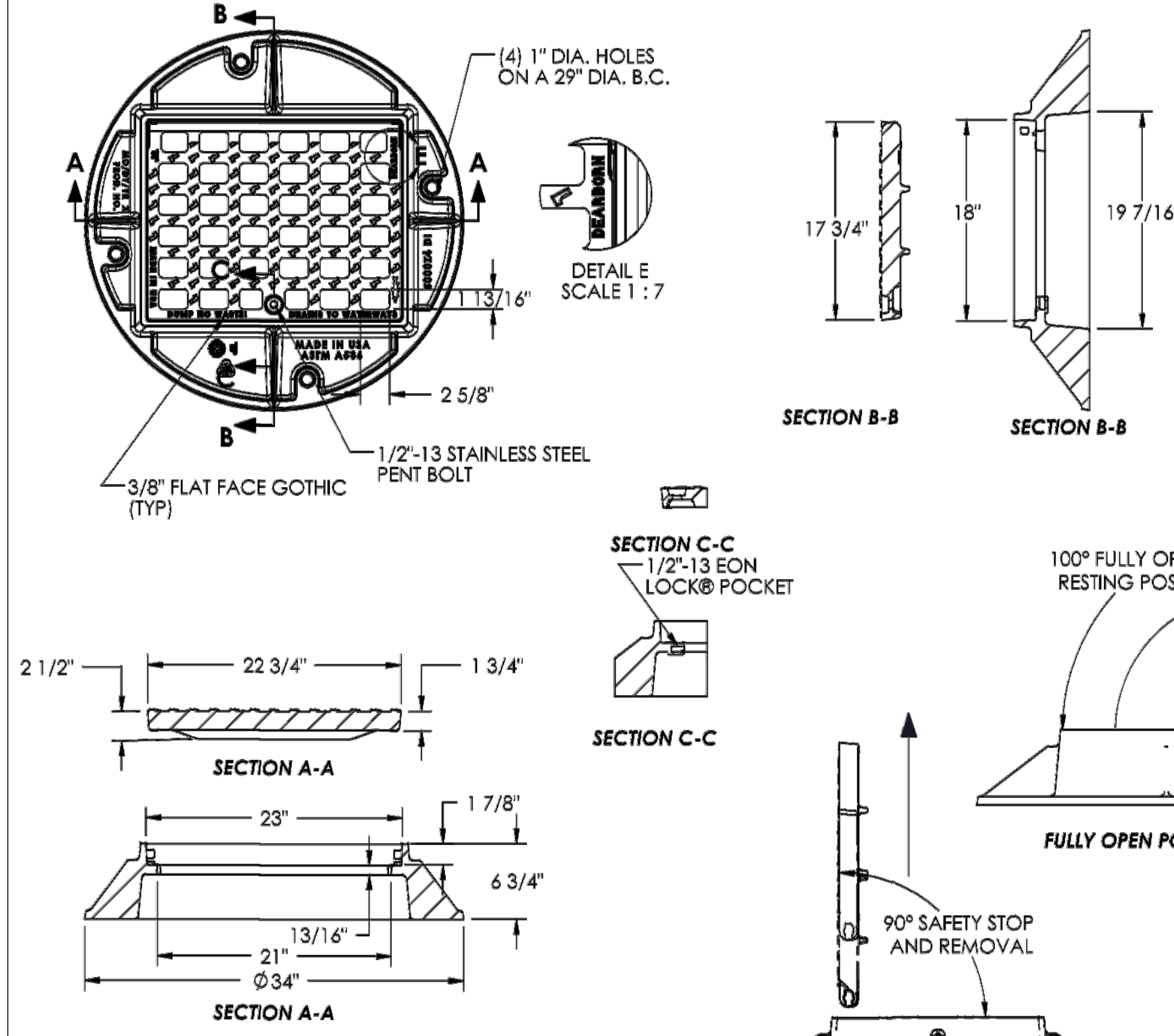


5000Z4 5000M4 Assembly



Product Number
00500077B01

Design Features

- Materials
Frame
Ductile Iron (80-55-08)
- Grate
Ductile Iron (70-50-05)

-Design Load
Heavy Duty

-Open Area
180 sq in

-Coating
Dipped

-/ Designates Machined Surface

Weight = 237 lbs.

Certification

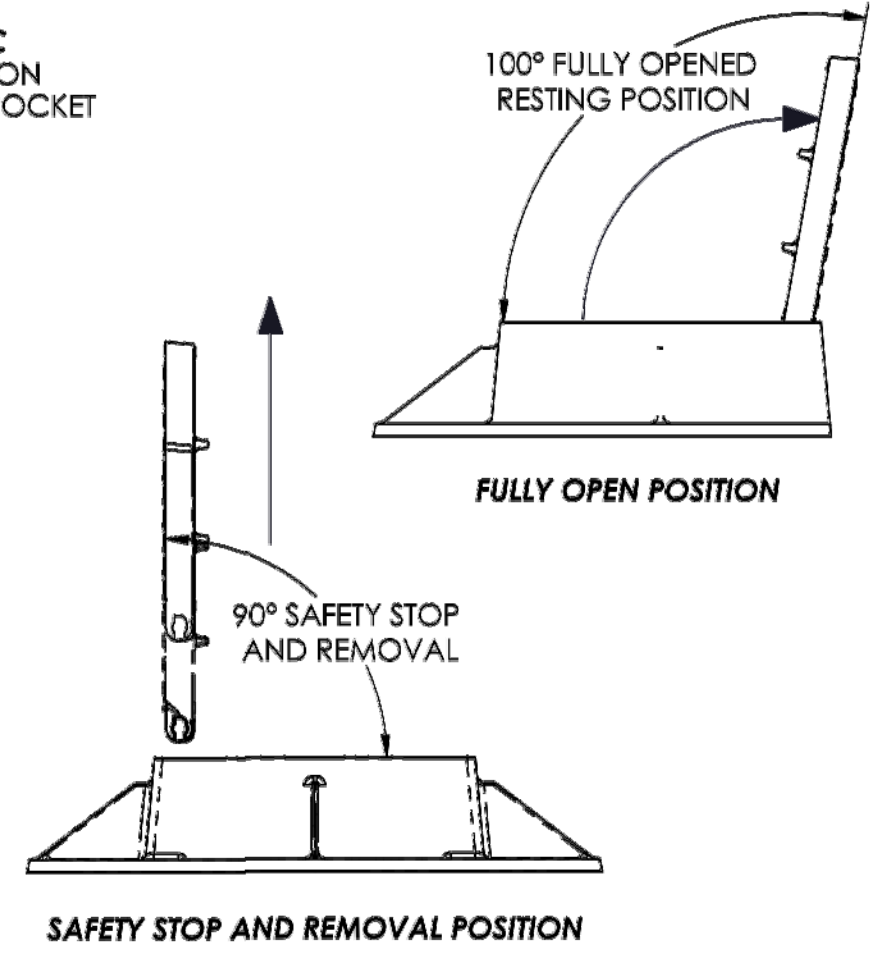
- ASTM A536
- Country of Origin: USA

Major Components
00500018
00500077

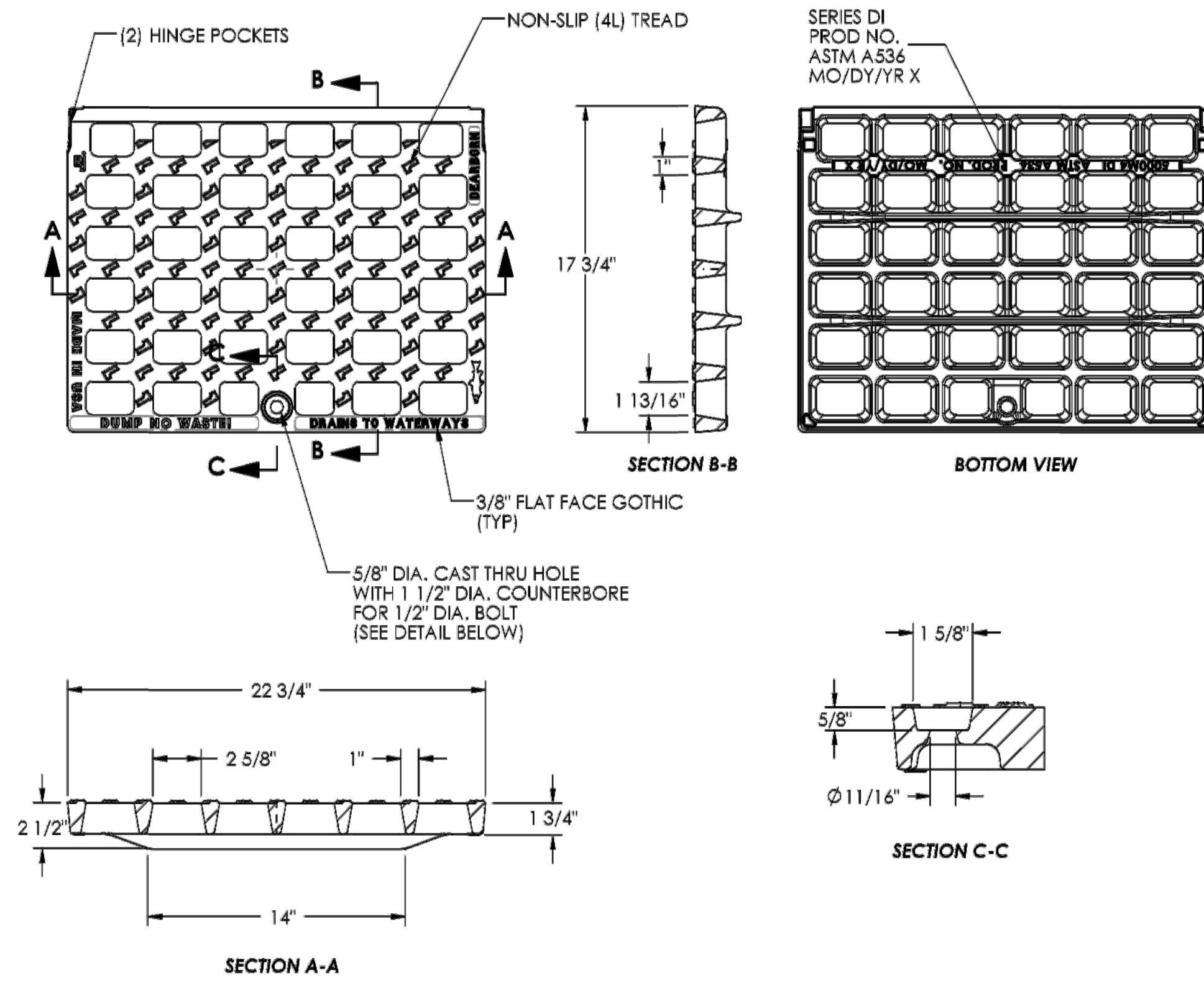
Drawing Revision
11/21/2012 Designer: DJH
01/10/2013 Revised By: DJH

Contact
800 826 4653
ejco.com

FOR CATCH BASIN/INLET
NEW INSTALLATION



5000M4 Grate



Product Number
00500077

Design Features

- Materials
Ductile Iron (70-50-05)

-Design Load
Heavy Duty

-Open Area
160 sq in

-Coating
Dipped

-/ Designates Machined Surface

Weight = 85 lbs.

Certification

- ASTM A536
- Country of Origin: USA

Drawing Revision
11/21/2012 Designer: DJH
7/2/2019 Revised By: DAE

Contact
800 826 4653
ejco.com

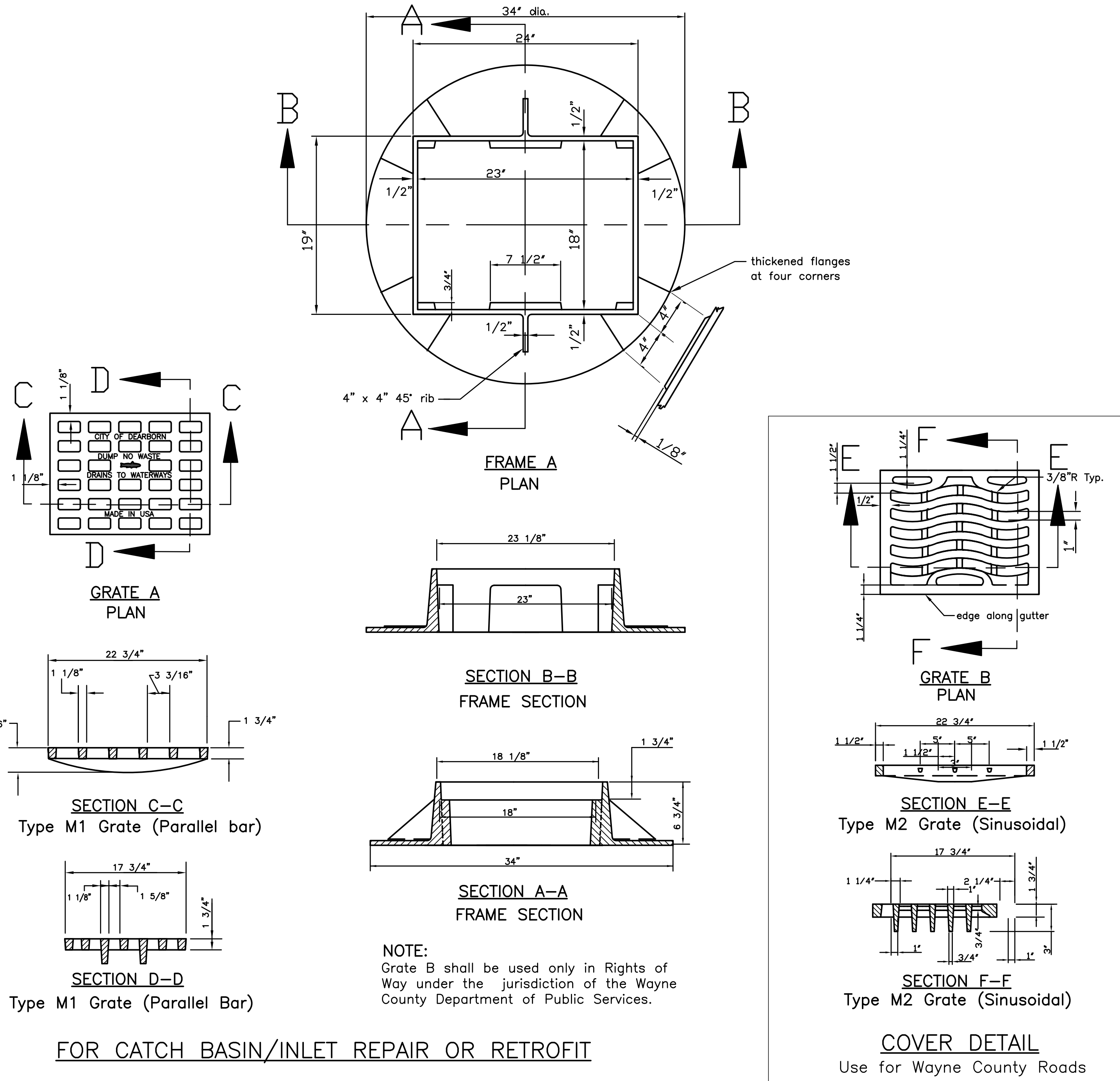
FOR CATCH BASIN/INLET
NEW INSTALLATION

CASTING STANDARDS

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CITY OF DEARBORN, MICHIGAN

NO.	BY	DATE	REVISIONS
3	B.J.H.	06-01-23	UPDATED FOR CATCH BASIN/INLET REPAIR OR RETROFIT SECTIONS AA & BB
2	S.A.S.	10-21-20	UPDATED GRATE & ASSEMBLY DETAILS PER MANUFACTURER
1	S.A.S.	02-02-15	REV. NOTES: ADDED GRATE & ASSEMBLY SPECS; MOVED 1040C MH DETAIL TO SHEET C-2

SHEET NO. C-1 OF



FOR CATCH BASIN/INLET REPAIR OR RETROFIT

GENERAL NOTES

MANHOLE & GATE WELL (NEW INSTALLATION)
FRAME: No. 1040, E.J.I.W., Base Flange Typ., Weight 154 lbs.
COVER: As shown in detail, Weight 125 lbs.

CATCH BASIN & INLETS (NEW INSTALLATION)
FRAME: As shown in detail
COVER: As shown in detail

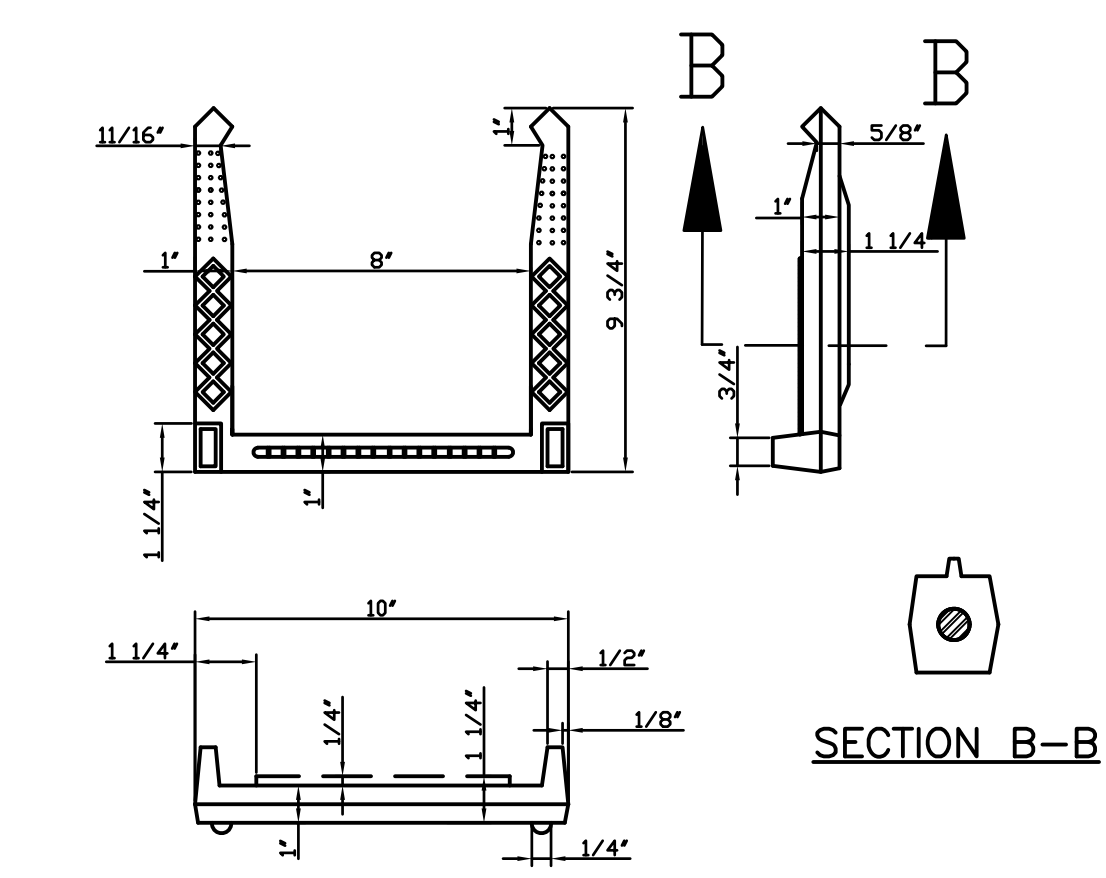
CATCH BASIN & INLETS (REPAIR OR RETROFIT)
FRAME A: No. 5080, E.J.I.W., Round Base, Weight 222 lbs.
GRATE A: Type M1, E.J.I.W., parallel bar grate = 29 holes or 160 sq. in. of opening, with City of Dearborn "Logo" Weight 111 lbs.
GRATE B: Type M2, E.J.I.W., sinusoidal grate = 160 sq. in. of opening, Weight 116 lbs.
GRATE B shall be used only in Rights of Way under the jurisdiction of the Wayne County Department of Public Services.
GRATE C: Type M3, E.J.I.W., Restricted Grate, 2, 4 or 6 Openings, approx. 5 sq. in. per opening, Weight 123 lbs.
GRATE D: (Same detail as GRATE A except number of openings) Type 02, E.J.I.W., Beehive Grate, Height Above Frame - 6", Weight 101 lbs.

CASTINGS
Equivalent castings of other manufacturers may be substituted if approved by the engineer.

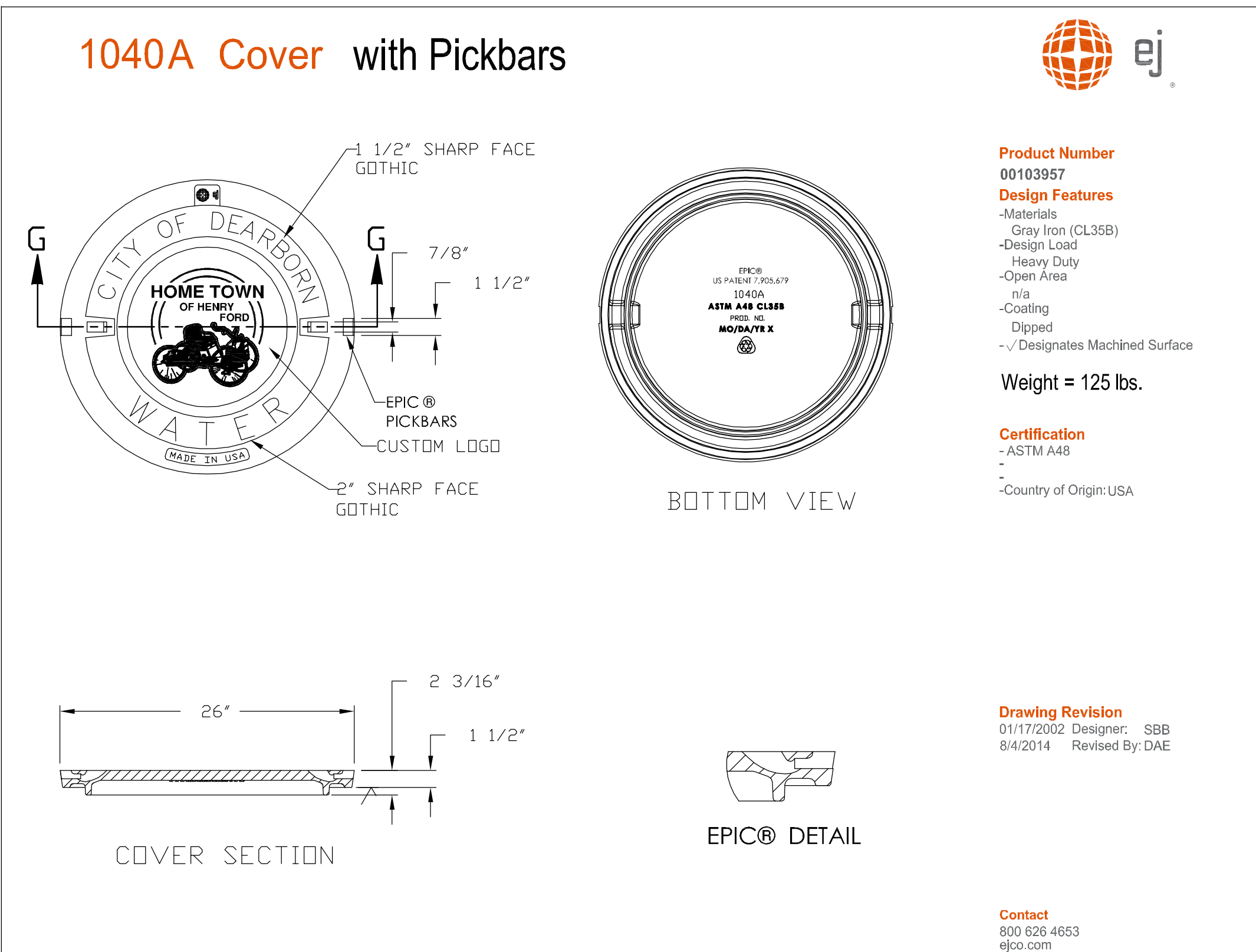
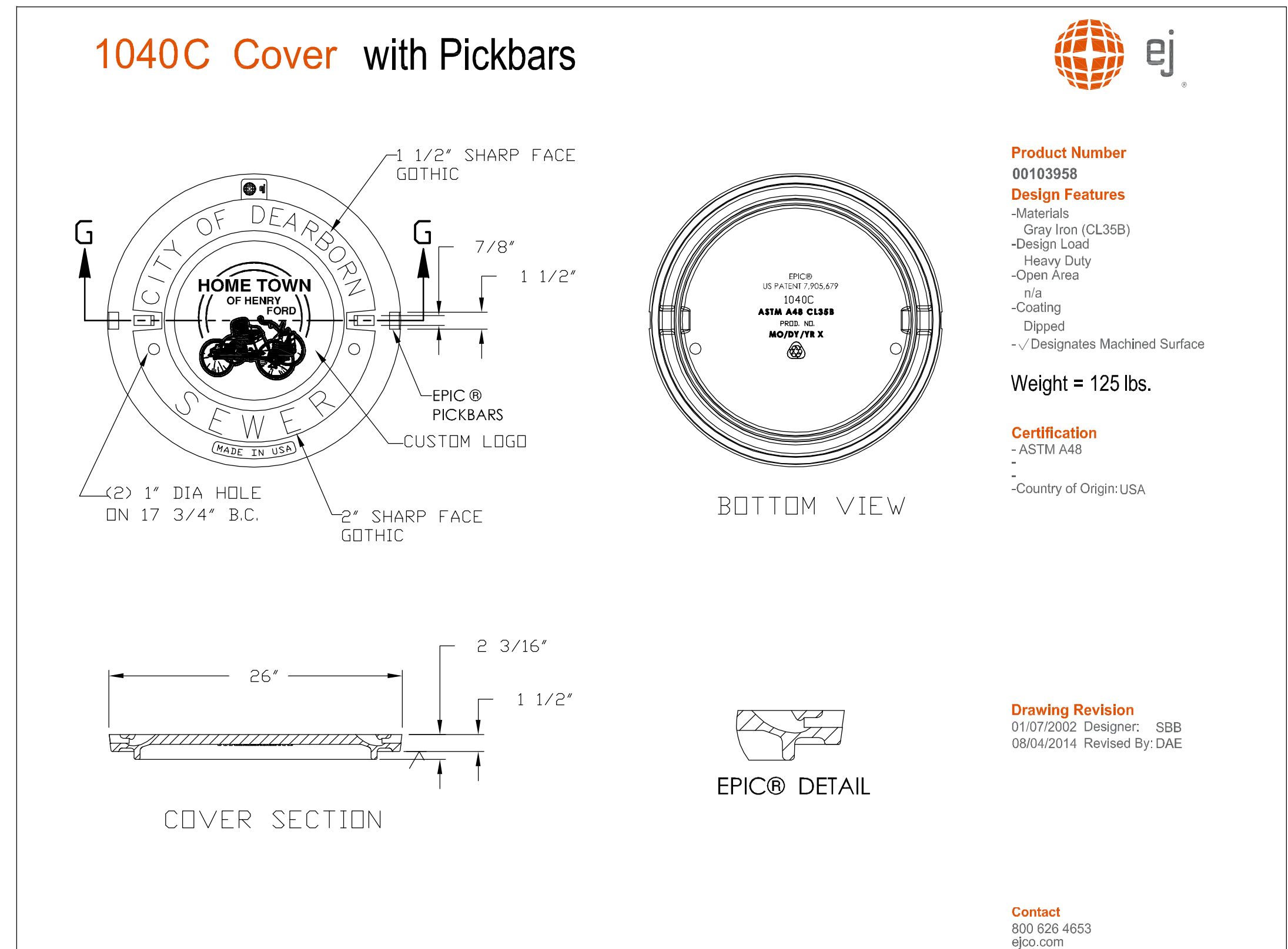
All casting shall meet the requirements of the current specifications ASTM Designation A-48 and shall have the same minimum strength as provided for No. 30 Gray Iron Castings.

The seating face of manhole lids and of catch basin inlet grates and the seats on the frames shall be machine finished to provide uniform bearing.

PLASTIC STEP
M. A. Industries, Inc., steel reinforced polypropylene plastic step (PS3) meeting requirements outlined in ASTM 2146-68 under Type II, Grade 16906.

