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

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

|             | LEGEND                      |          |
|-------------|-----------------------------|----------|
| EXISTING    | FEATURE                     | PROPOSED |
|             | PROPERTY BOUNDARY           |          |
| <u> </u>    | MAJOR CONTOUR               |          |
| 5671        | MINOR CONTOUR               |          |
|             | WOODEN FENCE                |          |
| ⊠wv         | WATER VALVE                 | X        |
| ss          | SANITARY SEWER LINE         |          |
| SD          | STORM SEWER LINE            |          |
| w           | WATER LINE                  | w        |
| P-UG        | UNDERGROUND ELECTRICAL LINE | ——Е—     |
| G           | GAS LINE                    |          |
|             | UNDERGROUND CABLE LINE      |          |
| 0           | BUSH                        |          |
| ∞, ∕∞       | CONTROL POINT               |          |
| <b>⊕</b> B1 | SOIL BORING                 |          |
| •           | UTILITIY POTHOLE            |          |
| 0           | VENT PIPE                   |          |
| W           | WATER MANHOLE               |          |
| GM          | GAS METER                   |          |
| ⊠IRR        | IRRIGATION VALVE            |          |
| 0           | TREE                        |          |
| \$          | SANITARY MANHOLE            |          |
| 0           | SIGN                        |          |
|             | ASPHALT                     |          |
|             | CONCRETE                    |          |
|             | LANDSCAPING AREA            |          |
| LELELELE    | RIVER ROCKS                 |          |
|             | THRUST BLOCK                | <b>A</b> |
|             | IRRIGATION LINE             |          |
|             | LIMITS OF CONSTRUCTION      |          |
|             | SAWCUT OF SIDEWALK          |          |
|             | SAWCUT OF ASPHALT           |          |

#### **UTILITY CONTACTS**

| OTILITI CONT   | 4013   |   |  |
|--|--|---|--|
| UTILITY:   | OWNER:   | CONTACT:  | TELEPHONE NO.  |
| CABLE TELEVISION GAS & ELECTRIC TELECOMMUNICATIONS TELECOMMUNICATIONS WATER SANITARY SEWER | XFINITY XCEL ENERGY AT&T CENTURYLINK CITY OF THORNTON CITY OF THORNTON | KIP WEST JEREMY HUTAFF FREDDIE GEORGE NICOLE FRANK STEVE CROW JUSTIN RICHARDSON | 720-347-9992<br>303-425-3823<br>303-620-2753<br>303-514-6331<br>720-977-6553<br>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



VICINITY MAP

#### CITY OF THORNTON

| JASON PIERCE, P.E., INFRASTRUCTURE ENGINEERING DIRECTOR | DATE |
|---|------|
| TIFFANY HESS, PROJECT MANAGER                           | DATE |
| JOSH REDMAN, UTILITIES OPERATIONS MANAGER               | DATE |

PREPARED BY:



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

DATE



CHANCE UHRICH P.E. 48947, PROJECT ENGINEER

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|              |  |

| LIST OF      | ABBREVIATIONS          |
|--------------|------------------------|
| ABBREVIATION | DESCRIPTION            |
| ACP          | ASBESTOS CEMENT PIPE   |
| В            | BORE HOLE              |
| B.O.C.       | BACK OF CURB           |
| B.O.W.       | BACK OF WALK           |
| СР           | 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                   |

|                |          | REV.<br>NO. | DATE | REVISIONS DESCRIPTION |  |
|----------------|----------|-------------|------|-----------------------|--|
|                |          |             |      |                       |  |
|                |          |             |      |                       |  |
|                |          |             |      |                       |  |
| MPROVEMENTS    | S.       |             |      |                       |  |
|                | <u> </u> |             |      |                       |  |
| LT REPLACEMENT |          |             |      |                       |  |
|                |          |             |      |                       |  |
|                |          |             |      |                       |  |

2019 TREATED WATER SYSTEM IMPROPRESSURE REDUCING VALVE VAULT REHORNTON COLORADO

drawn by:

checked by:
approved by:

QA/QC by:
project no.:

drawing no.:

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019-236

SHEET 1 of 17

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- 1. LOCATION OF UTILITIES REPRESENT THE BEST-KNOWN LOCATIONS AT THE TIME OF PREPARATION OF DRAWINGS. THE CONTRACTOR SHALL FIELD-LOCATE ALL UTILITIES PRIOR TO COMMENCING WORK. FOR UTILITY LOCATES CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AT 811.
- RELOCATION OF UTILITIES MAY OR MAY NOT BE NEEDED AFTER THEY ARE EXPOSED. ACTUAL RELOCATION OF LINES WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS OTHERWISE SHOWN, BUT THE CONTRACTOR SHALL COOPERATE WITH UTILITY COMPANIES TO COORDINATE THE RELOCATION EFFORT. LINES NOT RELOCATED SHALL BE PROTECTED BY THE CONTRACTOR IN PLACE.
- 3. NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR THE FIELD LOCATION (INCLUDING POTHOLING AND SURVEYING TO VERIFY LOCATION AND ELEVATION), PROTECTION, AND REPAIR OF ALL UTILITIES, COORDINATION WITH UTILITY COMPANIES AND ANY MINOR ADJUSTMENT OF STRUCTURES OR PIPES NEEDED IN ORDER TO CLEAR A CONFLICTING UTILITY. CONTACT UTILITY COMPANIES THREE BUSINESS DAYS IN ADVANCE WHEN WORKING ADJACENT TO THE UTILITY.
- 4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE ALL PRECAUTIONS AS NECESSARY TO PROTECT ALL UTILITIES DURING CONSTRUCTION. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING UTILITIES RESULTING FROM CONSTRUCTION OPERATIONS. ALL COSTS ASSOCIATED WITH REPAIR OF DAMAGED UTILITIES SHALL BE BORNE SOLELY BY THE CONTRACTOR.
- 5. WHEREAS CERTAIN UTILITY COMPANIES UNDERTAKE ALL WORK ASSOCIATED WITH THEIR RESPECTIVE UTILITY, THE CONTRACTOR SHALL NOT UNDERTAKE ANY UTILITY WORK WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE APPROPRIATE UTILITY COMPANY TO PERFORM SAID WORK. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH IMPACTED UTILITIES TO ASSURE TIMELY RELOCATION OF THEIR FACILITIES. UTILITY CONTACT INFORMATION IS PROVIDED ON THE COVER SHEET.
- 6. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED CONSTRUCTION DRAWINGS, CONTRACT DOCUMENTS, SHOP DRAWINGS, ONE COPY OF APPLICABLE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSIONS AT THE JOB SITE AT ALL TIMES.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCEPTANCE AND CONTROL OF ALL FLOWS INCLUDING STORM FLOWS, OFF-SITE DRAINAGE FLOWS. AND GROUNDWATER FLOWS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO STRUCTURES, LOSS OF TOPSOIL AND LOSS OF SEED CAUSED BY FLOWS UNTIL THE PROJECT IS ACCEPTED BY THE CITY.
- 8. ALL ASPHALT REMOVALS SHALL BE SAWCUT TO PROVIDE A CLEAN EDGE FOR REMOVAL AND REPLACEMENT. CONCRETE SHALL BE REMOVED UP TO AN EXISTING EXPANSION/CONTRACTION JOINT, AND THE JOINT SAWCUT IF NECESSARY TO PROVIDE A CLEAN BREAK. CONCRETE ROAD PAVEMENT SHALL BE REMOVED AS ENTIRE PANELS ONLY. NO PARTIAL PANEL REMOVALS ARE PERMITTED.
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL DISTURBED SURFACES AND RELATED STRUCTURES, INCLUDING BUT NOT LIMITED TO, DRIVEWAYS, CONCRETE WASHOUTS, CURBS, GUTTERS, WALKS, AND BITUMINOUS PAVEMENTS TO ORIGINAL CONDITIONS (OR BETTER). THE CITY CONSTRUCTION COORDINATOR AND THE CONTRACTOR SHALL TOGETHER COORDINATE THE DOCUMENTATION OF EXISTING GRADES AND OTHER INFORMATION PRIOR TO ALL CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL INCLUDE THE RESTORATION WORK IN THEIR BID.
- 10. THE COST OF ANY AND ALL DEWATERING NECESSARY FOR THE CONSTRUCTION OF ALL ITEMS SHOWN ON THESE DRAWINGS WILL NOT BE PAID AS A SEPARATE BID ITEM. ALL WORK SHALL BE DONE IN A DRY CONDITION. CONSTRUCTION DEWATERING SHALL COMPLY WITH CDPHE STANDARDS AND REGULATIONS.
- 11. CONTRACTOR SHALL SUBMIT A PLAN FOR DELIVERY OF MATERIALS, EQUIPMENT, SITE ACCESS, AND STORAGE TO CITY PRIOR TO STARTING CONSTRUCTION.
- 12. THE CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF ALL WASTE MATERIAL, CONCRETE, ASPHALT, SUBGRADE, ETC.
- 13. CONTRACTOR TO NOTIFY ENGINEER IMMEDIATELY OF ANY FIELD CONDITION NOT CONSISTENT W/ CONTRACT DOCUMENTS.
- 14. CONTRACTOR SHALL OBTAIN ALL APPLICABLE CODES, LICENSES, STANDARDS, SPECIFICATIONS, PERMITS, AND BONDS THAT ARE NECESSARY TO PERFORM THE PROPOSED WORK.
- 15. ALL PAVEMENT, CURBS, GUTTERS, SIDEWALKS, BACKFILLS AND ALL OTHER ROADWAY STRUCTURES SHALL BE PREPARED AND CONSTRUCTED IN CONFORMANCE WITH THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", OR THE DESIGNS PRESENTED HEREIN, WHICHEVER IS MORE STRINGENT.
- 16. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ANY ASPHALT, CONCRETE, ETC. NOT DESIGNATED FOR REPLACEMENT BUT DAMAGED BY THEIR ACTIONS AT NO COST TO THE CITY. DAMAGED CONCRETE SHALL BE REPLACED AT THE NEXT UNDAMAGED JOINT AND ASPHALT SHALL BE SAW CUT AT LEAST ONE FOOT FROM THE DAMAGED SECTION OR AS DIRECTED BY THE
- 17. THE CONTRACTOR SHALL BE RESPONSIBLE TO CLEANUP ANY TRASH OR MUD ON THE SITE OR ADJACENT STREETS AS A RESULT OF CONSTRUCTION.
- 18. WORK HOURS SHALL BE FROM 7:00 AM TO 4:00 PM UNLESS OTHERWISE APPROVED BY CITY OF THORNTON
- 19. TEMPORARY LANE CLOSURES SHALL BE COORDINATED WITH THE CITY OF THORNTON.
- 20. UPON COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER A SET OF CONSTRUCTION DRAWINGS WITH REDLINES INDICATING THE ACTUAL CONFIGURATIONS AND LOCATIONS OF IMPROVEMENTS CONSTRUCTED WHERE AS-BUILT CONDITIONS DIFFER FROM THE CONTRACT DRAWINGS. ALSO, THE CONTRACTOR SHALL IDENTIFY THE TYPE AND HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES ENCOUNTERED DURING EXCAVATION.
- 21. ALL VEGETATION, INCLUDING, BUT NOT LIMITED TO, TREES AND SHRUBS, MUST BE PROTECTED UNLESS IDENTIFIED FOR REMOVAL. TURF OR VEGETATION THAT IS DAMAGED DURING THE CONSTRUCTION PROCESS WILL BE REPLACED AND MAINTAINED UNTIL ESTABLISHMENT. MODIFICATIONS TO EXISTING IRRIGATION WILL BE COORDINATED WITH OWNER, WILL BE UNDERTAKEN BY QUALITY CONTRACTOR, AND WILL BE RECORDED IN AS-BUILT DOCUMENTS.

#### SIGNING, STRIPING, TRAFFIC CONTROL NOTES

- CONSTRUCTION TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), SECTION VI AND CITY OF THORNTON REQUIREMENTS. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY OF THORNTON FOR APPROVAL AND OBTAIN A TRAFFIC CONTROL PERMIT PRIOR TO COMMENCING ANY WORK WITHIN THE PUBLIC RIGHT OF WAY.
- ALL WORK REQUIRED TO SETUP, MAINTAIN, RELOCATE AND REMOVE TRAFFIC CONTROL AS WELL AS ALL MATERIALS REQUIRED SHALL BE INCLUSIVE OF THE LUMP SUM PAYMENT FOR CONSTRUCTION TRAFFIC CONTROL.
- 3. SPECIAL CARE SHALL BE TAKEN IN SIGN LOCATION TO ENSURE AN UNOBSTRUCTED VIEW OF EACH SIGN.
- 4. LATERAL SIGN PLACEMENT SHALL BE A MINIMUM OF 2 FEET FROM THE EDGE OF THE PAVEMENT.
- 5. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL RESIDENCES/BUSINESSES AT ALL TIMES.
- 6. EXISTING GROUND SIGNS AND SIGN PANELS TO BE REMOVED SHALL BE SALVAGED TO THE CITY.

#### 1. BMP'S SHALL BE INSTALLED BEFORE ANY EARTH DISTURBING ACTIVITIES COMMENCE.

- 2. STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES SHALL NOT CAUSE, HAVE THE REASONABLE POTENTIAL TO CAUSE, OR MEASURABLY CONTRIBUTE TO AN EXCEEDANCE OF ANY WATER QUALITY STANDARD.
- 3. CONSTRUCTION SHALL BE PHASED IN A MANNER TO LIMIT EARTH DISTURBING ACTIVITIES (I.E. THE ENTIRE PROJECT SITE SHOULD NOT BE DISTURBED IF CONSTRUCTION WILL ONLY BE OCCURRING IN ONE PARTICULAR SECTION).
- 4. SEDIMENT CAUSED BY ACCELERATED SOIL EROSION SHALL BE REMOVED FROM RUNOFF WATER BEFORE IT LEAVES THE CONSTRUCTION SITE.
- 5. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND ANY OTHER CHEMICALS SHALL HAVE SECONDARY CONTAINMENT OR EQUIVALENT PROTECTION TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTER STATE WATERS.
- 6. THE CITY/CONTRACTOR SHALL INSPECT THE CONSTRUCTION SITE (INCLUDING ALL BMP'S, STORAGE CONTAINERS, AND CONSTRUCTION EQUIPMENT) A MINIMUM OF EVERY 14 CALENDAR DAYS AND WITHIN 24 HOURS AFTER A PRECIPITATION EVENT OR SNOW MELT THAT CAUSES SURFACE EROSION.INSPECTIONS SHALL CONTINUE UNTIL PROJECT IS ACCEPTED BY CITY.
- 7. BMP'S REQUIRING MAINTENANCE OR ADJUSTMENT SHALL BE REQUIRED IMMEDIATELY AFTER OBSERVATION OF THE FAILING BMP.
- 8. FOR ALL INSTANCES OF NONCOMPLIANCE BASED ON ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES, ALL NEEDED INFORMATION MUST BE PROVIDED ORALLY TO CDPHE SPILL REPORTING LINE (24-HOUR NUMBER FOR ENVIRONMENTAL HAZARDS AND CHEMICAL SPILLS AND RELEASES: 1-877-518-5608) WITHIN 24 HOURS FROM THE TIME THE CITY/CONTRACTOR COMES AWARE OF THE CIRCUMSTANCES.
- 9. STRAW BALES SHALL NOT BE USED FOR PRIMARY EROSION OR SEDIMENT CONTROL (I.E. STRAW BALES MAY BE USED FOR REINFORCEMENT BEHIND ANOTHER BMP SUCH AS SILT FENCE).
- 10. BMP'S INTENDED FOR SHEET FLOW SEDIMENT RUNOFF SHALL BE PLACED PARALLEL TO THE SLOPE.
- 11. ALL BMP'S SHALL BE CLEANED WHEN SEDIMENT LEVELS ACCUMULATE TO HALF THE DESIGN OF THE BMP UNLESS OTHERWISE SPECIFIED.
- 12. ALL SEDIMENT COLLECTED IN BMP'S SHALL BE REMOVED UPON INITIAL ACCEPTANCE.
- 13. PERMANENT EROSION CONTROL MEASURES FOR SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH DISTURBANCE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH DISTURBANCE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED WITHIN 14 CALENDAR DAYS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION MEASURES ARE IMPLEMENTED.
- 14. FINAL STABILIZATION HAS BEEN ACHIEVED WHEN ALL EARTH DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH AN INDIVIDUAL PLANT DENSITY OF AT LEAST 70 PERCENT OF PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED.
- 15. ALL TEMPORARY BMP'S SHALL BE REMOVED FROM THE SITE UPON SUBMITTING THE INACTIVATION NOTICE.
- 16. ALL SITE WASTES (INCLUDING TRASH AND BUILDING MATERIALS) MUST BE PROPERLY MANAGED TO PREVENT POTENTIAL POLLUTION OF STATE WATERS.
- 17. PREVENT VEHICLE TRACKING ON CITY STREETS. IF TRACKING OCCURS, THE CONTRACTOR SHALL IMMEDIATELY SWEEP THE
- 18. IF PORTABLE CONCRETE WASHOUT IS USED AND PLACED ON THE STREET, ADDITIONAL BMP'S ARE REQUIRED AROUND CWA TO PREVENT POTENTIAL CONCRETE SPILLS FROM BEING TRANSPORTED INTO THE STORM SEWER.

