CITY OF WACO

TEXAS

MANUAL OF STANDARD DETAILS

Published by

PUBLIC WORKS DEPARTMENT

ENGINEERING DIVISION

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REVISED: APRIL 2025

Green highlight indicates new standard details.

Turquoise highlight indicates revised standard details.

CITY OF WACO STANDARD DETAILS

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Use Applicable Current TxDOT Culvert and Drainage Standards for concrete structures and appurtenances not shown above (City of Waco Cover and Frame are required per Standard Detail SD-9). For Precast elements follow current Guide to the Standard Inlet and Manhole Program available at
https://ftp.dot.state.tx.us/pub/txdot-info/cmd/cserve/standard/bridge/preguide.pdf

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(Mow Strip is Required)

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GENERAL DETAILS

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GENERAL DETAILS

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CONSTRUCTION MATERIAL SAMPLING AND TESTING MATRIX - 1 OF 2

Construction Operation	Standard Specifications		Standard Details	Applicable Testing	Minimum Frequency of Testing
	Material Specs	Construction Specs			
(Fill) Embankment		Section 1.5, Part 2		Standard Proctor & field densities	Proctor for each material to be used. Densities to be project specific
Excavation & Backfill (Trenching Operations)	Section 4.2, Part 2	Section 4.2, Part 3			
Embedment	Section 4.2, Part 2.A.1, & Part 2.A.2	Section 4.2, Part 3.A.5	G-8	Gradations, Atterberg Limits, Standard Proctor, Field Densities	Gradation, Atterberg Limits, and Proctor at beginning of project on material submitted for use and at anytime there is an apparent change in material. Densities to be project specific.
Trench Backfill	Section 4.2, Part 2.A.3	Section 4.2, Part 3.A.5	G-9 G-10		Gradation, Atterberg Limits, and Proctor at beginning of project on material submitted for use and at anytime there is an apparent change in material. Densities: 2 in first lift first 50 LF or less, then 2 in first lift per 500 LF or less, 2 in intermediate lifts per 500 LF or less every 3 vertical FT. above the first compacted lift, and 2 in final lift per 500 LF or less. Additional densities as required if compaction fails to meet specifications.
Flowable Fill (Controlled Low Strength Material)	Section 4.2, Part 2.A.3(f)	Section 4.2, Part 2.A.3(f)	G-8 Note 4 G-9 Note 4 G-10 Note 4	Consistency, Compressive strength ASTM D4832	Consistency and Compressive Strength every 300 LF of trench backfilled.
Subgrade	Testing - Section 2.6				
Stabilization Determination			ST-3A ST-3F ST-3B ST-3G ST-3C ST-3H ST-3D ST-4 ST-3E	Atterberg Limits to determine if stabilization is necessary, pH to determine amount of lime needed to stabilize	City Projects: Preliminary determined during design. Every 600 LF maximum along CL of street after mass grading. Subdivisions: Every 600 LF maximum along CL of street after mass grading.
Lime Treatment	Section 2.4, Part 2	Section 2.4, Part 3	ST-3A ST-3E ST-3B ST-3F ST-3C ST-3G ST-3D ST-3H ST-4 ST-19	Gradations, Standard Proctor, Moisture Bias Calculations, Field Densities	Initial gradations performed to determine mixing pattern. Standard Proctor performed on each material that is visibly different. Densities performed at a rate of one per 300 LF of paving for two lanes.
Portland Cement Treatment	Section 2.2.B, Part 2	Section 2.2.B, Part 3		Unconfined Compressive Strength	1 sample per day of operations
Reclamation	Section 2.3.D, Part 2	Section 2.3.D, Part 3		Refer to either Lime Treatment or Portland Cement Treatment	Refer to either Lime Treatment or Portland Cement Treatment
Existing Material		Section 2.2, Part 3	G-7 Note 6, SD-14, SD-15, SD-16, ST-3A, ST-3B, ST-3C, ST-3D, ST-3E, ST-3F, ST-3G, ST-3H, ST-4 ST-19,	Standard Proctor, Field Densities	Standard Proctor performed on each visibly different material. Densities performed at a rate of one per 300 LF of paving for two lanes or of concrete channel
Base Course	Testing - Section 2.6				
Gravel Base Course	Section 2.3, Part 2	Section 2.3, Part 3		Gradations, Atterberg Limits, Standard Proctor, Field Densities	Gradation, Atterberg Limits, and Proctor at beginning of project on material submitted for use and at any time there is an apparent change in material. Densities to be project specific.
Flexible Base	Section 2.3.B, Part 2	Section 2.3.B, Part 3	G-9		
Cement Treated Base (Pug Base)	Section 2.3.C, Part 2	Section 2.3.C, Part 3	ST-3A, ST-3B, ST-3C, ST-3D, ST-3E, ST-3F, ST-3G, ST-3H, ST-4 S-5, ST-19,	Unconfined Compressive Strength	1 sample per day of operations

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G-1A

CONSTRUCTION MATERIAL SAMPLING AND TESTING MATRIX - 2 OF 2

Construction Operation	Standard Specifications		Standard Details	Applicable Testing	Minimum Frequency of Testing
	Material Specs	Construction Specs			
Surface Course	Testing - Section 3.7				
Hot-Mix Asphaltic Concrete Pavement	Section 3.3, Part 2	Section 3.3, Part 3	ST-3A, ST-3B, ST-3C, ST-3D	Extraction, Gradation, Stability & Flow, Densities, Thickness	1 sample per day of paving operations. Densities - one per 600 LF of paving. Thickness - each street per 1,000 LF in each lane
Portland Cement Concrete Pavement	Section 3.6, Part 2	Section 3.6, Part 3	G-7, ST-1, ST-4, ST-3E, ST-3F, ST-3G, ST-3H, ST-6, ST-7, ST-8, ST-9	Air Content (if specified) , Slump, Compressive Strength	1 set of 4 cylinders per 150 CY but no less than 2 sets per day
Concrete	Testing - Section 5.6				
Curb and Gutter	Section 5.1, Part 2 & 3	Section 5.3, Part 3	G-7, ST-1, ST-7, ST-15, ST-16, ST-17 ST-18, ST-19, ST-20A, ST-20B, ST-20C	Slump Compressive Strength	One set of 4 cylinders per placement for the first 5 placements then one set for every other placement thereafter. (max. of 2 sets per day) *Different trucks on the same site at different times of the day constitute different placements.
Drive Approach		Section 5.4, Part 3	G-7, ST-1, ST-23A ST-23B, ST-24A, ST-24B ST-25A, ST-25B, ST-26		
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Sidewalk, Curb Ramps, & Retaining Walls		Section 5.4, Part 3	G-7, SW-1, SW-2, SW-3, SW-4, SW-5, SW-6, SW-7, SW-8, SW-9, SW-10, SW-11, SW-12, SW-13, SW-14, SW-15, SW-16, SW-17, SW-18, SW-19, SW-21, SW-22, SW-23, ST-1		
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Cast-In-Place Sanitary Sewer Manholes		Section 4.8, Part 3.A.3	G-7 S-5 Note 15, S-6 S-11 S-12 S-13	Air (if specified) , Slump, Compressive Strength	
Storm Sewer Manholes			G-7 SD-1 SD-10 SD-11 SD-12 SD-13		
Inlets			G-7 SD-1 SD-2 SD-3 SD-4 SD-5 SD-6 SD-7		
Concrete Medians		Section 5.1, Part 3	ST-1 G-7 ST-5	Slump, Compressive Strength	
Reinforced Concrete Headers			G-7		
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Retaining Walls (Structural)			G-7	Air (if specified) , Slump, Compressive Strength	One set per placement

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SOME HIGHLIGHTS OF MATERIAL COMPACTION REQUIREMENTS

STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION	MATERIAL	TESTING METHOD AND REQUIREMENTS
2.2: SUBGRADE COURSES 2.2A SUBGRADE PREPARATION	COMPACTED SUBGRADE	THE COMPLETED SUBGRADE SHALL HAVE A UNIFORM DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY DETERMINED BY ASTM D698. MOISTURE CONTENT SHALL BE WITHIN MINUS 2 TO PLUS 2 PERCENT OF OPTIMUM.
2.3C PORTLAND CEMENT TREATMENT (PUG BASE)	CEMENT TREATED BASE	RATHER THAN TESTING FOR COMPACTION, A SAMPLE SHALL BE TAKEN AT TIME OF PLACEMENT. THE CEMENT TREATED BASE SHALL BE FORMED IN A PROCTOR MOLD USING ASTM D698 COMPACTION METHODS WITHIN 2 HOURS OF SAMPLING. THE UNCONFINED COMPRESSION STRENGTH OF 500 PSI TO 1,200 PSI AT 7 DAYS MUST BE OBTAINED.
SECTION 2.4: LIME TREATMENT	LIME TREATED SUBGRADE	THE COMPACTED MIXTURE SHALL HAVE A UNIFORM DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D698. MOISTURE CONTENT SHALL BE WITHIN 0 TO PLUS 4 PERCENT OF OPTIMUM.
4.2: EXCAVATION AND BACKFILL	TRENCH BACKFILL TYPE A ALSO TO BE USED FOR CURB BACKFILL	COMPACTION SHALL BE A MINIMUM OF 95 PERCENT OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698. MOISTURE CONTENT SHALL BE WITHIN MINUS 2 TO PLUS 2 PERCENT OF OPTIMUM.
5.4 CONCRETE SIDEWALKS AND DRIVEWAY APPROACHES	COMPACTED SUBGRADE INCLUDING ITEMS OF G-7 NOTE 6 AND ST-1 NOTE 20. EXCLUDES CONTINUOUS RUN OF SUBGRADE UNDER PAVEMENT	THE COMPLETED SUBGRADE SHALL HAVE A UNIFORM DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY DETERMINED BY ASTM DESIGNATION D698. MOISTURE CONTENT SHALL BE WITHIN MINUS 2 TO PLUS 2 PERCENT OF OPTIMUM.
TXDOT ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIAL WITH A MINIMUM P.I. OF 4.	RECYCLED CRUSHED CONCRETE BASE	THE COMPLETED SUBGRADE SHALL HAVE A UNIFORM DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY DETERMINED BY ASTM DESIGNATION D698. MOISTURE CONTENT SHALL BE WITHIN MINUS 2 TO PLUS 2 PERCENT OF OPTIMUM.
TXDOT ITEM 341 DENSE-GRADED HOT-MIX ASPHALT	SURFACING	COMPACT THE PAVEMENT UNIFORMLY TO CONTAIN BETWEEN 3.8 PERCENT AND 8.5 PERCENT IN-PLACE AIR VOIDS DETERMINED BY TEX-207-F AND TEX-227-F.

NOTES:

1. SEE RELEVANT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS INCLUDING MAXIMUM THICKNESS OF LAYERS PLACED LOOSE TO BE MECHANICALLY COMPACTED.

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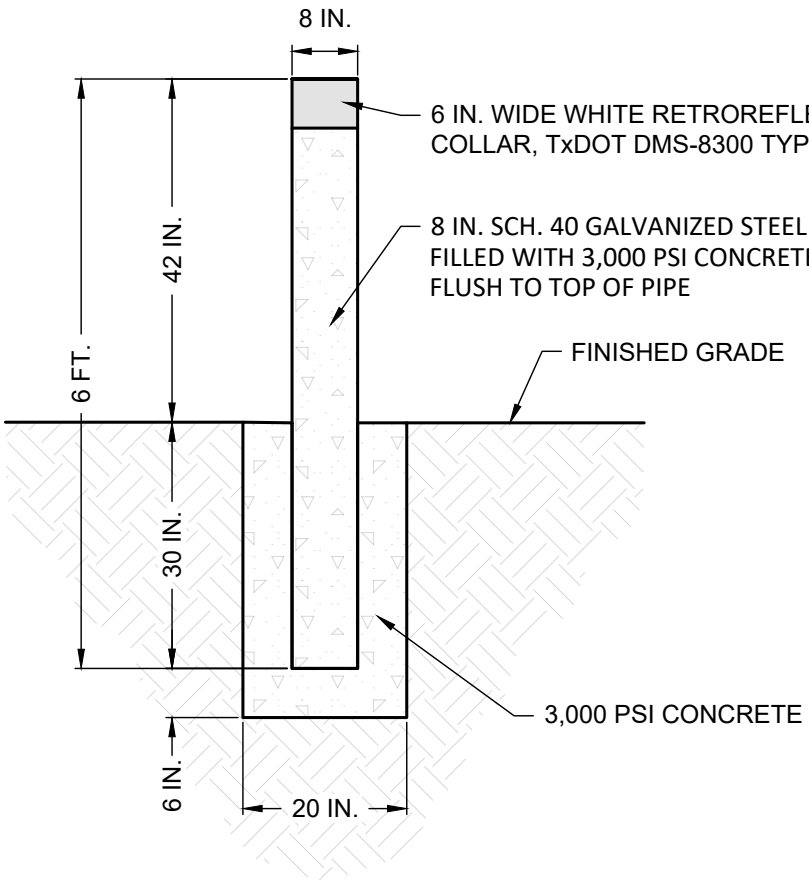
G-1C



NOTES:

1. BOLLARDS PLACED IN SERIES TO BE SPACED MAXIMUM 5 FT. APART MEASURED FROM BOLLARD CENTER TO CENTER UNLESS OTHERWISE SHOWN IN PLANS

FIXED (8 IN. DIAMETER) BOLLARD

(NO SCALE)

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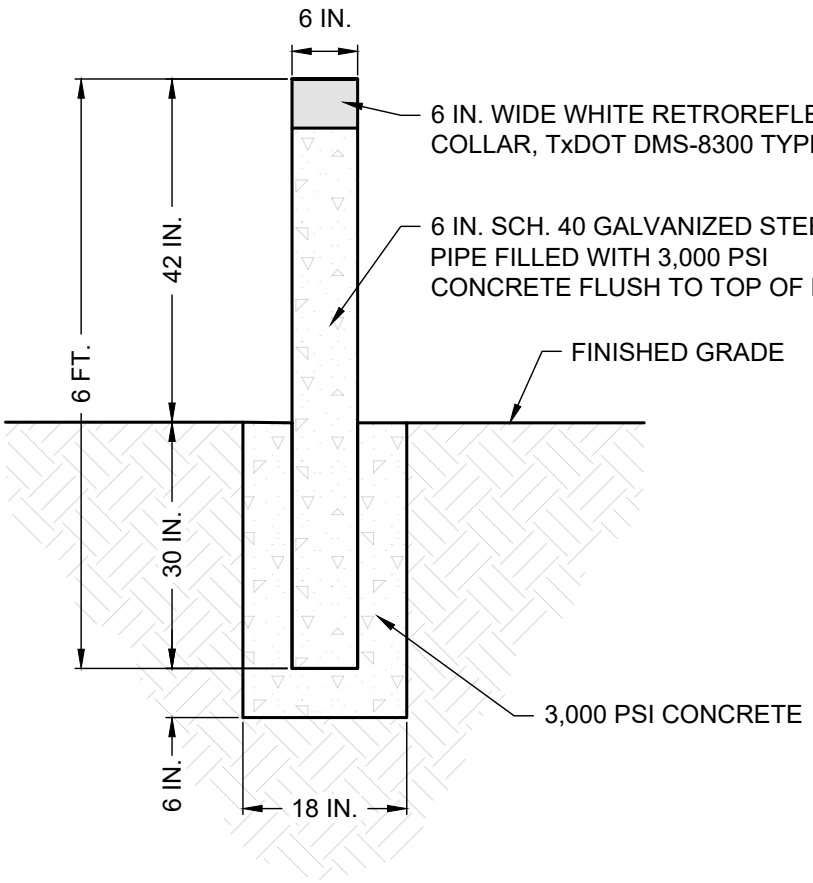
G-2A



NOTES:

1. BOLLARDS PLACED IN SERIES TO BE SPACED MAXIMUM 5 FT. APART MEASURED FROM BOLLARD CENTER TO CENTER UNLESS OTHERWISE SHOWN IN PLANS

FIXED (6 IN. DIAMETER) BOLLARD

(NO SCALE)

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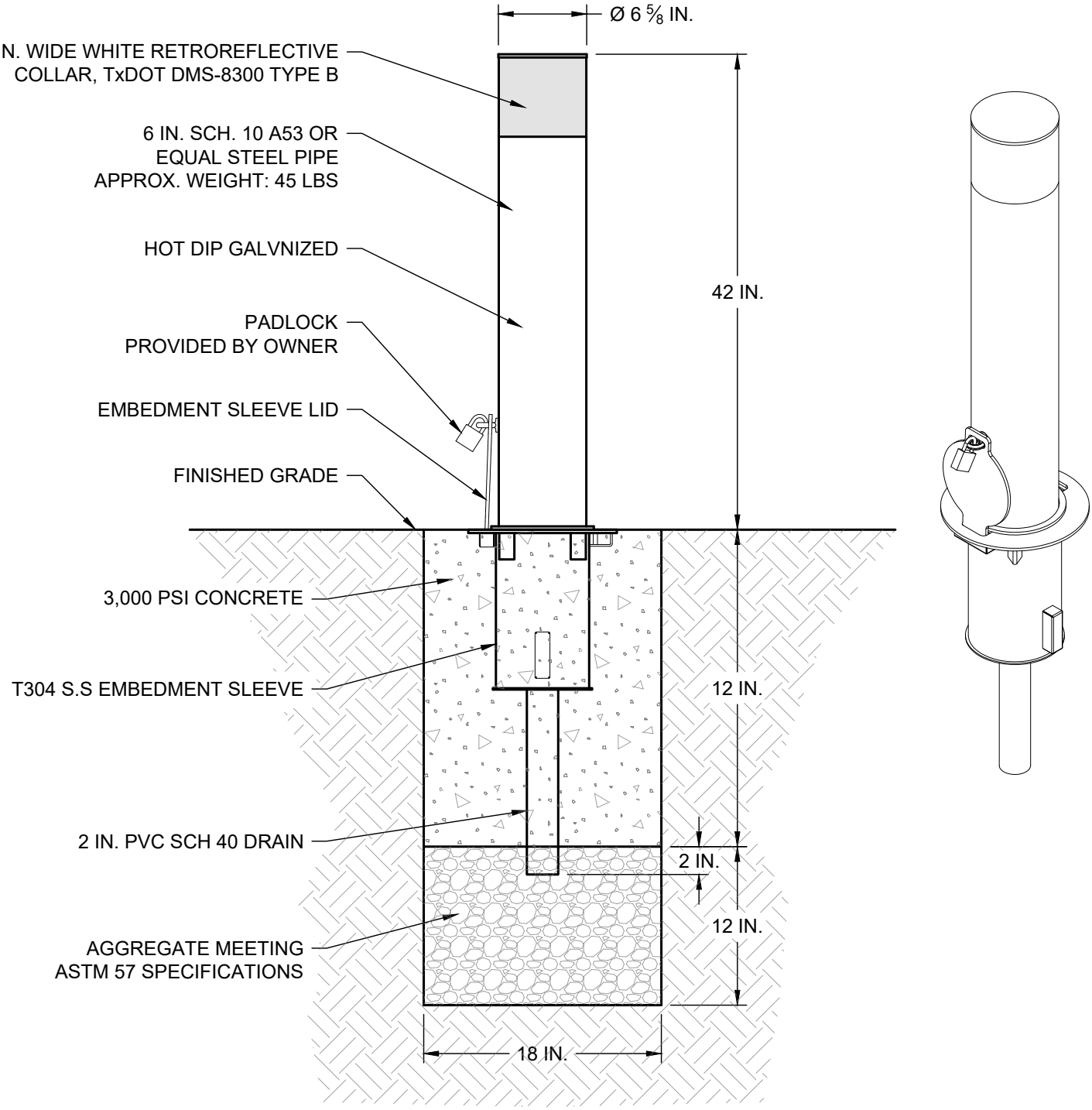
G-2B



NOTES:

1. BOLLARDS PLACED IN SERIES TO BE SPACED MAXIMUM 5 FT. APART MEASURED FROM BOLLARD CENTER TO CENTER UNLESS OTHERWISE SHOWN IN PLANS.
2. PRODUCT SHALL BE HOT-DIPPED GALVANIZED MODEL NUMBER IBP06010-42-12-F-HDG FROM ATKORE CALPIPE SECURITY OR PRE-APPROVED EQUAL.

REMOVEABLE (6 IN. DIAMETER) BOLLARD

(NO SCALE)

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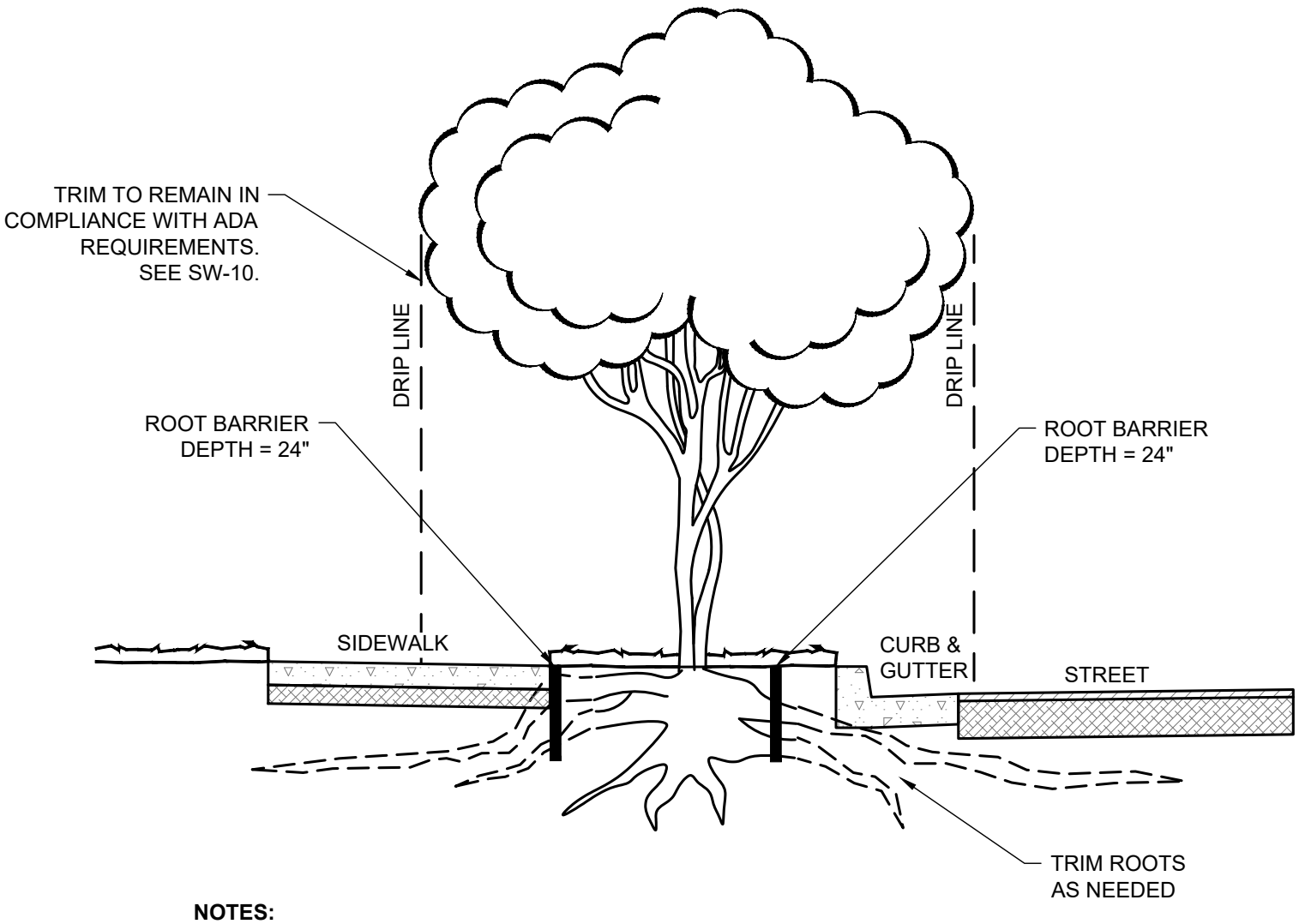
G-2C



NOTES:

1. TREE ROOT BARRIER MATERIAL SHALL BE 45 MIL EPDM RUBBER LINING (OR PRE-APPROVED EQUAL) AND SHALL EXTEND 15 FEET PAST TREE TRUNK ON EACH SIDE.
2. TREE ROOT BARRIER MATERIAL SHALL BE PLACED 24 INCHES BEHIND BACK OF CURB AND AT THE EDGE OF THE SIDEWALK UNLESS NOTED OTHERWISE IN PLANS.
3. REFER TO PLANS FOR SPECIFIC LOCATIONS OF ROOT BARRIER INSTALLATION.

ROOT BARRIER

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

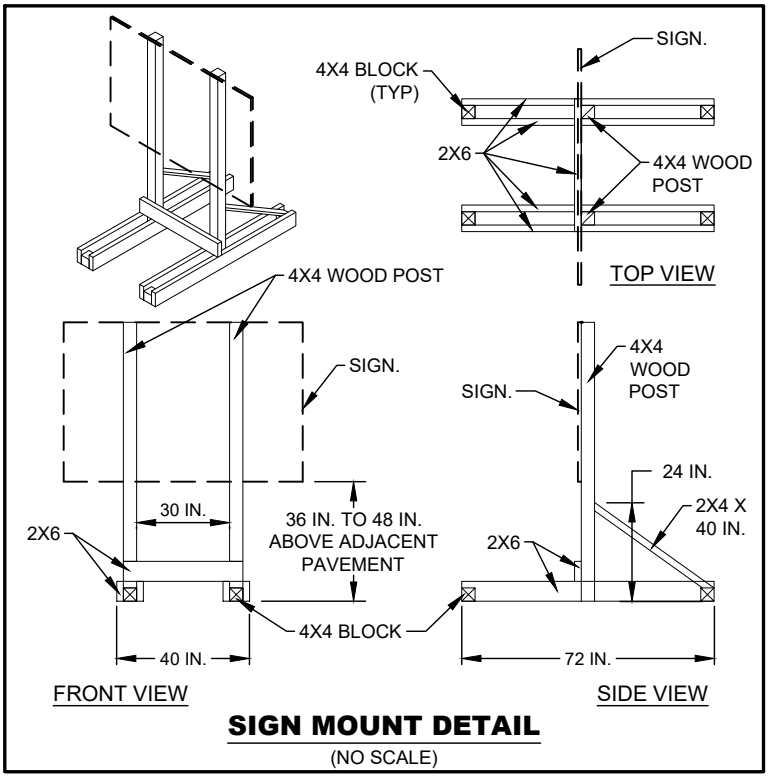
G-3

COLORS
NAVY - PMS 276 OR C=100 M=100 Y=0 K=58
WHITE

FONTS
ARIAL BOLD

NOTES:

1. CITY OF WACO AND *BETTER STREETS WACO* LOGOS SHALL BE OBTAINED FROM THE CITY OF WACO.
2. SIGNS SHALL BE MADE OF ALUMINUM COMPOSITE MATERIAL, SUCH AS DIBOND™, SIGNBOND™ OR SIMILAR.
3. SIGNS SHALL BE MOUNTED ON SKID MOUNTED WOOD SIGN SUPPORTS AS SHOWN.
4. NAILS MAY NOT BE USED IN THE ASSEMBLY OF WOODEN SIGN SUPPORTS. 3/8 IN. X 3 ½ IN. LAG SCREWS SHALL BE USED ON EVERY JOINT FOR FINAL CONNECTION.
5. SEE CURRENT TXDOT BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES BC (4) FOR SIGN SUPPORT WEIGHTS.
6. SIGNS SHALL BE PLACED IN PROMINENT LOCATION, ALONG THE MOST MAJOR THOROUGHFARE, WITHIN THE PROJECT LIMITS.
7. SIGNS SHALL HAVE THEIR OWN SUPPORT STRUCTURE AND BE ABLE TO WITHSTAND 75 MPH WINDS.
8. SUPPORT STRUCTURES / POSTS SHALL BE PAINTED WHITE.
9. SIGNS SHALL BE MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION BY CONTRACTOR. SIGNS SHALL REMAIN CLEAN, LEGIBLE AND STRUCTURALLY SOUND. IF SIGNS ARE DAMAGED OR STOLEN, THEY SHALL BE REPLACED BY CONTRACTOR AS SOON AS POSSIBLE.
10. SIGNS SHALL BE INSTALLED AT LEAST ONE WEEK BEFORE CONSTRUCTION BEGINS AND REMOVED BY CONTRACTOR NO LATER THAN ONE WEEK AFTER FINAL ACCEPTANCE OF THE PROJECT.
11. COUNCIL MEMBERS PROPER NAMES SHALL BE ADDED TO SIGN AS PROVIDED BY PROJECT ENGINEER.



SIGN MOUNT DETAIL
(NO SCALE)

BETTER STREETS WACO PROJECT DESIGNATION SIGN

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

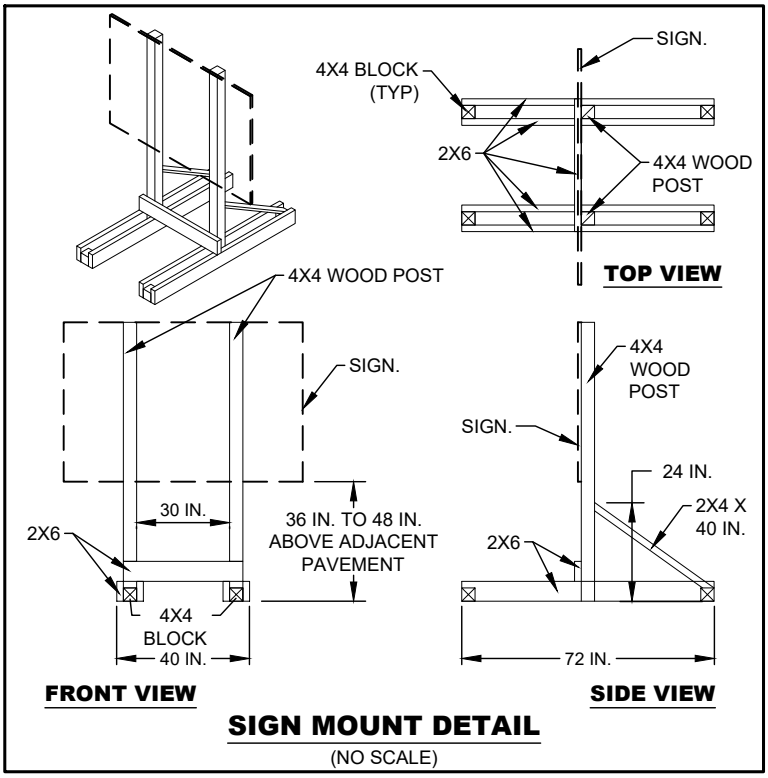
G-4

COLORS
NAVY - PMS 276 OR C=100 M=100 Y=0 K=58
WHITE

FONTS
ARIAL BOLD

NOTES:

1. CITY OF WACO AND *BUILDING WACO* LOGOS SHALL BE OBTAINED FROM THE CITY OF WACO.
2. SIGNS SHALL BE MADE OF ALUMINUM COMPOSITE MATERIAL, SUCH AS DIBOND™, SIGNBOND™ OR SIMILAR.
3. SIGNS SHALL BE MOUNTED ON SKID MOUNTED WOOD SIGN SUPPORTS AS SHOWN.
4. NAILS MAY NOT BE USED IN THE ASSEMBLY OF WOODEN SIGN SUPPORTS. 3/8 IN. X 3 ½ IN. LAG SCREWS SHALL BE USED ON EVERY JOINT FOR FINAL CONNECTION.
5. SEE CURRENT TXDOT BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES BC (4) FOR SIGN SUPPORT WEIGHTS.
6. SIGNS SHALL BE PLACED IN PROMINENT LOCATION, ALONG THE MOST MAJOR THOROUGHFARE, WITHIN THE PROJECT LIMITS.
7. SIGNS SHALL HAVE THEIR OWN SUPPORT STRUCTURE AND BE ABLE TO WITHSTAND 75 MPH WINDS.
8. SUPPORT STRUCTURES / POSTS SHALL BE PAINTED WHITE.
9. SIGNS SHALL BE MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION BY CONTRACTOR. SIGNS SHALL REMAIN CLEAN, LEGIBLE AND STRUCTURALLY SOUND. IF SIGNS ARE DAMAGED OR STOLEN, THEY SHALL BE REPLACED BY CONTRACTOR AS SOON AS POSSIBLE.
10. SIGNS SHALL BE INSTALLED AT LEAST ONE WEEK BEFORE CONSTRUCTION BEGINS AND REMOVED BY CONTRACTOR NO LATER THAN ONE WEEK AFTER FINAL ACCEPTANCE OF THE PROJECT.
11. COUNCIL MEMBERS PROPER NAMES SHALL BE ADDED TO SIGN AS PROVIDED BY PROJECT ENGINEER.



SIGN MOUNT DETAIL
(NO SCALE)

BUILDING WACO PROJECT DESIGNATION SIGN

(NO SCALE)

CITY OF WACO

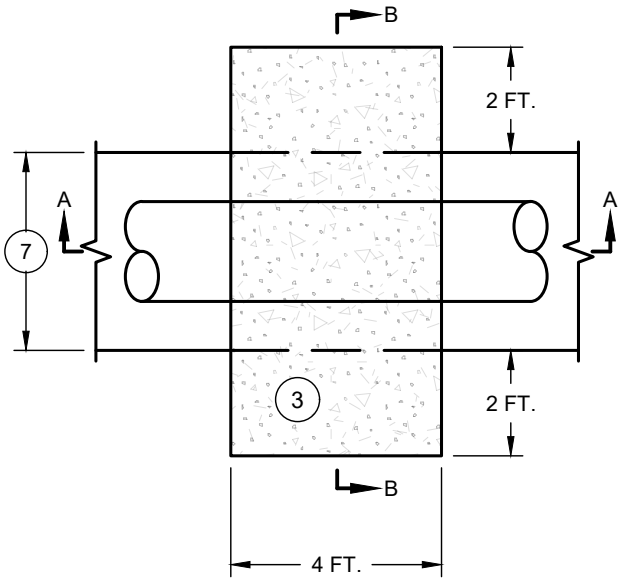
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

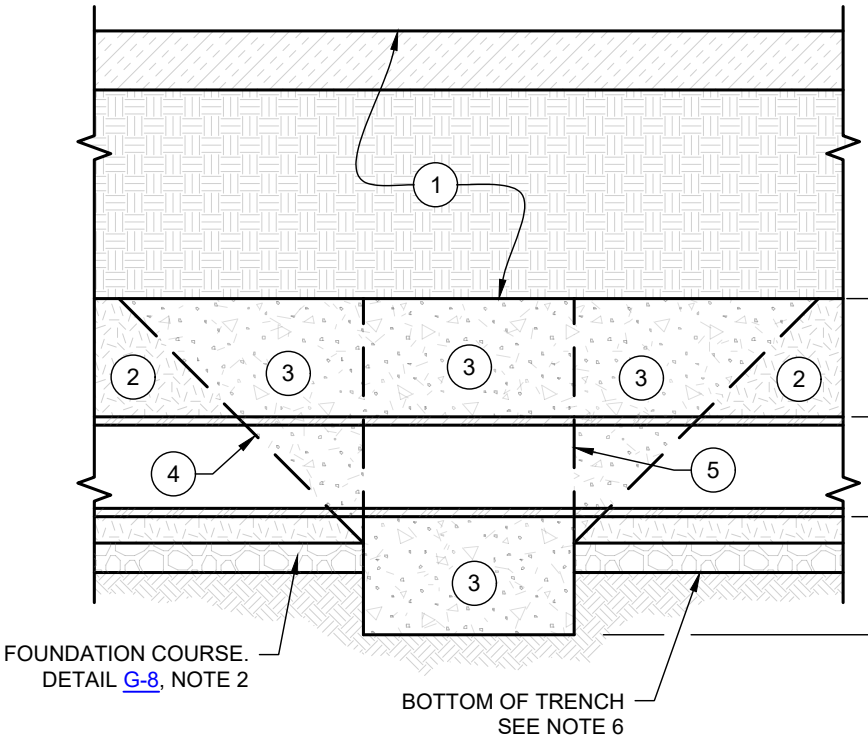
G-5



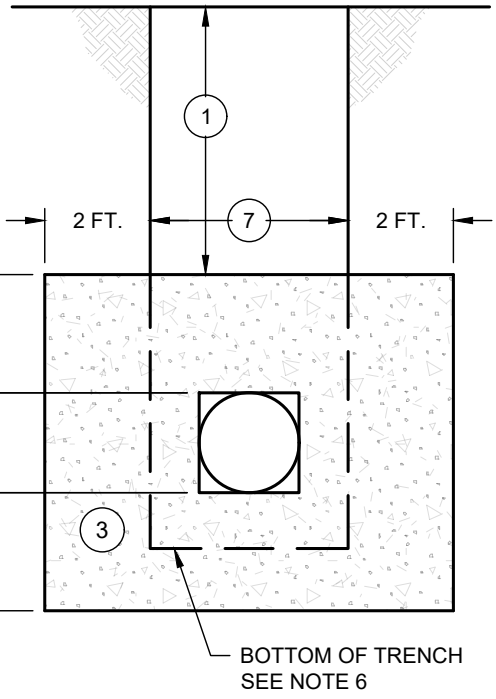
PLAN VIEW

NOTES:

1. BACKFILL & SURFACE REPLACEMENT PER STANDARD DETAILS G-9 AND G-10 AND STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. TYPE A MATERIAL PER DETAIL G-10, NOTE 4
3. CONTROLLED LOW STRENGTH MATERIAL (CLSM)
4. ANGLE OF REPOSE
5. FORMS (OPTIONAL)
6. PLACE WATERSTOP BETWEEN PIPE JOINTS. SPACING TO BE SHOWN ON PLANS.
7. TRENCH WIDTH
8. PIPE O.D. OR OUTSIDE BOX CULVERT DIMENSION



SECTION A-A



SECTION B-B

TRENCH WATERSTOP DETAIL

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-6

GENERAL CONCRETE & REINFORCEMENT NOTES

GENERAL

1. ALL CONCRETE AND REINFORCEMENT MATERIALS AND PLACEMENT MUST COMPLY WITH SECTION 5.1 OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. CURING MEMBRANE SHALL BE APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

MATERIALS

3. ALL CONCRETE SHALL BE 3000 PSI, 5 SACK, MIX WITH A MAXIMUM 15% FLY ASH CONTENT; PLACED AT SLUMP VALUES AS SPECIFIED IN SECTION 5.1 PART 3. PARAGRAPH B.
4. ALL REINFORCING STEEL SHALL BE ASTM A 615 GRADE 60, UNLESS OTHERWISE SPECIFIED.

SITE PREPARATION

5. GRADE AND SUBGRADE NEED TO BE ADEQUATELY WATERED, PRIOR TO THE PLACEMENT OF PUG AND PRIOR TO THE PLACEMENT OF CONCRETE.
6. GRADE AND/OR SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.

REINFORCING STEEL

7. CONSTRUCTION VEHICLES SHALL NOT DRIVE ON REINFORCEMENT.
8. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS AND THE ACI STANDARDS, WITH OVERLAPS OF 40 BAR DIAMETERS.
9. DOWEL BARS SHALL BE SMOOTH, LEVEL, AND PERPENDICULAR TO THE JOINT; ADEQUATELY SUPPORTED TO RETAIN PROPER ALIGNMENT; AND SHALL HAVE ONE END PROTECTED AGAINST BONDING TO THE CONCRETE IN ACCORDANCE WITH STANDARD CONSTRUCTIONS SPECIFICATIONS (SEE SECTION 5.1 PART 2 ITEM 6).
10. REBAR CHAIRS SHALL BE PLACED ON 4' MAXIMUM SPACING, EACH WAY.
11. REINFORCING STEEL COVER SHALL BE MINIMUM 2 IN. FORMED AND 3 IN. AGAINST EARTH IF UNFORMED FROM OUTSIDE LAYER OF STEEL TO FACE OF CONCRETE. THE MAXIMUM LATERAL COVER IS 3 INCHES.

CONCRETE

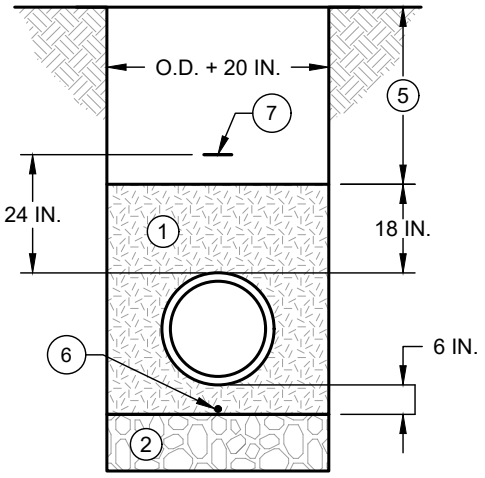
12. PLACEMENT OF CONCRETE NEEDS TO COMPLY WITH THE SPECIFICATIONS AND ACI STANDARDS, INCLUDING HOT AND COLD WEATHER PLACEMENT. SEE STANDARD SPECIFICATION SECTION 5.1 PART 3 ITEM E FOR MORE INFORMATION.
13. NO WATER SHALL BE ADDED AFTER INSPECTION AND TESTING.
14. CONCRETE SHALL BE VIBRATED WHERE POSSIBLE.
15. UNLESS OTHERWISE SPECIFIED, CONCRETE SHALL BE PLACED AT 4 IN. SLUMP, ± 1 INCH.

DIMENSIONAL TOLERANCES

16. LEVEL AND HORIZONTAL ALIGNMENT TOLERANCES FOR CURBS, GUTTERS, PAVEMENTS, SIDEWALKS, AND RAMPS, IN ALL DIRECTIONS, SHALL BE SUCH THAT THE GAP BELOW AN UNLEVELED 10' STRAIGHTEDGE RESTING ON THE HIGH SPOTS SHALL NOT EXCEED 1/8 INCH.
17. DIMENSIONAL TOLERANCES FOR OTHER CONCRETE PLACEMENTS SHALL COMPLY WITH ACI 117.

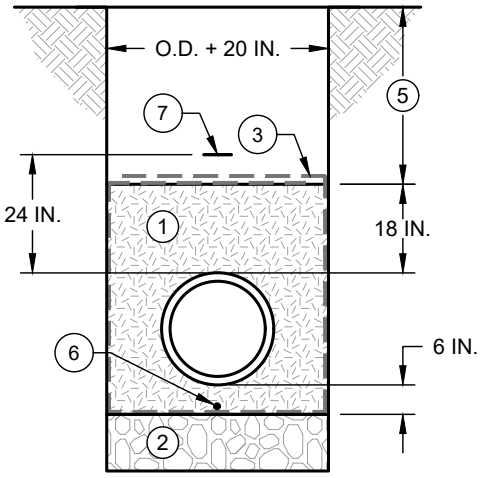
CONSTRUCTION AND CRACK CONTROL AND EXPANSION JOINTS

18. UNLESS OTHERWISE SPECIFIED CONSTRUCTION (FULL DEPTH) JOINTS SHALL BE PLACED AT MAXIMUM OF 50' AND CRACK CONTROL JOINTS (DUMMY JOINTS) AT A MAXIMUM OF 10'.
19. CRACK CONTROL JOINTS MAY BE TOOLED OR SAWED A MINIMUM OF 1/2 THE THICKNESS OF THE CONCRETE ON CURB AND GUTTER AND 1/2 INCH ON SIDEWALKS.
20. CONSTRUCTION JOINTS ARE FULL DEPTH JOINTS AND MAY BE CONSTRUCTED WITH DOWEL BARS, AS INDICATED IN THE DESIGN AND DETAILS.
21. EXPANSION BARS ARE FULL DEPTH JOINTS THAT MAY BE CONSTRUCTED WITH SMOOTH BARS AS INDICATED IN THE DESIGN AND DETAILS. EXPANSION MATERIAL MAY BE ½ IN. THICK REDWOOD OR ANY MATERIAL COMPLYING WITH ASTM D 1751. ALL MATERIALS MUST BE PLACED IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS.



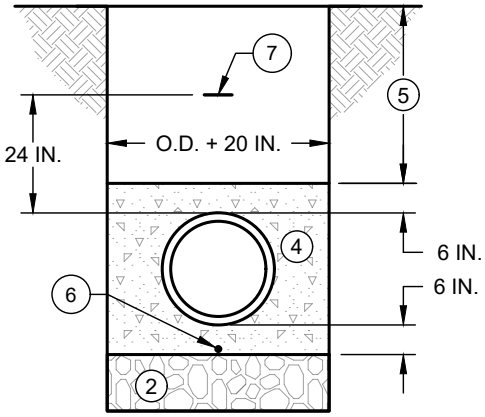
STANDARD EMBEDMENT

(NO SCALE)



STANDARD EMBEDMENT @ LOCATIONS WITH GROUNDWATER

(NO SCALE)



CONCRETE ENCASEMENT

(NO SCALE)

NOTE:
CONCRETE ENCASEMENT SHALL BE INSTALLED WHERE SHOWN ON THE PLANS OR AS INSTRUCTED BY DIRECTOR OF PUBLIC WORKS OR HER/HIS DESIGNEE.

NOTES:

1. EMBEDMENT FOR ALL PUBLIC MAINS SHALL BE TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS, SECTION 4.2 EXCAVATION AND BACKFILL, PART 2: PRODUCT, A. MATERIALS, 3. TRENCH BACKFILL, A. TYPE "A," COMPACTED IN ACCORDANCE WITH G-1C. AN ALTERNATE IS CONTROLLED LOW STRENGTH MATERIAL.
2. FOUNDATION COURSE (AS REQUIRED) OF AGGREGATE MEETING ASTM 57 SPECIFICATIONS TO PROVIDE FIRM, STABLE, AND UNIFORM PIPE SUPPORT. ALTERNATIVE ROCK SIZES SHALL BE PRE-APPROVED BY DIRECTOR OF PUBLIC WORKS OR HER/HIS DESIGNEE.
3. GEOTEXTILE WOVEN: GTF-200 OR PRE-APPROVED EQUAL. THE GEOTEXTILE FILTER FABRIC SHALL BE OVERLAPPED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. 2000 PSI CONCRETE OR CONTROLLED LOW STRENGTH MATERIAL.
5. BACKFILL & SURFACE REPLACEMENT PER STANDARD DETAILS G-9, G-10, APPLICABLE ST-30, ST-33, ST-34, ST-35, ST-36, AND ST-37 AND STANDARD SPECIFICATIONS FOR CONSTRUCTION.
6. FOR WATER MAINS PLACE METALLIC TRACER WIRE #12 AWG SOLID WIRE WITH A BLUE COATING, SEE W-1 NOTES 4 AND 5.
7. IDENTIFICATION NON-DETECTIBLE UNDERGROUND WARNING TAPE SHALL BE PLACED FOR ALL WATER MAINS, SANITARY SEWER MAINS, AND ALL CLOSED CONDUIT STORMWATER DRAINAGE SYSTEMS FOR ALL PIPE MATERIALS AND SIZES 4 IN. DIAMETER AND GREATER. FOR SPECIFICATIONS ON TAPE SEE CORRESPONDING W-1 NOTE 14, S-1 NOTE 19, AND SD-1 NOTE 1.

STANDARD EMBEDMENT AND CONCRETE ENCASEMENT

(NO SCALE)

CITY OF WACO

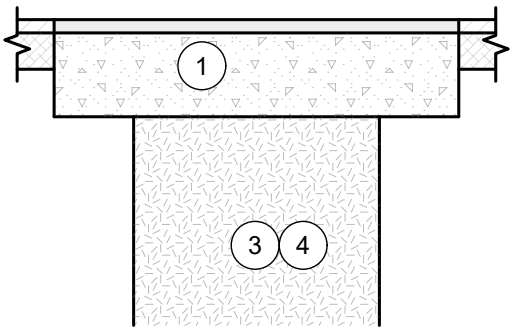
ENGINEERING DIVISION

REVISIONS

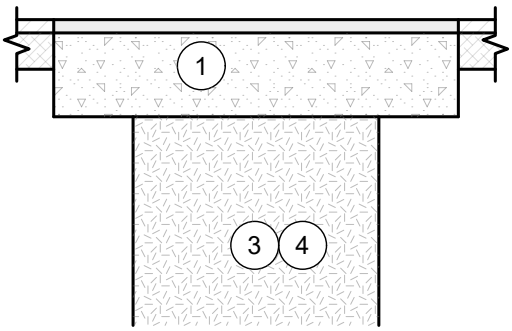
NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 1	MZ	04/28/2025
1	ADD NOTES 6 & 7	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

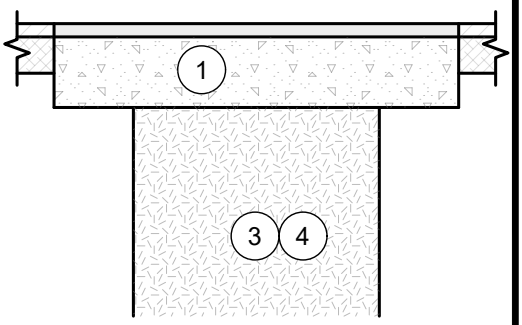
G-8



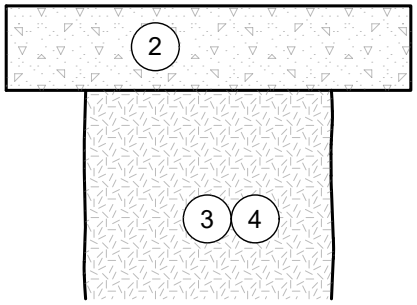
CLASS A
HMAC
INDUSTRIAL COLLECTOR &
ARTERIAL STREETS



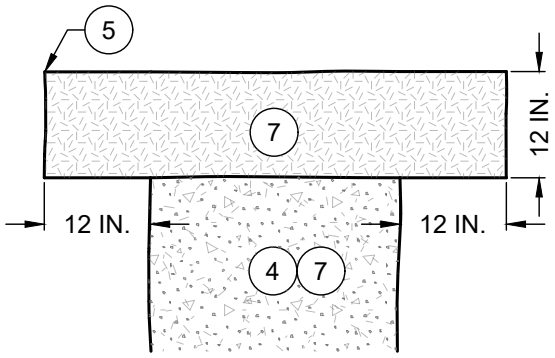
CLASS B
HMAC
RESIDENTIAL COLLECTOR &
COMMERCIAL COLLECTOR STREETS



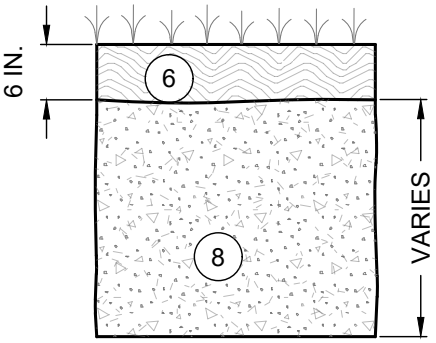
CLASS C
HMAC
LOCAL STREETS



CLASS D
CONCRETE



CLASS E
FOR EXISTING NON-BONDED
AGGREGATE SURFACES ONLY



CLASS F
SEED OR SOD

PAVEMENT / SURFACE REPLACEMENT DETAILS

(1) SEE ST-30 FOR CONCRETE OR ST-31 FOR CONTROLLED LOW STRENGTH MATERIAL AND APPLICABLE ST-33 AND/OR ST-34 FOR SAW CUT AND PAVEMENT REPLACEMENT DETAILS.

(2) SEE ST-37 AND APPLICABLE ST-35 AND/OR ST-36 FOR SAW CUT AND PAVEMENT REPLACEMENT DETAILS.

(3) TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 4.2 EXCAVATION AND BACKFILL, PART 2: PRODUCT, A. MATERIALS, 3. TRENCH BACKFILL, A. TYPE "A." MATERIAL MECHANICALLY COMPACTED IN ACCORDANCE WITH G-1C. AN ALTERNATE IS CONTROLLED LOW STRENGTH MATERIAL.

(4) USE CONTROLLED LOW STRENGTH MATERIAL TO BACKFILL ALL TRENCHES 22 IN. OR NARROWER, IN THE RIGHT-OF-WAY AND PUBLIC EASEMENTS.

(5) EDGE TO BE STRAIGHT, SQUARE AND PARALLEL TO SIDES OF TRENCH.

(6) 6 IN. MIN. TOPSOIL AND SEED OR SOD - SUBSIDIARY.

(7) TXDOT ITEM 247 FLEXIBLE BASE TYPE A GRADE 1-2 MINIMUM PLASTICITY INDEX 5.

(8) SEE G-10 FOR BACKFILL MATERIAL REQUIREMENTS AND FOR INSTALLATION.

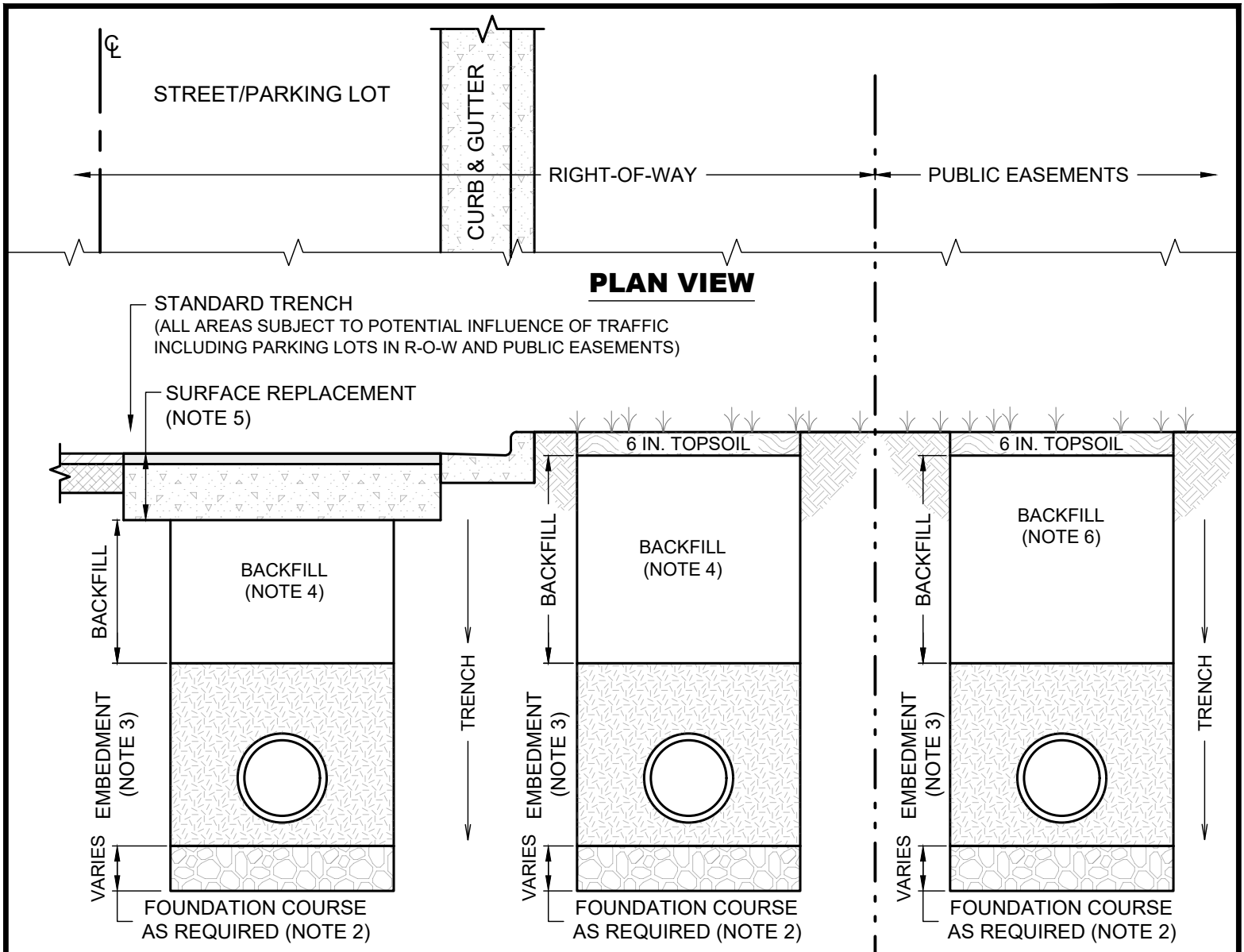
CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
3	MODIFY NOTE 3	MZ	04/28/2025
2	NOTE 4: CHANGE WIDTH OF TRENCH FROM 18"	MZ	11/15/2024
1	MODIFY NOTE 1	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024



PAY ITEMS:
- PIPING = L.F.
- SURFACE REPLACEMENT = L.F.

PAY ITEMS:
- PIPING = L.F.

(TOPSOIL AND VEGETATION SUBSIDIARY)

PAY ITEMS:
- PIPING = L.F.

(TOPSOIL AND VEGETATION SUBSIDIARY)

NOTES:

1. TRAFFIC AREAS SHALL INCLUDE ALL AREAS UNDER THE INFLUENCE OF TRAFFIC, INCLUDING ALL TRENCHES IN THE RIGHT-OF-WAY, BACK OF CURB, ALL ALLEYS, PUBLIC EASEMENTS, AND PARKING LOTS.
2. REFER TO STANDARD DETAIL G-8 FOR FOUNDATION COURSE (AS REQUIRED).
3. REFER TO STANDARD DETAIL G-8 FOR EMBEDMENT REQUIREMENTS.
4. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 4.2 EXCAVATION AND BACKFILL, PART 2: PRODUCT, A. MATERIALS, 3. TRENCH BACKFILL, A. TYPE "A." MATERIAL MECHANICALLY COMPACTED IN ACCORDANCE WITH G-1C. AN ALTERNATE IS CONTROLLED LOW STRENGTH MATERIAL. USE CONTROLLED LOW STRENGTH MATERIAL TO BACKFILL ALL TRENCHES 22 IN. OR NARROWER IN THE RIGHT-OF-WAY.
5. REFER TO STANDARD DETAILS G-9, ST-30 OR ST-31 AND APPLICABLE ST-33, ST-34, ST-35, ST-36 AND ST-37 FOR SURFACE REPLACEMENT REQUIREMENTS.
6. SHALL BE STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL 3. TRENCH BACKFILL. USE CONTROLLED LOW STRENGTH MATERIAL TO BACKFILL ALL TRENCHES 22 IN. OR NARROWER IN PUBLIC EASEMENTS.

TRENCH BACKFILL GUIDELINES

(NO SCALE)

CITY OF WACO

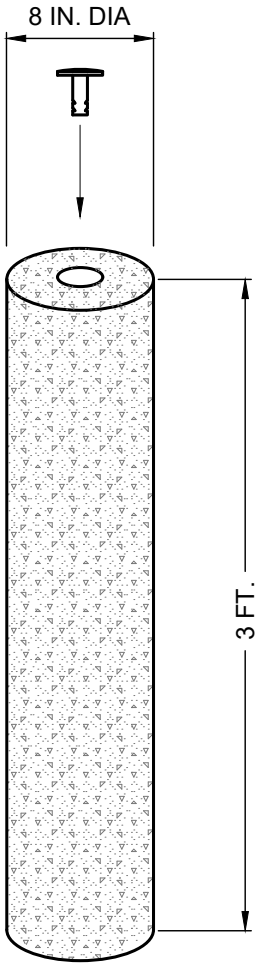
ENGINEERING DIVISION

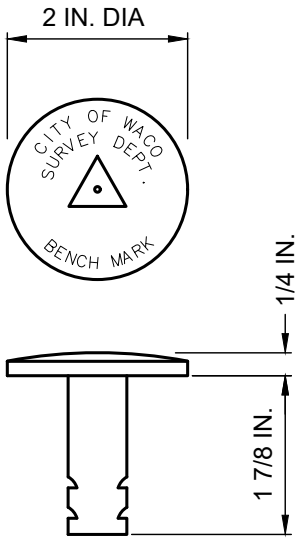
REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 4	MZ	04/28/2025
1	NOTE 6: CHANGE WIDTH OF TRENCH FROM 18"	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

G-10





BENCHMARK DETAIL

NTS

NOTES:

1. THE CITY OF WACO BENCHMARKS SHALL BE PLACED AT A MAXIMUM SPACING OF 750 FT.
2. THE CITY OF WACO ENGINEERING DEPT. WILL PROVIDE THE BENCHMARKS. THE CONTRACTOR WILL COORDINATE WITH THE ENGINEERING CONSTRUCTION INSPECTOR.
3. THE CITY OF WACO SURVEY DEPT. MAY SUPPLY ONE "CITY OF WACO BENCHMARK" FOR PLACEMENT IN INLET TOP IN EITHER BACK CORNER.

THE CITY OF WACO SURVEY DEPT. WILL PLACE "CITY OF WACO BENCH MARK" INTO THE CONCRETE CYLINDER.

CONCRETE CYLINDER FOR BENCHMARKS

(NO SCALE)

CITY OF WACO

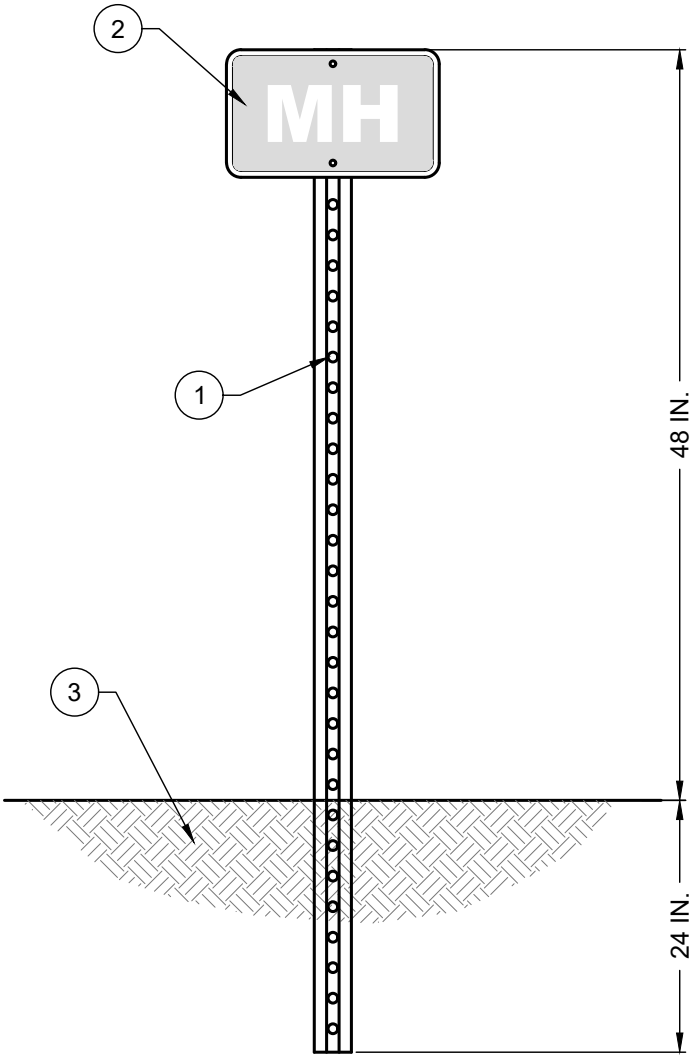
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-11



NOTES:

1. 6 FT. 12 GAUGE GALVANIZED STEEL U-CHANNEL POST WITH 3/8 IN. DIAMETER HOLES AT 1 IN. SPACING.

2. SIGNAGE PROVIDED BY CITY OF WACO WATER UTITLY SERVICES DEPARTMENT AND INSTALLED BY CONTRACTOR. COORDINATE WITH WATER UTILITY SERVICES DEPARTMENT FOR SIGNS. SEE SIGN DETAILS FOR ADDITIONAL INFORMATION

3. EXISTING GROUND: IF DISTURBED, CONTRACTOR TO PROOF ROLL AND COMPACT PRIOR TO INSTALLING POST.

4. SIGN SHALL FACE PUBLIC STREET IF DIRECT LINE OF SIGHT IS AVAILABLE, OTHERWISE SIGN SHALL FACE LOGICAL VEHICLE PATH ALONG PUBLIC EASEMENT.

DELINEATOR POST

(NO SCALE)

CITY OF WACO

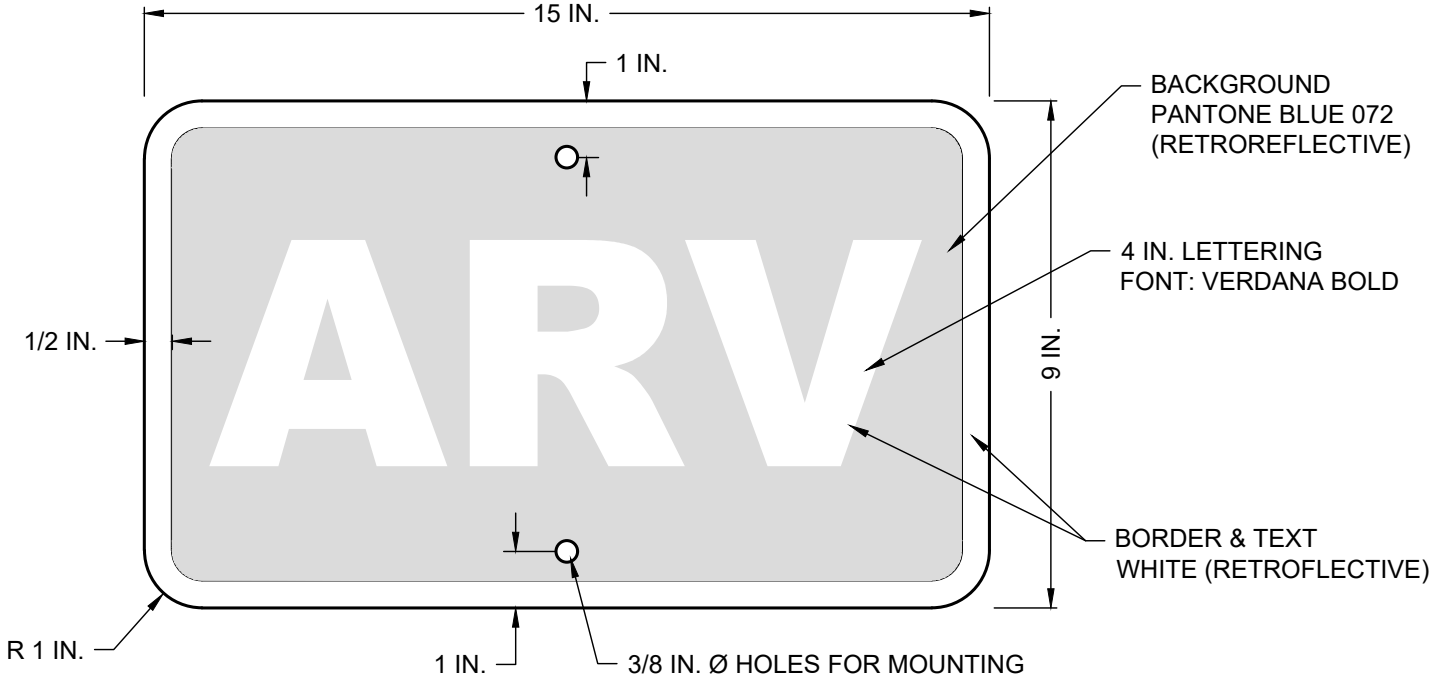
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-12



NOTES:

1. SIGN MATERIAL SHALL BE ALUMINUM SHEET OR COIL AND WILL CONFORM TO THE REQUIREMENTS OF ASTM B209, ALLOYS 6061-T-6, 5052-438.

2. SIGN SHALL BE FREE OF BUCKLES, WARPS, DENTS, BURRS AND OTHER DEFECTS & MUST BE A PLANE SURFACE.

3. SIGN SHALL BE TREATED WITH A CHROMATE CHEMICAL PROCESS RESULTING IN A COATING MEETING THE REQUIREMENTS OF ASTM B 449, C12. COATING WILL BE LIGHT-COLORED, TIGHT AND FREE FROM POWDERY RESIDUES.

4. MINIMUM THICKNESS OF SIGN SHALL BE 0.080 INCHES.

5. ALL SIGN FACE MATERIALS SHALL COMPLY WITH TEXAS DEPARTMENT OF TRANSPORTATION, DEPARTMENTAL MATERIALS SPECIFICATION 8300, LATEST VERSION.

THE FOLLOWING UTILITIES REQUIRE SIGNAGE:	
UTILITY	ABBREVIATION
GATE VALVE	V
MANHOLE	MH
FIRE HYDRANT	FH
PRESSURE REDUCING VALVE	PRV
AIR RELEASE VALVE	ARV

TYPE 'A' SIGN

(NO SCALE)

CITY OF WACO

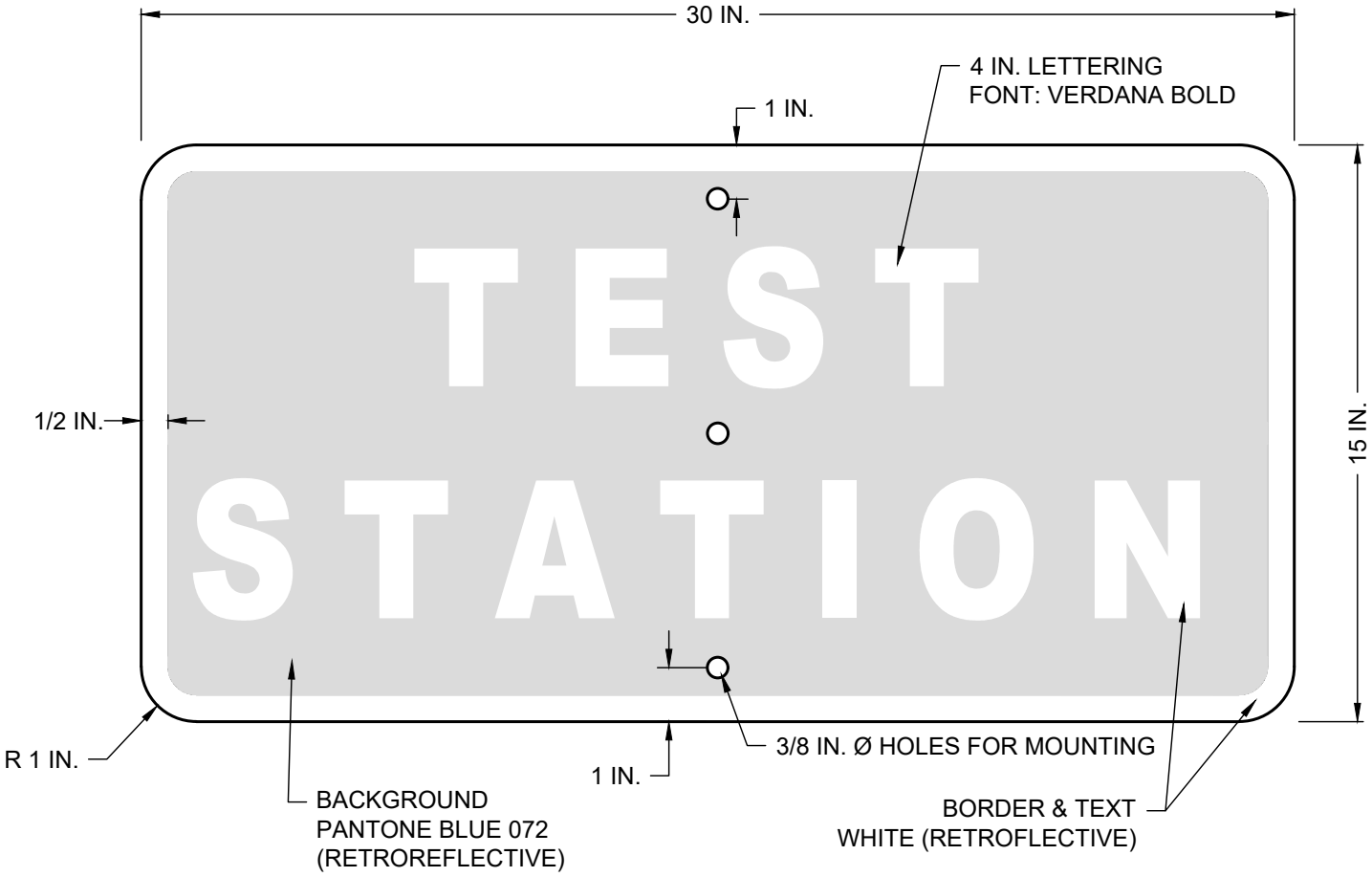
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-13



NOTES:

1. SIGN MATERIAL SHALL BE ALUMINUM SHEET OR COIL AND WILL CONFORM TO THE REQUIREMENTS OF ASTM B209, ALLOYS 6061-T-6, 5052-438.

2. SIGN SHALL BE FREE OF BUCKLES, WARPS, DENTS, BURRS AND OTHER DEFECTS & MUST BE A PLANE SURFACE.

3. SIGN SHALL BE TREATED WITH A CHROMATE CHEMICAL PROCESS RESULTING IN A COATING MEETING THE REQUIREMENTS OF ASTM B 449, C12. COATING WILL BE LIGHT-COLORED, TIGHT AND FREE FROM POWDERY RESIDUES.

4. MINIMUM THICKNESS OF SIGN SHALL BE 0.080 INCHES.

5. ALL SIGN FACE MATERIALS SHALL COMPLY WITH TEXAS DEPARTMENT OF TRANSPORTATION, DEPARTMENTAL MATERIALS SPECIFICATION 8300, LATEST VERSION.

TYPE 'B' SIGN

(NO SCALE)

CITY OF WACO

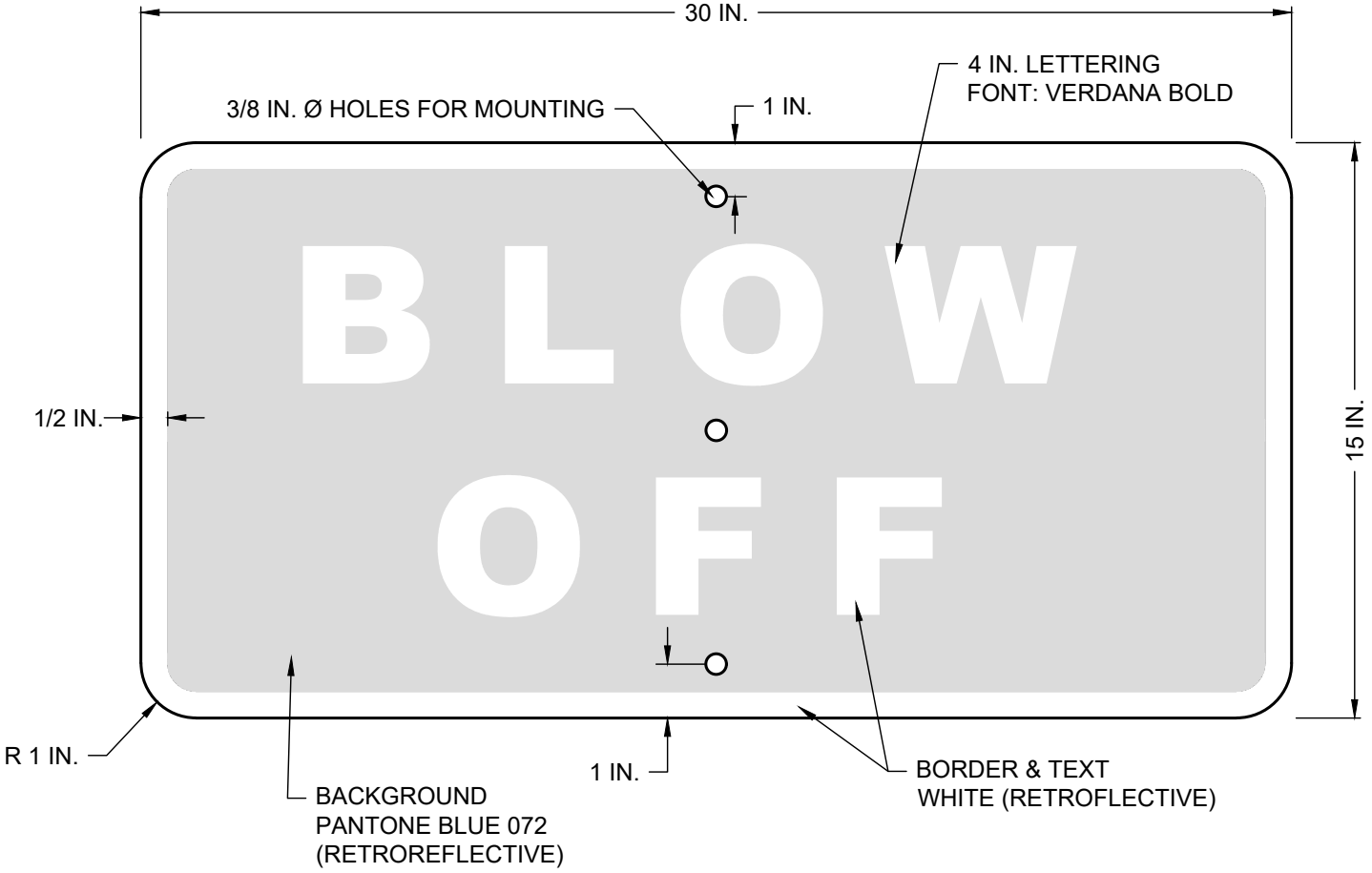
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-14



NOTES:

1. SIGN MATERIAL SHALL BE ALUMINUM SHEET OR COIL AND WILL CONFORM TO THE REQUIREMENTS OF ASTM B209, ALLOYS 6061-T-6, 5052-438.

2. SIGN SHALL BE FREE OF BUCKLES, WARPS, DENTS, BURRS AND OTHER DEFECTS & MUST BE A PLANE SURFACE.

3. SIGN SHALL BE TREATED WITH A CHROMATE CHEMICAL PROCESS RESULTING IN A COATING MEETING THE REQUIREMENTS OF ASTM B 449, C12. COATING WILL BE LIGHT-COLORED, TIGHT AND FREE FROM POWDERY RESIDUES.

4. MINIMUM THICKNESS OF SIGN SHALL BE 0.080 INCHES.

5. ALL SIGN FACE MATERIALS SHALL COMPLY WITH TEXAS DEPARTMENT OF TRANSPORTATION, DEPARTMENTAL MATERIALS SPECIFICATION 8300, LATEST VERSION.

TYPE 'C' SIGN

(NO SCALE)

CITY OF WACO

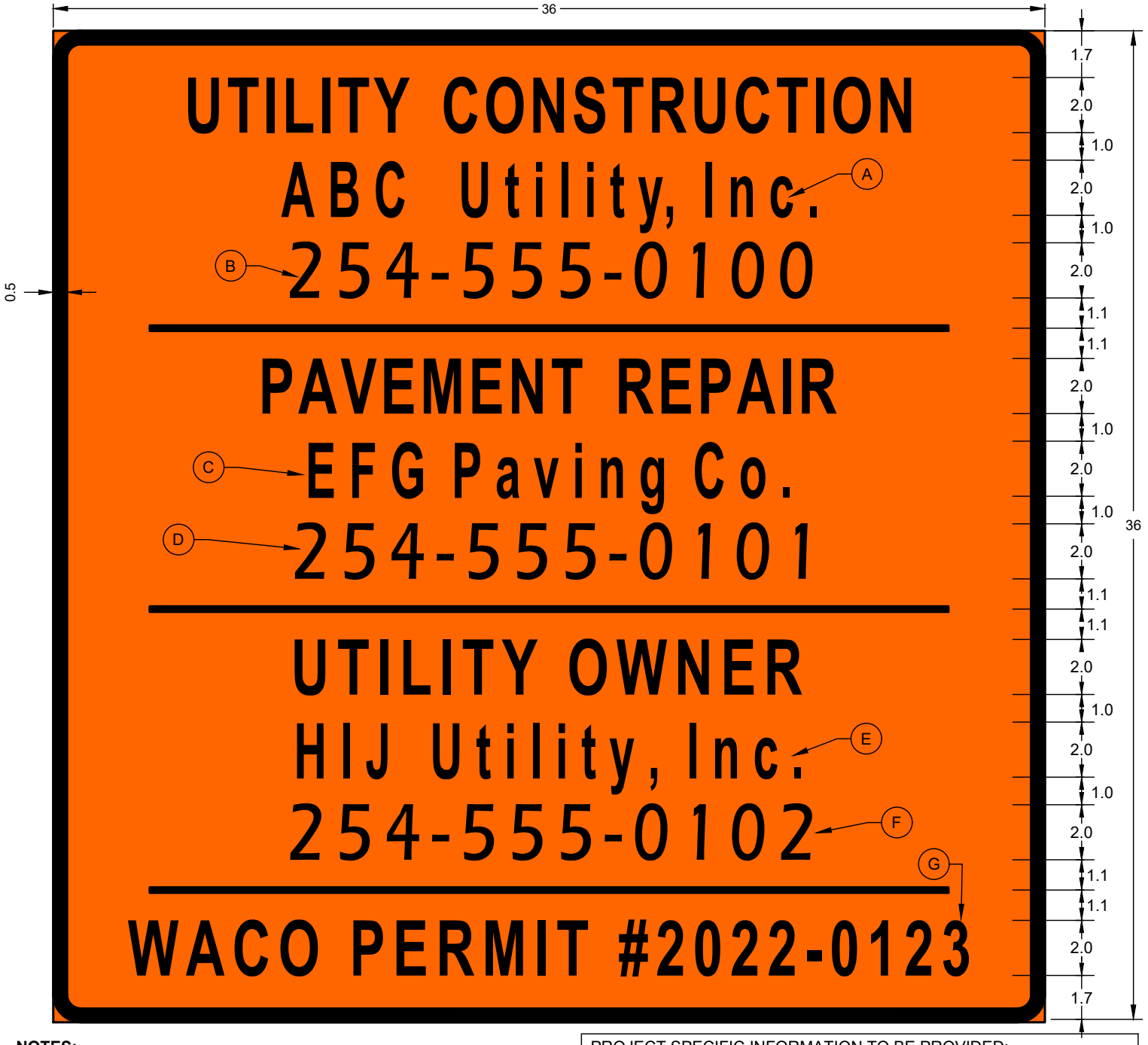
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

G-15



NOTES:

1. ALL UNITS ARE IN INCHES.
2. SEE G-16B FOR ADDITIONAL REQUIREMENTS
3. COLORS:
   - ORANGE — SHEETING MATERIAL MEETING REQUIREMENTS OF DMS-8300 TYPE B_{FL} OR C_{FL} SHALL BE USED
   - BLACK
4. FONTS:
   - SERIES B ALPHABET OF THE CURRENT STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)

PROJECT SPECIFIC INFORMATION TO BE PROVIDED:

- (A) UTILITY CONTRACTOR'S COMPANY NAME
- (B) UTILITY CONTRACTOR'S SUPERINTENDENT'S 24-HR PHONE NUMBER
- (C) PAVING CONTRACTOR'S COMPANY NAME
- (D) PAVING CONTRACTOR'S SUPERINTENDENT'S 24-HR PHONE NUMBER
- (E) UTILITY OWNER'S NAME
- (F) UTILITY OWNER'S 24-HR PHONE NUMBER
- (G) PERMIT NUMBER

PERMITTEE CONSTRUCTION INFORMATION SIGN

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

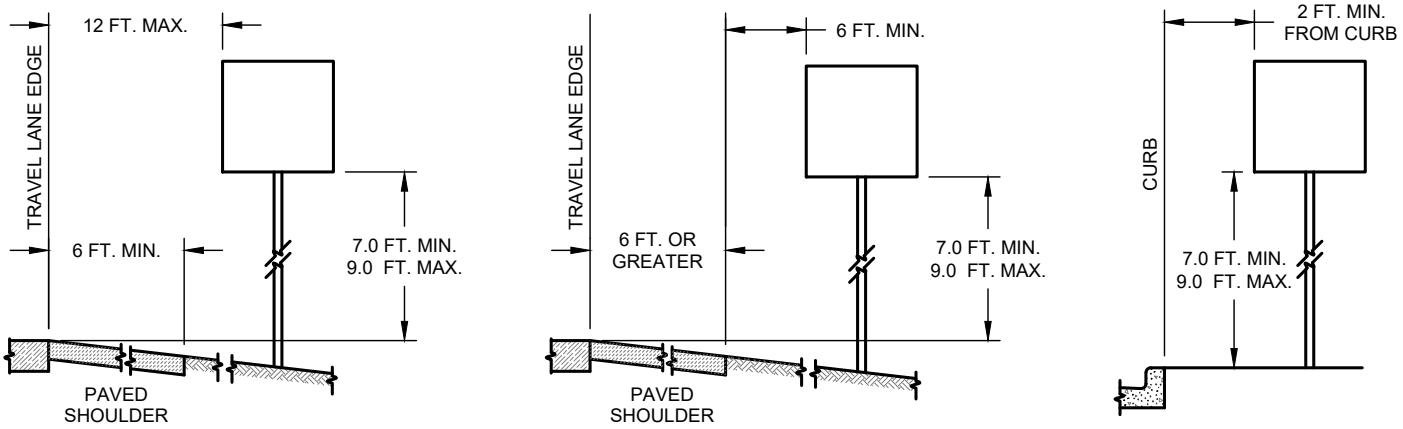
DATE 01/01/2024

G-16A

GENERAL NOTES:

1. IN ACCORDANCE WITH CITY CODE OF ORDINANCES SEC. 23-19. CONSTRUCTION STANDARDS, A USER SHALL PLACE AT THE LOCATION WHERE CONSTRUCTION IS TO OCCUR, AT LEAST 24-HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION, INFORMATION SIGNS MEASURING THREE FEET BY THREE FEET, STATING THE IDENTITY AND TELEPHONE NUMBER OF THE PERSON DOING THE CONSTRUCTION IN THE RIGHT-OF-WAY, AND THE IDENTITY AND TELEPHONE NUMBER OF THE USER, AND SAID INFORMATION SIGNS SHALL REMAIN POSTED AT THE LOCATION DURING THE ENTIRE TIME THE CONSTRUCTION IS OCCURRING. IF THE CONSTRUCTION IS DUE TO AN EMERGENCY AS DEFINED ELSEWHERE IN THIS CHAPTER, THE 24-HOUR ADVANCED PLACEMENT IS NOT REQUIRED.
2. SIGN SHALL ALSO INCLUDE CITY OF WACO RIGHT-OF-WAY PERMIT NUMBER. PERMIT NUMBER MAY BE UPDATED FOR REUSE OF SIGN. PERMISSIBLE METHODS INCLUDE REMOVAL AND REPLACEMENT OF NUMBERS AND MASKING WITH SPECIFIED SHEETING
3. SIGNS SHALL BE MADE OF ALUMINUM COMPOSITE MATERIAL, SUCH AS DIBOND™, SIGNBOND™ OR APPROVED EQUAL.
4. SIGNS SHALL HAVE THEIR OWN SUPPORT STRUCTURE AND BE ABLE TO WITHSTAND 75 MPH WINDS.
5. SEE G-17 FOR SIGN SUPPORT ASSEMBLY.
6. A MINIMUM OF 2 SIGNS ARE REQUIRED FOR WORK ON TWO-WAY AND ONE-WAY STREETS PLACED ON EITHER SIDE OF THE STREET IN CLOSE PROXIMITY TO WORK BEING PERFORMED.
7. SIGNS SHALL BE MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION BY CONTRACTOR. SIGNS SHALL REMAIN CLEAN, LEGIBLE AND STRUCTURALLY SOUND. IF SIGNS ARE DAMAGED OR STOLEN, THEY SHALL BE REPLACED BY CONTRACTOR WITHIN 48-HOURS.
8. SIGNS SHALL BE REMOVED BY THE CONTRACTOR NO LATER THAN 3 DAYS AFTER FINAL ACCEPTANCE OF THE WORK.

TYPICAL MINIMUM CLEARANCES FOR PLACEMENT OF SIGNS



PERMITTEE CONSTRUCTION INFORMATION SIGN

(NO SCALE)

CITY OF WACO

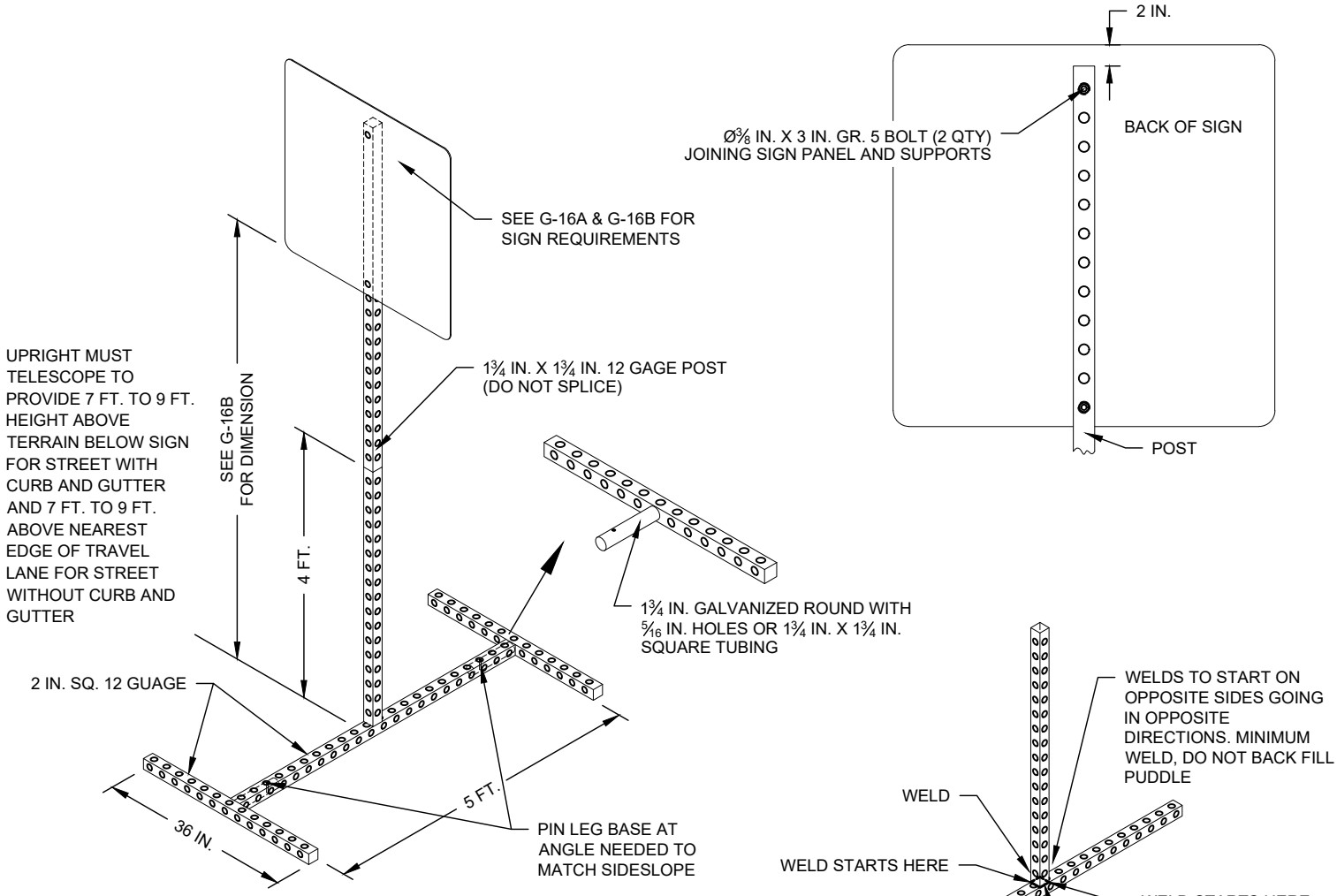
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

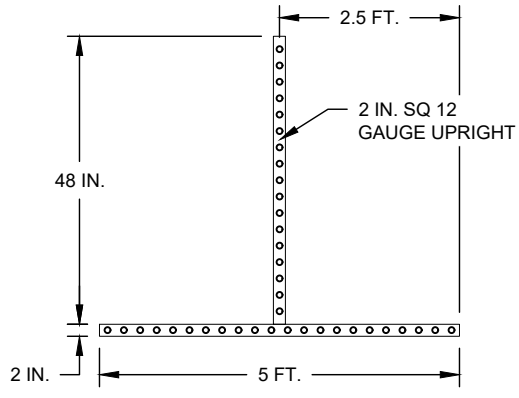
DATE 01/01/2024

G-16B



NOTES:

1. NO MORE THAN 2 SIGN POSTS SHALL BE PLACED WITHIN 7 FT. OF EACH OTHER.
2. WHERE SIGN SUPPORTS REQUIRE THE USE OF WEIGHTS TO REMAIN UPRIGHT, THE USE OF SANDBAGS WITH DRY, COHESIONLESS SAND SHOULD BE USED.
3. THE SANDBAGS WILL BE TIED SHUT TO KEEP THE SAND FROM SPILLING AND TO MAINTAIN A CONSTANT WEIGHT.
4. ROCK, CONCRETE, IRON, STEEL OR OTHER SOLID OBJECTS SHALL NOT BE PERMITTED FOR USE AS SIGN SUPPORT WEIGHTS.
5. SANDBAGS SHOULD WEIGH A MINIMUM OF 35 LBS AND A MAXIMUM OF 50 LBS.
6. SANDBAGS SHALL BE MADE OF A DURABLE MATERIAL THAT TEARS UPON VEHICULAR RUBBER (SUCH AS TIRE INNER TUBES) SHALL NOT BE USED.
7. SANDBAGS SHALL ONLY BE PLACED ALONG OR LAID OVER THE BASE OF THE TRAFFIC CONTROL DEVICE AND SHALL NOT BE SUSPENDED ABOVE GROUND LEVEL OR HUNG WITH ROPE, WIRE, CHAINS OR OTHER FASTENERS. SANDBAGS SHALL BE PLACED ALONG THE LENGTH OF THE BASE TO WEIGH DOWN THE SIGN SUPPORT.
8. SANDBAGS SHALL NOT BE PLACED UNDER THE BASE AND SHALL NOT BE USED TO LEVEL SIGN SUPPORTS PLACED ON SLOPES.



LEG BASE
SIDE VIEW

PERMITTEE CONSTRUCTION INFORMATION SIGN SUPPORT ASSEMBLY

(NO SCALE)

CITY OF WACO

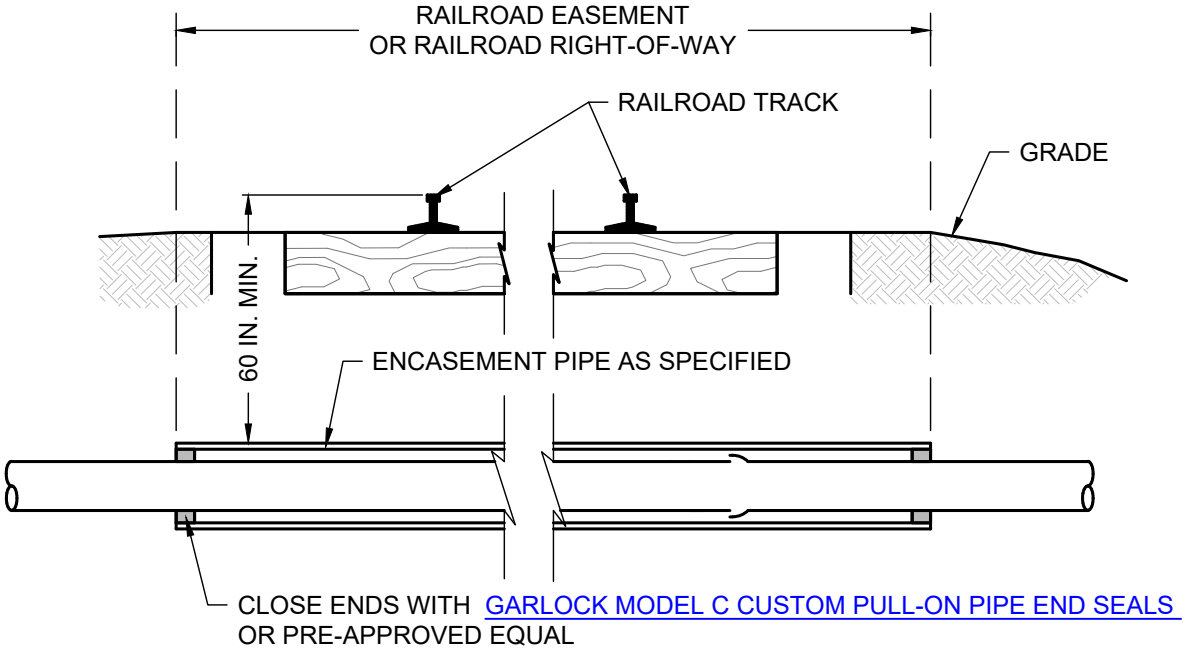
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

G-17



NOTES:

1. MINIMUM SIZE OF CASING SHALL BE 12 IN. LARGER THAN THE NOMINAL PIPE DIAMETER.

2. CASING SHALL BE STEEL WITH A MINIMUM WALL THICKNESS OF:

INSIDE DIAMETER OF STEEL CASING PIPE		MINIMUM CASING WALL THICKNESS
GREATER THAN	UP TO AND INCLUDING	
12 IN.	18 IN.	5/16 IN.
18 IN.	22 IN.	3/8 IN.
22 IN.	28 IN.	7/16 IN.
28 IN.	34 IN.	1/2 IN.
34 IN.	42 IN.	9/16 IN.
42 IN.	48 IN.	5/8 IN.

3. THE MINIMUM THICKNESS FOR ALL CASINGS GREATER THAN 48 IN. DIA. SHALL BE DETERMINED BY THE ENGINEER OF RECORD, AND SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF WACO PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION.

4. ALL PIPE IN CASING SHALL BE JOINT RESTRAINED.

5. ALL CASINGS WITH LESS THAN 24 IN. OF COVER SHALL BE PAINTED PER STANDARD SPECIFICATIONS AND AS REQUIRED BY RAILROAD AND SHALL BE COATED WITH TNEMEC PERMA-SHIELD SERIES 46H-413 COAL TAR EPOXY.

6. ALL CARRIER PIPE SHALL BE INSTALLED USING GARLOCK PIPELINE SEAL & ISOLATOR/SPACER MODEL S8G-2 (SIZES UP TO 24 IN.) AND S12G-2 (LARGER THAN 24 IN.) REINFORCED RUNNERS OR PRE-APPROVED EQUAL.

7. PLACE ISOLATORS/SPACERS AT NO MORE THAN 2 FT. FROM EACH JOINT AND A MINIMUM SPACING OF 5 FT. OR LESS AS PER MANUFACTURER'S RECOMMENDATION. IN ADDITION, ALSO PLACE AN ISOLATOR/SPACER WITHIN 1 FT. OF EACH END OF THE CASING.

RAILROAD CROSSING BORE DETAILS

(NO SCALE)

CITY OF WACO

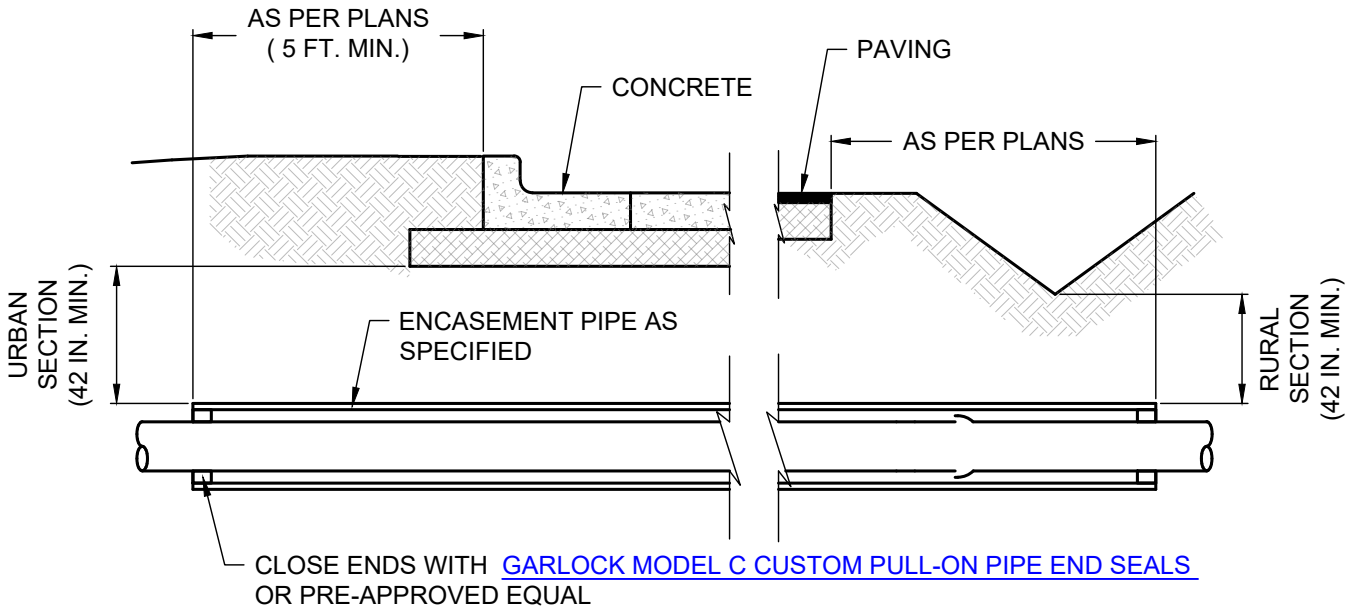
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 1 & 6; MODIFY NOTE IN DETAIL FOR END SEALS; ADD NOTE 7	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 11/15/2024

G-18



NOTES:

1. MINIMUM SIZE OF CASING SHALL BE 12 IN. LARGER THAN THE NOMINAL PIPE DIAMETER.

2. CASING SHALL BE STEEL WITH A MINIMUM WALL THICKNESS OF:

INSIDE DIAMETER OF STEEL CASING PIPE		MINIMUM CASING WALL THICKNESS
GREATER THAN	UP TO AND INCLUDING	
12 IN.	18 IN.	5/16 IN.
18 IN.	22 IN.	3/8 IN.
22 IN.	28 IN.	7/16 IN.
28 IN.	34 IN.	1/2 IN.
34 IN.	42 IN.	9/16 IN.
42 IN.	48 IN.	5/8 IN.

3. THE MINIMUM THICKNESS FOR ALL CASINGS GREATER THAN 48 IN. DIA. SHALL BE DETERMINED BY THE ENGINEER OF RECORD, AND SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF WACO PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION.

4. ALL PIPE IN CASING SHALL BE JOINT RESTRAINED.

5. ALL CASINGS WITH LESS THAN 24 IN. OF COVER SHALL BE PAINTED PER STANDARD SPECIFICATIONS AND SHALL BE COATED WITH TNEMEC PERMA-SHIELD SERIES 46H-413 COAL TAR EPOXY.

6. ALL CARRIER PIPE SHALL BE INSTALLED USING GARLOCK PIPELINE SEAL & ISOLATOR/SPACER MODEL S8G-2 (SIZES UP TO 24 IN.) AND S12G-2 (LARGER THAN 24 IN.) REINFORCED RUNNERS OR PRE-APPROVED EQUAL.

7. PLACE ISOLATORS/SPACERS AT NO MORE THAN 2 FT. FROM EACH JOINT AND A MINIMUM SPACING OF 5 FT. OR LESS AS PER MANUFACTURER'S RECOMMENDATION. IN ADDITION, ALSO PLACE AN ISOLATOR/SPACER WITHIN 1 FT. OF EACH END OF THE CASING.

BORE DETAIL

(NO SCALE)

CITY OF WACO

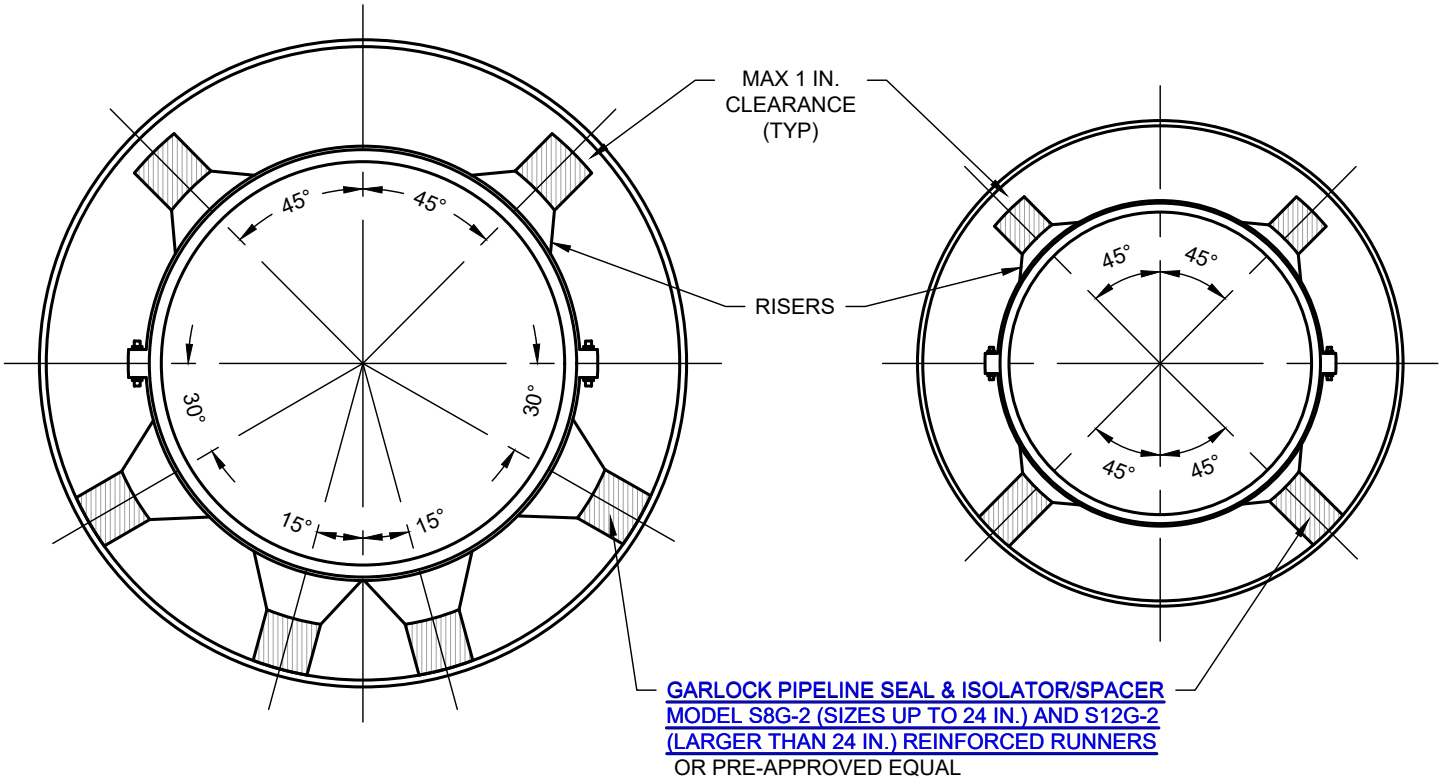
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 1 & 6; MODIFY NOTE IN DETAIL FOR END SEALS; ADD NOTE 7	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 11/15/2024

G-19



CARRIER PIPE NOMINAL DIAMETER 14 IN. THRU 36 IN.
(NO SCALE)

CARRIER PIPE NOMINAL DIAMETER 4 IN. THRU 12 IN.
(NO SCALE)

REQUIRED INSTALLATION PRACTICES FOR PIPE IN CASINGS ARE:

1. MINIMUM SIZE OF CASING SHALL BE 12 IN. LARGER THAN THE NOMINAL PIPE DIAMETER.
2. ALL PIPE CASING SHALL BE JOINT RESTRAINED.
3. THE PIPE MUST BE BRACED AND ANCHORED IN A MANNER THAT PREVENTS MOVEMENT IN ANY DIRECTION.
4. THE PIPE MUST BE INSTALLED IN A MANNER THAT WILL PERMIT ITS REMOVAL WITH REASONABLE EASE, SHOULD THIS BE NECESSARY AT A LATER DATE.
5. PLACE SPACERS AT NO MORE THAN 2 FT. FROM EACH JOINT AND A MAXIMUM SPACING OF 5 FT. OR LESS AS PER MANUFACTURER'S RECOMMENDATION. IN ADDITION, ALSO PLACE AN ISOLATOR/SPACER WITHIN 1 FT. OF EACH END OF THE CASING.
6. SPACERS MUST BE A MAXIMUM OF 1 IN. FROM CASING WALL.
7. CASING SPACERS SHALL BE UTILIZED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. CASING SHALL BE STEEL WITH A MINIMUM WALL THICKNESS PER RELEVANT G-18 OR G-19.
9. ALL CASINGS WITH LESS THAN 24 IN. OF COVER SHALL BE PAINTED PER STANDARD SPECIFICATIONS AND SHALL BE COATED WITH TNEMEC PERMA-SHIELD SERIES 46H-13 COAL TAR EPOXY.
10. CLOSE ENDS WITH GARLOCK MODEL C CUSTOM PULL-ON PIPE END SEALS OR PRE-APPROVED EQUAL.

PIPE THROUGH CASING DETAIL

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 1, 2, 5 & NOTE IN DETAIL FOR PIPE SEALS; ADD NOTES 9 & 10; RENUMBER 7 & 8	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
11/15/2024

G-20

CITY OF WACO

SANITARY SEWER DETAILS

CITY OF WACO
SANITARY SEWER DETAILS

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

SANITARY SEWER GENERAL NOTES AND SERVICE TAP NOTES

1. PVC SEWER MAIN PIPE COLOR SHALL BE GREEN.
2. ALL PVC SANITARY SEWER PIPE AND FITTINGS SHALL BE SDR26 OR PS115.
3. ALL PVC SANITARY SEWER SERVICES SHALL BE SCHEDULE 40 OR SDR26.
4. A STAMPED "S" OF 4 IN. IN HEIGHT AND 3/8 IN. IN DEPTH SHALL BE PLACED IN THE CENTER OF THE FACE OF CURB, AT EACH NEW TAP LOCATION, AND IN ANY NEW CURB AT EXISTING SERVICES.
5. PLEASE REFER TO STANDARD DETAIL S-2 FOR SEWER CLEANOUTS SITUATED IN A TRAFFIC AREA INCLUDING SIDEWALKS.
6. FOR BEDDING EMBEDMENT AND BACK FILL ABOVE EMBEDMENT REFER TO STANDARD DETAILS G-8, G-9 AND G-10 .
7. BID ITEM FOR SEWER SERVICE INCLUDES EXCAVATION, WYE, SERVICE LINE, CLEANOUT, BOX, ALL FITTINGS, BACKFILL, AND SURFACE REPLACEMENT.
8. ALL WYES SHALL BE SAME MATERIAL SPECIFICATION AS THE MAIN IN REGARDS TO MATERIAL, SDR, AND ASTM DESIGNATIONS.
9. ALL SERVICE CONNECTIONS TO EXISTING SEWER PIPE SHALL BE MADE BY USING NON-SHEAR COUPLINGS AND RIGID FITTINGS.
10. ALL ADAPTERS, BENDS, AND TEES ON SERVICE LINES SHALL BE FULLY ENCASED IN 6 IN. OF CONCRETE.
11. WHERE NEW SANITARY SEWER SERVICES ARE INSTALLED UNDER EXISTING CURB AND GUTTER, THE CONTRACTOR WILL HAVE THE FOLLOWING OPTIONS:

    A. REMOVE AND REPLACE ADEQUATE AMOUNT OF CURB AND GUTTER.
    B. PLACE CONTROLLED LOW STRENGTH MATERIAL BENEATH THE EXISTING CURB AND GUTTER.
    C. INSTALL SERVICE THROUGH A HOLE AT THE SAME LOCATION AS THE EXISTING PIPE, AND APPROXIMATELY THE SAME DIAMETER.

12. ALL WATER AND SEWER CROSSINGS SHALL MEET TCEQ SEPARATION REQUIREMENTS. MINIMUM SEPARATION SHALL BE 6 INCHES. SEE STANDARD DETAIL S-19 AND S-20 .
13. ANY UNDERGROUND DUCTILE IRON PIPE SHALL BE LINED WITH TNEMEC PERMA-SHIELD 431 OR A PRE-APPROVED EQUAL. USE OF DUCTILE IRON SANITARY SEWER PIPE SHALL BE PREAPPROVED BY THE CITY ENGINEER.
14. STEEL PIPE CASING USED FOR AERIAL CROSSING SHALL BE PAINTED WITH TNEMEC SERIES 46H-413 COAL TAR EPOXY AT 60.0 DRY MILS. PAINTING IS SUBSIDIARY TO THE CASING.
15. SEWER MAINS AND/OR SERVICES ENTERING INTO A MANHOLE MORE THAN 24 IN. ABOVE AN INVERT MUST HAVE A DROP FIXTURE.
16. ALL SERVICE TAPS MUST BE APPROVED IN ADVANCE BY THE CITY OF WACO AND MUST BE PERFORMED UNDER THE DIRECT SUPERVISION OF A DESIGNATED CITY OF WACO UTILITY INSPECTOR. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN.
17. PLEASE REFER TO CITY OF WACO STANDARD DETAILS FOR AIR RELEASE VALVES ON FORCE MAINS.
18. FILL ALL ABANDONED CONDUITS GREATER THAN 6 IN. DIAMETER WITH CONTROLLED LOW STRENGTH MATERIAL.
19. IDENTIFICATION NON-DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED 24 IN. ABOVE TOP OF THE PIPE FOR ENTIRE LENGTH OF ALL SANITARY SEWER MAINS. TAPE SHALL BE A MINIMUM 4 MIL OVERALL THICKNESS AND BE 6 IN. WIDE, APWA GREEN IN COLOR, COLORFAST, CHEMICALLY INERT, AND WITH BLACK LETTERING IMPRINTED LEGEND "PRESSURIZED WASTEWATER" FOR FORCE MAINS AND “CAUTION BURIED SEWER LINE BELOW” FOR GRAVITY FLOW LINES, SEE G-8 NOTE 7.
20. IN ACCORDANCE WITH G-7 NOTE 6, PRIOR TO PLACEMENT OF CONCRETE FOR A DIAMOND IN PAVEMENT FOR A FORCE MAIN VALVE OR A SANITARY SEWER MANHOLE, MATERIAL BELOW SHALL BE COMPACTED / RE-COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.

CITY OF WACO

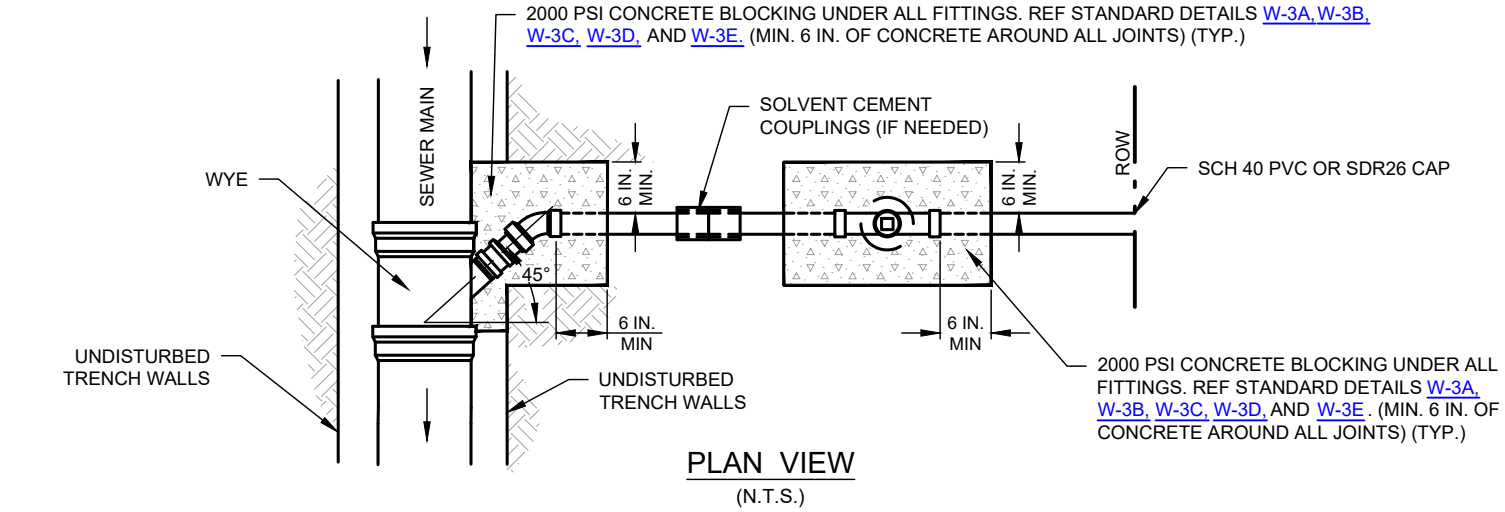
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 19	MZ	11/15/2024
1	ADD NOTE 19	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

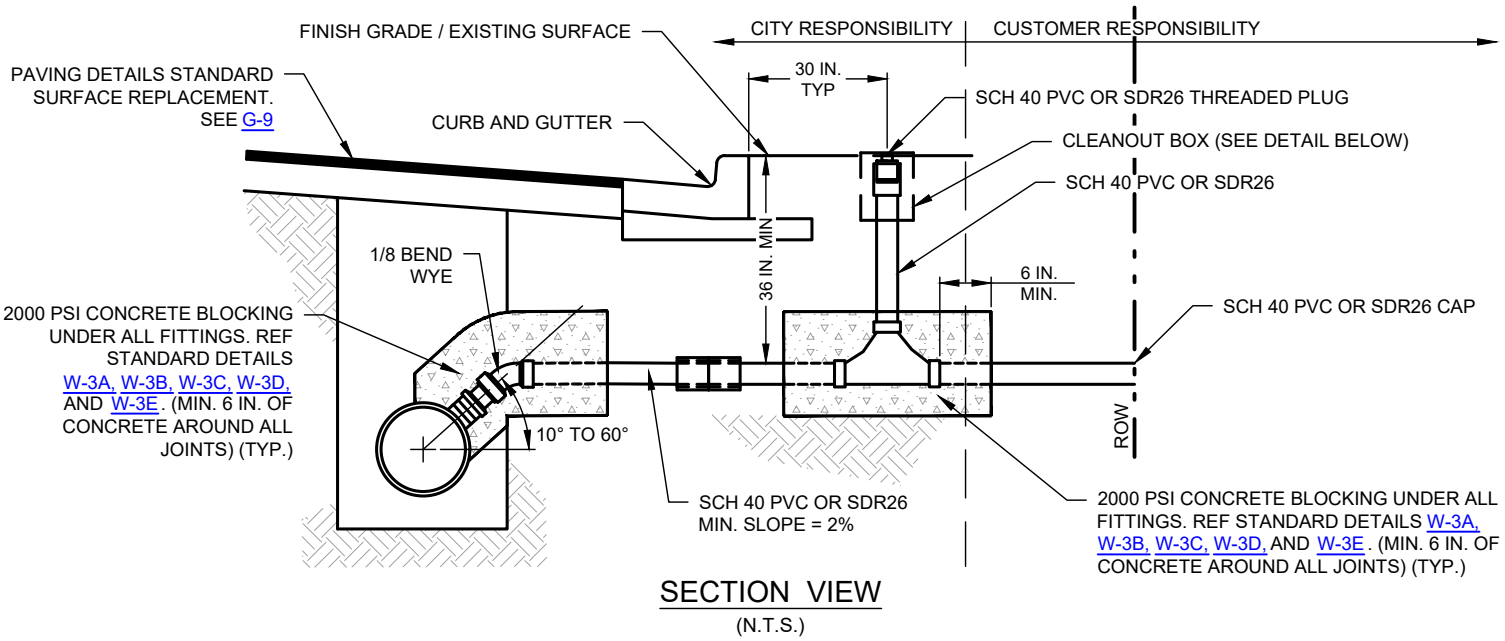
DATE 01/01/2024

S-1



PLAN VIEW

(N.T.S.)



SECTION VIEW

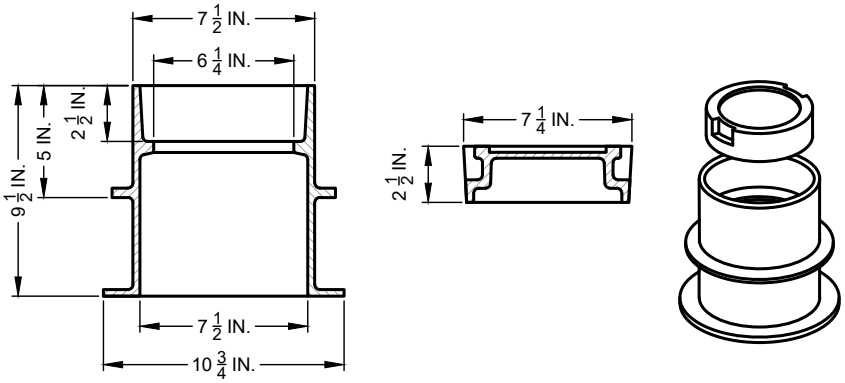
(N.T.S.)

SANITARY SEWER SERVICE - RESIDENTIAL

(NO SCALE)

NOTES:

1. EXISTING MAIN REQUIRES A GASKETED, RIGID, WYE AND A COUPLING THAT RESISTS SHEARING.
2. 4 IN. RESIDENTIAL SERVICE REQUIRES SINGLE 2 WAY CLEANOUT.
4. CLEANOUTS IN ALLEYS TO BE 18 IN. ABOVE SURFACE, NEXT TO PROPERTY LINE, WITH NO BOX.
5. CLEANOUT SHALL BE 340-1 DALLAS SHORTY VALVE BOX W/ SEWER LID. MATERIAL IS CAST IRON, ASTM A48, CLASS 30B OR PRE-APPROVED EQUAL.
6. REFER TO STANDARD DETAILS W-35 OR W-36 FOR REQUIREMENTS FOR CLEANOUTS LOCATED IN TRAFFIC AREAS.
7. IF SEWER DEPTH IS GREATER THAN 10 FT., THEN S-3 DEEP SANITARY SEWER SERVICE CONNECTION SHALL BE USED.



CLEANOUT BOX & COVER

(NO SCALE)

CITY OF WACO

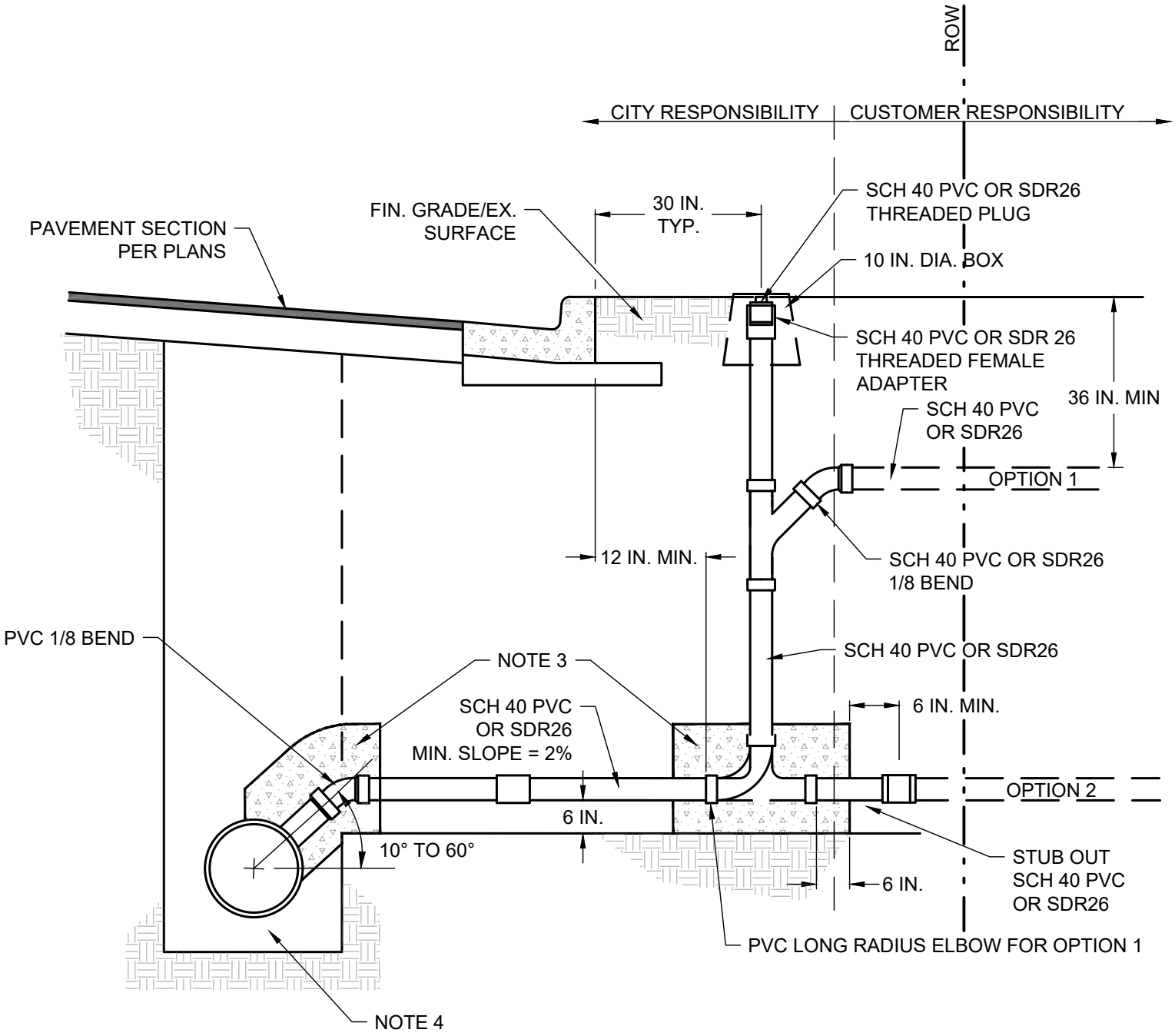
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-2



NOTES:

1. THIS DETAIL SHALL BE USED FOR SEWER DEPTHS GREATER THAN 10 FT.
2. EXISTING MAIN REQUIRES A GASKETED, RIGID, WYE AND A COUPLING THAT RESISTS SHEARING.
3. THRUST BLOCKING UNDER ALL FITTINGS. REFERENCE W-3A, W-3B, W-3C, W-3D, AND W-3E . (MIN. 6 IN. OF CONCRETE AROUND ALL JOINTS (TYP.)
4. REFERENCE G-8 AND G-10 FOR PIPE EMBEDMENT REQUIREMENTS.

DEEP SANITARY SEWER SERVICE CONNECTION

(NO SCALE)

CITY OF WACO

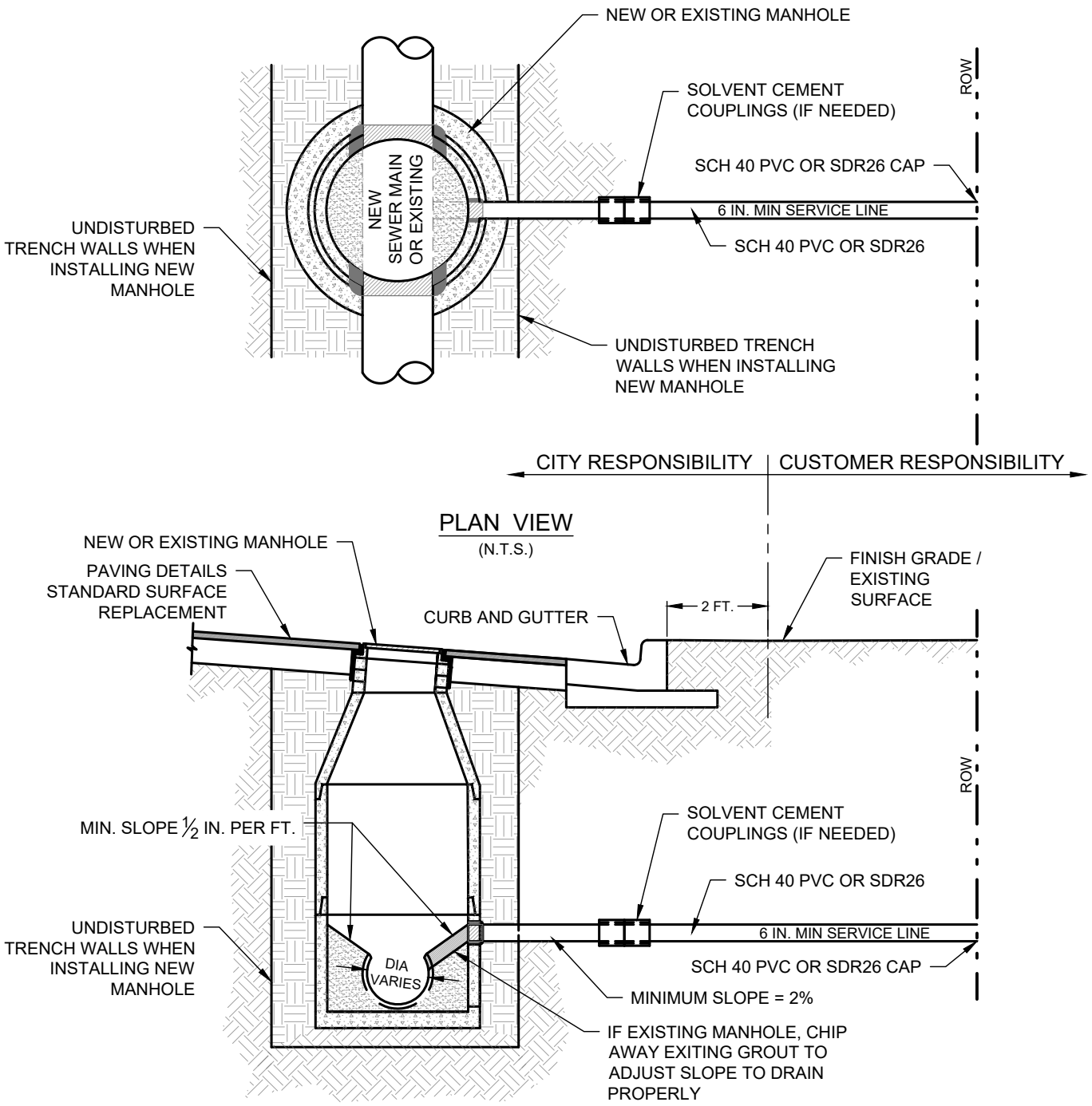
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTE 1; ADD NOTE 2; RENUMBER NOTES; MODIFY DETAIL NOTES TO MATCH NUMBERED NOTES	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-3



PLAN VIEW
(N.T.S.)

SECTION VIEW
(N.T.S.)

NOTES:

1. 6 IN. SERVICE TO MANHOLE REQUIRES NO CLEAN-OUT.
2. 6 IN. SERVICE SHALL CONNECT TO THE SEWER MAIN VIA A MANHOLE.
3. ADDITIONAL APPURTENANCES MAY BE REQUIRED PER SEWER PERMIT REQUIREMENTS.
4. ALL SEWER PENETRATIONS FOR EXISTING MANHOLES SHALL BE CORED.

SANITARY SEWER SERVICE - COMMERCIAL

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-4

MANHOLE NOTES

1. PIPES LAID THROUGH MANHOLES ARE TO BE CAREFULLY REMOVED TO ALLOW ACCESS TO SEWER MAIN AFTER INVERT IS CONCRETED.

2. INVERT TO BE SHAPED AND FINISHED SMOOTH BY HAND FLOAT AND TROWEL.

3. STANDARD 4 FT. DIAMETER MANHOLES TO BE CONSTRUCTED ON PIPE 10 IN. AND SMALLER IN DIAMETER AND LESS THAN 10 FT. DEEP.

4. STANDARD 5 FT. DIAMETER MANHOLES TO BE CONSTRUCTED ON PIPE 12 TO 15 IN. DIAMETER AND LESS THAN 20 FT. DEEP. EXCEPT FOR THE CONE, MANHOLE RISER DIAMETER REDUCTIONS ARE NOT PERMITTED.

5. STANDARD 6 FT. DIAMETER MANHOLES TO BE CONSTRUCTED ON PIPE GREATER THAN 15 IN. IN DIAMETER. EXCEPT FOR THE CONE, MANHOLE RISER DIAMETER REDUCTIONS ARE NOT PERMITTED.

6. IN STREET SECTION ONLY, 2 IN. GRADE RINGS AND MORTAR SHALL BE APPLIED TO A MANHOLE CONE TO ALLOW FOR FUTURE ADJUSTMENT. TOTAL DEPTH OF GRADE RINGS AND MORTAR SHALL BE BETWEEN 4 IN. MINIMUM AND 12 IN. MAXIMUM. GRADE RINGS AND FRAME/RING AND COVER SHALL BE SECURED IN A SET BED OF MORTAR. APPLY GROUT BETWEEN AND ON THE INSIDE OF GRADE RINGS AND WIPE SMOOTH.

7. A MAXIMUM OF 2 IN. OF MORTAR MAY BE USED TO BRING FRAME/RING AND COVER TO GRADE.

8. MANHOLE COVERS SHALL HAVE THE WORDS "SANITARY SEWER", "CITY OF WACO", AND THE CURRENT "FLYING W" LOGO RAISED ON THE OUTWARD FACE.

9. STANDARD DETAIL S-13 SHALL BE USED WHERE MANHOLES ARE INSTALLED IN UNDEVELOPED AREAS, SUCH AS FIELDS.

10. PRECAST CONCRETE MANHOLES, WITH APPROVED COATING, ARE PERMITTED. THE MANHOLES SHALL CONFORM TO CITY OF WACO MANHOLE DETAILS AND TO ASTM C-478. CONTRACTOR SHALL SUBMIT DESIGN INFORMATION ON PRECAST MANHOLES STAMPED BY A PROFESSIONAL ENGINEER FOR CITY ENGINEER'S APPROVAL. IF PRECAST MANHOLES ARE USED, THEY SHALL BE PLACED ON A BEDDING OF 6 IN. MINIMUM DEPTH OF AGGREGATE MEETING ASTM NO. 57 SPECIFICATIONS. SEE NOTE 17.

11. MEASUREMENT DEPTH FOR PAYMENT OF MANHOLES SHALL BE FROM THE FLOWLINE TO THE TOP SURFACE OF THE MANHOLE COVER.

12. VACUUM AIR TEST MANHOLES AFTER GRADE RINGS AND COVER RINGS ARE IN PLACE IN ACCORDANCE TO TESTING PROCEDURES IN SECTION 4.8 SANITARY SEWER A. CONSTRUCTION METHODS 3. SANITARY SEWER MANHOLE C. TESTING OF MANHOLES AS REPLACED BY SPECIAL PROVISION.

13. SURFACE REPLACEMENT SHALL BE INCLUDED IN THE PRICE FOR THE MANHOLE.

14. MANHOLE GRADE RINGS AND THE INTERIOR SURFACES OF THE MANHOLE SHALL BE PRIMED WITH TNEMEC SERIES 218 FOLLOWED BY A COAT OF TNEMEC SERIES 436 AT 60.0 DRY MILS. PROTECTIVE COATING SHALL BE ADDED TO THE MANHOLE EXTERIOR FOR ALL EXPOSED APPLICATIONS. EXTEND EXTERIOR COATING 18-INCHES BELOW GROUND. PROTECTIVE COATING SHALL BE: TNEMEC SERIES 218, PRIMED, THEN TNEMEC SERIES 436 (60 MIL MINIMUM). SEE S-11 AND/OR S-12 FOR AN ALTERNATE REQUIRING A 5-YEAR MAINTENANCE BOND WARRANTY FOR PARTS AND LABOR FOR MANHOLE INSTALLATIONS.

15. CAST IN PLACE MANHOLE WILL REQUIRE A SEALED DESIGN SUBMITTED BY A LICENSED PROFESSIONAL ENGINEER, AND APPROVED BY CITY ENGINEER. CAST IN PLACE BASE MUST BE MINIMUM 8 IN. THICK WITH #5 BARS @ 12 IN. OCEW AND SHALL EXTEND 1 FT. BEYOND MANHOLE.

16. MAXIMUM MANHOLE SPACING IS 450 LF.

17. AGGREGATE MEETING ASTM NO. 57 SPECIFICATIONS INCLUDING GRADATION AS SHOWN IN THE TABLE BELOW SHALL BE COMPACTED BY MECHANICAL/VIBRATORY COMPACTION METHODS.

ASTM NO. 57 GRADATION SPECIFICATIONS	
SIEVE SIZE	PERCENTAGE PASSING
1 1/2 IN.	100
1 IN.	95-100
1/2 IN.	25-60
#4	0-10
#8	0-5

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 6, 7, 12, AND 14	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-5

MANHOLE CONFIGURATION

1. ALL MANHOLES CONSTRUCTED IN AREAS SUBJECT TO TRAFFIC SHALL BE CONSTRUCTED IN A MANNER THAT THE SURFACE OF THE MANHOLE COVER SHALL BE WITHIN +/- 1/8 IN. OF THE ADJACENT SURFACE.

2. MANHOLES CONSTRUCTED IN NON STREET AREAS SHALL BE CONFIGURED IN ONE OF THE FOLLOWING 3 WAYS:

   - THE LIDS FOR MANHOLES LOCATED BEHIND CURB SHALL BE CONSTRUCTED 2 IN. ABOVE ADJACENT GRADE AND RECEIVE A REINFORCED 5 FT. X 5 FT. X 8 IN. CONCRETE PAD.

   - MANHOLES CONSTRUCTED IN RURAL AREAS SHALL COMPLY WITH STANDARD DETAIL "MANHOLE IN UNDEVELOPED AREAS."

   - THE LIDS FOR MANHOLES IN AREAS SUBJECT TO FLOODING SHALL BE 24 IN. ABOVE THE 100 YEAR FLOOD ELEVATION. IN AREAS WHERE THIS IS NOT POSSIBLE, THE LID SHALL BE BOLTED DOWN, AND WATER TIGHT.

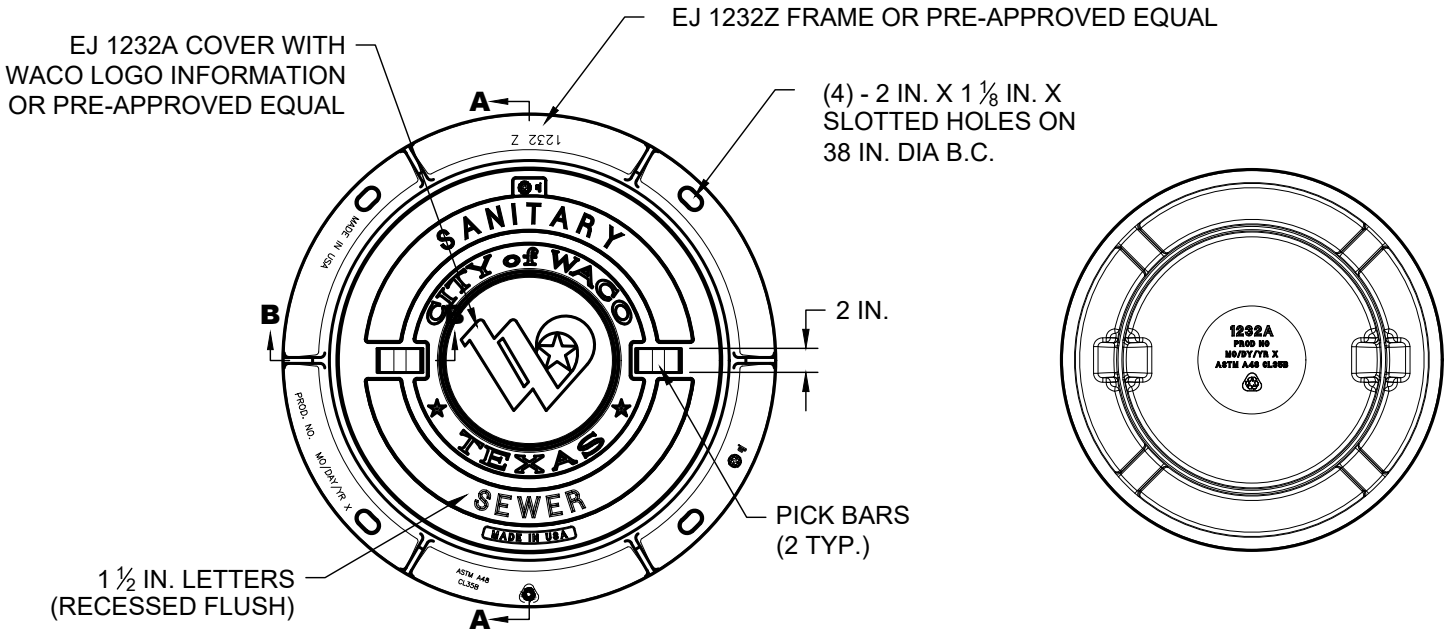
3. COMPOSITE LIDS SHALL BE USED ON MANHOLES LOCATED ON SEWER INTERCEPTORS AND TRUNK LINES DIRECTLY TIED TO SEWER INTERCEPTORS.

4. THE PROJECT DRAWINGS SHALL CLEARLY INDICATE THE CONFIGURATION OF EACH MANHOLE SHOWN.

5. MANHOLES IN UNDEVELOPED AREAS WILL REQUIRE LOCATOR SIGNS ON INDICATOR POSTS, SEE STANDARD DETAIL G-12 AND G-13

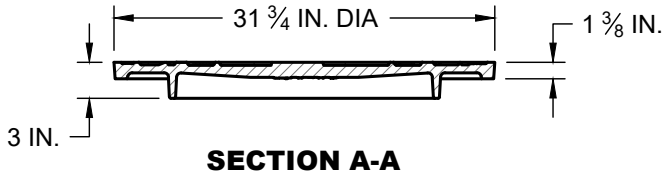
6. MANHOLES LOCATED WITHIN 100 YR FLOODPLAIN OR AREAS SUBJECT TO FLOODING SHALL REQUIRE A WATERTIGHT MANHOLE RING AND COVER.

7. THE DESIGN ENGINEER SHALL VERIFY THE SPECIFIC CONDITIONS TO EACH MANHOLE SITE AND ENSURE THE APPROPRIATE CONFIGURATION IS SHOWN. ANY QUESTIONS SHALL BE SUBMITTED TO, AND DECIDED UPON, BY WACO CITY ENGINEER.

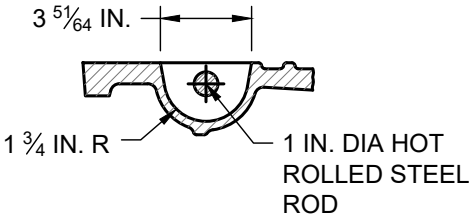


STANDARD COVER AND FRAME

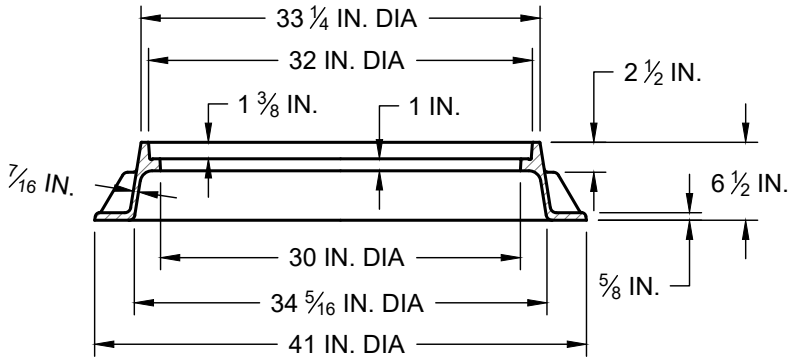
COVER BACK



SECTION A-A
COVER



SECTION B-B
PICKBAR DETAIL



SECTION A-A
FRAME

SANITARY SEWER MANHOLE COVER AND FRAME

(NO SCALE)

CITY OF WACO

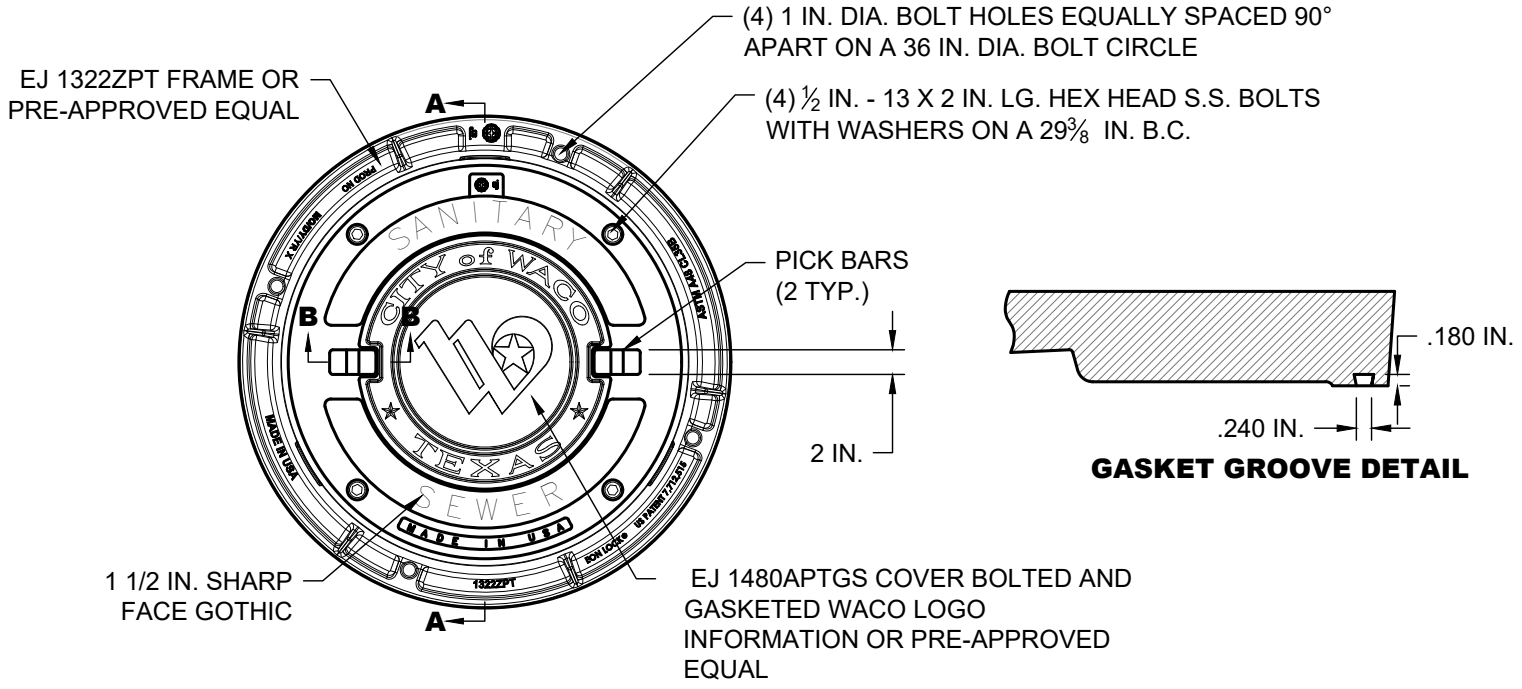
ENGINEERING DIVISION

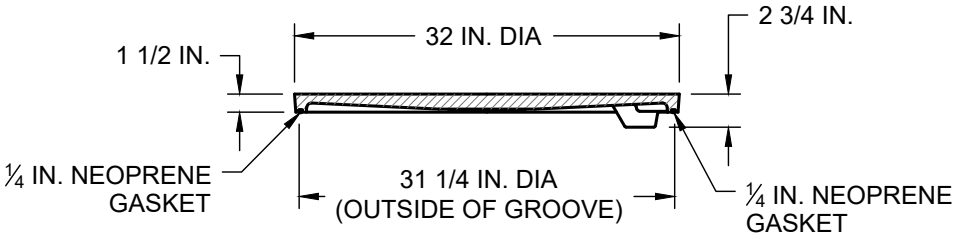
REVISIONS

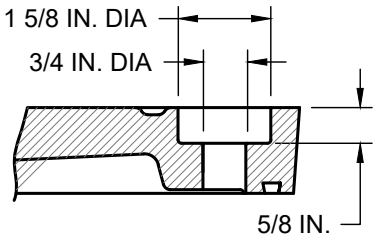
NO.	COMMENTS	BY	DATE
2	REVISED FOR CURRENT STANDARD	MZ	11/15/2024
1	UPDATE CITY LOGO	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

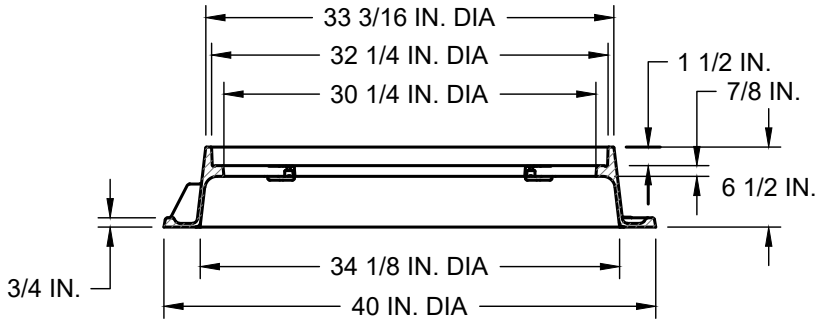
DATE 01/01/2024

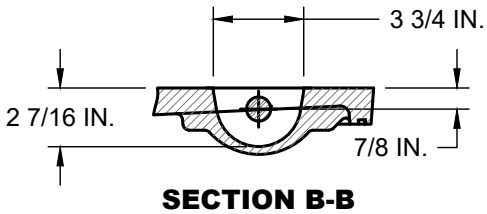
S-7











WATERTIGHT/AIRTIGHT SANITARY SEWER MANHOLE COVER AND FRAME

(NO SCALE)

CITY OF WACO

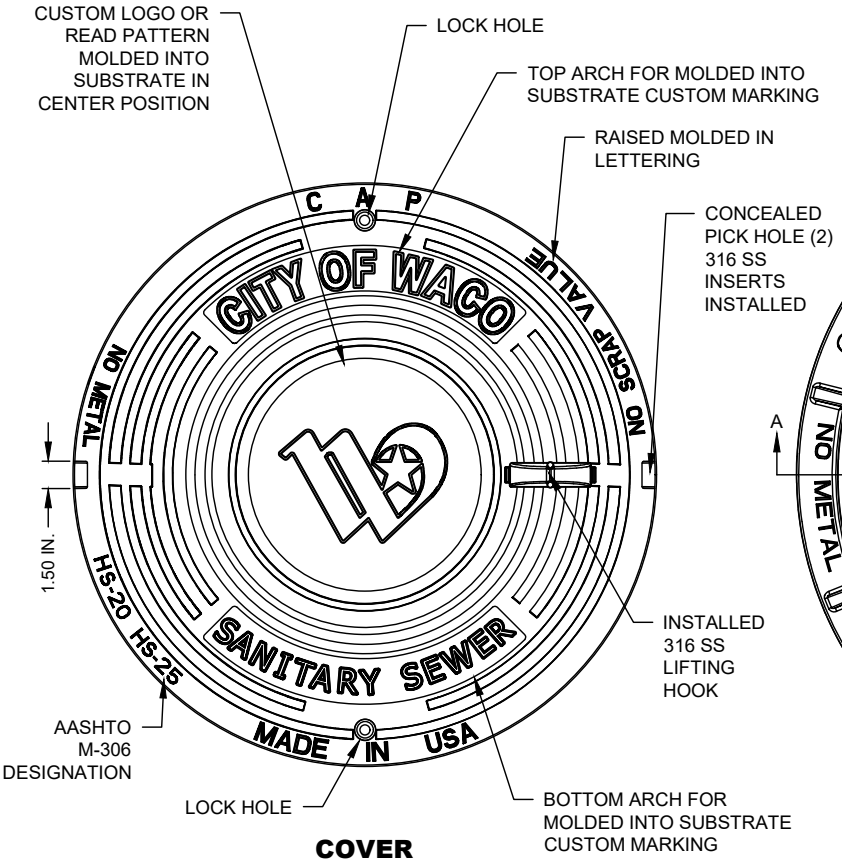
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	REVISED FOR CURRENT STANDARD	MZ	11/15/2024
1	UPDATE CITY LOGO	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-8



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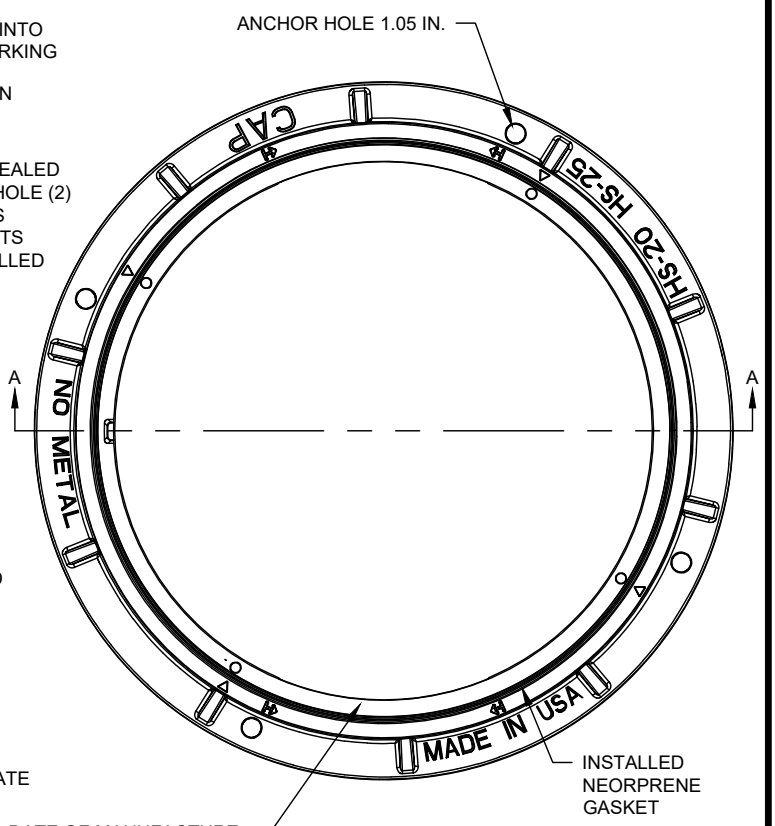

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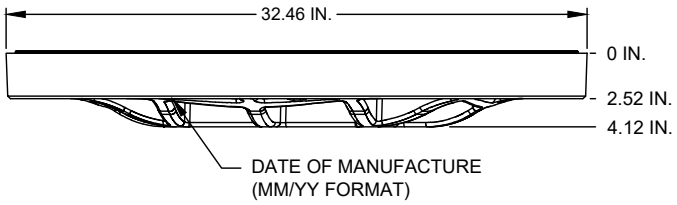
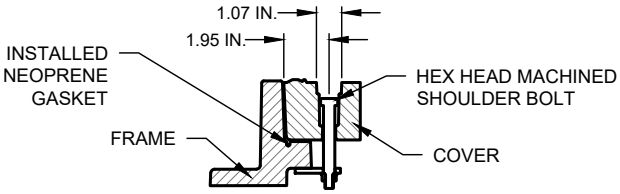
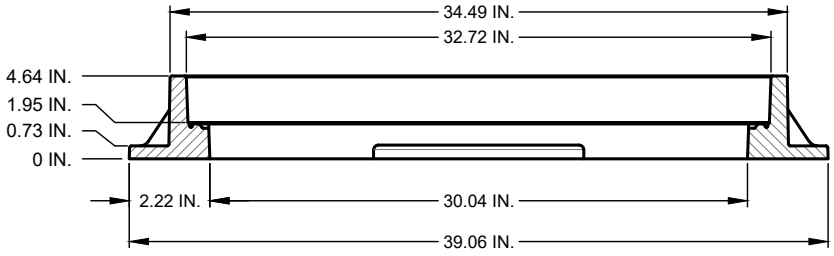
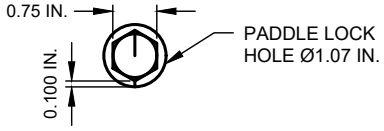


COVER SIDE





SECTION A-A



NOTES:

1. COMPOSITE ACCESS PRODUCTS LP PRODUCT CODE: A-1BK30H2-W01WLOSS-H1.
2. ALL HARDWARE IS 316 STAINLESS STEEL.
3. DETECTABLE BY STANDARD METAL DETECTORS.
4. COMPRESSION MOLDED THERMOSET COMPOSITE - NO METAL REINFORCEMENT PERMITTED.
5. PASSED AASHTO M306 H20/H25 PROOF LOAD.

