

2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE (PRV) VAULT REPLACEMENT FOR BID

THORNTON PROJECT NO. 19-37
CITY OF THORNTON, COLORADO

olsson

1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072 www.olsson.com

LEGEND		
EXISTING	FEATURE	PROPOSED
	PROPERTY BOUNDARY	
---	MAJOR CONTOUR	
---	MINOR CONTOUR	
□	WOODEN FENCE	
ΣWV	WATER VALVE	Σ
SS	SANITARY SEWER LINE	
SD	STORM SEWER LINE	
W	WATER LINE	W
P-UG	UNDERGROUND ELECTRICAL LINE	E
G	GAS LINE	
	UNDERGROUND CABLE LINE	
○	BUSH	
▲	CONTROL POINT	
⊕	SOIL BORING	
⊗	UTILITY POTHOLE	
○	VENT PIPE	
⊙	WATER MANHOLE	
⊕	GAS METER	
ΣIRR	IRRIGATION VALVE	
⊙	TREE	
⊙	SANITARY MANHOLE	
⊙	SIGN	
	ASPHALT	
	CONCRETE	
	LANDSCAPING AREA	
	RIVER ROCKS	
	THRUST BLOCK	▲
	IRRIGATION LINE	
	LIMITS OF CONSTRUCTION	
	SAWCUT OF SIDEWALK	
	SAWCUT OF ASPHALT	



VICINITY MAP
SCALE: NTS

CITY OF THORNTON

JASON PIERCE, P.E., INFRASTRUCTURE ENGINEERING DIRECTOR DATE

TIFFANY HESS, PROJECT MANAGER DATE

JOSH REDMAN, UTILITIES OPERATIONS MANAGER DATE

PREPARED BY:

olsson

1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072
FAX 303.237.2659



CHANCE UHRICH P.E. 48947, PROJECT ENGINEER DATE

SHEET LIST TABLE	
Sheet Number	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	SURVEY CONTROL / TOPOGRAPHIC SURVEY
4	EROSION AND SEDIMENT CONTROL PLAN
5-6	EROSION AND SEDIMENT CONTROL DETAILS
7	SITE PREPARATION AND DEMOLITION PLAN
8	SITE PLAN AND WATERLINE PROFILE
9	GATE VALVE AND VALVE BOX DETAILS
10	CORROSION AND THRUST BLOCK DETAILS
11	AIR VENT AND MECHANICAL JOINT RESTRAIN DETAILS
12	PRESSURE REDUCING VAULT DETAILS
13	CURB, GUTTER, SIDEWALK AND BEDDING DETAILS
14	FIRE HYDRANT ASSEMBLY DETAIL
15	ELECTRICAL DETAILS
16	DECIDUOUS AND EVERGREEN TREE DETAILS
17	SEEDING AND SODDING SPECIFICATIONS
1-1	SURVWEST SUBSURFACE UTILITY ENGINEERING PLAN

LIST OF ABBREVIATIONS	
ABBREVIATION	DESCRIPTION
ACP	ASBESTOS CEMENT PIPE
B	BORE HOLE
B.O.C.	BACK OF CURB
B.O.W.	BACK OF WALK
CP	CONTROL POINT
CWA	CONCRETE WASHOUT AREA
DESC.	DESCRIPTION
DI	DUCTILE IRON
DIA	DIAMETER
E	EASTING
ELEV.	ELEVATION
GPM	GALLONS PER MINUTE
HORZ.	HORIZONTAL
LF	LINEAR FEET
M.J.	MECHANICAL JOINT
MIL	MILLIMETER
MIN.	MINIMUM
N	NORTHING
NTS	NOT TO SCALE
P.S.F.	POUNDS PER SQUARE FOOT
PC	POINT OF CURVATURE
PH	POT HOLE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE
SF	SQUARE FEET
STA.	STATION
SY	SQUARE YARDS
T.B.	THRUST BLOCK
T.O.P.	TOP OF PIPE
TYP	TYPICAL
VERT.	VERTICAL
W/	WITH

UTILITY CONTACTS

UTILITY:	OWNER:	CONTACT:	TELEPHONE NO.
CABLE TELEVISION	XFINITY	KIP WEST	720-347-9992
GAS & ELECTRIC	XCEL ENERGY	JEREMY HUTAFF	303-425-3823
TELECOMMUNICATIONS	AT&T	FREDDIE GEORGE	303-620-2753
TELECOMMUNICATIONS	CENTURYLINK	NICOLE FRANK	303-514-6331
WATER	CITY OF THORNTON	STEVE CROW	720-977-6553
SANITARY SEWER	CITY OF THORNTON	JUSTIN RICHARDSON	720-977-6550

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811
CALL 3-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.



FOR BID
NOT TO BE USED FOR CONSTRUCTION
January 31, 2024
DATE PRINTED
OLSSON

REV. NO.	DATE	REVISIONS DESCRIPTION

COVER SHEET
2019 TREATED WATER SYSTEM IMPROVEMENTS
PRESSURE REDUCING VALVE REPLACEMENT
THORNTON, COLORADO
2023

drawn by: RH
checked by: CU
approved by: DK
QA/QC by: DK
project no.: 019-2365
drawing no.: TTL
date: 1.31.2024

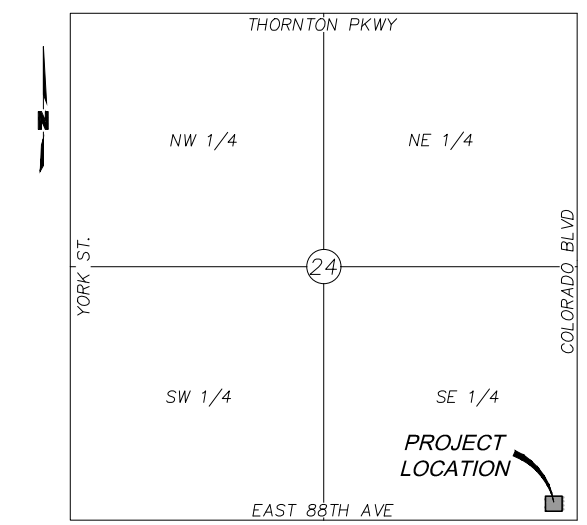
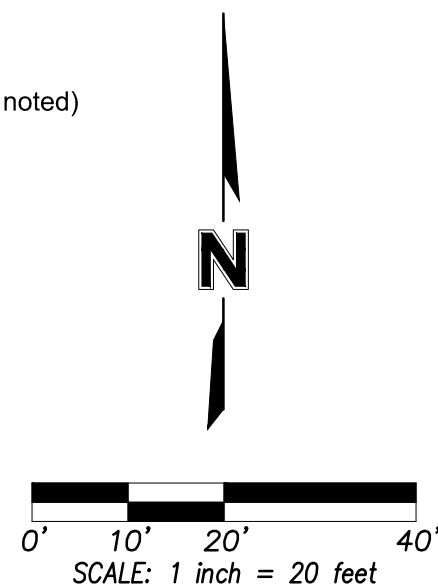
DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRS\DWG\W_TTL_019-2365.dwg
 DATE: Jan 31, 2024 10:04am
 USER: lhamilton
 XREFS: W_TBLK_019-2365

SURVEY CONTROL / TOPOGRAPHIC SURVEY

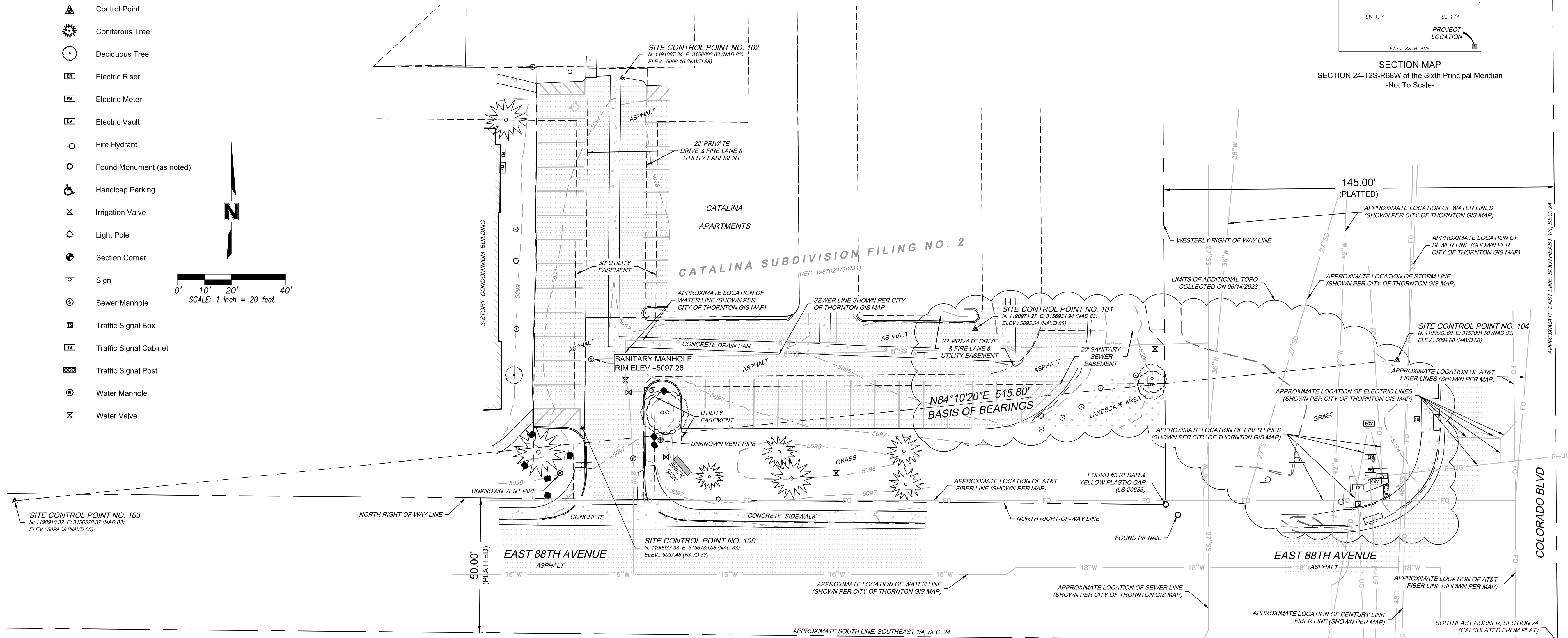
A part of Catalina Subdivision Filing No. 2,
A plat of land located in the SE Quarter of Section 24, Township 2 South, Range 68 West of the Sixth Principal Meridian,
City of Thornton, County of Adams, State of Colorado

LEGEND

- Boulder
- Bollard
- Bush
- Control Point
- Coniferous Tree
- Deciduous Tree
- Electric Riser
- Electric Meter
- Electric Vault
- Fire Hydrant
- Found Monument (as noted)
- Handicap Parking
- Irrigation Valve
- Light Pole
- Section Corner
- Sign
- Sewer Manhole
- Traffic Signal Box
- Traffic Signal Cabinet
- Traffic Signal Post
- Water Manhole
- Water Valve



SECTION MAP
SECTION 24-T2S-R68W of the Sixth Principal Meridian
-Not To Scale-



UTILITY NOTES

1. Initially no underground utilities were located for this survey; Any underground utilities that exist on this site they are not shown and are to be shown on a separate survey provided by Surwest. A utility locate requested was generated for the additional topo collected on 06/14/2023 through the Colorado 811 service for this survey on May 23rd, 2023 under ticket number A314301427-00A. The underground utilities shown hereon are as located along the markings created by this request. They are representational only and are in no way intended to show their exact location, nor is this information to be construed as a complete inventory of all utilities at this location. Olsson and surveyor cannot confirm if the response to the utility locator/s was complete. Olsson personnel did not locate the utilities themselves; Olsson personnel only located the markings created by others. Response to 811 utility locate request for purpose of a survey is often incomplete or the request is ignored. 811 locating service does not mark commercial-private utilities (e.g. Underground power lines serving light poles in a parking lot; lengthy underground service lines through a large private facility; underground sprinkler lines, etc.). If any such commercial-private utilities exist their location and route is unknown to this surveyor and could not be shown. Client has been advised by contract that lacking excavation, the exact location of underground features cannot be accurately, completely and reliably depicted.

GENERAL NOTES

1. **BASIS OF BEARINGS:** (Grid) Bearings are based upon Olsson Set control points 103 & 104, locations of said control points were determined by Global Positioning System observations referenced to the Colorado State Plane Coordinate System, North Zone, NAD 83. From Control Point No. 103, a Set 60D Nail & Ribbon, Point No. 104 bears North 84°10'20" East a ground distance of 515.80 feet, also being a set 60D Nail & Ribbon.
2. All Distances shown hereon are based on ground distanced measured in U.S. Survey Feet using a scale factor of 0.99998041, based upon Control Point No 100 as a reference point. (N:1190937.33' E:3156789.08') and using an elevation factor based upon an elevation of 5040'. Include the combined factor to get from grid to ground 1.000260674.
3. Elevations are based on the found City of Thornton benchmark "88.5-48"; The upper flange bolt with a chiseled "*" on the fire hydrant on the East side of Monroe St., between 88th Circle N. and 88th Circle S. Published Elevation: 5105.50 (NAVD 88).
4. Contours are shown at 1 foot intervals.
5. Easements shown are based on the plat of Catalina Subdivision Filing No. 2, recorded in Reception Number 1987020738741. No additional research was performed and any other existing easements (if any) are not known to the surveyor.
6. Initial field work was completed May 15th, 2019, additional topographic survey was collected June 14th, 2023. Olsson did not update/verify anything outside of the additional requested topographic survey. There could be recent changes to the site that are not reflected hereon.

