

PAVING GENERAL NOTES

1. All construction shall be in accordance with the standard specifications and details of the Town of Copper Canyon and the Fourth Edition of the "Standard Specifications for Public Works Construction - North Central Texas" herein referred to as "COG". Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888.
2. Subgrade preparation shall be in accordance with COG Item 301.
3. Lime Stabilized subgrade shall be installed in accordance with COG Item 301.2. Lime shall be placed using the slurry method, to be mixed on-site and not trucked in. Refer to COG Item 301.2.1.1.
4. The Contractor shall install supporting chairs for reinforcing steel on a one per square yard spacing in all concrete pavements. The chairs are to be plastic and installed as per COG Item 303.2.11.
5. 20% (by weight) of the cement content may be replaced with Type C fly ash. Refer to COG Item 303.2.4.
6. Concrete for all paving and curbs within Town of Copper Canyon shall have a minimum strength of 4,000 psi at 28 days for machine paved and 4,500 psi at 28 days for hand poured. The Town shall approve the concrete mix design in writing prior to use.
7. Slump requirements for slip form paving shall be an average of three inches with a maximum of four inches; for hand formed paving it shall be an average of four inches with a maximum of five inches; and for sidewalk & other it shall be specified by the owner. Refer to COG Item 303.3.4.4.
8. Curbs for concrete pavement shall be poured monolithically. Refer to COG Item 303.5.9.
9. The Contractor shall use a liquid membrane-forming compound as per COG Item 303.2.13.1.1.
10. Construction joints shall be used in all back-outs for driveways and inlets.
11. Transverse joints shall be sawed on 15 foot centers for all pavement thicknesses. The concrete saw must be stationed on the job-site prior to placing the pavements. All joints shall be sawed within an eighteen (18) hour period from the time of the pour.
12. Construction and longitudinal joints shall be placed in accordance with details. Saw joints to be 1/4 inch for each inch of pavement thickness.
13. The Contractor shall submit a Jointing Plan, for review by the Town, prior to placing.
14. Parkway, roadway ditches and adjacent disturbed areas for paving of roadways in undeveloped areas shall be seeded with Bermuda grass. Parkway and adjacent disturbed areas for paving of roadways in developed areas shall be block sodded with either Bermuda or St. Augustine to match the adjacent private property. Medians shall be block sodded. All sodding and seeding will be placed on four inches of topsoil. The Contractor is responsible for maintenance, including mowing and watering until vegetation is established at not less than 20 plants per square foot area, and until accepted by the Town.
15. Unless stated otherwise in the Contract Documents, the Contractor is responsible for all testing. All final reports shall be turned in to the Town Inspector within five (5) working days. Failed samples must be reported to the Town Inspector immediately.
 - a. The CONTRACTOR shall be responsible for notifying the Town Inspector at least 24 hours prior to any required testing.
 - b. Soil testing technicians shall provide written proof of having minimum of two (2) years of related field experience.
 - c. The CONTRACTOR shall coordinate all testing activities with the Town Inspector and shall facilitate required testing throughout the construction period. The Inspector shall be present during all testing.
 - d. The Town shall make final decision as to the validity of all testing results.
 - e. The CONTRACTOR shall be responsible for ensuring that materials to be tested are in compliance with all plans and specifications prior to testing. All materials found not to be in compliance with the plans and specifications before and after testing shall be removed and replaced at the CONTRACTOR'S expense.
 - f. All costs associated with the retesting of work that fails to meet the specifications required in the contract documents shall be borne by the CONTRACTOR. For Town projects retesting cost shall be withheld from pay requests submitted by the CONTRACTOR, this cost will be based on the Town's cost with no additional mark-up. A letter of acceptance will not be issued until all testing deficiencies are addressed and all related cost paid.
 - g. The Town Inspector shall be notified of concrete placement 24 hours in advance for steel and form inspection.

h. Subgrade Testing

- 1) Samples shall be taken for all classifications of soils on site. Testing for sulfate presence and lime series tests shall be conducted for all samples prior to any stabilization. If sulfate content is greater than 2,000 ppm (parts per million), specific recommendation shall be made by geotechnical engineer for subgrade preparation and thicker pavement section to be approved by the Town. The use of lime or cement and the percent content shall comply with the Geotech Engineer recommendations. Additional geotechnical testing and recommendations may be required by Town as field conditions dictate. Atterberg Limits shall be determined on all Proctor samples.
- 2) Gradations for lime treated subgrade shall be taken at intervals not exceeding 300 feet along road and must pass 100% through a 1 3/4" sieve and 60% through a No. 4 sieve according to NCTCOG Item 301.2.3.5.1.
- 3) Gradations for Portland cement treated subgrade shall be taken at intervals not exceeding 100 feet along road and must pass 100% through a 1" sieve and 80% through a No. 4 sieve according to NCTCOG Item 301.3.3.2.
- 4) Lime subgrade shall be tested in accordance with NCTCOG Item 301.2.1.3. Tests will be performed by excavating deeper than lime treatment and administering a phenolphthalein indicator.
- 5) Densities shall be taken on subgrade in accordance with the Wastewater General Notes 15.1.3 Mechanical Tamping and in accordance with NCTCOG Item 301.2.3.6 unless otherwise stated on the plans or in the specifications.
- 6) All subgrade shall be visually "proof rolled" after it is trimmed and prior to placement of steel.
- 7) Densities shall be taken at least 72 hours before concrete placement (NCTCOG Item 303.5.1). If more than 72 hours elapse, densities must be retaken unless an approved emulsion sealant is used in accordance with NCTCOG Item 302.3.5.
- 8) Locations for densities, gradations, and depth checks shall be at the discretion of the Inspector and shall be representative of the entire cross section of the subgrade.
- 9) Subgrade failures shall be defined by Inspector or ENGINEER. Repair method will be discussed with Inspector or ENGINEER and approved prior to beginning repair work.
10. Multiple tests may be required across width of right-of-way.
- 11) For emulsion placement over subgrade refer to NCTCOG Item 302.3.5.2.

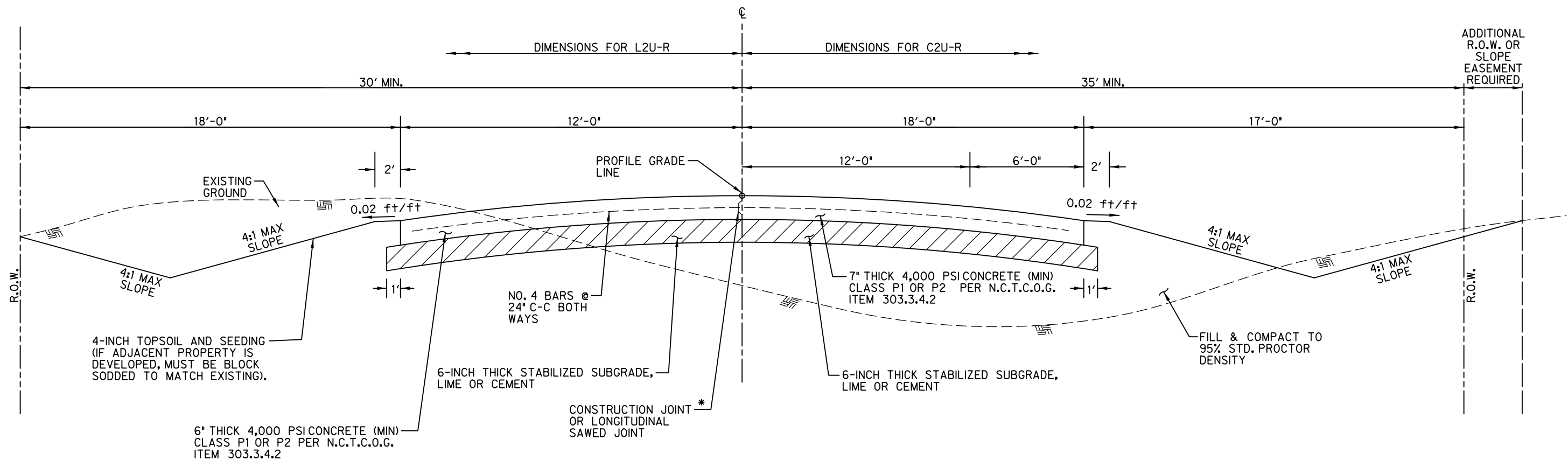
i. Concrete Testing for Pavements, Curbs, Sidewalks and Driveways.

- 1) A concrete mix design must be submitted and approved by the Town prior to any placement of concrete. A minimum of four (4) test cylinders shall be obtained per one hundred cubic yard (100 cy) of concrete placed with a minimum of four cylinders per placement. Tests shall also include slump, air contents and temperature of concrete mixture; each mix design of concrete placed each day shall also be tested. Concrete strength shall be tested at 7 days (2 cylinders) and 28 days (2 cylinders). Additional cylinders and or tests may be requested at the Town Inspector's discretion.
- 2) Concrete with a temperature of 85 degrees or higher will require a retarding agent admixture.
- 3) The maximum temperature of concrete at the time of placement shall not exceed 95 degrees. It shall be the CONTRACTOR and/or his supplier's responsibility to take steps to control the temperature of concrete. All concrete that exceeds the temperature limit of 95 degrees will be rejected.
- 4) Forms shall not be removed from pavement, sidewalks, ramps, or retaining walls for 24 hours minimum, and shall not be backfilled less than 72 hours after concrete placement. Pavement shall have a minimum cure time of 7 days, but may be opened to traffic earlier at the discretion of the Inspector or ENGINEER only after review of compressive strength data. Temporary perpendicular crossings may be made after 72 hours by ramping soil over the new pavement at a depth of not less than 18-inches and a width of not less than 10-feet. Prior to grout wiping any concrete, CONTRACTOR shall demonstrate method of surface preparation to ensure adhesion of grout.
- 5) All street pavement shall be cored to verify proper pavement thickness and strength prior to acceptance. Cores for strength and depth shall be 4-inches diameter and taken at intervals not exceeding 600 feet; cores for depth only shall be 2-inches diameter and shall be taken at intermediate intervals not exceeding 300-feet. Locations will be approved by the Town. Multiple cores may be required at each interval to represent entire cross section. All cores shall be taken at 28 days and results shall be correlated with the cylinder test results. Evaluation of cores will be in accordance with NCTCOG Item 303.8.2. All required pavement replacement shall be in full panel increments.

j. Hot-Mix Asphalt Concrete Pavement Testing

- 1) Specifications shall follow COG Item 302 and conform to the TxDOT Standard for Hot-Mix Asphaltic Concrete.
- 2) The asphaltic mixture shall be tested for oven burn off/gradation and stability.
- 3) A relative density of not less than 92% will be required after final compaction of the in-place pavement section. The CONTRACTOR shall schedule the CMT Laboratory to come out in the field and establish a rolling pattern. The use of nuclear field density determinations shall not be accepted as the basis for acceptance with respect to density. The CONTRACTOR shall be responsible for assuring that the compaction of the asphaltic concrete in place will attain between 5% and 9% (five and nine percent) air voids. The CONTRACTOR's responsibility for the required compaction includes the selection of rolling equipment and selection of rolling patterns to achieve the required compaction.
- 4) HMAc mix temperature range at time of placement shall be between 260 degrees and 325 degrees. The asphaltic mixture shall not be placed when the air temperature is below 50 degrees but may be placed when the air temperature is above 40 degrees and rising, the temperature being taken in the shade and away from artificial heat.
- 5) In-place compaction control is required for all mixtures. Asphaltic concrete should be placed and compacted to contain not more than 9% (nine percent) nor less than 5% (five percent) air void unless otherwise indicated. The percent air voids will be calibrated using the maximum theoretical specific gravity of the mixture determined according to TxDOT Test Method Tex-227-F Roadway Specimen, which shall either be cores or sections of pavement, will be tested according to TxDOT Test Method Tex-207-F. The same specimen shall be used in determining both the theoretical density and field density.
- 6) Prime coat will follow COG Items 302.7 and 302.9.6.1.
- 7) Tack coat will follow COG Specifications Item 302.9.6.2.
- 8) HMAc mix designs shall follow COG Item 302.9.3 and the grading tables included in this section. These mixtures will be in accordance with TxDOT Test Method Tex-204-F, design of Bituminous Mixtures.

PAVEMENT DETAILS						
PAVING GENERAL NOTES						
<div>CERTIFICATION:</div> <div>THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.</div>						
<div><div><div><div></div><div>Town of COPPER CANYON TEXAS</div></div></div></div>						
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REINFORCED CONCRETE PAVING STANDARDS **LOCAL RESIDENTIAL & COLLECTOR STREETS - RURAL** **L2U-R & C2U-R** N.T.S.

* FOR C2U A CONSTRUCTION JOINT MUST BE USED.
FOR A L2U A LONGITUDINAL JOINT SAWED JOINT MAY BE USED.

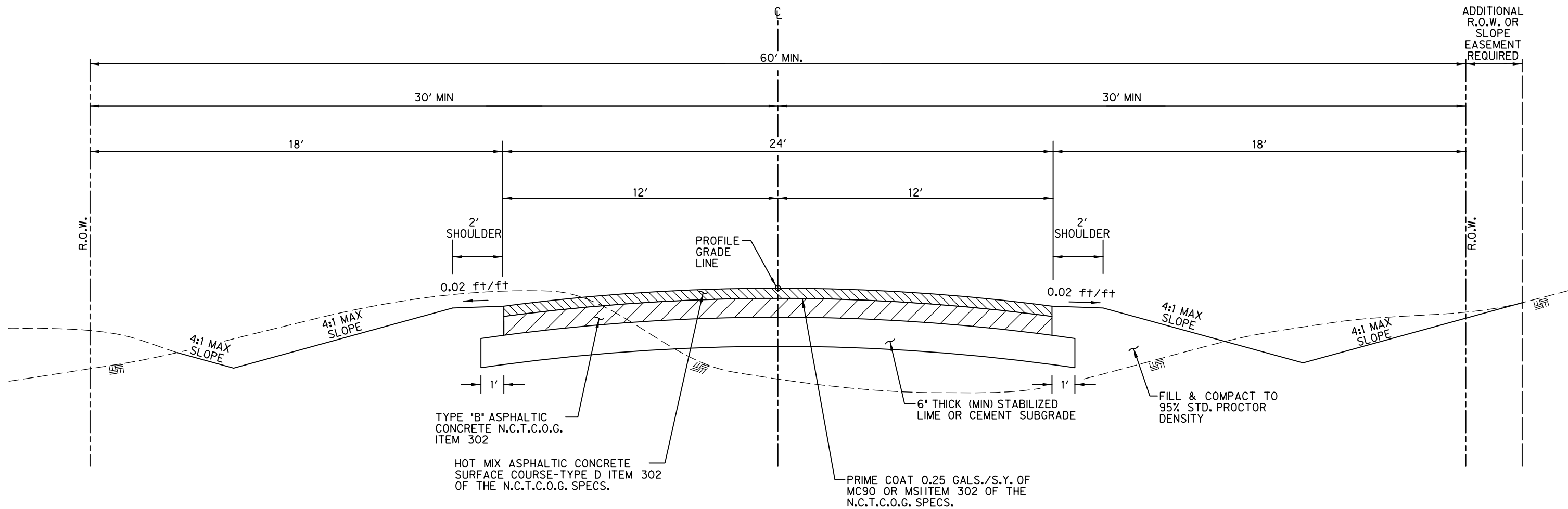
- NOTES:
1. L2U-R IS SHOWN ON LEFT SIDE OF DRAWING AND C2U-R IS SHOWN ON RIGHT SIDE OF DRAWING.
 2. ALL UTILITIES AND SIDEWALKS ARE TO BE PLACED IN A MINIMUM 10' SIDEWALK & UTILITY EASEMENT OUTSIDE OF RIGHT-OF-WAY.
 3. SEE SIDEWALL DETAILS FOR SIDEWALK LOCATIONS
 4. PAVEMENT AND SUBGRADE THREATMENT SHALL BE DESIGNED BASED ON GEOTECHNICAL INVESTIGATION.

CERTIFICATION:
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

PAVEMENT DETAILS **LOCAL RESIDENTIAL & COLLECTOR STREETS - RURAL**



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**L2U-R LOCAL RESIDENTIAL - RURAL
ASPHALT PAVEMENT OPTION**

N.T.S.

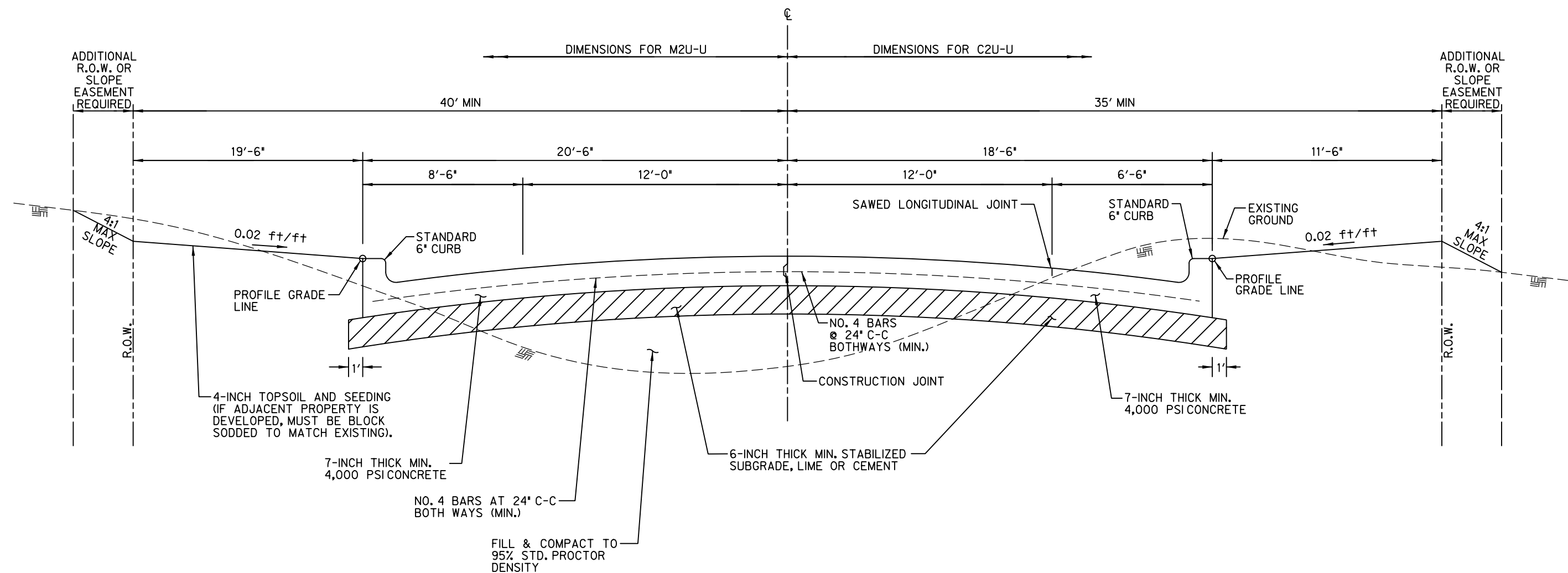
- NOTES:
1. ALL UTILITIES AND SIDEWALKS ARE TO BE PLACED IN A MINIMUM 10' SIDEWALK & UTILITY EASEMENT OUTSIDE OF RIGHT-OF-WAY.
 2. SEE SIDEWALL DETAILS FOR SIDEWALK LOCATIONS.
 3. PAVEMENT AND SUBGRADE TREATMENT SHALL BE DESIGNED BASED ON GEOTECH INVESTIGATION.
 4. TOWN NEEDS TO APPROVE ASPHALT ROADWAY IN CASE BY CASE BASIS

CERTIFICATION:
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**PAVEMENT DETAILS
RESIDENTIAL STREET - RURAL
ASPHALT PAVEMENT OPTION**



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REINFORCED CONCRETE PAVING STANDARDS **MINOR ARTERIAL & COLLECTOR STREETS - URBAN** **M2U-U & C2U-U**

N.T.S.

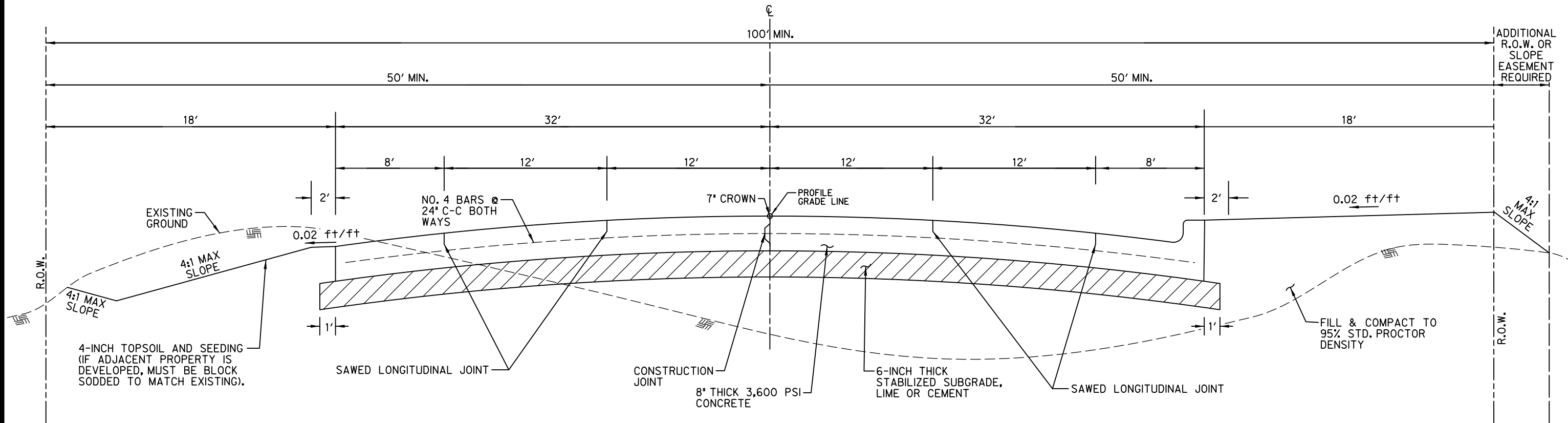
- NOTES:
- 1.M2U-U IS SHOWN ON LEFT SIDE OF DRAWING AND C2U-U IS SHOWN ON RIGHT SIDE OF DRAWING.
 - 2.ALL DIMENSIONS TO CURB ARE SHOWN TO THE BACK OF CURB.
 - 3.SEE SIDEWALK DETAILS FOR SIDEWALK LOCATIONS.

CERTIFICATION:
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PAVEMENT DETAILS **LOCAL RESIDENTIAL & COLLECTOR** **STREETS - URBAN**



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REINFORCED CONCRETE PAVING STANDARDS **UNDIVIDED MINOR ARTERIAL - M4U-R** N.T.S.

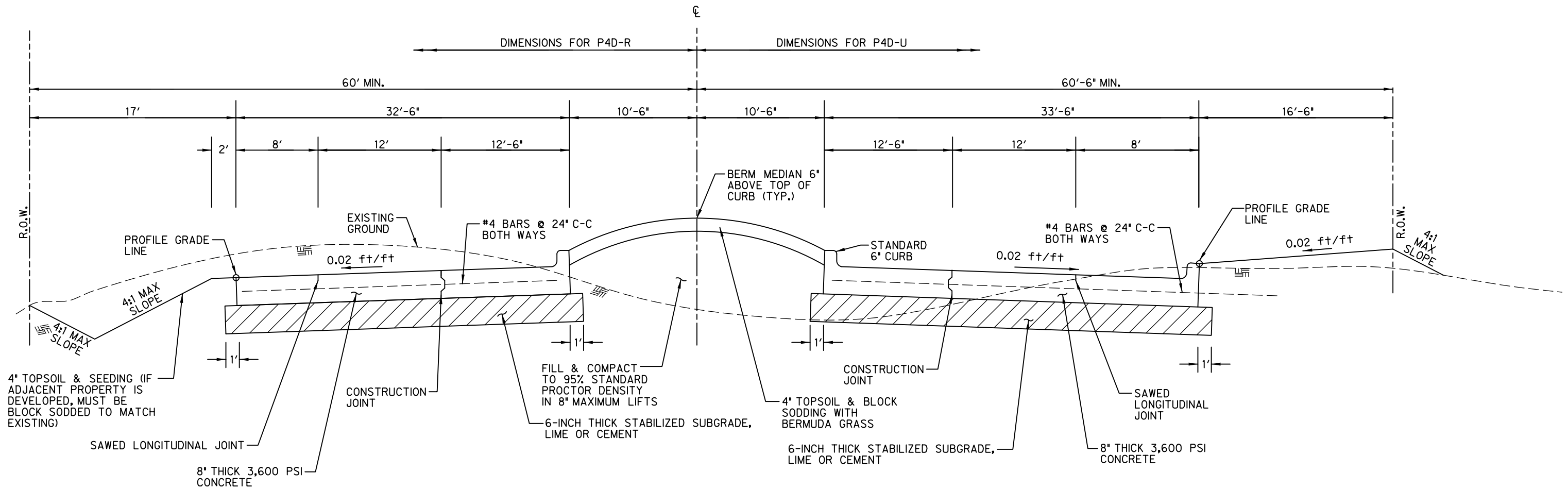
- NOTES:
- ALL UTILITIES AND SIDEWALKS ARE TO BE PLACED IN A MINIMUM 10' SIDEWALK & UTILITY EASEMENT OUTSIDE OF RIGHT-OF-WAY.
 - SEE SIDEWALL DETAILS FOR SIDEWALK LOCATIONS

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PAVEMENT DETAILS **UNDIVIDED MINOR ARTERIAL - RURAL**



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REINFORCED CONCRETE PAVING STANDARDS

DIVIDED ARTERIALS - P4D-R & P4D-U

N.T.S.

NOTE:

1. P4D-R IS SHOWN ON LEFT SIDE OF DRAWING AND P4D-U IS SHOWN ON RIGHT SIDE OF DRAWING.
2. ALL DIMENSIONS TO CURB ARE SHOWN TO THE BACK OF CURB.
3. ALL SIDEWALKS FOR P4D-R ARE TO BE PLACED IN A MINIMUM 10' SIDEWALK & UTILITY EASEMENT OUTSIDE OF RIGHT-OF-WAY.
4. ALL UTILITIES AND SIDEWALKS FOR P4D-U ARE TO BE PLACED WITHIN THE LANDSCAPE AREA BETWEEN THE BACK OF CURB AND THE RIGHT-OF-WAY.
5. SEE SIDEWALK DETAILS FOR SIDEWALK LOCATIONS

CERTIFICATION:

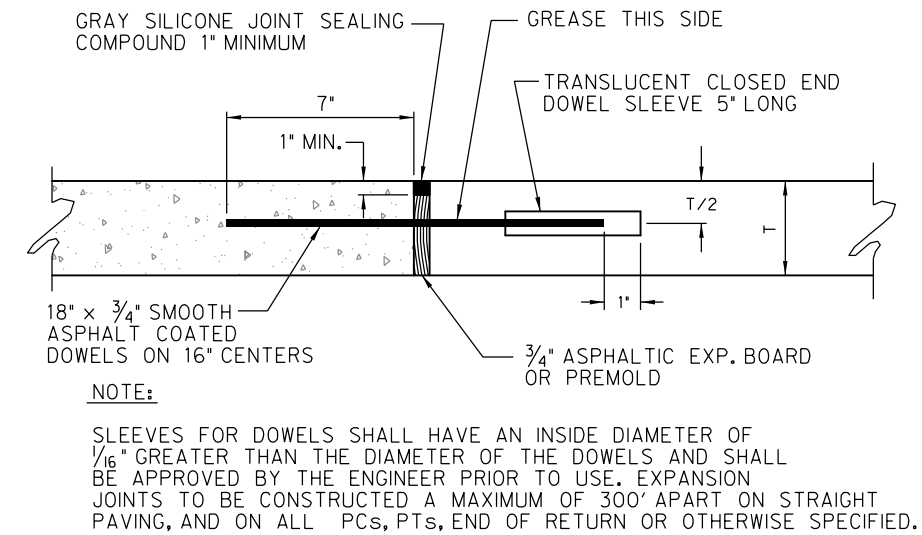
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PAVEMENT DETAILS

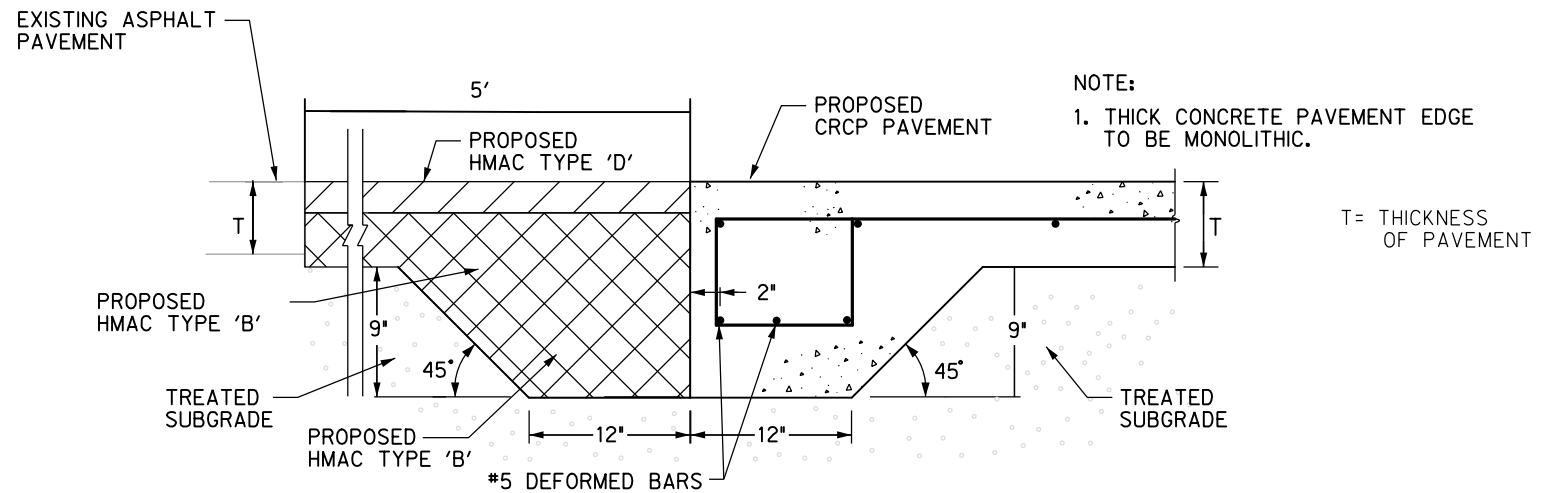
DIVIDED ARTERIALS - RURAL



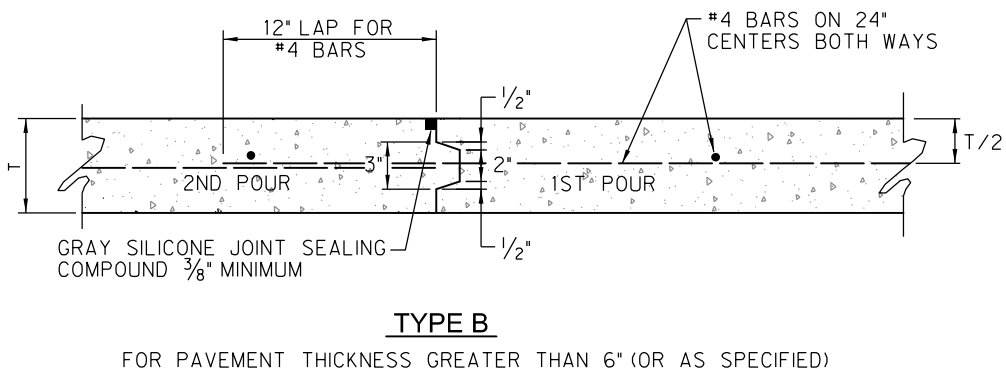
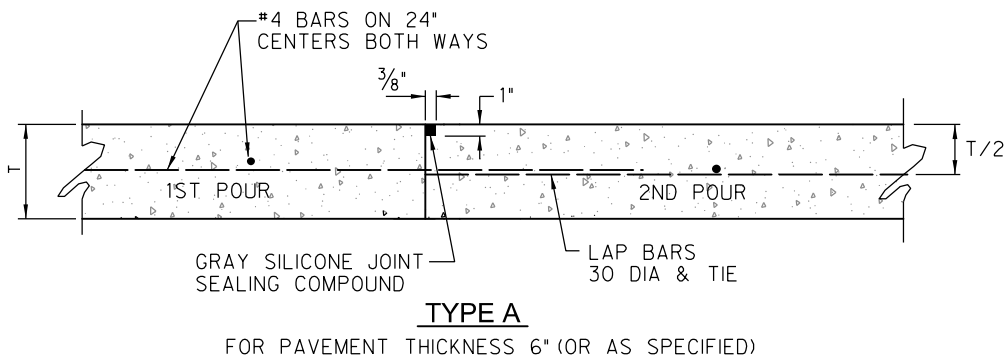
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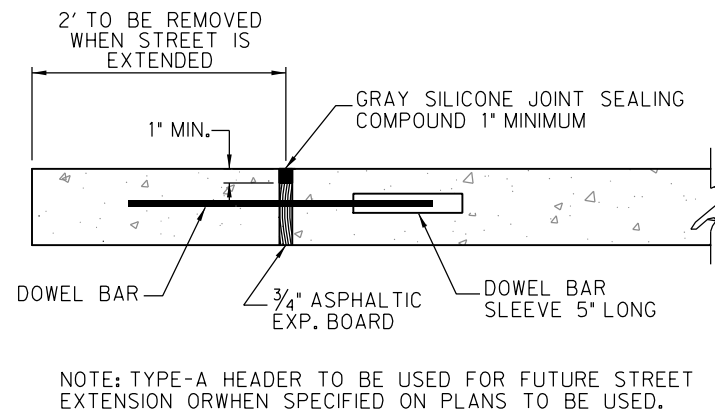
EXPANSION JOINT
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PAVEMENT TERMINUS
NOT TO SCALE



CONSTRUCTION JOINT
NOT TO SCALE

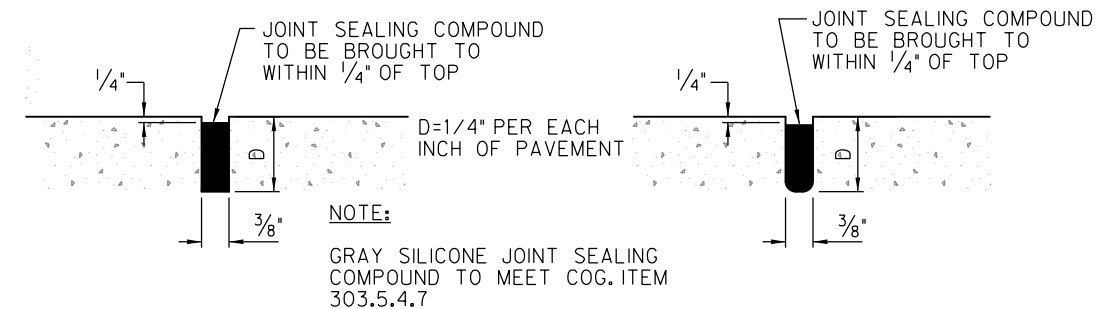


TYPE-B CONCRETE HEADER
NOT TO SCALE

NOTES:

UNLESS TYPE 'A' OR 'B' HEADERS ARE SPECIFIED, WHEN CONSTRUCTING NEW PAVEMENT, THE CONTRACTOR MUST:

- EXPOSE THE REINFORCING STEEL FROM THE EXISTING PAVEMENT AND TIE IT TO THE PROPOSED STEEL MAT, OR
- DOWEL #3 REINFORCING STEEL BARS INTO THE EXISTING PAVEMENT A MINIMUM OF (6) SIX INCHES AT 24" CENTERS AND HAVE A MINIMUM OF 15" LAP.



SAWED DUMMY JOINT
NOT TO SCALE

CERTIFICATION:

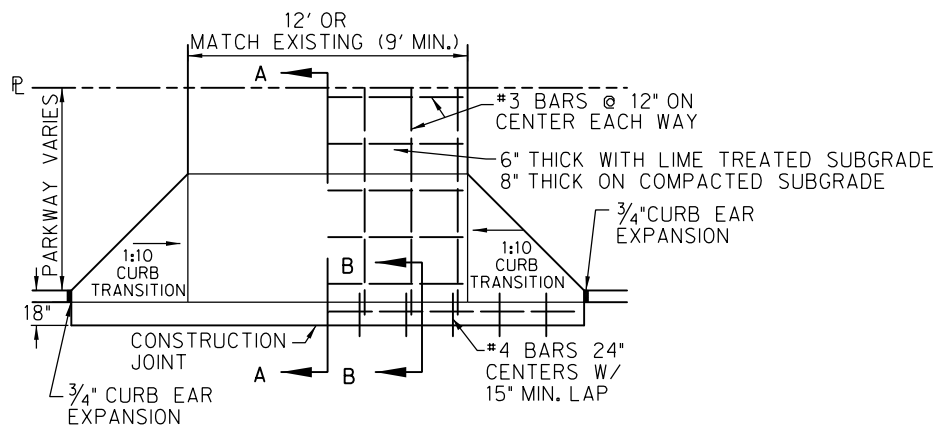
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PAVEMENT STANDARD DETAILS

CONSTRUCTION JOINT DETAILS

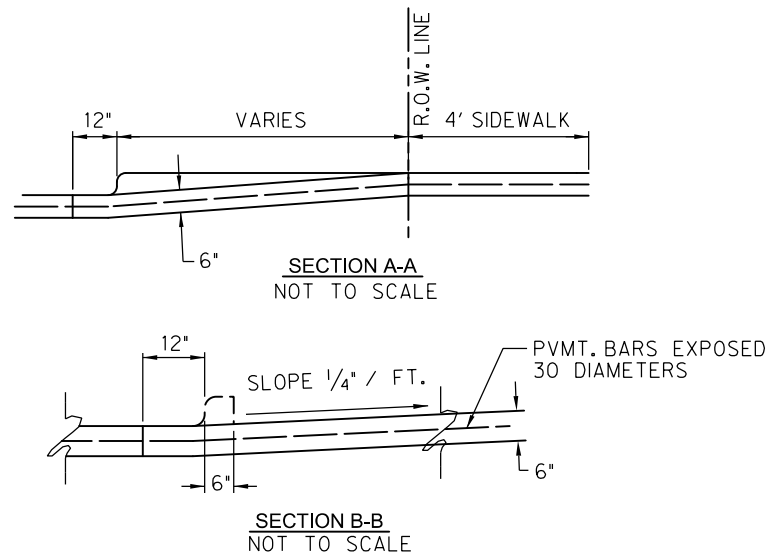


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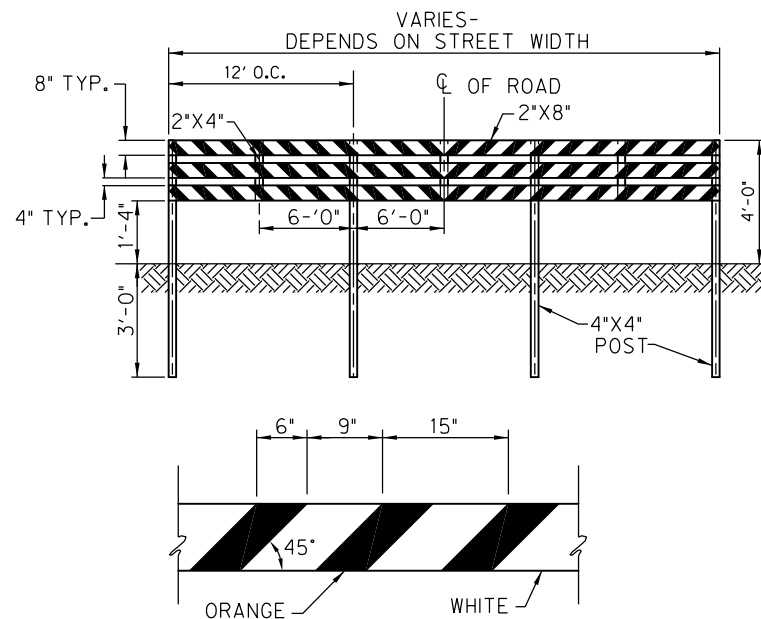
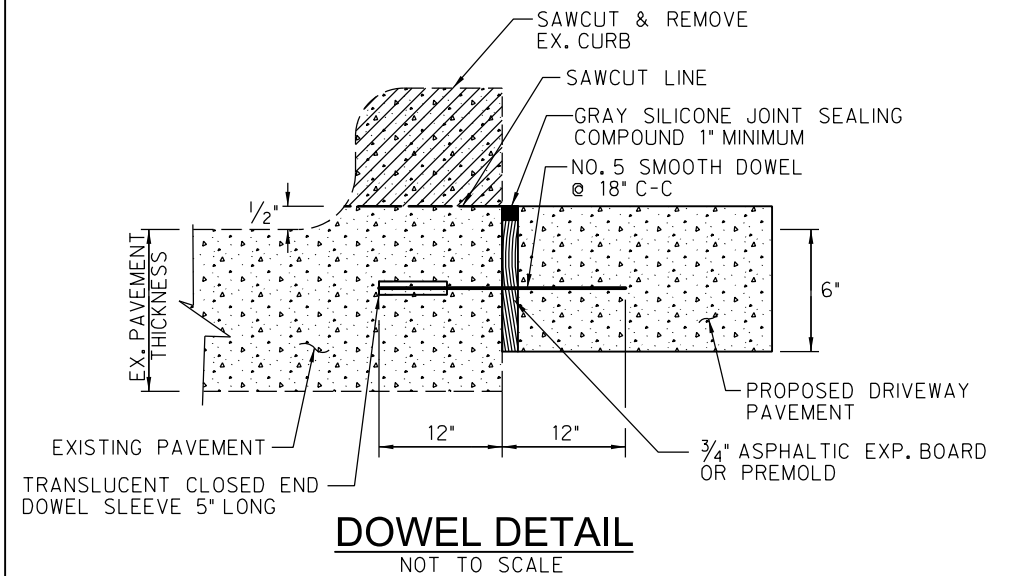


- NOTES:
1. DRIVEWAYS SHALL BE 12 FOOT WIDE OR SHALL MATCH EXISTING,(9' WIDE MINIMUM) NEW DRIVES WILL BE CONSTRUCTED TO PROPERTY LINE, IN REPLACING EXISTING DRIVES, THE EXISTING DRIVE WILL BE SAWED AND REMOVED AT A DISTANCE WHICH WILL ASSURE A SMOOTH GRADE, (TO BE SPECIFIED BY THE ENGINEER) AND WILL BE REPLACED TO THAT POINT. GRADE NOT TO EXCEED 1/10 TO THE FOOT RISE.
 - 2.FOR DRIVEWAYS BEING INSTALLED TO EXISTING PAVEMENT, SAWCUT CURB AND DOWEL INTO EXISTING PAVEMENT. SEE DOWEL DETAIL ON THIS SHEET.

DRIVEWAY DETAIL
NOT TO SCALE

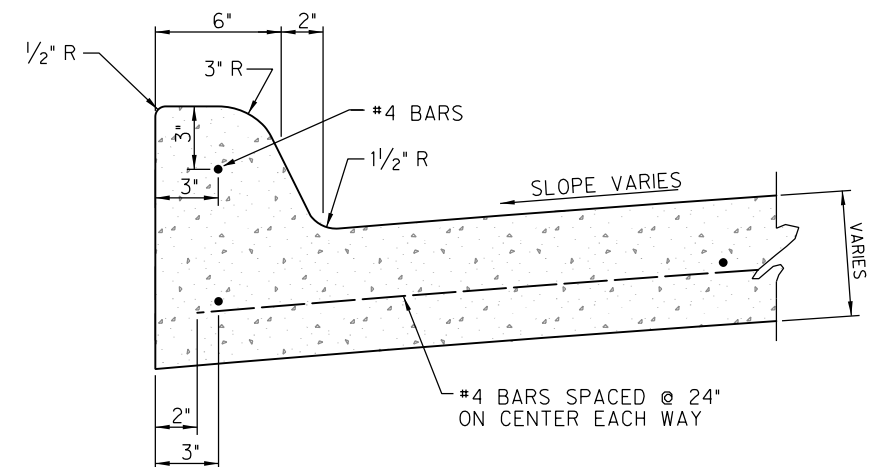


- NOTE:
- CURB, GUTTER, PAVEMENT, AND VALLEY TO BE POURED MONOLITHIC. THE REINFORCED CONCRETE VALLEY SHALL REPLACE THE CONCRETE PAVING WITH THE SUBGRADE AND BASE TREATMENT REMAINING THE SAME IN ACCORDANCE WITH THE TYPICAL PAVING SECTION. THE CONCRETE VALLEY WILL BE CONSTRUCTED ACCORDING TO THE TOWN OF COPPER CANYON PAVING STANDARDS.



END OF ROAD BARRICADE DETAIL
NOT TO SCALE

- NOTES:
1. REFLECTIVE SHEETING FOR ALL TRAFFIC CONTROL DEVICES SHALL BE OF HIGH SPECIFIC INTENSITY (TYPE IIIA OR IIIB). ALL CHANNELIZATION DEVICES SHALL USE TYPE IIIA REBOUNDABLE SHEETING.
 2. ATTACH 2"x 8" BOARDS TO 4"x 4" POST WITH LAG BOLTS.
 3. ATTACH 2"x 4" BRACES TO 2"x 8" BOARDS WITH 10d-NAILS.
 4. BARRICADE TO BE FULL WIDTH OF STREET BACK OF CURB TO BACK OF CURB.
 5. IF BARRICADE IS USED TO DENOTE END OF ROADWAY, DIAGONAL STRIPES USED SHALL BE RED AND WHITE.



