EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

SURVEYOR
MCINNIS ENGINEERING
CONTACT: LARRY WALKER
202 E 34TH ST
TACOMA, WA 98404
OFFICE: 253-414-1992

ARCHITECT
SYNTHESIS 9, LLC
CONTACT: BRETT LINDSAY
523 N. D. ST
TACOMA, WA 98403
OFFICE: 253-468-4117

CIVIL ENGINEER
AHBL INC.
2215 NORTH 30TH STREET, SUITE 300
TACOMA, WA 98403
PHONE: (253) 383-2422
CONTACT: TODD SAWIN
EMAIL: TSAWIN@AHBL.COM

SITE INFORMATION
PARCEL: 0420264021, 0420264054, 0420264053, 0420351066, 0420351030, 0420351029, 0420351026
ADDRESS: 2902 E PIONEER
PUYALLUP, WA 98372
ZONING: CG AND RM-20

SURVEYOR'S NOTES
1. **HORIZONTAL DATUM:** BASIS OF BEARING AND SURVEY DATA PER WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE.

2. **BASIS OF BEARING:** HELD S 01° 21' 28" W OBSERVED ALONG THE EAST LINE OF THE NORTHEAST QUARTER OF SEC. 35, T. 20 N. R. 4 E. BETWEEN THE NORTHEAST CORNER OF THE NORTHEAST QUARTER MONUMENT AND THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER MONUMENT OF THE SAID SECTION AS SHOWN HEREON.

3. **VERTICAL DATUM:** NAVD88
AS DEFINED BY THE NATIONAL GEODETIC SURVEY (NGS)
PROJECT BENCHMARK:
DESIGNATION: 21 010
PID: DL2774

PUBLISHED ELEVATION: 75.70 FEET (NAVD 88)
DESCRIPTION: ENCASED STEEL ROD LOCATED IN EASTERLY GRAVEL SHOULDER AT THE INTERSECTION OF PIONEER WAY AND 134TH AVE. E.

4. ALL UTILITY LOCATES HAVE BEEN DETERMINED BY SURFACE LOCATION ONLY EITHER BY PHYSICAL STRUCTURES OR PAINT MARKINGS
AS DETERMINED BY UNDERGROUND + UTILITY LOCATE, INC. AND/OR UTILITY COMPANY. GAS PIPE LOCATION WITH IN THE PROPERTY
DETERMINED BY MAP PROVIDE BY PUGET SOUND ENERGY, INC. ACTUAL UNDERGROUND LOCATION MAY VARY. EXISTING UTILITIES AS
SHOWN MAY NOT BE THE SAME AFTER THIS DATE AS MAJOR CONSTRUCTION IS IN PROGRESS.

5. REFERENCE SURVEYS:
   1. 200303315001
   2. SP 9303315001
   3. ROS 8210040207

6. METHOD OF SURVEYING WAS:
   1. CONVENTIONAL TRAVERSE USING A TOPCON 800A TOTAL STATION.
   2. MONUMENTS FOUND MARCH 2008

TOPOGRAPHIC NOTE
THE EXISTING CULTURAL AND TOPOGRAPHICAL DATA SHOWN ON THESE DRAWINGS HAS BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, AHBL ENGINEERING CANNOT ENSURE ACCURACY AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THAT INFORMATION OR FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THESE DRAWINGS AS A RESULT.

FILL SPECIFICATIONS
FILL MATERIAL SHALL NOT CONTAIN PETROLEUM PRODUCTS, OR SUBSTANCES WHICH ARE HAZARDOUS, DANGEROUS, TOXIC, OR WHICH OTHERWISE VIOLATE ANY STATE, FEDERAL. OR LOCAL LAW, ORDINANCE, CODE, REGULATION, RULE, ORDER, OR STANDARD.

City Standards require a minimum 3ft of cover over CPEP pipe (ref. City Stds 204.4(3)). The City is willing to allow minimum cover of 30in, but staff cannot support a further reduction based on City regulations. If it is still desired to use CPEP with less than 30in of cover, a formal Alternative Methods Request (AMR) application must be submitted for review and formal decision by the City Engineer. Please be aware that cost savings cannot be a justification to deviate from City Standards. [Plans Sht C0.0; Pg 1 of 63]

Noted

FIRE SPRINKLER NOTE
FIRE LINE SHALL BE SIZED BY A LICENSED FIRE PROTECTION ENGINEER. A SEPARATE, DETAILED PLAN SHALL BE APPROVED BY THE FIRE MARSHALL AND INSTALLED BY A WASHINGTON CERTIFIED LEVEL "U" CONTRACTOR IN ACCORDANCE WITH WAC 212-80-010. A POST INDICATOR VALVE SHALL BE INSTALLED ON THE SPRINKLER LINE TO ISOLATE THE FIRE SYSTEM FROM THE WATER SYSTEM WHEN REQUIRED.

VERIFICATION NOTE
ALL EXISTING UTILITIES IN THE CONSTRUCTION AREA SHALL BE IDENTIFIED AND VERIFIED FOR DEPTH AND LOCATION PRIOR TO ANY CONSTRUCTION ACTIVITIES SO TO IDENTIFY ANY POTENTIAL CONFLICTS WITH PROPOSED CONSTRICTION. CONTACT PROJECT ENGINEER IMMEDIATELY IF ANY CONFLICTS ARE IDENTIFIED.

PRIOR TO ANY CONSTRUCTION ACTIVITIES, VERIFY EXISTING TOPOGRAPHY IS CONSISTENT WITH WHAT IS SHOWN ON PLANS AND IF THERE ARE ANY POTENTIAL CONFLICTS WITH PROPOSED CONSTRUCTION ACTIVITIES. CONTACT PROJECT ENGINEER IMMEDIATELY IF ANY CONFLICTS ARE IDENTIFIED.

TRENCH NOTES
IF WORKERS ENTER ANY TRENCH OR OTHER EXCAVATION FOUR OR MORE FEET IN DEPTH THAT DOES NOT MEET THE OPEN PIT REQUIREMENTS OF WSDOT SECTION 2-09 .3(3)8, IT SHALL BE SHORED AND CRIBBED. THE CONTRACTOR IS ALONE RESPONSIBLE FOR WORKER SAFETY. ALL TRENCH SAFETY SYSTEMS SHALL MEET THE REQUIREMENTS OF THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT, CHAPTER 49.17 RCW.

CONSTRUCTION SEQUENCE
1. OBTAIN REQUIRED PERMITS AND HOLD A PRE-CONSTRUCTION MEETING WITH THE CITY
2. FLAG CLEARING LIMITS
3. INSTALL OR REPLACE SILT FENCE
4. INSTALL CONSTRUCTION ENTRANCE
5. POTHOLE ANY EXISTING UTILITIES FOR VERIFICATION OF DEPTH AND LOCATION. SEE VERIFICATION NOTE
6. SCHEDULE EROSION CONTROL INSPECTION W/ CITY
7. GRADE SITE
8. MAINTAIN EROSION CONTROL MEASURE AND RELOCATE SURFACEWATER CONTROLS AS NEEDED IN ACCORDANCE WITH CITY OF PUYALLUP REQUIREMENTS AND NPDES CONSTRUCTION STORMWATER GENERAL PERMIT
9. COVER ALL AREAS THAT WILL BE UNWORKED FOR MORE THAN FIVE DAYS DURING THE DRY SEASON OR TWO DAYS DURING THE WET SEASON
10. STABILIZE ALL AREAS WITHIN SEVEN DAYS OF REACHING FINAL GRADE
11. INSTALL RTANKS
12. STABILIZE ALL DISTURBED AREAS AND REMOVES BMP'S AND EROSION CONTROL MEASURES AS APPROPRIATE
13. ARRANGE FINAL INSPECTION WITH THE CITY

Fixed spelling error

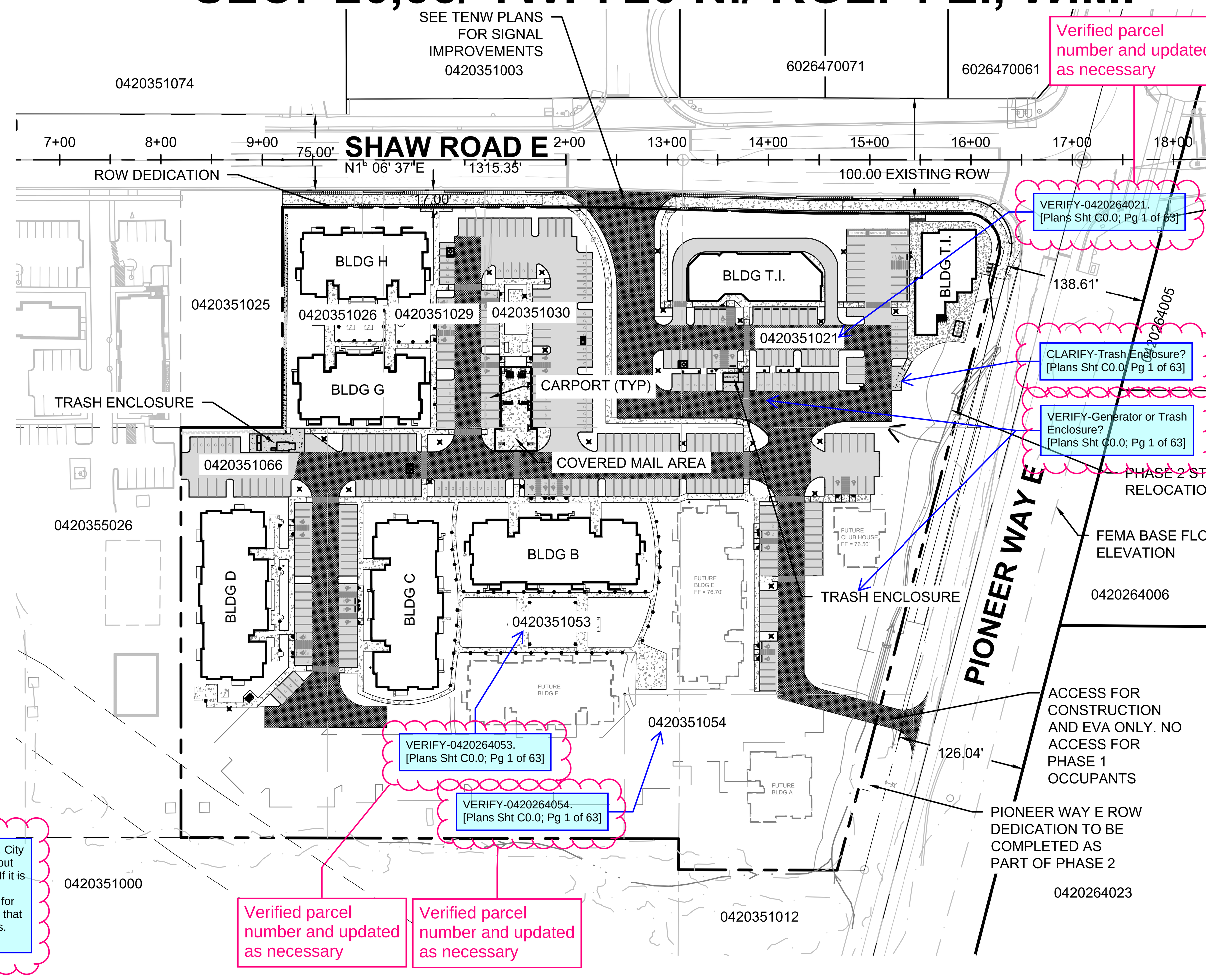
Noted. Including for clarity and communication

These conditions were for the design team's information on the previous review and do not have to be included on the civil plans. Up to the EoR discretion whether to remove or include on the planset. [Plans Sht C0.0; Pg 1 of 63]

CUT AND FILL ESTIMATES
CUT: 2,500 CY
FILL: 45,600 CY
NET IMPORT: 43,100 CY

CONDITIONS:
1. PRIOR TO PERMIT ISSUANCE, RIGHT-OF-WAY DEDICATION ALONG SHAW ROAD SHALL BE APPROVED AND RECORDED. RIGHT-OF-WAY ALONG EAST PIONEER SHALL BE APPROVED AND RECORDED PRIOR TO ISSUANCE OF PHASE 2 CIVIL PERMIT.
2. PRIOR TO PERMIT ISSUANCE, THE APPLICANT SHALL CLARIFY WHETHER IT IS THE PROJECT'S INTENT TO DEDICATE RIGHT-OF-WAY OR GRANT AN EASEMENT FOR MAINTENANCE AND OPERATION OF THE SHAW ROAD TRAFFIC SIGNAL AND EQUIPMENT.
3. ALL PRIVATE STORM DRAINAGE FACILITIES SHALL BE COVERED BY A MAINTENANCE AGREEMENT PROVIDED BY THE CITY AND RECORDED WITH PIERCE COUNTY. UNDER THIS AGREEMENT, IF THE OWNER FAILS TO PROPERLY MAINTAIN THE FACILITIES, THE CITY, AFTER GIVING THE OWNER NOTICE, MAY PERFORM NECESSARY MAINTENANCE AT THE OWNER'S EXPENSE. PRIOR TO OCCUPANCY THE AGREEMENT SHALL BE APPROVED AND RECORDED.
4. PRIOR TO OCCUPANCY, A STREET MAINTENANCE COVENANT WILL BE REQUIRED TO ENSURE THAT PAVEMENT MARKINGS LOCATED ON PRIVATE PROPERTY AT THE DRIVE ENTRANCES WILL BE MAINTAINED.
5. AS MENTIONED DURING THE LAND USE APPLICATION (P-21-0034), THE EXISTING STORMWATER FACILITY SERVING THE OFFSITE PROPERTIES SOUTH OF THE PROJECT IS CURRENTLY IN VIOLATION OF NPDES REGULATIONS AND THE PUYALLUP MUNICIPAL CODE DUE TO LACK OF MAINTENANCE, BREACHING OF THE POND BERM, AND PASS-THROUGH OF A REGULATED STREAM THROUGH THE CONTROL STRUCTURE. HOWEVER, THE CITY IS WILLING TO ALLOW THE POND REMEDIATION TO OCCUR DURING PHASE 2, PROVIDED THE REMEDIATION IS ACCOMPLISH PRIOR TO ANY OCCUPANCY OF PHASE 1 STRUCTURES.

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



GRAPHIC SCALE
0 50 100 200
1" = 100 FEET

FLOOD PLAIN NOTE
THE FLOOD PLAIN INFORMATION SHOWN IN THE PLAN SET IS BASED ON THE REVISED PANEL 342 OF 1375 OF MAP 53053C0342E THAT WAS PART OF THE 09/08/22 LOMR. THE FLOOD ZONES AND BFE's SHOWN IN THE PLAN SET ARE DRAWN FROM A COMBINATION OF THE PDF MAP PANEL AND GIS DATA. THE INFORMATION SHOWN IN THE REVISED PANEL IS BASED ON AN ASSUMED RELOCATED STREAM LOCATION. ACTUAL FLOOD ZONE AND BFE's WILL BE BASED FINAL LOCATION AND ELEVATION OF RELOCATED STREAM.

2nd Review
PRCCP20230970
Jan 2024

APPROVED

BY ____________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ____________

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

Sheet List Table

LEGAL DESCRIPTION
TAX PARCEL NO. 0420264021: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249900-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

BEGINNING AT THE INTERSECTION OF THE SOUTH LINE OF SECTION 26, TOWNSHIP 20 NORTH, RANGE 4 EAST, W.M., IN PIERCE COUNTY, WASHINGTON, WITH THE EAST 1/16TH LINE OF SAID SECTION;
THENCE SOUTH ALONG THE 1/16TH LINE OF SECTION 35, TOWNSHIP 20 NORTH, RANGE 4 EAST, W.M., A DISTANCE OF 95.4 FEET;
THENCE EAST 258.26 FEET;
THENCE NORTH TO THE SOUTHERLY LINE OF THE COUNTY ROAD;
THENCE NORTHWESTERLY ALONG SAID SOUTHERLY LINE OF COUNTY ROAD TO THE EAST 1/16TH LINE OF SECTION 26;
THENCE SOUTH ALONG SAID 1/16TH LINE TO THE POINT OF BEGINNING;

EXCEPT THE WEST 30 FEET THEREOF CONVEYED TO PIERCE COUNTY BY DEED RECORDED UNDER RECORDING NO. 1618885 FOR SHAW COUNTY ROAD;

ALSO EXCEPT THEREFROM THAT PORTION CONVEYED TO THE CITY PUYALLUP BY INSTRUMENT RECORDED UNDER AUDITOR'S FILE NO. 9408230215, BEING A RE-RECORD OF INSTRUMENT RECORDED UNDER AUDITOR'S FILE NO. 9308310480;

AND ALSO EXCEPT ANY PORTION THEREOF LYING SOUTHERLY AND WESTERLY OF A LINE DESCRIBED AS BEGINNING AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35, HEREINAFTER CALLED "POINT A";
THENCE SOUTH ALONG THE 1/16TH LINE 95.4 FEET TO THE TRUE POINT OF BEGINNING OF THE LINE TO BE DESCRIBED;
THENCE EAST 258.35 FEET;
THENCE SOUTH TO A POINT 495.4 FEET SOUTH OF AND 258.35 FEET EAST OF "POINT A";
THENCE EAST TO THE EAST LINE OF SAID PREMISES AND THE TERMINUS OF SAID LINE, SAID POINT ALSO BEING DESCRIBED AS THE SOUTHWEST CORNER OF LOT 3 OF BOUNDARY LINE ADJUSTMENT RECORDED UNDER AUDITOR'S FILE NO. 200303315001;

SITUATE IN THE CITY PUYALLUP, COUNTY OF PIERCE STATE OF WASHINGTON.

TAX PARCEL NO. 0420264053: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249901-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 20 NORTH, RANGE 4 EAST, WM.M., IN PIERCE COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35 WHICH POINT BEARS NORTH 88°32'51" WEST, 640.11 FEET FROM A BRASS IN CONCRETE MONUMENT MARKING THE NORTHEAST CORNER OF SAID SECTION 35;
THENCE ALONG THE EAST LINE OF SAID WEST HALF, SOUTH 01°15'04" WEST, 54.00 FEET TO THE TRUE POINT OF BEGINNING;
THENCE ALONG THE EAST LINE OF SAID WEST HALF, SOUTH 01°15'04" WEST, 437.43 FEET TO POINT LYING
SOUTH 88°53'30" EAST, 405.26 FEET OF THE EASTERLY EXTENSION OF THE NORTH LINE OF LOT 2 OF PIERCE COUNTY SHORT PLAT NO. 9303010321;
THENCE ALONG THE NORTHERLY EXTENSION OF THE EAST LINE OF SAID LOT 2, NORTH 01°06'30" EAST, 789.89 FEET TO THE SOUTHERLY MARGIN OF PIONEER WAY;
THENCE ALONG SAID SOUTHERLY MARGIN, SOUTH 74°08'09" EAST, 272.98 FEET TO A LINE LYING 263.84 FEET EAST OF AND PARALLEL WITH THE NORTHERLY EXTENSION OF THE EAST LINE OF SAID LOT 2;
THENCE ALONG SAID PARALLEL LINE, SOUTH 01°06'30" WEST, 282.06 FEET TO A LINE 54.00 FEET SOUTH OF AND PARALLEL WITH THE NORTH LINE OF SECTION 35:
THENCE ALONG SAID PARALLEL LINE, SOUTH 88°32'51" EAST, 142.38 FEET TO THE TRUE POINT OF BEGINNING;

EXCEPT THE SOUTH 145.00 FEET THEREOF;
(ALSO KNOWN AS LOT 3 OF RECORD OF SURVEY FOR BOUNDARY LINE ADJUSTMENT RECORDED MARCH 31, 2003 UNDER RECORDING NO. 200303315001).

SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

TAX PARCEL NO. 0420264054: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249902-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

THAT PORTION OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 26, TOWNSHIP 20 NORTH, RANGE 4 EAST, WM.M., IN PIERCE COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35 WHICH POINT BEARS NORTH 88°32'51" WEST, 640.11 FEET FROM A BRASS IN CONCRETE MONUMENT MARKING THE NORTHEAST CORNER OF
SAID SECTION 35;
THENCE ALONG THE EAST LINE OF SAID WEST HALF, SOUTH 01°15'04" WEST, 54.00 FEET;
THENCE ALONG A LINE PARALLEL WITH THE NORTH LINE OF SAID SECTION 35, NORTH 88°32'51" WEST, 142.38 FEET;
THENCE NORTH 01°06'30" EAST, 282.08 FEET TO THE SOUTHERLY MARGIN OF PIONEER WAY;
THENCE ALONG SAID SOUTHERLY MARGIN, SOUTH 74°08'09" EAST, 179.36 FEET TO A LINE LYING 30.48 FEET EAST OF AND PARALLEL WITH EAST LINE OF THE WEST HALF OF THE NORTH EAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35;
THENCE ALONG SAID PARALLEL LINE, SOUTH 01°15'04" WEST, 183.43 FEET TO THE NORTH LINE OF SAID SECTION 35;
THENCE ALONG SAID NORTH LINE, NORTH 88°32'51" WEST, 30.48 FEET TO THE POINT OF BEGINNING;

(ALSO KNOWN AS LOT 5 OF RECORD OF SURVEY FOR BOUNDARY LINE ADJUSTMENT RECORDED MARCH 31, 2003 UNDER RECORDING NO. 200303315001).

SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

TAX PARCEL NO. 0420351066: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249903-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

COMMENCING AT THE NORTHEAST CORNER OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35 WHICH POINT BEARS NORTH 88°32'51" WEST, 640.11 FEET FROM A BRASS IN CONCRETE MONUMENT MARKING THE NORTHEAST CORNER OF SAID SECTION 35;
THENCE ALONG THE EAST LINE OF SAID WEST HALF, SOUTH 01°15'04" WEST, 491.43 FEET TO A POINT LYING
SOUTH 88°53'30" EAST, 405.26 FEET TO THE EASTERLY EXTENSION OF THE NORTH LINE OF LOT 2 OF THE PIERCE COUNTY SHORT PLAT NO. 9303010321 AND THE TRUE POINT OF BEGINNING;
THENCE ALONG SAID NORTH LINE, NORTH 88°53'30" WEST, 405.26 TO THE NORTHEAST CORNER OF SAID LOT 2;
THENCE ALONG THE NORTHERLY EXTENSION OF THE EAST LINE OF SAID LOT 2, NORTH 01°06'30" EAST, 145.00 FEET;
THENCE SOUTH 88°53'30" EAST 405.62 FEET TO THE EAST LINE OF THE WEST HALF OF THE NORTHEAST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35;
THENCE ALONG SAID EAST LINE SOUTH 01°15'04" WEST, 145.00 FEET TO THE TRUE POINT OF BEGINNING

(ALSO KNOWN AS LOT 3 OF RECORD OF SURVEY FOR BOUNDARY LINE ADJUSTMENT RECORDED MARCH 31, 2003 UNDER RECORDING NO. 200303315001).

SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

TAX PARCEL NO. 0420351030: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249904-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

BEGINNING AT THE SIXTEENTH SECTION CORNER OF SECTION 35, TOWNSHIP 20 NORTH, RANGE 4 EAST OF THE WILLAMETTE MERIDIAN, 1321.48 FEET WEST OF THE CORNER COMMON TO SECTIONS 25, 26, 35 AND 36;
THENCE SOUTH ALONG THE SIXTEENTH SECTION 95.4 FEET TO THE TRUE POINT OF BEGINNING;
THENCE EAST 258.26 FEET;
THENCE SOUTH 100 FEET;
THENCE WEST 258.26 FEET;
THENCE NORTH 100 FEET TO THE TRUE POINT OF BEGINNING, IN PIERCE COUNTY, WASHINGTON.

EXCEPT SHAW COUNTY ROAD.

SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

TAX PARCEL NO. 0420351029: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249905-1-E
DATED JANUARY 22, 2021 AT 8:00 A.M.

BEGINNING AT THE 1/16 SECTION CORNER, 1321.48 FEET WEST OF CORNER MONUMENT
COMMON TO SECTIONS 25, 26, 35 AND 36 IN TOWNSHIP 20 NORTH, RANGE 4 EAST,
WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON;
THENCE SOUTH ALONG THE 1/16 SECTION LINE 195.4 FEET TO THE TRUE POINT OF
BEGINNING;
THENCE EAST 258.26 FEET;
THENCE SOUTH 100 FEET;
THENCE WEST 258.26 FEET;
THENCE NORTH 100 FEET TO TRUE POINT OF BEGINNING.

EXCEPT THE WEST 30 FEET THEREOF FOR ROAD.

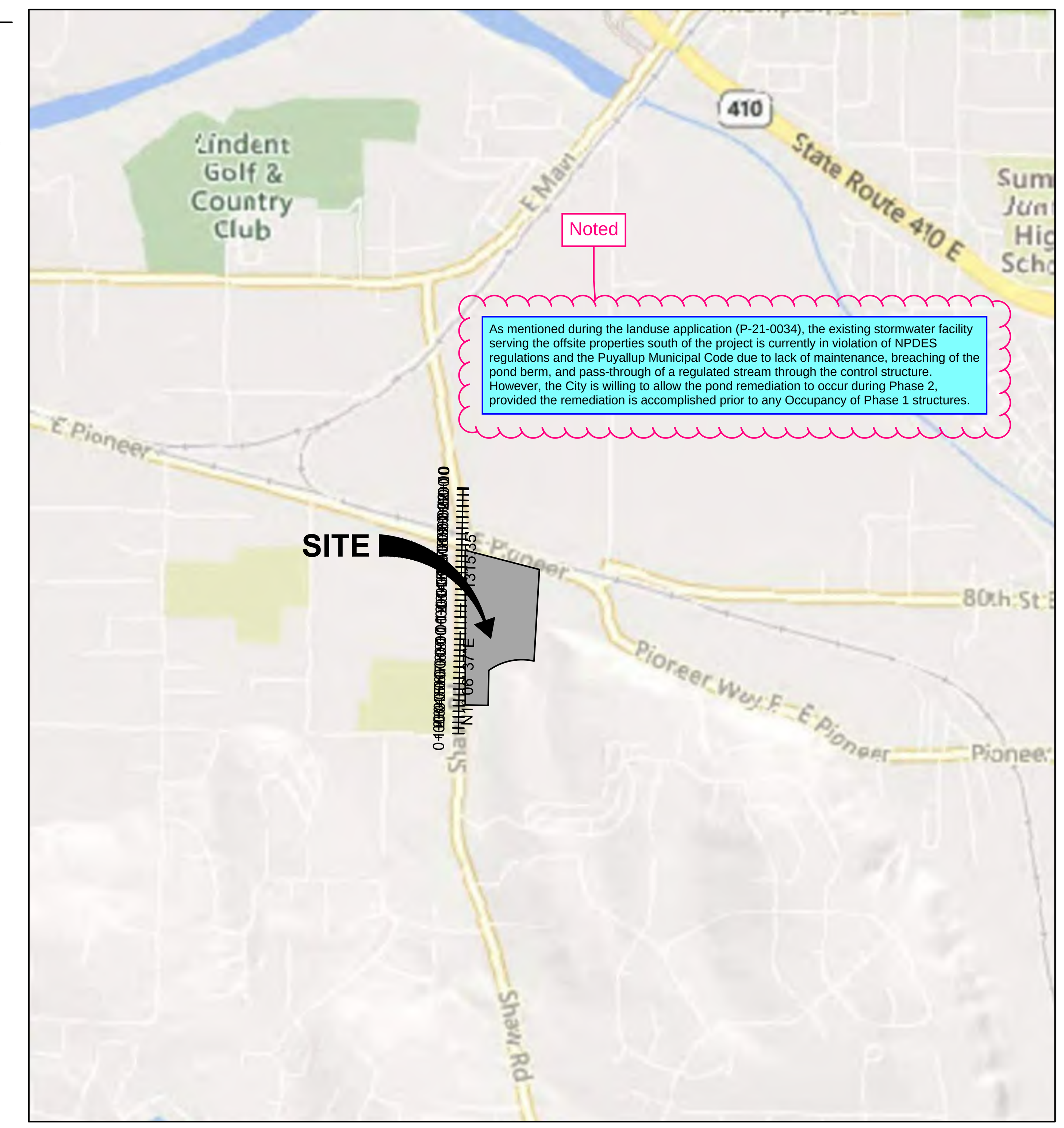
SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

TAX PARCEL NO. 0420351026: PER CW TITLE TITLE RESOURCES GUARANTY COMPANY SUBDIVISION GUARANTEE ORDER NO. 40249906-T35
DATED JANUARY 22, 2021 AT 8:00 A.M.

BEGINNING AT THE 1/16 CORNER 1321.48 FEET WEST OF THE CORNER MONUMENT COMMON TO SECTIONS 25, 26, 35 AND 36 IN TOWNSHIP 20 NORTH, RANGE 4 EAST, WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON;
THENCE SOUTH ALONG THE 1/16 SECTION LINE 294.5 FEET TO THE TRUE POINT OF BEGINNING;
THENCE EAST 258.35 FEET;
THENCE SOUTH 100 FEET;
THENCE WEST 258.35 FEET;
THENCE NORTH 100 FEET TO THE TRUE POINT OF BEGINNING, IN PIERCE COUNTY, WASHINGTON.

EXCEPT SHAW COUNTY ROAD.

SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.



VICINITY MAP
1" = 1000'
2902 E PIONEER WAY

AHBL
TACOMA · SEATTLE · SPOKANE · TRI-CITIES
2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN
STATE OF WASHINGTON
46416
REGISTERED PROFESSIONAL ENGINEER
11/21/2023

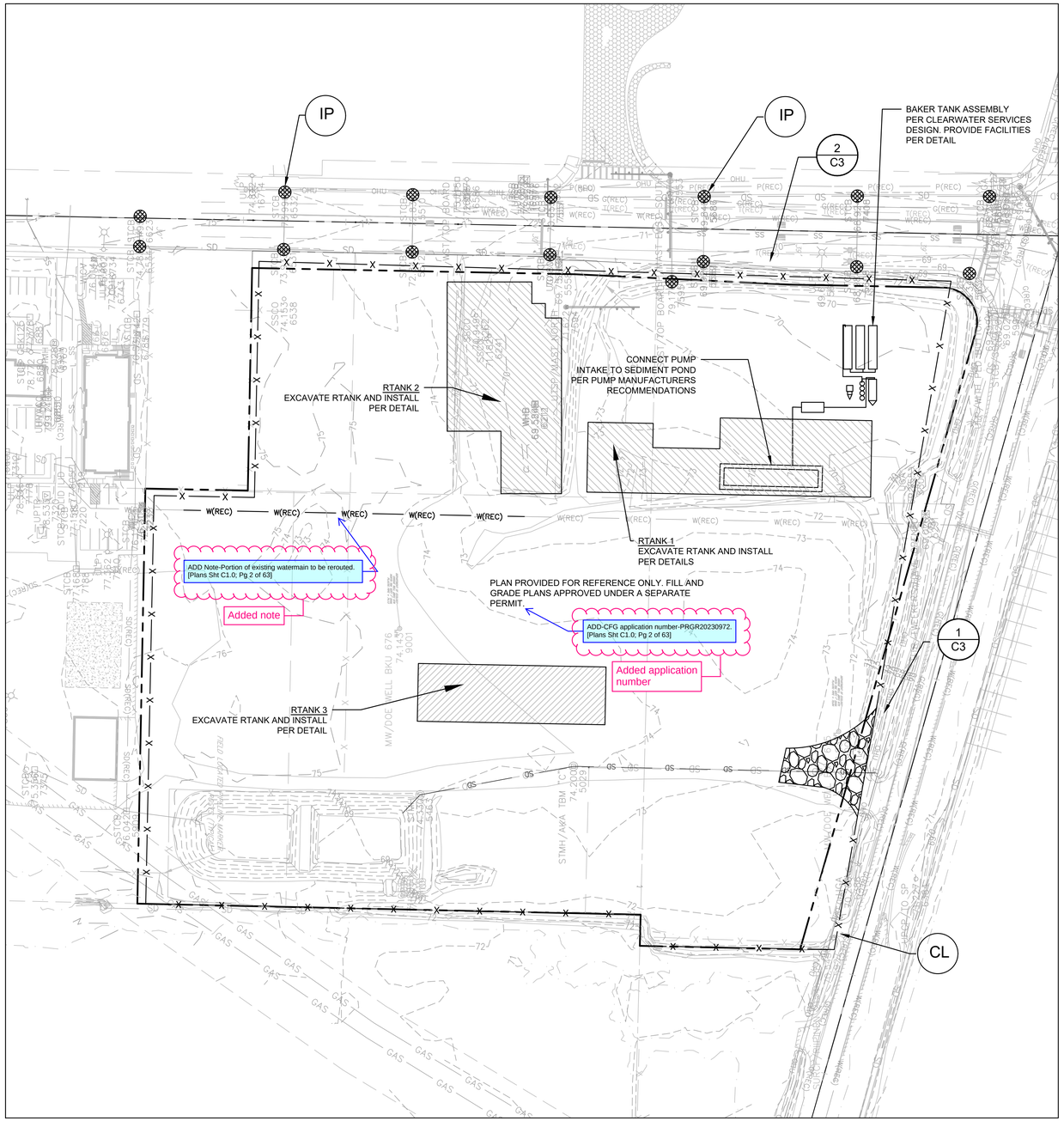
Revisions:

Sheet Title:
COVER SHEET

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C0.0

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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

Added application number

ADD CFG application number-PRGR20230972. [Plans Sht C1.0; Pg 2 of 63]

NOTE:

MAINTAIN SEDIMENT POND AND BAKER TANKS AS DESIGNED IN CLEAR, FILL AND GRADE PLANS

TESC LEGEND:

CL	CLEARING/ GRADING/ DISTURBED LIMITS	
FF	FILTER FABRIC FENCE SEE DETAIL	2 / C2
CE	CONSTRUCTION ENTRANCE	1 / C2
IP	INLET PROTECTION	3 / C2

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

AHBL
TACOMA · SEATTLE · SPOKANE · TRI-CITIES
2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

TESC PLAN

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C1.0

2 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Included note restricting access from Shaw Rd

Include note that specifically restricts construction access from Shaw Rd.
[Plans C1.1; Pg 3 of 63]

TESC INSPECTION NOTES:

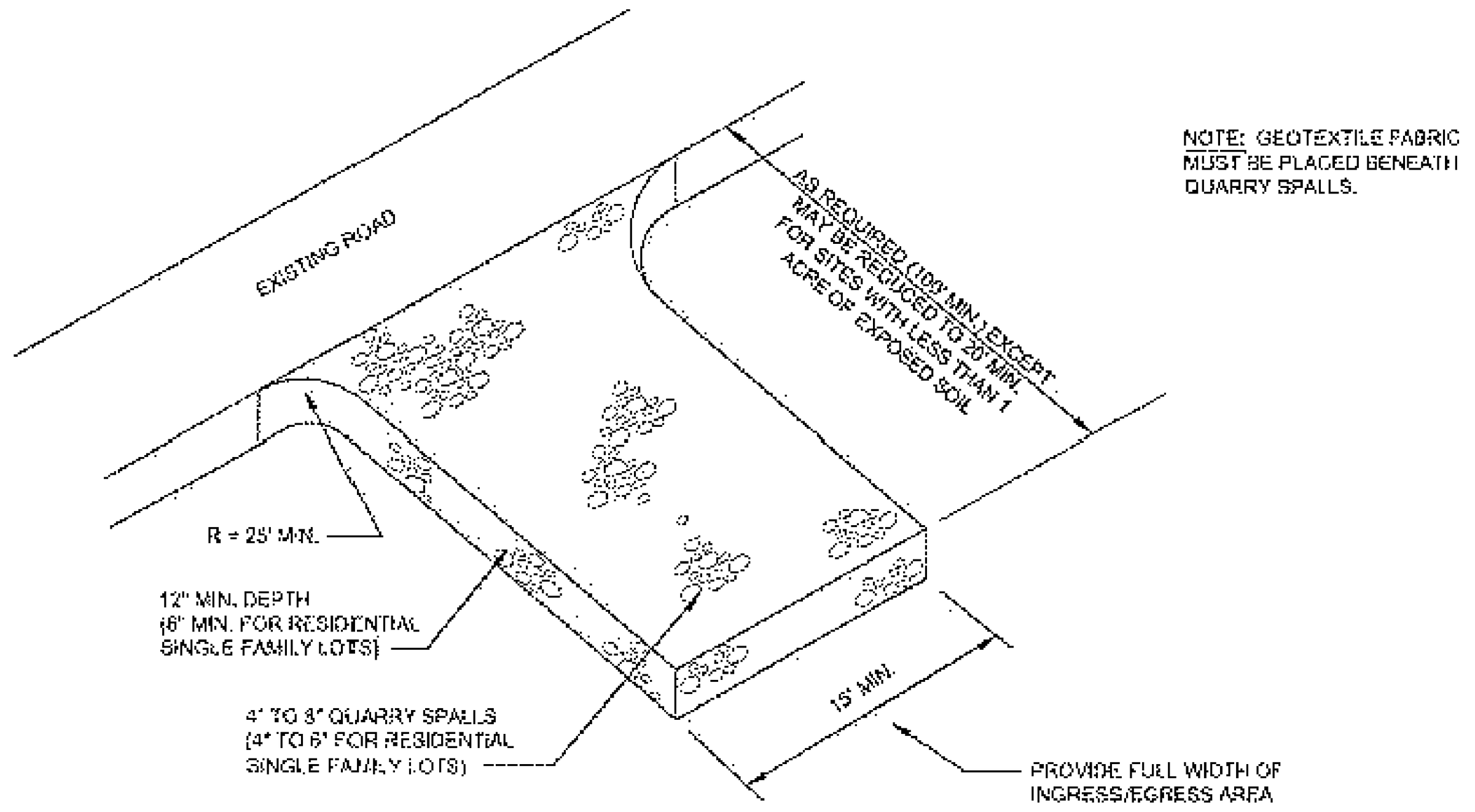
1. INSPECT ALL INLET PROTECTION ON CATCH BASINS. CLEAN OR REPLACE IF FULL OF SEDIMENT /DEBRIS AND REPAIR/REPLACE AS NEEDED IF DAMAGED TO MAINTAIN PROTECTION.
2. INSPECT ALL PERMANENT AND TEMPORARY STABILIZED SLOPES. REPAIR ANY DAMAGED SECTIONS AND RE-VEGETATE AS NEEDED TO ENSURE THE ESTABLISHMENT OF VEGETATION AND THAT NO EROSION OF THE SLOPES OCCUR.
3. INSPECT ALL FILTER FABRIC FENCING FOR SIGNS OF EROSION, DAMAGE OR FAILURES. REPAIR AND/OR REPLACE AS NEEDED. SEE FILTER FABRIC NOTES. SEDIMENT BUILD-UP ALONG FENCE SHALL BE REMOVED WHEN REACHES 1/3 THE FENCE HEIGHT. IF EROSION IS OCCURRING, CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL MEASURES AS NEEDED TO PREVENT EROSION.
4. ANY FILL/CUT SLOPES SHALL BE INSPECTED FOR EROSION. IF SIGNS OF EROSION ARE PRESENT, INSTALL APPROPRIATE BMPS AS NEEDED TO STOP EROSION AND STABILIZE SLOPES.
5. TESC LEAD RESPONSIBLE FOR NOTIFYING ENGINEER IF ADDITIONAL MEASURES ARE WARRANTED.

PERMANENT STABILIZATION NOTES:

1. ALL EXPOSED SOILS AND SLOPES SHALL BE SEEDED OR OTHERWISE STABILIZED IMMEDIATELY AFTER CONSTRUCTION AND GRADING ACTIVITIES HAVE BEEN COMPLETED.
2. SILT FENCE, IF DEEMED APPROPRIATE, SHALL REMAIN FOR A MINIMUM OF 30 DAYS AFTER THE FINAL STABILIZATION OF THE SLOPES HAS OCCURRED.
3. ALL TEMPORARY EROSION CONTROL BMP'S SHALL BE REMOVED 30 DAYS AFTER FINAL STABILIZATION HAS OCCURRED AS DIRECTED BY CITY OR COUNTY INSPECTOR.
4. CONTRACTOR SHALL REFER TO THE CONSTRUCTION SWPP FOR APPLICABLE BMPS.

CONSTRUCTION ENTRANCE NOTES:

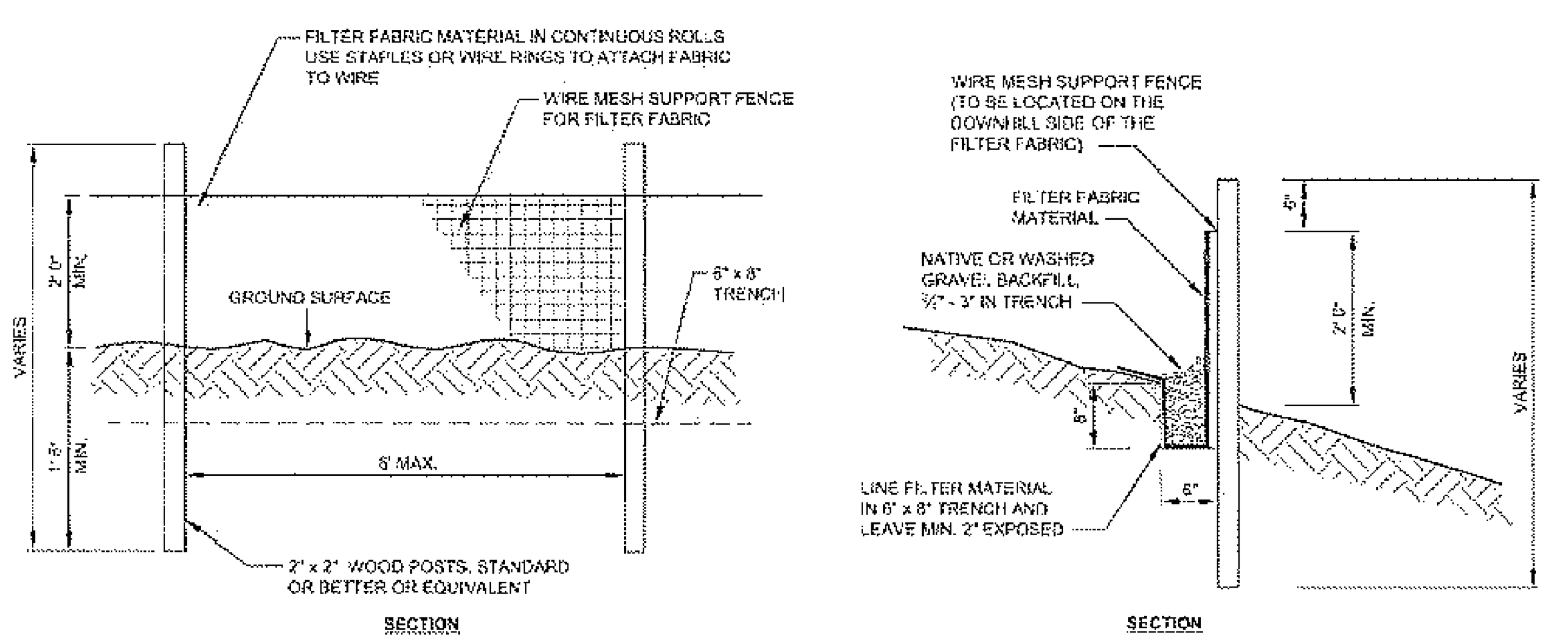
1. MATERIAL SHALL BE 4" TO 8" QUARRY SPALLS (4 TO 6 INCH FOR RESIDENTIAL SINGLE FAMILY LOTS) AND MAY BE TOP-DRESSED WITH 1 TO 3 INCH ROCK.
2. THE ROCK PAD SHALL BE AT LEAST 12" THICK AND 100' LONG (REDUCED TO 20 FEET FOR SITES LESS THAN 1 ACRE OF DISTURBED SOIL) WIDTH SHALL BE FULL WIDTH OF INGRESS AND EGRESS AREA. SMALLER PADS MAY BE APPROVED FOR SINGLE-FAMILY RESIDENTIAL AND COMMERCIAL SITES .
3. ADDITIONAL ROCK SHALL BE ADDED PERIODICALLY TO MAINTAIN FUNCTION OF THE PAD.
4. IF THE PAD DOES NOT ADEQUATELY REMOVE MUD FROM THE VEHICLE WHEELS, THE WHEELS SHALL BE HOSED OFF BEFORE THE VEHICLE ENTERS A PAVED STREET.THE WASHING SHALL BE DONE ON AN AREA COVERED WITH CRUSHED ROCK AND WASH WATER SHALL DRAIN TO A SEDIMENT RETENTION FACILITY OR THROUGH A SILT FENCE.



1 CONSTRUCTION ENTRANCE
SCALE:NTS

FILTER FABRIC FENCE NOTES:

1. SUPPORT POST, WITH A MINIMUM 6-INCH OVERLAP. AND SECURELY FASTENED AT BOTH ENDS TO POSTS.
2. POSTS SHALL BE SPACED A MAXIMUM OF 6 FEET APART AND DRIVEN SECURELY INTO THE GROUND (MINIMUM OF 30 INCHES).
3. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 8 INCHES WIDE AND 12 INCHES DEEP ALONG THE LINE OF POSTS
4. AND UPSLOPE FROM THE BARRIER. THIS TRENCH SHALL BE BACKFILLED WITH WASHED GRAVEL.
5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 4 INCHES AND SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
6. THE STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, AND 20 INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
7. WHEN EXTRA-STRENGTH FILTER FABRIC AND CLOSER POST SPACING IS USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH A CASE, THE FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO THE POSTS WITH ALL OTHER PROVISIONS OF ABOVE NOTES APPLYING.
8. FILTER FABRIC FENCES SHALL NOT BE REMOVED BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
9. FILTER FABRIC FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
10. SILT FENCES WILL BE INSTALLED PARALLEL TO ANY SLOPE CONTOURS.
11. CONTRIBUTING LENGTH TO FENCE WILL NOT BE GREATER THAN 100 FEET.
12. DO NOT INSTALL BELOW AN OUTLET PIPE OR WEIR.
13. INSTALL DOWNSLOPE OF EXPOSED AREAS.
14. DO NOT DRIVE OVER OR FILL OVER SILT FENCES.



2 FILTER FABRIC FENCE
SCALE:NTS

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

AMENDED SOILS NOTES:

- SOIL AMENDMENTS ARE REQUIRED FOR ALL DISTURBED AREAS IN ACCORDANCE WITH BMP L613: POST-CONSTRUCTION SOIL QUALITY AND DEPTH OF THE 2021 SURFACE WATER MANAGEMENT MANUAL
- AMENDED SOILS SHALL BE A MINIMUM OF 8" (NON-COMPACTED) WITH SUBSOILS SCARIFIED AT LEAST 4" WITH INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS, WHERE FEASIBLE.
- QUALITY OF COMPOST AND OTHER MATERIALS USED TO MEET THE ORGANIC CONTENT REQUIREMENTS ARE AS FOLLOWS:

a. THE ORGANIC CONTENT FOR "PRE-APPROVED" AMENDMENT RATES CAN BE MET ONLY USING COMPOST THAT MEETS THE DEFINITION OF "COMPOSTED MATERIALS" IN WAC 173-350-220. THE WAC IS AVAILABLE ONLINE AT: HTTP://WWW.ECY.WA.GOV/PROGRAMS/SWFA/FACILITIES/350.HTML THE COMPOST MUST ALSO HAVE AN ORGANIC MATTER CONTENT OF 35% TO 65%, AND A CARBON TO NITROGEN RATIO BELOW 25:1. THE CARBON TO NITROGEN RATIO MAY BE AS HIGH AS 35: 1 FOR PLANTINGS COMPOSED ENTIRELY OF PLANTS NATIVE TO THE PUGET SOUND LOWLANDS REGION.
b. CALCULATED AMENDMENT RATES MAY BE MET THROUGH USE OF COMPOSTED MATERIALS AS DEFINED ABOVE; OR OTHER ORGANIC MATERIALS AMENDED TO MEET THE CARBON TO NITROGEN RATIO REQUIREMENTS, AND MEETING THE CONTAMINANT STANDARDS OF GRADE A COMPOST.

- USE ONE OF THE FOLLOWING OPTIONS TO MEET THE POST CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS. USE THE MOST RECENT VERSION OF "GUIDELINES FOR RESOURCES FOR IMPLEMENTING SOIL QUALITY AND DEPTH BMP T5.13" TO MEET THE REQUIREMENTS OF THIS BMP. THIS GUIDANCE CAN BE FOUND ONLINE AT:WWW.SOILSFORSALMON.ORG

a. LEAVE NATIVE VEGETATION AND SOIL UNDISTURBED, AND PROTECT FROM COMPACTION DURING CONSTRUCTION
b. AMEND EXISTING SITE TOPSOIL OR SUBSOIL EITHER AT DEFAULT "PRE-APPROVED" RATES, OR AT CUSTOM CALCULATED RA TES BASED ON SPECIFIC TESTS OF THE SOIL AND AMENDMENT
c. STOCKPILE EXISTING TOPSOIL DURING GRADING, AND REPLACE IT PRIOR TO PLANTING. STOCKPILED TOPSOIL MUST ALSO BE AMENDED IF NEEDED TO MEET THE ORGANIC MATTER OR DEPTH REQUIREMENTS, EITHER AT A DEFAULT "PRE-APPROVED" RATE OR AT A CUSTOM CALCULATED RATE.
d. IMPORT TOPSOIL MIX OF SUFFICIENT ORGANIC CONTENT AND DEPTH TO MEET THE REQUIREMENTS. MORE THAN ONE METHOD MAY BE USED ON DIFFERENT PORTIONS OF THE SAME SITE. SOIL THAT ALREADY MEETS THE DEPTH AND ORGANIC MATTER QUALITY STANDARDS, AND IS NOT COMPACTED, DOES NOT NEED TO BE AMENDED.

- AMENDED SOILS SHALL BE MAINTAINED AS FOLLOWS:

a. SOIL QUALITY AND DEPTH SHOULD BE ESTABLISHED TOWARD THE END OF CONSTRUCTION AND ONCE ESTABLISHED, SHOULD BE PROTECTED FROM COMPACTION, SUCH AS FROM LARGE MACHINERY USE, AND FROM EROSION.
b. SOIL SHOULD BE PLANTED AND MULCHED AFTER INSTALLATION.
c. PLANT DEBRIS OR ITS EQUIVALENT SHOULD BE LEFT ON THE SOIL SURFACE TO REPLENISH ORGANIC MA TIER.
d. IT SHOULD BE POSSIBLE TO REDUCE USE OF IRRIGATION, FERTILIZERS, HERBICIDES AND PESTICIDES. THESE ACTIVITIES SHOULD BE ADJUSTED WHERE POSSIBLE,RATHER THAN CONTINUING TO IMPLEMENT FORMERLY ESTABLISHED PRACTICES.

- SEE PROJECT CONSTRUCTION SWPPP FOR ADDITIONAL INFORMATION OR SECTION 2.2.1.4 OF CHAPTER 2 OF VOLUME 6 OF THE 2021 SURFACE WATER MANAGEMENT MANUAL

MULCHING NOTES:

1. MULCH MATERIALS USED SHALL BE STRAW OR HAY, AND SHALL BE APPLIED AT THE RATE OF 75-100 POUNDS PER 1000 SQ. FT. (APPX 2" THICK).
2. MULCH SHALL BE APPLIED IN ALL AREAS WITH EXPOSED SLOPES GREATER THAN 2: 1.
3. MULCHING SHALL BE USED IMMEDIATELY AFTER SEEDING OR IN AREAS WHICH CANNOT BE SEEDED BECAUSE OF THE SEASON.
4. ALL AREAS NEEDING MULCH SHALL BE COVERED BY NOVEMBER 1.

CONTRACTOR NOTES:

1. INLET PROTECTION SHALL BE INSTALLED IN ALL NEWLY CONSTRUCTED CATCH BASINS AND ALONG ALL IMPACTED FRONTAGE AND OFFSITE AREAS PER THE REQUIREMENTS OF THE COUNTY INSPECTOR PER DETAIL 5 ON THIS SHEET 5.
2. CONSTRUCTION FENCE CAN BE UTILIZED IN PLACE OF FILTER FABRIC FENCE ONLY IN AREAS WHERE THE GRADES DO NOT ALLOW THE POTENTIAL FOR ANY STORMWATER TO LEAVE THE SITE.
3. ALL DEMOLISHED MATERIALS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT A CITY APPROVED LOCATION AND IN A MANNER CONSISTENT WITH CURRENT REGULATIONS AND REQUIREMENTS.
4. ALL AREAS THAT WILL BE UNWORKED FOR MORE THAN SEVEN (7) DAYS DURING THE DRY SEASON OR TWO (2) DAYS DURING THE WET SEASON, SHALL BE COVERED WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, OR OTHER EQUIVALENT PER CURRENT CITY OR COUNTY STANDARDS. SEE SEEDING NOTES AND MULCHING NOTES ON THIS SHEET.
5. CONTRACTOR SHALL DESIGNATE A WASHINGTON DEPT OF ECOLOGY CERTIFIED EROSION CONTROL LEAD PERSON, AND SHALL COMPLY WITH THE CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT.
6. AT ANY TIME DURING CONSTRUCTION IT IS DETERMINED BY THE CITY OR COUNTY THAT MUD AND DEBRIS ARE BEING TRACKED ONTO PUBLIC STREETS WITH INSUFFICIENT CLEANUP, ALL WORK SHALL CEASE ON THE PROJECT UNTIL THIS CONDITION IS CORRECTED. THE CONTRACTOR AND/OR THE OWNER SHALL IMMEDIATELY TAKE ALL STEPS NECESSARY TO PREVENT FUTURE TRACKING OF MUD AND DEBRIS INTO THE PUBLIC ROW, WHICH MAY INCLUDE THE INSTALLATION OF A WHEEL WASH FACILITY ON-SITE.
7. SEDIMENT LADEN RUNOFF SHALL NOT BE ALLOWED TO DISCHARGE BEYOND THE LIMITS OF THE IMPROVEMENTS. ADDITIONAL MEASURES SHALL BE INSTALLED AS NEEDED.
8. SAND BAGS SHALL BE SECURELY PLACED AROUND INSTALLED CATCH BASINS WITH INLET PROTECTION AS FIELD AND WEATHER CONDITIONS WARRANT SO TO PROTECT ALL DISPERSION AND INFILTRATION TRENCHES SEDIMENT LADEN RUNOFF.
9. TREES WITHIN WORKING LIMITS TO BE SAVED, SHALL BE MARKED AS SUCH ON SITE AND PROTECTION FENCE PLACED AROUND EACH TREE.

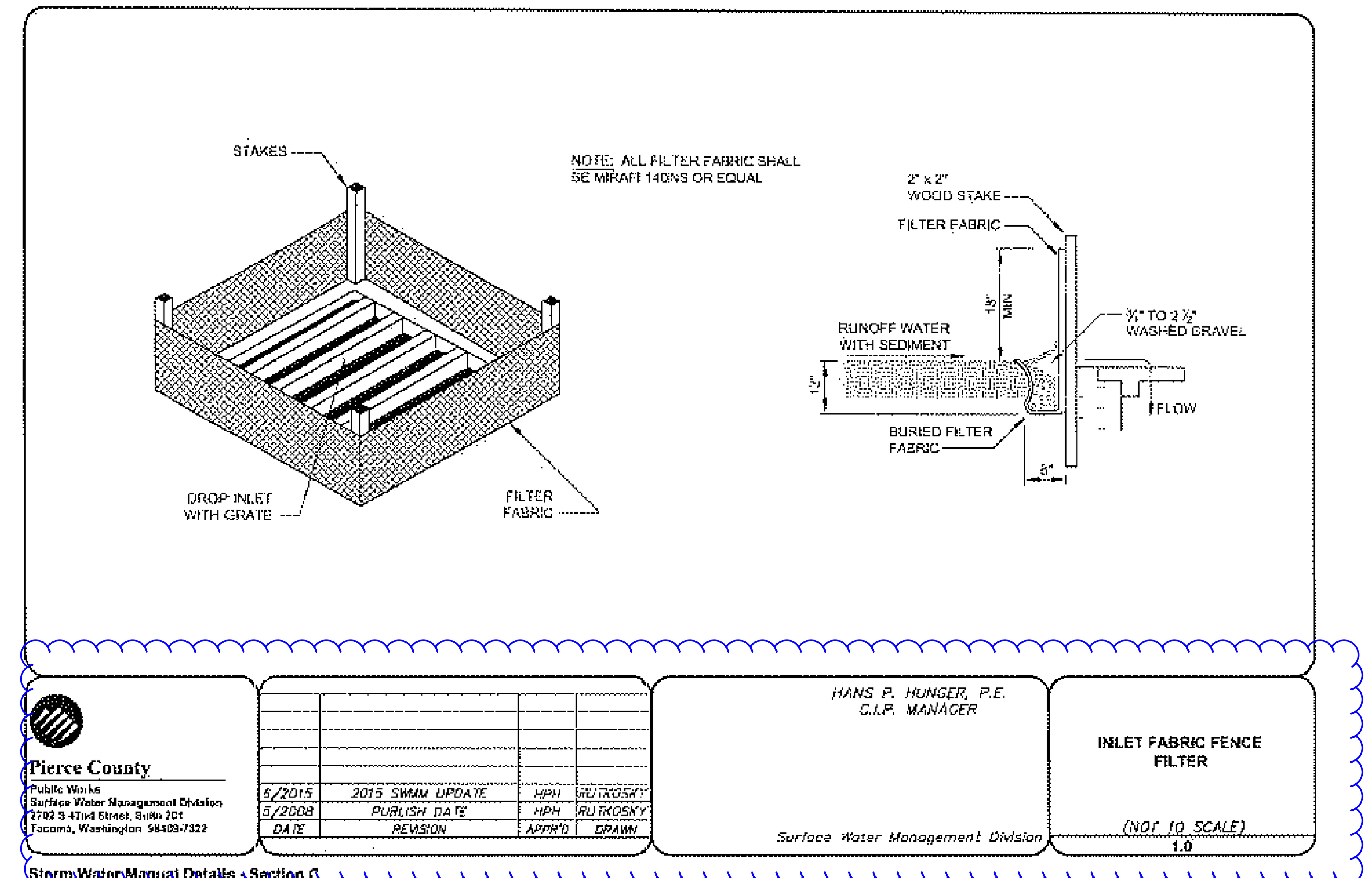
SEEDING NOTES:

1. THE FOLLOWING SEED MIXTURE SHALL BE AS BELOW AND SHALL BE APPLIED AT THE RATE RECOMMENDED BY THE SUPPLIER.

TABLE D.3.2.B TEMPORARY EROSION CONTROL SEED MIX

	% WEIGHT	% PURITY	% GERMINATION
CHEWINGS OR RED FESCUE FESTUCA *RUBRA VAR. COMMUTATA OR FESTUCA RUBRA*	40	98	90
ANNUAL OR PERENNIAL RYE *LOLIUM MULTIFLORUM OR LOLIUM PERENNE*	40	98	90
REDTOP OR COLONIAL BENTGRASS *AGROSTIS ALBA OR AGROSTIS TENUIS*	10	92	85
WHITE DUTCH CLOVER *TRIFOLIUM REPENS*	10	98	90

2. SEED BEDS PLANTED BETWEEN MAY 1 AND OCTOBER 31 WILL REQUIRE IRRIGATION AND OTHER MAINTENANCE AS NECESSARY TO FOSTER AND PROTECT THE ROOT STRUCTURE.
3. FOR SEED BEDS PLANTED BETWEEN OCTOBER 31 AND APRIL 30, ARMORING OF THE SEED BED WILL BE NECESSARY. {E.G., GEOTEXTILES, JUTE MAT, CLEAR PLASTIC COVERING),
4. BEFORE SEEDING, INSTALL NEEDED SURFACE RUNOFF CONTROL MEASURES SUCH AS GRADIENT TERRACES, INTERCEPTOR DIKES, SWALES, LEVEL SPREADERS AND SEDIMENT BASINS.
5. THE SEEDBED SHALL BE FIRM WITH A FAIRLY FINE SURFACE, FOLLOWING SURFACE ROUGHENING. PERFORM ALL OPERATIONS ACROSS OR AT RIGHT ANGLES TO THE SLOPE.
6. FERTILIZERS ARE TO BE USED ACCORDING TO SUPPLIER'S RECOMMENDATIONS. AMOUNTS USED SHOULD BE MINIMIZED, ESPECIALLY ADJACENT TO WATER BODIES AND WETLANDS.



