALL
3500 S. MERIDIAN ST.
UNIT #800
PUYALLUP, WA 98373

Project Number 33247
Store Number 3507

Revision Log:

Date	Description	No.
12-19-24	ISSUED FOR PERMIT, BID, LANDLORD & CLIENT REVIEW	1
02-20-25	LANDLORD & BD COMMENTS	2

Professional Seal:

LIC.# : 22005563
EXP. DATE : 10/02/25

Drawing Description:

PLUBMING SCHEDULES, LEGEND & DETAILS

Drawing Number:

P-201