SANITARY SEWER MANHOLE COMPOSITE COVER AND FRAME

(NO SCALE)

CITY OF WACO

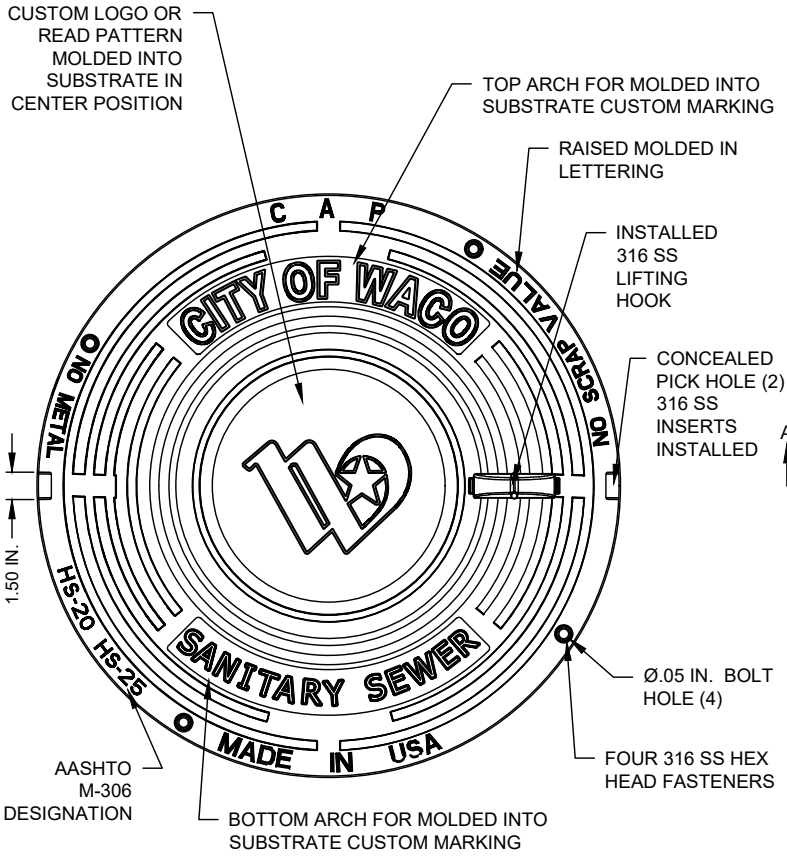
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-9



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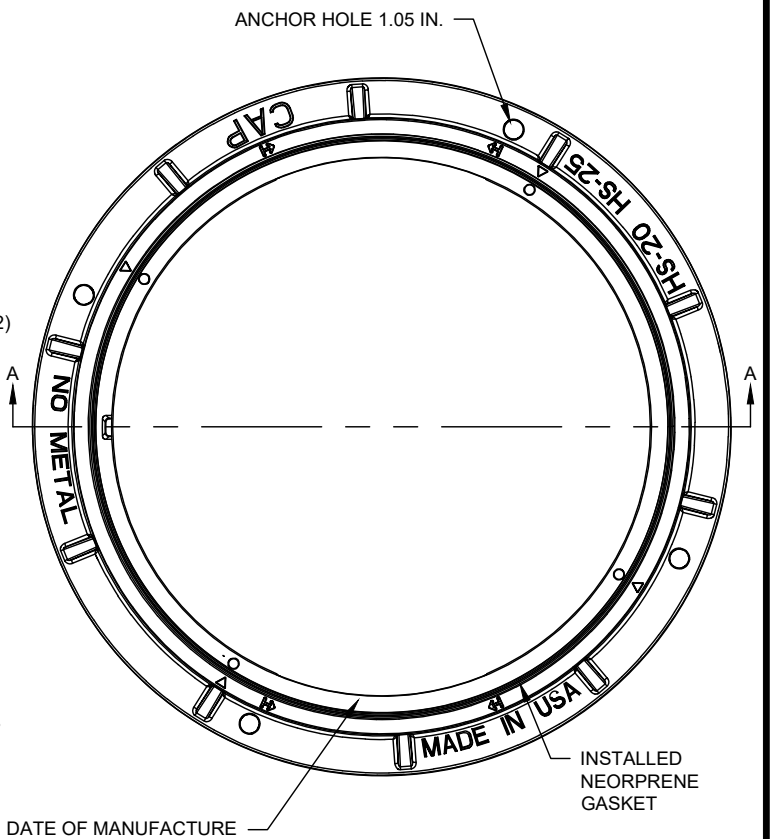

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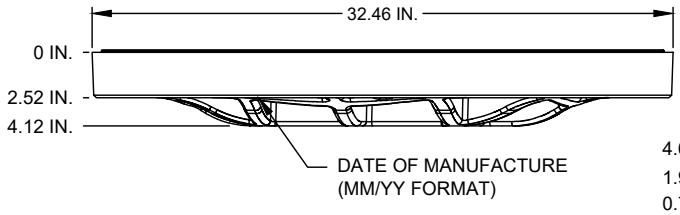
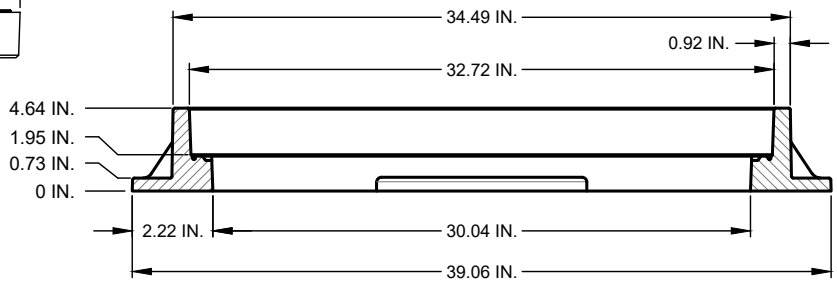
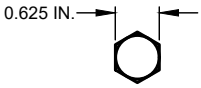


COVER SIDE



SECTION A-A



FASTENERS ARE 1/2-13 UNC, 3.5 IN. LONG

NOTES:
1. COMPOSITE ACCESS PRODUCTS LP PRODUCT CODE: A-1BK30X4-W01WLOSS-H1
2. ALL HARDWARE IS 316 STAINLESS STEEL.
3. DETECTABLE BY STANDARD METAL DETECTORS.
4. COMPRESSION MOLDED THERMOSET COMPOSITE - NO METAL REINFORCEMENT PERMITTED.
5. PASSED AASHTO M306 H20/H25 PROOF LOAD.
6. WATERTIGHT (0.0 GPM)

SANITARY SEWER MANHOLE COMPOSITE BOLT COVER AND FRAME

(NO SCALE)

CITY OF WACO

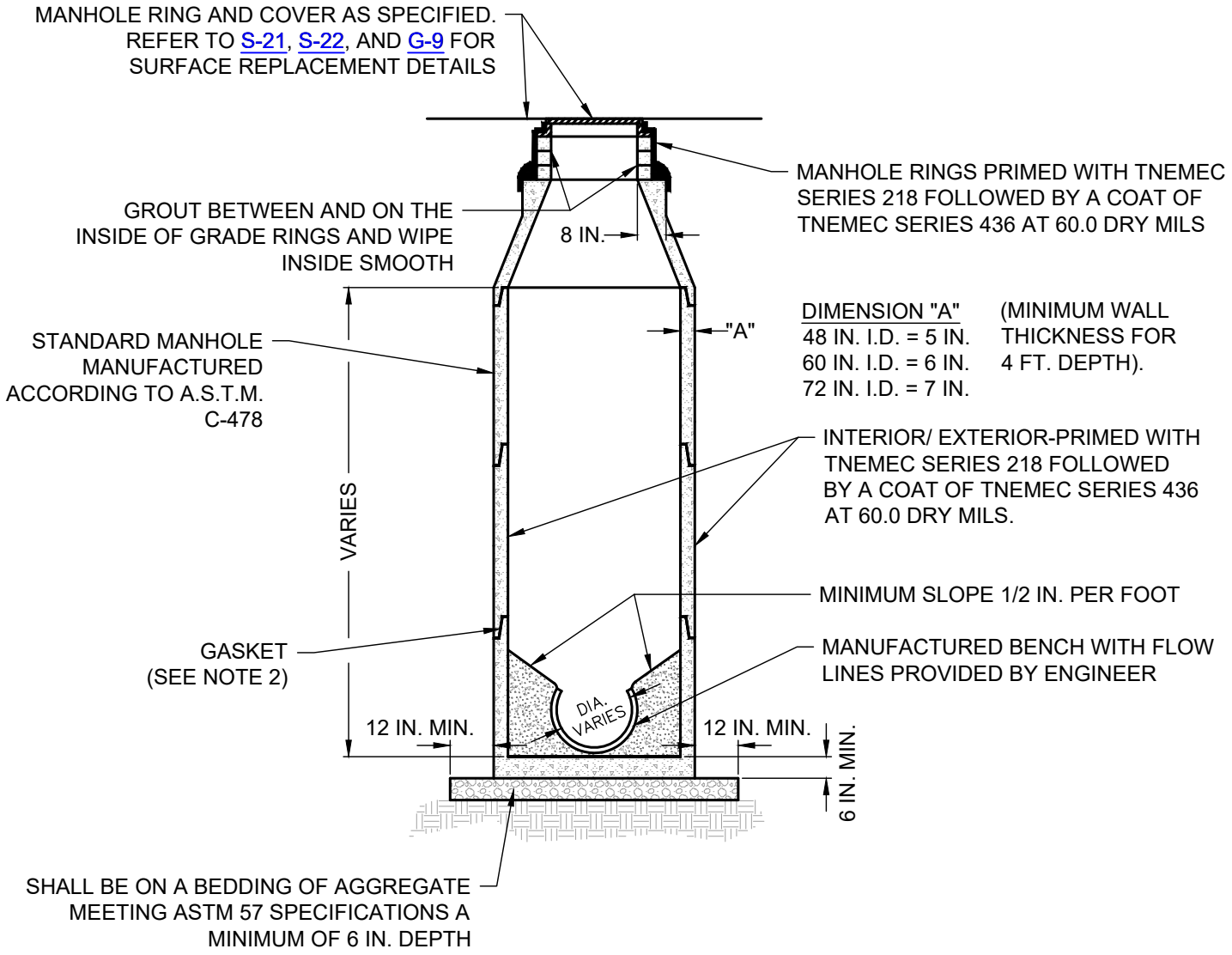
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-10



SECTION VIEW

(N.T.S.)

NOTES:

1. PLEASE REFER TO S-5 AND S-6 FOR ADDITIONAL REQUIREMENTS.
2. GASKET MEETING MANUFACTURER'S SPECIFICATIONS SHALL BE PLACED AT EACH JOINT PRIOR TO PLACING NEXT SECTION.
3. ALL SEWER PENETRATIONS FOR NEW MANHOLES SHALL BE MANUFACTURED. ALL SEWER PENETRATIONS INTO EXISTING MANHOLES SHALL BE CORED.
4. ALL MANHOLE STRUCTURES SHALL BE HS-20 RATED.
5. MAY ELIMINATE THE USE OF INTERIOR AND EXTERIOR TNEMEC SERIES 218 FOLLOWED BY A COAT OF TNEMEC SERIES 436 AT 60 DRY MILS BY USE OF PRECAST CONCRETE ADMIXTURE: CONMICSHIELD® OR APPROVED EQUAL. CONTRACTOR SHALL PROVIDE A 5-YEAR MAINTENANCE BOND WARRANTY FOR PARTS AND LABOR FOR MANHOLE INSTALLATIONS IF THIS OPTION IS USED.
6. IF CONMICSHIELD® IS USED THEN THE FOLLOWING ARE ALSO REQUIRED:
   - COLORANT OF CONTINT® SHALL BE ADDED AT A RATE OF 5 LBS PER CY OF CONCRETE YIELDING A TERRACOTTA COLOR.
   - COVERING OF JOINT SECTIONS AND FILLING OF INTERIOR LIFT HOLES SHALL REQUIRE CONMICSHIELD® JOINT SET XX. IN HOT, DRY, OR WINDY CONDITIONS FOLLOW THIS APPLICATION WITH CURING COMPOUND OF CONMICSHIELD® IDENTIFIER PER CONMICSHIELD®JOINT SET XX TECHNICAL DATA SHEET.

PRECAST REINFORCED CONCRETE MANHOLE

(NO SCALE)

CITY OF WACO

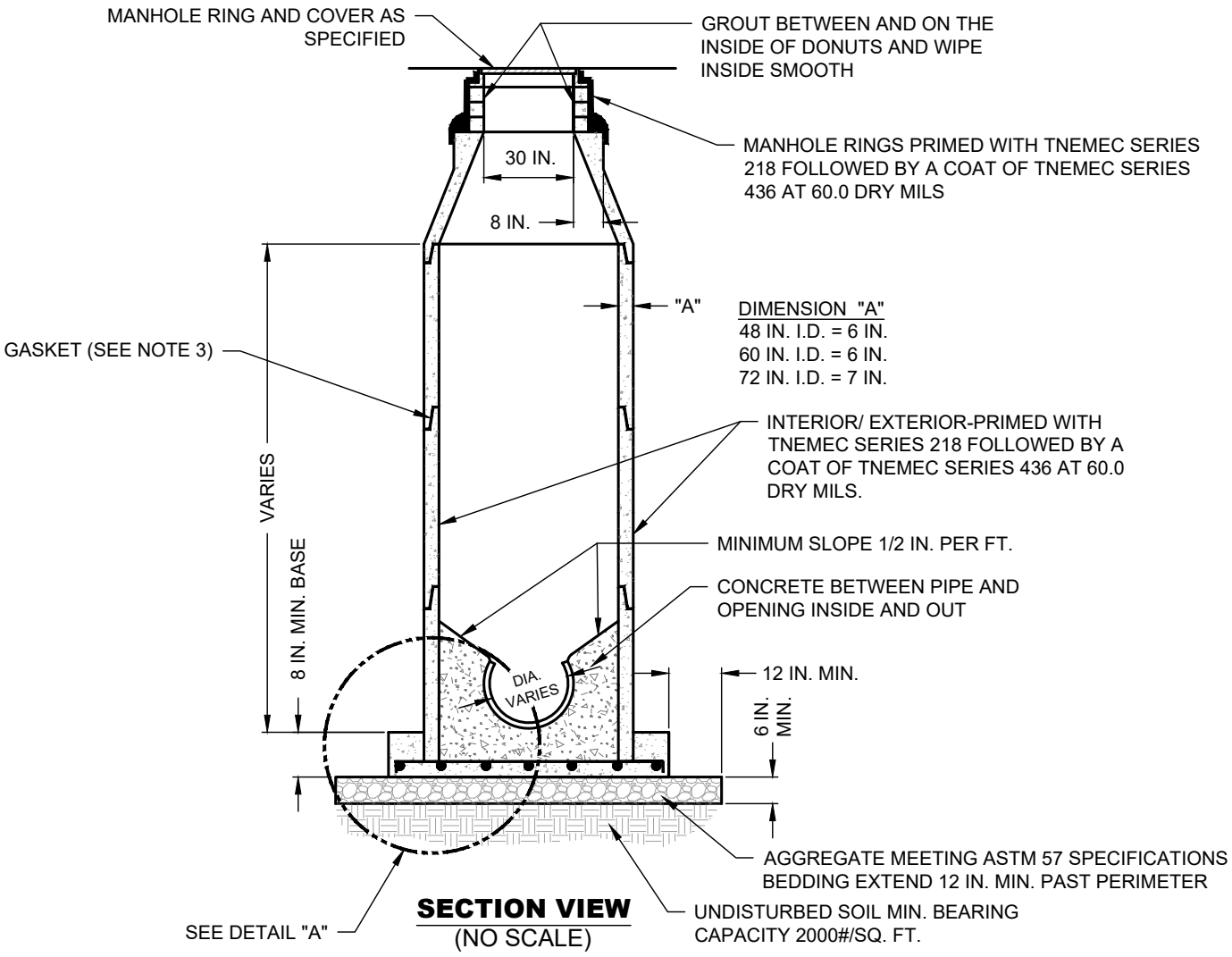
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	ADD NOTE 6	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

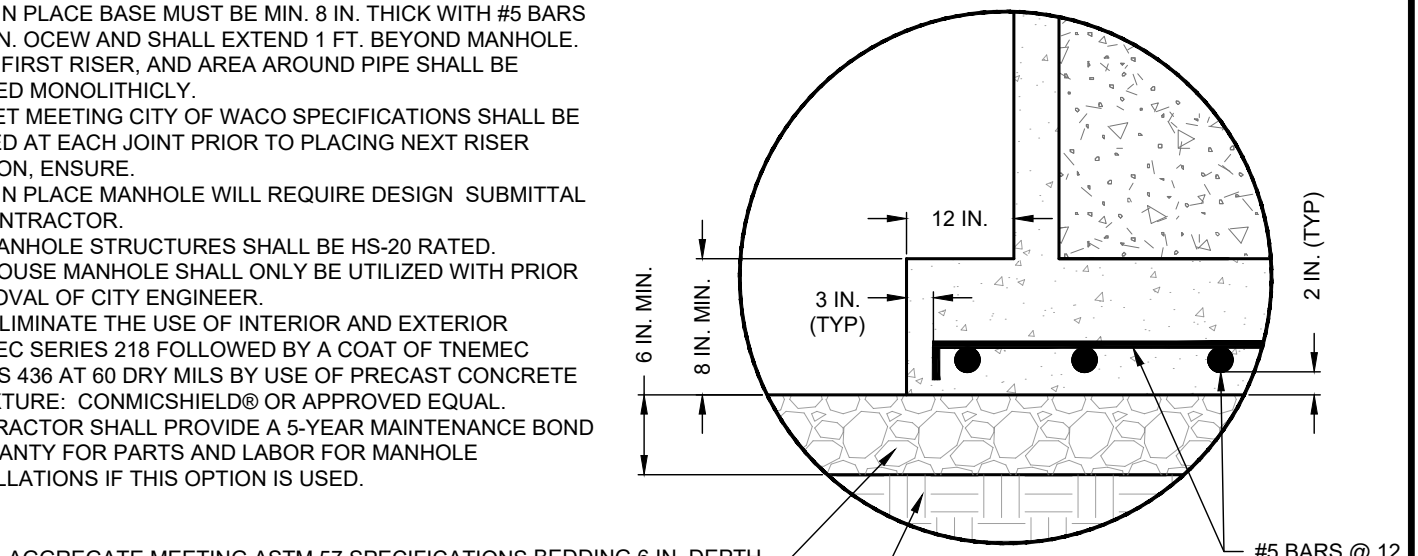
S-11



SECTION VIEW
(NO SCALE)

NOTES:

1. CAST IN PLACE BASE MUST BE MIN. 8 IN. THICK WITH #5 BARS @ 12 IN. OCEW AND SHALL EXTEND 1 FT. BEYOND MANHOLE.
2. BASE, FIRST RISER, AND AREA AROUND PIPE SHALL BE POURED MONOLITHICLY.
3. GASKET MEETING CITY OF WACO SPECIFICATIONS SHALL BE PLACED AT EACH JOINT PRIOR TO PLACING NEXT RISER SECTION, ENSURE.
4. CAST IN PLACE MANHOLE WILL REQUIRE DESIGN SUBMITTAL BY CONTRACTOR.
5. ALL MANHOLE STRUCTURES SHALL BE HS-20 RATED.
6. DOGHOUSE MANHOLE SHALL ONLY BE UTILIZED WITH PRIOR APPROVAL OF CITY ENGINEER.
7. MAY ELIMINATE THE USE OF INTERIOR AND EXTERIOR TNEMEC SERIES 218 FOLLOWED BY A COAT OF TNEMEC SERIES 436 AT 60 DRY MILS BY USE OF PRECAST CONCRETE ADMIXTURE: CONMICSHIELD® OR APPROVED EQUAL. CONTRACTOR SHALL PROVIDE A 5-YEAR MAINTENANCE BOND WARRANTY FOR PARTS AND LABOR FOR MANHOLE INSTALLATIONS IF THIS OPTION IS USED.



DETAIL "A"
(NO SCALE)

DOGHOUSE MANHOLE
(NO SCALE)

CITY OF WACO

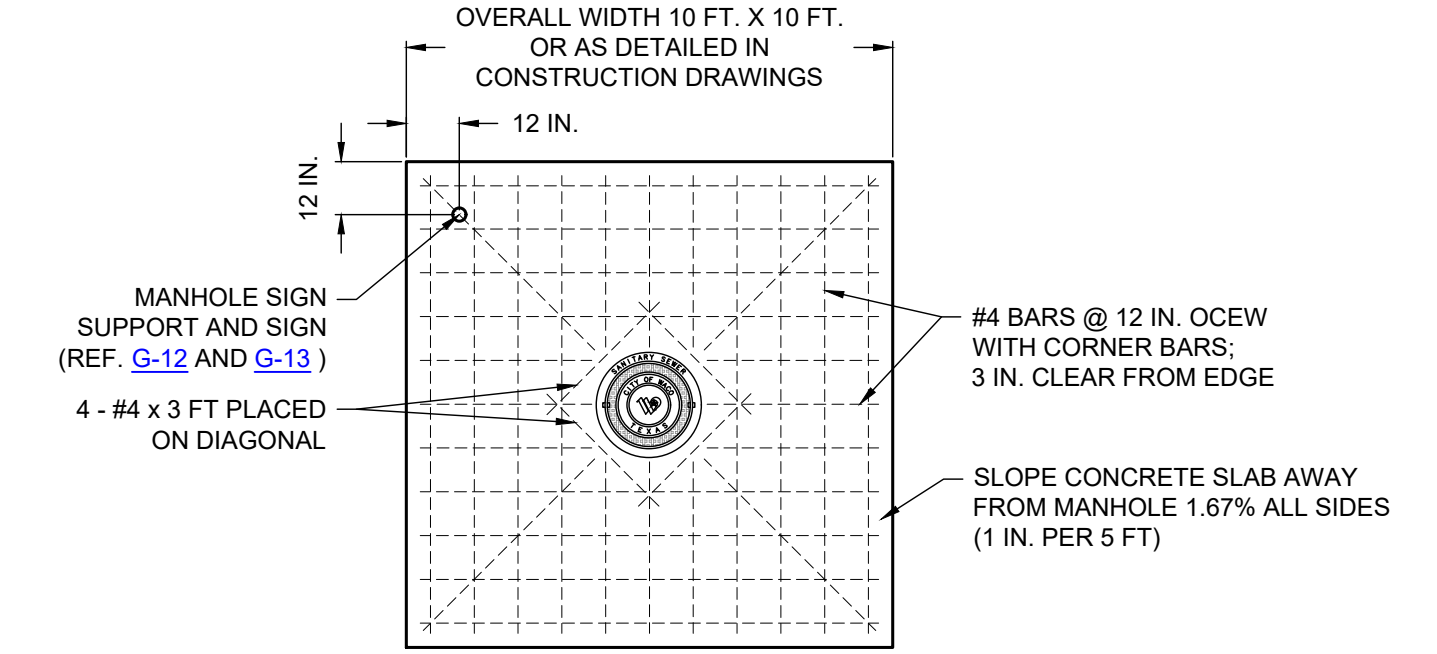
ENGINEERING DIVISION

REVISIONS

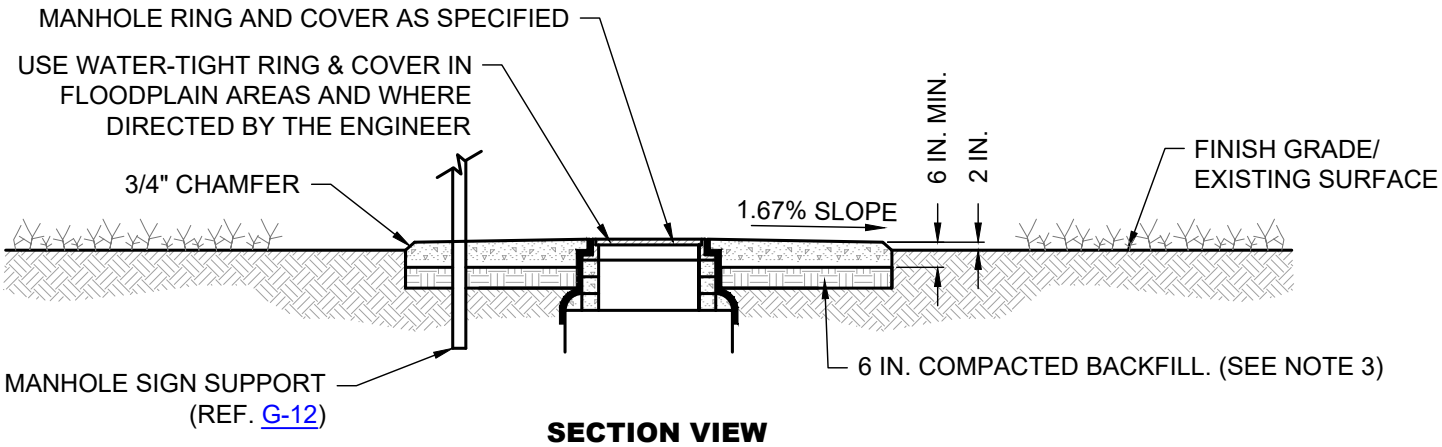
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-12



PLAN VIEW



SECTION VIEW

NOTES:

1. THE CITY OF WACO REQUIRES MANHOLE SIGNS MOUNTED ON CONTRACTOR PROVIDED SIGN POSTS FOR UNDEVELOPED AREAS. THE CONTRACTOR WILL COORDINATE WITH WATER UTILITY SERVICES DEPARTMENT FOR SIGNS AND INSTALL THESE SIGNS. SEE STANDARD DETAILS G-12 AND G-13.
2. CONCRETE SLAB SHALL BE 10 FT. X 10 FT. X 6 IN. DEPTH WITH #4 BARS @ 12 IN. OCEW WITH CORNER BARS AND 4 - # 4 BARS BY 3 FT. PLACED ON DIAGONAL AROUND MANHOLE LID. SLOPE SLAB AWAY FROM MANHOLE AT 1.67% ALL SIDES.
3. THE BACKFILL UNDER THE CONCRETE SLAB SHALL BE 6 IN. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION TO SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” COMPACTED IN ACCORDANCE WITH G-1C.
4. CONTRACTOR SHALL PROVIDE MANHOLE VENTING AT THE MAXIMUM SPACING OF 1,500 FEET IN UNDEVELOPED AREAS. SEE STANDARD DETAIL S-16.

MANHOLE IN UNDEVELOPED AREAS

(NO SCALE)

CITY OF WACO

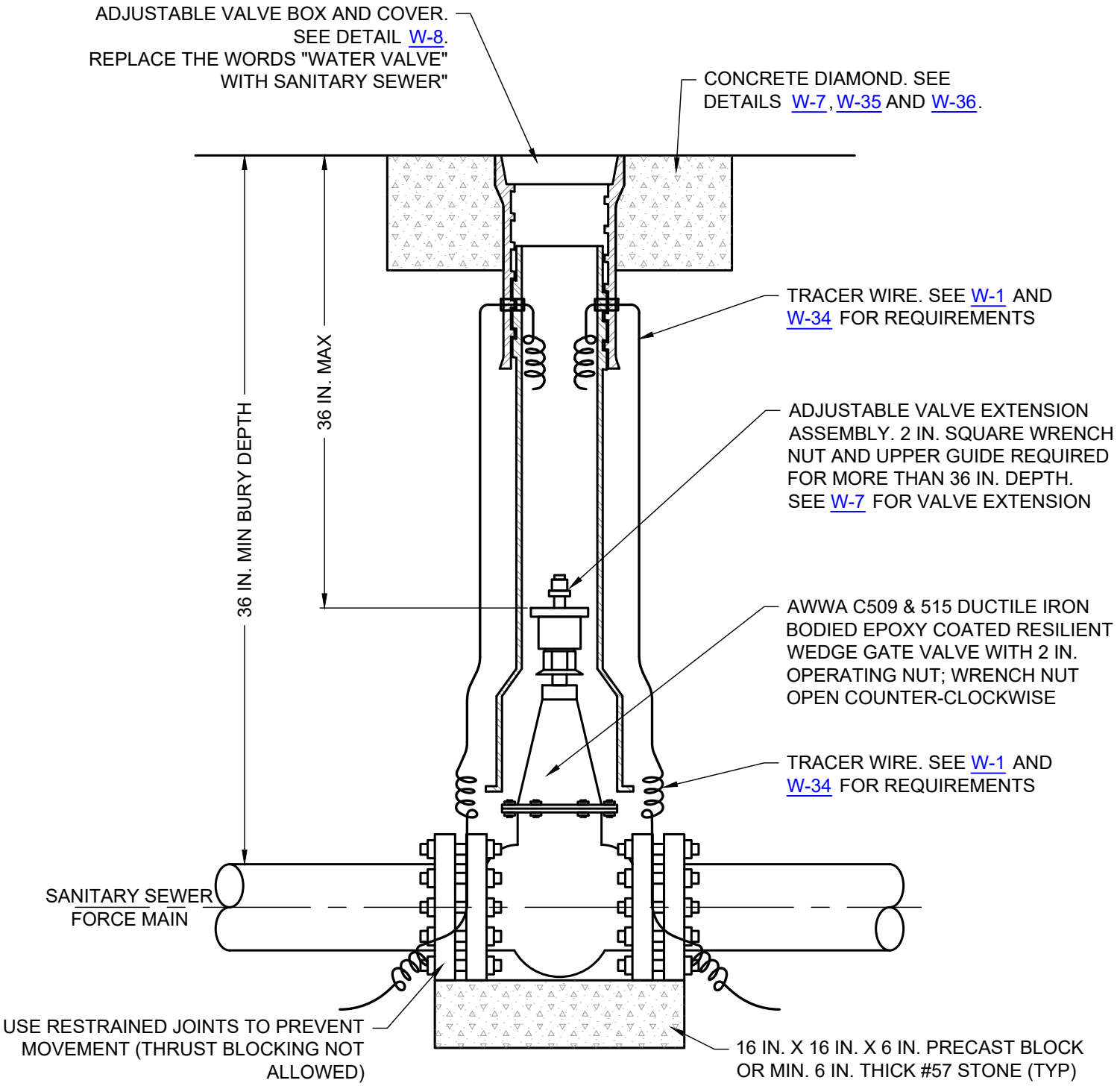
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTE 3	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-13



NOTES:

1. BOLT VALVES TO TEE OR CROSS WHEREVER AND WHEREVER APPLICABLE
2. GATE VALVE WEDGE SHALL BE COMPLETELY ENCAPSULATED WITH EPDM RUBBER.
3. ALL OUTSIDE HEX NUTS, BOLTS AND HARDWARES (EXCEPT MECHANICAL BOLTS SUCH AS "T" BOLTS) SHALL BE MINIMUM 316 STAINLESS STEEL GRADE

SANITARY SEWER FORCE MAIN VALVE AND VALVE BOX

(NO SCALE)

CITY OF WACO

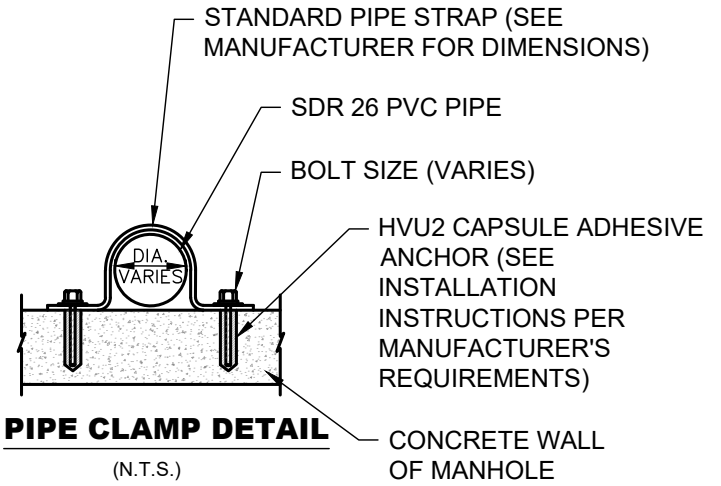
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

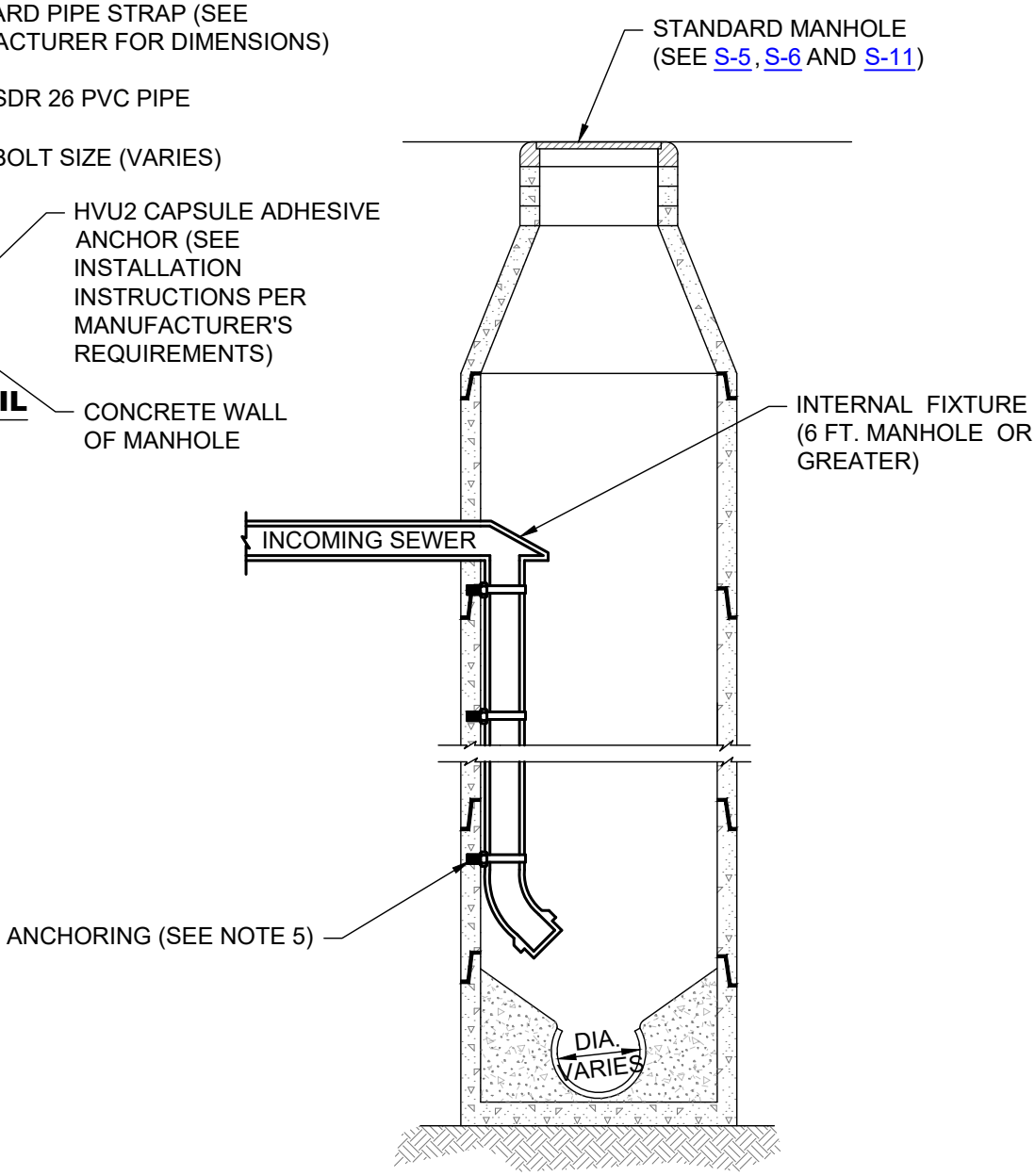
DATE 01/01/2024

S-14



PIPE CLAMP DETAIL

(N.T.S.)



NOTES:

1. USE OF INTERNAL DROP SHALL ONLY BE PERMITTED FOR USE BY CITY ENGINEER.
2. OUTFLOW OF DROP FIXTURE SHALL BE 24 IN. MAXIMUM SPACING ABOVE FLOWLINE OF MANHOLE.
3. IF OUTFLOW PIPE IS LARGER THAN 24 IN., INSTALL OUTFLOW OF DROP FIXTURE 6 IN. ABOVE CROWN OF OUTFLOW MAIN.
4. APPLIES TO CITY MAINS AND LATERAL SERVICES.
5. CONTRACTOR SHALL SUBMIT ANCHORING FOR PRE-APPROVAL AND SHALL BE HILTI H.A.S. ROD AND HVU2 ADHESIVE CAPSULE OR PRE-APPROVED EQUAL. MAXIMUM ANCHOR SPACING SHALL BE 1/2 MANUFACTURER'S RECOMMENDED ANCHOR LOADING BASED ON FULLY LOADED DROP FIXTURE OR MAXIMUM SPACING OF 4 FT., WHICHEVER IS LESS. MINIMUM OF 3 CLAMPS SHALL BE PLACED.

MANHOLE INTERNAL DROP FIXTURE

(NO SCALE)

CITY OF WACO

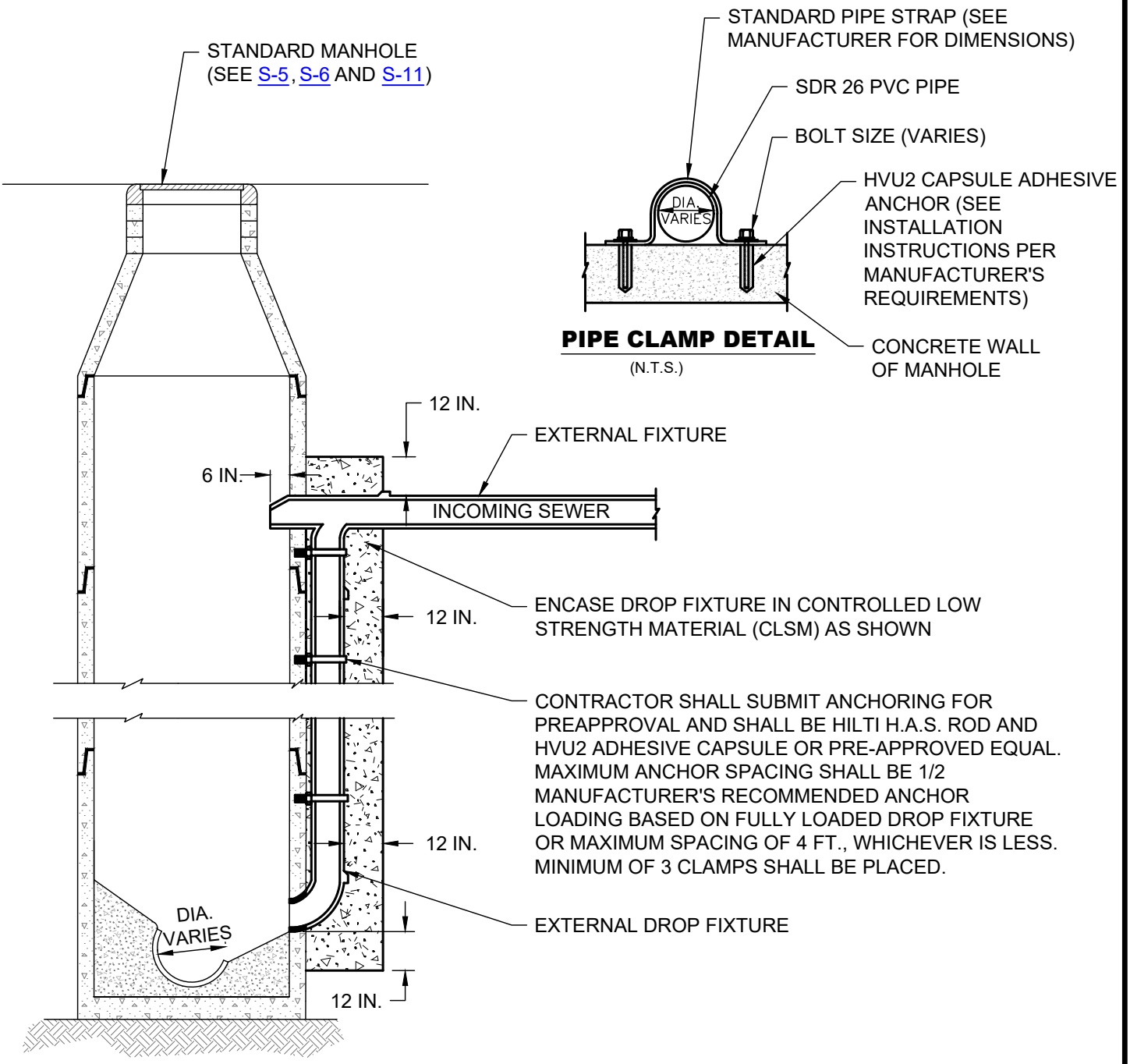
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-15



NOTES:

1. OUTFLOW OF DROP FIXTURE SHALL BE 24 IN. MAXIMUM SPACING ABOVE FLOWLINE OF MANHOLE.
2. IF OUTFLOW PIPE IS LARGER THAN 24 IN., INSTALL OUTFLOW OF DROP FIXTURE AT TOP OF OUTFLOW MAIN.
3. CONTRACTOR SHALL SUBMIT ANCHORING FOR PREAPPROVAL AND SHALL BE HILTI H.A.S. ROD AND HVU2 ADHESIVE CAPSUL OR PRE-APPROVED EQUAL.
4. APPLIES TO CITY MAINS AND LATERAL SERVICES.

MANHOLE EXTERNAL DROP FIXTURE

(NO SCALE)

CITY OF WACO

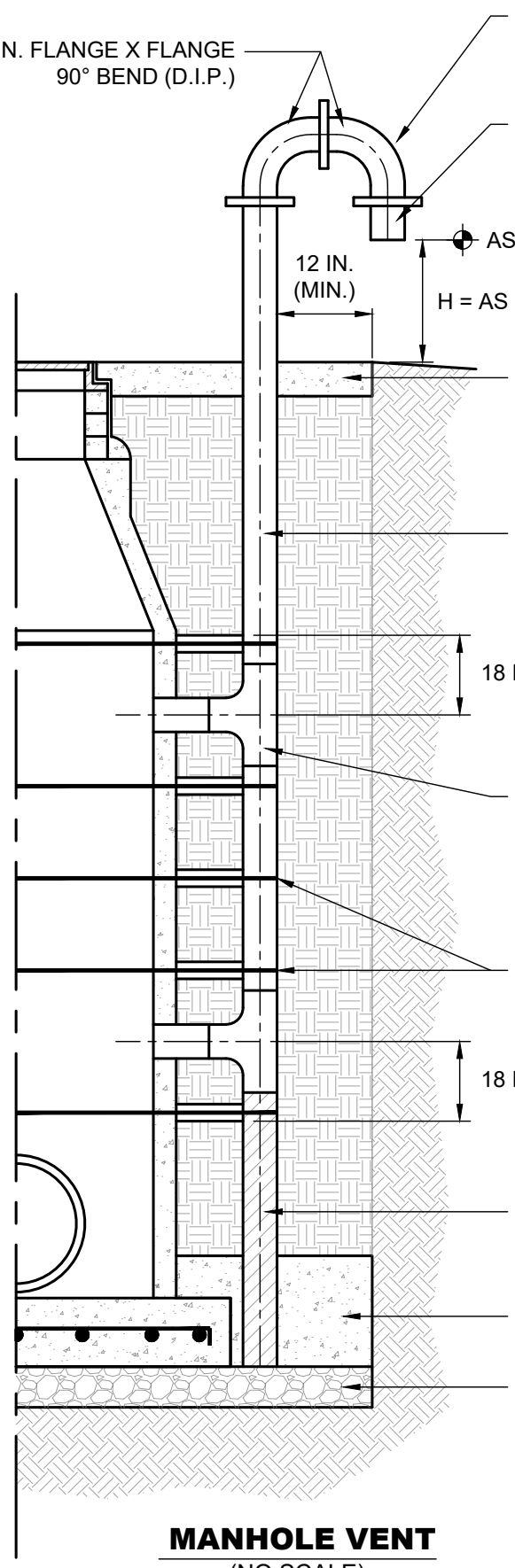
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-16



MANHOLE VENT

(NO SCALE)

NOTE:
ALL D.I.P. AND FITTINGS SHALL BE WRAPPED WITH AN 8 MILS THICK POLY WRAP ENCASEMENT TUBE

CITY OF WACO

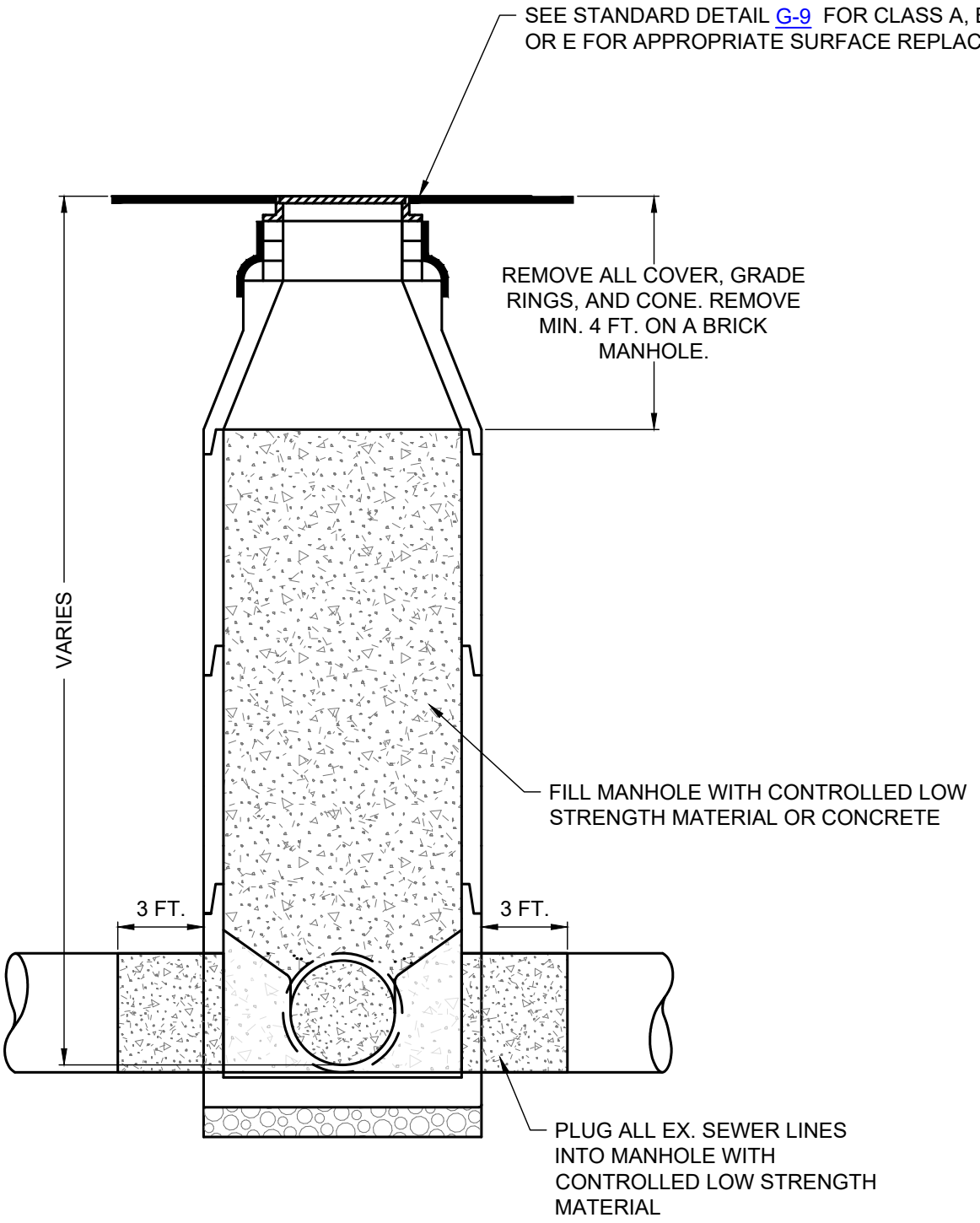
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-17



MANHOLE ABANDONMENT

(NO SCALE)

CITY OF WACO

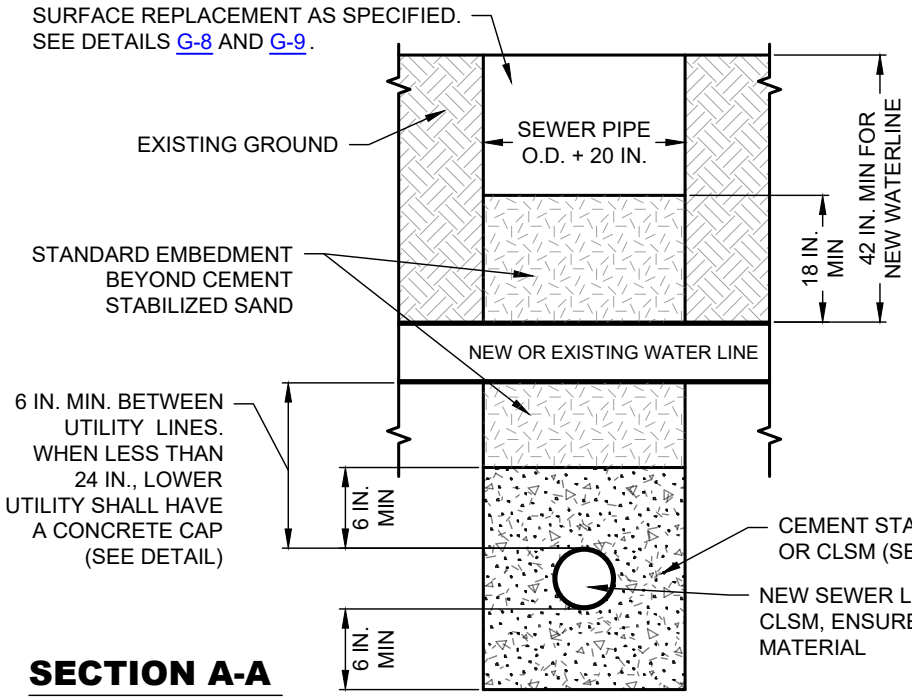
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

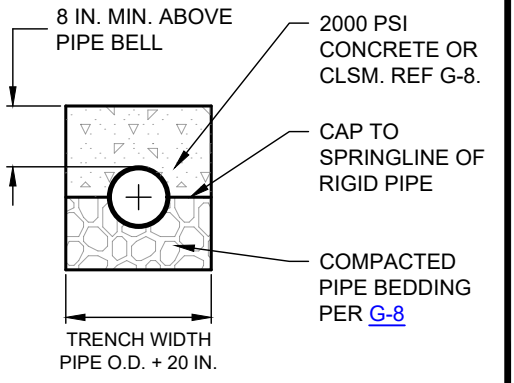
DATE 01/01/2024

S-18

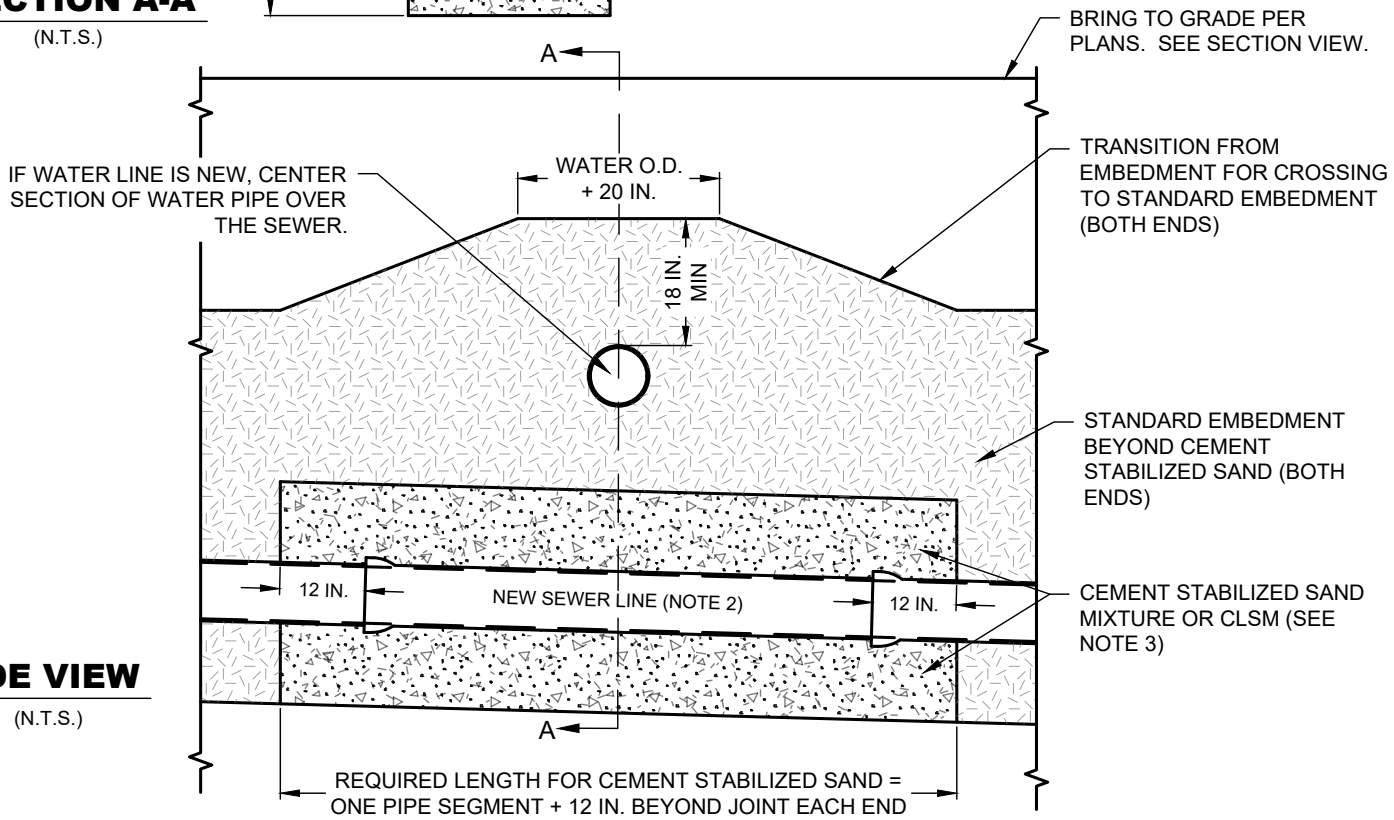


SECTION A-A

(N.T.S.)



CONCRETE CAP DETAIL (N.T.S.)



SIDE VIEW

(N.T.S.)

NOTES:

1. THIS DETAIL NEED NOT TO BE APPLIED FOR CROSSINGS INVOLVING WATER OR SEWER SERVICE CONNECTIONS.
2. CENTER 18 FT. MIN. SECTION OF SEWER PIPE UNDER WATER PIPE. SEWER LINE SHALL BE PVC PRESSURE- RATED AT 150 PSI MIN.
3. CEMENT STABILIZED SAND MIXTURE MUST HAVE MINIMUM 10% CEMENT BASED ON LOOSE DRY WEIGHT VOLUME (AT LEAST 3-94 LBS BAGS OF CEMENT PER C.Y. OF MIXTURE). CITY STANDARD CONTROLLED LOW STRENGTH MATERIAL (CLSM) MAY BE USED AS AN ALTERNATE.

EMBEDMENT FOR NEW SEWER CROSSING UNDER NEW OR EXISTING WATER LINE

(NO SCALE)

CITY OF WACO

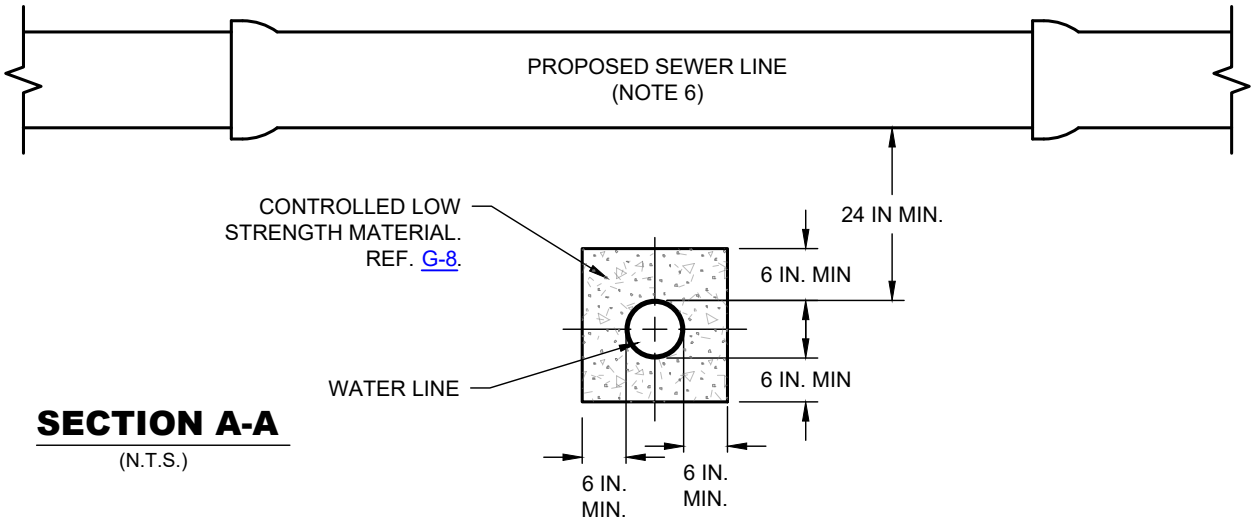
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	ADD NOTE TO NEW SEWER LINE NOTE	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

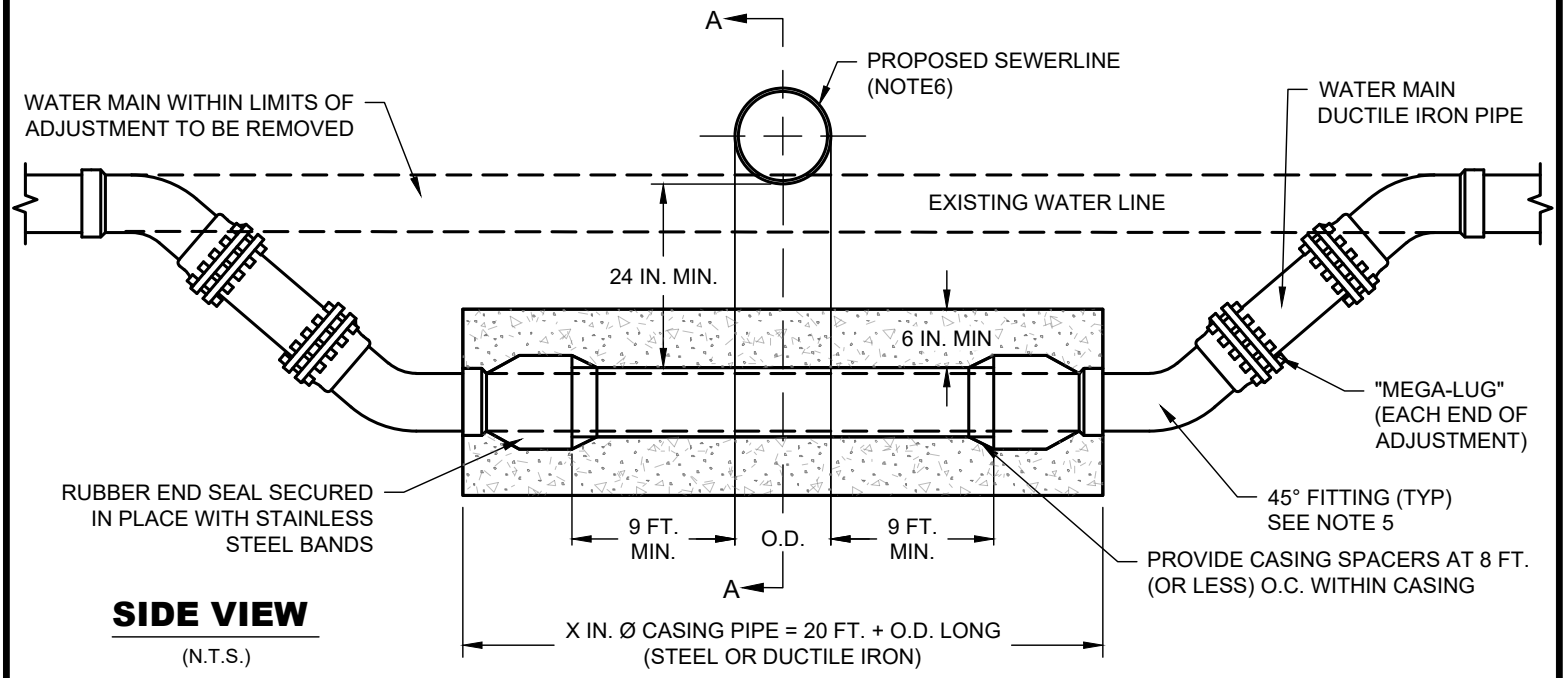
DATE 01/01/2024

S-19



SECTION A-A

(N.T.S.)



SIDE VIEW

(N.T.S.)

NOTES:

1. NEW WATER MAINS SHALL BE LAID TO PROVIDE A MIN. VERTICAL DISTANCE OF 24 IN. BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE.
2. ARRANGE CROSSING SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).
3. WHERE PROPOSED SEWER MEETS WATER MAIN REQUIREMENTS, CASING PIPE SHALL BE OMITTED.
4. NO WATER OR SEWER SERVICE WILL BE PERMITTED IN THE CONFINES OF THE WATER LINE AS DETAILED ABOVE.
5. DUCTILE IRON MECHANICAL JOINT 45° FITTINGS WITH "MEGA-LUG" RETAINER GLANDS OR PRE-APPROVED EQUAL. REQUIRES BLOCKING. SEE DETAILS W-3A , W-3B , W-3C , W-3D , AND W-3E .
6. CENTER 18 FT. MIN. SECTION OF SEWER PIPE OVER WATER PIPE. SEWER LINE SHALL BE PVC PRESSURE-RATED AT 150 PSI MIN.
7. CONTROLLED LOW STRENGTH MATERIAL.
8. EVERY EFFORT SHALL BE MADE TO PLACE THE SEWER LINE BELOW THE WATER LINE. WHEN NO OTHER OPTIONS ARE AVAILABLE AND ONLY WITH PRIOR APPROVAL BY CITY ENGINEER WILL THIS DETAIL BE UTILIZED.

EMBEDMENT FOR NEW SEWER CROSSING OVER NEW OR EXISTING WATER LINE

(NO SCALE)

CITY OF WACO

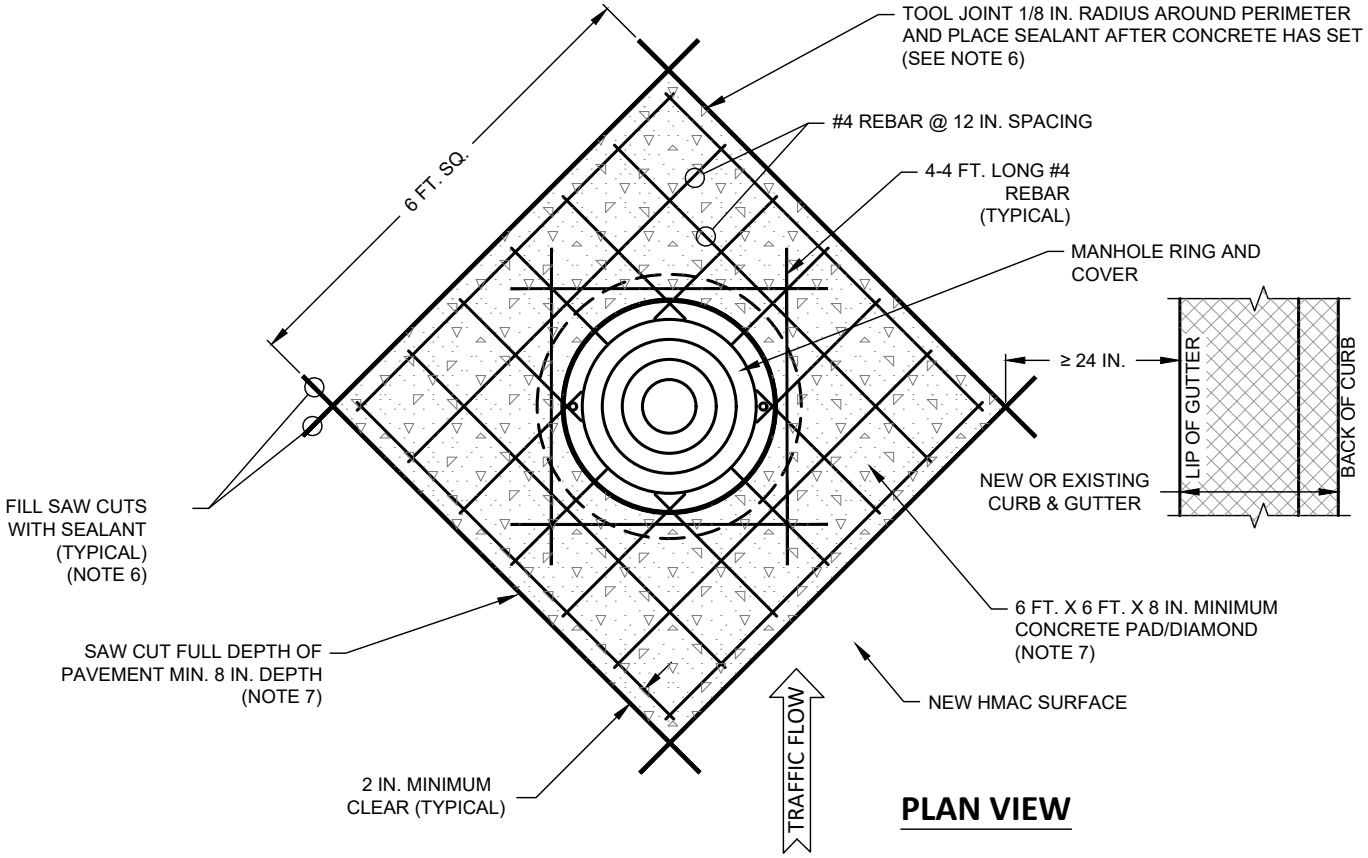
ENGINEERING DIVISION

REVISIONS

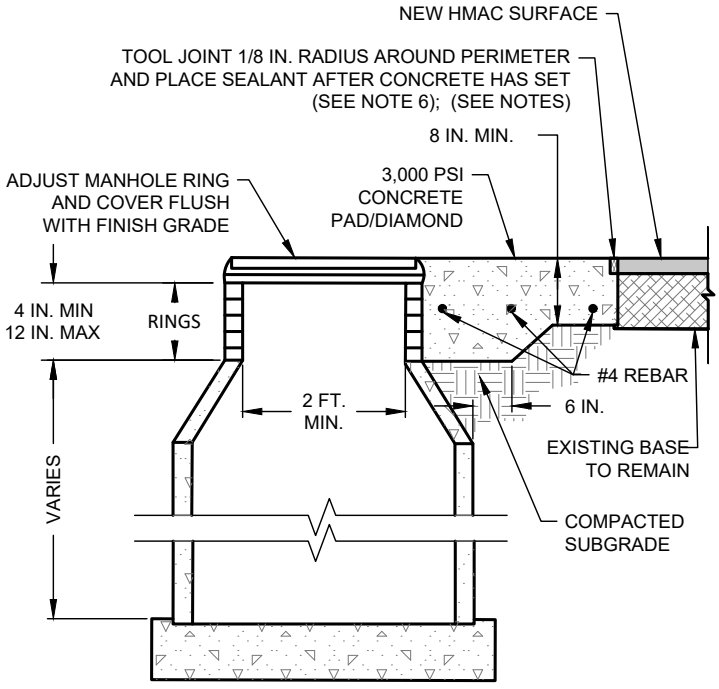
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-20



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN THE CONCRETE PAD/DIAMOND, AS DETAILED ABOVE, IS 24 INCHES OR GREATER FROM THE LIP OF THE CONCRETE GUTTER.
2. CONTRACTOR SHALL PROTECT SEWER FROM DEBRIS.
3. ANY DEBRIS THAT ENTERS SEWER SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR. DO NOT ENTER SANITARY SEWER MANHOLE WITHOUT FIRST OBTAINING A CONFINED SPACE PERMIT.
4. RING SHALL BE THOROUGHLY GROUTED IN PLACE PRIOR TO PLACING CONCRETE PATCH.
5. REUSE EXISTING MANHOLE RING AND COVER EXCEPT AS NOTED IN PLANS OR AS FOLLOWS:
   EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE AS PER CITY OF WACO DETAILS. REFER TO S-6, S-7, S-8, S-9, S-10, SD-9 FOR APPLICABLE REQUIREMENTS.
6. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL APPROVED PRODUCER LIST.
7. NEW CONCRETE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
8. MANHOLE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/- 1/8 INCH. IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT. OF ALL SIDES OF THE DIAMOND.

MANHOLE LID HEIGHT ADJUSTMENT A

(FOR ALL NEW HOT MIX ASPHALTIC CONCRETE (HMAC) INSTALLATIONS)

(NO SCALE)

CITY OF WACO

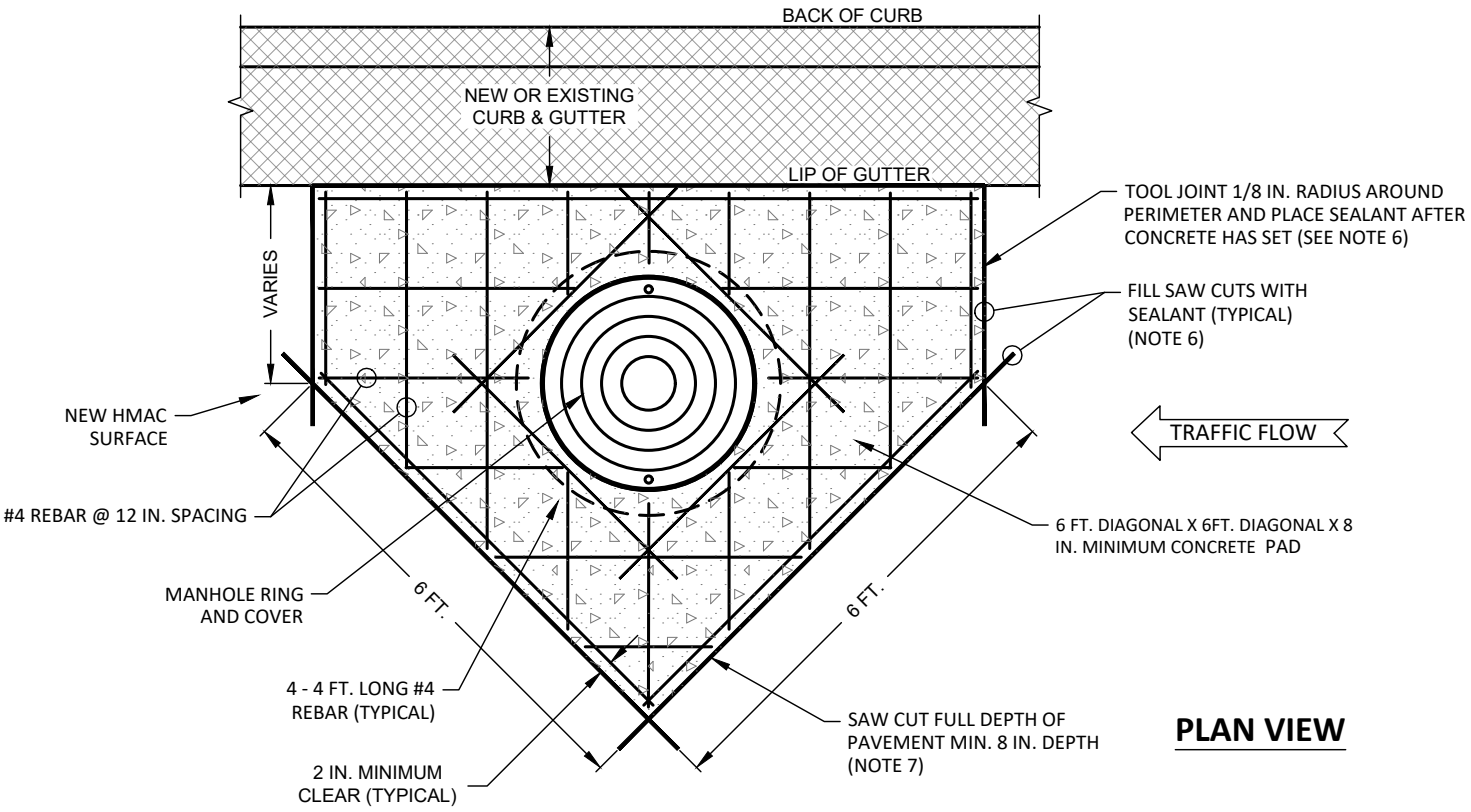
ENGINEERING DIVISION

REVISIONS

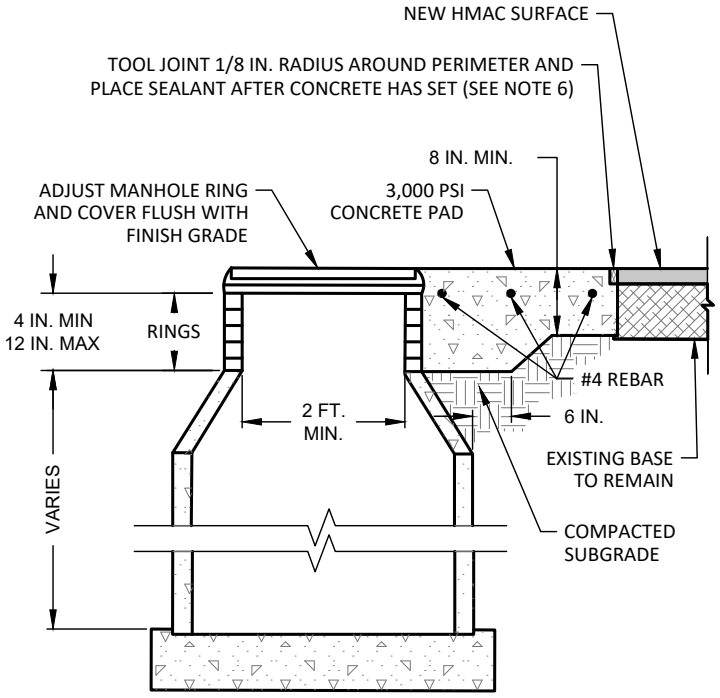
NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTE; MODIFY NOTE 6	MZ	04/28/2025
1	MODIFY NOTE 5	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

S-21



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN ANY PART OF THE CONCRETE PAD/DIAMOND, AS DETAILED ON ST-11 IS LESS THAN 24 IN. FROM THE LIP OF THE CONCRETE GUTTER.
2. CONTRACTOR SHALL PROTECT SEWER FROM DEBRIS.
3. ANY DEBRIS THAT ENTERS SEWER SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR. DO NOT ENTER SANITARY SEWER MANHOLE WITHOUT FIRST OBTAINING A CONFINED SPACE PERMIT.
4. RING SHALL BE THOROUGHLY GROUTED IN PLACE PRIOR TO PLACING CONCRETE PATCH.
5. REUSE EXISTING MANHOLE RING AND COVER EXCEPT AS NOTED IN PLANS OR AS FOLLOWS:
   EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE AS PER CITY OF WACO DETAILS. REFER TO S-6, S-7, S-8, S-9, S-10, SD-9 FOR APPLICABLE REQUIREMENTS.
6. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL APPROVED PRODUCER LIST.
7. NEW CONCRETE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
8. MANHOLE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/- 1/8 INCH. IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT. OF ALL SIDES OF THE DIAMOND.

MANHOLE LID HEIGHT ADJUSTMENT B

(FOR ALL NEW HOT MIX ASPHALTIC CONCRETE (HMAC) INSTALLATIONS)

(NO SCALE)

CITY OF WACO

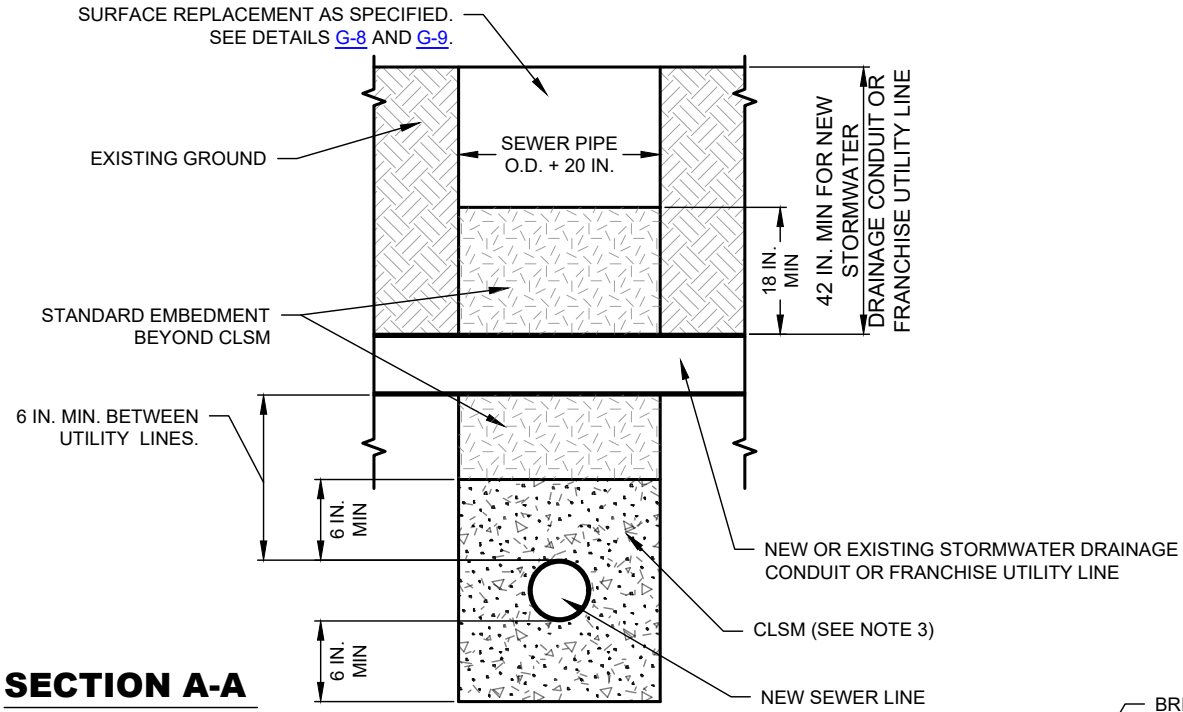
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTE; MODIFY NOTE 6	MZ	04/28/2025
1	MODIFY NOTE 5	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

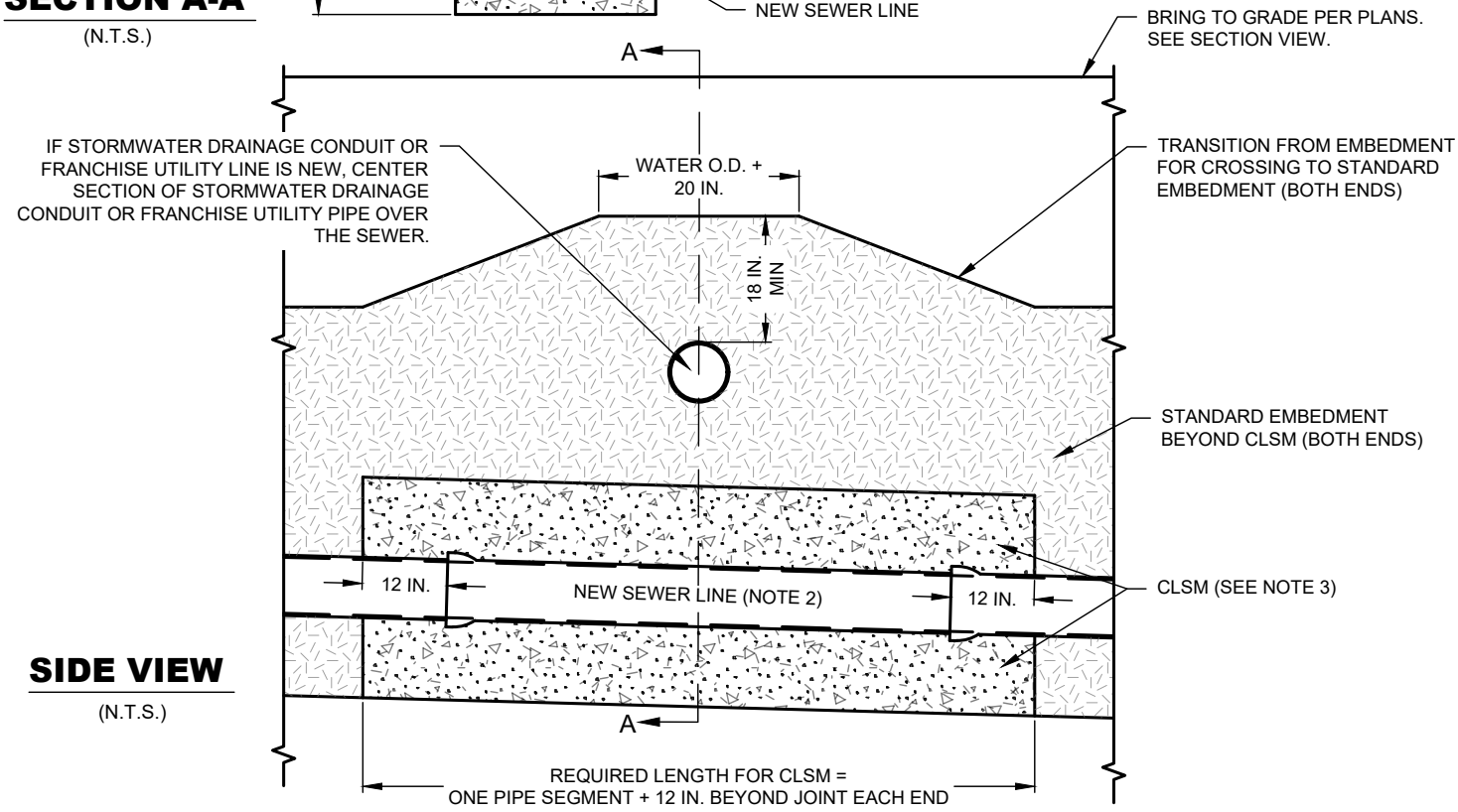
DATE 01/01/2024

S-22



SECTION A-A

(N.T.S.)



SIDE VIEW

(N.T.S.)

NOTES:

1. THIS DETAIL NEED NOT TO BE APPLIED FOR CROSSINGS INVOLVING SEWER SERVICE CONNECTIONS.
2. CENTER 18 FT. MIN. SECTION OF SEWER PIPE UNDER STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY PIPE. SEWER LINE SHALL BE PVC PRESSURE- RATED AT 150 PSI MIN.
3. CITY STANDARD CONTROLLED LOW STRENGTH MATERIAL (CLSM).

EMBEDMENT FOR NEW SEWER CROSSING UNDER NEW OR EXISTING STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY LINE

(NO SCALE)

CITY OF WACO

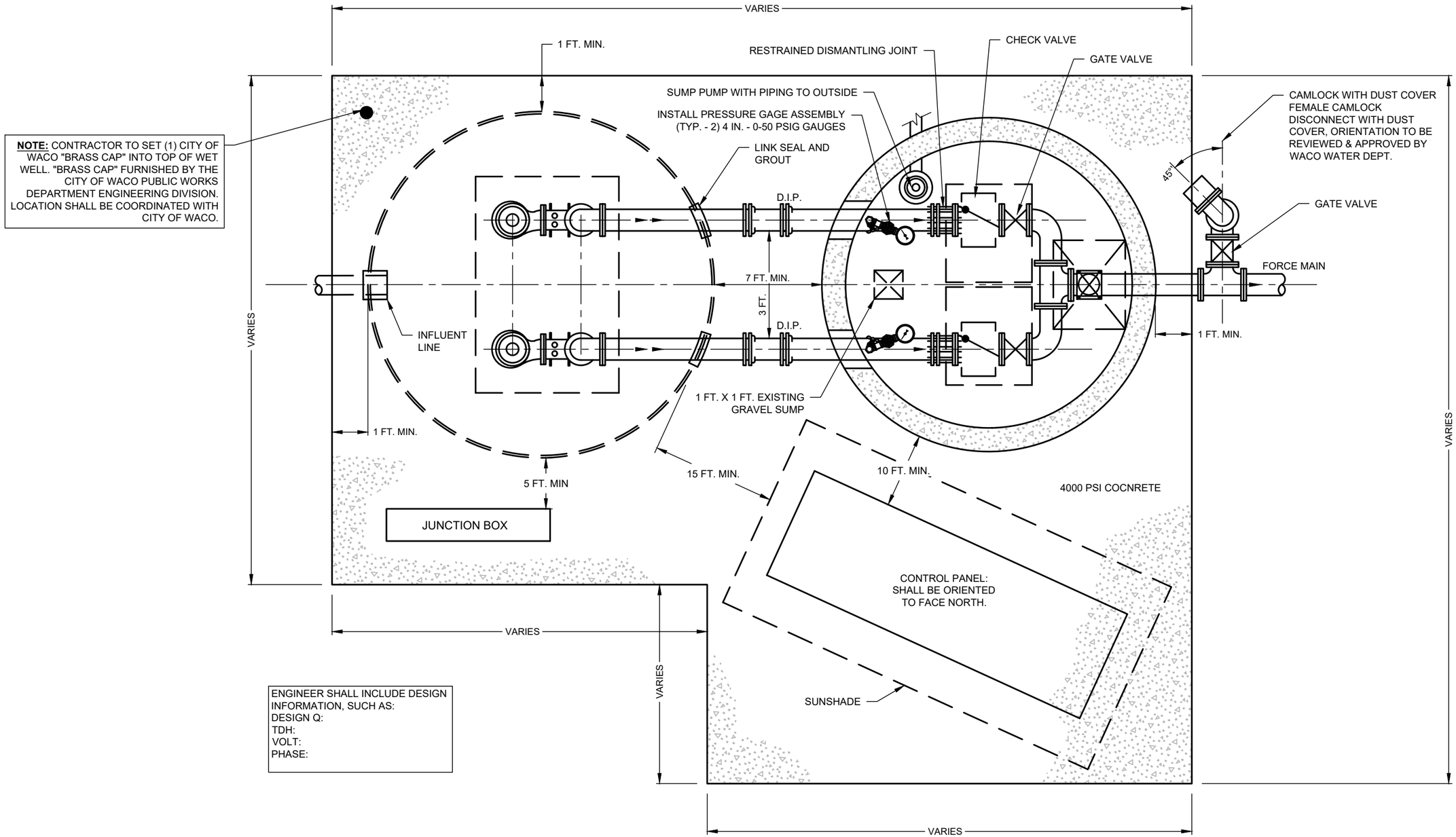
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

S-23



NOTE: CONTRACTOR TO SET (1) CITY OF WACO "BRASS CAP" INTO TOP OF WET WELL. "BRASS CAP" FURNISHED BY THE CITY OF WACO PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION. LOCATION SHALL BE COORDINATED WITH CITY OF WACO.

ENGINEER SHALL INCLUDE DESIGN INFORMATION, SUCH AS:
DESIGN Q:
TDH:
VOLT:
PHASE:

NOTES:
1. SEAL ALL PENETRATIONS IN ELECTRICAL BOXES.
2. ALL HARDWARE SHALL BE 304SS

LIFT STATION - WET WELL & VALVE VAULT

PLAN VIEW
NOT TO SCALE

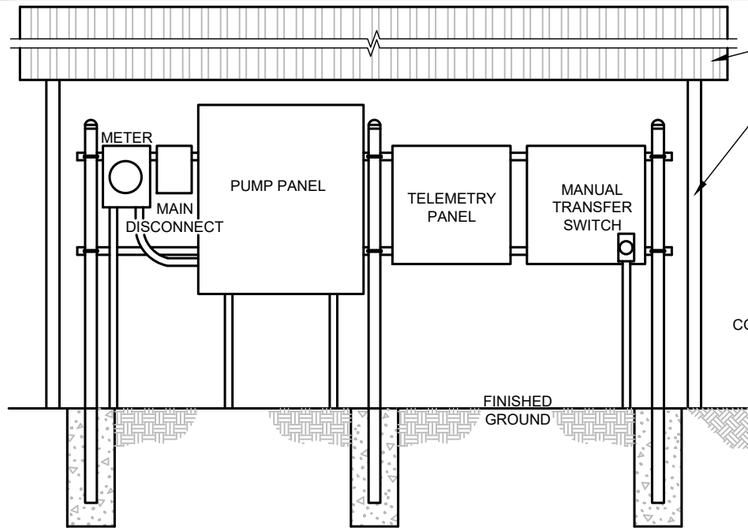
CITY OF WACO

ENGINEERING DIVISION

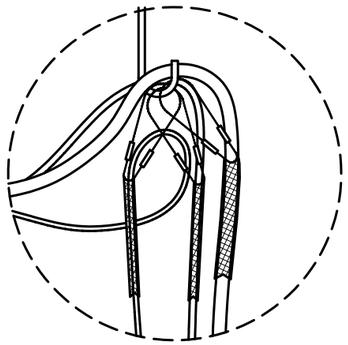
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	MLZ	MM/DD/YYYY

DATE
01/01/2024

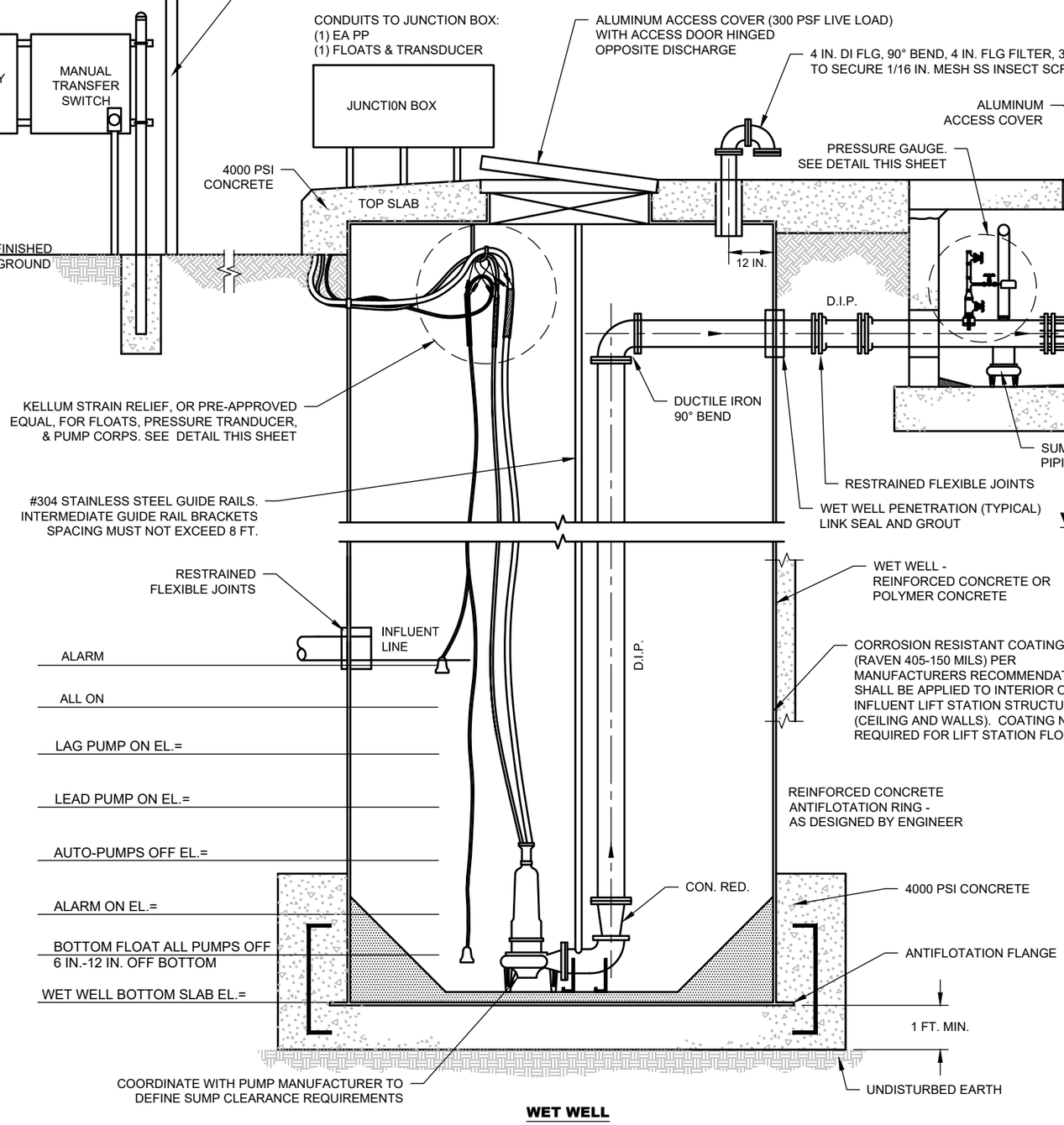
S-24A



CONTROL PANEL

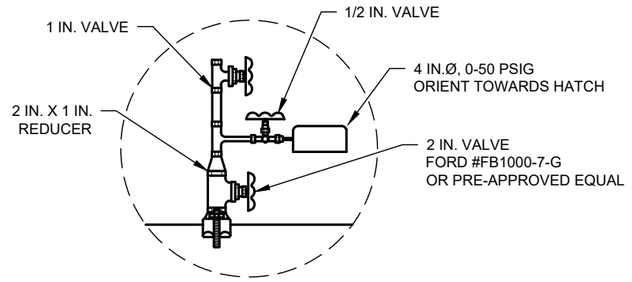


KELLUM STRAIN RELIEF
NOT TO SCALE



WET WELL

VALVE VAULT



PRESSURE GAUGE
NOT TO SCALE

LIFT STATION - WET WELL & VALVE VAULT

SECTION VIEW
NOT TO SCALE

CITY OF WACO

ENGINEERING DIVISION

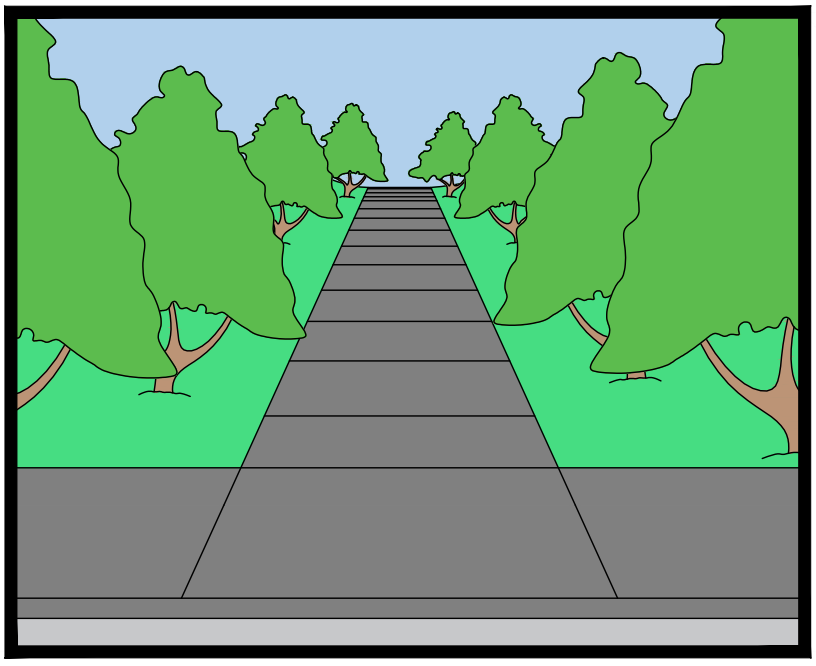
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	MLZ	MM/DD/YYYY

DATE
01/01/2024

S-24B

CITY OF WACO

SIDEWALK DETAILS



CITY OF WACO
SIDEWALK DETAILS

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

SIDEWALK GENERAL NOTES

GENERAL

1. ALL CONCRETE AND REINFORCEMENT MATERIALS AND PLACEMENT MUST COMPLY WITH SECTION 5.1 OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION AND WITH ALL NOTES ON SHEET G-7 OF THE CITY OF WACO MANUAL OF STANDARD DETAILS.
2. PROPOSED SIDEWALKS MUST COMPLY WITH THE CITY OF WACO STREET DESIGN CRITERIA AND THE CITY OF WACO CODES AND ORDINANCES, CHAPTER 22, ARTICLE III, SIDEWALKS, DIVISION 28, SPECIAL DISTRICT, COLLEGE AND UNIVERSITY NEIGHBORHOODS DISTRICT, AND DOWNTOWN DISTRICT.
3. PEDESTRIAN ACCESS ROUTES, SHARED USE PATHS, AND ELEMENTS OF THESE WITHIN THE CITY RIGHT-OF-WAY, AND PUBLIC EASEMENTS SHALL COMPLY WITH THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG).
4. RETAINING WALLS IN THE RIGHT-OF-WAY AND PUBLIC EASEMENT SHALL BE CAST-IN-PLACE CONCRETE.
5. TRUNCATED DOME BRICK PAVERS ARE REQUIRED FOR DETECTABLE WARNING STRIPS. SAKRETE® PAVER SET POLYMERIC SAND™ OR PRE-APPROVED EQUAL SHALL BE USED.
6. SW-5, SW-6, SW-7, SW-8 SHOW SOME TYPICAL RAMPS, ILLUSTRATING REQUIRED SLOPES AND DIMENSIONS AS THEY MIGHT BE APPLIED IN SEVERAL PARTICULAR CIRCUMSTANCES. IF ADEQUATE RIGHT-OF-WAY IS NOT AVAILABLE FOR THESE TYPICAL RAMPS, ALTERNATE DESIGNS MUST BE CREATED TO FIT WITHIN AVAILABLE RIGHT-OF-WAY AND STILL SATISFY THE GENERAL SLOPE AND DIMENSIONAL REQUIREMENTS ILLUSTRATED.

CONFIGURATION

7. SIDEWALKS AND LANDINGS SHALL BE FORMED AT A MAXIMUM CROSS-SLOPE OF 1.5%. FINISHED CROSS-SLOPES EXCEEDING 2% WILL NOT BE ACCEPTED.
8. NEW SIDEWALK SHALL BE CONNECTED TO ALL EXISTING ADJACENT WALKS AND STEPS.
9. LANDINGS SHALL BE 5 FT. X 5 FT. MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION, GRADED FOR POSITIVE DRAINAGE TO STREET.
10. IF AN EXISTING GUTTER AT THE ENTRANCE TO A NEW RAMP OR LANDING HAS A CROSS SLOPE GREATER THAN 2%, THE EXISTING GUTTER MUST BE REMOVED AND REPLACED WITH GUTTER TIED TO THE 2% CROSS SLOPE ON ONE SIDE AND THE EXISTING STREET ON THE OTHER. THE SLOPE OF THE NEW GUTTER TOWARD THE STREET MAY NOT EXCEED 1:12.
11. SLOPE OF RAMPS SHALL NOT EXCEED 1:12 UNLESS OTHERWISE NOTED.
12. MINIMUM RAMP WIDTH IS 5 FT. EXCLUSIVE OF FLARED SIDES, HOWEVER, FOR A SHARED USE PATH THE WIDTH OF THE RAMP SHALL EQUAL THE WIDTH OF THE SHARED USE PATH.
13. NO SKEWED ANGLES ARE ALLOWED WHERE SIDEWALK MEETS LANDING, WHERE LANDING MEETS RAMP, AND WHERE PERPENDICULAR CURB RAMP MEETS CURB.

CONSTRUCTION

14. PLACE CONSTRUCTION JOINTS WITH EXPANSION MATERIAL AT MINIMUM 50 FT. INTERVALS. EXPANSION JOINTS SHALL EXTEND THROUGH ANY ADJACENT RETAINING WALL OR TRANSITION CURB.
15. REBAR CHAIRS SHALL BE PLACED ON 4 FT. MAX SPACING EACH WAY.
16. PLACE TOOLED, CRACK CONTROL JOINTS AT A SPACING EQUAL TO THE WIDTH OF THE WALK.
17. VERTICAL CHANGES IN LEVEL GREATER THAN 1/4 IN. ARE NOT PERMITTED ALONG SIDEWALKS.
18. WHERE SIDEWALK OR CURB RAMP IS ADJACENT TO BACK OF CURB, DRIVEWAY RADIUS, INLET, OR ANY CONCRETE STRUCTURE, INSTALL CONSTRUCTION JOINT. SEE DETAIL SW-3 .
19. WHERE SIDEWALK OR CURB RAMP CONTACTS A POLE OR POLE FOUNDATION, PLACE 1/2 IN. EXPANSION JOINT MATERIAL BETWEEN POLE OR POLE FOUNDATION AND SIDEWALK/RAMP.
20. CURING OF CONCRETE SHALL BE DONE IN ACCORDANCE WITH SECTION 5.1 OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
21. POOR WORKMANSHIP OR APPEARANCE SHALL BE GROUNDS FOR REMOVAL OR REJECTION.

LOCATIONS WITHIN THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES OF MINIMUM REQUIRED WIDTHS OF SIDEWALK AND RELATED BUFFER PRESENTLY INCLUDE THE FOLLOWING

- STREET DESIGN CRITERIA TABLE 2-5
- SEC. 22-37. - CHANGING OF GRADE OF STREETS, ETC.
- SEC. 22-63. - SAME-LOCATION AND WIDTH OF SIDEWALKS.
- SEC. 28-880.11. - PUBLIC SPACES.
- SEC. 28-839. - SIDEWALKS.

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
3	ADD REFERENCES TO STREET DESIGN CRITERIA	MZ	04/28/2025
2	MODIFY NOTE 12, ADD NOTE 13; RENUMBER 14-21	MZ	11/15/2024
1	MODIFY NOTE 3	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SW-1

SIDEWALK DETAILS LEGEND

1. 5 IN. 3000 PSI CONCRETE WITH REBAR CHAIRS AT 48 IN. OCEW MAX. SIDEWALK SHALL BE 8 IN. THICK WHEN ADJACENT TO RETAINING WALLS. TRANSITION FROM 8 IN. DEPTH AT TERMINUS OF RETAINING WALL (HEIGHT = 0 IN.) TO 5 IN. DEPTH SHALL BE OVER 18 INCHES. UNLESS OTHERWISE NOTED, SIDEWALK REINFORCEMENT SHALL BE #4 BARS @ 18 IN. OCEW.

2. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
   - A. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A.” MATERIAL
   - B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
   - C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER

3. CROSS-SLOPE OF SIDEWALK SHALL BE 1.5% DESIGNED AND FORMED. ANY CROSS-SLOPE CONSTRUCTED LESS THAN 1% OR EXCEEDING 2% SHALL NOT BE ACCEPTED.

4. TOOLED EDGE. MATCH EXISTING GRADE IF EXISTING GRADE IS HIGHER THAN TOP OF CURB. OTHERWISE, AREA BETWEEN CURB AND NEW SIDEWALK MUST BE FILLED AS REQUIRED & GRADED TO DRAIN. FILL SHALL BE COMPACTED TO 85% STANDARD PROCTOR DENSITY, AT OR ABOVE OPTIMUM MOISTURE CONTENT.

5. GRADE/SLOPE SHALL BE WITHIN THE RANGE OF 1/4 IN. PER 1 FT. TO 1/2 IN. PER 1 FT.

6. SLOPE OF BUFFER/LANDSCAPE AREAS WITHIN THE RIGHT-OF-WAY SHALL NOT EXCEED 4%.

7. RESTORE VEGETATION IN KIND TO PRE-PROJECT CONDITIONS. FOR NEW SUBDIVISIONS, COMPLY WITH VEGETATION REQUIREMENTS

8. CURB AND GUTTER PER PLANS AND CITY OF WACO DETAILS.

9. IF EXISTING GRADE IS LOWER THAN NEW BACK OF SIDEWALK, FILL SHALL BE PLACED PER ORDINANCE, SEC. 22-73. - DIMENSIONS-PARKWAY. OUTSIDE OF RIGHT-OF-WAY FILL SHALL BE PLACED WITH MAXIMUM SLOPE OF 25% DOWN TO EXISTING GRADE. FILL SHALL BE COMPACTED TO 85% STANDARD PROCTOR DENSITY AT OR ABOVE OPTIMUM MOISTURE CONTENT.

10. MATCH EXISTING GRADE.

11. CUT TO GRADE.

12. ¾ INCH CHAMFER BOTH SIDES.

13. CONTRACTION JOINTS WITH ¾ IN. CHAMFER ON EACH SIDE SHALL BE PLACED ALONG ENTIRE HEIGHT OF RETAINING WALL AT EQUAL SPACING OF ADJOINING SIDEWALK.

14. FRONT OF RETAINING WALL SHALL BE BROOM FINISHED PER ORDINANCE.

15. WHERE SIDEWALK WITH RETAINING WALL IS SPECIFIED, RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONCRETE SIDEWALK (SPECIAL) (RETAINING WALL)", WITH LIMITS OF PAY AS SHOWN HEREON.

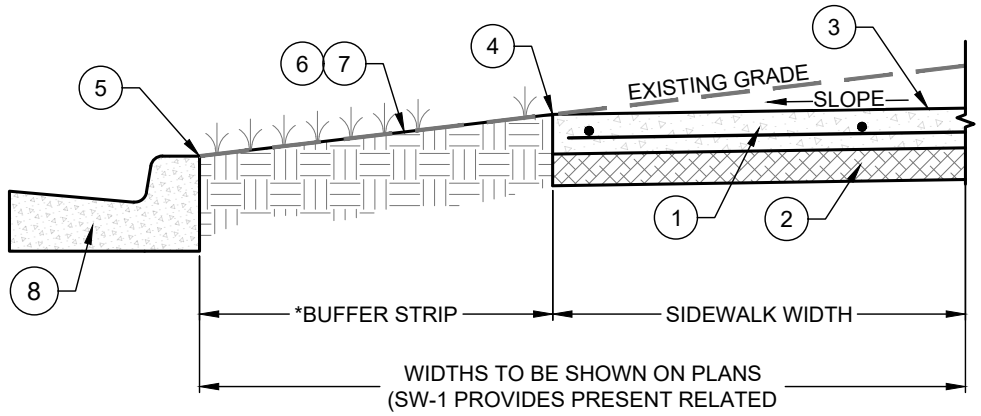
16. 2 IN. SCH. 40 PVC WEEP HOLES @ 10 FT. OC (TYP) SLOPED ¼ INCH PER FOOT TO DRAIN TOWARD FRONT OF SIDEWALK.

17. 1 CUBIC FOOT AGGREGATE MEETING ASTM 57 SPECIFICATIONS WRAPPED IN FILTER FABRIC.

18. 1 IN. DIA X 3 FT. SMOOTH DOWELS AT 1 FT OC.

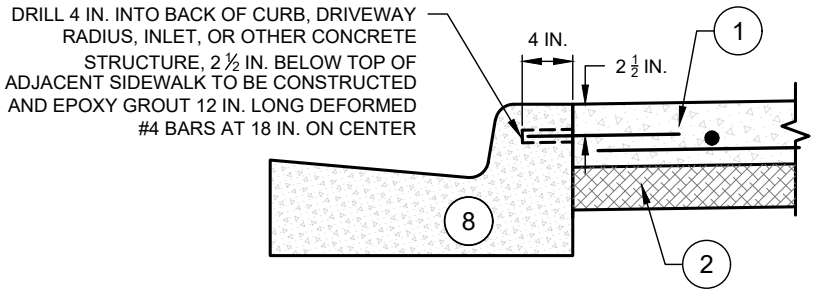
19. 1 IN. PVC PIPE WITH CAPPED END.

20. 1/2 IN. PERMANENT EXPANSION JOINT MATERIAL.

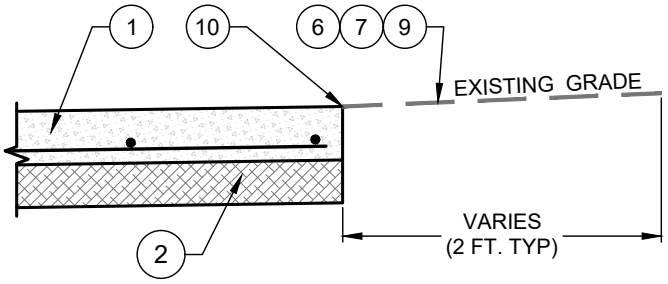


*BUFFER STRIP
3.5 FT. MIN. FOR LOCAL STREET & MINOR COLLECTOR (COMMERCIAL) STREET, OTHERWISE 4 FT. MIN. (TYP)

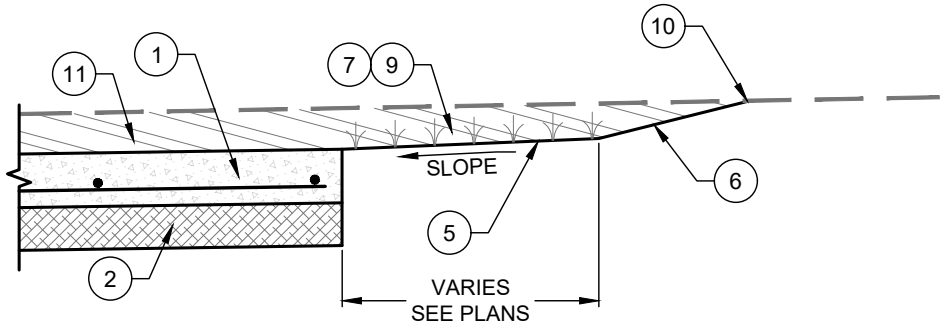
TYPICAL DETAILS OF FRONT OF SIDEWALKS



CONSTRUCTION JOINT OF SIDEWALK ADJACENT TO BACK OF CURB, DRIVEWAY RADIUS, INLET, OR OTHER CONCRETE STRUCTURE



SIDEWALK TO MATCH EXISTING GRADE



CUT BEHIND SIDEWALK TO MATCH EXISTING GRADE

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-2

SIDEWALK DETAILS - 1 OF 2

(NO SCALE)

CITY OF WACO

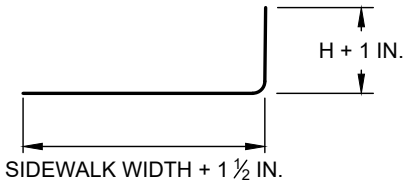
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTE TO REFERENCE DESIGN CRITERIA AND BUFFER STRIP NOTE IN TOP DETAIL	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

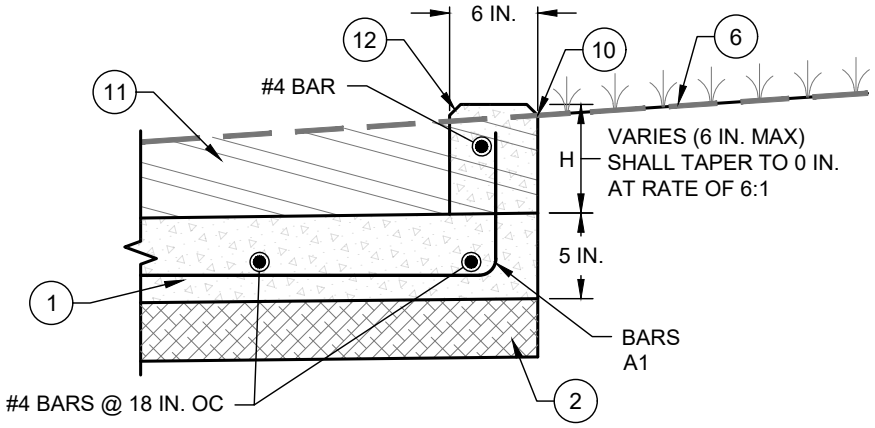
DATE
01/01/2024

SW-3

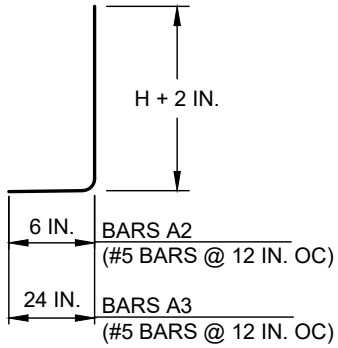


BARS A1
(#4 BARS @ 18 IN. OC)

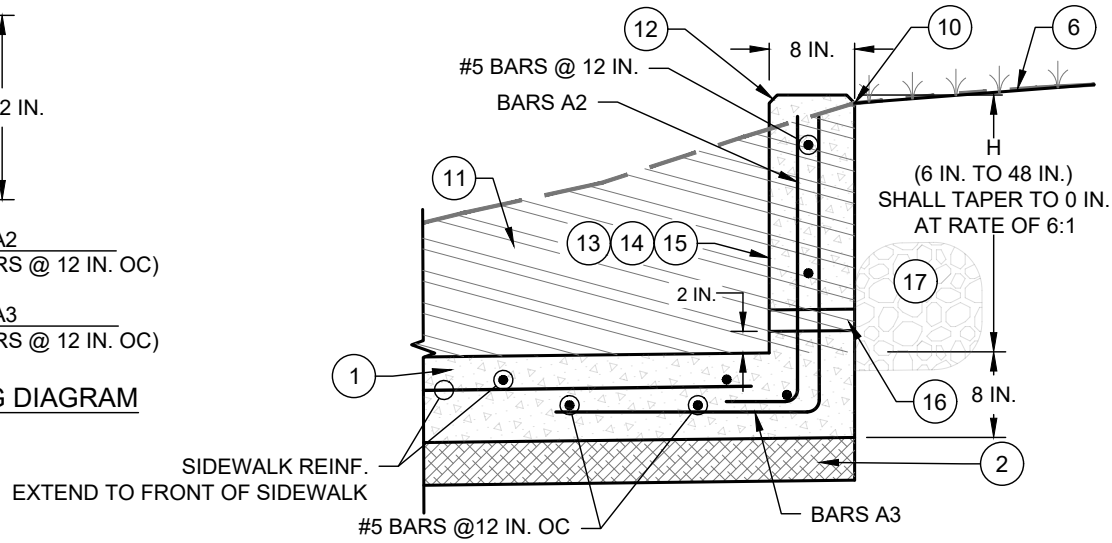
BAR BENDING DIAGRAM



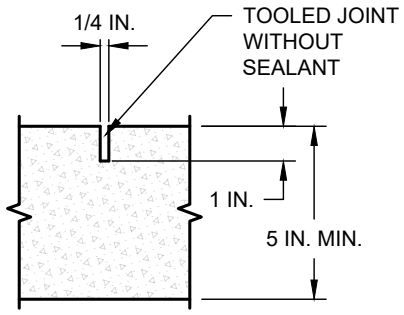
CURB TO MATCH EXISTING GRADE



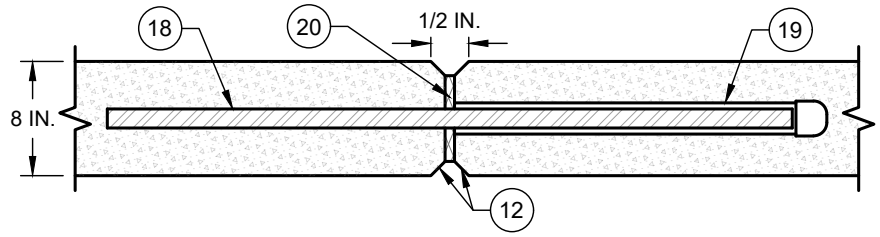
BAR BENDING DIAGRAM



RETAINING WALL MATCH TO EXISTING GRADE



CONTRACTION JOINT



RETAINING WALL EXPANSION JOINT

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-2

SIDEWALK DETAILS - 2 OF 2

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

SW-4

CURB RAMPS GENERAL NOTES - 1 OF 2

CURB RAMPS

1. INSTALL A CURB RAMP OR BLENDED TRANSITION AT EACH PEDESTRIAN STREET CROSSING.

2. ALL SLOPES SHOWN ARE MAXIMUM ALLOWABLE. CROSS SLOPES OF 1.5% OR LESS (RUNNING) SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS AS DIRECTED.

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

4. THE MINIMUM SIDEWALK WIDTH IS 5 FT. WHERE THE SIDEWALK IS ADJACENT TO THE BACK OF CURB, A 6 FT. SIDEWALK WIDTH IS DESIRABLE. WHERE A 5 FT. SIDEWALK CANNOT BE PROVIDED DUE TO SITE CONSTRAINTS, SIDEWALK WIDTH MAY BE REDUCED TO 4 FT. FOR SHORT DISTANCES. 5 FT. X 5 FT. PASSING AREAS AT INTERVALS NOT TO EXCEED 200 FT. ARE REQUIRED.

5. TURNING SPACES SHALL BE 5 FT. X 5 FT. MINIMUM. CROSS SLOPE SHALL BE MAXIMUM 2%.

6. CLEAR SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4 FT. X 4 FT. WHOLLY CONTAINED WITHIN THE CROSSWALK, AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.

7. PROVIDE FLARED SIDES WHERE THE PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP. FLARED SIDES SHALL BE SLOPED AT 10% MAXIMUM, MEASURED PARALLEL TO THE CURB. RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, EITHER BECAUSE THE ADJACENT SURFACE IS PLANTED, SUBSTANTIALLY OBSTRUCTED, OR OTHERWISE PROTECTED.

8. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT REFLECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG).

9. TO SERVE AS A PEDESTRIAN REFUGE AREA, THE MEDIAN SHOULD BE A MINIMUM OF 6 FT. WIDE, MEASURED FROM BACK OF CURBS. MEDIANS SHOULD BE DESIGNED TO PROVIDE ACCESSIBLE PASSAGE OVER OR THROUGH THEM.

10. SMALL CHANNELIZATION ISLANDS, WHICH DO NOT PROVIDE A MINIMUM 5 FT. X 5 FT. LANDING AT THE TOP OF CURB RAMPS, SHALL BE CUT THROUGH LEVEL WITH THE SURFACE OF THE STREET.

11. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS SHALL ALIGN WITH THEORETICAL CROSSWALKS UNLESS OTHERWISE DIRECTED.

12. PROVIDE CURB RAMPS TO CONNECT THE PEDESTRIAN ACCESS ROUTE AT EACH PEDESTRIAN STREET CROSSING. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS.

13. SIDEWALKS WILL BE MEASURED BY THE SQUARE YARD OF SURFACE AREA. CURB RAMPS WILL BE MEASURED BY THE SQUARE YARD OF SURFACE AREA OR BY EACH. A CURB RAMP CONSISTS OF THE RAMP, LANDING(S), ADJACENT FLARES OR SIDE CURB, AND DETECTABLE WARNING SURFACE AS SHOWN ON THE PLANS. THE WORK PERFORMED AND MATERIALS FURNISHED IN ACCORDANCE WITH THIS ITEM, AND MEASURED AS PROVIDED ABOVE, WILL BE PAID FOR AT THE UNIT PRICE BID FOR “CONCRETE SIDEWALKS” AND “CURB RAMPS” OF THE TYPE SPECIFIED. THIS PRICE IS FULL COMPENSATION FOR SURFACE PREPARATION OF SIDEWALK FOUNDATION; MATERIALS; REMOVAL AND DISPOSAL OF EXISTING CONCRETE; EXCAVATION, HAULING AND DISPOSAL OF EXCAVATED MATERIAL; DRILLING AND DOWELING INTO EXISTING CONCRETE CURB, SIDEWALK, AND PAVEMENT; REPAIR OF ADJACENT STREET OR PAVEMENT STRUCTURE DAMAGED BY THESE OPERATIONS; AND EQUIPMENT, LABOR, MATERIALS, TOOLS, AND INCIDENTALS.

14. PLACE CONCRETE AT A MINIMUM DEPTH OF 5 IN. FOR RAMPS, FLARES AND LANDINGS, UNLESS OTHERWISE DIRECTED.

15. FURNISH AND INSTALL #4 REINFORCING STEEL BARS AT 18 IN. O.C. BOTH WAYS, UNLESS OTHERWISE DIRECTED.

16. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.

17. CURBS SHOWN ON SHEETS SW-7 AND SW-8 WITHIN THE LIMITS OF PAYMENT ARE CONSIDERED PART OF THE CURB RAMP FOR PAYMENT, WHETHER IT IS CONCRETE CURB, GUTTER, OR COMBINED CURB AND GUTTER.

18. EXISTING FEATURES THAT COMPLY WITH APPLICABLE STANDARDS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.

LEGEND	
PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.	
DETECTABLE WARNING SURFACE	
PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.	⊠
GUTTER LINE	— · —
GRADE BREAK	·····
RAMP LIMITS OF PAYMENT	– – – –
SHOWS DOWNWARD SLOPE.	→

CITY OF WACO

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2	MODIFY NOTE 17	MZ	11/15/2024
1	MODIFY NOTE 8	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SW-5

CURB RAMPS GENERAL NOTES - 2 OF 2

DETECTABLE WARNING MATERIAL

1. CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG). THE SURFACE SHALL PROVIDE STARK VISUAL CONTRAST WITH ADJOINING SURFACES, INCLUDING SIDE FLARES AND SHALL BE BRICK RED FEDERAL STANDARD COLOR NO. 595 C 22144 OR APPROVED NEAR IDENTICAL.

2. DETECTABLE WARNING MATERIALS MUST MEET TXDOT DEPARTMENTAL MATERIALS SPECIFICATION DMS 4350 AND BE LISTED ON THE MATERIAL PRODUCER LIST AND SHALL BE UNIT PAVER DETECTABLE WARNING SYSTEMS. INSTALL PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

3. DETECTABLE WARNING SURFACES MUST BE FIRM, STABLE AND SLIP RESISTANT AND SHALL BE TRUNCATED DOME BRICK PAVERS PER SW-1 , NOTE 5.

4. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24 IN. IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.

5. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS AT THE BACK OF CURB AND NEITHER END OF THAT EDGE IS GREATER THAN 5 FT. FROM THE BACK OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.

6. SHADED AREAS ON SHEETS SW-7 AND SW-8 INDICATE THE APPROXIMATE LOCATION FOR THE DETECTABLE WARNING SURFACE FOR EACH CURB RAMP TYPE.

DETECTABLE WARNING PAVERS

7. FURNISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A 2 BY 2 UNIT BASKET WEAVE PATTERN OR AS DIRECTED.

8. LAY FULL-SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25% OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.

SIDEWALKS

9. PROVIDE CLEAR GROUND SPACE AT OPERABLE PARTS, INCLUDING PEDESTRIAN PUSH BUTTONS. OPERABLE PARTS SHALL BE PLACED WITHIN UNOBSTRUCTED REACH RANGE SPECIFIED IN PROWAG SECTION R406.

10. PLACE TRAFFIC SIGNAL OR ILLUMINATION POLES, GROUND BOXES, CONTROLLER BOXES, SIGNS, DRAINAGE FACILITIES AND OTHER ITEMS SO AS NOT TO OBSTRUCT THE PEDESTRIAN ACCESS ROUTE OR CLEAR GROUND SPACE.

11. STREET GRADES AND CROSS SLOPES SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.

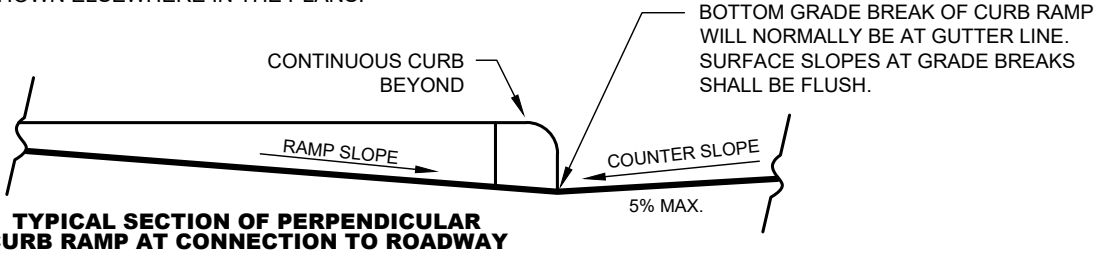
12. CHANGES IN LEVEL GREATER THAN 1/4 IN. ARE NOT PERMITTED.

13. THE LEAST POSSIBLE GRADE SHOULD BE USED TO MAXIMIZE ACCESSIBILITY. THE RUNNING SLOPE OF SIDEWALKS AND CROSSWALKS WITHIN THE PUBLIC RIGHT OF WAY MAY FOLLOW THE GRADE OF THE PARALLEL ROADWAY. WHERE A CONTINUOUS GRADE GREATER THAN 5% MUST BE PROVIDED, HANDRAILS MAY BE DESIRABLE TO IMPROVE ACCESSIBILITY. HANDRAILS MAY ALSO BE NEEDED TO PROTECT PEDESTRIANS FROM POTENTIALLY HAZARDOUS CONDITIONS. IF PROVIDED, HANDRAILS SHALL COMPLY WITH PROWAG R409.

14. HANDRAIL EXTENSIONS SHALL NOT PROTRUDE INTO THE USABLE LANDING AREA OR INTO INTERSECTING PEDESTRIAN ROUTES.

15. DRIVEWAYS AND TURNOUTS SHALL BE CONSTRUCTED AND PAID FOR IN ACCORDANCE WITH ITEM "INTERSECTIONS, DRIVEWAYS AND TURNOUTS". SIDEWALKS SHALL BE CONSTRUCTED AND PAID FOR IN ACCORDANCE WITH ITEM, "SIDEWALKS".

16. SIDEWALK DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 6	MZ	11/15/2024
1	MODIFY NOTE 1	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

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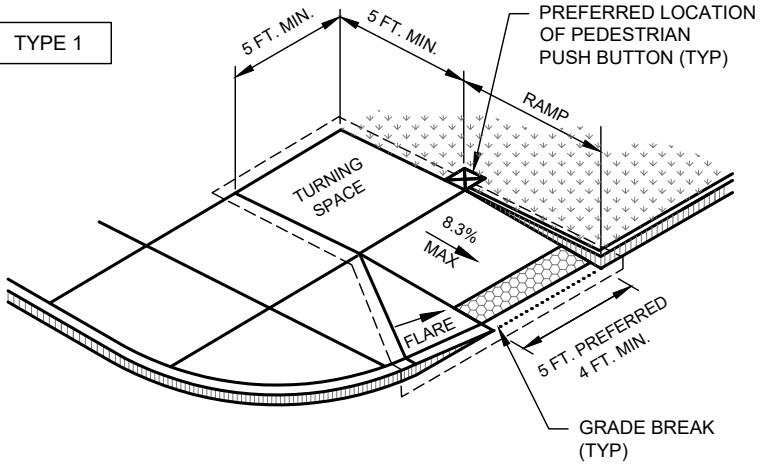
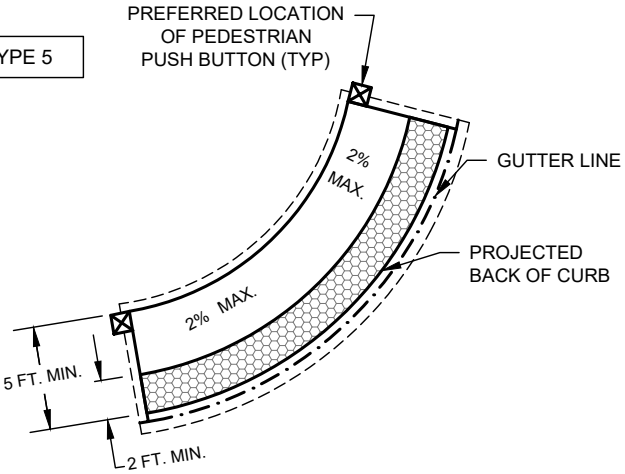
SW-6

TYPE 1



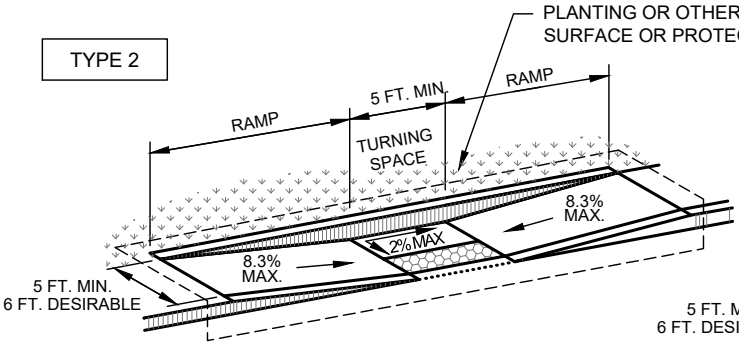
PERPENDICULAR CURB RAMP

TYPE 5

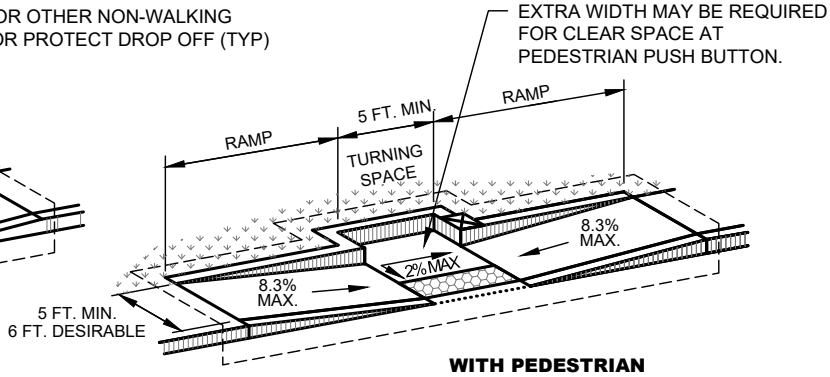


BLENDED TRANSITION (FLUSH LANDING)

TYPE 2



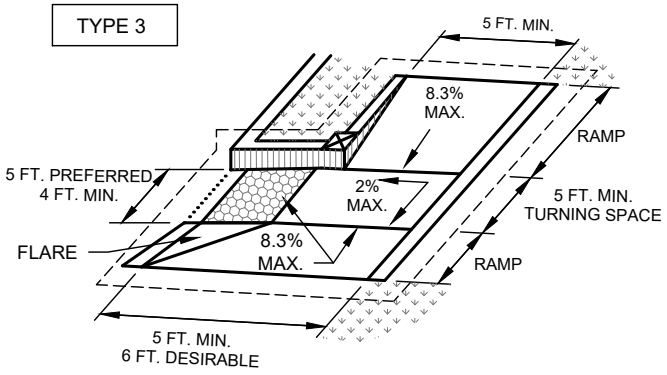
WITHOUT PEDESTRIAN PUSH BUTTON



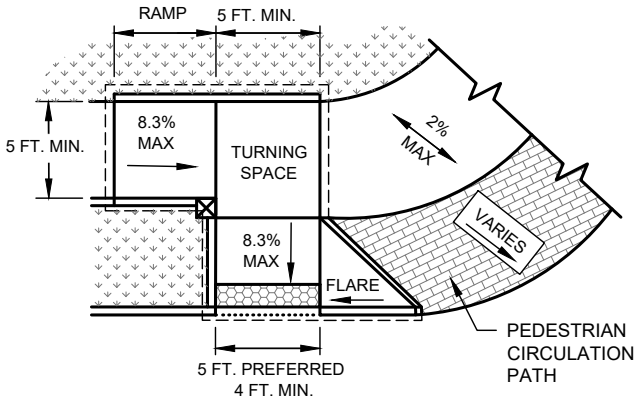
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3



TYPE 6



COMBINATION CURB RAMPS

CURB RAMPS: TYPES 1, 2, 3, 5 AND 6

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND

CITY OF WACO

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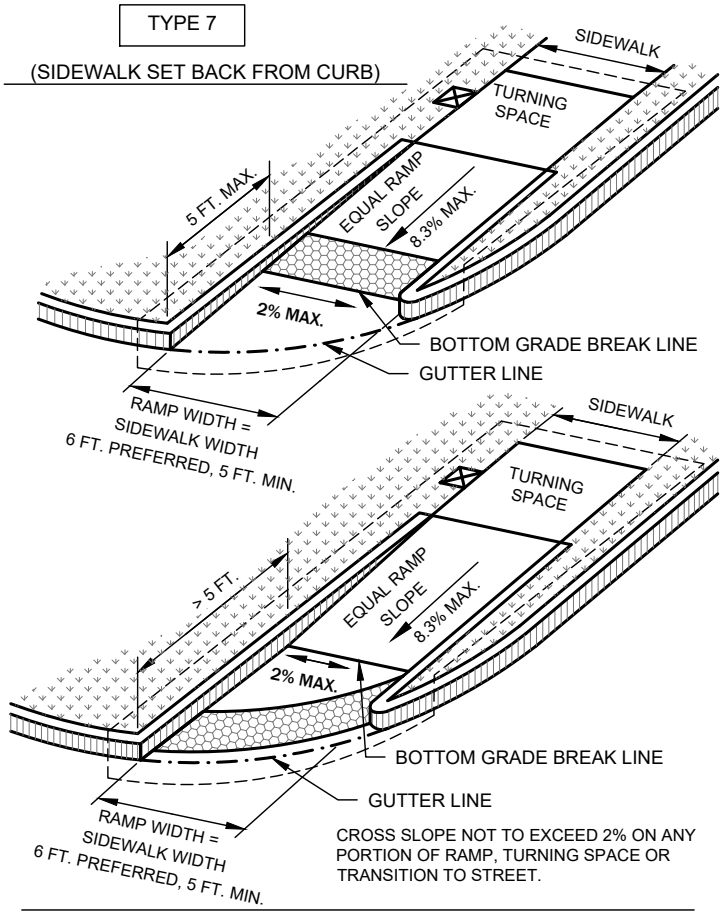
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SW-7

TYPE 7

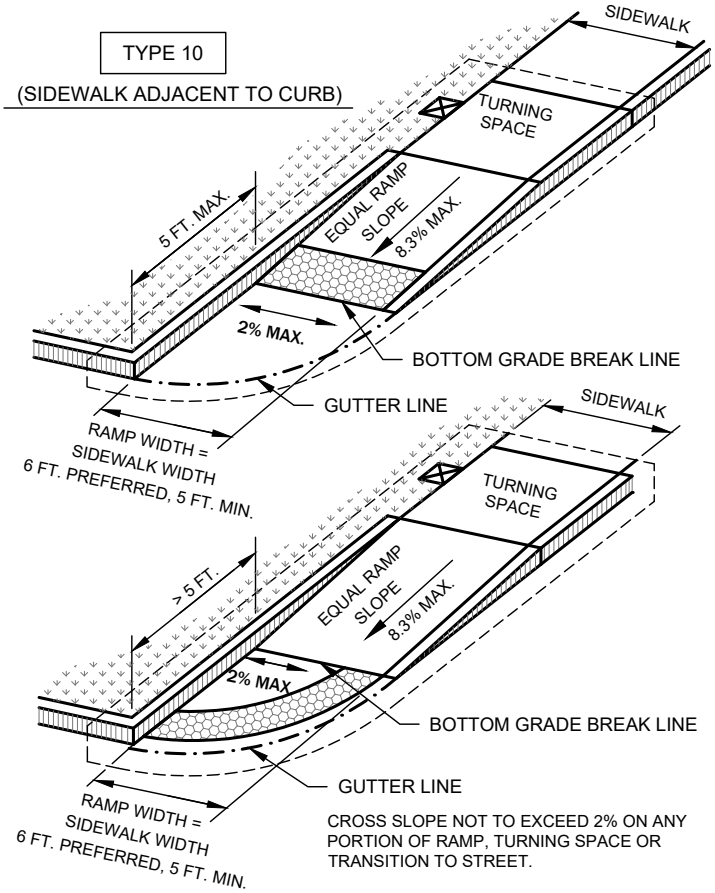
(SIDEWALK SET BACK FROM CURB)



CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

TYPE 10

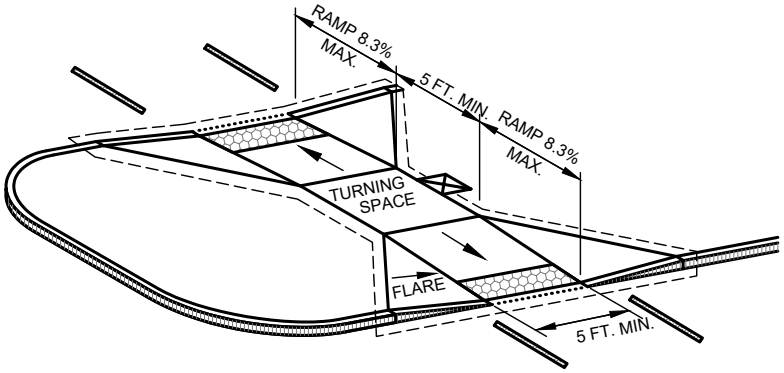
(SIDEWALK ADJACENT TO CURB)



CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

DIRECTIONAL RAMPS WITHIN RADIUS

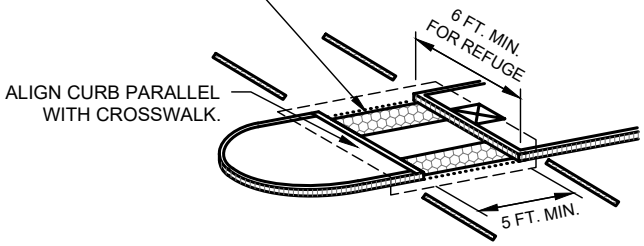
TYPE 20



CURB RAMPS AT MEDIAN ISLANDS

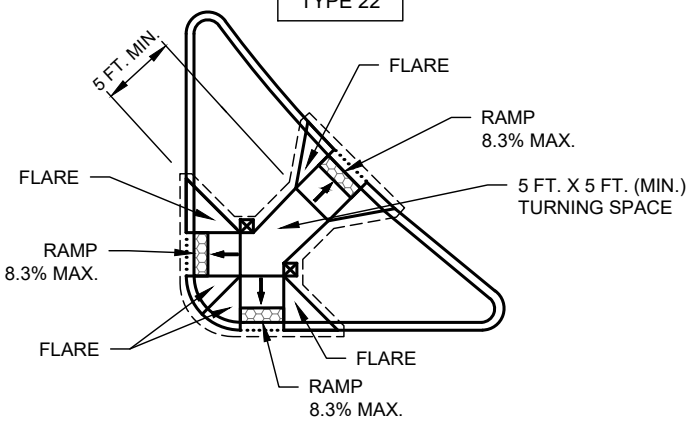
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2 FT. USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6 FT. WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

CURB RAMPS: TYPES 7, 10, 20, 21 AND 22

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND

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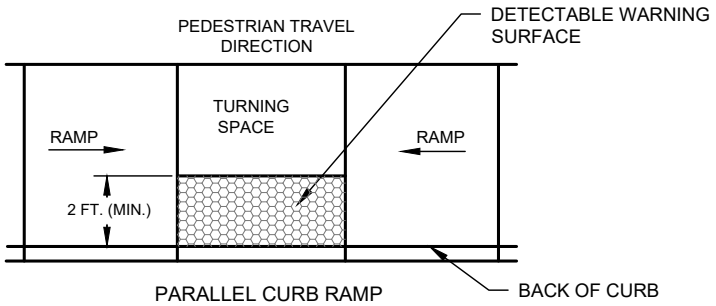
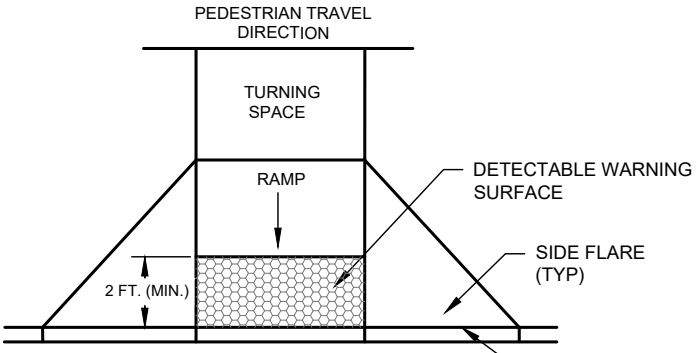
SW-8



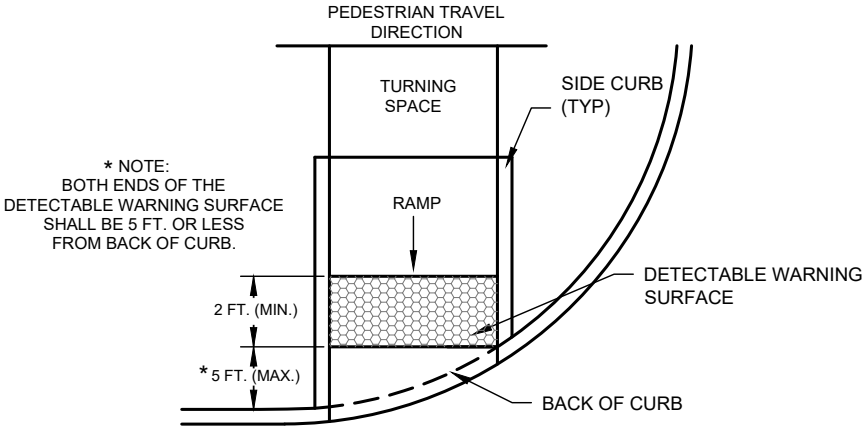
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



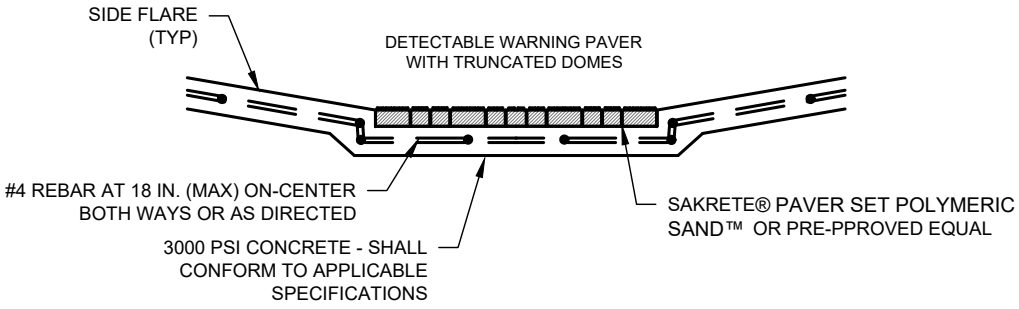
PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL

CURB RAMP AT DETECTABLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND

CITY OF WACO

ENGINEERING DIVISION

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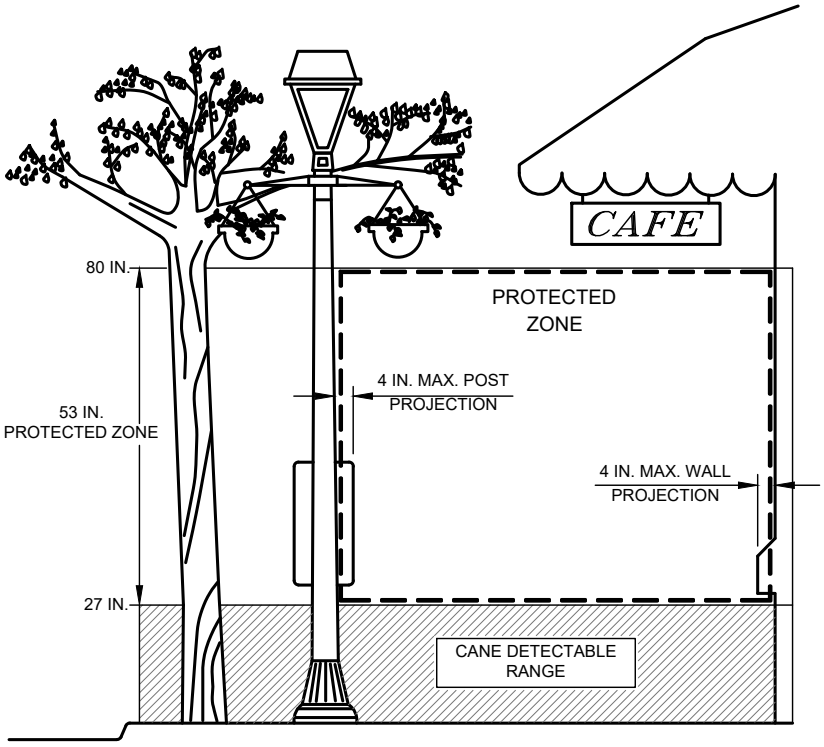
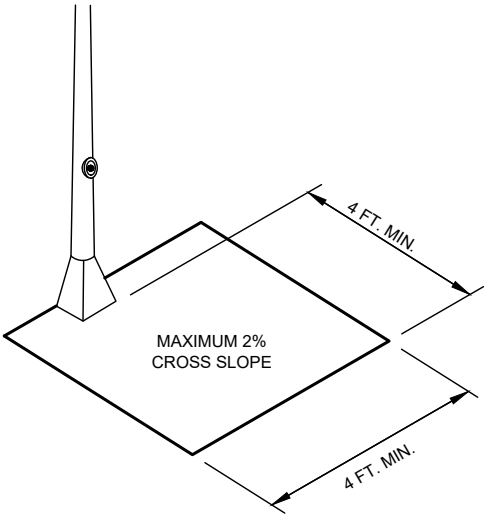
SW-9

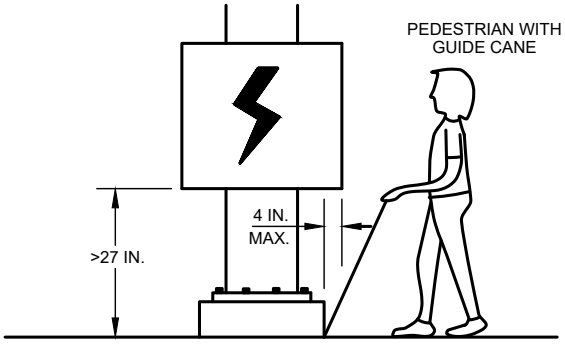


PROTECTED ZONE

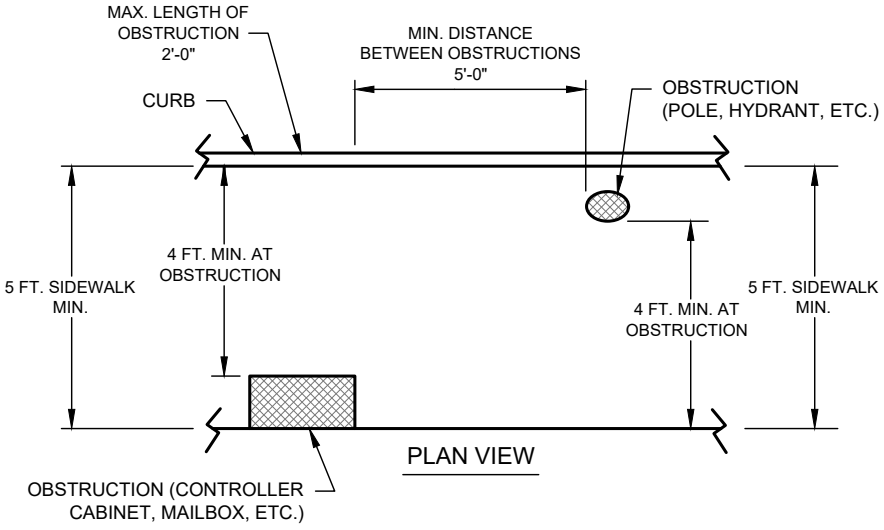
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4 IN. PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27 IN. AND 80 IN. ABOVE THE SURFACE.



CLEAR SPACE ADJACENT
TO PEDESTRIAN PUSH BUTTON



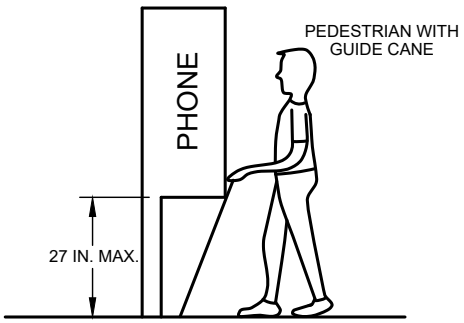
WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27 IN. FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4 IN. INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4 IN. OVERHANG.



PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE.
MINIMUM 4 FT. X 4 FT. CLEAR GROUND SPACE
REQUIRED AT PUBLIC USE FIXTURES.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27 IN. ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR
VERTICAL CLEARANCE < 80 IN.

