

**CITY STANDARDS APPLY TO
PUBLIC PROPERTY & PRIVATE
PROPERTY**



STANDARD CONSTRUCTION DETAILS

AMENDED JANUARY 2022

DIRECTIONS FOR USE

- 1) Applicable sheets from the City Standards shall be attached to the construction drawings and shall be considered part thereto. Individual City Standards that do not apply may be crossed out by design engineer by placing a single large X over the detail. Minor reference notations may be placed adjacent to individual standard titles for coordination. However, the standards themselves shall not be modified in any way.
- 2) Details prepared by outside sources shall not be included in the construction drawings when said details are covered by City Standards.
- 3) Details prepared by outside sources covering work which is not covered by City Standards are the sole responsibility of the design engineer and shall be placed on sheets other than the City Standard sheets.
- 4) Failure to properly execute the above directions for use will not affect the applicability nor the enforcement of the City Standards.
- 5) City of Fishers shall be contacted when required by calling the Director of Engineering.
- 6) City Standards shall be used in conjunction with the Transportation Plan and Construction Specifications.
- 7) The use of INDOT refers to Indiana Department of Transportation Standard Drawings and Specifications (Current Version).

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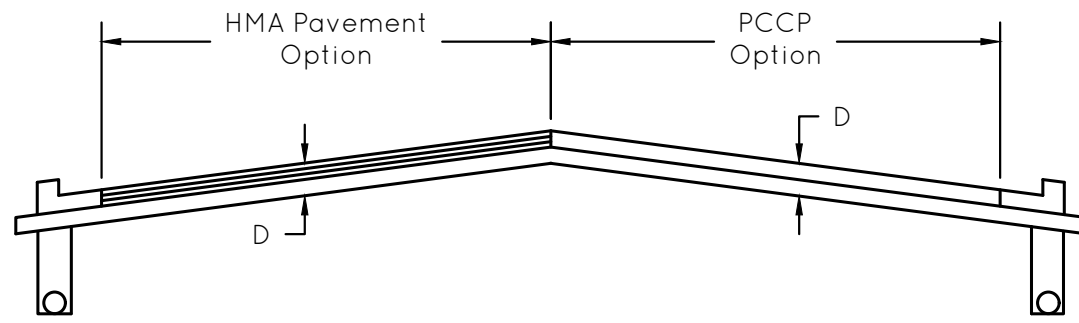
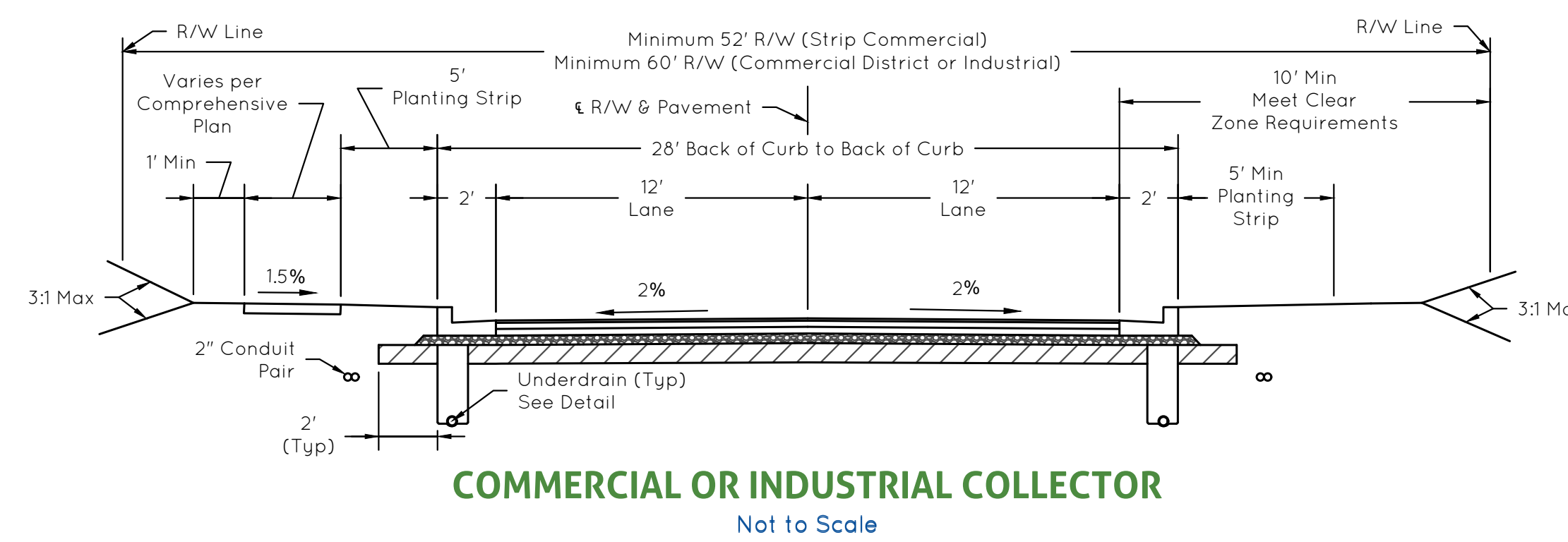
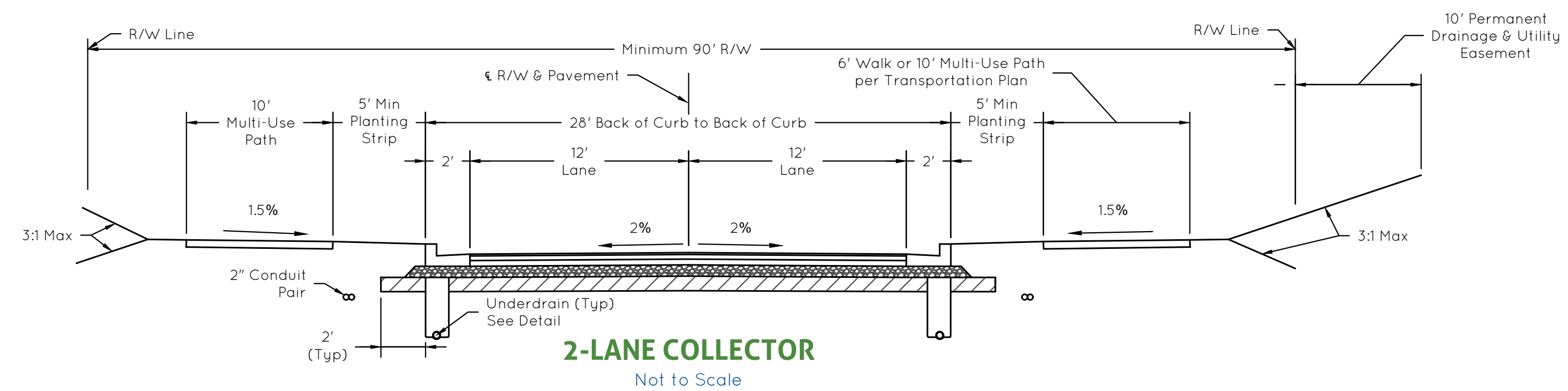
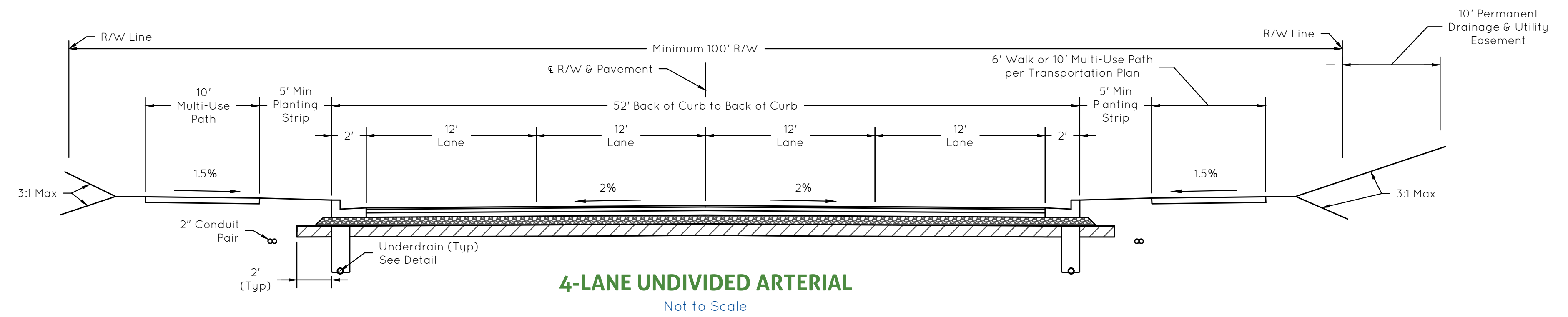
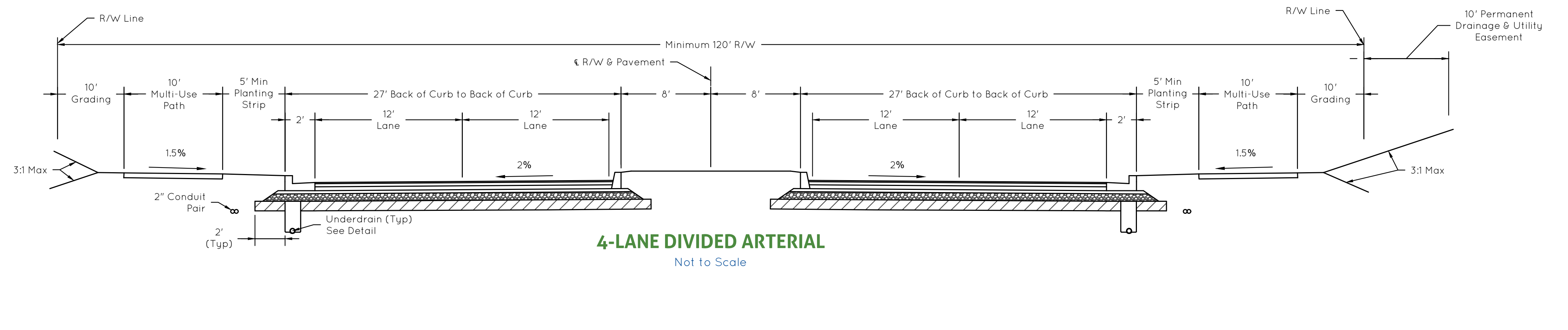
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NOTES

- 1) A City of Fishers Right-of-Way Activity Permit is required for utilities crossing existing public right-of-way or encroaching into right-of-way pavement.
- 2) Utility work within existing public right-of-way or within 5 feet of existing right-of-way pavement requires removable flowable fill as backfill.

J. Taylor
1/18/2022

	CITY OF FISHERS	RESOLUTION NO.	RO11822A	SHEET
	STANDARD CONSTRUCTION DETAILS	DATE OF ADOPTION	1/18/2022	1 of 29
	TITLE SHEET			



Notes:

- 1) Asphalt pavement shall be in accordance with the most current INDOT Standard Specifications Section 401. For all local (non-Federal Aid) projects, all HMA acceptance and testing requirements shall be in accordance with Section 402. Patching and Widening shall be in accordance with Section 304.
- 2) PCCP pavement shall be in accordance with the most current INDOT Standard Specifications Section 502.
- 3) Any other pavement design will need Director of Engineering approval.
- 4) Where existing roads have SMA surface pavement, material is to be matched.

PRIMARY ARTERIAL AND COLLECTOR

HMA Pavement Option

D = 1.5" - 165lb/syd QC/QA-HMA, 2, 64, Surface, 9.5mm, on
 2.5" - 275lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 3.75" - 413lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 3" - 300lb/syd QC/QA-HMA, 3, 76, Intermediate, Base, 19.0mm, on
 6" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

PCCP Option (Requires Engineering Approval)

D = 13" - PCCP, on
 3" - Compacted Aggregate, No. 8, on
 3" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

Roundabout

D = 2" - 220lb/syd QC/QA-HMA, 2, 64, Surface, 9.5mm, on
 2.5" - 275lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 3.5" - 385lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 3" - 300lb/syd QC/QA-HMA, 3, 76, Intermediate, Base, 19.0mm, on
 6" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

SECONDARY ARTERIAL

HMA Pavement Option

D = 1.5" - 165lb/syd QC/QA-HMA, 2, 64, Surface, 9.5mm, on
 2.5" - 275lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 3.75" - 413lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 9" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

PCCP Option (Requires Engineering Approval)

D = 13" - PCCP, on
 3" - Compacted Aggregate, No. 8, on
 3" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

Roundabout

D = 2" - 220lb/syd QC/QA-HMA, 2, 64, Surface, 9.5mm, on
 2.5" - 275lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 3.5" - 385lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 9" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

COLLECTOR

HMA Pavement Option

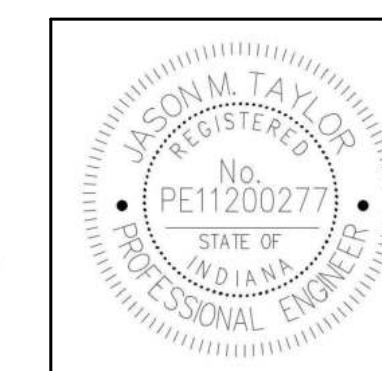
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 3.75" - 413lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 8" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

PCCP Option (Requires Engineering Approval)

D = 13" - PCCP, on
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 14" - INDOT Subgrade Treatment, Type IBC

Roundabout

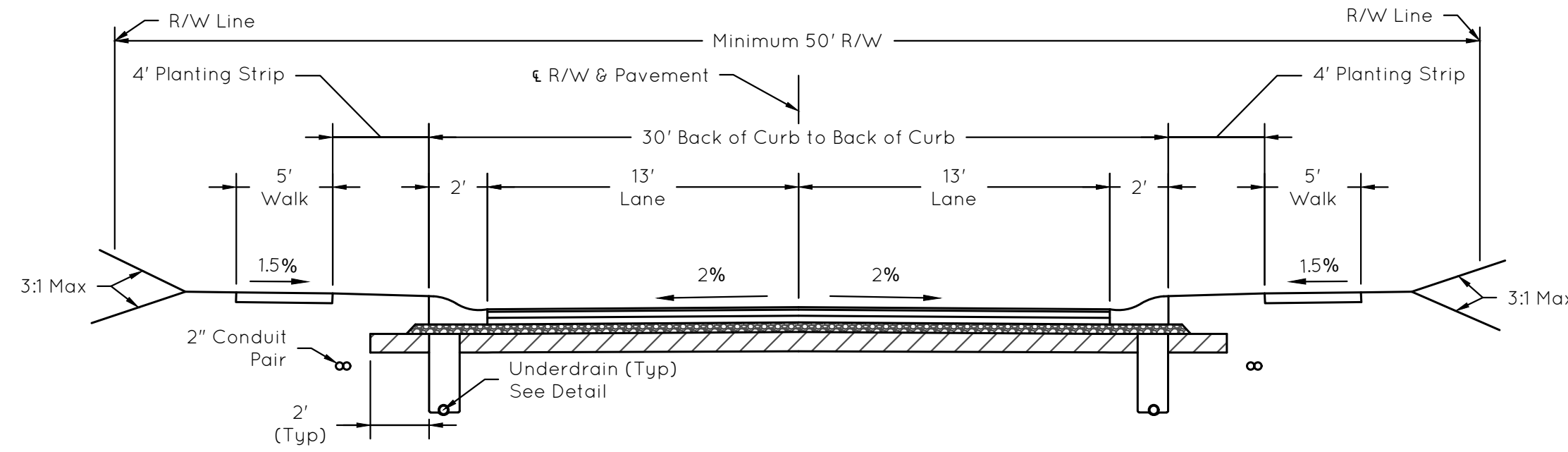
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 3.5" - 385lb/syd QC/QA-HMA, 2, 64, Base, 25.0mm, on
 8" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC



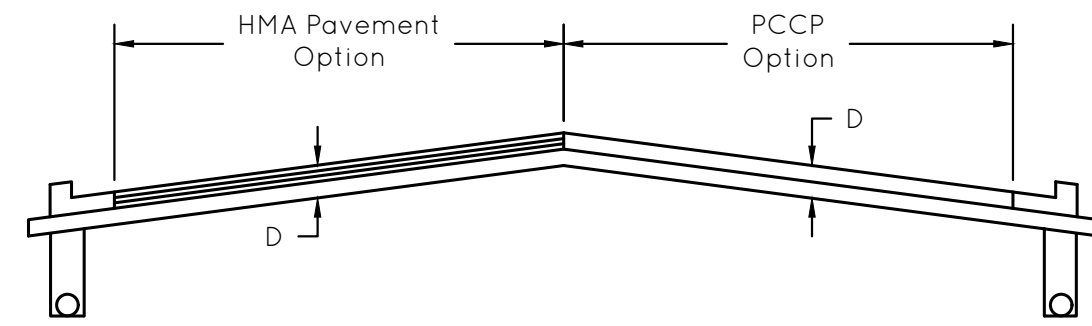
J. Taylor
1/18/2022

CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
 ARTERIAL AND COLLECTOR
 TYPICAL PAVEMENT AND
 ROADWAY SECTIONS

SHEET
2
of
29



LOCAL STREET
Not to Scale



Notes:

- 1) Asphalt pavement shall be in accordance with the most current INDOT Standard Specifications Section 401. For all local (non-Federal Aid) projects, all HMA acceptance and testing requirements shall be in accordance with Section 402. Patching and Widening shall be in accordance with Section 304.
- 2) PCCP pavement shall be in accordance with the most current INDOT Standard Specifications Section 502.
- 3) Any other pavement design will need Director of Engineering approval

LOCAL STREET

HMA Pavement Option

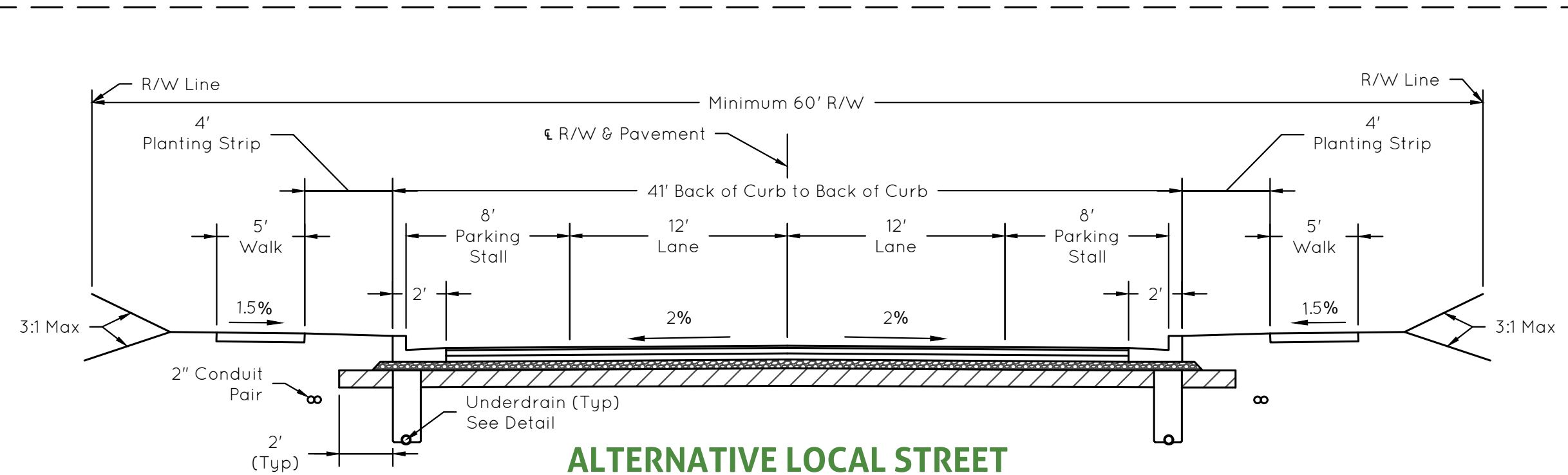
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 2.5" - 275lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 3.75" - 413lb/syd QC/QA-HMA, 2, 64, Base, 19.0mm, on
 6" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

PCCP Option (Requires Engineering Approval)

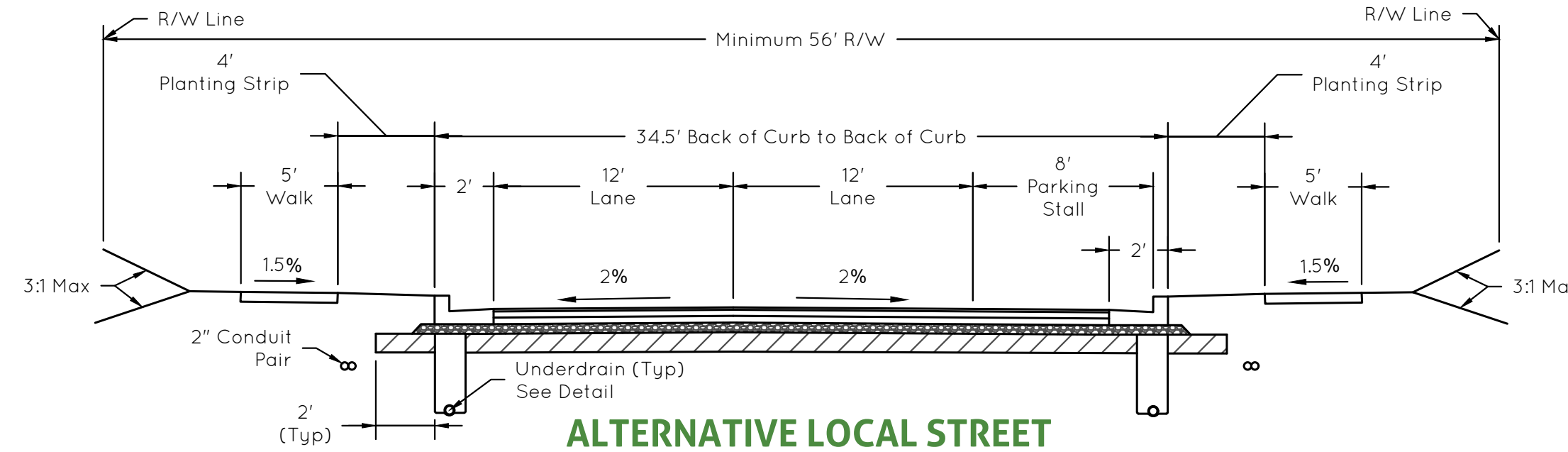
D = 13" - PCCP, on
 3" - Compacted Aggregate, No. 8, on
 3" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

Minor Subdivision

D = 1.5" - 165lb/syd QC/QA-HMA, 2, 64, Surface, 9.5mm, on
 3.5" - 385lb/syd QC/QA-HMA, 2, 64, Intermediate, 19.0 mm, on
 12" - Compacted Aggregate, No. 53, on
 14" - INDOT Subgrade Treatment, Type IBC

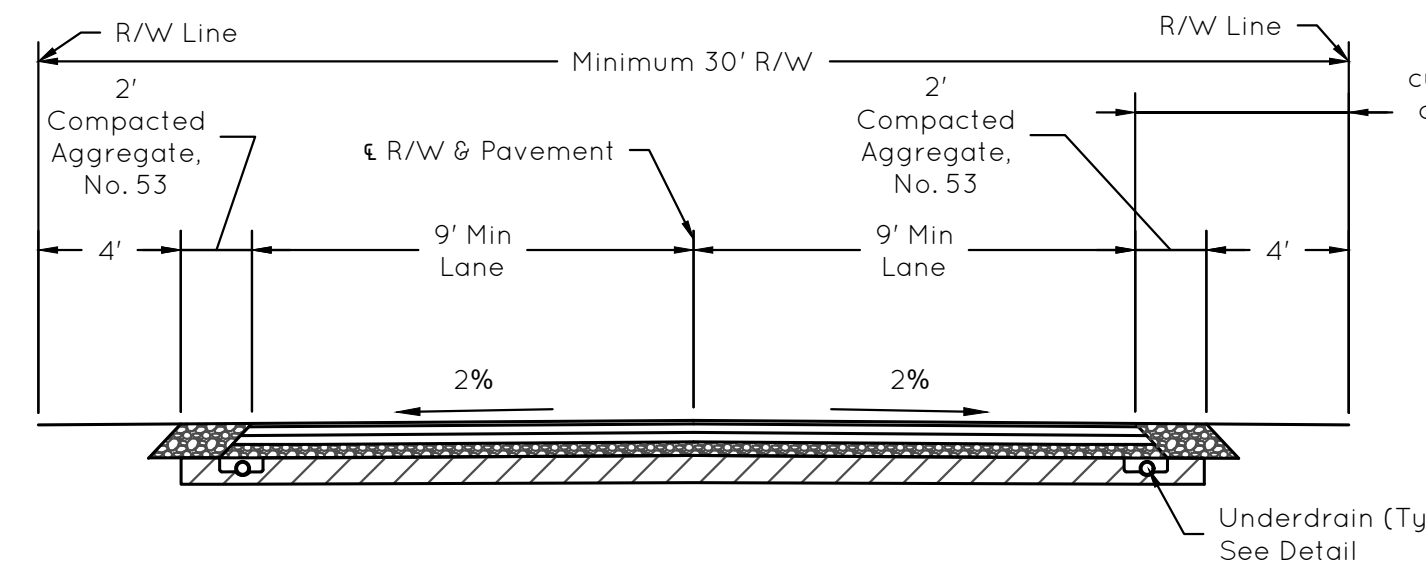


**ALTERNATIVE LOCAL STREET
TRADITIONAL SECTION WITH 2 PARKING LANES**
Not to Scale



**ALTERNATIVE LOCAL STREET
TRADITIONAL SECTION WITH 1 PARKING LANE**
Not to Scale

**MODIFICATIONS TO THESE SECTIONS
MUST BE APPROVED BY
THE DIRECTOR OF ENGINEERING**



**ALTERNATIVE LOCAL STREET
MINOR SUBDIVISION**
Not to Scale

Road sections without curb shall require special consideration for storm drainage, underdrain, side ditch depth, etc.

1/18/2022

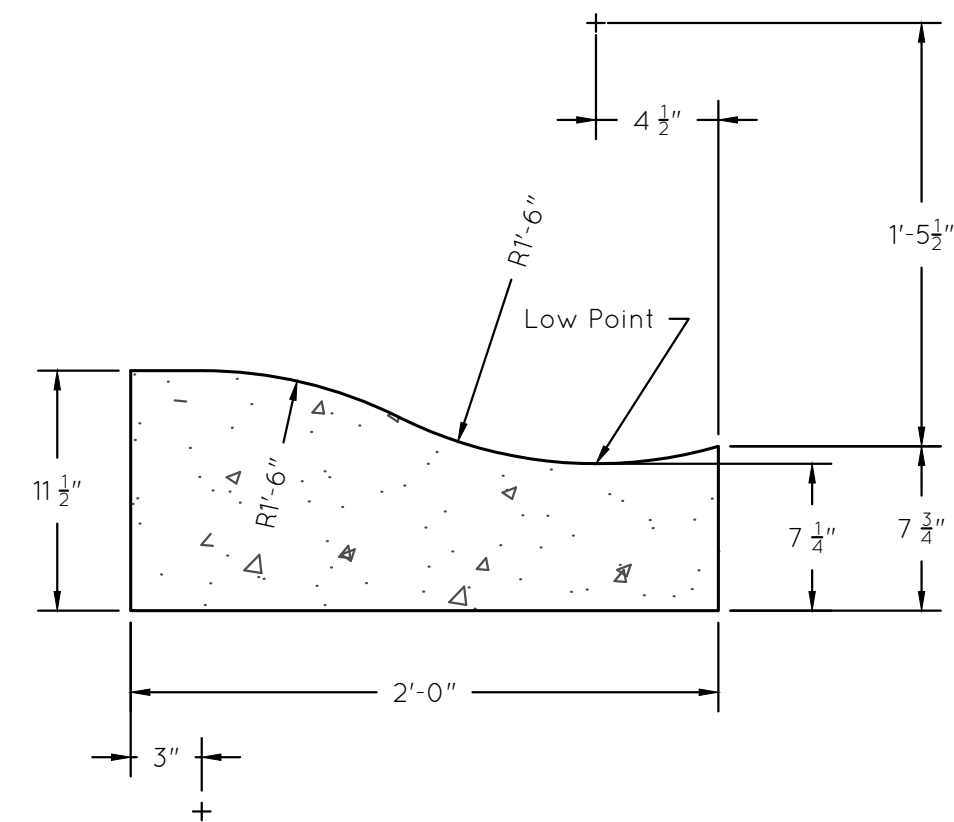


**CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS**

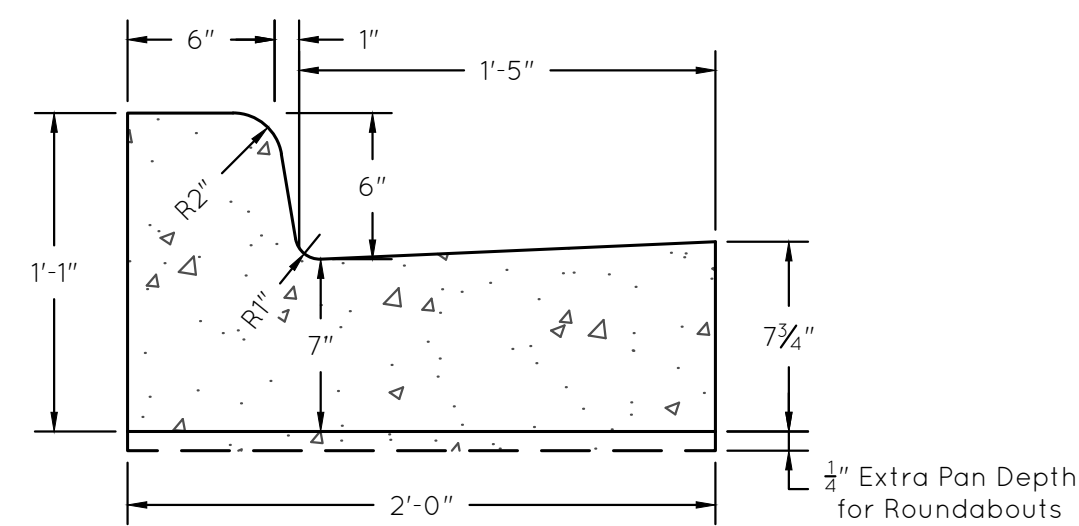
LOCAL STREET
TYPICAL PAVEMENT AND
ROADWAY SECTIONS

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29**

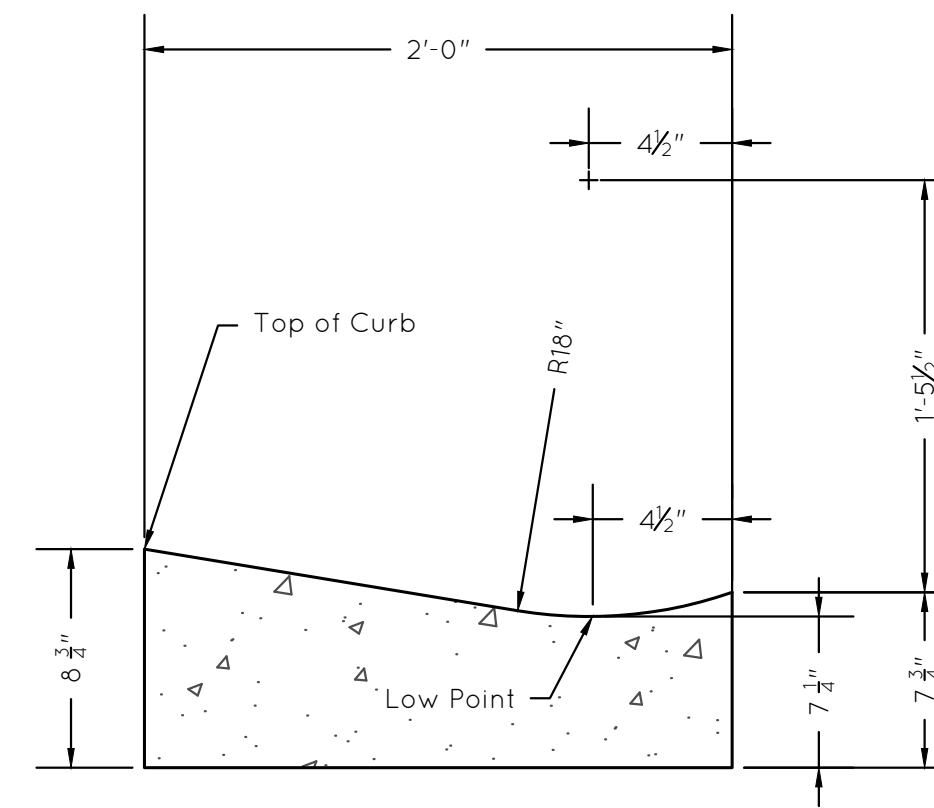


CONCRETE ROLL CURB
Not to Scale

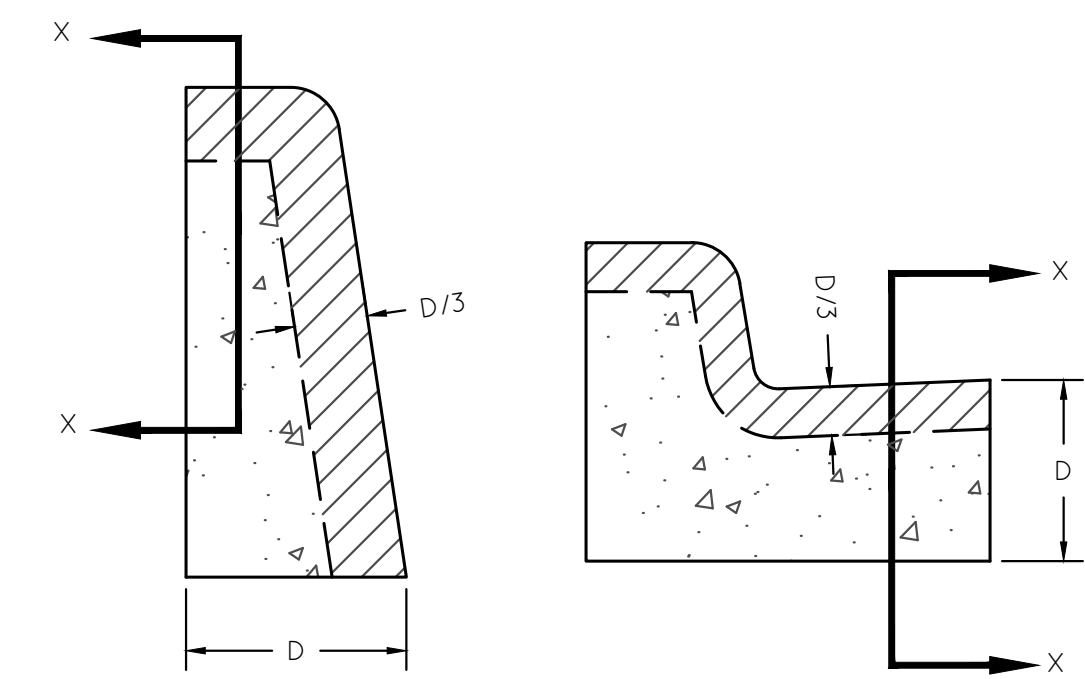


Note:
1) Provide reverse pitch curb & gutter on center islands when curb inlets are not provided for drainage and when natural flow is away from curb.

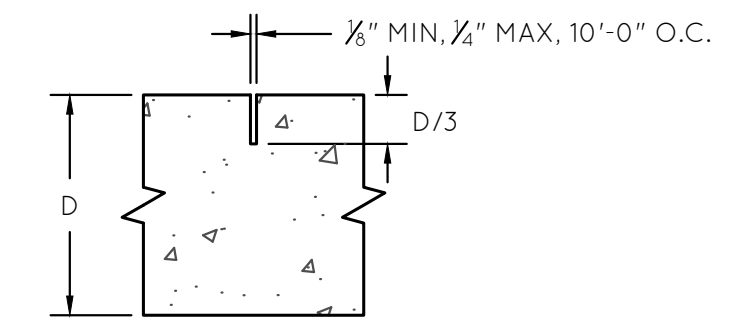
CONCRETE COMBINED CURB & GUTTER
Not to Scale



CONCRETE VALLEY GUTTER
Not to Scale



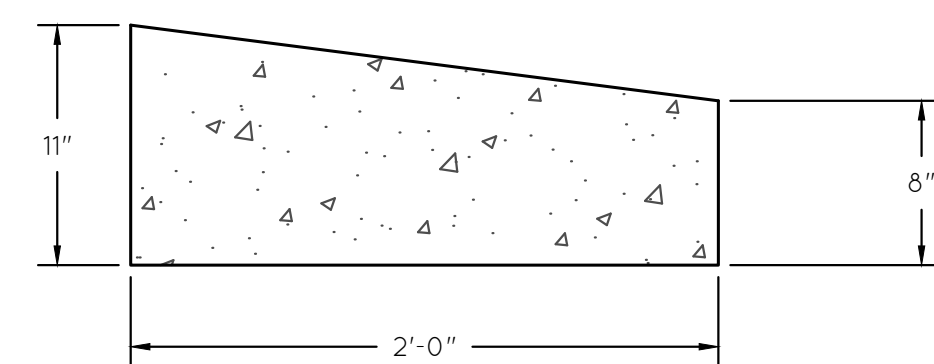
Barrier Curb Combined Curb & Gutter



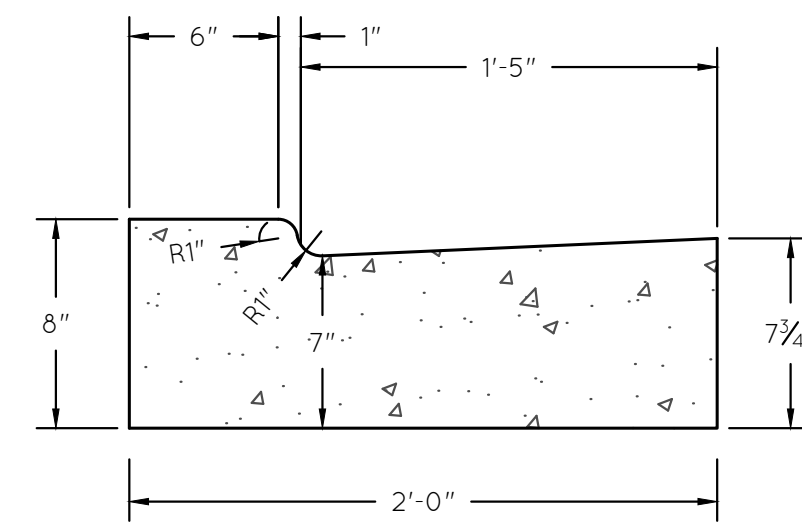
Section X-X

Note:
1) Contraction joints for concrete curbs shall be sawed at 10-ft spacing. Spacing shall be 5-ft on curves.