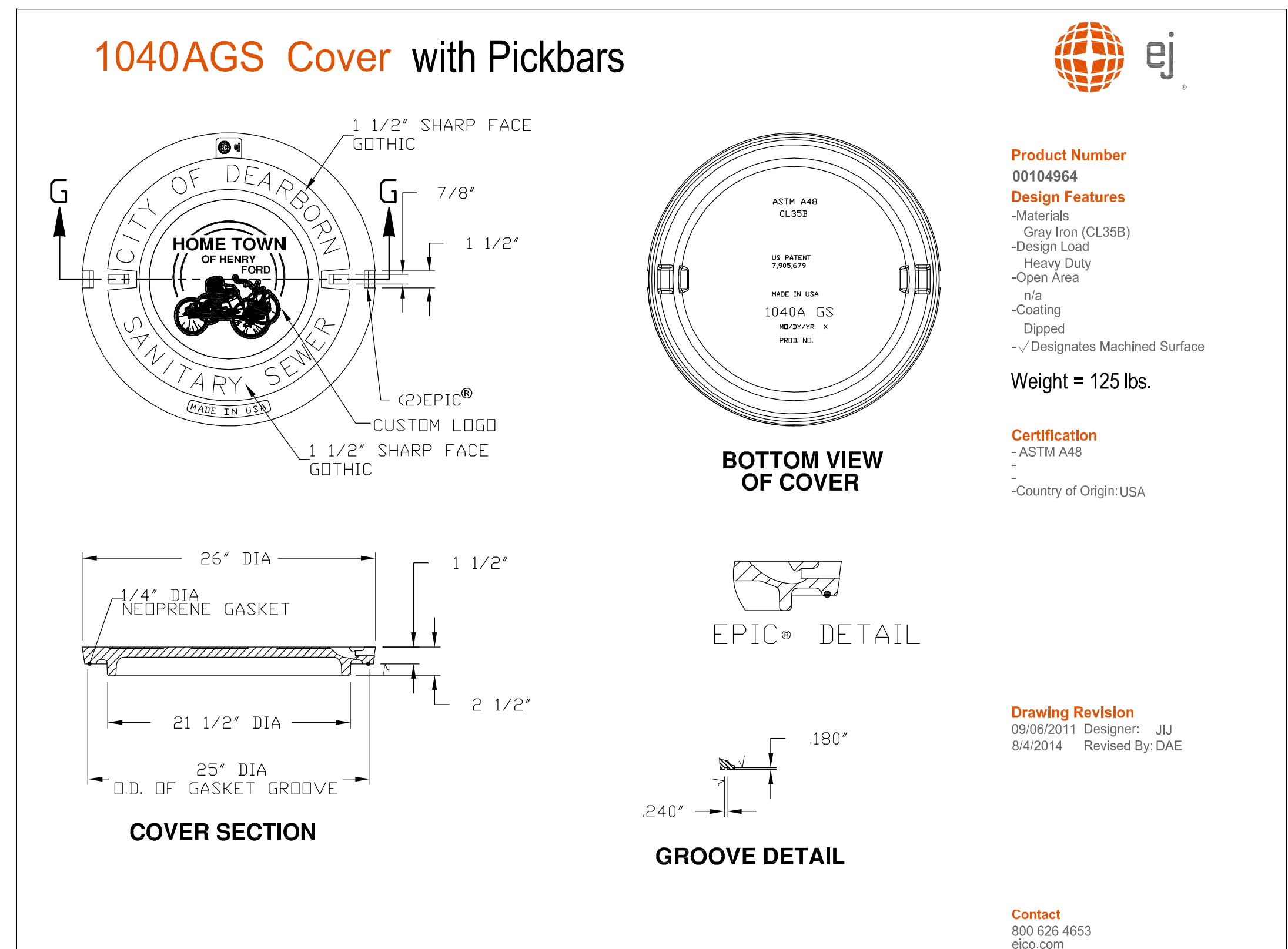


PLASTIC MANHOLE STEP

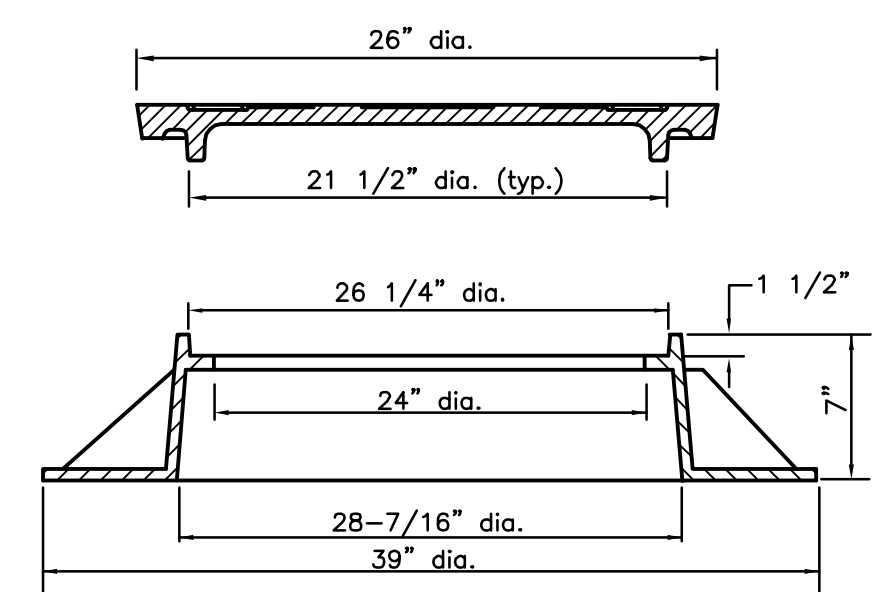


STORM AND COMBINATION SEWER COVER DETAIL

GATE WELL COVER DETAIL



SANITARY SEWER COVER DETAIL



MANHOLE FRAME FOR STORM,
SANITARY & GATE WELLS
TYPICAL SECTION G-G

GENERAL NOTES

MANHOLE & GATE WELL (NEW INSTALLATION)
FRAME: No. 1040, E.J.I.W., Base Flange Typ.,
Weight 154 lbs.
COVER: As shown in detail
Weight 125 lbs.

CATCH BASIN & INLETS (NEW INSTALLATION)
FRAME: As shown in detail
COVER: As shown in detail

CATCH BASIN & INLETS (REPAIR OR RETROFIT)
FRAME A: No. 5080, E.J.I.W., Round Base,
Weight 222 lbs.
GRATE A: Type M1, E.J.I.W., parallel bar grate = 29 holes or 160 sq. in. of opening, with City of Dearborn "Logo" Weight 111 lbs.
GRATE B: Type M2, E.J.I.W., sinusoidal grate = 160 sq. in. of opening, Weight 116 lbs. GRATE B shall be used only in Rights of Way under the jurisdiction of the Wayne County Department of Public Services.
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GRATE D: Type O2, E.J.I.W., Beehive Grate, Height Above Frame = 6", Weight 101 lbs.

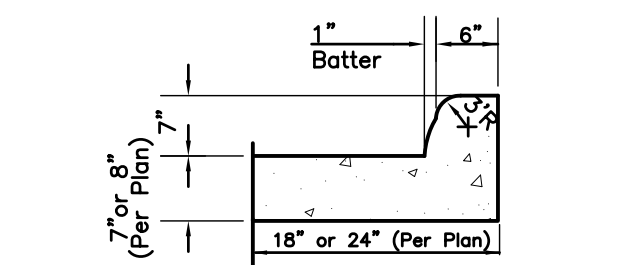
CASTINGS
Equivalent castings of other manufacturers may be substituted if approved by the engineer.

All casting shall meet the requirements of the current specifications ASTM Designation A-48 and shall have the same minimum strength as provided for No. 30 Gray Iron Castings.

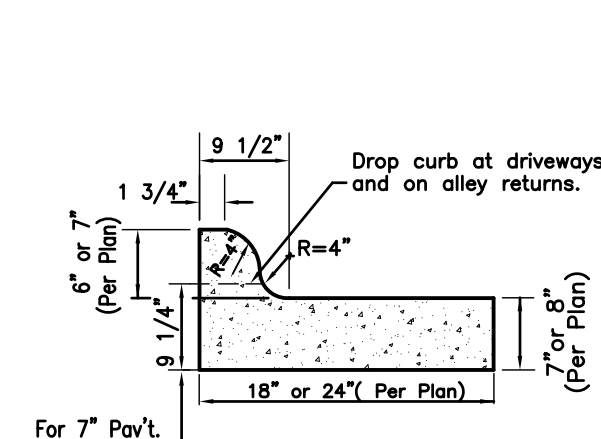
The seating face of manhole lids and of catch basin inlet grates and the seats on the frames shall be machine finished to provide uniform bearing.

PLASTIC STEP
M. A. Industries, Inc., steel reinforced polypropylene plastic step (PS3) meeting requirements outlined in ASTM 2146-68 under Type II, Grade 16906.

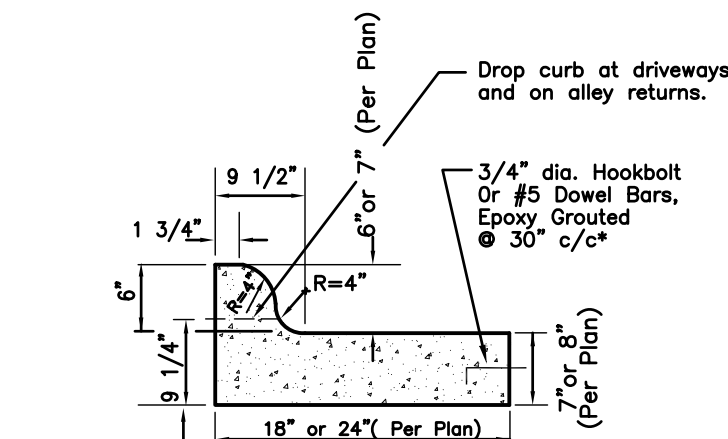
NO.	BY	DATE	REVISIONS



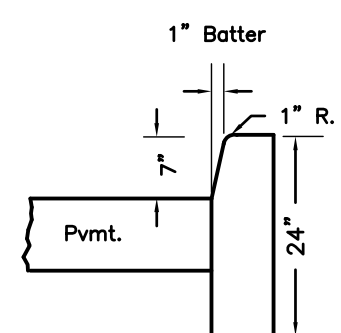
INTEGRAL STRAIGHT CURB DETAIL



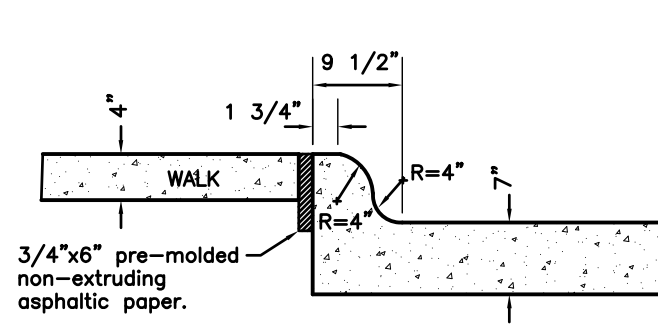
CURB & GUTTER DETAIL (FOR ASPHALT PAVEMENT)



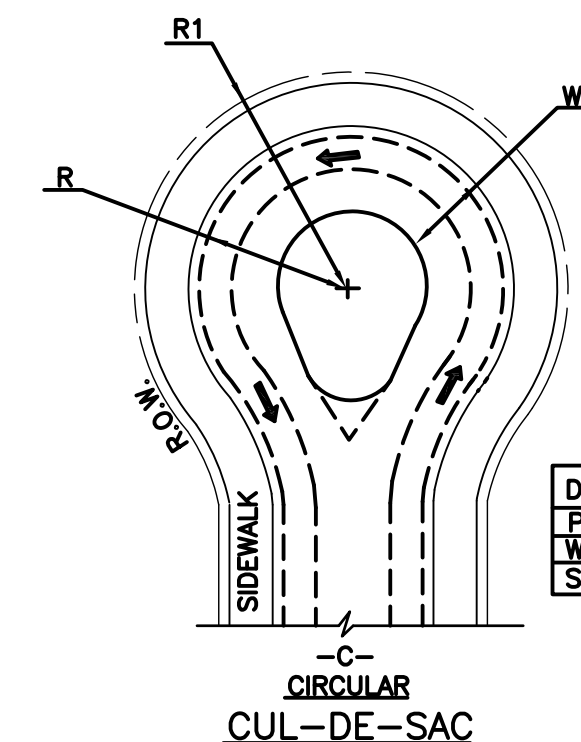
INTEGRAL CURB DETAIL (FOR CONCRETE PAVEMENT AND BASE COURSE)



STRAIGHT CURB



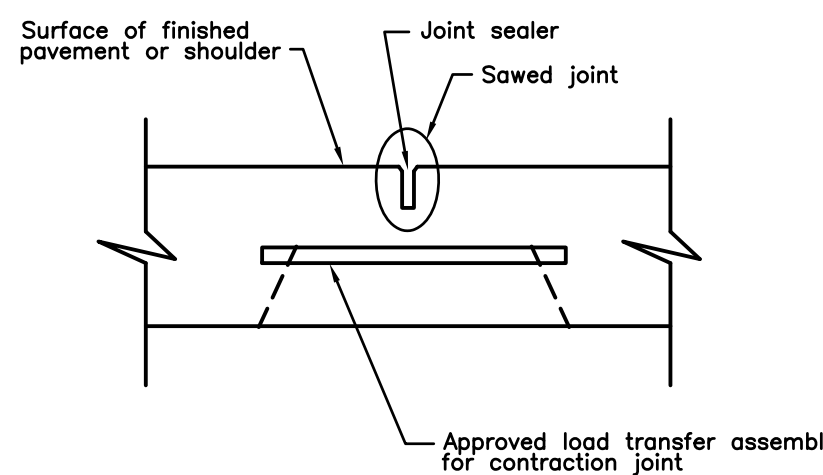
INTEGRAL CURB DETAIL AT CROSSWALKS



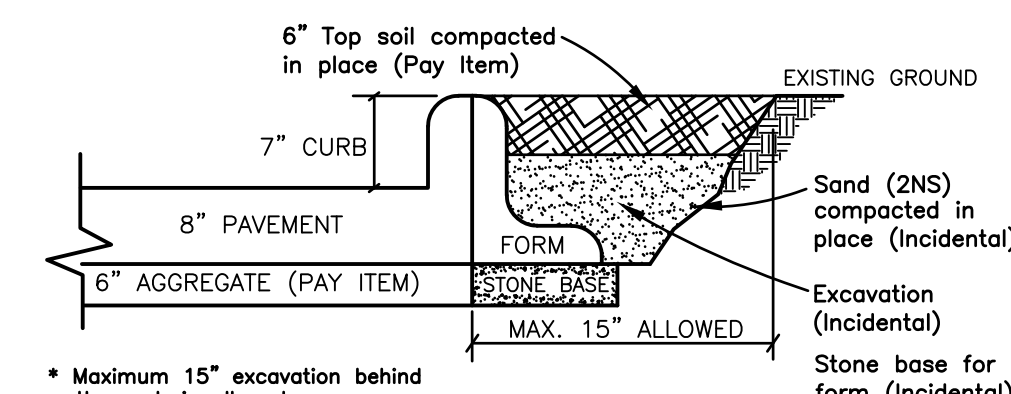
DES. VEHICLE	R	W	R1
P	30'	18'	48'
WB-40	42'	25'	60'
SU & WB-50	47'	30'	65'

CUL-DE-SAC

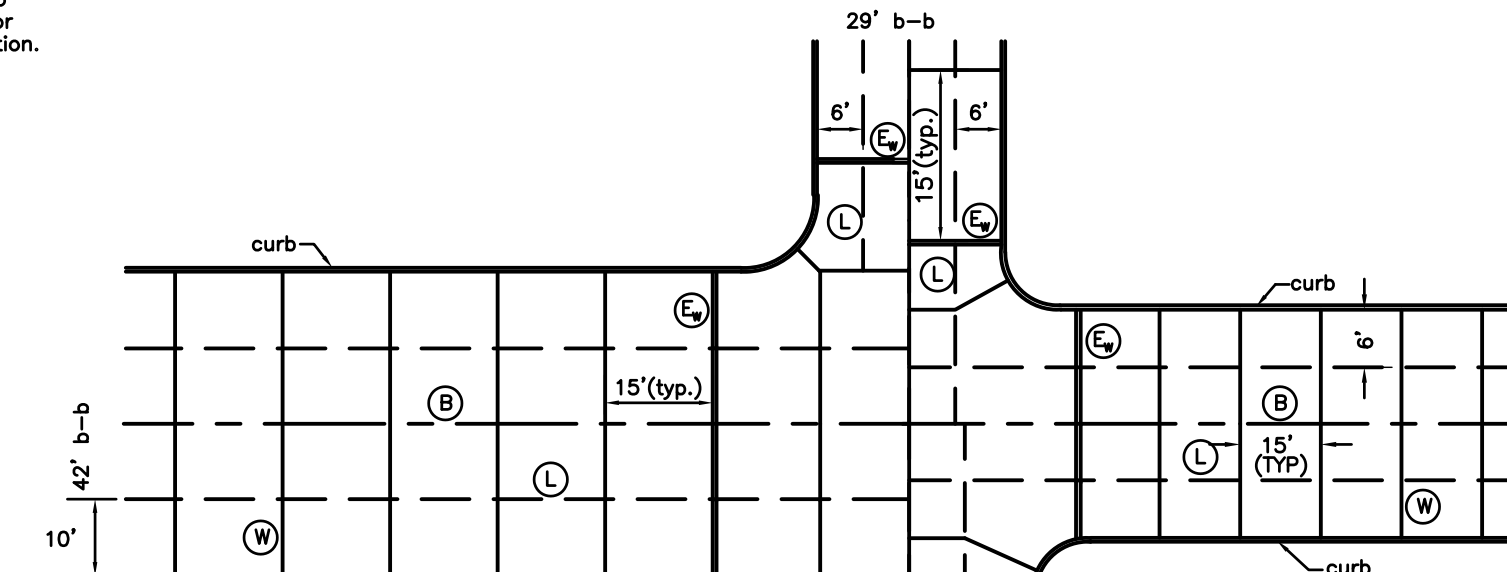
GENERAL NOTES
 Transverse construction joints shall be placed at the ends of all pours and at places where paving operations are discontinued for a period of more than one-half hour except where such pours end at contraction or expansion joints. Construction joints shall not be less than 10 feet from any adjacent joints. Sections of pavement less than 10 feet in length between adjacent joints, if constructed, shall be removed at the contractor's expense.
 All transverse joints in concrete pavement shall extend through the integral curb and shall be of the same kind and thickness as provided for the pavement, except that a pre-molded bituminous filler shall be used in the integral curb when a temporary filler such as polystyrene is used in the pavement. The joint material shall be pre-cut so as to conform to the geometric shape and cross-sectional area of the curb, and shall be placed in contact with the filler material in the pavement. The edges of all transverse joints in the integral curb shall be rounded with the approved finishing tool, having a radius of 1/4 inch.



TRANSVERSE CONTRACTION JOINT FOR REINFORCED CONCRETE



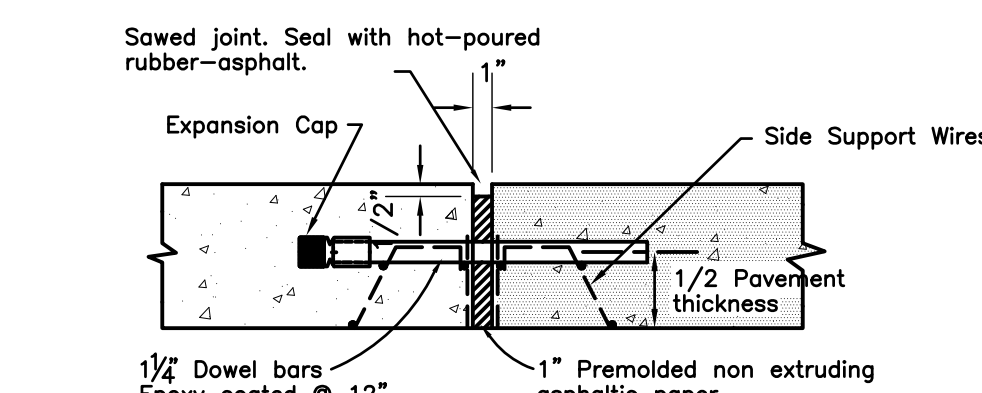
① ③ ④ ⑤ CONCRETE FORM SETUP & BACKFILLING DETAILS BEHIND THE CURB



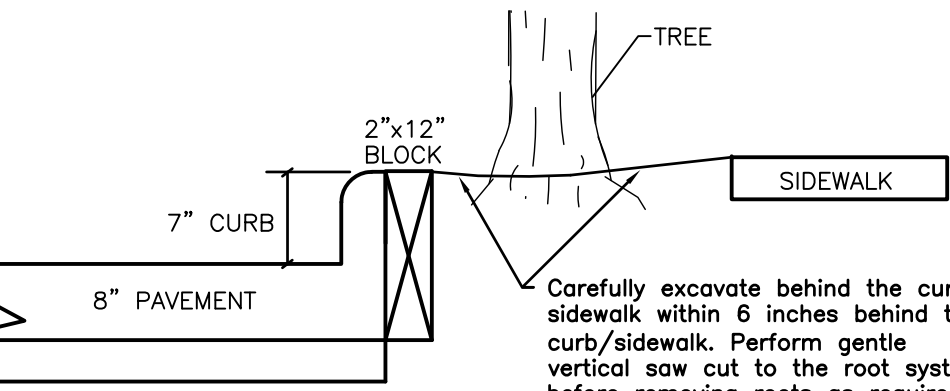
INTERSECTION PLAN

JOINT LEGEND

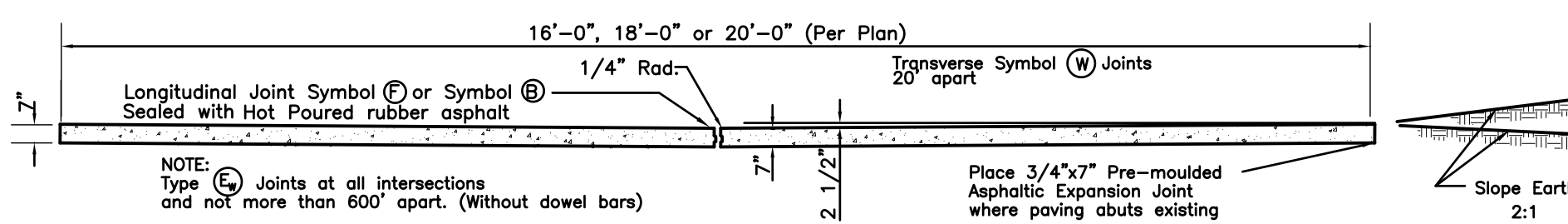
- Symbol (E) Transverse Expansion Joint
- Symbol (B) Longitudinal Bulkhead Construction Joint
- Symbol (L) Longitudinal Lane Tie Joint
- Symbol (W) Transverse Plane of Weakness Joint



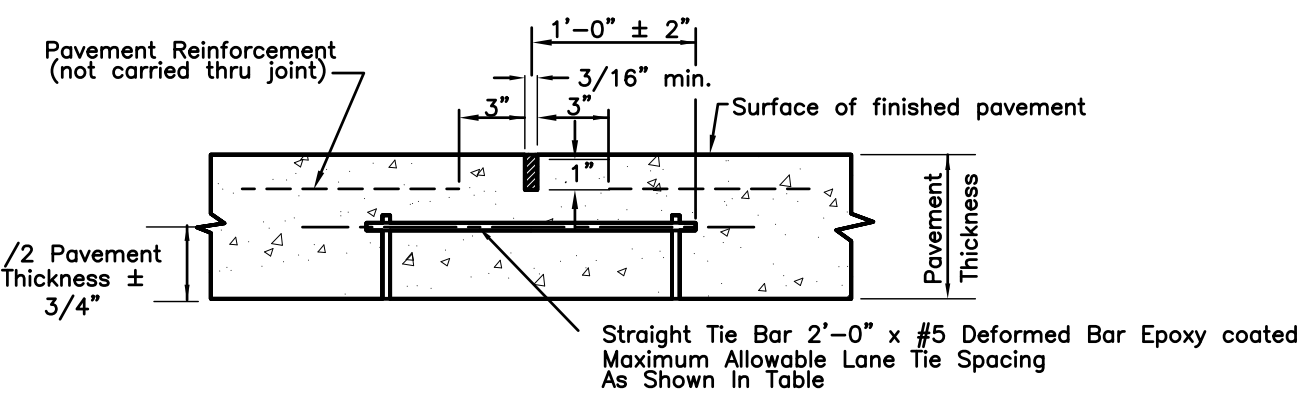
TRANSVERSE EXPANSION JOINT WITH LOAD TRANSFER - SYMBOL (EW)



③ ④ CONCRETE FORM SETUP & BACKFILLING DETAILS BEHIND THE CURB IN THE VICINITY OF TREES

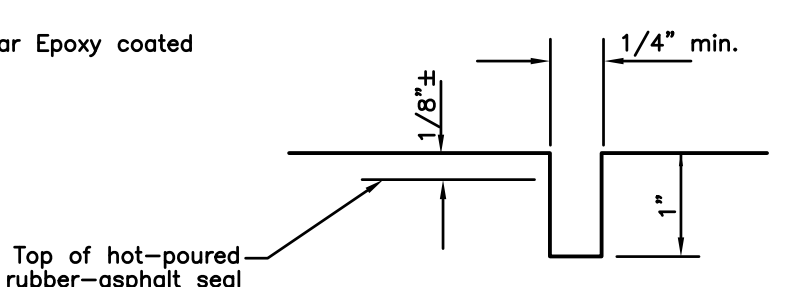


TYPICAL SECTION ALLEY PAVEMENT

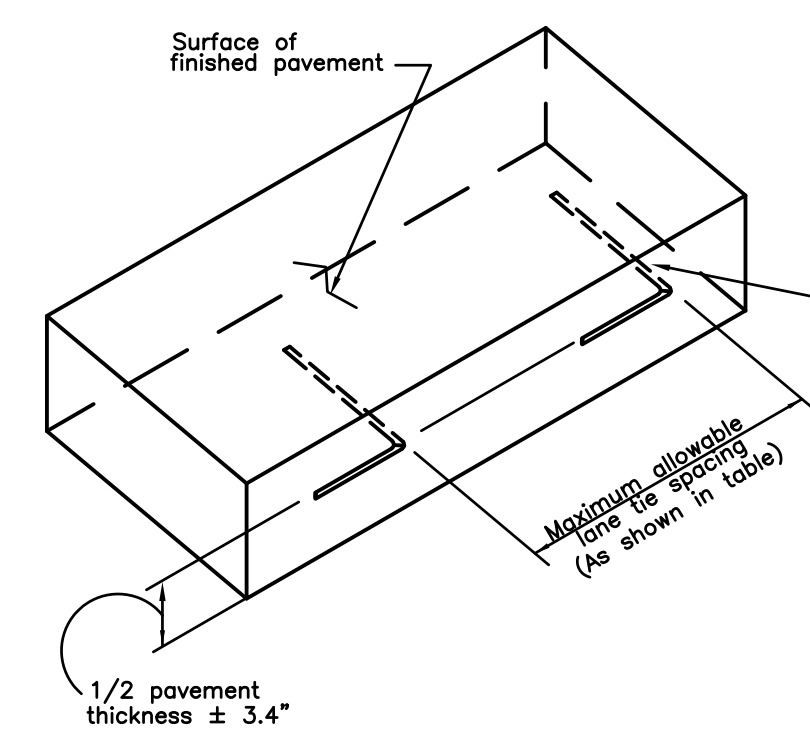


LONGITUDINAL LANE TIE JOINT

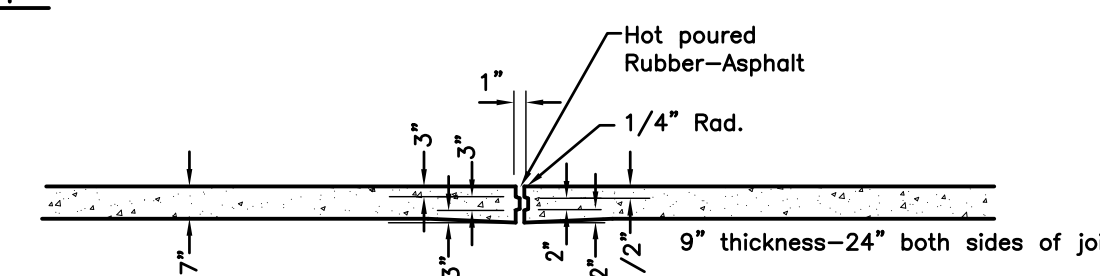
SYMBOL (L)



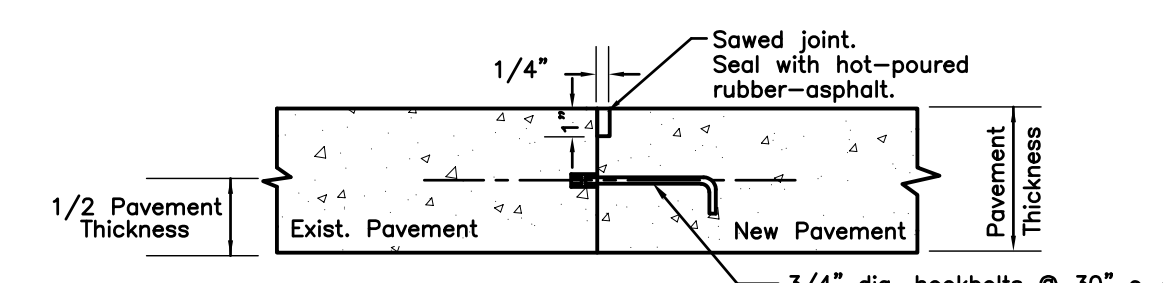
SAWED JOINT SEALED WITH HOT-POURED RUBBER-ASPHALT