VERTICAL AND HORIZONTAL CLEARANCE REQUIREMENTS

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND

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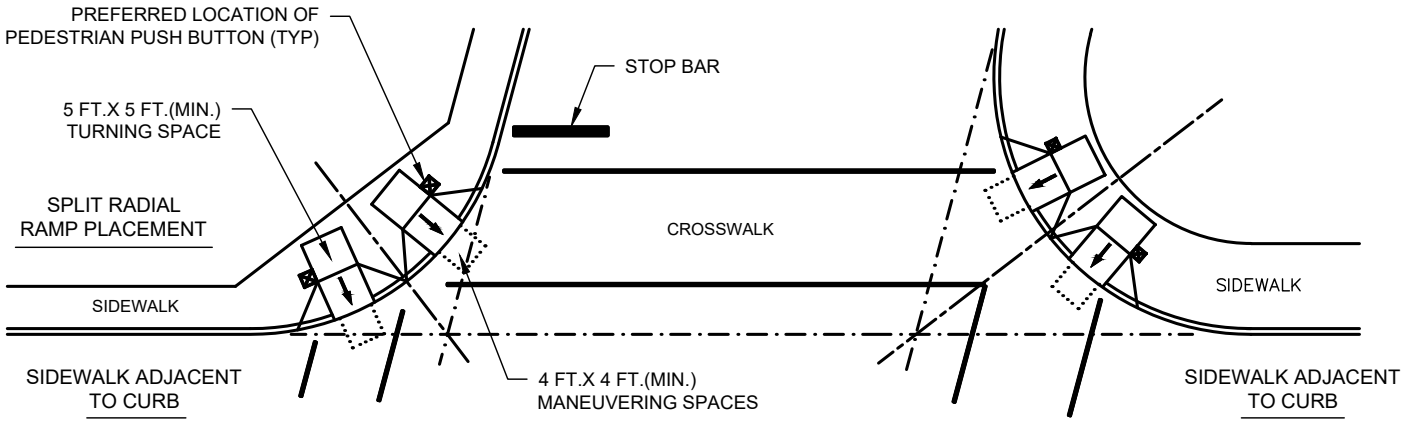
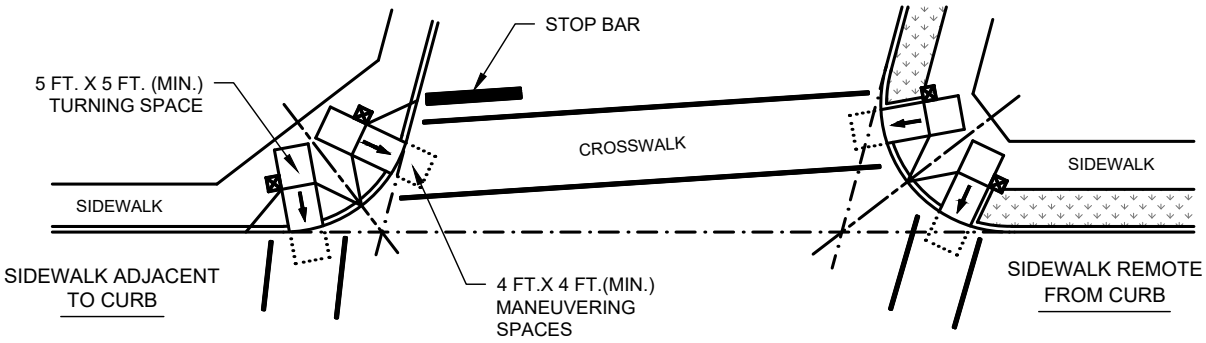
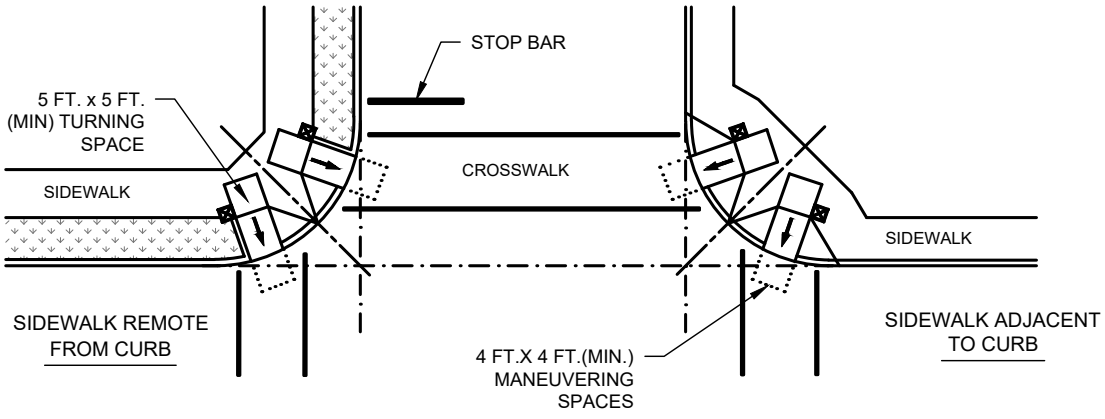
SW-10



SKEWED INTERSECTION WITH "LARGE" RADIUS



SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS

TYPICAL CROSSING LAYOUTS: 1 OF 2

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND

SEE SHEETS SW-7 AND SW-8 FOR DETAILS AND DIMENSIONS

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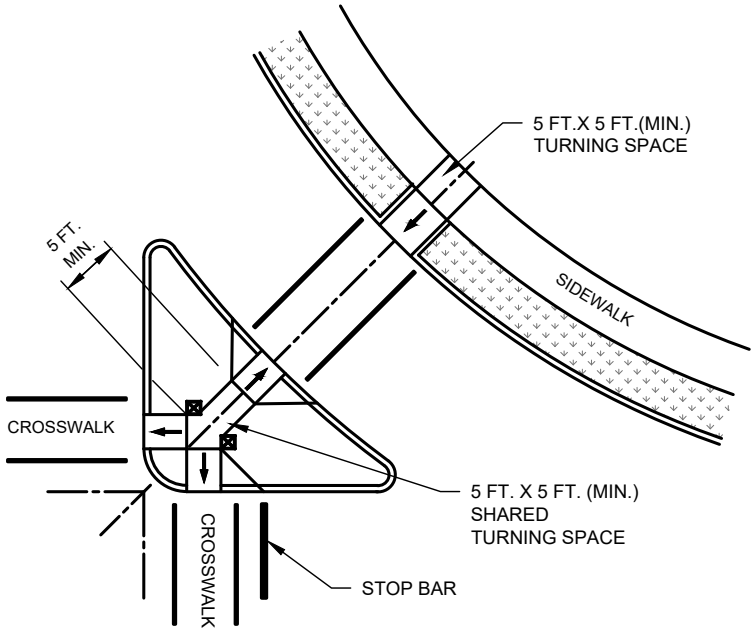
SW-11



AT INTERSECTION
WITH FREE RIGHT TURN & ISLAND

SIDEWALK ADJACENT
TO CURB

SIDEWALK REMOTE
FROM CURB

MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

TYPICAL CROSSING LAYOUTS: 2 OF 2

(NO SCALE)

SEE SHEETS SW-5 AND SW-6 FOR GENERAL NOTES AND LEGEND
SEE SHEETS SW-7 AND SW-8 FOR DETAILS AND DIMENSIONS

CITY OF WACO

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SW-12

PEDESTRIAN MEDALLION PATHS - GENERAL NOTES

GENERAL

1. ALL CONCRETE AND REINFORCEMENT MATERIALS AND PLACEMENT MUST COMPLY WITH SECTION 5.1 OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.

2. PLEASE REFER TO CITY OF WACO MANUAL OF STANDARD DETAILS G-7 FOR GENERAL CONCRETE AND REINFORCEMENT NOTES.

LOCATION

3. LOCATION INTENDED FOR SELECTED SIDEWALK IN DOWNTOWN DISTRICT WITH C-4 ZONING. SUBMITTALS MUST BE REVIEWED AND APPROVED BY PLANNING.

CONSTRUCTION

4. TOOL ALL EXPOSED EDGES (TYPICAL).

5. PEDESTRIAN MEDALLION PATHS AT CROSSWALKS SHALL BE INSTALLED TO MATCH EXISTING STREET CROSS SLOPE. H.M.A.C. LEVEL-UP SHALL BE PLACED SO AS TO PROVIDE A SMOOTH TRANSITION. CONTRACTOR SHALL VERIFY THAT THE PEDESTRIAN CROSSING AND LEVEL-UP WILL ALLOW POSITIVE STREET DRAINAGE.

6. SAW CUT AND REMOVE EXISTING PAVEMENT AS REQUIRED FOR SMOOTH TRANSITION.

7. SAKRETE® PAVER SET POLYMERIC SAND™ SHALL BE CLEANED FROM TOP OF BRICKS AND WALKWAY.

PAVEMENT AND SIDEWALK LEVEL ALIGNMENT:

8. FOR MAINLINE PAVEMENTS IN LONGITUDINAL DIRECTION, THE GAP BELOW A 10 FT. UNLEVELED STRAIGHT EDGE RESTING ON HIGH SPOTS SHALL NOT EXCEED 1/8 IN.

9. FOR MAINLINE PAVEMENTS IN TRANSVERSE DIRECTION, THE GAP BELOW A 10 FT. UNLEVELED STRAIGHT EDGE RESTING ON HIGH SPOTS SHALL NOT EXCEED 1/4 IN.

10. FOR RAMPS, SIDEWALKS, AND INTERSECTIONS, IN ANY DIRECTION, THE GAP BELOW A 10 FT. UNLEVELED STRAIGHT EDGE RESTING ON HIGH SPOTS SHALL NOT EXCEED 1/4 IN.

CITY OF WACO

ENGINEERING DIVISION

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SW-13

PEDESTRIAN MEDALLION PATHS LEGEND

1. BELGARD INTERLOCKING CONCRETE PAVER UNITS OR APPROVED EQUAL ARE MADE FROM "NO-SLUMP" CONCRETE MIX UNDER EXTREME PRESSURE AND HIGH FREQUENCY VIBRATION AND MEET OR EXCEED THE FOLLOWING REQUIREMENTS:
   ASTM STANDARD C-936
   A. AVERAGE COMPRESSIVE STRENGTH - 8000 PSI.
   B. MAXIMUM WATER ABSORPTION - 5%.
   C. FREEZE-THAW TESTING PER SECTION 8 OF ASTM C-67.

   PRODUCT CODES FOR APPROVED COLORS AND SIZES:
   HOLLAND 80MM (3 ⅛ IN.) RED/BLACK - 156438202
   HOLLAND 80MM (3 ⅛ IN.) CHARCOAL - 156438204
2. REQUIRED 1IN. (MAX.) SAKRETE® PAVER SET POLYMERIC SAND™ OR PRE-APPROVED EQUAL SHALL BE USED.
3. FILL JOINTS BETWEEN BRICKS WITH SAKRETE® PAVER SET POLYMERIC SAND™ OR PRE-APPROVED EQUAL.
4. PRECAST BUFF COLORED CONCRETE IN-LAY OF TEXAS STAR - 3 FT. X 3 FT. MEDALLION WILL BE SITE SPECIFIED.
5. CONCRETE BROOM FINISH. SLOPE ¼ IN. PER FOOT FOR DRAINAGE (TYPICAL), ALL EXPOSED CORNERS SHALL BE EITHER TOOLED OR CHAMFERED TO A 1/2 IN. RADIUS.
6. 1/8 IN. TO 1/4 IN. SAKRETE® PAVER SET POLYMERIC SAND™ OR PRE-APPROVED EQUAL.
7. 1 IN. Ø SMOOTH DOWEL 24 IN. LONG @ 12 IN. SPACING AND PVC PIPE SLEEVE WITH CAPPED END.
8. REDWOOD EXPANSION JOINT OR PRE-APPROVED EQUAL WITH 1 IN. X 3/4 IN. W.R. MEADOWS, SOF-SEAL, LOW MODULUS HORIZONTAL SEALANT OR PRE-APPROVED EQUAL. REFERENCE ST-9.
9. #4 REBARS @ 18 IN. OCEW
10. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
    A. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A.” MATERIAL
    B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
    C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER
11. MINIMUM 3000 PSI REINFORCED CONCRETE.
12. REQUIRED 8 IN. THICK, 2000 PSI REINFORCED CONCRETE UNDER ASPHALT.
13. STANDARD WIDTH IS 12 FT. WIDTH MAY BE SCALED DOWN WITH CITY OF WACO PLANNING APPROVAL. TOP SURFACE SHALL HAVE A SMOOTH TRANSITION WITH POSITIVE DRAINAGE. SLOPE 1/4 IN. PER FOOT
14. NEW H.M.A.C. TYPE "D" LEVEL-UP (2 IN. MIN) LAID WITH POSITIVE DRAINAGE.
15. EXISTING H.M.A.C.
16. SAW CUT & REMOVE EXISTING PAVEMENT AS REQUIRED FOR SMOOTH TRANSITION.
17. EXISTING PAVEMENT.
18. EXISTING BASE.
19. COMPACT EXISTING SUBGRADE TO 95% STANDARD PROCTOR DENSITY AT, OR ABOVE, OPTIMUM MOISTURE CONTENT.
20. 12 IN. WIDE CONCRETE EDGE - MANDATORY AT ALL LOCATIONS, ALL EXPOSED CORNERS SHALL BE EITHER TOOLED OR CHAMFERED TO A 1/2 IN. RADIUS.
21. 36 IN. X 5 IN. #4 "L" BAR AT 18 IN. OC.
22. 24 IN. #4 BAR AT 12 IN. OC WITH 1 IN. (DEEP) X 1/8 IN. (WIDE) TOOLED JOINT FILLED WITH W.R. MEADOWS, SOF-SEAL, LOW MODULUS HORIZONTAL SEALANT OR PRE-APPROVED EQUAL.
23. CURB AND GUTTER REINFORCEMENT. REFERENCE DETAIL ST-15.
24. NEENAH TYPE R-8710-106 TREE GRATE OR APPROVED EQUAL.
25. TREE GRATE FRAME PER MANUFACTURER.
26. CYPRESS MULCH. REFERENCE CODE OF ORDINANCES FOR SPECIFICATIONS.

CITY OF WACO

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1	MODIFY NOTE 10	MZ	04/28/2025
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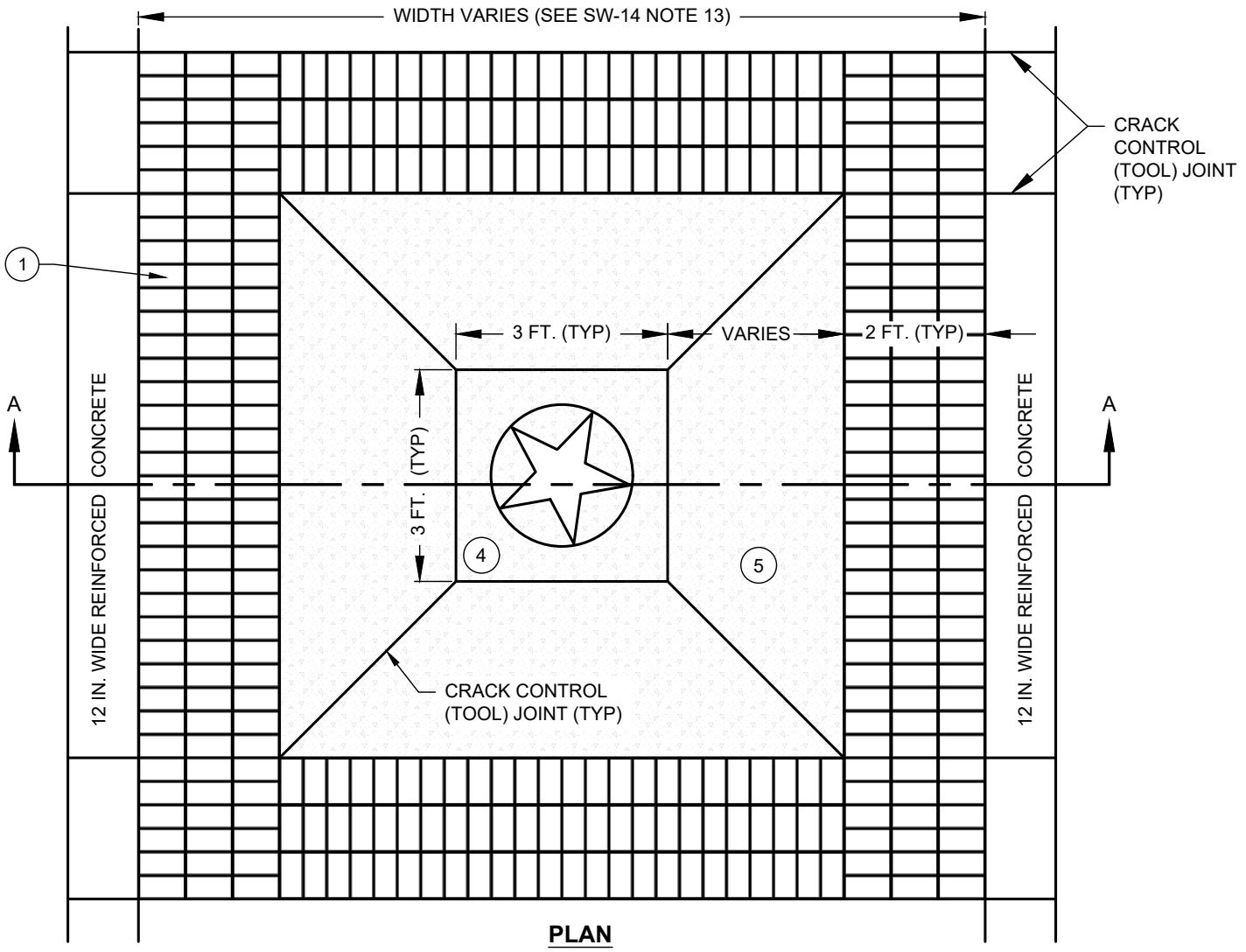
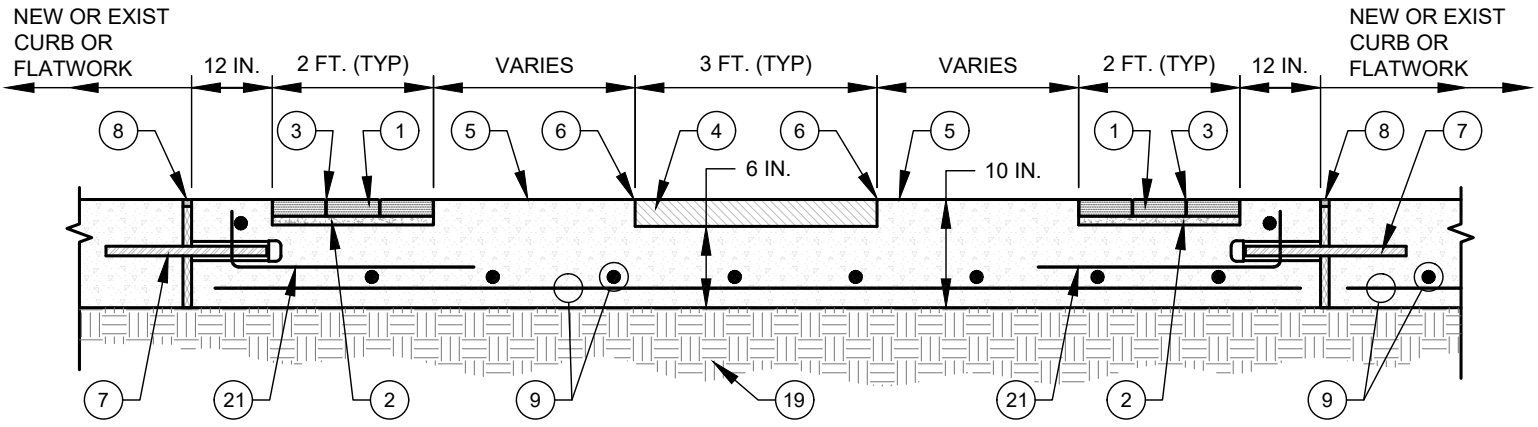
SW-14



PLAN



SECTION A-A

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN MEDALLION PATH DETAILS IN NON-TRAFFIC AREAS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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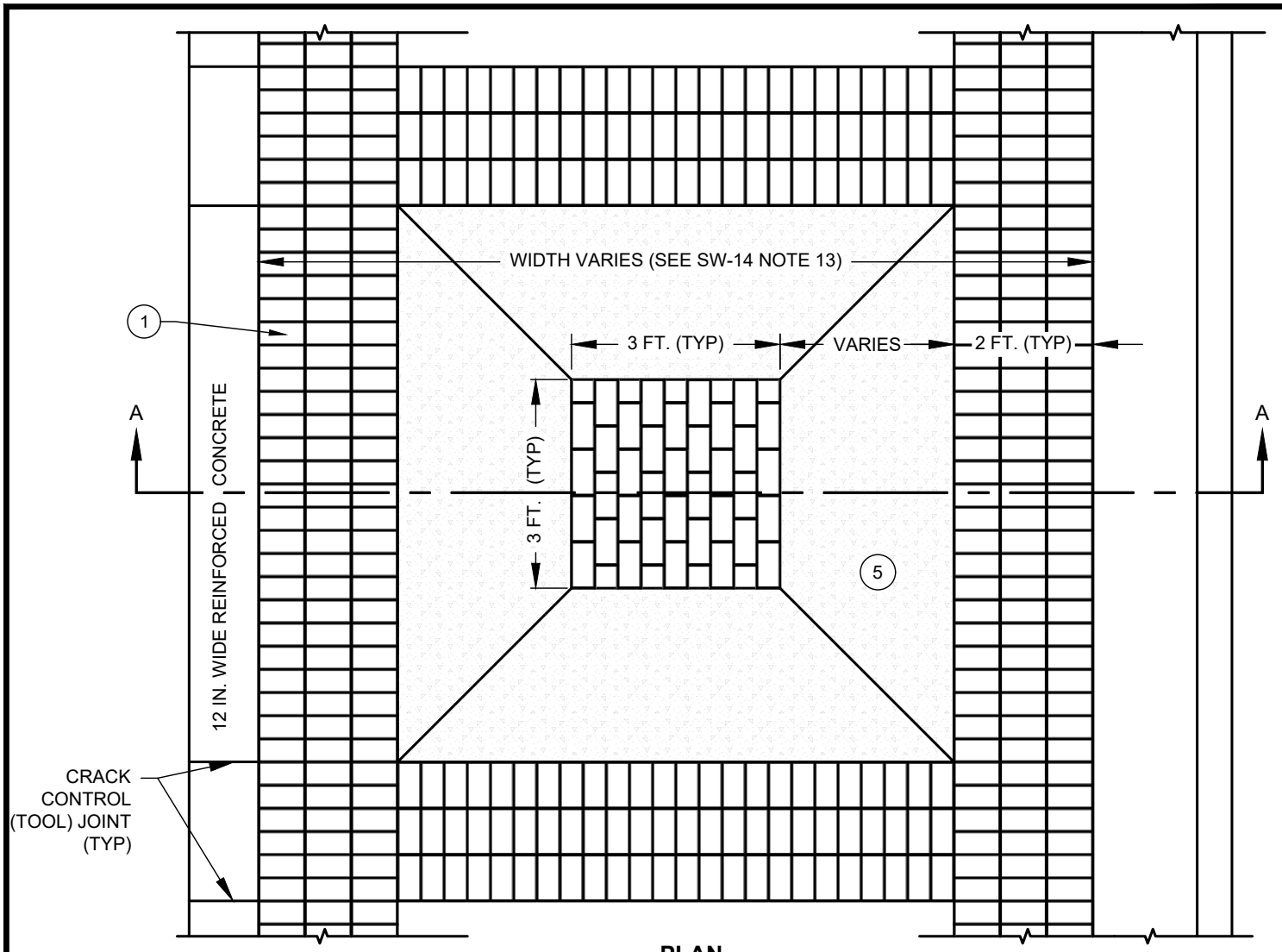
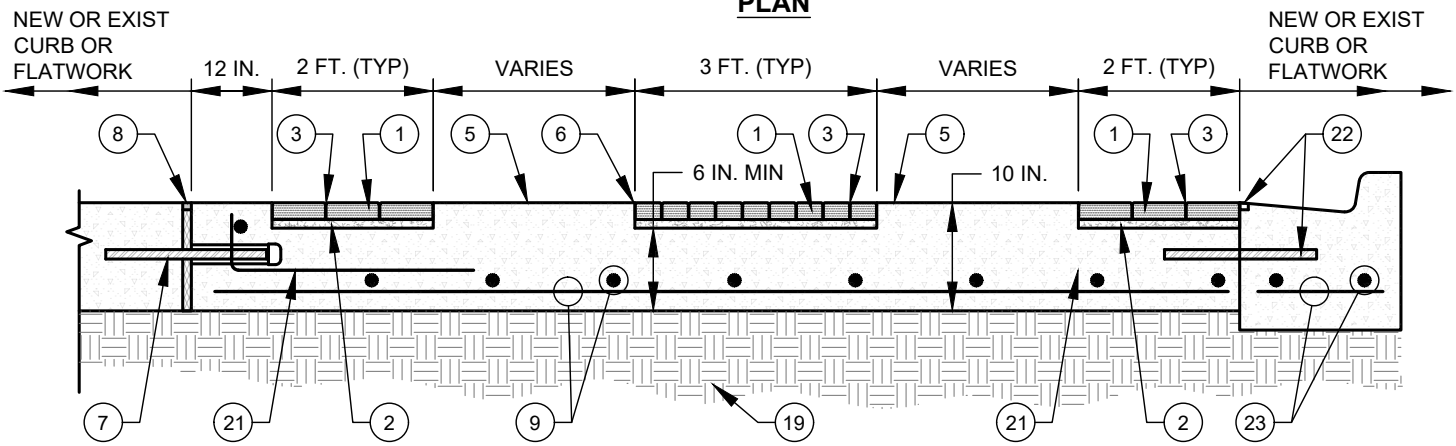
SW-15



PLAN



SECTION A-A

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN BRICK MEDALLION PATH DETAILS IN CONCRETE AREAS INCLUDING DRIVES

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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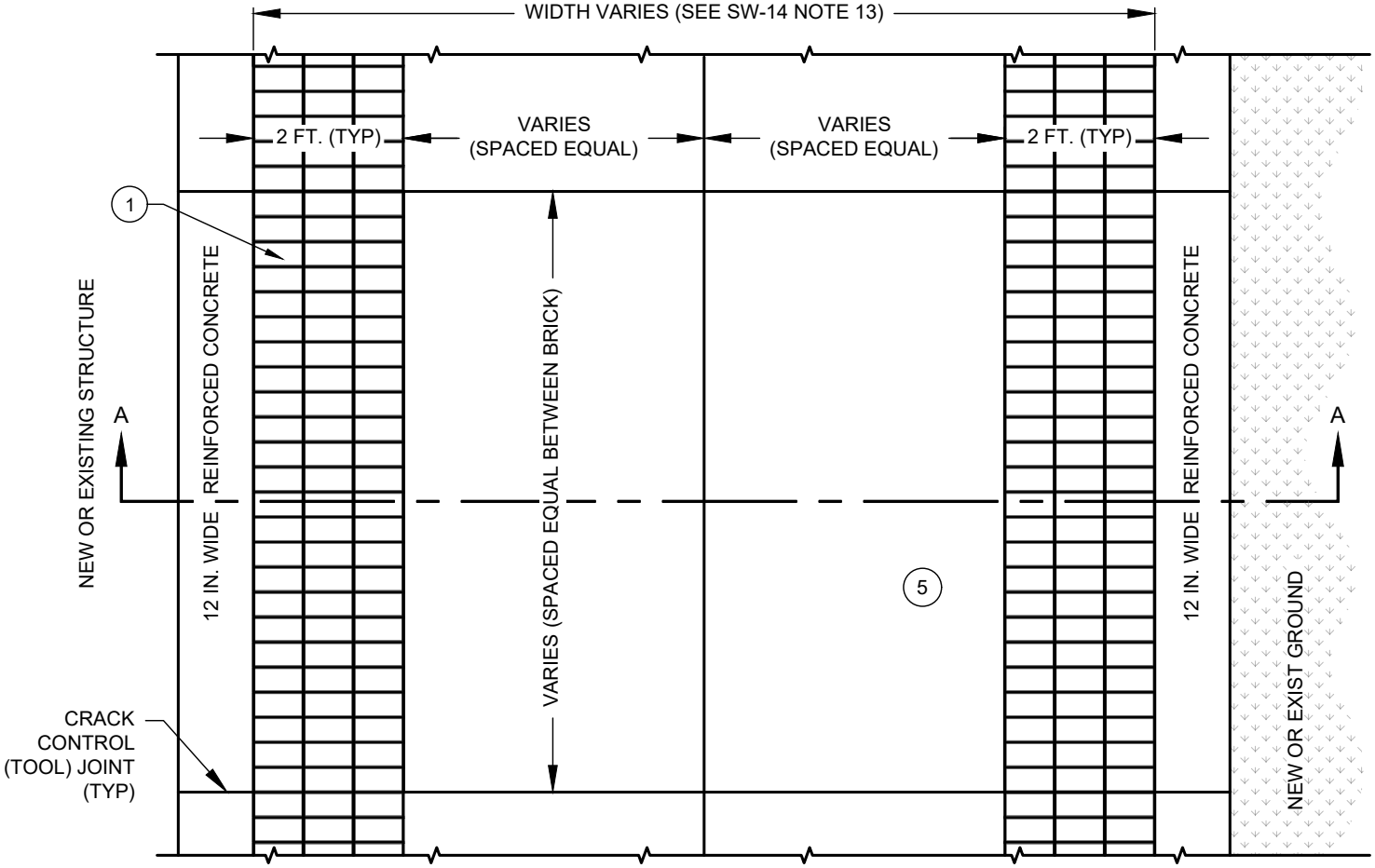
SW-16



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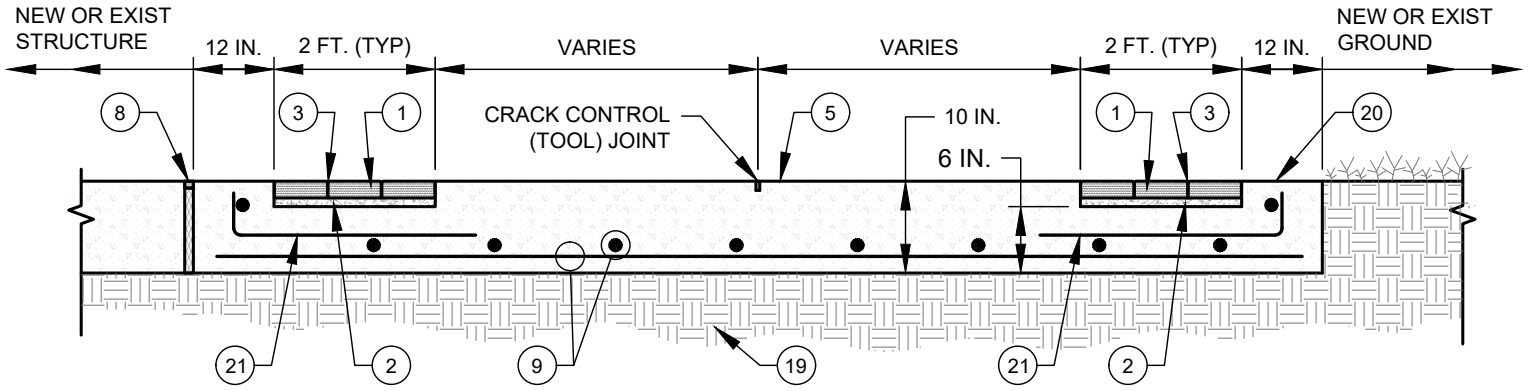

SECTION A-A

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN CONCRETE PATH DETAILS IN NON-TRAFFIC AREAS

(NO SCALE)

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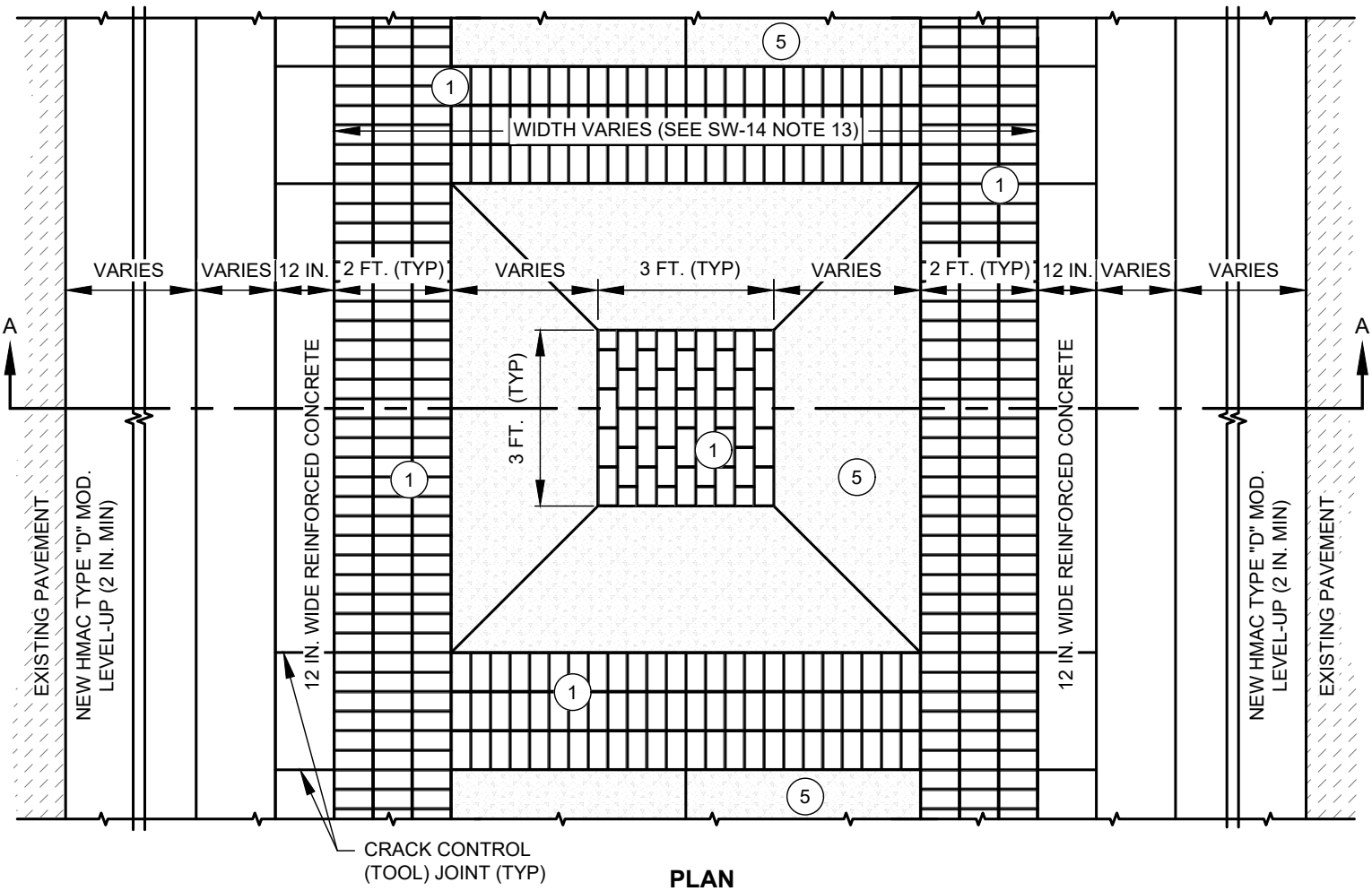
SW-17



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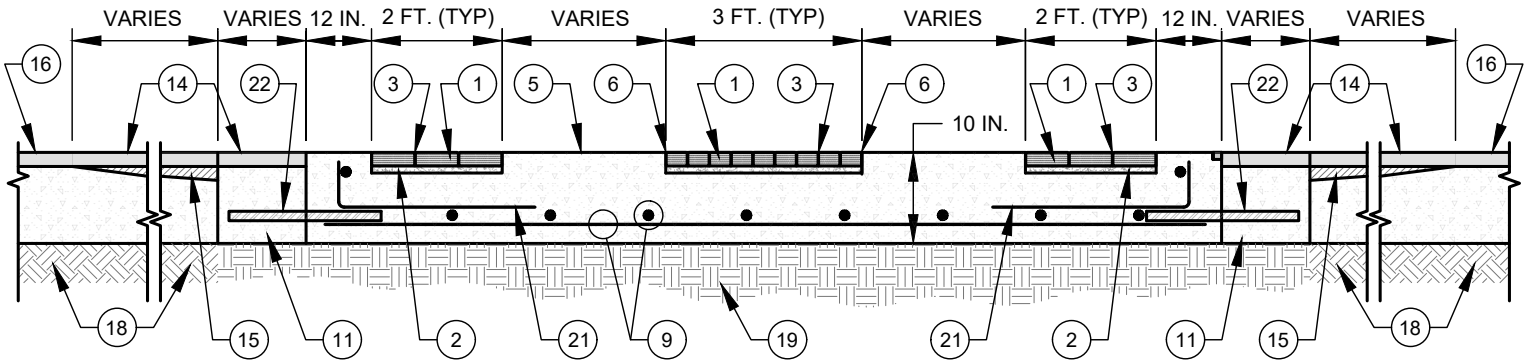

SECTION A-A

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN BRICK PAVER MEDALLION PATH DETAILS IN ASPHALT AREAS INCLUDING DRIVES

(NO SCALE)

CITY OF WACO

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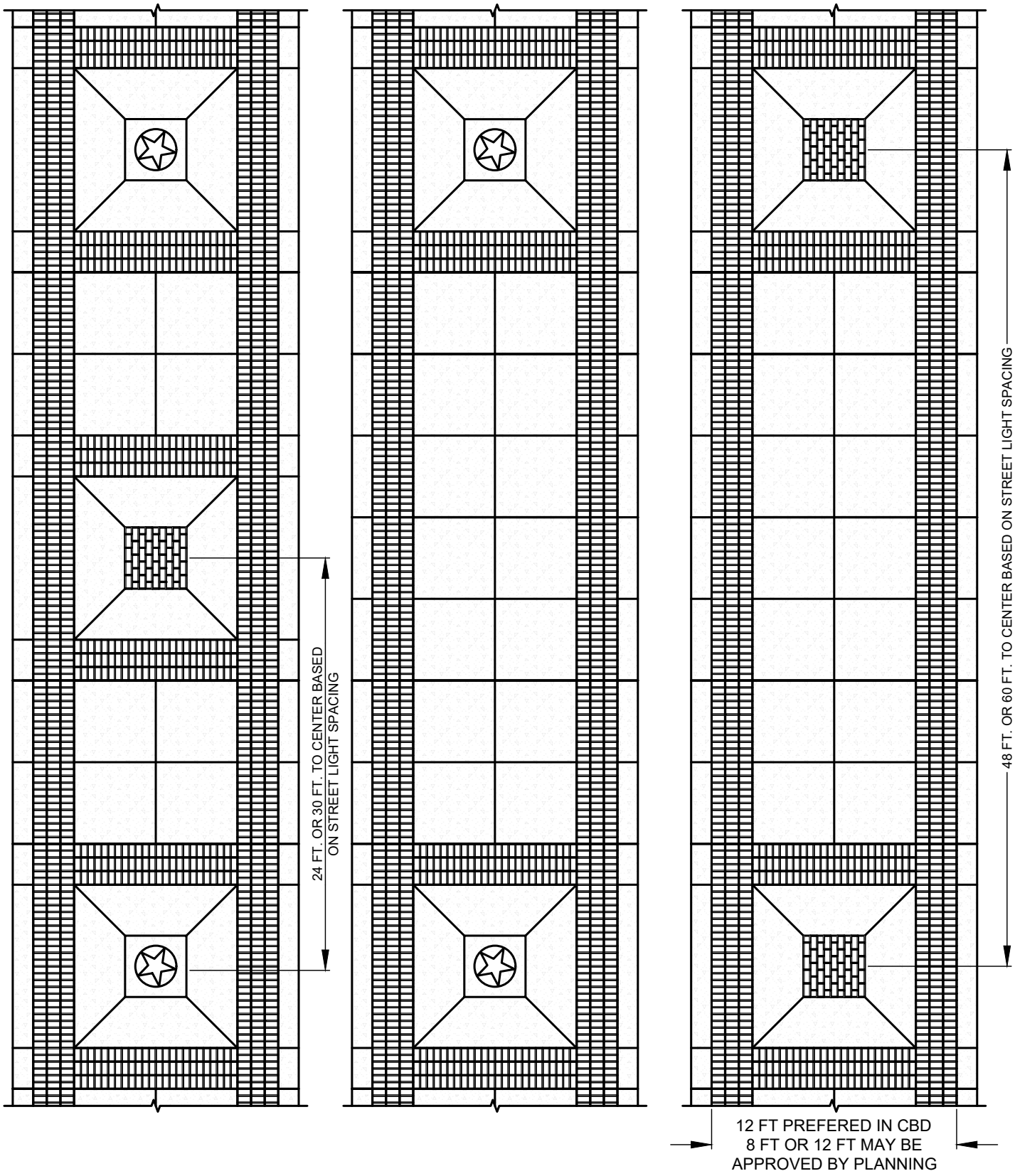
SW-18



FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN MEDALLION PATH DETAILS IN NON-TRAFFIC AREAS SPACING

(NO SCALE)

CITY OF WACO

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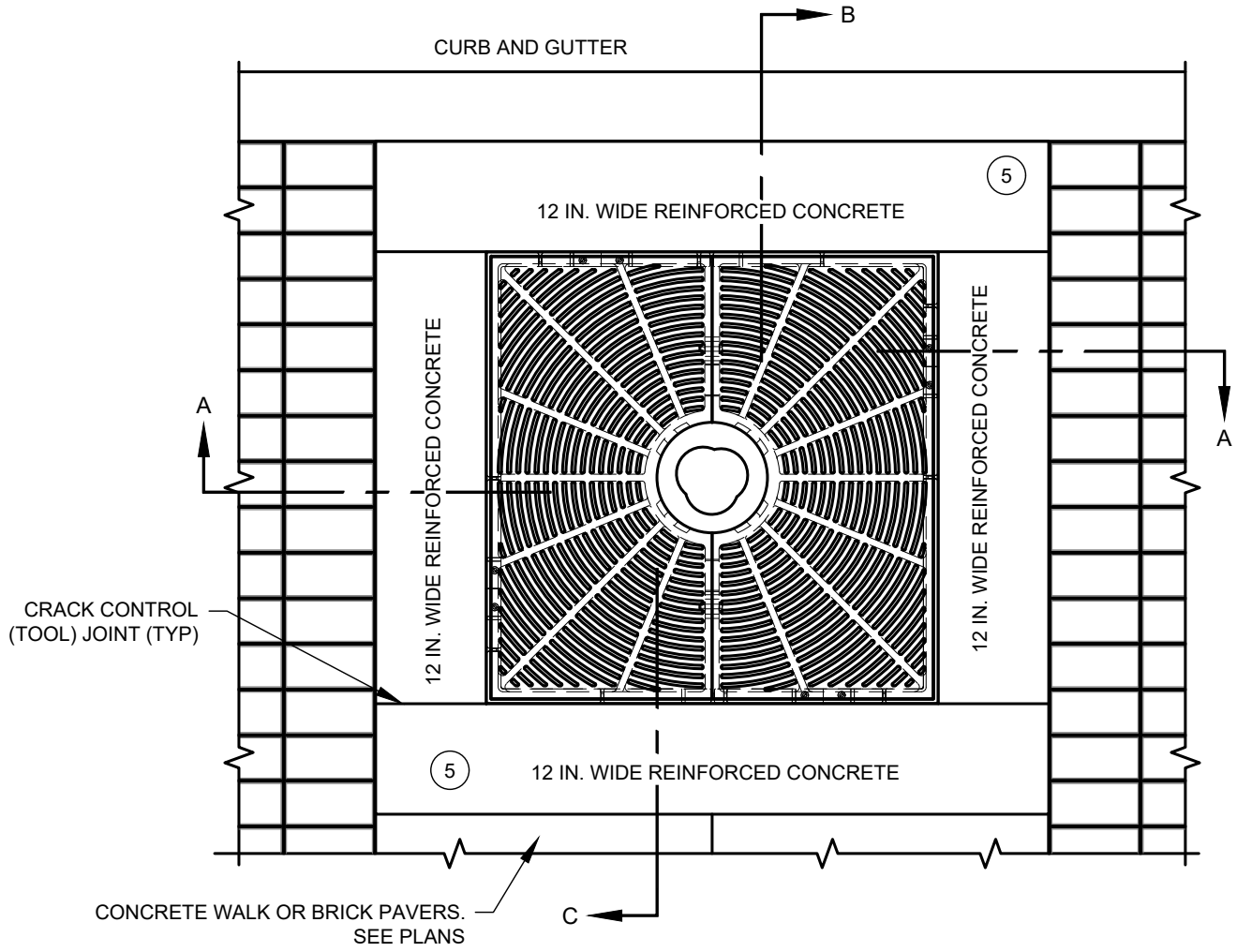
SW-19



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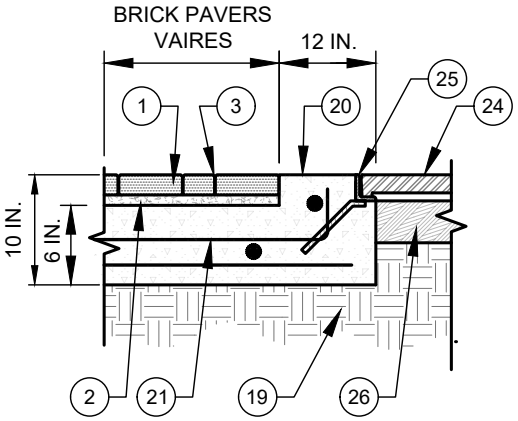
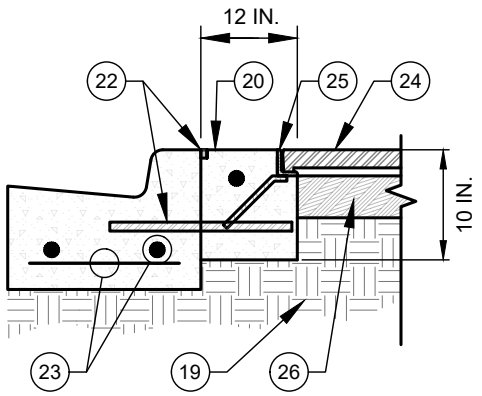
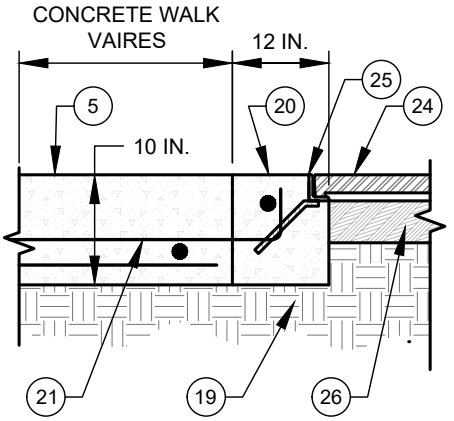


SECTION A
TREE GRATE AT BRICK PAVERS



SECTION B
TREE GRATE AT CURB AND GUTTER



SECTION C
TREE GRATE AT CONCRETE WALK

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

TREE GRATE DETAILS

(NO SCALE)

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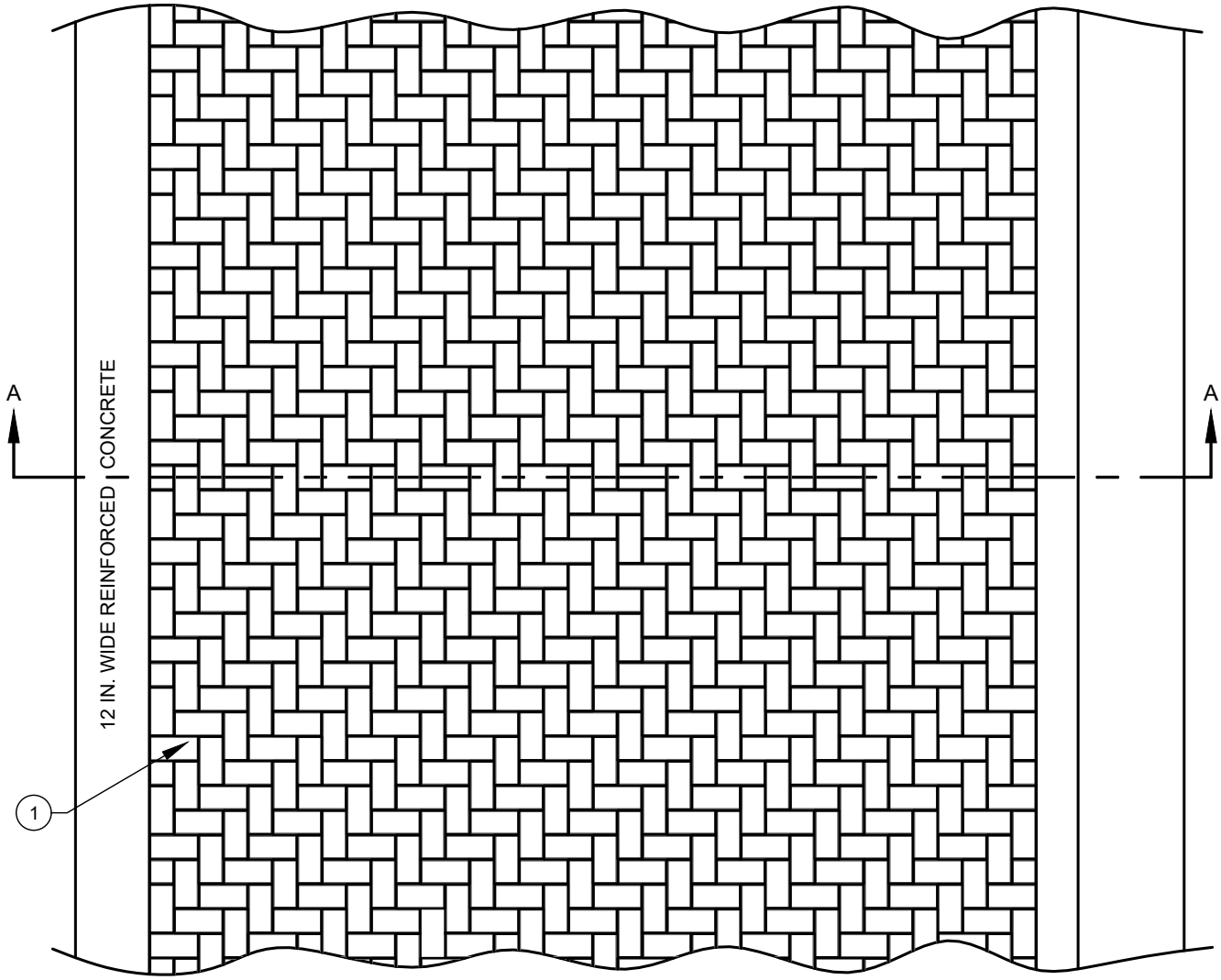
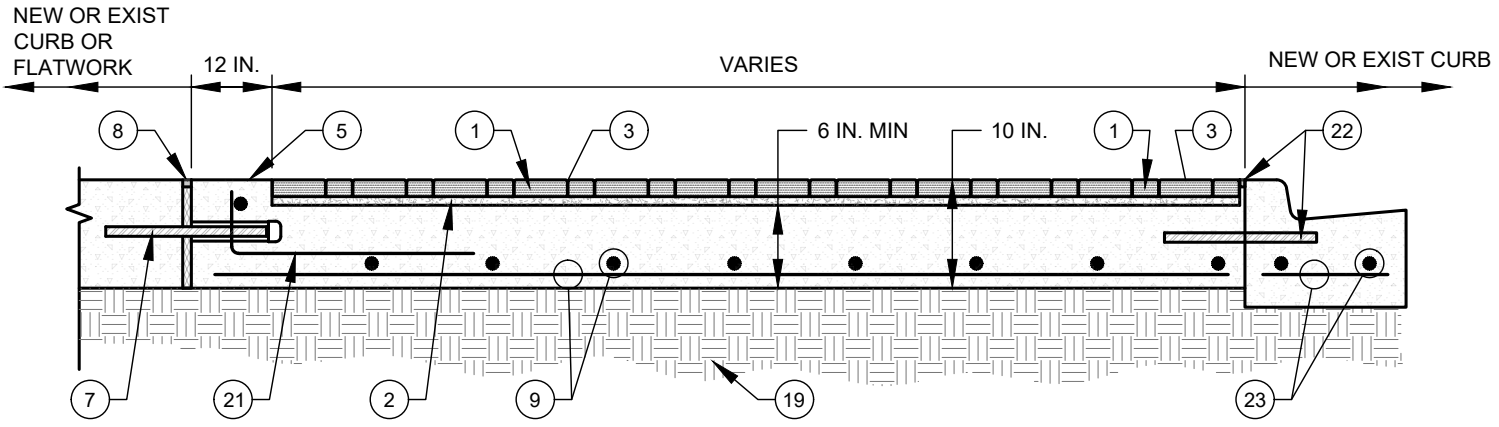
SW-20



PLAN



SECTION A-A

FOR GENERAL NOTES SEE SHEET SW-1
FOR LEGEND DESCRIPTIONS SEE SHEET SW-14

PEDESTRIAN BRICK PAVER PATH DETAILS IN CONCRETE AREAS INCLUDING DRIVES

(NO SCALE)

CITY OF WACO

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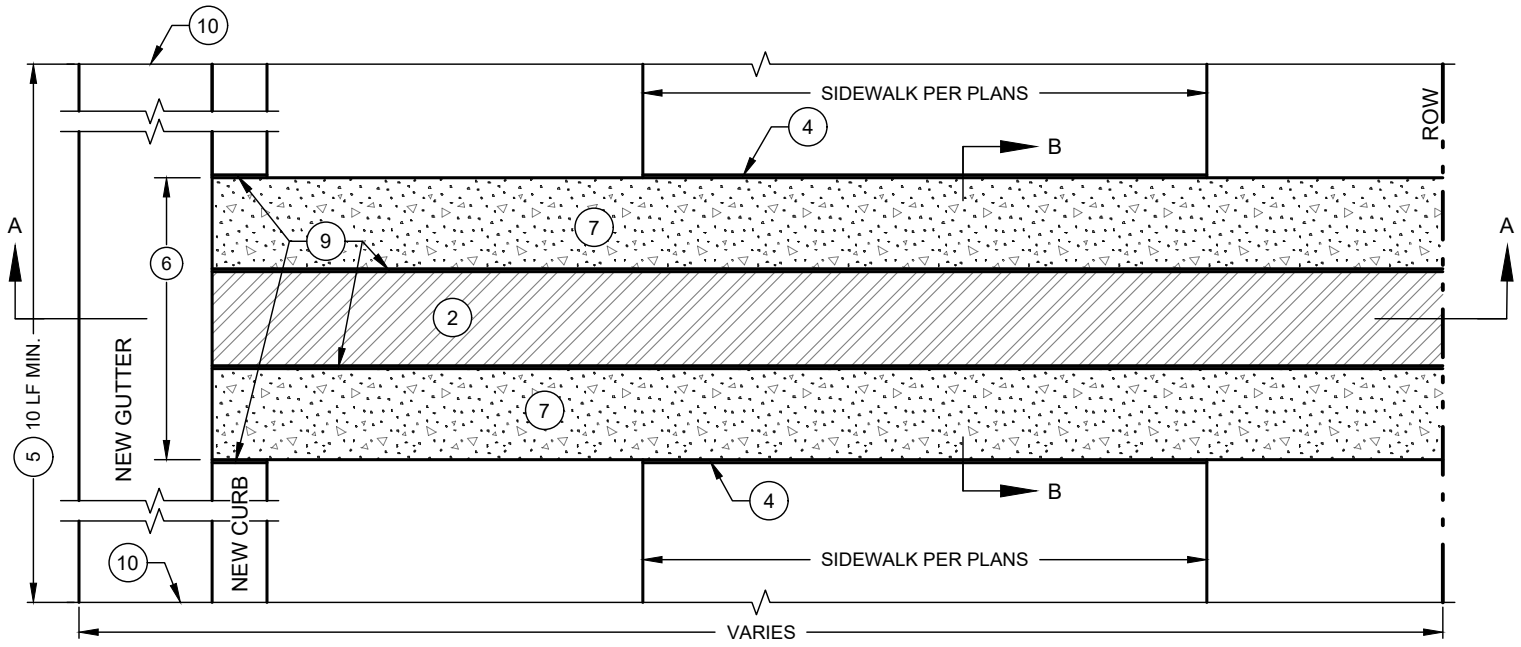
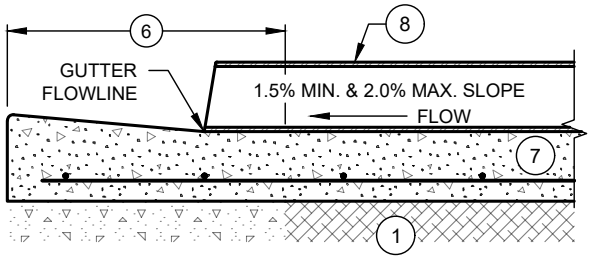
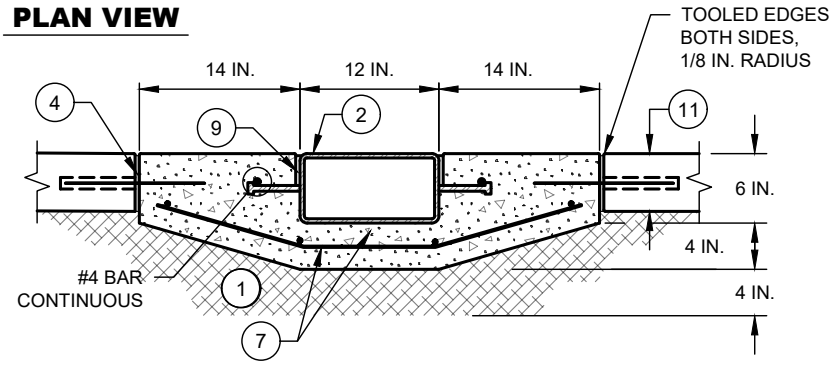
SW-21



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

1. MATERIAL PER SW-2 SIDEWALK DETAILS LEGEND NOTE 2.
2. 12 IN. X 6 IN. X 3/8 IN. GALVANIZED STEEL TUBE (A36) WITH 4 IN. X 1/2 IN. DIA. STUDS PLACED 4 IN. FROM EACH END AND AT MAXIMUM SPACING OF 12 IN. THE TOP SURFACE OF THE TUBE SHALL RECEIVE A SLIPNOT STEEL GRIP PLATE® (GRADE 3 COARSE) COATING AS MANUFACTURED BY TRACTION TECHNOLOGIES HOLDINGS, LLC (1-800-SLIPNOT) OR EQUIVALENT AND THEN THE ENTIRE TUBE WITH STUDS ATTACHED SHALL BE HOT DIP GALVANIZED (GRADE 3 COARSE). TOP OF STEEL TUBE TO BE FLUSH WITH TOP OF ADJOINING CONCRETE "SADDLE."
3. ENGINEER SHALL PERFORM AND PROVIDE HYDRAULIC CALCULATIONS AND ESTABLISH ADEQUACY OF DRAINAGE TUBE.
4. CONCRETE EXPANSION JOINT. THE SIDEWALK SCUPPER WITH ADJOINING CONCRETE “SADDLE” SHALL BE PLACED PER THIS STANDARD DETAIL TO REQUIRED GRADES PRIOR TO PLACEMENT OF ADJACENT SIDEWALK SECTIONS AND SHALL INCLUDE CONCRETE EXPANSION JOINTS PER ST-9 AND AS SHOWN ON THIS STANDARD DETAIL WITH NON-SLEEVED PORTION OF 3/4 IN. DIA. 24 IN. LONG SMOOTH DOWELS PLACED IN THE CONCRETE “SADDLE” AT MAXIMUM SPACING OF 12 IN. WITH MINIMUM DISTANCE OF 3 IN. BETWEEN DOWELS AND 4 IN. X 1/2 IN DIA.STUDS.
5. SIDEWALK SCUPPER SHALL INCLUDE 10 LF OF NEW CURB AND GUTTER CENTERED ABOUT THE SCUPPER. WHEN CONSTRUCTING THE NEW CURB AND GUTTER EXISTING CURB AND GUTTER SHALL BE SAWED. IF THE SAWCUT WILL BE WITHIN 3 FT. OF AN EXISTING JOINT, THE EXISTING CURB AND GUTTER SHALL BE REMOVED AND REPLACED TO THE NEXT EXISTING JOINT. CONCRETE FOR SIDEWALK SCUPPER AND NEW CURB AND GUTTER SHALL BE PLACED MONOLITHICALLY.
6. WITHIN THESE LIMITS SCUPPER AND CONCRETE "SADDLE" SHALL CONFORM TO STANDARD CURB AND GUTTER SECTION REF ST-15 & ST-20. (SEE NOTE 5).
7. CONCRETE "SADDLE" CLASS A CONCRETE WITH #4 @ 12 IN. OCEW EXTEND FULLY INTO GUTTER PORTION OF NEW CURB AND GUTTER MAINTAINING MIN. 2 IN. CLEARANCE FROM SURFACES.
8. TOP OF STEEL TUBE SHALL BE FLUSH WITH TOP OF ADJOINING CONCRETE "SADDLE."
9. 1/2 IN. PREFORMED BITUMINOUS JOINT FILLER.
10. EXPANSION JOINT WITH 2 3/4 IN. DIA. X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN DIA. PVC PIPE SLEEVE WITH CAPPED END. REF. ST-9 FOR ADDITIONAL REQUIREMENTS.
11. 5 IN. MIN. MATCH DEPTH OF CONCRETE SIDEWALK OR TRAIL.

SIDEWALK SCUPPER TYPE 1

(NO SCALE)

CITY OF WACO

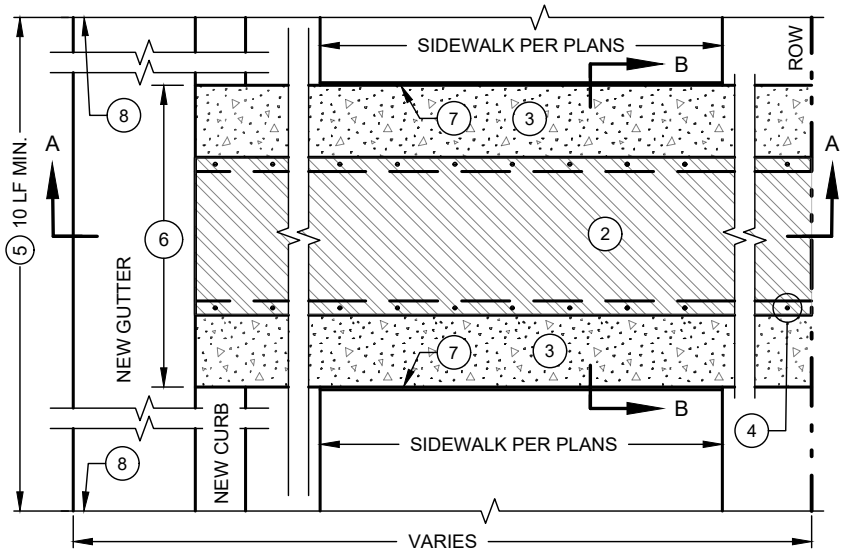
ENGINEERING DIVISION

REVISIONS

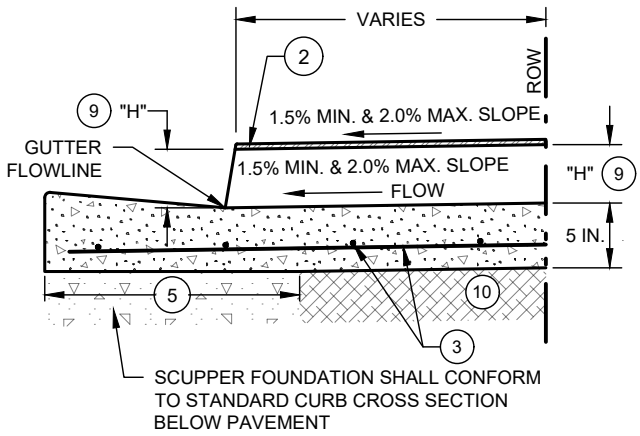
NO.	COMMENTS	BY	DATE
1	NOTE 5: ADD CONCRETE NOTE	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

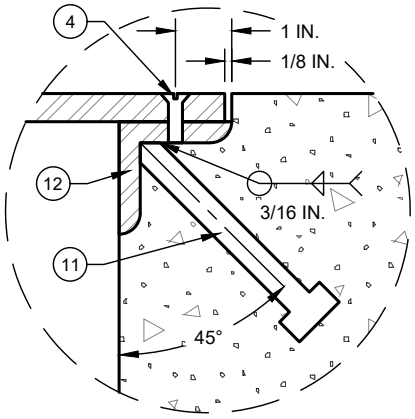
SW-22



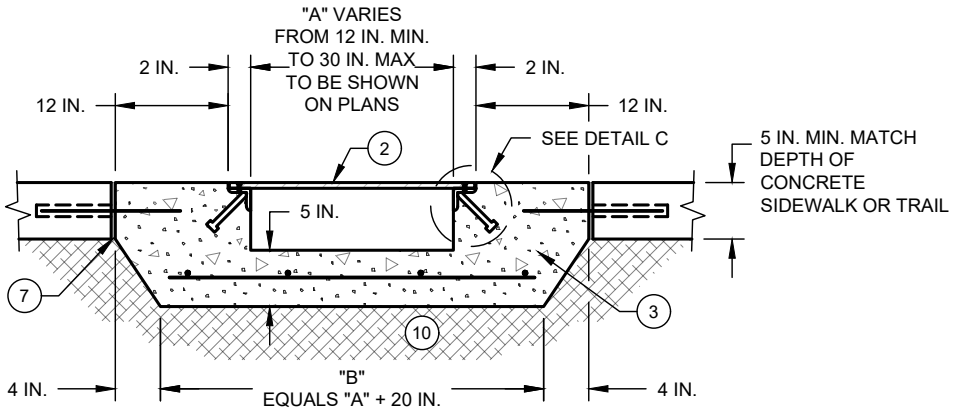
PLAN VIEW



SECTION A-A



DETAIL C



SECTION B-B

NOTES:

1. ENGINEER SHALL PREPARE AND PROVIDE HYDRAULIC CALCULATIONS AND ESTABLISH ADEQUACY OF DRAINAGE WAY.
2. 1/2 IN. THICK GALVANIZED STEEL PLATE ASTM A-36. GALVANIZED STEEL PLATE SHALL BE DELIVERED AS ONE PIECE, CONFORMING TO THE REQUIRED SCUPPER DIMENSIONS. PLATES SHALL NOT BE SPLICED. TOP SURFACE OF STEEL PLATE SHALL RECEIVE A SLIPNOT STEEL GRIP PLATE® (GRADE 3 COARSE) COATING AS MANUFACTURED BY TRACTION TECHNOLOGIES HOLDINGS, LLC (1-800-SLIPNOT) OR EQUIVALENT, COUNTERSUNK HOLES SHALL BE DRILLED, AND THEN THE ENTIRE STEEL PLATE SHALL BE HOT DIP GALVANIZED (GRADE 3 COARSE).
3. CONCRETE "SADDLE" CLASS A CONCRETE WITH #4 @ 12 IN. OCEW. FULLY EXTEND REINF INTO GUTTER PORTION OF NEW CURB AND GUTTER MAINTAINING MIN. 2 IN. CLEARANCE FROM SURFACES.
4. 3/8 IN. FLATHEAD STAINLESS STEEL CAP SCREW. COUNTER SINK PLACED 2 IN. FROM EACH END AND AT MAXIMUM SPACING OF 8 IN.
5. SIDEWALK SCUPPER SHALL INCLUDE 10 LF OF NEW CURB AND GUTTER CENTERED ABOUT THE SCUPPER. WHEN CONSTRUCTING THE NEW CURB AND GUTTER EXISTING CURB AND GUTTER SHALL BE SAWED. IF THE SAWCUT WILL BE WITHIN 3 FT. OF AN EXISTING JOINT, THE EXISTING CURB AND GUTTER SHALL BE REMOVED AND REPLACED TO THE NEXT EXISTING JOINT. CONCRETE FOR SIDEWALK SCUPPER AND NEW CURB AND GUTTER SHALL BE PLACED MONOLITHICALLY.
6. WITHIN THESE LIMITS SCUPPER AND CONCRETE "SADDLE" SHALL CONFORM TO STANDARD CURB AND GUTTER SECTION REF ST-15 & ST-20. (SEE NOTE 5).
7. CONCRETE EXPANSION JOINT. THE SIDEWALK SCUPPER WITH ADJOINING CONCRETE “SADDLE” SHALL BE PLACED PER THIS STANDARD DETAIL TO REQUIRED GRADES PRIOR TO PLACEMENT OF ADJACENT SIDEWALK SECTIONS AND SHALL INCLUDE CONCRETE EXPANSION JOINTS PER ST-9 AND AS SHOWN ON THIS STANDARD DETAIL WITH NON-SLEEVED PORTION OF 3/4 IN. DIAMETER 24 IN. LONG SMOOTH DOWELS PLACED IN THE CONCRETE “SADDLE” AT MAXIMUM SPACING OF 12 IN. WITH MINIMUM DISTANCE OF 3 IN. BETWEEN DOWEL AND 4 IN. X 1/2 IN. DIAMETER STUDS (SEE NOTE 11) .
8. EXPANSION JOINT WITH 2 3/4 IN. DIA. X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN DIA. PVC PIPE SLEEVE WITH CAPPED END. REF. ST-9 FOR ADDITIONAL REQUIREMENTS.
9. "H" EQUALS CURB FACE HEIGHT MINIMUM 6 IN. DIMENSION TO BE NOTED ON PLANS.
10. 4 IN. DEPTH OF TYPE MATERIAL PER SW-2 SIDEWALK DETAILS LEGEND NOTE 2.
11. 4 IN. X 1/2 IN. DIA. STUDS PLACED 4 IN. FROM EACH END AND AT MAX SPACING OF 12 IN.
12. GALVANIZED STEEL L 2 IN. X 2 IN. X 3/8 IN. BOTH SIDES. FOR THE FABRICATION, THE HOLES SHALL BE DRILLED, THEN THE STUDS SHALL BE WELDED, FOLLOWED BY HOT DIP GALVANIZING OF THE FINISHED UNITS.

SIDEWALK SCUPPER TYPE 2

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	NOTE 5: ADD CONCRETE NOTE	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

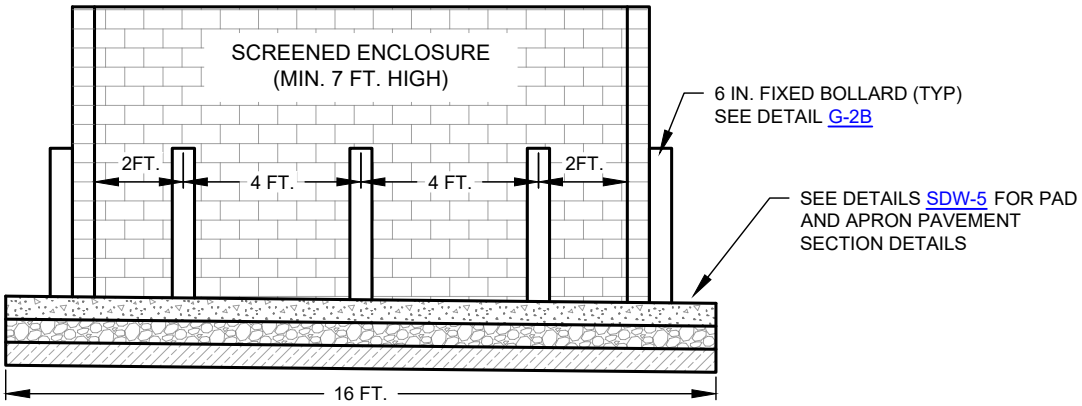
SW-23

CITY OF WACO

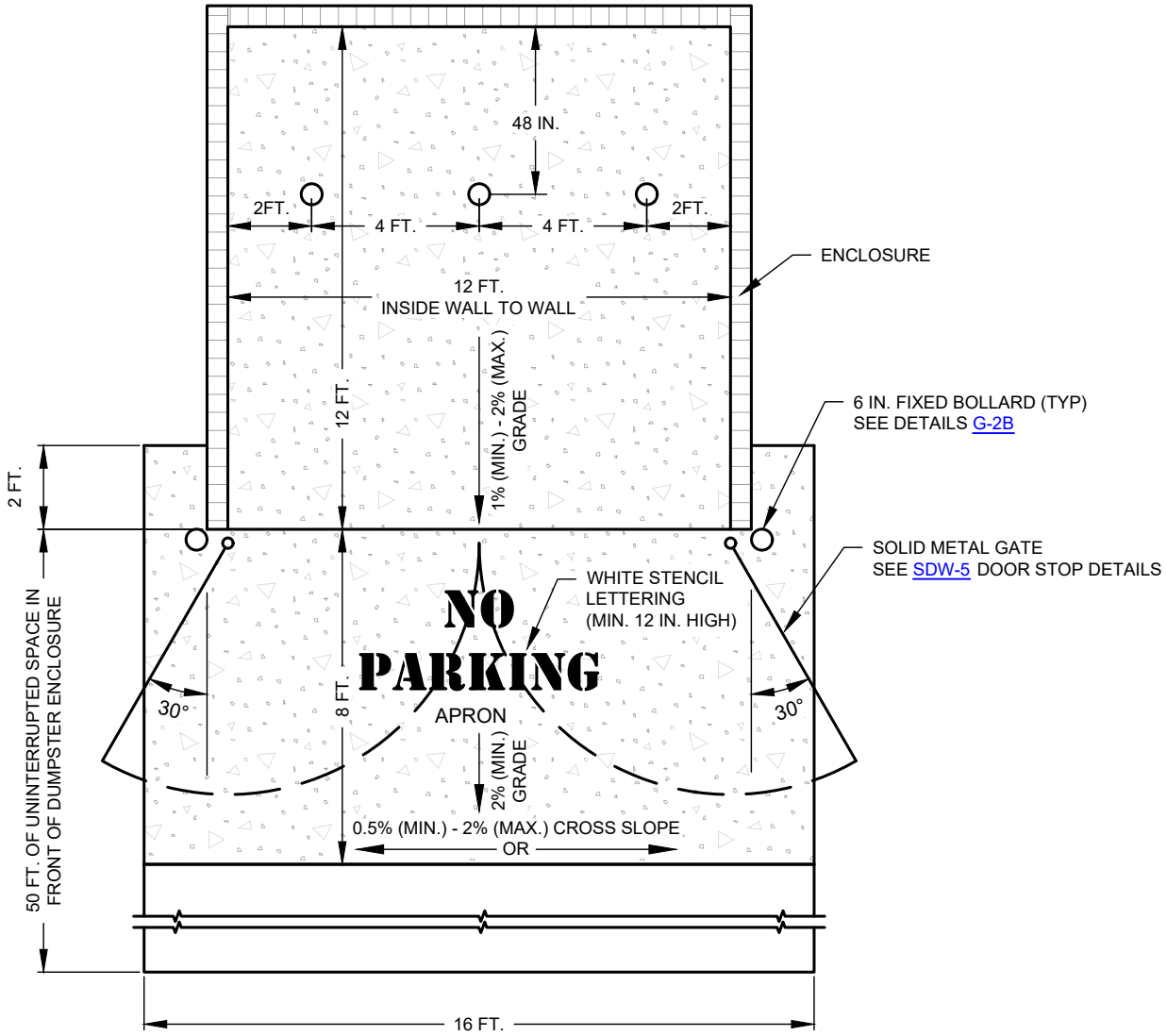
SOLID WASTE DETAILS

CITY OF WACO
SOLID WASTE DETAILS

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024



SECTION VIEW



PLAN VIEW

NOTE:
APRON SHALL BE GRADED TO DRAIN TOWARDS APPROVED DRAINAGE PATH WITH A MINIMUM 2% LONGITUDINAL SLOPE AND A MINIMUM 0.5% CROSS SLOPE AND MAXIMUM 2% CROSS SLOPE. ANY DESIGNS THAT PROPOSE TO EXCEED 2% CROSS SLOPE SHALL REQUIRE THE APPROVAL OF THE DIRECTOR OF SOLID WASTE DEPARTMENT.

FRONT LOAD SINGLE WASTE CONTAINER PAD WITH ENCLOSURE

(NO SCALE)

CITY OF WACO

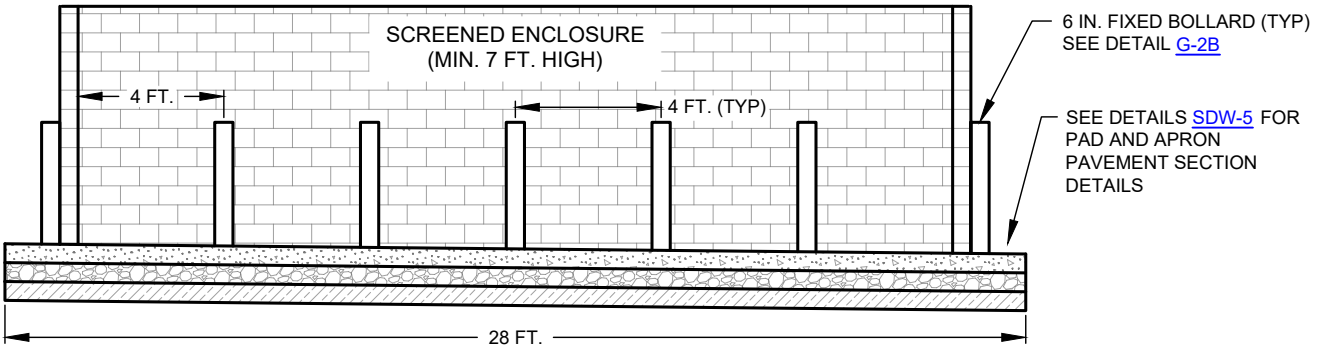
ENGINEERING DIVISION

REVISIONS

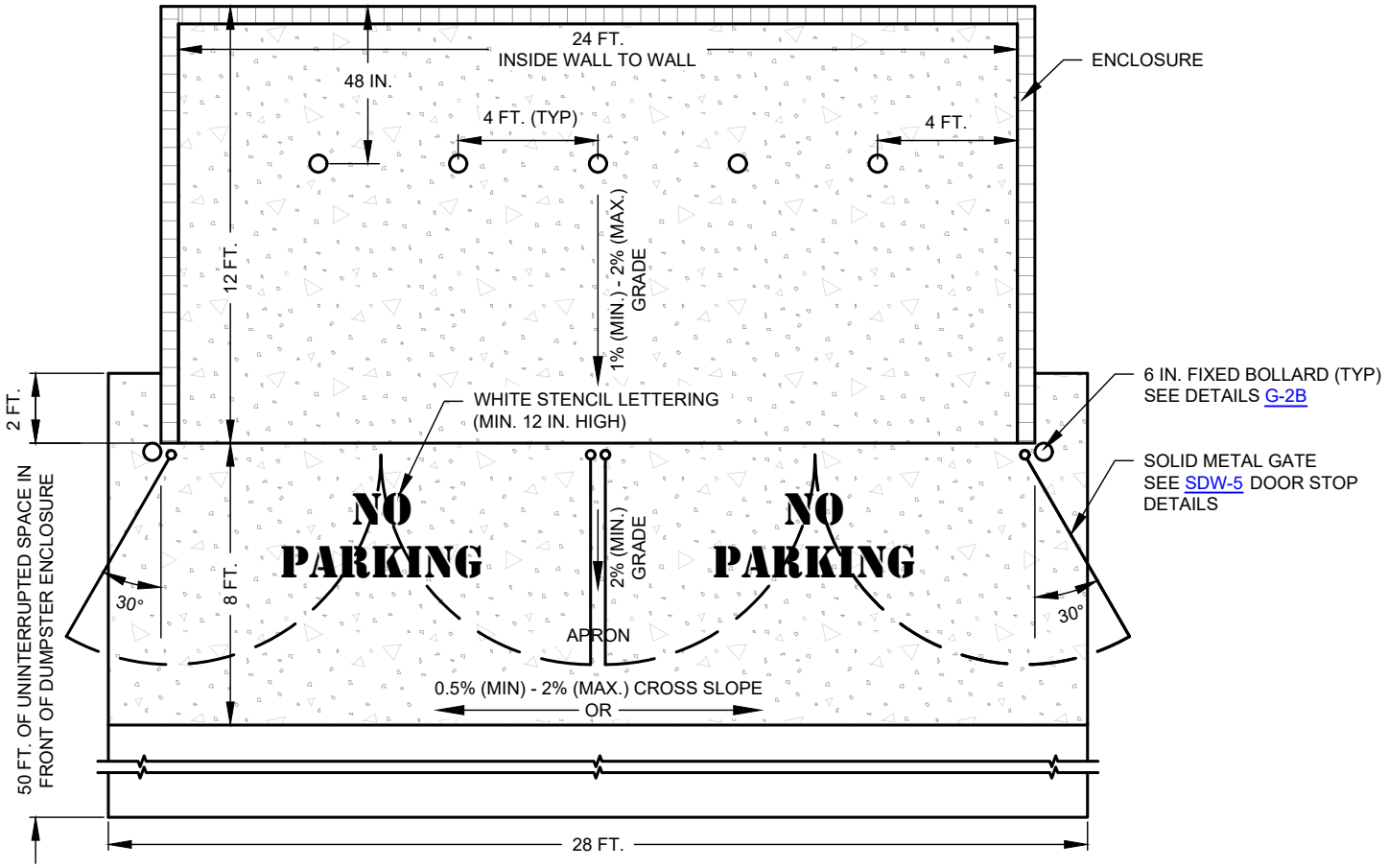
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

SDW-1



SECTION VIEW



PLAN VIEW

NOTE:
APRON SHALL BE GRADED TO DRAIN TOWARDS APPROVED DRAINAGE PATH WITH A MINIMUM 2% LONGITUDINAL SLOPE AND A MINIMUM 0.5% CROSS SLOPE AND MAXIMUM 2% CROSS SLOPE. ANY DESIGNS THAT PROPOSE TO EXCEED 2% CROSS SLOPE SHALL REQUIRE THE APPROVAL OF THE DIRECTOR OF SOLID WASTE DEPARTMENT.

FRONT LOAD DOUBLE WASTE CONTAINER PAD WITH ENCLOSURE

(NO SCALE)

CITY OF WACO

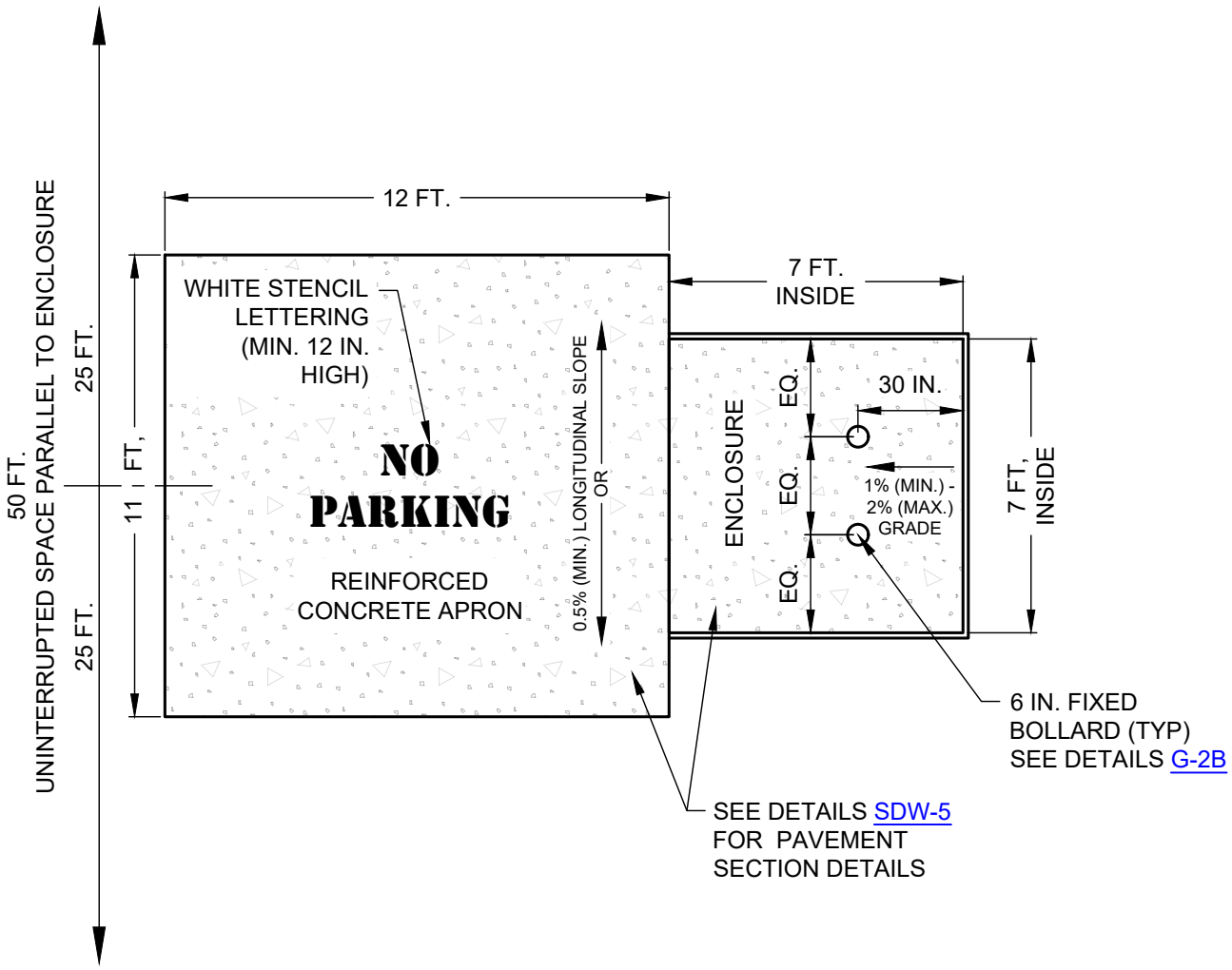
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

SDW-2



NOTES:

1. INSIDE DIMENSION OF ENCLOSURE SHALL BE 7 FT. X 7 FT. OF UNINTERRUPTED SPACE. AN ADDITIONAL 12 FT. X 11 FT. REINFORCED CONCRETE PAD SHALL BE PARALLEL TO ENCLOSURE TO PROVIDE A FIRM PLATFORM FOR SERVICE.
2. ENCLOSURE MUST BE PARALLEL TO DRIVE, ALLEY OR FIRE LANE AND ALLOW ROOM FOR VEHICLE TO APPROACH. DOORS ARE NOT ALLOWED ON SIDE LOAD ENCLOSURES.
3. SIDE LOAD WASTE CONTAINERS REQUIRE SOLID WASTE MANAGEMENT APPROVAL.
4. APRON SHALL BE GRADED TO DRAIN TOWARDS APPROVED DRAINAGE PATH WITH A MINIMUM 0.5% LONGITUDINAL SLOPE.

SIDE LOAD WASTE CONTAINER PAD DETAILS

(NO SCALE)

CITY OF WACO

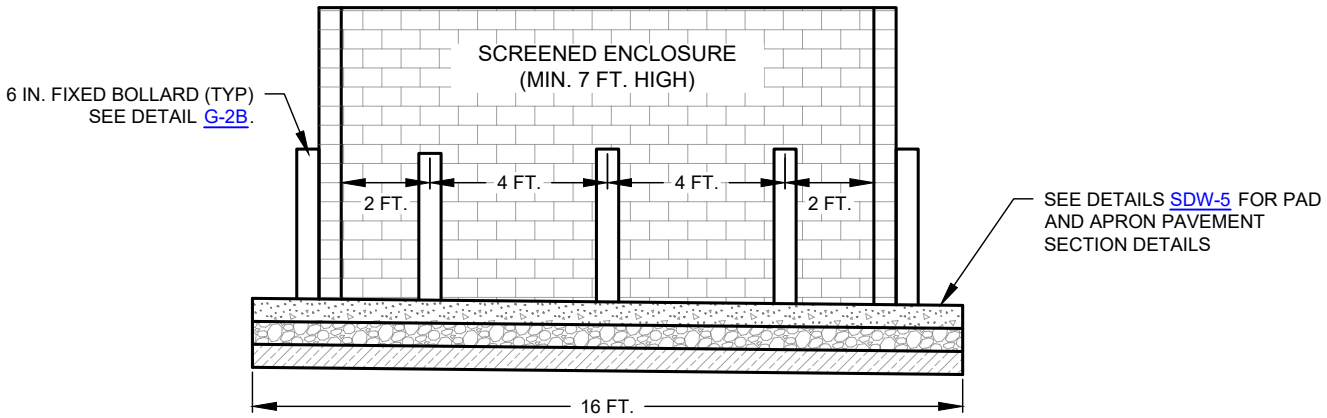
ENGINEERING DIVISION

REVISIONS

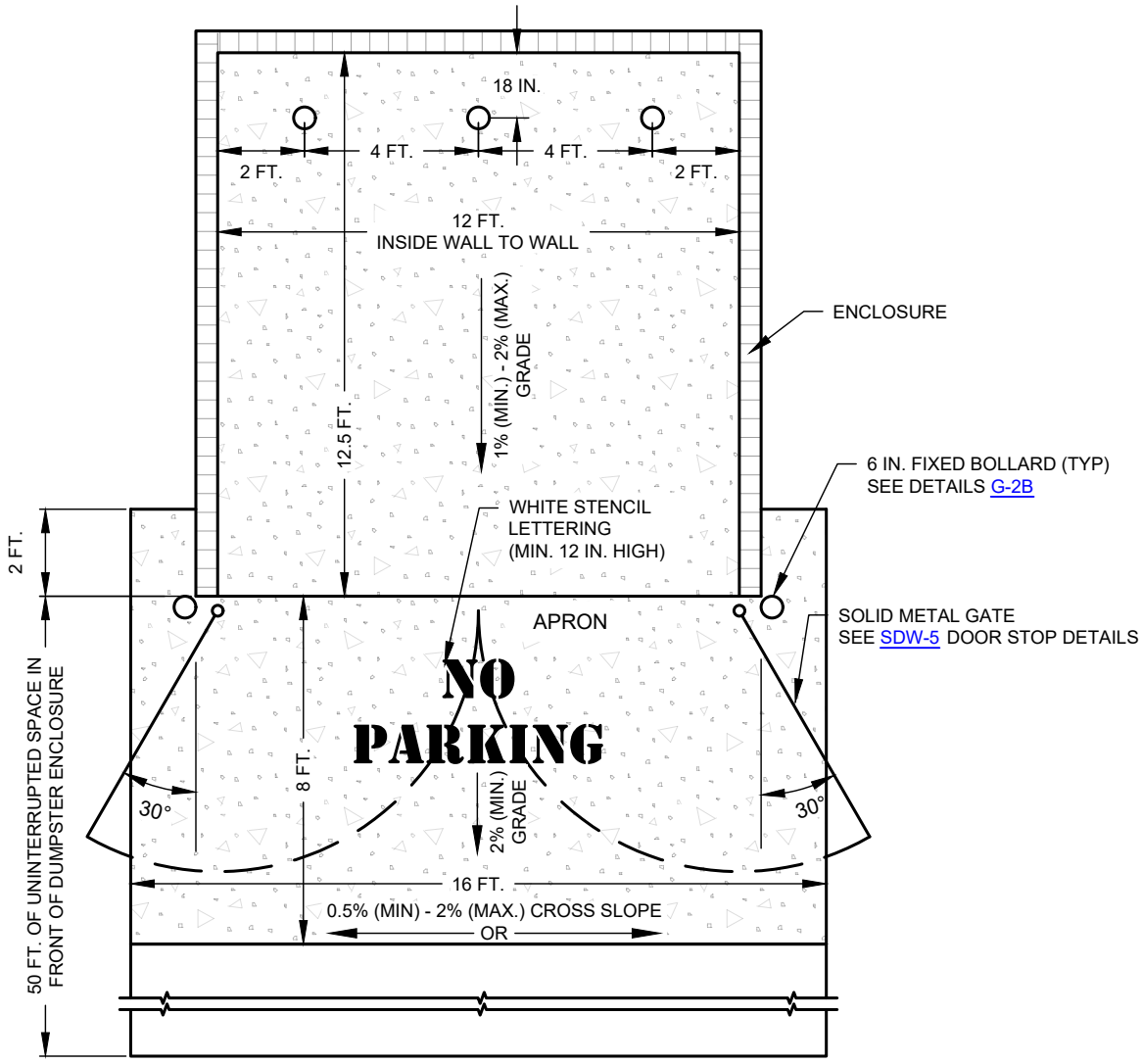
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SDW-3



SECTION VIEW



PLAN VIEW

NOTE:
APRON SHALL BE GRADED TO DRAIN TOWARDS APPROVED DRAINAGE PATH WITH A MINIMUM 2% LONGITUDINAL SLOPE AND A MINIMUM 0.5% CROSS SLOPE AND MAXIMUM 2% CROSS SLOPE. ANY DESIGNS THAT PROPOSE TO EXCEED 2% CROSS SLOPE SHALL REQUIRE THE APPROVAL OF THE DIRECTOR OF SOLID WASTE DEPARTMENT.

REAR LOAD SINGLE WASTE CONTAINER PAD WITH ENCLOSURE

(NO SCALE)

CITY OF WACO

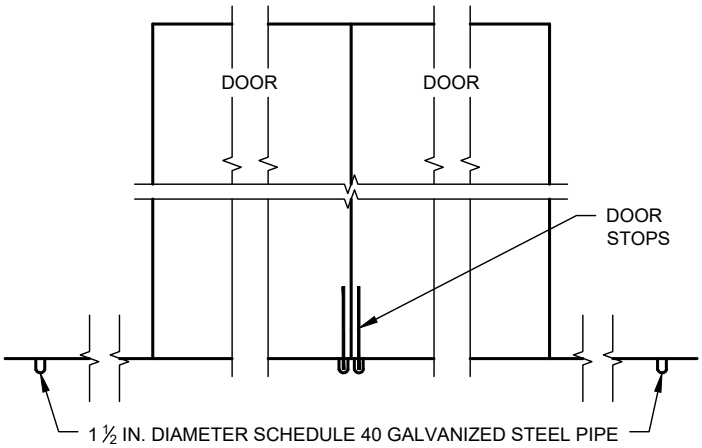
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

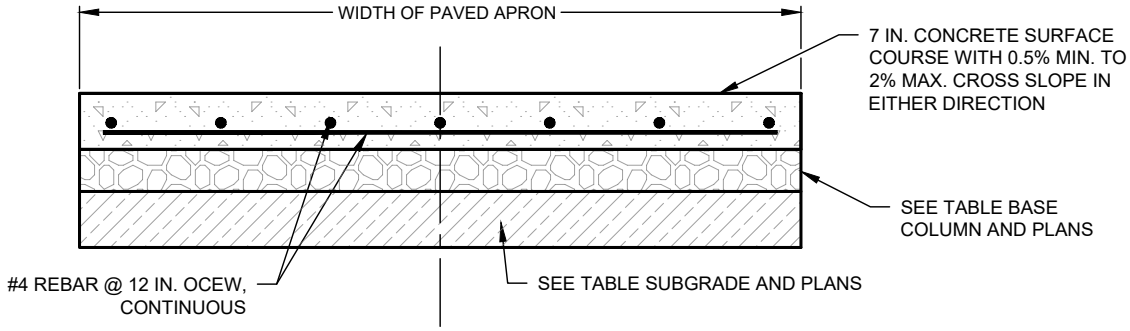
SDW-4



NOTES:

1. DOOR STOPS SHALL BE CONSTRUCTED OF ¾ IN. SOLID STEEL ROD.
2. 1 ½ IN. DIAMETER SCHEDULE 40 GALVANIZED STEEL PIPE SHALL BE PLACED AT THE DOORS CLOSED AND OPEN POSITIONS.
3. THE RODS SHALL PENETRATE THE SURFACE 2½ IN.
4. DOORS SHALL REMAIN OPEN AT A 30° ANGLE WITH A ¾ IN. SOLID STEEL ROD INTO A 1 ½ IN. DIAMETER SCHEDULE 40 GALVANIZED STEEL PIPE TO HOLD DOOR OPEN.

DOOR STOP DETAILS



	RIGID PAVEMENT SECTION (P.C. CONCRETE)		
P.I. OF SUBGRADE	P.C. CONCRETE	BASE	SUBGRADE
P.I. ≤ 20	7 IN.	4 IN. CTB[1,2]	COMPACTED[3]
20< P.I. < 40	7 IN.	-	6 IN. LSS[3]
P.I. ≥ 40	7 IN.	-	8 IN. LSS[3]

COMPACTION SHALL BE IN ACCORDANCE WITH G-1C.

NOTES:

1. ALTERNATE TO CEMENT TREATED BASE (CTB) IS 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR).
2. BOND BREAKER CONSISTING OF 10 MIL POLYETHYLENE BETWEEN CTB AND P.C. CONCRETE PAVEMENT.
3. LIME STABILIZED SUBGRADE (LSS)
4. ANY DESIGNS THAT PROPOSE TO EXCEED 2% CROSS SLOPE SHALL REQUIRE THE APPROVAL OF THE DIRECTOR OF SOLID WASTE DEPARTMENT.

PAD AND APRON PAVEMENT SECTION DETAILS

WASTE CONTAINER PAD AND APRON DETAILS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 1 AND 3; ADD SUPERSCRIPTS & COMPACTION NOTE TO TABLE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SDW-5

CITY OF WACO

STORMWATER DRAINAGE DETAILS

CITY OF WACO
STORMWATER DRAINAGE DETAILS

Use Applicable Current TxDOT Culvert and Drainage Standards for concrete structures and appurtenances not shown above (City of Waco Cover and Frame are required per Standard Detail SD-9). For Precast elements follow current Guide to the Standard Inlet and Manhole Program available at https://ftp.dot.state.tx.us/pub/txdot-info/cmd/cserve/standard/bridge/preguide.pdf.

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

STORMWATER DRAINAGE - GENERAL NOTES

1. STORMWATER DRAINAGE PIPE IN THE RIGHT-OF-WAY AND PUBLIC EASEMENTS SHALL BE REINFORCED CONCRETE PIPE WITH POLYVINYL CHLORIDE (PVC) SEWER PIPE & FITTINGS WITH DIMENSION CONTROL PERMITTED FOR TRUNK LINES AND LATERAL LINES; SIZED PER DESIGN REQUIREMENTS, HOWEVER NO LESS THAN 18 IN. DIAMETER; AND SHALL BE ASTM C76 CLASS III OR HIGHER DEPENDING ON APPLICATION REQUIREMENTS. IDENTIFICATION NON-DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED 24 IN. ABOVE TOP OF THE PIPE FOR ENTIRE LENGTH OF PIPE OF ALL CLOSED CONDUIT STORMWATER DRAINAGE SYSTEMS. TAPE SHALL BE A MINIMUM 4 MIL OVERALL THICKNESS, BE 6 IN. WIDE, APWA GREEN IN COLOR, COLORFAST, CHEMICALLY INERT, AND WITH BLACK LETTERING IMPRINTED LEGEND “CAUTION BURIED STORMWATER DRAIN BELOW.” SEE G-8 NOTE 7.
2. PRE-CAST INLETS AND MANHOLES SHALL BE PER TXDOT GUIDE TO THE STANDARD INLET AND MANHOLE PROGRAM STANDARDS. CAST-IN-PLACE INLETS AND MANHOLES SHALL BE PER CITY OF WACO STANDARDS.
3. SEE PLAN-PROFILE SHEETS FOR INLET SIZE, LOCATION AND ELEVATIONS.
4. WHERE GROUNDWATER IS ENCOUNTERED, ALL LOOSE AND SPONGY MATERIAL WILL BE REMOVED AND 6 IN. MINIMUM DEPTH OF AGGREGATE MEETING ASTM NO. 57 SPECIFICATIONS SHALL BE INSTALLED FOR BASE.
5. AGGREGATE MEETING ASTM 57 SPECIFICATIONS INCLUDING GRADATION AS SHOWN IN THE TABLE BELOW SHALL BE COMPACTED BY MECHANICAL/VIBRATORY COMPACTION METHODS.

ASTM NO. 57 GRADATION SPECIFICATIONS	
SIEVE SIZE	PERCENTAGE PASSING
1 1/2 IN.	100
1 IN.	95-100
1/2 IN.	25-60
#4	0-10
#8	0-5

6. THE SIZE AND SPACING OF INLETS MUST COMPLY WITH CURRENT CITY DRAINAGE POLICIES.
7. MANHOLE INLET RING AND COVER FOR PRE-CAST AND CAST-IN-PLACE STRUCTURES SHALL BE IN ACCORDANCE WITH STANDARD DETAIL SD-9 .
8. TOP OF INLET SLOPE SHALL CONFORM TO ADJACENT PARKWAY GRADES AND NOT EXCEED 1/2 IN. PER FOOT SLOPE.
9. CONCRETE FOR INVERTS ON ALL MANHOLES AND INLETS SHALL BE PLACED AND SHAPED WITH THE CONCRETE THICKNESS RANGING FROM THE THICKNESS OF THE RCP TO 8 IN.
10. IN ACCORDANCE WITH G-7 NOTE 6, PRIOR TO PLACEMENT OF CONCRETE FOR A DIAMOND IN PAVEMENT FOR A STORMWATER DRAINAGE MANHOLE, MATERIAL BELOW SHALL BE COMPACTED / RE-COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.

CAST-IN-PLACE GENERAL NOTES:

11. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 POUNDS PER SQUARE INCH AT 28 DAYS UNLESS OTHERWISE NOTED. DESIGN MIX FOR 3000 POUND CONCRETE SHALL CONTAIN A MINIMUM OF 5 SACKS OF CEMENT PER CUBIC YARD.
12. REINFORCING STEEL COVER SHALL BE MINIMUM 2 IN. FORMED AND 3 IN. AGAINST EARTH IF UNFORMED FROM OUTSIDE LAYER OF STEEL TO FACE OF CONCRETE.
13. REINFORCED STEEL SHALL BE NEW BILLETED CONFORMING TO ASTM A615 GRADE 60 OR LATEST REVISIONS.
14. CONSTRUCTION JOINTS WILL BE PERMITTED AS SHOWN ON PLANS.
15. DIMENSIONS RELATING TO REINFORCING STEEL SHALL BE TO OUTSIDE OF BAR NEAREST TO FACE OF CONCRETE.
16. CITY OF WACO INLET SIZES NOTED ON PLAN & PROFILE SHEETS REFER TO DIMENSION "A". DIMENSION "A" MINIMUM IS 10 FEET.
17. PLACE MANHOLE FRAME AND COVER ADJACENT TO OUTLET PIPE SOFFIT AT BACK WALL.
18. BARS SHALL BE SUPPORTED, SPACED AND ACCURATELY SECURED IN PLACE IN ACCORDANCE WITH SPECIFICATIONS FOR PLACING REINFORCEMENT AND FOR PLACING ACCESSORIES MEETING THE REQUIREMENTS OF THE CURRENT ACI MANUAL OF STANDARD PRACTICE FOR DETAILS AND DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315) WITH LATEST REVISIONS.
19. ALL INTERSECTING WALLS, TOPS, FLOORS, SHALL HAVE "L" BARS IN CORNERS LAPPED 40 BAR DIAMETERS.
20. ALL EXPOSED CORNERS SHALL BE TOOLED OR CHAMFERED TO A 1/2 IN. RADIUS.

PRE-CAST GENERAL NOTES:

21. PRE-CAST INLET SIZES NOTED ON PLAN & PROFILE SHEETS REFER TO DIMENSION "A". DIMENSION "A" MINIMUM IS 10 FEET.
22. PRECAST INLETS, MANHOLES, AND JUNCTION BOXES SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM NO. 57 GRADATION SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.
23. FOR PRE-CAST AREA ZONE DRAIN (PAZD) AND PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE (PAZD-CZ) CAST-IN-PLACE REINFORCED CONCRETE APRON IS REQUIRED, SEE SD-17 FOR ADDITIONAL DETAILS.

CITY OF WACO

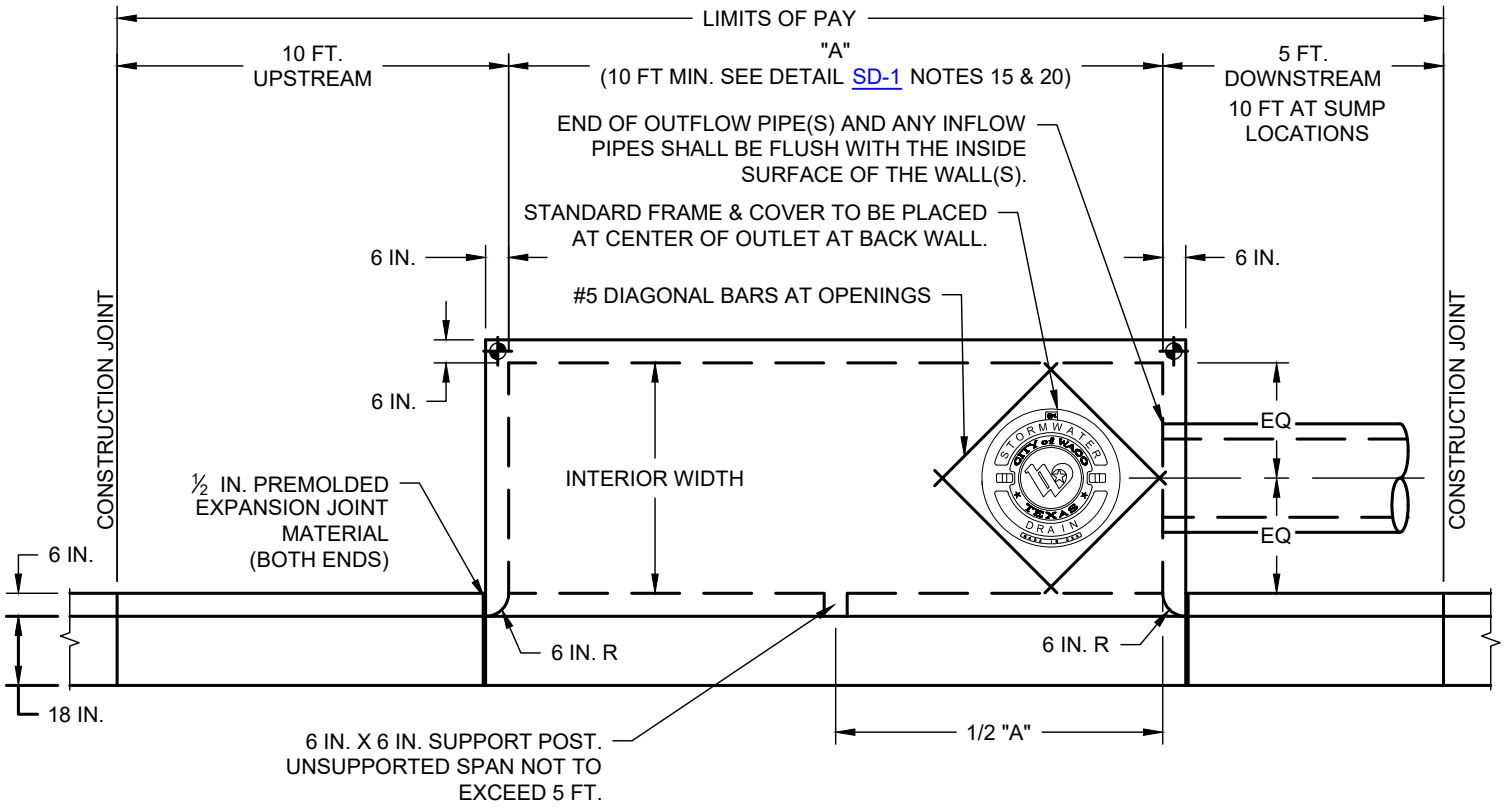
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
3	MODIFY NOTE 1	MZ	04/28/2025
2	MODIFY NOTES 17 & 23	MZ	11/15/2024
1	MODIFY NOTES 7 & 9; ADD NOTES 10 & 22; RENUMBER NOTES	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-1



PLAN VIEW

INTERIOR WIDTH = OUTSIDE DIAMETER OF LARGEST PIPE + 12 IN., 36 IN. MINIMUM

NOTE:

1. THE CITY OF WACO PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION MAY SUPPLY ONE "CITY OF WACO BENCHMARK" FOR PLACEMENT IN INLET TOP IN EITHER BACK CORNER.
2. THE CITY OF WACO PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION BENCHMARKS SHALL BE PLACED AT A MAXIMUM SPACING OF 750 FT, AND WILL BE PROVIDED BY THE CITY OF WACO PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEERING INSPECTOR.

STANDARD INLET PLAN VIEW

(NO SCALE)

CITY OF WACO

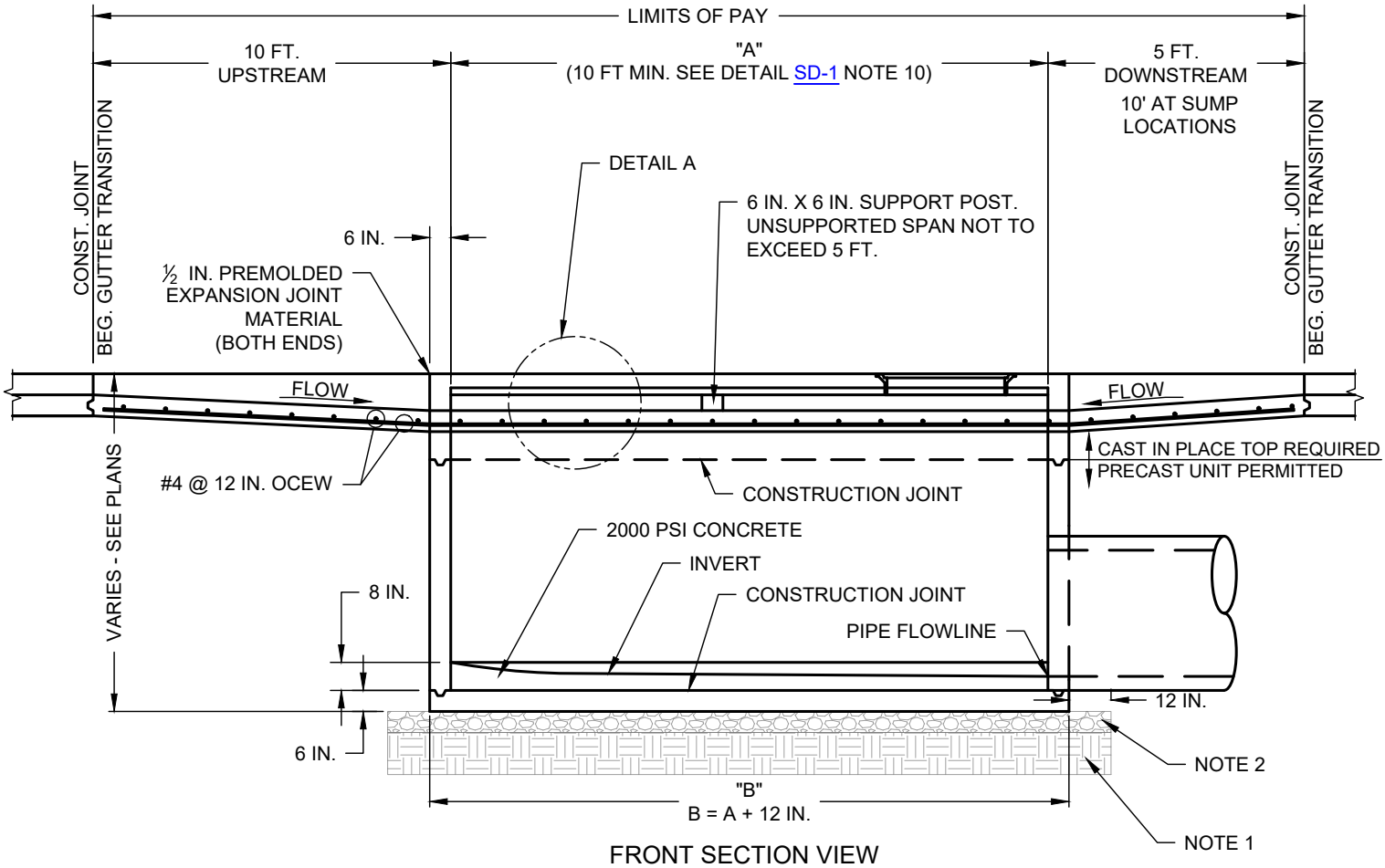
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	REVISE OUTFLOW PIPE LOCATION & ADD NOTE; MODIFY INTERIOR DIMENSION; MODIFY COVER	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

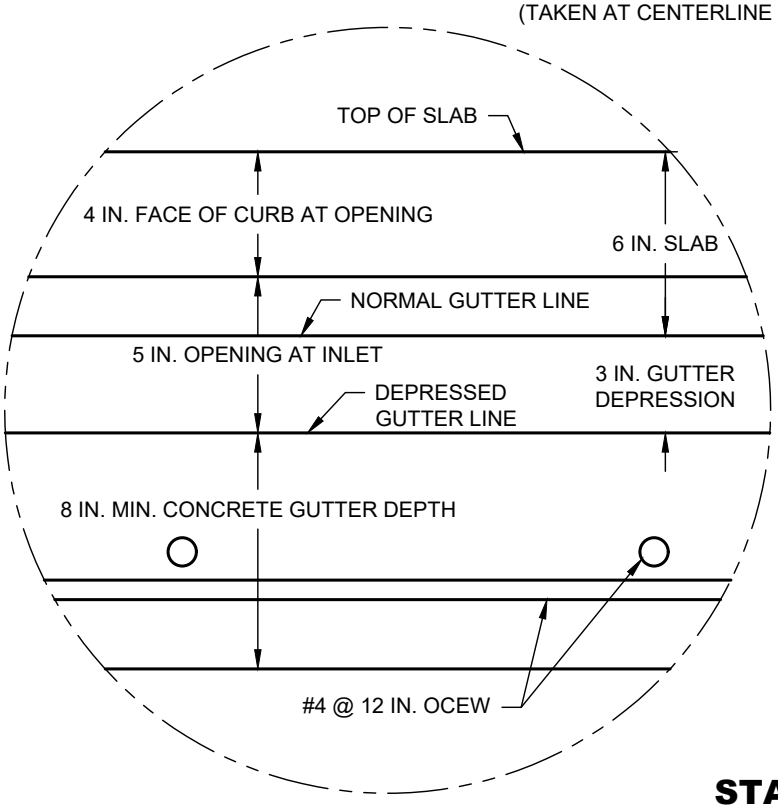
DATE 01/01/2024

SD-2



FRONT SECTION VIEW

(TAKEN AT CENTERLINE OF INLET AND OUTFLOW PIPE)



DETAIL A

NOTES:

1. IN ACCORDANCE WITH G-7 NOTE 6. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ± 2% OPTIMAL MOISTURE CONTENT.
2. IN ACCORDANCE WITH SD-1 NOTE 21 PRECAST INLETS SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM 57 SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.

STANDARD INLET FRONT SECTION VIEW

(NO SCALE)

CITY OF WACO

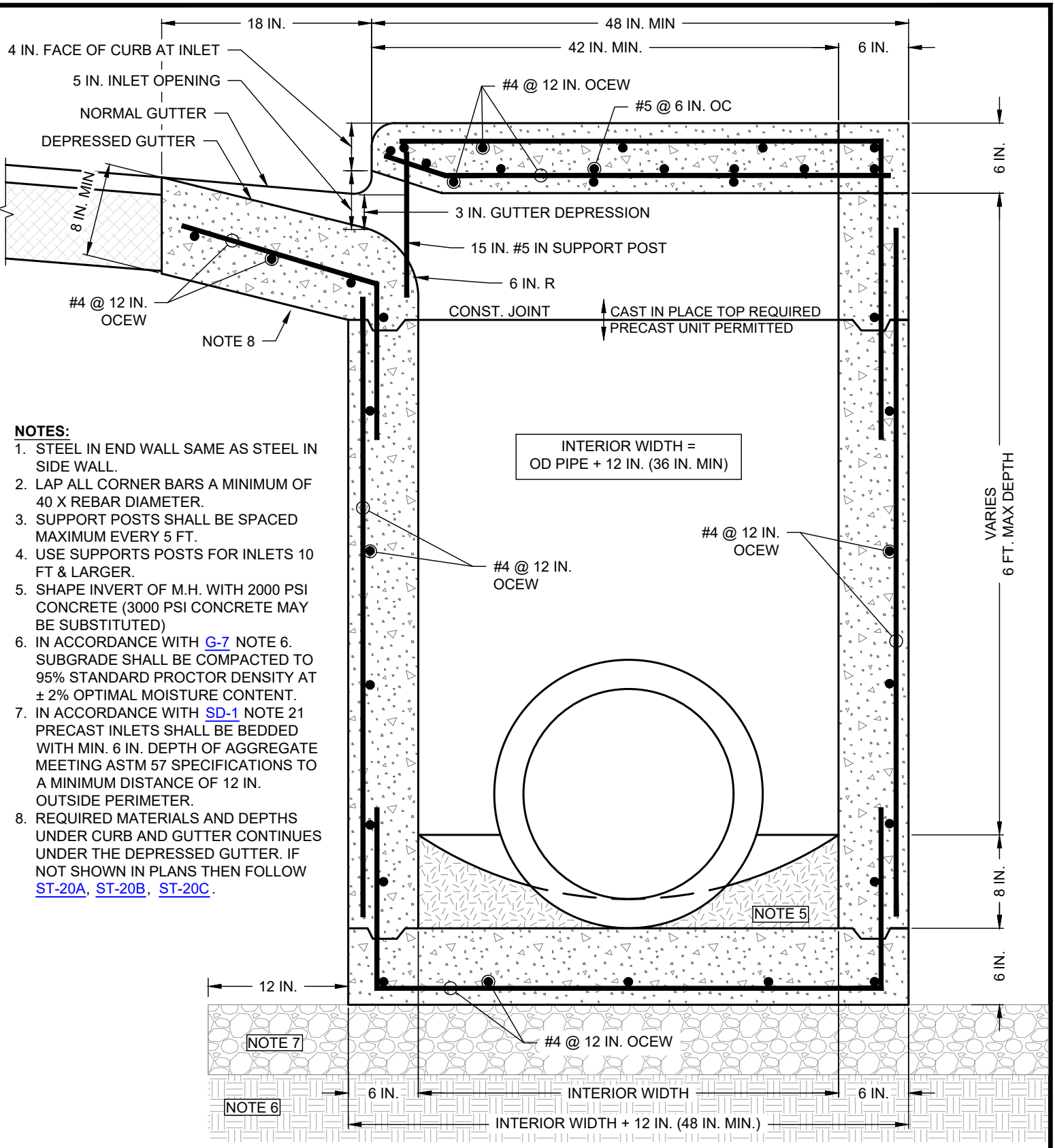
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY OUTFLOW PIPE PLACEMENT	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

SD-3



NOTES:

1. STEEL IN END WALL SAME AS STEEL IN SIDE WALL.
2. LAP ALL CORNER BARS A MINIMUM OF 40 X REBAR DIAMETER.
3. SUPPORT POSTS SHALL BE SPACED MAXIMUM EVERY 5 FT.
4. USE SUPPORTS POSTS FOR INLETS 10 FT & LARGER.
5. SHAPE INVERT OF M.H. WITH 2000 PSI CONCRETE (3000 PSI CONCRETE MAY BE SUBSTITUTED)
6. IN ACCORDANCE WITH G-7 NOTE 6. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ± 2% OPTIMAL MOISTURE CONTENT.
7. IN ACCORDANCE WITH SD-1 NOTE 21 PRECAST INLETS SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM 57 SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.
8. REQUIRED MATERIALS AND DEPTHS UNDER CURB AND GUTTER CONTINUES UNDER THE DEPRESSED GUTTER. IF NOT SHOWN IN PLANS THEN FOLLOW ST-20A, ST-20B, ST-20C.

STANDARD INLET SIDE SECTION

(NO SCALE)

CITY OF WACO

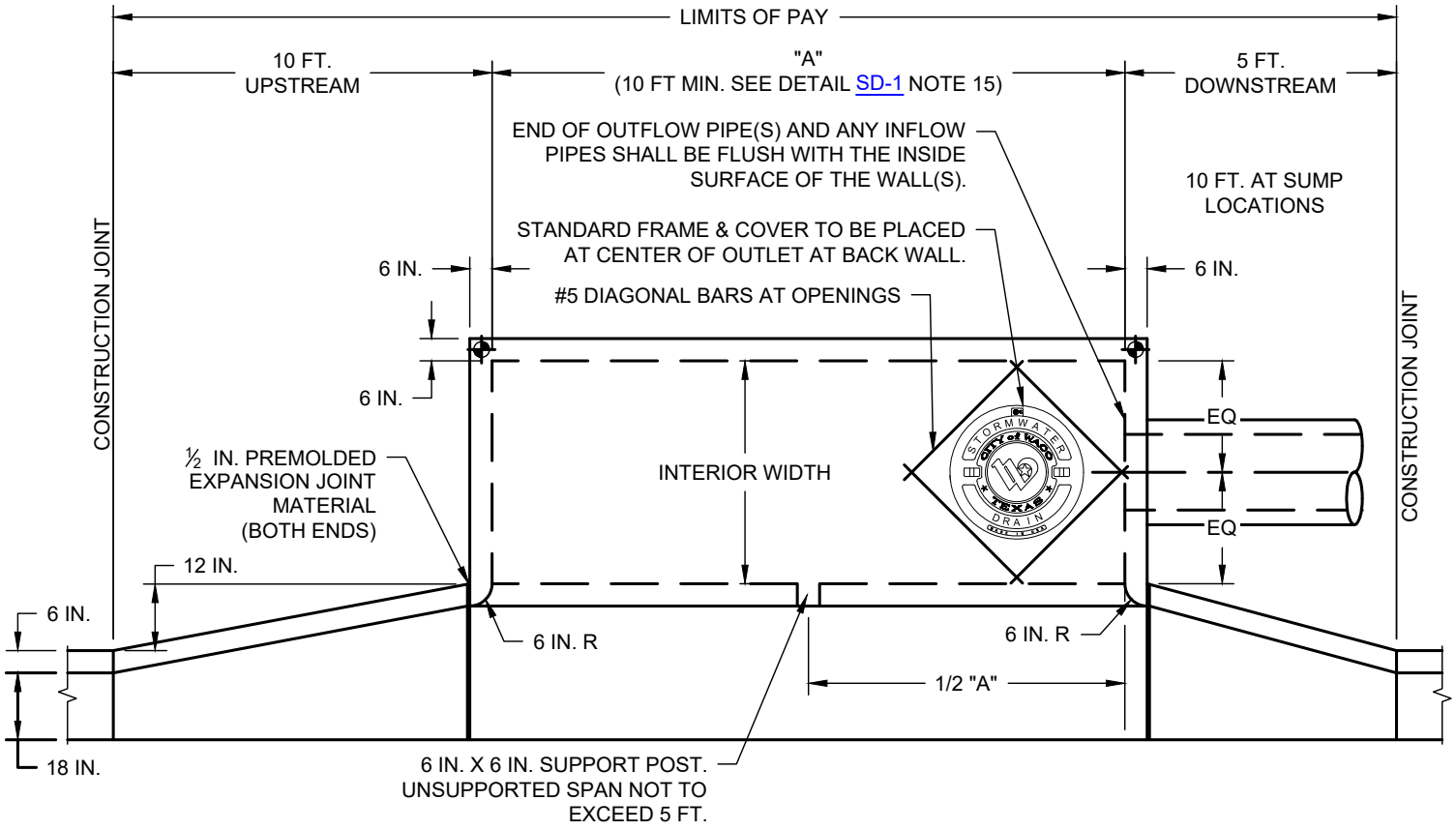
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	ADD HYPER LINK TO DETAIL REFERENCES	MZ	11/15/2024
1	REVISE OUTFLOW PIPE & INTERIOR WIDTH; ADD NOTE & DIMENSION	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-4



PLAN VIEW

INTERIOR WIDTH = OUTSIDE DIAMETER OF LARGEST PIPE + 12 IN., 36 IN. MINIMUM

NOTE:

1. THE CITY OF WACO PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION MAY SUPPLY ONE "CITY OF WACO BENCHMARK" FOR PLACEMENT IN INLET TOP IN EITHER BACK CORNER.
2. THE CITY OF WACO PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION BENCHMARKS SHALL BE PLACED AT A MAXIMUM SPACING OF 750 FT, AND WILL BE PROVIDED BY THE CITY OF WACO PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEERING INSPECTOR.

STANDARD RECESSED INLET PLAN VIEW

(NO SCALE)

CITY OF WACO

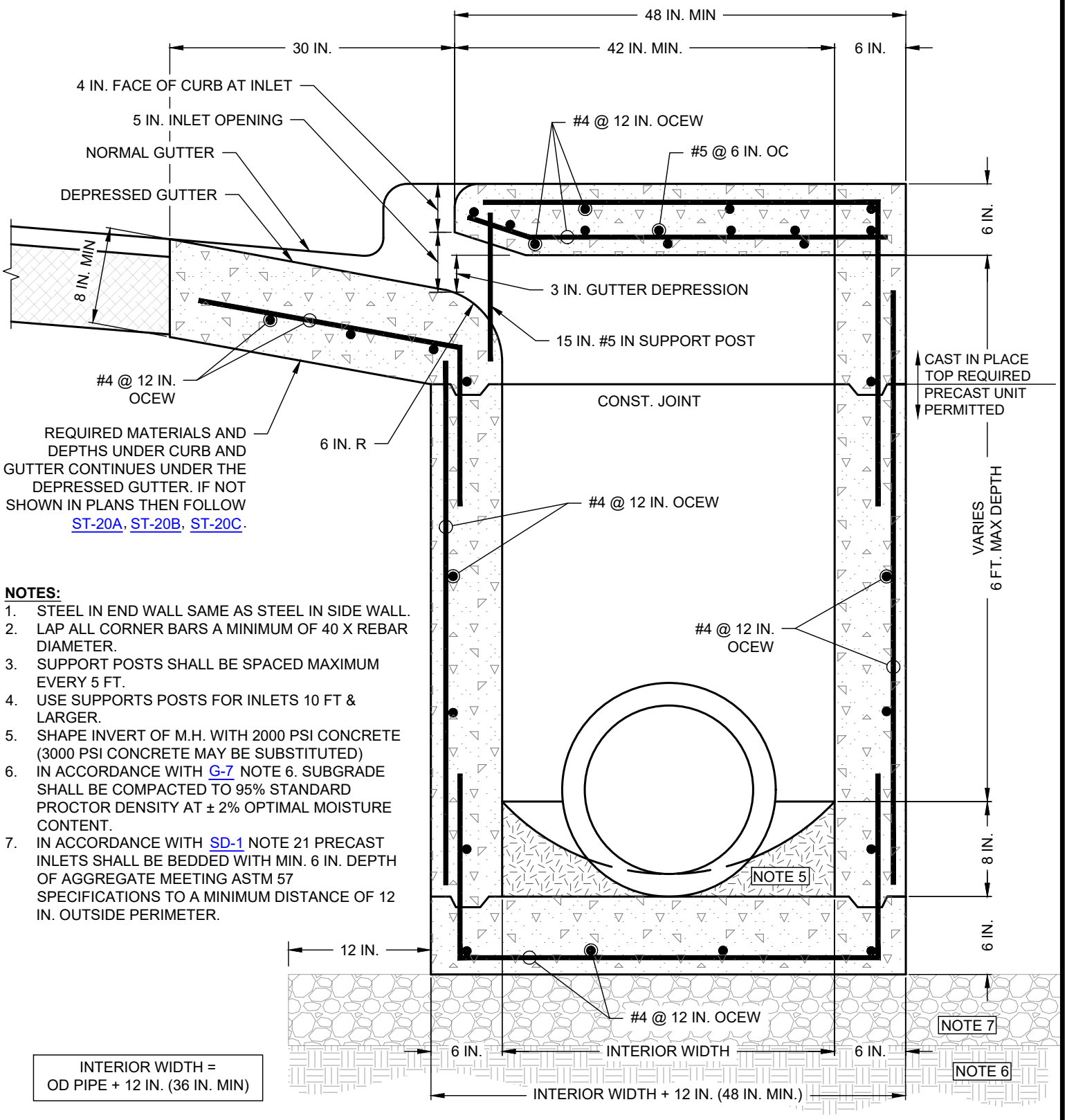
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	REVISE OUTFLOW PIPE LOCATION & ADD NOTE; MODIFY INTERIOR DIMENSION; MODIFY COVER	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-5



NOTES:

1. STEEL IN END WALL SAME AS STEEL IN SIDE WALL.
2. LAP ALL CORNER BARS A MINIMUM OF 40 X REBAR DIAMETER.
3. SUPPORT POSTS SHALL BE SPACED MAXIMUM EVERY 5 FT.
4. USE SUPPORTS POSTS FOR INLETS 10 FT & LARGER.
5. SHAPE INVERT OF M.H. WITH 2000 PSI CONCRETE (3000 PSI CONCRETE MAY BE SUBSTITUTED)
6. IN ACCORDANCE WITH G-7 NOTE 6. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ± 2% OPTIMAL MOISTURE CONTENT.
7. IN ACCORDANCE WITH SD-1 NOTE 21 PRECAST INLETS SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM 57 SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.

INTERIOR WIDTH = OD PIPE + 12 IN. (36 IN. MIN)

STANDARD RECESSED INLET SIDE SECTION

(NO SCALE)

CITY OF WACO

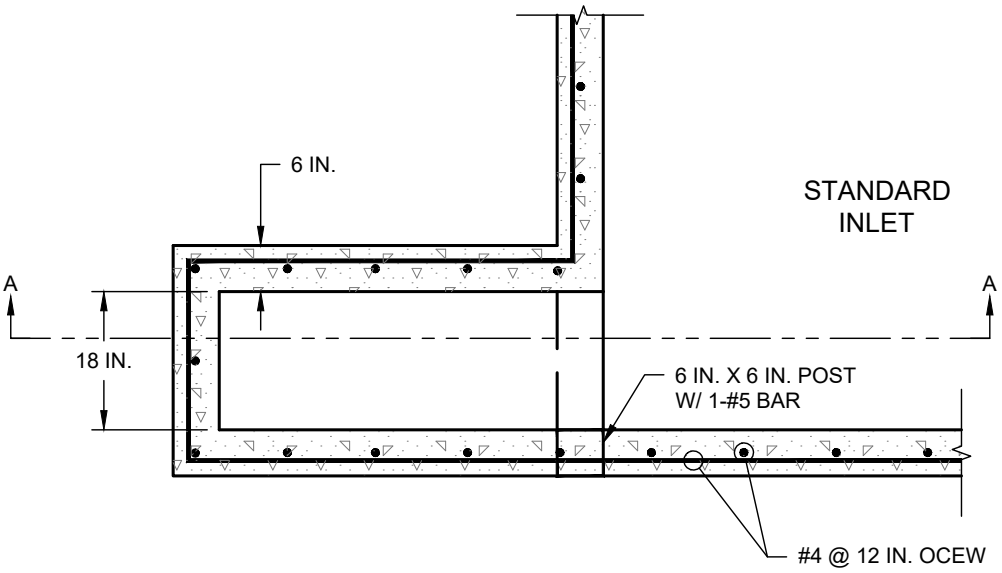
ENGINEERING DIVISION

REVISIONS

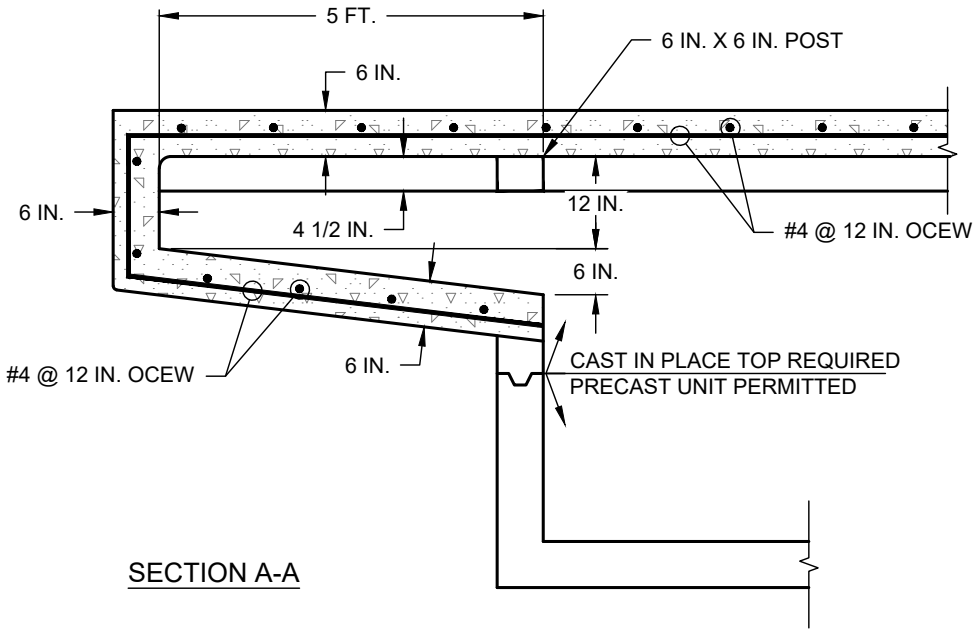
NO.	COMMENTS	BY	DATE
2	ADD HYPER LINK TO DETAIL REFERENCES	MZ	11/15/2024
1	REVISE OUTFLOW PIPE & INTERIOR WIDTH; ADD NOTES	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-6



PLAN



SECTION A-A

STANDARD INLET TROUGH

(NO SCALE)

CITY OF WACO

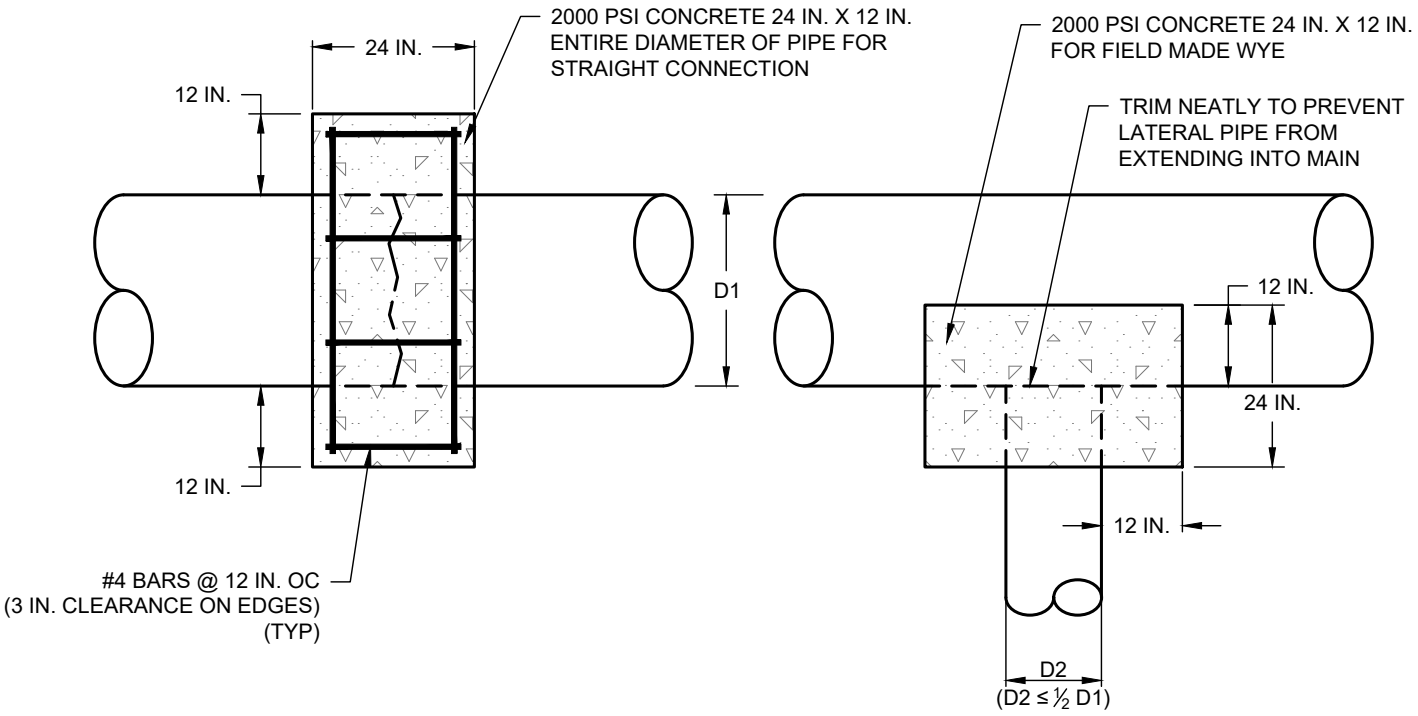
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-7



NOTE: CONCRETE TO BE PLACED COMPLETELY AROUND PIPE.

CONCRETE COLLAR FOR STORM PIPE: STRAIGHT AND PERPENDICULAR FIELD CONNECTION

DETAIL WILL ONLY BE ALLOWED WITH PRIOR APPROVAL FROM CITY ENGINEER
(NO SCALE)

CITY OF WACO

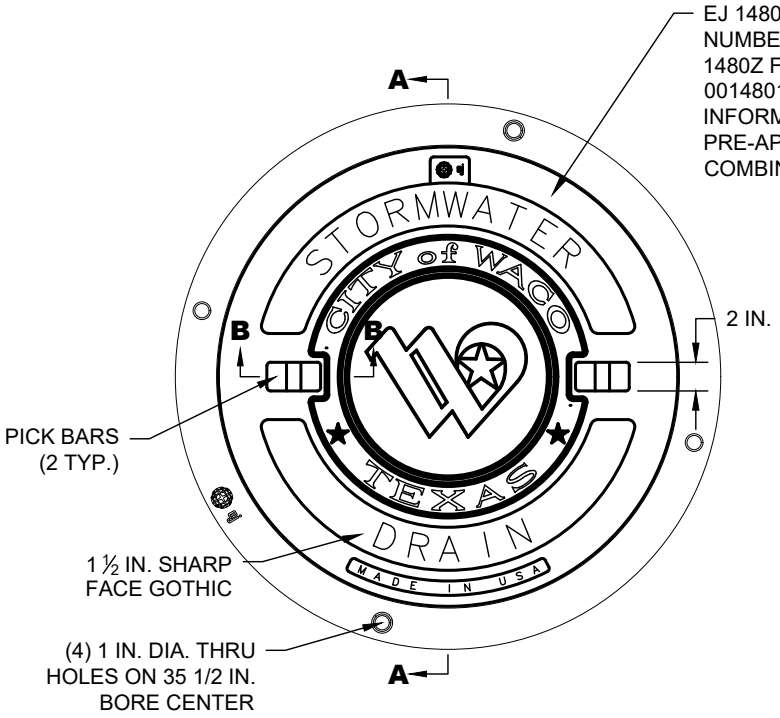
ENGINEERING DIVISION

REVISIONS

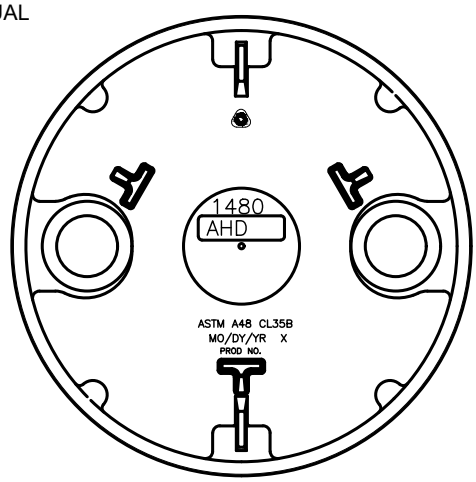
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

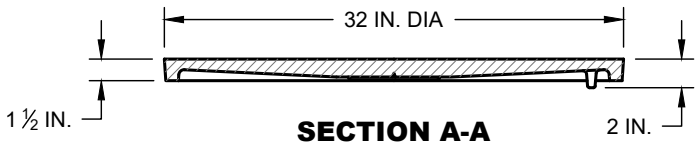
SD-8



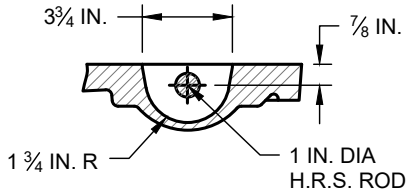
STANDARD COVER AND FRAME



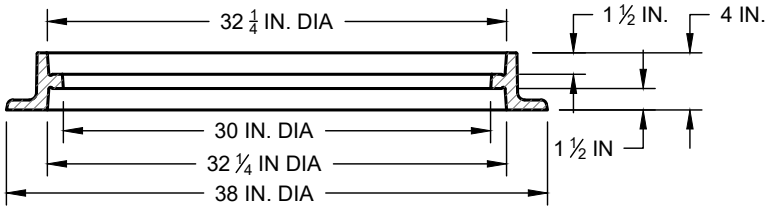
COVER BACK



SECTION A-A
COVER



SECTION B-B
PICKBAR DETAIL



SECTION A-A
FRAME

FRAME IS REVERSIBLE

STORMWATER DRAIN MANHOLE COVER AND FRAME

(NO SCALE)

CITY OF WACO

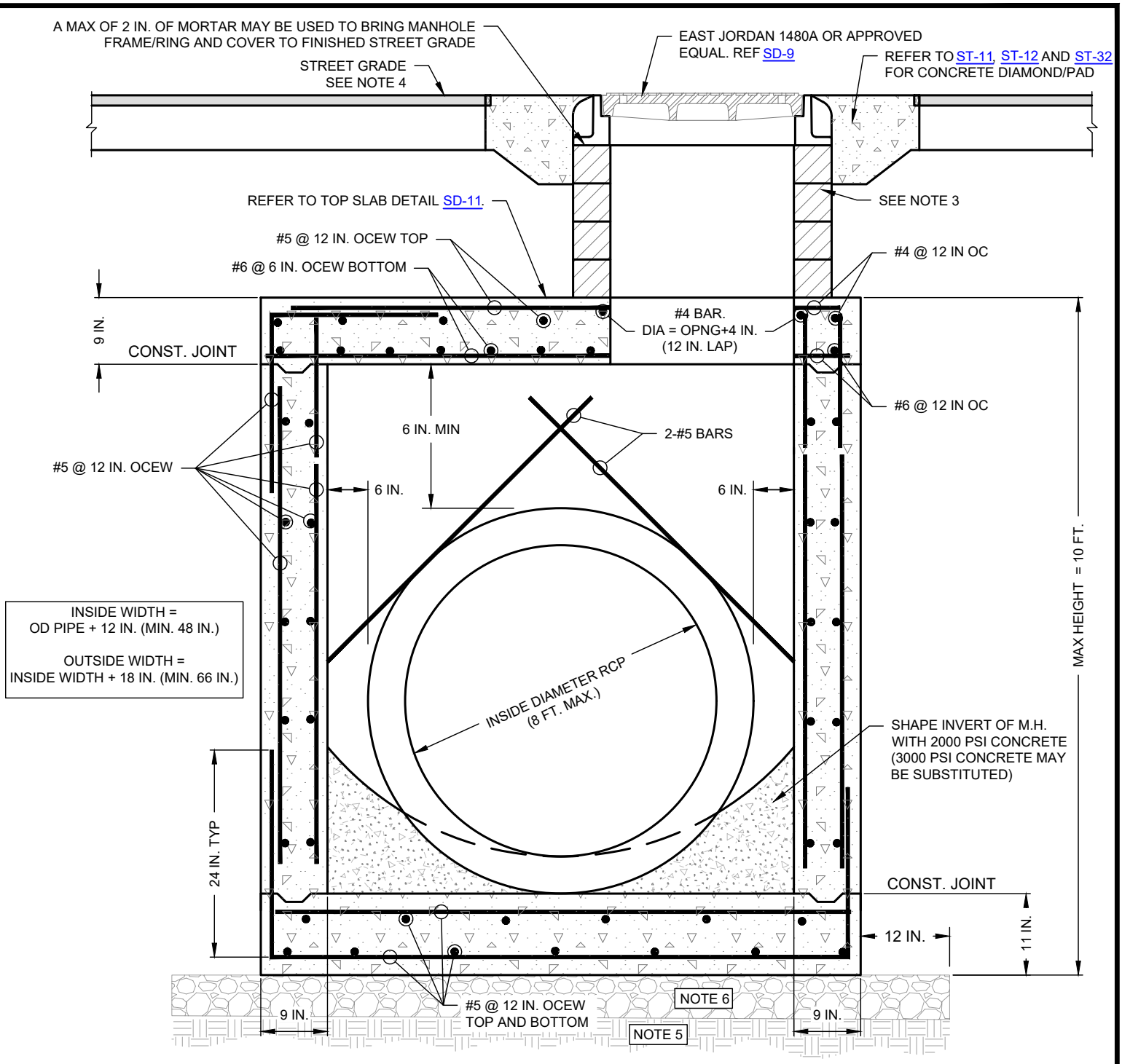
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	REVISED FOR CURRENT STANDARD	MZ	11/15/2024
1	MODIFY LOGO AND ADD NOTE TO FRAME TOP VIEW	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-9



NOTES:

1. USE SAME STEEL CONFIGURATION IN ALL WALLS.
2. SET MANHOLE AT CORNER NEAREST OUTLET PIPE BEARING ON TWO WALLS.
3. IN STREET SECTION ONLY, 2 IN. GRADE RINGS AND MORTAR SHALL BE APPLIED TO TOP OF MANHOLE TO ALLOW FOR FUTURE ADJUSTMENT. TOTAL DEPTH OF GRADE RINGS AND MORTAR SHALL BE BETWEEN 4 IN. MINIMUM AND 12. IN. MAXIMUM. GRADE RINGS AND FRAME/RING AND COVER SHALL BE SECURED IN A BED OF MORTAR. APPLY GROUT BETWEEN AND ON THE INSIDE OF GRADE RINGS AND WIPE SMOOTH.
4. FOR MANHOLE CONSTRUCTION IN STREET, REFERENCE ST-11 AND ST-12 FOR CONCRETE DIAMOND/PAD REQUIREMENTS
5. IN ACCORDANCE WITH G-7 NOTE 6. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT + 2% OPTIMAL MOISTURE CONTENT.
6. IN ACCORDANCE WITH SD-1 NOTE 21 PRECAST INLETS SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM 57 SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.
7. IN ACCORDANCE WITH THE STORMWATER DESIGN CRITERIA PIPE SOFFIT (HIGHEST POINT OF THE INTERIOR OF PIPE) ELEVATIONS SHALL MATCH AT MANHOLE.
8. IN ACCORDANCE WITH THE STORMWATER DESIGN CRITERIA AN ELEVATION DROP SHALL BE PROVIDED EQUAL TO THE CHANGE IN PIPE DIAMETER, OR A MINIMUM OF ONE-TENTH OF ONE FOOT (0.10 FT.) FOR JUNCTIONS WITH THE SAME PIPE DIAMETER ENTERING AND EXITING THE STRUCTURE.

STANDARD STORMWATER DRAIN MANHOLE SECTION

(NO SCALE)

CITY OF WACO

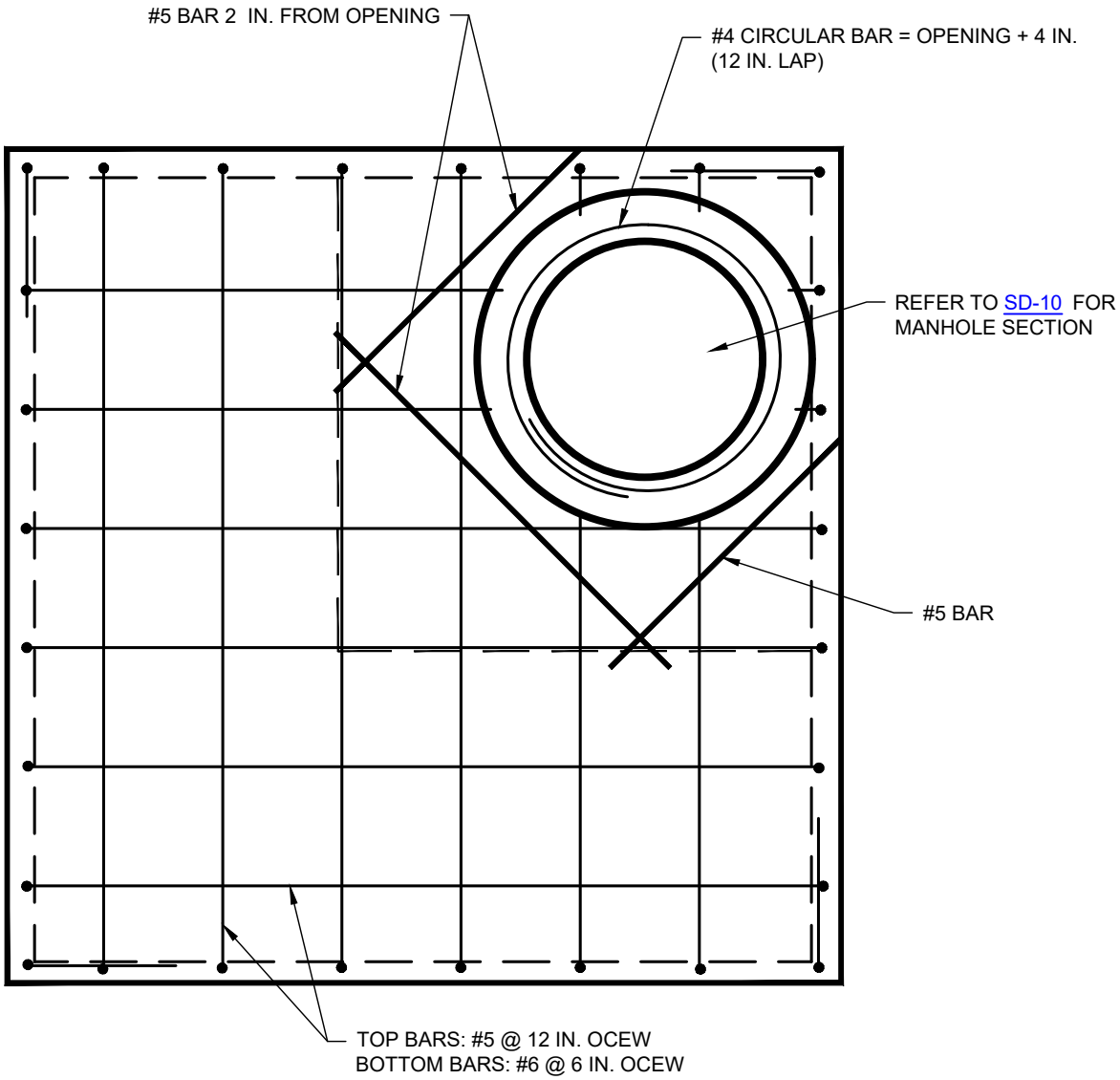
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY MANHOLE NOTE; MODIFY NOTE 3; ADD NOTES 7 & 8	MZ	04/28/2025
1	RENUMBER NOTES 5 & 6; MODIFY PIPE SIZE	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-10



TOP SLAB DETAIL

STANDARD STORMWATER DRAIN MANHOLE TOP SLAB

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

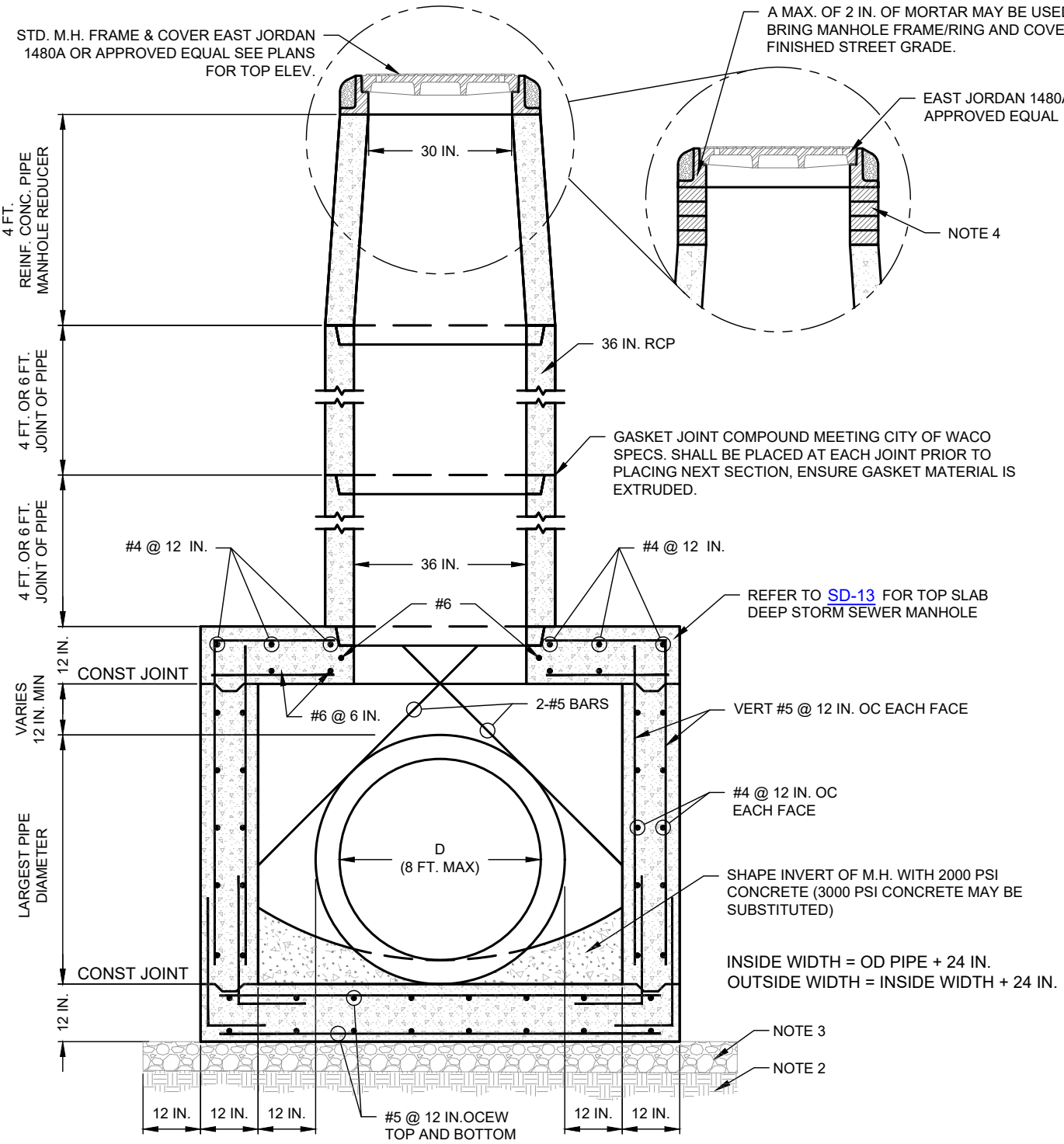
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF WACO FOR ANY PURPOSE WHATSOEVER. THE CITY OF WACO ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-11



NOTES:

1. USE SAME STEEL CONFIGURATION IN ALL WALLS. SET MANHOLE RISER SO THAT IT BEARS ON THE WALL CENTERED OVER OUTLET PIPE.
2. IN ACCORDANCE WITH G-7 NOTE 6. SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ± 2% OPTIMAL MOISTURE CONTENT.
3. IN ACCORDANCE WITH SD-1 NOTE 21 PRECAST INLETS SHALL BE BEDDED WITH MIN. 6 IN. DEPTH OF AGGREGATE MEETING ASTM NO. 57 SPECIFICATIONS TO A MINIMUM DISTANCE OF 12 IN. OUTSIDE PERIMETER.
4. IN STREET SECTION ONLY, 2 IN. GRADE RINGS AND MORTAR SHALL BE APPLIED TO TOP OF MANHOLE TO ALLOW FOR FUTURE ADJUSTMENT. TOTAL DEPTH OF GRADE RINGS AND MORTAR SHALL BE BETWEEN 4 IN. MINIMUM AND 12. IN. MAXIMUM. GRADE RINGS AND FRAME/RING AND COVER SHALL BE SECURED IN A BED OF MORTAR. APPLY GROUT BETWEEN AND ON THE INSIDE OF GRADE RINGS AND WIPE SMOOTH.
5. IN ACCORDANCE WITH THE STORMWATER DESIGN CRITERIA PIPE SOFFIT (HIGHEST POINT OF THE INTERIOR OF PIPE) ELEVATIONS SHALL MATCH AT MANHOLE.
6. IN ACCORDANCE WITH THE STORMWATER DESIGN CRITERIA AN ELEVATION DROP SHALL BE PROVIDED EQUAL TO THE CHANGE IN PIPE DIAMETER, OR A MINIMUM OF ONE-TENTH OF ONE FOOT (0.10 FT.) FOR JUNCTIONS WITH THE SAME PIPE DIAMETER ENTERING AND EXITING THE STRUCTURE.