## **EARTHWORK NOTES**

STREET OF DEBRIS. AT A MINIMUM, THE STREET SHALL BE SWEPT EACH DAY AS NEEDED.

- 1. EXPLORATORY BORINGS AND LOGS WERE PERFORMED BY OLSSON, DATED JANUARY 13, 2020. A COMPLETE GEOTECHNICAL REPORT IS INCLUDED IN THE PROJECT MANUAL.
- 2. CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION, TRENCHING, BACKFILL, AND COMPACTION IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. COMPACTION AND MOISTURE TESTING WILL BE PROVIDED BY THE CITY. IF A COMPACTION OR MOISTURE TEST FAILS TO MEET SAID REQUIREMENTS, THE CONTRACTOR WILL BE REQUIRED TO CORRECT THE WORK AND WILL BE RESPONSIBLE FOR THE COST OF RE-TESTING.
- 3. WATER SHALL BE USED AS A DUST PALLIATIVE WHERE REQUIRED. THE CONTRACTOR SHALL PROVIDE A WATER TRUCK ON-SITE FOR DUST CONTROL. LOCATIONS SHALL BE AS ORDERED BY CITY AND WILL NOT BE PAID FOR SEPARATELY.
- 4. EXCESS SOIL THAT MAY BE GENERATED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR.

1. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB SITE; INCLUDING , SAFETY OF PERSONS AND PROPERTY DURING THE PERFORMANCE OF WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE CITY TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE

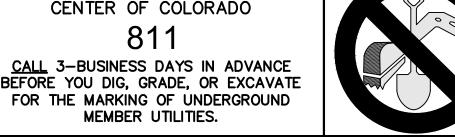
CONTRACTOR'S SAFETY MEASURES IN, ON, OR NEAR THE CONSTRUCTION SITE.

- 2. THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO 811 OR (1-800-922-1987) FOR THE LOCATION OF UNDERGROUND GAS, ELECTRIC, TELEPHONE, CABLE, WATER, AND SANITARY UTILITIES AT LEAST THREE BUSINESS DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- 3. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" AND WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY AUTHORIZED CITY OF THORNTON PERSONNEL.
- 4. NEW WATER MAINS TWELVE (12) INCHES OR LESS SHALL BE PVC PRESSURE PIPE, UNLESS OTHERWISE SPECIFIED, AND SHALL CONFORM TO AWWA STANDARD C-900 WITH THE FOLLOWING ADDITIONAL REQUIREMENTS OR EXCEPTIONS:
  - PIPE SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" SECTION 204.
  - WATER MAINS SHALL BE LAID IN CONFORMANCE WITH LATEST EDITION OF THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS AND SHALL BE SUBJECT TO CITY INSPECTION AND APPROVAL.
- 5. FIRE HYDRANTS SHALL BE LIMITED TO THE FOLLOWING MANUFACTURERS ONLY AND SHALL BE PAINTED ACCORDING TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" PRIOR TO ACCEPTANCE.

MUELLER COMPANY - 51/8" CENTURION WATEROUS COMPANY - MODEL WB-67 AVK - SERIES 27

- 6. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER THE "AS CONSTRUCTED" LOCATIONS OF INSTALLED FACILITIES AND, THIS IN TURN, SHALL BE DEVELOPED INTO RECORD DRAWINGS BY THE ENGINEER AND SUBMITTED TO THE CITY.
- 7. THERE SHALL BE A MINIMUM OF 4.5 FEET OF COVER FROM FINISHED GRADE TO THE TOP OF PIPE.
- 8. BEDDING AND BACKFILL MATERIALS FOR BOTH WATER AND SEWER SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS."
- 9. A MEETING MUST BE HELD BETWEEN THE CONTRACTOR AND CITY OF THORNTON CONSTRUCTION COORDINATOR PRIOR TO CONSTRUCTION.
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING NEARBY PUBLIC STREETS OF MUD OR DEBRIS DUE TO CONSTRUCTION ACTIVITY INITIATED BY SAID CONTRACTOR ON A DAILY BASIS OR AS OTHERWISE DIRECTED BY AUTHORIZED CIT **PERSONNEL**
- 11. THRUSTBLOCKS SHALL BE PLACED AT FITTINGS, TEES, BENDS, CROSSES, PLUGS, ETC., IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF THORNTON "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS."
- 12. MECHANICAL JOINT RESTRAINTS (I.E. MEGALUG OR UNI-FLANGE) ARE REQUIRED AT ALL FITTINGS AND BENDS.
- 13. ALL FITTINGS AND BENDS SHALL BE CLASS 350/AWWA C153 DUCTILE IRON.
- 14. CONTRACTOR SHALL COORDINATE ALL WATER SYSTEM INTERRUPTIONS WITH CITY 48 HOURS PRIOR TO ANTICIPATED DISRUPTION OF SERVICE.

CALL UTILITY NOTIFICATION CENTER OF COLORADO



FOR BID NOT TO BE USED FOR CONSTRUCTION

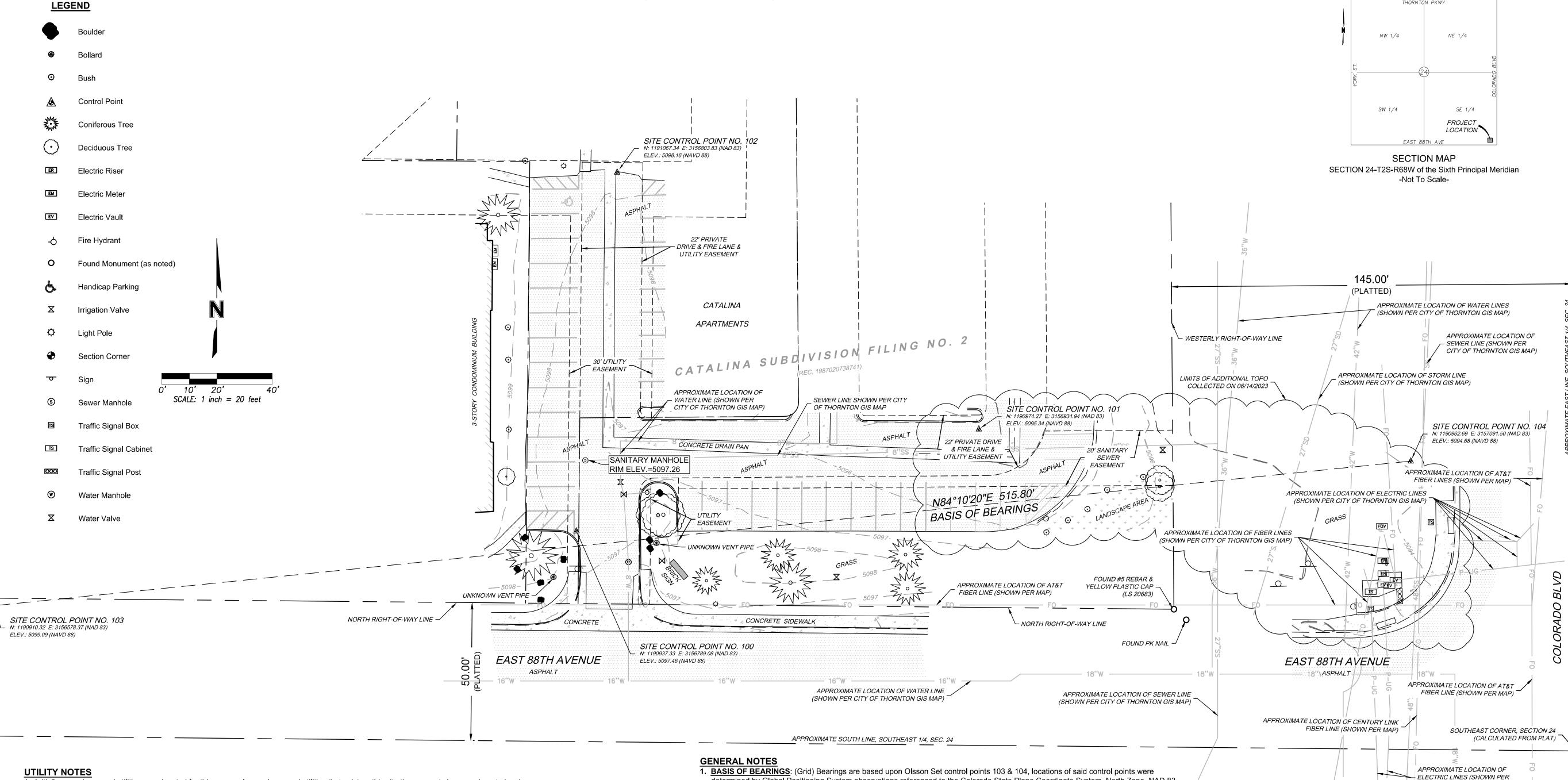
> DATE PRINTED OLSSON

January 31, 2024

## 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



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 Survwest. 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 locate request by 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.

|   |        |                 |                | CONTRO        | DL 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                               |
| Ī | 201    | 1191208.25      | 3155936.57     | 1191208.18    | 3155936.78     | 5105.50   | FOUND CHISELED "X" ON FIRE HYDRANT 88.5-48 |

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.

| CITY OF THORNTON GIS MAP)

On behalf of Olsson,

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

NOTE
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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 HOWEVER THE RESPONSIBILIT OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

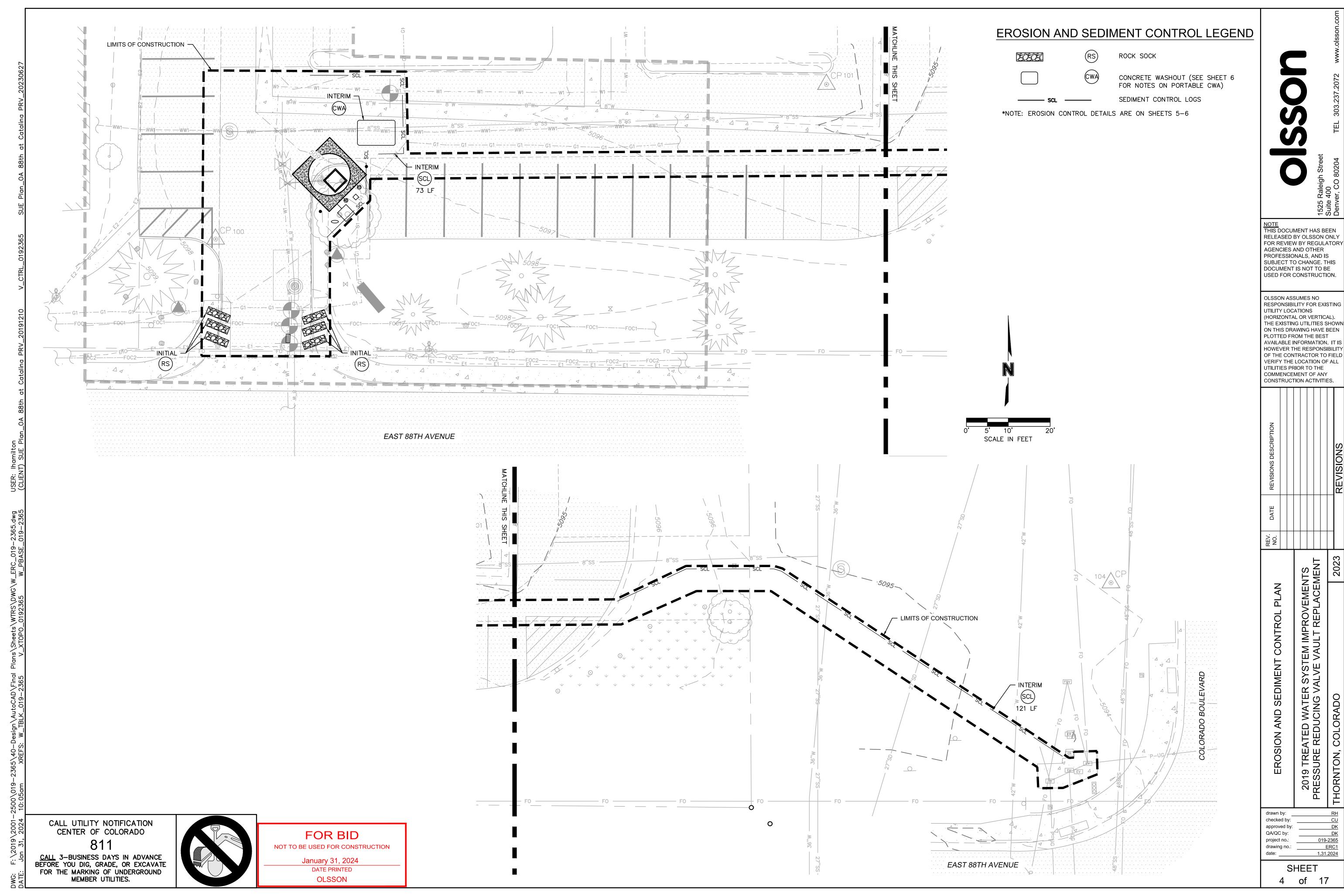
YSTEM IMPROVEMENTS VE VAULT REPLACEMEN S. A  $\propto$  >ATED REDU

drawn by: checked by: DMW QA/QC by: project no : 019-2365

19 SS

drawing no.: <u>V TOPO 0192365</u> SHEET

of

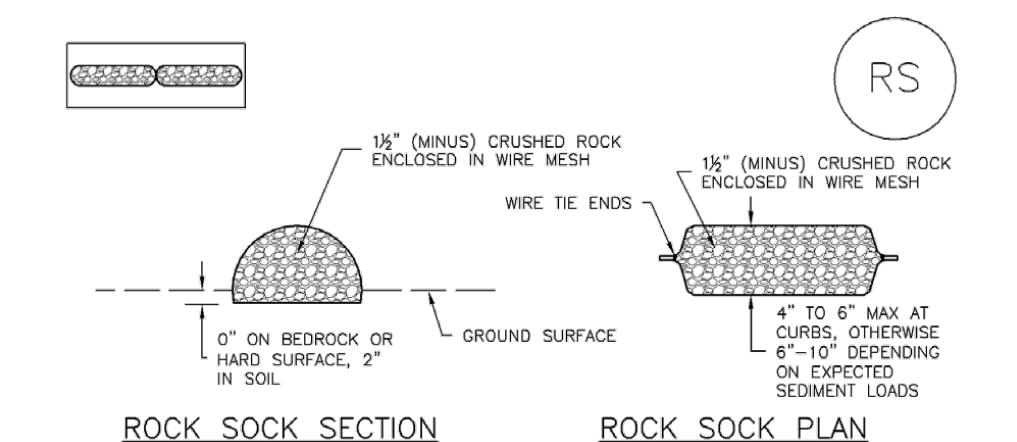


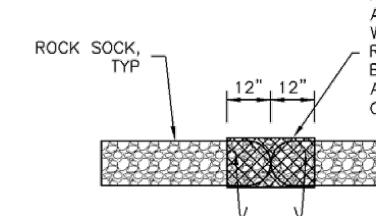
- 2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- 3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- 4. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.
- 5. 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 ½ OF THE HEIGHT OF THE ROCK SOCK.
- 6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- 7. 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 NDORSES 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.





