

Development Design Standard Details

Section 2-000-000

Water System

<u>Drawing Number</u>	<u>Drawing Title</u>
2-060-001	Fire Hydrant Installation
2-070-001	Valve Box and Extension
2-070-002	Valve Markers
2-070-003	2" Air-Release and Vacuum Valve
2-070-004	Water Main Connections – Hot Tap & Direct Tap
2-080-003	Pressure Reducing Station (Profile)
2-080-004	Pressure Reducing Station (Plan)
2-090-001	Single Meter Service – 3/4" x 5/8"
2-090-002	Double Meter Service – 3/4" x 5/8"
2-090-003	Single Meter Service – 1" to 2"
2-090-004	Water Service Notes
2-100-001	Pipe Casing
2-120-001	2" Blow Off Assembly
2-130-002	Thrust Block Table
2-153-001	Double Detector Check Valve
2-153-002	Double Check Valve Outside
2-153-003	Reduced Pressure Backflow Assembly

Section 3-010-000

Roadway

<u>Drawing Number</u>	<u>Drawing Title</u>
3-010-002	Vertical Curb Type Roadway
3-010-007	Cul-de-Sacs
3-010-008	Temporary Cul-de-Sac
3-010-009	Eyebrow
3-010-010	Half Street
3-010-011	Alley Pavement Detail
3-010-012	Inline Trench
3-010-013	Seepage Barrier
3-010-014	Construction Notice Board

Section 3-020-000

Drainage

<u>Drawing Number</u>	<u>Drawing Title</u>
3-020-001	Culvert - Beveled End Pipe Section
3-020-003	Catch Basin - Type 1
3-020-004	Catch Basin - Type 1-L
3-020-005	Catch Basin - Type 2 - 48", 54", 72" & 96"
3-020-006	Catch Basin Notes
3-020-012	Catch Basin - Curb Inlet
3-020-013	Standard Grate

Section 3-020-000

Drainage

<u>Drawing Number</u>	<u>Drawing Title</u>
3-020-014	Curb Installation – Standard Frame
3-020-015	Standards Solid Cover
3-020-016	Through-curb Inlet Frame
3-020-017	Through-curb Inlet Frame and Grate with Vertical Curb Installation
3-020-018	Vaned Grate
3-020-022	Solid Locking Cover
3-020-023	Locking Cover Frame
3-020-025	Flow Restrictor / Oil Pollution Control Device, Tee Type (FROP-T)
3-020-026	Shear Gate
3-020-027	Flow Restrictor / Oil Pollution Control Device, Baffle Type (FROP-B)
3-020-028	Individual Lot & Roof Drain
3-020-030	Debris Cage

Section 3-030-000

Sidewalk, Curb & Driveway

<u>Drawing Number</u>	<u>Drawing Title</u>
3-030-002	Vertical & Extruded Curb
3-030-003	Shoulder and Ditch Section Driveway
3-030-004A	Standard Driveway with Planter Strip
3-030-004B	Standard Driveway without Planter Strip
3-030-005A	Reverse Slope Driveway with Planter Strip
3-030-005B	Curb, Sidewalk and Joint Details
3-030-006	Driveway Placement and Setbacks
3-030-007	Joint Use Driveway Tract

Section 3-040-000

Curb Ramps

<u>Drawing Number</u>	<u>Drawing Title</u>
3-040-002	Perpendicular Curb Ramp
3-040-003	Parallel Curb Ramp
3-040-004	Combination Curb Ramp
3-040-005	Single Direction Curb Ramp
3-040-006	Detectable Warning Surface

Section 3-050-000

Roadside Appurtenances

<u>Drawing Number</u>	<u>Drawing Title</u>
3-050-003	Barricades
3-050-004	Rock Facing, Cut Section
3-050-005	Rock Facing, Fill Section
3-050-007	Rock Facing, Fill Section Reinforcement
3-050-008	Concrete Steps and Metal Handrail
3-050-009	Street Tree Standards
3-050-010	Mailbox Mounting, Curb Type Location
3-050-011	Mailbox Mounting, Shoulder Type Location
3-050-012	Single Mailbox Installation

Section 3-050-000

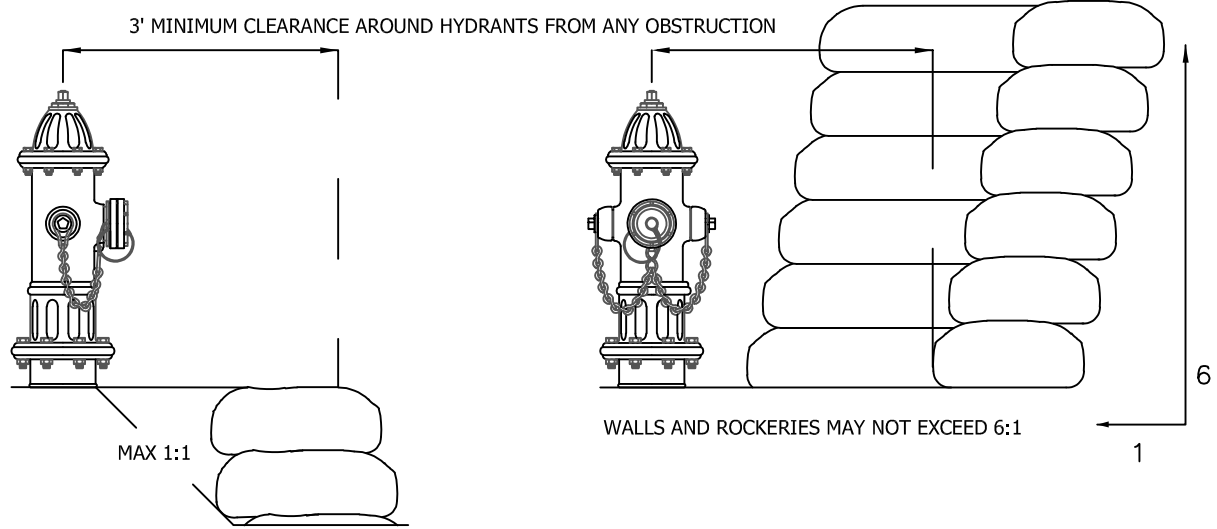
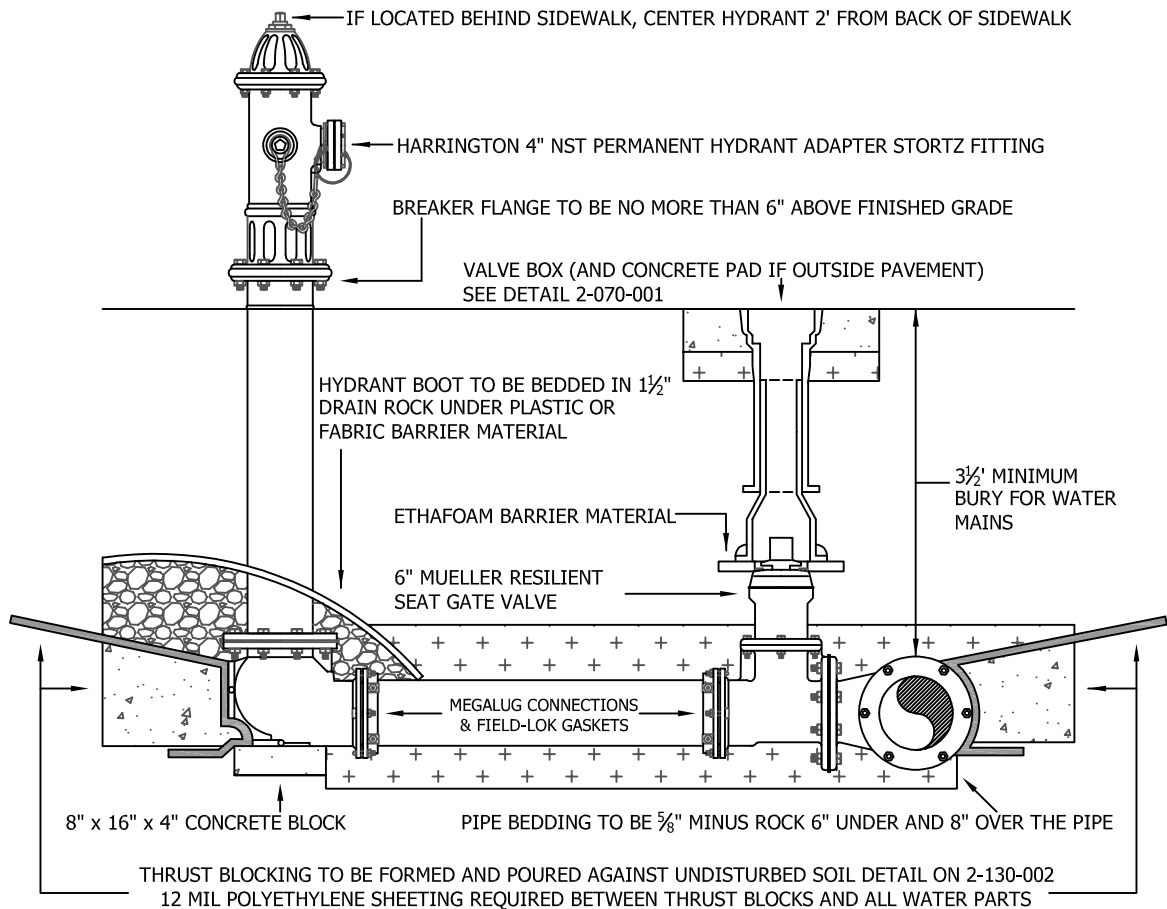
Roadside Appurtenances

<u>Drawing Number</u>	<u>Drawing Title</u>
3-050-012A	Mailbox Collection Unit (MBCU) Installation
3-050-013	Removable Bollards
3-050-014	Roadway Survey Monument with Case and Cover
3-050-015	Off-Roadway Survey Monument
3-050-016	Street Signs in Landscape
3-050-017	Street Signs in Hardscape

Section 5-10-000

Sanitary Sewer System

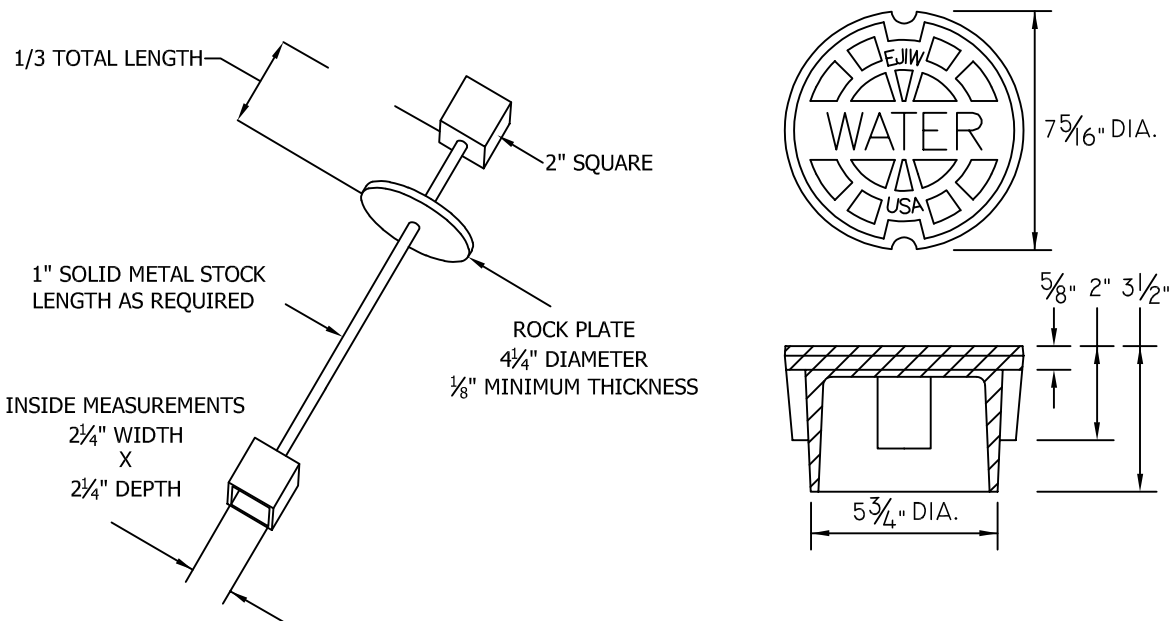
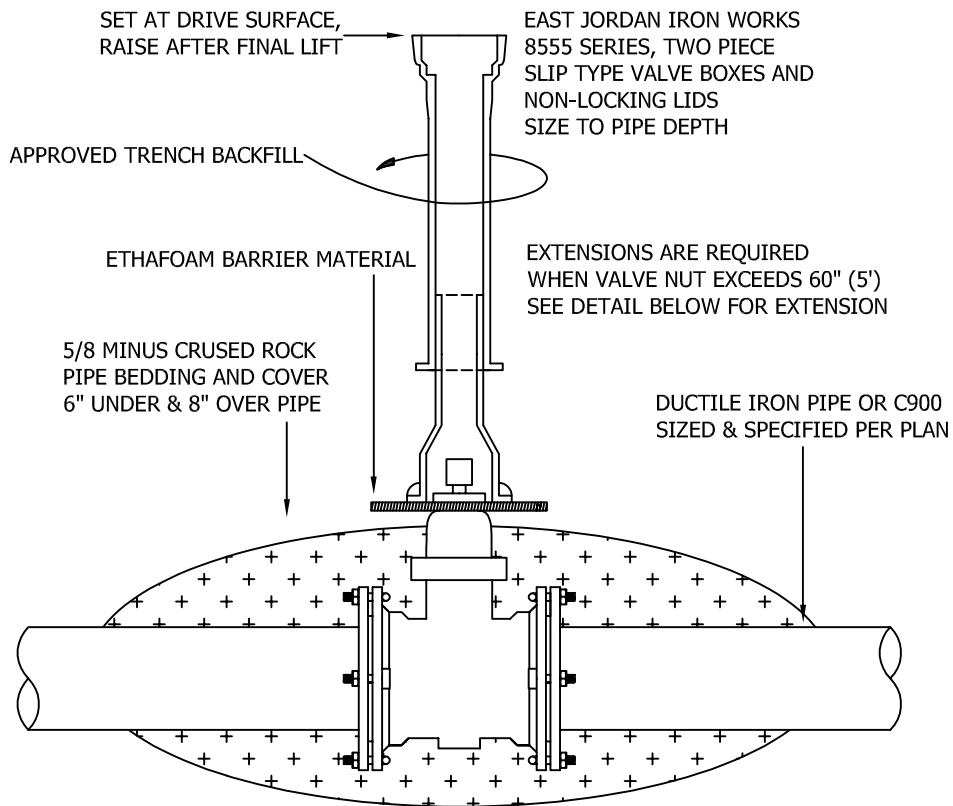
<u>Drawing Number</u>	<u>Drawing Title</u>
5-010-001	Ductile Iron Ring and Cover
5-010-003	Typical Side Sewer
5-010-006	Ladder Detail
5-010-007	Pipe Bedding, Trench Section & Asphalt Patching
5-010-010	Type 1 Manhole
5-010-013	Type 3 Manhole
5-010-017	Manhole Frame Collar
5-140-001	Inside Drop Connection for Sanitary Sewers



NOTES:

1. PAINT HYDRANT WITH TWO COATS OF QUICK-SET ENAMEL YELLOW HYDRANT PAINT (FAR WEST PAINT COMPANY #403472)
2. STENCIL DISTANCE FROM THE HYDRANT TO THE MARKER (ROUND TO NEAREST FOOT) IN 2" BLACK NUMBERS DIRECTLY INLINE WITH VALVE
3. WHEN HYDRANT IS LOCATED BE HIND A DITCH, INSTALL A CULVERT FOR ACCESS. SEE PUBLIC WORKS FOR SIZE AND MATERIAL
4. PLACE BLUE RETRO-REFLECTIVE MARKER IN THE CENTER OF THE ROADWAY ADJACENT TO THE FIRE HYDRANT

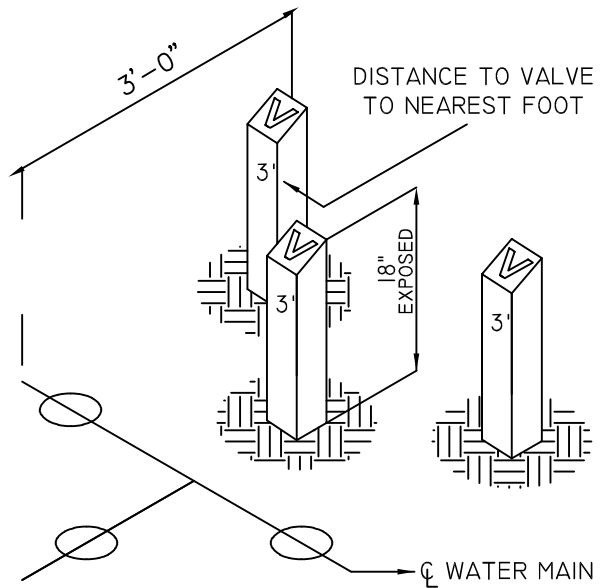
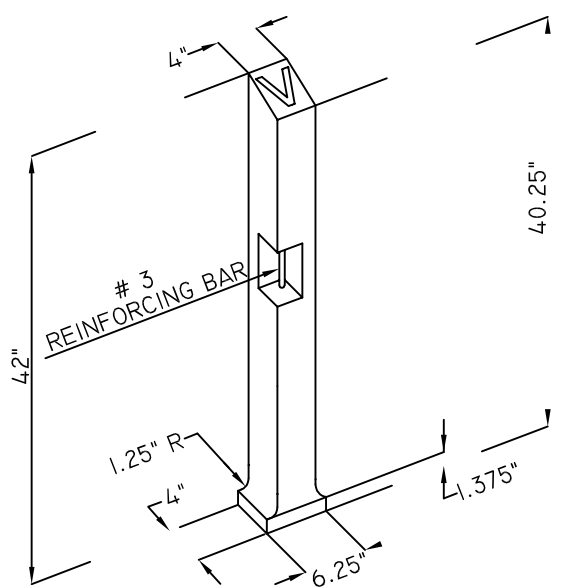
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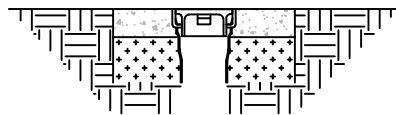
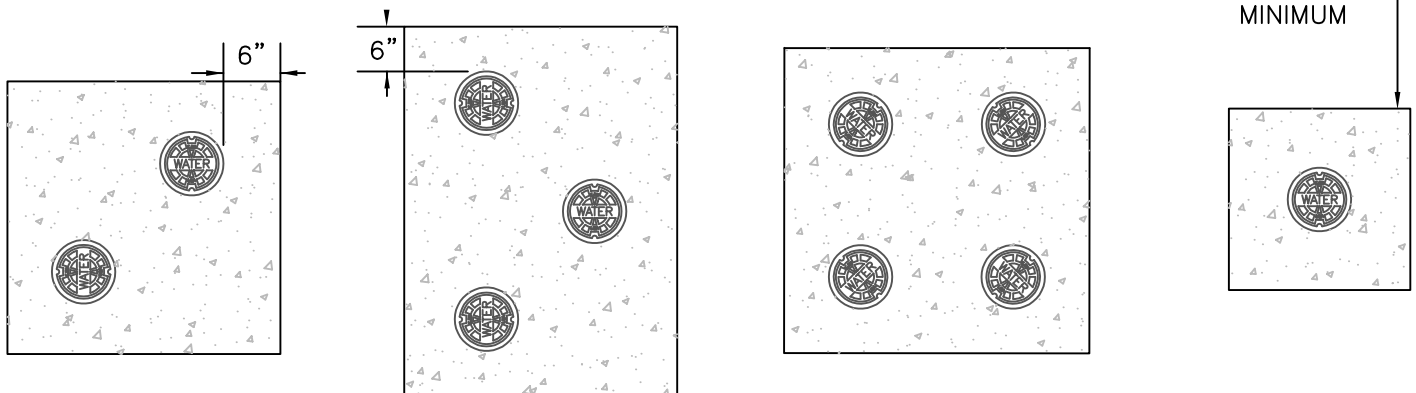
NOTES:

1. ALL EXTENSIONS ARE TO BE MADE OF STEEL. SIZE TO ALLOW VALVE OPERATION WITHIN 60" (5') OF SURFACE.
2. EXTENSIONS ARE TO BE A MINIMUM OF 12" LONG. ONLY ONE EXTENSION MAY BE USED PER VALVE ASSEMBLY.
3. PAINT ENTIRE ASSEMBLY WITH TWO COATS OF ATCO # 222 CARBON ELASTIC.

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STANDARD SINGLE
CONCRETE VALVE CAN
PAD TO BE 2'X2'
MINIMUM



NOTES:

1. VALVE MARKER POSTS AND CONCRETE PADS AROUND VALVE CANS ARE REQUIRED WHEN LOCATED IN A NON-PAVED AREA. VALVE CANS LOCATED IN NON-PAVED AREAS MUST 6" OF CONCRETE IS AROUND ALL VALVE CANS. NO EARTH FORMING ALLOWED. CONCRETE PAD TO BE 4" THICK OVER 6" OF COMPACTED 5/8" MINUS CRUSHED ROCK.
2. VALVE MARKER POST SHALL BE FROM FOGTITE INC. USE ONE VALVE MARKER POST PER VALVE.
3. THE POST SHALL BE SET AT RIGHT ANGLES TO THE ROADWAY FROM THE VALVE AND SHALL BE SITUATED IN A SAFE AND REASONABLY CONSPICUOUS LOCATION.
4. PAINT VALVE MARKERS WITH TWO COATS OF QUICKSET ENAMEL YELLOW PAINT.
5. STENCIL DISTANCE FROM THE VALVE TO THE MARKER (TO THE NEAREST FOOT) IN 2" BLACK NUMBERS.
6. VALVE CANS FOR BUTTERFLY VALVES TO BE LOCATED ON THE NORTH AND EAST SIDES OF THE MAIN.

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DEVELOPMENT DESIGN
STANDARD DETAILS



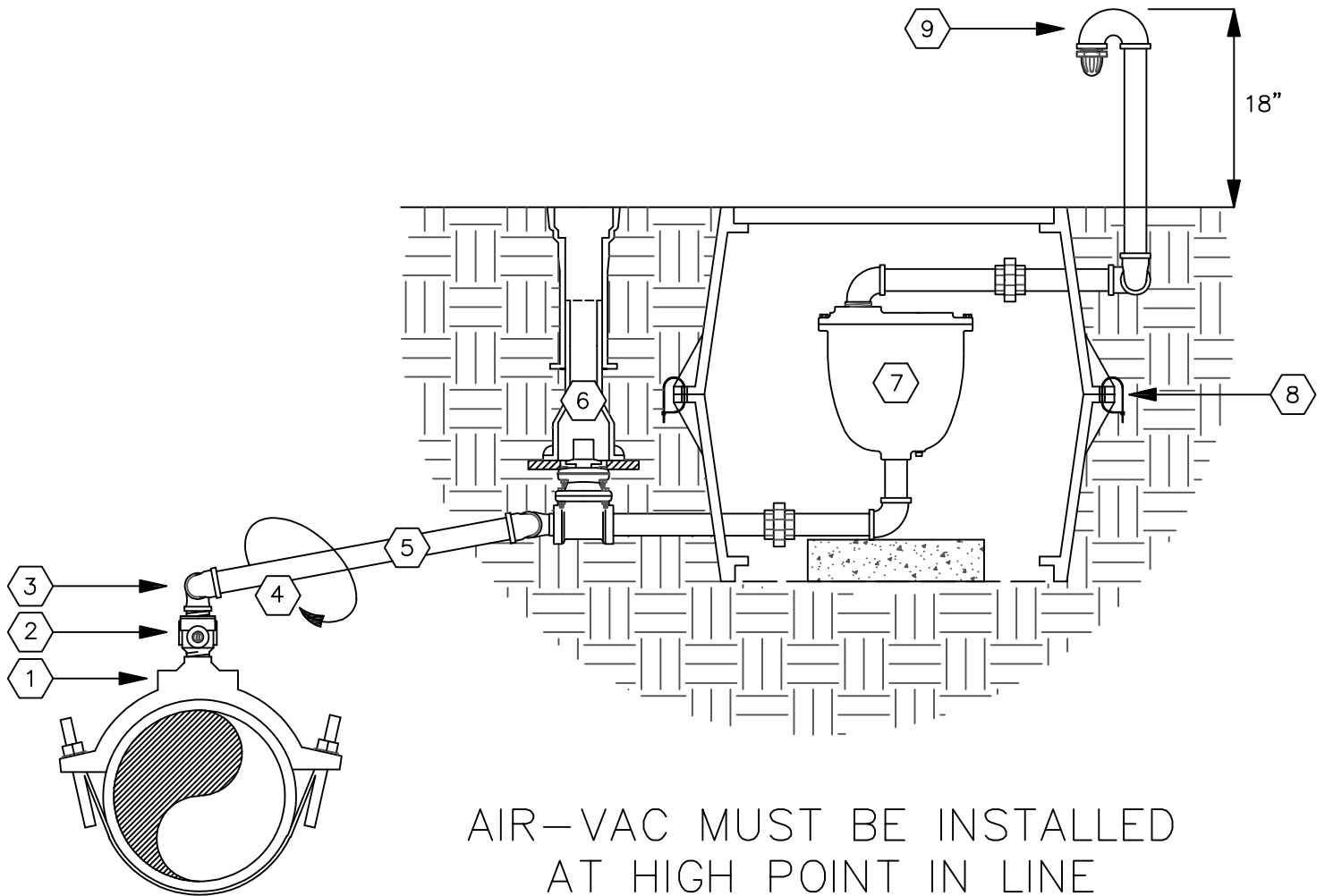
August 2021

TITLE

Valve Markers

DRAWING NUMBER

2-070-002



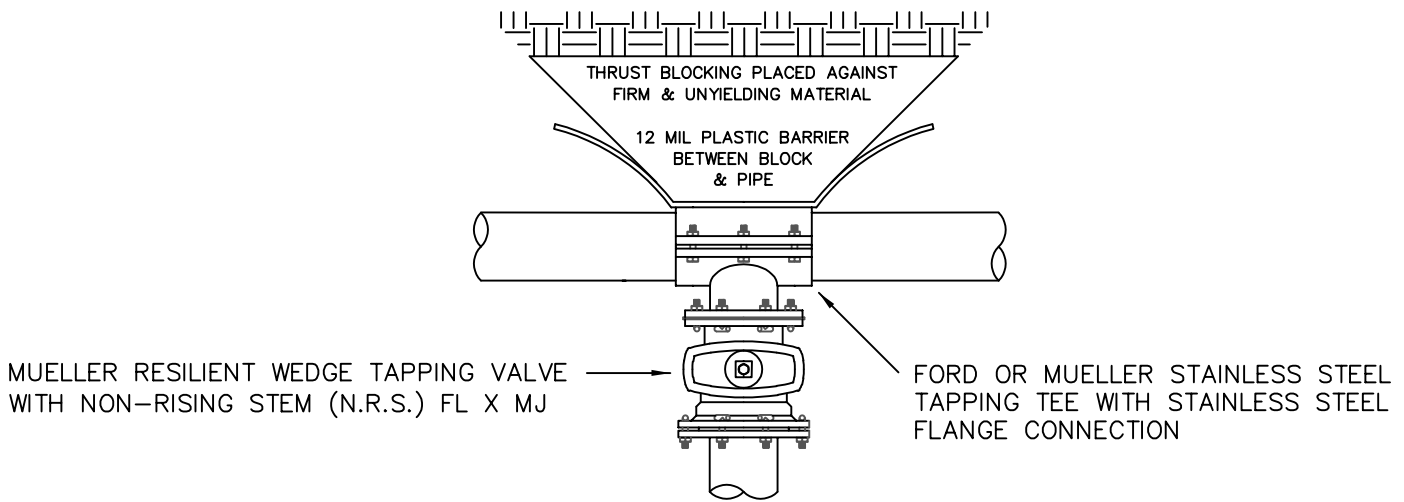
NOTES:

1. SADDLE SHALL BE EITHER FOR FC202 OR ROMAC 202NS PLACED SO OUTLET IS UP.
2. FORD FB400 OR MUELLER 300 BALLCORP VALVES (AWWA/CC TAPER THREAD INLET BY IRON PIPE THREAD OUTLET).
3. PIPE BED ZONE SHALL BE 3" OF SAND ALL AROUND THE PIPE.
4. ALL PIPES AND FITTINGS UNDER AIR-VAC VALVE SHALL BE 2" BRASS, EVERYTHING ABOVE MAY BE 2" GALVANIZED STEEL. AIR-VAC LINE SHALL HAVE A MINIMUM OF 2% SLOPE UPHILL TOWARDS THE AIR-VAC VALVE TO ALLOW PURGING OF AIR
5. 2" MUELLER RESILIENT WEDGE (N.R.S.) GATE VALE WITH I.P.S. THREADED ENDS, PLACE GATE VALVE AS CLOSE TO BOX AS PRACTICAL, SEE DRAWING 5-070-001 FOR VALVE BOX DETAILS AND INFORMATION, NO CONCRETE PAD IS REQUIRED AROUND VALVE BOX IF IT IS PLACED NEXT TO BOX
6. APCO 145C COMBINATION AIR VALVE (AIR-VAC), AIR-VAC IS CONNECTED IN LINE WITH A UNION AT EITHER SIDE AS SHOWN, USE A 2" STREET 90 DIRECTLY INTO TOP OF VALVE AND A DOUBLE FEMALE 90 BELOW, ADJUST HEIGHT WITH NIPPLE LENGTH BELOW VALVE. PLACE WEIGHT OF ASSEMBLY ON 8"X16"X4" CONCRETE BLOCK AND INSULATE WITH RIGID FOAM INSULATION TO TOP OF AIR-VAC.
7. BOXES SHALL BE CARSON 1730 HDPE (SHOWN) FOR USE OUT OF THE TRAVEL LANE, FOR APPLICATIONS IN A PAVED AREA USE MID-STATES 1730-R HDPE TRAFFIC RATED BOXES WITH DUCTILE IRON LIDS. ATTEMPT TO LOCATE BOXES IN THE LANDSCAPE STRIP WHENEVER POSSIBLE.
8. USE NYLON ZIP-TIES TO CONNECT THE BOTTOM OF THE BOXES TOGETHER. STACK TWO BOXES IN THE CONVENTIONAL MANNER.
9. RETURN BEND WITH BEEHIVE STRAINER. PAINT STAND PIPE WITH TWO COATS OF QUICK SET ENAMEL BLUE PAINT.

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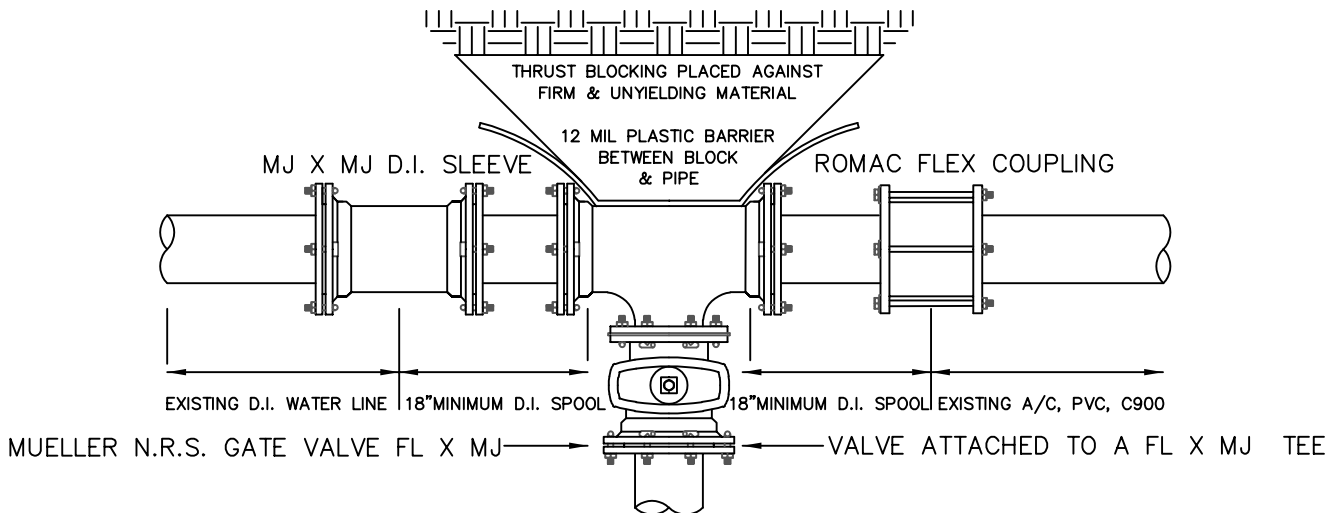
'HOT TAP / DIRECT TAP'

MAY BE USED ANYTIME THE BRANCH SIZE IS SMALLER THAN MAIN SIZE, SAME SIZE TAPS MAY BE PERFORMED ON DUCTILE IRON PIPE ONLY



'CUT-IN'

MUST BE USED WHEN EXISTING WATER MAIN IS MADE FROM A/C, C-900, OR PVC PIPE AND THE NEW BRANCH MUST BE THE SAME SIZE



NOTES:

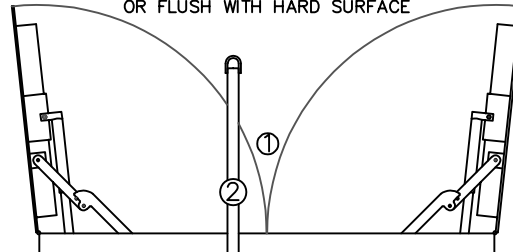
1. ALL CONNECTIONS TO BE MADE WITH THE CITY INSPECTOR PRESENT
2. WHEN HOT TAPPING SUPPORT WEIGHT OF VALVE BY PLACING A CONCRETE BLOCK UNDER THE VALVE BEFORE TIGHTENING THE TAPPING TEE
3. CUT-IN'S REQUIRING WATER MAIN SHUTDOWN ARE REQUIRED TO HAVE A MINIMUM OF 3 DAYS NOTICE TO ALL EFFECTED CUSTOMERS IN WRITING AND APPROVED BY THE CITY OF DUVALL, TO BE CONSIDERED ONE FULL DAY SHUT OFF NOTICES MUST BE DELIVERED BEFORE 12:00 PM, DO NOT COUNT WEEKEND DAYS
4. ALL PIPE AND FITTINGS TO BE SWABBED WITH A CL SOLUTION OF AT LEAST 50 PPM
5. CONTRACTOR MAY NOT OPERATE CITY WATER VALVES UNLESS GIVEN CONSENT BY THE CITY INSPECTOR OR DURING AN EMERGENCY

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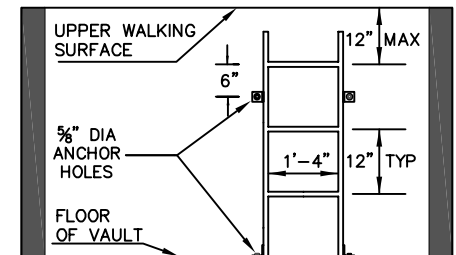
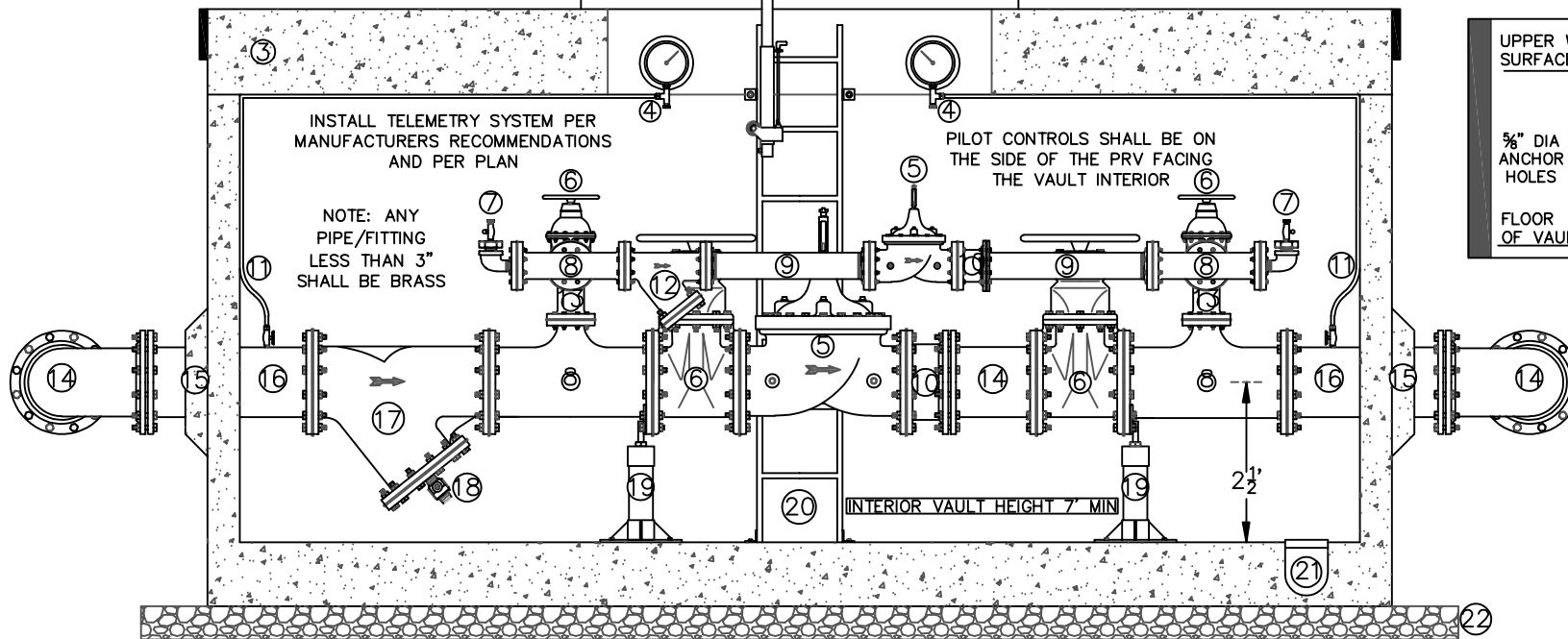
1. ALUMINUM DOUBLE DOOR ACCESS HATCH SHALL PROVIDE A MIN OF 4' X 5' OPENING AND WITHSTAND H-20 LOADS, HATCH SHOULD HAVE AN ASSISTED OPENING AND BE LOCKABLE.
2. BILCO 'LADDER UP' SAFETY POST OR EQUIVALENT, ATTACH TO SIDE OF LADDER OR RUNG.
3. PRECAST CONCRETE UTILITY VAULT WITH PRECAST DRAINAGE SUMP, SIZE FOR MINIMUM CLEARANCES.
4. 4½" PRESSURE GAUGE WITH TURRET CASE (0-200 PSI). ATTACH TO COPPER WITH BRASS TEE.
5. CLA-VAL PRESSURE REDUCING VALVE (PRV) # 90G-01 ABCSKC WITH LEVEL INDICATOR.
6. MUELLER RESILIENT WEDGE (NON-RISING STEM) GATE VALVE WITH HAND WHEEL OPERATION.
7. TAPPED BLIND FLANGE, BRASS STREET 90, BRASS BUSHING(S) ¼" BRASS BALL VALVE.
8. DUCTILE IRON (D.I.) FL X FL TEE
9. DUCTILE IRON (D.I.) FL X FL SPOOL
10. DUCTILE IRON (D.I.) FL X MJ COUPLER
11. ¼" BRASS BALL VALVE AND COPPER LINE TO GAUGE

12. D.I. FL X FL WYE STRAINER WITH 20 MESH SCREEN
13. D.I. FL X FL LONG SWEEP 90
14. D.I. MJ X MJ 90 WITH RESTRAINED JOINTS
15. MEGA-LUG STYLE FOLLOWER PLACED AGAINST VAULT WALL AND ENCASED IN CONCRETE FOR THRUST PROTECTION.
16. D.I. PIPE FL X PE, SIZE FOR 12" MIN. BETWEEN INSIDE OF VAULT WALL AND FLANGE
17. D.I. FL X FL WYE STRAINER WITH 1/8TH DIA. SCREEN (LARGER SCREEN SIZE THAN 12)
18. 2" BRASS CORPORATION STOP, FORD FB400 OR MUELLER 300 BALLCORP VALVE
19. ADJUSTABLE PIPE SUPPORT WITH SADDLE AND ANCHOR FLANGE, SPACE AS NEEDED
20. POLYPROPYLENE LADDER SIZED TO DETAIL
21. PRECAST SUMP FOR GRAVITY DRAIN (2% MIN.) OR VENTURI PUMP IF NO OBTAINABLE
22. 6" MIN. ⅝" MINUS CRUSHED ROCK MECHANICALLY COMPACTED AND PLACED OVER

SET HATCH 2" ABOVE FINISH GRADE IN LANDSCAPE OR FLUSH WITH HARD SURFACE



PROVIDE EXPANSION JOINT WHEN IN HARDSCAPE

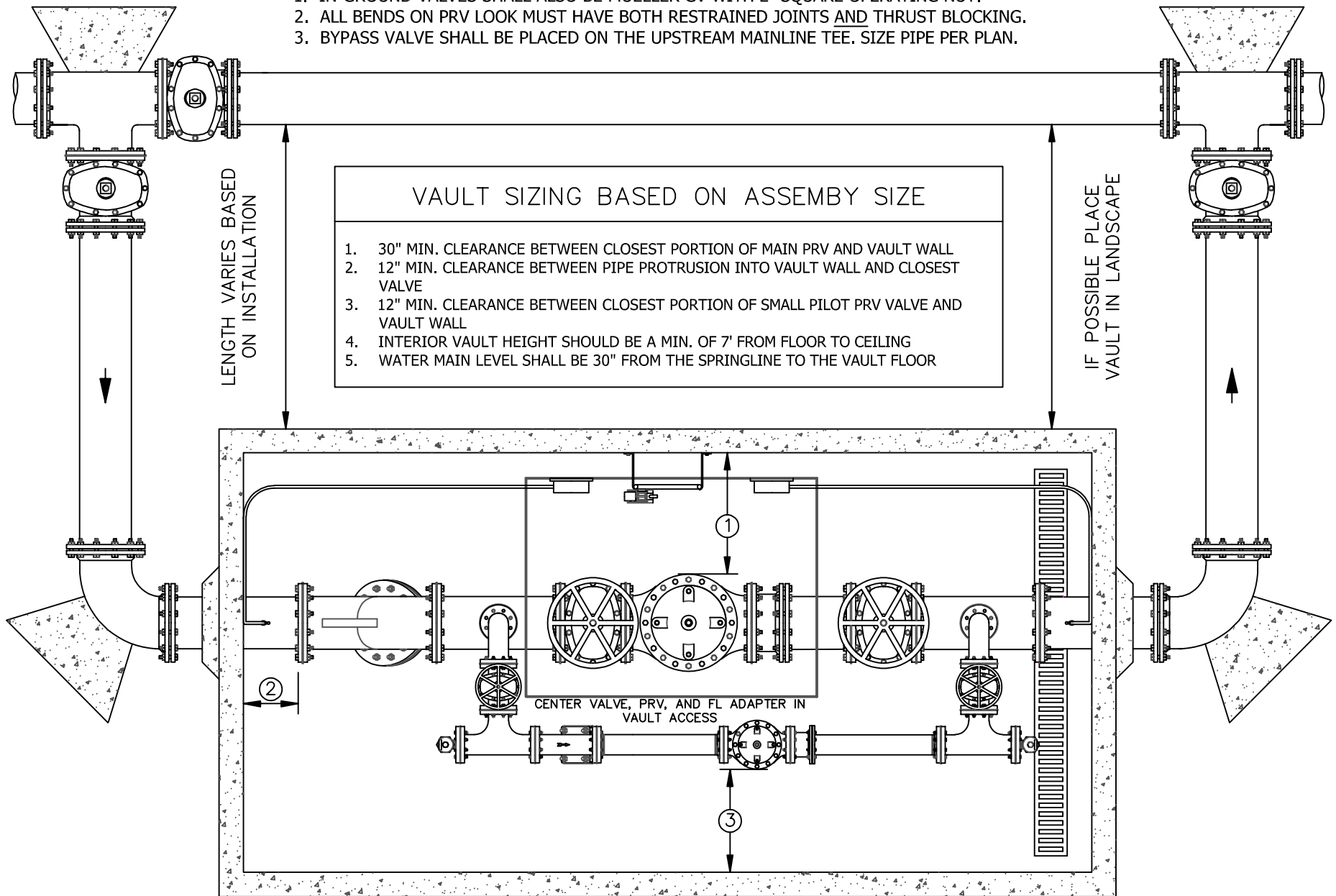


VAULT LADDER DIMENSIONS

SEE VAULT CLEARANCE DETAIL ON SHEET 2-08-004 TO SIZE VAULT BASED ON ASSEMBLY SIZE

NOTES:

1. IN-GROUND VALVES SHALL ALSO BE MUELLER GV WITH 2" SQUARE OPERATING NUT.
2. ALL BENDS ON PRV LOOK MUST HAVE BOTH RESTRAINED JOINTS AND THRUST BLOCKING.
3. BYPASS VALVE SHALL BE PLACED ON THE UPSTREAM MAINLINE TEE. SIZE PIPE PER PLAN.