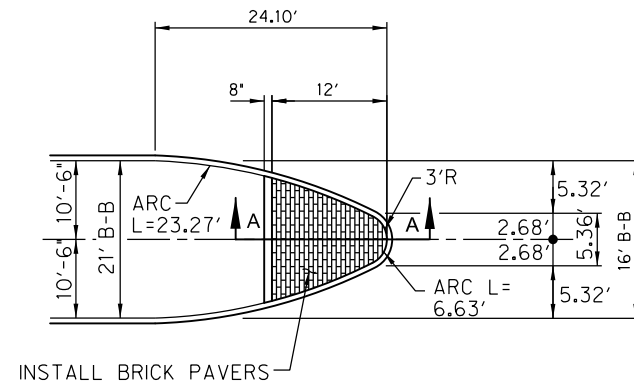
6" MONOLITHIC CONCRETE CURB
NOT TO SCALE

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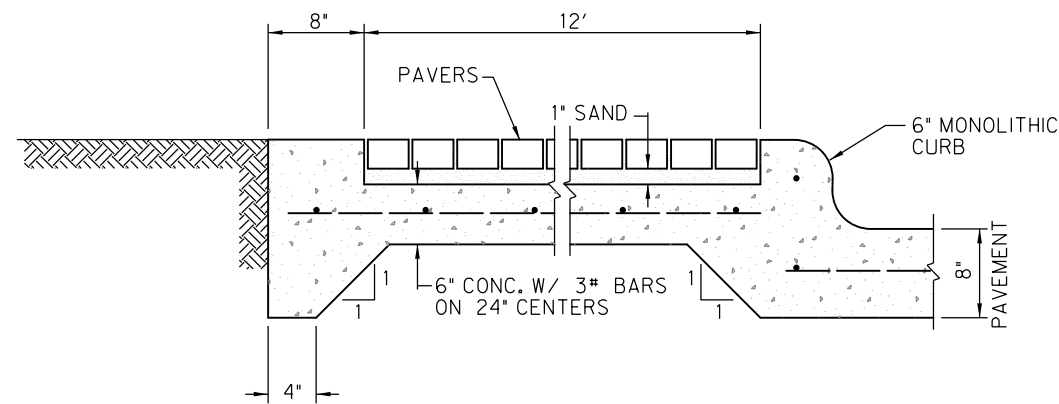
PAVEMENT STANDARD DETAILS
DRIVEWAYS, CURBS, AND MISCELLANEOUS PAVEMENT DETAILS



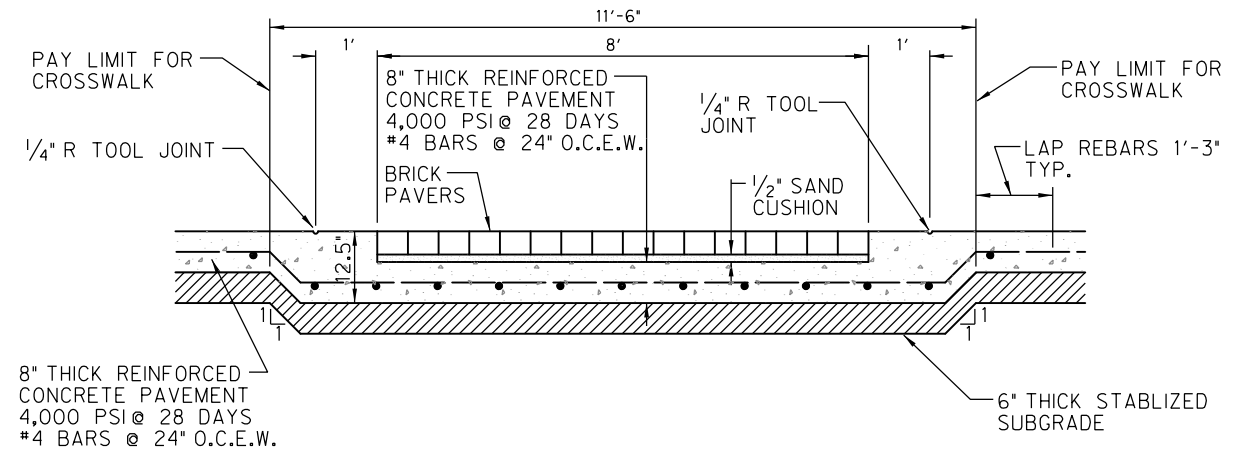
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MEDIAN NOSE DETAIL
NOT TO SCALE



SECTION A-A
NOT TO SCALE



BRICK PAVER CROSS WALK
NOT TO SCALE

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PAVEMENT STANDARD DETAILS

BRICK PAVERS FOR MEDIAN NOSE AND CROSS WALKS



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SIDEWALK AND HANDICAP / CURB RAMP NOTES:

GENERAL REQUIREMENTS:

REQUIREMENTS AND SPECIFICATIONS OF THE TEXAS ACCESSABILITY STANDARDS AND THE AMERICAN DISABILITIES ACT.

ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL DRAIN PROPOERLY SHOULD BE USED. ADJUST CURB RAMP LENTH OR GRADE OF APPROACH SIDEWALKS AS DIRECTED.

SIDEWALK WIDTH:

THE MINIMUM WIDTH OF ALL SIDEWALKS SHALL BE 4 FEET, ALONG FRONTAGE WITH RESIDENTIAL PROPERTIES AND 5 FEET ALONG COMMERCIAL FRONTAGE, AND TO BE CONSTRUCTED AS PER FIGURE 1: "SIDEWALK LOCATION DETAIL" ON THIS SHEET & SHEET 2 OF 3.

A 5'X5' LANDING SHALL BE REQUIRED EVERY 200 FEET FOR SIDEWALKS LESS THAN 5' IN WIDTH.

MINIMUM 6-FOOT SIDEWALK IS REQUIRED ADJACENT TO THE CURB, WITH THE APPROVAL OF THE TRAFFIC ENGINEER.

CURB RAMP LOCATION:

CURB RAMPS UNDER THESE PROVISIONS, SHALL BE WHEREVER AN ACCESSIBLE ROUTE CROSSES A CURB.

SLOPE:

MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP SURFACES IS 2%.

SLOPES ON CURB RAMPS SHALL BE AS FOLLOWS:

- A. THE SLOPE SHALL BE MEASURED AS SHOWN IN FIGURE 3.
- B. TRANSITIONS FROM RAMPS TO WALKS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
- C. MAXIMUM SLOPES OF ADJOINING GUTTERS, ROAD SURFACE IMMEDIATELY ADJACENT TO THE CURB RAMP, OR ACCESSIBLE ROUTE SHALL NOT EXCEED 1:50
- D. THE LEAST POSSIBLE SLOPE SHALL BE USED FOR ANY RAMP. THE MAXIMUM SLOPE OF A RAMP IN NEW CONSTRUCTION SHALL BE 1:12. THE MAXIMUM RISE FOR ANY RUN SHALL BE 30-INCHES. ANY RUN LONGER THAT 6' AT 1:12 WILL REQUIRE RAILING. CURB RAMPS AND RAMPS TO BE CONSTRUCTED ON EXISTING SITES OR IN EXISTING BUILDINGS OR FACILITIES MAY HAVE SLOPES AND RISES IF SPACE LIMITATIONS PROHIBIT THE USE OF A 1:12 SLOPE OR LESS, AS FOLLOWS:
- 1.) A SLOPE BETWEEN 1:10 AND 1:12 IS ALLOWED FOR A MAXIMUM RISE OF 6-INCHES.
- 2.) A SLOPE BETWEEN 1:8 AND 1:10 IS ALLOWED FOR A MAXIMUM OF 3-INCHES A SLOPE STEEPER THAN 1:8 IS NOT ALLOWED.
- E. LANDINGS SHALL BE 5'X 5' MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION
- F. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE MINIMUM OF 4'X4' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.

RAMP WIDTH:

THE MINIMUM WIDTH OF A CURB RAMP SHALL BE 36 INCHES EXCLUSIVE OF FLARED SIDES.

SURFACE:

SURFACES OF CURB RAMPS, ALONG ACCESSIBLE ROUTES AND IN ACCESSIBLE ROOMS AND SPACES INCLUDING FLOORS, WALKS, RAMPS, STAIRS, AND CURB RAMPS, SHALL BE STABLE, FIRM , AND SLIP RESISTANT.

SIDES OF CURB RAMPS:

IF A CURB RAMP IS LOCATED WHERE PEDESTRIANS MUST WALK ACROSS THE RAMP, OR WHERE IT IS NOT PROTECTED BY HANDRAILS OR GUARDRAILS, IT SHALL HAVE FLARED SIDES.

THE MAXIMUM SLOPE OF THE FLARE SHALL BE 1:10 (SEE FIGURE 4 (A)) CURB RAMPS WITH RETURNED CURBS MAY BE USED WHERE PEDESTRIANS WOULD NOT WALK ACROSS THE RAMP (SEE FIGURE 4 (B)) PROVIDE 1/8-INCH TOOLED 1/4-INCH TO 3/4-INCH WIDE GROOVES AT 2-INCH CENTERS.

BUILT-UP RAMPS:

BUILT-UP CURB RAMPS SHALL BE LOCATED SO THEY DO NO PROJECT INTO VEHICULAR TRAFFICE LANES. PROVIDE 1/8-INCH TOOLED 1/4-INCH TO 3/4-INCH WIDE GROOVES AT 2-INCH CENTERS.

OBSTRUCTIONS:

CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED VEHICLES.

LOCATION AT MARKED CROSSINGS:

CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES (SEE FIGURE 2).

DIAGONAL CURB RAMPS:

IF DIAGONAL (OR CORNER TYPE) CURB RAMPS HAVE RETURNED CURBS OR OTHER WELL DEFINED EDGES, SUCH EDGES SHALL BE PARALLEL TO THE DIRECTION OF PEDESTIRAN FLOW. THE BOTTOM OF THE DIAGONAL CURB RAMPS SHALL HAVE 48-INCHES MINIMUM. IF DIAGONAL CURB RAMPS ARE PROVIDED AT MARKED CROSSINGS. THE 48-INCH CLEAR SPACE SHALL BE WITHIN THE MARKINGS (SEE FIGURE 2 (C) AND (D)). IF DIAGONAL CURB RAMPS HAVE FLARED SIDES, THEY SHALL ALSO HAVE AT LEAST A 24-INCH LONG SEGMENT OF STRAIGHT CURB LOCATED ON EACH SIDE OF THE CURB RAMPS AND WITHIN THE MARKED CROSSING (SEE FIGURE 2 (C)) ISLANDS.

ANY RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES AND A LEVEL AREA AT LEAST 48-INCHES LONG BETWEEN THE CURB RAMPS IN THE PART OF THE ISLAND INTERSECTED BY THE CROSSINGS (SEE FIGURE 2 (A) AND (B)).

JOINTING:

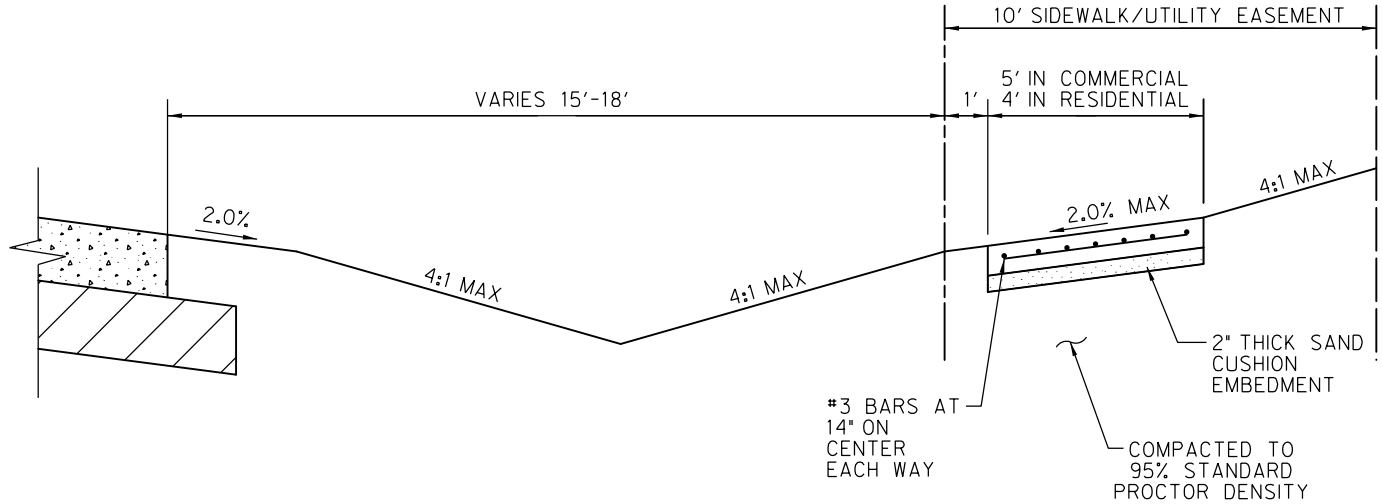
SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PREMOLD OR BOARD JOINT OF 3/4" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CONSTRUCTION:

- A. THE CONTRACTOR SHALL SAWCUT, REMOVE AND DISPOSE OFF-SITE THE REQUIRED EXISTING CONCRETE SIDEWALK, AND CURB AND GUTTER, TO CONSTRUCT THE PROPOSED RAMPS.
- B. CONCRETE SIDEWALKS AND RAMPS SHALL BE MINIMUM 4-INCH THICK, 3,600 PSI, 5 SACK CONCRETE, REINFORCED WITH #3 BARS AT 14-INCH CENTERS BOTHWAYS, PLACED OVER A 2-INCH THICK SAND CUSHION EMBEDMENT.
- C. THE CONTRACTOR SHALL USE 1-INCH PREMOLDED EXPANSION JOINT MATERIAL BETWEEN THE PROPOSED SIDEWALKS AND RAMPS AT THE BACK OF CURBS, AND AT JOINTS AT NO EXTRA PAY.
- D. DUMMY JOINT REQUIRED EVERY 4-FEET IN 4-FOOT WIDE SIDEWALKS AND EVERY 5-FEET IN 6-FOOT WIDE SIDEWALK.

PAYMENT:

CURB RAMPS AND LANDINGS SHALL BE CONSTRUCTED AND PAID FOR IN ACCORDANCE WITH NCTCOG ITEM 305.2.



(A)
OPTION 1
SIDEWALK LOCATION DETAIL
N.T.S.

FIGURE 1

PAVEMENT STANDARD DETAILS

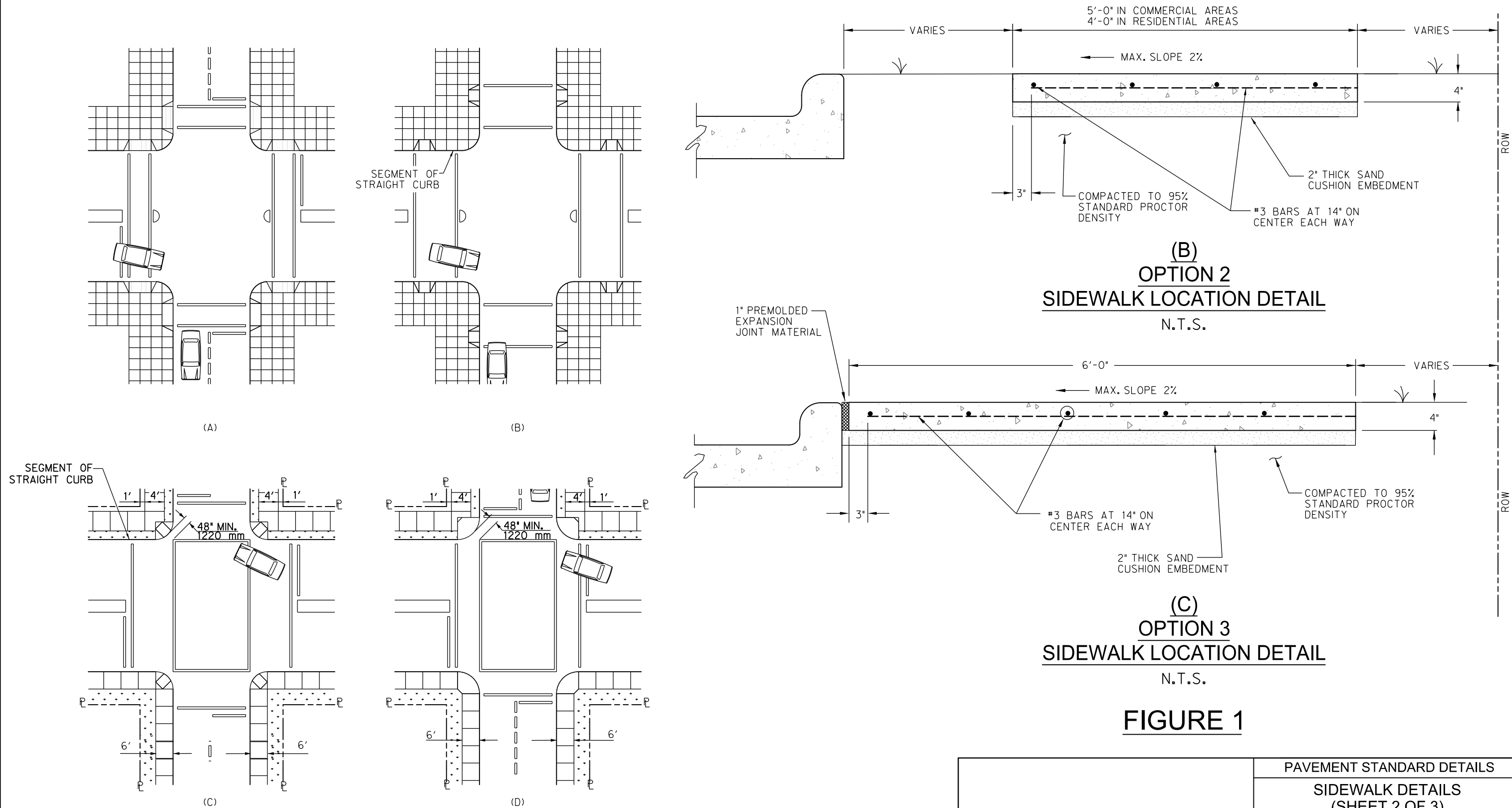
SIDEWALK DETAILS
(SHEET 1 OF 3)




DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-10	___

CERTIFICATION:

THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.



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PAVEMENT STANDARD DETAILS						
SIDEWALK DETAILS (SHEET 2 OF 3)						
						
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-11	

V:H = VERTICAL : HORIZONTAL

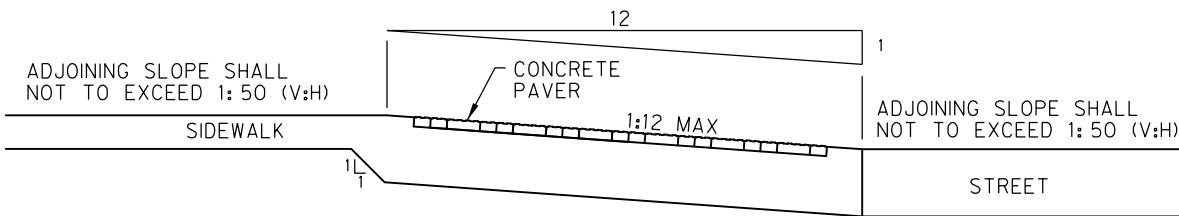
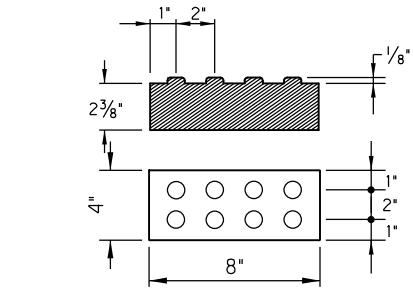


FIGURE 3
MEASUREMENT OF CURB RAMP SLOPES
N.T.S.



CONCRETE PAVER WITH
TRUNCATED DOME
SURFACE DETAIL
N.T.S.

CONCRETE PAVER NOTES:

1. Concrete paver units shall meet all requirements of ASTM C-936, C-33, and shall be laid in a two by two unit basket weave pattern, unless shown otherwise in the plans.
2. Domes shall be aligned in the direction of pedestrian travel.
3. Concrete paver units shall have a truncated dome top surface for detectable warning to pedestrians.
4. Concrete paver unit color for the ramp shall be a contrasting color (red) that provides a light reflective value that significantly contrasts with the adjacent surfaces. Use red pigment in concrete at ramp. The red pigment shall be Patterned Concrete Industries, Inc. A-27 dark red. All pigment used on the project must be the same for the entire project.
5. Concrete paver units shall be saw cut only and any cut unit shall not be less than 25 percent of a full unit.
6. Other applications of truncated domes may be accepted for use as approved by Town of Copper Canyon.
7. Landings shall be provided at top and bottom of each curb ramp. Landings shall be 5'X 5' min. with a max. 2% cross slope in any direction.
8. Concrete pavers shall be installed the full length of ramp, except when located in public R.O.W. where it shall be a minimum of 2' wide.

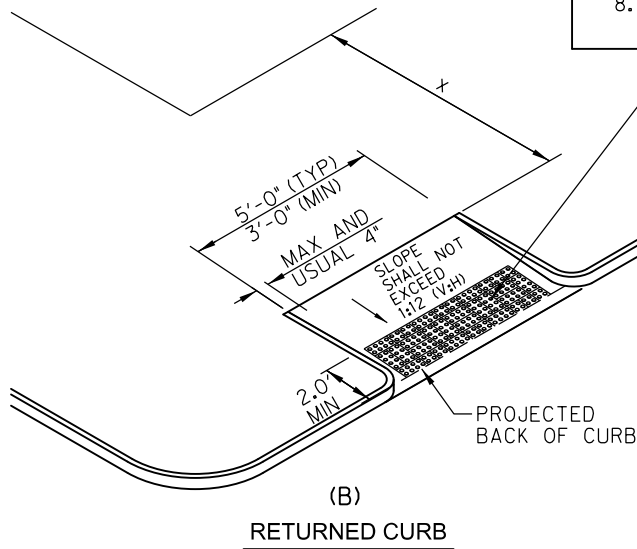
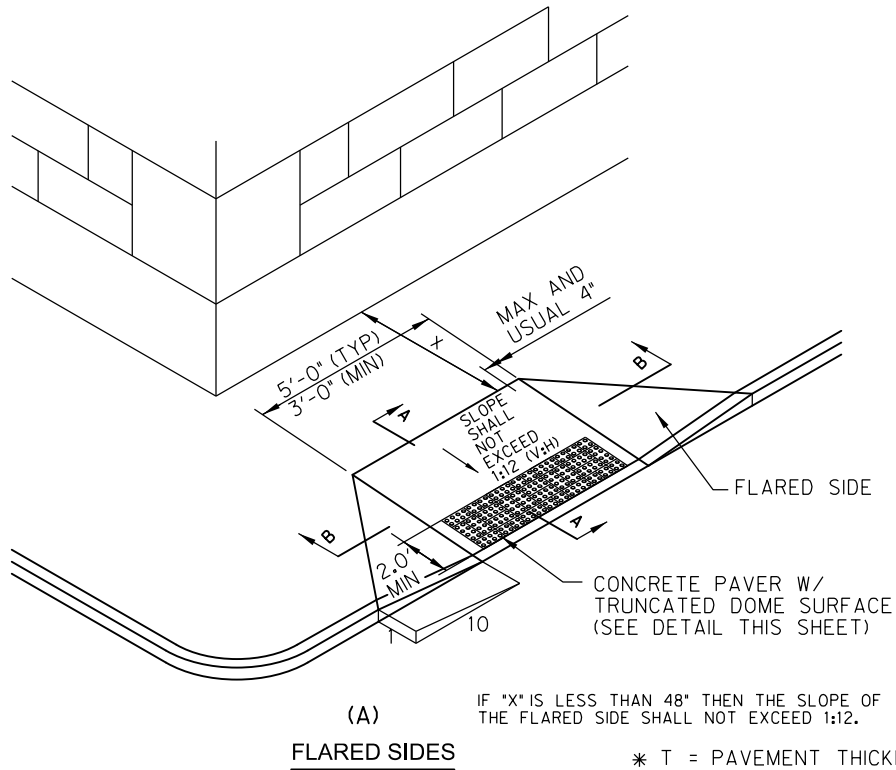
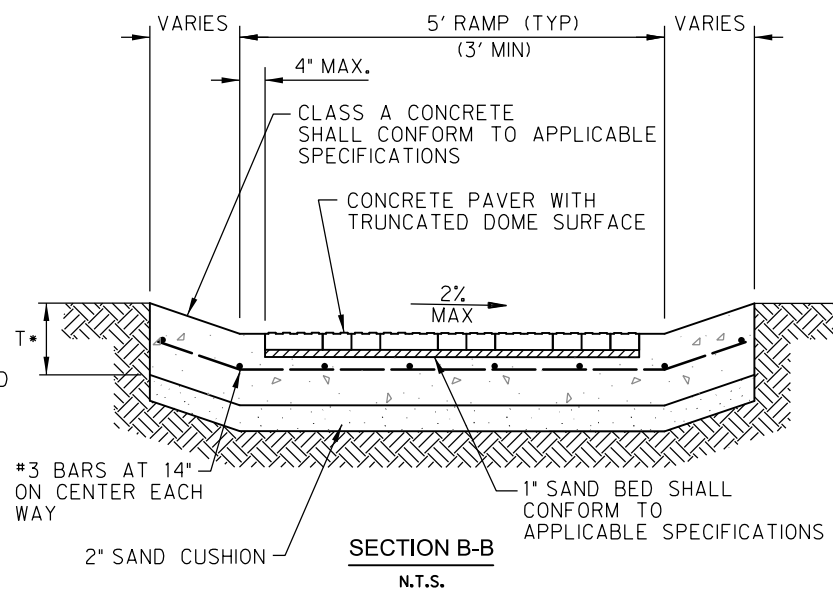
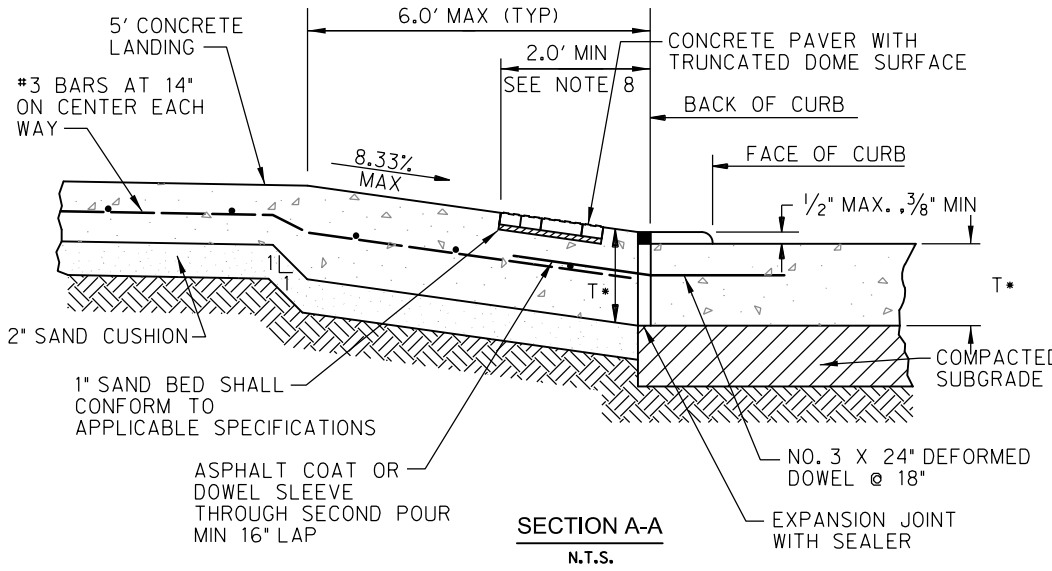
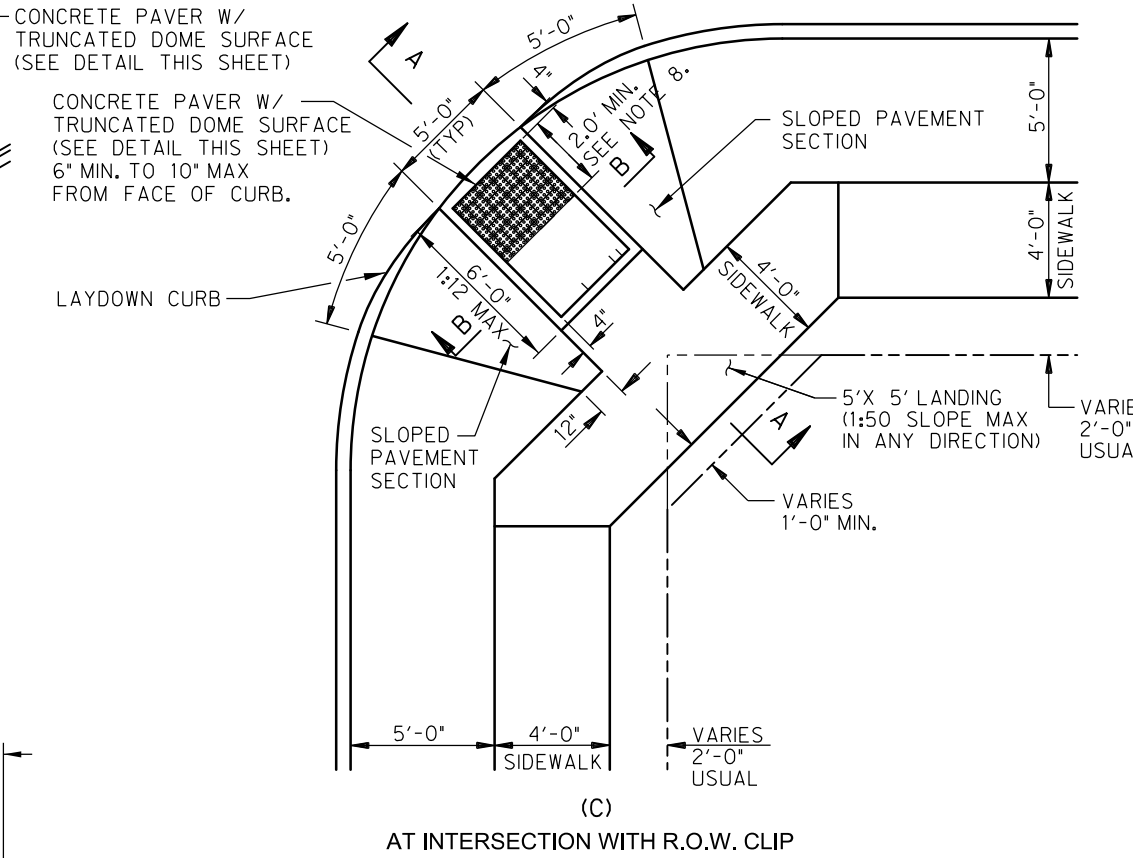

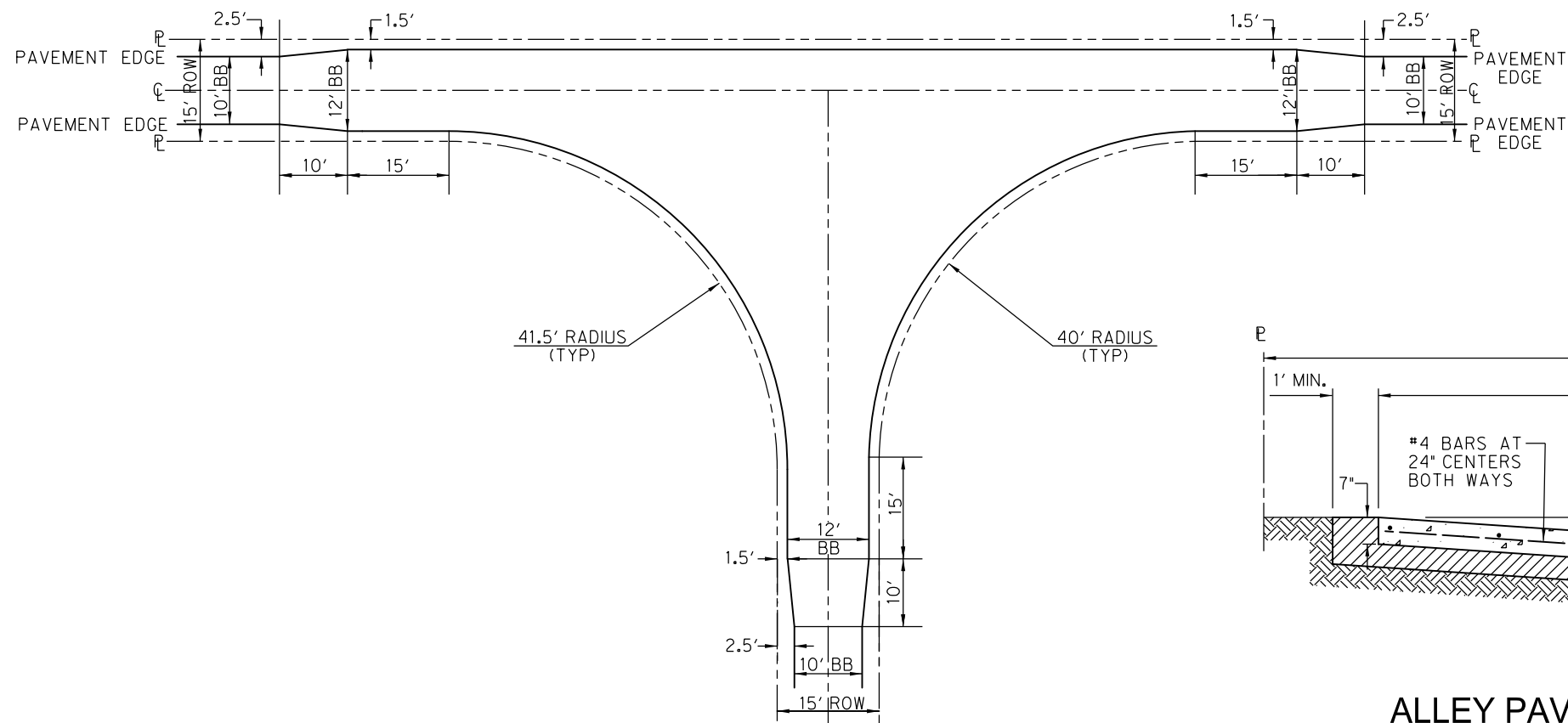


FIGURE 4
SIDES OF CURB RAMP

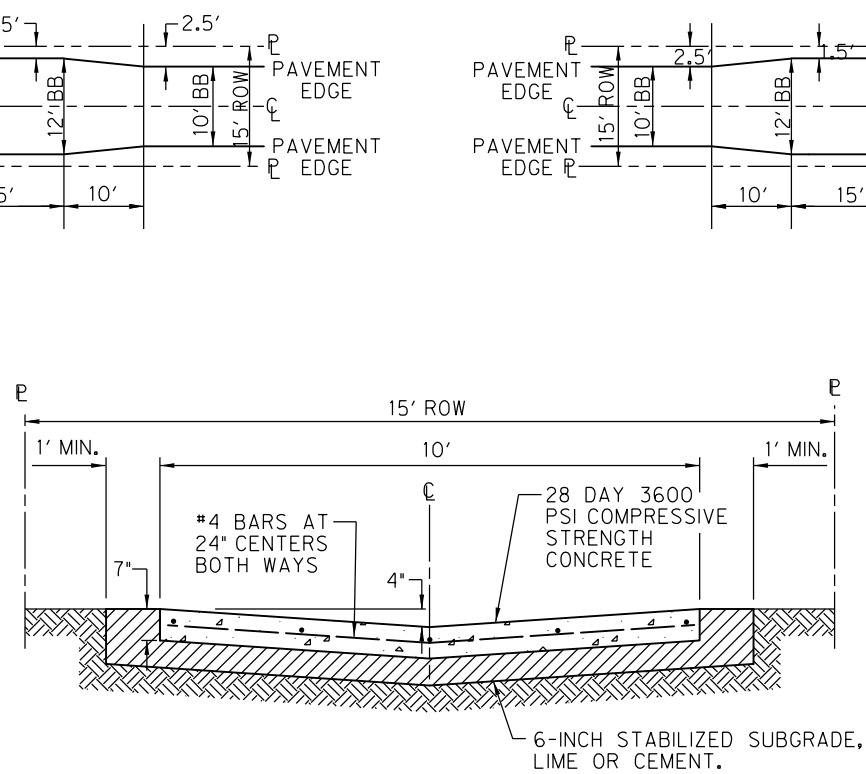


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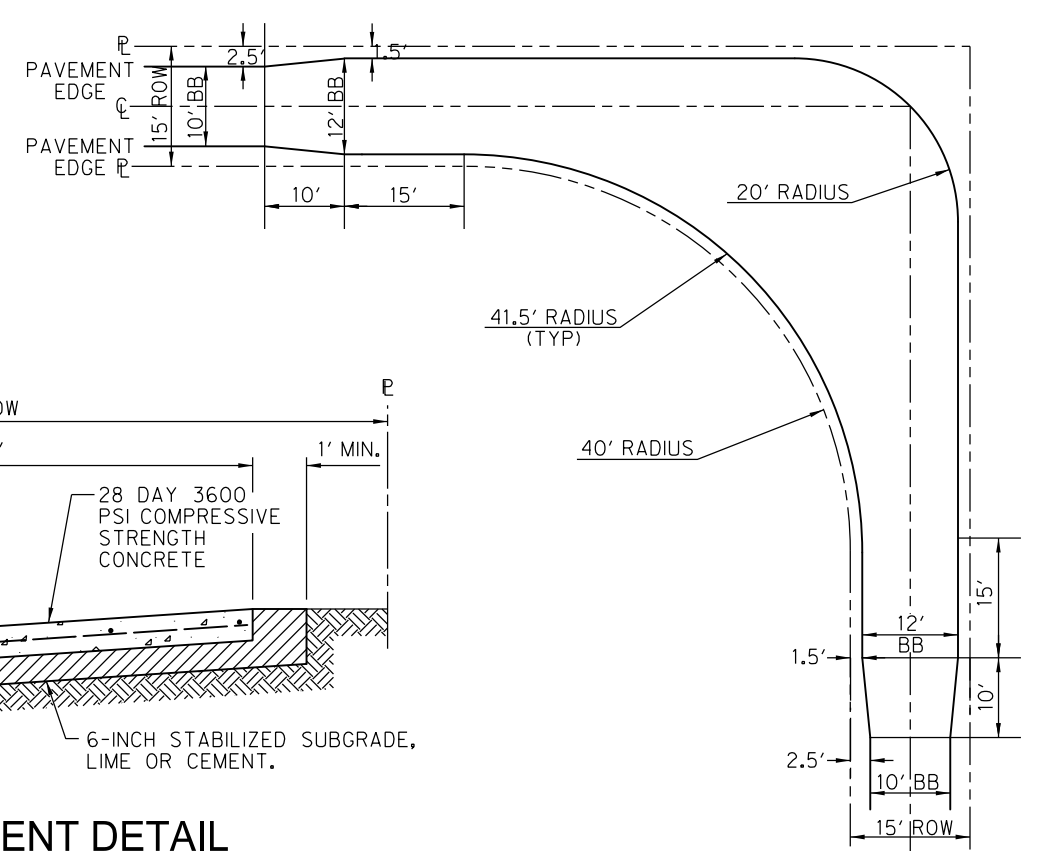
PAVEMENT STANDARD DETAILS						
SIDEWALK DETAILS (SHEET 3 OF 3)						
						
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-12	



**ALLEY INTERSECTION
TYPE "A"**



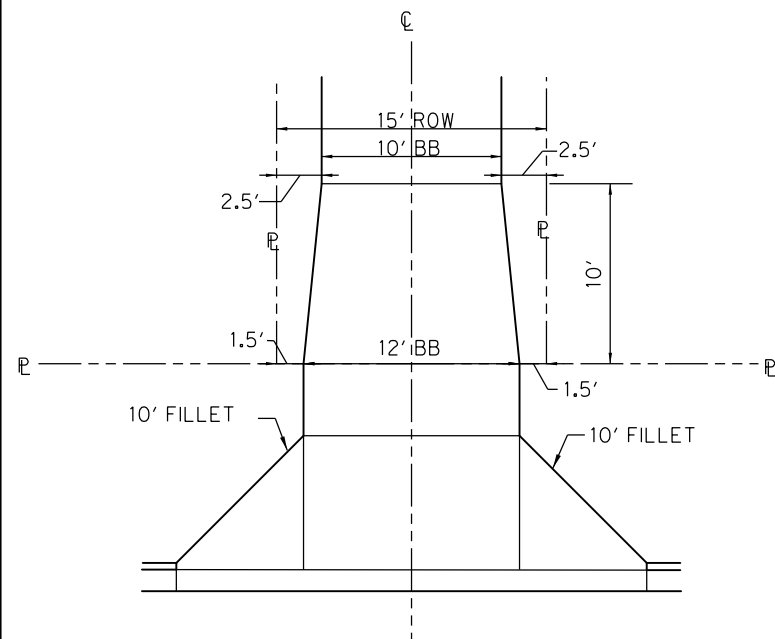
ALLEY PAVEMENT DETAIL
NOTE: SAME INVERT ON 12' WIDTH ALLEY PAVEMENT



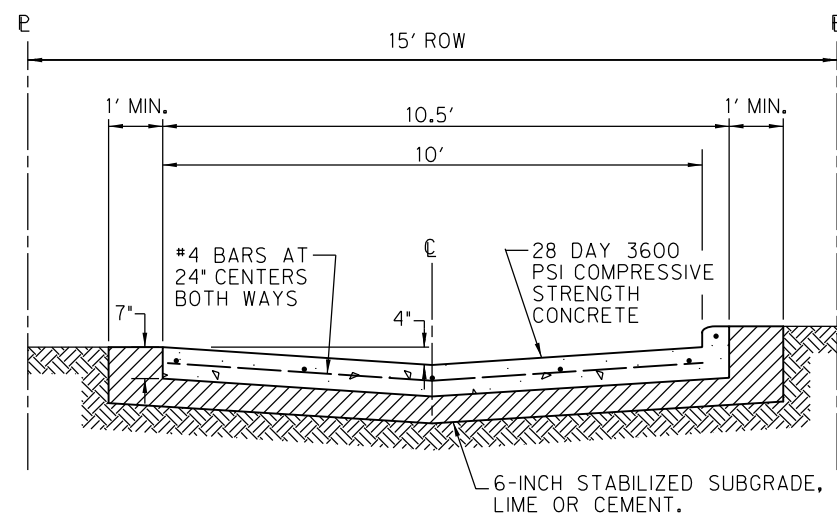
**ALLEY INTERSECTION
TYPE "B"**

NOTE:

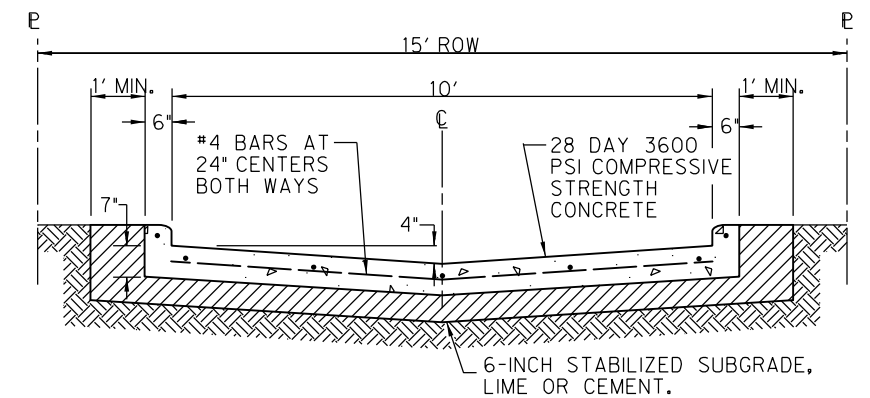
- UPON APPROVAL FROM THE TOWN, ALLEY SHALL ONLY BE CONSTRUCTED IN COMMERCIAL AREAS.



ALLEY ENTRANCE PLAN



ALLEY PAVEMENT DETAIL WITH CURB



CURBED ALLEY SECTION

CERTIFICATION:

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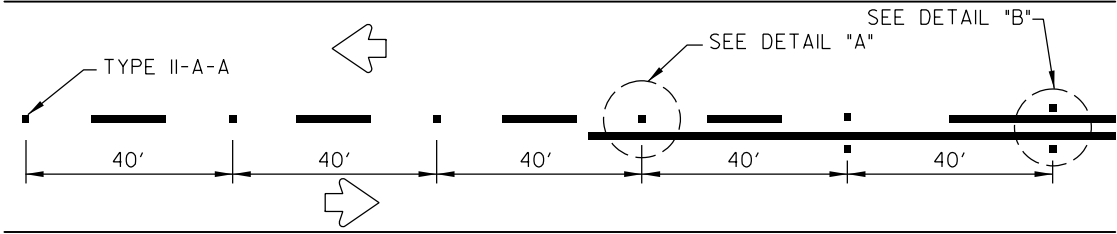
PAVEMENT STANDARD DETAILS

ALLEY DETAILS

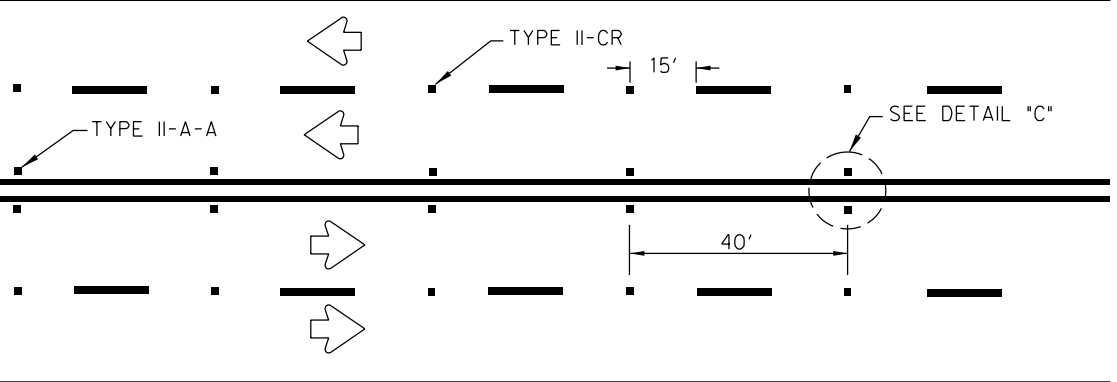


DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-13	

REFLECTIVE RAISED PAVEMENT MARKERS
FOR VEHICLE POSITIONING GUIDANCE

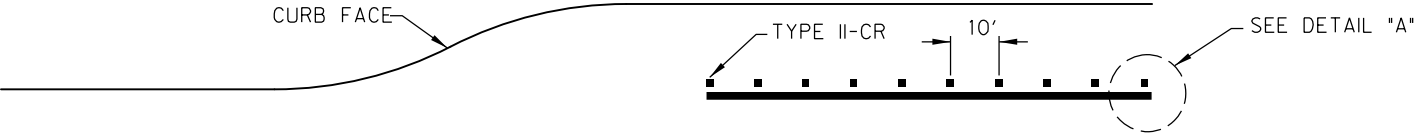
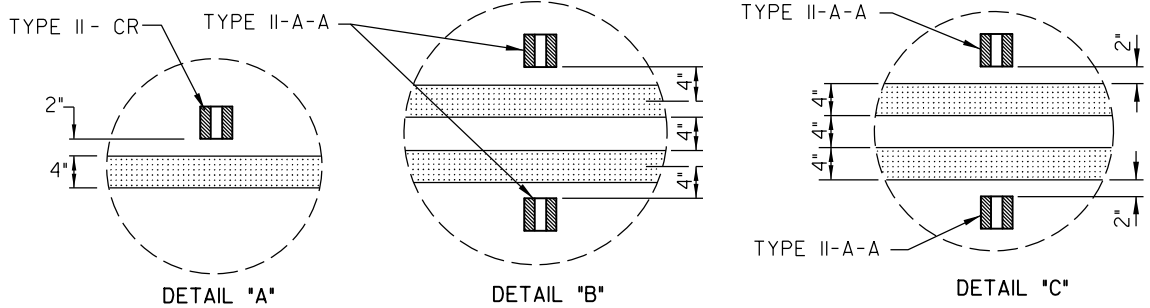


CENTERLINE FOR ALL TWO LANE ROADWAYS

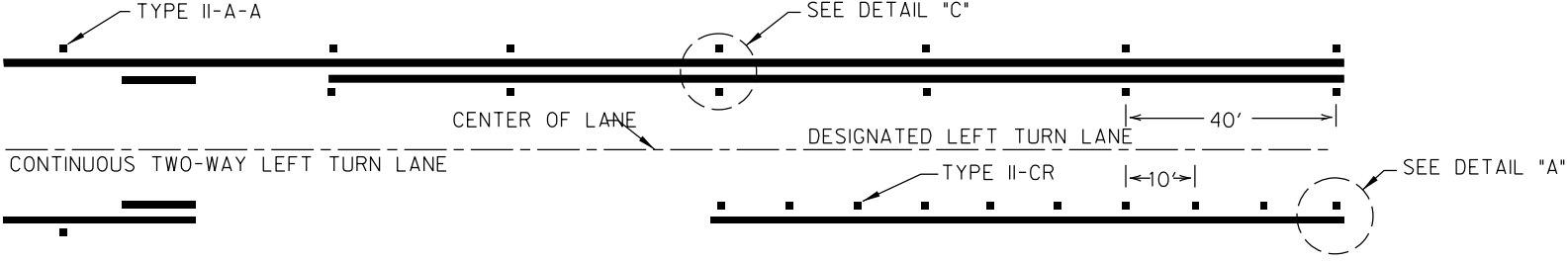


CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker TYPE II-CR, clear/red face toward normal traffic, shall be placed on 40-foot centers.