DEEP STORMWATER DRAIN MANHOLE SECTION VIEW

(NO SCALE)

CITY OF WACO

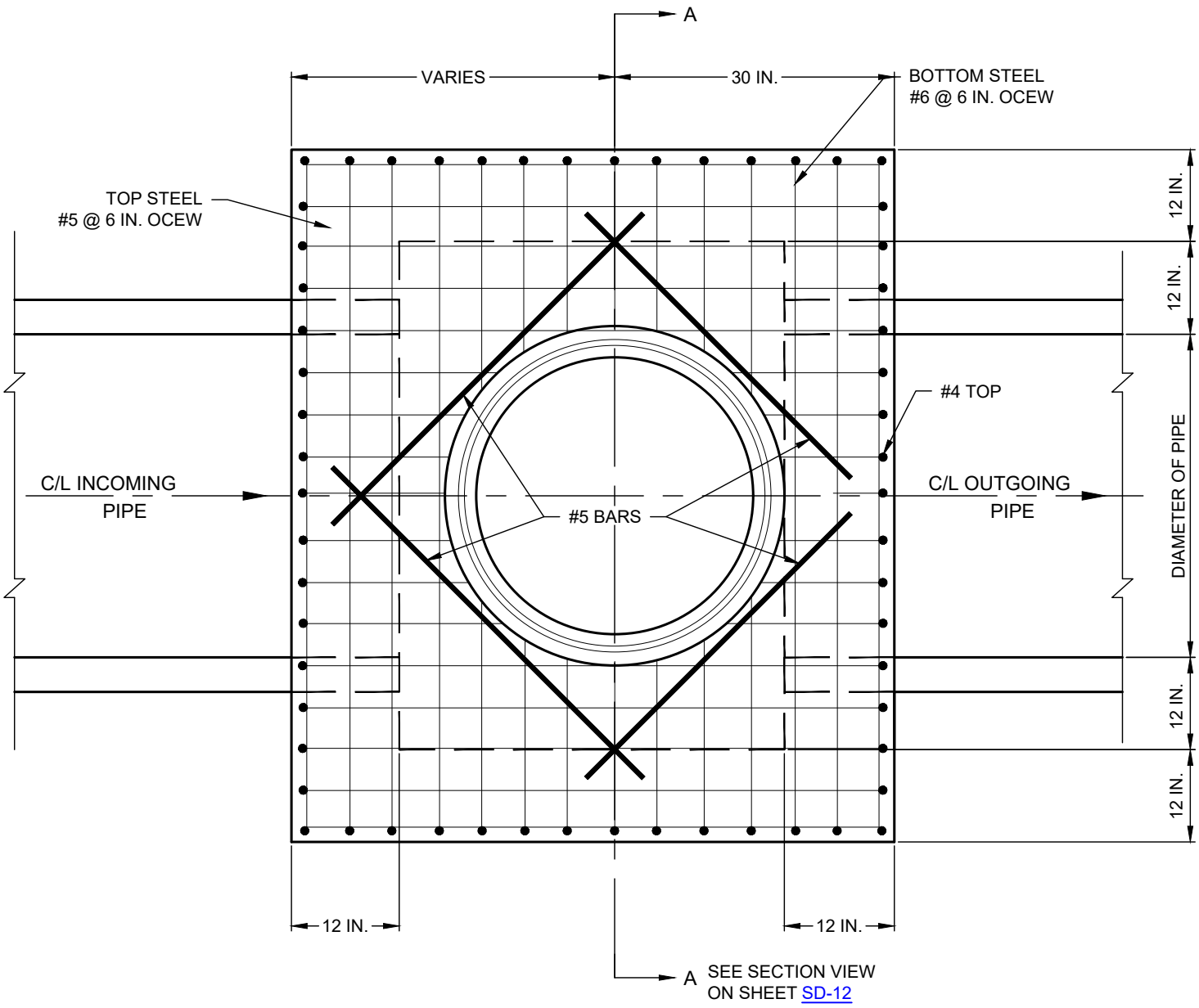
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	ADD MANHOLE NOTE TO DETAIL; MODIFY NOTE ON DETAIL; ADD NOTES 4, 5 & 6	MZ	04/28/2025
1	MODIFY PIPE AND CONCRETE	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-12



TOP SLAB DEEP STORMWATER DRAIN MANHOLE

(NO SCALE)

CITY OF WACO

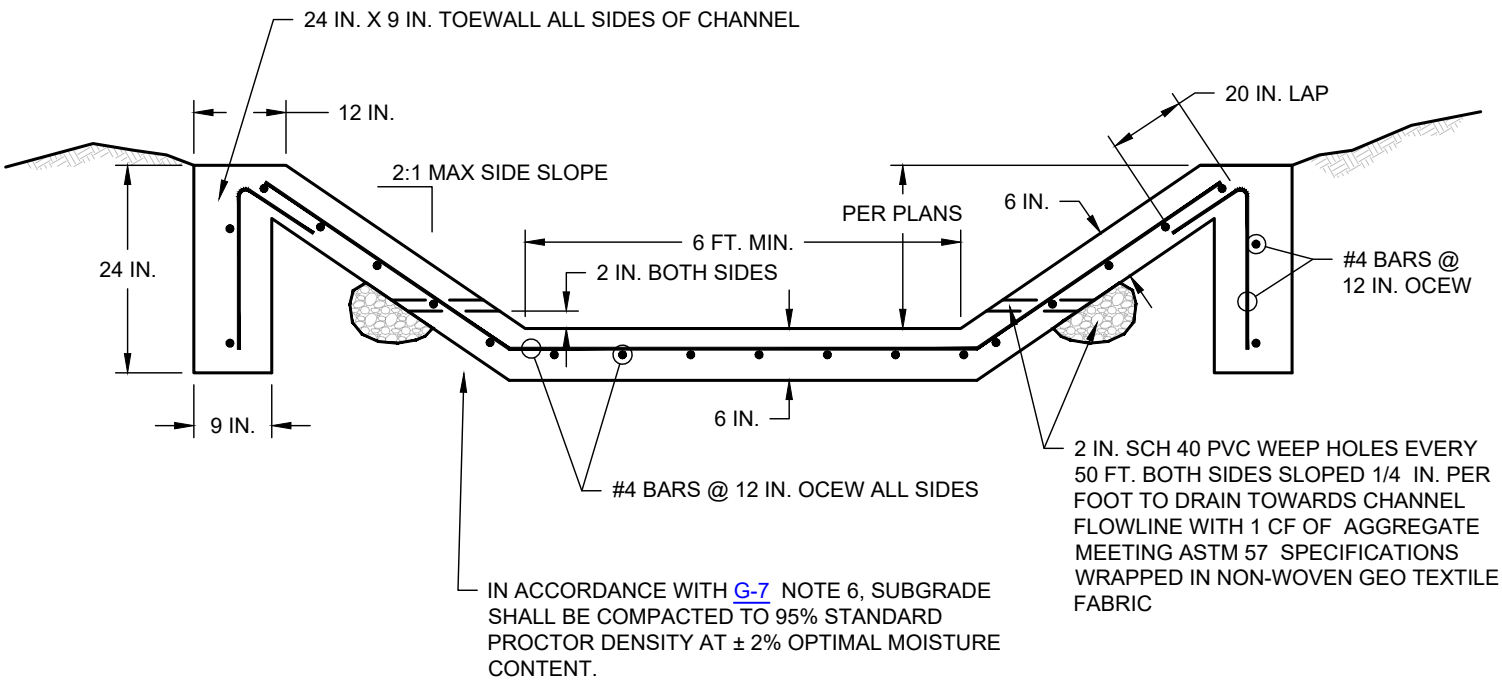
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	PLACE END OF OUTLFOW PIPE FLUSH WITH INTERIOR WALL	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

SD-13



NOTES:

1. CHANNEL WALLS WILL BE DESIGNED TO SUIT PROJECT SPECIFIC SITE.
2. CHANNEL CONFIGURATION IN PLANS TO BE CONSISTENT WITH HYDROLOGIC AND HYDRAULIC COMPUTATIONS.
3. CHANNEL SIZES FOR HEIGHT OF CHANNEL GREATER THAN 5 FT. TO BE DESIGNED AND INCLUDED IN PLANS.
4. PLEASE REFER TO DETAIL G-7 FOR GENERAL CONCRETE NOTES.
5. WORK SHALL BEGIN AT DOWNSTREAM END OF CHANNEL AND PROGRESS UPSTREAM.
6. CONCRETE MUST BE PLACED TO ENSURE POSITIVE DRAINAGE SLOPE.
7. CONCRETE SHALL BE PLACED MONOLITHICALLY ACROSS CHANNEL.
8. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT A SPACING OF BETWEEN 200 FT. MINIMUM DISTANCE AND 600 FT. MAXIMUM DISTANCE BETWEEN TRANSVERSE EXPANSION JOINTS. THE DESIGN LOCATION AND SPACING OF TRANSVERSE EXPANSION JOINTS, CONTRACTION JOINTS, AND WEEP HOLES SHALL BE DETAILED IN PLANS AND PROVIDE FOR MINIMUM DISTANCE OF 3 FT. FROM NEAREST TRANSVERSE JOINT TO CENTER OF WEEP HOLE.
9. IF PROPOSED CONCRETE LINED CHANNEL INTERSECTS OR IN ANY WAY IMPACTS AN EXISTING OR PROPOSED PEDESTRIAN ACCESS ROUTE OR SHARED USE PATH OR ELEMENTS OF THESE, THEN THE PLANS SHALL PROVIDE FOR COMPLIANCE WITH THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG) AND THE NECESSARY PEDESTRIAN ACCESS ROUTE / SHARED USE PATH ELEMENTS WITHIN THE FOOTPRINT OF THE CONCRETE LINED CHANNEL AND BEYOND AS NECESSARY FOR COMPLIANCE WITH PROWAG SHALL BE CONSTRUCTED DURING THIS PHASE.

CONCRETE LINED CHANNEL

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

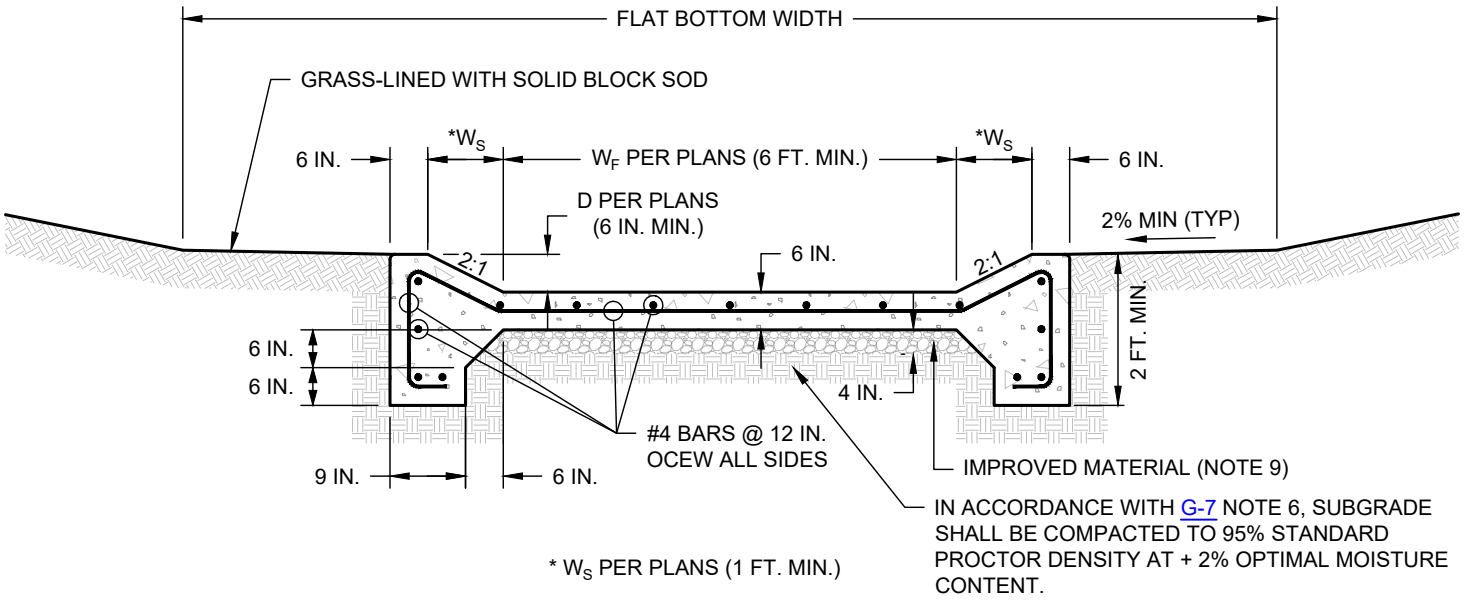
NO.	COMMENTS	BY	DATE
2	MODIFIY NOTE 8; MODIFY WEEPHOLES & NOTE	MZ	11/15/2024
1	ADD NOTES 9	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-14

CONFIGURATION SUMMARY TABLE				
LOCATION IDENTIFICATION	W_F FT	W_S FT.	D IN.	SLOPE %

CONFIGURATION SUMMARY TABLE SHALL BE SEALED, SIGNED, AND DATED BY RESPONSIBLE PROFESSIONAL ENGINEER



NOTES:

1. CHANNEL SHALL BE DESIGNED TO SUIT PROJECT SPECIFIC SITE.
2. CHANNEL CONFIGURATION IN PLANS TO BE CONSISTENT WITH HYDROLOGIC AND HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH CURRENT CITY OF WACO STORMWATER DESIGN CRITERIA.
3. MINIMUM LONGITUDINAL SLOPE IS 0.5 PERCENT.
4. PLEASE REFER TO DETAIL G-7 FOR GENERAL CONCRETE NOTES.
5. WORK SHALL BEGIN AT DOWNSTREAM END OF CHANNEL AND PROGRESS UPSTREAM.
6. CONCRETE MUST BE PLACED TO ENSURE POSITIVE DRAINAGE SLOPE.
7. CONCRETE SHALL BE PLACED MONOLITHICALLY ACROSS CHANNEL.
8. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED EVERY 600 FT. AT A MINIMUM, AND NO CLOSER THAN 200 FT.
9. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
   A. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A.” MATERIAL
   B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
   C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER
10. IF CONCRETE PILOT CHANNEL / DRAINAGE FLUME INTERSECTS OR IN ANY WAY IMPACTS AN EXISTING OR PROPOSED PEDESTRIAN ACCESS ROUTE OR SHARED USE PATH OR ELEMENTS OF THESE, THEN THE PLANS SHALL PROVIDE FOR COMPLIANCE WITH THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG) AND THE NECESSARY PEDESTRIAN ACCESS ROUTE / SHARED USE PATH ELEMENTS WITHIN THE FOOTPRINT OF THE CONCRETE PILOT CHANNEL / DRAINAGE FLUME AND BEYOND AS NECESSARY FOR COMPLIANCE WITH PROWAG SHALL BE CONSTRUCTED DURING THIS PHASE.

CONCRETE PILOT CHANNEL / DRAINAGE FLUME

(NO SCALE)

CITY OF WACO

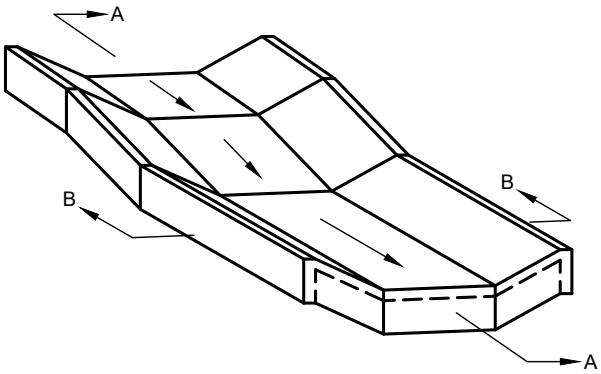
ENGINEERING DIVISION

REVISIONS

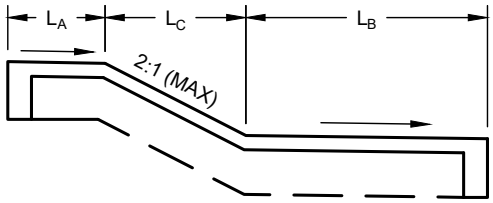
NO.	COMMENTS	BY	DATE
2	MODIFY BASE MATERIAL NOTE; MODIFY NOTE 9	MZ	04/28/2025
1	ADD NOTE 10; MODIFY DETAIL NAME	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

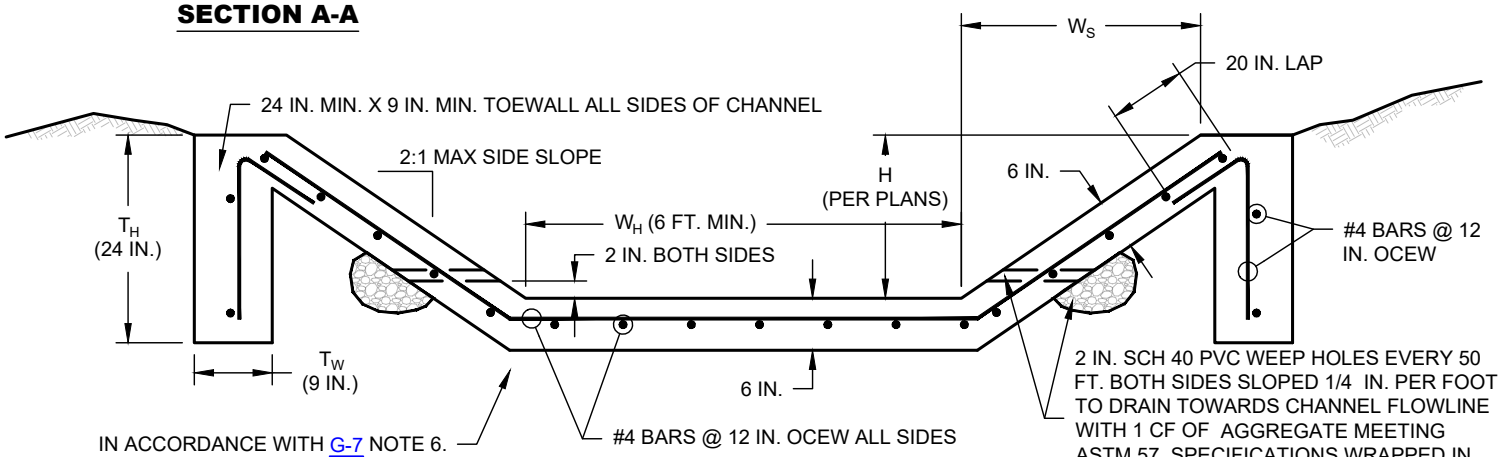
SD-15



CONFIGURATION SUMMARY TABLE*								
LOCATION IDENTIFICATION	T_W IN.	T_H IN.	H FT.	W_H FT.	W_S FT.	L_A & S_A FT. %	L_C & S_C FT. %	L_B & S_B FT. %



SECTION A-A



SECTION B-B

NOTES:

1. CONCRETE SLOPING CHANNEL DROP STRUCTURE SHALL BE DESIGNED TO SUIT PROJECT SPECIFIC SITE.
2. CONCRETE SLOPING CHANNEL DROP STRUCTURE CONFIGURATION IN PLANS TO BE CONSISTENT WITH HYDROLOGIC AND HYDRAULIC COMPUTATIONS IN ACCORDANCE WITH CURRENT CITY OF WACO STORMWATER DESIGN CRITERIA.
3. CHANNEL SIZES FOR HEIGHT OF CHANNEL GREATER THAN 5 FT. TO BE DESIGNED AND DETAILS INCLUDED IN PLANS.
4. PLEASE REFER TO DETAIL G-7 FOR GENERAL CONCRETE NOTES.
5. WORK SHALL BEGIN AT DOWNSTREAM END OF CHANNEL AND PROGRESS UPSTREAM.
6. CONCRETE MUST BE PLACED TO ENSURE POSITIVE DRAINAGE SLOPE.
7. CONCRETE SHALL BE PLACED MONOLITHICALLY ACROSS CHANNEL.
8. TRANSVERSE EXPANSION JOINTS SHALL BE PLACED AT A SPACING OF BETWEEN 200 FT. MINIMUM DISTANCE AND 600 FT. MAXIMUM DISTANCE BETWEEN TRANSVERSE EXPANSION JOINTS. THE DESIGN LOCATION AND SPACING OF TRANSVERSE EXPANSION JOINTS, CONTRACTION JOINTS, AND WEEP HOLES SHALL BE DETAILED IN PLANS AND PROVIDE FOR MINIMUM DISTANCE OF 3 FT. FROM NEAREST TRANSVERSE JOINT TO CENTER OF WEEP HOLE.
9. THE FOLLOWING STRUCTURAL DIMENSIONS SHALL BE DESIGNED IN ACCORDANCE WITH NOTE 2 AND SHOWN IN THE TABLE WITH SEAL, SIGNATURE, AND DATE BY THE RESPONSIBLE PROFESSIONAL ENGINEER:
   - TOE WALL WIDTH - TW
   - TOE WALL HEIGHT - TH
   - CHANNEL HEIGHT - H
   - CHANNEL FLAT WIDTH - WH
   - CHANNEL SLOPE WIDTH - WS
   - APPROACH APRON LENGTH (MIN. 10 FT.) - L_A & SLOPE - S_A
   - CHUTE LENGTH (MIN. 10 FT.) - L_C & SLOPE S_C
   - DOWNSTREAM APPROACH LENGTH - L_B & SLOPE S_B
10. IF PROPOSED CONCRETE SLOPING CHANNEL DROP STRUCTURE INTERSECTS OR IN ANY WAY IMPACTS AN EXISTING OR PROPOSED PEDESTRIAN ACCESS ROUTE OR SHARED USE PATH OR ELEMENTS OF THESE, THEN THE PLANS SHALL PROVIDE FOR COMPLIANCE WITH THE CURRENT UNITED STATES ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (ACCESS BOARD) ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG) AND THE NECESSARY PEDESTRIAN ACCESS ROUTE / SHARED USE PATH ELEMENTS WITHIN THE FOOTPRINT OF THE CONCRETE SLOPING CHANNEL DROP STRUCTURE AND BEYOND AS NECESSARY FOR COMPLIANCE WITH PROWAG SHALL BE CONSTRUCTED DURING THIS PHASE.

CONCRETE SLOPING CHANNEL DROP STRUCTURE

(NO SCALE)

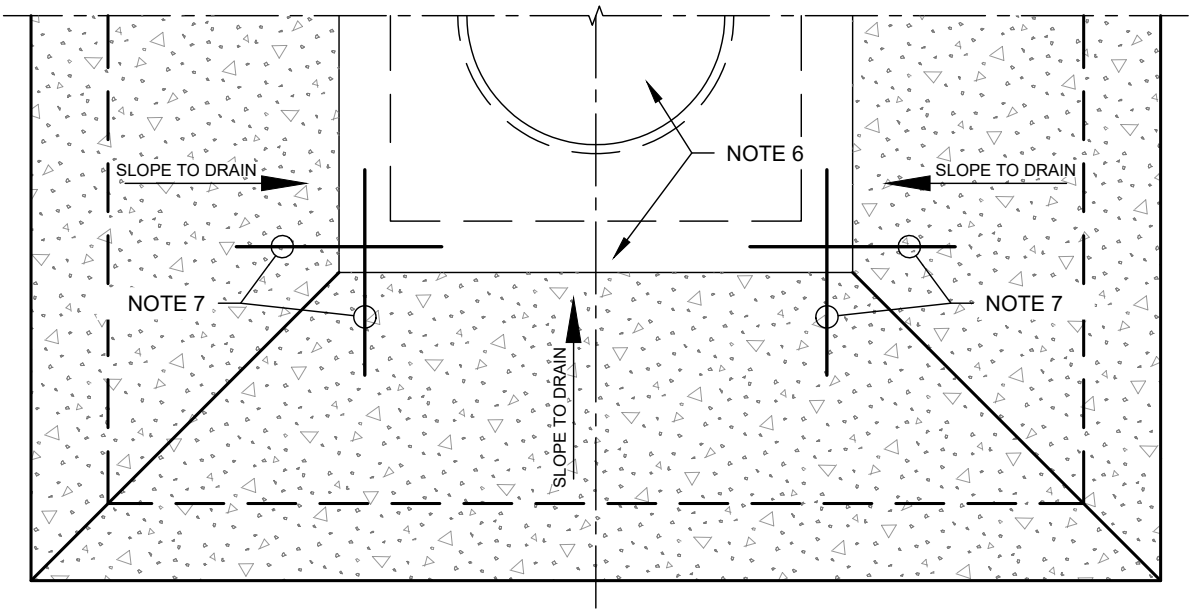
CITY OF WACO

ENGINEERING DIVISION

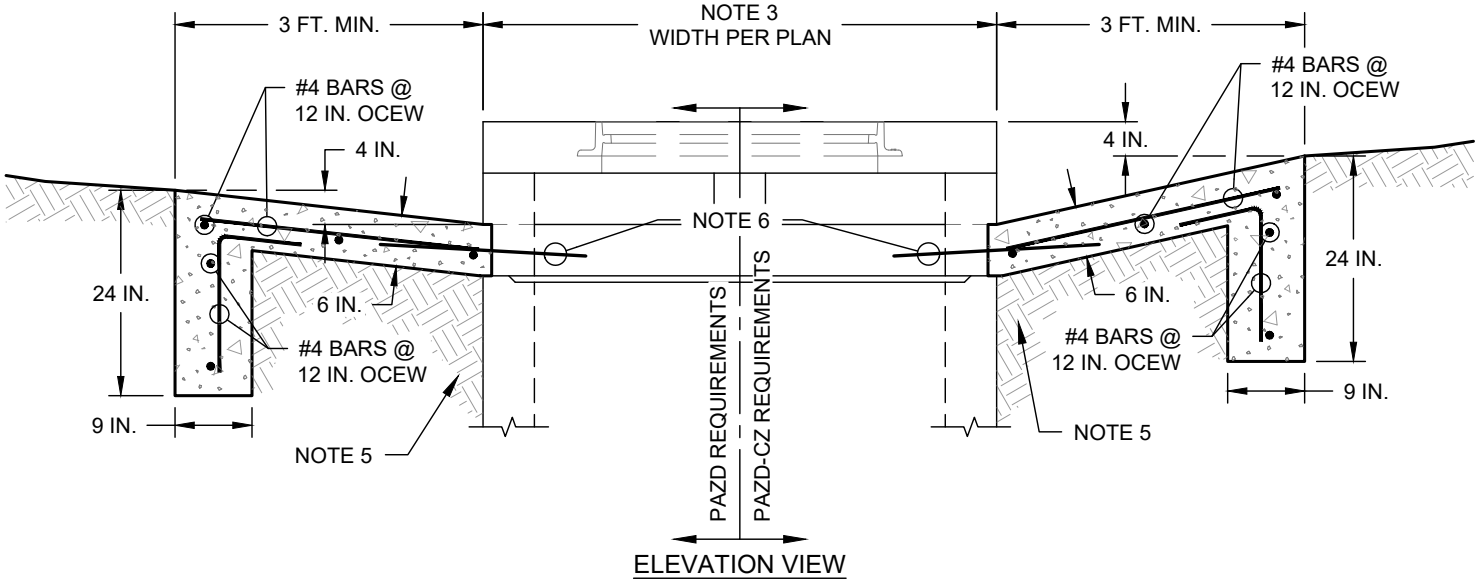
REVISIONS			
NO.	COMMENTS	BY	DATE
2	MODIFIY NOTE 8; MODIFY WEEPHOLES & NOTE	MZ	11/15/2024
1	ADD NOTE 10	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

SD-16



PARTIAL PLAN VIEW



ELEVATION VIEW

NOTES:

1. FOR USE WITH PRECAST AREA ZONE DRAIN (PAZD) AND PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE (PAZD-CZ).
2. PLEASE SEE SD-1 NOTE 23 FOR REFERENCE.
3. AREA ZONE DRAIN PER PLANS. STORMWATER DRAIN MANHOLE COVER AND FRAME AS REQUIRED PER PLANS. REF. STANDARD DETAIL SD-9 FOR DETAILS.
4. PLEASE REFER TO DETAIL G-7 FOR GENERAL CONCRETE NOTES.
5. IN ACCORDANCE WITH G-7 NOTE 6, SUBGRADE SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ± 2% OPTIMAL MOISTURE CONTENT.
6. 2-#4 DEFORMED TIE BARS 24 IN. LONG AT EACH CORNER PERPENDICULAR TO ONE ANOTHER AND PENETRATING WALLS 12 IN.
7. CONCRETE SHALL BE PLACED MONOLITHICALLY THROUGHOUT ALL 4-SIDES AND ALL COMPONENTS OF THE REINFORCED CONCRETE APRON.

PRECAST AREA ZONE DRAIN CAST-IN-PLACE REINFORCED CONCRETE APRON

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
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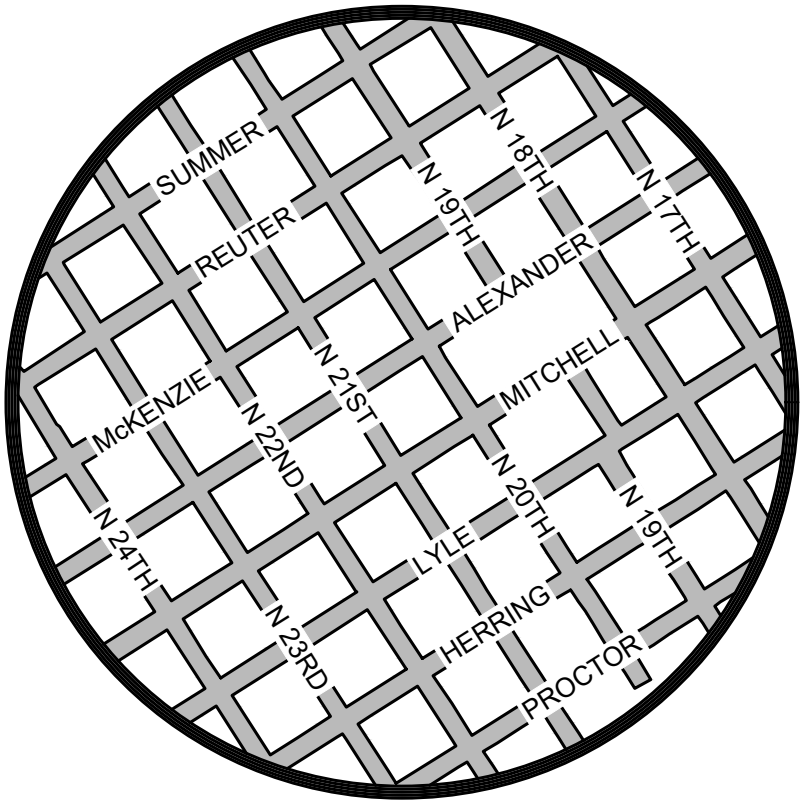
DATE 11/15/2024

SD-17

CITY OF WACO

STREET DETAILS



CITY OF WACO
STREET DETAILS

Sheet #	Sheet Title	Revision Date
ST-1	Street General Notes	04/28/2025
ST-2	Local Street Section - REPLACED WITH ST-2A, ST-2B, ST-2C, ST-2D	04/28/2025
ST-2A	Local Street And Right-of-Way Cross Section With Utility Assignments	04/28/2025
ST-2B	Minor Collector (Residential) Street And R.O.W. Cross Section With Utility Assignments	04/28/2025
ST-2C	Minor Collector (Commercial) Street And R.O.W. Cross Section With Utility Assignments	04/28/2025
ST-2D	Major Collector (Neighborhood) Street And R.O.W. Cross Section With Utility Assignments	04/28/2025
ST-3	Street Typical Section ~ REPLACED WITH ST-3A, ST-3B, ST-3C, ST-3D, ST-3E, ST-3F, ST-3G, ST-3H	04/28/2025
ST-3A	Typical Flexible Pavement Sections: Local Streets	04/28/2025
ST-3B	Typical Flexible Pavement Sections: Residential/Neighborhood Collector Streets	04/28/2025
ST-3C	Typical Flexible Pavement Sections: Commercial Collector Streets	04/28/2025
ST-3D	Typical Flexible Pavement Sections: Industrial Collector Streets	04/28/2025
ST-3E	Typical Rigid Pavement Sections: Local Streets	04/28/2025
ST-3F	Typical Rigid Pavement Sections: Residential/Neighborhood Collector Streets	04/28/2025
ST-3G	Typical Rigid Pavement Sections: Commercial Collector Streets	04/28/2025
ST-3H	Typical Rigid Pavement Sections: Industrial Collector Streets	04/28/2025
ST-4	Standard Alley Details	04/28/2025
ST-5	Typical Median Cross Section	04/28/2025
ST-6	Concrete Pavement Typical Plan	
ST-7	Concrete Streets Curb Details	04/28/2025
ST-8	Concrete Street Keyway Construction Joint Detail	04/28/2025
ST-9	Concrete Expansion Joint Detail and Concrete Street Sawed Contraction Joint Detail	04/28/2025
ST-10	Manhole & Water Valve Cover Reinforcing Plan (Concrete Streets Only)	
ST-11	Manhole Lid Height Adjustment A	04/28/2025
ST-12	Manhole Lid Height Adjustment B	04/28/2025
ST-13	Valve Box Height Adjustment A	04/28/2025
ST-14	Valve Box Height Adjustment B	04/28/2025
ST-15	Standard Curb And Gutter Details	04/28/2025
ST-16	Ribbon Curb Detail	11/15/2024
ST-17	Mountable Curb And Gutter Details	04/28/2025
ST-18	Street Rehabilitation Driveway Valley Curb Detail (Street Rehabilitation Use Only)	04/28/2025
ST-19	Standard Concrete Valley & Concrete Curb & Gutter Fillet	04/28/2025
ST-20A	Standard Curb & Gutter Placement and Replacement Details	04/28/2025
ST-20B	Ribbon Curb Placement and Replacement Details	04/28/2025
ST-20C	Mountable Curb & Gutter Placement and Replacement Details	04/28/2025
ST-21	Residential Stormwater Curb Outlet	
ST-22	Curb and Gutter Transition Details for Pre-Cast Inlet Outside of Pavement	
ST-23A	Standard Residential Drive Approach	04/28/2025
ST-23B	Residential Drive Approach General Notes	04/28/2025
ST-24A	Standard Commercial Drive Approach	04/28/2025
ST-24B	Commercial Drive Approach General Notes	04/28/2025
ST-25A	Saw Cut Standard Curb and Gutter Drive Approach	
ST-25B	Saw Cut Standard Curb and Gutter Drive Approach General Notes	04/28/2025
ST-26	Mountable Curb Residential Drive Approach	
ST-27	Base Failure Repair with Concrete After Milling (Mill & Overlay Projects)	04/19/2024
ST-28	Base Failure Repair with Controlled Low Strength Material After Milling (Mill & Overlay Projects)	04/19/2024
ST-29	Base Failure Repair with Controlled Low Strength Material (Street Preservation Projects)	
ST-30	Class B Surface Replacement, Trench Backfill, & Type A Embedment	
ST-31	Trench Backfill with Controlled Low Strength Material and Type A Embedment	04/19/2024
ST-32	Concrete Pad Modification Examples	

Sheet #	Sheet Title	Revision Date
ST-33	Asphalt Street Cut Repair Requirements For Streets Improved For The Prior Five Years	
ST-34	Asphalt Street Cut Repair Requirements For Streets Not Improved For The Prior Five Years	
ST-35	Concrete Street Cut Repair Requirements	
ST-36	Concrete Alley Cut Repair Requirements	
ST-37	Class D (Concrete) Pavement Replacement, Trench Backfill and Embedment	
ST-38	Steel Plate Details	11/15/2024
ST-39A	Ribbon Curb Residential Drive Approach	04/19/2024
ST-39B	Ribbon Curb Residential Drive Approach General Notes	04/28/2025
ST-40	Concrete Pavement to Asphalt Pavement Transition Panel	04/19/2024
ST-41	Base Failure Repair with Concrete Prior to Milling (Mill & Overlay Projects)	04/19/2024
ST-42	Base Failure Repair with Controlled Low Strength Material Prior to Milling (Mill & Overlay Projects)	04/19/2024
ST-43	Base Failure Repair with HMAC Type B (Full Depth) Prior to Milling (Mill & Overlay Projects)	04/19/2024
ST-44	Joint and Transition Details for Asphalt Pavement	11/15/2024
ST-45	Manhole Lid Height Adjustment or Replacement (Preservation Work Only)	11/15/2024
ST-46	Gate Valve Box Adjustment or Replacement (Preservation Work Only)	11/15/2024
ST-47	Seal Coat Surfacing for Developer Projects	11/15/2024

Use Applicable Current TxDOT Barrier and Guardrail End Treatments
(Mow Strip is Required)

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

STREET - GENERAL NOTES

GENERAL

1. WORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE STREET DESIGN CRITERIA.
2. ALL CONCRETE, REINFORCEMENT, AND PLACEMENT MUST COMPLY WITH SECTION 5.1 OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION. PLEASE REFER TO CITY OF WACO MANUAL OF STANDARD DETAILS, GENERAL DETAILS, GENERAL CONCRETE AND REINFORCEMENT NOTES - G-7.

STREETS

3. SAW JOINTS AS SOON AS IT IS POSSIBLE TO DO SO WITHOUT DAMAGING THE PAVEMENT AND LESS THAN 24 HOURS AFTER CONCRETE PLACEMENT. THE EXACT TIME IS SUBJECT TO APPROVAL BY THE CITY ENGINEER.

CURB AND GUTTER

4. NOTES UNDER THIS HEADING SHALL APPLY TO ALL THE TYPES OF CURBS AND GUTTERS.
5. ALL EXISTING CURBS AND GUTTERS SHALL BE REMOVED BY FULL DEPTH SAWCUT PERPENDICULAR AND PARALLEL TO THE STREET.
6. 2 IN. MINIMUM CLEAR DISTANCE SHALL BE USED FOR ALL REBAR.
7. EXPANSION JOINTS, PER STANDARD DETAILS, SHALL BE CONSTRUCTED AT EACH SIDE OF STRUCTURES, AT EACH SIDE OF DRIVEWAYS, CURB RETURNS, AND AT LOCATIONS NECESSARY TO LIMIT SPACING TO 50 FT. EXPANSION JOINTS SHALL BE CONSTRUCTED TO MATCH EXISTING EXPANSION JOINTS IN PAVEMENT OR CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT
8. AT ALL EXPANSION JOINTS FOR CURBS AND GUTTERS, THE FOLLOWING SHALL APPLY:
   - 8.1. JOINTS SHALL BE 1/2 IN. WIDE.
   - 8.2. MATERIALS USED SHALL BE IN ACCORDANCE WITH CITY STANDARD SPECIFICATIONS FOR EXPANSION JOINTS.
   - 8.3. USE TWO 24 IN. LONG 3/4 IN. DIAMETER SMOOTH BARS FOR DOWELS.
   - 8.4. USE 3/4 IN. PVC PIPE SLEEVE WITH CAPPED END PLACED LEVEL AND PERPENDICULAR TO THE FACE.
9. CONTRACTION JOINTS SHALL BE PLACED ON 10 FT. SPACING. JOINTS SHALL BE CUT OR TOOLED AT LEAST 2 IN. THROUGH THE FACE, TOP, AND GUTTER.
10. 1/2 IN. EXPANSION JOINTS ARE REQUIRED WHERE BACK OF CURBS OR CURB CUTS ARE ADJACENT TO CONCRETE FLATWORK (I.E. SIDEWALKS OR RIPRAP).
11. THE LIP OF GUTTER SHALL BE THE SAME ELEVATION AS TOP OF SURFACE COURSE.
12. CONCRETE FOR CURB AND GUTTER SHALL BE PLACED AND FINISHED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 5.3 CONCRETE CURB AND GUTTER.
13. FOR CONVENTIONALLY FORMED CONCRETE CURB AND GUTTER, FORMS SHALL BE "TAPPED" TO MINIMIZE VOIDS. WITHIN 24 HOURS OF REMOVAL OF THE FORMS, ANY VOIDS SHALL BE PATCHED WITH PORTLAND CEMENT MORTAR.
14. CURB AND GUTTER SHALL CURE A MINIMUM OF 7 DAYS PRIOR TO INSTALLATION OF STREET BASE COURSE. IF CYLINDER BREAK SHOW A COMPRESSIVE STRENGTH OF 3000 PSI, THE CITY ENGINEER MAY APPROVE INSTALLATION OF BASE COURSE PRIOR TO 7 DAYS.
15. STANDARD CURB AND GUTTER; RIBBON CURB; AND MOUNTABLE CURB AND GUTTER (ROLLED-OVER CURB) SHALL BE PLACED AND/OR REPLACED IN ACCORDANCE WITH APPLICABLE PLACEMENT AND REPLACEMENT DETAILS STANDARD DETAILS ST-20A , ST-20B , AND ST-20C RESPECTIVELY UNLESS OTHER DETAILS ARE SHOWN IN THE PLANS AND APPROVED BY THE CITY.
16. PER S-1 NOTE 4, A STAMPED "S" OF 4 IN. IN HEIGHT AND 3/8 IN. IN DEPTH SHALL BE PLACED IN THE CENTER OF THE FACE OF CURB, AT EACH NEW SANITARY SEWER SERVICE TAP LOCATION AND IN ANY NEW CURB AT EXISTING SERVICES. PER W-1 NOTE 7, A STAMPED "W" OF 4 IN. IN HEIGHT AND 3/8 IN. IN DEPTH SHALL BE PLACED IN THE CENTER OF FACE OF CURB AT EACH NEW WATER SERVICE LOCATION AND IN ANY NEW CURB AT EXISTING SERVICES.

PARKWAY

17. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF WACO STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES SEC. 22-73. - DIMENSIONS—PARKWAY.
    - A. THE PARKWAY SHALL BE THAT SPACE BETWEEN THE FACE OF THE STREET CURB AND THE PROPERTY LINE. THIS PARKWAY SHALL HAVE A MINIMUM SLOPE OF ONE-QUARTER OF AN INCH PER ONE FOOT AND A MAXIMUM SLOPE OF ONE-HALF OF AN INCH PER ONE FOOT TOWARD THE STREET.
    - B. IF THIS SLOPE HAS BEEN ESTABLISHED BY PRIOR WORK, THE CEMENT CONTRACTOR SHALL ADHERE TO THAT SLOPE, EXCEPT THAT SUCH SLOPE SHALL NEVER EXCEED THAT ALLOWED IN SUBSECTION (A) OF THIS SECTION.

    THIS EXCLUDES COMPONENTS OF ADA PEDESTRIAN ACCESS ROUTES, SHARED USE PATHS, DRIVE APPROACHES, AND OTHER APPROVED IDENTIFIED INFRASTRUCTURE WITHIN THE PARKWAY.

METAL BEAM GUARD FENCE

18. METAL BEAM GUARD FENCE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST TEXAS DEPARTMENT OF TRANSPORTATION ROADWAY STANDARDS AND STANDARD SPECIFICATIONS. MOW STRIP IS REQUIRED.

COMPACTION OF MATERIALS

19. COMPACTION OF MATERIALS FOR THE CONSTRUCTION OF STREETS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C.

VARIOUS CIVIL INFRASTRUCTURE APPURTENANCES IN/UNDER PAVEMENT

20. IN ACCORDANCE WITH G-7 NOTE 6, PRIOR TO PLACEMENT OF CONCRETE FOR A DIAMOND IN PAVEMENT FOR A FORCE MAIN VALVE, A SANITARY SEWER MANHOLE, A STORMWATER DRAINAGE MANHOLE, OR A WATER VALVE MATERIAL BELOW SHALL BE COMPACTED / RE-COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.

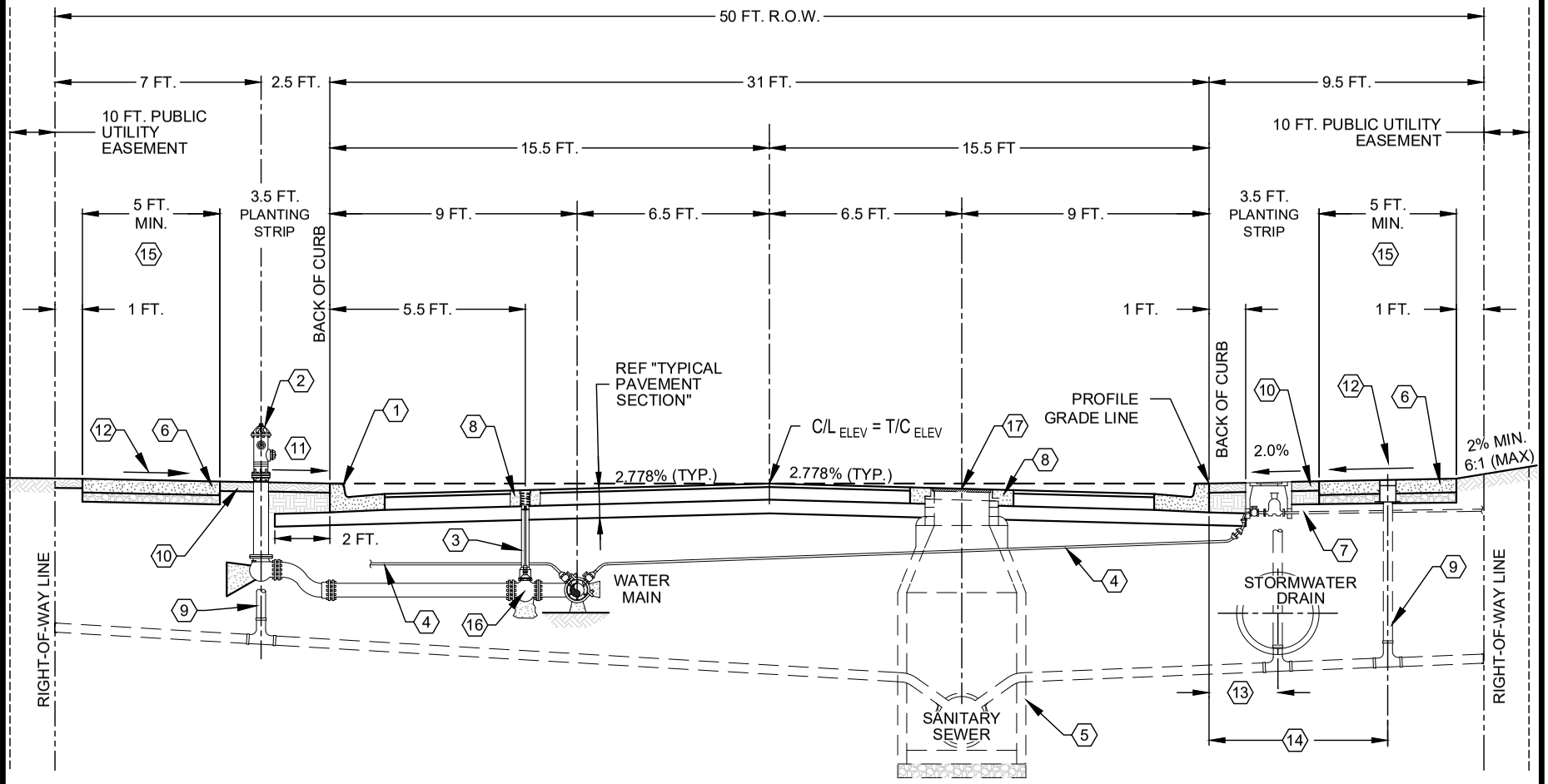
CITY OF WACO

ENGINEERING DIVISION

REVISIONS				
#	DESCRIPTION	NO.	BY	DATE
FL	MM/DD/YYYY			

ST-2A

DATE 04/28/2025



KEY NOTES:

1. STANDARD CURB & GUTTER
2. FIRE HYDRANT CONNECTION PER W-2
3. VALVE BOX & EXTENSION INSTALLATION
4. RESIDENTIAL WATER SERVICE
5. PRECAST CONCRETE WASTEWATER MANHOLE
6. REINFORCED CONCRETE SIDEWALK
7. YARD LINE
8. CONCRETE PAD/DIAMOND
9. SANITARY SEWER SERVICE W/ CLEANOUT BOX & COVER
10. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D
11. SLOPE TOWARDS STREET: 1/4 IN. PER FT. TO 1/2 IN. PER FT.
12. CROSS-SLOPE OF SIDEWALK SHALL BE 1.5% DESIGNED AND FORMED. ANY CROSS-SLOPE CONSTRUCTED LESS THAN 1% OR EXCEEDING 2% SHALL NOT BE ACCEPTED
13. WHEN NOT IN CONFLICT W/ STORMWATER DRAIN: 2.5 FT. TYPICAL
14. WHEN IN CONFLICT W/ STORMWATER DRAIN: 6 FT. TYPICAL OR 18 IN. FROM O.D. OF STORMWATER DRAIN
15. GREATER WIDTH MAY BE REQUIRED BY CODE OF ORDINANCES
16. FIRE HYDRANT WATER VALVE CONNECTED TO WATER MAIN AS PER DETAIL W-2
17. TOP OF RIM = TOC - 0.181 FT. = TOC - 2 3/16 IN.

LOCAL STREET AND RIGHT-OF-WAY CROSS-SECTION WITH UTILITY ASSIGNMENTS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF WACO FOR ANY PURPOSE WHATSOEVER. THE CITY OF WACO ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

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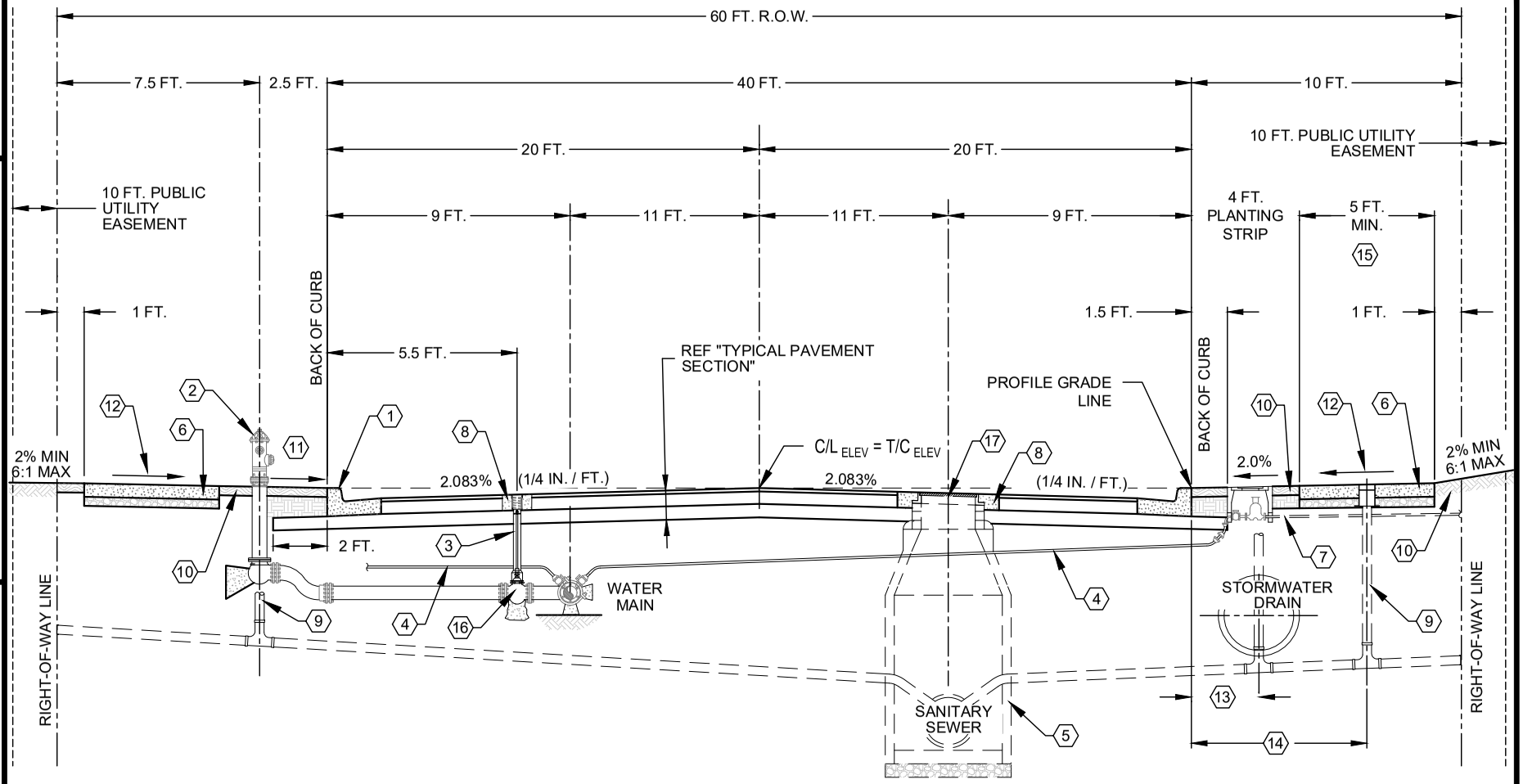

KEY NOTES:

1. STANDARD CURB & GUTTER
2. FIRE HYDRANT CONNECTION PER W-2
3. VALVE BOX & EXTENSION INSTALLATION
4. RESIDENTIAL WATER SERVICE
5. PRECAST CONCRETE WASTEWATER MANHOLE
6. REINFORCED CONCRETE SIDEWALK
7. YARD LINE
8. CONCRETE PAD/DIAMOND
9. SANITARY SEWER SERVICE W/ CLEANOUT BOX & COVER
10. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D
11. SLOPE TOWARDS STREET: 1/4 IN. PER FT. TO 1/2 IN. PER FT.
12. CROSS-SLOPE OF SIDEWALK SHALL BE 1.5% DESIGNED AND FORMED. ANY CROSS-SLOPE CONSTRUCTED LESS THAN 1% OR EXCEEDING 2% SHALL NOT BE ACCEPTED
13. WHEN NOT IN CONFLICT W/ STORMWATER DRAIN: 2.5 FT. TYPICAL
14. WHEN IN CONFLICT W/ STORMWATER DRAIN: 6 FT. TYPICAL OR 18 IN. FROM O.D. OF STORMWATER DRAIN
15. GREATER WIDTH MAY BE REQUIRED BY CODE OF ORDINANCES
16. FIRE HYDRANT WATER VALVE CONNECTED TO WATER MAIN AS PER DETAIL W-2
17. TOP OF RIM = TOC - 0.2292 FT.
    = TOC - 2 3/4 IN.

MINOR COLLECTOR (RESIDENTIAL) STREET AND R.O.W. CROSS SECTION WITH UTILITY ASSIGNMENTS

(NO SCALE)

ST-2B

DATE 04/28/2025

CITY OF WACO

ENGINEERING DIVISION

REVISIONS				
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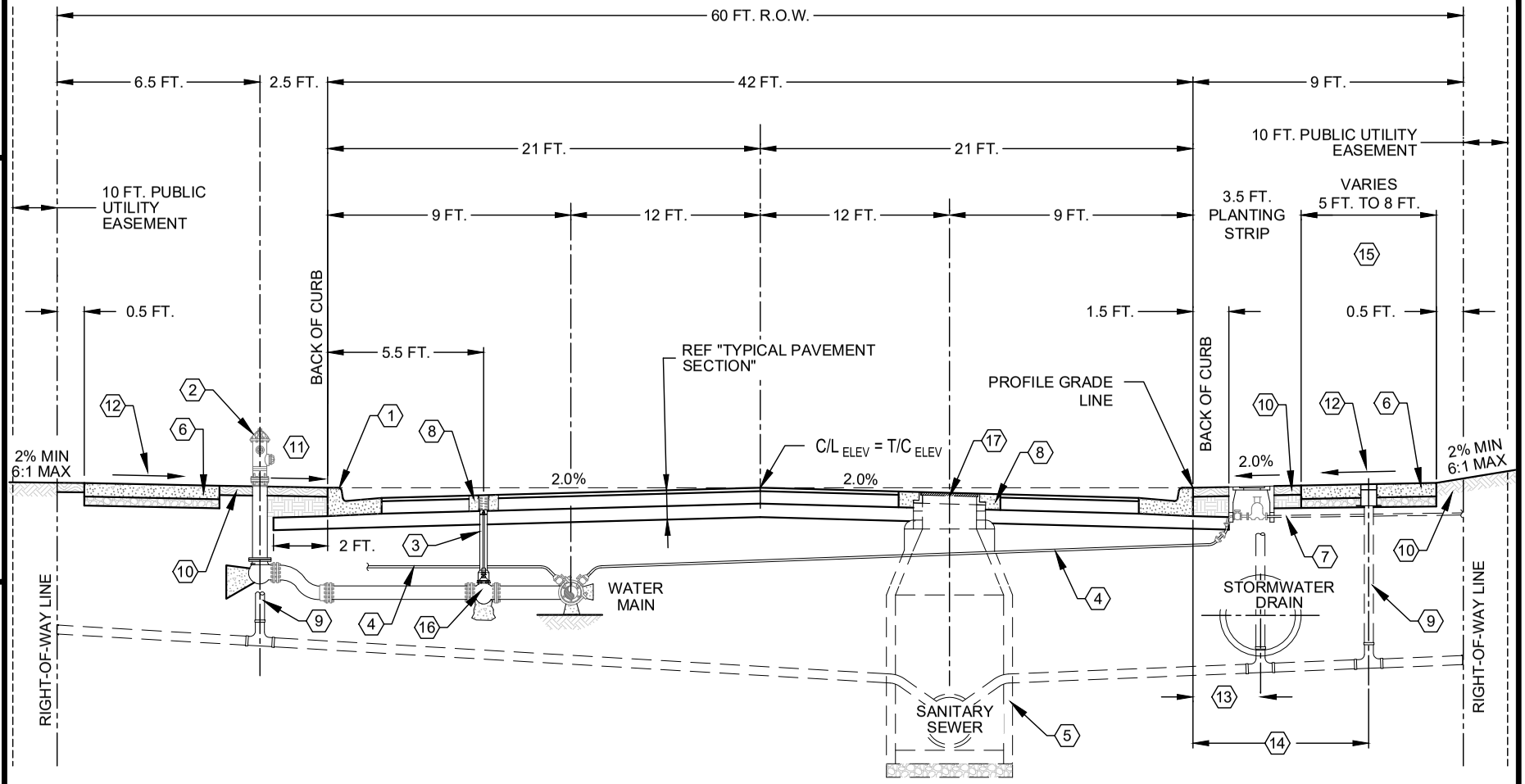
DATE 04/28/2025



KEY NOTES:

1. STANDARD CURB & GUTTER
2. FIRE HYDRANT CONNECTION PER W-2
3. VALVE BOX & EXTENSION INSTALLATION
4. WATER SERVICE
5. PRECAST CONCRETE WASTEWATER MANHOLE
6. REINFORCED CONCRETE SIDEWALK
7. YARD LINE
8. CONCRETE PAD/DIAMOND
9. SANITARY SEWER SERVICE W/ CLEANOUT BOX & COVER
10. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D
11. SLOPE TOWARDS STREET: 1/4 IN. PER FT. TO 1/2 IN. PER FT.
12. CROSS-SLOPE OF SIDEWALK SHALL BE 1.5% DESIGNED AND FORMED. ANY CROSS-SLOPE CONSTRUCTED LESS THAN 1% OR EXCEEDING 2% SHALL NOT BE ACCEPTED
13. WHEN NOT IN CONFLICT W/ STORMWATER DRAIN: 2.5 FT. TYPICAL
14. WHEN IN CONFLICT W/ STORMWATER DRAIN: 6 FT. TYPICAL OR 18 IN. FROM O.D. OF STORMWATER DRAIN
15. GREATER THAN 5 FT. WIDTH MAY BE REQUIRED BY CODE OF ORDINANCES
16. FIRE HYDRANT WATER VALVE CONNECTED TO WATER MAIN AS PER DETAIL W-2
17. TOP OF RIM = TOC - 0.24 FT.
    = TOC - 2 7/8 IN.

MINOR COLLECTOR (COMMERCIAL) STREET AND R.O.W. CROSS SECTION WITH UTILITY ASSIGNMENTS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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REVISIONS				
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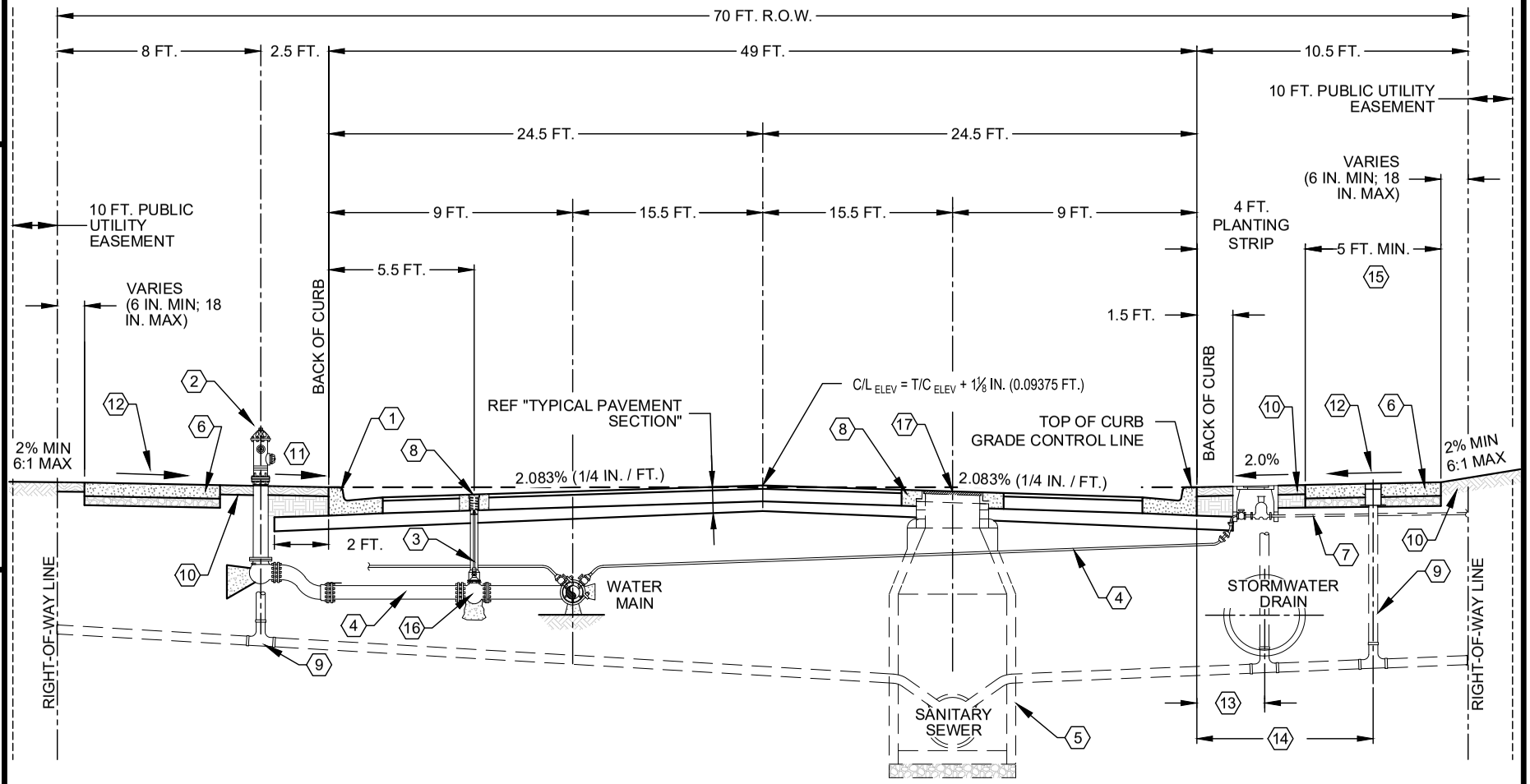
FL	MM/DD/YYYY				

ST-2D

DATE 04/28/2025

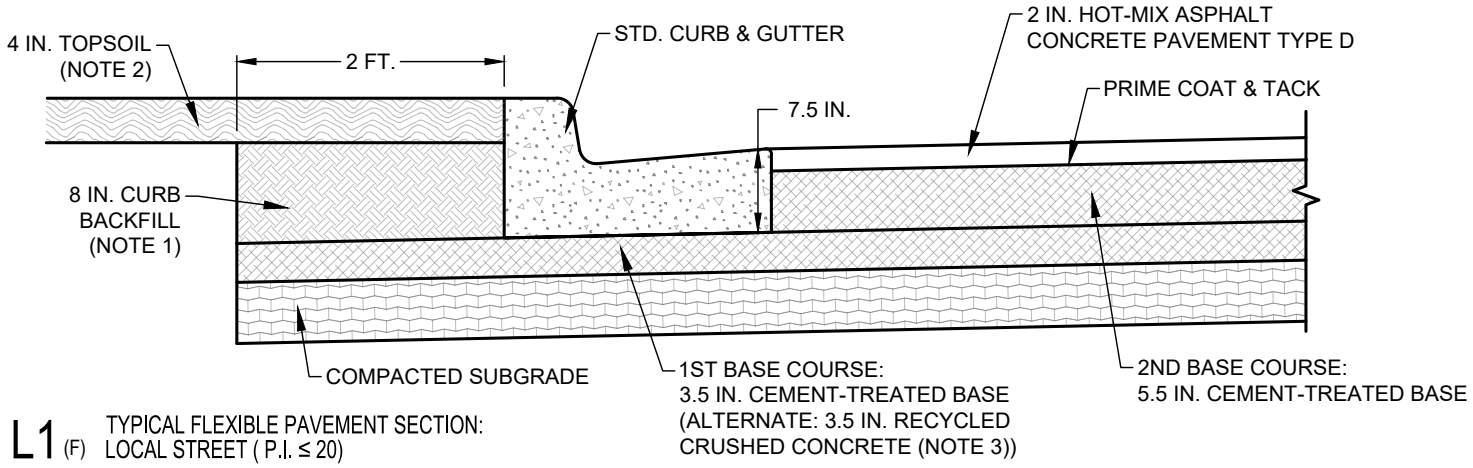


KEY NOTES:

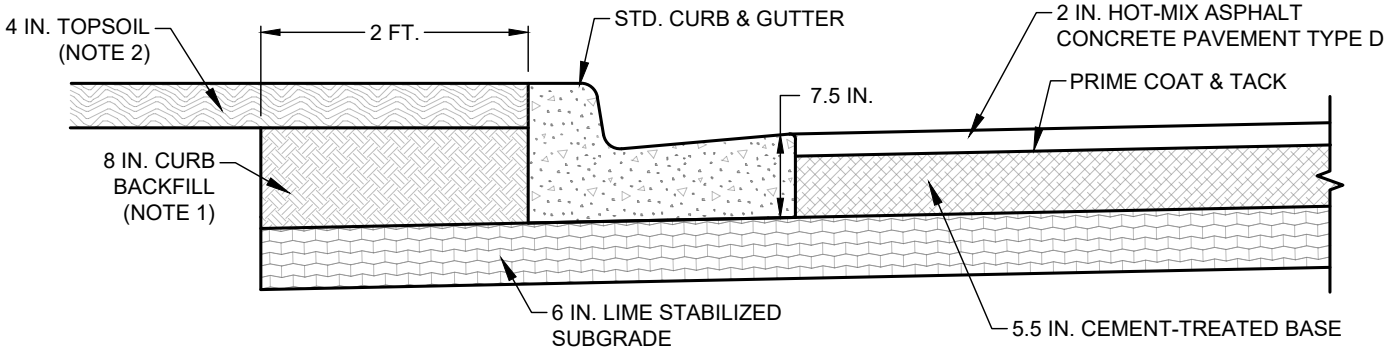
1. STANDARD CURB & GUTTER
2. FIRE HYDRANT CONNECTION PER W-2
3. VALVE BOX & EXTENSION INSTALLATION
4. WATER SERVICE
5. PRECAST CONCRETE WASTEWATER MANHOLE
6. REINFORCED CONCRETE SIDEWALK
7. YARD LINE
8. CONCRETE PAD/DIAMOND
9. SANITARY SEWER SERVICE W/ CLEANOUT BOX & COVER
10. 5 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D
11. SLOPE TOWARDS STREET: 1/4 IN. PER FT. TO 1/2 IN. PER FT.
12. CROSS-SLOPE OF SIDEWALK SHALL BE 1.5% DESIGNED AND FORMED. ANY CROSS-SLOPE CONSTRUCTED LESS THAN 1% OR EXCEEDING 2% SHALL NOT BE ACCEPTED
13. WHEN NOT IN CONFLICT W/ STORMWATER DRAIN: 2.5 FT. TYPICAL
14. WHEN IN CONFLICT W/ STORMWATER DRAIN: 6 FT. TYPICAL OR 18 IN. FROM O.D. OF STORMWATER DRAIN
15. GREATER WIDTH MAY BE REQUIRED BY CODE OF ORDINANCES FOR WIDTH
16. FIRE HYDRANT WATER VALVE CONNECTED TO WATER MAIN AS PER DETAIL W-2
17. TOP OF RIM = TOC - 0.2292 FT.
    = TOC - 2 3/4 IN.

MAJOR COLLECTOR (NEIGHBORHOOD) STREET AND R.O.W. CROSS SECTION WITH UTILITY ASSIGNMENTS

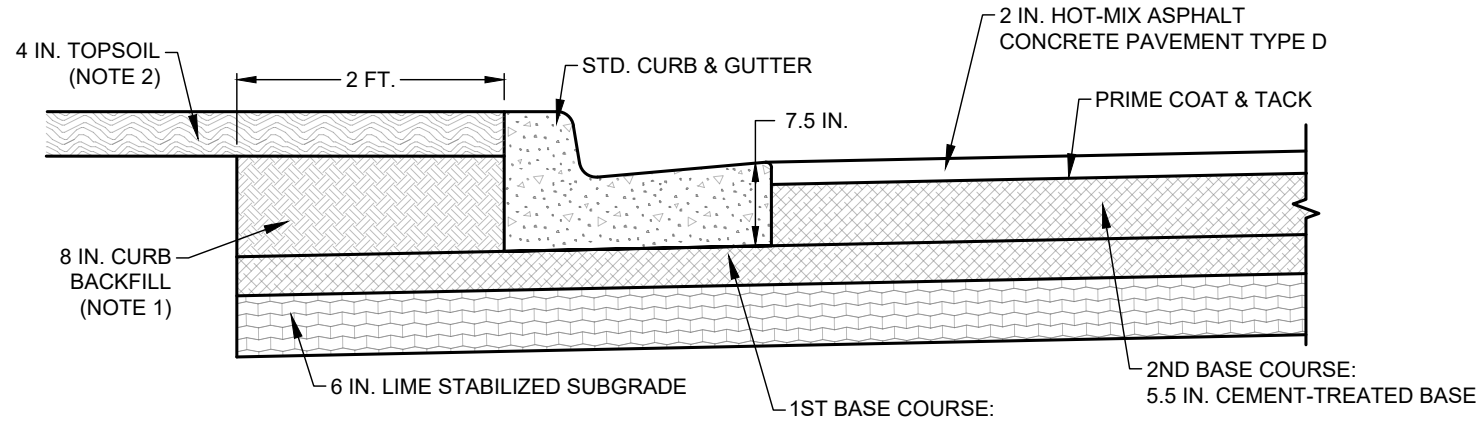
(NO SCALE)



L1 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
LOCAL STREET (P.I. ≤ 20)



L2 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
LOCAL STREET (20 < P.I. < 40)



L3 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
LOCAL STREET (P.I. ≥ 40)

NOTES:

1. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. ALTERNATE: 3.5 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH MINIMUM PLASTICITY INDEX OF FOUR) MAY BE SUBSTITUTED FOR 1ST BASE COURSE OF 3.5 IN. CEMENT-TREATED BASE.
4. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .
5. FOR LOCAL/RURAL STREET SECTIONS WITH ROADSIDE DRAINAGE DITCH REPLACE STANDARD CURB & GUTTER WITH RIBBON CURB ST-16 AND REDUCE CURB BACKFILL DEPTH TO 3.5 IN.

TYPICAL FLEXIBLE PAVEMENT SECTIONS: LOCAL STREETS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
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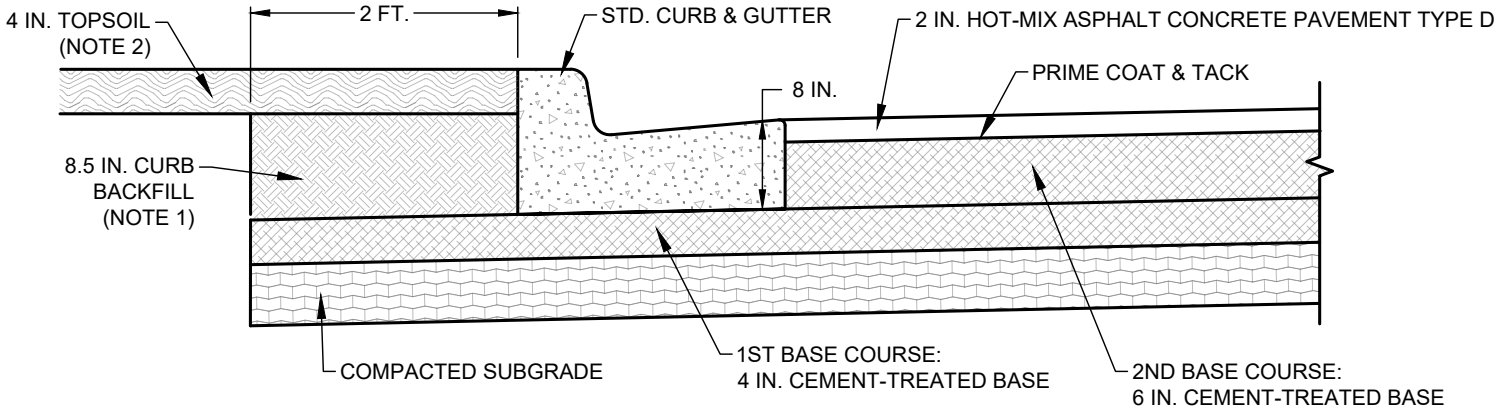
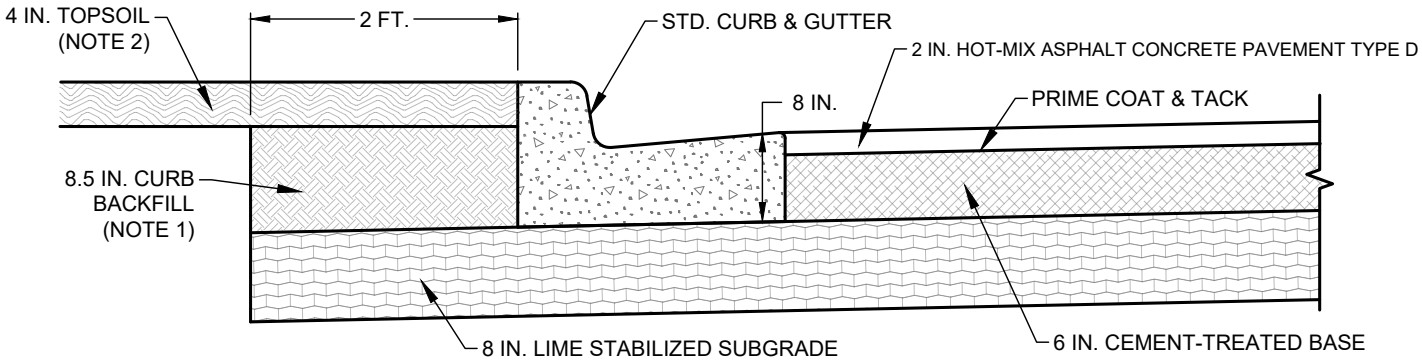
DATE
04/28/2025

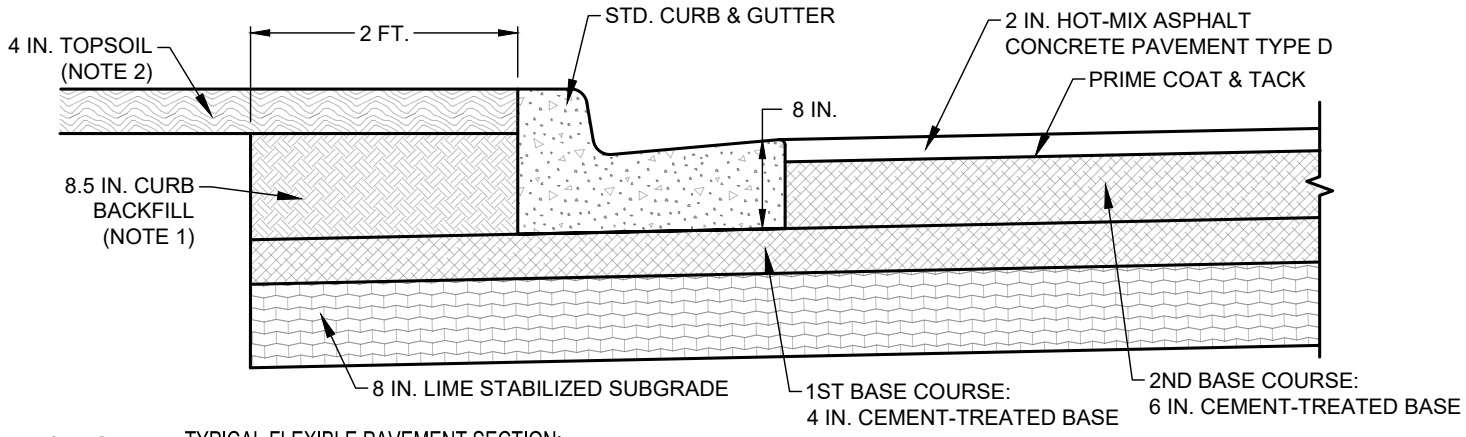
ST-3A



R/NC1(F) TYPICAL FLEXIBLE PAVEMENT SECTION:
RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREET (P.I. ≤ 20)



R/NC2(F) TYPICAL FLEXIBLE PAVEMENT SECTION: RESIDENTIAL/NEIGHBORHOOD
COLLECTOR STREET (20 < P.I. < 40)



R/NC3(F) TYPICAL FLEXIBLE PAVEMENT SECTION:
RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREET (P.I. ≥ 40)

NOTES:

1. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL FLEXIBLE PAVEMENT SECTIONS: RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREETS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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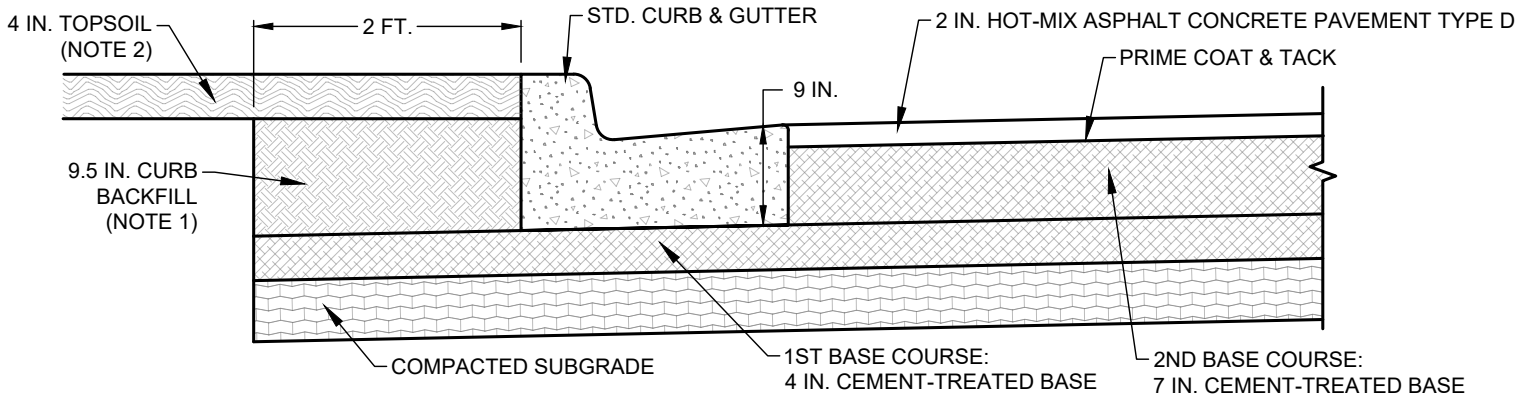
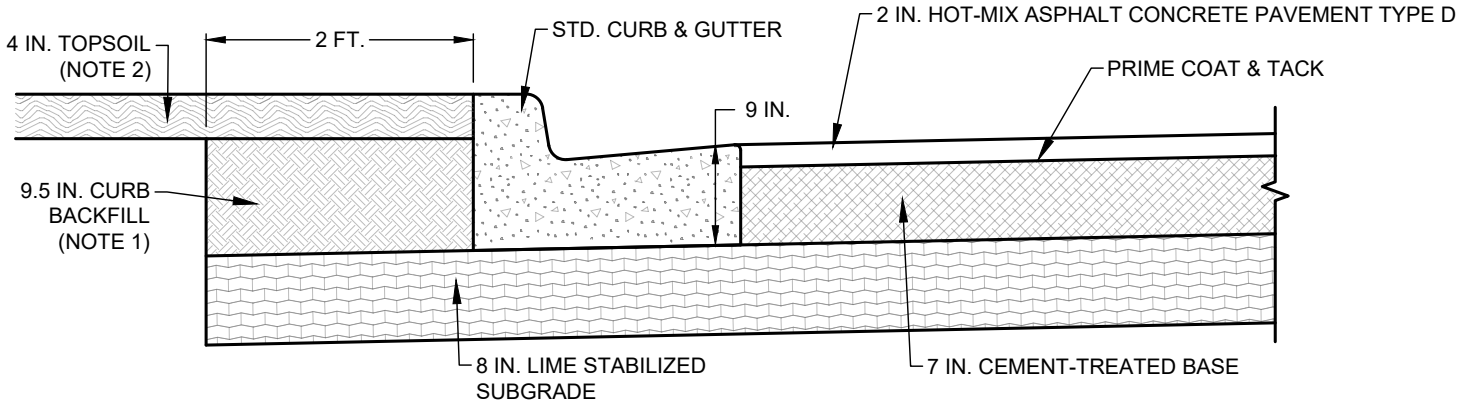
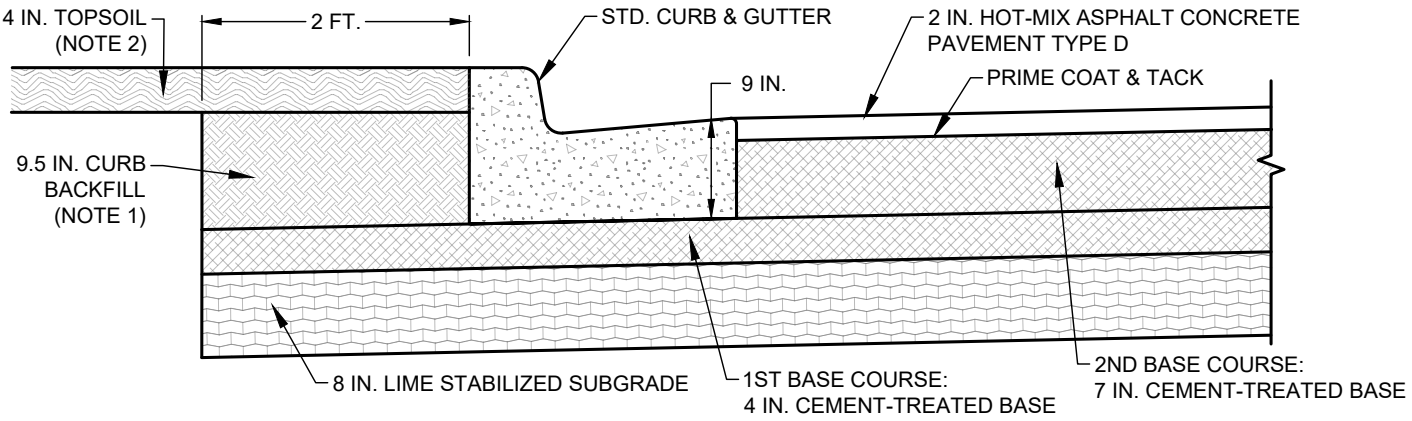
ST-3B



CC1(F) TYPICAL FLEXIBLE PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (P.I. ≤ 20)



CC2(F) TYPICAL FLEXIBLE PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (20 < P.I. < 40)



CC3(F) TYPICAL FLEXIBLE PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (P.I. ≥ 40)

NOTES:

1. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL FLEXIBLE PAVEMENT SECTIONS: COMMERCIAL COLLECTOR STREETS

(NO SCALE)

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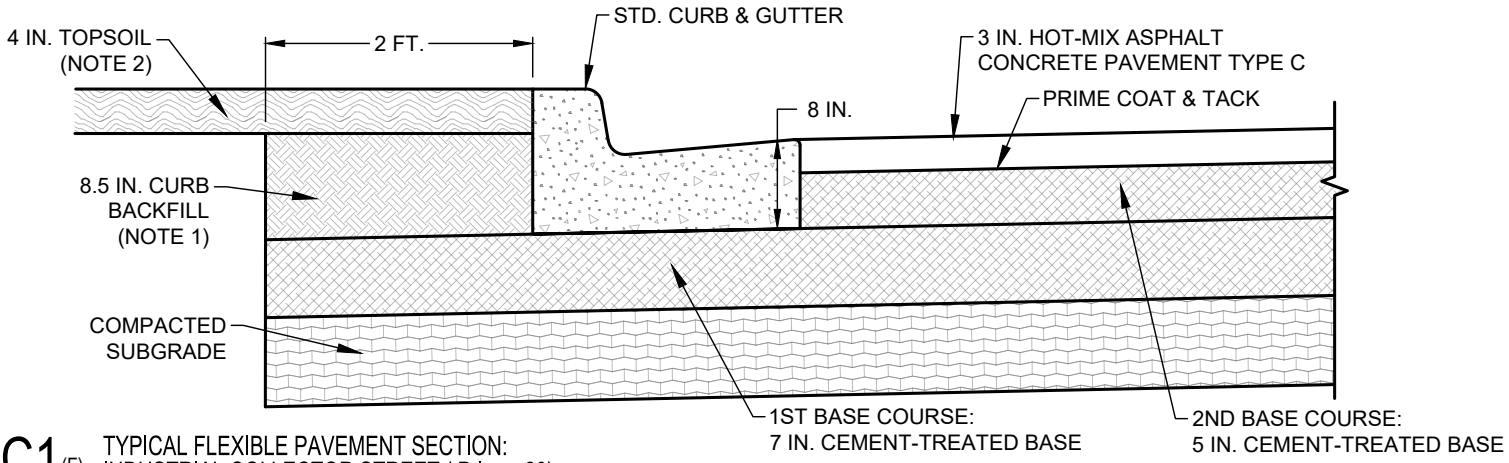
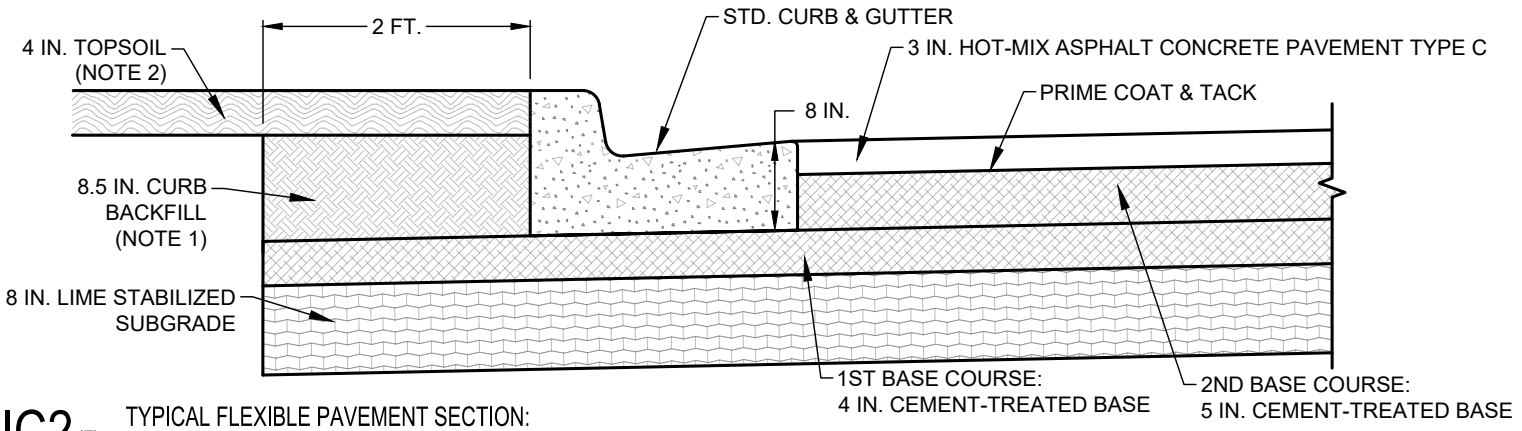
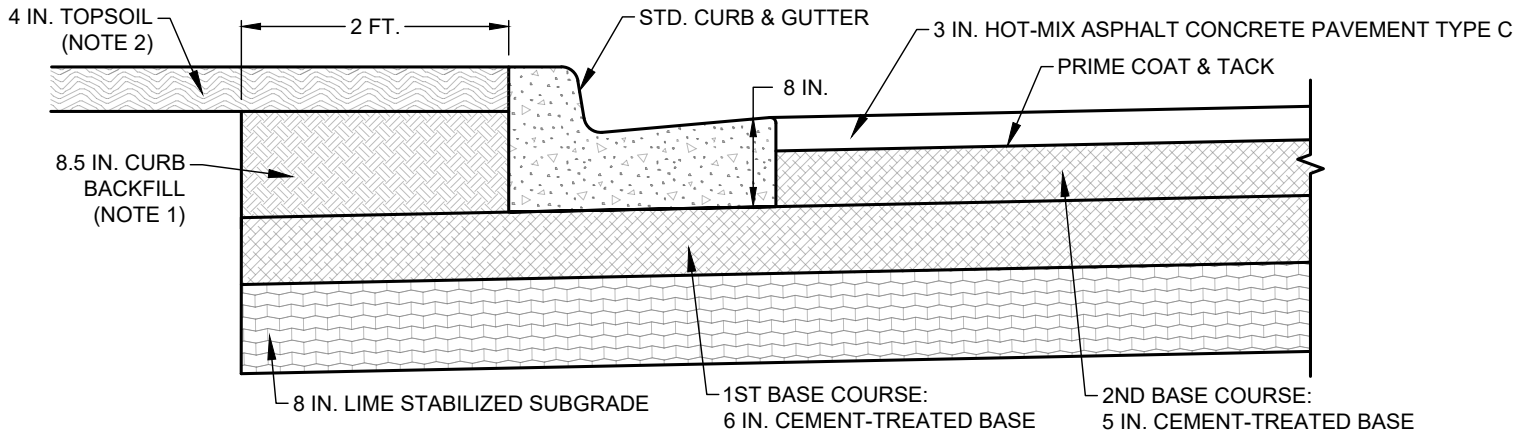
ST-3C



IC1 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (P.I. ≤ 20)



IC2 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (20 < P.I. < 40)



IC3 (F) TYPICAL FLEXIBLE PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (P.I. ≥ 40)

NOTES:

1. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL FLEXIBLE PAVEMENT SECTIONS: INDUSTRIAL COLLECTOR STREETS

(NO SCALE)

CITY OF WACO

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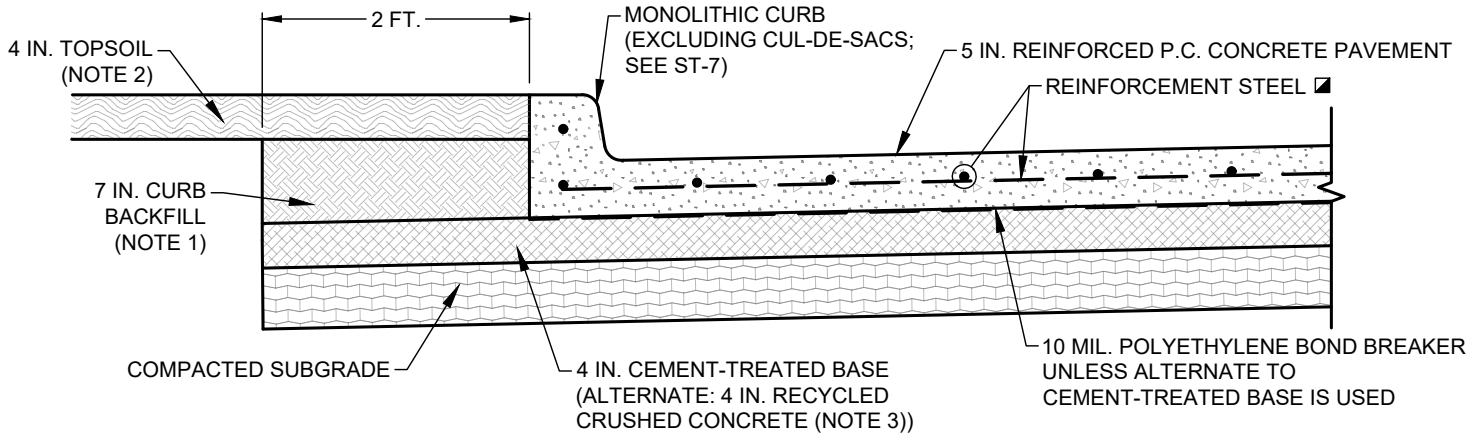
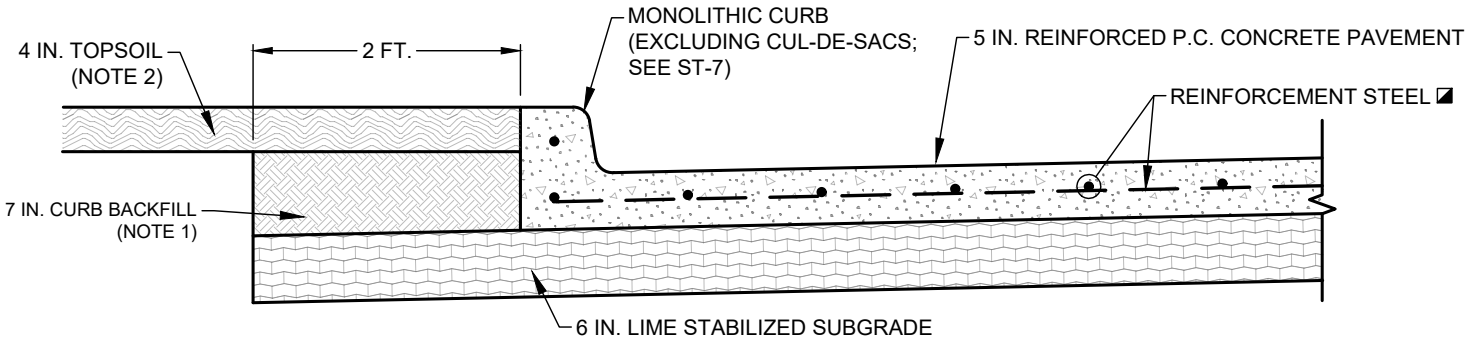
ST-3D



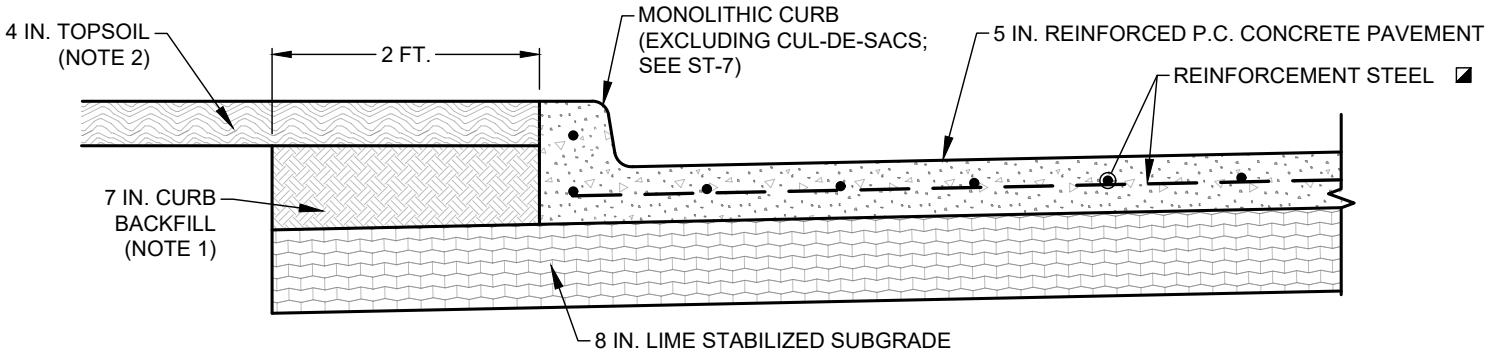
L1(R) TYPICAL RIGID PAVEMENT SECTION:
LOCAL STREET (P.I. ≤ 20)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



L2(R) TYPICAL RIGID PAVEMENT SECTION:
LOCAL STREET (20 < P.I. < 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



L3(R) TYPICAL RIGID PAVEMENT SECTION:
LOCAL STREET (P.I. ≥ 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY

NOTES:

1. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH MINIMUM PLASTICITY INDEX OF FOUR) MAY BE SUBSTITUTED FOR 1ST BASE COURSE OF 4 IN. CEMENT-TREATED BASE.
4. FOR LOCAL/RURAL STREET ELIMINATE CURB.
5. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL RIGID PAVEMENT SECTIONS: LOCAL STREETS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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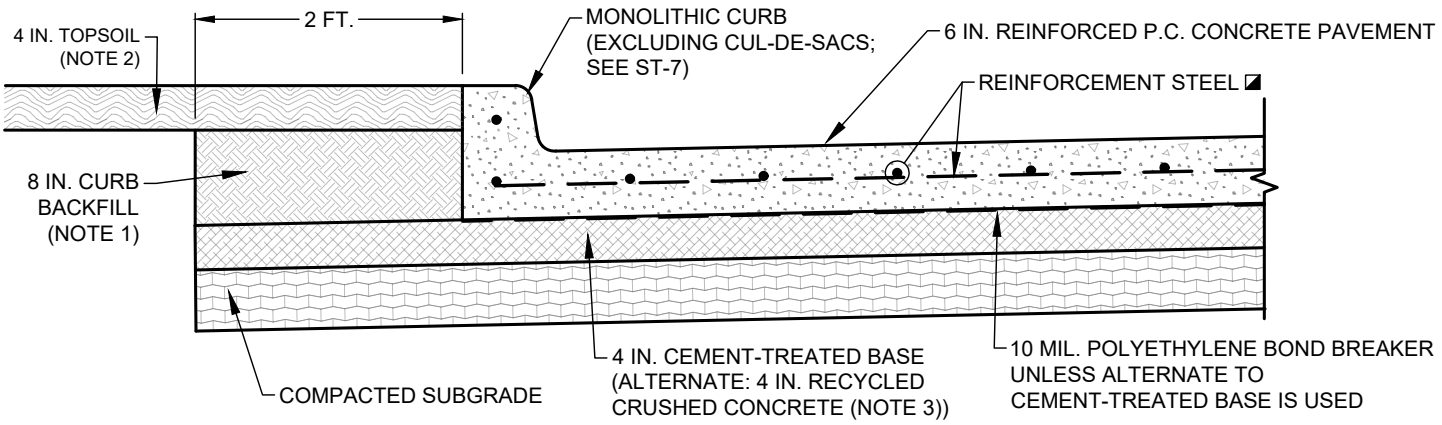
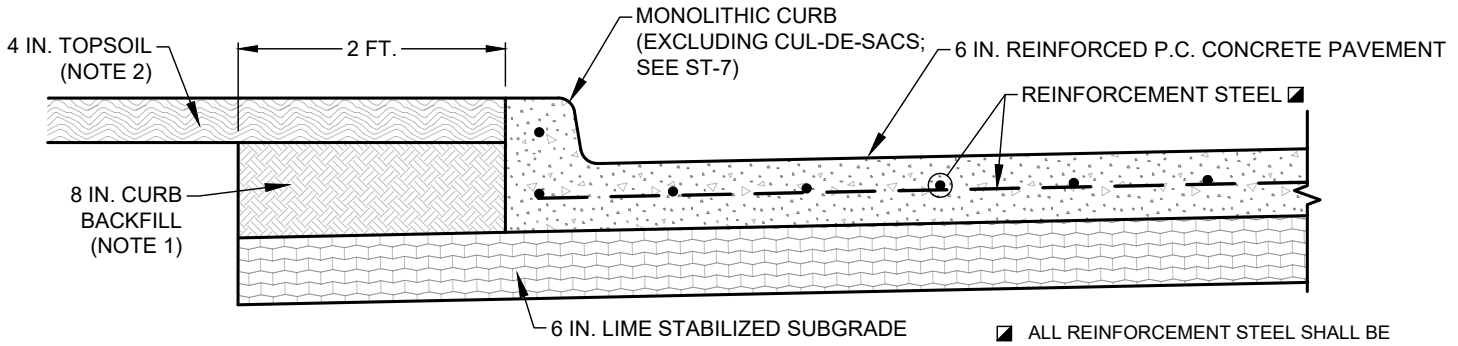
ST-3E



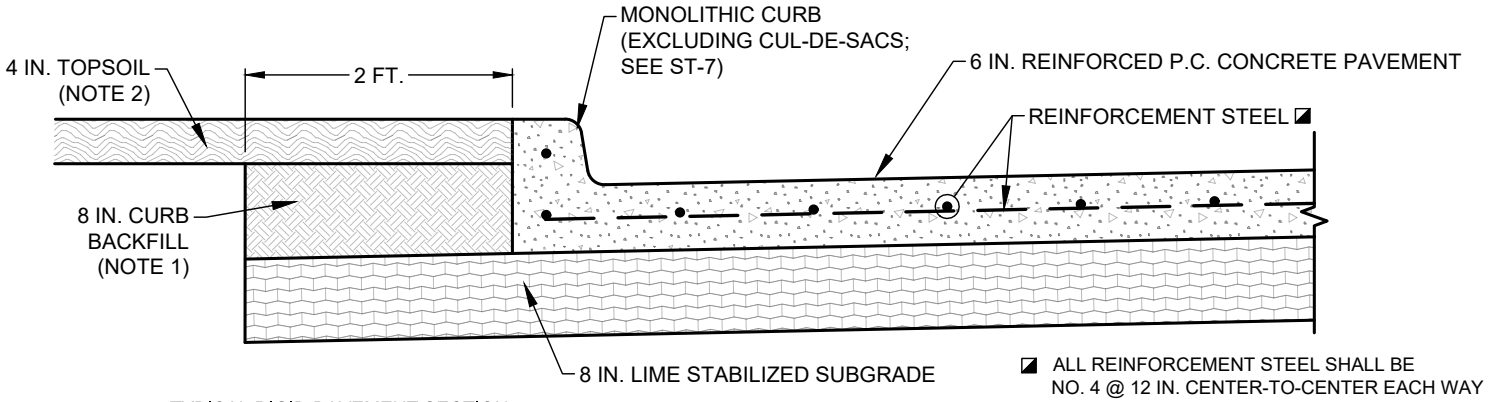
R/NC1(R) TYPICAL RIGID PAVEMENT SECTION:
RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREET (P.I. ≤ 20)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



R/NC2(R) TYPICAL RIGID PAVEMENT SECTION:
RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREET (20 < P.I. < 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



R/NC3(R) TYPICAL RIGID PAVEMENT SECTION:
RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREET (P.I. ≥ 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY

NOTES:

1. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH MINIMUM PLASTICITY INDEX OF FOUR) MAY BE SUBSTITUTED FOR 1ST BASE COURSE OF 4 IN. CEMENT-TREATED BASE.
4. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1 G-1C .

TYPICAL RIGID PAVEMENT SECTIONS: RESIDENTIAL/NEIGHBORHOOD COLLECTOR STREETS

(NO SCALE)

CITY OF WACO

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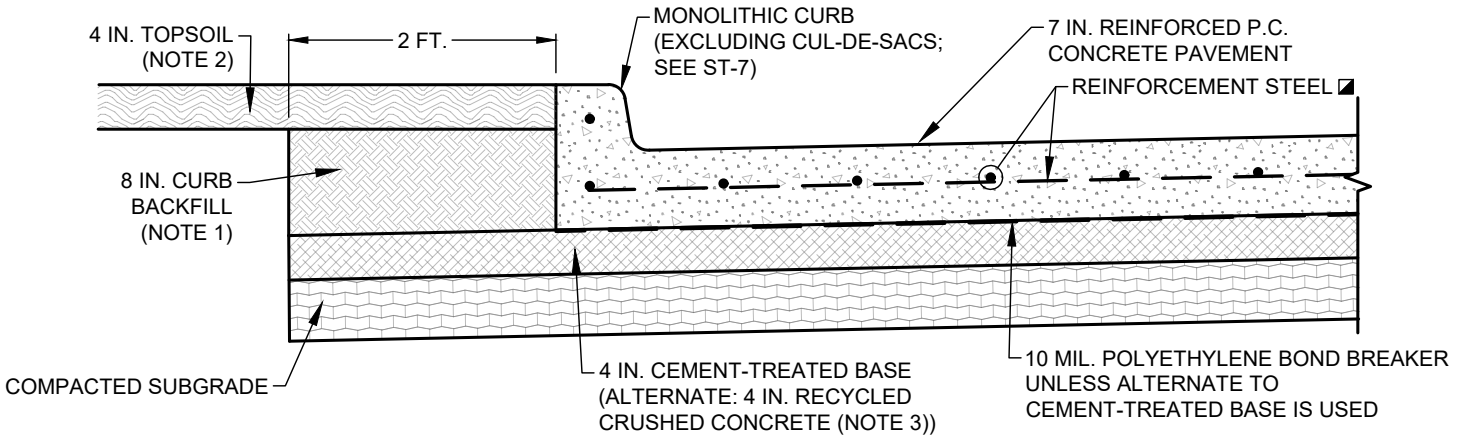
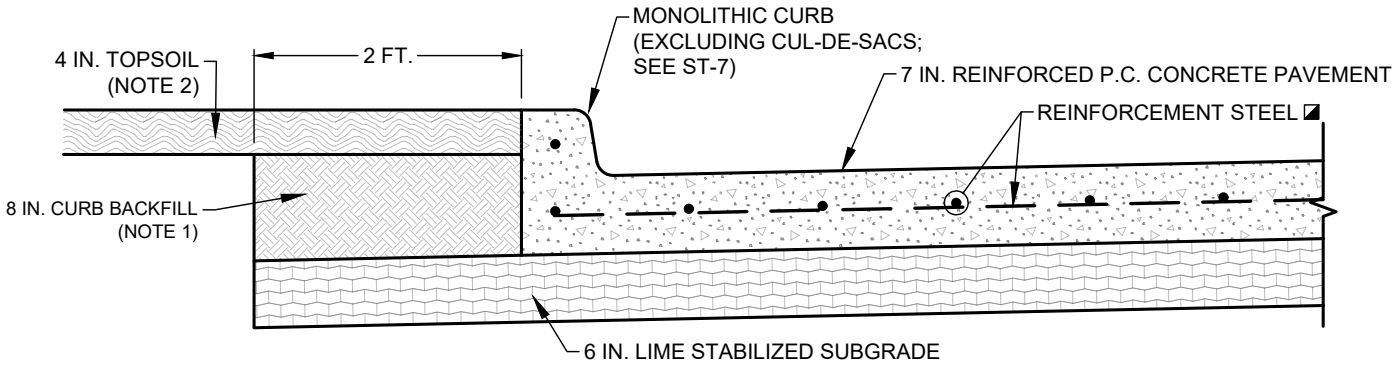


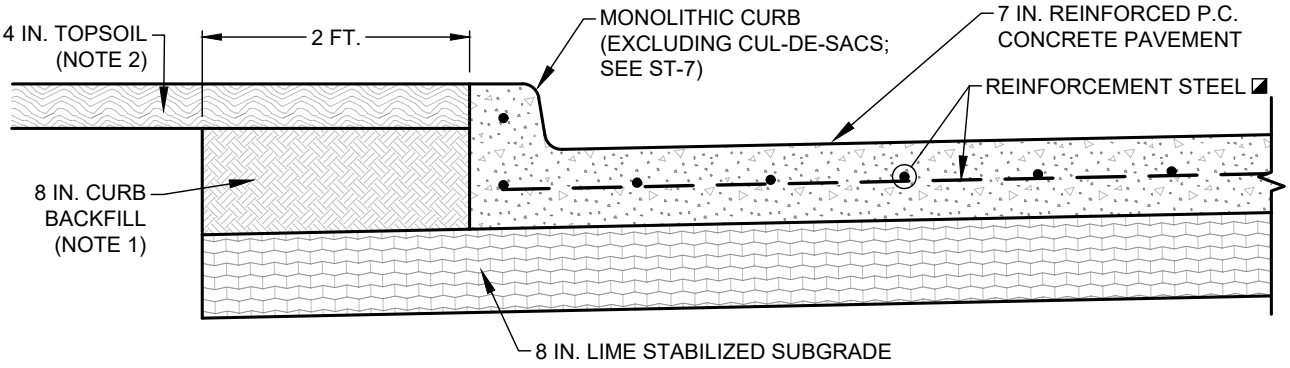
CC1(R) TYPICAL RIGID PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (P.I. ≤ 20)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



CC2(R) TYPICAL RIGID PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (20 < P.I. < 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



CC3(R) TYPICAL RIGID PAVEMENT SECTION:
COMMERCIAL COLLECTOR STREET (P.I. ≥ 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY

NOTES:

1. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH MINIMUM PLASTICITY INDEX OF FOUR) MAY BE SUBSTITUTED FOR 1ST BASE COURSE OF 4 IN. CEMENT-TREATED BASE.
4. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL RIGID PAVEMENT SECTIONS: COMMERCIAL COLLECTOR STREETS

(NO SCALE)

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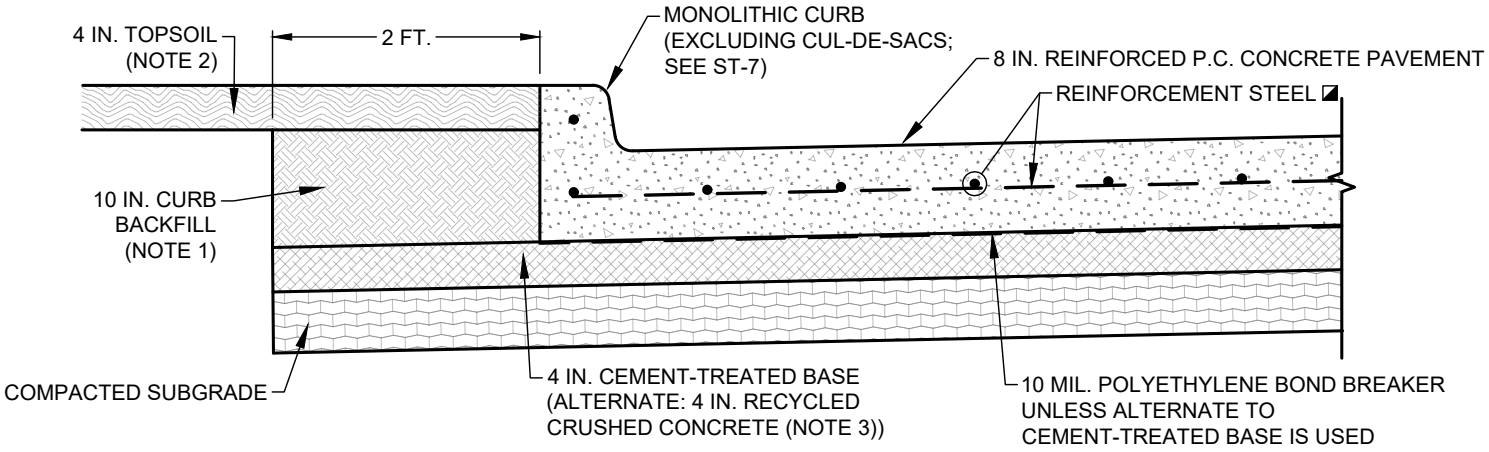
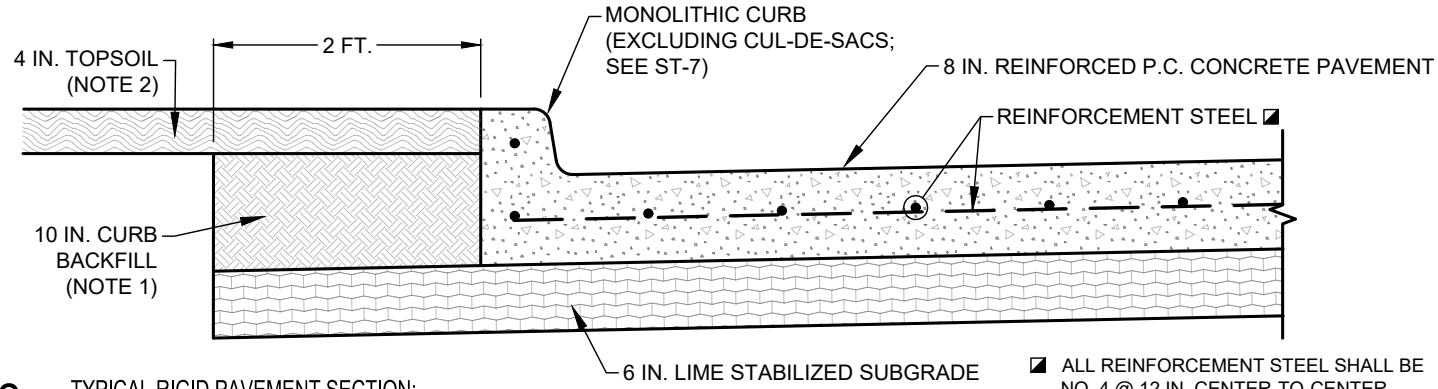
ST-3G



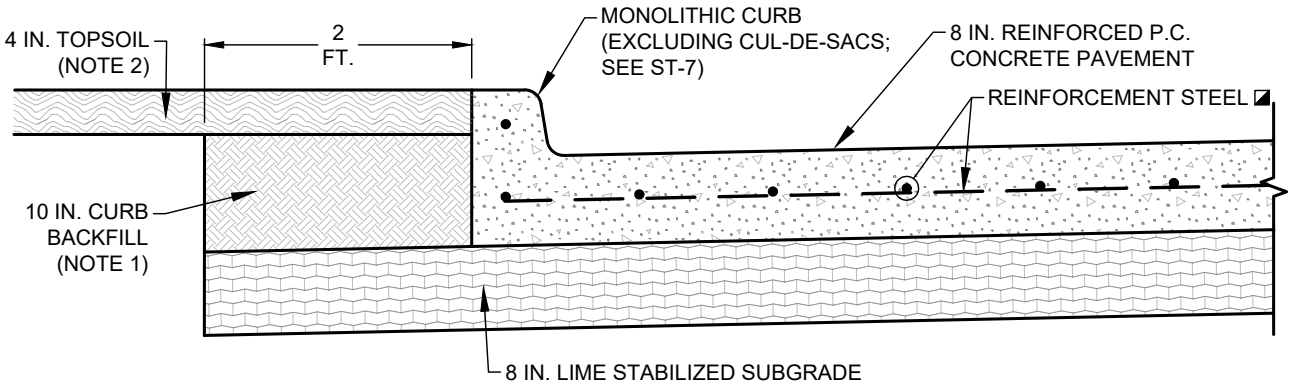
IC1(R) TYPICAL RIGID PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (P.I. ≤ 20)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



IC2(R) TYPICAL RIGID PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (20 < P.I. < 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY



IC3(R) TYPICAL RIGID PAVEMENT SECTION:
INDUSTRIAL COLLECTOR STREET (P.I. ≥ 40)

◪ ALL REINFORCEMENT STEEL SHALL BE NO. 4 @ 12 IN. CENTER-TO-CENTER EACH WAY

NOTES:

1. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” MATERIAL.
2. 4 IN. TOPSOIL W/ SOLID BLOCK SOD OR BERMUDA SEED W/ GREEN SOIL RETENTION BLANKET CLASS 1 TYPE A, B, C, OR D.
3. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH MINIMUM PLASTICITY INDEX OF FOUR) MAY BE SUBSTITUTED FOR 1ST BASE COURSE OF 4 IN. CEMENT-TREATED BASE.
4. COMPACTION OF MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT SPECIFICATIONS WITH SOME HIGHLIGHTS PROVIDED IN G-1C .

TYPICAL RIGID PAVEMENT SECTIONS: INDUSTRIAL COLLECTOR STREETS

(NO SCALE)

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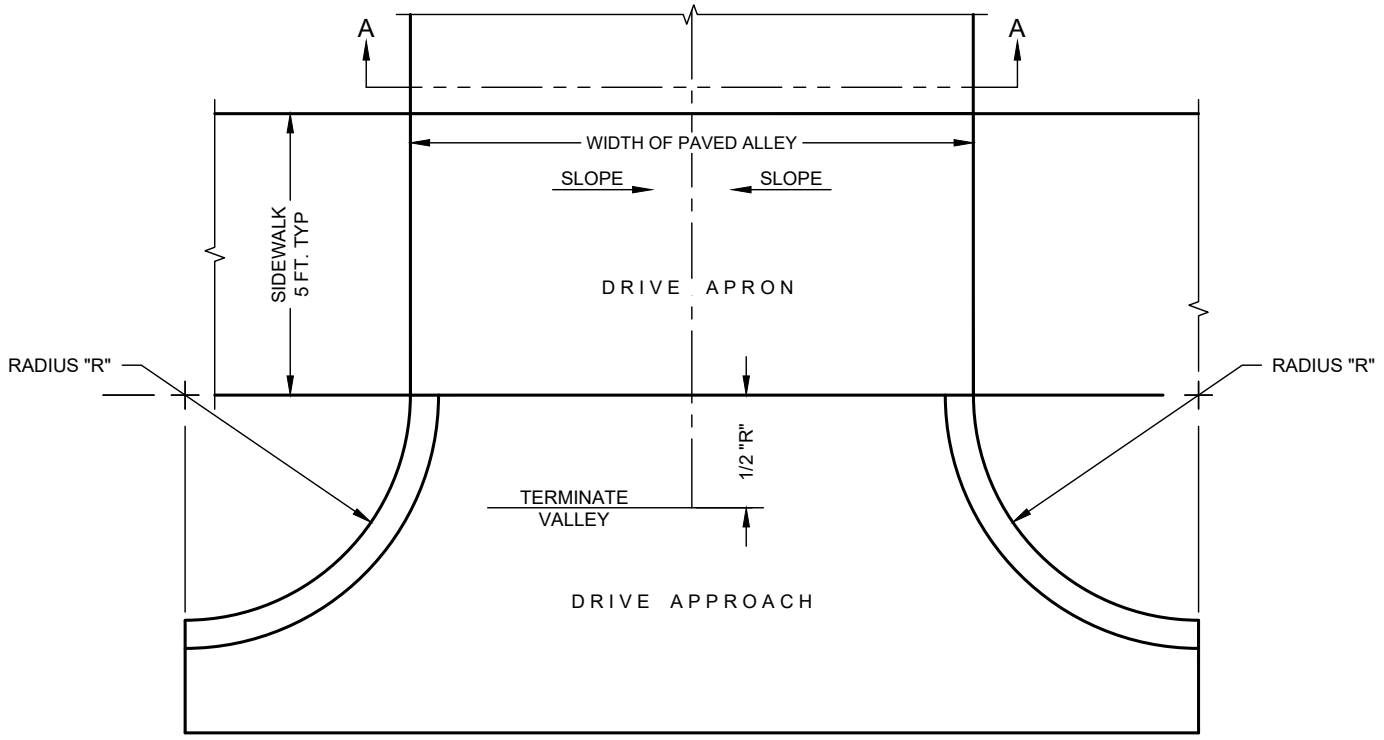
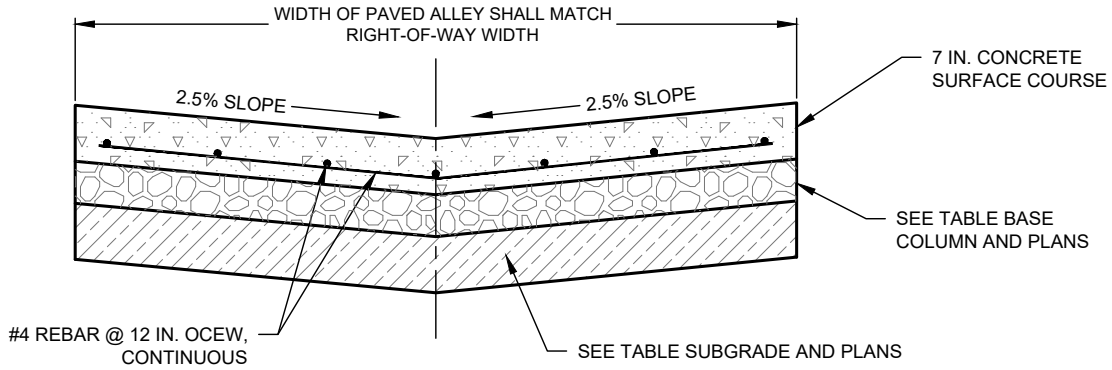
ST-3H



PLAN VIEW



SECTION VIEW

NOTES:

1. ALLEYS IN RESIDENTIAL BLOCKS SHALL HAVE A MINIMUM RIGHT-OF-WAY WIDTH OF 20 FEET.
2. ALLEYS IN COMMERCIAL AREAS SHALL HAVE A MINIMUM RIGHT-OF-WAY WIDTH OF 30 FEET.
3. ALLEY INVERT SHALL BE CARRIED THROUGH DRIVEWAY APRON. TRANSITION SHALL TERMINATE PER DETAIL ABOVE.
4. SEE DRIVE APPROACH DETAILS FOR ADDITIONAL REQUIREMENTS.
5. NO LONGITUDINAL CONTRACTION JOINT SHALL BE PLACED FOR ALLEYS 20 FT. < IN WIDTH. FOR ALLEYS > 20 FT. IN WIDTH TWO LONGITUDINAL CONTRACTION JOINTS SHALL BE PLACED EACH 1/3 THE WIDTH OF THE ALLEY FROM NEAREST LONGITUDINAL EDGE OF ALLEY IN ACCORDANCE WITH ST-9.
6. TRANSVERSE CONTRACTION JOINTS SHALL BE SPACED AT 20 FT. AND SHALL BE IN ACCORDANCE WITH ST-9.
7. TRANSVERSE EXPANSION JOINTS SHALL BE SPACED AT MAXIMUM SPACING OF 600 FT. AND PLACED AT EACH DRIVE APPROACH IN ACCORDANCE WITH DRIVE APPROACH DETAILS AND ST-9.

	RIGID PAVEMENT SECTION (P.C. CONCRETE)		
P.I. OF SUBGRADE	P.C. CONCRETE	BASE	SUBGRADE
P.I. ≤ 20	7 IN.	4 IN. CTB[a,b]	COMPACTED
20< P.I. < 40	7 IN.	-	6 IN. LSS[c]
P.I. ≥ 40	7 IN.	-	8 IN. LSS[c]

MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH G-1C.

a. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 WITH MINIMUM P.I. OF FOUR).
b. REQUIRES BOND BREAKER CONSISTING OF 10 MIL POLYETHYLENE BETWEEN CEMENT TREATED BASE (CTB) AND P.C. CONCRETE PAVEMENT UNLESS ALTERNATE TO CTB IS USED.
c. LIME STABILIZED SUBGRADE.

STANDARD ALLEY DETAILS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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1	REVISE NOTES UNDER TABLE	MZ	04/28/2025
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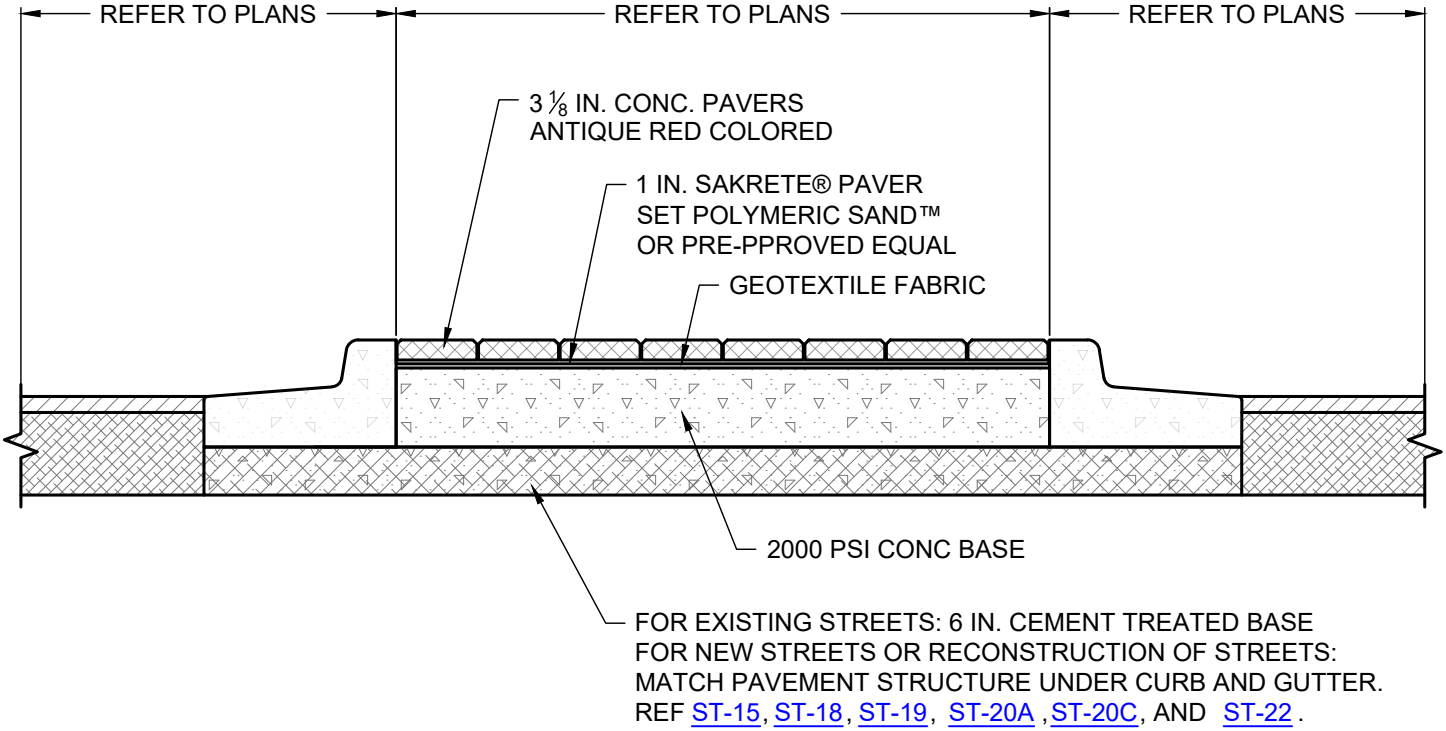
ST-4



TYPICAL MEDIAN CROSS SECTION

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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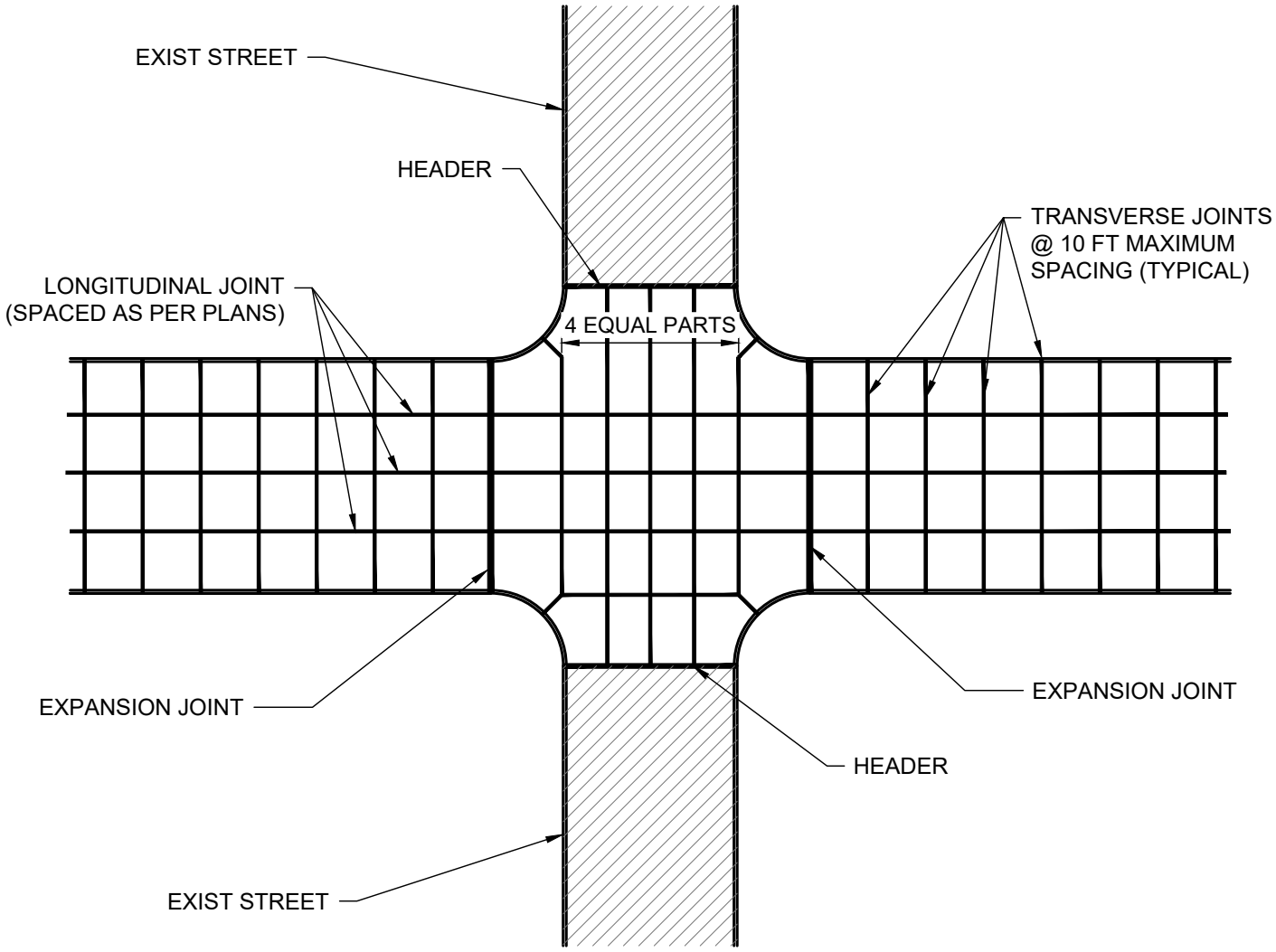
NO.	COMMENTS	BY	DATE
1	ADD LINKS FOR STANDARD DETAILS	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-5



NOTES:

1. TRANSVERSE JOINTS AS SHOWN PER DETAIL MAY NOT BE APPLICABLE TO TXDOT STANDARD DETAILS FOR CONCRETE PAVEMENT.
2. ALL PAVEMENT JOINTS ARE EITHER SAWED CONTRACTION JOINTS OR CONSTRUCTION JOINTS UNLESS NOTED OTHERWISE.
3. TRANSVERSE JOINTS AND LONGITUDINAL JOINTS SHALL EITHER BE SAWED CONTRACTION JOINTS OR CONSTRUCTION JOINTS.
4. ALL JOINTS SHALL EXTEND THRU THE CURBS.
5. EXPANSION JOINTS SHALL HAVE A MAXIMUM SPACING OF 600 FEET AND BE PLACED AT EVERY STREET INTERSECTION CURB RETURN.

CONCRETE PAVEMENT TYPICAL PLAN

(NO SCALE)

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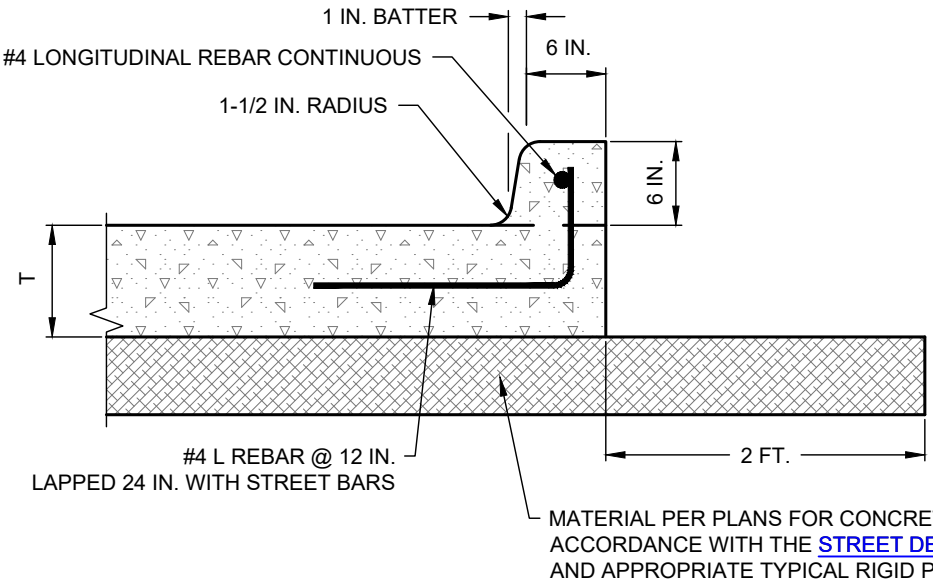
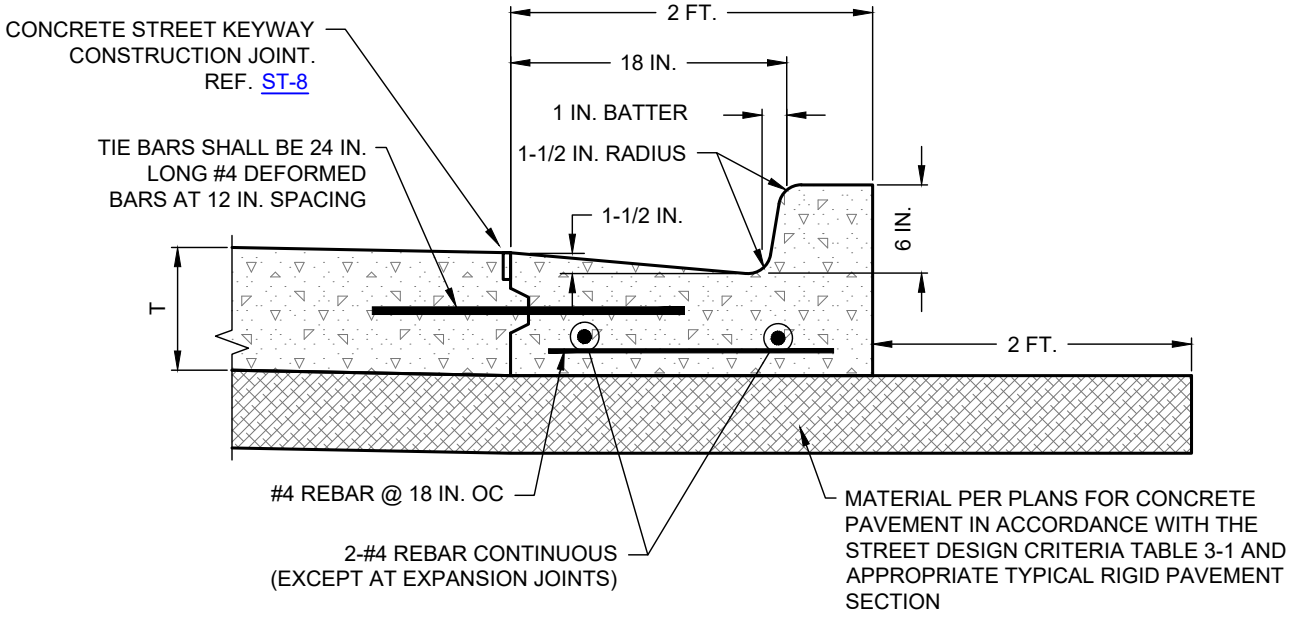
ST-6



MONOLITHIC CURB



FOR USE EXCLUSIVELY IN CONCRETE CUL-DE-SACS

NOTES:

1. REQUIRED STEPS OF PREPARING PAVEMENT SURFACE TO RECEIVE CURB:
   - 1.1. ROUGHEN SURFACE BEFORE PAVEMENT TAKES FINAL SET.
   - 1.2. WIRE BRUSH, BROOM, AND WASH SURFACE TO REMOVE CURING COMPOUND, DIRT, DEBRIS, ETC.
   - 1.3. JUST BEFORE PLACING CURB, WET THE SURFACE WITH WATER AND APPLY DRY PORTLAND CEMENT IN SUFFICIENT QUANTITY TO MAKE A THICK PASTE.
2. CURB SHALL BE PLACED MONOLITHICALLY UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.

CONCRETE STREETS CURB DETAILS

(NO SCALE)

CITY OF WACO

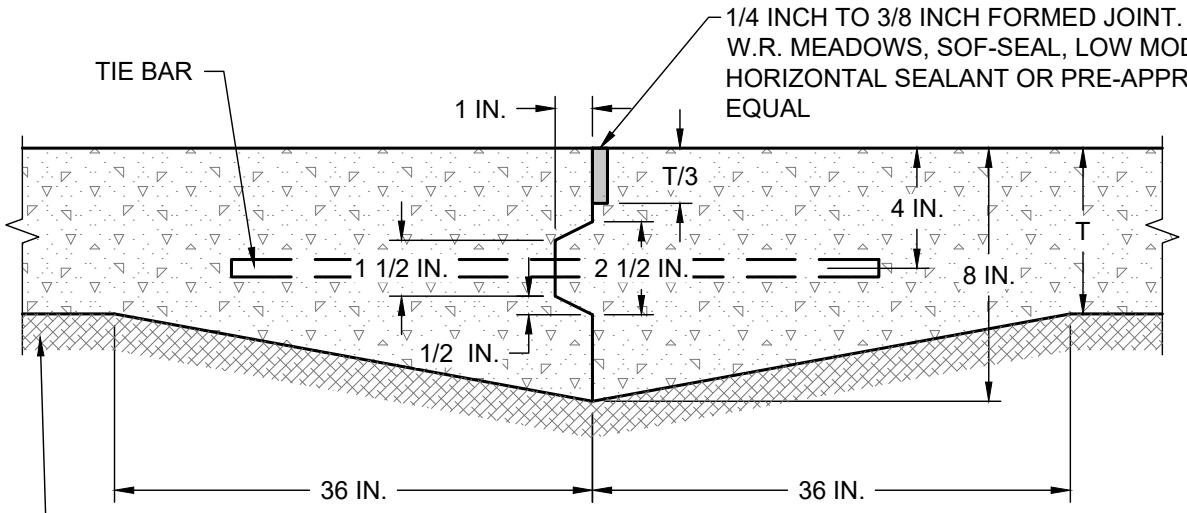
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY BASE MATERIAL NOTES	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

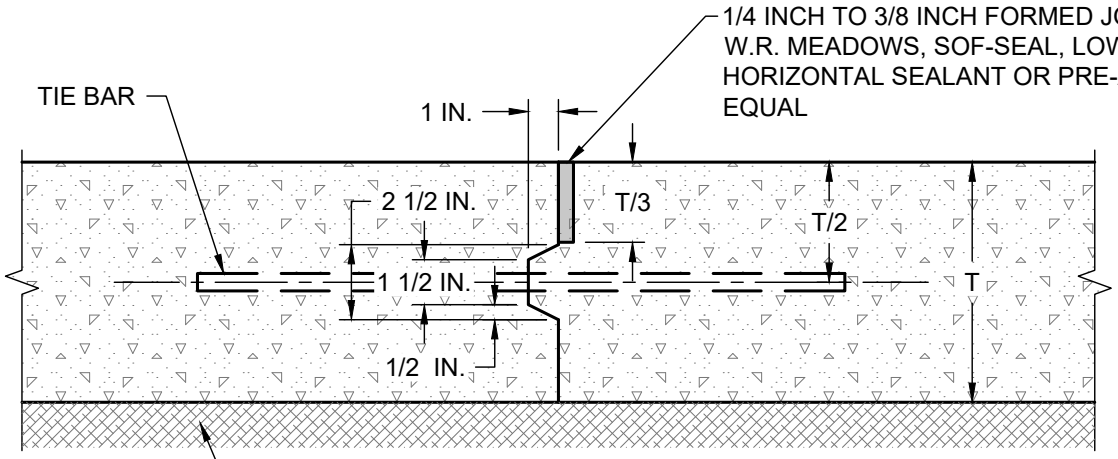
DATE 01/01/2024

ST-7



MATERIAL PER PLANS FOR CONCRETE PAVEMENT IN ACCORDANCE WITH THE STREET DESIGN CRITERIA TABLE 3-1 AND APPROPRIATE TYPICAL RIGID PAVEMENT SECTION

PAVEMENT THICKNESS LESS THAN 8 INCHES



MATERIAL PER PLANS FOR CONCRETE PAVEMENT IN ACCORDANCE WITH THE STREET DESIGN CRITERIA TABLE 3-1 AND APPROPRIATE TYPICAL RIGID PAVEMENT SECTION

PAVEMENT THICKNESS 8 INCHES AND GREATER

NOTES:

1. PRESSED SHEET METAL KEYWAY FOR BENT TIE BAR SHALL BE HELD IN PLACE BY CLAMPS AND STAKES.
2. FOR PAVEMENTS LESS THAN 8 INCHES THICK, PAVEMENT SHALL BE THICKENED TO 8 INCHES ON EACH SIDE OF PROPOSED JOINT.
3. TIE BARS SHALL BE 24 IN. LONG #4 DEFORMED BARS AT 12 IN. SPACING.
4. CONCRETE SHALL BE REINFORECED WITH A MINIMUM #4 REBAR AT 12 INCHES OCEW (NOT SHOWN FOR CLARITY).

CONCRETE STREET KEYWAY CONSTRUCTION JOINT DETAIL

(SPACED AS PER PLANS)

(NO SCALE)

CITY OF WACO

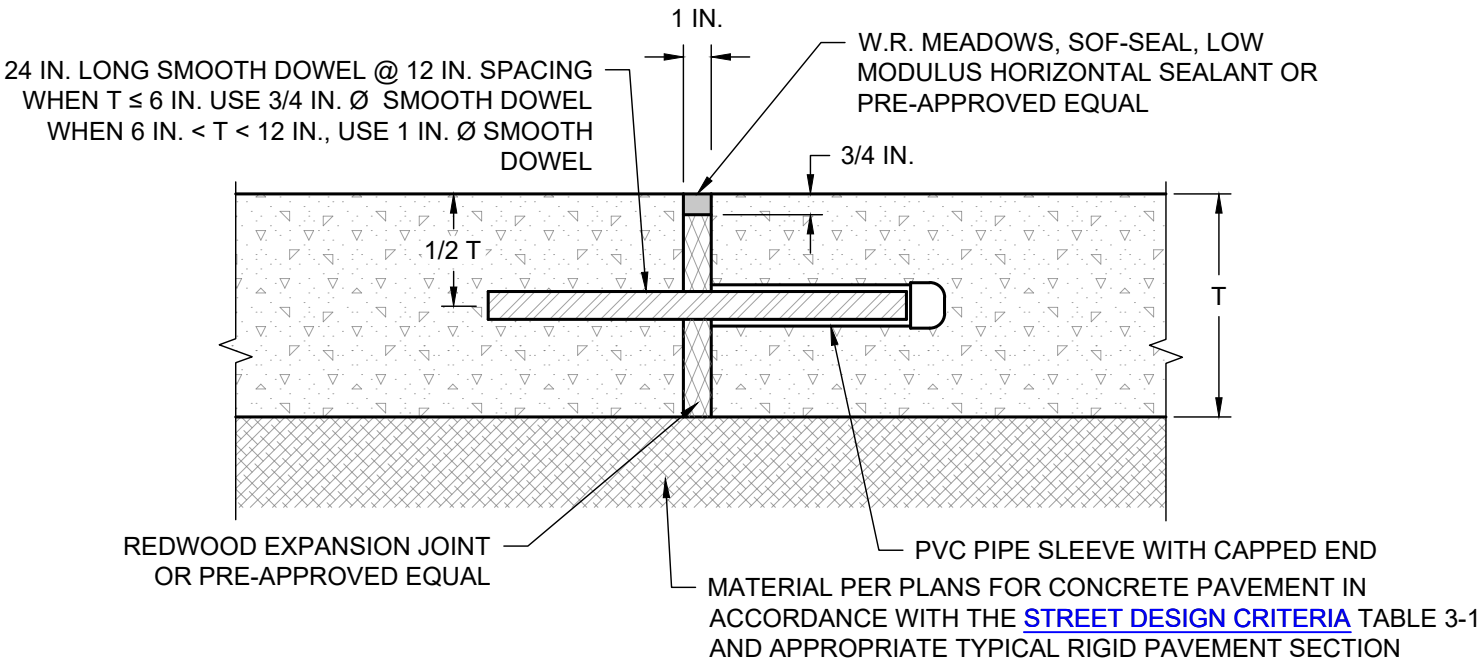
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY BASE MATERIAL NOTES	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-8



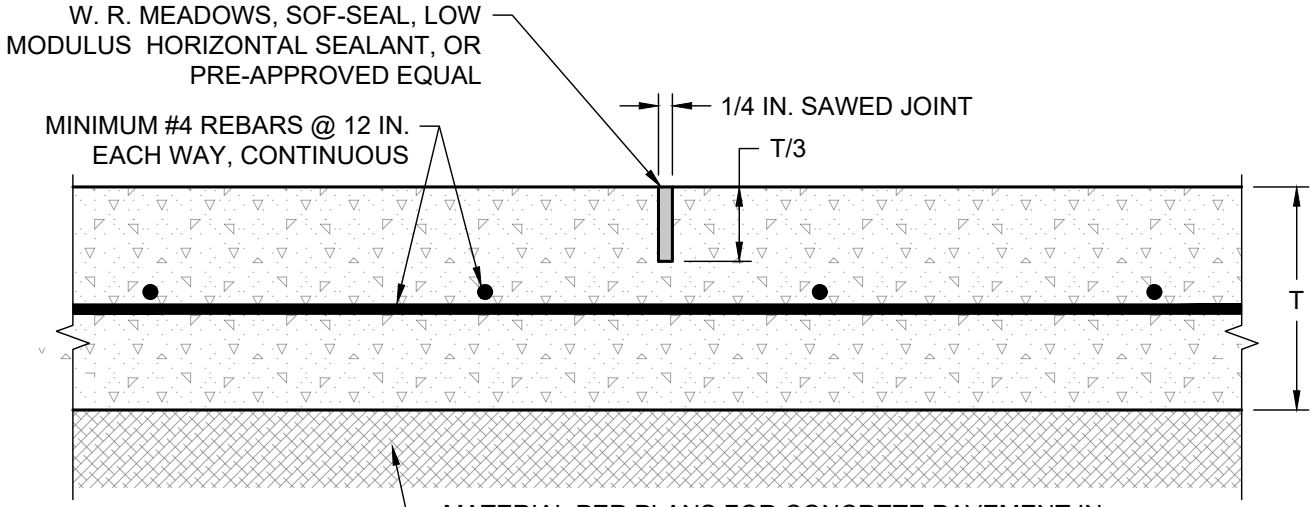
NOTES:

1. CONCRETE REINFORCEMENT (NOT SHOWN FOR CLARITY) SHALL STOP 3 IN. CLEAR OF JOINT FACES.
2. SMOOTH DOWELS SHALL BE LEVEL AND PERPENDICULAR TO THE FACE.

CONCRETE EXPANSION JOINT DETAIL

(SPACED AS PER PLANS)

(NO SCALE)



NOTES:

1. SAW JOINTS AS SOON AS IT IS POSSIBLE TO DO SO WITHOUT DAMAGING THE PAVEMENT AND LESS THAN 24 HOURS AFTER CONCRETE PLACEMENT. THE EXACT TIME IS SUBJECT TO APPROVAL BY THE CITY ENGINEER.