ANY GAP AT JOINT SHALL BE FILLED WITH AN ADEQUATE AMOUNT OF 1½" (MINUS) CRUSHED ROCK AND WRAPPED WITH ADDITIONAL WIRE MESH SECURED TO ENDS OF ROCK PEINFORCED SOCK. AS AN ALTERNATIVE TO FILLING JOINTS BETWEEN ADJOINING ROCK SOCKS WITH CRUSHED ROCK AND ADDITIONAL WIRE WRAPPING, ROCK SOCKS CAN BE OVERLAPPED (TYPICALLY 12-INCH OVERLAP) TO AVOID GAPS.

## ROCK SOCK JOINTING

| SIEVE SIZE                       | MASS PERCENT PASSING<br>SQUARE MESH SIEVES |  |  |  |
|----------------------------------|--|--|--|--|
|                                  | NO. 4                                      |  |  |  |
| 2"                               | 100  |  |  |  |
| 1/2                              | 90 - 100<br>20 - 55                        |  |  |  |
| 3 <sub>/</sub> ."                | 20 - 55<br>0 - 15                          |  |  |  |
| 74<br>3%"                        | 0 – 5                                      |  |  |  |
| MATCHES SPECIFICATIONS FOR NO. 4 |  |  |  |  |
|                                  | GGREGATE FOR CONCRETE                      |  |  |  |
| PER AASHTO                       | M43. ALL ROCK SHALL BE                     |  |  |  |

FRACTURED FACE, ALL SIDES.

GRADATION TABLE

#### ROCK SOCK INSTALLATION NOTES

- SEE PLAN VIEW FOR:

   LOCATION(S) OF ROCK SOCKS.
- 2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).
- 3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½", RECOMMENDED MINIMUM ROLL WIDTH OF 48"
- 4. 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.
- 5. 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

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

811

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



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HOWEVER THE RESPONSIBILITY
OF THE CONTRACTOR TO FIELD
VERIFY THE LOCATION OF ALL
UTILITIES PRIOR TO THE
COMMENCEMENT OF ANY
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RESPONSIBILITY FOR EXISTING

THE EXISTING UTILITIES SHOW

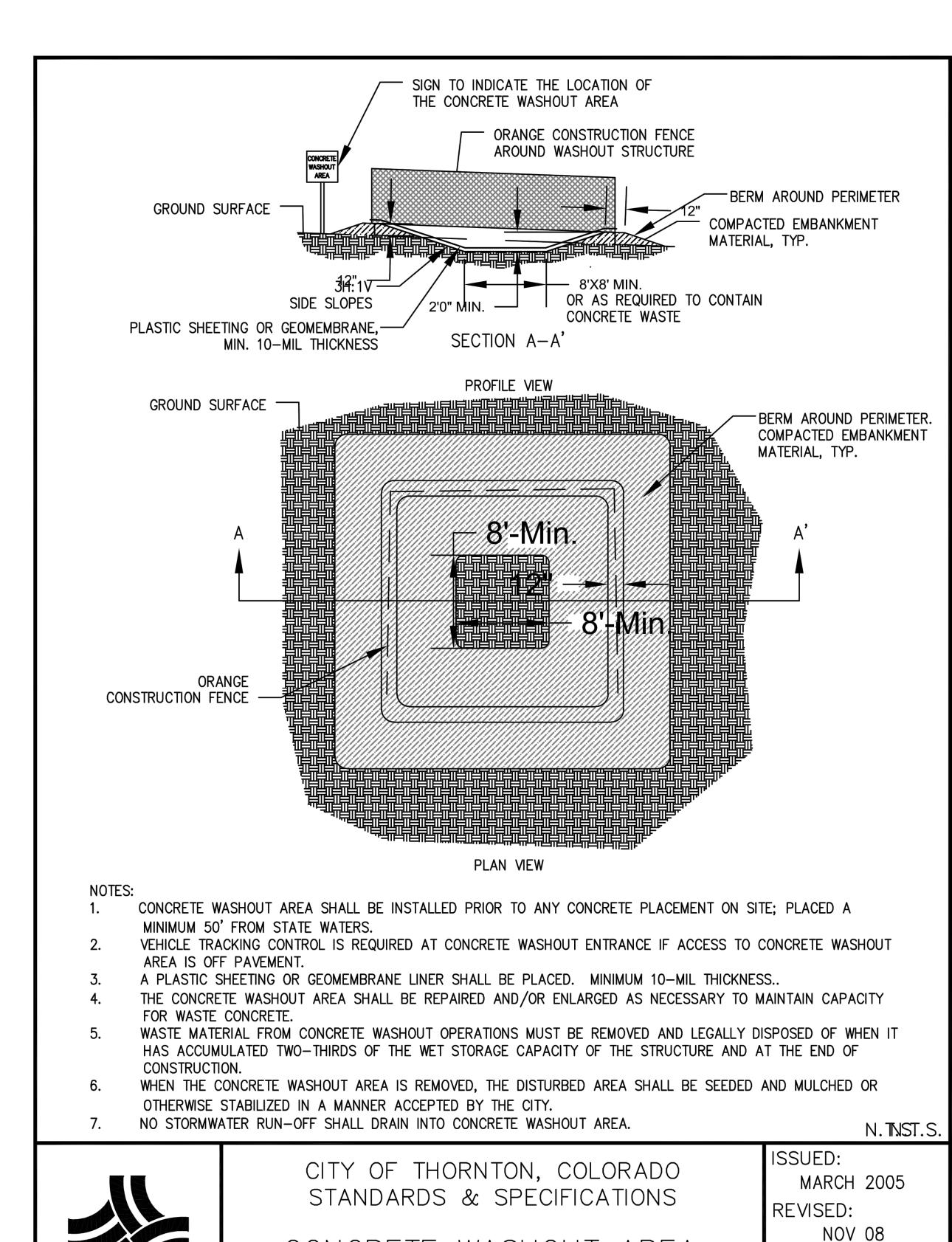
UTILITY LOCATIONS

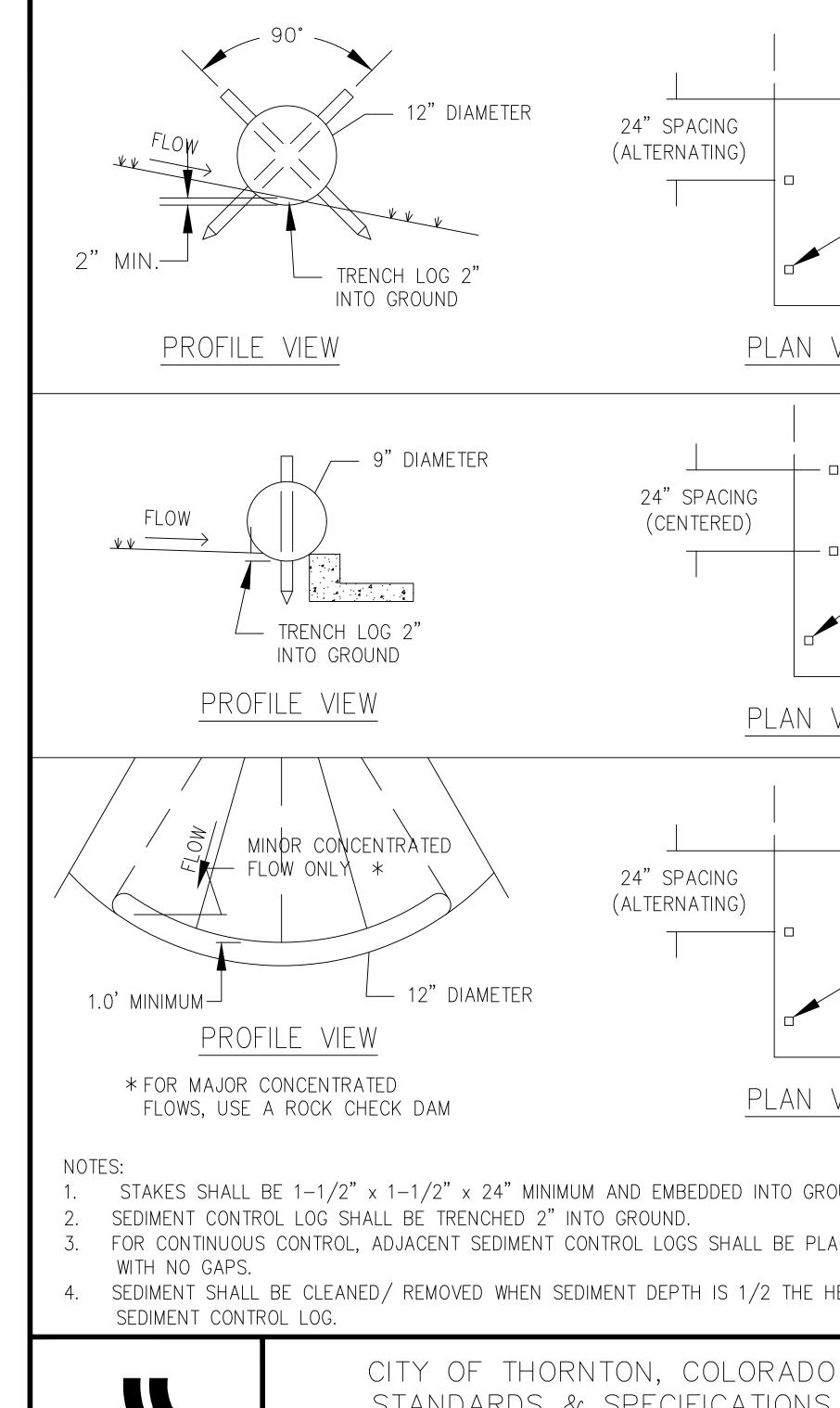
SEDIMENT CONTROL DETAILS
WATER SYSTEM IMPROVEMENTS
ICING VALVE VAULT REPLACEMENT

EROSION AND SEDIMENT 2019 TREATED WATER SYS PRESSURE REDUCING VALVI

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

SHEET 5 of 17

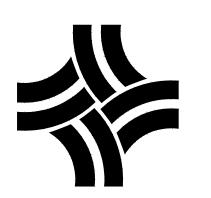




USE 2 STAKES AT 90° ANGLE TO EACH OTHER AT LOG ENDS PLAN VIEW USE 2 STAKES AT 90° ANGLE TO EACH OTHER AT LOG ENDS PLAN VIEW USE 2 STAKES AT 90° ANGLE TO EACH OTHER AT LOG ENDS PLAN VIEW STAKES SHALL BE  $1-1/2" \times 1-1/2" \times 24"$  MINIMUM AND EMBEDDED INTO GROUND A MINIMUM OF 12". FOR CONTINUOUS CONTROL, ADJACENT SEDIMENT CONTROL LOGS SHALL BE PLACED FIRMLY TOGETHER

SEDIMENT SHALL BE CLEANED/ REMOVED WHEN SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE

N.T.S.



STANDARDS & SPECIFICATIONS

SEDIMENT CONTROL LOG

ISSUED: NOV 08 REVISED:

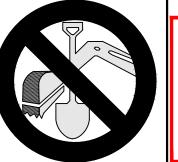
DRAWING NO.

400-9

CONCRETE WASHOUT AREA DRAWING NO. DETAIL 400-6

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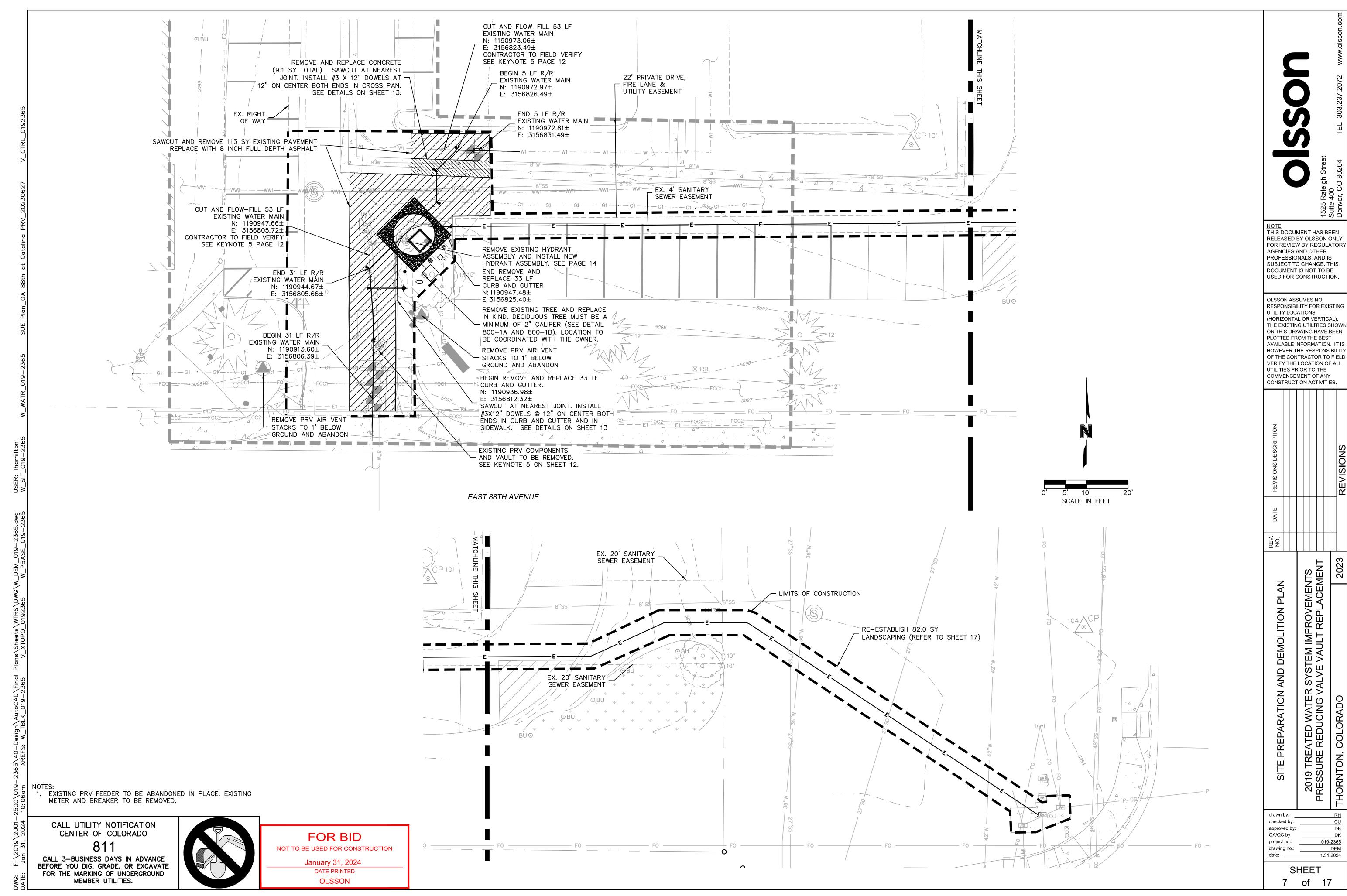