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**DEVELOPMENT DESIGN
STANDARD DETAILS**

August 2021

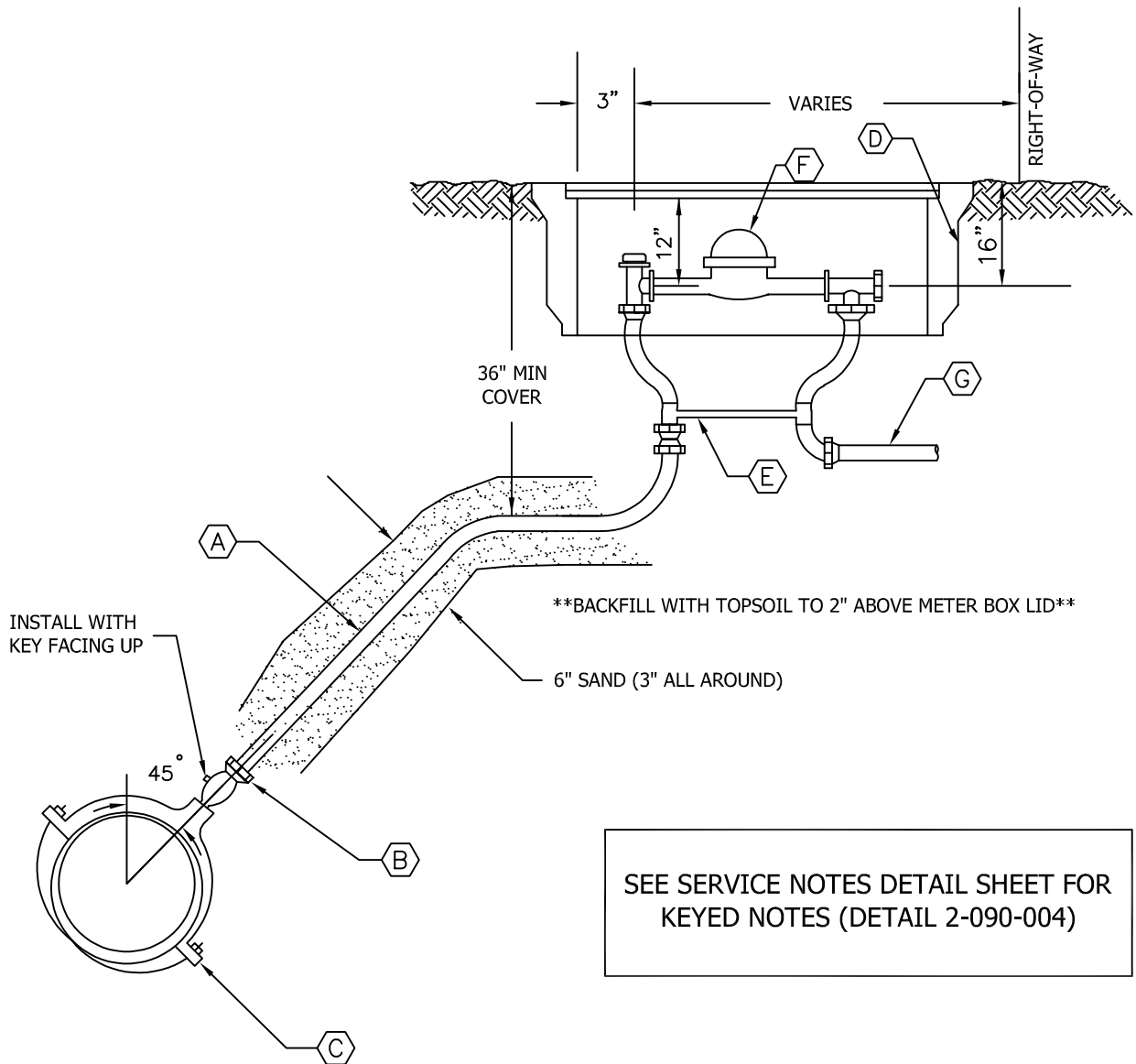


TITLE

Pressure Reducing Station (Plan)

DRAWING NUMBER

2-080-004

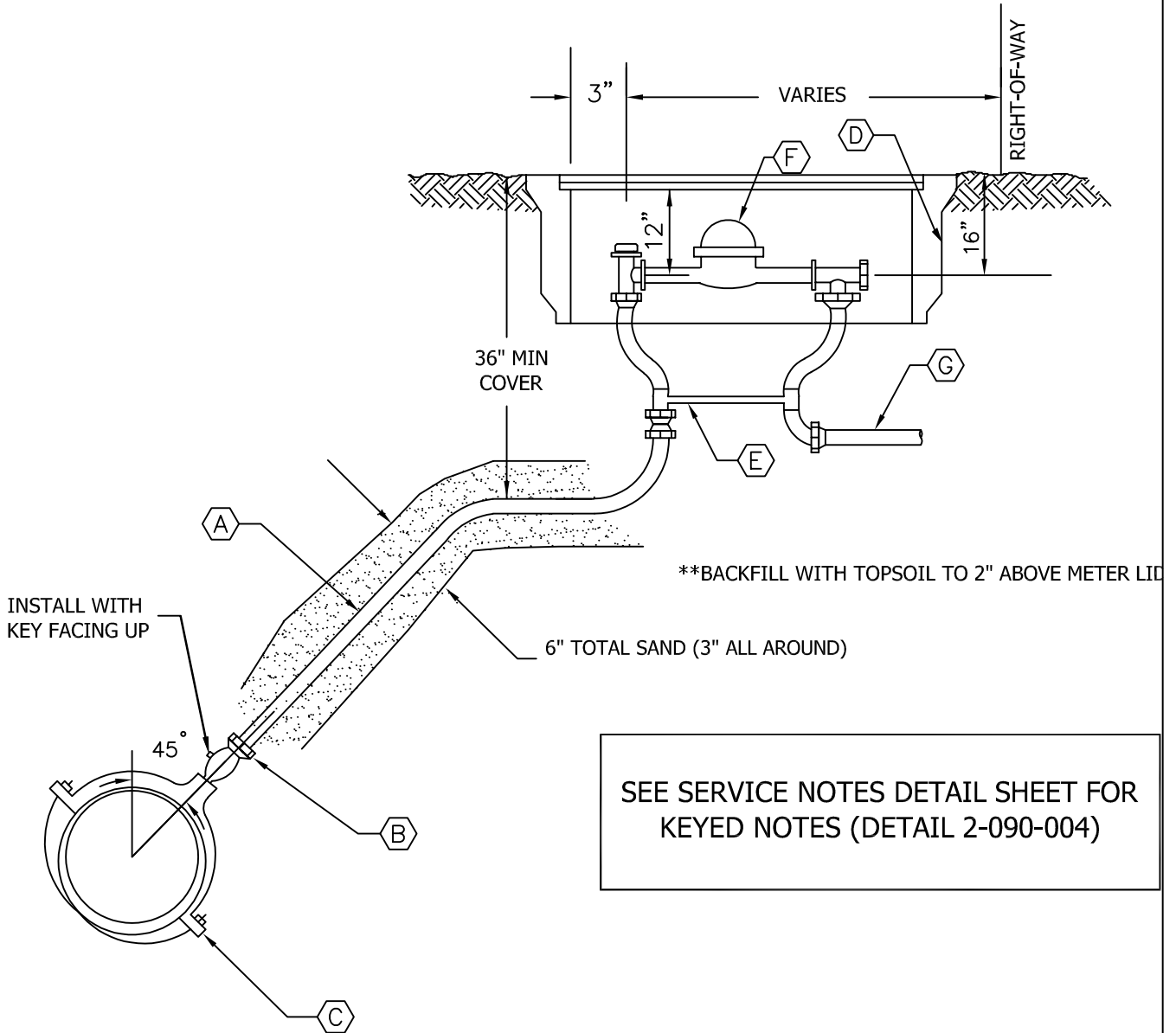


NOTES FOR METER BOX LOCATION:

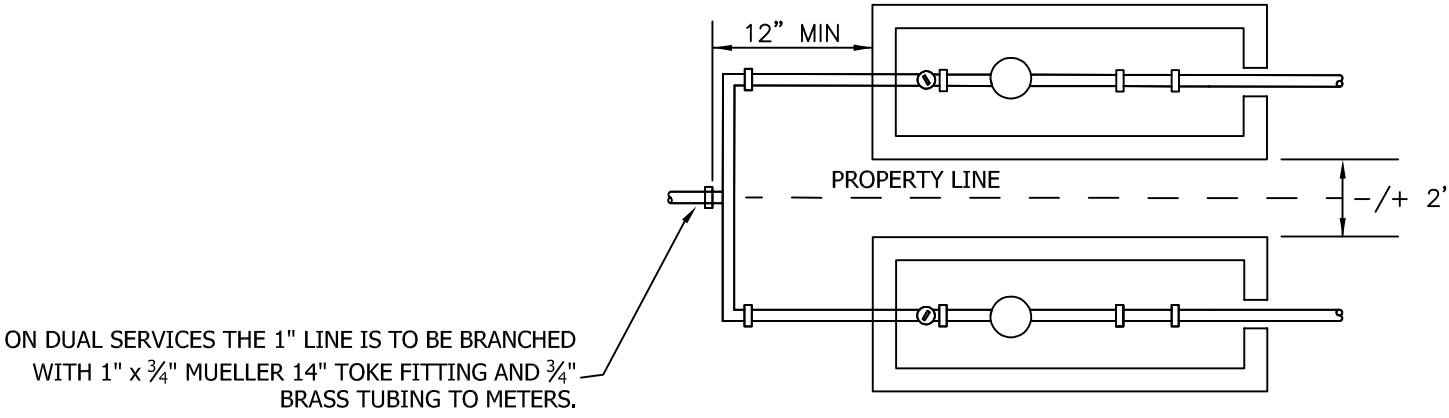
1. SIDEWALK - METER BOX 1' BEHIND SIDEWALK
2. THICKENED EDGE - SET METER BOX 3' OFF RIGHT-OF-WAY LINE (WITHIN ROW)
3. SHOULDER ROADS - SET METER BOX ON BACKSIDE OF DITCH (WITHIN ROW)
4. SPECIAL CIRCUMSTANCE - CONSULT CITY ENGINEER
5. CURB NO SIDEWALK - 6' BEHIND BOCK OF CURB (WITHIN ROW)
6. SET METER PERPENDICULAR TO PAVING

SERVICE LOCATION SHALL BE DETERMINED SIMULTANEOUSLY WITH OTHER UTILITIES SO THAT CONFLICTS ARE AVOIDED

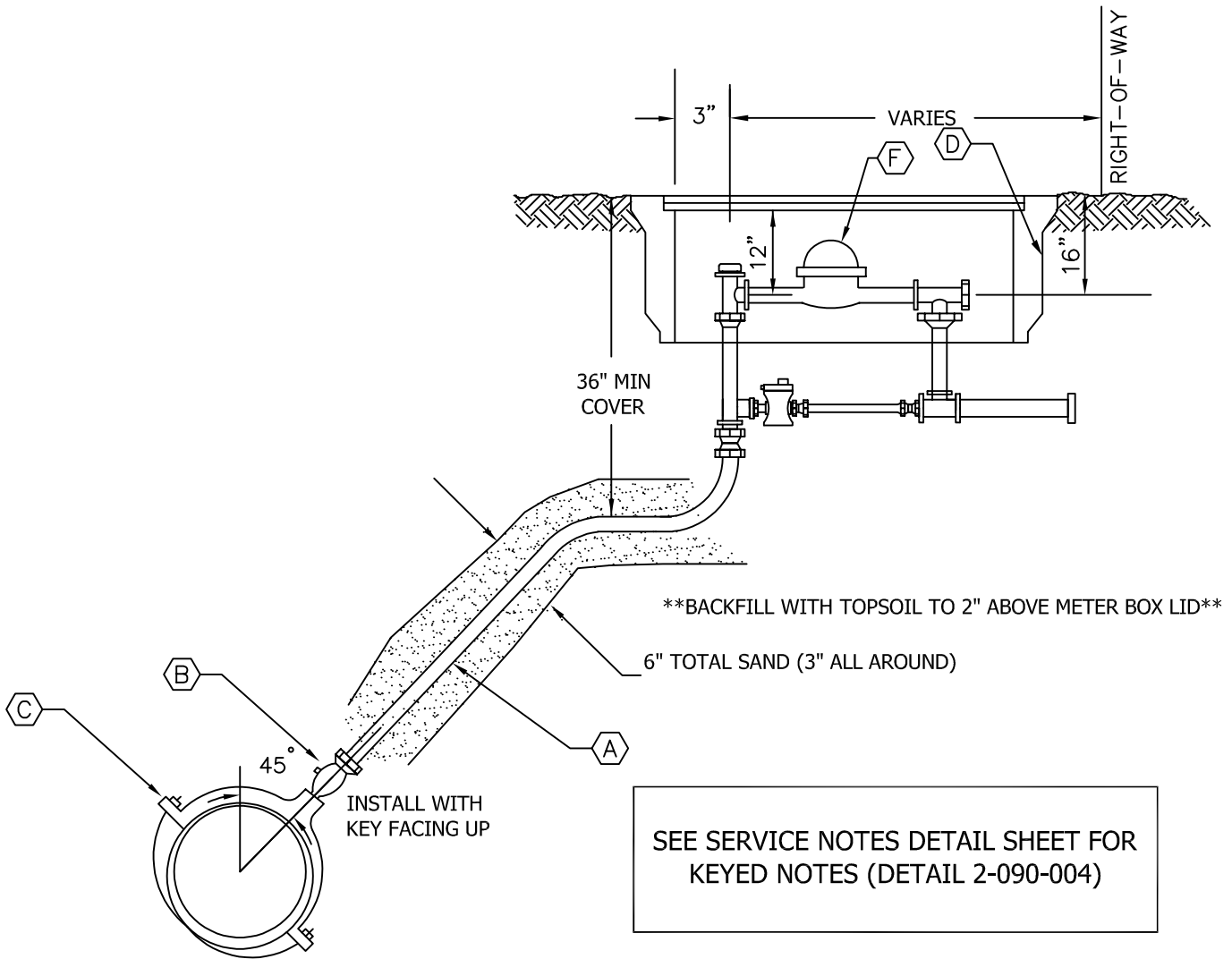
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SEE SERVICE NOTES DETAIL SHEET FOR
KEYED NOTES (DETAIL 2-090-004)



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NOTES:

1. METER SETTER WITH BYPASS, MUELLER, FORD, OR APPROVED EQUAL. SPACE BETWEEN ANGLE STOP AND CHECK ANGLE SHALL BE 13-12" FOR 1" SERVICE OR 17-1/2" FOR 2" SERVICE.
2. INSTALL IDLER PRIOR TO METER INSTALLATION IF METER IS TO BE INSTALLED AT LATER DATE.
3. 1" OR 2" DIAMETER 12" LONG BRASS NIPPLE WITH PVC CAP REQUIRED.

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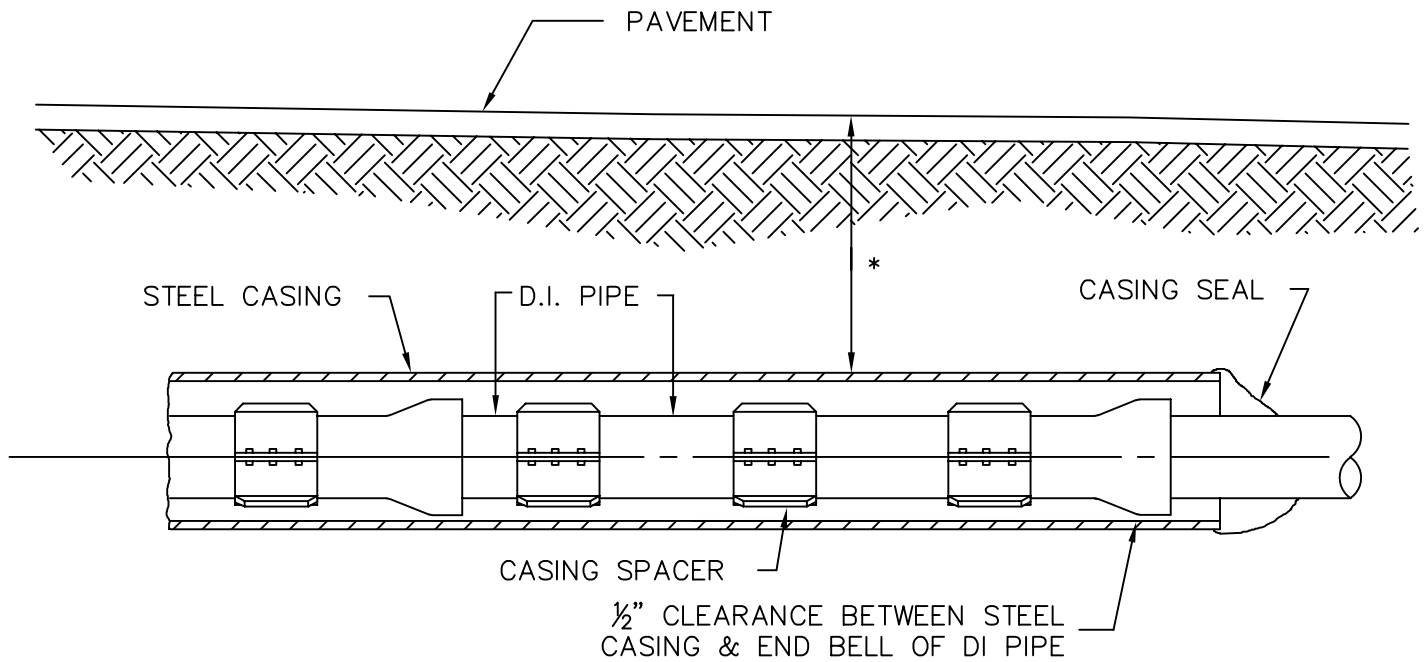
GENERAL NOTES

1. INSTALLATION: FAULTY INSTALLATION OR POOR WORKMANSHIP NOT CORRECTED BY THE DEVELOPER OR CONTRACTOR WILL BE CORRECTED BY THE CITY. THE COST OF SUCH CORRECTIONS WILL BE CHARGED TO THE DEVELOPER.
2. SERVICES: INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE SERVICE DETAIL DRAWINGS.
3. FITTINGS: ALL FITTINGS SHALL BE BRASS AND ALL JOINTS ON FITTINGS SHALL BE INSTA-TITE BY MUELLER.

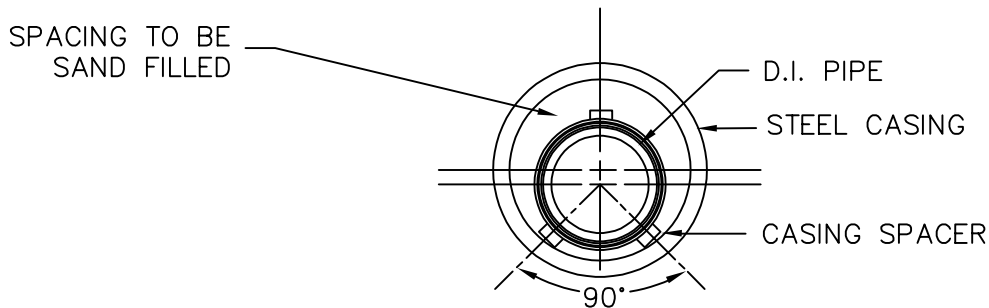
KEYED NOTES

- Ⓐ $\frac{3}{4}$ " OR 1" SERVICES: ALL DOUBLE SERVICES (REGARDLESS OF LENGTH) AND SINGLE SERVICE LINES OVER 50' IN LENGTH SHALL BE MINIMUM 1" HDPE PRESSURE CLASS 200. PIPE SHALL BE NEW AND FREE OF SHARP BENDS, KINKS, OR DENTS. DOUBLE SERVICE SHALL BE SET WITH FORD OR MUELLER 14" YOKE FITTING OR APPROVED EQUAL. STAINLESS STEEL INSERTS AND LOCATOR WIRE SHALL BE REQUIRED.
- Ⓑ CORPORATION STOP ASSEMBLY: SHALL BE BALL VALVE TYPE OR PLUG EQUAL TO FORD OR MUELLER WITH (AWWA/CC) TAPERED THREAD INLET, OUTLET WITH INSTA-TITE FITTING FOR BRASS OUTLET.
- Ⓒ SADDLES: ON 4" DUCTILE (DI) PIPE, USE DOUBLE STRAP SADDLES FOR ALL TAPS. ON THICKNESS CLASS 52 DI PIPE 6" AND LARGER, 1" DIRECT TAP IS ACCEPTABLE. ON ASBESTOS CONCRETE (AC), PVC, AND WELDED STEEL PIPE, USE ROMAC STYLE 202-S SADDLE OR APPROVED EQUAL. DIRECT TAPS ARE NOT ALLOWED ON THESE PIPE TYPES.
- Ⓓ METER BOX: METER BOX TO BE CARSON HDPE TYPE METER BOX WITH HDPE COVER AND READER WINDOW, FURNISHED AND INSTALLED BY THE CONTRACTOR AND ADJUSTED TO FINAL GRADE PRIOR TO METER INSTALLATION. METER BOXES LOCATED IN DRIVEWAYS, PAVED AREAS OR AREA SUBJECT TO TRAFFIC SHALL BE TRAFFIC BEARING. BOX SHALL PROVIDE ADEQUATE SPACE FOR RADIO READ UNITS AND ELECTRONICS. DRILL 1-3/4" HOLE IN UPPER LEFT CORNER.
- Ⓔ BRASS METER SETTER - MUELLER, FORD, OR APPROVED EQUAL. TO BE EQUIPPED AS FOLLOWS:
- PADLOCK WINGS ON KEY VALVE
 - ANGLE CHECK ON METER OUTLET (AS REQUIRED)
 - IRON PIPE CONNECTIONS ON SETTER AND INLET AND OUTLET
 - INSTA-TITE FITTING ON SETTER INLET
 - 18" BRASS NIPPLE ON SETTER OUTLET
 - 1" BYPASS WITH PADLOCK WINGS ON CURB STOP (AS REQUIRED)
- Ⓕ METER: METER TO BE FURNISHED AND INSTALLED BY THE CITY UNLESS OTHERWISE NOTED.
- Ⓖ SERVICE LINE TO STRUCTURE: CONSTRUCTED BY DEVELOPER OR PROPERTY OWNER IN ACCORDANCE WITH THESE STANDARDS.

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*DEPTH PER APPLICABLE CITY REQUIREMENTS



CASING NOTES:

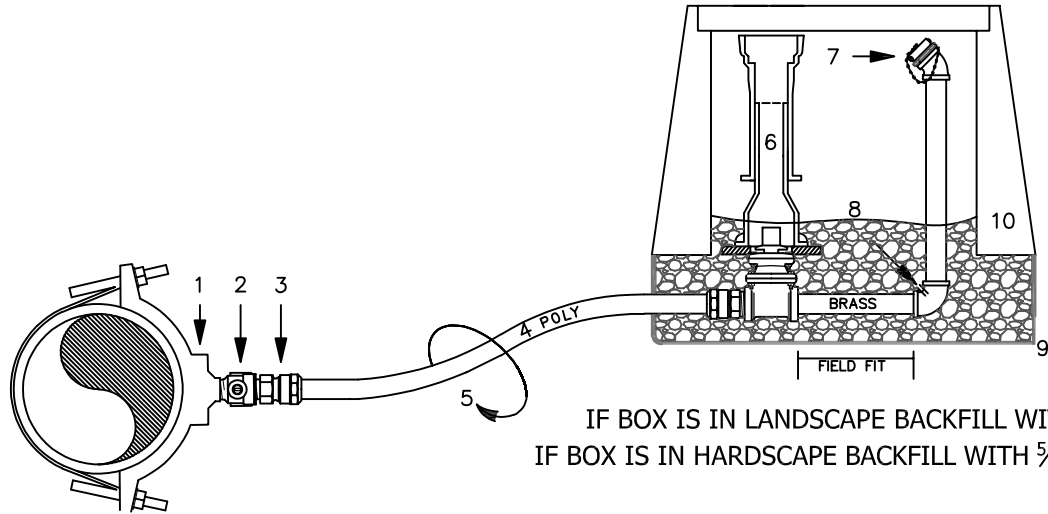
1. SIZE AND MIN. THICKNESS OF CASING SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS, HOWEVER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE THICKNESS CONSISTENT WITH THEIR OPERATION

CASING SEAL NOTES:

1. MIN. $\frac{3}{16}$ " THICK, SHEET TYPE SYNTHETIC RUBBER WITH STAINLESS STEEL BANDS

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IF VALVE BOX LIES WITHIN LANDSCAPE (NOT COUNTING LANDSCAPE STRIP), INSTALL CONCRETE VALVE MARKERS AS SHOWN IN DETAIL 2-070-002. END OF WATER MAIN SHALL BE CAPPED AND BLOCKED ACCORDING TO THE TRUST BLOCK DETAIL 2-130-002.



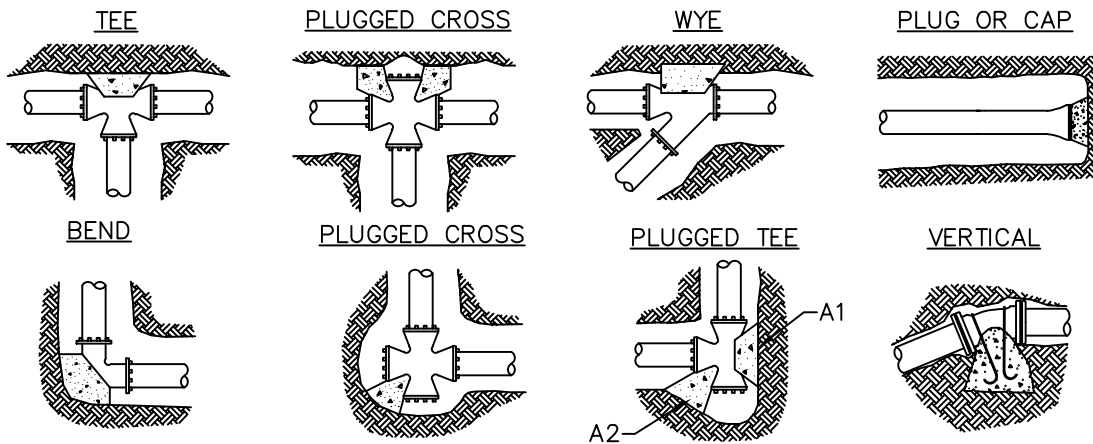
IF BOX IS IN LANDSCAPE BACKFILL WITH NATIVE MATERIAL.
IF BOX IS IN HARDSCAPE BACKFILL WITH 5/8" MINUS CRUSHED ROCK.

NOTES:

1. SADDLE SHALL BE EITHER FORD FC202 OR ROMAC 202NS, PLACED SO OUTLET IS ABOVE SPRINGLINE.
2. FORD FB400 OR MUELLER 300 BALLCORP VALVES (AWWA/CC TAPER THREAD INLET BY MIP THREAD OUTLET).
3. MUELLER 110 COMPRESSION CONNECTION OR FORD QUICK JOINT COUPLING (2" CTS x 2" FIP).
4. 2" CTS POLY MAY BE USED FROM THE MAIN TO THE BOX. ALL HARD PIPES & FITTINGS SHALL BE 2" BRASS.
5. BED PIPE IN 3" SAND ON ALL SIDES.
6. 2" MUELLER RESILIENT WEDGE (NRS) GATE VALVE WITH IPS THREADED ENDS. PLACE GATE VALVE AS CLOSE TO BOX AS PRACTICAL. SEE DRAWING 2-070-001 FOR VALVE BOX INFORMATION.
7. BRASS 2 1/2" MALE NST x 2" IPS MALE HOSE ADAPTER & 2 1/2" NTS LUG CAP WITH CHAIN.
8. DRILL 1/4" DRAINAGE HOLE IN BRASS 90 AT THE INSIDE OF THE TURN.
9. 1" DRAIN ROCK FILLED TO A DEPTH OF 12". USE GEOTEXTILE FABRIC AS A BARRIER BETWEEN NATIVE SOIL AND DRAIN ROCK.
10. BOX SELECTION: TO BE CARSON HDPE TYPE BOX WITH HDPE COVER AND READER WINDOW. BOXES LOCATED IN DRIVEWAYS, PAVED AREAS OR AREA SUBJECT TO TRAFFIC SHALL BE TRAFFIC BEARING.

ALL EFFORTS SHALL BE MADE TO KEEP THE BOXES OUT OF PAVED AREAS. LOCATE BOX IN LANDSCAPE STRIP IF POSSIBLE. IF NOT, LOCATE 12" BEHIND SIDEWALK. IF SIDEWALKS ARE NOT AVAILABLE, PLACE BOX 6' BEHIND CURB.

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CONCRETE THRUST BLOCK SCHEDULE

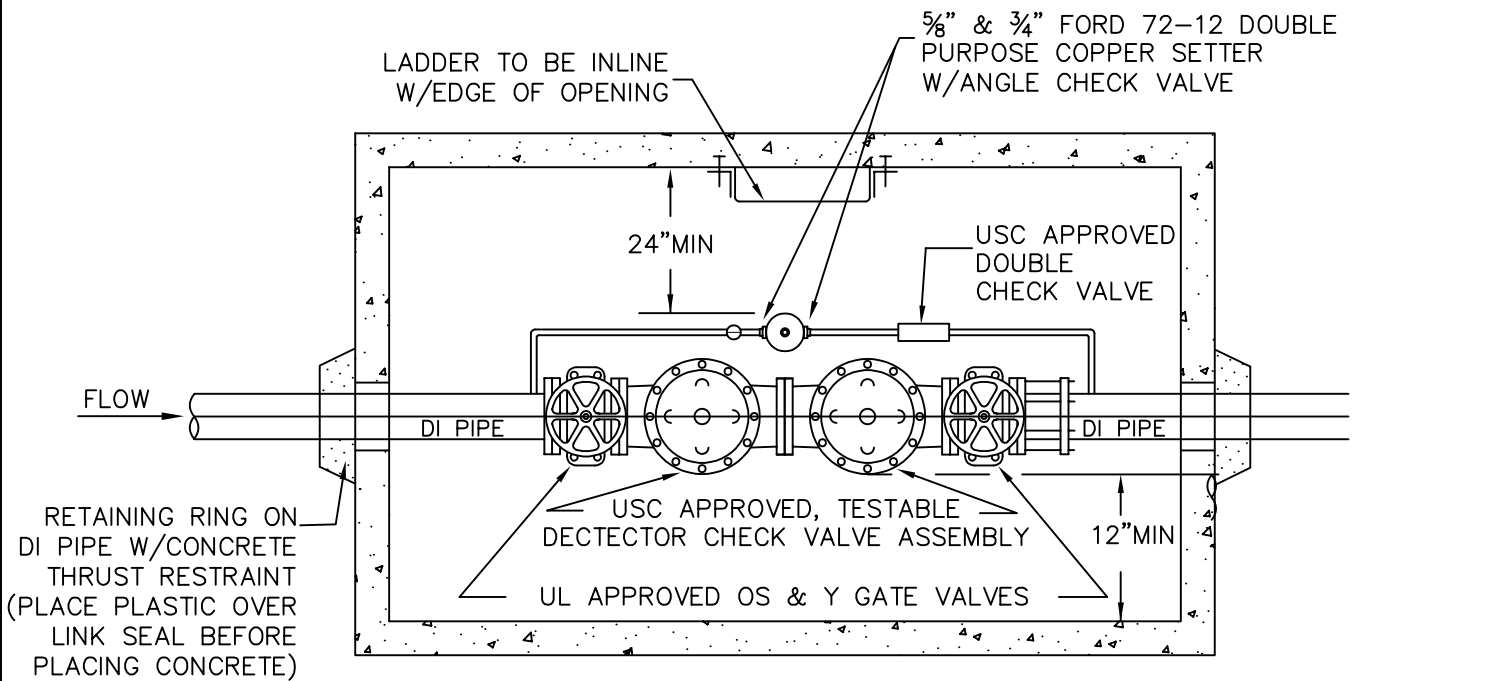
FITTING SIZE (INCHES)	BEARING AREA OF THRUST BLOCKS IN SQUARE FEET							VERTICAL VOLUME OF THRUST BLOCK IN CUBIC YARDS			
	TEE, WYE, PLUG OR CAP	90° BEND OR PLUGGED CROSS	TEE PLUGGED ON RUN BEND		45° BEND	22 1/2° BEND	11 1/4° BEND	FITTING SIZE	45° BEND	22 1/2° BEND	11 1/4° BEND
			A1	A2							
04	1.3	1.9	2.5	1.9	1.3	1.3	1.3	4"	1.1	0.4	0.2
06	2.8	4.0	5.7	4.0	2.1	1.3	1.3	6"	2.7	1.0	0.4
08	5.1	7.1	10.1	7.1	3.9	2.0	1.3	8"	4.0	1.5	0.6
10	7.9	11.2	15.7	11.2	6.1	3.2	1.6	12"	8.5	3.2	1.3
12	11.3	16.0	22.7	16.0	8.8	4.5	2.3	16"	14.8	5.6	2.3
14	15.3	21.7	30.7	21.7	11.9	6.1	3.1	VERTICAL BEND			
16	20.0	28.4	40.0	28.4	15.5	8.0	4.0	FITTING SIZE	ROD SIZE	EMBEDMENT BEND	
18	25.3	36.0	50.7	36.0	19.5	10.1	5.1	4"-12"	#6	30	
20	31.3	44.4	62.7	44.4	24.1	12.5	6.3	4"-12"	#6	30	
24	45.3	64.0	90.7	64.0	34.9	18.1	9.1	14"-16"	#8	36	

ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 PSI AND AN ALLOWABLE SOIL BEARING OF 1,500 POUNDS PER SQUARE FOOT (PSF). TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING AREA = (TEST PRESSURE / 150) X (1,00 / SOIL BEARING STRESS) X (TABLE VALUE)

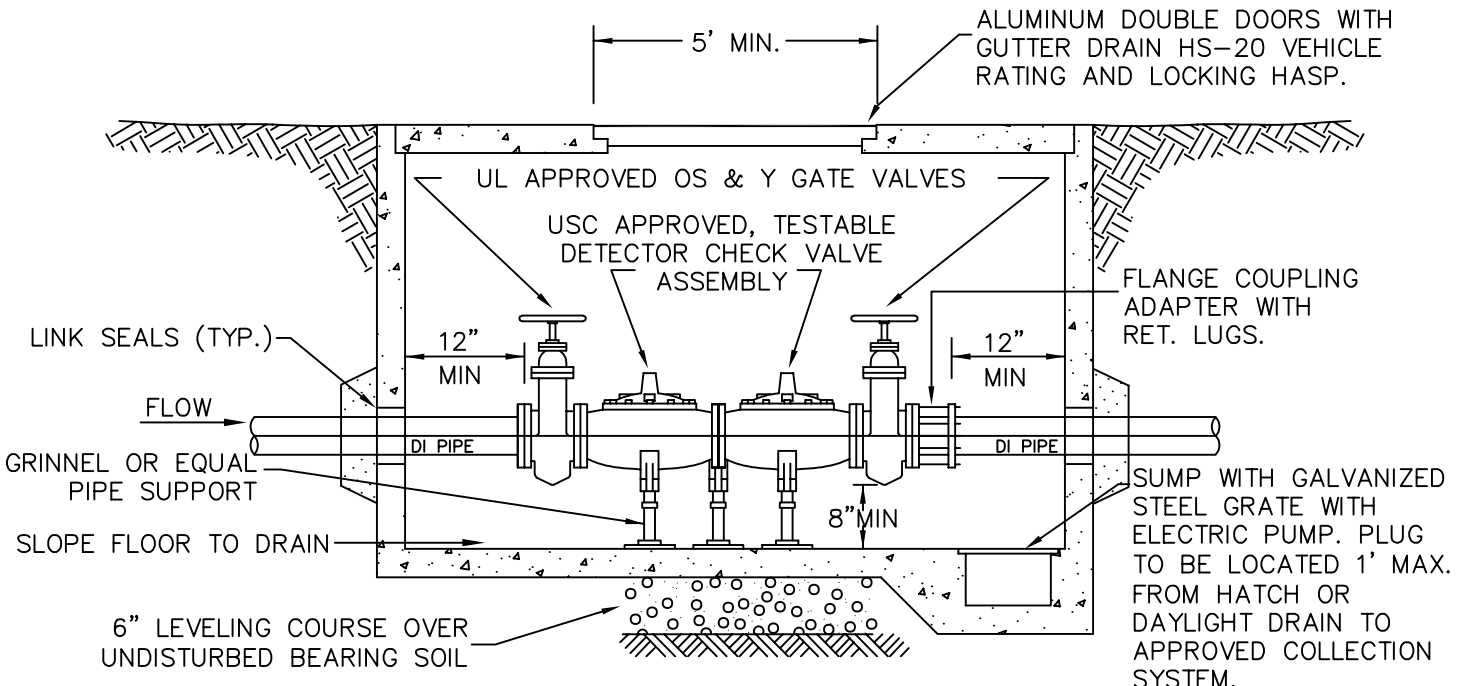
NOTES:

1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH
2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES, INSTALL 12 MIL TOTAL THICKNESS POLYETHYLENE SHEET AROUND FITTING, SECURE SHEET ENDS TO PREVENT INFILTRATION OF DIRT BETWEEN SHEET AND PIPE FITTING PRIOR TO POURING THRUST BLOCKING, PROTECT MECHANICAL JOINT FOLLOWERS AND BOLTS FROM CONCRETE WITH TEMPORARY FORMS AND 12 MIL POLYETHYLENE SHEETING
3. THE REQUIRED THRUST BEARING AREAS FOR SPECIAL CONNECTIONS ARE SHOWN
4. IF NOT SHOWN ON PLANS, REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED ABOVE, ADJUST IF NECESSARY, TO CONFORM TO THE TEST PRESSURE(S) AND ALLOWABLE SOIL BEARING STRESS(ES) STATED IN THE SPECIAL SPECIFICATIONS
5. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN ON THIS STANDARD DWG, BEARING AREA OF THRUST BLOCKS IS IN SQUARE FEET
6. VERTICAL CHANGES IN DIRECTION REQUIRE SPECIFIC DESIGNS FOR THRUST BLOCKS
7. CONCRETE MUST BE READY MIX MINIMUM 2,500 PSI MIX
8. ALL BLOCKS TO HAVE A MINIMUM 12" THICKNESS (DIMENSION NOT SHOWN)

NTS



PLAN

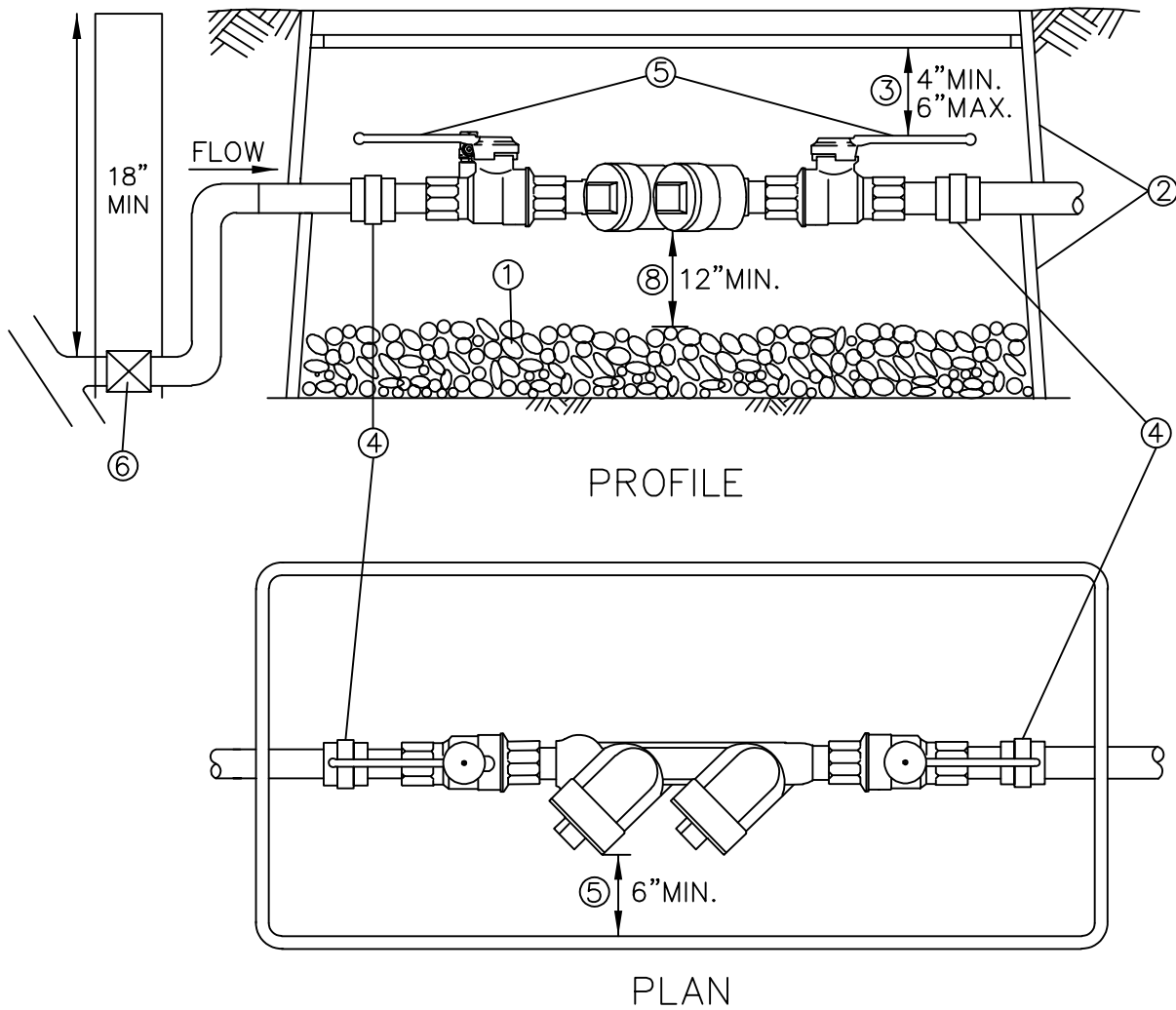


SECTION

NOTES:

1. 5/8" METER TO BE SUPPLIED BY CITY
2. COVER SHALL EXTEND 6" ABOVE GRADE WHEN VAULT IS NOT IN TRAFFICS AREA AND SHALL BE FLUSH IN TRAFFIC AREA
3. SLOPE PAVEMENT AWAY FROM COVER WHEN VAULT IS IN TRAFFIC AREA
4. ALL BYPASSES TO BE SADDLED AND NOT DIRECT-TAPPED

NTS



- ① 1" ROUND WASHED ROCK, 6" DEEP ON BOTTOM OF BOX.
- ② ENCLOSE 2" & SMALLER D.C.V.A. ON TWO METER BOXES STACKED ON TOP OF EACH OTHER OR, OVERSIZED BOX. MUST HAVE REMOVABLE COVER. BOXES TO BE LOCATED IN SIDEWALK AND AREAS WITH VEHICULAR TRAFFIC SHALL BE METAL, EQUAL TO OLYMPIC FOUNDRY SM30. BOXES IN OTHER NON-TRAFFIC AREAS TO BE CARSON 1730 HDPE WITH COVER. MAXIMUM OF 6" DISTANCE BETWEEN UNDERSIDE OF LID AND HIGHEST POINT OF DEVICE.
- ③ (2) UNIONS.
- ④ WHEN TEST-COCKS ARE FACING SIDWAYS THERE MUST BE A 6" MINIMUM CLEARANCE
- ⑤ BETWEEN THEM AND SIDE OF BOX.
- ⑥ IN ACCORDANCE WITH PLUMBING CODE REQUIREMENT, IRRIGATION SYSTEMS MUST HAVE SHUT OFF INSTALLED AS SHOWN. FEMALE FITTINGS ARE PROHIBITED IN CONJUNCTION WITH METALLIC MALE FITTINGS.

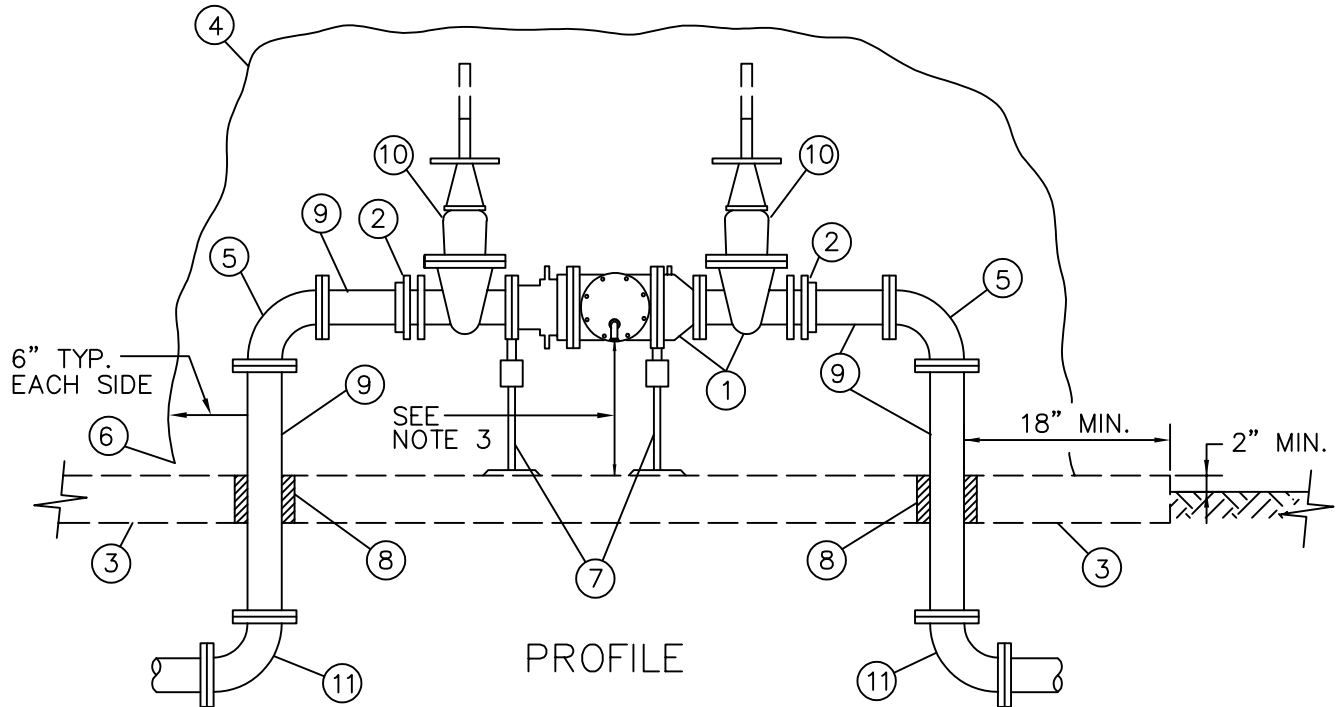
NOTES:

- 1. ALL INSTALLATIONS MUST MEET MINIMUM STANDARDS OF THE UNIFORM PLUMBING CODE AND WSDOH APPROVED INSTALLATIONS LIST.
- 2. TESTING IS REQUIRED BY A WASHINGTON STATE DEPARTMENT OF HEALTH CERTIFIED BACKFLOW ASSEMBLY TESTER UPON INSTALLATION AND ANNUALLY THEREAFTER.
- 3. ASSEMBLY TO BE MAINTAINED BY OWNER.

NTS

NOTICE:

OUTSIDE – INSTALLED RPBA IS NOT ALLOWED IN BURIED VAULTS. DEVELOPER SHALL PROVIDE UTILITIES WITH A DESIGN FOR AN ABOVE-GROUND ENCLOSURE THAT DRAINS TO DAY LIGHT FOR APPROVAL. CLEARANCES SHOWN BELOW SHALL APPLY TO THE ENCLOSURE.



- ① STATE APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY, COMPLETE WITH (2) RESILIENT SEATED O.S.&Y GATE VALVES AND (4) RESILIENT SEATED TEST COCKS.
- ② MEGAFLANGE.
- ③ 4" CONCRETE, 2000 PSI, SLAB EXTENDED 6" BEYOND ENCLOSURE (ALL DIRECTIONS). REINFORCED WITH 6"x6" W2.9xW2.9 WWF.
- ④ APPROVED ENCLOSURE. CONTRACTOR TO VERIFY REQUIRED SIZE.
- ⑤ 90 DEGREE BEND, FL.
- ⑥ ENCLOSURE DRAIN. SIZED IN ACCORDANCE WITH PNWS-AWWA CROSS CONNECTION CONTROL MANUAL (7TH ADDITION) FIGURE 6-1.
- ⑦ TWO ADJUSTABLE PIPE STANCHIONS, BOLTED TO SLAB.
- ⑧ PVC SLEEVE THROUGH SLAB.
- ⑨ CL 52 DI PEXFL
- ⑩ EACH VALVE SHALL BE MARKED WITH MODEL NUMBER WITH DESIGNATION OF RESILIENT SEAT: SUCH AS "RS" OR "R", WHICH MUST BE CAST, MOLDED, OR AFFIXED ONTO THE BODY OR BONNET OF THE VALVE. ALL FERROUS BODIED VALVES SHALL BE COATED WITH A MINIMUM OF 4MLS. OF EPOXY OR EQUIVALENT POLYMERIZED COATING.
- ⑪ 90 DEGREE BEND, RESTRAINED JOINT.

NOTES:

1. PROVIDE ELECTRICAL HEAT TAPE FREEZE PROTECTION.
2. WHEN THE REDUCED PRESSURE ASSEMBLY IS LOCATED INSIDE A BUILDING A SIZED DRAIN SHALL BE PROVIDED FOR RELIEF PORT. THERE MUST BE AN APPROVED AIR GAP BETWEEN THE RELIEF PORT AND DRAIN.
3. ALL 12"+ NOMINAL DIAMETER OF ASSEMBLY CLEARANCE BELOW RELIEF PORT FOR REPAIR. ALSO PROVIDE 12" MINIMUM AIR GAP CLEARANCE FROM TOP OF DRAIN.
4. REDUCED PRESSURE BACKFLOW ASSEMBLY WILL BE ALLOWED TO BE INSTALLED IN VAULTS ONLY IN CASES WHERE NO OTHER MEANS OF INSTALLATION IS AVAILABLE AND AS APPROVED BY THE CITY OF DUVALL.
5. TESTING IS REQUIRED BY A WASHINGTON STATE DEPARTMENT OF HEALTH CERTIFIED BACKFLOW ASSEMBLY TESTER UPON INSTALLATION AND ANNUALLY THEREAFTER.
6. ASSEMBLY TO BE MAINTAINED BY OWNER.
7. ENCLOSURES SHALL NOT BE INSTALLED IN AREAS WITH VEHICULAR TRAFFIC.
8. TEE AND GATE VALVES REQUIRED ON MAIN.
9. MINIMUM 2' OF LEVEL, UNOBSTRUCTED AREA AROUND ENCLOSURES.
10. RPBA INSTALLATIONS THAT DIFFER FROM THIS STANDARD DETAIL MUST BE APPROVED BY THE CROSS CONNECTION CONTROL PROGRAM ADMINISTRATOR AND WILL BE REVIEWED ON A CASE BY CASE BASIS TO ENSURE THEY MEET CURRENT REQUIREMENTS FOR INSTALLATION AND FREEZE PROTECTION.