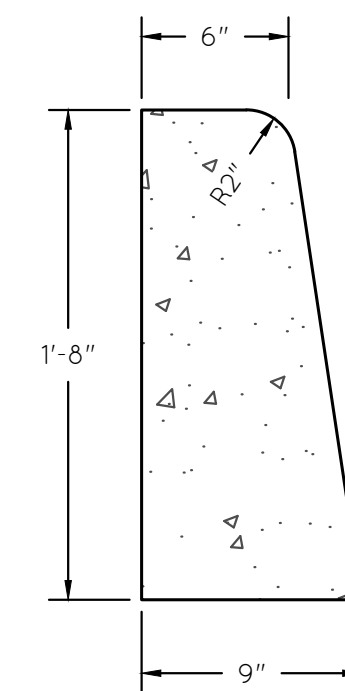
CONTRACTION JOINTS - CONCRETE CURB
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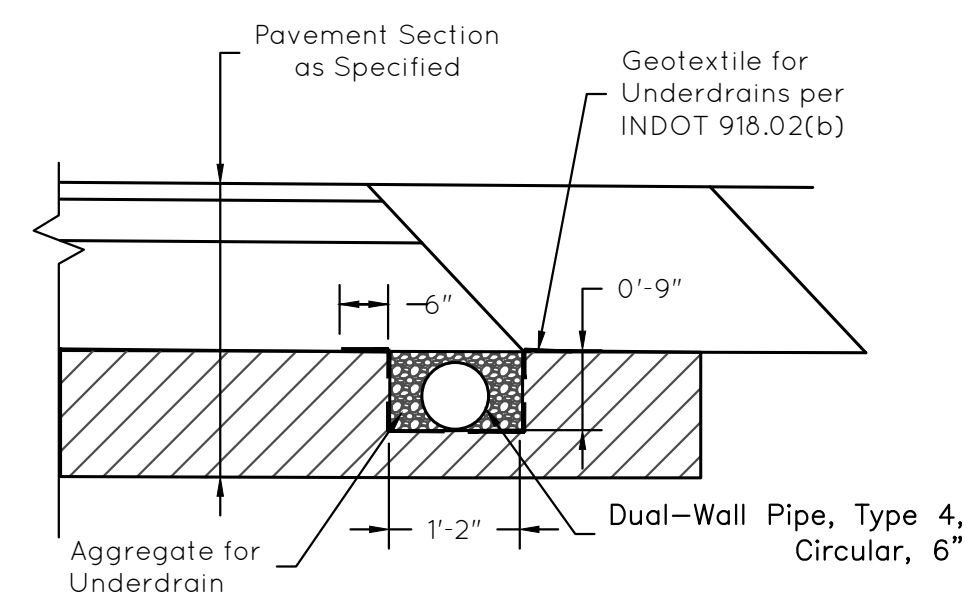
CONCRETE SLOPED CURB - FOR ROUNDABOUTS
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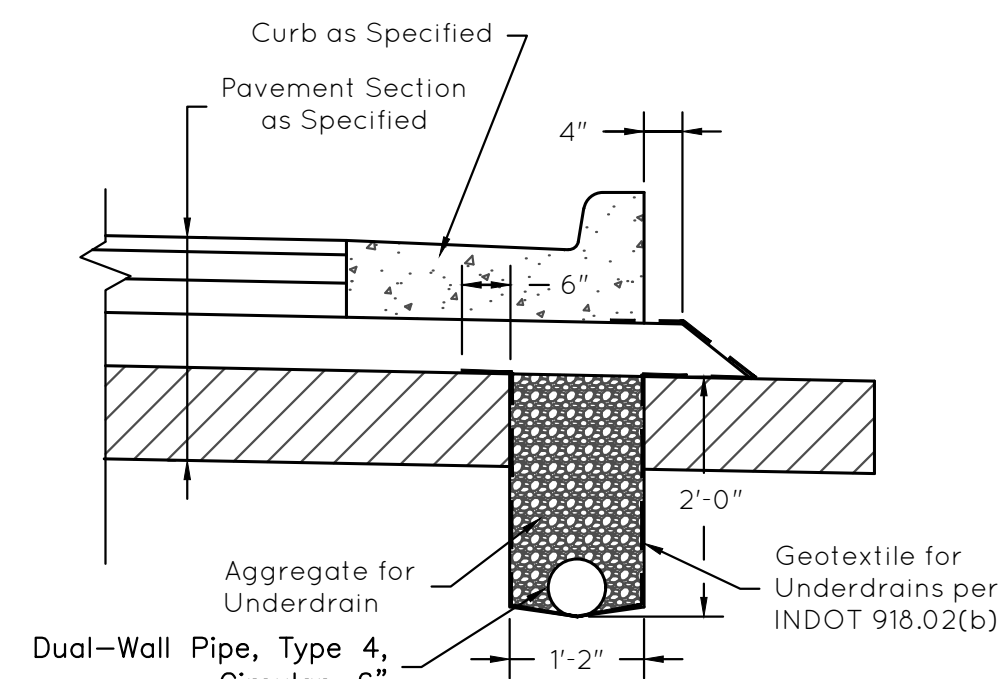
CONCRETE COMBINED CURB & GUTTER - DEPRESSED
Not to Scale



CONCRETE BARRIER CURB
Not to Scale



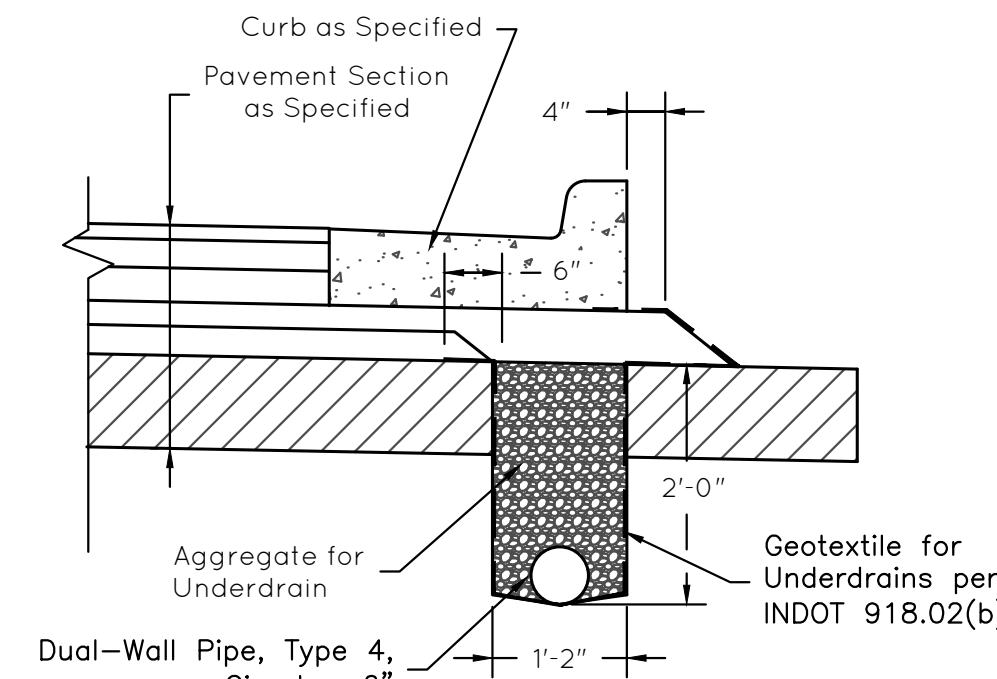
LOCAL STREET UNDERDRAIN
Not to Scale



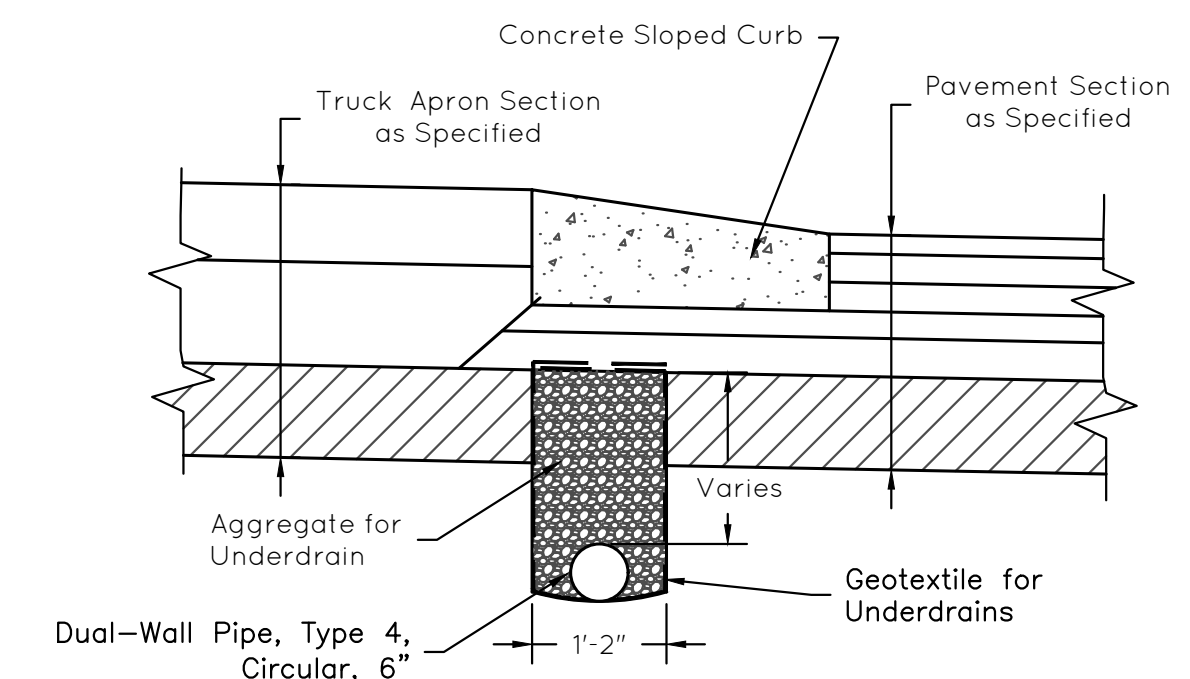
Underdrain without HMA Drainage Layer

Note:
1) No connections shall be made to curb underdrain (downspouts, sump pumps, yard drains, etc).

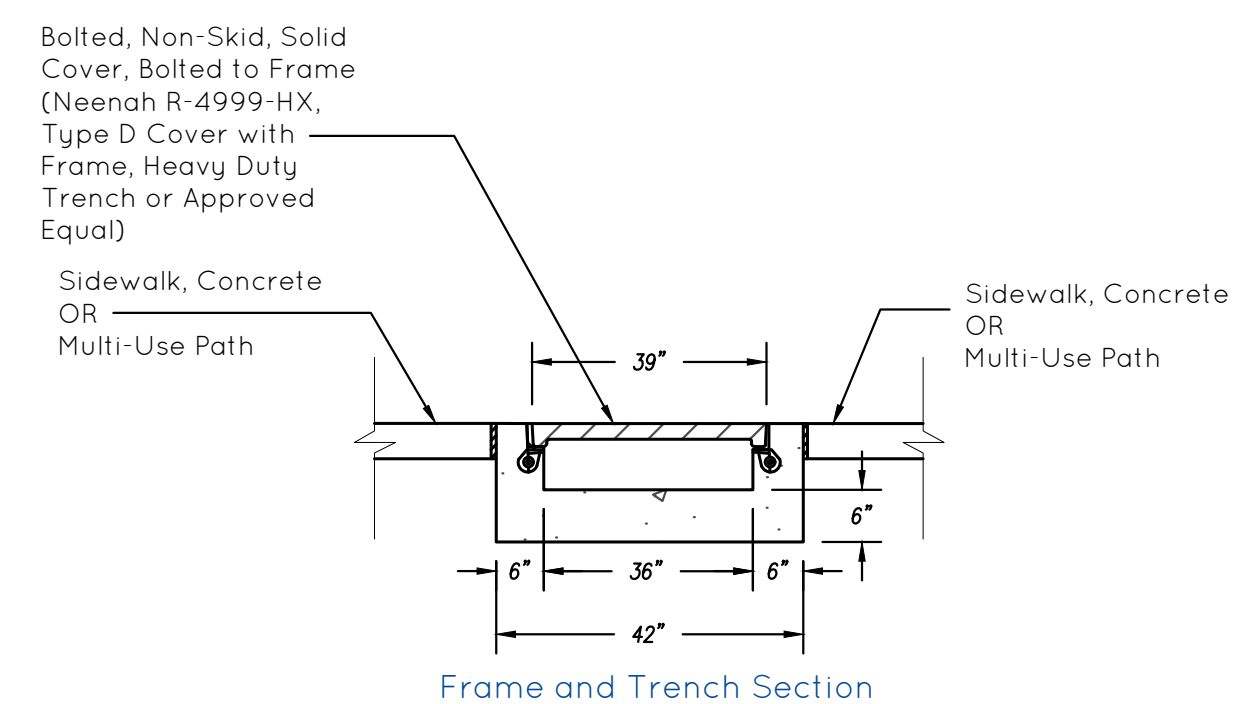
CURB UNDERDRAIN
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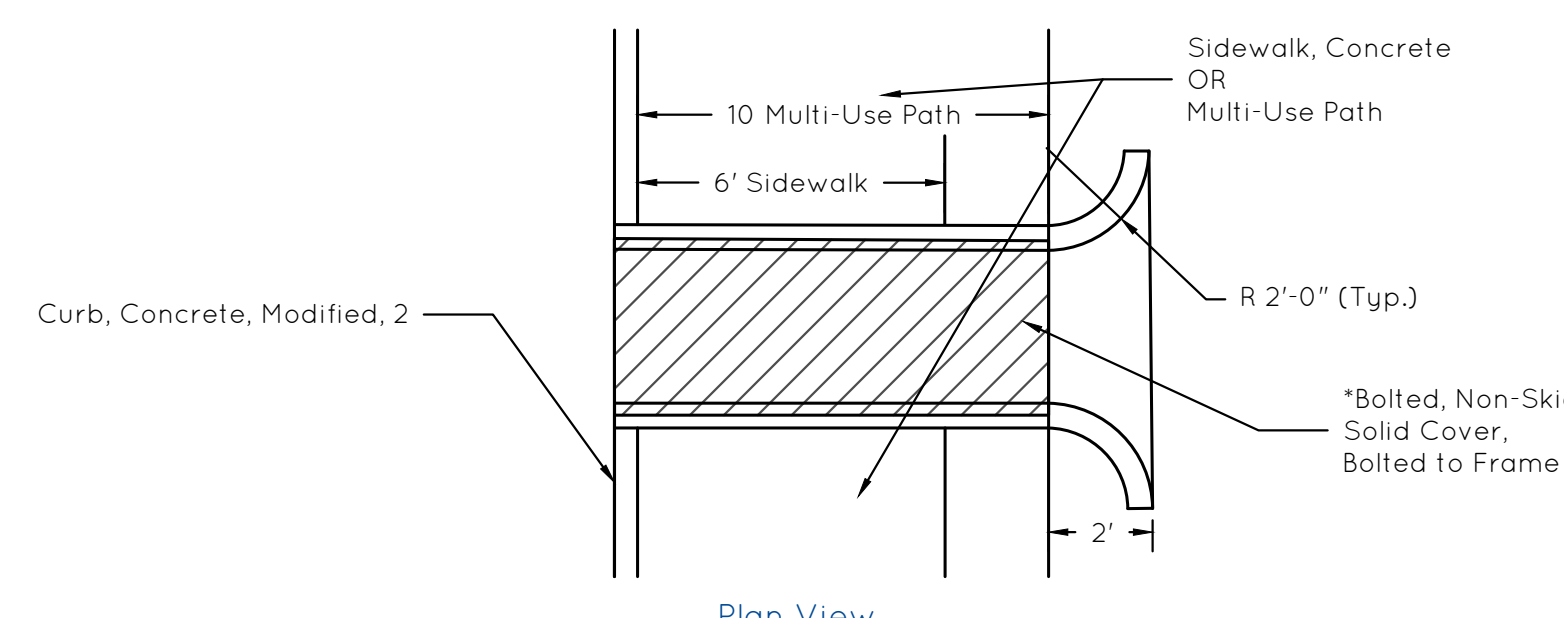
Underdrain with HMA Drainage Layer



UNDERDRAIN AT ROUNDABOUTS (AS NEEDED)
Not to Scale

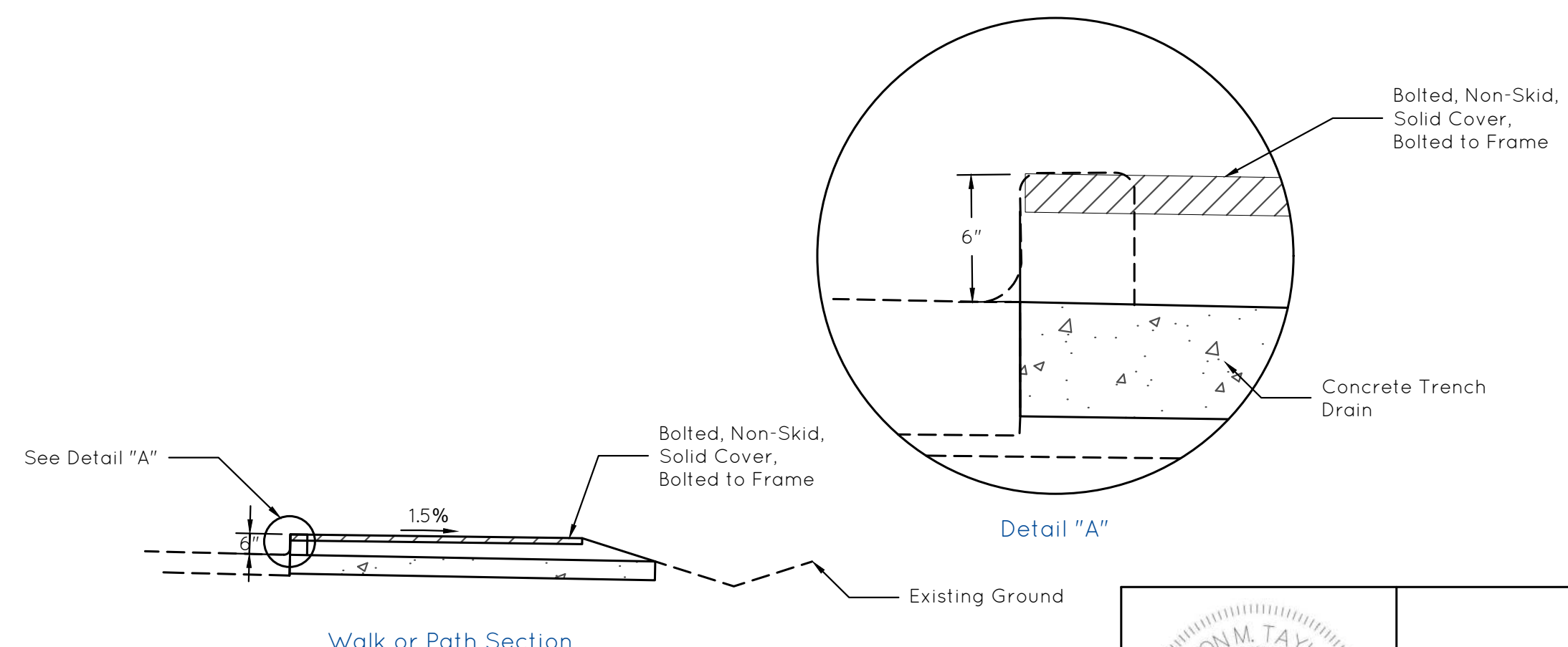


Frame and Trench Section



Plan View

TRENCH DRAIN DETAIL W/ SIDEWALK OR MULTI-USE PATH
Not to Scale

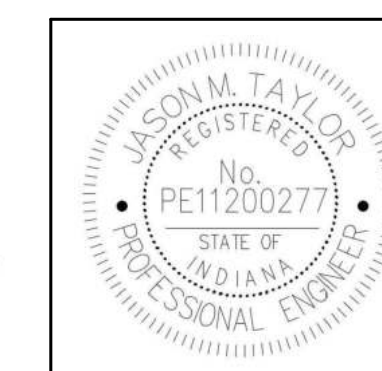


Walk or Path Section

Detail "A"

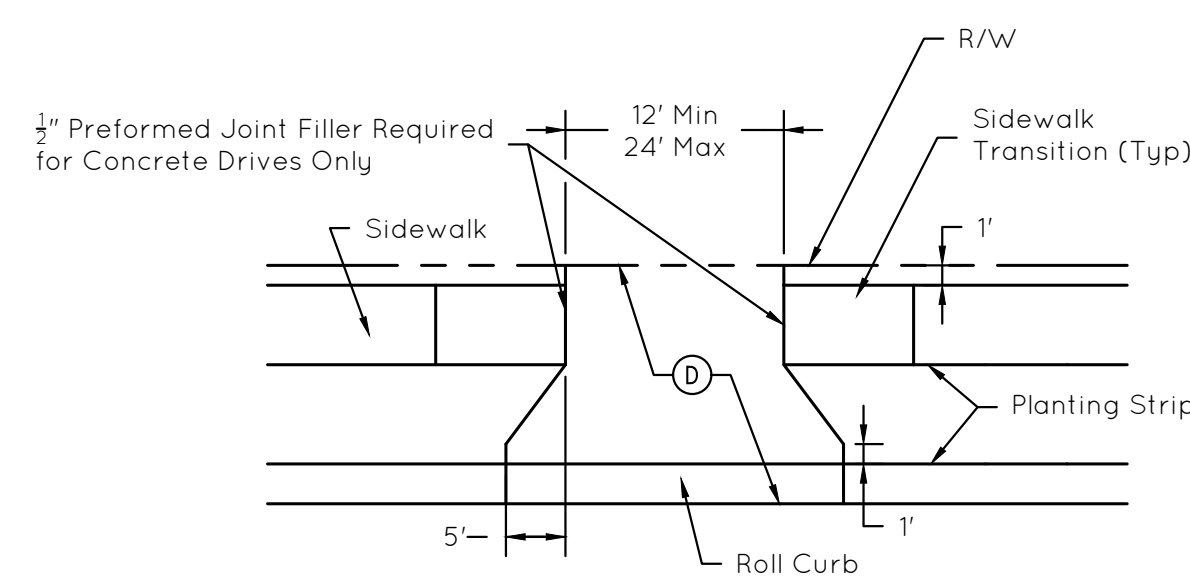
J. Taylor

1/18/2022



CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
CURB AND UNDERDRAIN DETAILS

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of
29

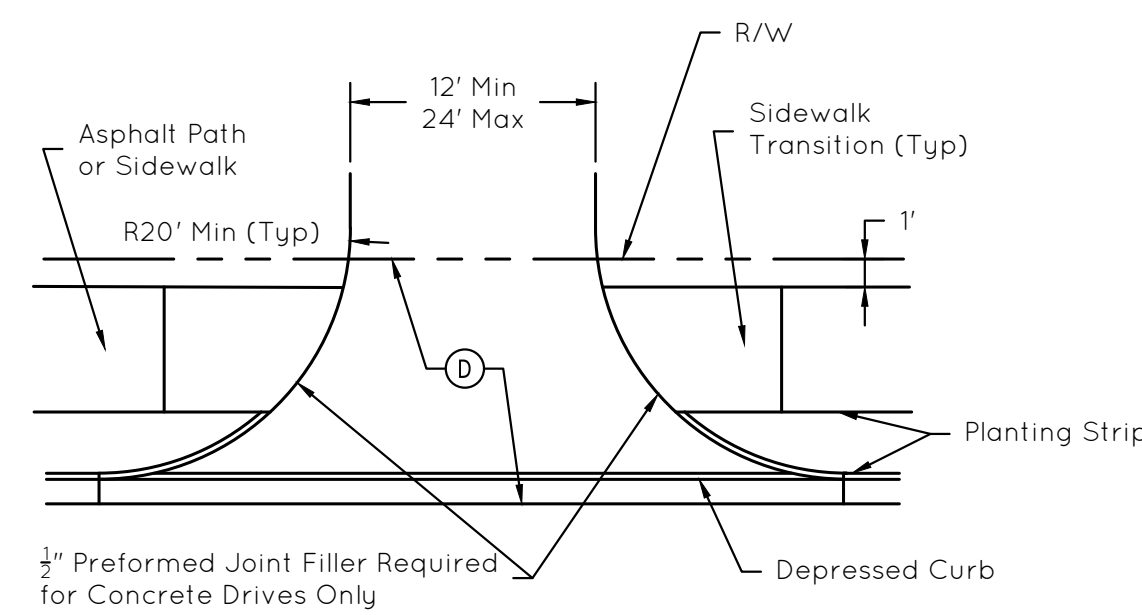


Residential Driveway on Local Road

PCCP for Approaches, 6 in., on Dense Graded Subbase, 6 in., on 6" - INDOT Subgrade Treatment, Type II

or

HMA for Approaches, Type B 1.5" - 165lb/syd HMA Surface, Type B on 2.5" - 275lb/syd HMA Intermediate, Type B on 6" - Compacted Aggregate, No. 53, on 6" - INDOT Subgrade Treatment, Type II

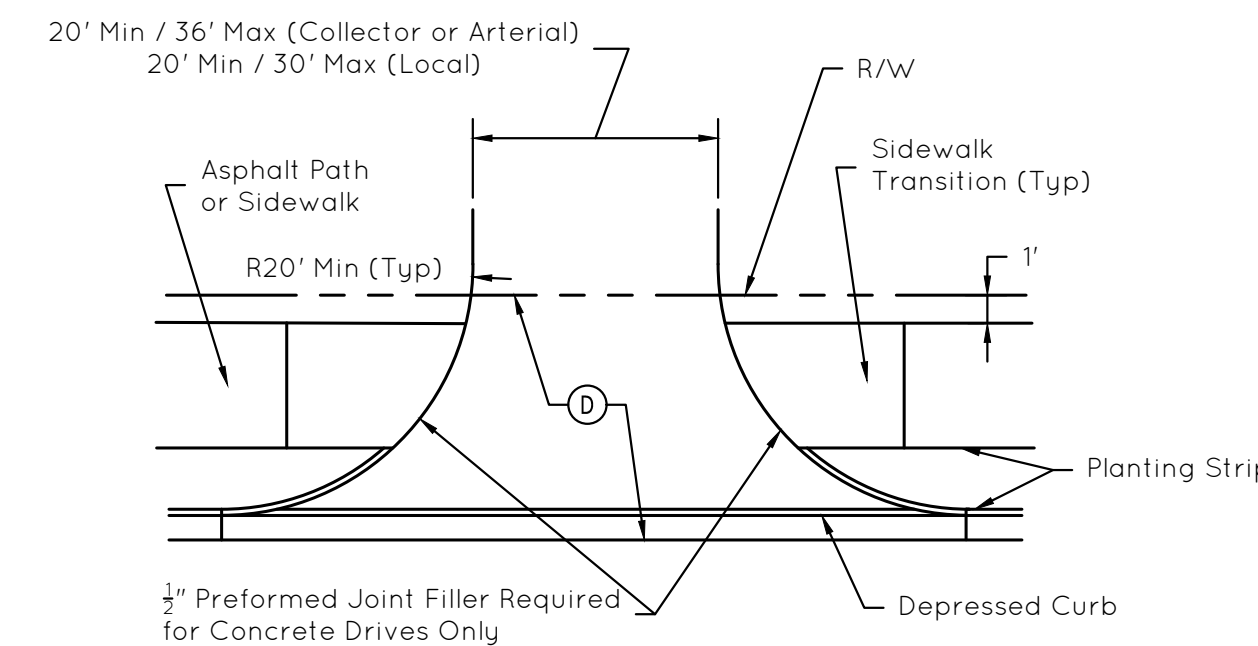


Residential Driveway on Collector, Secondary, or Primary Arterial

PCCP for Approaches, 6 in., on Dense Graded Subbase, 6 in., on 6" - INDOT Subgrade Treatment, Type II

or

HMA for Approaches, Type B 1.5" - 165lb/syd HMA Surface, Type B on 2.5" - 275lb/syd HMA Intermediate, Type B on 6" - Compacted Aggregate, No. 53, on 6" - INDOT Subgrade Treatment, Type II



Commercial Driveway

PCCP for Approaches, 9 in., on Dense Graded Subbase, 6 in., on Geogrid, Type 1B, on 6" - INDOT Subgrade Treatment, Type II

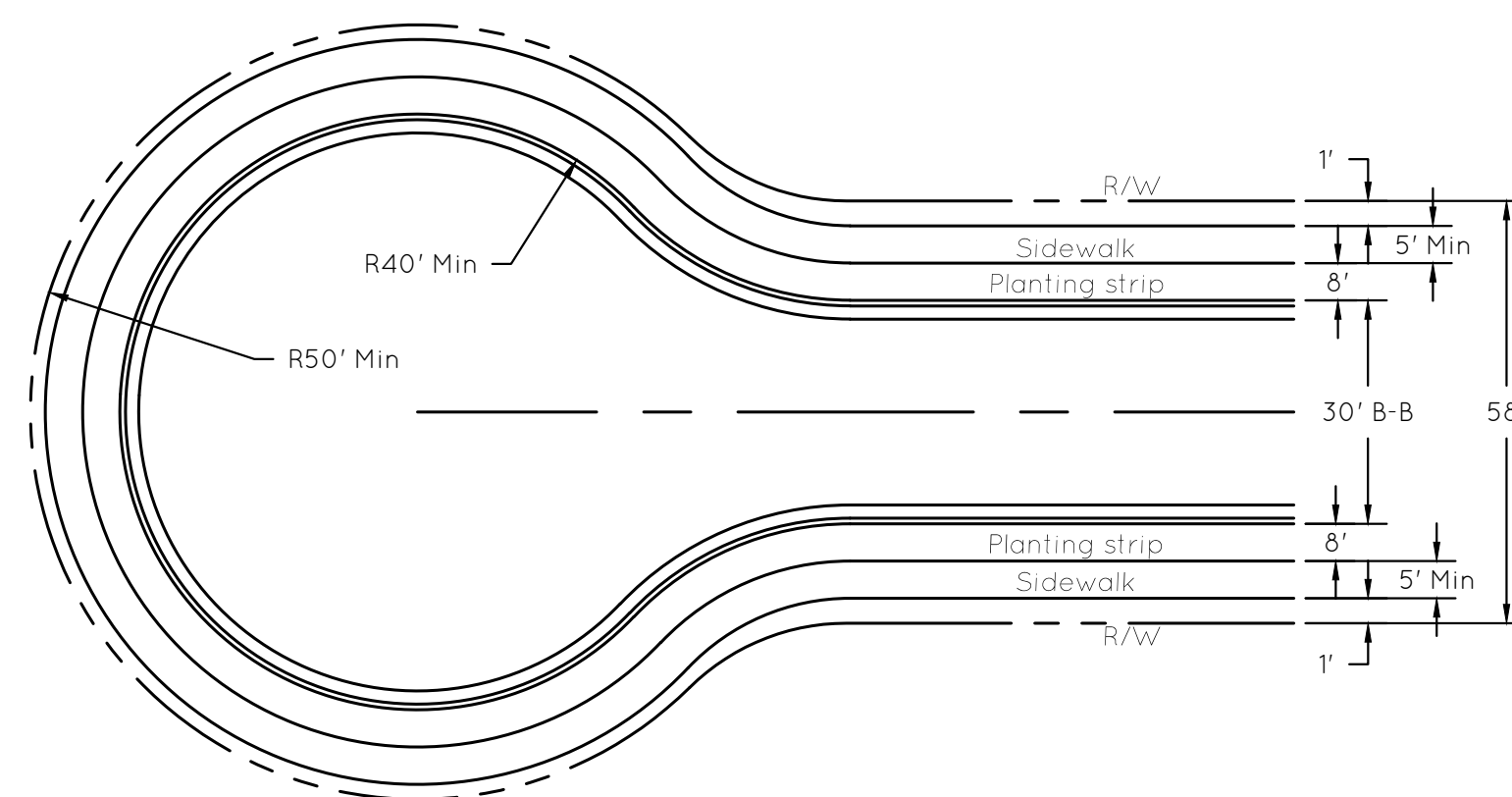
or

HMA for Approaches, Type B 1.5" - 165lb/syd HMA Surface, Type B on 2.5" - 275lb/syd HMA Intermediate, Type B on 6" - 660lb/syd HMA Base, Type B on 6" - INDOT Subgrade Treatment, Type II on Geogrid, Type 1B

- Notes:
- 1) Details do not reflect additional road improvements (i.e., turn lanes and tapers).
 - 2) Decorative driveway aprons are not allowed except as approved by the Director of Engineering.
 - 3) Maximum driveway slope outside of right-of-way shall be 12% for minimum 10 feet beyond R/W line.
 - 4) Adjoining asphalt shall have perpendicular edges.
 - 5) Asphalt shall not be used for residential driveways on Collector, Secondary, or Primary Arterials.
 - 6) Asphalt must match adjacent mainline cross section for commercial approaches.

DRIVEWAY DETAILS

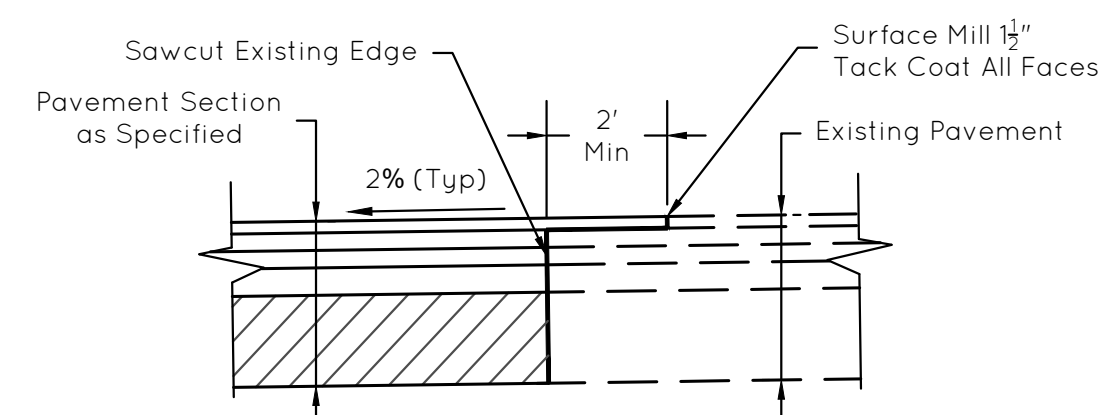
Not to Scale



Note:
1) 'Eyebrows' are not allowed

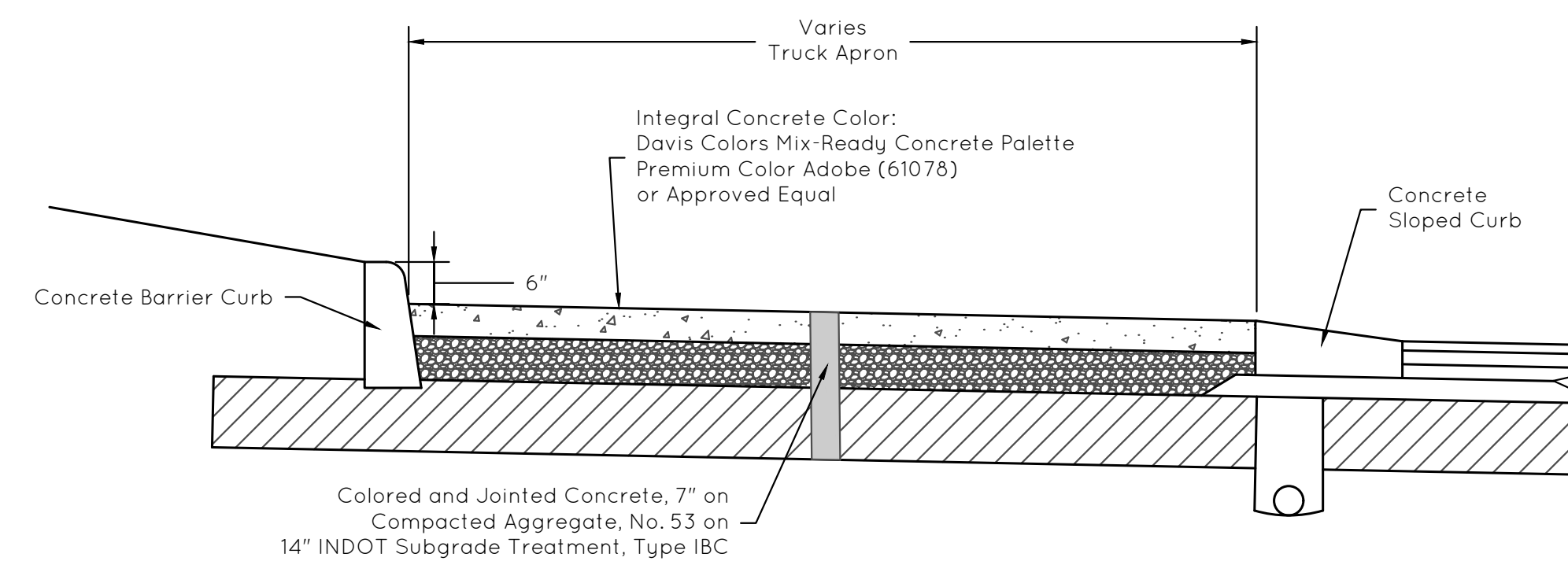
CUL-DE-SAC

Not to Scale



LONGITUDINAL PAVEMENT TIE-IN SECTION

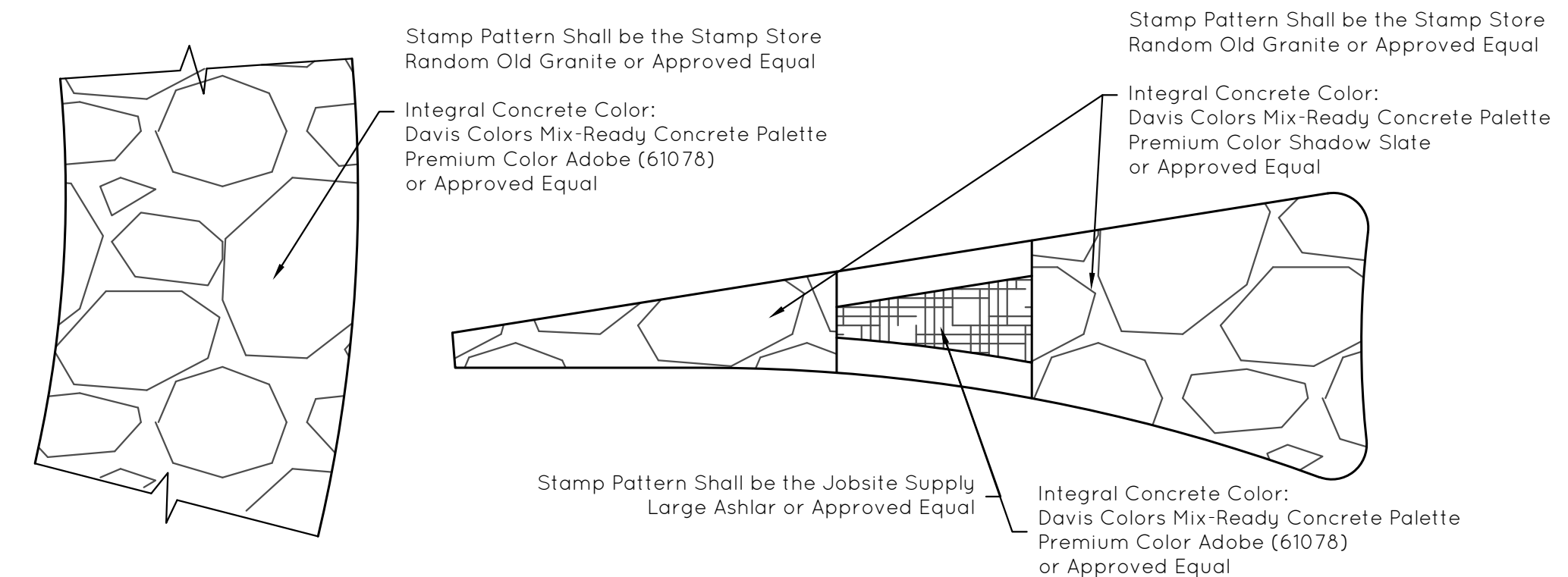
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Note:
1) Type D-1 Contraction Joints not required unless otherwise directed by Dept. of Engineering.

CONCRETE TRUCK APRON DETAIL

Not to Scale



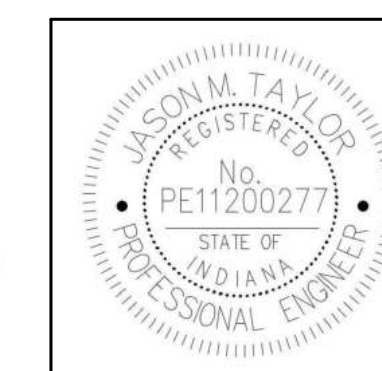
Notes:
1) Pattern shall be submitted to ENGINEER prior to construction.
2) A 4' x 4' mock-up is required for ENGINEER approval.
3) Concrete shall cure for a minimum of four days prior to applying sealant.