SURVEYOR'S NOTES

1. **LIMITED SCOPE OF RESPONSIBILITY STATEMENT:** This survey does not constitute a title search by Olsson to determine ownership or easements of record. If any other easements, Right-of-Ways, vacations, court decrees or other encumbrances affect this property, their existence is unknown to this surveyor and therefore not shown.
2. **NOTICE:** Pursuant to Colorado Revised Statutes Title 13, Article 80, Section 105 (C.R.S. 13-80-105) - You must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

SURVEYOR'S CERTIFICATE

This survey was prepared by me or under my responsible charge, is based upon my knowledge, information and belief, and is in accordance with applicable standards of practice. This statement is not a guaranty or warranty, either expressed or implied.

On behalf of Olsson,

Nicholas S. Schrader
Professional Land Surveyor
Colorado Registration Number: 38693

CONTROL POINT TABLE						
POINT #	GROUND NORTHING	GROUND EASTING	GRID NORTHING	GRID EASTING	ELEVATION	FULL DESCRIPTION
100	1190937.33	3156789.08	1190937.33	3156789.08	5097.46	SET PK NAIL
101	1190974.27	3156934.94	1190974.26	3156934.91	5095.34	SET PK NAIL
102	1191067.34	3156803.83	1191067.31	3156803.82	5098.16	SET PK NAIL
103	1190910.32	3156578.37	1190910.33	3156578.42	5099.09	SET 60D NAIL
104	1190962.69	3157091.50	1190962.69	3157091.43	5094.68	SET 60D NAIL
201	1191208.25	3155936.57	1191208.18	3155936.78	5105.50	FOUND CHISELED "*" ON FIRE HYDRANT 88.5-48

1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072
www.olsson.com

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

SURVEY CONTROL / TOPOGRAPHIC SURVEY

2019 TREATED WATER SYSTEM IMPROVEMENTS

PRESSURE REDUCING VALVE VAULT REPLACEMENT

THORNTON, COLORADO

2023

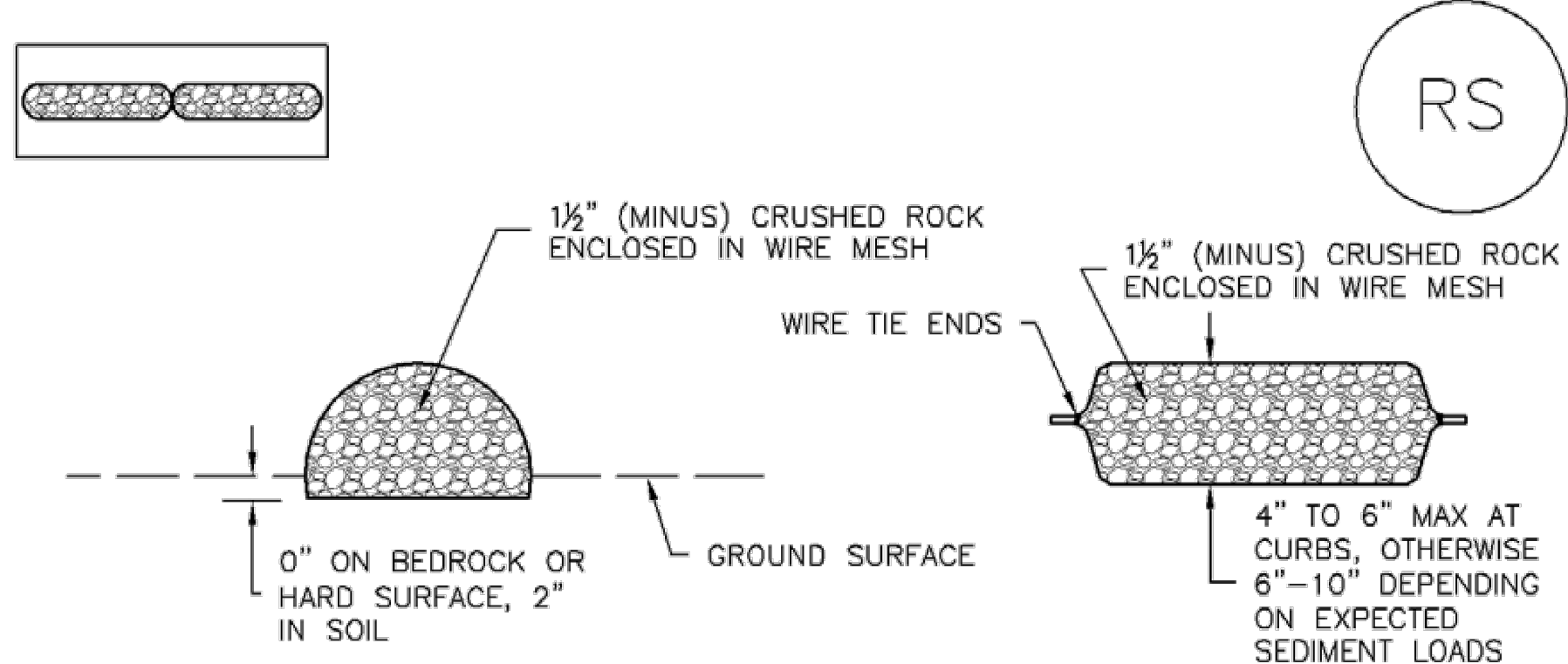
drawn by:	DMW
checked by:	DMW
approved by:	NSS
QA/QC by:	NSS
project no.:	019-2365
drawing no.:	V_TOPO_0192365
date:	1.31.2024

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRSDWG\W_TPO_019-2365.dwg USER: Ihamilton
 DATE: Jan 31, 2024 10:05am W_TBLK_019-2365 SUE_Plan_OA_88th at Catalina PRV_20230627 V_CTRL_0192365

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTR\DWG\W.ERC_019-2365.dwg
 DATE: Jan 31, 2024 10:05am XREFS: W_TBLK_019-2365 V_XTOPO_0192365 V_CTRL_0192365 V_PLN_0A_88th at Catalina PRV_20230627
 USER: lhamilton (CLIENT) SUE Plan_0A_88th at Catalina PRV_20191210

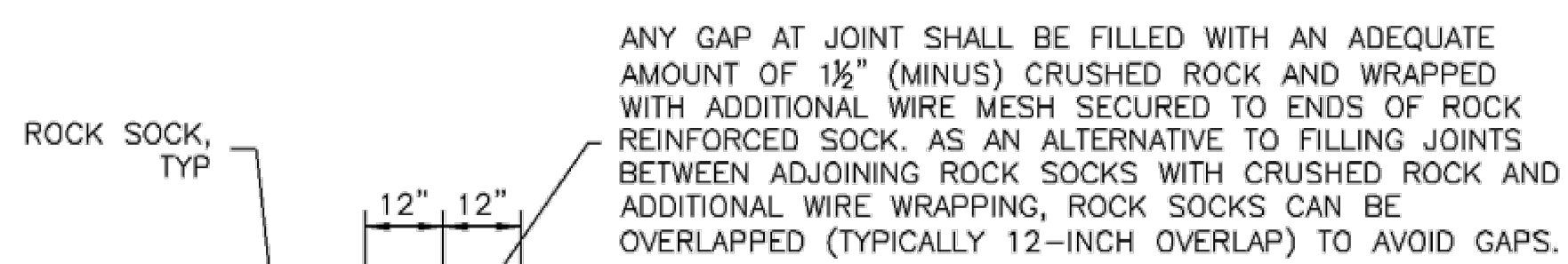
SC-5

Rock Sock (RS)



ROCK SOCK SECTION

ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1 1/2"	90 - 100
1"	20 - 55
3/4"	0 - 15
3/8"	0 - 5

MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.

ROCK SOCK INSTALLATION NOTES

- SEE PLAN VIEW FOR: -LOCATION(S) OF ROCK SOCKS.
- CRUSHED ROCK SHALL BE 1/2" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1/2" MINUS).
- WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF 1/2", RECOMMENDED MINIMUM ROLL WIDTH OF 48"
- WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.
- SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS-1. ROCK SOCK PERIMETER CONTROL

Rock Sock (RS)

SC-5

ROCK SOCK MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
- SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE ROCK SOCK.
- ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- WHEN ROCK SOCKS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF ROCK SOCK INSTALLATION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY OTHER SIMILAR PROPRIETARY PRODUCTS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY PROTECTION PRODUCTS; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

RS-2

Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3

November 2010

November 2010

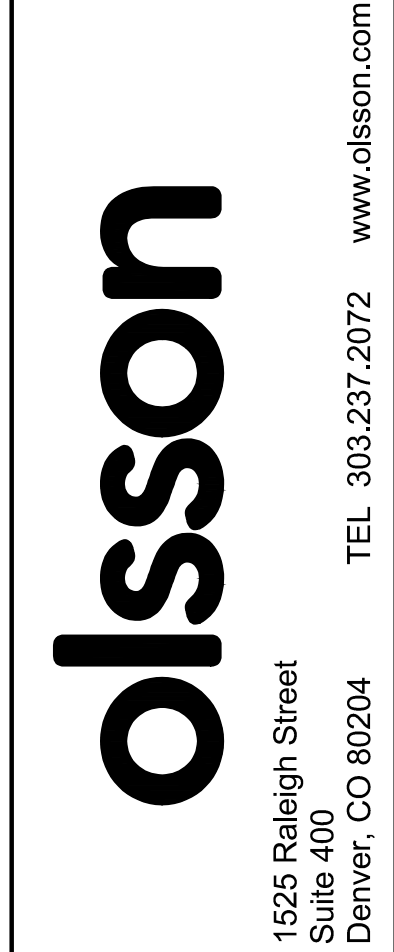
Urban Drainage and Flood Control District
Urban Storm Drainage Criteria Manual Volume 3

RS-3

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811
CALL 3-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.



FOR BID
 NOT TO BE USED FOR CONSTRUCTION
 January 31, 2024
 DATE PRINTED
 OLSSON



NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

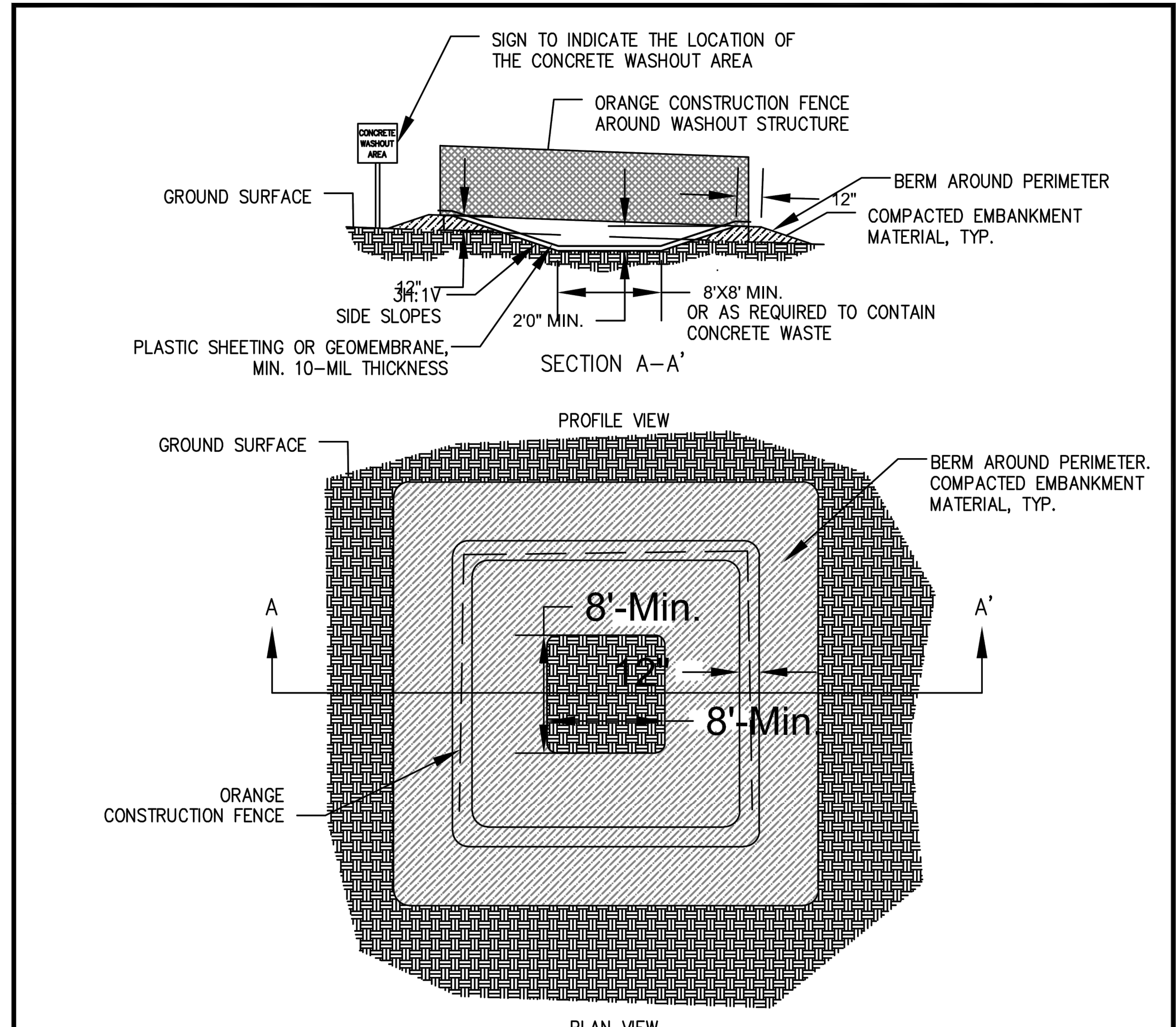
OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