NTS

DEVELOPMENT DESIGN
STANDARD DETAILS



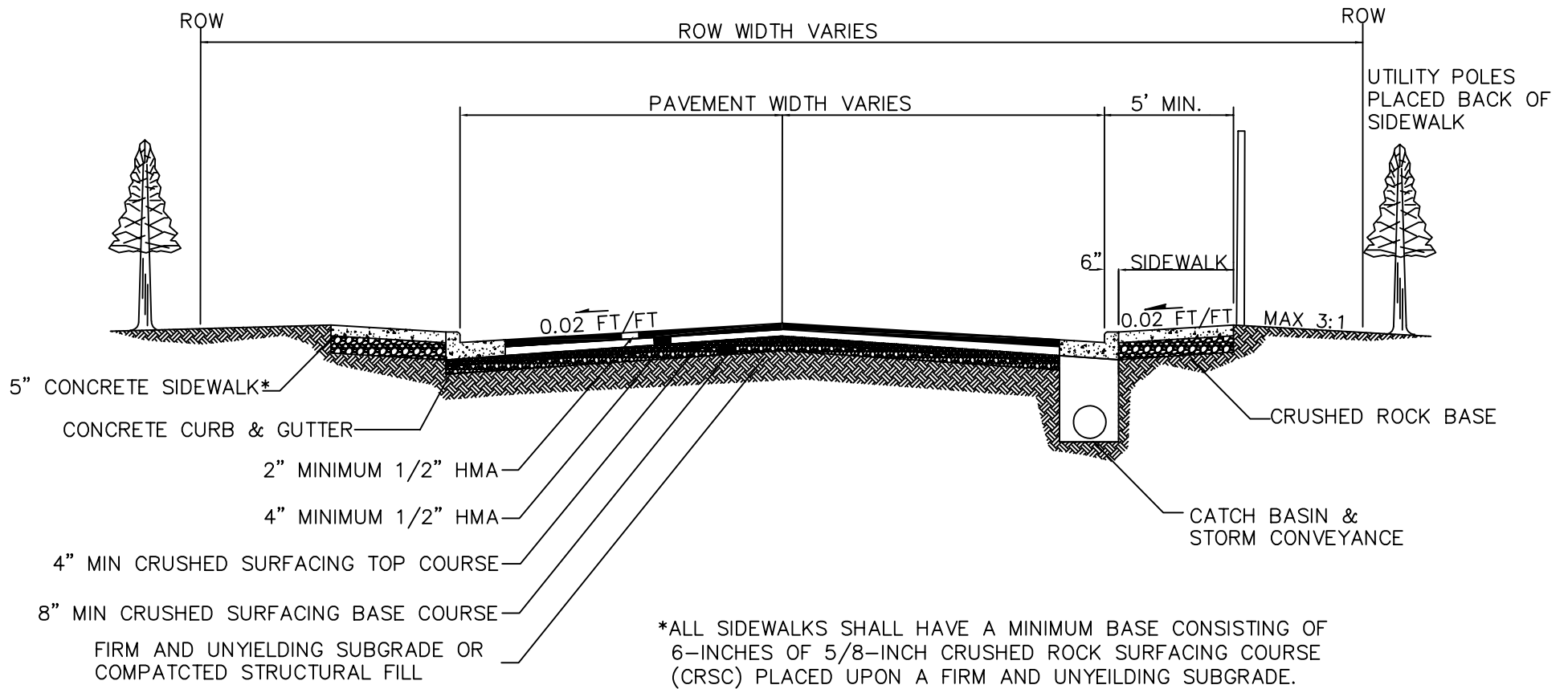
City of Duvall

TITLE

Reduced Pressure Backflow
Assembly

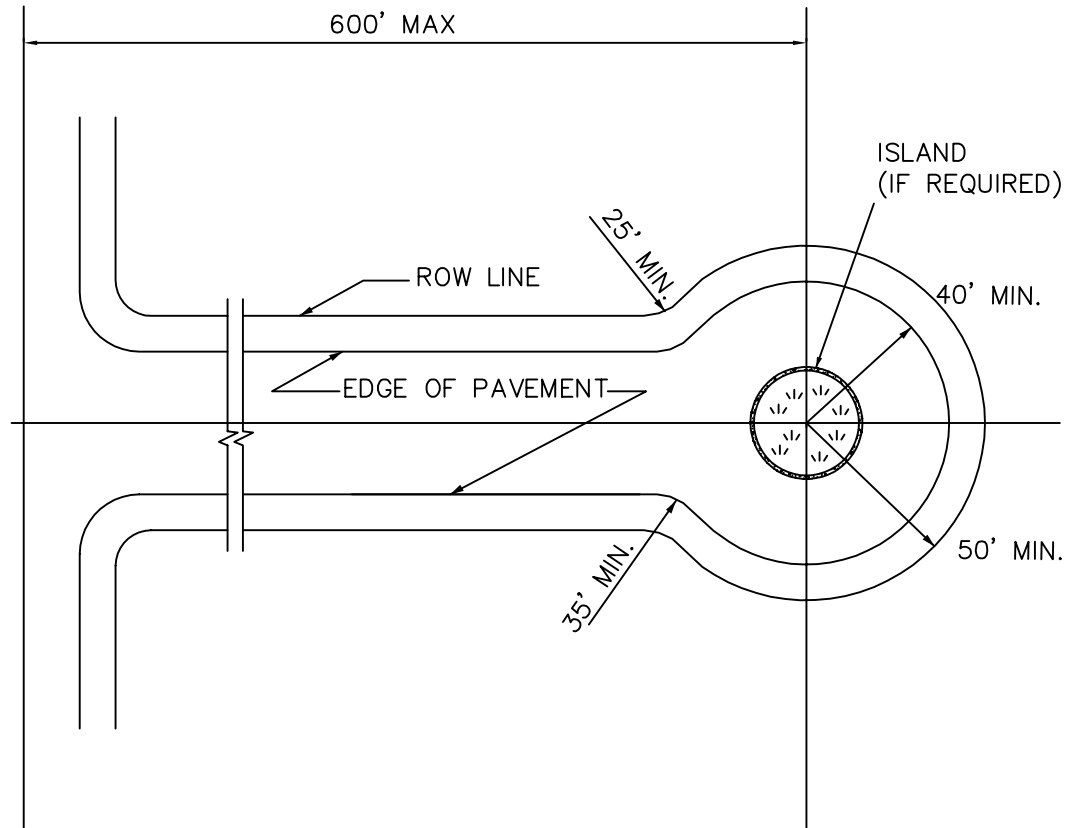
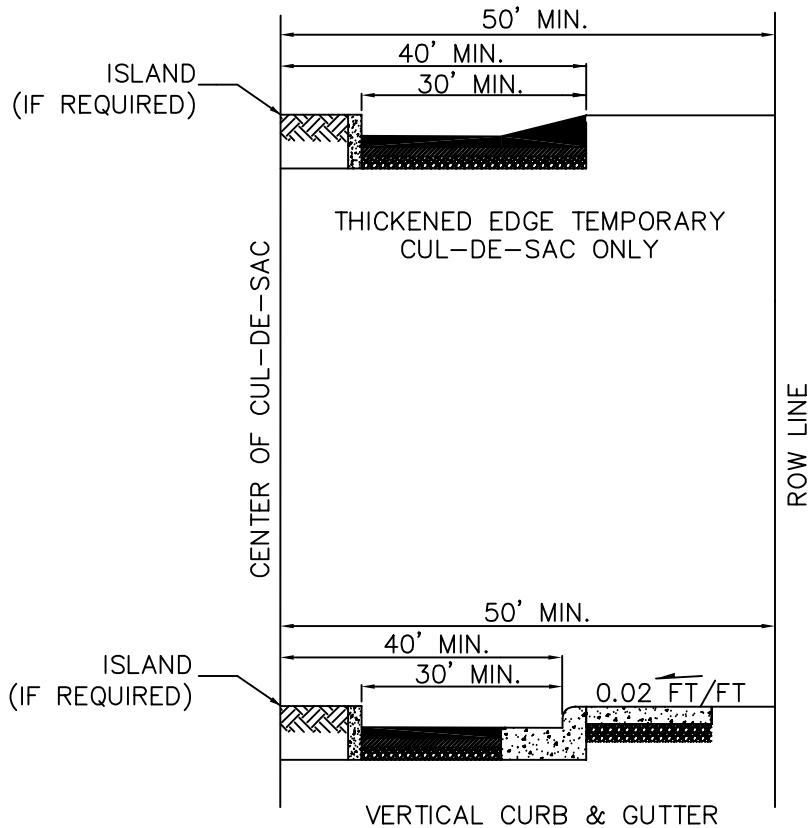
DRAWING NUMBER

2-153-003



- NOTES:
- THIS DRAWING ILLUSTRATES A TYPICAL ASPHALT CONCRETE ROAD SECTION, ACTUAL SURFACING DESIGN FOR ARTERIALS AND COMMERCIAL ACCESS STREETS SHALL BE BASED ON SOILS AND TRAFFIC ANALYSIS IN ACCORDANCE WITH DEVELOPMENT DESIGN STANDARDS SECTION 3-4.03, RESIDENTIAL ACCESS SHALL BE IN ACCORDANCE WITH DEVELOPMENT DESIGN STANDARDS SECTIONS 3-4.01 AND 3-4.02.
 - GRADES:
 - MINIMUM 0.5%
 - MAXIMUM SEE SECTIONS 3-2.02, 3-2.03, 3-2.04, AND 3-2.11
 - SIDEWALK WIDTHS ARE DETERMINED IN THE DUVALL MUNICIPAL CODE CHAPTER 14, SEE ALSO SECTION 3-2.03, 3-2.04, AND 3-3.02 OF THE DUVALL DESIGN STANDARDS
 - FOR WIDTHS OF PAVEMENT, SHOULDER, AND RIGHT-OF-WAY, SEE SECTIONS 3-2.02, 3-2.03, AND 3-2.04
 - FOR CLEARANCE OF UTILITY POLES SEE SECTION 3-8.02E AND STANDARD DETAIL 3-050-001
 - SEE CHAPTER 4 FOR CATCH BASIN AND STORM SEWER LOCATIONS
 - SEE SECTION 3-5.02 FOR SIDE SLOPE REQUIREMENTS
 - FOR GAS AND WATER MAIN LOCATIONS SEE SECTION 3-8.02A.
 - SANITARY SEWER ON SOUTH AND WEST SIDE OF STREET. SEE SECTION 3-8.02B.

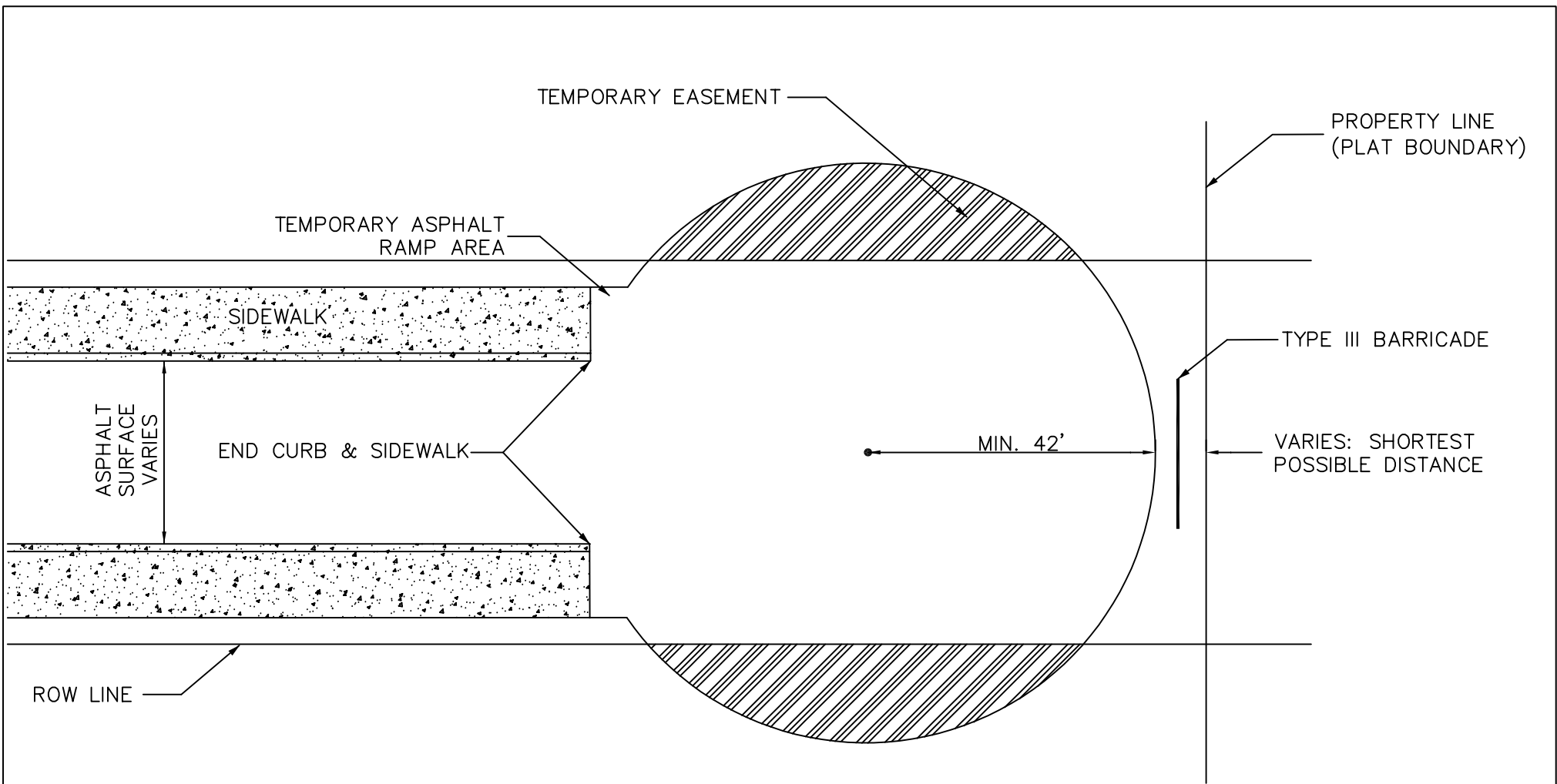
NTS



NOTES:

1. SEE SECTION 3-2.08 – CUL-DE-SACS AND EYEBROWS FOR ADDITIONAL INFORMATION.
2. ISLAND AT CENTER OF BULB SHALL HAVE VERTICAL CURB, SEE STANDARD DETAIL 3-030-002.
3. ISLAND IS OPTIONAL WHEN RADIUS OF PAVED AREA IS 40' OR LESS
4. SEE SECTIONS 3-2.08 FOR CUL-DE-SAC LENGTH EXCEPTION
5. SEE SECTIONS 3-2.03, 3-2.08, AND 3-2.09 FOR RIGHT-OF-WAY (ROW) REDUCTION REQUIREMENTS

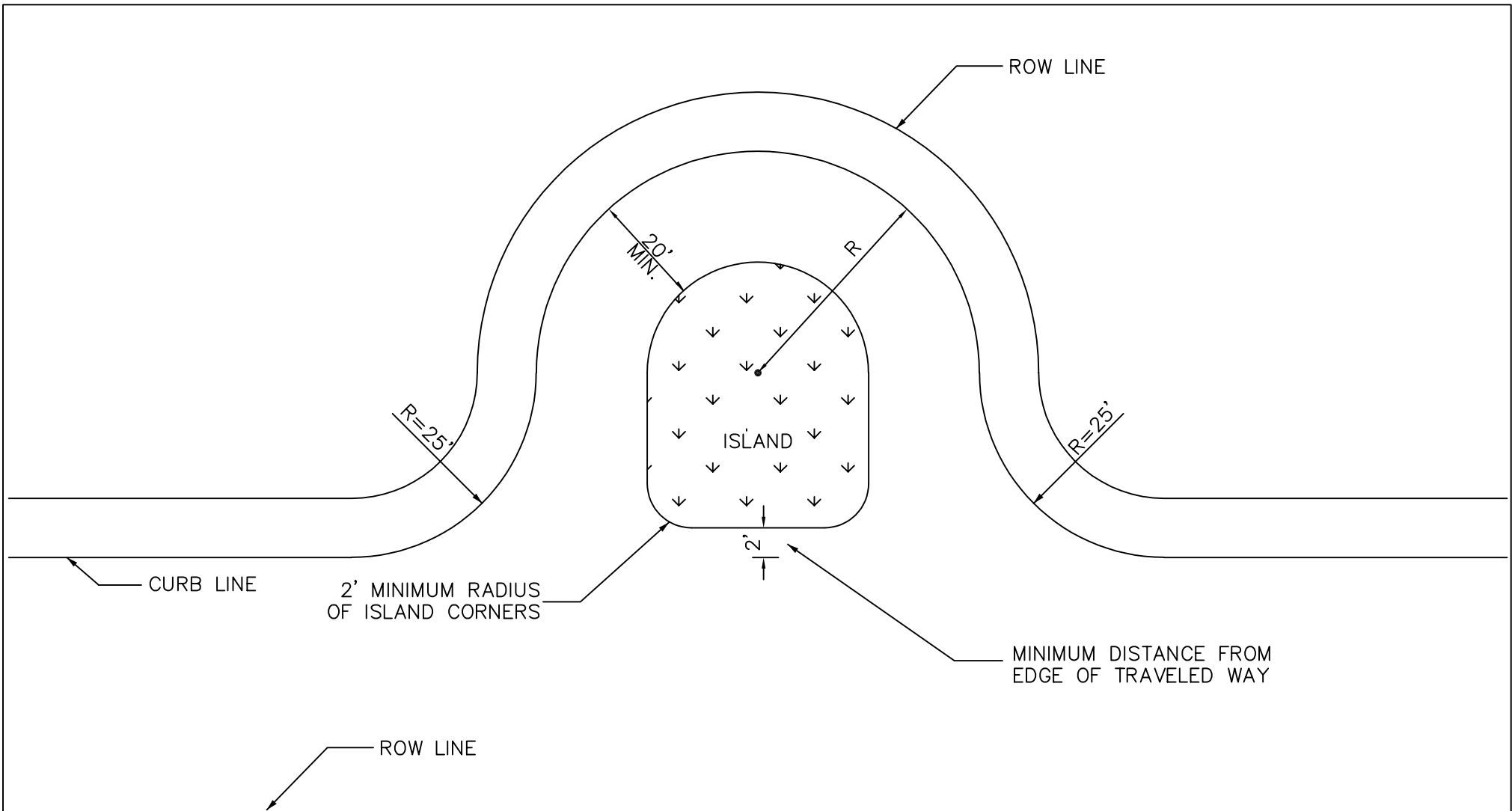
NTS



NOTES:

1. SEE SECTION 3-2.08 - CUL-DE-SACS AND EYEBROWS OF THE DESIGN STANDARDS FOR MORE DETAILS.
2. BARRICADE REQUIRED AT END OF THE TEMPORARY CUL-DE-SAC. SEE SECTION 3-5.07 - ROADWAY BARRICADES OF THE DESIGN STANDARDS MORE DETAILS..

NTS



NOTES:

1. SEE SECTION 3-2.08 – CUL-DE-SACS AND EYEBROWS OF THE DESIGN STANDARDS FOR MORE DETAILS.
2. ISLAND REQUIRED ON EYEBROWS WITH RADIUS GREATER THAN 25 FEET
3. MINIMUM ISLAND DIAMETER SHALL BE 10 FEET

NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**

August 2021

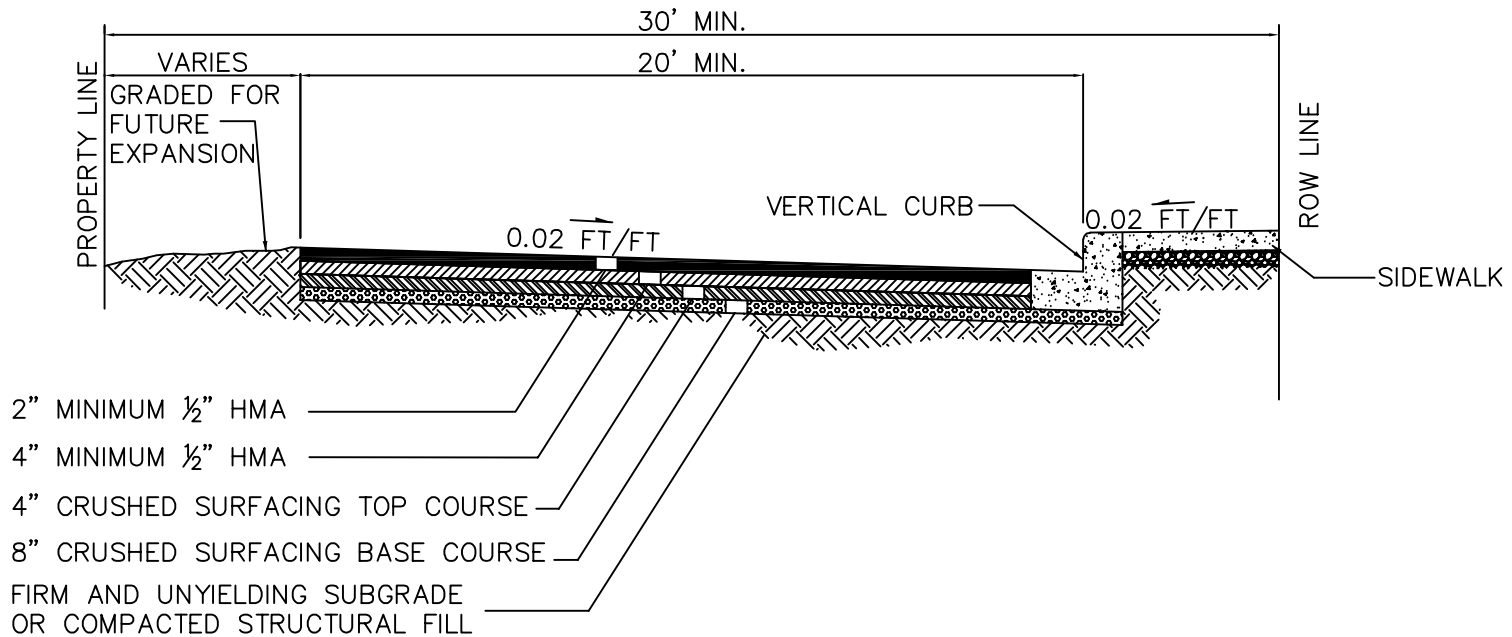


TITLE

Eyebar

DRAWING NUMBER

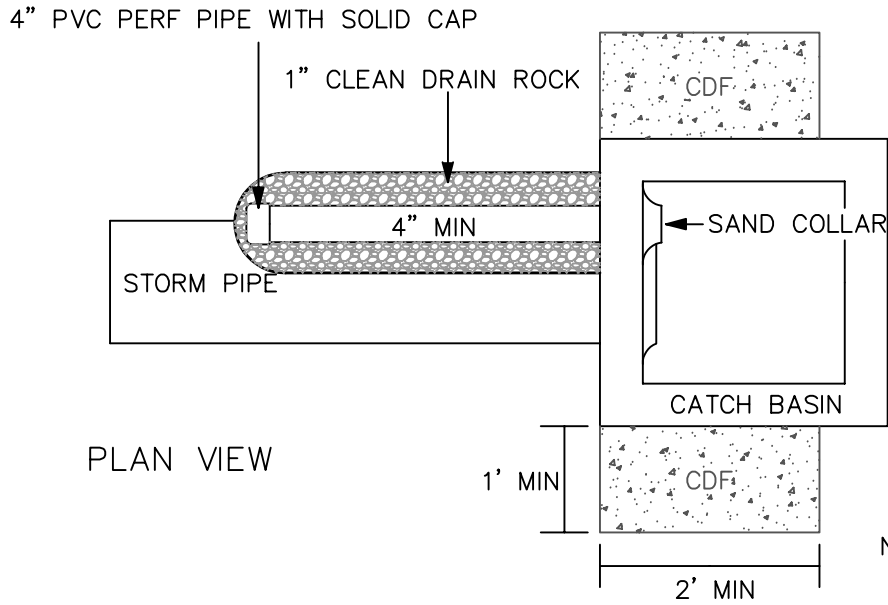
3-010-009



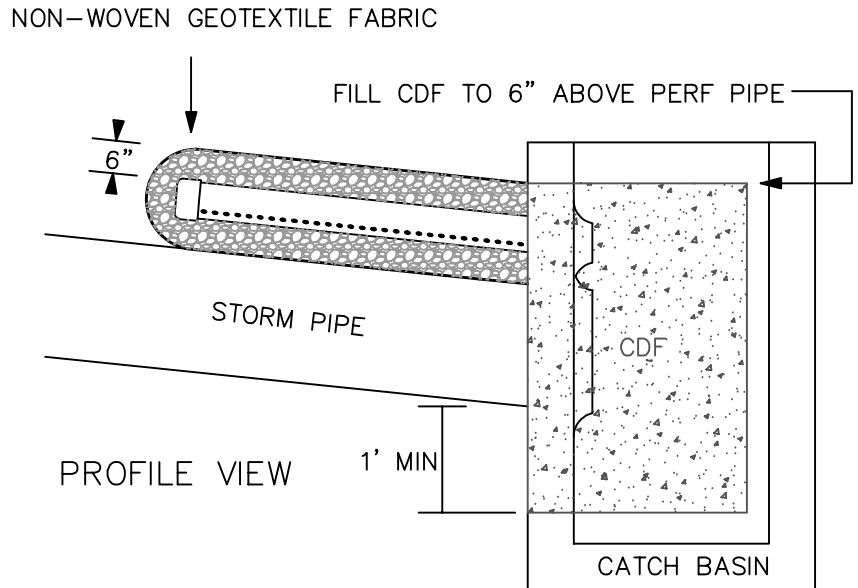
NOTE:

1. THIS DRAWING ILLUSTRATES A TYPICAL ROAD SECTION WITH UNIMPROVED GRAVEL SHOULDERS. ACTUAL SURFACING DESIGN FOR ARTERIALS AND COMMERCIAL ACCESS STREETS SHALL BE BASED ON SOILS AND TRAFFIC ANALYSIS IN ACCORDANCE WITH SECTION 3-4.03 - ARTERIALS AND AND COMMERCIAL ACCESS STREETS OF THE DESIGN STANDARDS.
2. DESIGN FOR RESIDENTIAL ACCESS STREETS SHALL BE IN ACCORDANCE WITH SECTIONS 3-4.01 - RESIDENTIAL STREETS, PEDESTRIANS AND BIKE AND 3-4.02 - REQUIREMENTS FOR RESIDENTIAL STREETS ON POOR SUBGRADE.
3. SEE SECTION 3-2.07 - HALF STREETS OF THE DESIGN STANDARDS FOR MORE DETAILS.
4. EDGE OF PAVEMENT TO BE CONSTRUCTED AS SHOWN FOR CUT OR FILL SECTION AS APPROPRIATE
5. ALL ROADWAY DESIGN CRITERIA SHALL BE GOVERNED BY CHAPTER 3 IN THE DEVELOPMENT DESIGN STANDARDS. THIS ILLUSTRATION IS VALID FOR MINIMUM PAVEMENT WIDTH REQUIREMENTS ONLY.

NTS



PLAN VIEW



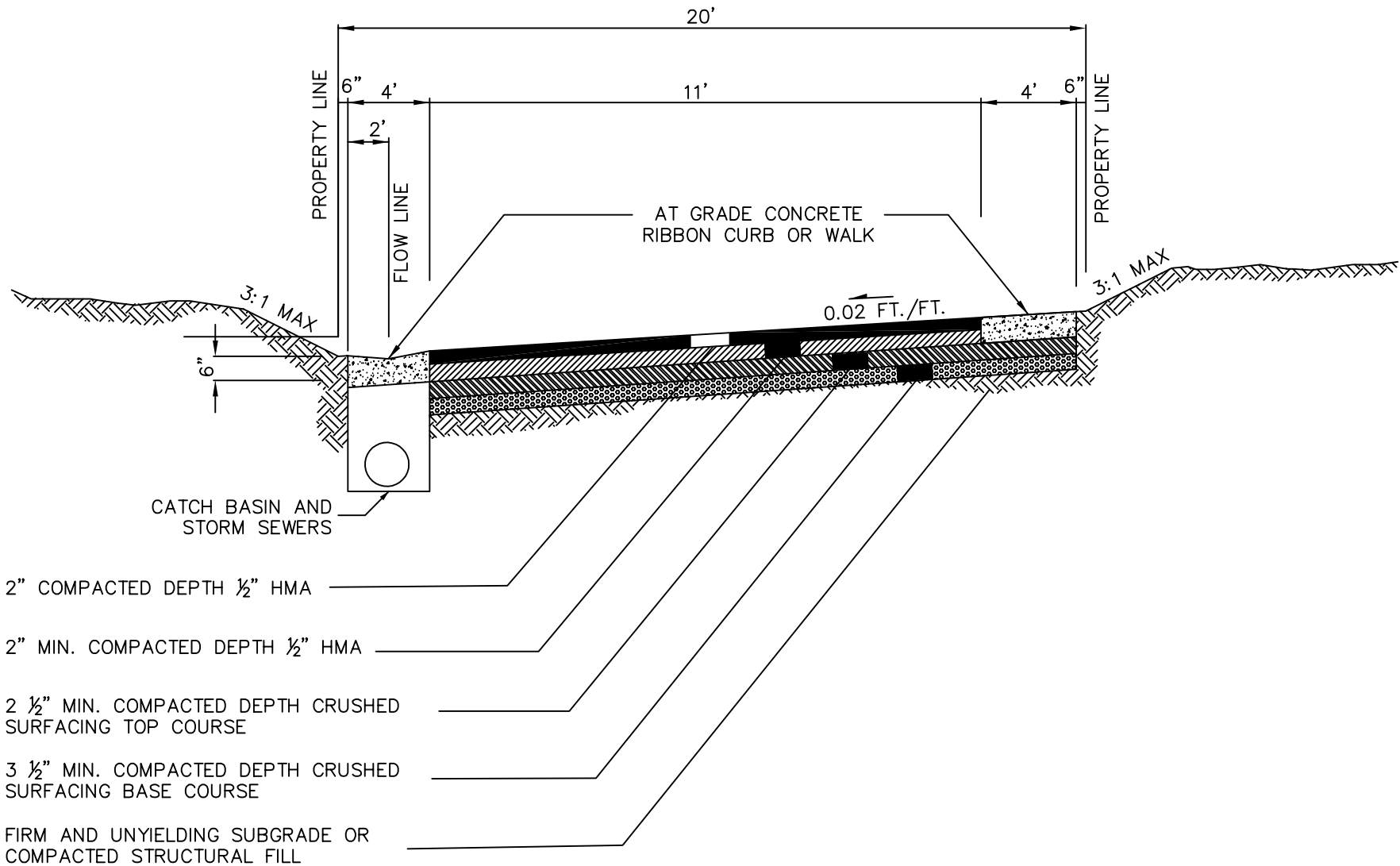
PROFILE VIEW

SURFACE SLOPE DETERMINES THE NEED FOR INLINE TRENCH AND SEEPAGE BARRIERS:	
PIPE SLOPE:	TRENCH DAM SPACING:
0-7%	NONE
7-10%	EVERY 200'
10-15%	EVERY 150'
15-20%	EVERY 100'
20% <	CONSULT THE ENGINEER

NOTES:

1. TRENCH DAMS SHALL CONSIST OF CDF (CONTROLLED DENSITY FILL) OR AN APPROVED EQUIVALENT.
2. THE CDF BARRIERS SHALL EXTEND FROM THE BASE OF THE KEYED TRENCH TO A DISTANCE OF AT LEAST 6" ABOVE THE PERF PIPE MEASURED AT THE CATCH BASIN. CDF SHALL BE Poured DIRECTLY UP AGAINST A CLEAN TYPE 1 OR TYPE 2 CATCH BASIN.
3. THE EXACT LOCATIONS SHALL BE FIELD FIT BY THE CONTRACTOR AND APPROVED BY THE CITY INSPECTOR OR ENGINEER. IT IS THE CONTRACTORS RESPONSIBILITY TO AS-BUILT TRENCH DAM LOCATIONS. TRENCH DAMS MAY BE ADDED OR REMOVED AS NECESSARY BY THE INSPECTOR OR ENGINEER.

NTS



NOTES:

1. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-2.09 – ALLEY FOR MORE DETAILS.
2. CROSS SLOPE OR NORMAL CROWN ROADWAY SECTIONS ARE ACCEPTABLE.
3. NO REVERSE OR INVERTED CROWN ROADWAY SECTIONS ACCEPTED UNLESS ENTIRE WIDTH IS PORTLAND CEMENT CONCRETE AND APPROVED BY THE CITY ENGINEER.
4. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-4.02 – REQUIREMENTS FOR RESIDENTIAL STREETS ON POOR SUBGRADE. ADDITIONAL TREATMENT MAY BE REQUIRED DEPENDING ON SOIL CONDITIONS.

NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**

August 2021

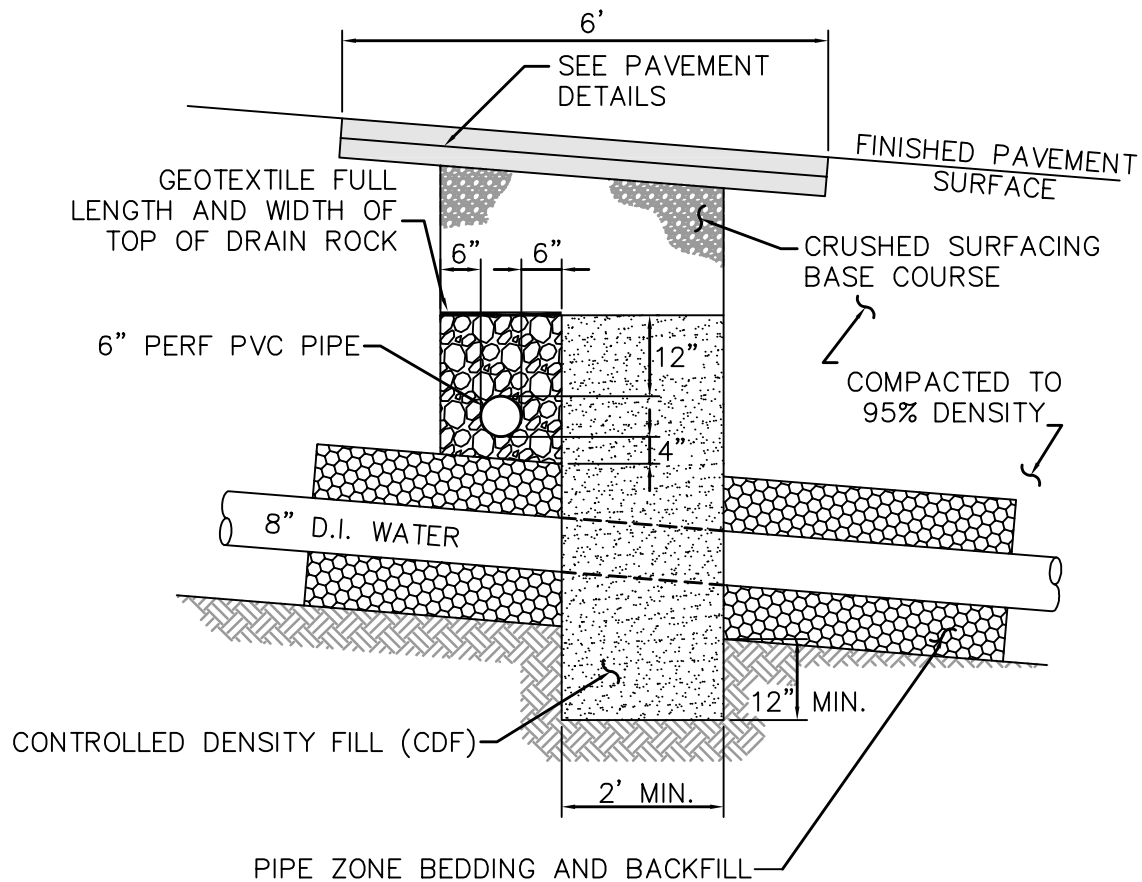


TITLE

Alley Pavement

DRAWING NUMBER

3-010-011



PROFILE VIEW

NOTES:

1. NORMAL PIPE BEDDING AND MANHOLE LEVELING COURSE REQUIREMENTS WILL BE SATISFACTORY. REFER TO STANDARD DETAIL 5-010-007 FOR PIPE BEDDING DETAILS.
2. EACH SEEPAGE BARRIER SHALL BE NOTCHED AT LEAST 12" INTO THE BASE AND SIDES OF THE TRENCH TO KEY THE BARRIER INTO THE NATIVE SOILS.
3. THE SEEPAGE BARRIERS SHALL EXTEND FROM THE BASE OF THE KEY TRENCH, SURROUND EACH PIPE, AND EXTEND A DISTANCE OF AT LEAST 2' OR ONE PIPE DIAMETER, WHICHEVER IS GREATER, ABOVE THE TOP OF THE PIPE BEDDING. THEY SHALL BE AT LEAST 2' LONG MEASURED PARALLEL TO THE PIPES.
4. THE TRENCH SHALL BE DRAINED VIA A "FRENCH DRAIN" THAT IS TIED INTO THE STORM DRAINAGE CONVEYANCE SYSTEM ON THE UPHILL SIDE OF THE BARRIER. CITY INSPECTOR TO VERIFY LOCATION.
5. SEE TABLE ON INLINE TRENCH DETAIL FOR NEED AND FREQUENCY REQUIREMENTS.

NTS



NOTICE OF PROPOSED CONSTRUCTION

Engineering Department
14525 Main Street, PO Box 1300
Duvall, WA 98019

Project Number:
Project Description:

Project Completion Date:
Hours of Construction: 7am to 6pm except Sundays and
City of Duvall Contact: City-Observed Holidays
Engineering Department
Phone Number: 425-788-3434

Developer's Contact:
Phone Number:
TESC Supervisor:
After Business Hours for
Environmental Safety
Related Emergencies:

48"

48"

36"

24"

SPECIFICATIONS:

1. THE NOTICE BOARD SHALL BE CONSTRUCTION WITH 4'X4'X1/2" PLYWOOD, EXTERIOR GRADE OR APPROVED EQUAL. THE NOTICE BOARD SHALL DISPLAY THE INFORMATION AS SHOWN IN THIS DETAIL AND AS SPECIFIED AT THE PRE-CONSTRUCTION MEETING.

- 1.1. LETTERING STYLE: HELVETICA OR SIMILAR TYPEFACE
- 1.2. LETTERING SIZE: TITLE SHOULD BE 3" CAPITAL LETTERS (NOTICE OF PROPOSED ACTIVITY). OTHER LETTERS SHOULD BE 2" LETTERS AND THE 'EMERGENCY' TEXT AND PHONE MAY BE 1 1/2" LETTERS. THE SIZE OF THE CITY LOGO WITH ADDRESS SHALL FIT THE AVAILBLE SPACE AS SHOWN. BORDER AREA AND LINES OF TEXT SHALL BE EVENLY SPACED TO APPROXIMATE SAMPLE.
- 1.3. LETTERING BLACK (PERMANENT INK OR SILK-SCREEN)
- 1.4. BACKGROUND COLOR WHITE
- 1.5. LOGO CITY OF DUVALL LOGO

2. THE APPLICANT/DEVELOPER SHALL ERECT THE NOTICE BOARD BY SOLIDLY SETTING TWO 4"X4" POSTS, 12-24" INTO THE GROUND; OR STRUCTURALLY ATTACHING IT TO AN EXISTING BUILDING. POST LENGTH SHALL BE AT LEAST 7' ABOVE THE GROUND. TWO 2"X4" DIAGONAL BRACES SHOULD BE NAILED TO THE INSIDE BACK OF THE POSTS AND STAKED AT THE GROUND TO PROVIDE STABILITY AGAINST WIND OR SOFT SOIL CONDITIONS IF POSTS ARE LESS THAN 24" IN THE GROUND.

3. THE NOTICE BOARD SHALL BE ATTACHED TO THE POSTS WITH FOUR LAG BOLTS AND WASHERS (3/8" DIAMETER AND 3" LONG).

THE NOTICE BOARD SHALL BE LOCATED:

- 1. AT THE MIDPOINT ON THE SITE STREET FRONTAGE OR OTHERWISE DIRECTED BY STAFF TO MAXIMIZE VISIBILITY.
- 2. AT A LOCATION 5' INSIDE THE FRONTAGE PROPERTY LINE; A NOTICE BOARD STRUCTURALLY ATTACHED TO AN EXISTING BUILDING SHALL BE EXEMPT FROM THE SETBACK PROVISIONS, PROVIDED THAT THE NOTICE BOARD IS LOCATED NOT MORE THAN 5' FROM THE PROPERTY LINE WITHOUT APPROVAL FROM STAFF.
- 3. SO THAT THE TOP OF THE NOTICE BOARD IS BETWEEN 7-9' ABOVE GRADE.
- 4. SO THAT IT IS TOTALLY VISIBLE TO PEDESTRIANS.

MAINTENANCE AND REMOVAL OF NOTICE BOARD:

- 1. THE APPLICANT/DEVELOPER SHALL MAINTAIN THE NOTICE BOARD IN GOOD CONDITON THROUGHOUT THE SITE IMPROEMENT CONSTRUCTION PERIOD, WHICH SHALL EXTEND THROUGH THE TIME OF FINAL PLAT APPROVAL BY THE CITY OF DUVALL. THE NOTICE BOARD SHALL BE REMOVED WITHIN 14 DAYS AFTER FINAL PLAT APPROVAL. EARLY REMOVAL OF THE NOTICE BOARD MY RESULT IN ENFORCEMENT ACTIONS AND MAY DELAY FINAL PLAT APPROVAL.

NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**



TITLE

Construction Notice Board

August 2021

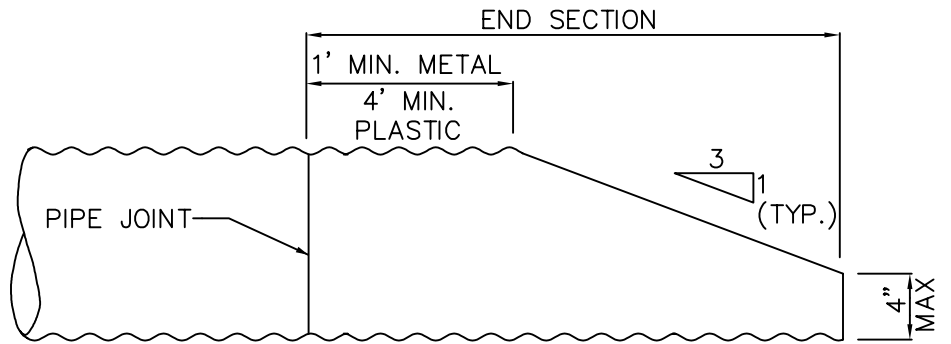
DRAWING NUMBER

3-010-014

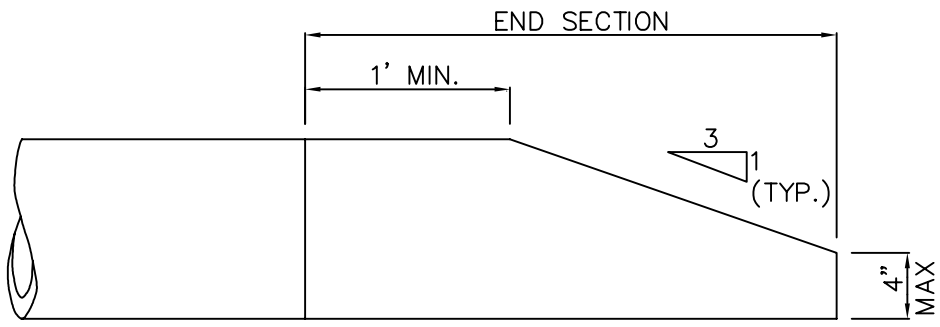
GROOVE END ALWAYS LAID UPGRADE



PLAN



PROFILE - METAL & PLASTIC PIPE

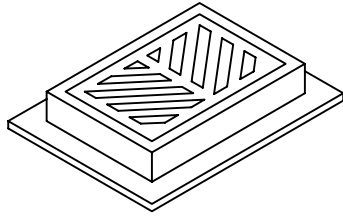


PROFILE - CONCRETE

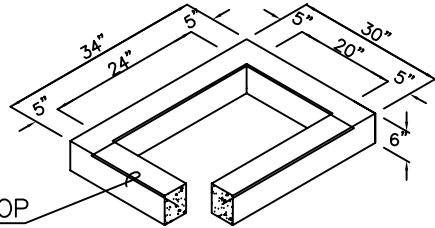
NOTES:

1. SIDE SLOPE SHALL BE WARPED TO MATCH THE BEVELED PIPE END WHEN CULVERT IS ON SKEW.
2. BEVELED END SHALL BE ROTATED TO CONFORM TO SLOPE IF SLOPE DIFFERS FROM 3:1.
3. PIPE SHALL BE BEVELED TO MATCH SLOPE.
4. PIPED OUTLETS GREATER THAN 12-INCHES REQUIRES TRASH RACK OR OTHER AS APPROVED BY THE CITY ENGINEER.

NTS

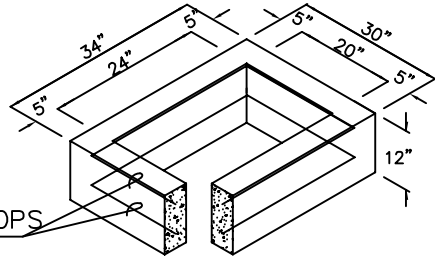


FRAME AND GRATE
SEE SECTION 3-7.05



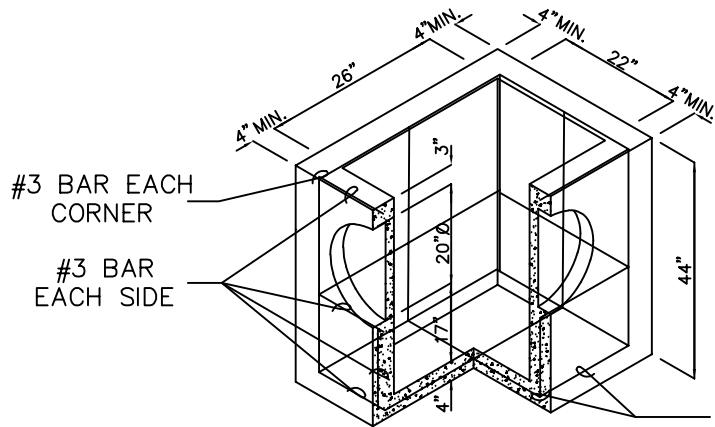
6" RISER SECTION

1 - #3 BAR HOOP



12" RISER SECTION

2 - #3 BAR HOOPS



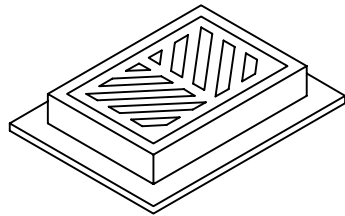
PRECAST BASE SECTION
(MEASUREMENT AT THE
TOP OF THE BASE)

#3 BAR EACH WAY

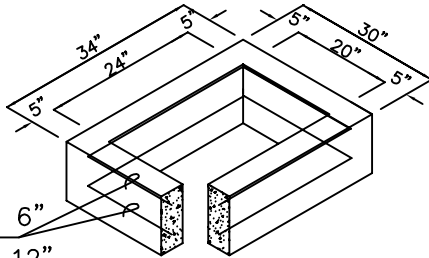
NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) AND C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED AND SHALL COMPLY TO ASTM A497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000 PSI.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS WITH A MINIMUM WALL THICKNESS OF 2 INCHES. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF LEFT INTACT.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCH BASIN WALL THICKNESS.
6. ROUND KNOCKOUTS MAY BE ON ALL FOUR SIDES, WITH A MAXIMUM DIAMETER OF 20 INCHES, KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE.
7. THE MAX DEPTH FROM THE FINISHED GRADE TO PIPE INVERT IS FIVE FEET.
8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2 INCH PER FOOT.
9. CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. MATING SURFACES SHALL BE FINISHED TO ASSURE NON-ROCKING FIT WITH ANY COVER POSITION.
10. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
11. FOR CATCH BASINS IN PARKING LOTS REFER TO WSDOT/APWA STANDARD DRAWING B1-b.
12. EDGE OF RISER OR BRICK SHALL NOT BE MORE THAN TWO INCHES FROM VERTICAL EDGE OF CATCH BASIN WALL.
13. GROUT BETWEEN ALL RISERS AND CONTACT SURFACES OF CATCH BASIN WITH APPROVED GROUT.
14. VANED GRATE REQUIRED FOR INLETS ON ROADS WITH 5% SLOPE OR GREATER.