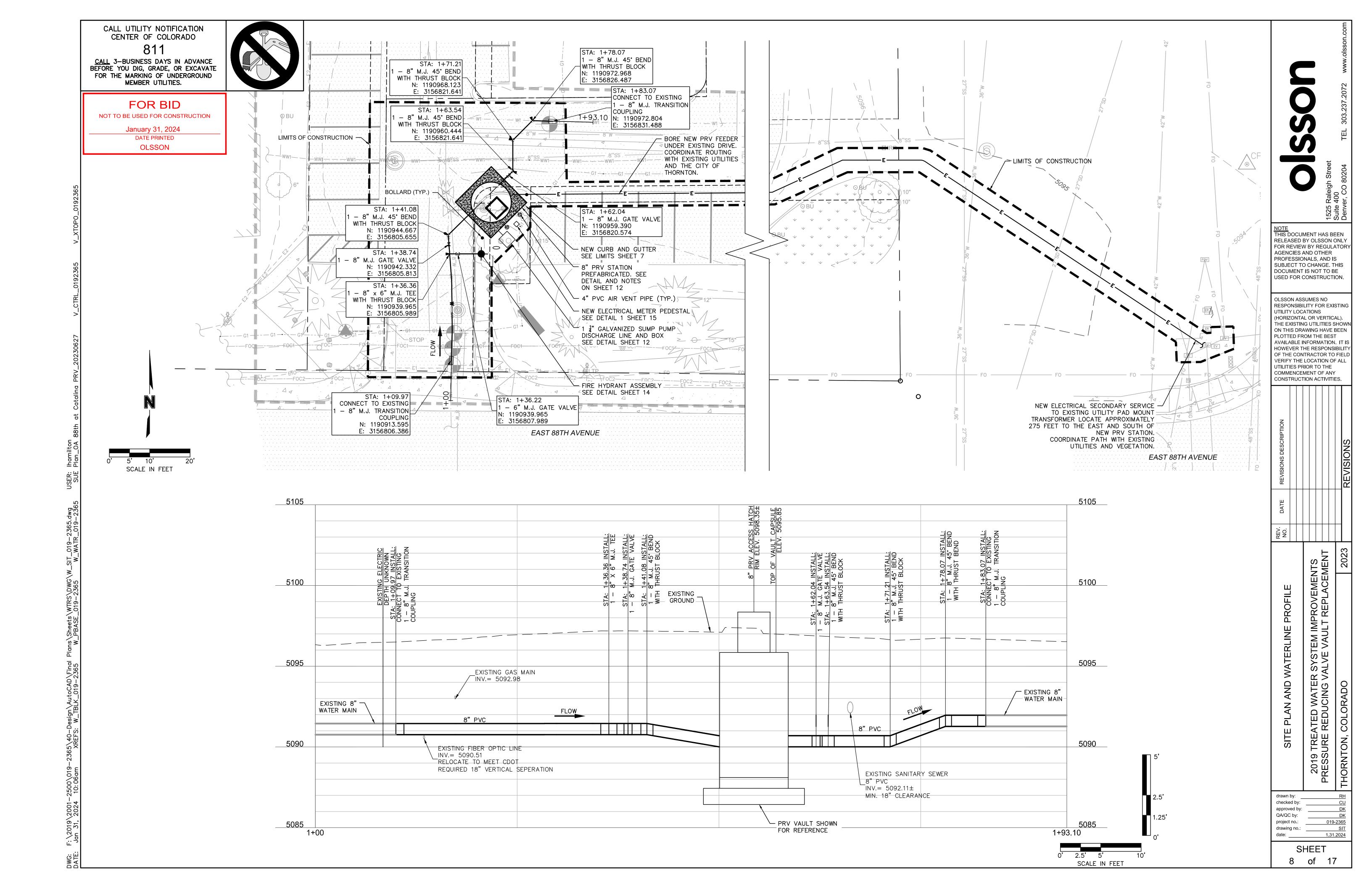
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SHEET 6 of 17

QA/QC by: 019-2365 project no.: ERC3 1.31.2024 drawing no.:





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> SHEET of 17

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

Flanges shall be sized and drilled in accordance with ansi B-16.1 class 126 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

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-60 "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

**GATE VALVES** 

VALVE BOX PARTS SHALL BE MANUFACTURED BY TYLER, SERIES 6860 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 <u>STANDARDS AND SPECIFICATIONS</u>. 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.

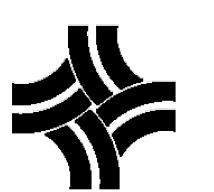
FINAL ELEVATION OF VALVE BOXES SHALL BE LEFT TO THE DISCRETION OF THE DEVELOPMENT ENGINEERING MANAGER.

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

DRAWING NO. 200-6B

ISSUED:

REVISED:

APRIL 2010

CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS

RUBBER

PART LIST

RED'D MATERIAL

CAST IRON

CAST IRON

BRONZE

RIMBER

RUBBER

CELCON

RUBBER

CAST IRDN

DETAIL OF VIPER RING STEN RENOVED FOR CLARITY 4'-12' DNLY

GATE VALVE DETAIL

REVISED:

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

ITEN DESCRIPTION

1 CAP SCREW

2 VRENCH NUT

4 STUFFING BOX

STUFFING BOX BOLTS

STUFFING BOX NUTS

8 ANTI-FRICTION VASHER

11 BUNNET GASKET (U-RING)

10 BONNET BOLTS
BONNET NUTS

16 BODY - FLANGE ENDS

19 BODY - SLIP-ON ENDS

20 BODY - FLANGE x NJ END

21 BODY - FLANGE x SLIP-ON END

3 ISTEM

7 D-RING

9 BONNET

13 DISC NUT

15 GUIDE CAP

17 HANDVHEEL

22 VIPER RING

18 | Body - NJ ends

14 DISC

RUBBER - SBR- ASTM D2000

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CALL UTILITY NOTIFICATION

CENTER OF COLORADO

January 31, 2024 DATE PRINTED OLSSON

A126 CLASS B

304 STAINLESS STEEL A193 GRADE B8 304 STAINLESS STEEL F594 GROUP 1 D2000 NITRILE B62 | ALLITY CB3600

astm

A126 CLASS B

A126 CLASS B

D2000 NITRILE

D2000 NITRILE

B138 | ALLIDY C67600

304 STAINLESS STEEL | A193 | GRADE B8

304 STAINLESS STEEL | A193 |GRADE B8 304 STAINLESS STEEL | F594 | GROUP 1

BRONZE SEE NOTE 1 CELCON CAST IRON ICLASS B

A126 CLASS B CAST IRDN A126 CLASS B CAST IRDN A126 CLASS B CAST IRDN CAST IRON A126 CLASS B CAST IRON A126 CLASS B

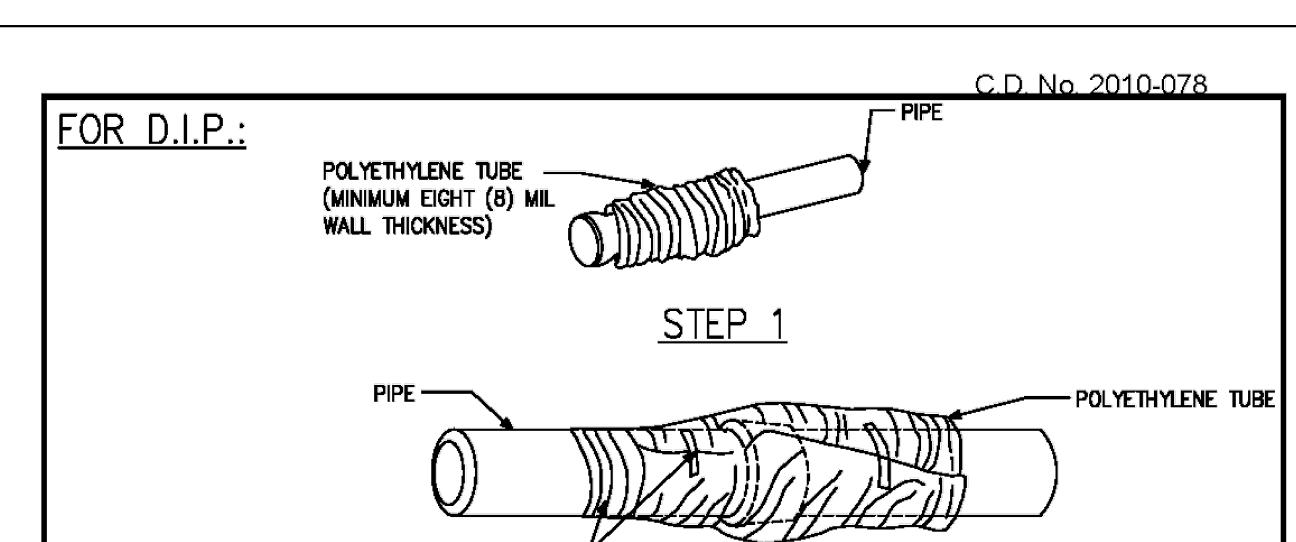
> ISSUED: APRIL 2010

> > DRAWING NO.

N.T.S.

200-6A





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

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.

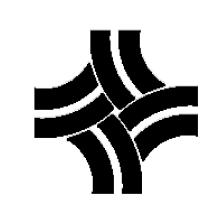
STEP 3 - OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF PIPE AND TAPED IN PLACE.

## 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.



CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS

ISSUED: **APRIL 1992** REVISED: APRIL 2010

CORROSION PROTECTION DETAIL

DRAWING NO.

200-15

C.D. No. 2010-078 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

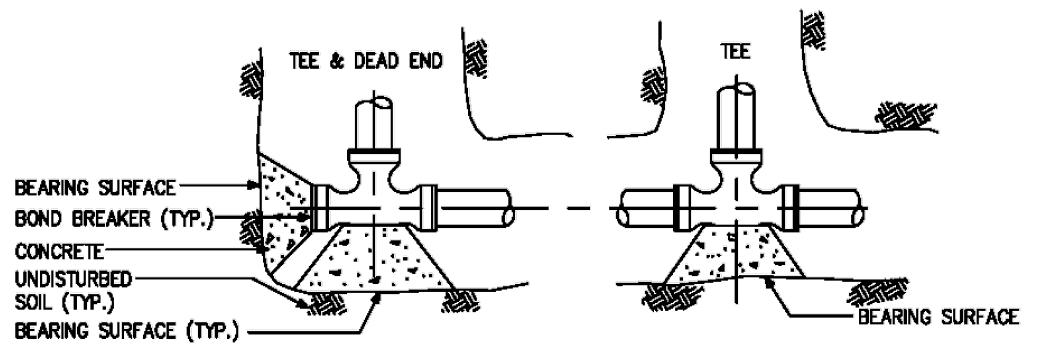
A BOND BREAKER SHALL BE PLACED BETWEEN THE FITTING AND THE THRUST BLOCK TO AID IN EASE OF FUTURE REMOVAL. THE VERTICAL SIDES OF THE CONCRETE THRUST BLOCKS SHALL BE FORMED TO ALLOW FOR SYMMETRICAL THRUST.

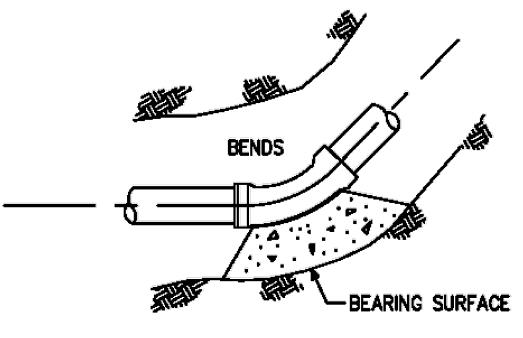
WHEN IT IS IMPOSSIBLE THROUGH OVER EXCAVATION OR OTHER CAUSES TO POUR A THRUST BLOCK AGAINST UNDISTURBED EARTH, HARNESS RODS SHALL BE REQUIRED TO ANCHOR THE FITTINGS TO THE MAIN UPON APPROVAL OF THE DEVELOPMENT ENGINEERING MANAGER.

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.





PLAN VIEW

#### NOTES:

1. THRUST BLOCKS MUST BE CAST IN PLACE CONCRETE.

- 2. NO TAMPING OR COMPACTING SHALL BE ALLOWED ABOVE THRUST BLOCK FOR A MINIMUM OF TWENTY-FOUR (24) HOURS AFTER PLACEMENT.
- 3. CONCRETE MUST SET A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE PERFORMANCE OF A HYDROSTATIC TEST.
  4. 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 VERICAL THRUSTS, SHOW AREA REQUIREMENT ON STANDARD DETAILS.