EROSION AND SEDIMENT CONTROL DETAILS		
2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT		
THORNTON, COLORADO		
		2023

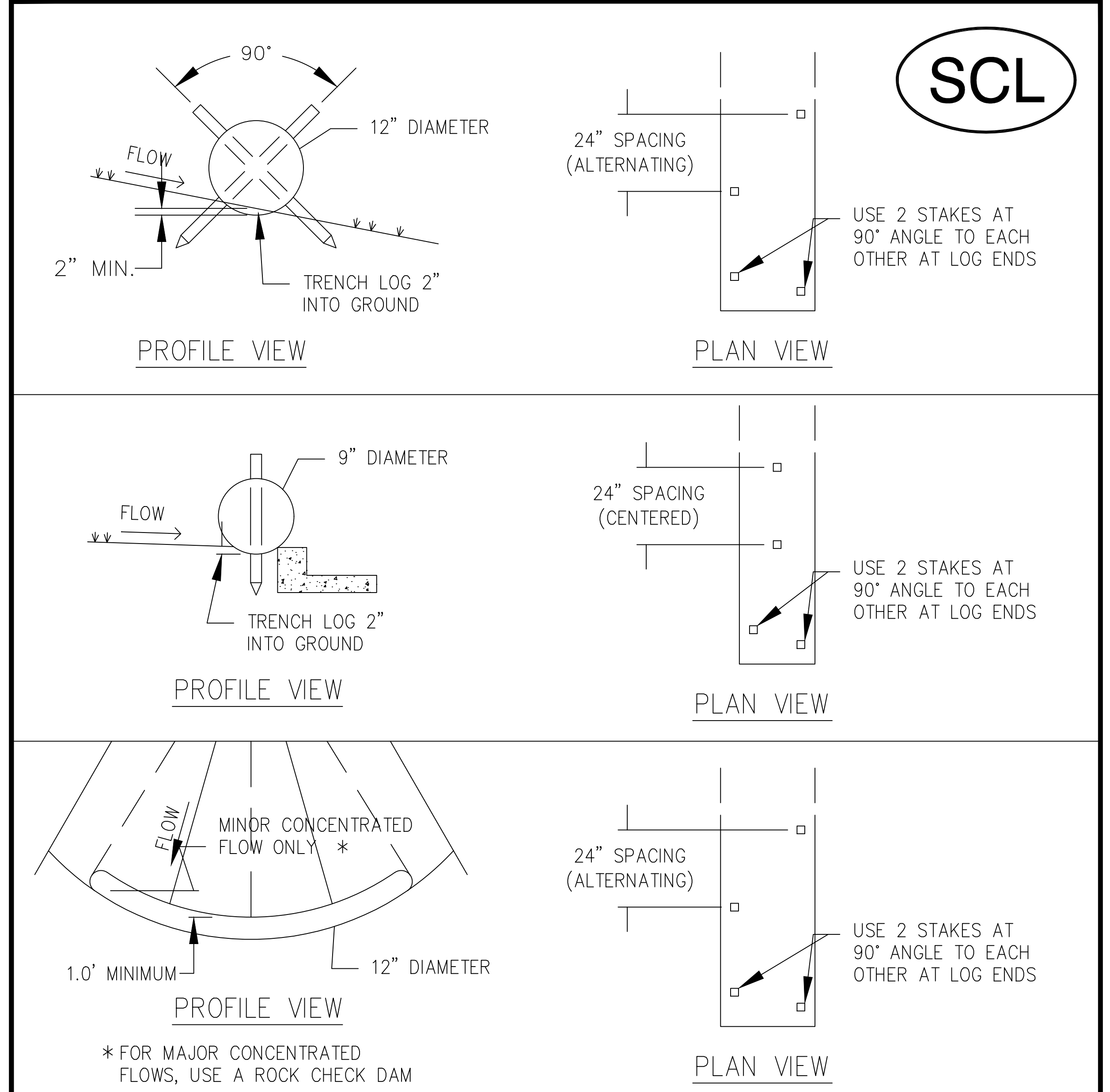
drawn by:	RH
checked by:	CU
approved by:	DK
QA/QC by:	DK
project no.:	019-2365
drawing no.:	ERC2
date:	1.31.2024

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTR\DWG\W.ERC_019-2365.dwg
 DATE: Jan 31, 2024 10:05am
 USER: Ihamilton
 (CLIENT) SUE Plan_OA_88th at Catalina PRV_20191210 V_CTRL_0192365
 W_PBASE_019-2365



- NOTES:
1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE; PLACED A MINIMUM 50' FROM STATE WATERS.
 2. VEHICLE TRACKING CONTROL IS REQUIRED AT CONCRETE WASHOUT ENTRANCE IF ACCESS TO CONCRETE WASHOUT AREA IS OFF PAVEMENT.
 3. A PLASTIC SHEETING OR GEOMEMBRANE LINER SHALL BE PLACED. MINIMUM 10-MIL THICKNESS.
 4. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND/OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTE CONCRETE.
 5. WASTE MATERIAL FROM CONCRETE WASHOUT OPERATIONS MUST BE REMOVED AND LEGALLY DISPOSED OF WHEN IT HAS ACCUMULATED TWO-THIRDS OF THE WET STORAGE CAPACITY OF THE STRUCTURE AND AT THE END OF CONSTRUCTION.
 6. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.
 7. NO STORMWATER RUN-OFF SHALL DRAIN INTO CONCRETE WASHOUT AREA.
- N. T.S.S.

	CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS	ISSUED: MARCH 2005
	CONCRETE WASHOUT AREA DETAIL	REVISED: NOV 08
		DRAWING NO. 400-6



- NOTES:
1. STAKES SHALL BE 1-1/2" x 1-1/2" x 24" MINIMUM AND EMBEDDED INTO GROUND A MINIMUM OF 12".
 2. SEDIMENT CONTROL LOG SHALL BE TRENCHED 2" INTO GROUND.
 3. FOR CONTINUOUS CONTROL, ADJACENT SEDIMENT CONTROL LOGS SHALL BE PLACED FIRMLY TOGETHER WITH NO GAPS.
 4. SEDIMENT SHALL BE CLEANED/ REMOVED WHEN SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE SEDIMENT CONTROL LOG.
- N. T.S.S.

	CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS	ISSUED: NOV 08
	SEDIMENT CONTROL LOG	REVISED:
		DRAWING NO. 400-9

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811
CALL 3-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.

FOR BID

NOT TO BE USED FOR CONSTRUCTION

January 31, 2024
DATE PRINTED
OLSSON

1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072 www.olsson.com

NOTE: THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

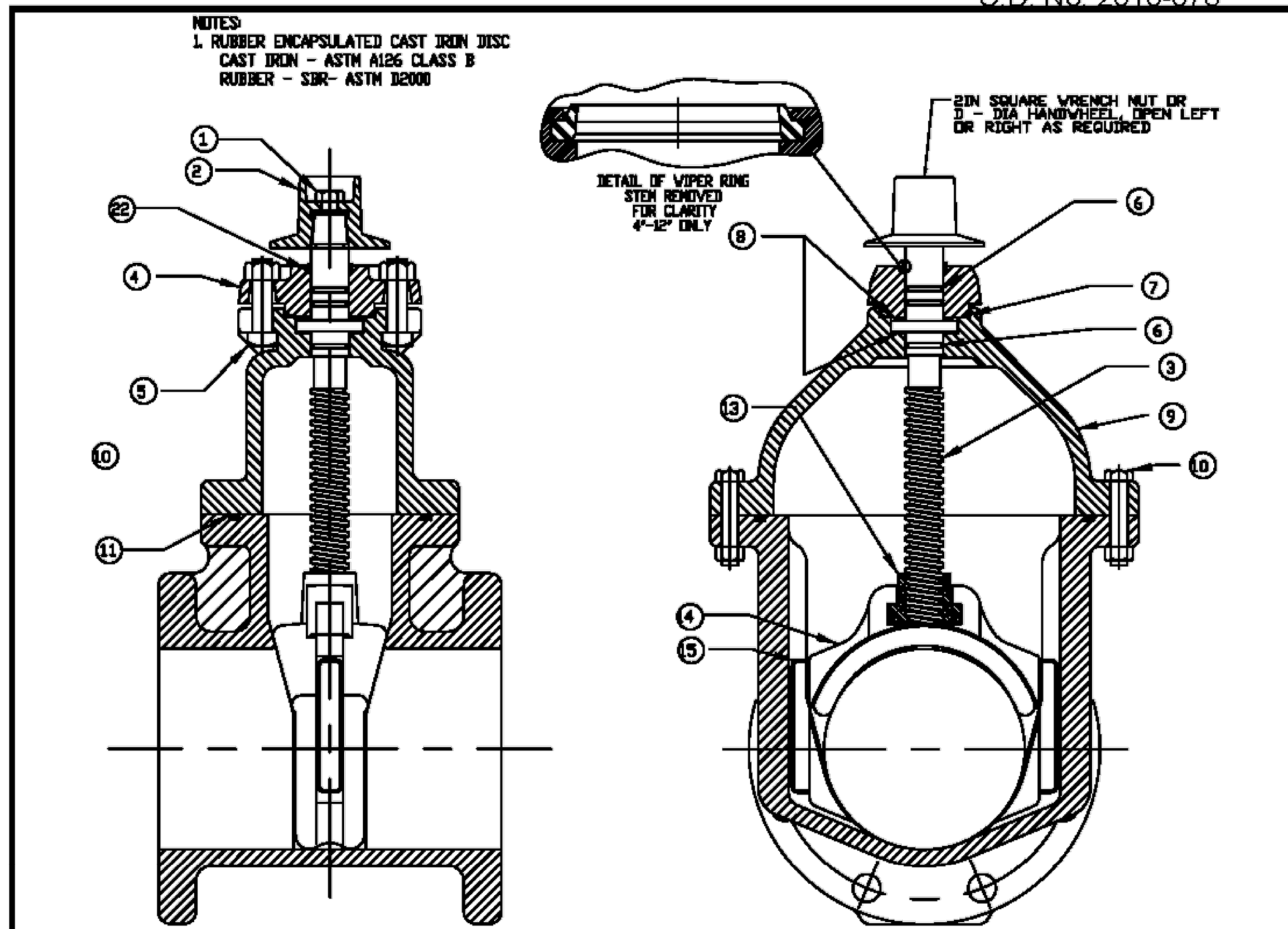
OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION	REVISIONS

EROSION AND SEDIMENT CONTROL DETAILS	2023
2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT	
THORNTON, COLORADO	

drawn by: _____ RH	checked by: _____ CU
approved by: _____ DK	QA/QC by: _____ DK
project no.: _____ 019-2365	drawing no.: _____ ERC3
date: _____ 1.31.2024	

SHEET
6 of 17



NOTES
 1. RUBBER ENCAPSULATED CAST IRON DISC
 CAST IRON - ASTM A126 CLASS B
 RUBBER - SBR- ASTM D2000

2IN SQUARE WRENCH NUT OR
 D - DIA HANDWHEEL, OPEN LEFT
 OR RIGHT AS REQUIRED

DETAIL OF WIPER RING
 STEM REMOVED
 FOR CLARITY
 4"-12" ONLY

		PART LIST		
ITEM	DESCRIPTION	QTY	MATERIAL	ASTM
1	CAP SCREW	1	304 STAINLESS STEEL	A193 GRADE B8
2	WRENCH NUT	1	CAST IRON	A126 CLASS B
3	STEM	1	BRONZE	B138 ALLOY C67600
4	STUFFING BOX	1	CAST IRON	A126 CLASS B
5	STUFFING BOX BOLTS STUFFING BOX NUTS	2	304 STAINLESS STEEL 304 STAINLESS STEEL	A193 GRADE B8 F594 GROUP 1
6	O-RING	3	RUBBER	D2000 NITRILE
7	O-RING	1	RUBBER	D2000 NITRILE
8	ANTI-FRICTION WASHER	2	CELCON	
9	BONNET	1	CAST IRON	A126 CLASS B
10	BONNET BOLTS BONNET NUTS	2	304 STAINLESS STEEL 304 STAINLESS STEEL	A193 GRADE B8 F594 GROUP 1
11	BONNET GASKET (O-RING)	1	RUBBER	D2000 NITRILE
13	DISC NUT	1	BRONZE	B62 ALLOY C83600
14	DISC	1	SEE NOTE 1	
15	GUIDE CAP	2	CELCON	
16	BODY - FLANGE ENDS	1	CAST IRON	CLASS B
17	HANDWHEEL	1	CAST IRON	A126 CLASS B
18	BODY - NJ ENDS	1	CAST IRON	A126 CLASS B
19	BODY - SLIP-ON ENDS	1	CAST IRON	A126 CLASS B
20	BODY - FLANGE x NJ END	1	CAST IRON	A126 CLASS B
21	BODY - FLANGE x SLIP-ON END	1	CAST IRON	A126 CLASS B
22	WIPER RING	1	RUBBER	

N.T.S.

CITY OF THORNTON, COLORADO
STANDARDS & SPECIFICATIONS

GATE VALVE DETAIL

ISSUED:
APRIL 2010
REVISED:

DRAWING NO.
200-6A

GATE VALVES

VALVES SHALL BE MANUFACTURED AND TESTED IN ACCORDANCE WITH AWWA STANDARD C-500, "METAL-SEATED GATE VALVES FOR WATER", OR AWWA C-509 "RESILIENT-SEATED GATE VALVES, 3 THROUGH 12 NPS, FOR WATER AND SEWAGE SYSTEMS" WITH THE FOLLOWING ADDITIONAL REQUIREMENTS OR EXCEPTIONS:

VALVES MEETING AWWA STANDARD C-500 SHALL BE OF A MODIFIED WEDGE DISC CONSTRUCTION, COATED BOTH INSIDE AND OUT WITH A TOUGH, DURABLE EPOXY TO PREVENT CORROSION, CAST IRON BODY, FULLY BRONZE MOUNTED WITH NON-RISING STEMS.