ROUNDBOUT TRUCK APRON AND SPLITTER ISLAND STAMP DETAIL

Not to Scale

J. Taylor

1/18/2022



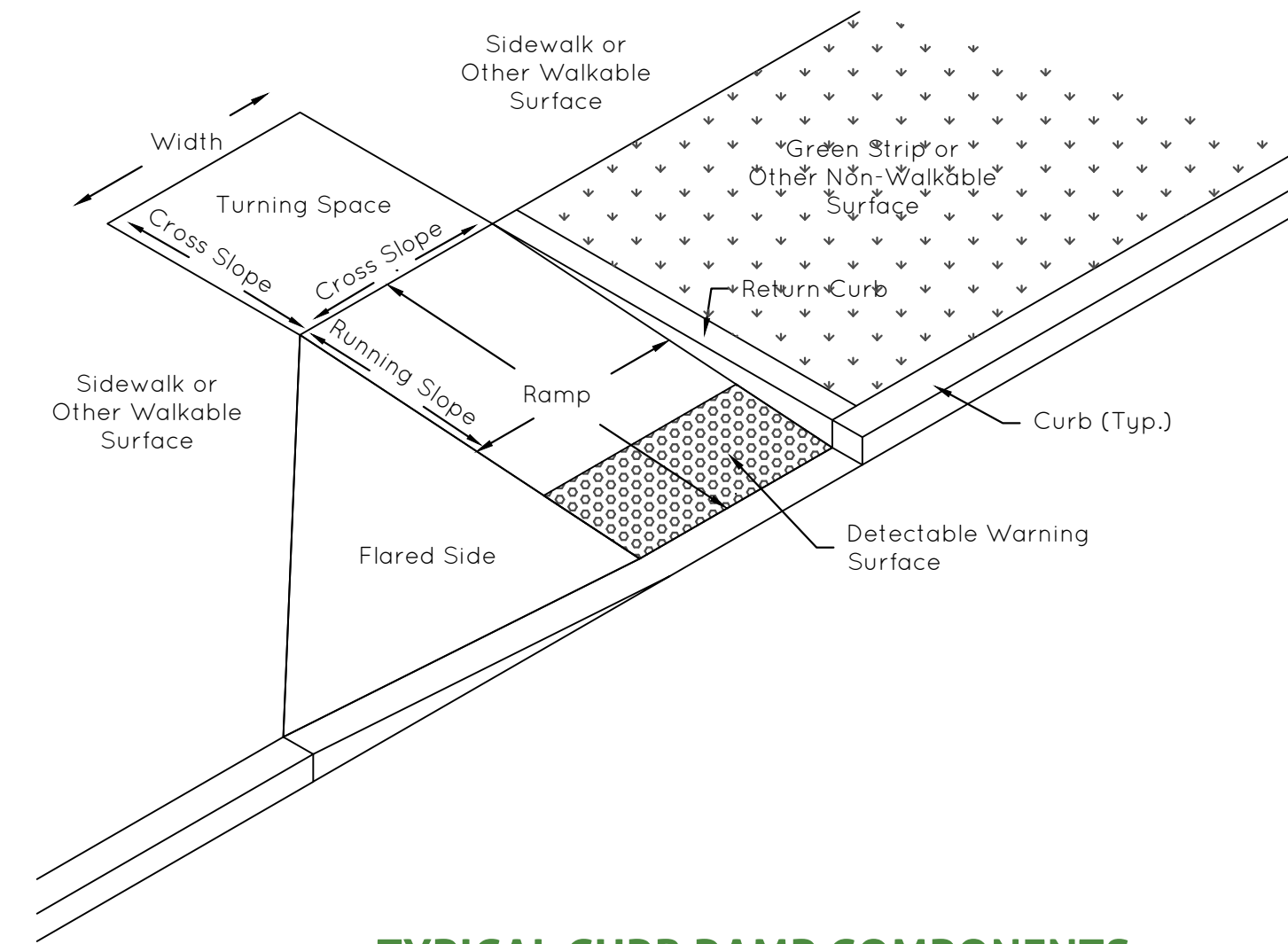
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

DRIVEWAY, CUL-DE-SAC, AND MISC. TRANSPORTATION DETAILS

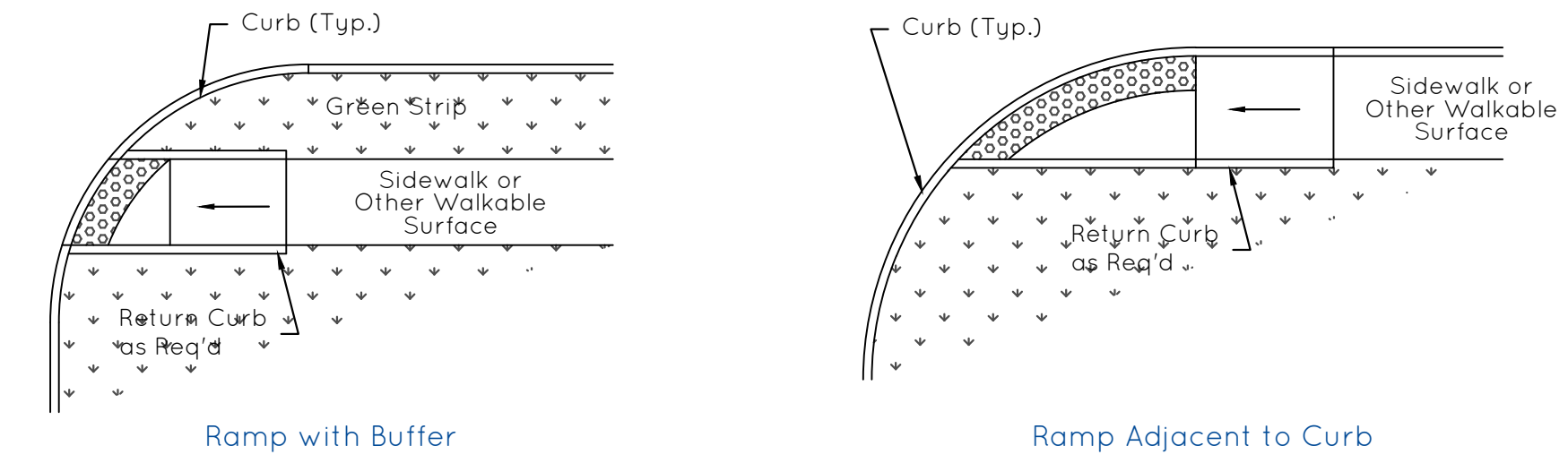
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NOTES

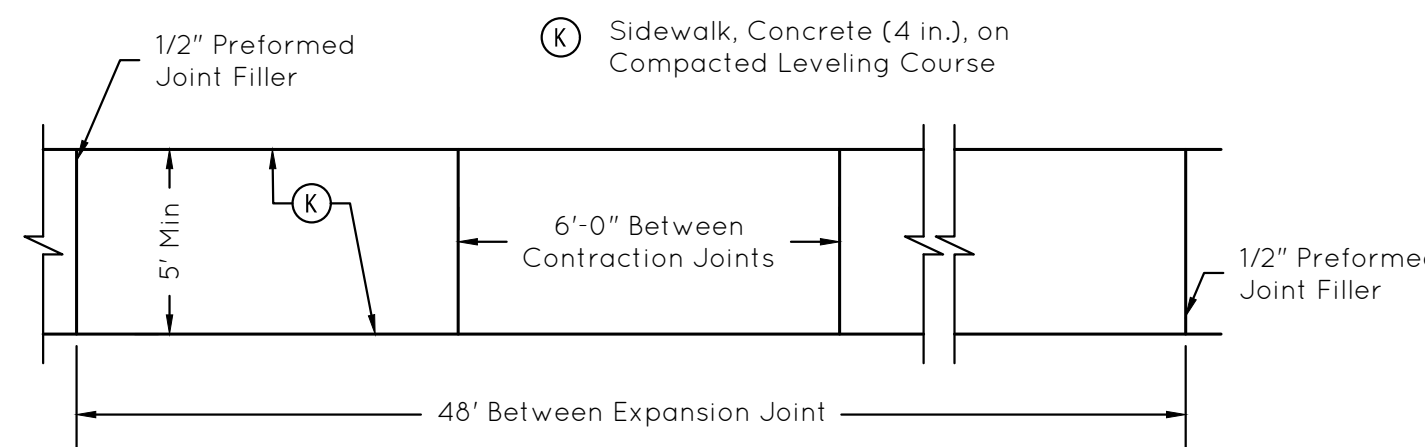
- 1) Curb ramps and sidewalks shall be constructed in accordance with INDOT Standard Specifications, Section 604.
- 2) All sidewalks and curb ramps within Fishers Right-of-Way shall be ADA compliant.
- 3) Detectable Warning Surfaces shall be cast iron type and shall be powder coated black.
- 4) Detectable Warning Surfaces shall not be installed at commercial or private driveways unless traffic warrants or approved by City Engineer.
- 5) Transverse joints shall be cut with a jointer having a radius of 1/2-inch of spacing.
- 6) Decorative sidewalks are not permitted unless prior approval has been given by the Director of Engineering.
- 7) When sidewalk is built in conjunction with concrete pavement, expansion and contraction joints should be placed at the same location as the pavement slab. The curb and gutter shall be tied to the pavement by 1/2-in round preformed epoxy coated bars at approximate 3-foot intervals. If concrete pavement is not being built at the same time the curb is constructed, expansion joints should be placed at the ends of all returns and at intervals not to exceed 100 feet. Contraction joints should be installed at 20-foot intervals.
- 8) Curb inlets shall not be allowed within 2 feet of curb ramps or at the apex of corner radii.



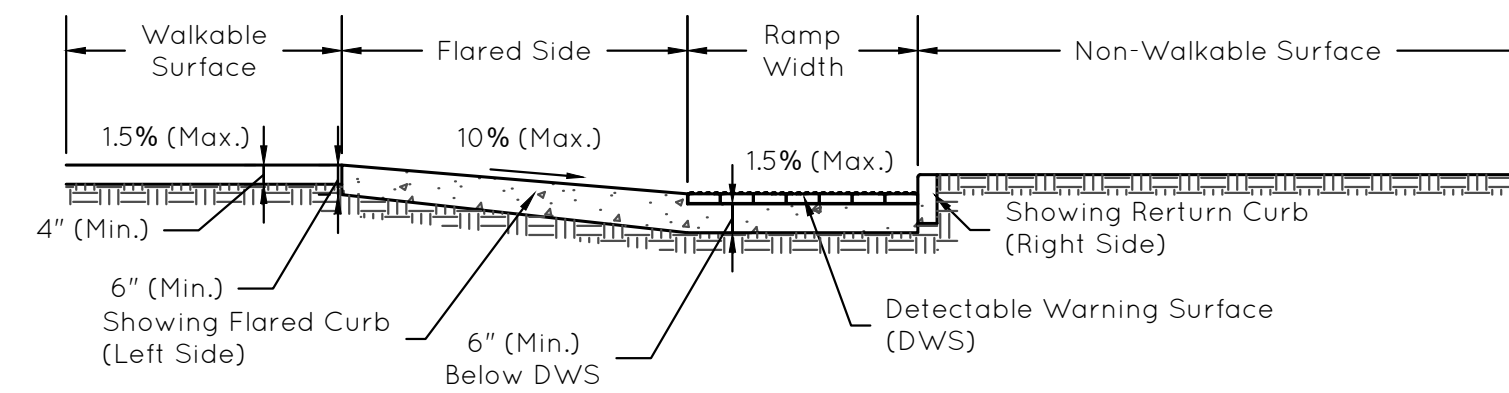
TYPICAL CURB RAMP COMPONENTS
Not to Scale



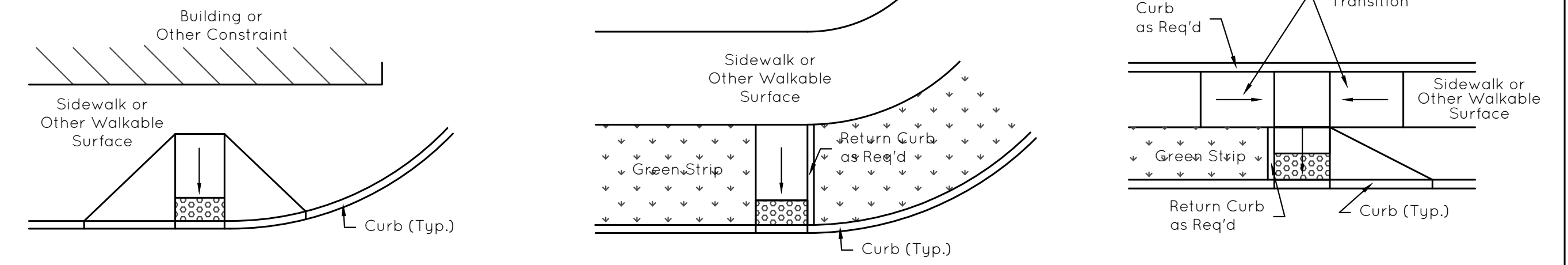
ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP EXAMPLES
Not to Scale



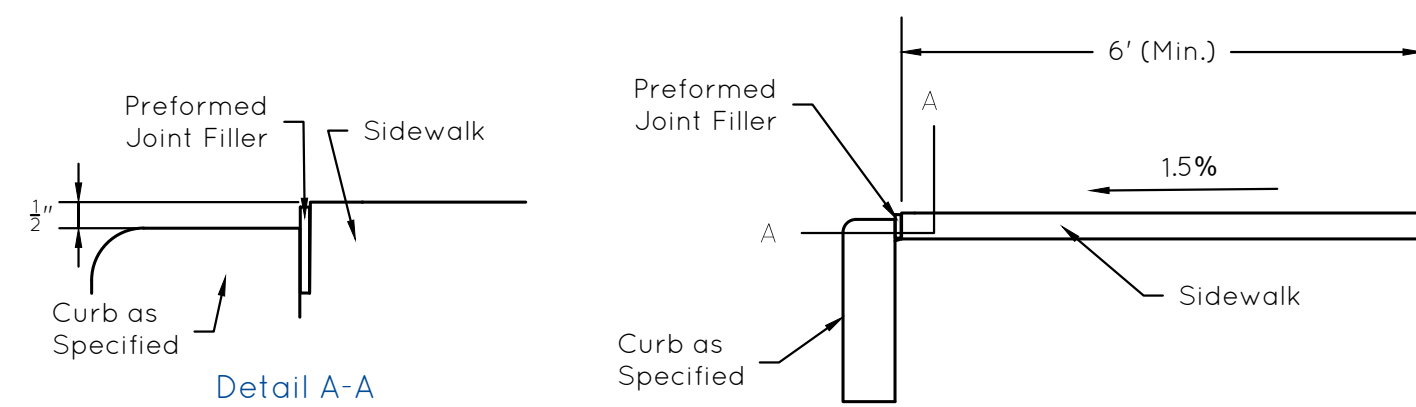
SIDEWALK DETAIL
Not to Scale



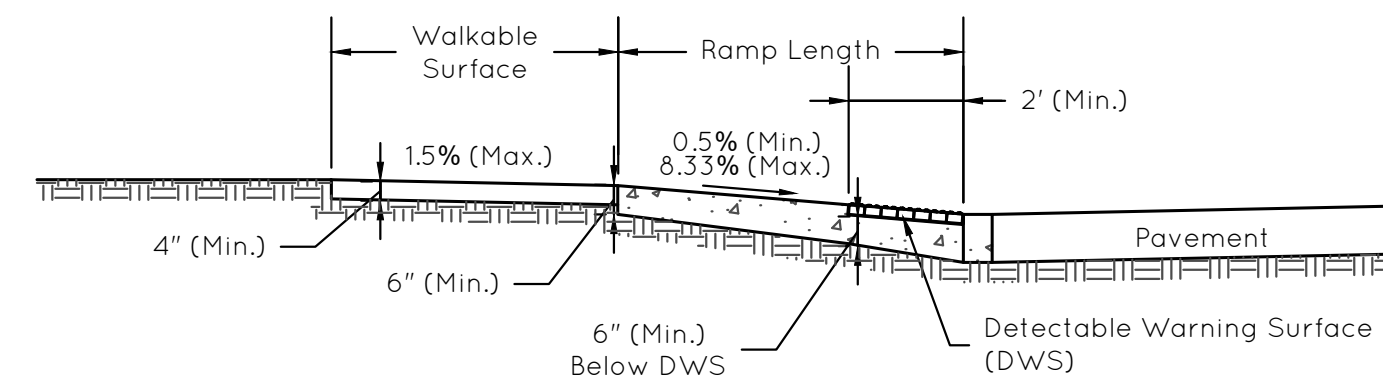
TYPICAL CURB RAMP CROSS SLOPE SECTION
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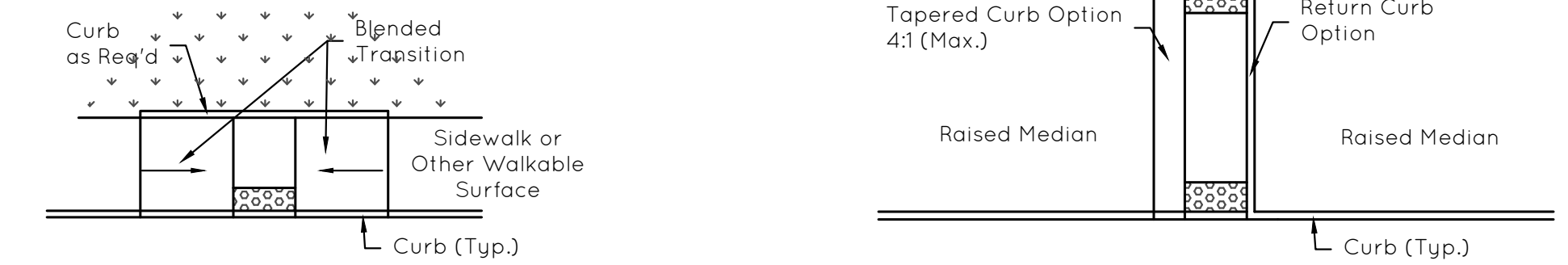
PERPENDICULAR CURB RAMP EXAMPLES
Not to Scale



SIDEWALK ADJACENT TO CURB
Not to Scale

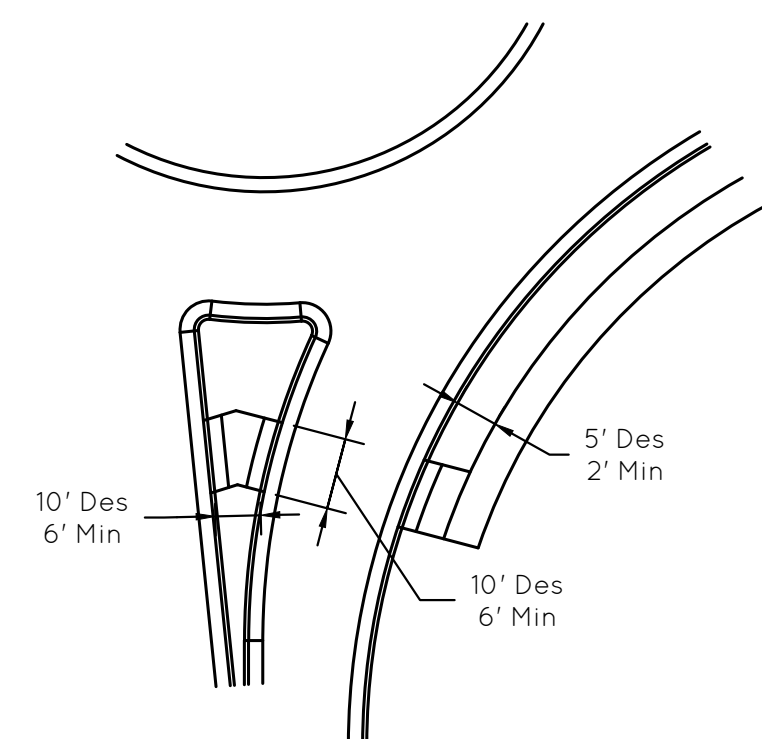


TYPICAL CURB RAMP RUNNING SLOPE SECTION
Not to Scale



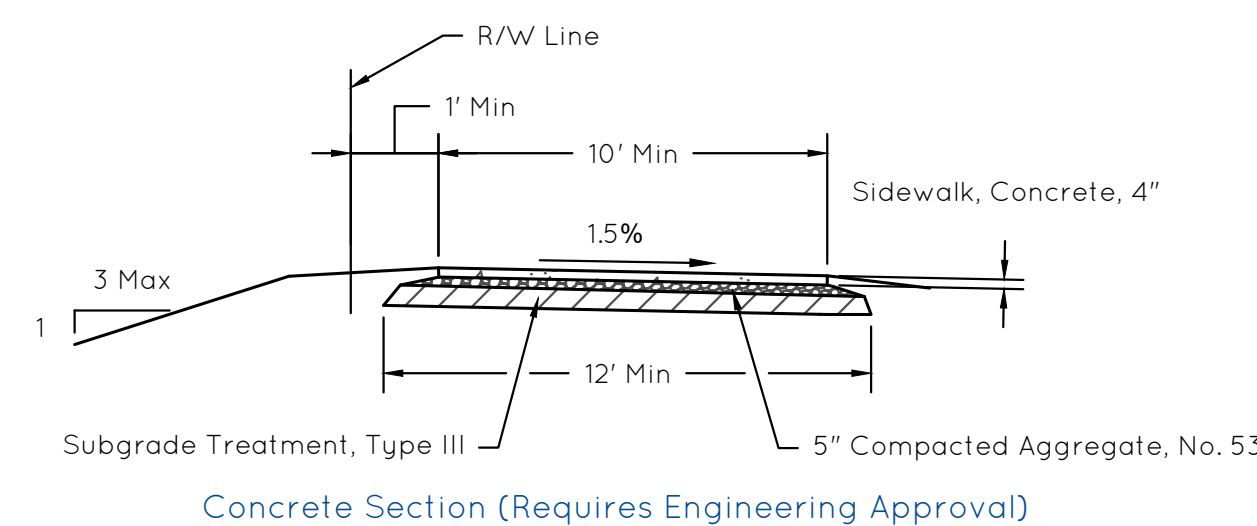
PARALLEL CURB RAMP EXAMPLE
Not to Scale

MEDIAN CURB RAMP EXAMPLE
Not to Scale

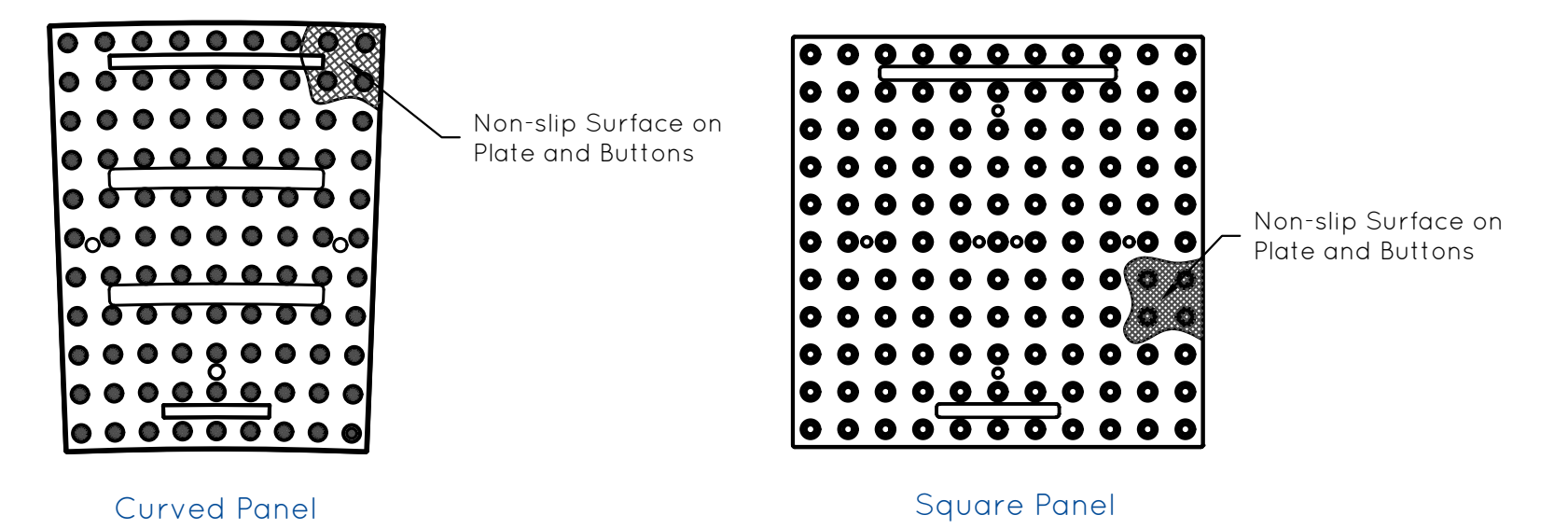
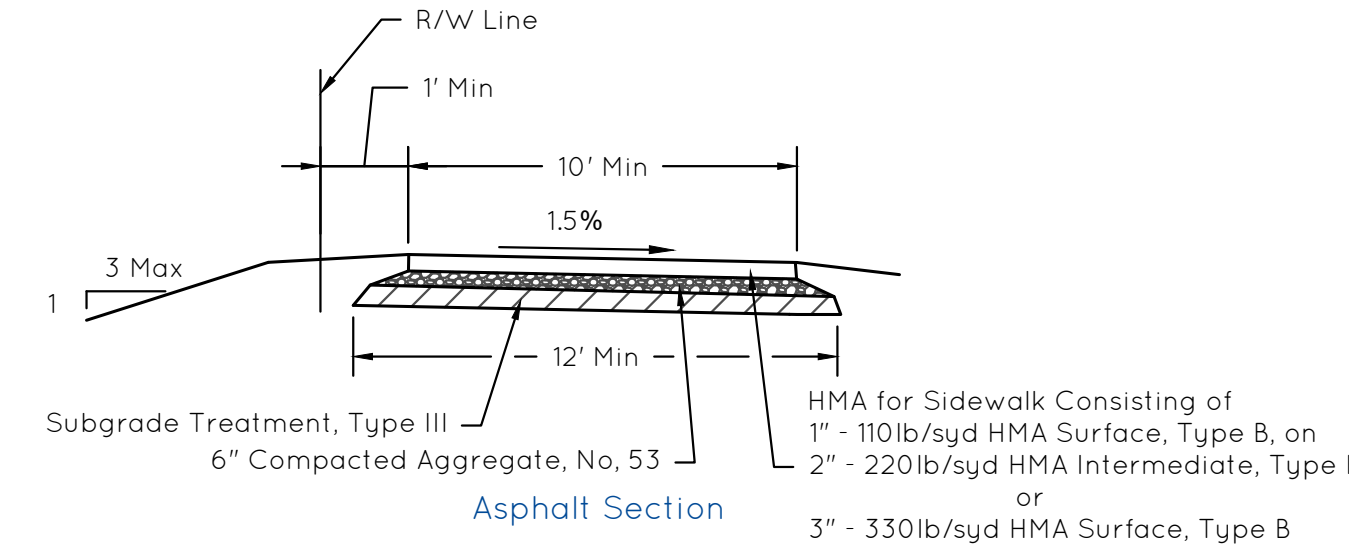


Note:
1) If 6' minimum cannot be achieved at the splitter island, crosswalk shall be of passthrough type without angular deflection.

ROUNDBOULT SIDEWALK AND CURB RAMP PLACEMENT
Not to Scale



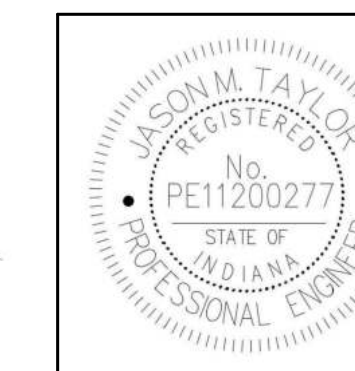
PERIMETER PATH
Not to Scale



- Note:
- 1) Detectable warning surfaces by East Jordan Iron Works, Neenah, or approved equal shall be cast iron, have a heavy duty load rating, and be powder coated black.
 - 2) Detectable warning surfaces shall be ADA compliant.

DETECTABLE WARNING SURFACE
Not to Scale

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1/18/2022



CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

SIDEWALK, CURB RAMP, AND PERIMETER PATH DETAILS

SHEET

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PRINCIPLES AND OBJECTIVES

Several overarching principles should guide the development of all roundabout designs. Achieving these principles should be the goal of any roundabout design:

- Provide slow entry speeds and consistent speeds through the roundabout by using deflection.
- Provide the appropriate number of lanes and lane assignment to achieve adequate capacity, lane volume balance, and lane continuity.
- Provide smooth channelization that is intuitive to drivers and results in vehicles naturally using the intended lanes.
- Provide adequate accommodation for the design vehicles.
- Design to meet the needs of pedestrians and cyclists.
- Provide appropriate sight distance and visibility for driver recognition of the intersection and conflicting users.

Note that some features of multi-lane roundabout design are significantly different from single-lane roundabout design, and some techniques used in single-lane roundabout design may not directly transfer to multi-lane design. Each of the principles described above affects the safety and operations of the roundabout. When developing a design, the trade-offs of safety, capacity, cost, and so on must be recognized and assessed throughout the design process.

DESIGN GUIDELINES

Submittals

All roundabout designs shall be submitted for review at the following stages of development:

- 1) Conceptual
 - 1)1) Preliminary layout
 - 1)2) Planned roundabout capacity analysis for construction year, 10-year, and 20-year traffic review
- 2) Stage 1 or 25% plans
 - 2)1) Refined geometrics
 - 2)2) Turning movement and design vehicle selection review
 - 2)3) Striping review
- 3) Stage 2 or 50% plans
 - 3)1) Drainage and grade review
 - 3)2) Roundabout sight distance review
- 4) Stage 3 or 75% plans
 - 4)1) Landscaping review
 - 4)2) Lighting review
 - 4)3) Signage review

Speed Management

The maximum allowable fastest path entry speeds shall be as indicated below unless prior approval has been given by the Department.

- 1) Single-lane roundabouts - 25 mph
- 2) Multi-lane roundabouts - 30 mph

Design Vehicle Selection

- 1) The WB-62 shall be the minimum design vehicle for sizing the roundabout unless prior approval has been given by the Department.
 - 1)1) At multi-lane approaches it shall be assumed that the WB-62 will straddle the lane line to make a through and right-turn movement.
- 2) At a minimum, the WB-62 shall be able to travel through a roundabout without over-tracking any curb with the exception of the truck apron roll curb unless prior approval has been given by the Department.
- 3) The circulatory roadway and all lanes within a multi-lane roundabout shall accommodate a city-bus, fire truck, and school bus unless prior approval has been given by the Department.

Inscribed Circle Diameter (ICD)

Unless prior approval is given by the Department, the smallest ICD used for design shall be 110 ft.

Entry Geometry and Path Alignment

- 1) If horizontal deflection is utilized on an approach to a roundabout it should be a 6 ft offset minimum and, ideally, 10 to 12 ft to ensure drive path is influenced.
- 2) Entries shall be designed such that path overlap is eliminated.

Profiles and Grades

Vertical profiles and roundabout grading should take into consideration low clearance vehicles especially on heavy truck routes.

Splitter Islands

- 1) Splitter islands for single-lane roundabouts should be 50 feet or greater in length and 100 feet or greater in length for multi-lane roundabouts measured from the circulatory roadway.
- 2) On high speed approaches (design speed of approaching roadways above 45 mph) consideration should be given for the splitter island length to be the SSD of that design speed.

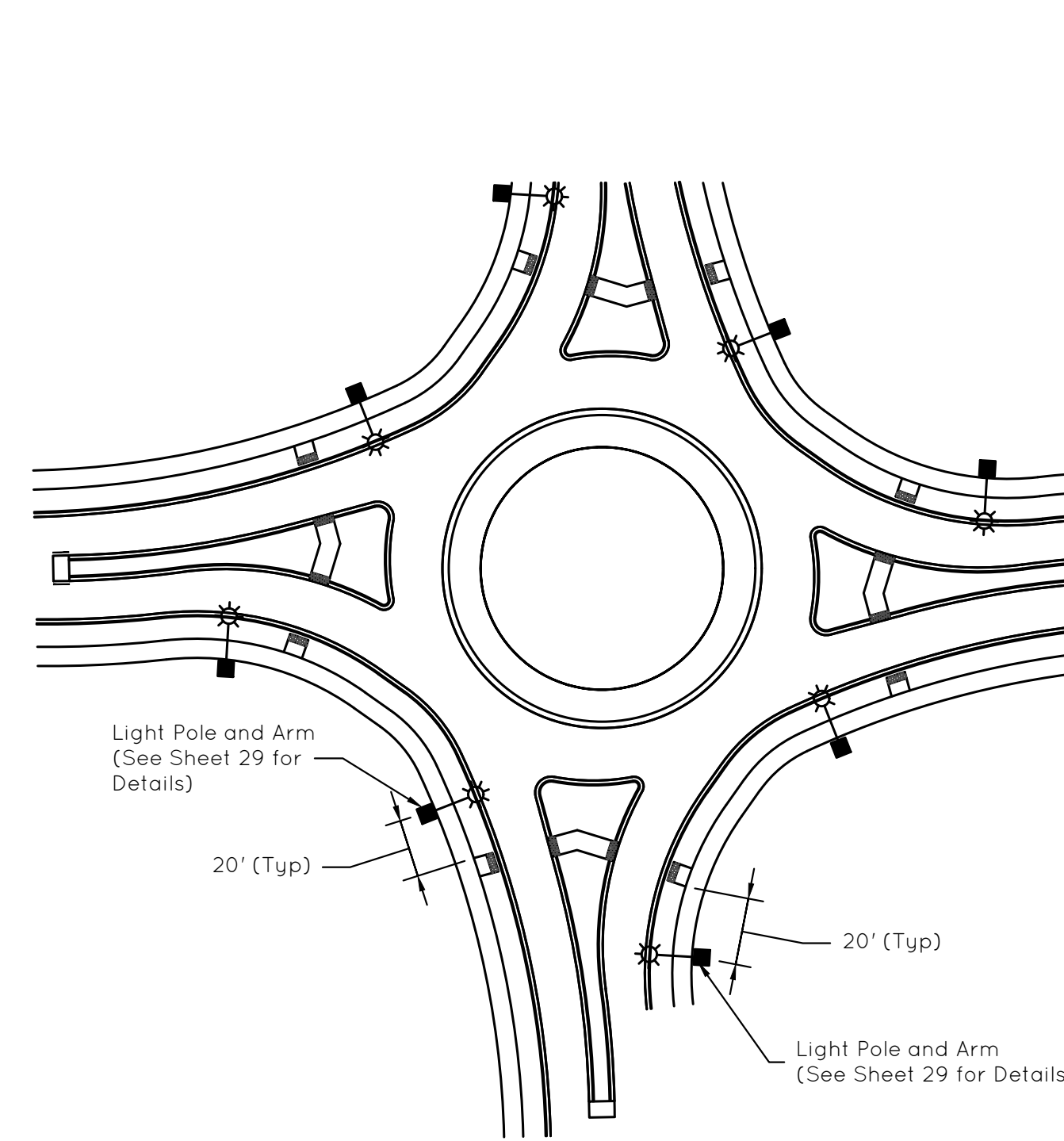
Drainage

No drainage structures shall be located within the circulatory roadway unless prior approval has been given by the Department.

Landscape

Any landscaping or object located within the center island shall be approved by the City of Fishers.

- 1) If no landscaping is proposed in the center island, fill should be placed at a 6:1 slope in order to provide a sight obstruction mound.
- 2) All splitter islands less than 8 ft in width and between the pedestrian crosswalk and circulatory roadway shall not be landscaped and shall be in stamped concrete unless prior approval has been given by the Department.
- 3) The minimum median width shall be 52 inches. If 52 inches cannot be achieved, then median must be stamped concrete or landscaped with typical Fishers narrow median landscape plan as provided by City during plan review.

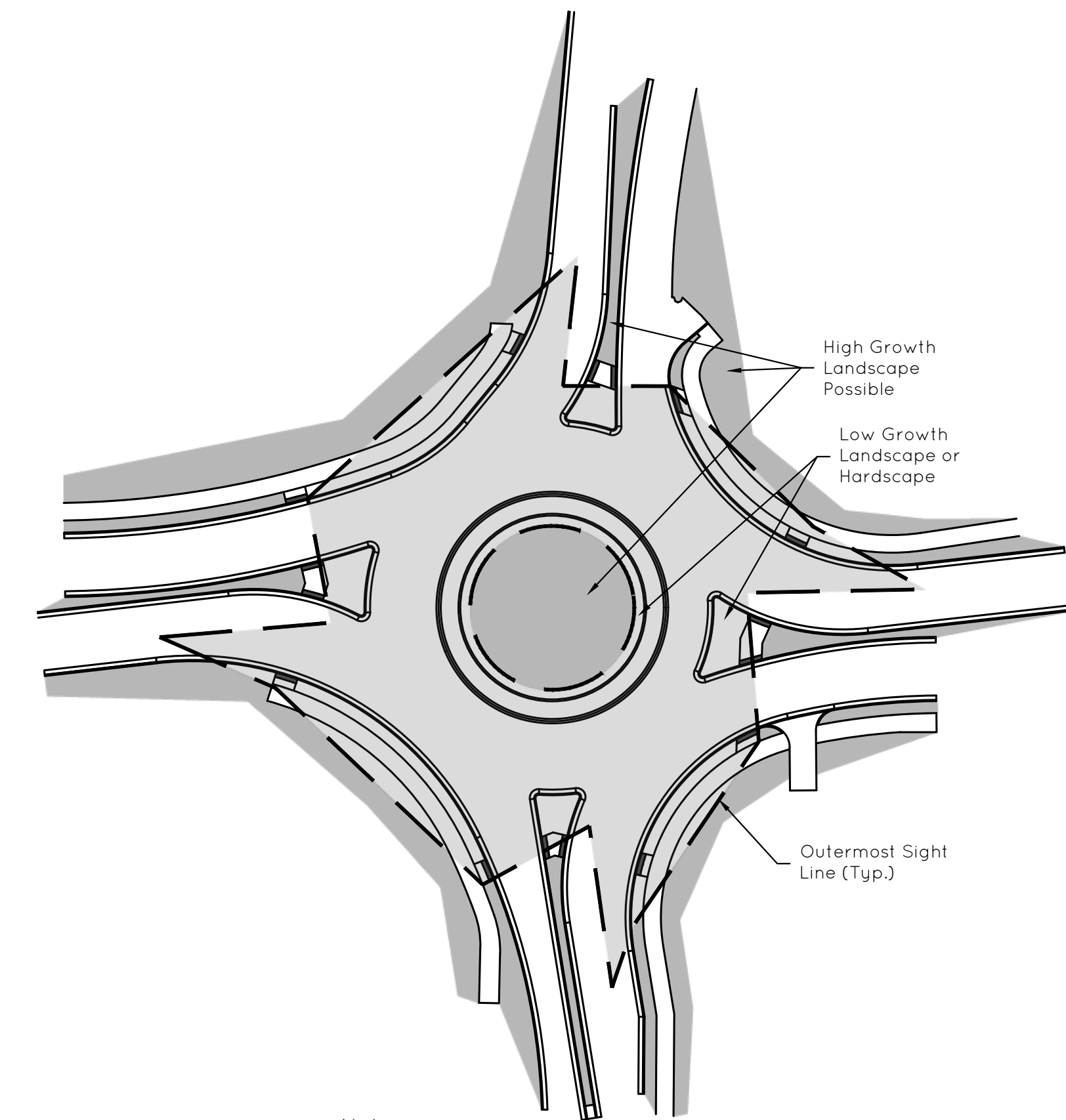


Notes:

- 1) Lighting design shall be in conformance with the IES Design Guide (IES DG-19-08) and City of Fishers standards.
- 2) Luminaire, pole, and placement shall be coordinated for installation by Duke Energy.
- 3) Do not backlight pedestrians.
- 4) The full length of splitter islands shall be illuminated unless prior approval has been given by the Department.
- 5) Additional poles should be provided as required to meet appropriate photometric results for complex geometry.

TYPICAL LIGHTING PLACEMENT

Not to Scale

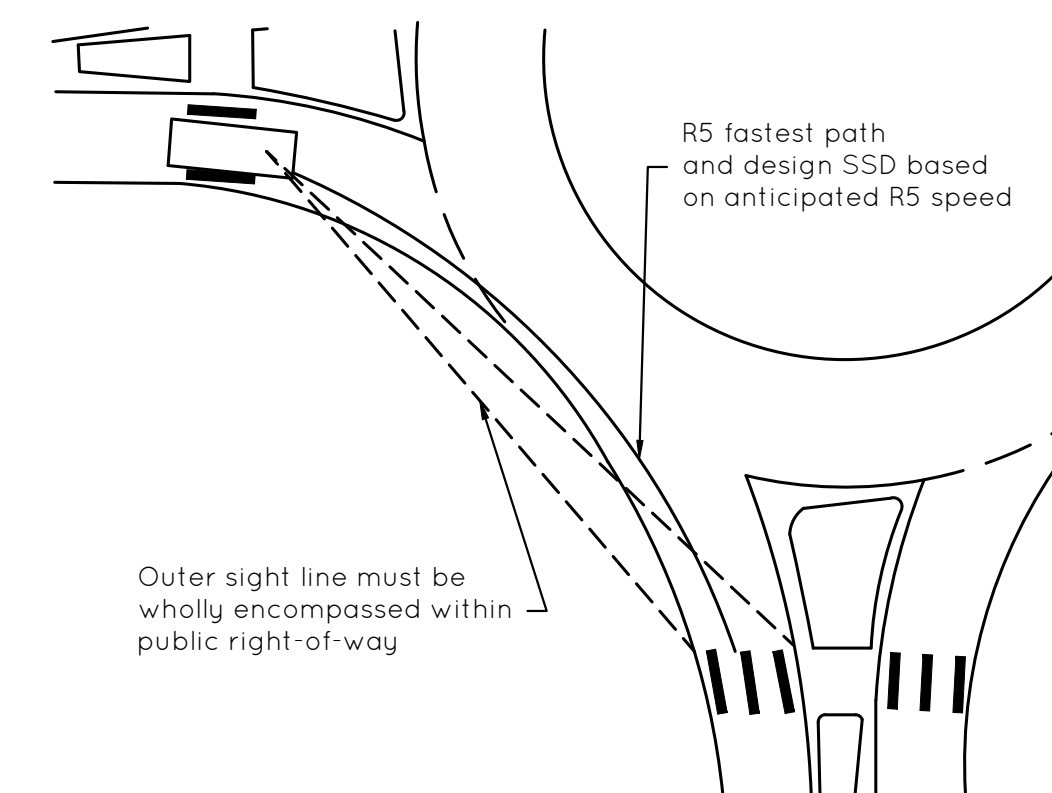


Note:

- 1) A scalable plan sheet and CAD file shall be provided to the Dept. of Engineering upon completion of final plans.