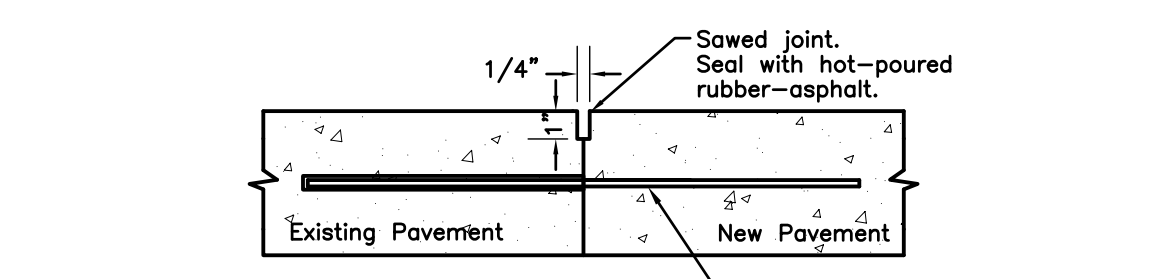
METHOD 1 BENT TIE BAR METHOD



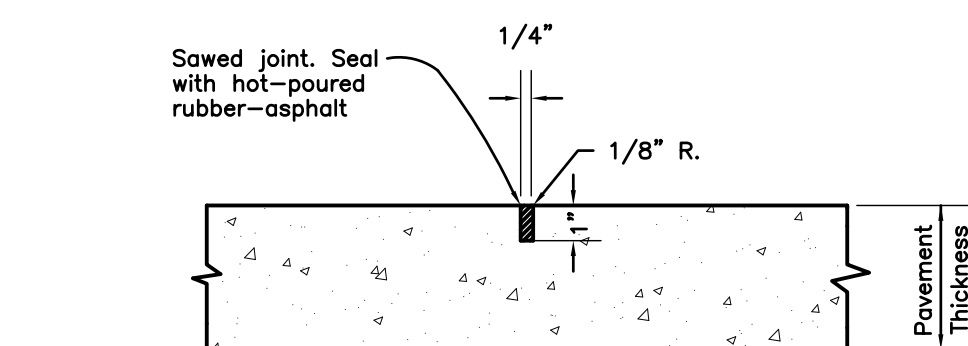
JOINT SYMBOL (E) 7 INCH SLAB



HOOK BOLT METHOD

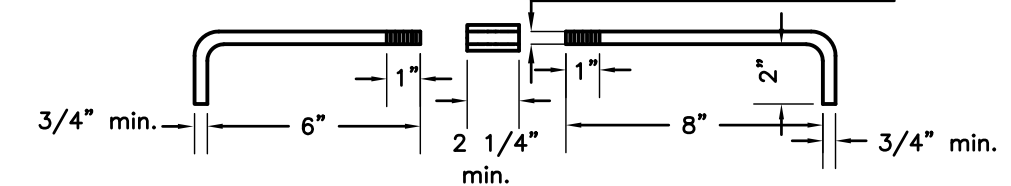


DOWEL BAR METHOD

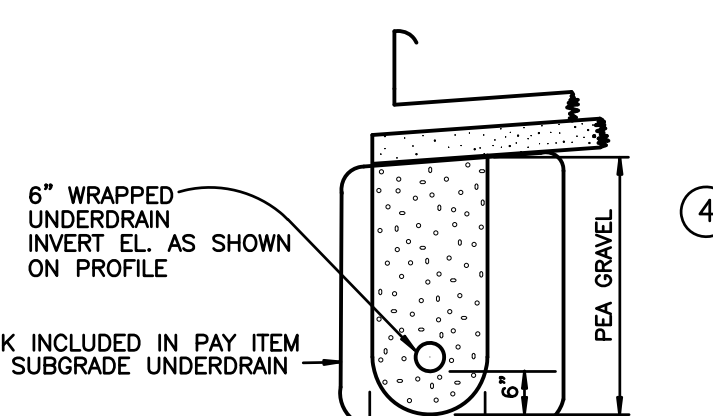


TRANSVERSE PLANE OF WEAKNESS JOINT FOR PLAIN CONCRETE PAVEMENT

SYMBOL (W)



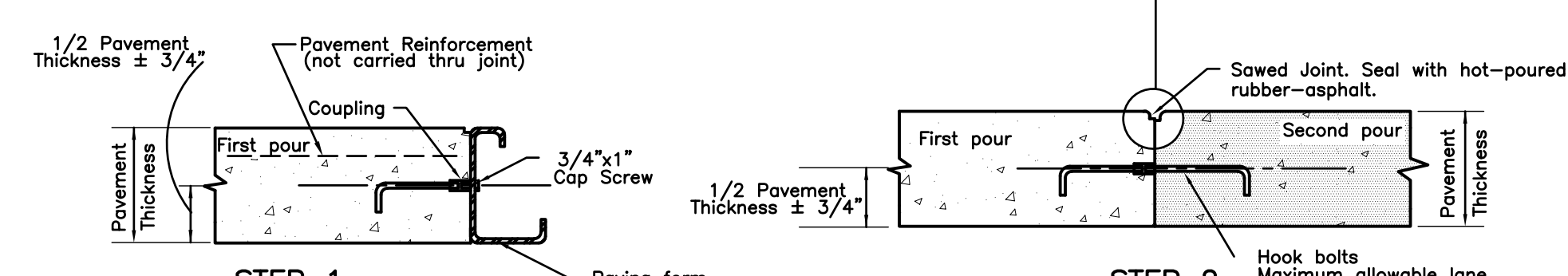
HOOK BOLT DETAIL



SUBGRADE UNDERDRAIN DETAIL

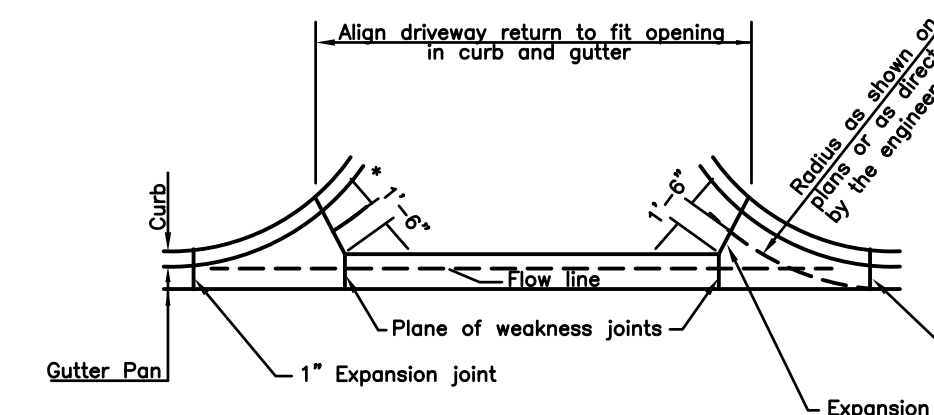
Maximum Allowable Lane Tie Spacing	Total Distance Of Tied Joint From Nearest Free Edge
4'-6 3/4"	12' or Less
3'-5"	12" thru 17'
2'-6 3/4"	17" thru 24'
2'-1 7/8"	24" thru 28'
1'-6 1/4"	28" thru 36'
** 1'-2"	36" thru 48'

* Includes any tied combination of lane width, Valley gutter, curb & gutter or shoulder.
 ** For widths greater than 48', use No. 6 deformed bars spaced at 1'-2"



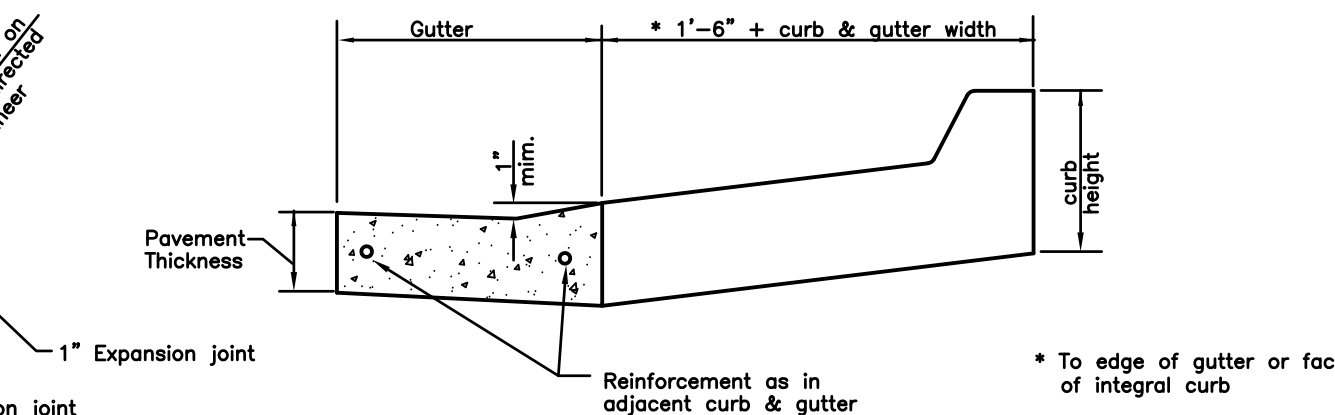
METHOD 2 HOOK BOLT METHOD LONGITUDINAL BULKHEAD CONSTRUCTION JOINT

SYMBOL (B)

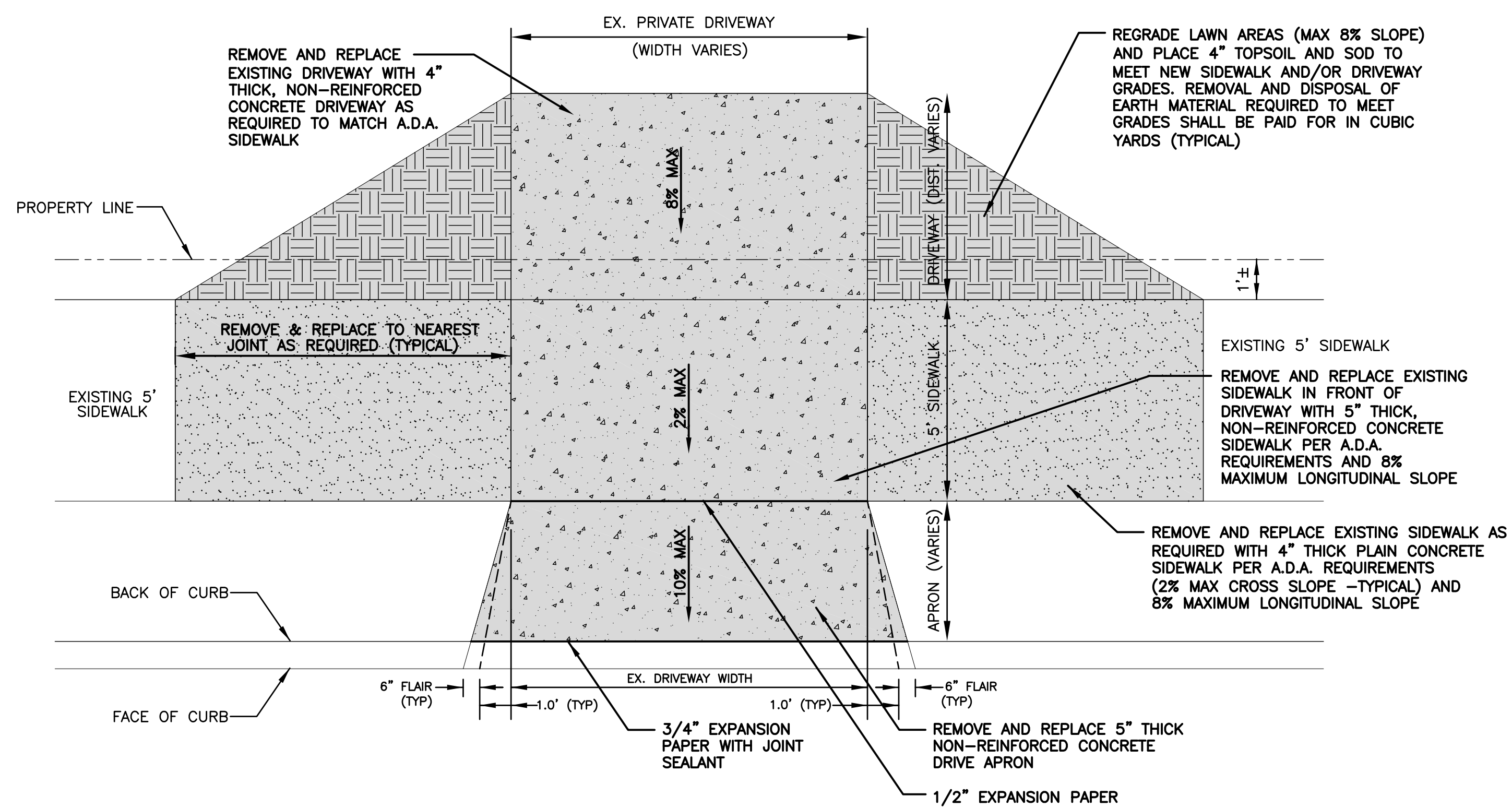


CONCRETE DRIVEWAY OPENING - DETAIL M FOR COMMERCIAL DRIVEWAY

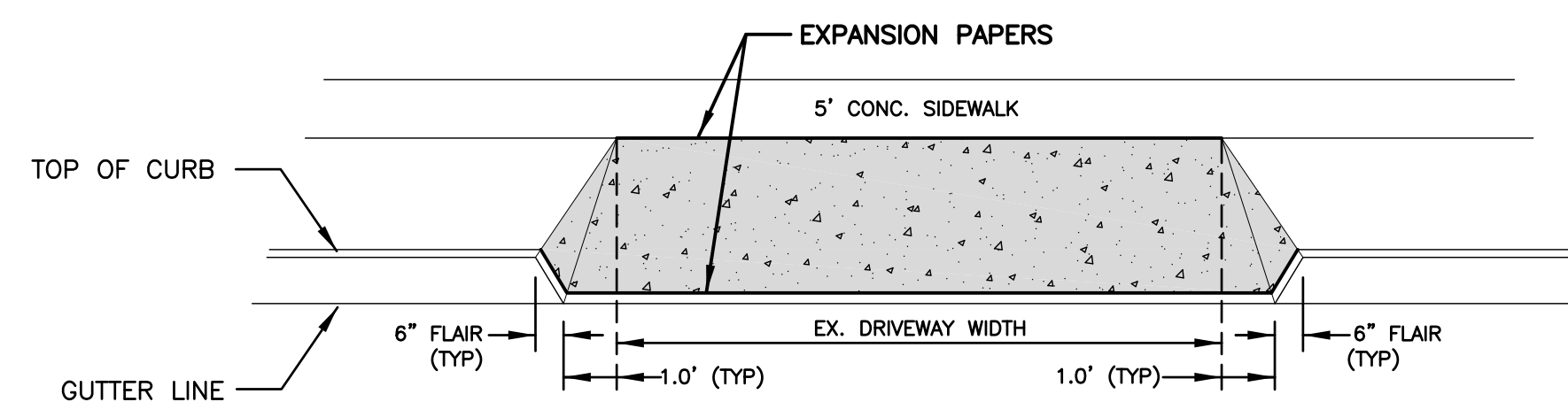
SPACING LAYOUT FOR HOOK BOLTS OR DOWEL BARS TRANSVERSE JOINT CONNECTING NEW PAVEMENT TO EXISTING PAVEMENT



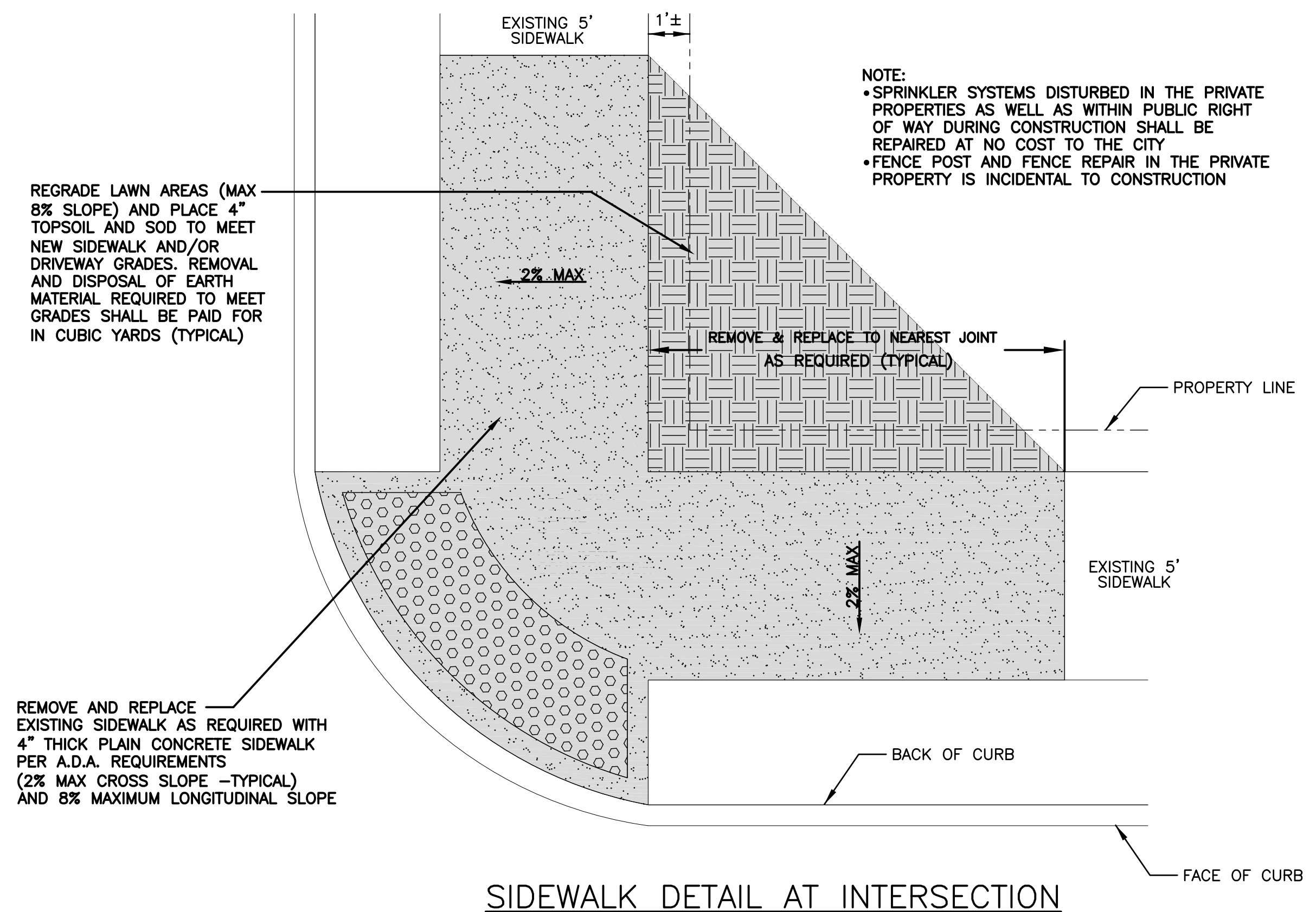
SECTION A-A



TYPICAL RESIDENTIAL DRIVEWAY REPLACEMENT PLAN



TYPICAL APPROACH FLAIR DETAIL



SIDEWALK DETAIL AT INTERSECTION

CONCRETE PAVEMENT STANDARD

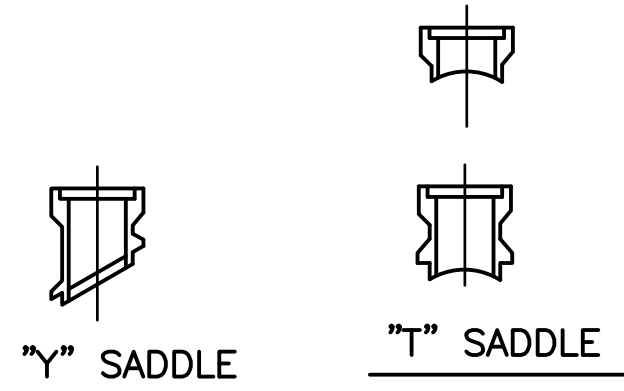
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CITY OF DEARBORN, MICHIGAN

APPROVED: *[Signature]* DATE: 06-16-21
APPROVED: *[Signature]*

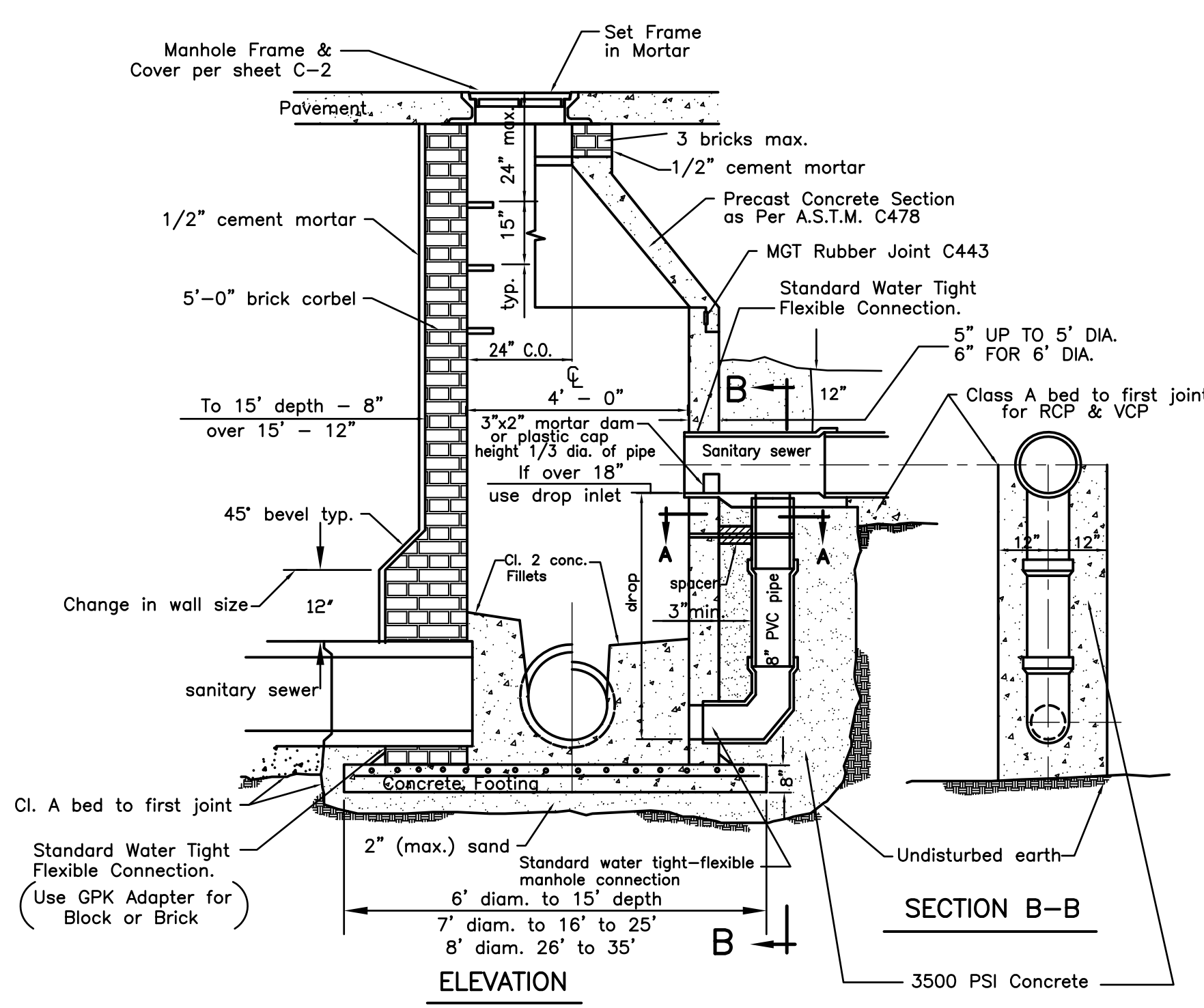
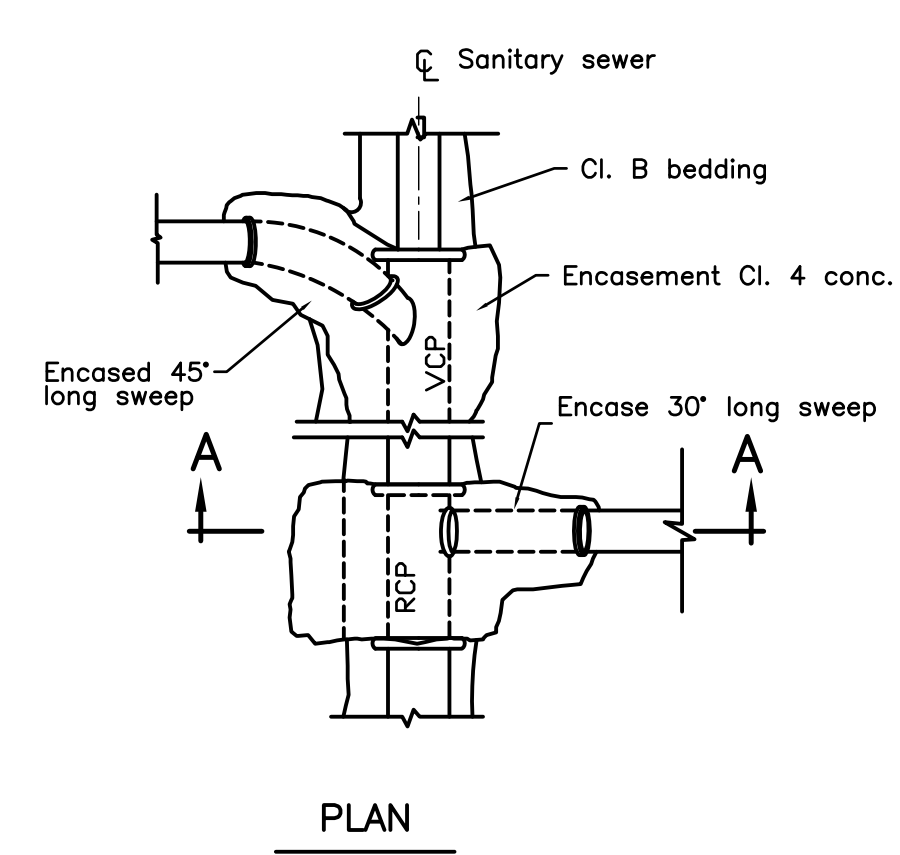
NO.	BY	DATE	REVISIONS