VALVES SHALL BE SUITABLE FOR FREQUENT OPERATION, AS WELL AS SERVICE INVOLVING LONG PERIODS OF INACTIVITY. THE OPERATING PRESSURE FOR VALVES SIX (6) INCHES THROUGH TWELVE (12) INCHES SHALL BE 200 PSI.

VALVE STEMS SHALL BE MADE OF BRONZE AND THREADED SO THAT VALVES SHALL OPEN BY TURNING TO THE LEFT (COUNTERCLOCKWISE). EACH VALVE SHALL BE FURNISHED WITH A TWO (2) INCH SQUARE OPERATING NUT. THE OPERATING NUT SHALL HAVE AN ARROW SHOWING THE DIRECTION OF OPENING AND THE WORD "OPEN" CAST ON THE NUT. THE STEM SEAL SHALL CONSIST OF TWO (2) O-RINGS; ONE OR BOTH POSITIONED ABOVE THE THRUST COLLAR WITH THE VALVE UNDER PRESSURE IN THE FULL OPEN POSITION.

BOLTS AND HEX NUTS USED ON THE BONNET OF THE VALVE SHALL BE THE MANUFACTURER'S STANDARD FABRICATED FROM A LOW ALLOY STEEL FOR CORROSION RESISTANCE.

FLANGES SHALL BE SIZED AND DRILLED IN ACCORDANCE WITH ANSI B-16.1 CLASS 125 SPECIFICATIONS. FLANGES SHALL BE MACHINED IN A FLAT FACE OR MACHINED TO A FLAT SURFACE WITH A SERRATED FINISH IN ACCORDANCE WITH AWWA STANDARD C-207 "STEEL PIPE FLANGES."

THE COMPONENTS OF THE MECHANICAL JOINT SHALL CONFORM TO ANSI A-21.11 (AWWA STANDARD C-111). THE TEE-HEAD BOLTS AND HEXAGON NUTS SHALL BE FABRICATED FROM A HIGH STRENGTH, STAINLESS STEEL, OR AN APPROVED EQUAL.

AFTER APPROVED FACTORY ASSEMBLY, EACH VALVE SHALL BE GIVEN THE OPERATION AND HYDROSTATIC TESTS IN ACCORDANCE WITH THE REFERENCED SPECIFICATIONS.

WEDGE DISC VALVES SHALL BE LIMITED TO THE FOLLOWING MANUFACTURERS OR APPROVED EQUIVALENT: WATEROUS SERIES-500, MUELLER-A-2360, KENSEAL, CLOW R/N. RESILIENT-SEATED GATE VALVES SHALL BE LIMITED TO THE AMERICAN-80 "CRS" GATE VALVE OR THE U.S. PIPE "METROSEAL" GATE VALVE.

THE MANUFACTURER SHALL FURNISH A CERTIFIED STATEMENT THAT THE INSPECTION AND SPECIFIED TESTS HAVE BEEN MADE AND THE RESULTS THEREOF COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE STANDARD(S) HEREIN SPECIFIED. A COPY OF THE CERTIFICATION SHALL BE SENT TO THE DEVELOPMENT ENGINEERING MANAGER UPON REQUEST.

CORROSION PROTECTION SHALL BE COVERED IN SUBSECTION 204.2 OF THESE STANDARDS AND SPECIFICATIONS.

VALVES SHALL BE HANDLED IN SUCH A MANNER AS TO PREVENT ANY INJURY OR DAMAGE AND SHALL BE THOROUGHLY CLEANED BEFORE INSTALLATION. VALVES SHALL BE SET IN SUCH A MANNER THAT THE VALVE STEMS ARE PLUMB. VALVES SHALL BE LOCATED AT POINTS AS SPECIFIED IN SUBSECTION 203.8 OF THESE STANDARDS AND SPECIFICATIONS.

VALVE BOXES

VALVE BOX PARTS SHALL BE MANUFACTURED BY TYLER, SERIES 8880 OR AN APPROVED EQUIVALENT MANUFACTURER AND MADE OF GRAY CAST IRON, BUFFALO TYPE WITH NO. 180 OVAL BASE. A FIVE AND ONE-QUARTER (5 1/4) INCH SCREW-TYPE SHAFT SHALL BE ADJUSTABLE FROM 45 INCHES TO 66 INCHES. VALVE BOX LIDS SHALL BE MARKED WITH THE WORD "WATER" AND SHALL HAVE A LIP OR FLANGE EXTENDING INTO THE VALVE BOX SHAFT. NO SLIP-TYPE BOXES SHALL BE ALLOWED. THE VALVE BOX SHALL BE OF A DESIGN WHICH SHALL NOT TRANSMIT SHOCK OR STRESS TO THE VALVE AND SHALL BE CENTERED AND PLUMB OVER THE OPERATING NUT OF THE VALVE WITH THE BOX COVER FLUSH WITH THE SURFACE OF THE PAVEMENT. IN NON-PAVED AREAS, A 24 INCH SQUARE CONCRETE COLLAR IS REQUIRED AROUND VALVE BOX COVER AS PER THE STANDARD DETAIL IN SECTION 200 OF THESE STANDARDS AND SPECIFICATIONS. IN UNIMPROVED ROADWAYS THE VALVE BOX COVER SHALL BE SET SIX (6) INCHES BELOW FINAL GRADE WITH A MARKER POST INDICATING THE LOCATION AS PER THE STANDARD DETAIL DRAWING.

THE MANUFACTURER SHALL FURNISH A CERTIFIED STATEMENT THAT THE INSPECTION AND SPECIFIED TESTS HAVE BEEN MADE AND THE RESULTS THEREOF COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE STANDARD(S) HEREIN SPECIFIED. A COPY OF THE CERTIFICATION SHALL BE SENT TO THE DEVELOPMENT ENGINEERING MANAGER UPON REQUEST.

FOR VALVE BOXES ALONG FIRE SPRINKLER LINES THE LID SHALL BE LABELED "FIRE".

CORROSION PROTECTION SHALL BE COVERED IN SUBSECTION 204.2 OF THESE STANDARDS AND SPECIFICATIONS.

FINAL ELEVATION OF VALVE BOXES SHALL BE LEFT TO THE DISCRETION OF THE DEVELOPMENT ENGINEERING MANAGER.

VALVE BOXES SHALL BE INSTALLED PLUMB.

VALVE BOXES WHICH HAVE SHIFTED DURING BACKFILL OPERATIONS AND ARE NO LONGER PLUMB, SHALL BE RE-EXCAVATED AND RE-ALIGNED TO THE SATISFACTION OF THE DEVELOPMENT ENGINEERING MANAGER.

FOR GREENBELT AREA APPLICATION, REFER TO DETAIL 200-7

N.T.S.

CITY OF THORNTON, COLORADO
STANDARDS & SPECIFICATIONS

GATE VALVE AND VALVE BOX
NOTES

ISSUED:
APRIL 2010
REVISED:

DRAWING NO.
200-6B

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRs\DWG\W_DTL_019-2365.dwg
 DATE: Jan 31, 2024 10:06am
 USER: lhamilton
 XREFS: W_TBLK_019-2365

CALL UTILITY NOTIFICATION
 CENTER OF COLORADO
811
 CALL 3-BUSINESS DAYS IN ADVANCE
 BEFORE YOU DIG, GRADE, OR EXCAVATE
 FOR THE MARKING OF UNDERGROUND
 MEMBER UTILITIES.



FOR BID
 NOT TO BE USED FOR CONSTRUCTION
 January 31, 2024
 DATE PRINTED
 OLSSON

1525 Raleigh Street
 Suite 400
 Denver, CO 80204
 TEL 303.237.2072 www.olsson.com

NOTE
 THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

REVISIONS

GATE VALVE AND VALVE BOX DETAILS

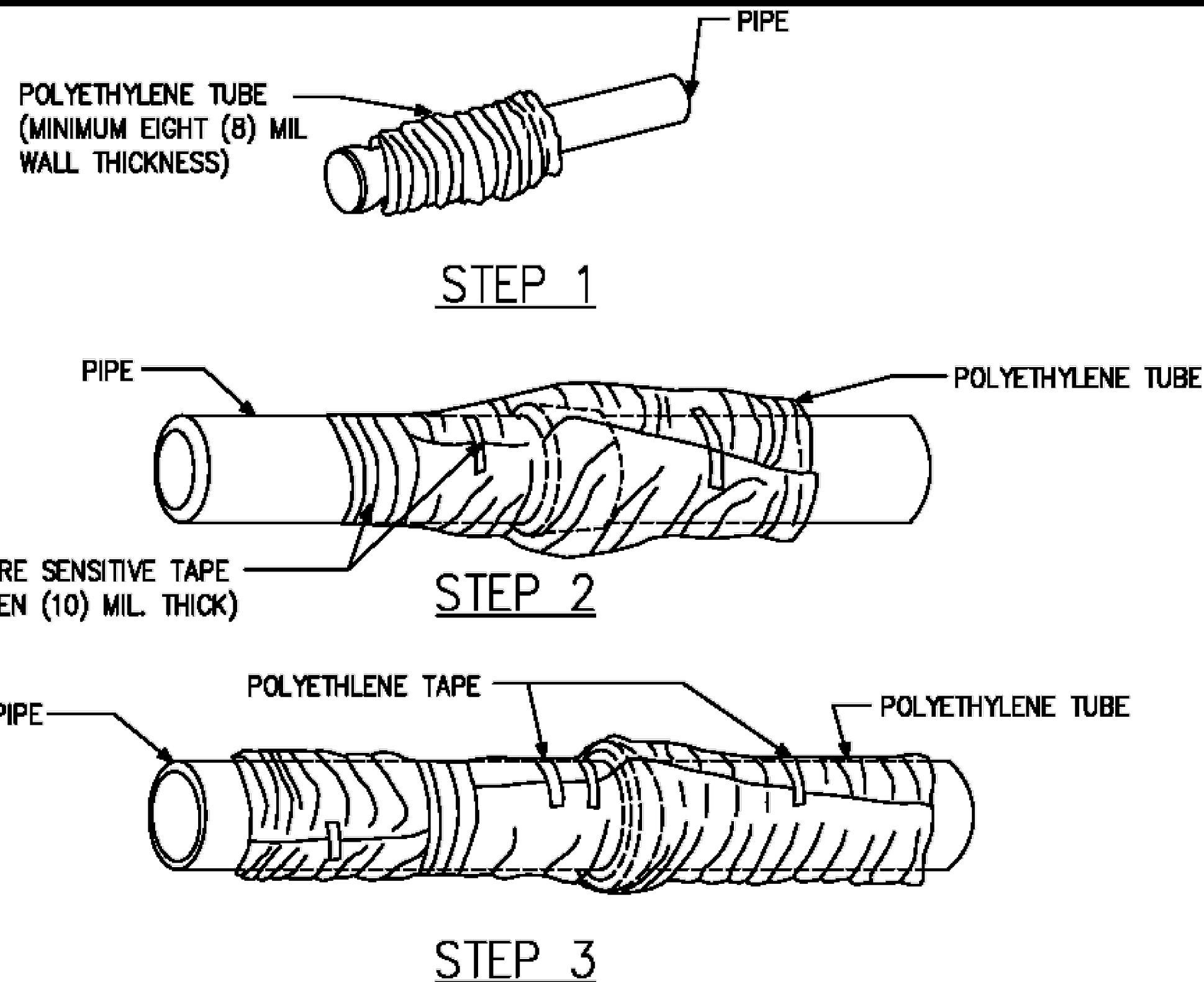
2019 TREATED WATER SYSTEM IMPROVEMENTS
 PRESSURE REDUCING VALVE VAULT REPLACEMENT

THORNTON, COLORADO

2023

drawn by: _____ RH checked by: _____ CU approved by: _____ DK QA/QC by: _____ DK project no.: 019-2365 drawing no.: DTL1 date: 1.31.2024	SHEET 9 of 17
--	------------------

FOR D.I.P.:



POLYETHYLENE PRESSURE SENSITIVE TAPE (TWO (2) IN. WIDE & TEN (10) MIL. THICK)

NOTE: POLYETHYLENE ENCASEMENT MATERIAL SHALL BE MANUFACTURED IN ACCORDANCE WITH CURRENT ASTM STANDARD. THE RAW MATERIAL USED TO MANUFACTURE POLYETHYLENE FILM SHALL BE TYPE I, CLASS A, GRADE E-1 IN ACCORDANCE WITH CURRENT ASTM STANDARD.

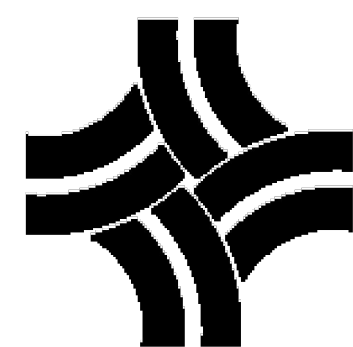
- STEP 1 - PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.
- STEP 2 - PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.
- STEP 3 - OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.

FOR STEEL:

BITUMINOUS MATERIAL IS TO BE USED FOR CORROSION PROTECTION ON ALL STEEL PIPES.