EXAMPLE LANDSCAPE AREAS DIAGRAM

Not to Scale



Notes:

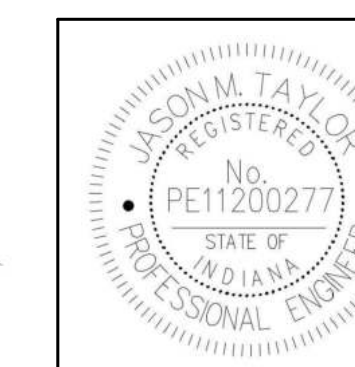
- 1) This detail is to provide additional guidance to designers. Designer shall not arbitrarily place vehicle at yield line or circulatory roadway edge line to check visibility.
- 2) All roundabout sight lines shall be checked in accordance with NCHRP 672.

STOPPING SIGHT DISTANCE (SSD) TO CROSSWALK

Not to Scale

J. Taylor

1/18/2022

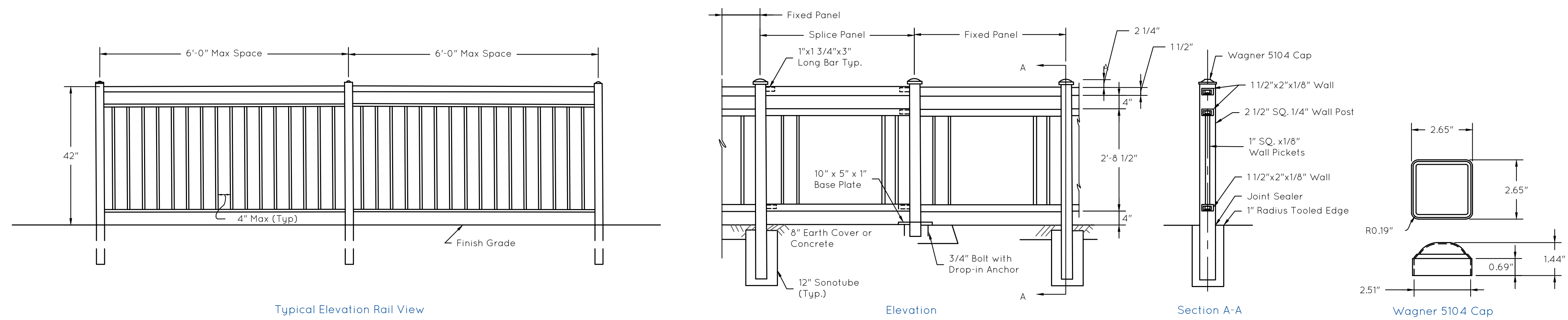


CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

ROUNDABOUT DESIGN
STANDARDS

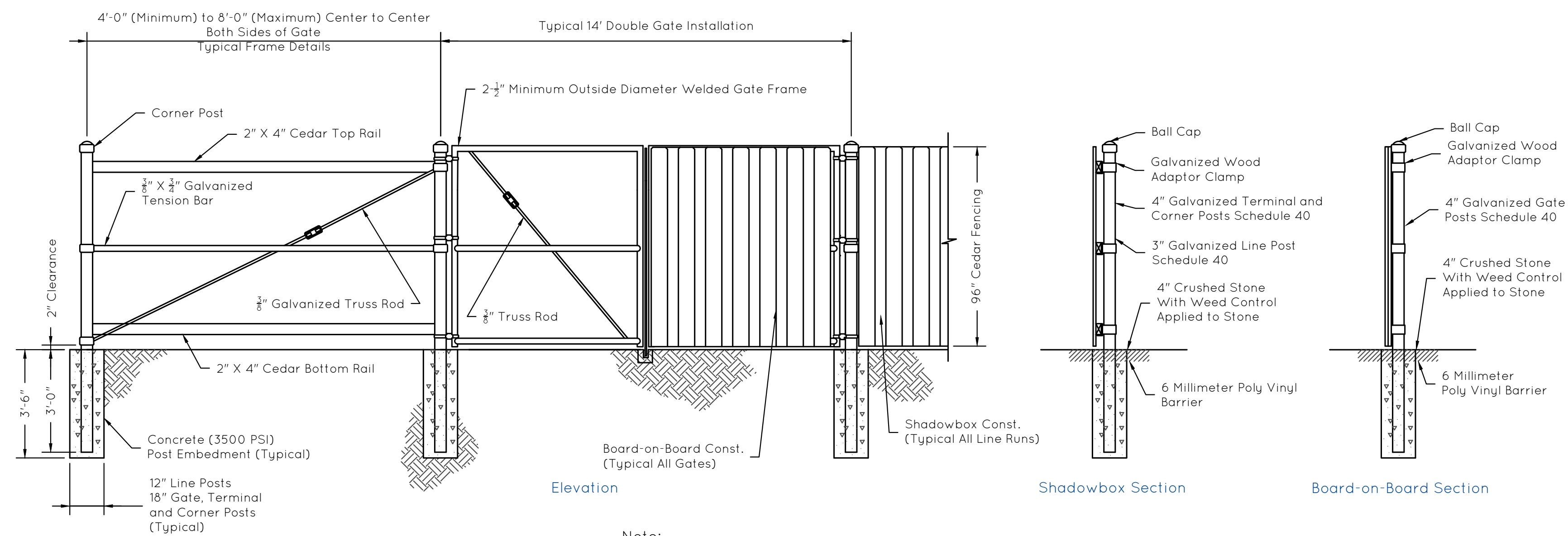
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- Notes:
- 1) All extrusions aluminum 6061-T6 or 6063-T6.
 - 2) Pedestrian handrail shall be powder coated in accordance with ASTM D7803 and D3359. Powder coating color shall be Fishers Green (RAL 6004).
 - 3) Fixed panel sections will consist of two to three 6' maximum post pace sections welded as an assembly.
 - 4) Splice panel sections will consist of a loose top rail section and a welded pick panel section field assembled onto the 1" x 1 3/4" x 3" long bar supports.
 - 5) Railing connections shall be designed per AASHTO LRFD Bridge Design Specifications (Latest Edition).
 - 6) Footing and post embedment to be designed by the manufacturer. All concrete shall be Class "A" (3500 PSI). Posts may be anchored to precast concrete headwalls.
 - 7) Handrail to be used in conjunction with combined walk and retaining wall detail.

PEDESTRIAN HANDRAIL
Not to Scale

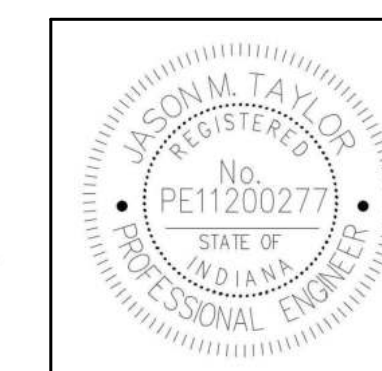


- Note:
- 1) Only for lift stations conveyed to Fishers.

CEDAR FENCE
Not to Scale

J. Taylor

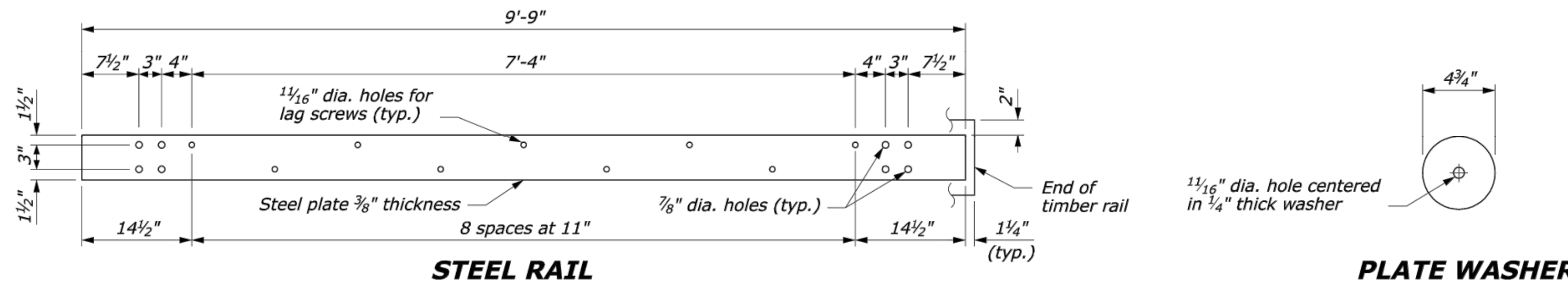
1/18/2022



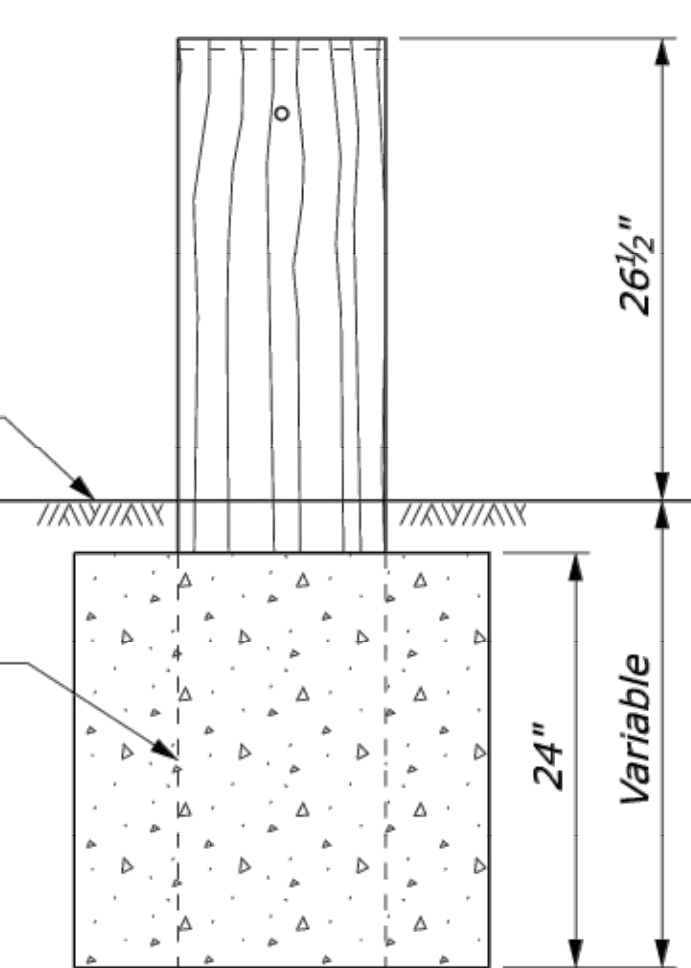
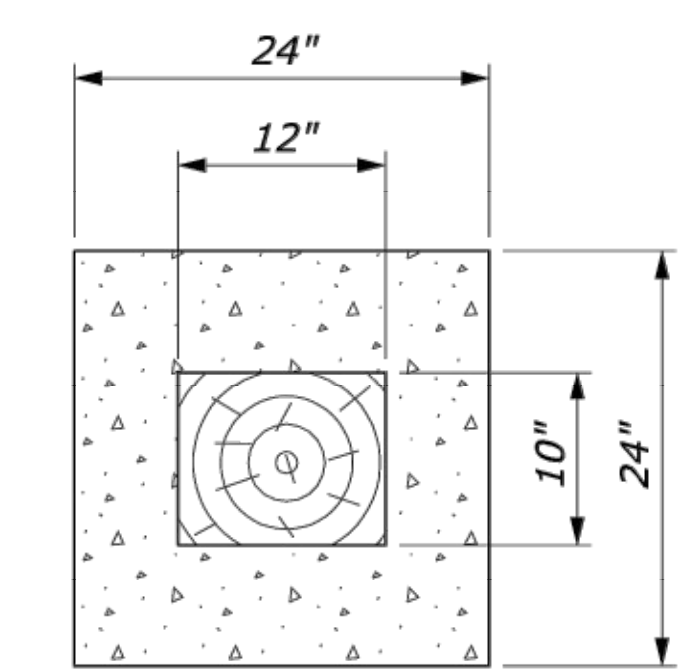
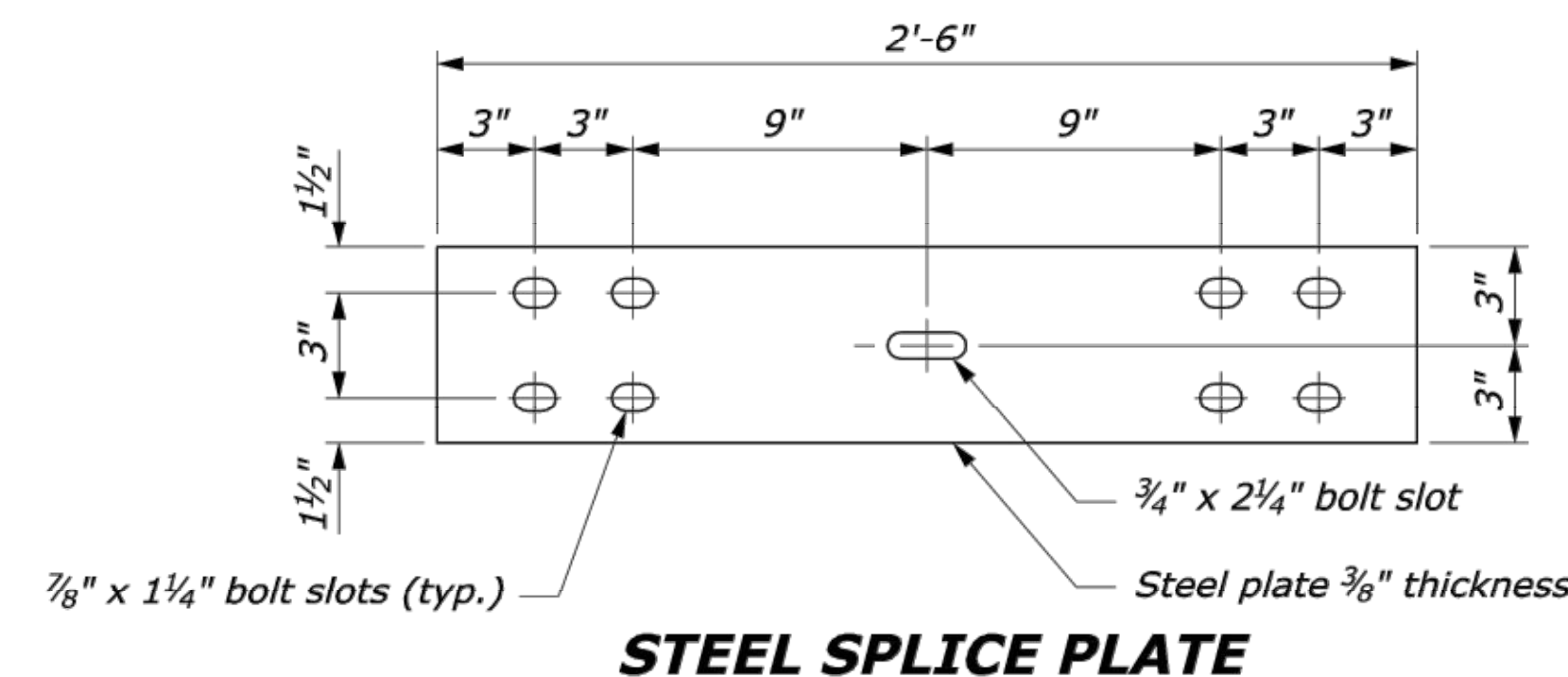
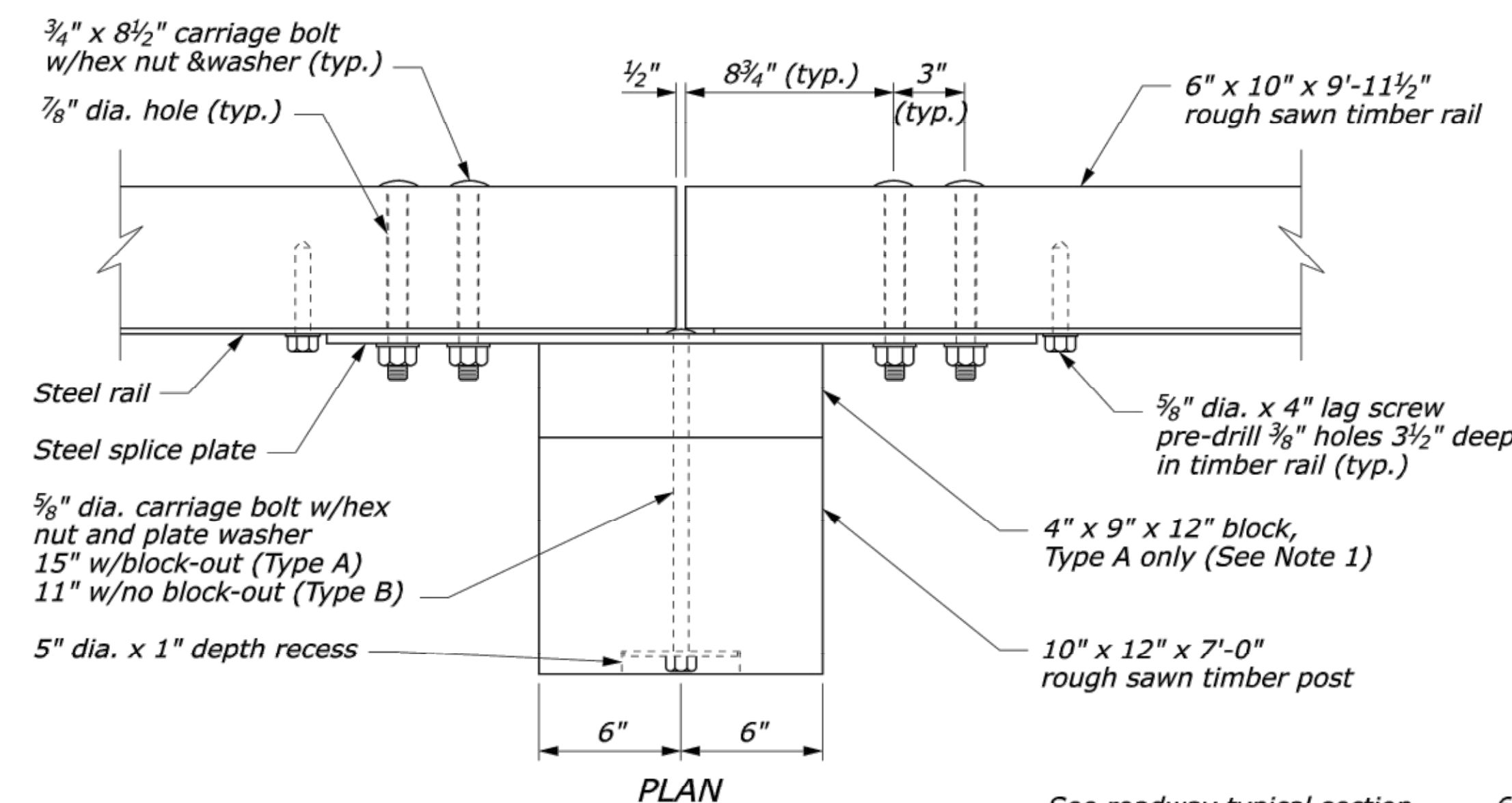
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

CEDAR FENCE AND PEDESTRIAN
HANDRAIL DETAILS

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of
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- NOTE:**
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified in the plans.
 2. Use weathering steel for all structural steel and fastener hardware as specified.
 3. Place a terminal section (See Standards 617-61 and 617-62) on both approach and trailing ends of barrier installations.

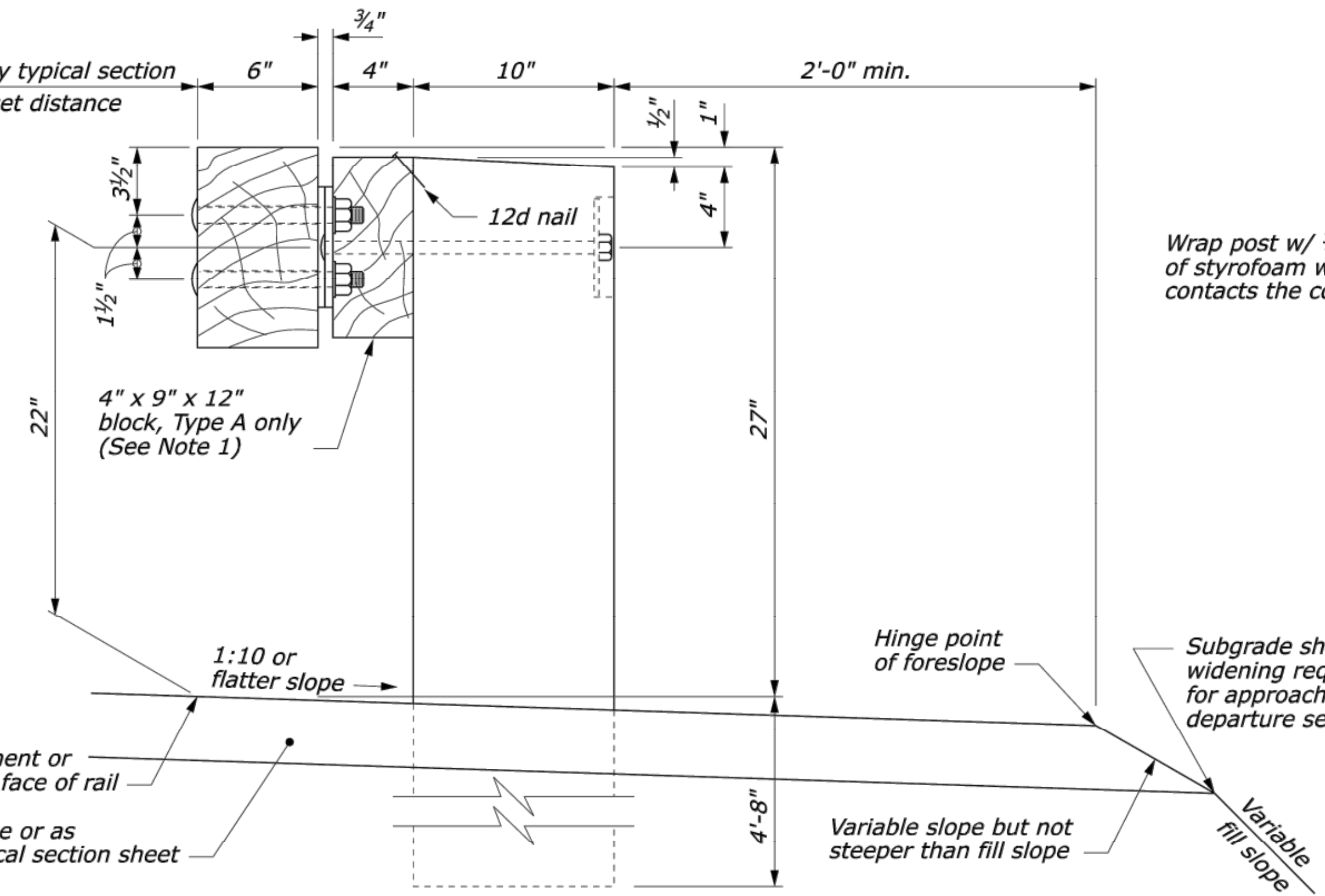
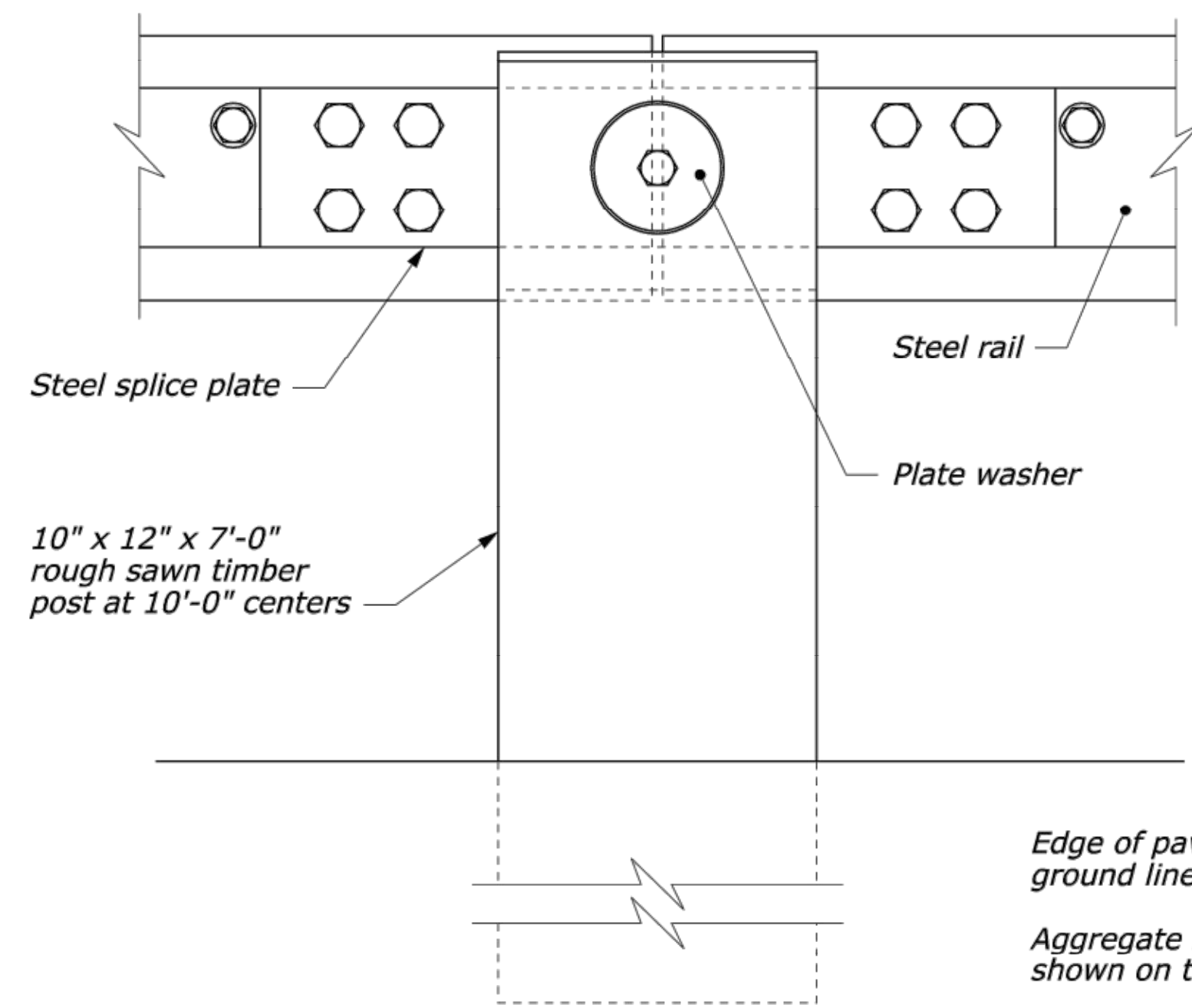


Ground line

Wrap post w/ 1/2" of styrofoam where it contacts the concrete anchor

24" dia. round anchor is an acceptable alternative. Reduced size acceptable in solid rock.

CONCRETE ANCHOR FOR SHORT GUARDRAIL POST

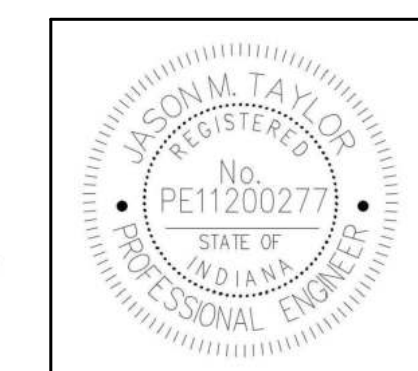


ELEVATION POST CONNECTION

TYPICAL GUARDRAIL CROSS SECTION

NO SCALE

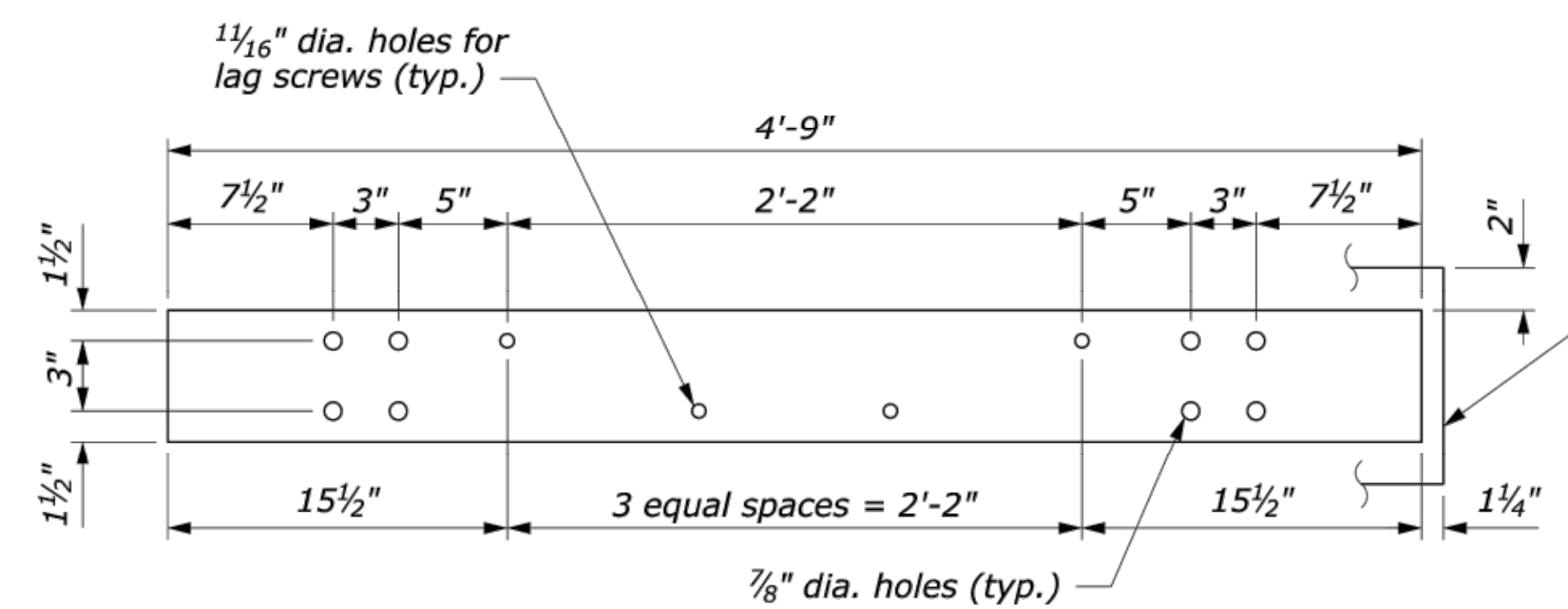
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
STEEL-BACKED TIMBER GUARDRAIL TYPE A & TYPE B	
STANDARD APPROVED FOR USE 3/1990	STANDARD
REVISED: 4/1994 6/2005	617-60



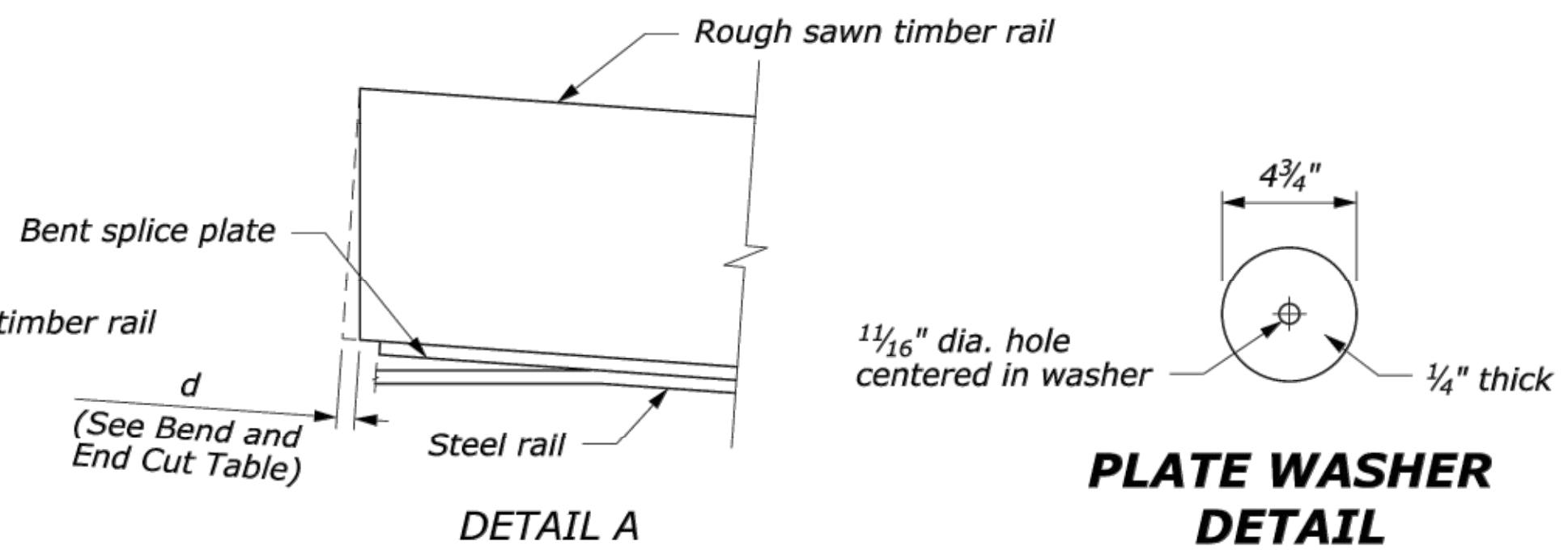
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

FHWA TIMBER GUARDRAIL DETAILS

J. Taylor
1/18/2022

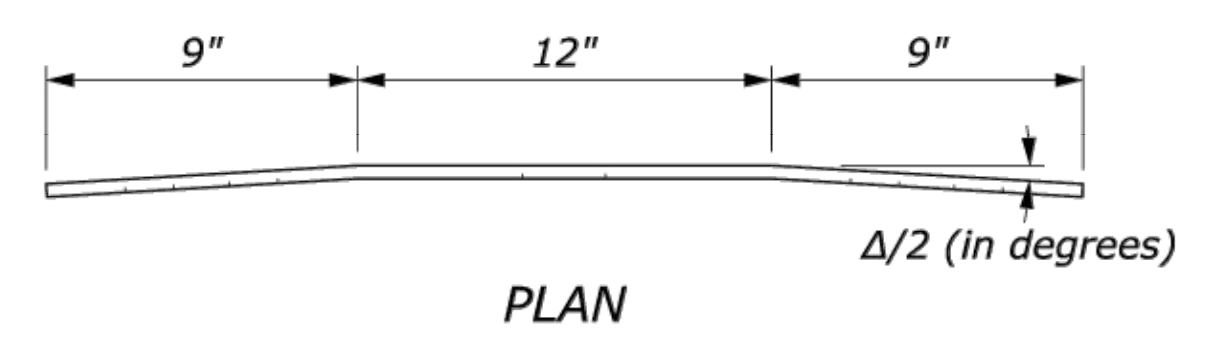
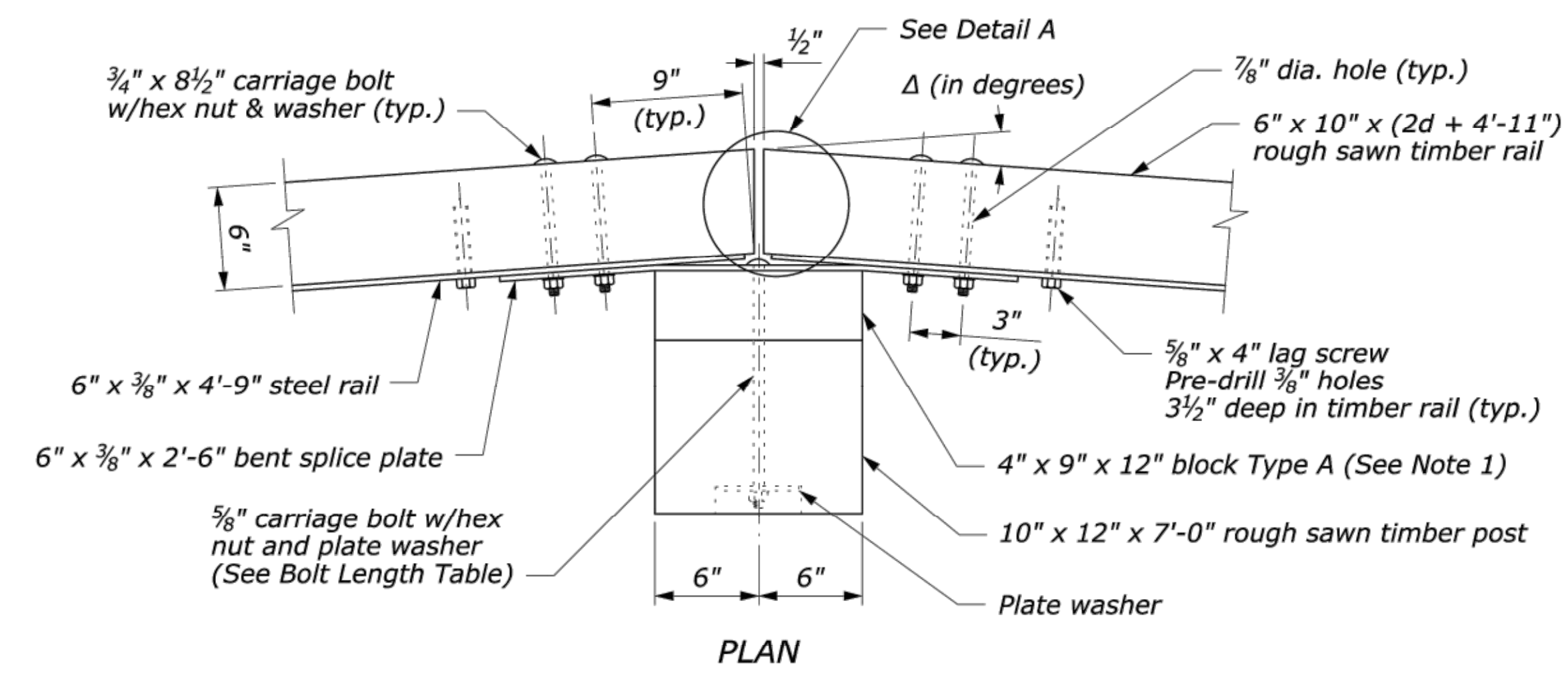


STEEL RAIL
6" x 3/8" x 4'-9"



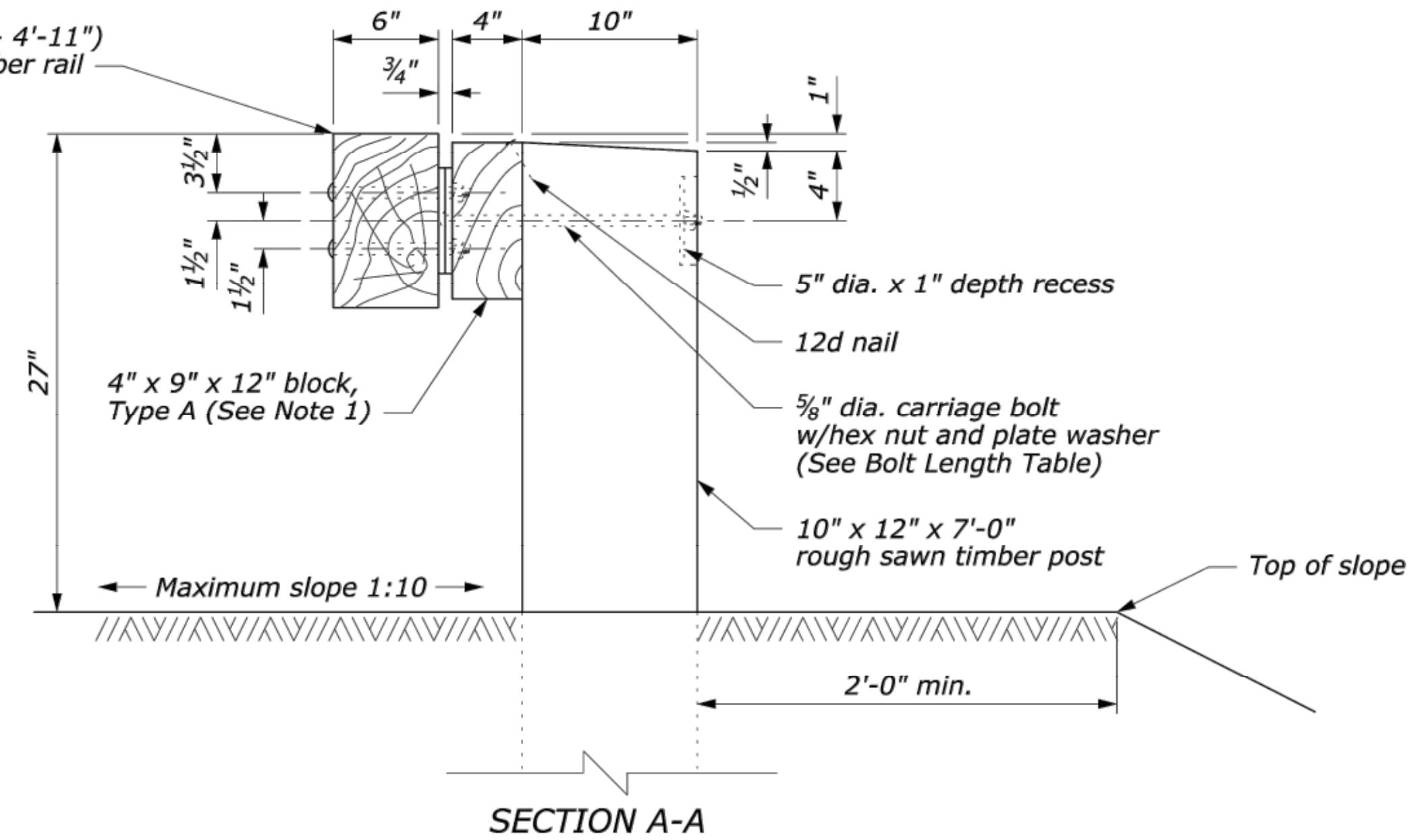
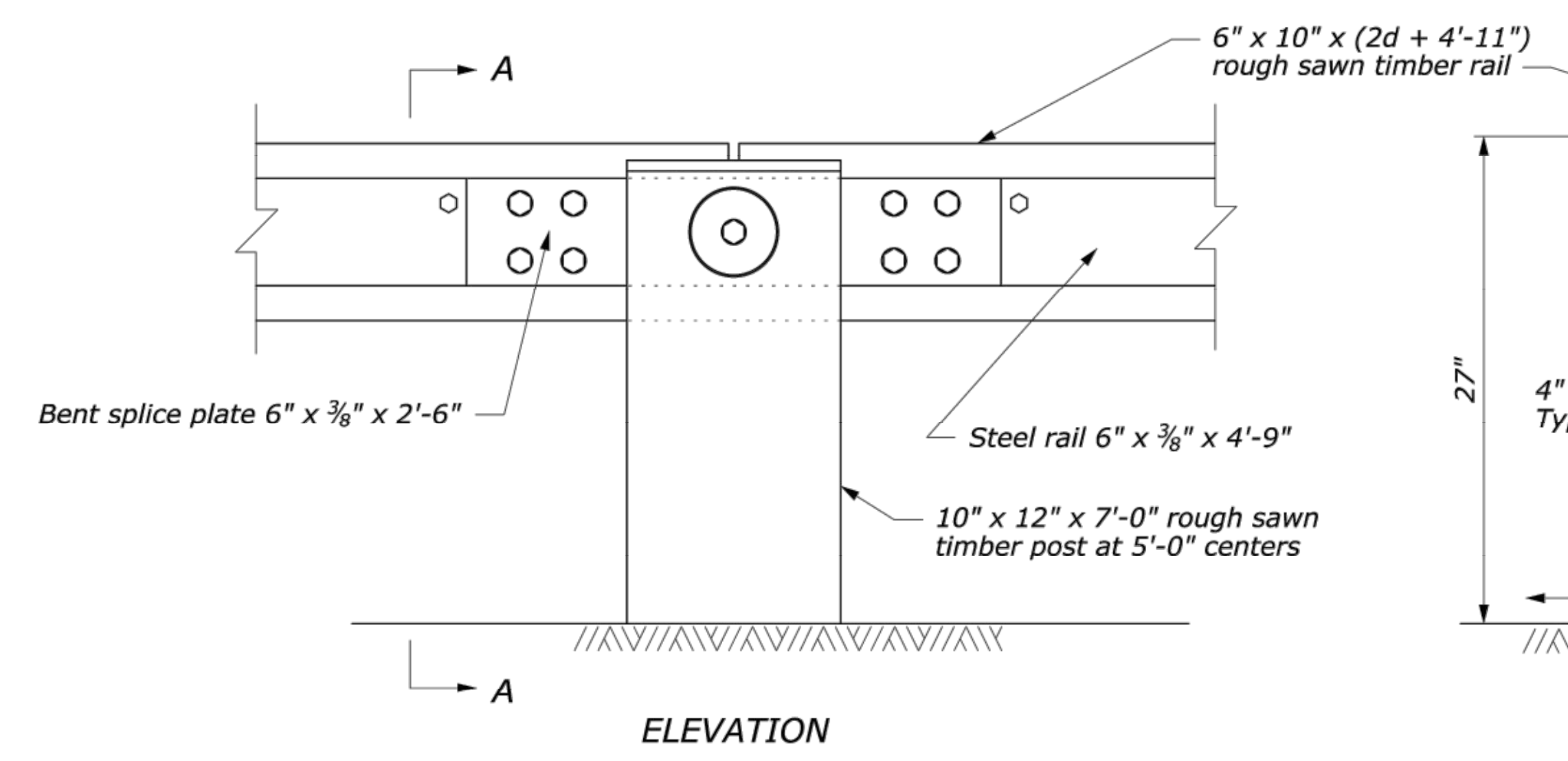
NOTE:

1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified.
2. Use the weathering steel for all structural steel and fastener hardware.
3. Furnish shop bent splice plates. Use the minimum bend angle shown in the table below.
4. See Sheet 2 of 2 for Plan View Layout.