5. BOND BREAKER TO BE MINIMUM OF 8 MIL. POLYETHYLENE PLASTIC.

CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS

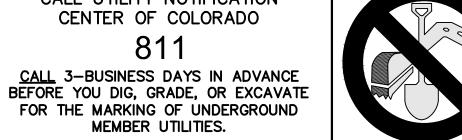
THRUST BLOCK DETAIL

ISSUED: **APRIL 1992** REVISED:

**APRIL 2010** 

DRAWING NO. 200-11

CALL UTILITY NOTIFICATION CENTER OF COLORADO

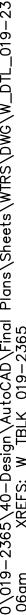


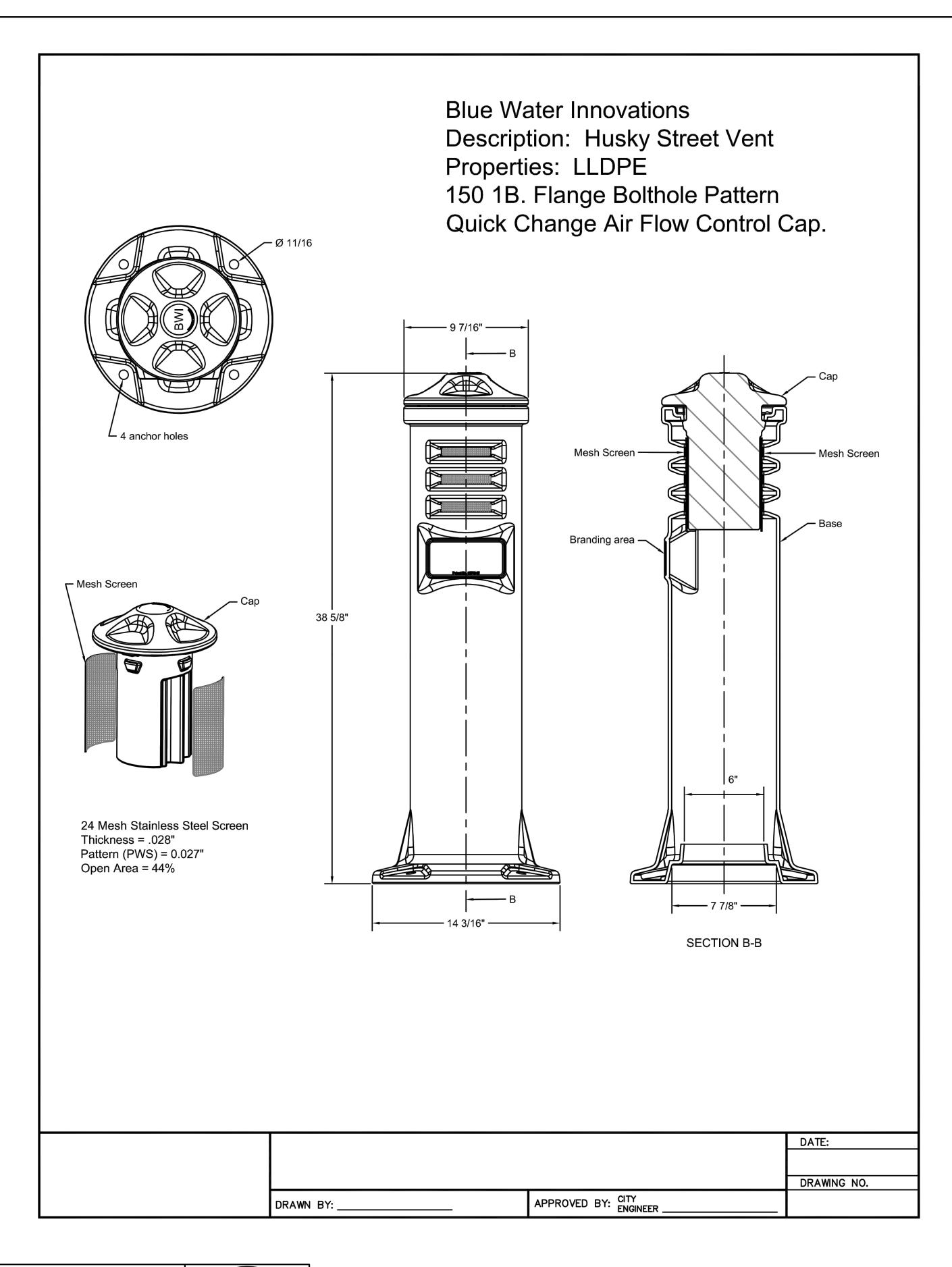


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SHEET 10 of 17

| REV. | DATE | REVISIONS DESCRIPT |
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MECHANICAL JOINT RESTRAINING GLANDS FOR P.V.C. OR D.I. PIPE.

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

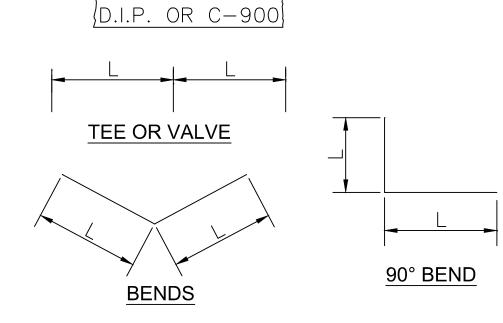
P.V.C. GLANDS 2000 MEG-A-LUG OR 1500 UNI-FLANGE OR APPROVED EQUAL D.I. GLANDS 1100 MEG-A-LUG OR 1400 UNI-FLANGE OR APPROVED EQUAL

FOR INSTALLATION ON C-900 PVC OR DUCTILE IRON PIPE USE AS RECEIVED

AND INSTALL PER INSTRUCTIONS.

PIPE O.D.
P.V.C. DUCTILE
AWWA IRON
C900 ASTM A536 SHIPPING WEIGHT 6.900 9.050 6.900 9.050 11.10C 16.3 26.0 31.4 11.10C 13.20C 13.20C

D.I.P. OR C-900



#### ROD DIAMETER, GRADE AND LENGTH OF RESTRAINED PIPE

| PIPE SIZE                |      | 4"  |      |      | 6"  |      |      | 8"     |      |
|--------------------------|------|-----|------|------|-----|------|------|--------|------|
| FITTING                  | D    | L   | G    | D    | L   | G    | О    | $\Box$ | G    |
| PLUG, TEE OR<br>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. |

- LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM BENDS.
- CLAMPS AND RODS SHALL BE EXTENDED TO NEXT PIPE.
- D = DIAMETER, L = LENGTH, G = GRADE, M.S. = MILD STEEL, H.S. = HIGH STRENGTH STEEL.
- MINIMUM 6.0' OF GROUND COVER IS REQUIRED.
- BASED ON 200 P.S.I., INTERNAL PRESSURE.
- M.S.=MILD STEEL ROD, A.S.T.M. STANDARD DESIGNATION A-36.
- H.S.=HIGH STRENGTH ROD, A.S.T.M. STANDARD DESIGNATION A-193, GRADE B-7.
- NUTS SHALL BE A.S.T.M., STANDARD DESIGNATION A-307, GRADE A OR B, HEXAGON HEAVY SERIES.
- 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

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drawn by: checked by: QA/QC by: project no.: drawing no.: DTL3 1.31.2024

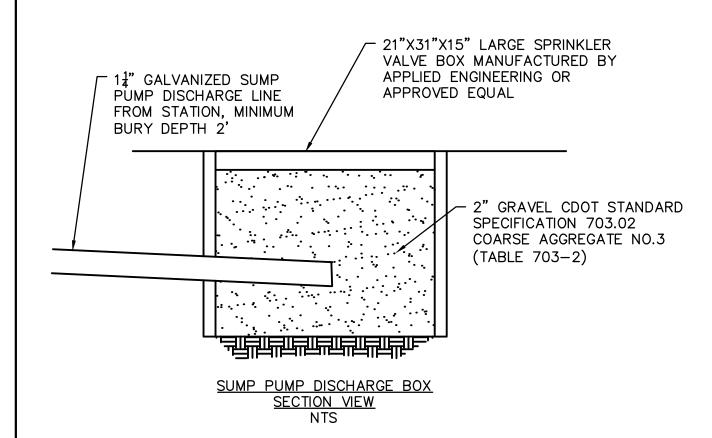
UTILITY LOCATIONS

WATER SYSTEM IMPROVEMENTS JCING VALVE VAULT REPLACEMENT

2019 RESSI

SHEET 11 of 17

- THE CITY OF THORNTON PRV VAULT SHALL HAVE THE FOLLOWING ADDITIONAL REQUIREMENTS:
- 2.1. ITEM 2 (PRESSURE GAUGES) SHALL BE MOUNTED ON A 1/8-INCH THICK STAINLESS STEEL PLATE AND BE MOUNTED TO THE WALL.
- 2.12. ITEM 7 (AIR VENTS) VENTILATION STACKS ARE TO BE PER DETAIL ON SHEET 10. 2.13. ITEM 21 (ENTRANCE HATCH) SHALL BE A BILCO J-3AL-H20 OR APPROVED EQUIVALENT. 2.13.1. THE ENTRANCE HATCH SHALL BE INSTALLED AT A SLOPE THAT MATCHES THE
- EXISTING SIDEWALK. 2.13.2. DRAINAGE AT THE ENTRANCE HATCH SHALL BE CONNECTED TO SUMP PIT OUTSIDE OF THE VAULT STRUCTURE. CONTRACTOR TO VERIFY DRAINAGE FROM HATCH **GUTTER TO SUMP.**
- 2.14. ITEM 25 (POWER PANEL) SHALL BE PROVIDED WITH MAIN BREAKER.
- 2.15. ITEM 28 (CATHOTIC PROTECTION) SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND INCLUDE A TEST STATION LOCATED INSIDE THE VAULT. TEST STATION SHALL INCLUDE OPERATING RANGE AND MINIMUM INFORMATION FROM MANUFACTURER FOR ALL GAUGES.
- 2.16. ALL CONTROL LINES SHALL BE BRAIDED 316 STAINLESS STEEL.
- 2.17. THE INFLOW AND OUTFLOW LINES SHALL BE RESTRAINED TO THE PRV VAULT SHELL.
- 2.18. ITEM 23 (SUMP PUMP DISCHARGE LINE) SHALL BE GALVANIZED STEEL.
- 2.19. THERE SHALL BE SCREENS ON ALL WYES.
- 2.20. INTERIOR SHALL BE LINED WITH VINYL LINING OF "RHINO" STANDARD, OR APPROVED EQUAL, 18-INCHES UP THE WALL.
- 2.21. THERE SHALL BE AN ANALOGUE GUAGE ON THE STATION'S INFLOW AND OUTFLOW LINES.
- 2.22. THE HIGH WATER SENSOR SHALL BE CYLINDRICAL, MODEL: DWYER F7-BT. 2.23. A STRAINER SHALL BE INSTALLED UPSTREAM OF THE GATE VALVE (ITEM 17).
- 2.24. REINFORCED CONCRETE PAD AND ANCHOR BOLTS B INSTALLING CONTRACTOR IN ACCORDANCE WITH DIMENSIONS SHOWN ON THE SUPPLIERS SHOP DRAWINGS AND AS DIRECTED BY RESPONSIBLE PARTY. REVIEW WITH C.O.T. REGARDING RESPONSIBLE PARTY.
- 2.25. IF VAULT DOES NOT SLOPE TOWARDS SUMP, CONTRACTOR MUST ADJUST VAULT ACCORDINGLY TO ALLOW FOR PROPER DRAINAGE OF THE VAULT.
- THE PRV SHALL BE CAPABLE OF PROVIDING A PRESSURE REDUCTION OF A MINIMUM 47 PSI IN THE OPERATING RANGE OF AT LEAST 92 PSI TO 139 PSI.
- FOUNDATION FOR THE PRESSURE REDUCING VAULT TO BE DESIGNED BY COLORADO REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH THE GEOTECHNICAL ENGINEERING STUDY BY OLSSON DATED AUGUST 14, 2019. FOUNDATION DESIGN AND BUOYANCY CALCULATIONS ARE TO BE SUPPLIED AS PART OF THE PRESSURE REDUCING VAULT SUBMITTAL. THE FOUNDATION COST SHALL BE INCLUDED IN THE PRV VAULT LINE ITEM.
- REMOVAL OF EXISTING PRV VAULT AND WATER MAIN INCLUDES REMOVAL OF THE EXISTING INTERNAL COMPONENTS, EXISTING VAULT, BACKFILLING THE SPACE WITH FLO-FILL, REMOVAL OF THE EXISTING PRV VAULT SUMP PUMP DISCHARGE PIPE, VENT PIPE OR ANY OTHER EXISTING EXTERNAL COMPONENTS THAT CONFLICT WITH THE INSTALLATION OF THE NEW PRV STATION AND ASSOCIATED COMPONENTS. THE REMOVED PRV VAULT INTERNAL COMPONENTS SHALL BE RETURNED TO THE CITY OF THORNTON.
- CONTRACTOR SHALL VERIFY LIMITS OF CONSTRUCTION, PRV STATION LOCATION AND ASPHALT AND CONCRETE REMOVAL WITH CITY PRIOR TO CONSTRUCTION.
- GATE VALVES SHALL REPLACE ALL BUTTERFLY VALVES DEPICTED IN PRV DETAIL.



#### NOTES:

- CONTRACTOR TO CONFIRM DEPTHS OF PIPELINES AT THE PROPOSED VAULT LOCATION BEFORE CONSTRUCTION.
- INSTALLATION OF PROPOSED WATER MAIN THROUGH ABANDONED PRV VAULT SHALL CONSIST OF EXCAVATION OF FLO-FILL, INSTALLATION OF PIPE AT REQUIRED DEPTH AND BACKFILL OF TRENCH WITH FLOW
- 3. SLOPE SUMP DISCHARGE LINE DOWN TO DISCHARGE BOX @ 0.5%.

FOR BID NOT TO BE USED FOR CONSTRUCTION

> January 31, 2024 DATE PRINTED OLSSON

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THE PRESSURE REDUCING VAULT SHALL BE MANUFACTURED BY ENGINEERED FLUID. INC., DAKOTA PUMP INC. OR OTHER APPROVED BY DEVELOPMENT ENGINEERING MANAGER.

THE VAULT SHALL ALSO BE EQUIPPED WITH FOLLOWING:

- SUMP PUMPS SHALL BE HYDRO-MATIC OSP50AB, OR AN APPROVED EQUIVALENT. A PIPE UNION SHALL BE INSTALLED IN THE DISCHARGE LINE BETWEEN THE PUMP AND THE CHECK VALVE. DISCHARGE LINE SHALL BE MADE OF IRON AND SHALL DIRECT FLOWS TO A LOCATION APPROVED BY CITY OF THORNTON INSPECTOR.
- VENTILATION FANS SHALL BE AS MANUFACTURED BY ILG, OR AN APPROVED EQUIVALENT, MODEL PTD DIRECT-DRIVE TUBEAXIAL DUCT FAN SIZE PTD 123 (811 CFM @ 3/8" S.P.) WITH A ONE-SIXTH (1/6) HP, 120-VOLT CONSTANT SPEED, SINGLE PHASE, 60HZ ELECTRIC MOTOR. CONTROL SWITCH FOR THE FAN SHALL BE MOUNTED NEXT TO THE ENTRYWAY SO THAT IT CAN BE OPERATED WITHOUT COMPLETELY ENTERING THE VAULT. THE DISCHARGE OF THE VENT FAN SHALL BE TOTALLY ENCLOSED AND ATTACHED TO THE OPENING OF THE EXHAUST VENT PIPE.
- <u>DEHUMIDIFIERS</u> SHALL BE DAYTON MODEL# 5EAJ7, OR AN APPROVED EQUIVALENT. PROVIDE CONDENSATE DRAIN PIPE FROM DRIP TRAY TO WITHIN SIX (6) INCHES OF THE FINISHED FLOOR.
- ALL CONTROL LINES AND FITTINGS SHALL BE STAINLESS STEEL AND INCLUDE ISOLATION TO ALL PRV CONTROL LINES
- SEE SECTION 204.1(G) AND 204.1(J) OF THE CITY OF THORNTON STANDARDS AND SPECIFICATIONS.