NOTES

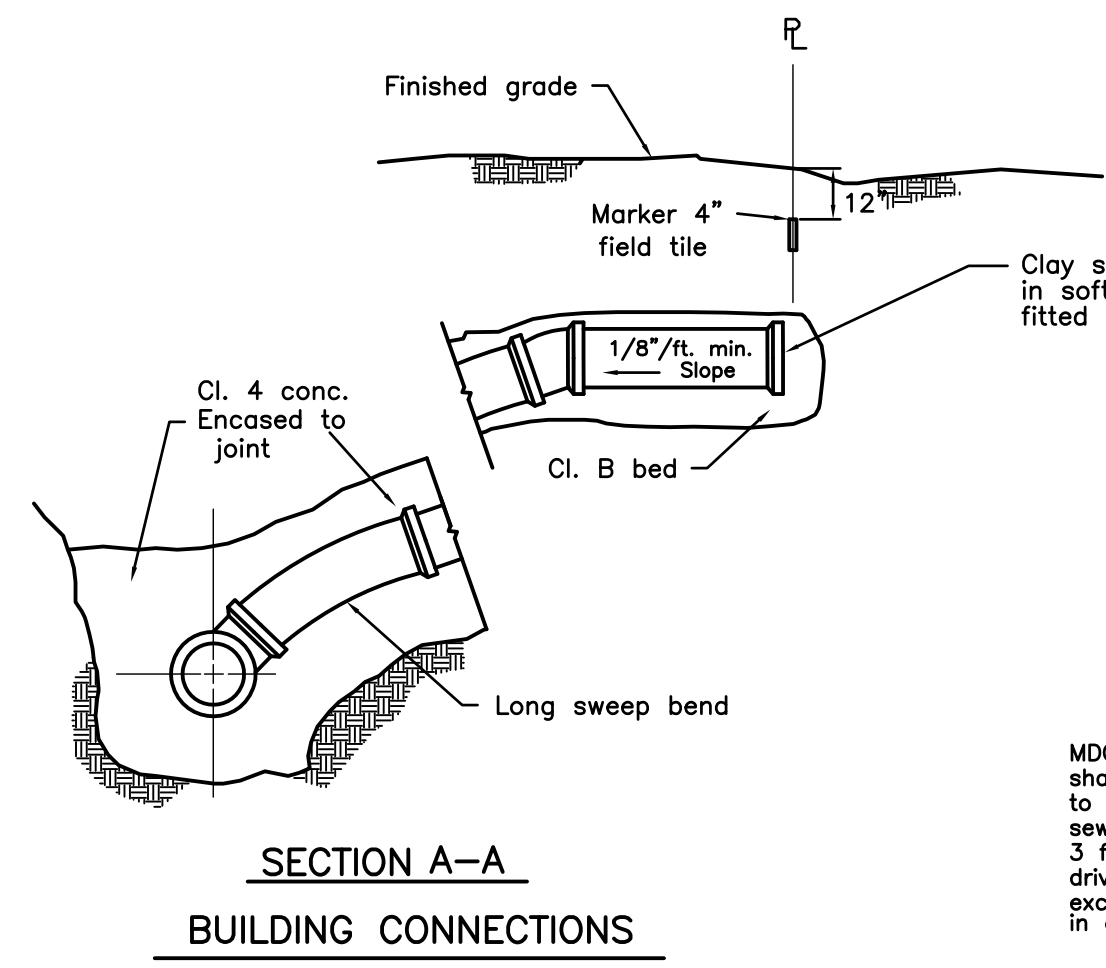
- Top of masonry structures shall be sufficiently low to permit proper adjustment of cover to grade with mortar or brick as directed by the Engineer.
- The top portion of 4' diameter and larger precast reinforced manholes units shall be eccentric in design. The top section of the brick or block manhole units shall be corbelled to be eccentric.
- Premium joints are required on all sanitary manholes. See A.S.T.M. designation C-923.
- The bell shall be removed for the first length of outlet pipe projecting through the wall of the manhole.
- Precast concrete sections, sumps, and flat top shall be built in accordance with A.S.T.M. C-478. The walls of the precast units may have a slight taper to allow for form removal. Precast concrete 2' diameter drainage structures shall have a minimum 3" wall thickness with a 6" minimum bearing surface on top. See precast riser ring for 2' diameter structure.
- Pipes entering or leaving precast structures shall not have an inside diameter greater than 2" less than the inside diameter of the structure, except pipes entering or leaving 2' inside diameter structures may have pipes 1" inside diameter or less.
- The number of pipe openings in a riser shall be determined by the designer. Spacing between openings shall be 6" minimum. Openings may be constructed by casting, removing the green concrete, or by drilling the openings in cured concrete. No openings shall be made in precast units which leave less than 24" of undisturbed precast pipe, or would remove more than 30% of the circumference along any horizontal plane.
- Precast concrete footings or bases shall be reinforced with #4 steel bars spaced at 1' both ways or with two layers of welded wire fabric of equivalent cross sectional area laid at right angles and wired together. Reinforcement shall be placed in top of footing and shall be marked. Steel reinforcement may be omitted in cast-in-place concrete footings.
- Precast concrete footings & precast bottoms shall be supported by a compacted 6" aggregate base, compacted in place.
- Concrete footing shall be cast-in-place or precast concrete. Precast concrete base sections are acceptable for manholes, catch basins & inlets. Concrete shall be poured against undisturbed ground. Poured concrete and mortar must be hard before being stressed with backfill or precast modules.
- The minimum wall thickness for all 2', 4', and 5' drainage structures using concrete block, brick, or cast-in-place concrete shall be as shown in typical wall sections.
- Approved adapter such as Fernco coupling to connect dissimilar pipe is acceptable.
- Mortar shall be 1 part cement and 2 parts N.S. sand. Plaster all bricks and blocks with 1/2" mortar.
- For Manholes, Catch Basins & Inlets
If the base is over excavated it shall be backfilled with class 4 concrete.
- Locate corbel and steps at 45° to outlet sewer.
- Joints for clay pipe shall be internal rubber type gasket meeting the current A.S.T.M. Specification C425. Joints for concrete pipe shall be internal rubber type gasket meeting the current A.S.T.M. Specification C443.
- Infiltration/Exfiltration. Maximum allowable rates shall be 100 gallons per mile per inch diameter of sewer per 24 hour day on any one run between manholes.
- In precast sanitary manholes all holes for inlet and outlet pipe shall be formed or equipped for an approved flexible joint connection such as "Res-Seal", "Press-Wedge" or "Kor-N-Seal" or equal.
- No roof drain or down spout shall be connected to any city sewer or private sewer which is discharging to the city sewer.
- Castings shall meet the requirements of the current specification A.S.T.M. designation A-48 and shall have the same minimum strength as provided for #30 gray iron castings.
- All construction shall conform to the current Standards & Specifications.
- ABS Truss pipe and/or PVC pipe shall comply with and be installed in accordance with current ASTM designation.
- ABS or PVC Truss pipe constructed at depths greater than 12' below grade shall be tested for deflection. Deflection shall not exceed 5% of the normal pipe diameter.
- No ground water, storm water, construction water, downspout drainage shall be allowed to enter any sanitary sewer installation.
- All manholes, manhole access diameters and appurtenances shall meet the requirements of Section 34 of the 2004 Edition of the Ten States Standards.
- There shall be no discharge of untreated sanitary sewerage to the surface waters of the State due to construction activity associated with this project.



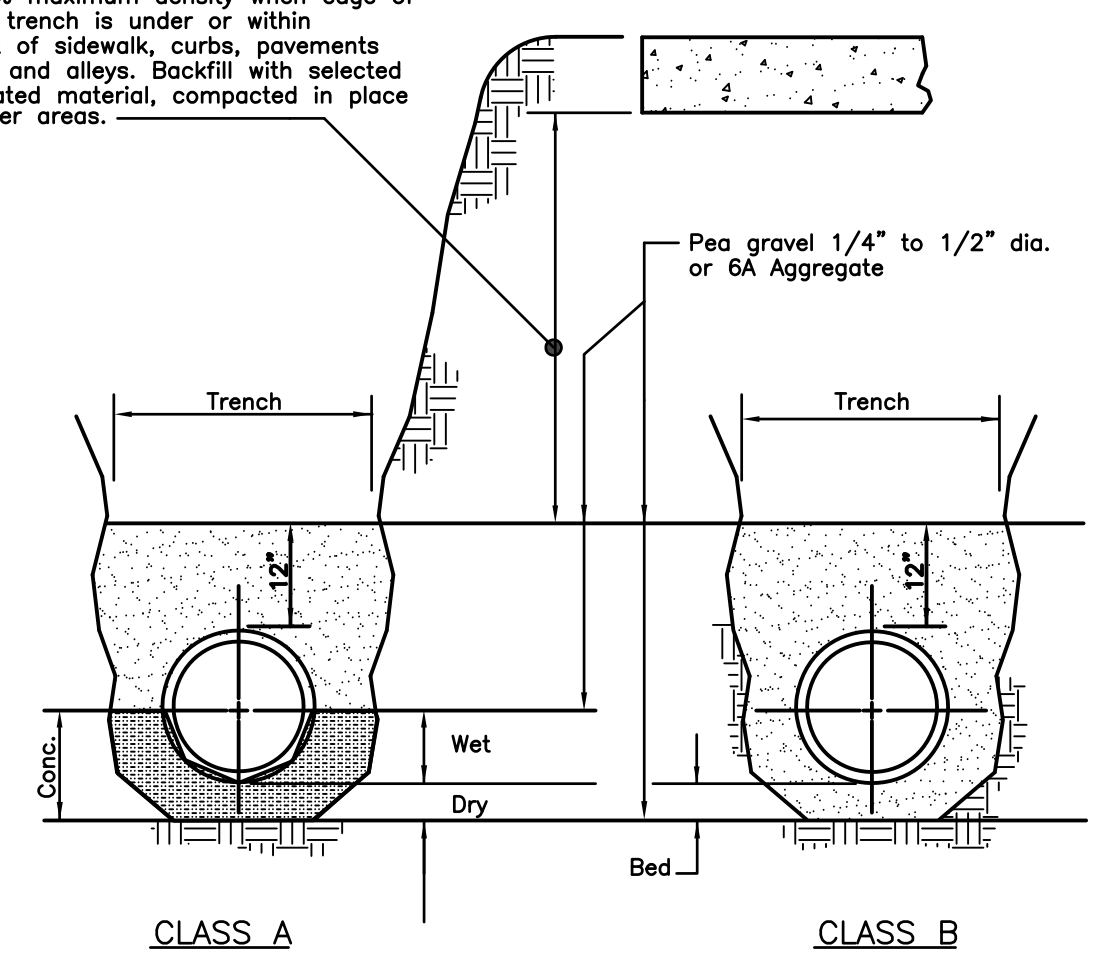
Standard saddles shall be used when spurs are cut into sewers.



4 FT. MANHOLE
with drop inlet.**
** Internal drop inlet may be allowed with Engineer's approval.



MDOT Class II Granular Material backfill shall be placed in 6" layers and compacted to 95% maximum density when edge of sewer trench is under or within 3 feet of sidewalk, curbs, pavements drives and alleys. Backfill with selected excavated material, compacted in place in other areas.



PIPE DIA.	BED	PIPE DIA.	TRENCH
8" - 60"	6"	8" - 15"	30"
66" - 108"	9"	18" - 30"	O.D. plus 18"
114" - UP	12"	36" - UP	O.D. plus 24"

SEWER BEDDING - TRENCH DETAIL

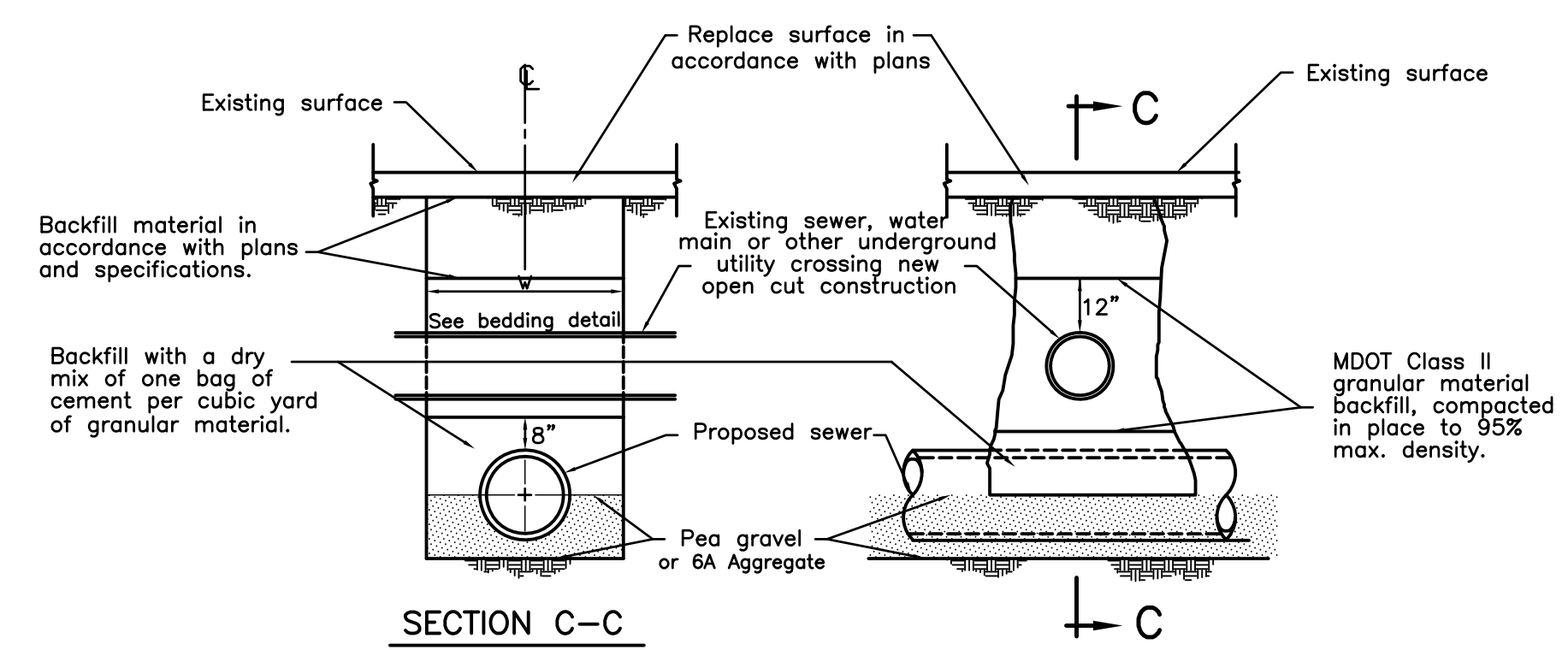
Excavating, Sewer/Bedding & Trench Backfill Shall be Incidental to Sewer Construction
④ Class A Bedding is Required for the Full Depth of Over Excavation.

NOMINAL DIA. IN INCHES	THICKNESS IN INCHES
10 AND UNDER	0.188
12 & 14	0.250
16	0.291
18	0.317
20 & 22	0.344
24	0.375
26	0.406
28	0.438
30	0.469
32	0.500
34 & 36	0.532
40	0.562
42	0.594
44 & 46	0.625
48	0.688
50	0.719
52	0.750
54	0.781
56 & 58	0.812
60	0.844
62	0.875
64	0.906
66 & 68	0.938
70	0.969
72	1.000

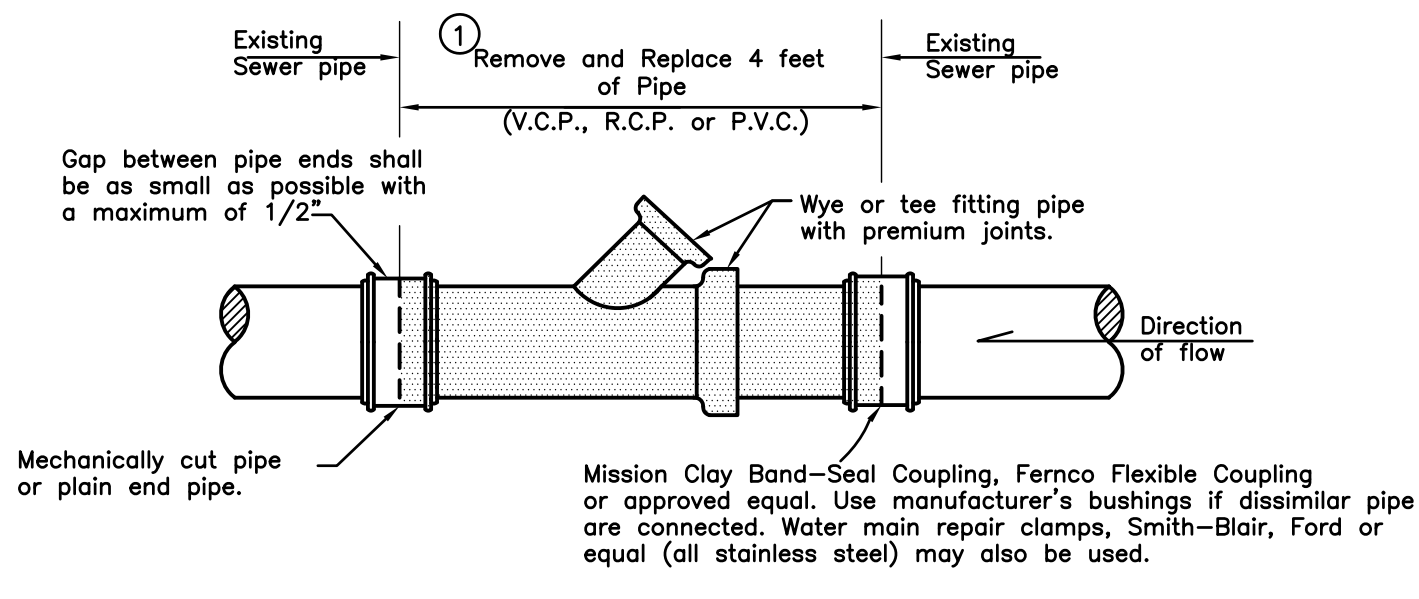
BACKFILL
SPACE BETWEEN THE SEWER PIPE AND CASING PIPE SHOULD BE FILLED WITH FLOWABLE FILL OR OTHER MATERIAL APPROVED BY THE ENGINEER AND SHALL COMPLETELY FILL ALL VOIDS BETWEEN THE SEWER AND THE CASING PIPE.

WALL THICKNESS (IN.)	STEEL CASING OUTSIDE DIAMETER (IN.)
3/16	12 1/4 14 1/4 16 1/4 18 1/4 20 1/4 22 1/4 24 1/4 26 1/4 28 1/4 30 1/4 32 1/4 34 1/4 36 1/4 38 1/4 40 1/4 42 1/4 44 1/4 46 1/4 48 1/4 50 1/4 52 1/4 54 1/4 56 1/4 58 1/4 60 1/4 62 1/4 64 1/4 66 1/4 68 1/4 70 1/4 72 1/4
1/4	20 3/4 22 3/4 24 3/4 26 3/4 28 3/4 30 3/4 32 3/4 34 3/4 36 3/4 38 3/4 40 3/4 42 3/4 44 3/4 46 3/4 48 3/4 50 3/4 52 3/4 54 3/4 56 3/4 58 3/4 60 3/4 62 3/4 64 3/4 66 3/4 68 3/4 70 3/4 72 3/4
5/16	24 1/2 26 1/2 28 1/2 30 1/2 32 1/2 34 1/2 36 1/2 38 1/2 40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2
3/8	28 3/4 30 3/4 32 3/4 34 3/4 36 3/4 38 3/4 40 3/4 42 3/4 44 3/4 46 3/4 48 3/4 50 3/4 52 3/4 54 3/4 56 3/4 58 3/4 60 3/4 62 3/4 64 3/4 66 3/4 68 3/4 70 3/4 72 3/4
7/16	32 1/2 34 1/2 36 1/2 38 1/2 40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2
1/2	36 1/2 38 1/2 40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2
9/16	40 1/2 42 1/2 44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2
5/8	44 1/2 46 1/2 48 1/2 50 1/2 52 1/2 54 1/2 56 1/2 58 1/2 60 1/2 62 1/2 64 1/2 66 1/2 68 1/2 70 1/2 72 1/2
MAX. NOMINAL DIA. OF SEWER (CARRIER)	
8"	10" 12" 14" 16" 18" 20" 24"

TYPICAL TUNNEL CASING DETAIL FOR SEWER BORED-IN-PLACE



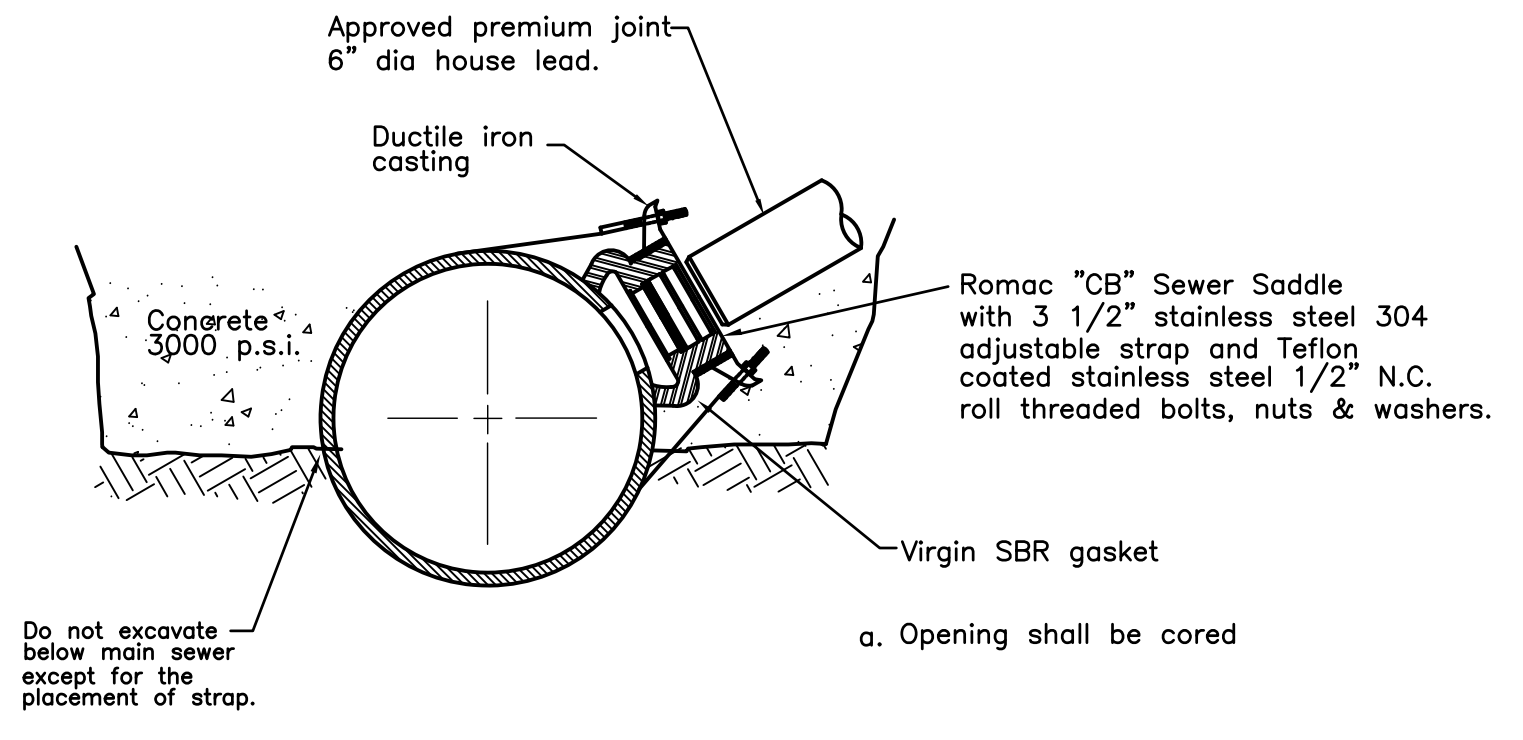
UTILITY CROSSING
This item is incidental to construction



Note: Pipe shall be bedded in Class "B" granular bedding, or if directed, concrete shall be used below springline and granular material 12" above pipe.

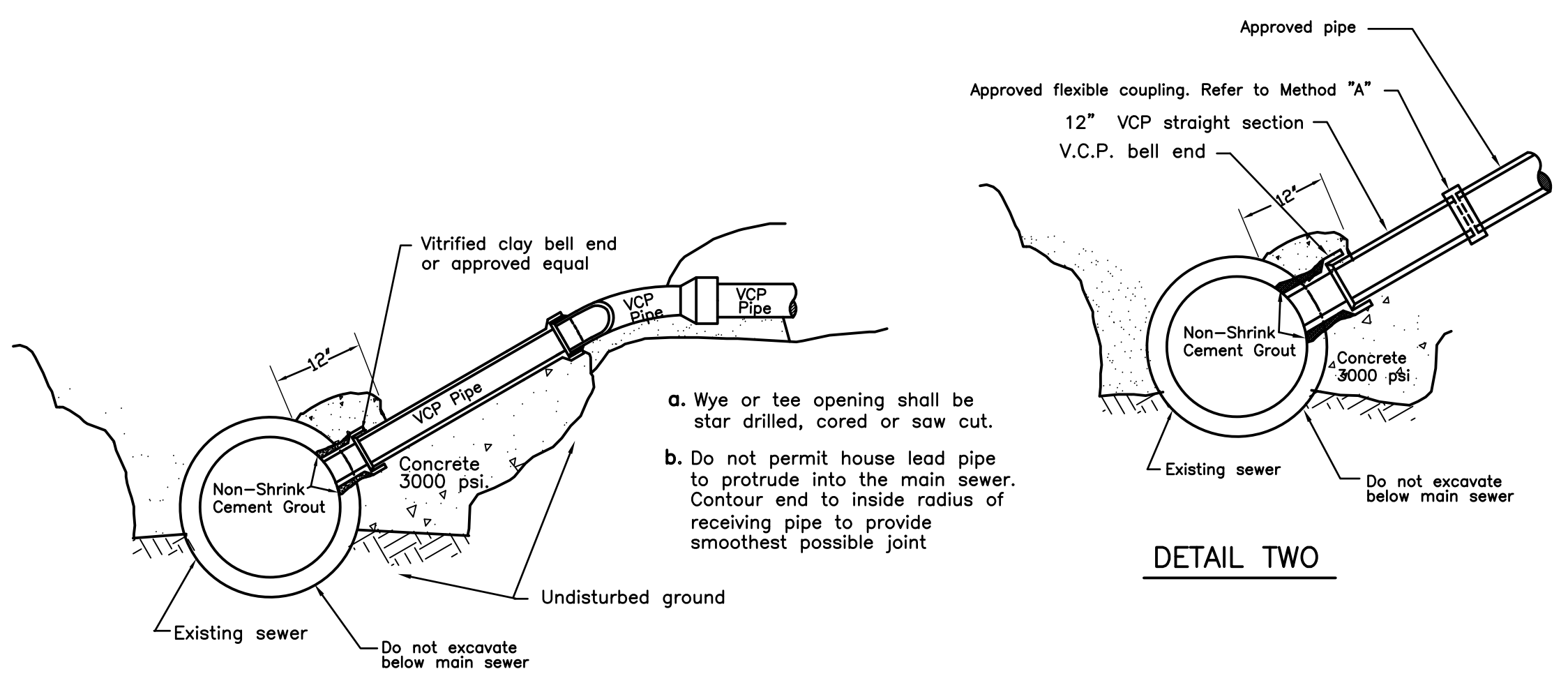
METHOD "A"

① **WYE PIPE INSERTION WITH FLEXIBLE COUPLING**
(FOR SEWER TAP WHERE MAIN SEWER PIPE IS LESS THAN 10" DIAMETER)
no scale



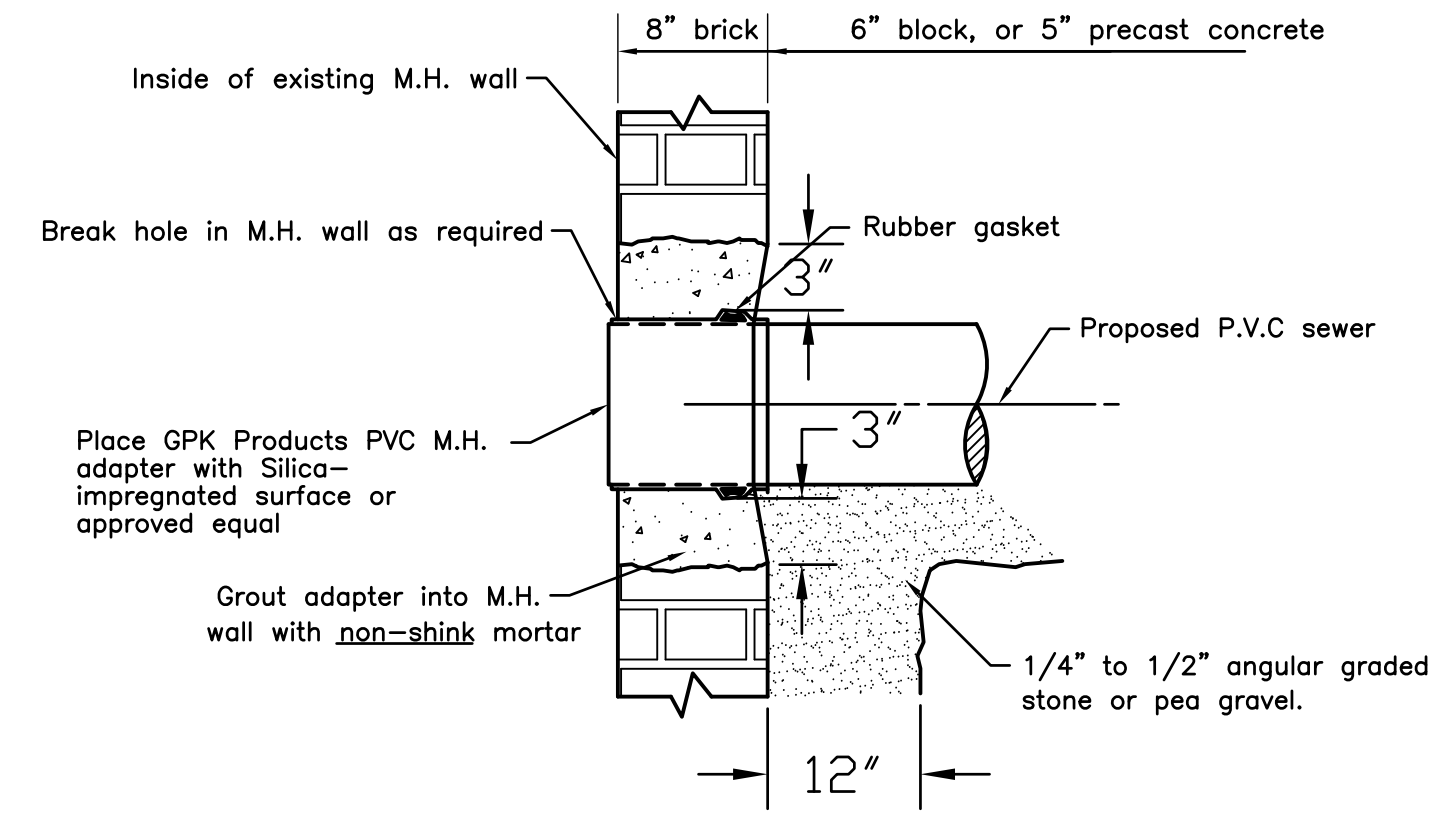
METHOD "D"