BENT SPLICE PLATE
6" x 3/8" x 2'-6"

Radius R ft	Δ/2 degrees	d in
20	7.18	3/4
25	5.74	5/8
30	4.78	1/2
35	4.10	7/16
40	3.58	3/8
45	3.18	1/2
50	2.87	5/16
55	2.61	1/4
60	2.39	1/4
65	2.20	1/4
70	2.05	1/4
over 70	flat	0



POST CONNECTION

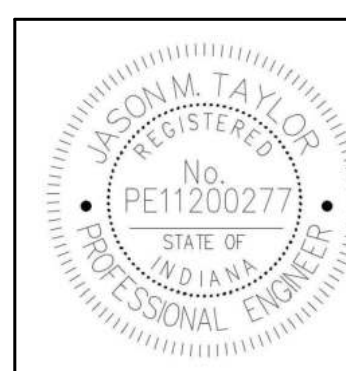
Type A (Block-out)	Type B (No Block-out)
15"	11"

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

U.S. CUSTOMARY STANDARD
**STEEL-BACKED TIMBER GUARDRAIL
AROUND CIRCULAR CURVES
70 FOOT RADIUS AND BELOW**
Sheet 1 of 2

STANDARD APPROVED FOR USE 6/2005
REVISED: STANDARD 617-63

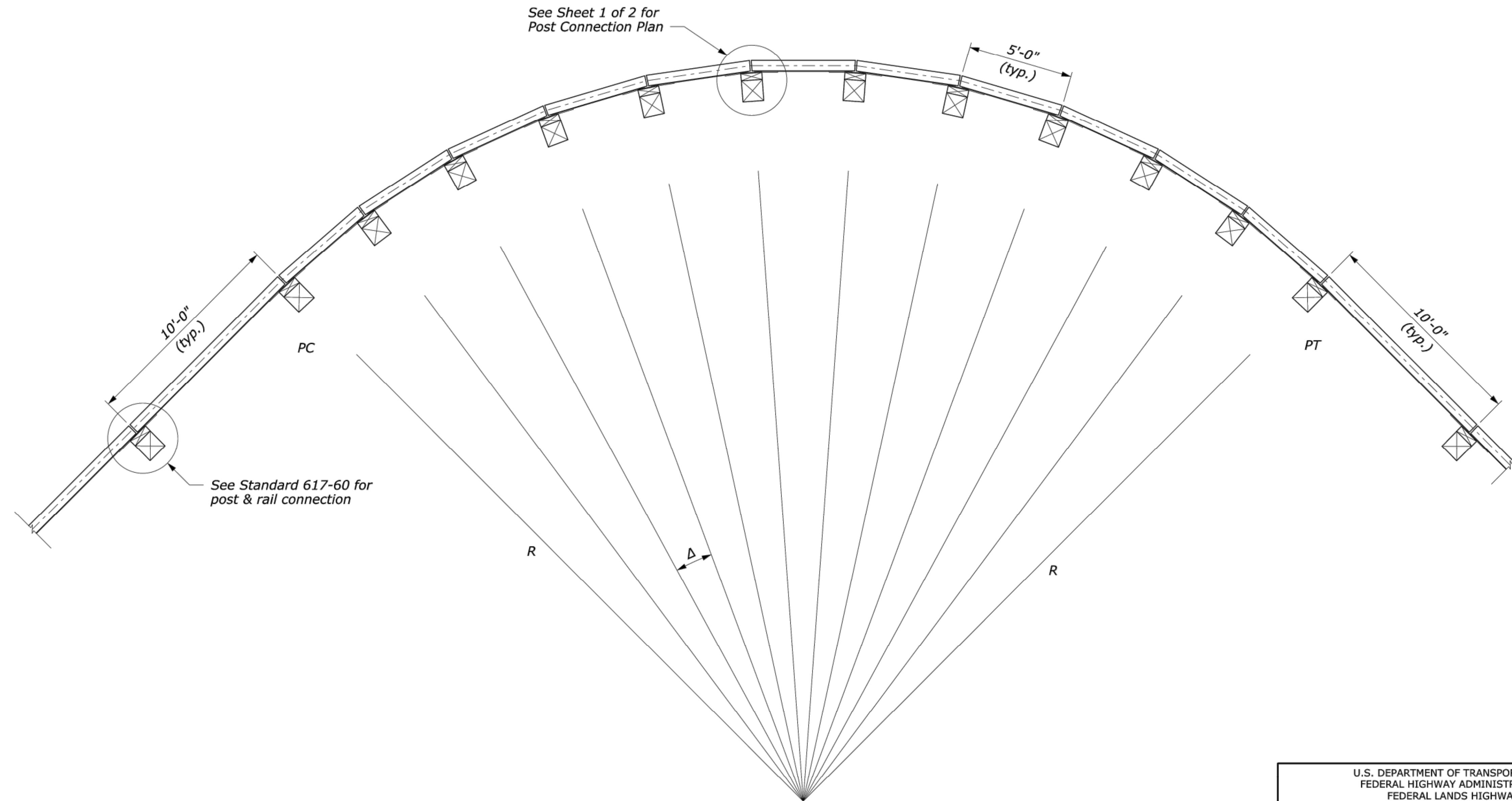
NO SCALE



STATE	PROJECT	SHEET NUMBER

NOTE:

1. Δ is the central angle which subtends a 5'-0" chord.
2. R is measured from the center of the circle to the back surface of the rough sawn timber rail.



PLAN VIEW LAYOUT

NO SCALE

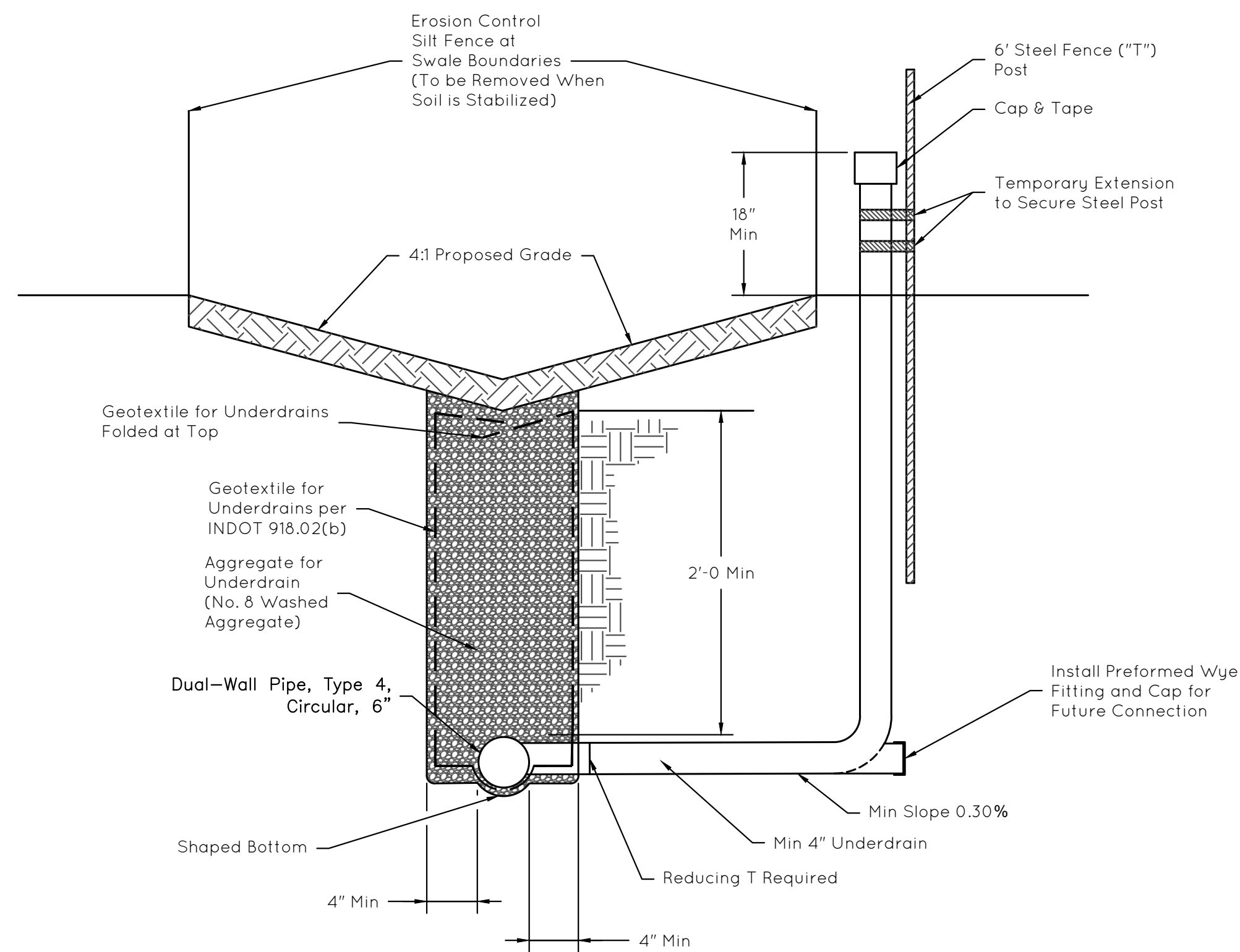
U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
STEEL-BACKED TIMBER GUARDRAIL AROUND CIRCULAR CURVES 70 FOOT RADIUS AND BELOW	
Sheet 2 of 2	
STANDARD APPROVED FOR USE 6/2005	STANDARD
REVISED:	617-63

1/18/2022



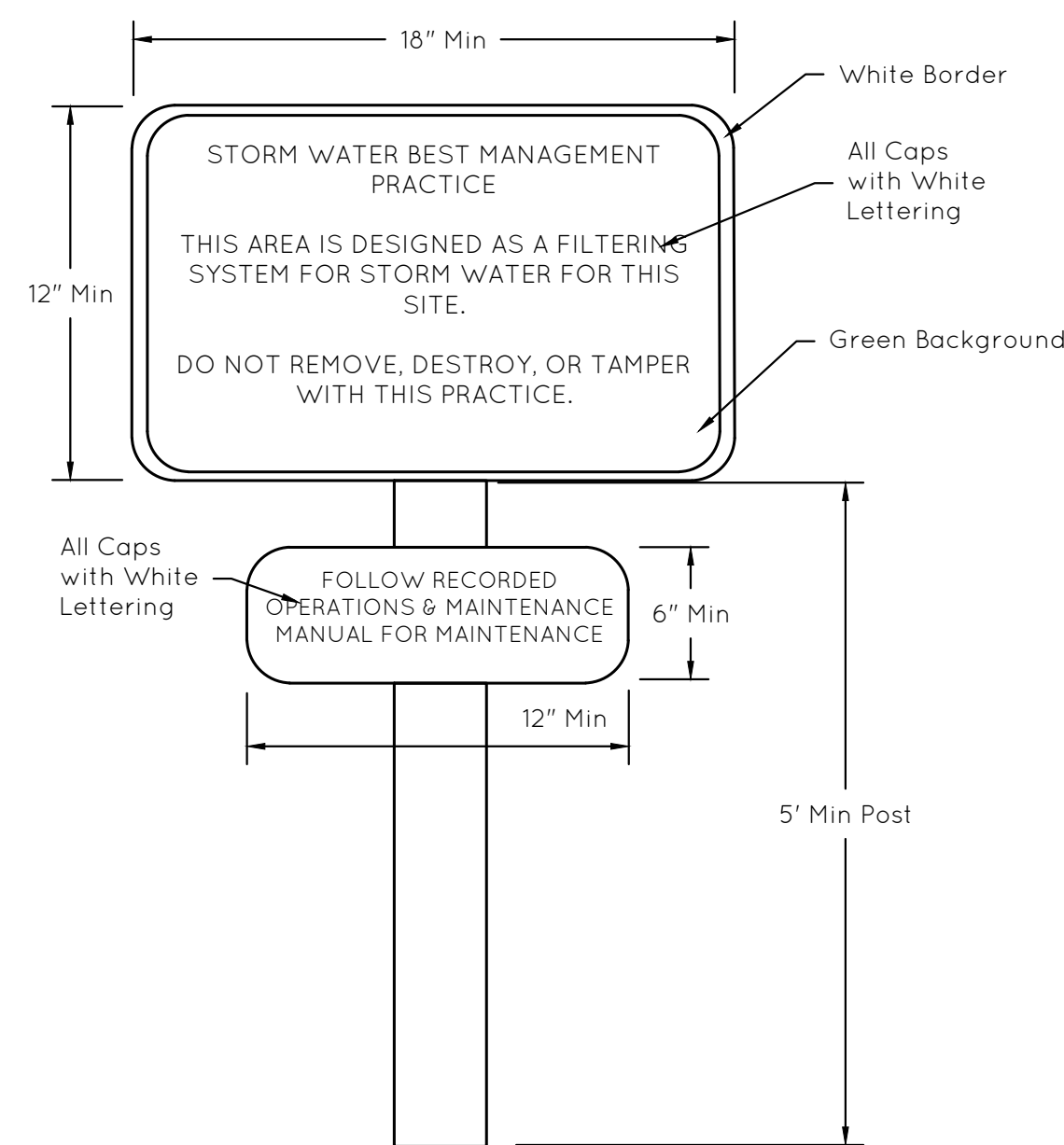
CITY OF FISHERS	
STANDARD CONSTRUCTION DETAILS	
FHWA TIMBER GUARDRAIL DETAILS	

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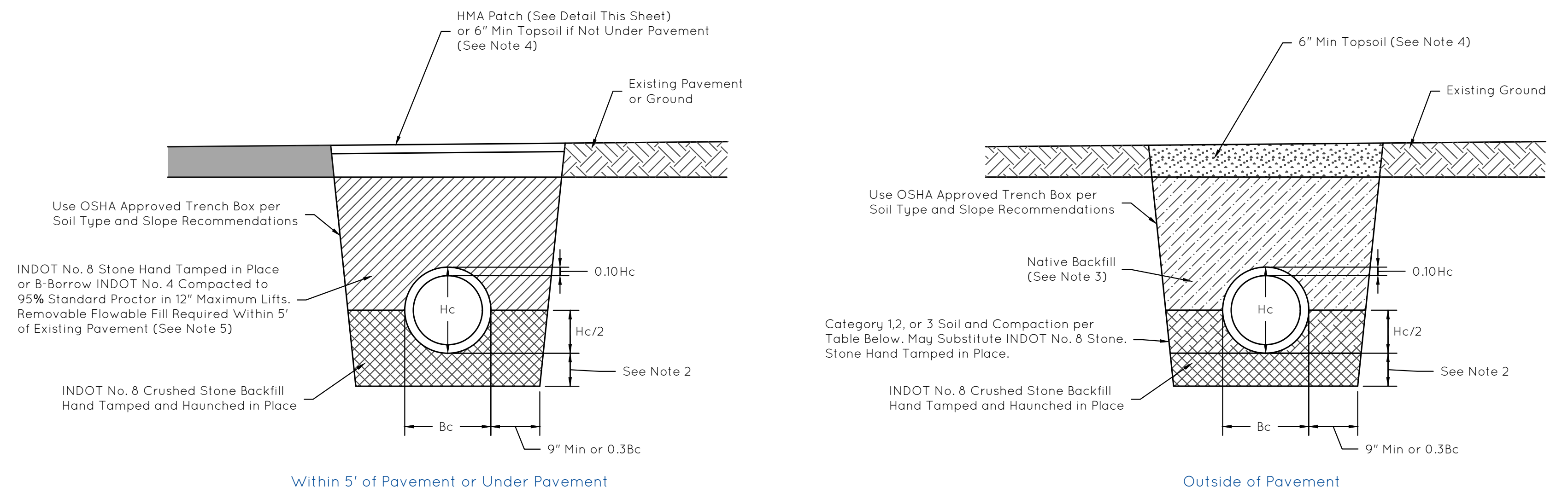
- Notes:
- 1) Temporary extension above ground to be removed upon connection to house. If extension is not utilized, it shall be capped below ground level.
 - 2) Location of structures shall be shown on as-built plans.
 - 3) Must connect sump pumps to underdrain.
 - 4) Required for all rear yard drainage swales unless waived in writing by the Director of Engineering.

REAR YARD UNDERDRAIN
Not to Scale



- Notes:
- 1) BMP signs should be placed immediately adjacent or within the practice.
 - 2) Signs should be aluminum and meet minimum IMUTCD standards.
 - 3) Total number of signs required for each BMP is subject to plan review.

BMP SIGN
Not to Scale

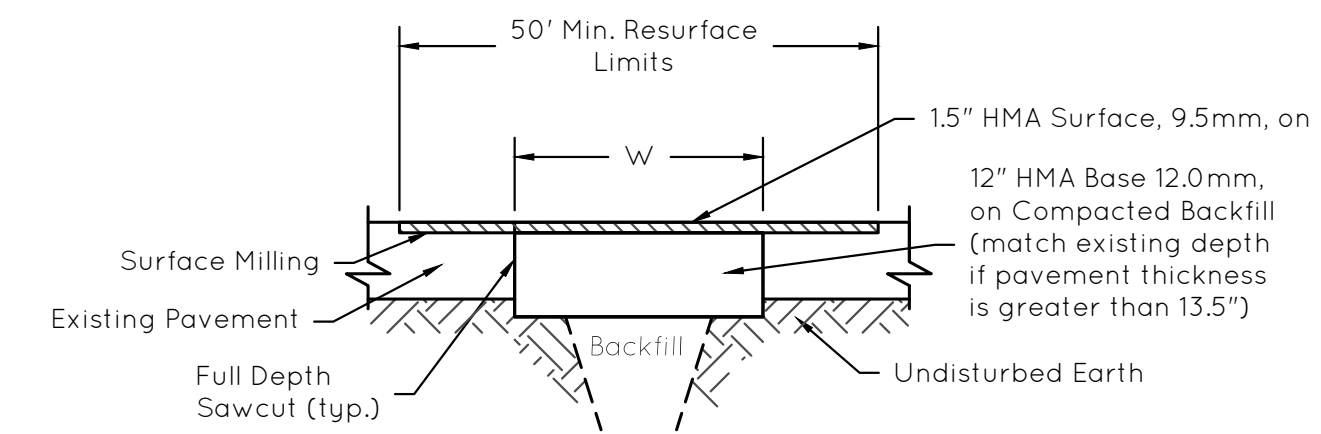


SOIL CATEGORY	SOIL NAME	USCS SOIL TYPE	AASHTO SOIL TYPE	STANDARD PROCTOR	MODIFIED PROCTOR
CATEGORY 1	CLEAN GRAVEL OR SAND	SW, SP, GW, GP	A1, A3	85	80
CATEGORY 2	SILTY GRAVEL OR SAND	GM, SM, ML & GC/SC W/LESS THAN 20% PASSING #200 SIEVE	A2, A4	90	85
CATEGORY 3	SILTY CLAY	CL, MH, GC, SC	A5, A6	95	85

Reference: American Concrete Pipe Association Standard Installation Manual

- Notes:
- 1) For backfill purposes, paved shoulders and curbs are considered pavement. If paving is to occur within 30 days of placement of INDOT No.#4 B-Borrow, contractor shall provide City of Fishers with Professional Engineer certified compaction results.
 - 2) Depth of bedding material below pipe shall be minimum of 3" or hc/24, whichever is greater.
 - 3) Native backfill material must be free of aggregate greater than 6" diameter.
 - 4) Topsoil material shall be mounded to accommodate settlement.
 - 5) Removable flowable backfill shall be required for all open cuts across existing pavement and will also be allowed as a substitute for other backfill requirements.
 - 6) Pipe and fittings used in storm sewer construction shall be RCP (AASHTO M170) and meet the fill height and load requirements according to the latest fill height tables of INDOT. Refer to Chapter 4.J of the City of Fishers Stormwater Technical Standards Manual for other approved pipe materials that may be used in commercial parking lots or private, non-paved areas. Any alternative pipe materials shall be in accordance with the requirements of Chapter 4.J, and shall be installed in accordance with manufacturer's specifications.
 - 7) A minimum of Class III RCP (D-load 1350 lb/ft/ft) is required for all pipe within the City of Fishers Right-of-Way, or areas subject to loading. An alternate pipe class (Class IV or V) may be required by the design engineer or Director of Engineering for special pavement loading circumstances.
 - 8) For pavement bores, alternative materials will be considered.
 - 9) For elliptical or arch pipe installations, see installation specifications from the American Concrete Pipe Association.
 - 10) For all excavation work, OSHA approved safety standards shall be followed.

TRENCH BACKFILL DETAILS
Not to Scale



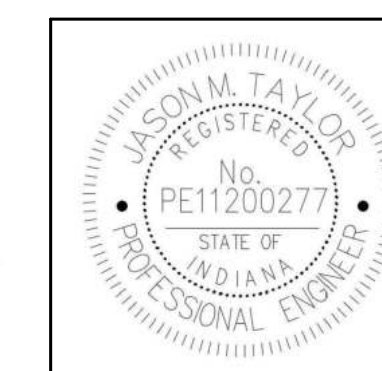
- Notes:
- 1) Sawcuts shall provide a vertical, neat, and uniform edge.
 - 2) All materials shall comply with specifications as required by the City of Fishers.
 - 3) Contractor shall surface mill (1.5") existing pavement 25 ft. in each direction from trench centerline from face-of-curb to face-of-curb or edge-of-roadway, replace with 1.5" HMA Surface, 9.5mm, and appropriate pavement markings.
 - 4) The existing milled surface and HMA Base layer is to be tack coated prior to the placement of new asphalt. The new surface pavement grade shall match the existing surface pavement grade.
 - 5) A two (2) inch wide band of crack sealant is to be applied along the joint between the existing and new asphalt surface. Sealant is to be applied in accordance with INDOT Standard Specifications, Section 305.
 - 6) Refer to Pavement Restoration Table for W.

PAVEMENT RESTORATION TABLE	
UTILITY DEPTH RANGE (FEET)	MAXIMUM TRENCH WIDTH AT FINISHED GRADE, W (FEET)
0 to 5	I.D. +5
5 to 8	I.D. +8
8 to 10	I.D. +10
10 to 12	I.D. +12
12 to 14	I.D. +14
14 to 16	I.D. +16
16 to 18	I.D. +18
18 to 20	I.D. +20

I.D. = Pipe or Conduit Inside Diameter

HMA PATCH DETAIL
Not to Scale

1/18/2022



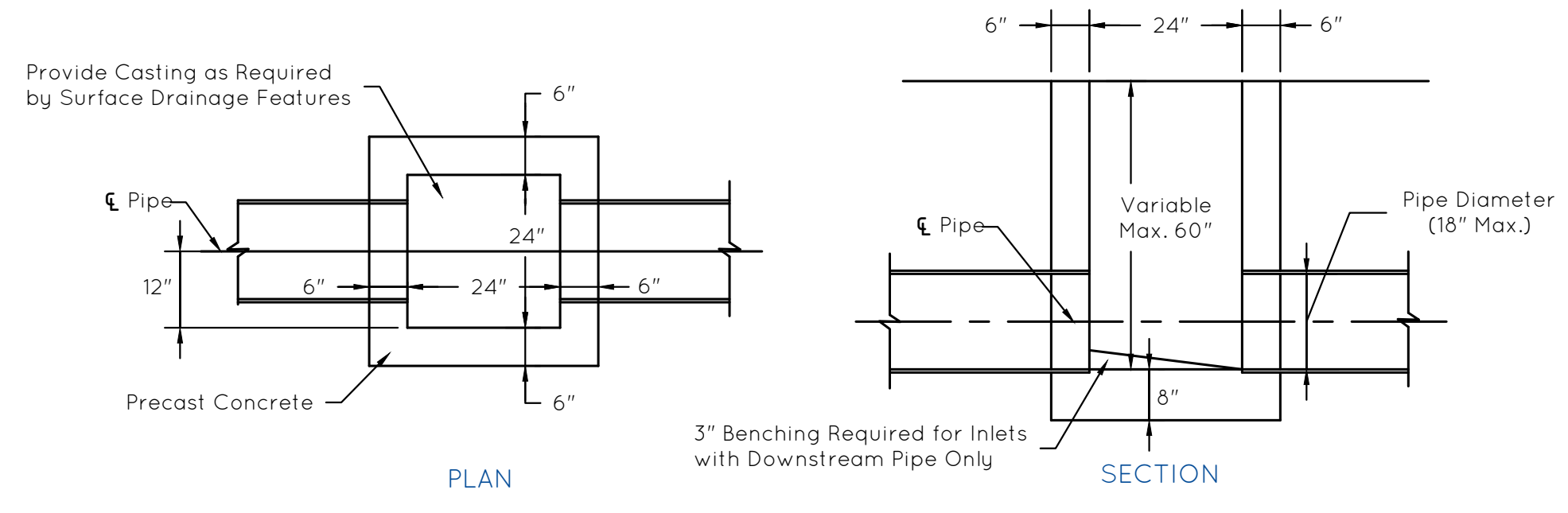
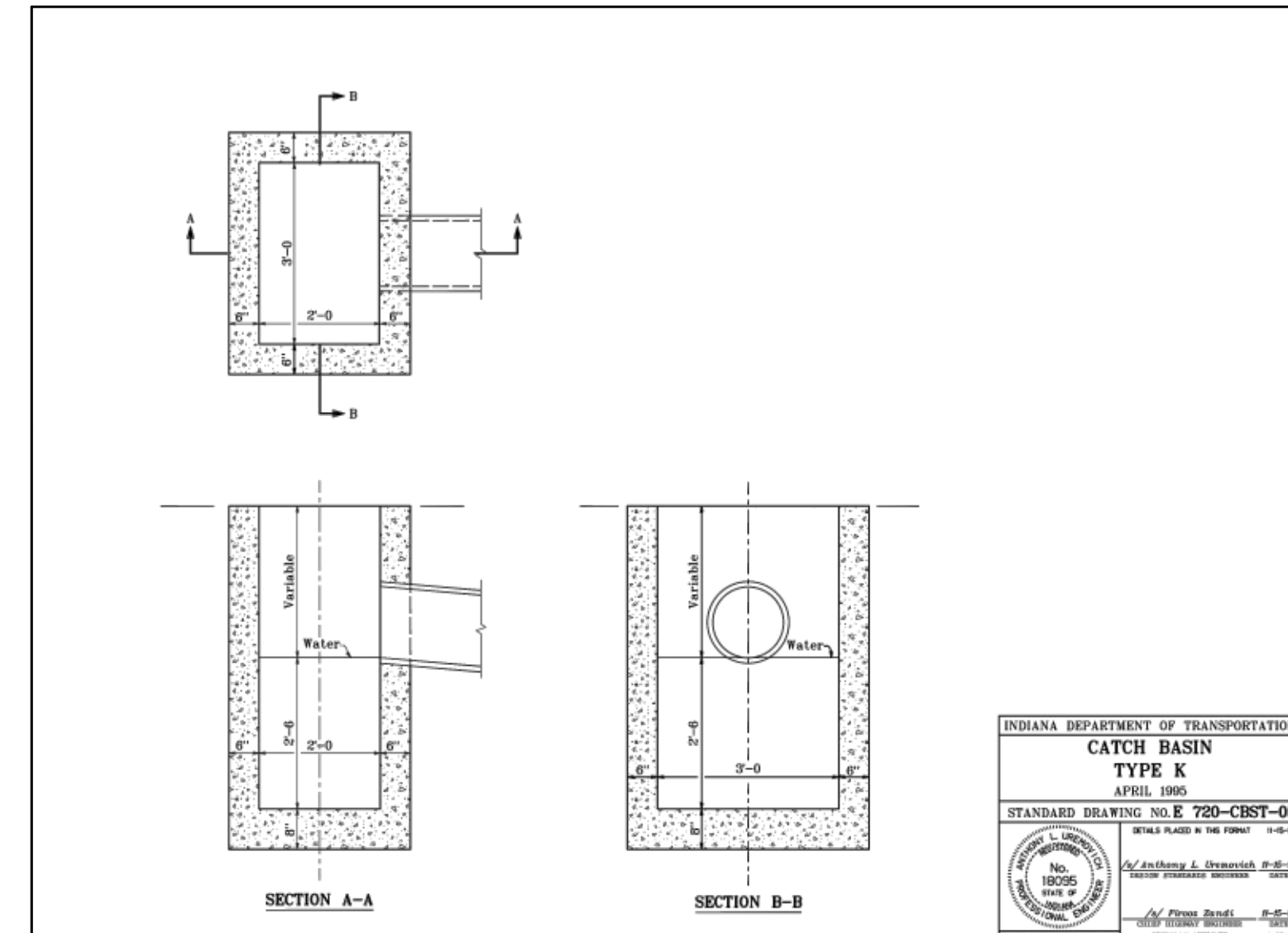
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
STORM SEWER BACKFILL, SWALE UNDERDRAIN, EXCAVATION DETAILS AND NOTES