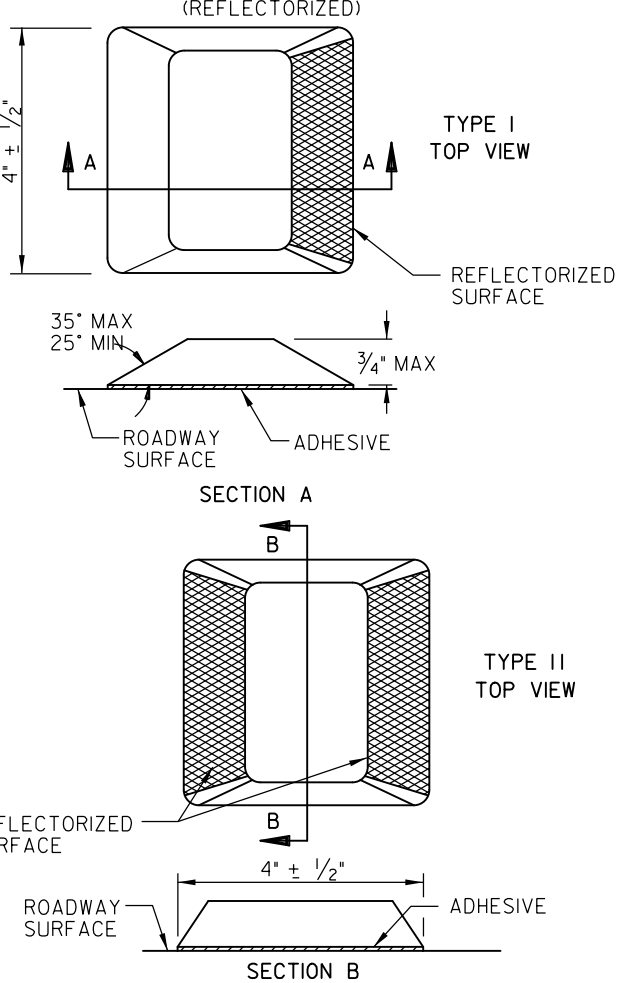


LANE LINES FOR DESIGNATED TURN LANES



LANE LINES FOR DESIGNATED TURN LANES IN A SHARED TWO-WAY TURN LANE

RAISED PAVEMENT MARKERS



GENERAL NOTES:

All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.

On concrete pavements the raised pavement markers should be placed to the same side of the longitudinal joints as the lane line.

All pavement markers installed on concrete shall be installed using Epoxy adhesive.

All pavement markers installed on asphalt shall be installed using Bituminous adhesive.

All pavement marking materials shall meet the Texas Department of Transportation Material Specifications as specified by the plans.

SPECIFICATION REFERENCE TABLE - MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECT.)	DMS-4200
EPOXY	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130

CERTIFICATION:

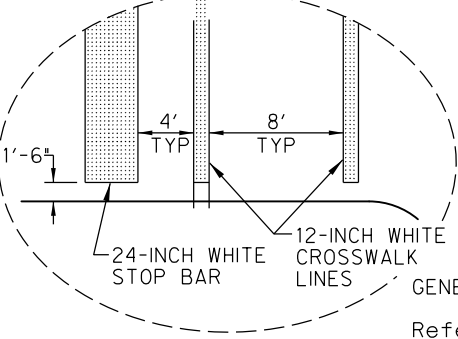
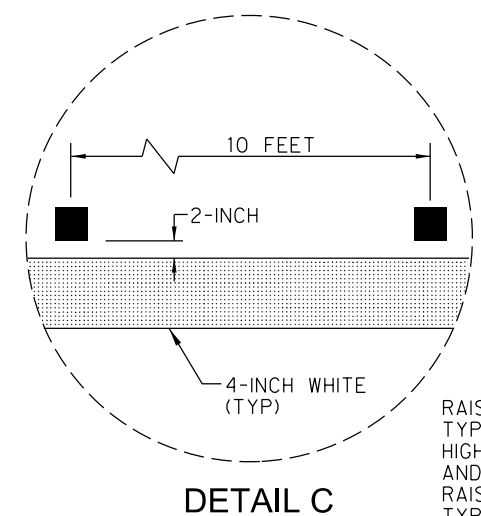
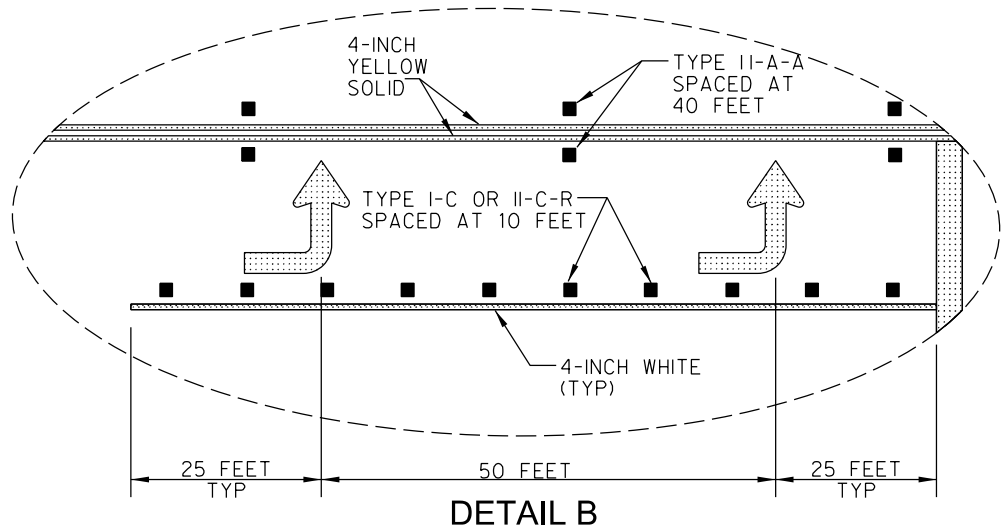
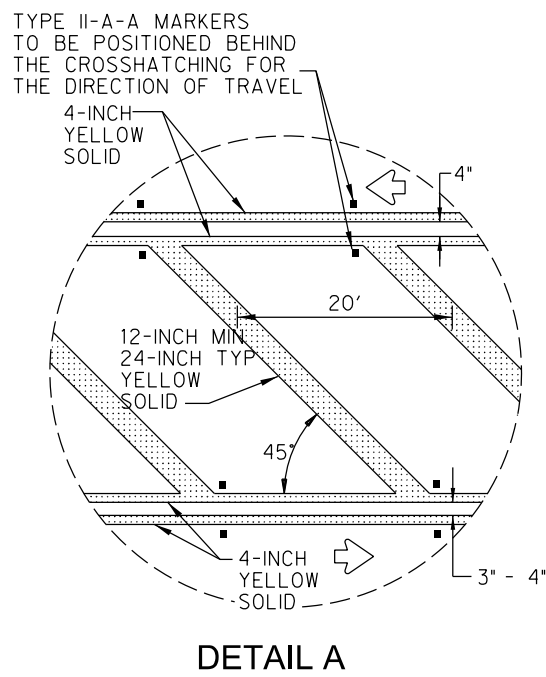
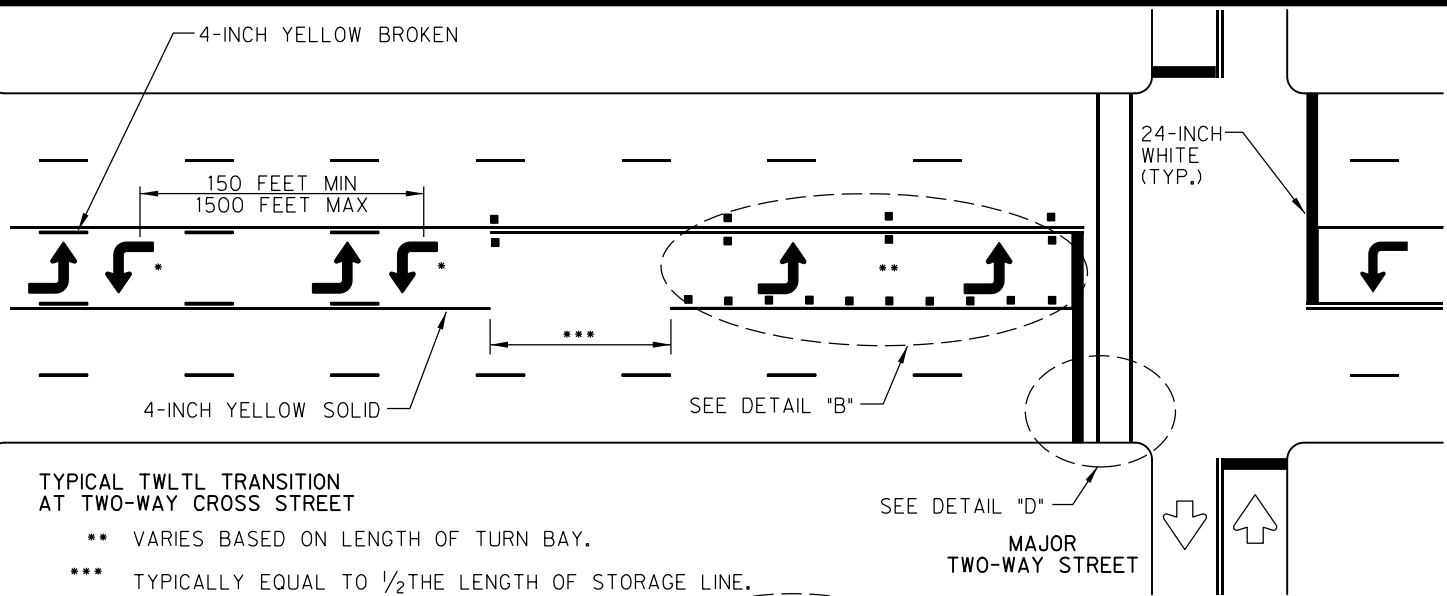
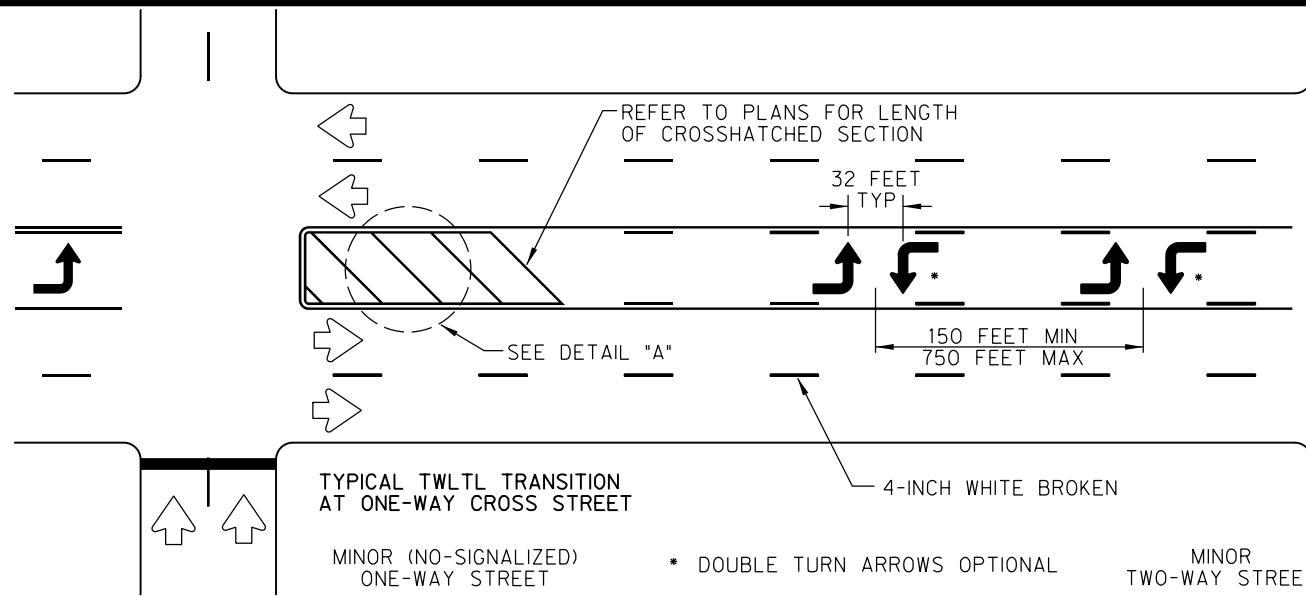
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

PAVEMENT MARKING STANDARD DETAILS

TURN LANE AND
TRANSVERSE MARKINGS



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-14	___



DETAIL D
FINAL PLACEMENT OF STOP BAR AND CROSSWALK SHALL BE APPROVED BY THE ENGINEER IN THE FIELD.

GENERAL NOTES

Refer elsewhere in plans for additional RPM placement and details. Details for words and arrows as shown on other sheets.

All pavement marking materials shall meet the Texas Department of Transportation Material Specifications as specified by the plans.

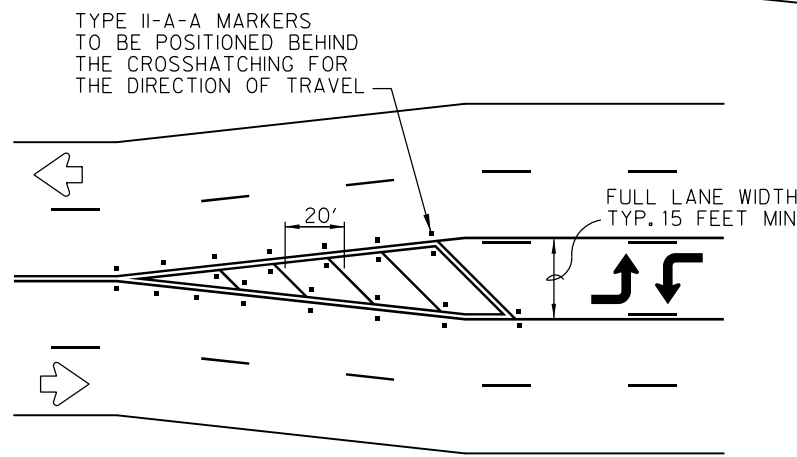
For a left turn bay less than 100 feet in length two arrows shall be used.

For a left turn bay greater than 100 feet in length three arrows shall be used. Spacing to be determined by Engineer.

Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.

SPECIFICATION REFERENCE TABLE - MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECT.)	DMS-4200
EPOXY	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130



TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

TYPICAL TWO-LANE INTERSECTION WITH LEFT TURN BAYS

CERTIFICATION:

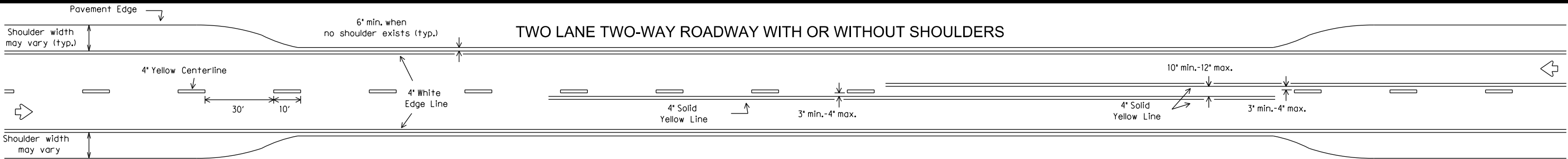
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

PAVEMENT MARKING STANDARD DETAILS

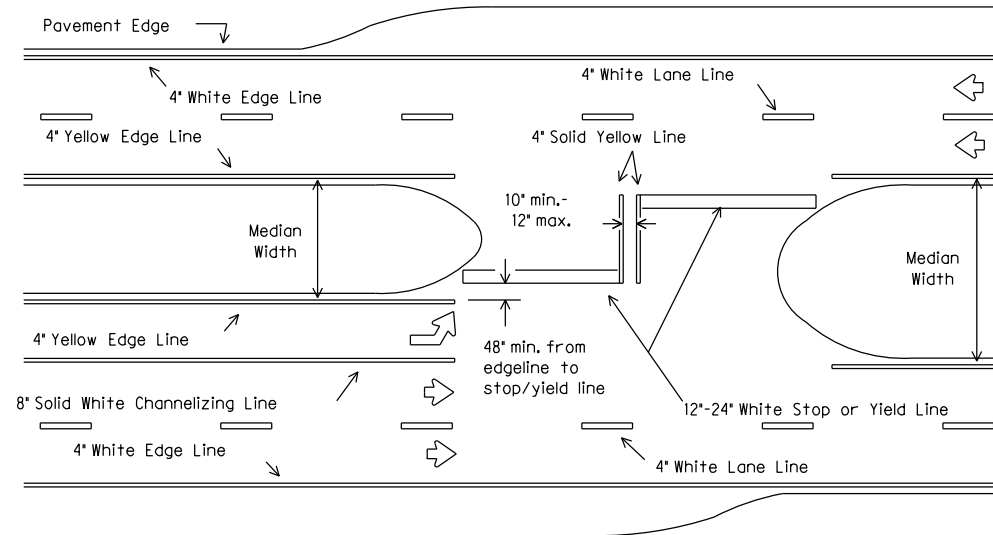
TWO-WAY LEFT TURN LANES AND LEFT TURN BAYS



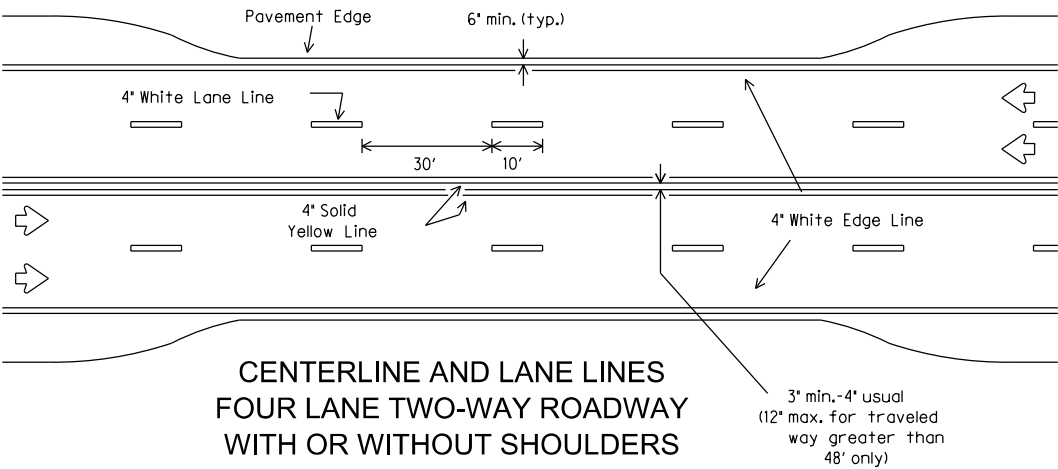
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-15	



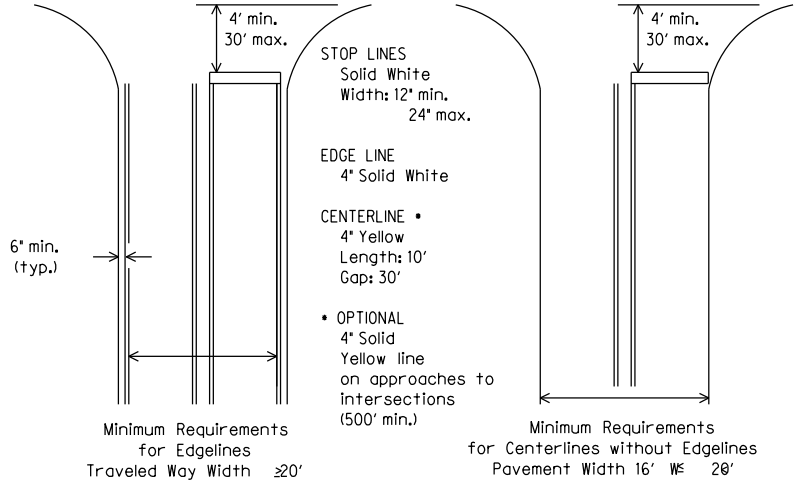
FOUR LANE DIVIDED ROADWAY INTERSECTIONS



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.



CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
30, 35, 40	$L = \frac{WS^2}{60}$
45, 50, 55, 60, 65, 70	$L = WS$

85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

L=Length of Crosshatching (FT.) W=Width of Offset (FT.) S=Posted Speed (MPH)

EXAMPLES:

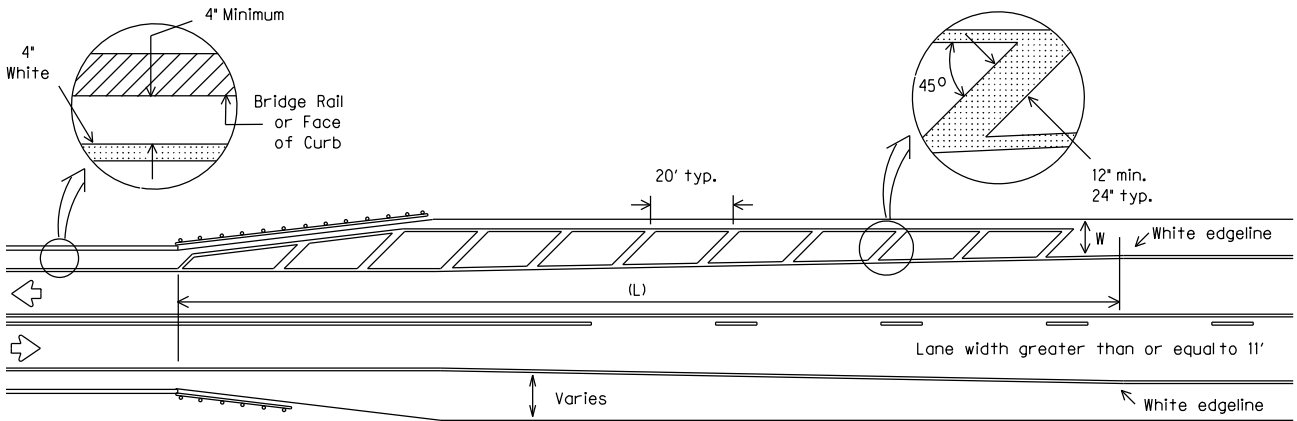
An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the cross-hatching should be:

$L = 8 \times 70 = 560 \text{ ft.}$

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the cross-hatching should be:

$L = 4(40) / 60 = 106.67 \text{ ft. rounded to 110 ft.}$

ROADWAYS WITH REDUCED SHOULDER
WIDTHS ACROSS BRIDGE OR CULVERT



NOTES:

- No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
- For crosshatching length (L) see Table 1.
- The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
- The crosshatching should be required if the shoulder width in advance of the bridge is 4 foot or wider and any reduction in shoulder width across the bridge occurs.
- For guard fence details, refer elsewhere in the plans.

GENERAL NOTES:

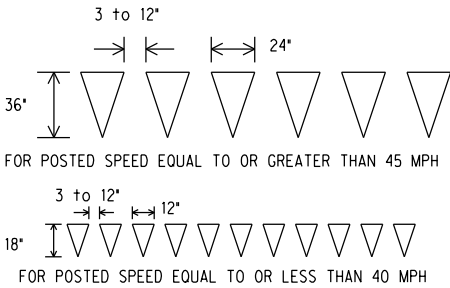
Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

The traveled way includes only that portion of the roadway used for vehicular travel and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

SPECIFICATION REFERENCE TABLE			
MATERIAL SPECIFICATIONS			
PAVEMENT MARKERS (REFLECT.)	DMS-4200		
EPOXY	DMS-6100		
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130		

YIELD LINES



CERTIFICATION:

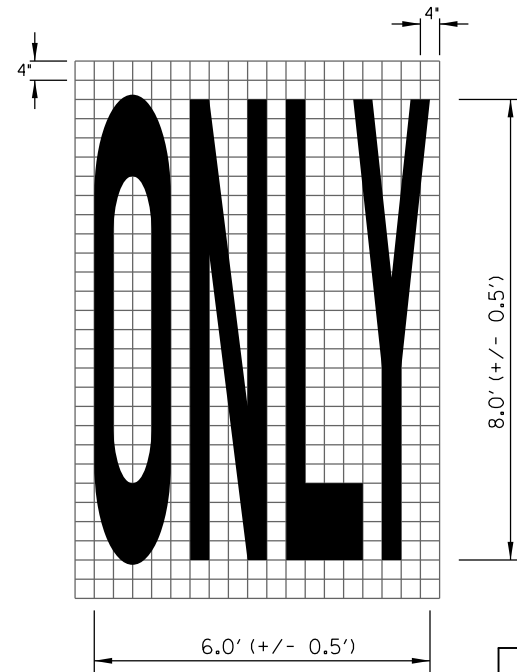
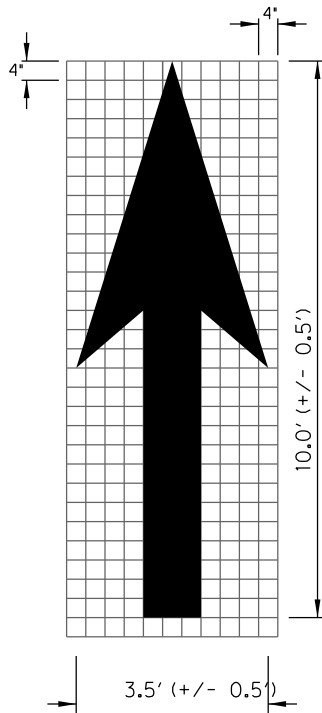
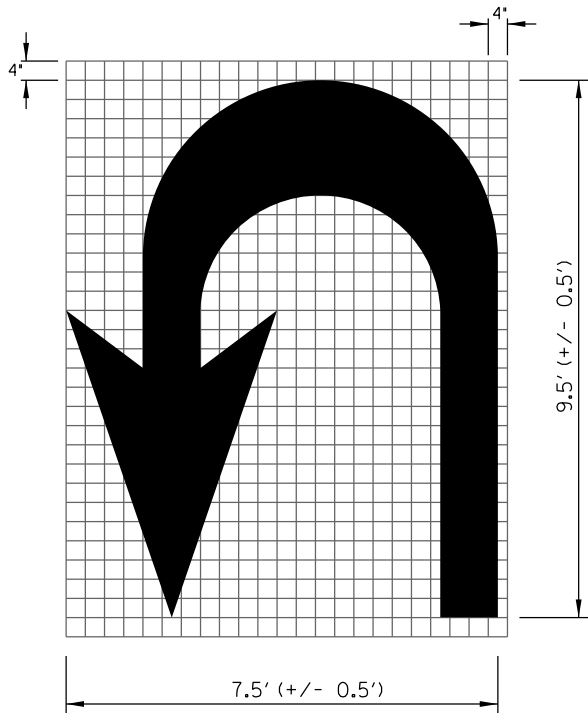
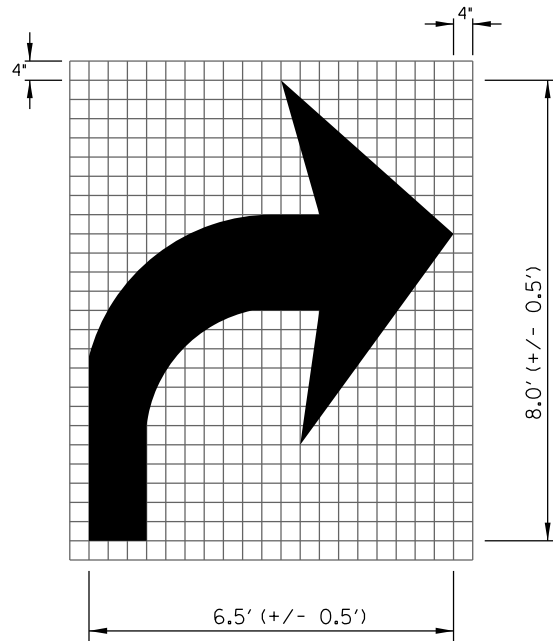
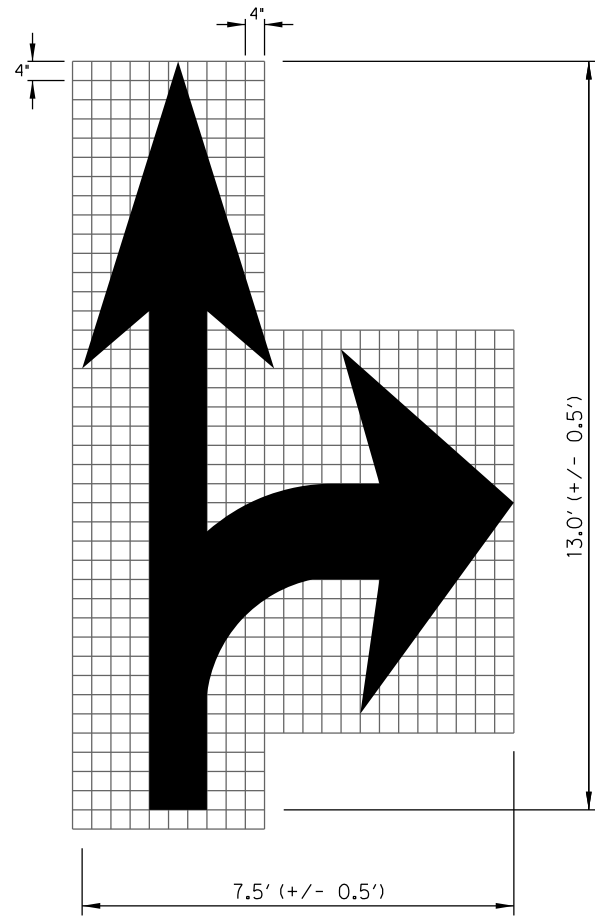
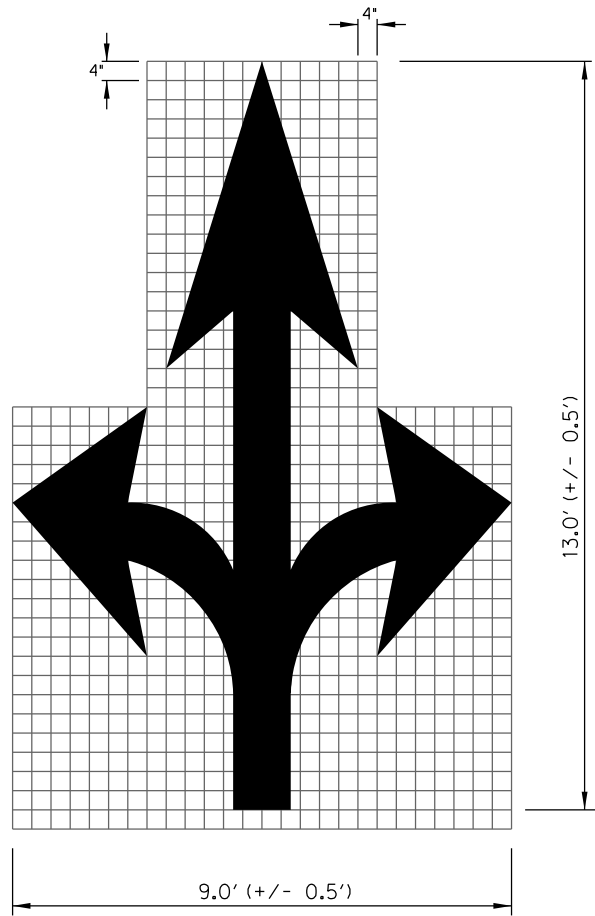
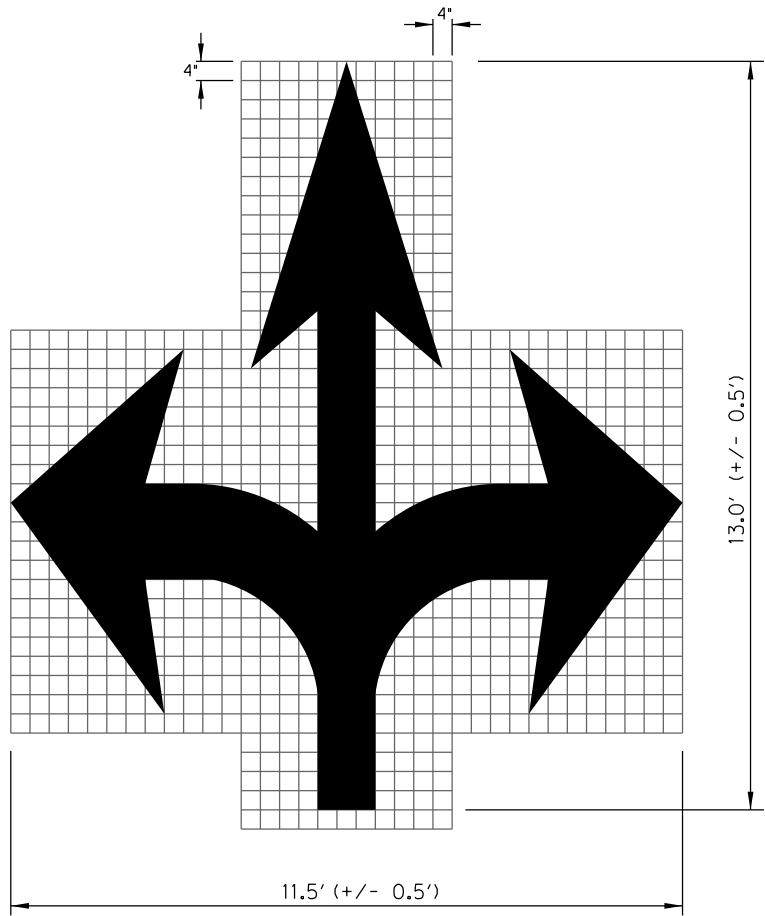
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PAVEMENT MARKING STANDARD DETAILS

TYPICAL STANDARD
PAVEMENT MARKINGS



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-16	



- GENERAL NOTES:
- Minimum 8 foot white markings should be used, unless otherwise noted. If message consists of more than one word, it should be placed with first word nearest the driver.
 - These details are standard size for normal installation; sizes may be reduced approximately one-third for low speed urban conditions; larger sizes may be needed for freeways, above average speed conditions or other critical locations.
 - The longitudinal space between markings should be at least four times the height of the markings, on low speed roads, but should not exceed ten times the height under any condition.
 - Markings considered appropriate for use when warranted include the following:
 - A. Regulatory
 - STOP
 - RIGHT (LEFT) TURN ONLY
 - 25 MPH
 - SYMBOL ARROWS
 - B. Warning
 - STOP AHEAD
 - SIGNAL AHEAD
 - SCHOOL
 - SCHOOL X-ING
 - PED X-ING
 - R X R (see RCPM standard)
 - C. Guide
 - US XXX
 - ROUTE XXX
 - STATE XXX
 - Other words or symbols may be necessary under certain conditions
 - Uncontrolled use of pavement markings can result in driver confusion. Word and symbol markings should be no more than three lines.
 - The word "STOP" shall not be used on the pavement unless accompanied by a Stop line and Stop sign. The word "STOP" shall not be placed on the pavement in advance to a stop line, unless every vehicle is required to stop at all times.
 - Pavement markings should generally be no more than one lane in width, with School messages being the exception. For details of School and School crossing pavement markings, refer to Part VII of the "Texas Manual on Uniform Traffic Control Devices".
 - Spacing between letters should be approximately 4 inches. The width of letters may vary depending on the width of the travel lanes.
 - Lane-Use arrow markings may be used to convey either guidance or mandatory messages. Arrows used to convey a mandatory movement must be accompanied by standard signs and the pavement marking word "ONLY".
 - Pavement markings are to be located as specified elsewhere in the plans.

SPACING BETWEEN LINES OF PAVEMENT MARKING	
MPH	SPACING
≤ 45	MINIMUM 4 TIMES THE LETTER HEIGHT
> 45	MINIMUM - 4 TIMES THE LETTER HEIGHT MAXIMUM - 10 TIMES THE LETTER HEIGHT

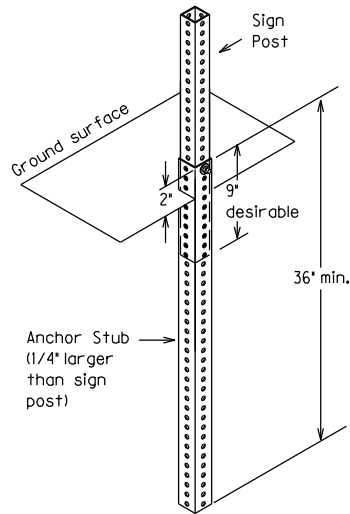
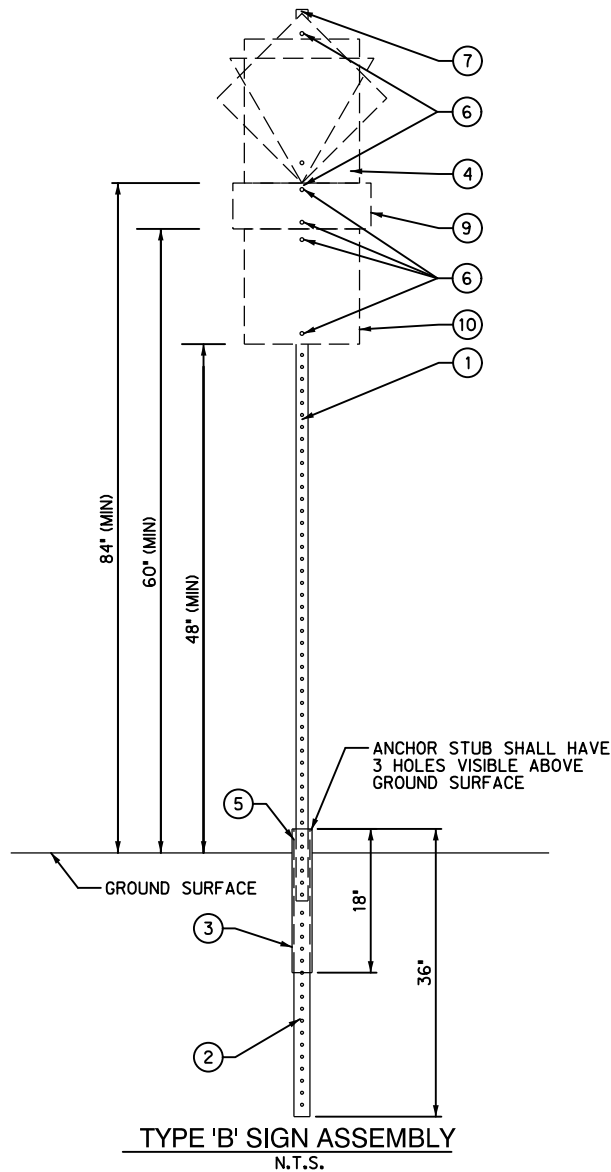
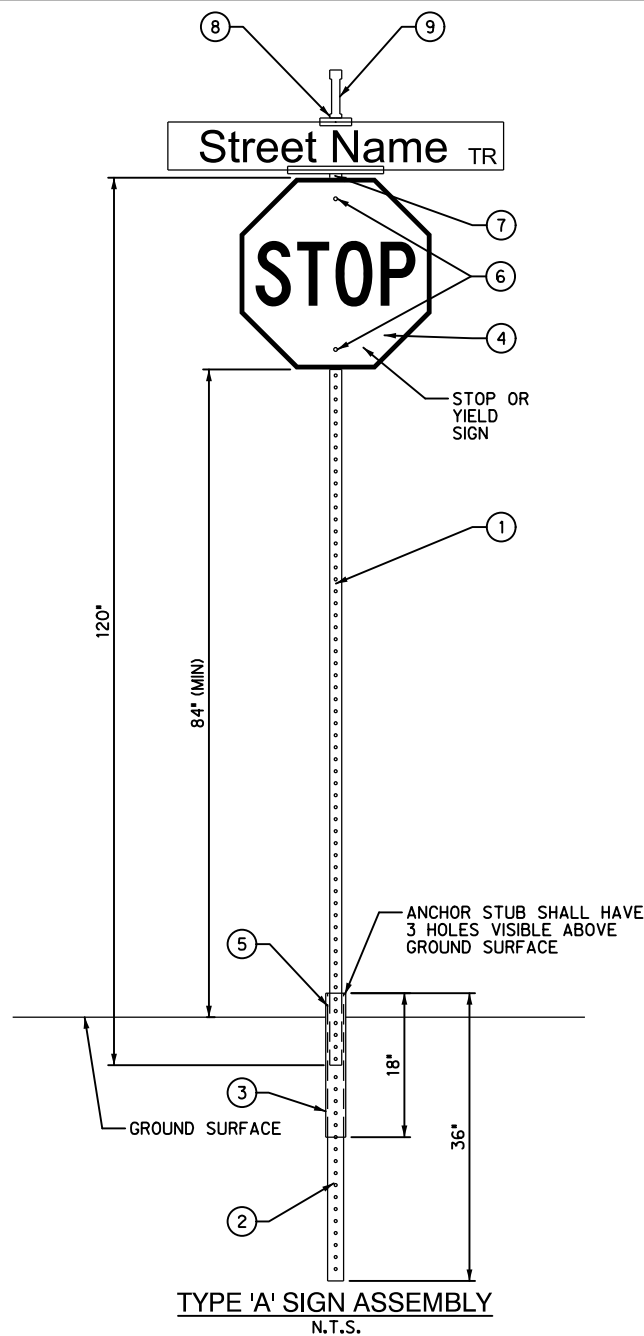
CERTIFICATION:
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PAVEMENT MARKING STANDARD DETAILS

LEGENDS AND ARROWS



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-17	___



TRAFFIC CONTROL NOTES

1. ALL SIGNAGE, BARRICADES, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE STANDARD HIGHWAY SIGN DESIGN FOR TEXAS.
2. LOCATIONS SHOWN FOR SIGNAGE AND PAVEMENT MARKINGS ARE APPROXIMATE; FINAL LOCATIONS MAY CHANGE DUE TO POST CONSTRUCTION CONDITIONS AND PRESENCE OF OTHER PHYSICAL FEATURES. FINAL LOCATION OF ALL TRAFFIC CONTROL DEVICES SHALL BE FIELD VERIFIED WITH TOWN OF COPPER CANYON PRIOR TO INSTALLATION.
3. ALL PAVEMENT MARKINGS OTHER THAN BUTTONS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
4. ALL SIGNS SHALL BE DIAMOND GRADE INTENSITY AND THE SIZES SHALL BE STANDARD UNLESS OTHERWISE NOTED.
5. ALL TRAFFIC SIGNS, POSTS, AND MATERIALS SHALL BE INSTALLED PER DETAIL ON THIS SHEET.
6. FOR STOP SIGNS THAT WILL ACCEPT FUTURE STREET SIGNS, EXTEND POST ABOVE STOP SIGN SO THAT 2 HOLES ARE AVAILABLE FOR MOUNTING. (FOR ALL OTHERS, POST SHALL NOT EXTEND ABOVE SIGN.)
7. CHANGES TO TYPICAL SIGN POST LOCATION MADE AT ENGINEER'S DISCRETION.

LOCATION:

- 9" EXTRUDED STREET NAME BLADE SHALL BE USED AT ALL INTERSECTIONS.

BLADE REQUIREMENTS:

- BLADES SHALL BE ALUMINUM.

LETTERING ALIGNMENT:

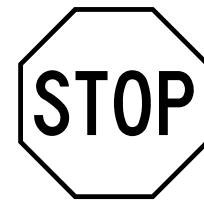
- FOR MAJOR ROADS THE TOWN LOGO SHALL APPEAR AT THE LEFT EDGE.
- STREET NAME SHALL BE LEFT JUSTIFIED & ALIGNED WITH TOWN LOGO
- BLOCK NUMBERS SHALL BE LOCATED IN UPPER RIGHT HAND CORNER AND RIGHT JUSTIFIED.
- ABBREVIATED STREET DESIGNATIONS SHALL BE LOCATED IN THE LOWER RIGHT HAND CORNER AND RIGHT JUSTIFIED.

LETTERING FOR 9" EXTRUDE BLADES:

- FONT SHALL BE CLEAR VIEW 2W
- FOR EACH WORD, THE FIRST LETTER SHALL BE UPPERCASE, 6" TALL AND ALL FOLLOWING LETTERS SHALL BE LOWERCASE.
- LETTERS IN ABBREVIATED STREET DESIGNATIONS SHALL BE 3" TALL AND WITH THE FIRST LETTER UPPERCASE (i.e. Ln, Pkwy, Ct, etc.)
- BLOCK NUMBERS SHALL BE 3" TALL

SIGN SHEETING AND COLORS:

- SHEETING SHALL BE 3M REFLECTIVE COATING.
- BACKGROUND COLOR SHALL BE GREEN WITH WHITE LEGEND TEXT.
- ALL LETTERING SHALL BE WHITE.
- EMBLEM SHALL BE ACQUIRED FROM TOWN OF COPPER CANYON
- "NO OUTLET" PANEL BACKGROUND SHALL BE YELLOW WITH BLACK LEGEND TEXT.
- "PRIVATE" PANEL BACKGROUND SHALL BE WHITE WITH BLACK LEGEND TEXT.