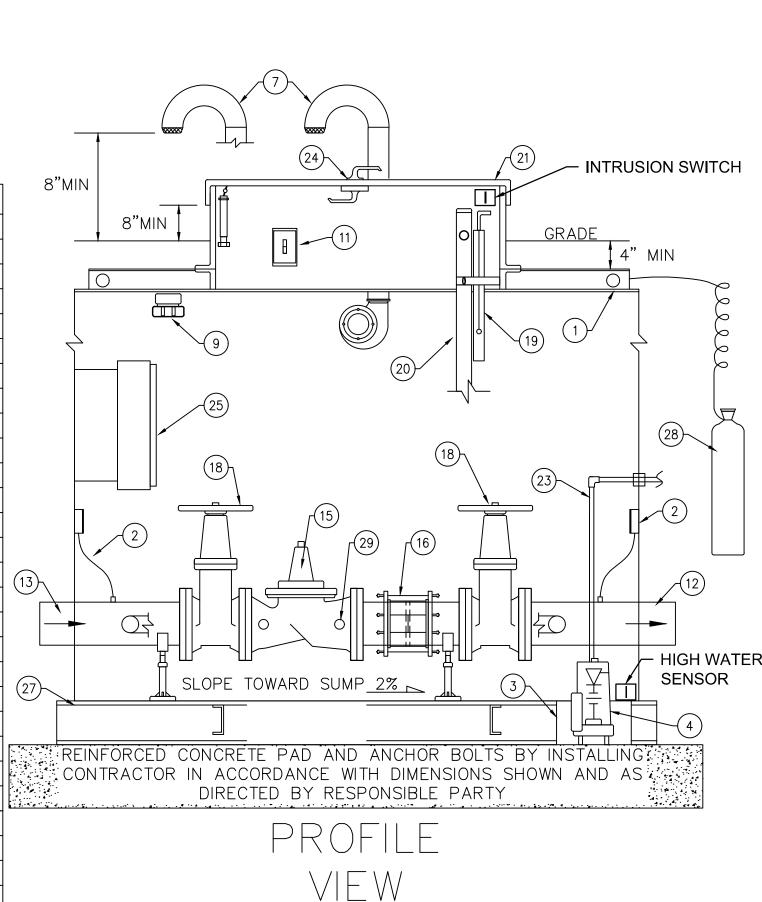
LOW FLOW BYPASS SIZES

| PRV | MIN. BYPASS SIZE |
|-----|------------------|
| 8"  | 2-1/2"           |
| 12" | 4"               |
| 16" | 6" w/2" BYPASS   |

|               | Legend  |  |  |  |  |  |  |
|---------------|---|--|--|--|--|--|--|
| 1             | Lifting Hooks (Add to any equipment in excess of 60 lbs)            |  |  |  |  |  |  |
| 2             | Pressure Gauges (stainless steel w/ isolation vlv & purge line) (2) |  |  |  |  |  |  |
| 3             | Sump Well (18" deep 12" wide)                                       |  |  |  |  |  |  |
| 4             | Sump Pump with grate  |  |  |  |  |  |  |
| 5             | Dehumidifier  |  |  |  |  |  |  |
| 6             | Station Heater  |  |  |  |  |  |  |
| 7             | Air Ducts   |  |  |  |  |  |  |
| 8             | Ventilation Blower  |  |  |  |  |  |  |
| 9             | Station Light   |  |  |  |  |  |  |
| 10            | 1.5" Conduit (provide a minimum of two conduits)                    |  |  |  |  |  |  |
| 11            |   |  |  |  |  |  |  |
| 12            | <u> </u>  |  |  |  |  |  |  |
| 13            | 3 Main Inlet  |  |  |  |  |  |  |
| 14            | 4 Low Flow Bypass   |  |  |  |  |  |  |
| 15            |   |  |  |  |  |  |  |
| 16            | Coupling  |  |  |  |  |  |  |
| 17            | GATE Valves   |  |  |  |  |  |  |
| <del>18</del> | BUTTERFLY valves GATE Valves  |  |  |  |  |  |  |
| 19            | Safety Post   |  |  |  |  |  |  |
| 20            | Entrance Ladder   |  |  |  |  |  |  |
| 21            | Entrance Hatch (weather tight cover with overhang skirt)            |  |  |  |  |  |  |
|               | 2 3/4" Hose Bib   |  |  |  |  |  |  |
| 23            | Sump discharge (IRON pipe with swivel joint for settlement)         |  |  |  |  |  |  |
| 24            | Lock with AH1 keys or "BEST" locking assembly                       |  |  |  |  |  |  |
| 25            | Power Panel Enclosure   |  |  |  |  |  |  |
| <del>26</del> | Telemetry Panel   |  |  |  |  |  |  |
| 27            | Capsule reinforcement (SEE PRV VAULT KEY NOTE 4, THIS SHEET)        |  |  |  |  |  |  |

28 Cathotic Protection (SEE PRV VAULT KEY NOTE 2, THIS SHEET)

29 Control lines (stainless steel w/ stainless steel isolation valves)



PLAN VIEW



ISSUED: APRIL 2010 REVISED:

N.T.S

DRAWING NO 200-12

PRESSURE REDUCING VAULT DETAIL SHALL INCLUDE THE ADDITIONAL REQUIREMENTS LISTED IN THE KEY NOTES, THIS SHEET

NOTE
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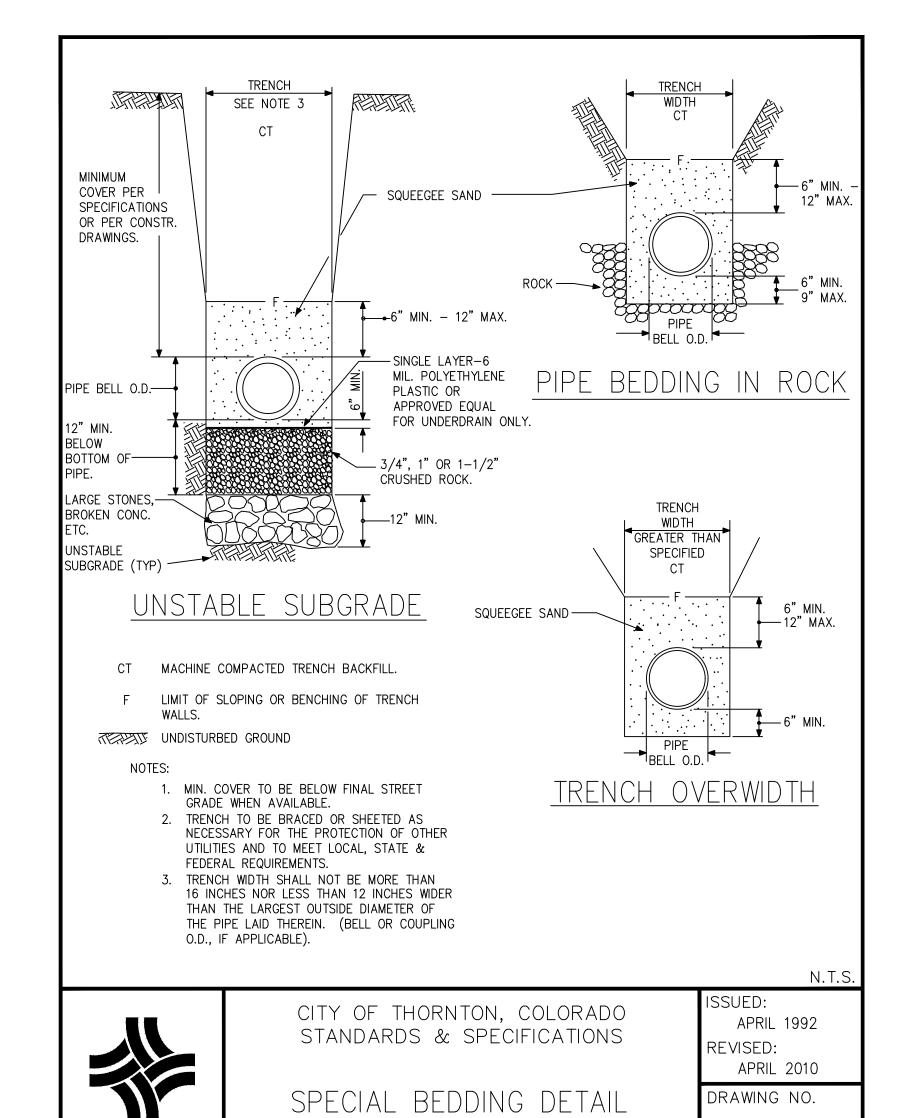
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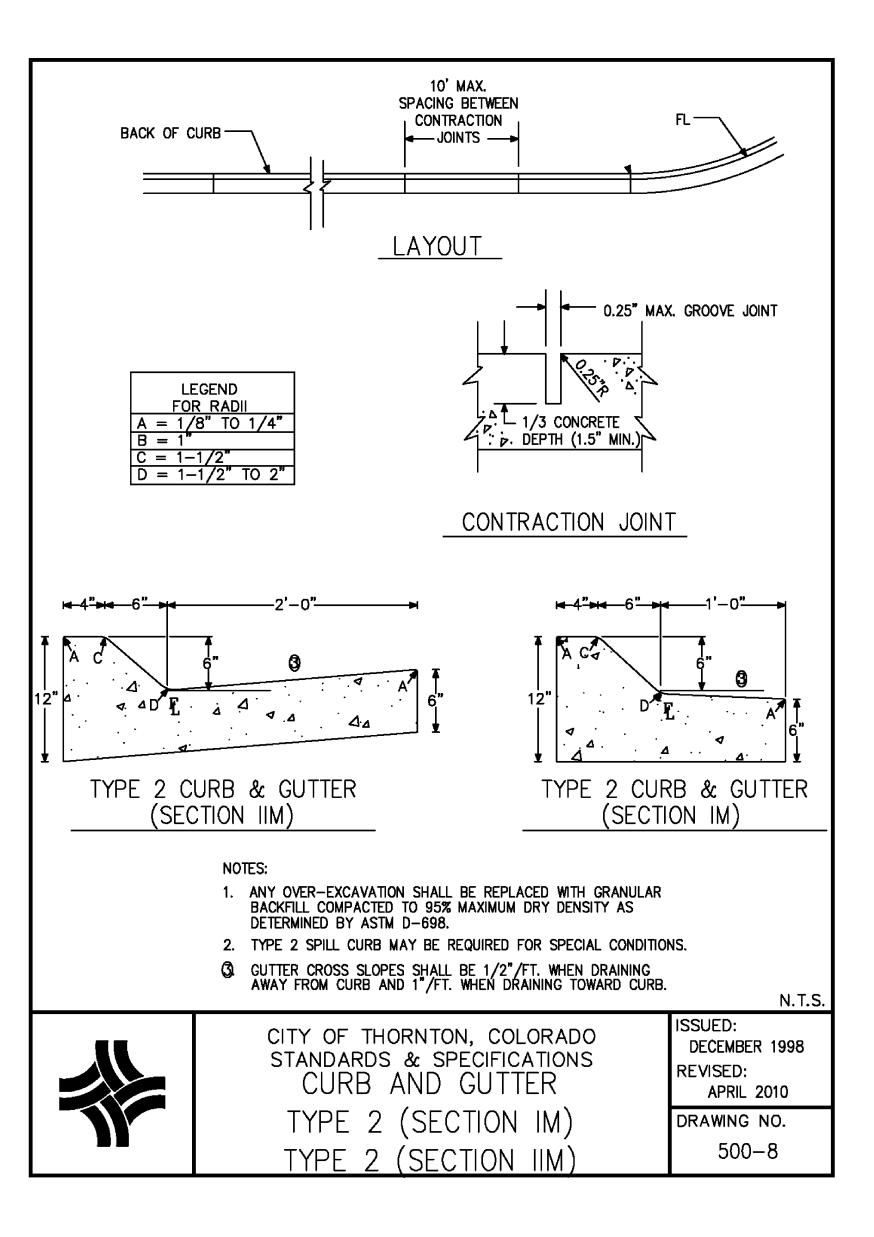
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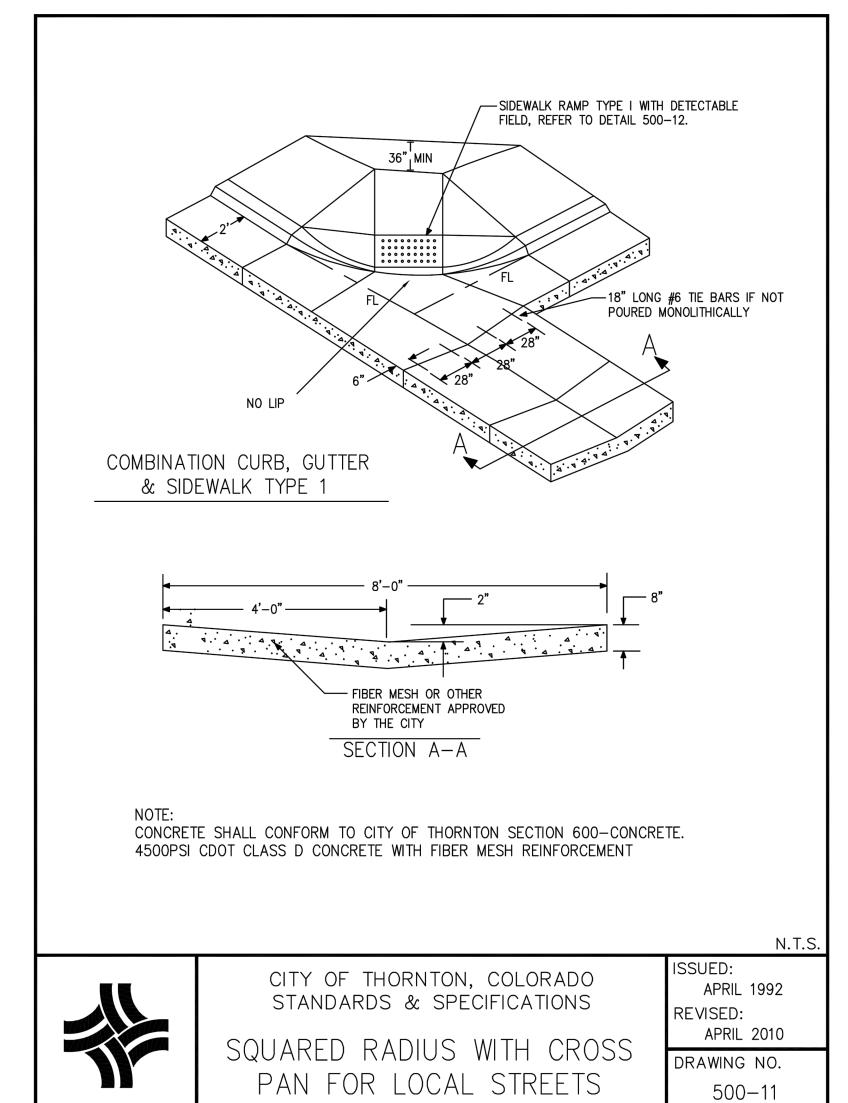
2019 <sup>-</sup> PRESSI

SHEET 12 of 17









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200-5

2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT

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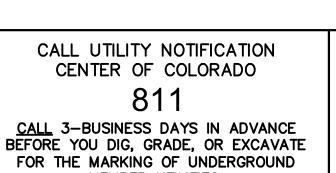
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DETAILS

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SHEET 13 of 17

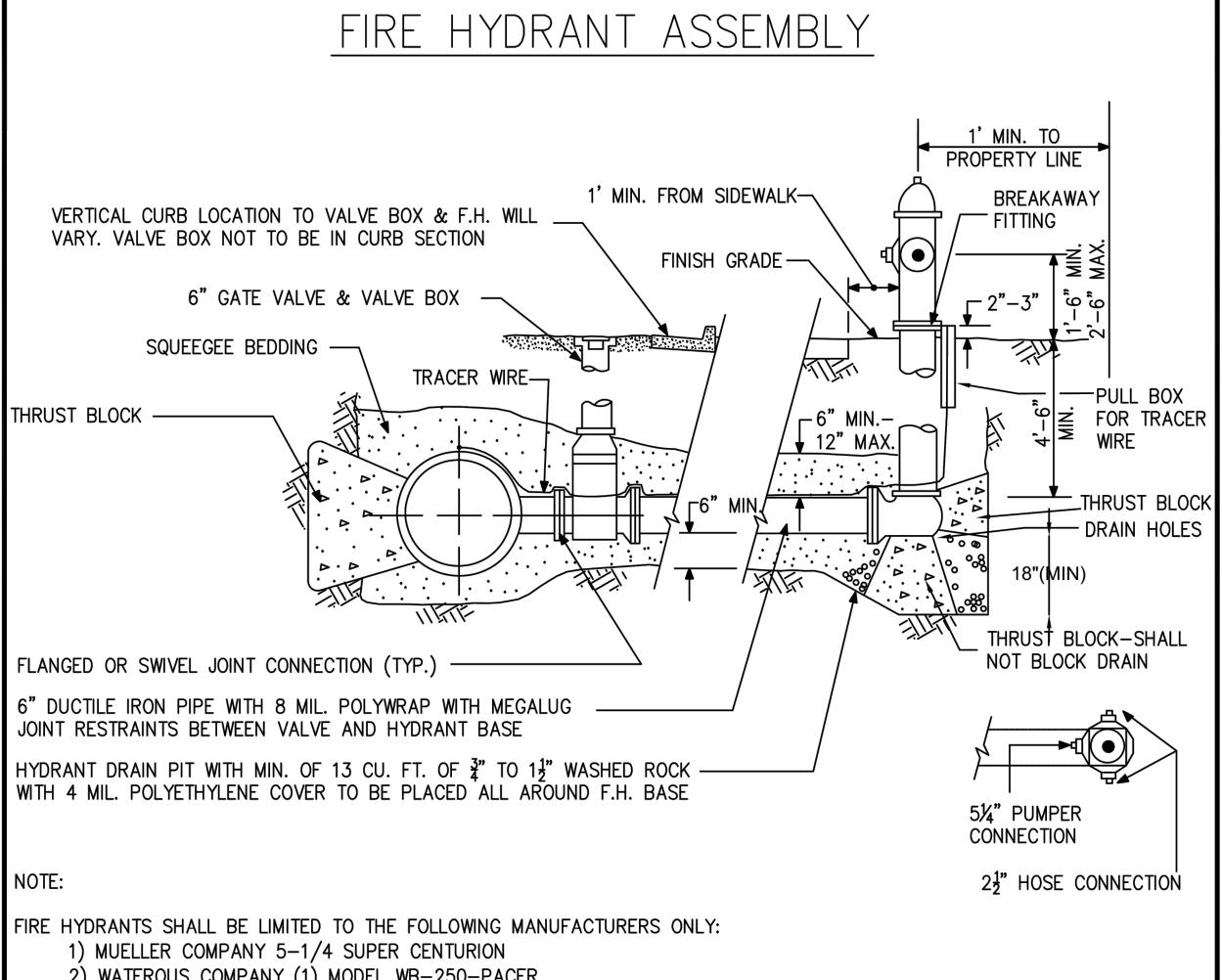


MEMBER UTILITIES.