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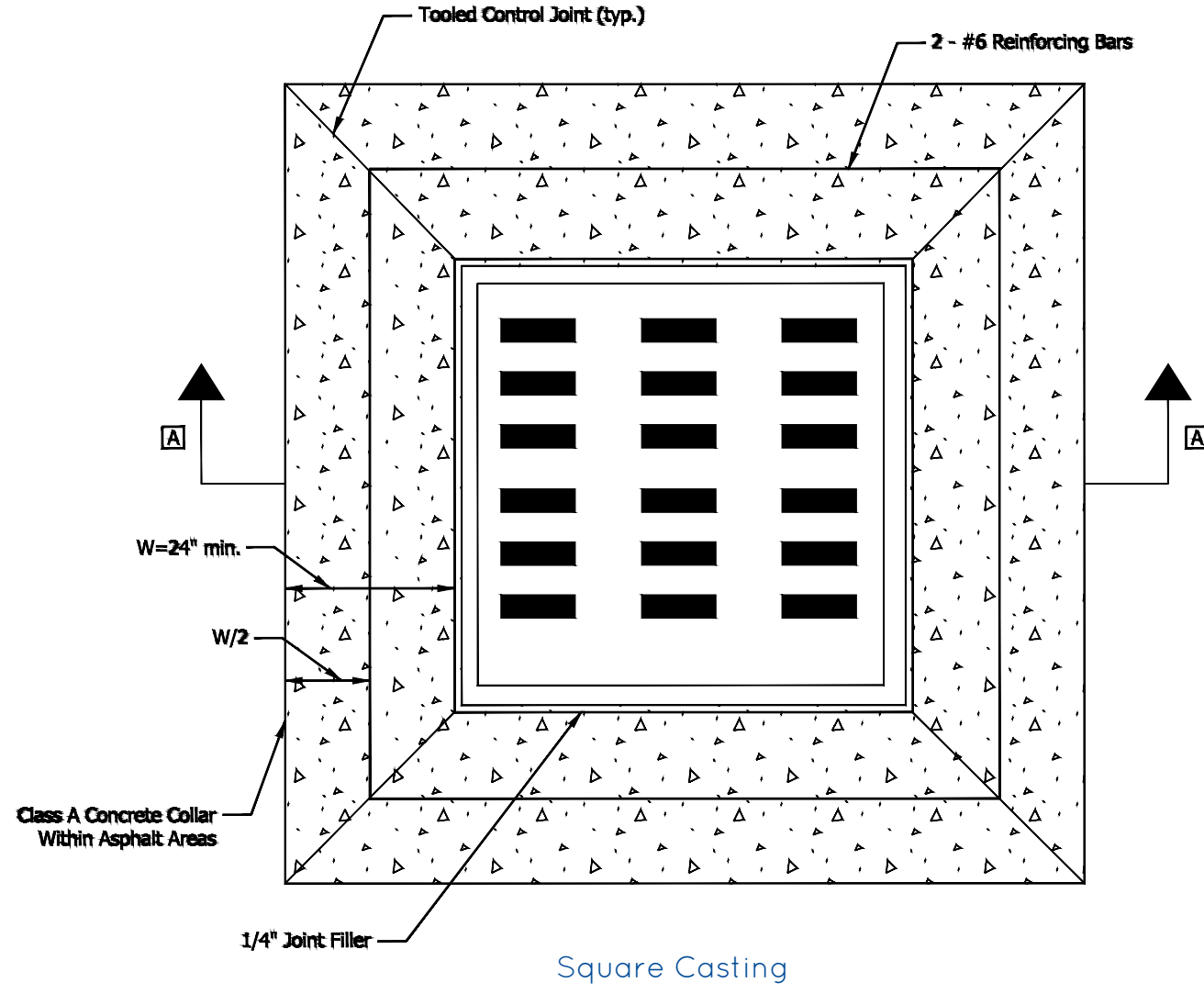
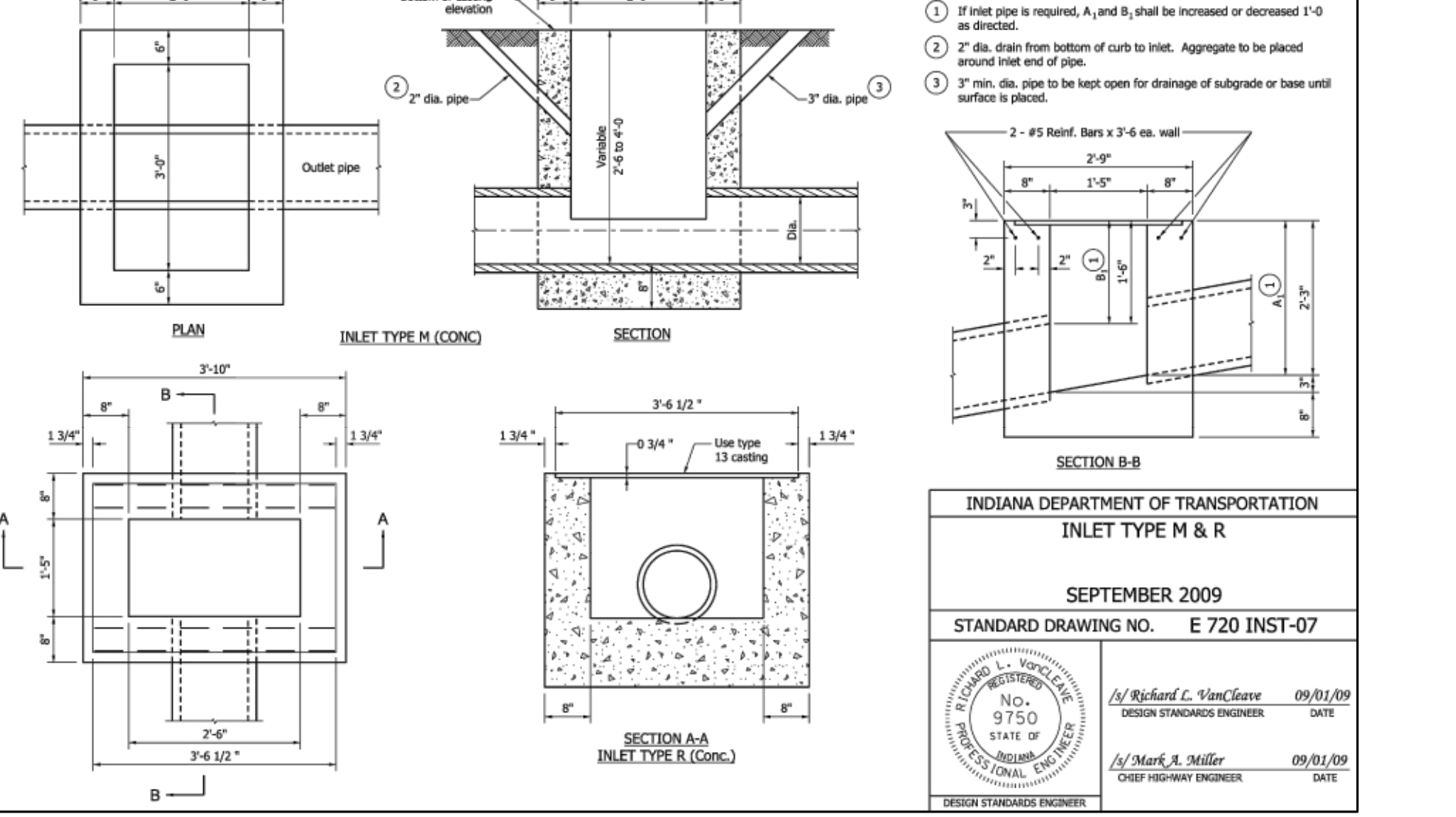
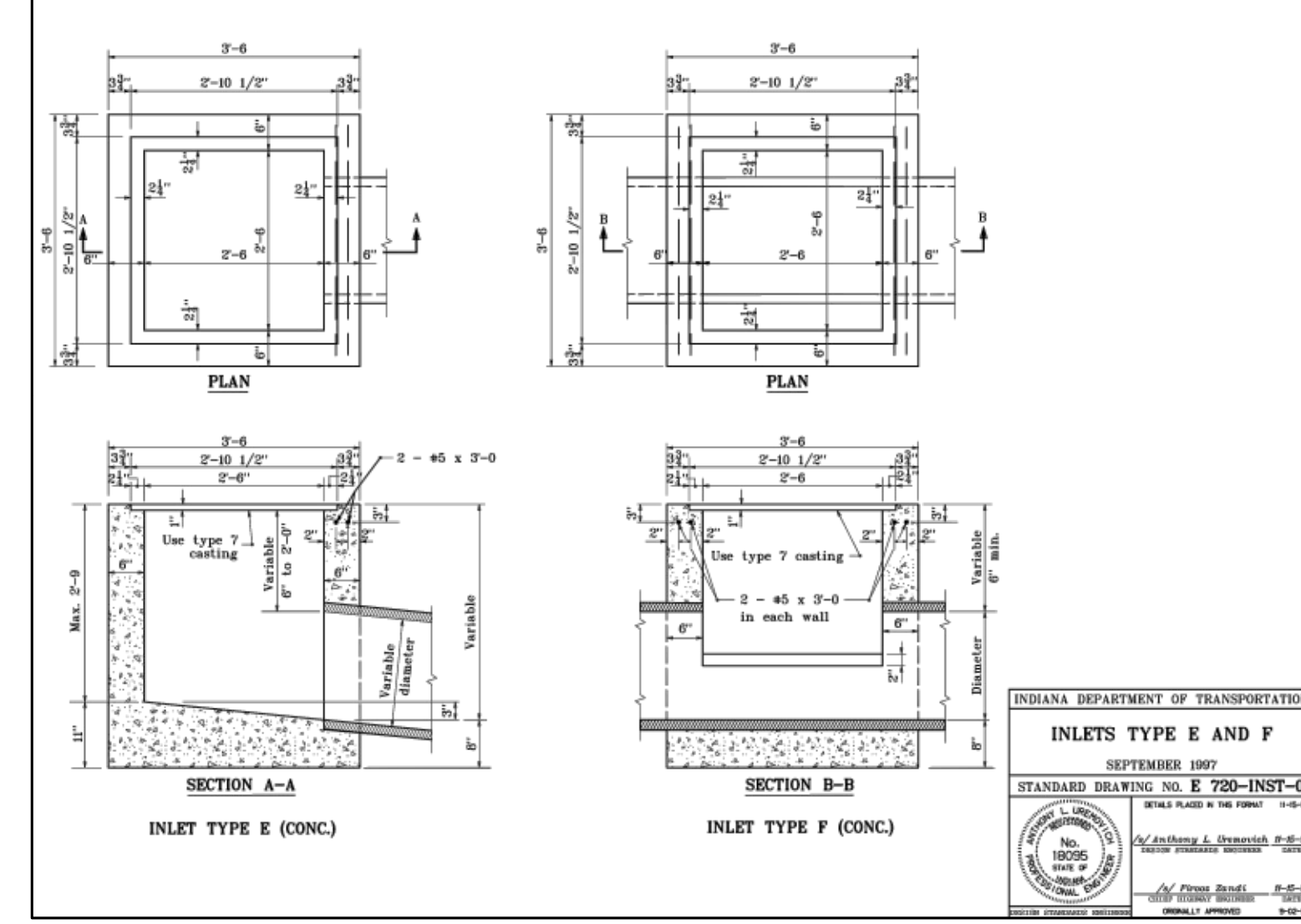
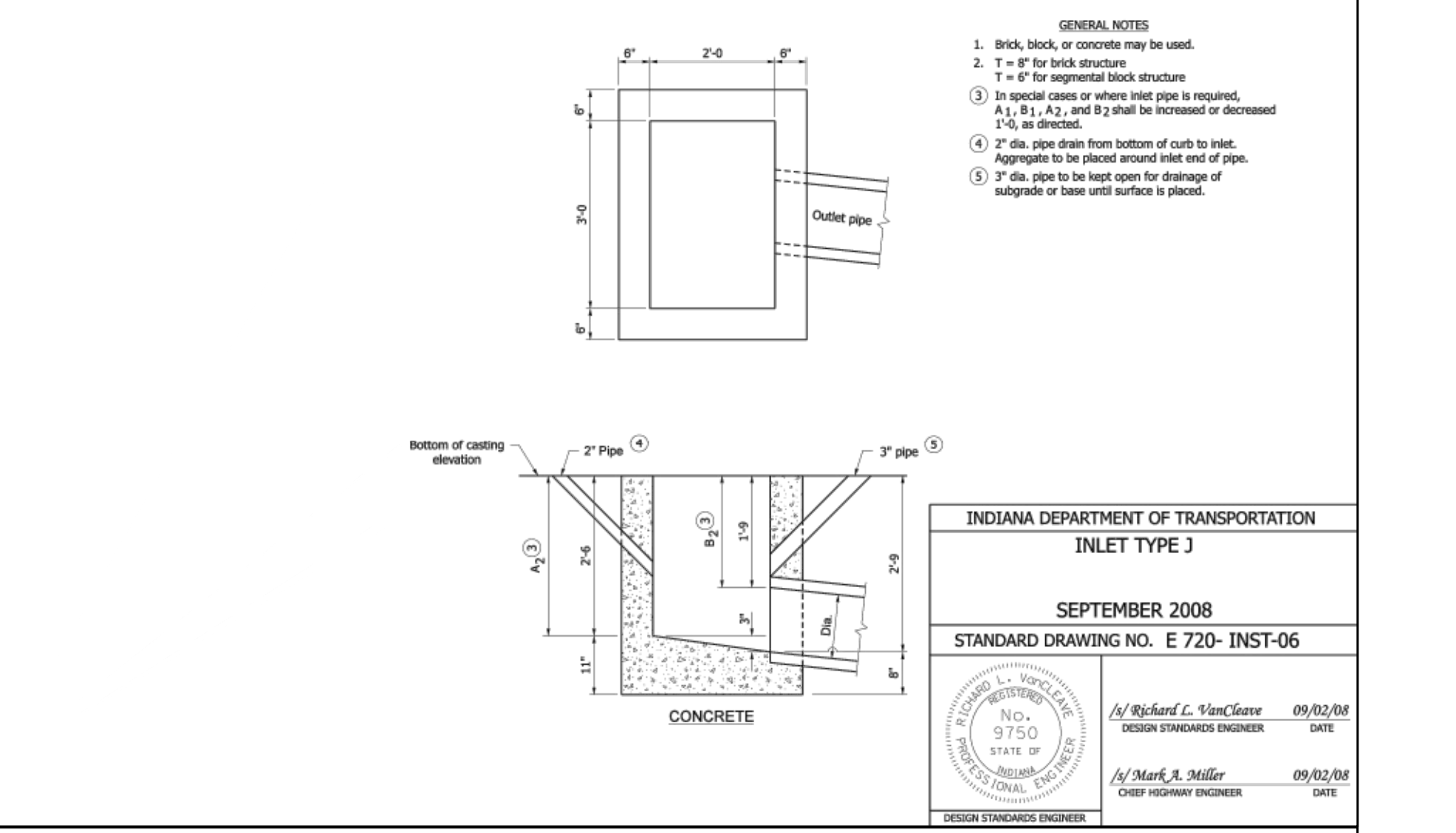
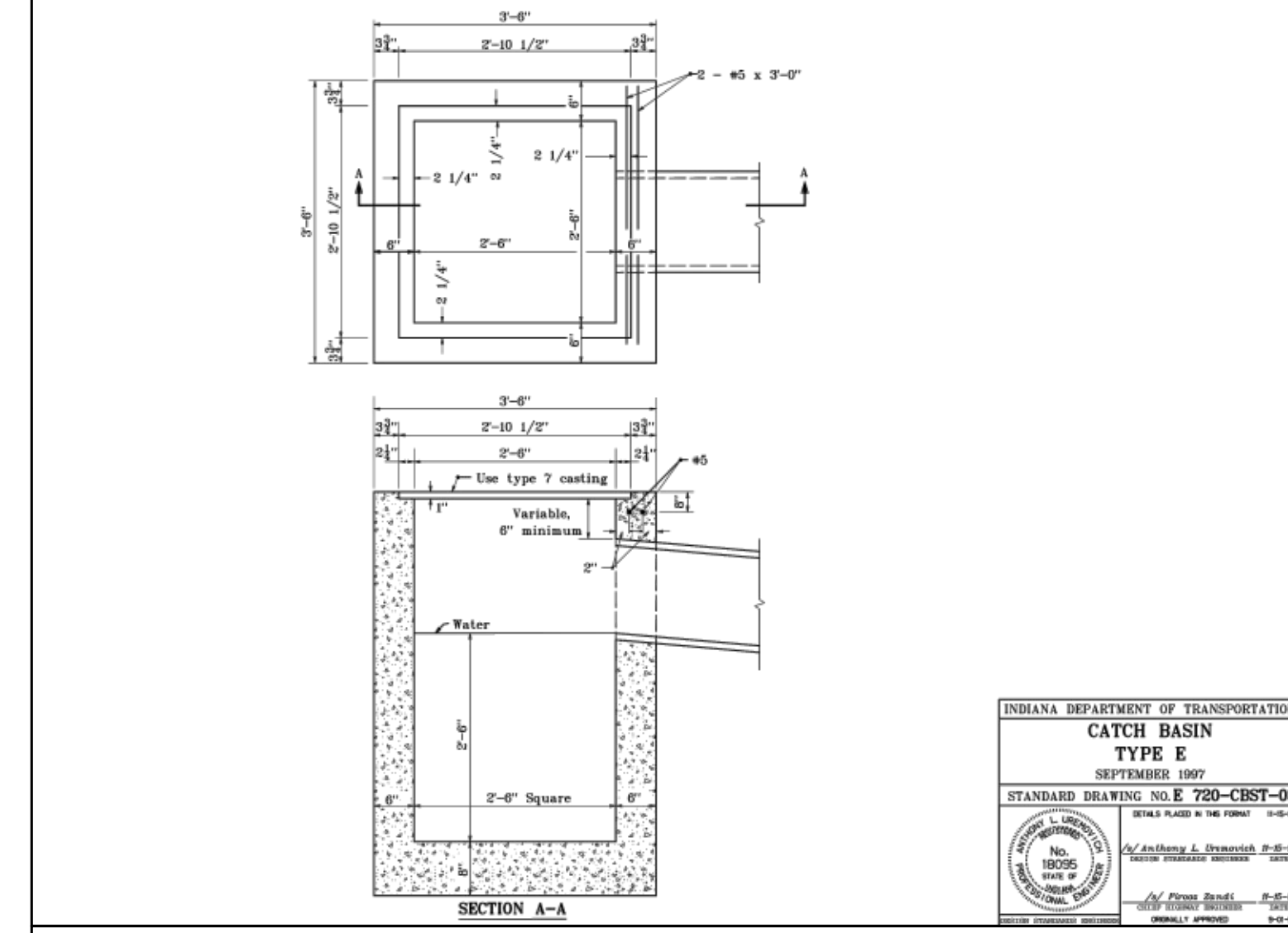
NOTES

- Inlet boxes shall not extend into the pavement section beyond the width of the wall thickness which shall be a maximum of 6 inches. Square or rectangular structures shall be utilized for all pipe connections along the curb line. The maximum inlet box size shall be limited to 24"x36". Mainline pipe shall be defined as all pipe greater than 15" in diameter. No mainline pipe shall be allowed in direct connection to the inlet box. Details and manufacturer shop drawings shall be provided for all pipe connections less than 90 degrees to the box edge. Field changes to structures shall be cut or cored. Round structures shall only be allowed for areas outside of the curb line and outside of road section pavement.
- 24"x24" inlet boxes shall be limited to depths of 5 feet. Inlet boxes greater than 5 feet in depth shall be 24"x36" (inside dimensions), or greater, and include steps.
- The downstream most structure that collects runoff from within the Right-of-Way shall be sumped (2 feet) prior to the detention basin and is required to be placed within 15 feet of the curb, where practical, and equipped with a snout to catch floatables.
- The contractor shall use precast inlets or catch basins, unless otherwise approved by the Director of Engineering, that are in accordance with INDOT Standard Specifications.
- A 6" cushion of INDOT No. 8 crushed stone shall be required when the precast bottom section is used.
- If a precast inlet, catch basin, or manhole is used and the adjoining pipes are field connected directly to the precast unit, the connection shall be made using a Class "A" concrete collar of 6" minimum longitudinal and radial thickness. Brick should be used as a filler for concrete patching for inlets that are not precast.
- Waterproofing material shall conform to AASHTO M115 and INDOT Standard Specifications.
- All curb inlets and catch basins shall be equipped for underdrains.
- All structures receiving sub-surface drain (SSD) shall have both ports core drilled. T or Y blind connections are not allowed.
- Expansion joints are required around castings for all structures located within PCCP, PCC sidewalk, PCC multi-use paths, or concrete curb and/or gutter.
- All castings shall be checked to meet inlet design and ensure compatibility with curb specified, swales, ponds, etc. All castings shall be in accordance with the Compatibility of Inlet Structures and Castings Table, this sheet, unless otherwise approved by the Director of Engineering.
- All inlet castings shall contain a "NO DUMPING, DRAINS TO WATERWAY" or equivalent clean water message to educate and warn against illegal dumping. Casting openings should be grated or otherwise designed to limit floatables and debris from entering the inlet box.
- No inlet castings shall be installed within wheel paths, unless otherwise approved by the Director of Engineering.

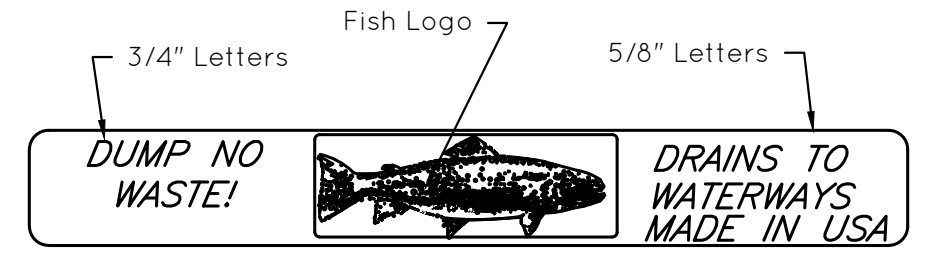
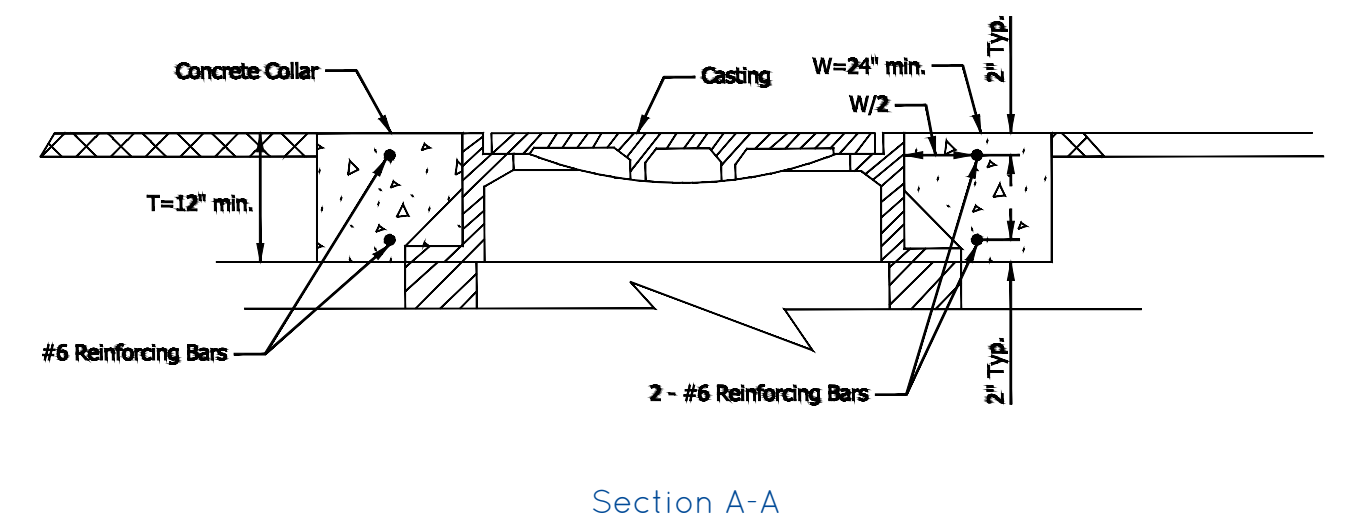
INLET TYPE	INDOT CASTING TYPES					NEENAH CASTING TYPES					EAST JORDAN IRON WORKS CASTING TYPES					
	2	3	7	8	10	R-3287-10V	R-3405-A	R-3501-TR	R-3501-TL	R-4215-C	5250	6610	7030 w/M2 Grate & T1 Back	7495M1	7495M2	7495M4
A	X	X		X			X				X					
E			X							X		X				
F			X							X		X				
J					X	X		X	X				X	X	X	X
M					X	X		X	X				X	X	X	X



INLET, TYPE A
Not to Scale

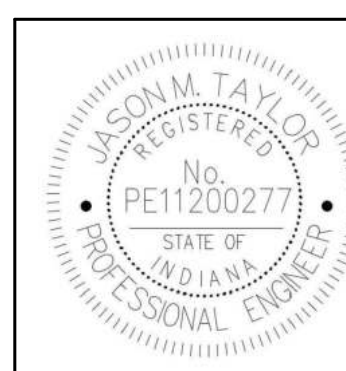


CONCRETE COLLAR FOR SQUARE CASTINGS DETAIL
Not to Scale



INLET LID CASTING DETAIL
Not to Scale

J. Taylor



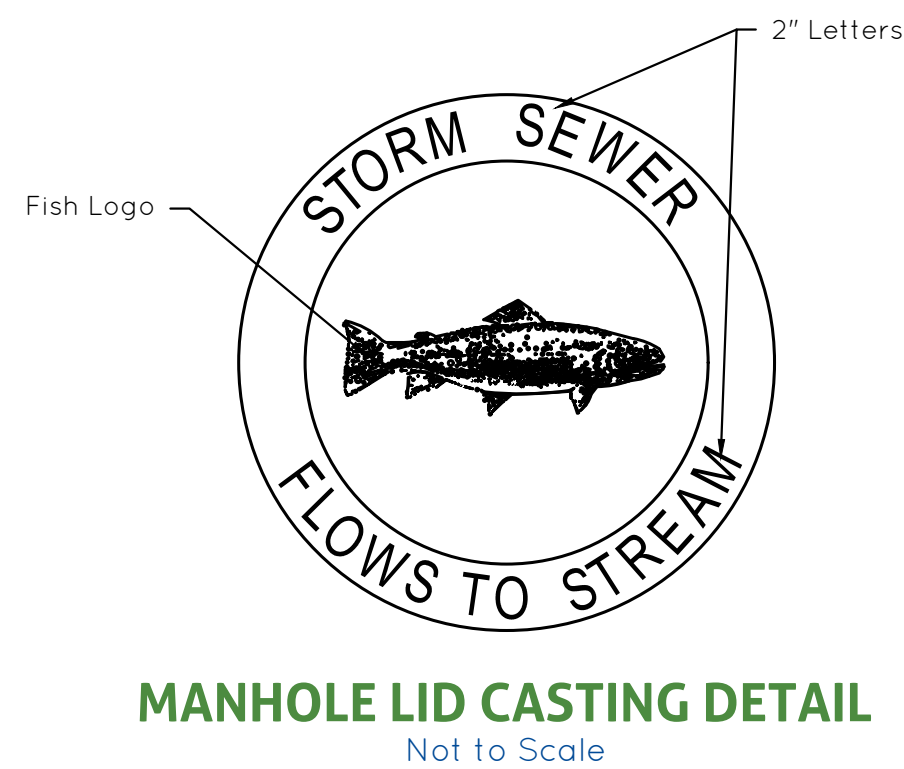
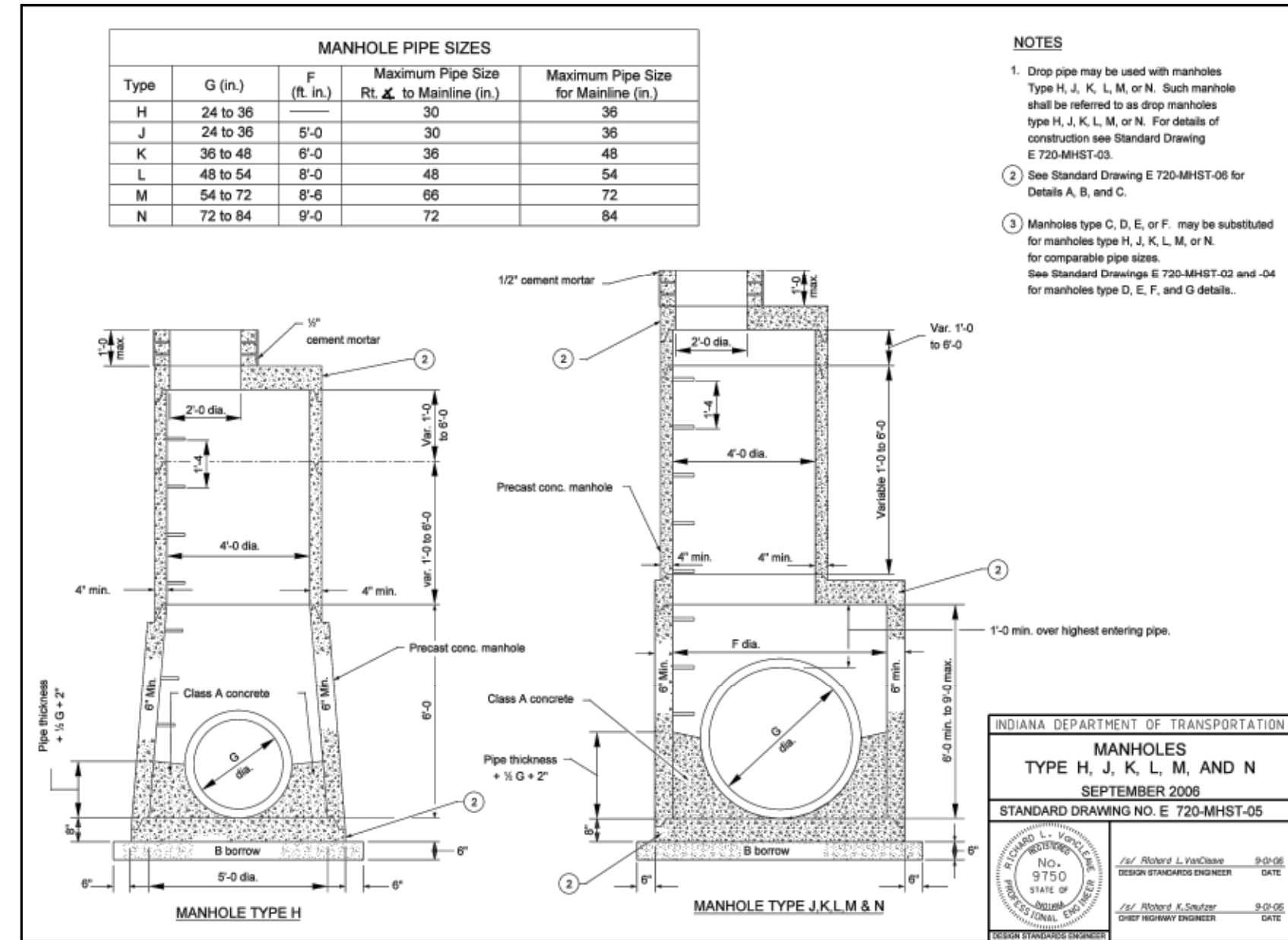
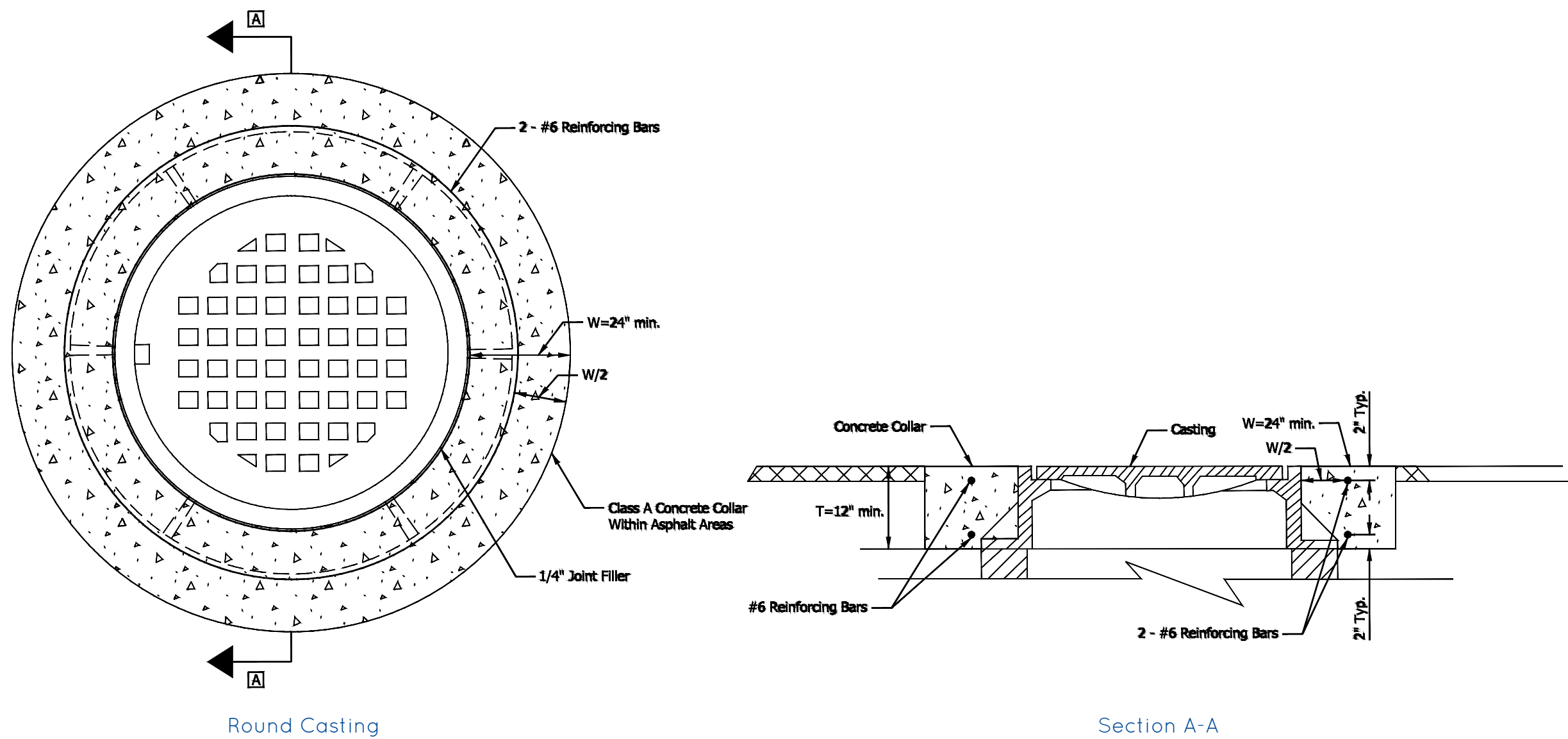
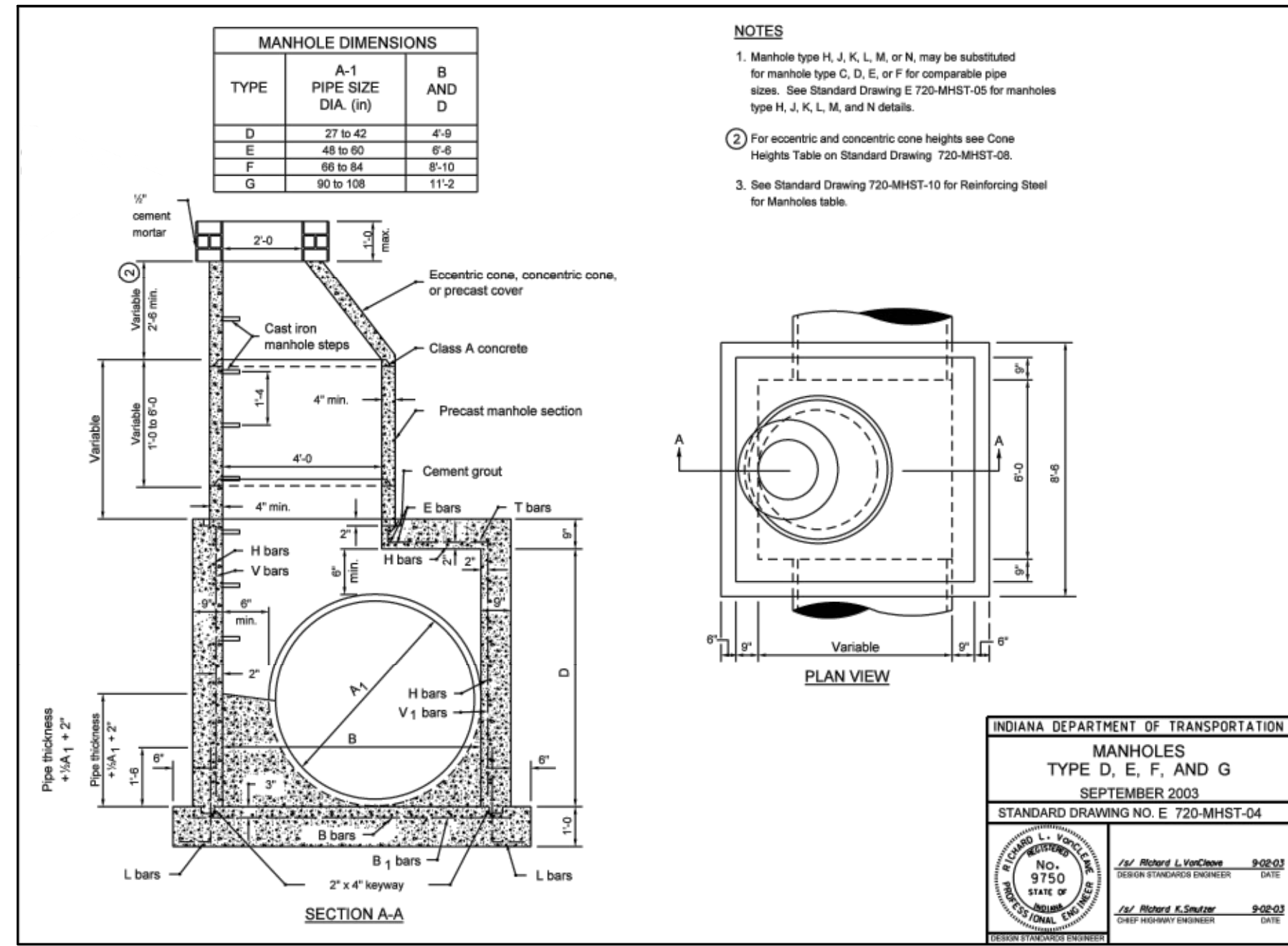
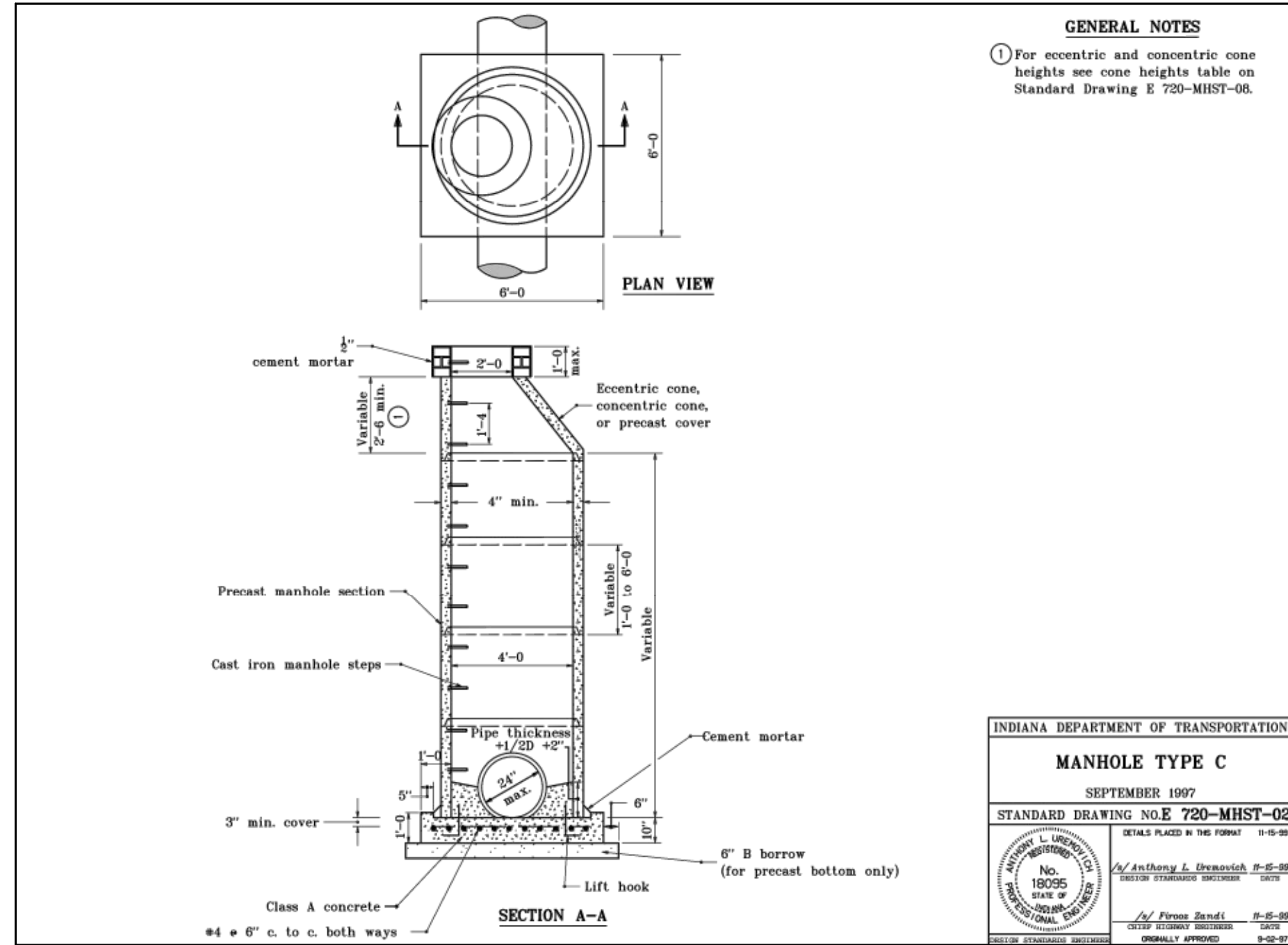
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
 STORM SEWER INLET STRUCTURE
 DETAILS AND NOTES

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NOTES

- 1) All precast manhole materials shall conform to ASTM C-478 and INDOT Standard Specifications (min. sq. in. of reinforcing steel per lineal foot of barrel shall be 0.12).
- 2) A 6" cushion of INDOT No. 8 crushed stone shall be required when the precast bottom section is used.
- 3) Joints between sections of precast manholes shall be in accordance with ASTM C-443.
- 4) If the contractor uses a precast manhole and the adjoining pipes are field connected directly to the precast unit, the connection shall be made using a Class "A" concrete collar of 6" minimum longitudinal and radial thickness. Brick should be used as a filler for concrete patching for manholes that are not precast.
- 5) Drop pipe may be used with Manhole, Type D, E, F, or G and referred to as Drop Manhole, Type D, E, F, or G as approved by the Director of Engineering.
- 6) Bottom shall be constructed of precast bottom section or Class "A" concrete formed in place.
- 7) Benchwalls shall be Class "A" concrete.
- 8) Waterproofing material shall conform to AASHTO M115 and INDOT Standard Specifications.
- 9) Flat precast covers shall be used where headroom is limited.
- 10) The downstream most structure that collects runoff from within the Right-of-Way shall be sumped (2 feet) prior to the detention basin and is required to be placed within 15 feet of the curb, where practical, and equipped with a snout to catch floatables.
- 11) All structures receiving sub-surface drain (SSD) shall have both ports core drilled. T or Y blind connections are not allowed.
- 12) Expansion joints around castings are required at all structures located within PCCP, PCC sidewalk, PCC multi-use paths, or concrete curb and/or gutter.
- 13) All manhole castings shall be checked to meet inlet grate design and ensure compatibility with curb specified, swales, ponds, etc. In accordance with the Compatibility of Manhole Structures and Castings Table, this sheet, unless otherwise approved by the Director of Engineering.
- 14) All manhole castings shall contain a "NO DUMPING, DRAINS TO WATERWAY" or equivalent clean water message to educate and warn against illegal dumping. Casting openings should be grated or otherwise designed to limit floatables and debris from entering the manhole.
- 15) All manhole steps shall conform to INDOT Standard Drawing 720-MHST-09.
- 16) No manhole castings shall be installed within wheel paths, unless otherwise approved by the Director of Engineering.

