

# CITY OF ORLAND

## 4TH STREET AND 5TH STREET ALLEY WATER MAIN REPLACEMENT

DECEMBER, 2025

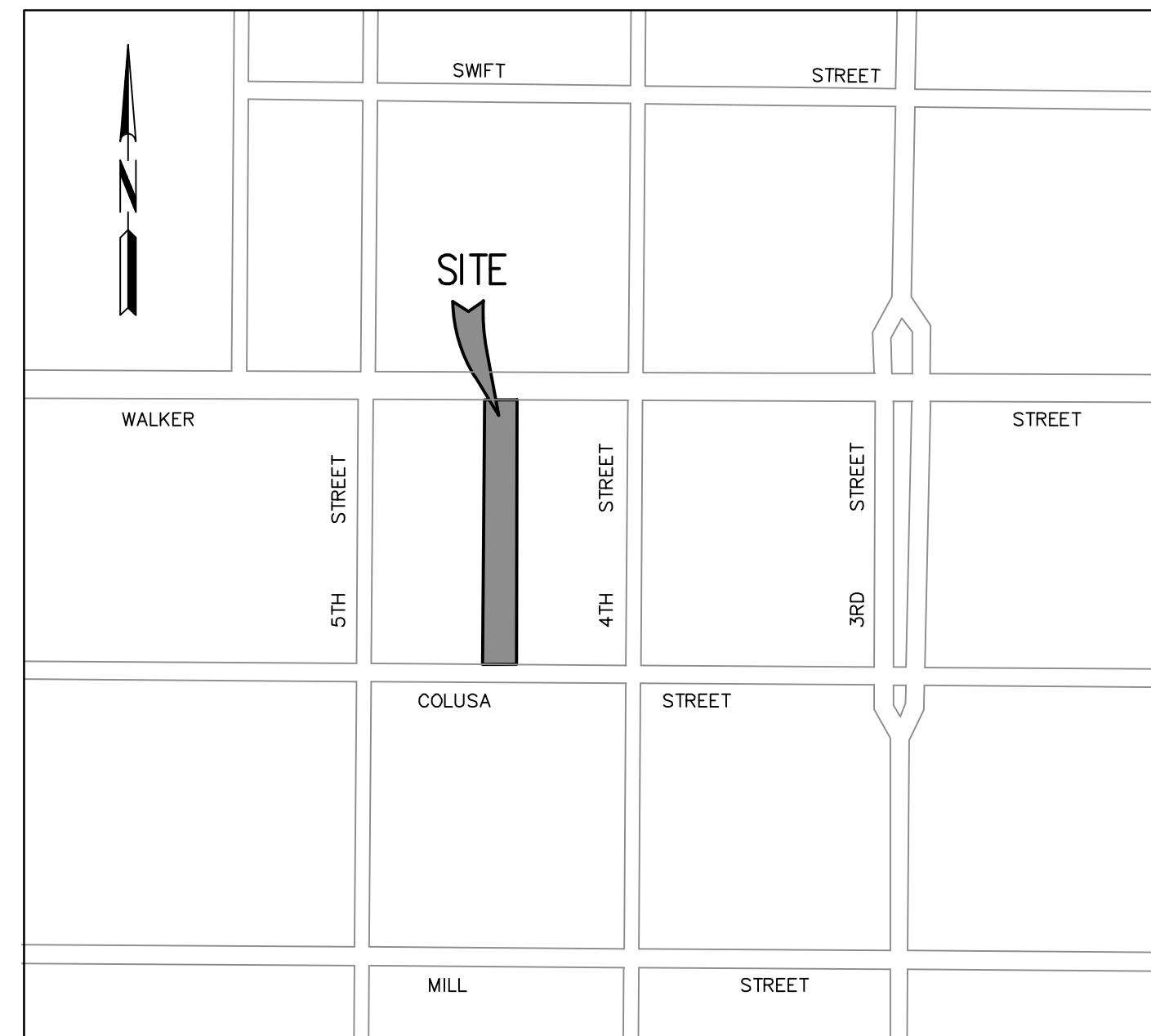
### ENGINEER

ROLLS, ANDERSON & ROLLS  
115 YELLOWSTONE DRIVE  
CHICO, CA 95973-5811

PREPARED BY OR UNDER THE DIRECTION OF



*Paul W. Rabo*  
PAUL W. RABO RCE 72209  
DATE 12-8-25



### LOCATION MAP

NO SCALE

### DRAWING INDEX

DWG NO.	TITLE
1	TITLE SHEET
2	WATER MAIN IMPROVEMENT PLAN
3-4	DETAILS

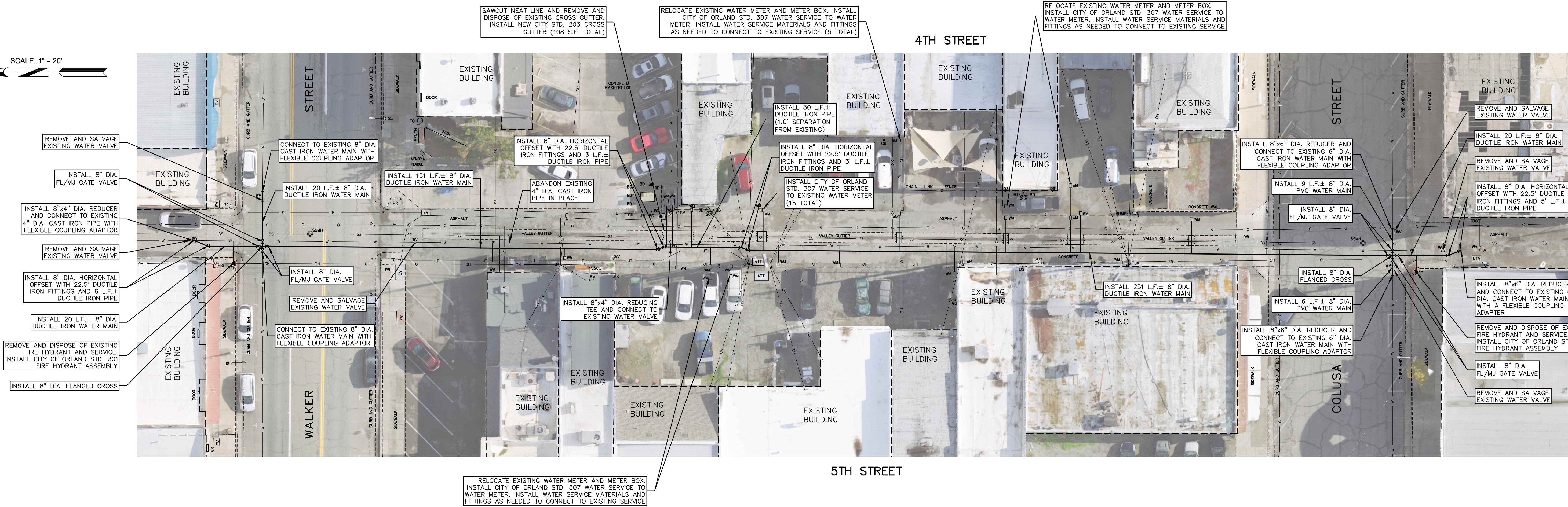
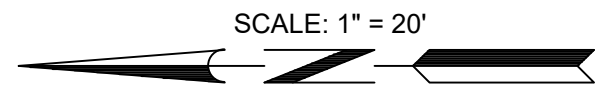
PREPARED BY:

**RAR**  
ROLLS ANDERSON & ROLLS  
CIVIL ENGINEERS

115 YELLOWSTONE DRIVE • CHICO, CALIFORNIA 95973-5811 • TELEPHONE 530-895-1402

25002





LEGEND

BD	EXISTING BOLLARD
BV	EXISTING BLOWOFF VALVE
DS	EXISTING RAIN LEADER DOWN SPOUT
DW	EXISTING DRIVEWAY
EB	EXISTING ELECTRIC BOX
EV	EXISTING ELECTRIC VAULT
FH	EXISTING FIRE HYDRANT
FR	EXISTING FIRE RISER
FDC	EXISTING FIRE DEPARTMENT CONNECTION
GM	EXISTING GAS METER
GV	EXISTING GAS VALVE
GS	EXISTING GAS SERVICE BOX
JP	EXISTING JOINT UTILITY POLE
PR	EXISTING PEDESTRIAN RAMP
SL	EXISTING STREET LIGHT
SP	EXISTING SIGN POST
SSCD	EXISTING SANITARY SEWER CLEANOUT
SSWH	EXISTING SANITARY SEWER MANHOLE
TC	EXISTING TRASH CAN
WM	EXISTING WATER METER
WV	EXISTING WATER VALVE
----	EXISTING EDGE OF CONCRETE
----	EXISTING EDGE OF PAVEMENT
-X-	EXISTING FENCE - TYPE LABELED
OH	EXISTING OVERHEAD LINE
W	EXISTING WATER MAIN
G	EXISTING GAS MAIN
SS	EXISTING SANITARY SEWER MAIN
JT	EXISTING JOINT TRENCH LINE
E	EXISTING ELECTRIC LINE
----	EXISTING EDGE OF BUILDING
=====	PROPOSED WATER MAIN
-----	PROPOSED SAWCUT LINE
=====	PROPOSED EDGE OF CONCRETE
=====	PROPOSED WATER SERVICE LINE