January 31, 2024 OLSSON



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

2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT QA/QC by: 019-2365 DTL5 1.31.2024 project no.: drawing no.:

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RESPONSIBILITY FOR EXISTING

VERIFY THE LOCATION OF ALL

COMMENCEMENT OF ANY

CONSTRUCTION ACTIVITIES

UTILITY LOCATIONS

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COMPLY WITH THEIR INSTALLATION REQUIREMENTS. SERVICE METER PEDESTAL

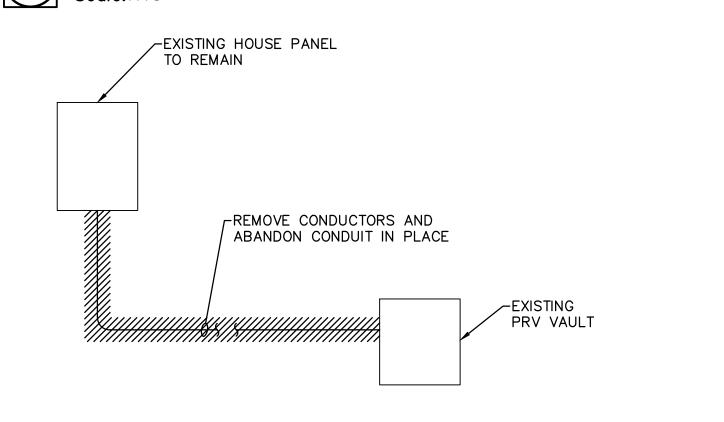
15 Scale:NTS

SOCKET

EXOTHERMIC WELD -

OR COMPRESSION

CONNECTION

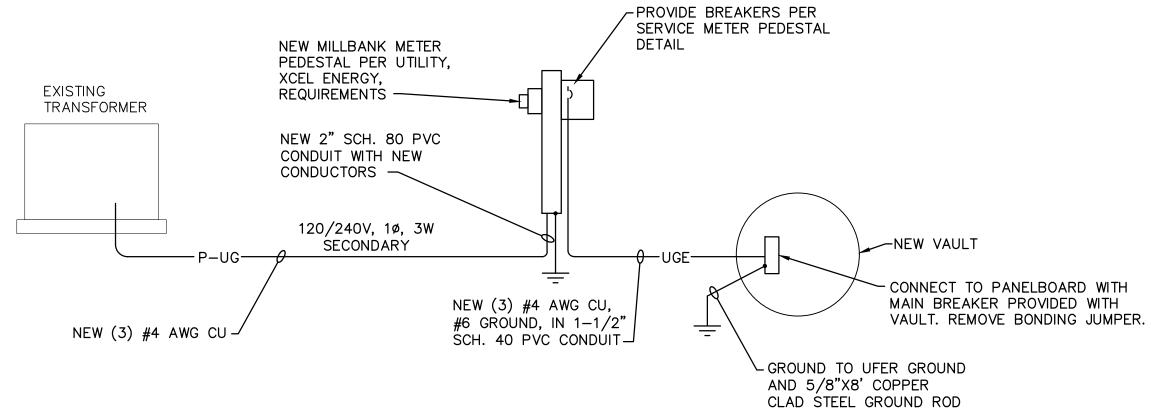


-5/8" x 8' COPPER CLAD STEEL GROUND ROD

NOTES:

2 EXISTING RISER DIAGRAM

15 Scale: NTS



TUTILITY TRANSFORMER

-NEW CONDUIT

CONDUCTORS

AND

1. COORDINATE INSTALLATION WITH UTILITY COMPANY AND

NEW RISER DIAGRAM

Scale: NTS

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2019 TREATED WATER SYSTEM IMPROVEMENTS PRESSURE REDUCING VALVE VAULT REPLACEMENT DETAILS

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STAKING: INSTALL 6' METAL T-POST STAKES OUTSIDE TREE STAKING PLAN VIEW PLANTING PIT IN UNDISTURBED MULCHED SOIL. USE #12 GAUGE GALVANIZED WIRE. ALLOW FOR SOME TRUNK MOVEMENT ATTACH TO 2" NYLON STRAPS THROUGH METAL GROMMETS, WITH  $1/2" \times 15"$  WHITE PVC SLEEVE ON EACH WIRE. 3" OR LESS MORE THAN 3" NYLON STRAPS SHALL BE LONG ENOUGH TO ACCOMMODATE CALIPER & ON CALIPER 1-1/2" OF TRUNK GROWTH. ALL EVERGREENS ADD PROTECTOR CAP TO TOP OF POST. WRAP TREES TO FIRST BRANCH IF PLANTED IN THE FALL. DO NOT WRAP IF PLANTED IN SPRING. INSTALL TRUNK PROTECTOR, DESIGNED TO EXPAND WITH TRUNK GROWTH (DECIDUOUS — PLANT TREE SUCH THAT FIRST ORDER MAJOR ROOT IS 1" TO 2" ABOVE GRADE AND TRUNK FLARE IS VISIBLE. — SPECIFIED MULCH (4" DEPTH X 6' DIAMETER) PULLED BACK 6" FROM BASE OF TRUNK. BACKFILL PIT WITH MIXTURE OF 2/3 EXISTING SOIL AND 1/3 APPROVED GRADE AMENDMENT. WATER THOROUGHLY WHILE BACKFILLING. DO NOT COMPACT OR TAMP. - SIDE SLOPES OF PLANTING HOLE SHALL BE 1:1. ROUGHEN SIDES OF PLANTING PIT PRIOR TO SETTING. · PLACE ROOTBALL ON UNDISTURBED SOIL TO PREVENT SETTLEMENT. REMOVE ENTIRE WIRE BASKET, ALL ROPE, TWINE AND BURLAP FROM ROOTBALL AND TRUNK. DIAMETER N.T.S SSUED: CITY OF THORNTON, COLORADO MARCH 1996 STANDARDS & SPECIFICATIONS REVISED: APRIL 2010 ECIDUOUS AND EVERGREEN TREE DRAWING NO.

PLANTING DETAIL

800-1A

ARRODRIGAR: INSTALAR ESTACAS METÁLICAS EN FORMA DE T DE 6' FUERA DEL HOYO DE PLANTACIÓN EN TIERRA SIN DISTURBAR CUBIERTA DE MANTILLO. USE ALAMBRE GALVANIZADO DE ANCHO #12.

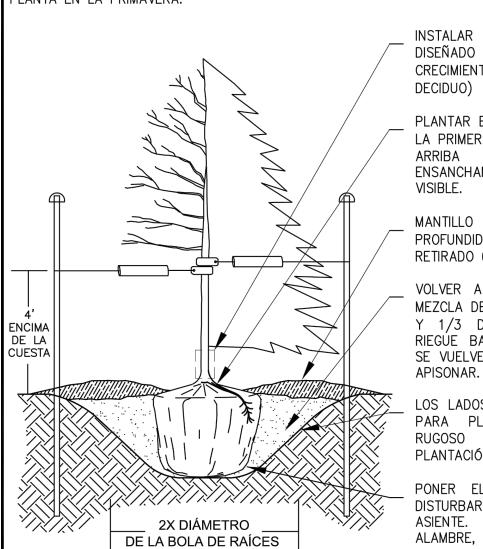
DEJE ESPACIO PARA QUE EL TRONCO SE PUEDA MOVER

PONER CORREAS DE NYLON DE 2"A TRAVÉS DE OJALES METÁLICOS, CON UNA MANGA DE PVC BLANCA DE ½"X 15"EN CADA ALAMBRE.

LAS CORREAS DE NYLON SERÁN LO SUFICIENTEMENTE LARGAS PARA PERMITIR QUE EL TRONCO CREZCA

AGREGAR TAPA PROTECTORA A LA PARTE DE ARRIBA DE LA ESTACA.

ENVOLVER LOS ÁRBOLES HASTA LA PRIMERA RAMA SI SE PLANTA EN EL OTOÑO. NO ENVOLVER SI SE PLANTA EN LA PRIMAVERA.



INSTALAR PROTECTOR PARA EL TRONCO, DISEÑADO PARA EXPANDIRSE CON EL CRECIMIENTO DEL TRONCO ( SÓLO DECIDUO)

PLANTAR EL ÁRBOL DE TAL MANERA QUE LA PRIMERA RAÍZ PRINCIPAL ESTÉ 1"A 2" ARRIBA DE LA CUESTA Y EL ENSANCHAMIENTO DEL TRONCO SEA

MANTILLO ESPECIFICADO (4" DE PROFUNDIDAD X 6" DE DIÁMETRO) RETIRADO 6"DE LA BASE DEL TRONCO.

VOLVER A LLENAR EL HOYO CON UNA MEZCLA DE 2/3 DE LA TIERRA EXISTENTE Y 1/3 DE LA ENMIENDA APROBADA. RIEGUE BASTANTE CON AGUA MIENTRAS SE VUELVE A LLENAR. NO COMPACTAR O

LOS LADOS DE LAS CUESTAS DEL HOYO PARA PLANTAR SERÁN 1:1. PONER RUGOSO LOS LADOS DEL HOYO DE PLANTACIÓN ANTES DE COLOCAR.

PONER EL CEPELLÓN EN TIERRA SIN DISTURBAR PARA PREVENIR QUE SE ASIENTE. QUITE TODA LA CESTA DE ALAMBRE, TODA LA SOGA, CUERDA Y ARPILLERA DEL CEPELLÓN Y EL TRONCO. N.T.S.

SSUED:

REVISED:

MARCH 1996

APRIL 2010

800-1B

CITY OF THORNTON, COLORADO STANDARDS & SPECIFICATIONS

ECIDUOUS AND EVERGREEN TREE DRAWING NO. PLANTING DETAIL

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- A. In general, grassed landscaped areas shall be sodded. In areas where sod installation of practical turf areas is not desired or possible, seeding with a mix of species shall be considered when justified by size of area, type of use, and level of anticipated maintenance, and with specific approval of the Senior
- B. Mow strips at the edges of seeded areas shall be established if visibility is an issue, or to incorporate a maintained appearance to the perimeter.
- C. A permanent, automatic irrigation system shall be provided to support establishment and maintenance of seeded areas or as approved through the Development Permit review process.

A. The proposed seed mix, pounds pure live seed per acre and a note stating that all seeding will be installed in accordance with Section 805 of these Standards and Specifications shall be included in the approved construction drawings and/or Development Permit for the project.

A. "Native" Seed Mixes: Per-acre seeding rates are based on 144 pure live seeds (PLS) per square foot, which is equivalent to one (1) pure live seed per square inch. These seed mixes are not intended to replicate the diversity of a truly natural, undisturbed stand of native grasses. Instead, they have been developed to provide a more uniform look, which is what the urban setting demands. Most of the species are native, some are naturalized, but all are water efficient and low maintenance, excluding the wet detention mix. Seed mixes have been purposefully developed with all warm or all cool season grasses to minimize the perception of a weedy look, and to optimize maintenance practices. Requests for alternative mixes, for special site conditions, shall be submitted to the Senior Landscape Architect for review.

Thornton Buff/Blue Grama Mix:

(This all native, all warm season, upland mix is our most commonly planted mix. These two spreading grasses are very similar and complement each other well. They provide a uniform carpet when mowed, but don't get very tall if left unmowed. This mix is also ideal for large detention pond bottoms that stay predominately dry.)

60% Buffalograss (Buchloe dactyloides) 37 lbs./Acre 40% Blue Grama (Bouteloua gracilis) 8 lbs./Acre

45 lbs./Acre Thornton Signature Warm Season Mix:

(This taller, all native, all warm season, upland mix has added color interest, especially when dormant. It's our most diverse and natural looking mix. It can tolerate mowing, but also has a wilder, natural look with variable height if left unmowed.)

40% Little Bluestem (Schizachyrium scoparium) 15 lbs./Acre 20% Side Oats Grama (Bouteloua curtipendula) 10 lbs./Acre 20% Blue Grama (Bouteloua gracilis) 3 lbs./Acre

20% Buffalograss (Buchloe dactyloides) 12 lbs./Acre 3. Thornton Wheatgrass Mix:

(This taller, all native, all cool season, upland mix is best left unmowed after establishment, which will give it the "Amber Waves of Grain" look.)

40% Western Wheatgrass (Pascopyrum smithii) 32 lbs./Acre 40% Streambank Wheatgrass (Elymus lanceolatus) 18 lbs./Acre 20% Slender Wheatgrass (Elymus trachycaulus) 10 lbs./Acre 60 lbs./Acre

4. Thornton Short, Cool Season Mix: (This all cool season, upland mix contains both native and naturalized grasses. It's quick to establish and has a mottled dusty blue-green appearance that is most noticeable during the growing season. It can tolerate mowing, but also has a wilder, natural look with variable height if left unmowed. These grasses may handle extreme heat by going dormant in mid to late summer, but green-up again in

27 lbs./Acre

50% Crested Wheatgrass (Agropyron cristatum) 20 lbs./Acre 25% Sheep Fescue (Festuca ovina) 3 lbs./Acre 25% Hard Fescue (Festuca longifolia) 4 lbs./Acre

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5. Thornton Moist and Salty Detention Pond Bottom Mix: (This all cool season mix contains both native and naturalized grasses, and has a dusty blue-green overall color. This mix likes moist sites and is very salt tolerant, which makes it ideal for variably wet detention pond bottoms that get salty from sub-irrigation.)