NTS

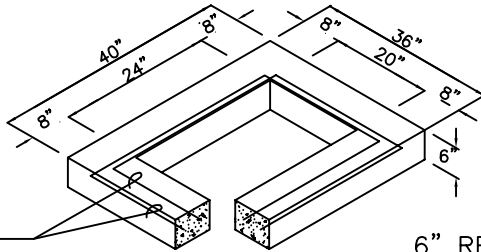


FRAME AND GRATE
SEE SECTION 3-7.05



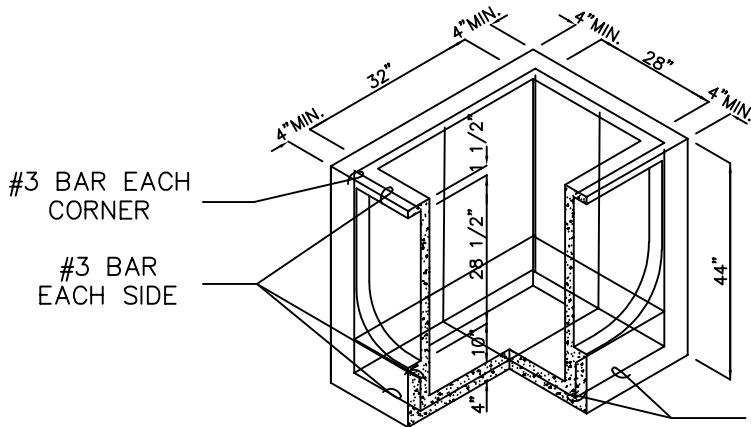
RISER SECTION

- 1 - #3 BAR HOOP FOR 6"
- 2 - #3 BAR HOOP FOR 12"



6" REDUCING SECTION

- 2 - #3 BAR HOOP



PRECAST BASE SECTION
(MEASUREMENT AT THE TOP OF THE BASE)

#3 BAR EACH CORNER

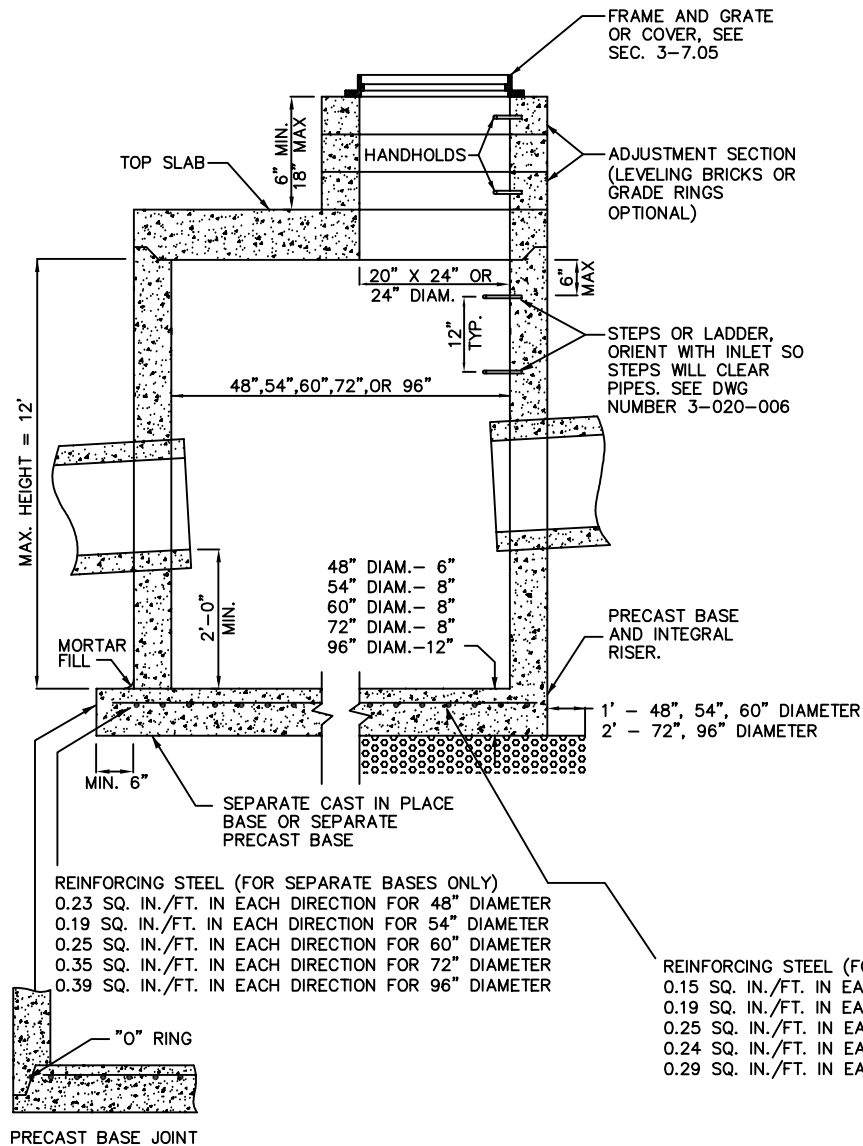
#3 BAR EACH SIDE

#3 BAR EACH WAY

NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M 199) AND C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED AND SHALL COMPLY TO ASTM A497 (AASHTO M 221). WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS.
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000 PSI.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS WITH A MINIMUM WALL THICKNESS OF 2 INCHES. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF LEFT INTACT.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCH BASIN WALL THICKNESS.
6. KNOCKOUTS MAY BE ON ALL SIDES WITH MAXIMUM DIAMETER OF 28 INCHES. KNOCKOUTS MAY BE EITHER ROUND OR "D" SHAPE.
7. THE MAXIMUM DEPTH FROM FINISHED GRADE TO PIPE INVERT SHALL BE FIVE FEET.
8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2 INCHES PER FOOT.
9. CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
10. EDGE OF REDUCING SECTION OR BRICK SHALL NOT BE MORE THAN TWO INCHES FROM VERTICAL EDGE OF CATCH BASIN WALL.
11. GROUT BETWEEN ALL RISERS AND CONTACT SURFACES OF CATCH BASIN WITH APPROVED GROUT.
12. VANED GRATE REQUIRED FOR INLETS ON ROADS WITH 5% SLOPE OR GREATER.

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NOTES:

1. CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 (AASHTO M199) AND ASTM C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE WSDOT/APWA STANDARD SPECIFICATIONS.
2. MINIMUM CLEARANCE (SEE DETAIL 3-020-006):
 - 2.1. HANDHOLDS IN ADJUSTMENT SECTION = 3 INCHES.
 - 2.2. STEPS IN CATCH BASIN = 6 INCHES.
3. HANDHOLDS SHALL BE PLACED IN ALTERNATING GRADE RINGS OR LEVELING BRICK COURSE WITH A MINIMUM OF ONE HANDHOLD BETWEEN THE LAST STEP AND TOP OF THE STRUCTURE.
4. ALL PRECAST AND REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000 PSI.
5. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS WITH A MINIMUM WALL THICKNESS OF 2 INCHES. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF LEFT INTACT.
6. MINIMUM 6 INCHES COMPACTED DEPTH GRAVEL BACKFILL FOR PRECAST BASE FOUNDATIONS ONLY.
7. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CATCH BASIN WALL THICKNESS.
8. CATCH BASIN FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID. FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
9. ALL BASE REINFORCING STEEL SHALL HAVE A MIN. YIELD STRENGTH OF 60,000 PSI AND BE PLACED IN THE UPPER HALF OF THE BASE WITH MINIMUM 1 INCH CLEARANCE.
10. MINIMUM SOIL BEARING VALUE SHALL EQUAL 3,300 POUNDS PER SQUARE FOOT.
11. SEE THE WSDOT/APWA STANDARD SPECIFICATIONS SECTION 7-05.3 FOR JOINT REQUIREMENTS.
12. GROUT BETWEEN ALL RISERS AND CONTACT SURFACES OF CATCH BASIN WITH APPROVED GROUT.
13. VANED GRATE REQUIRED FOR INLETS ON ROADS WITH 5% SLOPE OR GREATER.

NTS

DEVELOPMENT DESIGN
STANDARD DETAILS

August 2021

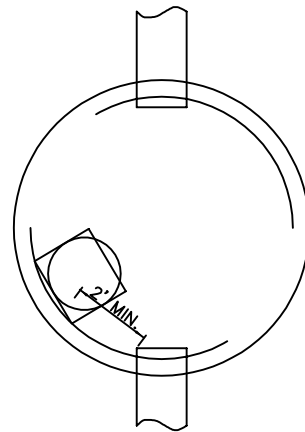
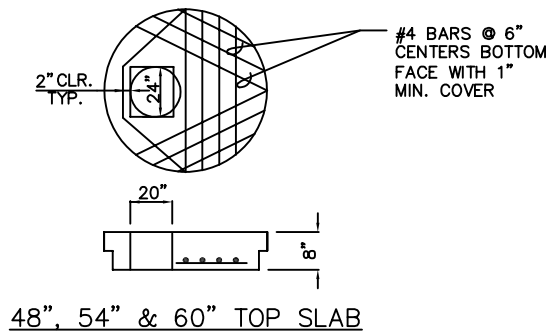


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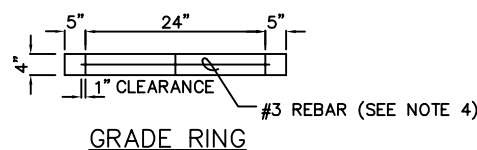
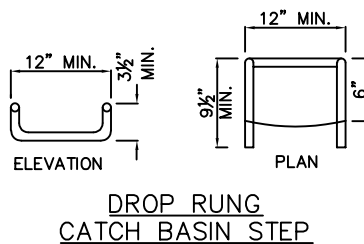
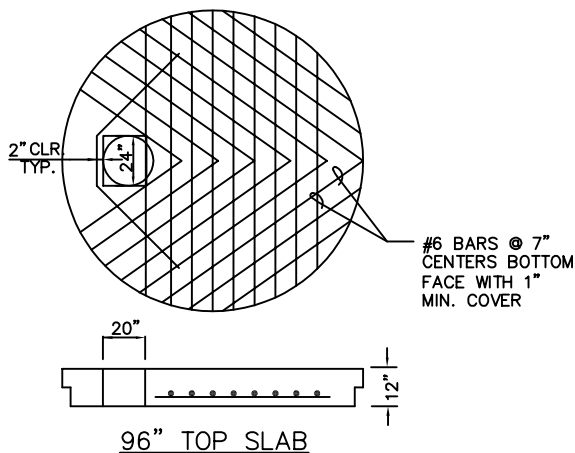
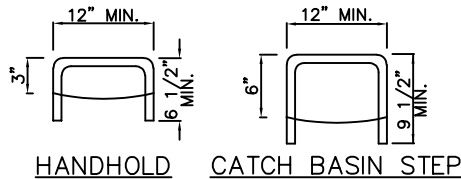
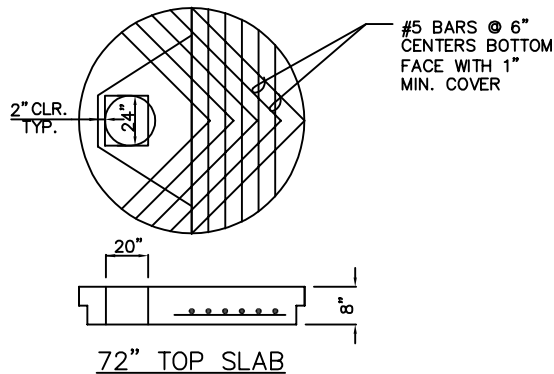
Catch Basin Type 2 - 48", 54", 72" & 96"

DRAWING NUMBER

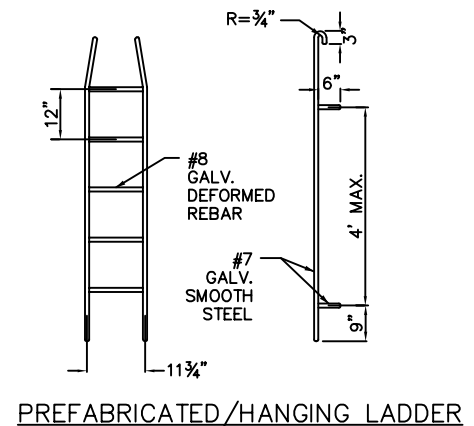
3-020-005



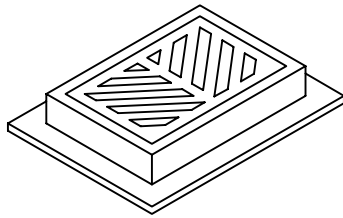
TYPICAL ORIENTATION FOR ACCESS AND STEPS



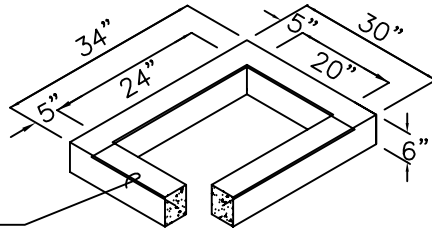
- NOTES:
1. ALL STEPS AND RUNGS TO BE #8 GALVANIZED DEFORMED REBAR OR COPOLYMER PROPYLENE. PROPRIETARY CATCH BASIN HANDHOLDS AND STEPS ARE ACCEPTABLE, PROVIDED THEY CONFORM TO SECTION R, ASTM C478, AASHTO M-199 AND MEET WISHA REQUIREMENTS.
 2. STEP/HANDHOLD LEGS SHALL BE PARALLEL OR APPROXIMATELY RADIAL AT THE OPTION OF THE MANUFACTURER, EXCEPT THAT ALL STEPS IN ANY CATCH BASIN SHALL BE SIMILAR.
 3. PENETRATION OF OUTER WALL BY A LEG IS PROHIBITED.
 4. STEP/HANDHOLD SHALL HAVE "DROP" RUNGS AS SHOWN ON DETAIL OR PROTUBERANCES TO PREVENT SIDEWAYS SLIP.
 5. SLAB OPENING MAY BE 24" X 20" OR 24" DIAMETER.
 6. WELDED WIRE FABRIC HAVING A MINIMUM AREA OF 0.12 SQUARE INCHES PER FOOT AND COMPLIES TO ASTM A497, CAN BE USED AS AN ACCEPTABLE ALTERNATIVE TO REBAR.
 7. LADDERS OR STEPS SHALL EXTEND TO WITHIN 16" OF BOTTOM OF CATCH BASIN.
 8. HANGING LADDERS SHALL BE PERMANENTLY FASTENED AT TOP BY HANGING ON STEP OR BY BOLTING OR EMBEDDING IN CONCRETE. EACH SHALL BE EMBEDDED AT BOTTOM IN BASE.
 9. ADDITIONAL SAFETY FEATURES MAY BE REQUIRED IN VERY DEEP OR UNUSUAL STRUCTURES.



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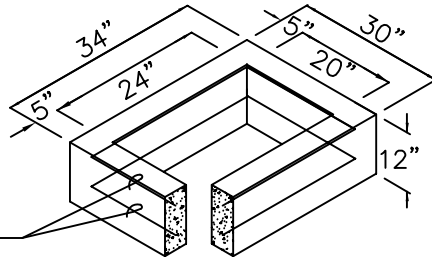


FRAME AND GRATE
SEE SECTION 3-7.05



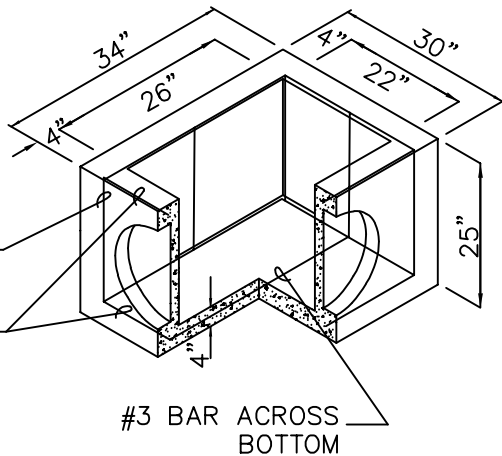
6" RISER SECTION

1 - #3 BAR HOOP



12" RISER SECTION

2 - #3 BAR HOOPS



PRECAST BASE SECTION
(MEASUREMENT AT THE
TOP OF THE BASE)

#3 BAR EACH
CORNER

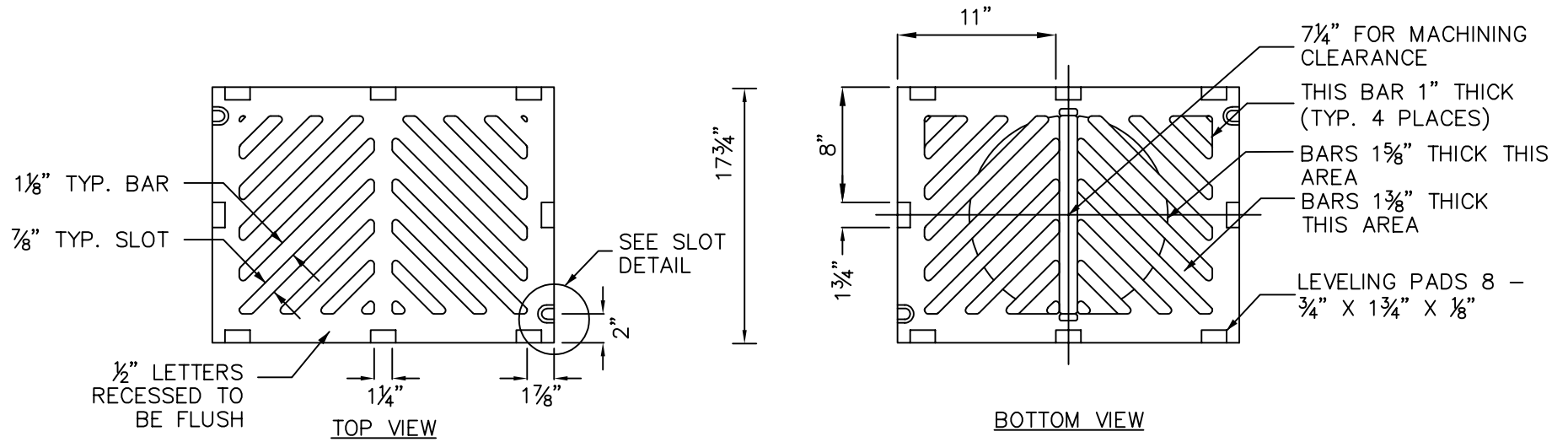
#3 BAR EACH
SIDE TOP AND
BOTTOM

#3 BAR ACROSS
BOTTOM

NOTES:

1. CURB INLET TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478 & C890 UNLESS OTHERWISE SHOWN ON PLANS OR NOTED IN THE STANDARD SPECIFICATIONS
2. AS AN ACCEPTABLE ALTERNATIVE TO REBAR, WELDED WIRE FABRIC HAVING A MIN. AREA OF 0.12 SQUARE INCHES PER FOOT MAY BE USED. WELDED WIRE FABRIC SHALL COMPLY TO ASTM A497, WIRE FABRIC SHALL NOT BE PLACED IN KNOCKOUTS
3. ALL REINFORCED CAST-IN-PLACE CONCRETE SHALL BE CLASS 4000 PSI.
4. PRECAST BASES SHALL BE FURNISHED WITH CUTOUTS OR KNOCKOUTS WITH A MINIMUM WALL THICKNESS OF TWO INCHES. ALL PIPE SHALL BE INSTALLED IN FACTORY PROVIDED KNOCKOUTS. UNUSED KNOCKOUTS NEED NOT BE GROUTED IF WALL IS LEFT INTACT.
5. KNOCKOUT OR CUTOUT HOLE SIZE IS EQUAL TO PIPE OUTER DIAMETER PLUS CURB INLET WALL THICKNESS
6. ROUND KNOCKOUTS MAY BE ON ALL FOUR SIDES WITH A MAXIMUM DIAMETER OF 17 INCHES.
7. THE MAXIMUM DEPTH FROM THE FINISHED GRADE TO THE PIPE INVERT IS FIVE FEET.
8. THE TAPER ON THE SIDES OF THE PRECAST BASE SECTION AND RISER SECTION SHALL NOT EXCEED 1/2 INCHES PER FOOT.
9. CURB INLET FRAME AND GRATE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND MEET THE STRENGTH REQUIREMENTS OF FEDERAL SPECIFICATION RR-F-62ID, FRAME AND GRATE MAY BE INSTALLED WITH FLANGE DOWN OR CAST INTO RISER.
13. GROUT BETWEEN ALL RISERS AND CONTACT SURFACES OF CATCH BASIN WITH APPROVED GROUT.
14. VANED GRATE REQUIRED FOR INLETS ON ROADS WITH 5% SLOPE OR GREATER.

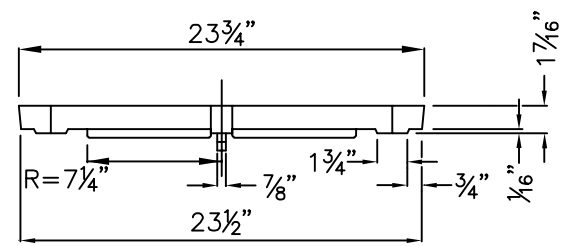
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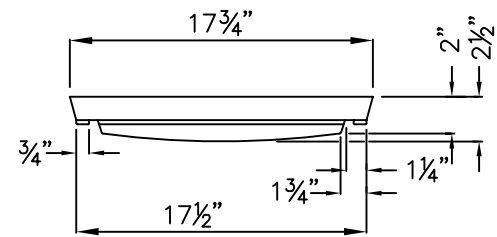
1/2" LETTERS RECESSED TO BE FLUSH

TOP VIEW

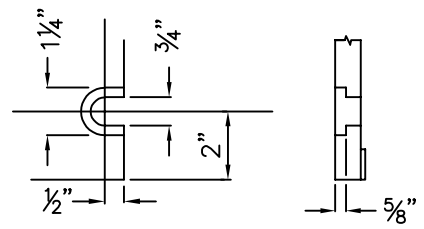
BOTTOM VIEW



SIDE VIEW



END VIEW

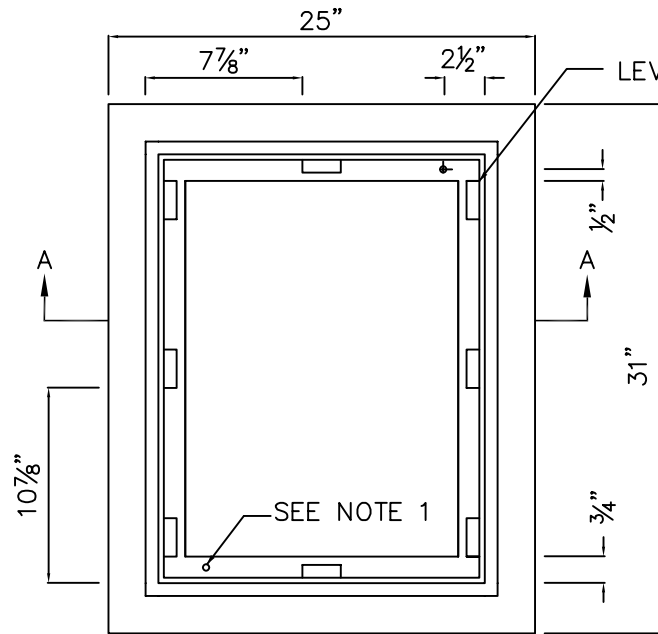


SLOT DETAIL

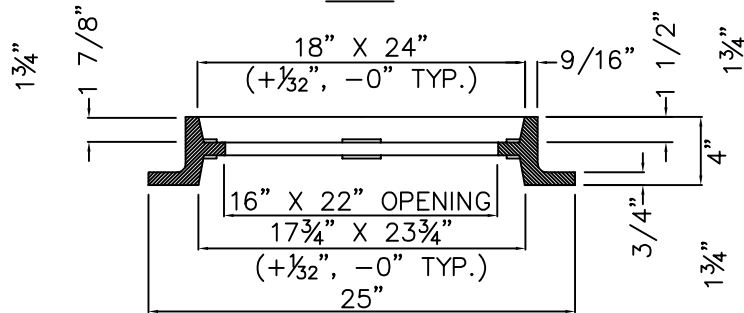
NOTES:

1. SLOT FORMED AND RECESSED FOR 5/8"-11 NC X 2" SOCKET HEAD (ALLEN HEAD) CAP SCREW.
2. GRATE SHALL BE CAST IRON PER ASTM A48 CLASS 35 UNLESS OTHERWISE SPECIFIED.
3. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
4. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
5. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00770072 OR APPROVED EQUAL.

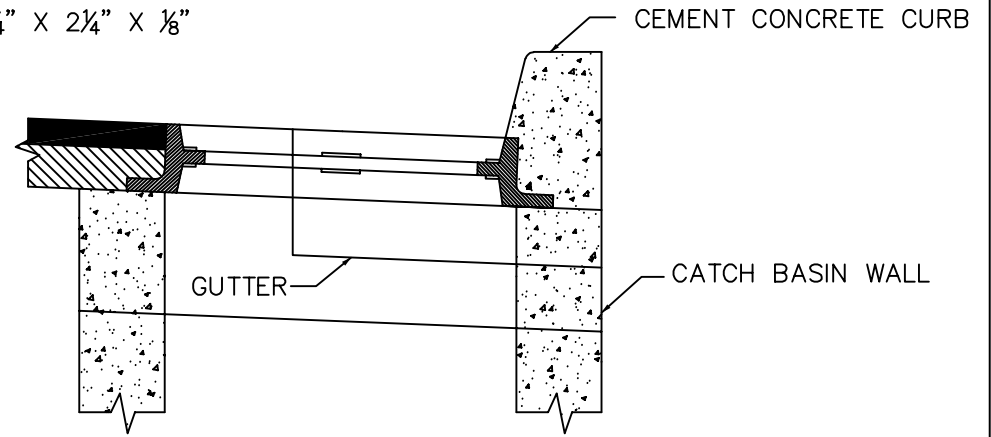
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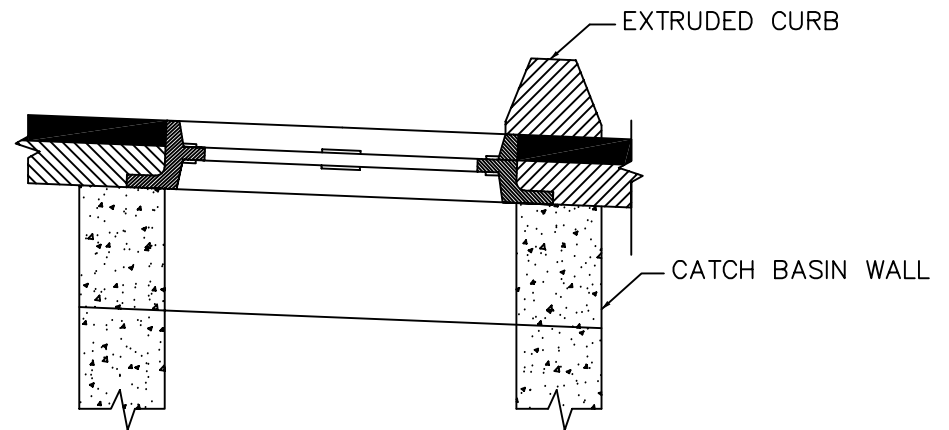
PLAN



SECTION A-A



VERTICAL CURB

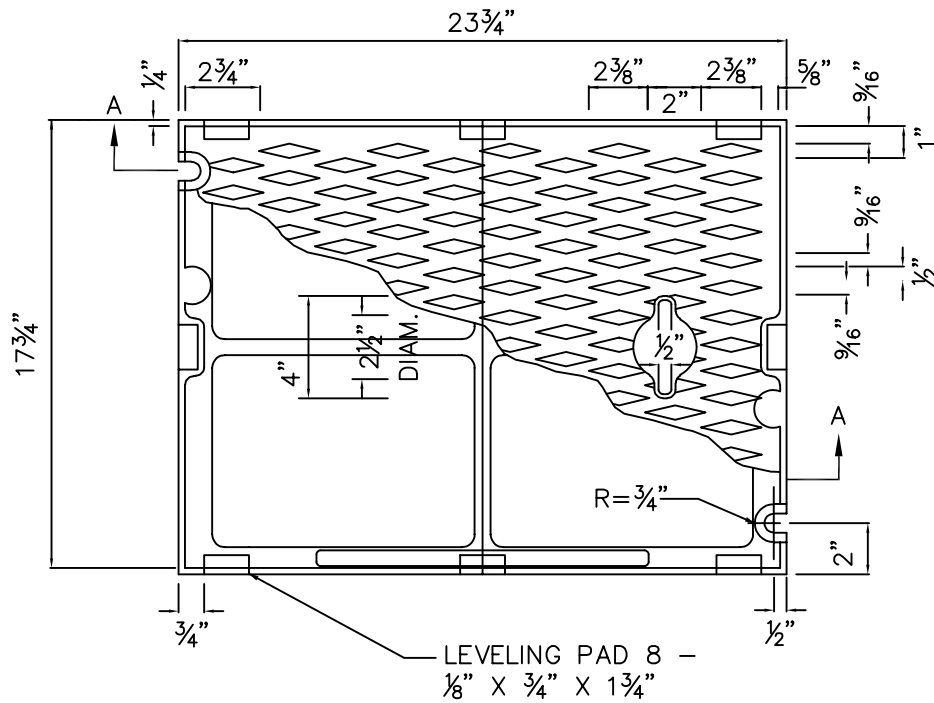


EXTRUDED CURB

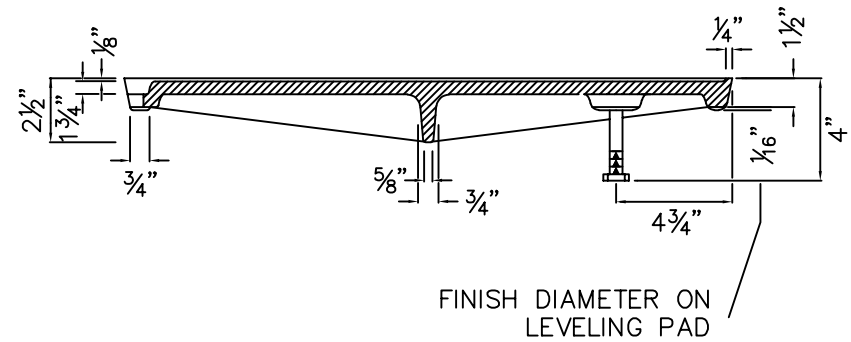
NOTES:

1. DRILL AND TAP FOR, AND PROVIDE, TWO LOCKING BOLTS $\frac{5}{8}$ "-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS, 2-INCHES LONG WHEN USED WITH SOLID COVER (STANDARD DETAIL 3-020-015) OR WHEN SPECIFIED BY ENGINEER.
2. FRAME MATERIAL IS CAST IRON PER ASTM A48 CLASS 35.
3. SET FRAME TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.
4. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
5. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
6. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 072 OR APPROVED EQUAL.

NTS



PLAN



SECTION A-A

NOTES:

1. USE WITH FRAME (STANDARD DETAIL 3-020-014) DRILLED AND TAPPED FOR LOCKING BOLTS.
2. USE WITH TWO LOCKING BOLTS 5/8"-11 NC STAINLESS STEEL TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS, 2-INCHES LONG.
3. MATERIAL IS CAST IRON PER ASTM A48 CLASS 35.
4. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
5. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
6. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00770070 OR APPROVED EQUAL.

NTS

DEVELOPMENT DESIGN
STANDARD DETAILS

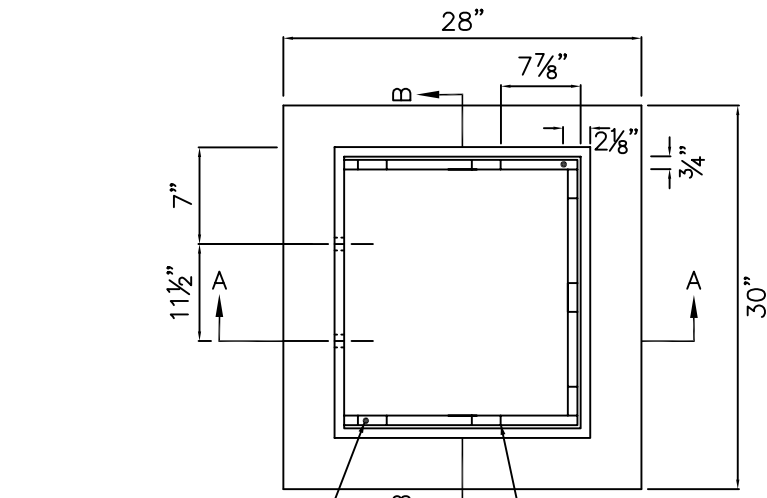


TITLE

Standard Solid Cover

DRAWING NUMBER

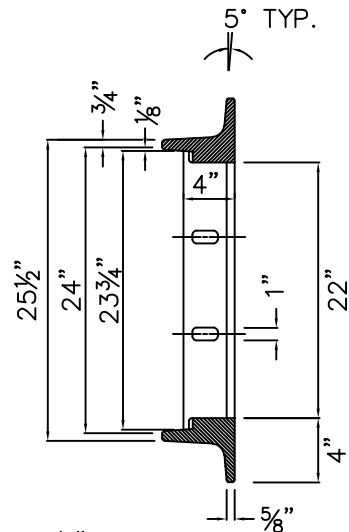
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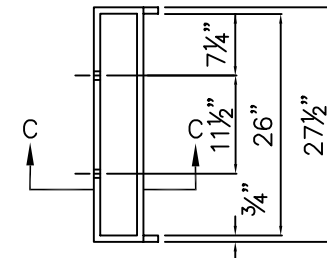
DRILL AND TAP TWO
5/8" - 11NC HOLES
THRU FRAME

LEVELING PAD 7 7/8" X 3/4" X 2 1/4"

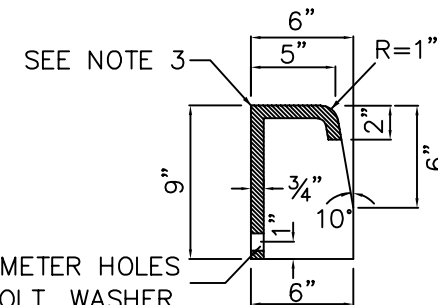
PLAN



SECTION B-B

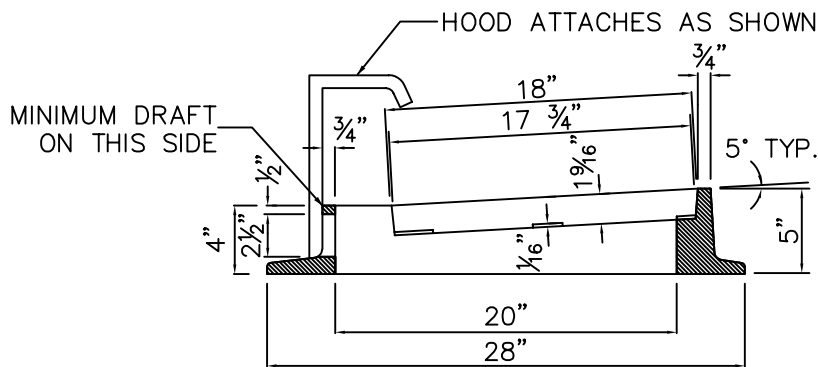


HOOD DETAIL



SECTION C-C

2 - 1" DIAMETER HOLES
FOR 3/4" BOLT, WASHER,
AND NUT

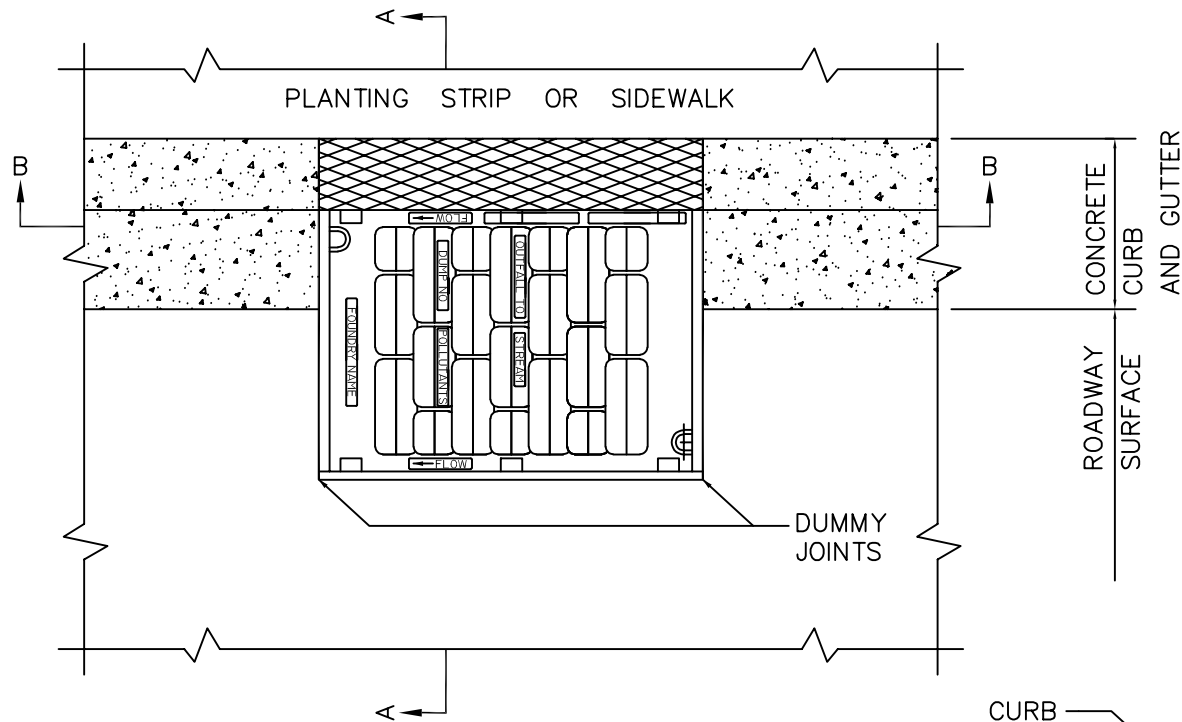


SECTION A-A

NOTES:

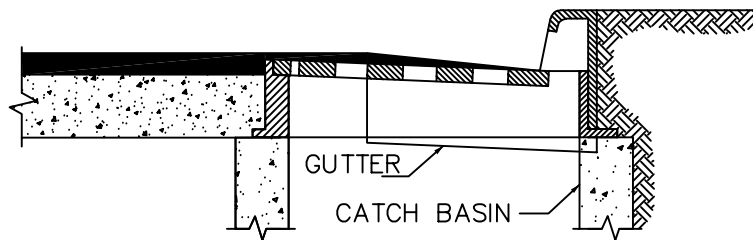
1. MATERIAL IS CAST IRON ASTM A48 CLASS 35.
2. SEE STANDARD DETAIL 3-020-018 FOR VANED GRATE.
3. PATTERN ON TOP SURFACE OF HOOD SHALL BE 3/16" NON-SKID DIAMOND.
4. BOLT, WASHER, AND NUT SHALL BE GALVANIZED OR CORROSION RESISTANT. SEE SECTION C-C.
5. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
6. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
7. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00770168 AND NUMBER 00770178 OR APPROVED EQUAL.

NTS

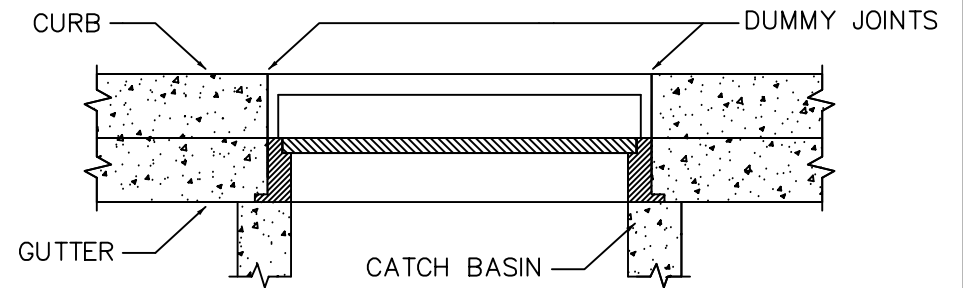


USE THIS GRATE AS STANDARD FOR ALL INLETS ON ROADS WITH SLOPE OF 5% OR GREATER UNLESS OTHERWISE DIRECTED BY CITY ENGINEER

PLAN



SECTION A-A

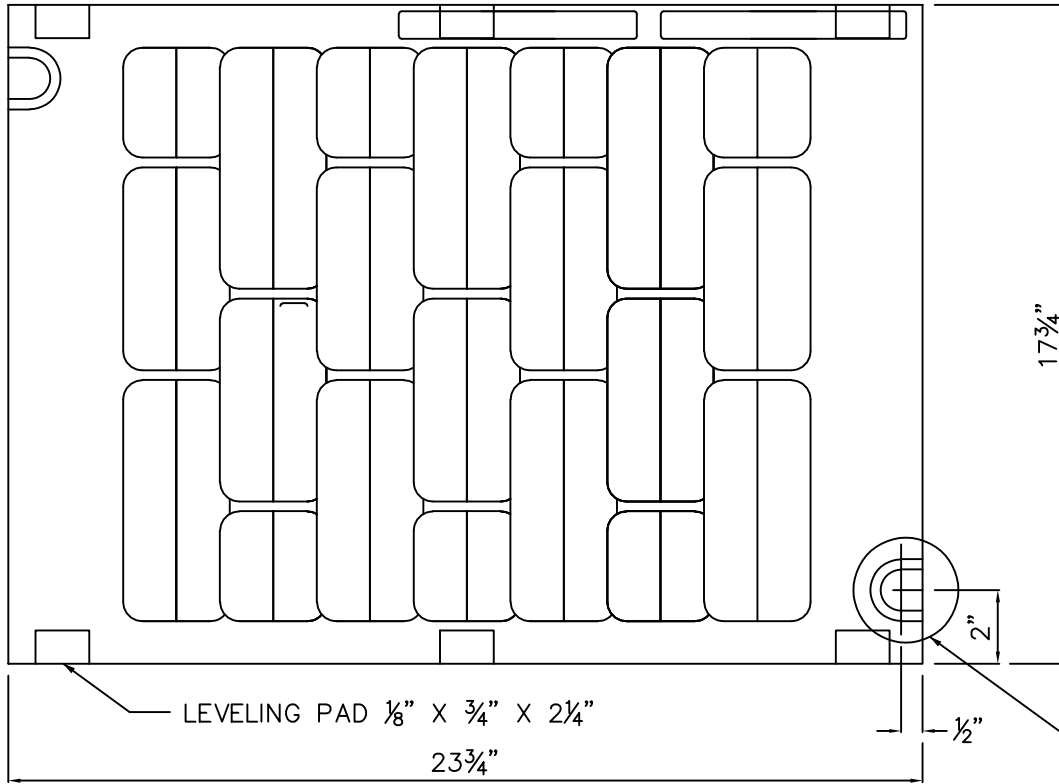


SECTION B-B

NOTES:

1. SET TO GRADE AND CONSTRUCT ROAD AND GUTTER TO BE FLUSH WITH FRAME.
2. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.04 EXPANSION AND DUMMY JOINTS FOR FURTHER INFORMATION.
3. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
4. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00770168 AND NUMBER 00770178 OR APPROVED EQUAL.

NTS

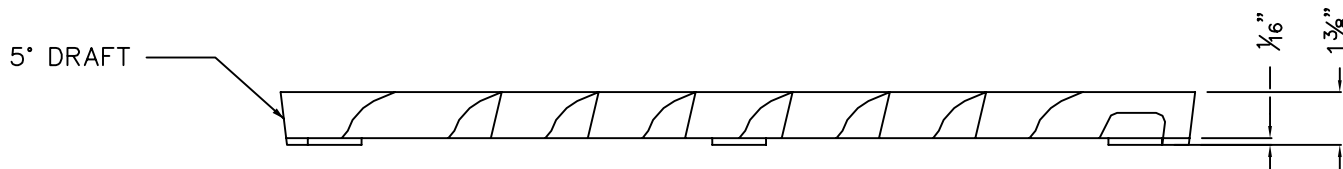


NOTES:

1. SELF-LOCK VANED GRATE MANUFACTURER SUBJECT TO APPROVAL BY ENGINEER.
2. USE WITH TWO LOCKING BOLTS $\frac{5}{8}$ "-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS 2 INCHES LONG. MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06.
3. "OUTFALL TO STREAM DUMP NO POLLUTANTS" MAY BE LOCATED ON BORDER AREA.
5. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
6. VANED GRATE REQUIRED ON STREETS WHERE ROADWAY SLOPE IS GREATER THAN 5%.
7. GRATES AND FRAMES SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
8. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00770178 OR APPROVED EQUAL.
9. GRATE CAN BE ADDED FOR BI-DIRECTIONAL FLOWS OF STORMWATER.