SADDLE TAP ON ALL PVC MAIN LINES
no scale

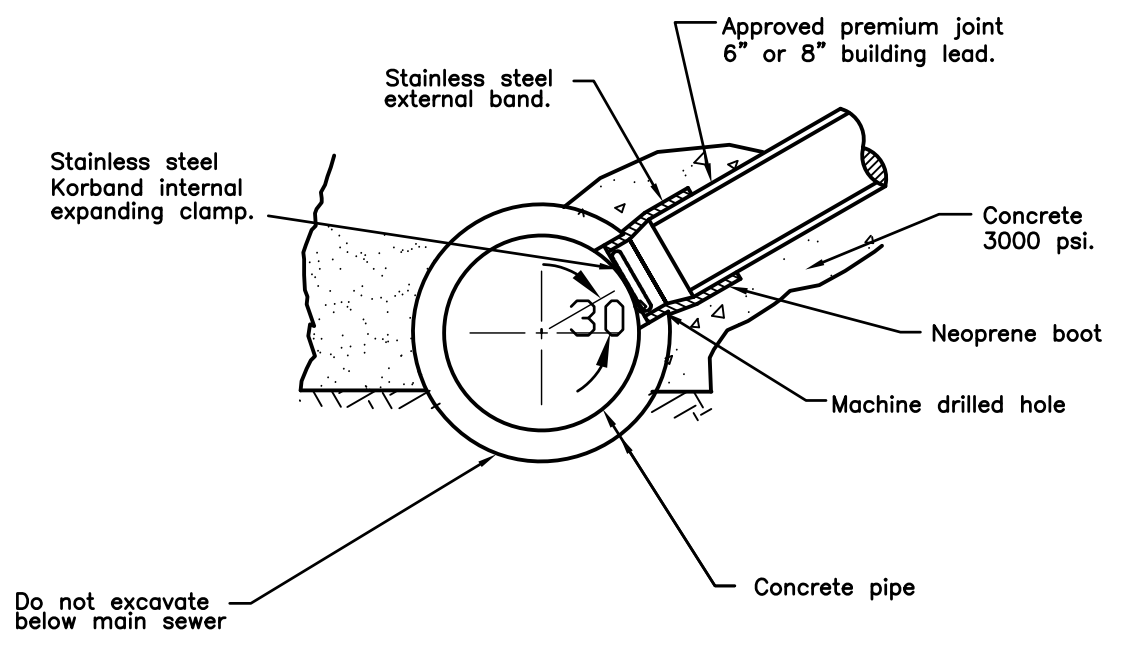


METHOD "B"

① **DIRECT TAP ON 10" AND LARGER MAIN LINES ONLY**
V.C.P. OR R.C.P. ONLY
no scale



MANHOLE CONNECTION DETAIL FOR
CONNECTING PVC PIPE TO BRICK, BLOCK OR
PRECAST CONCRETE MANHOLES
no scale



METHOD "C"

KOR-N-TEE TAP FOR CONCRETE PIPE
no scale

NON SHRINK GROUT	
NON SHRINK GROUT SHALL BE PREMIXED NON METALLIC, NON STAINING DIMENSIONALLY STABLE, INORGANIC GROUT AS MANUFACTURED BY:	
MANUFACTURER OR EQUAL	PRODUCTS OR EQUAL
MASTER BUILDERS	"MASTER FLOW 813 GROUT"
W.R. MEADOWS, INC.	"SEALTIGHT V-1 GROUT"
SET PRODUCTS	"NON SHRINK GROUT"
SONNEBORN - CONTECH	"SONOGROUT"
THE EUCLID CHEMICAL CO.	"EUCO N-S"
THE UPKO CO.	"UPCON HIGH FLOW"
PRECO INDUSTRIES, LTD.	"DURA-FLOW GROUT"
U.S. GROUT CORP.	"FIVE STAR GROUT"

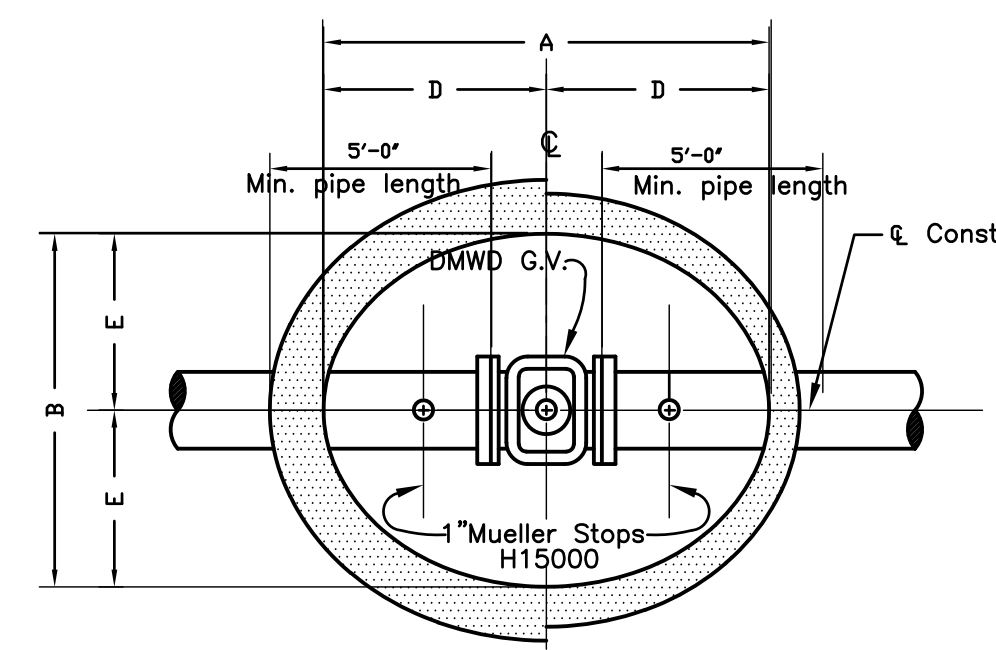
BUILDING LEAD REQUIREMENTS

- A. All building lead work will be constructed in accordance with the current standards and specifications of the City of Dearborn.
- B. The sewer Contractor shall obtain a permit for all building lead work from the City of Dearborn Department of Building and Safety and pay all required plan review and inspection fees.
- C. All building lead work will be performed under City of Dearborn Department of Building and Safety inspection and/or Engineering Division.
- D. No sanitary sewer shall be used as dewatering outlet.
- E. Use City of Dearborn approved adapter to connect two dissimilar sewer pipes. The approved adapters are as follows:
 1. Mission Clay Band-Seal Coupling.
 2. Fernco Flexible Coupling / 6"x6" Strong Back PVC Shielded Coupling (Clay to PVC)
 3. Stainless steel water repair clamps such as Smith-Blair, Baker, Ford or equal.
 4. Fernco reducer and adapter donuts.
- F. Approved building lead materials - 6" minimum diameter pipe:
 1. Vitrified clay pipe - N.C.P.I. ERA-67 Extra strength A.S.T.M. C700 with the following A.S.T.M. C425 joints:

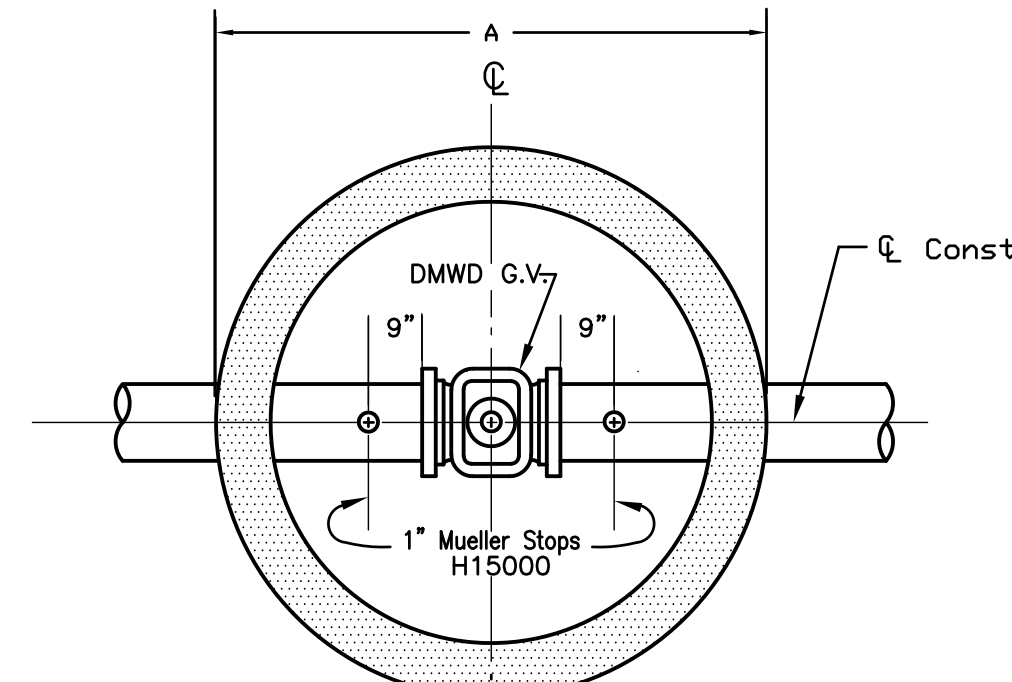
a) O-Ring	e) A-Ring	i) Fibuloc
b) Uniloc	f) Wedgelock	j) Tylox
c) Amvit	g) Deflec/Tite	k) Stre-Tite
d) Nobel	h) Loxon	l) Slip-Seal
 2. Polyvinyl Chloride (PVC) Pipe - A.S.T.M. D2665 or D1785 Schedule 40.
 - a) Elastomeric gasket push-on joint A.S.T.M. D3212.
 - b) Solvent cemented joint - A.S.T.M. D2564 & D2855. Purple Primer to be used on all joints.
 3. Acrylonitrile Butadiene Styrene (ABS) Pipe A.S.T.M. D2751 SDR 23.5.
 - a) Solvent welded joint with primer.
- G. Building connections shall be made to existing wye or tee fittings where possible. Refer to details shown on Sanitary Sewer Standards sheet.
New connections to old building services will not be permitted, unless approved by the Engineer. A new sewer service shall be placed from the City sewer to the proposed building. The existing wye connection shall be replaced if found to be broken.
If necessary, direct taps to main sewers where wye or tee openings are not provided, shall be done in accordance with the details shown on this sheet.
All direct taps shall be approved, in advance, by the Engineering Division. A particular sewer connection method will be specified by the City Engineer.
- H. At connections to manholes, where the difference in invert elevations between the building connection and the outlet sewer exceeds 18", an exterior drop connection will be required. Interior drop connections may be allowed with Engineer's approval.
- I. At connections to existing manholes, holes shall be drilled at 4" center to center around periphery of opening to create a plane of weakness before breaking out section or cored using a drilling machine.
For concrete or vitrified clay pipe connections, non-shrink grout shall be used to seal the opening and a concrete collar shall be poured 12" thick around the pipe and extended 12" beyond the opening.
For PVC and ABS pipe, all openings shall be fitted with an approved adapter. Refer to details on this sheet.
- J. MDOT Class II Granular Backfill shall be placed and compacted to 95% maximum density when edge of sewer trench is under or within 3' of sidewalk, curbs, pavements, drives, building slabs and in alleys.
- K. The Contractor will be responsible for temporary pavement patching and maintenance. Temporary surface shall consist of 2" asphaltic concrete surface with 6" aggregate base, compacted in place.

NO.	BY	DATE	REVISIONS
②	S.M.E.	06-12-23	ADDITION TO BUILDING LEAD REQUIREMENTS E2
①	M.P.	04-14-11	

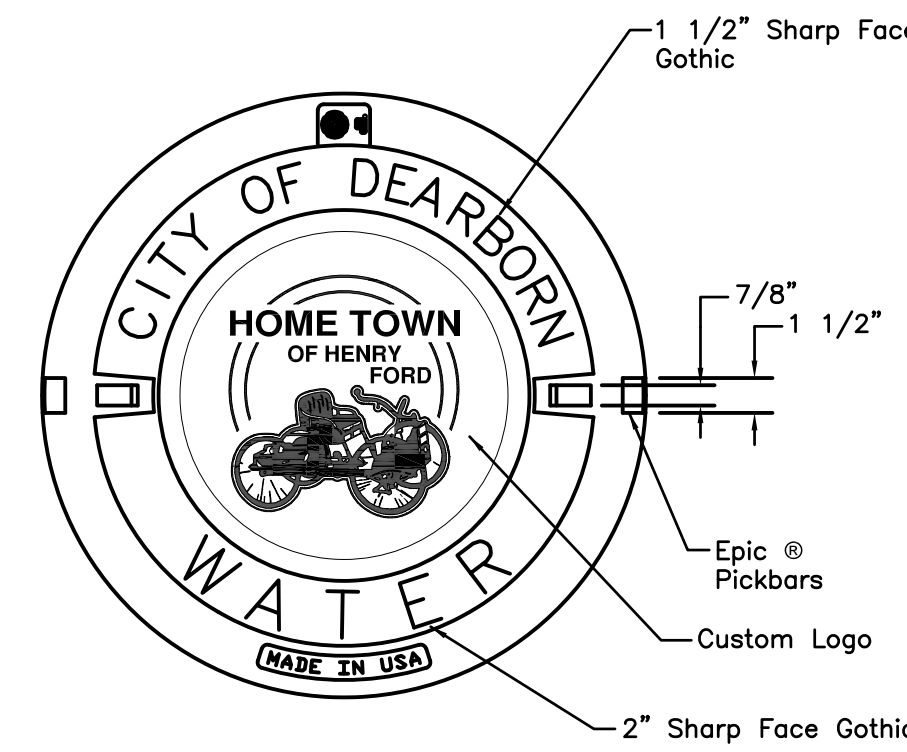
SHEET NO. 5-3 OF



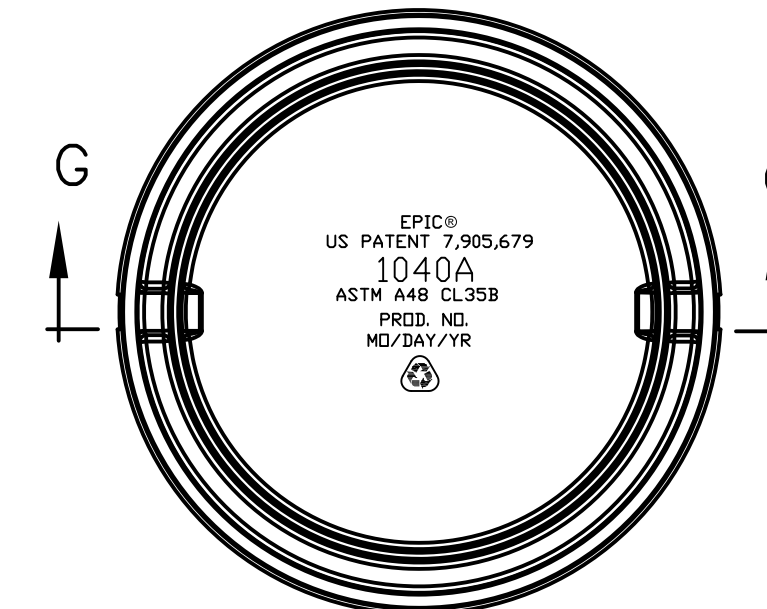
SECTION
Flanged valve shown



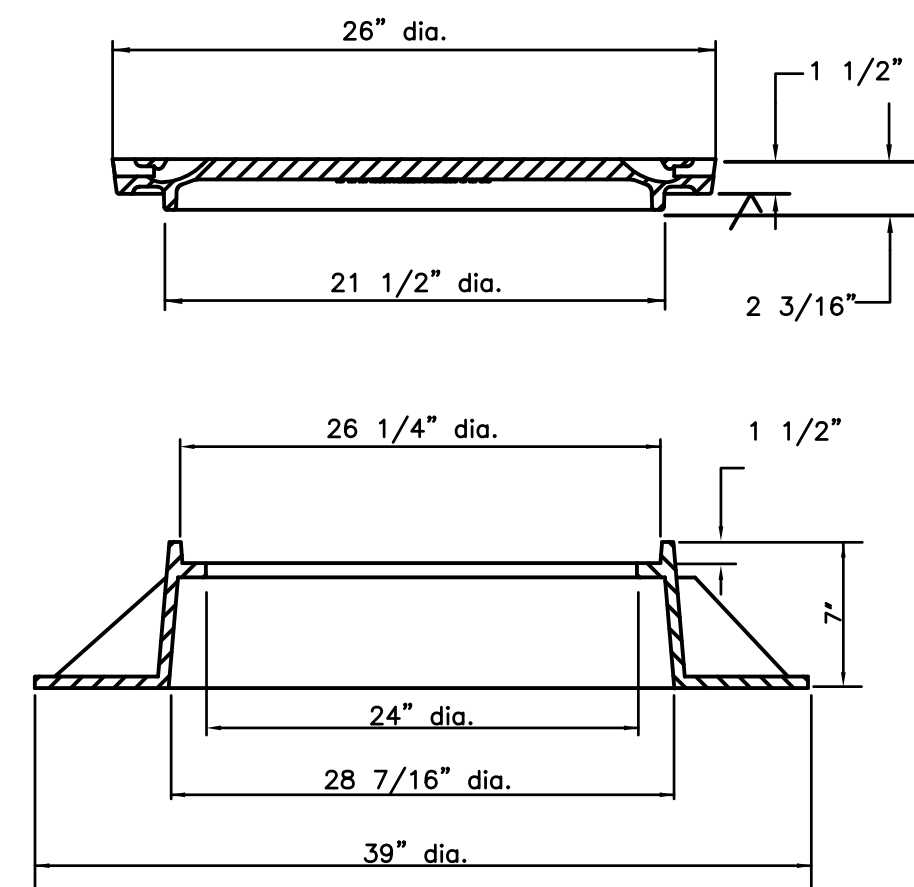
SECTION



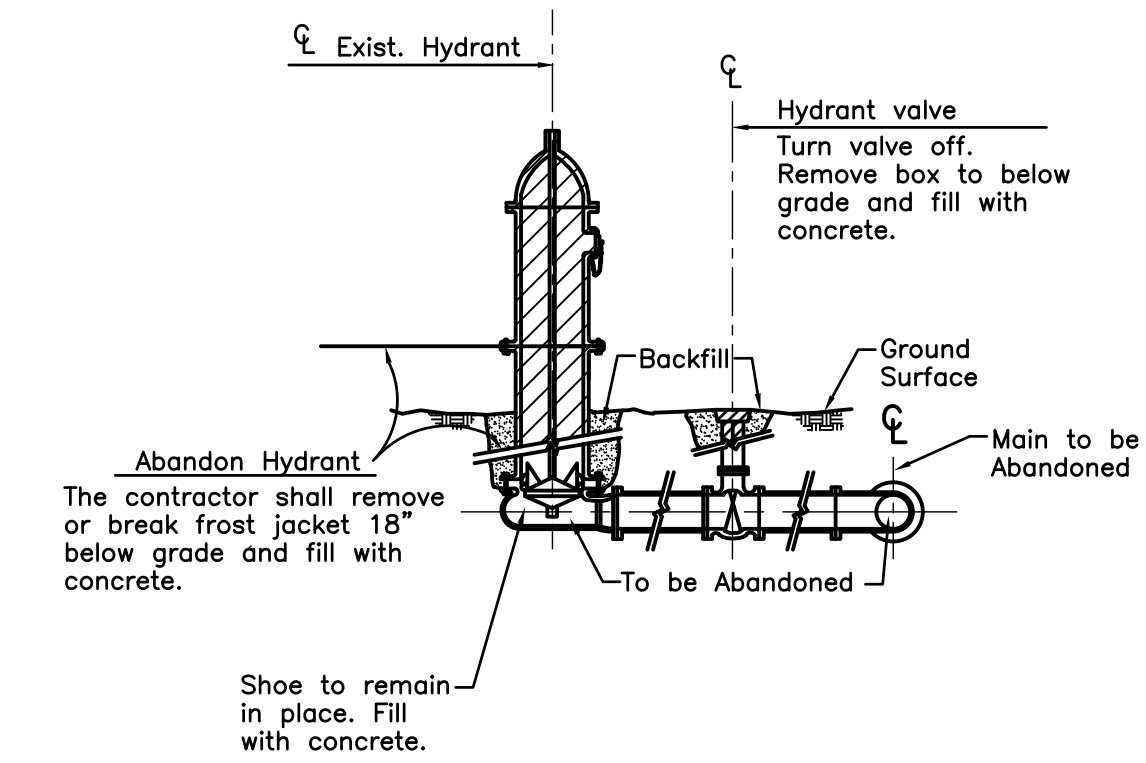
④ 1040A COVER



BOTTOM VIEW



SECTION G-G

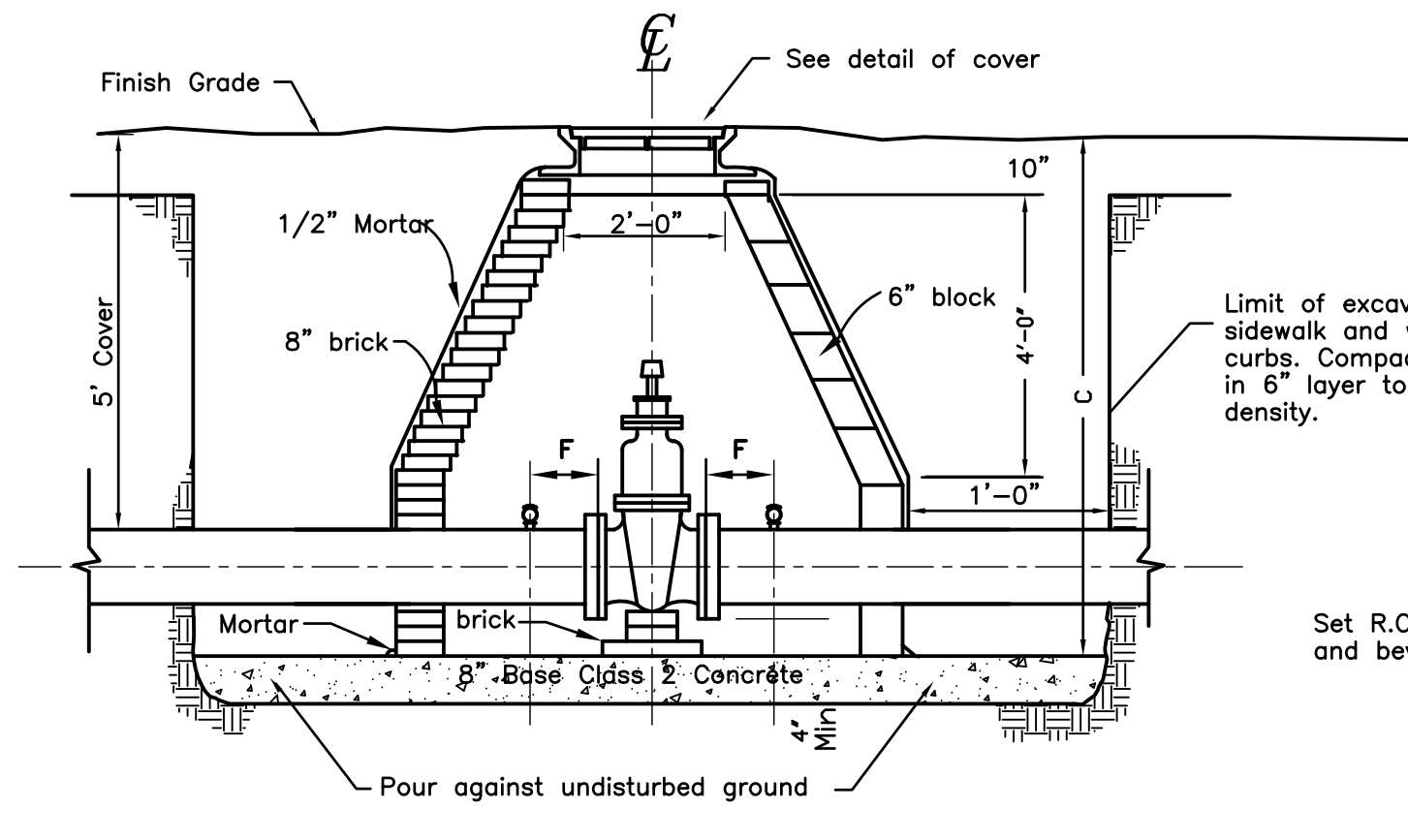


REMOVE AND SALVAGE HYDRANT

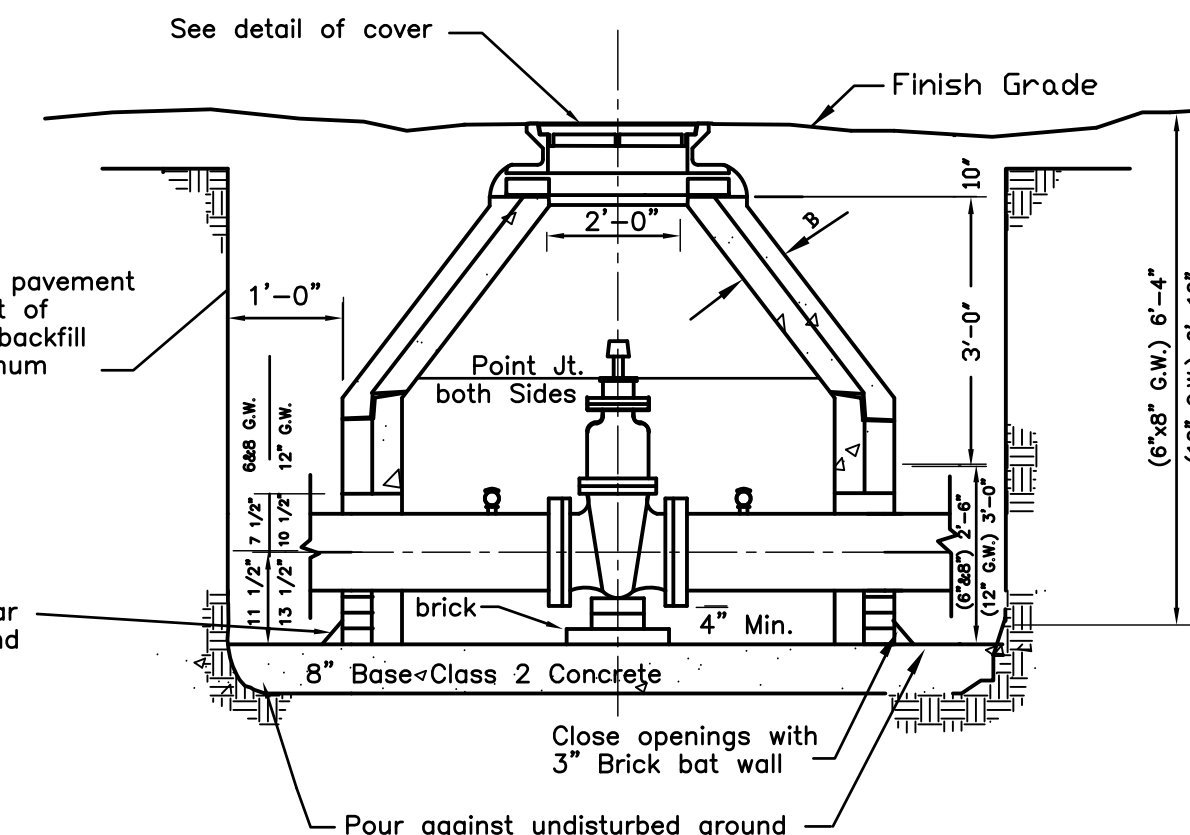
No Scale

REMOVE AND REPLACE HYDRANT

Shall include the Removal/Replacement of Hydrant, 6" Valve, Road Box, Restraining glands & Thrust Blocks.