3 INLET PROTECTION
SCALE:NTS

OK to use detail...please remove title block info.
[Plans Sht C1.1; Pg 3 of 63]

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APPROVED

BY ______________________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ____________________

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN
STATE OF WASHINGTON
46416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

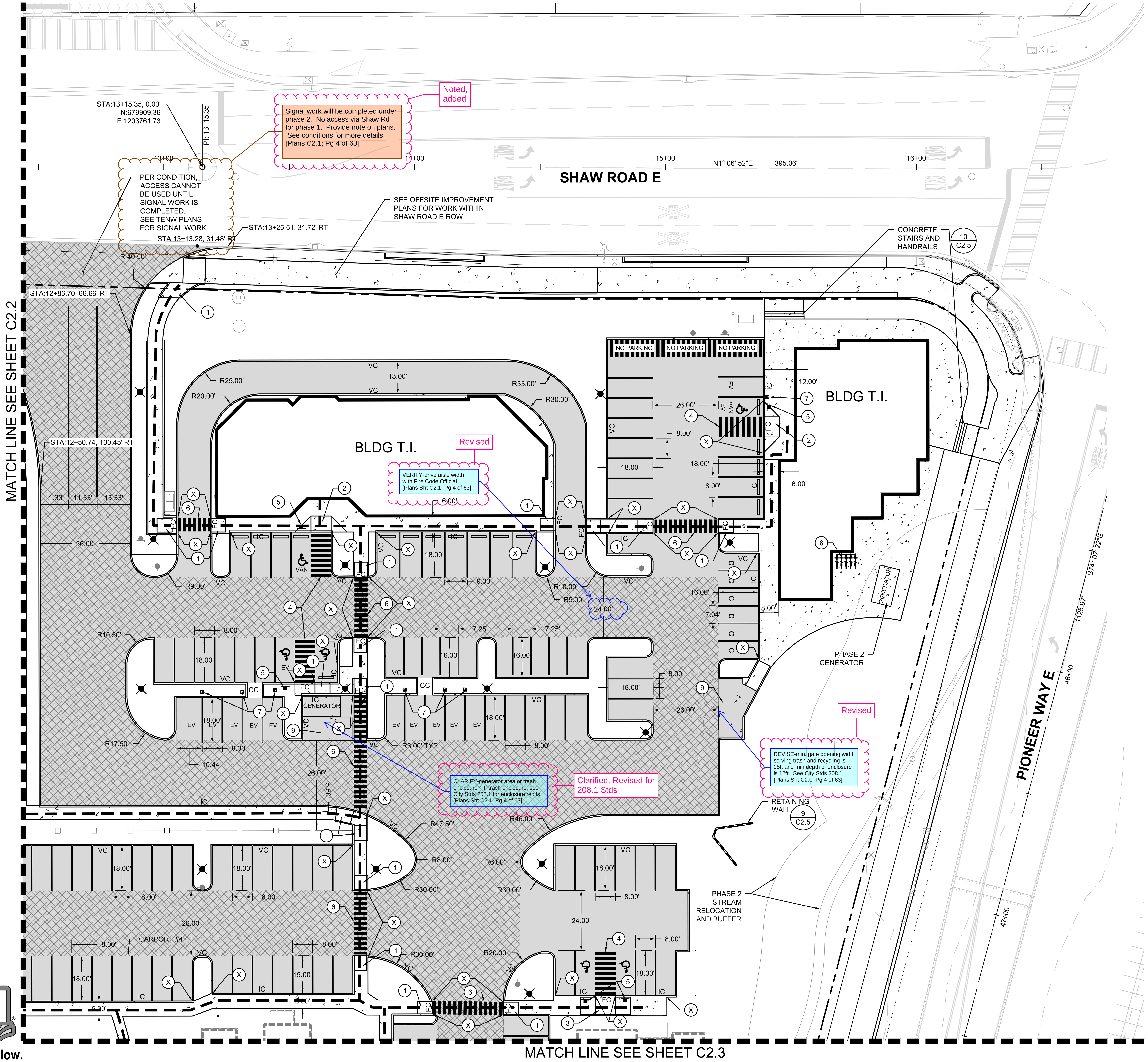
Revisions:

Sheet Title:
TESC NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C1.1

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

LEGEND:

	RIGHT-OF-WAY/PROPERTY LINE
	CENTERLINE
	PROPOSED BUILDING OUTLINE
	FENCING - REFER TO LANDSCAPE ARCHITECTS DRAWINGS.
	ACCESSIBLE PATH
	ASPHALT PAVEMENT - STANDARD DUTY (1 / C2.5)
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VC	VERTICAL CURB
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KEYNOTES

1. ADA RAMP - SINGLE DIRECTIONAL (1 / C2.6)
2. ADA RAMP - PERPENDICULAR (3 / C2.6)
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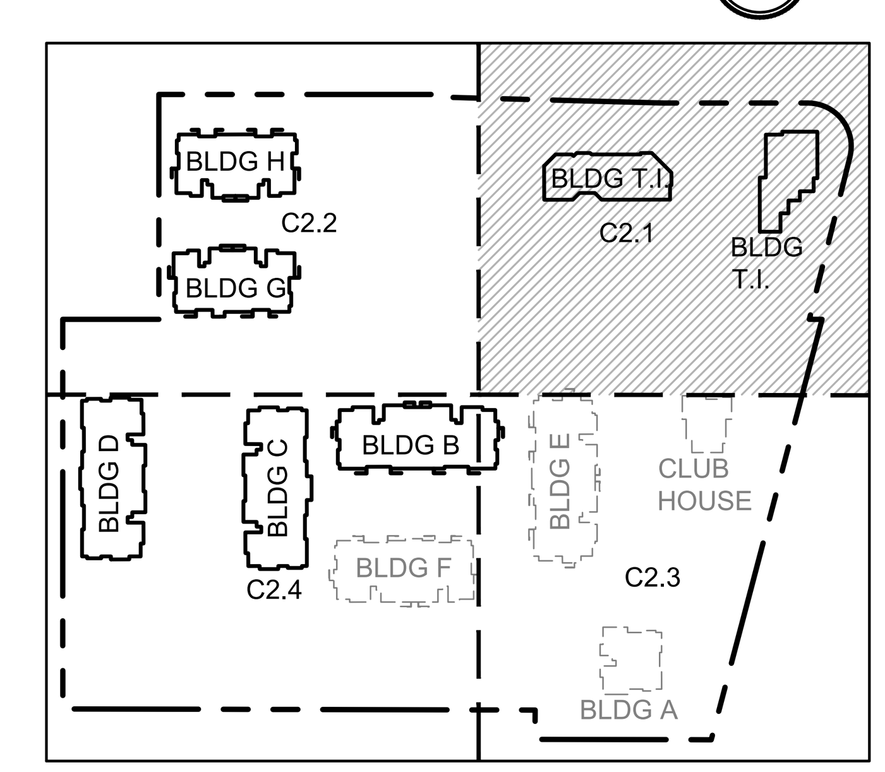
8. BIKE RACK, SEE ARCHITECTURAL PLANS
9. DUMPSTER ENCLOSURE, SEE ARCHITECTURAL PLANS



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Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SAWIN — STATE OF WASHINGTON — 46416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

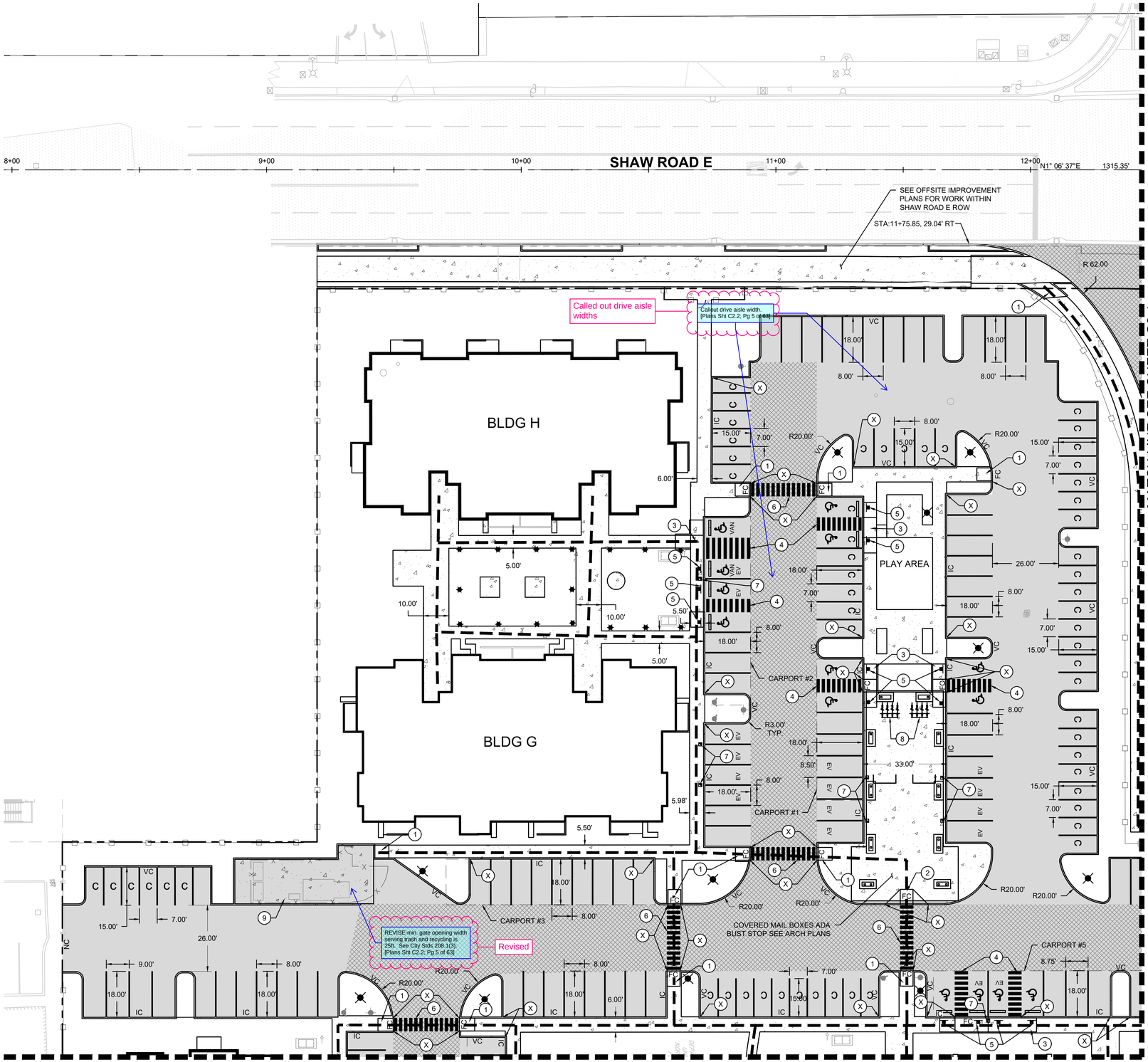
HORIZONTAL CONTROL AND PAVING PLAN NW

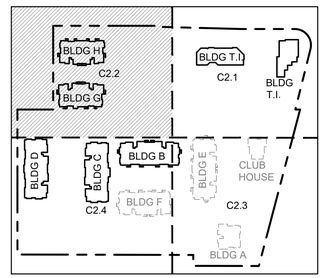
Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C2.1

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.





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LEGEND:

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- BOLLARD PROTECTION
- CEMENT CONCRETE WHEEL STOP (7 / C2.5)
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GREG HELLE
GREG.HELLE@ASHNW.COM

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PERMIT SUBMITTAL
11/20/2023

11/21/2023

Revisions:
A
B
A
1

Sheet Title:
HORIZONTAL CONTROL AND PAVING PLAN SW

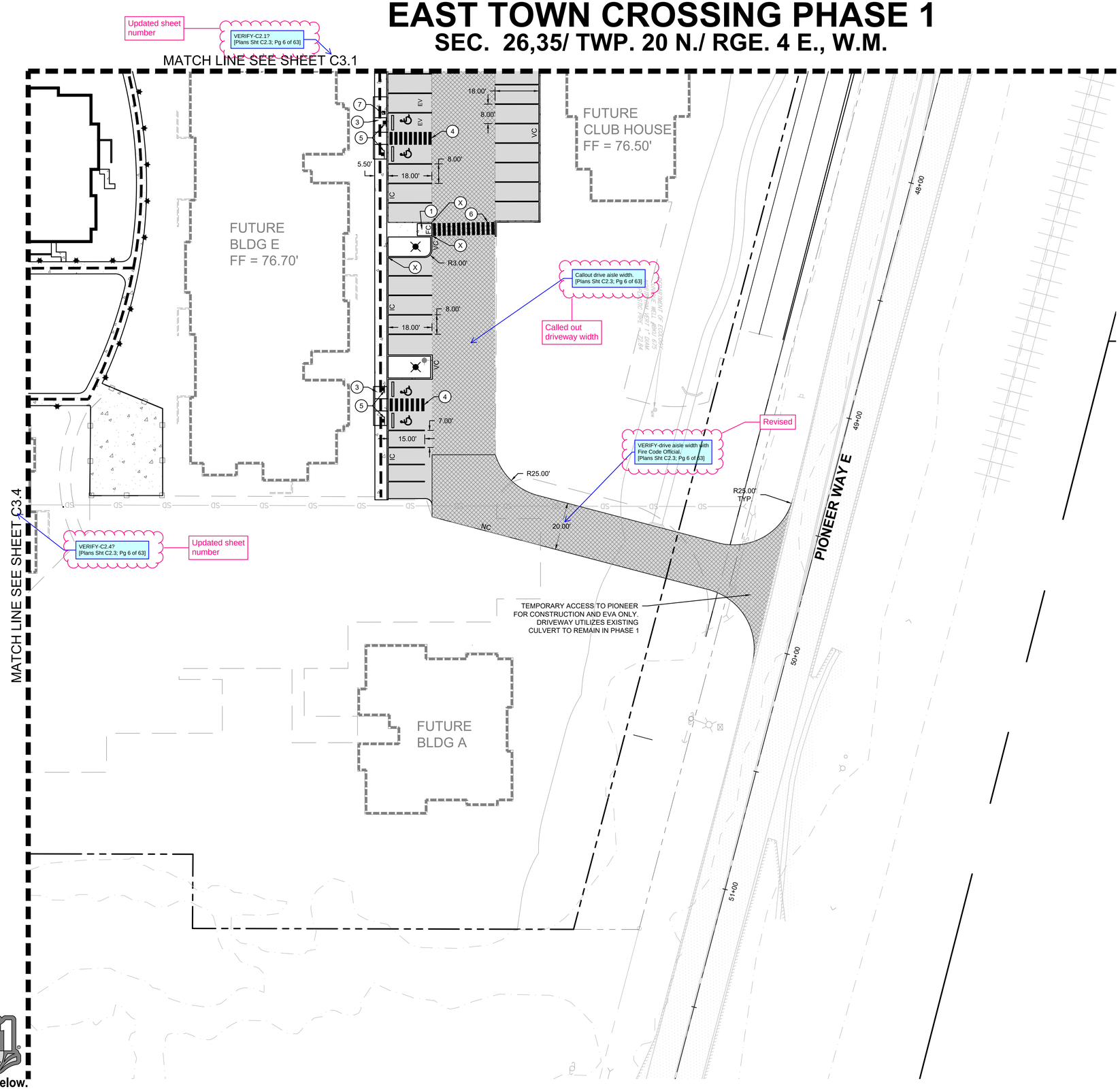
Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C2.2
5 of 63 Sheets

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

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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N

GRAPHIC SCALE
0 10 20 40
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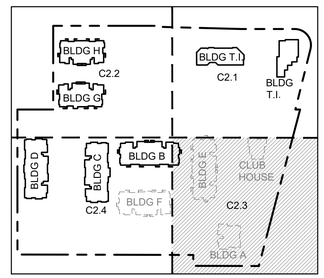

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11/20/2023

CLAYTON CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

HORIZONTAL CONTROL AND PAVING PLAN NE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C2.3

6 of 63 Sheets

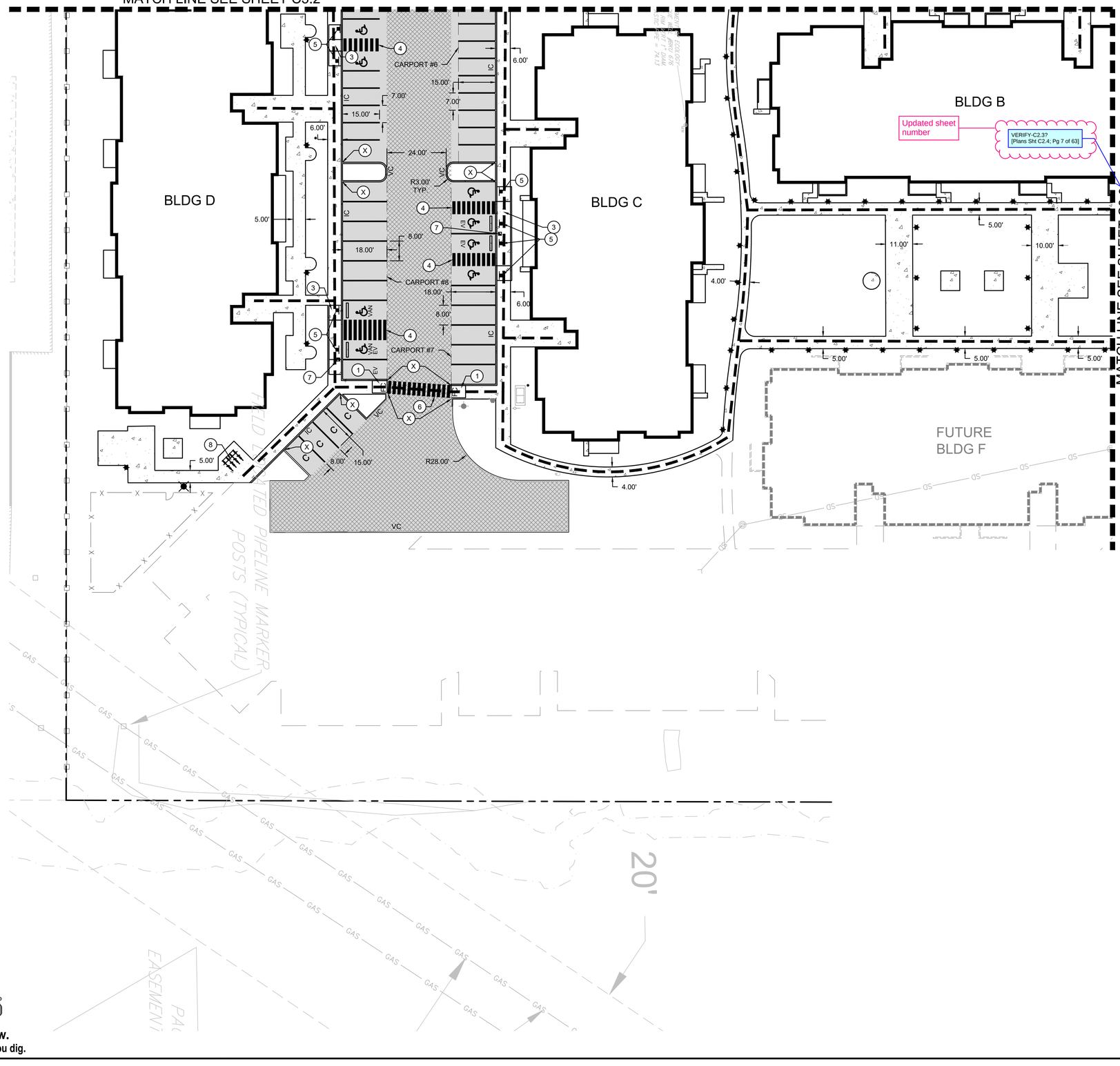
EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Updated sheet number

VERIFY-C2.2? [Plans Sht C2.4; Pg 7 of 63]

MATCH LINE SEE SHEET C3.2



MATCH LINE SEE SHEET C3.3

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VERIFY-C2.3? [Plans Sht C2.4; Pg 7 of 63]

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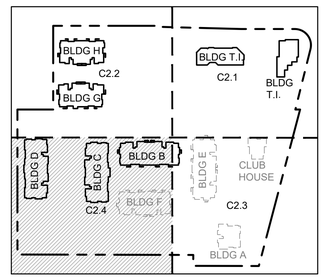
- CEMENT CONCRETE - HEAVY DUTY (4 / C2.5)
- BOLLARD PROTECTION
- CEMENT CONCRETE WHEEL STOP (7 / C2.5)
- LIGHTING - REFER TO ELECTRICAL PLANS
- ADA ACCESSIBLE PARKING STALL (5 / C2.6)
- (X) CHANGE IN CURB TYPE / END CURB
- EC CONCRETE EXTRUDED CURB
- IC INTEGRAL CURB AND SIDEWALK (5 / C2.5)
- NC NO CURB
- CC CURB CUT (8 / C2.5, 6 / C2.5)
- VC VERTICAL CURB
- CG CONCRETE CURB AND GUTTER
- FC FLUSH CURB

KEYNOTES

1. ADA RAMP - SINGLE DIRECTIONAL (1 / C2.6)
2. ADA RAMP - PERPENDICULAR (3 / C2.6)
3. ADA RAMP - DEPRESSED SIDEWALK (2 / C2.6)
4. ADA STALL (5 / C2.6)
5. ADA SIGN (5 / C2.6)
6. CROSSWALK STRIPING
7. EV CHARGING - SEE ARCHITECTURAL PLANS
8. BIKE RACK, SEE ARCHITECTURAL PLANS
9. DUMPSTER ENCLOSURE, SEE ARCHITECTURAL PLANS



Know what's below. Call before you dig.

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

CHRISTOPHER J. TODD SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

HORIZONTAL CONTROL AND PAVING PLAN SE

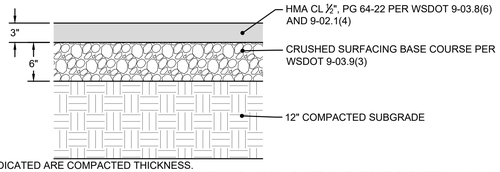
Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C2.4

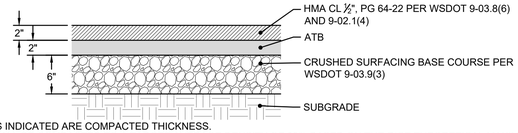
7 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



NOTES:
1. DEPTHS INDICATED ARE COMPACTED THICKNESS.
2. HMA SHALL BE COMPACTED TO A TARGET AVERAGE DENSITY OF 92% BASED ON THE RICE THEORETICAL MAXIMUM DENSITY PER ASTM D-2041. INDIVIDUAL LOCATIONS SHALL BE COMPACTED NOT LESS THAN 90% NOR MORE THAN 96%.
3. ALL ASPHALT BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% BASED ON THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D-1557.
4. SUBGRADE SHALL BE COMPACTED TO A FIRM AND UNYIELDING CONDITION PRIOR TO PLACEMENT OF ANY PAVEMENT LAYERS. ANY LOCALIZED ZONES OF SOFT, ORGANIC-RICH, OR DEBRIS-LADEN SOILS SHOULD BE OVEREXCAVATED AND REPLACED WITH STRUCTURAL FILL MATERIAL.
5. SEAL JOINTS WITH EMULSIFIED ASPHALT PER PROJECT SPECIFICATIONS.

1 ASPHALT PAVEMENT - STANDARD DUTY
NOT TO SCALE



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5. SEAL JOINTS WITH EMULSIFIED ASPHALT PER PROJECT SPECIFICATIONS.

2 ASPHALT PAVEMENT - ATB
NOT TO SCALE

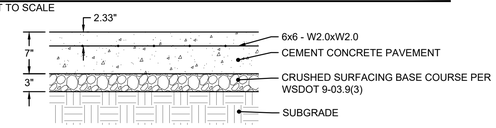
CONCRETE MIX DESIGN

- UNIT WEIGHT: 120 TO 130 POUNDS PER CUBIC FOOT (PERMEABLE CONCRETE IS APPROXIMATELY 70 TO 80 PERCENT OF THE UNIT WEIGHT OF CONVENTIONAL CONCRETE) (FCPA, N.D.)
- VOID SPACE: 15 TO 21 PERCENT ACCORDING TO ASTM C 138.
- WATER CEMENT RATIO: 0.27 TO 0.35.
- AGGREGATE TO CEMENT RATIO: 4:1 TO 4.5:1
- AGGREGATE: USE EITHER:
  3/8 - INCH TO NO. 16 WASHED CRUSHED OR ROUND PER ASTM C 35 OR
  3/8 - INCH TO NO. 50 WASHED CRUSHED OR ROUND PER ASTM D 448.

PORTLAND CEMENT: TYPE I OR II CONFORMING TO ASTM C 150 OR TYPE IP OR IS CONFORMING TO ASTM C 595.

- ADMIXTURES: CAN BE USED TO INCREASE WORKING TIME AND INCLUDE: WATER REDUCING/RETARDING ADMIXTURE
- IN CONFORMANCE WITH ASTM C 494 TYPE D AND HYDRATION STABILIZER IN CONFORMANCE WITH ASTM C494 TYPE B.
- WATER: USE POTABLE WATER.
- FIBER MESH CAN BE INCORPORATED INTO THE CEMENT MIX FOR ADDED STRENGTH.
- PROVIDE JOINTS AT 15' O.C. - PROVIDE DOWEL BARS 1 ½" x 18" LONG ON 18" CENTERS ON TRANSVERSE JOINTS AND #5 TIE BARS x 30" LONG ON 36" CENTERS ON LONGITUDINAL JOINTS PER WSDOT A-40.10-04.

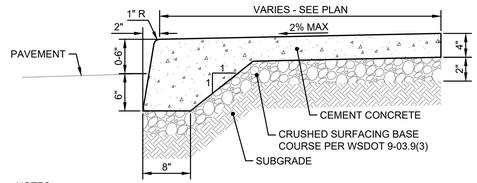
3 PERVIOUS CEMENT CONCRETE
NOT TO SCALE



NOTES:
1. DEPTHS INDICATED ARE COMPACTED THICKNESSES.
2. CEMENT CONCRETE PAVEMENT SHALL CONSIST OF PORTLAND CEMENT CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AND A MINIMUM RUPTURE MODULUS OF 580 PSI.
3. GRANULAR SUBBASE SHALL CONSIST OF "BALLAST" PER WSDOT 9-03.9(1), "GRAVEL BORROW" PER WSDOT 9-03.14, OR CRUSHED RECYCLED CONCRETE PROVIDED THAT IT MEETS THE SAME TEXTURAL CRITERIA AS "BALLAST" OR "GRAVEL BORROW."
4. ALL BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% BASED ON THE MODIFIED PROCTOR MAXIMUM DRY DENSITY PER ASTM D-1557.
5. SUBGRADE SHALL BE COMPACTED TO A FIRM AND UNYIELDING CONDITION PRIOR TO PLACEMENT OF ANY PAVEMENT LAYERS. ANY LOCALIZED ZONES OF SOFT, ORGANIC-RICH, OR DEBRIS-LADEN SOILS SHOULD BE OVEREXCAVATED AND REPLACED WITH STRUCTURAL FILL MATERIAL.

4 CEMENT CONCRETE - HEAVY DUTY
NOT TO SCALE

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



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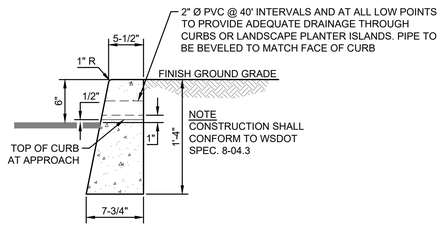
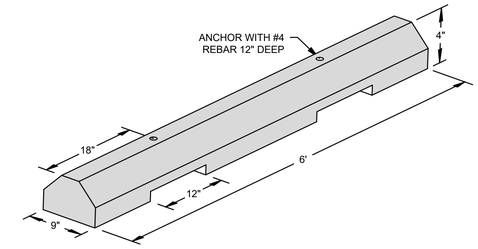
5. EXPANSION JOINTS SHALL BE AT 10' INTERVALS OR AS SHOWN ON THE ARCHITECTURAL PLANS.
6. RECYCLED CONCRETE IS NOT ACCEPTABLE.

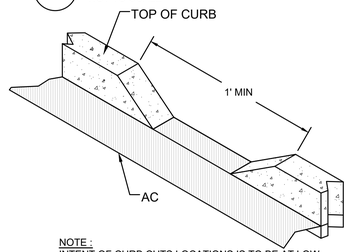
5 INTEGRAL CURB
NOT TO SCALE



6 VERTICAL CURB
NOT TO SCALE



7 CONCRETE WHEEL STOP
NOT TO SCALE

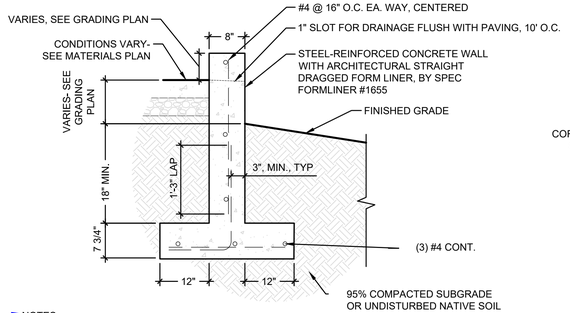


NOTE -
INTENT OF CURB CUTS LOCATIONS IS TO BE AT LOW POINTS OF ASPHALT EDGE TO ENSURE PONDING DOES NOT OCCUR. CONTRACTOR SHALL ADJUST LOCATION IN FIELD AS NECESSARY.

8 CURB CUT
NOT TO SCALE

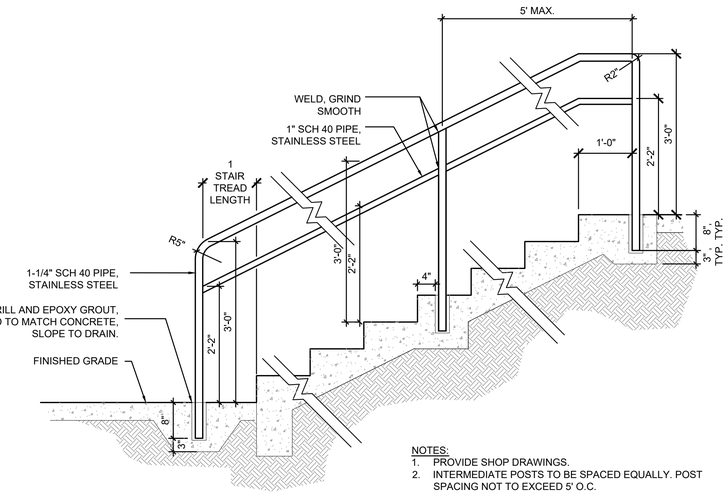
Included note

Add Note:"Walls over 4'-0" require separate building permit." [Plans Sht C2.5, Pg 8 of 63]



NOTES:
1. KEEP TOP LEVEL
2. MAX WALL HEIGHT 3'-0", SEE STRUCTURAL FOR WALLS ABOVE 3'-0"

9 CONCRETE RETAINING WALL
NOT TO SCALE



NOTES:
1. PROVIDE SHOP DRAWINGS.
2. INTERMEDIATE POSTS TO BE SPACED EQUALLY. POST SPACING NOT TO EXCEED 5' O.C.

10 CONCRETE STAIRS AND HANDRAILS
NOT TO SCALE

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

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EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:
4
3
2
1

Sheet Title:

PAVING NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

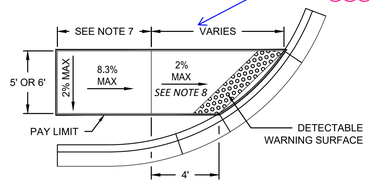
C2.5

8 of 63 Sheets

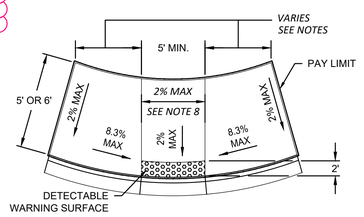
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Added note

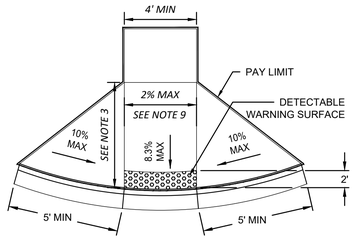
FYI-if this distance is less than 5ft (btwn landing and back of curb), then the DWS is req'd at the bottom of the ramp. [Plans Sht C2.6; Pg 9 of 63]



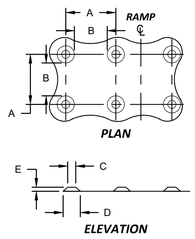
1 SINGLE DIRECTION CURB RAMP
NOT TO SCALE



2 PARALLEL CURB RAMP
NOT TO SCALE



3 PERPENDICULAR CURB RAMP
NOT TO SCALE



DETECTABLE WARNING SURFACE AREA SHALL BE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS SECTION 8-14.2.

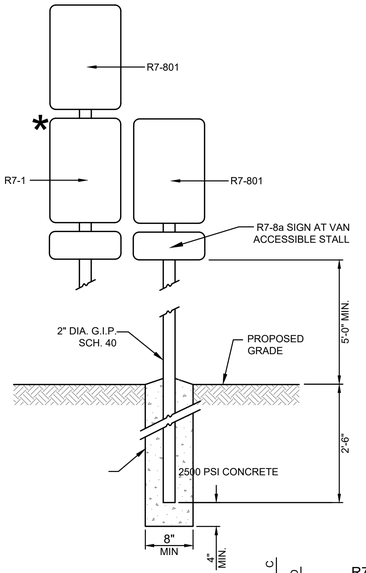
DETECTABLE WARNING SURFACES SHALL BE PLACED IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATIONS SECTION 8-14.3(5).

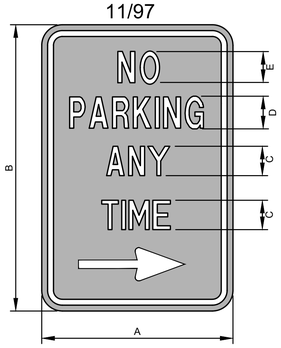
** DIMENSION C SHALL BE 50% THROUGH 65% OF DIMENSION D*

4 DETECTABLE WARNING SURFACE DETAIL
NOT TO SCALE

CURB RAMP NOTES:

1. CURB RAMPS ARE TYPICALLY CENTERED AT THE 1/4 RADIUS POINTS.
2. CURB TO BE FLUSH WITH ADJACENT ROADWAY SURFACE. THE BID ITEM DOES NOT INCLUDE THE CURB AND GUTTER.
3. PERPENDICULAR RAMP LENGTH IS MEASURED FROM BACK OF CURB.
4. PARALLEL RAMP LENGTHS VARY FROM 6' MIN. TO 15' MAX.
5. IF SIGNAL POLE EXISTS, PARALLEL CURB RAMP SHALL INCLUDE THE CONCRETE AREA AROUND THE SIGNAL POLE. SIDEWALK DEPTH SHALL BE 6" FROM PC TO PT. SEE STANDARD DRAWING PC.J1.2 FOR ADDITIONAL DETAILS.
6. ADJUST RAMP LENGTHS TO MEET ADA REQUIREMENTS 8.3% MAX GRADE, 15' MAX LENGTH.
7. SEE WSDOT STANDARD PLAN F-40.16-03 NOTE 8.
8. LANDINGS SHALL HAVE A 2% MAX. GRADE IN EACH DIRECTION, EXCEPT AT MIDBLOCK CROSSINGS WHERE THEY MAY MATCH THE GRADE OF THE ROADWAY.
9. PERPENDICULAR CURB RAMPS SHALL HAVE A 2% MAX. CROSS SLOPE, EXCEPT AT MIDBLOCK CROSSINGS WHERE IT MAY MATCH THE GRADE OF THE ROADWAY.
10. THE ROWS OF TRUNCATED DOMES IN DETECTABLE WARNING SURFACES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK AT THE BACK OF CURB.
11. CURB RAMPS CANNOT BE PERVIOUS MATERIAL.
12. SEE THE CURRENT EDITION OF WSDOT STANDARD PLAN F-10.12 FOR PEDESTRIAN CURB DETAILS.
13. FOR RESIDENTIAL DRIVEWAY APPROACHES PARALLEL CURB RAMPS SHALL BE 2' MIN. FROM THE DRIVEWAY APPROACH.
14. TO AVOID OBSTACLES, CURB RAMPS OPPOSITE THE RETURNED CURBS AT "T" INTERSECTIONS MAY BE PLACED AT A SKEW OF 5° MAX FROM AN ALIGNMENT PERPENDICULAR TO THE CENTERLINE





SEE PLANS FOR DESIGNATED LEFT, RIGHT, OR BOTH ARROW

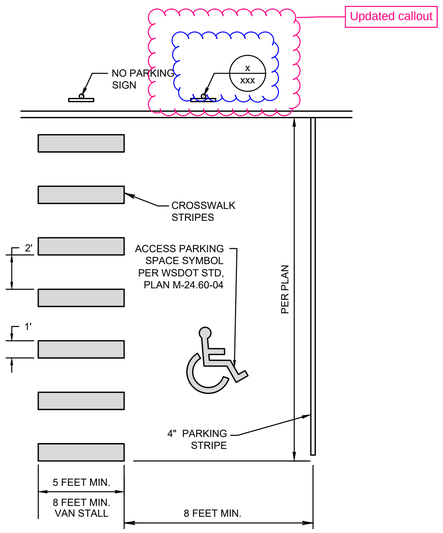
COLORS
LEGEND - RED
BACKGROUND - WHITE (REFL)

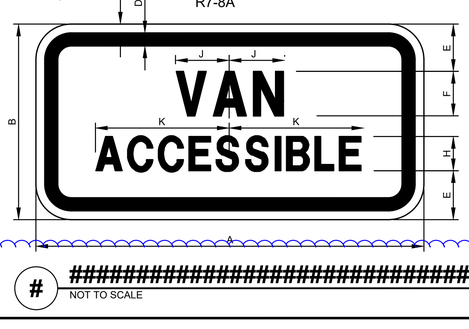
DIMENSIONS (INCHES)				
A	B	C	D	E
12	18	2C	3B	2C

NOTE:

1. PLACE NO PARKING SIGN 12 INCHES BEHIND CURB AT OUTSIDE EDGE OF AISLES

COLORS
LEGEND & BORDER - WHITE (REFL)
SYMBOL - WHITE (REFL)
BACKGROUND - BLUE (REFL)





DIMENSIONS (INCHES)								
A	B	C	D	E	F	G	H	J
12	18	3/8	3/8	2 1/2	2C	2	9	1 1/2

NOTE:

1. PROVIDE VAN ACCESSIBLE STALL SIGN ON STALLS IDENTIFIED AS VAN STALLS.
2. PLACE NO PARKING SIGN 12 INCHES BEHIND CURB AT OUTSIDE EDGE OF AISLES
3. PROVIDE NO PARKING SIGN ON STALL POST IF AISLE LEADS TO RAMP

CLARIFY. [Plans Sht C2.6; Pg 9 of 63]

Updated detail label

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

\# ##########
NOT TO SCALE

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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GREG HELLE

GREG.HELLE@ASHNW.COM

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PERMIT SUBMITTAL
11/20/2023

11/21/2023

3 _____
2 _____
1 _____

Revisions:

Sheet Title:

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Designed by:	Drawn by:	Checked by:
CW	SK	JI

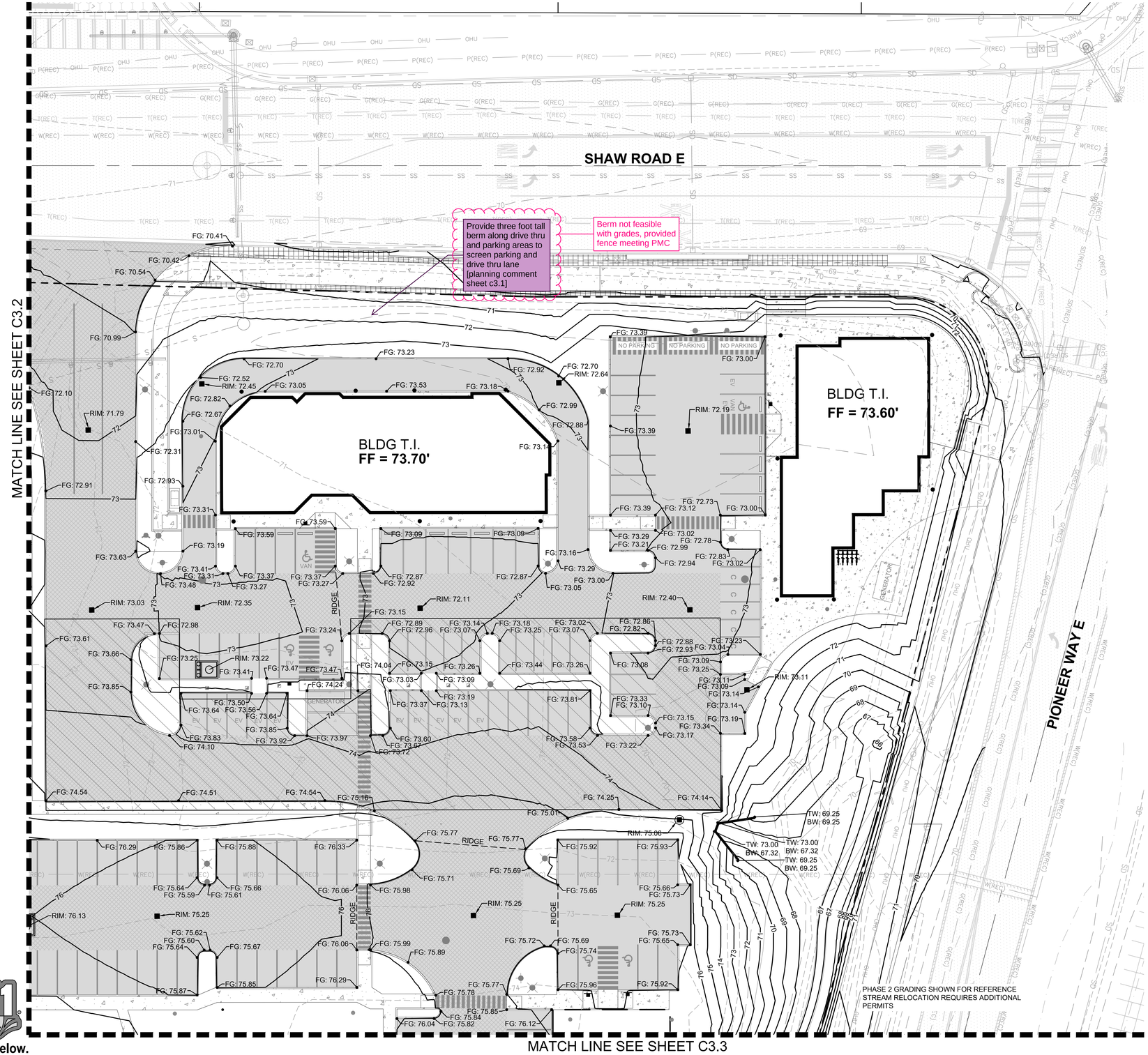
Sheet No.

C2.6

9 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

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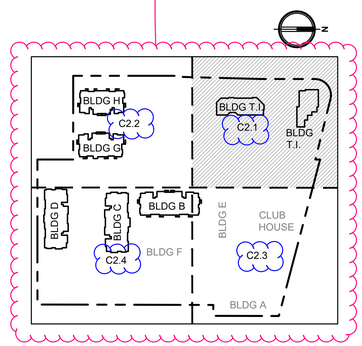
Know what's **below.**
Call before you dig.

Delineate the regulated floodplain per the LOMR, Effective September 8, 2022. [Plans Sht C3.1; Pg 10 of 63]

Called out regulated floodplain

Updated sheet labels



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11/20/2023

TODD CHRISTOPHER SAMMIN
STATE OF WASHINGTON
16416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

A

A

A

1

Revisions:

Sheet Title:

GRADING PLAN NW

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C3.1

10 of 63 Sheets

EAST TOWN CROSSING PHASE 1
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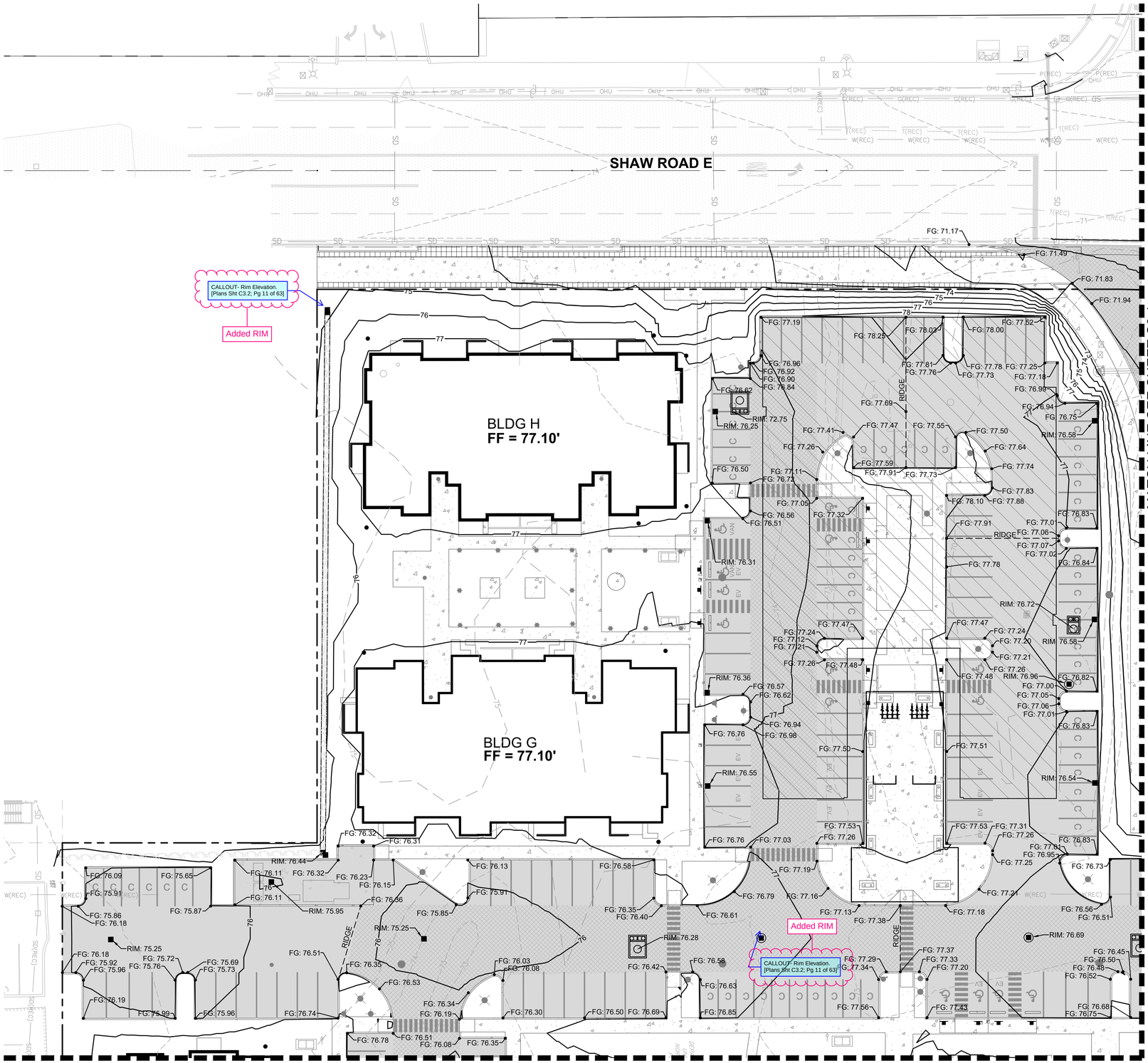

GRAPHIC SCALE
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1" = 20 FEET

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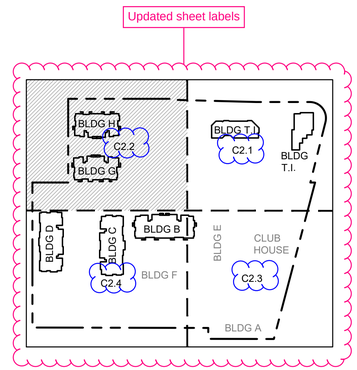

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
16416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

Revisions:
A
3
2
1

Sheet Title:

GRADING PLAN SW

Designed by:	Drawn by:	Checked by:
CW	SK	JI

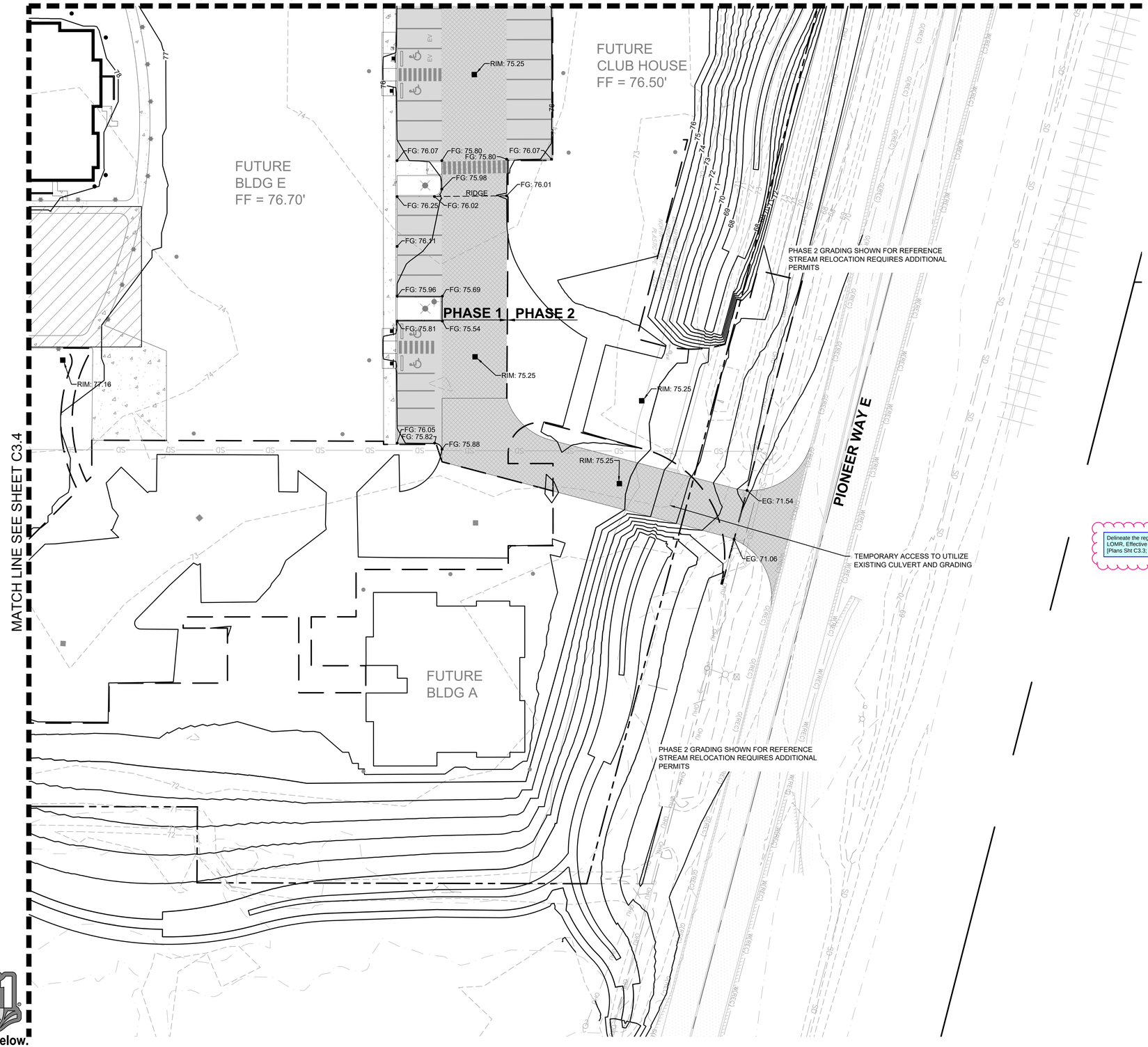
Sheet No.

C3.2

11 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
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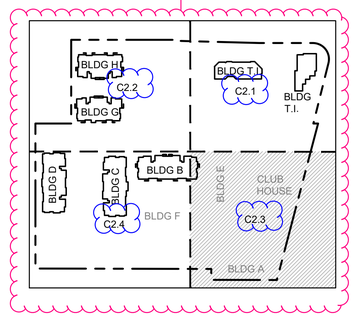
FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

Delineate the regulated floodplain per the LOMR, Effective September 8, 2022. [Plans Sht C3.3; Pg 12 of 63]

Called out

Updated sheet labels



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TACOMA · SEATTLE · SPOKANE · TRI-CITIES
2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

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J. TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

Revisions:

4	
3	
2	
1	

Sheet Title:

GRADING PLAN NE

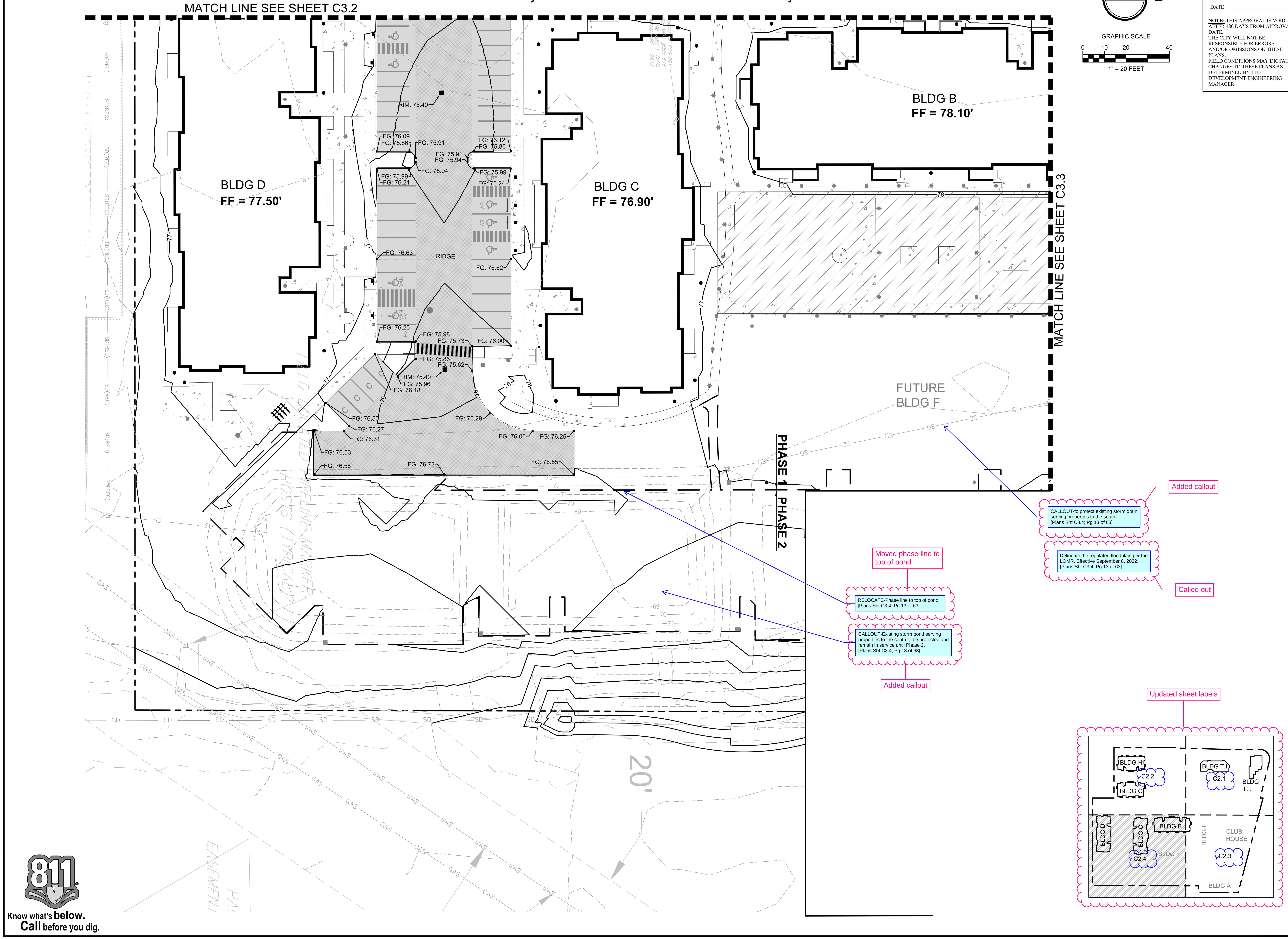
Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C3.3

12 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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BY ______________________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ______________________

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STATE OF WASHINGTON
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11/21/2023

4
3
2
1
Revisions:

Sheet Title:
GRADING PLAN SE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C3.4

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Done

Civil C-14: For pages C-14, C-15, C-16, C-17: Make corrections to all Development Engineering comments on these pages.

Civil C-14: For pages C-14, C-15, C-16, C-17: Many of the proposed fire hydrant runs are located off dead-end 8-inch water mains, which reduces the available fire flow. Pay to have a hydraulic model of the proposed water layout, to see if the available fire flow will meet the building requirements.

Refer to water sheets

Civil C-14: For pages C-14, C-15, C-16, C-17: All water infrastructure for this project outside the proposed public utility easement shall be private, and the property owners responsibility to repair and maintain. This includes all parts of each water service (i.e. connection taps, service line, meter setters, meter boxes, etc.), the only exception would be the water meters and radio transmission equipment (MXU) which would be owned by the City, but paid for and installed by the contractor.

Noted

Thank you, Noted

Civil C-14: For pages C-14, C-15, C-16, C-17: The existing 8-inch water main that runs through this project also supplies water to the property to the south, which requires the water main to be public. Since this existing water main will be running through proposed parking areas, the City will allow a one-time exception from our 40-foot utility easement requirement, and allow the water main to be placed in the middle of a 20-foot easement.

Civil C-14: For pages C-14, C-15, C-16, C-17: If the buildings are housing just apartments, a DCVA will be sufficient back flow protection. If the buildings contain both commercial space and apartments, upgrade the protection to an above ground RPBA.