R1-1
30\"X30\"



R1-2
30\"X30\"X30\"



R2-1
24\"X30\"

STOP SIGN ASSEMBLY (W/ STREET NAME SIGN ON TOP)		
MATERIALS		QUANTITY
①	10 FOOT (120 INCH) - SIGN POST - 1-3/4\" X 1-3/4\" PERFORATED SQUARE METAL TUBING	1
②	3 FOOT (36 INCH) - ANCHOR STUB - 2\" X 2\" PERFORATED SQUARE METAL TUBING	1
③	1.5 FOOT (18 INCH) - REINFORCING SLEEVE - 2-1/4\" X 2-1/4\" PERFORATED SQUARE METAL TUBING	1
④	24\" X 24\" OR 30\" X 30\" STOP SIGN* - 0.080\" THICK ALUMINUM HIGH INTENSITY PRISMATIC	1
⑤	SQUARE POST CORNER BOLT	1
⑥	JUMBO HEAD DRIVE REVIT - 3/8\" DIAM., 1/2\" LENGTH, 1\" HEAD DIAMETER -	2
⑦	1-3/4\" SQUARE POST CAP W/ 12\" EXTRUDED BLADE HOLDER	1
⑧	12\" CROSS EXTRUDED BLADE HOLDER	1
⑨	9\" EXTRUDED BLADE STREET NAME MARKER	2

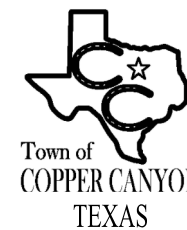
TRAFFIC SIGN ASSEMBLY		
MATERIALS		QUANTITY
①	10 FOOT (120 INCH) - SIGN POST - 1-3/4\" X 1-3/4\" PERFORATED SQUARE METAL TUBING	1
②	3 FOOT (36 INCH) - ANCHOR STUB - 2\" X 2\" PERFORATED SQUARE METAL TUBING	1
③	1.5 FOOT (18 INCH) - REINFORCING SLEEVE - 2-1/4\" X 2-1/4\" PERFORATED SQUARE METAL TUBING	1
④	TOP TRAFFIC SIGN	1
⑤	SQUARE POST CORNER BOLT	1
⑥	JUMBO HEAD DRIVE REVIT - 3/8\" DIAM., 1/2\" LENGTH, 1\" HEAD DIAMETER -	2
⑦	1-3/4\" SQUARE POST CAP W/ 5-1/2\" EXTRUDED BLADE HOLDER	1
⑧	5-1/2\" CROSS EXTRUDED BLADE HOLDER	1
⑨	MIDDLE TRAFFIC SIGN	1
⑩	BOTTOM TRAFFIC SIGN	1

CERTIFICATION:

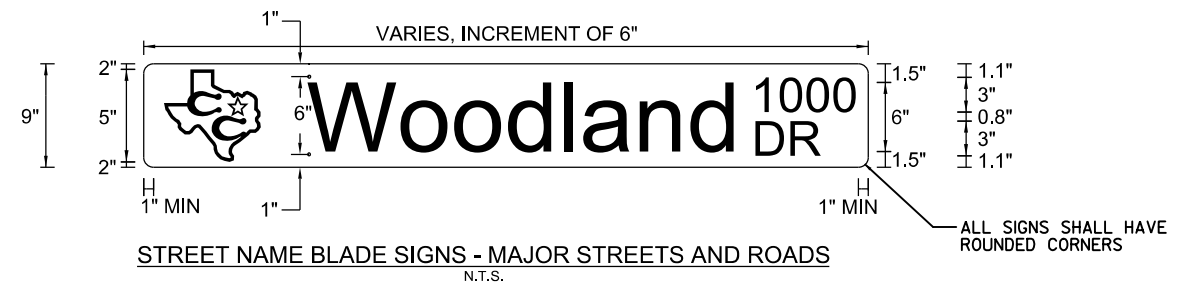
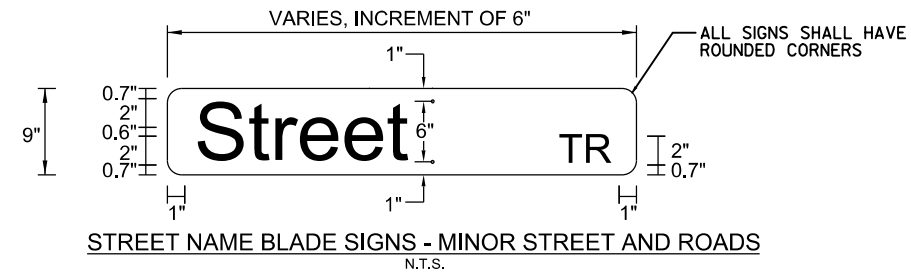
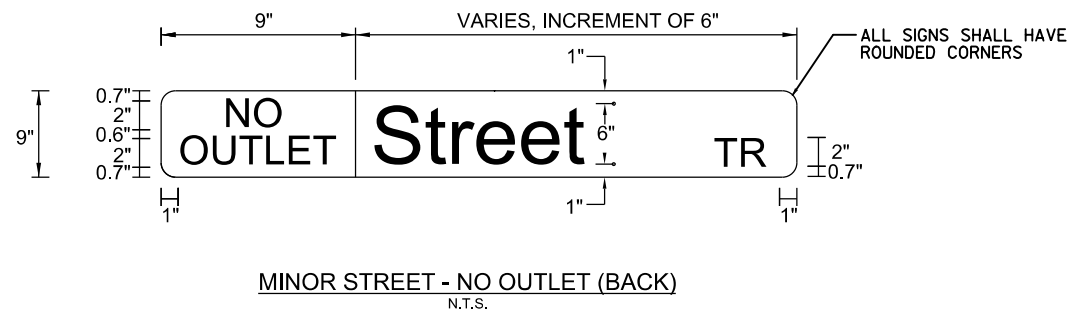
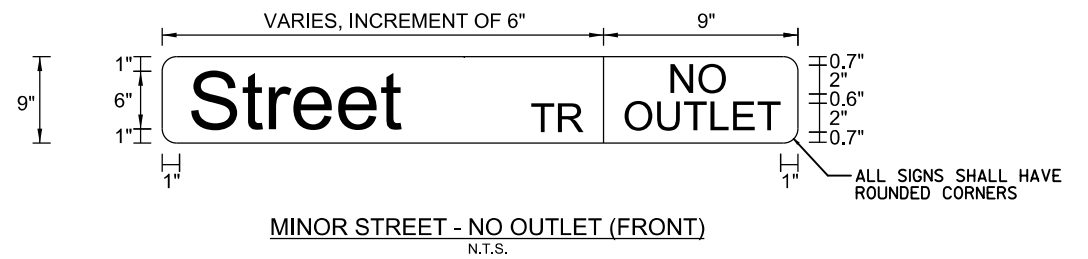
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PAVEMENT STANDARD DETAILS

SIGNING DETAILS & TRAFFIC CONTROL NOTES



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-18	___



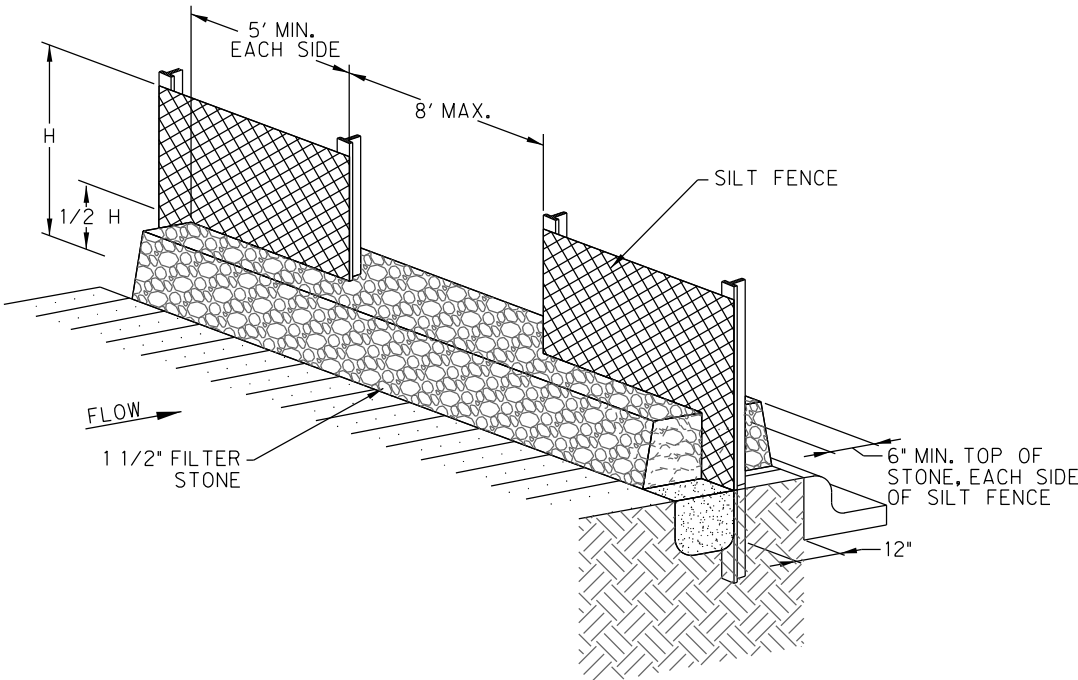
PAVEMENT STANDARD DETAILS						
SIGNING DETAILS & TRAFFIC CONTROL NOTES						
<div><p>Town of COPPER CANYON TEXAS</p></div>						
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	P-19	___

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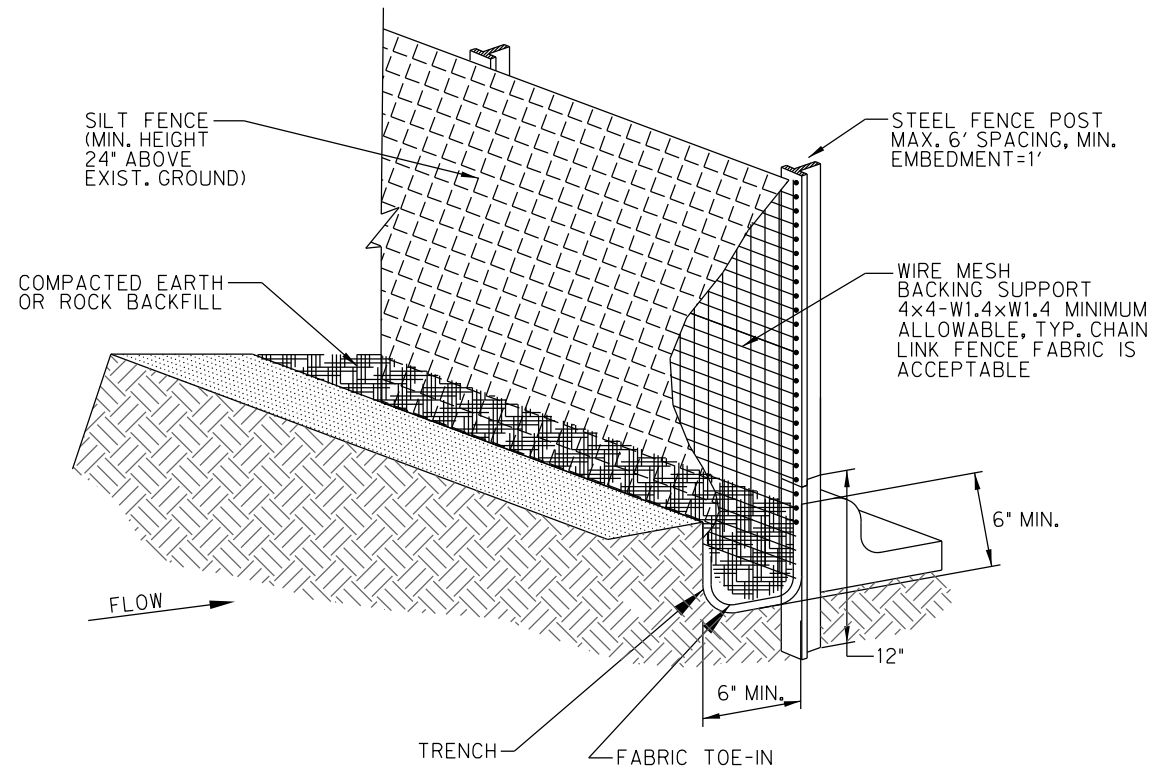
SILT FENCE GENERAL NOTES

- (1) STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
- (2) THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
- (3) THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
- (4) SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
- (5) INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
- (6) SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
- (7) ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

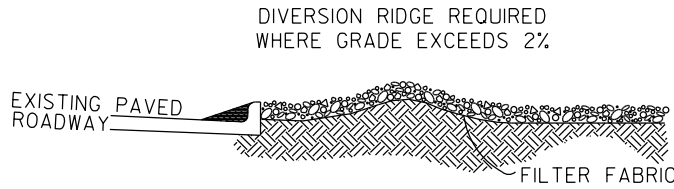
NOTE:
STONE OVERFLOW STRUCTURES OF OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE FENCE OR EVERY 300 FEET IF THERE IS NO APPARENT LOW POINT



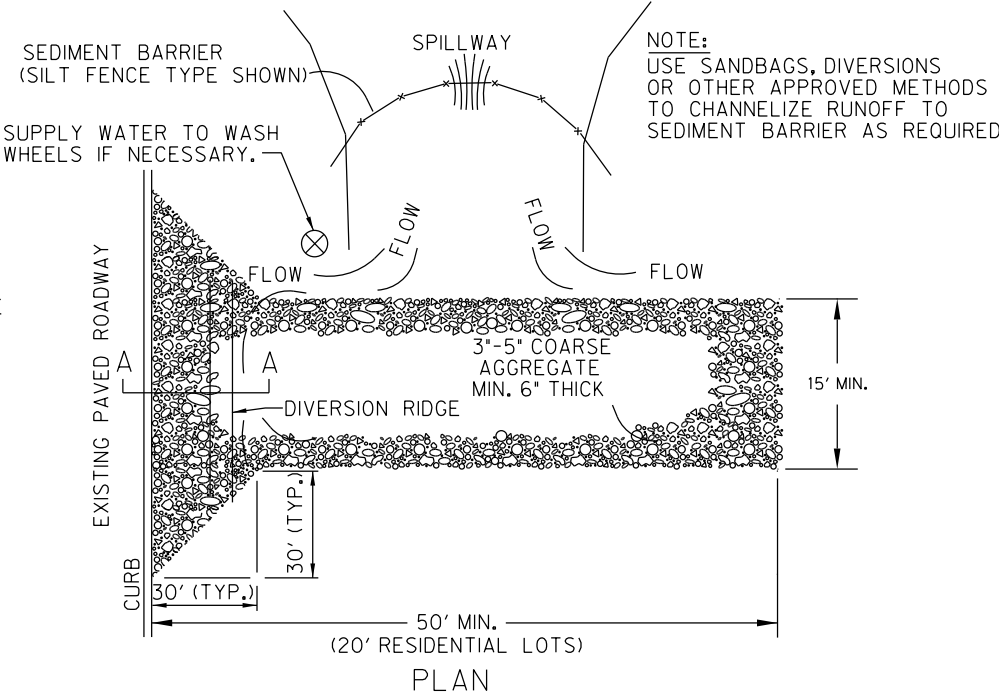
SILT FENCE
STONE OVERFLOW STRUCTURE
N.T.S.



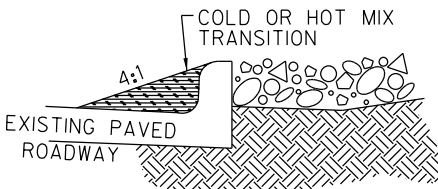
ISOMETRIC PLAN VIEW
N.T.S.



SECTION A - A



NOTE:
WHEN SEDIMENT HAS SUBSTANTIALLY CLOGGED THE VOID AREA BETWEEN THE ROCKS, THE AGGREGATE MAT MUST BE WASHED DOWN OR REPLACED. PERIODIC RE-GRADING AND TOP DRESSING WITH ADDITIONAL STONE MUST BE DONE TO KEEP THE EFFICIENCY OF THE ENTRANCE FROM DIMINISHING.



TRANSITION

TEMPORARY STONE CONSTRUCTION
ENTRANCE/EXIT
N.T.S.

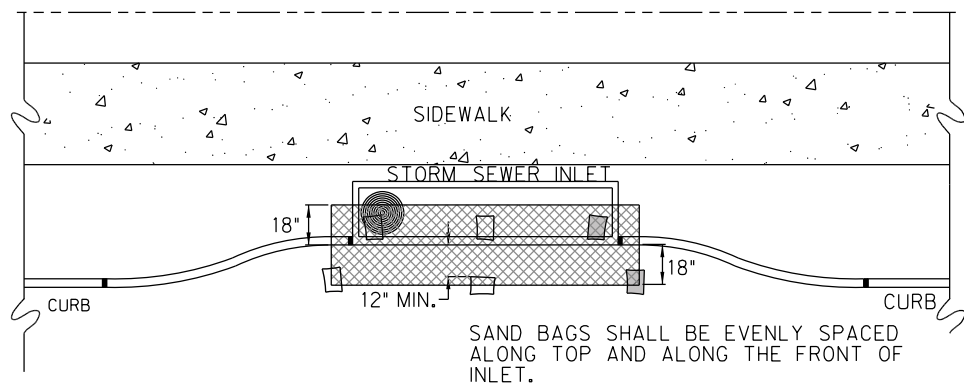
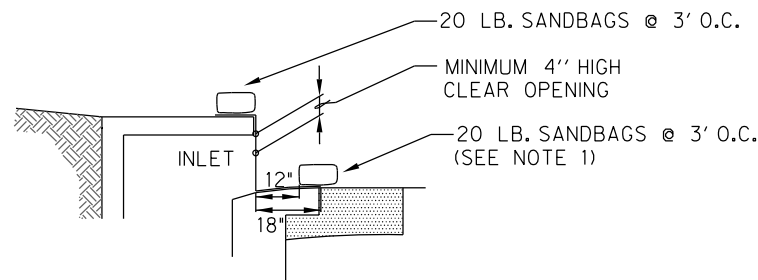
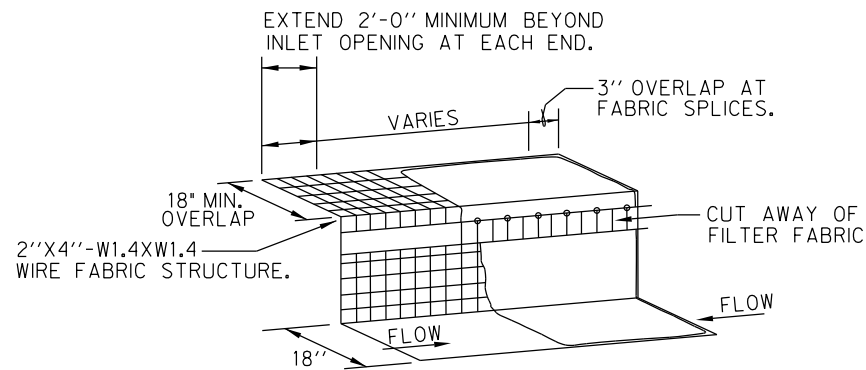
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PAVEMENT MARKING STANDARD DETAILS

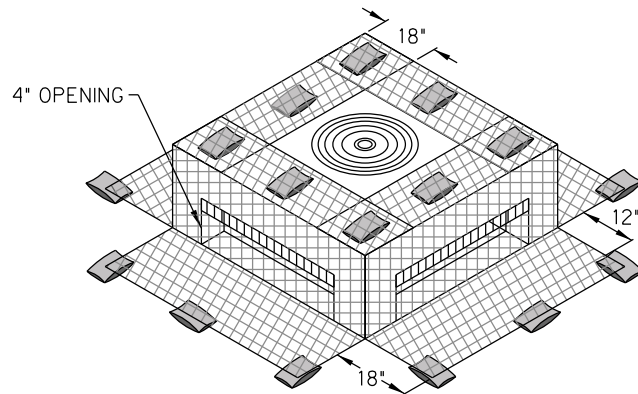
EROSION CONTROL DETAILS
(SHEET 1 OF 2)



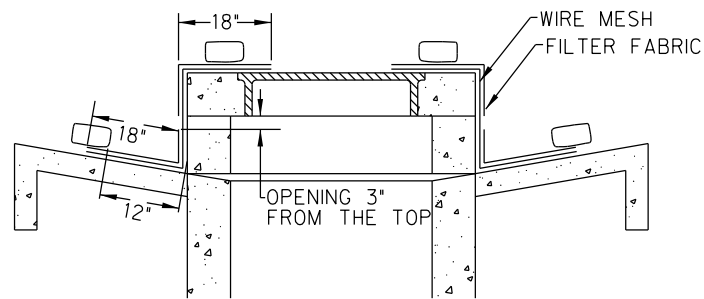
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	EC-1	



CURB INLET PROTECTION DETAIL
N.T.S.



ISOMETRIC VIEW



SECTION

FILTER FABRIC WYE INLET PROTECTION
N.T.S.

ESTABLISHMENT OF GROUND COVER

- (1) Eighty percent (80%) evenly distributed ground cover, without large bare areas, shall be established after the designated areas have been completed to the lines, grades and cross sections shown on the plans and prior to final acceptance by the Town.
- (2) Ground cover, for Seeding Turf Grass, shall be in accordance with the standard specifications of the City of The Colony, which has also adopted the Fourth Edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300. A copy of the contract documents, plans and specifications shall be available on-site at all times by the Contractor.
- (3) Refer to COG Item 202.6 specifications.
- (4) Prior to planting, contractor shall provide the Town with the State of Texas Certificate stating analysis of purity and germination of seed.
- (5) Planting season and application rates. All planting shall be done between the dates specified in Table 1, for each grass type except when specifically authorized in writing. The seeds planted per acre shall be of a type specified with the mixture, rate and planting dates as shown in the Table 1, or as specified by the Engineer.

Table 1. Seeding Turfgrass		
TYPE	PLANTING SEASON	SEED AND RATE
TYPE I	MARCH THROUGH SEPTEMBER	BERMUDA GRASS, HULLED 50-LB (22.7-KG) PLS PER ACRE
TYPE II	OCTOBER THROUGH FEBRUARY	RYE GRASS, 100-LB (45.4-KG) PLS PER ACRE COMBINED WITH BERMUDA GRASS, HULLED 20-LB (9.1-KG) PLS PER ACRE.
OTHER	AS SPECIFIED ON PLANS	AS SPECIFIED ON PLANS

¹PLS - Pure Live Seed is determined by multiplying the gross weight times purity times the germination [For example, a 100-lb bag with 85% purity and 80% germination. (PLS=pounds in bag x Purity x germination) 100 x 0.85 x 0.8 = 60.8 -lbs of pure live seed.)

- (6) Seeded areas shall be maintained, including watering and mowing, at such time and in a manner and quality to establish a minimum 80% evenly distributed ground cover, without large bare areas, until completion and final acceptance of the project by the Town.

NOTES:

- (1) A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL TO PROVIDE A 4-INCH MINIMUM CLEAR OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
- (2) INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2-INCHES.
- (3) CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
- (4) INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

INLET OPENING	MINIMUM NUMBER OF SAND BAGS	
	TOP	FRONT
5'	2	3
10'	3	3
15'	3	4
20'	4	4

PAVEMENT MARKING STANDARD DETAILS

EROSION CONTROL DETAILS (SHEET 2 OF 2)



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DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	EC-2	___

STORM DRAIN GENERAL NOTES

1. All construction shall be in accordance with the standard specifications of the Town of Copper Canyon and the Fourth Edition of the "Standard Specifications for Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640- 3300.
2. Storm drain lines shall be installed per COG Item 508 specifications.
3. Only Reinforced Concrete Pipe (RCP) or Reinforced Concrete Box (RCB) is approved for use in public right-of-way or easements.
4. For pipes, embedment shall be per the Street Backfill & Repair detail on the Backfill / Embedment Standard Detail. For box culverts, embedment shall be per the Box Culvert Embedment detail on the Backfill / Embedment Standard Detail.

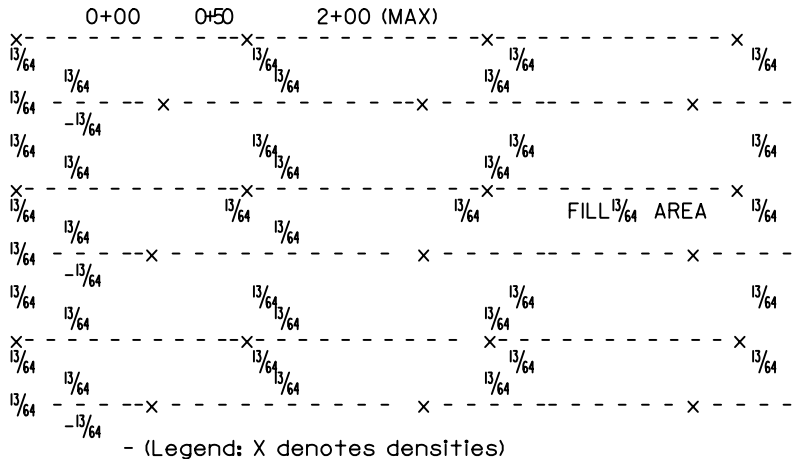
Note that flowable backfill is only required below areas to be paved.
5. The CONTRACTOR shall seal all joints on closed conduits with Omni-Flex Joint seals, or equal; unless approved otherwise by the Town.
6. All concrete to be used in pre-cast products for reinforced concrete pipes or boxes shall come from plants certified by the National Pre-cast Concrete Association.
7. The CONTRACTOR shall use only pre-fabricated fittings on new construction projects. Field connections shall be made only to existing pipe with Town approval. The connection shall be a smooth connection and concrete wrapped on the outside and inside.
8. Concrete collars shall be constructed per the Concrete Collar Details on the Headwalls & Pipe Collars Standard Detail at all storm drain size and at grade changes or in curves where the joint is being pulled more than recommended by the manufacturer. Please refer to the details on the Headwalls & Pipe Collars Standard Detail and COG Item 508.3.4.1 specifications.
9. All inlets shall be poured in place. Precast inlets, junction boxes, manholes, and headwalls are not allowed without prior approval from Town Engineer.
10. Bottoms, tops, and variable height curb to be separate pours (3 pours) for curb inlets.
11. Curb Inlet bottoms shall be poured prior to any paving.
12. Ring and cover on curb inlets to be located directly over the outlet pipe.
13. Concrete shall be made with a minimum of 5 sacks of cement and have a minimum compressive strength of 3,600 PSI at 28 days.
14. All reinforcing steel shall be new, neat, billet-steel per ASTM designation A-615, Grade 60, and shall be detailed and placed for ACI Manuals SP-88 and 318, latest additions. All reinforcing steel shall have minimum 15 inch lap splices, unless noted otherwise on the plans.
15. The CONTRACTOR shall use a liquid membrane-forming curing compound per COG Item 303.2.13.1.1.
16. All exposed surfaces shall have 3/4 -inch chamfer.
17. All closed conduits shall be Television Inspected.
18. The CONTRACTOR shall be responsible for notifying the Town hspector at least 24 hours prior to any required testing.

- a. Soil and material testing technicians shall provide written proof of having minimum of two (2) years of related field experience.
- b. The CONTRACTOR shall coordinate all testing activities with the Town Inspector and shall facilitate required testing throughout the construction period. The inspector shall be present during all testing.
- c. The Town shall make final decision as to the validity of all testing results.
- d. The CONTRACTOR shall be responsible for ensuring that materials to be tested are in compliance with all plans and specifications prior to testing. All materials found not to be in compliance with the plans and specifications before and after testing shall be removed and replaced at the CONTRACTOR'S expense.
- e. All costs associated with the retesting of work that fails to meet the specifications required in the contract documents shall be borne by the CONTRACTOR. For Town projects retesting cost shall be withheld from pay requests submitted by the CONTRACTOR, this cost will be based on the Town's cost with no additional mark-up. A letter of acceptance will not be issued until all testing deficiencies are addressed and all related cost paid.

- f. The Town Inspector shall be notified of concrete placement 24 hours in advance for steel and form inspection.
- g. One set of four cylinders (2-7 day, 2-28 day) for cast-in-place concrete shall be made for every day that concrete is placed (ASTM C-31). Air, slump, and temperature tests shall be taken for every set of cylinders made. Concrete with a temperature above 95 degrees will be rejected. Additional cylinders and or tests may be requested at the Inspector or ENGINEER's discretion. Exterior forms shall not be removed for a minimum of 24 hours unless approved by Inspector or ENGINEER. Sulfate resistant concrete shall be used for all manholes.

h. Backfill and Density Testing

- 1) All trenches shall be backfilled in accordance with standard details and mechanically compacted with approved vibratory methods in accordance with COG Item 504.5.3.2.1 and paragraph 3) below unless otherwise stated on the plans or in the specifications.
- 2) Densities shall conform to standard trench details, COG Item 504.5.3.2.1, and Paragraph 3) below unless otherwise stated on the plans or in the specifications. Proctor samples shall be taken for all classifications of soil on site. Atterberg Limits shall be determined on all Proctor samples. No "potholing" will be allowed. Densities shall be taken on all storm drain laterals within the Right-of-Way and shall conform to Paragraph 3) below and COG Item 504.5.3.2.1, unless otherwise stated on the plans or in the specifications. Backfill adjacent to all structures shall be compacted manually and density tested on every lift.
- 3) Mechanical Tamping of Backfill
 - a) All ditch lines and bore pits shall be mechanically tamped.
 - b) Backfill, other than select fill, may consist of onsite or offsite inorganic soils and should be placed in loose lifts 6-inches - 8-inches in thickness (not to exceed 12-inches) and should be mechanically compacted to 98 percent of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures under existing and proposed pavement, and to 95 percent standard proctor procedures elsewhere. The moisture content of the fill at the time of compaction shall be between minus 2% of optimum to four percentage points above the proctor optimum value.
 - c) All backfill material to be select native material, 6" diameter clods and smaller, unless directed otherwise on the plans or in the specifications and to be mechanically tamped and density controlled as described in Paragraph b) above.
 - d) Water jetting is not permitted.
 - e) Densities shall be taken every one (1) lift at staggered locations not to exceed 200 feet increments. Offset fifty (50) feet every other lift.
 - f) Densities may be taken at typical locations as shown below; also, densities will be taken at random locations and at the geotechnician's discretion.



CERTIFICATION:

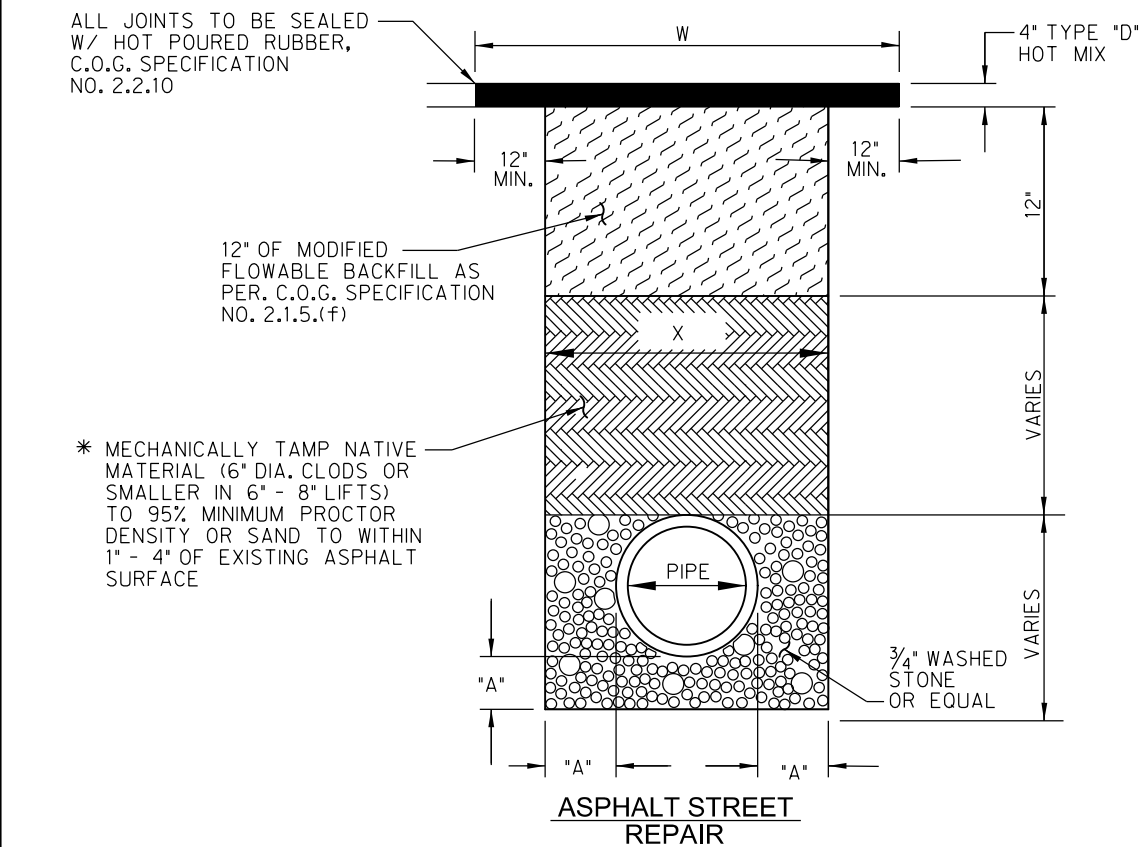
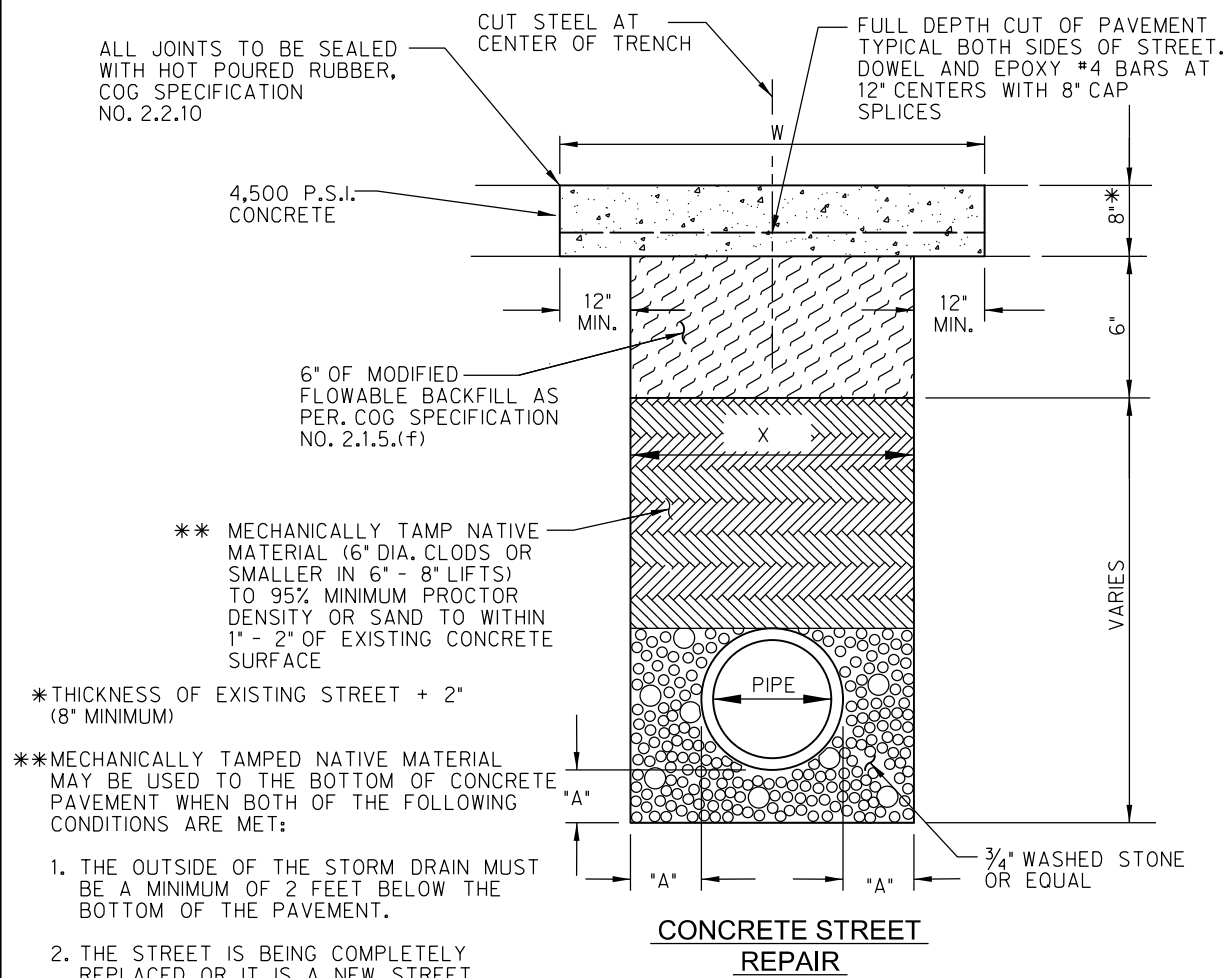
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STORM DRAIN STANDARD DETAILS

STORM DRAIN GENERAL NOTES

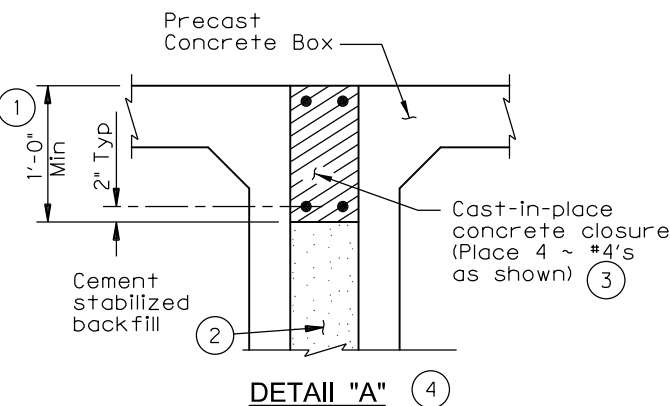
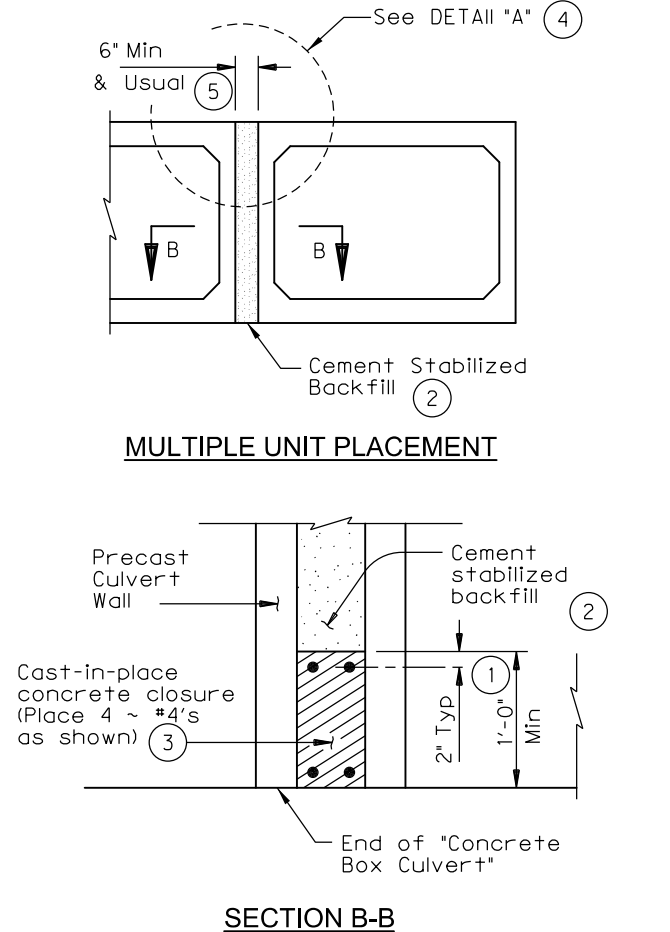


DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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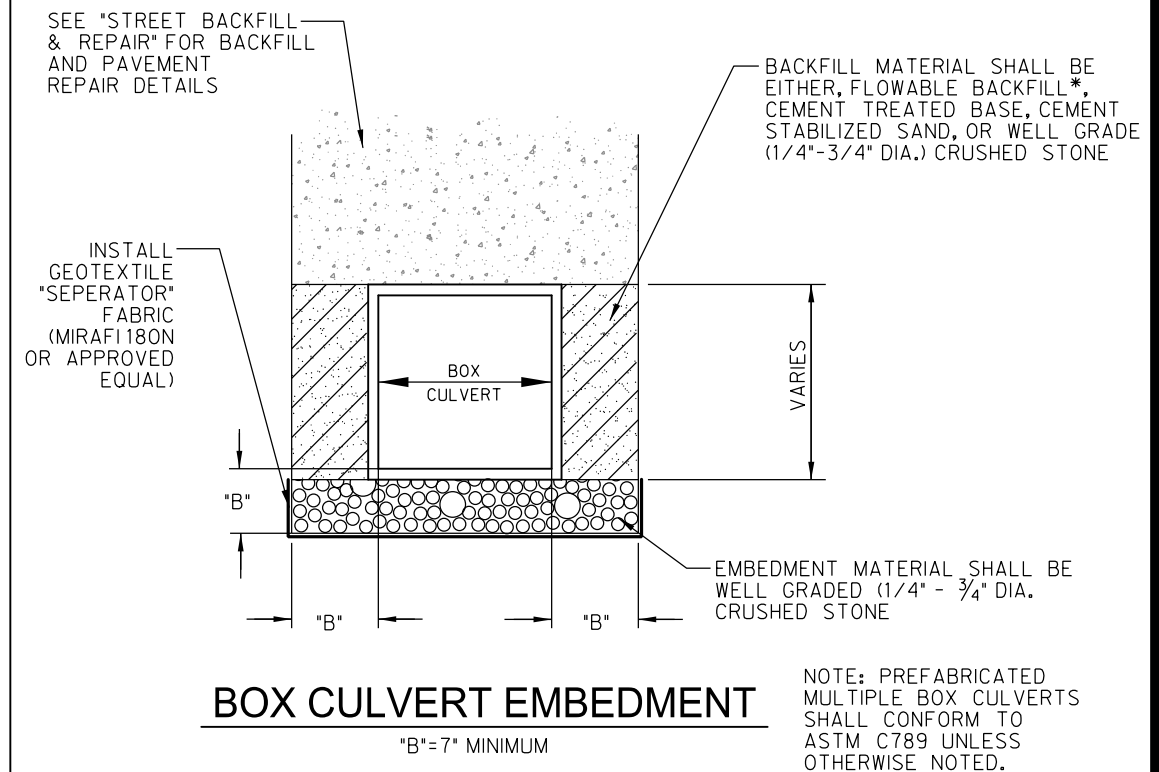


STREET BACKFILL & REPAIR

N.T.S.
NOTE:
SAWCUT TO REPAIR ASPHALT OR CONCRETE PAVEMENT PRIOR TO OPENING THE DITCH IN ORDER TO ENSURE A NEAT STRAIGHT EDGE.



- 1 For multiple unit placements the length of the closure for the interior walls may be adjusted as necessary. The length of the top slab, bottom slab, and exterior wall closure shall not be less than 3'-0". See Section B-B detail when interior walls are cast full length.
- 2 Cement Stabilized Backfill between boxes is considered part of the Box Culvert for payment.
- 3 Any additional concrete and reinforcing required for the closures shall be considered as subsidiary to the Concrete Box Culvert.
- 4 For multiple unit placement with the top slab as the final riding surface, provide wall closure as shown in DETAIL "A".
- 5 This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked. No payment will be made for any additional material in the gap between adjacent boxes.



* FLOWABLE BACKFILL IS ONLY REQUIRED FOR AREAS TO BE PAVED.

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPE BELL IN INCHES CLASS III R.C.P.	MINIMUM TRENCH WALL CLEARANCE "A" IN INCHES	WIDTH OF TRENCH ("X")		WIDTH OF PVMT. REPLACEMENT *
			MAXIMUM ** IN INCHES	MINIMUM ** IN INCHES	("W") CONC. & ASPHALT **
18	22.5	6	48	36	60
24	29.0	6	48	42	60
30	35.5	6	52	48	72
36	42.5	6	61	55	72
42	49.75	6	68	62	86
48	56.5	8	75	69	93
54	63.25	8	82	76	100
60	70.5	8	89	83	107
66	77.5	8	96	90	114
72	84.5	8	103	97	121
72+	VARIES	8	.	.	.

NOTE: * REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
** RECOMMENDED WIDTHS - VARIES BASED ON DEPTH, AND SOIL MATERIAL.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

CERTIFICATION:

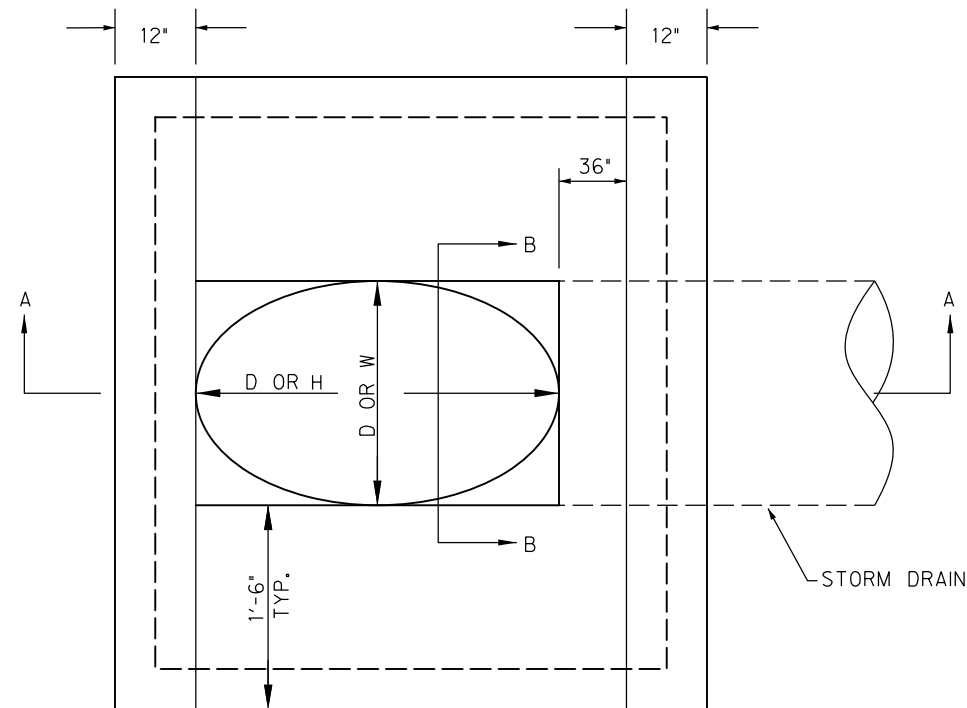
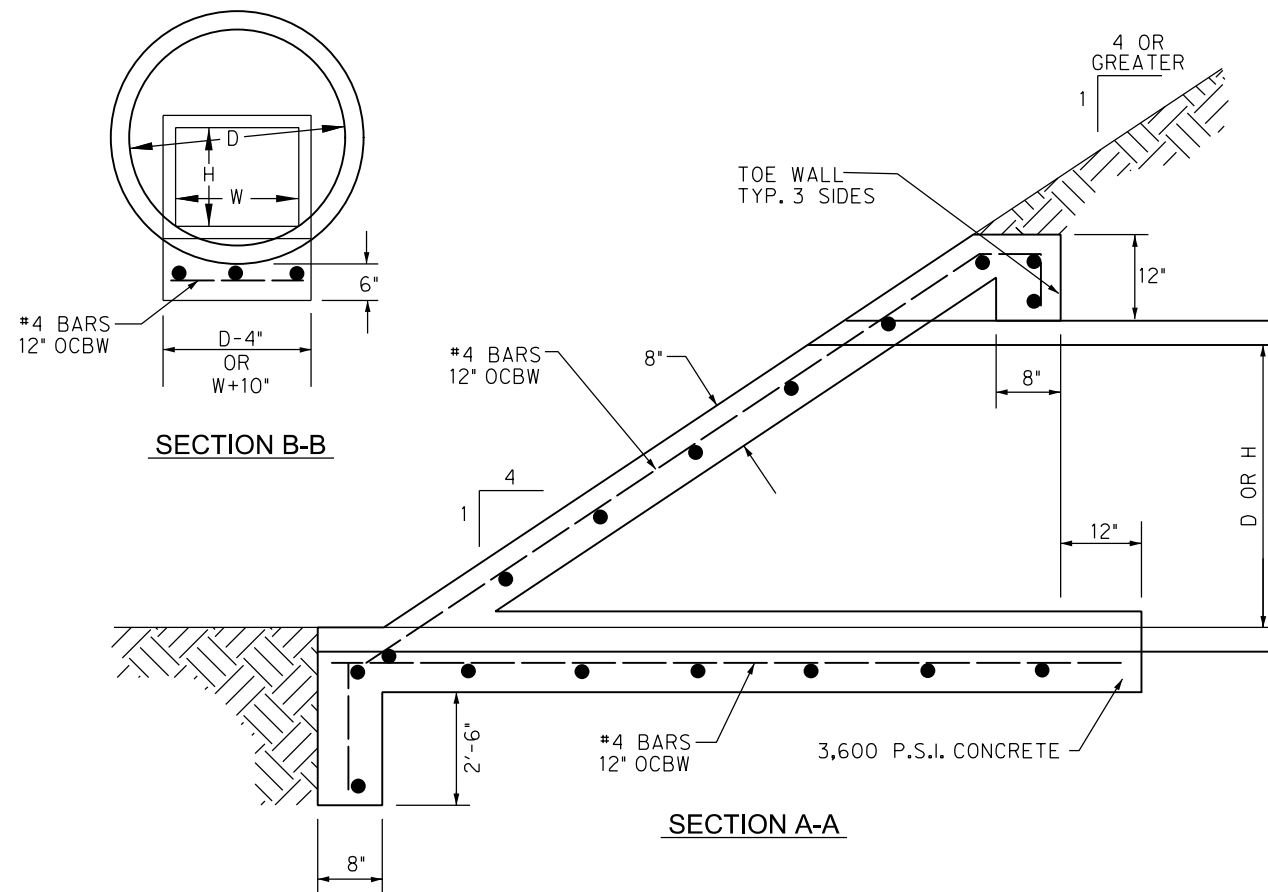
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

STORM DRAIN STANDARD DETAILS

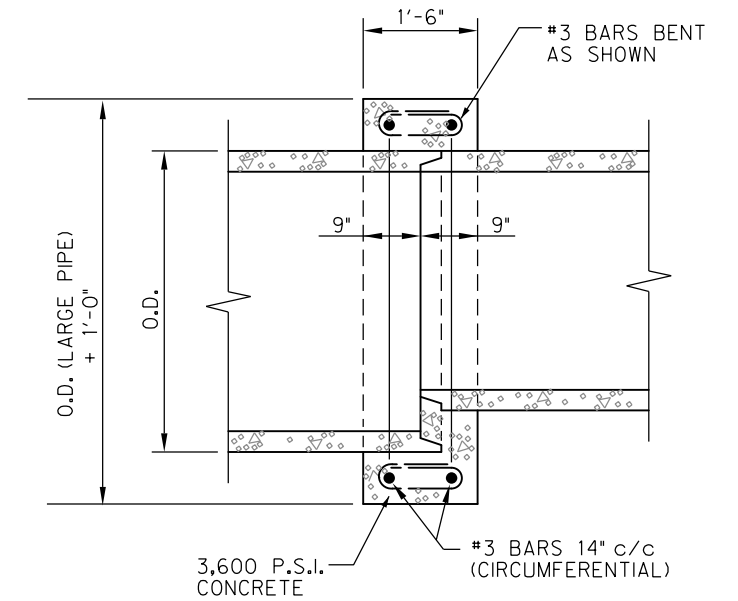
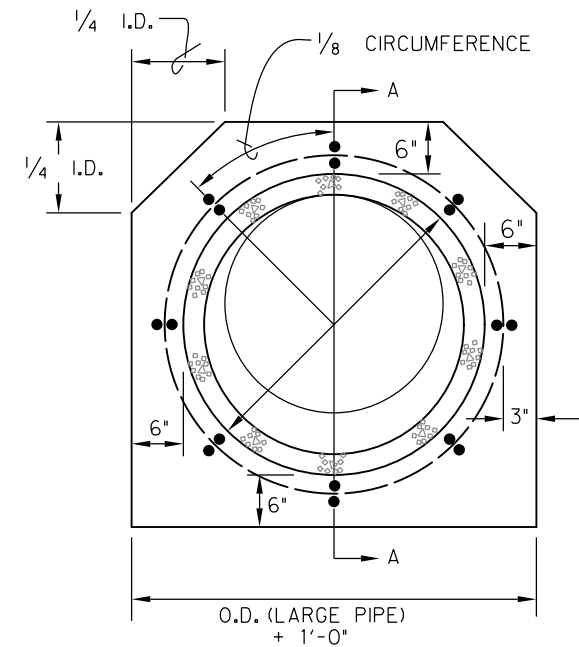
BACKFILL / EMBEDMENT



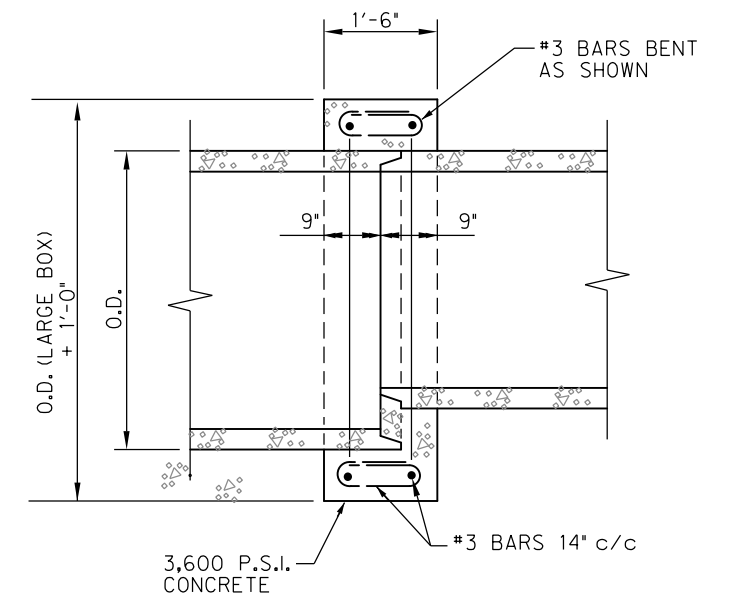
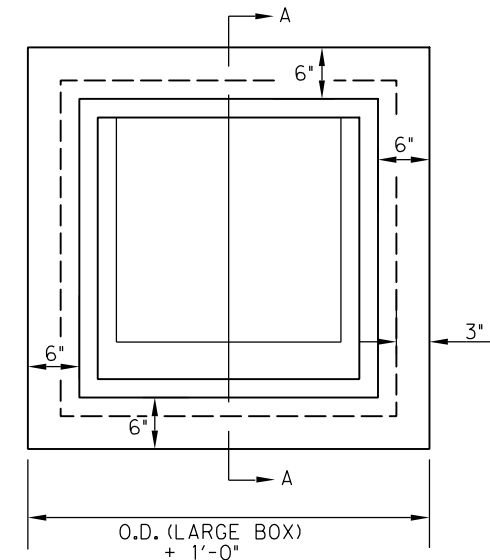
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-2	



SLOPED HEADWALL
N.T.S.