MANHOLE TYPE	INDOT CASTING TYPES			NEENAH CASTING TYPES			EAST JORDAN IRON WORKS CASTING TYPES		
	2	4	8	R-2502-D	R-4342	R-1772	1022 w/ Type A Lid	1022 w/ M1 or M3 Grate	6489
C	X	X	X	X	X	X	X	X	X
H	X	X	X	X	X	X	X	X	X
J	X	X	X	X	X	X	X	X	X
K	X	X	X	X	X	X	X	X	X
L	X	X	X	X	X	X	X	X	X
M	X	X	X	X	X	X	X	X	X
N	X	X	X	X	X	X	X	X	X



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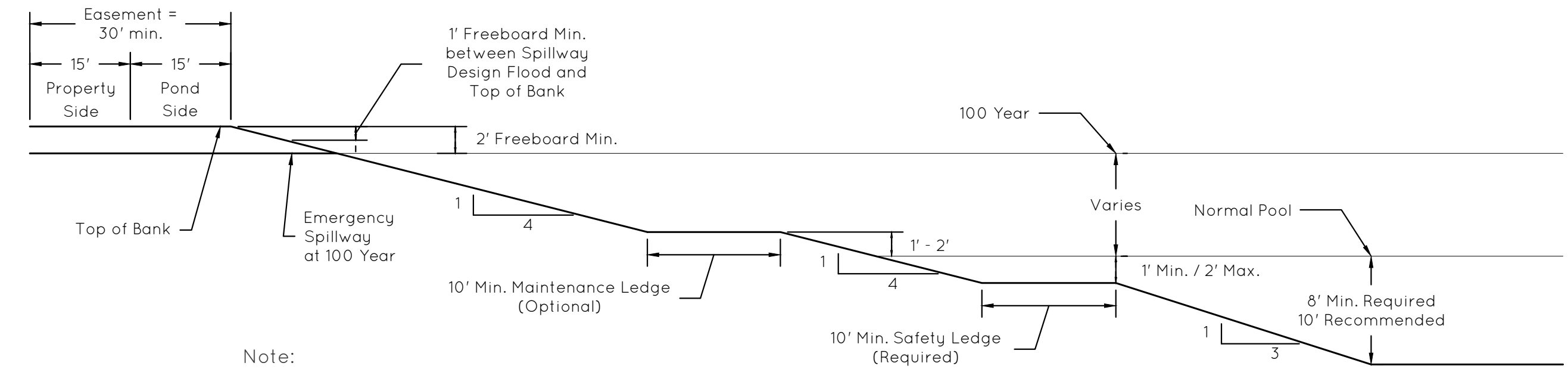
	CITY OF FISHERS STANDARD CONSTRUCTION DETAILS	SHEET 15 of 29
	STORM SEWER MANHOLE STRUCTURE DETAILS AND NOTES	

GENERAL WET-BOTTOM DETENTION BASIN NOTES

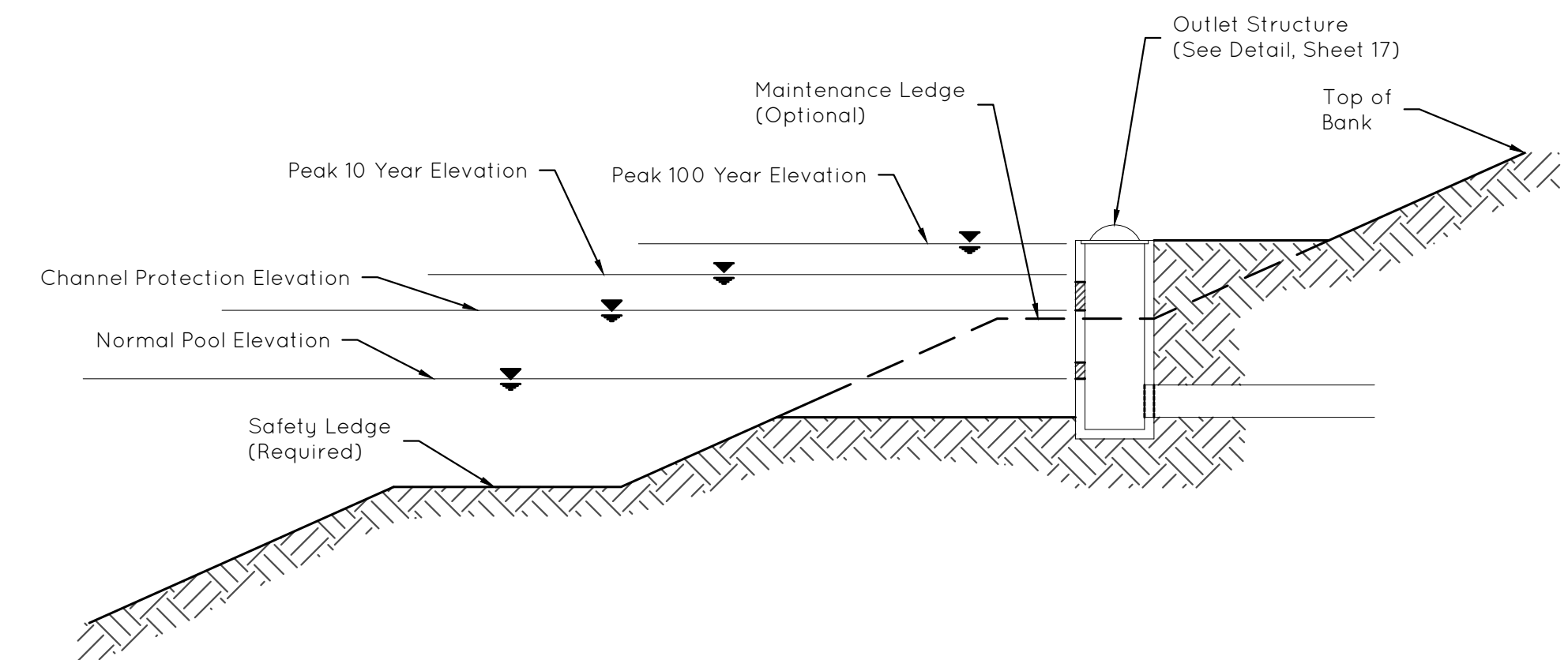
- All detention basins shall be designed in accordance with Chapters 3, 6 and 8 of the City of Fishers Stormwater Technical Standards Manual (STSM).
- Per Section 6.C.4 of the STSM, all detention facilities shall be separated from edge of pavement of parking lots by a minimum of 50 feet and a minimum of 150 feet from a roadway, unless structural measures, such as guardrails, berms, or other physical barriers are provided that prevent passage of a vehicle. See Guardrail Details, Sheets 9 - 12.
- Regardless of physical barriers, minimum separation of all stormwater detention facilities shall be according to the Minimum Detention Pond Setbacks in Table 1.
- The design of all wet-bottom detention facilities should include methods to prevent pond stagnation, including but not limited to, surface or sub-surface aeration (diffusers) or destratification facilities.

Table 1. Detention Facility Minimum Separations

FUNCTIONAL CLASSIFICATION OF ROADWAY	MINIMUM DETENTION POND SETBACK
Principal Arterial	50 Ft. From Right-of-Way to the Top of Bank -Or- 50 Ft. From Right-Of-Way to Maximum 100-Year Elevation, Whichever is Greater.
Minor Arterial	
Rural Major Collector	
Rural Minor Collector	
Urban Collector	
Local	80 Ft. From Centerline of Roadway to the Top of Bank -Or- 80 Ft. From Centerline of Roadway to Maximum 100-Year Elevation, Whichever is Greater.
Private Roadways	

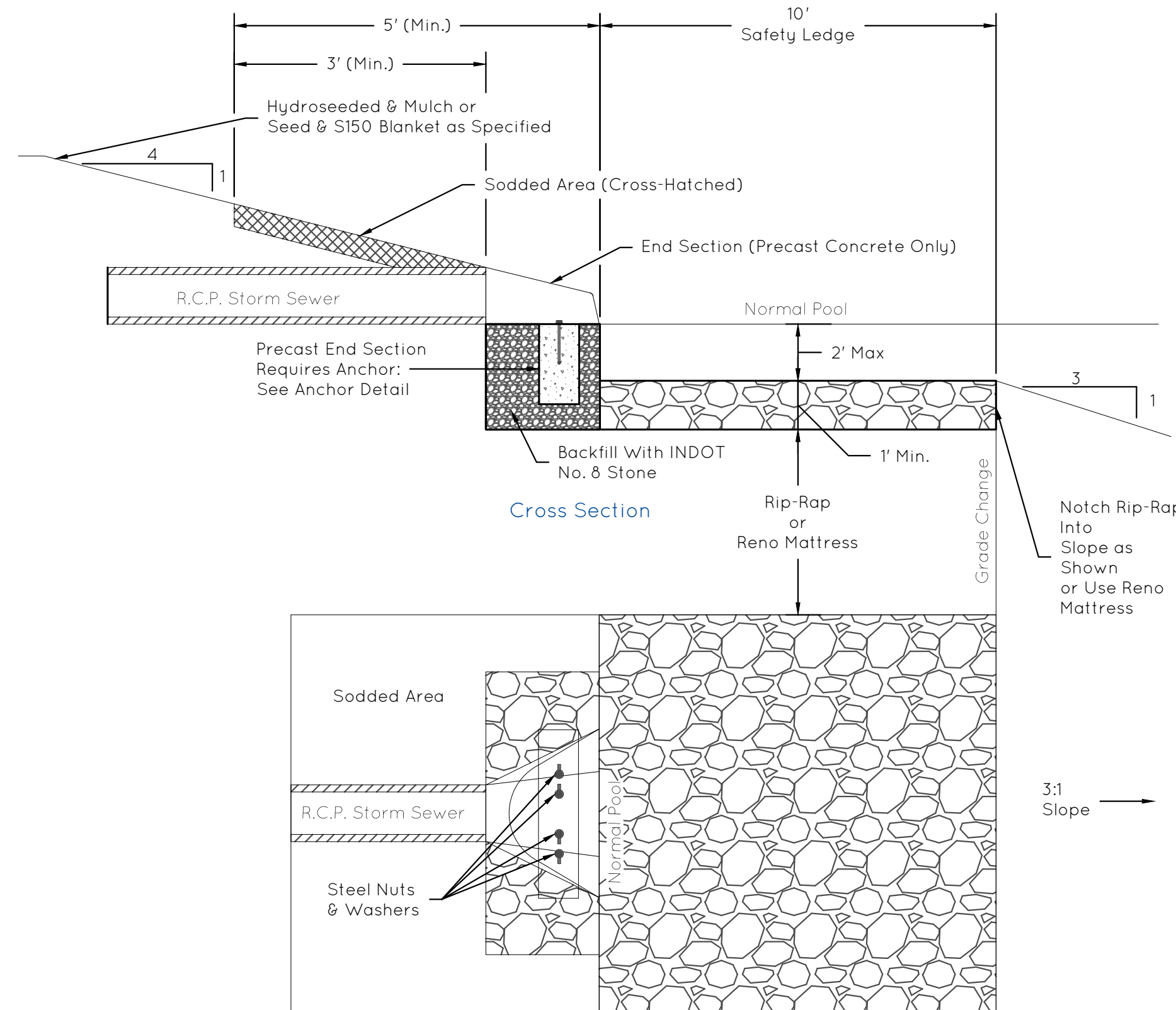


DETENTION BASIN CROSS-SECTION
Not to Scale

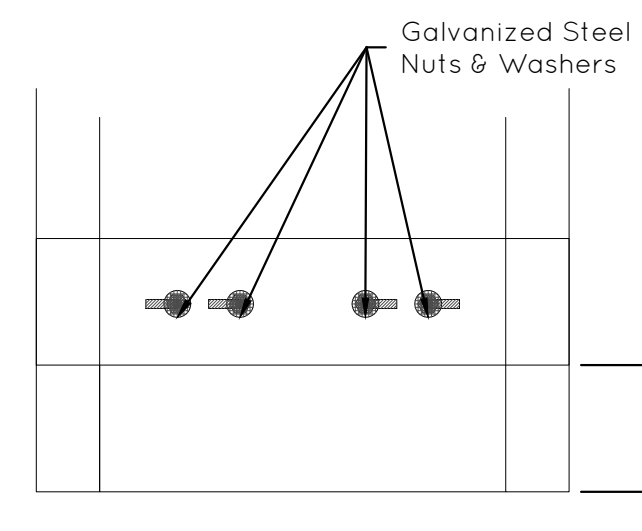


TYPICAL OUTLET STRUCTURE PLACEMENT
Not to Scale

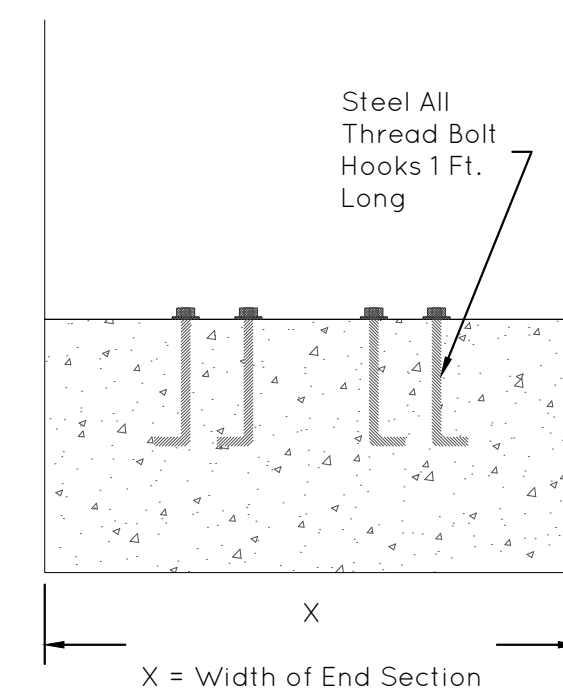
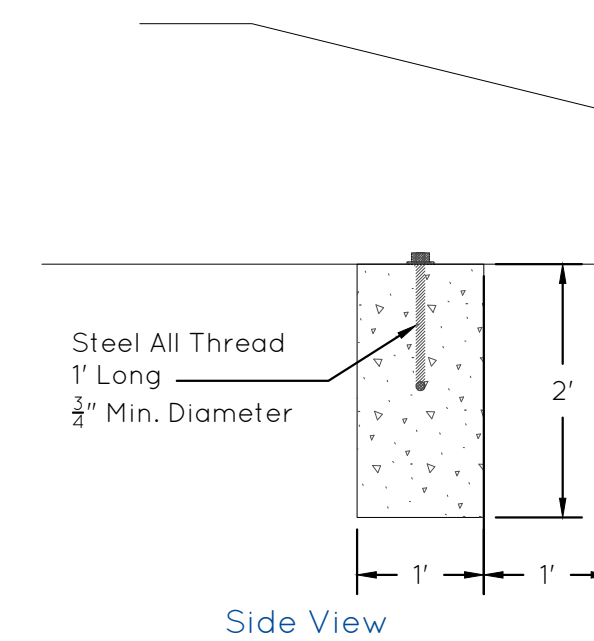
- Note:
1) Underwater discharge not allowed.



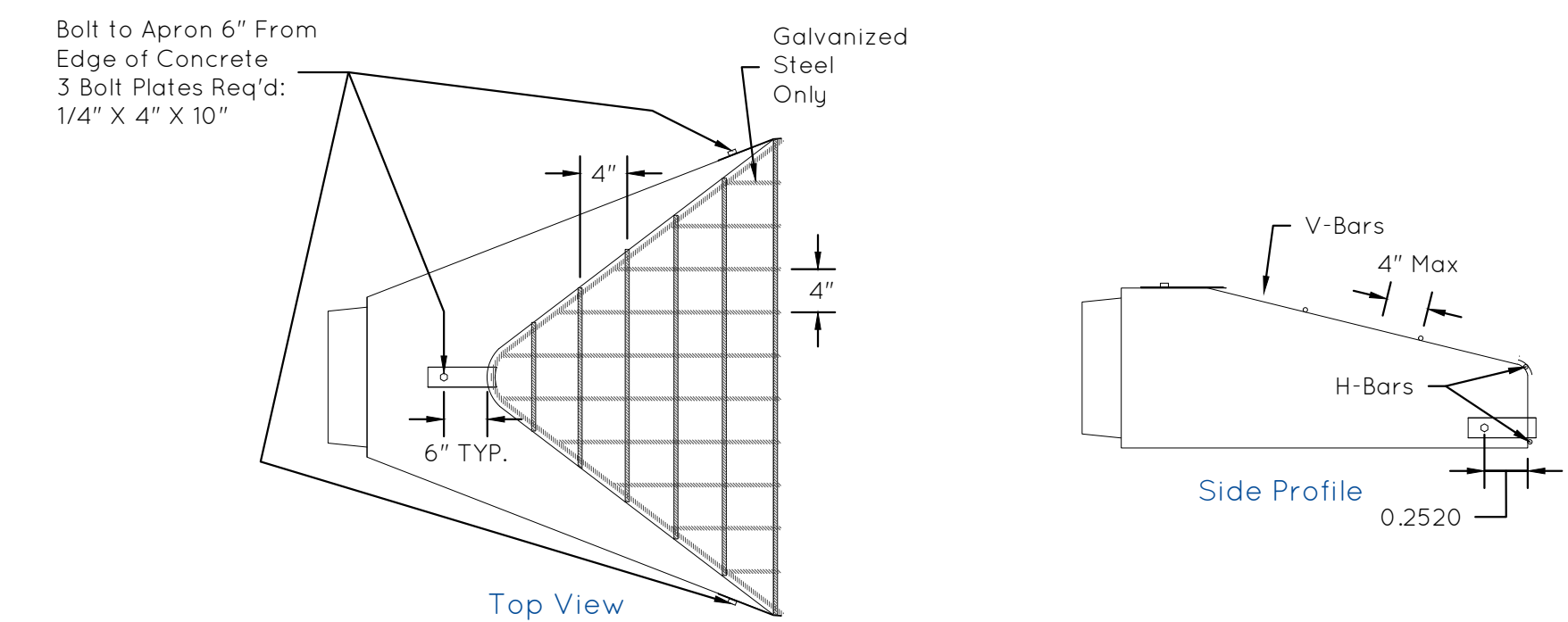
OUTLET TO DETENTION BASIN
Not to Scale



All Thread Spacing to be Two Per Foot
EX: 12" End Section = 2 All Thread
24" End Section = 4 All Thread



END SECTION ANCHOR
Not to Scale



- Notes:
1) Trash guards should be galvanized steel only.
2) To be placed on upstream end of detention basin outlet pipe only.

TRASH/DEBRIS GUARD
Not to Scale

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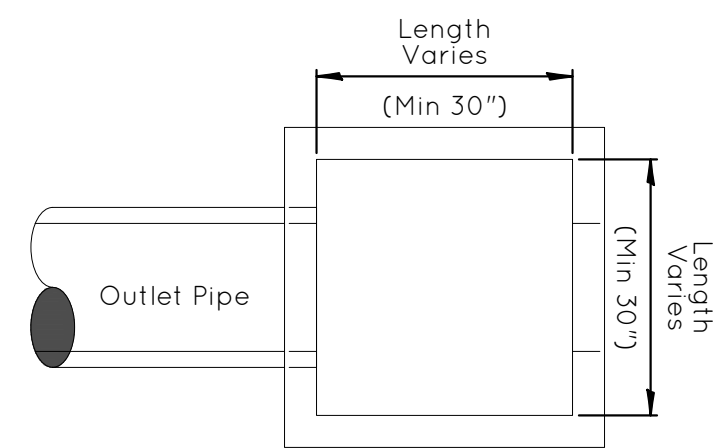


CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
DETENTION BASIN & END SECTION
DETAILS

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GENERAL OUTLET STRUCTURE NOTES

- 1) Use of a circular or rectangular orifice is at the discretion of the designer. The minimum opening height or diameter shall be 6", unless written approval of a smaller opening is provided during the stormwater review process. Openings shall be consolidated as much as is practicable while meeting the remaining requirements to reduce the potential for clogging. The minimum 6" dimension requirement does not apply to CPv or WQ orifice sizing. Coordinate with City of Fishers for minimum CPv / WQ orifice sizing.
- 2) If an overland emergency flow route cannot be created, the structure shall be sized to allow the open casting and outlet pipe to serve as a drop-inlet capable of carrying 125% of the peak inflow to the detention pond.
- 3) The maximum opening size for trash racks shall be 3" for outlets less than 24" in diameter or smaller than a 24" x 24" rectangle. Larger outlets shall have a 6" opening size.



Outlet Structure Top View

DESCRIPTION OF OUTLETS

Outlet 1: Extended Detention / Channel Protection Outlet
The purpose of this outlet is to detain the flow and provide for settlement of suspended solids and to attenuate the outflow from the detention basin to meet the water quality or channel protection requirements of Ch. 8 of the STSM.

Outlet 2: Peak Flow Control Orifice (10-year)
The purpose of this outlet is to restrict the flow leaving the detention pond when the volume of runoff exceeds the water quality or channel protection volume. This outlet is typically used to control the release of runoff for events between the 2-year and 10-year events to meet peak flow control requirements. This outlet has an invert elevation at the elevation of when the water quality or channel protection is fully stored assuming no outflow from Outlet 1.

Outlet 3: Peak Flow Control Orifice (100-year)
The purpose of this outlet is to supplement Outlet 2 when the 100-year peak flow control requirements cannot be met using a single peak flow control orifice. This outlet typically has an invert elevation above the 10-year maximum water surface elevation.

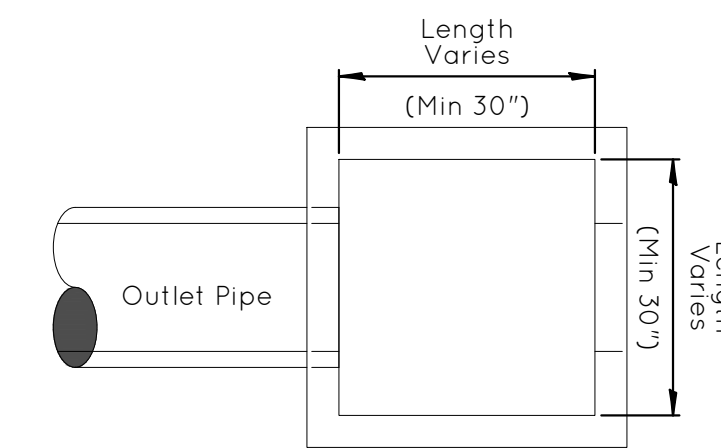
Outlet 4: Emergency Overflow
The purpose of this outlet is to allow the outlet to convey flow downstream even if the peak flow control orifice(s) are completely blocked. It may also serve as a part of the emergency flood route in special circumstances.

DESCRIPTION OF OUTLETS

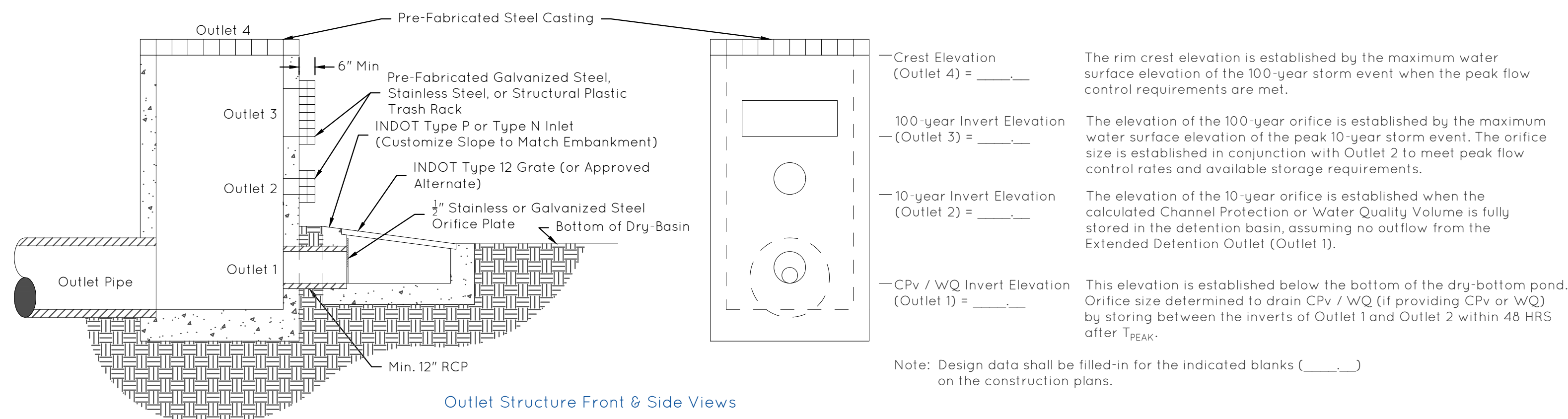
Outlet 1: Peak Flow Control Orifice (10-year)
The purpose of this outlet is to control the release of runoff for events between the 2-year and 10-year storm events to meet peak flow control requirements per Ch. 3 and 6 of the STSM. This outlet has an invert elevation at the normal pool of a wet pond or below the bottom of a dry-bottom facility.

Outlet 2: Peak Flow Control Orifice (100-year)
The purpose of this outlet is to supplement Outlet 1 when the 100-year peak flow control requirements cannot be met using a single peak flow control orifice. This outlet typically has an invert elevation above the 10-year maximum water surface elevation.

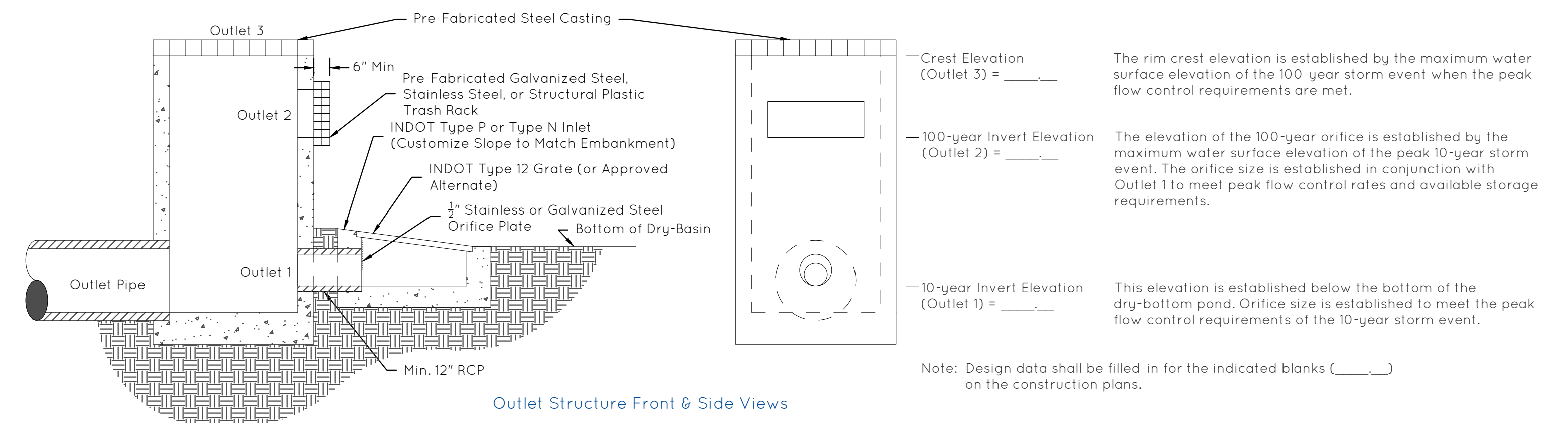
Outlet 3: Emergency Overflow
The purpose of this outlet is to allow the outlet to convey flow downstream even if the peak flow control orifice(s) are completely blocked. It may also serve as a part of the emergency flood route in special circumstances.



Outlet Structure Top View



Outlet Structure Front & Side Views



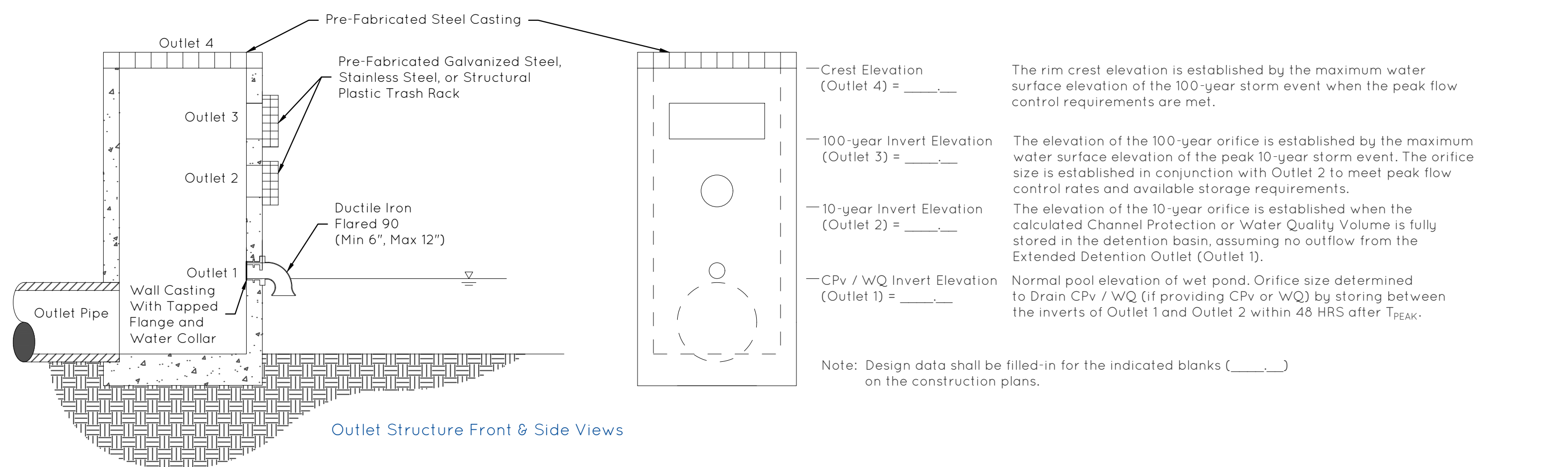
Outlet Structure Front & Side Views

DRY-BOTTOM DETENTION BASIN OUTLET DETAILS - COMBINED PEAK FLOW AND CHANNEL PROTECTION / WATER QUALITY BASIN

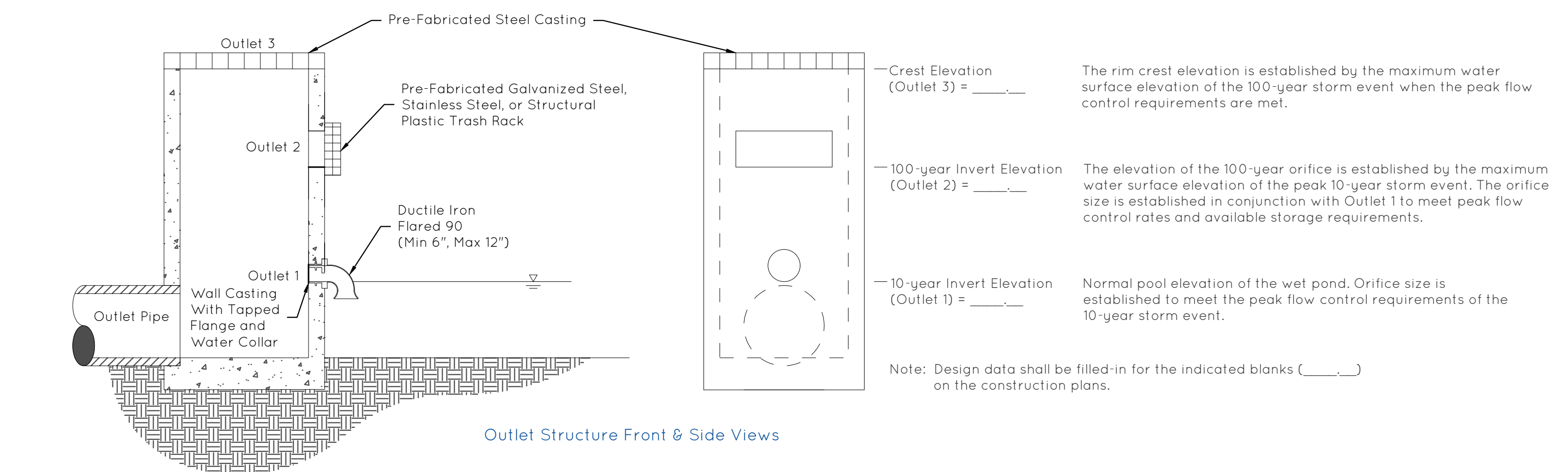
Not to Scale

DRY-BOTTOM DETENTION BASIN OUTLET DETAILS - PEAK FLOW CONTROL FACILITY (SINGLE USE)

Not to Scale



Outlet Structure Front & Side Views



Outlet Structure Front & Side Views

WET-BOTTOM DETENTION BASIN OUTLET DETAILS - COMBINED PEAK FLOW AND CHANNEL PROTECTION / WATER QUALITY BASIN

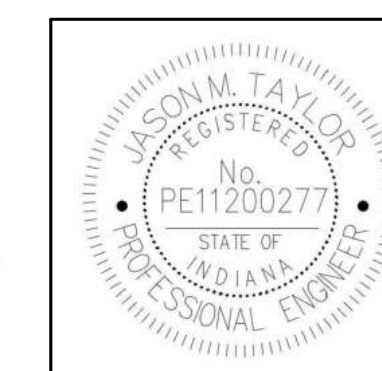
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WET-BOTTOM DETENTION BASIN OUTLET DETAILS - PEAK FLOW CONTROL FACILITY (SINGLE USE)

Not to Scale

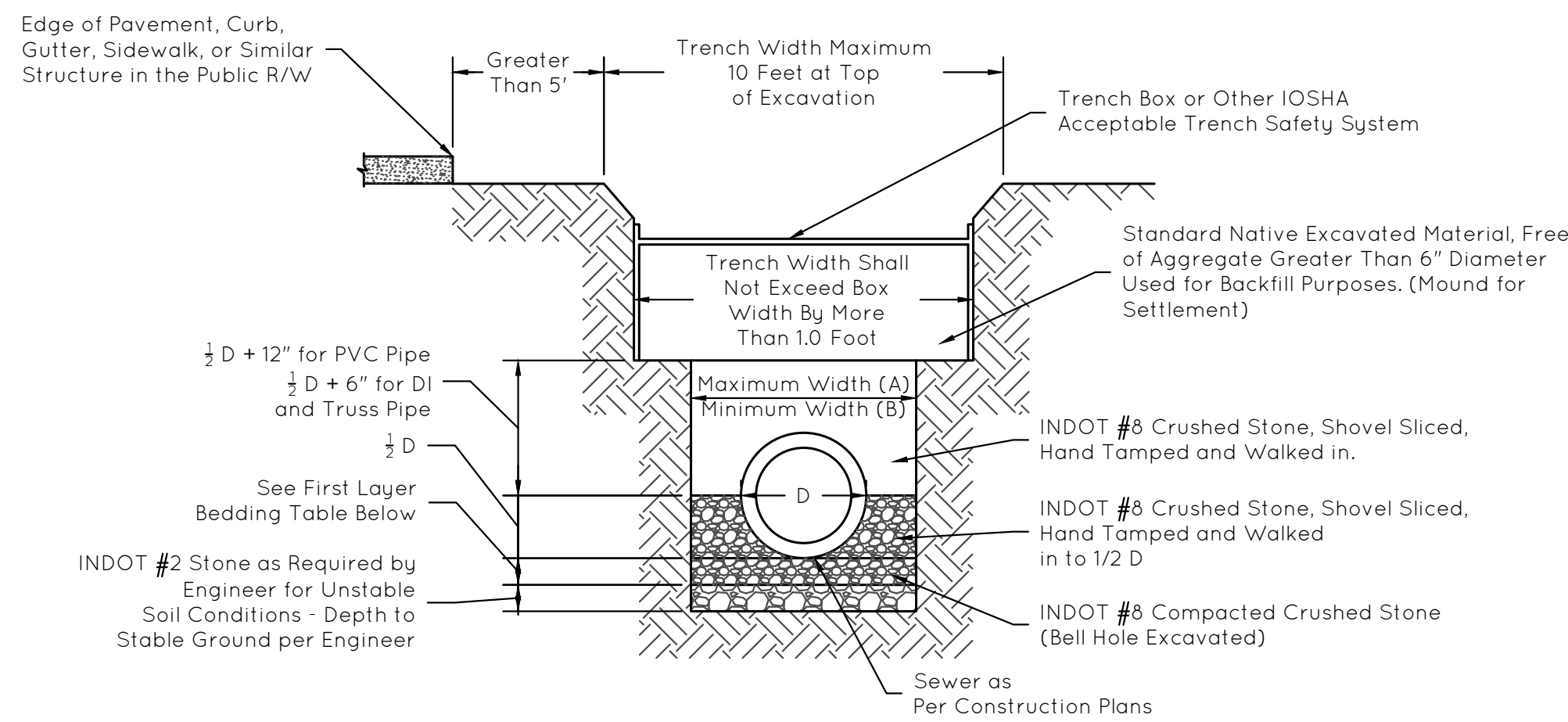
J. Taylor

1/18/2022



CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
DETENTION BASIN - OUTLET CONTROL STRUCTURE DETAILS

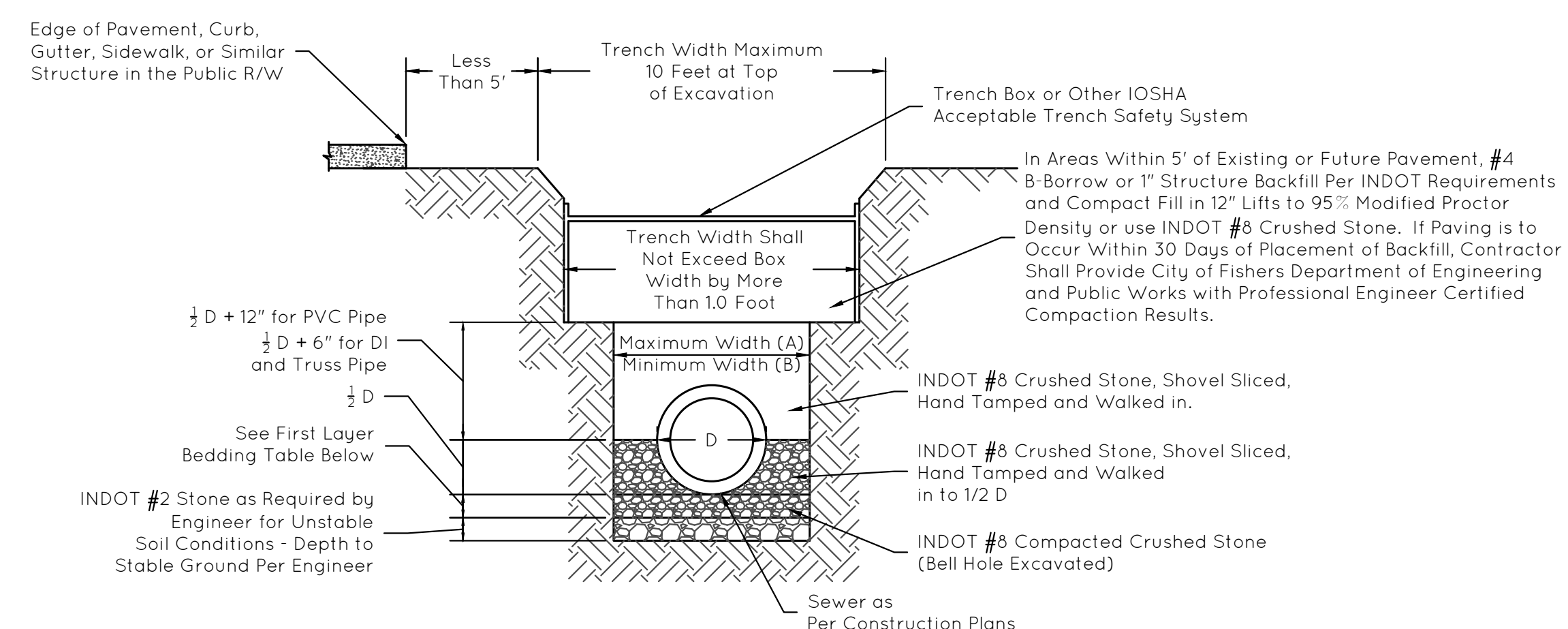
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FIRST LAYER BEDDING TABLE		
PIPE SIZE	6" TO 15"	18" & Over
Bedding Below the Pipe Barrel and Bell	Minimum = 6"	Minimum = 10"

PIPE SIZE	A	B
	Up to 18"	3' - 0"
18" and Greater	D + 24"	D + 18"

Greater Than 5' From Edge of Pavement



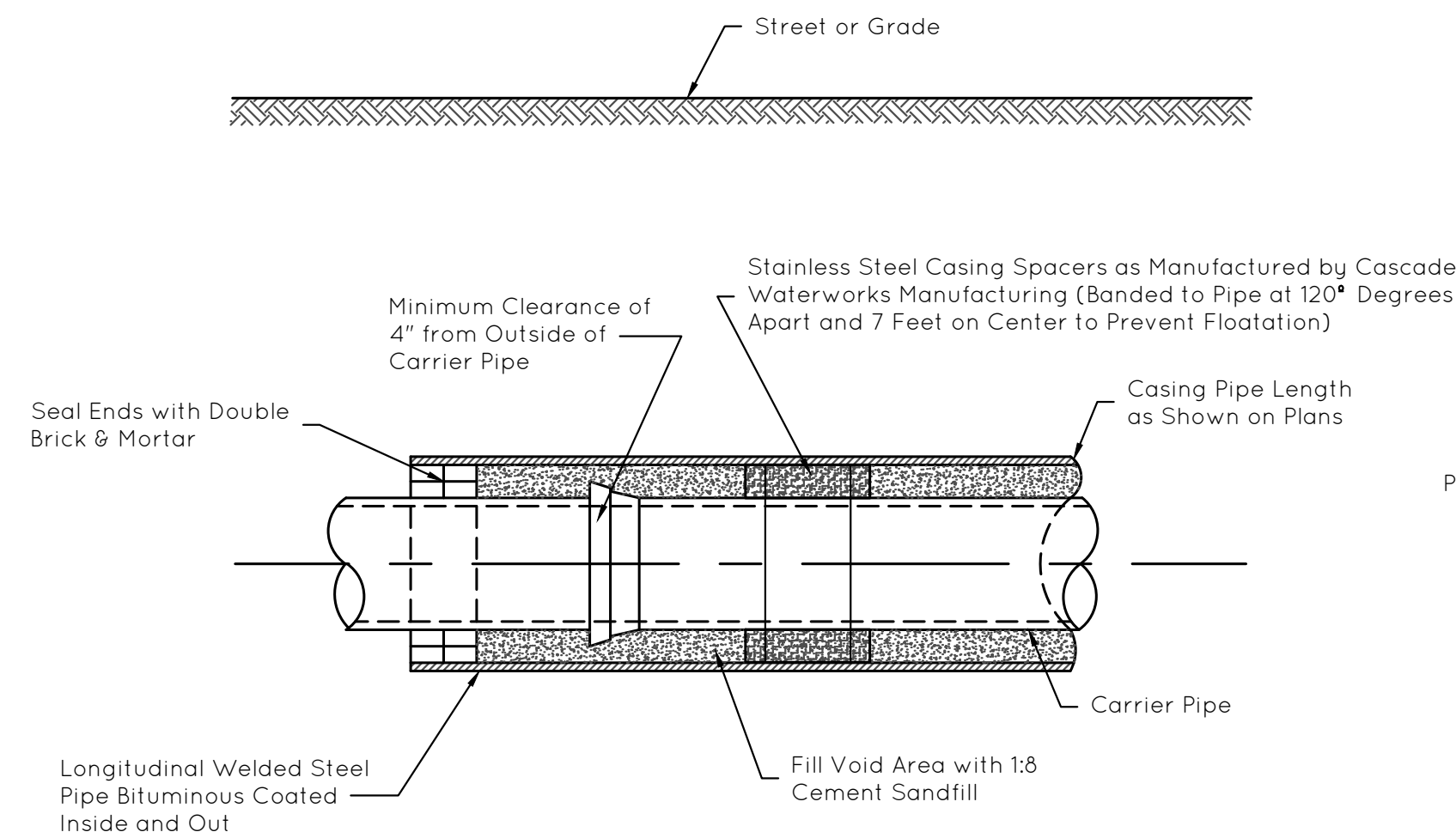
FIRST LAYER BEDDING TABLE		
PIPE SIZE	6" TO 15"	18" & Over
Bedding Below the Pipe Barrel and Bell	Minimum = 6"	Minimum = 10"