CONCRETE STREET SAWED CONTRACTION JOINT DETAIL

(SPACED AS PER PLANS)

(NO SCALE)

CITY OF WACO

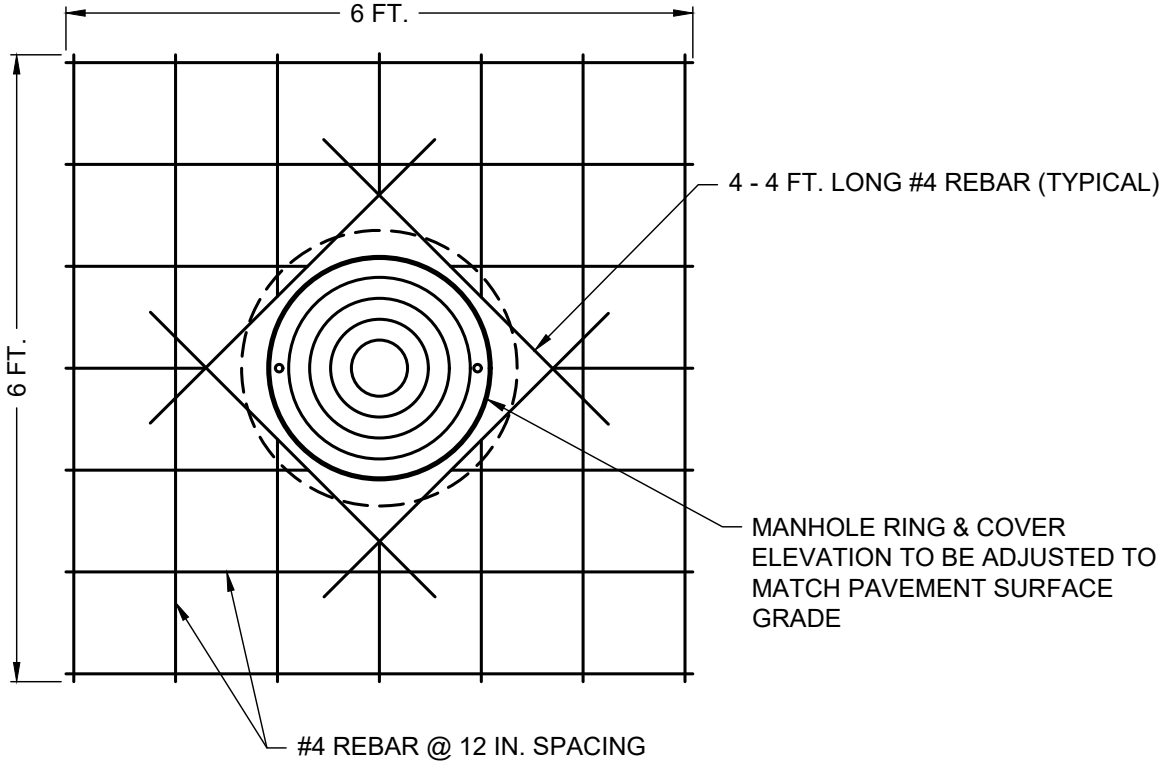
ENGINEERING DIVISION

REVISIONS

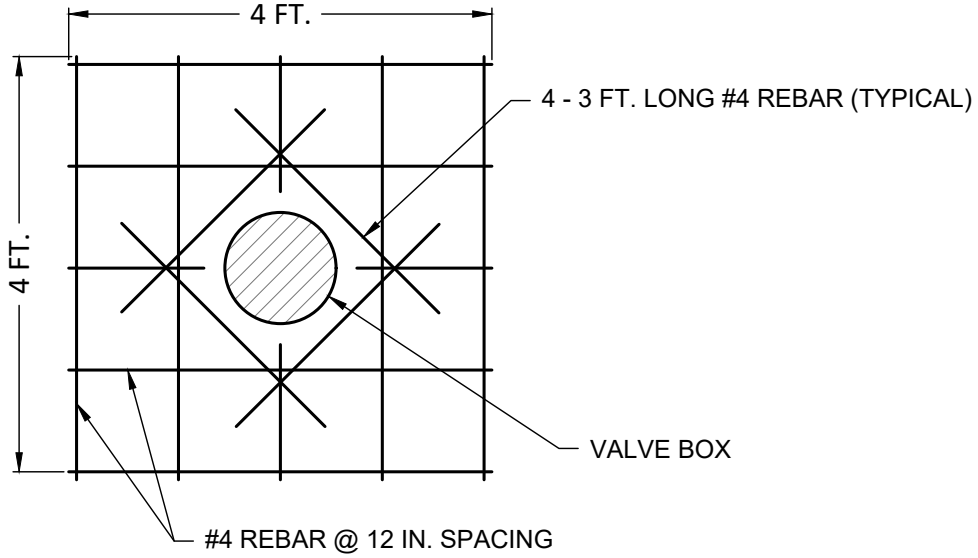
NO.	COMMENTS	BY	DATE
1	MODIFY BASE MATERIAL NOTES	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-9



MANHOLE



WATER VALVE

NOTES:

1. REINFORCING REBAR SHOWN ARE IN ADDITION TO REINFORCEMENT FOR STREETS ON PLANS.

MANHOLE & WATER VALVE COVER REINFORCING PLAN

(CONCRETE STREETS ONLY)
(NO SCALE)

CITY OF WACO

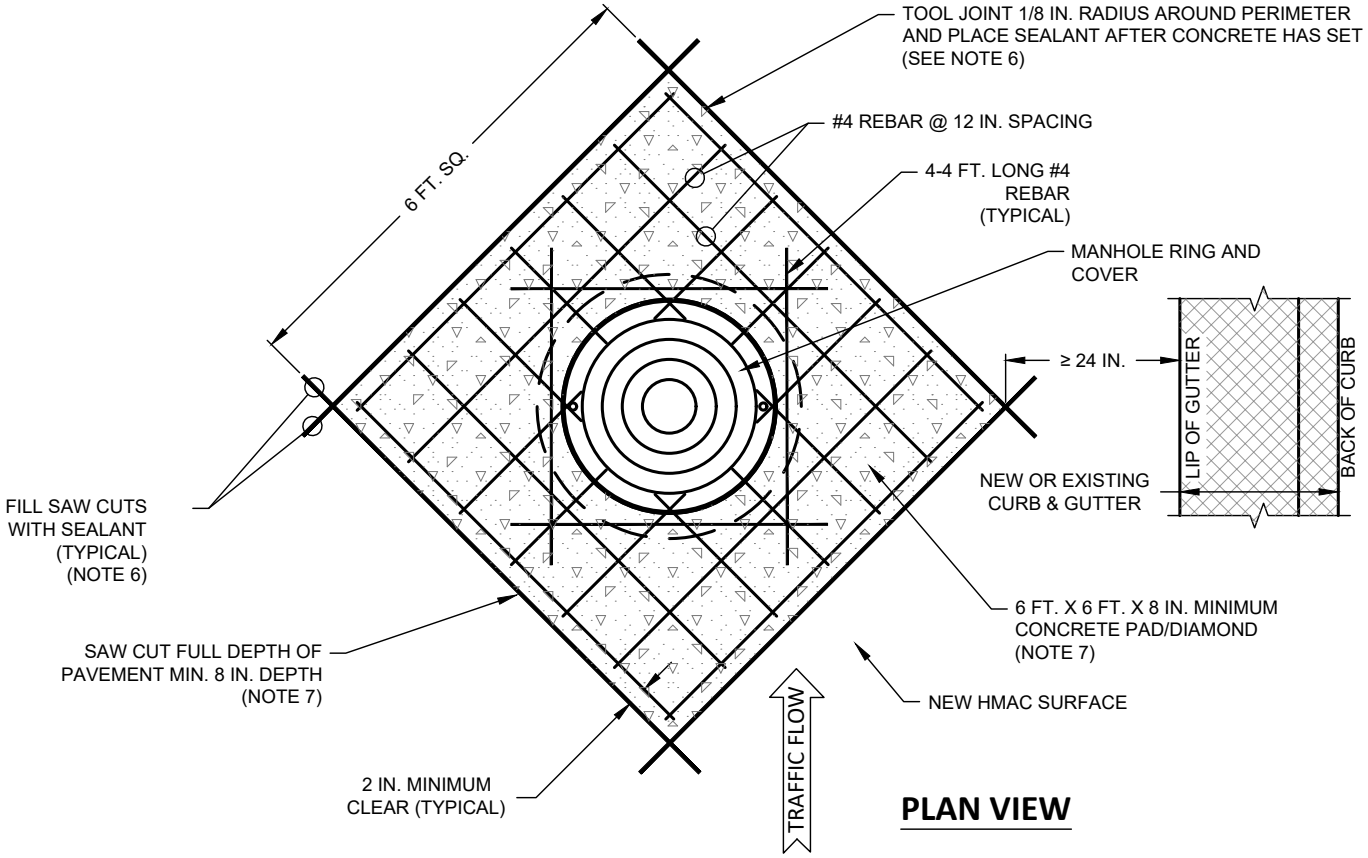
ENGINEERING DIVISION

REVISIONS

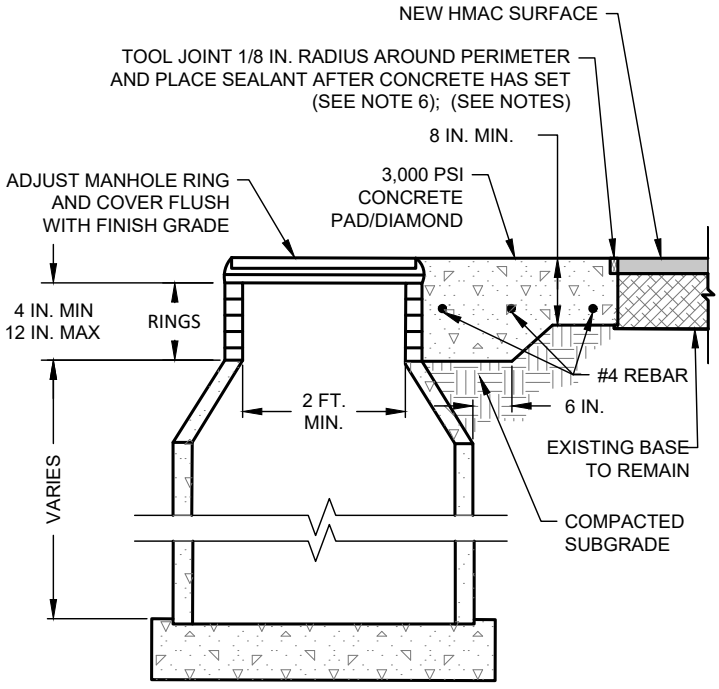
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-10



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN THE CONCRETE PAD/DIAMOND, AS DETAILED ABOVE, IS 24 INCHES OR GREATER FROM THE LIP OF THE CONCRETE GUTTER.
2. CONTRACTOR SHALL PROTECT SEWER FROM DEBRIS.
3. ANY DEBRIS THAT ENTERS SEWER SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR. DO NOT ENTER SANITARY SEWER MANHOLE WITHOUT FIRST OBTAINING A CONFINED SPACE PERMIT.
4. RING SHALL BE THOROUGHLY GROUTED IN PLACE PRIOR TO PLACING CONCRETE PATCH.
5. REUSE EXISTING MANHOLE RING AND COVER EXCEPT AS NOTED IN PLANS OR AS FOLLOWS:
   EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE AS PER CITY OF WACO DETAILS. REFER TO S-6, S-7, S-8, S-9, S-10, SD-9 FOR APPLICABLE REQUIREMENTS.
6. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL APPROVED PRODUCER LIST.
7. NEW CONCRETE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
8. MANHOLE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/- 1/8 INCH. IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT. OF ALL SIDES OF THE DIAMOND.

MANHOLE LID HEIGHT ADJUSTMENT A

(FOR ALL NEW HOT MIX ASPHALTIC CONCRETE (HMAC) INSTALLATIONS)

(NO SCALE)

CITY OF WACO

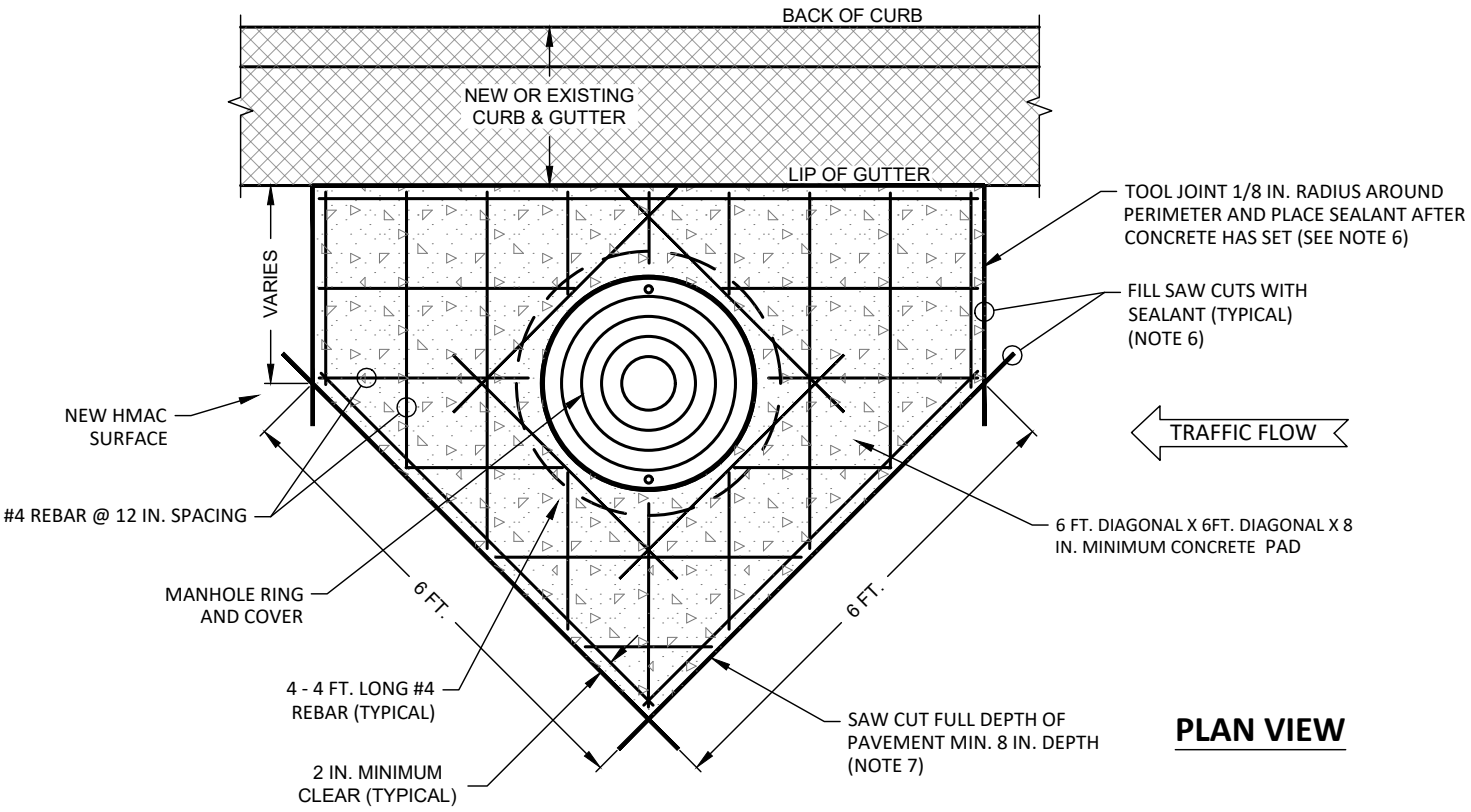
ENGINEERING DIVISION

REVISIONS

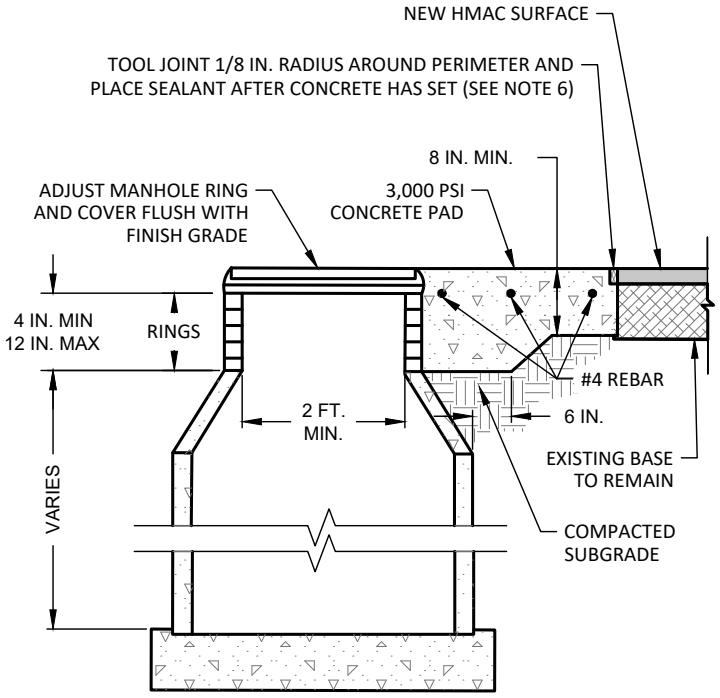
NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTE; MODIFY NOTE 6	MZ	04/28/2025
1	MODIFY NOTE 5	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-11



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN ANY PART OF THE CONCRETE PAD/DIAMOND, AS DETAILED ON ST-11 IS LESS THAN 24 IN. FROM THE LIP OF THE CONCRETE GUTTER.
2. CONTRACTOR SHALL PROTECT SEWER FROM DEBRIS.
3. ANY DEBRIS THAT ENTERS SEWER SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR. DO NOT ENTER SANITARY SEWER MANHOLE WITHOUT FIRST OBTAINING A CONFINED SPACE PERMIT.
4. RING SHALL BE THOROUGHLY GROUTED IN PLACE PRIOR TO PLACING CONCRETE PATCH.
5. REUSE EXISTING MANHOLE RING AND COVER EXCEPT AS NOTED IN PLANS OR AS FOLLOWS:
   EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE AS PER CITY OF WACO DETAILS. REFER TO S-6, S-7, S-8, S-9, S-10, SD-9 FOR APPLICABLE REQUIREMENTS.
6. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL APPROVED PRODUCER LIST.
7. NEW CONCRETE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
8. MANHOLE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/- 1/8 INCH. IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT. OF ALL SIDES OF THE DIAMOND.

MANHOLE LID HEIGHT ADJUSTMENT B

(FOR ALL NEW HOT MIX ASPHALTIC CONCRETE (HMAC) INSTALLATIONS)

(NO SCALE)

CITY OF WACO

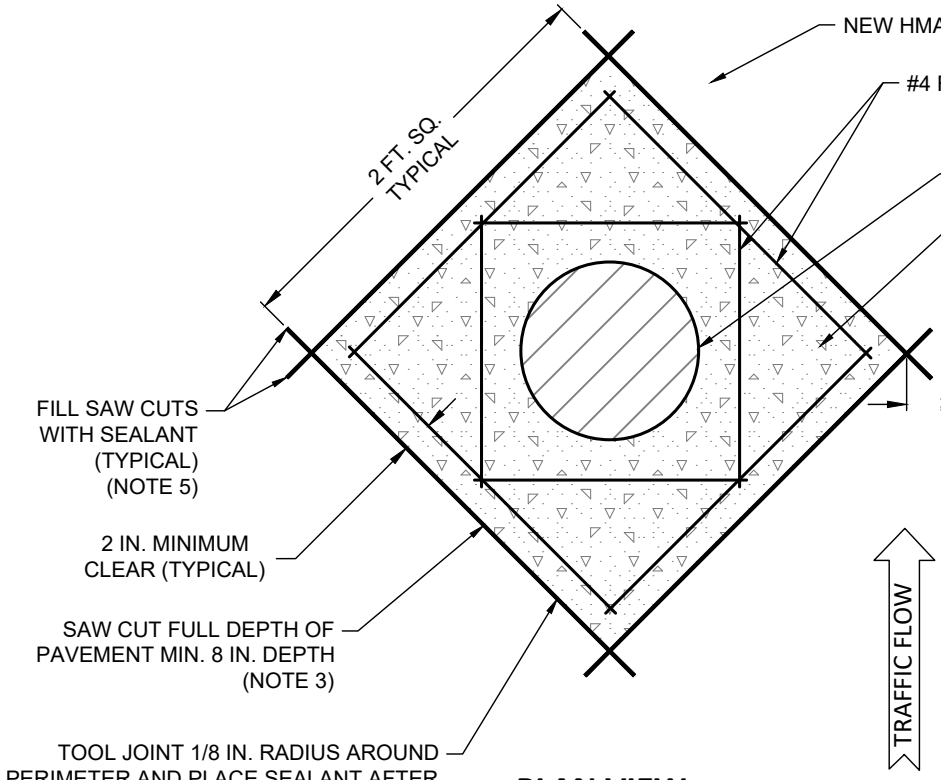
ENGINEERING DIVISION

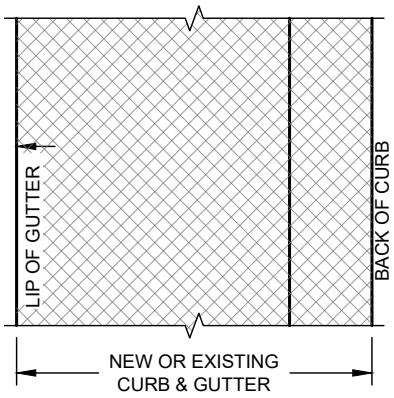
REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTE; MODIFY NOTE 6	MZ	04/28/2025
1	MODIFY NOTE 5	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

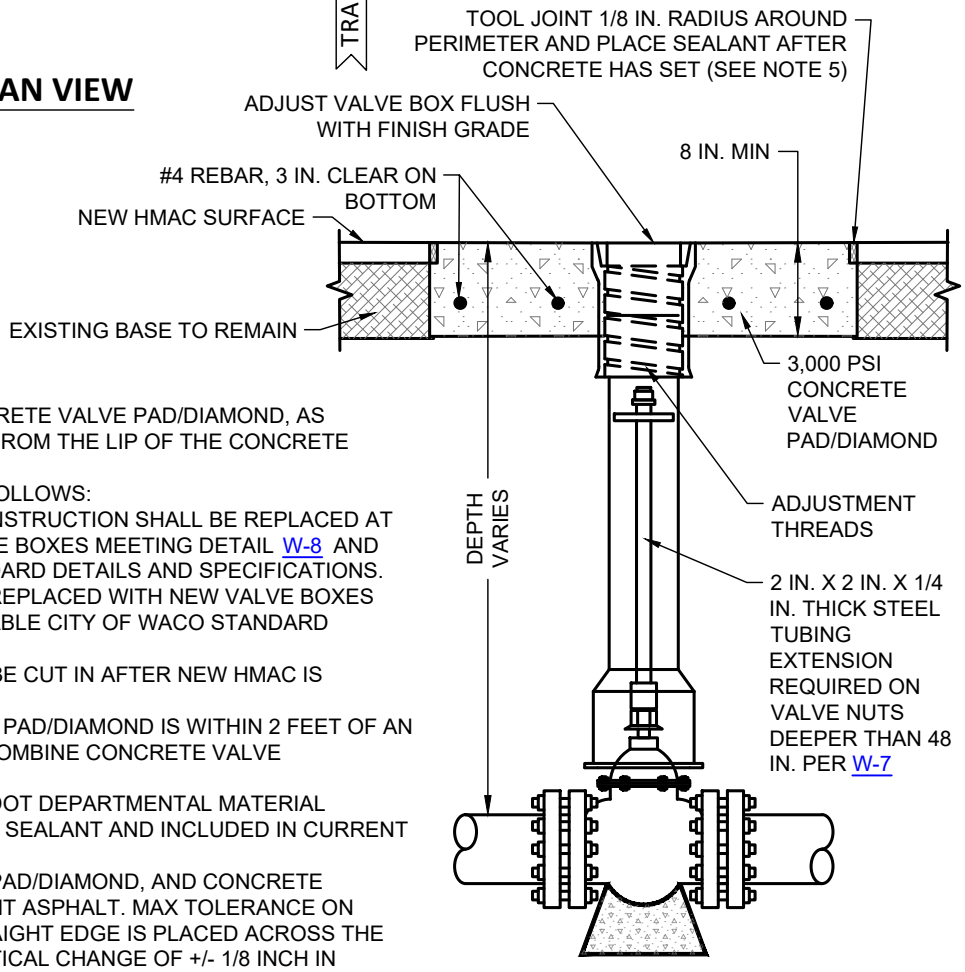
DATE 01/01/2024

ST-12





PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN THE CONCRETE VALVE PAD/DIAMOND, AS DETAILED ABOVE, IS 24 INCHES OR GREATER FROM THE LIP OF THE CONCRETE GUTTER.
2. RE-USE EXISTING VALVE BOXES, EXCEPT AS FOLLOWS:
   A. EXISTING VALVE BOXES DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
   B. ANY OLD-STYLE VALVE BOXES SHALL BE REPLACED WITH NEW VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
3. NEW CONCRETE VALVE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
4. IF POINT ON PERIMETER OF CONCRETE VALVE PAD/DIAMOND IS WITHIN 2 FEET OF AN ADJACENT CONCRETE VALVE PAD/DIAMOND COMBINE CONCRETE VALVE PADS/CONCRETE DIAMONDS.
5. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL PRODUCER LIST.
6. VALVE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, AND CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/-1/8 INCH IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT OF ALL SIDES OF THE PAD/DIAMOND.

VALVE BOX HEIGHT ADJUSTMENT A

(FOR ASPHALT STREET REHABILITATION PROJECTS ONLY)

(NO SCALE)

CITY OF WACO

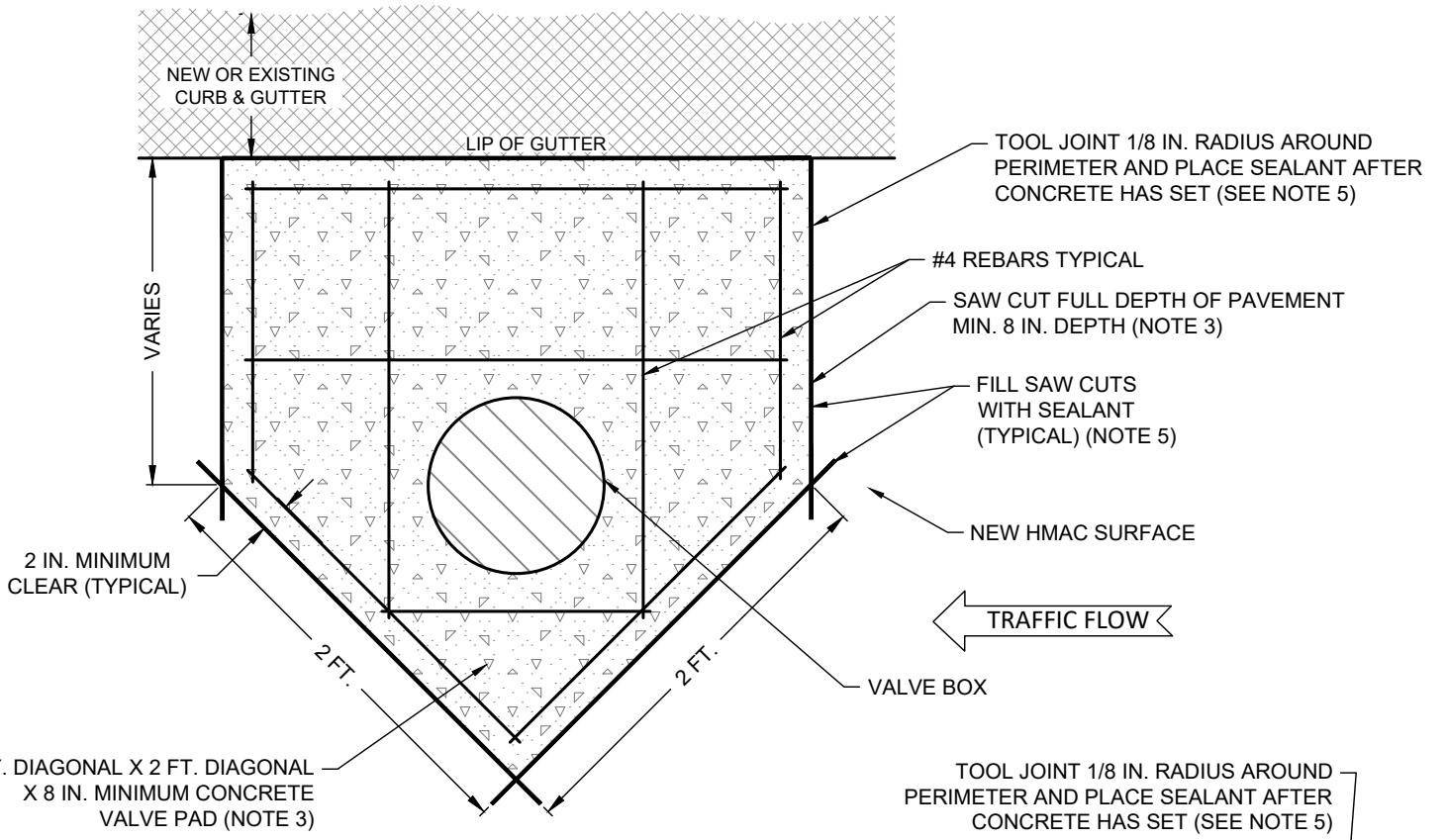
ENGINEERING DIVISION

REVISIONS

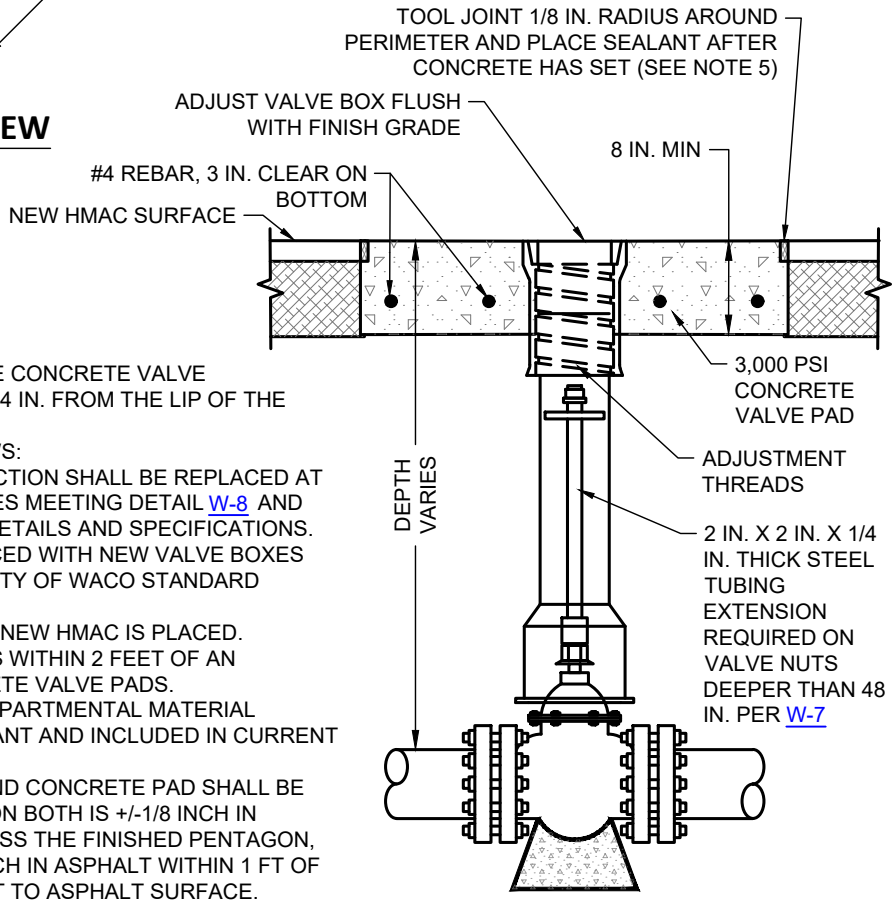
NO.	COMMENTS	BY	DATE
1	MODIFY SAW CUT NOTE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-13



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN ANY PART OF THE CONCRETE VALVE PAD/DIAMOND AS DETAILED ON ST-13 IS LESS THAN 24 IN. FROM THE LIP OF THE CONCRETE GUTTER.
2. RE-USE EXISTING VALVE BOXES, EXCEPT AS FOLLOWS:
   A. EXISTING VALVE BOXES DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
   B. ANY OLD-STYLE VALVE BOXES SHALL BE REPLACED WITH NEW VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
3. NEW CONCRETE VALVE PAD SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
4. IF POINT ON PERIMETER OF CONCRETE VALVE PAD IS WITHIN 2 FEET OF AN ADJACENT CONCRETE VALVE PAD COMBINE CONCRETE VALVE PADS.
5. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL PRODUCER LIST.
6. VALVE LID SHALL BE FLUSH WITH CONCRETE PAD, AND CONCRETE PAD SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/-1/8 INCH IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED PENTAGON, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT OF THE 4 SIDES OF THE PENTAGON THAT ARE ADJACENT TO ASPHALT SURFACE.

VALVE BOX HEIGHT ADJUSTMENT B

(FOR ASPHALT STREET REHABILITATION PROJECTS ONLY)

(NO SCALE)

CITY OF WACO

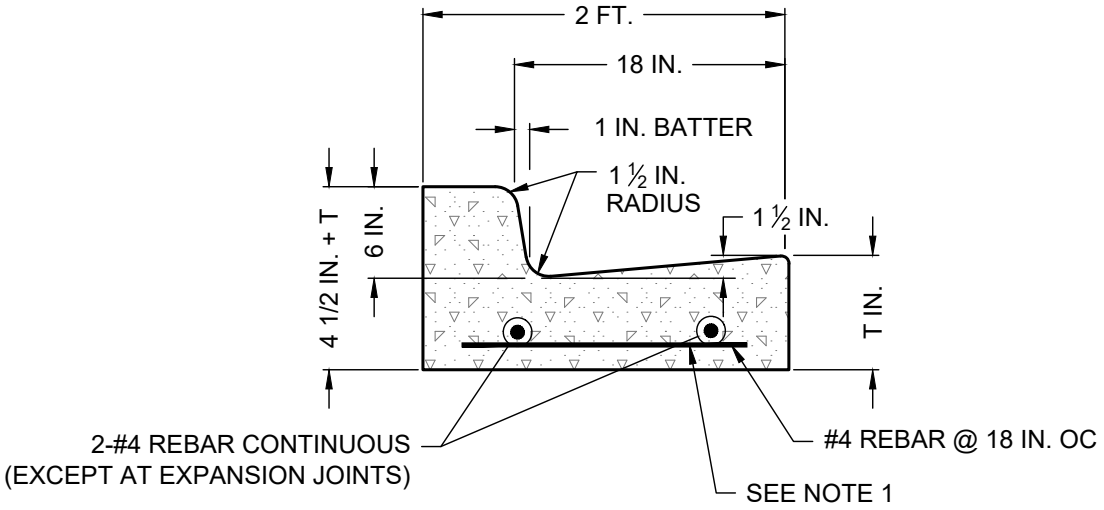
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTES	MZ	04/28/2025
1	REMOVE THE WORD "DETAIL" FROM NAME	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

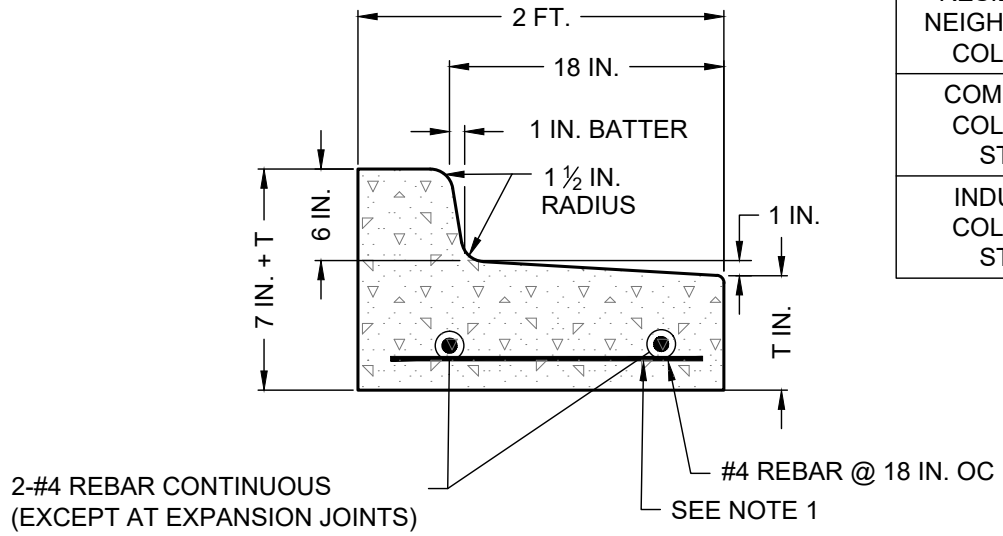
DATE 01/01/2024

ST-14



DIRECT FLOW

STREET FUNCTIONAL CLASSIFICATION	FLEXIBLE PAVEMENT THICKNESS "T"
LOCAL	7 1/2 IN.
RESIDENTIAL / NEIGHBORHOOD COLLECTOR	8 IN.
COMMERCIAL COLLECTOR STREET	9 IN.
INDUSTRIAL COLLECTOR STREET	8 IN.



INDIRECT FLOW

NOTE:

1. TRANSVERSE BARS MAY BE OMITTED WHEN CONCRETE FOR CURB AND GUTTER IS PLACED WITH A SELF-PROPELLED CURB MACHINE THAT PROVIDES CORRECT PLACEMENT OF THE LONGITUDINAL BARS.
2. STANDARD CURB AND GUTTER SHALL BE PLACED AND/OR REPLACED IN ACCORDANCE WITH ST-20A UNLESS OTHER DETAILS ARE SHOWN IN THE PLANS AND APPROVED BY THE CITY.

STANDARD CURB AND GUTTER DETAILS

(NO SCALE)

CITY OF WACO

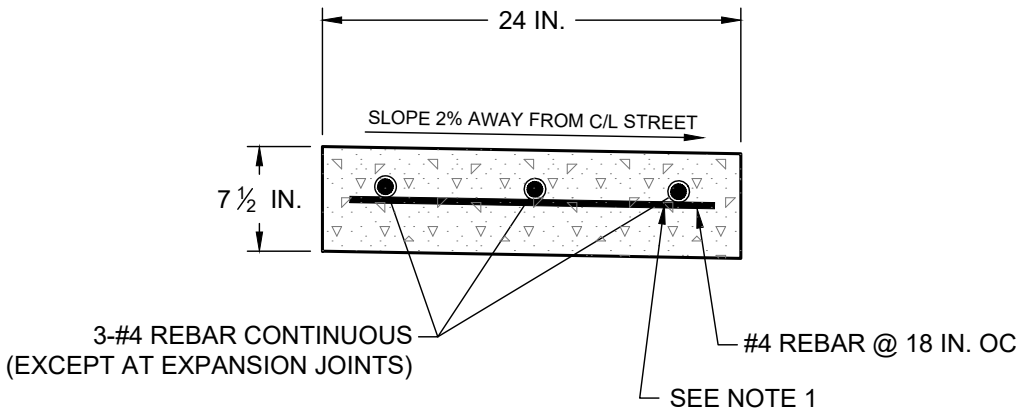
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	ADD STREET TABLE; MOD DIMS TO REFLECT "T"	MZ	04/28/2025
1	ADD NOTE 2	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-15



NOTE:

1. TRANSVERSE BARS MAY BE OMITTED WHEN CONCRETE FOR RIBBON CURB IS PLACED WITH A SELF-PROPELLED CURB MACHINE THAT PROVIDES CORRECT PLACEMENT OF THE LONGITUDINAL BARS.
2. RIBBON CURB SHALL BE PLACED AND/OR REPLACED IN ACCORDANCE WITH ST-20B UNLESS OTHER DETAILS ARE SHOWN IN THE PLANS AND APPROVED BY THE CITY.

RIBBON CURB DETAIL

(NO SCALE)

CITY OF WACO

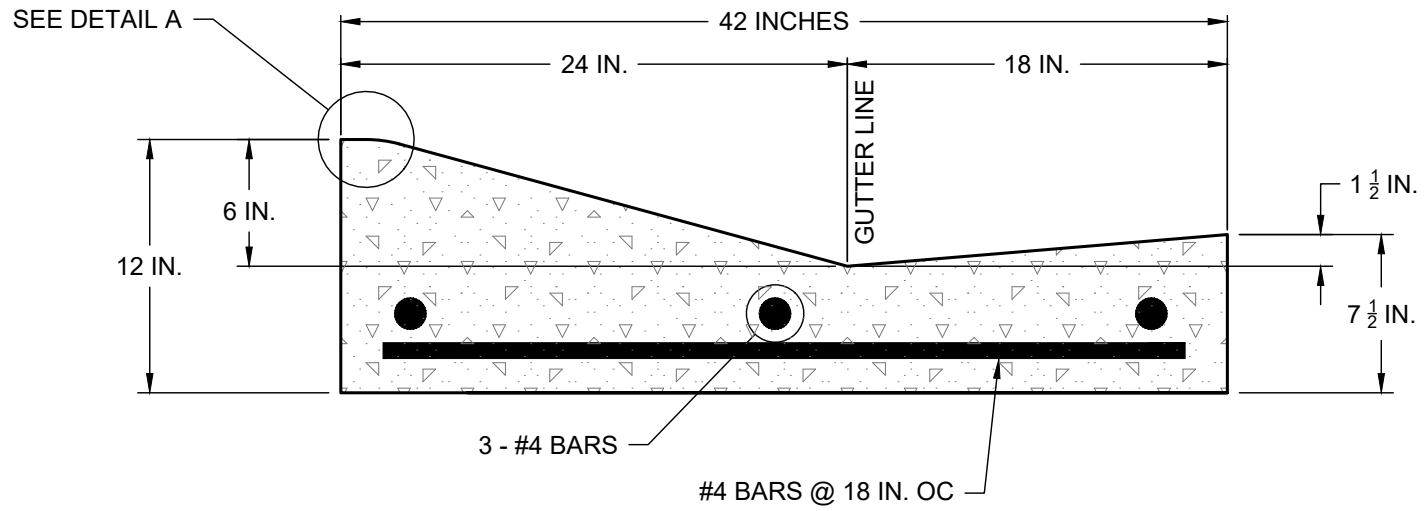
ENGINEERING DIVISION

REVISIONS

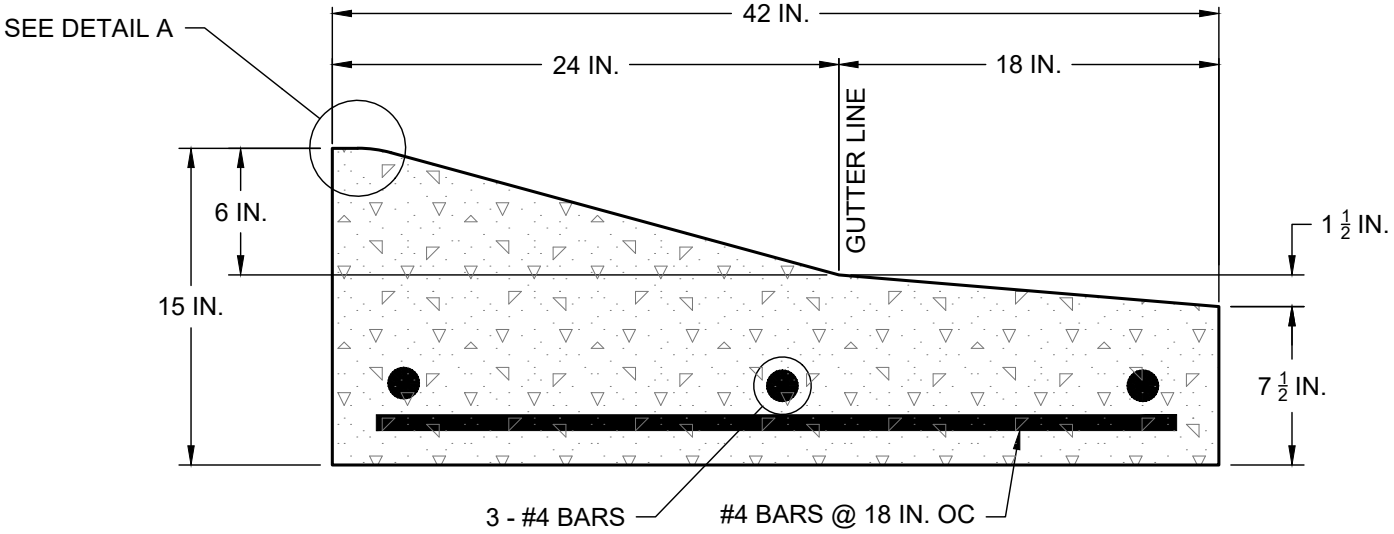
NO.	COMMENTS	BY	DATE
1	ADD NOTE 2	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-16



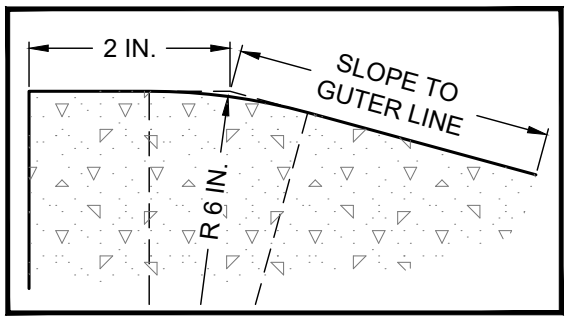
DIRECT FLOW



INDIRECT FLOW

NOTES:

1. MOUNTABLE CURB AND GUTTER CAN ONLY BE USED FOR STREET FUNCTIONAL CLASSIFICATION OF LOCAL.
2. WHEN CONNECTING TO AN EXISTING LOCAL STREET WITH STANDARD CURB AND GUTTER, A COLLECTOR OR AN ARTERIAL STREET, STANDARD CURB AND GUTTER SECTION SHALL BE CARRIED AROUND THE CURB RETURNS AND TRANSITIONED IN 10 FT. TO MOUNTABLE CURB AND GUTTER.
3. MOUNTABLE CURB AND GUTTER SHALL BE PLACED AND/OR REPLACED IN ACCORDANCE WITH ST-20C UNLESS OTHER DETAILS ARE SHOWN IN THE PLANS AND APPROVED BY THE CITY.



DETAIL A

MOUNTABLE CURB AND GUTTER DETAILS

(NO SCALE)

CITY OF WACO

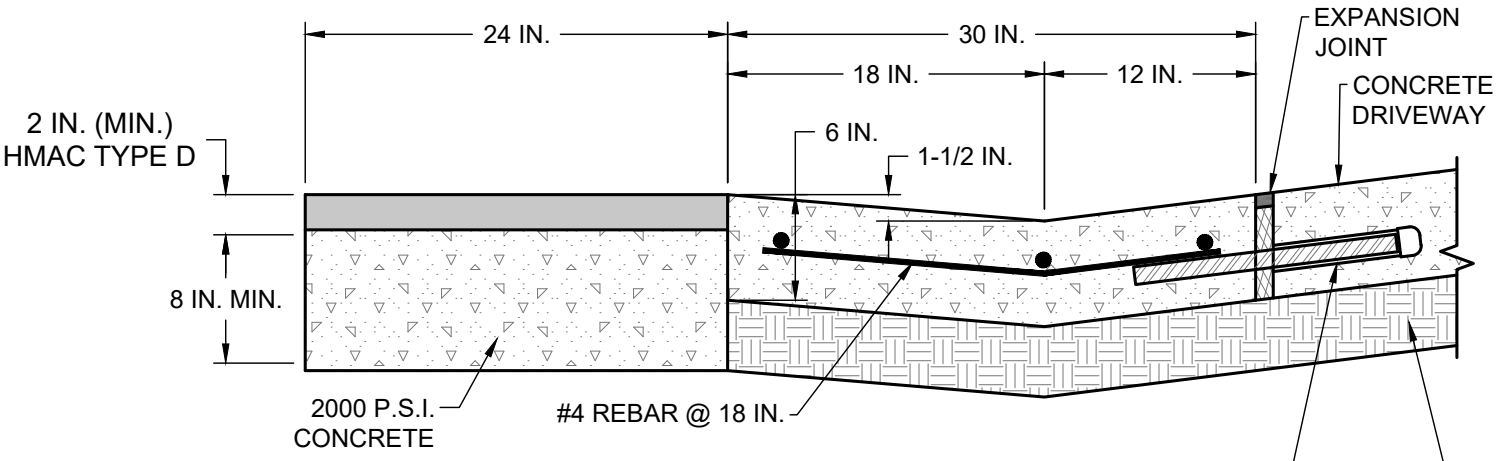
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 1	MZ	04/28/2025
1	ADD NOTE 3	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-17



4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:

A. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A." MATERIAL

B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR

C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER

STREET REHABILITATION DRIVEWAY VALLEY CURB DETAIL
(STREET REHABILITATION USE ONLY)

(NO SCALE)

CITY OF WACO

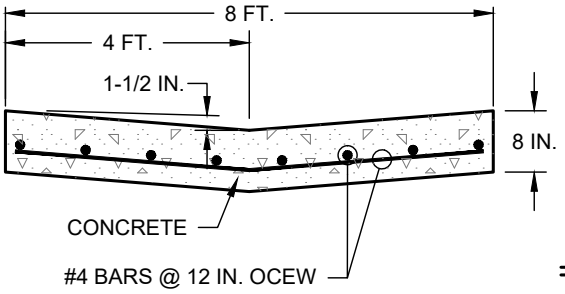
ENGINEERING DIVISION

REVISIONS

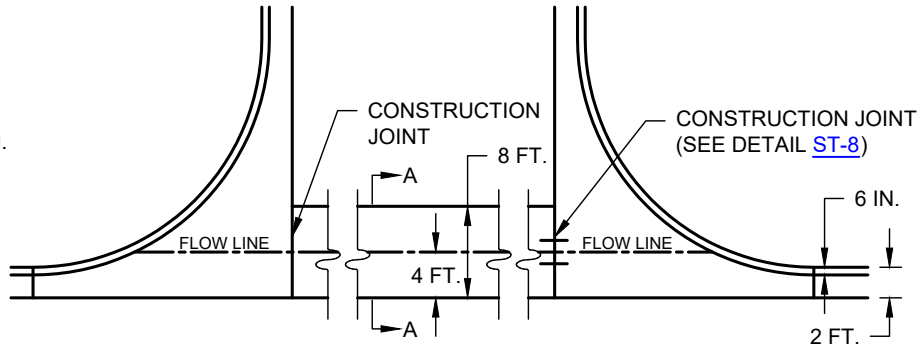
NO.	COMMENTS	BY	DATE
1	MODIFY BASE NOTE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-18



A-A



NOTES:

1. IF FILLETS ARE NOT EXISTING, VALLEY AND FILLETS SHALL EACH BE MONOLITHIC WHEN CURB AND GUTTER IS CALLED FOR.
2. UPSTREAM RETURN IN VALLEY SHALL BE CONSTRUCTED SO WATER WILL NOT POND.
3. IF RUNOFF IS BEING CONVEYED ACROSS THE STREET AT AN INTERSECTION, A STANDARD VALLEY SHALL BE REQUIRED.
4. FOR NEW OR RECONSTRUCTION OF PAVEMENT, SUBSTITUTE TOP 8 IN. OF PAVEMENT STRUCTURE PER PLANS WITH 8 IN. 3,000 PSI CONCRETE.
5. IN ACCORDANCE WITH THE STREET DESIGN CRITERIA VALLEY GUTTERS MAY ONLY BE PLACED ON LOCAL STREETS EXCEPT ONLY WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS MAY VALLEY GUTTERS BE PLACED ON THE:
   - SECONDARY RESIDENTIAL COLLECTOR STREET FOR COLLECTOR (RESIDENTIAL) STREET TO COLLECTOR (RESIDENTIAL) STREET INTERSECTIONS
   - ON THE SECONDARY COMMERCIAL/INDUSTRIAL COLLECTOR STREET FOR COLLECTOR (COMMERCIAL/INDUSTRIAL) STREET TO COLLECTOR (INDUSTRIAL/COLLECTOR) STREET INTERSECTIONS.
   - ON THE MINOR STREET OF AN ARTERIAL STREET INTERSECTION.
   - OTHERWISE, ARTERIAL STREETS AND COLLECTOR STREETS SHALL NOT BE CROSSED BY A VALLEY GUTTER.

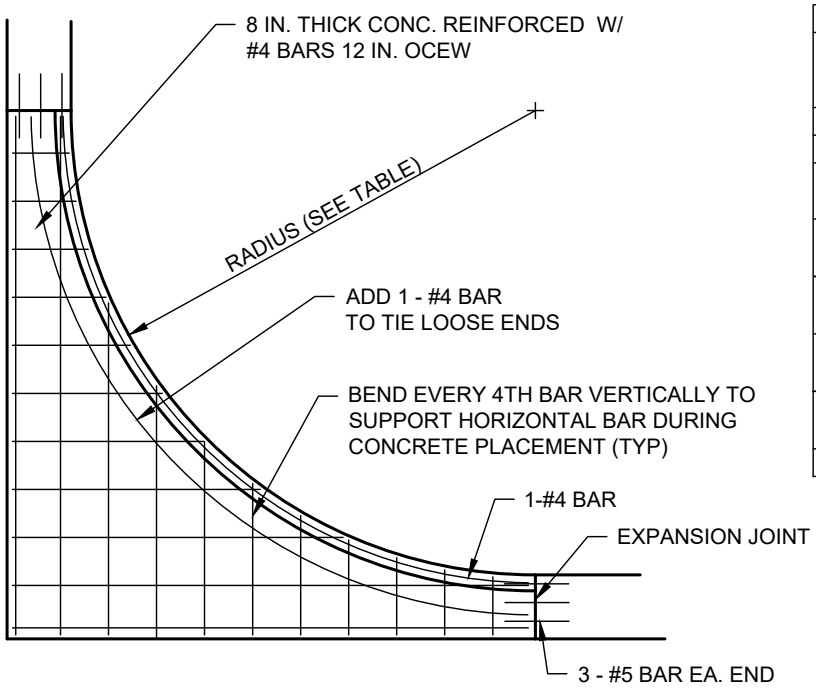
	FOR PLACEMENT OF STANDARD CONCRETE VALLEY AND FILLET IN EXISTING PAVEMENT		
P.I. OF SUBGRADE	PORTLAND CEMENT CONCRETE	BASE	SUBGRADE
P.I. ≤ 20	8 IN.	4 IN. CTB[a,b]	COMPACTED
20< P.I. < 40	8 IN.	-	6 IN. LSS[c]
P.I. ≥ 40	8 IN.	-	8 IN. LSS[c]

MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH G-1C.

a. ALTERNATE: 4 IN. RECYCLED CRUSHED CONCRETE (TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D, GRADE 1-2, EXCLUDING TYPE A MATERIALS, WITH A MINIMUM P.I. OF 4).
b. REQUIRES BOND BREAKER CONSISTING OF 10 MIL POLYETHYLENE BETWEEN CEMENT TREATED BASE (CTB) AND P.C. CONCRETE PAVEMENT UNLESS ALTERNATE TO CTB IS USED.
c. LIME STABILIZED SUBGRADE

STANDARD CONCRETE VALLEY

(NO SCALE)



CURB RETURN RADII CRITERIA	
INTERSECTION TYPE	MINIMUM CURB RETURN RADIUS (FEET)
LOCAL TO LOCAL	20
LOCAL TO MINOR COLLECTOR (RESIDENTIAL)	20
MINOR COLLECTOR (RESIDENTIAL) TO MINOR COLLECTOR (RESIDENTIAL)	25
MINOR COLLECTOR (COMMERCIAL) TO MINOR COLLECTOR (COMMERCIAL)	30
MAJOR COLLECTOR (NEIGHBORHOOD) TO MAJOR COLLECTOR (NEIGHBORHOOD)	30
MAJOR COLLECTOR (COMMERCIAL/INDUSTRIAL) TO MAJOR COLLECTOR (COMMERCIAL/INDUSTRIAL)	30
MAJOR COLLECTOR (COMMERCIAL/INDUSTRIAL) TO ARTERIAL	30
ALLEYS SHALL BE TREATED AS LOCAL STREETS	

NOTES:

1. CURB AND FILLET SHALL BE MONOLITHIC.
2. CONCRETE FILLETS SHALL BE REQUIRED AT INTERSECTION CORNER OF ALL STREET CLASSIFICATIONS.

CONCRETE CURB & GUTTER FILLET

(NO SCALE)

CITY OF WACO

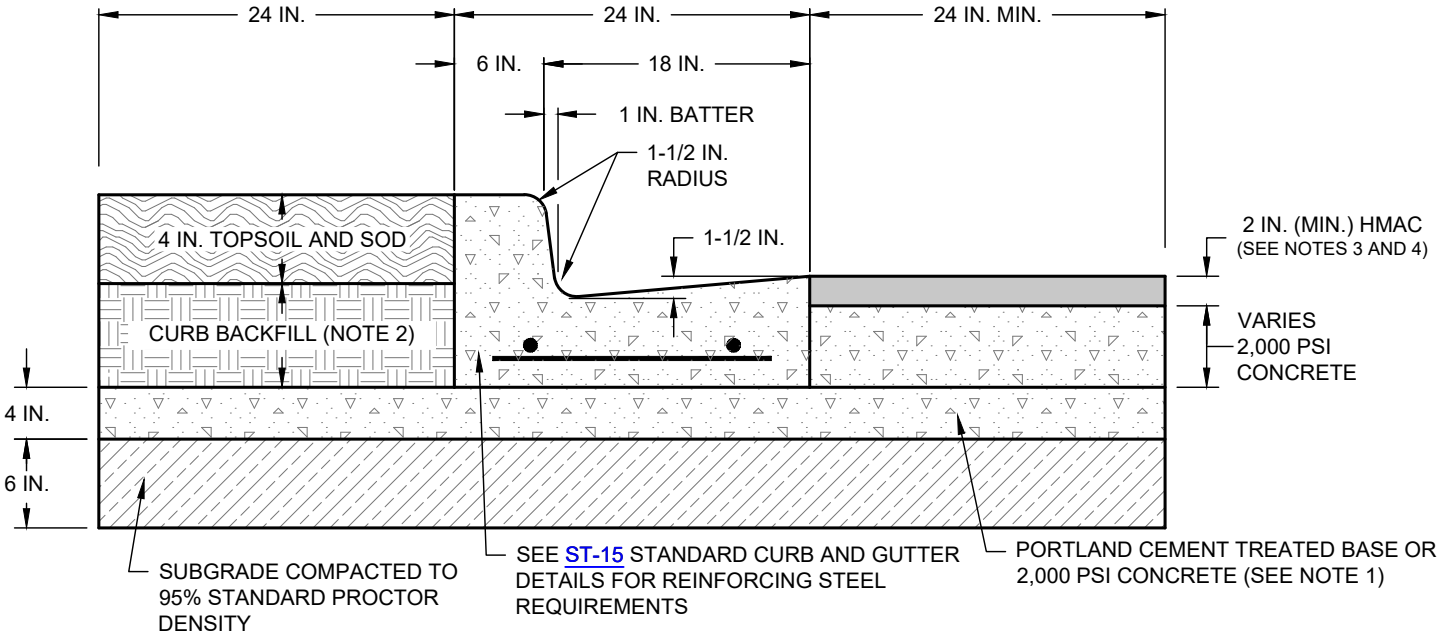
ENGINEERING DIVISION

REVISIONS

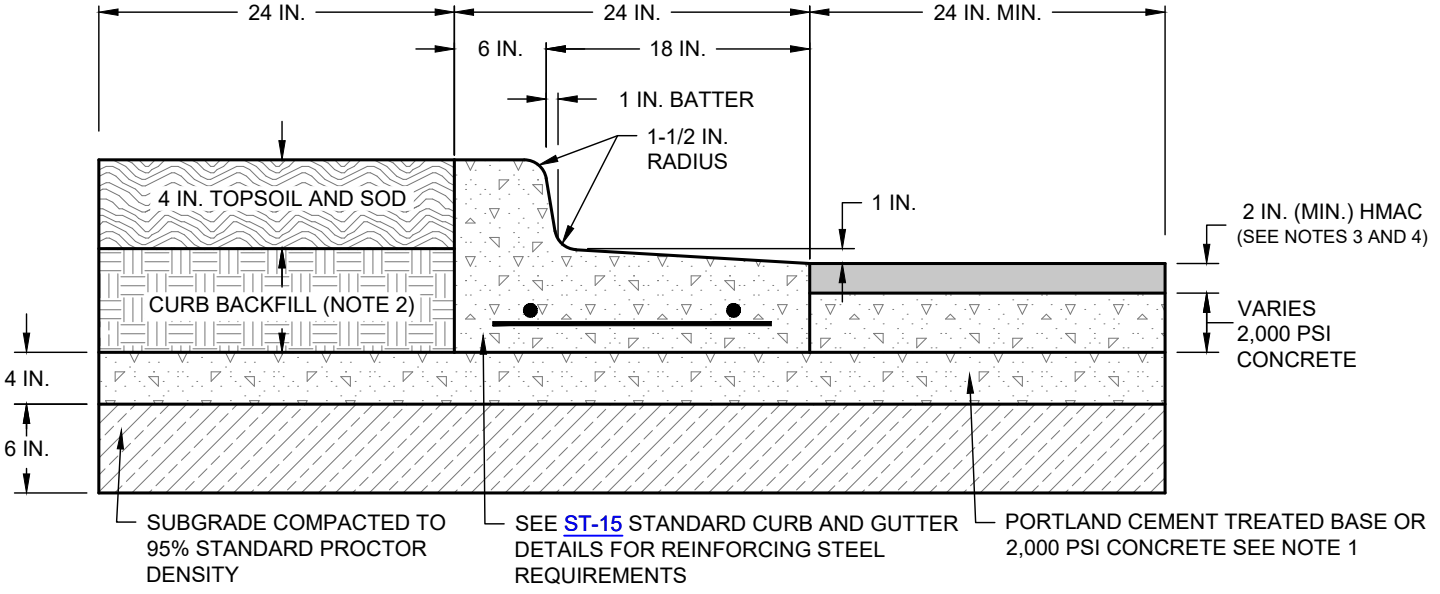
NO.	COMMENTS	BY	DATE
2	ADD NOTE 5; REVISE NOTES UNDER P.I. TABLE & ADD COMPACTION NOTE; MODIFY CURB RETURN RADII TABLE	MZ	04/28/2025
1	REVISE WIDTH OF VALLEY & CORRESPONDING LOCATION OF FLOW LINE; ADD NOTE C SUBGRADE	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-19



DIRECT FLOW



INDIRECT FLOW

NOTES:

1. CURB AND GUTTER SHALL BE PLACED SEPARATELY AFTER BASE OR 2,000 PSI CONCRETE HAS CURED.
2. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
3. HMAC SHALL BE TYPE D FOR STREET CLASSIFICATION LOCAL AND RESIDENTIAL/NEIGHBORHOOD COLLECTOR.
4. HMAC SHALL BE TYPE D FOR STREET CLASSIFICATION OF COMMERCIAL COLLECTOR AND TYPE C FOR INDUSTRIAL COLLECTOR. FOR INDUSTRIAL COLLECTOR DEPTH OF HMAC SHALL BE 3 INCHES.
5. ORIGINAL PLACEMENT OF CURB & GUTTER AND REPLACEMENT OF CURB & GUTTER SHALL BE IN ACCORDANCE WITH THIS STANDARD DETAIL UNLESS SHOWN OTHERWISE IN PLANS APPROVED BY THE CITY.
6. MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH G-1C.

STANDARD CURB & GUTTER PLACEMENT AND REPLACEMENT DETAILS

(USE FOR EXISTING STREETS ONLY)
(NO SCALE)

CITY OF WACO

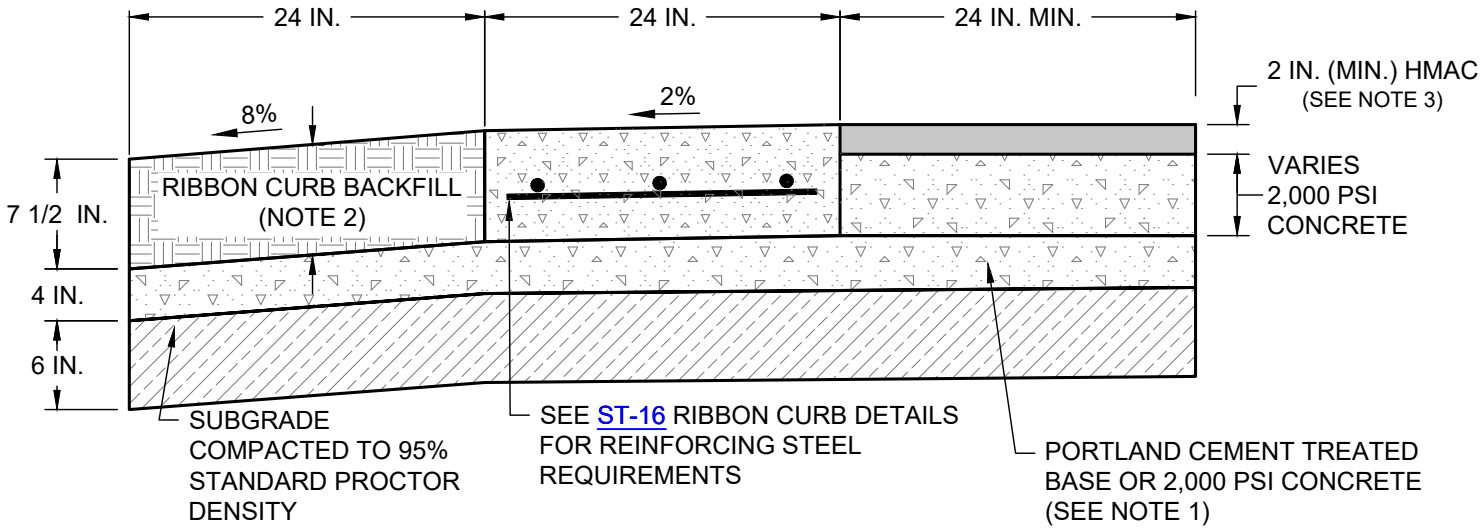
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTES 2, 3 & 4; REMOVE MIN DEPTH OF CURB; MOD DEPTH OF TOPSOIL; REMOVE DIM OF BACKFILL	MZ	04/28/2025
1	ADD "A" TO DETAIL NUMBER; ADD REF. TO STD DETAIL	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-20A



NOTES:

1. RIBBON CURB SHALL BE PLACED SEPARATELY AFTER BASE OR 2,000 PSI CONCRETE HAS CURED.
2. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A” MATERIAL.
3. HMAC SHALL BE TYPE D FOR STREET CLASSIFICATION LOCAL.
4. ORIGINAL PLACEMENT OF RIBBON CURB AND REPLACEMENT OF RIBBON CURB SHALL BE IN ACCORDANCE WITH THIS STANDARD DETAIL UNLESS OTHERWISE SHOWN IN PLANS APPROVED BY THE CITY.
5. MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH G-1C .

RIBBON CURB PLACEMENT AND REPLACEMENT DETAILS

(USE FOR EXISTING STREETS ONLY)
(NO SCALE)

CITY OF WACO

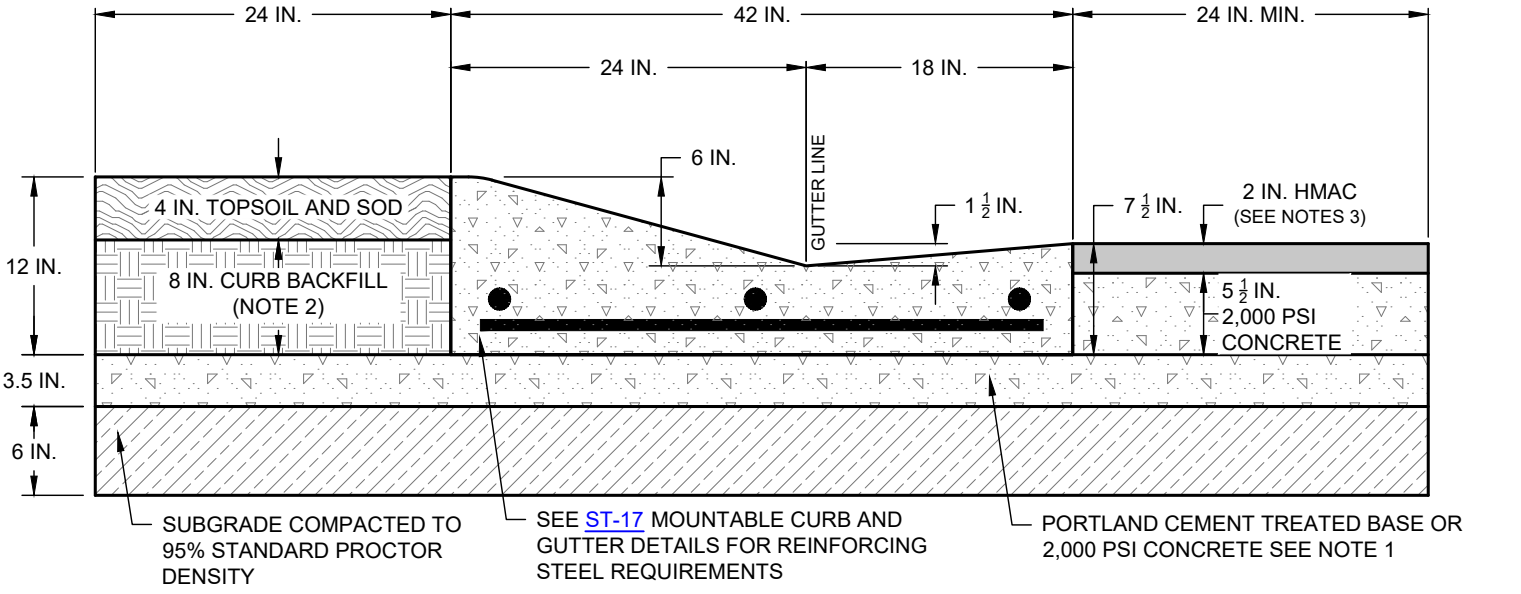
ENGINEERING DIVISION

REVISIONS

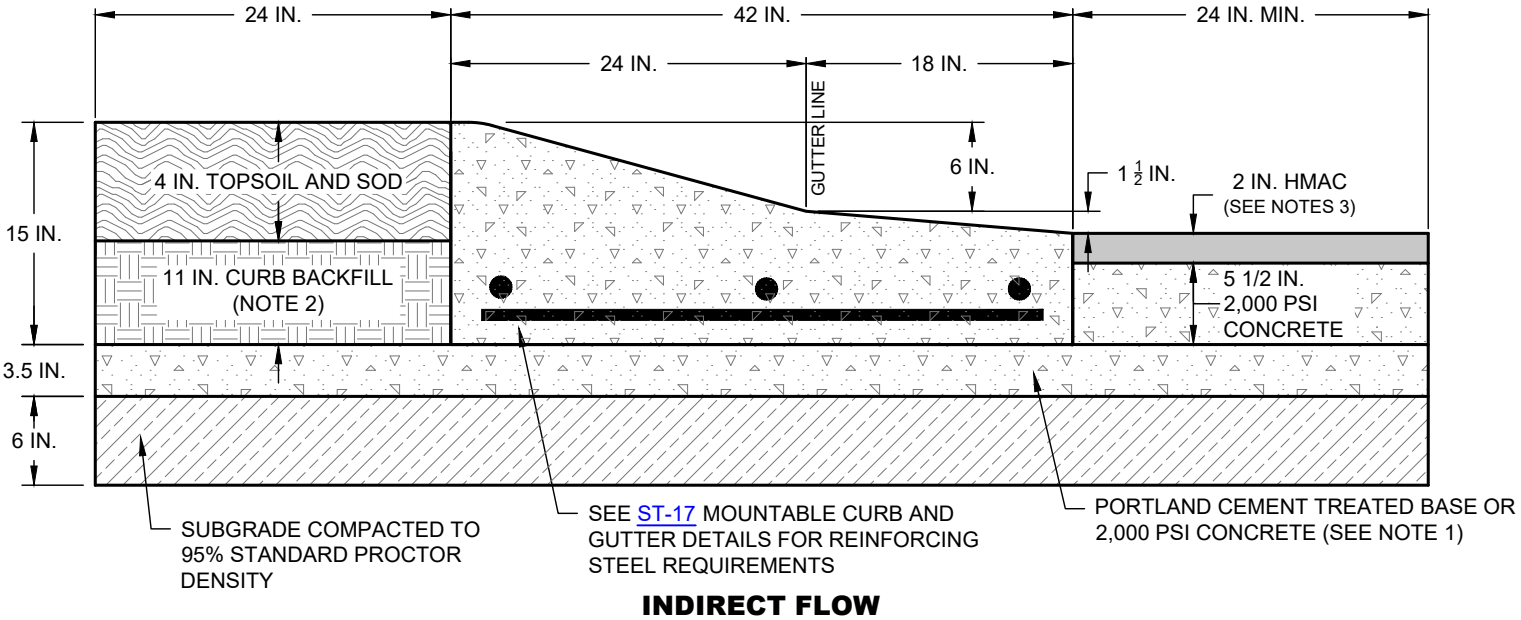
NO.	COMMENTS	BY	DATE
1	MODIFY NOTE 2	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
11/15/2024

ST-20B



DIRECT FLOW



INDIRECT FLOW

NOTES:

1. CURB AND GUTTER SHALL BE PLACED SEPARATELY AFTER BASE OR 2,000 PSI CONCRETE HAS CURED.
2. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" MATERIAL.
3. PER ST-17 NOTE 1 MOUNTABLE CURB AND GUTTER CAN ONLY BE USED FOR STREET FUNCTIONAL CLASSIFICATION OF LOCAL. HMAC SHALL BE TYPE D.
4. ORIGINAL PLACEMENT OF MOUNTABLE CURB & GUTTER AND REPLACEMENT OF MOUNTABLE CURB & GUTTER SHALL BE IN ACCORDANCE WITH THIS STANDARD DETAIL UNLESS SHOWN OTHERWISE IN PLANS APPROVED BY THE CITY.
5. MATERIALS SHALL BE COMPACTED IN ACCORDANCE WITH G-1C.

MOUNTABLE CURB & GUTTER PLACEMENT AND REPLACEMENT DETAILS

(USE FOR EXISTING STREETS ONLY)
(NO SCALE)

CITY OF WACO

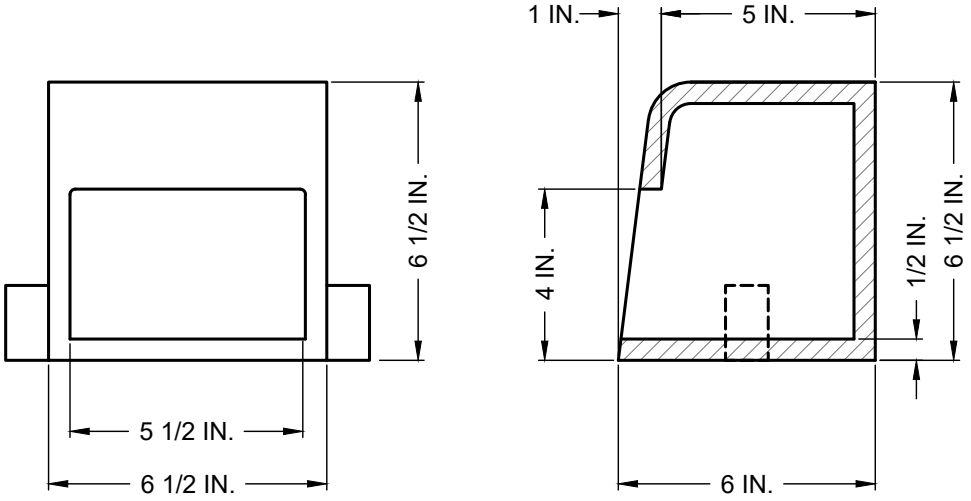
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 2 & 3; MODIFY DIMS FOR TOPSOIL & BACKFILL; MOD. BASE DEPTH ON INDIRECT FLOW DETAIL	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

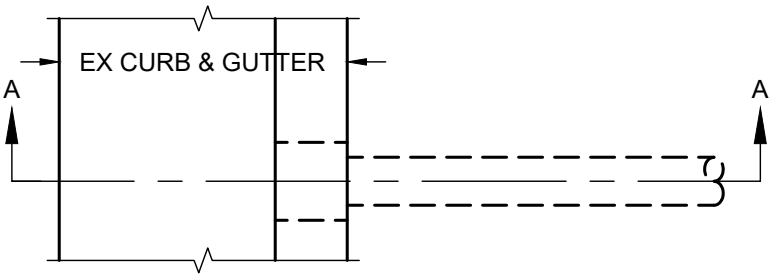
DATE
11/15/2024

ST-20C

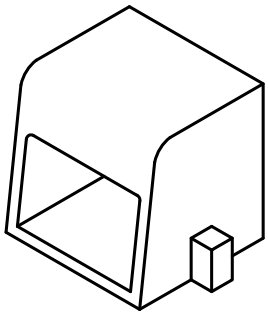


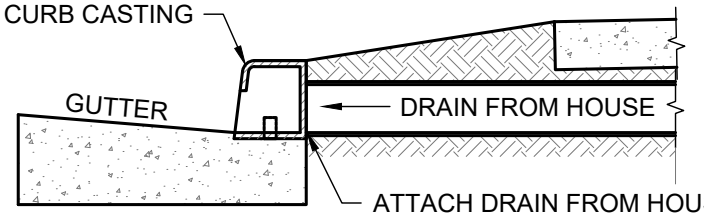
STORMWATER CURB OPENING

NEENAH R-3262-3

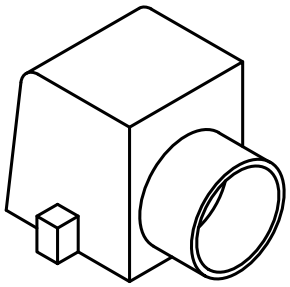


PLAN VIEW





ATTACH DRAIN FROM HOUSE WITH COUPLER AND WATER TIGHT BAND CLAMP PER MANF RECOMMENDATION. STUBBING IN PIPE AND GROUTING SHALL NOT PER PERMITTED



SECTION A-A

NOTES:

1. CONTRACTOR SHALL LOCATE AND RECONNECT ANY SIDE DRAINS FROM ADJACENT PROPERTY THROUGH THE CURB.
2. INSTALL R-3262-3 SERIES HEAVY DUTY STORMWATER CURB OPENING BY NEENAH OR APPROVED EQUAL.
3. FIELD VERIFY SIZE AND LOCATION PRIOR TO PAVING OPERATION.
4. CONTRACTOR SHALL CAST INLETS IN PLACE DURING CURB PRODUCTION. "CUT-IN" NOT ACCEPTED.
5. TO BE USED FOR EXISTING PENETRATIONS. NEW CONNECTIONS ARE NOT ALLOWABLE.

RESIDENTIAL STORMWATER CURB OPENING

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-21

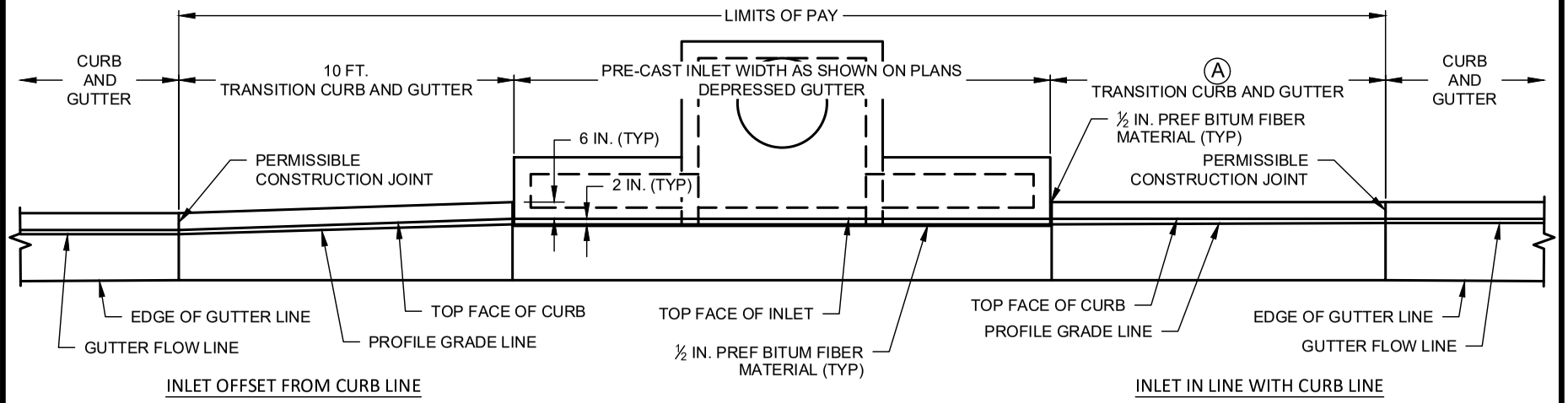
CITY OF WACO

ENGINEERING DIVISION

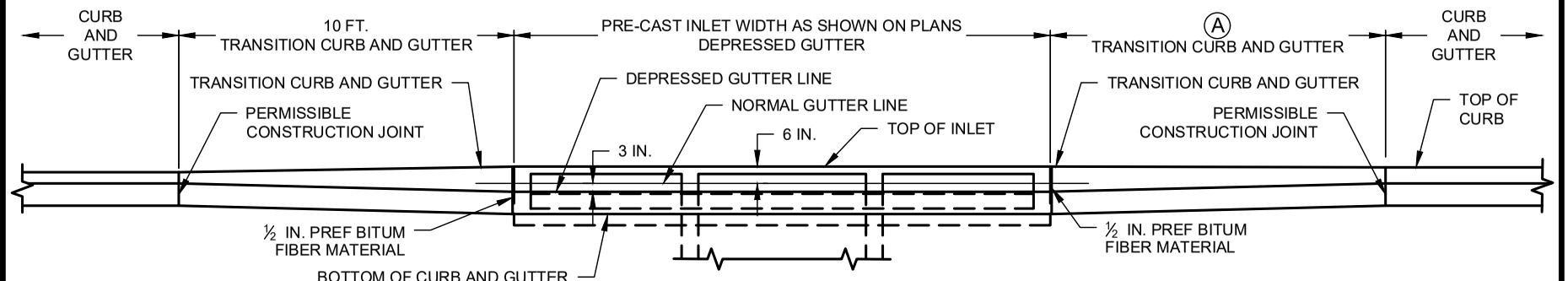
REVISIONS				
NO.	COMMENTS	BY	DATE	
#	DESCRIPTION	FL	MM/DD/YYYY	

ST-22

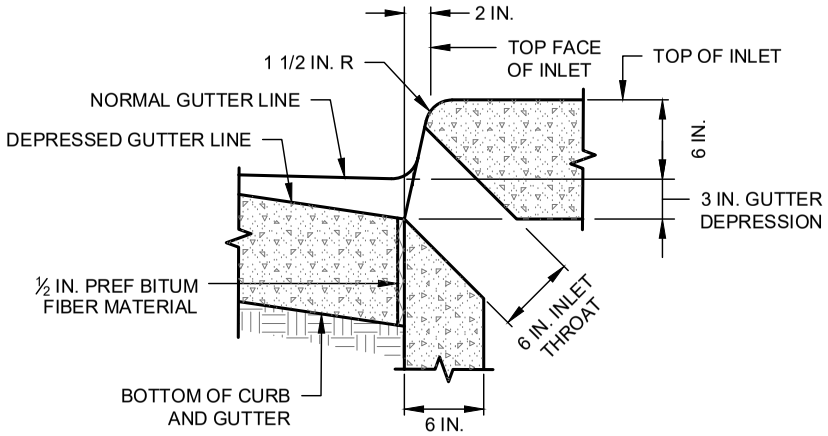
DATE 01/01/2024



PLAN VIEW



ELEVATION VIEW



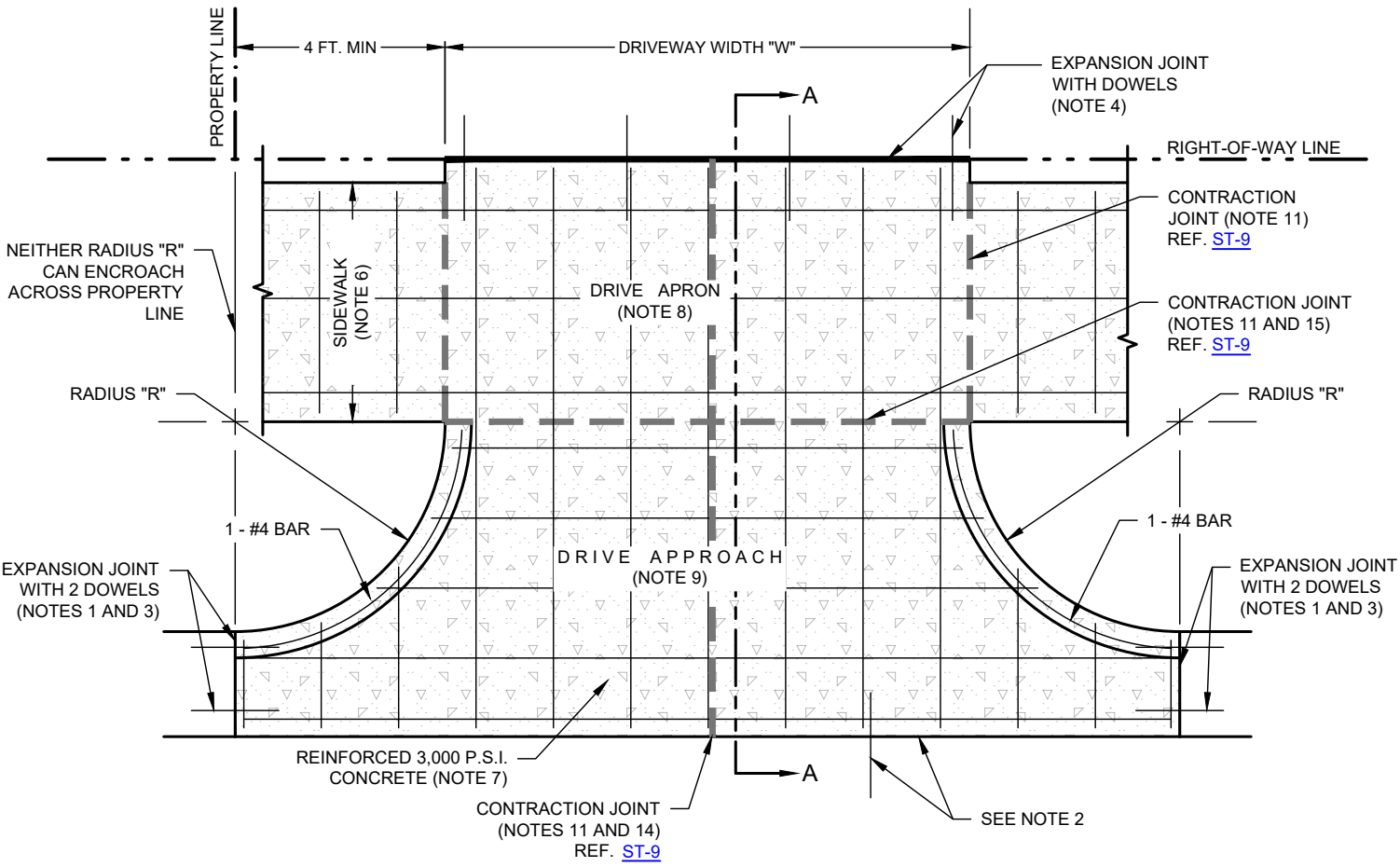
SECTION AT GUTTER AND INLET

REINFORCING STEEL NOT SHOWN FOR CLARITY

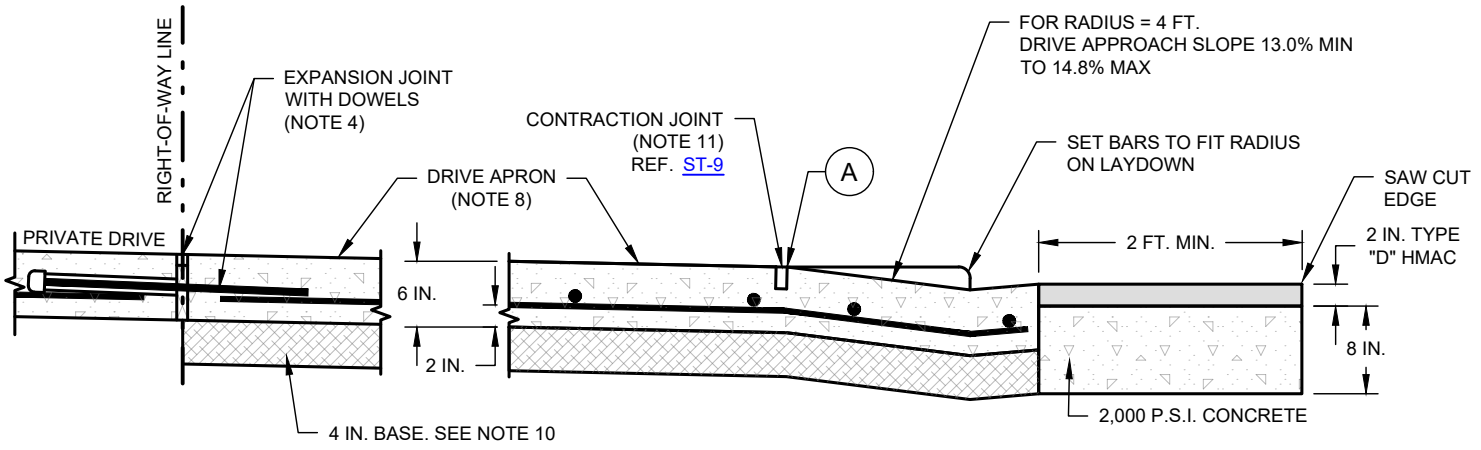
Ⓐ 5 FT. DOWNSTREAM
10 FT. AT SUMP LOCATIONS

CURB AND GUTTER TRANSITION DETAILS FOR PRE-CAST INLET OUTSIDE OF PAVEMENT

(NO SCALE)



PLAN VIEW



Ⓐ ELEVATION 1 IN. MIN. TO 2 IN. MAX ABOVE TOP OF "ADJACENT CURB FOR RADIUS = 4 FT.

SECTION A - NEW APPROACH ON EXISTING ASPHALT STREET

(NO SCALE)

STANDARD RESIDENTIAL DRIVE APPROACH

(NO SCALE)

SEE ST-23B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF WACO FOR ANY PURPOSE WHATSOEVER. THE CITY OF WACO ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

REVISIONS

NO.	COMMENTS	BY	DATE
1	ADD "3,000 PSI" TO CONCRETE NOTE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-23A

RESIDENTIAL DRIVE APPROACH GENERAL NOTES

NOTES:

1. WHEN CONSTRUCTING DRIVE AT EXISTING CURB, CURB MUST BE SAWED. IF THE RADIUS RETURN IS WITHIN 3 FT. OF AN EXISTING JOINT, THE EXISTING CURB AND GUTTER SHALL BE REMOVED AND REPLACED TO THE NEXT EXISTING JOINT.

2. ON CONCRETE STREETS: EXPANSION JOINT WITH DOWELS 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END AT 36 IN. OC. (REF ST-9)

3. EXPANSION JOINT: 2 EACH 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END. WHEN ADDING TO EXISTING DRIVE APPROACH, JOINT MUST BE SAW-CUT. REF. ST-9 FOR ADDITIONAL REQUIREMENTS.

4. EXPANSION JOINT WITH 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END AT 36 IN. OC. (REF ST-9)

5. SEE ST-4 STANDARD ALLEY SECTION FOR ADDITIONAL INFORMATION WHEN CONNECTING TO A RESIDENTIAL ALLEY.

6. SIDEWALK: SEE THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES FOR REQUIREMENTS OF SIDEWALK. LOCATIONS WITHIN THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES OF MINIMUM REQUIRED WIDTHS OF SIDEWALK AND RELATED BUFFER PRESENTLY INCLUDE THE FOLLOWING
   - STREET DESIGN CRITERIA TABLE 2-5 AND APPENDIX C STREET CROSS-SECTIONS
   - SEC. 22-37. - CHANGING OF GRADE OF STREETS, ETC.
   - SEC. 22-63. - SAME-LOCATION AND WIDTH OF SIDEWALKS.
   - SEC. 28-880.11. - PUBLIC SPACES.
   - SEC. 28-839. - SIDEWALKS.

7. 6 IN. REINFORCED 3,000 P.S.I. CONCRETE PER G-7 NOTE 3 WITH #4 BARS AT 18 IN. OCEW (CONCRETE CHAIRS REQUIRED) CONTINUOUS THROUGH DRIVE APPROACH, DRIVE APRON, AND SIDEWALK.

8. DRIVE APRON. MAXIMUM SLOPE SHALL BE 1.5% FORMED. ANY SLOPE EXCEEDING 2% SHALL NOT BE ACCEPTED.

9. DRIVE APPROACH: FOR RADIUS = 4 FT., SLOPE SHALL BE 13.0% MIN. TO 14.8 % MAX.

10. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
    A. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A.” MATERIAL
    B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
    C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER)

11. CONTRACTION JOINT MAY BE TOOLED. SEE ST-9 FOR DETAILS.

12. UPON REQUEST, CONTRACTOR SHALL SHOW INSPECTOR SIDEWALK COMPLIANCE.

13. FOR GRADING OF AREAS TO BE VEGETATED ENSURE CONCRETE WORK IS DONE TO PROVIDE FOR COMPLIANCE WITH CODE OF ORDINANCES SEC. 22-73. - DIMENSIONS--PARKWAY.
    (a) THE PARKWAY SHALL BE THAT SPACE BETWEEN THE FACE OF THE STREET CURB AND THE PROPERTY LINE. THIS PARKWAY SHALL HAVE A MINIMUM SLOPE OF ONE-QUARTER OF AN INCH PER ONE FOOT AND A MAXIMUM SLOPE OF ONE-HALF OF AN INCH PER ONE FOOT TOWARD THE STREET.

14. A LONGITUDINAL CONTRACTION JOINT SHALL BE PLACED AT CENTERLINE OF ALL DRIVEWAYS. FOR DRIVEWAYS WIDER THAN 20 FEET ADDITIONAL LONGITUDINAL CONTRACTION JOINTS SHALL BE PLACED, SPACED EQUALLY AT 10 FT. MAXIMUM SPACING.

15. IF DISTANCE BETWEEN INITIALLY REQUIRED TRANSVERSE JOINTS EXCEEDS 10 FT. THEN ADDITIONAL CONTRACTION JOINT(S) SHALL BE PLACED TO ENSURE DISTANCE BETWEEN TRANSVERSE JOINTS DOES NOT EXCEED 10 FEET. THESE ADDITIONALLY REQUIRED CONTRACTION JOINTS SHALL BE PLACED TO PROVIDE EQUAL SPACING BETWEEN TRANSVERSE JOINTS TO THE EXTENT PRACTICAL.

RESIDENTIAL DRIVEWAY STANDARDS		
DRIVEWAY TYPE	"W" DRIVEWAY WIDTH	"R" BACK OF CURB RADIUS
SINGLE	10 FT MIN ~ 12 FT MAX	4 FT MIN ~ 15 FT MAX
DOUBLE	20 FT MIN ~ 24 FT MAX	4 FT MIN ~ 15 FT MAX
ALLEY (NOTE 5)	MATCH ALLEY R.O.W. WIDTH	4 FT MIN ~ 15 FT MAX
SEE CITY OF WACO STREET DESIGN CRITERIA FOR MORE DETAILS		

SEE ST-23A FOR ADDITIONAL DETAILS

CITY OF WACO

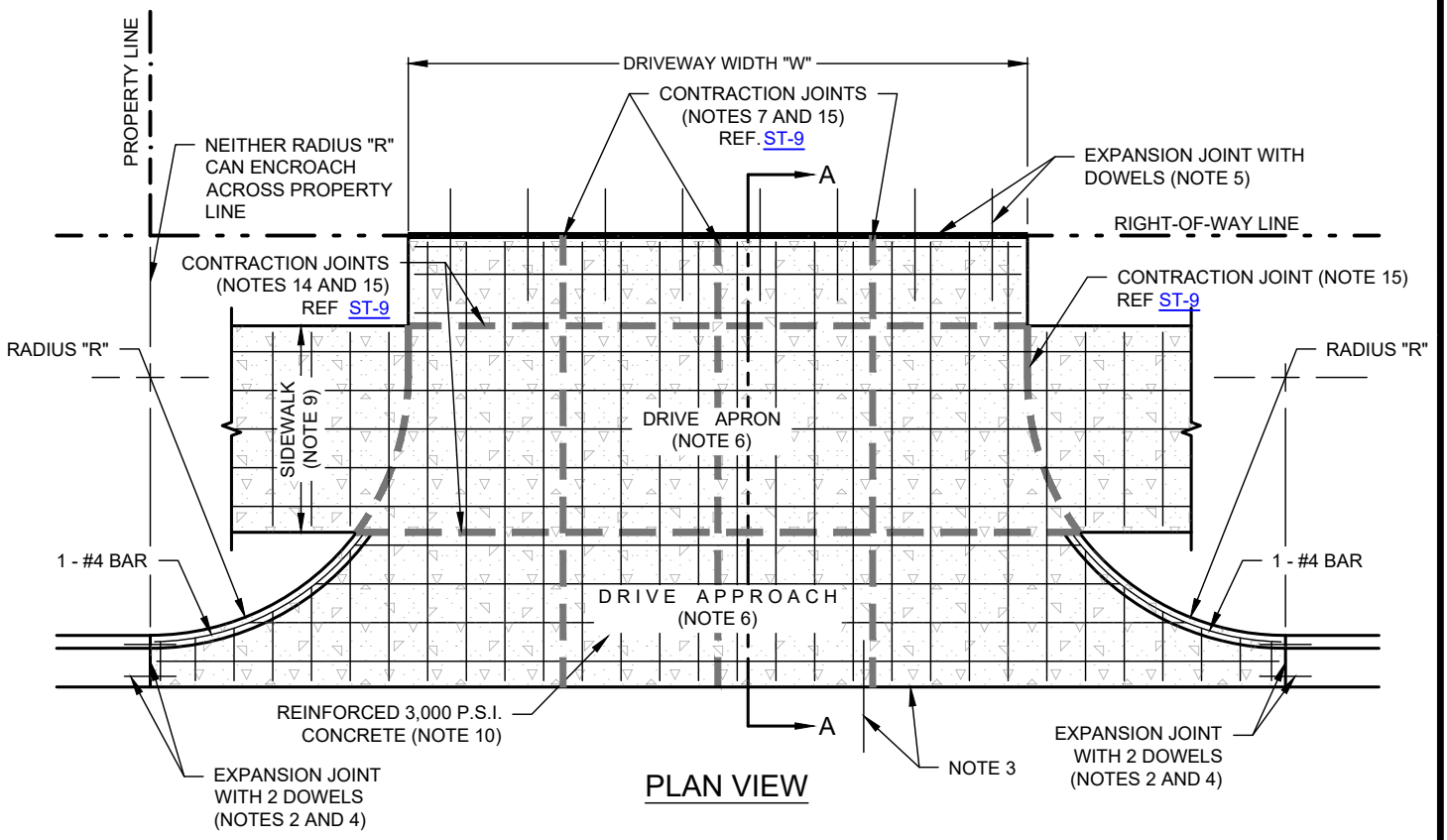
ENGINEERING DIVISION

REVISIONS

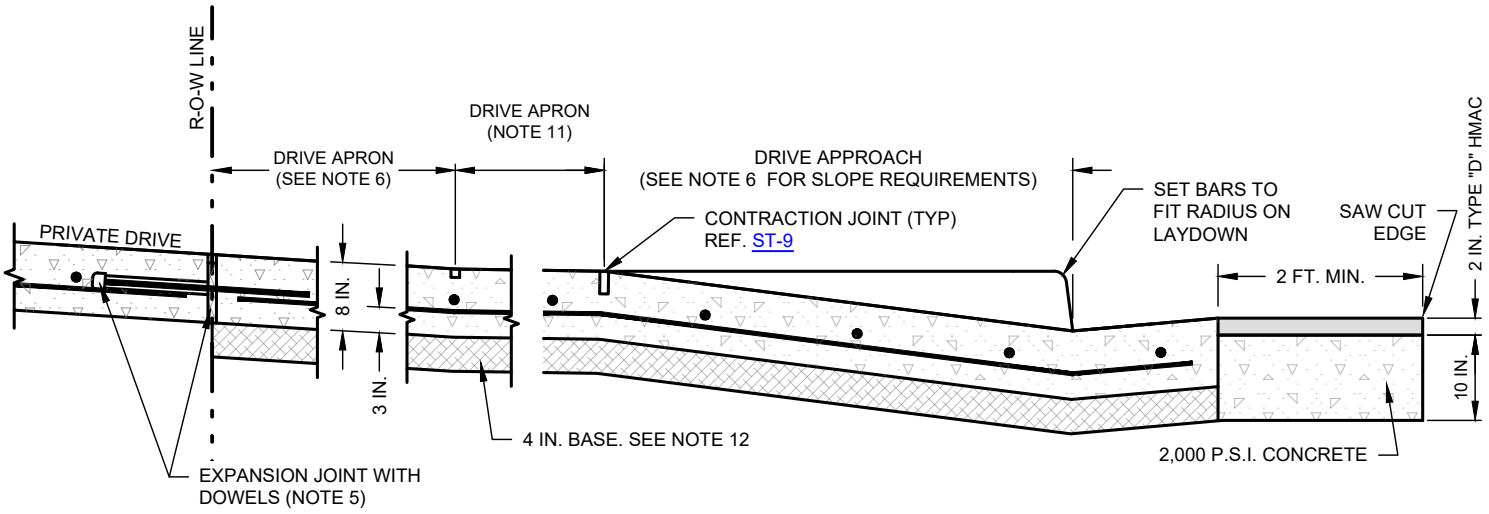
NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 6, 7 & 10; MODIFY TABLE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-23B



PLAN VIEW



SECTION A - NEW APPROACH ON EXISTING ASPHALT STREET

(NO SCALE)

STANDARD COMMERCIAL DRIVE APPROACH

(NO SCALE)

SEE ST-24B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	ADD "3,000 PSI" TO CONCRETE NOTE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-24A

COMMERCIAL DRIVE APPROACH GENERAL NOTES

NOTES:

1. COMMERCIAL TYPE DRIVE APPROACHES AND TURN-OUTS (I.E. FOR BUSINESS PROPERTY) REQUIRE CITY TRAFFIC APPROVAL.

2. WHEN CONSTRUCTING DRIVE AT EXISTING CURB, CURB MUST BE SAWED. IF THE RADIUS RETURN IS WITHIN 3 FT. OF AN EXISTING JOINT, THE EXISTING CURB AND GUTTER SHALL BE REMOVED AND REPLACED TO THE NEXT EXISTING JOINT.

3. ON CONCRETE STREETS: EXPANSION JOINT WITH DOWELS 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END. (REF ST-9)

4. EXPANSION JOINT: 2 EACH 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END. WHEN ADDING TO EXISTING DRIVE APPROACH, JOINT MUST BE SAW-CUT. REF. ST-9 FOR ADDITIONAL REQUIREMENTS.

5. EXPANSION JOINT WITH 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END AT 36 IN. OC. (REF ST-9)

6. THE DRIVEWAY SLOPE IN THE FIRST 10 FEET FROM THE GUTTER LINE SHALL BE A MAXIMUM OF 5%. THE SLOPE MAY RISE AN ADDITIONAL 5% OR FALL A MAXIMUM OF 6% IN THE SECOND 10 FEET. THROUGH DRIVE APRON AT EXISTING OR FUTURE SIDEWALKS, MAX SLOPE SHALL BE 1.5%

7. A LONGITUDINAL CONTRACTION JOINT SHALL BE PLACED AT CENTERLINE OF ALL DRIVEWAYS AND ADDITIONAL LONGITUDINAL CONTRACTION JOINTS SHALL BE PLACED, SPACED EQUALLY AT 10 FT. MAXIMUM SPACING.

8. SEE ST-4 STANDARD ALLEY SECTION FOR ADDITIONAL INFORMATION WHEN CONNECTING TO A COMMERCIAL ALLEY.

9. SIDEWALK: SEE THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES FOR REQUIREMENTS OF SIDEWALK. LOCATIONS WITHIN THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES OF MINIMUM REQUIRED WIDTHS OF SIDEWALK AND RELATED BUFFER PRESENTLY INCLUDE THE FOLLOWING
   - STREET DESIGN CRITERIA TABLE 2-5 AND APPENDIX C STREET CROSS-SECTIONS
   - SEC. 22-37. - CHANGING OF GRADE OF STREETS, ETC.
   - SEC. 22-63. - SAME-LOCATION AND WIDTH OF SIDEWALKS.
   - SEC. 28-880.11. - PUBLIC SPACES.
   - SEC. 28-839. - SIDEWALKS.

10. MINIMUM 8 IN. REINFORCED 3,000 P.S.I. CONCRETE PER G-7 NOTE 3 WITH #4 BARS AT 18 IN. OCEW (CONCRETE CHAIRS REQUIRED) CONTINUOUS THROUGH DRIVE APPROACH, DRIVE APRON, AND SIDEWALK.

11. DRIVE APRON AT EXISTING AND FUTURE SIDEWALKS. MAX SLOPE OF 1.5% FORMED. ANY SLOPE EXCEEDING 2% SHALL NOT BE ACCEPTED.

12. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
    A. TYPE “A” MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE “A.” MATERIAL
    B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
    C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER)

13. UPON REQUEST, CONTRACTOR SHALL SHOW INSPECTOR SIDEWALK COMPLIANCE.

14. IF DISTANCE BETWEEN INITIALLY REQUIRED TRANSVERSE JOINTS EXCEEDS 10 FT. THEN ADDITIONAL CONTRACTION JOINT(S) SHALL BE PLACED TO ENSURE DISTANCE BETWEEN TRANSVERSE JOINTS DOES NOT EXCEED 10 FEET. THESE ADDITIONALLY REQUIRED CONTRACTION JOINTS SHALL BE PLACED TO PROVIDE EQUAL SPACING BETWEEN TRANSVERSE JOINTS TO THE EXTENT PRACTICAL.

15. CONTRACTION JOINT MAY BE TOOLED. SEE ST-9 FOR DETAILS.

COMMERCIAL DRIVEWAY STANDARDS		
DRIVEWAY TYPE	"W" DRIVEWAY WIDTH	"R" BACK OF CURB RADIUS
ARTERIAL	30 FT. MIN. ~ 42 FT. MAX	10 FT. MIN.
COLLECTOR/LOCAL/CBD[1,2]	24 FT. MIN. ~ 42 FT. MAX	10 FT. MIN.
ALLEY (NOTE 8)	MATCH ALLEY R.O.W.	10 FT. MIN. ~ 25 FT. MAX
INDUSTRIAL DRIVEWAY AND INTERNAL CIRCULATION STANDARDS		
DRIVEWAY TYPE	"W" DRIVEWAY WIDTH	"R" BACK OF CURB RADIUS
ARTERIAL	30 FT. MIN. ~ 50 FT. MAX	15 FT. MIN. 25 FT. TYP
COLLECTOR[2]	30 FT. MIN. ~ 50 FT. MAX	10 FT. MIN. 25 FT. TYP
ALLEY (NOTE 8)	MATCH ALLEY R.O.W.	10 FT. MIN.
SEE CITY OF WACO STREET DESIGN CRITERIA FOR MORE DETAILS		

1. CENTRAL BUSINESS DISTRICT
2. DIVIDED DRIVEWAY WITH RAISED MEDIANS WILL BE REVIEWED ON A CASE-BY-CASE BASIS.

SEE ST-24A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 9, 10 & 12; MODIFY TABLE	MZ	04/28/2025
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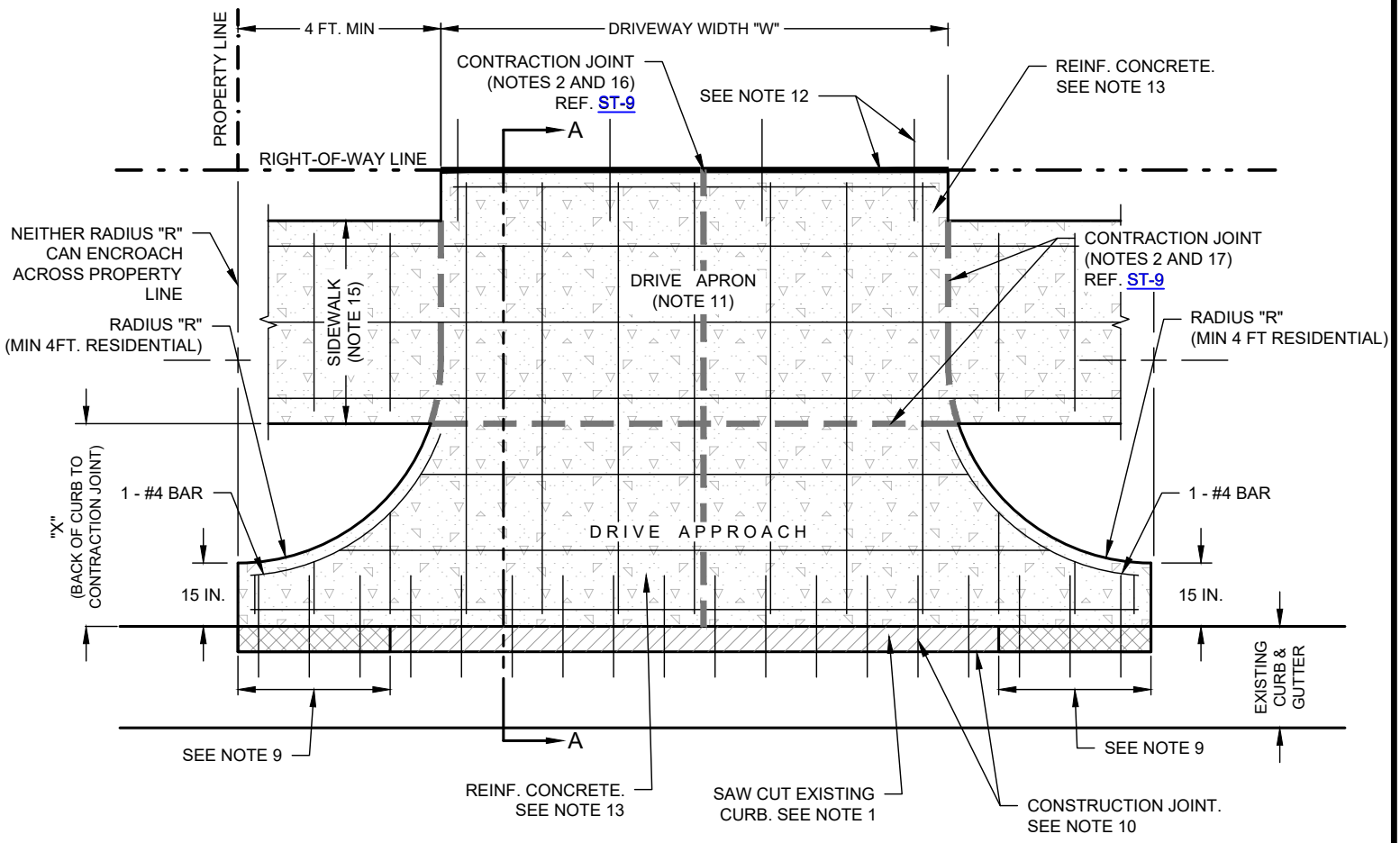
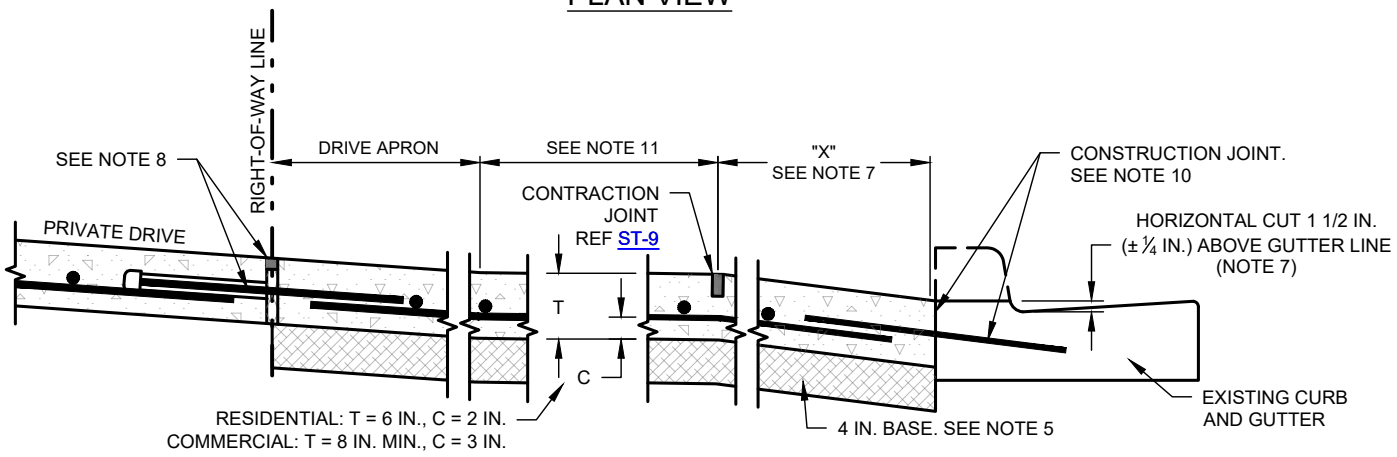
DATE 01/01/2024

ST-24B



PLAN VIEW



SECTION A - NEW APPROACH ON EXISTING STANDARD CURB AND GUTTER WITH HORIZONTAL AND VERTICAL SAW CUT

(NO SCALE)

SAW CUT STANDARD CURB AND GUTTER DRIVE APPROACH

(NO SCALE)

SEE ST-25B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY THE CITY OF WACO FOR ANY PURPOSE WHATSOEVER. THE CITY OF WACO ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

REVISIONS

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##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

ST-25A

SAW CUT STANDARD CURB AND GUTTER DRIVE APPROACH GENERAL NOTES

NOTES:

1. CURB MUST BE SAW CUT HORIZONTALLY AND WITH A UNIFORM TAPER PER DETAIL.

2. CONTRACTION JOINT MAY BE TOOLED. SEE ST-9 FOR DETAILS.

3. SEE ST-23A AND ST-23B STANDARD RESIDENTIAL DRIVEWAY APPROACH DETAILS FOR ADDITIONAL REQUIREMENTS.

4. SEE ST-24A AND ST-24B STANDARD COMMERCIAL DRIVEWAY APPROACH DETAILS FOR ADDITIONAL REQUIREMENTS.

5. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
   A. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A." MATERIAL
   B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
   C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER)

6. UPON REQUEST, CONTRACTOR SHALL SHOW INSPECTOR SIDEWALK COMPLIANCE.

7. DRIVE APPROACH:
   - RESIDENTIAL: X = 4 FT. MINIMUM.
     SLOPE SHALL BE 11.5% MIN TO 13.5% MAX WHEN X = 4 FT. AND HORIZONTAL CUT EQUALS 1 ½ INCH. ELEVATION AT TOP OF CONTRACTION JOINT SHALL BE 1 IN. MIN TO 2 IN. MAX ABOVE TOP OF "ADJACENT" CURB WHEN X = 4 FT. AND HORIZONTAL CUT EQUALS 1 ½ INCH.
   - COMMERCIAL: SEE ST-24A AND ST-24B

8. EXPANSION JOINT WITH 3/4 IN. Ø x 24 IN. LONG SMOOTH DOWEL BARS W/ PVC CAPPED SLEEVE AT 36 IN. OC (REF ST-9)

9. 30 IN. TAPERED CUT (HEIGHT REMAINING TRANSITIONS FROM 1 ½ IN. TO 6 IN.)

10. CONSTRUCTION JOINT WITH #4 DEFORMED TIE BARS 24 IN. LONG AT 12 IN. SPACING.

11. DRIVE APRON AT EXISTING OR FUTURE SIDEWALK. MAXIMUM SLOPE SHALL BE 1.5% FORMED. ANY CROSS-SLOPE EXCEEDING 2% SHALL NOT BE ACCEPTED.

12. EXPANSION JOINT W/ 3/4 IN. Ø x 24 IN. LONG SMOOTH DOWEL BARS W/ PVC CAPPED SLEEVE AT 36 IN. OC (REF ST-9)

13. REINFORCED CONCRETE:
   - RESIDENTIAL: 6 IN. REINFORCED CONCRETE WITH #4 BARS AT 18 IN. OCEW (CONCRETE CHAIRS REQUIRED). CONTINUOUS THROUGH DRIVE APPROACH, DRIVE APRON, AND SIDEWALK.
   - COMMERCIAL: MINIMUM 8 IN REINFORCED CONCRETE WITH #4 BARS AT 18 IN. OCEW (CONCRETE CHAIRS REQUIRED). CONTINUOUS THROUGH DRIVE APPROACH, DRIVE APRON, AND SIDEWALK.

14. SEE ST-4 STANDARD ALLEY SECTION FOR ADDITIONAL INFORMATION WHEN CONNECTING TO AN ALLEY.

15. SIDEWALK: SEE THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES FOR REQUIREMENTS OF SIDEWALK. LOCATIONS WITHIN THE STREET DESIGN CRITERIA AND THE CODE OF ORDINANCES OF MINIMUM REQUIRED WIDTHS OF SIDEWALK AND RELATED BUFFER PRESENTLY INCLUDE THE FOLLOWING
   - STREET DESIGN CRITERIA TABLE 2-5 AND APPENDIX C STREET CROSS-SECTIONS
   - SEC. 22-37. - CHANGING OF GRADE OF STREETS, ETC.
   - SEC. 22-63. - SAME-LOCATION AND WIDTH OF SIDEWALKS.
   - SEC. 28-880.11. - PUBLIC SPACES.
   - SEC. 28-839. - SIDEWALKS.

16. A LONGITUDINAL CONTRACTION JOINT SHALL BE PLACED AT CENTERLINE OF ALL DRIVEWAYS. FOR DRIVEWAYS WIDER THAN 20 FEET ADDITIONAL LONGITUDINAL CONTRACTION JOINTS SHALL BE PLACED, SPACED EQUALLY AT 10 FT. MAXIMUM SPACING.

17. IF DISTANCE BETWEEN INITIALLY REQUIRED TRANSVERSE JOINTS EXCEEDS 10 FT. THEN ADDITIONAL CONTRACTION JOINT(S) SHALL BE PLACED TO ENSURE DISTANCE BETWEEN TRANSVERSE JOINTS DOES NOT EXCEED 10 FEET. THESE ADDITIONALLY REQUIRED CONTRACTION JOINTS SHALL BE PLACED TO PROVIDE EQUAL SPACING BETWEEN TRANSVERSE JOINTS TO THE EXTENT PRACTICAL.

SEE ST-25A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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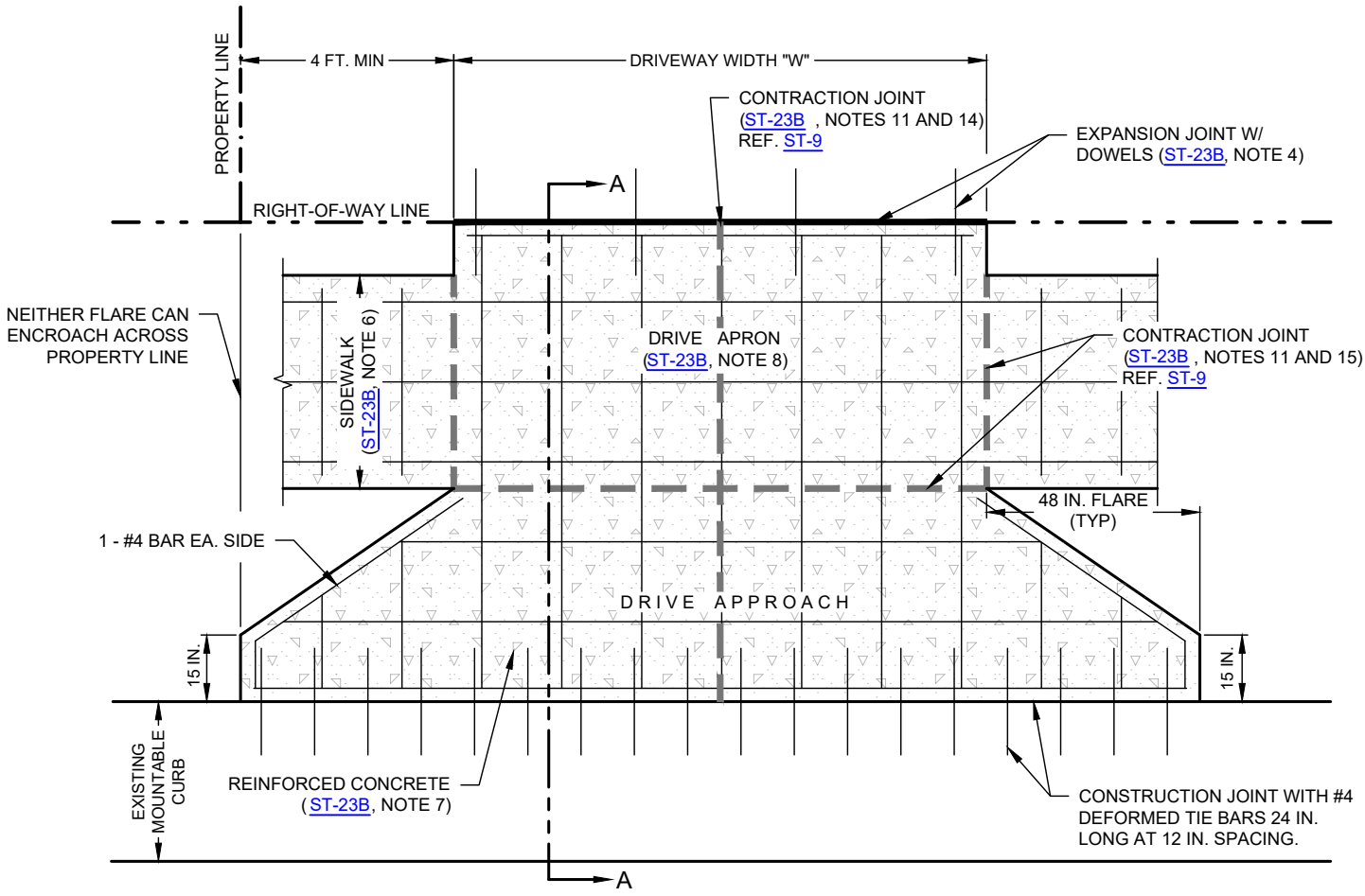
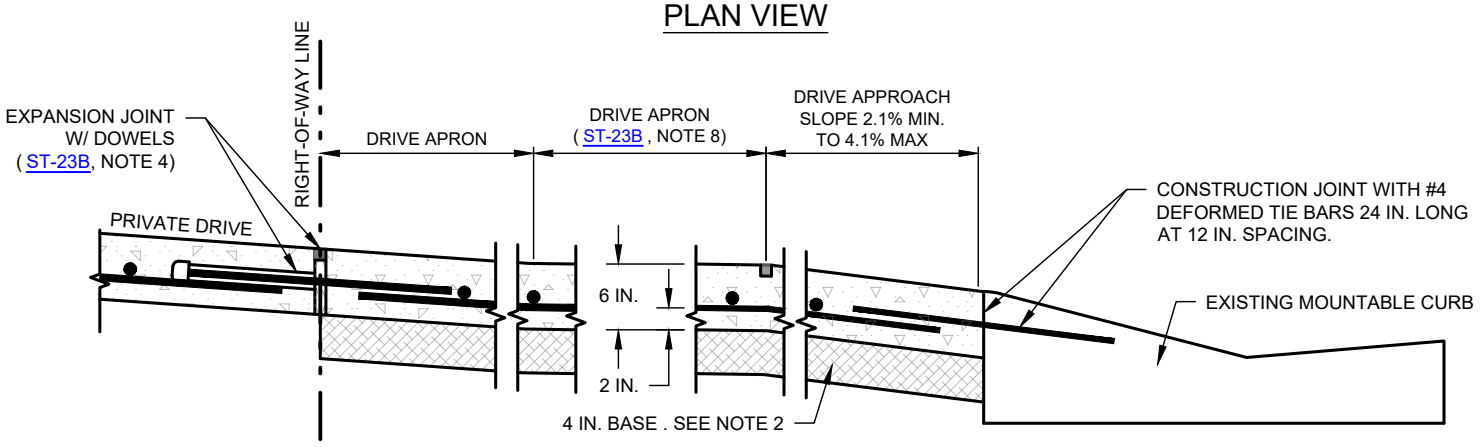
ST-25B



PLAN VIEW



SECTION A - NEW APPROACH ON EXISTING MOUNTABLE CURB

(NO SCALE)

NOTES:

1. SEE ST-23A AND ST-23B STANDARD RESIDENTIAL DRIVEWAY APPROACH DETAILS AND GENERAL NOTES FOR ADDITIONAL REQUIREMENTS.
2. 4 IN. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A" OR 4 IN. RECYCLED CRUSHED CONCRETE (TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D, GRADE 1-2 EXCLUDING TYPE A MATERIALS, WITH A MINIMUM P.I. OF FOUR) OR 4 IN. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION COVERED BY 10 MIL POLYETHELENE BOND BREAKER) MECHANICALLY COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY.

MOUNTABLE CURB RESIDENTIAL DRIVE APPROACH

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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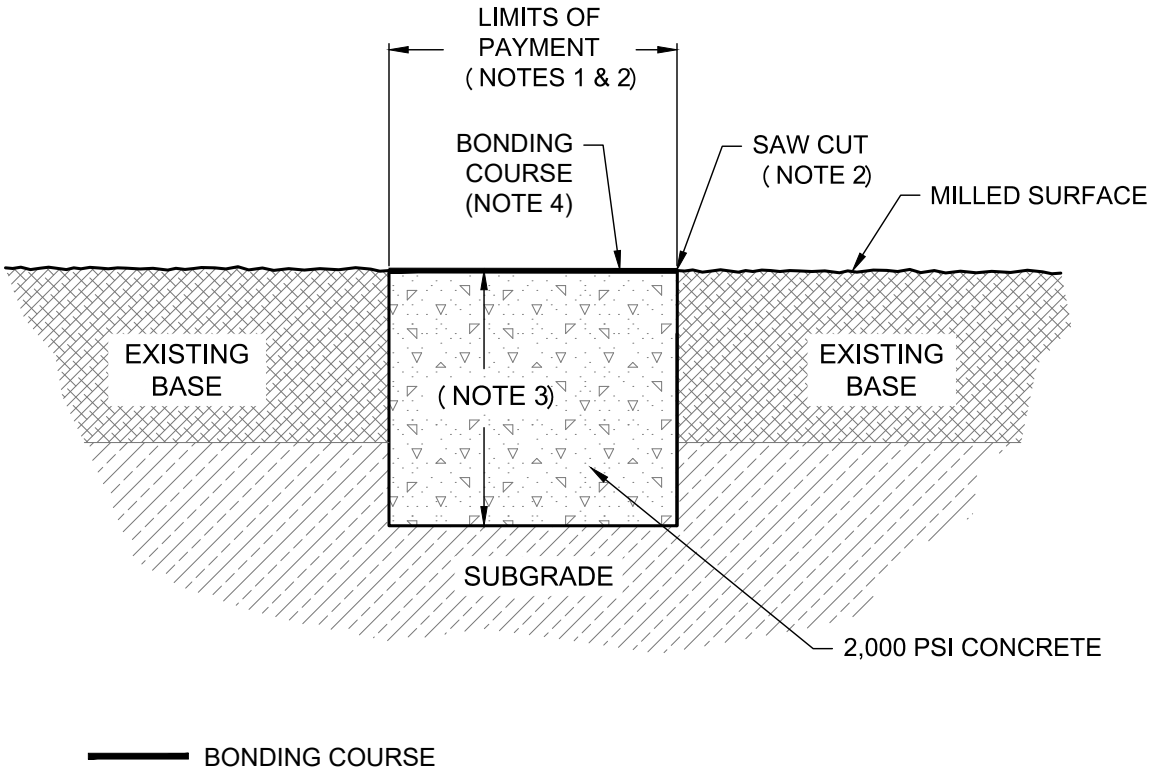
ST-26



NOTES:

1. MINIMUM BASE REPAIR DIMENSIONS (EXTENTS OF SAW CUT) SHALL BE 5 FT. BY 10 FT., WITH THE 10 FOOT DIMENSION IN THE DIRECTION OF TRAVEL. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

2. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. SAW CUTS SHALL BE ON LANE LINES OR BE BETWEEN WHEEL PATHS. IF ORIGINAL BASE FAILURE PAYMENT LIMITS IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

3. CONCRETE - MINIMUM 2,000 PSI.
   CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 12 IN.
   CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 10 IN.
   CLASS C LOCAL STREET = 8 IN.

4. HMAC AND BONDING COURSE SHALL BE PLACED FOLLOWING COMPLETION AND CURE OF BASE REPAIR. BONDING COURSE SHALL BE APPLIED TO CLEAN SURFACE AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

BASE FAILURE REPAIR WITH CONCRETE AFTER MILLING
(MILL & OVERLAY PROJECTS)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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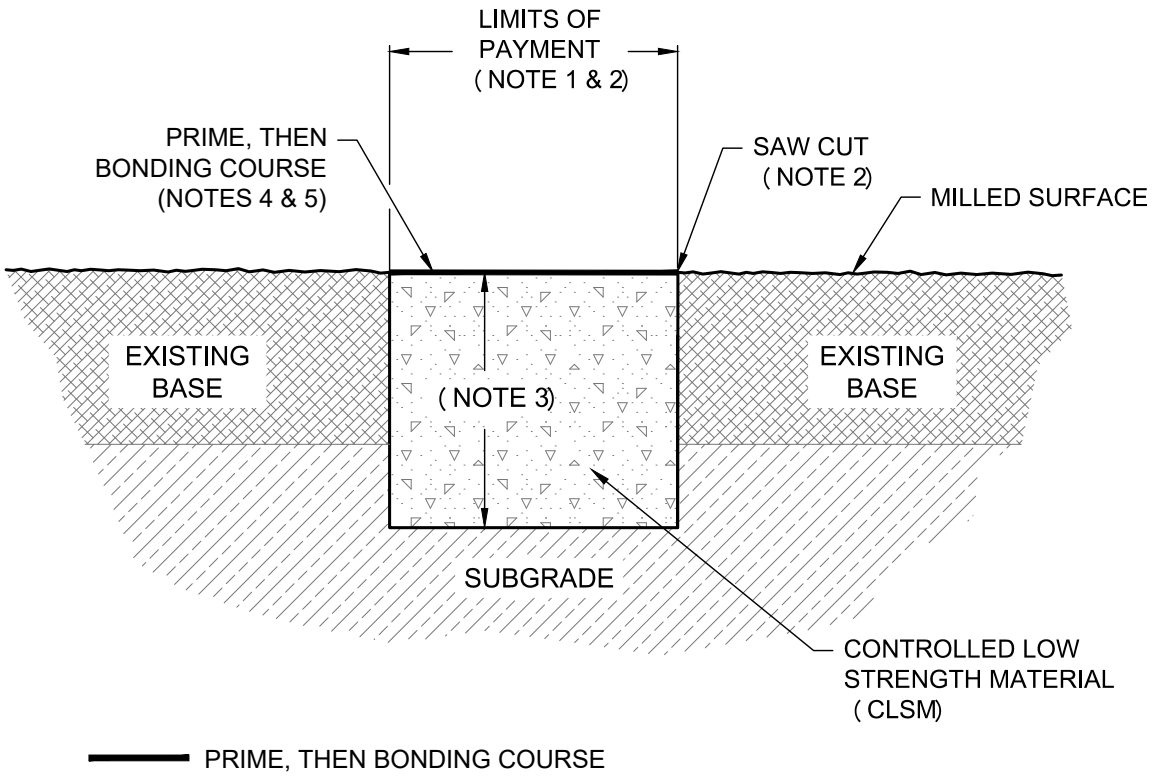

NOTES:

1. MINIMUM BASE REPAIR DIMENSIONS (EXTENTS OF SAW CUT) SHALL BE 5 FT. BY 10 FT., WITH THE 10 FOOT DIMENSION IN THE DIRECTION OF TRAVEL. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

2. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. SAW CUTS SHALL BE ON LANE LINES OR BE BETWEEN WHEEL PATHS. IF ORIGINAL BASE FAILURE PAYMENT LIMITS IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

3. CONTROLLED LOW STRENGTH MATERIAL (CLSM):
   CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 14 IN.
   CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 12 IN.
   CLASS C LOCAL STREET = 10 IN.

4. PRIME OF RC-2 OR AE-P OR PRE-APPROVED EQUAL SHALL BE APPLIED TO SWEPT SURFACE AND ALLOWED TO CURE.

5. HMAC AND BONDING COURSE SHALL BE PLACED FOLLOWING COMPLETION AND CURE OF BASE REPAIR. BONDING COURSE SHALL BE APPLIED TO CLEAN SURFACE AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

BASE FAILURE REPAIR WITH CONTROLLED LOW STRENGTH MATERIAL AFTER MILLING (MILL & OVERLAY PROJECTS)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
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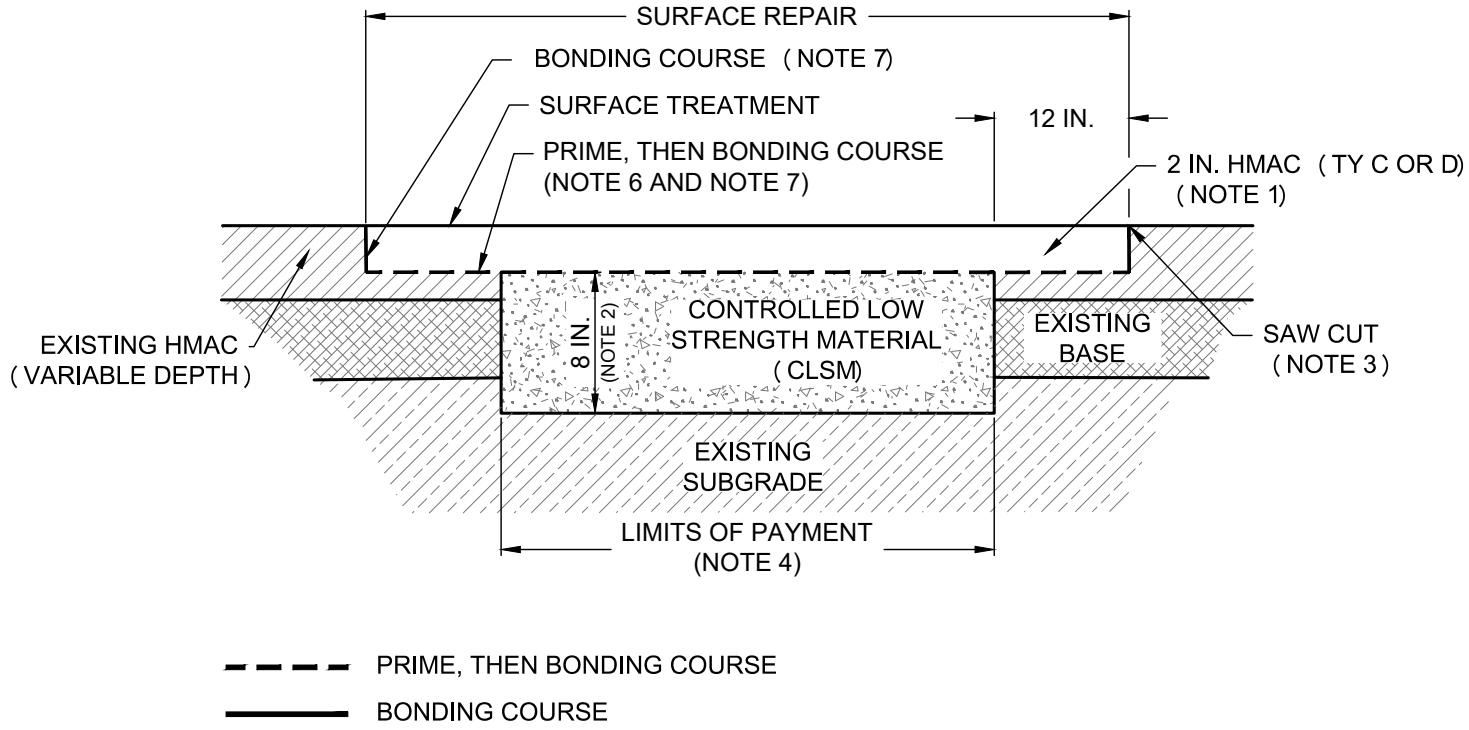

NOTES:

1. HMAC AND BONDING COURSE SHALL BE PLACED FOLLOWING COMPLETION AND CURE OF BASE REPAIR. BONDING COURSE SHALL BE APPLIED TO CLEAN SURFACE AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

2. AVERAGE DEPTH OF BASE REPAIR IS 8 IN.

3. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

4. MINIMUM BASE REPAIR DIMENSIONS (LIMITS OF PAYMENT) SHALL BE 5 FT. X 8 FT., WITH THE 8 FT. DIMENSION IN THE DIRECTION OF TRAVEL. SURFACE REPAIR (PRIME, BONDING, AND HMAC) ARE SUBSIDIARY TO BASE FAILURE REPAIR.

5. IF BASE FAILURE PAYMENT LIMIT IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

6. PRIME OF RC-2 OR AE-P OR PRE-APPROVED EQUAL SHALL BE APPLIED TO SWEPT SURFACE AND ALLOWED TO CURE.

7. BONDING COURSE SHALL BE AE-P OR PRE-APPROVED EQUAL AND ALLOWED TO BREAK.

BASE FAILURE REPAIR WITH CONTROLLED LOW STRENGTH MATERIAL (STREET PRESERVATION PROJECTS)

(NO SCALE)

CITY OF WACO

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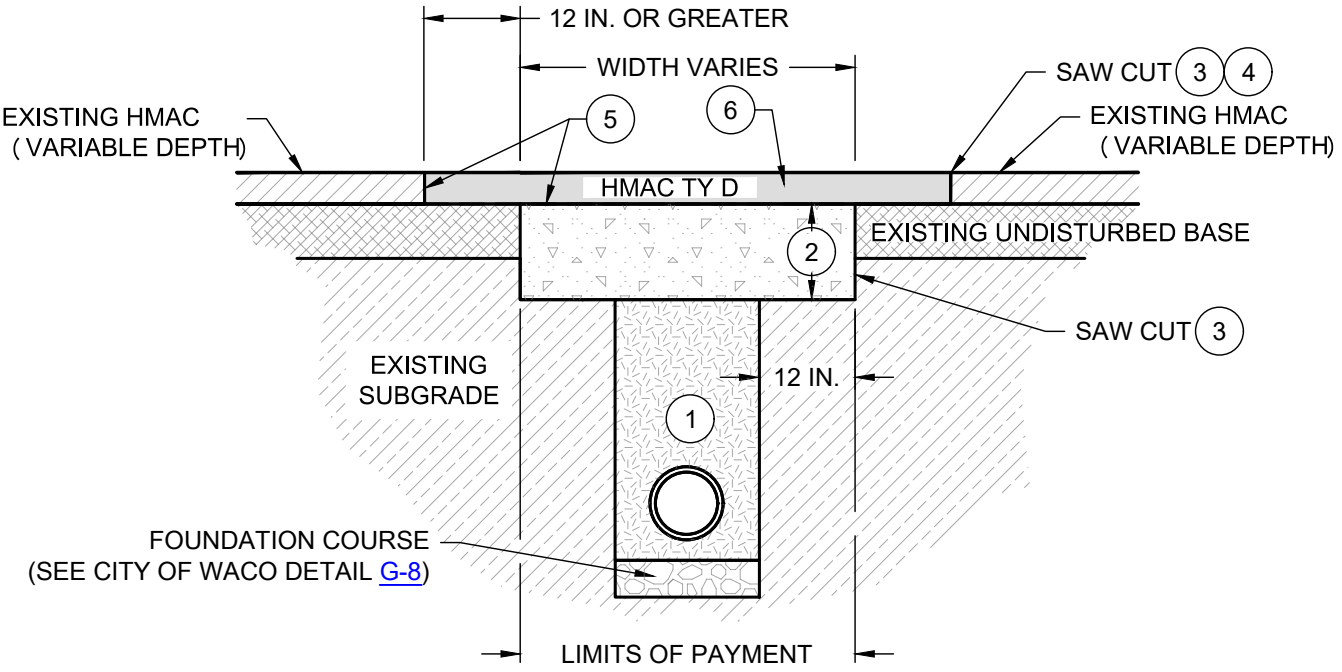
ST-29



NOTES:

(1) SEE G-7, G-8, G-9, AND G-10 FOR MATERIAL REQUIREMENTS AND INSTALLATION.

(2) CONCRETE - MINIMUM 2,000 PSI.
CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 12 IN.
CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 10 IN.
CLASS C LOCAL STREET = 8 IN.

(3) SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF TRENCH TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

(4) SEE ST-33 AND/OR ST-34 FOR LIMITS OF THIS SAW CUTTING.

(5) BONDING COURSE OF AE-P OR PRE-APPROVED EQUAL SHALL BE APPLIED TO SWEPT SURFACE AND ALLOWED TO BREAK.

(6) CLASS A INDUSTRIAL COLLECTOR & ARTERIAL: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 3 IN. MINIMUM (GREATER THAN 3 IN. REQUIRES MORE THAN 1 LIFT).
CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 2 IN. MINIMUM.
CLASS C LOCAL STREET: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 2 IN. MINIMUM.

(7) IF BASE REPLACEMENT IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF CONCRETE AND SURFACE SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

CLASS A, B & C (ASPHALTIC) PAVEMENT REPLACEMENT, TRENCH BACKFILL, & EMBEDMENT

(NO SCALE)

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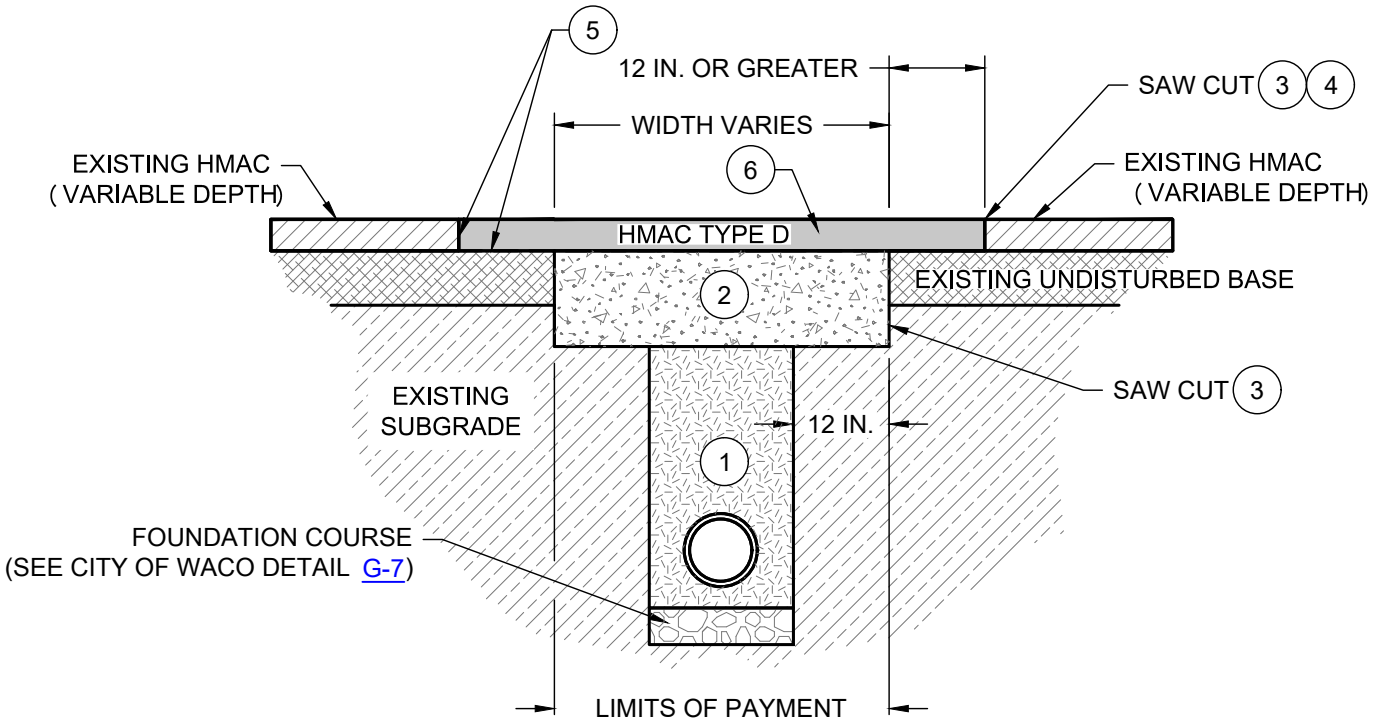
ST-30



NOTES:

(1) SEE G-7, G-8, G-9, AND G-10 FOR MATERIAL REQUIREMENTS AND FOR INSTALLATION.

(2) CONTROLLED LOW STRENGTH MATERIAL (CLSM).
CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 14 IN.
CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 12 IN.
CLASS C LOCAL STREET = 10 IN.

(3) SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF TRENCH TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

(4) SEE ST-33 AND/OR ST-34 FOR LIMITS OF THIS SAW CUTTING.

(5) PRIME OF RC-2 OR AE-P OR PRE-APPROVED EQUAL SHALL BE APPLIED TO SWEPT SURFACE AND ALLOWED TO CURE. BONDING COURSE SHALL BE AE-P OR PRE-APPROVED EQUAL AND ALLOWED TO BREAK

(6) CLASS A INDUSTRIAL COLLECTOR & ARTERIAL: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 3 IN. MINIMUM (GREATER THAN 3 IN. REQUIRES MORE THAN 1 LIFT).
CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 2 IN. MINIMUM.
CLASS C LOCAL STREET: HMAC (TYPE D) - MATCH EXISTING SURFACE THICKNESS WITH 2 IN. MINIMUM.

(7) IF BASE REPLACEMENT IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF CLSM AND SURFACE SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

TRENCH BACKFILL WITH CONTROLLED LOW STRENGTH MATERIAL AND EMBEDMENT

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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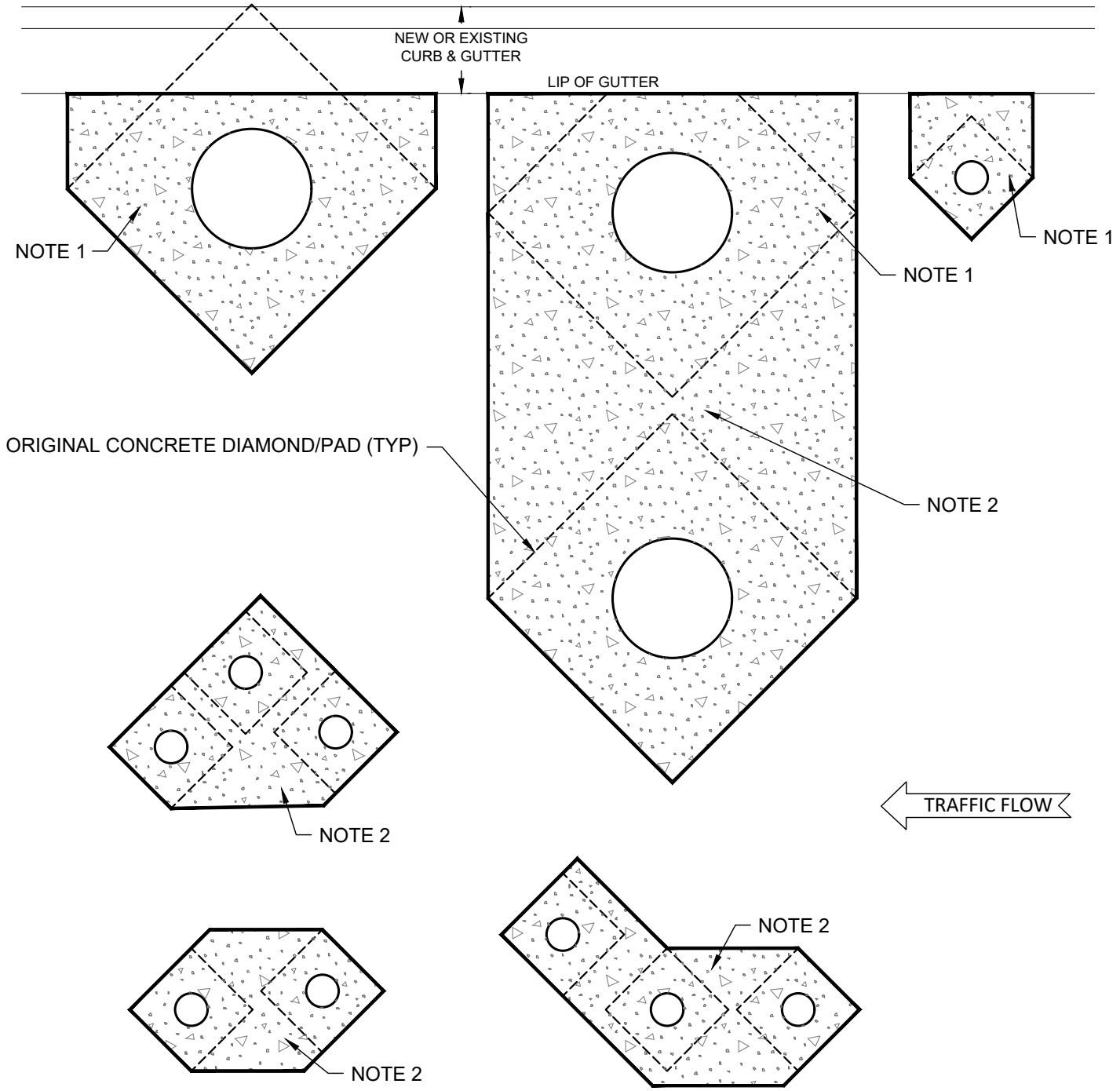

NOTES:

1. THIS METHOD SHALL BE USED WHEN THE CONCRETE VALVE/MANHOLE PAD/DIAMOND IS LESS THAN 2 FEET FROM THE LIP OF THE CONCRETE GUTTER.
2. IF POINT ON PERIMETER OF CONCRETE VALVE/MANHOLE PAD/DIAMOND IS WITHIN 2 FEET OF AN ADJACENT CONCRETE VALVE/MANHOLE PAD/DIAMOND COMBINE CONCRETE VALVE/MANHOLE PADS/CONCRETE DIAMONDS.
3. REFERENCE ST-11, ST-12, ST-13, ST-14, W-35, W-36, S-21, AND S-22 FOR ADDITIONAL DETAILS.