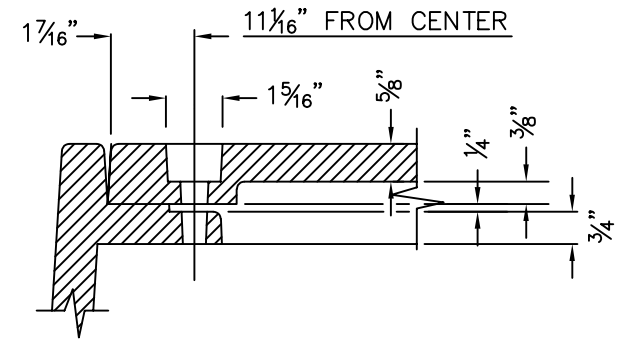
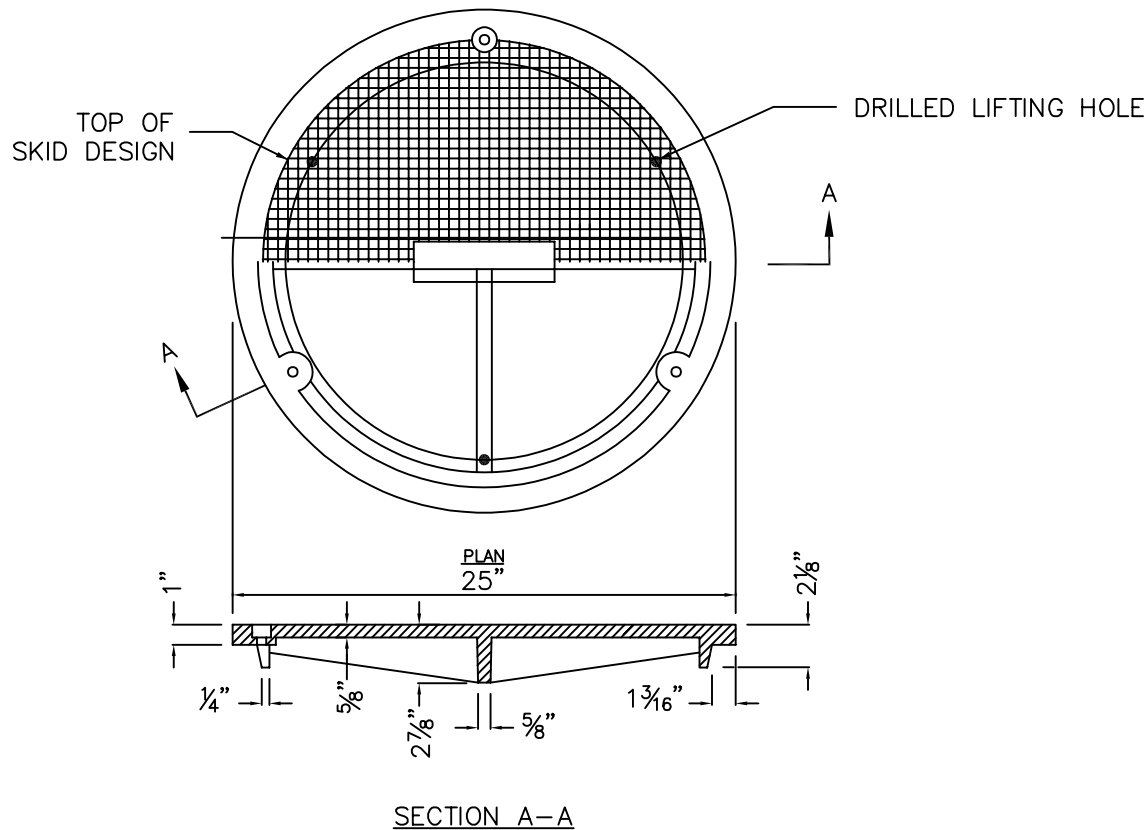
SEE STANDARD
DETAIL 3-020-013

PLAN

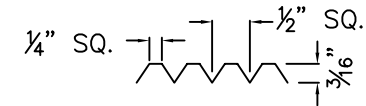


ELEVATION

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BOLT-DOWN DETAIL

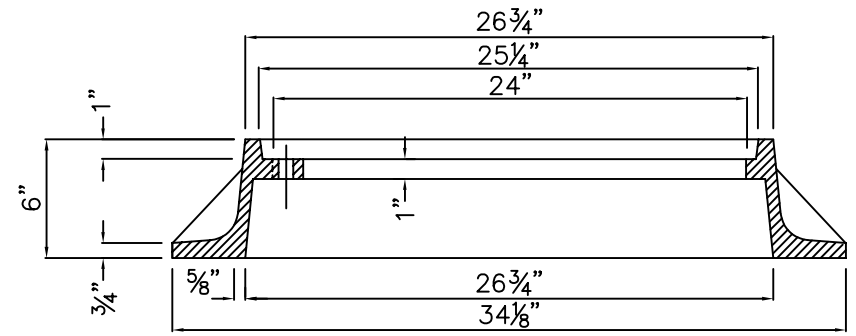
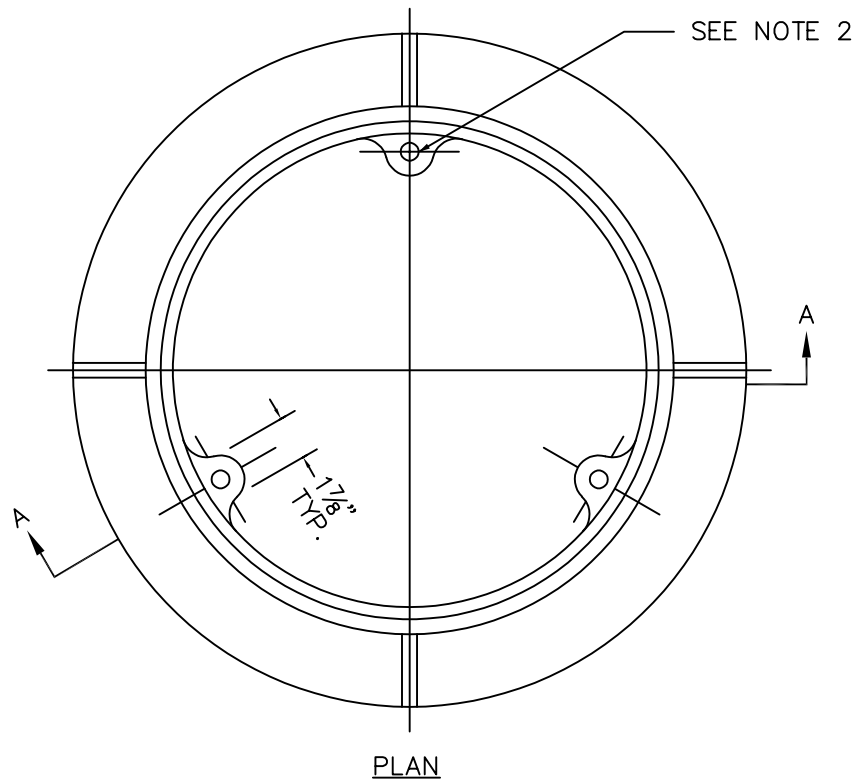


COVER SKID DESIGN DETAIL

NOTES:

1. USE WITH THREE LOCKING BOLTS $\frac{5}{8}$ "-11 NC STAINLESS TYPE 304 STEEL SOCKET HEAD (ALLEN HEAD) CAP SCREWS, 2-INCHES LONG. DRILL HOLES SPACED 120° AT $11\frac{1}{16}$ " RADIUS.
2. DRILL THREE 1-INCH LIFTING HOLES SPACED 120° AT $9\frac{1}{2}$ " RADIUS.
3. MATERIAL IS DUCTILE IRON ASTM A536 GRADE 80-55-06 AND SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
4. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
5. A NON-LOCKING STYLE COVER MAY BE REQUIRED. IF SO IT SHALL BE EAST JORDAN IRON WORKS NUMBER 370568 OR APPROVED EQUAL.
6. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00371570 OR APPROVED EQUAL.

NTS



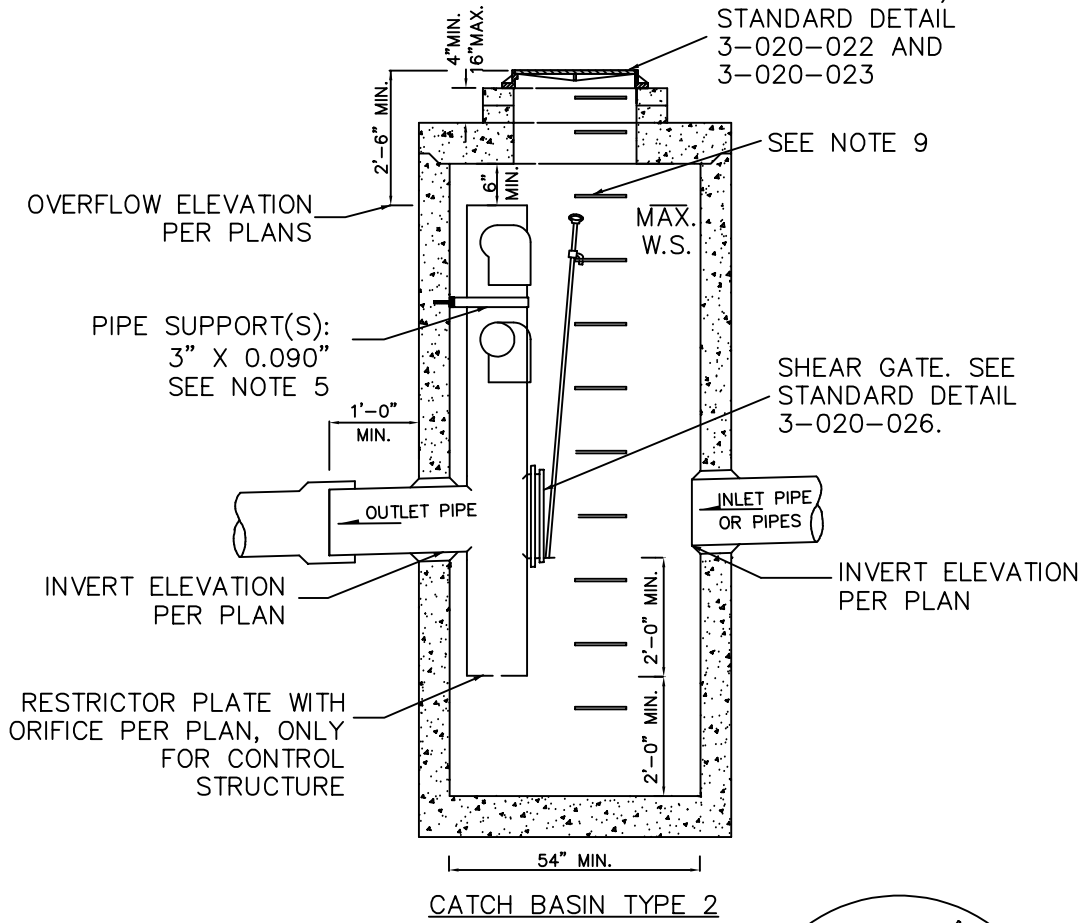
SECTION A-A

NOTES:

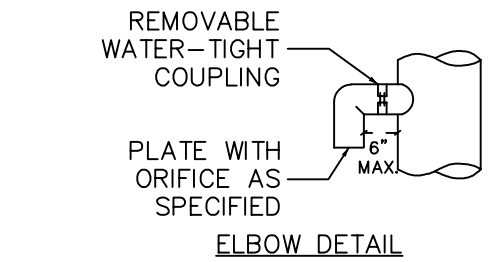
1. DRILL AND TAP THREE $\frac{5}{8}$ "-11 NC HOLES THROUGH FRAME AT 120° AND $11\frac{1}{16}$ " RADIUS.
2. SEE STANDARD DETAIL 3-020-022 LOCKING STRUCTURE COVER FOR BOLT DOWN DETAIL.
3. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-7.05 FRAME, GRATES, AND COVERS FOR FURTHER INFORMATION.
4. MATERIAL IS CAST IRON ASTM A48 CLASS 30 AND SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.
5. EAST JORDAN IRON WORKS MANUFACTURING CO. PRODUCT NUMBER 00371512 OR APPROVED EQUAL.

NTS

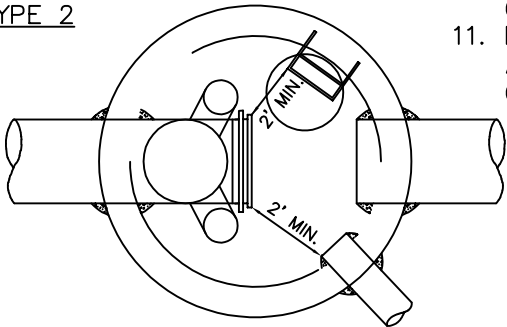
SOLID LOCKING COVER
MARKED "DRAIN", SEE
STANDARD DETAIL
3-020-022 AND
3-020-023



CATCH BASIN TYPE 2



ELBOW DETAIL



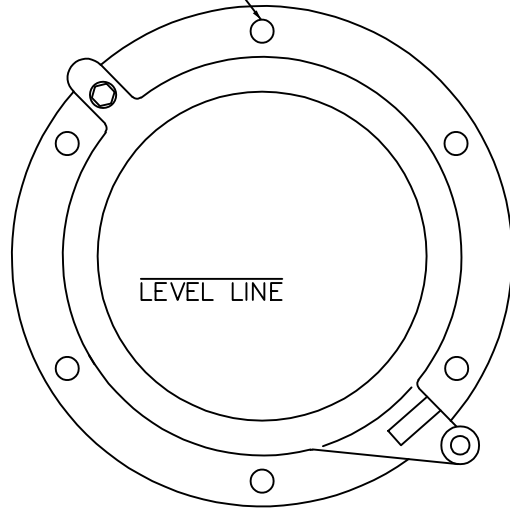
PLAN

NOTES:

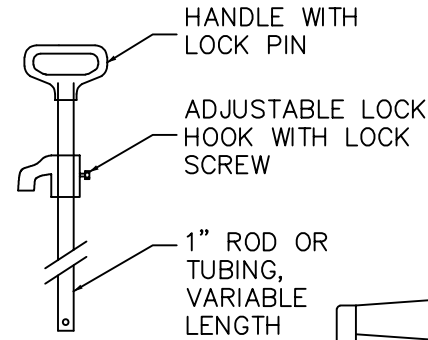
1. SEE KING COUNTY SURFACE WATER DESIGN MANUAL FOR SPECIFIC DESIGN CRITERIA.
2. PIPE SIZES AND SLOPES: IN ACCORDANCE WITH PLANS.
3. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
4. EXCEPT AS SHOWN OR NOTED, UNITS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS FOR CATCH BASIN TYPE 2, 54 INCH MINIMUM DIAMETER.
5. PIPE SUPPORTS AND RESTRICTOR/SEPARATOR SHALL BE OF SAME MATERIAL, AND BE ANCHORED AT 3-FOOT MAXIMUM SPACING BY 5/8 INCH DIAMETER STAINLESS STEEL EXPANSION BOLTS OR EMBEDDED 2-INCH IN WALL.
6. THE RESTRICTOR/SEPARATOR SHALL BE FABRICATED FROM 0.060-INCH ALUMINUM, OR 0.064-INCH ALUMINIZED STEEL, OR 0.064-INCH GALVANIZED STEEL PIPE; IN ACCORDANCE WITH AASHTO M 36, M 196, M 197 AND M 274. GALVANIZED STEEL SHALL HAVE TREATMENT 1.
7. OUTLET SHALL BE CONNECTED TO CULVERT OR PIPE WITH A STANDARD COUPLING BAND FOR CORRUGATED METAL PIPE, OR GROUTED INTO THE BELL OF CONCRETE PIPE.
8. THE VERTICAL RISER STEM OF THE RESTRICTOR/SEPARATOR SHALL BE THE SAME DIAMETER AS THE HORIZONTAL OUTLET PIPE, WITH AN 8-INCH MINIMUM DIAMETER.
9. FRAME, LADDER OR STEPS:
 - 9.1. OFFSET SO THAT SHEAR GATE IS VISIBLE FROM TOP
 - 9.2. CLIMB DOWN AREA IS CLEAR OF RISER AND SHEAR GATE
 - 9.3. FRAME IS CLEAR OF CURB
 - 9.4. SEE STANDARD DETAIL 3-020-006 FOR LADDER DETAILS.
10. IF METAL OUTLET PIPE CONNECTS TO CEMENT CONCRETE PIPE: OUTLET PIPE TO HAVE SMOOTH O.D. EQUAL TO CONCRETE PIPE I.D. LESS 1/4 INCH.
11. MULTI-ORIFICE ELBOWS MAY BE LOCATED AS SHOWN OR ALL ON ONE SIDE OF RISER TO ASSURE LADDER CLEARANCE.

NTS

SIX EVENLY SPACED HOLES ON 10 $\frac{3}{8}$ " BOLT CIRCLE FOR BOLTING TO FLANGE CONNECTION



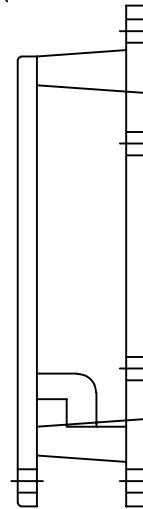
FRONT



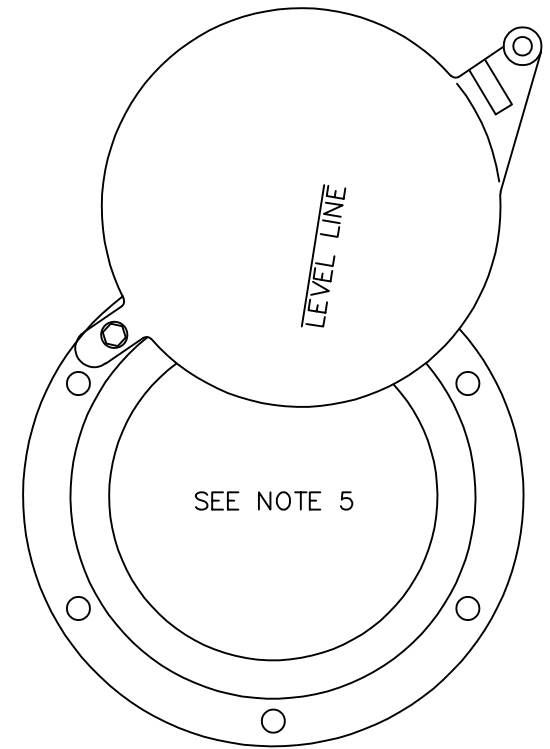
LIFT HANDLE



LIFT HANDLE SHALL BE ATTACHED PER MANUFACTURER'S RECOMMENDATIONS



SIDE



MAXIMUM OPENING OF GATE

NOTES:

1. SEE KING COUNTY SURFACE WATER DESIGN MANUAL FOR SPECIFIC DESIGN CRITERIA.
2. SHEAR GATE SHALL BE ALUMINUM ALLOY PER ASTM B-26-ZG-32a OR CAST IRON ASTM A48 CLASS 30B.
3. GATE SHALL BE 8-INCH DIAMETER UNLESS OTHERWISE SPECIFIED.
4. GATE SHALL BE JOINED TO TEE SECTION BY BOLTING (THROUGH FLANGE), WELDING, OR OTHER SECURE MEANS.
5. LIFT ROD: AS SPECIFIED BY MANUFACTURER. WITH HANDLE EXTENDING TO WITHIN 1-FOOT OF COVER AND ADJUSTABLE HOOK LOCK FASTENED TO FRAME OR UPPER HANDHOLD.
6. GATE SHALL NOT OPEN BEYOND THE CLEAR OPENING BY LIMITED HINGE MOVEMENT, STOP TAB, OR SOME OTHER DEVICE.
7. NEOPRENE RUBBER GASKET REQUIRED BETWEEN RISER MOUNTING FLANGE AND GATE FLANGE.
8. MATING SURFACES OF LID AND BODY TO BE MACHINED FOR PROPER FIT.
9. FLANGE MOUNTING BOLTS SHALL BE $\frac{3}{8}$ " DIAMETER STAINLESS STEEL.
10. ALTERNATE SHEAR GATES TO THE DESIGN SHOWN ARE ACCEPTABLE, PROVIDED THEY MEET THE MATERIAL SPECIFICATIONS ABOVE AND HAVE A SIX BOLT, 10 $\frac{3}{8}$ " BOLT CIRCLE FOR BOLTING TO THE FLANGE CONNECTION.

NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**



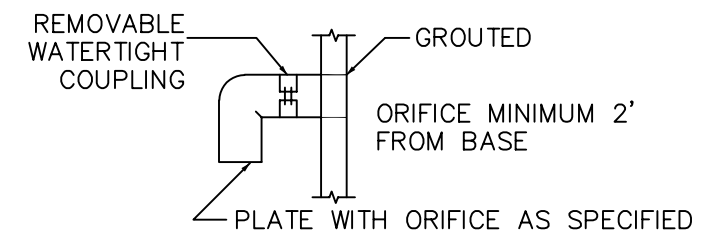
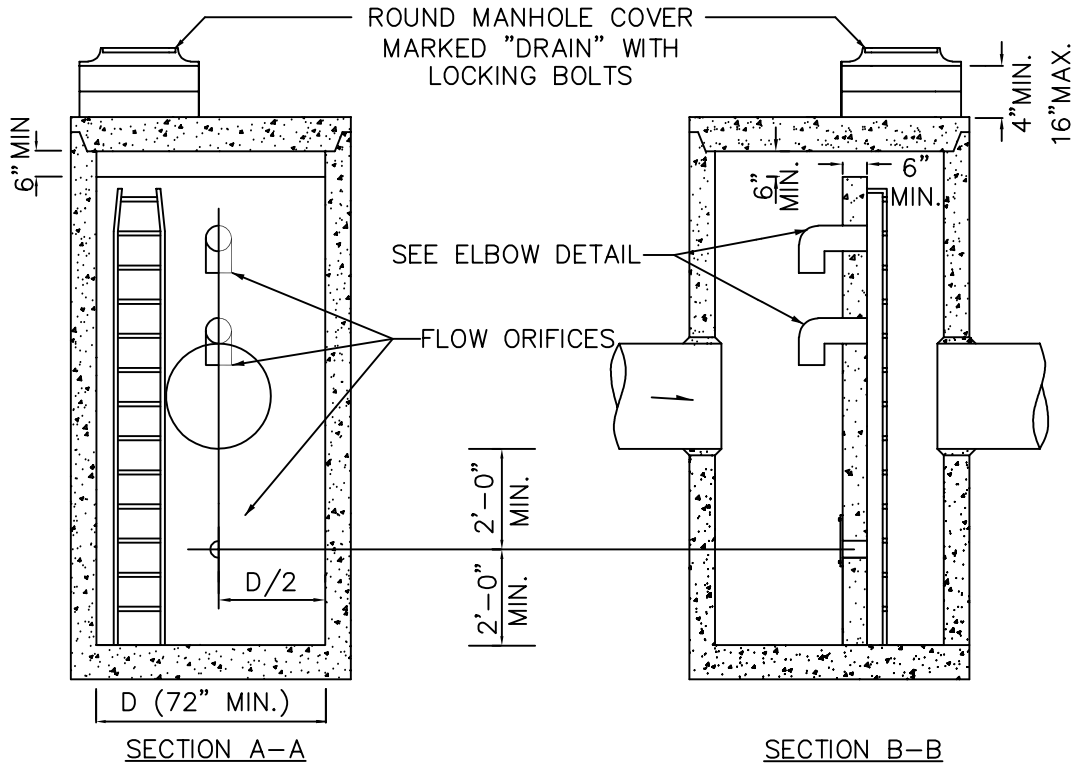
City of Duvall

TITLE

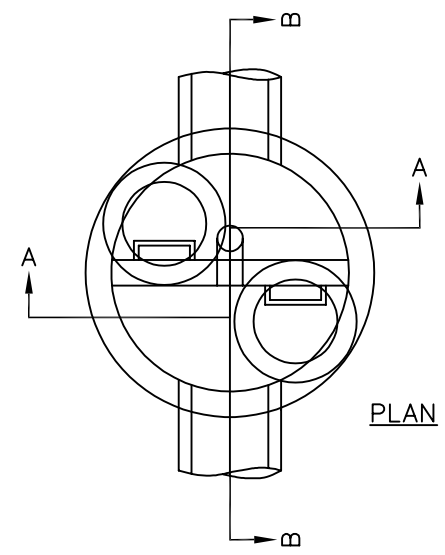
Shear Gate

DRAWING NUMBER

3-020-026

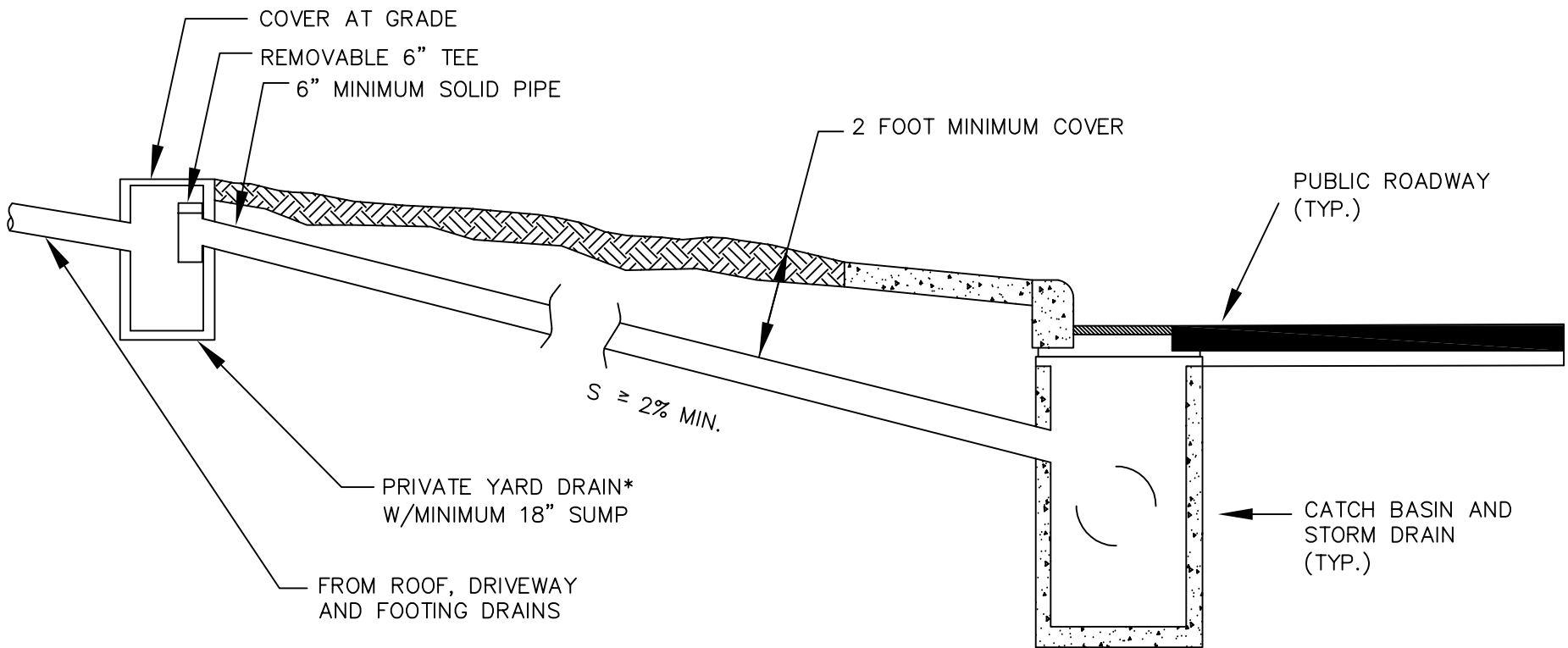


SEE STANDARD DETAILS 3-020-022 AND 3-020-023



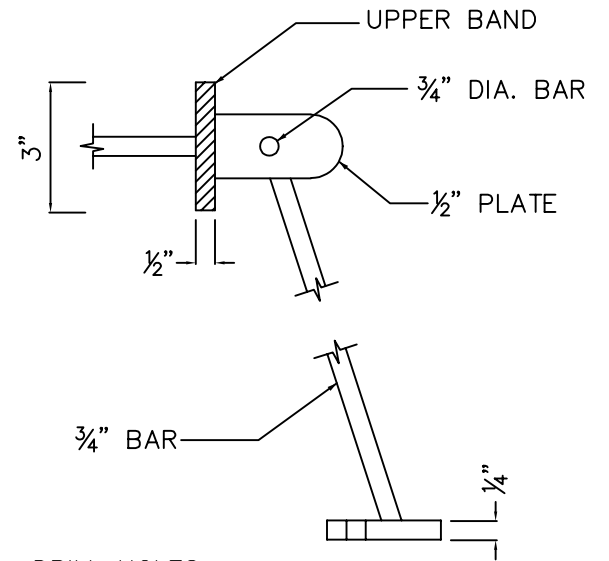
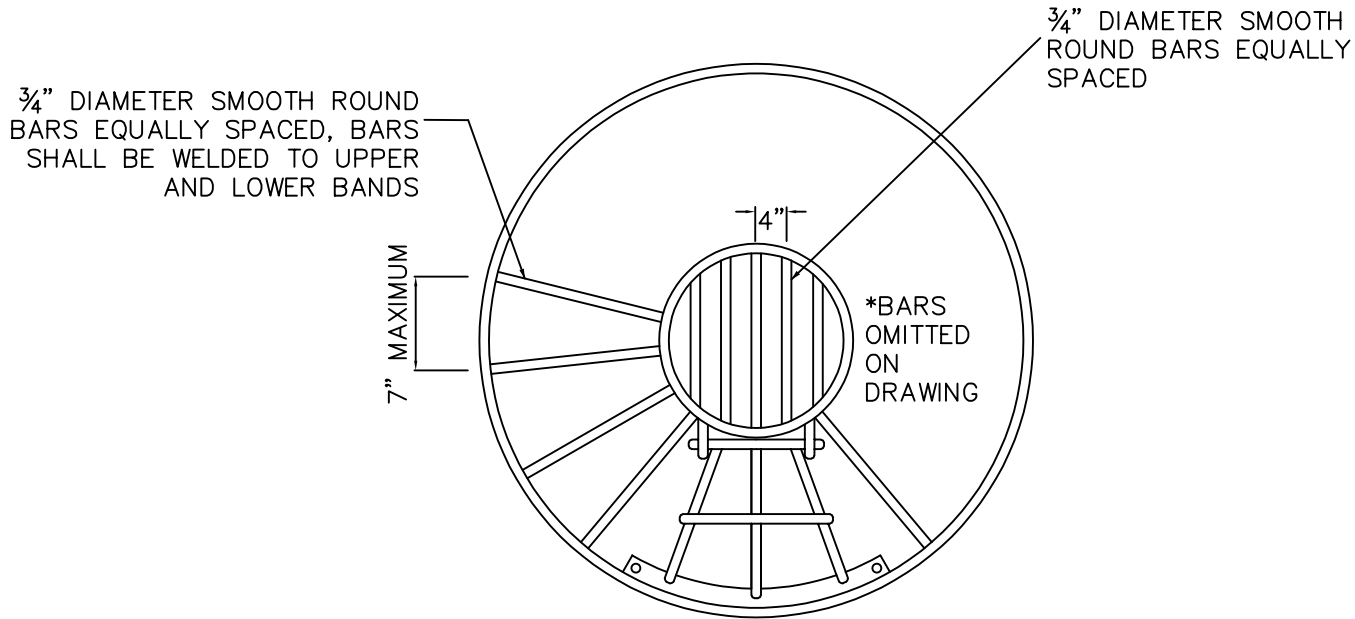
- NOTES:
1. SEE KING COUNTY SURFACE WATER DESIGN MANUAL FOR SPECIFIC DESIGN CRITERIA.
 2. PIPE SIZE, SLOPES AND ALL ELEVATIONS: IN ACCORDANCE WITH PLANS.
 3. OUTLET CAPACITY: NOT LESS THAN COMBINED INLETS.
 4. TYPE 2 CATCH BASIN TO BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DETAIL 3-020-005 AND AASHTO M199 UNLESS OTHERWISE APPROVED.
 5. ROUND, SOLID COVERS MARKED "DRAIN," WITH LOCKING BOLTS.
 6. ORIFICE TO BE SIZED AND LOCATED AS DESIGNED.
 7. BAFFLE WALL SHALL HAVE #4 BAR AT 12" SPACING EACH WAY.
 8. PRECAST BAFFLE WALL SHALL BE KEYED AND GROUTED IN PLACE.
 9. BOTTOM ORIFICE PLATE TO BE 1/4" MINIMUM GALVANIZED STEEL AND ATTACHED WITH 1/2" STAINLESS STEEL BOLTS. OMIT ORIFICE PLATE IF ONLY FOR OIL SEPARATION.
 10. UPPER FLOW ORIFICE SHALL BE ALUMINUM, ALUMINIZED STEEL OR GALVANIZED STEEL, SEE STANDARD DETAIL 3-020-025, GALVANIZED STEEL SHALL HAVE TREATMENT 1.

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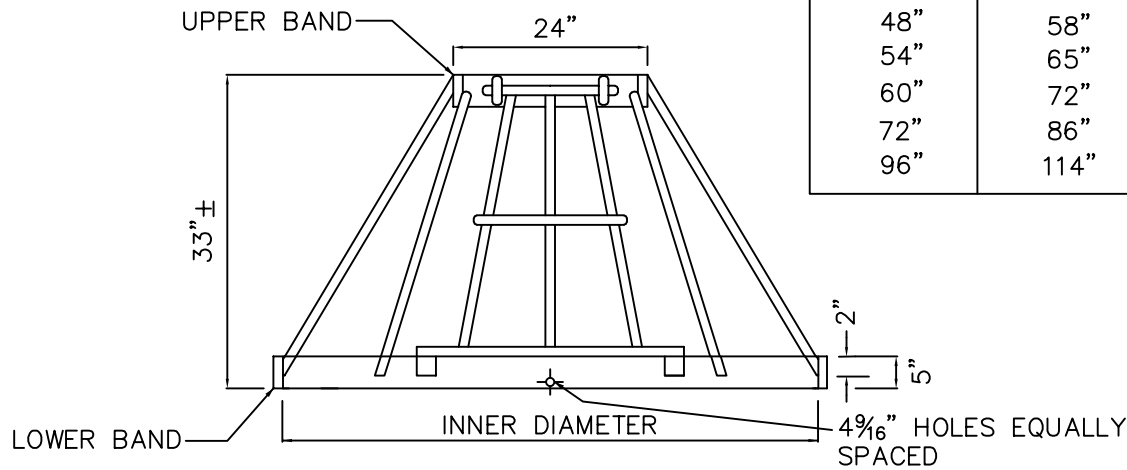
*IF NO YARD DRAIN IS REQUIRED, CLEANOUT SHALL BE USED AFTER WYE WHERE ROOF AND FOOTINGS ARE CONNECTED (MAXIMUM 5' AWAY FROM FOUNDATION).

NTS

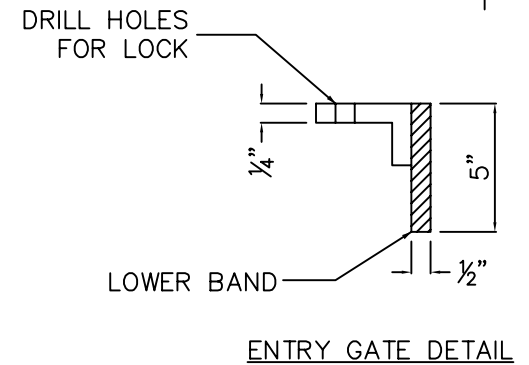


PLAN

CB	INNER DIAM.
48"	58"
54"	65"
60"	72"
72"	86"
96"	114"



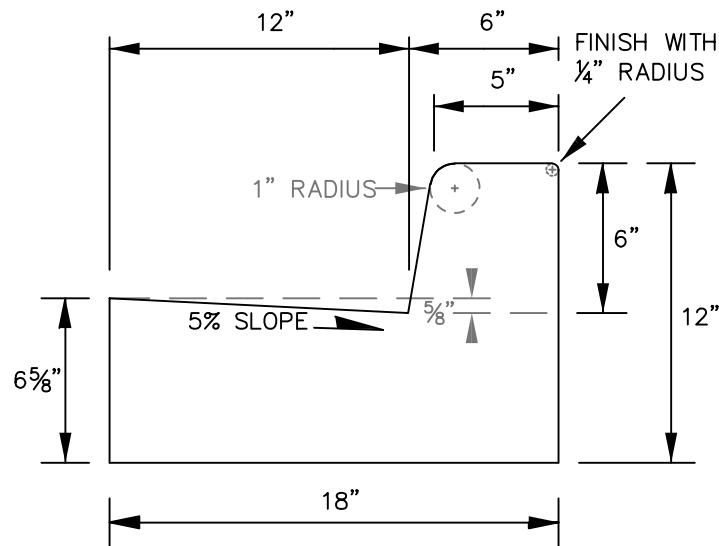
ELEVATION



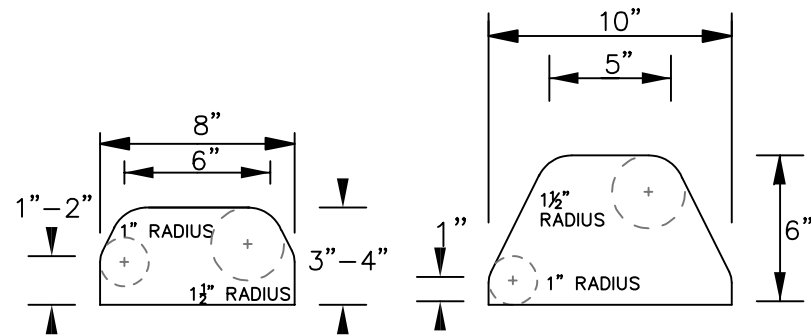
NOTES:

1. ALL STEEL PLATES, BARS AND BANDS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36.
2. DEBRIS CAGE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 (AASHTO M111).

NTS



TYPICAL VERTICAL CURB AND GUTTER



EXTRUDED CURB

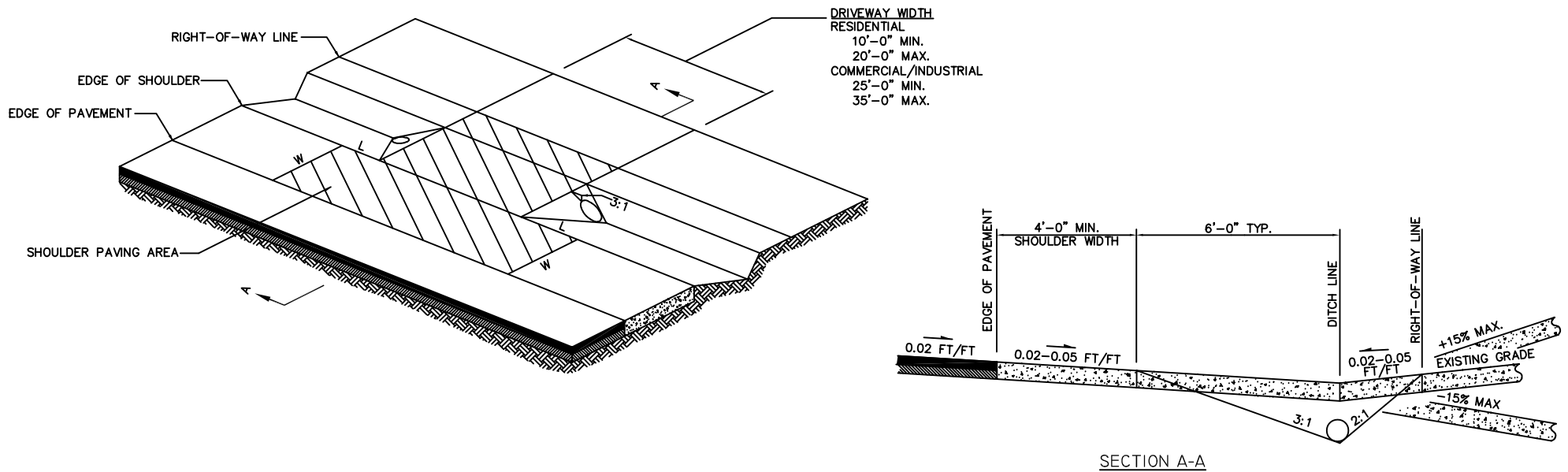
NOTES:

1. EXTRUDED CURB SHALL BE ATTACHED WITH STEEL TIE BARS OR A TACK COAT. ALL ATTACHMENT METHODS MUST CONFORM TO WSDOT/APWA STANDARDS.
2. SEE SECTION 3-3.03 – SIDEWALKS, CURB AND GUTTER OF THE DESIGN STANDARDS FOR MORE DETAILS.
3. DEFAULT TO VERTICAL CURB IF PLANS DO NOT SPECIFY.

RELATED STANDARD DETAILS:

- ROAD REQUIREMENTS: 3-010-001, 3-010-002
- DRIVEWAY REQUIREMENTS: 3-030-003 TO 3-030-006
- EXPANSION JOINT REQUIREMENTS: DETAIL 3-03-005B.

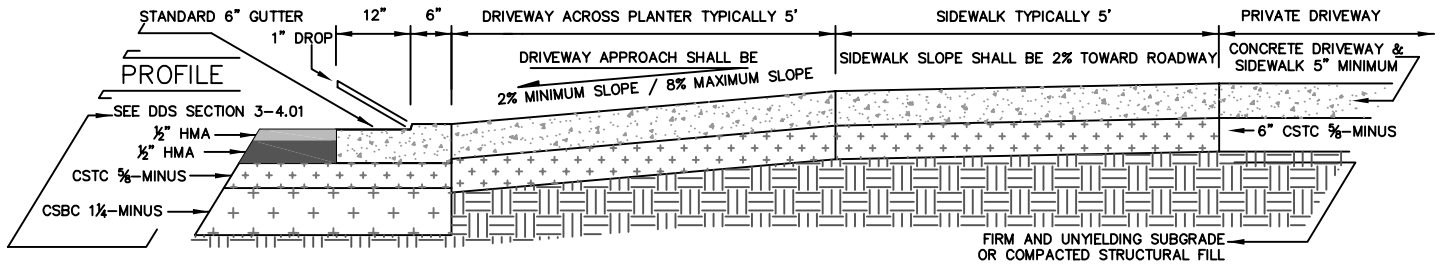
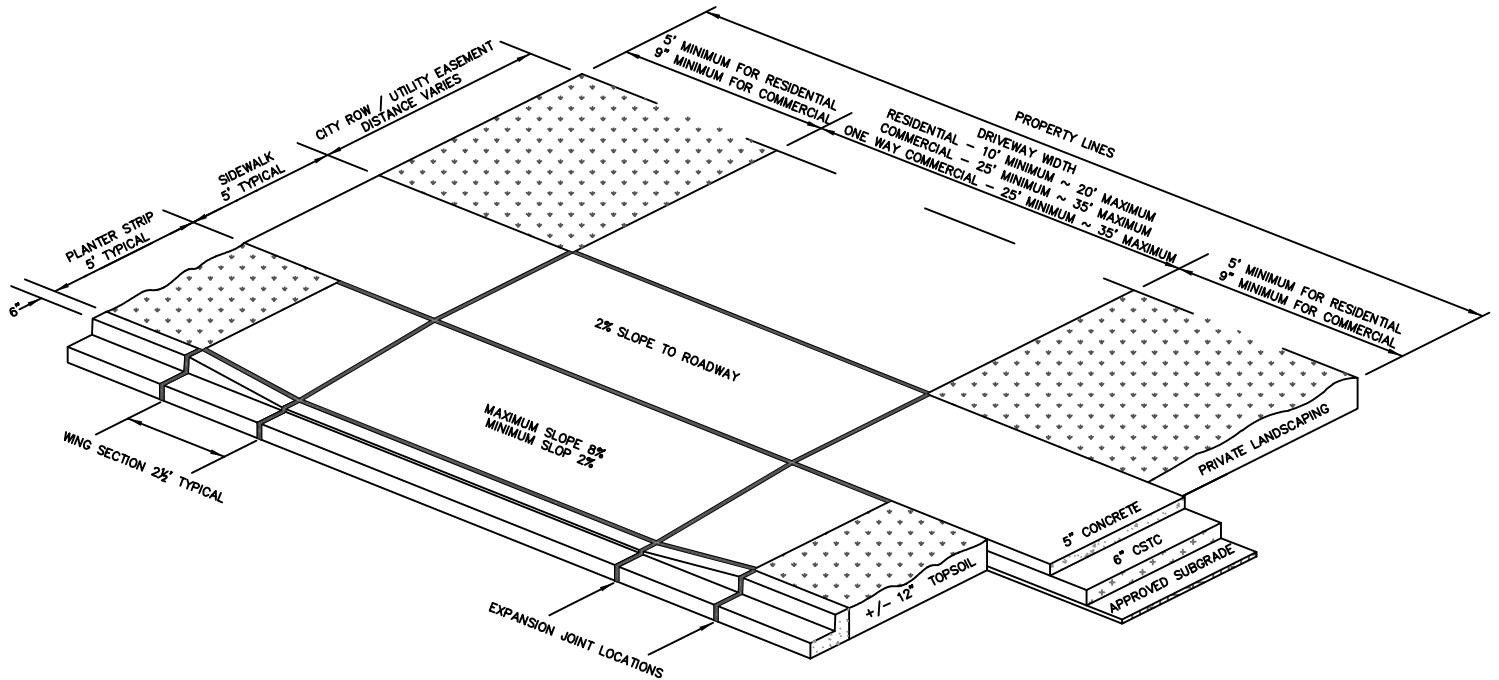
NTS



NOTES:

1. COMMERCIAL/INDUSTRIAL DRIVEWAYS WIDER THAN 35' MAY BE APPROVED BY THE ENGINEER CONSIDERING BOTH TRAFFIC SAFETY AND THE ACTIVITY BEING SERVED.
2. ALL COMMERCIAL/INDUSTRIAL DRIVEWAYS SHALL HAVE AN EXPANSION JOINT LOCATED MID-WIDTH. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.04 EXPANSION AND DUMMY JOINTS.
3. DRIVEWAY CULVERT PIPE SHALL BE:
 - 3.1. SIZED TO CONVEY COMPUTED STORMWATER RUNOFF.
 - 3.2. MINIMUM 12" DIAMETER.
 - 3.3. EQUAL TO OR LARGER THAN EXISTING PIPES WITHIN 500' UPSTREAM.
4. EXPOSED PIPE ENDS SHALL BE BEVELED TO MATCH THE SLOPE FACE AND PROJECT NO MORE THAN 2" BEYOND SLOPED SURFACE. PROJECTING HEADWALLS ARE NOT ACCEPTABLE
5. CONCRETE PIPE SHALL HAVE A MINIMUM COVER OF 6" TO FINISH GRADE. ALL OTHER TYPES OF PIPE SHALL HAVE MINIMUM COVER SPECIFIED BY MANUFACTURER.
6. PIPE SHALL BE INSTALLED IN A STRAIGHT UNIFORM ALIGNMENT AT A MINIMUM 0.5% SLOPE (0.5 FT PER 100 FT), WITH THE DOWNSTREAM END LOWER THAN THE UPSTREAM END.
7. DRIVEWAY SLOPE SHALL MATCH TO BACK EDGE OF SHOULDER, BUT SHOULDER SLOPE AND EDGE OF SHOULDER SHALL NOT BE ALTERED AS A RESULT OF DRIVEWAY CONSTRUCTION.
8. PAVED DRIVEWAYS SHALL BE PAVED THROUGH THE RIGHT-OF-WAY WITH ASPHALT CONCRETE (½" HMA), NOT CONCRETE
9. GRAVEL DRIVEWAYS SHALL BE PAVED BETWEEN THE EDGE OF PAVEMENT AND ROW WITH ASPHALT CONCRETE (½" HMA), WITH DIMENSIONS L=W.
10. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.01 DRIVEWAYS AND 3-4.01 RESIDENTIAL STREETS, PEDESTRIAN AND BIKE FOR ADDITIONAL INFORMATION.

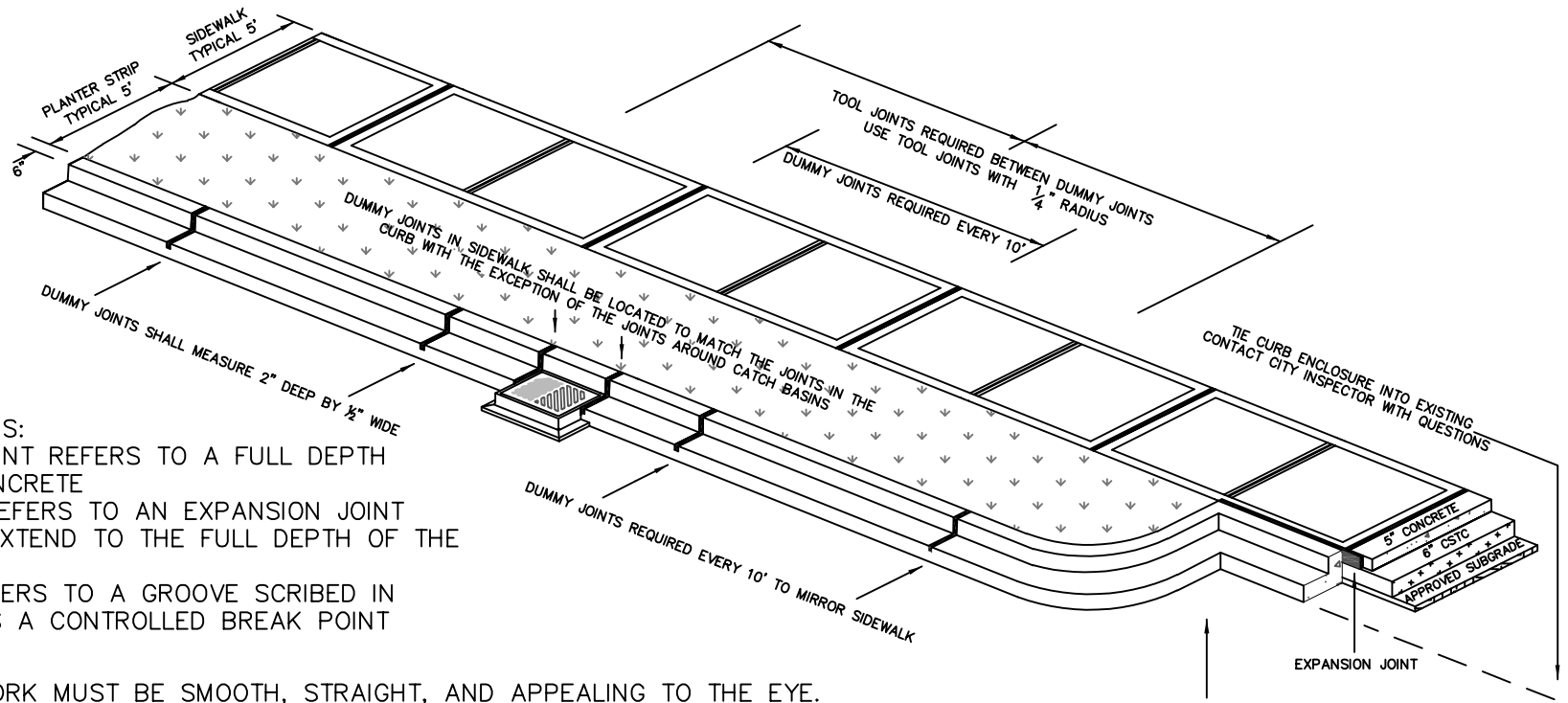
NTS



NOTES:

1. COMMERCIAL DRIVEWAYS WIDER THAN 35' MAY BE APPROVED BY THE CITY ENGINEER CONSIDERING TRAFFIC SAFETY AND THE NEEDS OF THE ACTIVITY SERVED.
2. ALL COMMERCIAL DRIVEWAYS SHALL HAVE AN EXPANSION JOINT LOCATED MID-WIDTH – SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.04 EXPANSION AND DUMMY JOINTS.
3. FOR SPECIFIC SURFACING REQUIREMENTS. SEE TABLE IN DEVELOPMENT DESIGN STANDARDS SECTION 3-4.01 RESIDENTIAL STREETS, PEDESTRIAN AND BIKE.
4. FOR GENERAL DRIVEWAY REQUIREMENTS SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.01 DRIVEWAYS.
5. USE THIS DETAIL ON STANDARD DRIVEWAYS WHERE PRIVATE DRIVE IS AT OR ABOVE TOP BACK OF SIDEWALK.
6. 4000 PSI CONCRETE REQUIRED AT DRIVE ENTRANCES IN ACCORDANCE WITH DEVELOPMENT DESIGN STANDARDS SECTION 3-3.03 SIDEWALKS, CURB AND GUTTER.