SOIL RESISTIVITY TESTS:

SOIL RESISTIVITY TESTS AND/OR ANY OTHER SOIL TESTS ARE REQUIRED WITH THE UTILIZATION OF METAL PIPING OR AT THE SOLE DISCRETION OF THE DEVELOPMENT ENGINEERING MANAGER. OTHER MEANS OF CORROSION PROTECTION MUST BE SPECIFICALLY APPROVED BY THE DEVELOPMENT ENGINEERING MANAGER. THE RESPONSIBLE PARTY SHALL INCUR THE COSTS OF ALL SOIL TESTING AS REQUIRED. N.T.S.



CITY OF THORNTON, COLORADO
STANDARDS & SPECIFICATIONS

CORROSION PROTECTION DETAIL

ISSUED:
APRIL 1992
REVISED:
APRIL 2010
DRAWING NO.
200-15

THRUST BLOCKS SHALL BE CONSTRUCTED AT BENDS AND FITTINGS WHICH RESULT IN UNBALANCED LINE THRUST. CARE SHALL BE TAKEN NOT TO BLOCK OUTLETS OR TO COVER BOLTS, NUTS, CLAMPS OR OTHER FITTINGS OR TO MAKE THEM INACCESSIBLE.

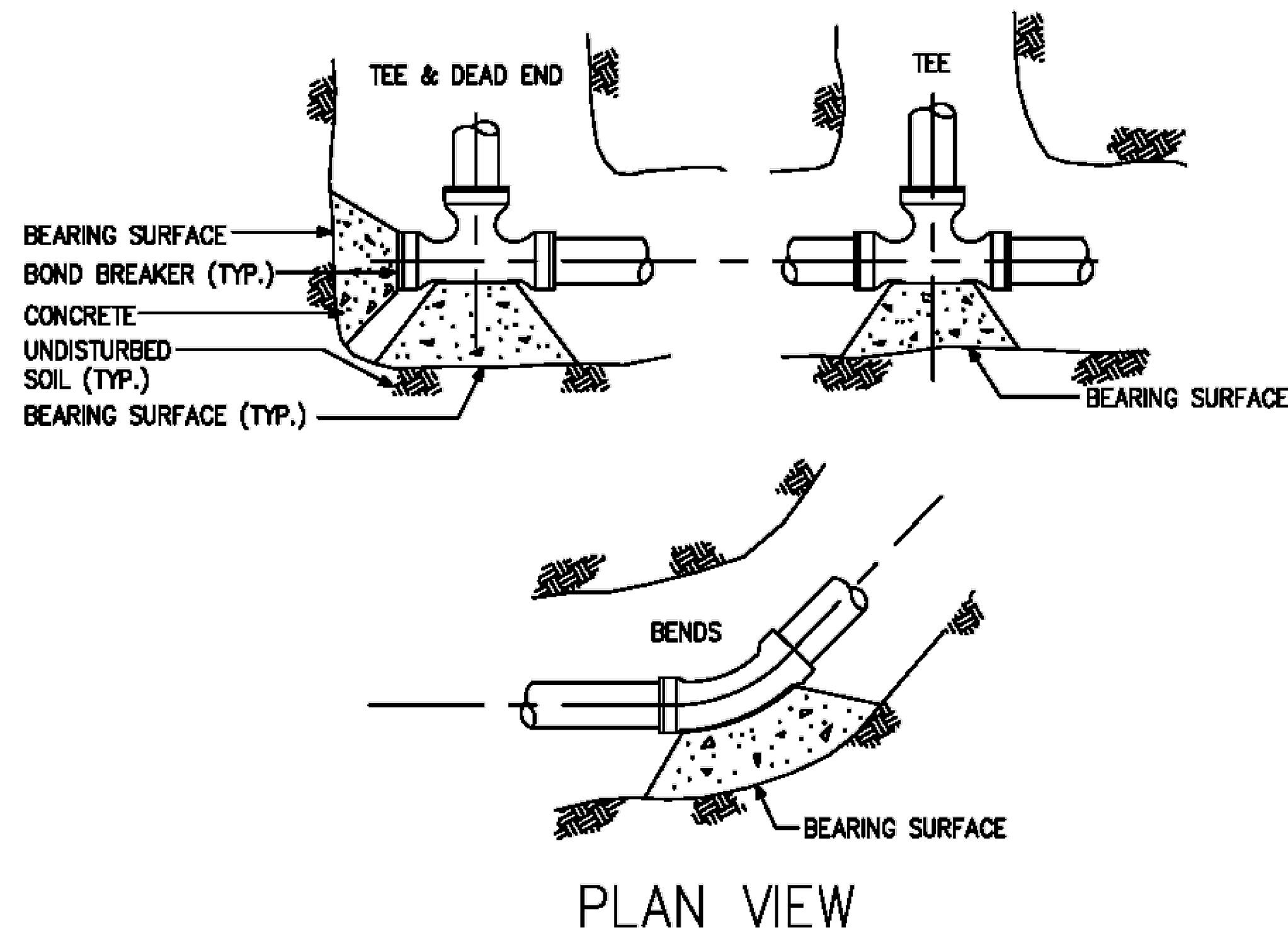
A BOND BREAKER SHALL BE PLACED BETWEEN THE FITTING AND THE THRUST BLOCK TO AID IN EASE OF FUTURE REMOVAL. THE VERTICAL SIDES OF THE CONCRETE THRUST BLOCKS SHALL BE FORMED TO ALLOW FOR SYMMETRICAL THRUST.

WHEN IT IS IMPOSSIBLE THROUGH OVER EXCAVATION OR OTHER CAUSES TO POUR A THRUST BLOCK AGAINST UNDISTURBED EARTH, HARNESS RODS SHALL BE REQUIRED TO ANCHOR THE FITTINGS TO THE MAIN UPON APPROVAL OF THE DEVELOPMENT ENGINEERING MANAGER.

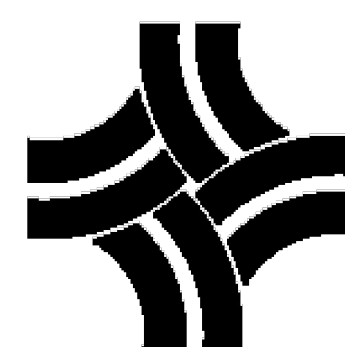
BACKFILL MAY BE PLACED OVER THE THRUST BLOCK ONCE THE SURFACE HAS SET SUFFICIENTLY TO RESIST THE WEIGHT OF THE BACKFILL.

NO DRY KICKERS SHALL BE ALLOWED.

NO HAND MIXED CONCRETE SHALL BE ALLOWED.



- NOTES:
- THRUST BLOCKS MUST BE CAST IN PLACE CONCRETE.
 - NO TAMPING OR COMPACTING SHALL BE ALLOWED ABOVE THRUST BLOCK FOR A MINIMUM OF TWENTY-FOUR (24) HOURS AFTER PLACEMENT.
 - CONCRETE MUST SET A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE PERFORMANCE OF A HYDROSTATIC TEST.
 - BEARING SURFACE BASED ON BEARING STRENGTH OF 3000 P.S.F. AND MAIN PRESSURE OF 200 P.S.I. FOR MAINS GREATER THAN 16" OR VERTICAL THRUSTS, SHOW AREA REQUIREMENT ON STANDARD DETAILS.
 - BOND BREAKER TO BE MINIMUM OF 8 MIL. POLYETHYLENE PLASTIC.
- N.T.S.



CITY OF THORNTON, COLORADO
STANDARDS & SPECIFICATIONS

THRUST BLOCK DETAIL

ISSUED:
APRIL 1992
REVISED:
APRIL 2010
DRAWING NO.
200-11

olsson

1525 Raleigh Street
Suite 400
Denver, CO 80204
TEL 303.237.2072
www.olsson.com

NOTE: THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

CORROSION AND THRUST BLOCK DETAILS	2023
2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT	
THORNTON, COLORADO	

drawn by:	RH
checked by:	CU
approved by:	DK
QA/QC by:	DK
project no.:	019-2365
drawing no.:	DTL2
date:	1.31.2024

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRS\DWG\W_DTL_019-2365.dwg
 USER: lhamilton
 DATE: Jan 31, 2024 10:06am
 XREFS: W_TBLK_019-2365

CALL UTILITY NOTIFICATION CENTER OF COLORADO
811
CALL 3-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

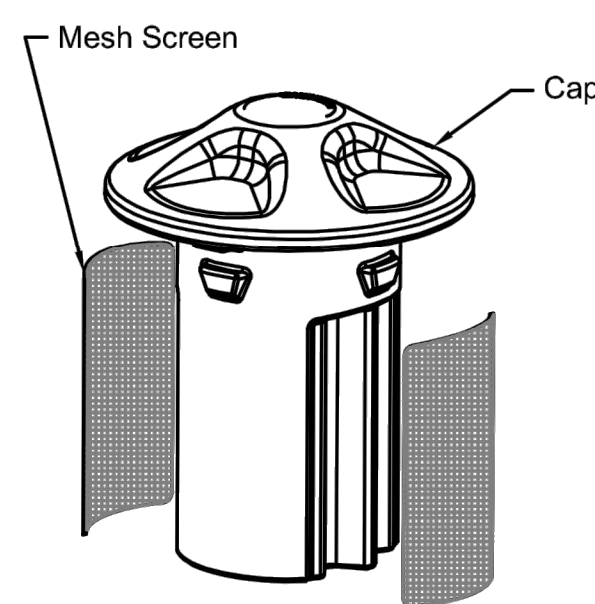
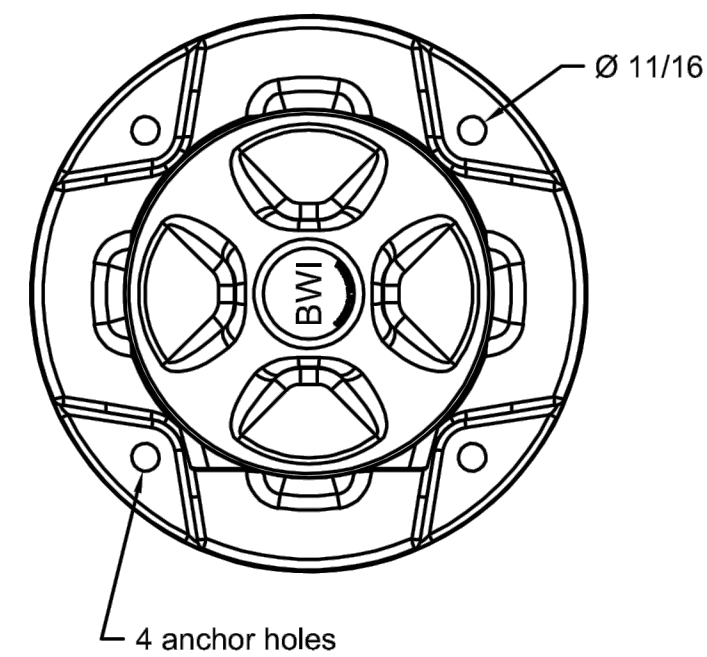