CONCRETE COLLAR DETAIL (PIPE)



CONCRETE COLLAR DETAIL (BOX)

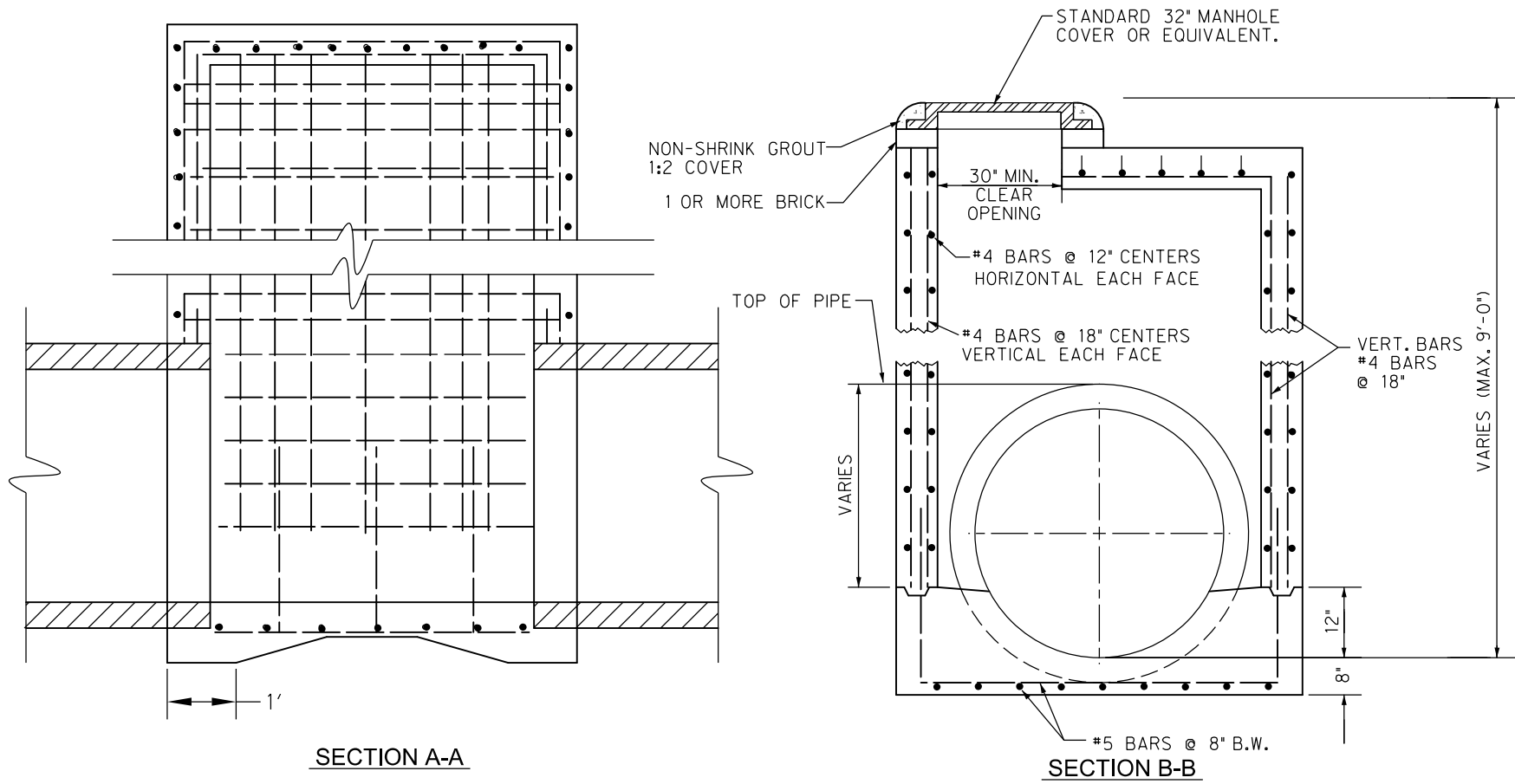
CONCRETE COLLAR
N.T.S.

CERTIFICATION:
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STORM DRAIN STANDARD DETAILS
HEADWALLS & PIPE COLLARS

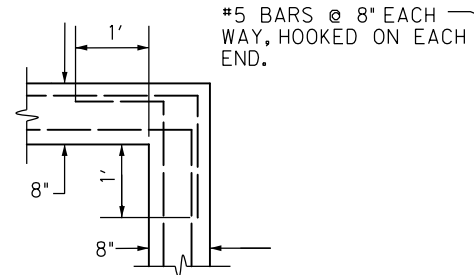


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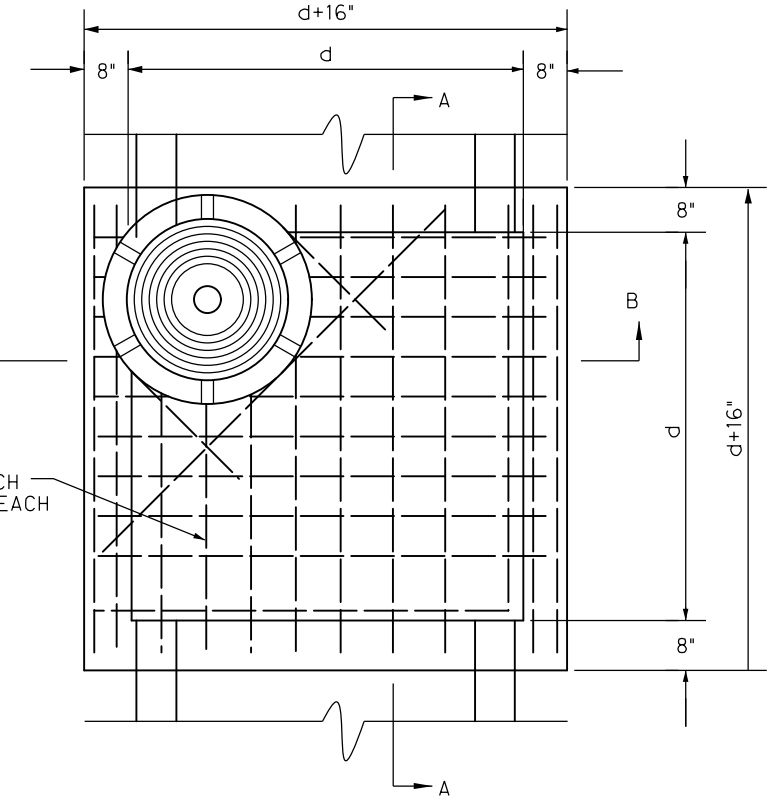


NO.	* PIPE SIZES	d
1	24"-45"	4'
2	48"-54"	5'
3	60"	6'

* PIPE SIZE > 60"
REQUIRES SPECIAL DESIGN

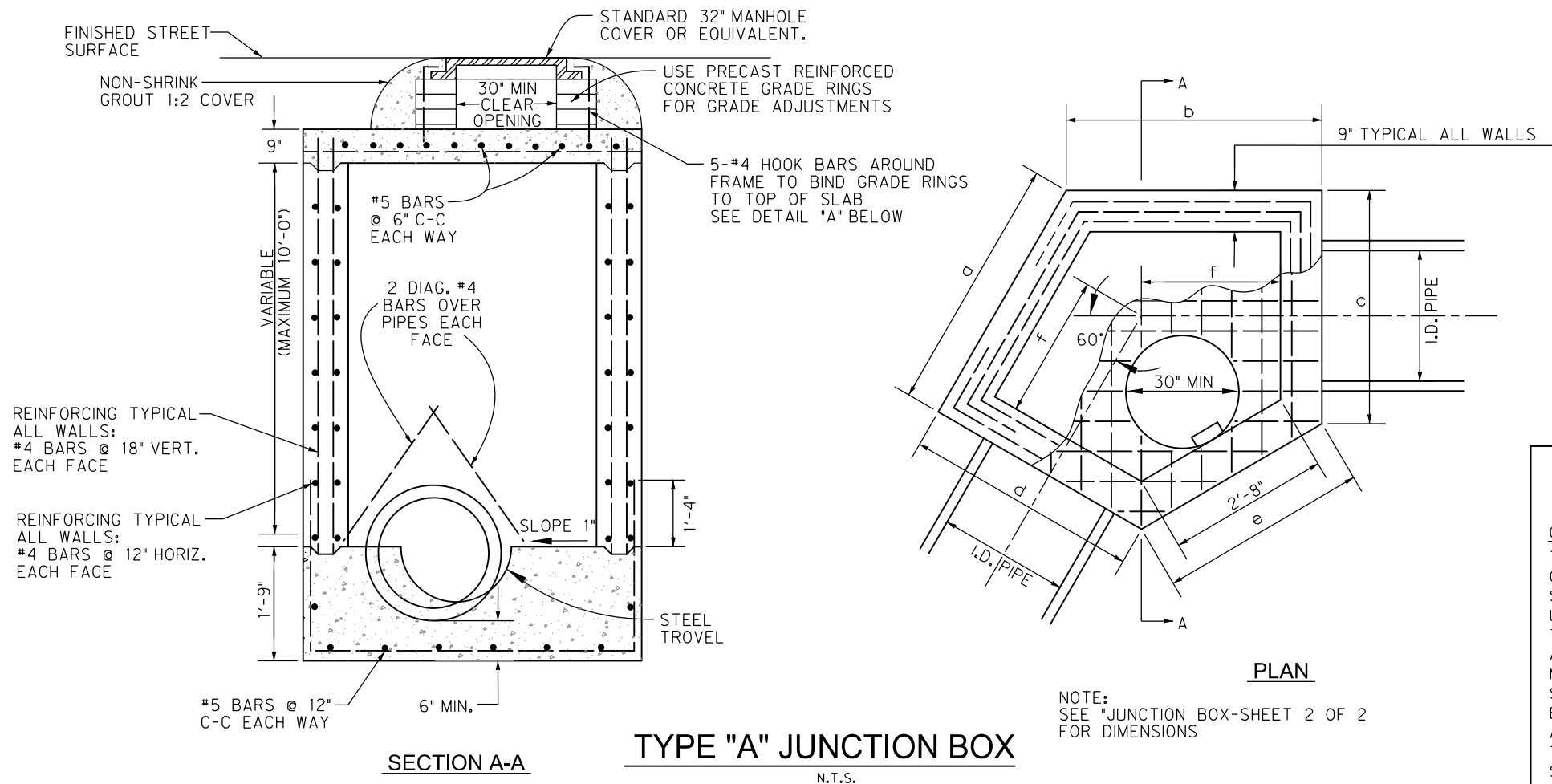


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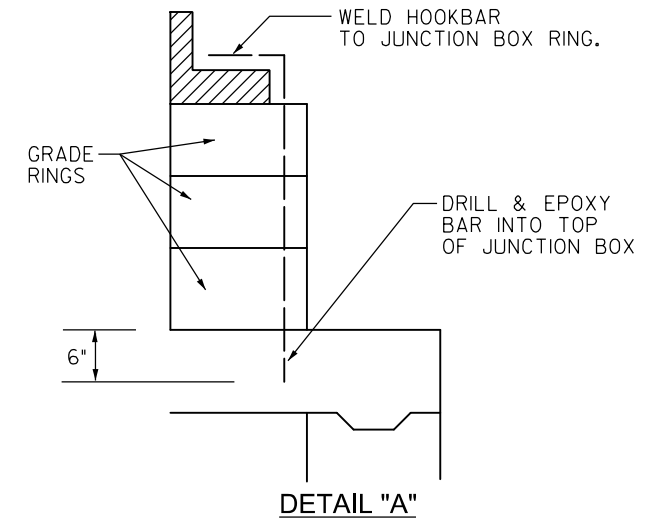


TYPE "B" JUNCTION BOX

NOTE: JUNCTION BOX FOR PIPE > 60"
DIAMETER REQUIRE A SPECIAL DESIGN



HOOK BAR



CERTIFICATION:

THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

STORM DRAIN STANDARD DETAILS

JUNCTION BOX DETAILS (SHEET 1 OF 2)



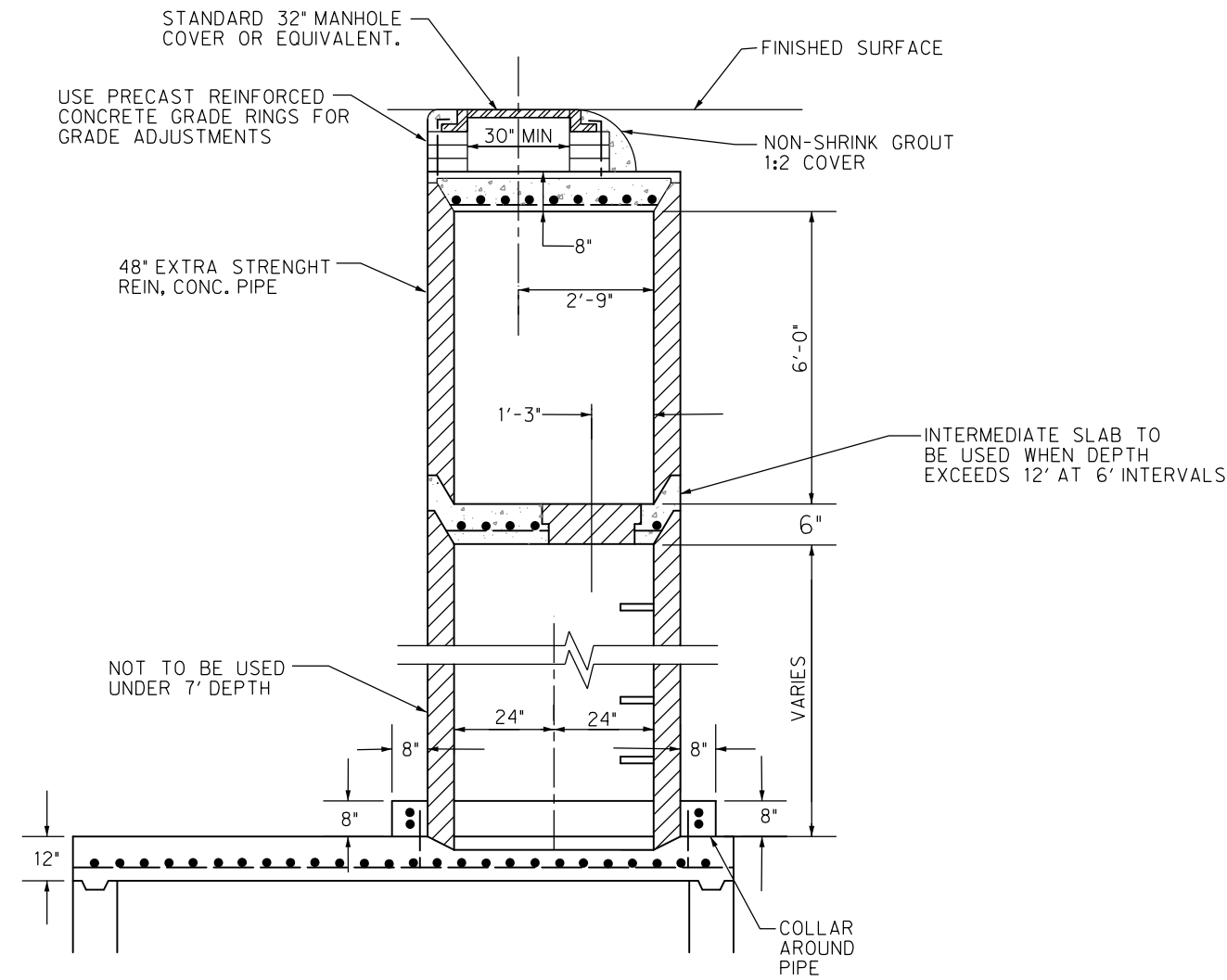
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HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-4	

TYPE "A" JUNCTION BOX DIMENSIONS

NO.	PIPE SIZES	a	b	c	d	e	f
1	18"-24"	4'-5½"	4'-5½"	4'-2"	4'-2"	3'-6½"	2'-5"
2	27"-33"	4'-11⅝"	4'-11⅝"	5'-1"	5'-1"	3'-6¾"	2'-8"
3	36"-42"	5'-5⅝"	5'-5⅝"	5'-11¼"	5'-11¼"	3'-6¾"	2'-11"
4	48"-54"	6'-1¾"	6'-1¾"	7'-1¼"	7'-1¼"	3'-6½"	3'-3"
5	60"-66"	6'-9⅞"	5'-9⅞"	8'-3¼"	8'-3¼"	3'-6½"	3'-7"
6	72"-78"	7'-6"	7'-6"	9'-5¼"	9'-5¼"	3'-6½"	3'-11"
7	84"-96"	8'-6⅞"	8'-6⅞"	11'-2¼"	11'-2¼"	3'-6½"	4'-5½"

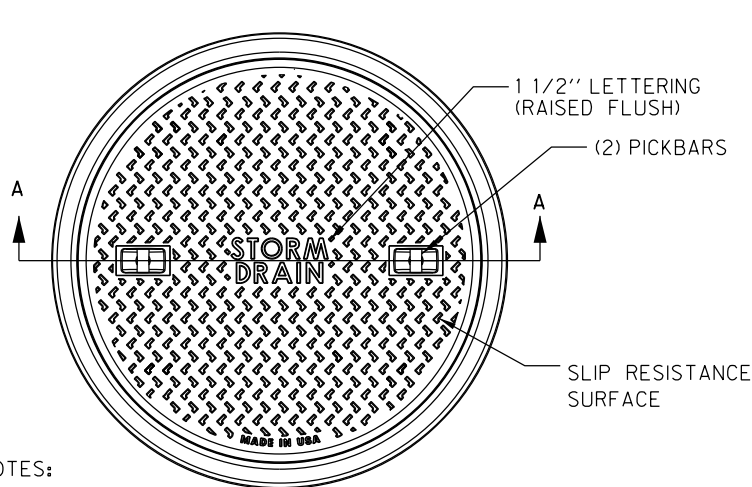
GENERAL NOTES:

- (A) All construction shall be in accordance with the standard specifications of the TOWN OF COPPER CANYON, which has also adopted the Fourth Edition of the "Standard Specifications for Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300.
- (B) All manholes shall be poured in place. Precast junction boxes or manholes are not allowed.
- (C) Concrete shall be made with a minimum of 5 sacks of cement and have a minimum compressive strength of 3,600 PSI at 28 days.
- (D) All reinforcing steel shall be new, neat, billet-steel per ASTM designation A-615, Grade 60, and shall be detailed and placed per ACI Manuals SP-88 and 318, latest additions. All reinforcing steel shall have minimum 15 inch lap splices, unless noted otherwise on the plans.
- (E) The Contractor shall use a liquid membrane-forming curing compound per COG item 303.2.13.1 specifications.
- (F) Light broom finish required on all exposed manhole tops.
- (G) Manhole steps, frame and cover shall be installed as per the details on this sheet.
- (H) Staked manhole extension shall be installed, where specified on the plans and as per the details on this sheet.
- (I) Manholes shall be constructed per details on this sheet and COG Item 502.1.4 specifications.



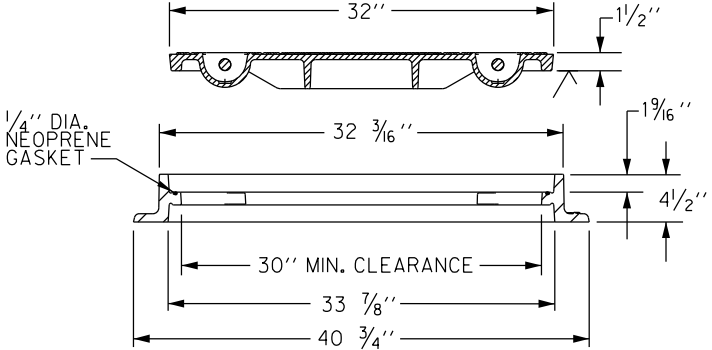
STACKED JUNCTION BOX EXTENSION

N.T.S.



NOTES:

1. COVER SHALL BE DUCTILE IRON ASTM A536 FRAME SHALL BE CAST IRON ASTM A48 CL35B.
2. MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM TOTAL WEIGHT OF 300 POUNDS.
3. MANHOLE FRAME SHALL HAVE A MINIMUM CLEAR OPENING OF 30".
4. MANHOLE COVER AND FRAME SHALL HAVE MACHINED SURFACES WHERE SHOWN.



SECTION A-A

STANDARD 32" RING & COVER

N.T.S.

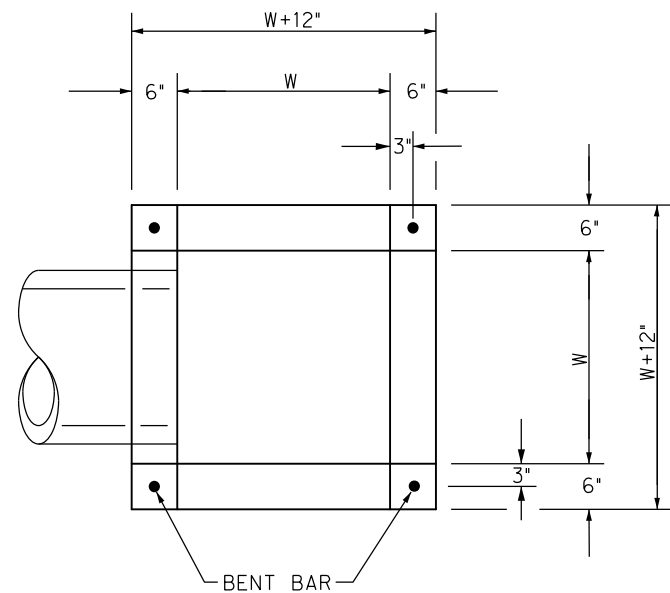
CERTIFICATION:

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STORM DRAIN STANDARD DETAILS
JUNCTION BOX DETAILS
(SHEET 2 OF 2)

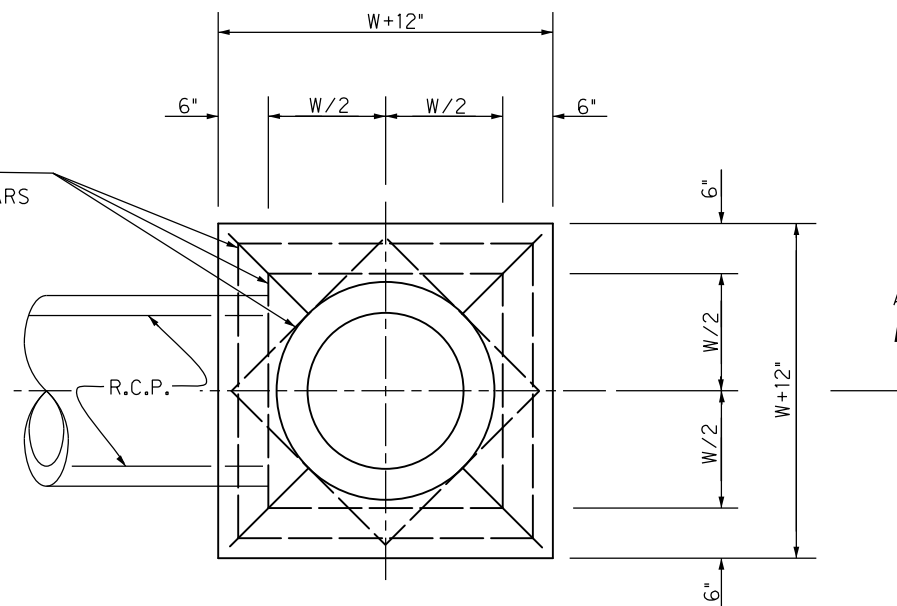


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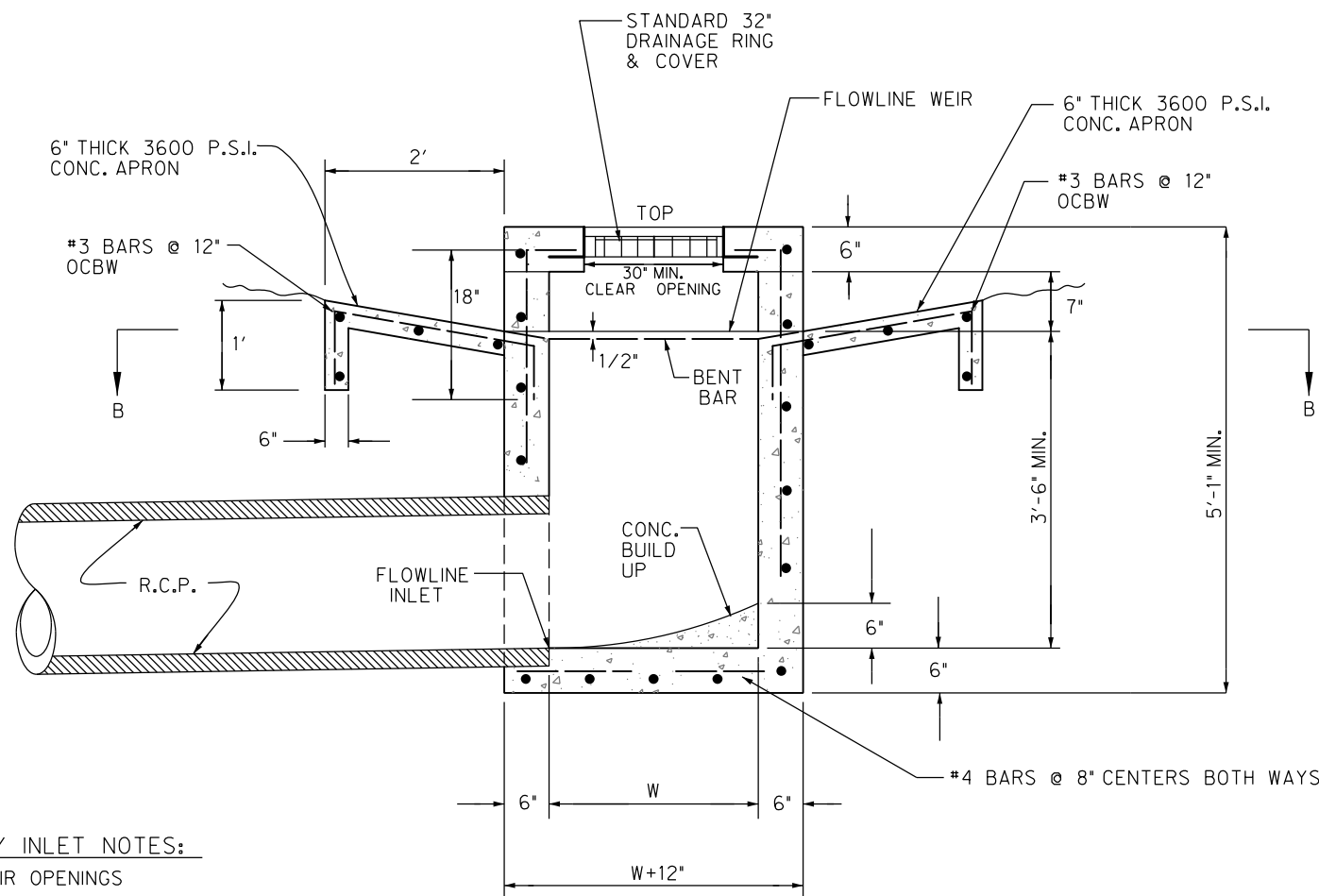


SECTION B-B

ALL REINFORCEMENT
IN TOP SHALL BE #5 BARS



PLAN

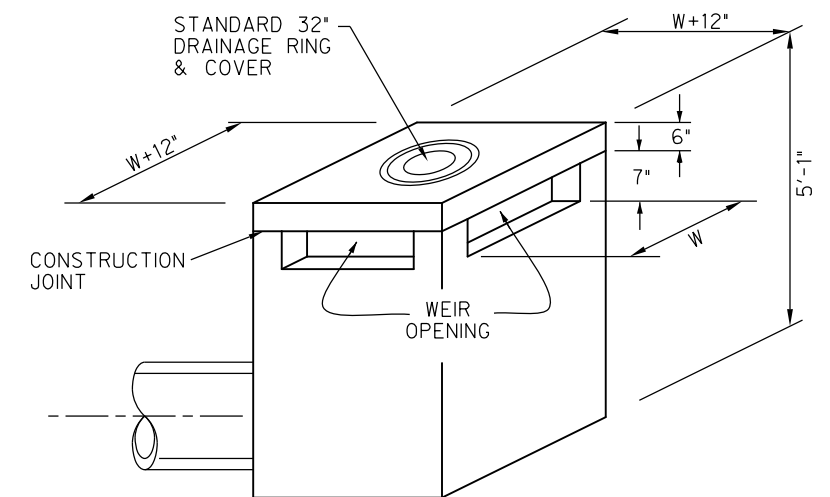


SECTION A-A

TYPE Y & SPECIAL TYPE Y INLET

N.T.S.

NOTE: MINIMUM DIMENSION FOR "W" = 36 INCHES



ISOMETRIC DETAIL

TYPE Y AND SPECIAL TYPE Y INLET NOTES:

1. SPECIAL TYPE Y INLET HAS WEIR OPENINGS REQUIRED ON TWO SIDES.
2. TYPE Y INLET HAS WEIR OPENINGS REQUIRED ON FOUR SIDES.
3. THE MINIMUM OPENINGS FOR TYPE Y AND SPECIAL TYPE Y INLETS IS W=3 FEET
4. ALL REINFORCING SHALL BE WITH #4 BARS @ 12 INCH CENTERS, EXCEPT IN TOP.

CERTIFICATION:

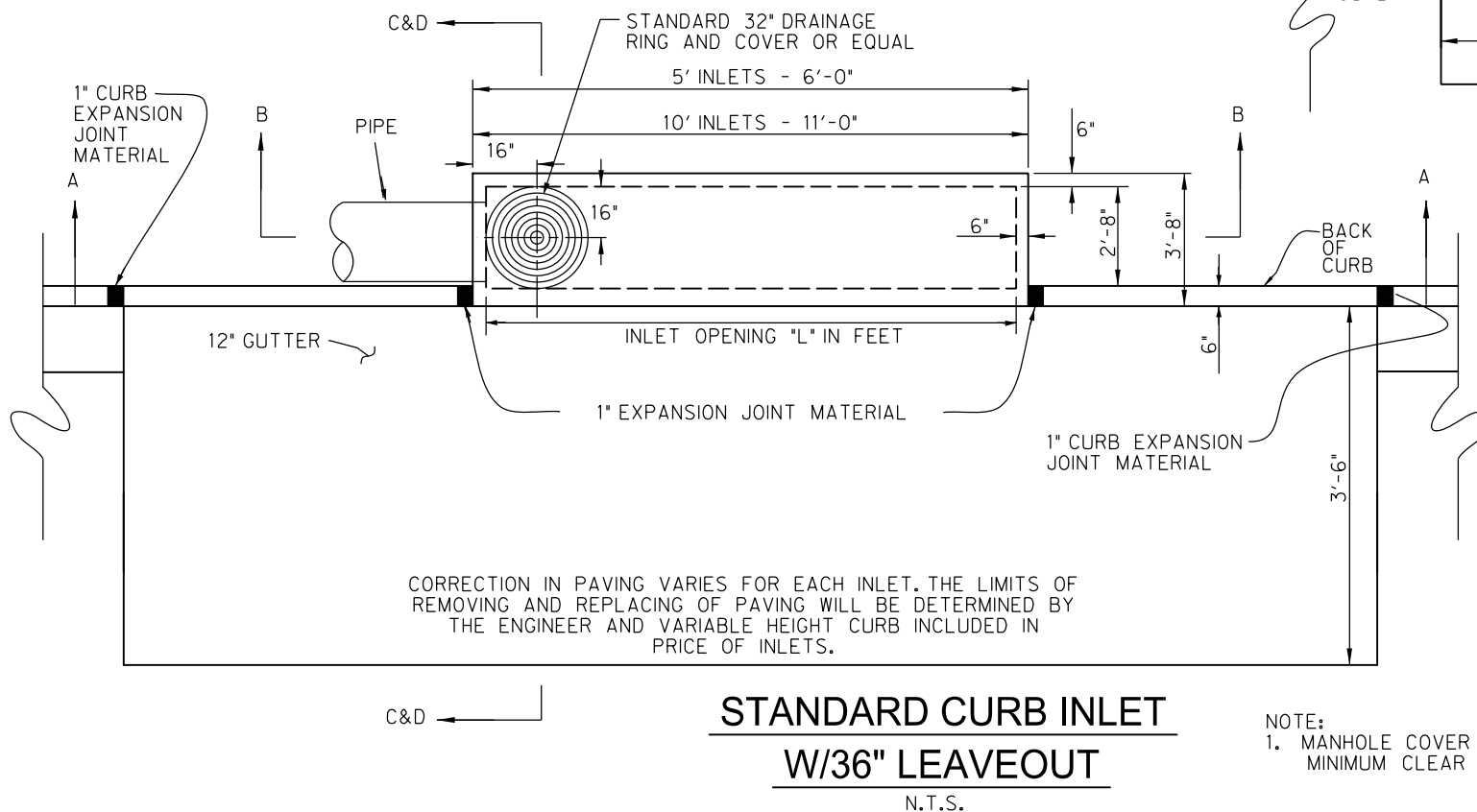
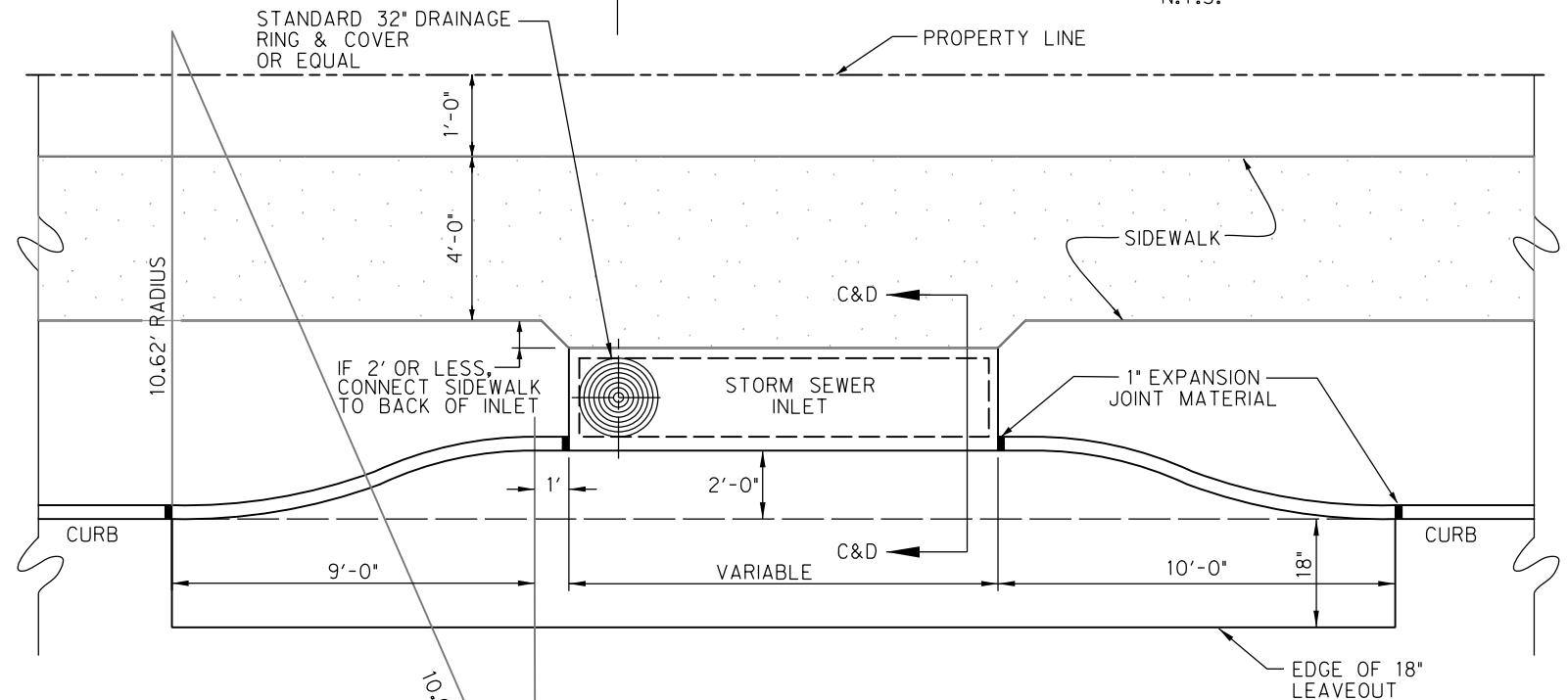
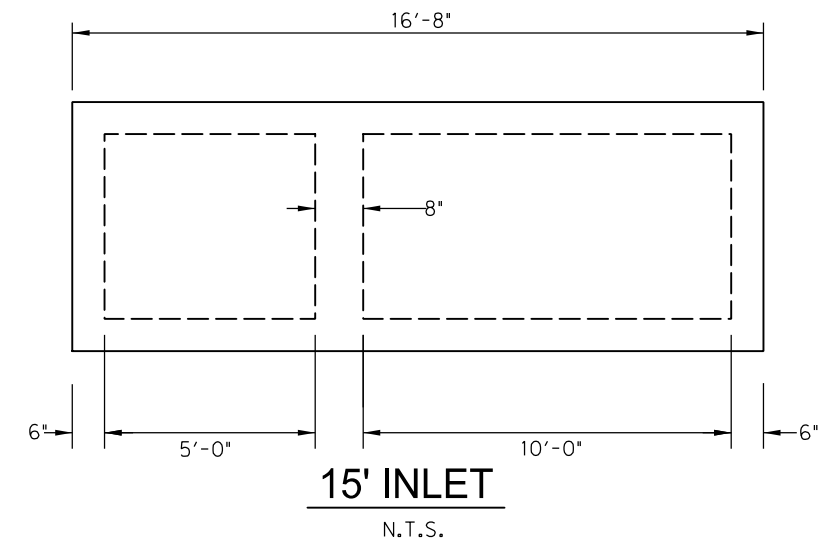
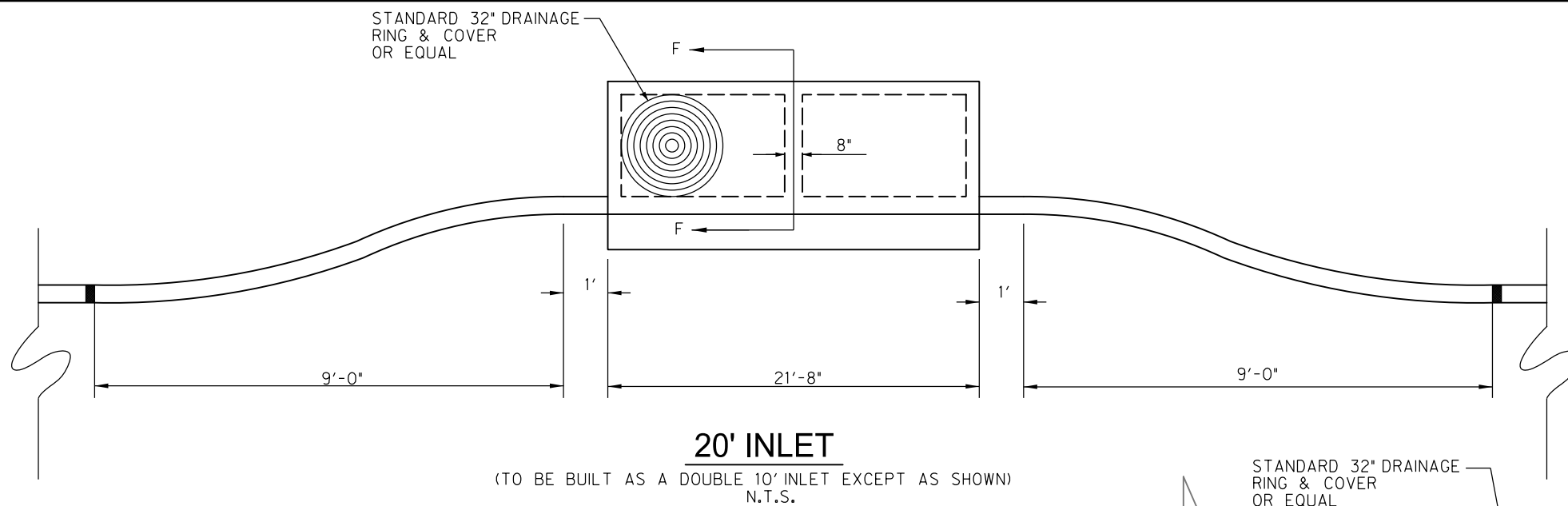
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STORM DRAIN STANDARD DETAILS

INLETS (SHEET 1 OF 3)



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-6	



NOTE:
1. MANHOLE COVER AND NECK SHALL HAVE A MINIMUM CLEAR OPENING OF 30".