GENERAL NOTES

- ALL CONSTRUCTION SHALL CONFORM TO THE PROJECT PLANS, SPECIFICATIONS AND THE CITY OF ORLAND IMPROVEMENT STANDARDS.
- THE LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ORDERING MATERIALS OR BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT (USA NORTH) AT 811 AT LEAST THREE (3) WORKING DAYS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING MONUMENTS AND OTHER SURVEY MARKERS FOUND DURING CONSTRUCTION. ANY MONUMENTS DISTURBED, DAMAGED OR DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED LAND SURVEYOR OR REGISTERED ENGINEER LICENSED TO PERFORM LAND SURVEYING AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL APPLY EITHER WATER OR DUST PALLATIVE OR BOTH FOR THE ALLEVIATION OF DUST NUISANCE AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL REMOVE MUD AND DUST CARRIED ONTO STREET SURFACES BY CONSTRUCTION EQUIPMENT ON A DAILY BASIS.
- HAUL TRUCKS SHALL BE COVERED WITH TARPULAINS OR OTHER EFFECTIVE COVERS AT ALL TIMES.
- THE CONTRACTOR SHALL PROVIDE EROSION CONTROL IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES TO PREVENT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE. THE CONTRACTOR SHALL CONCRETE WASHOUT PER DETAILS AS REQUIRED.
- THE CONTRACTOR SHALL REPLACE, AT NO COST TO THE CITY, ANY CONCRETE CURB, GUTTER, OR SIDEWALK DAMAGED DURING CONSTRUCTION ACTIVITIES.
- CITY OF ORLAND WILL PROVIDE CONSTRUCTION STAKING AT THE REQUEST OF THE CONTRACTOR.
- THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL CONFLICTS PRIOR TO ORDERING MATERIALS. PROVIDE THE ENGINEER WITH A LOG OF POTHOLE LOCATIONS AND UTILITY DEPTHS FOR REVIEW. CONTRACTOR SHALL POTHOLE ADDITIONAL ITEMS AS NEEDED TO LOCATE EXISTING UTILITIES.
- THE CONTRACTOR SHALL POTHOLE AND VERIFY ALL EXISTING PIPE SIZES AND PIPE MATERIALS AT POINTS OF CONNECTION PRIOR TO ORDERING MATERIALS.
- EXISTING SEWER LATERAL LOCATIONS AS SHOWN WERE TAKEN FROM RECORD DATA AND ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL POTHOLE THE LOCATION AND DEPTH OF LATERALS PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY POTENTIAL CONFLICTS.
- THE CONTRACTOR SHALL REPLACE ANY STRIPING, PAVEMENT MARKING, OR MARKERS WHICH ARE DAMAGED DURING CONSTRUCTION.
- THRUST BLOCKS SHALL BE INSTALLED WHERE SHOWN ON THE PLANS PER CITY STD. 303. ALL CONCRETE USED FOR THRUST BLOCKS SHALL BE 2,500 PSI.
- CONCRETE COLLARS SHALL BE INSTALLED AROUND ALL WATER VALVES PER CITY STD. 409.
- THE CITY MAY TEST COMPACTION AT ANY LOCATION IN AREAS TO BE COMPACTED. THE CONTRACTOR SHALL PAY THE COST OF ALL FAILED TESTS.
- THE CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR AT (530) 895-1422 AT LEAST 48 HOURS PRIOR TO BEGINNING OR RESUMING WORK, TRENCHING OR BACKFILLING OPERATIONS, AND CONCRETE REPLACEMENT.
- THE CONTRACTOR SHALL COORDINATE ALL WORK ON THIS PROJECT WITH THE PUBLIC WORKS DIRECTOR AT (530) 865-1602. IN CASE OF EMERGENCY, THE CONTRACTOR SHALL NOTIFY THE CITY OF ORLAND POLICE DEPARTMENT OFFICE (911).
- LOW OVERHEAD POWER AND TELEPHONE FACILITIES EXIST ADJACENT TO THE PROJECT WORK AREA. THE CONTRACTOR SHALL EXERCISE EXTREME CARE TO AVOID THE OVERHEAD FACILITIES, AND SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED FACILITIES.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND IMPROVEMENTS WITHIN AND ADJACENT TO THE PROJECT AREA. ANY EXISTING UTILITIES OR IMPROVEMENTS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
- CONTRACTOR SHALL SAWCUT NEAT LINES THROUGH EXISTING ASPHALT, CONCRETE, SIDEWALKS, CURB AND GUTTER, CROSS GUTTER, DRIVEWAYS AND OTHER IMPROVEMENTS FOR THE INSTALLATION OF THE NEW WATER MAIN. SAWCUT MATERIALS SHALL BE REMOVED AND DISPOSED. NEW IMPROVEMENTS SHALL BE INSTALLED PER CITY OF ORLAND STANDARDS.
- CONTRACTOR SHALL INSTALL BLUE REFLECTIVE MARKERS PER CITY STD. 301A

SALVAGED MATERIALS

- 4" DIA. GATE VALVE (2 EA.)
- 6" DIA. GATE VALVE (3 EA.)
- 8" DIA. GATE VALVE (1 EA.)



APPROVED  
*Paul W. Rago*  
DATE  
DECEMBER, 2025

PREPARED FOR :

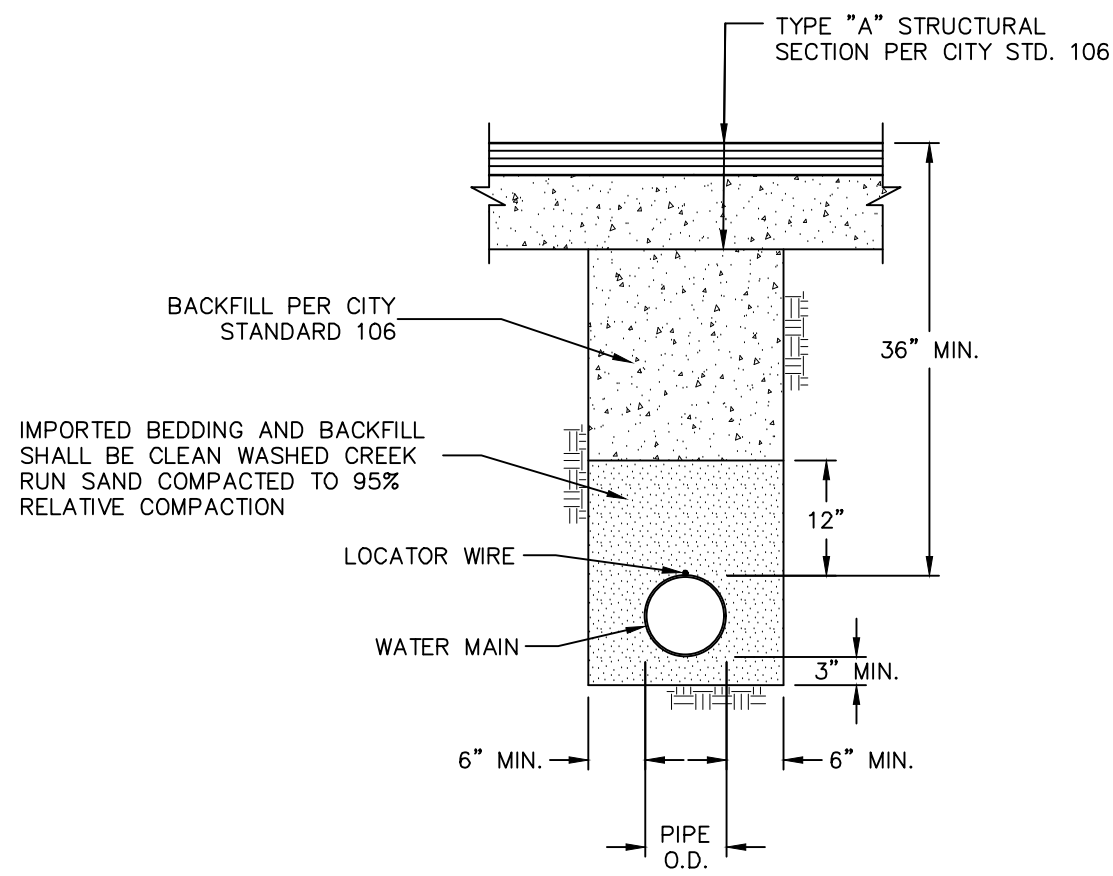
CITY OF ORLAND



4TH ST. AND 5TH ST. ALLEY WATER MAIN REPLACEMENT  
WATER MAIN IMPROVEMENT PLAN

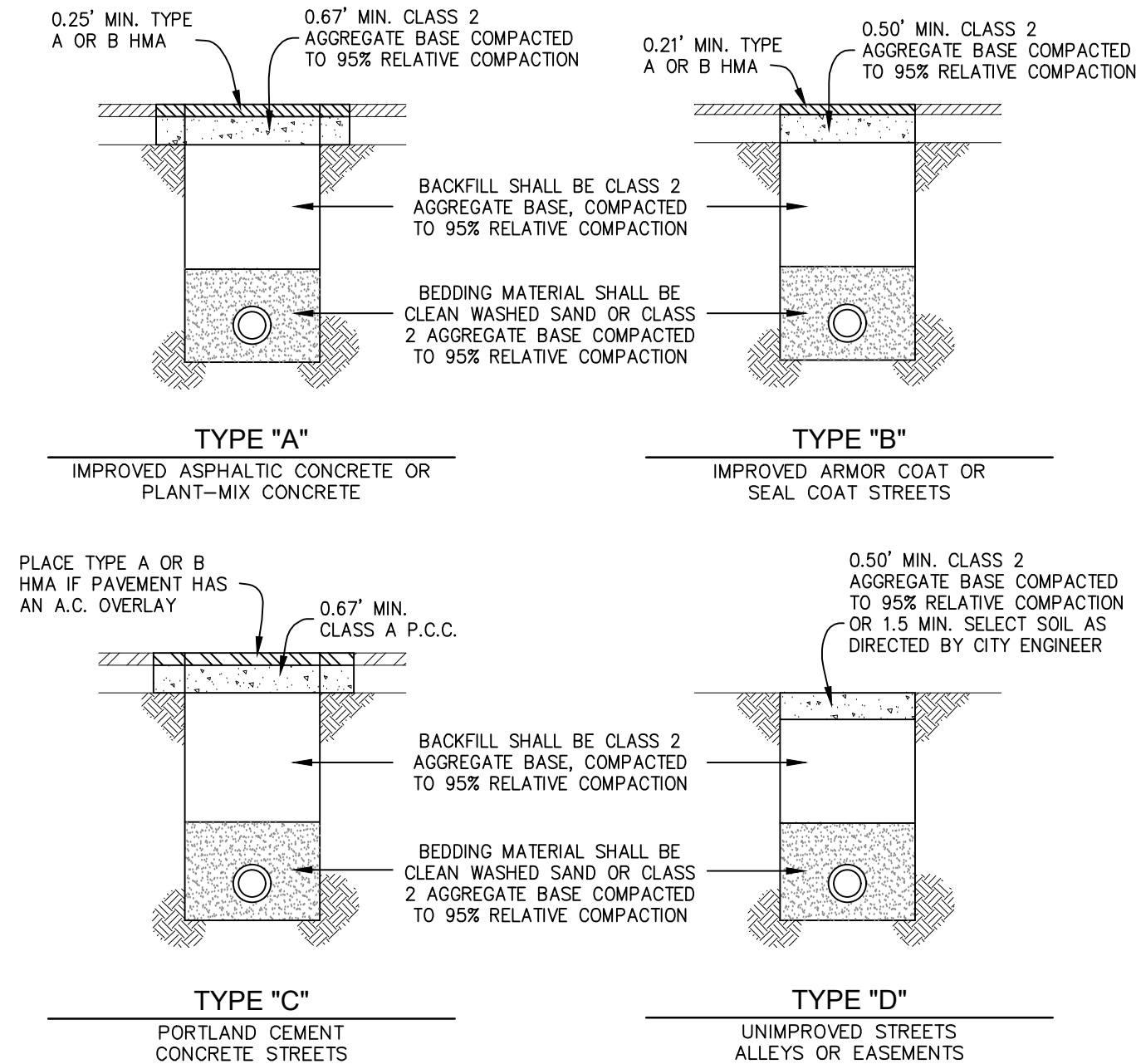
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JOB NO.	25002