FOR BID
 NOT TO BE USED FOR CONSTRUCTION
 January 31, 2024
 DATE PRINTED
 OLSSON

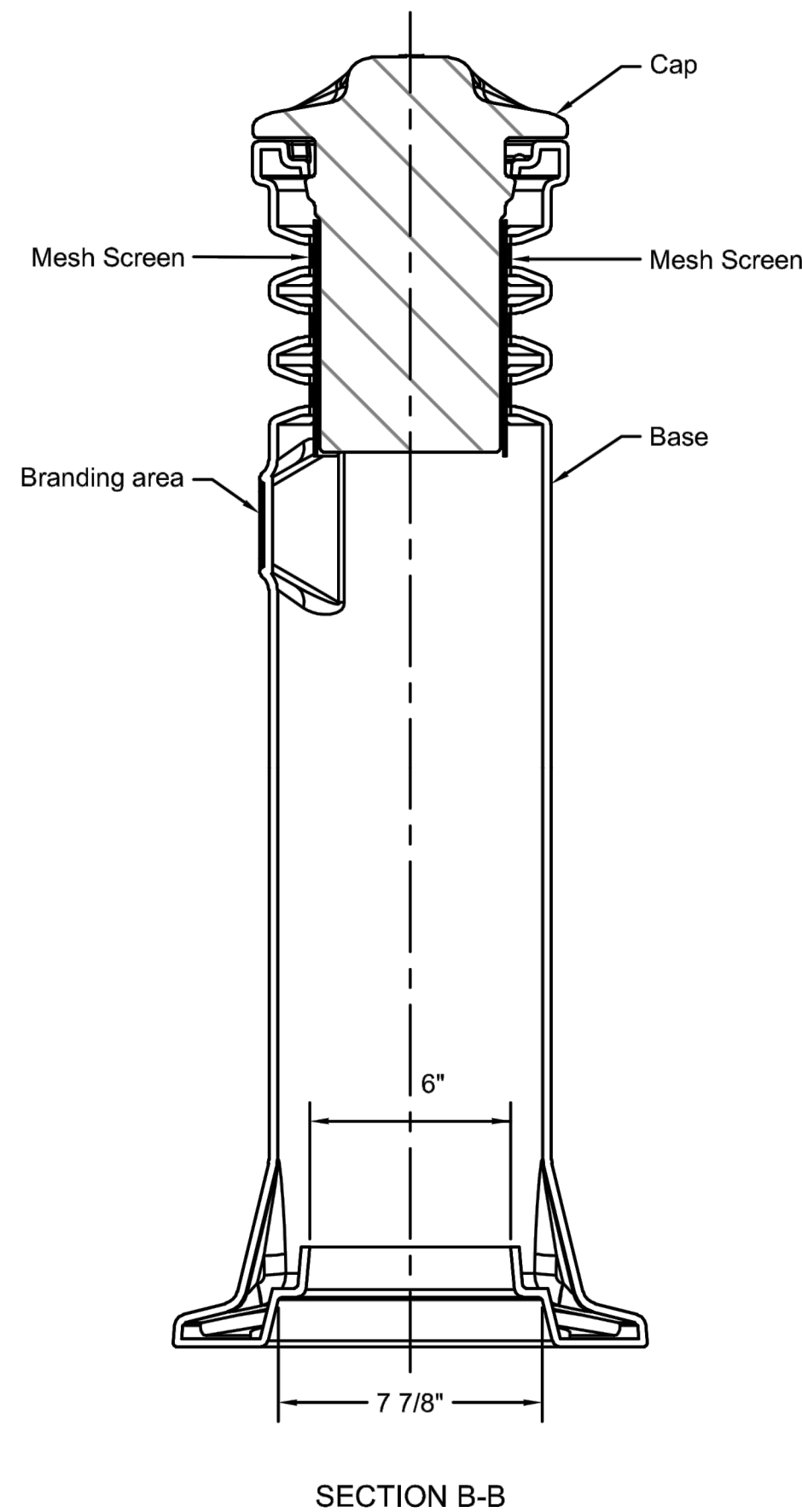
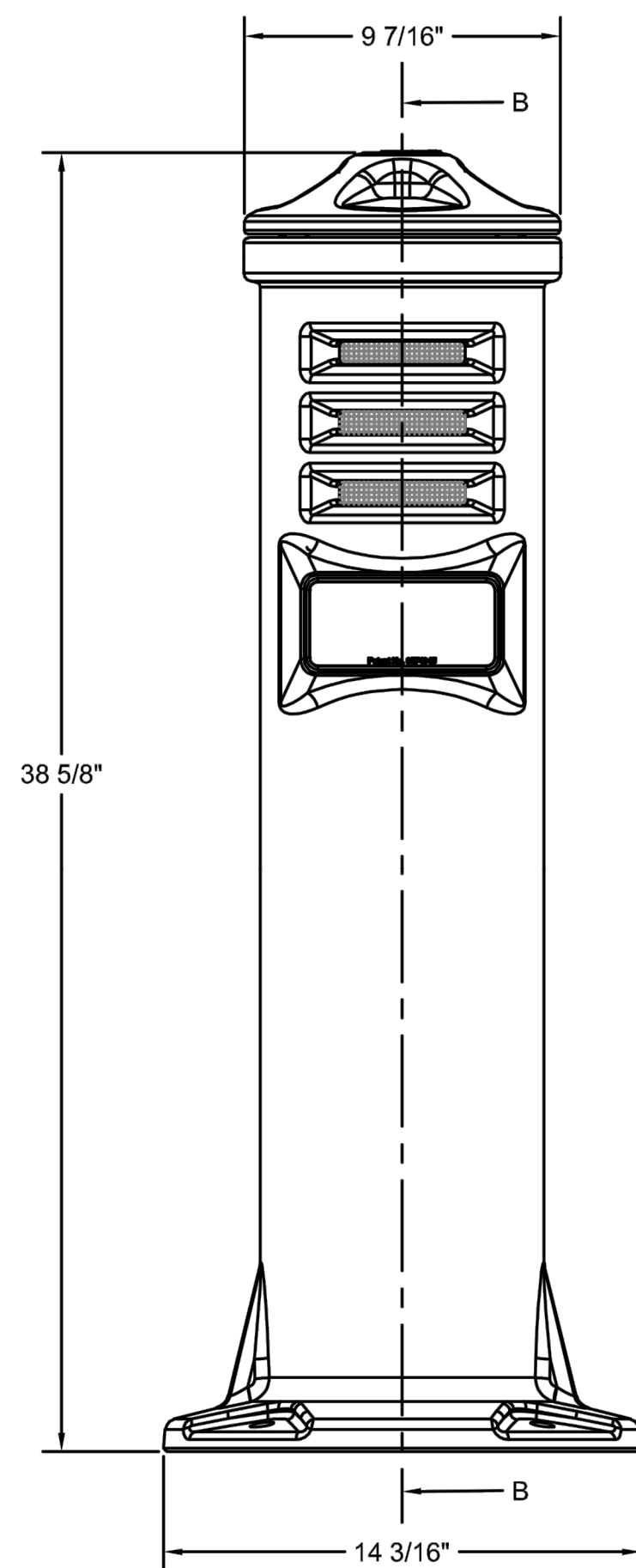
USER: lhamilton

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRS\DWG\W_DTL_019-2365.dwg
 DATE: Jan 31, 2024 10:06am XREFS: W_TBLK_019-2365

Blue Water Innovations
Description: Husky Street Vent
Properties: LLDPE
150 1B. Flange Bolthole Pattern
Quick Change Air Flow Control Cap.



24 Mesh Stainless Steel Screen
 Thickness = .028"
 Pattern (PWS) = 0.027"
 Open Area = 44%



DRAWN BY: _____		APPROVED BY: CITY ENGINEER _____	DATE: _____
			DRAWING NO. _____

CALL UTILITY NOTIFICATION
 CENTER OF COLORADO
811
 CALL 3-BUSINESS DAYS IN ADVANCE
 BEFORE YOU DIG, GRADE, OR EXCAVATE
 FOR THE MARKING OF UNDERGROUND
 MEMBER UTILITIES.



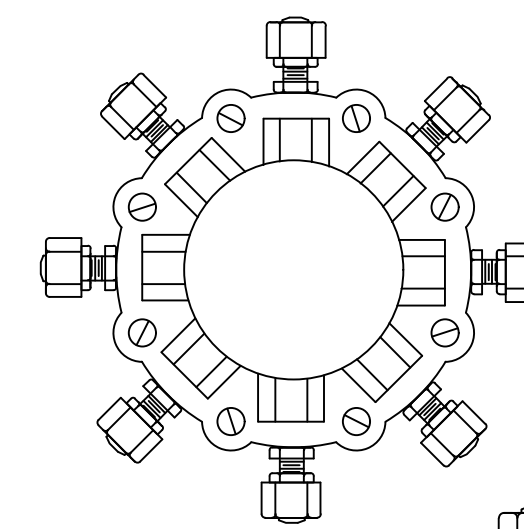
FOR BID
 NOT TO BE USED FOR CONSTRUCTION
 January 31, 2024
 DATE PRINTED
 OLSSON

MECHANICAL JOINT RESTRAINING GLANDS FOR P.V.C. OR D.I. PIPE.

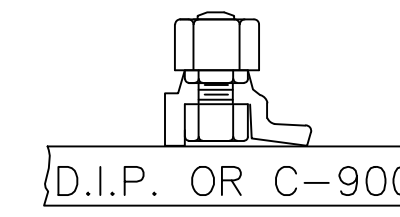
GLANDS SHALL BE COLOR CODED: P.V.C - C 900RED
 DUCTILE IRON BLACK

P.V.C. GLANDS 2000 MEG-A-LUG OR 1500 UNI-FLANGE OR APPROVED EQUAL D.I. GLANDS 1100 MEG-A-LUG OR 1400 UNI-FLANGE OR APPROVED EQUAL

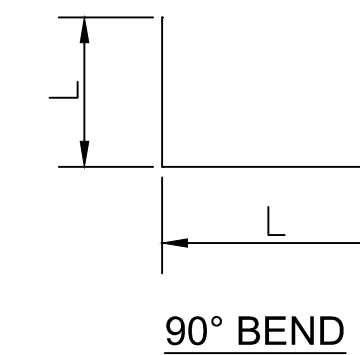
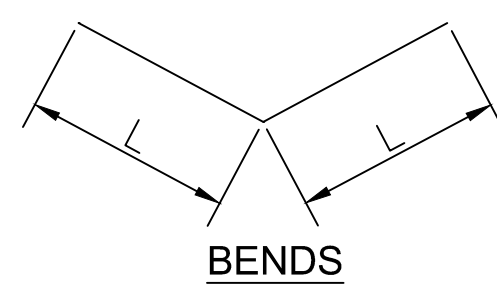
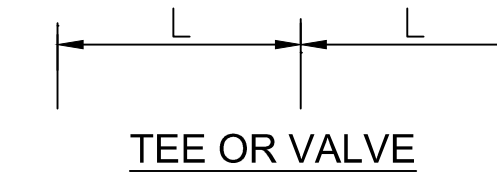
FOR INSTALLATION ON C-900 PVC OR DUCTILE IRON PIPE USE AS RECEIVED AND INSTALL PER INSTRUCTIONS.



D.I.P. OR C-900



D.I.P. OR C-900



NOMINAL PIPE SIZE	SHIPPING WEIGHT	PIPE O.D.	
		P.V.C. AWWA C900	DUCTILE IRON ASTM A536
4"	8.8	4.800	4.800
6"	12.1	6.900	6.900
8"	16.3	9.050	9.050
10"	26.0	11.10C	11.10C
12"	31.4	13.20C	13.20C

ROD DIAMETER, GRADE AND LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"			6"			8"		
	D	L	G	D	L	G	D	L	G
FITTING									
PLUG, TEE OR 90° BEND	3/4"	30'	M.S.	3/4"	45'	M.S.	3/4"	60'	M.S.
45° BEND	3/4"	9'	M.S.	3/4"	13'	M.S.	3/4"	18'	M.S.
22-1/2° BEND	3/4"	1'	M.S.	3/4"	5'	M.S.	3/4"	6'	M.S.
11-1/4° BEND	-	-	-	-	-	-	3/4"	3'	M.S.

1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM BENDS.
2. CLAMPS AND RODS SHALL BE EXTENDED TO NEXT PIPE.
3. D = DIAMETER, L = LENGTH, G = GRADE, M.S. = MILD STEEL, H.S. = HIGH STRENGTH STEEL.
4. MINIMUM 6.0' OF GROUND COVER IS REQUIRED.
5. BASED ON 200 P.S.I., INTERNAL PRESSURE.
6. M.S.=MILD STEEL ROD, A.S.T.M. STANDARD DESIGNATION A-36.
7. H.S.=HIGH STRENGTH ROD, A.S.T.M. STANDARD DESIGNATION A-193, GRADE B-7.
8. NUTS SHALL BE A.S.T.M., STANDARD DESIGNATION A-307, GRADE A OR B, HEXAGON HEAVY SERIES.
9. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER, AND IS NOT NECESSARILY THE LENGTH OF THE RODS.
10. LENGTH OF RESTRAINED PIPE TABLE IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.

DETAIL - MECHANICAL JOINT RESTRAINING RING AND RODDING
 NOT TO SCALE

olsson

1525 Raleigh Street
 Suite 400
 Denver, CO 80204
 TEL 303.237.2072
 www.olsson.com

NOTE
 THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

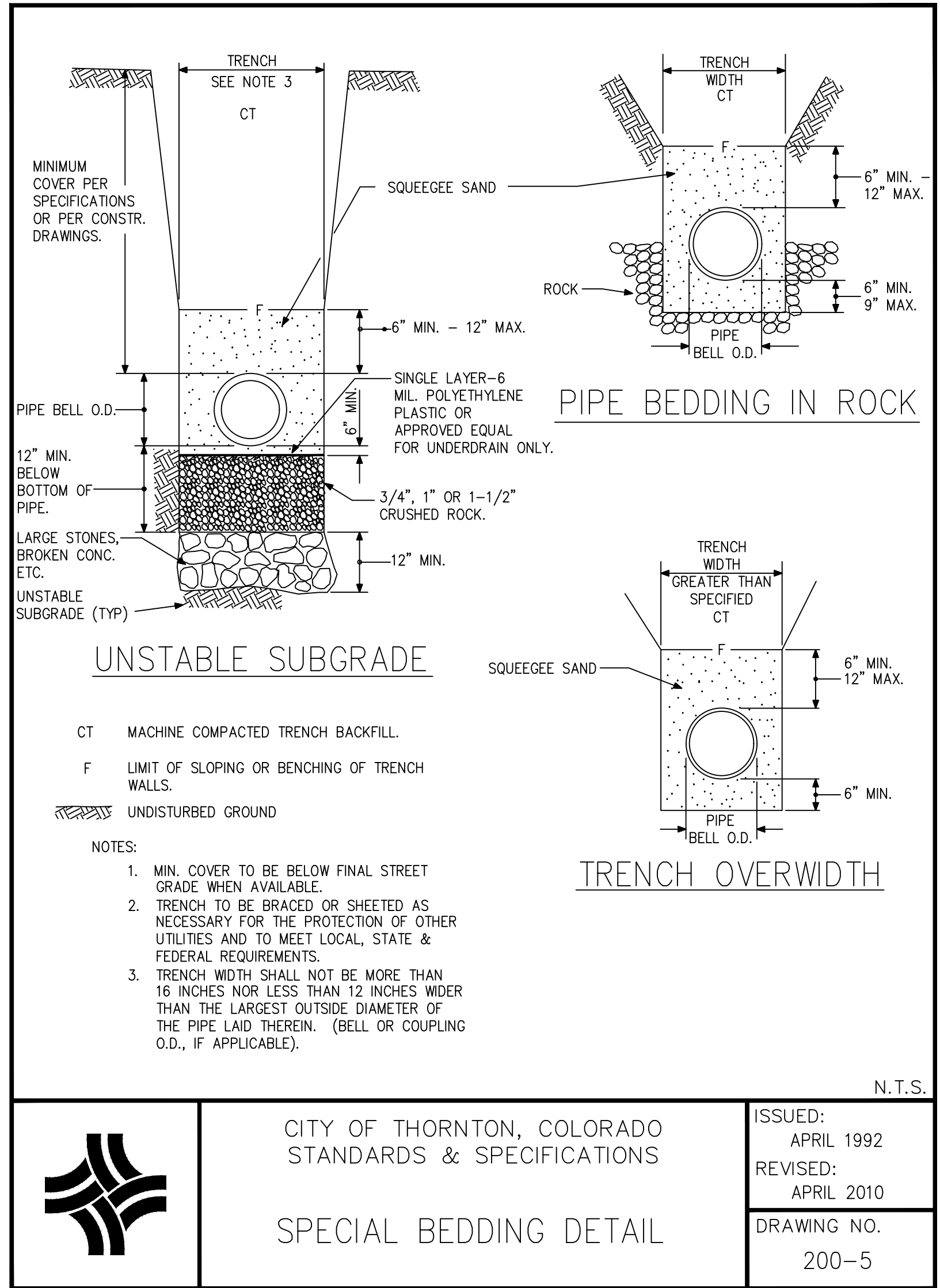
REV. NO.	DATE	REVISIONS DESCRIPTION

AIR VENT AND MECHANICAL JOINT RESTRAIN DETAILS
 2019 TREATED WATER SYSTEM IMPROVEMENTS
 PRESSURE REDUCING VALVE VAULT REPLACEMENT
 THORNTON, COLORADO
 2023