ELEVATION



ELEVATION

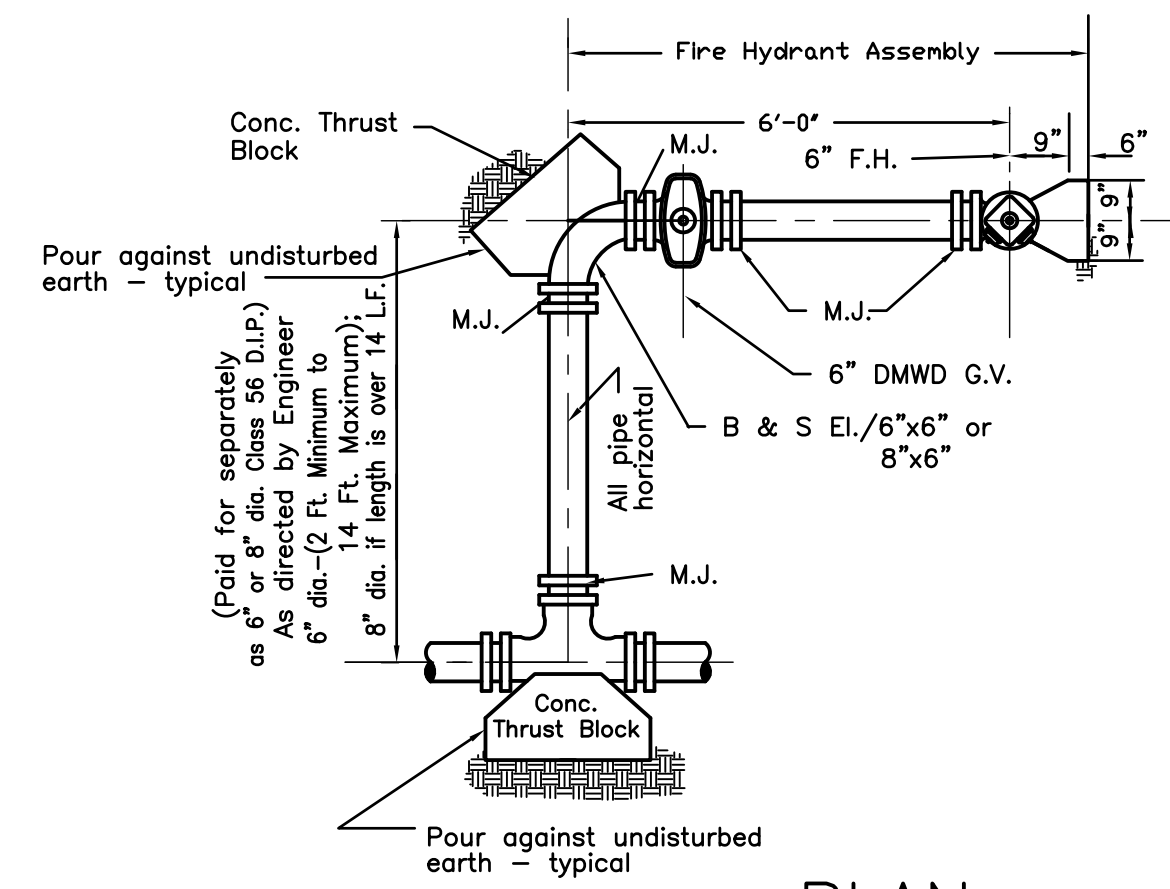
① IN PRECAST GATE WELL HOLES FOR INLET AND OUTLET PIPE SHALL BE FORMED OR EQUIPPED FOR AN APPROVED FLEXIBLE JOINT CONNECTION SUCH AS "RES-SEAL", "PRESS-WEDGE" OR "KOR-N-SEAL" OR EQUAL.

Gate Valve	A	B	C	D	E	F
6"-8"	5'-0"	4'-0"	6'-3"	2'-6"	2'-0"	9"
12"	5'-6"	4'-6"	6'-8"	2'-9"	2'-3"	9"
16"	6'-0"	5'-6"	7'-2"	3'-0"	2'-9"	12"

BRICK OR BLOCK GATE WELL

Gate Valve	A	B
6"	5'-0"	5"
8"	5'-0"	5"
12"	6'-0"	7"

PRECAST GATE WELL



PLAN

FIRE HYDRANT ASSEMBLY

All 6" or 8" mechanical joints in the F.H. assembly shall be restrained with retainer glands.

Pipe and fittings shall be 6" or 8" D.I.P., Class 56

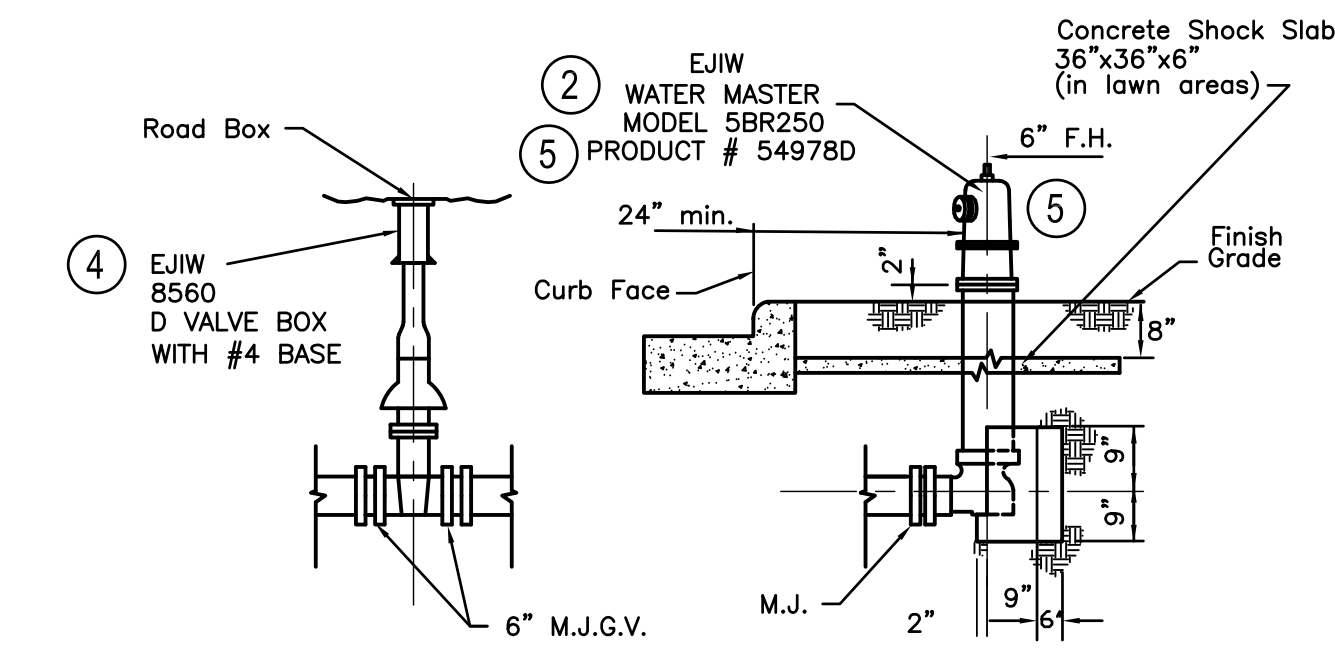
T bolts and set screws shall be Corten steel.

All new hydrants installed by the Contractor shall be repainted using Rustoleum 7543, "Safety Yellow." ③

STANDARD ABBREVIATIONS AS USED ON CONSTRUCTION PLANS	
G.V.	Gate valve
G.W.	Gate Well
EL.	Elbow or Bend
T.	Tee
B.O.	Blow Off
T.B.	Thrust Block
12"C.I.P.	12" Cast Iron Water Pipe
16"D.I.P.	16" Ductile iron water Pipe
24"PCCP	24" Prestressed concrete cylinder Pipe
R.C.E.	Reinforced Concrete Encasement
S.P.E.	Steel Pipe Encasement
M.J.	Mechanical Joint
F.J.	Flanged Joint
F.H.	Fire Hydrant Assembly

ALLOWABLE DEFLECTION				
Diameter	6"	8"	12"	16"
Rubber Slip-joint	7 3/8"	7 3/8"	7 3/8"	4 1/2"
*Mechanical Joint	10 1/2"			

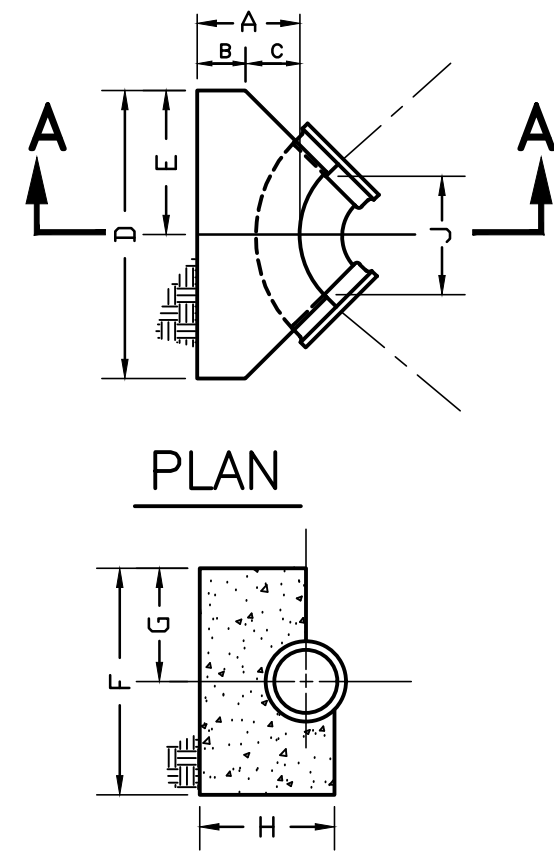
Inches per 10 feet of pipe
* F.H. Assembly and all G.V. fittings.



ELEVATION

NOTES RELATED TO GATE VALVE, GATE WELL & FIRE HYDRANTS ARE LISTED ON SHEET "W-2"

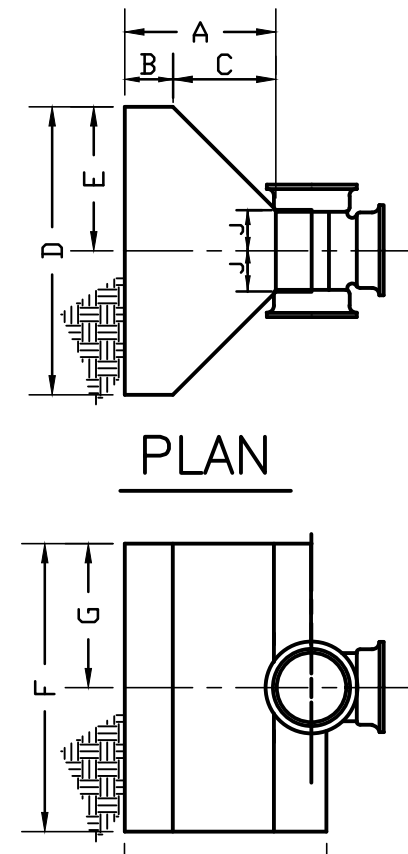
NO.	BY	REVISIONS	DATE
⑤	T.C.W.	MODEL CHANGE FOR FIRE HYDRANT	02-24-22
④	S.A.S.	CHANGED COVER & REV. ELEVATION DETAIL	02-02-15
③	C.J.R.	HYDRANT PAINT	03-22-10
②	C.J.R.	MODEL CHANGE FOR FIRE HYDRANT	05-05-00
①	C.J.R.	CONNECTION DETAIL ADDED FOR GATE WELL	03-19-07



SECTION A-A

DETAIL OF STANDARD THRUST BLOCKS FOR BENDS

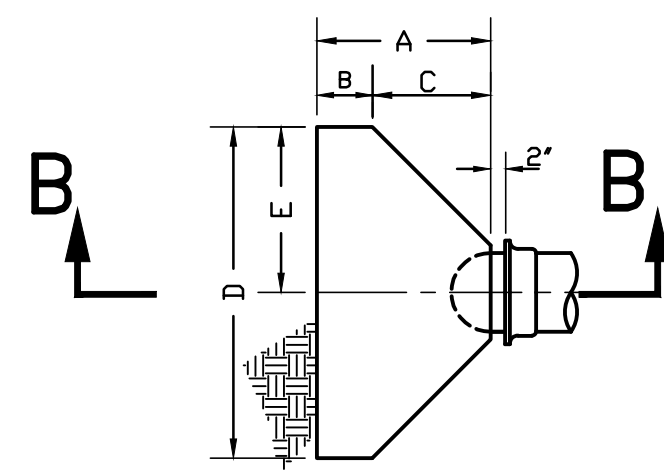
BEND SIZE	SCHEDULE OF THRUST BLOCK DIMENSIONS									
	A	B MIN.	C	D	E	F	G	H MIN.	J	
6"-45°	1'-9"	0'-9"	1'-0"	2'-0"	1'-0"	1'-6"	0'-9"	1'-11"	1'-4"	
6"-90°	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	1'-6"	0'-9"	1'-11"	1'-2"	
8"-45°	1'-9"	0'-9"	1'-0"	2'-4"	1'-2"	2'-0"	1'-0"	1'-11"	1'-4"	
8"-90°	1'-9"	0'-9"	1'-0"	3'-4"	1'-8"	2'-6"	1'-3"	1'-11"	1'-2"	
12"-22 1/2°	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	2'-0"	1'-0"	2'-0"	1'-4"	
12"-45°	2'-1"	0'-9"	1'-4"	3'-6"	1'-9"	2'-6"	1'-3"	2'-4"	1'-4"	
12"-90°	2'-1"	0'-9"	1'-4"	5'-6"	2'-9"	3'-0"	1'-6"	2'-4"	1'-8"	
16"-22 1/2°	2'-8"	1'-0"	1'-8"	3'-4"	1'-8"	2'-6"	1'-3"	3'-0"	1'-2"	
16"-45°	2'-8"	1'-0"	1'-8"	5'-4"	2'-8"	3'-0"	1'-6"	3'-0"	2'-6"	
16"-90°	2'-8"	1'-0"	1'-8"	6'-0"	3'-0"	5'-0"	2'-6"	3'-0"	2'-8"	



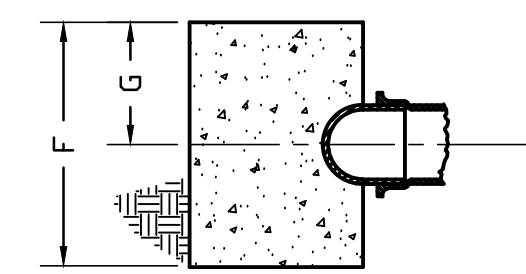
ELEVATION

DETAIL OF STANDARD THRUST BLOCKS FOR TEES

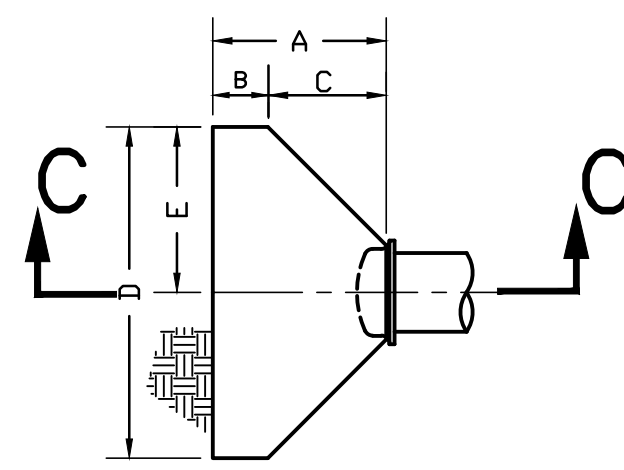
TEE SIZE	SCHEDULE OF THRUST BLOCK DIMENSIONS									
	A	B MIN.	C	D	E	F	G	H MIN.	J	
6" x 6"	1'-9"	0'-9"	1'-0"	2'-6"	1'-3"	1'-6"	0'-9"	2'-3"	0'-6"	
8" x 8"	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-3"	0'-6"	
12" x 8"	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-5"	0'-6"	
12" x 12"	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	2'-9"	0'-8"	
16" x 8"	1'-9"	0'-9"	1'-0"	3'-0"	1'-6"	2'-0"	1'-0"	2'-9"	0'-6"	
16" x 12"	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"	3'-1"	0'-8"	
16" x 16"	2'-8"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"	3'-8"	0'-11"	



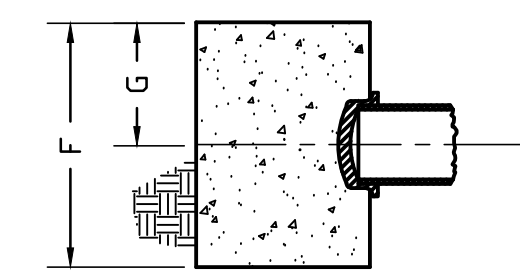
PLAN



SECTION B-B



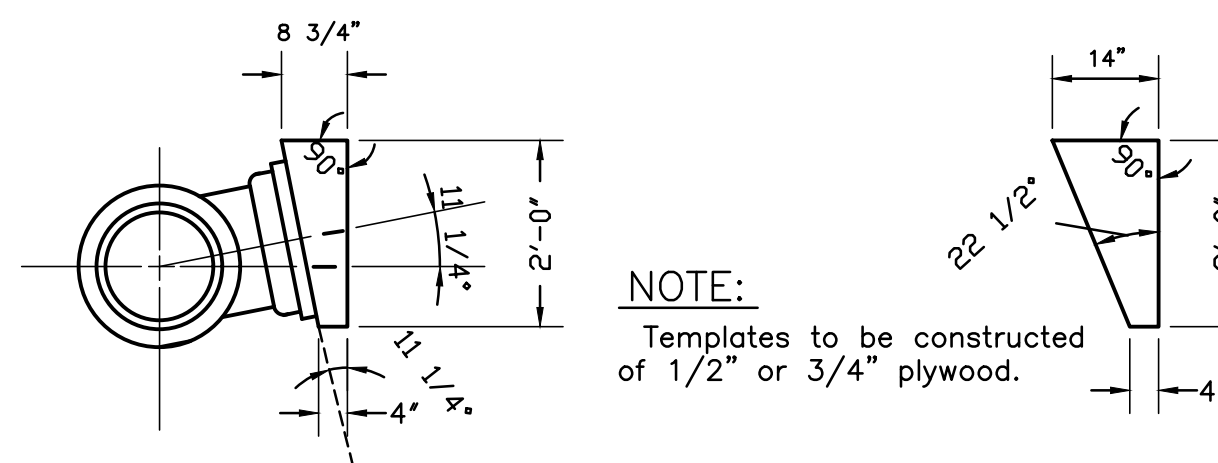
PLAN



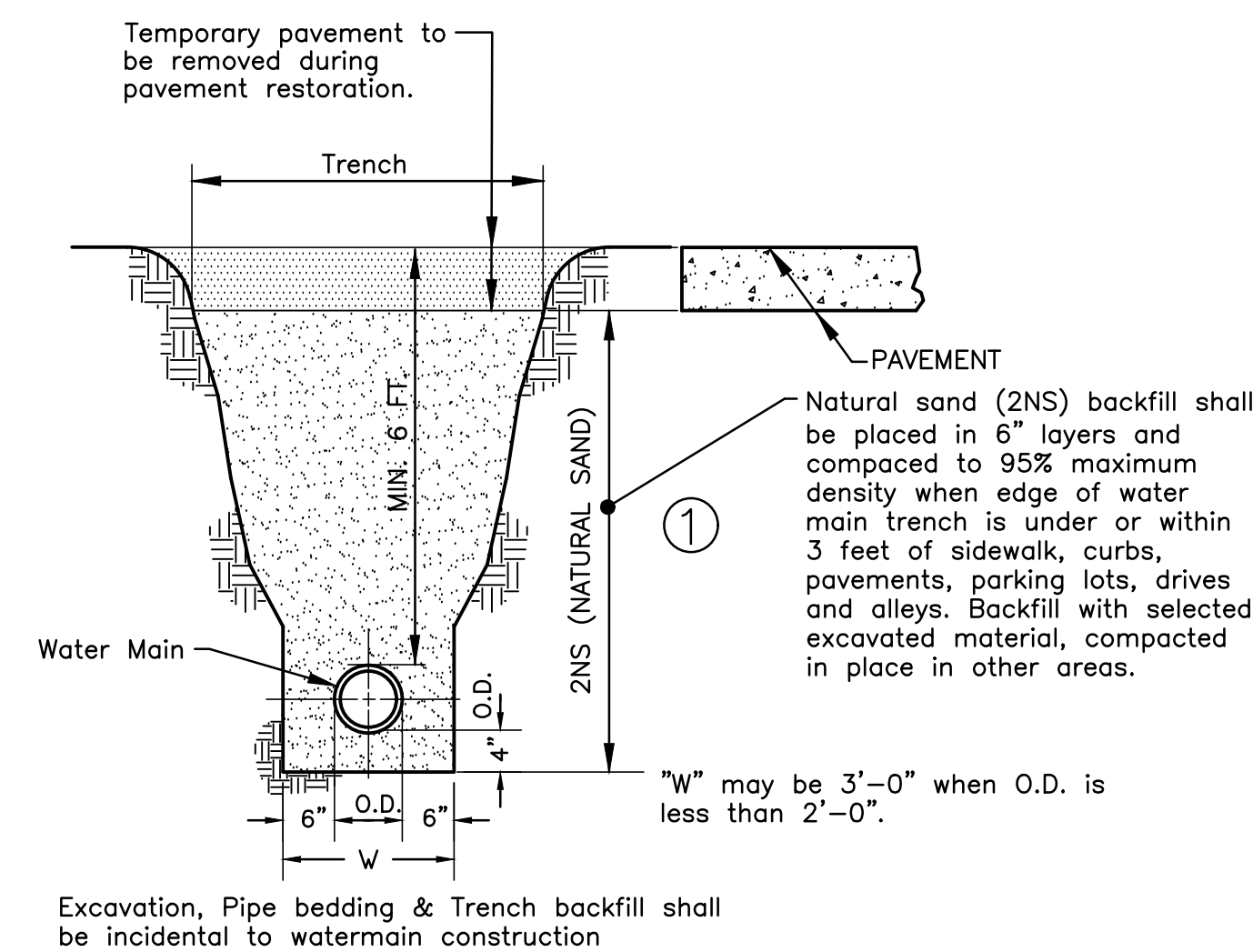
SECTION C-C

PLUG & CAP SIZE	SCHEDULE OF THRUST BLOCK DIMENSIONS						
	A MIN.	B MIN.	C	D	E	F	G
6"	1'-11"	0'-9"	1'-2"	2'-6"	1'-3"	1'-6"	0'-9"
8"	1'-11"	0'-9"	1'-2"	3'-0"	1'-6"	2'-0"	1'-0"
12"	2'-1"	0'-9"	1'-4"	4'-0"	2'-0"	3'-0"	1'-6"
16"	2'-8"	1'-0"	1'-8"	5'-0"	2'-6"	4'-0"	2'-0"

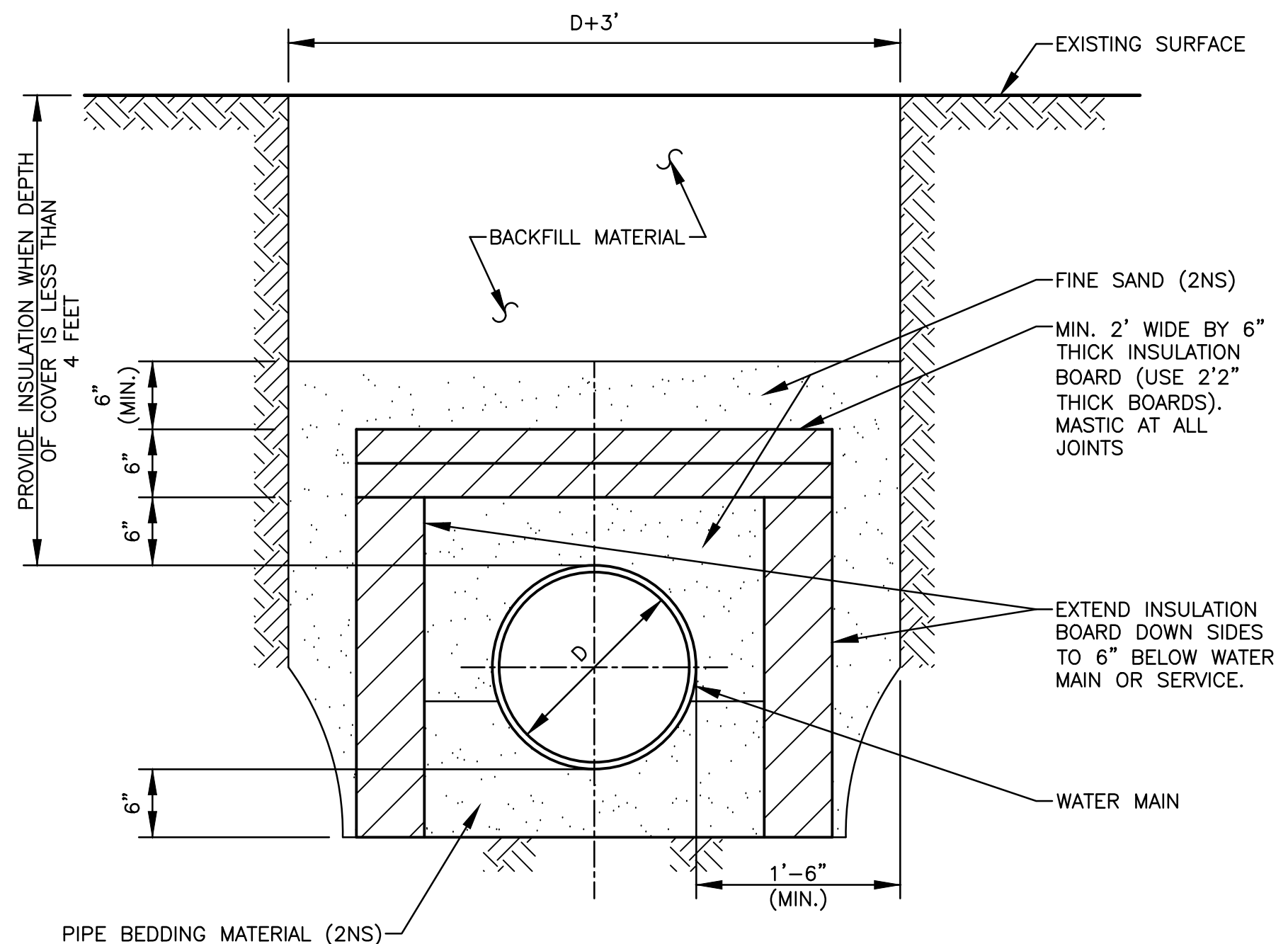
DETAIL OF STANDARD THRUST BLOCKS FOR PLUGS & CAPS



TEMPLATES FOR SETTING TEES AT 11 1/4° & 22 1/2° ANGLES



TRENCH DETAIL



- NOTES:
- INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSING STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272).
 - BACKFILL MATERIAL AROUND INSULATION MUST BE FINE SAND FREE FROM ROOTS, ORGANIC MATTER, OR OTHER INJURIOUS MATERIALS.
 - OVERLAP ALL INSULATION BOARD JOINTS.

③ WATER MAIN TRENCH INSULATION DETAIL

NOTES

- ALL 6", 8" AND 12" GATE VALVES SHALL HAVE MECH. JOINT FITTINGS.
- ALL NUT, BOLTS AND WASHERS ON GATE VALVES AND FITTINGS SHALL BE CORE BLUE OR CORTEN BLUE STEEL.
- CONCRETE FOOTING FOR GATE WELL: THE FOOTING SHALL BE CAST-IN-PLACE OR PRECAST CONCRETE. PRECAST CONCRETE BASE SECTIONS ARE ACCEPTABLE FOR GATE WELLS. CONCRETE SHALL BE POURED AGAINST UNDISTURBED GROUND. POURED CONCRETE AND MORTAR MUST BE HARD BEFORE BEING STRESSED WITH BACKFILL OR PRECAST MODULES.
 - PRECAST CONCRETE FOOTINGS & PRECAST BOTTOMS FOR GATE WELLS SHALL BE SUPPORTED BY A COMPACTED 6" AGGREGATE BASE, COMPACTED IN PLACE.
 - PRECAST CONCRETE FOOTINGS OR BASES SHALL BE REINFORCED WITH #4 STEEL BARS SPACED AT 1' BOTH WAYS OR WITH TWO LAYERS OF WELDED WIRE FABRIC OF EQUIVALENT CROSS SECTIONAL AREA LAID AT RIGHT ANGLES AND WIRING TOGETHER. REINFORCEMENT SHALL BE PLACED IN TOP OF FOOTING AND SHALL BE MARKED. STEEL REINFORCEMENT MAY BE OMITTED IN CAST-IN-PLACE CONCRETE FOOTINGS.
- THE TOP PORTION OF PRECAST REINFORCED GATE WELL UNITS SHALL BE CONCENTRIC. THE TOP PORTION OF THE BRICK OR BLOCK GATE WELL UNITS SHALL BE CONCENTRIC.
- PRECAST CONCRETE SECTIONS FOR GATE WELLS SHALL BE BUILT IN ACCORDANCE WITH A.S.T.M. C-478. THE WALLS OF THE PRECAST UNITS MAY HAVE A SLIGHT TAPER TO ALLOW FOR FORM REMOVAL.
- MORTAR SHALL BE 1 PART CEMENT AND 2 PARTS N.S. SAND. PLASTER ALL BRICK & BLOCK WITH 1/2" MORTAR.
- PLACE C.I. STEPS (EJIW 8500) IN GATE WELLS ONLY IF CALLED FOR IN SPECIFICATIONS.
- IF FLANGE VALVES ARE SPECIFIED, LONG HUB PIPE FLANGES MUST BE POWER TIGHTENED AND REFACED AT THE FACTORY.
- STEM NUTS ON ALL GATE VALVES INCLUDING 6" HYDRANT GATE VALVES SHALL TURN RIGHT TO OPEN.
- OPERATING NUT ON FIRE HYDRANT SHALL TURN LEFT TO OPEN.
- GATE WELL FRAME SHALL BE NO. 1040, E.J.I.W., BASE FLANGE TYPE., WEIGHT 230 LBS.
- GATE WELL COVER SHALL BE TYPE C SOLID COVER WITH TWO-1" DIA. HOLES WITH CITY OF DEARBORN "LOGO", WEIGHT 145 LBS.
- DUCTILE IRON PIPE SHALL BE DUCTILE IRON PIPE SHALL BE CLASS 56 LINED WITH STANDARD THICKNESS CEMENT MORTAR LINING SEALED WITH BITUMINOUS SEAL COAT IN ACCORDANCE WITH AWWA SPECIFICATION (104) (ANSI A21.4). DUCTILE IRON PIPE SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA SPECIFICATION (C151) & (ANSI A21.51) AND SHALL MEET STANDARD NSF 61.
- JOINTS ON PIPES SHALL BE OF RUBBER PUSH-ON TYPE. JOINTS FOR ALL FITTINGS SHALL BE MECHANICAL JOINT.
- FIRE HYDRANTS ARE TO BE THE NEW CITY OF DEARBORN TYPE AS MANUFACTURED BY EAST JORDAN IRON WORKS, MODEL 5BR250.
- CASTINGS SHALL MEET THE REQUIREMENTS OF THE CURRENT SPECIFICATIONS A.S.T.M. DESIGNATION A-48 AND SHALL HAVE THE SAME MINIMUM STRENGTH AS PROVIDED FOR #30 GRAY IRON CASTINGS.
- COPPER WATER SERVICE PIPE AND FITTINGS THE WATER SERVICE LINES THAT ARE TO BE TRANSFERRED FROM THE OLD TO THE NEW WATER MAIN SHALL BE TYPE K COPPER PIPE (2" DIA. OR LESS) AND THOSE FITTINGS NECESSARY FOR THIS WORK SHALL BE MANUFACTURED BY MUELLER COMPANY, DECATUR, ILLINOIS, OR AN EQUAL APPROVED BY THE CITY OF DEARBORN WATER DEPARTMENT. IDENTIFICATION NUMBERS LISTED BELOW ARE FROM MUELLER CATALOG W103 CORPORATIONS SHALL BE H-15000 FLARE COUPLINGS SHALL BE H-15400 (3/4" AND 1") COPPER TO COPPER COMPRESSION COUPLINGS SHALL BE H-15403 (1-1/2" & 2") COPPER TO COPPER CURB STOP & VALVE SHALL BE MUELLER H-15204 FOR COPPER TO COPPER CURB STOP & VALVE SHALL BE MUELLER H-10051 AND H015174.
- CONCRETE THRUST BLOCKS SHALL BE REQUIRED AT ALL HORIZONTAL BENDS & TEES WITH A DIMENSION AS INDICATED. CONCRETE IN THRUST BLOCKS AND CONCRETE ENCASEMENTS MAYBE CLASS 4 CONCRETE. CONCRETE ANCHORING AS SHOWN ON THE DRAWINGS SHALL BE REQUIRED FOR ALL VERTICAL BENDS.
- MEGALUGS MAY BE ACCEPTABLE IN PLACE OF CONCRETE THRUST BLOCK IF APPROVED BY THE ENGINEER.
- DUCTILE IRON WATER MAIN SHALL BE WRAPPED WITH POLYETHYLENE ENCASEMENT WITH SPECIFIED OVERLAPS.