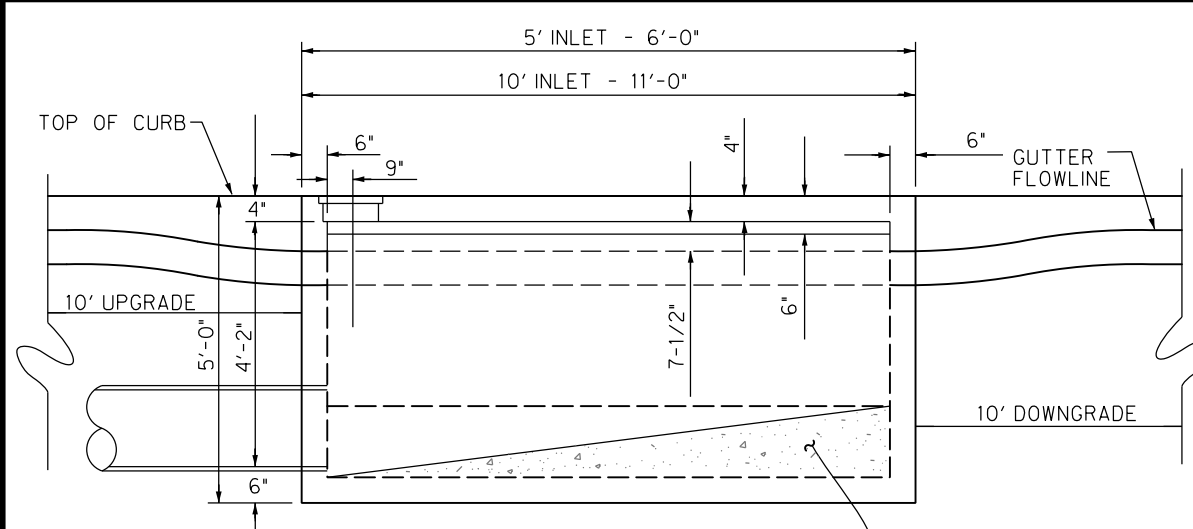
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STORM DRAIN STANDARD DETAILS

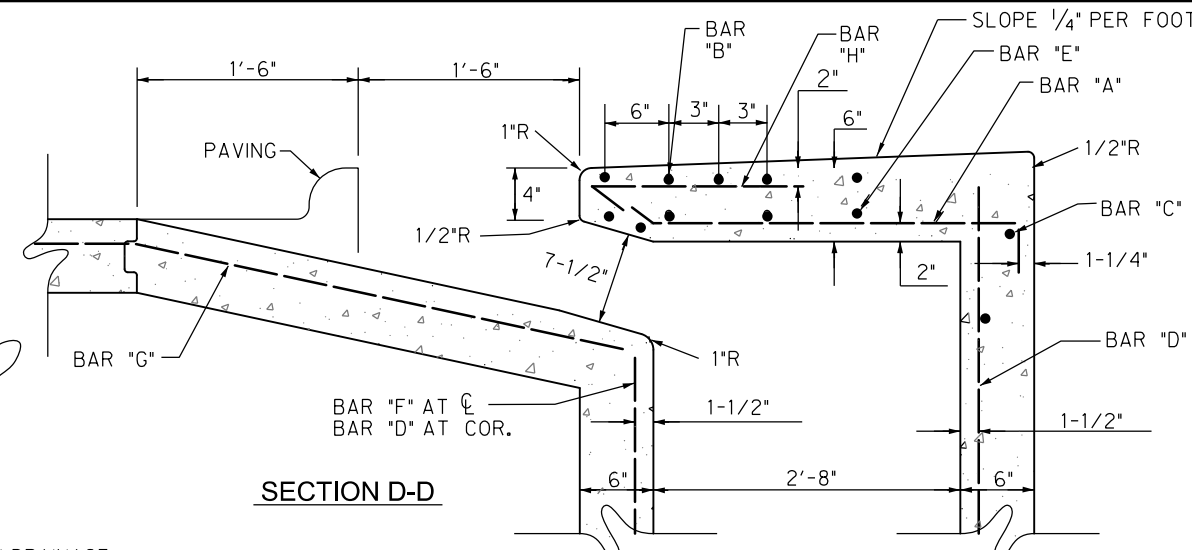
INLETS
(SHEET 2 OF 3)



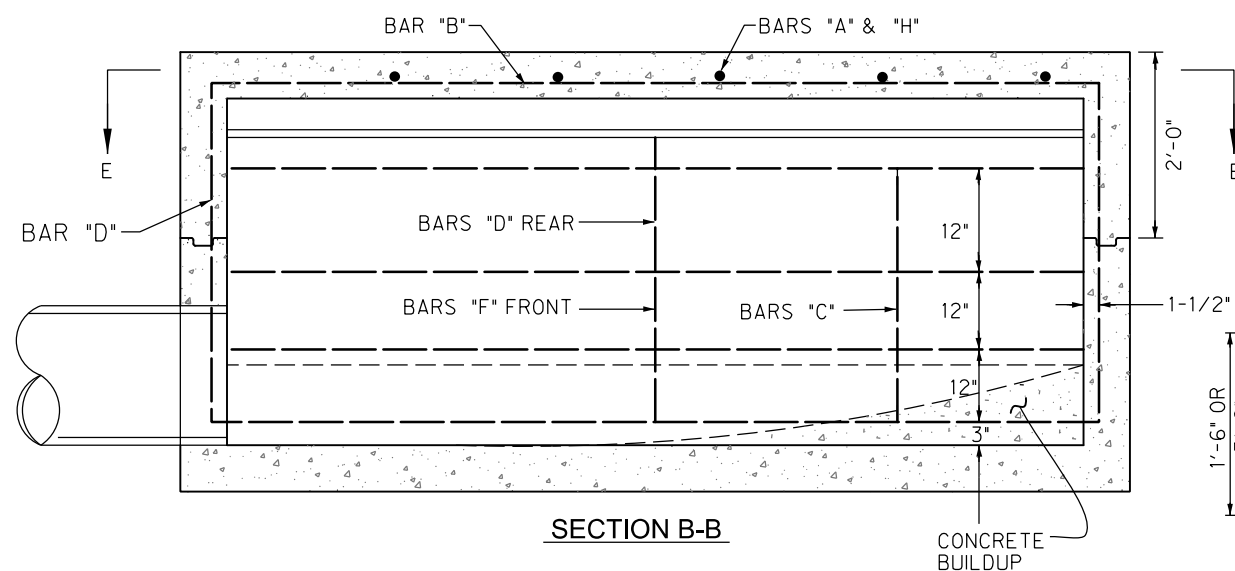
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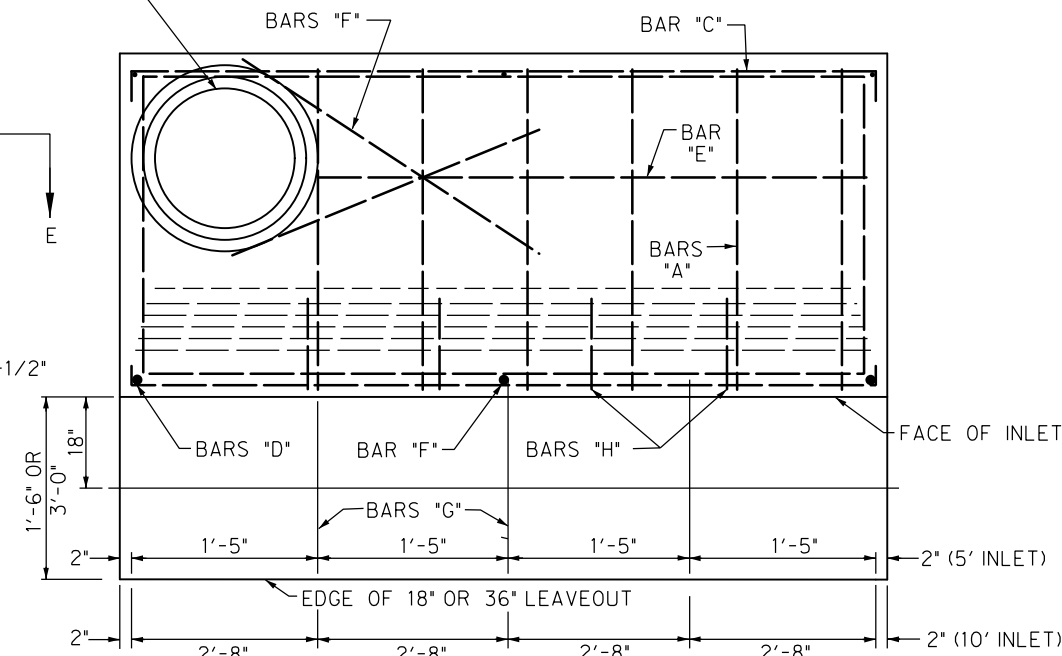
SECTION A-A



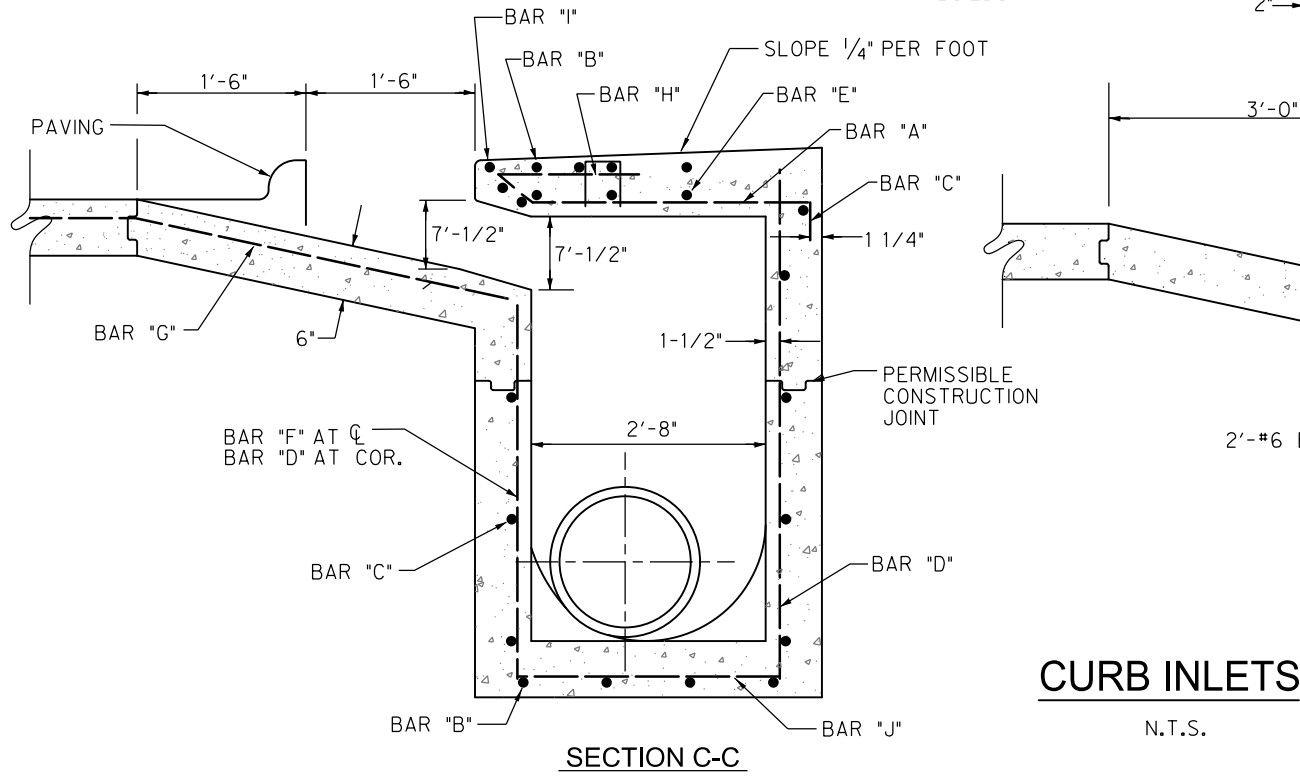
SECTION D-D



SECTION B-B



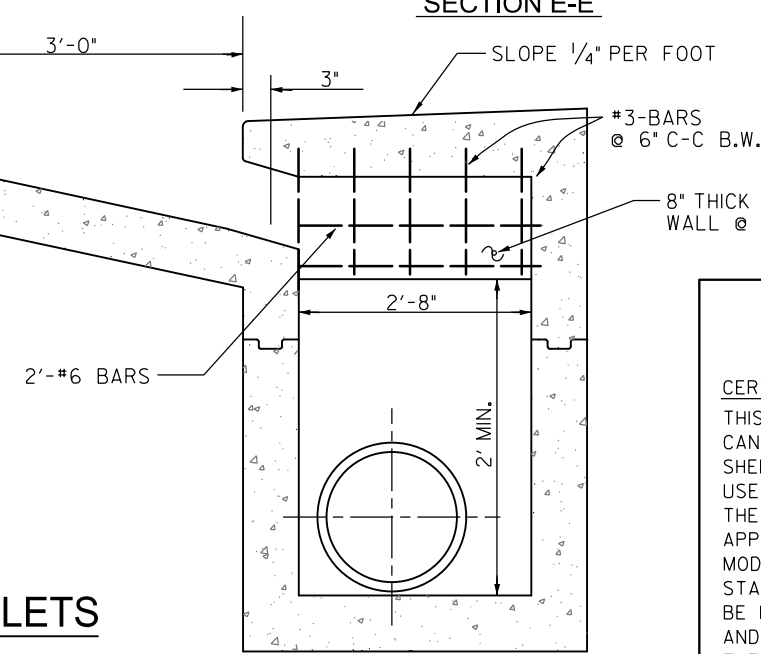
SECTION E-E



SECTION C-C

CURB INLETS

N.T.S.



SECTION F-F

BAR	DESCRIPTION
A	5' INLET -6 NO. 4 10' INLET -9 NO. 4
B	5' INLET -12 NO. 4 10' INLET -13 NO. 4
C	5' INLET -8 NO. 4 10' INLET -8 NO. 4
D	5' INLET -5 NO. 4 10' INLET -7 NO. 4
E	5' INLET -1 NO. 3 10' INLET -1 NO. 3
BAR	DESCRIPTION
F	5' INLET -3 NO. 4 10' INLET -4 NO. 4
G	5' INLET -5 NO. 3 10' INLET -7 NO. 3
H	5' INLET -6 NO. 4 10' INLET -9 NO. 4
I	5' INLET -1 NO. 3 10' INLET -1 NO. 3
J	5' INLET -6 NO. 4 10' INLET -11 NO. 4

REINFORCING STEEL SCHEDULE

N.T.S.

CERTIFICATION:

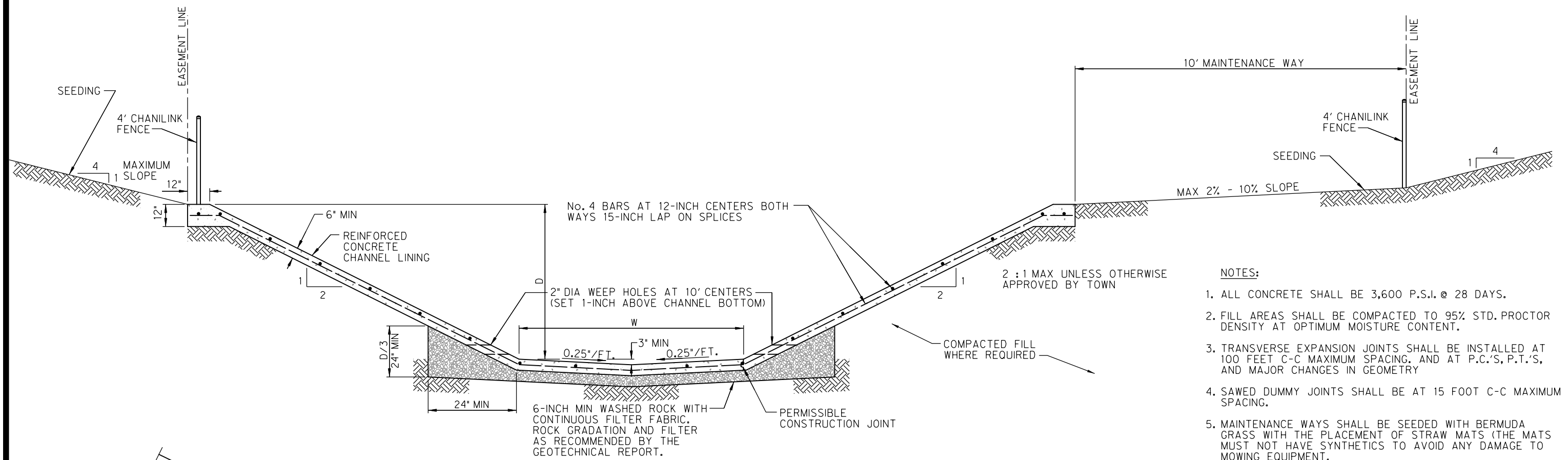
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STORM DRAIN STANDARD DETAILS

INLETS (SHEET 3 OF 3)

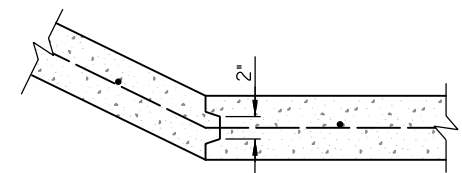


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NOTES:

1. ALL CONCRETE SHALL BE 3,600 P.S.I. @ 28 DAYS.
2. FILL AREAS SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT.
3. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT 100 FEET C-C MAXIMUM SPACING, AND AT P.C.'S, P.T.'S, AND MAJOR CHANGES IN GEOMETRY
4. SAWED DUMMY JOINTS SHALL BE AT 15 FOOT C-C MAXIMUM SPACING.
5. MAINTENANCE WAYS SHALL BE SEEDED WITH BERMUDA GRASS WITH THE PLACEMENT OF STRAW MATS (THE MATS MUST NOT HAVE SYNTHETICS TO AVOID ANY DAMAGE TO MOWING EQUIPMENT).

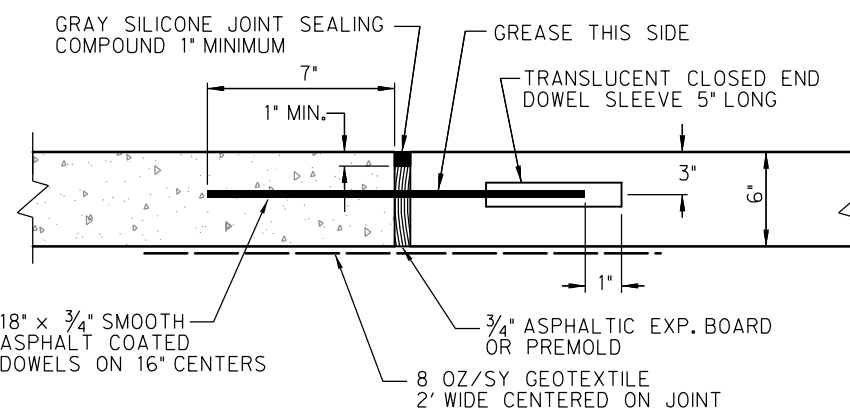


CONSTRUCTION JOINT

NOT TO SCALE

REINFORCED CONCRETE CHANNEL SECTION

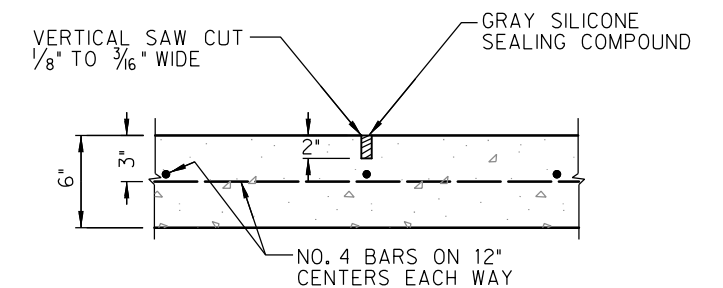
NOT TO SCALE



NOTE:
SLEEVES FOR DOWELS SHALL HAVE AN INSIDE DIAMETER OF 1/16" INCH GREATER THAN THE DIAMETER OF THE DOWELS AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.

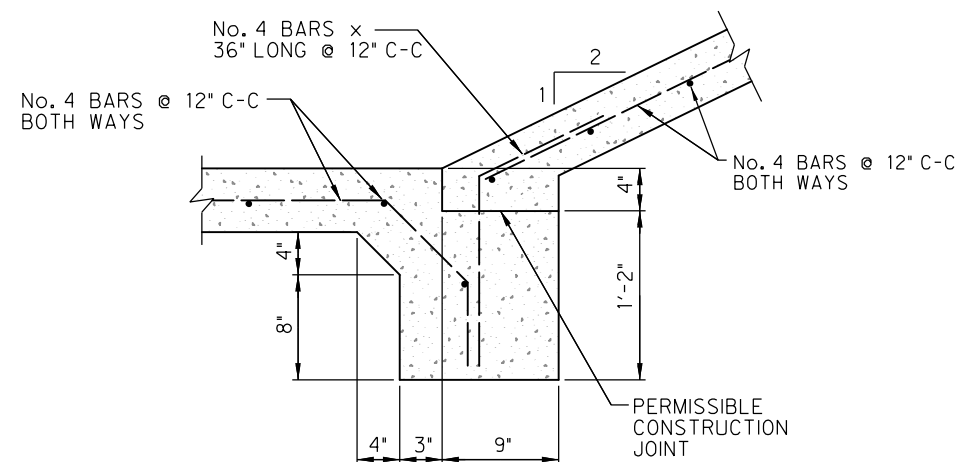
TRANSVERSE EXPANSION JOINT

NOT TO SCALE



SAWED DUMMY JOINT

NOT TO SCALE



ALTERNATE CONSTRUCTION JOINT

NOT TO SCALE

CERTIFICATION:

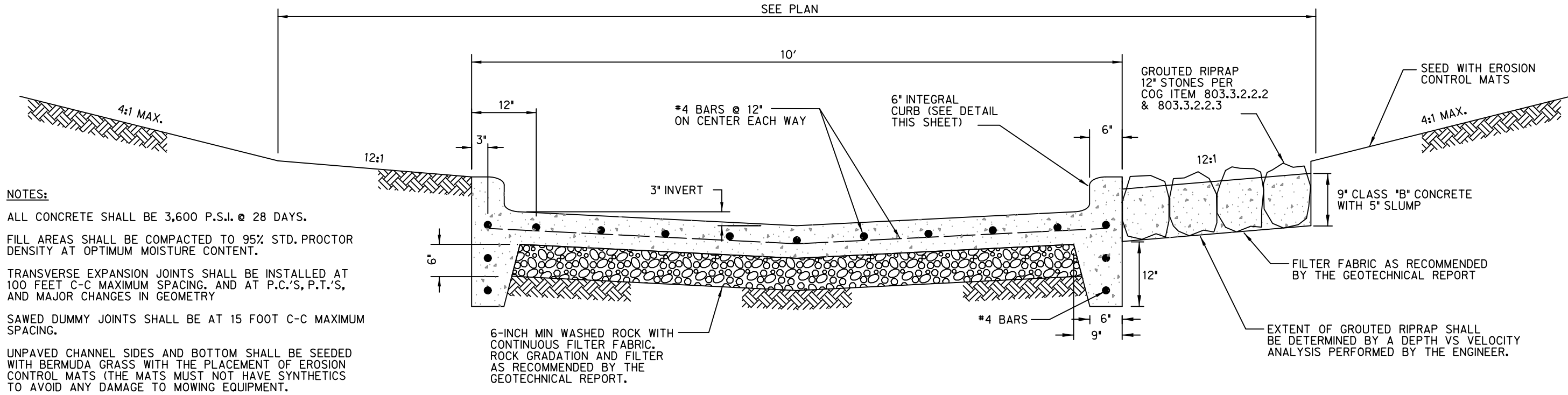
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STORM DRAIN STANDARD DETAILS

FULL CHANNEL LINING CONCRETE REINFORCED



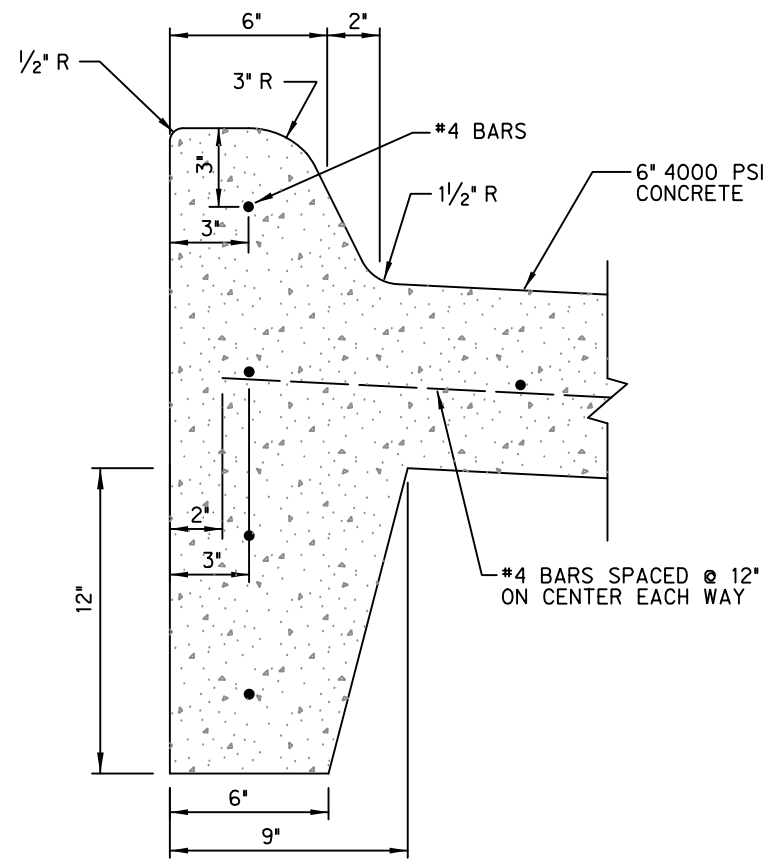
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HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-9	



- NOTES:**
1. ALL CONCRETE SHALL BE 3,600 P.S.I. @ 28 DAYS.
 2. FILL AREAS SHALL BE COMPACTED TO 95% STD. PROCTOR DENSITY AT OPTIMUM MOISTURE CONTENT.
 3. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT 100 FEET C-C MAXIMUM SPACING, AND AT P.C.'S, P.T.'S, AND MAJOR CHANGES IN GEOMETRY.
 4. SAWED DUMMY JOINTS SHALL BE AT 15 FOOT C-C MAXIMUM SPACING.
 5. UNPAVED CHANNEL SIDES AND BOTTOM SHALL BE SEEDED WITH BERMUDA GRASS WITH THE PLACEMENT OF EROSION CONTROL MATS (THE MATS MUST NOT HAVE SYNTHETICS TO AVOID ANY DAMAGE TO MOWING EQUIPMENT).

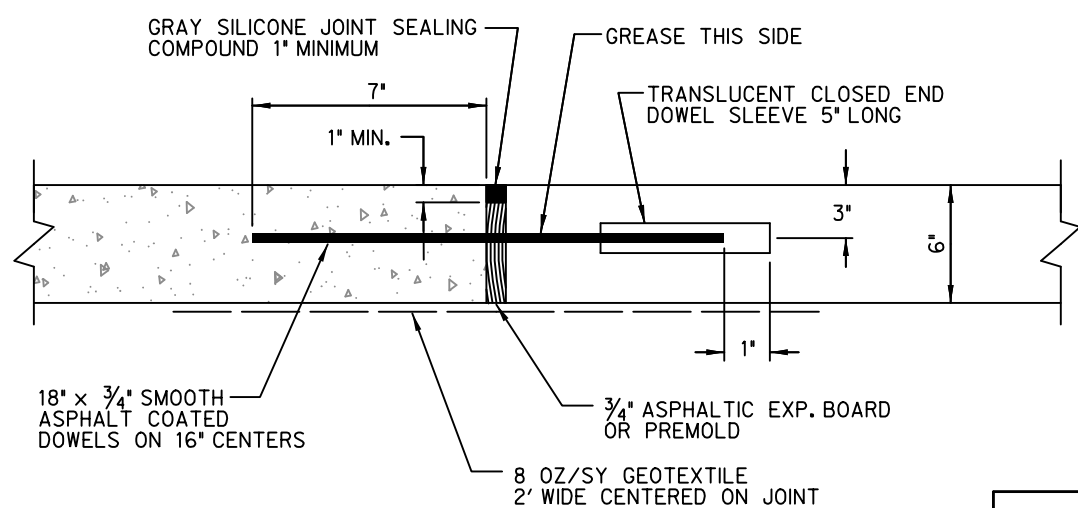
CONCRETE PILOT CHANNEL DETAIL

NOT TO SCALE



6" INTEGRAL CONCRETE CURB

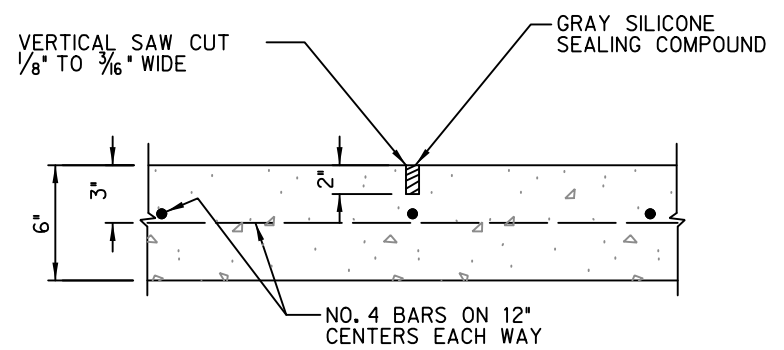
NOT TO SCALE



NOTE:
SLEEVES FOR DOWELS SHALL HAVE AN INSIDE DIAMETER OF 1/16-INCH GREATER THAN THE DIAMETER OF THE DOWELS AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE.

TRANSVERSE EXPANSION JOINT


NOT TO SCALE

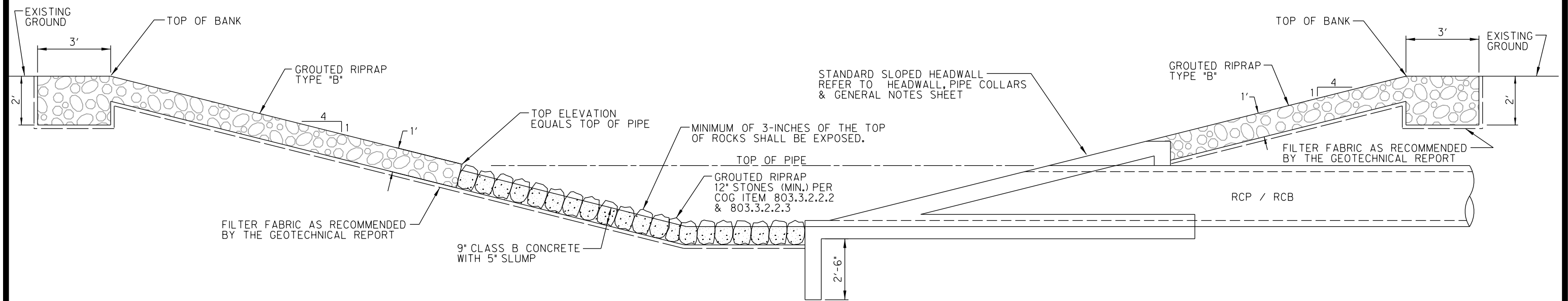


SAWED DUMMY JOINT

NOT TO SCALE

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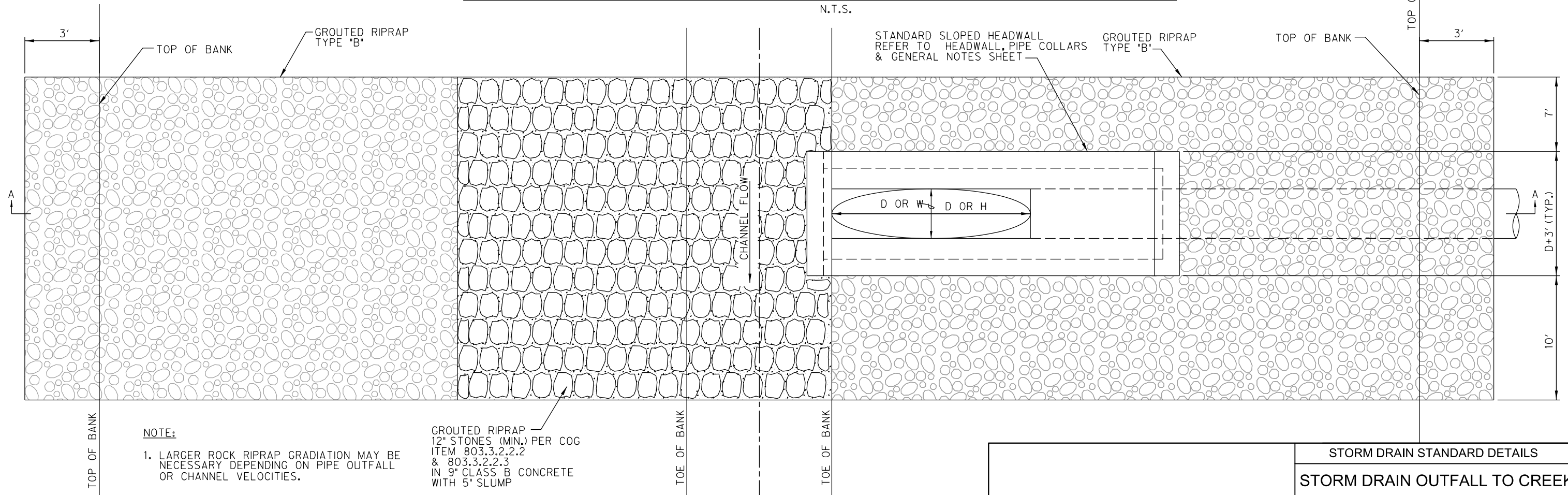
STORM DRAIN STANDARD DETAILS						
TYPICAL PILOT CHANNEL						
						
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-11	



SECTION A-A

STORM DRAIN OUTFALL PERPENDICULAR TO CENTERLINE OF CREEK

N.T.S.



STORM DRAIN OUTFALL PLAN VIEW

N.T.S.

CERTIFICATION:

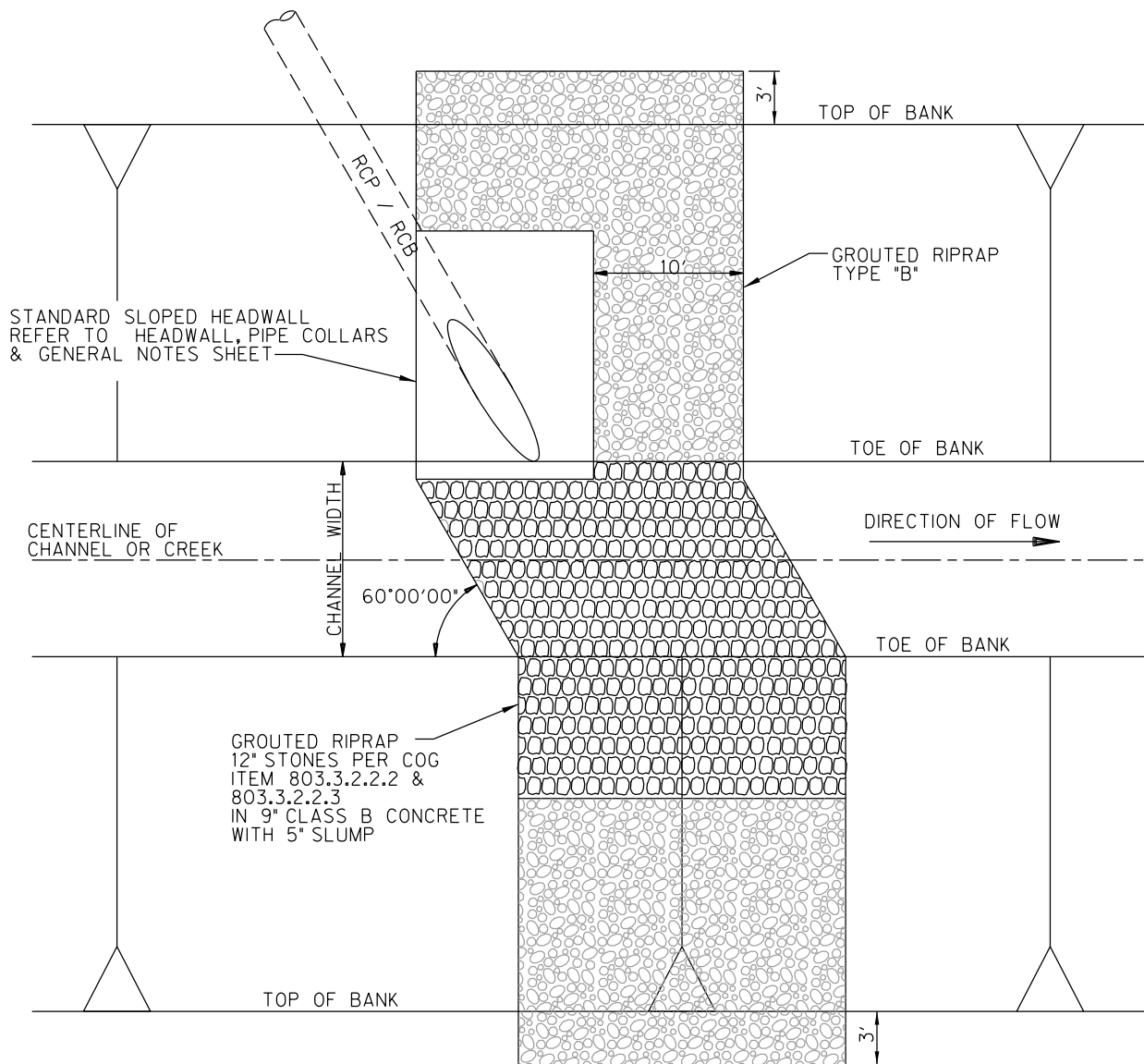
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STORM DRAIN STANDARD DETAILS

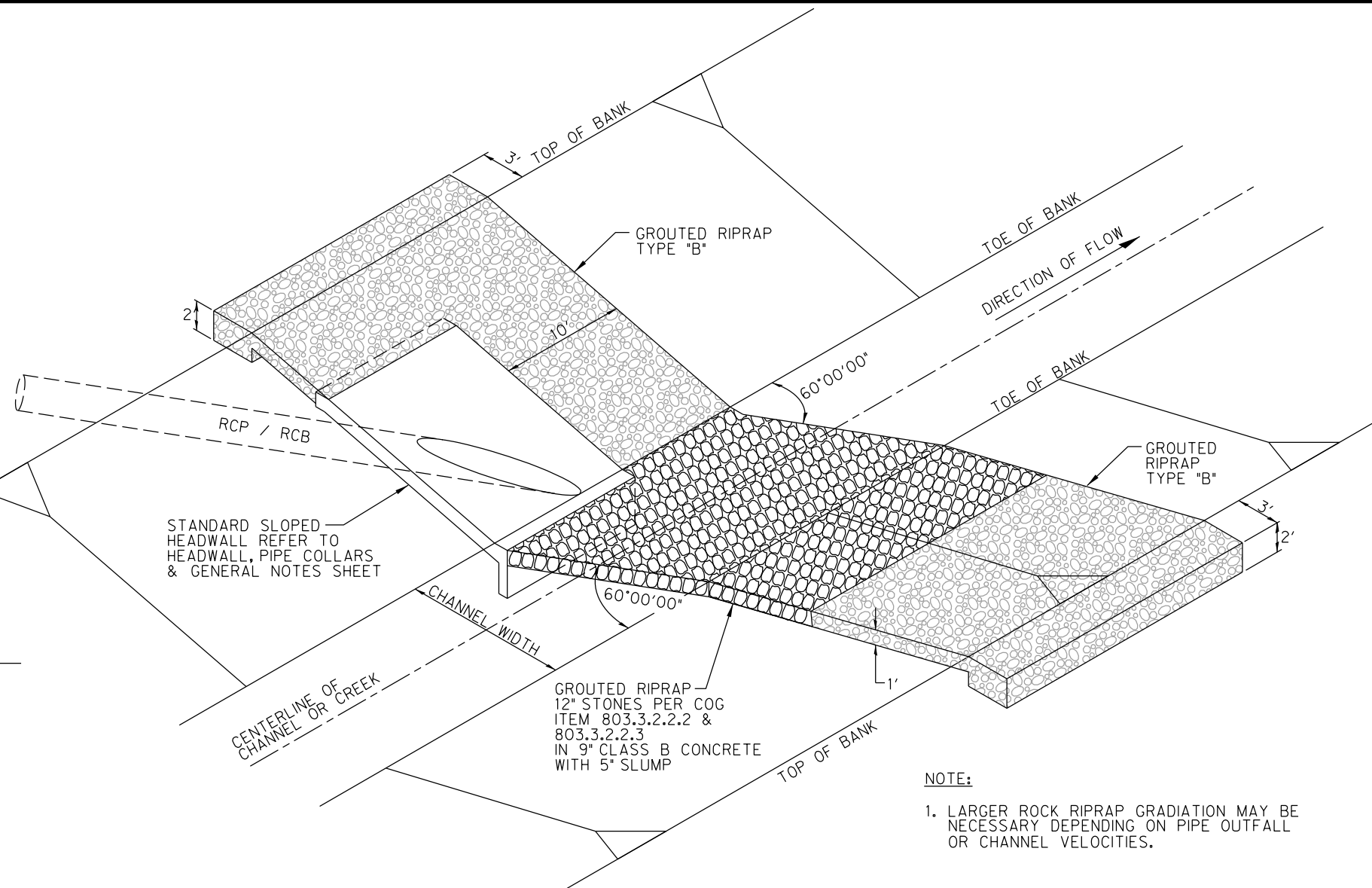
STORM DRAIN OUTFALL TO CREEK



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-12	



STORM DRAIN OUTFALL PLAN VIEW
N.T.S.



NOTE:
1. LARGER ROCK RIPRAP GRADATION MAY BE NECESSARY DEPENDING ON PIPE OUTFALL OR CHANNEL VELOCITIES.

ISOMETRIC STORM DRAIN OUTFALL VIEW
N.T.S.

STORM DRAIN OUTFALL - 60 DEGREE ANGLE TO CREEK

CERTIFICATION:
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

STORM DRAIN STANDARD DETAILS STORM DRAIN OUTFALL 60 DEGREE ANGLE TO CREEK




DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	SD-13	—

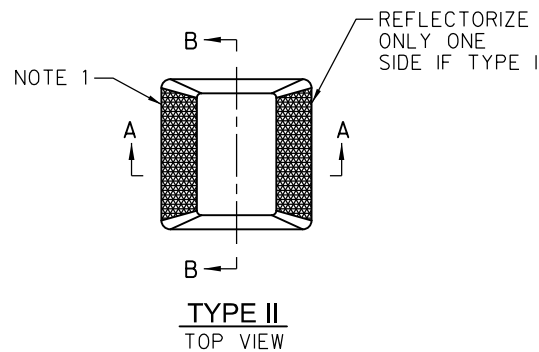
1. All construction shall be in accordance with the standard specifications and details of the Town of Copper Canyon and the Fourth Edition of the "Standard Specifications for Public Works Construction - North Central Texas" herein referred to as "COG". Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888.
2. For 6-Inch to 24-Inch sizes, water lines shall be AWWA C900-07 Polyvinyl Chloride Pressure Class 235 (DR18) or greater.
3. Fittings shall be cast iron or ductile iron, with 89-mil polywrap per COG Item 501.7.4. All fittings shall be Mega Lug or equivalent unless specified otherwise. Beveled ends of the pipe shall be removed when used with Mega Lug fittings. Fittings shall be blocked as per the Concrete Blocking details.
4. Water pipe shall be blue in color.
5. All pipe joints shall be gasketed, bell and spigot, push-on type.
6. For creek crossings with less than 5 feet of cover to the creek flowline, the pipe shall be PVC with concrete encasement.
7. Embedment and backfill shall be as per the Water Details for pipes up to 12-inch diameter. For pipes larger than 12-inch size, the Engineer shall specify embedment.
8. Minimum cover over water lines shall be as follows:
 - a. 48 inches for water lines 12-inches in diameter or less
 - b. 60 inches for water lines larger than 12-inches in diameter.Cover over 72 inches must be approved by the Town.
9. Clay cut-off walls shall be constructed as per the Water Details.
10. PVC Water pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipes should be covered or protected from sunlight and to be protected from other elements.
11. When PVC water pipe is installed in casing, skids must be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on the bells. Plastic spacers such as RACI or approved equal shall be used.
12. Valves installed on waterlines 16 inches diameter or less shall be vertical gate valves with non-rising stems and resilient wedge seal.
13. All valves shall be gate valves.
14. Valves and fire hydrants shall be installed in line with lot and ROW lines, where possible.
15. Valve locations shall be marked with "V" stamped or cut on the curb and painted blue for water mains and silver for fire hydrants.
16. All property corners shall be staked with iron pins prior to the installation of any water services. The locations of the water service shall be staked according to the plans.
17. Unless otherwise stated in the Contract Documents the Contractor is responsible for all testing. All final reports shall be turned in to the Town Inspector within five (5) working days. Failed samples must be reported to the Town Inspector immediately.
18. Water mains shall be standard sizes that are readily available such as 8-inch, 12-inch, 18-inch, 20-inch, 30-inch, and 36-inch.
 - a. The CONTRACTOR shall be responsible for notifying the Town Inspector at least 24 hours prior to any required testing.
 - b. Soil and material testing technicians shall provide written proof of having minimum of two (2) years of related field experience.
 - c. The CONTRACTOR shall coordinate all testing activities with the Town Inspector and shall facilitate required testing throughout the construction period. The Inspector shall be present during all testing.
 - d. The Town shall make final decision as to the validity of all testing results.

- e. The CONTRACTOR shall be responsible for ensuring that materials to be tested are in compliance with all plans and specifications prior to testing. All materials found not to be in compliance with the plans and specifications before and after testing shall be removed and replaced at the CONTRACTOR'S expense.
- f. All costs associated with the retesting of work that fails to meet the specifications required in the contract documents shall be borne by the CONTRACTOR. For Town projects retesting cost shall be withheld from pay requests submitted by the CONTRACTOR, this cost will be based on the Town's cost with no additional mark-up. A letter of acceptance will not be issued until all testing deficiencies are addressed and all related cost paid.
- g. The Town Inspector shall be notified of concrete placement 24 hours in advance for steel and form inspection.
- h. One set of four cylinders (2-7 day, 2-28 day) for cast-in-place concrete shall be made for every day that concrete is placed (ASTM C-31). Air, slump, and temperature tests shall be taken for every set of cylinders made. Concrete with a temperature above 95 degrees will be rejected. Additional cylinders and or tests may be requested at the Inspector or ENGINEER'S discretion. Exterior forms shall not be removed for a minimum of 24 hours unless approved by Inspector or ENGINEER. Sulfate resistant concrete shall be used for all manholes.
- i. Backfill and Density Testing
 - 1) All trenches shall be backfilled in accordance with standard details and mechanically compacted with approved vibratory methods in accordance with COG Item 504.5.3.2.1 and paragraph 3) below unless otherwise stated on the plans or in the specifications.
 - 2) Densities shall conform to standard trench details, COG Item 504.5.3.2.1, and Paragraph 3) below unless otherwise stated on the plans or in the specifications. Proctor samples shall be taken for all classifications of soil on site. Atterberg Limits shall be determined on all Proctor samples. No "potholing" will be allowed. Densities shall be taken on all water services both sides of the street within the Right-of-Way and shall conform to Paragraph 3) below and COG Item 504.5.3.2.1, unless otherwise stated on the plans or in the specifications. Backfill adjacent to all structures shall be compacted manually and density tested on every lift.
 - 3) Mechanical Tamping of Backfill
 - a) All ditch lines and bore pits shall be mechanically tamped.
 - b) Backfill, other than select fill, may consist of onsite or offsite inorganic soils and should be placed in loose lifts 6" - 8" in thickness (not to exceed 12") and should be mechanically compacted to 95 percent of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures under existing and proposed pavement, and to 90 percent standard proctor procedures elsewhere. The moisture content of the fill at the time of compaction shall be between minus 2% of optimum to four percentage points above the proctor optimum value.
 - c) All backfill material to be select native material, 6" diameter clods and smaller, unless directed otherwise on the plans or in the specifications and to be mechanically tamped and density controlled as described in Paragraph b) above.
 - d) Water jetting is not permitted.
 - e) Densities shall be taken every one (1) lift at staggered locations not to exceed 200 feet increments. Offset fifty (50) feet every other lift.

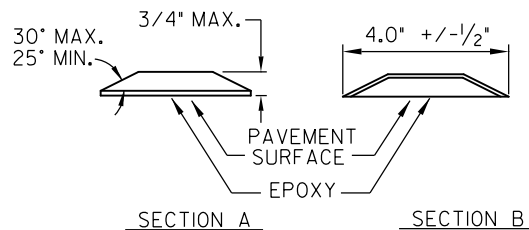
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- j. Purging - All water lines greater than 200 feet in length and 12-inches in diameter or less shall be purged using the "Poly-Pig" method with the "Poly-Pig" to enter and exit at an approved location. Purging shall be in accordance with CCG Item 506.7.3.1. Lines larger than 12-inches in diameter shall be purged using the flushing method in accordance with CCG Item 506.7.3.2. The Town Inspector must be present.
- k. Hydrostatic Testing - All water lines shall be tested in accordance with CCG Item 506.5. The Town Inspector must be present.
- l. Disinfection - All water lines shall be disinfected in accordance with CCG Item 506.7.5 and as approved by the Town. All bleeders shall have corporation stops at the main. One water sample shall be obtained for each street name (no greater than 1,000 feet) or as approved by the Town.