NTS



CLARIFICATION OF TERMS:

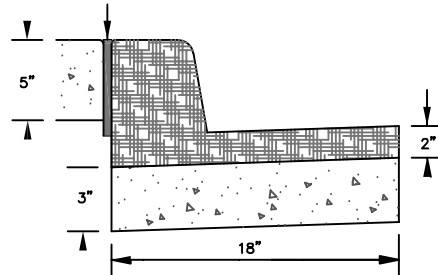
1. AN EXPANSION JOINT REFERS TO A FULL DEPTH FELT JOINT IN CONCRETE
2. A DUMMY JOINT REFERS TO AN EXPANSION JOINT THAT DOES NOT EXTEND TO THE FULL DEPTH OF THE CONCRETE
3. A TOOL JOINT REFERS TO A GROOVE SCRIBED IN WET CONCRETE AS A CONTROLLED BREAK POINT

NOTES:

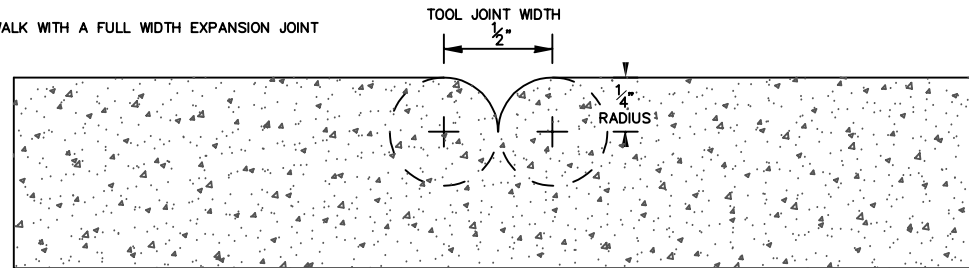
1. ALL CONCRETE WORK MUST BE SMOOTH, STRAIGHT, AND APPEALING TO THE EYE.
2. ANY CONCRETE REPLACEMENT SHALL BE PERFORMED FROM JOINT TO JOINT – NO PATCHING PERMITTED.
3. FOR GENERAL DRIVEWAY REQUIREMENTS SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.01 DRIVEWAYS.
4. FOR ASPHALT SURFACING REQUIREMENTS SEE TABLE IN DEVELOPMENT DESIGN STANDARDS SECTION 3-4.01 RESIDENTIAL STREET, PEDESTRIAN AND BIKE.
5. DO NOT ADD A TOOL JOINT IF PANEL IS LESS THAN 8' BETWEEN DUMMY JOINTS.

ENCLOSE PLANTER STRIP WITH CURB AND GUTTER ANYTIME IT TERMINATES PLANTER STRIP ENCLOSURE RADIUS SHALL BE HALF OF THE PLANTER STRIP WIDTH UNLESS OTHERWISE SPECIFIED ON PLANS. THIS PANEL TO BE REMOVED TO TIE IN FOR FUTURE CONSTRUCTION.

WHEN NO PLANTERSTRIP IS USED, SEPARATE THE CURB AND SIDEWALK WITH A FULL WIDTH EXPANSION JOINT

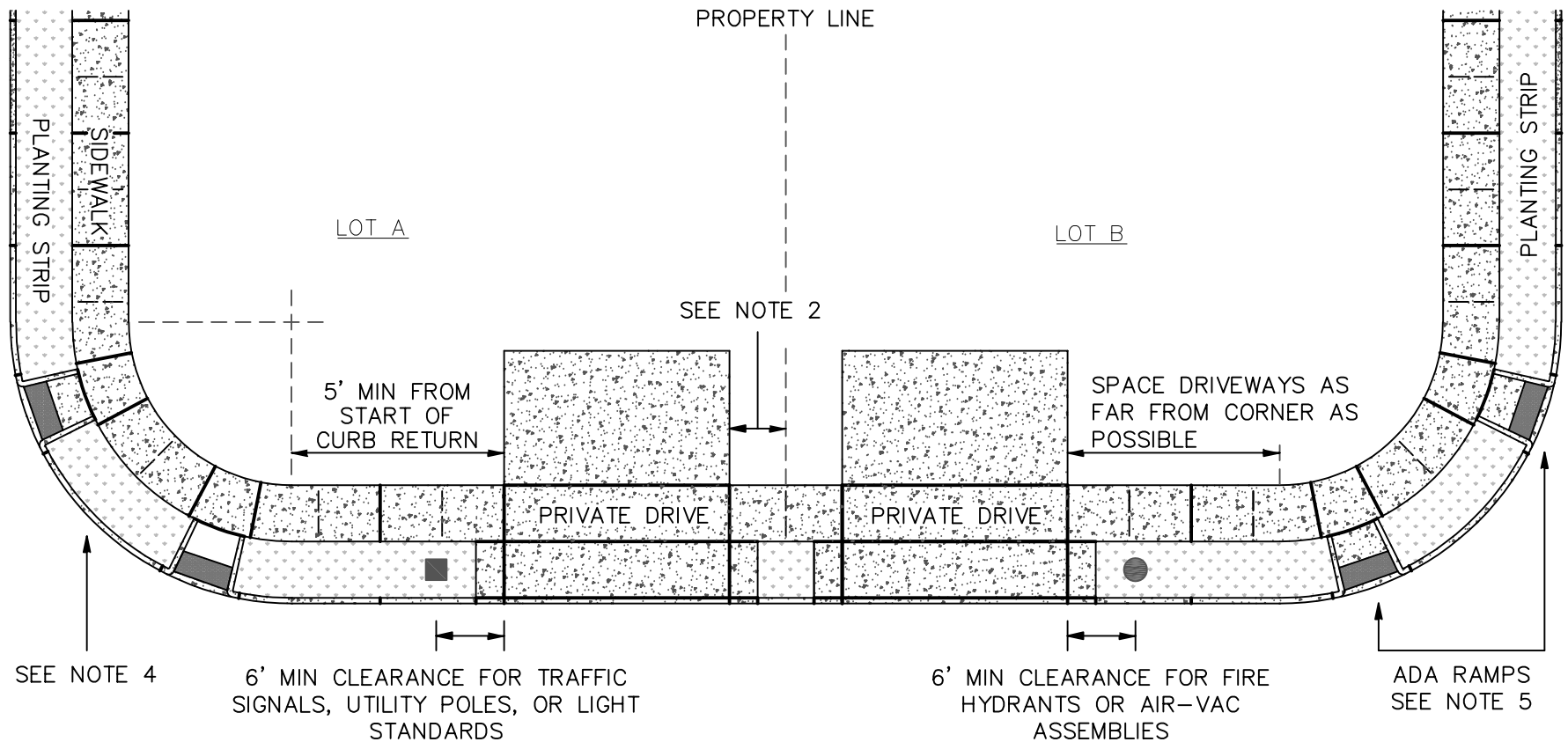


FELT DUMMY JOINT



TOOL JOINT INFORMATION

NTS



NOTES:

1. THIS DRAWING SHALL APPLY TO ALL APPLICATIONS WITH OR WITHOUT PLANTER STRIP AS A TEMPLATE OF WHERE TO PLACE DRIVEWAYS ON LOTS.
2. MINIMUM DISTANCE FROM DRIVEWAY TO PROPERTY LINE SHALL BE 5' RESIDENTIAL OR 9' COMMERCIAL.
3. ALL COMMERCIAL/INDUSTRIAL DRIVEWAYS MUST BE APPROVED BY THE CITY ENGINEER CONSIDERING BOTH TRAFFIC SAFETY AND THE ACTIVITY BEING SERVED. FOR COMPLETE INFORMATION ON DRIVEWAY DESIGN.
4. CURB RETURN RADIUS BASED ON PROJECTED SPEED OF ROADWAY. FOR MORE INFORMATION REFER TO THE DEVELOPMENT DESIGN STANDARDS CHAPTER 3 – ROAD DESIGN STANDARDS.
5. FOR ADA RAMP INFORMATION AND REQUIREMENTS, REFERENCE STANDARD DRAWINGS 3-040-002, 3-040-003, 3-040-004, AND 3-040-005.
6. FOR CURB & GUTTERS, SIDEWALKS, AND JOINTS, REFERENCE STANDARD DRAWING 3-030-005B.
7. FOR LAYOUT OF UTILITY POLES AND STRUCTURES IN RELATION TO THE ROADWAY, REFER TO CHAPTER 3 AS MENTIONED ABOVE, OR STANDARD DRAWING 3-050-001.

NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**

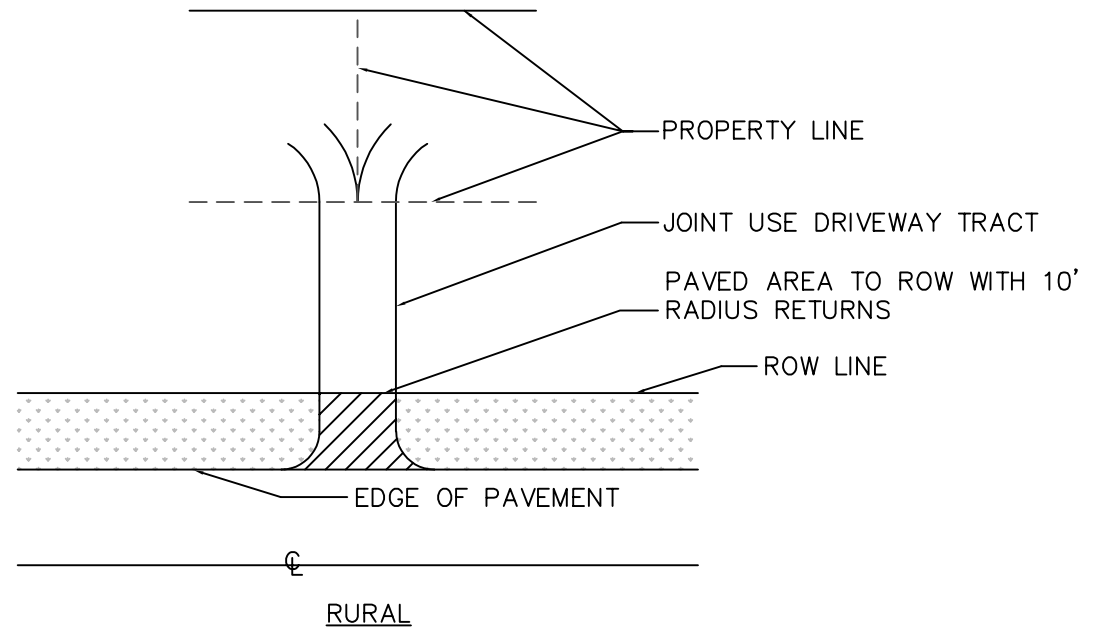
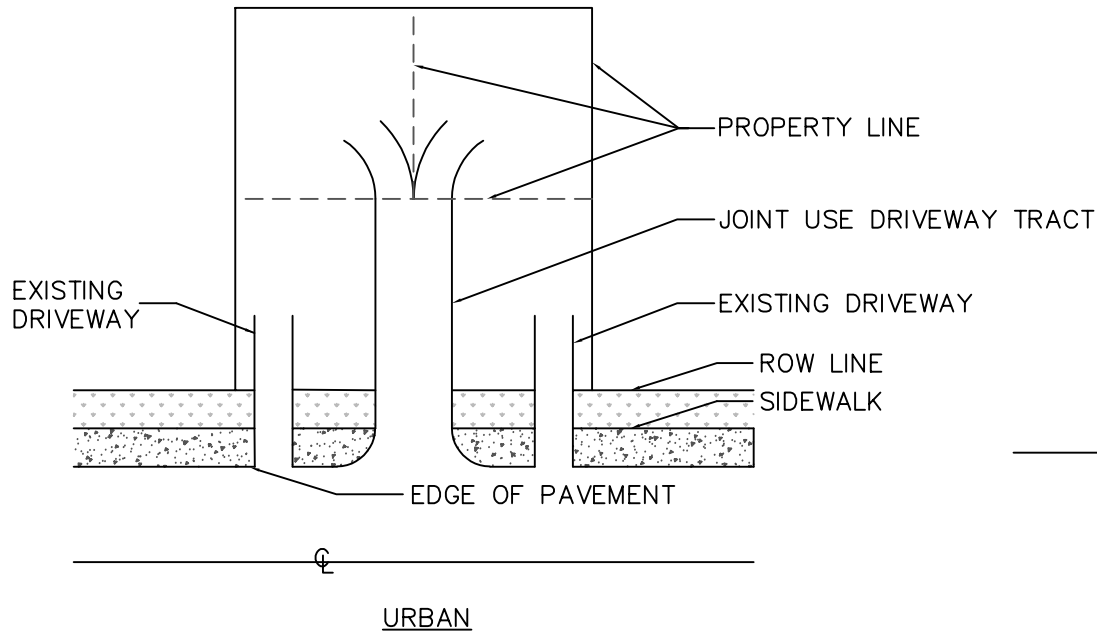


TITLE

Driveway Placement & Setbacks

DRAWING NUMBER

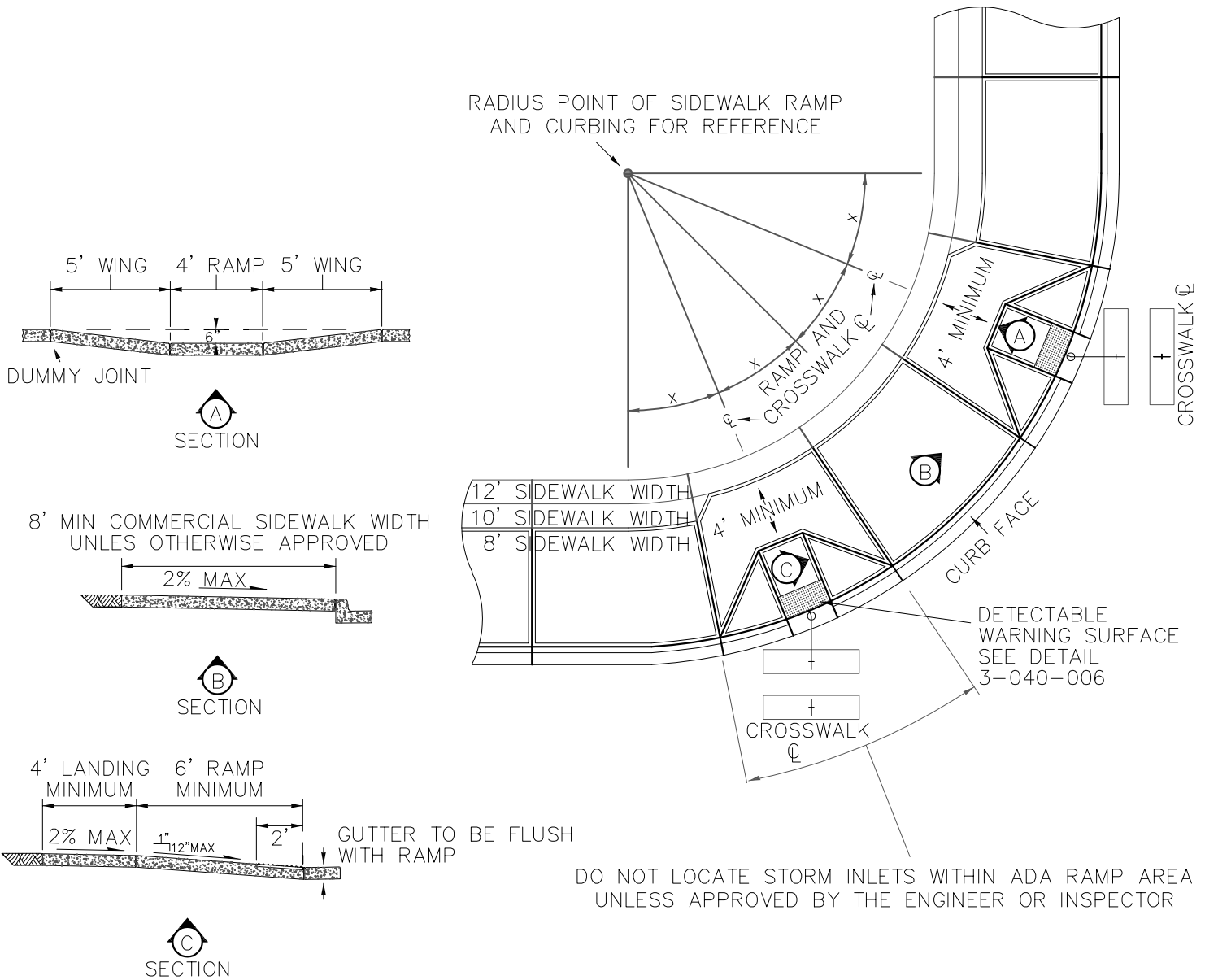
3-030-006



NOTE:

1. FOR TRACT WIDTH AND PAVING REQUIREMENTS SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.01 DRIVEWAYS.

NTS



NOTES:

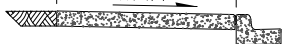
1. ALL COMMERCIAL RAMPS SHALL BE CONSTRUCTED TWO PER RADIUS. SET THE RAMP CENTERLINE AT THE $\frac{1}{4}$ RADIUS CENTERLINE AS SHOWN ABOVE.
2. THERE ARE THREE INSTANCES WHERE A SINGLE CURB RAMP LOCATED IN THE CENTER OF THE RADIUS WILL BE ALLOWED, THEY ARE (1) ON RESIDENTIAL STREETS, (2) WHERE STREET GRADE EXCEEDS 4%, OR (3) WHERE UTILITIES ARE IN CONFLICT.
3. CURB RAMPS SHALL BE SQUARE TO CURB AND ROADWAY UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER AND/OR INSPECTOR.
4. ACCOMMODATION MUST BE MADE SO PROPOSED CURB RAMPS HAVE A RECEIVING RAMP ON THE OPPOSITE SIDE OF THE STREET IN ACCORDANCE WITH RCW 35.68.075.
5. RAMP SLOPES SHALL NOT EXCEED A RATIO OF 12 HORIZONTAL TO 1 VERTICAL (12H:1V).
6. RAMP & APPROACHES SHALL BE CLEAR OF OBSTACLES INCLUDING HYDRANTS, POLES, AND DRAINS
7. SEE PLANS FOR SPECIFIED CURB AND GUTTER STYLE (VERTICAL, ROLLED, OR INTEGRAL POUR).
8. FELT DUMMY JOINTS SHALL BE 2" BY $\frac{1}{2}$ " THICK.
9. FOR WIDTHS OF SIDEWALK REFER TO DEVELOPMENT DESIGN STANDARDS SECTION 3-3.03 SIDEWALKS, CURB AND GUTTER.
10. FOR CURB AND SIDEWALK JOINTS REFER TO STANDARD DRAWING 3-030-005B.

NTS

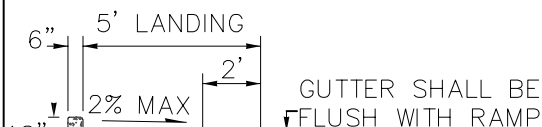
RADIUS POINT OF SIDEWALK RAMP AND CURBING FOR REFERENCE

5' MIN SIDEWALK WIDTH UNLESS OTHERWISE APPROVED

2% MAX

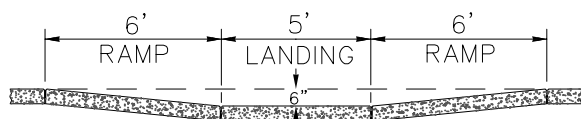


A SECTION

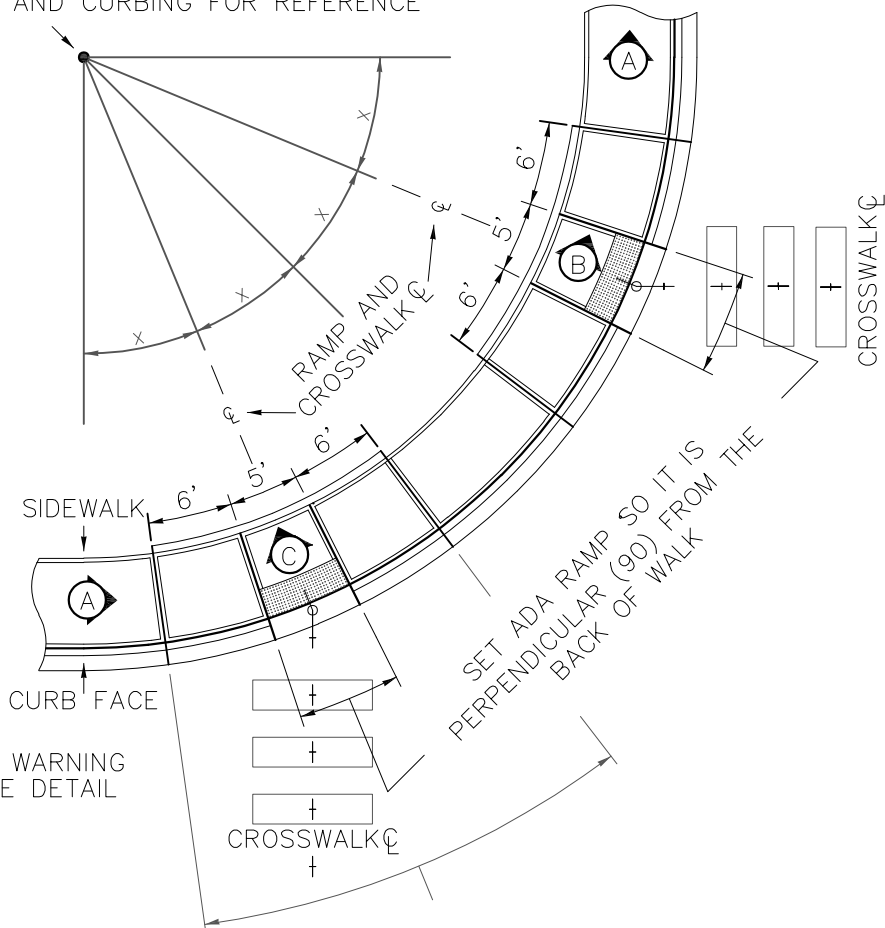


B SECTION

GUTTER SHALL BE FLUSH WITH RAMP
DETECTABLE WARNING SURFACE SEE DETAIL 3-040-006



C SECTION



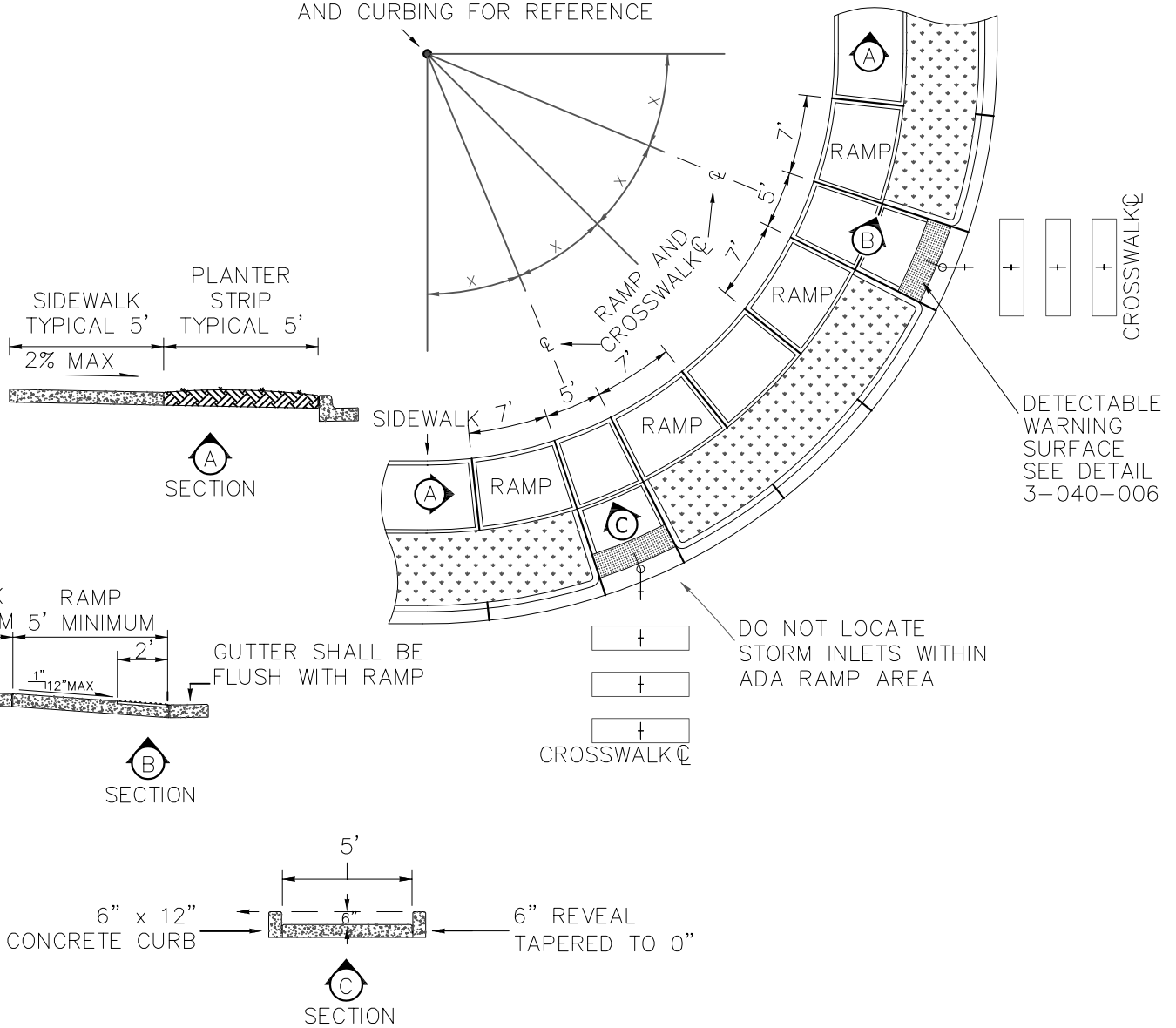
DO NOT LOCATE STORM INLETS WITHIN ADA RAMP AREA UNLESS APPROVED BY THE ENGINEER OR INSPECTOR

NOTES:

1. ALL COMMERCIAL RAMPS SHALL BE CONSTRUCTED TWO PER RADIUS. SET THE RAMP CENTERLINE AT THE 1/4" RADIUS CENTERLINE AS SHOWN ABOVE.
2. THERE ARE THREE INSTANCES WHERE A SINGLE CURB RAMP LOCATED IN THE CENTER OF THE RADIUS WILL BE ALLOWED. THEY ARE (1) ON RESIDENTIAL STREETS, (2) WHERE STREET GRADE EXCEEDS 4%, OR (3) WHERE UTILITIES ARE IN CONFLICT.
3. CURB RAMPS SHALL BE SQUARE TO CURB AND ROADWAY UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER AND/OR INSPECTOR.
4. ACCOMMODATION MUST BE MADE SO PROPOSED CURB RAMPS HAVE A RECEIVING RAMP ON THE OPPOSITE SIDE OF THE STREET IN ACCORDANCE WITH RCW 35.68.075.
5. RAMP SLOPES SHALL NOT EXCEED A RATIO OF 12 HORIZONTAL TO 1 VERTICAL (12H:1V).
6. RAMP & APPROACHES SHALL BE CLEAR OF OBSTACLES INCLUDING HYDRANTS, POLES, AND DRAINS.
7. SEE PLANS FOR SPECIFIED CURB AND GUTTER STYLE (VERTICAL, ROLLED, OR INTEGRAL POUR).
8. FELT DUMMY JOINTS SHALL BE 2" BY 1/2" THICK.
9. FOR WIDTHS OF SIDEWALK REFER TO DEVELOPMENT DESIGN STANDARDS SECTION 3-3.03 SIDEWALKS, CURB AND GETTER.
10. FOR CURB AND SIDEWALK JOINTS REFER TO STANDARD DRAWING 3-030-005B.

NTS

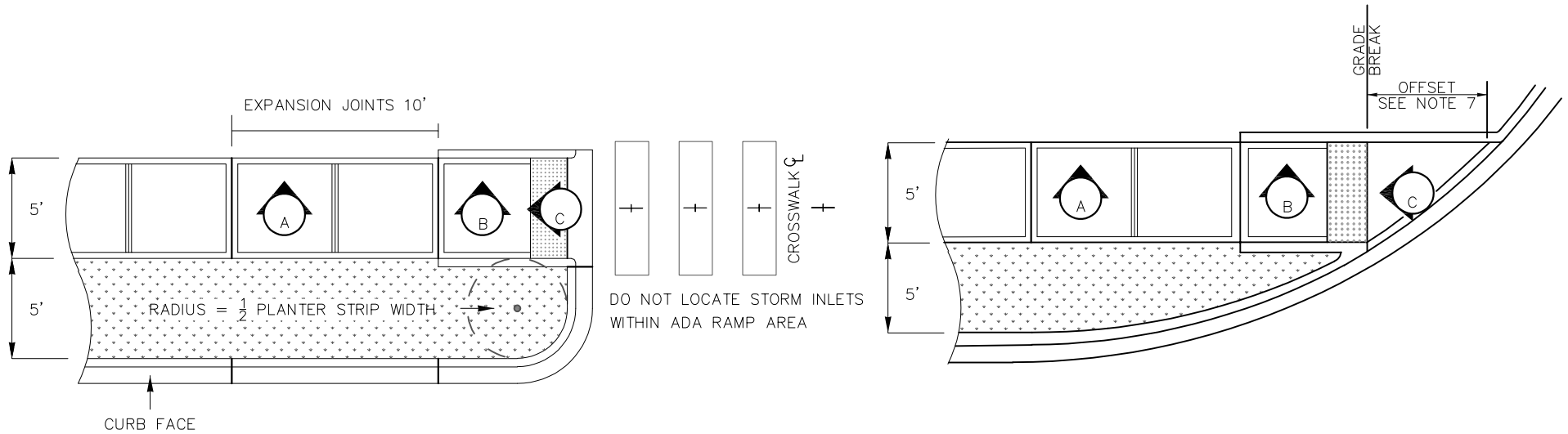
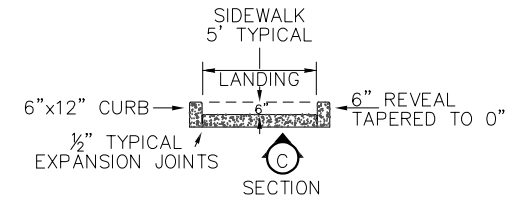
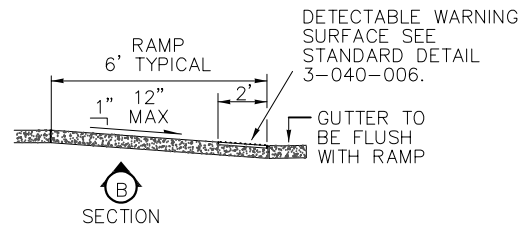
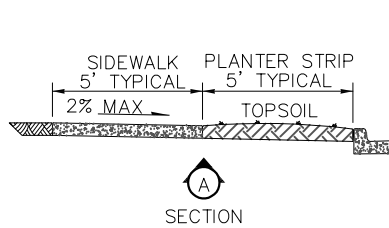
RADIUS POINT OF SIDEWALK RAMP AND CURBING FOR REFERENCE



NOTES:

1. ALL COMMERCIAL RAMPS SHALL BE CONSTRUCTED TWO PER RADIUS. SET THE RAMP CENTERLINE AT THE $\frac{1}{4}$ RADIUS CENTERLINE AS SHOWN ABOVE.
2. THERE ARE THREE INSTANCES WHERE A SINGLE CURB RAMP LOCATED IN THE CENTER OF THE RADIUS WILL BE ALLOWED, THEY ARE (1) ON RESIDENTIAL STREETS, (2) WHERE STREET GRADE EXCEEDS 4%, OR (3) WHERE UTILITIES ARE IN CONFLICT.
3. CURB RAMPS SHALL BE SQUARE TO CURB AND ROADWAY UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER AND/OR INSPECTOR.
4. ACCOMMODATION MUST BE MADE SO PROPOSED CURB RAMPS HAVE A RECEIVING RAMP ON THE OPPOSITE SIDE OF THE STREET IN ACCORDANCE WITH RCW 35.68.075.
5. RAMP SLOPES SHALL NOT EXCEED A RATIO OF 12 HORIZONTAL TO 1 VERTICAL (12H:1V).
6. RAMP & APPROACHES SHALL BE CLEAR OF OBSTACLES INCLUDING HYDRANTS, POLES, AND DRAINS
7. SEE PLANS FOR SPECIFIED CURB AND GUTTER STYLE (VERTICAL, ROLLED, OR INTEGRAL POUR).
8. FELT DUMMY JOINTS SHALL BE 2" BY $\frac{1}{2}$ " THICK.
9. FOR CURB AND SIDEWALK JOINTS REFER TO STANDARD DRAWING 3-030-005B.

NTS

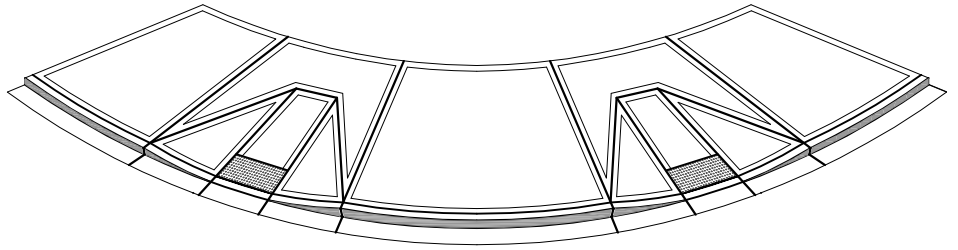


NOTES:

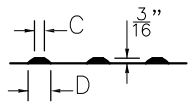
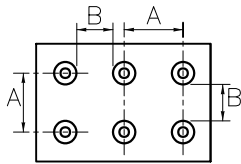
1. RAMP SLOPES SHALL NOT EXCEED 12 HORIZONTAL TO 1 VERTICAL (12H:1V).
2. RAMP & APPROACHES SHALL BE CLEAR OF OBSTACLES INCLUDING HYDRANTS, POLES, & DRAINS.
3. SEE PLANS FOR SPECIFIED CURB AND GUTTER STYLE (VERTICAL, ROLLED, OR INTEGRAL POUR).
4. FELT EXPANSION JOINTS SHALL BE 2" BY 1/2" THICK.
5. CURB RAMP SHALL BE SQUARE TO CURB AND ROADWAY.
6. ACCOMMODATION MUST BE MADE SO PROPOSED CURB RAMP(S) HAVE A CORRESPONDING RAMP(S) ON THE OPPOSITE SIDE OF THE STREET IN ACCORDANCE WITH RCW 35.68.075.
7. WHEN THE GRADE BREAK BETWEEN THE CURB RAMP AND THE LANDING IS LESS THAN OR EQUAL TO 5' FROM THE BACK OF CURB AT ALL POINTS, PLACE THE DETECTABLE WARNING SURFACE ON THE BOTTOM OF THE CURB RAMP DIRECTLY ABOVE THE GRADE BREAK.
8. FOR AREAS WITHOUT PLANTER STRIP, OMIT ASSOCIATED CURBING AS SHOWN IN THE ISOMETRIC VIEW(S) ABOVE.
9. FOR WIDTHS OF SIDEWALK REFER TO DEVELOPMENT DESIGN STANDARDS SECTION 3-3.03 SIDEWALKS, CURB AND GUTTER.
10. FOR CURB AND SIDEWALK JOINTS REFER TO STANDARD DRAWING 3-030-005B.

NTS

ISOMETRIC VIEW CORRESPONDING TO
STANDARD DETAIL 3-040-002

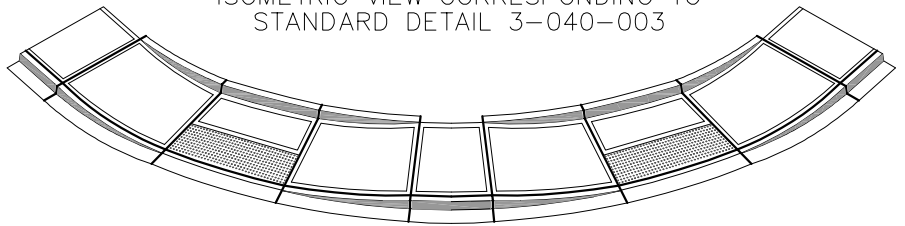


DETECTABLE WARNING DETAIL

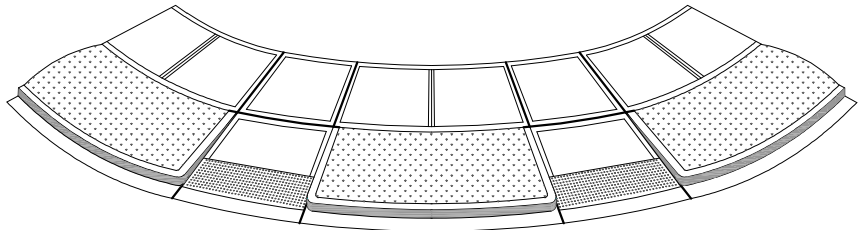


	MIN	MAX
A	1 5/8"	2 3/8"
B	5/8"	1 1/2"
C	7/16"	3/4"
D	7/8"	1 7/16"

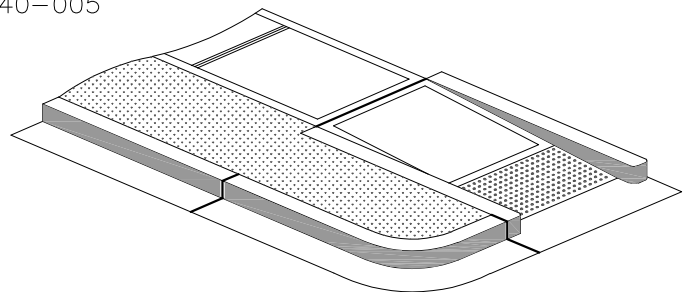
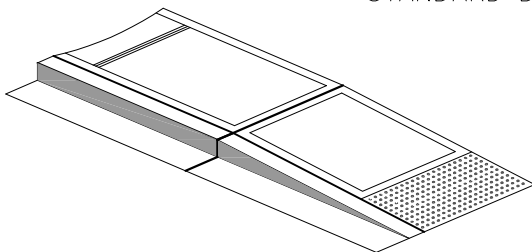
ISOMETRIC VIEW CORRESPONDING TO
STANDARD DETAIL 3-040-003



ISOMETRIC VIEW CORRESPONDING TO
STANDARD DETAIL 3-004-004



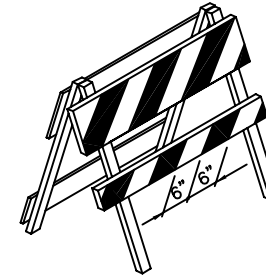
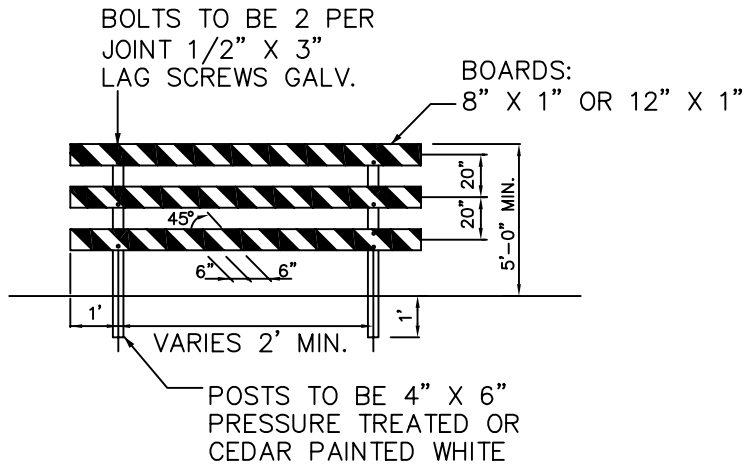
ISOMETRIC VIEW CORRESPONDING TO
STANDARD DETAIL 3-040-005



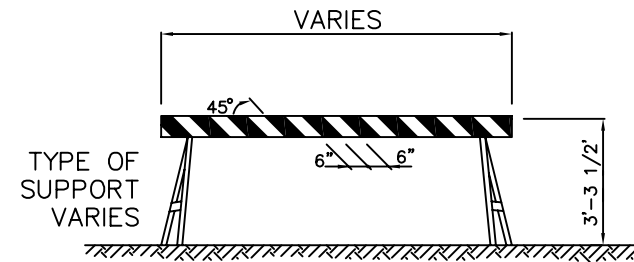
NOTES:

1. DETECTABLE WARNING DEVICE MUST BE OF AN APPROVED COLOR AND REMOVABLE UNLESS OTHERWISE APPROVED.
2. DETECTABLE WARNING MATERIAL SHALL BE INCLUDED IN MATERIAL SUBMITTALS AND APPROVED BY CITY PRIOR TO INSTALLATION.
3. TRUNCATED DOME INSTALLATION HEIGHT MUST BE WITHIN 1/4" OF CONCRETE GRADE.

NTS



*FOR DIMENSIONS NOT SHOWN, SEE TABLE.



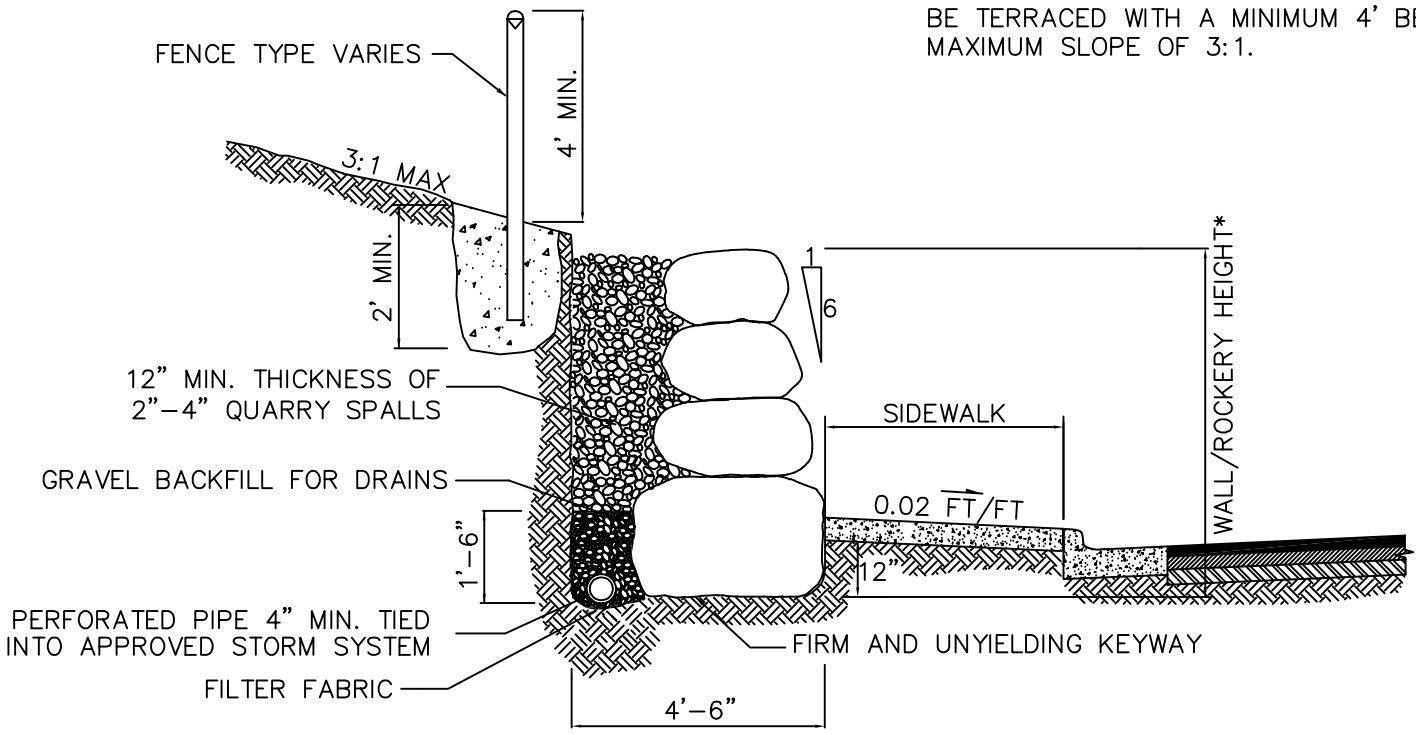
BARRICADE NOTES:			
TYPE	I	II	III
WIDTH OF RAIL	8" MIN. 12" MAX.	8" MIN. 12" MAX.	8" MIN. 12" MAX.
LENGTH OF RAIL	2' MIN.	2' MIN.	4' MIN.
HEIGHT	3' MIN.	3' MIN.	5' MIN.
TYPE OF FRAME	DEMOUNTABLE OR HEAVY "A"	LIGHT "A" FRAME	POST OR SKIDS
FLEXIBILITY	ESSENTIALLY MOVABLE	PORTABLE	ESSENTIALLY PERMANENT

NOTES:

1. IF TEMPORARY, ORANGE AND WHITE.
2. IF PERMANENT, RED & WHITE IF PERMANENT.
3. REFLECTIVE SLANT DOWNWARD IN DIRECTION TRAFFIC WILL PASS.
4. SLANT BOTH DIRECTIONS FROM MIDDLE IF TRAFFIC PASSES BOTH ENDS.
5. WIDTH 6". UNLESS RAILS ARE LESS THAN 3' LONG, THAN 4".
6. SLANT DOWNWARD TO MIDDLE AT END OF CLOSED ROAD.
7. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.07 ROADWAY BARRICADES AND MUTCD SECTION 6F.68 TYPE 1, 2 OR 3 BARRICADES FOR ADDITIONAL INFORMATION.

NTS

*WALLS GREATER THAN 4' IN HEIGHT MUST BE DESIGNED BY A LICENSED ENGINEER AND APPROVED BY THE CITY ENGINEER. ANY AREA THAT REQUIRES A WALL SYSTEM OVER THE 4' MUST BE TERRACED WITH A MINIMUM 4' BETWEEN WALLS AND MAXIMUM SLOPE OF 3:1.