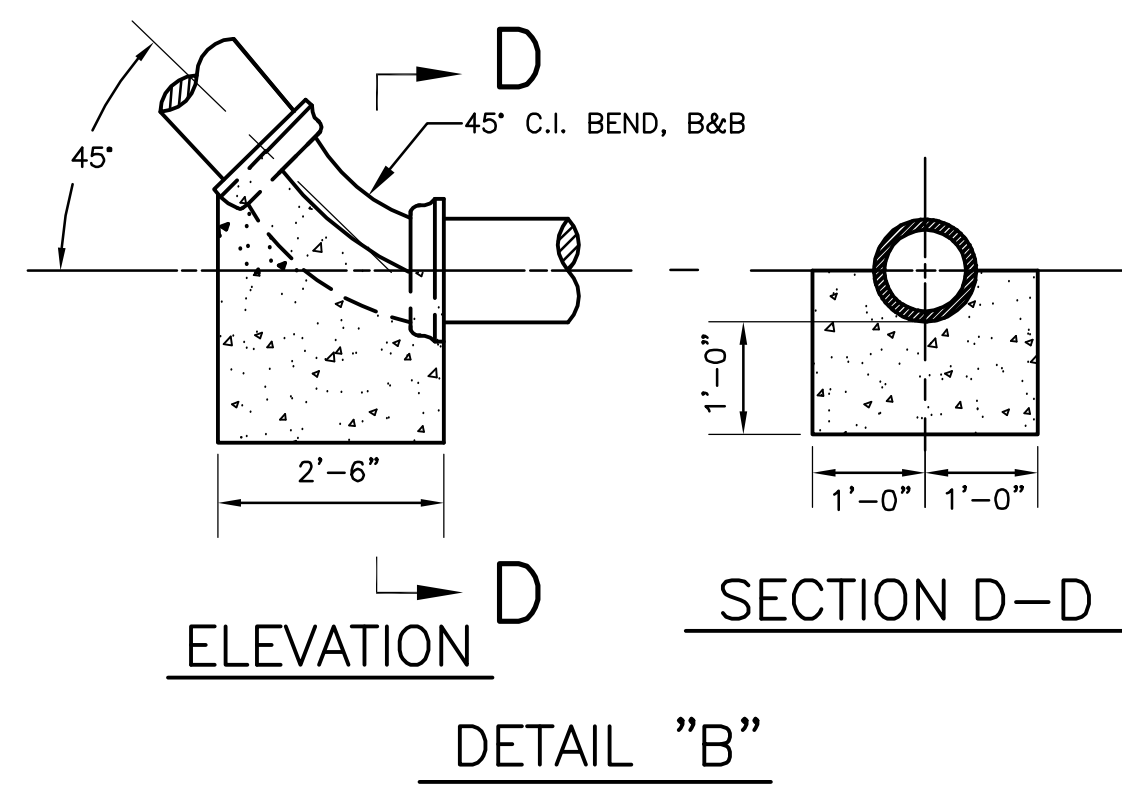
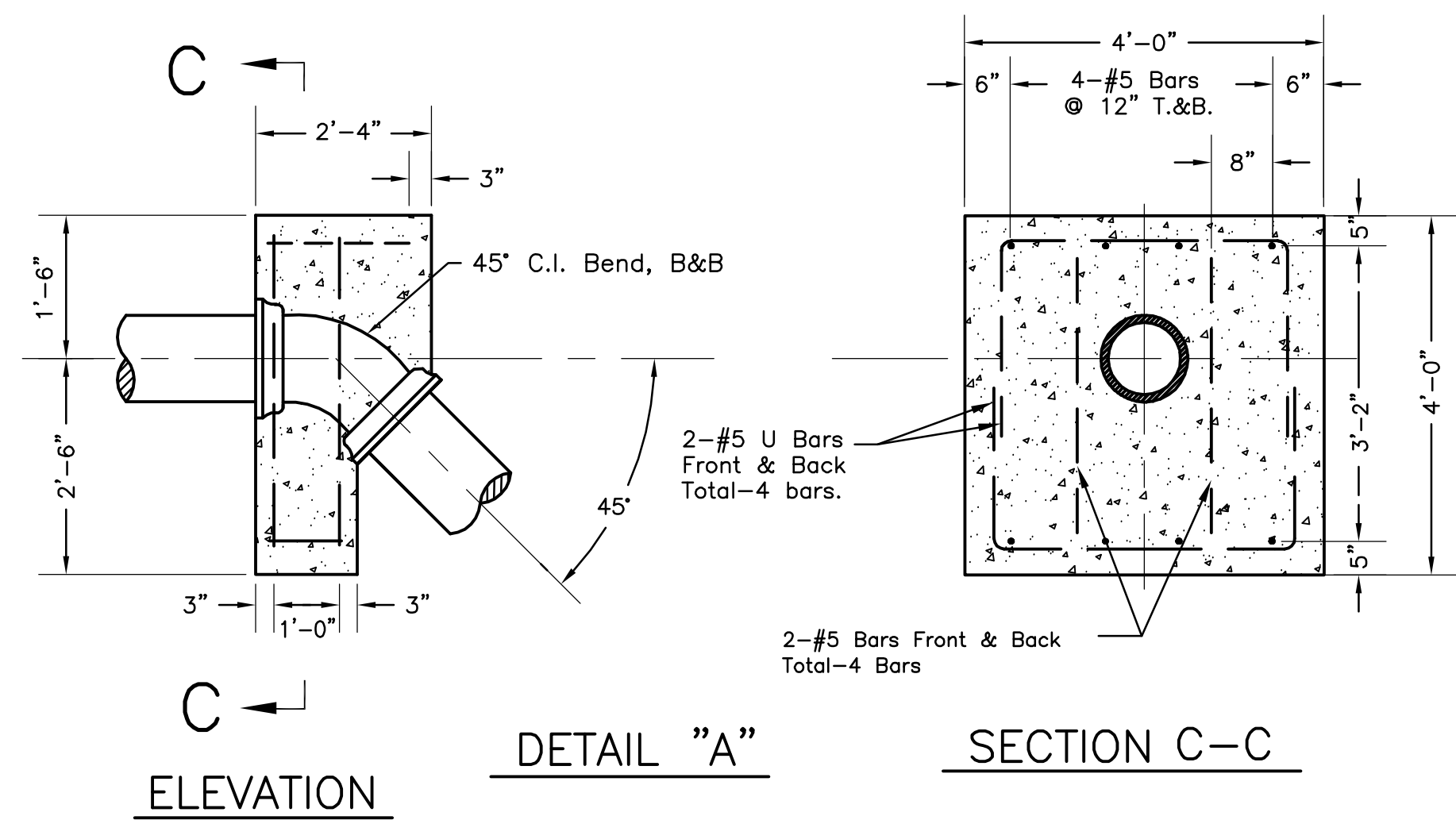
WATER STANDARDS
THRUST BLOCK AND
TRENCH DETAILS

DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION
CITY OF DEARBORN, MICHIGAN

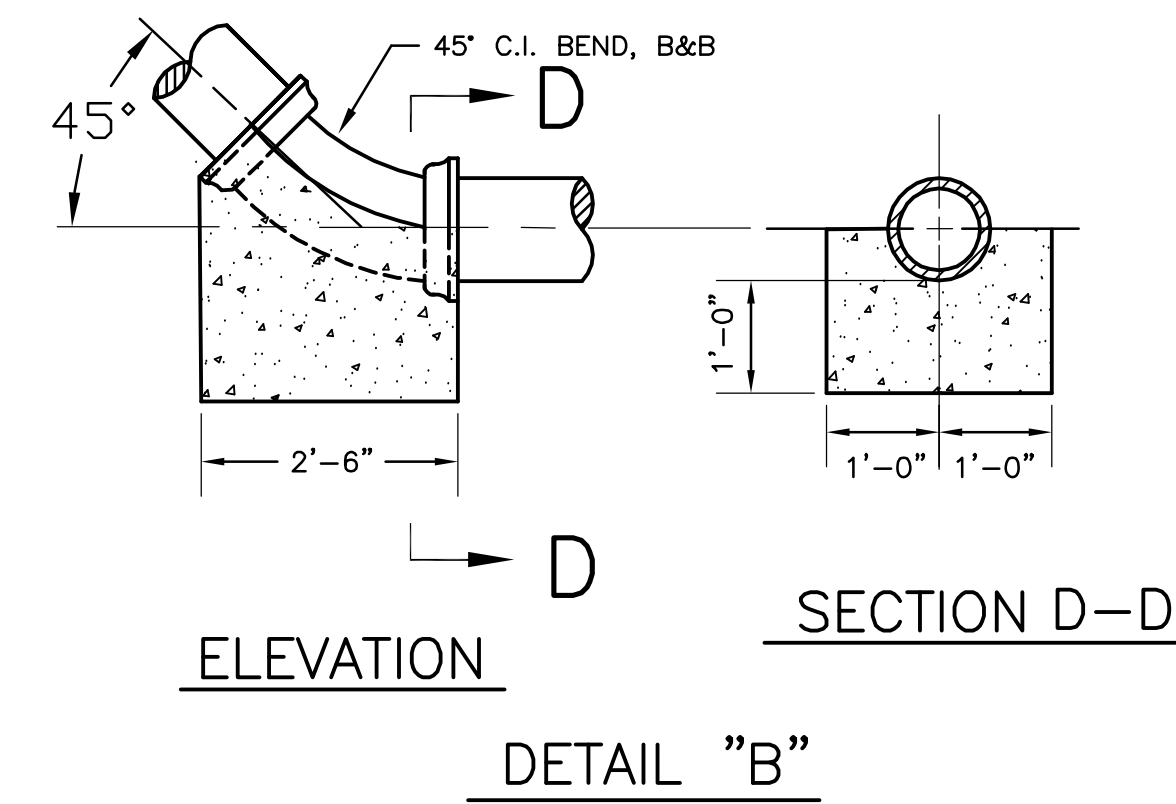
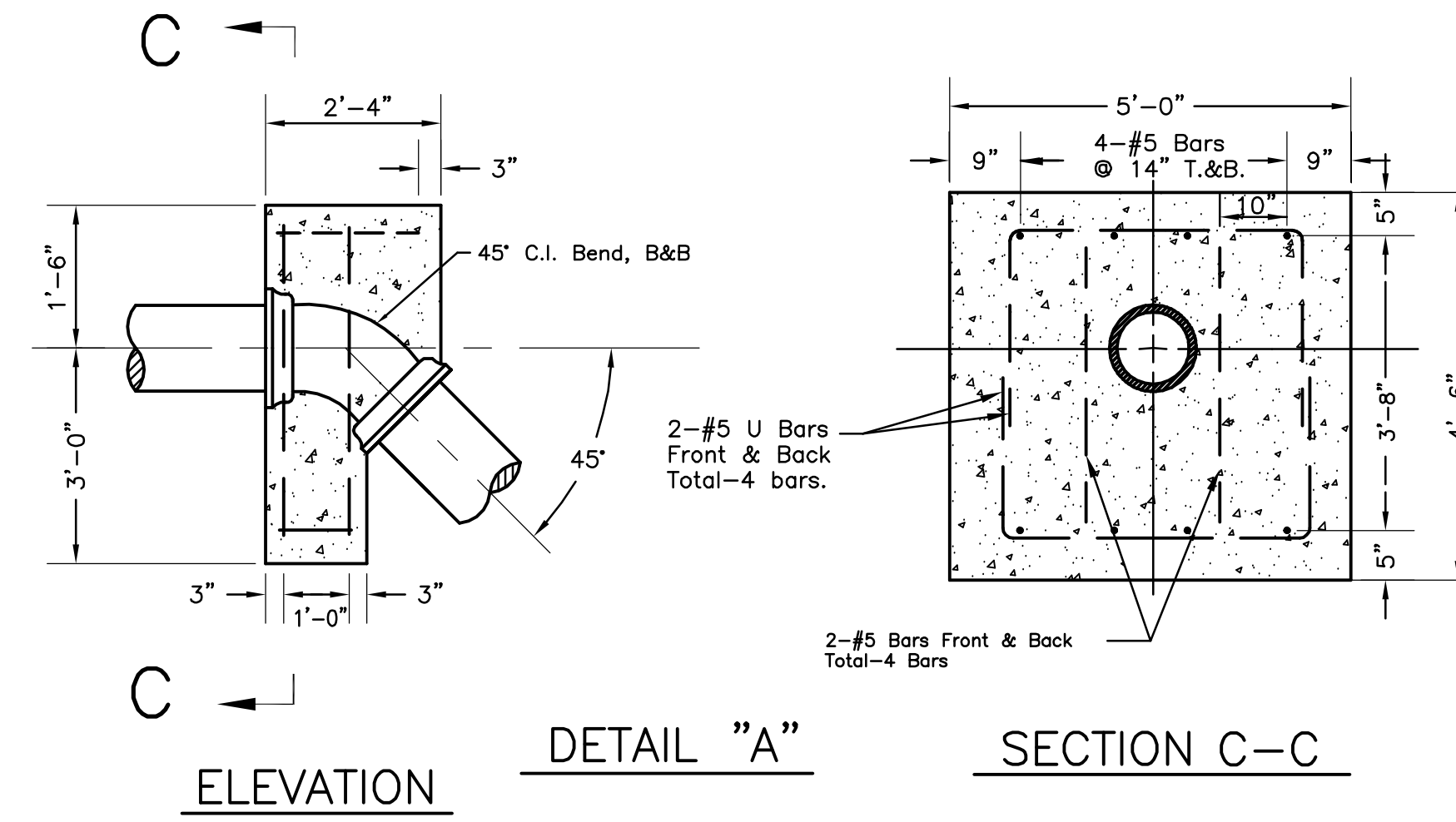
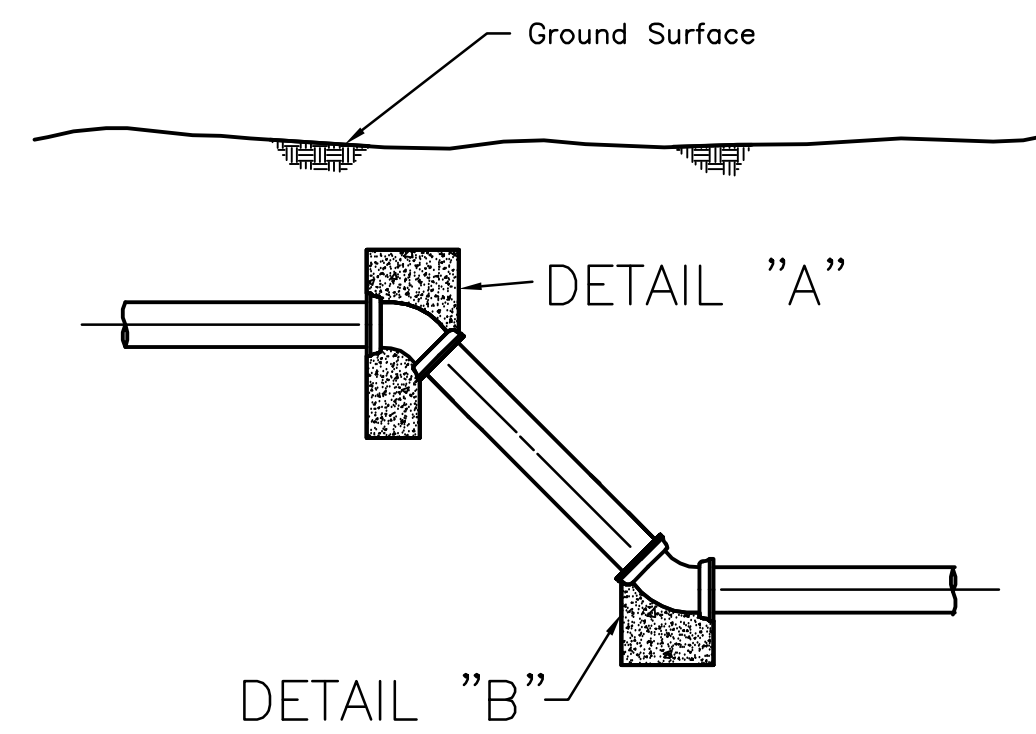
APPROVED: *[Signature]*
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DATE: 02-02-15

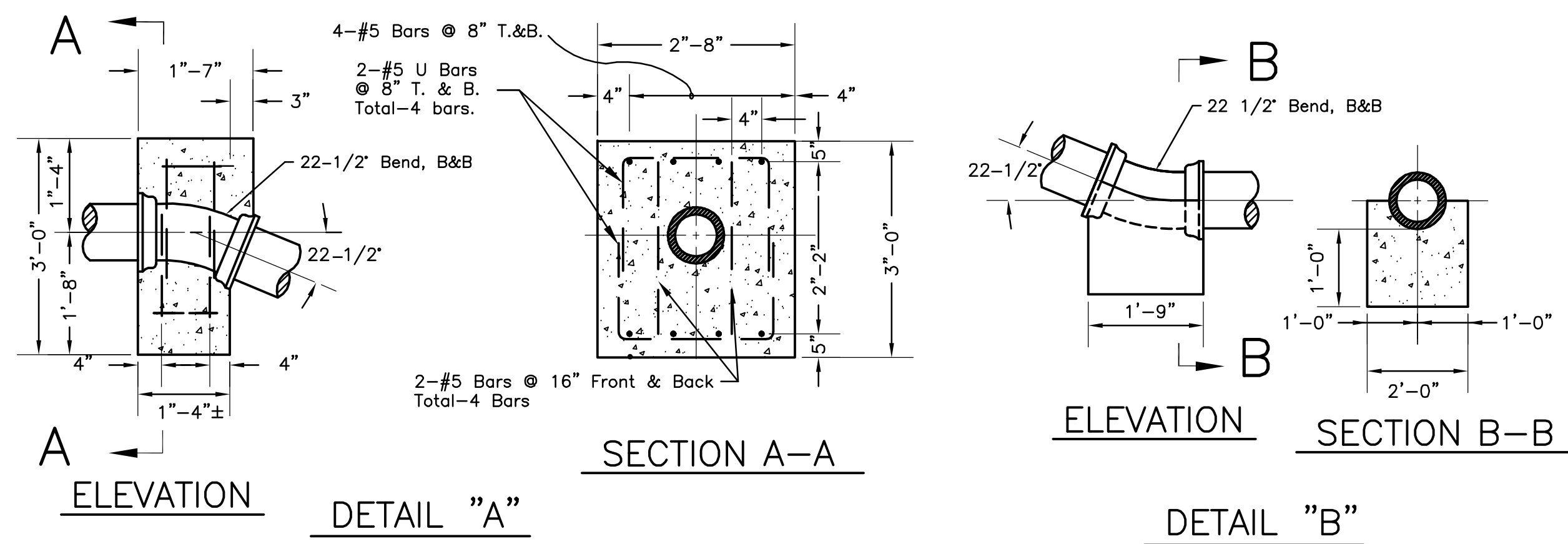
NO.	BY	DATE	REVISIONS
④	B.J.H.	04-05-21	REV. NOTE #13 & NOTE #17
③	S.A.S.	02-28-20	ADD TRENCH INSULATION DETAIL
②	G.A.V.	09-09-14	REV. NOTE #18 & ADD NOTE #20
①	J.G.S.	03-04-14	REV. TRENCH DETAIL



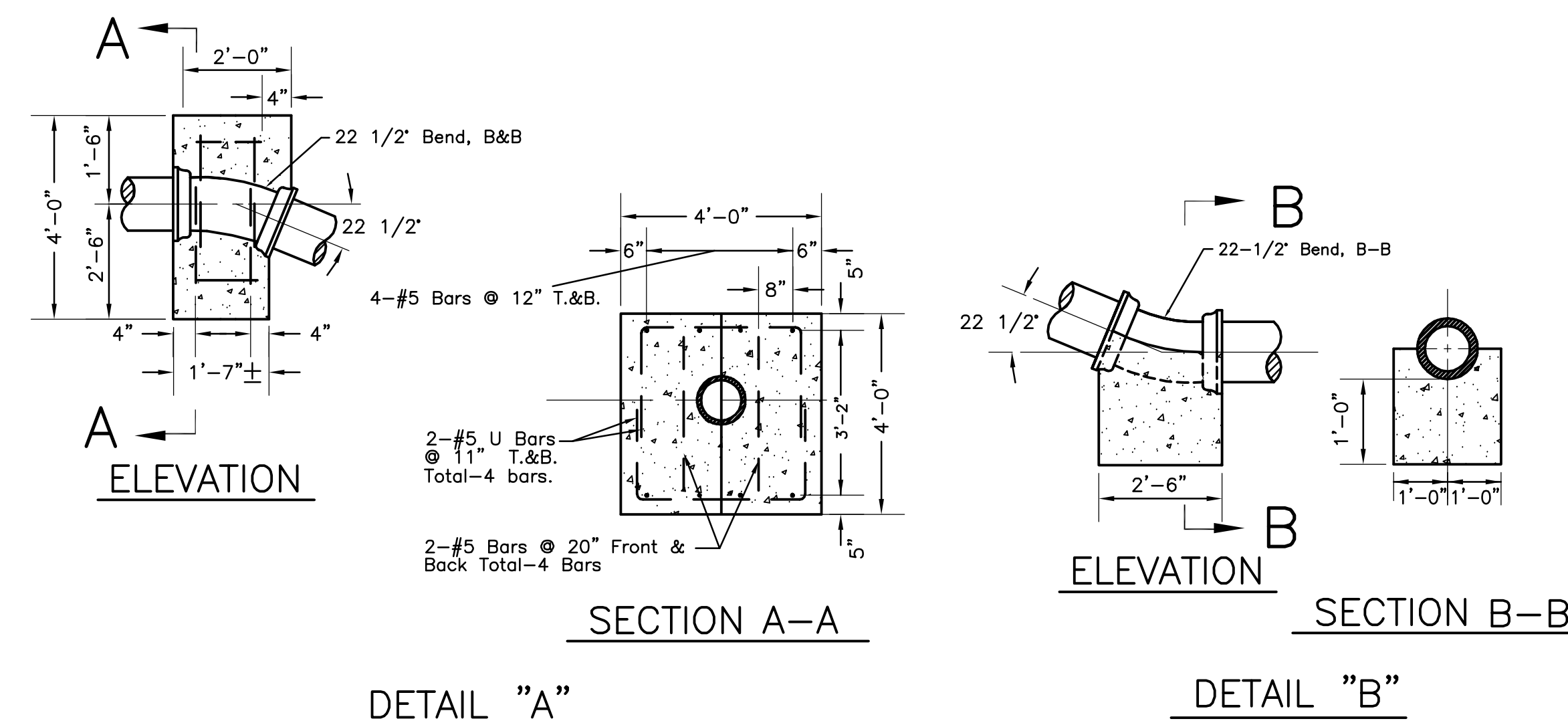
ANCHORAGE DETAILS FOR 8"–45° VERTICAL BEND