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40% Alkaligrass (Puccinellia distans) 30% Western Wheatgrass (Pascopyrum smithii) 22 lbs./Acre 30% Smooth Brome (Bromus inermis) 16 lbs./Acre 40 lbs./Acre

6. Thornton Always Wet Detention Pond Bottom Mix: (This all cool season mix is designed for perpetually wet and sometimes flooded detention pond bottoms that won't ever be mowed. These species are also suitable for growing on the bottom slopes of the pond, and canal and stream banks. Sedges, rushes and bulrushes can be added to the mix as

15% Meadow Brome (Bromus riparius) 8 lbs./Acre 15% Western Wheatgrass (Pascopyrum smithii) 11 lbs./Acre 15% Canada Wildrye (Elymus canadensis) 10 lbs./Acre 15% Basin Wildrye (Leymus cinereus) 9 lbs./Acre 15% Beardless Wildrye (Leymus triticoides) 8 lbs./Acre 15% Creeping Foxtail (Alopecurus arundinaceus) 2 lbs./Acre 10% Reed Canarygrass (Phalaris arundinacea) 2 lbs./Acre 50 lbs./Acre

7. Flower seed may be added to mixes but shall not substitute for quantities of seed. Chemical weed control that may be needed to establish grasses will likely kill off any such flowers. Wait to plant the flower seed until after grass establishment

805.4 Process

A. Seedbed Preparation

The seedbed shall be free of debris including weeds, plant matter, rocks, clods, and other impervious material over one (1) inch in diameter. Seedbed shall be smooth and free of large clumps, fluffy yet firm,

B. Fertilization

Refer to section 804.3.C.2 or follow the site specific fertilization requirements outlined in the approved construction drawings or landscape plans.

1. Seeding shall be done immediately after soil preparation operations to discourage weed competition. Seed shall be evenly distributed over fertilized ground on a still day into a slightly moist seedbed. using an approved grass drill followed by packer wheels. Hand-broadcasting methods shall be at double the seeding rate and shall be 'raked in' or otherwise covered with soil to a depth of 1/4 inch. Hydraulic seeding can be used in areas not accessible for machine methods; seed and mulch shall not be applied in the same operation.

- 2. Seeding of irrigated "native" grasses can take place at any time during the growing season. For best and quickest results, warm season grasses should be seeded in May and no later than July. Irrigated cool season "native" grasses are best seeded in the spring. Generally, dormant seeding of cool season non-irrigated grass shall occur between November 15th and April 15th on unfrozen ground. Seeding of non-irrigated warm season grasses shall occur between March 15th and June 15th.
- 3. All seeded areas shall be hydromulched, applied with tackifier at rates recommended by the manufacturer. Hydraulic mulching shall not be performed in the presence of free surface water. In areas not able to be hydromulched, cover all seeded area with 100% biodegradable straw blanket with biodegradable blanket pins. Within 12 hours of seeding, water seeded area frequently and lightly. Water enough to keep the soil moist, but not so heavily as to cause soil washing and loss of

D. Weed Control

1. Weed control is an important factor for grass establishment. Timely mowing operations are the most successful method of control. Mow at six (6) inches with a flail type mower. No mowing for the first six (6) weeks after seeds sprout; mow weeds before annual seed set. It shall be necessary to mow several times the first growing season, depending on when grass was seeded. It shall be necessary

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d. Fine Fescue Mix (Festuca ovina, Festuca glauca, Festuca longifolia, Festuca rubra, Poa Variations of this mixture must contain no more than 20% Creeping Red Fescue (Festuca rubra), as it is a moderate water demand turfgrass species. This mixture has increased maintenance requirements, and is generally more difficult to maintain than other turfgrasses. It is also less available, as many sod farms no longer carry it.

4. Warm season sod and plugs shall be 100% certified turf-forming variety Legacy or Prestige Buffalograss, or approved equal.

5. Cold-tolerant varieties of Hybrid Bermudagrass (Cynodon x transvaalensis), such as Yukon and Riviera, will be approved for a given site on a case by case basis.

6. Other types of sod, as approved through the Development Permit review process.

A. Care and Handling

Care shall be exercised at all times to retain the soil on the sod roots during transportation, handling, and planting. Dumping sod from vehicles shall not be permitted. The sod shall be installed within 24 hours from the time it is cut, unless it can be stored to the satisfaction of the Senior Landscape Architect. During delivery and while in stacks, all sod shall be kept moist and protected from drying, sun, or freezing. All damaged sod shall be rejected. All sod discolored due to excessive drying shall be rejected.

B. Transporting Sod On-site

Sod can be transported on or across the site on pallets by forklift, bobcat, or equivalent. Damage to the sod bed by the vehicles shall be avoided; any damage shall be repaired prior to sodding of the area. Damage caused to paying curbs, fences, plants or other objects from sodding operations shall be remedied by the Responsible Party at his expense, as directed by the Senior Landscape Architect.

- 1. Sod shall be laid on a firm, pre-moistened, but not wet, bed by staggering joints with all edges touching so that no voids occur under or between strips. Sod roll length shall run perpendicular to all slope fall lines, with biodegradable sod staples employed on slopes, as necessary. End joints shall be staggered at least 18 inches between adjacent rows.
- 2. Sod shall be laid flush with paving, curbs, and irrigation heads and one (1) inch below the top edge of steel edging. All rolls terminating at the project edge shall be cut in a straight line. No sod shall be installed within a radius of three (3) feet around any tree.
- 3. Sod placed in drainage swales shall be staked, with stakes spaced not more than 30 inches apart, driven into the ground at an angle against the flow of the water. Sodding shall begin at the bottom and progress upward, with strips laid perpendicular to the flow of the water.
- 4. Warm season sod and plugs shall be installed between May 1<sup>st</sup> and July 15<sup>th</sup>. Plugs shall be planted on 12-inch centers with a requirement of at least nine (9) plugs per square yard of ground.

5. Immediately after the sod has been laid, it shall be rolled with approved equipment to eliminate air pockets and to provide a smooth and even surface, and watered. Sufficient water shall be applied to saturate the sod or plugs completely. The planting shall be protected from drying and shall be watered as often as needed to prevent drying. Settled sod areas shall be pulled, re-graded, and relaid. Excessively shrunken sod (over ¾ inch shrinkage) shall be replaced with new sod.

806.4 Maintenance

- A. Protect and maintain sod and plugs until Initial Acceptance. Maintenance shall include irrigation controller programming and watering, mowing, and trimming as necessary to prevent sod and plugs from drying and shrinking, and to maintain proper soil moisture and a neat appearance. Care should be given to avoid standing water, surface wash, or erosion from over-watering. Failure of the irrigation system shall not relieve the Responsible Party from applying the water required during this period.
- B. Under normal weather conditions, after new, green top growth is seen, warm season sod and plugs will require between 1 and 1-1/2 inches of water per week for two (2) to three (3) months, to prevent drought stress, until deeper rooting takes place.

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to mow in the second year. For perennial weed control, use spot chemical spraying or hand weeding

Revised: October 2012

2. The use of Journey selective, pre-emergent herbicide or approved equal shall be required in areas infested with Cheatgrass (*Bromus tectorum*) and other grassy weeds. Journey shall be applied in late summer prior to germination of Cheatgrass and other winter annual weeds.

after grass plants are up and fairly mature, at the minimum, past the three (3) to five (5) leaf stage.

805.5 Establishment Time and Acceptance

- A. For both native and naturalized grass seed species, germination should start within three (3) to six (6) weeks. Depending on planting time, available moisture and success of weed control, full establishment and initial acceptance of irrigated seed can take a minimum of one (1) full growing season, but usually takes longer. Full establishment of non-irrigated seed can take three (3) to five (5) years or more. Higher seed rates, shallow drilling of no greater than ½", and narrow (2-4") seeder row spacing have proven to be critical in obtaining rapid establishment.
- B. Seeded areas will not be accepted until the stand of grass displays uniform coverage of the seed mix planted, with all species of the mix being well represented, and minimal weeds are present, as determined by the Senior Landscape Architect.

#### **806 SODDING SPECIFICATIONS**

The Responsible Party shall provide all labor, equipment, and materials necessary to furnish and install all sod or plugs as required by the drawings and these Standards and Specifications.

806.2 Materials

A. Fertilizer

- 1. On public projects apply, a 18-46-0 starter fertilizer at a rate of 1 (one) pound per 1,000 (one thousand) square feet having the following composition by weight: Nitrogen, eighteen percent (18%), and phosphoric acid (P205), forty-six percent (46%). These elements may be organic, inorganic, or a combination of the two, and shall be measured according to the methods of the Association of Official Analytical Chemists. Or, follow the site specific fertilization requirements outlined in the approved construction drawings or landscape plans.
- 2. On private sod installations, follow the site specific fertilization requirements outlined in the approved construction drawings or landscape plans.

1. Turfgrass blends and mixes shall be selected based on site conditions, intended use, and water conservation; and shall be determined through the Development Permit review process

2. Sod shall be healthy and certified by the State of Colorado as insect, disease, and noxious weed free. The cultivars that comprise each sod blend or mix must test well above average on the National Turfgrass Evaluation Program trials, as reviewed by the Senior Landscape Architect. The sod shall be mowed at two (2) inches and thoroughly watered before harvested. All sod shall be cut to provide a minimum thickness of three-fourths (¾) inch of soil adhering to the roots. Each sod strip shall be harvested in a minimum width of 16 inches and a minimum length of 24 inches. Sod may be supplied in wider and longer rolls.

3. The following turfgrass blends and mixtures are approved for use as sod in the City of Thornton and shall be specified on the approved plans

a. Kentucky Bluegrass (Poa pratensis)

Must be a blend of at least three (3) improved cultivars (varieties) that are acclimated to Thornton's growing conditions.

b. Texas Hybrid Bluegrass (Poa pratensis x Poa arachnifera) The minimum amount of Texas Bluegrass (Poa arachnifera) allowed in the hybrid is 25%. If the sod is a blend, it must be all Texas Hybrid Bluegrass; no mixes of predominantly straight Kentucky Bluegrass with small percentages of Texas Hybrid Bluegrass will be approved as Low Water Demand Turf. This turf has excellent heat tolerance that leads to drought tolerance as

c. Tall Fescue (Festuca arundinacea) Must be a blend of at least three (3) improved cultivars. Rhizomatous cultivars are preferred.

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Revised: October 2012

C. For public sod installations, apply fertilizer after initial mowing (within approximately 20 days after sodding), when grass is dry, using fertilizer that will provide actual nitrogen of at least 1 lb/1000 SF. 20-10-5 plus iron and 8% sulfur fertilizer (50% sulfur coated urea). Continue fertilizer applications every 30 days thereafter at the rate of ½ lb actual nitrogen per 1000sf until Initial Acceptance of project--in March, April, May, June, (0 nitrogen in July), ½ lb/1000sf in August, September, October and November (no fertilizer in July, December, January, February). Six months into maintenance program, take a soil sample and adjust fertilizer accordingly and as approved by COT

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 I HOWEVER THE RESPONSIBILIT OF THE CONTRACTOR TO FIELD VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES.

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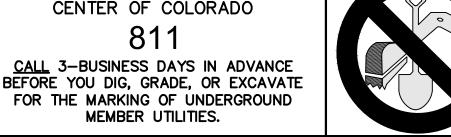
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CALL UTILITY NOTIFICATION CENTER OF COLORADO

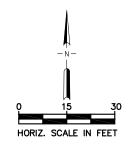


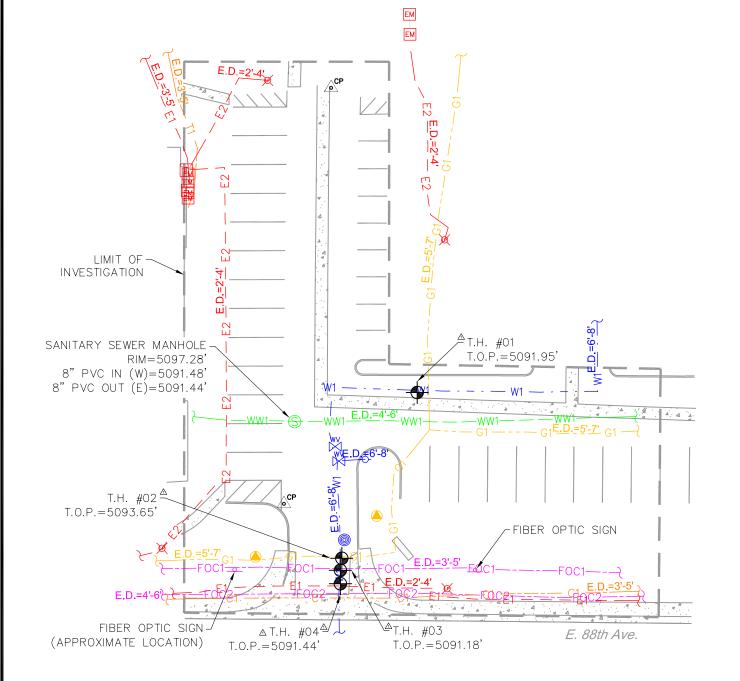
FOR BID NOT TO BE USED FOR CONSTRUCTION

> January 31, 2024 DATE PRINTED OLSSON

800-7

8-008





SANITARY SEWER MANHOLE

RIM=5095.00'

8" PVC (W)=5089.91'



#### **LEGEND OF UTILITY TYPES** CENTURYLINK COMCAST —-- C1 —--AT&T —--FOC1—--QWEST —--F0C2—-XCEL ENERGY Sewers / Drains QL "B" CITY OF THORNTON Water QL "B" THORNTON WATER Electric / Power XCEL ENERGY PRIVATE 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 (TP)  $\bigcirc$ WATER VAULT WATER VALVE WATER METER WATER MANHOLE FIRE HYDRANT IRRIGATION VALVE WATER FAUCET WM  $\varphi$ ₩ Ö MONITORING WELL ŏ IRRIGATION WELL GAS VENT PIPE (GAS RISER) GAS VENT PIPE (GAS GAS VALVE GAS METER GAS TEST STATION GAS HANDHOLE GAS MARKER SIGN GAS MANHOLE <u>\$</u> WASTE WATER MANHOLE WASTE WATER CLEANOUT STORM SEWER MANHOLE STORM SEWER INLET INLET CATV HANDHOLE CATV CABINET CATV PEDESTAL LIGHT POLE
ELECTRIC TRANSFORMER
ELECTRIC POLE (POWER)
ELECTRIC POLE (WRISER
TRANSMISSION POLE
ELECTRIC HANDHOLE/PULL BOX
ELECTRIC MANHOLE
SIGNAL POLE
SIGNAL HANDHOLE/BOX
TRAFFIC LIGHT
ELECTRIC METER
ELECTRIC PEDESTAL
GUY WIRE/GUY ANCHOR P 0 SP) S 1 Έ

| NO. | DATE  | DESCRIPTION   |          |  |  |  |  |  |
|-----|---|---|----------|--|--|--|--|--|
| 1   | 1 6/27/2023 ADD TEST HOLE DATA & MANHOLE TO EAST RLC                                |   |          |  |  |  |  |  |
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| 050 | SURVEST 6501 E. BELLEVIEW AVENUE V SUITS 300 V ENGLEWOOD, CO 80111 V (720) 259-9321 |   |          |  |  |  |  |  |
| 650 | 1 E. BELLEVIE   | W AVENUE ▼ SUITE 300 ▼ ENGLEWOOD, CO 80111 ▼ (720): | 259-9321 |  |  |  |  |  |

PRV VAULT REPLACEMENT AT EAST 88TH AVE. AT CATALINA

SUBSURFACE UTILITY ENGINEERING PLAN

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