Noted

City Standards require a minimum 3ft of cover over CPEP pipe (ref. City Stds 204.4(3)). The City is willing to allow minimum cover of 30in, but staff cannot support a further reduction based on City regulations. If it is still desired to use CPEP with less than 30in of cover, a formal Alternative Methods Request (AMR) application must be submitted for review and formal decision by the City Engineer. Please be aware that cost savings cannot be a justification to deviate from City Standards. [Plans Sht C4.01; Pg 14 of 63]

Refer to water sheets

SHAW ROAD E

MATCH LINE SEE SHEET C4.02

Added pipe info

CALLOUT-pipe info (size, mat'l, slope). Use ductile iron per City Stds 204.4. [Plans Sht C4.01; Pg 14 of 63]

SDCB#08 — 46 LF 6" CPEP @ 1.16% — 37 LF 6" CPEP @ 1.00% — 21 LF 8" DI CL52 @ 0.50% — SDCB#04 — 55 LF 8" DI CL52 @ 0.50%

SDCO#COM12 — SDCO#COM13 — SDCO#COM08 — SDCO#COM07

SDCB#07 — 49 LF 8" DI CL52 @ 0.50%

BLDG T.I. SEE ARCH PLANS FOR DOWNSPOUT LOCATIONS AND PROVIDE CONNECTION POINTS

Adjusted connection

REVISE-City Stds 204.3(4) requires min 12in dia pipe for mains. Revise accordingly. [Plans Sht C4.01; Pg 14 of 63]

SDCB#03 — 38 LF 8" DI CL52 @ 0.50% — 72 LF 8" DI CL52 @ 0.50%

SDCO#COM11 — 75 LF 6" CPEP @ 1.00% — SDCO#COM09 SDCO#COM10 — 48 LF 6" CPEP @ 1.55%

GREASE INTERCEPTOR

Revised

REVISE-City Stds 204.3(4) requires min 12in dia pipe for mains. Revise accordingly. [Plans Sht C4.01; Pg 14 of 63]

35 LF 8" CPEP @ 2.53%

Verified

VERIFY-Profile 5/C4.06 (and 6/C4.06)? [Plans Sht C4.01; Pg 14 of 63]

SDCB#06 — 42 LF 8" CPEP @ 0.50% — SDCB#09 — 89 LF 8" CPEP @ 0.50% — SDCB#05 — 108 LF 8" DI CL52 @ 0.50% — SDCB#02

35 LF 24" CPEP @ 1.50%

R-TANK 1 INLET 2 SEE SHEET C4.10

21 LF 12" CPEP @ 0.50%

PROFILE 6 C4.06

61+00 — 60+00

WQ1 OUTLET: 6x8 BIOPOD 1 C4.08

6 LF 12" CPEP @ 0.50%

R-TANK 1 INLET 1

R-TANK 12" INSPECTION PORT SEE SHEET C4.10

MAINTENANCE ROW 2 MODULES SEE SHEET C4.10

R-TANK 1
TOP ROCK 70.88
TOP R-TANK 69.88
BOTTOM R-TANK 67.65
BOTTOM STORAGE 67.40
SEE ACF DRAWINGS ON SHEET C4.10

REVISE-DI pipe due to shallow bury. [Plans Sht C4.01; Pg 14 of 63]

Revised

REVISE-City Stds 204.3(4) requires min 12in dia pipe for mains. Revise accordingly. [Plans Sht C4.01; Pg 14 of 63]

Revised

Clarified

CLARIFY-generator area or trash enclosure? If trash enclosure, see City Stds 208.1 for enclosure reqts. [Plans Sht C2.1; Pg 4 of 63]

R-TANK 1 OUTLET

4 LF 24" CPEP @ 0.00%

PIPE OUTLET WITH FISH SCREEN TO RELOCATED STREAM IE: 67.32 AS PART OF PHASE 2 WORK TEMP OUTLET AND PUMPING TO BE PROVIDED IN PHASE 1

SDCB#01 — 16 LF 12" CPEP @ 0.50%

WQ4 INLET 6x8 BIOPOD 1 C4.08

4 C4.06 PROFILE

49 LF 12" CPEP @ 0.50%

41+00 — 127 LF 12" CPEP @ 0.50% — 42+00

SDCB#19 — SDCB#20 — 58 LF 8" CPEP @ 0.86% — SDCB#21

PROFILE 4 C4.06

76 LF 12" CPEP @ 0.50%

SDCO#COM02 — 61 LF 8" DI CL52 @ 1.00% — SDCO#COM03

BLDG T.I. SEE ARCH PLANS FOR DOWNSPOUT LOCATIONS AND PROVIDE CONNECTION POINTS

49 LF 6" CPEP @ 1.00%

SDCO#COM01

SDCO#COM06 — 57 LF 6" CPEP @ 1.00%

23 LF 6" CPEP @ 1.00%

59 LF 8" DI CL52 @ 1.00%

Revised

SDCO#COM05

SDCO#COM04

GREASE INTERCEPTOR — ELEVATOR

Updated callout

VERIFY-C4.07? [Plans Sht C4.01; Pg 14 of 63]

Revised

REVISE-to 12" dia. per Stds 204.3(4) (south). [Plans Sht C4.01; Pg 14 of 63]

Revised

REVISE-to 12" dia. per Stds 204.3(4) (S & N). [Plans Sht C4.01; Pg 14 of 63]

REVISE-to 12" dia. per Stds 204.3(4) (north). [Plans Sht C4.01; Pg 14 of 63]

CAUTION: OVERHEAD POWER

PIONEER WAY E

Called out

Delineate the regulated floodplain per the LOMR, Effective September 8, 2022. [Plans Sht C4.01; Pg 14 of 63]

MATCH LINE SEE SHEET C4.03

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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

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N

GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

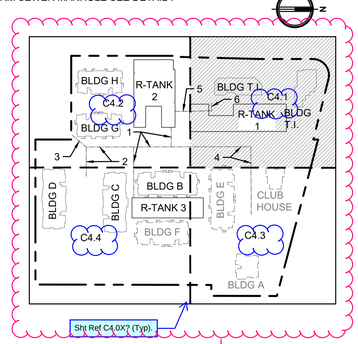
STORM STRUCTURE TABLE		STORM STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS	STRUCTURE NAME	STRUCTURE DETAILS
R-TANK 1 INLET 1 N 679894.35 E 1203965.82	IE = 67.87 (12" N)	SDCO#COM01 N 680135.62 E 1203883.57	RIM = 73.56 IE = 70.38 (8" S) IE = 70.54 (6" E) IE = 70.54 (6" W)
R-TANK 1 INLET 2 N 679840.50 E 1203962.06	IE = 67.87 (24" S)	SDCO#COM02 N 680137.83 E 1203834.23	RIM = 73.51 IE = 71.03 (6" N) IE = 71.03 (6" E)
R-TANK 1 OUTLET N 680093.81 E 1204023.48	IE = 67.40 (24" E)	SDCO#COM03 N 680198.55 E 1203835.24	RIM = 73.53 IE = 71.64 (6" S)
SDCB#01 60" CONTROL STRUCTURE 5.1 C4.05 N 680093.51 E 1204027.65	RIM = 75.06 IE = 67.40 (24" W) IE = 67.40 (12" N)	SDCO#COM04 N 680134.35 E 1203940.15	RIM = 73.59 IE = 71.11 (6" N) IE = 71.11 (6" W)
SDCB#02 TYPE 1 N 680099.34 E 1203943.53	RIM = 72.40 IE = 69.83 (8" W) IE = 69.83 (8" S)	SDCO#COM05 N 680157.13 E 1203940.51	RIM = 73.58 IE = 71.34 (6" NW) IE = 71.34 (6" S)
SDCB#03 TYPE 1 N 680100.00 E 1203871.83	RIM = 72.19 IE = 70.19 (8" E) IE = 70.19 (8" N) IE = 70.19 (8" S)	SDCO#COM06 N 680197.58 E 1203897.23	RIM = 73.47 IE = 71.93 (6" SE)
SDCB#04 TYPE 1 N 680048.61 E 1203851.51	RIM = 72.64 IE = 70.47 (8" N) IE = 70.47 (8" S)	SDCO#COM07 N 680027.25 E 1203853.88	RIM = 73.18 IE = 70.58 (8" N) IE = 70.74 (6" S)
SDCB#05 TYPE 1 N 679991.28 E 1203940.77	RIM = 72.11 IE = 69.29 (8" S) IE = 69.29 (8" W) IE = 69.29 (8" N)	SDCO#COM08 N 679990.68 E 1203853.44	RIM = 73.55 IE = 71.11 (6" N)
SDCB#06 TYPE 1 N 679859.67 E 1203938.96	RIM = 73.03 IE = 69.06 (8" W) IE = 69.06 (8" N)	SDCO#COM09 N 679991.81 E 1203905.90	RIM = 73.63 IE = 70.17 (8" E) IE = 70.34 (6" N) IE = 70.34 (6" S)
SDCB#07 TYPE 1 N 679859.67 E 1203866.80	RIM = 71.79 IE = 69.42 (8" E) IE = 69.42 (8" N)	SDCO#COM10 N 680040.22 E 1203906.79	RIM = 73.63 IE = 71.09 (6" S)
SDCB#08 TYPE 1 N 679905.53 E 1203849.15	RIM = 72.45 IE = 69.67 (8" N) IE = 69.67 (8" S)	SDCO#COM11 N 679917.20 E 1203904.57	RIM = 73.63 IE = 71.09 (6" N)
SDCB#09 TYPE 1 N 679902.08 E 1203938.82	RIM = 72.35 IE = 68.84 (8" S) IE = 68.84 (8" N) IE = 68.51 (12" E)	SDCO#COM12 N 679921.42 E 1203852.60	RIM = 72.88 IE = 70.34 (6" N) IE = 70.17 (8" S)
SDCB#19 TYPE 1 N 679883.48 E 1204062.20	RIM = 75.25 IE = 70.35 (12" S) IE = 70.35 (12" N)	SDCO#COM13 N 679967.13 E 1203853.13	RIM = 73.41 IE = 70.87 (6" S)
SDCB#20 TYPE 1 N 680010.25 E 1204064.38	RIM = 75.25 IE = 70.98 (12" S) IE = 71.31 (8" N) IE = 70.98 (12" E)	WQ#4 OUTLET BPU-68IB N 679827.49 E 1204061.23	IE = 69.60 (12" S)
SDCB#21 TYPE 1 N 680067.90 E 1204065.38	RIM = 75.25 IE = 71.81 (8" S)	WQ1 OUTLET BPU-68IB N 679900.73 E 1203965.93	IE = 67.90 (12" S)

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C4.05
-FOR CATCH BASIN TYPE 1
-(AREA DRAIN) SEE DETAIL 1
-(GUTTER DRAIN) SEE DETAIL 2
-FOR CATCH BASIN TYPE II SEE DETAIL 3
-STORM SEWER MANHOLE SEE DETAIL 7

VERIFY-Sheet callout (C4.07?). [Plans Sht C4.01; Pg 14 of 63]

Updated sheet callout



Sht Ref C4.0X? (Typ)

Updated sheet labels

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TODD CHRISTOPHER SAMMIN — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Info on detail sheet, removed from this sheet

ADD-WQ Rim and inlet elevation info. [Plans Sht C4.01; Pg 14 of 63]

Revisions:

Sheet Title:

STORM DRAINAGE PLAN NW

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C4.01

14 of 63 Sheets

EAST TOWN CROSSING PHASE 1
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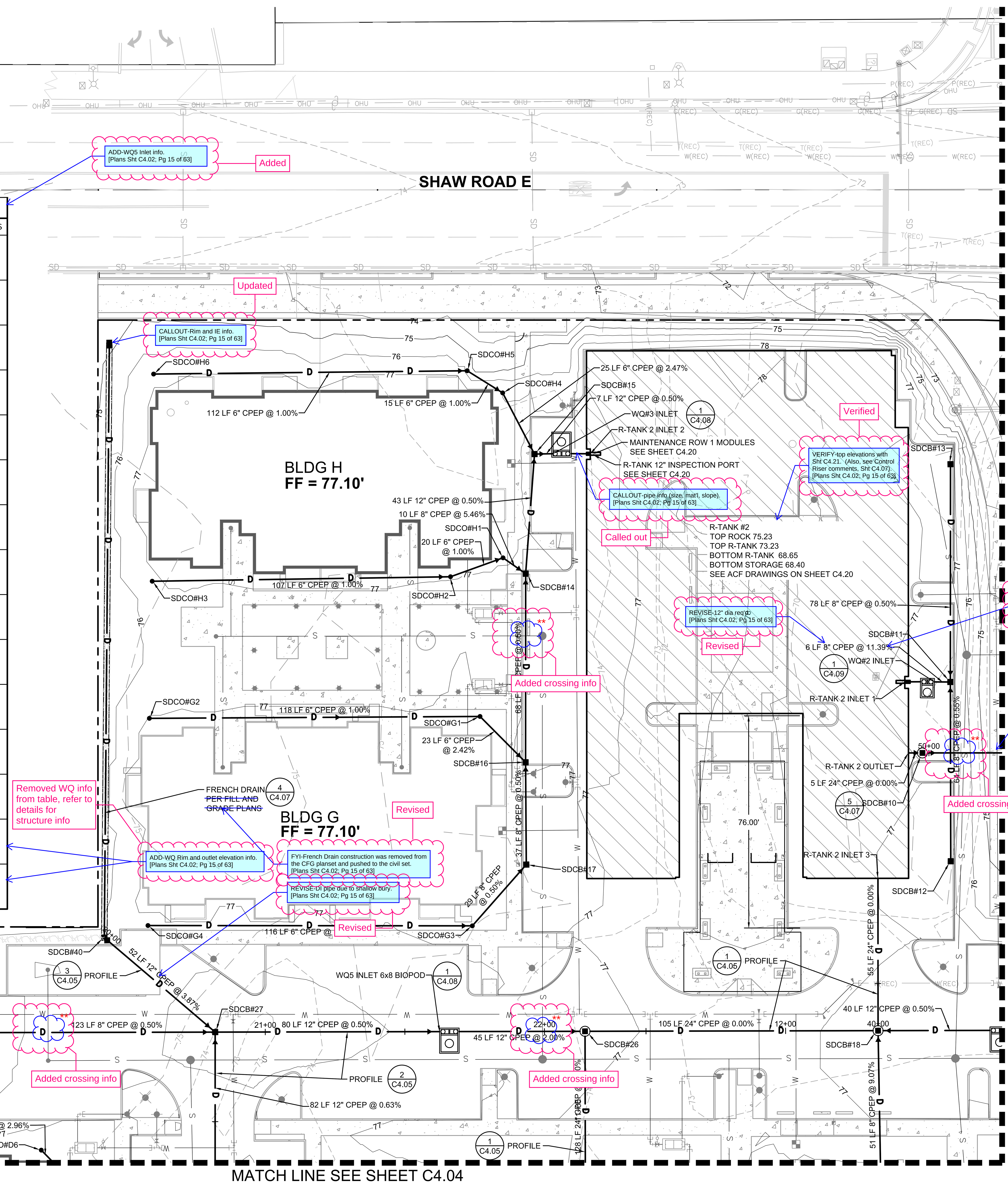

STORM STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
R-TANK 2 INLET 1 N 679799.41 E 1203935.82	IE = 68.87 (12" N)
R-TANK 2 INLET 2 N 679688.36 E 1203851.96	IE = 68.87 (12" S)
R-TANK 2 INLET 3 N 679788.42 E 1204006.00	IE = 68.40 (24" E)
R-TANK 2 OUTLET N 679800.23 E 1203961.30	IE = 68.40 (24" N)
SDCB#10 60" CONTROL STRUCTURE N 679805.23 E 1203961.40	RIM = 76.96 IE = 68.40 (24" S) IE = 68.40 (24" N)
SDCB#11 TYPE 1 N 679815.72 E 1203936.19	RIM = 76.58 IE = 73.48 (8" W) IE = 73.48 (8" E) IE = 73.48 (8" S)
SDCB#12 TYPE 1 N 679814.62 E 1204000.39	RIM = 76.54 IE = 73.83 (8" W)
SDCB#13 TYPE 1 N 679817.30 E 1203858.20	RIM = 76.58 IE = 73.87 (8" E)
SDCB#14 TYPE 1 N 679664.39 E 1203894.46	RIM = 76.31 IE = 71.89 (12" W) IE = 72.22 (8" SW) IE = 71.89 (12" E)
SDCB#15 TYPE 1 N 679668.39 E 1203851.68	RIM = 76.25 IE = 71.68 (12" E) IE = 72.18 (6" SW) IE = 71.68 (12" N)
SDCB#16 TYPE 1 N 679663.04 E 1203961.97	RIM = 76.36 IE = 72.57 (8" E) IE = 72.23 (12" W) IE = 72.73 (6" SW)
SDCB#17 TYPE 1 N 679662.59 E 1203998.62	RIM = 76.55 IE = 72.75 (8" W) IE = 72.75 (8" SE)
SDCB#18 48" TYPE 2 N 679787.40 E 1204060.54	RIM = 76.69 IE = 69.40 (12" N) IE = 69.73 (8" E) IE = 68.40 (24" S) IE = 68.40 (24" W)
SDCB#26 48" TYPE 2 N 679682.46 E 1204058.73	RIM = 76.79 IE = 69.40 (12" S) IE = 68.40 (24" E) IE = 68.40 (24" N)
SDCB#27 TYPE 1 N 679550.01 E 1204056.45	RIM = 75.25 IE = 71.54 (8" S) IE = 71.20 (12" N) IE = 71.20 (12" SW) IE = 71.20 (12" E)

STORM STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
SDCB#28 TYPE 1 N 679427.04 E 1204054.32	RIM = 75.25 IE = 72.15 (8" N) IE = 72.15 (8" E)
SDCB#40 TYPE 1 N 679510.96 E 1204021.83	RIM = 76.44 IE = 73.22 (12" NE) IE = 74.00 (6" W)
SDCO#D6 N 679486.92 E 1204097.51	RIM = 77.33 IE = 74.79 (6" NE)
SDCO#G1 N 679647.05 E 1203945.26	RIM = 77.07 IE = 73.29 (6" S) IE = 73.29 (6" NE)
SDCO#G2 N 679528.62 E 1203943.63	RIM = 77.01 IE = 74.47 (6" N)
SDCO#G3 N 679642.84 E 1204020.18	RIM = 77.15 IE = 73.06 (6" S) IE = 72.89 (8" NW)
SDCO#G4 N 679526.68 E 1204017.81	RIM = 76.85 IE = 74.22 (6" N)
SDCO#H1 N 679656.40 E 1203888.61	RIM = 77.10 IE = 72.93 (6" S) IE = 72.76 (8" NE)
SDCO#H2 N 679637.46 E 1203895.03	RIM = 77.02 IE = 73.13 (6" S) IE = 73.13 (6" N)
SDCO#H3 N 679530.60 E 1203894.55	RIM = 76.74 IE = 74.20 (6" N)
SDCO#H4 N 679657.42 E 1203829.56	RIM = 77.00 IE = 72.79 (6" SW) IE = 72.79 (6" NE)
SDCO#H5 N 679644.87 E 1203821.38	RIM = 75.70 IE = 72.94 (6" S) IE = 72.94 (6" NE)
SDCO#H6 N 679532.54 E 1203820.38	RIM = 76.59 IE = 74.06 (6" N)
WQ#2 INLET BPU-46IB N 679810.02 E 1203936.05	IE = 72.83 (8" N)
WQ#3 INLET 6x8 BIOPOD N 679675.06 E 1203851.68	IE = 71.65 (12" S)

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C4.05
-FOR CATCH BASIN TYPE 1
-(AREA DRAIN) SEE DETAIL 1
-(GUTTER DRAIN) SEE DETAIL 2
-FOR CATCH BASIN TYPE II SEE DETAIL 3
-STORM SEWER MANHOLE SEE DETAIL 7

APPROVED

BY ______________
CITY OF PUYALLUP DEVELOPMENT ENGINEERING

DATE ______________

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TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER
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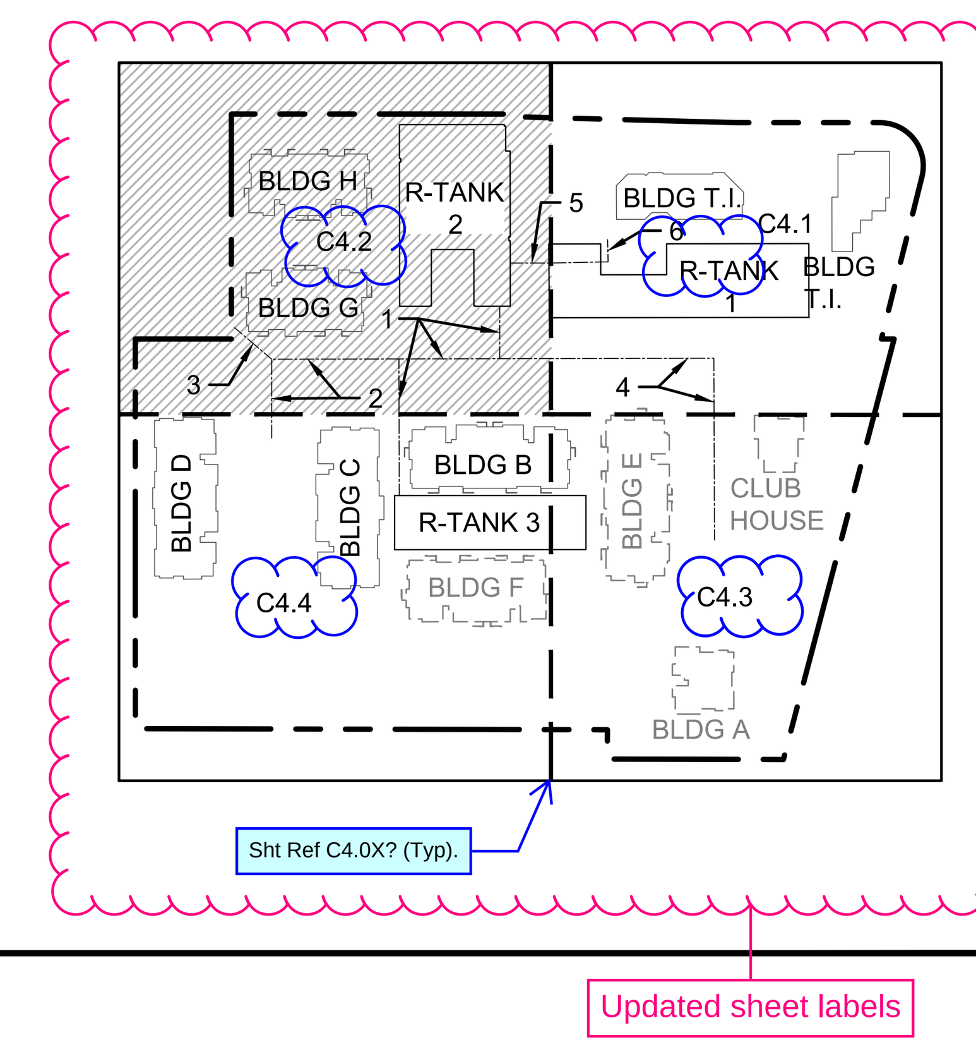
Revisions:



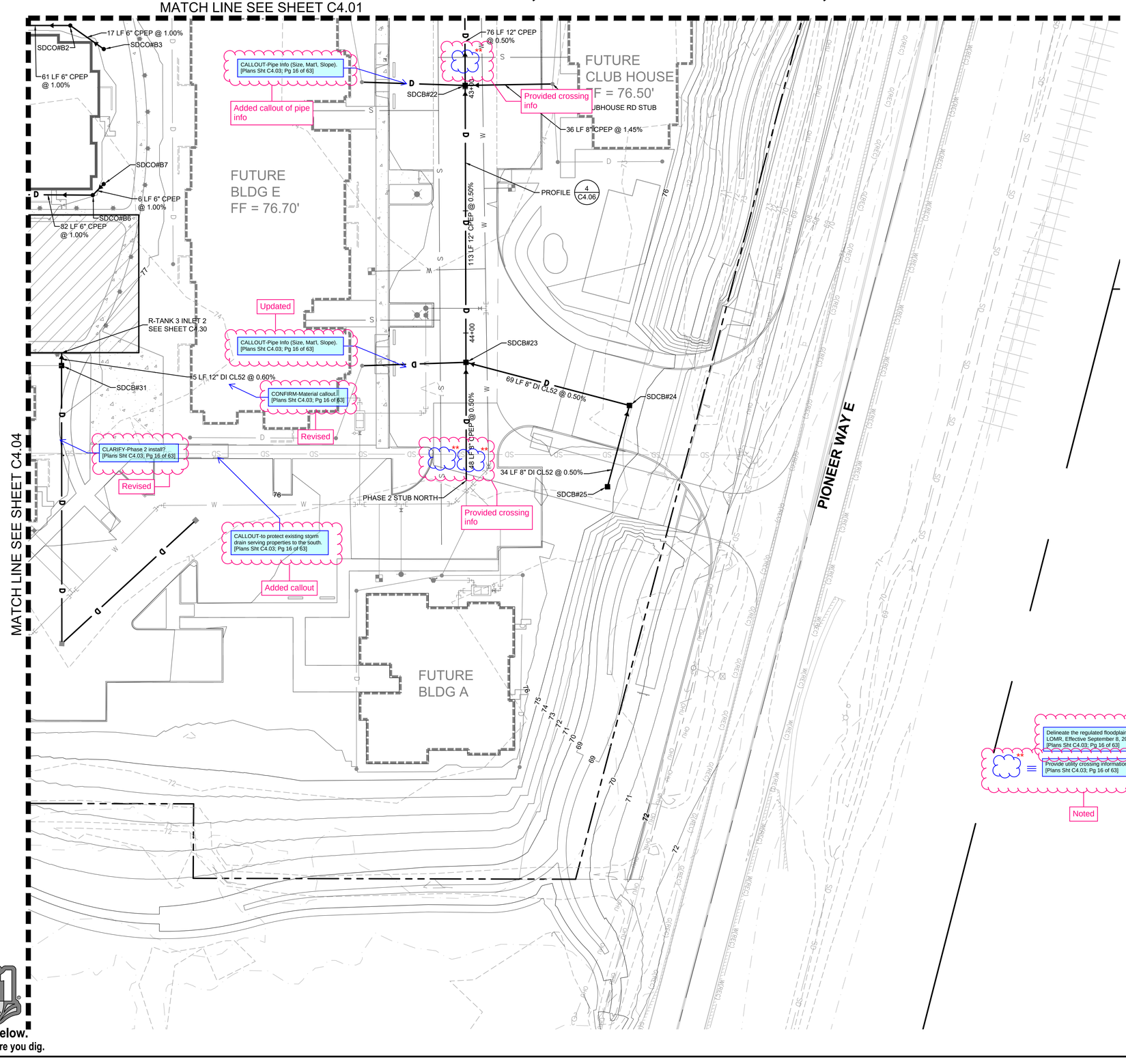
Sheet Title:
STORM DRAINAGE PLAN SW

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.02

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

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STORM STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
R-TANK 3 INLET 2 N 679841.90 E 1204246.34	IE = 70.22 (12" E)
SDCB#22 TYPE 1 N 680009.17 E 1204140.15	RIM = 75.25 IE = 71.36 (12" E) IE = 71.36 (12" W) IE = 71.69 (8" N) IE = 71.69 (8" S)
SDCB#23 TYPE 1 N 680007.27 E 1204253.48	RIM = 75.25 IE = 71.93 (12" W) IE = 72.26 (8" N) IE = 72.26 (8" E) IE = 72.26 (8" S)
SDCB#24 TYPE 1 W/ SOLID LOCKING LID N 680073.82 E 1204272.43	RIM = 75.25 IE = 72.61 (8" E) IE = 72.61 (8" S)
SDCB#25 TYPE 1 N 680064.22 E 1204305.52	RIM = 75.25 IE = 72.79 (8" W)
SDCB#31 AREA DRAIN N 679841.75 E 1204251.59	RIM = 77.16 IE = 70.25 (12" W)
SDCO#B2 N 679848.03 E 1204112.49	RIM = 77.80 IE = 75.11 (6" NE) IE = 75.11 (6" S)
SDCO#B3 N 679861.56 E 1204122.40	RIM = 77.92 IE = 75.28 (6" SW)
SDCO#B6 N 679855.88 E 1204182.08	RIM = 78.02 IE = 72.81 (6" S) IE = 72.81 (6" NW)
SDCO#B7 N 679860.43 E 1204177.64	RIM = 77.95 IE = 72.87 (6" SE)

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C4.05
-FOR CATCH BASIN TYPE 1
-(AREA DRAIN) SEE DETAIL 1
-(GUTTER DRAIN) SEE DETAIL 2
-FOR CATCH BASIN TYPE II SEE DETAIL 3
-STORM SEWER MANHOLE SEE DETAIL 7

VERIFY-Sheet callout (C4.07?).
[Plans Sht C4.03; Pg 16 of 63]

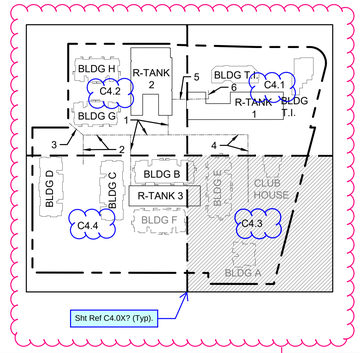
Updated sheet callout

Delineate the regulated floodplain per the LOMR, Effective September 8, 2022.
[Plans Sht C4.03; Pg 16 of 63]

Provide utility crossing information.
[Plans Sht C4.03; Pg 16 of 63]

Called out

Noted



Sht Ref C4.0X? (Typ).

Updated sheet labels

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

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2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

CLYDE CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

STORM DRAINAGE PLAN NE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

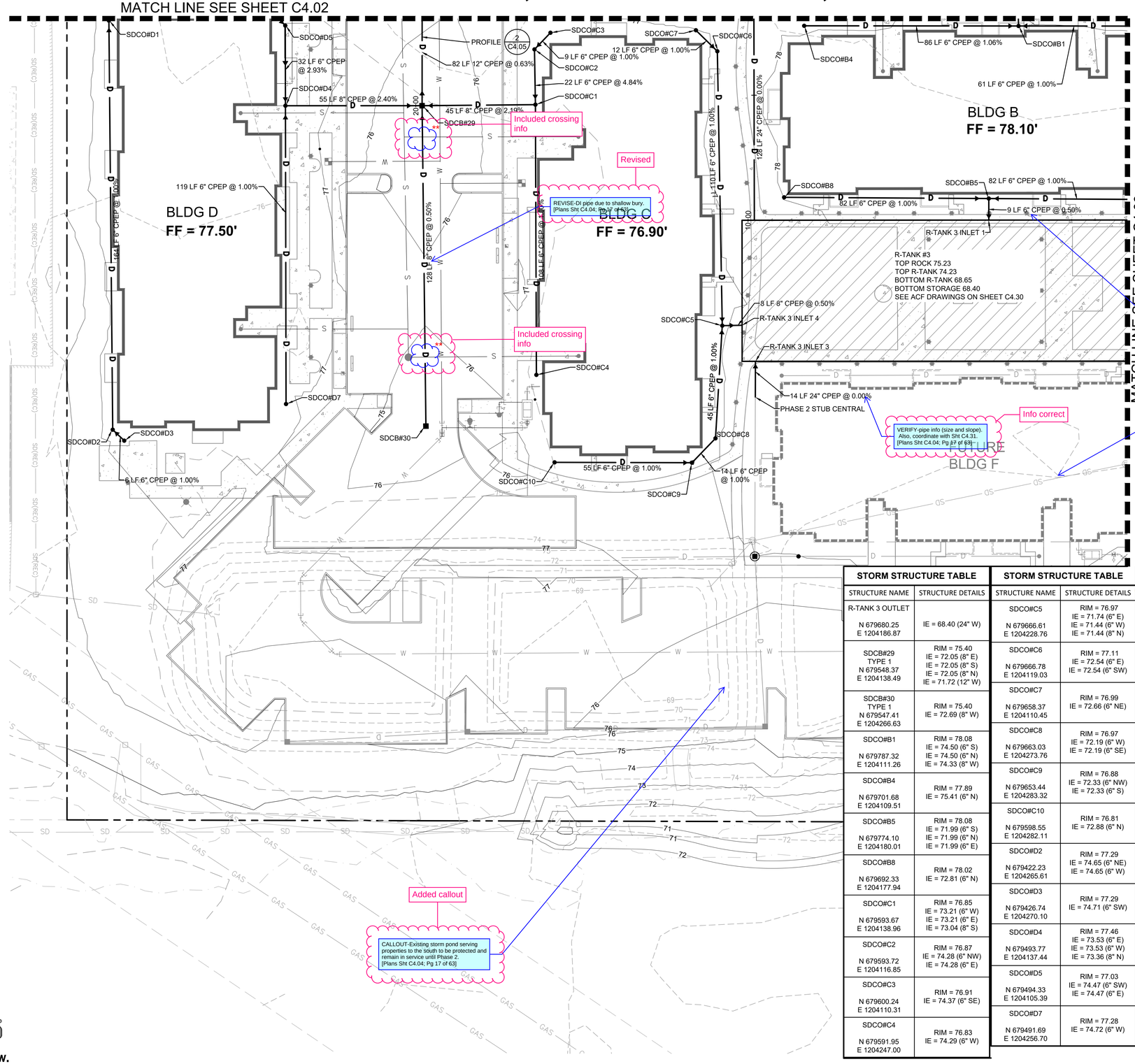
Sheet No.

C4.03

16 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



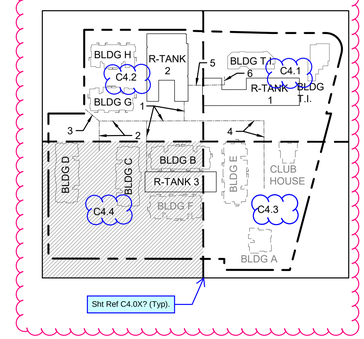
STORM STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS
R-TANK 3 OUTLET N 679680.25 E 1204186.87	IE = 68.40 (24" W)
SDCB#29 TYPE 1 N 679548.37 E 1204138.49	RIM = 75.40 IE = 72.05 (8" E) IE = 72.05 (8" S) IE = 72.05 (8" N) IE = 71.72 (12" W)
SDCB#30 TYPE 1 N 679547.41 E 1204266.63	RIM = 75.40 IE = 72.69 (8" W)
SDCO#B1 N 679787.32 E 1204111.26	RIM = 78.08 IE = 74.50 (6" S) IE = 74.50 (6" N) IE = 74.33 (8" W)
SDCO#B4 N 679701.68 E 1204109.51	RIM = 77.89 IE = 75.41 (6" N)
SDCO#B5 N 679774.10 E 1204180.01	RIM = 78.08 IE = 71.99 (6" S) IE = 71.99 (6" N) IE = 71.99 (6" E)
SDCO#B8 N 679692.33 E 1204177.94	RIM = 78.02 IE = 72.81 (6" N)
SDCO#C1 N 679593.67 E 1204138.96	RIM = 76.85 IE = 73.21 (6" W) IE = 73.21 (6" E) IE = 73.04 (8" S)
SDCO#C2 N 679593.72 E 1204116.85	RIM = 76.87 IE = 74.28 (6" NW) IE = 74.28 (6" E)
SDCO#C3 N 679600.24 E 1204110.31	RIM = 76.91 IE = 74.37 (6" SE)
SDCO#C4 N 679591.95 E 1204247.00	RIM = 76.83 IE = 74.29 (6" W)

STORM STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS
SDCO#C5 N 679666.61 E 1204228.76	RIM = 76.97 IE = 71.74 (6" E) IE = 71.44 (6" W) IE = 71.44 (8" N)
SDCO#C6 N 679666.78 E 1204119.03	RIM = 77.11 IE = 72.54 (6" E) IE = 72.54 (6" SW)
SDCO#C7 N 679658.37 E 1204110.45	RIM = 76.99 IE = 72.66 (6" NE)
SDCO#C8 N 679663.03 E 1204273.76	RIM = 76.97 IE = 72.19 (6" W) IE = 72.19 (6" SE)
SDCO#C9 N 679653.44 E 1204283.32	RIM = 76.88 IE = 72.33 (6" NW) IE = 72.33 (6" S)
SDCO#C10 N 679598.55 E 1204282.11	RIM = 76.81 IE = 72.88 (6" N)
SDCO#D2 N 679422.23 E 1204265.61	RIM = 77.29 IE = 74.65 (6" NE) IE = 74.65 (6" W)
SDCO#D3 N 679426.74 E 1204270.10	RIM = 77.29 IE = 74.71 (6" SW)
SDCO#D4 N 679493.77 E 1204137.44	RIM = 77.46 IE = 73.53 (6" E) IE = 73.53 (6" W) IE = 73.36 (8" N)
SDCO#D5 N 679494.33 E 1204105.39	RIM = 77.03 IE = 74.47 (6" SW) IE = 74.47 (6" E)
SDCO#D7 N 679491.69 E 1204256.70	RIM = 77.28 IE = 74.72 (6" W)

GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C4.05
-FOR CATCH BASIN TYPE 1
-(AREA DRAIN) SEE DETAIL 1
-(GUTTER DRAIN) SEE DETAIL 2
-FOR CATCH BASIN TYPE II SEE DETAIL 3
-STORM SEWER MANHOLE SEE DETAIL 7



APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

STORM DRAINAGE PLAN SE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

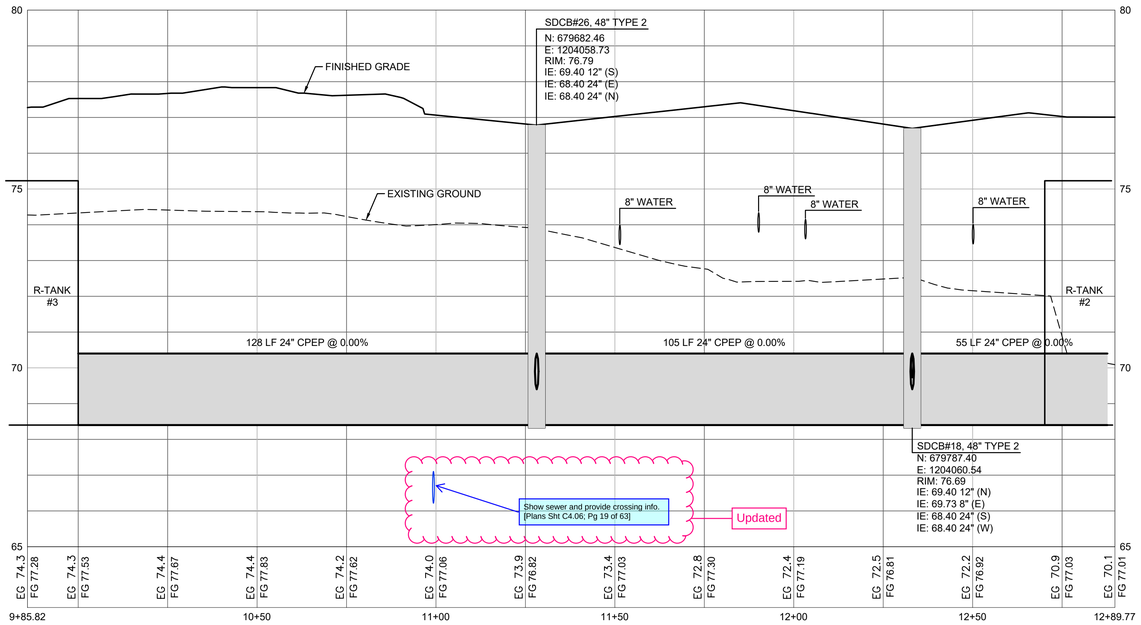
Sheet No.

C4.04

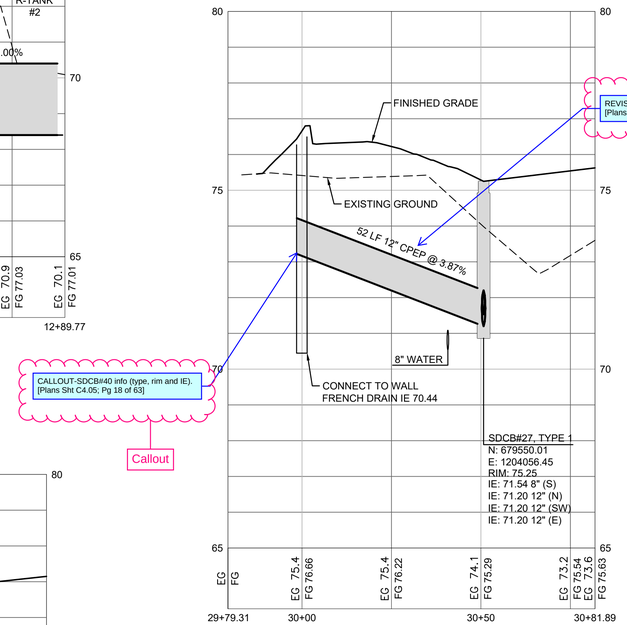
17 of 63 Sheets

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

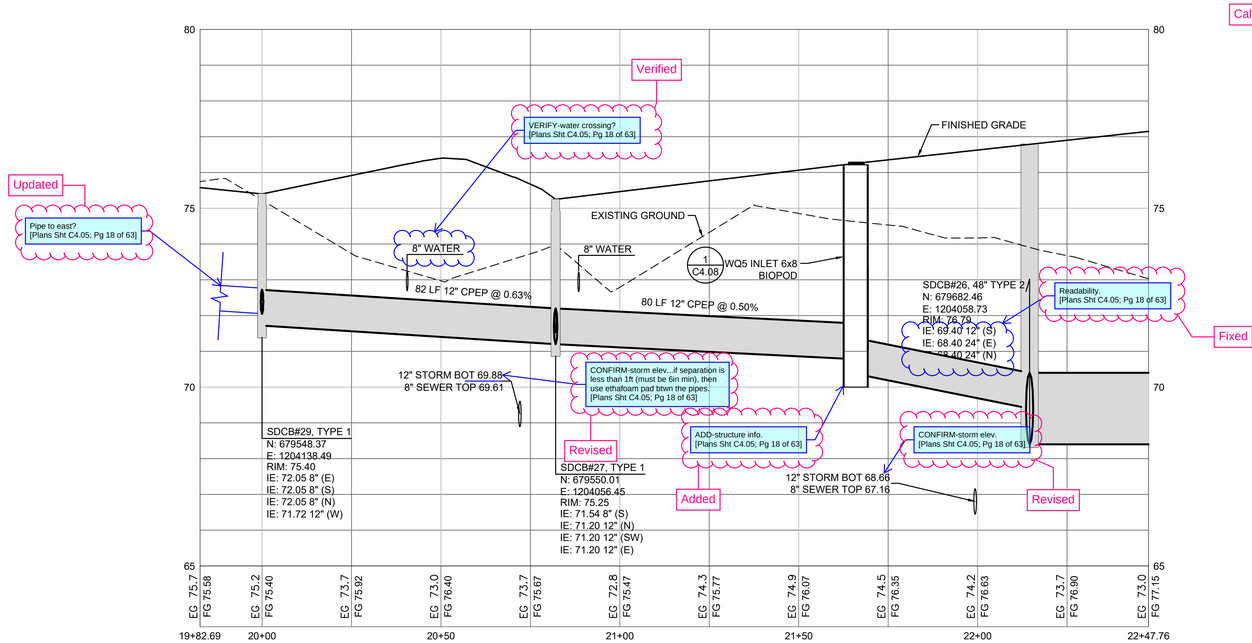
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



1 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'

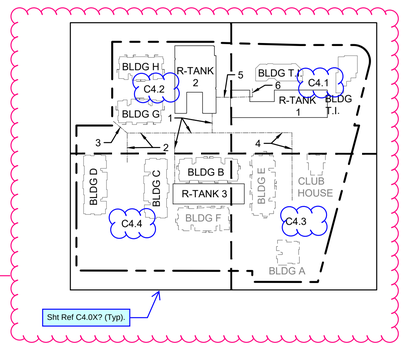


3 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'



2 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'

Updated sheet labels



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DEVELOPMENT ENGINEERING

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Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

LLOYD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

STORM PROFILES

Designed by:	Drawn by:	Checked by:
CW	SK	JI

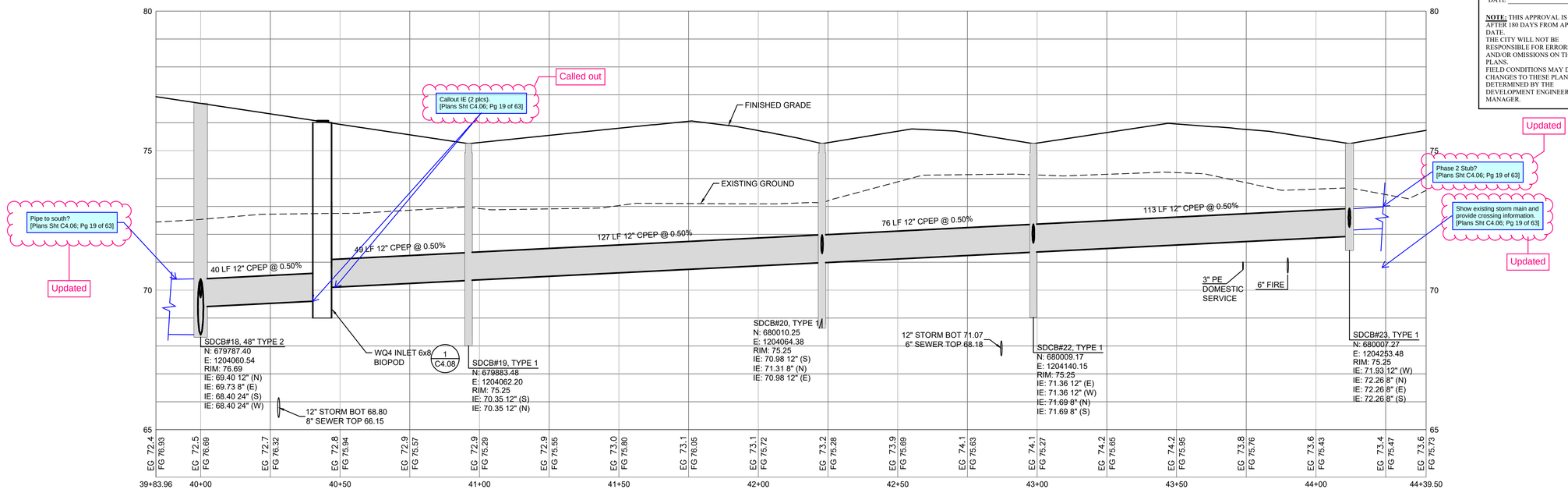
Sheet No.

C4.05

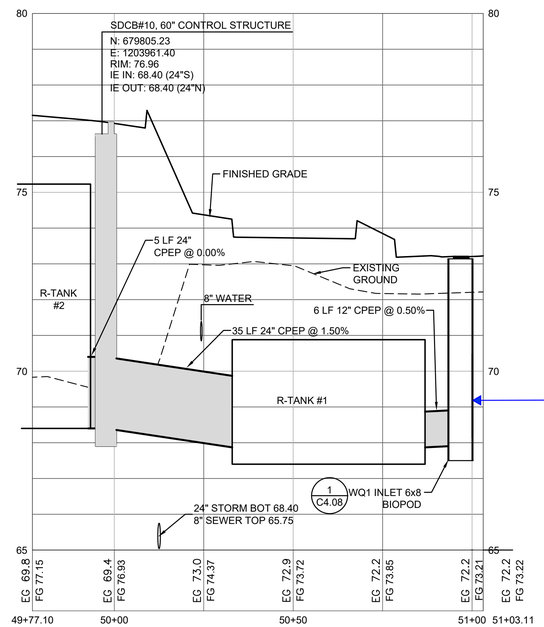
18 of 63 Sheets

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

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

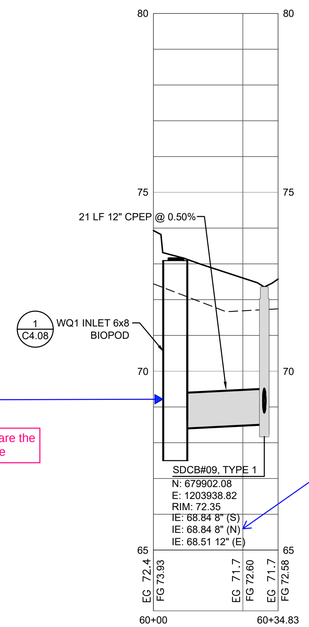


4 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'



5 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'

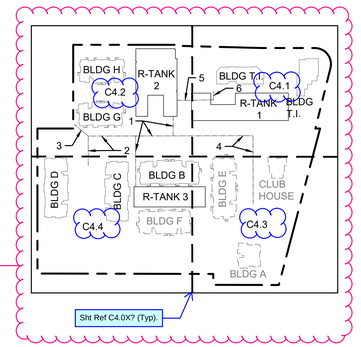
Correct, they are the same structure



6 STORM PROFILE
SCALE: HORIZ 1"=20'; VERT 1"=2'

Revised
Per comments on C4.01, revise to 12" dia. per Stds 204.3(4) (north).
[Plans Sht C4.06, Pg 19 of 63]

Updated sheet labels



Know what's **below.**
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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4

Sheet Title:
STORM PROFILES

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.06
19 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

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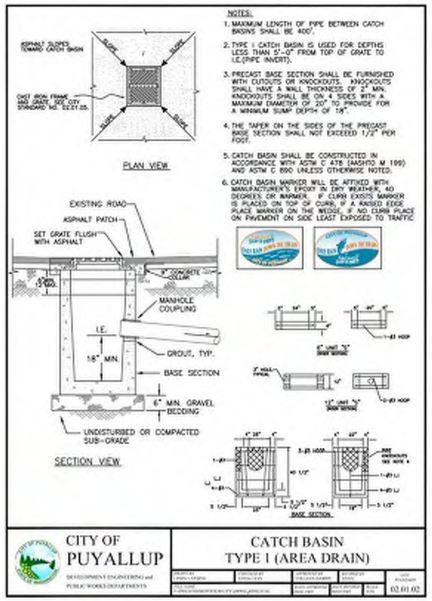
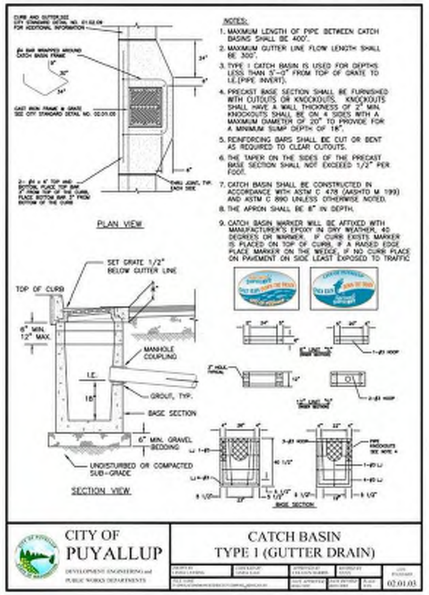
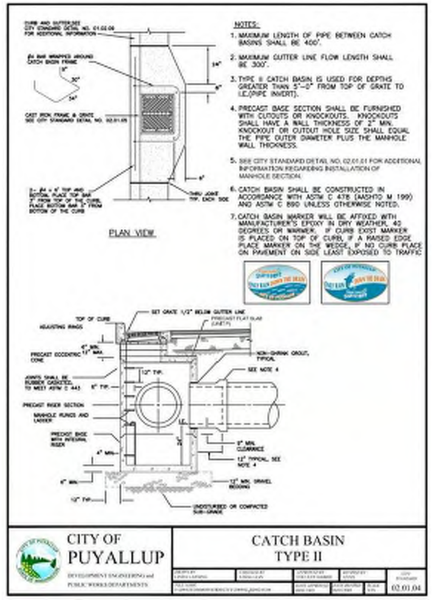


1 CATCH BASIN TYPE 1 (AREA DRAIN)
NOT TO SCALE



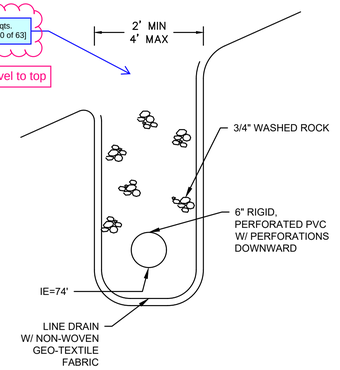
2 CATCH BASIN TYPE 1 (GUTTER DRAIN)
NOT TO SCALE



3 CATCH BASIN TYPE II
NOT TO SCALE

Verify-fabric overlap reqts. [Plans Sht C4.07; Pg 20 of 63]

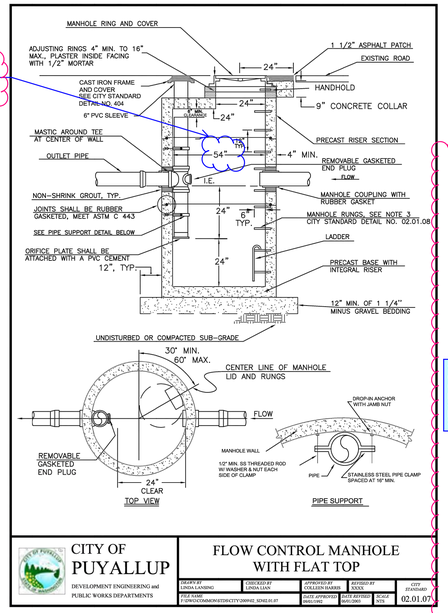
None, gravel to top



4 FRENCH DRAIN DETAIL
NOT TO SCALE

60in. [Plans Sht C4.07; Pg 20 of 63]

Revised Plan



VERIFY-1.25ft above IE per calcs in Storm Report, Pg 373 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY-It appears to be El. 70.88 noted on Sht. C4.11 (2ft of live storage per calcs-which places riser top at El 69.40). Also, there are a number of CB rims below this elevation. [Plans Sht C4.07; Pg 20 of 63]

CONTROL STRUCTURE GEOMETRY

STRUCTURE	PART	INVERT ELEVATION	DIAMETER (IN)	NOTES
5.1	RISER CREST	73.35	12.00	CIRCULAR
	ORIFICE 1	67.40	2.06	CIRCULAR, NO ELBOW
	ORIFICE 2	68.30	3.00	CIRCULAR, WITH ELBOW
	OUTLET PIPE	67.40	12.00	RIM: 75.06
5.2	RISER CREST	75.25	18.00	CIRCULAR
	ORIFICE 1	68.40	1.37	CIRCULAR, NO ELBOW
	ORIFICE 2	74.21	2.25	CIRCULAR, WITH ELBOW
	OUTLET PIPE	68.40	24.00	RIM: 76.96

VERIFY-18in used in calcs per Storm Report, Pg 373 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY-2.25 per Storm Report, Pg 373 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY- calcs callout a 3rd orifice on the control riser per Storm Report, Pg 373 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY-It appears to be El. 73.32 noted on Sht. C4.21 (5ft of live storage per calcs-which places riser top at El. 73.40). However, RTank 3 top of storage is El. 75.23. It appears that as RTank 3 fills, RTank 2 will go into overflow before RTank 3 storage is fully utilized. If riser top is intended to be El. 75.25, then RTank 2 appears to be in a surcharged condition. [Plans Sht C4.07; Pg 20 of 63]

Revised all control structure comments in plans and report.

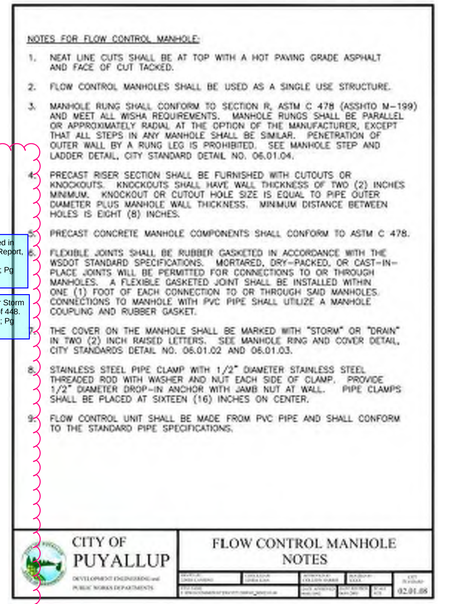
Refer to report

VERIFY-24in used in calcs per Storm Report, Pg 372 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY-1.5 per Storm Report, Pg 372 of 448. [Plans Sht C4.07; Pg 20 of 63]

VERIFY-1.25 per Storm Report, Pg 372 of 448. [Plans Sht C4.07; Pg 20 of 63]

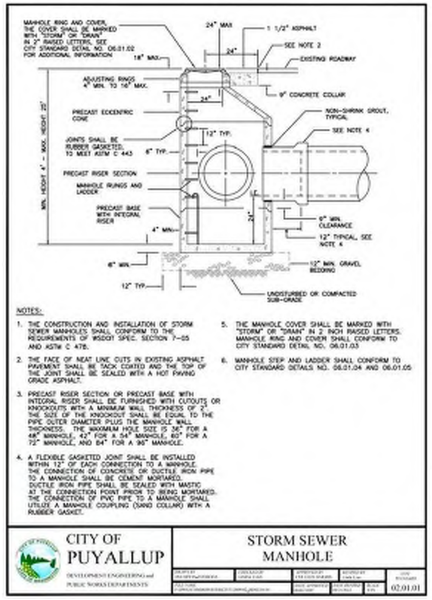
5 FLOW CONTROL MANHOLE WITH FLAT TOP (AND DATA TABLE)
NOT TO SCALE



6 FLOW CONTROL MANHOLE NOTES
NOT TO SCALE

ADD-City Standard Details 02.01.05 // 02.01.09. [Plans Sht C4.07; Pg 20 of 63]

Added



7 STORM SEWER MANHOLE
NOT TO SCALE

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

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Issue Set & Date:
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11/20/2023

11/21/2023

Revisions:
4
3
2
1

Sheet Title:

STORM DRAINAGE NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C4.07

20 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility.
[Plans Sht C4.08; Pg 21 of 63]
Fixed

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
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SITE SPECIFIC DATA				
Structure ID				ID
Treatment Flow Rate (cfs)				0.12 CFS
Peak Flow Rate (cfs)				4 CFS
Rim Elevation				
Top of Vault Elevation				
Pipe Data	**Pipe Location**	**Pipe Size**	**Pipe Type**	**Invert Elevation**
Inlet				
Outlet				
Notes: SEE TABLE BELOW FOR DATA				

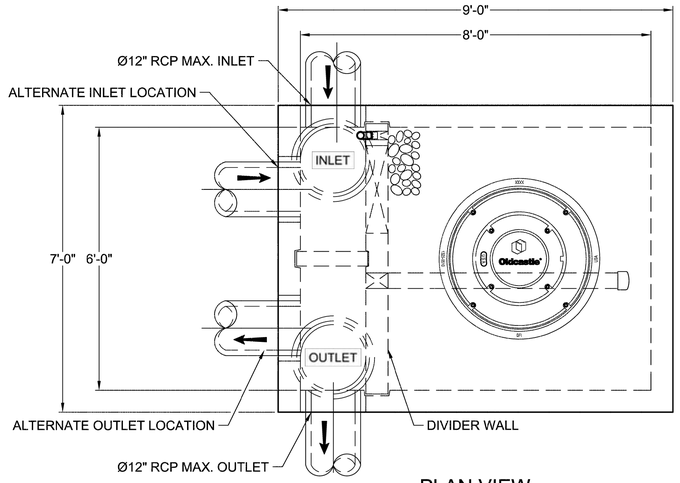
PERFORMANCE SPECIFICATIONS	
Treatment Flow Capacities:*	
NJDEP 80% Removal, 75 micron	0.144 cfs
WA Ecology GULD - Basic, Enhanced & Phosphorus	0.128 cfs
Bypass Capacity	5.0 cfs
*Contact Oldcastle for alternative treatment flow capacities.	

6x8 BIOPOD				
NUMBER	1	3	4	5
RIM	73.16	76.48	76.19	76.23
TOP OF VAULT ELEVATION	72.83	76.15	75.86	75.90
INLET LOCATION	W	S	N	S
PIPE SIZE	8"	12"	12"	12"
PIPE TYPE	CPEP	CPEP	CPEP	CPEP
INLET IE	68.40	71.71	70.10	70.80
OUTLET LOCATION	S	N	S	N
PIPE SIZE	8"	12"	12"	12"
PIPE TYPE	CPEP	CPEP	CPEP	CPEP
OUTLET IE	67.90	68.90	69.60	70.30

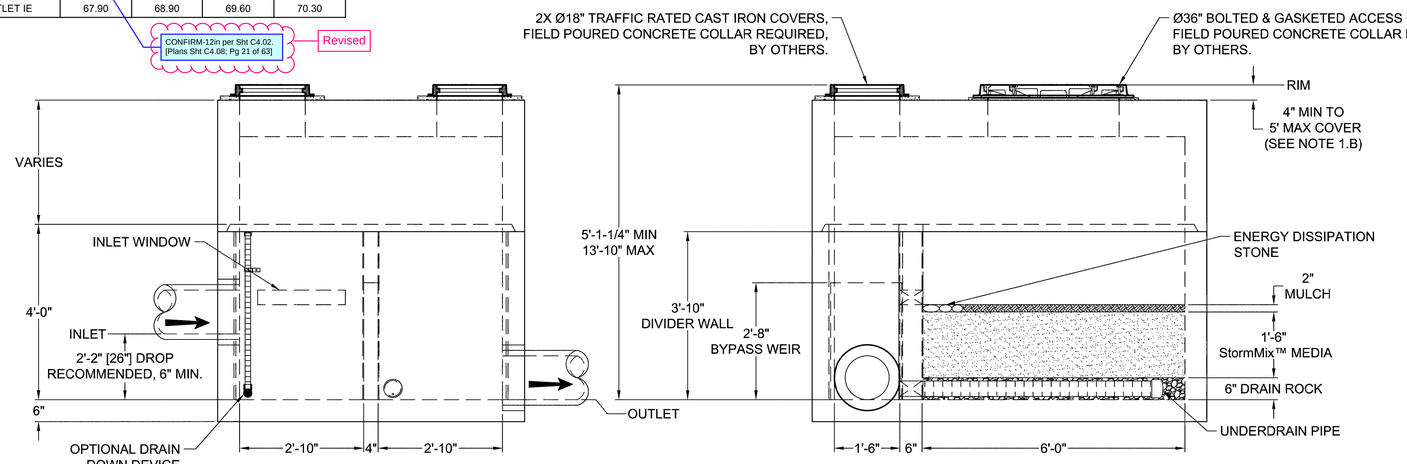
CONFIRM-12in per Sht C4.02.
[Plans Sht C4.08; Pg 21 of 63]
Revised

CONFIRM-IE w Sht C4.02.
[Plans Sht C4.08; Pg 21 of 63]
Revised

CONFIRM-12in per Sht C4.02.
[Plans Sht C4.08; Pg 21 of 63]
Revised



PLAN VIEW



LEFT END VIEW

ELEVATION VIEW

CLARIFY-whether the optional drain down device will be implemented.
(See GULD Para 3)
[Plans Sht C4.08; Pg 21 of 63]
Will not be included

1 **6X8 BIOPOD**
NOT TO SCALE

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

NOTES:

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 (WITH IMPACT)
   B. DESIGN SOIL COVER: 5'-0" MAXIMUM
   C. ASSUMED WATER TABLE: BELOW BASE OF PRECAST (ENGINEER-OF-RECORD TO CONFIRM SITE WATER TABLE ELEVATION)
   D. LATERAL EARTH PRESSURE: 45 PCF (DRAINED)
   E. LATERAL LIVE LOAD SURCHARGE: 80 PSF (APPLIED TO 8'-0" BELOW GRADE)
   F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
2. CONCRETE 28-DAY MINIMUM COMPRESSIVE STRENGTH: 5,000 PSI MINIMUM.
3. REINFORCING: REBAR, ASTM A615/A706, GRADE 60
4. CEMENT: ASTM C150
5. REQUIRED ALLOWABLE SOIL BEARING CAPACITY: 2,500 PSF
6. REFERENCE STANDARD:
   A. ASTM C890
   B. ASTM C913
   C. ACI 318-14
7. THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. ENGINEER-OF-RECORD SHALL VERIFY FY THAT NOTED PARAMETERS MEET OR EXCEED PROJECT REQUIREMENTS. IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE INFRASTRUCTURE UPON REVIEW.
8. INLET AND OUTLET HOLES WILL BE FACTORY CORED/CAST PER PLANS AND CUSTOMER REQUIREMENTS. INLET AND OUTLET LOCATIONS CAN BE MIRRORED.
9. CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS, AND ELEVATIONS OF OPENINGS.
10. CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED AND LEVEL PER PROJECT SPECIFICATIONS).
11. SECTION HEIGHTS, SLAB/WALL THICKNESSES, AND KEYWAYS ARE SUBJECT TO CHANGE AS REQUIRED FOR SITE REQUIREMENTS AND/OR DUE TO PRODUCT AVAILABILITY AND PRODUCTION FACILITY CONSTRAINTS.
12. MAXIMUM PICK WEIGHTS":
    A. TOP: XX,XXX LBS
    B. BASE: XX,XXX LBS*
       (* COMBINED WEIGHT OF BASE INCLUDES BYPASS WEIR, DIVIDER WALL, ROCK & MEDIA)
13. INTERNALS SHALL CONSIST OF UNDERDRAIN PIPE, ROCK, STORMMIX™ MEDIA, MULCH, DIVIDER WALL, BYPASS WEIR AND OPTIONAL DRAIN DOWN.