ANCHORAGE DETAILS FOR 12"–45° VERTICAL BEND

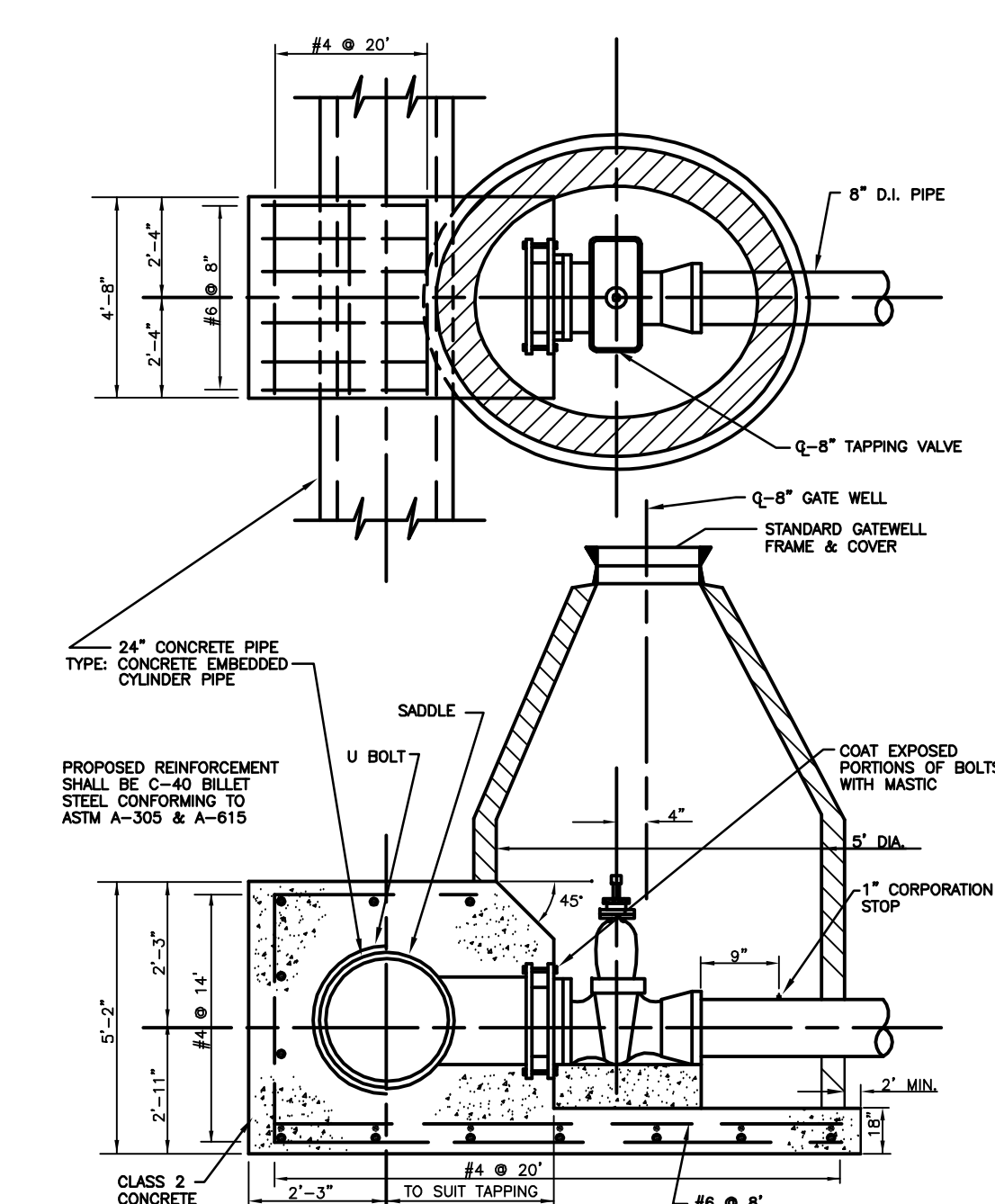


ANCHORAGE DETAILS FOR 8" 22-1/2° VERTICAL BEND

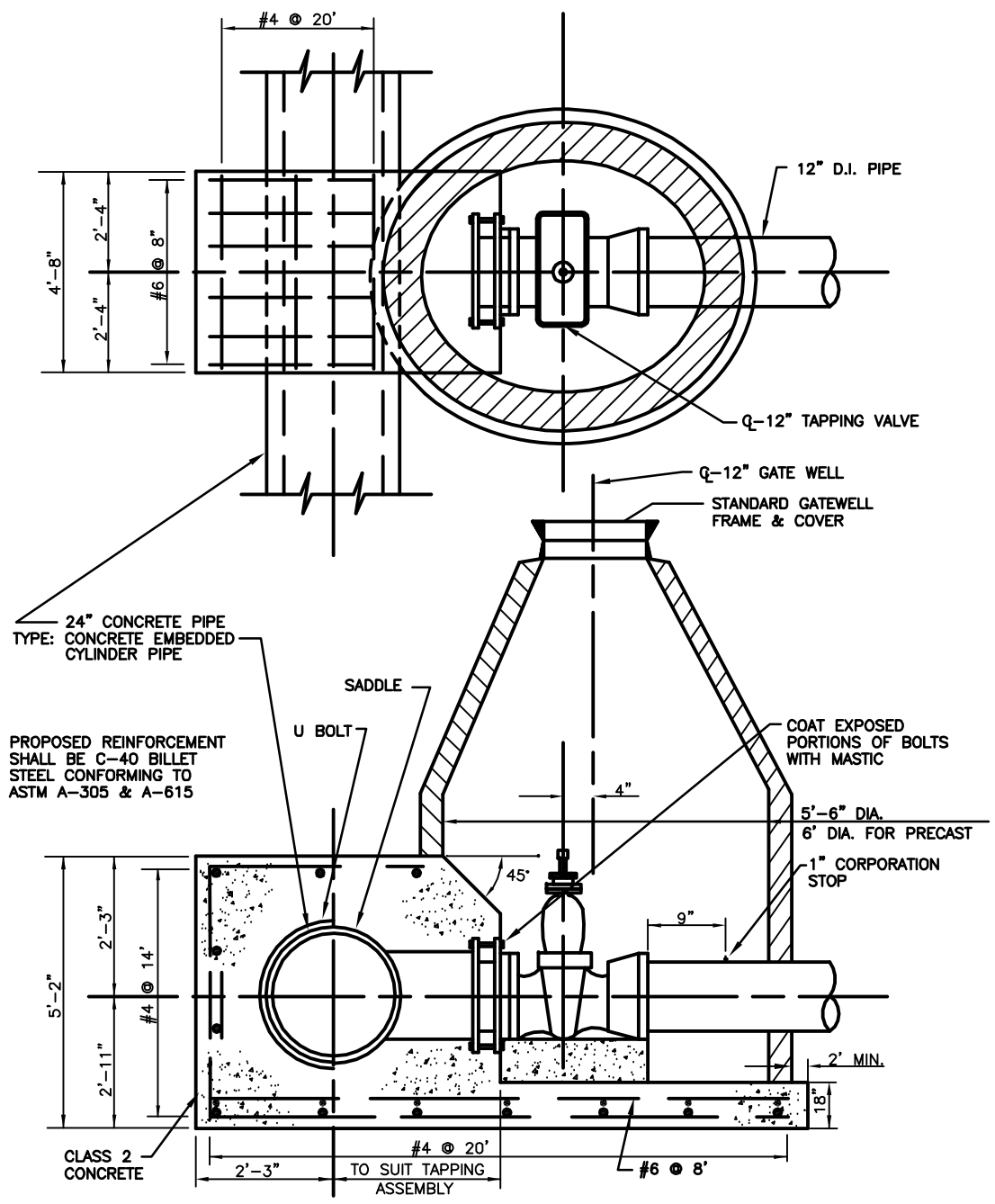


ANCHORAGE DETAILS FOR 12" 22-1/2° VERTICAL BEND

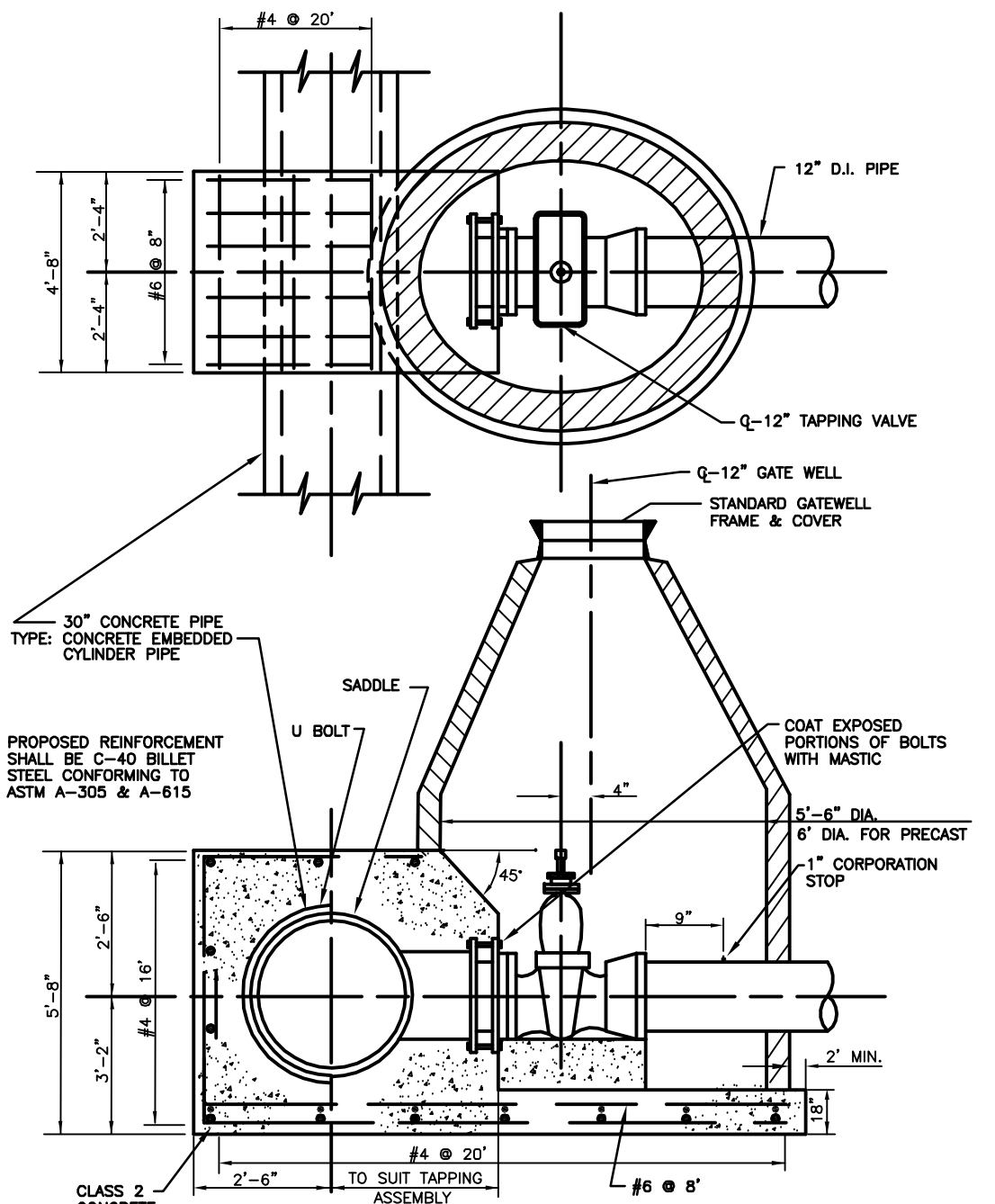
NO.	BY	DATE	REVISIONS	DESIGN	DRAWN	CHECKED



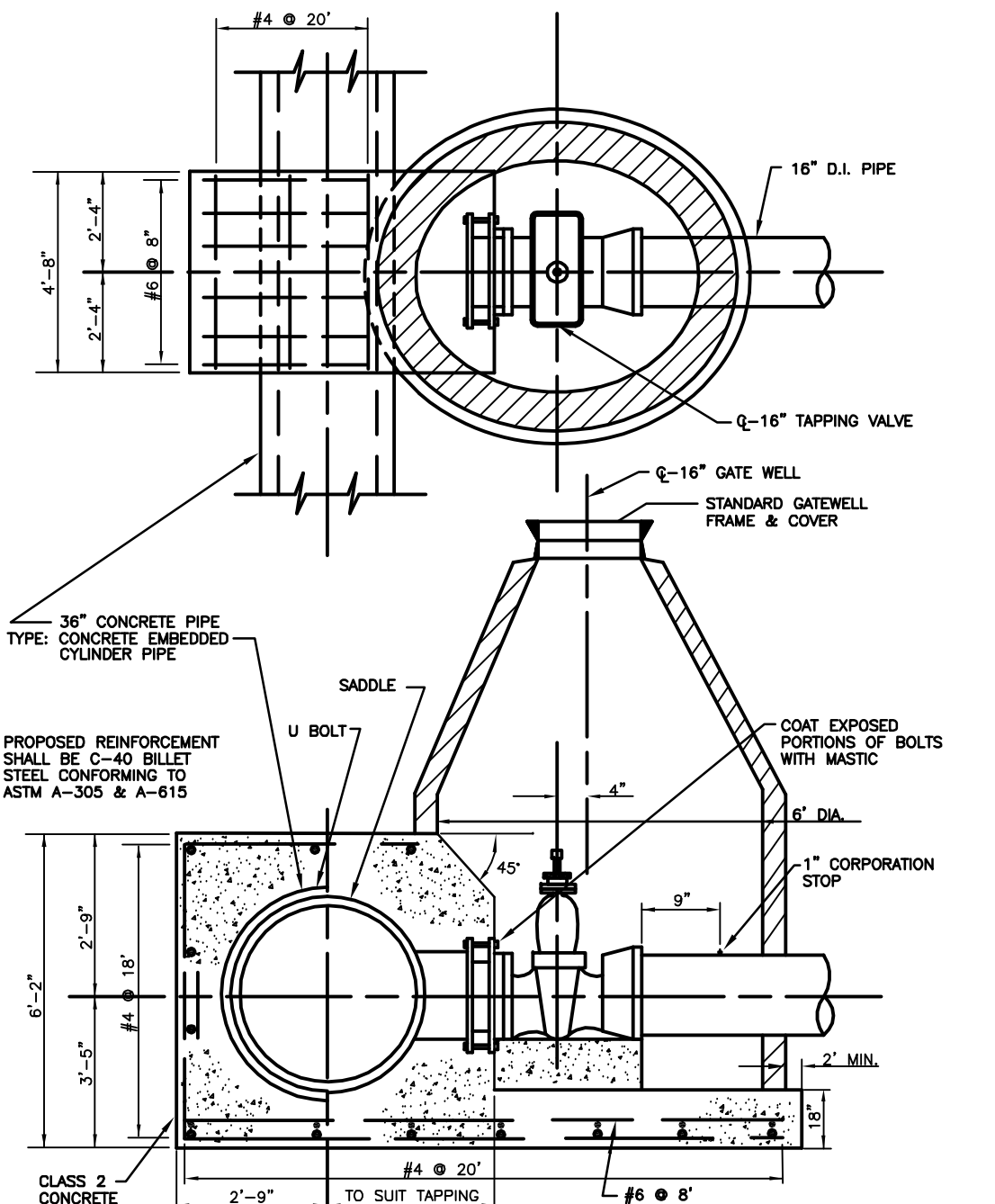
24"x8" PRESSURE TAP VALVE & WELL ASSEMBLY



24"x12" PRESSURE TAP VALVE & WELL ASSEMBLY

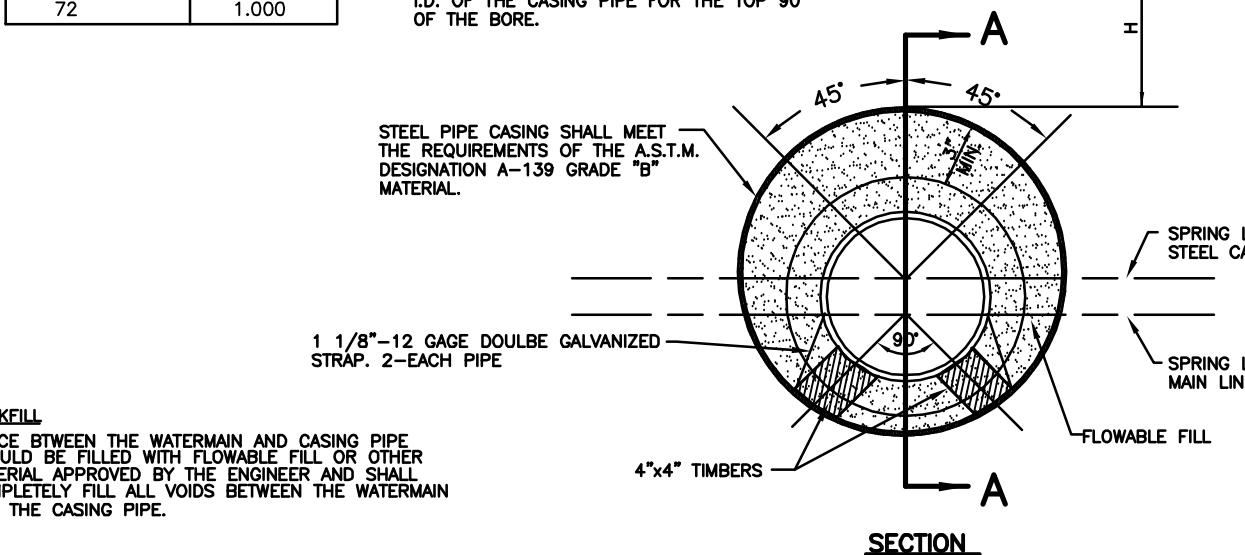


30"x12" PRESSURE TAP VALVE & WELL ASSEMBLY



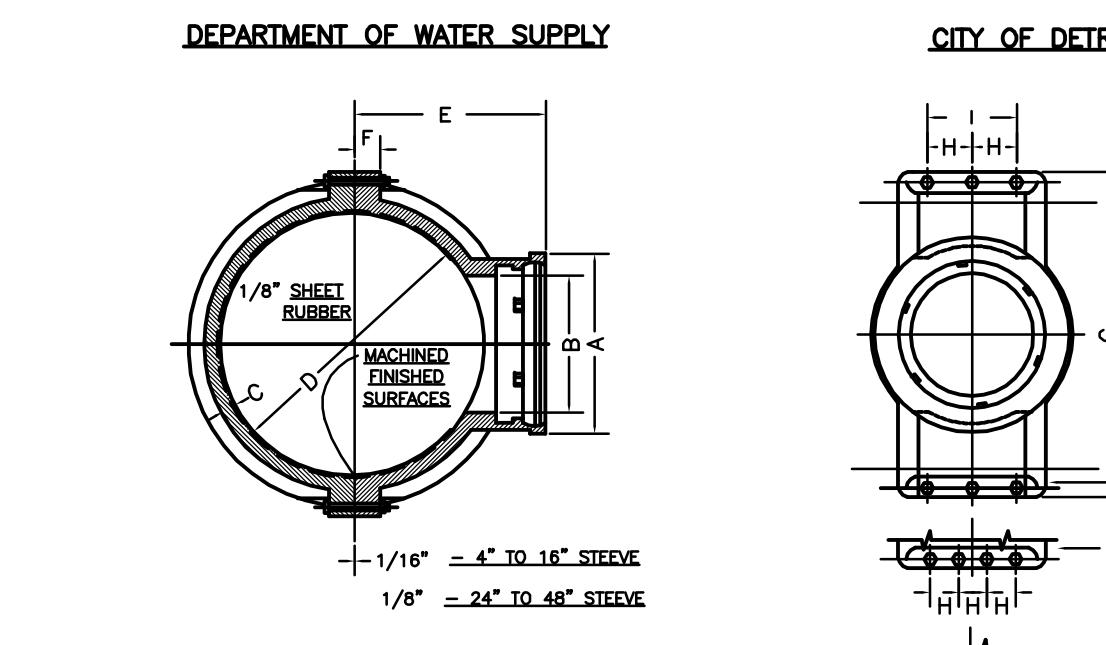
36"x16" PRESSURE TAP VALVE & WELL ASSEMBLY

NOMINAL DIA. IN INCHES	THICKNESS IN INCHES
10 AND UNDER	0.188
12 & 14	0.250
16	0.281
18	0.312
20 & 22	0.344
24	0.375
26	0.406
28	0.438
30	0.469
32	0.500
34 & 36	0.532
38	0.562
40	0.594
42	0.625
44 & 46	0.657
48	0.688
50	0.719
52	0.750
54	0.781
56 & 58	0.812
60	0.844
62	0.875
64	0.906
66 & 68	0.938
70	0.969
72	1.000



WALL THICKNESS (IN)	FRAC. 1/8"	DEC.	12	14	16	18	20	24	28	30	36	42
3/16	.1875	39	30	24	21	19	17	16				
1/4	.250	50	50	39	31	27	21	19	18	16		
5/16	.3125	50	48	39	28	23	21	18	17			
3/8	.375	50	48	39	28	23	21	18	17			
7/16	.4375	50	48	39	28	23	21	18	17			
1/2	.500	50	48	39	28	23	21	18	17			
9/16	.5625	50	48	39	28	23	21	18	17			
5/8	.625	50	48	39	28	23	21	18	17			

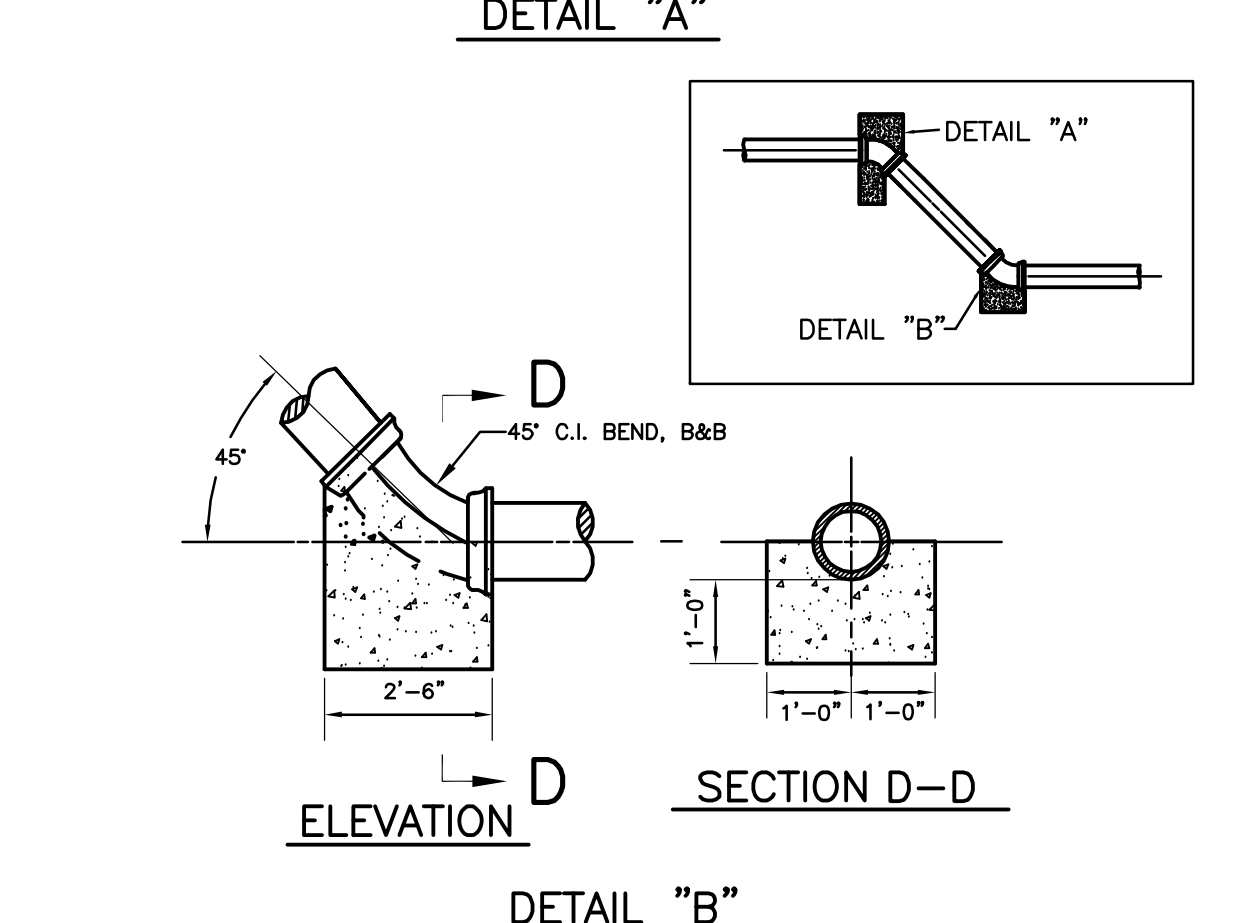
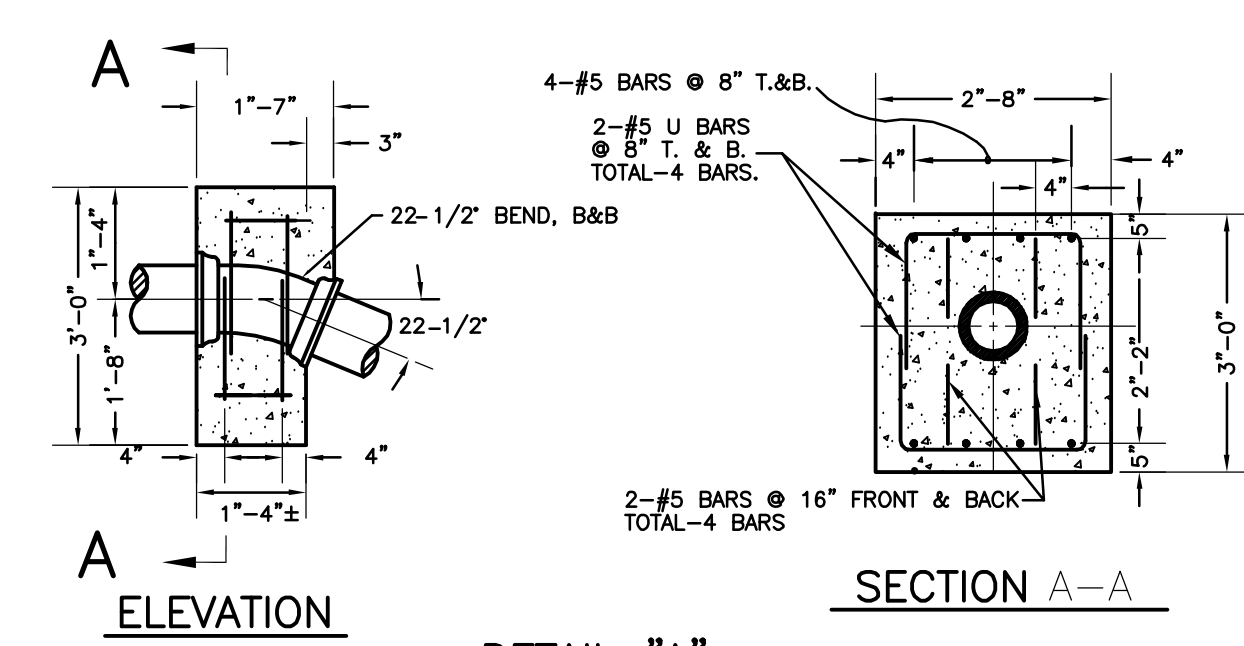
TYPICAL HORIZONTAL AUGER BORING (BORE AND JACK)



STANDARD TAPPING SLEEVE

SIZE OF SLEEVE	A	B	C	D	E	F	G	H	I	NO. OF BOLTS	SIZE OF BOLTS	WT. IN LBS.
4 x 2	6 1/4	2 3/8	5/8	5 3/8	3 3/4	15/16	11 1/4	3	6 1/4	4	3/4 x 3	56
4 x 3	7 5/8	3 3/8	5/8	5 3/8	5 3/4	15/16	11 1/4	3	6 1/2	4	3/4 x 3	57
4 x 4	8 3/4	4 3/8	5/8	5 3/8	6 1/4	15/16	11 1/4	3	6 1/2	4	3/4 x 3	70
6 x 2	6 1/4	2 3/8	11/16	7 3/8	6 7/8	15/16	13 1/2	3	6 1/2	4	3/4 x 3	65
6 x 3	7 5/8	3 3/8	11/16	7 3/8	6 7/8	15/16	13 1/2	3	6 1/2	4	3/4 x 3	70
6 x 4	8 3/4	4 3/8	11/16	7 3/8	7 3/8	15/16	13 1/2	3	6 1/2	4	3/4 x 3	77
8 x 6	11 1/4	6 1/2	15/16	7 3/8	7 3/8	15/16	15 1/2	3	6 1/2	4	3/4 x 3	109
8 x 8	13 5/8	6 5/8	3/4	9 1/2	8 7/8	1 1/8	15 1/2	4	12	6	3/4 x 3 1/2	190
8 x 2	6 1/4	2 3/8	3/4	9 1/2	7 7/8	1 1/8	15 1/2	3	7 1/2	4	3/4 x 3 1/2	80
8 x 3	7 5/8	3 3/8	3/4	9 1/2	7 7/8	1 1/8	15 1/2	3	7 1/2	4	3/4 x 3 1/2	80
8 x 4	8 3/4	4 3/8	3/4	9 1/2	8 3/8	1 1/8	15 1/2	3	7 1/2	4	3/4 x 3 1/2	109
8 x 6	11 1/4	6 1/2	3/4	9 1/2	8 3/8	1 1/8	15 1/2	3	7 1/2	4	3/4 x 3 1/2	125
8 x 8	13 5/8	6 5/8	3/4	9 1/2	8 7/8	1 1/8	15 1/2	4	12	6	3/4 x 3 1/2	190
10 x 2	6 1/4	2 3/8	3/4	11 3/4	9	1 1/8	17 1/2	3	7 1/2	4	3/4 x 3 1/2	245
10 x 3	7 5/8	3 3/8	3/4	11 3/4	9	1 1/8	17 1/2	3	7 1/2	4	3/4 x 3 1/2	119
10 x 4	8 3/4	4 3/8	3/4	11 3/4	9 1/2	1 1/8	17 1/2	3	7 1/2	4	3/4 x 3 1/2	124
10 x 6	11 1/4	6 1/2	3/4	11 3/4	9 1/2	1 1/8	17 1/2	3	7 1/2	4	3/4 x 3 1/2	145
10 x 8	13 5/8	6 5/8	3/4	11 3/4	10	1 1/8	17 1/2	4	12	6	3/4 x 3 1/2	229
10 x 10	15 7/8	10 5/8	3/4	11 3/4	10	1 1/8	17 1/2	4	12	6	3/4 x 3 1/2	245
12 x 2	6 1/4	2 3/8	13/16	13 7/8	10 1/8	1 3/16	20 3/8	4	7 1/2	4	7/8 x 3 3/4	148
12 x 3	7 5/8	3 3/8	13/16	13 7/8	10 1/8	1 3/16	20 3/8	4	7 1/2	4	7/8 x 3 3/4	148
12 x 4	8 3/4	4 3/8	13/16	13 7/8	10 5/8	1 3/16	20 3/8	4	7 1/2	4	7/8 x 3 3/4	170
12 x 6	11 1/4	6 1/2	13/16	13 7/8	10 5/8	1 3/16	20 3/8	4	7 1/2	4	7/8 x 3 3/4	172
12 x 8	13 5/8	6 5/8	13/16	13 7/8	11 1/8	1 3/16	20 3/8	4	12	6	7/8 x 3 3/4	255
12 x 10	15 7/8	10 5/8	13/16	13 7/8	11 1/8	1 3/16	20 3/8	4	12	6	7/8 x 3 3/4	286
12 x 12	18 1/2	12 5/8	13/16	13 7/8	11 1/8	1 3/16	20 3/8	4	12	6	7/8 x 3 3/4	304
16 x 2	6 1/4	2 3/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	8 1/2	4	7/8 x 4 1/2	217
16 x 3	7 5/8	3 3/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	8 1/2	4	7/8 x 4 1/2	255
16 x 4	8 3/4	4 3/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	8 1/2	4	7/8 x 4 1/2	237
16 x 6	11 1/4	6 1/2	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	8 1/2	4	7/8 x 4 1/2	266
16 x 8	13 5/8	6 5/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	12	6	7/8 x 4 1/2	353
16 x 10	15 7/8	10 5/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	12	6	7/8 x 4 1/2	408
16 x 12	18 1/2	12 5/8	7/8	18 1/8	12 3/8	1 3/8	24 7/8	4	16	8	7/8 x 4 1/2	463
16 x 16	23 3/8	16 3/8	7/8	18 1/8	14	1 3/8	24 7/8	4	16	8	7/8 x 4 1/2	

ANCHORAGE DETAILS FOR 16"-22 1/2" C.I. VERTICAL BENDS



ANCHORAGE DETAILS FOR 16"-22 1/2" C.I. VERTICAL BENDS