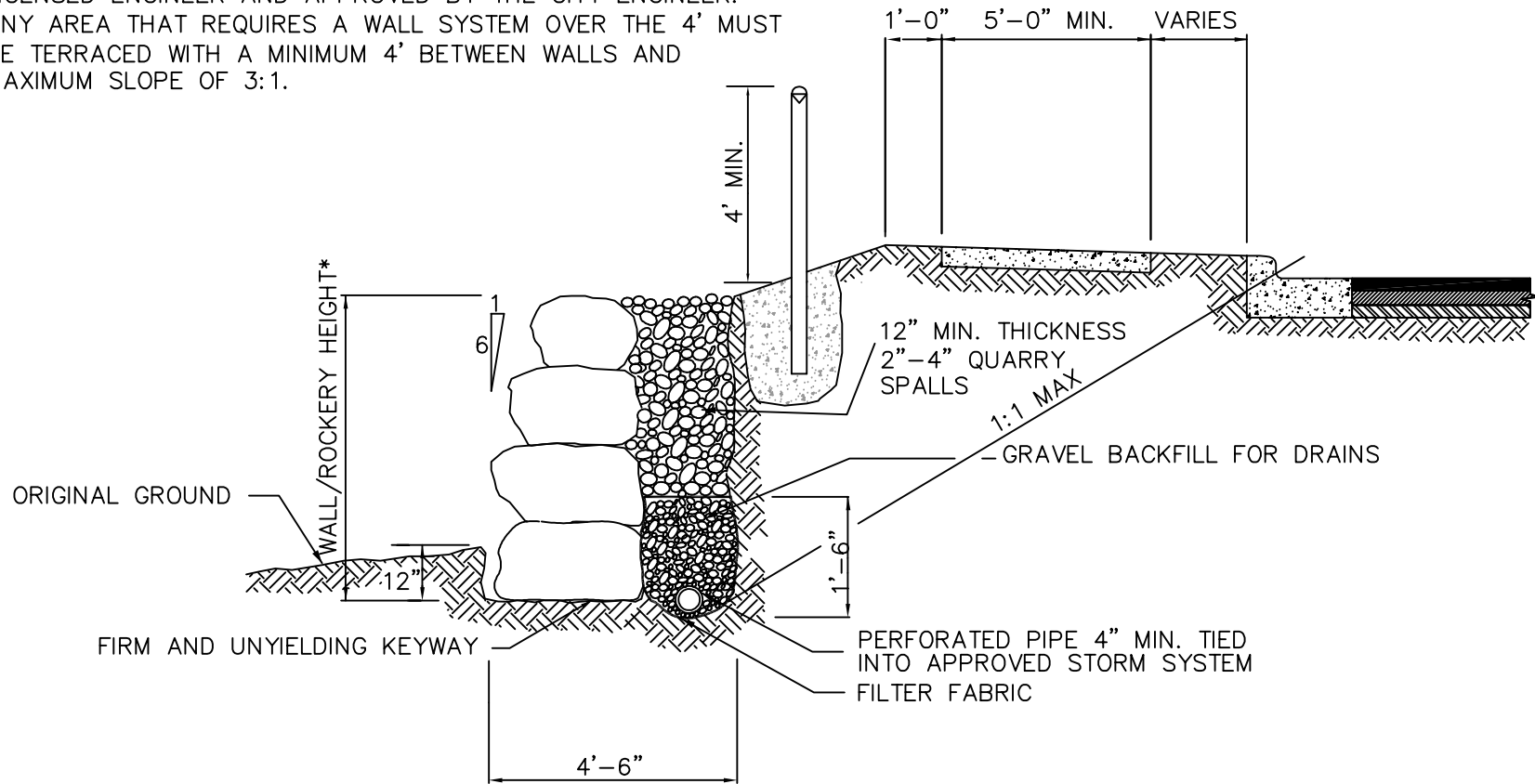


- NOTES:
1. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.01 ROCK FACINGS FOR ADDITIONAL INFORMATION.
 2. IF ROCKERY OR RETAINING WALL IS BEHIND ROLLED CURB OR ON A RURAL SECTION, FACE OF ROCKERY OR RETAINING WALL MUST BE A MIN. OF 10' FROM TRAVELED WAY
 3. FENCE TYPE SHALL BE AT THE DISCRETION OF THE CITY ENGINEER BUT AT A MINIMUM THE FENCE SHALL BE BLACK VINYL COATED CHAIN LINK FENCE. REQUIRED WHEN ROCKERY HEIGHT IS THREE FEET OR GREATER.

NTS

<p>DEVELOPMENT DESIGN STANDARD DETAILS</p> <p>August 2021</p>	<p>City of Duvall</p>	<p>TITLE</p> <p>Rock Facing Cut Section</p> <p>DRAWING NUMBER</p> <p>3-050-004</p>
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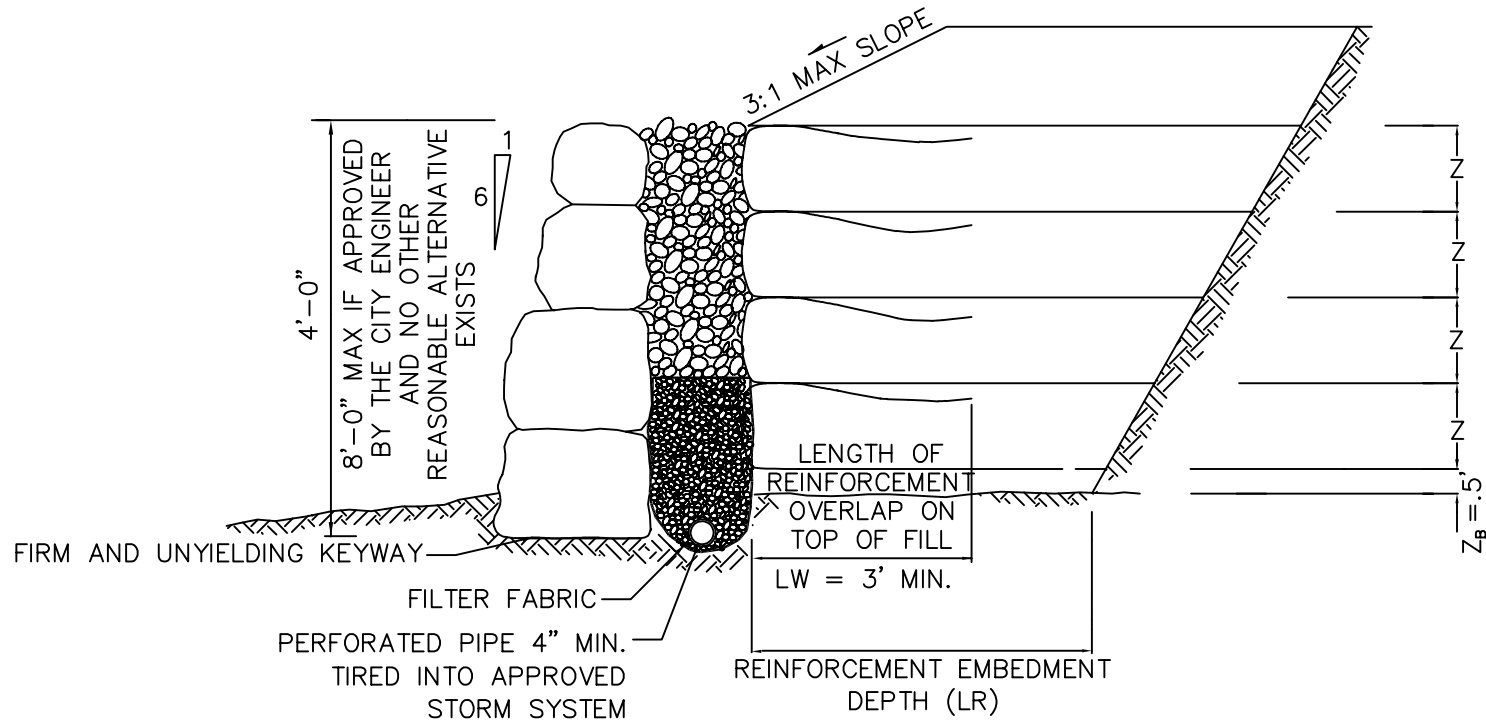
*WALLS GREATER THAN 4' IN HEIGHT MUST BE DESIGNED BY A LICENSED ENGINEER AND APPROVED BY THE CITY ENGINEER. ANY AREA THAT REQUIRES A WALL SYSTEM OVER THE 4' MUST BE TERRACED WITH A MINIMUM 4' BETWEEN WALLS AND MAXIMUM SLOPE OF 3:1.



NOTES:

1. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.01 ROCK FACINGS.
2. SLOPES AT TOP OF WALL SHALL NOT EXCEED 3:1.
3. NO STRUCTURES ABOVE 1:1 MAX ENVELOPE, FLATTER SLOPE MAY BE REQUIRED IN LESS STABLE SOIL.
4. IF ROCKERY OR RETAINING WALL IS BEHIND ROLLED CURB OR ON A RURAL SECTION, FACE OF ROCKERY OR RETAINING WALL MUST BE A MIN. OF 10' FROM TRAVELED WAY.
5. FOR ROCKERY HEIGHTS EXCEEDING 4', SEE STANDARD DETAIL 3-050-007 ROCK FACING, FILL SECTION REINFORCEMENT.
6. FENCE TYPE SHALL BE AT THE DISCRETION OF THE CITY ENGINEER BUT AT A MINIMUM THE FENCE SHALL BE BLACK VINYL COATED CHAIN LINK FENCE, REQUIRED WHEN ROCKERY HEIGHT IS THREE FEET OR GREATER.

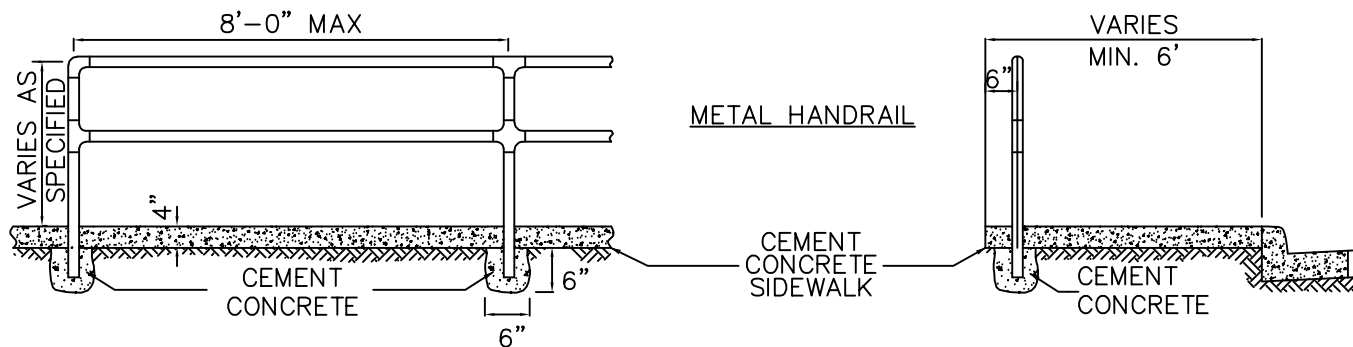
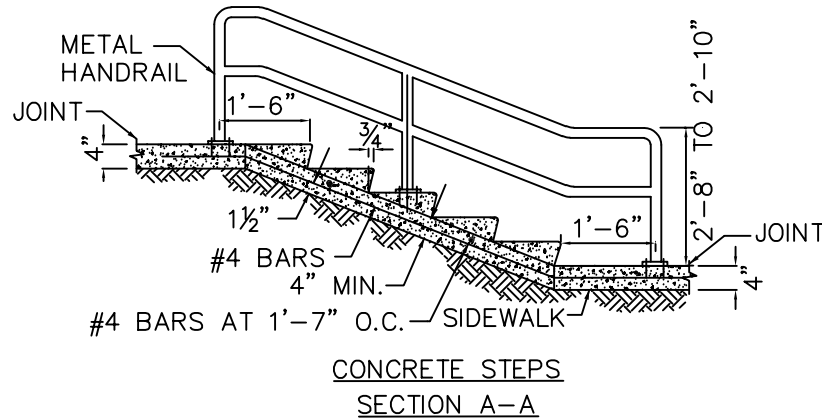
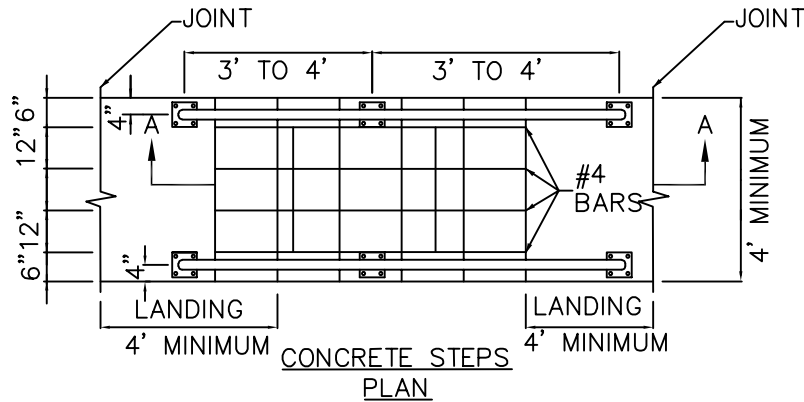
NTS



NOTES:

1. FOR ROCK FACING REQUIREMENTS, SEE DEVELOPMENT DESIGN STANDARDS SECTION 3.5.01 ROCK FACINGS AND STANDARD DETAILS 3-050-004 AND 3-050-005.
2. THE WALL FOUNDATION IS TO BE CLEARED OF ORGANIC MATTER AND DEBRIS AND THE UNDERLYING SOIL COMPACTED TO 95% OF THE MAX DRY DENSITY. THE EMBANKMENT MATERIAL IS TO BE GRAVEL BORROW MEETING WSDOT STANDARDS. THE BACKFILL IS TO BE PLACED IN THIN LIFTS, NOT EXCEEDING SIX INCHES IN THICKNESS AND COMPACTED TO 95% OF THE MAX DRY DENSITY.
3. GEOSYNTHETIC FABRIC OR GEOGRID REQUIREMENTS INCLUDING TYPE, VERTICAL SPACING (Z), AND EMBEDMENT (LR), WILL BE DETERMINED ON AN INDIVIDUAL BASIS BY A PROFESSIONAL ENGINEER.
4. Z_B IS THE HEIGHT OF THE FIRST LAYER OF REINFORCEMENT ABOVE COMPACTED SUBGRADE ELEVATION.
5. EMBANKMENTS BEHIND ROCKERIES EXCEEDING 4' IN HEIGHT SHALL BE REINFORCED WITH GEOSYNTHETIC FABRIC OR GEOGRID.
6. TYPICALLY WALLS SHALL BE NO TALLER THAN 4' AND IF WALLS ARE REQUIRED TO BE GREATER THAN 4' IN HEIGHT THEY SHALL BE TERRACED, WALLS GREATER THAN 4', NOT TERRACED SHALL ONLY BE ALLOWED IF NO OTHER REASONABLE ALTERNATIVE EXISTS AND UPON APPROVED ENGINEER DESIGN.

NTS



NOTES FOR CONCRETE STEPS:

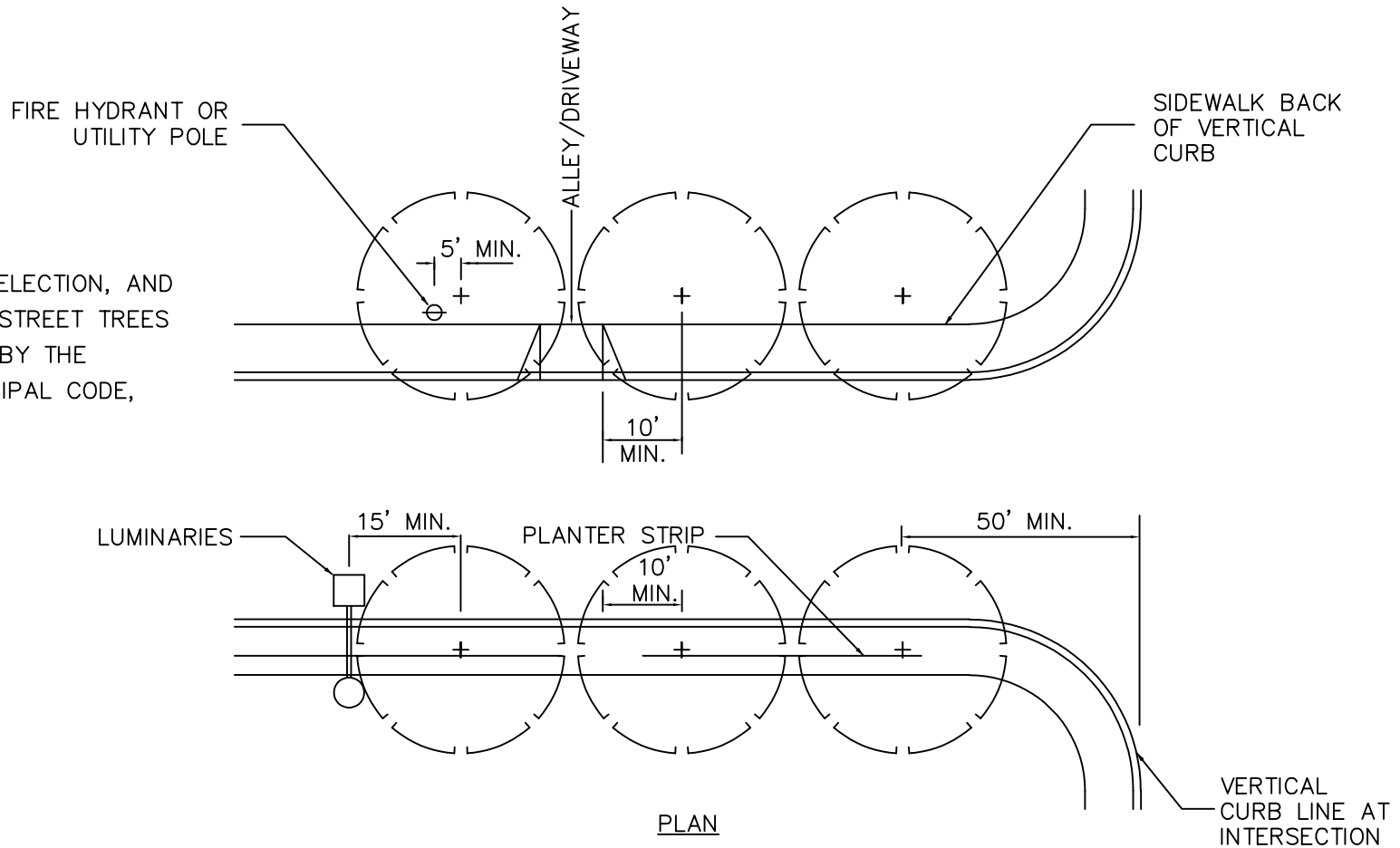
1. CONCRETE: CEMENT CONCRETE CLASS 3000.
2. ALL STEPS: SAME DIMENSIONS, WITHIN 3/8" MAX DIFFERENCE.
3. RISERS: 7 1/2" MAX, 5" MIN.
4. TREADS: 12" MAX, 11" MIN., WITH TRANSVERSE 0.01 FT/FT SLOPE.
5. METAL HANDRAIL REQUIRED FOR 3 STEPS OR MORE, SEE NOTES BELOW.
6. REINFORCING BARS SHALL MEET THE REQUIREMENTS OF ASTM A-615, GRADE 60 AND ARE REQUIRED FOR 4 STEPS OR MORE.
7. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.06 CONCRETE STEPS, METAL HANDRAIL AND HANDICAPPED ACCESS RAMPS.
8. MAX VERTICAL DISTANCE BETWEEN LANDINGS IS 12'

NOTES FOR HANDRAILS:

1. MATERIAL: GALVANIZED STEEL OR ALUMINUM.
2. 1 1/4" TO 2" OUTER DIAMETER ROUND OR OVAL PIPE
3. WELDED, WITH SMOOTH SURFACE AND JOINTS
4. POSTS SET IN MIN. 6" CONCRETE CLASS 3000
5. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.06 CONCRETE STEPS, METAL HANDRAIL AND HANDICAPPED ACCESS RAMPS.
6. RAILING MUST MEET ALL APPLICABLE BUILDING CODES.

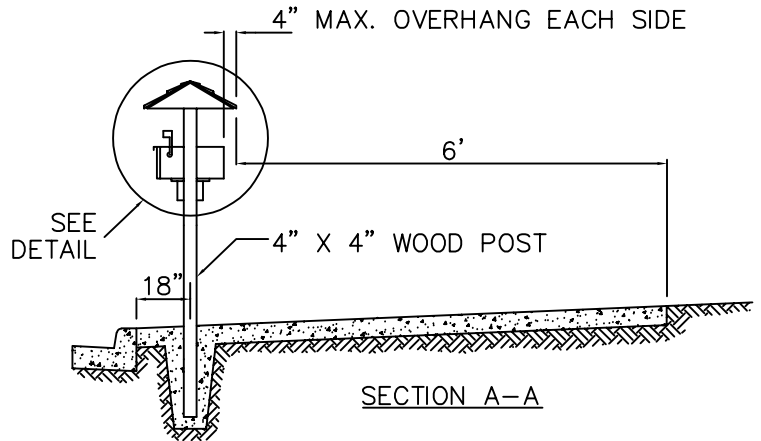
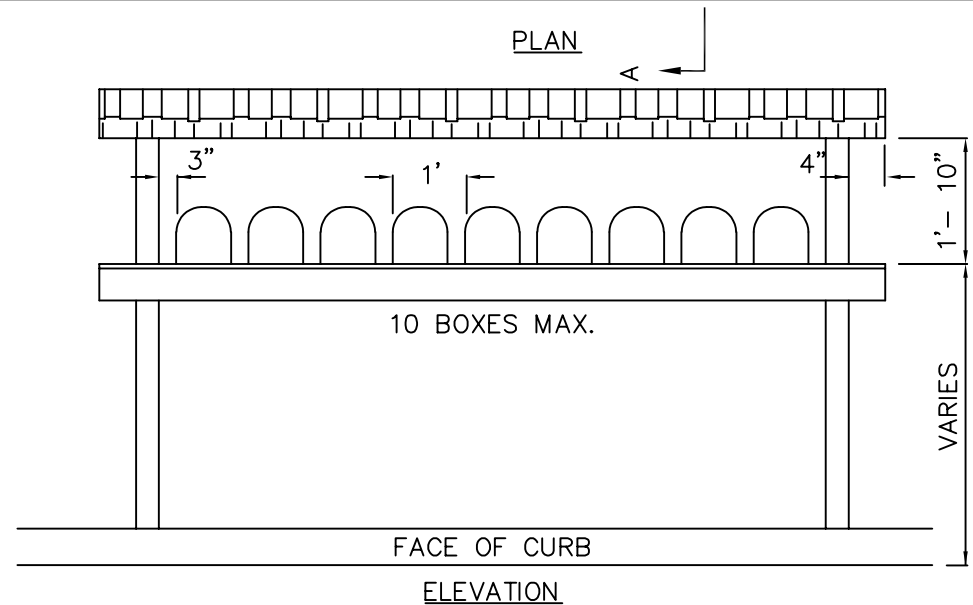
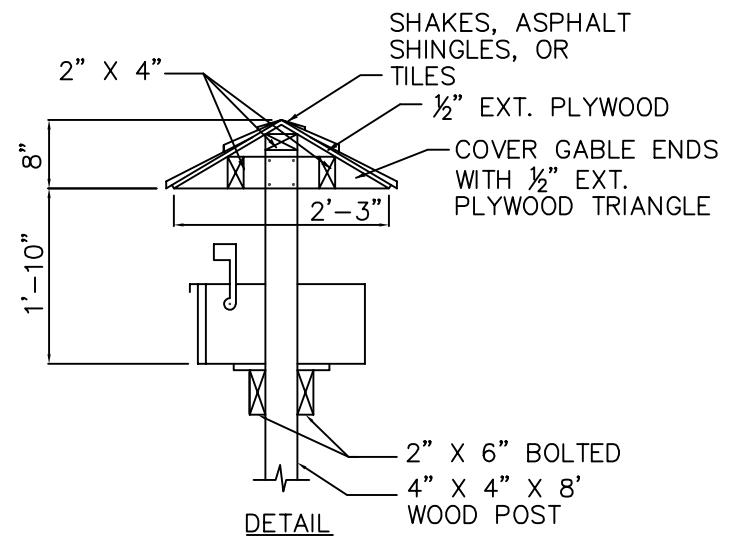
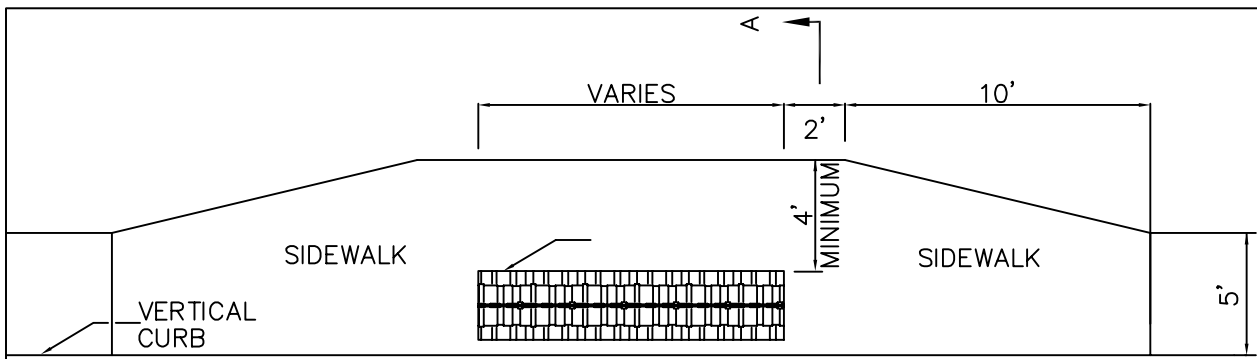
NTS

*PLACEMENT, SELECTION, AND LOCATION OF STREET TREES IS GOVERNED BY THE DUVALL MUNICIPAL CODE, CHAPTER 14



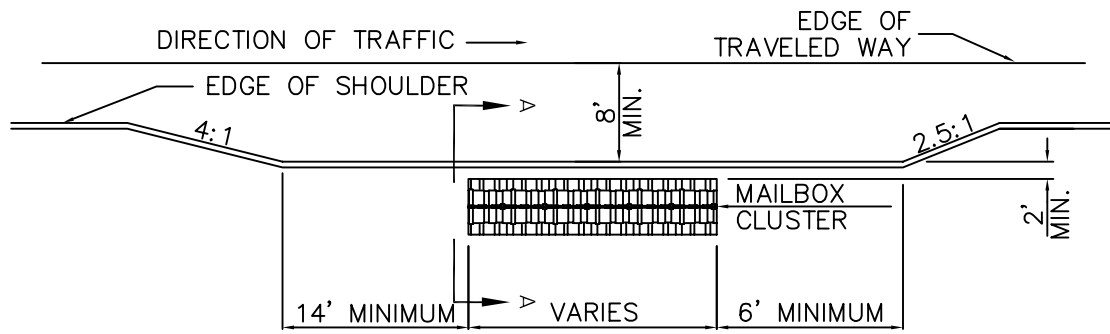
- NOTES:
1. TREES SHALL GENERALLY BE PLANTED BACK OF THE SIDEWALK. PLANTER STRIPS WILL BE APPROVED ONLY AS PART OF A LANDSCAPING PLAN IN WHICH PLANT MAINTENANCE, COMPATIBILITY WITH UTILITIES, AND TRAFFIC SAFETY ARE DULY CONSIDERED.
 2. IF PLANTER STRIPS ARE APPROVED:
 - 2.1. MINIMUM DISTANCE FROM CENTER OF ANY TREE TO NEAREST EDGE OF VERTICAL CURB SHALL BE 2 FEET.
 - 2.2. TREES SHALL BE STAKED IN A MANNER NOT TO OBSTRUCT SIDEWALK TRAFFIC.
 - 2.3. IN CASE OF TREE GRATES, MINIMUM CLEAR SIDEWALK WIDTH SHALL BE 5 FEET IN RESIDENTIAL OR 8 FEET IN BUSINESS DISTRICTS.
 3. ON BUS ROUTES, PLANS SHALL BE COORDINATED WITH METRO SERVICE PLANNING. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.03 STREET TREES AND LANDSCAPING FOR DETAILS.
 4. STANDARD ROOT DEFLECTORS (ROOT BARRIER) SHALL BE INSTALLED AROUND ALL TREE'S WITHIN THE PUBLIC ROW. ROOT DEFLECTORS SHALL BE RIGID HIGH IMPACT POLYPROPYLENE TREATED WITH UV INHIBITORS, MINIMUM 18" IN HEIGHT, WITH 1/2" RAISED VERTICAL RIBS ON CENTER, OR APPROVED EQUAL.
 5. SPACE BETWEEN BACK OF CURB AND SIDEWALK SHALL BE 2x ROOT BALL WIDTH.
 6. FOR TREE SPECIES NOT APPROVED FOR USE IN THE PUBLIC ROW SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.03 STREET TREES AND LANDSCAPING. CONTACT THE PLANNING DEPARTMENT FOR APPROVED LIST OF TREE SPECIES.

NTS

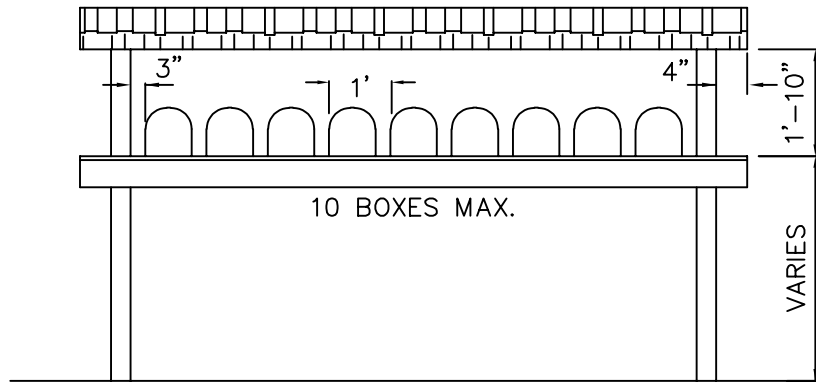


- NOTES:
1. THIS DETAIL IS APPLICABLE FOR THREE OR MORE MAILBOXES ON URBAN RESIDENTIAL ACCESS STREETS WHERE THE SPEED LIMIT IS 25 MPH.
 2. MAILBOX HEIGHT VARIES ACCORDING TO THE TYPE OF DELIVERY VEHICLE. THESE HEIGHTS SHALL BE DETERMINED BY THE POSTMASTER DURING PLAN REVIEW.
 3. MAILBOXES MUST BE APPROVED BY THE POSTMASTER WITH A UNIFORM BOX STYLE AND METHOD OF ADDRESS IDENTIFICATION.
 4. LOCATION OF MAILBOXES SUBJECT TO APPROVAL OF PUBLIC WORKS.
 5. WOOD POSTS SHALL BE PRESSURE TREATED.
 6. FOR MAILBOX CLUSTER LOCATION IN SHOULDER SEE STANDARD DETAIL 3-050-011.
 7. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.04 MAILBOXES FOR DETAILS.
 8. SEE STANDARD DETAIL 3-050-012 FOR MAILBOX COLLECTION UNIT (MBCU).

NTS



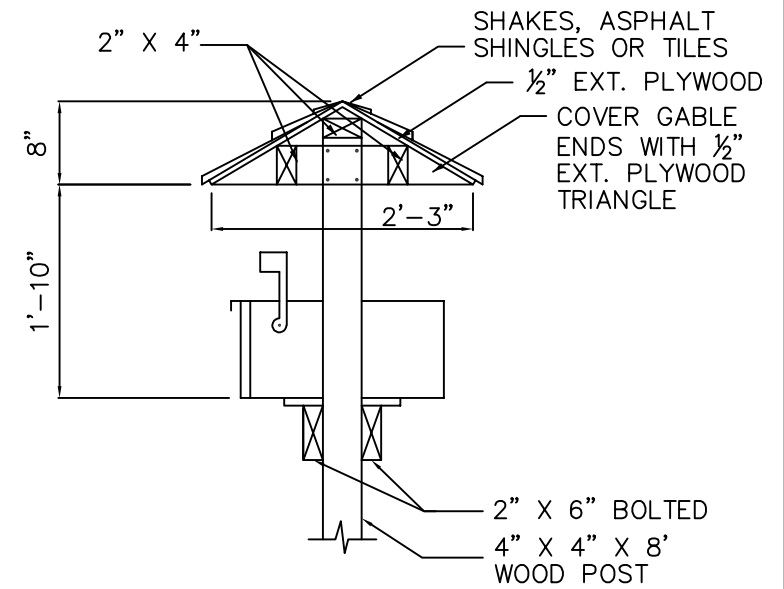
PLAN



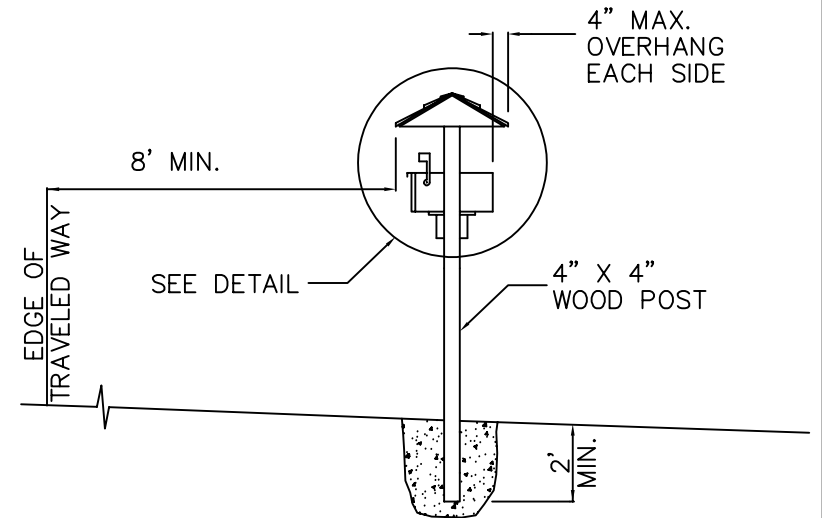
ELEVATION

NOTES:

1. MAILBOX INSTALLATION ON PROJECTS FUNDED BY FEDERAL GRANTS SHALL BE CONSTRUCTION IN ACCORDANCE WITH WSDOT STANDARD PLANS SECTION H FOR MAILBOX SUPPORT.
2. REVIEWING AGENCY MAY APPROVE INSTALLATIONS OF MAILBOXES WITHOUT TURNOUT IF CONSTRUCTED IN CONFORMANCE WITH WSDOT STANDARD PLANS SECTION H FOR MAILBOX SUPPORT.
3. MAILBOX HEIGHT SHALL BE DETERMINED BY THE POSTMASTER DURING PLAN REVIEW.
4. LOCATION OF MAILBOXES SUBJECT TO APPROVAL OF PUBLIC WORKS.
5. WOOD POSTS SHALL BE PRESSURE TREATED.
6. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.04 MAILBOXES FOR DETAILS.
7. SEE STANDARD DETAIL 3-050-012 FOR MAILBOX COLLECTION UNIT (MBCU).

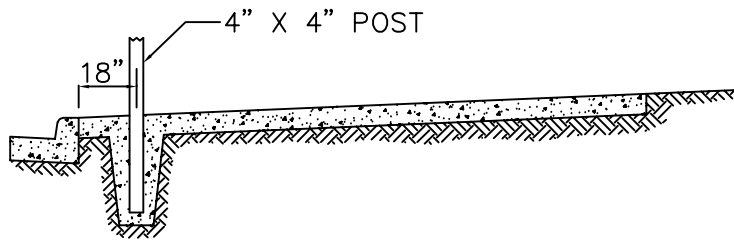


DETAIL

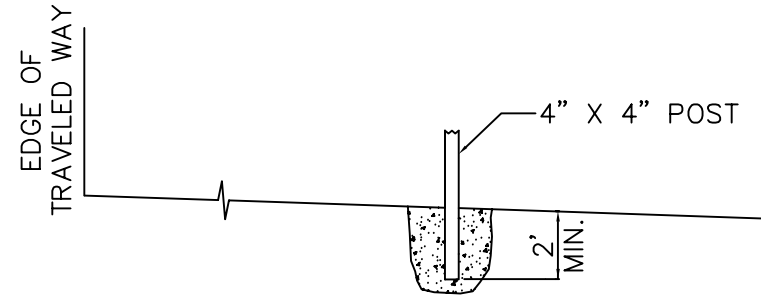


SECTION A-A

NTS



SINGLE MAILBOX
CURB TYPE LOCATION

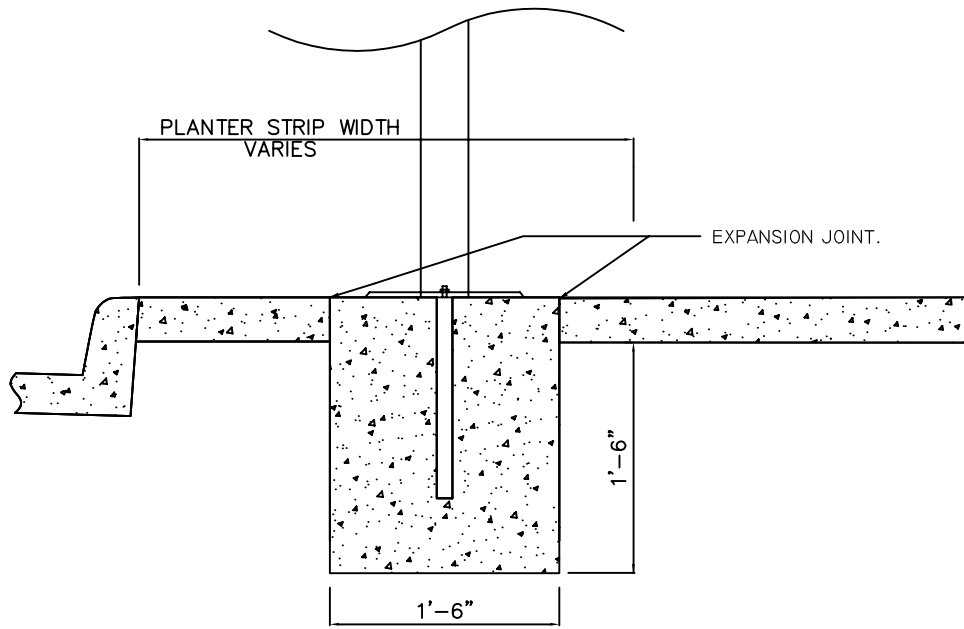


SINGLE MAILBOX
SHOULDER TYPE LOCATION

NOTES:

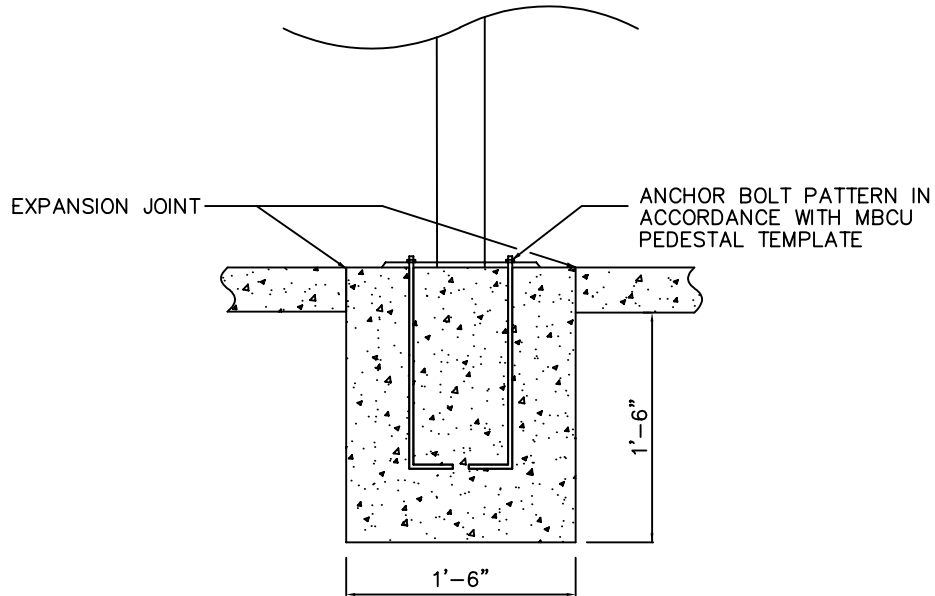
1. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.04 MAILBOXES.
2. INSTALLATION OF MAILBOX COLLECTION UNIT (MBCU), INCLUDING CONSTRUCTION OF BASE, SHALL BE DONE IN ACCORDANCE WITH U.S. POSTAL SERVICE STANDARD MAIL RECEPTACLES.
3. WOOD POSTS SHALL BE PRESSURE TREATED.
4. MINIMUM CLEARANCE FROM THE SIDE OF THE MAILBOX TO THE EDGE OF SIDEWALK SHOULD BE AT LEAST 4 FEET IN ACCORDANCE WITH DMC 14.34.041.

NTS



SIDE

*MOUNT ON
PEDESTAL PROVIDED
WITH MBCU



FRONT

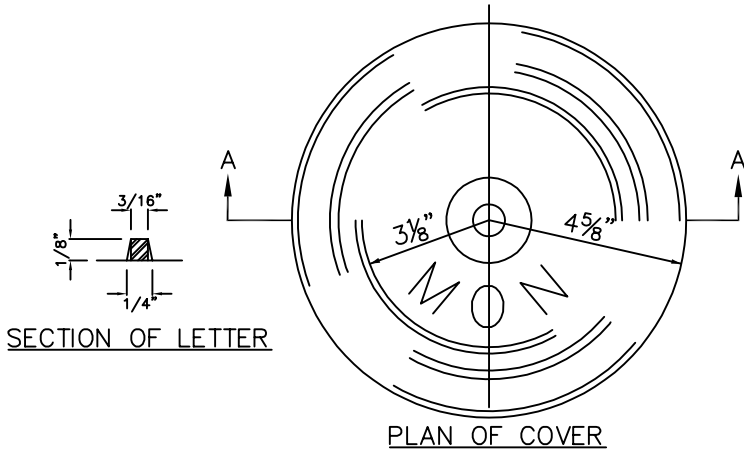
NOTES:

1. MINIMUM CLEAR WIDTH ESTABLISHED IN DMC 14.34.041 PEDESTRIAN FACILITIES.
2. SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-5.04 MAILBOXES FOR DETAILS.
3. INSTALLATION OF MAILBOX COLLECTION UNIT (MBCU), INCLUDING CONSTRUCTION OF BASE, SHALL BE DONE IN ACCORDANCE WITH U.S. POSTAL SERVICE STANDARD MAIL RECEPTACLES.
4. FOR JOINT REQUIREMENTS SEE DEVELOPMENT DESIGN STANDARDS SECTION 3-3.04 EXPANSION AND DUMMY JOINTS.

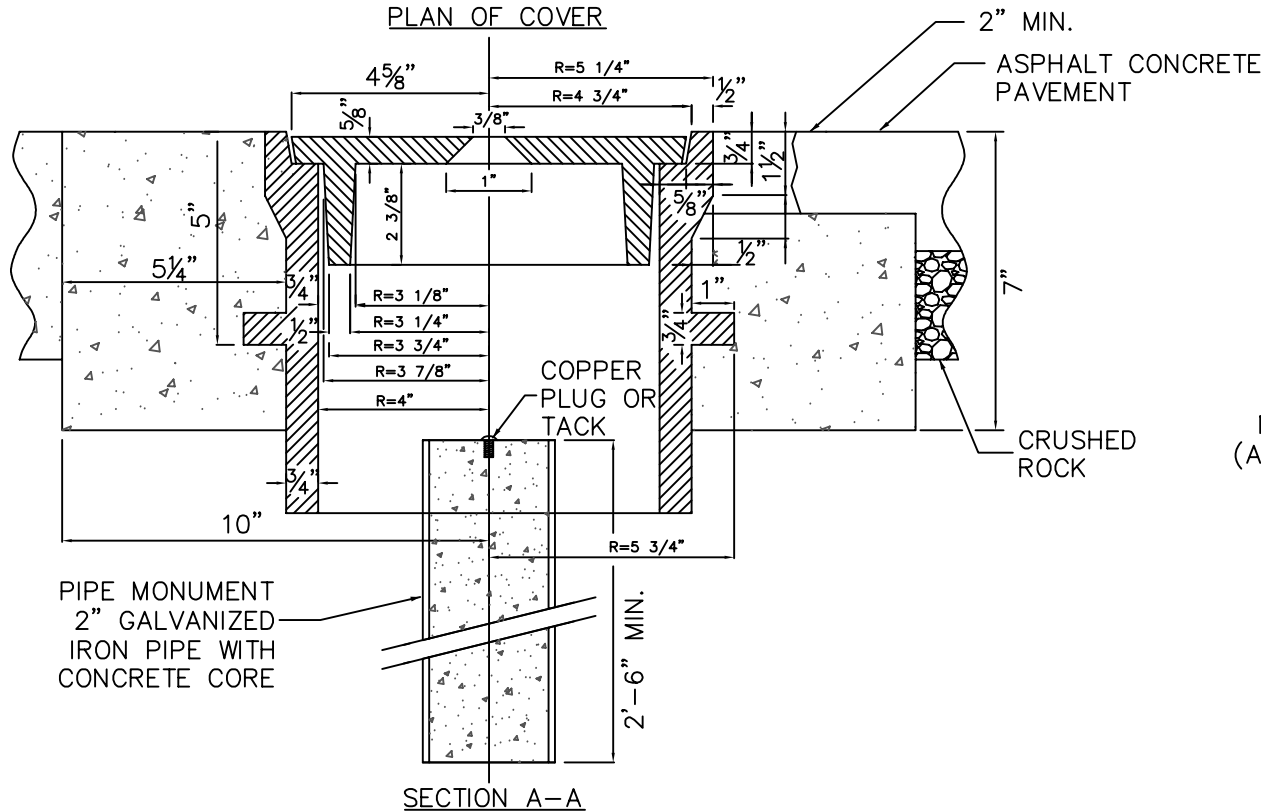
NTS

NOTES:

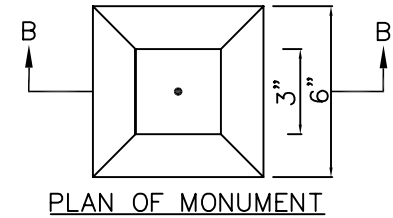
1. CASTINGS SHALL BE GRAY IRON ASTM A48, AASHTO M 105, CLASS 30.
2. COVER AND SEAT SHALL BE MACHINED FOR PERFECT CONTACT AROUND CIRCUMFERENCE AND FULL WIDTH OF BEARING SURFACE.
3. APPROXIMATE WEIGHTS, STANDARD.
 CASE 60 LBS
 COVER 19 LBS
 TOTAL 79 LBS
4. PAVEMENT SHALL BE ASPHALT CONCRETE UNLESS OTHERWISE APPROVED.
5. CONCRETE SHALL BE CLASS 4000.



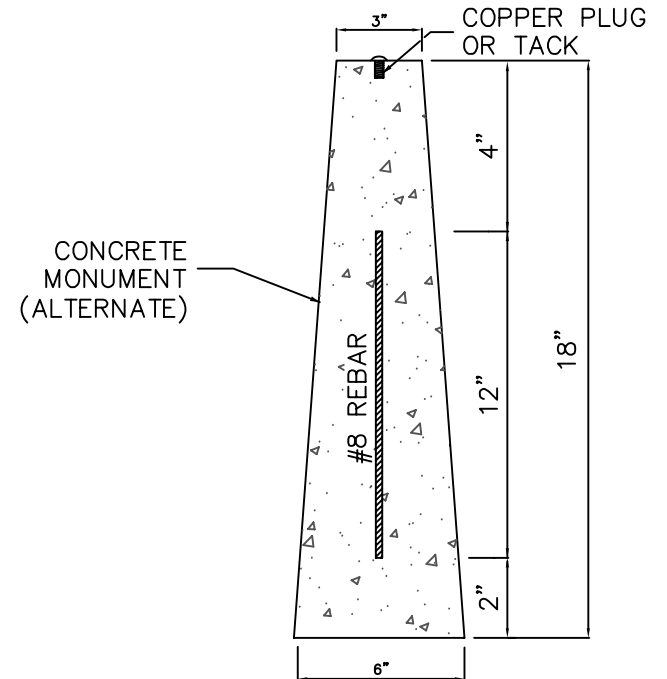
PLAN OF COVER



SECTION A-A

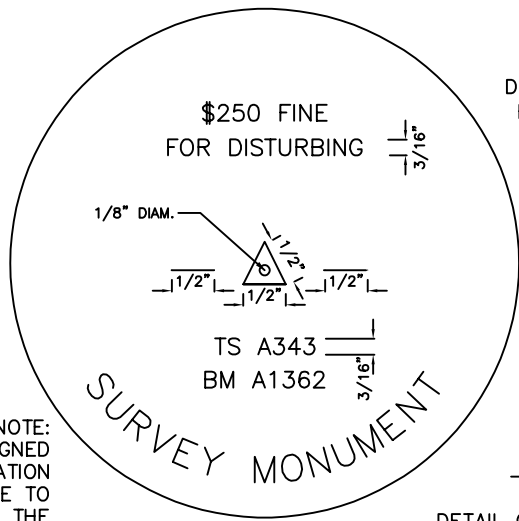


PLAN OF MONUMENT



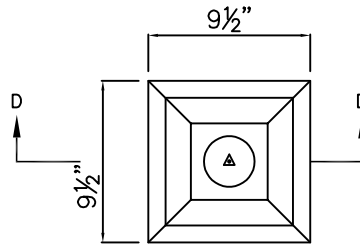
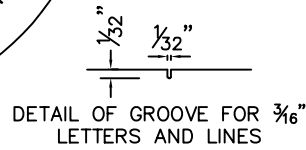
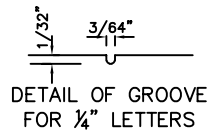
SECTION B-B

NTS

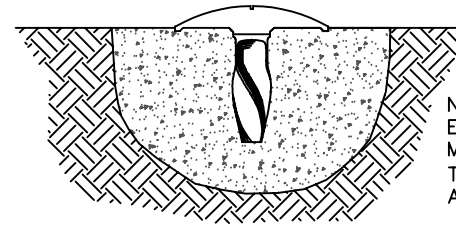


NOTE:
ONLY THE ASSIGNED
IDENTIFICATION
NUMBERS ARE TO
APPEAR ON THE
BRASS DISC.