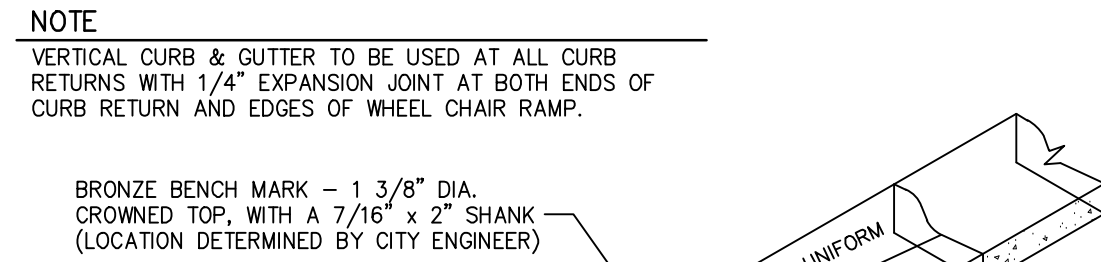
WATER MAIN TYPICAL SECTION

NO SCALE

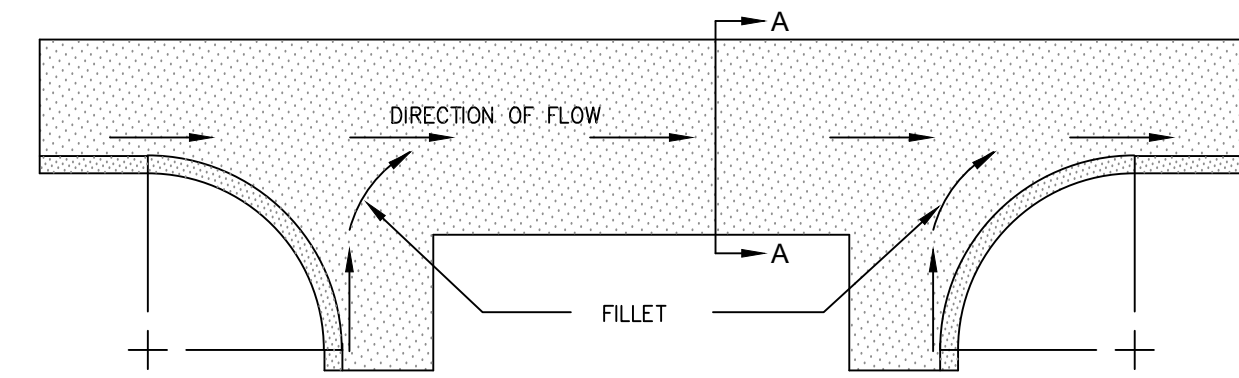


CITY STANDARD 106

NO SCALE



BARRIER C & G TO ROLL C & G TRANSITION

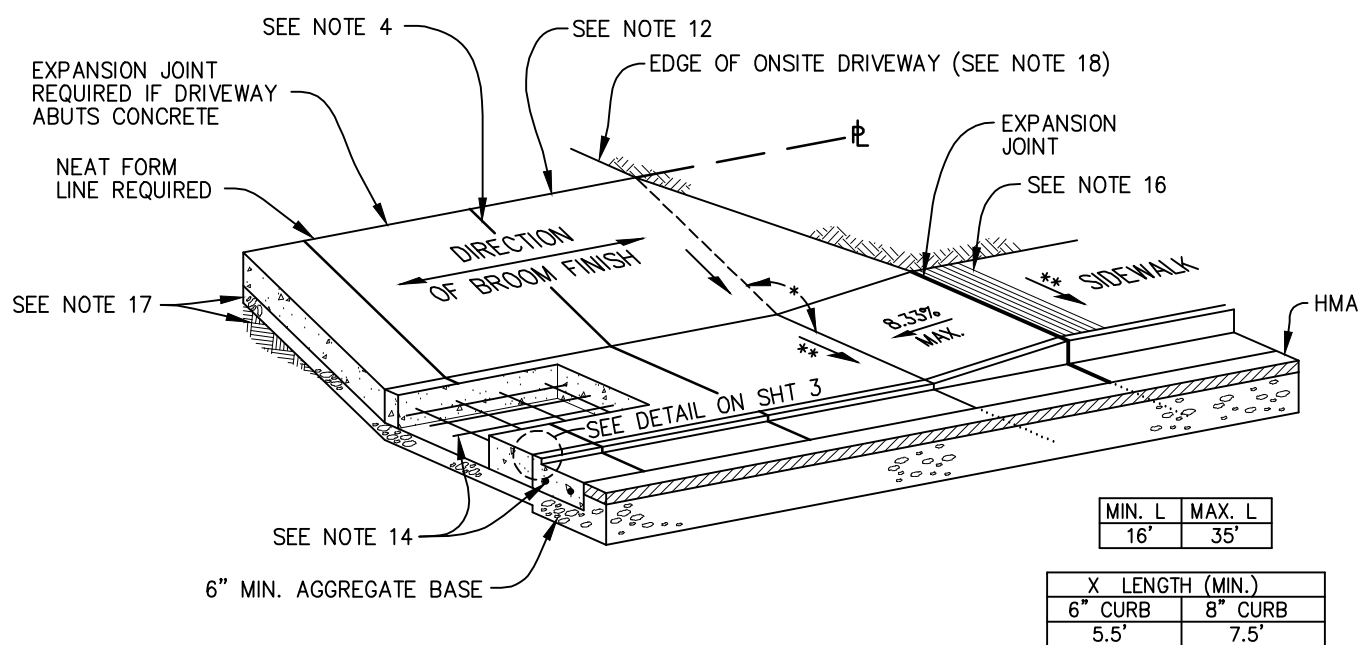


SECTION A-A

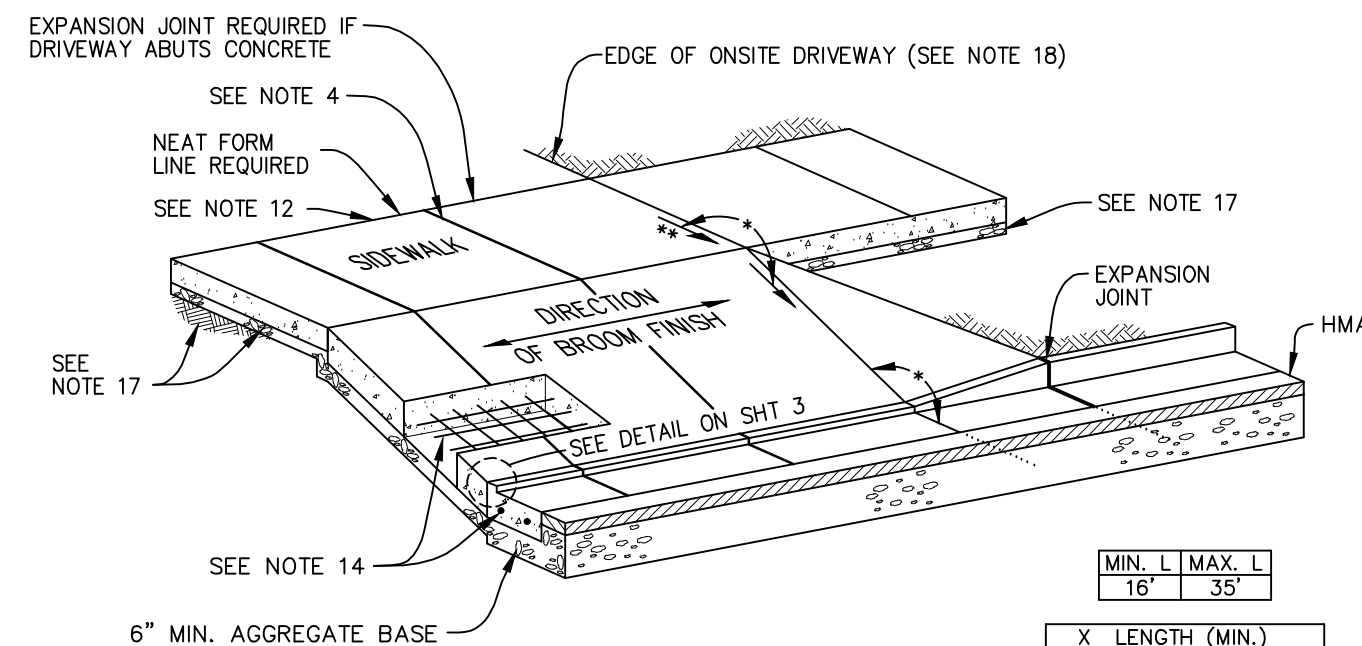
CROSS GUTTER