CONCRETE PAD MODIFICATION EXAMPLES

(SHALL BE SHOWN IN PLANS CONSISTENT WITH THE STANDARD DETAILS)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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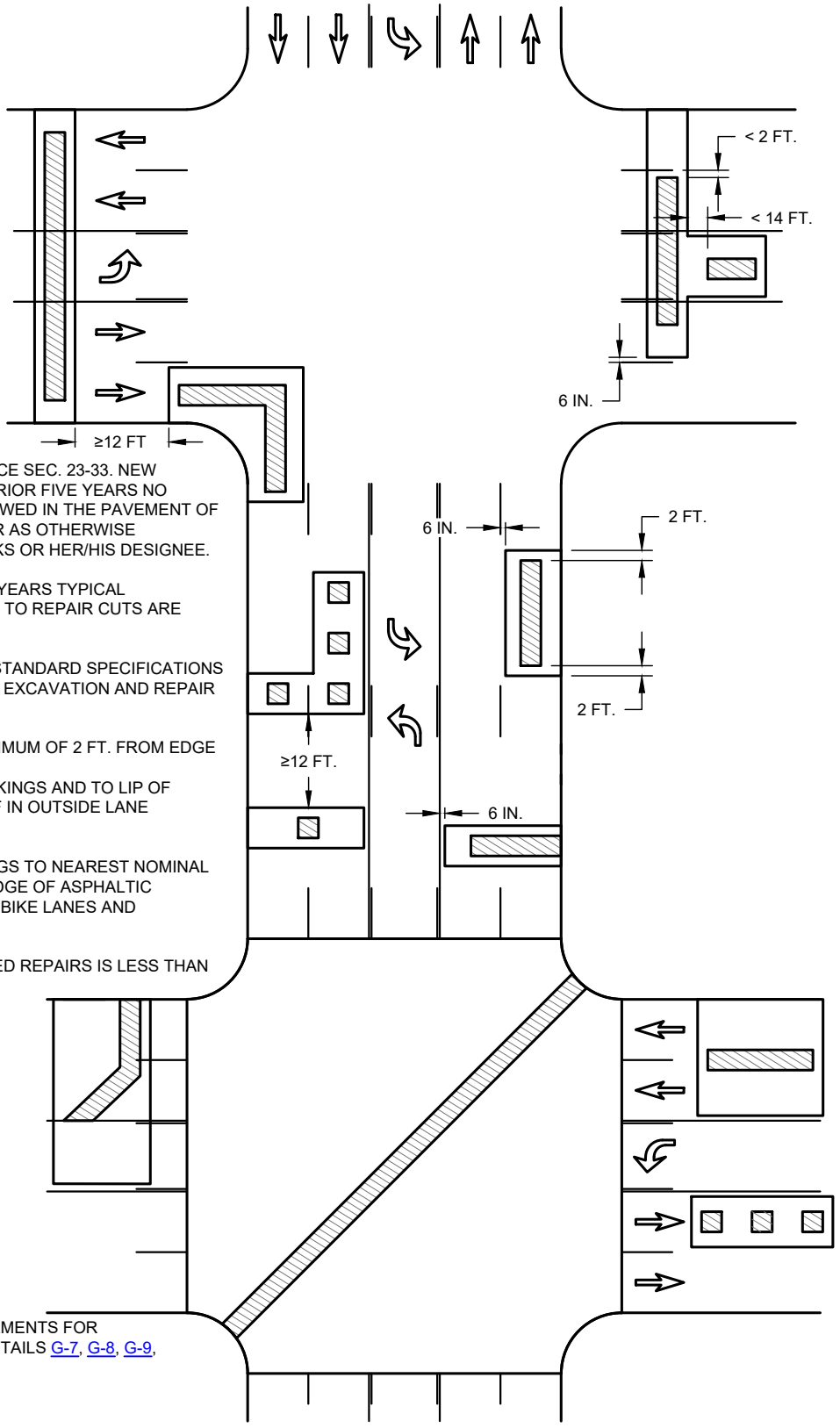
ST-32



NOTES:

1. IN ACCORDANCE WITH CITY CODE OF ORDINANCE SEC. 23-33. NEW STREETS, FOR STREETS IMPROVED FOR THE PRIOR FIVE YEARS NO RIGHT-OF-WAY CONSTRUCTION SHALL BE ALLOWED IN THE PAVEMENT OF THESE STREETS EXCEPT IN AN EMERGENCY OR AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR HER/HIS DESIGNEE.

2. FOR STREETS IMPROVED FOR THE PRIOR FIVE YEARS TYPICAL RESTORATION LIMITS FOR ASPHALT PAVEMENT TO REPAIR CUTS ARE SHOWN.

3. WORK SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.3: STREET CUT EXCAVATION AND REPAIR STANDARDS.

4. OFFSET OF PAVEMENT REPAIR SHALL BE A MINIMUM OF 2 FT. FROM EDGE OF UTILITY STREET CUT AND
   - 6 IN. FROM LONGITUDINAL PAVEMENT MARKINGS AND TO LIP OF GUTTER/EDGE OF ASPHALTIC PAVEMENT IF IN OUTSIDE LANE INCLUDING BIKE LANES AND SHOULDERS.
     OR
   - ON STREETS WITHOUT PAVEMENT MARKINGS TO NEAREST NOMINAL LANE LINE/JOINT AND TO LIP OF GUTTER/EDGE OF ASPHALTIC PAVEMENT IF IN OUTSIDE LANE INCLUDING BIKE LANES AND SHOULDERS.

5. IF LONGITUDINAL DISTANCE BETWEEN REQUIRED REPAIRS IS LESS THAN 12 FT. THEN REPAIRS SHALL BE COMBINED.

UTILITY STREET CUT

CITY STANDARD RESTORATION REQUIREMENTS FOR ASPHALT PAVEMENT. SEE STANDARD DETAILS G-7, G-8, G-9, G-10, ST-1, ST-30 AND ST-31

ASPHALT STREET CUT REPAIR REQUIREMENTS FOR STREETS IMPROVED FOR THE PRIOR FIVE YEARS

(NO SCALE)

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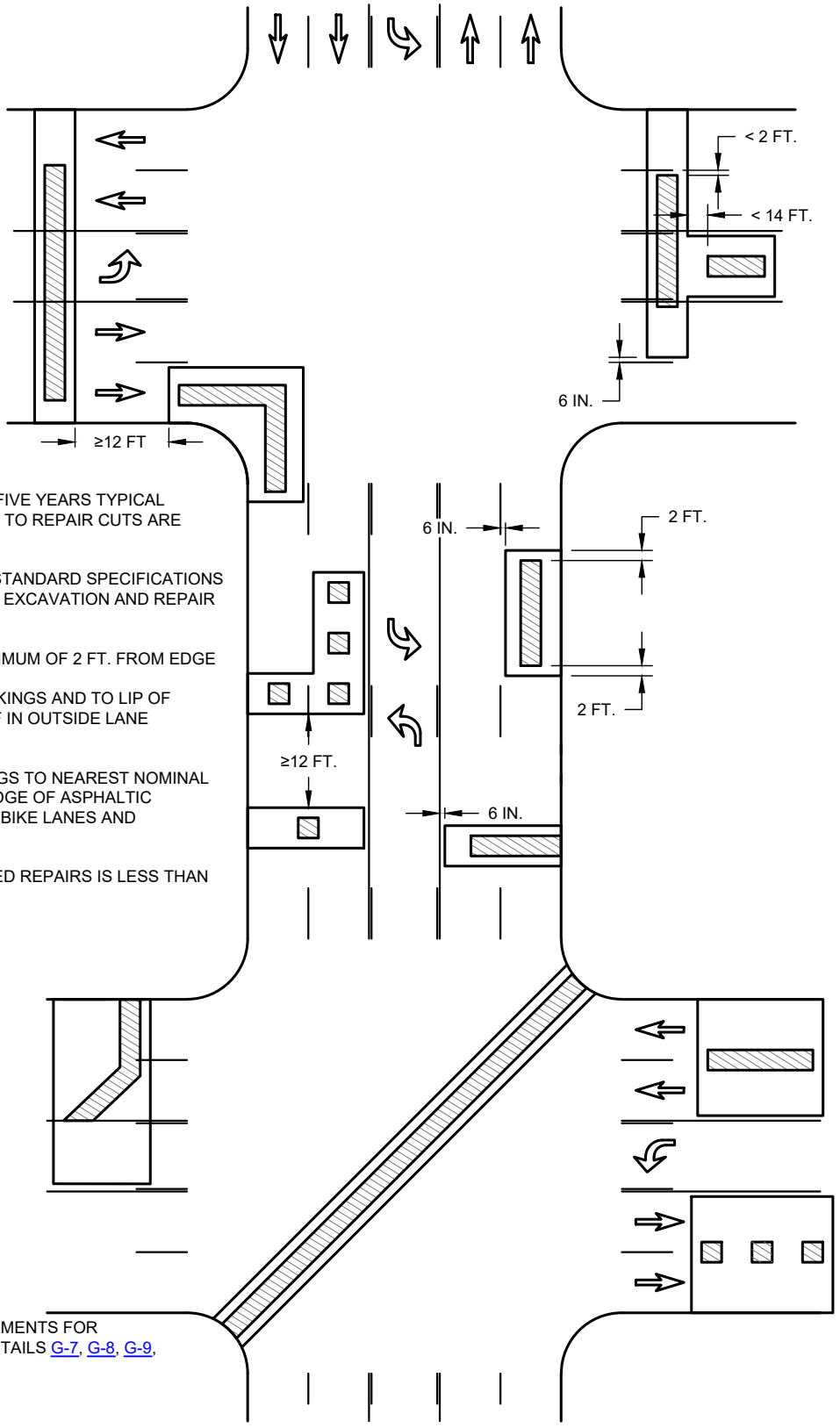
ST-33



NOTES:

1. FOR STREETS NOT IMPROVED FOR THE PRIOR FIVE YEARS TYPICAL RESTORATION LIMITS FOR ASPHALT PAVEMENT TO REPAIR CUTS ARE SHOWN.

2. WORK SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.3: STREET CUT EXCAVATION AND REPAIR STANDARDS.

3. OFFSET OF PAVEMENT REPAIR SHALL BE A MINIMUM OF 2 FT. FROM EDGE OF UTILITY STREET CUT AND
   - 6 IN. FROM LONGITUDINAL PAVEMENT MARKINGS AND TO LIP OF GUTTER/EDGE OF ASPHALTIC PAVEMENT IF IN OUTSIDE LANE INCLUDING BIKE LANES AND SHOULDERS.
     OR
   - ON STREETS WITHOUT PAVEMENT MARKINGS TO NEAREST NOMINAL LANE LINE/JOINT AND TO LIP OF GUTTER/EDGE OF ASPHALTIC PAVEMENT IF IN OUTSIDE LANE INCLUDING BIKE LANES AND SHOULDERS.

4. IF LONGITUDINAL DISTANCE BETWEEN REQUIRED REPAIRS IS LESS THAN 12 FT. THEN REPAIRS SHALL BE COMBINED.

UTILITY STREET CUT

CITY STANDARD RESTORATION REQUIREMENTS FOR ASPHALT PAVEMENT. SEE STANDARD DETAILS G-7, G-8, G-9, G-10, ST-1, ST-30 AND ST-31

ASPHALT STREET CUT REPAIR REQUIREMENTS FOR STREETS NOT IMPROVED FOR THE PRIOR FIVE YEARS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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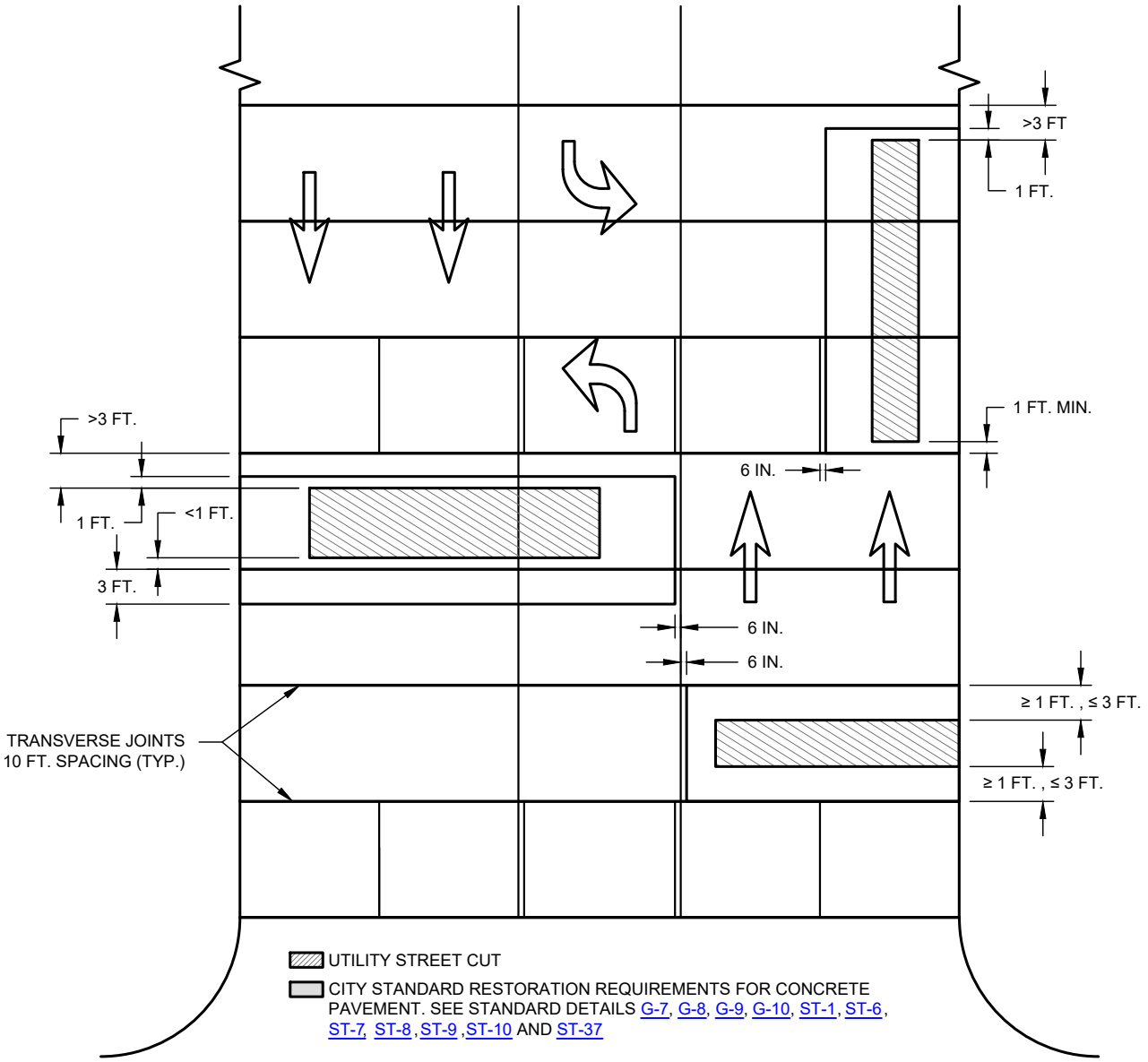
ST-34



NOTES:

1. IN ACCORDANCE WITH CITY CODE OF ORDINANCE SEC. 23-33. NEW STREETS, FOR STREETS IMPROVED FOR THE PRIOR FIVE YEARS NO RIGHT-OF-WAY CONSTRUCTION SHALL BE ALLOWED IN THE PAVEMENT OF THESE STREETS EXCEPT IN AN EMERGENCY OR AS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS OR HER/HIS DESIGNEE.

2. WORK SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.3: STREET CUT EXCAVATION AND REPAIR STANDARDS.

3. LONGITUDINAL PAVEMENT REPAIR:
   - LONGITUDINAL PAVEMENT REPAIR SHALL BE A MINIMUM OF 1 FT. FROM EDGE OF UTILITY STREET CUT.
   - IF LONGITUDINAL PAVEMENT REPAIR IS WITHIN 3 FT. OF TRANSVERSE JOINT OR APPURTENANCE (MANHOLE, VALVE, ETCETERA), THEN EXTEND PAVEMENT REPAIR TO TRANSVERSE JOINT OR 3 FT. PAST APPURTENANCE.
   - IF LONGITUDINAL PAVEMENT REPAIR IS LESS THAN 1 FT. FROM TRANSVERSE JOINT OR APPURTENANCE, THEN EXTEND PAVEMENT REPAIR 3 FT. PAST TRANSVERSE JOINT OR APPURTENANCE.

4. TRANSVERSE PAVEMENT REPAIR:
   - OFFSET OF TRANSVERSE PAVEMENT REPAIR SHALL BE 6 IN. FROM LONGITUDINAL PAVEMENT MARKINGS UNLESS LONGITUDINAL JOINT EXIST AS LOCATION FOR WHICH THEN PAVEMENT REPAIR SHALL BE TO LONGITUDINAL JOINT AND PAVEMENT MARKINGS BE REPLACED. TRANSVERSE PAVEMENT REPAIR SHALL ALSO ALWAYS BE A MINIMUM OF 1 FT. FROM EDGE OF UTILITY STREET CUT.
   - ON STREETS WITHOUT PAVEMENT MARKINGS PAVEMENT REPAIR SHALL BE TO NEAREST NOMINAL LANE LINE/JOINT A MINIMUM OF 1 FT. FROM EDGE OF UTILITY STREET CUT.

CONCRETE STREET CUT REPAIR REQUIREMENTS

(NO SCALE)

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ST-35

NOTES:

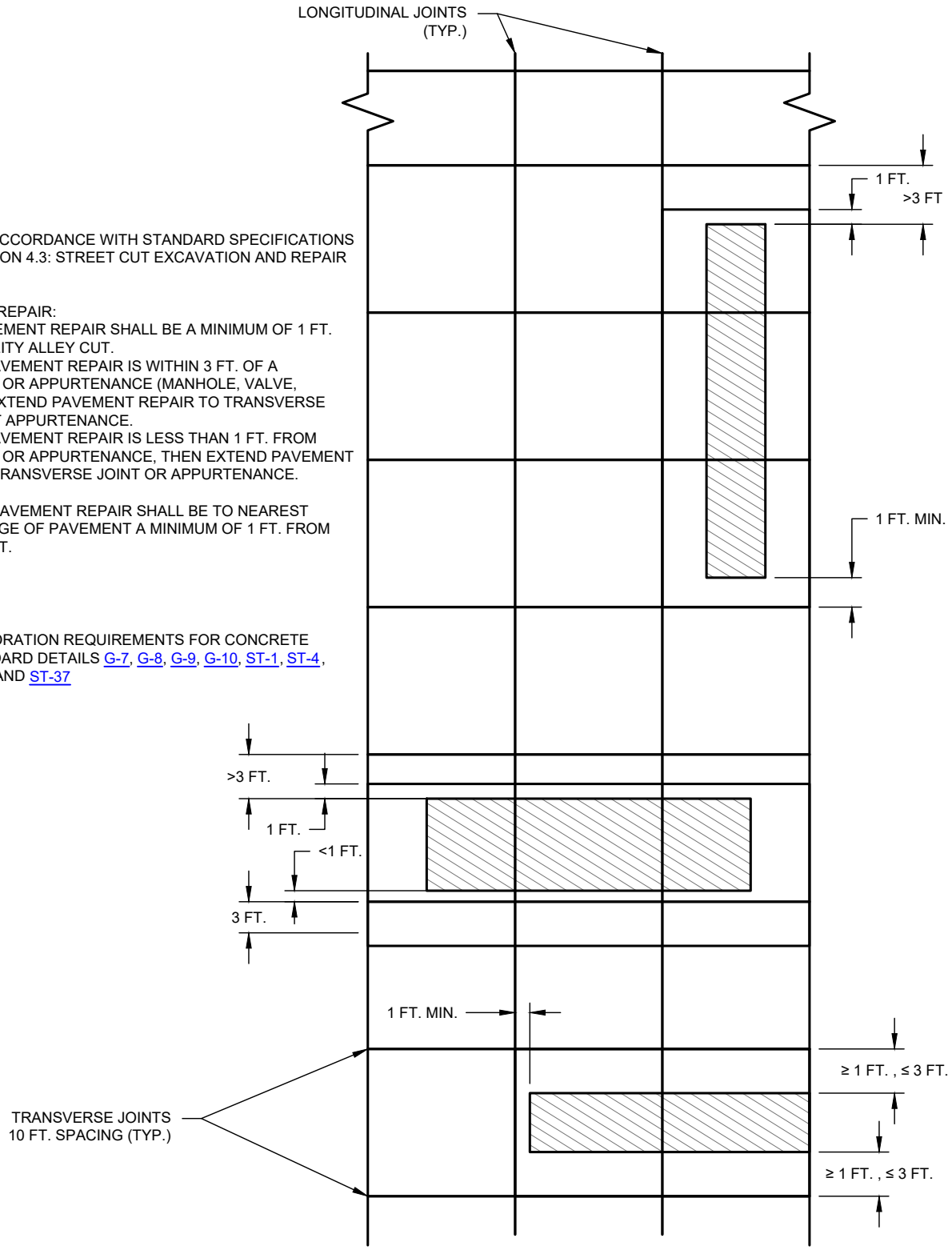
1. WORK SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.3: STREET CUT EXCAVATION AND REPAIR STANDARDS.

2. LONGITUDINAL PAVEMENT REPAIR:
   - LONGITUDINAL PAVEMENT REPAIR SHALL BE A MINIMUM OF 1 FT. FROM EDGE OF UTILITY ALLEY CUT.
   - IF LONGITUDINAL PAVEMENT REPAIR IS WITHIN 3 FT. OF A TRANSVERSE JOINT OR APPURTENANCE (MANHOLE, VALVE, ETCETERA), THEN EXTEND PAVEMENT REPAIR TO TRANSVERSE JOINT OR 3 FT. PAST APPURTENANCE.
   - IF LONGITUDINAL PAVEMENT REPAIR IS LESS THAN 1 FT. FROM TRANSVERSE JOINT OR APPURTENANCE, THEN EXTEND PAVEMENT REPAIR 3 FT. PAST TRANSVERSE JOINT OR APPURTENANCE.

3. TRANSVERSE OFFSET OF PAVEMENT REPAIR SHALL BE TO NEAREST LONGITUDINAL JOINT(S)/EDGE OF PAVEMENT A MINIMUM OF 1 FT. FROM EDGE OF UTILITY ALLEY CUT.

UTILITY ALLEY CUT

CITY STANDARD RESTORATION REQUIREMENTS FOR CONCRETE PAVEMENT. SEE STANDARD DETAILS G-7, G-8, G-9, G-10, ST-1, ST-4, ST-6, ST-8, ST-9, ST-10 AND ST-37



CONCRETE ALLEY CUT REPAIR REQUIREMENTS

(NO SCALE)

CITY OF WACO

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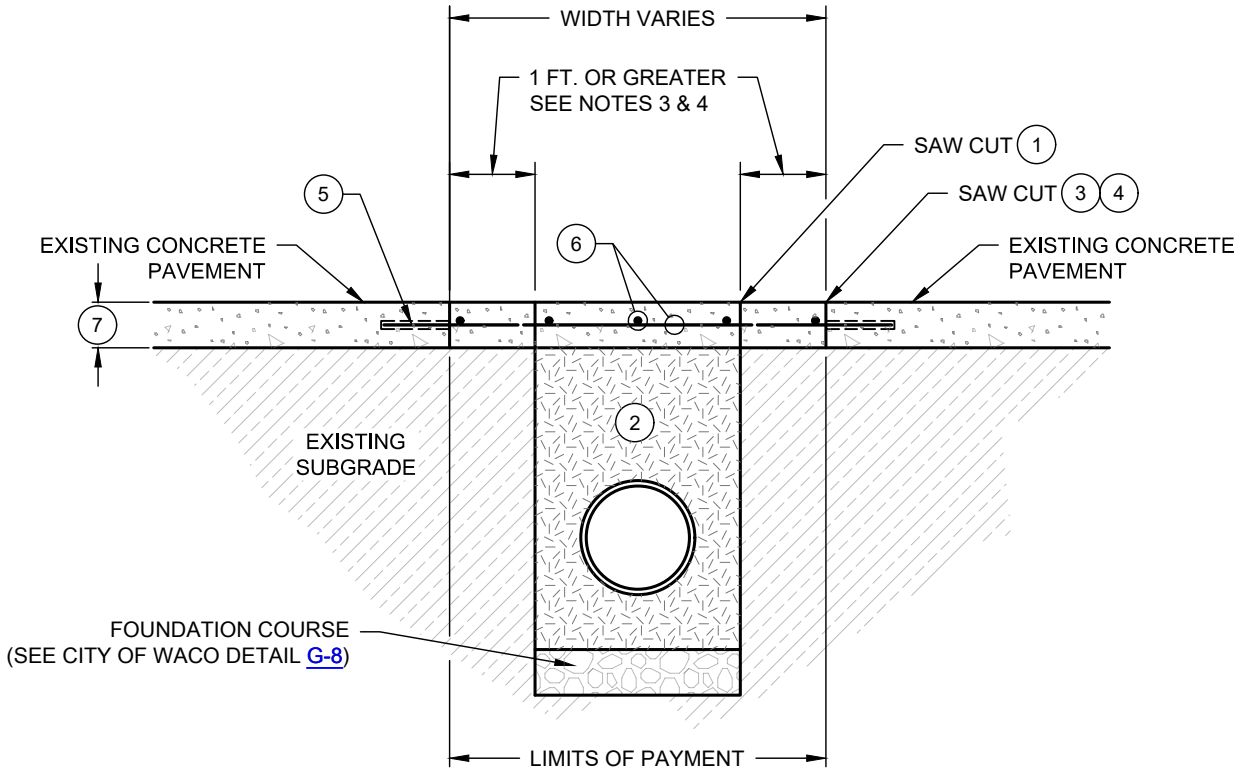

NOTES:

1. SAW CUT EDGE OF EXISTING PAVEMENT FULL DEPTH OF CONCRETE ON ALL SIDES OF PROPOSED TRENCH TO PRODUCE A SMOOTH AND EVEN EDGE FOR TRENCH EXCAVATION. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC.
2. SEE G-7, G-8, G-9, AND G-10 FOR MATERIALS REQUIREMENTS AND INSTALLATION.
3. UPON COMPLETION OF PLACEMENT OF MATERIAL IN NOTE 2, SAW CUT EXISTING PAVEMENT FULL DEPTH OF CONCRETE TO PRODUCE A SMOOTH AND EVEN EDGE FOR CONCRETE PAVEMENT REPLACEMENT. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCH WITH ANGLED SIDES AND IRREGULAR SHAPES.
4. SEE ST-35 AND/OR ST-36 FOR LIMITS OF THIS SAW CUTTING.
5. #5 X 24 IN. DEFORMED DOWELS AT 12 IN. O.C. PLACED IN 3/4 IN. DRILLED HOLES BLOWN CLEAN. COAT DOWELS WITH EPOXY RESIN, FILL HOLES WITH EXPOXY RESIN, AND SUPPORT DOWELS IN CENTER OF HOLE UNTIL EPOXY HAS CURED.
6. #4 REBARS @ 12 IN. OCEW
7. CONCRETE FOR PAVING SHALL BE IN ACCORDANCE WITH ST-1. THICKNESS SHALL BE 8 IN. OR MATCH EXISTING CONCRETE PAVEMENT THICKNESS WHICHEVER IS GREATER.

CLASS D (CONCRETE) PAVEMENT REPLACEMENT, TRENCH BACKFILL AND EMBEDMENT

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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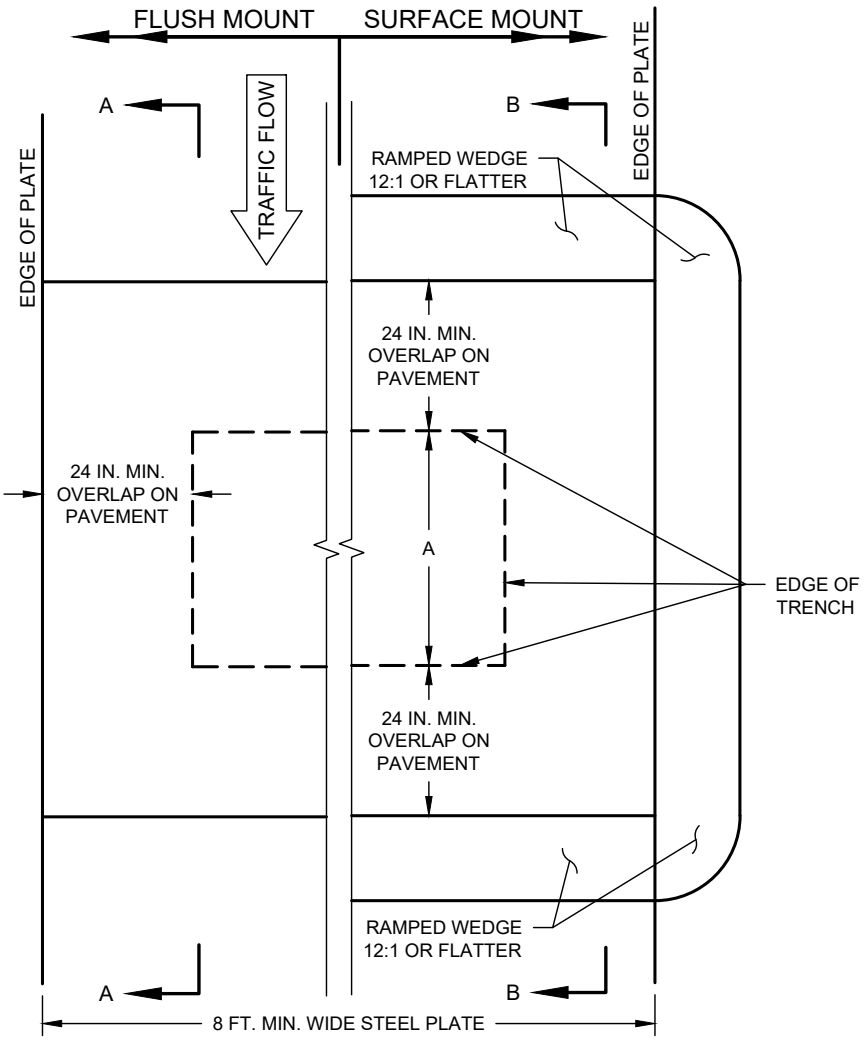
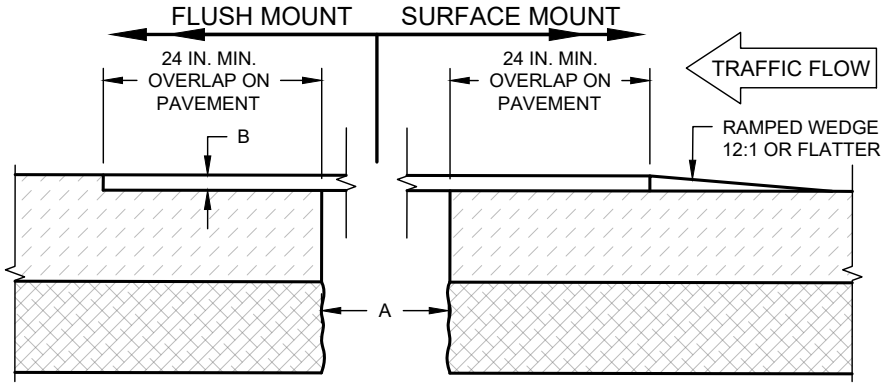
ST-37



PLAN VIEW



SECTION A-A **SECTION B-B**

NOTES:

1. FOR TRENCH WIDTHS EQUAL TO OR GREATER THAN 5 FT. STEEL PLATE AND SUPPORT SYSTEM SHALL BE DESIGNED, SEALED AND SIGNED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. DESIGN SHALL BE APPROVED BY THE CITY PRIOR TO USE.
2. STEEL PLATES SHALL CONFORM TO ASTM A36 STANDARDS.
3. ADEQUATELY SHORE THE TRENCH TO SUPPORT THE BRIDGING AND TRAFFIC LOADS.
4. PLATES SHALL BE PLACED PARALLEL TO TRAFFIC FLOW.
5. FINAL PLATE CONFIGURATION SHALL OVERLAP ALL EDGES OF TRENCH A MINIMUM OF 24 IN. IF APPURTENANCE SUCH AS LIP OF GUTTER IS ENCOUNTERED, THEN EDGE OF PLATE SHALL BE PLACED FLUSH TO VERTICAL PROJECTION OF EDGE OF APPURTENANCE FOR SURFACE MOUNT METHOD AND DESIGN BE SUBMITTED BY ENGINEER FOR FLUSH MOUNT.
6. INSTALL STEEL PLATE BRIDGING AND SHORING USING THE APPROPRIATE METHOD BELOW:

   FLUSH MOUNT: FOR SPEEDS GREATER THAN 45 MPH, AND AT CONTRACTOR'S OPTION FOR SPEEDS 45 MPH OR LESS, SAWCUT EDGES AND MILL THE PAVEMENT TO A DEPTH EQUAL TO THE THICKNESS OF THE PLATE AND TO A WIDTH AND LENGTH EQUAL TO THE DIMENSION OF THE PLATE. BUTT SUBSEQUENT PLATES TO EACH OTHER AND WELD 2 IN. IN LENGTH SPACED AT 18 IN. MAX. APART. MAXIMUM VERTICAL DIFFERENCE BETWEEN EDGE OF STEEL PLATE AND ADJACENT EDGE OF TOP OF PAVEMENT SHALL BE 1/2 IN. MAXIMUM HORIZONTAL GAP BETWEEN EDGE OF PLATE AND VERTICAL EDGE OF SAW CUT SHALL BE 1 IN. WITH ANY WIDTH EXCEEDING 1/2 IN. FILLED WITH HOT-MIX ASPHALT CONCRETE OR COLD-MIX.

   SURFACE MOUNT: FOR SPEEDS 45 MPH OR LESS, PLACE THE PLATE ON THE ROADWAY AND BUTT SUBSEQUENT PLATES TO EACH OTHER AND WELD 2 IN. IN LENGTH SPACED AT 18 IN. MAX. APART. USE COMPACTED HOT-MIX ASPHALT CONCRETE OR COLD-MIX ASPHALT CONCRETE TO FORM A RAMP WEDGE WITH A MAXIMUM SLOPE OF 12:1 TO COVER ALL TRAFFIC FLOW EDGES OF STEEL PLATES.
7. FOR TRENCHES RUNNING NON-PERPENDICULAR TO THE FLOW OF TRAFFIC, PERIMETER OVERLAP REQUIREMENTS REMAIN AS PRESENTED FOR BOTH FLUSH MOUNT AND SURFACE MOUNT.
8. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF STEEL PLATES, SHORING, ASPHALT CONCRETE RAMPS, AND ENSURING THEY MEET ALL MINIMUM SPECIFICATIONS. DEFORMATIONS OF ANY KIND ARE NOT ACCEPTABLE ON STEEL PLATES. EXAMPLES OF DEFORMATIONS INCLUDE, BUT ARE NOT LIMITED TO, ANY OF THE FOLLOWING: CLIPS, CHAINS, ATTACHMENTS, WELDMENTS, AND SURFACE IRREGULARITIES.

TRENCH WIDTH DIMENSION A	MINIMUM STEEL PLATE THICKNESS DIMENSION B
< 5 FT.	1 IN.
≥ 5 FT.	SEE NOTE #1

MINIMUM DIMENSIONS OF PLATE SHALL BE 8 FT. WIDE X (A + 4 FT.) LONG

STEEL PLATE DETAILS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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1	MODIFY DETAIL NAME	MZ	11/15/2024
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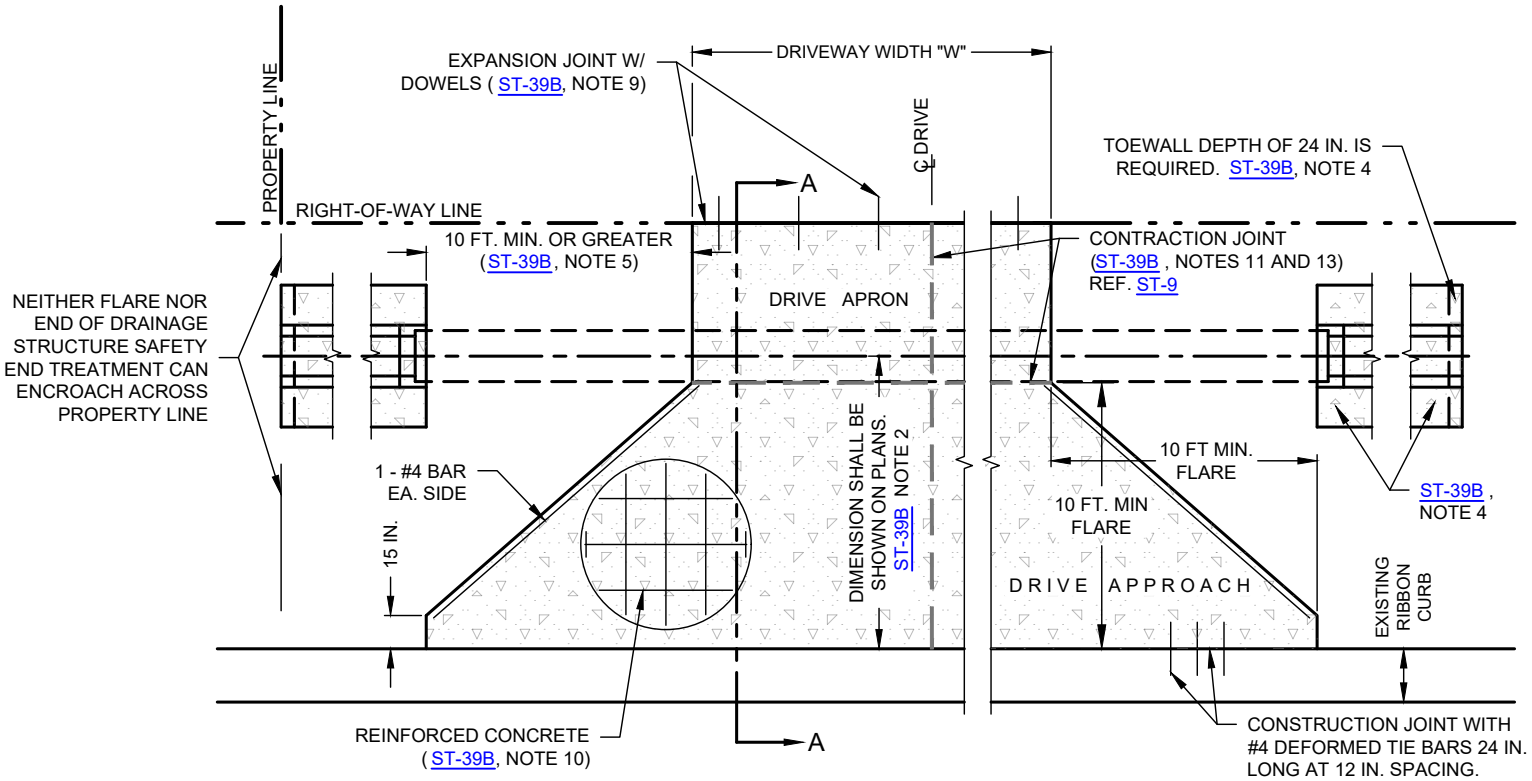
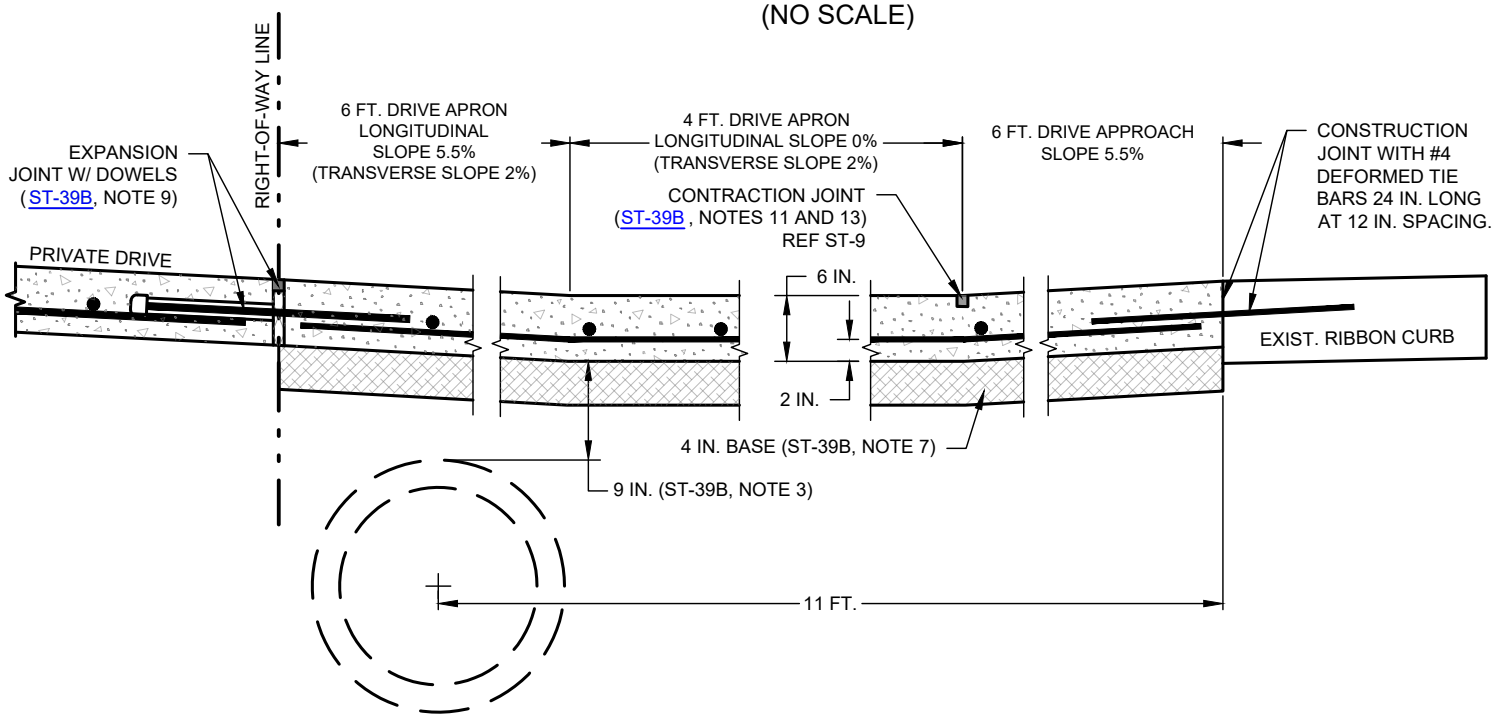
ST-38



PLAN VIEW
(NO SCALE)



SECTION A - NEW APPROACH ON EXISTING RIBBON CURB
(NO SCALE)

RIBBON CURB RESIDENTIAL DRIVE APPROACH

(NO SCALE)

SEE ST-39B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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04/19/2024

ST-39A

RIBBON CURB RESIDENTIAL DRIVE APPROACH GENERAL NOTES

NOTES:

1. NUMBER AND SIZE OF REINFORCED CONCRETE PIPES CLASS III SHALL BE DESIGNED AND SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL*. THE MINIMUM PIPE DIAMETER SHALL BE 18 IN. THE LONGITUDINAL SLOPE OF THE PIPE SHALL MATCH THE CHANNEL SLOPE WITH A MINIMUM SLOPE OF 0.5%.

2. DRAINAGE PIPE SHALL BE PLACED IN THE DITCH AS FAR FROM THE OUTSIDE EDGE OF THE RIBBON CURB AS PRACTICAL AND THIS DIMENSION FROM OUTSIDE EDGE OF RIBBON CURB TO THE CENTER OF PIPE(S) SHOWN ON THE PLANS. FOR SINGLE PIPE INSTALLATION THE MINIMUM DISTANCE IS 11 FT.

3. THE PIPE SHALL HAVE MINIMUM COVER OF 9 IN. MEASURED FROM BOTTOM OF CONCRETE DRIVE TO TOP OF PIPE.

4. APPROPRIATE SAFETY END TREATMENTS OF 6:1 SLOPE ARE REQUIRED. PROVIDE PRECAST TYPE II SET'S PSET-SP OR PSET-RP, AND CAST-IN-PLACE CONCRETE RIPRAP APRONS PSET-RR. TOEWALL DEPTH OF 24 IN. IS REQUIRED UPSTREAM AND DOWNSTREAM. CAST-IN-PLACE TOEWALL WIDTH SHALL BE 9 INCHES. SYNTHETIC FIBERS MAY NOT BE USED IN LIEU OF STEEL REINFORCING IN RIPRAP CONCRETE.

5. LENGTH OF PIPE SHALL BE DETERMINED THROUGH 6:1 SLOPE INTERCEPT PROJECTED FROM EDGE OF DRIVE APRON TO TOP OF PIPE AT SAFETY END TREATMENT ON UPSTREAM AND DOWNSTREAM SIDES WITH MINIMUM DIMENSION FROM EDGE OF DRIVE APRON TO INSIDE OF SET HEADWALL 10 FT. OR GREATER.

6. DRIVE APPROACH TRANSVERSE SLOPE SHALL MATCH THE LONGITUDINAL SLOPE OF THE STREET AT THE OUTSIDE EDGE OF THE RIBBON CURB AND THEN TRANSITION TO 2% SLOPE IN THE DIRECTION OF DRAINAGE OF THE DITCH AT THE DRIVE APRON 4 FT. SECTION AND CONTINUE AT THIS CROSS SLOPE TO THE PROPERTY LINE.

7. 4 IN. BASE MATERIAL MAY BE ONE OF THE FOLLOWING SELECTED FOR THE ENTIRE PROJECT AND COMPACTED IN ACCORDANCE WITH G-1C:
   A. TYPE "A" MATERIAL PER STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 4.2 EXCAVATION AND BACKFILL PART 2: PRODUCT A. MATERIALS 3. TRENCH BACKFILL A. TYPE "A." MATERIAL
   B. RECYCLED CRUSHED CONCRETE TxDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM 247 FLEXIBLE BASE TYPE D GRADE 1-2 EXCLUDING TYPE A MATERIAL, WITH MINIMUM P.I. OF FOUR
   C. PORTLAND CEMENT TREATED BASE (AFTER COMPACTION) COVERED BY 10 MIL. POLYETHYLENE BOND BREAKER

8. REQUIRED DRIVE APPROACH AND DRIVE APRON SLOPES SHALL BE ADHERED TO. ANY GRADING NECESSARY TO MATCH THE PROPOSED DRIVEWAY ELEVATION AT THE RIGHT-OF-WAY LINE SHALL BE DONE ON THE PRIVATE SIDE.

9. EXPANSION JOINT WITH 3/4 IN. Ø X 24 IN. LONG SMOOTH DOWEL BARS WITH 3/4 IN. Ø PVC PIPE SLEEVE WITH CAPPED END AT 36 IN. OC. (REF ST-9)

10. 6 IN. REINFORCED CONCRETE WITH #4 BARS AT 18 IN. OCEW (CONCRETE CHAIRS REQUIRED). CONTINUOUS THROUGH DRIVE APPROACH AND DRIVE APRON.

11. CONTRACTION JOINT MAY BE TOOLED. SEE ST-9 FOR DETAILS.

12. A LONGITUDINAL CONTRACTION JOINT SHALL BE PLACED AT CENTERLINE OF ALL DRIVEWAYS. FOR DRIVEWAYS WIDER THAN 20 FEET ADDITIONAL LONGITUDINAL CONTRACTION JOINTS SHALL BE PLACED, SPACED EQUALLY AT 10 FT. MAXIMUM SPACING.

13. IF DISTANCE BETWEEN INITIALLY REQUIRED TRANSVERSE JOINTS EXCEEDS 10 FT. THEN ADDITIONAL CONTRACTION JOINT(S) SHALL BE PLACED TO ENSURE DISTANCE BETWEEN TRANSVERSE JOINTS DOES NOT EXCEED 10 FEET. THESE ADDITIONALLY REQUIRED CONTRACTION JOINTS SHALL BE PLACED TO PROVIDE EQUAL SPACING BETWEEN TRANSVERSE JOINTS TO THE EXTENT PRACTICAL.

14. SLOPE FROM EDGE OF DRIVE APPROACH AND DRIVE APRON SHALL BE 6:1 TO THE BOTTOM OF THE CHANNEL OR ADJACENT GRADED TERRAIN. SLOPE FROM EDGE OF STREET OUTSIDE EDGE OF RIBBON CURB TO BOTTOM OF CHANNEL SHALL BE 5:1.

* IF THE DRIVEWAY IS LOCATED AT A CREST GRADE BREAK AS REVIEWED AND APPROVED BY THE CITY, THEN NO PIPE SHALL BE PLACED, AND THE DRIVE APRON AND DRIVE APPROACH SHALL BE CROWNED WITH TRANSVERSE SLOPE OF 2% TRANSITIONING BACK TO THE LONGITUDINAL SLOPE AT THE OUTSIDE EDGE OF THE RIBBON CURB. THE LONGITUDINAL SLOPE SHALL BE FROM 2% TO 4% SLOPING TOWARDS THE RIBBON CURB. DRAINAGE OF PRIVATE PROPERTY VIA THIS DRIVEWAY SHALL NOT BE PERMITTED.

RIBBON CURB RESIDENTIAL DRIVEWAY STANDARDS		
DRIVEWAY TYPE	"W" DRIVEWAY WIDTH	"F" BACK OF CURB FLARE
SINGLE	10 FT MIN ~ 12 FT MAX	10 FT MIN ~ 15 FT MAX
DOUBLE	20 FT MIN ~ 24 FT MAX	10 FT MIN ~ 15 FT MAX
SEE CITY OF WACO STREET DESIGN CRITERIA FOR MORE DETAILS		

SEE ST-39A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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1	MODIFY NOTES 7 & 14 & TABLE	MZ	04/28/2025
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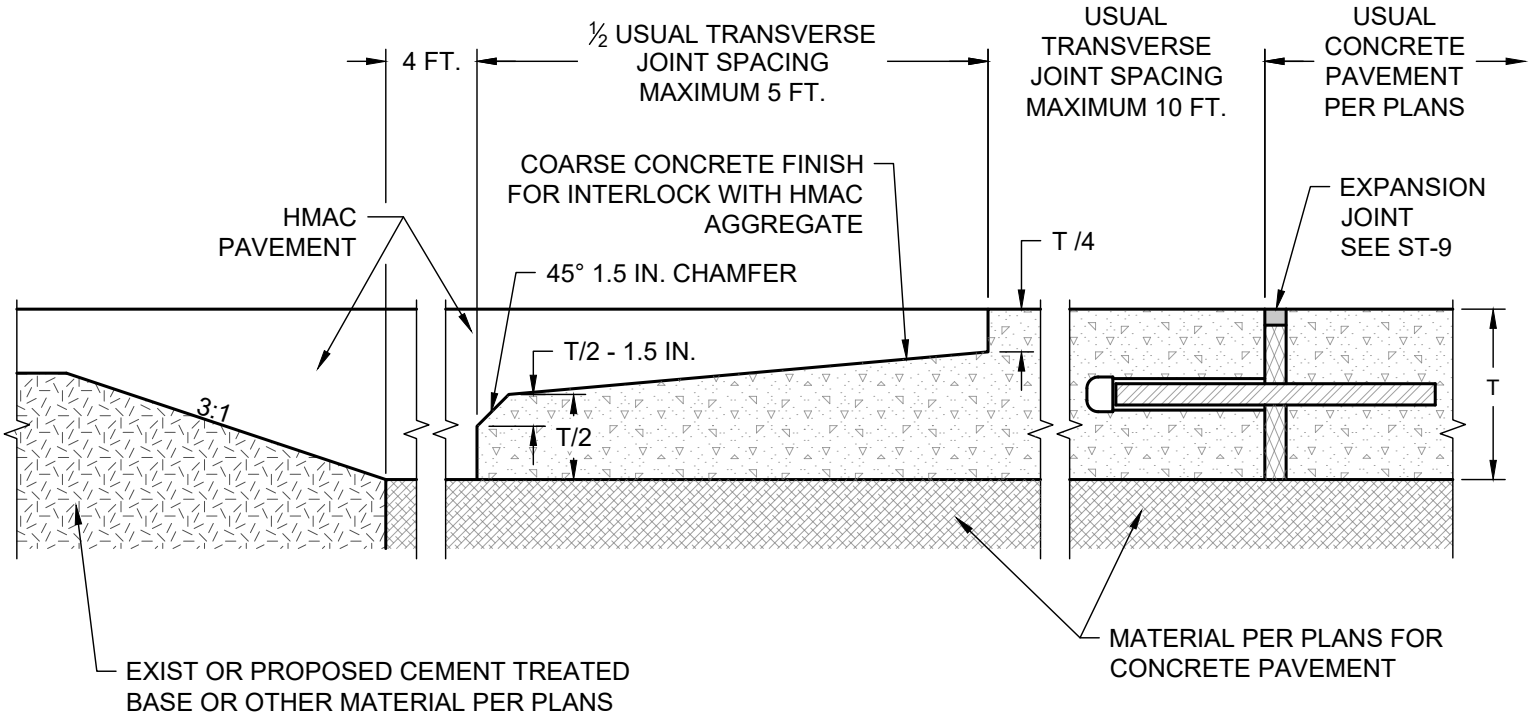
DATE 04/19/2024

ST-39B



NOTES:

1. CONCRETE TRANSITION PANEL SHALL BE CONSTRUCTED IN ACCORDANCE WITH CONCRETE PAVEMENT DETAILS SHOWN IN PLANS WITH REINFORCING STEEL TERMINATING WHERE 2 IN. CLEAR COVER CANNOT BE ACHIEVED.
2. PAYMENT FOR CONCRETE TRANSITION PANEL SHALL BE PER CONCRETE PAVEMENT OF THE THICKNESS DIMENSION T.

CONCRETE PAVEMENT TO ASPHALT PAVEMENT TRANSITION PANEL

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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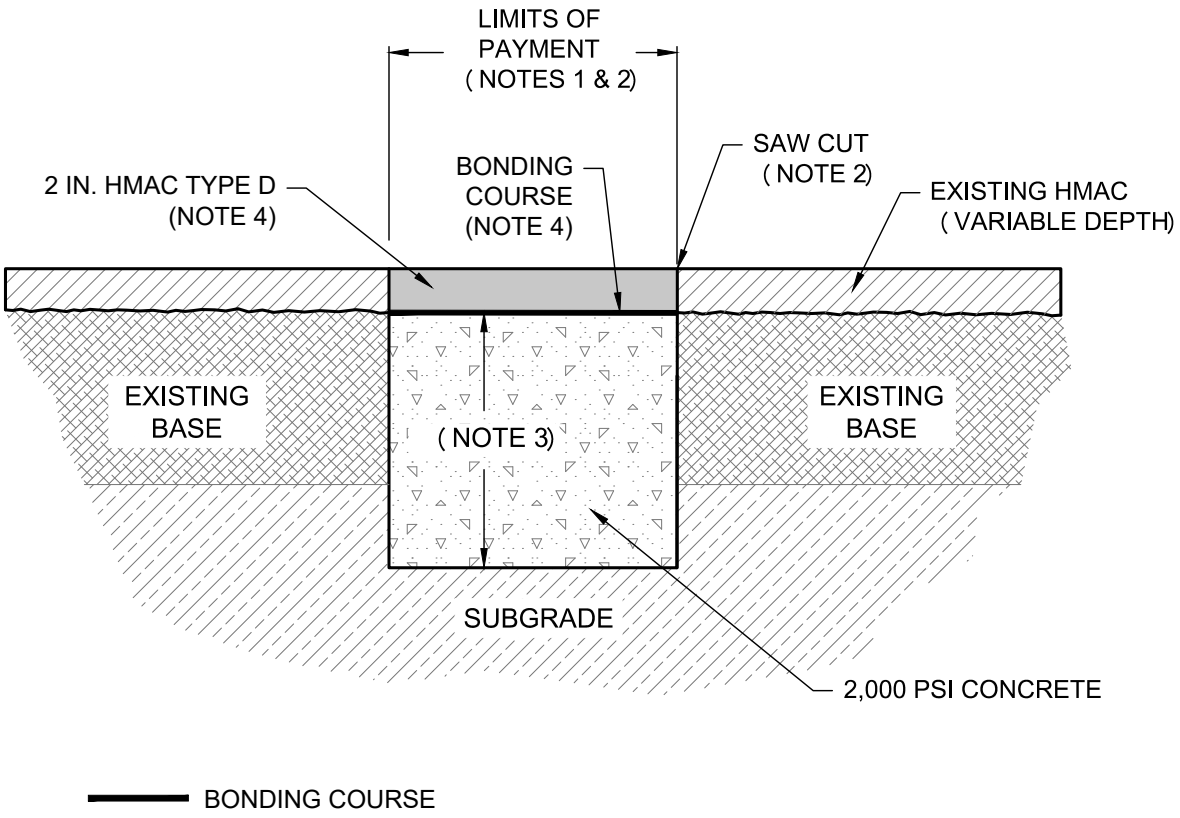
ST-40



NOTES:

1. MINIMUM BASE REPAIR DIMENSIONS (EXTENTS OF SAW CUT) SHALL BE 5 FT. BY 10 FT., WITH THE 10 FOOT DIMENSION IN THE DIRECTION OF TRAVEL. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

2. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. SAW CUTS SHALL BE ON LANE LINES OR BE BETWEEN WHEEL PATHS. IF ORIGINAL BASE FAILURE PAYMENT LIMITS IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

3. CONCRETE - MINIMUM 2,000 PSI:
   CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 12 IN.
   CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 10 IN.
   CLASS C LOCAL STREET = 8 IN.

4. HMAC AND BONDING COURSE SHALL BE PLACED FOLLOWING COMPLETION AND CURE OF BASE REPAIR. BONDING COURSE SHALL BE APPLIED TO CLEAN SURFACE AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

BASE FAILURE REPAIR WITH CONCRETE PRIOR TO MILLING (MILL & OVERLAY PROJECTS)

(NO SCALE)

CITY OF WACO

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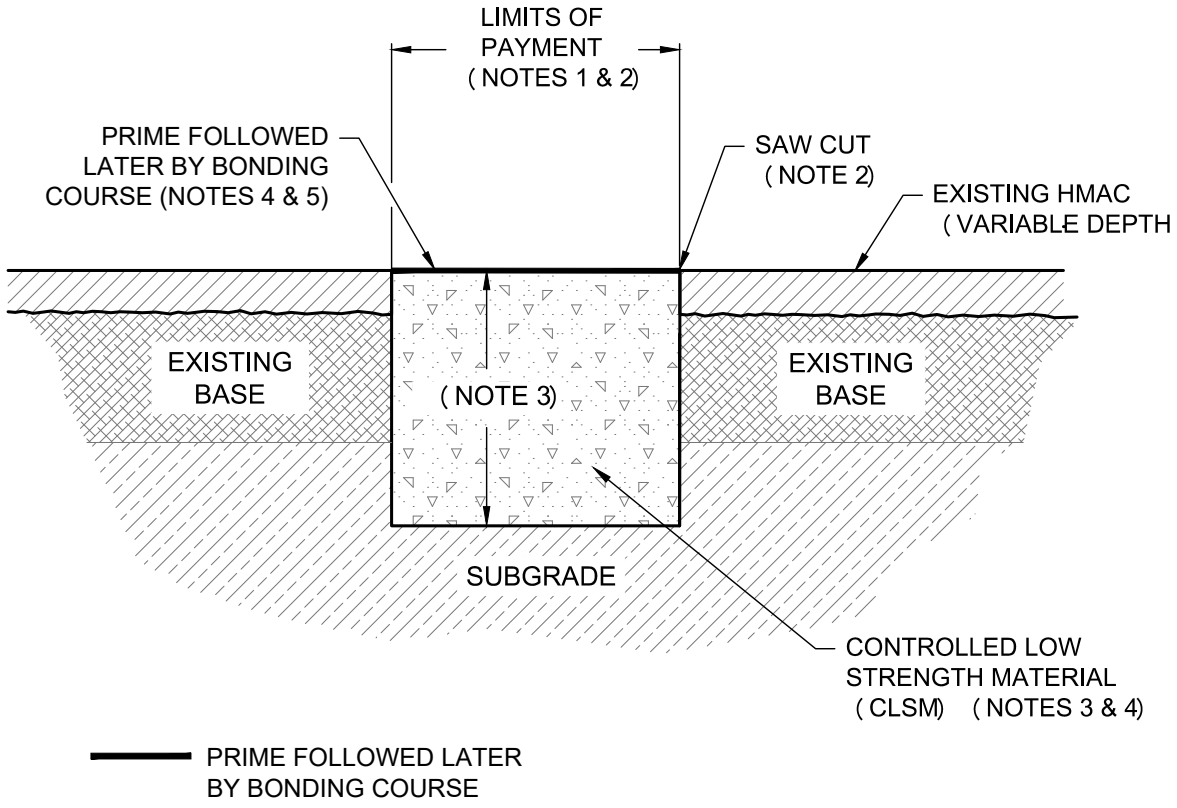

NOTES:

1. MINIMUM BASE REPAIR DIMENSIONS (EXTENTS OF SAW CUT) SHALL BE 5 FT. BY 10 FT., WITH THE 10 FOOT DIMENSION IN THE DIRECTION OF TRAVEL. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

2. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. SAW CUTS SHALL BE ON LANE LINES OR BE BETWEEN WHEEL PATHS. IF ORIGINAL BASE FAILURE PAYMENT LIMITS IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

3. CONTROLLED LOW STRENGTH MATERIAL (CLSM):
   CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 16 IN.
   CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 14 IN.
   CLASS C LOCAL STREET = 12 IN.

4. CLSM SHALL BE PLACED TO MATCH EXISTING HMAC SURFACE. PRIME OF AE-P OR PRE-APPROVED EQUAL SHALL BE APPLIED TO SWEPT SURFACE AND ALLOWED TO CURE

5. HMAC AND BONDING COURSE SHALL BE PLACED FOLLOWING COMPLETION AND CURE OF BASE REPAIR. BONDING COURSE SHALL BE APPLIED TO CLEAN SURFACE AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

BASE FAILURE REPAIR WITH CONTROLLED LOW STRENGTH MATERIAL PRIOR TO MILLING (MILL & OVERLAY PROJECTS)

(NO SCALE)

CITY OF WACO

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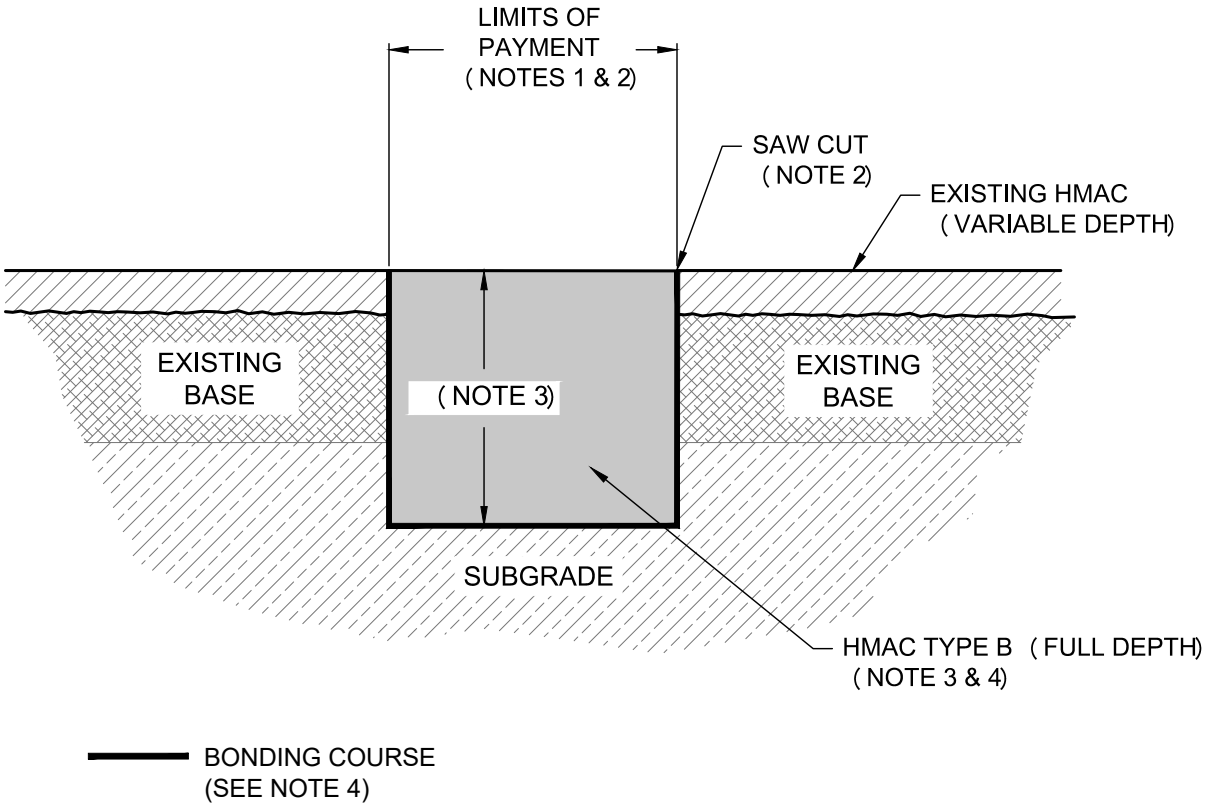

NOTES:

1. MINIMUM BASE REPAIR DIMENSIONS (EXTENTS OF SAW CUT) SHALL BE 10 FT. BY 20 FT., WITH THE 20 FOOT DIMENSION IN THE DIRECTION OF TRAVEL. EXISTING PAVEMENT SHOULD BE REMOVED TO CLEAN, STRAIGHT LINES PARALLEL AND PERPENDICULAR TO THE FLOW OF TRAFFIC. DO NOT CONSTRUCT PATCHES WITH ANGLED SIDES AND IRREGULAR SHAPES.

2. SAW CUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF REPAIR TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT. SAW CUTS SHALL BE ON LANE LINES OR BE BETWEEN WHEEL PATHS. IF ORIGINAL BASE FAILURE PAYMENT LIMITS IS WITHIN 3 FT. OF PAVEMENT EDGE OR APPURTENANCE (CURB AND GUTTER, VALLEY GUTTER, ETC.), LIMITS OF REMOVAL SHALL EXTEND TO PAVEMENT EDGE OR APPURTENANCE.

3. HMAC TYPE B
   CLASS A INDUSTRIAL COLLECTOR & ARTERIAL = 16 IN.
   CLASS B RESIDENTIAL COLLECTOR & COMMERCIAL COLLECTOR = 14 IN.
   CLASS C LOCAL STREET = 12 IN.

4. HMAC SHALL BE PLACED TO MATCH EXISTING HMAC SURFACE AND SHALL BE PLACED IN EQUAL LIFTS NOT TO EXCEED 5 IN. BONDING COURSE SHALL BE APPLIED TO ALL SURFACES PRIOR TO PLACEMENT OF EACH LIFT AND ALLOWED TO CURE. SEE SPECIAL PROJECT PROVISIONS FOR MATERIAL REQUIREMENTS.

BASE FAILURE REPAIR WITH HMAC TYPE B (FULL DEPTH) PRIOR TO MILLING (MILL & OVERLAY PROJECTS)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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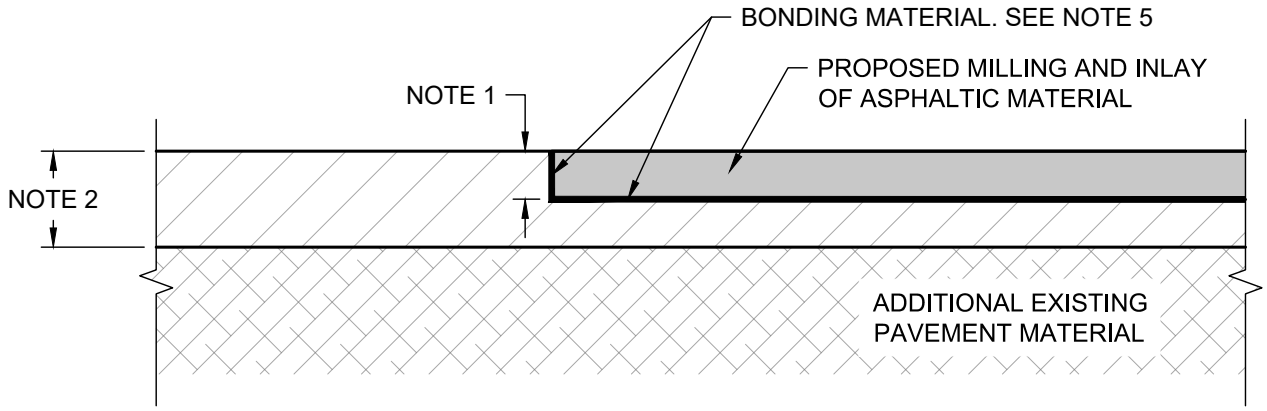
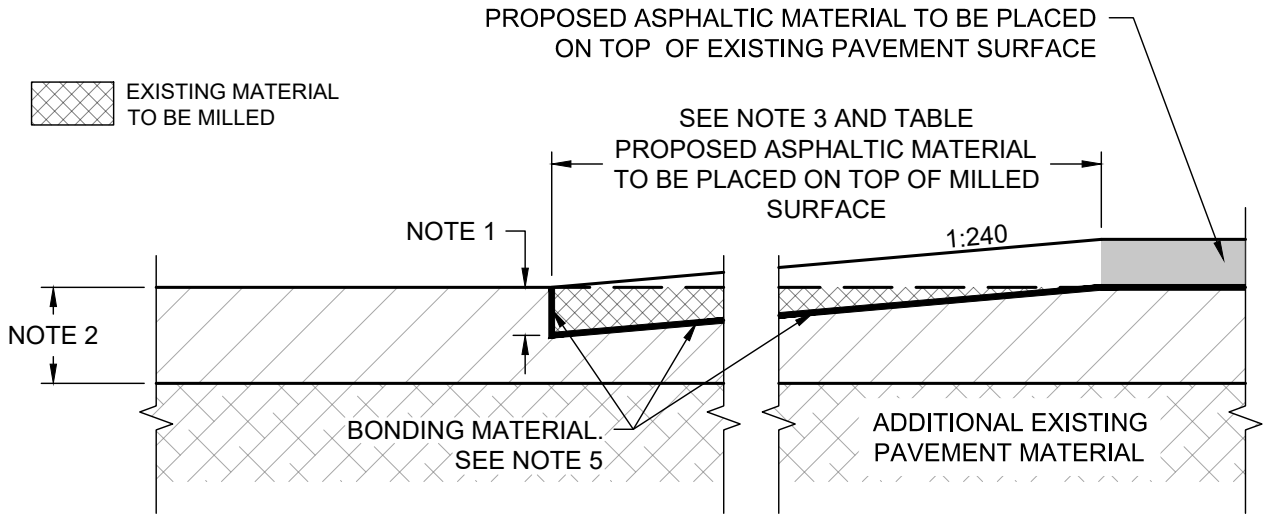


FULL INLAY JOINT

DEPTH OF SAWCUT (NOTES 1 & 2)	DISTANCE PROPOSED ASPHALTIC MATERIAL TO BE PLACED ON TOP OF MILLED SURFACE (NOTE 3)
1.0 IN.	20 FT.
1.5 IN.	30 FT.
2.0 IN.	40 FT.
3.0 IN.	60 FT



TRANSITION TO AND FROM PLACEMENT OF ASPHALTIC MATERIAL ON EXISTING PAVEMENT SURFACE

NOTES:

1. DEPTH OF SAWCUT TO MATCH DEPTH OF PROPOSED ASPHALTIC MATERIAL.
2. DEPTH OF EXISTING ASPHALTIC MATERIAL MAY VARY AND BE LESS THAN PROPOSED DEPTH OF SAWCUT AND/OR MILLING. SEE PLANS FOR ADDITIONAL INFORMATION.
3. DEPTH OF MILLING SHALL VARY LINEARLY FROM DEPTH OF SAWCUT MATCHING DEPTH OF PROPOSED ASPHALTIC MATERIAL TO ZERO AT THE RATE SHOWN ON THIS STANDARD DETAIL.
4. SAWCUT IS INCLUDED IN THE MILLING OF MATERIAL AND SHALL NOT BE PAID FOR SEPARATELY.
5. ALL SURFACES SHALL RECEIVE BONDING MATERIAL, INCLUDING PRIME FOR EXPOSED BASE MATERIAL, IN ADVANCE OF PLACEMENT OF ASPHALTIC MATERIAL. SEE PROJECT SPECIAL PROVISIONS FOR DETAILS.
6. ANY OTHER MILLING OF EDGES SHALL BE AS DESCRIBED/SHOWN ELSEWHERE IN PLANS.

JOINT AND TRANSITION DETAILS FOR ASPHALT PAVEMENT

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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1	ADD TABLE AND NOTE 6	MZ	11/15/2024
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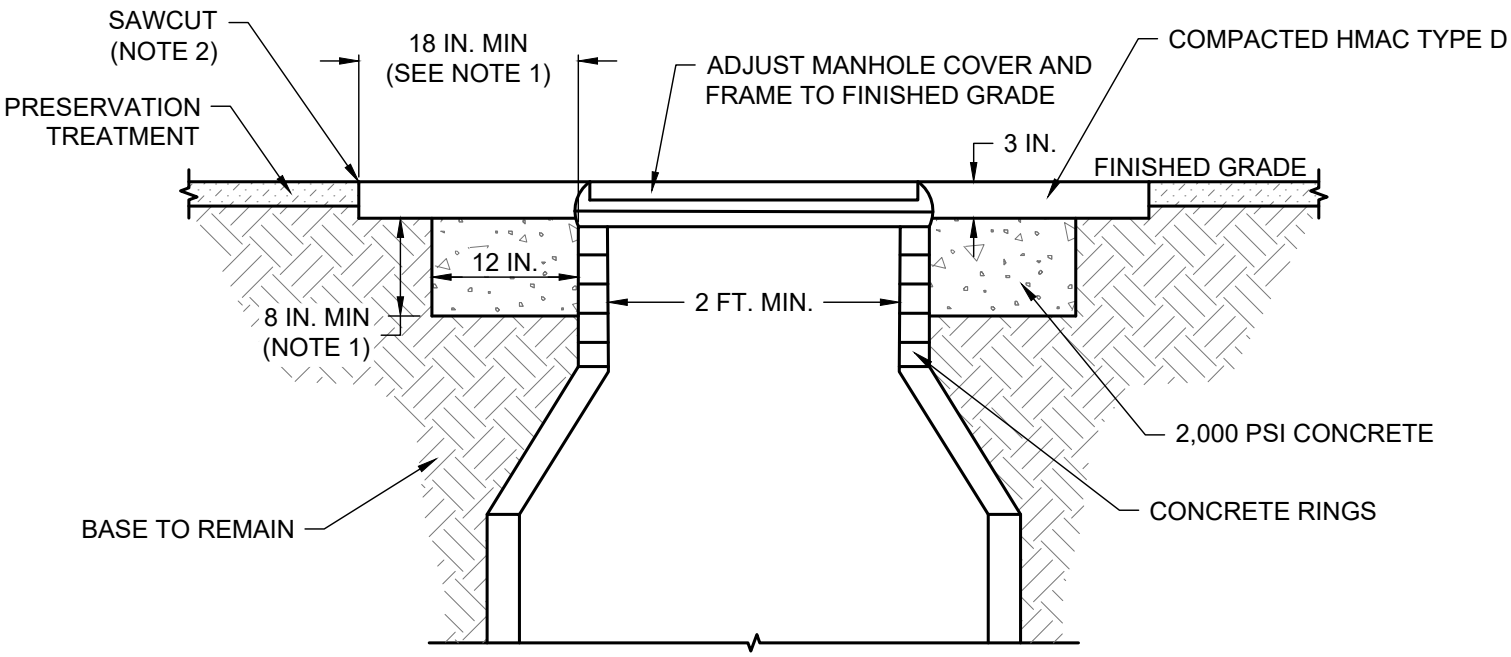

NOTES:

1. MINIMUM DIMENSIONS PROVIDED. CONTRACTOR SHALL INCREASE AS NEEDED TO ADJUST OR REPLACE MANHOLE COVER, FRAME, OR CONCRETE RINGS.
2. SAWCUT EDGE OF EXISTING PAVEMENT THE SAME DISTANCE AROUND EXISTING MANHOLE RING AND COVER TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT.
3. CONTRACTOR SHALL PROTECT SEWER FROM CONSTRUCTION DEBRIS.
4. ANY DEBRIS WHICH ENTERS THE MANHOLE OR THE SEWER MAIN SHALL BE IMMEDIATELY REMOVED BY CONTRACTOR.
5. REUSE MANHOLE RING AND COVER EXCEPT PER NOTE 6.
6. EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE AS PER CITY OF WACO DETAILS. REFER TO S-6, S-7, S-8, S-9, S-10, SD-9 FOR APPLICABLE REQUIREMENTS.
7. EXISTING MANHOLE RING AND COVER OR CONCRETE RINGS DESIGNATED FOR REPLACEMENT SHALL BE DONE SO BY THE CONTRACTOR PER NOTE 6.
8. SEE CITY OF WACO DETAIL S-5 FOR ADDITIONAL REQUIREMENTS.
9. MANHOLE LID SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MAX TOLERANCE +/- 1/8 INCH.

MANHOLE LID HEIGHT ADJUSTMENT OR REPLACEMENT (PRESERVATION WORK ONLY)

(NO SCALE)

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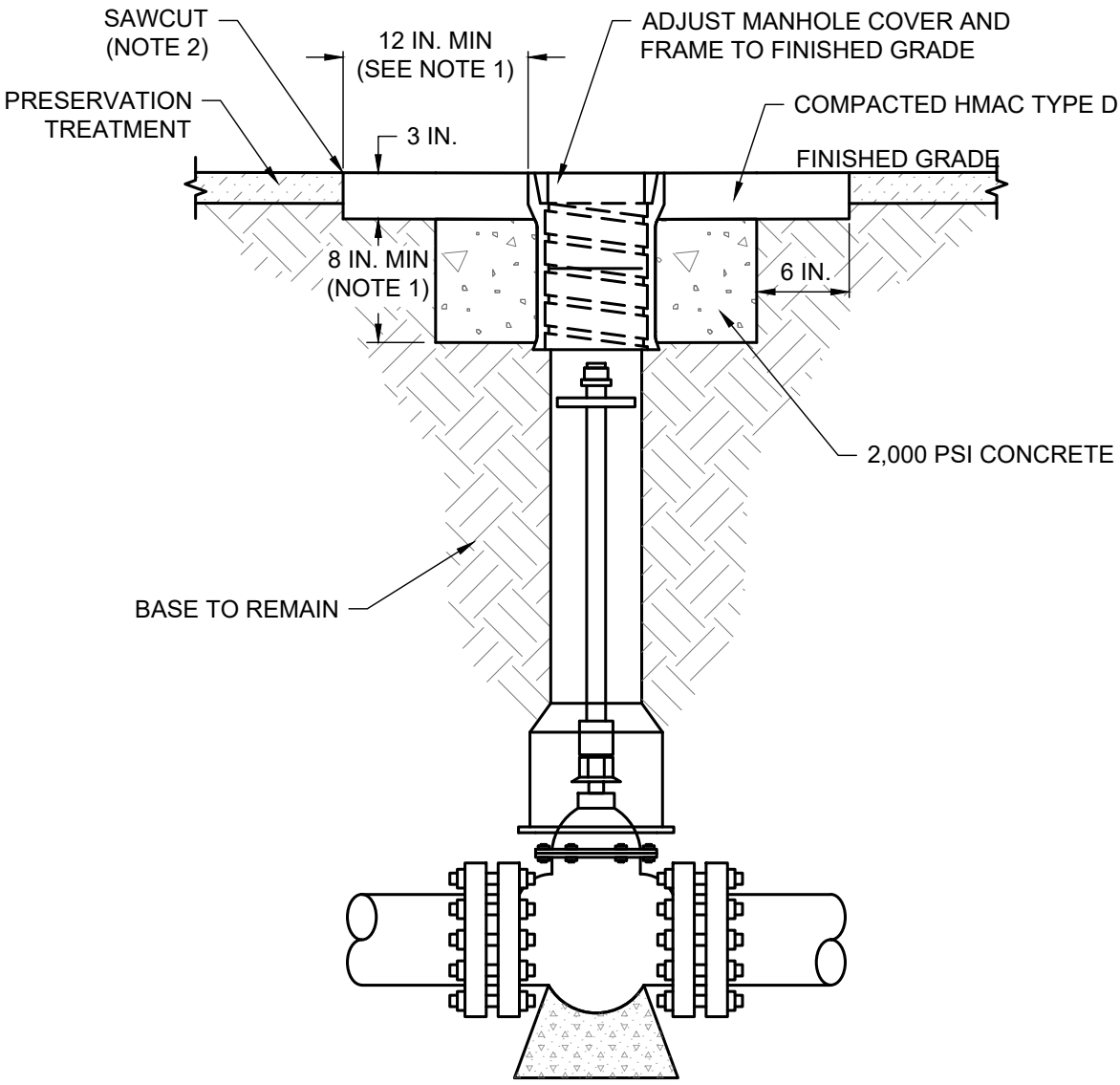

NOTES:

1. MINIMUM DIMENSIONS PROVIDED. CONTRACTOR SHALL INCREASE AS NEEDED TO ADJUST OR REPLACE VALVE BOX.
2. SAWCUT EDGE OF EXISTING PAVEMENT ON ALL SIDES OF VALVE BOX TO PRODUCE A SMOOTH AND EVEN EDGE FOR SURFACE REPLACEMENT.
3. ANY OLD STYLE VALVE BOXES SHALL BE REPLACE WITH A NEW VALVE BOX AND LID PER CITY OF WACO DETAIL DETAILS W-6, W-7, AND W-8.
4. ANY EXISTING VALVE BOXES DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT CONTRACTOR'S EXPENSE WITH A BOX THAT MEETS THE CITY OF WACO DETAILS W-6, W-7, AND W-8.
5. VALVE BOX LID SHALL BE FLUSH WITH FINISHED PAVEMENT SURFACE. MAX TOLERANCES +/- 1/8 INCH.

GATE VALVE BOX ADJUSTMENT OR REPLACEMENT (PRESERVATION WORK ONLY)

(NO SCALE)

CITY OF WACO

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ASPHALT SURFACE AREAS AND RATES FOR TRAVEL LANES

DESCRIPTION	RATE	BASIS	QUANTITIES
SEAL COAT			
FIRST COURSE			
ASPH (AC-20-XP)	0.40 GAL / SY[#]	___,_____ SY	__,_____ GAL
AGGR (TY-PB GR-3)	1 CY / 90 SY	___,_____ SY	_____ CY
SECOND COURSE			
ASPH (AC-20-XP)	0.28 GAL / SY[#]	___,_____ SY	__,_____ GAL
AGGR (TY-PB GR-4 SAC-B)	1 CY / 120 SY	___,_____ SY	_____ CY

[#] RATE MAY BE VARIED BY ENGINEER OF RECORD DEPENDING ON FIELD CONDITIONS AND OTHER FACTORS IN ADVANCE OF MANDATORY PRE-SURFACING MEETING WITH APPROVAL OF THE CITY.

NOTES:

1. ASPHALT SHALL ONLY BE PLACED JUNE 1 THROUGH AUGUST 31 UNLESS OTHERWISE APPROVED BY THE CITY.
2. PLACE FIRST COURSE SEAL COAT USING AC-20-XP ASPHALT ON PRIMED SURFACE (OR EXISTING ASPHALTIC SURFACE) AT A RATE OF 0.40 GAL / SY (UNDERSTANDING RATE MAY REQUIRE MODIFYING BASED ON FIELD CONDITIONS AND OTHER FACTORS)[#] AND IMMEDIATELY COVER WITH AGGR (TY-PB GR-3) AT RATE OF 1 CY / 90 SY, ROLL, CURE, AND SWEEP.
3. PLACE SECOND COURSE SEAL COAT ON FIRST COURSE SEAL COAT USING AC-20-XP ASPHALT AT A RATE 0.28 GAL / SY (UNDERSTANDING RATE MAY REQUIRE MODIFYING BASED ON FIELD CONDITIONS AND OTHER FACTORS)[#] AND IMMEDIATELY COVER WITH AGGR (TY-PB GR-4 SAC-B) AT RATE OF 1 CY / 120 SY, ROLL, CURE, AND SWEEP.
4. MATERIALS AND WORK SHALL BE IN ACCORDANCE WITH CURRENT TXDOT SPECIFICATIONS.

SEAL COAT SURFACING FOR DEVELOPER PROJECTS

(USE REQUIRES MODIFICATION BY ENGINEER OF RECORD FOR BASIS & QUANTITIES AND APPROVAL BY THE CITY)

CITY OF WACO

ENGINEERING DIVISION

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CITY OF WACO

TRAFFIC DETAILS

CITY OF WACO
TRAFFIC DETAILS

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

TRAFFIC CONTROL PLANS

GENERAL REQUIREMENTS

- MUST CONFORM WITH CURRENT TEXAS MUTCD STANDARD
- MULTIPLE PHASES OF CONSTRUCTION WILL REQUIRE A SEPARATE TCP FOR EACH PHASE. ALL MAY BE SUBMITTED AT ONE TIME FOR ACCEPTANCE.
- MUST BE DEVELOPED TO ADDRESS THE SPECIFIC CONDITIONS OF THE PLANNED CONSTRUCTION WORK ZONE LOCATION.
- MUST BE COMPILED BY TEXAS LICENSED PROFESSIONAL ENGINEER

TCP SUBMITTAL PROCESS:

- THE TCP SHALL BE SUBMITTED TO THE CITY OF WACO TRAFFIC ENGINEERING OFFICE 15 CALENDAR DAYS PRIOR TO THE ANTICIPATED START DATE, WITH COPY OF CURRENT CERTIFICATION.
- ALL SUBMITTALS SHALL BE IN PORTABLE DOCUMENT FORMAT (.pdf) AND SENT VIA EMAIL TO TCP_SUBMITTAL@WACOTX.GOV, EXCEPT THAT CITY OF WACO PROJECTS IN PROJECTMATES SHALL BE SUBMITTED THROUGH THE PORTAL AT: HTTPS://CITYOFWACO.PROJECTMATES.COM.

LOCAL ROADS

- TCP REQUIRED FOR ANY LANE OR ROAD CLOSURES EXCEEDING 4 HOURS
- MAY UTILIZE TX MUTCD TYPICAL DETAILS INSTEAD OF A SITE-SPECIFIC TCP

COLLECTORS & ARTERIALS

- TCP REQUIRED FOR ANY LANE OR ROAD CLOSURES REGARDLESS OF DURATION
- TCP MUST BE SITE-SPECIFIC TO ADDRESS THE SPECIFIC CONDITIONS OF THE CORRIDOR AND ACCESS TO ADJACENT PROPERTIES
- LANE CLOSURES WILL REQUIRE ARROW BOARDS
- ROAD CLOSURES MAY REQUIRE DYNAMIC MESSAGE BOARDS TO PROVIDE PRIOR WARNING AHEAD OF START DATE
- NO INTERFERENCE WITH TRAFFIC FLOW SHALL BE PERMITTED DURING THE HOURS OF 6:30 A.M. TO 9:30 A.M. AND 3:30 P.M. TO 6:30 P.M., MONDAYS THROUGH FRIDAYS, UNLESS DIRECTED OTHERWISE BY THE DIRECTOR OF PUBLIC WORKS. EMERGENCY CLOSURES DURING THESE HOURS SHALL BE WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.

OTHER INFORMATION

- LANE OR ROAD CLOSURES ALONG STATE FACILITIES REQUIRE TXDOT APPROVAL
- REFERENCE CITY ORDINANCE: SEC. 23-25 TRAFFIC CONTROL

TCP IMPLEMENTATION

- CONTRACTOR SHALL PROVIDE A DESIGNATED CONTRACTOR'S RESPONSIBLE PERSON (CRP) FOR IMPLEMENTATION AND MAINTENANCE OF IMPLEMENTED TRAFFIC CONTROL PLAN.
- CONTRACTOR WILL HAVE TXDOT APPROVED TRAINING UNDER THE MATERIAL PRODUCER LIST HTTPS://WWW.TXDOT.GOV/BUSINESS/RESOURCES/PRODUCER-LIST.HTML

ANTIQUE LIGHT & ASSOC. ITEMS SPECS. (LED)

1.0 LIGHTING POLES AND FIXTURES:

THE LIGHTING POLES FURNISHED FOR MOUNTING LUMINARIES SHALL BE FREE FROM IMPERFECTIONS AND PRESENT A PLEASING APPEARANCE WHEN PLUMBED AND SECURED TO THE FOUNDATION. THE FINISHED POLE SHALL HAVE A SMOOTH UNIFORM FINISH FREE FROM PITS, SCRATCHES, BLISTERS OR OTHER DEFECTS. ALL FIXTURES SHALL NOT REQUIRE INDIVIDUAL PHOTOCELLS OR PHOTOCELL SOCKETS. ALL POLES SHALL NOT HAVE FACTORY INSTALLED FUSE HOLDERS, BUT SHALL HAVE EXTERNAL FUSE HOLDERS INSTALLED AT THE BASE OF EACH POLE. ALL ANTIQUE LIGHT POLES AND FIXTURES SHALL HAVE A POWDER COAT PAINT FINISH.

ANTIQUE DECORATIVE POLE AND FIXTURE

THE ANTIQUE LIGHT POLE AND FIXTURE MANUFACTURER AND PART NUMBER:

MANUFACTURER: STERNBERG LIGHTING
PART NUMBER:
PT-A850NF-73-VCOB-4L30TS-MDL02-A / 4214'2"TFP5-C / PGT

MOUNTING CONFIGURATION: CENTER POST TOP (PT)

FIXTURE MODEL: A850NF (ACORN WITH NO FINIAL)

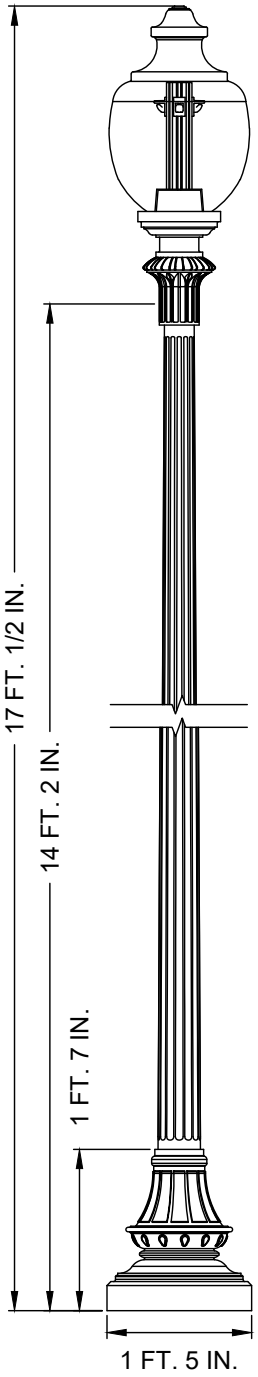
PT FITTER: 73

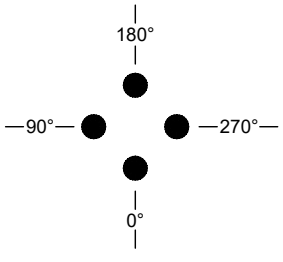
PT LIGHT SOURCE: -VCOB-4L30TS-MDL02
NUMBER OF LEDS: 4 LEDS, 40W FOR MD_02 (VCOB-4L)
COLOR TEMP: 3000K (30)
DISTRIBUTION: TS (SYMMETRIC) (TS)
DRIVER: MDL02 (250MA, 120-277V) (MDL02)

PT FIXTURE OPTIONS: -A
ACORN MATERIAL: TEXTURED ACRYLIC (A)

POLE: 4214'2"TFP5-C
THE 17 IN. DIAMETER CAST 356 ALUMINUM ALLOY BASE AND ALUMINUM SHAFT SHALL BE A ONE-PIECE CONSTRUCTION. THE POLE SHALL BE U.L. LISTED IN U.S. ALL POLE HEIGHTS TO HAVE A TOLERANCE OF ± 2 INCHES.
MODEL: 4200 AUGUSTA (42)
HEIGHT: 14 FT 2 IN (TFP5-3) (14'2")
SHAFT TYPE: FLUTED TAPERED 5-3 INCH 356 ALUMINUM ALLOY (TFP5)
GAUGE: VARIED WALL THICKNESS (CAST) (C)

FINISH: PGT
ASSEMBLY SHALL BE POWDER COATED TO PARK GREEN TEXTURED FINISH. PRIOR TO COATING, THE ASSEMBLY SHALL BE CHEMICALLY CLEANED AND ETCHED IN A 5-STAGE WASHING SYSTEM WHICH INCLUDES ALKALINE CLEANING, RINSING, PHOSPHORIC ETCHING, REVERSE OSMOSIS WATER RINSING, AND NON-CHROME SEALING TO ENSURE CORROSION RESISTANCE.





(4) 1/2 IN. X 18 IN. ANCHOR BOLTS, 12 IN. BOLT CIRCLE, DIAMOND PATTERN

ACCESS DOOR ORIENTATION: 0°
STREET SIDE ORIENTATION: 180°

SEE T-2B & T-2C FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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T-2A

ANTIQUE LIGHT & ASSOC. ITEMS SPECS. (LED)

2.0 PHOTOELECTRIC CONTROL:
THE PHOTOELECTRIC CELLS SHALL BE TWIST PLUG IN TYPE PRECISION BRAND TO MATCH FIXTURE OR CONTACTOR VOLTAGE.

3.0 ELECTRICAL SERVICE EQUIPMENT:
ELECTRICAL SERVICE EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO; METERED SERVICE/DISCONNECT OR CONTACTOR ENCLOSURE. ALL ENCLOSURES HOUSING ELECTRICAL EQUIPMENT SHALL BE RAIN-TIGHT, INCLUDE A PADLOCK HANDLE, AND DESIGNED FOR OUTDOOR INSTALLATION IN ACCORDANCE WITH NEMA STANDARDS. THE LIGHTING INSTALLATIONS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL SAFETY CODE AND NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION SPECIFICATIONS. A STANDALONE, PEDESTAL TYPE COMBINATION METERED SERVICE/DISCONNECT/CONTACTOR CONTROL PANEL SHALL BE USED. THE PEDESTAL TYPE METER SERVICE MAY BE MOUNTED TO A CONCRETE PAD, ALTHOUGH A PRE CAST POLYMER PAD BASE IS RECOMMENDED. POWER REQUIREMENTS DESIRED SHOULD BE 120/240V OR 208/120V SINGLE PHASE. IF NOT AVAILABLE, AN OPTIONAL SERVICE VOLTAGE MAY BE ACCEPTABLE IF APPROVED BY CITY STAFF. EACH SERVICE POINT SHALL INCLUDE INDIVIDUAL CIRCUIT BREAKERS AND PHOTOCELL CONTROLLED CONTACTOR(S), AND A HOA SWITCH FOR CONTROL OF THE LIGHTING CIRCUIT(S). METER SERVICES SHALL REQUIRE A NO FEE ELECTRICAL PERMIT AND BE INSPECTED BY CITY OF WACO INSPECTION SERVICES. ELECTRIC METER, APPLICATION FOR SERVICE WILL BE MADE BY CITY STAFF. THE COLOR OF THE ELECTRICAL SERVICE EQUIPMENT SHALL BE MANUFACTURES STANDARD LIGHT OR MINT GREEN.

RECOMMENDED, ONCOR APPROVED, SERVICE PEDESTALS ARE MILBANK BRAND.

4.0 WIRE:
ALL ELECTRICAL WIRE SHALL BE STRANDED COPPER CONDUCTOR. EARTH GROUND SHALL BE STRANDED COPPER CONDUCTOR WITH GREEN INSULATION. ALL WIRE SHALL BE OF ADEQUATE SIZE TO ACCOMMODATE LIGHTING LOAD. ALL SPLICES SHALL BE MADE INSIDE THE POLE. MINIMUM CONDUCTOR SIZE SHALL BE 10 AWG.

5.0 ANCHOR BOLTS:
FOUR HIGH STRENGTH ½ IN. DIAMETER BY 18 IN. LENGTH STEEL ANCHOR BOLTS SHALL BE FURNISHED FOR EACH POLE. ANCHOR BOLTS SHALL BE FABRICATED FROM GOOD COMMERCIAL QUALITY HOT ROLLED CARBON STEEL BAR WITH MINIMUM YIELD STRENGTH OF 50,000 PSI. EACH ANCHOR BOLT SHALL BE THREADED AT THE TOP AND FITTED WITH DOUBLE NUTS AND WASHERS. THE OTHER END OF THE BOLT SHALL HAVE AN “L” BEND. ANCHOR BOLTS, ASSOCIATED HARDWARE, AND TEMPLATES SHALL BE GALVANIZED. ALL NECESSARY ANCHOR BOLTS, ASSOCIATED HARDWARE, AND TEMPLATES FOR SETTING ANCHOR BOLTS SHALL BE FURNISHED IMMEDIATELY AFTER AWARD OF THE CONTRACT, REGARDLESS OF DELIVERY SCHEDULES OF THE POLES.

6.0 CONCRETE:
SEE STANDARD DETAIL G-7 GENERAL CONCRETE AND REINFORCEMENT NOTES.

7.0 FOUNDATION BASE
ALL FOUNDATION BASES SHALL BE (24) TWENTY-FOUR INCHES IN DIAMETER. TOP OF FOUNDATION BASES SHALL EXTEND 2 IN. ABOVE ADJOINING TOP OF PAVED, CONCRETE, OR OTHER HARD SURFACES AND 4 IN. ABOVE ADJOINING GRADE OF GRASSED/VEGETATED AREAS. TOP OF FOUNDATION SHALL HAVE A 1 IN. CHAMFER. STEEL REBAR SHALL BE USED TO FOR CONCRETE REINFORCEMENT THROUGHOUT THE ENTIRE BASE. ALL FOUNDATIONS SHALL HAVE A MINIMUM OF TWO 2 IN. PVC CONDUITS INSTALLED. FOUNDATION SHALL BE POSITIONED WITH OUTSIDE EDGE A MINIMUM OF 2 FT. FROM BACK OF CURB.

- FOR ANTIQUE DECORATIVE POLES SPECIFIED IN T-2A , BASES SHALL EXTEND A MINIMUM OF (3) THREE FEET BELOW GRADE.

SEE T-2A & T-2C FOR ADDITIONAL DETAILS

CITY OF WACO

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ANTIQUE LIGHT & ASSOC. ITEMS SPECS. (LED)

8.0 FUSE HOLDERS AND FUSES:
IN-LINE FUSE HOLDERS ELASTIMOLD OR BUCHANAN, STYLE D65 (DOUBLE FUSE) WITH BUSSMAN FNM-TYPE FUSES, OF THE APPROPRIATE AMPERAGE SHALL BE INSTALLED AT THE BASE OF EACH POLE INSIDE THE HAND HOLE. FUSING IN FIXTURE SHALL NOT BE ALLOWED.

9.0 CABLE CONNECTIONS AND SPLICES:
CABLE CONNECTIONS AND SPLICES SHALL BE MADE INSIDE THE POLE WITH SPLIT BOLT CONNECTORS AND INSULATED WITH #23 3M RUBBER TAPE, OR APPROVED EQUAL THEN WRAPPED WITH #88 3M VINYL TAPE, OR APPROVED EQUAL. NO SPLICES MAY BE MADE OUTSIDE THE POLE OTHER THAN INSIDE THE SERVICE/DISCONNECT OR CONTRACTOR ENCLOSURE.

10.0 GROUND RODS:
GROUND RODS SHALL BE INSTALLED IN EACH POLE FOUNDATION AND AT THE POINT OF SERVICE DISCONNECT. THE GROUND RODS SHALL BE MINIMUM 8 FT. X 5/8 IN. COPPER-CLAD. ALL GROUND RODS AT POLE FOUNDATIONS SHALL BE INSTALLED IN THE CONCRETE FOUNDATION AND AT AN ANGLE AS TO PENETRATE THE SOIL ON THE SIDE OF THE FOUNDATION. A MINIMUM OF 4 IN. AND A MAXIMUM OF 6 IN. OF GROUND ROD SHALL EXTEND ABOVE THE TOP OF THE CONCRETE FOUNDATION FINISHED GRADE. INSTALLATIONS OUTSIDE THE FOUNDATION ARE NOT ACCEPTABLE.

11.0 EQUIPMENT GROUNDING:
ALL POLES, GROUND RODS, ELECTRIC SERVICE AND ASSOCIATED EQUIPMENT SHALL BE BONDED BY MEANS OF A COPPER GROUNDING CONDUCTOR. GROUNDING OF POLES BY MEANS OF ANCHOR BOLTS SHALL NOT BE PERMITTED. POLE GROUNDING SHALL BE ACCOMPLISHED BY MEANS OF A GROUNDING LUG; SCREW ETC. ATTACHED TO THE POLE.

12.0 GROUND (JUNCTION) BOXES:
ELECTRICAL GROUND BOXES AND GROUND BOX COVERS CONSTRUCTED OF POLYMER CONCRETE. COVERS TO BE PERMANENTLY MARKED WITH "ELECTRICAL" LOGO.

RECOMMENDED GROUND BOXES ARE QUAZITE BRAND.

REFERENCE TxDOT DMS-11070 GROUND BOXES FOR MATERIAL REQUIREMENTS

REFERENCE TXDOT ELECTRICAL DETAILS GROUND BOXES ED(4)-14 FOR INSTALLATION REQUIREMENTS

13.0 ELECTRICAL CONDUIT MINIMUM REQUIREMENTS:
SCHEDULE 40 GRAY ELECTRICAL PVC
2 IN. MINIMUM FOR POLE TO POLE AND HOME RUNS
SERVICE CONDUIT 2 IN. PVC 24 IN. RADIUS
ALL STREETS AND DRIVEWAY CROSSING SHALL BE BORED AT 24 IN. DEPTH

SEE T-2A & T-2B FOR ADDITIONAL DETAILS

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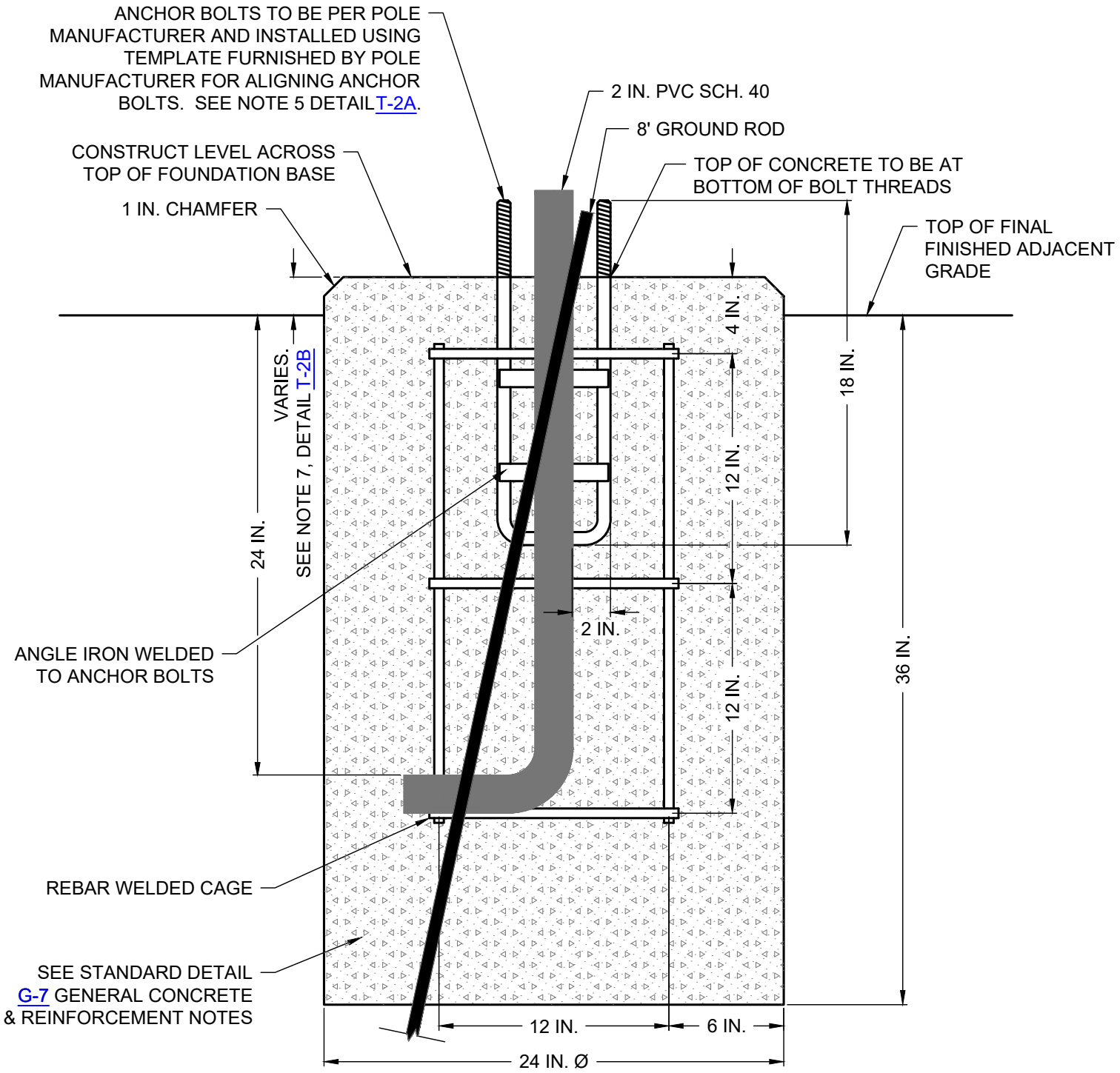

SECTION VIEW

NOTES:
LIGHT POLES SHALL BE INSTALLED A MINIMUM OF 2 FT. OFFSET FROM BACK OF CURB. MEASUREMENT IS FROM FACE OF FOUNDATION TO BACK OF CURB.

ANTIQUE STREET LIGHT REINFORCED FOUNDATION

(NO SCALE)

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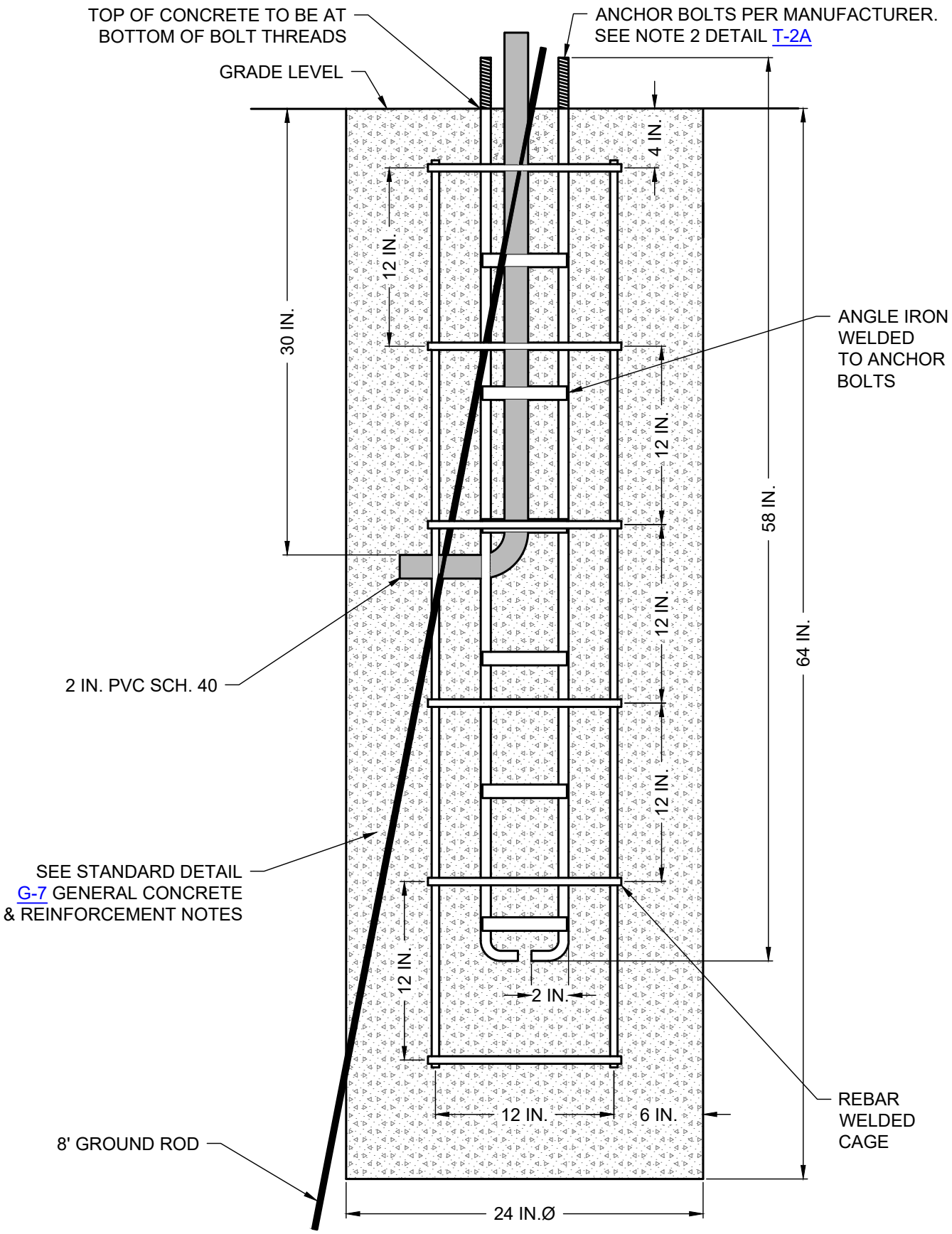

SHOE BOX STREET LIGHT REINFORCED FOUNDATION

SECTION VIEW

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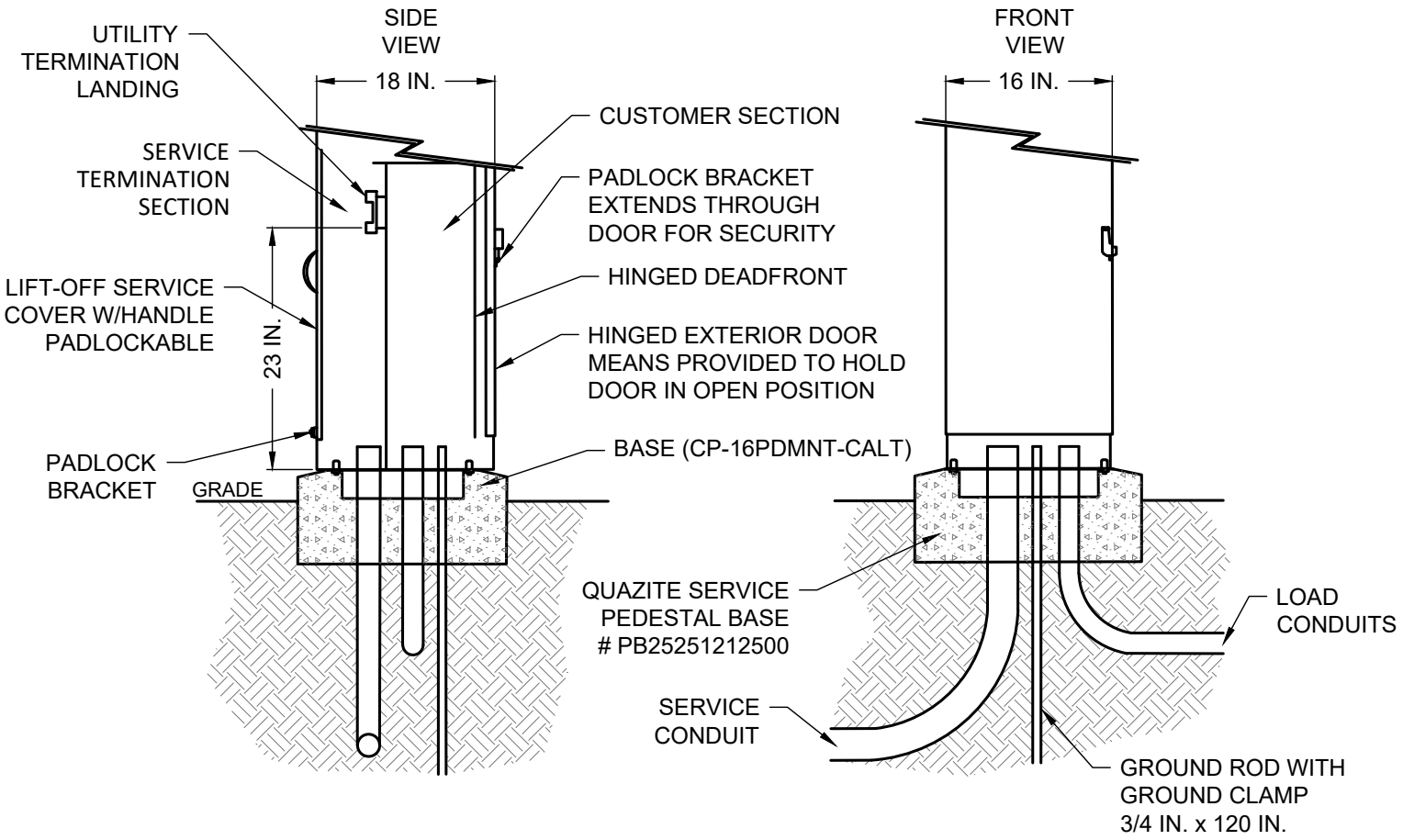
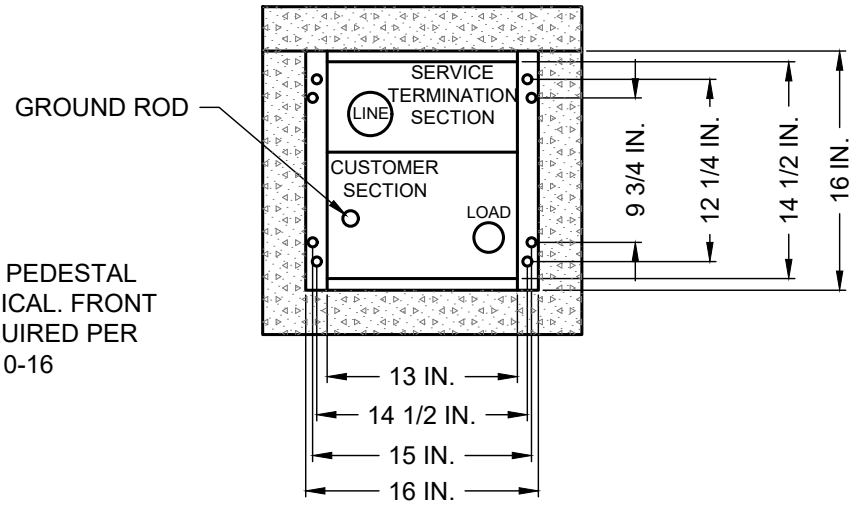


TYPICAL CONSTRUCTION & INSTALLATION DETAILS



36 IN. MINIMUM PEDESTAL CLEARANCE TYPICAL. FRONT AND BACK REQUIRED PER N.E.C. 110-16

MOUNTING BASE DETAIL TOP VIEW

MILBANK SERVICE PEDESTAL

CP3B IN.ML IN. SERIES

(NO SCALE)

CITY OF WACO

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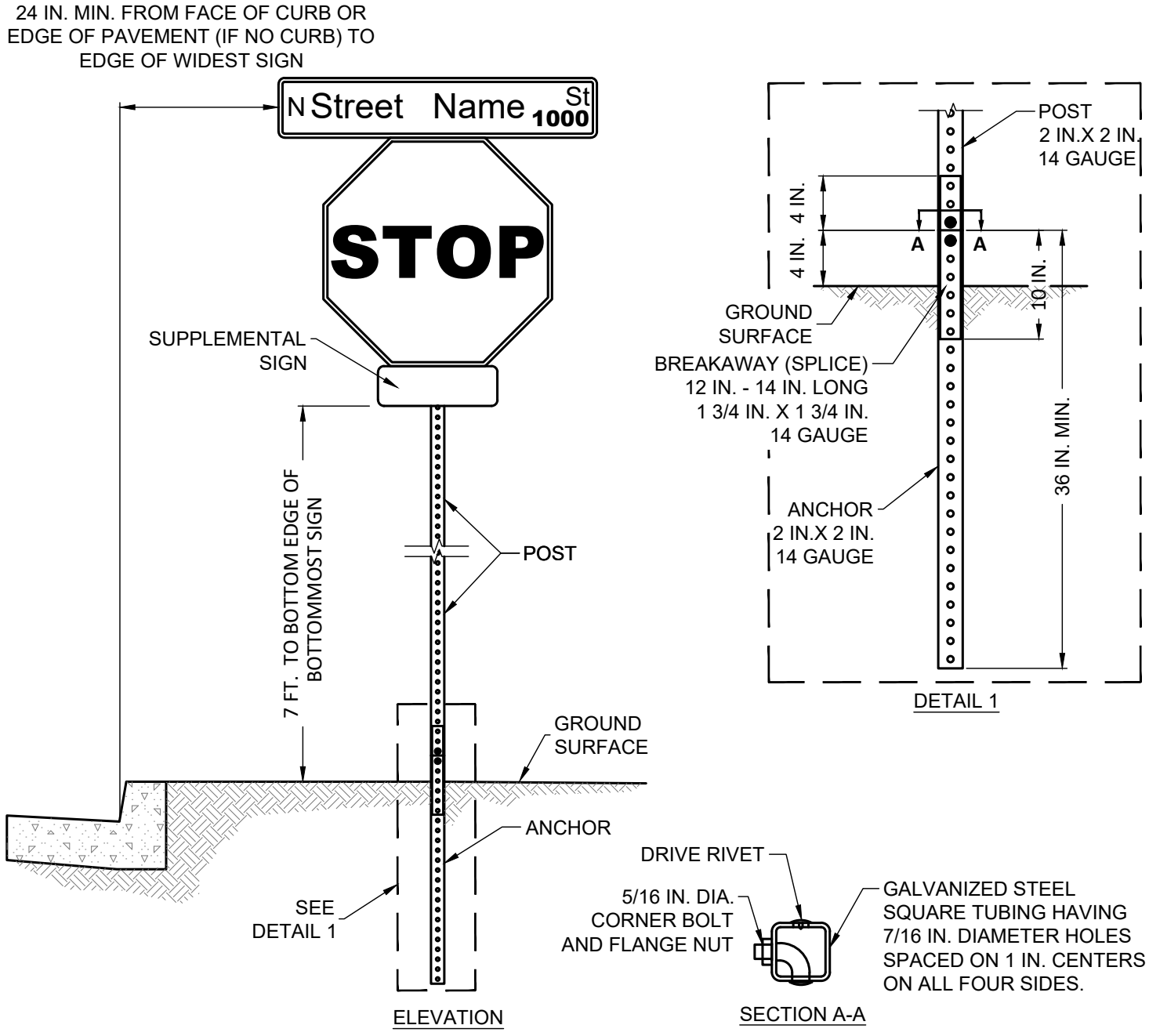

NOTES:

1. SIGN AND SIGN POST SHALL BE TWO SEPARATE PAY ITEMS.
2. SIGN POST SHALL BE PLUMB (TRUE VERTICAL) IN ALL DIRECTIONS, AND SIGNS SHALL BE BE PERPENDICULAR TO POST.
3. SIGN SHALL BE FASTENED TO POST USING JUMBO HEAD DRIVE RIVETS.
4. IF TRAFFIC CONTROL SIGN (E.G., STOP, YIELD) IS REQUIRED, IT SHALL BE LOCATED BELOW THE STREET NAME SIGN.
5. SUPPLEMENTAL SIGN(S) SHALL BE LOCATED BELOW THE TRAFFIC CONTROL SIGN.
6. DRIVE RIVETS SHALL BE JUMBO HEAD, SHALL HAVE 3/8 INCH DIAMETER SHANK, AND SHALL HAVE A 1 INCH DIAMETER HEAD.
7. ANCHOR POST SHALL BE DRIVEN INTO THE GROUND OR SET IN 3000 PSI CONCRETE HAVING 1 FOOT DIAMETER AND A 26 INCH DEPTH. ANCHOR POST SHALL BE WRAPPED IF IT IS SET IN CONCRETE.

SIGN POST INSTALLATION

(NO SCALE)

CITY OF WACO

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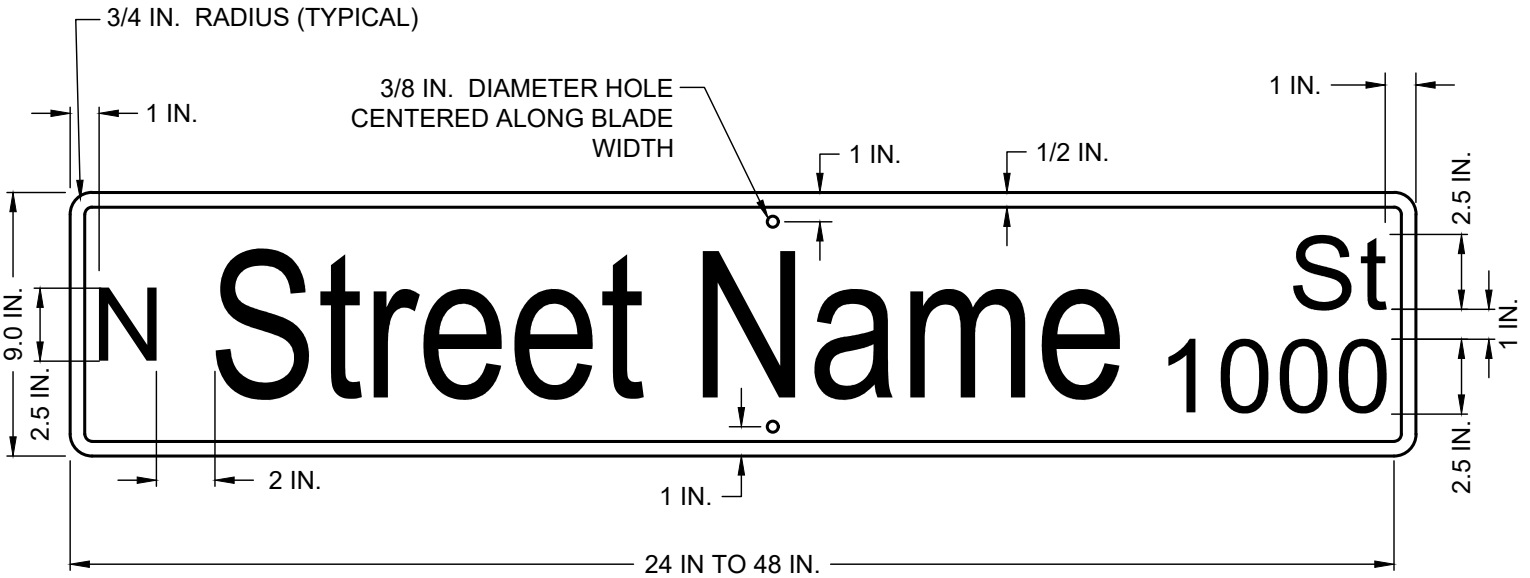
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

T-6



NOTES:

1. STREET NAME SIGNS SHALL BE INSTALLED AT LOCATIONS SHOWN ON PLANS THAT ARE APPROVED BY CITY ENGINEER.
2. STREET NAME SIGN SHALL FACE EACH DIRECTION OF TRAFFIC.
3. SIGN BLADE BLANK SHALL BE A FLAT (I.E., NOT EXTRUDED) SHEET HAVING A MINIMUM THICKNESS OF 0.080 INCH. THE BLANK SHALL BE MADE OF ALUMINUM ALLOY THAT CONFORMS TO REQUIREMENTS OF ASTM B209 (FOR ALLOYS 5052-H38 OR 6061-T6) AND SHALL BE FREE OF DEFECT INCLUDING WARP, DENT, BURR, CORROSION, WHITE RUST, AND DIRT.
4. SIGN FACE MATERIALS SHALL CONFORM TO THE CURRENT "DEPARTMENTAL MATERIALS SPECIFICATION 8300" OF THE TEXAS DEPARTMENT OF TRANSPORTATION. MATERIALS SHALL CONSIST OF GREEN ELECTRONIC-CUTTABLE (EC) FILM OVER WHITE HIGH INTENSITY PRISMATIC (HIP) RETROFLECTIVE SHEETING. EC FILM SHALL BE 1177C GREEN, AVERY DENNISON OL-2007 GREEN, OR EQUIVALENT. HIP SHEETING SHALL CONFORM TO REQUIREMENTS OF ASTM D4956 (TYPE III HIP) OR AASHTO M268 (E.G., AVERY DENNISON OMNICUBE T-11500 WHITE OR EQUIVALENT).
5. SIGN FACE SHALL HAVE WHITE LETTERING ON A GREEN BACKGROUND AND SHALL HAVE A 1/2 INCH WIDE WHITE BORDER.
6. LETTERING FONT (TYPEFACE) SHALL BE CLEARVIEW.
7. STREET NAME SHALL BE CENTER-JUSTIFIED AND SHALL HAVE AN UPPERCASE FIRST LETTER FOLLOWED BY LOWERCASE LETTERS. UPPERCASE LETTERS SHALL BE AT LEAST 5 INCHES TALL. LOWERCASE LETTERS SHALL BE AT LEAST 4 INCHES TALL.
8. STREET NAME DIRECTIONAL PREFIX (E.G., N, S) SHALL BE LEFT-JUSTIFIED, UPPERCASE, AND 2.5 INCHES TALL.
9. STREET NAME SUFFIX SHALL BE RIGHT-JUSTIFIED, ABBREVIATED, AND 2.5 INCHES TALL. THE SUFFIX SHALL HAVE AN UPPERCASE FIRST LETTER FOLLOWED BY LOWERCASE LETTERS. ACCEPTABLE ABBREVIATIONS INCLUDE: Ave, Blvd, Cir, Ct, Dr, Hwy, Pkwy, Pl, Plz, Rd, St, Ter, AND Trl.
10. STREET NUMBER SUFFIX (E.G., nd, th) SHALL BE LOWERCASE AND 2.5 INCHES TALL.
11. EVERY STREET NAME SIGN SHALL HAVE A BEGINNING BLOCK NUMBER. THE NUMBER SHALL BE RIGHT-JUSTIFIED AND 2.5 INCHES TALL.

STREET NAME SIGN BLADE

(FOR LOCAL AND RESIDENTIAL COLLECTOR STREETS)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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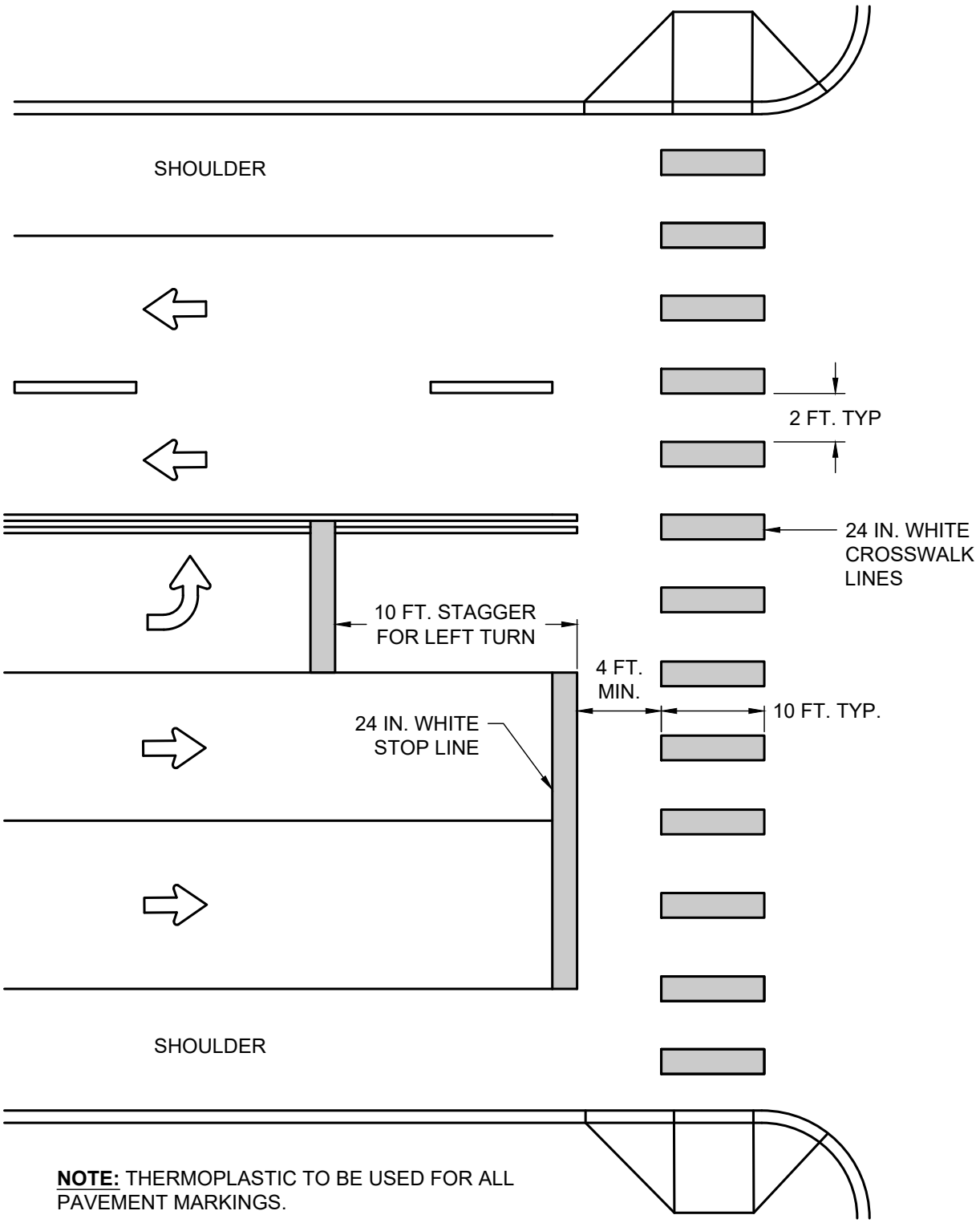

NOTE: THERMOPLASTIC TO BE USED FOR ALL PAVEMENT MARKINGS.

HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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T-8

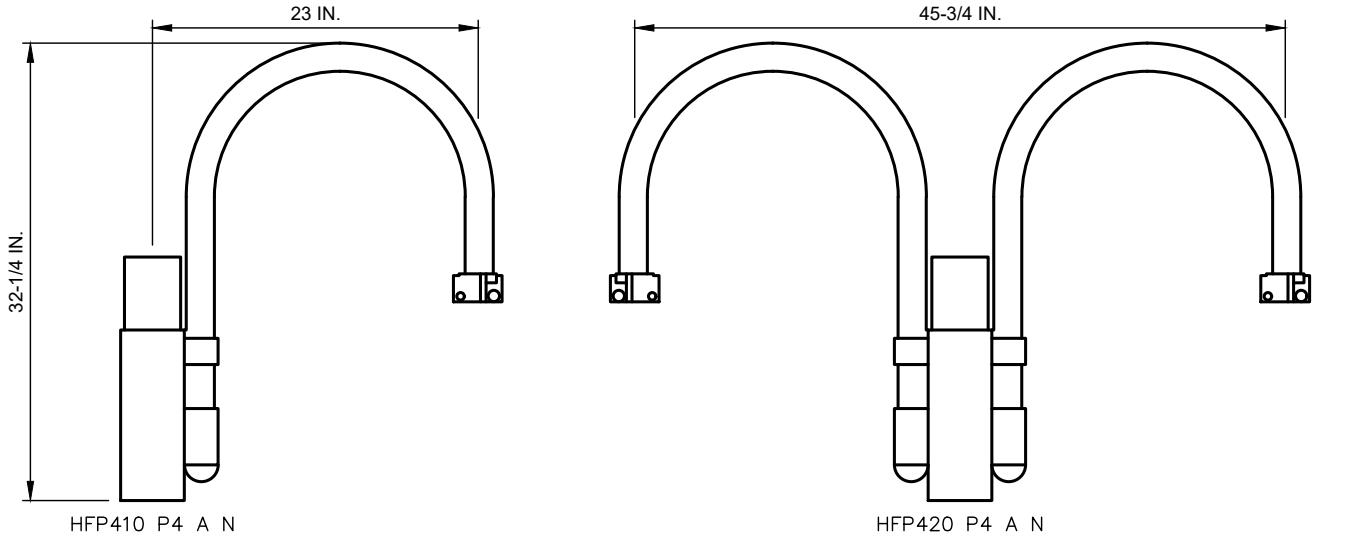
GENERAL NOTES:

1. PHOTOELECTRIC CONTROL:
   THE PHOTOELECTRIC CELLS LOCATED ON THE ELECTRICAL SERVICE, SHALL BE TWIST PLUG IN TYPE PRECISION BRAND TO MATCH FIXTURE OR CONTRACTOR VOLTAGE.

2. ELECTRICAL SERVICE EQUIPMENT:
   ELECTRICAL SERVICE EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO; METERED SERVICE/DISCONNECT OR CONTRACTOR ENCLOSURE. ALL ENCLOSURES HOUSING ELECTRICAL EQUIPMENT SHALL BE RAIN-TIGHT, INCLUDE A PADLOCK HANDLE, AND DESIGNED FOR OUTDOOR INSTALLATION IN ACCORDANCE WITH NEMA STANDARDS. THE LIGHTING INSTALLATIONS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF THE NATIONAL ELECTRICAL SAFETY CODE AND NATIONAL ELECTRIC MANUFACTURERS ASSOCIATION SPECIFICATIONS. A STANDALONE, PEDESTAL TYPE COMBINATION METERED SERVICE/DISCONNECT/CONTRACTOR CONTROL PANEL SHALL BE USED. THE PEDESTAL TYPE METER SERVICE MAY BE MOUNTED TO A CONCRETE PAD, ALTHOUGH A PRE CAST POLYMER PAD BASE IS RECOMMENDED. POWER REQUIREMENTS DESIRED SHOULD BE 120/240V SINGLE PHASE. IF NOT AVAILABLE, AN OPTIONAL SERVICE VOLTAGE MAY BE ACCEPTABLE IF APPROVED BY CITY STAFF. EACH SERVICE POINT SHALL INCLUDE INDIVIDUAL CIRCUIT BREAKERS AND PHOTOCELL CONTROLLED BY CONTRACTOR(S), AND A HOA SWITCH FOR CONTROL OF THE LIGHTING CIRCUIT(S). METER SERVICES SHALL REQUIRE A NO FEE ELECTRICAL PERMIT AND BE INSPECTED BY CITY OF WACO INSPECTION SERVICES. ELECTRIC METER APPLICATION FOR SERVICE WILL BE MADE BY CITY STAFF. THE COLOR OF THE ELECTRICAL SERVICE EQUIPMENT SHALL BE MANUFACTURER'S STANDARD BLACK.

   RECOMMENDED, ONCOR APPROVED, SERVICE PEDESTALS ARE MILBANK BRAND.

3. WIRE:
   ALL ELECTRICAL WIRE SHALL BE STRANDED COPPER CONDUCTOR. EARTH GROUND SHALL BE STRANDED COPPER CONDUCTOR WITH GREEN INSULATION. ALL WIRE SHALL BE OF ADEQUATE SIZE TO ACCOMMODATE LIGHTING LOAD. ALL SPLICES SHALL BE MADE INSIDE THE POLE. MINIMUM CONDUCTOR SIZE SHALL BE 10 AWG.



LIGHT FIXTURE ARM BRACKET

SCALE: NTS

DIMENSIONS

CXF15

WIDTH: 26 IN. DIAMETER

HEIGHT: 22-1/4 IN.

EPA: 1.6 SQ. FT.

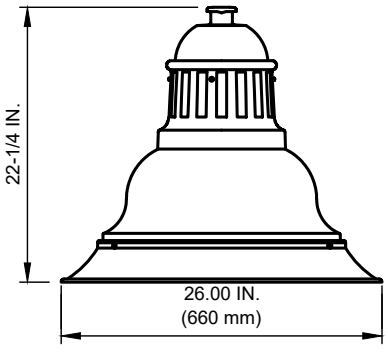
WEIGHT: 38 lbs (MAXIMUM)

COLOR TEMPERATURE:3000K

VOLTAGE: 120-277 VAC

WATTAGE: 35

LUMENS: 4715



LIGHT FIXTURE

SCALE: NTS

LIGHTING NOTES:

1. LIGHTING FIXTURE CATALOG NUMBER: HADCO BY SIGNIFY CXF15-32-G3-T-A-2-730-A-3-N OR APPROVED EQUAL.
2. LIGHT FIXTURE ARM BRACKET CATALOG NUMBER: HADCO BY SIGNIFY HFP-410 (OR 420) P4 A N.

ZONE LIGHT FIXTURE & ARM BRACKET

TO BE USED IN DOWNTOWN IMPLEMENTATION PLAN ZONE WITH APPROVAL OF DIRECTOR OF PUBLIC WORKS.

SEE T-SPL-2B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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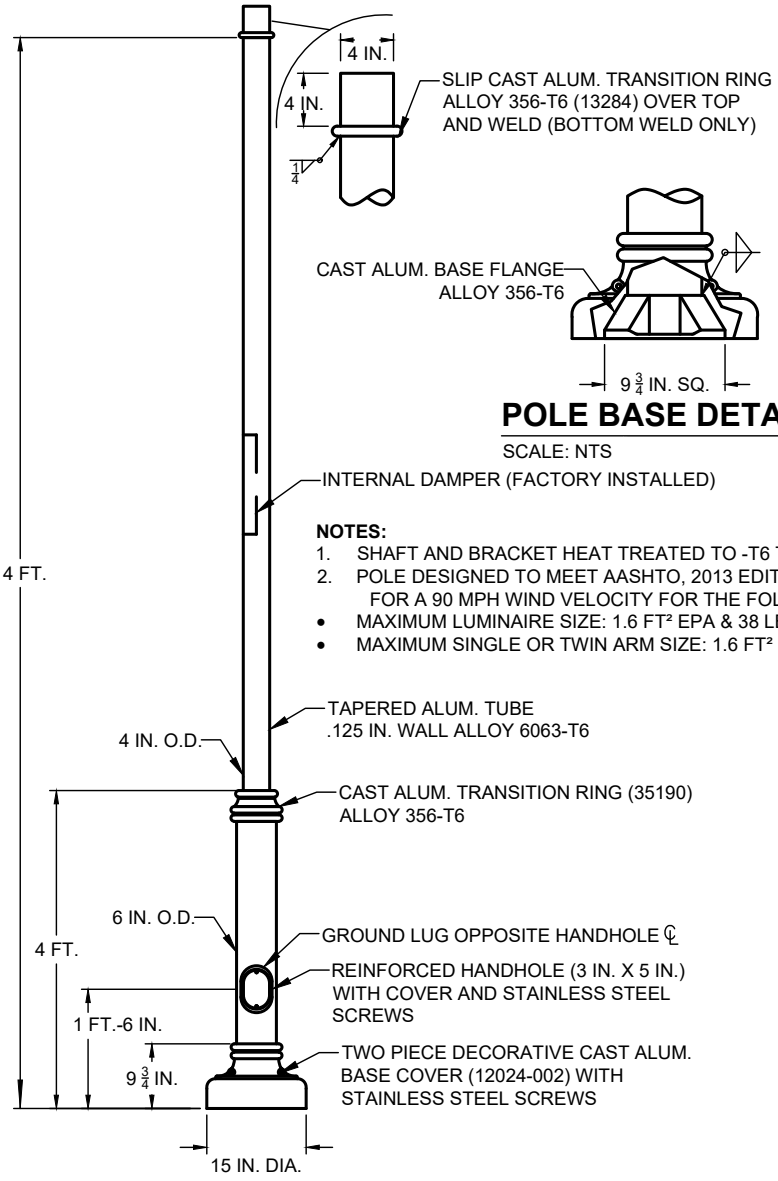
T-SPL-2A

GENERAL NOTES:

1. LIGHTING POLES AND FIXTURES:
   THE LIGHTING POLES FURNISHED FOR MOUNTING LUMINAIRES SHALL BE FREE FROM IMPERFECTIONS AND PRESENT A PLEASING APPEARANCE WHEN PLUMBED AND SECURED TO THE FOUNDATION. THE FINISHED POLE SHALL HAVE A SMOOTH UNIFORM FINISH FREE FROM PITS, SCRATCHES, BLISTERS OR OTHER DEFECTS. THE MOUNTING HEIGHT SHALL BE MIN. 14 FT. ALL FIXTURES SHALL NOT REQUIRE INDIVIDUAL PHOTOCELLS OR PHOTOCELL SOCKETS. ALL POLES SHALL NOT HAVE FACTORY INSTALLED FUSE HOLDERS, BUT SHALL HAVE EXTERNAL FUSE HOLDERS INSTALLED AT THE BASE OF EACH POLE. ALL LIGHT POLES AND FIXTURES (BASE COVER, ARM BRACKETS, LIGHT FIXTURES, POLE BANNER BRACKETS) SHALL HAVE A BLACK POWDER COAT PAINT FINISH (RAL 9017 TRAFFIC BLACK).

2. FUSE HOLDERS AND FUSES:
   IN-LINE FUSE HOLDERS ELASTIMOLD OR BUCHANAN, STYLE D65 (DOUBLE FUSE) WITH BUSSMAN FNM-TYPE FUSES, OF THE APPROPRIATE AMPERAGE SHALL BE INSTALLED AT THE BASE OF EACH POLE INSIDE THE HAND HOLE. FUSING IN FIXTURE SHALL NOT BE ALLOWED.

3. CABLE CONNECTIONS AND SPLICES:
   CABLE CONNECTIONS AND SPLICES SHALL BE MADE INSIDE THE POLE WITH SPLIT BOLT CONNECTORS AND INSULATED WITH #23 3M RUBBER TAPE, OR APPROVED EQUAL THEN WRAPPED WITH #88 3M VINYL TAPE, OR APPROVED EQUAL. NO SPLICES MAY BE MADE OUTSIDE THE POLE OTHER THAN INSIDE THE SERVICE/DISCONNECT OR CONTRACTOR ENCLOSURE.



POLE BASE DETAIL

SCALE: NTS

LIGHT POLE DETAIL

SCALE: NTS

4. GROUND (JUNCTION) BOXES:
   ELECTRICAL GROUND BOXES AND GROUND BOX COVERS CONSTRUCTED OF POLYMER CONCRETE. COVERS TO BE PERMANENTLY MARKED WITH "ELECTRICAL" LOGO.

   RECOMMENDED GROUND BOXES ARE QUAZITE BRAND.

   REFERENCE TxDOT DMS-11070 GROUND BOXES FOR MATERIAL REQUIREMENTS

   REFERENCE TXDOT ELECTRICAL DETAILS GROUND BOXES ED(4)-14 FOR INSTALLATION REQUIREMENTS

5. ELECTRICAL CONDUIT MINIMUM REQUIREMENTS:
   SCHEDULE 40 GRAY ELECTRICAL PVC
   2 IN. MINIMUM FOR POLE TO POLE AND HOME RUNS
   SERVICE CONDUIT 2 IN. PVC 24 IN. RADIUS
   ALL STREET AND DRIVEWAY CROSSINGS SHALL BE BORED AT 24 IN. DEPTH

NOTES:
1. SHAFT AND BRACKET HEAT TREATED TO -T6 TEMPER AFTER WELDING
2. POLE DESIGNED TO MEET AASHTO, 2013 EDITION (EXCEPT BREAKAWAY) FOR A 90 MPH WIND VELOCITY FOR THE FOLLOWING DESIGN CONDITIONS
- MAXIMUM LUMINAIRE SIZE: 1.6 FT² EPA & 38 LBS.
- MAXIMUM SINGLE OR TWIN ARM SIZE: 1.6 FT² EPA & 45 LBS

LIGHT POLE NOTES:

1. LIGHT POLE CATALOG NUMBER: BY HAPCO S6414-B6-4-SR-STAFFORD-NEXGENMOD-15 IN. DECORATIVE BASE OR APPROVED EQUAL.
2. LIGHT POLES SHALL BE INSTALLED A MINIMUM OF 2 FT. OFFSET FROM BACK OF CURB. MEASUREMENT IS FROM FACE OF FOUNDATION TO BACK OF CURB.
3. CONTRACTOR TO REFER TO CURRENT VERSION LIGHT POLE AND FIXTURE CUT SHEETS PRIOR TO INSTALLATION.
4. MINIMUM 10 AWG XHHW WIRE. FOR LONG RUN LENGTHS, SIZE WIRE TO NO MORE THAN 3% VOLTAGE DROP.
5. CONTRACTOR TO COORDINATE WITH ELECTRIC UTILITY TO ESTABLISH POINT OF DELIVERY.
6. CONDUIT SHALL BE 2 IN. PVC WITH A MINIMUM 24 IN. COVER.

ZONE LIGHT POLE & POLE BASE DETAILS

TO BE USED IN DOWNTOWN IMPLEMENTATION PLAN ZONE WITH APPROVAL OF DIRECTOR OF PUBLIC WORKS.

SEE T-SPL-2A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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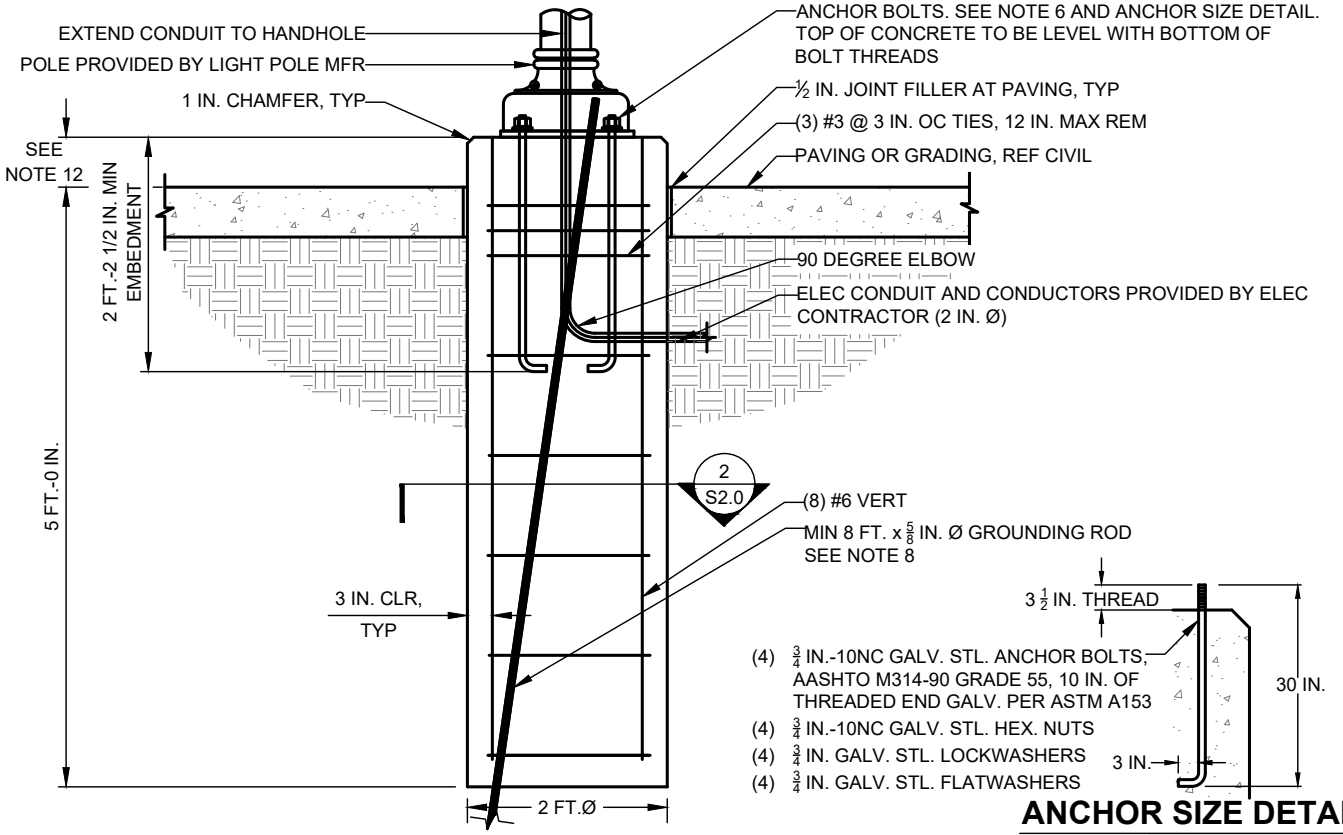
T-SPL-2B

GENERAL NOTES:

1. THIS STANDARD IS INTENDED FOR USE IN THE CITY OF WACO.
2. MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF CITY OF WACO STANDARD SPECIFICATIONS.
3. THE LIGHT POLE FOUNDATION IS DESIGNED FOR THE HAPCO S6414-B6-4-SR-STAFFORD-NEXGENMOD-15 IN. DECORATIVE BASE POLE. THE ASSOCIATED FIXTURES ARE THE HADCO HFP420 TWIN ARM BRACKET WITH (2) CXF14 PENDANTS. IF CHANGES TO THE POLE, ARM BRACKET, OR PENDANTS ARE MADE, THE CITY SHALL BE NOTIFIED AND THIS DESIGN MUST BE VERIFIED OR REDESIGNED BY AN ENGINEER LICENSED IN THE STATE OF TEXAS.
4. THE CONTRACTOR SHALL VERIFY LIGHT POLE STRUCTURE, ARM BRACKET, AND FIXTURE WITH CITY PRIOR TO CONSTRUCTION.
5. SHOP DRAWING SUBMITTAL REQUIRED FOR REVIEW AND APPROVAL BY THE CITY.
6. THE BOTTOM OF ANCHOR BOLTS SHALL HAVE A 90° "L" BEND. THE ANCHOR BOLTS SHALL BE EMBEDDED A MINIMUM OF 26-1/2 IN. INTO THE DRILLED SHAFT. ALL NECESSARY ANCHOR BOLTS AND TEMPLATES FOR SETTING ANCHOR BOLTS SHALL BE FURNISHED IMMEDIATELY AFTER AWARD OF THE CONTRACT, REGARDLESS OF POLE DELIVERY SCHEDULES. ANY ANCHOR BOLTS THAT DO NOT MEET THE MINIMUM DIAMETER OR EMBEDMENT DEPTH SHALL BE DESIGNED BY A LICENSED ENGINEER IN THE STATE OF TEXAS.
7. POLE FOUNDATION SHALL NOT BE LOCATED WITHIN 6 FT. OF EXISTING DEEP FOUNDATIONS.
8. GROUND RODS SHALL BE COPPER-CLAD AND INSTALLED IN EACH POLE FOUNDATION AT THE POINT OF SERVICE DISCONNECT. ALL GROUND RODS AT POLE FOUNDATIONS SHALL BE INSTALLED IN THE CONCRETE FOUNDATION AND AT AN ANGLE AS TO PENETRATE THE SOIL ON THE SIDE OF THE FOUNDATION. GROUND ROD SHALL EXTEND BETWEEN 4 IN. AND 6 IN. ABOVE THE TOP OF CONCRETE FOUNDATION FINISHED GRADE. INSTALLATIONS OUTSIDE THE FOUNDATION ARE NOT ACCEPTABLE.
9. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH f'c = 4,000 PSI AT 28 DAYS.
10. ALL REINFORCING STEEL SHALL BE GRADE 60.
11. ALL REINFORCING STEEL SHALL HAVE A MINIMUM OF 3 IN. COVER TO CENTER OF BAR, UNLESS NOTED OTHERWISE.
12. THE FOUNDATION BASE HEIGHT ABOVE TOP OF ADJOINING PAVED, CONCRETE, OR OTHER HARD SURFACES SHALL BE 2 IN. THE FOUNDATION BASE HEIGHT ABOVE ADJOINING GRASSED/ VEGETATED AREA SHALL BE 4 IN.



LIGHT POLE FOUNDATION DETAIL

1 S2.0

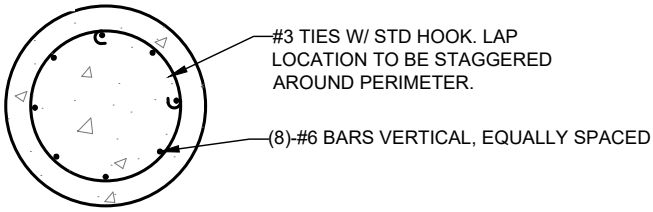
SCALE: NTS

ANCHOR SIZE DETAIL

SCALE: NTS

DESIGN LOADS

IBC 2018 WITH AMENDMENTS
DEAD: SELF WEIGHT
WIND: V.ult = 110 MPH
V.asd = 86 MPH
EXPOSURE CATEGORY = D
SOIL BEARING: 1500 PSF
RISK CATEGORY 1



FOUNDATION DETAIL SECTION

2 S2.0

SCALE: NTS

ZONE LIGHT REINFORCED FOUNDATION

TO BE USED IN DOWNTOWN IMPLEMENTATION PLAN ZONE WITH APPROVAL OF DIRECTOR OF PUBLIC WORKS.