PLAN

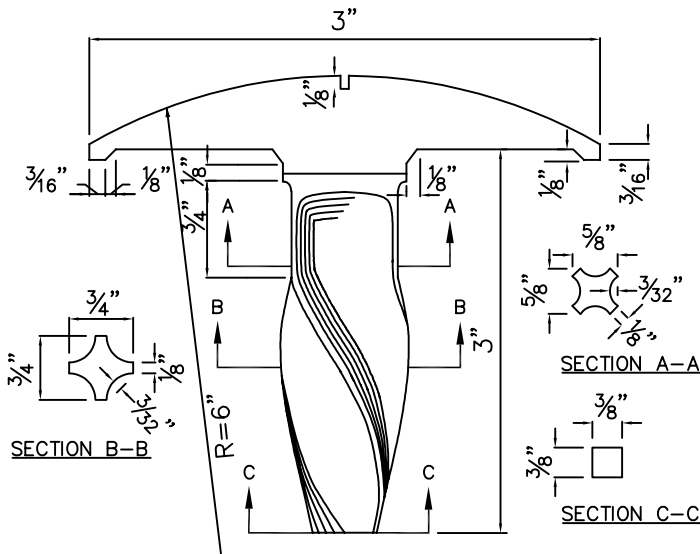


PLAN

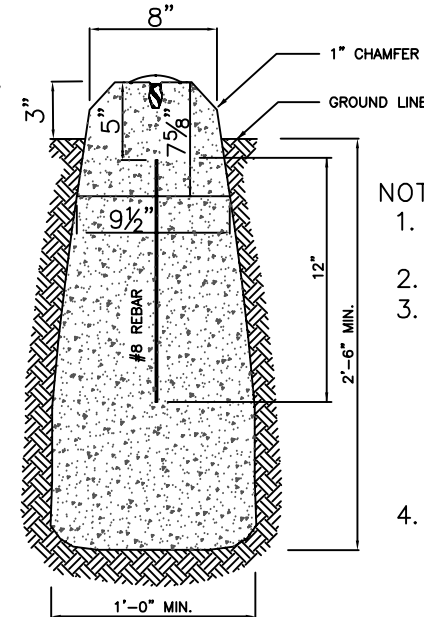


NOTE:
EXCAVATION TO BE
MADE LARGE ENOUGH
TO CLEAR MARKER 1 1/2"
AT ALL POINTS.

LEDGE ROCK OR
CONCRETE INSTALLATION



BRASS DISC
ELEVATION

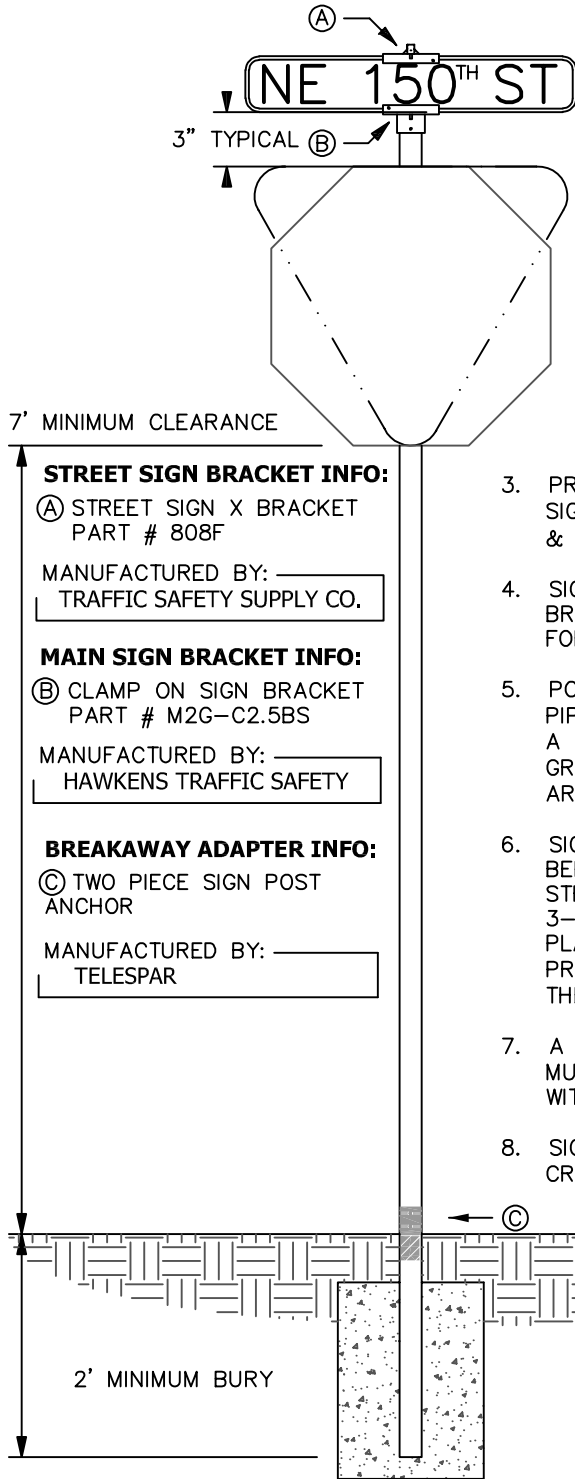


GENERAL INSTALLATION
SECTION D-D

NOTES:

1. THE BRASS DISC SHALL BE CAST OF YELLOW BRASS SAE 41.
2. CONCRETE SHALL BE CLASS 4000.
3. THE HOLE SHALL BE 2'-6" MINIMUM IN DEPTH OR 6" BELOW THE DEEPEST RECORDED FROST LINE. ALL LOOSE MATERIAL SHALL BE REMOVED FROM THE BOTTOM OF THE HOLE SO THAT THE CONCRETE IS ON FIRM, UNDISTURBED EARTH.
4. THE TOP OF THE CONCRETE SHALL BE TROWLED SMOOTH AND THE BRASS DISC SET IN THE CENTER WITH ITS TOP EDGE FLUSH AND LEVEL.
5. COORDINATES OR ELEVATIONS SHALL NOT BE PLACED ON THE BRASS DISCS.

NTS



NOTES:

1. STREET SIGN BLANKS SHALL CONSIST OF 0.080" ANODIZED OR ALODIZED ALUMINUM WITH 1½" RADIUS CORNERS. SIGN SHALL BE 6" WIDE, LENGTH VARIES.
2. STREET SIGNS SHALL HAVE WHITE HI INTENSITY PRISMATIC LETTERING & BORDER (3/8") WITH A REVERSE CUT GREEN EC FILM BACKGROUND.
3. PRIMARY LETTERS & NUMBERS FOR STREET SIGNS SHALL BE 4" TALL. SECONDARY LETTERS & NUMBERS SHALL BE 2" TALL.
4. SIGNS MUST BE ATTACHED TO POSTS WITH BRACKETS. SEE (A) & (B) LOCATED TO THE LEFT FOR DETAILS.
5. POSTS SHALL BE 2" SQUARE PERFORATED STEEL PIPE. THEY SHALL BE INSTALLED ANCHORED INTO A BREAKAWAY ADAPTER A MIN. OF 2' INTO THE GROUND WITH 100 LBS OF CONCRETE POURED AROUND THEM (USUALLY 2 BAGS).
6. SIGNS LOCATED IN NON-PAVED AREAS SHALL BE PLACED IN THE CENTER OF THE LANDSCAPE STRIP IF ONE IS PRESENT. IF NOT, SEE DETAIL 3-050-017 FOR SIGNS IN HARDSCAPE AND PLACE SIGN IN SIDEWALK. IF NO SIDEWALK IS PRESENT, LOCATE SIGN 6' FROM FOG LINE IN THE UNIMPROVED SHOULDER.
7. A 4' MINIMUM OF UNOBSTRUCTED WALKWAY MUST BE LEFT IN ALL SIDEWALKS TO COMPLY WITH CURRENT ADA REQUIREMENTS.
8. SIGNS SHALL NOT BE PLACED WITHIN 4' OF A CROSSWALK.

STREET SIGN BRACKET INFO:

(A) STREET SIGN X BRACKET
PART # 808F
MANUFACTURED BY: _____
TRAFFIC SAFETY SUPPLY CO.

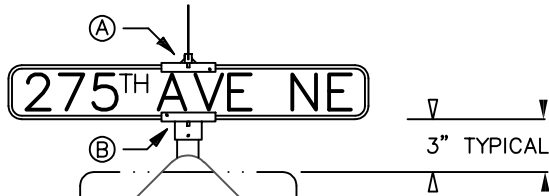
MAIN SIGN BRACKET INFO:

(B) CLAMP ON SIGN BRACKET
PART # M2G-C2.5BS
MANUFACTURED BY: _____
HAWKENS TRAFFIC SAFETY

BREAKAWAY ADAPTER INFO:

(C) TWO PIECE SIGN POST
ANCHOR
MANUFACTURED BY: _____
TELESPAR

NTS



ALL SIGNS IN HARDSCAPE SHALL BE APPROVED BY THE INSPECTOR PRIOR TO PLACEMENT

7' MINIMUM CLEARANCE

NOTES:

STREET SIGN BRACKET INFO:

(A) STREET SIGN X BRACKET
PART # 808F

MANUFACTURED BY: _____
TRAFFIC SAFETY SUPPLY CO.

MAIN SIGN BRACKET INFO:

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PART # M2G-C2.5BS

MANUFACTURED BY: _____
HAWKENS TRAFFIC SAFETY

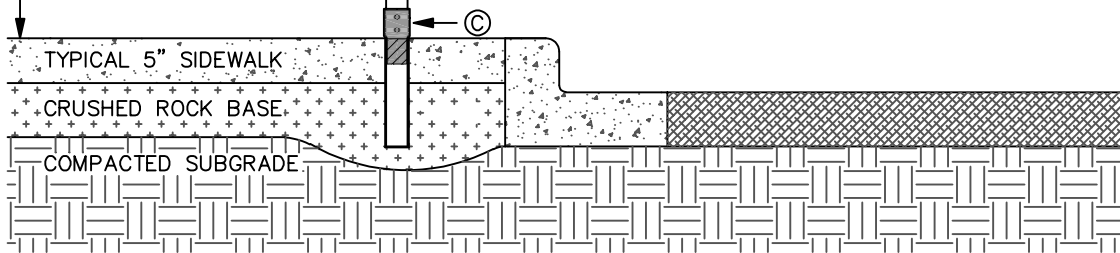
BREAKAWAY ADAPTER INFO:

(C) TWO PIECE SIGN POST
ANCHOR

MANUFACTURED BY: _____
TELESPAR

NOTES:

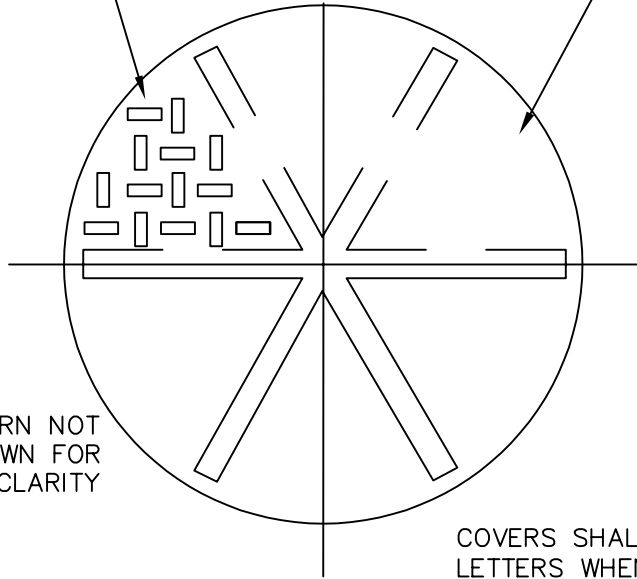
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NTS

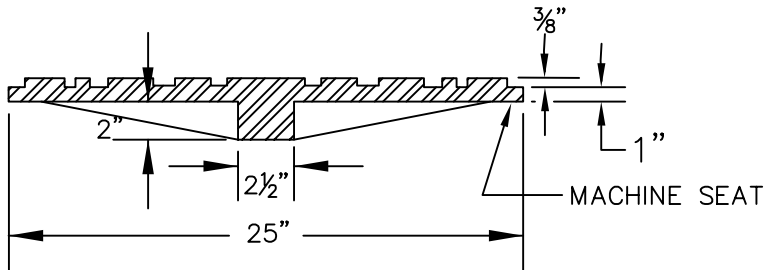
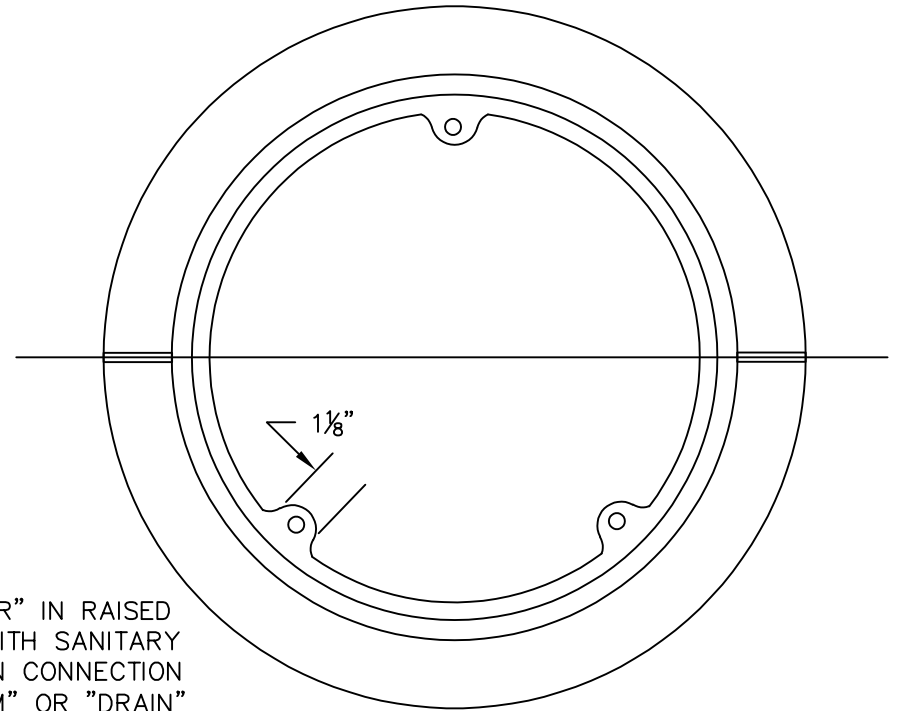
NON-SKID PATTERN
SHALL BE CAST
INTEGRAL ON TOP
OF COVER

NO PICK HOLES

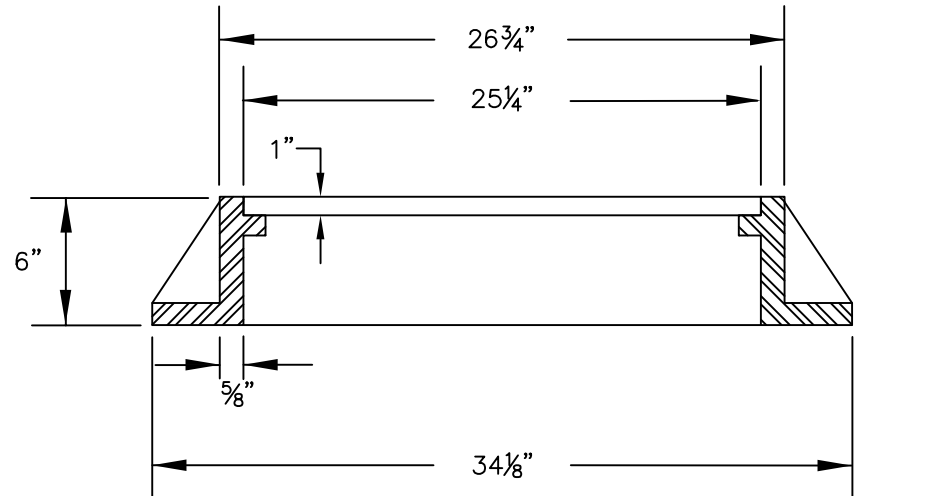


*PATTERN NOT
SHOWN FOR
CLARITY

COVERS SHALL HAVE THE WORD "SEWER" IN RAISED
LETTERS WHEN USED IN CONNECTION WITH SANITARY
SEWER INSTALLATION, "WATER" WHEN IN CONNECTION
WITH WATER DISTRIBUTION, AND "STORM" OR "DRAIN"
WHEN IN CONNECTION WITH STORMWATER SYSTEM
INSTALLATION.



*DUCTILE IRON NON-LOCKING COVER
MINIMUM WEIGHT 180 POUNDS



NTS

**DEVELOPMENT DESIGN
STANDARD DETAILS**

August 2021

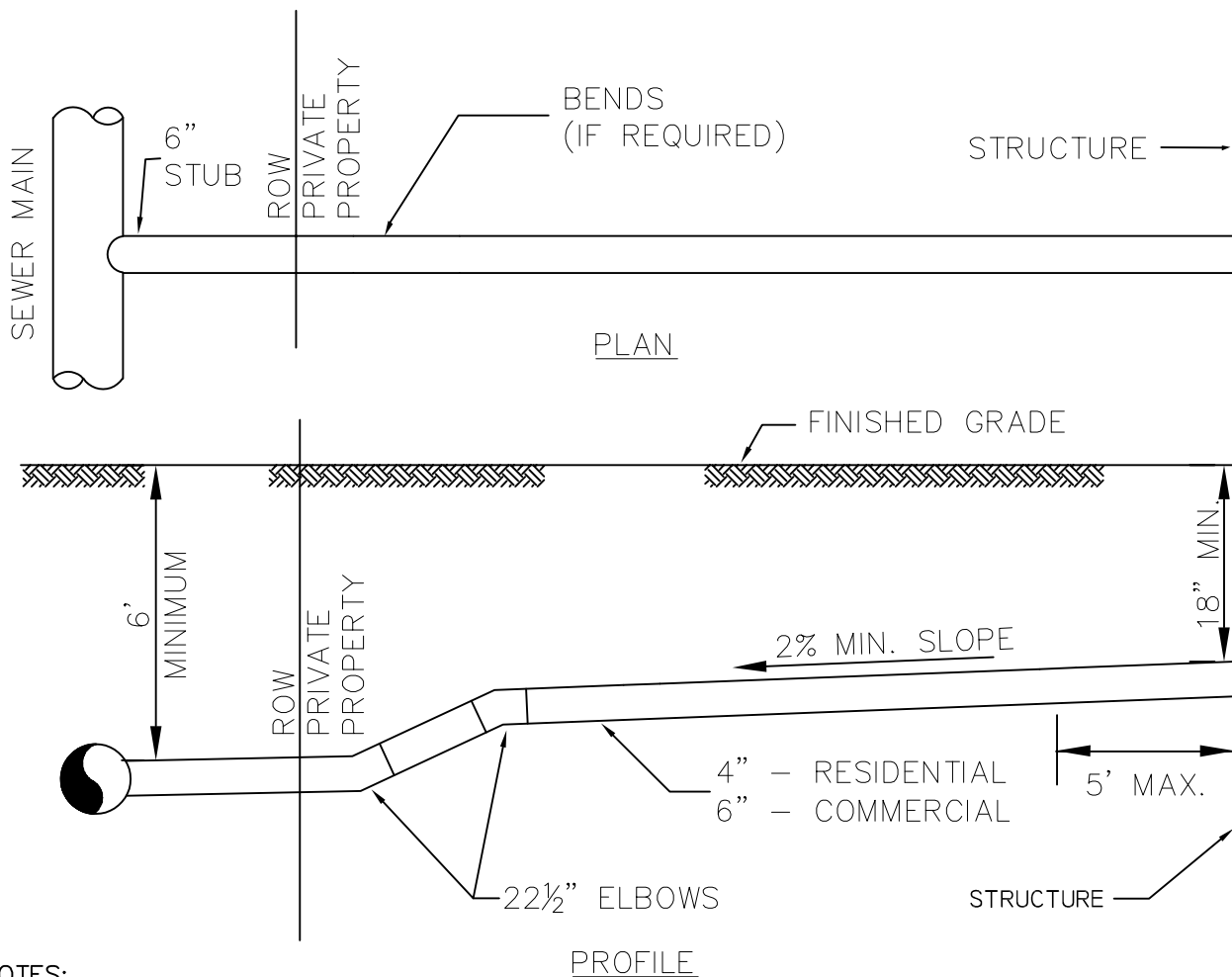


TITLE

Ductile Iron Non-Locking Cover

DRAWING NUMBER

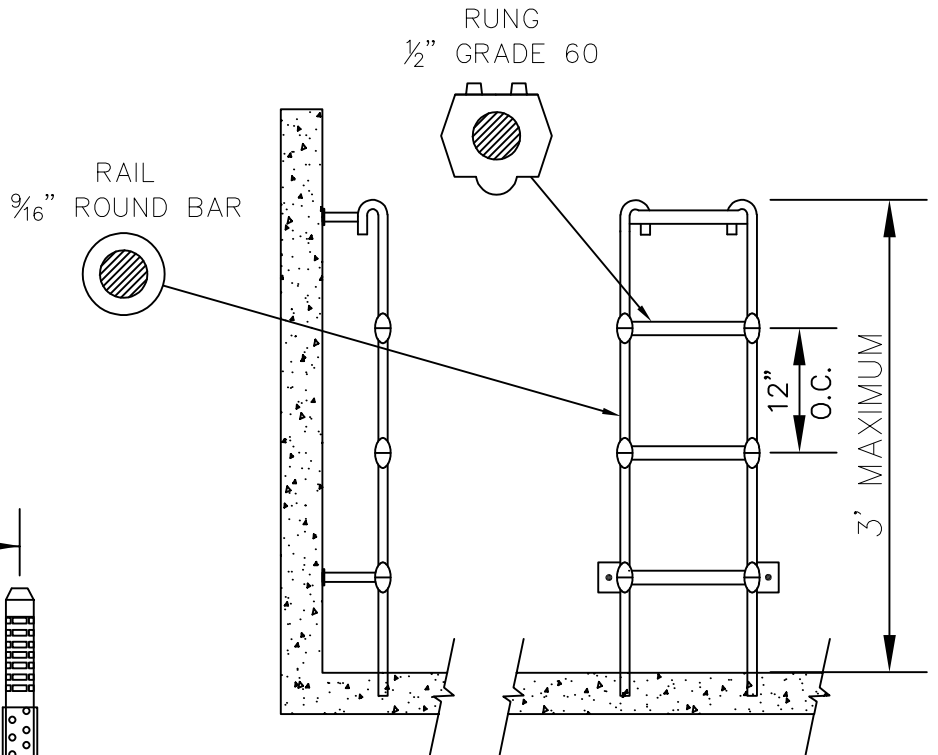
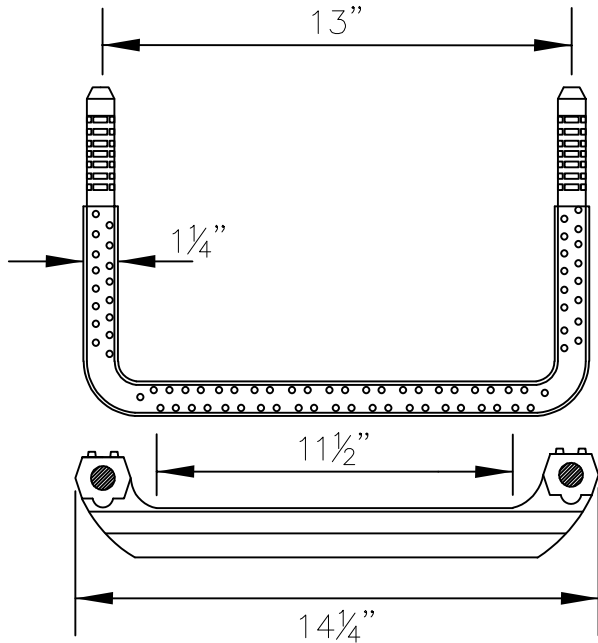
5-010-001



NOTES:

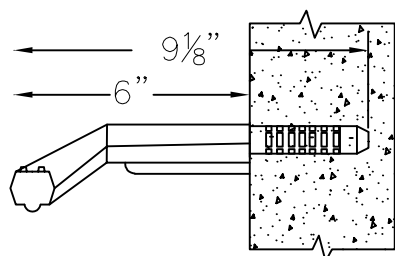
1. ELBOWS SHALL NOT BE GREATER THAN 45°.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100'.
3. ROW RESTORATIONS SHALL MATCH OR EXCEED THE ORIGINAL CONDITIONS. SEE STANDARDS DETAIL 5-010-007.
4. BACKFILL FOR PAVED AREA SHALL BE 5/8" MINUS CRUSHED SURFACING TOP COURSE, COMPACTED IN 12" LIFTS.
5. ALL PLUMBING OUTLETS SHALL BE CONNECTED TO THE SEWER. NO DOWNSPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
6. 18" MINIMUM COVER OF SERVICE LATERAL.
7. 6' MINIMUM COVER AT THE PROPERTY LINE.
8. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH AN ELBOW OR WYE. 90° CHANGE WITH AN ELBOW AND WYE.
9. MINIMUM 6" SEWER PIPE SIZE IN ROW, 2% MINIMUM SLOPE, 45% MAX.
10. MINIMUM 4" SEWER PIPE ON PRIVATE RESIDENTIAL PROPERTY. MINIMUM 6" SEWER PIPE SIZE ON COMMERCIAL PROPERTY. 2% MINIMUM SLOPE, 45% MAX.
11. CONSTRUCTION IN ROW SHALL BE PERFORMED BY A LICENSED AND REGISTERED CONTRACTOR.
12. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEES. COMPLETE LEGAL DESCRIPTION OF PROPERTY AND DIMENSIONS.
13. SEWER AS-BUILT DRAWING SHOWING LOCATION OF SIDE SEWER IN RELATION TO THE STRUCTURE IS REQUIRED AFTER INSTALLATION.
14. TEST WYE WITH PLUG TO BE INSTALLED AT TIME OF BUILDING CONNECTION FOR HYDROSTATIC TEST.

NTS



LADDER SHALL CONFORM TO
 POLYPROPYLENE ASTM-1401
 1/2" GRADE 60 REINFORCING
 BAR A-615 9/16" COLD DRAWN
 BAR C-1018.

POLYPROPYLENE LADDER



POLYPROPYLENE STEP
 NO. P-13938 OR EQUAL

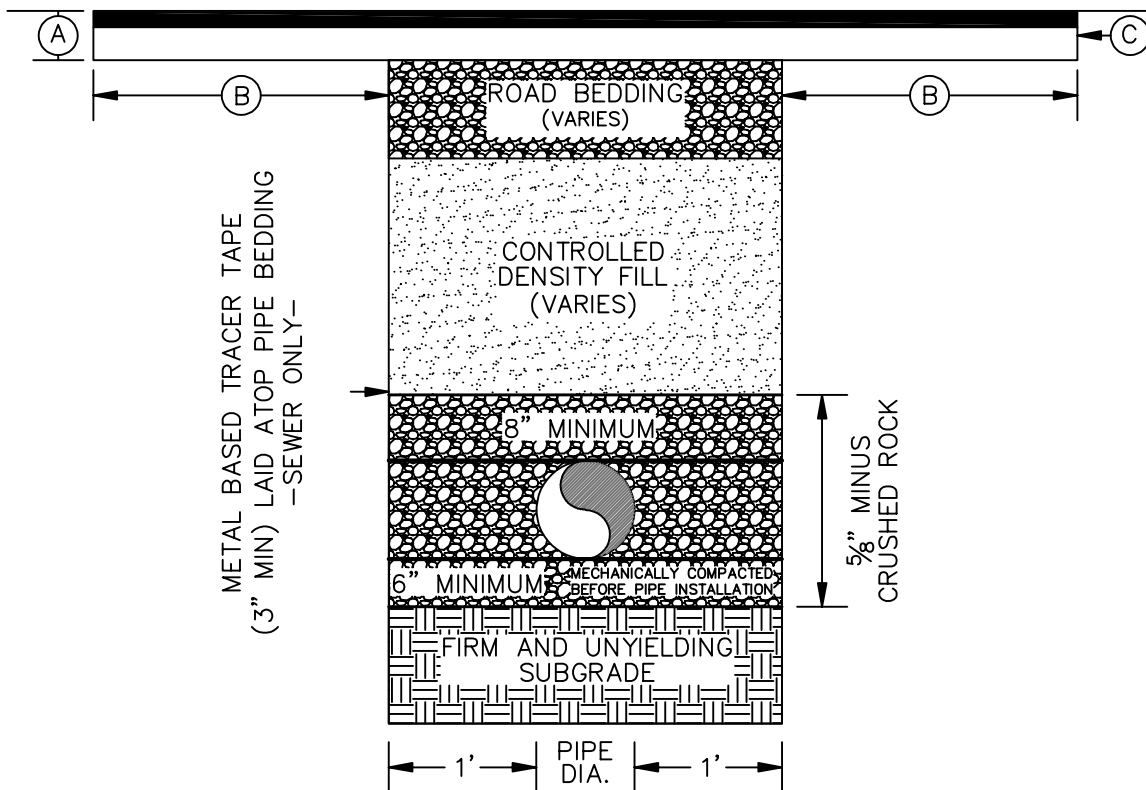
POLYPROPYLENE
 MANHOLE STEPS

NTS

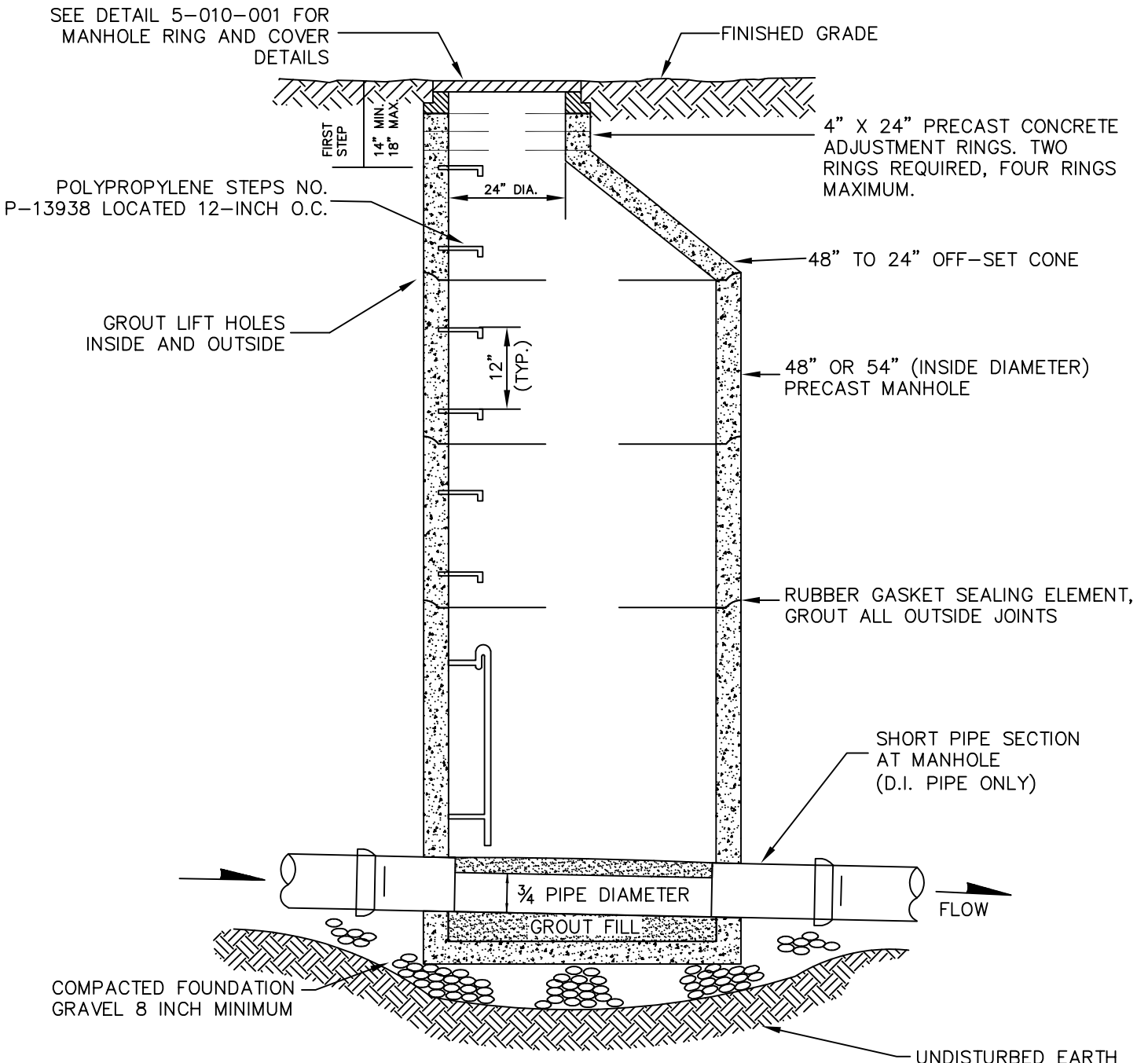
- (A) PERMANENT ASPHALT TRENCH PATCH TO BE THE THICKNESS OF THE EXISTING ASPHALT + 1" OR A TOTAL OF 3", WHICHEVER IS GREATER UNLESS OTHERWISE.
- (B) 3' TYPICAL "T-CUT" MUST BE SQUARE IN SHAPE AND CONTAIN ONLY 90 DEGREE ANGLES UNLESS OTHERWISE APPROVED. "T-CUTTING" MAY BE DONE BEFORE OR AFTER EXCAVATION, HOWEVER, IF THE SAWCUT ASPHALT EDGES BECOME BROKEN DURING CONSTRUCTION ANOTHER CUT WILL BE REQUIRED PRIOR TO PAVING.
- (C) CUT EDGES OF ASPHALT SHALL BE CLEAN, STRAIGHT AND SQUARE BEFORE PAVING, ASPHALT EMULSION TACK SHALL BE APPLIED TO THE CLEAN CUT EDGES JUST PRIOR TO PAVING, LIQUID RUBBERIZED TAR SHALL BE APPLIED AND BROOMED TO ALL SEAMS AFTER PAVING ACTIVITIES, SAND SHALL BE APPLIED TO THE LIQUID TAR AFTER BROOMING, SPECIFICATIONS ON THE ASPHALT EMULSION AND LIQUID TAR CAN BE FOUND IN THE CURRENT WSDOT MANUAL

COMPACTION NOTES:

1. AREAS WITHIN ROW: THE TOP 4' OF BACKFILL MUST MEET 95% COMPACTION. BELOW THAT MUST MEET A MINIMUM OF 90% COMPACTION.
2. AREAS OUTSIDE THE ROW: MUST MEET A MINIMUM OF 90% COMPACTION IN LANDSCAPE AREAS. IN HARDSCAPE AREAS, THE TOP 4' MUST MEET 95% COMPACTION WITH A MINIMUM OF 90% COMPACTION BELOW.

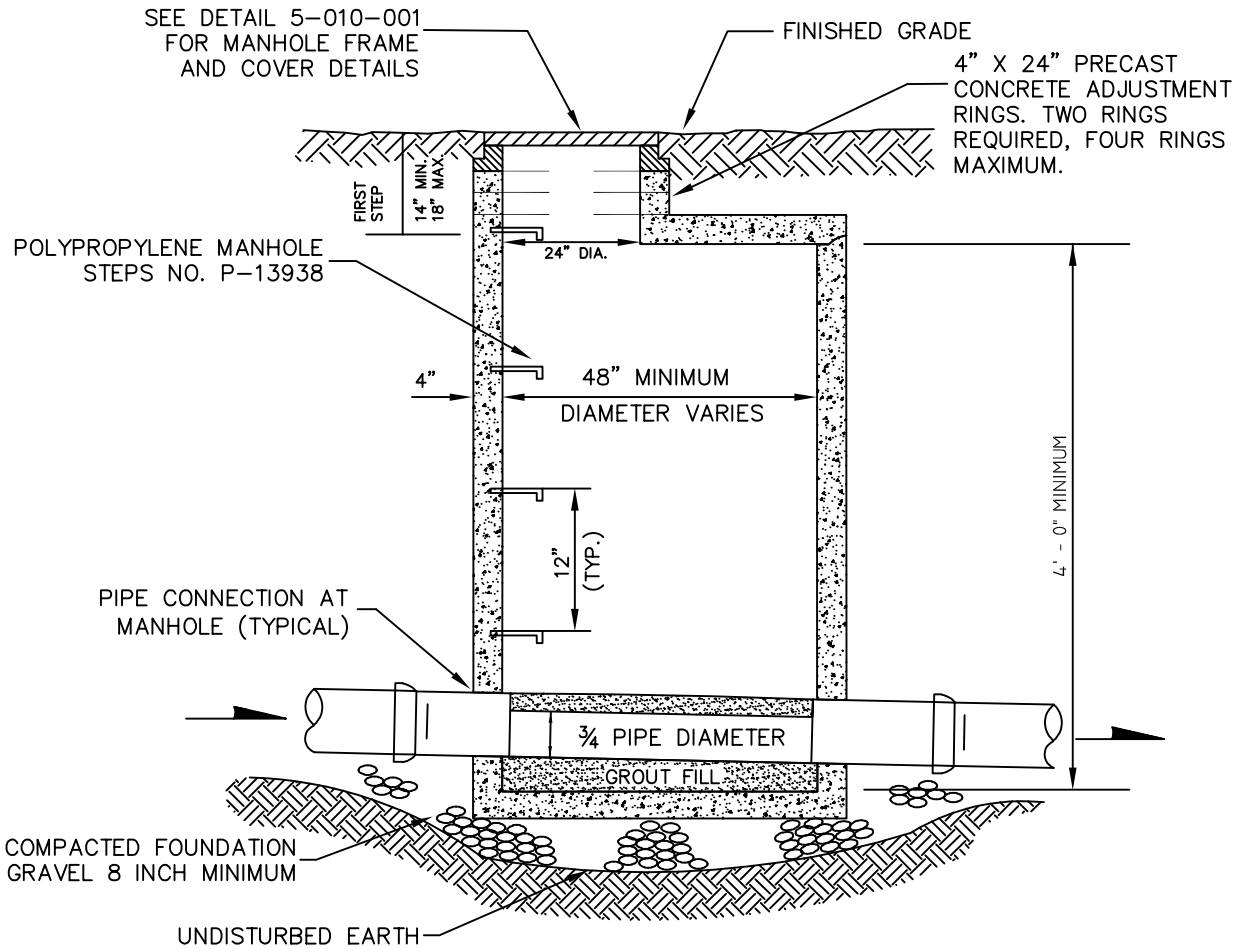


NTS



- NOTES:
1. PIPE CONNECTIONS TO MANHOLES SHALL BE AS FOLLOWS:
 - PVC PIPE: CAST OR GROUT A MANHOLE COUPLING INTO THE WALL.
 - D.I. PIPE: BELL AND SPIGOT JOINT OR FLEXIBLE COUPLING SHALL BE 12 INCH MAXIMUM DISTANCE FROM MANHOLE WALL.
 - PVC AND D.I. PIPE (OPTIONAL): CORE THE MANHOLE AND CONNECT SEWER PIPE WITH A WATER TIGHT FLEXIBLE RUBBER BOOT IN MANHOLE WALL, KOR-N-SEAL BOOT OR EQUAL.
 2. DROP OF GRADE THRU MANHOLE SHALL BE 0.10 FOOT, UNLESS OTHERWISE APPROVED.
 3. LARGER MANHOLES WILL BE REQUIRED AT THE DISCRETION OF THE CITY ENGINEER BASED ON PIPE SIZE, NUMBER AND ORIENTATION OF PIPE(S).
 4. GROUT INSIDE, OUTSIDE AND CONTACT SURFACES OF RISERS WITH MINIMUM 1/2 INCH THICKNESS.
 5. SHELF SLOPE 3/8 INCH PER FOOT

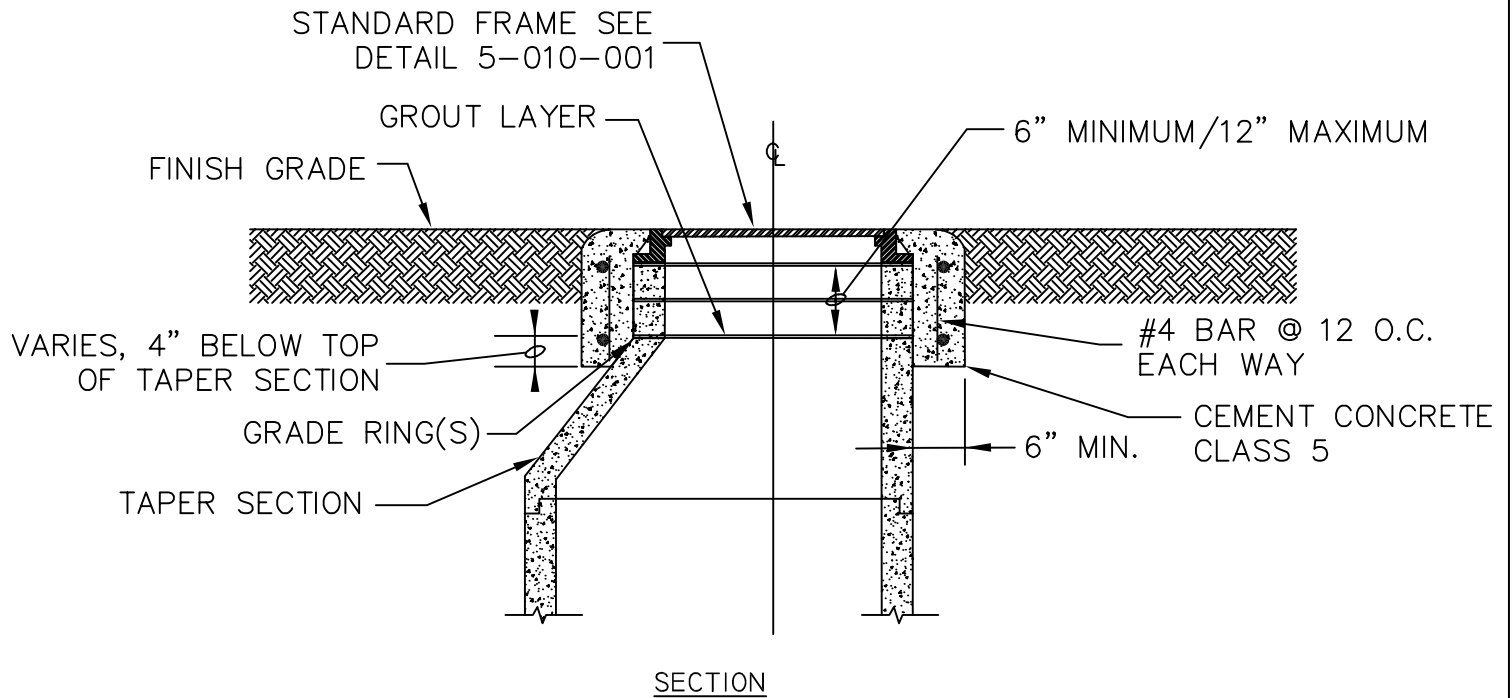
NTS



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NTS

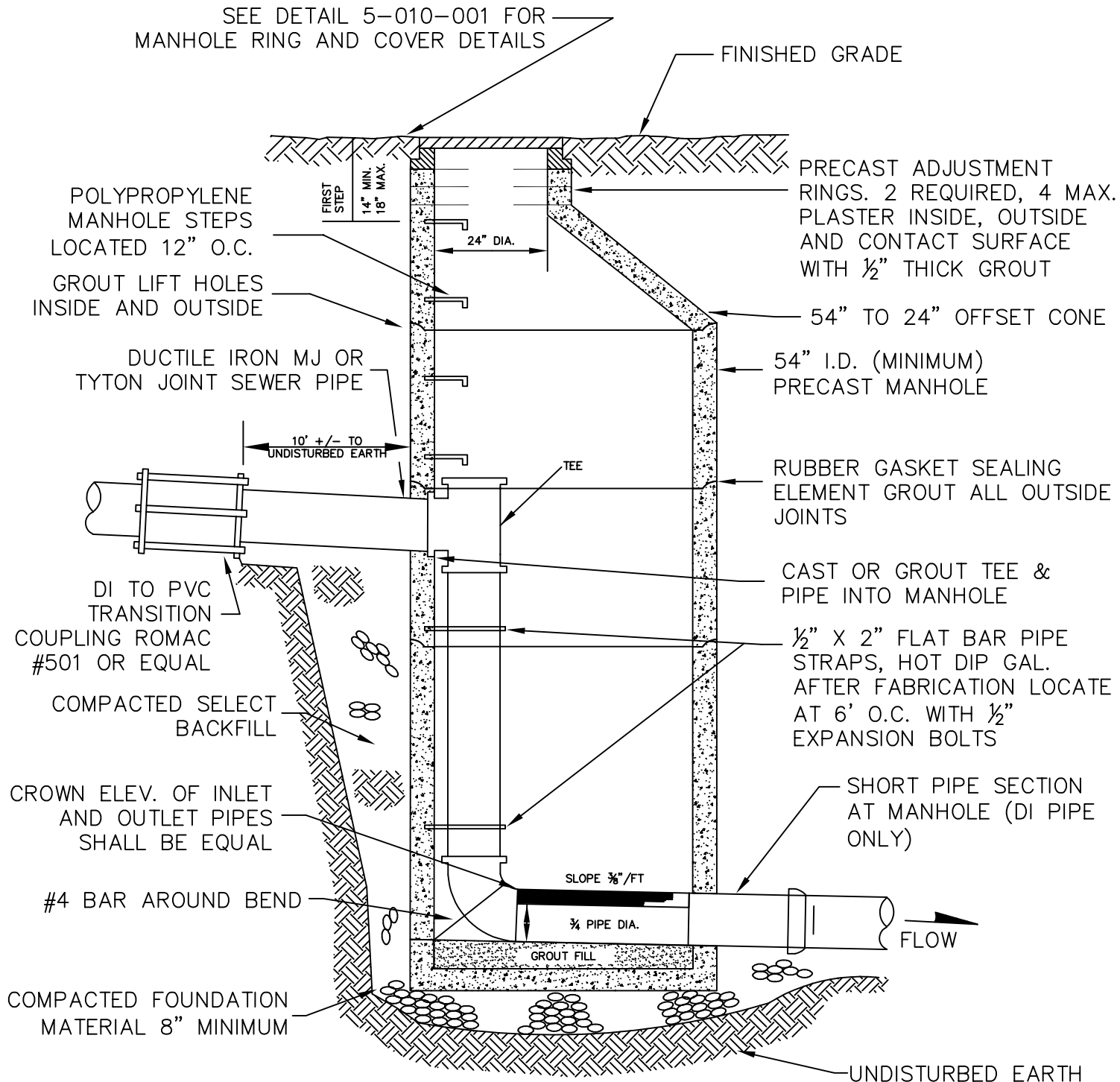


NOTES:

1. CONSTRUCT CONCENTRIC CONCRETE COLLARS AROUND ALL MANHOLE FRAMES LOCATED OUTSIDE OF PAVED AREAS.

NTS

SEE DETAIL 5-010-001 FOR
MANHOLE RING AND COVER DETAILS



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2. DROP OF GRADE THROUGH MANHOLE SHALL BE 0.10', UNLESS OTHERWISE APPLICABLE.

NTS