CITY STANDARD 203

NO SCALE



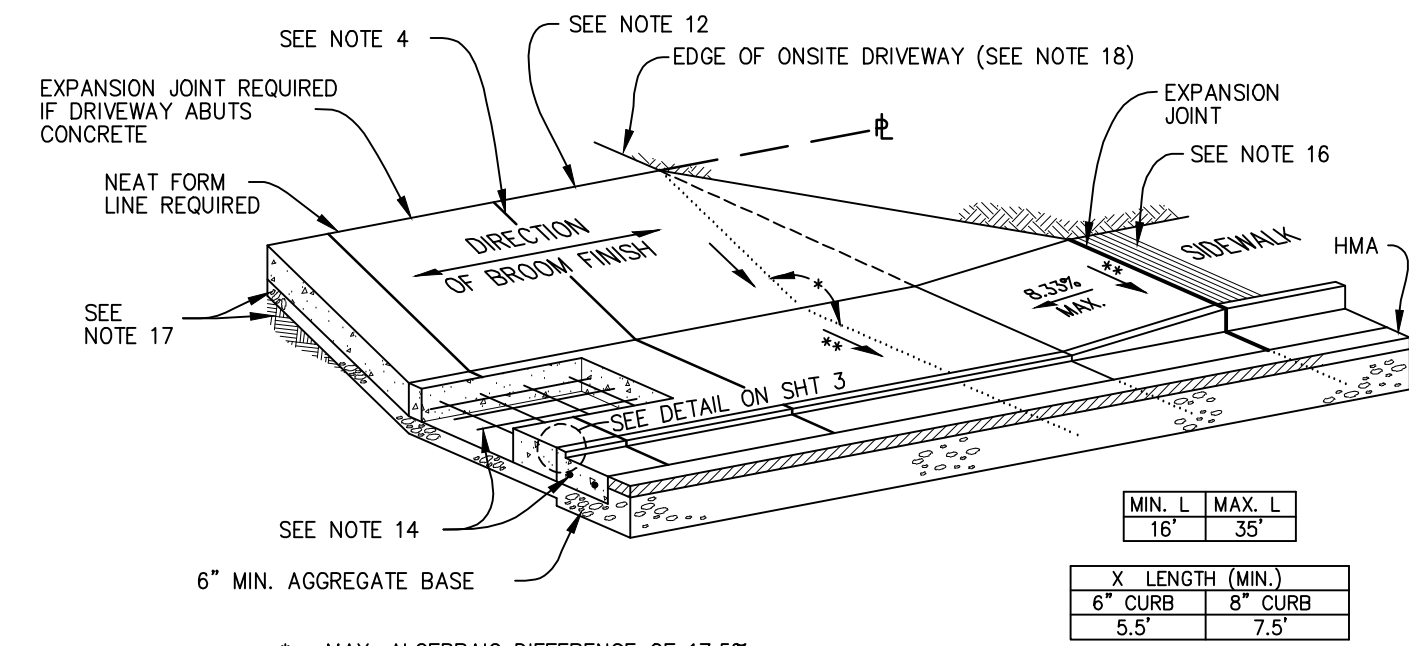
CONTIGUOUS SIDEWALK



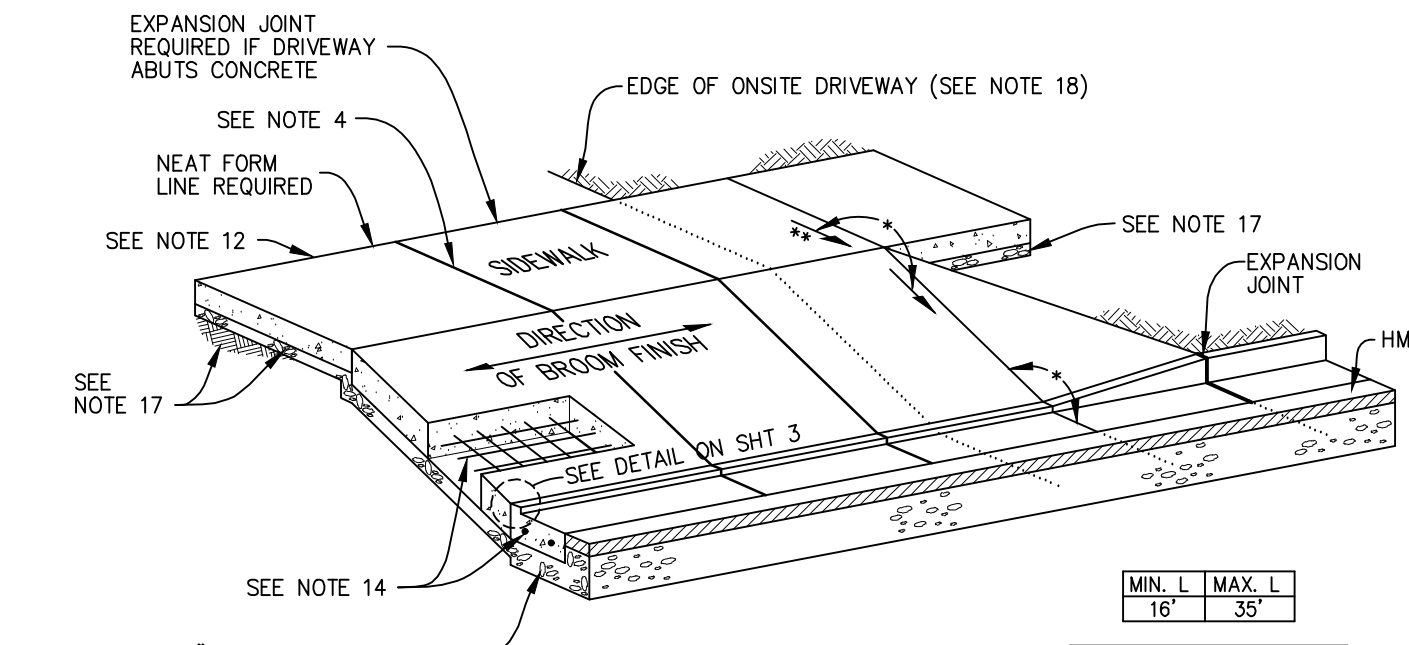
SEPARATED SIDEWALK

CITY STANDARD 206 (1 OF 3)

NO SCALE



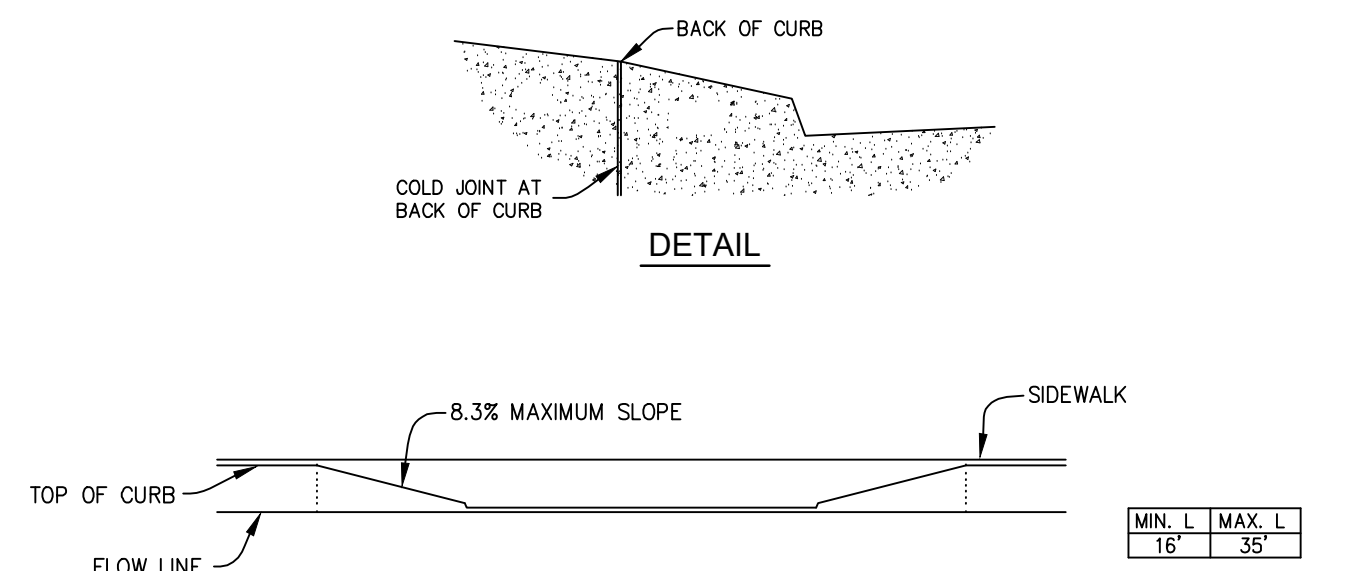
CONTIGUOUS SIDEWALK



SEPARATED SIDEWALK

CITY STANDARD 206 (2 OF 3)