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	WATER GENERAL NOTES						
	<div><div></div><div>Town of COPPER CANYON TEXAS</div></div>						
	DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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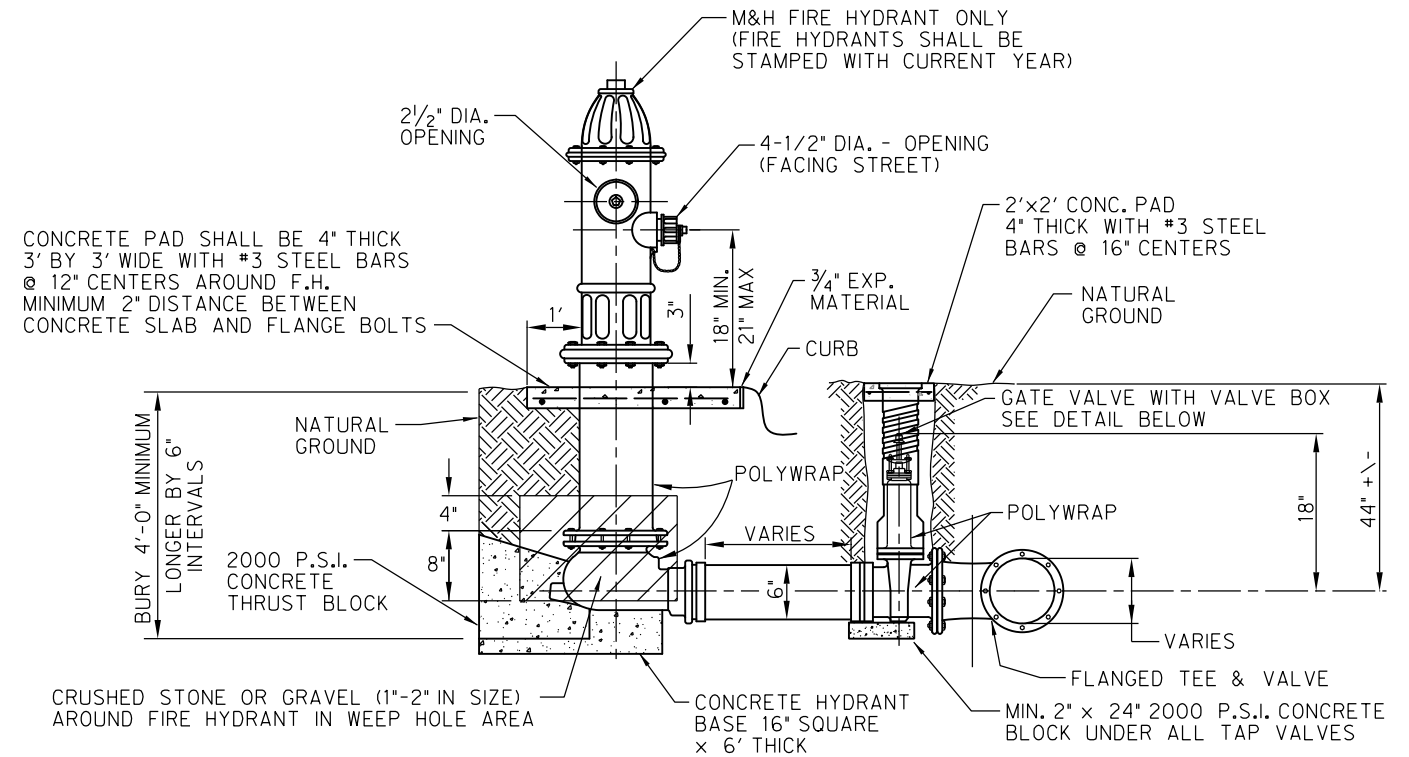
- HYDRANT MARKER NOTES
1. USE RAY-O-LITE PAT. 3 409 344 OR APPROVED EQUAL
 2. HYDRANT MARKERS SHOULD BE PLACED 4" OFF THE CENTER STRIPE OR OTHER TRAFFIC BUTTONS AS PER. DRAWINGS.
 3. PAVEMENT MARKER NOTES FIRE HYDRANT LOCATION WILL BE MARKED BY PLACING A TYPE II PAVEMENT MARKER REFLECTORIZED BLUE 4" OFF OF THE TRAFFIC LANE BUTTONS. THE MARKER WILL BE IN THE LANE NEAREST TO THE FIRE HYDRANT. ALL MARKERS AT INTERSECTIONS SHOULD BE 10 FEET BACK FROM THE INTERSECTION.



TYPE I

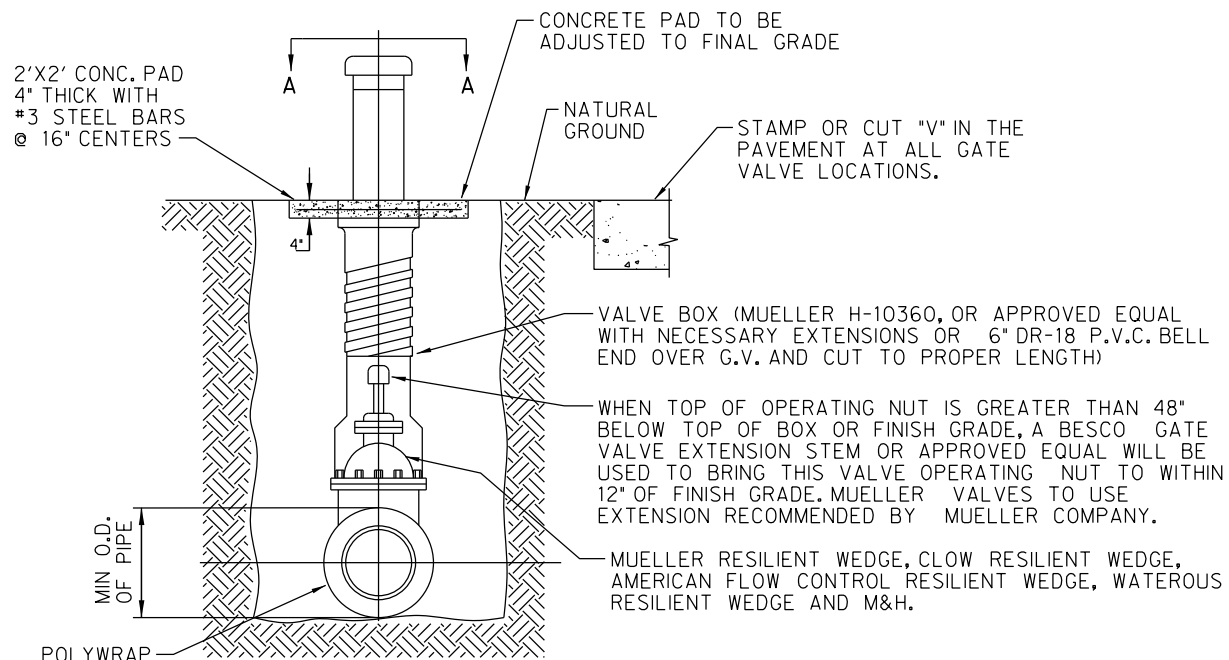
PAVEMENT MARKERS (REFLECTORIZED)

N.T.S.



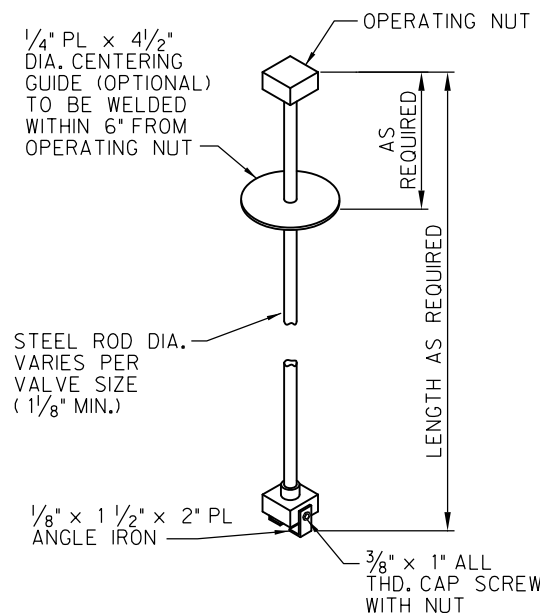
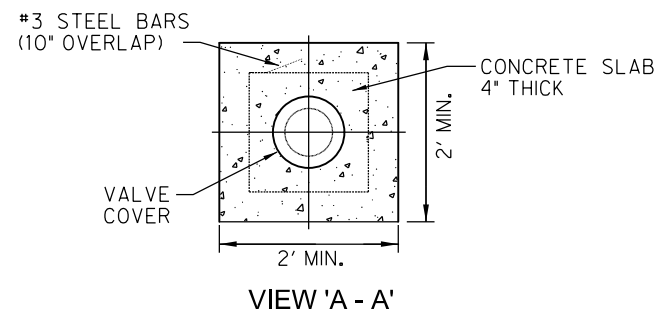
STANDARD FIRE HYDRANT DETAIL

N.T.S.



TYPICAL GATE VALVE SETTING AND BOX

N.T.S.



GATE VALVE EXTENSION STEM

N.T.S.

FIRE HYDRANT NOTE:

1. FIRE HYDRANTS SHALL HAVE A 4-1/2" DIA. OPENING FACING THE STREET AND TWO 2-1/2" DIA. THE THREADS SHALL BE OF THE NATIONAL STANDARD HOSE COUPLING SCREW THREAD DESIGN AND SHALL OPEN COUNTER CLOCKWISE.
2. REFLECTIVE (BLUE) FIRE HYDRANT SPOTTERS SHALL BE INSTALLED IN ALL STREETS AT A POINT OPPOSITE FIRE HYDRANTS; LOCATED ALONG CENTERLINE OF STREET, CLOSEST TO THE FIRE HYDRANT.

CERTIFICATION:

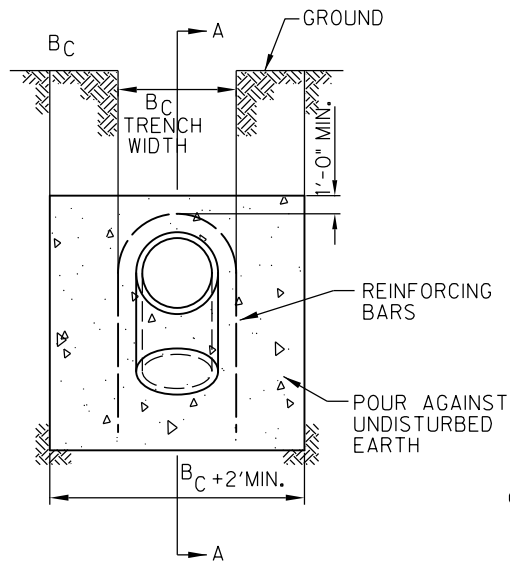
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WATER STANDARD DETAILS

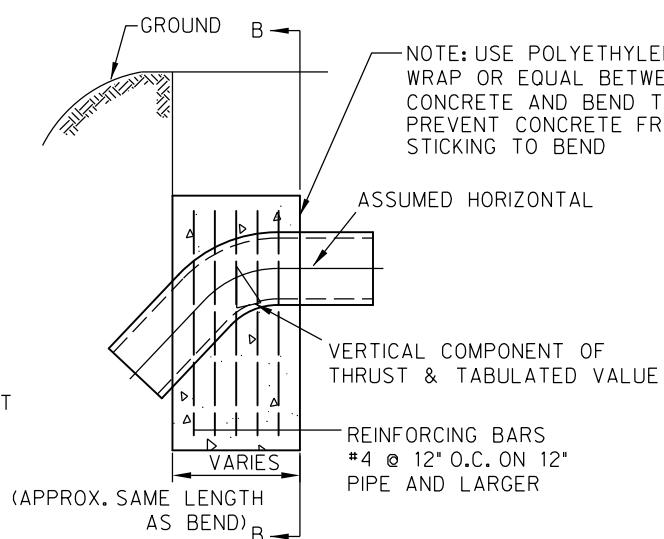
VALVE, HYDRANTS



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ELEVATION B-B



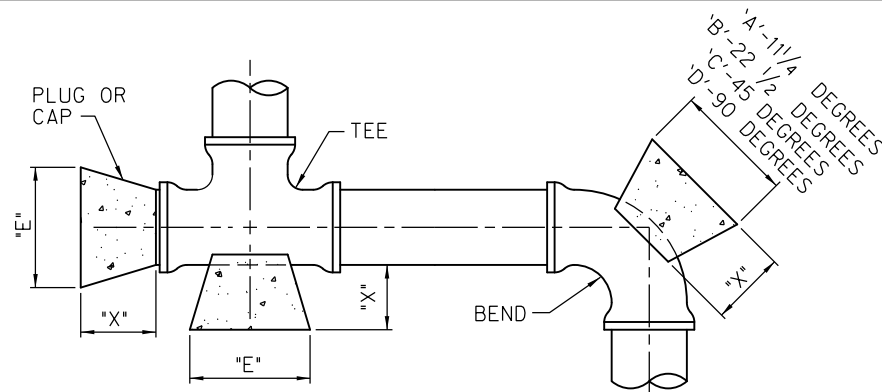
ELEVATION A-A

VERTICAL THRUST BLOCK NOTES:

1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 P.S.I. FOR 24" I.D. PIPE AND SMALLER AND 150 P.S.I. ON 30" I.D. AND LARGER.
2. VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
3. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATED PURPOSES ONLY.
4. CONCRETE FOR BLOCKING SHALL BE 2000 P.S.I. CONCRETE DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.

△	11.25°		22.50°		30°		45°		67.50°		90°		△
I.D. (IN.)	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	THRUST TONS	VOL. C.Y.	I.D. (IN.)
4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

DIMENSIONS OF CONCRETE FOR VERTICAL THRUST BLOCKS AT FITTINGS



PIPE SIZE	X--* DIA. FT.	11 1/4 DEGREES		22 1/2 DEGREES		45 DEGREES		90 DEGREES		TEE & PLUG	
		"A"	MIN. AREA	"B"	MIN. AREA	"C"	MIN. AREA	"D"	MIN. AREA	"E"	MIN. AREA
4"	1.5	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.06	1.00	1.00
6"	1.5	1.00	1.00	1.00	1.00	1.14	1.30	1.55	2.40	1.30	1.70
8"	1.5	1.00	1.00	1.08	1.18	1.52	2.31	2.07	4.27	1.74	3.02
10"	1.5	1.00	1.00	1.35	1.84	1.90	3.61	2.58	6.66	2.17	4.71
12"	1.5	1.00	1.33	1.63	2.65	1.86	5.19	3.10	9.60	2.61	6.79
14"	1.5	1.03	1.81	1.90	3.60	2.66	7.07	3.61	13.06	3.04	9.246
16"	2.0	1.18	2.36	2.17	4.71	3.04	9.23	6.20	17.06	3.47	12.06
18"	2.0	1.33	2.99	2.44	5.96	3.42	11.69	4.65	21.59	3.91	15.27
20"	2.0	1.48	3.70	2.71	7.35	3.80	14.43	5.16	26.86	4.34	18.85
21"	2.0	1.55	4.07	2.85	8.11	3.99	15.91	5.42	29.39	4.56	20.78
24"	2.0	1.77	5.32	3.25	10.59	4.56	20.77	6.20	38.39	5.21	27.14
27"	2.5	1.99	6.73	3.66	13.40	5.13	26.29	6.97	48.58	5.86	34.35
30"	2.5	2.22	8.31	4.07	16.55	5.70	32.46	7.74	59.98	6.51	42.41
33"	2.5	2.44	10.06	4.47	20.02	6.27	39.28	8.52	72.57	7.16	51.31
36"	2.5	2.66	11.97	4.88	23.83	6.84	46.74	9.29	86.37	7.81	61.07
39"	3.0	2.88	14.05	5.29	27.97	7.41	54.86	10.07	101.36	8.47	71.68
42"	3.0	3.10	16.30	5.69	32.43	7.98	63.62	10.85	117.56	9.12	83.13

HORIZONTAL THRUST BLOCK NOTES:

1. USE MEGA LUGS OR EQUIVALENT FOR ALL BENDS.
2. ALL CALCULATIONS ARE BASED ON A WATER LINE PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING VALUE OF 2,500 POUNDS PER SQUARE FEET.
3. 2000 PSI. CONCRETE SHALL BE USED FOR ALL BLOCKING.
4. THE MINIMUM VERTICAL DIMENSIONS OF ALL BLOCKING SHALL BE 1.5 TIMES THE PIPE DIAMETER WITH AT LEAST 0.75 TIMES THE PIPE DIAMETER EXTENDING BOTH ABOVE AND BELOW THE PIPE CENTERLINE. THIS DIMENSION DETERMINES THE "X" DIMENSION FOR 11 1/4° BENDS.
5. FOR 22-1/2°, 45°, 90°, AND TEE AND PLUGS, THE VERTICAL DIMENSION SHALL BE EQUAL TO THE HORIZONTAL DIMENSION SHOWN TO PRODUCE THE REQUIRED MINIMUM AREA.
6. ALL MINIMUM AREAS ARE IN SQUARE FEET.

DIMENSIONS OF CONCRETE FOR HORIZONTAL THRUST BLOCKING AT FITTINGS

CERTIFICATION:

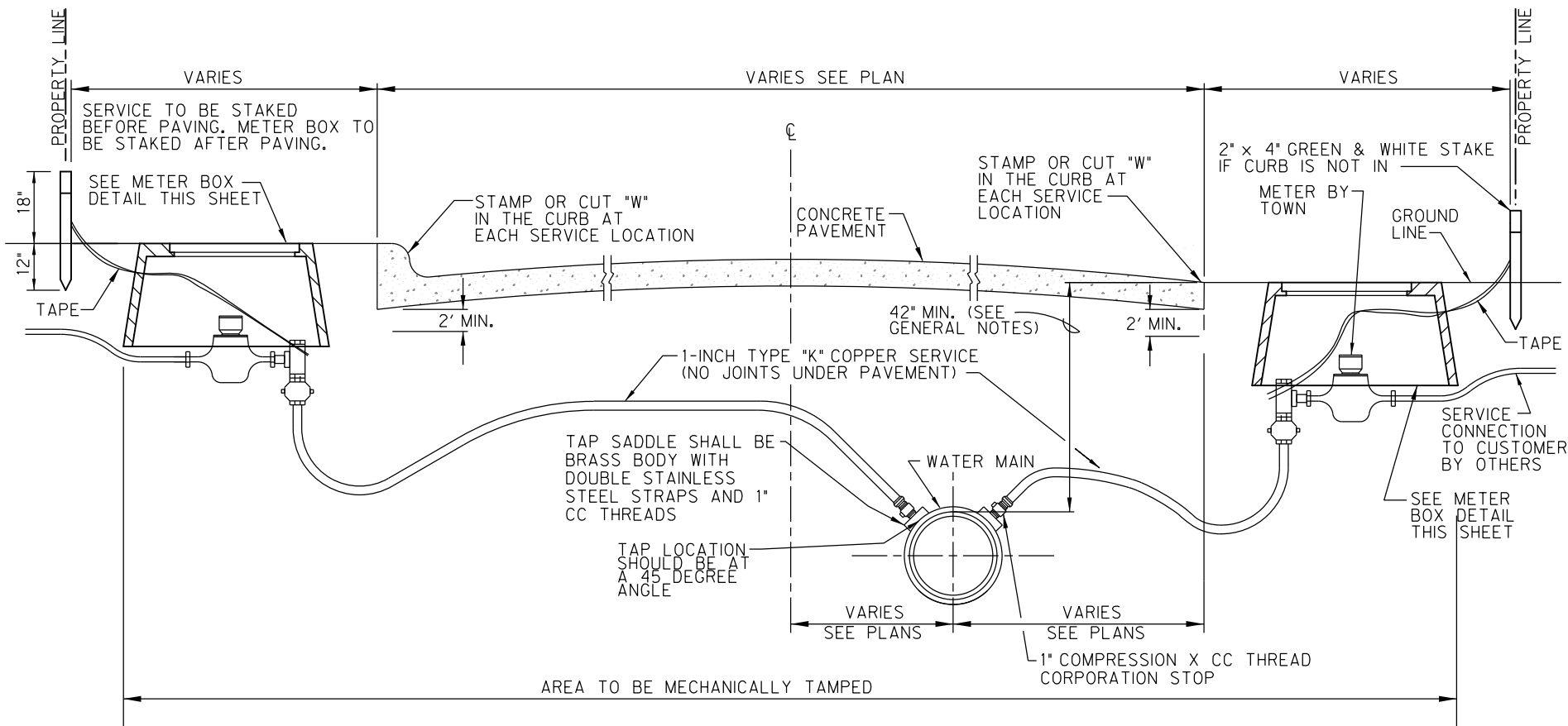
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WATER STANDARD DETAILS

CONCRETE BLOCKING



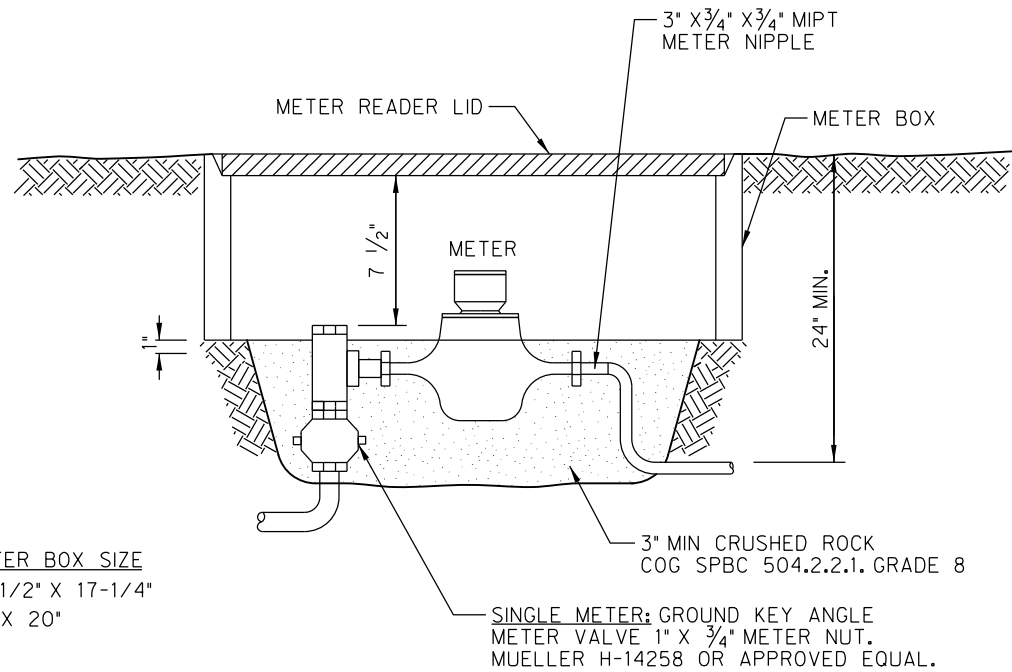
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NOTE:
SINGLE SERVICES SHALL BE PLACED ON
A PROPERTY LINE WITH A 1" LINE AND
REDUCED AT THE ANGLE STOP.

WATER SERVICE DETAIL

N.T.S.



METER SIZE
SINGLE 3/4"
SINGLE 1"

METER BOX SIZE
10-1/2" X 17-1/4"
12" X 20"

NOTE:
METER BOX SHALL BE DFW PLASTICS "C" SERIES BOX(ES) OR APPROVED
EQUAL IN THE APPROPRIATE SIZE FOR ALL 1" AND SMALLER.

METER BOX DETAIL

N.T.S.

WATER SERVICE NOTES:

1. All property corners shall be staked with iron rods prior to the installation of any water services. Water service locations shall be staked in the field in accordance with Note 4 below.
2. Water services shall not be connected to fire hydrant lead lines.
3. All material shall conform to the Bartonville Water Supply Corp. (BWSC) standard specifications.
4. The Contractor shall set the meter boxes in all cases. The meter box shall be set within the right-of-way or a dedicated utility easement. The meter box shall be protected from vehicular traffic.
5. It is the responsibility of the Contractor to furnish and install the corporation, water service pipe, cut-off angle valve, the connector pipe, and meter box, as per the details on this sheet.
6. Direct taps are not allowed, saddles shall be used.
7. Cutter for taps shall be of the double slotted type.
8. Tap saddle shall be brass body with double stainless steel straps and 1" CC threads.
9. All taps larger than 2-inch shall be made using tapping tees.
10. Taps shall be a minimum of 18 inches apart with taps no closer than 1 foot from the end of the pipe.
11. All house services shall be 1 inch Type "K" soft drawn copper.
12. No splices of water services shall be permitted under pavement unless approved by the Town.
13. Where splices are approved by the Town, use a 3 part union copper to copper, Mueller H-15403, restrained union, or equal.
14. Corporations shall be minimum 1-inch. Mueller B-25008 compression corporation or approved equal.
15. Meters shall be centered in boxes.
16. Meter boxes shall be located outside of all flatwork, sidewalks and approaches, except when approved by the building official. A water meter service located in an area subject to vehicular traffic must employ a traffic rated meter box.
17. No 90 degree bends may be installed in services, except as shown.
18. All water services to be marked by "W" stamped or cut on the pavement or curb.

CERTIFICATION:

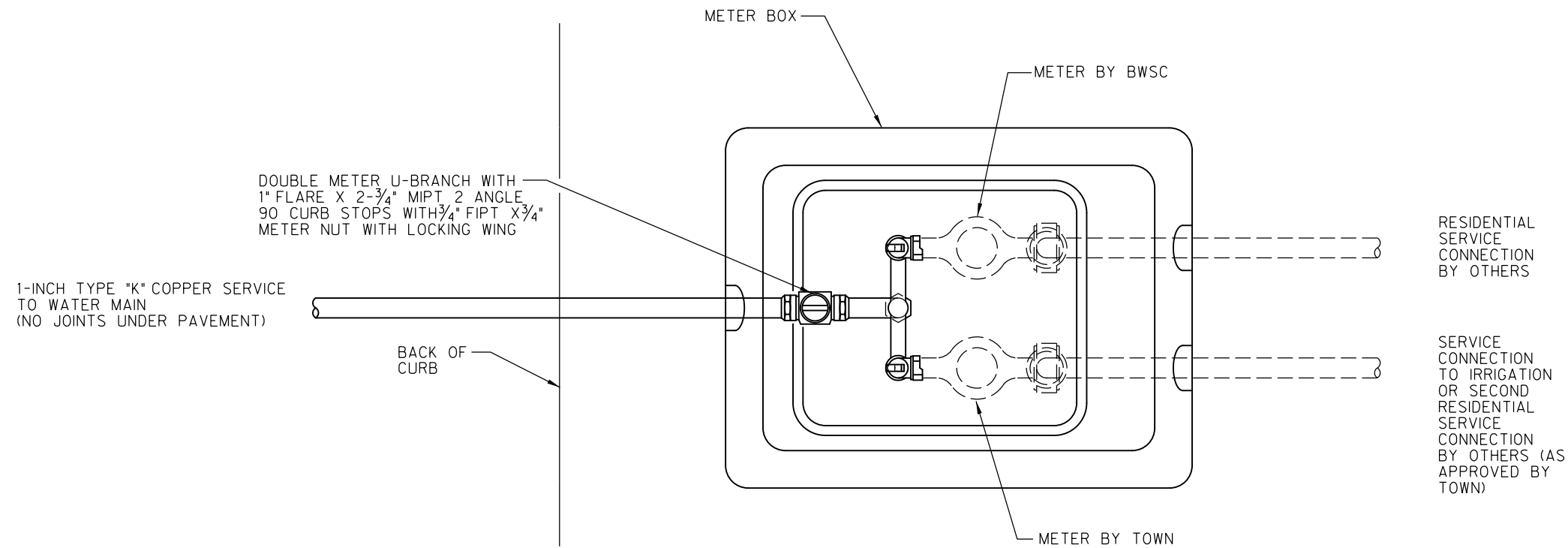
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WATER STANDARD DETAILS

WATER SERVICES



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PLAN VIEW
WATER SERVICE WITH U BRANCH
CONNECTION FOR A COMBINATION

NOT TO SCALE

METER BOX NOTES:

1. WHEN EXISTING WATER MAINS ARE BEING REPLACED, ANY WATER METERS FOUND WITHIN THE LIMITS OF THE PROJECT THAT ARE GREATER THAN 4-INCHES TO 5-INCHES BELOW THE TOP OF THE METER BOX ARE TO BE RAISED TO TOWN STANDARDS.
- 2.. PLACE WATER METER IN CENTER OF METER BOX.

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WATER STANDARD DETAILS

COMBINATION WATER SERVICE WITH U BRANCH CONNECTION



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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LOCATION:
(A) The vault shall be located on the owner's property and not within town right-of-way.
(B) The owner at his option and the approval of the Bartonville Water Supply Corporation may be permitted to install the double check detector backflow preventer assembly inside the building. The installation would be required to be permitted by the Town of Copper Canyon. The Fire Department connection is to be located at the street. The Fire Department connection shall be within 6 feet of curb, unobstructed and in clear view. And Water Utility personnel shall have access during normal business hours.
(C) The Fire Department connection may be installed outside the vault with the approval of the engineering division.

VAULT:
(A) The valve vault may be precast as per details of Dalworth Quickset or Brooks Products or an approved equal.
(B) The vault shall be placed on 8-inches crushed limestone and the vault shall have a sump with a minimum of a 12" X 12" grate in the bottom of the vault for drain purposes.
(C) Concrete shall be minimum of 4200 P.S.I. at 28 days.
(D) Unit is to be of monolithic construction at floor and first stage of wall with sectional riser to required depth.
(E) Reinforcement shall be Grade 60 steel Rebar conforming to ASTM A-615 on required centers or equal.
(F) Hatchway shall be 1/4-inch Aluminum Diamond Plate Cover with extruded aluminum frame. Hatch to be furnished with 316 stainless steel snap lock and brass hinges.

PERMIT AND INSPECTION:
(A) The installation of the pipe check valves and vault shall be permitted and inspected by the Town of Copper Canyon Building Inspector.

INSTALLATION:
(A) The double check detector backflow preventer assembly shall consist of a single complete assembly containing two independent acting check valves and four properly placed resilient test cocks for test of the assembly. Assembly shall also include two (2) U.L. Listed resilient seated OS & Y shutoff valves and test cocks.
(B) Unit shall be UL/FM approved with UL/FM approved OS & Y shutoff valves.
(C) OS & Y valves shall be Mueller, American Flow Control or an approved equal.
(D) The auxiliary line shall consist of an approved backflow preventer (double check assembly completed with test cocks) and a 5/8" X 3/4" water meter.
(E) The bypass auxiliary line shall have a double check assembly, Watts series 007, Ames 2000 SS BV or FEBCO 805 Y or an approved equal.
(F) The bypass auxiliary line 5/8" X 3/4" meter shall be Hersey, Neptune or Badger.

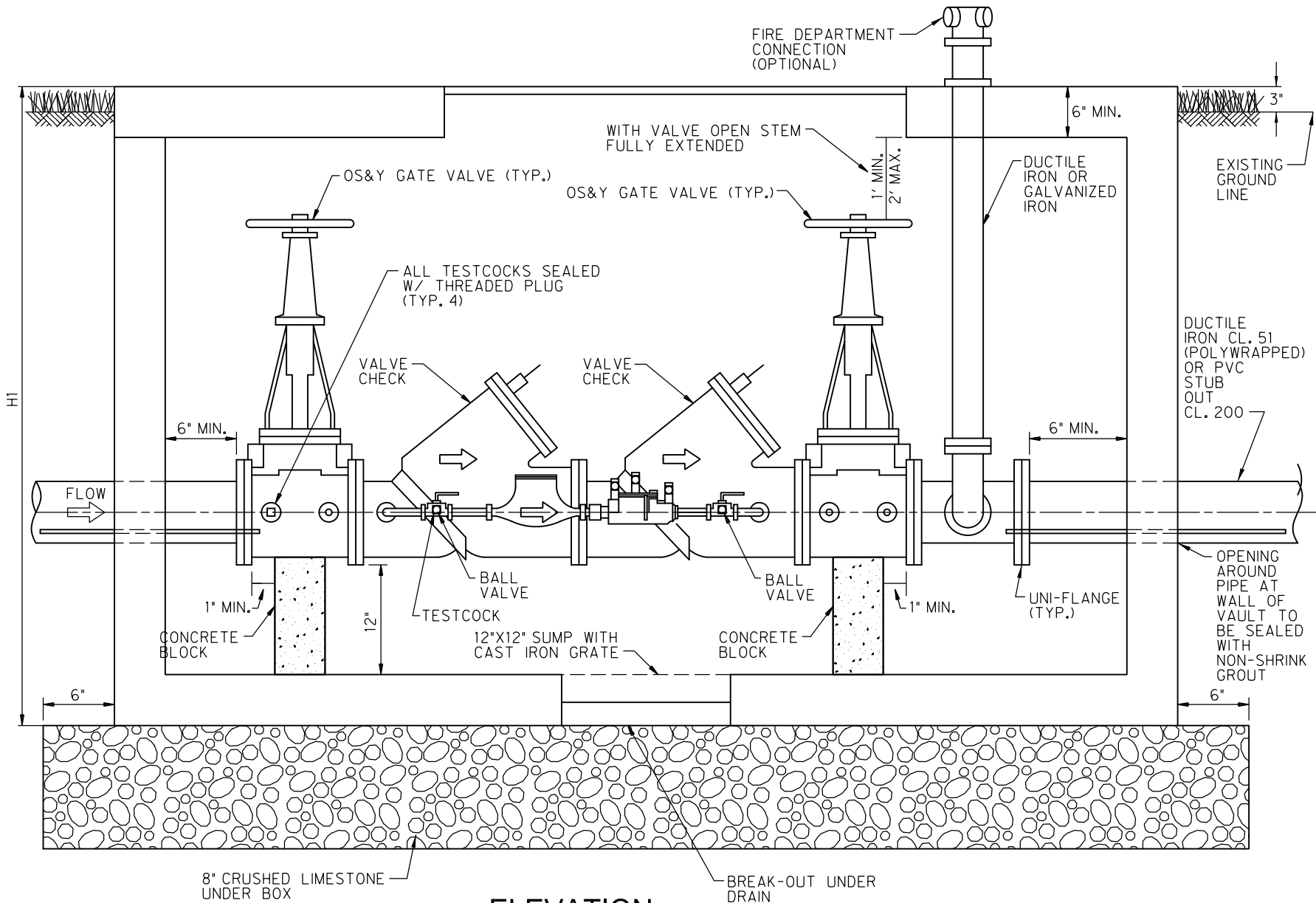
(G) The backflow preventer shall have a Epoxy coated cast iron body, Epoxy coated ductile iron body or stainless steel body with replacement bronze seats and/or a unitized stainless and plastic check assembly.

(H) The double check detector backflow preventer assembly shall be a Watts series 709 DCDA OSYRW, AMES Model 3000 SS or FEBCO Model 856 or an approved equal.

(I) 4-inch Water check valves shall be reliable Model DW, Mueller A 2102 or NBCO W-900W or an approved equal.

TESTING:
(A) The Uniform Plumbing Code requires that this assembly must be tested immediately upon installation. Copies of the test report must be forwarded to the Environmental Services Department.
(B) Upon installation and approval of fire sprinkler line/Fire Department connection, the owner shall be required to submit a yearly test report from a reputable testing company stating that the check valves are in good working condition. These test reports shall be submitted to the Town of Copper Canyon Environmental Services Department and the Fire Department once a year as required by the TCEQ rules. The testing of backflow preventer assemblies which are installed to provide protection against Health hazards are to be completed by certified Fireline Testers that are qualified to test and repair backflow preventer assemblies on fire lines only.

MAINTENANCE:
(A) The maintenance of the double check detector backflow assembly shall be by the property owner.



GENERAL NOTES:

GENERAL:
(A) All construction shall be in accordance with the standard specifications of the Town of Copper Canyon, which has also adopted the Fourth Edition of the "Standard Specifications For Public Works Construction - North Central Texas" herein referred to as "COG" specifications. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888. (817) 640-3300.
(B) Refer to COG Items 502.12.2 and 502.6 specifications.
(C) The assembly shall meet the basic requirements of ASSE 1048 for double check valves and meet requirements of AWWA, CSA, UL Classified, FM Approved. Assembly shall also be approved by the University of Southern California.
(D) All details and specifications shown on this sheet will govern for the installation of the assembly.

PARK EQUIPMENT CO. (OR EQUAL) VAULT DETAIL

DIMENSIONS					
MODEL	SIZE	L1	W1	H1	WEIGHT LBS.
DDBP3	3"	6'-0"	3'-6"	4'-0"	2,700
DDBP4	4"	6'-0"	3'-6"	4'-0"	2,900
DDBP6	6"	7'-10"	4'-4"	5'-5"	9,000
DDPB8	8"	8'-8"	5'-0"	5'-6"	15,000
DDBP10	10"	9'-2"	5'-8"	8'-6"	18,000

CERTIFICATION:

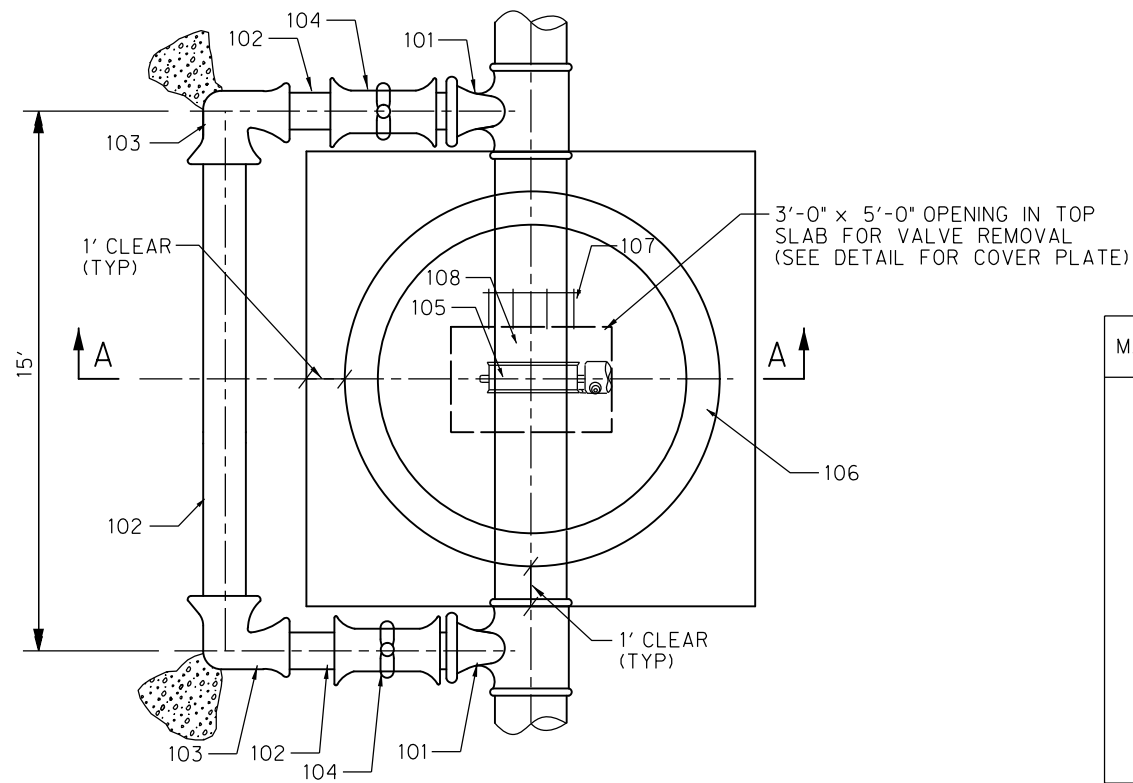
THIS TOWN OF COPPER CANYON STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. MODIFICATIONS TO THE STANDARD DETAILS SHALL BE NOTED ON THIS SHEET AND SHALL COMPLY WITH THE TOWN'S ORDINANCES, STATE, AND FEDERAL REGULATIONS.

WATER STANDARD DETAILS

WATER DETECTOR CHECK AND VAULT



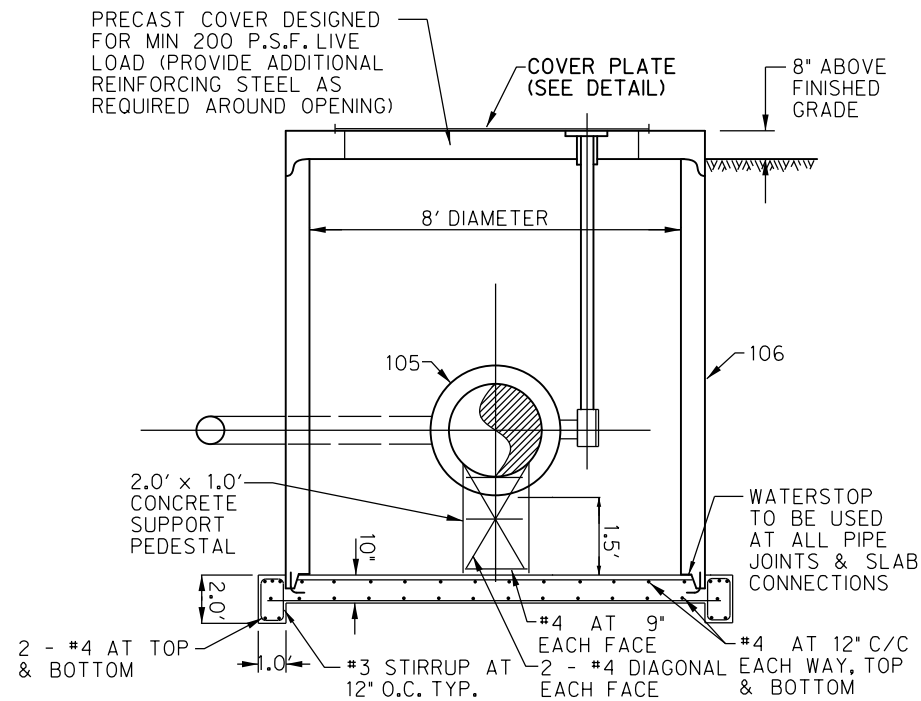
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PLAN VIEW
NOT TO SCALE

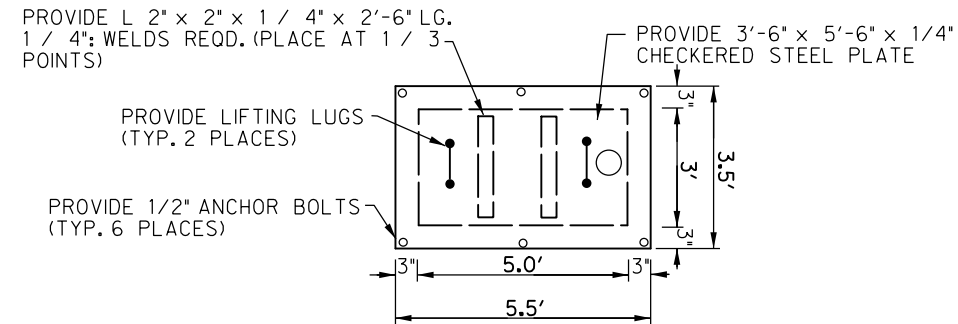
MARK	DESCRIPTION
101	FLANGE x FLANGE TEE
102	SPOOL, FLANGE x P.E., BYPASS SIZE
103	90° M.J. x M.J., BYPASS SIZE
104	GATE VALVE, FLANGE x M.J., BYPASS SIZE
105	BUTTERFLY VALVE, FL x FL (SIZE AS SHOWN ON PLANS, 18" TO 48")
106	PRECAST CONCRETE MANHOLE, 8'-0" ASTM C-76
107	FLEXIBLE COUPLING, LINE SIZE
108	SPOOL, FL x P.E. LINE SIZE x 1'-6" LONG

SIZE REQUIREMENTS FOR BYPASS VALVES ABOVE 48" WILL BE STATED ON THE PLANS	
VALVE DIAMETER	BYPASS DIAMETER
18" - 20"	4"
24" - 48"	6"

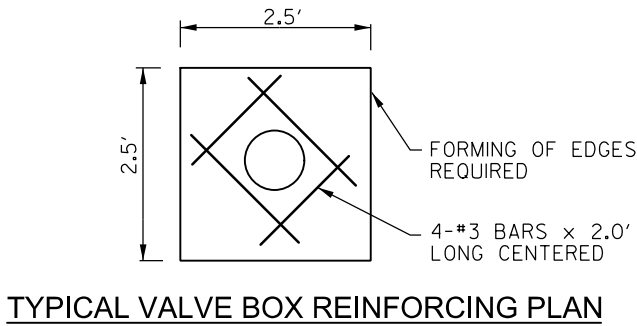


SECTION A-A
HORIZONTAL BUTTERFLY VALVE INSTALLATION DETAILS
NOT TO SCALE

NOTE:
ALL WATER VALVES 18-INCHES & LARGER SHALL BE HORIZONTAL BUTTERFLY VALVES.



VALVE VAULT COVER DETAIL

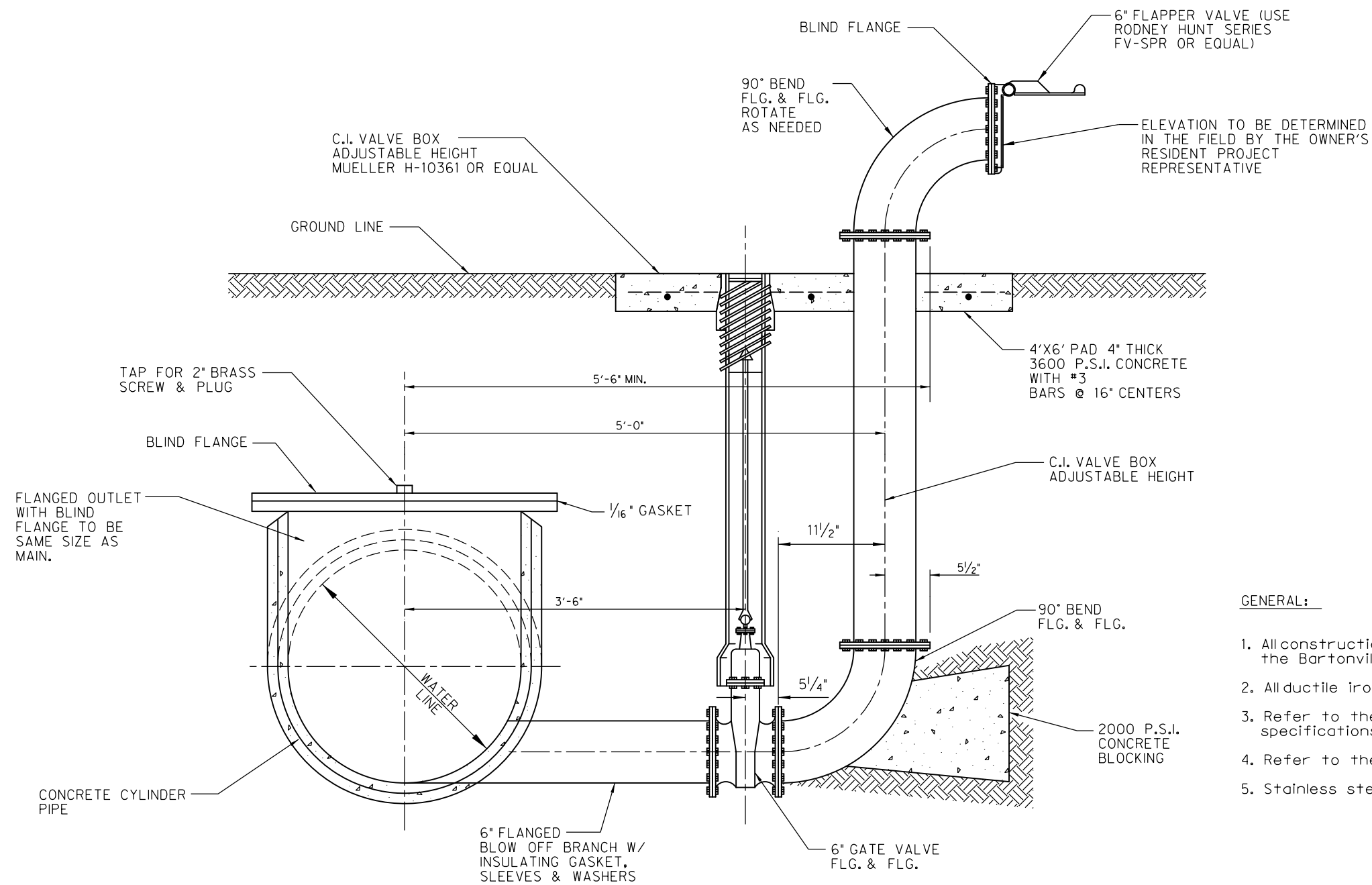


CERTIFICATION:
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WATER STANDARD DETAILS
HORIZONTAL BUTTERFLY VALVE



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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GENERAL:

1. All construction shall be in accordance with the standard specifications of the Bartonville Water Supply Corporation.
2. All ductile iron pipe shall be class 50, and polywrapped.
3. Refer to the "Water Standard Detail" sheet for valve, blocking and testing specifications.
4. Refer to the details on this sheet and COG Item 502.11.2 specifications.
5. Stainless steel bolts shall be used on flanged fittings installed below ground.