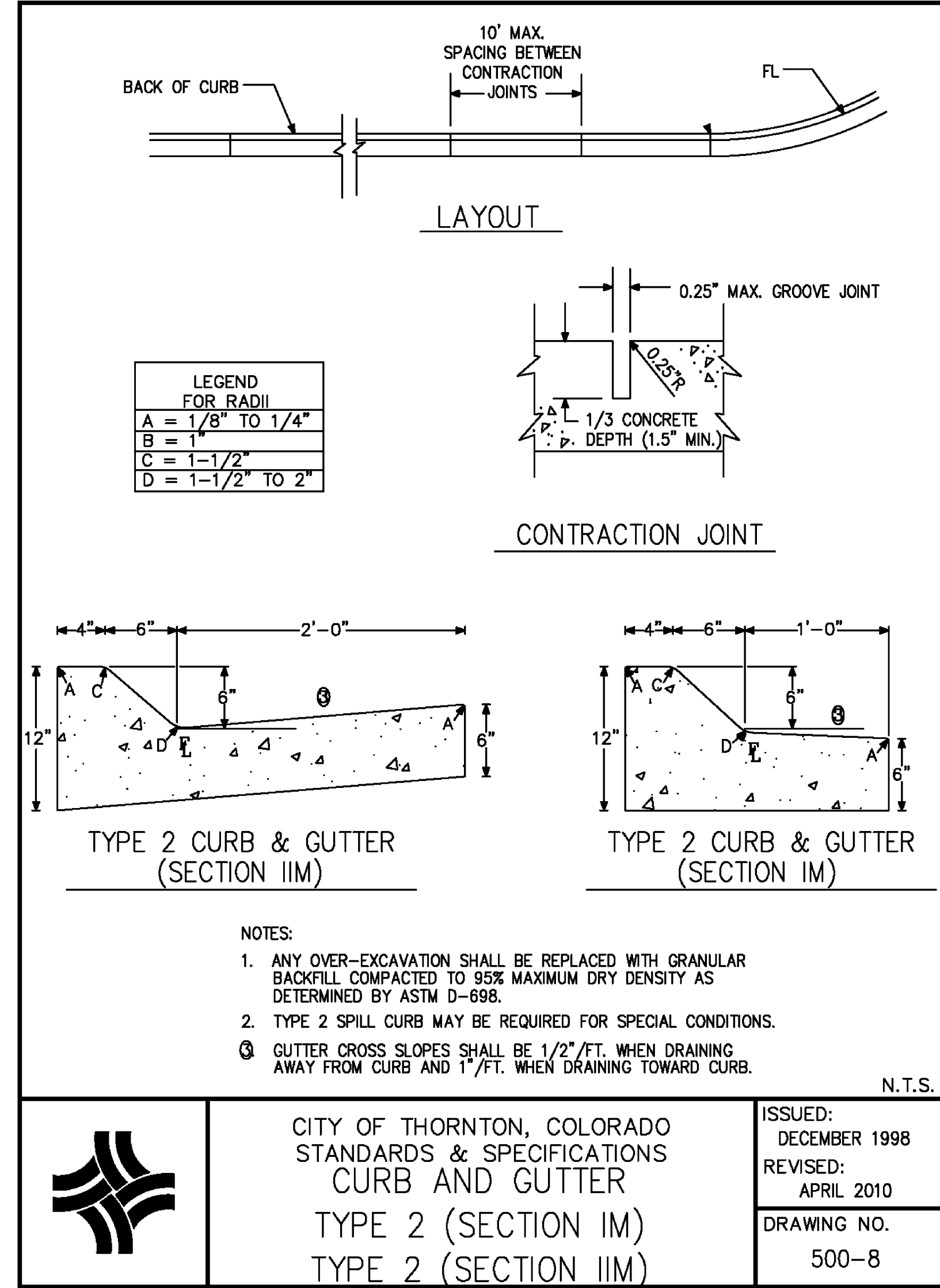
drawn by:	RH
checked by:	CU
approved by:	DK
QA/QC by:	DK
project no.:	019-2365
drawing no.:	DTL3
date:	1.31.2024

USER: lhamilton

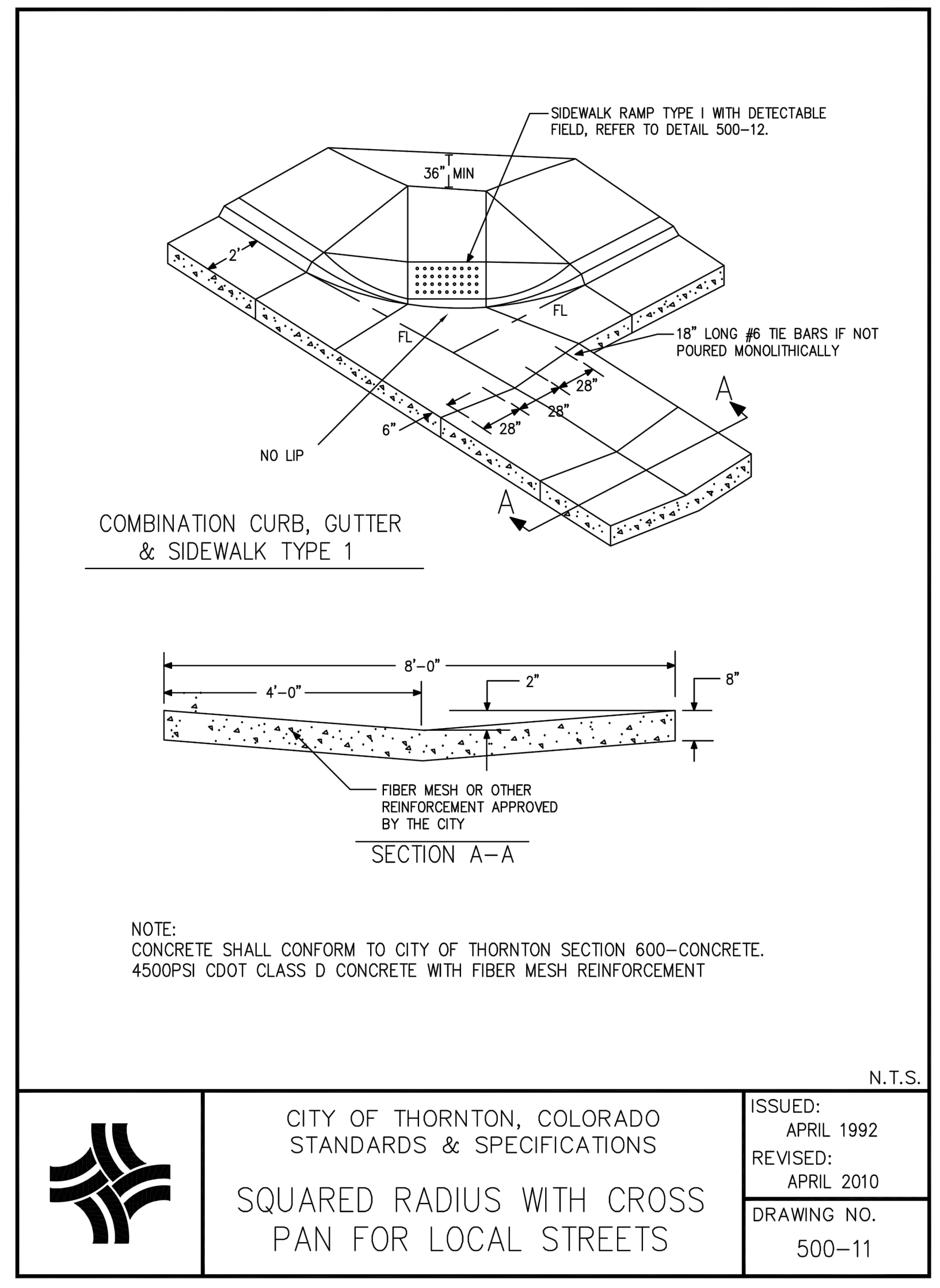
DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRS\DWG\W_DTL_019-2365.dwg
DATE: Jan 31, 2024 10:07am XREFS: W_TBLK_019-2365



	CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS	ISSUED: APRIL 1992 REVISED: APRIL 2010
	SPECIAL BEDDING DETAIL	DRAWING NO. 200-5



	CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS CURB AND GUTTER TYPE 2 (SECTION IM) TYPE 2 (SECTION IIM)	ISSUED: DECEMBER 1998 REVISED: APRIL 2010
		DRAWING NO. 500-8



	CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS SQUARED RADIUS WITH CROSS PAN FOR LOCAL STREETS	ISSUED: APRIL 1992 REVISED: APRIL 2010
		DRAWING NO. 500-11

NOTE
THIS DOCUMENT HAS BEEN RELEASED BY OLSSON ONLY FOR REVIEW BY REGULATORY AGENCIES AND OTHER PROFESSIONALS, AND IS SUBJECT TO CHANGE. THIS DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION.

OLSSON ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS (HORIZONTAL OR VERTICAL). THE EXISTING UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS HOWEVER THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

CURB, GUTTER, SIDEWALK AND BEDDING DETAILS	2023
2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT	
THORNTON, COLORADO	

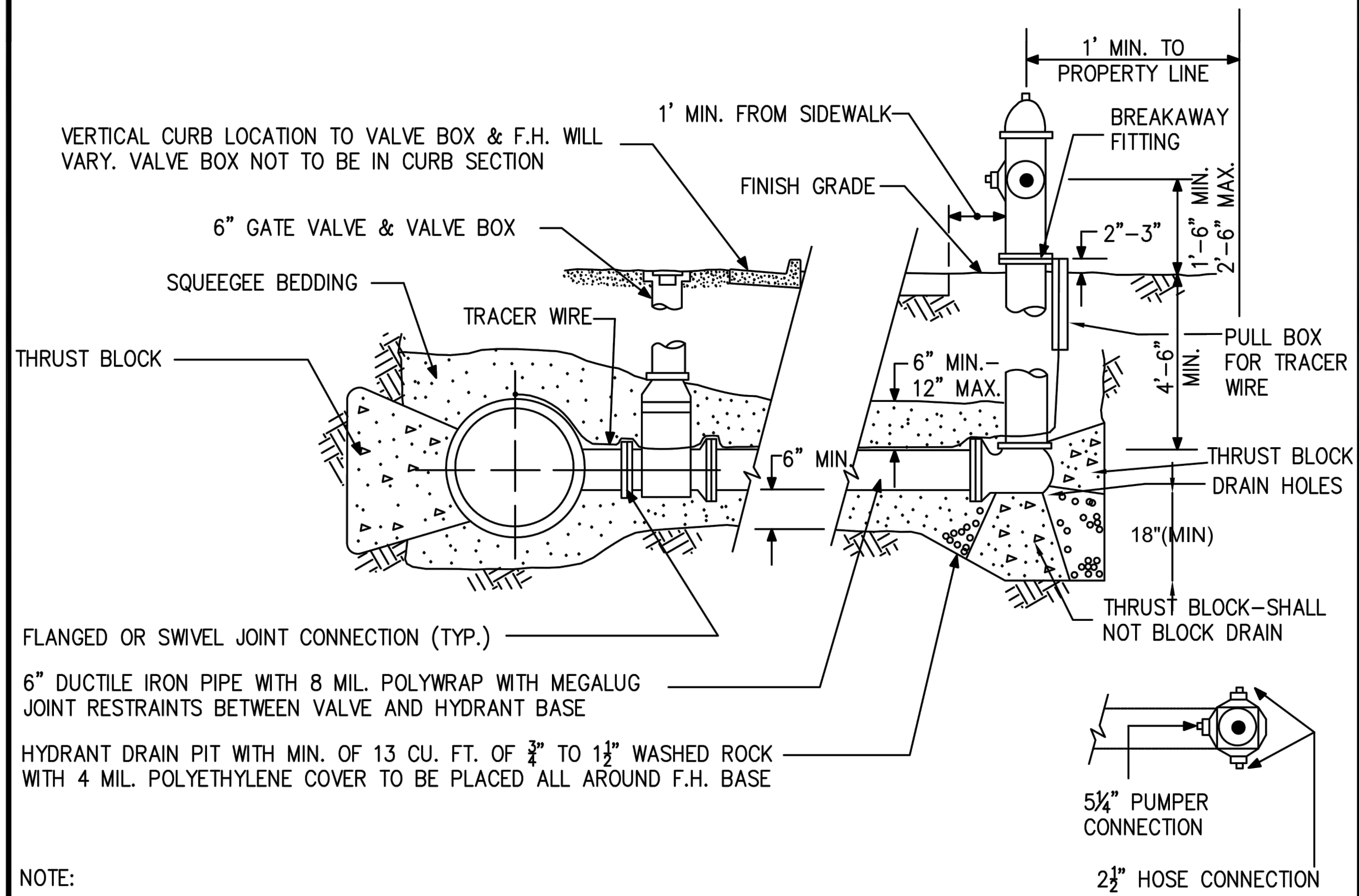
drawn by:	RH
checked by:	CU
approved by:	DK
QA/QC by:	DK
project no.:	019-2365
drawing no.:	DTL5
date:	1.31.2024

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
811
CALL 3-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.