NO SCALE



ELEVATION

- NOTES
- ALL WORK TO BE DONE AND ALL MATERIALS TO BE SUPPLIED SHALL CONFORM TO THE ORLAND PUBLIC WORKS CONSTRUCTION STANDARDS.
  - ALL CONCRETE SHALL BE CLASS B P.C.C.
  - THE AREA INCLUDED WITHIN THE SLOPES OF THE DRIVEWAY SHALL BE GIVEN A HEAVY BROOM FINISH AFTER BEING TROWELED.
  - CONTROL JOINTS SHALL EXTEND FROM LIP OF GUTTER TO THE BACK OF SIDEWALK UNLESS OTHERWISE SPECIFIED. CONTROL JOINTS SHALL BE EVENLY SPACED AT A MAXIMUM INTERVAL OF 8 FEET.
  - TOP OF LIP AT THE FLOWLINE TO BE TROWELED STRAIGHT AND TRUE.
  - WHERE CURB IS EXISTING AND NO DEPRESSION HAS BEEN PROVIDED, THE EXISTING CURB SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
  - WHERE AN EXISTING SIDEWALK IS IN PLACE, IT SHALL BE REMOVED TO THE FIRST EXPANSION JOINT BEYOND EITHER SIDE.
  - ALLEY CURB RETURNS MAY BE DERESSED AS PART OF THE DRIVEWAY ONLY WHEN APPROVED BY THE CITY ENGINEER.
  - DRIVEWAYS SHALL NOT BE CONSTRUCTED CLOSER THAN 20 FEET TO THE END OF STREET CURB RETURNS UNLESS APPROVED BY THE CITY ENGINEER.
  - THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON THE SAME LOT SHALL BE 24 FEET.
  - THE MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN DRIVEWAYS ON ADJACENT LOTS SHALL BE 6 FEET.
  - ON-SITE GRADING MAY BE REQUIRED TO ELIMINATE EXCESSIVE GRADE CHANGE AND TO MAINTAIN SUITABLE DRAINAGE.
  - MAXIMUM CURB OPENING MAY BE INCREASED DUE TO SPECIAL CONDITIONS WITH APPROVAL OF THE CITY ENGINEER.
  - ALL DRIVEWAYS SHALL HAVE 2 NO. 4 REBAR 12" O.C. IN THE GUTTER AND 6" x 6" 10 GA. WIRE MESH THROUGHOUT THE APPROACH.
  - DRIVEWAY APPROACH SHALL BE POURED SEPARATELY FROM CURB UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
  - SIDEWALK ADJACENT TO THE TOP OF RAMPS SHALL HAVE A 12" WIDE GROOVED BORDER STRIP WITH 1/4" GROOVES AT 3/4" ON CENTER, SEE GROOVE DETAIL ON STD. 205.
  - 2" SAND OR CLASS 2 AGGREGATE BASE COMPACTED TO 95% RELATIVE COMPACTION OVER SUBGRADE COMPACTED TO 92% RELATIVE COMPACTION.
  - BOTTOM WIDTH OF PROPOSED DRIVEWAY SHALL BE THE SAME AS THE ON-SITE DRIVEWAY.

CITY STANDARD 206 (3 OF 3)

NO SCALE



APPROVED  
*Paul W. Rago*  
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4TH ST. AND 5TH ST. ALLEY WATER MAIN REPLACEMENT  
DETAILS

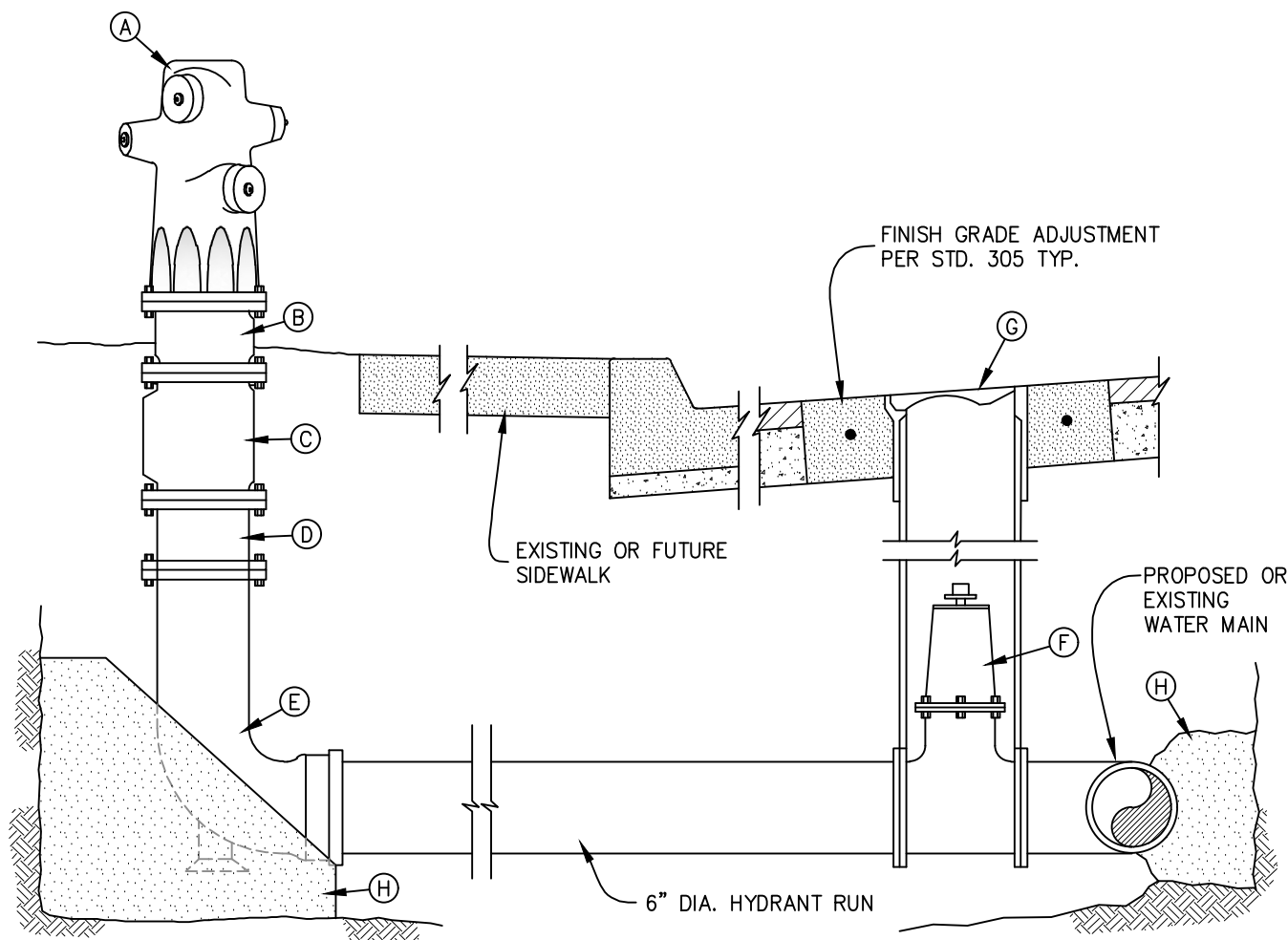
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DRAWN	CAD
CHECKED	JIR
DRAWING NO.	3 OF 4
JOB NO.	25002

NOTES

1. IF SIDEWALK IS SEPARATED FROM CURB THEN THE FIRE HYDRANT SHALL BE PLACED 30" FROM FACE OF CURB.
2. BLUE REFLECTIVE PAVEMENT MARKERS SHALL CONFORM TO CITY STD. 301A.

CONSTRUCTION MATERIALS AND NOTES

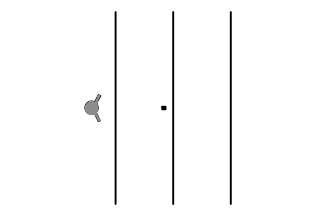
- (A) WET BARREL FIRE HYDRANT (CLOW VALVE COMPANY MODEL 960 OR APPROVED EQUAL) WITH (1) 4½" AND (2) 2½" OUTLETS. FIRE HYDRANTS SHALL HAVE ONE COAT OF RED PRIMER OVER SOUND METAL AND ONE COAT OF RED PAINT. ALL FIRE HYDRANT LOCATIONS SHALL BE APPROVED BY THE ORLAND FIRE DEPARTMENT
- (B) 6" DIA. BREAK OFF RISER
- (C) 6" DIA. BREAK OFF CHECK VALVE (CLOW VALVE COMPANY MODEL LBI 400A OR APPROVED EQUAL)
- (D) 6" DIA. SPOOL (REQUIRED)
- (E) 6" DIA. FIRE HYDRANT BURY (HEIGHT VARIES)
- (F) 6" DIA. GATE VALVE (MUELLER A-2360 OR APPROVED EQUAL)
- (G) TRAFFIC VALVE BOX (BROOKS PRODUCTS NO. 3-RT SERIES)
- (H) THRUST BLOCKS SHALL CONFORM TO STD. 303