WATER BLOW-OFF DETAIL

NOT TO SCALE

CERTIFICATION:

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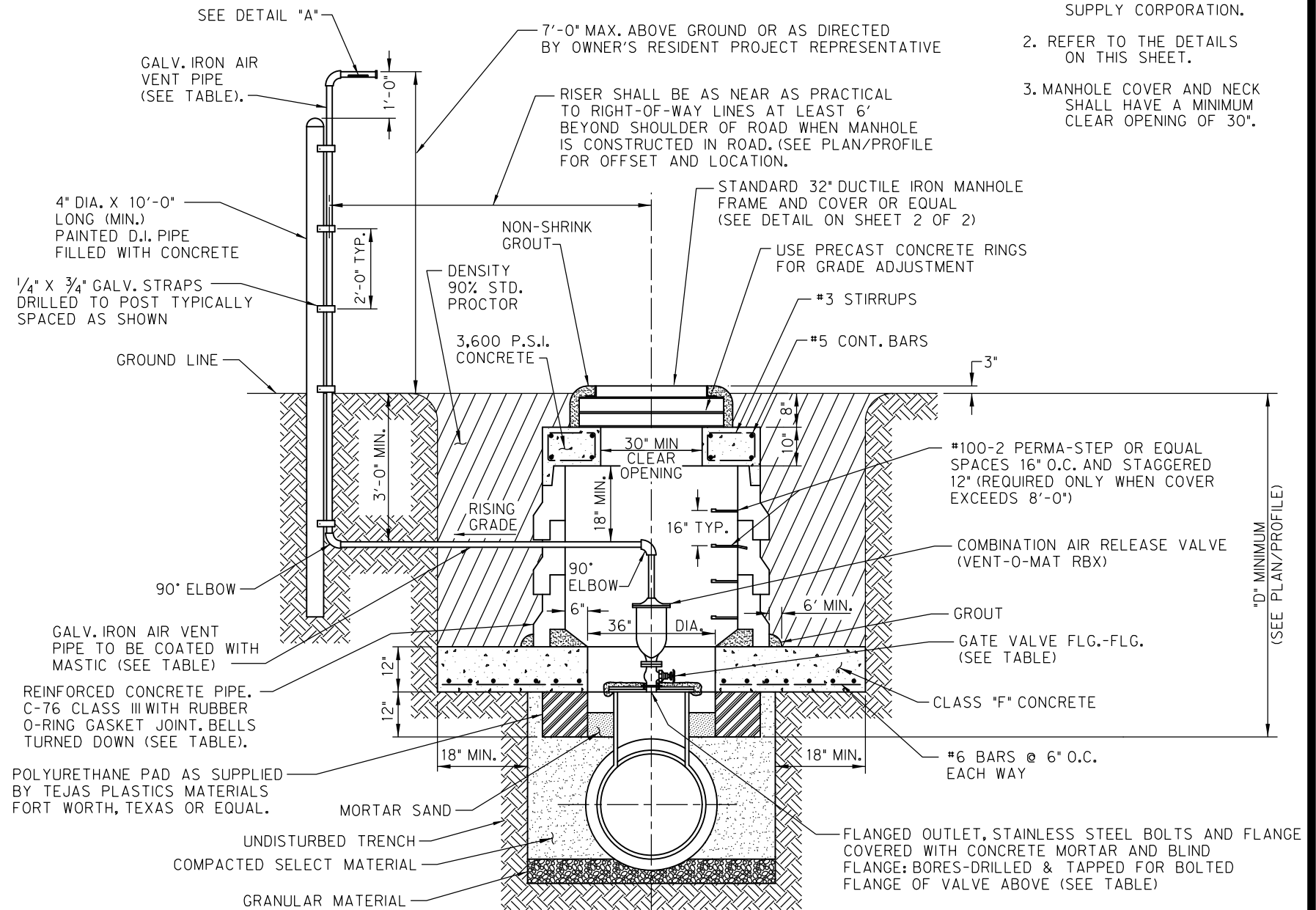
WATER STANDARD DETAILS

WATER BLOW OFF VALVE



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	W-9	

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF THE BARTONVILLE WATER SUPPLY CORPORATION.
2. REFER TO THE DETAILS ON THIS SHEET.
3. MANHOLE COVER AND NECK SHALL HAVE A MINIMUM CLEAR OPENING OF 30".



NOT TO SCALE

A diagram of a circular pipe with diameter D . The cross-section shows a central core surrounded by a thick wall. The wall is divided into two regions: an inner region with a wavy, textured boundary and an outer region with a smooth boundary. The diameter D is indicated by a horizontal line passing through the center of the pipe.

9.0'

GALV. IRON PIPE

EXPANDED METAL

GALV. IRON CAP

90° ELBOW GALV. IRON

A

A

8"

12"

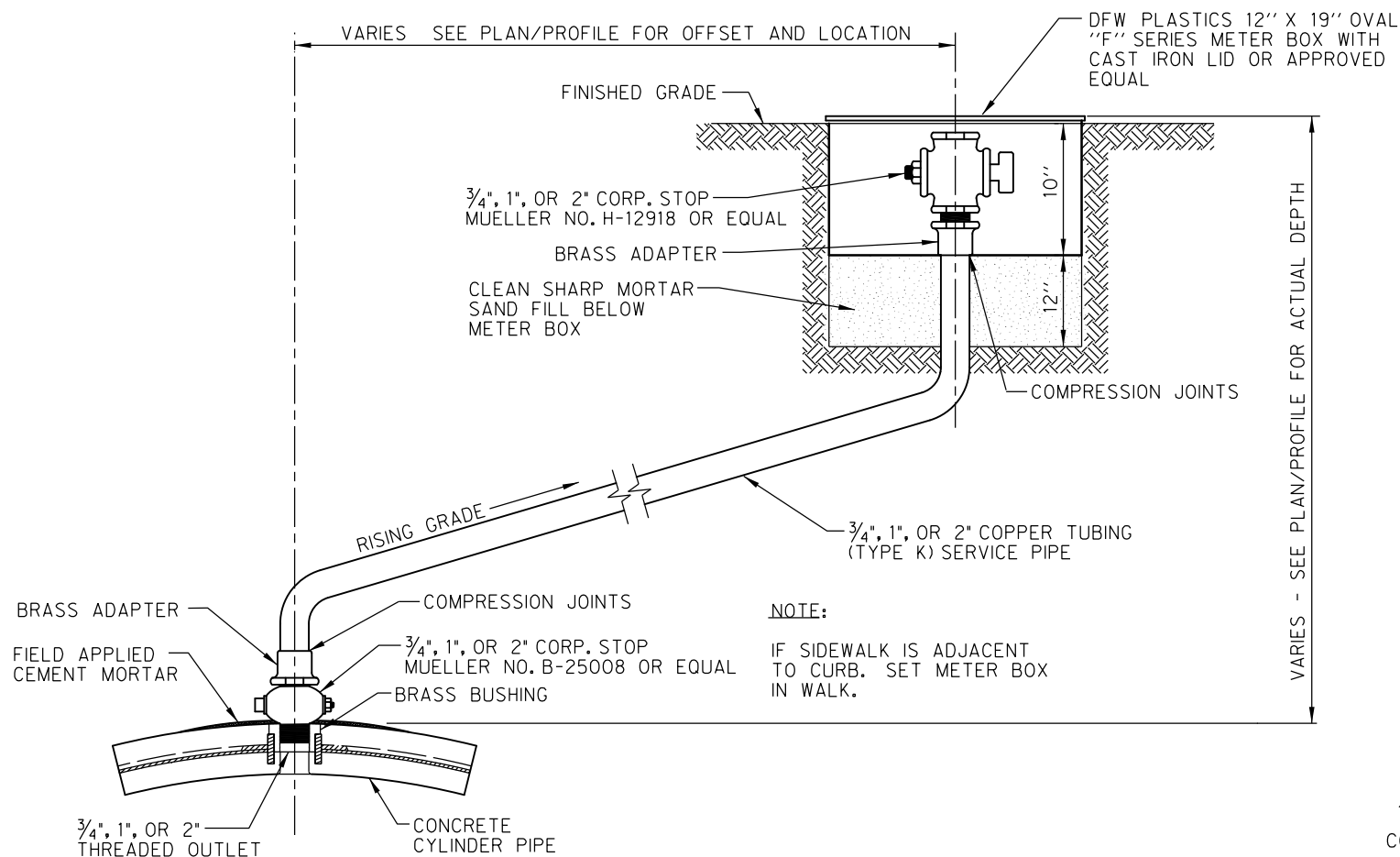
D

THIS TOWN OF COPPER
CANYON STANDARD DETAIL
SHEET IS AUTHORIZED FOR
USE IN THIS PROJECT BY
THE ENGINEER WHOSE SEAL
APPEARS ON THIS SHEET.
MODIFICATIONS TO THE
STANDARD DETAILS SHALL
BE NOTED ON THIS SHEET
AND SHALL COMPLY WITH
THE TOWN'S ORDINANCES,
STATE, AND FEDERAL
REGULATIONS.

WATER AIR VALVE
(SHEET 1 OF 2)

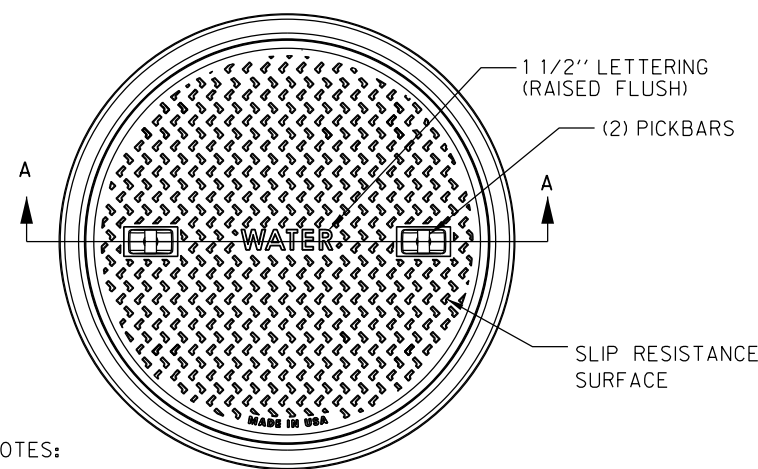


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MANUALLY OPERATED AIR VALVE AND FLUSH POINT

(SIZES DESIGNATED ON PLANS)
NOT TO SCALE

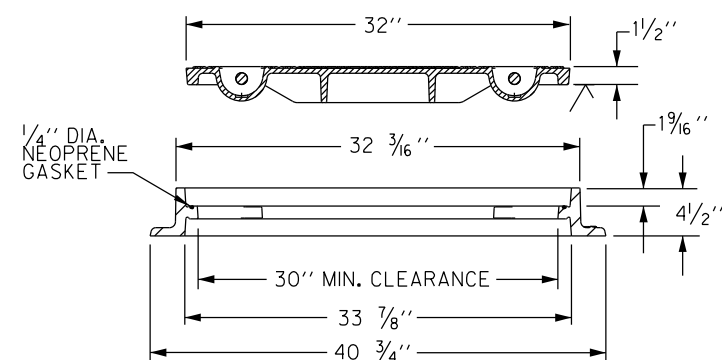


NOTES:

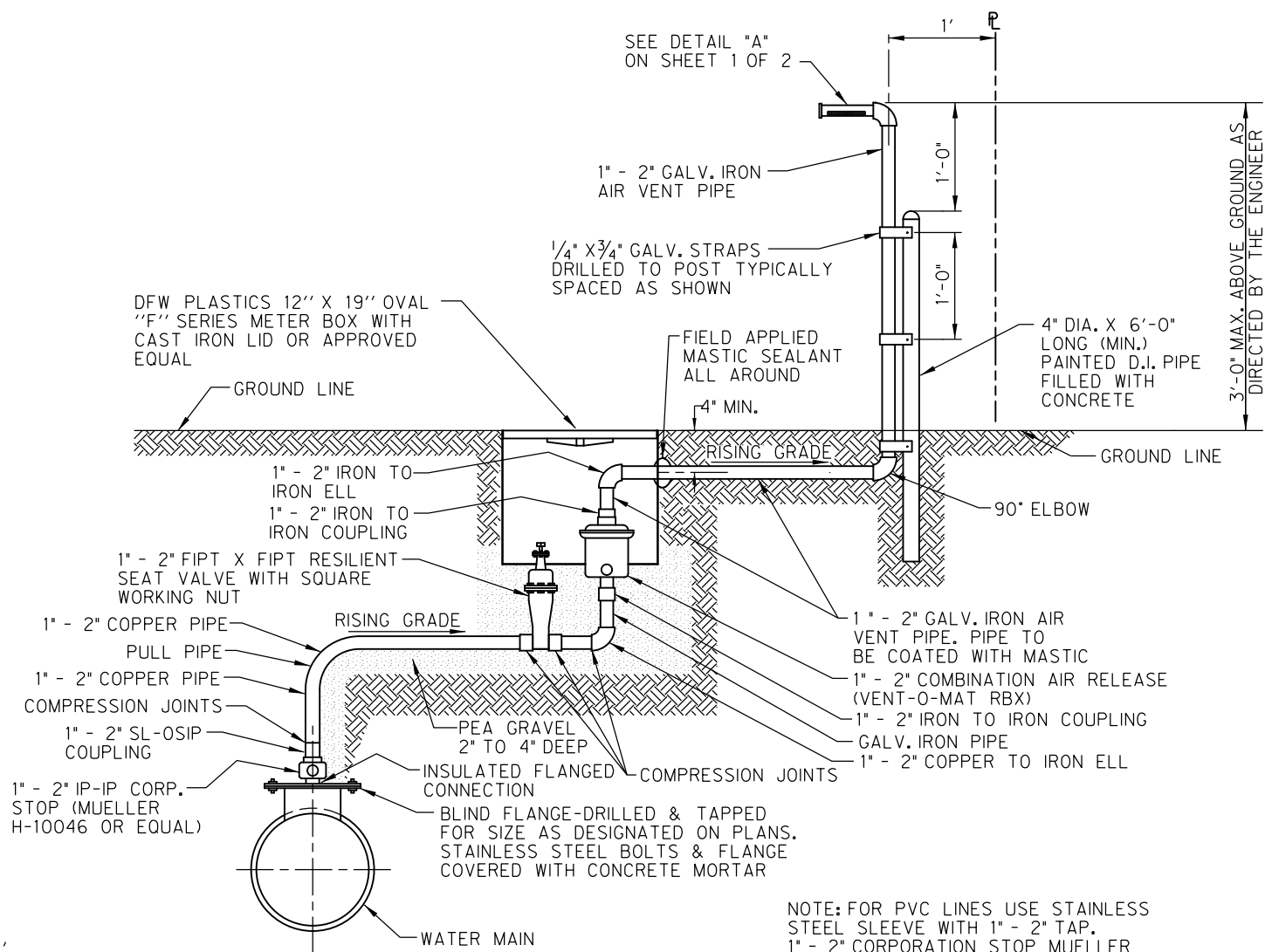
- COVER SHALL BE DUCTILE IRON ASTM A536 FRAME SHALL BE CAST IRON ASTM A48 CL35B.
- MANHOLE COVER AND FRAME SHALL HAVE A MINIMUM TOTAL WEIGHT OF 300 POUNDS.
- MANHOLE FRAME SHALL HAVE A MINIMUM CLEAR OPENING OF 30".
- MANHOLE COVER AND FRAME SHALL HAVE MACHINED SURFACES WHERE SHOWN.

STANDARD 32" RING & COVER

N.T.S.



SECTION A-A



COMBINATION AIR RELEASE VALVE AND METER BOX DETAIL

NOT TO SCALE

CERTIFICATION:

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WATER STANDARD DETAILS

WATER AIR VALVE (SHEET 2 OF 2)



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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WASTEWATER GENERAL NOTES

1. All construction shall be in accordance with the standard specifications and details of the Town of Copper Canyon and the Fourth Edition of the 7Standard Specifications for Public Works Construction - North Central TexasG herein referred to as 7COGG. Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888.
2. For 6-inch to 15-inch sizes, wastewater lines shall be ASTM D3034 Polyvinyl Chloride (PVC) SDR 35 for depths less than 14 feet. For depths greater than 14 feet, SDR 26 shall be used.
3. For 18-inch to 48-inch size wastewater mains shall be one of the following types:

a. ASTM F679 PVC, Large-Diameter Plastic Gravity Sewer Pipe and Fittings

b. ASTM F794 PVC, Profile Gravity Sewer Pipe and Fittings based on a Controlled, Inside Diameter

c. ASTM F949 PVC, Corrugated Sewer Pipe with a Smooth Interior Lining

d. ASTM F1803 PVC, Closed Profile Gravity Sewer Pipe and Fittings based on Controlled, Inside Diameter
4. All pipe joints shall be gasketed, bell and spigot, push-on type conforming to ASTM D3212 and compatible with the type of pipe to which they are attached.
5. All PVC pipe shall have a minimum pipe stiffness that equals or exceeds 46 psi.
6. For creek crossings with less than 5 feet of cover to the creek flowline, the pipe shall be PVC with concrete encasement.
7. Embedment and backfill shall be as per the Wastewater Details for pipes 6-inch to 15-inch diameter. Larger pipes shall be installed per ASTM D2321 and manufacturers recommendations with embedment and backfill details shown on the plans.
8. The minimum cover over all wastewater mains is 4 feet, unless approved by the Town. Approved mains with less than 3.5 feet of cover shall be capped as per details.
9. Clay cut-off walls shall be constructed as per the Wastewater Details.
10. PVC wastewater pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipes should be covered or protected from sunlight and to be protected from other elements.
11. When PVC wastewater pipe is installed in casing, skids must be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on the Bells. Plastic spacers such as RACI or approved equal shall be used.
12. All property corners shall be staked with iron pins prior to the installation of any wastewater services. The locations of the wastewater service shall be staked according to the plans.
13. Wastewater services to be marked with 7SG stamped or cut in the curb.
14. All new manhole locations shall be marked with 7MHG stamped or cut on the curb.
15. All wastewater shall be one of the following standard sizes, 8-inch, 10-inch, 12-inch, 15-inch, 18-inch, 21-inch, 24-inch, 30-inch, or 36-inch.

a. The CONTRACTOR shall be responsible for notifying the Town Inspector at least 24 hours prior to any required testing.

b. Soil and material testing technicians shall provide written proof of having minimum of two (2) years of related field experience.

c. The CONTRACTOR shall coordinate all testing activities with the Town Inspector and shall facilitate required testing throughout the construction period. The Inspector shall be present during all testing.

- d. The Town shall make final decision as to the validity of all testing results.
- e. The CONTRACTOR shall be responsible for ensuring that materials to be tested are in compliance with all plans and specifications prior to testing. All materials found not to be in compliance with the plans and specifications before and after testing shall be removed and replaced at the CONTRACTOR'S expense.
- f. All costs associated with the retesting of work that fails to meet the specifications required in the contract documents shall be borne by the CONTRACTOR. For Town projects, retesting cost shall be withheld from pay requests submitted by the CONTRACTOR, this cost will be based on the Town's cost with no additional mark-up. A letter of acceptance will not be issued until all testing deficiencies are addressed and all related cost paid.
- g. The Town Inspector shall be notified of concrete placement 24 hours in advance for steel and form inspection.
- h. One set of four cylinders (2-7 day, 2-28 day) for cast-in-place concrete shall be made for every day that concrete is placed (ASTM C-31). Air, slump, and temperature tests shall be taken for every set of cylinders made. Concrete with a temperature above 95 degrees will be rejected. Additional cylinders and or tests may be requested at the Inspector or ENGINEER's discretion. Exterior forms shall not be removed for a minimum of 24 hours unless approved by Inspector or ENGINEER. Sulfate resistant concrete shall be used for all manholes.
1. Backfill and Density Testing

1) All trenches shall be backfilled in accordance with standard details and mechanically compacted with approved vibratory methods in accordance with COG Item 504.5.3.2.1 and paragraph 3) below unless otherwise stated on the plans or in the specifications.

2) Densities shall conform to standard trench details, COG Item 504.5.3.2.1, and Paragraph 3) below unless otherwise stated on the plans or in the specifications. Proctor samples shall be taken for all classifications of soil on site. Atterberg Limits shall be determined on all Proctor samples. No 7potholingG will be allowed. Densities shall be taken on all sewer services both sides of the street within the Right-of-Way and shall conform to Paragraph 3) below and COG Item 504.5.3.2.1, unless otherwise stated on the plans or in the specifications. Backfill adjacent to all structures shall be compacted manually and density tested on every lift.

3) Mechanical Tamping of Backfill

a) All ditch lines and bore pits shall be mechanically tamped.

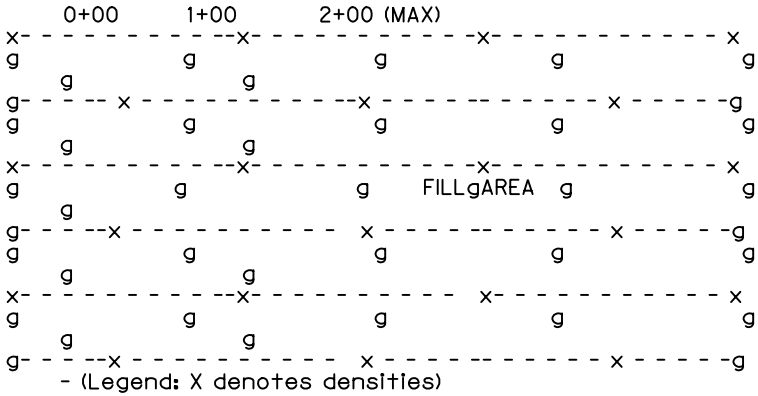
b) Backfill, other than select fill, may consist of onsite or offsite inorganic soils and should be placed in loose lifts 6-inches - 8-inches in thickness (not to exceed 12-inches) and should be mechanically compacted to 98 percent of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures under existing and proposed pavement, and to 95 percent standard proctor procedures elsewhere. The moisture content of the fill at the time of compaction shall be between minus 2% of optimum to four percentage points above the proctor optimum value.

c) All backfill material to be select native material, 6-inch diameter clods and smaller, unless directed otherwise on the plans or in the specifications and to be mechanically tamped and density controlled as described in Paragraph b) above.

d) Water Jetting is not permitted.

e) Densities shall be taken every one (1) lift at staggered locations not to exceed 200 feet increments. Offset fifty (50) feet every other lift.

- f) Densities may be taken at typical locations as shown below; also, densities will be taken at random locations and at the geo-technician's discretion.



- j. Deflection Testing - All sewer lines shall be tested with a mandrel for 5% deflection (max.) in accordance with COG Item 507.5.1.4.1. The Town Inspector must be present.
- k. Air Testing - All sewer lines shall be tested by a low pressure air test according to the COG Item 507.5.1.3. The Town Inspector must be present.
- l. Television Inspection - All sewer lines shall be televised in accordance with COG Item 507.5.2 and placed on DVD. A copy of the DVD and stationed report shall be submitted to the Town prior to any paving activities so failures may be identified and repaired accordingly (COG Item 507.5.2). All services shall be 7panned.G
- m. Manhole Testing - Vacuum testing of manholes shall be performed in accordance with COG Item 502.1.5.
- n. Deflection Testing, Air Testing, and Television Inspection shall not be performed until all utilities are complete in place and backfilled.

CERTIFICATION:

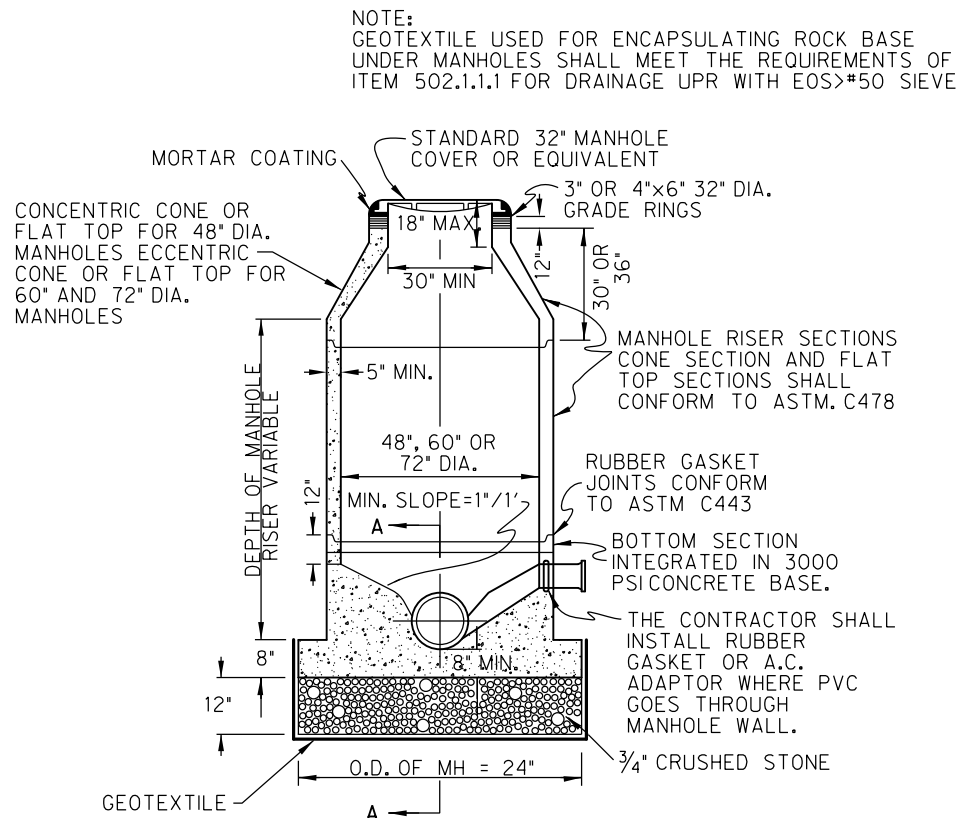
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WASTEWATER STANDARD DETAILS

WASTEWATER GENERAL NOTES

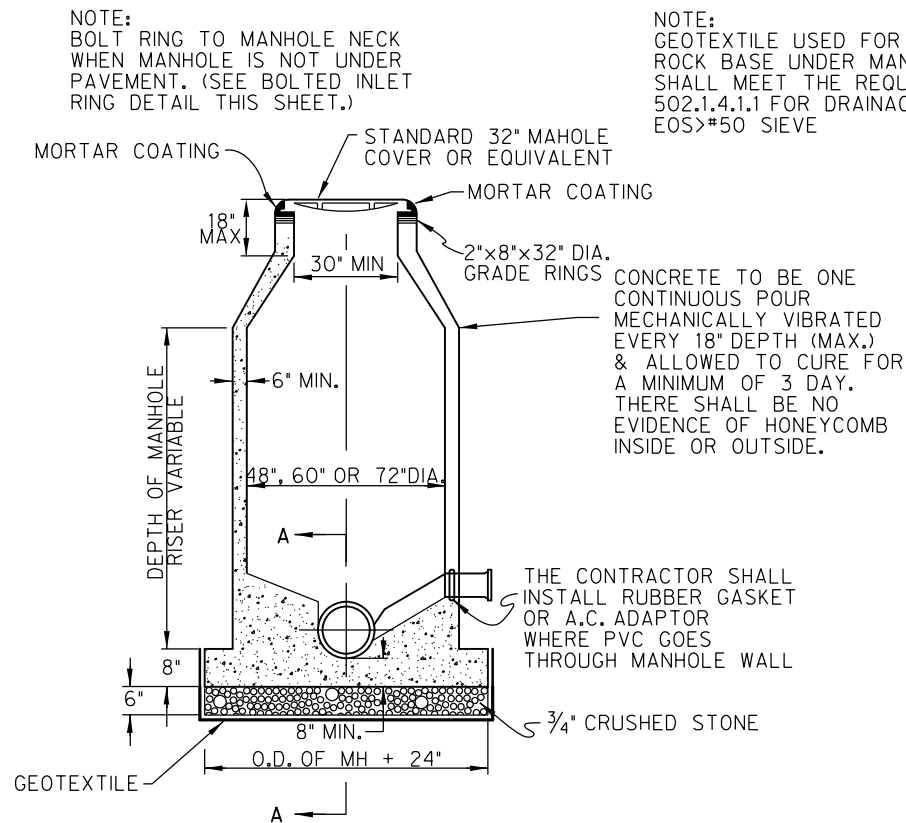


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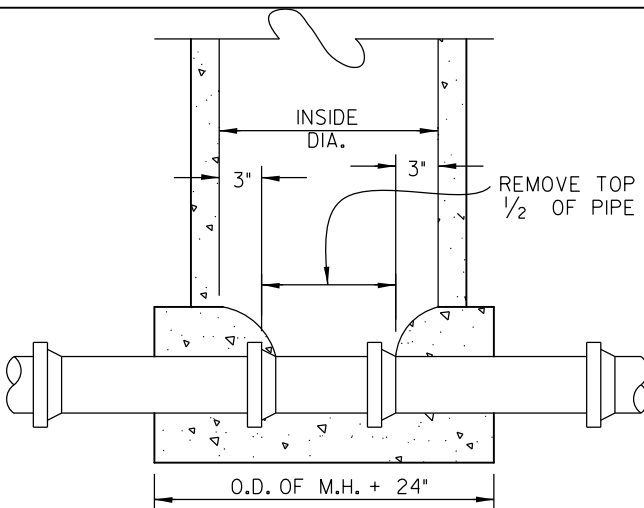
PRECAST CONCRETE MANHOLE

N.T.S.
SEE CONCRETE MANHOLE NOTES.

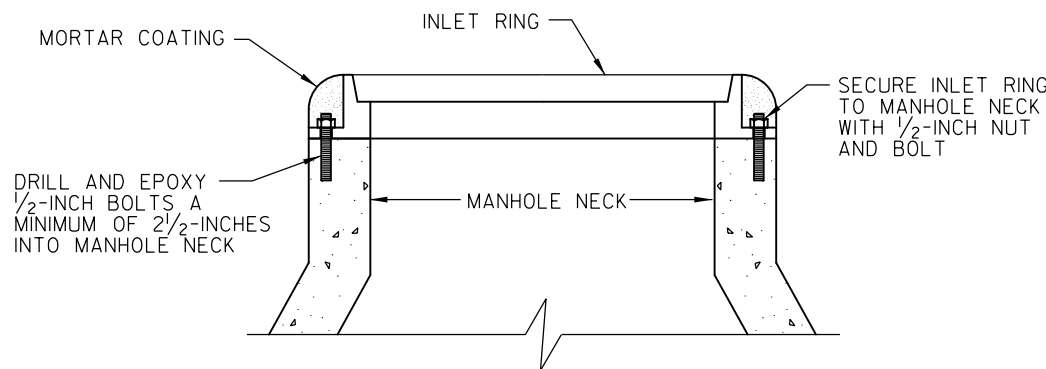


POURED IN PLACE CONCRETE MANHOLE

N.T.S.
SEE CONCRETE MANHOLE NOTES.



SECTION "A-A"
N.T.S.

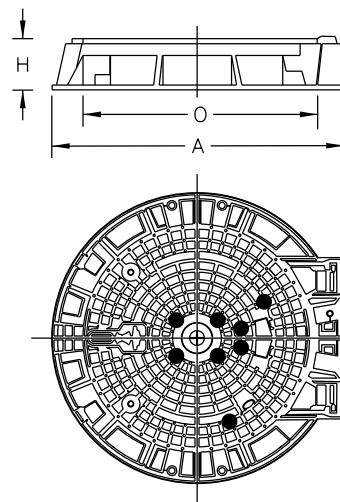


BOLTED INLET RING DETAIL

N.T.S.

PAMREX 32 INCH MANHOLE COVER AND FRAME

N.T.S.



NOTES:

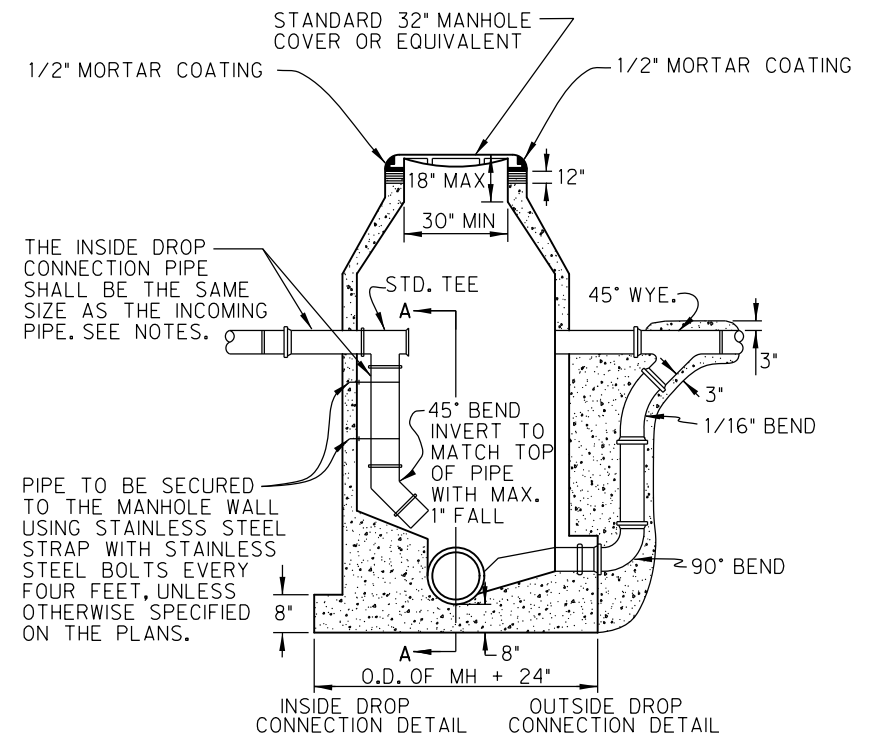
- MANHOLE COVER AND FRAME SHALL BE PAMREX OR APPROVED EQUAL. COVER AND FRAME SHALL BE MANUFACTURED FROM DUCTILE IRON.
- COVERS SHALL BE DUALY HINGED AND INCORPORATE A 90 DEGREE BLOCKING SYSTEM TO PREVENT ACCIDENTAL CLOSURE. COVERS SHALL BE ONE MAN OPERABLE USING STANDARD TOOLS AND SHALL BE CAPABLE OF WITHSTANDING A TEST LOAD OF 80,000 POUNDS.
- FRAMES SHALL BE CIRCULAR, INCORPORATE A SEATING RING AND A FITTED PLUG IN EACH HINGE HOUSING, AND BE AVAILABLE IN A 32 INCH CLEAR OPENING. THE FRAME DEPTH SHALL NOT EXCEED 5 INCHES AND THE FLANGE SHALL INCORPORATE BEDDING SLOTS, BOLT HOLES, AND LIFTING EYES.
- ALL COMPONENTS SHALL BE BLACK COATED.

FRAME WEIGHT: 107 LBS.
COVER WEIGHT: 162 LBS.
TOTAL WEIGHT: 269 LBS.

DIMENSIONS (INCHES)			WEIGHT (lbs)		REFERENCE
A	O	H	COVER AND FRAME	COVER ONLY	
39 1/4"	31 1/2"	5"	269	162	RE 32 R8 FD

CERTIFICATION:

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STANDARD DROP CONNECTION TO MANHOLE

N.T.S.

CONCRETE MANHOLE NOTES:

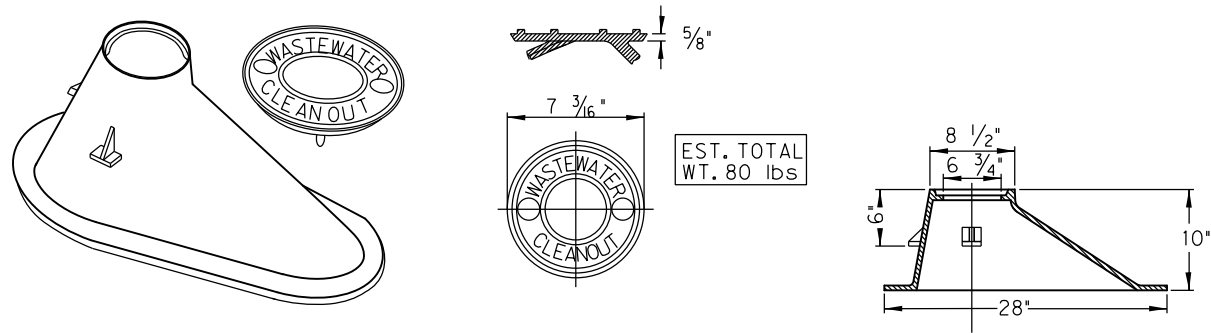
- CONCRETE FOR ALL PRECAST AND POURED IN PLACE MANHOLES SHALL BE 6.5 SACK, 4200 P.S.I. SULPHATE RESISTANT CONCRETE.
- THE DIAMETER OF THE CONCRETE BASE SHALL NOT BE LESS THAN THE INSIDE DIAMETER OF THE MANHOLE PLUS 2 FEET.
- STEPS SHALL NOT BE INSTALLED IN MANHOLE.
- ALL NEW MANHOLES SHALL BE MARKED WITH "MH" STAMPED OR CUT IN THE CURB.
- USE DROP CONNECTIONS WHEN CONNECTING LINE EXCEEDS 24" ABOVE THE MANHOLE FLOWLINE.
- USE OUTSIDE DROP CONNECTIONS ON ALL NEW MANHOLES.
- INSIDE DROP CONNECTION MANHOLES ARE ALLOWED ONLY ON EXISTING MANHOLES 5' (OR LARGER) IN DIAMETER
- ALL PRECAST MANHOLES SHALL BE AS MANUFACTURED BY HANSON, DALWORTH, OR EQUIVALENT.
- MANHOLE COVER AND NECK SHALL HAVE A MINIMUM CLEAR OPENING OF 30".

WASTEWATER STANDARD DETAILS

MANHOLES



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HALFF	HALFF	HALFF	MAY 2012	N.T.S.	WW-3	



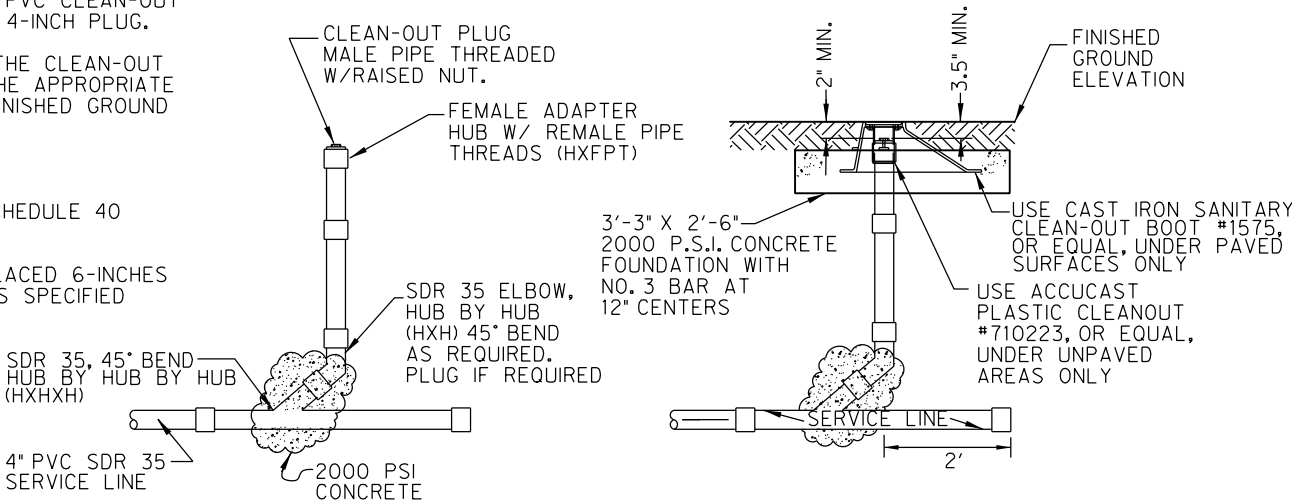
ACCUCAST CAST IRON CLEAN-OUT BOOT

N.T.S.

ACCUCAST #1575 OR EQUAL
(TO BE USED UNDER PAVED SURFACES ONLY)

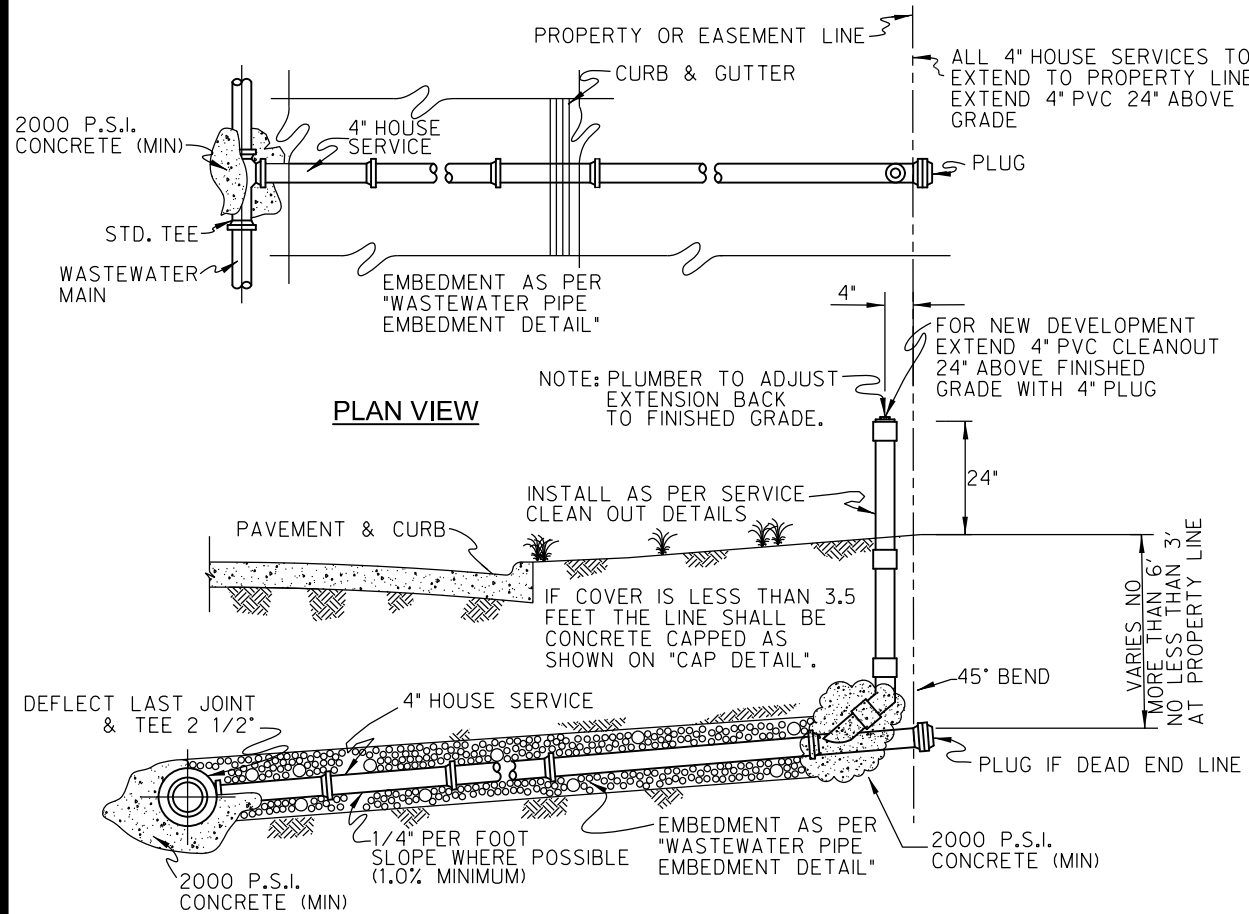
WASTEWATER SERVICE CLEAN-OUT NOTES:

1. FOR NEW DEVELOPMENT EXTEND 4-INCH PVC CLEAN-OUT 24-INCHES ABOVE FINISHED GRADE WITH 4-INCH PLUG.
2. AT THE TIME OF SERVICE CONNECTION THE CLEAN-OUT EXTENTION SHALL BE ADJUSTED AND THE APPROPRIATE CLEAN-OUT BOOT INSTALLED AT THE FINISHED GROUND ELEVATION.
3. ALL FITTINGS SHALL BE SOLVENT WELD
4. ALL PIPE SHALL BE PVC SDR 35 OR SCHEDULE 40 WHEN LESS THAN 14-FEET DEEP
5. CENTER LINE OF CLEAN-OUTS TO BE PLACED 6-INCHES INSIDE TOWN RIGHT-OF-WAY LINE UNLESS SPECIFIED OTHERWISE.
6. WASTEWATER SERVICE LEAN-OUTS ARE NOT ALLOWED ON MAIN LINES.



WASTEWATER SERVICE CLEAN-OUT DETAILS

N.T.S.

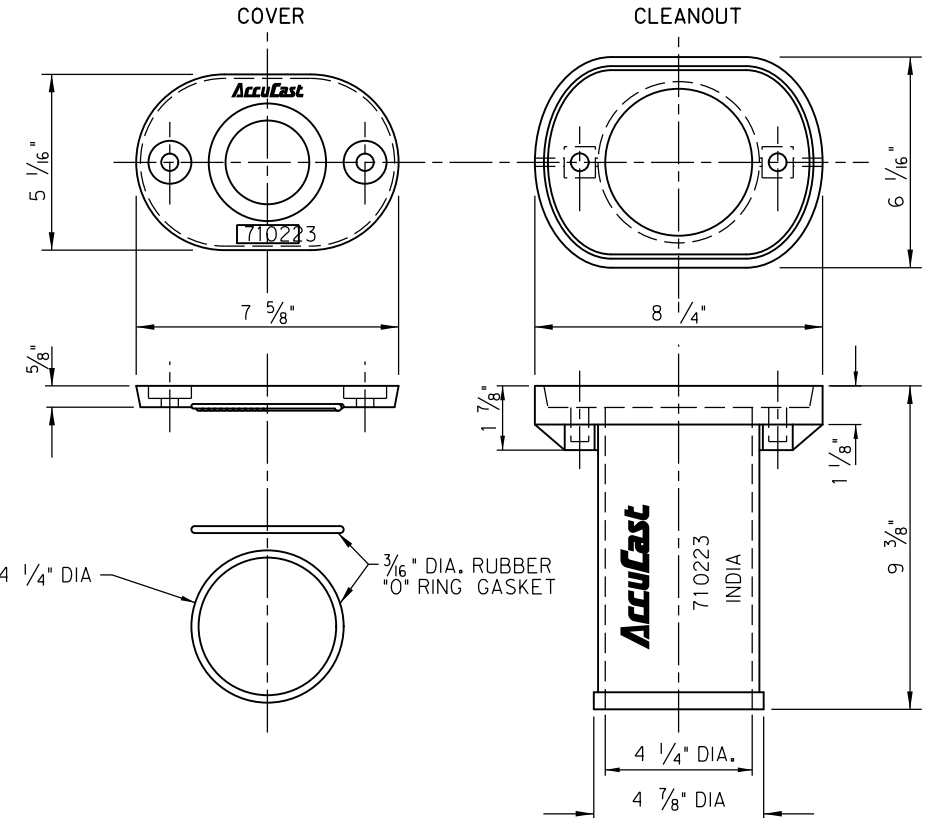


PROFILE VIEW

STANDARD WASTEWATER
SERVICE CONNECTION

N.T.S.

- NOTES:
1. WASTEWATER SERVICES TO BE MARKED WITH "S" STAMPED OR CUT IN CURB.
 2. WYES ARE NOT ALLOWED ON SANITARY SEWER SERVICE LINE CONNECTIONS.

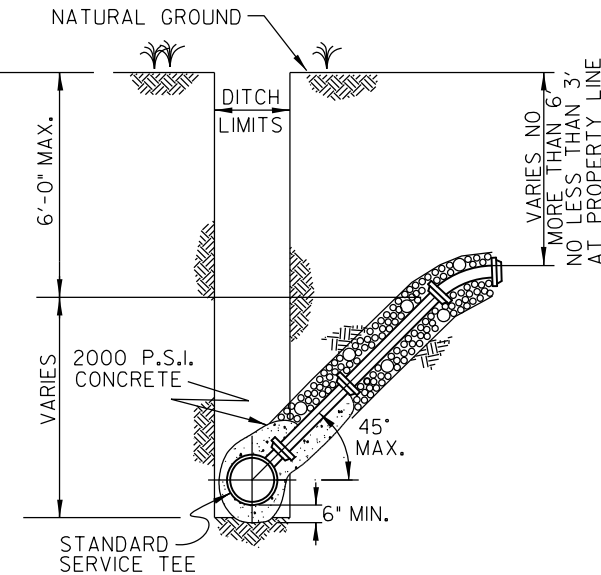


ACCUCAST PLASTIC
SEWER CLEANOUT

ACCUCAST #710223 OR EQUAL
(TO BE USED UNDER UNPAVED SURFACES ONLY)
NOT TO SCALE

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STANDARD DEEP
CUT CONNECTION

N.T.S.

WASTEWATER STANDARD DETAILS

SERVICES



DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	MAY 2012	N.T.S.	WW-4	