CITY OF WACO

ENGINEERING DIVISION

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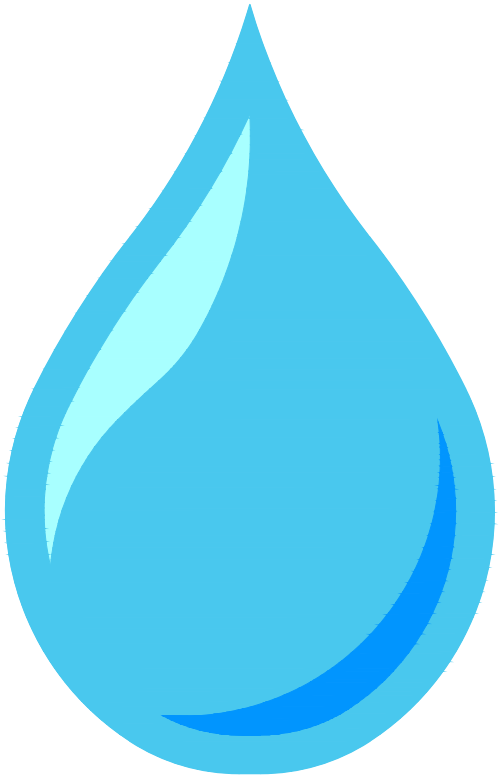
T-SPL-3

CITY OF WACO

WATER DETAILS



CITY OF WACO
WATER DETAILS

Sheet #	Sheet Title	Revision Date
W-1	Water General Notes And Water Service Tap Notes	11/15/2024
W-2	Fire Hydrant Setting	
W-2A	Limited Space Fire Hydrant Setting	
W-3A	General Notes: Thrust Blocks	
W-3B	Typical Horizontal Thrust Block	
W-3C	Typical Horizontal Thrust Block	
W-3D	Tee and Plug Thrust Blocks	
W-3E	Typical Vertical Bend Thrust Block	
W-4	Vertical Bend Detail	
W-5	Ring Connection	
W-6	Gate Valve and Valve Box	04/19/2024
W-7	Water Valve Box Extension Installation	04/19/2024
W-8	Water Valve Box and Water Valve Box Cover	
W-9	Typical Single-Family Water Meter Service Connection	04/28/2025
W-10	Bullhead Water Meter Connection	11/15/2024
W-11	Commercial Bullhead Water Meter with 1-1/2 Inch and 1 Inch Services	
W-12	Typical Commercial or Large Residential Water Meter Service Connection	
W-13	Typical Manifold Water Meter Service Connection	
W-14	Water Meter Box Unit for 3/4 Inch and 1 inch Meters (Carson 1017)	
W-15	Poly Meter Box and Lid for 1-1/2 Inch Meter (DWF65C)	
W-16	Concrete Meter Box Lid Details (DFW1324C)	
W-17	Concrete Water Meter Box for 3/4 Inch to 1 Inch Meters (Christy N30)	
W-18	Concrete Water Meter Box for 1-1/2 Inch Meter (Christy B65)	
W-19	Water Meter Vault and Lid Notes	04/28/2025
W-20	Typical Water Meter Detail for 2 Inch and Larger	
W-21	Double Check Valve Vault	
W-22	Air Release Valve and Manhole Vault (Off Street)	11/15/2024
W-23	Air Release Valve and Manhole Vault (In Street)	11/15/2024
W-24A	Pressure Reducing Valve Assembly on New or Existing Main	
W-24B	Pressure Reducing Valve (PRV) Notes	
W-25	Reduced Pressure Zone Assembly and Vault	
W-26	Dead End Water Main Automatic Flushing Valve	
W-27A	Below Ground Blow Off Assembly	
W-27B	Below Ground Blow Off Assembly	
W-28A	Above Ground Blow Off Assembly	
W-28B	Above Ground Blow Off Assembly	
W-29	Large Diameter (24 Inch to 48 Inch) Blow Off Valve Assembly	
W-30	Railroad Crossing Bore Details - REPLACED WITH G-18	11/15/2024
W-31	Bore Detail - REPLACED WITH G-19	11/15/2024
W-32	Pipe Through Casing Detail - REPLACED WITH G-20	11/15/2024
W-33	Embedment for New Water Line Crossing Over Existing Sewer Line	
W-34	Tracer Wire Details	11/15/2024
W-35	Valve Box Height Adjustment A	04/28/2025
W-36	Valve Box Height Adjustment B	04/28/2025
W-37	Embedment for New Stormwater Drainage Conduit or Franchise Utility Line Crossing Over New or Existing Water Line	11/15/2024
W-38	Fire Line Connection to Water Main	

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

WATER GENERAL NOTES

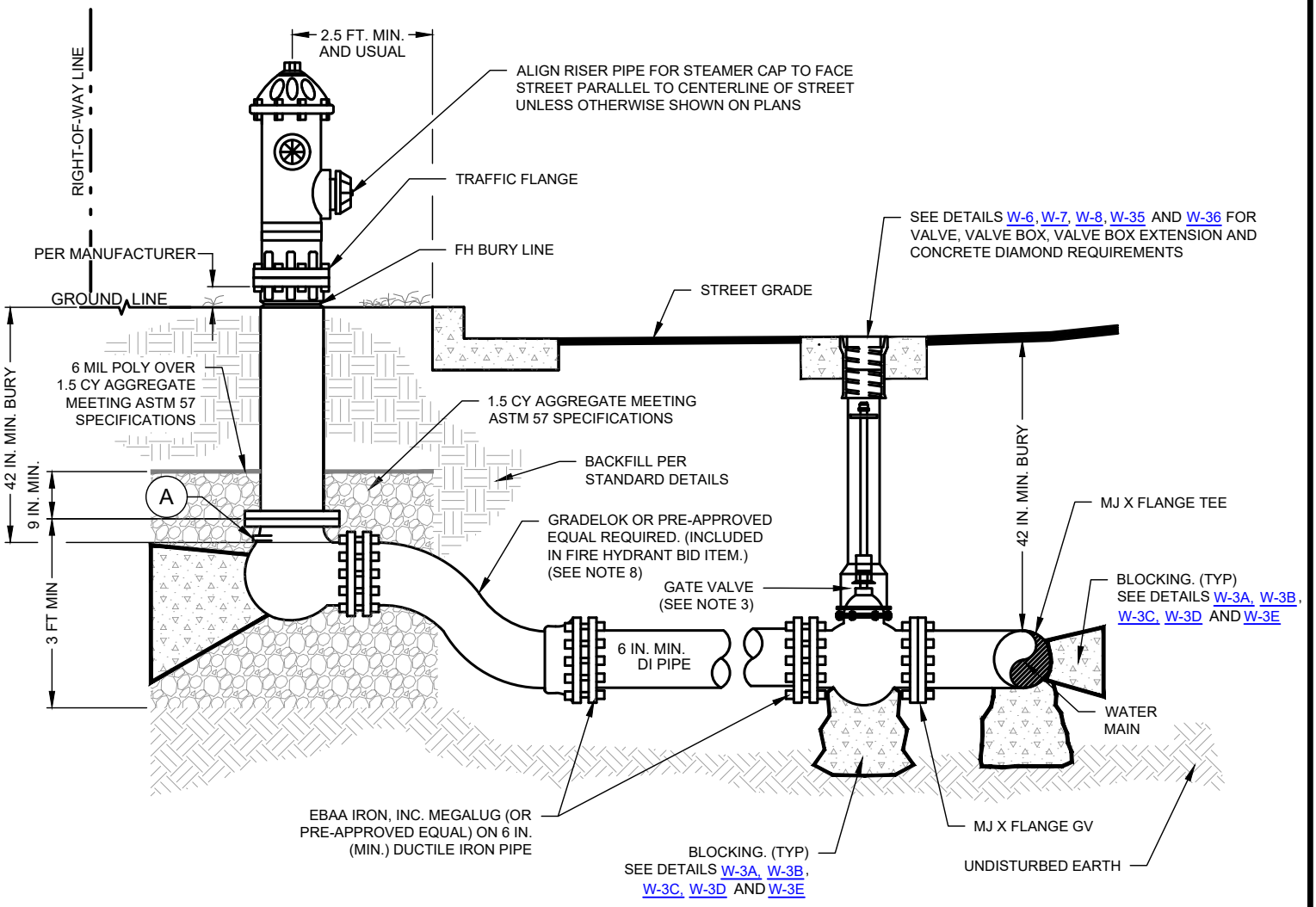
1. PVC WATER MAIN COLOR SHALL BE BLUE.
2. ALL WATER LINES SHALL BE COMPLETE IN PLACE INCLUDING ALL BENDS, BLOCKS, FITTINGS, SERVICES AND APPURTENANCES BEFORE PRESSURE TESTING.
3. SURFACE REPLACEMENT SHALL BE INCLUDED IN THE UNIT PRICE FOR WATER SERVICES.
4. PLACE METALLIC TRACER WIRE ON TOP OF TRENCH EXCAVATION PRIOR TO PLACEMENT OF EMBEDMENT AND WATER LINE AND CONNECT TO EACH SERVICE, VALVE AND FIRE HYDRANT. SEE DETAIL W-34
5. METALLIC TRACER WIRE SHALL BE #12 AWG SOLID TRACER WIRE WITH A BLUE COATING. LOCATOR WIRE MUST TERMINATE IN AN APPROVED TRACER WIRE BOX. SEE DETAIL W-34
6. ALL DUCTILE IRON WATER PIPE AND FITTINGS MUST BE POLY-WRAPPED PER CITY SPECIFICATIONS.
7. A STAMPED "W" OF 4 IN. IN HEIGHT AND 3/8 IN. IN DEPTH SHALL BE PLACED IN THE CENTER OF FACE OF CURB AT EACH NEW SERVICE LOCATION AND IN ANY NEW CURB AT EXISTING SERVICES.
8. ALL COPPER SERVICE PIPE MUST BE TYPE K-SOFT.
9. ALL POLYETHELINE SERVICE PIPE SHALL BE SDR-9 WITH EXTERIOR BLUE COLOR. CONTRACTOR SHALL USE 1 IN. OR 2 IN. CTS TUBING WITH STAINLESS STEEL INSERTS. ALL PIPE MUST MEET NSF 61, AWWA C901, ASTM D3350 AND ASTM D2737 STANDARD SPECIFICATIONS.
10. 3/4 IN. WASHED ROCK SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS FOR CONSTRUCTION ITEM A.2.a, CRUSHED STONE EMBEDMENT, OF SECTION 4.2 PART 2, EXCEPT THE GRADATION SHALL BE:

3/4 IN. WASHED ROCK	
SIEVE	PERCENTAGE RETAINED
1 1/2 IN.	0%
3/4 IN.	100%

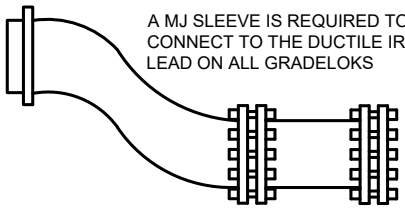
11. ALL SUBSTITUTIONS FOR USE AS A PRE-APPROVED EQUAL MUST BE SUBMITTED IN WRITING, AND APPROVED BY CITY ENGINEER, IN ADVANCE, IN ACCORDANCE WITH THE CURRENT VERSION OF THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
12. ANY DEVIATION FROM STANDARD DETAILS MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER AND APPROVED IN WRITING BY CITY ENGINEER.
13. IN ACCORDANCE WITH G-7 NOTE 6, PRIOR TO PLACEMENT OF CONCRETE FOR A DIAMOND IN PAVEMENT FOR A WATER VALVE, MATERIAL BELOW SHALL BE COMPACTED / RE-COMPACTED TO 95% STANDARD PROCTOR DENSITY AT ±2% OPTIMAL MOISTURE CONTENT.
14. IDENTIFICATION NON-DETECTABLE UNDERGROUND WARNING TAPE SHALL BE PLACED 24 IN. ABOVE TOP OF THE PIPE FOR ENTIRE LENGTH OF ALL WATER MAINS. TAPE SHALL BE A MINIMUM 4 MIL OVERALL THICKNESS AND BE 6 IN. WIDE, APWA BLUE IN COLOR, COLORFAST, CHEMICALLY INERT, AND WITH BLACK LETTERING IMPRINTED LEGEND “CAUTION BURIED WATER LINE BELOW.” SEE G-8 NOTE 7.

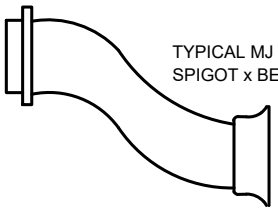
WATER SERVICE TAP NOTES

15. WHERE NEW WATER SERVICES ARE INSTALLED UNDER EXISTING CURB AND GUTTER, THE CONTRACTOR WILL HAVE THE FOLLOWING OPTIONS:
    A. REMOVE AND REPLACE CURB AND GUTTER SECTION FROM JOINT TO JOINT, TYPICALLY 10 FT.
    B. CONSTRUCT MINIMUM SIZE TUNNEL NECESSARY TO INSTALL NEW WATER SERVICE AND THEN PLACE CONTROLLED LOW STRENGTH MATERIAL BENEATH THE EXISTING CURB AND GUTTER.
    C. INSTALL SERVICE THROUGH A HOLE AT THE SAME LOCATION AS THE EXISTING PIPE, AND APPROXIMATELY THE SAME DIAMETER AS THE EXISTING PIPE.
16. ALL SERVICE TAPS MUST BE MADE UNDER PRESSURE AND FLUSHED, OR TAPPED DRY AND THEN HAVE A SWAB PULLED THROUGH THE PIPE BEFORE CONNECTING THE TAPPED PIPE TO THE MAIN.
17. 1-1/2 IN. AND 2 IN. METERS MUST BE BROUGHT TO THE WATER OFFICE TO BE TESTED. 3 IN. AND LARGER ARE TESTED IN THE FIELD BEFORE SERVICE IS APPROVED.
18. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
19. ALL EXTERNAL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL.
20. ALL SERVICE TAPS MUST BE APPROVED IN ADVANCE BY THE CITY OF WACO AND MUST BE PERFORMED UNDER THE DIRECT SUPERVISION OF A DESIGNATED CITY OF WACO UTILITY INSPECTOR. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN.



A LEAVE FREEZE HOLE OPEN





NOTES:

1. FIRE HYDRANT TO BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR TO REMOVE CHAINS FROM FIRE HYDRANT CAPS.
3. GATE VALVE IS REQUIRED TO BE DIRECTLY CONNECTED TO THE TEE.
4. MAINS VARY IN SIZE - REFER TO BLOCKING DETAILS W-3A, W-3B, W-3C, W-3D, AND W-3E.
5. ALL FITTINGS ON FIRE HYDRANT LEAD TO BE EBAA IRON, INC. MEGALUG RETAINER GLANDS OR PRE-APPROVED EQUAL.
6. LEAD SHALL BE DIP IN ALL CASES, SHALL BE 6 IN. MIN, AND SHALL BE POLY WRAPPED.
7. ON RURAL STREET SECTION, FIRE HYDRANT SHALL BE PLACED ON THE TOP-BANK, BACKSIDE OF DITCH.
8. 6 IN. X 6 IN. GRADELOK SHALL BE REQUIRED IN MOST CASES; HOWEVER, CONTRACTOR MAY USE A 6 IN. X 12 IN. GRADELOK TO ACCOMMODATE SITE CONDITIONS. **HYDRANT EXTENSIONS SHALL NOT BE ALLOWED**.
9. PRE-PACKAGED CONCRETE MIX SHALL NOT BE PERMITTED FOR USE IN CONCRETE DIAMOND.
10. REFL PAV MRK TY II-B-B TO BE PLACED 1 FT. FROM CENTERLINE OF STREET(S) ON SIDE OF FIRE HYDRANT FACING THE STEAMER CAP.

FIRE HYDRANT SETTING

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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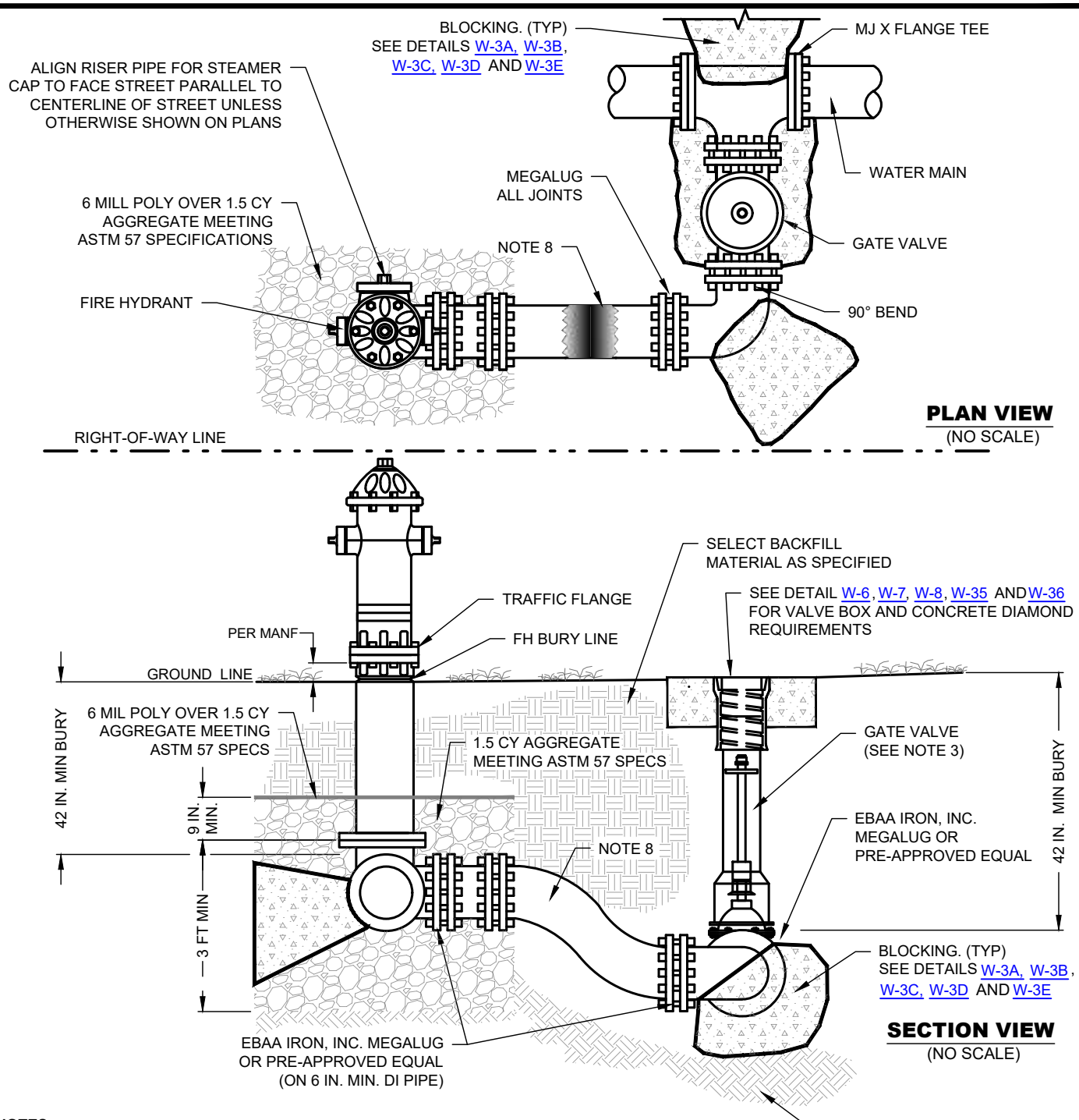
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-2



NOTES:

1. FIRE HYDRANT TO BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
2. CONTRACTOR TO REMOVE CHAINS FROM FIRE HYDRANT CAPS.
3. GATE VALVE IS REQUIRED TO BE CONNECTED DIRECTLY TO THE TEE.
4. MAINS VARY IN SIZE - REFER TO BLOCKING DETAILS W-3A, W-3B, W-3C, W-3D, AND W-3E.
5. ON RURAL STREET SECTIONS, FIRE HYDRANT SHALL BE PLACED ON THE TOP BANK BACKSIDE OF DITCH.
6. ALL FITTINGS ON FIRE HYDRANT LEAD NEED TO BE EBAA IRON, INC. MEGALUG RETAINER GLANDS OR PRE-APPROVED EQUAL.
7. LEAD SHALL BE D.I.P. IN ALL CASES, SHALL BE 6 IN. MIN. AND SHALL BE POLY WRAPPED.
8. GRADELOK OR PRE-APPROVED EQUAL REQUIRED. (INCLUDED IN FIRE HYDRANT BID ITEM.) (SEE DETAIL W-2)
9. 6 IN. X 6 IN. GRADELOK SHALL BE REQUIRED IN MOST CASES; HOWEVER, CONTRACTOR MAY USE A 6 IN. X 12 IN. GRADELOK TO ACCOMMODATE SITE CONDITIONS. **HYDRANT EXTENSIONS WILL NOT BE ALLOWED.**
10. PRE-PACKAGED CONCRETE MIX SHALL NOT BE PERMITTED FOR USE IN CONCRETE DIAMOND.
11. REFL PAV MRK TY II-B-B TO BE PLACED 1 FT. FROM CENTERLINE OF STREET(S) ON SIDE OF FIRE HYDRANT FACING THE STEAMER CAP.

LIMITED SPACE FIRE HYDRANT SETTING

USE OF THIS DETAIL IS ONLY ALLOWED WHEN THERE IS INSUFFICIENT ROOM TO USE STANDARD DETAIL W-2

CITY OF WACO

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W-2A

GENERAL NOTES:

1. SEE W-1 AND W-4 FOR ADDITIONAL GENERAL NOTES.
2. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 PSI FOR 24 IN. I.D. PIPE AND SMALLER AND 150 PSI ON 30 IN. AND LARGER.
3. VOLUMES OF VERTICAL BEND THRUST BLOCKS ARE NET VOLUMES OF CONCRETE TO BE FURNISHED. THE CORRESPONDING WEIGHT OF THE CONCRETE (4000 LB/C.Y.) IS EQUAL TO OR GREATER THAN THE VERTICAL COMPONENT OF THRUST ON THE VERTICAL BEND.
4. CONCRETE FOR ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH OR ROCK.
5. WALL THICKNESS (T) ASSUMED HERE FOR ESTIMATING PURPOSES ONLY.
6. CONCRETE FOR BLOCKING SHALL BE 2000 PSI CONCRETE.
7. 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.
8. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL SUBMIT TO THE PUBLIC WORKS DEPARTMENT A LISTING OF ALL MATERIALS TO BE USED. NO WORK SHALL BE UNDERTAKEN PRIOR TO WRITTEN APPROVAL OF THE MATERIAL LIST BY THE CITY PUBLIC WORKS DEPARTMENT.
9. CONCRETE SHALL NOT EXTEND BEYOND JOINTS.
10. USE 6 MIL POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE AND BENDS TO PREVENT CONCRETE FROM STICKING TO BENDS.
11. PRE-PACKAGED CONCRETE MIX OR EQUIVALENT WILL ONLY BE APPROVED ON LINES 12 IN. AND SMALLER DIAMETER WITH JOINT RESTRAINTS.
    - VOLUMETRIC CONCRETE MIXER TRUCK CONCRETE WILL BE PERMITTED FOR THRUST BLOCKS.
    - SUBMITTALS OF MIX OR PRODUCT MUST BE PROVIDED.
    - FOR NON-PLANT BATCHED CONCRETE FOR THRUST BLOCK LOCATIONS OF 2 CY OR LESS, MATERIAL SAMPLING AND TESTING FOR COMPRESSIVE STRENGTH WILL BE REQUIRED AT COST OF DEVELOPER'S CONTRACTOR. A MINIMUM OF ONCE PER FIRST USE ON PROJECT AND AS REQUIRED BY THE ENGINEERING INSPECTOR.
    - LOCATIONS WITH QUANTITIES GREATER THAN 2 CY SHALL BE PLACED WITH EITHER PLANT BATCHED CONCRETE DELIVERED BY CONCRETE MIXING TRUCK(S) OR VOLUMETRIC CONCRETE MIXER TRUCK CONCRETE.

GENERAL NOTES: THRUST BLOCKS

CITY OF WACO

ENGINEERING DIVISION

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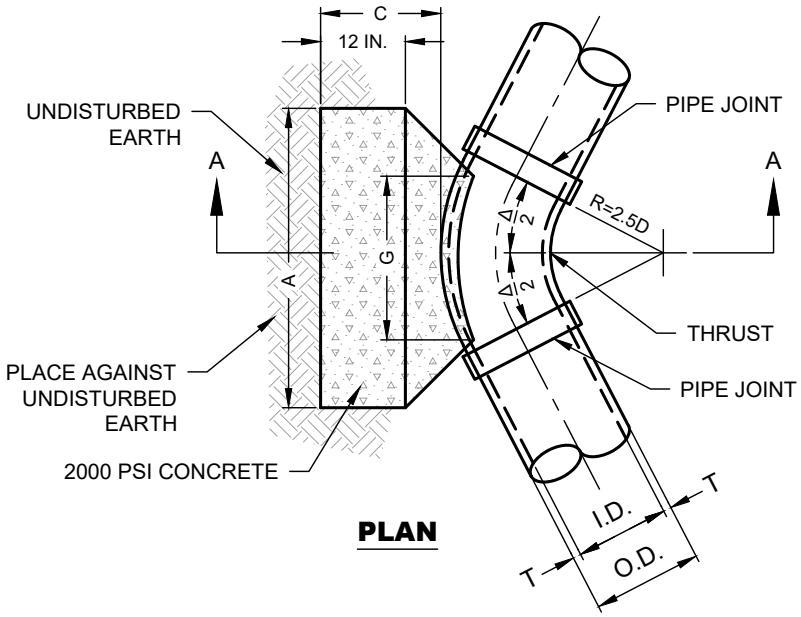
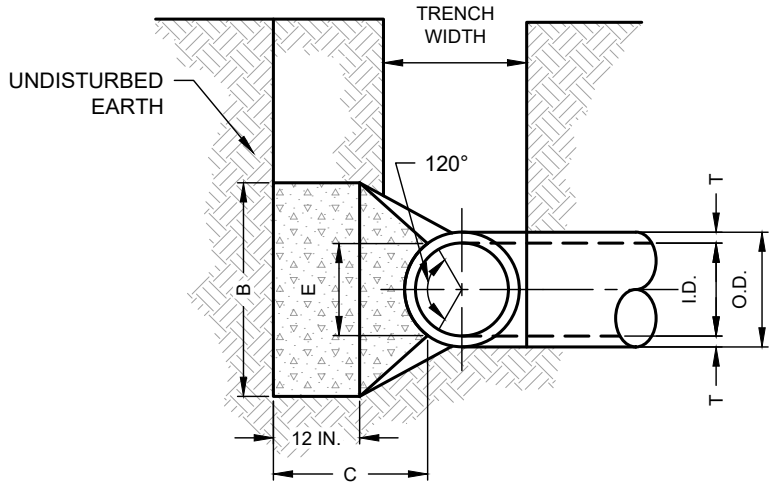
W-3A



PLAN



SECTION A-A

I.D (IN.)	T (IN.)	C 11.25° FT	C 22.50°+ FT	E FT	I.D. (IN.)
4.6 8	0.4	1.5	1.5	0.9	4.6.8
10.12	0.5	1.5	1.5	1.2	10.12
16 18	0 6	1 5	1.5	1 6	16.18
20	0.4	1.5	1.5	1.8	20
24	0.9	1 5	1.5	2.1	24
30	2 9	1 5	1.9	2 6	30
36	4.5	1.5	2.3	3.3	36
42	5.0	1.8	2.6	3.8	42
48	5 5	2 0	3.0	4 3	48
54	6.0	2.3	3.4	0.8	54
60	6.5	2 5	3.8	5.3	60
66	6 8	2 8	4.1	5 7	66
72	7.5	3.0	4.5	6.3	72
78	7.5	3.3	4.9	6.7	78
84	8 0	3 5	5.3	7 2	84
90	8.5	3.8	5.6	7.7	90
96	9.0	4.0	6.0	8.2	96

SEE W-3A FOR GENERAL NOTES

TYPICAL HORIZONTAL THRUST BLOCK

(NO SCALE)

SEE W-3C FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
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W-3B

ID (IN)	GPT	θ = 11.25° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	ID (IN)	GPT	θ = 22.50° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	ID (IN)
4 & 6	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4 & 6	0.5	2.0	1.5	1.5	0.1	1.0	1.0	0.1	4 & 6
10 & 12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10 & 12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1	10 & 12
16 & 18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16 & 18	1.6	8.9	2.0	3.5	0.5	2.0	2.5	0.3	16 & 18
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.6	2.5	3.5	0.7	2.0	3.5	0.4	20
24	1.1	8.9	3.0	3.0	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.0	0.5	24
30	1.4	10.4	2.0	4.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.5	30
36	1.7	15.0	2.5	5.0	0.9	2.0	4.0	0.5	36	3.3	29.6	5.5	5.5	2.3	4.0	4.0	1.0	36
42	1.9	20.4	4.5	6.0	1.5	2.5	5.0	0.6	42	3.9	40.5	7.0	6.0	3.9	4.5	5.0	2.1	42
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.5	48
54	2.5	33.7	6.0	7.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1	54
60	2.7	41.6	6.0	8.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3	60
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2	66
72	3.3	59.9	7.5	9.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1	72
78	3.6	70.2	8.0	10.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7	78
84	3.9	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.6	84
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7	90
96	4.4	105.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8	96

ID (IN)	GPT	θ = 30° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	ID (IN)	GPT	θ = 45° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	ID (IN)
4 & 6	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4 & 6	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	4 & 6
10 & 12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10 & 12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3	10 & 12
16 & 18	2.2	10.2	3.5	4.0	0.6	2.5	3.0	0.4	16 & 18	3.2	15.5	4.5	4.5	1.2	3.0	3.5	0.6	16 & 18
20	2.4	16.0	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.6	3.5	3.5	0.7	20
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	6.0	4.5	2.3	4.5	4.0	1.1	24
30	3.6	27.5	5.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	6.5	5.0	3.2	5.5	4.0	1.6	30
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.2	6.5	4.5	2.6	36
42	5.1	52.0	9.0	7.0	5.1	5.5	5.0	2.5	42	7.5	75.8	11.5	7.0	8.1	9.0	5.0	4.2	42
48	5.8	70.1	9.0	9.0	7.4	6.0	6.0	3.7	48	8.6	104.3	13.0	9.0	11.9	9.0	6.0	6.3	48
54	6.5	86.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	121.5	15.0	9.0	17.1	10.5	6.5	8.9	54
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	15.5	10.0	23.1	11.0	7.5	12.0	60
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2	66
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7	72
78	9.4	186.5	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9	78
84	10.1	216.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.7	15.5	10.5	32.6	84
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6	90
96	11.6	281.2	18.0	16.0	55.0	12.5	11.5	28.9	96	17.1	415.6	25.0	16.0	89.5	18.5	11.5	48.5	96

ID (IN)	GPT	θ = 67.5° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	D (IN)	GPT	θ = 90° THRUST TONS	EARTH AFT	EARTH BFT	EARTH VOLUME C.Y.	ROCK AFT	ROCK BFT	ROCK VOLUME C.Y.	ID (IN)
4 & 6	2.1	6.5	3.0	2.0	0.3	2.0	1.5	0.2	4 & 6	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2	4 & 6
10 & 12	3.1	12.5	5.5	2.5	0.8	3.5	2.0	0.4	10 & 12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5	10 & 12
16 & 18	4.7	28.3	7.5	4.0	1.9	5.0	3.0	0.9	15 & 18	6.0	36.0	9.0	4.5	2.4	4.5	4.0	1.0	16 & 18
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.5	44.1	10.0	4.5	3.1	6.0	4.0	1.5	20
24	6.2	50.3	11.5	4.5	3.2	6.5	4.0	1.8	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1	24
30	7.8	58.9	12.0	5.0	4.0	7.5	4.0	2.2	30	9.2	75.0	15.0	5.0	6.7	10.0	4.0	3.3	30
36	9.4	84.9	14.5	5.0	5.2	9.5	4.5	2.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3	36
42	10.9	115.5	17.0	7.0	12.0	11.0	5.5	6.1	42	13.9	147.0	21.0	7.0	17.5	17.0	5.5	8.7	42
48	12.5	150.9	19.0	9.0	18.4	13.0	8.0	9.2	48	15.9	192.0	24.0	8.0	25.2	18.0	6.0	12.4	48
54	14.0	191.0	21.5	9.0	26.0	15.0	9.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	19.1	54
60	15.6	235.8	24.0	10.0	35.6	15.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	27.0	60
66	17.1	285.3	25.0	11.0	46.0	18.0	9.0	23.0	66	21.8	362.8	32.0	11.0	66.2	22.0	8.5	32.5	66
72	18.7	339.5	26.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0	72
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	36.0	13.0	109.2	26.0	10.0	53.2	78
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	28.8	587.7	42.0	14.0	134.4	28.0	10.5	64.6	84
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	46.0	15.0	164.9	30.0	11.5	81.2	90
96	24.9	603.5	38.0	16.0	138.0	25.5	12.0	71.0	96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1	96

TYPICAL HORIZONTAL THRUST BLOCK

SEE W-3A FOR GENERAL NOTES (NO SCALE) SEE W-3B FOR ADDITIONAL DETAILS

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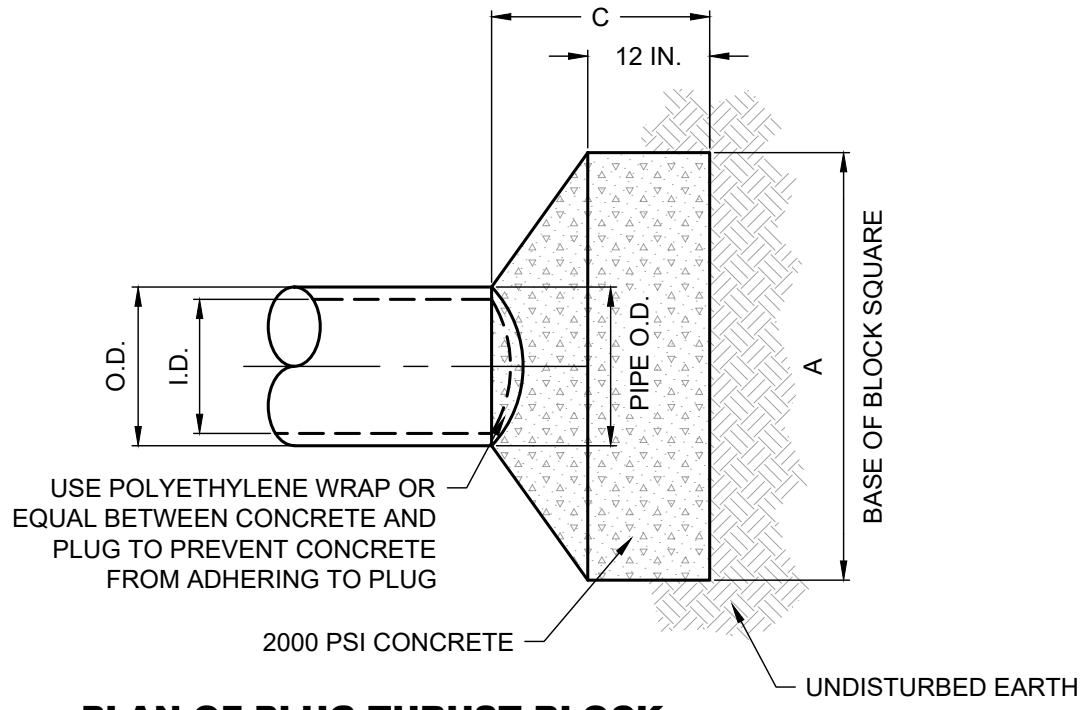
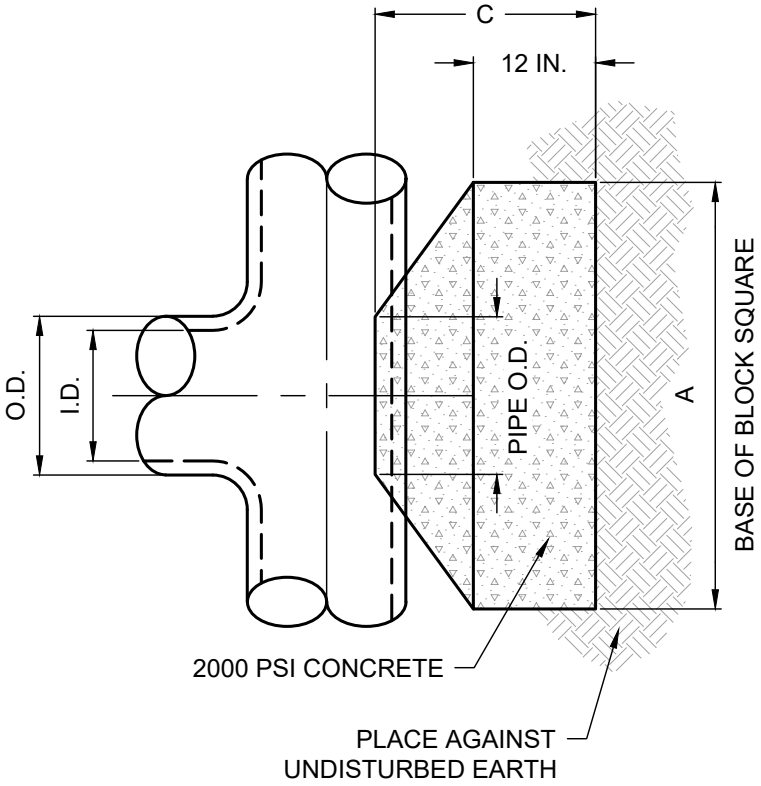
W-3C



PLAN OF PLUG THRUST BLOCK

(NO SCALE)



PLAN OF TEE THRUST BLOCK

(NO SCALE)

D (IN)	TEES & PLUGS THRUST TONS	C FT.	EARTH A FT	EARTH VOLUME C.Y	ROCK A FT	ROCK VOLUME C.Y	I D (IN)
4,5,8	6.1	1.5	2.5	0.3	2.0	0.2	4,5,8
10,12	11.3	1.5	3.5	0.6	2.5	0.3	10,12
15,18	25.5	2.0	5.5	1.9	4.0	0.9	15,18
20	31.5	2.0	6.0	1.9	4.0	0.9	20
24	45.2	2.5	7.0	3.1	5.0	1.7	24
30	63.0	3.0	7.5	4.1	5.5	2.4	30
36	46.3	4.0	9.0	7.5	6.5	4.2	36
42	104.0	4.5	10.5	11.0	7.5	6.2	42
48	136.0	5.0	12.0	15.6	8.5	8.7	48
54	172.0	5.5	13.5	21.4	9.5	11.9	54
60	212.0	6.0	15.0	28.4	10.5	15.7	60
66	257.0	6.5	16.5	36.8	11.5	20.5	66
72	306.0	7.5	17.5	47.2	12.5	27.2	72
78	358.0	8.0	18.0	58.0	13.5	33.7	78
84	416.0	8.5	20.5	72.3	14.5	41.7	84
90	477.0	9.0	22.0	87.7	15.5	49.7	90
96	543.0	9.5	23.5	104.8	16.5	59.0	96

SEE W-3A FOR GENERAL NOTES

TEE AND PLUG THRUST BLOCKS

CITY OF WACO

ENGINEERING DIVISION

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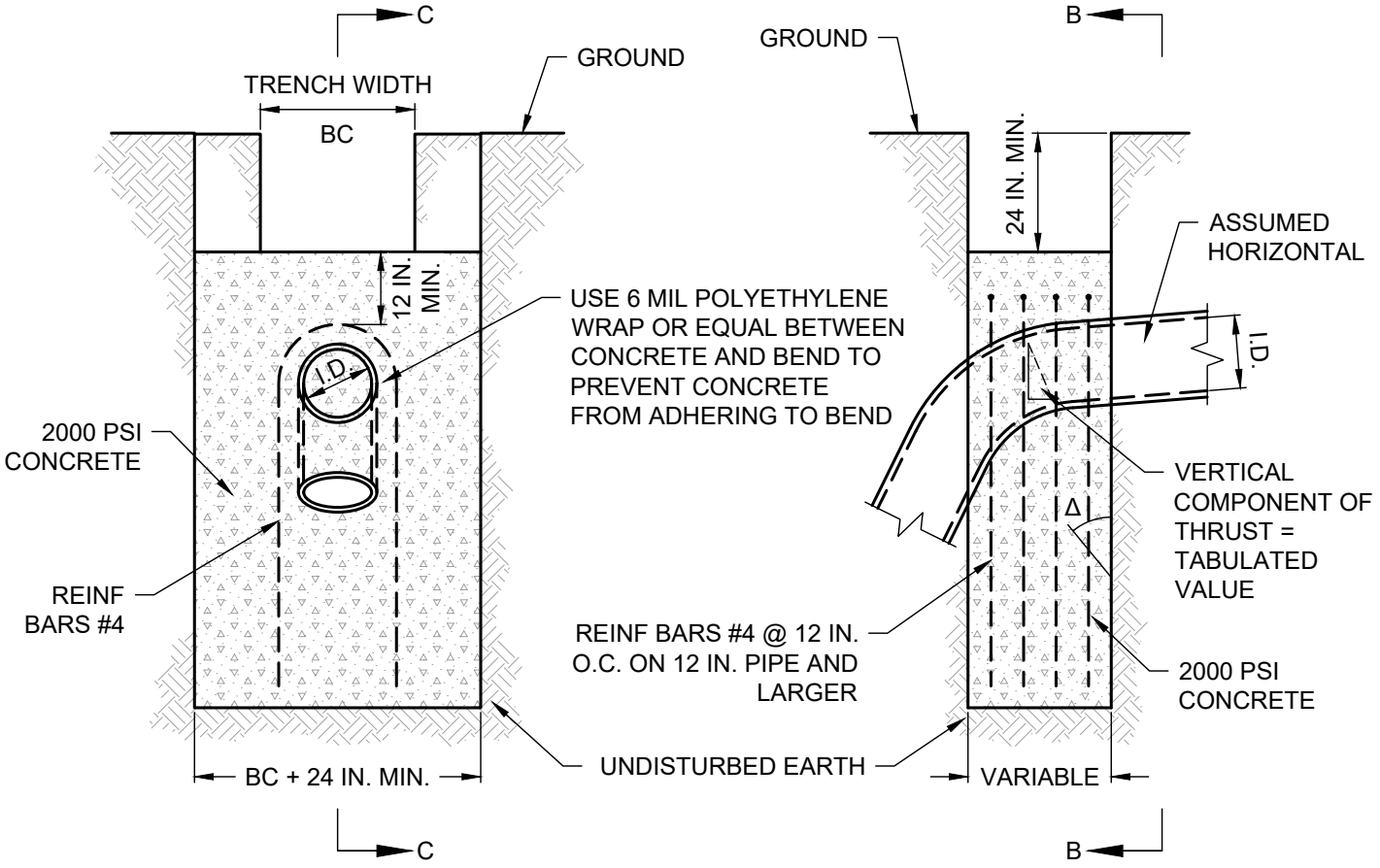
W-3D



ELEVATION B-B **SECTION C-C**

	VERTICAL BENDS												
	V >	11.25°		22.50°		30°		45°		67.5°		90°	< V
I.D. (IN.)	I.D. (IN.)	THRUST TONS	VOLUME C.Y.	THRUST TONS	VOLUME C.Y.	THRUST TONS	VOLUME C.Y.	THRUST TONS	VOLUME C.Y.	THRUST TONS	VOLUME C.Y.	THRUST TONS	VOLUME C.Y.	I.D. (IN.)
4 & 6	4 & 6	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
10 12	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
16.15	16.18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.6	11.8	25.5	12.7	16.15
20	20	6.1	3.1	12.0	6.0	15.7	7.9	22.3	11.1	29.2	14.6	31.4	15.7	20
24	24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.6	20.8	45.2	22.6	24
30	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	36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.2	76.4	38.2	36
42	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	48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	63.7	136.0	67.9	48
54	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	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	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	72	59.6	29.8	117.0	58.4	153.0	76.3	215.0	108.0	282.0	141.0	305.0	153.0	72
78	78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	356.0	179.0	78
84	84	81.1	40.5	159.0	79.5	209.0	104.0	294.0	147.0	384.0	192.0	415.0	208.0	84
90	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	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

TYPICAL VERTICAL BEND THRUST BLOCK

(NO SCALE)

SEE W-3A FOR GENERAL NOTES

CITY OF WACO

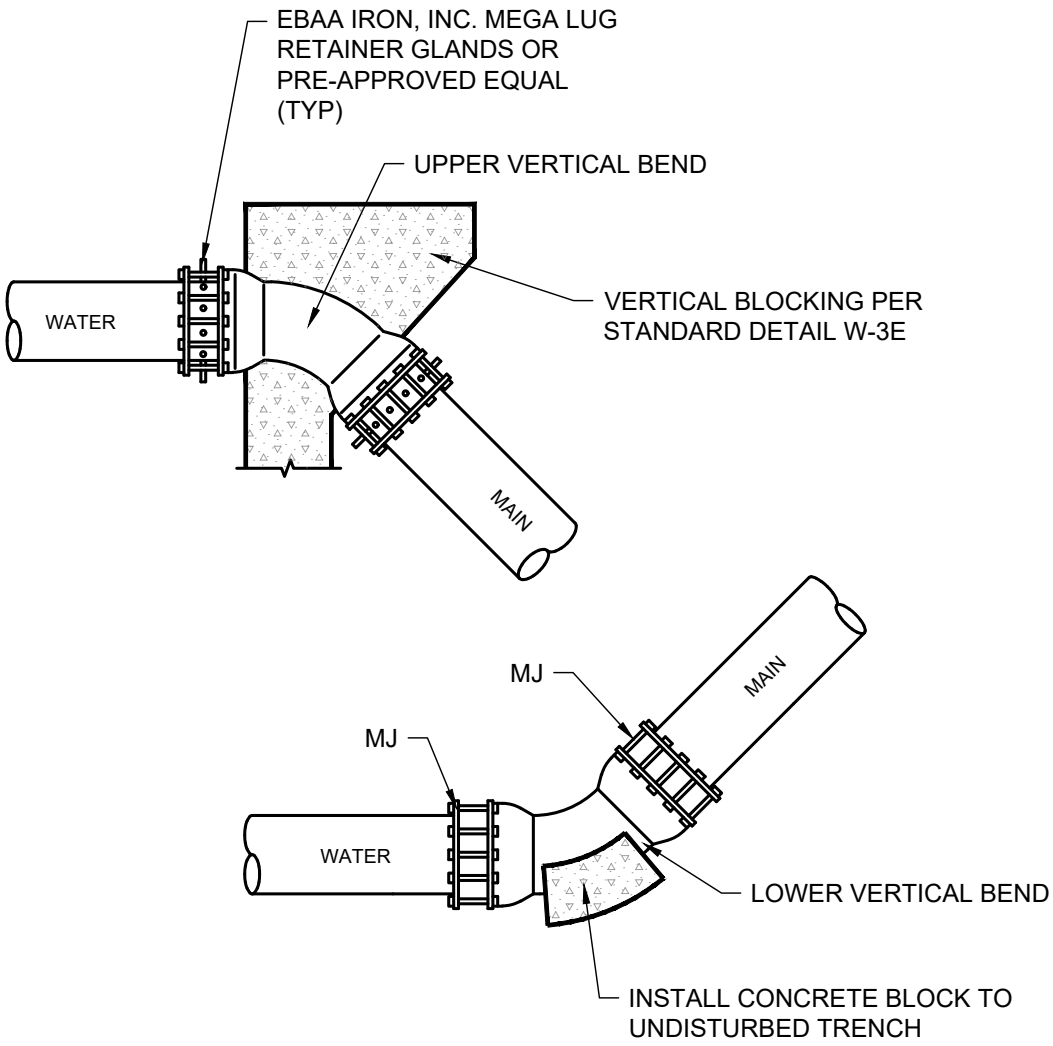
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-3E



NOTES:

1. VERTICAL BENDS SHALL HAVE MEGALUG FITTINGS ON EACH SIDE.
2. SEE STANDARD DETAILS W-3A, W-3B, W-3C, W-3D, AND W-3E FOR BLOCKING DETAILS AND TABLES.
3. PROJECT ENGINEER SHALL PROVIDE RESTRAINT LENGTH. RESTRAINT LENGTH MINIMUM IS 25 FT. FROM BEND.

VERTICAL BEND DETAIL

(NO SCALE)

CITY OF WACO

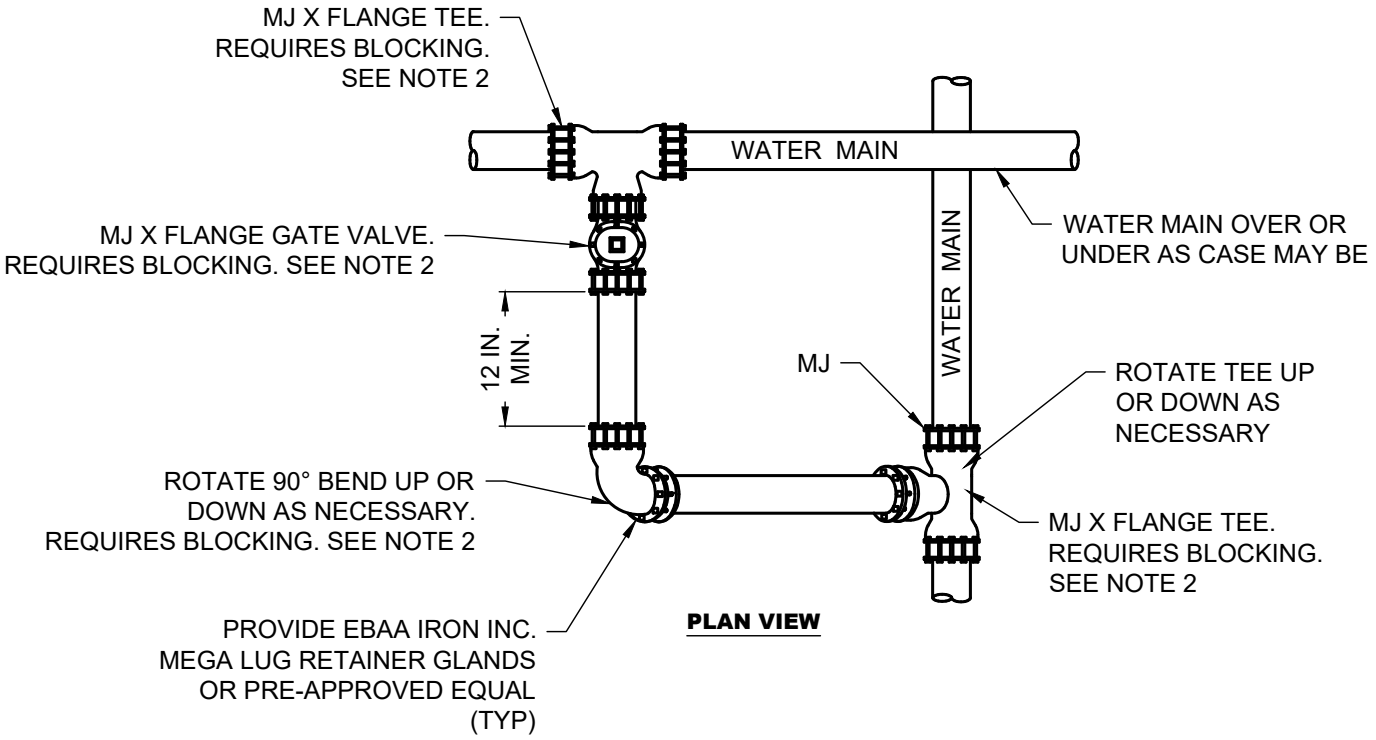
ENGINEERING DIVISION

REVISIONS

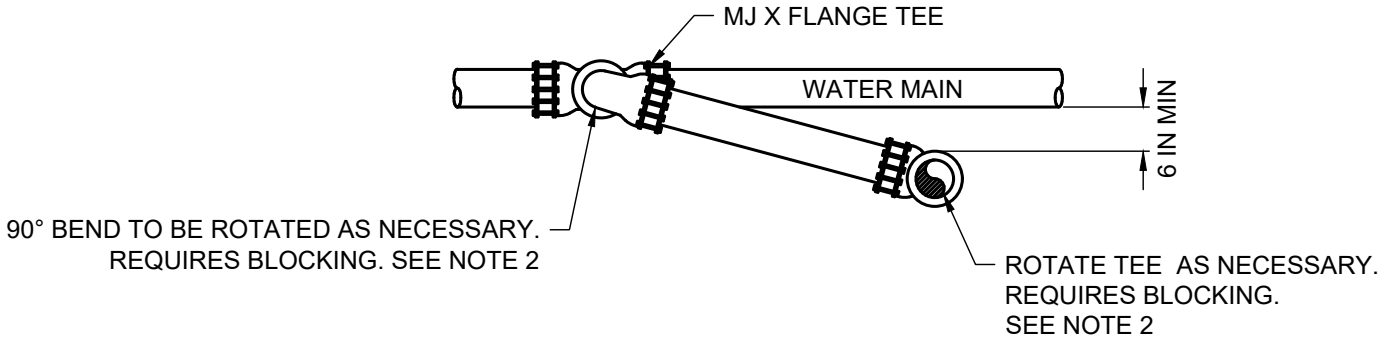
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-4



PLAN VIEW



SECTION VIEW

NOTES:

1. MINIMUM PIPE SIZE OF RING CONNECTION SHALL MATCH PIPE SIZE OF SMALLER MAIN.
2. GATE VALVES, TEES AND BENDS REQUIRE BLOCKING. SEE HORIZONTAL BLOCKING TABLES ON W-3A, W-3B, W-3C, W-3D, AND W-3E .
3. GATE VALVE SHALL BE INSTALLED ON LARGER WATER MAIN TEE.

RING CONNECTION

(NO SCALE)

CITY OF WACO

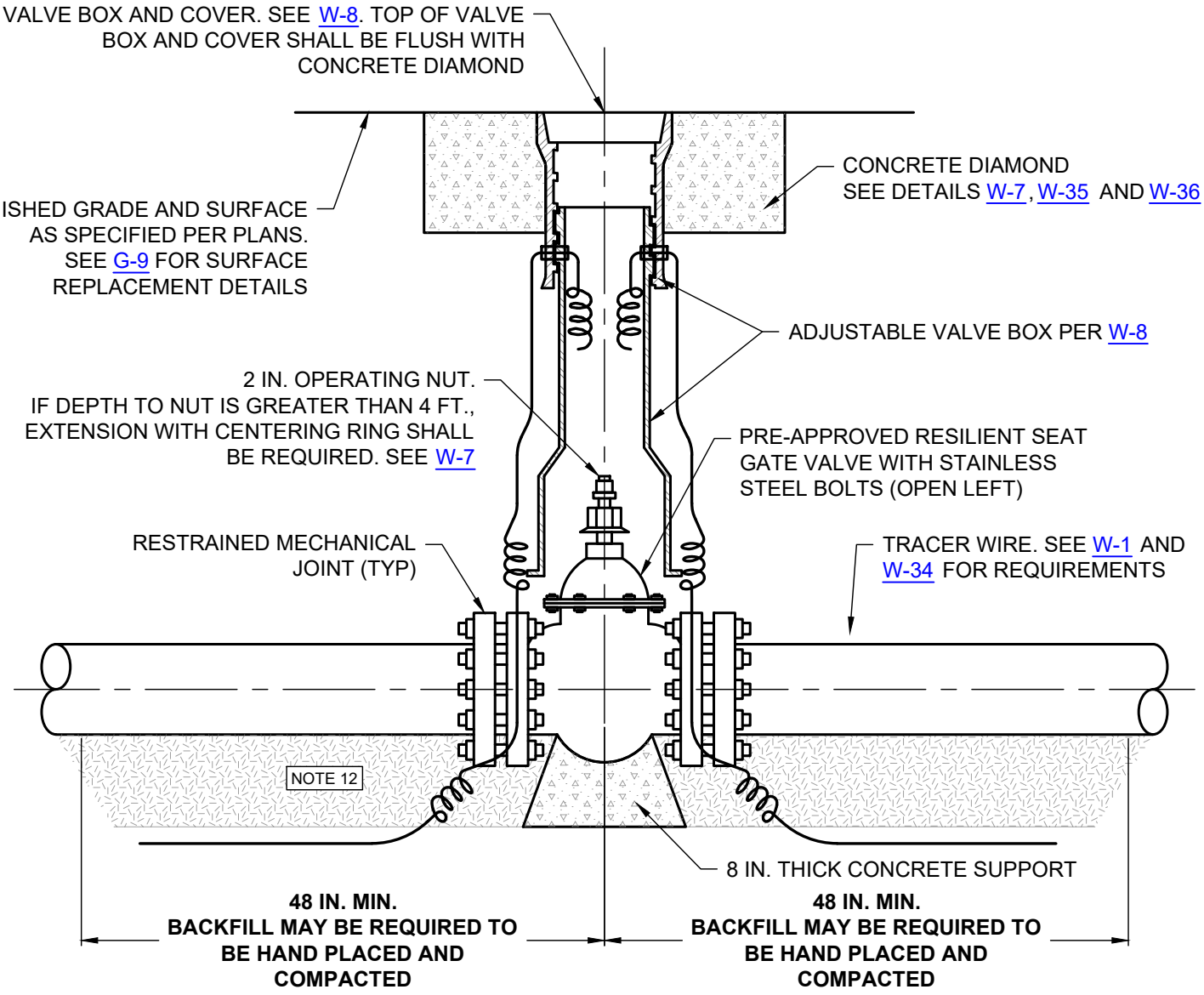
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-5



NOTES:

1. GATE VALVES SHALL BE DUCTILE IRON BODY, RESILIENT SEAT TYPE, WITH NON-RISING STEM, OPEN LEFT, 200 PSI WORKING PRESSURE AND CONFORM TO AWWA STANDARD C509 FOR RESILIENT SEATED GATE VALVES. T-HEAD BOLTS SHALL BE COR-BLUE, OTHER NUTS AND BOLTS SHALL BE STAINLESS STEEL.
2. ACCEPTABLE MANUFACTURERS ARE MUELLER, CLOW OR AFC.
3. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT WHERE REQUIRED.
4. VALVES SHALL NOT BE PLACED IN CONCRETE VALLEY OR GUTTERS.
5. VALVE AND FITTING SHALL BE POLY-WRAPPED PER SPECIFICATIONS.
6. VALVE BOXES SHALL BE ADJUSTED TO FINAL FINISHED GRADE BY CONTRACTOR.
7. ALL VALVES SHALL BE OPEN LEFT (COUNTER-CLOCKWISE)
8. VALVE BOX SHALL NOT BE SUPPORTED BY THE WATER LINE.
9. VALVE BOX TO BE PLUMB AND CENTERED OVER OPERATING NUT.
10. VALVE BOX DETAILS SHALL APPLY TO BOTH NEW INSTALLATIONS AND ADJUSTMENT OF EXISTING VALVES.
11. WHEN ADJUSTING EXISTING VALVE BOXES, RECONNECT EXISTING TRACER WIRE IF PRESENT.
12. EMBEDMENT PER STANDARD DETAIL G-8. TRACER WIRE TO BE PLACED ON TOP OF TRENCH EXCAVATION PRIOR TO PLACEMENT OF EMBEDMENT.

GATE VALVE AND VALVE BOX

(NO SCALE)

CITY OF WACO

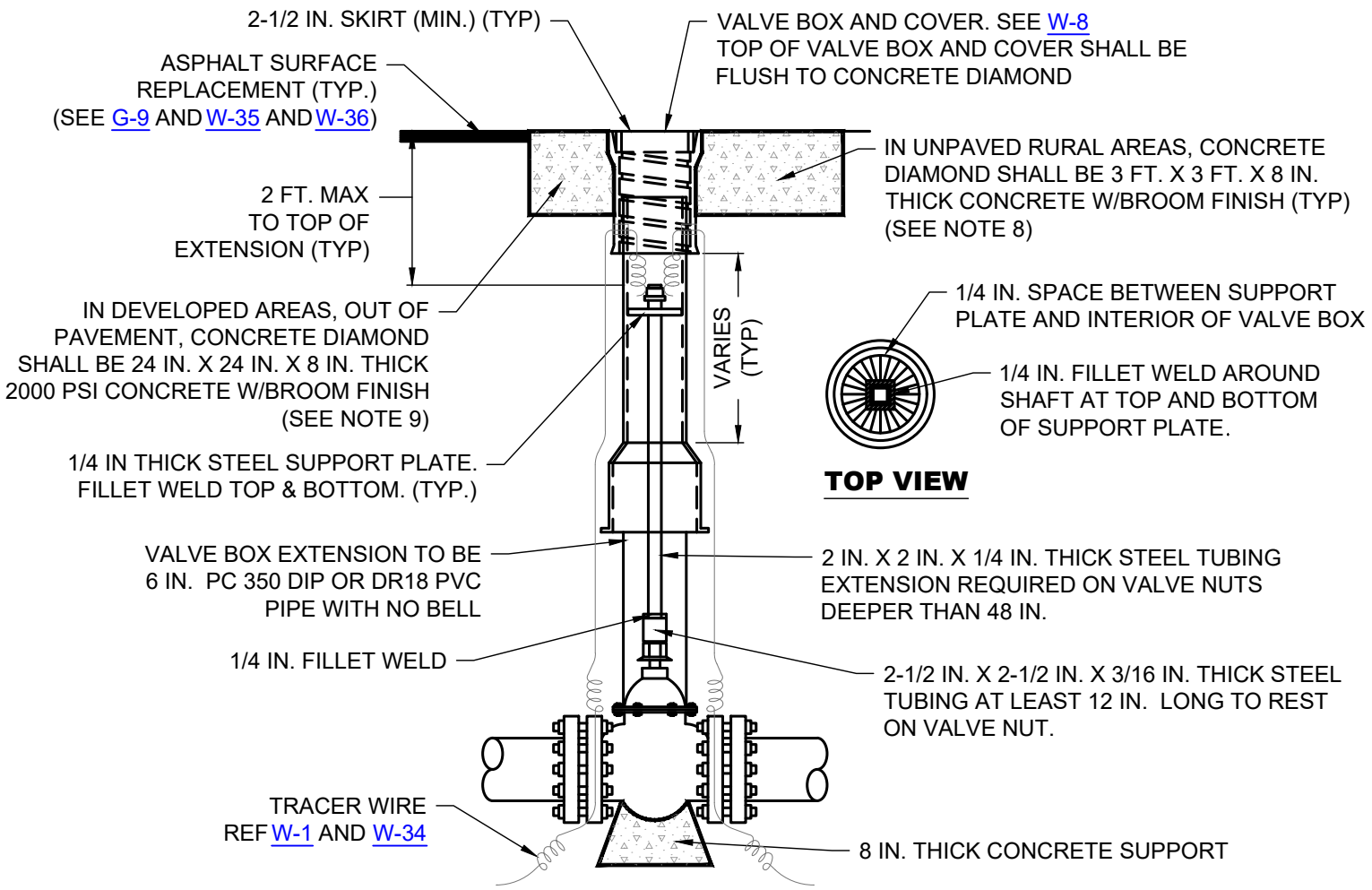
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	BOLD TEXT FOR EMPHISIS	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-6



SEE W-6 FOR LIMITS OF BACKFILL THAT MAY BE REQUIRED TO BE HAND PLACED AND COMPACTED

VALVE BOX EXTENSION DETAIL

NOTES:

1. STEM EXTENSION SHALL BE REQUIRED WHEN VALVE NUT BURY DEPTH EXCEEDS 48 IN.
2. ALL STEM EXTENSIONS SHALL BE CLIPPED TO THE VALVE NUT.
3. SUBGRADE WILL BE PLACED AND COMPACTED IN ACCORDANCE WITH SPECIFICATIONS.
4. STABILIZED BASE WILL BE PLACED TO GRADE IN ACCORDANCE WITH SPECIFICATIONS.
5. SOIL, SUBGRADE, AND STABILIZED BASE OVER VALVE BOX SHALL BE REMOVED AND THE VALVE BOX INSTALLED TO PROPER FINAL ELEVATION.
6. ANY EXCAVATED AREA BELOW THE SURFACE REPLACEMENT SHALL BE FILLED WITH 2000 PSI CONCRETE OR CONTROLLED LOW STRENGTH MATERIAL (CLSM). CARE SHALL BE EXERCISED IN THE CONCRETE OR CLSM PLACEMENT TO PREVENT ANY VOIDS BELOW OR AROUND THE VALVE BOX.
7. PLEASE REFER TO STANDARD DETAIL G-9 FOR ASPHALT SURFACE REPLACEMENT.
8. IN UNPAVED RURAL AREAS WITHIN THE RIGHT-OF-WAY, A 3 FT. X 3 FT. X 8 IN. THICK REINFORCED (4 - #4 EACH WAY, 3 IN. CLEAR SIDES AND BOTTOM) CONCRETE DIAMOND SHALL REPLACE THE ASPHALT SURFACE REPLACEMENT NOTED ABOVE. THE CONCRETE DIAMOND SHALL BE CENTERED ON THE VALVE BOX, HAVE A BROOM FINISH AND SHALL BE PLACED TO GRADE (NOTES: 3 - 7 AND NOTE 9 DO NOT APPLY). PLEASE REFER TO STANDARD DETAIL G-9 FOR CLASS E SURFACE REPLACEMENT.
9. IN DEVELOPED AREAS OUTSIDE OF THE PAVEMENT, AN 24 IN. X 24 IN. X 8 IN. THICK REINFORCED (2 - #4 EACH WAY, 3 IN. CLEAR SIDES AND BOTTOM) CONCRETE DIAMOND WILL REPLACE THE CLASS B SURFACE REPLACEMENT NOTED ABOVE. THE CONCRETE DIAMOND SHALL BE CENTERED ON THE VALVE BOX, HAVE A BROOM FINISH AND SHALL BE PLACED TO GRADE (NOTES: 4 - 8 DO NOT APPLY). PLEASE REFER TO STANDARD DETAILS G-9 FOR CLASS E SURFACE REPLACEMENT.
10. PRE-PACKAGED CONCRETE MIX NOT PERMITTED FOR USE IN CONCRETE DIAMOND.

WATER VALVE BOX EXTENSION INSTALLATION

(NO SCALE)

CITY OF WACO

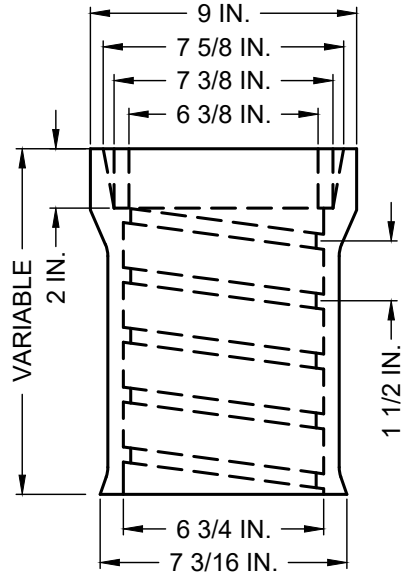
ENGINEERING DIVISION

REVISIONS

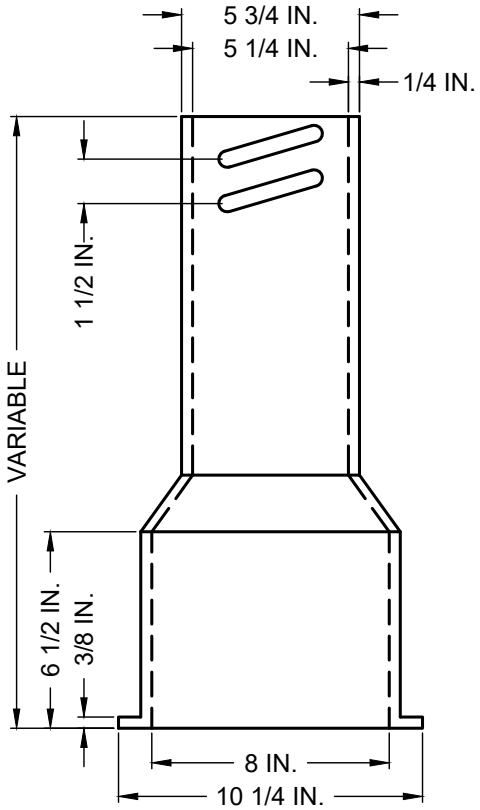
NO.	COMMENTS	BY	DATE
1	ADD NOTE REFERENCE TO STD DETAIL	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-7



TOP SECTION

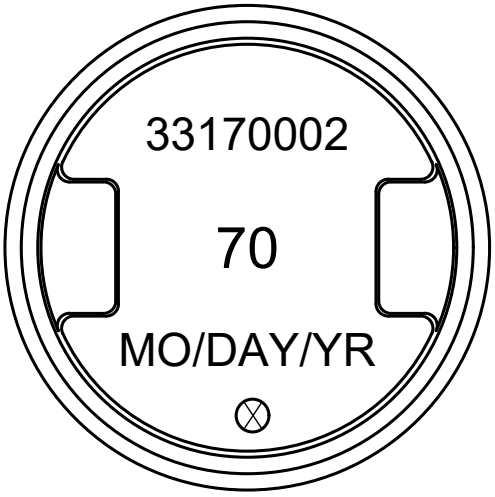


BOTTOM SECTION

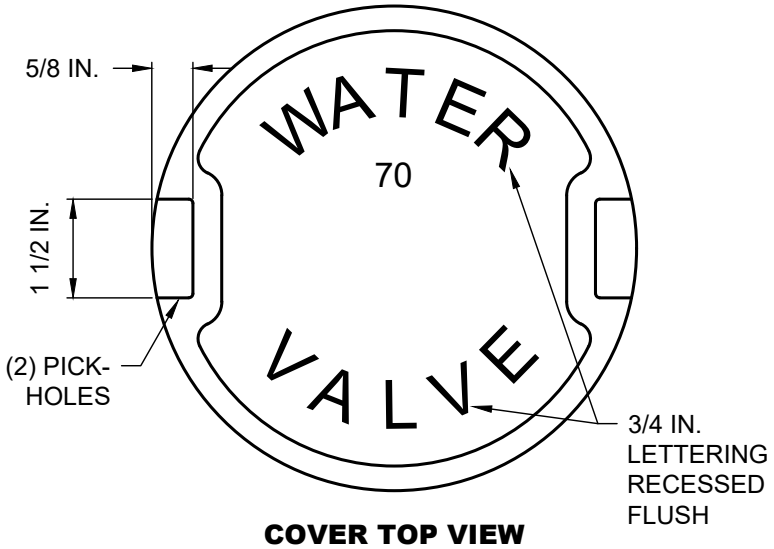
NOTE:
TYLER/UNION 6850 SERIES 462-S OR 562-S CAST IRON TWO-PIECE VALVE BOX OR PRE-APPROVED EQUAL.

WATER VALVE BOX

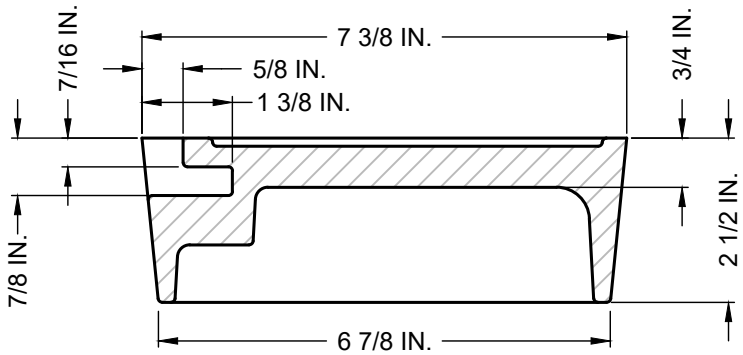
(NO SCALE)



COVER BACK VIEW



COVER TOP VIEW



COVER SECTION

NOTE:
EAST JORDAN IRON WORKS, INC. PRODUCT #33170002 OR PRE-APPROVED EQUAL

WATER VALVE BOX COVER

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

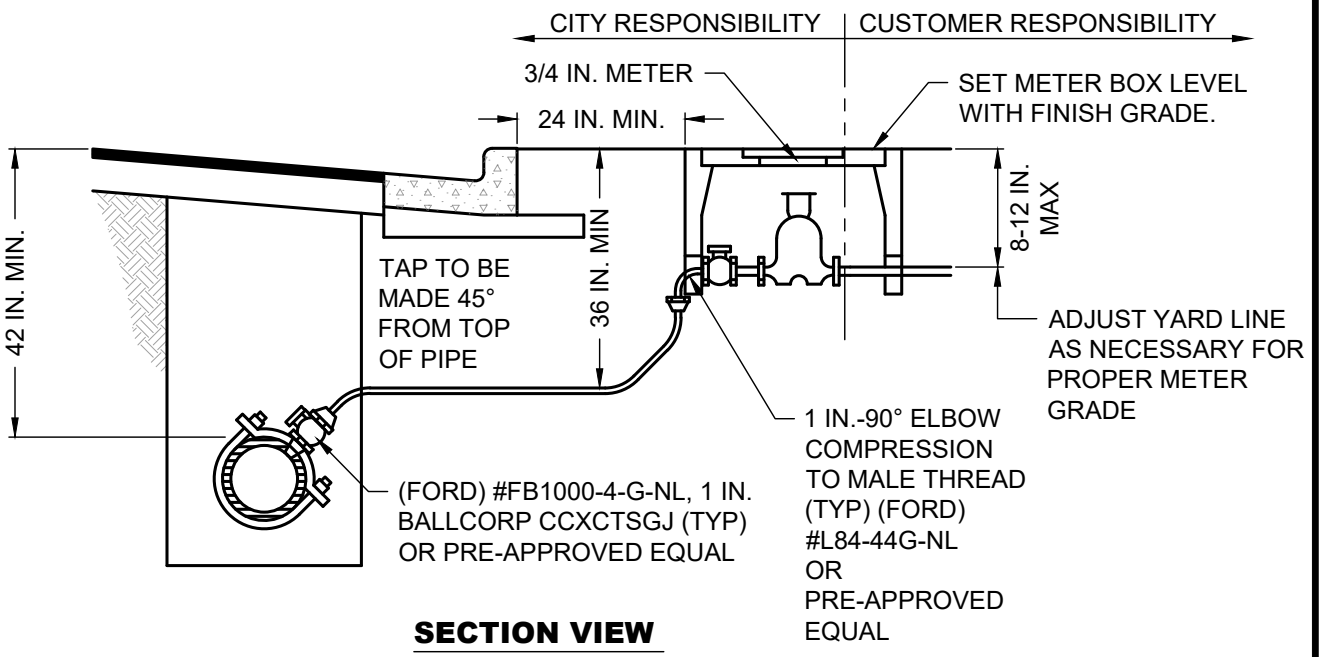
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

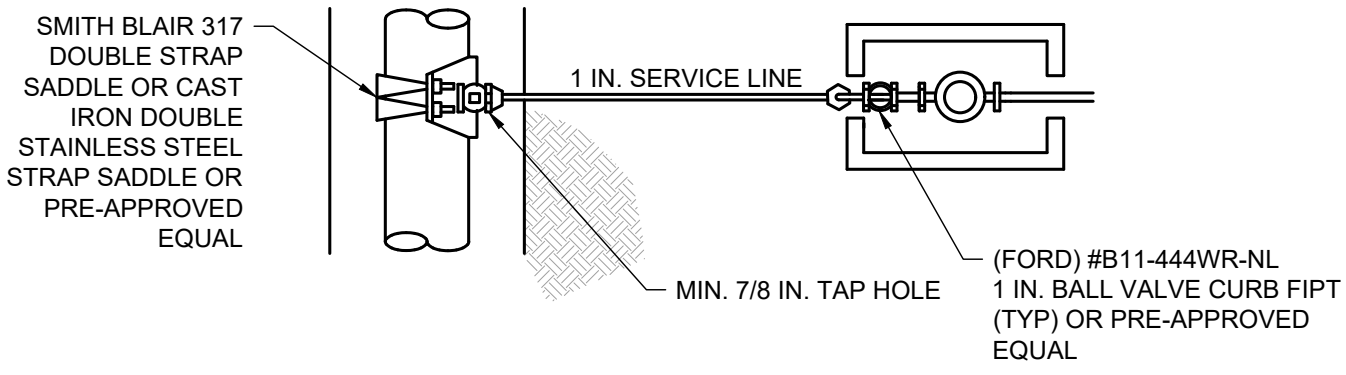
W-8

NOTES:

1. STANDARD METER BOX FOR 3/4 IN. (TYP) AND 1 IN. METERS IS A CARSON 1017 12 IN. BOX WITH SOLID POLYMER LID OR PRE-APPROVED EQUAL.
2. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
3. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
4. THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE CHRISTY N30 SERIES METER BOX WITH DFW1324C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
5. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
6. CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.



SECTION VIEW



PLAN VIEW

TYPICAL SINGLE-FAMILY RESIDENTIAL METER SERVICE CONNECTION

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

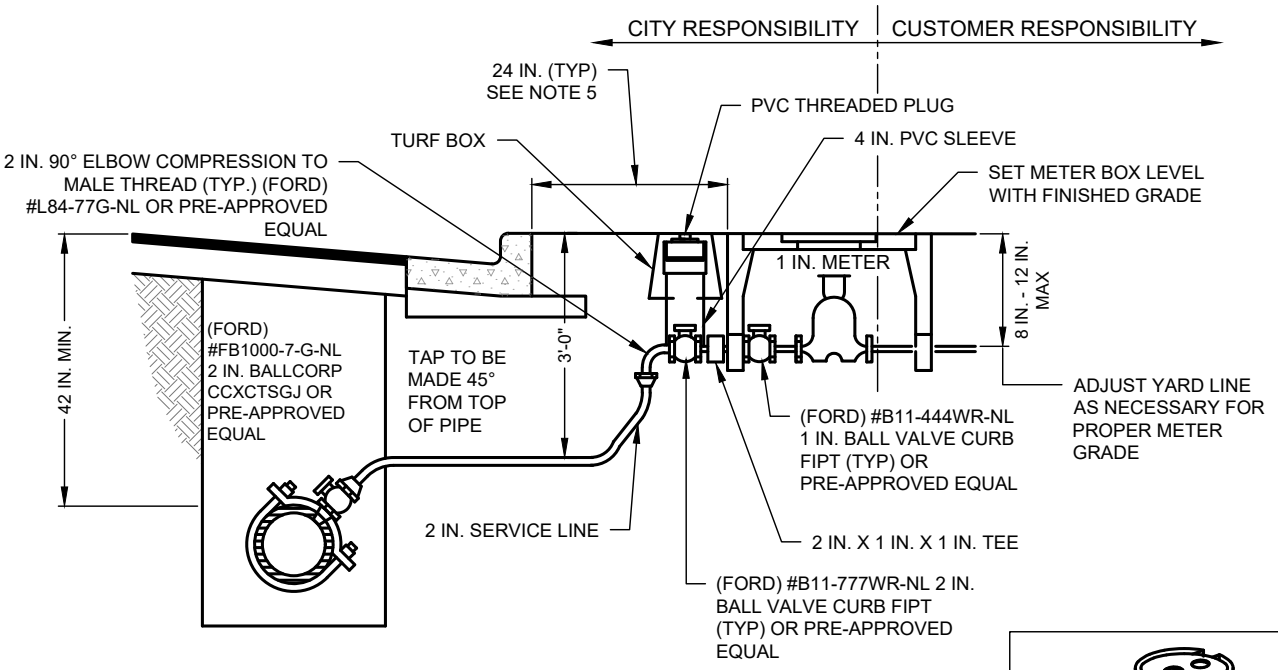
NO.	COMMENTS	BY	DATE
1	ADD "TYP" TO NOTE 1; CHANGE METER SIZE TO 3/4 IN.	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

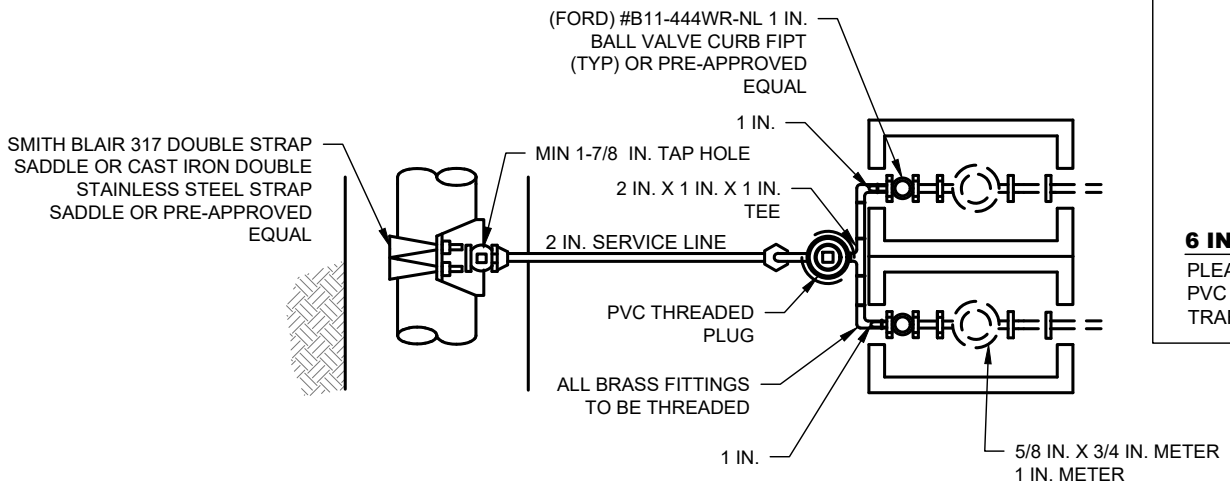
W-9

NOTES:

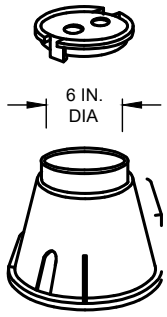
1. STANDARD METER BOX FOR 3/4 IN. AND 1 IN. METERS IS A CARSON 1017 12 IN. BOX WITH SOLID POLYMER LID OR RE-APPROVED EQUAL.
2. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
3. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
4. THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE CHRISTY N30 SERIES METER BOX WITH DFW1324C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
5. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
6. CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.
7. BULLHEAD WATER METER CONNECTIONS ARE ONLY ALLOWED FOR A DOMESTIC AND IRRIGATION COMBINATION SERVICE SERVING A SINGLE LOT.



SECTION VIEW



PLAN VIEW



6 IN. DIA TURF BOX

PLEASE REFER TO W-6 WHEN 4 IN. PVC SLEEVE IS EXPOSED TO TRAFFIC OR IS IN THE SIDEWALK.

BULLHEAD WATER METER CONNECTION

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

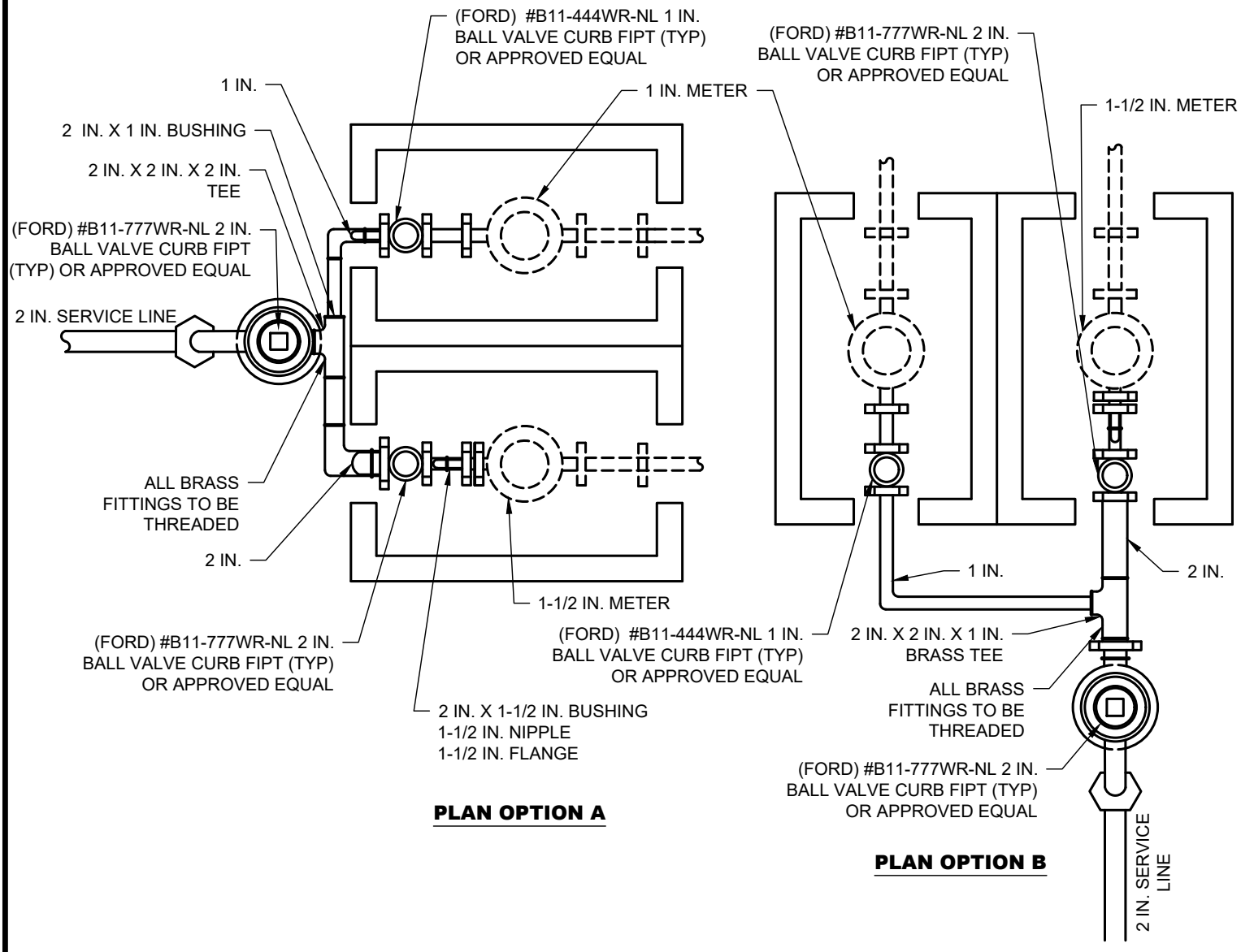
NO.	COMMENTS	BY	DATE
1	ADD NOTE 7	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-10

NOTES:

1. STANDARD METER BOX FOR 3/4 IN. AND 1 IN. METERS IS A CARSON 1017 12 IN. BOX WITH SOLID POLYMER LID OR RE-APPROVED EQUAL.
2. THE STANDARD METER BOX FOR 1-1/2 IN. METERS IS AN OLDCASTLE CHRISTY B65 SERIES METER BOX WITH DFW65C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
3. METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
5. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
6. THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE CHRISTY N30 SERIES METER BOX WITH DFW1324C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
7. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
8. CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.
9. MINIMUM COMMERCIAL SERVICE SIZE SHALL BE 2 INCHES.



COMMERCIAL BULLHEAD WATER METER WITH 1-1/2 IN. AND 1 IN. SERVICES

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

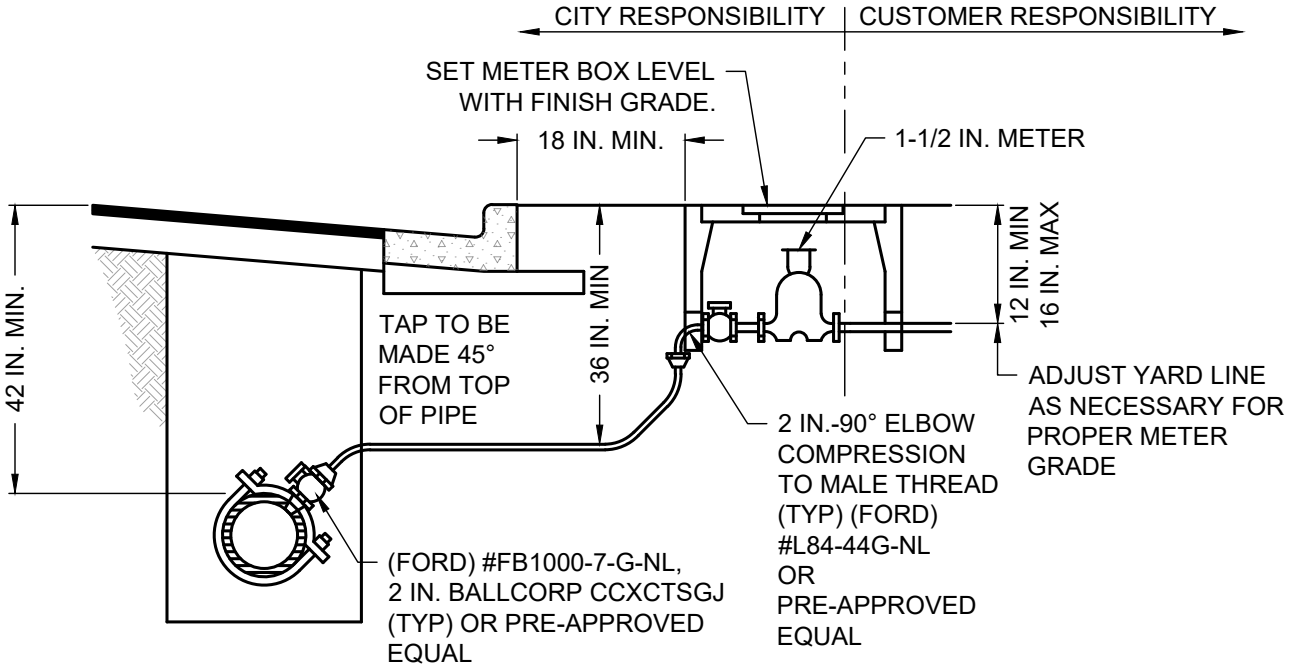
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

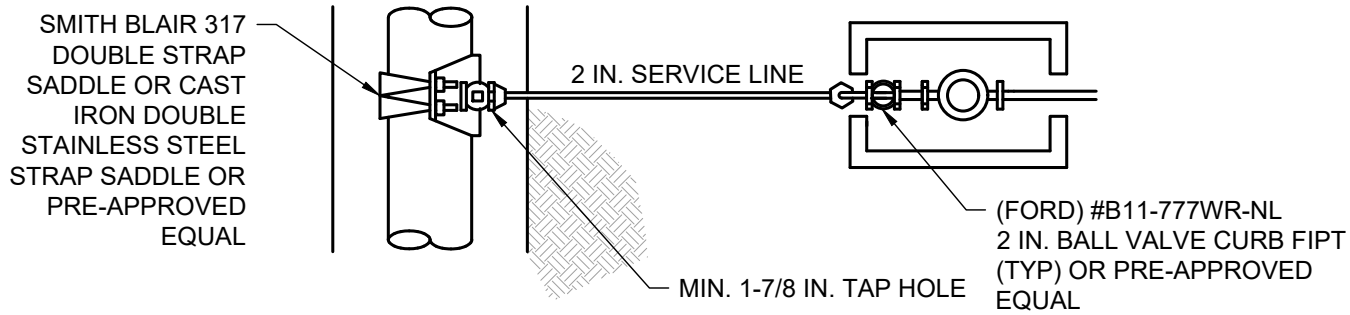
W-11

NOTES:

1. THE STANDARD METER BOX FOR 1-1/2 IN. METERS IS AN OLDCASTLE CHRISTY B65 SERIES METER BOX WITH DFW65C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
2. METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
3. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
4. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
5. THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE CHRISTY N30 SERIES METER BOX WITH DFW1324C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
6. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
7. CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.
8. MINIMUM COMMERCIAL SERVICE SIZE SHALL BE 2 IN.



SECTION VIEW



PLAN VIEW

TYPICAL COMMERCIAL OR LARGE RESIDENTIAL WATER METER SERVICE CONNECTION

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-12

NOTES:

1. STANDARD METER BOX FOR 3/4 IN. AND 1 IN. METERS IS A CARSON 1017 12 IN. BOX WITH SOLID POLYMER LID OR PRE-APPROVED EQUAL.
2. THE STANDARD METER BOX FOR 1-1/2 IN. METERS IS AN OLDCASTLE CHRISTY B65 SERIES METER BOX WITH DFW65C POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.
3. METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE. JOINTS ARE ONLY ALLOWED AT THE CORPORATION STOP AND THE CURB STOP.
5. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
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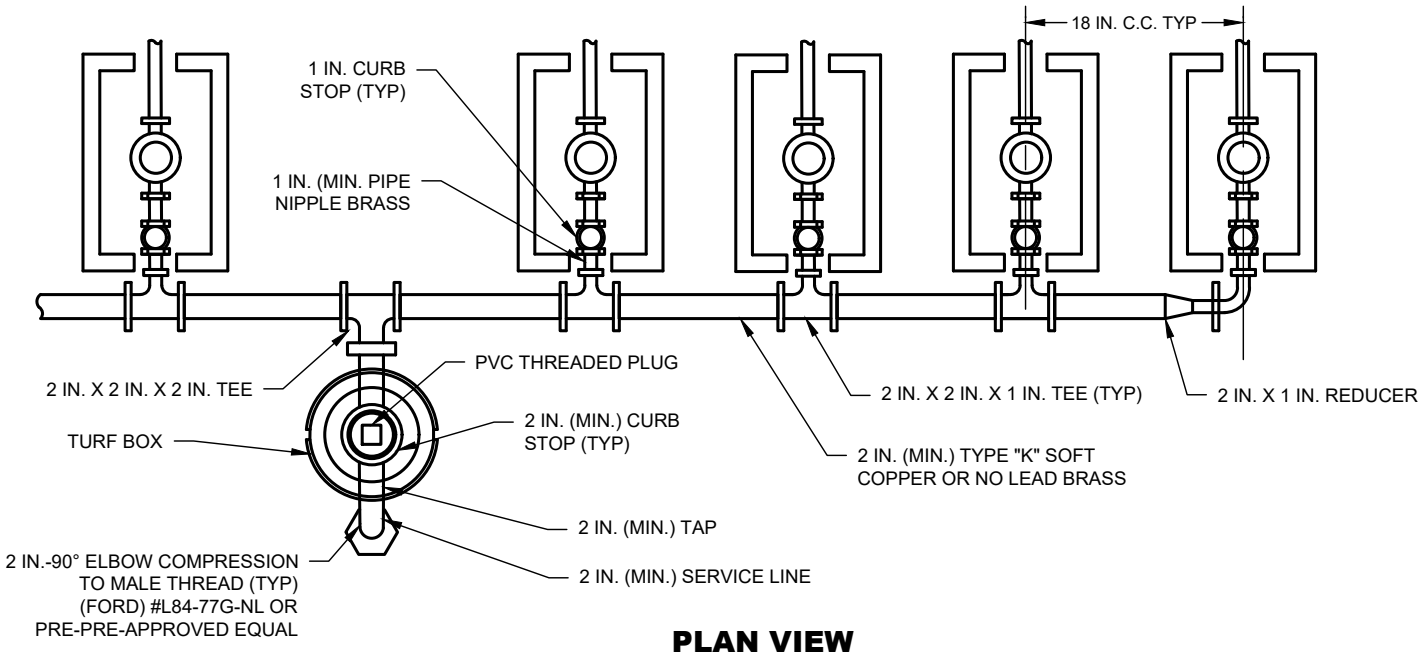
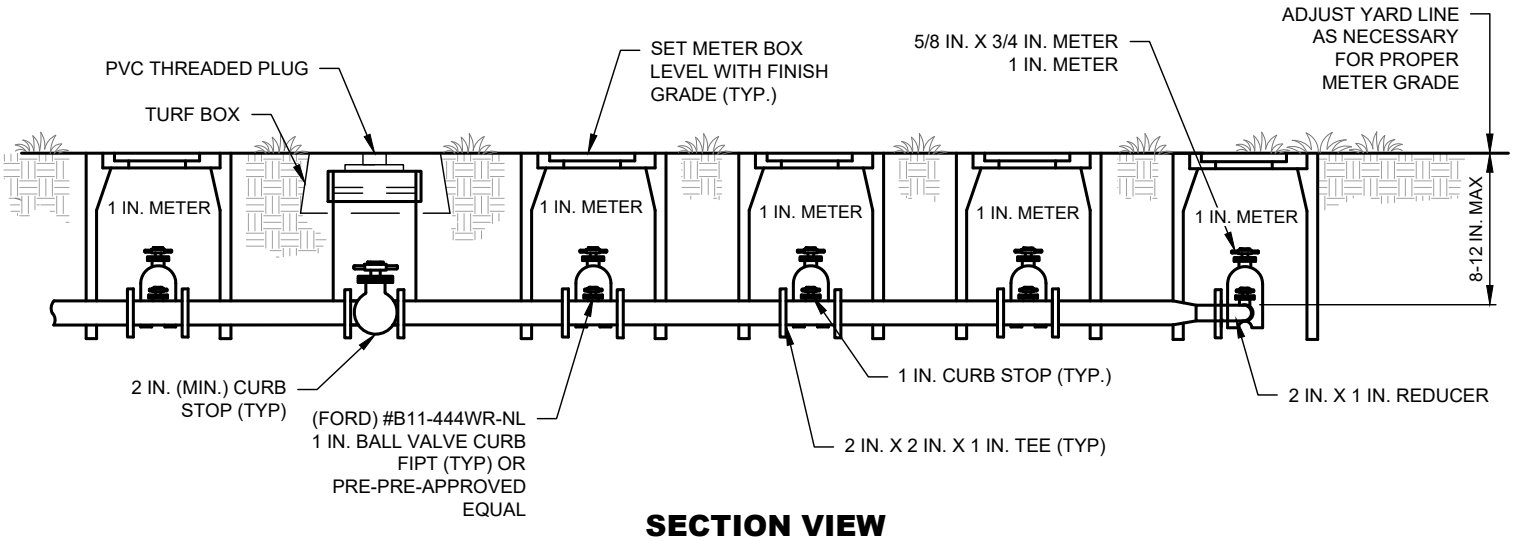
7. ALL 1-1/2 IN. AND LARGER METERS SHALL BE SENSUS OMNI METERS WITH ITRON CONNECTORS.
8. CITY'S RESPONSIBILITY FOR LEAK REPAIR ENDS AT CONNECTION ON DOWNSTREAM SIDE OF THE METER UP TO AND INCLUDING THE METER BRASS.



PLAN VIEW



SECTION VIEW

TYPICAL MANIFOLD WATER METER SERVICE CONNECTION

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

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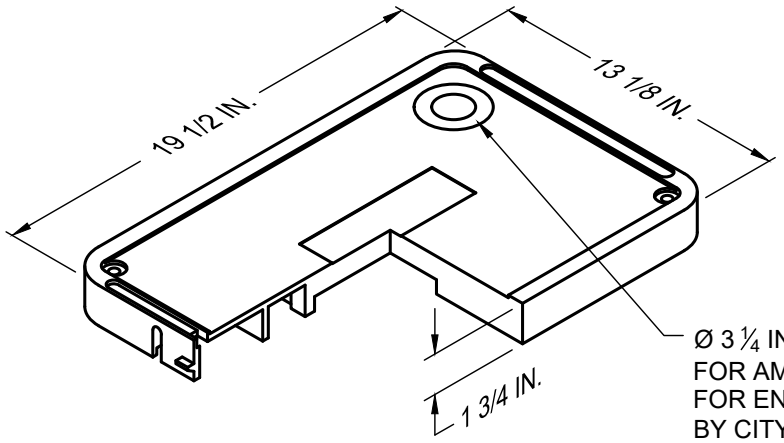
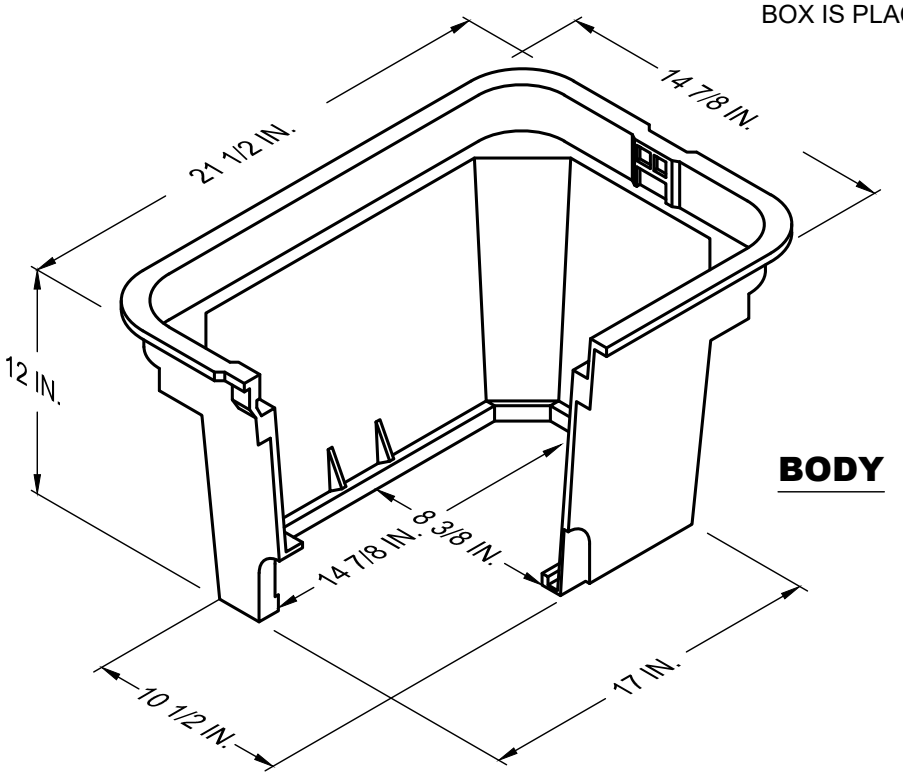
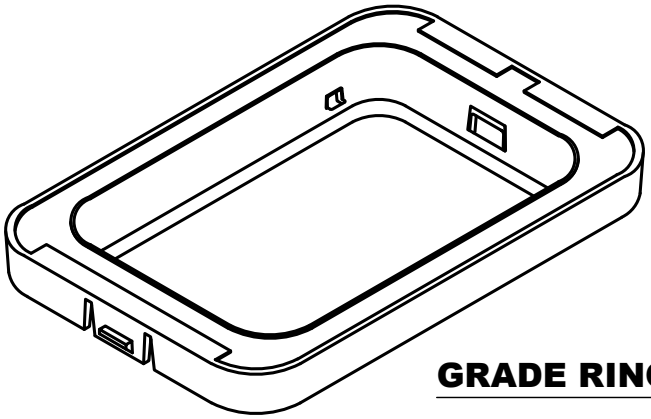


COVER

Ø 3 ¼ IN. X ⅜ IN. DEEP RECESS FOR AMR PAD W/ Ø 1 ⅞ IN. HOLE FOR ENDPOINT DRILLED ON SITE BY CITY OF WACO STAFF AFTER BOX IS PLACED.



BODY



GRADE RING

NOTES:

1. FOR USE IN GREEN SPACE ONLY.
2. REFERENCE OLDCASTLE INFRASTRUCTURE CARSON 1017-12
3. FLUSH COVER 10174001. MATERIAL IS HDPE. COLOR IS BLACK.
4. 12 INCH BODY 10172001. MATERIAL IS HDPE. COLOR IS BLACK.
5. FOR USE IN NON-VEHICULAR TRAFFIC SITUATIONS ONLY.

WATER METER BOX UNIT FOR 3/4 IN. AND 1 IN. METERS (CARSON 1017)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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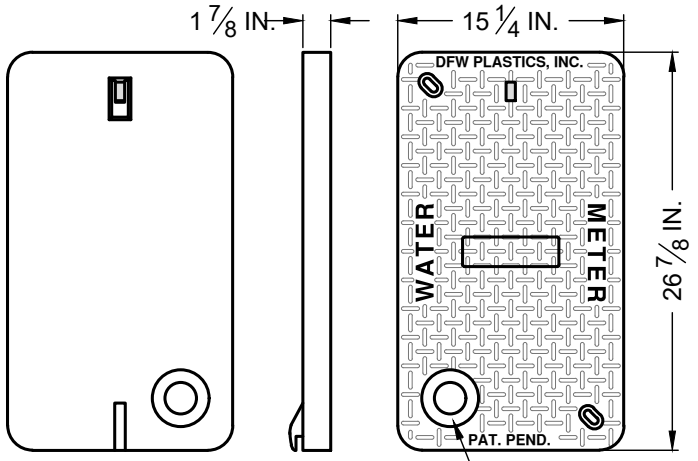
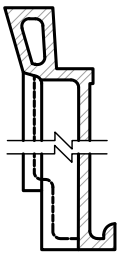


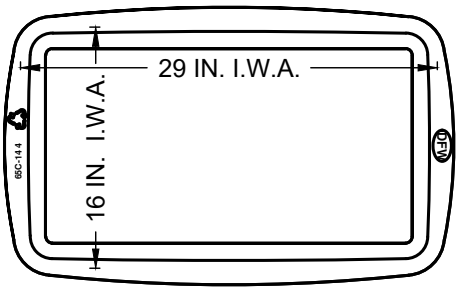
LID KEY	
AF	ANTI-FLOAT MATERIAL
1	BLACK COLOR
T	TOUCH READ HOLE
SMALL	BADGER/ITRON HOLE

LID

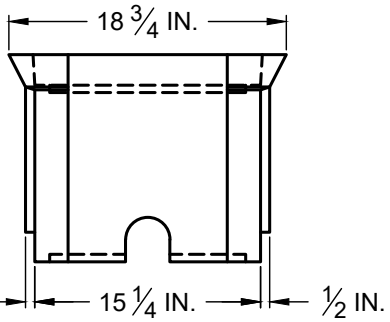
Ø 3 1/4 IN. X 3/8 IN. DEEP RECESS FOR AMR PAD W/ Ø 1 7/8 IN. HOLE FOR ENDPOINT



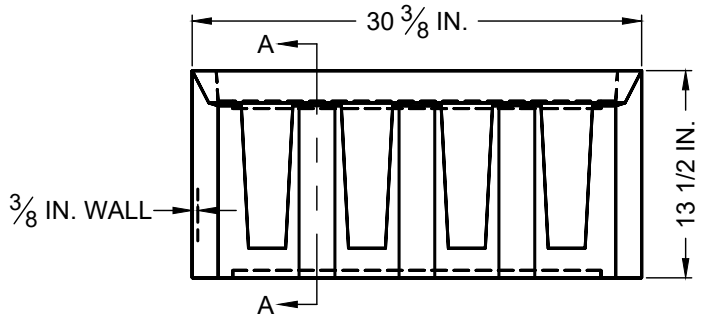
RIB DETAIL
SECTION A-A



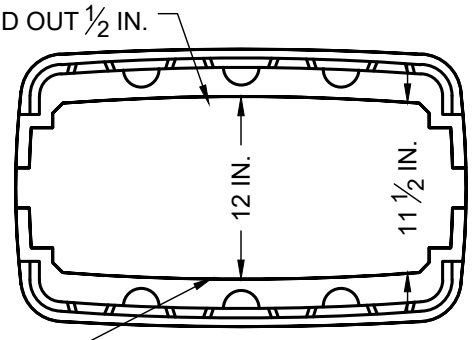
BOX FRONT VIEW



BOX SIDE VIEW



BOX FRONT VIEW



BOX BOTTOM VIEW

NOTES:

1. FOR USE IN GREEN SPACE ONLY.
2. REFERENCE DFW PLASTICS, INC. DETAIL "DFW65C-14-AF1T SMALL".
3. DIMENSIONS ARE ±1/8 IN. UNLESS NOTED OTHERWISE.
4. LID MATERIAL IS HDPE.
5. BODY MATERIAL IS LLDPE.
6. WALL THICKNESS IS 3/8 IN. MINIMUM
7. I.W.A. = INSIDE WORK AREA

POLY WATER METER BOX AND LID FOR 1-1/2 IN. METER (DFW65C)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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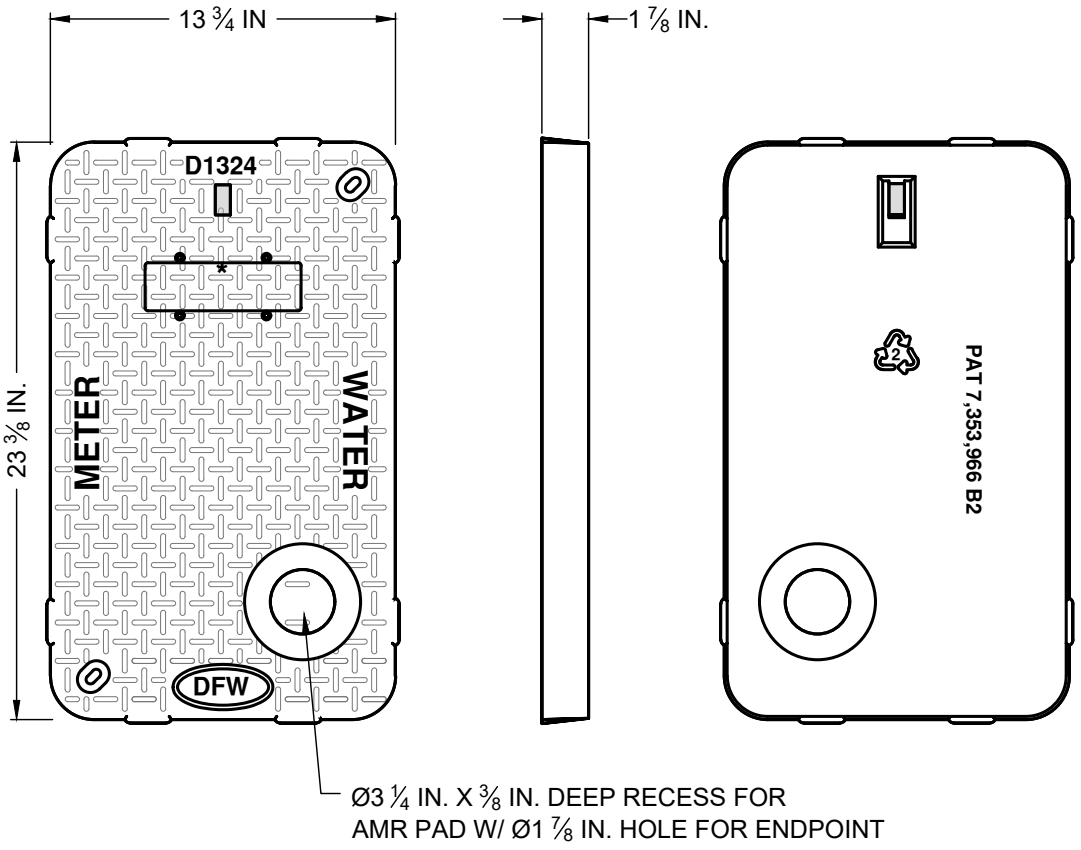
LID KEY	
AF	ANTI-FLOAT MATERIAL
1	BLACK COLOR
T	TOUCH READ HOLE
SMALL	BADGER/ITRON HOLE
<>	NO LID HOOK



NOTES:

1. REFERENCE DFW PLASTICS, INC. DETAIL "DFW1324C".
2. DIMENSIONS ARE ±1/8 IN. UNLESS NOTED OTHERWISE.
3. LID MATERIAL IS ANTI-FLOAT.
4. LID TO BE USED FOR CONCRETE METER BOXES IN TRAFFIC AREAS.

CONCRETE WATER METER BOX LID DETAILS (DFW1324C)

(NO SCALE)

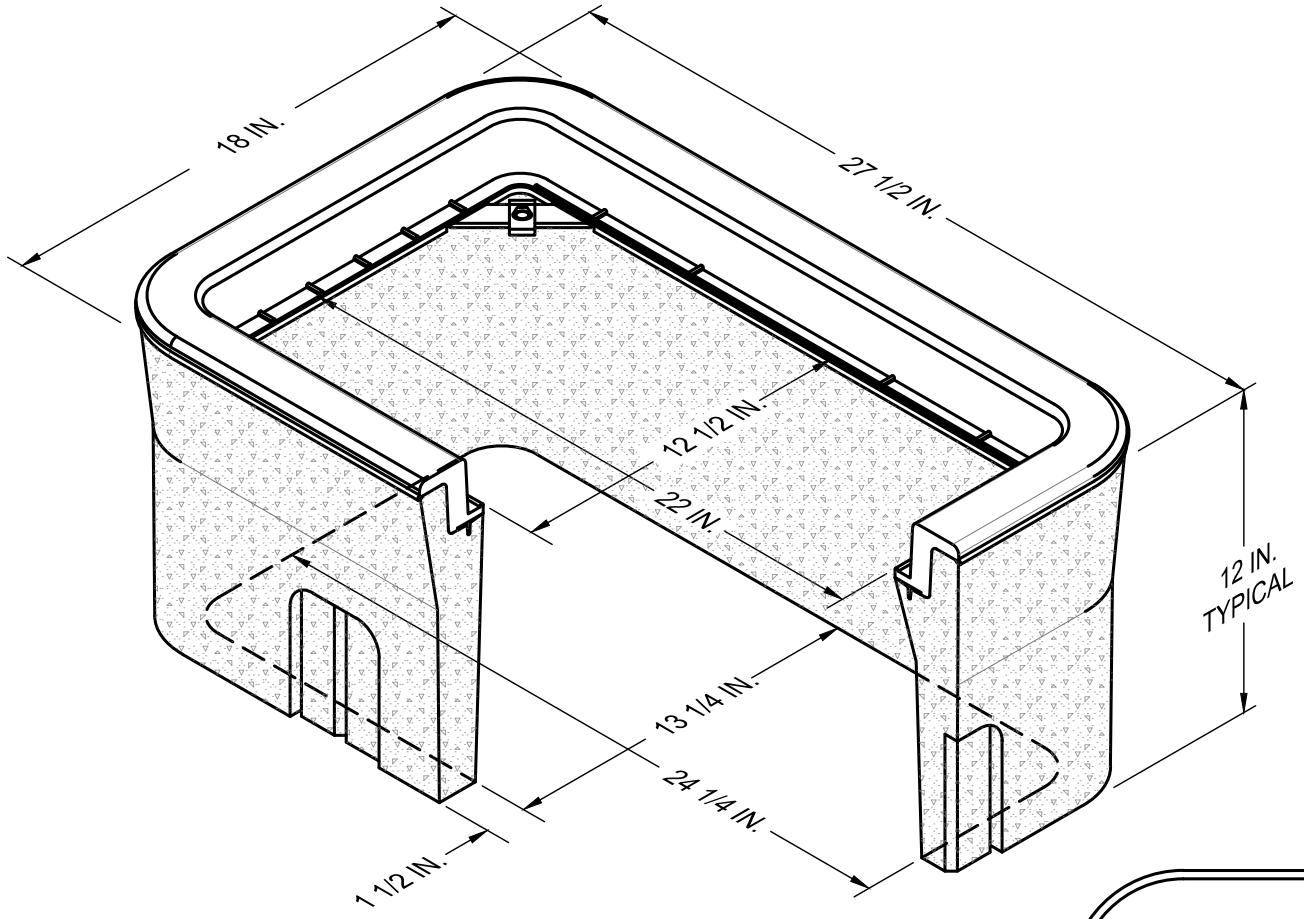
CITY OF WACO

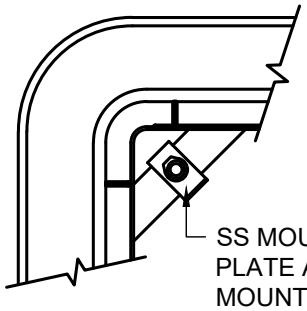
ENGINEERING DIVISION

REVISIONS			
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-16





BOLT DOWN DETAIL

NOTES:

1. FOR USE IN TRAFFIC AREAS AND SIDEWALKS ONLY.
2. REFERENCE OLDCASTLE INFRASTURCTURE CHRISTY® N30
3. BODY:
   - MATERIAL: REINFORCED CONCRETE WITH COMPOSITE CAP.
   - MODEL: 18 IN. X 27 IN.
   - WEIGHT: 138 LBS.
   - WALL TYPE: STRAIGHT
   - MOUSEHOLES: 0-2
   - PERFORMANCE: ASTM C 857, WUC 3.6
4. EXTENSION:
   - MATERIAL: REINFORCED CONCRETE
   - DEPTH: 12 IN.
   - WEIGHT: 116 LBS.
5. WEIGHTS AND DIMENSIONS MAY VARY SLIGHTLY.
6. ACTUAL LOAD RATING IS DETERMINED BY THE BOX AND COVER COMBINATION.

CONCRETE WATER METER BOX FOR 3/4 IN. TO 1 IN. METERS (CHRISTY N30)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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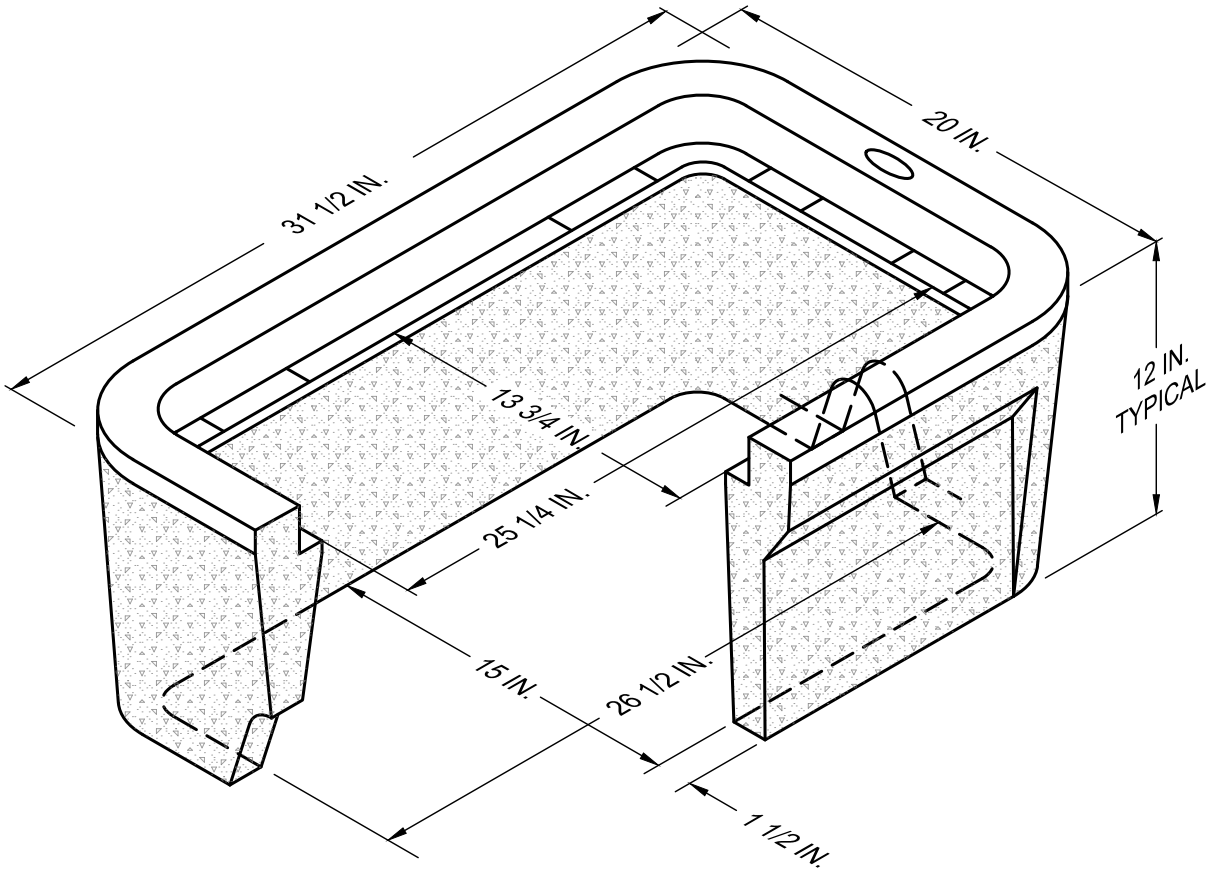
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-17



NOTES:

1. FOR USE IN TRAFFIC AREAS, SIDEWALKS AND GREENSPACE.
2. REFERENCE OLDCASTLE INFRASTURCTURE CHRISTY® B65
3. BODY:
   - MATERIAL: REINFORCED CONCRETE WITH COMPOSITE CAP.
   - MODEL: 20 IN. X 31 IN.
   - WEIGHT: 160 LBS.
   - WALL TYPE: STRAIGHT
   - MOUSEHOLES: 0
   - PERFORMANCE: ASTM C 857, WUC 3.6
4. EXTENSION:
   - MATERIAL: REINFORCED CONCRETE
   - DEPTH: 12 IN.
   - WEIGHT: 104 LBS.
5. WEIGHTS AND DIMENSIONS MAY VARY SLIGHTLY.
6. ACTUAL LOAD RATING IS DETERMINED BY THE BOX AND COVER COMBINATION.

CONCRETE WATER METER BOX FOR 1-1/2 IN. METER (CHRISTY B65)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-18

WATER METER VAULT AND LID - NOTES

1. METERS 2 IN. AND LARGER SHALL BE INSTALLED IN A CONCRETE VAULT.
2. METERS 8 IN. AND LARGER REQUIRE PROJECT SPECIFIC DESIGN PLANS SEALED BY A PROFESSIONAL ENGINEER.
3. VAULTS SHALL HAVE A MINIMUM 12 IN. WORKING CLEARANCE, EXCEPT FOR PENETRATIONS WHICH SHALL HAVE 6 IN. OF CLEARANCE BETWEEN FIRST FITTING AND INSIDE FACE OF WALL.

MINIMUM VAULT CHARACTERISTICS

MAIN SIZE	BY PASS	L	W	H	INSIDE DIMENSIONS
2 IN.	1 IN.	6'-0"	6'-0"	4'-5"	5'-0" X 5'-0" X 3'-5"
4 IN.	2 IN.	8'-6"	5'-6"	5'-6"	7'-6" X 4'-6" X 4'-6"
6 IN.	4 IN.	13'-0"	7'-0"	6'-0"	12'-0" X 6'-0" X 5'-0"

4. CONCRETE VAULTS SHALL HAVE VAULT WALLS AND FOUNDATIONS OF A MINIMUM THICKNESS OF 6 INCHES.
5. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEADED BRASS, COPPER TUBING WITH THREADED OR COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.
6. THE METER IS TO BE LOCATED IN A NON-TRAFFIC GREEN SPACE IN THE RIGHT OF WAY. ALL OTHER LOCATIONS MUST BE APPROVED BY THE CITY ENGINEER.
7. WITH PRIOR APPROVAL FROM THE CITY, A METER MAY BE LOCATED IN AN AREA EXPOSED TO TRAFFIC. IN THIS CASE THE STANDARD BOX FOR METERS OF THESE SIZES IS AN OLDCASTLE SERIES 30 METER BOX WITH 1324 DFW POLYMER LID WITH AMI HOLE OR PRE-APPROVED EQUAL.WHERE METER BOX IS EXPOSED TO TRAFFIC, OR IN SIDEWALK, USE A CONCRETE BOX WITH DFW POLYMER LID WITH AMI HOLE.
8. ALL METER BY-PASS INSTALLATIONS SHALL BE LOCKABLE.

NON-TRAFFIC LOCATION

1. STANDARD ACCESS DOOR IS 2.5 FT. X 4 FT. CLEAR, ALUMINUM HATCHWAY AND SPRING ASSISTED. DOOR SHALL BE CAST IN AND MOUNTED FLUSH HINGED 1/4 IN. ALUMINUM DIAMOND PLATE COVER, WITH 1/4 IN. EXTRUDED ALUMINUM FRAME. HATCH TO BE FURNISHED WITH STAINLESS STEEL HARDWARE.
2. CONCRETE: CONCRETE WITH DESIGN STRENGTH OF 4500 PSI AT 28 DAYS. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. ALL CONCRETE JOINTS SEALED WATERTIGHT WITH MANUFACTURERS GASKET.
3. ALL WALLS AND SLABS SHALL BE DESIGNED FOR HS20 LOADING.

TRAFFIC LOCATION - REQUIRES PRIOR APPROVAL OF CITY OF WACO ENGINEER

1. STANDARD ACCESS DOOR IS 2.5 FT. X 4 FT. CLEAR, AND SPRING ASSISTED. DOOR SHALL BE CAST IN FLUSH.
2. SINGLE OR DOUBLE LEAF STEEL LID, DESIGNED TO WITHSTAND AASHTO HS20 LOADINGS.
3. VAULT SHALL BE PLACED ON A 6 IN. BASE OF 1 IN. WASHED ROCK.
4. CONCRETE DESIGN IN ACCORDANCE WITH AASHTO HS20 TRAFFIC LOADING USING 4200 PSI COMPRESSIVE STRENGTH ASTM A-706 STEEL REINFORCEMENT PER CALCULATION NUMBER. UNIT IS OF MONOLITHIC CONSTRUCTION AT FLOOR AND FIRST STAGE OF WALL WITH SECTIONAL RISER TO REQUIRED DEPTH. ALL CONCRETE JOINTS SEALED WATERTIGHT WITH MANUFACTURERS GASKET.

CITY OF WACO

ENGINEERING DIVISION

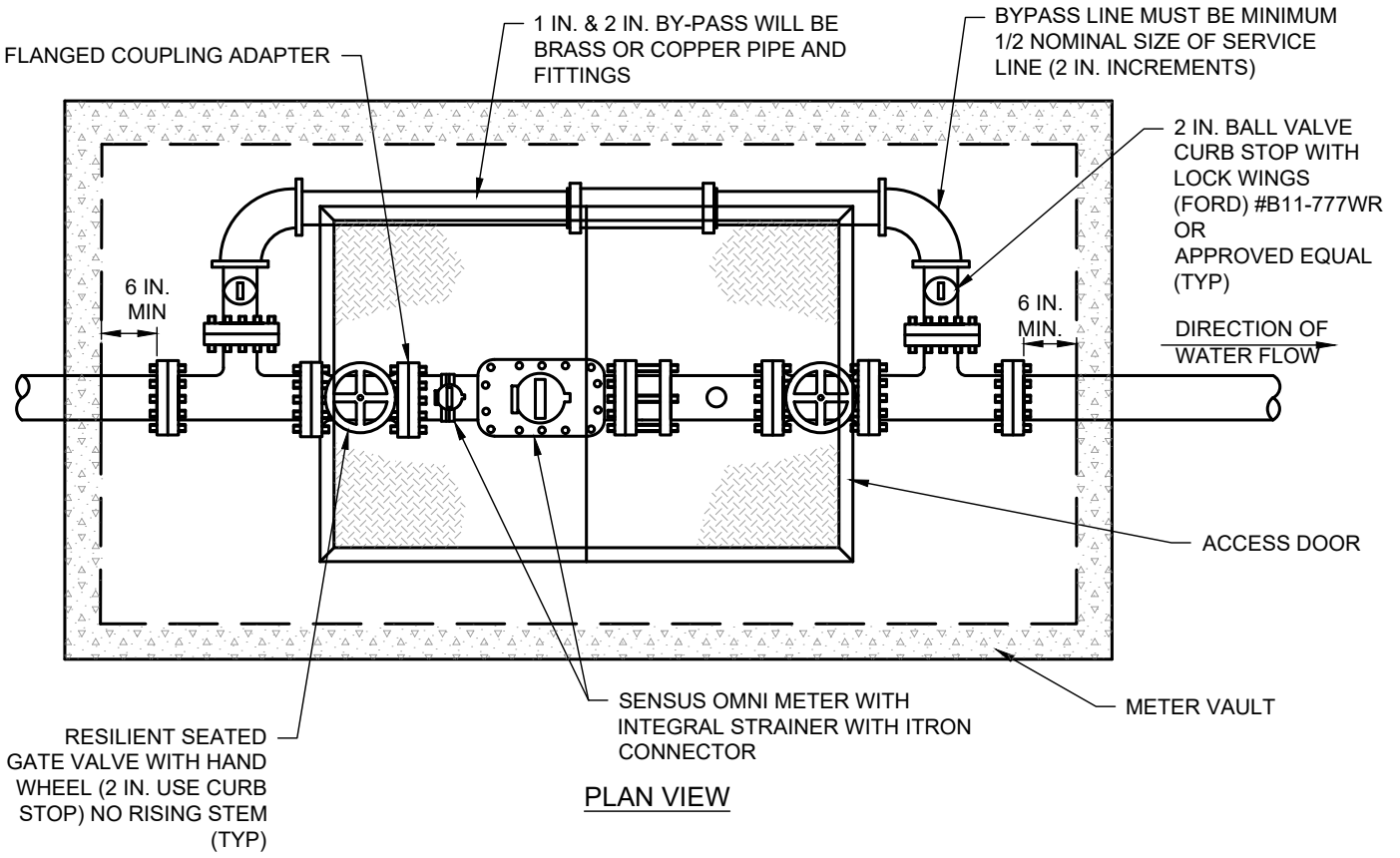
REVISIONS

NO.	COMMENTS	BY	DATE
1	REMOVE 3 IN. MAIN SIZE FROM TABLE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

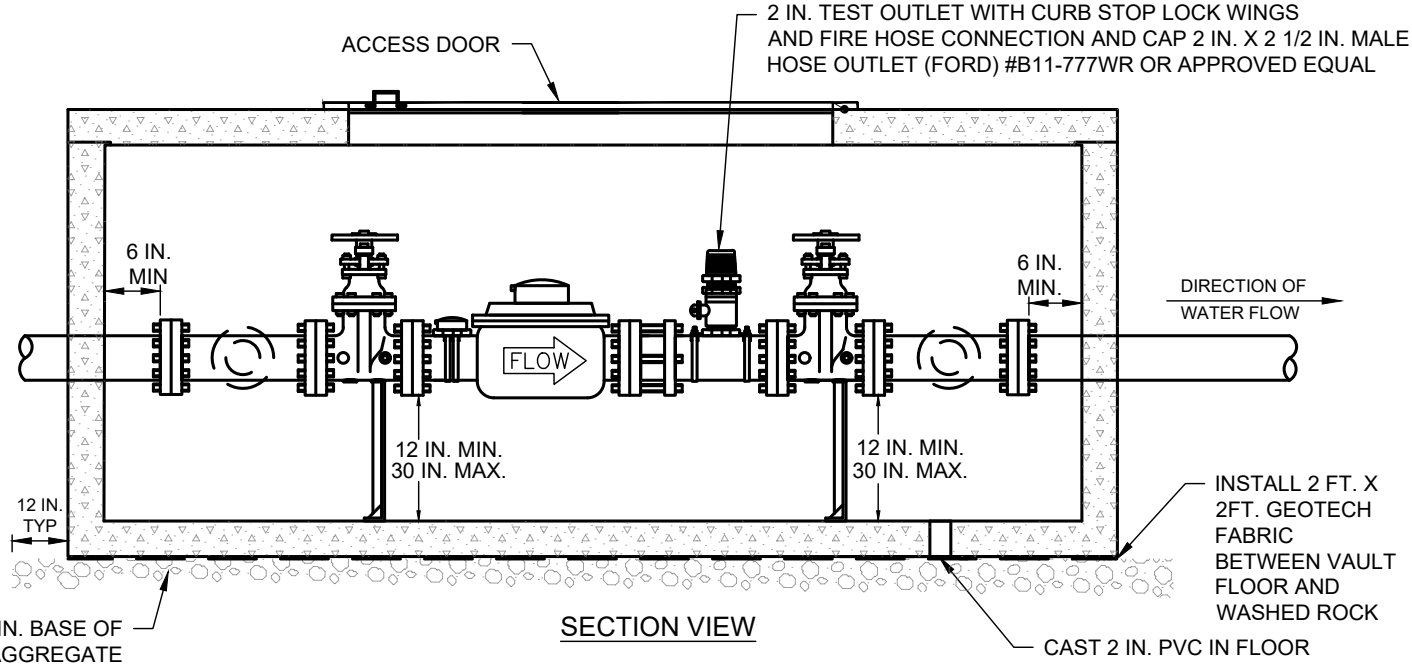
DATE 01/01/2024

NOTES:

1. ALL EXTERNAL NUTS, BOLTS AND WASHERS SHALL BE STAINLESS STEEL.
2. THREADED JOINTS ON BRASS PIPE BYPASS SHALL BE ACCEPTED.
3. NO SWEATED FITTINGS WILL BE ACCEPTED.
4. 3 IN. AND LARGER METERS TO BE TESTED IN THE FIELD BY CITY OF WACO UTILITIES.
5. LID MUST BE CENTERED ON VAULT.



PLAN VIEW



SECTION VIEW

TYPICAL WATER METER DETAIL FOR 2 IN. AND LARGER

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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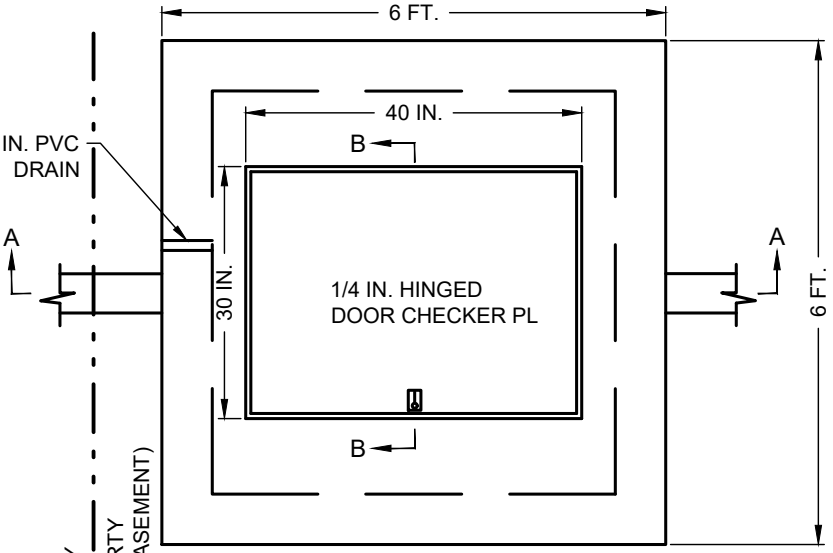
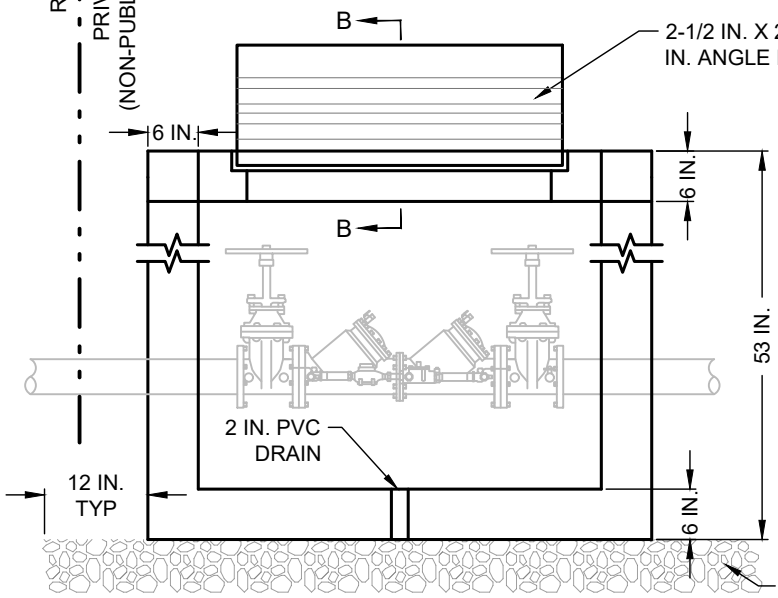


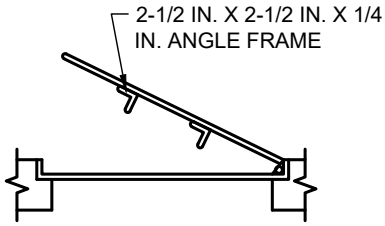
PLAN VIEW

DOUBLE CHECK VALVE VAULT

(NO SCALE)



SECTION A



SECTION B

NOTES:

1. ALL DOUBLE DETECTOR CHECK ASSEMBLIES SHALL BE HOUSED IN A PRECAST METER VAULT AND, FOR BELOW GROUND LEVEL ASSEMBLIES, THE VAULT SHALL BE RATED HS20.
2. ASSEMBLIES 2 IN. AND SMALLER SHALL HAVE AT LEAST A 6 IN. CLEARANCE BELOW AND ON BOTH SIDES OF THE ASSEMBLY. ALL ASSEMBLIES LARGER THAN 2 IN. SHALL HAVE A MINIMUM CLEARANCE OF 12 IN. ON THE BACK SIDE, 24 IN. ON THE TEST PORT SIDE, AND 12 IN. BELOW THE ASSEMBLY.
3. ALL TEST PORTS SHALL FACE UPWARD AND SHALL HAVE PROTECTIVE CAPS.
4. UPON INSTALLATION, ASSEMBLY MUST BE TESTED BY CERTIFIED TESTER AND RESULTS FURNISHED TO THE CITY OF WACO, UTILITY DEPARTMENT. TEST RESULTS SHALL BE FURNISHED BY OWNER ON ANNUAL BASIS.
5. ALL NEW FIRE LINE SERVICES, AND THOSE ENCOUNTERED IN A CONSTRUCTION PROJECT SHALL HAVE INSTALLED A BACKFLOW DEVICE BASED ON THE DEGREE OF HAZARD. ALL FIRE LINES ARE REQUIRED, AT A MINIMUM, TO HAVE A DOUBLE DETECTOR CHECK ASSEMBLY. THE AUXILIARY LINE SHALL CONSIST OF AN APPROVED BACKFLOW PREVENTER AND WATER METER WITH ITRON CONNECTOR.
6. THE DOUBLE DETECTOR CHECK ASSEMBLY AND VALVE VAULT, IF APPLICABLE, SHALL BE LOCATED ON PRIVATE PROPERTY AS NEAR THE PROPERTY LINE AS PRACTICAL AND WITHIN 150 FEET OF THE FIRE SYSTEM STAND PIPE. ALTERNATIVELY, THE CHECK ASSEMBLY CAN BE IN A BUILDING IF THE BUILDING IS WITHIN 150 FT OF THE WATER MAIN. DO NOT LOCATE WITHIN PUBLIC UTILITY EASEMENT.
7. FOR ABOVE GROUND LEVEL VAULTS, THE ADDITION OF SIDE ACCESS DOOR MAY BE SUBMITTED FOR REVIEW.
8. FOR ABOVE GROUND LEVEL ASSEMBLIES, THE VAULT SHALL BE LOCATED OUTSIDE OF THE CLEAR ZONE AND APPROACH AND DEPARTURE SITE TRIANGLE DISTANCES FOR INTERSECTIONS AND DRIVEWAYS.

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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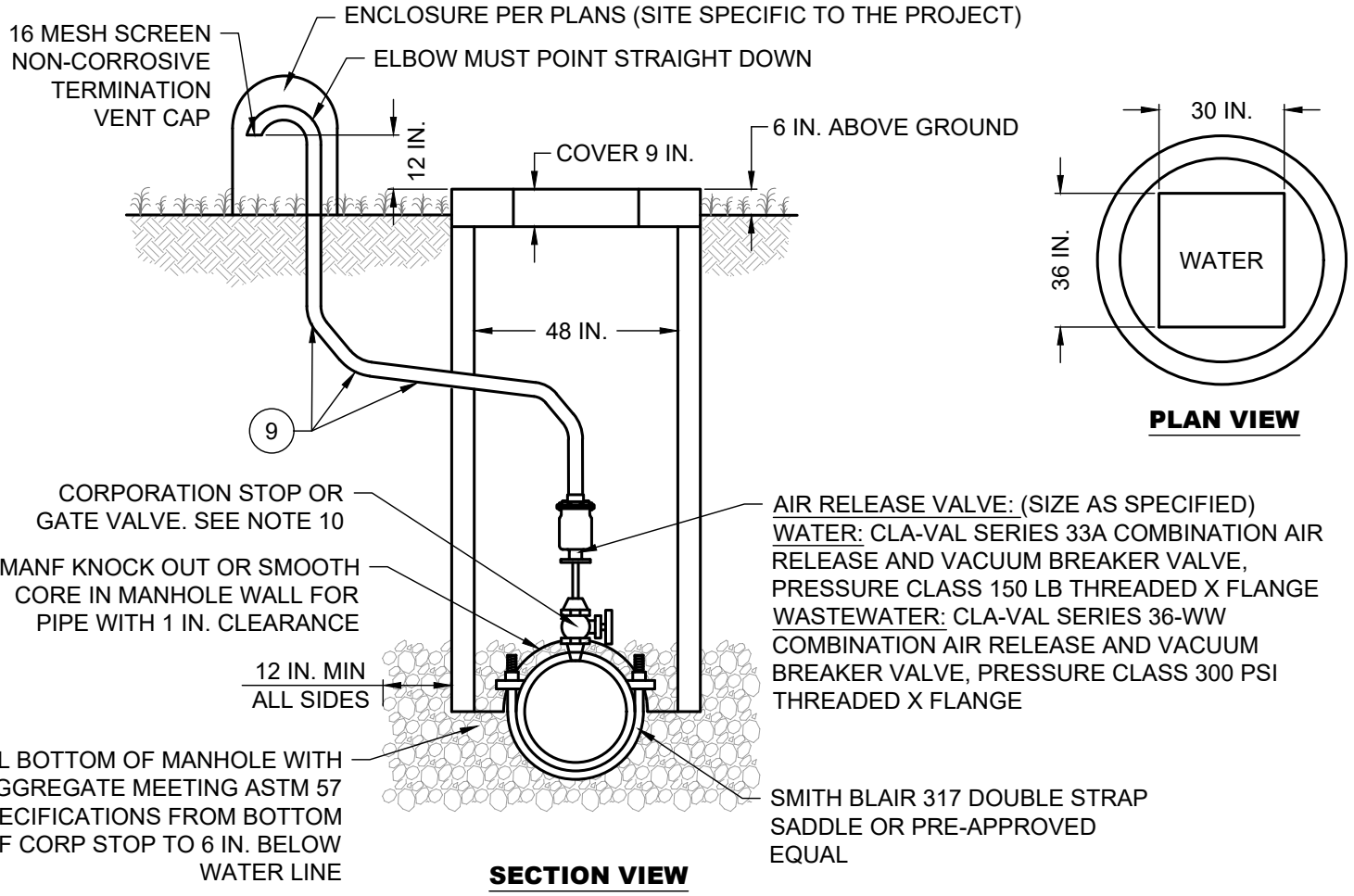
NOTES:

1. FRAME AND COVER SHALL BE 30 IN. X 36 IN. 1/4 IN. HINGED CHECKER PLATE.
2. WATER: NO SWEATED JOINTS, GALVANIZED OR PVC PIPE WILL BE ACCEPTED. USE BRASS FITTINGS WITH COPPER TUBING, THREADED OR COMPRESSION COUPLINGS.
3. WASTEWATER: NO SWEATED JOINTS, GALVANIZED, BRASS, OR COPPER PIPE OR TUBING SHALL BE USED FOR AIR RELEASE VALVE (ARV) VENT. PRESSURE RATED PVC ONLY.
4. PIPE VENT OPENING SHALL BE 12 IN. ABOVE TOP OF CONCRETE VAULT.
5. CONCRETE VAULT SHALL BE CONCRETE PRODUCTS, INC. MODEL "M.V.-8-H.L." OR PRE-APPROVED EQUAL.
6. AIR RELEASE VALVES SHALL BE PLACED IN AREAS NOT SUBJECT TO SUBMERGENCE AND OUTSIDE OF PAVEMENT AREAS.
7. THE PLACEMENT OF VAULT SHALL BE ON CITY RIGHT-OF-WAY OR WITHIN APPROPRIATE EASEMENTS AND SHALL BE LOCATED IN SUCH A WAY AS TO CAUSE THE LEAST AMOUNT OF SITE DISTURBANCE TO RESIDENTS AND TO NOT CREATE A SIGHT OBSTRUCTION FOR TRAFFIC.
8. AIR VENT DISCHARGE SHALL NOT BE LOCATED IN EXISTING /PROPOSED SIDEWALK OR SHARED USE PATH. AIR VENT DISCHARGE SHALL BE LOCATED AND PROTECTED TO ACCOMMODATE SITE CONDITIONS. BOLLARDS OR ENCLOSURE DESIGN SHALL BE SUBMITTED TO CITY OF WACO FOR APPROVAL. VAULT SHALL BE LOCATED AS CLOSE AS POSSIBLE TO PROPERTY LINES.
9. MINIMIZE ANGLES IN VENT PIPE/TUBING, HORIZONTAL LENGTHS TO BE SLOPED RISING (NOMINAL 2%) TOWARDS ARV.
10. 12 IN. AND BELOW WATER LINES REQUIRE A 2 IN. BALLCORP CORPORATION STOP WITH 2 IN. BALL FIPT (FORD) #FB1000-7-G OR PRE-APPROVED EQUAL; 16 IN. AND ABOVE WATERLINES REQUIRE A RESILIENT SEAT GATE VALVE SIZED TO MATCH ARV SIZE.



SECTION VIEW

PLAN VIEW

AIR RELEASE VALVE AND MANHOLE VAULT (OFF STREET)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

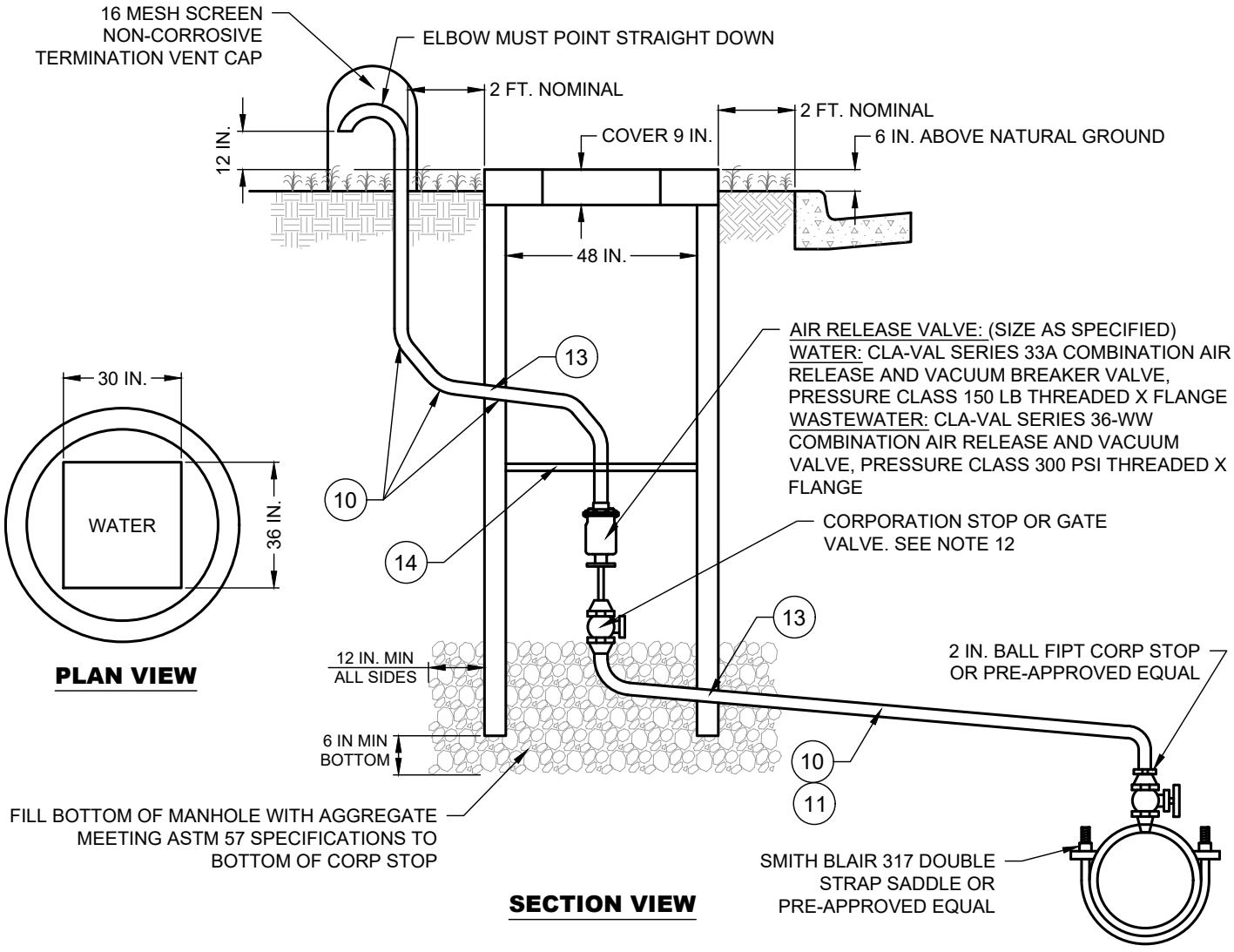
NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 3, 8 & 9	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-22

NOTES:

1. FRAME AND COVER SHALL BE 30 IN. X 36 IN. 1/4 IN. HINGED CHECKER PLATE.
2. WATER: NO SWEATED JOINTS, GALVANIZED OR PVC PIPE WILL BE ACCEPTED. USE BRASS FITTINGS WITH COPPER TUBING, THREADED OR COMPRESSION COUPLINGS.
3. WASTEWATER: NO SWEATED JOINTS, GALVANIZED, BRASS, OR COPPER PIPE OR TUBING SHALL BE USED FOR AIR RELEASE VALVE (ARV) VENT. PRESSURE RATED PVC ONLY.
4. PIPE VENT OPENING SHALL BE 12 IN. ABOVE TOP OF CONCRETE VAULT.
5. CONCRETE VAULT SHALL BE CONCRETE PRODUCTS, INC. MODEL "M.V.-8-H.L." OR PRE-APPROVED EQUAL.
6. AIR RELEASE VALVES SHALL BE PLACED IN AREAS NOT SUBJECT TO SUBMERGENCE AND OUTSIDE OF PAVEMENT AREAS.
7. THE PLACEMENT OF VAULT SHALL BE ON CITY RIGHT-OF-WAY OR WITHIN APPROPRIATE EASEMENTS AND SHALL BE LOCATED IN SUCH A WAY AS TO CAUSE THE LEAST AMOUNT OF SITE DISTURBANCE TO RESIDENTS AND TO NOT CREATE A SIGHT OBSTRUCTION FOR TRAFFIC.
8. IF WATER MAIN IS IN THE STREET, VAULT SHALL BE SET 2 FT. BEHIND CURB AND CORPORATION STOP ADDED AT MAIN. CURB STOP SHALL REMAIN IN VAULT.
9. AIR VENT DISCHARGE SHALL NOT BE LOCATED IN EXISTING /PROPOSED SIDEWALK OR SHARED USE PATH. AIR VENT DISCHARGE SHALL BE LOCATED AND PROTECTED TO ACCOMMODATE SITE CONDITIONS. BOLLARDS OR ENCLOSURE DESIGN SHALL BE SUBMITTED TO CITY OF WACO FOR APPROVAL. VAULT SHALL BE LOCATED AS CLOSE AS POSSIBLE TO PROPERTY LINES.
10. MINIMIZE ANGLES IN VENT PIPE/TUBING, HORIZONTAL LENGTHS TO BE SLOPED RISING (NOMINAL 2%) TOWARDS ARV.
11. MINIMIZE HORIZONTAL DISTANCE BETWEEN MAIN AND ARV.
12. 12 IN. AND BELOW WATER LINES REQUIRE A 2 IN. BALLCORP CORPORATION STOP WITH 2 IN. BALL FIPT (FORD) #FB1000-7-G OR PRE-APPROVED EQUAL; 16 IN. AND ABOVE WATERLINES REQUIRE A RESILIENT GATE VALVE SIZED TO MATCH WATERLINE SIZE.
13. SEAL ALL MANHOLE PENETRATIONS WITH LINK-SEAL PER MANUFACTURES RECOMMENDATIONS.
14. 2 IN. X 2 IN. GALVANIZED SUPPORT ANCHORED TO WALL ON BOTH SIDES.