Bioretention/ Biofiltration

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BioPod™ Biofilter System (STANDARD)
Underground Vault with Internal Bypass

CUSTOMER: -
PROJECT NAME: -

SHEET NAME	REVISION	SHEET
Specifier Drawing BPU-68IB	-	1 OF 1
	REV DATE: -	

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253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4
5

Sheet Title:
STORM DRAINAGE NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.08
21 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility.
[Plans Sht C4.09; Pg 22 of 63]

Fixed

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
THE CITY WILL NOT BE RESPONSIBLE FOR ERRORS AND/OR OMISSIONS ON THESE PLANS.
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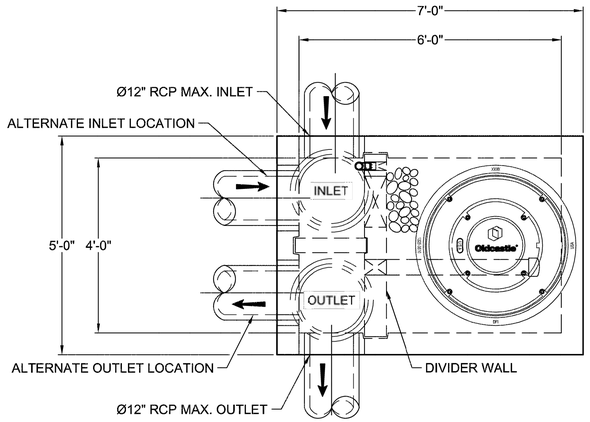
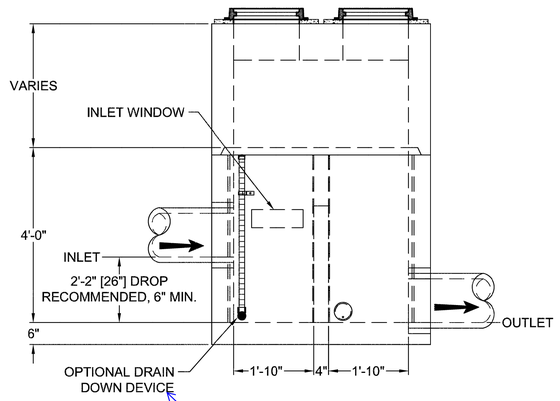
SITE SPECIFIC DATA				
Structure ID				ID
Treatment Flow Rate (cfs)				0.05 CFS
Peak Flow Rate (cfs)				1.2 CFS
Rim Elevation				76.71
Top of Vault Elevation				76.38
Pipe Data	**Pipe Location**	**Pipe Size**	**Pipe Type**	**Invert Elevation**
Inlet	N	8"	CPEP	72.83
Outlet	S	12"	CPEP	70.66
Notes:				

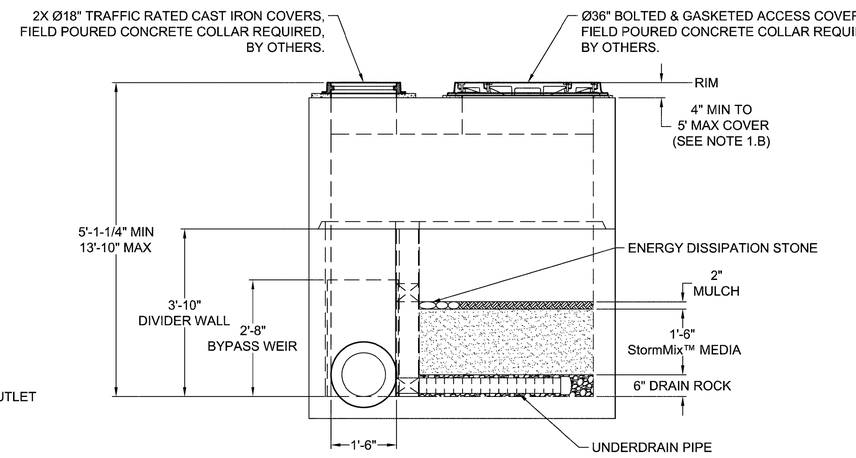
PERFORMANCE SPECIFICATIONS	
Treatment Flow Capacities:*	
NJDEP 80% Removal, 75 micron	0.064 cfs
WA Ecology GULD - Basic, Enhanced & Phosphorus	0.057 cfs
Bypass Capactiy	5.0 cfs
*Contact Oldcastle for alternative treatment flow capacities.	



PLAN VIEW



LEFT END VIEW



ELEVATION VIEW

CLARIFY-whether the optional drain down device will be implemented. (See GULD Para 3)
[Plans Sht C4.09; Pg 22 of 63]

Will not be included

NOTES:

1. DESIGN LOADINGS:
   A. AASHTO HS-20-44 (WITH IMPACT)
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PROJECT NAME
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Specifier Drawing BPU-46IB	-	1 OF 1
	REV DATE -	

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1 **4X6 BIOPOD**
NOT TO SCALE

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GREG HELLE

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Project No.
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Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

Revisions:
- 4
- 3
- 2
- 1

Sheet Title:

STORM DRAINAGE NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C4.09

22 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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Legibility.
[Plans Sht C4.10; Pg 23 of 63]

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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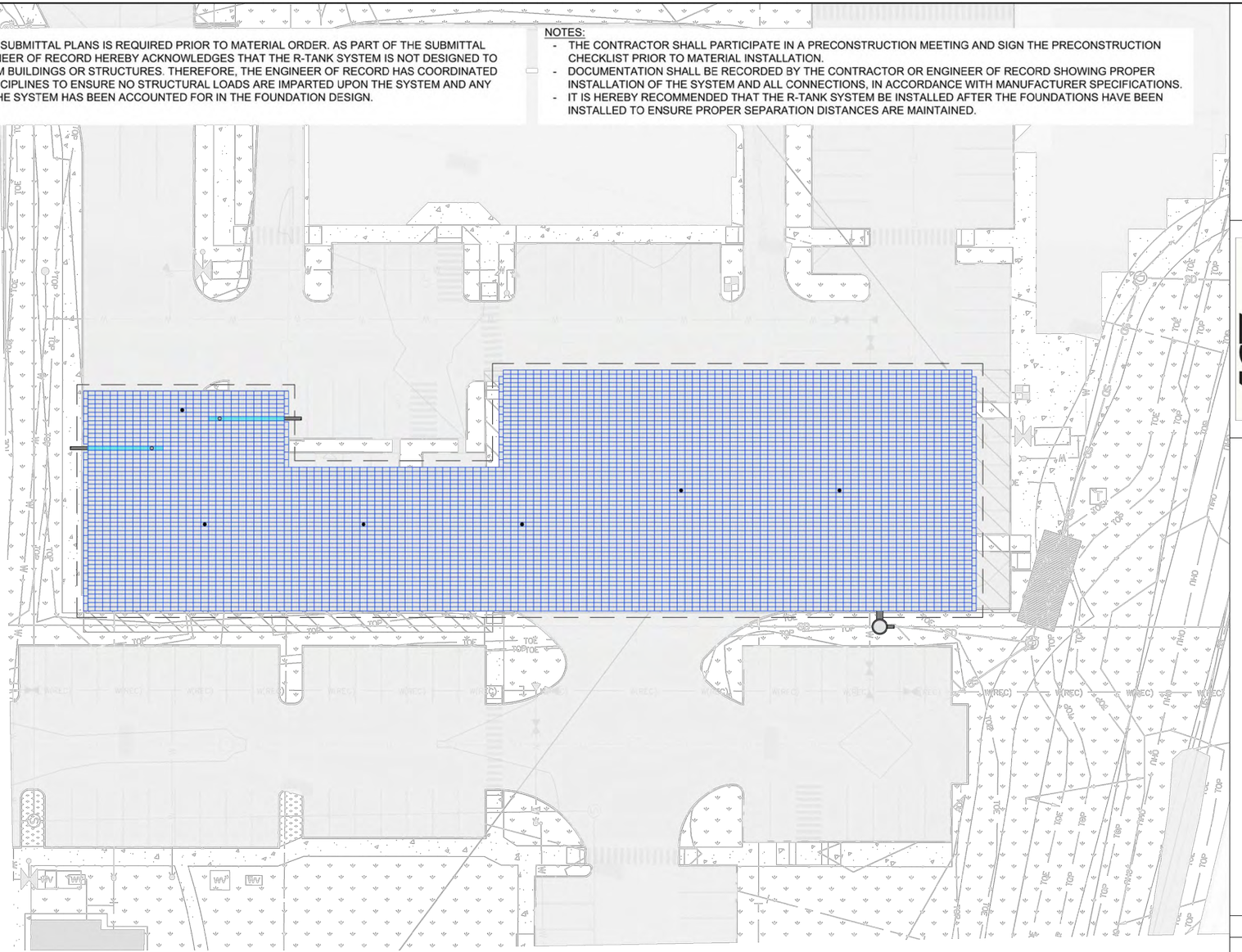
ACKNOWLEDGEMENT:
AN APPROVAL OF THE SUBMITTAL PLANS IS REQUIRED PRIOR TO MATERIAL ORDER. AS PART OF THE SUBMITTAL APPROVAL, THE ENGINEER OF RECORD HEREBY ACKNOWLEDGES THAT THE R-TANK SYSTEM IS NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS OR STRUCTURES. THEREFORE, THE ENGINEER OF RECORD HAS COORDINATED WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN THE FOUNDATION DESIGN.

NOTES:
- THE CONTRACTOR SHALL PARTICIPATE IN A PRECONSTRUCTION MEETING AND SIGN THE PRECONSTRUCTION CHECKLIST PRIOR TO MATERIAL INSTALLATION.
- DOCUMENTATION SHALL BE RECORDED BY THE CONTRACTOR OR ENGINEER OF RECORD SHOWING PROPER INSTALLATION OF THE SYSTEM AND ALL CONNECTIONS, IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
- IT IS HEREBY RECOMMENDED THAT THE R-TANK SYSTEM BE INSTALLED AFTER THE FOUNDATIONS HAVE BEEN INSTALLED TO ENSURE PROPER SEPARATION DISTANCES ARE MAINTAINED.



R-TANK^{SD} SYSTEM OVERLAY
SCALE: 1" = 30'

0 30' 60'
SCALE 1" = 30'

R-TANK^{SD} SYSTEM OVERLAY
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 1 of 8

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT:
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GREG.HELLE@ASHNW.COM

Project No.
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PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

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3
4

Sheet Title:
R-TANK 1 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.10
23 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility.
[Plans Sht C4.11; Pg 24 of 63]

Fixed

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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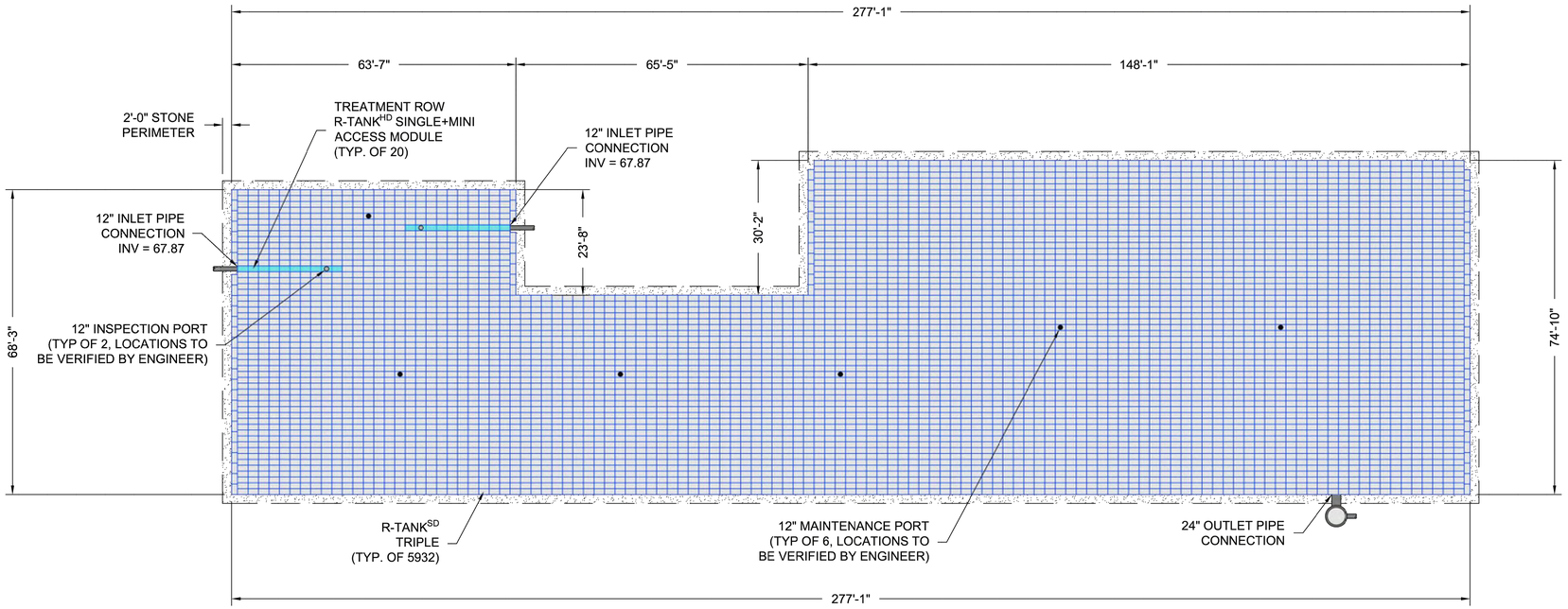
NOTE:
MINIMUM COVER FROM TOP OF TANK TO FINISH GRADE MUST BE AT LEAST 30" TO MEET A 45 KIP OUTRIGGER LOAD ON AN 18'X18" PAD.



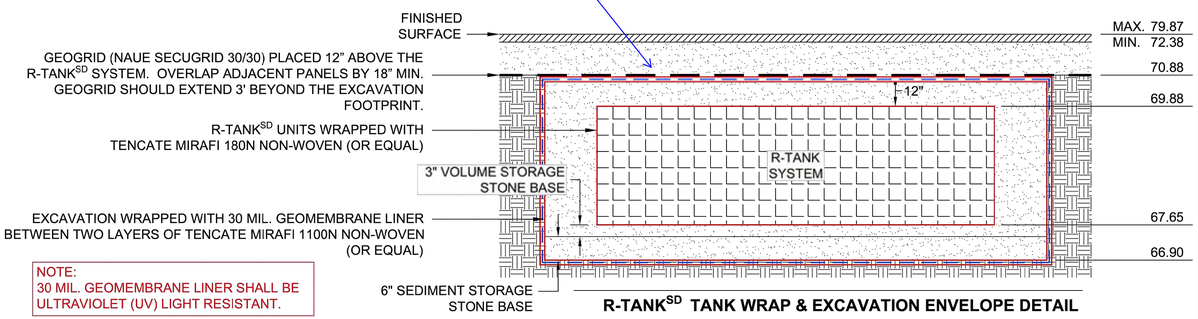
Provided

PROVIDE-2yr and 10yr water surface elevations on the cross section.
[Plans Sht C4.11; Pg 24 of 63]

0 25' 50'
SCALE 1" = 25'

NOTES:
1. DEAD STORAGE VOLUME FROM ELEVATION 66.90 TO 67.40 = 3,971 CF
2. LIVE STORAGE VOLUME FROM ELEVATION 67.40 TO 70.88 = 50,099 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.

LAYOUT SCALE	1" = 25'
R-TANK^SD MODULE TYPE	TRIPLE
TRAFFIC LOAD	45 KIP OUTRIGGER (18"X18")
# OF SD TRIPLE R-TANKS	5,932
# OF HD SINGLE+MINI R-TANK ACCESS MODULES	20
TOTAL SYSTEM STORAGE	50,099 CF
R-TANK STORAGE VOLUME	38,803 CF
STONE STORAGE VOLUME (40% VOID RATIO)	11,296 CF
TOP OF COVER STONE ELEV. (12")	70.88
NAUE SECUGRID 30/30 GEOGRID ELEV.	70.88
TOP OF R-TANK ELEV.	69.88
TANK INVERT	67.65
INVERT OF STONE BASE (9")	66.90
MIN. STONE PERIMETER WIDTH	2.0 FT
SEE SHEETS 3 - 8 FOR DETAILS AND ADDITIONAL INFORMATION	



NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

R-TANK^SD TANK WRAP & EXCAVATION ENVELOPE DETAIL

R-TANK^SD SYSTEM LAYOUT
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO: 2 of 8

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

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Project Title:

EAST TOWN CROSSING PHASE 1

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ASH DEVELOPMENT
GREG HELLE
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PERMIT SUBMITTAL
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TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Sheet Title:
R-TANK 1 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.11
24 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility.
[Plans Sht C4.12; Pg 25 of 63]
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APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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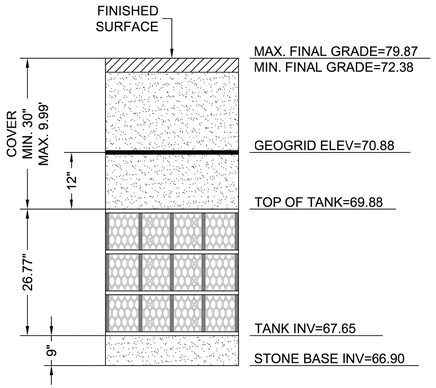
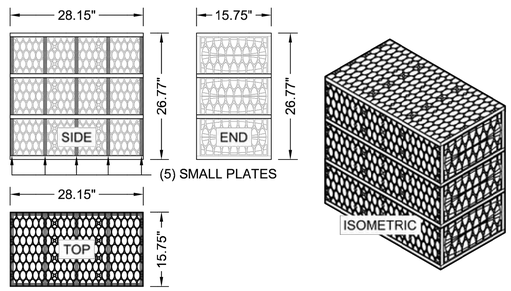


TRIPLE R-TANK^{SD} - ELEVATION

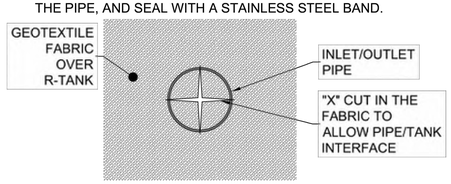


TRIPLE R-TANK^{SD} - MODULE DETAIL

MODULE DATA

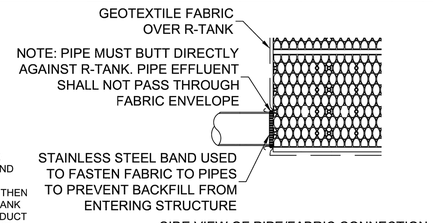
GEOMETRY:	**LOAD RATING:**
LENGTH = 28.15 IN. (715 MM)	42.9 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 26.77 IN. (680 MM)	COVER REQUIREMENTS
TANK VOLUME = 6.87 CF	**MATERIAL:**
STORAGE VOLUME = 6.52 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 15/MODULE

CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE. PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.

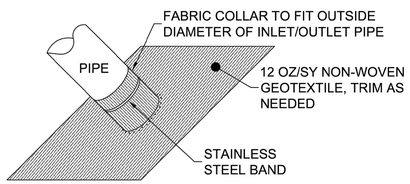


END VIEW OF PIPE/FABRIC CONNECTION

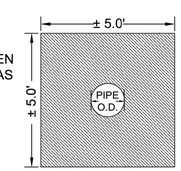
AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.



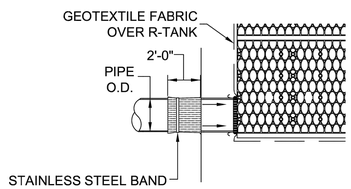
SIDE VIEW OF PIPE/FABRIC CONNECTION



GEOTEXTILE BOOT



FRONT VIEW OF GEOTEXTILE BOOT



SIDE VIEW OF GEOTEXTILE BOOT

R-TANK^{SD} TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

R-TANK^{SD} QUANTITIES	
R-TANK^{SD} MODULE TYPE	TRIPLE
# OF SD TRIPLE R-TANKS	5,932
# OF HD SINGLE+MINI R-TANK ACCESS MODULES	20
TOTAL SYSTEM STORAGE	50,099 CF
R-TANK STORAGE VOLUME	38,803 CF
STONE STORAGE VOLUME (40% VOID RATIO)	11,296 CF
STONE BED FOOTPRINT	19,856 SF
STONE QUANTITY	1,414 CY
TENCATE MIRAFI 180N NON-WOVEN TANK WRAP	44,091 SF (4,899 SY)
30 MIL. GEOMEMBRANE LINER EXCAVATION WRAP	49,184 SF (5,465 SY)
TENCATE MIRAFI 1100N NON-WOVEN LINER PROTECTION	98,368 SF (10,930 SY)
TENCATE MIRAFI 180N NON-WOVEN TREAT. ROW WRAP	327 SF (36 SY)
TENCATE MIRAFI FW-402 WOVEN TREAT. ROW BASE FABRIC	388 SF (43 SY)
NAUE SECUGRID 30/30 GEOGRID	25,522 SF (2,836 SY)
12" MAINTENANCE PORTS	6
12" INSPECTION PORTS	2
12" PIPE BOOTS	2
24" PIPE BOOTS	1
TRASHGUARD PLUS UNITS (RECOMMENDED)	2
NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 9" OF BASE.	
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.	

NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

NOTES:
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2. LIVE STORAGE VOLUME FROM ELEVATION 67.40 TO 70.88 = 50,099 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.

R-TANK^{SD} TANK

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

ACF WEST INC. GEOSYNTHETICS Products | Service | Solutions

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R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 3 of 8

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Designed by: CW | Drawn by: SK | Checked by: JI

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C4.12
25 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

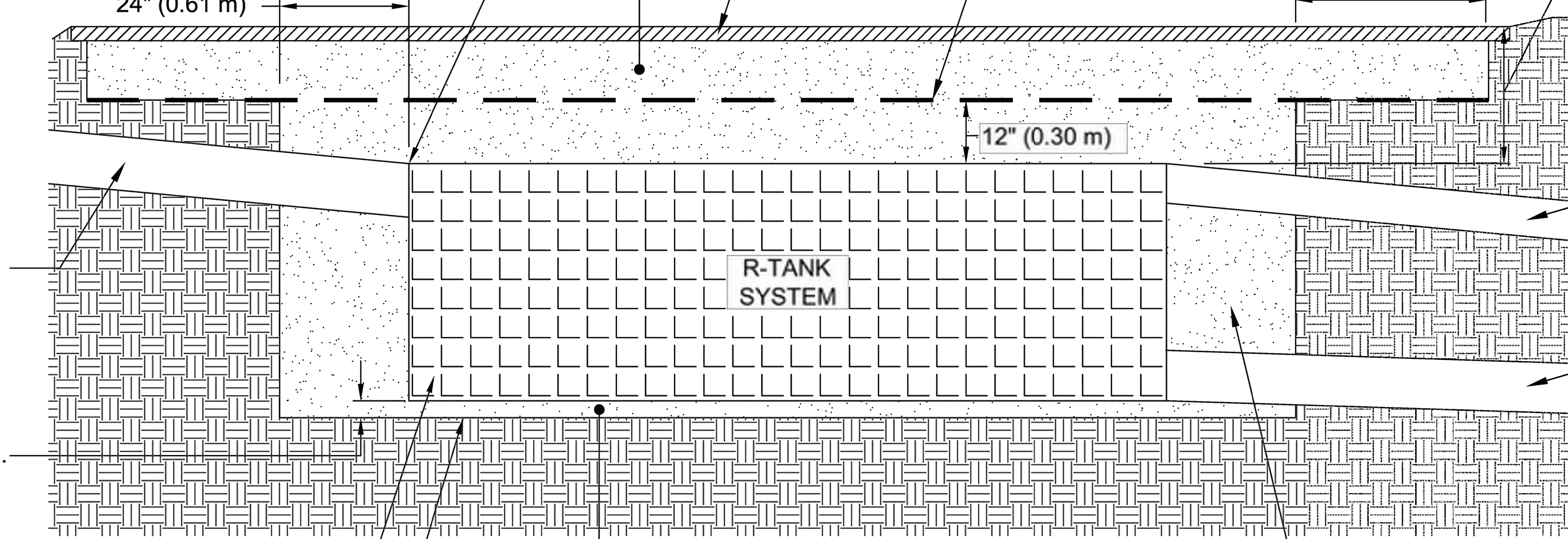
Legibility.
[Plans Sht C4.13; Pg 26 of 63]
Fixed

TOTAL COVER: 18" MINIMUM AND 120" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 10'. CONTACT ACF WEST IF MORE THAN 10' OR LESS THAN 18" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:

1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{SD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE TENCATE MIRAFI FW-402 WOVEN (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{SD} FOOTPRINT.

GEOGRID (NAUE SECUGRID 30/30) PLACED 12" ABOVE THE R-TANK^{SD} SYSTEM. OVERLAP ADJACENT PANELS BY 18" MIN. GEOGRID SHOULD EXTEND 3' BEYOND THE EXCAVATION FOOTPRINT.



R-TANK^{SD} UNITS
LOAD RATING: 42.9 PSI (MODULE ONLY)

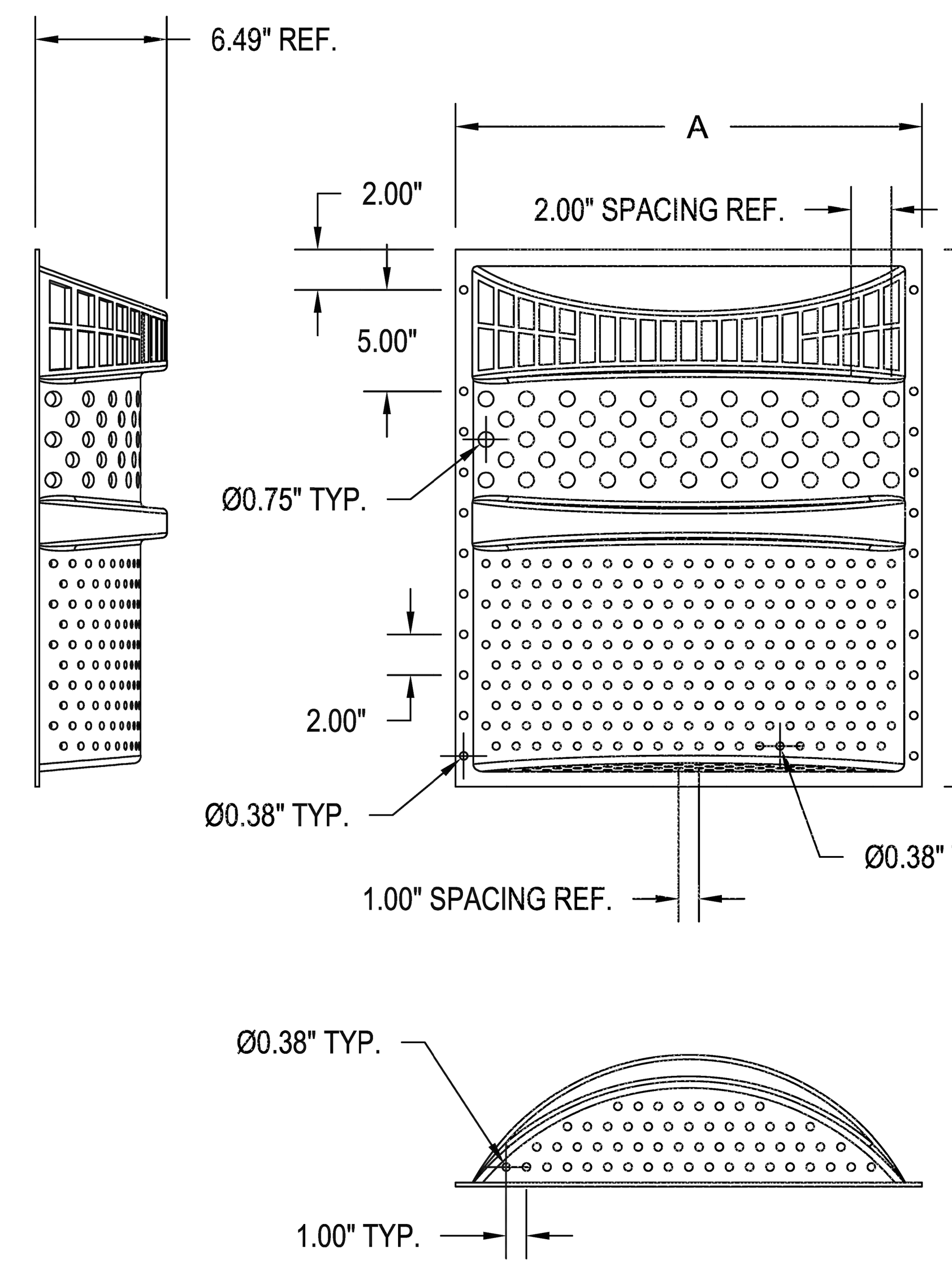
SUBGRADE / EXCAVATION LINE: COMPACT PER SPEC SECTION 3.02 D. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{SD}

BASE: 3" MIN. FREE DRAINING BACKFILL (SPEC SECTION 2.03B) COMPACTED TO 95% STANDARD PROCTOR DENSITY IS REQUIRED TO PROVIDE A LEVEL BASE SURFACE. MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{SD} FOOTPRINT. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{SD}. NATIVE SOILS MAY BE ACCEPTABLE IF DETERMINED TO BE STABLE BY OWNER'S ENGINEER.

SIDE BACKFILL: 24" MIN. OF FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). MUST BE FREE FROM LUMPS, DEBRIS AND OTHER SHARP OBJECTS. SPREAD EVENLY TO PREVENT R-TANK^{SD} MOVEMENT. COMPACT SIDE BACKFILL WITH POWERED MECHANICAL COMPACTOR IN 12" LIFTS (PER SPEC SECTION 3.05 A2).

NOTE:
MINIMUM COVER FROM TOP OF TANK TO FINISH GRADE MUST BE AT LEAST 30" TO MEET A 45 KIP OUTRIGGER LOAD ON AN 18'X18" PAD.

R-TANK^{SD} & HS-20 LOADS - SECTION VIEW



SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

NOTE:
TRASHGUARD PLUS UNITS ARE RECOMMENDED TO BE INSTALLED IN ALL CATCH BASINS DIRECTLY CONNECTED UPSTREAM OF THE R-TANK SYSTEM.

TRASHGUARD PLUS PRETREATMENT DETAIL

R-TANK (SD)

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

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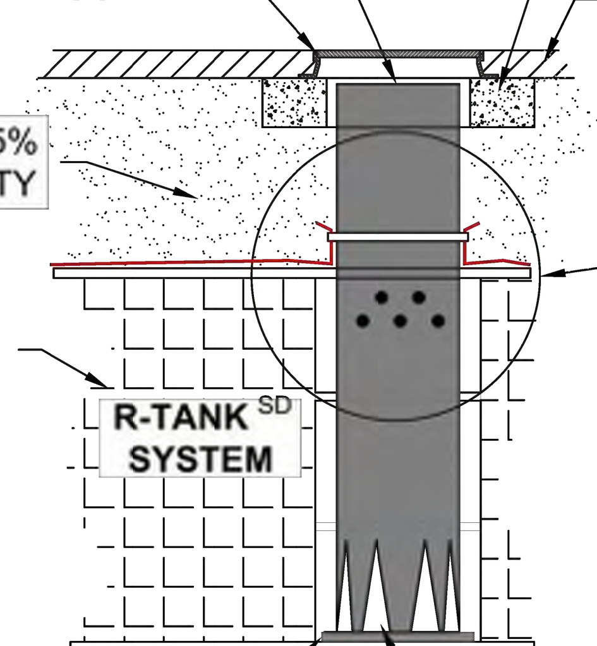
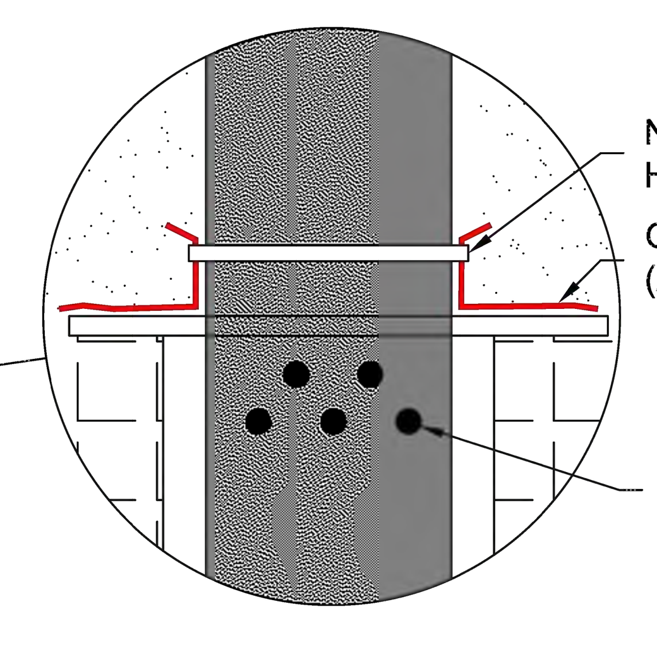
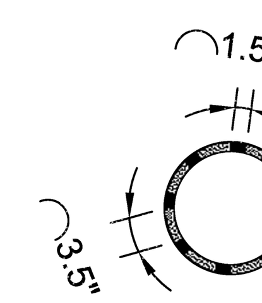
R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

NOTES

1. THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF MAINTENANCE PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.







PIPE NOTCHING PATTERN

R-TANK^{SD} TYPICAL MAINTENANCE PORT

DRAWN BY	DATE	ACF WEST PROJECT NUMBER	SHEET NO.
EDQ	11/10/2023	23-004WA	4 of 8

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BY ____________________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ____________________

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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN
STATE OF WASHINGTON
46416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

Revisions:

Sheet Title:
R-TANK 1 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.13

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE: _____

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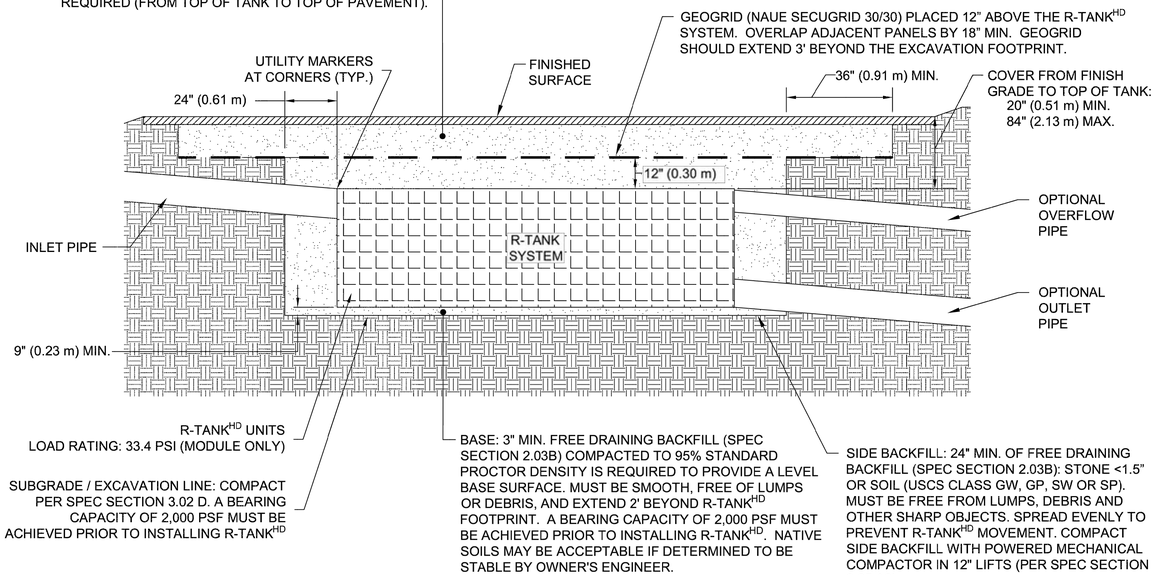
FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

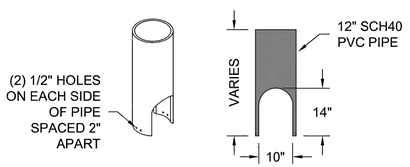
TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4 .A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF WEST IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

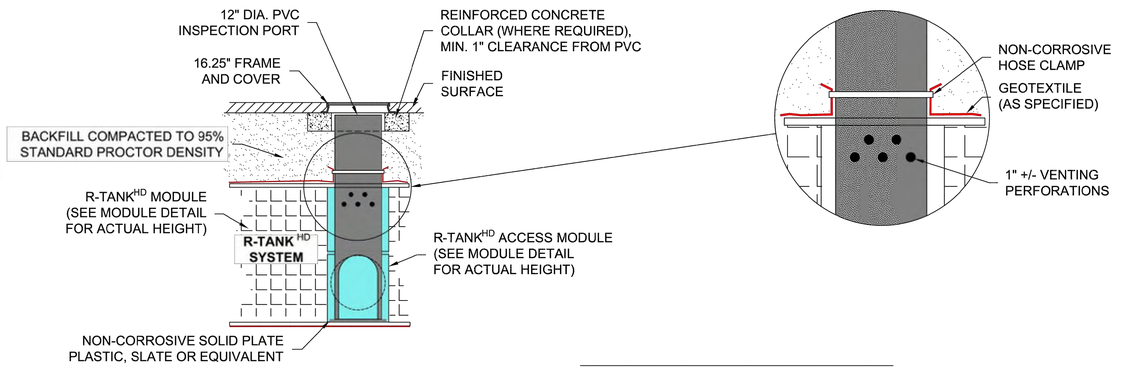
NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT.



R-TANK^{HD} & HS-20 LOADS - SECTION VIEW

NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS MODULE TO INSPECT THE LEVEL OF SEDIMENT ACCUMULATION.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF INSPECTION PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.





R-TANK^{HD} TYPICAL INSPECTION PORT

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF WEST, 1-800-423-4567, www.acfwest.com

R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 5 of 8

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:

Sheet Title:
R-TANK 1 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

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C4.14
27 of 63 Sheets

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EAST TOWN CROSSING PHASE 1
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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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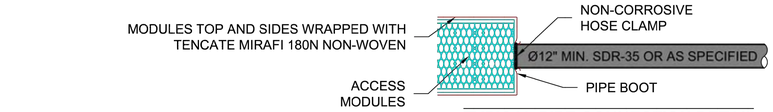
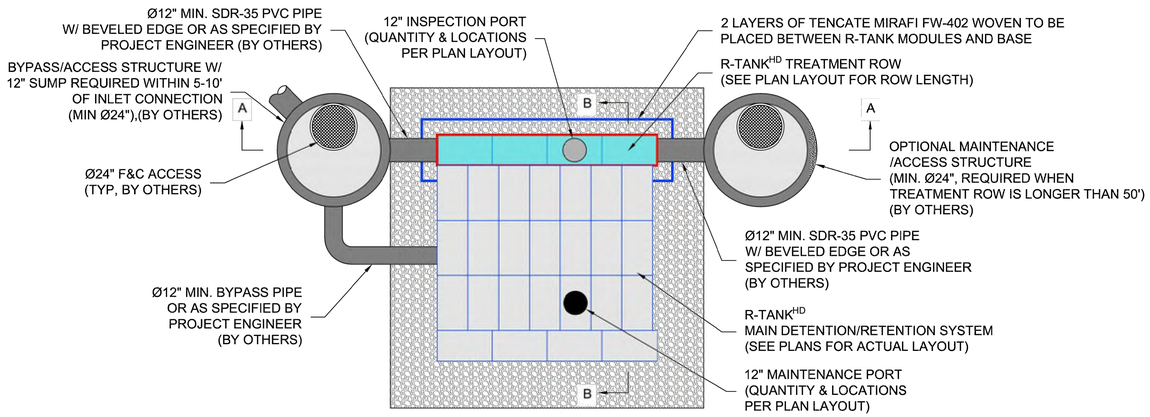
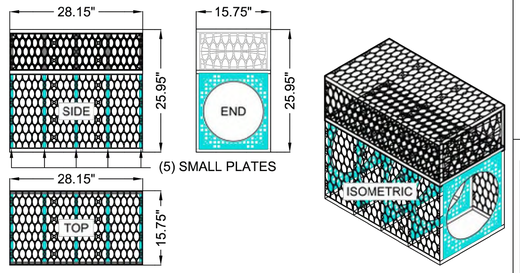


TYPICAL PIPE CONNECTION DETAIL

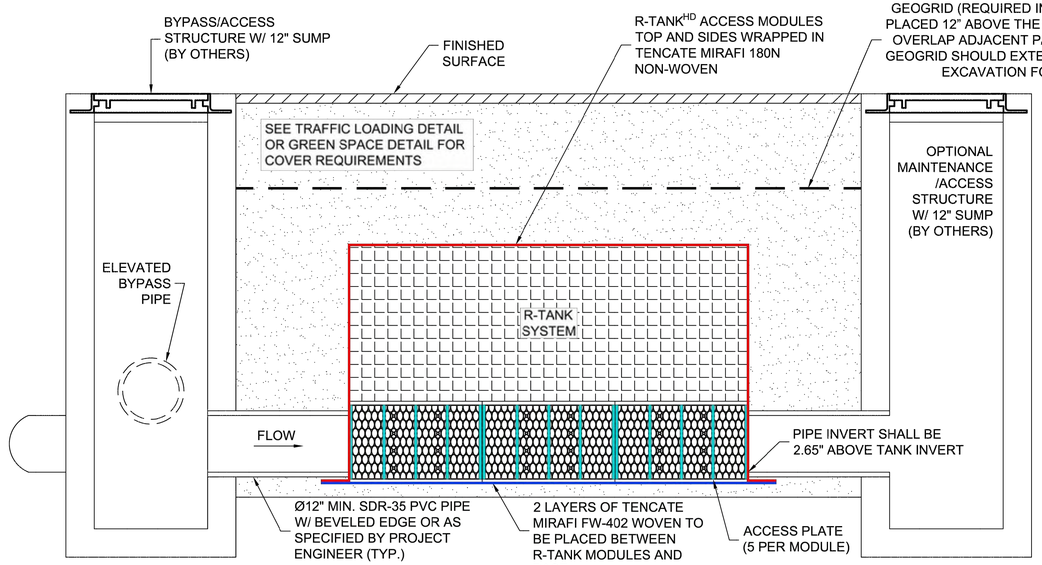
NOTE:
IF PIPE CONNECTING TO TREATMENT ROW IS LARGER THAN Ø12" SDR-35, IT SHALL BE ABUTTED FLUSH TO END PLATE AND SEALED WITH A PIPE BOOT.



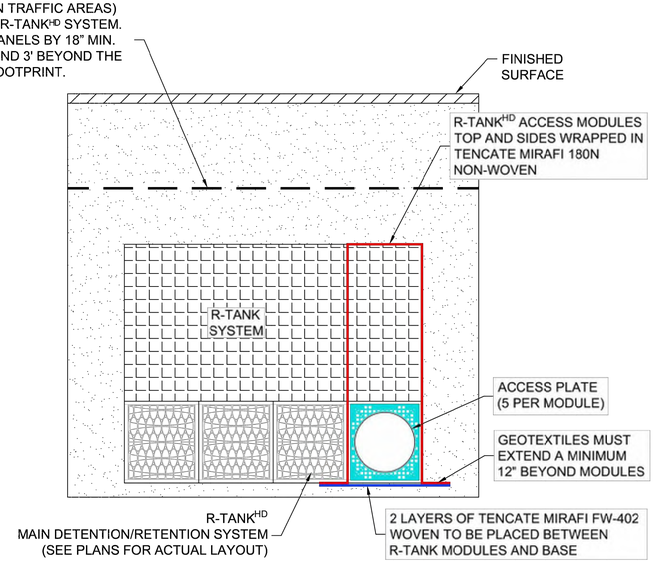
R-TANK^HD TREATMENT ROW WITH PRECAST INLET/ACCESS STRUCTURE



SINGLE + MINI R-TANK^HD - ACCESS MODULE DETAIL
(FOR MODULE DATA, SEE STANDARD MODULE DETAIL)



R-TANK^HD TREATMENT ROW SECTION A-A



R-TANK^HD TREATMENT ROW SECTION B-B

R-TANK^HD TREATMENT ROW DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 6 of 8

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

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Project Title:
EAST TOWN CROSSING PHASE 1

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Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4

Sheet Title:
R-TANK 1 NOTES AND DETAILS

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EAST TOWN CROSSING PHASE 1
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BY
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING
DATE
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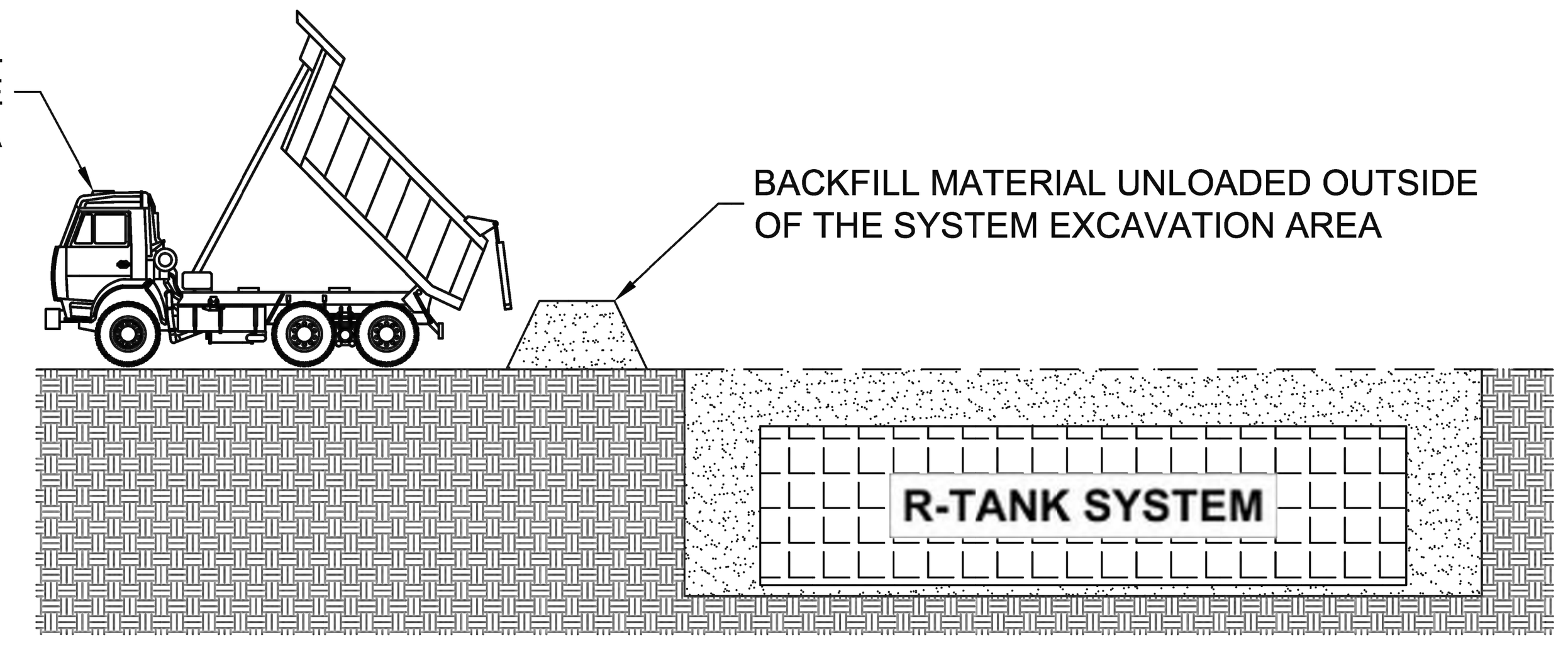
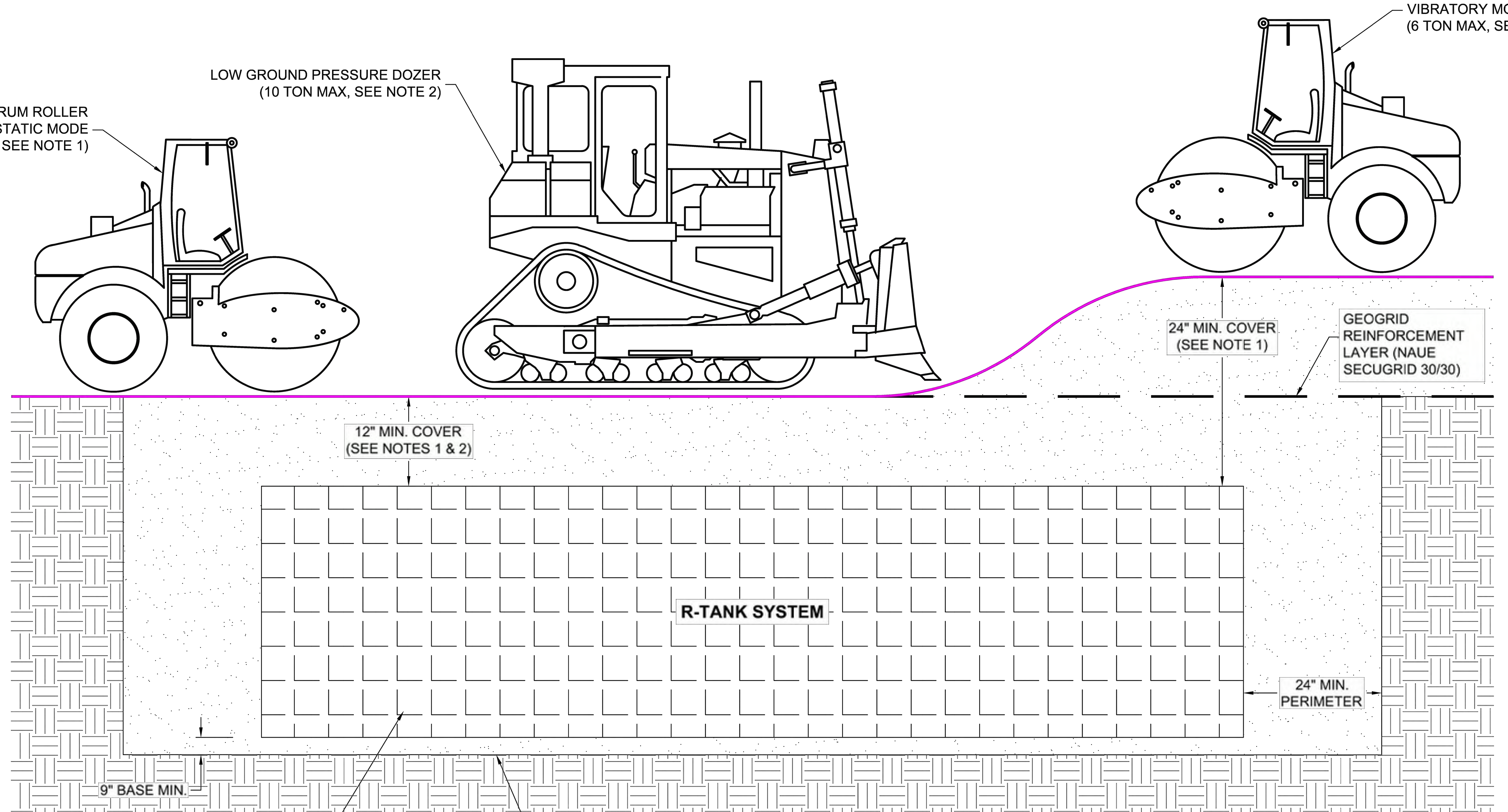


DUMP TRUCK DETAIL (SEE NOTE 3)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL ACF WEST REPRESENTATIVE FOR ADDITIONAL INFORMATION.



R-TANK^{HD} OR R-TANK^{SD} UNITS
HD: LOAD RATING: 33.4 PSI (MODULE ONLY)
SD: LOAD RATING: 42.9 PSI (MODULE ONLY)

SUBGRADE / EXCAVATION LINE: COMPACT PER SPEC SECTION 3.02 D. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{HD} OR R-TANK^{SD}

CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

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R-TANK^{SD} CONSTRUCTION EQUIPMENT COVER DETAIL
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO. 7 of 8

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GREG HELLE
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Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN
STATE OF WASHINGTON
46416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

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R-TANK 1 NOTES AND DETAILS

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Sheet No.
C4.16

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SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 RELATED DOCUMENTS
A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-TankLD/, R-TankHD/, R-TankSD/, or R-TankU/D/ system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 PROJECT CONDITIONS
A. Coordinate installation for the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plates assembled to form a 95% void modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank[LD] VALUE	R-Tank[HD] VALUE	R-Tank[SD] VALUE	R-Tank[UD] VALUE
Void Area	Volume available for water storage	95%	95%	95%	95%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	30.0 psi	33.4 psi	42.9 psi	134.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	20.0 psi	22.4 psi	28.9 psi	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	N/A	20"	18"	12" (STONE BACKFILL)
HS-25 Minimum Cover	Cover required to support HS-25 loads	N/A	24"	19"	15" (STONE BACKFILL)
Maximum Cover	Maximum allowable cover depth	3 feet	< 7 feet	< 10 feet	5 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.29 lbs / cf	3.62 lbs/cf	3.96 lbs / cf	4.33 lbs / cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.16 inches	0.18 inches	N/A
Service Temperature	Safe temperature range for use	-14 – 167° F	-14 – 167° F	-14 – 167° F	-14 – 167° F

C. Supplier: ACF West 15540 Woodinville-Redmond Rd., Woodinville, Washington 98072, (425) 415-6115, www.acfwest.com

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile (TenCate Mirafi 180N or equivalent).
2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament (TenCate Mirafi FW402 or equivalent) shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (Naue Secugrid 30/30 or equivalent) to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankUD/ installations, and is often not required for non-traffic load applications.

2.03 BACKFILL & COVER MATERIALS
A. Bedding Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the R-Tank system.
a. For HD, and SD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System).
b. For UD modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the UD module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14" or more. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Traffic / Green Space Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

Called out

CALLOUT-manufactured 30mil (min) impermeable liner to prevent groundwater intrusion.
[Plans Sht C4.17; Pg 30 of 63]

2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ½" (+/- ¼") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
1. Standard Applications: Static roll or otherwise compact bedding materials until they are firm and unyielding.
2. Infiltration Applications: Bedding materials shall be prepared in accordance with the contract documents.
B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper installation and compaction of backfill.

3.04 INSTALLATION OF THE R-TANKS
A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
C. Install R-Tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
1. For LD, HD, and SD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details
2. For UD installations, there is no perpendicular end row required.
D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with "U" bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 BACKFILLING OF THE R-TANK UNITS
A. Backfill and fill with recommended materials as follows:
1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
4. No compaction equipment is permissible to operate directly on the R-Tank modules.
5. Top Backfill: Only low pressure track vehicles shall be operated over the R-Tank system during construction. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system using tracked equipment with an operating weight of less than 10 tons.
a. Typical Applications: Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B) over the R-Tank Units, maintaining 12" between equipment tracks and R-Tank System. Lightly compacted using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24" of cover has been placed over the modules. Sheep foot rollers should not be used.
b. Shallow Applications (< 18" total cover): Install top backfill in accordance with plans.
6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
B. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement).
C. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
D. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

3.06 MAINTENANCE REQUIREMENTS
A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
B. All inlet pipes and Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.
C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
D. All inspection and maintenance activities should be performed in accordance with the R-Tank Operation, Inspection & Maintenance Manual.

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT:
ACF WEST, 1-800-423-4567, www.acfwest.com

R-TANK SPECIFICATION
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 1

DRAWN BY
EDQ
DATE
11/10/2023
ACF WEST PROJECT NUMBER
23-004WA
SHEET NO.
8 of 8

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
16416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

4
3
2
1
Revisions:

Sheet Title:
R-TANK 1 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.17
30 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility.
[Plans Sht C4.20; Pg 31 of 63]

Fixed

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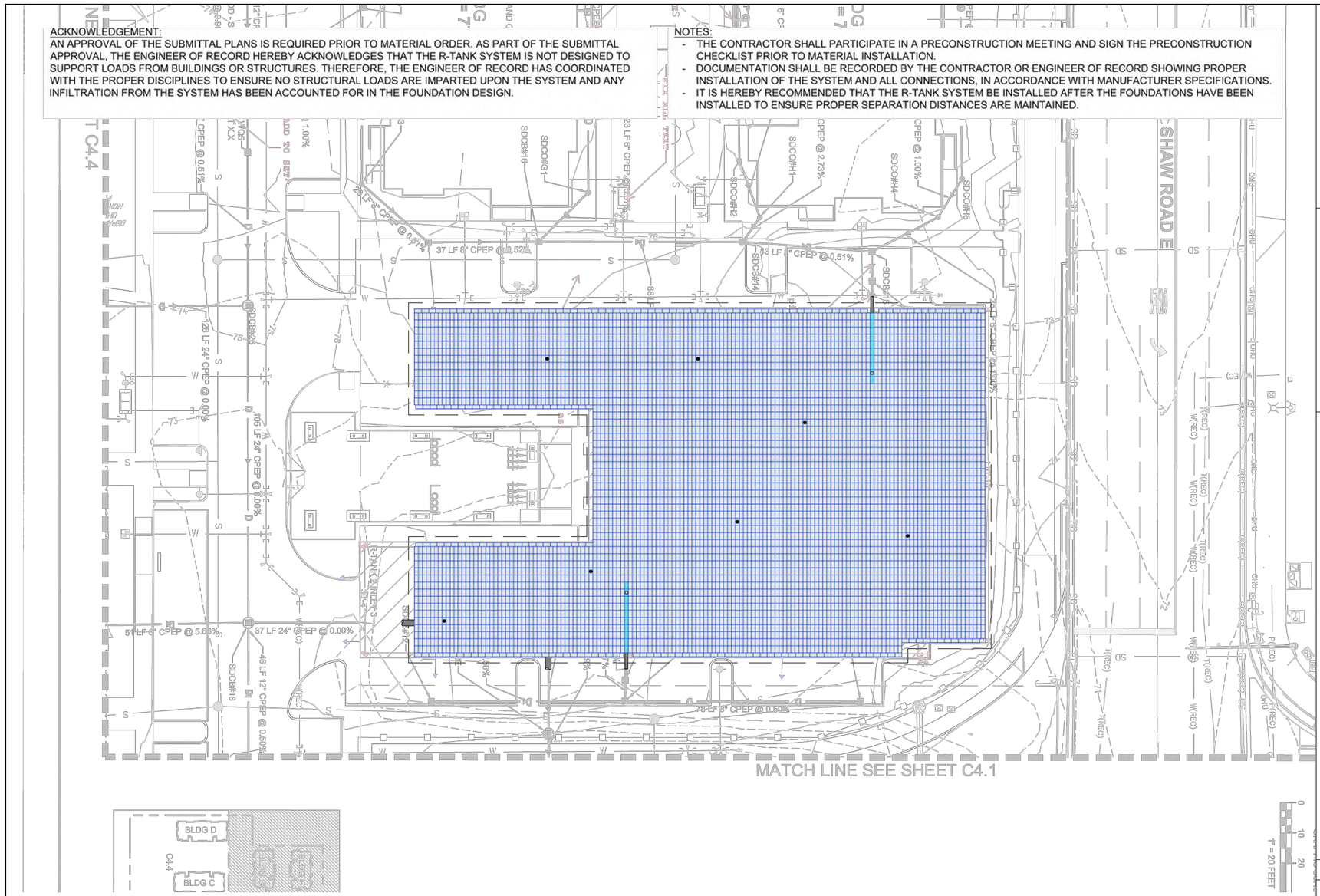
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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

ACKNOWLEDGEMENT:
AN APPROVAL OF THE SUBMITTAL PLANS IS REQUIRED PRIOR TO MATERIAL ORDER. AS PART OF THE SUBMITTAL APPROVAL, THE ENGINEER OF RECORD HEREBY ACKNOWLEDGES THAT THE R-TANK SYSTEM IS NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS OR STRUCTURES. THEREFORE, THE ENGINEER OF RECORD HAS COORDINATED WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN THE FOUNDATION DESIGN.

NOTES:
- THE CONTRACTOR SHALL PARTICIPATE IN A PRECONSTRUCTION MEETING AND SIGN THE PRECONSTRUCTION CHECKLIST PRIOR TO MATERIAL INSTALLATION.
- DOCUMENTATION SHALL BE RECORDED BY THE CONTRACTOR OR ENGINEER OF RECORD SHOWING PROPER INSTALLATION OF THE SYSTEM AND ALL CONNECTIONS, IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
- IT IS HEREBY RECOMMENDED THAT THE R-TANK SYSTEM BE INSTALLED AFTER THE FOUNDATIONS HAVE BEEN INSTALLED TO ENSURE PROPER SEPARATION DISTANCES ARE MAINTAINED.



R-TANK^{SD} SYSTEM OVERLAY
SCALE: 1" = 30'

0 30' 60'
SCALE 1" = 30'

0 10 20
1" = 20 FEET

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF WEST, 1-800-423-4567, www.acfwest.com

R-TANK^{SD} SYSTEM OVERLAY
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 1 of 8

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAMMAN — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
3
2
1

Sheet Title:

R-TANK 2 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.

C4.20

31 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Fixed
Legibility.
[Plans Sht C4.21; Pg 32 of 63]

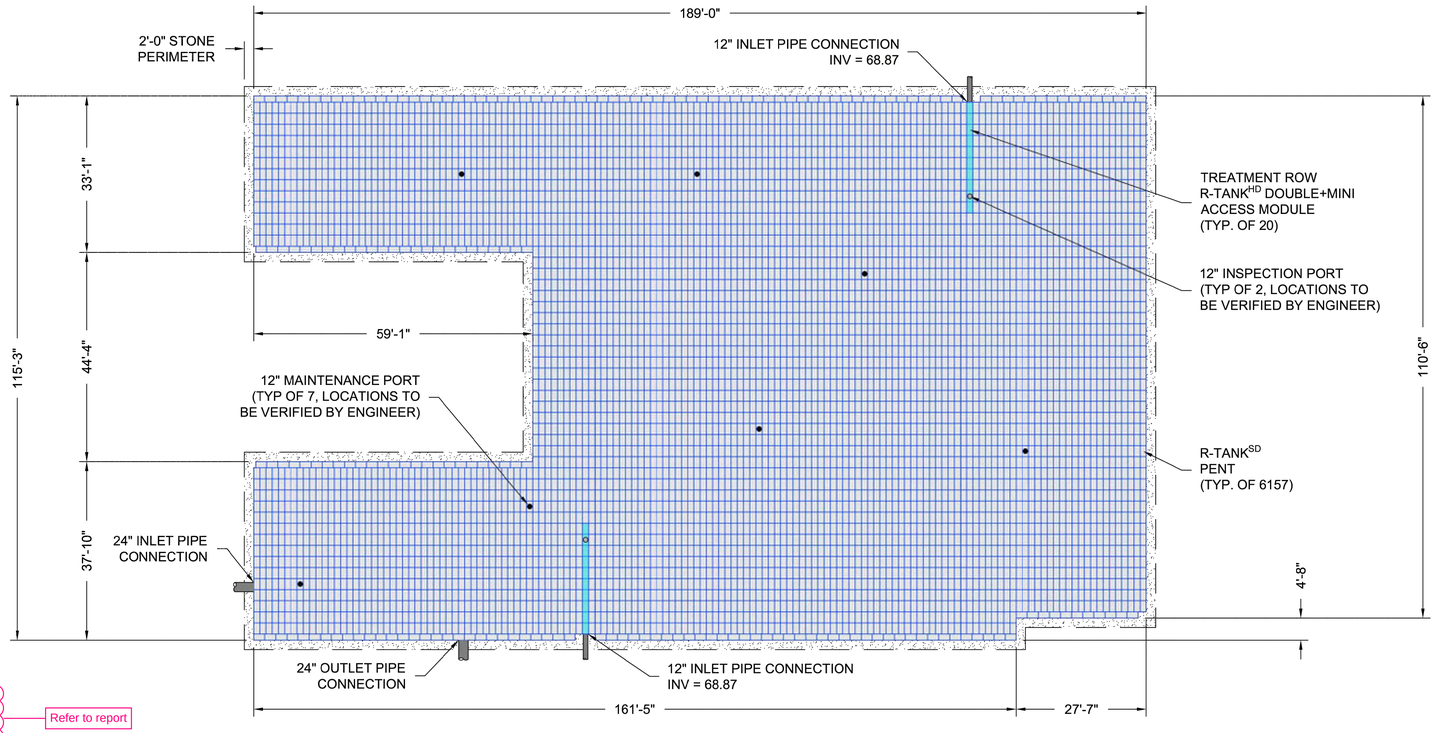
APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

BE: THIS APPROVAL IS VOID
ER 180 DAYS FROM APPROVAL
TE.
E CITY WILL NOT BE
SPONSIBLE FOR ERRORS
D/OR OMISSIONS ON THESE
ANS.
LD CONDITIONS MAY DICTATE
ANGES TO THESE PLANS AS
TERMINED BY THE
VELOPMENT ENGINEERING
NAGER

NOTE:
MINIMUM COVER FROM TOP OF TANK TO FINISH GRADE MUST BE AT LEAST 30" TO MEET A 45 KIP OUTRIGGER LOAD ON AN 18'X18" PAD.