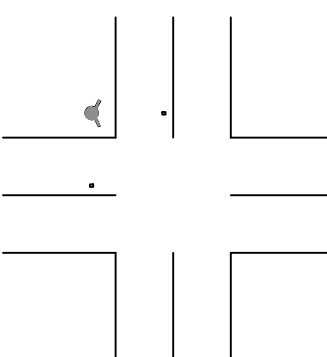
CITY STANDARD 301

NO SCALE

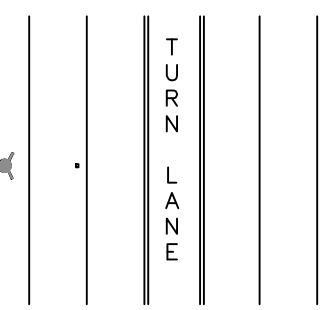
TWO LANE STREET



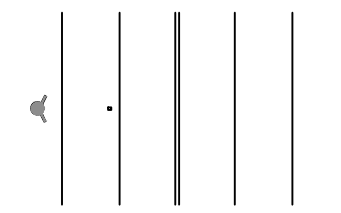
AN INTERSECTION



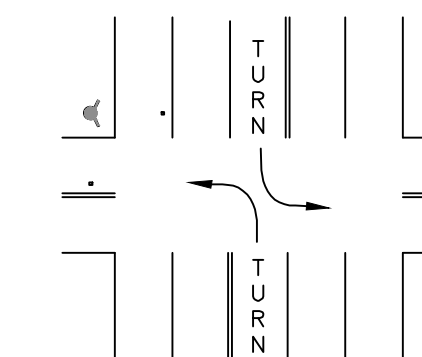
MULTI-LANE STREET WITH TURN LANE



MULTI-LANE STREET



FOUR LANE STREET WITH TURN LANE AT INTERSECTION



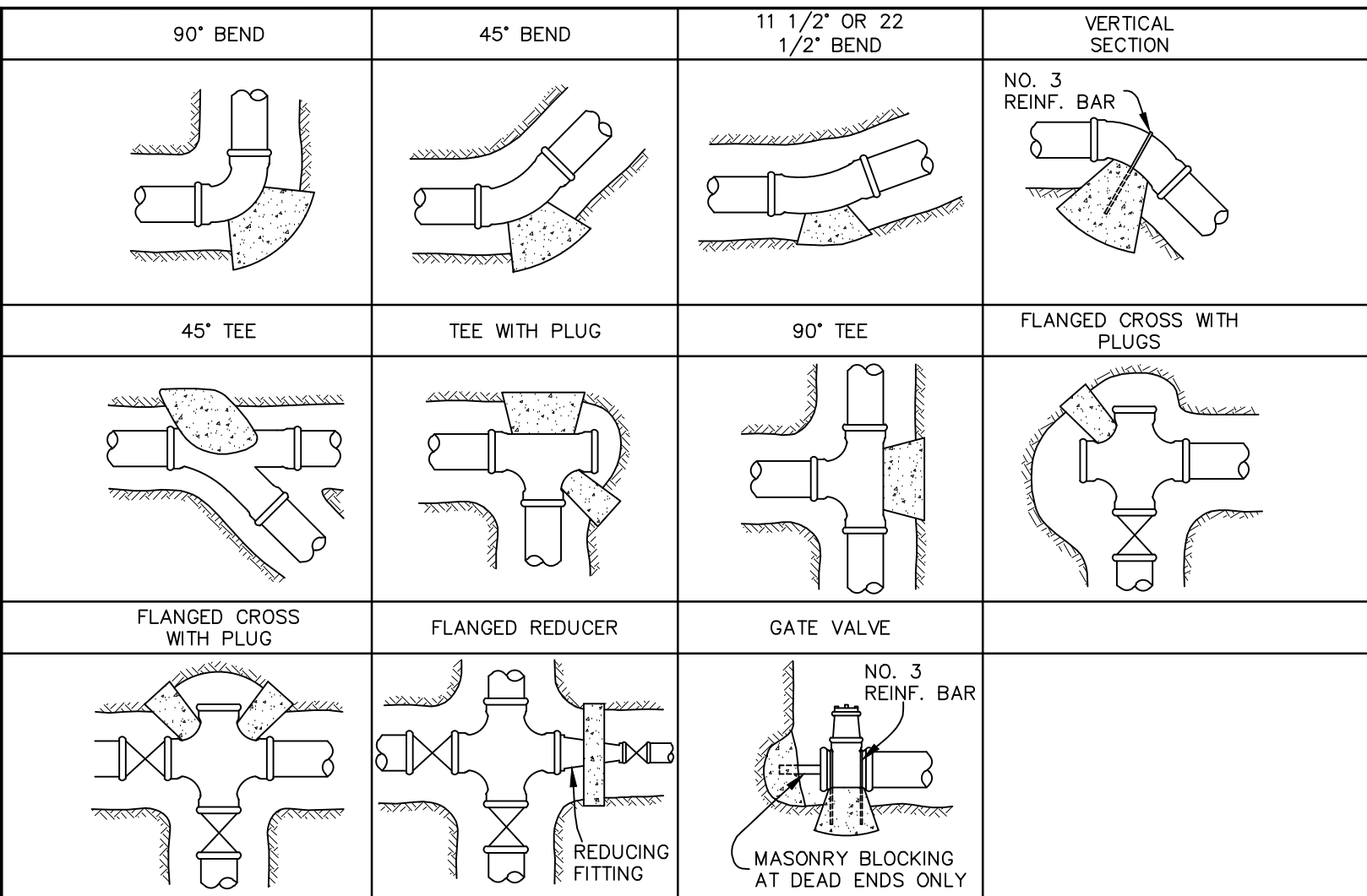
- FIRE HYDRANT
- BLUE PAVEMENT MARKER

NOTES

1. INSTALL TWO-WAY BLUE REFLECTIVE MARKERS. MARKERS SHALL BE AS SPECIFIED IN CALTRANS STANDARD SPECIFICATIONS AND APPROVED BY FIRE CHIEF.
2. INSTALL MARKERS WITH EPOXY APPROVED BY THE CITY ENGINEER.

CITY STANDARD 301A

NO SCALE

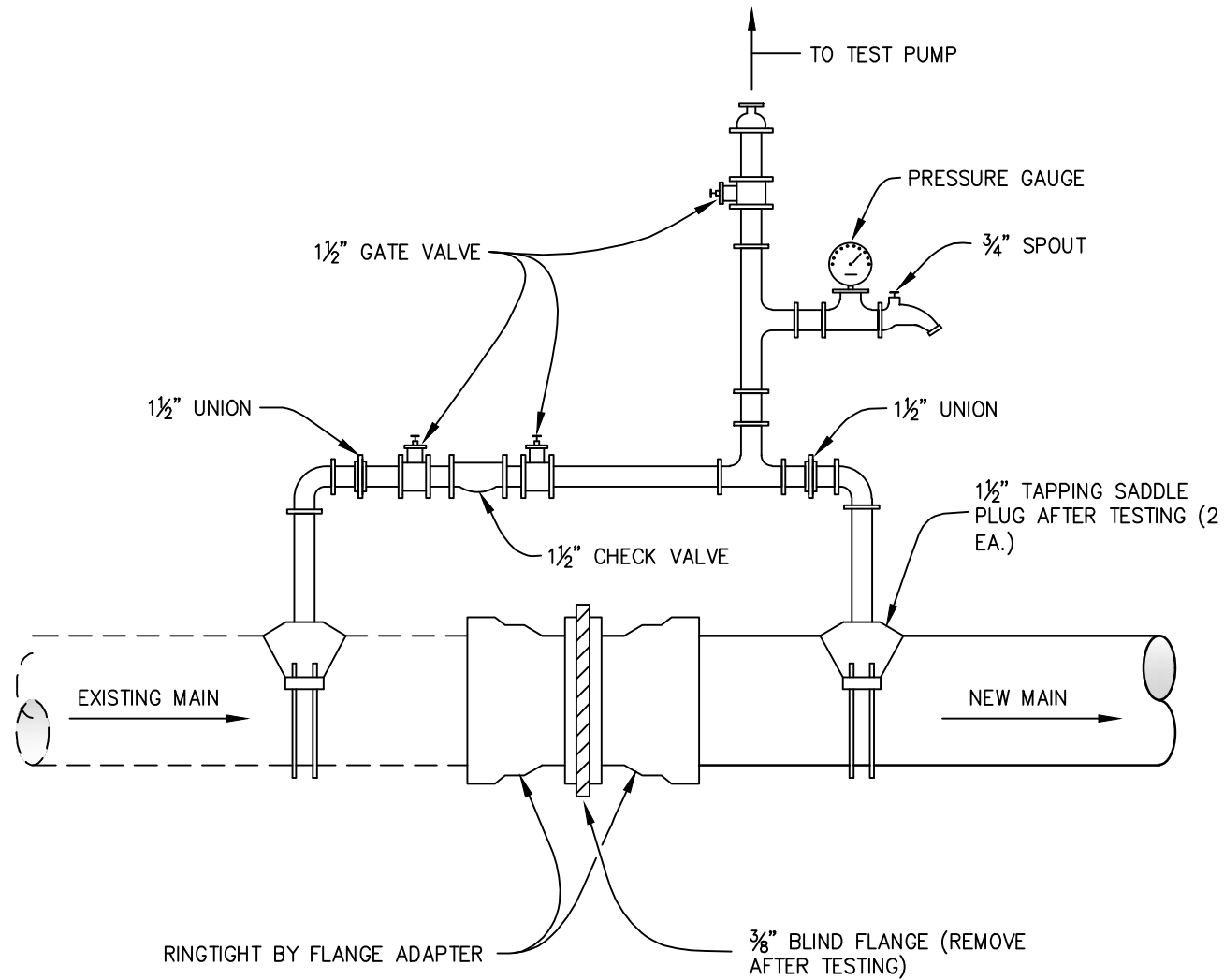


NOTES

1. THRUST BLOCKS SHALL BE CONSTRUCTED SO THAT THE BEARING SURFACE IS IN DIRECT LINE WITH THE MAJOR FORCE CREATED BY THE PIPE OR FITTING.
2. ALL CONCRETE SHALL BE CLASS C P.C.C.
3. CONCRETE SHALL BE FLUID ENOUGH SO THAT IT MAY BE WORKED AROUND THE FITTING.
4. CONCRETE SHALL BE KEPT BEHIND THE BELL OF THE FITTING AND AWAY FROM BOLTS AND FITTINGS.
5. THRUST BLOCK BEARING SURFACE SHALL BE PLACED AGAINST UNDISTURBED EARTH AND SHALL HAVE A MINIMUM VOLUME OF 6 CU. FT. AND A MINIMUM BEARING AREA OF 1 SF PER INCH OF DIAMETER. PIPES LARGER THAN 10" REQUIRE SPECIAL DESIGN.
6. A CONCRETE PAD SHALL BE POURED UNDER ALL VALVES 12" OR LARGER, OR AS DIRECTED BY THE ENGINEER.
7. ALL ANCHOR BLOCKS SHALL BE CONSTRUCTED AS SPECIFIED. SIZE OF BLOCK AND NUMBER OF STRAPS TO BE DESIGNED IN EACH SITUATION.