AIR RELEASE VALVE AND MANHOLE VAULT (IN STREET)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY NOTES 3, 9 & 10; REMOVE MESH SCREEN OVER VENT NOTE; MODIFY DRAWING TO TUBING TO EXIT BOTTOM OF GATE VALVE	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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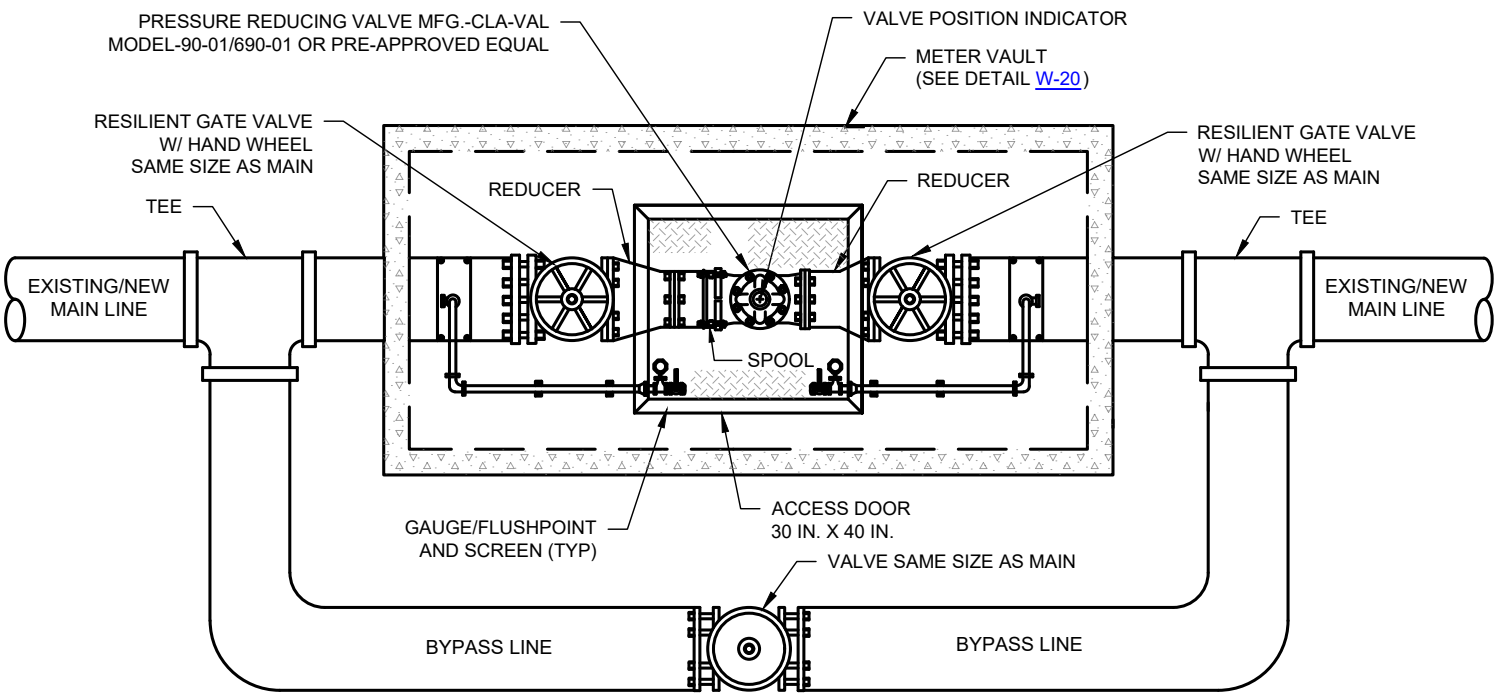
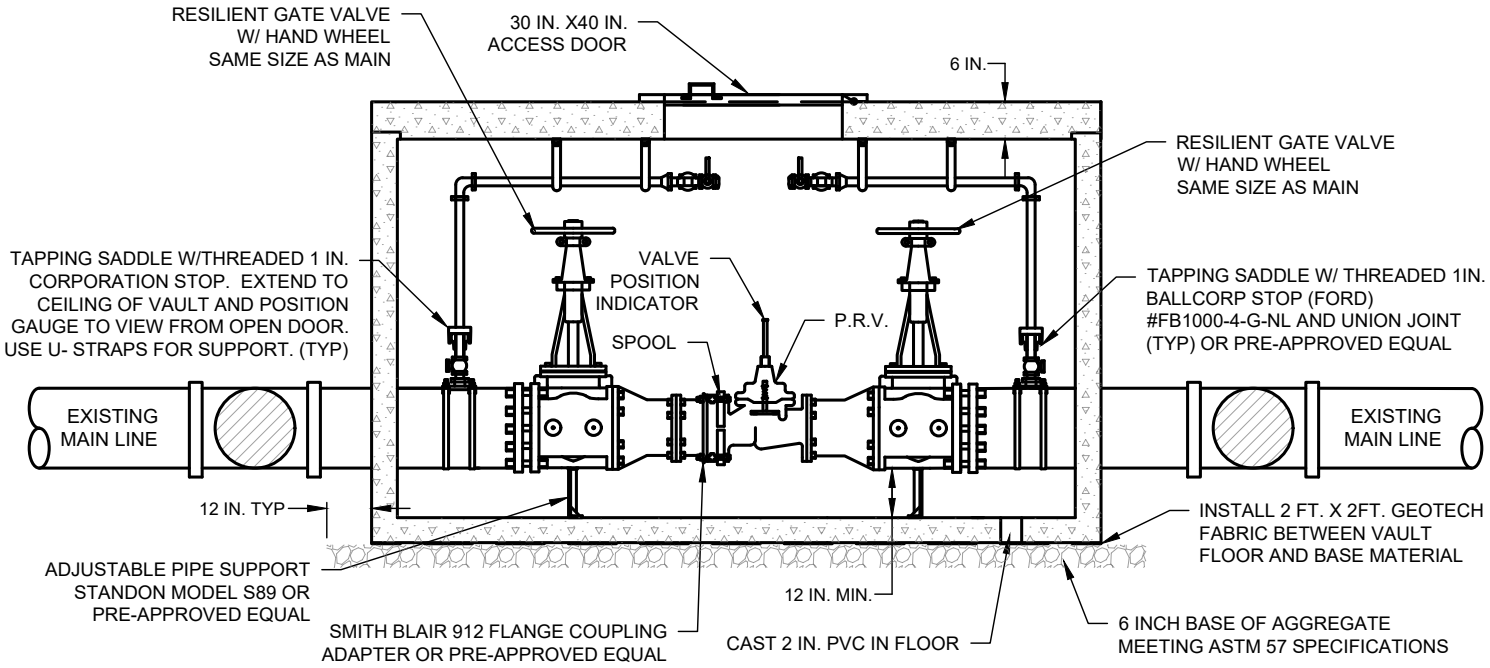


PLAN VIEW



SECTION VIEW

NOTES:

1. ASSEMBLIES 2 IN. AND SMALLER SHALL HAVE AT LEAST A 6 IN. CLEARANCE ON BOTH DRAIN SIDES AND ON TOP OF THE ASSEMBLY, AND 12 IN. BELOW AND BEHIND THE ASSEMBLY. ALL ASSEMBLIES LARGER THAN 2 IN. SHALL HAVE A MINIMUM OF 12 IN. ON THE BACK SIDE, 24 IN. ON THE TEST COCK SIDE, AND THE RELIEF VALVE OPENING SHALL BE AT LEAST 12 IN. PLUS NOMIINAL SIZE OF ASSEMBLY ABOVE THE FLOOR OR HIGHEST POSSIBLE WATER LEVEL REMOVABLE TOP.
2. THE ASSEMBLY SHALL BE READILY ACCESSIBLE FOR TESTING AND MAINTENANCE, WITH A MINIMUM CLEARANCE OF 12 IN. ALL AROUND THE ASSEMBLY.

PRESSURE REDUCING VALVE ASSEMBLY ON NEW OR EXISTING MAIN

(NO SCALE)

SEE W-24B FOR ADDITIONAL NOTES

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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##	DESCRIPTION	FL	MM/DD/YYYY

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W-24A

PRESSURE REDUCING VALVE (PRV) - NOTES

1. PRV SHALL BE CLA VAL 90-01 A, B, KC, OR PRE-APPROVED EQUAL WITH VALVE POSITION INDICATOR AND SHALL BE CAPABLE OF RETURN FLOW.

2. PRV SHALL BE SIZED FOR SITE SPECIFIC CONDITIONS.

3. ALL BYPASS PIPING TO BE SAME SIZE AS MAIN.

4. ALL PIPING WITHIN VAULT AND THROUGH WALLS, SHALL BE D.I.P. ALL FITTINGS WITHIN VAULT SHALL BE FLANGED.

5. VAULT TO BE SIZED SUCH THAT THERE IS A MINIMUM OF 30 IN. WORKING AREA BETWEEN WALLS AND ANY PIPE APPURTENANCES. VAULT SIZES ARE MINIMUM, AND SHALL BE DETERMINED BY GEOMETRICS OF ACTUAL PIPING ITEMS USED. CONTRACTOR SHALL SUBMIT VAULT SIZE PRIOR TO INSTALLATION.

6. BID ITEM FOR PRV INCLUDES VAULT, BYPASS, AND ALL ASSOCIATED APPURTENANCES.

7. BID ITEM SHALL BE CALLED FOR BASED ON MAIN SIZE AND PRV SIZE ASSEMBLY. (IE. 12 IN. X 8 IN. PRV ASSEMBLY).

8. ACCESS DOOR-30 IN. X 40 IN. MIN. SIZE: PARKWAY INSTALLATIONS-FLUSH MOUNTED. TRAFFIC-INSTALLATIONS HS20 TOP MOUNTED. DOOR SHALL BE SPRING ASSISTED, SUBMIT MAKE AND MODEL FOR ENGINEER'S WRITTEN APPROVAL.

9. PRV ASSEMBLY TO BE HOUSED IN A PRECAST METER VAULT, SUBMIT MAKE AND MODEL FOR ENGINEER'S WRITTEN APPROVAL. WHERE LINE PROTRUDES THROUGH VAULT, WALLS SHALL BE POURED TO ACCEPT INSTALLATION OF LINK SEAL TO MAINTAIN WATER TIGHT SEAL.

10. VAULT INCLUDING ACCESS DOOR SHALL BE DESIGNED FOR HS20 LOADING MINIMUM.

11. SPOOL PIECE TO BE UNIFLANGE RESTRAINED/REMOVABLE FLANGE CONNECTIONS.

12. BOX TOP SHALL BE INSTALLED 2 IN. ABOVE EXISTING GROUND.

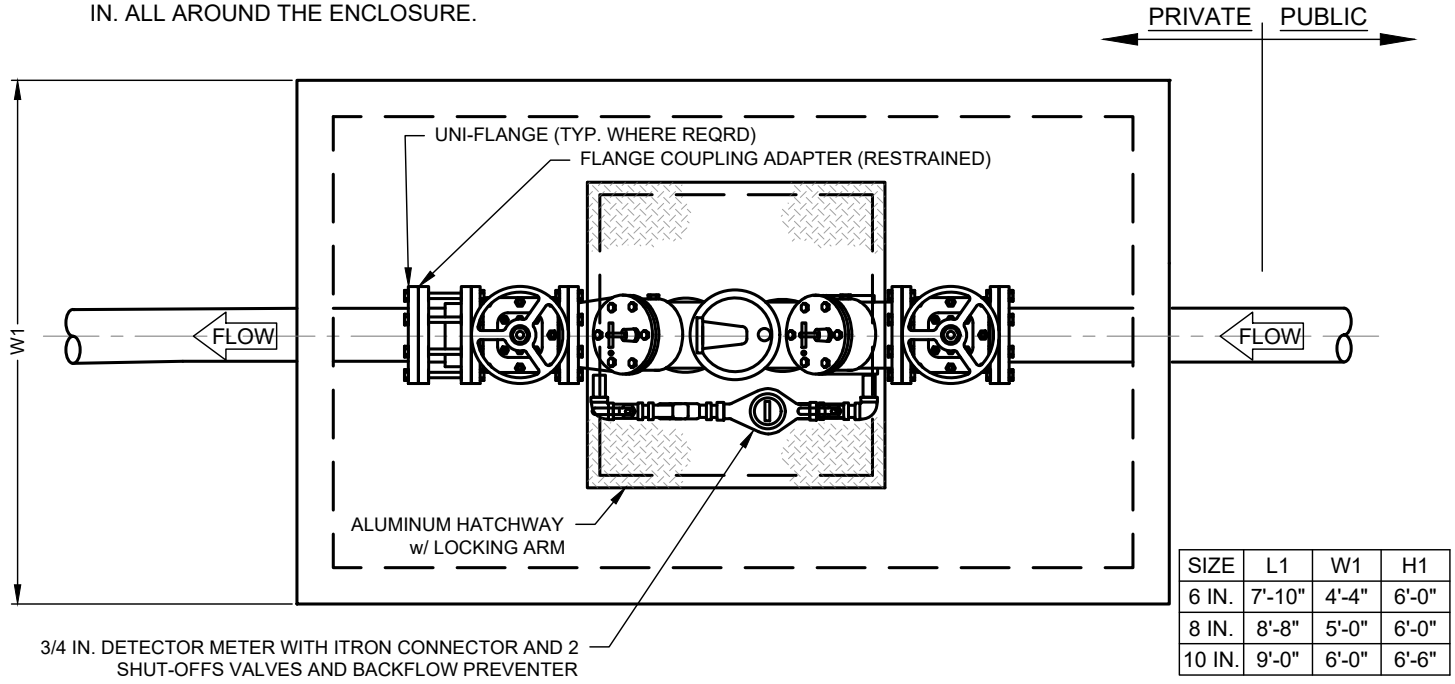
13. THE ASSEMBLY SHALL BE READILY ACCESSIBLE FOR TESTING AND MAINTENANCE, WITH A MINIMUM CLEARANCE OF 12 IN. ALL AROUND THE ASSEMBLY.

MAIN SIZE	MIN. VAULT SIZE
6 IN.	10 FT. X 6'-6"
8 IN.	11 FT. X 7 FT.
10 IN.	12 FT. X 7 FT.
12 IN.	12'-6" X 7 FT.
16 IN.	15'-6" X 7 FT.

SEE W-24A FOR ADDITIONAL DETAILS

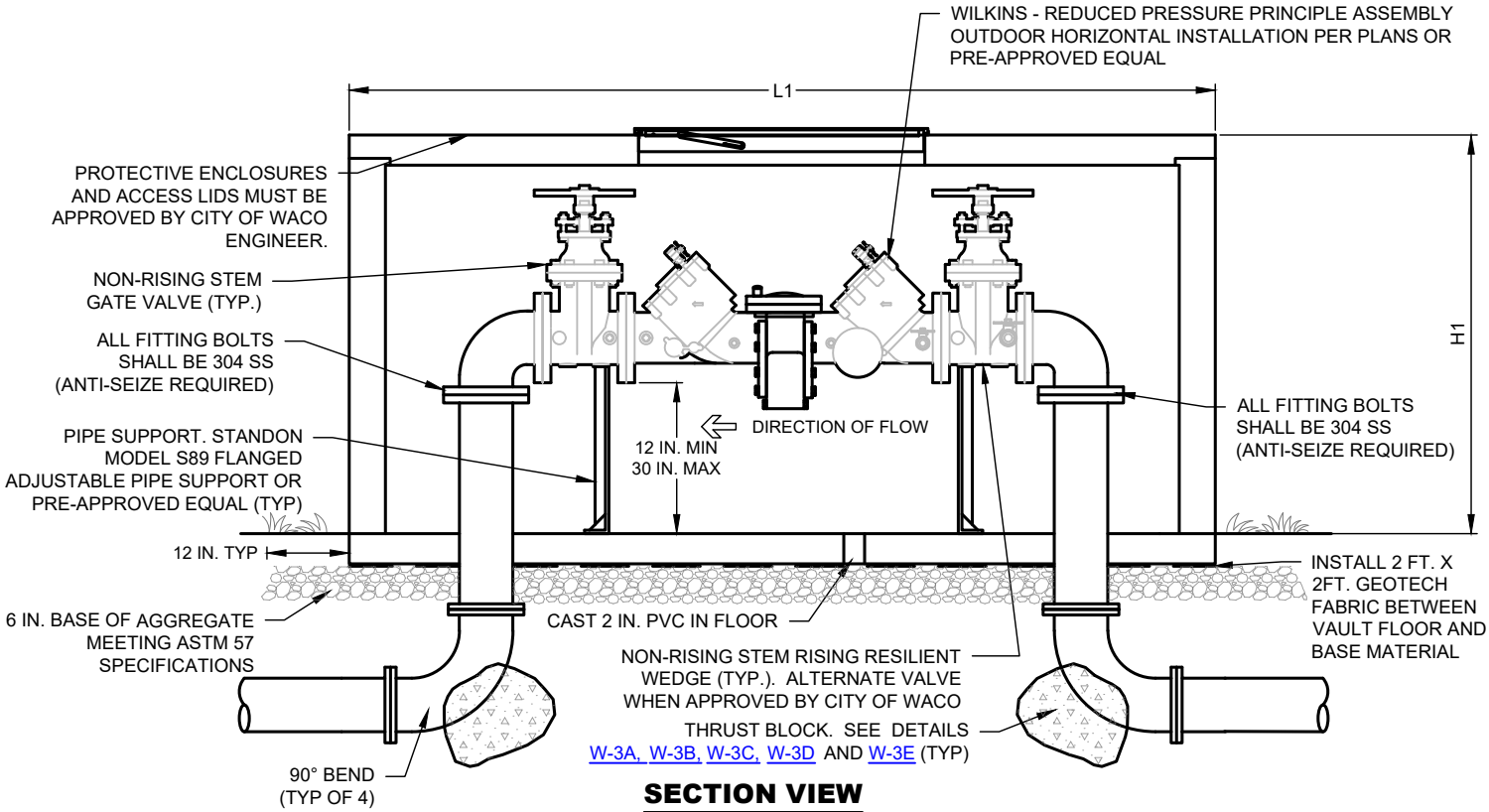
NOTES:

1. ASSEMBLIES 2 IN. AND SMALLER SHALL HAVE AT LEAST A 12 IN. CLEARANCE IN ALL DIRECTIONS. ALL ASSEMBLIES LARGER THAN 2 IN. SHALL HAVE A MINIMUM OF 12 IN. ON THE BACK SIDE, 24 IN. ON THE TEST COCK SIDE, AND THE RELIEF VALVE OPENING SHALL BE AT LEAST 12 IN. PLUS NOMINAL SIZE OF ASSEMBLY ABOVE THE FLOOR OR HIGHEST POSSIBLE WATER LEVEL.
2. THE ASSEMBLY SHALL BE READILY ACCESSIBLE FOR TESTING AND MAINTENANCE WITH A MINIMUM CLEARANCE OF 12 IN. ALL AROUND THE ENCLOSURE.



SIZE	L1	W1	H1
6 IN.	7'-10"	4'-4"	6'-0"
8 IN.	8'-8"	5'-0"	6'-0"
10 IN.	9'-0"	6'-0"	6'-6"

PLAN VIEW



SECTION VIEW

REDUCED PRESSURE ZONE ASSEMBLY AND VAULT

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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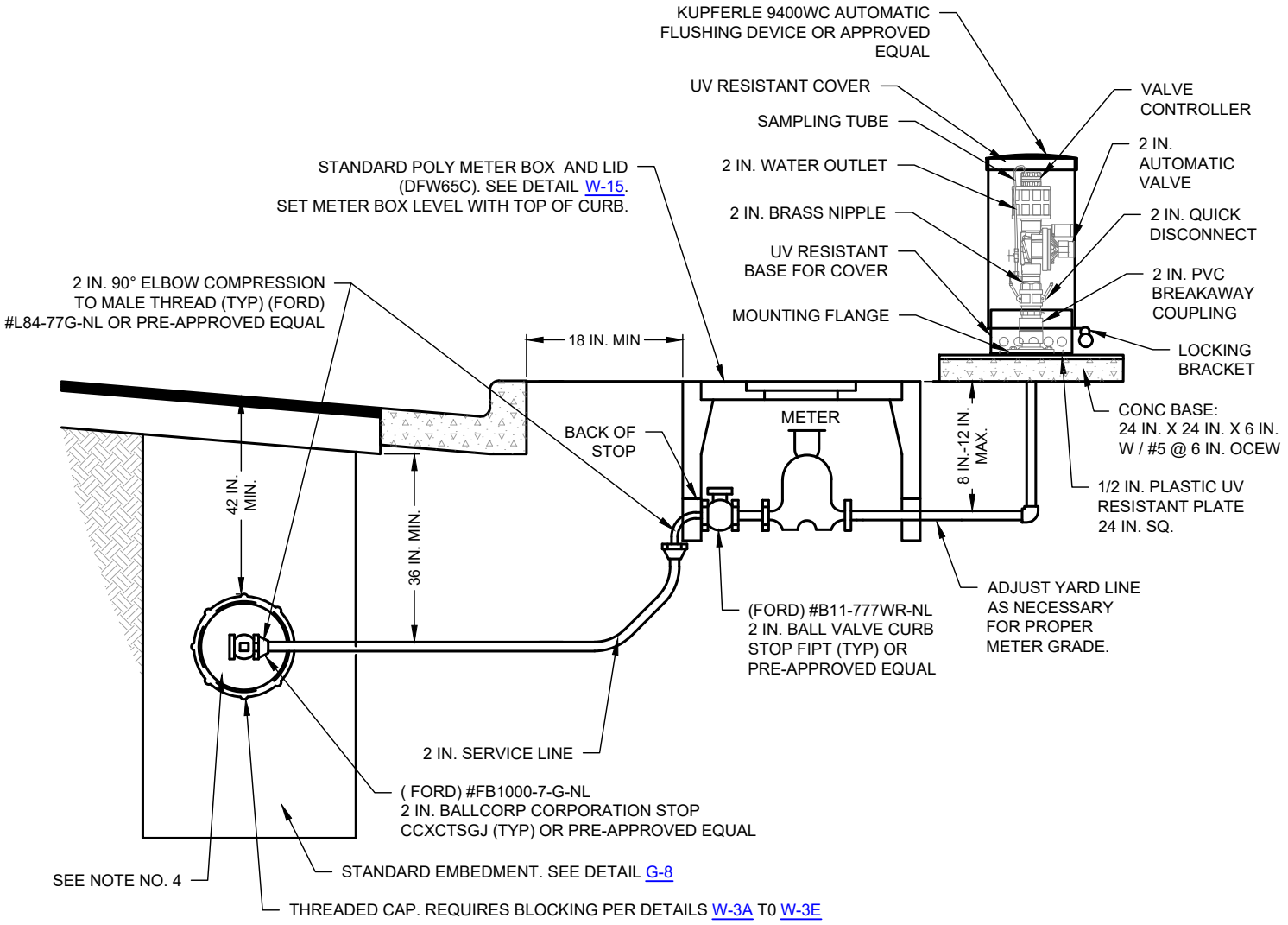

NOTES:

1. SWEATED, GALVANIZED, OR PVC JOINTS SHALL NOT BE ACCEPTED. NON-LEAD BRASS, COPPER TUBING WITH COMPRESSION COUPLINGS, OR POLY PIPE WITH STAINLESS STEEL INSERTS WILL BE ACCEPTED.

2. EROSION CONTROL AND AREA DRAINAGE MEASURES AT FLUSHING VALVE DISCHARGE MUST BE INSTALLED TO MEET SITE CONDITIONS.

3. DISCHARGE OF CHLORINATED WATER MUST COMPLY WITH TCEQ REQUIREMENTS.

4. INSTALL 2 IN. BALL CORP STOP INTO END CAP, SO IF MAIN IS EXTENDED, CAP AND 2 IN. STOP CAN BE REMOVED.

5. THE METER IS TO BE LOCATED AS CLOSE TO THE MAIN AS POSSIBLE. (MIN. 24 IN. CLEARANCE). LOCATIONS SHOULD BE REVIEWED BY THE INSPECTOR ASSIGNED TO THE PROJECT FROM THE CITY OF WACO. ANY VARIATION SHALL BE APPROVED BY CITY ENGINEER PRIOR TO INSTALLATION.

DEAD END WATER MAIN AUTOMATIC FLUSHING VALVE

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

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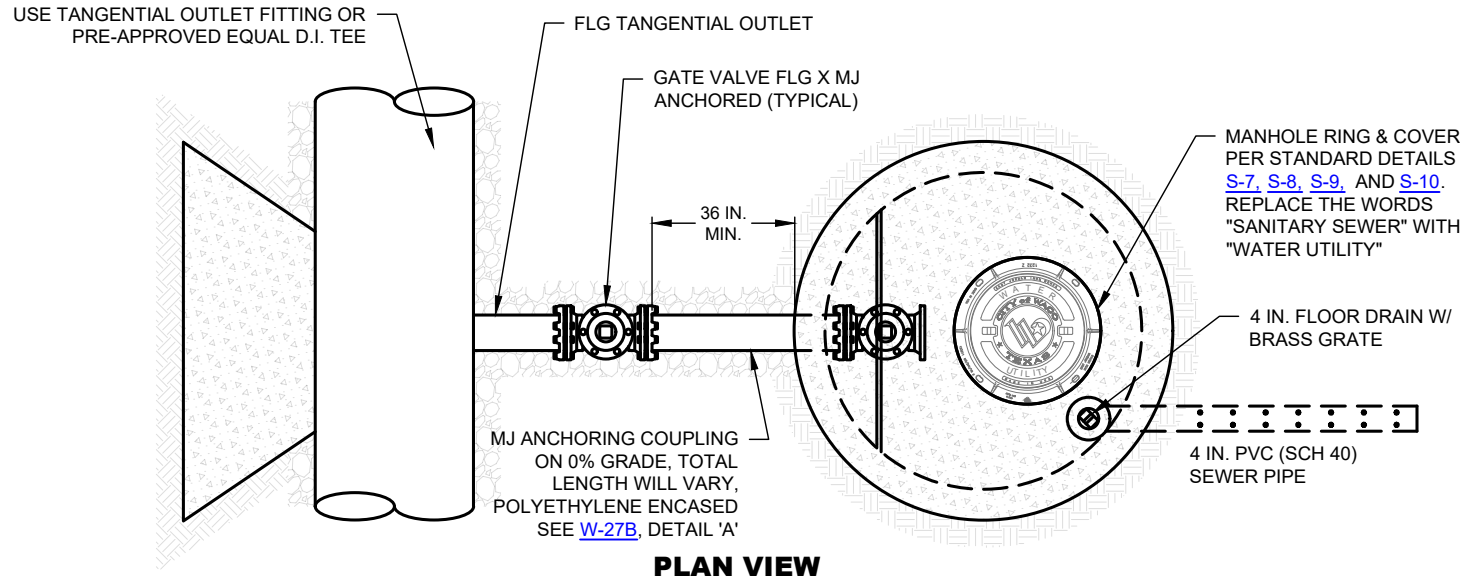
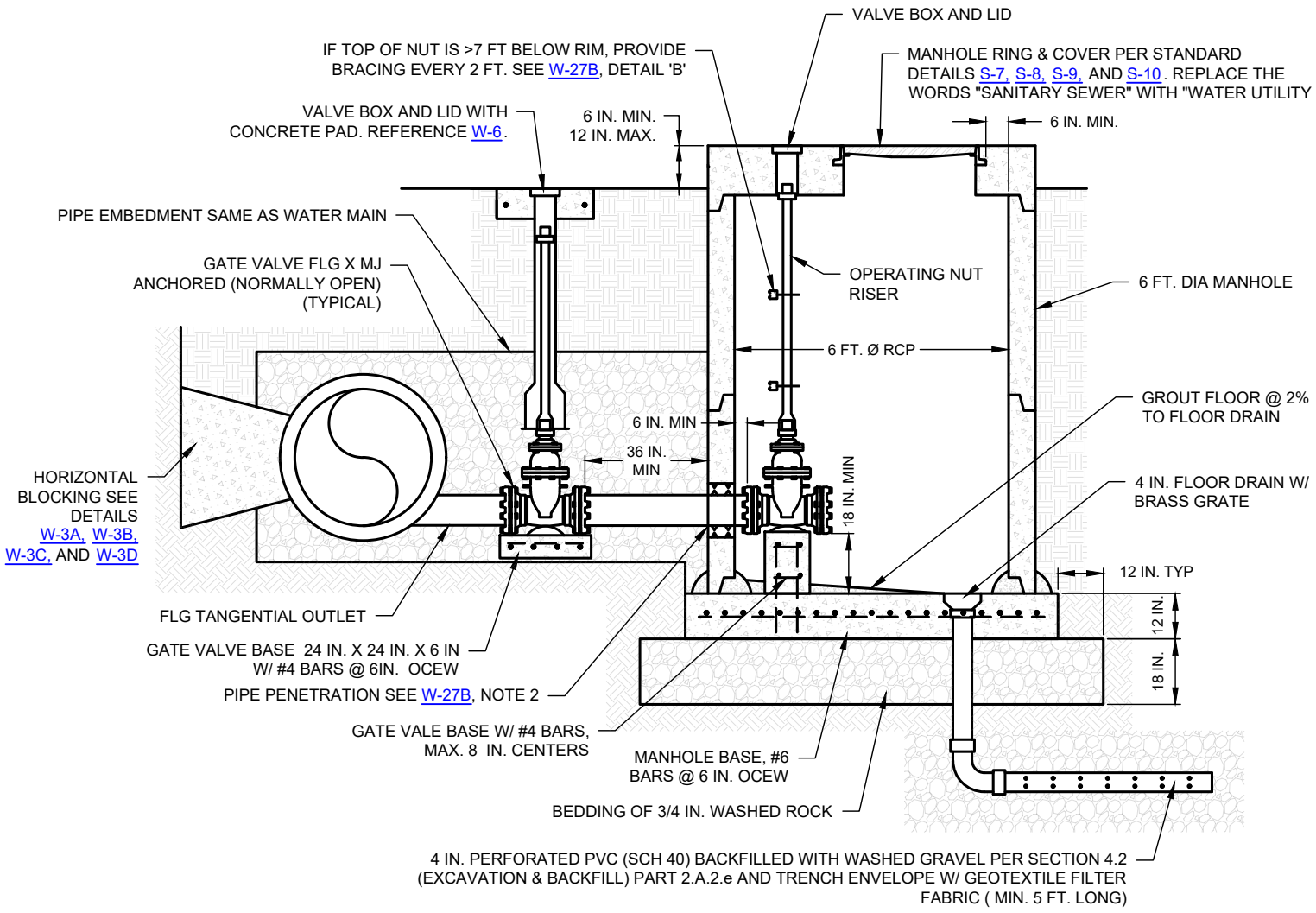


PLAN VIEW



SECTION VIEW

BELOW GROUND BLOW OFF ASSEMBLY

(NO SCALE)

SEE W-27B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

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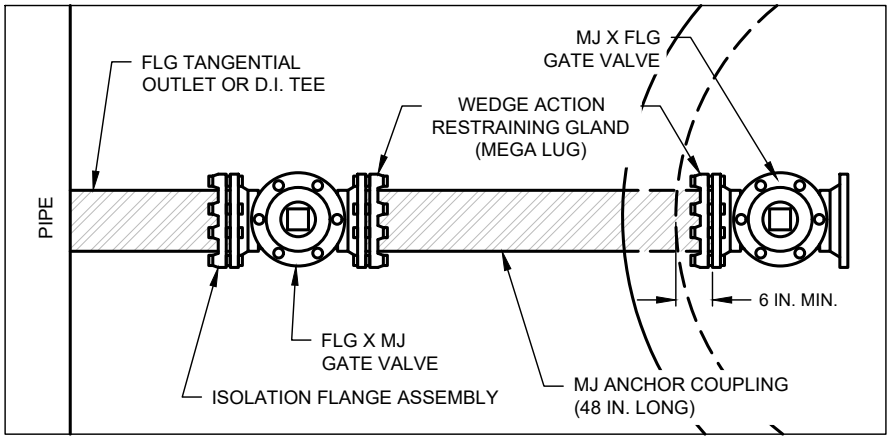
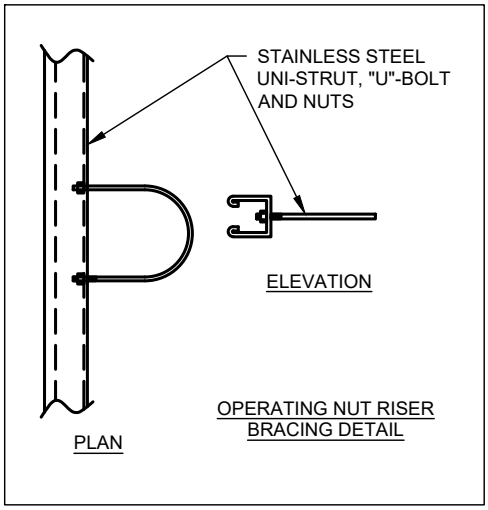
W-27A



DETAIL A: PVC PIPE



DETAIL B

BLOW-OFF SIZING	
MAIN NOM. PIPE Ø	BLOW-OFF SIZE
16 IN.	6 IN.
20 IN.	6 IN.
24 IN.	8 IN.
30 IN.	8 IN.
36 IN.	8 IN.
42 IN.	8 IN.
48 IN.	8 IN.
54 IN.	8 IN.

NOTES:

1. TANGENTIAL OUTLET SHALL BE INCLUDED AS A PART OF THE STANDARD BLOW-OFF ASSEMBLY LINE-ITEM.
2. MANHOLE PENETRATIONS: SHALL BE SEALED WITH WATERTIGHT FLEXIBLE CONNECTORS & NON-SHRINK EPOXY GROUT.
3. ALL PIPING TO BE RESTRAINED.
4. ALL COMPONENTS SHOWN ARE INCLUDED AS PART OF THE BLOW-OFF VALVE & VAULT BID ITEM.
5. ALL BOLTS SHALL BE STAINLESS STEEL.
6. WHERE SPACE IS LIMITED, RESTRAINED BENDS MAY BE UTILIZED TO REDUCE DISTANCE BETWEEN PIPELINE AND MANHOLE.

BELOW GROUND BLOW OFF ASSEMBLY

(NO SCALE)

SEE W-27A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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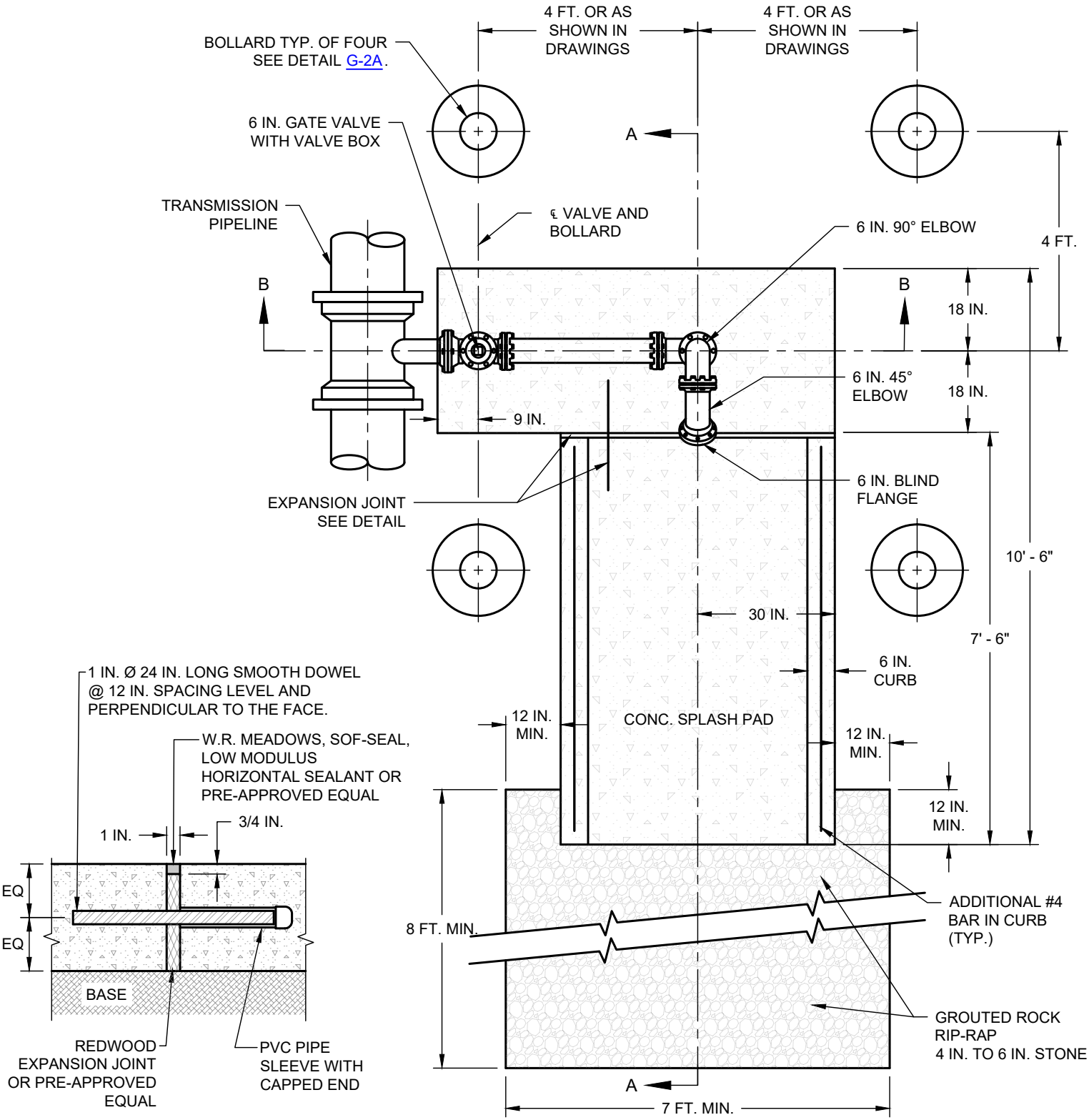
W-27B



EXPANSION JOINT
(NO SCALE)

PLAN VIEW

ABOVE GROUND BLOW OFF ASSEMBLY

(NO SCALE)

SEE W-28B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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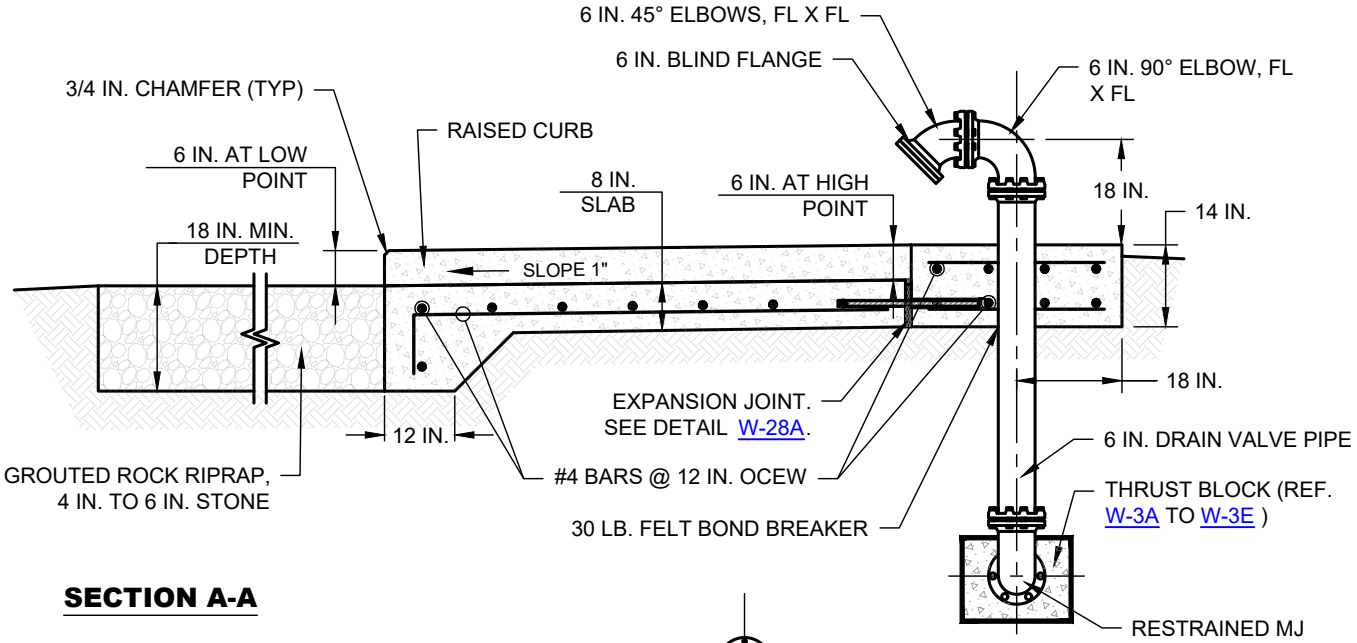
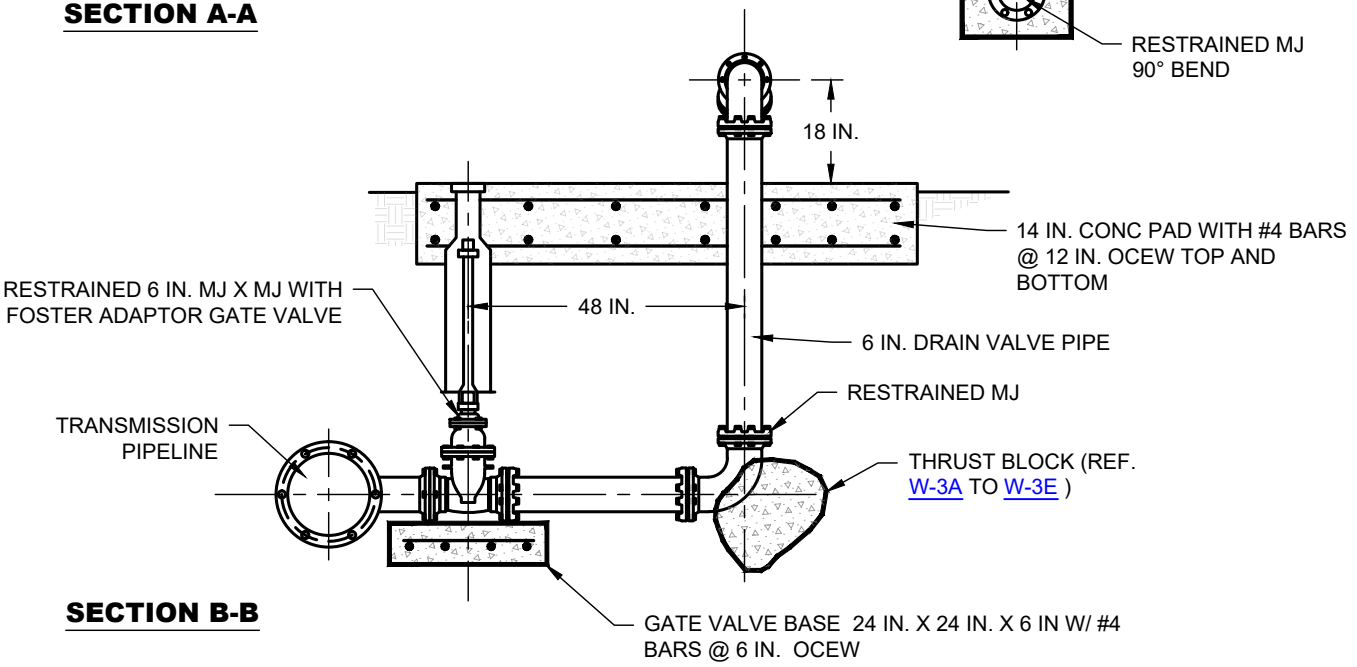


SECTION A-A



SECTION B-B

NOTES:

1. ABOVE GROUND PIPING SHALL BE FLANGED DUCTILE IRON.
2. THE FINAL LOCATIONS OF THE DUCTILE IRON BOLLARDS SHALL BE DETERMINED BY THE ENGINEER.
3. ALL CONCRETE SHALL BE 3000 PSI.
4. POLYWRAP ALL BURIED DUCTILE IRON PIPE, VALVES, AND FITTINGS.
5. ALL EXPOSED VERTICAL AND HORIZONTAL CONCRETE EDGES SHALL BE FORMED WITH 3/4 IN. CHAMFER.
6. DRAIN VALVE PIPING SHALL BE ORIENTED ON DOWN-HILL SIDE OF TRANSMISSION PIPELINE, OR ON OPPOSITE SIDE OF PIPELINE FROM PAVEMENT IN ROADWAYS, AS APPROVED BY THE ENGINEER OR AS SHOWN IN DRAWINGS.
7. FIELD PAINT EXPOSED PIPING WITH TNEMEC SERIES 46H-413 COAL TAR EPOXY AT 60.0 DRY MILS. PAINTING IS SUBSIDIARY TO PIPE.
8. ORIENTATION AND ELEVATION OF CONCRETE SPLASH PAD SHALL BE AS SHOWN ON DRAWINGS.
9. ALL EXPOSED DUCTILE IRON PIPE AND FITTINGS WITHIN MANHOLES SHALL HAVE FACTORY APPLIED ASPHALTIC COATING 1 MIL. THICK. ALL EXPOSED DUCTILE IRON PIPE ABOVE GRADE SHALL BE SHOP PRIMED AND COATED BY WATER UTILITY SERVICES.

ABOVE GROUND BLOW OFF ASSEMBLY

(NO SCALE)

SEE W-28A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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W-28B

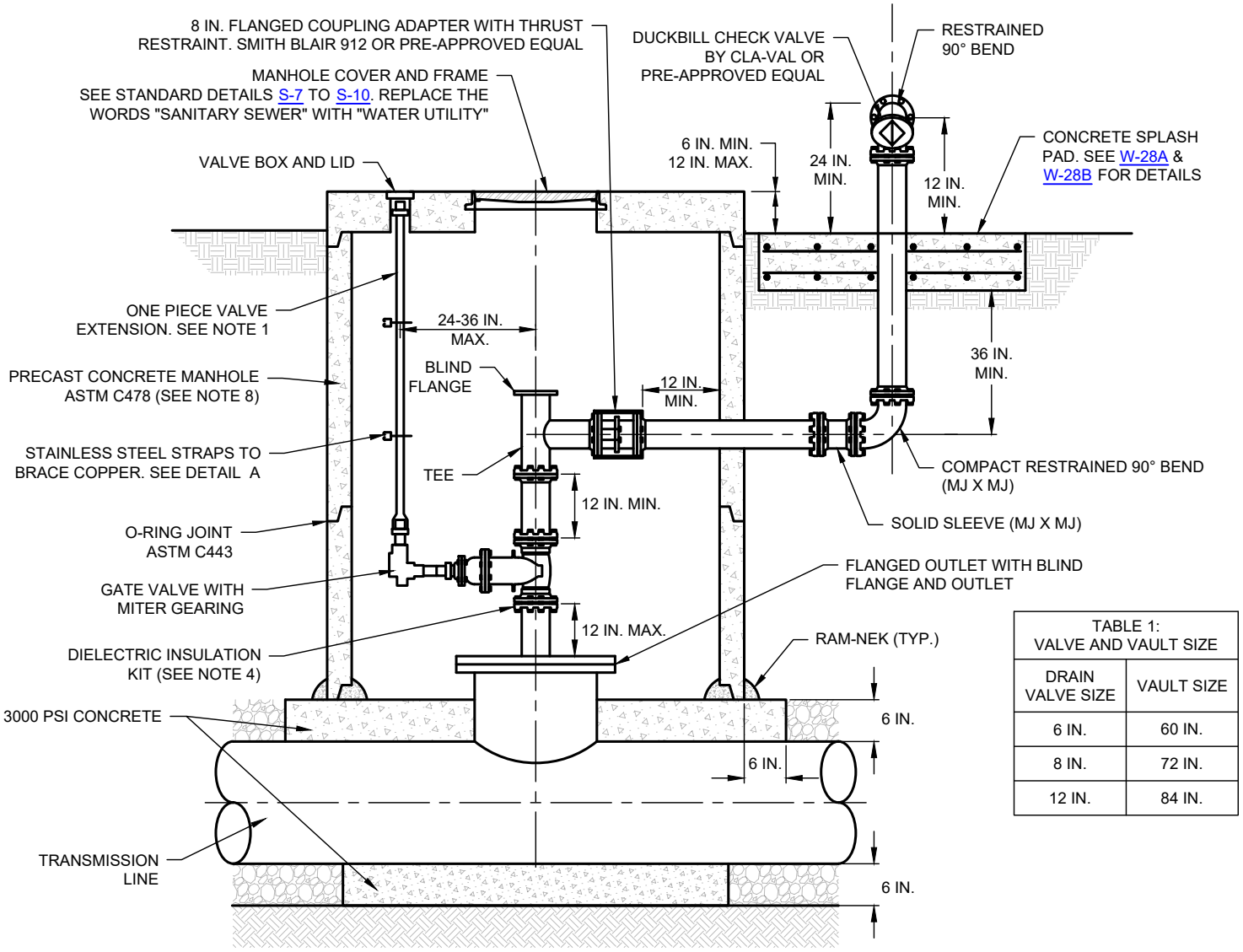
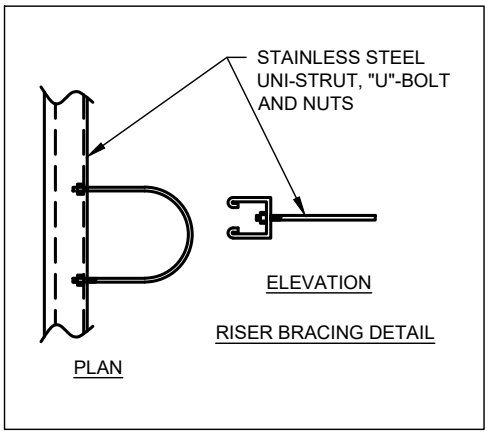


TABLE 1: VALVE AND VAULT SIZE	
DRAIN VALVE SIZE	VAULT SIZE
6 IN.	60 IN.
8 IN.	72 IN.
12 IN.	84 IN.



DETAIL A

NOTES:

1. THE VALVE EXTENSION SHALL BE ONE PIECE AND POSITIONED INSIDE THE MANHOLE SUCH THAT THE VALVE CAN BE OPERATED FROM GROUND LEVEL THROUGH THE MANHOLE TOP. THE VALVE EXTENSION SHALL EXTEND TO WITHIN 4 IN. OF THE MANHOLE . ACCESS TO VALVE EXTENSION SHALL NOT BE THROUGH MANHOLE COVER.
2. DRAIN VALVES SHALL UTILIZE DUCTILE IRON CLASS 53 PIPE FOR DRAIN VALVE PIPING.
3. CENTER VALVE STACK OPENING OVER GATE VALVE OPERATING STEM. CONTRACTOR SHALL COORDINATE VALVE STACK OPENING LOCATION WITH GATE VALVE MANUFACTURER AND MANHOLE COVER MANUFACTURER PRIOR TO MANHOLE COVER FABRICATION. CONTRACTOR SHALL SUBMIT SHOP DRAWING OF DRAIN VALVE MANHOLE AND MANHOLE COVER TO CITY OF WACO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
4. ISOLATION KITS SHALL BE PROVIDED AT LOCATION WHERE A CHANGE OF PIPE MATERIAL OCCURS.
5. ALL EXPOSED DUCTILE IRON PIPE AND FITTINGS WITHIN MANHOLES SHALL HAVE FACTORY APPLIED ASPHALTIC COATING, UNLESS OTHERWISE SPECIFIED
6. ORIENTATION AND ELEVATION OF CONCRETE SPLASH PAD SHALL BE AS SHOWN ON DRAWINGS.
7. ENSURE ALL DRAIN VALVE APPURTENANCES REMAIN WITHIN PROPOSED PERMANENT EASEMENT.
8. PIPE PENETRATION THROUGH VAULT WALL SHALL BE SEALED WITH A NON-SHRINK EPOXY GROUT.
9. REFERENCE G-8 FOR CONCRETE EMBEDMENT ENCASEMENT REQUIREMENTS.

LARGE DIAMETER (24 IN. TO 48 IN.) BLOW OFF VALVE ASSEMBLY

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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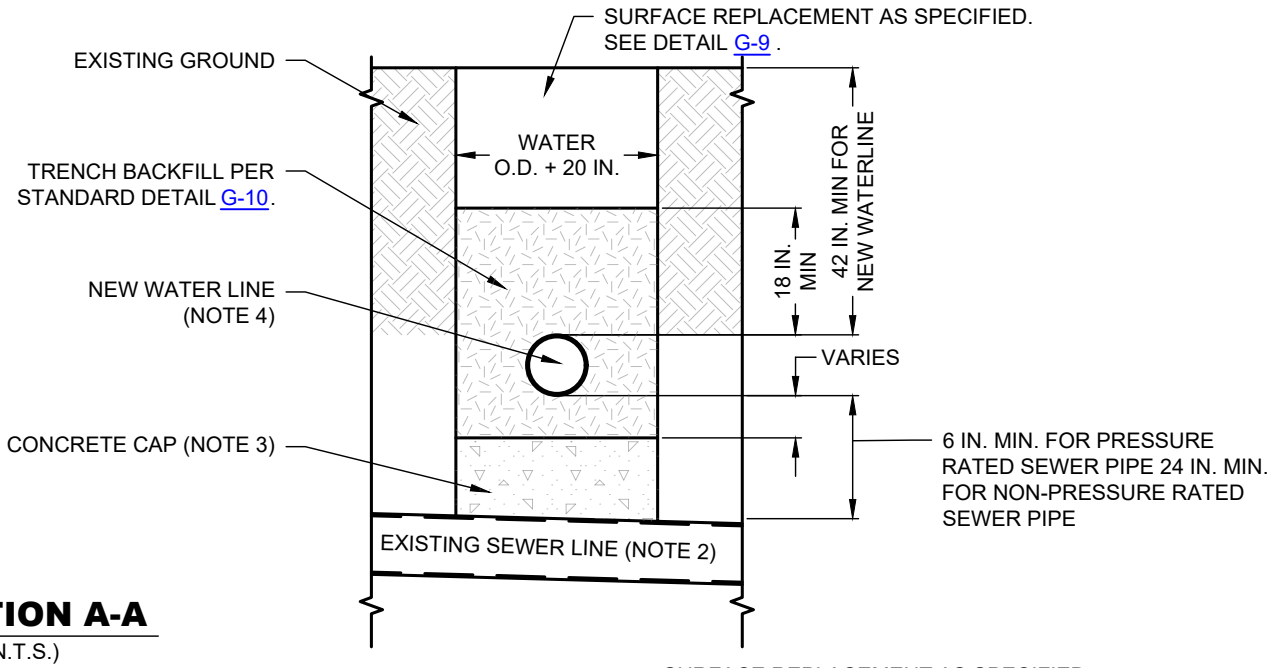
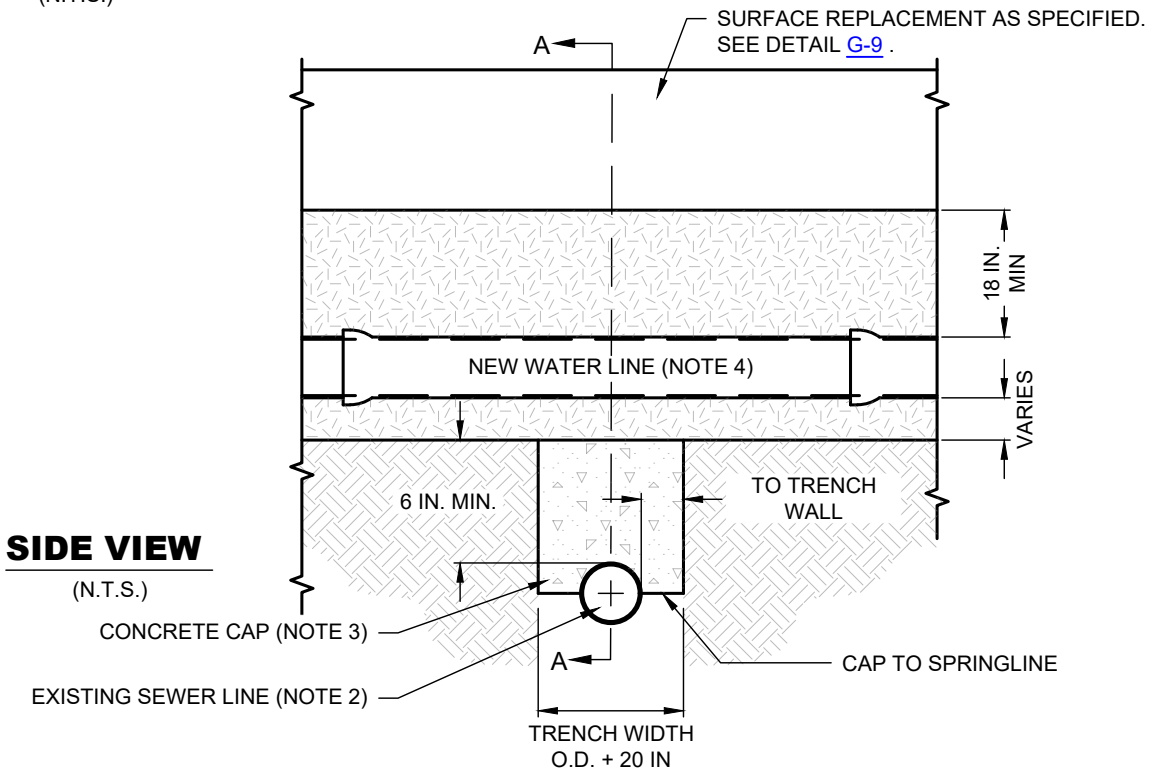


SECTION A-A

(N.T.S.)



SIDE VIEW

(N.T.S.)

NOTE:

1. THIS DETAIL NEED NOT BE APPLIED FOR CROSSINGS INVOLVING WATER OR SEWER SERVICE CONNECTIONS.
2. IF EXISTING SEWER LINE IS DISTURBED OR SHOWS SIGNS OF LEAKING, REPLACE WITH SINGLE PIPE JOINT, MIN. 18 FT., CENTERED UNDER NEW WATER LINE. NEW SEWER LINE SHALL BE PVC PRESSURE-RATED AT 150 PSI MIN. SEE DETAIL G-8 FOR EMBEDMENT REQUIREMENTS.
3. CONCRETE CAP. 2000 PSI CONCRETE OR CONTROLLED LOW STRENGTH MATERIAL OVER ENTIRE WIDTH OF WATER LINE TRENCH WHEN DISTANCE BETWEEN UTILITY LINES IS LESS THAN 24 IN. WHEN DISTANCE IS GREATER THAN 24 IN. REF. G-8 FOR STANDARD EMBEDMENT REQUIREMENTS.
4. NEW WATER LINE. CENTER ONE SECTION OF PIPE OVER SEWER PIPE. PIPE SECTION MUST BE MIN. 18 FT. LONG.

EMBEDMENT FOR NEW WATER LINE CROSSING OVER EXISTING SEWER LINE

(NO SCALE)

CITY OF WACO

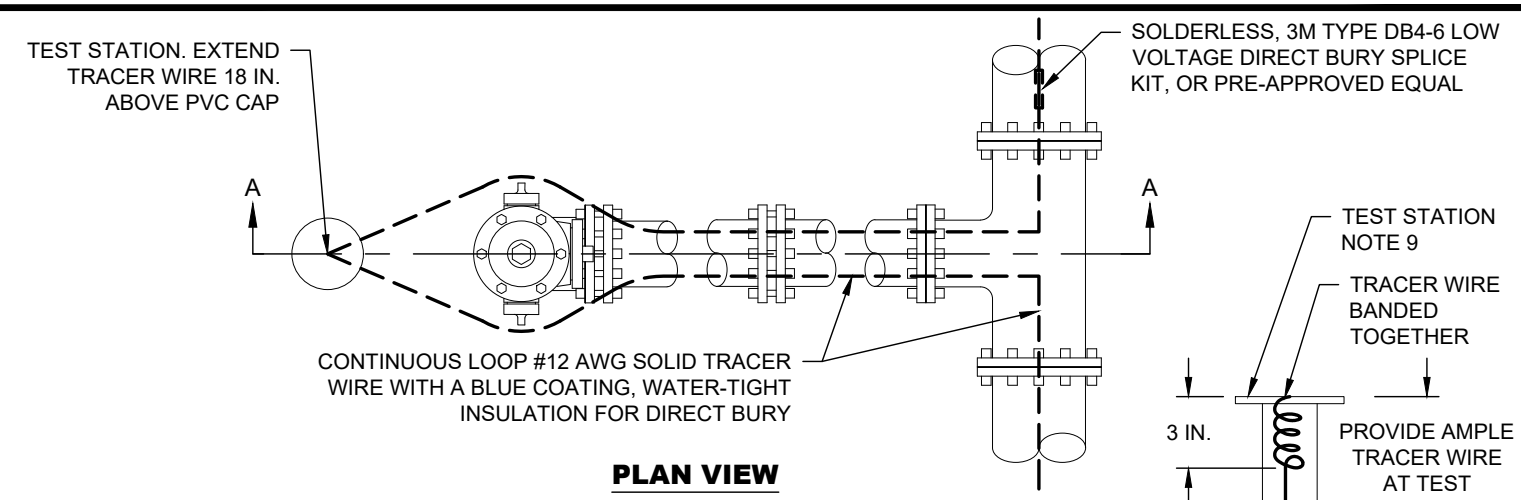
ENGINEERING DIVISION

REVISIONS

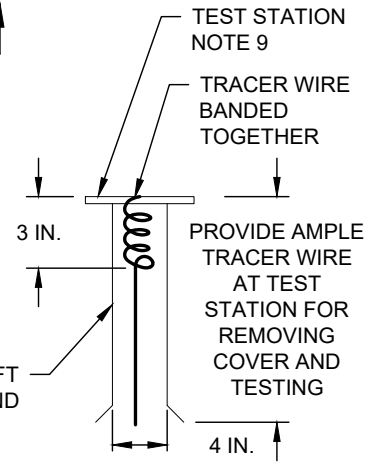
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

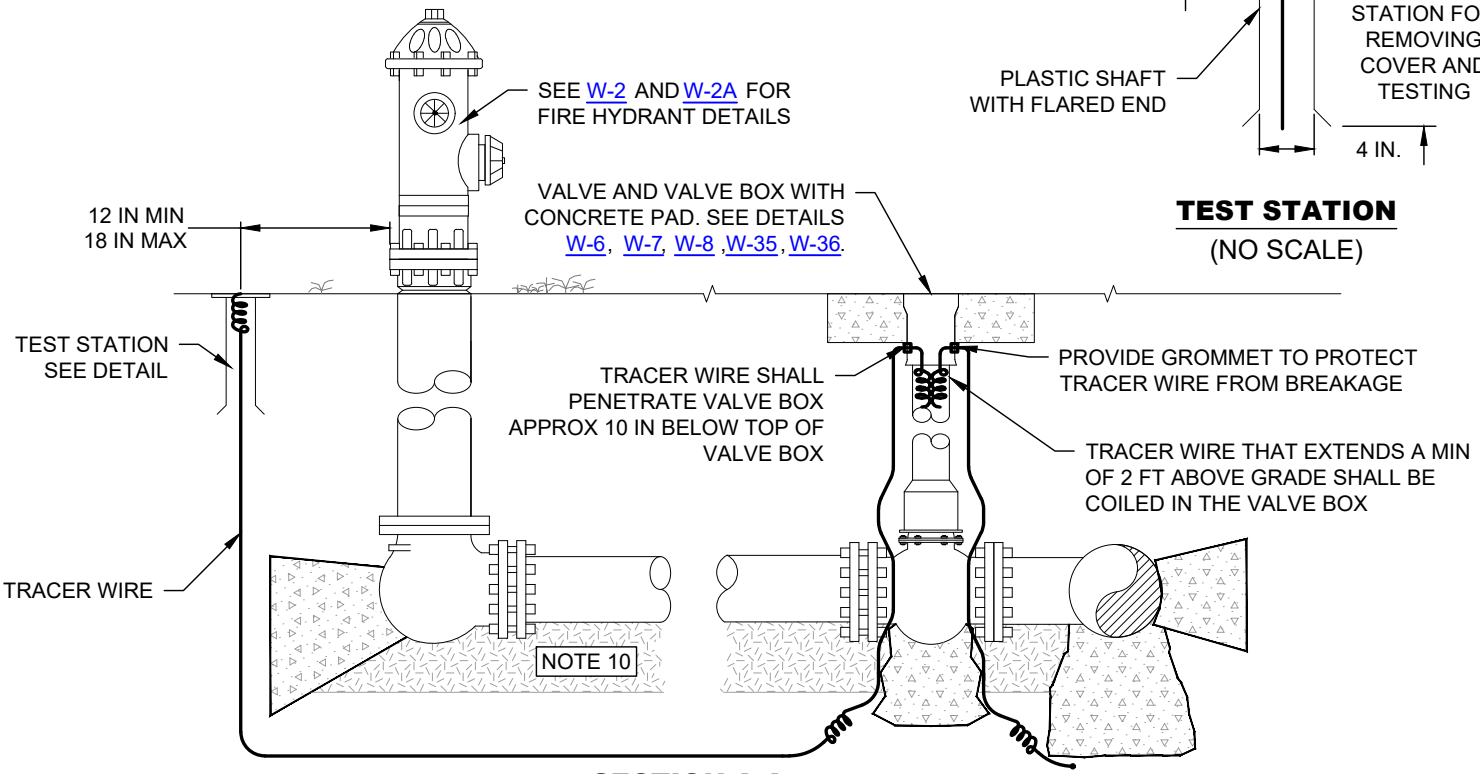
W-33



PLAN VIEW



TEST STATION
(NO SCALE)



SECTION A-A

NOTES:

1. SEE W-2 AND W-2A FOR FIRE HYDRANT REQUREMENTS.
2. TRACER WIRE SHALL BE TIED INTO EVERY VALVE, BLOW-OFF, ARV AND OTHER DEVICES.
3. TRACER LEADS SHALL BE INSTALLED IN APPROVED VALVE BOXES OR TRACER WIRE ACCESS BOXES. ACCESS BOX STYLE (LIGHT DUTY, DRIVEWAY, OR ROADWAY) SHALL BE DETERMINED BY BOX LOCATION.
4. VALVE BOXES SHALL BE INSTALLED FLUSH WITH GROUND.
5. TRACER LEADS SHALL HAVE ADEQUATE SLACK THROUGHOUT THE INSTALLATION TO REDUCE BREAKAGE FROM PULLING.
6. TRACER WIRE THAT EXTENDS A MIN OF 2 FT. ABOVE GRADE SHALL BE COILED IN THE VALVE BOX AND WIRES SHALL BE PROPERLY CONNECTED TO THE THE VALVE BOX PER MANUFACTURES SPECIFICATIONS. ALL TRACER WIRES SHALL BE OF #12 AWG SOLID TRACER WIRE WITH A BLUE COATING.
7. CONTRACTOR SHALL PROTECT THE LEADS, BOXES AND ALL TRACER WIRES THROUGHOUT THE PROJECT.
8. PROVIDE ONE TRACER WIRE IN EACH DIRECTION UNLESS OTHERWISE NOTED.
9. TEST STATION. "CP" TYPE COLUMN 4. TEST STATION AT EACH FIRE HYDRANT. HEAVY CAST IRON LOCKING COVER WITH 4 TERMINALS. 4 IN. ID X 18 IN. SHAFT LENGTH.
10. EMBEDMENT PER STANDARD DETAILS G-8 .TRACER WIRE TO BE PLACED ON TOP OF TRENCH EXCAVATION PRIOR TO PLACEMENT OF EMBEDMENT.

TRACER WIRE DETAILS

(NO SCALE)

CITY OF WACO

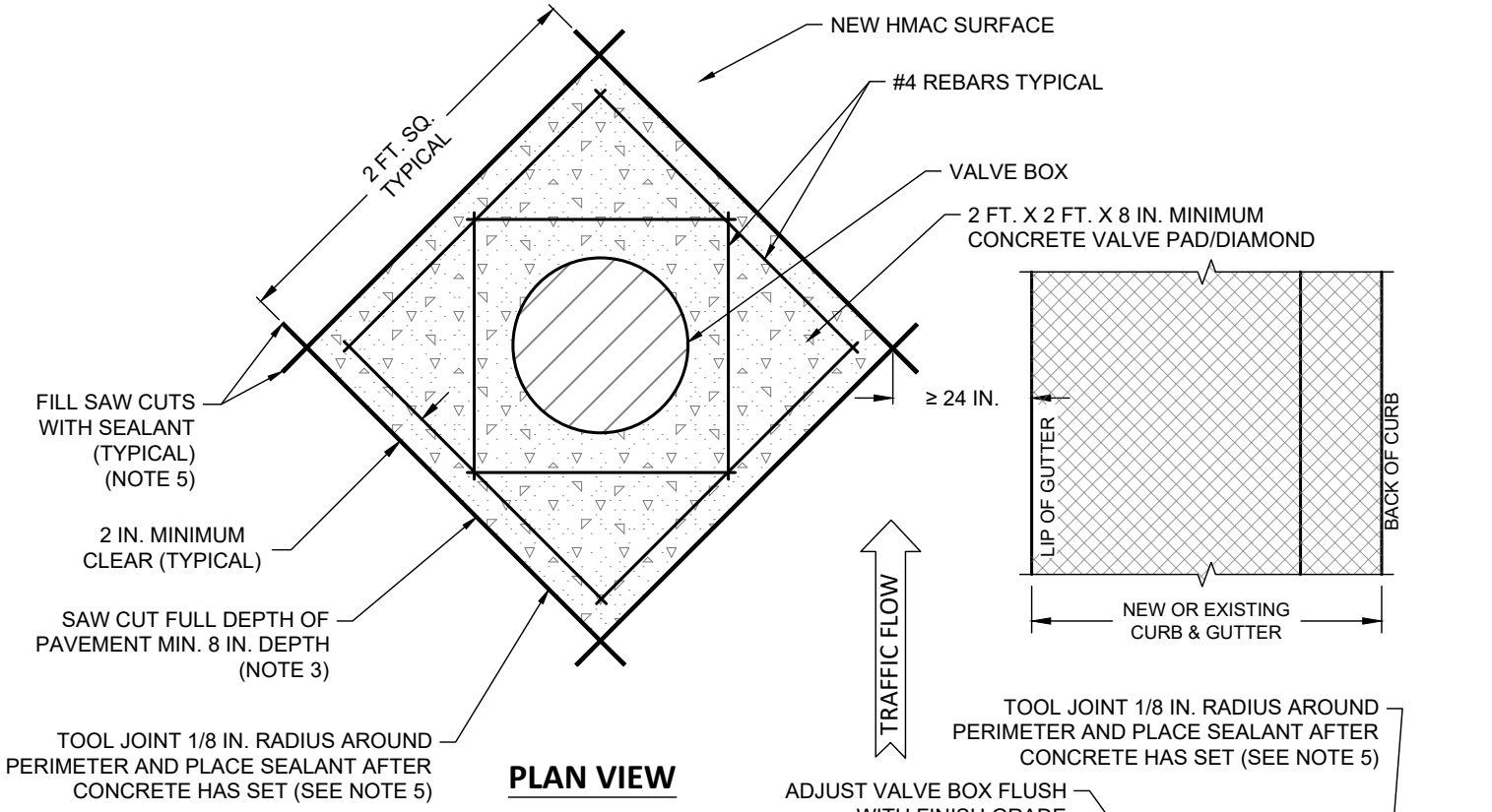
ENGINEERING DIVISION

REVISIONS

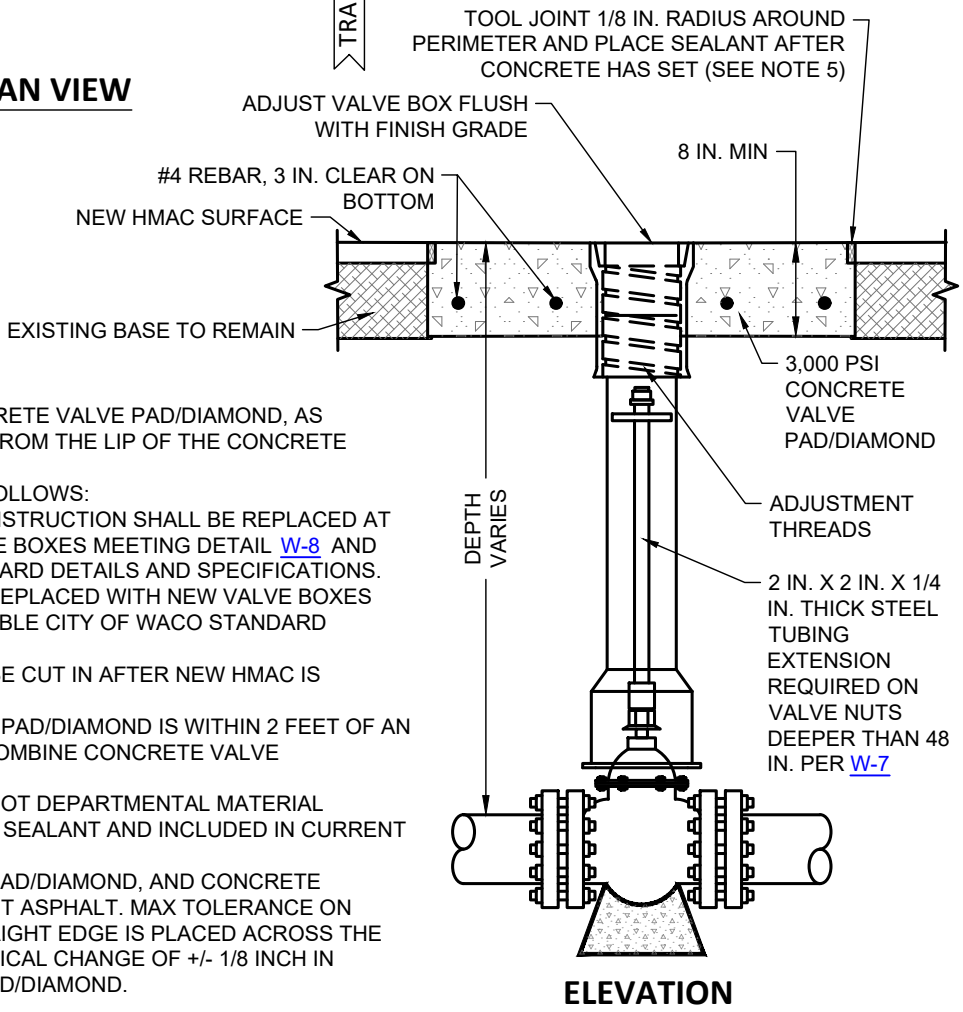
NO.	COMMENTS	BY	DATE
1	MODIFY TRACER WIRE MATERIAL IN PLAN VIEW AND NOTE 6	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-34



PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN THE CONCRETE VALVE PAD/DIAMOND, AS DETAILED ABOVE, IS 24 INCHES OR GREATER FROM THE LIP OF THE CONCRETE GUTTER.
2. RE-USE EXISTING VALVE BOXES, EXCEPT AS FOLLOWS:
   A. EXISTING VALVE BOXES DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
   B. ANY OLD-STYLE VALVE BOXES SHALL BE REPLACED WITH NEW VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
3. NEW CONCRETE VALVE PAD/DIAMOND SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
4. IF POINT ON PERIMETER OF CONCRETE VALVE PAD/DIAMOND IS WITHIN 2 FEET OF AN ADJACENT CONCRETE VALVE PAD/DIAMOND COMBINE CONCRETE VALVE PADS/CONCRETE DIAMONDS.
5. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL PRODUCER LIST.
6. VALVE LID SHALL BE FLUSH WITH CONCRETE PAD/DIAMOND, AND CONCRETE PAD/DIAMOND SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/-1/8 INCH IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED DIAMOND, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT OF ALL SIDES OF THE PAD/DIAMOND.

VALVE BOX HEIGHT ADJUSTMENT A

(FOR ASPHALT STREET REHABILITATION PROJECTS ONLY)

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
1	MODIFY SAW CUT NOTE	MZ	04/28/2025
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

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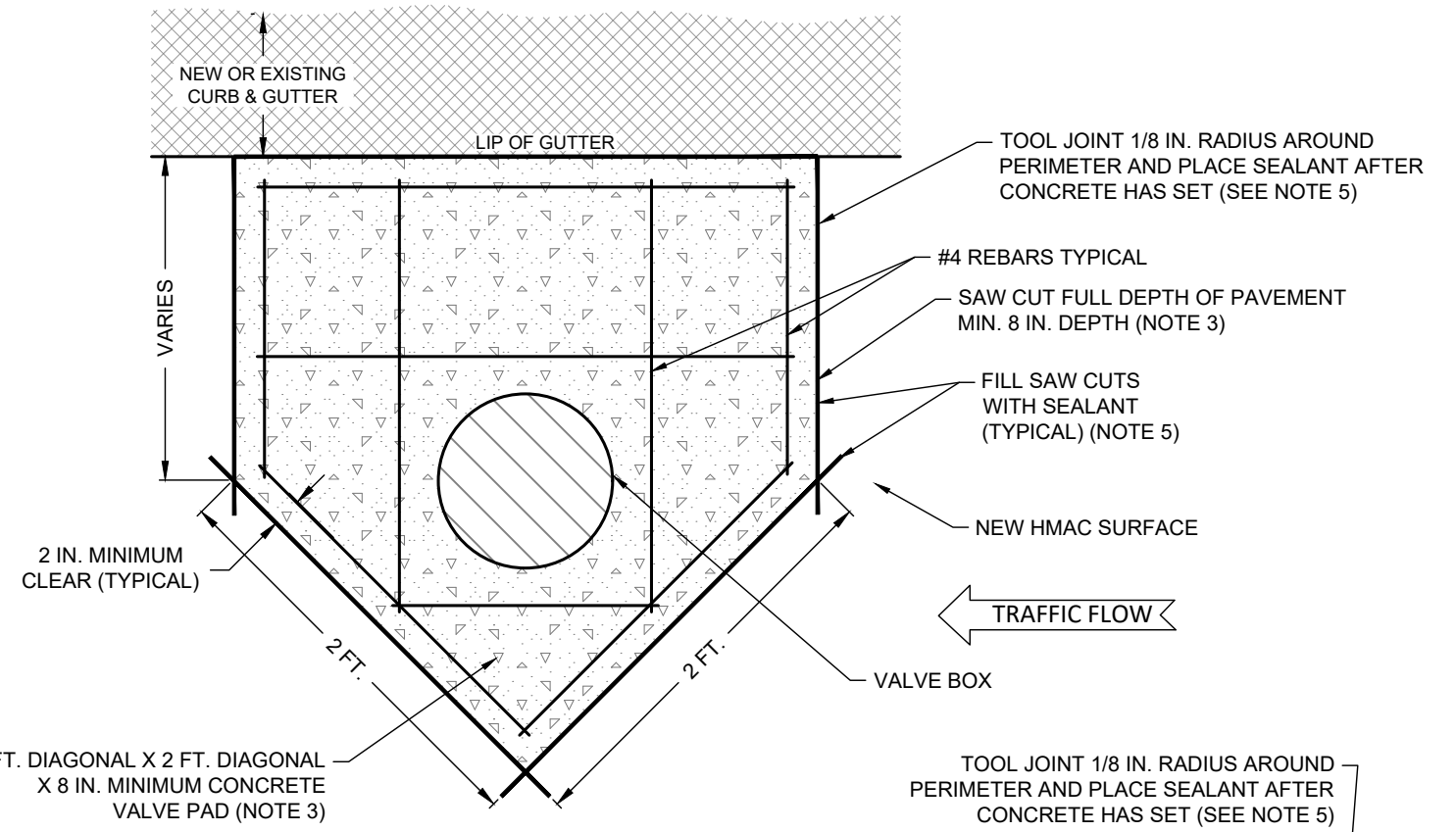
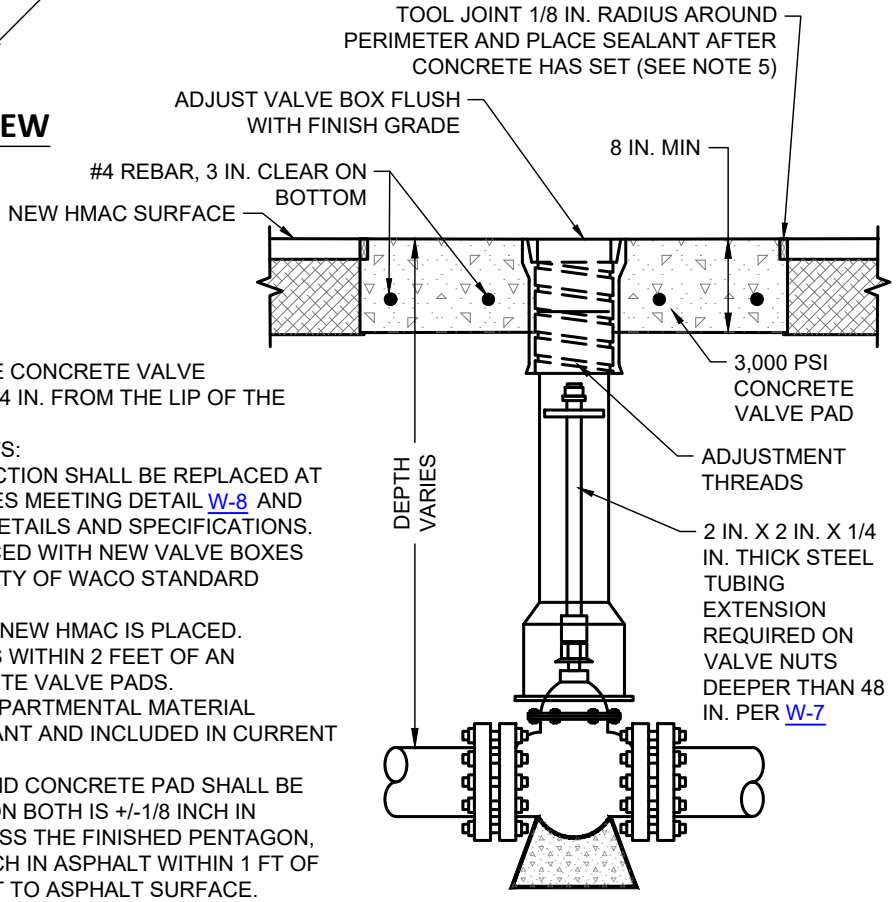


PLAN VIEW



ELEVATION

NOTES:

1. THIS DETAIL SHALL BE USED WHEN ANY PART OF THE CONCRETE VALVE PAD/DIAMOND AS DETAILED ON ST-13 IS LESS THAN 24 IN. FROM THE LIP OF THE CONCRETE GUTTER.
2. RE-USE EXISTING VALVE BOXES, EXCEPT AS FOLLOWS:
   A. EXISTING VALVE BOXES DAMAGED BY CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE WITH VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
   B. ANY OLD-STYLE VALVE BOXES SHALL BE REPLACED WITH NEW VALVE BOXES MEETING DETAIL W-8 AND OTHER APPLICABLE CITY OF WACO STANDARD DETAILS AND SPECIFICATIONS.
3. NEW CONCRETE VALVE PAD SHALL BE CUT IN AFTER NEW HMAC IS PLACED.
4. IF POINT ON PERIMETER OF CONCRETE VALVE PAD IS WITHIN 2 FEET OF AN ADJACENT CONCRETE VALVE PAD COMBINE CONCRETE VALVE PADS.
5. SEALANT SHALL BE IN ACCORDANCE WITH TXDOT DEPARTMENTAL MATERIAL SPECIFICATION DMS-6340 VEHICLE LOOP WIRE SEALANT AND INCLUDED IN CURRENT TXDOT MATERIAL PRODUCER LIST.
6. VALVE LID SHALL BE FLUSH WITH CONCRETE PAD, AND CONCRETE PAD SHALL BE FLUSH WITH ADJACENT ASPHALT. MAX TOLERANCE ON BOTH IS +/-1/8 INCH IN ADDITION, WHEN A STRAIGHT EDGE IS PLACED ACROSS THE FINISHED PENTAGON, THERE SHALL BE NO VERTICAL CHANGE OF +/- 1/8 INCH IN ASPHALT WITHIN 1 FT OF THE 4 SIDES OF THE PENTAGON THAT ARE ADJACENT TO ASPHALT SURFACE.

VALVE BOX HEIGHT ADJUSTMENT B

(FOR ASPHALT STREET REHABILITATION PROJECTS ONLY)

(NO SCALE)

CITY OF WACO

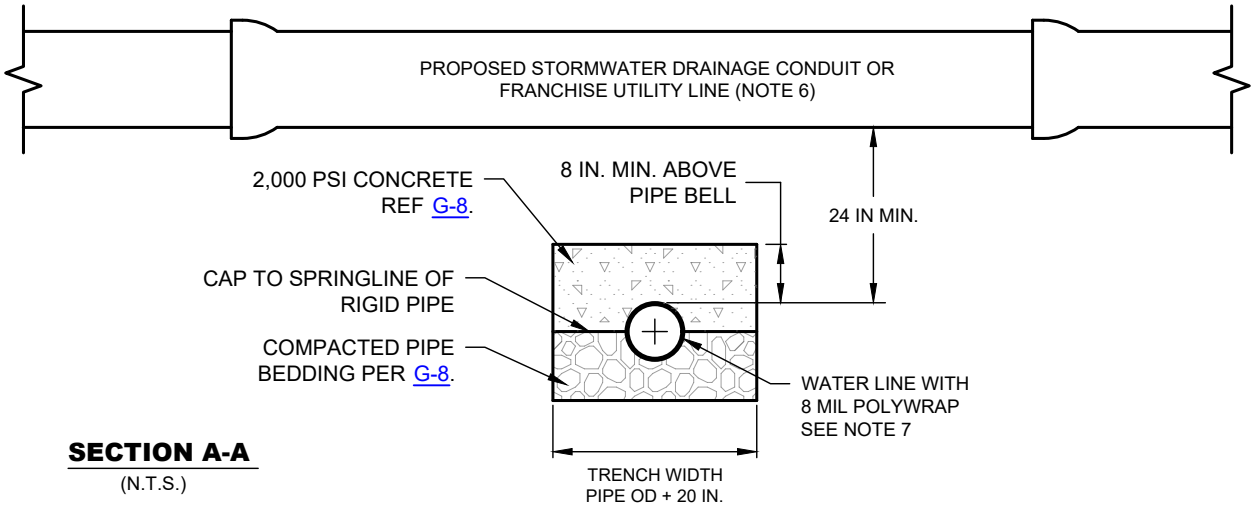
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY SAW CUT NOTES	MZ	04/28/2025
1	REMOVE THE WORD "DETAIL" FROM NAME	MZ	11/15/2024
##	DESCRIPTION	FL	MM/DD/YYYY

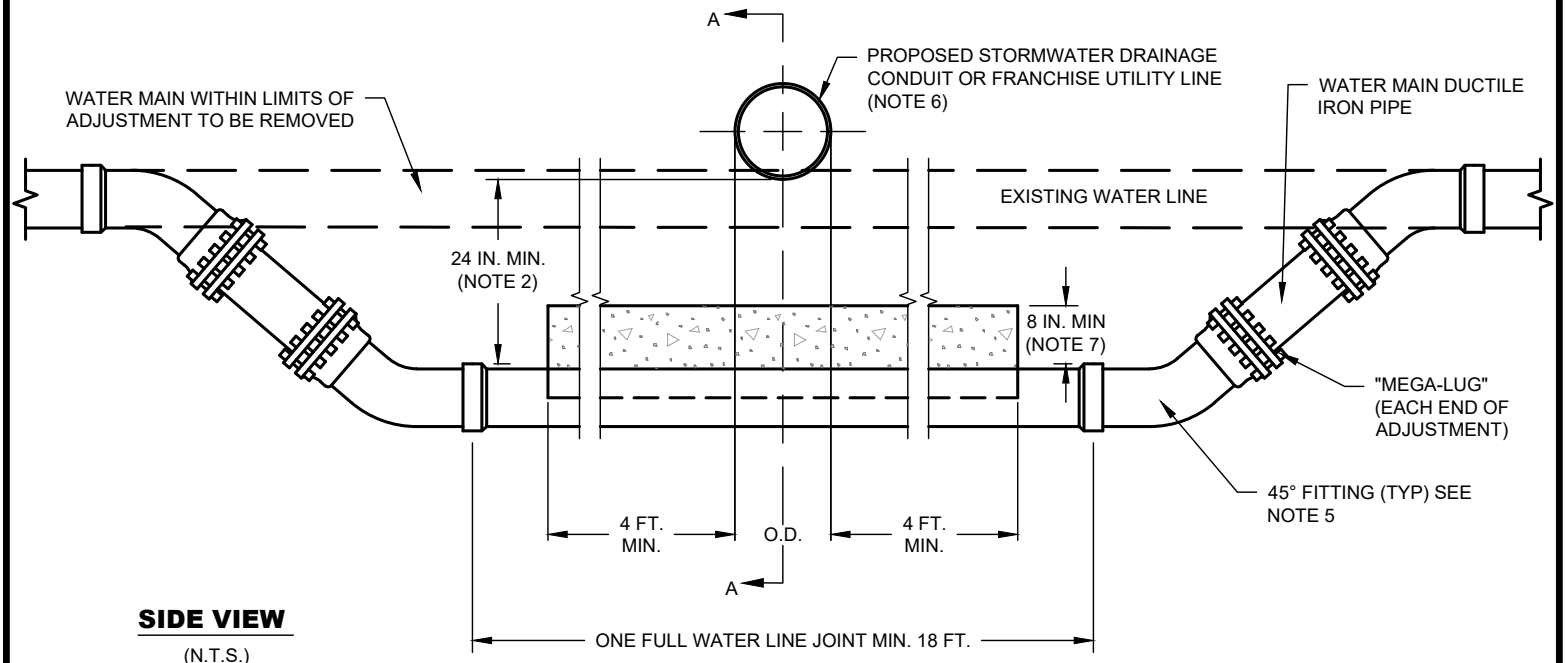
DATE 01/01/2024

W-36



SECTION A-A

(N.T.S.)



SIDE VIEW

(N.T.S.)

NOTES:

1. EVERY EFFORT SHALL BE MADE TO PLACE THE STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY LINE BELOW THE WATER LINE. WHEN NO OTHER OPTIONS ARE AVAILABLE AND ONLY WITH PRIOR APPROVAL BY DIRECTOR OF PUBLIC WORKS OR HER/HIS DESIGNEE WILL THIS DETAIL BE UTILIZED.
2. NEW STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY LINE SHALL BE LAID TO PROVIDE A MIN. VERTICAL DISTANCE OF 24 IN. BETWEEN THE BOTTOM OF THE UPPER PIPE AND THE PIPE BELL OF THE LOWER PIPE.
3. ARRANGE CROSSING SO THAT THE STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).
4. NO WATER SERVICE WILL BE PERMITTED IN THE CONFINES OF THE WATER LINE AS DETAILED ABOVE.
5. DUCTILE IRON MECHANICAL JOINT 45° FITTINGS WITH "MEGA-LUG" RETAINER GLANDS OR PRE-APPROVED EQUAL. REQUIRES BLOCKING. SEE DETAILS W-3A, W-3E AND W-4 .
6. CENTER 18 FT. MIN. SECTION OF STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY PIPE OVER WATER PIPE.
7. FROM THE SPRING LINE OF THE WATER LINE TO 8 IN. ABOVE THE PIPE BELL OF THE WATERLINE PROVIDE 2,000 PSI CONCRETE CAP WHICH EXTENDS 4 FT. BEYOND THE OUTERMOST EDGES OF THE STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY LINE. PRIOR TO PLACING CONCRETE, THE WATER LINE SHALL BE WRAPPED IN 8 MIL POLYWRAP EXTENDING 1 FT. PAST THE LIMITS OF CONCRETE.

EMBEDMENT FOR NEW STORMWATER DRAINAGE CONDUIT OR FRANCHISE UTILITY LINE CROSSING OVER NEW OR EXISTING WATER LINE

(NO SCALE)

CITY OF WACO

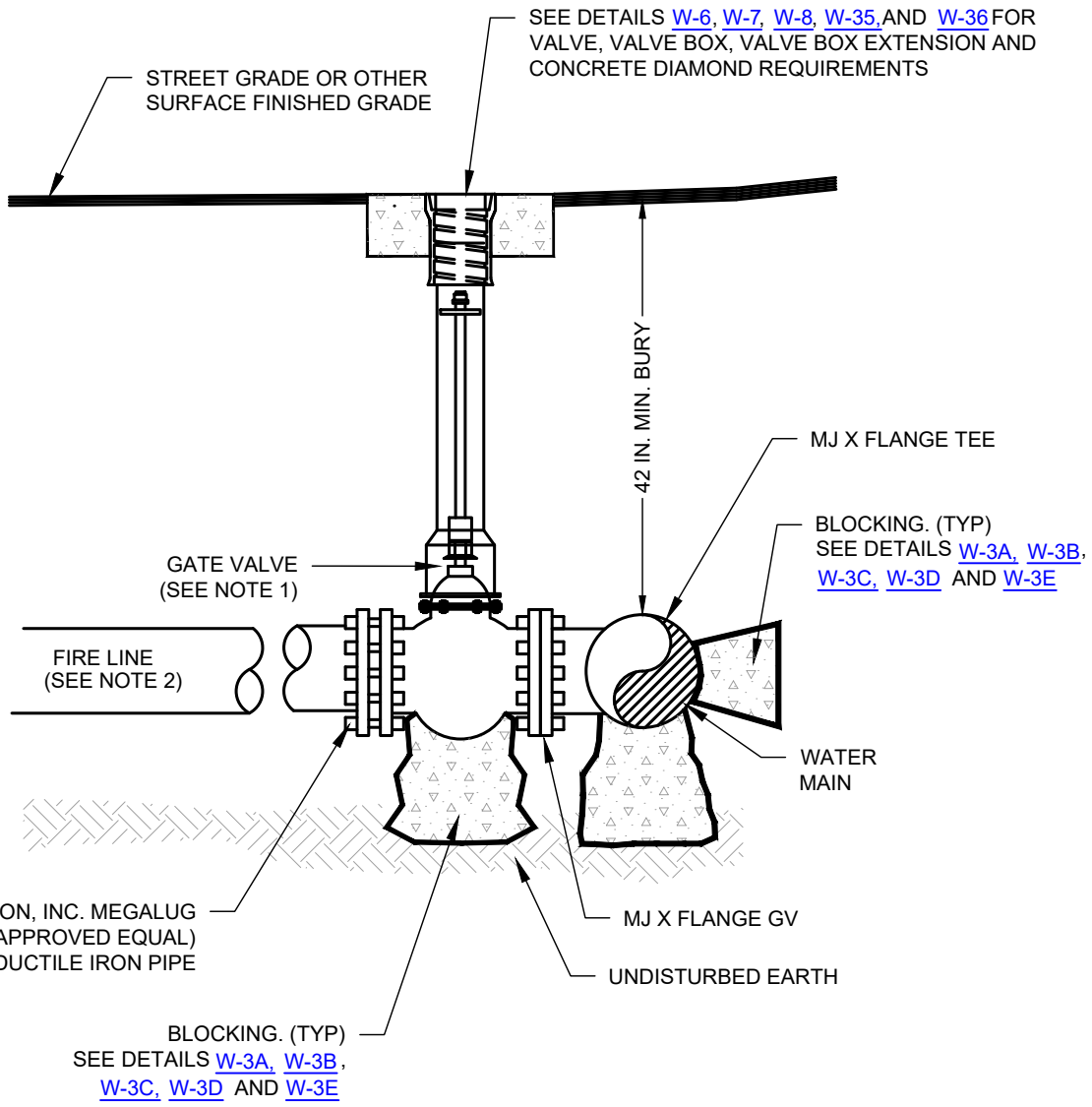
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	MODIFY NOTE 5; REVISE GRAPHIC TO MATCH NOTES 2 AND 7	MZ	11/15/2024
1	MODIFY DETAIL TO SHOW CHANGE CLSM ENCASEMENT TO CONCRETE CAP; MODIFY NOTES	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE
01/01/2024

W-37



NOTES:

1. GATE VALVE IS REQUIRED TO BE DIRECTLY CONNECTED TO THE TEE.
2. FIRE LINE SHALL BE A MINIMUM OF ONE STANDARD PIPE SIZE SMALLER THAN THE SIZE OF THE PUBLIC LINE AT THE CONNECTION POINT.
3. ALL FIRE LINES ARE REQUIRED, AT A MINIMUM, TO HAVE A DOUBLE DETECTOR CHECK ASSEMBLY. THE DOUBLE DETECTOR CHECK ASSEMBLY AND VAULT W-21, IF APPLICABLE, SHALL BE LOCATED ON PRIVATE PROPERTY AT THE PROPERTY LINE AND WITHIN 150 FEET OF THE FIRE SYSTEM STAND PIPE. ALTERNATIVELY, THE CHECK ASSEMBLY CAN BE IN A BUILDING IF THE BUILDING IS WITHIN 150 FT OF THE WATER MAIN.
4. FIRE LINES ARE CONSIDERED PRIVATE AFTER THE FIRE LINE VALVE LOCATED AT THE PUBLIC MAIN, THE FIRE LINE SHALL BE OWNED AND MAINTAINED IN GOOD WORKING CONDITION BY THE PROPERTY OWNER.
5. FIRE LINES SHALL BE ALIGNED STRAIGHT AND PERPENDICULAR TO THE WATER DISTRIBUTION LINE AND SHOULD AVOID CONFLICTS WITH EXISTING/PROPOSED UTILITIES.
6. NO HORIZONTAL BENDING OF FIRE LINES IS ALLOWED WITHIN PUBLIC RIGHT-OF-WAY.

FIRE LINE CONNECTION TO WATER MAIN

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-38

CITY OF WACO

WATERSHED PROTECTION DETAILS

CITY OF WACO
WATERSHED PROTECTION DETAILS

Sheet #	Sheet Title	Revision Date
WP-1	Stormwater Pollution Prevention General Notes	
WP-2	Silt Fence & Stone Overflow Structure	
WP-3	Rock Check Dam	
WP-4	Stone Outlet Sediment Trap	
WP-5	Stabilized Construction Exit	
WP-6	Concrete Washout Details	
WP-7A	Inlet Protection General Notes	04/19/2024
WP-7B	Filter Weir Curb Inlet Protection	11/15/2024
WP-8	Erosion Control Blanket Details	
WP-9A	Sedimentation Outlet Structure	04/28/2025
WP-9B	Sedimentation Outlet Structure: Outlet Pipe And Perforated Riser Pipe Table	04/28/2025

Unless otherwise noted on the Table of Contents under "Revision Date" , the most recent date on all details is January 1, 2024

STORMWATER POLLUTION PREVENTION

GENERAL NOTES

1. ALL CONSTRUCTION WORK WITHIN THE CITY OF WACO MUST COMPLY WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES UNDER THE TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM (TPDES) PROGRAM, AND CITY OF WACO ORDINANCES AND STANDARD SPECIFICATIONS FOR CONSTRUCTION (SECTION GP-3.6.D STORMWATER POLLUTION PREVENTION PLAN (EROSION CONTROL PLAN)).

2. ALL STORMWATER POLLUTION PREVENTION AND EROSION CONTROL PLANS MUST BE APPROVED BY THE WATERSHED PROTECTION COMPLIANCE TEAM PRIOR TO INSTALLATION OF PROTECTIVE MEASURES. THE INSTALLATION OF THE PROTECTIVE MEASURES MUST BE INSPECTED AND APPROVED BY CITY OF WACO INSPECTION STAFF PRIOR TO COMMENCING ANY OTHER CONSTRUCTION ACTIVITY. FAILURE OF COMPLIANCE WILL BY SUBJECT TO CITY OF WACO FEE SCHEDULE.

3. ALL MATERIALS USED FOR STORMWATER POLLUTION PREVENTION SHALL MEET THE MINIMUM DESIGN AND SPECIFICATION REQUIREMENTS AS REFERENCED FROM THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) INTEGRATED STORMWATER MANAGEMENT (iSWM) DESIGN MANUAL FOR CONSTRUCTION. THE CONTRACTOR SHALL USE APPROPRIATE CONTROL DEVICES TO PROTECT AGAINST STORMWATER POLLUTION FROM CONSTRUCTION SITE ACTIVITY.

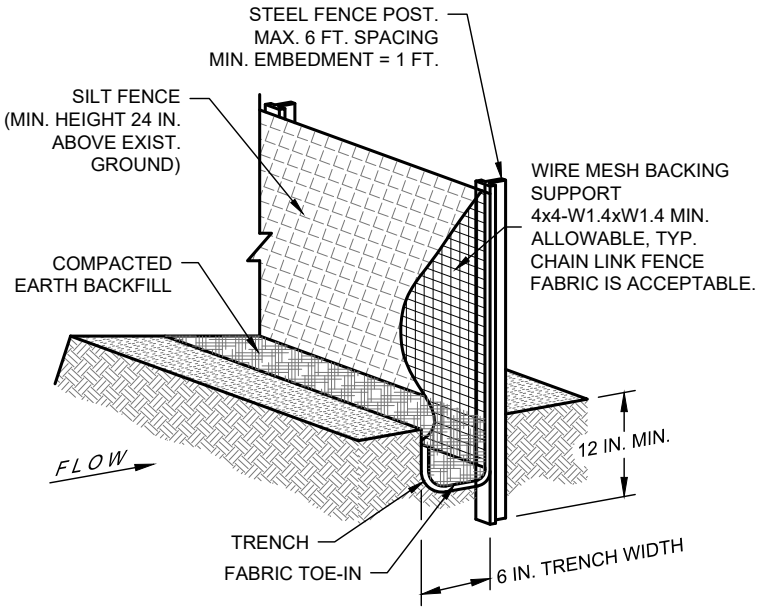
4. IN THE EVENT OF CONFLICT BETWEEN THE SPECIFIED REQUIREMENTS AND STORMWATER POLLUTION CONTROL LAWS, RULES, OR REGULATIONS, OR OTHER LOCAL, STATE, OR FEDERAL AGENCIES, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.

5. ALL PROTECTIVE MEASURES SHALL BE INSPECTED BY THE PRIMARY OPERATOR REGULARLY (AT LEAST AS OFTEN AS REQUIRED BY THE TPDES CONSTRUCTION GENERAL PERMIT).

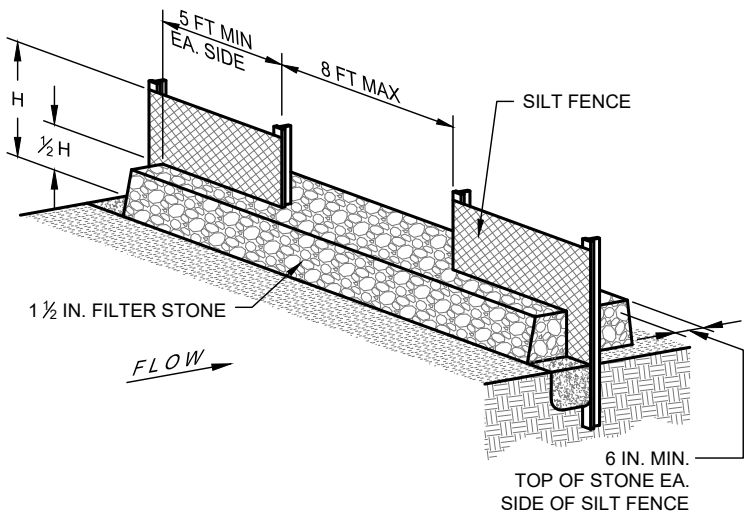
6. ALL POLLUTION PREVENTION CONTROL STRUCTURES AND PROCEDURES MUST BE MAINTAINED IN FULL WORKING ORDER AT ALL TIMES DURING CONSTRUCTION. THIS SHALL INCLUDE ANY NECESSARY REPAIR OR REPLACEMENT OF ITEMS, WHICH HAVE BECOME DAMAGED OR INEFFECTIVE. REMOVE SEDIMENT AND OTHER POLLUTANTS, WHICH ACCUMULATE IN POLLUTION CONTROL DEVICES AS NECESSARY TO MAINTAIN THE INTENDED DESIGN EFFICIENCY FOR THE POLLUTION PREVENTION MEASURE.

7. UPON COMPLETION OF CONSTRUCTION AND ACHIEVEMENT OF FINAL STABILIZATION, PROPERLY REMOVE THE TEMPORARY POLLUTANT CONTROL STRUCTURES AND COMPLETE THE AREA AS INDICATED. POLLUTION CONTROL DEVICES MADE OF ORGANIC MATERIALS DESIGNED TO DEGRADE NATURALLY IN PLACE WILL NOT REQUIRE REMOVAL, UNLESS SPECIFICALLY REQUIRED BY THE OWNER, ENGINEER, OR OWNER'S REPRESENTATIVE.

8. STANDARD DETAILS FOR SOME PROTECTIVE MEASURES HAVE BEEN INCLUDED. PLEASE REFER TO THE iSWM DESIGN MANUAL FOR OTHER PROTECTIVE MEASURES AS NEEDED.



ISOMETRIC PLAN VIEW



SILT FENCE OVERFLOW STRUCTURE

NOTES:

1. DESIGN SHALL SHOW ON THE DRAWING THE LOCATIONS WHERE OVERFLOW STRUCTURES SHALL BE INSTALLED. OVERFLOW STRUCTURES ARE REQUIRED AT ALL LOW POINTS AND AT A SPACING OF APPROXIMATELY 300 FEET WHERE NO LOW POINT IS APPARENT.
2. FILTER STONE FOR AN OVERFLOW STRUCTURE SHALL BE 1-1/2 IN. WASHED STONE CONTAINING NO FINE MATERIAL. ANGULAR SHAPED STONE IS PREFERABLE TO ROUNDED SHAPED STONE
3. DESIGNER SHALL SHOW ON THE DRAWING THE LOCATIONS WHERE SILT FENCE IS TO BE TURNED UPSLOPE AT THE ENDS. UPSLOPE LENGTHS SHALL BE A MINIMUM OF 10 FEET.
4. POST 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.
5. FENCE POST SHALL BE GALVANIZED STEEL OR EQUIVALENT AND MAY BE T-SECTION OR L-SECTION, 1.3 POUNDS PER LINEAR FOOT MINIMUM, AND 4 FEET IN LENGTH MINIMUM. WOOD POST MAY BE USED DEPENDING ON ANTICIPATED LENGTH OF SERVICE AND PROVIDED THEY ARE 4 FEET IN LENGTH MINIMUM AND HAVE A NOMINAL CROSS SECTION OF 2 INCHES BY 4 INCHES FOR PINE OR 2 INCHES BY 2 INCHES FOR HARDWOODS.
6. 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.
7. 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.
8. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO THE WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
9. SILT FENCE SHALL BE SUPPORTED BY GALVANIZED STEEL WIRE FENCE FABRIC AS FOLLOWS:
   A. 4 IN. X 4 IN. MESH SIZE, W1.4/1.4 MINIMUM 14-GAUGE WIRE FENCE;
   B. HOG WIRE, 12-GAUGE WIRE, SMALL OPENINGS INSTALLED AT BOTTOM OF SILT FENCE;
   C. STANDARD 2 IN. X 2 IN. CHAIN LINK FENCE FABRIC; OR
   D. OTHER WELDED OR WOVEN STEEL FABRICS CONSISTING OF EQUAL OR SMALLER SPACING AS THAT LISTED HEREIN AND APPROPRIATE GAUGE WIRE TO PROVIDE SUPPORT.
10. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
11. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.
12. 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.
13. PLEASE REFER TO CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 1.10, PART 2, A 3 AND SECTION 1.10, PART 3, B 2 FOR SILT FENCE MATERIAL AND INSTALLATION SPECIFICATIONS.

SILT FENCE & STONE OVERFLOW STRUCTURE

(NO SCALE)

CITY OF WACO

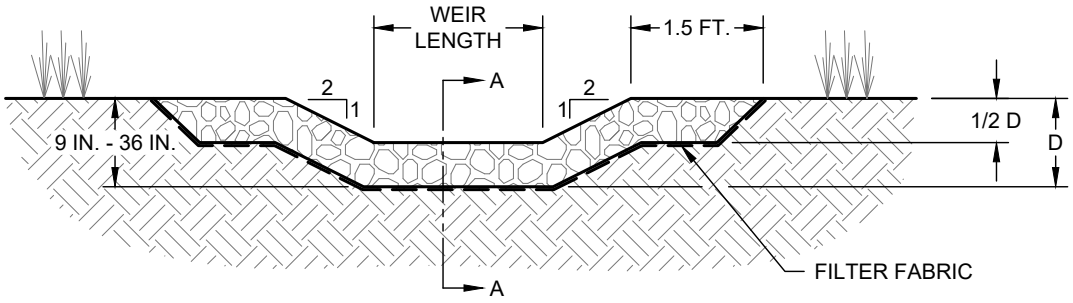
ENGINEERING DIVISION

REVISIONS

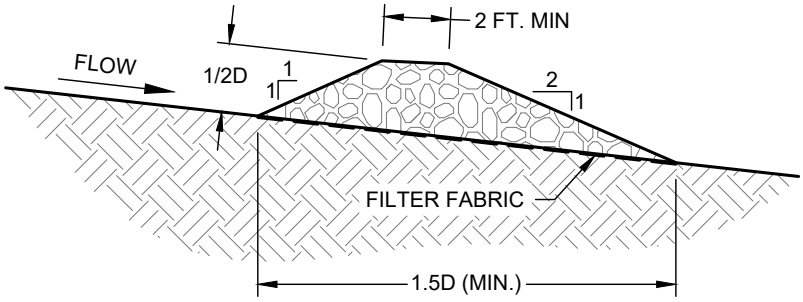
NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

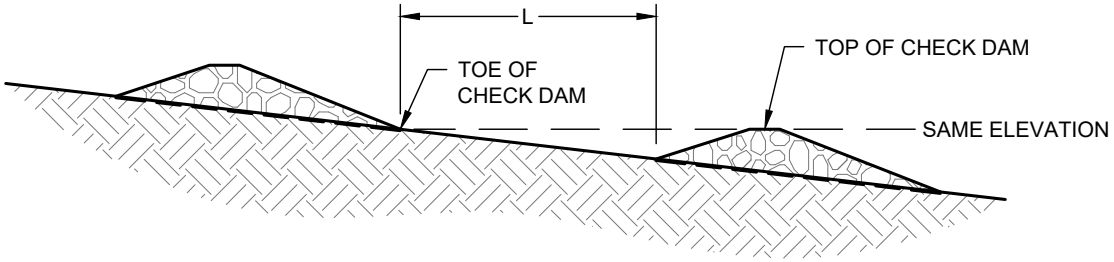
WP-2



ROCK CHECK DAM VIEW LOOKING UPSTREAM



CROSS SECTION A-A



SPACE BETWEEN ROCK CHECK DAMS

ACTUAL DIMENSIONS OF THE CHECK DAMS SHALL BE DESIGNED BASED ON FLOW CONDITIONS IN THE DRAINAGE SWALE OR DITCH. PROVIDE CALCULATIONS THAT DOCUMENT THE FOLLOWING PARAMETERS USED TO DESIGN THE CHECK DAM:

- HEIGHT OF CHECK DAMS(D) BASED ON SWALE OR DITCH DIMENSIONS AND FLOW CONDITIONS.
- SPACING OF CHECK DAMS BASED ON GRADE OF THE SWALE OR DITCH. TOP OF DOWNSTREAM DAM SHALL BE AT THE SAME ELEVATIONS AS TOW OR UPSTREAM DAM.

NOTES:

1. STONE SHALL BE WELL GRADED WITH SIZE RANGE FROM 1 ½ TO 3 ½ INCHES IN DIAMETER DEPENDING ON EXPECTED FLOW.
2. THE CHECK DAM SHALL BE INSPECTED AS SPECIFIED IN THE SWPPP AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
3. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE CHECK DAM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.
4. WHEN THE SITE HAS ACHIEVED FINAL STABILIZATION OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED, THE CHECK DAM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

ROCK CHECK DAM

(NO SCALE)

CITY OF WACO

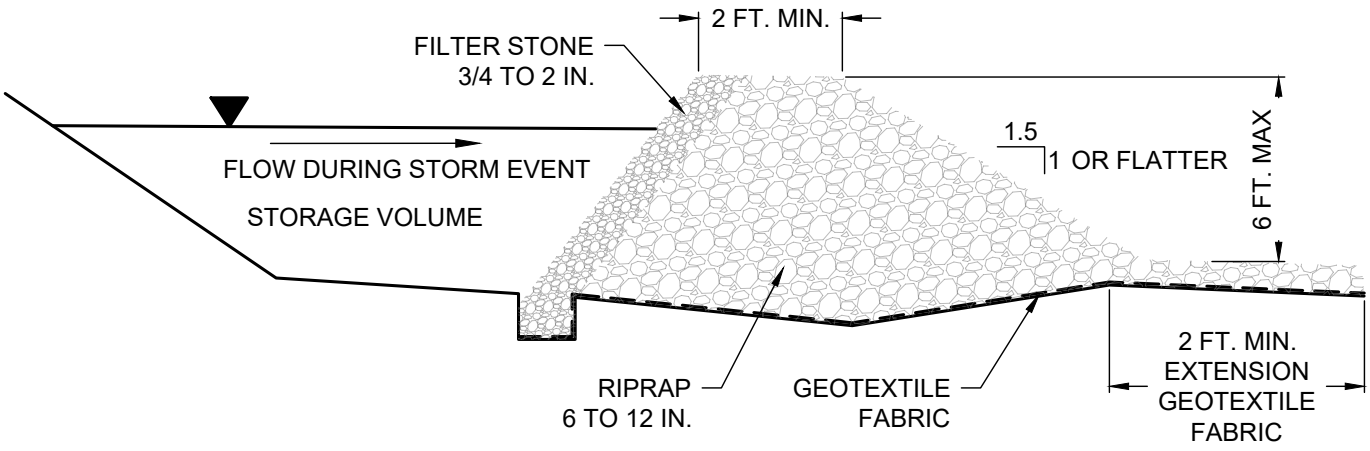
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

WP-3



STONE OUTLET SEDIMENT TRAP CROSS SECTION

NOTES:

1. STONE OUTLET SEDIMENT TRAPS ARE USED FOR SITUATIONS WHERE FLOWS ARE CONCENTRATED IN A DRAINAGE SWALE OR CHANNEL.
2. THE MAXIMUM DRAINAGE AREA CONTRIBUTING TO THE TRAP SHALL BE LESS THAN 10 ACRES FOR THE EXCAVATED STONE OUTLET SEDIMENT TRAP AND 5 ACRES OR LESS FOR THE BERMED TRAP.
3. THE MINIMUM STORAGE VOLUME SHALL BE THE VOLUME OF RUNOFF FROM THE TEMPORARY CONTROL DESIGN STORM (2-YEAR, 24 HOUR) FOR THE SEDIMENT TRAP'S DRAINAGE AREA.
4. THE SURFACE AREA OF THE DESIGN STORAGE AREA SHALL NOT BE LESS THAN 1 PERCENT OF THE AREA DRAINING TO THE DEVICE
5. PLEASE REFER TO CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 1.10, PART 2, A 5 AND SECTION 1.10, PART 3, B 4 FOR STONE OUTLET SEDIMENT TRAP MATERIAL AND INSTALLATION SPECIFICATIONS.

STONE OUTLET SEDIMENT TRAP

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

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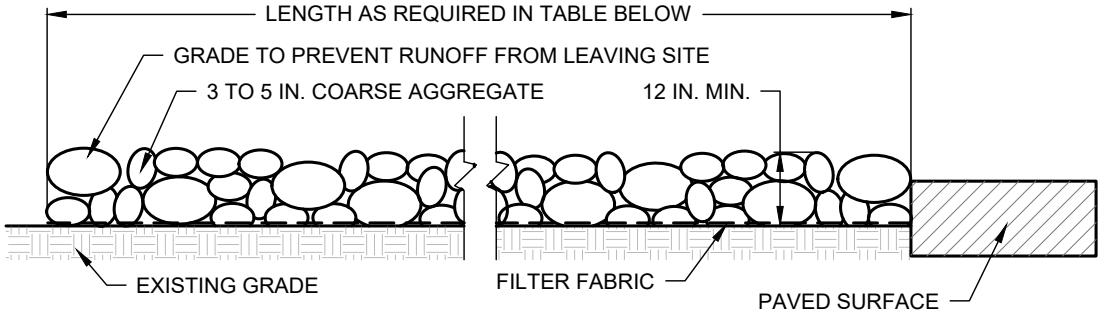
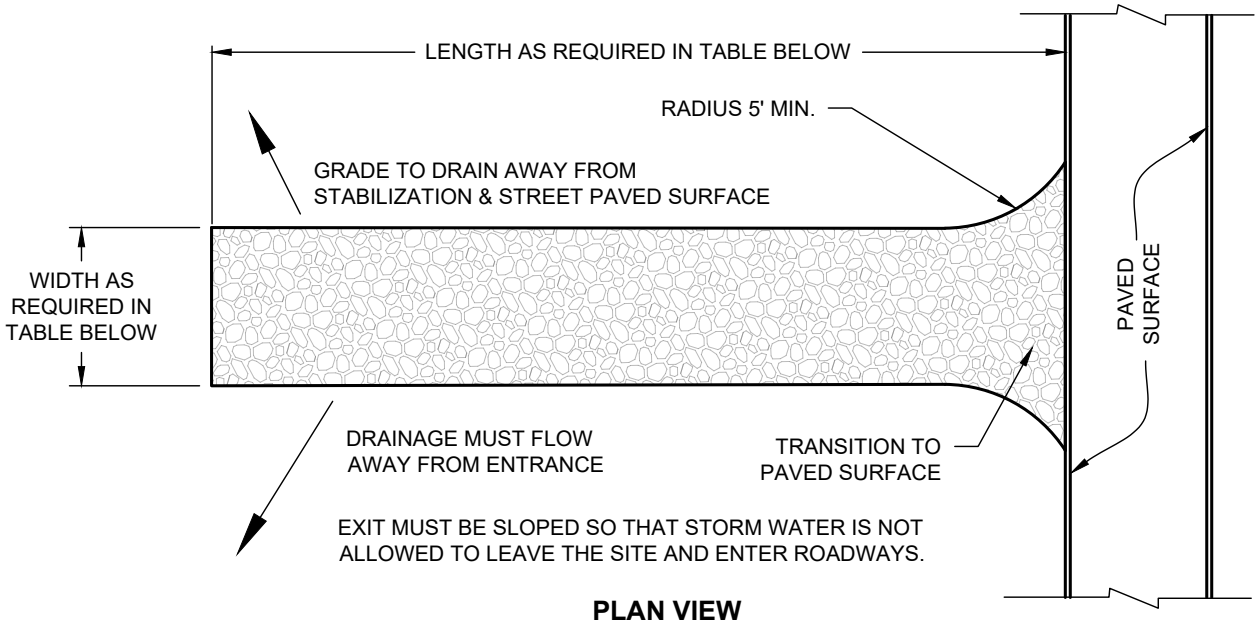
WP-4



PROFILE VIEW



PLAN VIEW

TRACT AREA (A)	MINIMUM WIDTH OF EXIT	MINIMUM LENGTH OF EXIT
A<5 ACRE	20 FEET	50 FEET
A>5 ACRE	30 FEET	75 FEET

NOTES:

1. STABILIZED CONSTRUCTION EXITS SHALL BE USED FOR SITES IN WHICH SIGNIFICANT TRUCK TRAFFIC OCCURS ON A DAILY BASIS.
2. THE THICKNESS SHALL BE NO LESS THAN 12 INCHES.
3. STONE SHALL BE 3 TO 5 INCH DIAMETER COARSE AGGREGATE.
4. LENGTH SHALL BE SHOWN ON PLANS, MEETING TABLE REQUIREMENTS ABOVE.
5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED EXIT. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE USING APPROVED METHODS.
6. THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.
7. THE EXIT MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. INSPECTION SHALL BE SPECIFIED IN THE SWPPP.
9. PLEASE REFER TO THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 1.10, PART 2, A 8 AND PART 3, B 7 FOR CONSTRUCTION EXIT MATERIAL AND INSTALLATION SPECIFICATIONS.

STABILIZED CONSTRUCTION EXIT

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
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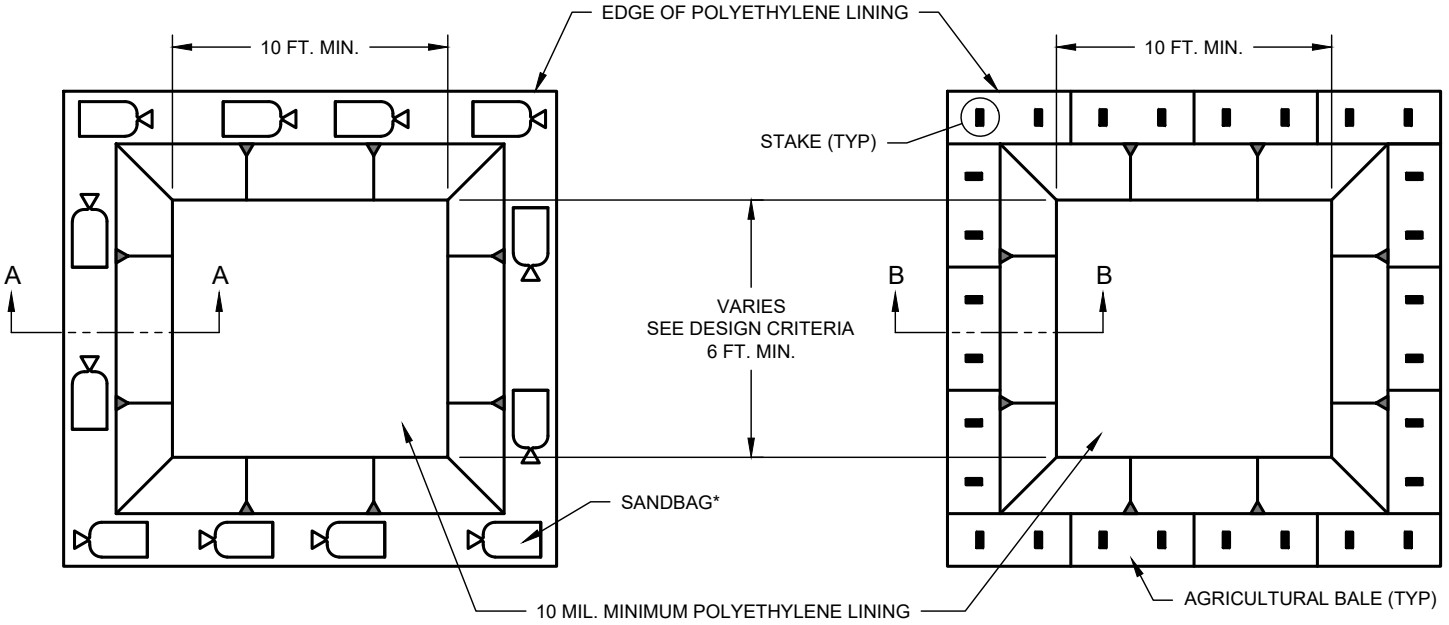
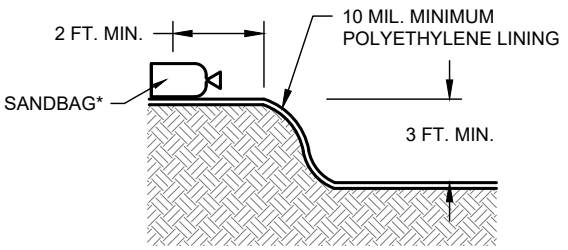
DATE 01/01/2024

WP-5



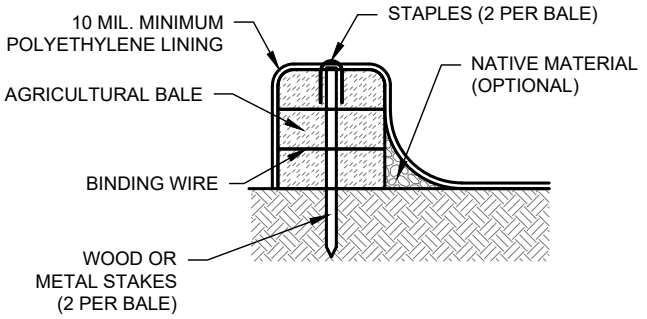
PLAN VIEW - SANDBAG OPTION

PLAN VIEW - AGRICULTURAL BALE OPTION

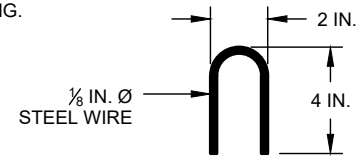


*SANDBAG MAY BE REPLACED BY A SOIL BERM TO ANCHOR THE PLASTIC LINING.

SECTION A-A



SECTION B-B



STAPLE DETAIL

NOTES:

1. WASHOUT AREA MUST BE CLEARLY MARKED WITH SIGNAGE NOTING THE WASHOUT AREA AND BE IDENTIFIED ON SWPPP MAP.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. A CONCRETE WASHOUT PIT OR OTHER CONTAINMENT SHALL BE INSTALLED A MINIMUM OF 50 FEET AWAY FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS, AND OTHER WATERS, IF THE SITE CONFIGURATION PROVIDES SUFFICIENT SPACE TO DO SO. IN NO CASE SHALL CONCRETE WASHOUT OCCUR CLOSER THAN 20 FEET FROM INLETS, SWALES, DRAINAGE WAYS, CHANNELS, AND OTHER WATERS.
4. WASHOUT AREA MUST ALLOW FOR 6 CUBIC FEET OF CONTAINMENT VOLUME FOR EVERY 10 CUBIC YARDS OF CONCRETE PLACED.
5. THE CONTAINMENT SHALL BE LINED WITH POLYETHYLENE (MINIMUM 10 MILLIMETERS THICK) OR AN EQUIVALENT MEASURE TO PREVENT SEEPAGE TO GROUNDWATER.
6. PORTABLE, PREFABRICATED, CONCRETE WASHOUT CONTAINERS ARE COMMERCIALLY AVAILABLE AND ARE AN ACCEPTABLE ALTERNATIVE TO THE ABOVE GRADE AND BELOW GRADE WASHOUT AREAS DEPICTED ABOVE.
7. WASHOUT STRUCTURES SHALL BE CLEANED OUT WHEN THE STRUCTURE IS 75% FULL. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY.

CONCRETE WASHOUT DETAILS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

WP-6

DESCRIPTION:
INLET PROTECTION CONSISTS OF A VARIETY OF METHODS TO INTERCEPT SEDIMENT AT LOW POINT INLETS THROUGH THE USE OF DEPRESSED GRADING, FILTER STONE, FILTER FABRIC, INLET INSERTS, AND OTHER MATERIALS. THE PROTECTION DEVICES ARE PLACED AROUND OR ACROSS THE INLET OPENINGS TO PROVIDE LOCALIZED DETENTION OR FILTRATION OF SEDIMENT AND FLOATABLE MATERIALS IN STORMWATER. PROTECTION DEVICES MAY BE ASSEMBLED ONSITE OR PURCHASED AS MANUFACTURED ASSEMBLIES. CURB INLET PROTECTION SHALL BE IN ACCORDANCE WITH WP-7B .

GENERAL NOTES:

1. DRAINAGE PATTERNS SHALL BE EVALUATED TO ENSURE INLET PROTECTION WILL NOT DIVERT FLOW OR FLOOD THE ROADWAY OR ADJACENT PROPERTIES AND STRUCTURES.
2. INLET PROTECTION MEASURES OR DEVICES THAT COMPLETELY BLOCK THE INLET ARE PROHIBITED. THEY MUST ALSO INCLUDE A BYPASS CAPABILITY IN CASE THE PROTECTION MEASURES ARE CLOGGED.
3. INLET PROTECTION MUST BE DESIGNED TO PASS THE CONVEYANCE STORM (25-YEAR, 24-HOUR) WITHOUT CREATING A ROAD HAZARD OR DAMAGING ADJACENT PROPERTY. THIS MAY BE ACCOMPLISHED BY ANY OF THE FOLLOWING MEASURES:
   A. AN OVERFLOW WEIR ON THE PROTECTION MEASURE.
   B. AN EXISTING POSITIVE OVERFLOW SWALE ON THE INLET.
   C. SUFFICIENT STORAGE VOLUME AROUND THE INLET TO HOLD THE PONDED WATER UNTIL IT CAN ALL FILTER INTO THE INLET.
   D. OTHER ENGINEERED METHOD.
4. POSITIVE OVERFLOW DRAINAGE IS CRITICAL IN THE DESIGN OF INLET PROTECTION. IF OVERFLOW IS NOT PROVIDED FOR AT THE INLET, TEMPORARY MEANS SHALL BE PROVIDED TO ROUTE EXCESS FLOWS THROUGH ESTABLISHED SWALES, STREETS, OR OTHER WATERCOURSES TO MINIMIZE DAMAGE DUE TO FLOODING.
5. FILTER FABRIC AND WIRE MESH USED FOR INLET PROTECTION SHALL MEET THE MATERIAL REQUIREMENTS SPECIFIED IN CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION.
6. BLOCK AND GRAVEL (CRUSHED STONE OR RECYCLED CONCRETE) PROTECTION IS USED WHEN FLOWS EXCEED 0.5 CUBIC FEET PER SECOND AND IT IS NECESSARY TO ALLOW FOR OVERTOPPING TO PREVENT FLOODING.
7. BAGS USED TO SECURE INLET PROTECTION DEVICES ON TOP OF CURB INLET SHALL BE FILLED WITH AGGREGATE, FILTER STONE, OR CRUSHED ROCK THAT IS LESS LIKELY THAN SAND TO BE WASHED INTO AN INLET IF THE BAG IS BROKEN. FILLED BAGS SHALL BE 24 TO 30 INCHES LONG, 16 TO 18 INCHES WIDE, AND 6 TO 8 INCHES THICK. BAGS SHALL BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN FABRIC WITH A MINIMUM UNIT WEIGHT OF 4 OUNCES PER SQUARE YARD AND MEET THE FOLLOWING CRITERIA:
   A. GREATER THAN 300 PSI MULLEN BURST STRENGTH USING ASTM D3786 STANDARD TEST METHOD FOR HYDRAULIC BURSTING STRENGTH OF TEXTILE FABRICS-DIAPHRAGM BURSTING STRENGTH TESTER METHOD.
   B. GREATER THAN 70 PERCENT UV STABILITY USING ASTM D4355 STANDARD TEST METHOD FOR DETERIORATION OF GEOTEXTILES BY EXPOSURE TO LIGHT, MOISTURE, AND HEAT IN A XENON ARC TYPE APPARATUS.
8. INLET PROTECTION SHALL BE MAINTAINED AS FOLLOWS:
   A. INSPECT EVERY 14 DAYS
   B. CHECK FOR AND REMOVE BLOCKAGE OF INLET AFTER EVERY STORM EVENT WITHIN 24 HOURS
   C. REMOVE SEDIMENT BEFORE IT REACHES HALF THE DESIGN HEIGHT OR VOLUME OF THE INLET PROTECTION, MORE FREQUENTLY FOR CURB INLETS
   D. REPAIR OR REPLACE DAMAGED MATERIALS
   E. CLEAN OR REPLACE FILTER STONE WHEN CLOGGED WITH SEDIMENT
9. FOR NON-CITY PROJECTS, REMOVAL OR TRANSFER (SEE FORM **WSP-0001**) OF ALL INLET PROTECTION AT SUBMISSION OF NOTICE OF TERMINATION.
10. PLEASE REFER TO THE CITY OF WACO STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 1.10, PART 2, A 4 AND PART 3, B 3 FOR INLET PROTECTION MATERIAL AND INSTALLATION SPECIFICATIONS.

INLET PROTECTION GENERAL NOTES

SEE WP-7B FOR ADDITIONAL DETAILS

CITY OF WACO

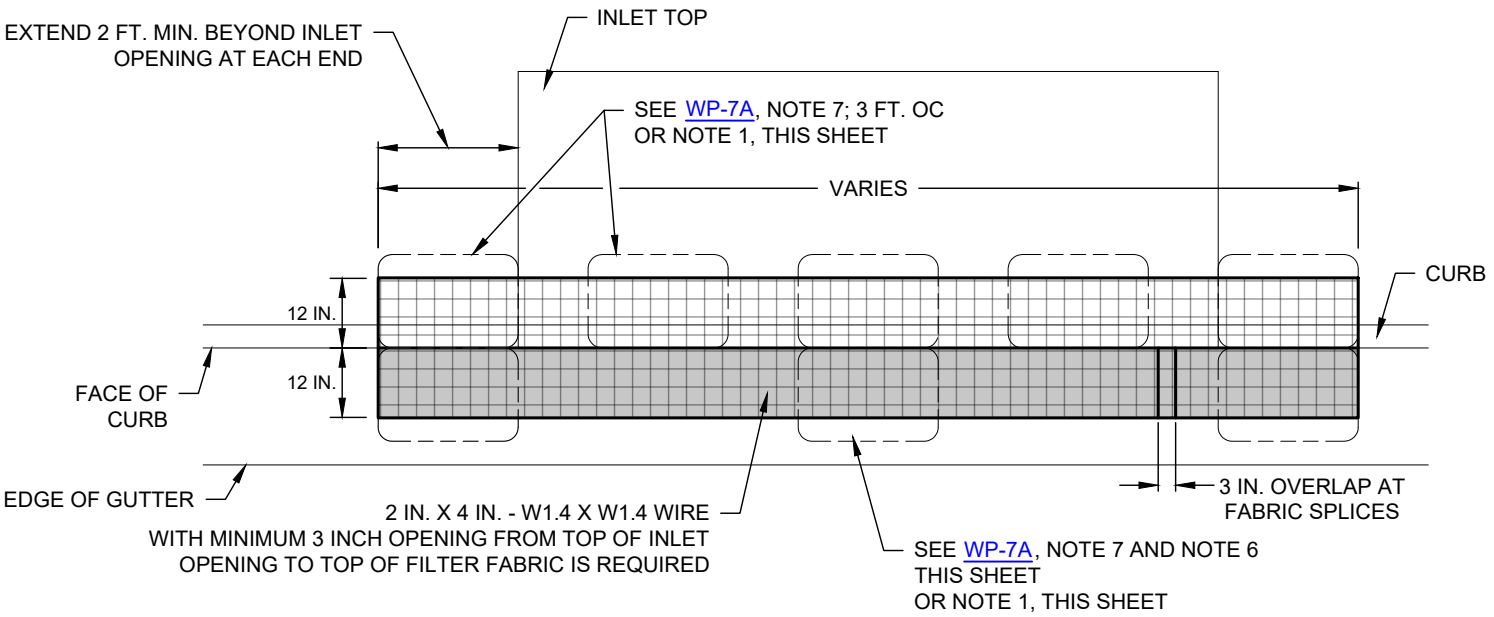
ENGINEERING DIVISION

REVISIONS

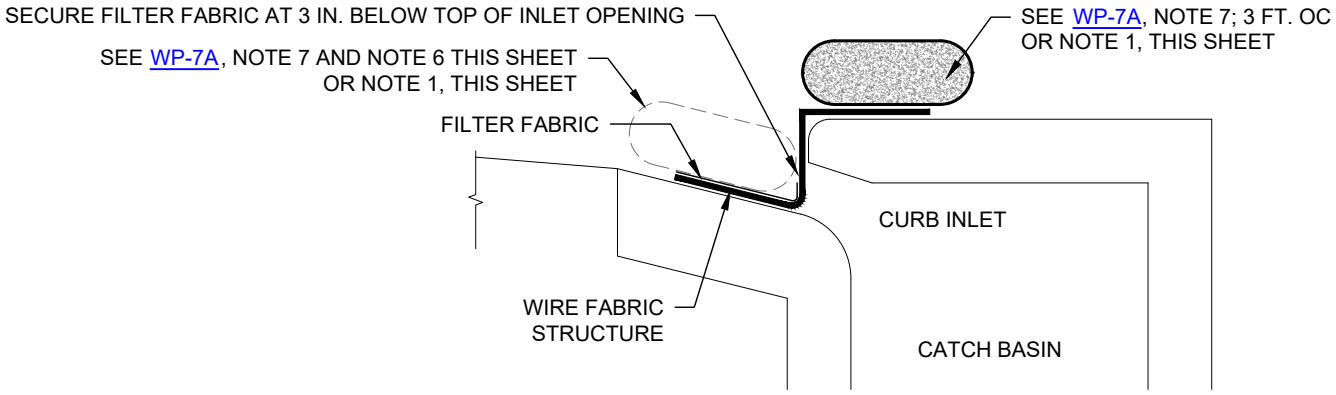
NO.	COMMENTS	BY	DATE
1	RENUMBER NOTES	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

WP-7A



PLAN VIEW



SECTION VIEW

NOTES:

1. A 1 IN. X 4 IN. BOARD SECURED WITH ¼ IN. OR ⅜ IN. Ø CONCRETE SCREWS OF SUFFICIENT LENGTH. THE SCREWS SHALL BE ATTACHED TO THE GUTTER AND INLET TOP BY DRILLING AN APPROPRIATE PILOT HOLE WITH A CONCRETE BIT AND INSERTING PLASTIC FASTENERS. THE TOP OF THE SCREW SHALL BE RECESSED BELOW THE TOP OF THE BOARD. THE SCREWS SHALL BE PLACED ON 3 FT. O.C. UPON REMOVAL, EITHER LEAVE THE PLASTIC FASTENERS IN PLACE, OR REMOVE THE PLASTIC FASTENERS, CLEAN ANY DIRT/DEBRIS FROM THE SCREW LOCATIONS, APPLY CHEMICAL SANDING AGENT AND APPLY NON-SHRINK GROUT FLUSH WITH THE SURFACE OF THE GUTTER. SEE NOTE 6 AND THIS DRAWING FOR ALTERNATE.
2. A SECTION OF FILTER FABRIC SHALL BE REMOVED TO ALLOW A 3 INCH OPENING FROM TOP OF INLET OPENING TO TOP OF FILTER FABRIC OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2 INCHES.
4. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORMWATER BEGINS TO OVERTOP THE CURB.
5. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.
6. IF BAGS ARE USED INSTEAD OF THE SECURING BY BOARD AS DESCRIBED IN NOTE 1, THEN THEY SHALL BE PLACED AS SHOWN INCLUDING IN GUTTER AT CENTER OF EACH INLET TOP SUPPORT POST PLACED EVERY 5 FT. PER SD-4, NOTE 4.

FILTER WEIR CURB INLET PROTECTION

(NO SCALE)

SEE WP-7A FOR ADDITIONAL DETAILS

CITY OF WACO

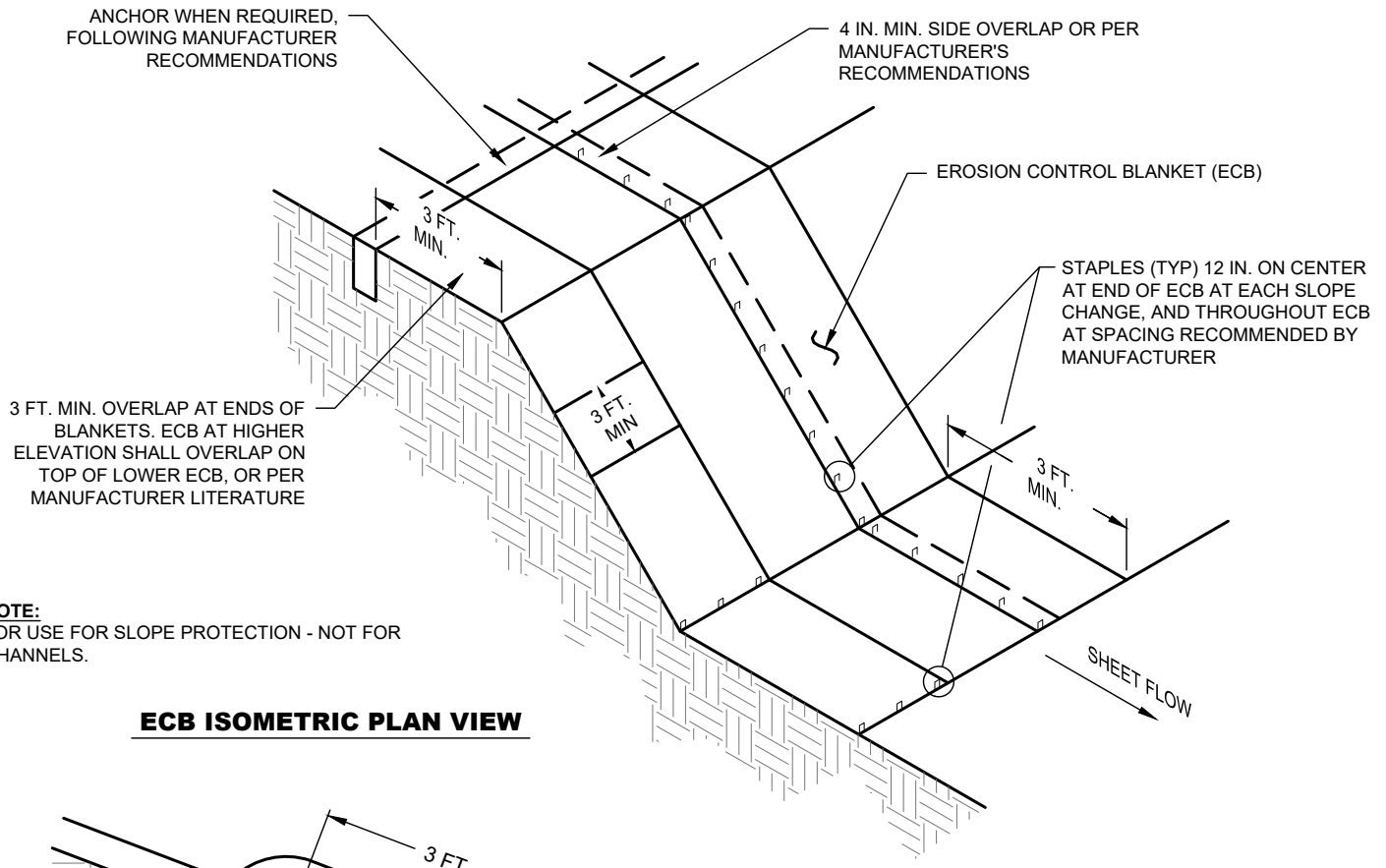
ENGINEERING DIVISION

REVISIONS

NO.	COMMENTS	BY	DATE
2	ADD HYPERLINK TO DETAIL REFERENCE	MZ	11/15/2024
1	MODIFY PLAN AND SECTION VIEWS TO PROVIDE MORE DETAIL; MODIFY NOTES 1& 2; ADD NOTE 6	MZ	04/19/2024
##	DESCRIPTION	FL	MM/DD/YYYY

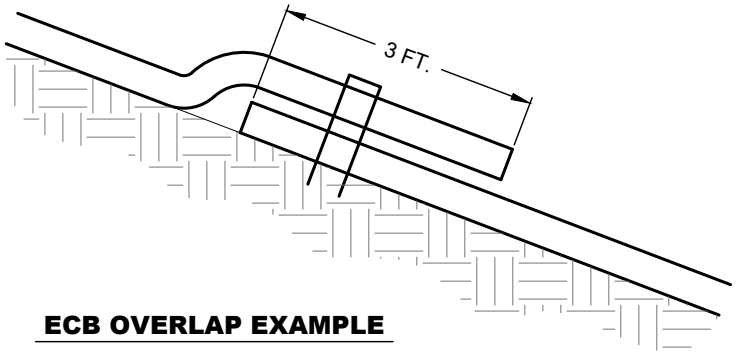
DATE 01/01/2024

WP-7B



NOTE:
FOR USE FOR SLOPE PROTECTION - NOT FOR CHANNELS.

ECB ISOMETRIC PLAN VIEW



ECB OVERLAP EXAMPLE

DESCRIPTION:

AN EROSION CONTROL BLANKET (ECB) IS A TEMPORARY, DEGRADABLE, ROLLED EROSION CONTROL PRODUCT THAT REDUCES SOIL EROSION AND ASSISTS IN THE ESTABLISHMENT AND GROWTH OF VEGETATION. ECBS, ALSO KNOWN AS SOIL RETENTION BLANKETS, ARE MANUFACTURED BY MANY COMPANIES AND ARE COMPOSED PRIMARILY OF PROCESSED, NATURAL, ORGANIC MATERIALS THAT ARE WOVEN, GLUED, OR STRUCTURALLY BOUND TOGETHER WITH NATURAL FIBER NETTING OR MESH ON ONE OR BOTH SIDES.

NOTES:

1. EROSION CONTROL BLANKETS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1 OR IN CHANNELS WITH SHEAR STRESSES GREATER THAN 2.0 POUNDS PER SQUARE FOOT
2. PRIOR TO THE INSTALLATION OF ANY EROSION CONTROL BLANKETS, ALL ROCKS, DIRT CLODS, STUMPS, ROOTS, TRASH, AND ANY OTHER OBSTRUCTIONS THAT WOULD PREVENT THE BLANKET FROM LYING IN DIRECT CONTACT WITH THE SOIL SHALL BE REMOVED. ANCHOR TRENCHING SHALL BE LOCATED ALONG THE ENTIRE PERIMETER OF THE INSTALLATION AREA, EXCEPT FOR SMALL AREAS WITH LESS THAN 2% SLOPE.
3. INSTALLATION AND ANCHORING SHALL CONFORM TO THE RECOMMENDATIONS WITHIN THE MANUFACTURE PUBLISHED LITERATURE FOR THE APPROVED EROSION CONTROL BLANKET. PARTICULAR ATTENTION MUST BE PAID TO JOINTS AND OVERLAPPING MATERIAL.
4. IN THE ABSENCE OF MANUFACTURE'S LITERATURE, A MINIMUM 11-GAUGE WIRE STAPLES, 6-INCHES IN LENGTH AND 1-INCH WIDTH WILL BE USED.
5. AFTER APPROPRIATE INSTALLATION, THE BLANKETS SHOULD BE CHECKED FOR UNIFORM CONTACT WITH THE SOIL, SECURITY OF THE LAP JOINTS, AND FLUSHNESS OF THE STAPLES WITH THE GROUND.
6. REGULAR INSPECTION SHALL OCCUR TO REPLACE OR RE-ANCHOR LOOSENED BLANKETS AND TO REMOVE SEDIMENT DEPOSITED ON BLANKETS.
7. INSPECTION SHALL BE SPECIFIED IN THE SWPPP.

EROSION CONTROL BLANKET (ECB) DETAILS

(NO SCALE)

CITY OF WACO

ENGINEERING DIVISION

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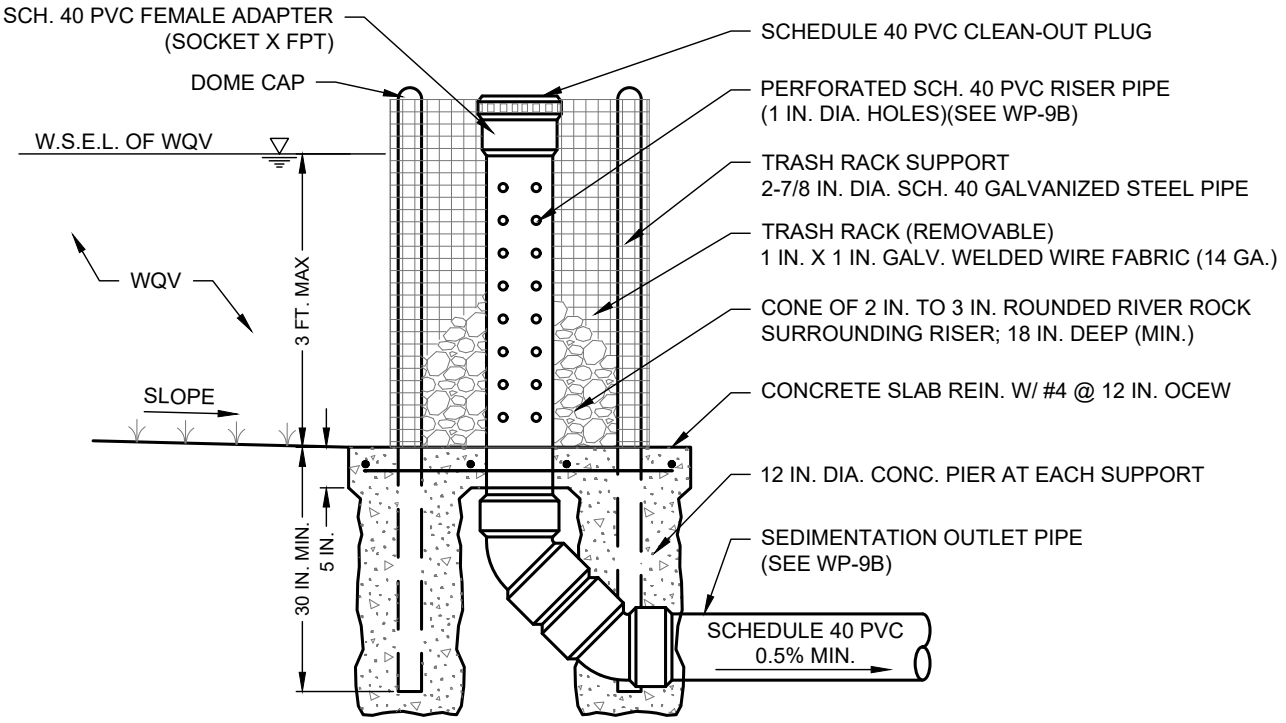
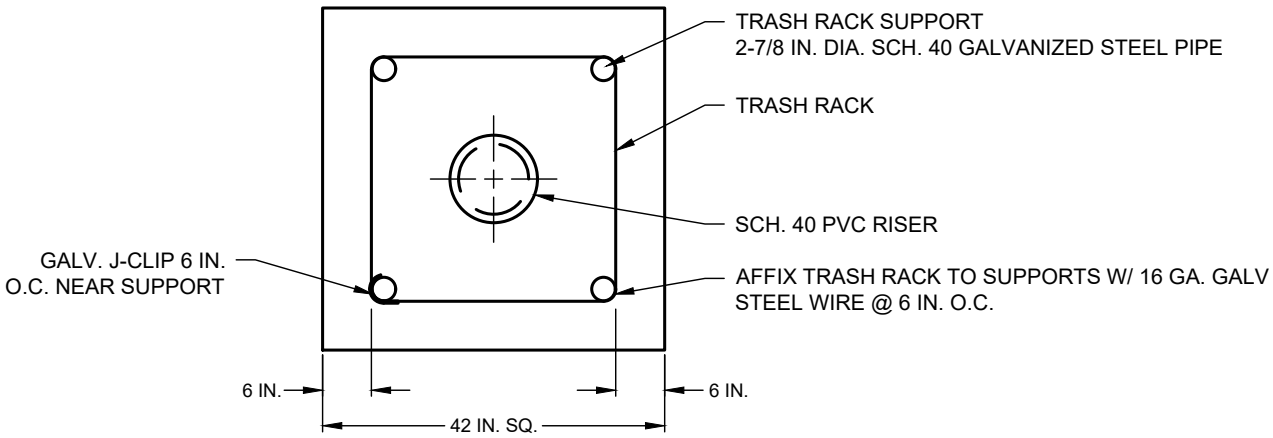
WP-8





NOTES: THE PERFORATED RISER PIPE AND DISCHARGE OUTLET PIPE SHALL BE PVC SCHEDULE 40. THE MINIMUM DIAMETER OF THE RISER PIPE SHALL BE 8 IN. AND SHALL BE PERFORATED WITH 1 IN. DIAMETER HOLES AS DESCRIBED IN THE TABLE SHOWN ON WP-9B. THE DISCHARGE CAPACITY OF THE PERFORATIONS SHALL EQUAL, OR EXCEED TWO (2) TIMES THE DISCHARGE RATE OF THE ORIFICE OUTLET.

SEDIMENTATION OUTLET STRUCTURE

(NO SCALE)

SEE WP-9B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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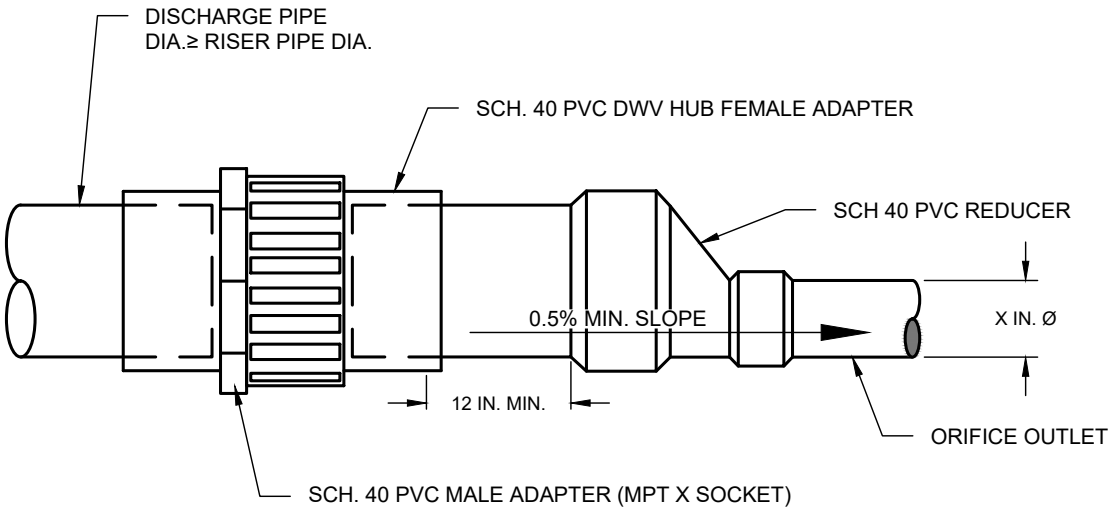
DATE 04/28/2025

WP-9A



SEDIMENTATION OUTLET PIPE

RISER PIPE NOMINAL DIA. (IN.)	VERTICAL SPACING BETWEEN ROWS (CENTER TO CENTER) (IN.)	NUMBER OF PERFORATIONS PER ROW	DIAMETER OF PERFORATIONS (IN.)
8	4	6	1
10	4	8	1
12	4	10	1

PERFORATED RISER PIPES TABLE

SEDIMENTATION OUTLET STRUCTURE: OUTLET PIPE AND PERFORATED RISER PIPE TABLE

(NO SCALE)

SEE WP-9A FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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DATE 04/28/2025

WP-9B