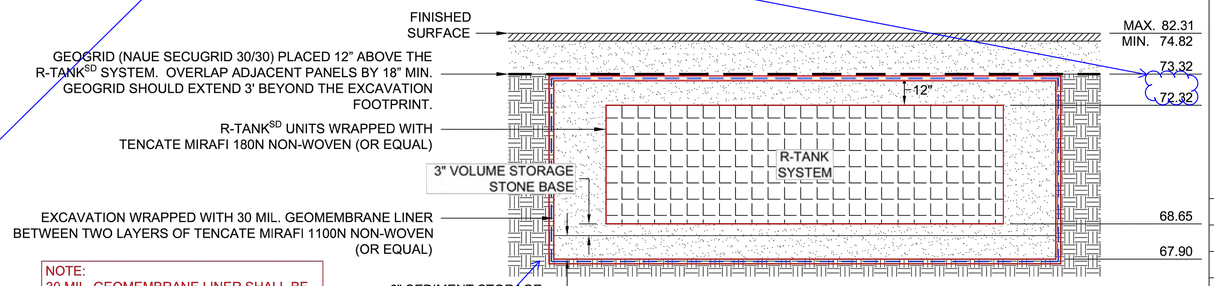
CLARIFY- See storage volume required comments in Storm Report, Pg 372 of 448. [Plans Sht C4.21; Pg 32 of 63]
Refer to report

NOTES:
1. DEAD STORAGE VOLUME FROM ELEVATION 67.90 TO 68.40 = 4,100 CF
2. LIVE STORAGE VOLUME FROM ELEVATION 68.40 TO 73.32 = 78,829 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.

CLARIFY- See Control Structure comments on Sht C4.07, and riser comments in Storm Report, Pg 372 of 448. [Plans Sht C4.21; Pg 32 of 63]
Refer to report

0 25' 50'
SCALE 1" = 25'

LAYOUT SCALE	1" = 25'
R-TANK^SD MODULE TYPE	PENT
TRAFFIC LOAD	45 KIP OUTRIGGER (18"X18")
# OF SD PENT R-TANKS	6,157
# OF HD DOUBLE+MINI R-TANK ACCESS MODULES	20
TOTAL SYSTEM STORAGE	78,829 CF
R-TANK STORAGE VOLUME	66,395 CF
STONE STORAGE VOLUME (40% VOID RATIO)	12,434 CF
TOP OF COVER STONE ELEV. (12")	73.32
NAUE SECUGRID 30/30 GEOGRID ELEV.	73.32
TOP OF R-TANK ELEV.	72.32
TANK INVERT	68.65
INVERT OF STONE BASE (9")	67.90
MIN. STONE PERIMETER WIDTH	2.0 FT
SEE SHEETS 3 - 8 FOR DETAILS AND ADDITIONAL INFORMATION	



NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

R-TANK^SD TANK WRAP & EXCAVATION ENVELOPE DETAIL

PROVIDE-2yr and 10yr water surface elevations on the cross section. [Plans Sht C4.21; Pg 32 of 63]
Provided

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R-TANK^SD SYSTEM LAYOUT
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 2 of 8

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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

CHRISTOPHER S. TODD — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
4
3
2
1

Sheet Title:
R-TANK 2 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.21
32 of 63 Sheets

Legibility. [Plans Sht C4.22; Pg 33 of 63]

Fixed

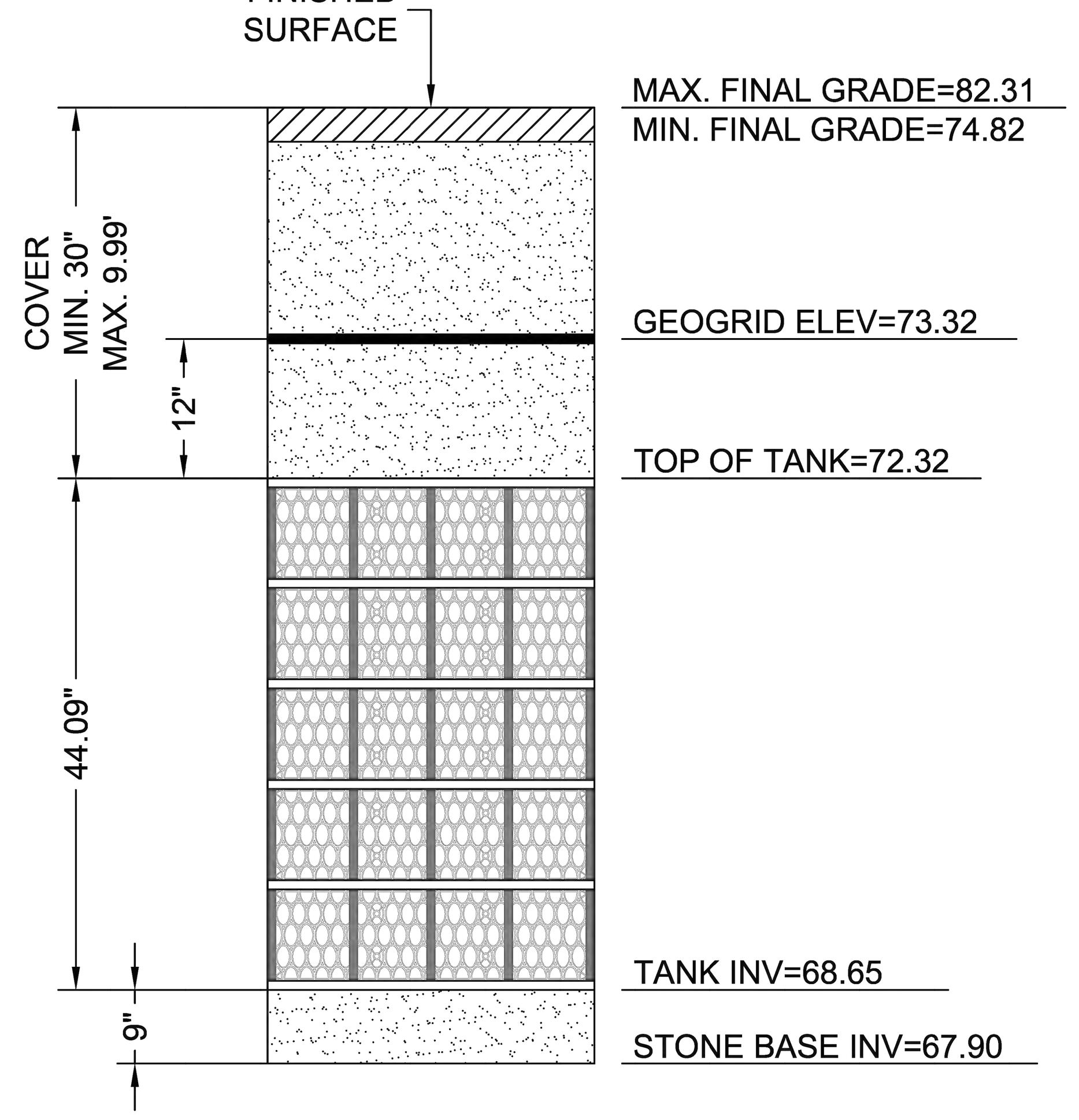
APPROVED

BY ____________ CITY OF PUYALLUP DEVELOPMENT ENGINEERING

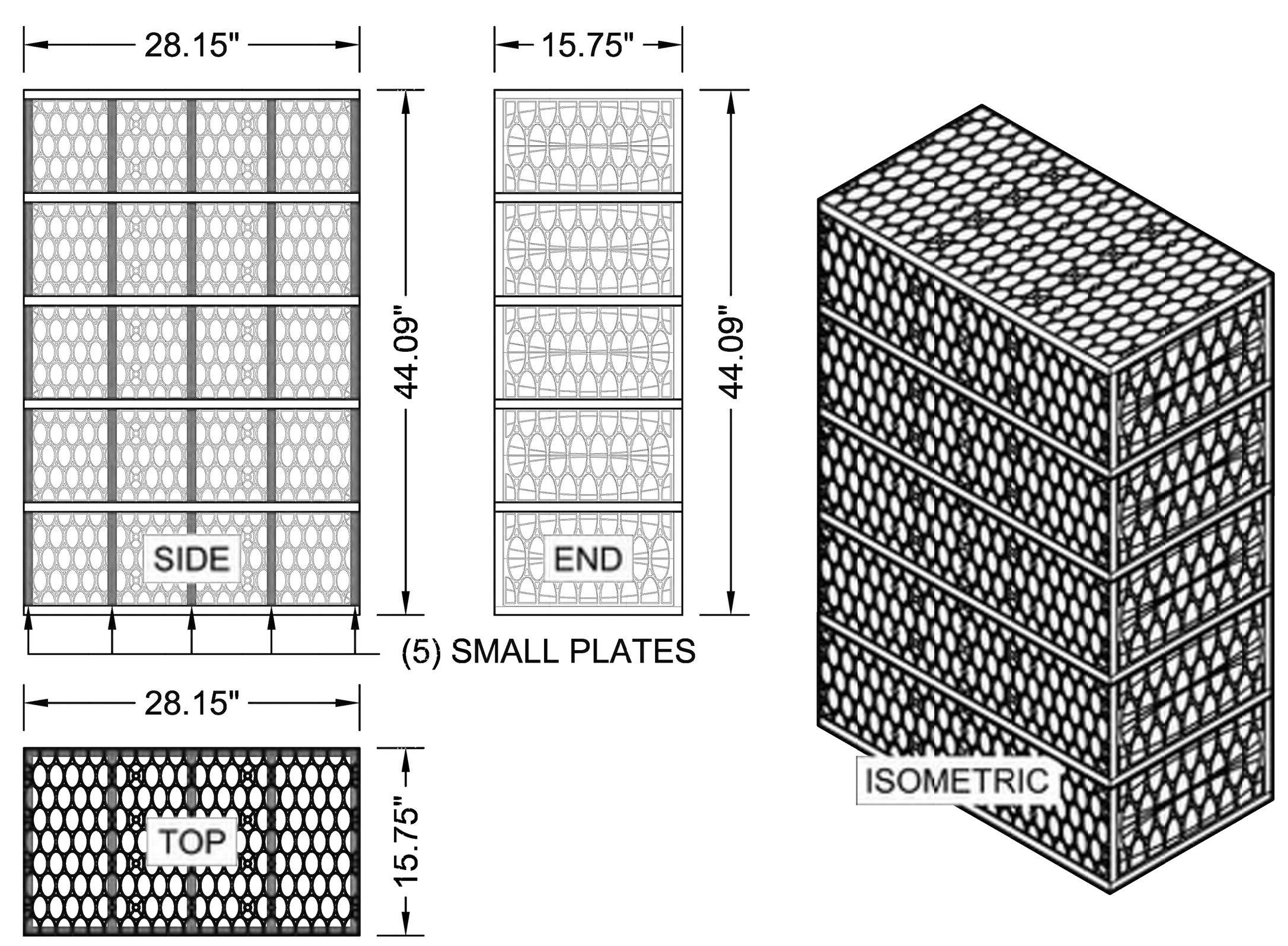
DATE ____________

[redacted]TE: THIS APPROVAL IS VOID [redacted]TER [redacted]0 DAYS FROM APPROVAL [redacted]TE. [redacted]E CITY WILL NOT BE [redacted]SPONSIBLE FOR ERRORS [redacted]D/OR OMISSIONS ON THESE [redacted]ANS. [redacted]LD CONDITIONS MAY DICTATE [redacted]ANGES TO THESE PLANS AS [redacted]TERMINED BY THE [redacted]VELOPMENT ENGINEERING [redacted]NAGER.

[redacted]



PENT R-TANK^{SD} - ELEVATION



MODULE DATA

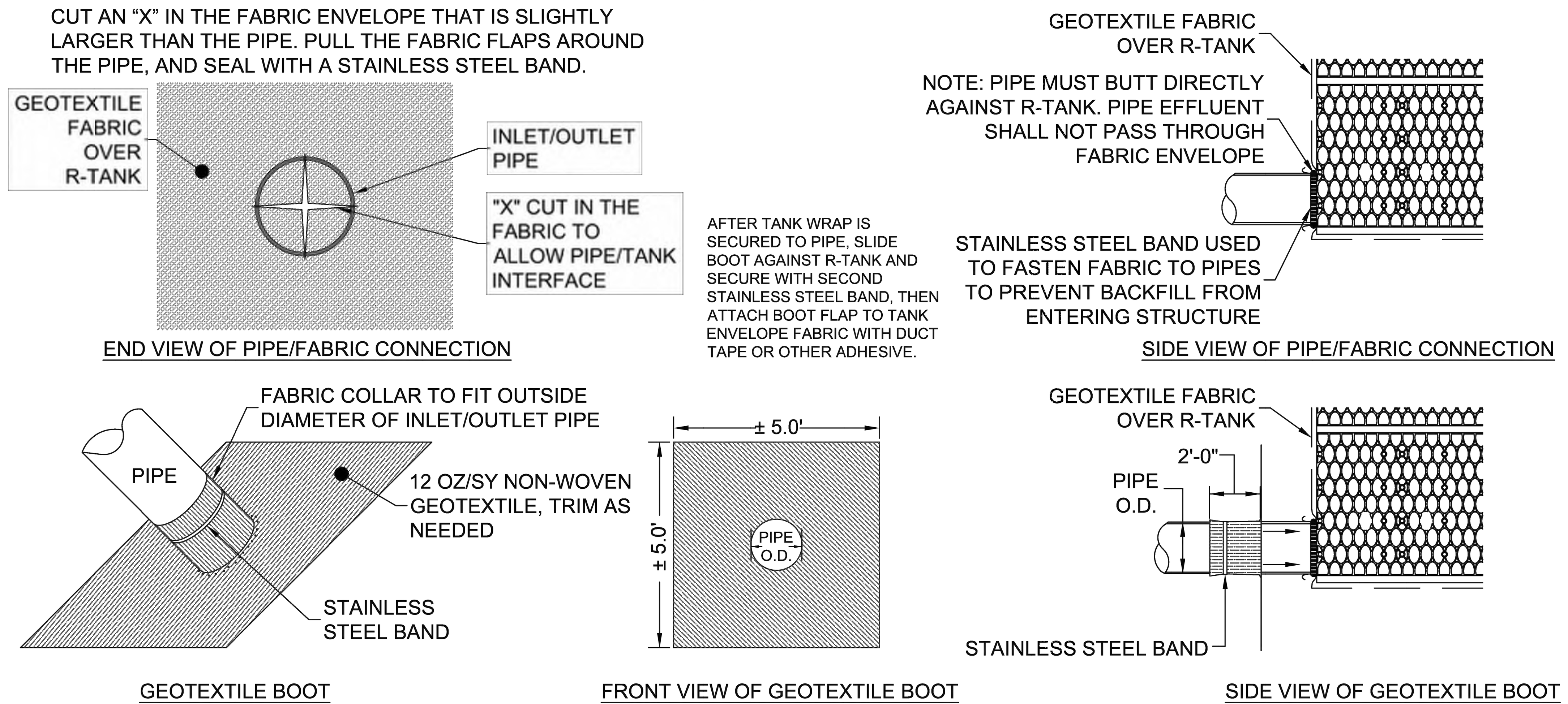
GEOMETRY:	LOAD RATING:
LENGTH = 28.15 IN. (715 MM)	42.9 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 44.09 IN. (1120 MM)	COVER REQUIREMENTS
TANK VOLUME = 11.31 CF	**MATERIAL:**
STORAGE VOLUME = 10.75 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 25/MODULE

PENT R-TANK^{SD} - MODULE DETAIL

R-TANK^{SD} QUANTITIES	
R-TANK^{SD} MODULE TYPE	PENT
# OF SD PENT R-TANKS	6,157
# OF HD SINGLE+MINI R-TANK ACCESS MODULES	20
TOTAL SYSTEM STORAGE	78,829 CF
R-TANK STORAGE VOLUME	66,395 CF
STONE STORAGE VOLUME (40% VOID RATIO)	12,434 CF
STONE BED FOOTPRINT	20,501 SF
STONE QUANTITY	1,531 CY
TENCATE MIRAFI 180N NON-WOVEN TANK WRAP	46,835 SF (5,204 SY)
30 MIL. GEOMEMBRANE LINER EXCAVATION WRAP	51,788 SF (5,754 SY)
TENCATE MIRAFI 1100N NON-WOVEN LINER PROTECTION	103,576 SF (11,508 SY)
TENCATE MIRAFI 180N NON-WOVEN TREAT. ROW WRAP	493 SF (55 SY)
TENCATE MIRAFI FW-402 WOVEN TREAT. ROW BASE FABRIC	388 SF (43 SY)
NAUE SECUGRID 30/30 GEOGRID	26,180 SF (2,909 SY)
12" MAINTENANCE PORTS	7
12" INSPECTION PORTS	2
12" PIPE BOOTS	2
24" PIPE BOOTS	2
TRASHGUARD PLUS UNITS (RECOMMENDED)	1
NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 9" OF BASE.	
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.	

NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

NOTES:
1. DEAD STORAGE VOLUME FROM ELEVATION 67.90 TO 68.40 = 4,100 CF
2. LIVE STORAGE VOLUME FROM ELEVATION 68.40 TO 73.32 = 78,829 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.



R-TANK^{SD} TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF WEST, 1-800-423-4567, www.acfwest.com

R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 3 of 8

[redacted]

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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Revisions:

Sheet Title:
R-TANK 2 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.22

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EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

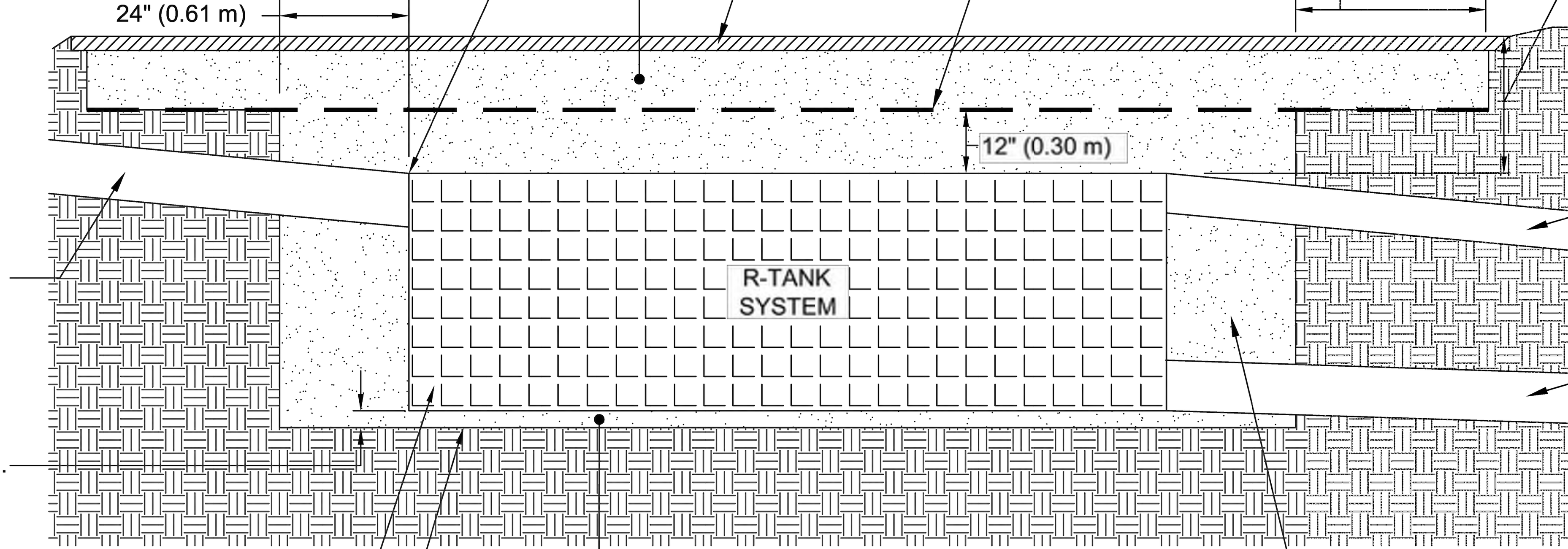
Legibility. [Plans Sht C4.23; Pg 34 of 63]
Fixed

APPROVED
BY
CITY OF PUYALLUP DEVELOPMENT ENGINEERING
DATE
[redacted]TE: THIS APPROVAL IS VOID [redacted]ER 180 DAYS FROM APPROVAL [redacted]TE. [redacted]E CITY WILL NOT BE [redacted]SPONSIBLE FOR ERRORS [redacted]D/OR OMISSIONS ON THESE [redacted]ANS. [redacted]LD CONDITIONS MAY DICTATE [redacted]ANGES TO THESE PLANS AS [redacted]TERMINED BY THE [redacted]VELOPMENT ENGINEERING [redacted]NAGER.

TOTAL COVER: 18" MINIMUM AND 120" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 10'. CONTACT ACF WEST IF MORE THAN 10' OR LESS THAN 18" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{SD} MODULE SHEET.
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE TENCATE MIRAFI FW-402 WOVEN (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{SD} FOOTPRINT.

GEOGRID (NAUE SECUGRID 30/30) PLACED 12" ABOVE THE R-TANK^{SD} SYSTEM. OVERLAP ADJACENT PANELS BY 18" MIN. GEOGRID SHOULD EXTEND 3' BEYOND THE EXCAVATION FOOTPRINT.



R-TANK^{SD} UNITS
LOAD RATING: 42.9 PSI (MODULE ONLY)

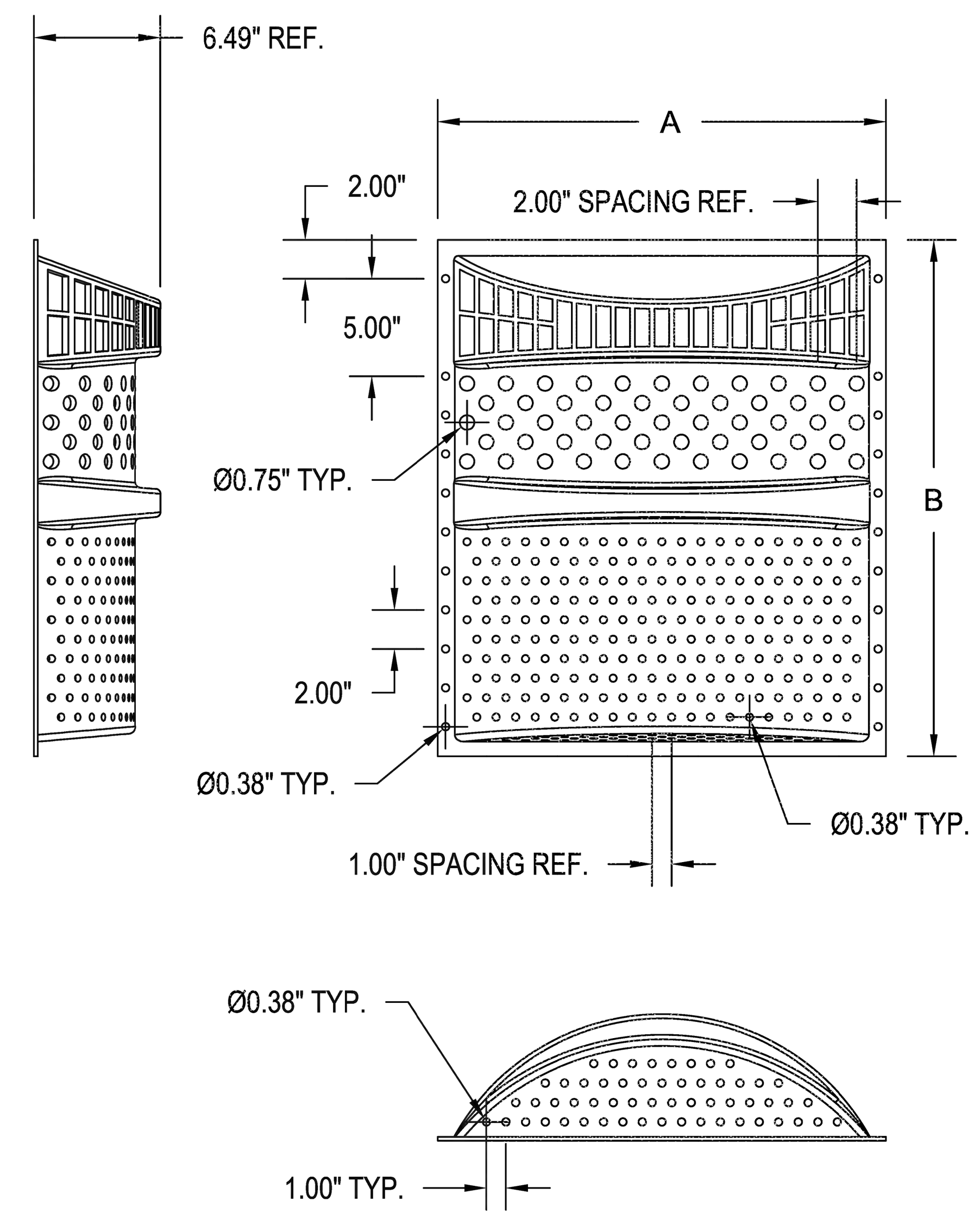
SUBGRADE / EXCAVATION LINE: COMPACT PER SPEC SECTION 3.02 D. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{SD}

BASE: 3" MIN. FREE DRAINING BACKFILL (SPEC SECTION 2.03B) COMPACTED TO 95% STANDARD PROCTOR DENSITY IS REQUIRED TO PROVIDE A LEVEL BASE SURFACE. MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{SD} FOOTPRINT. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{SD}. NATIVE SOILS MAY BE ACCEPTABLE IF DETERMINED TO BE STABLE BY OWNER'S ENGINEER.

SIDE BACKFILL: 24" MIN. OF FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). MUST BE FREE FROM LUMPS, DEBRIS AND OTHER SHARP OBJECTS. SPREAD EVENLY TO PREVENT R-TANK^{SD} MOVEMENT. COMPACT SIDE BACKFILL WITH POWERED MECHANICAL COMPACTOR IN 12" LIFTS (PER SPEC SECTION 3.05 A2).

NOTE:
MINIMUM COVER FROM TOP OF TANK TO FINISH GRADE MUST BE AT LEAST 30" TO MEET A 45 KIP OUTRIGGER LOAD ON AN 18'X18" PAD.

R-TANK^{SD} & HS-20 LOADS - SECTION VIEW



SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

NOTE:
TRASHGUARD PLUS UNITS ARE RECOMMENDED TO BE INSTALLED IN ALL CATCH BASINS DIRECTLY CONNECTED UPSTREAM OF THE R-TANK SYSTEM.

TRASHGUARD PLUS PRETREATMENT DETAIL

R-TANK SD

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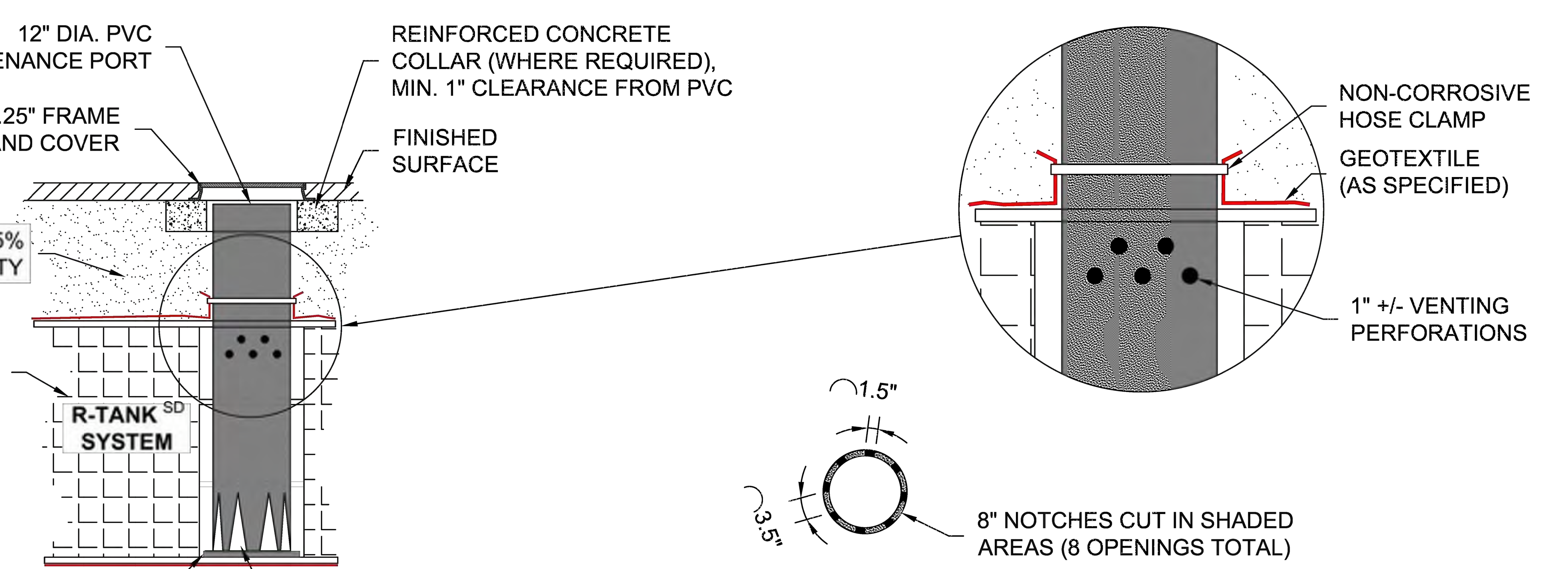
R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

NOTES
1. THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF MAINTENANCE PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.



R-TANK^{SD} TYPICAL MAINTENANCE PORT

DRAWN BY	EDQ
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ACF WEST PROJECT NUMBER	23-004WA
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Project No.
2230752

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11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Sheet Title:
R-TANK 2 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.23

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SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility: [Plans Sht C4.24; Pg 35 of 63]

Fixed

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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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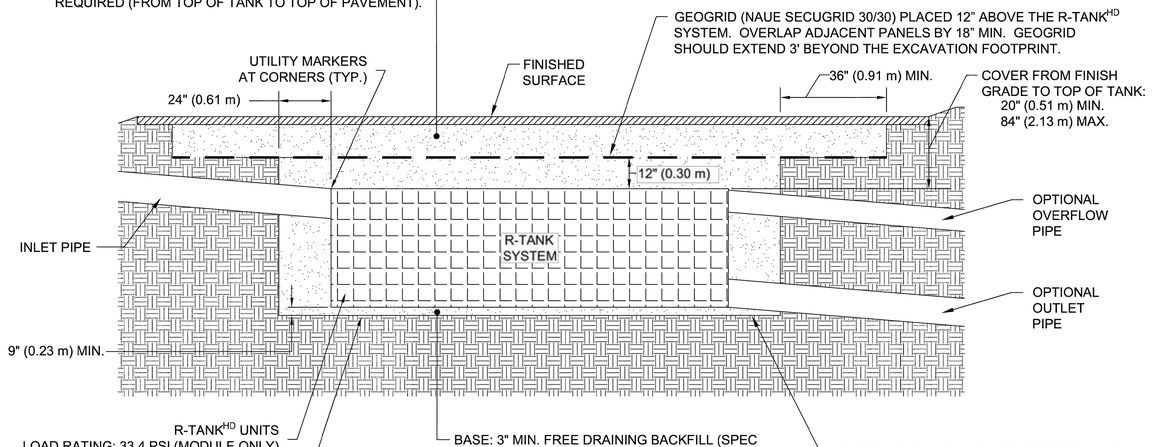
FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

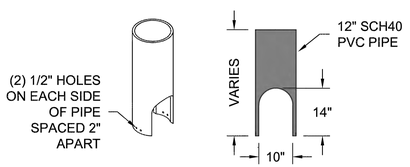
TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4 .A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF WEST IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

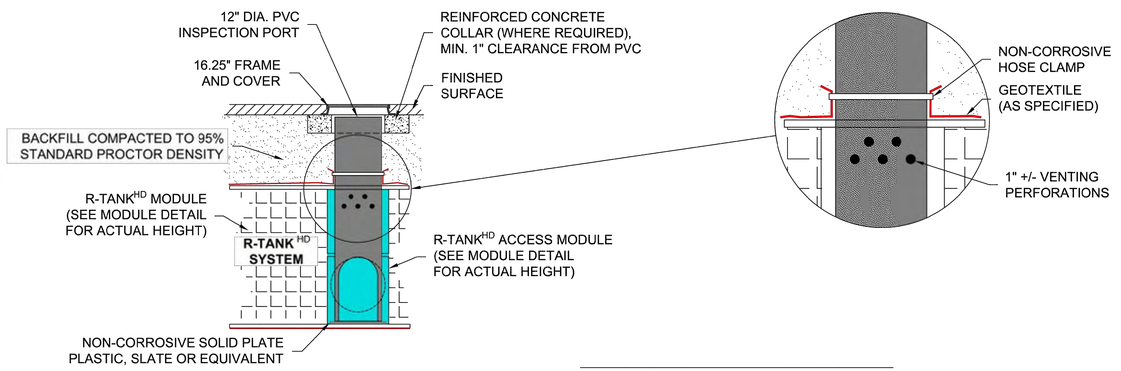
NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT.



R-TANK^{HD} & HS-20 LOADS - SECTION VIEW

NOTES
1. THE INSPECTION PORT IS USED IN THE ACCESS MODULE TO INSPECT THE LEVEL OF SEDIMENT ACCUMULATION.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF INSPECTION PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.





R-TANK^{HD} TYPICAL INSPECTION PORT

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R-TANK^{SD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 5 of 8

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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4

Sheet Title:
R-TANK 2 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.24
35 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE: _____

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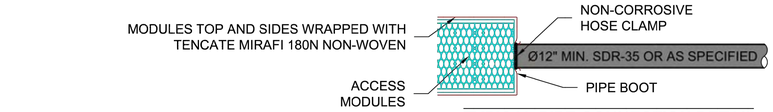
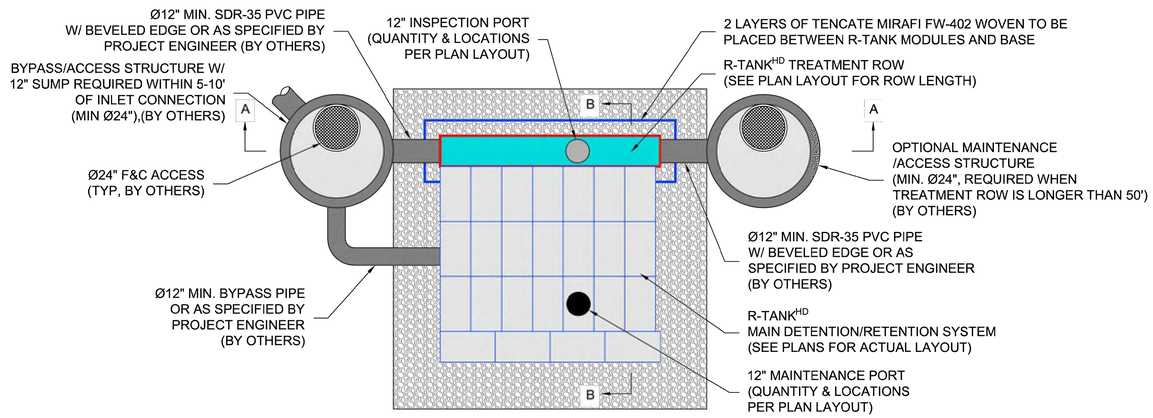
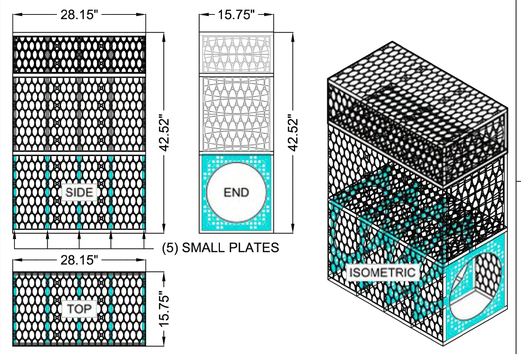


TYPICAL PIPE CONNECTION DETAIL

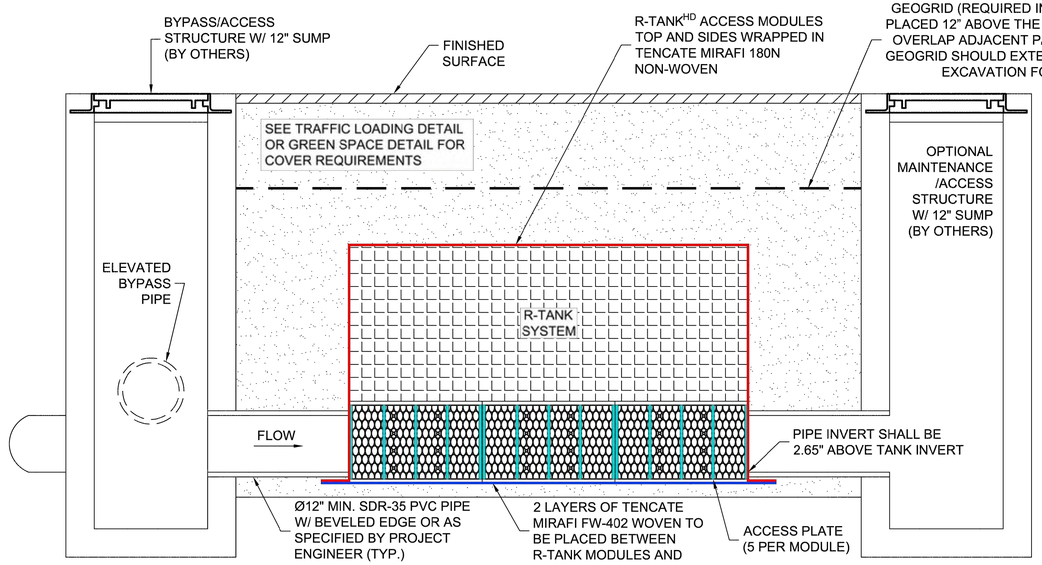
NOTE:
IF PIPE CONNECTING TO TREATMENT ROW IS LARGER THAN Ø12" SDR-35, IT SHALL BE ABUTTED FLUSH TO END PLATE AND SEALED WITH A PIPE BOOT.



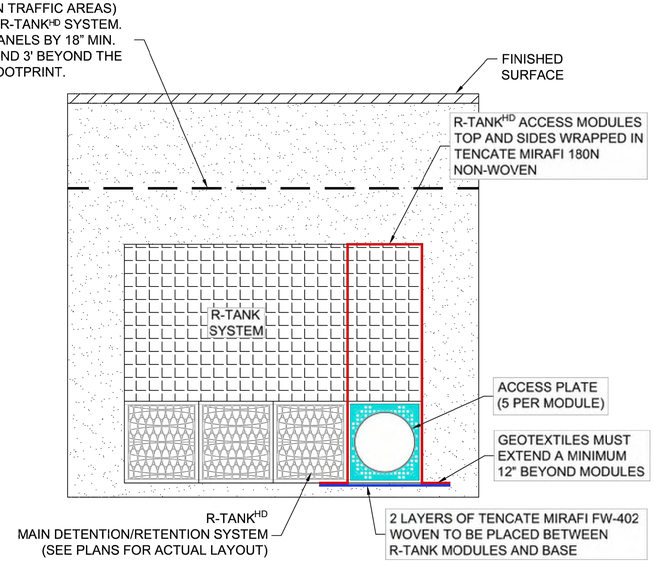
R-TANK^HD TREATMENT ROW WITH PRECAST INLET/ACCESS STRUCTURE



DOUBLE + MINI R-TANK^HD - ACCESS MODULE DETAIL
(FOR MODULE DATA, SEE STANDARD MODULE DETAIL)



R-TANK^HD TREATMENT ROW SECTION A-A



R-TANK^HD TREATMENT ROW SECTION B-B

R-TANK^HD TREATMENT ROW DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 6 of 8

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Project Title:

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Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

11/21/2023

Revisions:
1
2
3
4

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R-TANK 2 NOTES AND DETAILS

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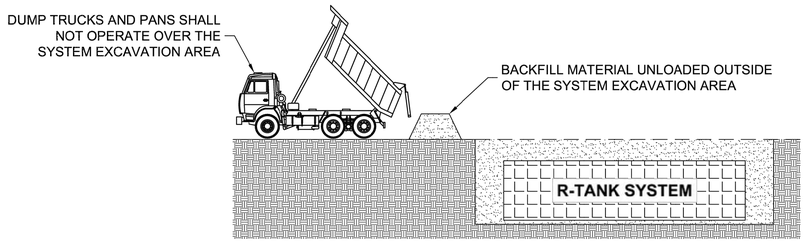
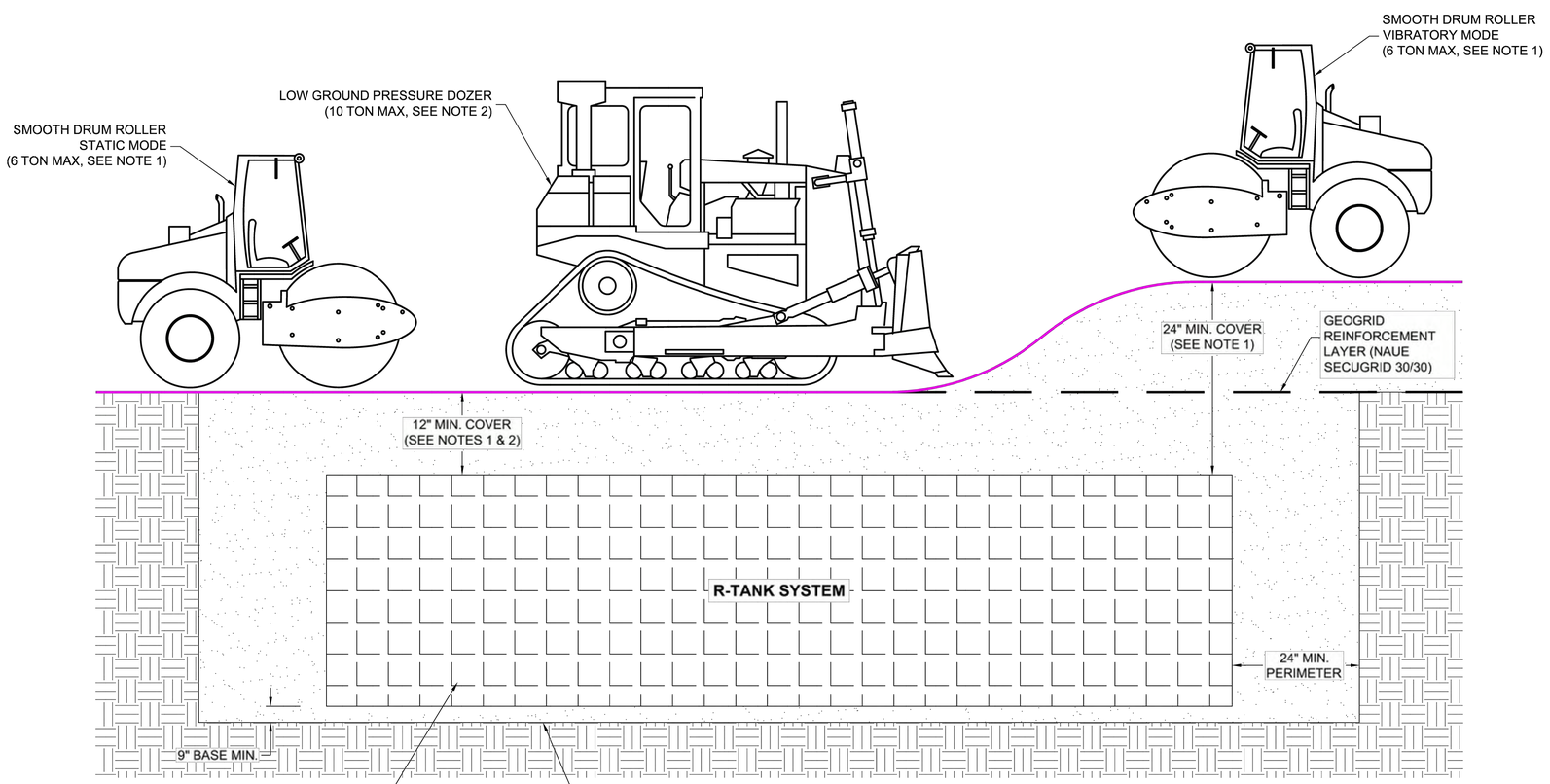


DUMP TRUCK DETAIL (SEE NOTE 3)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL ACF WEST REPRESENTATIVE FOR ADDITIONAL INFORMATION.



CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC

R-TANK^SD CONSTRUCTION EQUIPMENT COVER DETAIL
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY: EDQ
DATE: 11/10/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 7 of 8

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

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11/21/2023

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4 _____
3 _____
2 _____
1 _____

Sheet Title:
R-TANK 2 NOTES AND DETAILS

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Sheet No.
C4.26
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EAST TOWN CROSSING PHASE 1
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BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 RELATED DOCUMENTS
A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-TankLD/, R-TankHD/, R-TankSD/, or R-TankU/D/ system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 PROJECT CONDITIONS
A. Coordinate installation for the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plates assembled to form a 95% void modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank[LD] VALUE	R-Tank[HD] VALUE	R-Tank[SD] VALUE	R-Tank[UD] VALUE
Void Area	Volume available for water storage	95%	95%	95%	95%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	30.0 psi	33.4 psi	42.9 psi	134.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	20.0 psi	22.4 psi	28.9 psi	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	N/A	20"	18"	12" (STONE BACKFILL)
HS-25 Minimum Cover	Cover required to support HS-25 loads	N/A	24"	19"	15" (STONE BACKFILL)
Maximum Cover	Maximum allowable cover depth	3 feet	< 7 feet	< 10 feet	5 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.29 lbs / cf	3.62 lbs/cf	3.96 lbs / cf	4.33 lbs / cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.16 inches	0.18 inches	N/A
Service Temperature	Safe temperature range for use	-14 – 167° F	-14 – 167° F	-14 – 167° F	-14 – 167° F

Called out
CALLOUT-manufactured 30mil (min) impermeable liner to prevent groundwater intrusion.
[Plans Sht C4.27; Pg 38 of 63]

C. Supplier: ACF West 15540 Woodinville-Redmond Rd., Woodinville, Washington 98072, (425) 415-6115, www.acfwest.com

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile (TenCate Mirafi 180N or equivalent).
2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament (TenCate Mirafi FW402 or equivalent) shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (Naue Secugrid 30/30 or equivalent) to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankUD/ installations, and is often not required for non-traffic load applications.

2.03 BACKFILL & COVER MATERIALS
A. Bedding Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the R-Tank system.
a. For HD, and SD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System).
b. For UD modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the UD module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14" or more. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Traffic / Green Space Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" minimum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ½" (+/- ¼") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
1. Standard Applications: Static roll or otherwise compact bedding materials until they are firm and unyielding.
2. Infiltration Applications: Bedding materials shall be prepared in accordance with the contract documents.
B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper installation and compaction of backfill.

3.04 INSTALLATION OF THE R-TANKS
A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
C. Install R-Tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
1. For LD, HD, and SD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank area will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details
2. For UD installations, there is no perpendicular end row required.
D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with "U" bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 BACKFILLING OF THE R-TANK UNITS
A. Backfill and fill with recommended materials as follows:
1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
4. No compaction equipment is permissible to operate directly on the R-Tank modules.
5. Top Backfill: Only low pressure track vehicles shall be operated over the R-Tank system during construction. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system using tracked equipment with an operating weight of less than 10 tons.
a. Typical Applications: Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B) over the R-Tank Units, maintaining 12" between equipment tracks and R-Tank System. Lightly compacted using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24" of cover has been placed over the modules. Sheep foot rollers should not be used.
b. Shallow Applications (< 18" total cover): Install top backfill in accordance with plans.
6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
B. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement).
C. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
D. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

3.06 MAINTENANCE REQUIREMENTS
A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
B. All inlet pipes and Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.
C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
D. All inspection and maintenance activities should be performed in accordance with the R-Tank Operation, Inspection & Maintenance Manual.

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT:
ACF WEST, 1-800-423-4567, www.acfwest.com

R-TANK SPECIFICATION
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 2

DRAWN BY
EDQ
DATE
11/10/2023
ACF WEST PROJECT NUMBER
23-004WA
SHEET NO.
8 of 8

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
16416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

4 _____
3 _____
2 _____
1 _____
Revisions:

Sheet Title:
R-TANK 2 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C4.27
38 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Fixed

Legibility.
[Plans Sht C4.30; Pg 39 of 63]

APPROVED

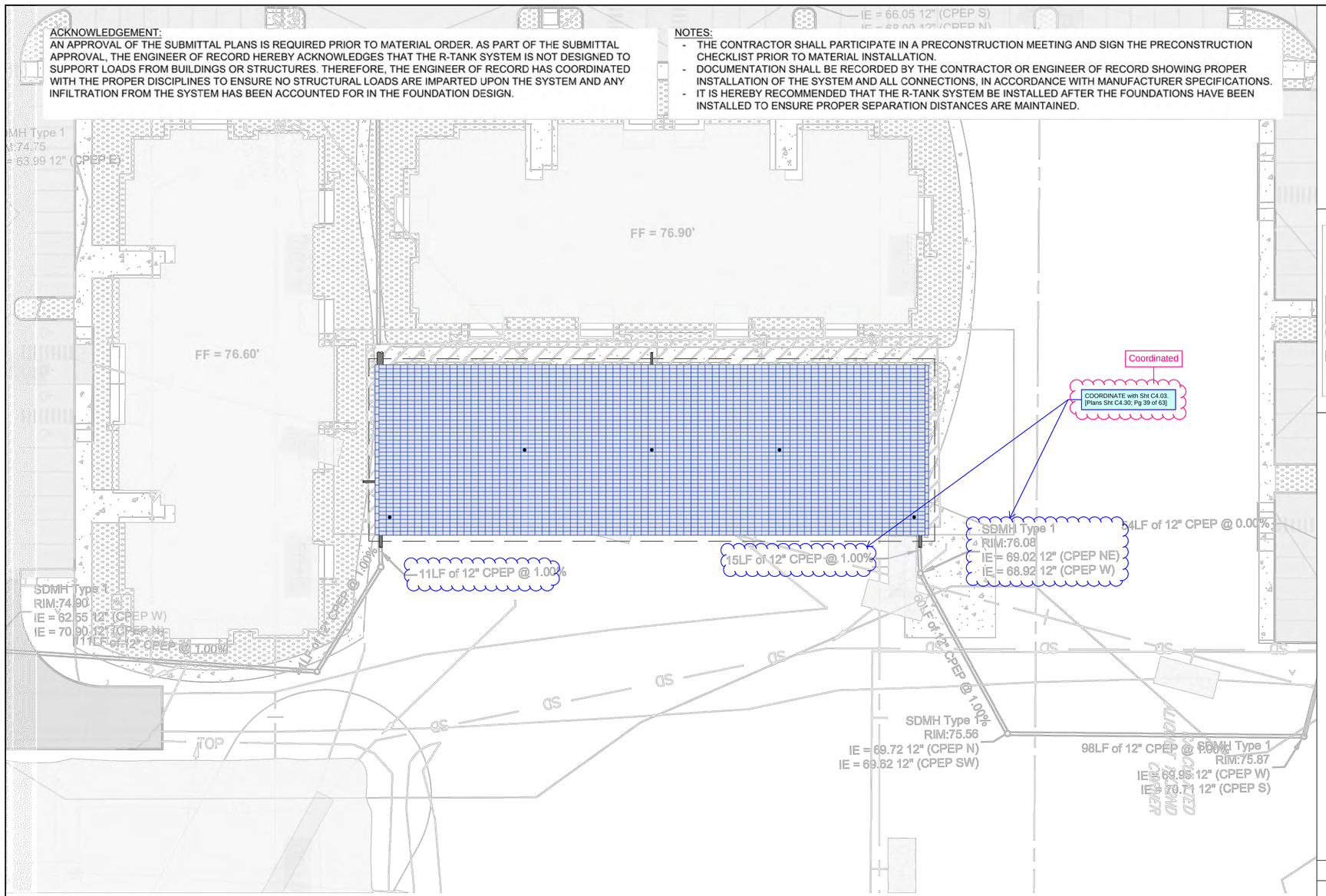
BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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

ACKNOWLEDGEMENT:
AN APPROVAL OF THE SUBMITTAL PLANS IS REQUIRED PRIOR TO MATERIAL ORDER. AS PART OF THE SUBMITTAL APPROVAL, THE ENGINEER OF RECORD HEREBY ACKNOWLEDGES THAT THE R-TANK SYSTEM IS NOT DESIGNED TO SUPPORT LOADS FROM BUILDINGS OR STRUCTURES. THEREFORE, THE ENGINEER OF RECORD HAS COORDINATED WITH THE PROPER DISCIPLINES TO ENSURE NO STRUCTURAL LOADS ARE IMPARTED UPON THE SYSTEM AND ANY INFILTRATION FROM THE SYSTEM HAS BEEN ACCOUNTED FOR IN THE FOUNDATION DESIGN.

NOTES:
- THE CONTRACTOR SHALL PARTICIPATE IN A PRECONSTRUCTION MEETING AND SIGN THE PRECONSTRUCTION CHECKLIST PRIOR TO MATERIAL INSTALLATION.
- DOCUMENTATION SHALL BE RECORDED BY THE CONTRACTOR OR ENGINEER OF RECORD SHOWING PROPER INSTALLATION OF THE SYSTEM AND ALL CONNECTIONS, IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
- IT IS HEREBY RECOMMENDED THAT THE R-TANK SYSTEM BE INSTALLED AFTER THE FOUNDATIONS HAVE BEEN INSTALLED TO ENSURE PROPER SEPARATION DISTANCES ARE MAINTAINED.



R-TANK[HD] SYSTEM OVERLAY
SCALE: 1" = 30'

0 30' 60'
SCALE 1" = 30'

R-TANK[HD] SYSTEM OVERLAY
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY: EDQ
DATE: 11/09/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 1 of 6

R-TANK[HD]

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
4
3
2
1

Sheet Title:

R-TANK 3 NOTES AND DETAILS

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.

C4.30

39 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Legibility. [Plans Sht C4.31; Pg 40 of 63]

Fixed

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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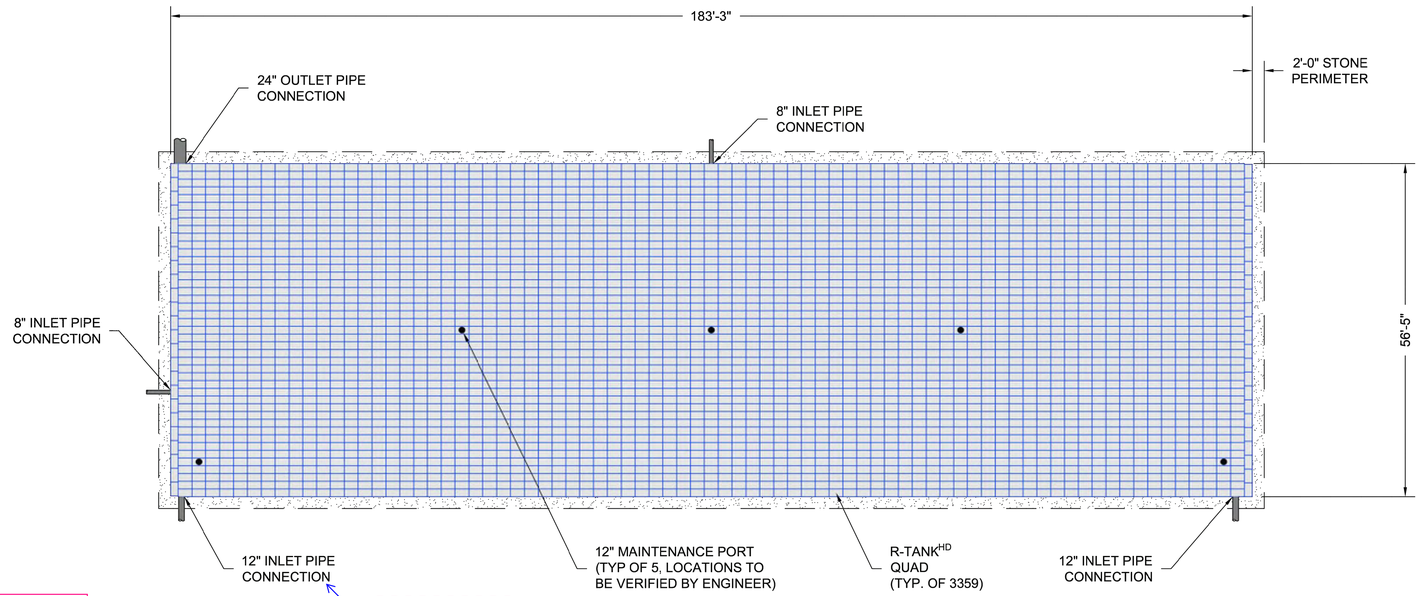


Clarified in report

CLARIFY- See storage volume required comments in Storm Report, Pg 372 of 448. [Plans Sht C4.31; Pg 40 of 63]

COORDINATE with Sht C4.04. [Plans Sht C4.31; Pg 40 of 63]

Revised to 24"

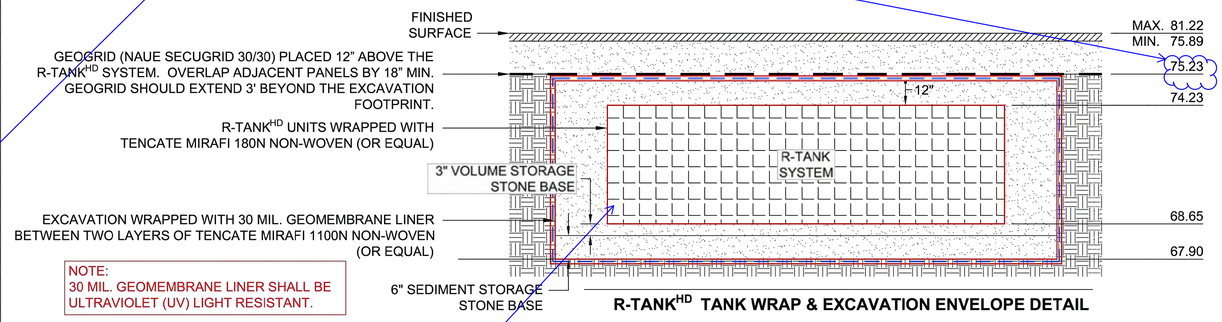
Clarified in report

CLARIFY- See Control Structure comments on Sht C4.07, and riser comments in Storm Report, Pg 372 of 448. [Plans Sht C4.31; Pg 40 of 63]

NOTES:
1. DEAD STORAGE VOLUME FROM ELEVATION 67.90 TO 68.40 = 2,263 CF
2. LIVE STORAGE VOLUME FROM ELEVATION 68.40 TO 75.23 = 62,623 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.

0 20' 40'
SCALE 1" = 20'

LAYOUT SCALE	1" = 20'
R-TANK^{HD} MODULE TYPE	QUAD
TRAFFIC LOAD	HS-20
# OF QUAD R-TANKS	3,359
TOTAL SYSTEM STORAGE	62,623 CF
R-TANK STORAGE VOLUME	54,785 CF
STONE STORAGE VOLUME (40% VOID RATIO)	7,838 CF
NAUE SECUGRID 30/30 GEOGRID ELEV.	75.23
TOP OF COVER STONE ELEV. (12")	75.23
TOP OF R-TANK ELEV.	74.23
TANK INVERT	68.65
INVERT OF STONE BASE (9")	67.90
MIN. STONE PERIMETER WIDTH	2.0 FT
SEE SHEETS 3 - 6 FOR DETAILS AND ADDITIONAL INFORMATION	



NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

R-TANK^{HD} TANK WRAP & EXCAVATION ENVELOPE DETAIL

PROVIDE-2yr and 10yr water surface elevations on the cross section. [Plans Sht C4.31; Pg 40 of 63]

Provided

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ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN

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R-TANK^{HD} SYSTEM LAYOUT
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY: EDQ
DATE: 11/09/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 2 of 6

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Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:

Sheet Title:

R-TANK 3 NOTES AND DETAILS

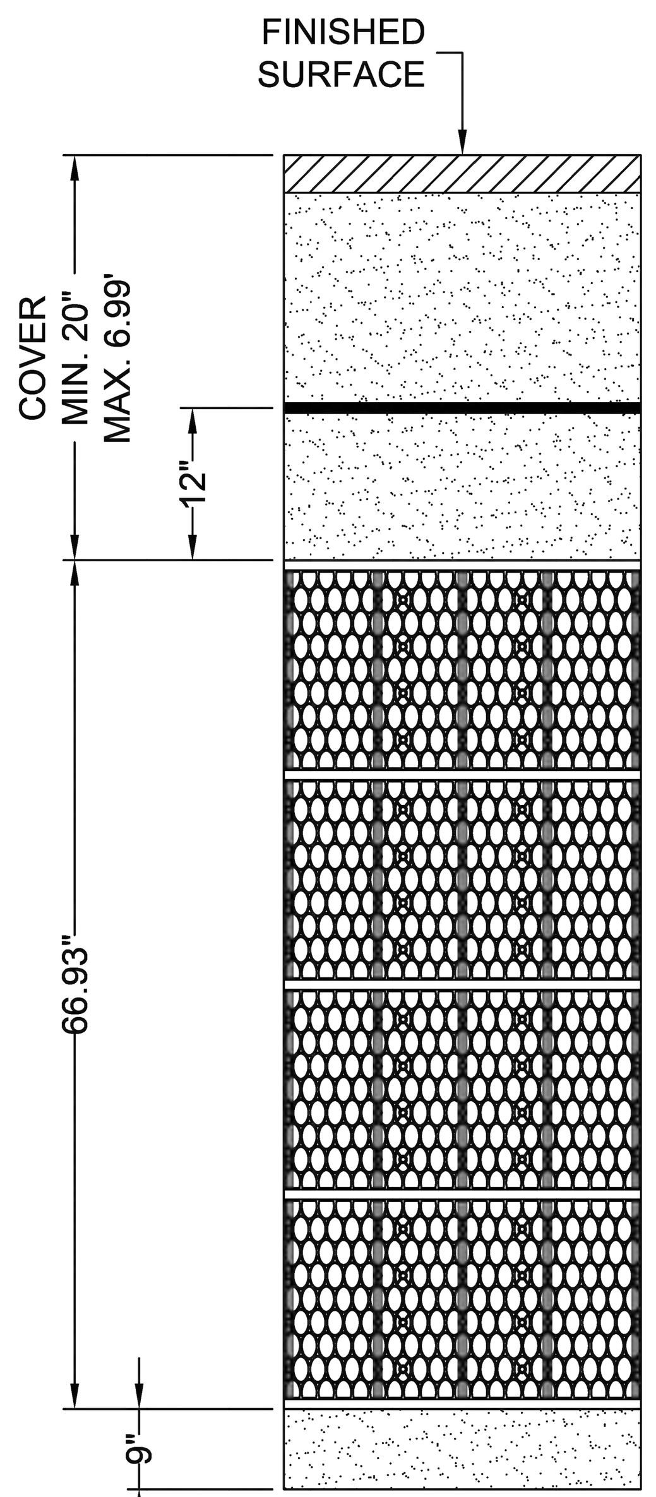
Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.