CITY STANDARD 303

NO SCALE



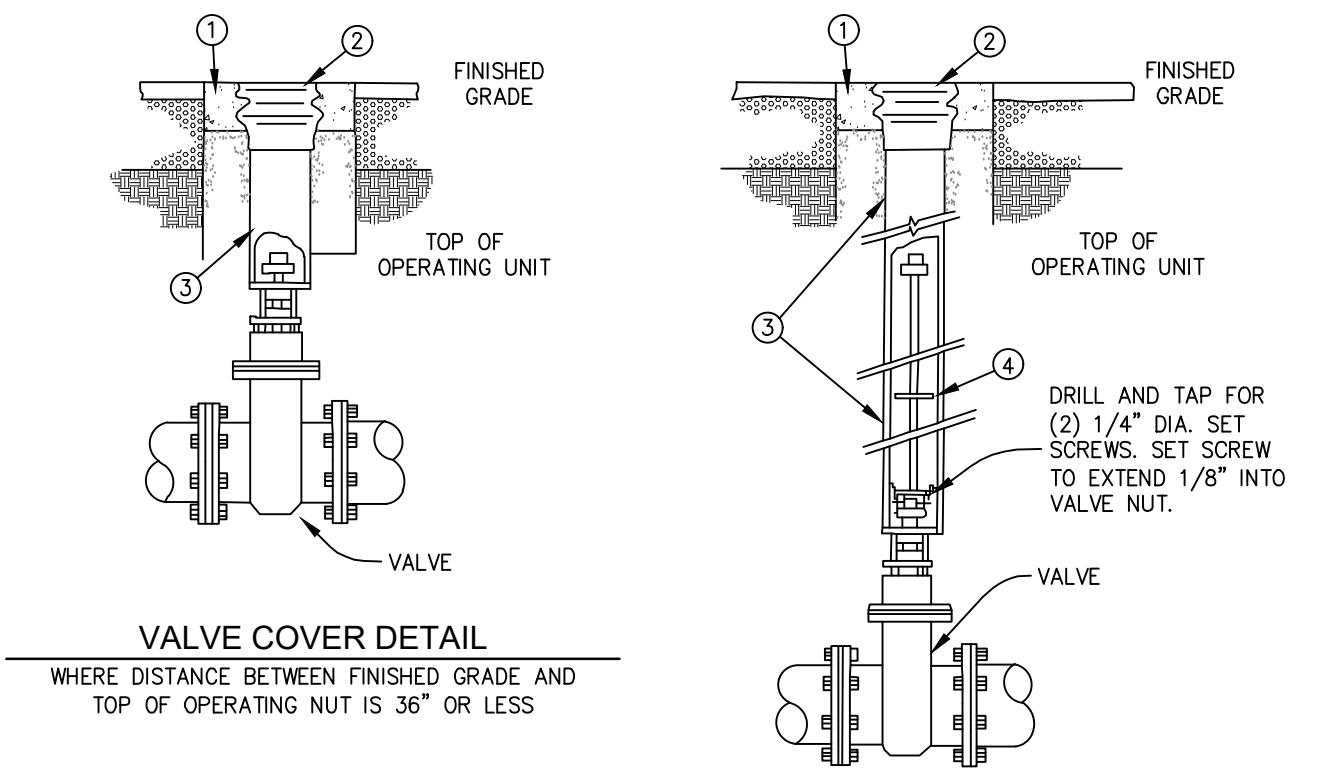
FOR NEW WATER MAIN CONSTRUCTION

NOTE

CONTRACTOR SHALL FURNISH AND INSTALL MATERIALS SHOWN FOR TESTING. WHEN TESTING IS COMPLETE AND RESULTS HAVE BEEN APPROVED, THE CONTRACTOR SHALL FURNISH AND INSTALL REQUIRED MATERIALS TO COMPLETE THE CONNECTION BETWEEN EXISTING AND PROPOSED WATER MAINS.

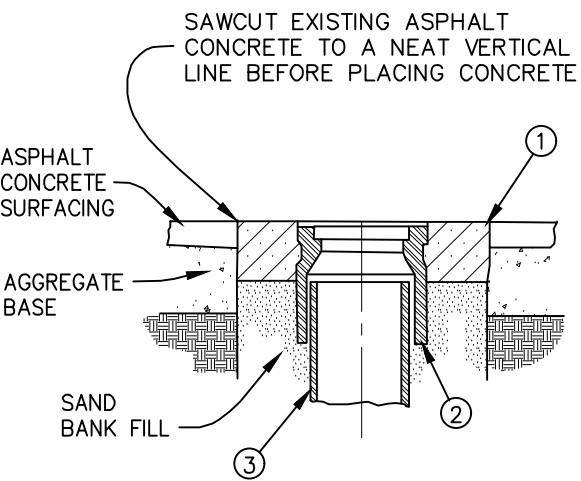
CITY STANDARD 304

NO SCALE



OPERATING NUT EXTENSION DETAIL

REQUIRED WHERE DISTANCE BETWEEN FINISHED GRADE AND TOP OF OPERATING NUT EXCEEDS 36"



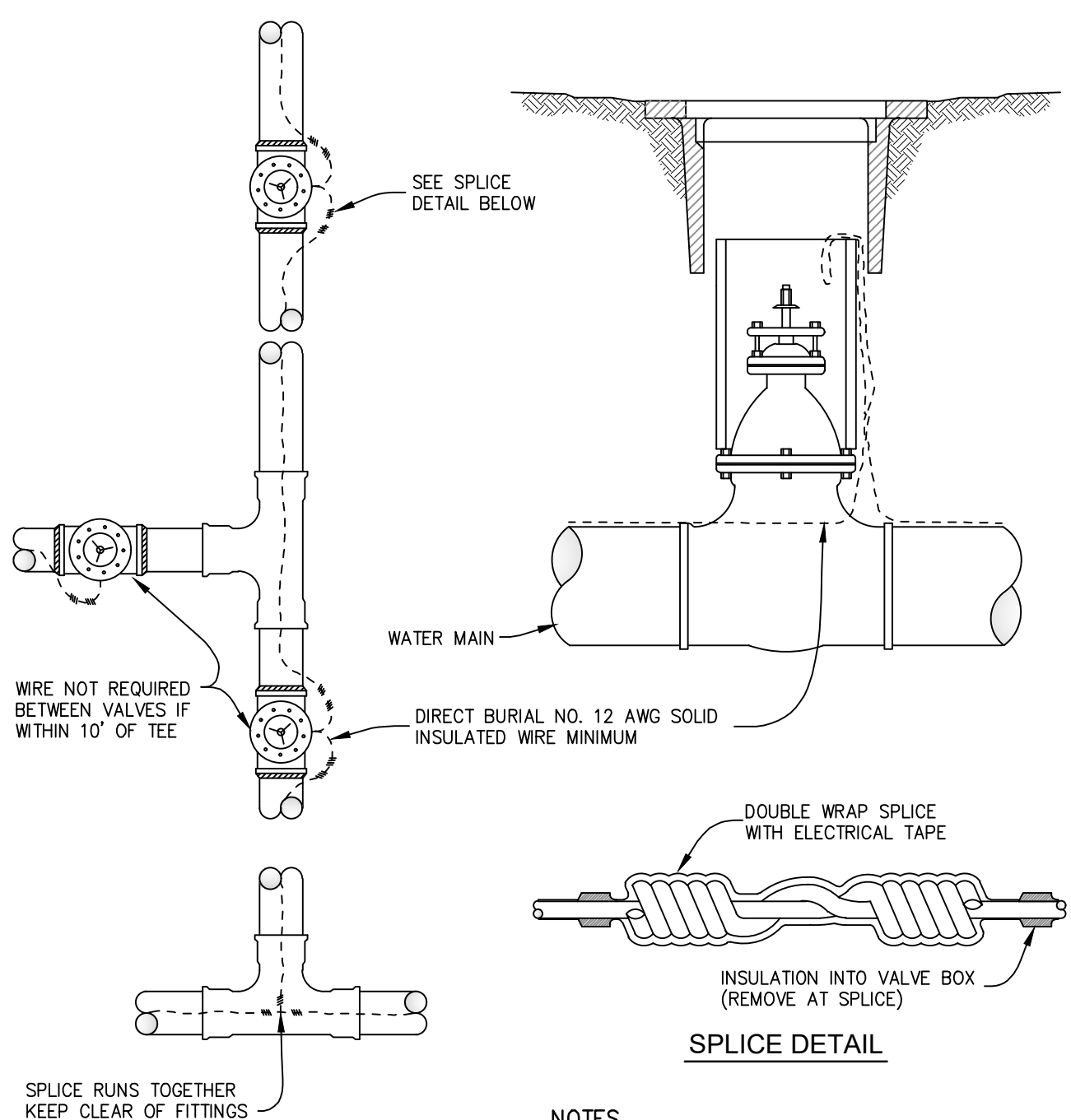
VALVE COVER ADJUSTMENT

NOTES

1. 24" DIA. x 6" THICK CONCRETE COLLAR
2. VALVE BOX COVER (BROOKS PRODUCTS 3-RT, CHRISTY G5 OR APPROVED EQUAL)
3. 8" I.D. PVC PIPE EXTENSION SHALL BE VERTICAL
4. OPERATING NUT EXTENSION WITH 7" DIA. PLATE WASHER WELDED TO EXTENSION AT MIDPOINT OF ROD. (MIN. LENGTH OF EXTENSION ROD SHALL BE 24")