FOR BID
NOT TO BE USED FOR CONSTRUCTION
January 31, 2024
DATE PRINTED
OLSSON

FIRE HYDRANT ASSEMBLY



NOTE:

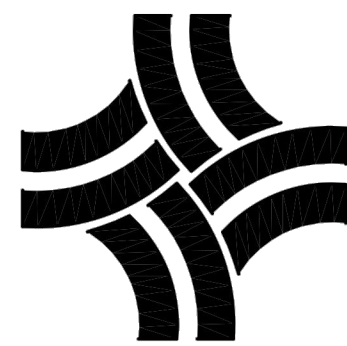
FIRE HYDRANTS SHALL BE LIMITED TO THE FOLLOWING MANUFACTURERS ONLY:

- 1) MUELLER COMPANY 5-1/4 SUPER CENTURION
- 2) WATEROUS COMPANY (1) MODEL WB-250-PACER

SHOE AND BARREL SHALL BE CONNECTED WITH HIGH STRENGTH STAINLESS BOLTS AND NUTS
 HYDRANT SHALL HAVE A FIVE (5') FOOT CLEAR ZONE ON EACH SIDE OF HYDRANT (TEN (10') FOOT EASEMENT AROUND).
 MINIMUM DISTANCE FROM DRIVEWAYS SHALL BE SIX (6) FEET.
 HYDRANTS SHALL CONFORM TO AND BE TESTED IN ACCORDANCE WITH AWWA SPECIFICATION C-502.
 HYDRANTS SHALL BE MADE OF CAST IRON WITH FULL BRONZE MOUNTINGS.
 INLET SHALL FIT SIX (6) INCH PIPE WITH BARREL LENGTH SUFFICIENT FOR A FIVE (5) FOOT TRENCH.
 ONLY TWO (2) HEIGHT EXTENSIONS MAY BE USED PER HYDRANT.
 HYDRANT BASES SHOULD NOT BE ANY DEEPER THAN SIX (6) FEET FROM THE TOP OF FINISHED GRADE.
 MAIN VALVE OPENING IN THE HYDRANT SHALL BE NO LESS THAN FIVE (5) INCHES IN DIAMETER.
 THREADS ON NOZZLES SHALL BE NATIONAL STANDARD.
 OPERATING NUT & NOZZLE COVERS SHALL BE NATIONAL STANDARD PENTAGON MEASURING ONE AND ONE-HALF (1½) INCHES FROM POINT TO OPPOSITE FLAT AND SHALL OPEN CLOCKWISE.
 HYDRANTS SHALL BE PLUMBED VERTICALLY WITH PUMPER NOZZLE FACING STREET.
 NO WATER SERVICE MAIN TAPS SHALL BE MADE TO A DISTRIBUTION MAIN WITHIN FIVE (5) FEET OF A FIRE HYDRANT BRANCH MAIN.
 NO HORIZONTAL BENDS OR OFFSETS SHALL BE USED IN INSTALLING FIRE HYDRANT BRANCH MAINS.

EACH HYDRANT SHALL BE PAINTED WITH OSHA ENAMEL, SAFETY YELLOW, OR AN APPROVED EQUIVALENT.
 FIRE HYDRANT ASSEMBLIES SHALL BE MEGALUGGED IN ACCORDANCE WITH SUBSECTION 204.1 (N)

N.T.S.



CITY OF THORNTON, COLORADO
 STANDARDS & SPECIFICATIONS

FIRE HYDRANT ASSEMBLY DETAIL

ISSUED:
 APRIL 1992

REVISED:
 APRIL 2010

DRAWING NO.
 200-10

DWG: F:\2019\2001-2500\019-2365\40-Design\AutoCAD\Final Plans\Sheets\WTRS\DWG\W_DTL_019-2365.dwg
 DATE: Jan 31, 2024 10:07am
 USER: lhamilton
 XREFS: W_TBLK_019-2365

CALL UTILITY NOTIFICATION
 CENTER OF COLORADO
811
 CALL 3-BUSINESS DAYS IN ADVANCE
 BEFORE YOU DIG, GRADE, OR EXCAVATE
 FOR THE MARKING OF UNDERGROUND
 MEMBER UTILITIES.



FOR BID
 NOT TO BE USED FOR CONSTRUCTION
 January 31, 2024
 DATE PRINTED
 OLSSON

olsson

1525 Raleigh Street
 Suite 400
 Denver, CO 80204
 TEL 303.237.2072 www.olsson.com

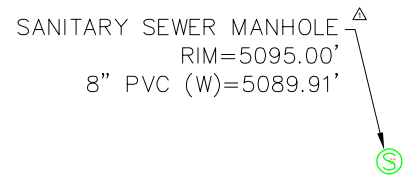
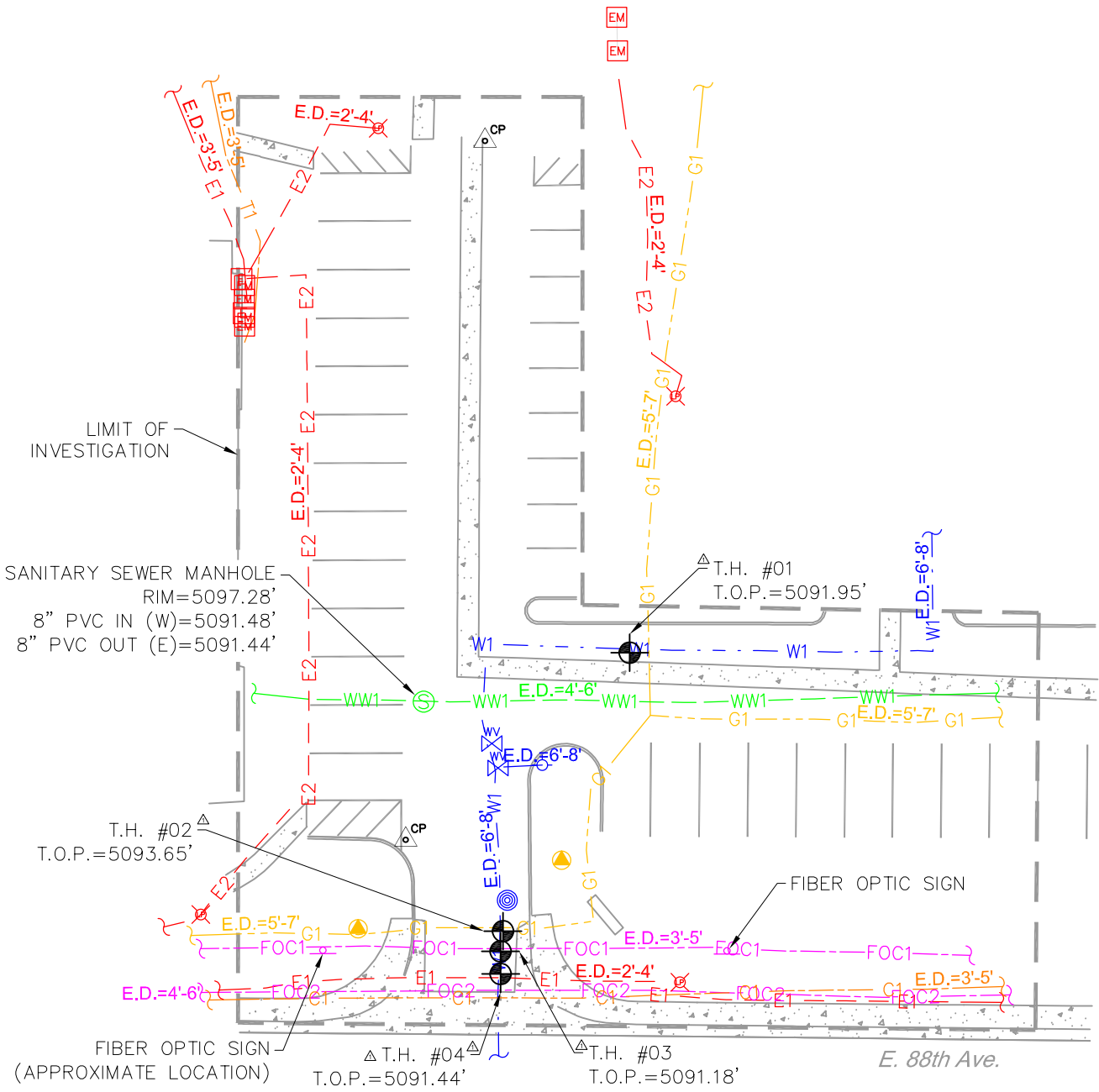
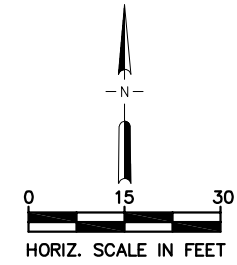
NOTE
 THIS DOCUMENT HAS BEEN
 RELEASED BY OLSSON ONLY
 FOR REVIEW BY REGULATORY
 AGENCIES AND OTHER
 PROFESSIONALS, AND IS
 SUBJECT TO CHANGE. THIS
 DOCUMENT IS NOT TO BE
 USED FOR CONSTRUCTION.

OLSSON ASSUMES NO
 RESPONSIBILITY FOR EXISTING
 UTILITY LOCATIONS
 (HORIZONTAL OR VERTICAL).
 THE EXISTING UTILITIES SHOWN
 ON THIS DRAWING HAVE BEEN
 PLOTTED FROM THE BEST
 AVAILABLE INFORMATION. IT IS
 HOWEVER THE RESPONSIBILITY
 OF THE CONTRACTOR TO FIELD
 VERIFY THE LOCATION OF ALL
 UTILITIES PRIOR TO THE
 COMMENCEMENT OF ANY
 CONSTRUCTION ACTIVITIES.

REV. NO.	DATE	REVISIONS DESCRIPTION

FIRE HYDRANT ASSEMBLY DETAIL	2023
2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT	
THORNTON, COLORADO	

drawn by: _____	RH
checked by: _____	CU
approved by: _____	DK
QA/QC by: _____	DK
project no.: _____	019-2365
drawing no.: _____	DTL5
date: _____	1.31.2024



LEGEND OF UTILITY TYPES

Communications	QL "B"
CENTURYLINK	T1
COMCAST	C1
AT&T	FOC1
QWEST	FOC2
Gas	QL "B"
XCEL ENERGY	G1
Sewers / Drains	QL "B"
CITY OF THORNTON	WW1
Water	QL "B"
THORNTON WATER	W1
Electric / Power	QL "B"
XCEL ENERGY	E1
PRIVATE	E2

NOTE: "ELECTRONIC DEPTH" (E.D.) VALUES SHOWN ARE APPROXIMATE ONLY, AND NOT INTENDED FOR DESIGN OR CONSTRUCTION USE.

LEGEND OF UTILITY SYMBOLS

TEST HOLE	
END CAP	
UTILITY CONTINUATION	
SURVEY CONTROL	
TELEPHONE CABINET/JUNCTION BOX	
TELEPHONE PEDESTAL	
TELEPHONE HANDHOLE (VAULT)	
TELEPHONE MANHOLE	
TELEPHONE POLE	
TELEPHONE POLE W/RISER	
FIBER HANDHOLE	
FIBER MANHOLE	
FIBER MARKER SIGN	
WATER VAULT	
WATER VALVE	
WATER METER	
WATER MANHOLE	
FIRE HYDRANT	
IRRIGATION VALVE	
WATER FAUCET	
MONITORING WELL	
IRRIGATION WELL	
GAS VENT PIPE (GAS RISER)	
GAS VALVE	
GAS METER	
GAS TEST STATION	
GAS HANDHOLE	
GAS MARKER SIGN	
GAS MANHOLE	
WASTE WATER MANHOLE	
WASTE WATER CLEANOUT	
STORM SEWER MANHOLE	
STORM SEWER INLET	
CATV HANDHOLE	
CATV CABINET	
CATV PEDESTAL	
LIGHT POLE	
ELECTRIC TRANSFORMER	
ELECTRIC POLE (POWER)	
ELECTRIC POLE W/RISER	
TRANSMISSION POLE	
ELECTRIC HANDHOLE/PULL BOX	
ELECTRIC MANHOLE	
SIGNAL POLE	
SIGNAL HANDHOLE/BOX	
TRAFFIC LIGHT	
ELECTRIC METER	
ELECTRIC PEDESTAL	
GUY WIRE/GUY ANCHOR	



REVISIONS			
NO.	DATE	DESCRIPTION	RLG
1	6/27/2023	ADD TEST HOLE DATA & MANHOLE TO EAST	RLG

SURVWEST

6501 E. BELLEVIEW AVENUE SUITE 300 ENGLEWOOD, CO 80111 (720) 259-9321

PRV VAULT REPLACEMENT AT EAST 88TH AVE. AT CATALINA

SUBSURFACE UTILITY ENGINEERING PLAN

DRAWN BY	CLIENT	SHEET NO.
RLG	OLSSON	1 of 1
CHECK	DATE	PROJECT NO.
JMH	12/09/2019	P190250
		CLIENT PROJ. NO.
		019-2365