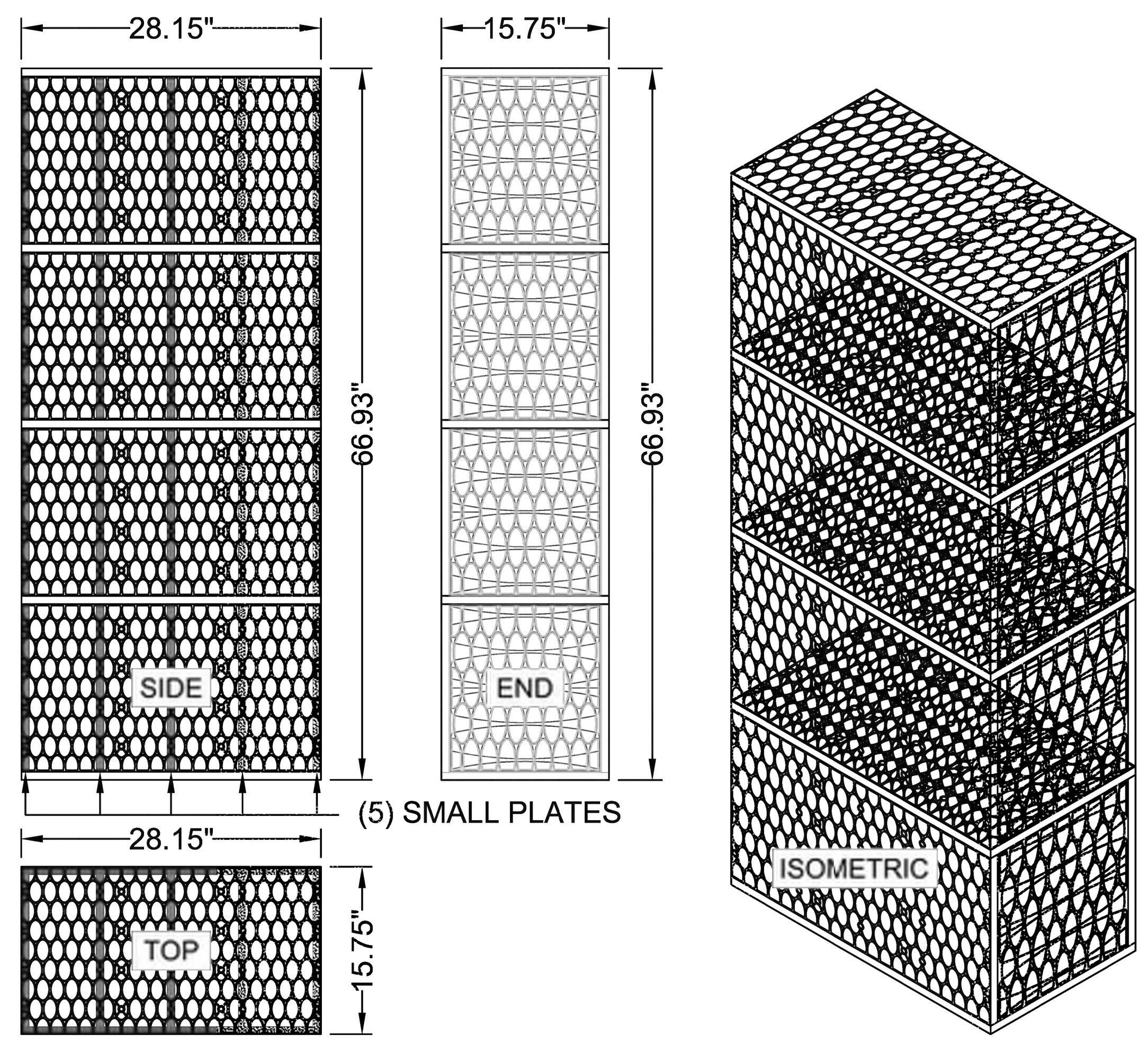
C4.31

40 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



QUAD R-TANK^{HD} - ELEVATION



MODULE DATA

GEOMETRY:	LOAD RATING:
LENGTH = 28.15 IN. (715 MM)	33.4 PSI, (MODULE ONLY)
WIDTH = 15.75 IN. (400 MM)	HS20/HS25 - SEE SPEC FOR
HEIGHT = 66.93 IN. (1700 MM)	COVER REQUIREMENTS
TANK VOLUME = 17.17 CF	**MATERIAL:**
STORAGE VOLUME = 16.31 CF	100% RECYCLED POLYPROPYLENE
VOID INTERNAL VOLUME: 95%	**SMALL PLATES REQUIRED:**
VOID SURFACE AREA: 90%	5/SEGMENT, 20/MODULE

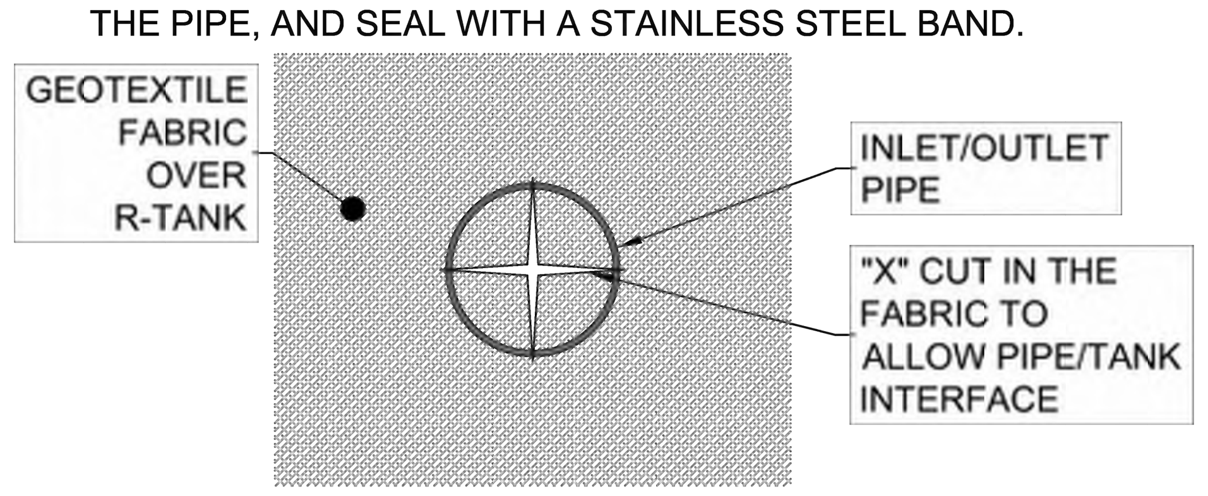
QUAD R-TANK^{HD} - MODULE DETAIL

R-TANK^{HD} QUANTITIES	
R-TANK^{HD} MODULE TYPE	QUAD
# OF QUAD R-TANKS	3,359
TOTAL SYSTEM STORAGE	62,623 CF
R-TANK STORAGE VOLUME	54,785 CF
STONE STORAGE VOLUME (40% VOID RATIO)	7,838 CF
STONE BED FOOTPRINT	11,317 SF
STONE QUANTITY	935 CY
TENCATE MIRAFI 180N NON-WOVEN TANK WRAP	26,865 SF (2,985 SY)
30 MIL. GEOMEMBRANE LINER EXCAVATION WRAP	30,209 SF (3,357 SY)
TENCATE MIRAFI 1100N NON-WOVEN LINER PROTECTION	60,418 SF (6,713 SY)
NAUE SECUGRID 30/30 GEOGRID	14,765 SF (1,641 SY)
12" MAINTENANCE PORTS	5
8" PIPE BOOTS	2
12" PIPE BOOTS	2
24" PIPE BOOTS	1
TRASHGUARD PLUS UNITS (RECOMMENDED)	2
NOTE: STONE QUANTITY INCLUDES 12" OF COVER AND 9" OF BASE.	
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.	

NOTE:
30 MIL. GEOMEMBRANE LINER SHALL BE ULTRAVIOLET (UV) LIGHT RESISTANT.

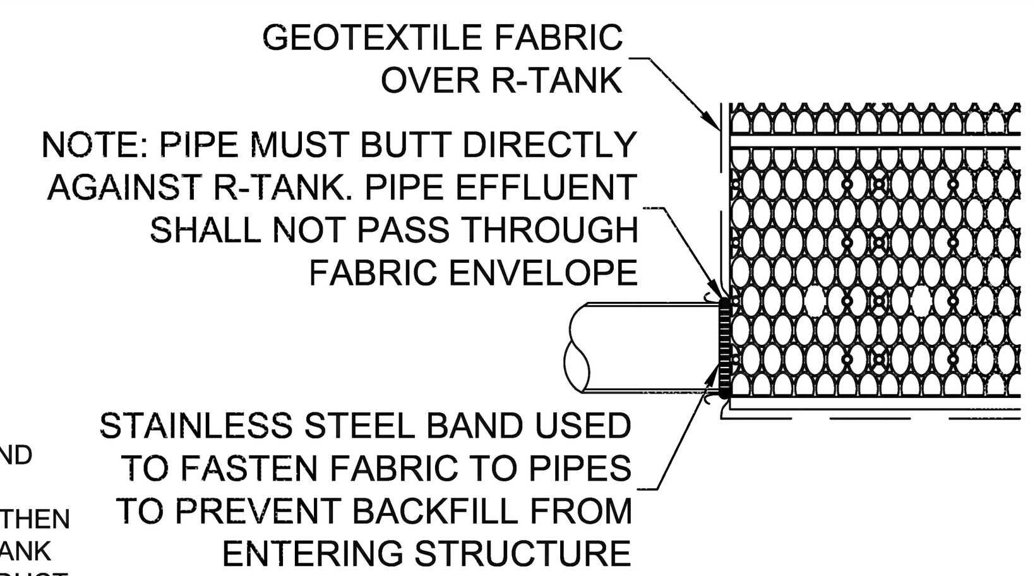
NOTES:
1. DEAD STORAGE VOLUME FROM ELEVATION 67.90 TO 68.40 = 2,263 CF
2. LIVE STORAGE VOLUME FROM ELEVATION 68.40 TO 75.23 = 62,623 CF
3. ONLY 3" OF BASE STONE INCLUDED IN LIVE STORAGE VOLUME.

CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE. PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.

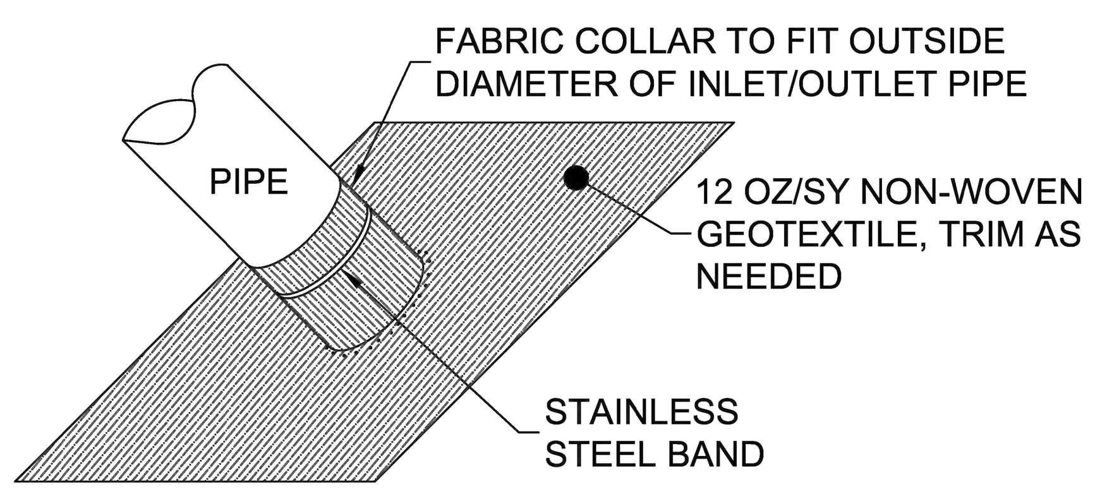


END VIEW OF PIPE/FABRIC CONNECTION

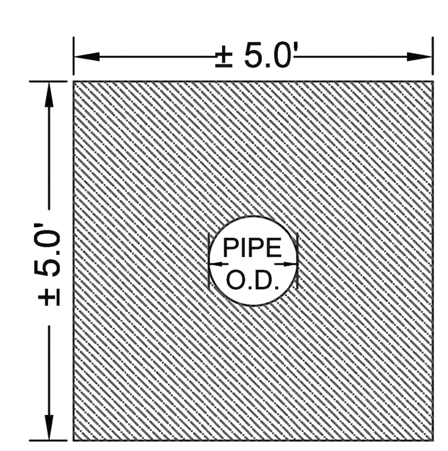
AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.



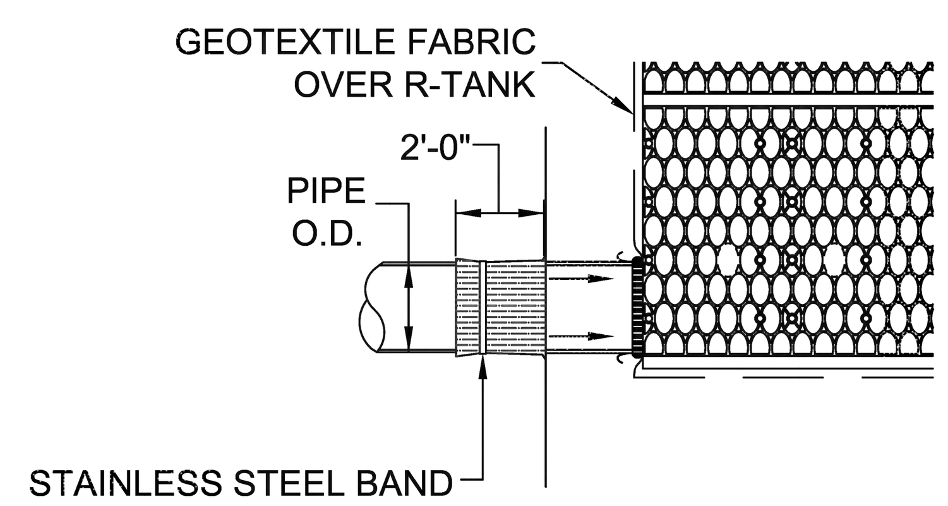
SIDE VIEW OF PIPE/FABRIC CONNECTION



GEOTEXTILE BOOT



FRONT VIEW OF GEOTEXTILE BOOT



SIDE VIEW OF GEOTEXTILE BOOT

R-TANK^{HD} TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

R-TANK HD

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R-TANK^{HD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY: EDQ
DATE: 11/09/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 3 of 6

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Legibility. [Plans Sht C4.32; Pg 41 of 63]

APPROVED
BY
CITY OF PUYALLUP DEVELOPMENT ENGINEERING
DATE
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Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Sheet Title:
R-TANK 3 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.32

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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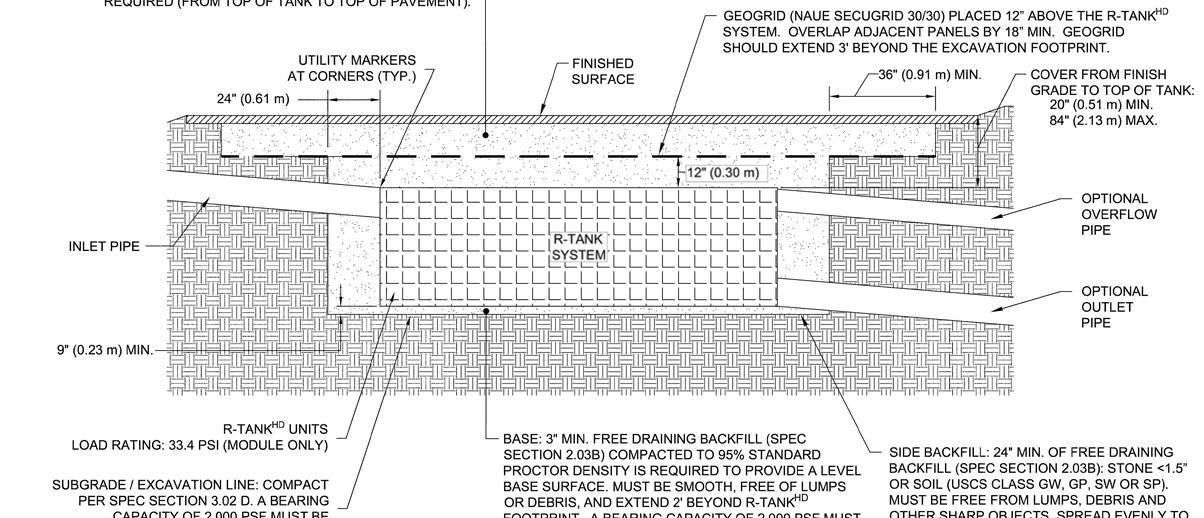
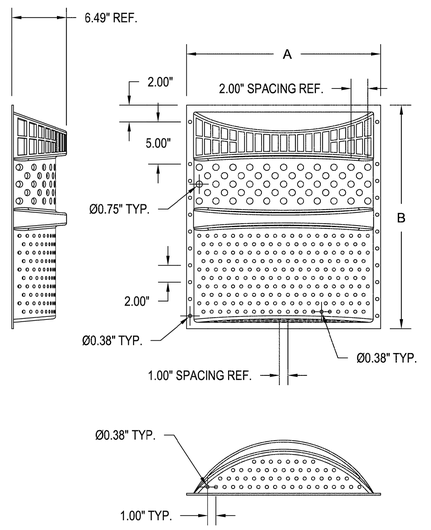
TOTAL COVER: 20" MINIMUM AND 84" MAXIMUM. FIRST 12" MUST BE FREE DRAINING BACKFILL (SPEC SECTION 2.03B): STONE <1.5" OR SOIL (USCS CLASS GW, GP, SW OR SP). ADDITIONAL FILL MAY BE STRUCTURAL FILL (SPEC SECTION 2.03C): STONE OR SOIL (USCS CLASS SM, SP, SW, GM, GP OR GW) WITH MAX CLAY CONTENT<10%, MAX 25% PASSING NO. 200 SIEVE, AND MAX PLASTICITY INDEX OF 4. A MIN. 12" COVER MUST BE MAINTAINED BETWEEN BACKFILL EQUIPMENT AND THE TOP OF THE R-TANK™ SYSTEM AT ALL TIMES. TOTAL HEIGHT OF TOP BACKFILL SHOULD NOT EXCEED 7'. CONTACT ACF WEST IF MORE THAN 7' OR LESS THAN 20" OF TOP BACKFILL IS REQUIRED (FROM TOP OF TANK TO TOP OF PAVEMENT).

NOTES:
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} MODULE SHEET .
2. INSTALLATIONS PER THIS DETAIL MEET GUIDELINES OF HL-93 LOADING PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, CUSTOMARY U.S. UNITS, 7TH EDITION, 2014 WITH 2015 AND 2016 INTERIM REVISIONS.
3. PRE-TREATMENT STRUCTURES NOT SHOWN.
4. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT.



R-TANK^{HD} & HS-20 LOADS - SECTION VIEW



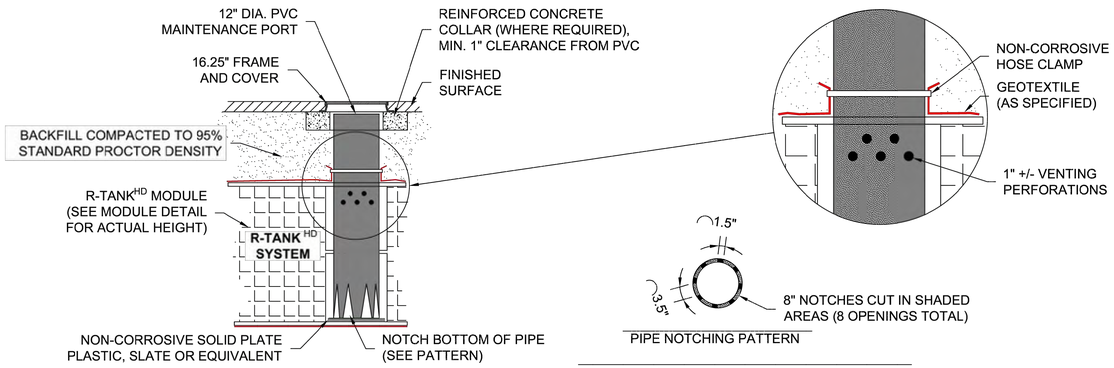
SIZE	A	B
23" x 24"	23"	26.51"
28" x 30"	28"	33.15"
34" x 36"	34"	38.69"

±0.25" TOLERANCE ON DIMENSIONS

NOTE:
TRASHGUARD PLUS UNITS ARE RECOMMENDED TO BE INSTALLED IN ALL CATCH BASINS DIRECTLY CONNECTED UPSTREAM OF THE R-TANK SYSTEM.

TRASHGUARD PLUS PRETREATMENT DETAIL

NOTES
1. THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF MAINTENANCE PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.



PIPE NOTCHING PATTERN

R-TANK^{HD} TYPICAL MAINTENANCE PORT

R-TANK^{HD} SYSTEM DETAILS
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY
EDQ
DATE
11/09/2023
ACF WEST PROJECT NUMBER
23-004WA
SHEET NO.
4 of 6

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GREG HELLE
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Project No.
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PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
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45416
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PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4

Sheet Title:

R-TANK 3 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C4.33

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EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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[Plans Sht C4.34; Pg 43 of 63]
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BY ______________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ______________

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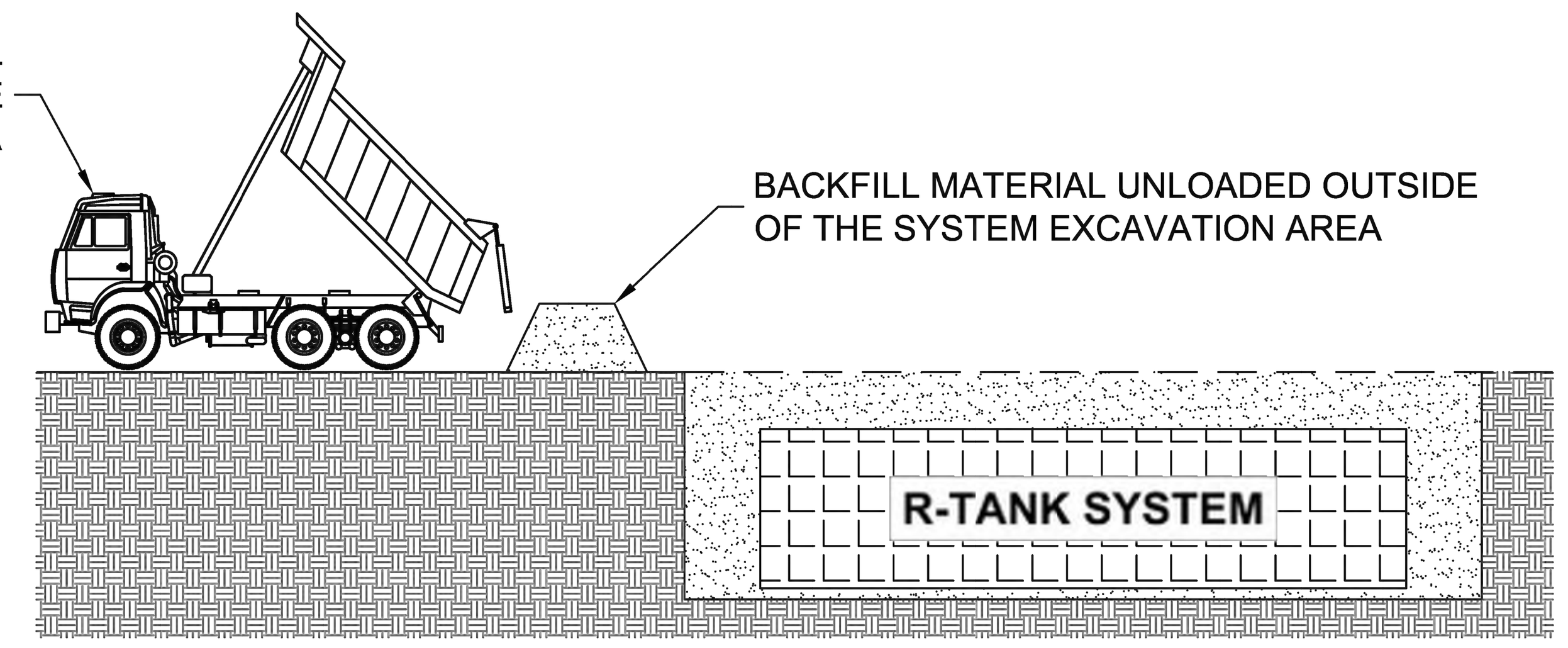
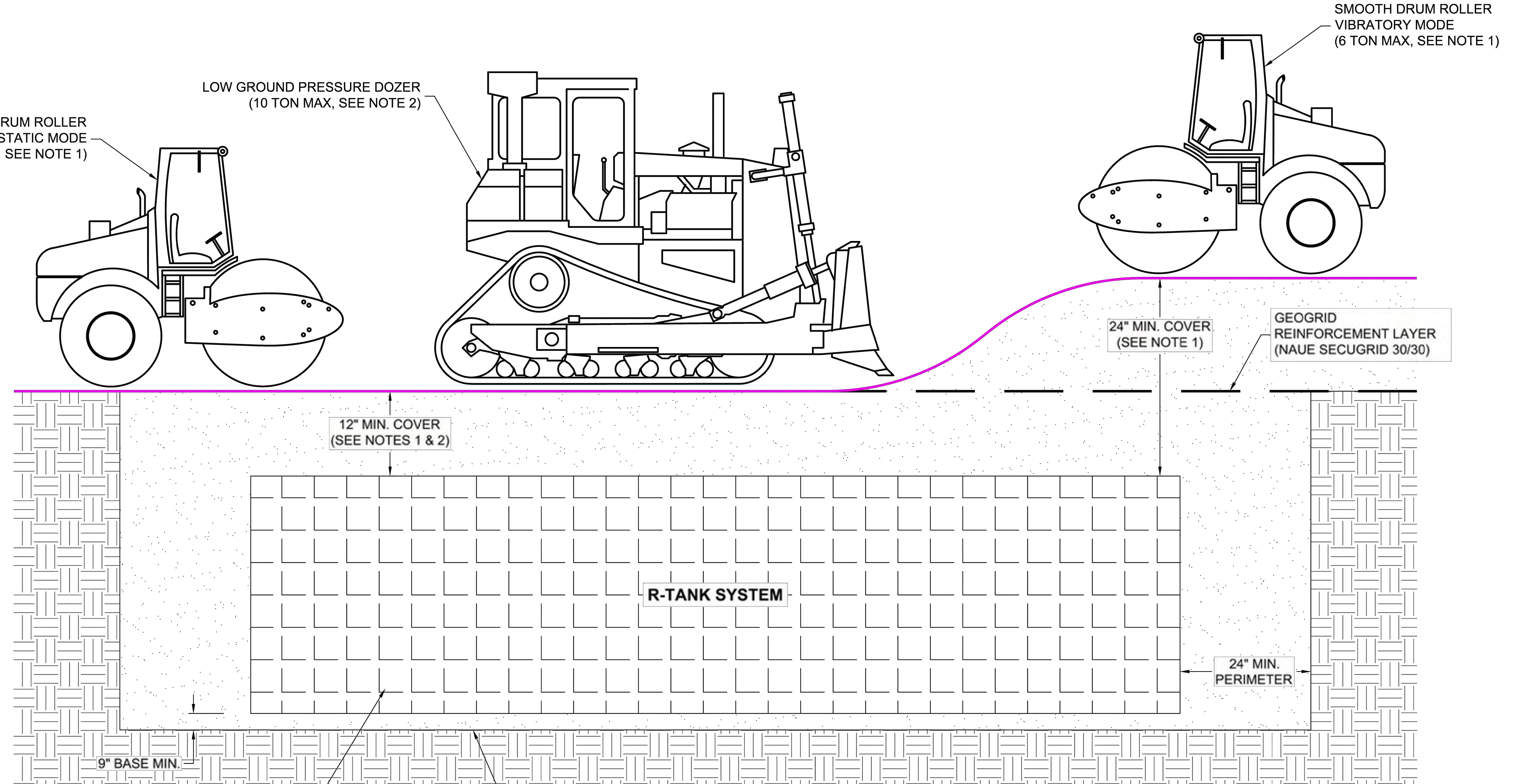


DUMP TRUCK DETAIL (SEE NOTE 3)

NOTES:
1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL ACF WEST REPRESENTATIVE FOR ADDITIONAL INFORMATION.



R-TANK^{HD} OR R-TANK^{SD} UNITS
HD: LOAD RATING: 33.4 PSI (MODULE ONLY)
SD: LOAD RATING: 42.9 PSI (MODULE ONLY)

SUBGRADE / EXCAVATION LINE: COMPACT PER SPEC SECTION 3.02 D. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{HD} OR R-TANK^{SD}

CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC

R-TANK HD

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R-TANK^{HD} CONSTRUCTION EQUIPMENT COVER DETAIL
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY: EDQ
DATE: 11/09/2023
ACF WEST PROJECT NUMBER: 23-004WA
SHEET NO.: 5 of 6

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Revisions:

Sheet Title:
R-TANK 3 NOTES AND DETAILS

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CW	SK	JI

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EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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R-TANK SPECIFICATION

PART 1 - GENERAL
1.01 RELATED DOCUMENTS
A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 DESCRIPTION OF WORK INCLUDED
A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
B. Provide and install R-TankLD/, R-TankHD/, R-TankSD/, or R-TankUD/ system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 QUALITY CONTROL
A. All materials shall be manufactured in ISO certified facilities.
B. Installation Contractor shall demonstrate the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 SUBMITTALS
A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
B. Submit manufacturer's product data, including compressive strength and unit weight.
C. Submit manufacturer's installation instructions.
D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
F. Submit required experience and personnel requirements as specified in Section 1.03.
G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.
B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
2. Do not use frozen materials or materials mixed or coated with ice or frost.
3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 PREINSTALLATION CONFERENCE.
A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 PROJECT CONDITIONS
A. Coordinate installation for the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
B. Protect adjacent work from damage during R-Tank system installation.
C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS
2.01 R-TANK UNITS
A. R-Tank - Injection molded plastic tank plates assembled to form a 95% void modular structure of predesigned height (custom for each project).
B. R-Tank units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank^{LD} VALUE	R-Tank^{HD} VALUE	R-Tank^{SD} VALUE	R-Tank^{UD} VALUE
Void Area	Volume available for water storage	95%	95%	95%	95%
Surface Void Area	Percentage of exterior available for infiltration	90%	90%	90%	90%
Vertical Compressive Strength	ASTM D 2412 / ASTM F 2418	30.0 psi	33.4 psi	42.9 psi	134.2 psi
Lateral Compressive Strength	ASTM D 2412 / ASTM F 2418	20.0 psi	22.4 psi	28.9 psi	N/A
HS-20 Minimum Cover	Cover required to support HS-20 loads	N/A	20"	18"	12" (STONE BACKFILL)
HS-25 Minimum Cover	Cover required to support HS-25 loads	N/A	24"	19"	15" (STONE BACKFILL)
Maximum Cover	Maximum allowable cover depth	3 feet	< 7 feet	< 10 feet	5 feet
Unit Weight	Weight of plastic per cubic foot of tank	3.29 lbs / cf	3.62 lbs/cf	3.96 lbs / cf	4.33 lbs / cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.18 inches	0.18 inches	N/A
Service Temperature	Safe temperature range for use	-14 – 167° F	-14 – 167° F	-14 – 167° F	-14 – 167° F

C. Supplier: ACF West 15540 Woodinville-Redmond Rd., Woodinville, Washington 98072, (425) 415-6115, www.acfwest.com

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[Plans Sht C4.35; Pg 44 of 63]

2.02 GEOSYNTHETICS
A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
1. Standard Application: The standard geotextile shall be an 8 oz per square yard nonwoven geotextile (TenCate Mirafi 180N or equivalent).
2. Infiltration Applications: When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament (TenCate Mirafi FW402 or equivalent) shall be used.
B. Geogrid. For installations subject to traffic loads and/or when required by project plans, install geogrid (Naue Secugrid 30/30 or equivalent) to reinforce backfill above the R-Tank system. Geogrid is not always required for R-TankUD/ installations, and is often not required for non-traffic load applications.

2.03 BACKFILL & COVER MATERIALS
A. Bedding Materials: Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
B. Side and Top Backfill: Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
1. Traffic Applications - Free draining material shall be used adjacent to (24" minimum) and above (for the first 12") the R-Tank system.
a. For HD, and SD modules, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System).
b. For UD modules with less than 14" of top cover, backfill materials shall be free draining stone (angular and smaller than 1.5" in diameter). The use of soil backfill on the sides and top of the UD module is not permitted unless the modules are installed outside of traffic areas or with cover depths of 14" or more. Top backfill material (from top of module to bottom of pavement base or 12" maximum) must be consistent with side backfill.
2. Non-Traffic / Green Space Applications - For all R-Tank modules installed in green spaces and not subjected to vehicular loads, backfill materials may either follow the guidelines for Traffic Applications above, or the top backfill layer (12" maximum) may consist of AASHTO #57 stone blended with 30-40% (by volume) topsoil to aid in establishing vegetation.
C. Additional Cover Materials: Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2.04 OTHER MATERIALS
A. Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION
3.01 ASSEMBLY OF R-TANK UNITS
A. Assembly of modules shall be performed in accordance with the R-Tank Installation Manual, Section 2.

3.02 LAYOUT AND EXCAVATION
A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. Standard Applications: Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
2. Infiltration Applications: Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
E. Unsuitable Soils or Conditions: All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 PREPARATION OF BASE
A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within ½" (+/- ¼") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
1. Standard Applications: Static roll or otherwise compact bedding materials until they are firm and unyielding.
2. Infiltration Applications: Bedding materials shall be prepared in accordance with the contract documents.
B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 2' perimeter is available around the R-Tank system for proper installation and compaction of backfill.

3.04 INSTALLATION OF THE R-TANKS
A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer. Use tape, special adhesives, sandbags or other ballast to secure overlaps. As geotextiles can be damaged by extreme heat, smoking is not permissible on/near the geotextile, and tools using a flame to tack the overlaps, such as propane torches, are prohibited.
B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
C. Install R-Tank modules by placing side by side, in accordance with the design drawings. No lateral connections are required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The modules are to be oriented as per the design drawing with required depth as shown on plans.
1. For LD, HD, and SD installations, the large side plate of the tank should be placed on the perimeter of the system. This will typically require that the two ends of the tank will have a row of tanks placed perpendicular to all other tanks. If this is not shown in the construction drawings, it is a simple field adjustment that will have minimal effect on the overall system footprint. Refer to R-Tank Installation Guide for more details
2. For UD installations, there is no perpendicular end row required.
D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with 'U' bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 BACKFILLING OF THE R-TANK UNITS
A. Backfill and fill with recommended materials as follows:
1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
4. No compaction equipment is permissible to operate directly on the R-Tank modules.
5. Top Backfill: Only low pressure track vehicles shall be operated over the R-Tank system during construction. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system using tracked equipment with an operating weight of less than 10 tons.
a. Typical Applications: Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B) over the R-Tank Units, maintaining 12" between equipment tracks and R-Tank System. Lightly compacted using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24" of cover has been placed over the modules. Sheep foot rollers should not be used.
b. Shallow Applications (< 18" total cover): Install top backfill in accordance with plans.
6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
B. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement).
C. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
D. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

3.06 MAINTENANCE REQUIREMENTS
A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices following manufacturer's guidelines (for proprietary systems).
B. All inlet pipes and Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter.
C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
D. All inspection and maintenance activities should be performed in accordance with the R-Tank Operation, Inspection & Maintenance Manual.

ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.

FOR ADDITIONAL INFORMATION PLEASE CONTACT: ACF WEST, 1-800-423-4567, www.acfwest.com

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R-TANK SPECIFICATION
EAST TOWN CROSSING
PUYALLUP, WA
SITE DESIGNATION: R-TANK 3

DRAWN BY	EDQ
DATE	11/09/2023
ACF WEST PROJECT NUMBER	23-004WA
SHEET NO.	6 of 6

[redacted]

APPROVED

BY ____________________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ____________________

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253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

CHRISTOPHER SAWYER TODD
STATE OF WASHINGTON
46416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

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Revisions:

Sheet Title:
R-TANK 3 NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C4.35

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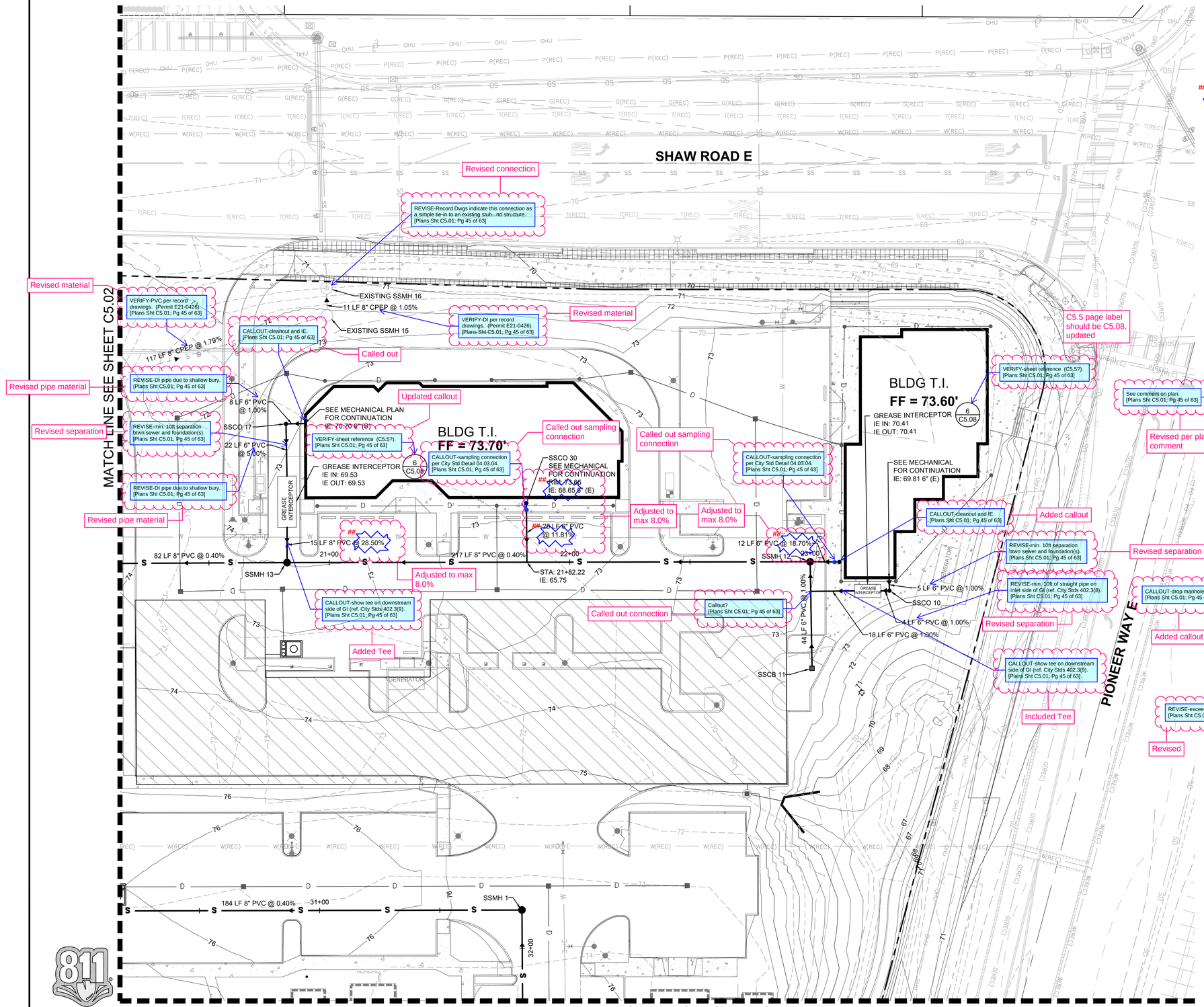
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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MATCH LINE SEE SHEET C5.03

N

GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

LEGEND

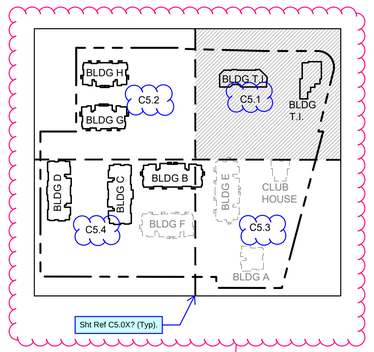
- RIGHT-OF-WAY / PROPERTY LINE
- CENTERLINE
- EASEMENT
- BUILDING OUTLINE
- SANITARY SIDE SEWER
- SANITARY SEWER MAIN
- SANITARY SEWER FORCE MAIN
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR

SEWER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
EXISTING SSMH 15 N 679922.81 E 1203825.42	RIM = 72.18 IE = 50.82 (8" W) IE = 62.37 (8" S)
EXISTING SSMH 16 N 679922.81 E 1203814.05	RIM = 71.33 IE = 50.70 (8" E)
SSCB 11 TYPE 1 CB N 680121.57 E 1203976.02	RIM = 73.11 IE = 69.76 (6" W)
SSCO 10 N 680154.37 E 1203944.34	RIM = 73.57 IE = 69.76 (6" S) IE = 69.76 (6" W)
SSCO 17 N 679904.86 E 1203870.14	RIM = 72.88 IE = 70.62 (6" E) IE = 70.62 (6" N)
SSMH 1 48" SSMH N 679999.02 E 1204074.16	RIM = 75.54 IE = 66.34 (8" S) IE = 66.44 (8" E)
SSMH 12 48" SSMH N 680121.64 E 1203931.70	RIM = 72.95 IE = 66.22 (8" S) IE = 69.32 (6" E) IE = 66.32 (6" N)
SSMH 13 48" SSMH N 679904.20 E 1203927.82	RIM = 73.05 IE = 65.25 (8" S) IE = 65.35 (8" N) IE = 65.35 (8" W)

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C5.5
-SIDE SEWER CLEANOUT PLACED IN DRIVEWAY SEE DETAIL 1
-INSIDE DROP FOR SANITARY SEWER MANHOLE SEE DETAIL 2 AND 3
-SANITARY SEWER MANHOLE SEE DETAIL 4



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DATE _____

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Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
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PERMIT SUBMITTAL
11/20/2023

CHRISTOPHER S. SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
4
3
2
1

Sheet Title:
SEWER PLAN NW

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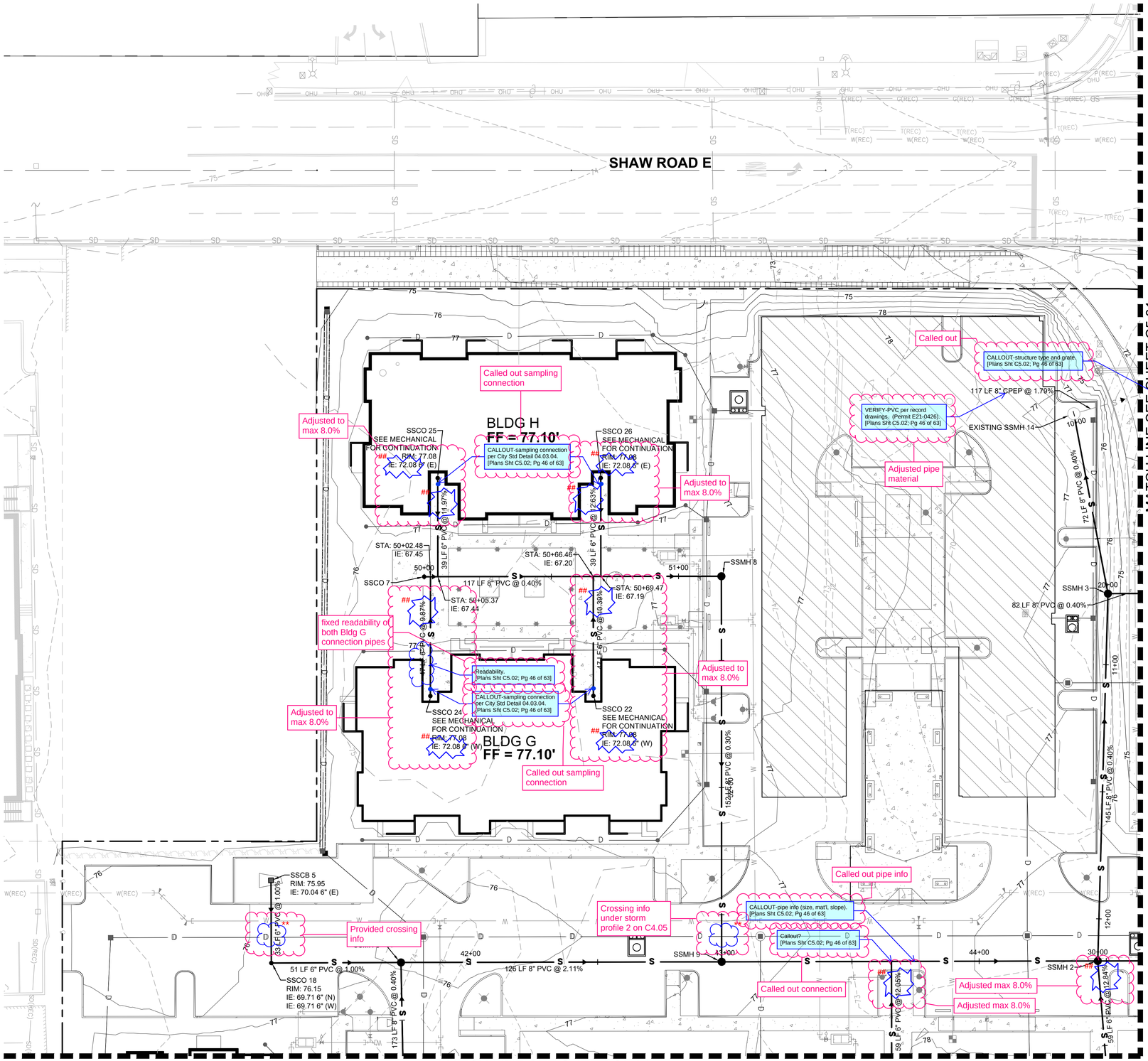
CW	SK	JI

Sheet No.
C5.01
45 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

Noted
Service lateral exceeds max. grade (8% max). Revise accordingly. [Plans Sht C5.02; Pg 46 of 63]
Provide utility crossing information. [Plans Sht C5.02; Pg 46 of 63]

LEGEND

- RIGHT-OF-WAY / PROPERTY LINE
- CENTERLINE
- EASEMENT
- BUILDING OUTLINE
- SANITARY SIDE SEWER
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- SANITARY SEWER FORCE MAIN
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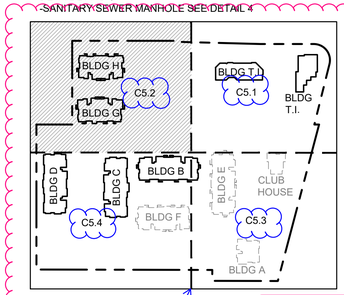
SEWER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
EXISTING SSMH 14 EXISTING SSMH 48" N 679809.71 E 1203855.61	RIM = 76.75 IE = 64.46 (8" N) IE = 64.53 (8" E)
SSCB 5 N 679490.51 E 1204032.97	RIM = 75.95 IE = 70.04 (6" E)
SSCO 7 N 679553.05 E 1203914.74	RIM = 76.72 IE = 67.46 (8" N)
SSCO 18 N 679490.00 E 1204065.50	RIM = 76.15 IE = 69.71 (6" N) IE = 69.71 (6" W)
SSMH 2 48" TYPE 1 N 679814.92 E 1204071.02	RIM = 76.47 IE = 65.50 (8" W) IE = 65.60 (8" N) IE = 65.60 (8" S) IE = 65.50 (6" E)
SSMH 3 48" TYPE 1 N 679821.72 E 1203926.62	RIM = 76.13 IE = 64.82 (8" W) IE = 64.92 (8" E) IE = 64.92 (8" N)
SSMH 6 48" SSMH N 679540.98 E 1204066.28	RIM = 75.88 IE = 69.10 (8" N) IE = 69.20 (8" E) IE = 69.20 (6" S)
SSMH 8 48" TYPE 1 N 679669.89 E 1203916.83	RIM = 76.55 IE = 66.90 (8" E) IE = 67.00 (8" S)
SSMH 9 48" TYPE 1 N 679667.05 E 1204068.46	RIM = 76.69 IE = 66.34 (8" N) IE = 66.44 (8" S) IE = 66.44 (8" W)

GENERAL NOTE

SEE DETAILS AS NOTED ON SHEET C5.5
-SIDE SEWER CLEANOUT PLACED IN DRIVEWAY SEE DETAIL 1
-INSIDE DROP FOR SANITARY SEWER MANHOLE SEE DETAIL 2 AND 3
-SANITARY SEWER MANHOLE SEE DETAIL 4



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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED PROFESSIONAL ENGINEER
11/21/2023

REVISE-side sewer IE. [Plans Sht C5.02; Pg 46 of 63]
Revised connection

Revisions:
4
3
2
1

Sheet Title:
SEWER PLAN SW

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C5.02
46 of 63 Sheets

EAST TOWN CROSSING PHASE 1

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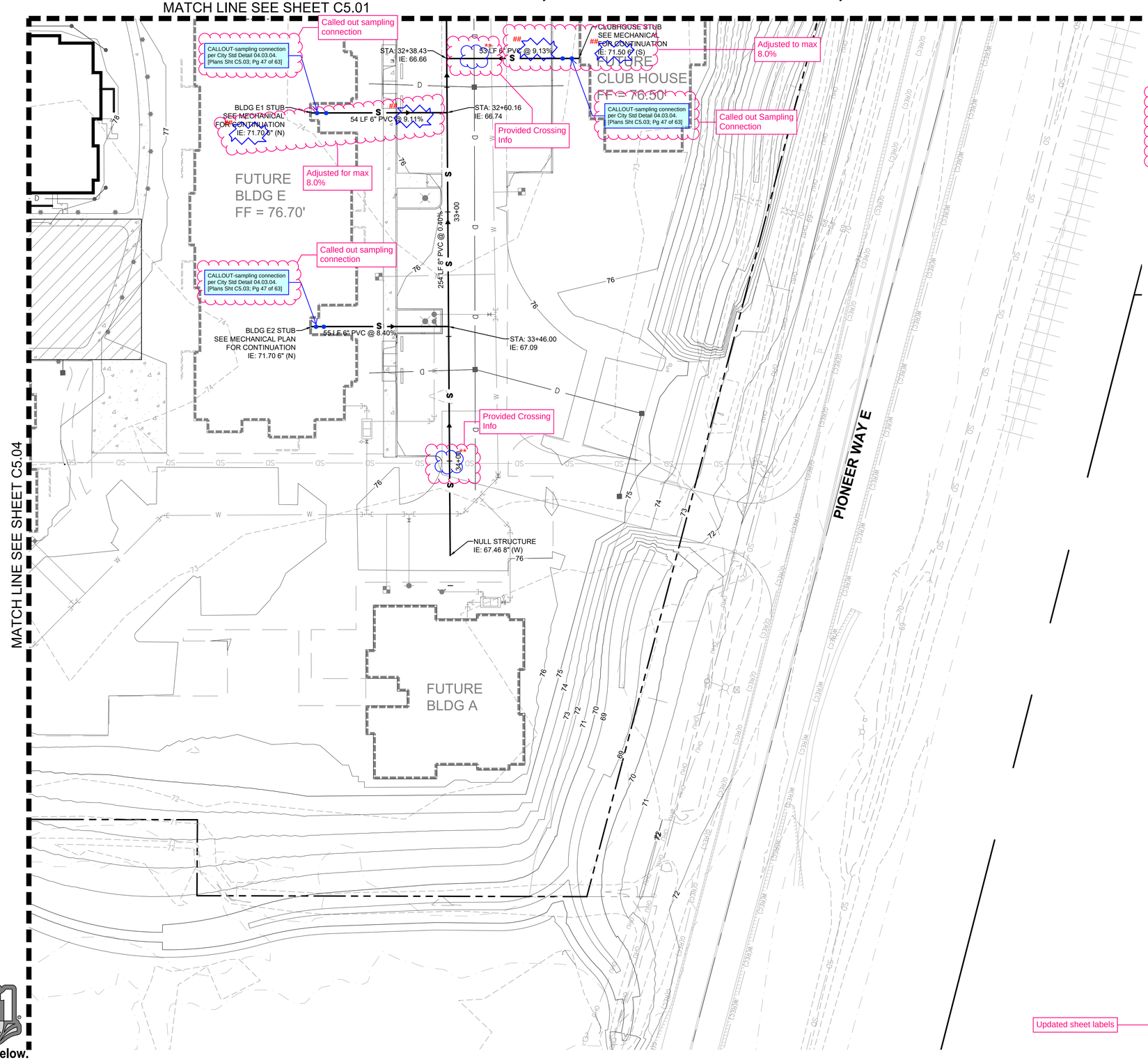

GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

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LEGEND

- ## ≡ Service lateral exceeds max. grade (8% max). Revise accordingly. [Plans Sht C5.03; Pg 47 of 63]
- ** ≡ Provide utility crossing information. [Plans Sht C5.03; Pg 47 of 63] — Noted

- RIGHT-OF-WAY / PROPERTY LINE
- CENTERLINE
- EASEMENT
- BUILDING OUTLINE
- S — SANITARY SIDE SEWER
- S — SANITARY SEWER MAIN
- FM — SANITARY SEWER FORCE MAIN
- SANITARY SEWER CLEANOUT
- SANITARY SEWER MANHOLE
- 123 — PROPOSED MINOR CONTOUR
- 123 — PROPOSED MAJOR CONTOUR

GENERAL NOTE

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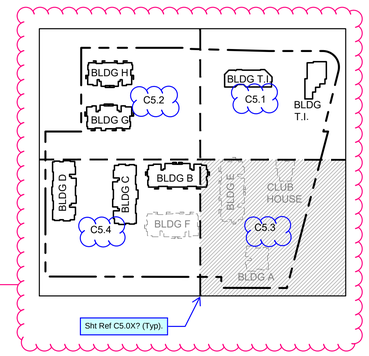

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11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

SEWER PLAN NE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

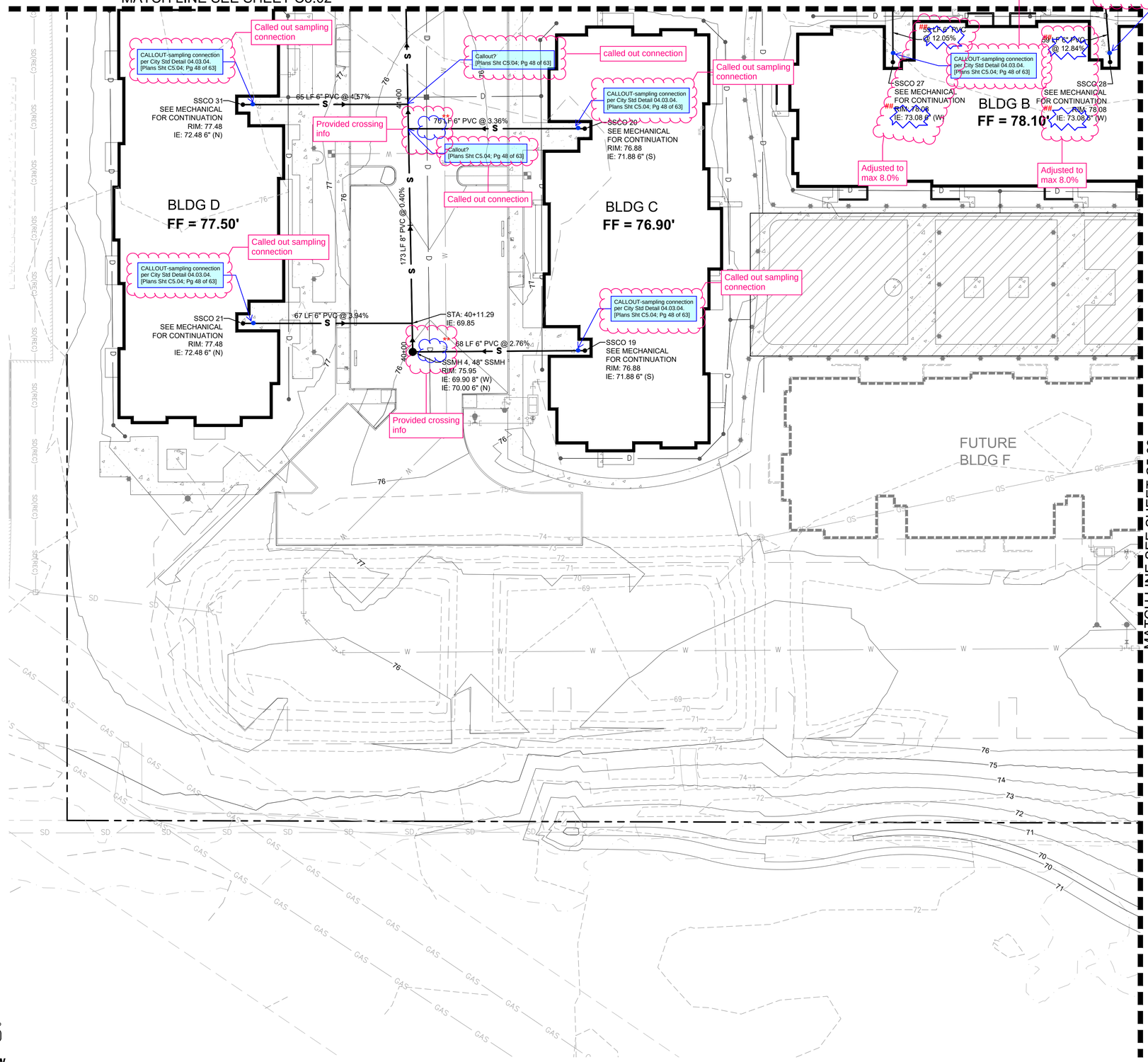
Sheet No.