CITY STANDARD 305

NO SCALE



SPlice DETAIL

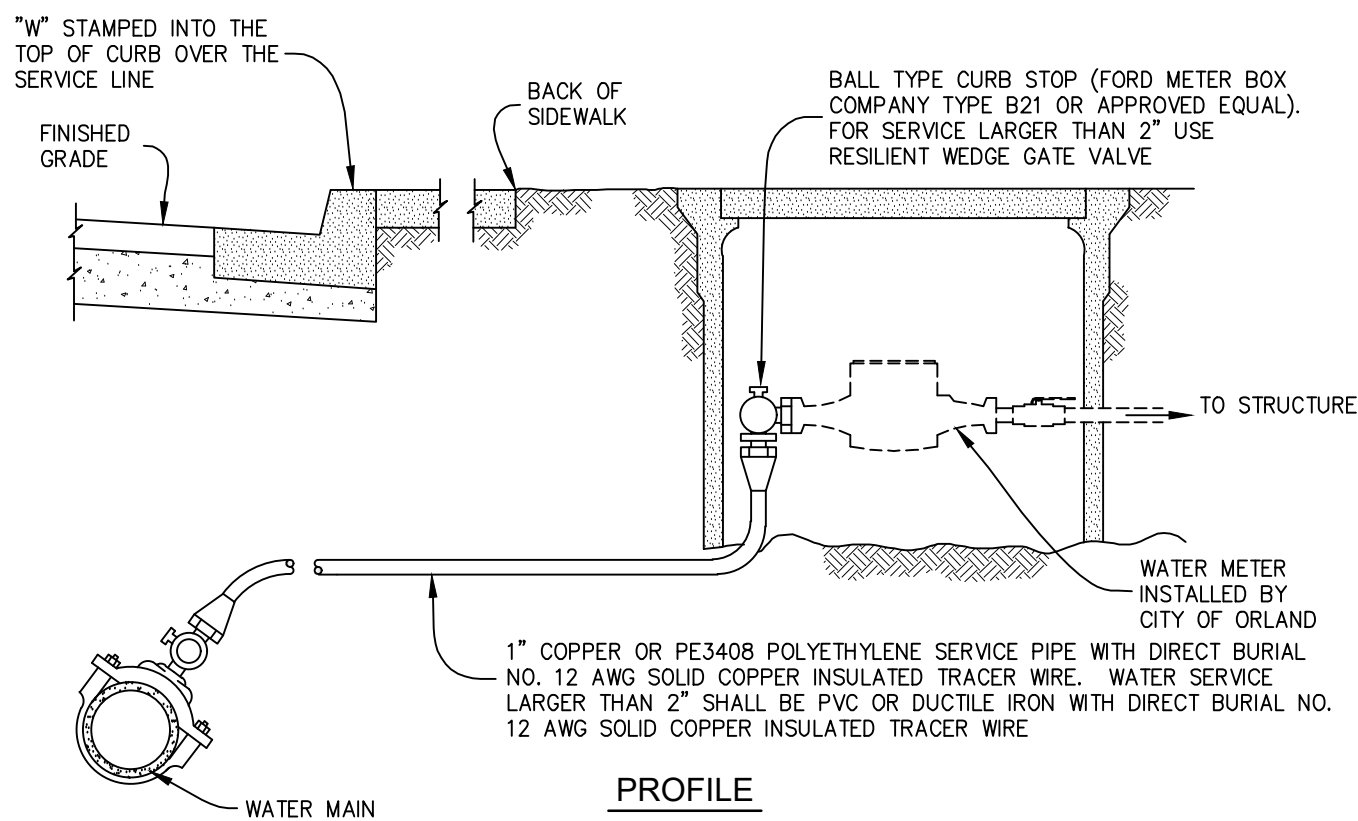
NOTES

1. WIRE TO BE CONTINUOUS BETWEEN VALVE BOXES, EXCEPT WHERE VALVE BOXES ARE WITHIN 10' OF PIPE INTERSECTIONS.
2. DETECTOR RISERS SHALL BE INSTALLED AT 500' INTERVALS MAXIMUM.
3. LOCATOR WIRE TO BE TAPED TO TOP OF WATER MAIN.
4. LOCATOR WIRE MUST BE TESTED AND BE IN WORKING ORDER AFTER ALL UNDERGROUND WORK IS DONE, AND PRIOR TO STREET PAVING.

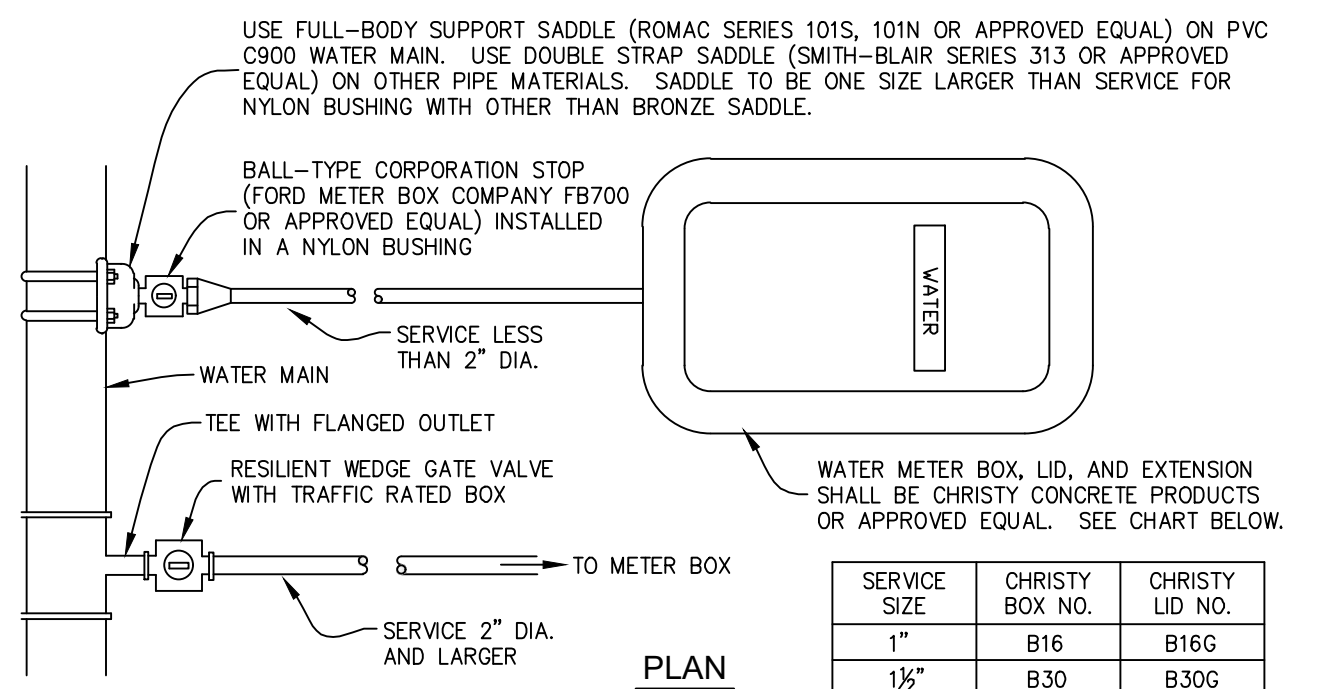
TYPICAL LAYOUT

CITY STANDARD 306

NO SCALE



PROFILE

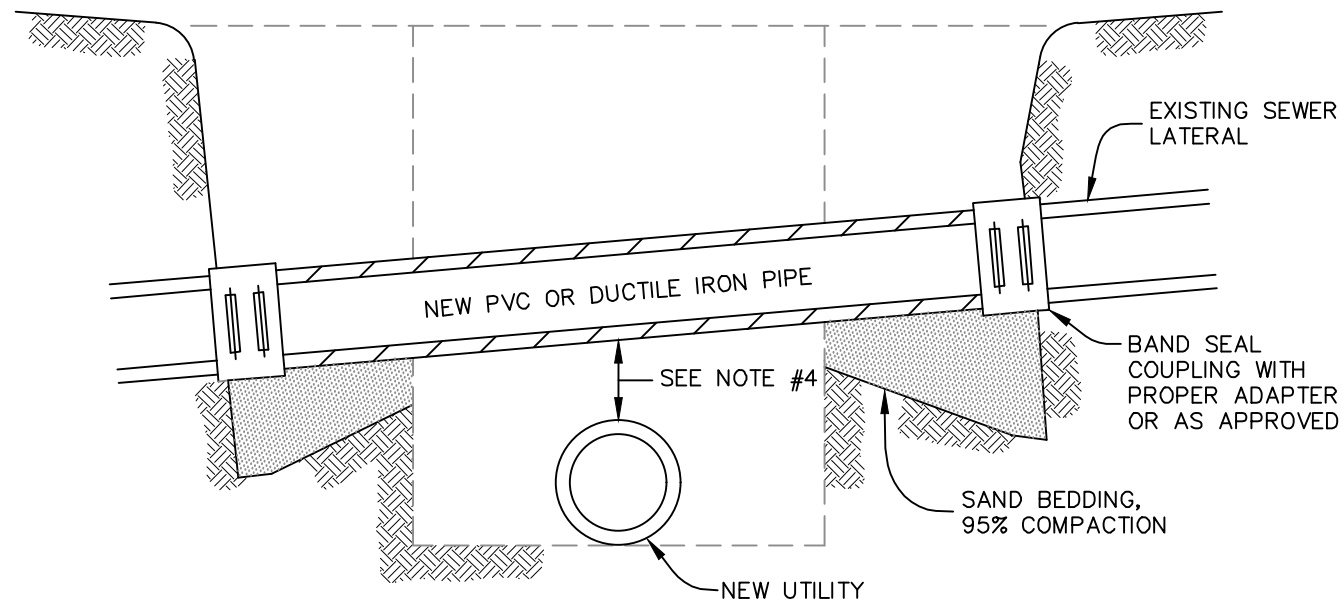


NOTE

1. LOCATE WATER SERVICE NEAR THE CENTER OF LOT.

CITY STANDARD 307

NO SCALE



NOTES

1. THIS STANDARD DETAIL SHALL BE USED IF THE EXISTING SEWER LATERAL IS DAMAGED DURING INSTALLATION OF A NEW UTILITY.
2. INSIDE DIAMETER OF PIPE TO BE THE SAME AS THE PIPE TO WHICH IT CONNECTS.
3. ALTERATIONS OF SEWER GRADES WILL BE PERMITTED ONLY AFTER PERMISSION HAS BEEN RECEIVED FROM THE CITY ENGINEER.
4. MINIMUM CLEARANCE BETWEEN AN EXISTING SEWER LATERAL AND A NEW WATER PIPE SHALL BE 12". MINIMUM CLEARANCE BETWEEN AN EXISTING SEWER LATERAL AND ALL OTHER NEW UTILITIES SHALL BE 3".
5. IF THE NEW UTILITY IS A WATER PIPE, CENTER AN 18 FOOT LENGTH OF PIPE WITH NO JOINTS UNDER THE EXISTING SEWER LATERAL.
6. TRIM THE END OF THE SEWER LATERAL TO A CLEAN CUT UNDAMAGED END WITH MECHANICAL PIPE CUTTER.
7. BAND SEAL COUPLING SHALL HAVE STAINLESS STEEL SHEAR RING, ROMAC LSS SEWER CLAMP OR APPROVED EQUAL.

CITY STANDARD 504

NO SCALE



APPROVED

*Paul W. Rago*

DATE

DECEMBER, 2025

PREPARED FOR :

CITY OF ORLAND

**RAR**  
**ROLLS ANDERSON & ROLL**  
**CIVIL ENGINEERS**

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4TH ST. AND 5TH ST. ALLEY WATER MAIN REPLACEMENT

DETAILS

DESIGNED	PWR
DRAWN	CAD
CHECKED	JIR
DRAWING NO.	4 OF 4
JOB NO.	25002