C5.03

47 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

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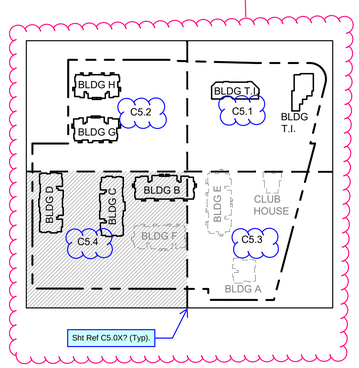
Updated sheet labels



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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Service lateral exceeds max. grade (8% max). Revise accordingly. [Plans Sht C5.04; Pg 48 of 63]

Provide utility crossing information. [Plans Sht C5.04; Pg 48 of 63]

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11/20/2023

CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

SEWER PLAN SE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C5.04

48 of 63 Sheets

EAST TOWN CROSSING PHASE 1
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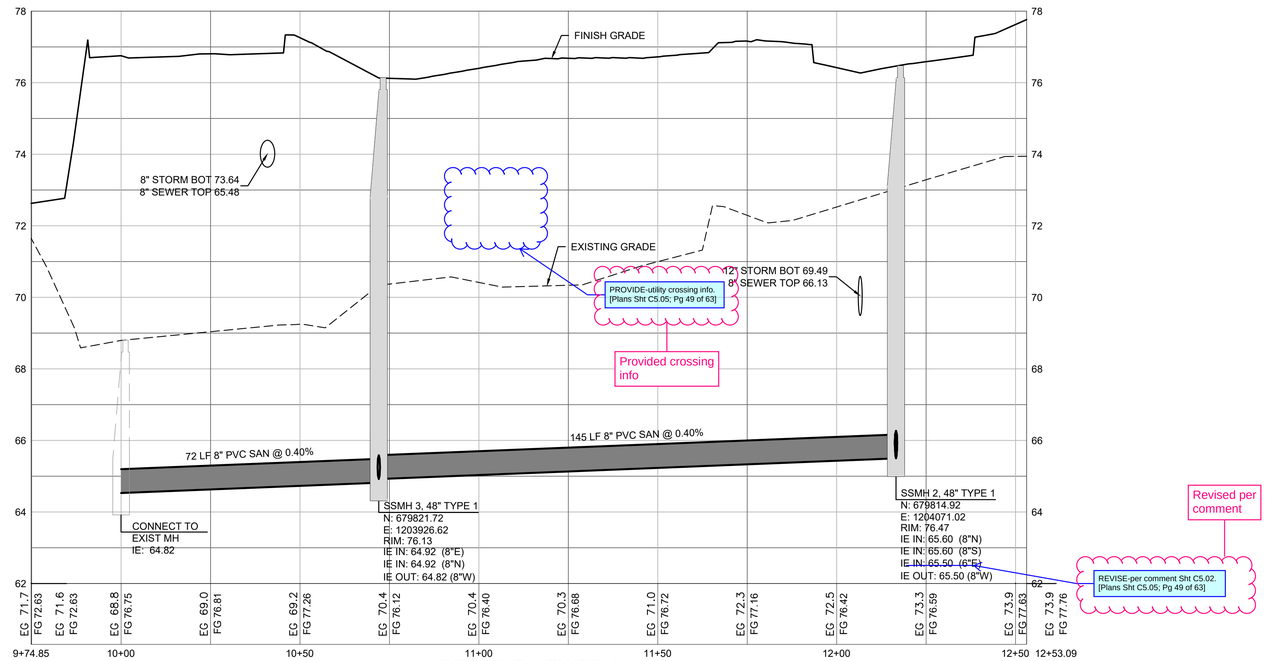
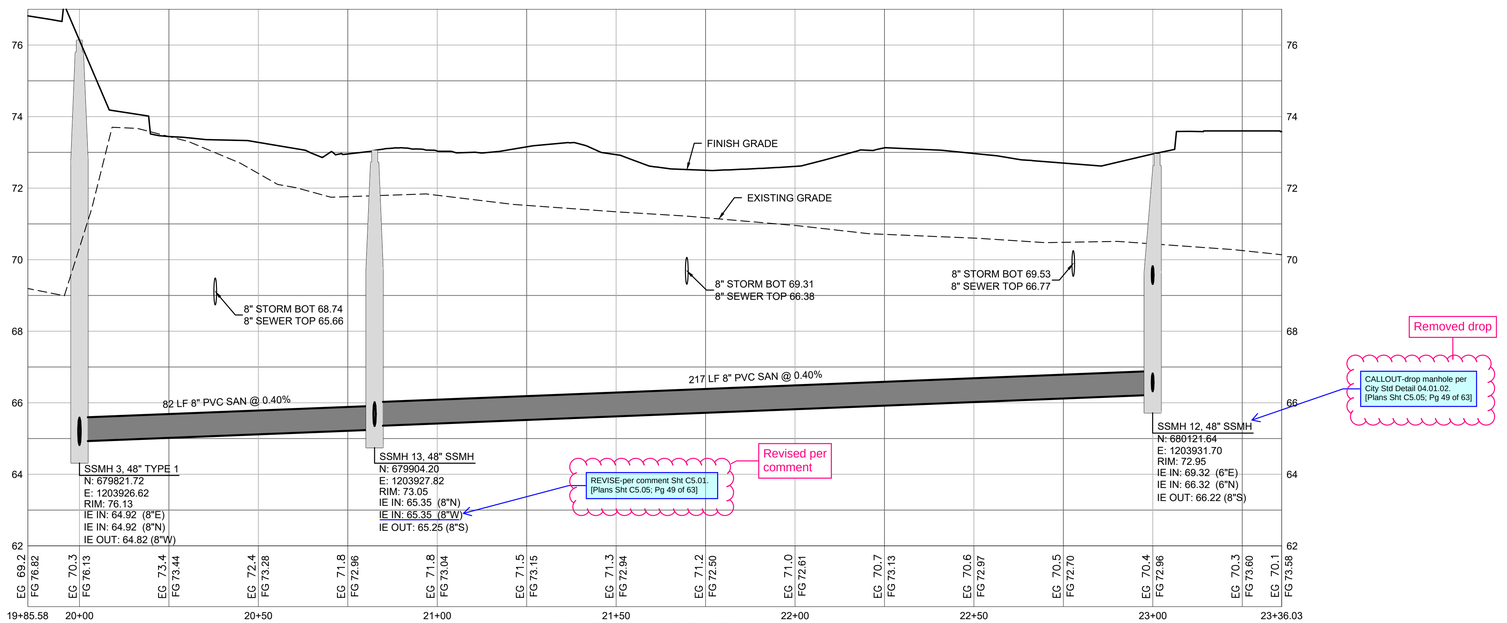


PROFILE SEWER 1



PROFILE (1) SEWER 2

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APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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FIELD CONDITIONS MAY DICTATE CHANGES TO THESE PLANS AS DETERMINED BY THE DEVELOPMENT ENGINEERING MANAGER.

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253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

CHRISTOPHER C. SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
1
2
3
4

Sheet Title:

SEWER PROFILES

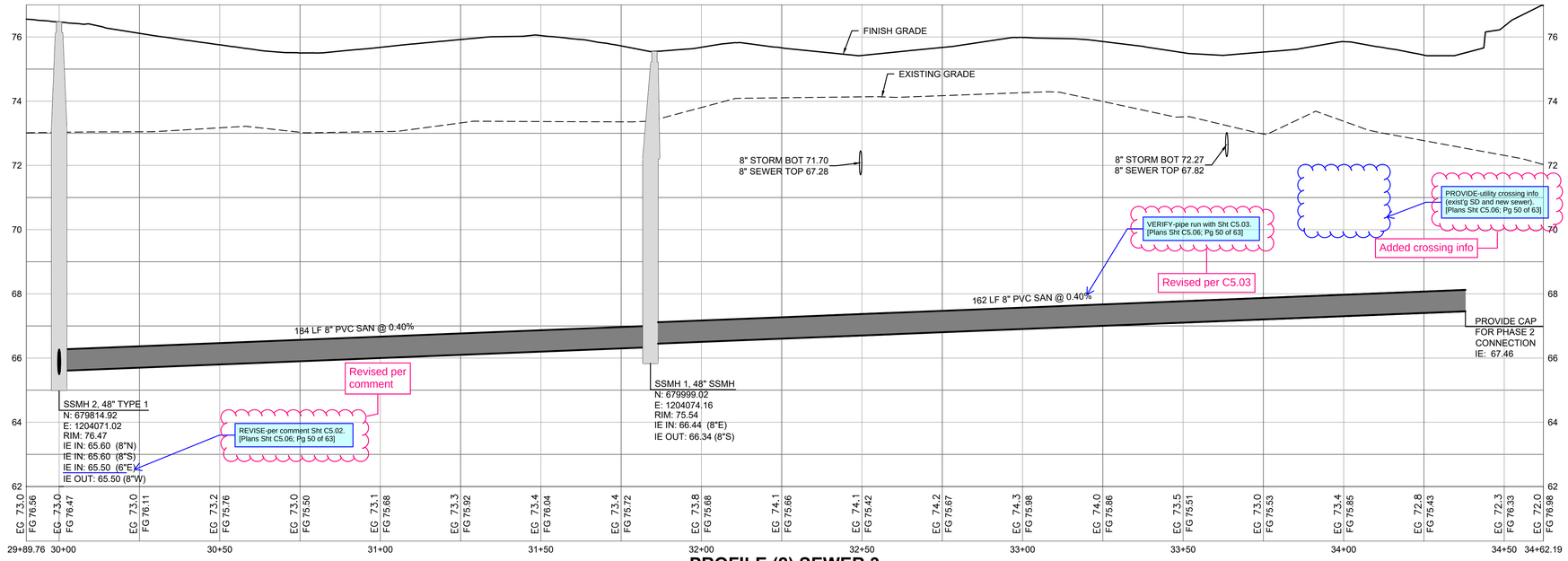
Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

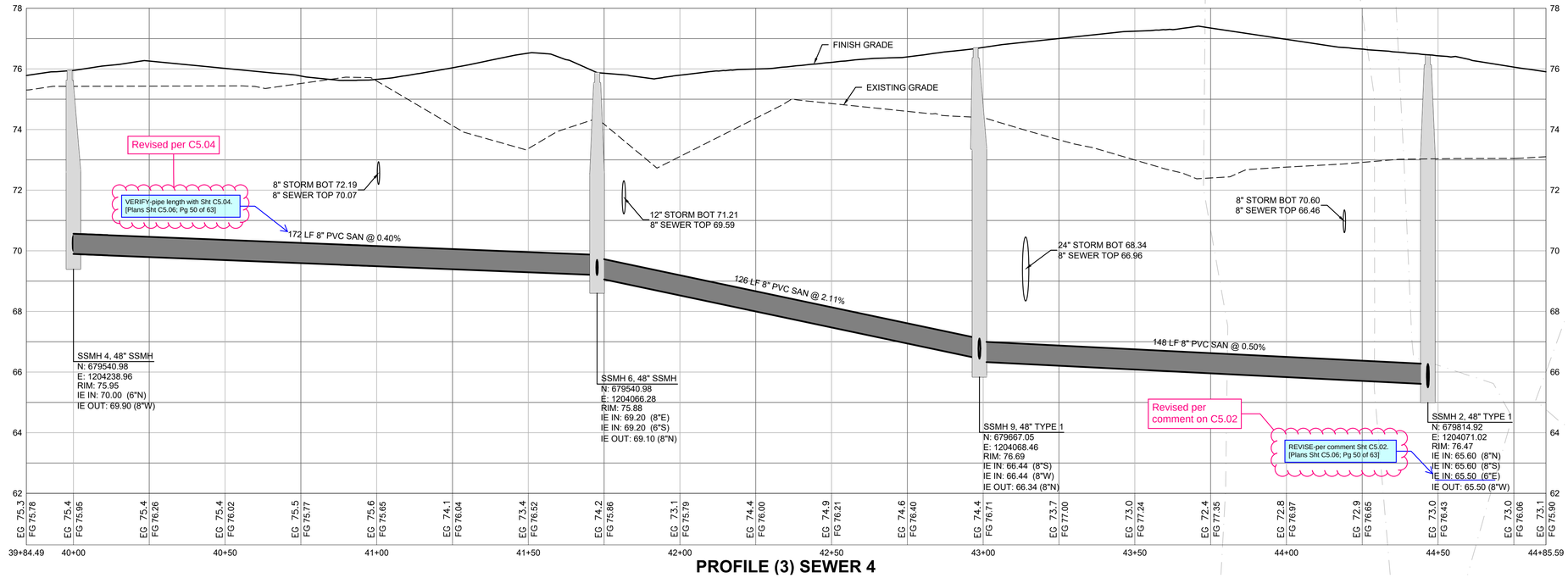
C5.05

49 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



PROFILE (2) SEWER 3



PROFILE (3) SEWER 4

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

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DEVELOPMENT ENGINEERING

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Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:
4
3
2
1

Sheet Title:

SEWER PROFILES

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C5.06

50 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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DEVELOPMENT ENGINEERING

DATE _____

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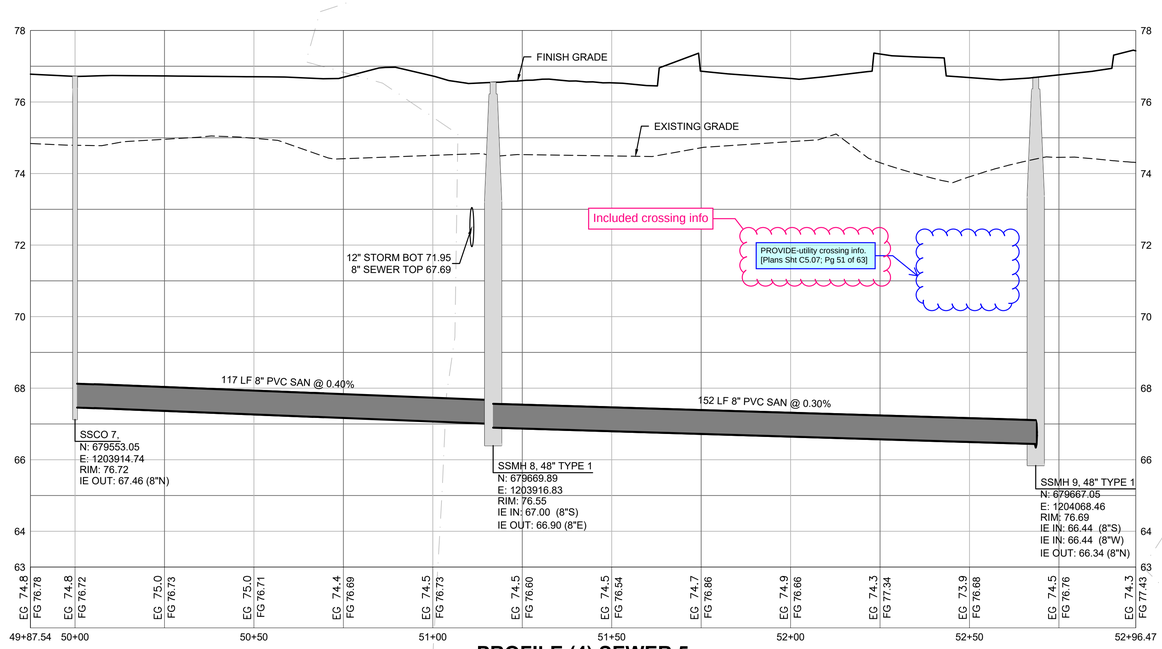

PROFILE (4) SEWER 5

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:

Sheet Title:

SEWER PROFILES

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

C5.07

51 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

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BY ____________________
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE ____________________

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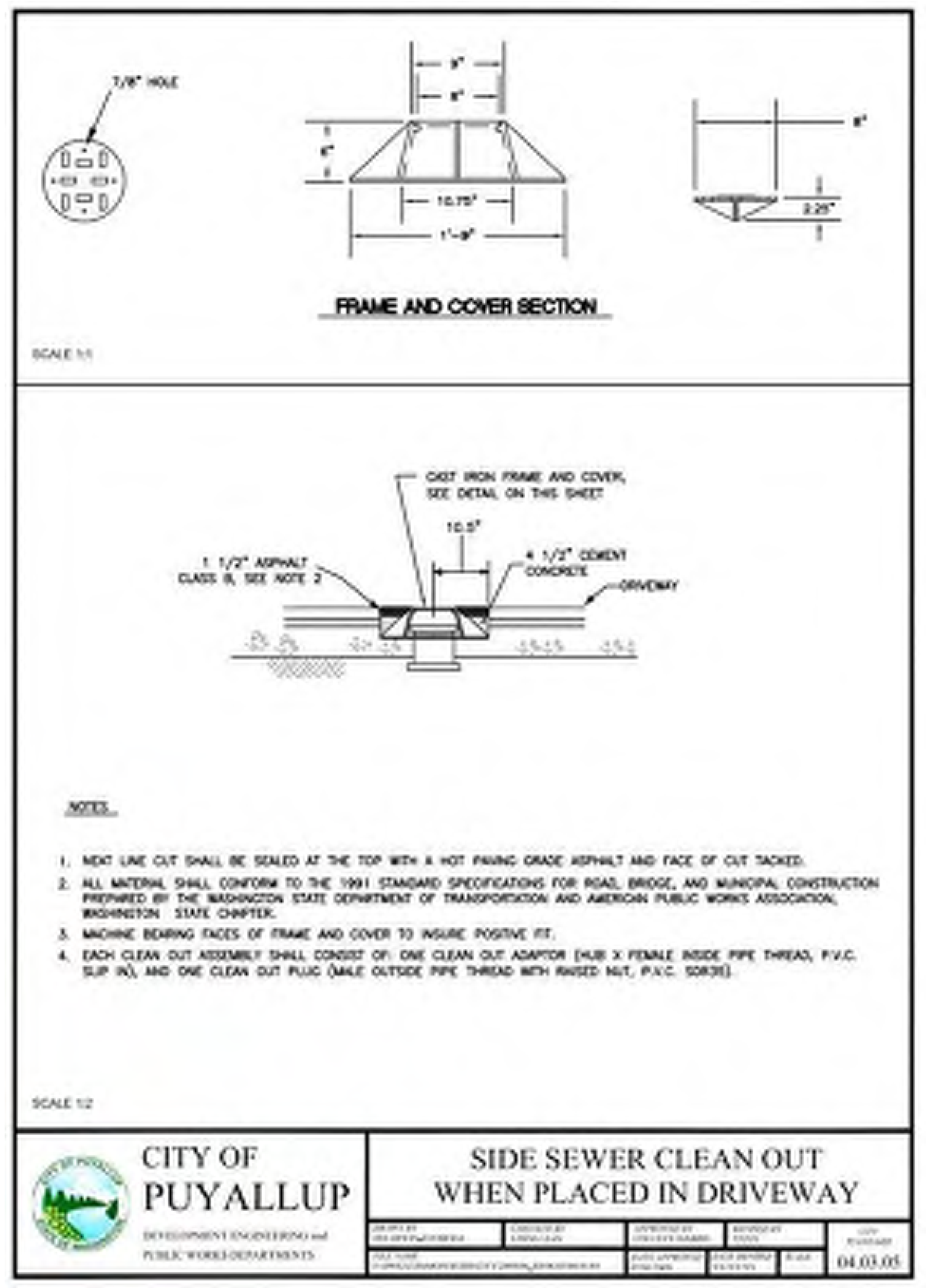
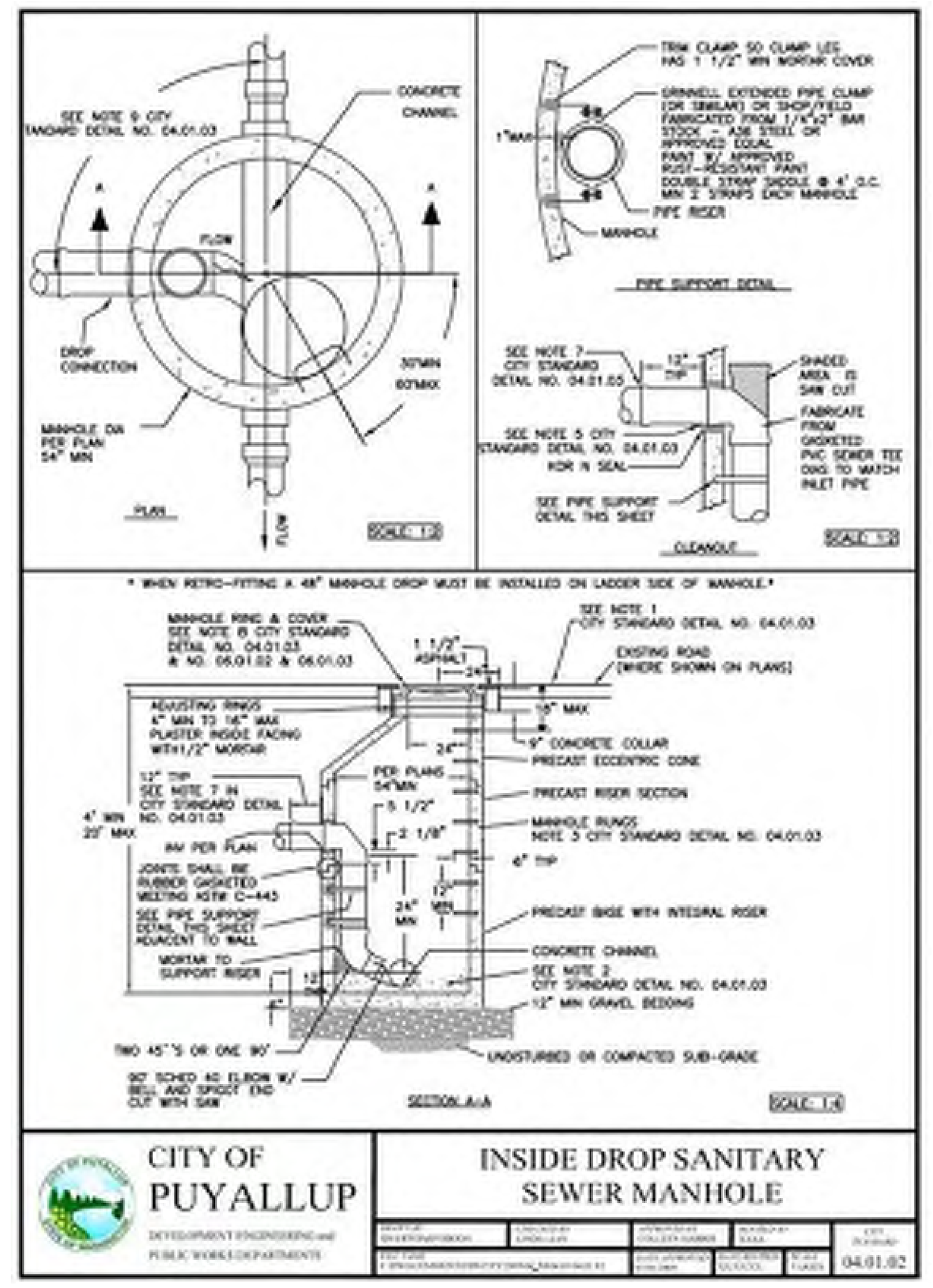
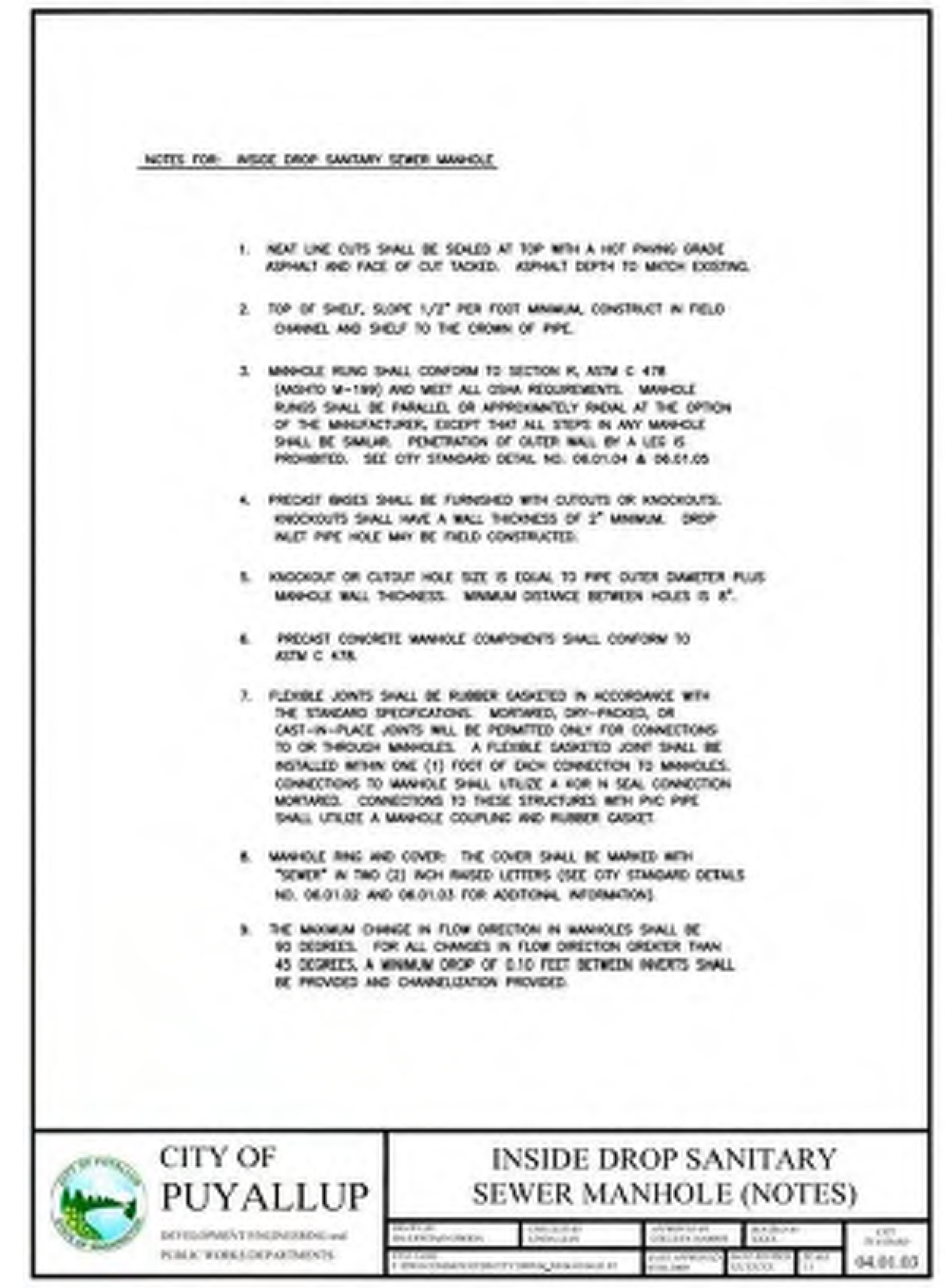


1 **SIDE SEWER CLEAN OUT WHEN PLACED IN DRIVEWAY**
NOT TO SCALE



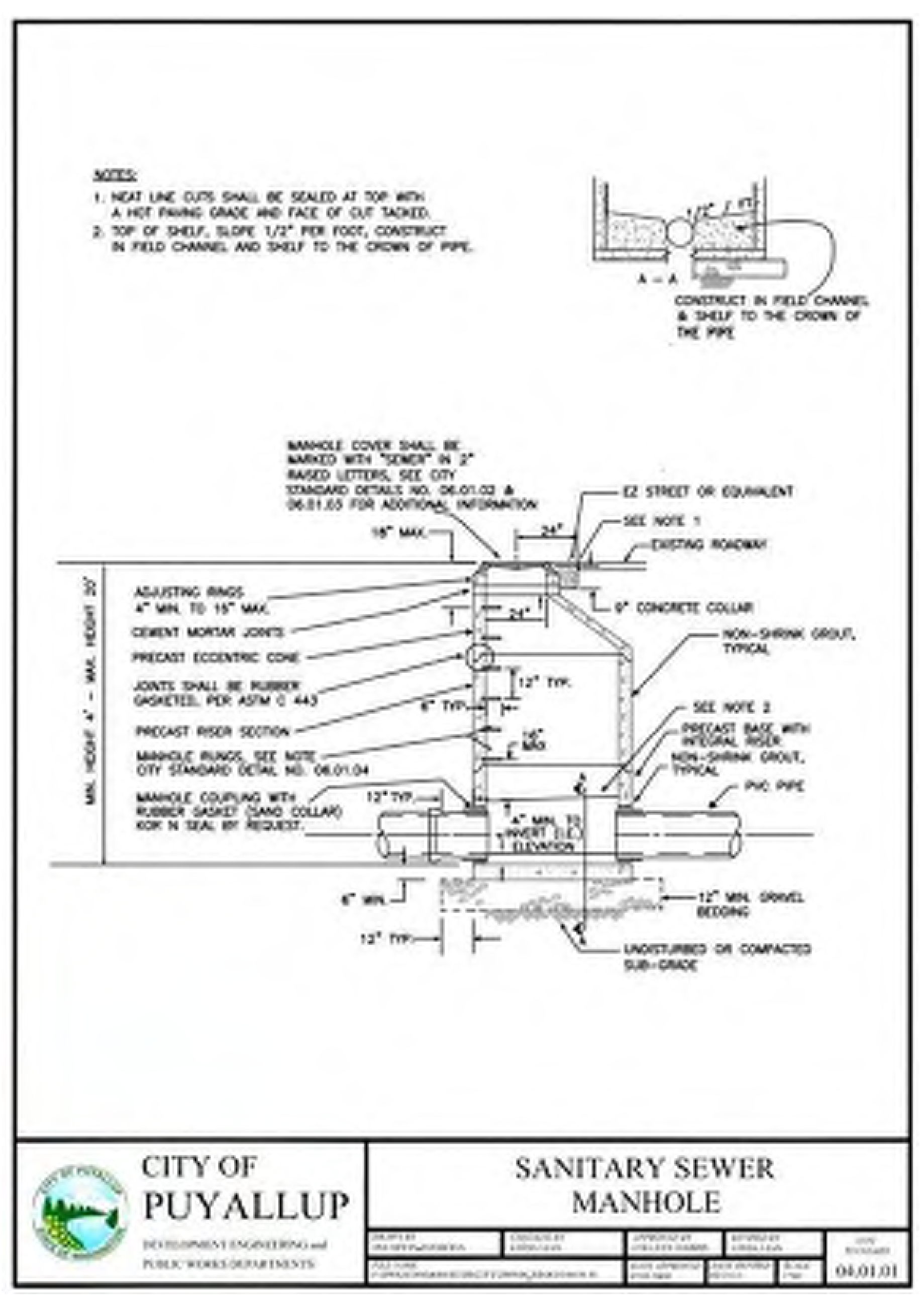
2 **INSIDE DROP SANITARY SEWER MANHOLE**
NOT TO SCALE



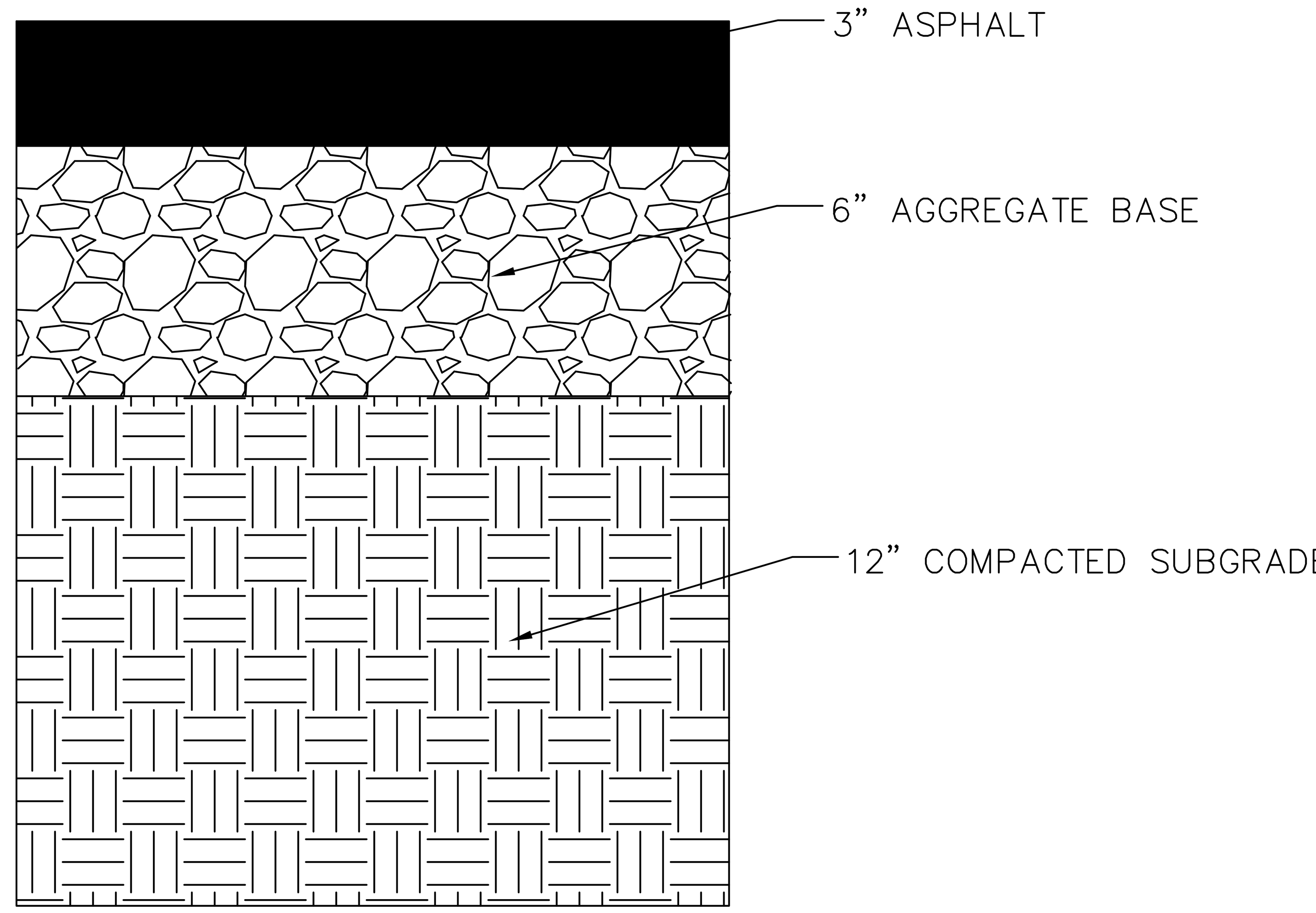
3 **INSIDE DROP SANITARY SEWER MANHOLE (NOTES)**
NOT TO SCALE

ADD-City Std Detail 04.03.04 // 04.06.02 [Plans Sht C5.5; Pg 52 of 63]

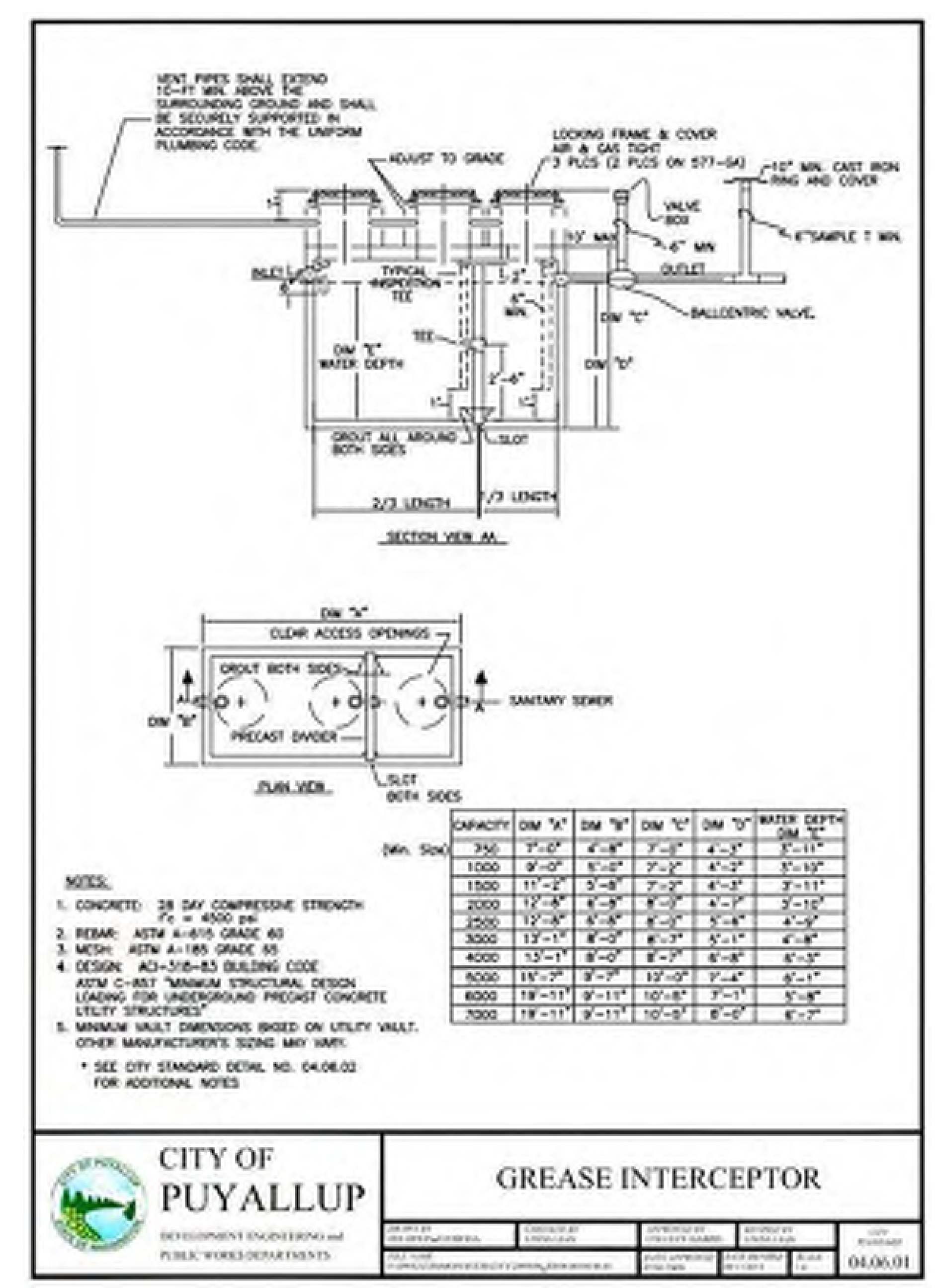
Added city details



4 **SANITARY SEWER MANHOLE**
NOT TO SCALE



5 **PAVING DETAIL**
NOT TO SCALE



6 **GREASE INTERCEPTOR DETAIL**
NOT TO SCALE

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER

11/21/2023

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Revisions:

Sheet Title:

SEWER NOTES AND DETAILS

Updated Sheet callout

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

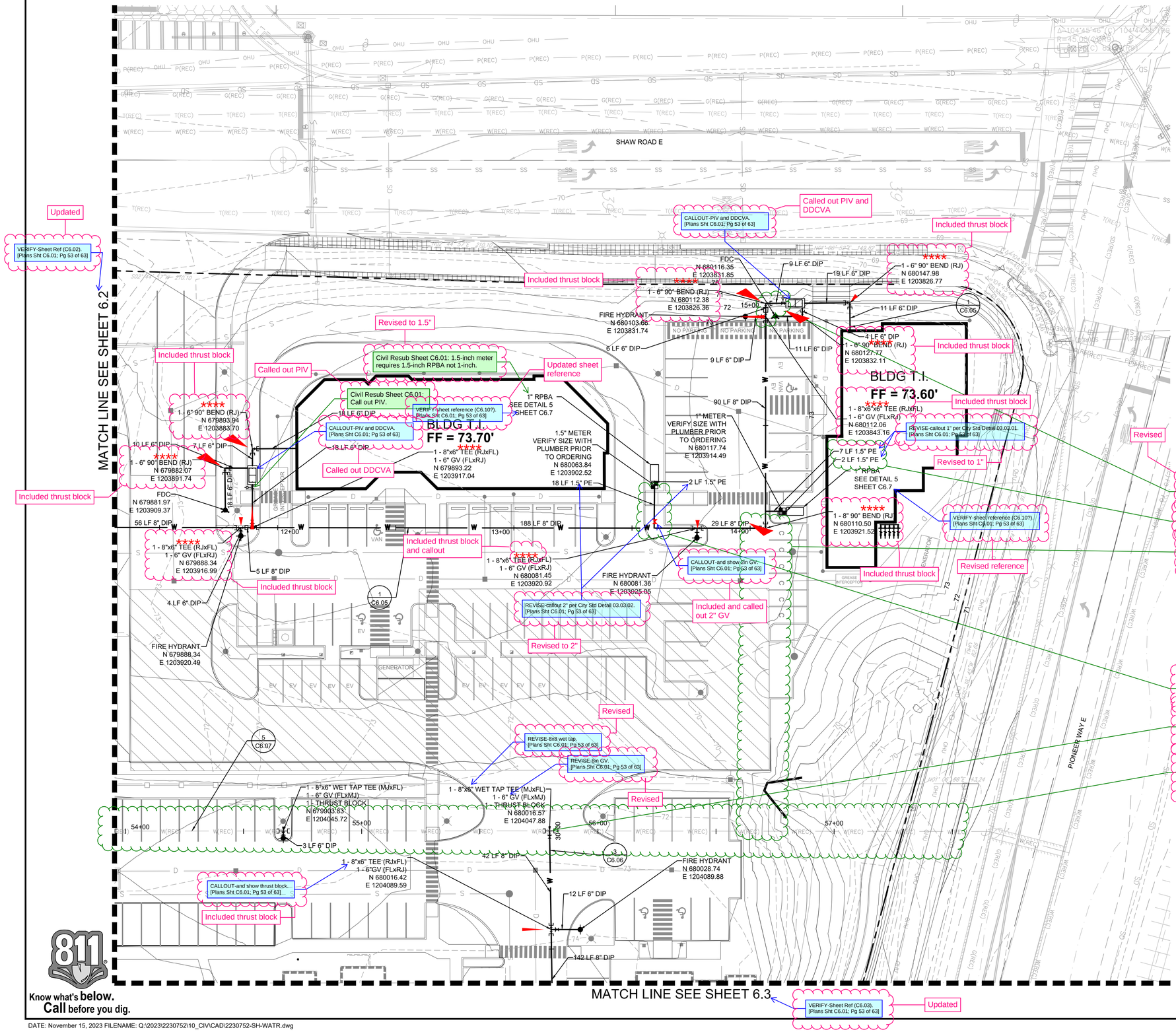
VERIFY-sheet callout (C5.08?). [Plans Sht C5.5; Pg 52 of 63]

C5.5

52 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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

DATE: November 15, 2023 FILENAME: Q:\2023\2230752\10_CIV\CAD\2230752-SH-WATR.dwg

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

FIRE PROTECTION NOTES

THE FIRE PROTECTION SYSTEM INCLUDING MATERIALS, SIZING, AND CONFIGURATION IS SUBJECT TO A CONTRACTOR PROVIDED DESIGN BY A FIRE PROTECTION ENGINEER, AND AS SUCH, THE FINAL DESIGN OF THE FIRE PROTECTION SYSTEM MAY DEVIATE FROM THE SYSTEM SHOWN. THE FIRE PROTECTION SYSTEM AS SHOWN FROM THE MAIN LINE TO THE CONNECTION AT THE BUILDING SPRINKLER IS INTENDED FOR LOCATION OF THE FIRE HYDRANTS AND FIRE DEPARTMENT CONNECTION ONLY. CONTRACTOR'S BID SHALL REFLECT THE CONDITIONS OF THE FIRE PROTECTION ENGINEER'S DESIGN. CONTRACTOR SHALL COMPLY WITH ALL NATIONAL FIRE PROTECTION ASSOCIATION REQUIREMENTS AS SET FORTH BY "NFPA 13", ITS AMENDMENTS, AND LOCAL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO ACQUISITION OF ALL PERMITS.

FIRE SPRINKLER NOTE

WHERE THE UNDERGROUND WATER SUPPLY TEES OFF TO SERVE ONLY A FIRE SPRINKLER SYSTEM AND/OR FIRE HYDRANTS, A SEPARATE DETAILED PLAN MUST BE SUBMITTED AND APPROVED BY THE FIRE MARSHAL PRIOR TO INSTALLATION.

GENERAL NOTE

SEE DETAILS AS NOTED
-VERTICAL THRUST BLOCKING SEE DETAILS 1 AND 2 SHEET C6.5
-WATER SERVICE CONNECTIONS SEE DETAILS 3 AND 4 SHEET C6.5
-PRIVATE WATER SERVICE LINE SEE DETAIL 5 SHEET C6.5
FIRE HYDRANT ASSEMBLY SEE DETAIL 6 SHEET C6.5
-AIR/VACUUM VALVE SEE DETAIL 1 SHEET C6.6
DOUBLE DETECTOR CHECK VALVE ASSEMBLY INSTALLATION SEE DETAIL 2 AND 3 SHEET C6.6
-FIRE DEPARTMENT CONNECTION (FDC) SEE DETAIL 4 SHEET C6.6
-POST INDICATOR VALVE SEE DETAIL 5 ON SHEET C6.6
HORIZONTAL THRUST BLOCKING SEE DETAIL 6 SHEET C6.6
-WATER VALVES AND MAINS SEE DETAIL 1 ON SHEET C6.7
-VALVE MARKER POST SEE DETAIL 2 SHEET C6.7
WATER MAIN CROSSING OTHER UTILITIES SEE DETAILS 3 AND 4 SHEET C6.7

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Project Title:

EAST TOWN CROSSING PHASE 1

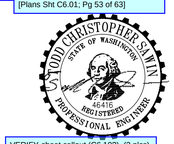
Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No. 2230752

Updated callouts

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

VERIFY-sheet callout (C6.087). (4 plcs) [Plans Sht C6.01; Pg 53 of 63]
VERIFY-sheet callout (C6.097). (5 plcs) [Plans Sht C6.01; Pg 53 of 63]
VERIFY-sheet callout (C6.107). (3 plcs) [Plans Sht C6.01; Pg 53 of 63]



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Revisions:
4
3
2
1

Sheet Title:
WATER PLAN NW

Designed by: CW | Drawn by: SK | Checked by: JI

Sheet No.
C6.01
53 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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N

GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

GENERAL NOTE

SEE DETAILS AS NOTED
-VERTICAL THRUST BLOCKING SEE DETAILS 1 AND 2 SHEET C6.5
-WATER SERVICE CONNECTIONS SEE DETAILS 3 AND 4 SHEET C6.5
-PRIVATE WATER SERVICE LINE SEE DETAIL 5 SHEET C6.5
FIRE HYDRANT ASSEMBLY SEE DETAIL 6 SHEET C6.5
-AIR/VACUUM VALVE SEE DETAIL 1 SHEET C6.6
DOUBLE DETECTOR CHECK VALVE ASSEMBLY INSTALLATION SEE DETAIL 2 AND 3 SHEET C6.6
-FIRE DEPARTMENT CONNECTION (FDC) SEE DETAIL 4 SHEET C6.6
-POST INDICATOR VALVE SEE DETAIL 5 ON SHEET C6.6
HORIZONTAL THRUST BLOCKING SEE DETAIL 6 SHEET C6.6
-WATER VALVES AND MAINS SEE DETAIL 1 ON SHEET C6.7
-VALVE MARKER POST SEE DETAIL 2 SHEET C6.7
WATER MAIN CROSSING OTHER UTILITIES SEE DETAILS 3 AND 4 SHEET C6.7

MATCH LINE SEE SHEET 6.1

MATCH LINE SEE SHEET 6.4

BLDG H
FF = 77.10'

BLDG G
FF = 77.10'

1 - 8" GATE VALVE (RJ)
1 - 8" CAP (RJ)
4 LF 6" DIP
5 LF 8" DIP
FIRE HYDRANT
N 679678.79
E 1203834.31
**** 1 - 8"x6" TEE (RJxFL)
1 - 6" GV (FLxRJ)
N 679683.69
E 1203834.59
2" METER
VERIFY SIZE WITH MECHANICAL ENGINEER
N 679658.96
E 1203855.00
23 LF 3" PE
29 LF 6" DIP
**** 1 - 6" 90° BEND (RJ)
N 679660.99
E 1203911.87
19 LF 6" DIP
2 LF 6" DIP
**** 1 - 6" 90° BEND (RJ)
N 679642.18
E 1203933.42
**** 1 - 6" 90° BEND (RJ)
N 679645.95
E 1203911.67
15 LF 6" DIP
29 LF 6" DIP
STA 21+18.41 0.03' LT
2 LF 6" DIP
**** 1 - 6" 90° BEND (RJ)
N 679645.16
E 1203937.35
18 LF 6" DIP
**** 1 - 6" 90° BEND (RJ)
N 679659.23
E 1203936.77
6 LF 6" DIP
**** 1 - 6" 90° BEND (RJ)
N 679659.38
E 1203966.15
1 - 6" 90° BEND (RJ)
N 679657.64
E 1203972.61
8 LF 6" DIP
27 LF 8" PE
2" METER
VERIFY SIZE WITH MECHANICAL ENGINEER
N 679654.29
E 1203986.36
**** 1 - 8" TEE (RJxFL)
1 - 8" GV (FLxRJ)
N 679656.58
E 1204049.86
FDC
N 679665.60
E 1203972.63
FIRE HYDRANT
N 679677.23
E 1203969.41
CONNECT TO EXISTING PIPE
1 - 8" 45° BEND (MJ)
1 - THRUST BLOCK
N 679446.77
E 1204036.41
16 LF 8" DIP
99 LF 8" DIP
124 LF 8" DIP
**** 1 - 8"x6" TEE (RJxFL)
1 - 6" GV (FLxRJ)
N 679528.39
E 1204036.78
FIRE HYDRANT
N 679528.54
E 1204085.49
**** 1 - 8" TEE (RJxFL)
N 679680.40
E 1204053.09
**** 1 - 8"x6" TEE (RJxFL)
N 679705.45
E 1204052.72
47 LF 6" DIP
FDC
N 679517.86
E 1204085.18
1 - 8" 45° BEND (RJ)
1 - THRUST BLOCK
N 679456.52
E 1204048.87
12 LF 6" DIP
48 LF 6" DIP
**** 1 - 8" TEE (RJxFL)
N 679556.23
E 1204097.52
**** 1 - 6" 90° BEND (RJ)
N 679705.03
E 1204099.66
FDC
N 679729.98
E 1204075.76
**** 1 - 6" 90° BEND (RJ)
N 679719.14
E 1204099.93
2" METER
N 679758.13
E 1204101.04
**** 1 - 6" 90° BEND (RJ)
N 679497.24
E 1204096.88
18 LF 6" DIP
10 LF 6" DIP
2 LF 6" DIP
32 LF 6" DIP
49 LF 8" DIP
**** 1 - 8"x6" TEE (RJxFL)
N 679682.58
E 1203908.70
FIRE HYDRANT
N 679805.71
E 1203904.78
**** 1 - 8"x6" TEE (RJxFL)
N 679682.64
E 1203934.18
1 - 8" TEE (RJxFL)
1 - 8" GV (FLxRJ)
N 679832.55
E 1203915.79
56 LF 8" DIP
**** 1 - 8"x6" TEE (RJxFL)
1 - 6" GV (FLxRJ)
N 679681.34
E 1203969.02
4 LF 6" DIP
FDC
N 679665.79
E 1203966.14
**** 1 - 8"x6" TEE (MJxFL)
1 - 6" GV (FLxMJ)
1 - THRUST BLOCK
N 679744.73
E 1204058.12
**** 1 - 6" 90° BEND (RJ)
N 679716.91
E 1204075.52
1 - 8" WET TAP TEE (MJxFL)
1 - THRUST BLOCK
N 679830.87
E 1204044.34
CONNECT TO EXISTING PIPE
1 - 8" 45° BEND (MJ)
1 - THRUST BLOCK
N 679778.71
E 1204043.61
1 - 8" 45° BEND (MJ)
1 - THRUST BLOCK
N 679788.11
E 1204055.19
1 - 8" GATE VALVE (RJ)
1 - 8" CAP (RJ)
6 LF 8" DIP
27 LF 6" DIP
**** 1 - 8"x6" TEE (RJxFL)
1 - 6" GV (FLxRJ)
N 679832.58
E 1203904.86
11 LF 8" DIP
1 - 8" TEE (RJxFL)
1 - 8" GV (FLxRJ)
N 679832.55
E 1203915.79
56 LF 8" DIP
129 LF 8" DIP
23 LF 8" DIP
39 LF 8" DIP
13 LF 6" DIP
32 LF 6" DIP
47 LF 3" PE
FIRE HYDRANT
N 679744.53
E 1204075.92
22 LF 6" DIP
4 LF 6" DIP
2 LF 6" DIP
14 LF 6" DIP

VERIFY-Sheet Ref (C6.01).
[Plans Sht C6.02; Pg 54 of 63]
Updated
Revised
See comments Sht C6.01.
[Plans Sht C6.02; Pg 54 of 63]
ADD NOTE: Wet taps to existing water mains shall be accomplished through a tapping tee and tapping valve and shall be made by a city approved contractor. The tapping sleeve shall be Romac SST all stainless steel tapping sleeve or approved equal. A two-piece epoxy coated or ductile iron tapping sleeve may be used on ductile iron pipe, when the tap is smaller than the water main size i.e. 6-inch tap on 8-inch pipe. The City shall approve the time and location for these connections.
[Plans Sht C6.02; Pg 54 of 63]
Noted
**** ≡ CALLOUT-and show thrust block.
[Plans Sht C6.02; Pg 54 of 63]
Included thrust block
Updated
CALLOUT-and show DCVA backflow device.
[Plans Sht C6.02; Pg 54 of 63]
VERIFY-sheet reference (C6.067).
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-and show 2in GV.
[Plans Sht C6.02; Pg 54 of 63]
REVISE-callout 2" per City Std Detail 03.03.02.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-and show 6in GV.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-and show 8in GV and thrust block.
[Plans Sht C6.02; Pg 54 of 63]
Revised with plug and reducing hydrant length
Civil Resub Sheet C6.02: Fire flow will be reduced by not looping in the dead-end 8-inch water main run. If the water main is not looped, install an 8-inch MJ plug on the west side of the hydrant tee with a thrust block. No 8-inch gate valve needed. Show the 6-inch gate valve for the hydrant. A fire hydrant run should be 20-feet or less in length. Move hydrant back in parking bump-out.
Civil Resub Sheet C6.02: Show 8-inch gate valve at tee.
Civil Resub Sheet C6.02: No line valves are called out on the public water main through this project. If any work needs to be done on this public main, all water to this complex will be off until work is completed. At a minimum, consider installing three 8-inch gate valves at this tee for better control. One 8-inch gate valve is required on the east side of this tee.
Civil Resub Sheet C6.02: Call out and show a 6-inch gate valve at this tee.
Civil Resub Sheet C6.02: Call out PIV.
Civil Resub Sheet C6.02: Call out and show 2-inch gate valve at water main tap.
Civil Resub Sheet C6.02: No backflow protection is shown for this water service.
Civil Resub Sheet C6.02: Call out 2-inch PE, not 3-inch PE.
Civil Resub Sheet C6.02: Call out 8-inch stainless steel tapping sleeve with gate valve. Show valve.
Added note, shown valve
Civil Resub Sheet C6.02: Fire flow will be reduced by not looping in the dead-end 8-inch water main run. If the water main is not looped, install an 8-inch MJ plug on the west side of the hydrant tee with a thrust block. No 8-inch gate valve needed.
Civil Resub Sheet C6.02: Call out and show 2-inch gate valve at water main tap. Call out 2-inch PE not 3-inch PE. No backflow protection is shown for this water service.
Civil Resub Sheet C6.02: Call out PIV.
Civil Resub Sheet C6.02: Call out and show 6-inch gate valve at tee.
Civil Resub Sheet C6.02: Call out PIV.
Civil Resub Sheet C6.02: Call out and show 2-inch gate valve at water main tap. Call out 2-inch PE not 3-inch PE. No backflow protection is shown for this water service.
Civil Resub Sheet C6.02: Call out and show an 8-inch gate valve at south side of tee.
Civil Resub Sheet C6.02: Install an 8-inch by 6-inch reducer on south side of tee, with a 6-inch gate valve.
Civil Resub Sheet C6.02: Call out PIV.
Civil Resub Sheet C6.02: The existing 8-inch water main through this project will be public and all other water lines will be private. Show and call out the public water easement for this plan set.
CALLOUT-to abandon rerouted existing watermain.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-and show 8in GV and thrust block.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-fitting and thrust block.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-and show 6in GV and thrust block.
[Plans Sht C6.02; Pg 54 of 63]
CALLOUT-PIV and DDCVA.
[Plans Sht C6.02; Pg 54 of 63]
REVISE-callout 2" per City Std Detail 03.03.02.
[Plans Sht C6.02; Pg 54 of 63]
Revised
Called out
Called out fitting and thrust block
Called out GV + TB
Called out and shown
Updated
Included thrust block
Sht Ref C6.0X? (Typ).
WATER PROFILE 1
WATER PROFILE 2
WATER PROFILE 3
WATER PROFILE 4
WATER PROFILE 5
BLDG H
BLDG T.I.
BLDG G
BLDG F
BLDG E
BLDG D
BLDG C
BLDG B
BLDG A
CLUB HOUSE
C6.1
C6.4
C6.3

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

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2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:
EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
Added note
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER
11/21/2023

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Revisions:
A
B
C

Sheet Title:
WATER PLAN SW

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C6.02
54 of 63 Sheets

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

MATCH LINE SEE SHEET 6.1

MATCH LINE SEE SHEET 6.4

FUTURE CLUB HOUSE FF = 76.50'

FUTURE BLDG E FF = 76.70'

FUTURE BLDG A

3 C6.06

142 LF 8" DIP

31+00

32+00

47 LF 3" PE

25 LF 6" DIP

66 LF 8" DIP

11 LF 3" PE

2" METER
VERIFY SIZE
MECHANICAL ENGINEER
N 680027.36
E 1204182.45

2" METER
VERIFY SIZE WITH
MECHANICAL ENGINEER
N 679969.36
E 1204215.47

FIRE HYDRANT
N 679991.28
E 1204231.04

1 - 8"x6" TEE (RJxFL)
1 - 6" GV (FL+RJ)
N 680016.03
E 1204231.55

END OF PHASE 1
1 - 8" GATE VALVE (RJ)
1 - 8" CAP (RJ)
N 680015.71
E 1204297.11

PHASE 2 WATER

Updated

VERIFY-Sheet Ref (C6.01). [Plans Sht C6.03; Pg 55 of 63]

CALLOUT-and show 2in GV. [Plans Sht C6.03; Pg 55 of 63]

REVISE-callout 2" per City Std Detail 03.03.02. [Plans Sht C6.03; Pg 55 of 63]

CALLOUT-and show DCVA backflow device. [Plans Sht C6.03; Pg 55 of 63]

CONFIRM-hydrant run with the hydraulic model (max run 20ft w/o modeling). [Plans Sht C6.03; Pg 55 of 63]

Waiting for model confirmation, will be revised if needed

VERIFY-Sheet Ref (C6.04). [Plans Sht C6.03; Pg 55 of 63]

Revised

Added DCVA

REVISE-callout 2" per City Std Detail 03.03.02. [Plans Sht C6.03; Pg 55 of 63]

REVISE-use blowoff assembly. [Plans Sht C6.03; Pg 55 of 63]

CALLOUT-and show thrust block. [Plans Sht C6.03; Pg 55 of 63]

Included thrust block

Civil Resub Sheet C6.03: Call out and show 2-inch gate valve at water main tap. Call out 2-inch PE not 3-inch PE. No backflow protection is shown for this water service.

Civil Resub Sheet C6.03: Call out and show 2-inch gate valve at water main tap. Call out 2-inch PE not 3-inch PE. No backflow protection is shown for this water service.

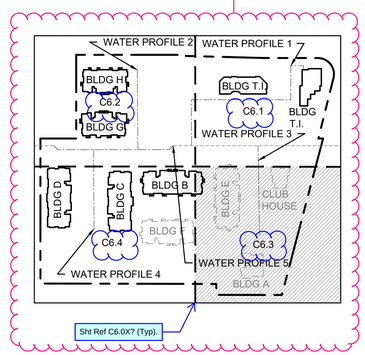
Civil Resub Sheet C6.03: Do not install 8-inch gate valve until the phase 2 tie-in. Install a 2-inch blow-off assembly per City Standard detail 03.06.01.

See comments Sht C6.01. [Plans Sht C6.03; Pg 55 of 63]

GENERAL NOTE

SEE DETAILS AS NOTED
-VERTICAL THRUST BLOCKING SEE DETAILS 1 AND 2 SHEET C6.5
-WATER SERVICE CONNECTIONS SEE DETAILS 3 AND 4 SHEET C6.5
-PRIVATE WATER SERVICE LINE SEE DETAIL 5 SHEET C6.5
FIRE HYDRANT ASSEMBLY SEE DETAIL 6 SHEET C6.5
-AIR/VACUUM VALVE SEE DETAIL 1 SHEET C6.6
DOUBLE DETECTOR CHECK VALVE ASSEMBLY INSTALLATION SEE DETAIL 2 AND 3 SHEET C6.6
-FIRE DEPARTMENT CONNECTION (FDC) SEE DETAIL 4 SHEET C6.6
-POST INDICATOR VALVE SEE DETAIL 5 ON SHEET C6.6
HORIZONTAL THRUST BLOCKING SEE DETAIL 6 SHEET C6.6
-WATER VALVES AND MAINS SEE DETAIL 1 ON SHEET C6.7
-VALVE MARKER POST SEE DETAIL 2 SHEET C6.7
WATER MAIN CROSSING OTHER UTILITIES SEE DETAILS 3 AND 4 SHEET C6.7

Updated sheet labels



GRAPHIC SCALE
0 10 20 40
1" = 20 FEET

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
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Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH
STATE OF WASHINGTON
45416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

Revisions:

Sheet Title:

WATER PLAN NE

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

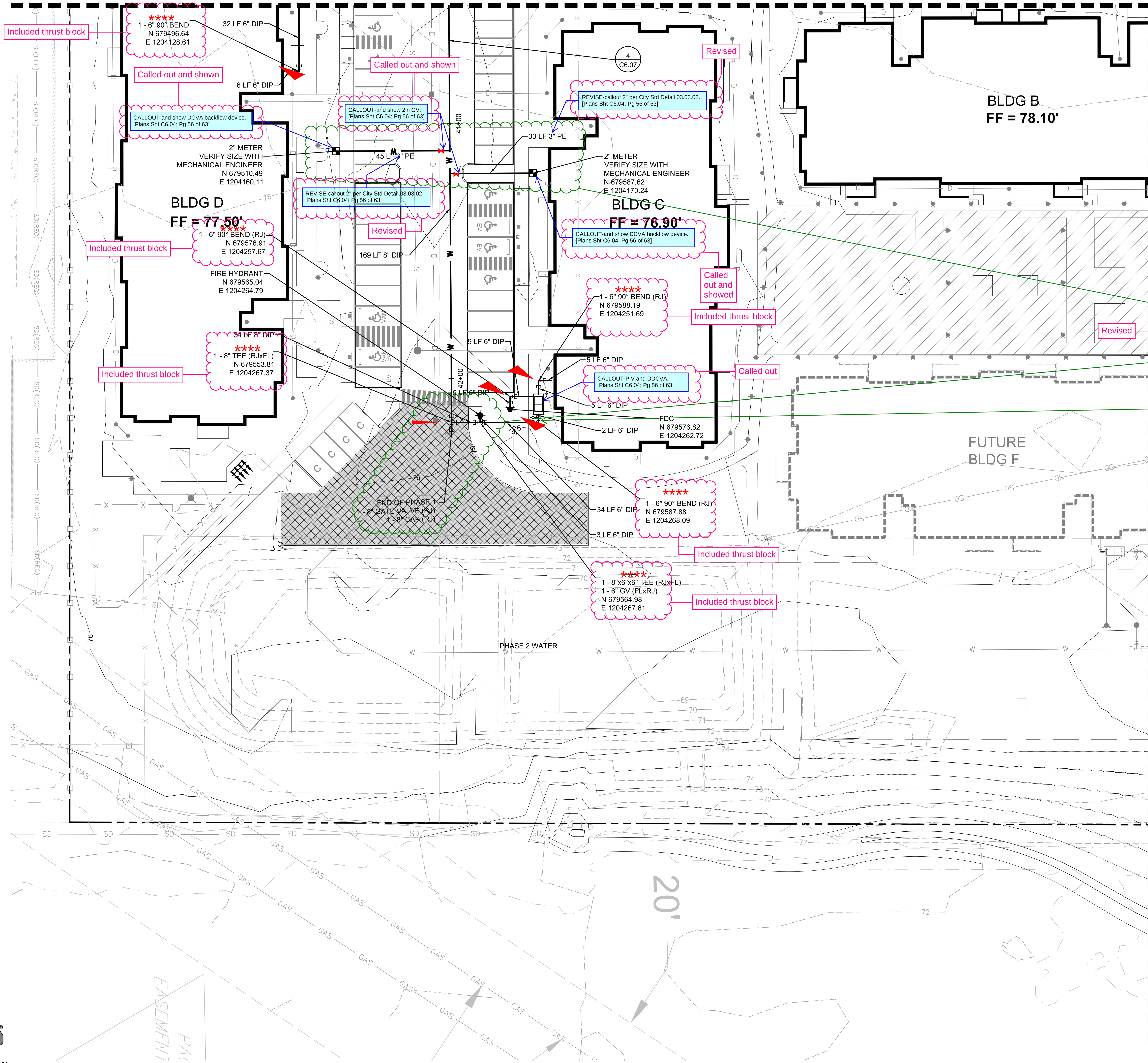
C6.03

55 of 63 Sheets

DATE: November 15, 2023 FILENAME: Q:\2023\2230752\10_CIV\CAD\2230752-SH-WATR.dwg

EAST TOWN CROSSING PHASE 1

SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



GRAPHIC SCALE

0 10 20 40

1" = 20 FEET

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BY ______________ CITY OF PUYALLUP DEVELOPMENT ENGINEERING

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GENERAL NOTE

SEE DETAILS AS NOTED
-VERTICAL THRUST BLOCKING SEE DETAILS 1 AND 2 SHEET C6.5
-WATER SERVICE CONNECTIONS SEE DETAILS 3 AND 4 SHEET C6.5
-PRIVATE WATER SERVICE LINE SEE DETAIL 5 SHEET C6.5
FIRE HYDRANT ASSEMBLY SEE DETAIL 6 SHEET C6.5
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-WATER VALVES AND MAINS SEE DETAIL 1 ON SHEET C6.7
-VALVE MARKER POST SEE DETAIL 2 SHEET C6.7
WATER MAIN CROSSING OTHER UTILITIES SEE DETAILS 3 AND 4 SHEET C6.7

Civil Resub Sheet C6.04: Call out and show 2-inch gate valves at water main taps. Call out 2-inch PE not 3-inch PE. No backflow protection is shown for these water services.

See comments Sht C6.01. [Plans Sht C6.04; Pg 56 of 63]

Revised

Revised

Civil Resub Sheet C6.04: When phase 2 is installed the 8-inch water main will be looped for better fire flow. Install an 8-inch by 6-inch fire hydrant tee west of the fire line tee to provide better future fire flow for the hydrant. The fire line tee can now be 8-inch by 6-inch with a 6-inch gate valve. The 8-inch gate valve to the east will be installed at the phase 2 tie-in. For now install an 8-inch MJ plug in the east end of the fire line tee with thrust blocking.

Civil Resub Sheet C6.04: Call out PIV.

Called out

Revised

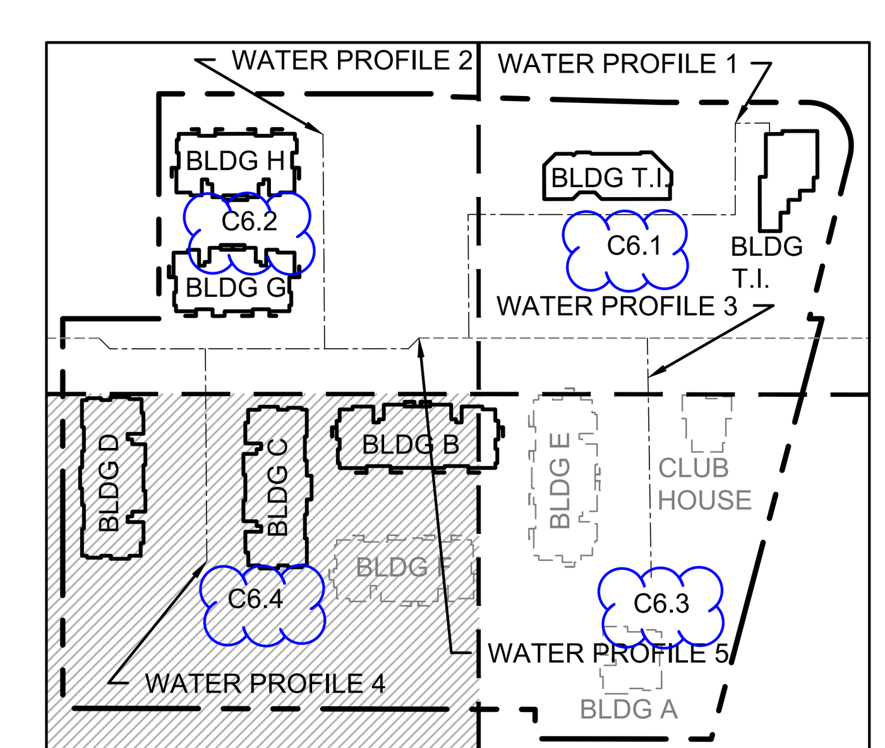
VERIFY-Sheet Ref (C6.03). [Plans Sht C6.04; Pg 56 of 63]

Revised

**** ≡ CALLOUT-and show thrust block. [Plans Sht C6.02; Pg 54 of 63]

Noted

Updated



Sht Ref C6.0X? (Typ).

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:

ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Revised

Project No.

2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER

11/21/2023

4
3
2
1

Revisions:

Sheet Title:

WATER PLAN SE

Designed by:	Drawn by:	Checked by:
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Sheet No.

C6.04

DATE: November 15, 2023 FILENAME: Q:\2023\2230752\10_CIV\CAD\2230752-SH-WATR.dwg

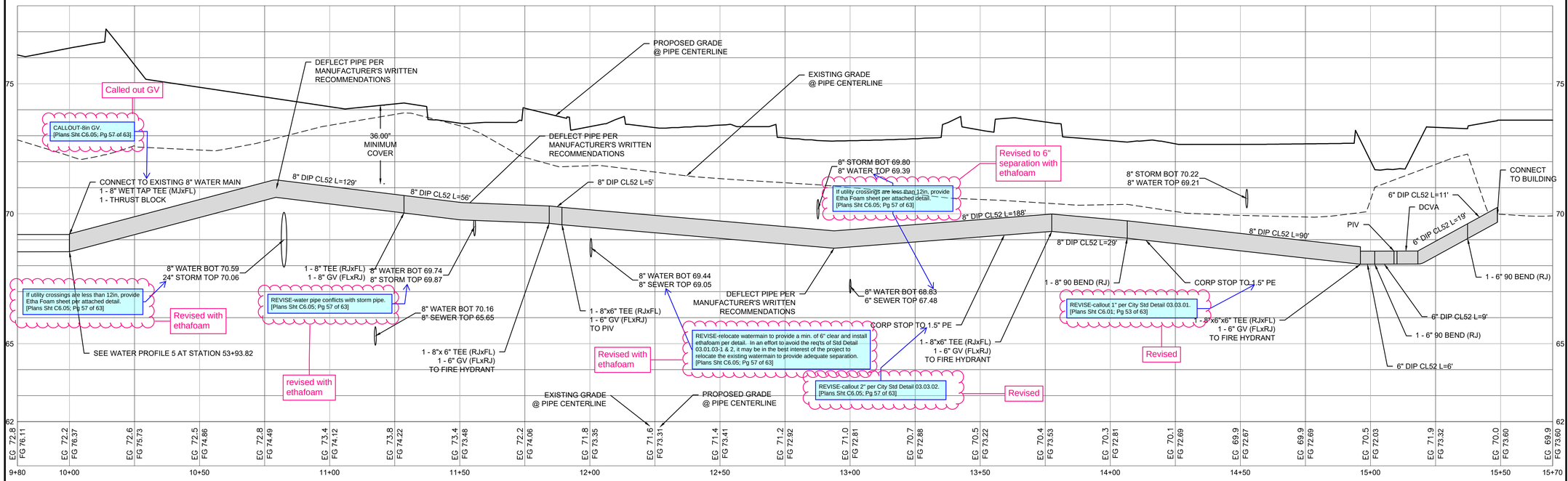
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

ADD-ethafoam detail to plan set.
[Plans Sht C6.01; Pg 53 of 63]

Added detail

ADD NOTE:"See Ethafoam Detail and City Std Detail 03.01.03-1 & 2 for utility crossing req'ts.".
[Plans Sht C6.05; Pg 57 of 63]

Added note



1 WATER PROFILE 1
1"=2' VERTICAL, 1"=20' HORIZONTAL

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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

LLOYD CHRISTOPHER SMITH
STATE OF WASHINGTON
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PROFESSIONAL ENGINEER
11/21/2023

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Sheet No.
C6.05
57 of 63 Sheets

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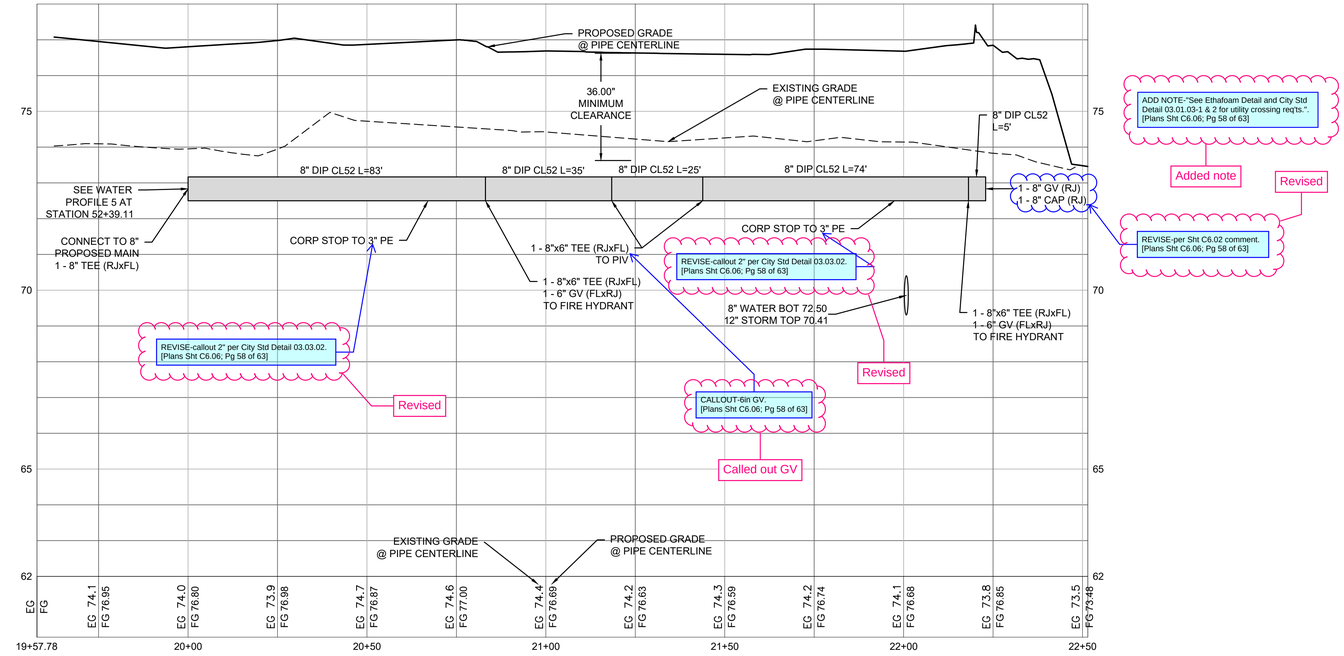
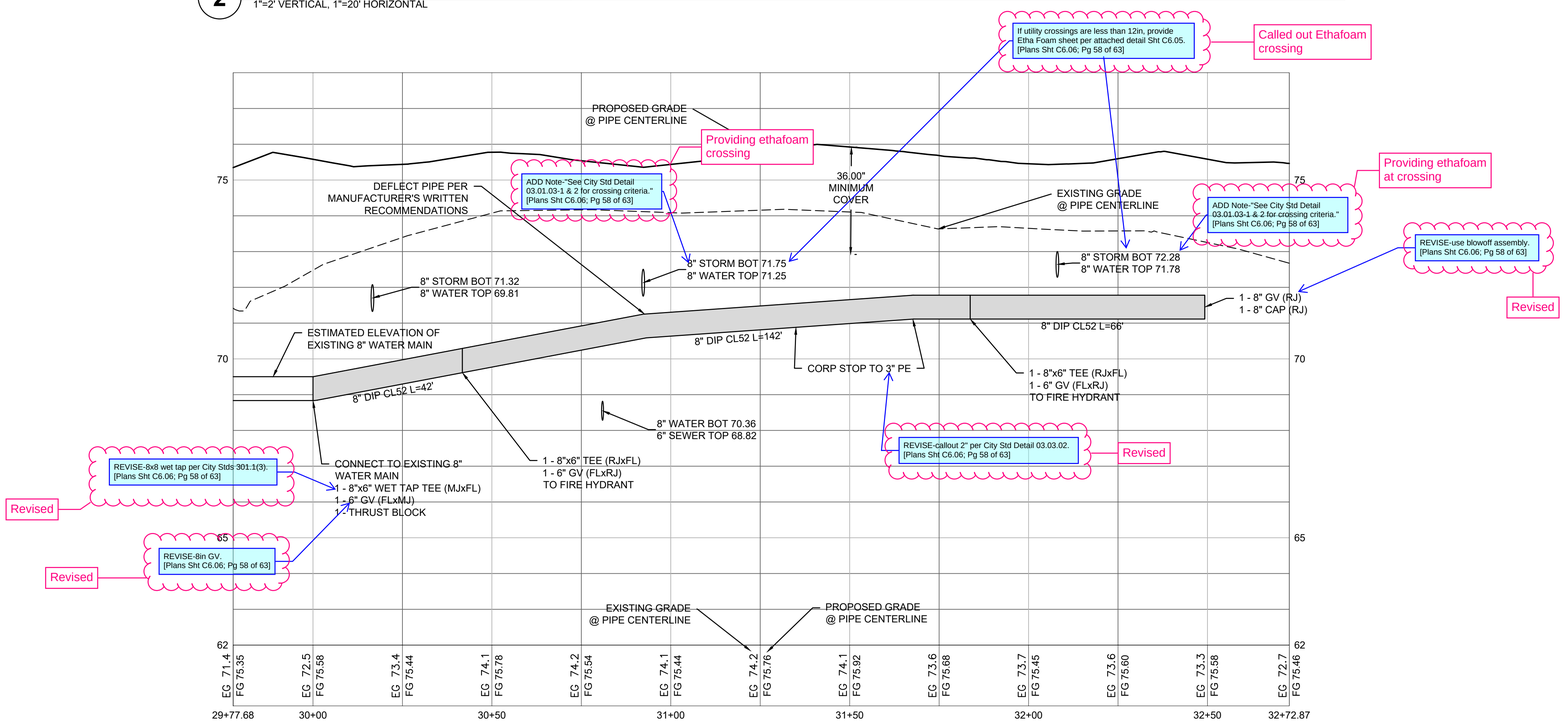
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



2 WATER PROFILE 2
1"=2' VERTICAL, 1"=20' HORIZONTAL



3 WATER PROFILE 3
1"=2' VERTICAL, 1"=20' HORIZONTAL

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Project Title:

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Client:
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Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL

11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER

11/21/2023

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Sheet Title:

WATER PROFILES

Designed by:	Drawn by:	Checked by:
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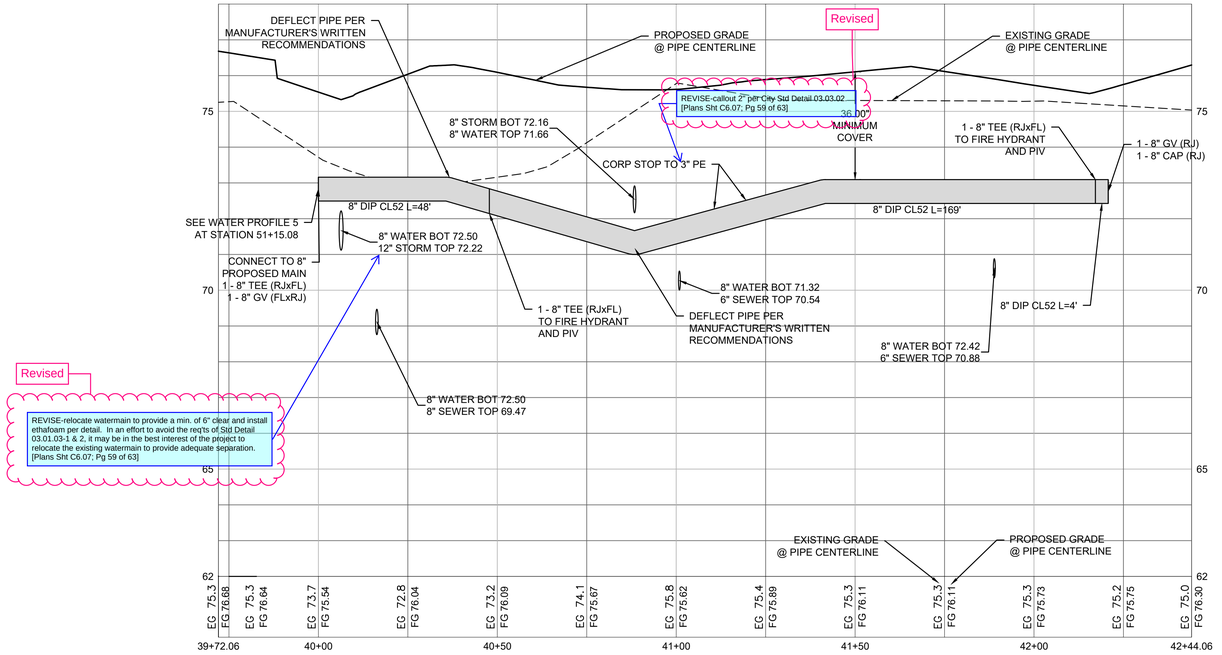
Sheet No.

C6.06

58 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



Added note

ADD NOTE-"See Ethafoam Detail and City Std Detail 03.01.03-1 & 2 for utility crossing req'ts.". [Plans Sht C6.07; Pg 59 of 63]

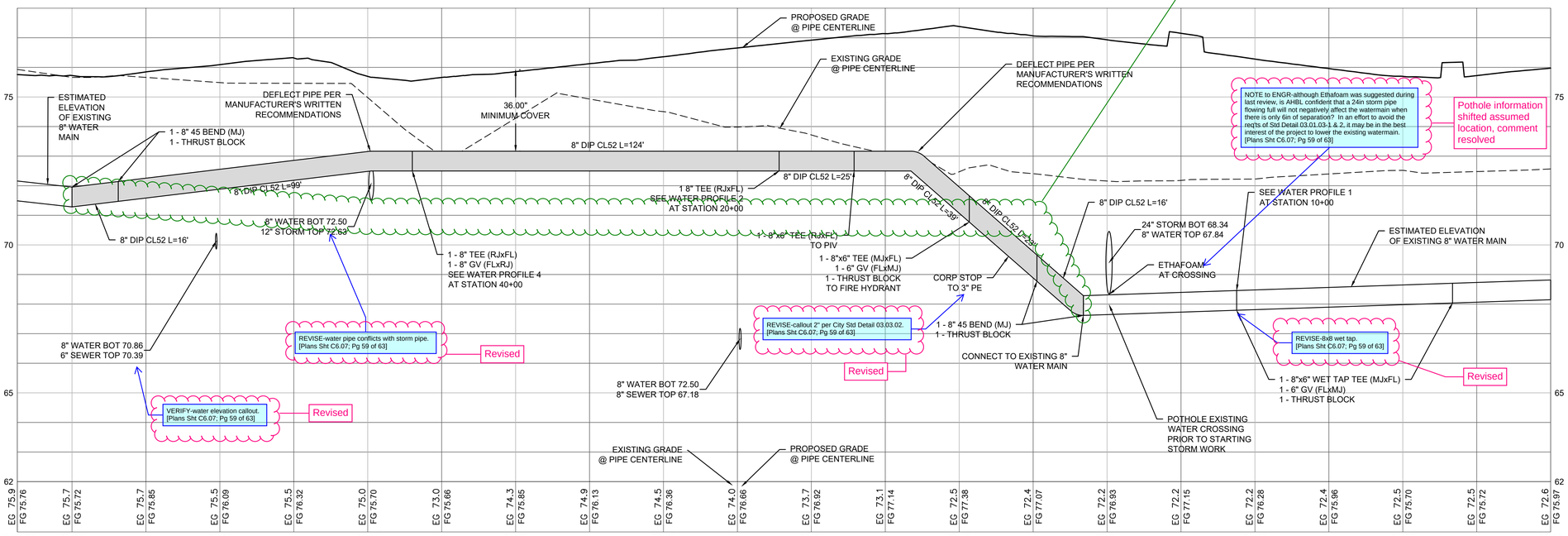
Revised

REVISE-relocate watermain to provide a min. of 6" clear and install ethafoam per detail. In an effort to avoid the req'ts of Std Detail 03.01.03-1 & 2, it may be in the best interest of the project to relocate the existing watermain to provide adequate separation. [Plans Sht C6.07; Pg 59 of 63]

4 WATER PROFILE 4
1"=2' VERTICAL, 1"=20' HORIZONTAL

Civil Resub Sheet C6.07: In a perfect world it would be great to keep our water main at 36-inches of cover. To eliminate trapped air high points, it would be best to run the relocated 8-inch water main under the 12-inch storm line at STA 51+00. Run the 8-inch relatively flat and transition with 45-degree bends to the low tie-in.

Revised run



NOTE to ENGR-although Ethafoam was suggested during last review, is AHBL confident that a 24in storm pipe flowing full will not negatively affect the watermain when there is only 6in of separation? In an effort to avoid the req'ts of Std Detail 03.01.03-1 & 2, it may be in the best interest of the project to lower the existing watermain. [Plans Sht C6.07; Pg 59 of 63]

Pothole information shifted assumed location, comment resolved

REVISE-water pipe conflicts with storm pipe. [Plans Sht C6.07; Pg 59 of 63]

Revised

VERIFY-water elevation callout. [Plans Sht C6.07; Pg 59 of 63]

Revised

REVISE-callout 2" per City Std Detail 03.03.02. [Plans Sht C6.07; Pg 59 of 63]

Revised

REVISE-8x8 wet tap. [Plans Sht C6.07; Pg 59 of 63]

Revised

5 WATER PROFILE 5
1"=2' VERTICAL, 1"=20' HORIZONTAL

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Project Title:

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ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

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TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Revisions:
4
3
2
1

Sheet Title:
WATER PROFILES

Designed by:	Drawn by:	Checked by:
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Sheet No.
C6.07
59 of 63 Sheets

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

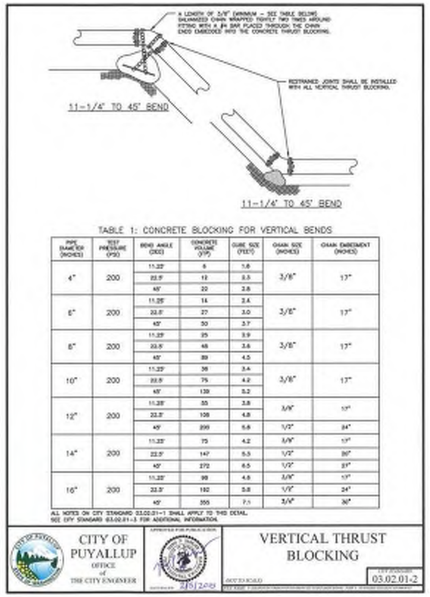


TABLE 1: CONCRETE BLOCKING FOR VERTICAL BENDS

PIPE DIAMETER (INCHES)	TEST PRESSURE (PSI)	BEND ANGLE (DEG)	CONCRETE VOLUME (CY)	CUBE SIZE (FEET)	CHAIN SIZE (INCHES)	CHAIN EMBEDMENT (INCHES)
4"	200	11.25°	6	1.8	3/8"	17"
		22.5°	12	2.3		
		45°	22	2.8		
6"	200	11.25°	14	2.4	3/8"	17"
		22.5°	27	3.0		
		45°	50	3.7		
8"	200	11.25°	25	3.9	3/8"	17"
		22.5°	48	3.6		
		45°	89	4.5		
10"	200	11.25°	36	3.4	3/8"	17"
		22.5°	75	4.2		
		45°	139	5.2		
12"	200	11.25°	55	3.8	3/8"	17"
		22.5°	108	4.8		
		45°	200	5.8	1/2"	24"
14"	200	11.25°	75	4.2	3/8"	17"
		22.5°	147	5.3	1/2"	20"
		45°	272	6.5	1/2"	27"
16"	200	11.25°	98	4.6	3/8"	17"
		22.5°	192	5.8	1/2"	24"
		45°	355	7.1	3/4"	36"

ALL NOTES ON CITY STANDARD 03.02.01-1 SHALL APPLY TO THIS DETAIL.
SEE CITY STANDARD 03.02.01-3 FOR ADDITIONAL INFORMATION.

CITY OF PUYALLUP OFFICE of THE CITY ENGINEER | APPROVED FOR PUBLICATION 2/5/2019 | VERTICAL THRUST BLOCKING | CITY STANDARD 03.02.01-2

1 VERTICAL THRUST BLOCKING
NOT TO SCALE

TABLE 2: THRUST AT FITTINGS AT 200 PSI

SIZE	TEST PRESSURE (PSI)	THRUST FITTINGS AT 200 PSI: A 11¼° AND 22½° ENDS	B 90° BEND	C 45° BEND	D 22.5° BEND	E 11.25° BEND
4"	200	3,140	4,440	2,400	1,220	615
6"	200	7,070	9,985	5,410	2,760	1,385
8"	200	12,565	17,770	9,620	4,905	2,465
10"	200	19,635	27,750	15,030	7,660	3,850
12"	200	28,275	39,985	21,640	11,030	5,545
14"	200	38,485	54,425	29,455	15,015	7,545
16"	200	50,265	71,085	38,470	19,615	9,855

TABLE 3: BEARING VALUE OF SOIL

SOIL TYPE	SAFE BEARING LOAD LBS/SF
MUCK, PEAT, ETC.	0
SOFT CLAY/ALLUVIAL SOIL	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED WITH CLAY	4,000
HARD SHALE	10,000

SEE CITY STANDARDS 03.02.01-1 AND 03.02.01-2 FOR ADDITIONAL INFORMATION.

NOTES:

① TO DETERMINE THRUST AT PRESSURES OTHER THAN PSI SHOWN, MULTIPLY THE THRUST OBTAINED IN TABLE 2 BY THE RATIO OF THE PRESSURE TO 200 PSI.
EXAMPLE:
THE THRUST ON A 12 INCH, 90° BEND AT 200 PSI:
$39,985 \times \frac{200\ PSI}{200\ PSI} = 94,978\ LBS$

② TO DETERMINE THE BEARING AREA OF THE THRUST BLOCK IN SQUARE FEET (SF):
SEE TABLE 3, BEARING VALUE OF SOIL.
EXAMPLE:
FOR SAND AND GRAVEL, BEARING VALUE FROM TABLE 3 IS 3,000 LBS/SF
50LBS LBS x 3000 LB/SF = 20 SF OF AREA

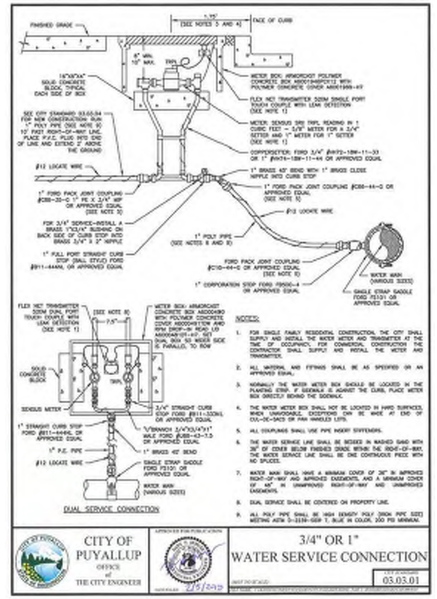
③ CONTRACTOR TO PROVIDE BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE

④ AREAS SHALL BE ADJUSTED FOR OTHER PRESSURE CONDITIONS.

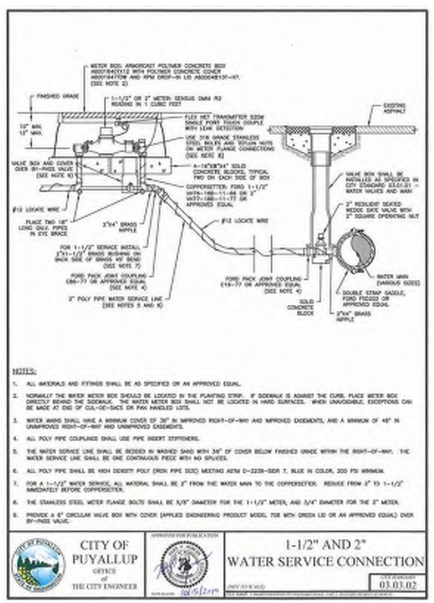
⑤ NO WATER MAIN SHALL DEAD END AGAINST A MAIN LINE VALVE. DEAD END WATER MAINS SHALL BE BLOCKED AGAINST A RESTRAINED MECHANICAL JOINT (MJ) PLUG OR CAP.

CITY OF PUYALLUP OFFICE of THE CITY ENGINEER | APPROVED FOR PUBLICATION 2/5/2019 | THRUST BLOCKING TABLE | CITY STANDARD 03.02.01-3

2 THRUST BLOCKING TABLE
NOT TO SCALE



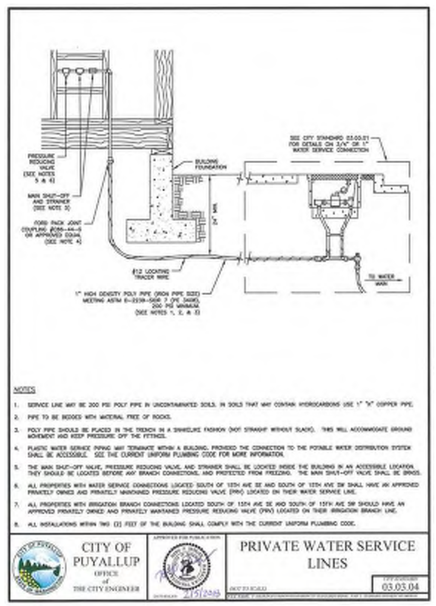
3 0.75IN OR 1IN WATER SERVICE CONNECTION
NOT TO SCALE



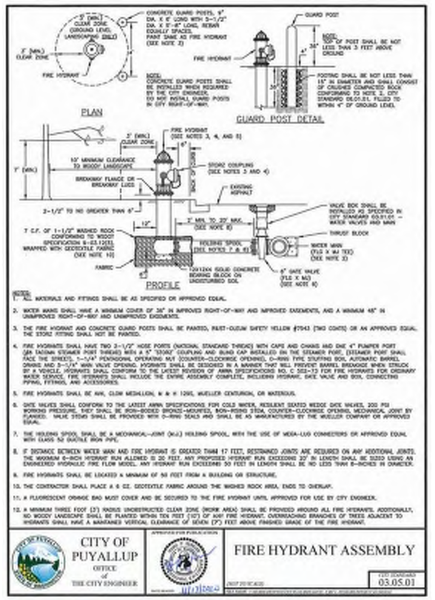
4 1.5IN OR 2IN WATER SERVICE CONNECTION
NOT TO SCALE

3" not anticipated

VERIFY-if 3" water service(s) are anticipated, include City Std Detail 03.03.03 to the planset. [Plans Sht C6.08; Pg 60 of 63]



5 PRIVATE WATER SERVICE LINES
NOT TO SCALE



6 FIRE HYDRANT ASSEMBLY
NOT TO SCALE

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

DATE: November 15, 2023 FILENAME: Q:\2023\2230752\10_CIV\CAD\2230752-SH-WATR.dwg

APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

NOTE: THIS APPROVAL IS VOID AFTER 180 DAYS FROM APPROVAL DATE.
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2215 North 30th Street, Suite 300, Tacoma, WA 98403
253.383.2422 TEL 253.383.2572 FAX www.ahbl.com WEB

Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:
PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 55416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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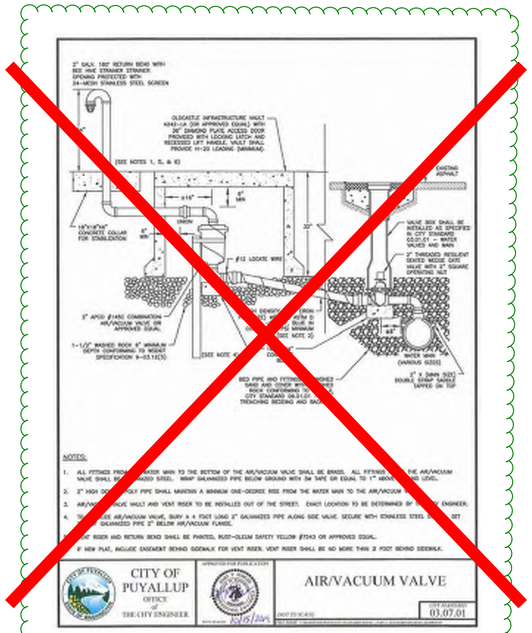
Revisions:
1
2
3
4

Sheet Title:
WATER NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C6.08
60 of 63 Sheets

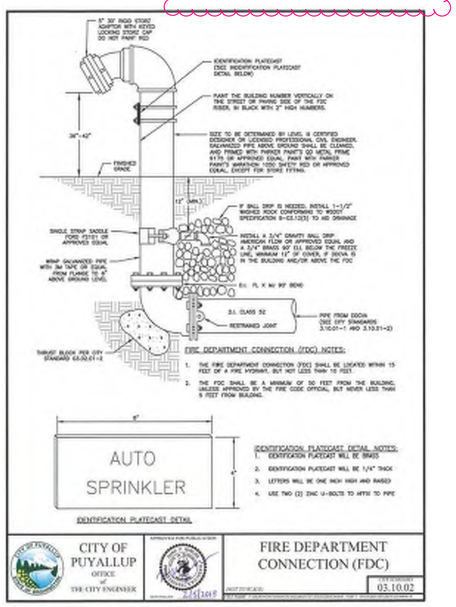
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



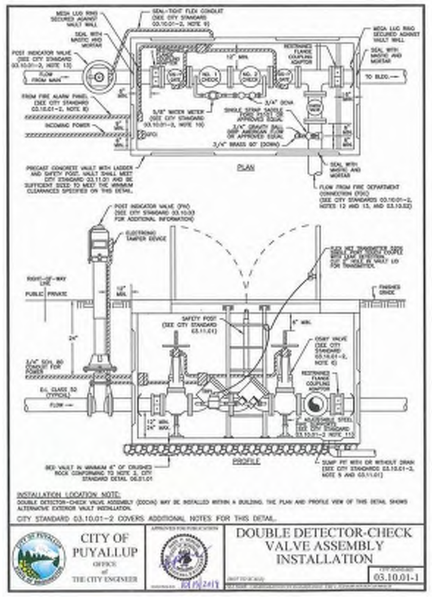
1 AIR AND VACUUM VALVE
NOT TO SCALE

Replaced

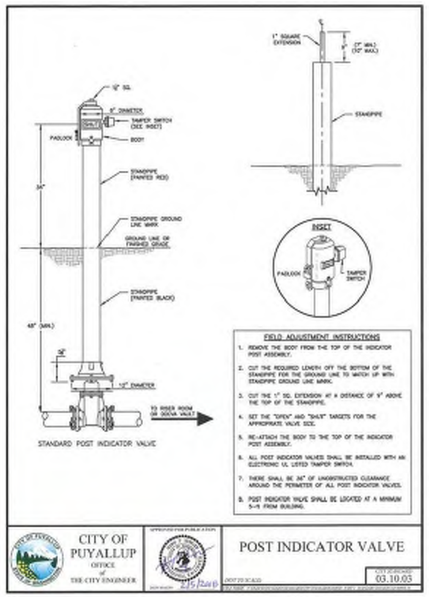
Civil Resub Sheet C6.09: Remove this Standard detail and replace with 03.06.01 2-inch blow-off assembly.



4 FIRE DEPARTMENT CONNECTION (FDC)
NOT TO SCALE



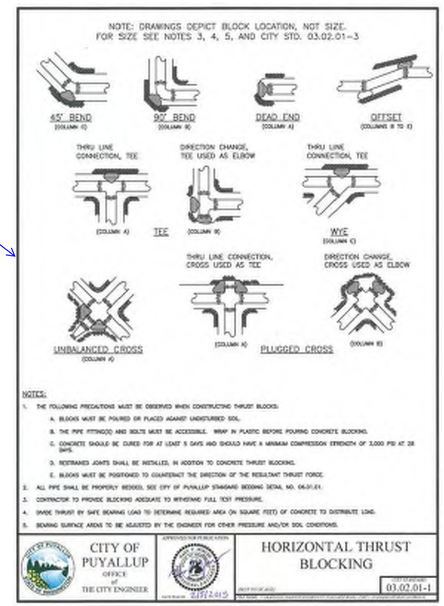
2 DOUBLE DETECTOR CHECK VALVE ASSEMBLY INSTALLATION
NOT TO SCALE



5 POST INDICATOR VALVE
NOT TO SCALE

3 DOUBLE DETECTOR CHECK VALVE ASSEMBLY INSTALLATION (NOTES)
NOT TO SCALE

Combine with thrust block details on Sht C6.08. [Plans Sht C6.09; Pg 61 of 63]



6 HORIZONTAL THRUST BLOCKING
NOT TO SCALE

Moved to C6.08

Civil Resub Sheet C6.09: Move the standard detail to Sheet C6.08.

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APPROVED

BY _____
CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

DATE _____

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Project Title:

EAST TOWN CROSSING PHASE 1

Client:
ASH DEVELOPMENT

GREG HELLE

GREG.HELLE@ASHNW.COM

Project No.
2230752

Issue Set & Date:

PERMIT SUBMITTAL
11/20/2023

TODD CHRISTOPHER SMITH — STATE OF WASHINGTON — 45416 — REGISTERED PROFESSIONAL ENGINEER
11/21/2023

Revisions:

Sheet Title:

WATER NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.

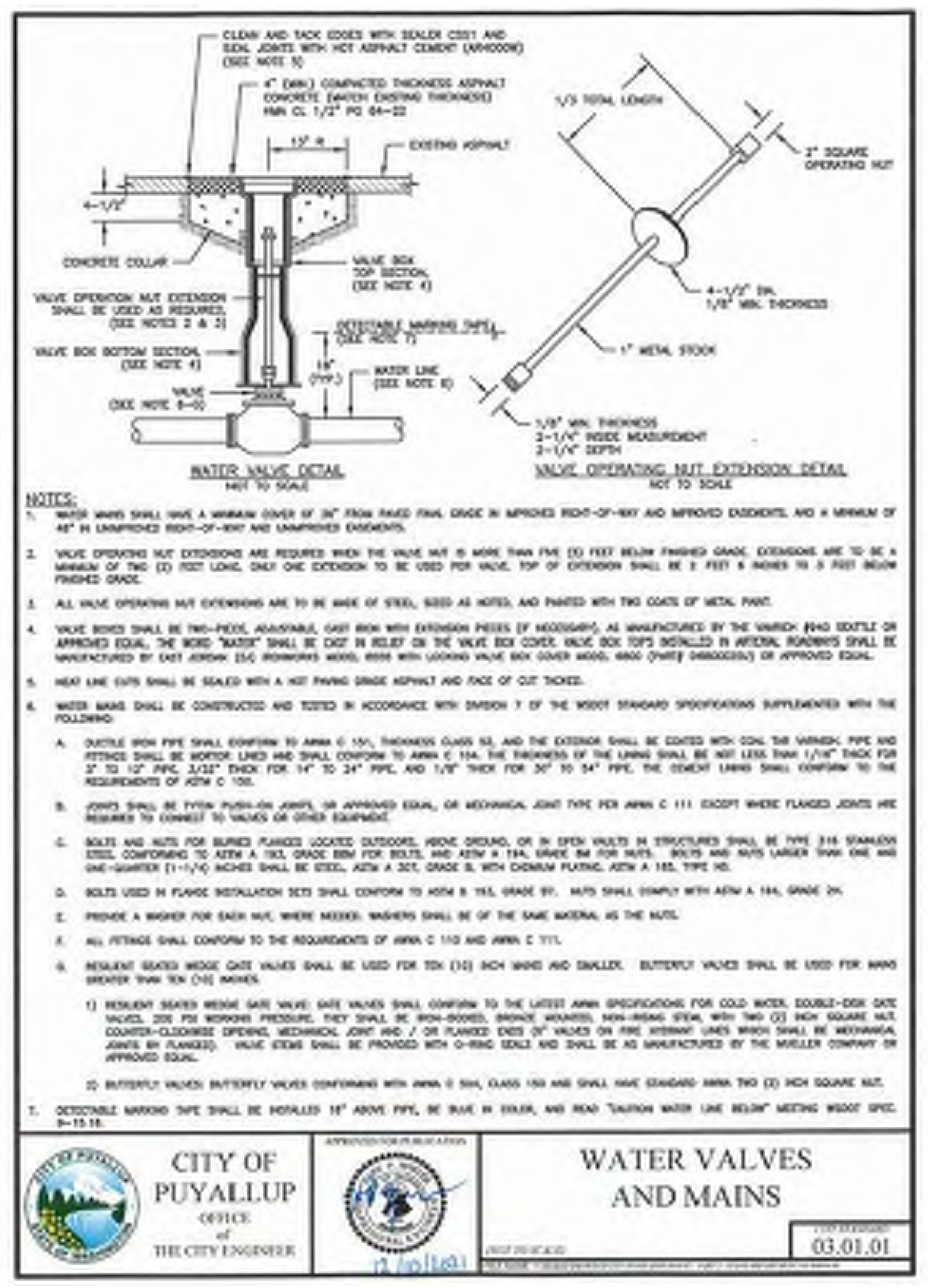
C6.09

61 of 63 Sheets

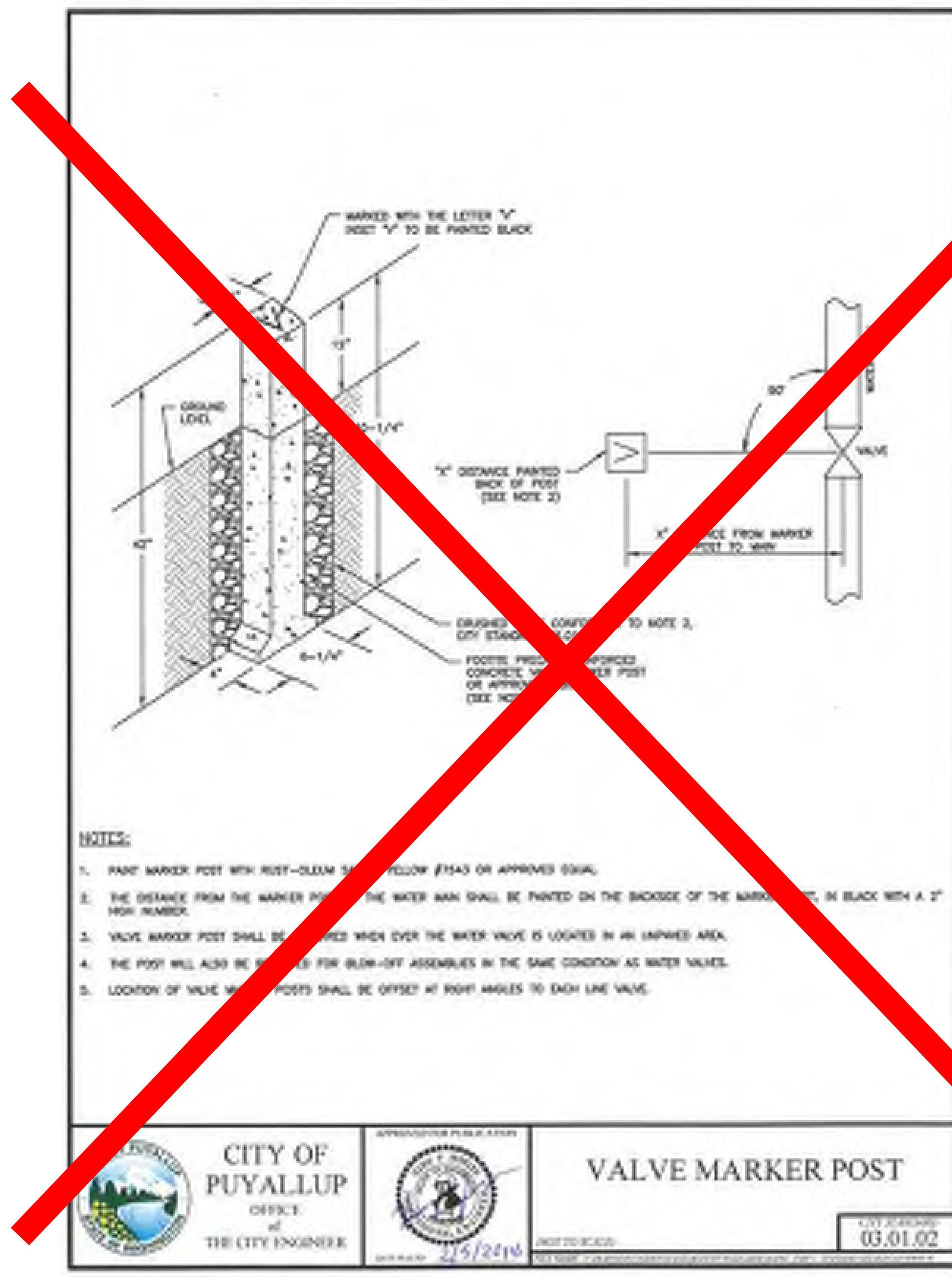
EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.

Civil Resub Sheet C6.10: Remove this unneeded Standard detail.

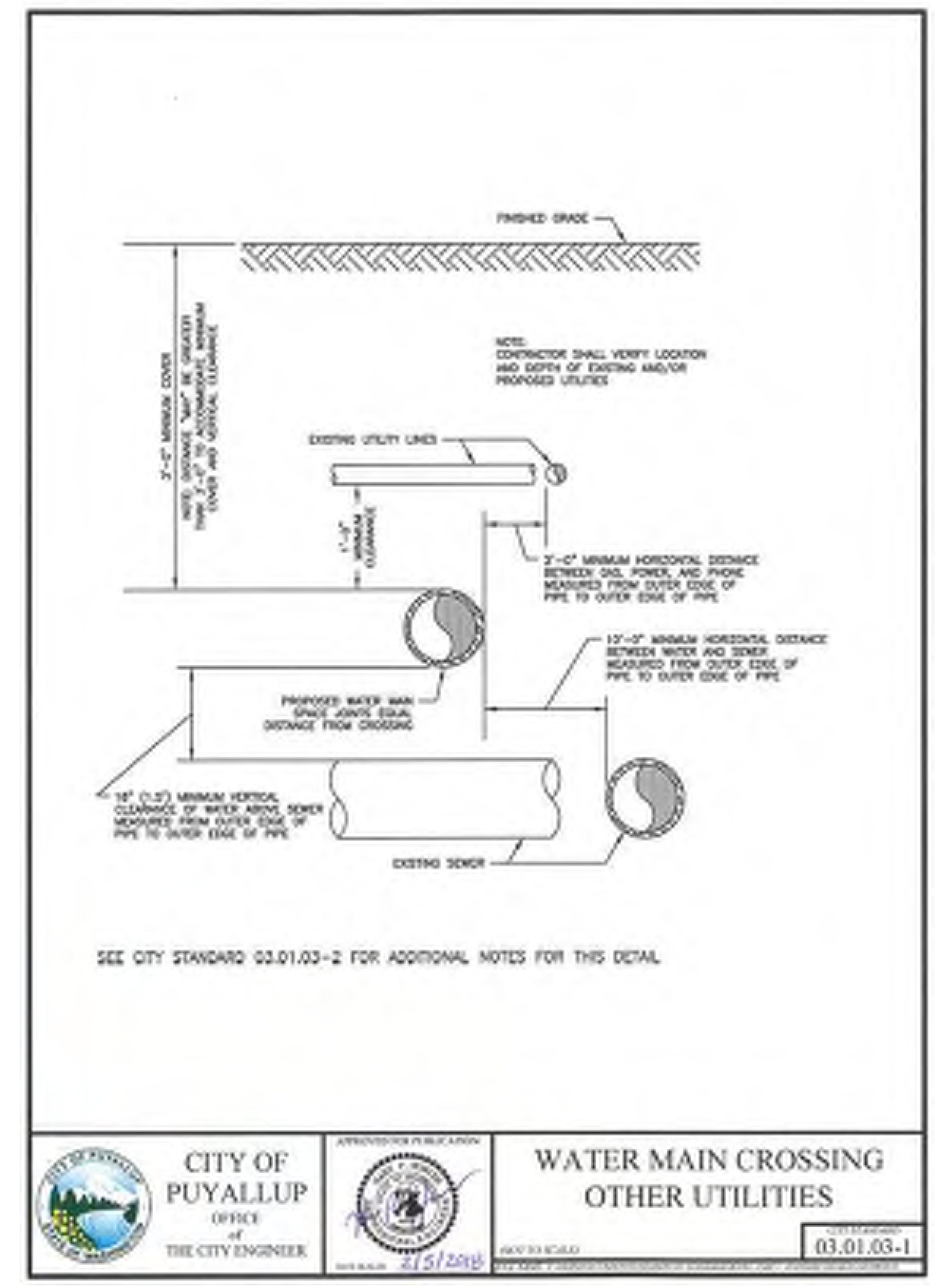
Removed



1 **WATER VALVES AND MAINS**
NOT TO SCALE

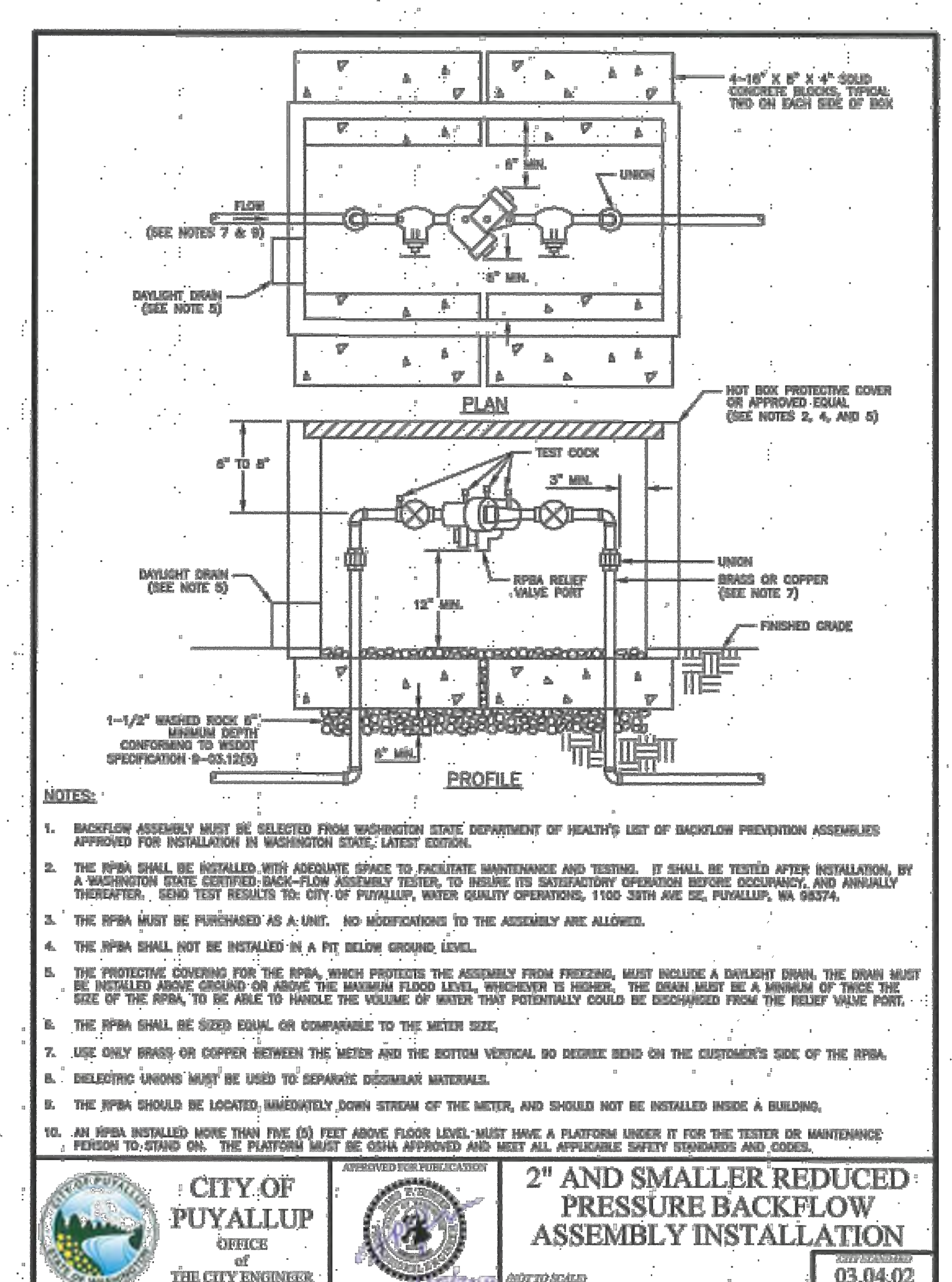


2 **VALVE MARKER POST**
NOT TO SCALE



3 **WATER MAIN CROSSING OTHER UTILITIES**
NOT TO SCALE

4 **WATER MAIN CROSSING OTHER UTILITIES (NOTES)**
NOT TO SCALE



5 **2IN AND SMALLER REDUCED PRESSURE BACKFLOW ASSEMBLY INSTALLATION**
NOT TO SCALE

Included relevant details

ADD-City Std Details 03.04.01 // 03.04.03 (if 3" water service(s) are anticipated) // 03.06.01 // 03.11.01. [Plans Sht C6.10; Pg 62 of 63]

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BY ______ CITY OF PUYALLUP DEVELOPMENT ENGINEERING

DATE ______

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Project Title: EAST TOWN CROSSING PHASE 1

Client: ASH DEVELOPMENT
GREG HELLE
GREG.HELLE@ASHNW.COM

Project No. 2230752

Issue Set & Date: PERMIT SUBMITTAL 11/20/2023

TODD CHRISTOPHER SAWIN, STATE OF WASHINGTON, 46416, REGISTERED PROFESSIONAL ENGINEER
11/21/2023

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Revisions:

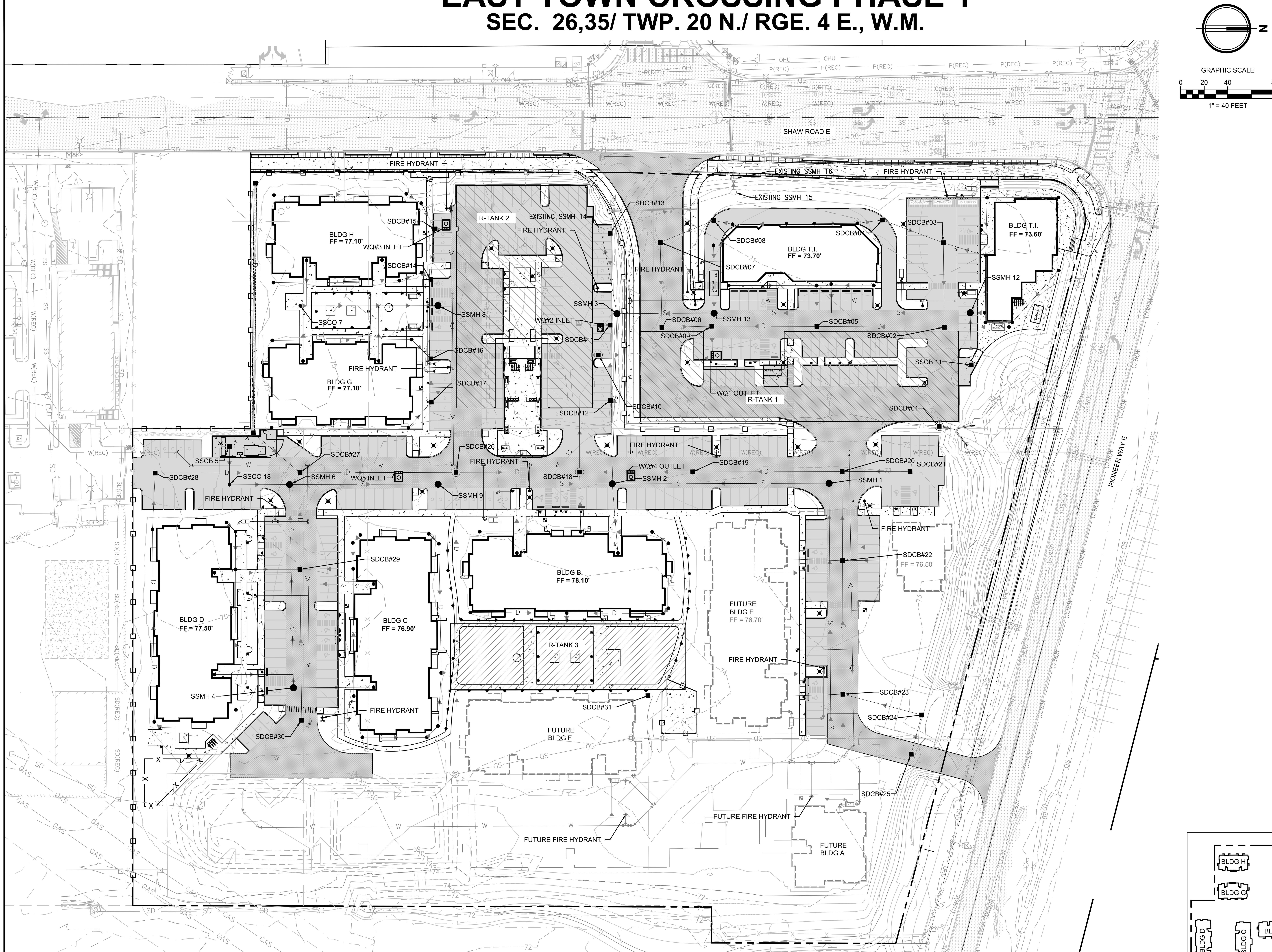
Sheet Title: WATER NOTES AND DETAILS

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No. **C6.10**

DATE: November 15, 2023 FILENAME: Q:\2023\2230752\10_CIVIC\CAD\2230752-SH-WATR.dwg

EAST TOWN CROSSING PHASE 1
SEC. 26,35/ TWP. 20 N./ RGE. 4 E., W.M.



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CITY OF PUYALLUP
DEVELOPMENT ENGINEERING

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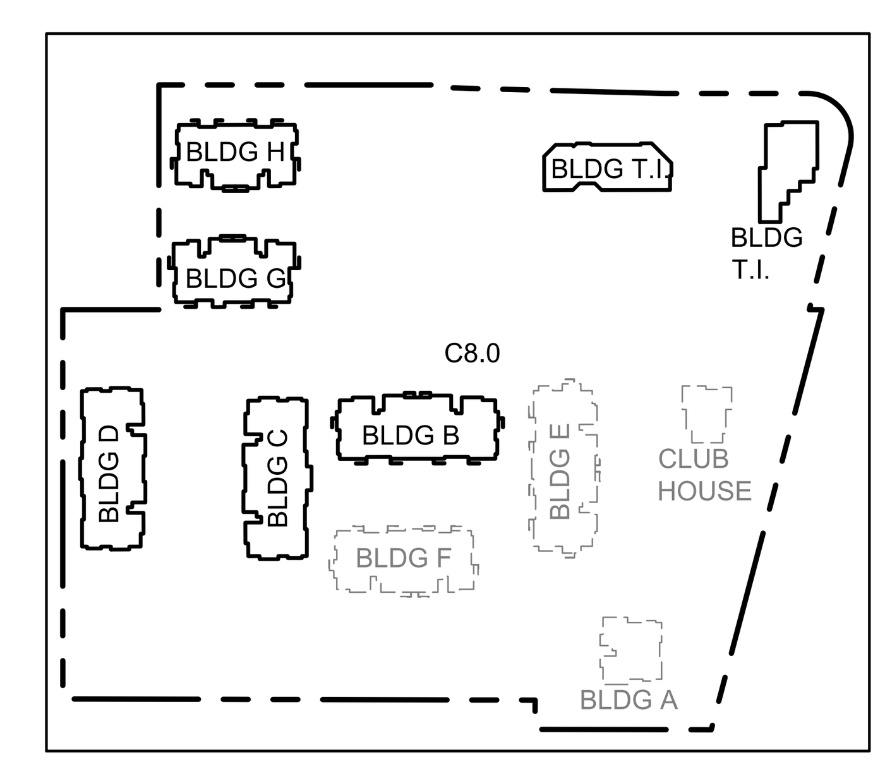
TODD CHRISTOPHER SAWIN
STATE OF WASHINGTON
46416
REGISTERED
PROFESSIONAL ENGINEER

11/21/2023

4
3
2
1

Revisions:



Sheet Title:
OVERALL UTILITY PLAN

Designed by:	Drawn by:	Checked by:
CW	SK	JI

Sheet No.
C8.0