PIPE SIZE	A	B
	Up to 18"	3' - 0"
18" and Greater	D + 24"	D + 18"

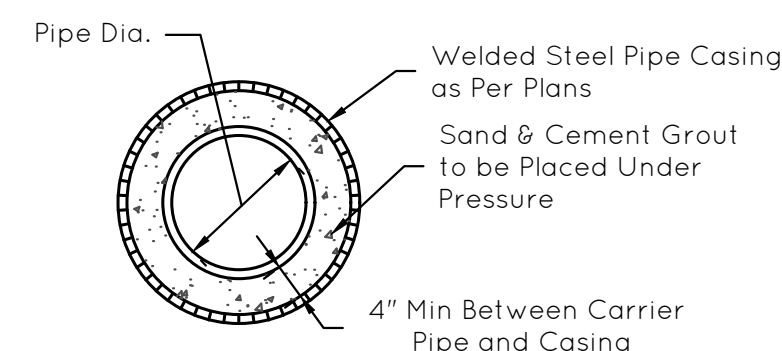
Within 5' of Existing or Future Pavement

SANITARY SEWER TRENCHING, BEDDING AND BACKFILL

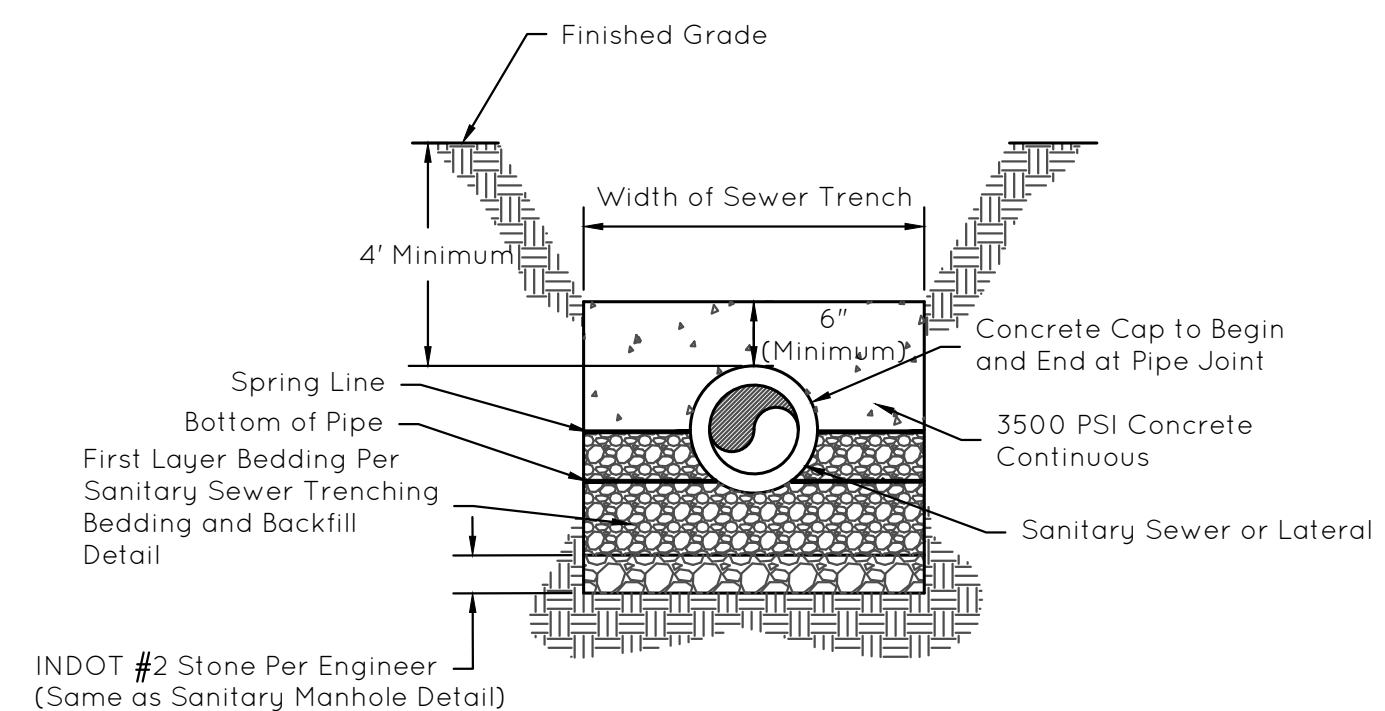
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TYPICAL STREET BORING SIDE VIEW
Not to Scale

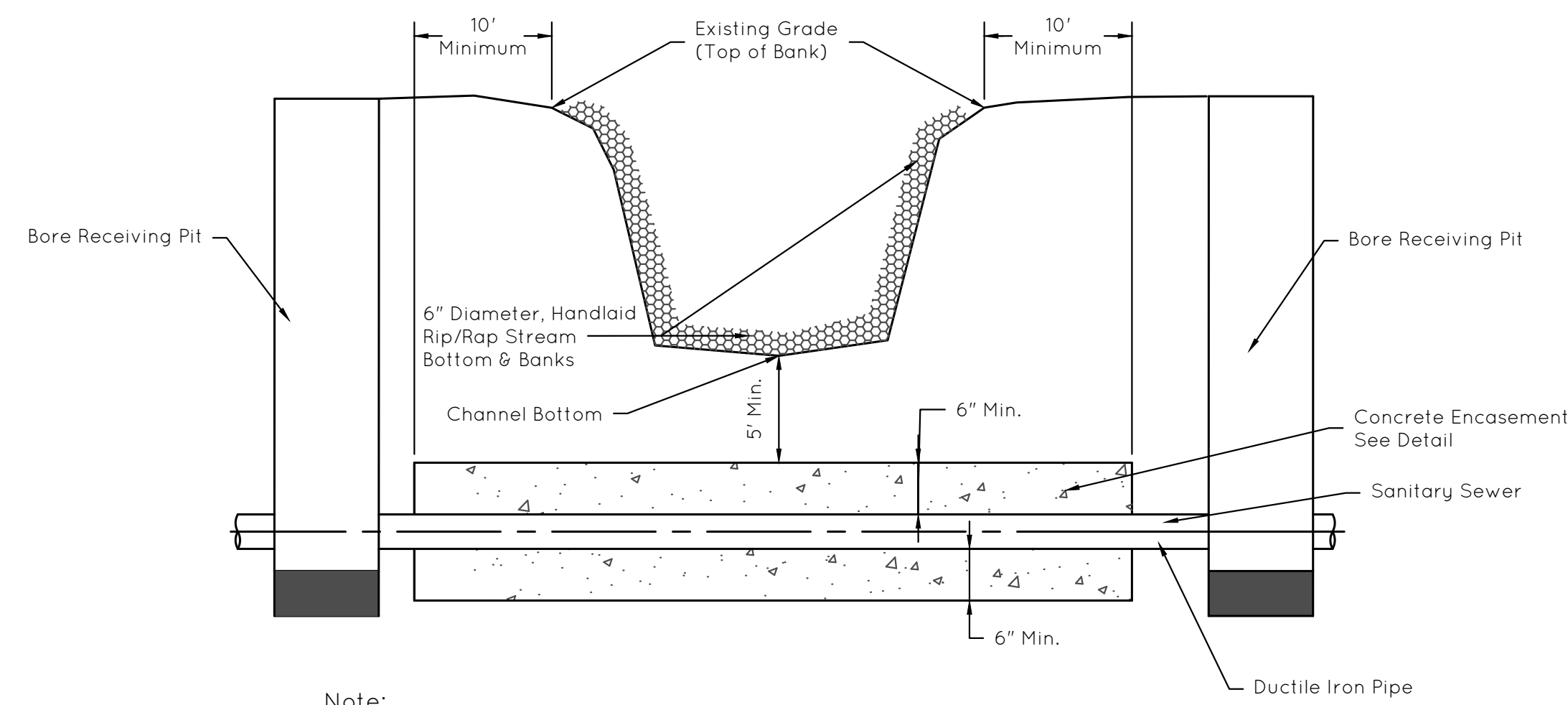


TYPICAL BORING END VIEW
Not to Scale



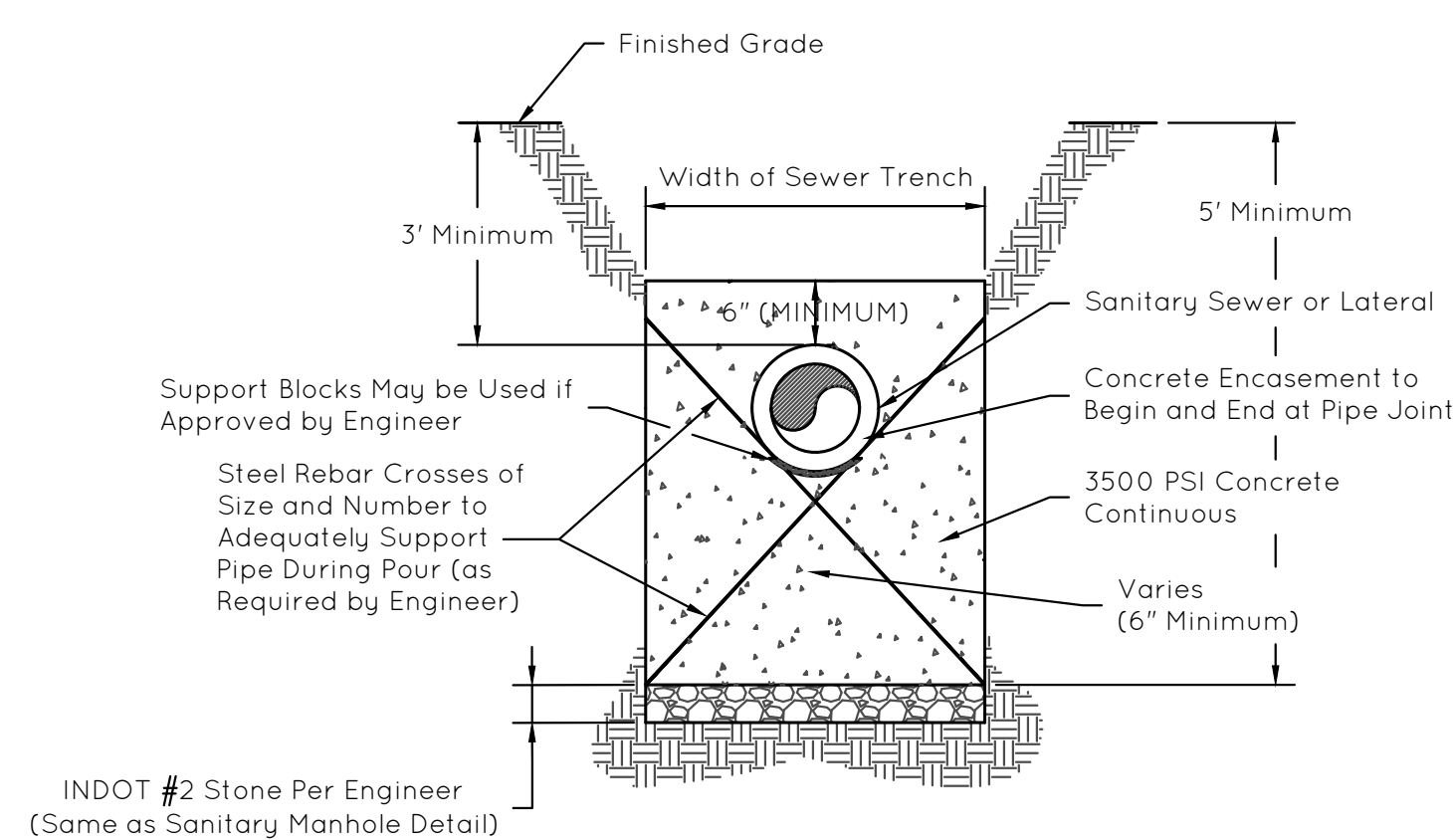
- Notes:
- Concrete shall be high-early yield and shall not be backfilled until Engineer deems the concrete adequately cured.
 - To be used when cover over top of pipe is 3-4 feet, per Engineer's direction, or where noted on the construction plans.

CONCRETE CAP
Not to Scale



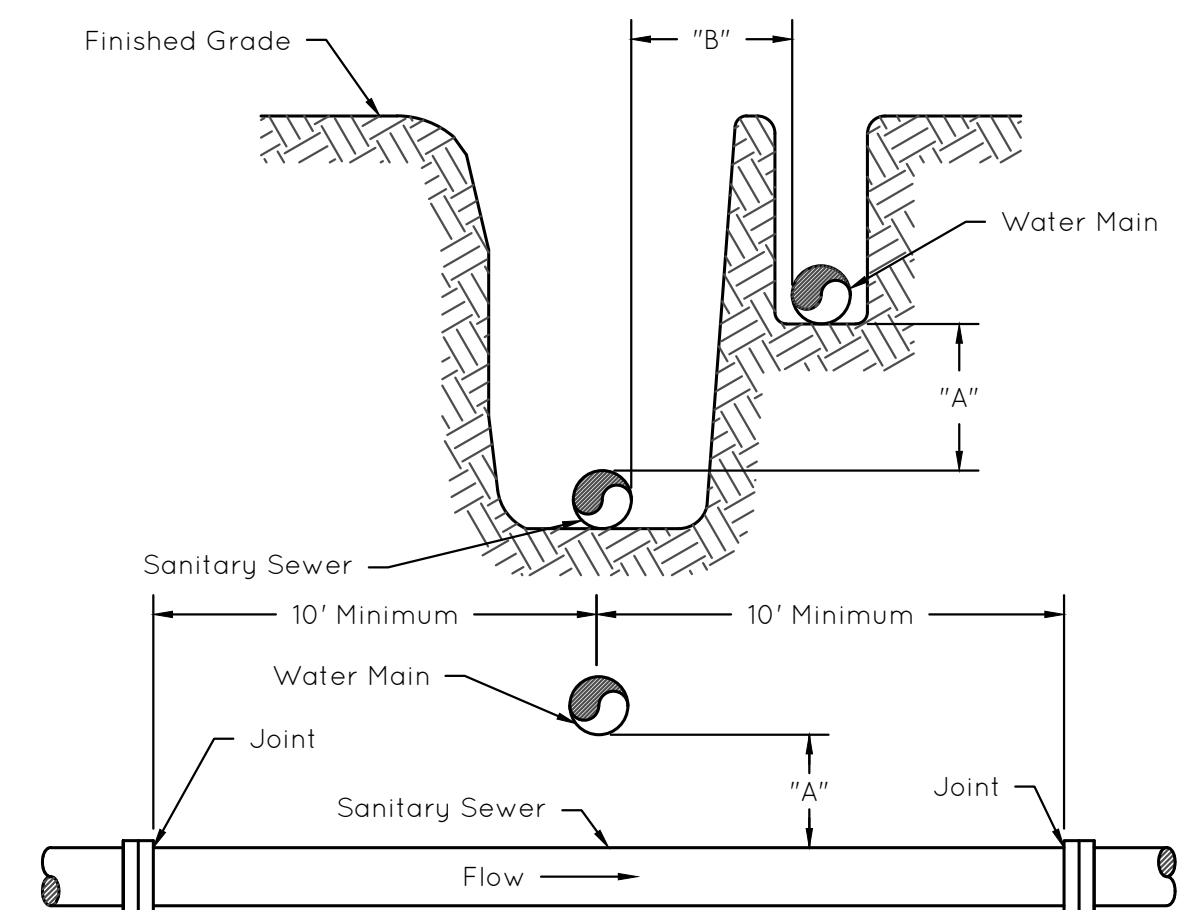
- Note:
- Stream crossing may need permit from Hamilton County Surveyor's Office. Should a county permit be necessary, refer to Hamilton County Surveyor's Office detail.

STREAM CROSSING - GRAVITY SEWER
Not to Scale



- Notes:
- Concrete shall be high-early yield and shall not be backfilled until Engineer deems the concrete adequately cured.
 - To be used when cover over top of pipe is 3-4 feet, per Engineer's direction, or where noted on the construction plans.

CONCRETE ENCASEMENT
Not to Scale



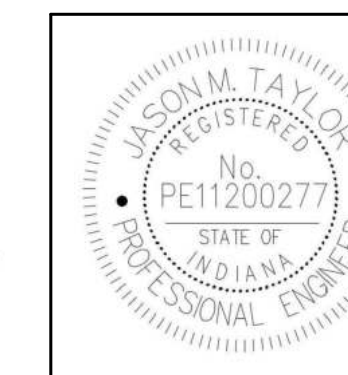
IF "A" IS	IF "B" IS	THEN SANITARY SEWER PIPE SEGMENT SHALL BE
18" or More	10' or More	No Special Pipe Material or Grade Requirements
Less Than 18"	Less Than 10'	PVC (Either ASTM D 2241 (SDR 21 Minimum) or ANSI/AWWA C900 (DR 18 Minimum) or ANSI/AWWA C905 (DR 21 Minimum)) or Ductile Iron (Class 51 Minimum)

- Notes:
- Water mains shall not be located in the same trench as sanitary sewers.
 - Separation distances from water supplies and pipe classifications shall conform to Indiana State Board of Health's "On-Site Water Supply and Wastewater Disposal for Public and Commercial Establishments - Bulletin S.E. 13".

WATER SUPPLY & SEWER CROSSING
Not to Scale

THESE SANITARY SEWER DETAILS AND FISHERS SANITARY SEWER SPECIFICATIONS ARE COMPLEMENTARY IN NATURE AND SHOULD NOT BE INTERPRETED INDIVIDUALLY WITHOUT REFERENCE TO THE OTHER.

J. Taylor
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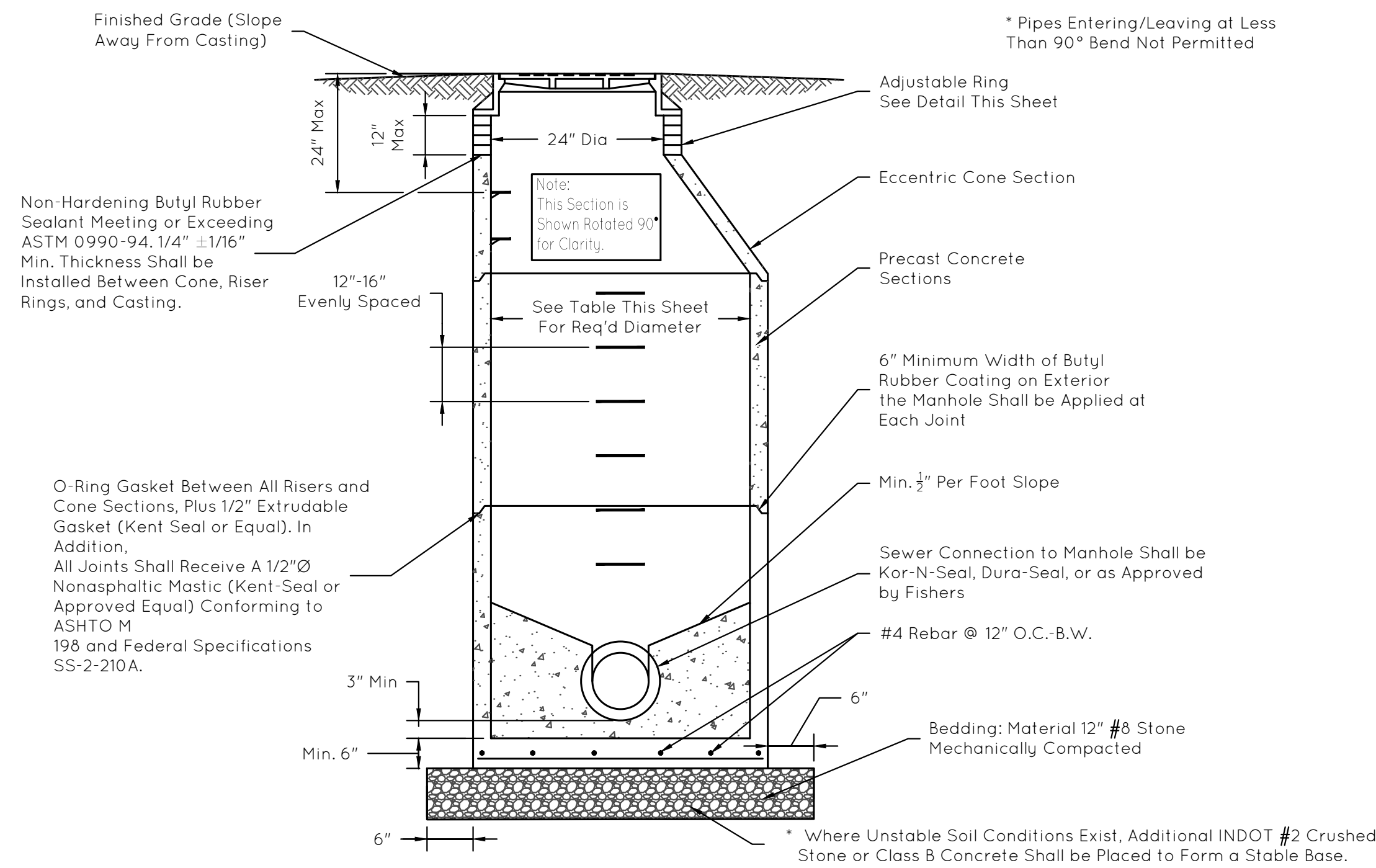
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
SANITARY SEWER PIPE BEDDING & CROSSING DETAILS

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MANHOLE DIAMETERS

Pipe Size	Pipes Entering/Leaving at *45°-90°
8"-24"	48"
27"-30"	60"

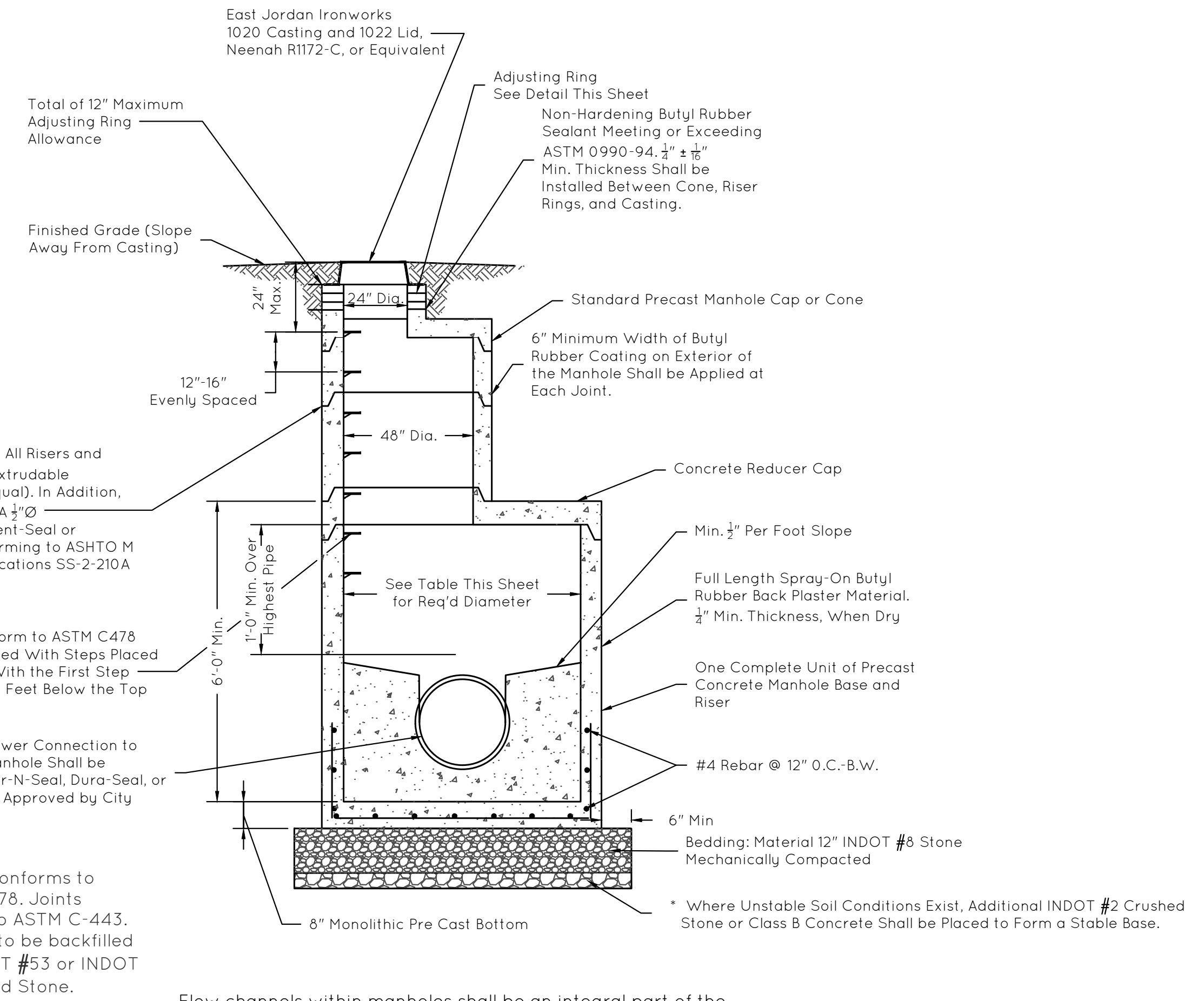
* Pipes Entering/Leaving at Less Than 90° Bend Not Permitted



Flow channels within manholes shall be an integral part of the precast base. The channels shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of the flow through the manhole. The bench wall shall be formed to the crown of the inlet and outlet pipes to form a "U" shaped channel. The bench wall shall slope back from the crown at 1/2" per foot to the manhole wall.

STANDARD MANHOLE FOR PIPE SIZES 8" THRU 24"

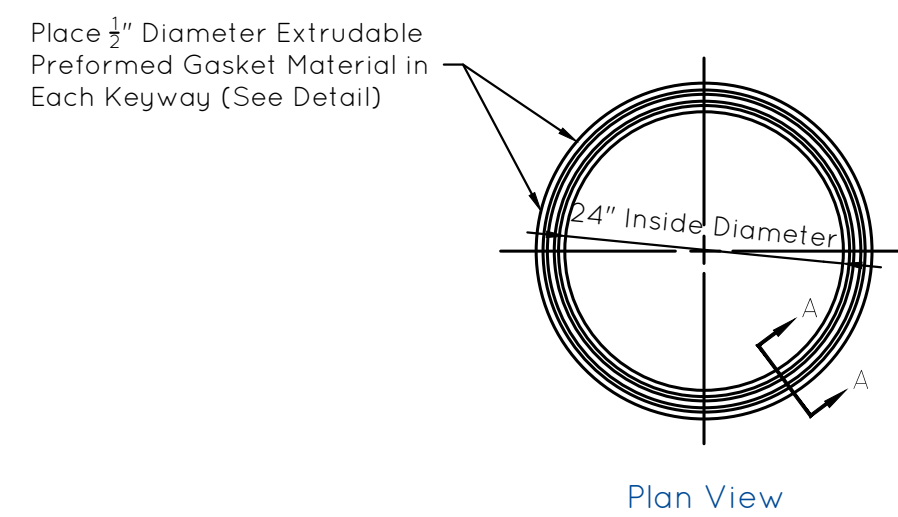
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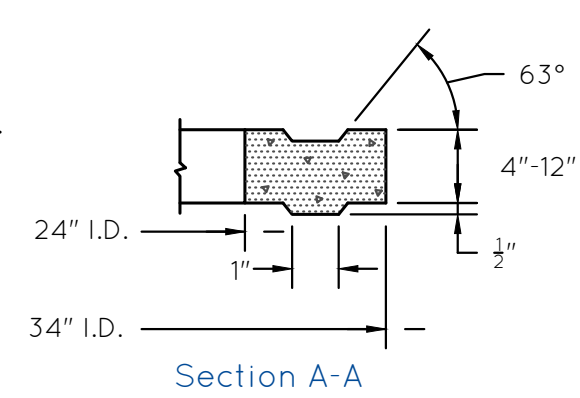
Flow channels within manholes shall be an integral part of the precast base. The channels shall be shaped and formed for a clean transition with proper hydraulics to allow the smooth conveyance of the flow through the manhole. The bench wall shall be formed to the crown of the inlet and outlet pipes to form a "U" shaped channel. The bench wall shall slope back from the crown at 1/2" per foot to the manhole wall.

STANDARD MANHOLE FOR PIPE SIZES 27" THRU "30"

Not to Scale



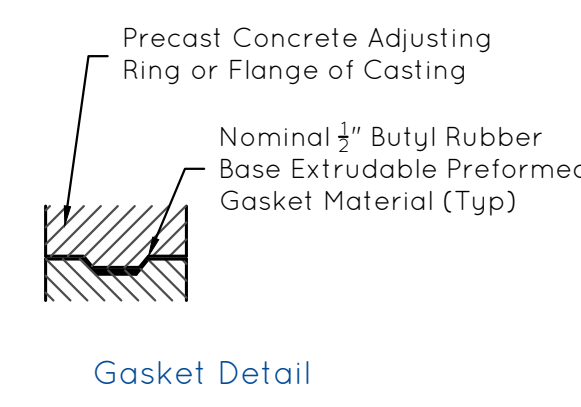
Plan View



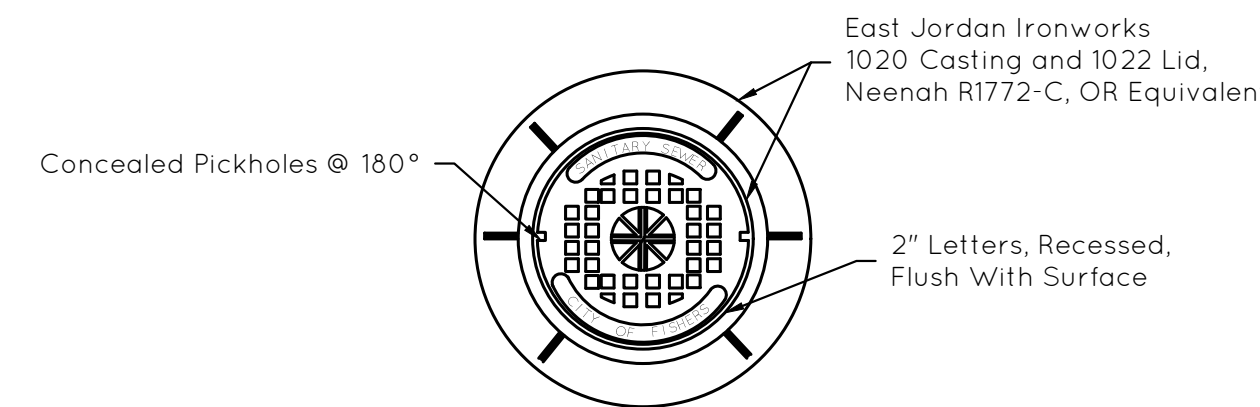
Section A-A

ADJUSTING RING

Not to Scale

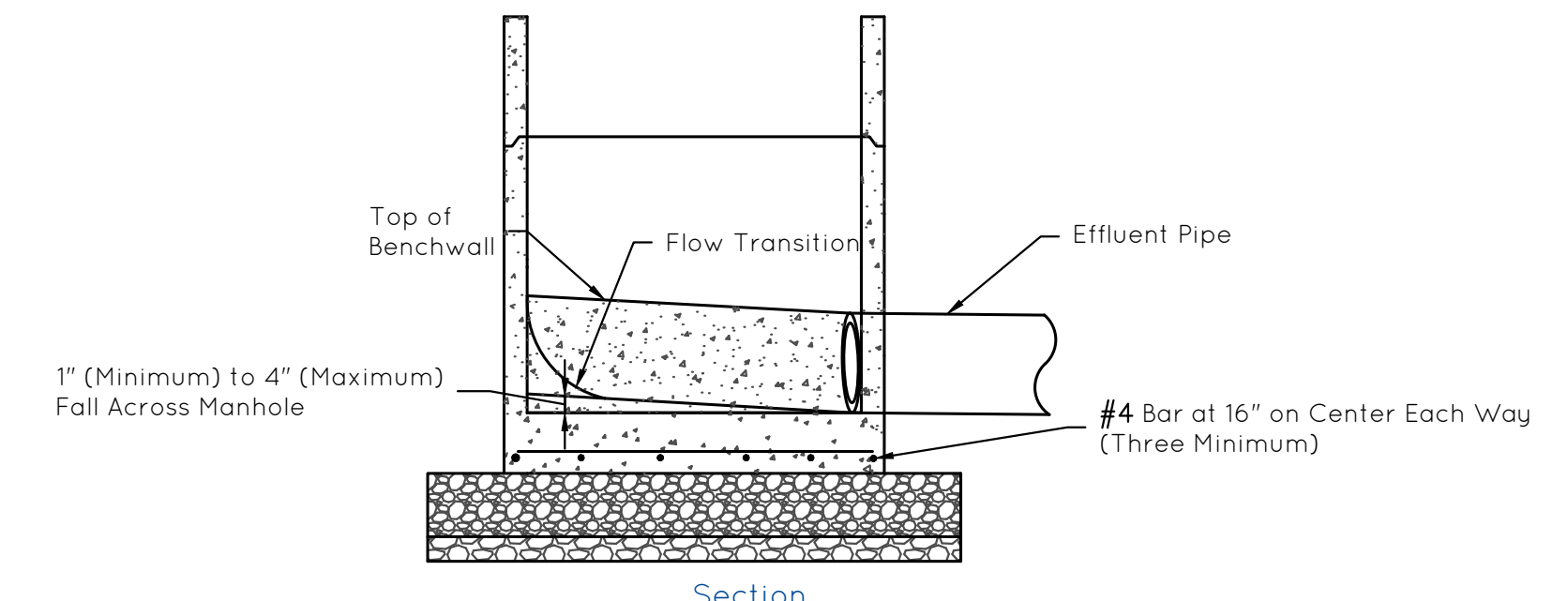


Gasket Detail



FRAME AND COVER

Not to Scale



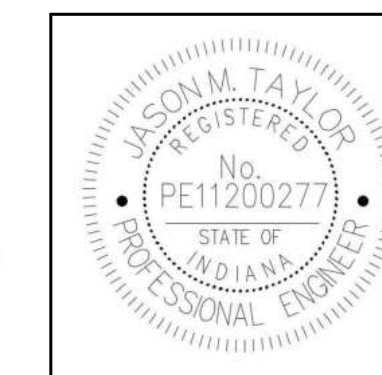
Section

TERMINATION MANHOLE

Not to Scale

THESE SANITARY SEWER DETAILS AND FISHERS SANITARY SEWER SPECIFICATIONS ARE COMPLEMENTARY IN NATURE AND SHOULD NOT BE INTERPRETED INDIVIDUALLY WITHOUT REFERENCE TO THE OTHER.

J. M. Taylor
1/18/2022



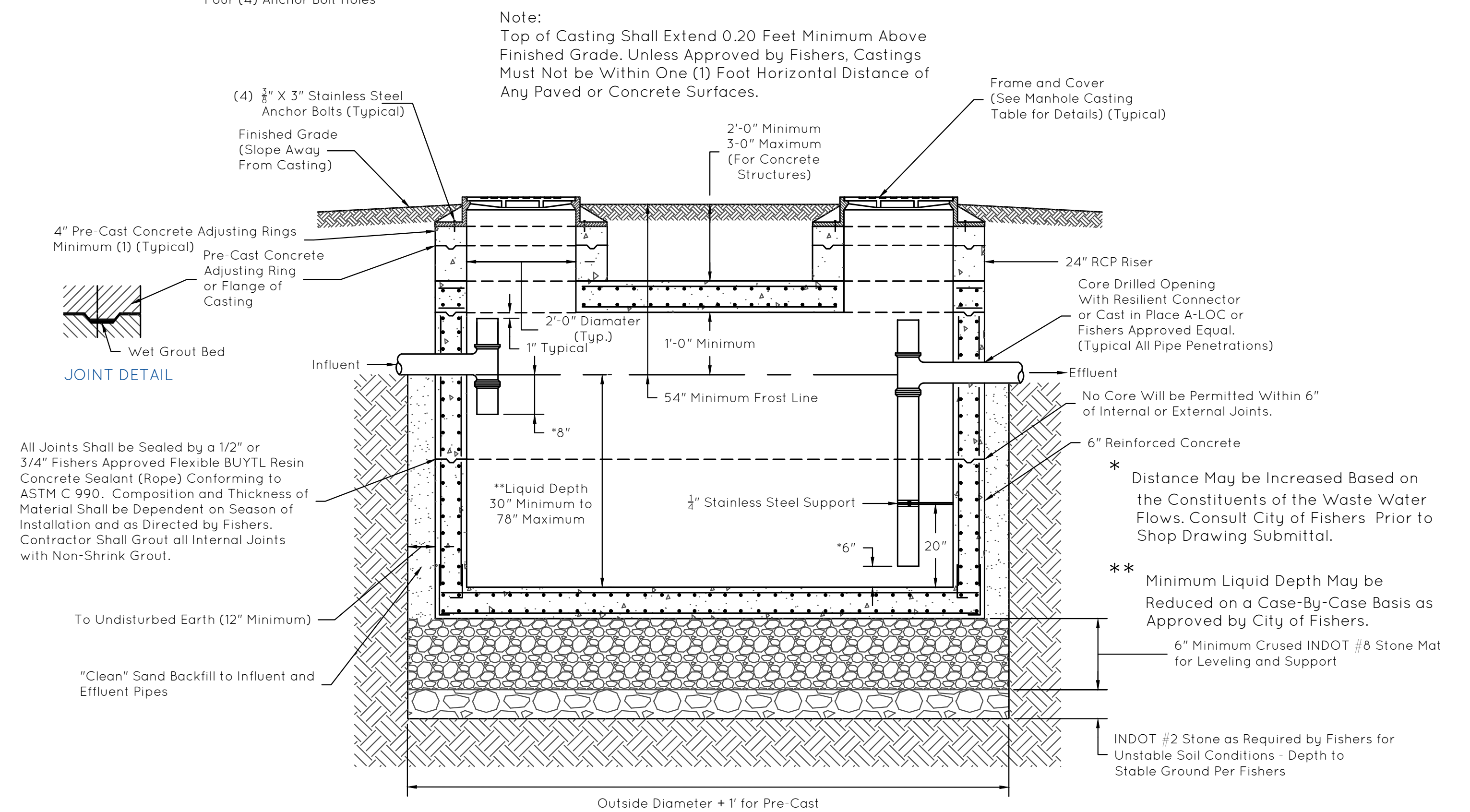
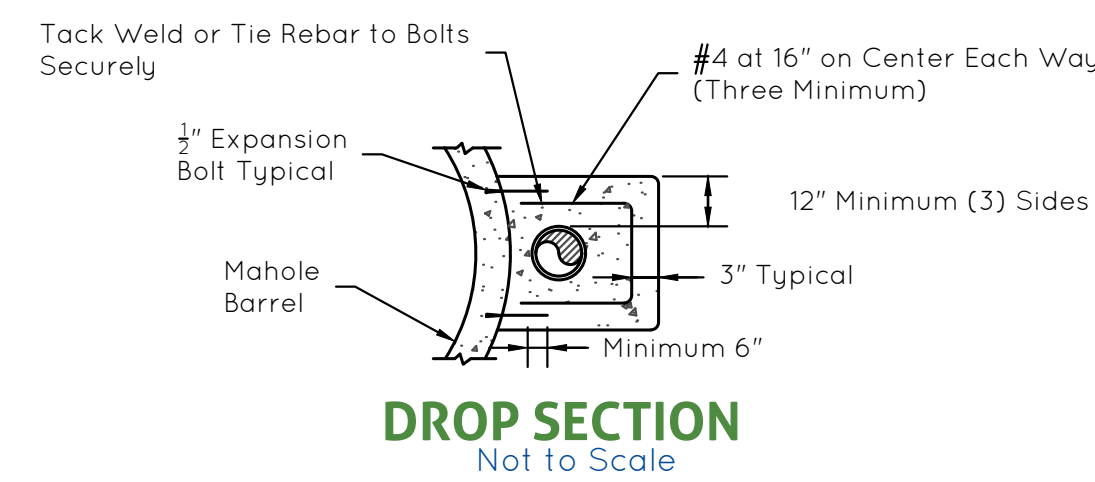
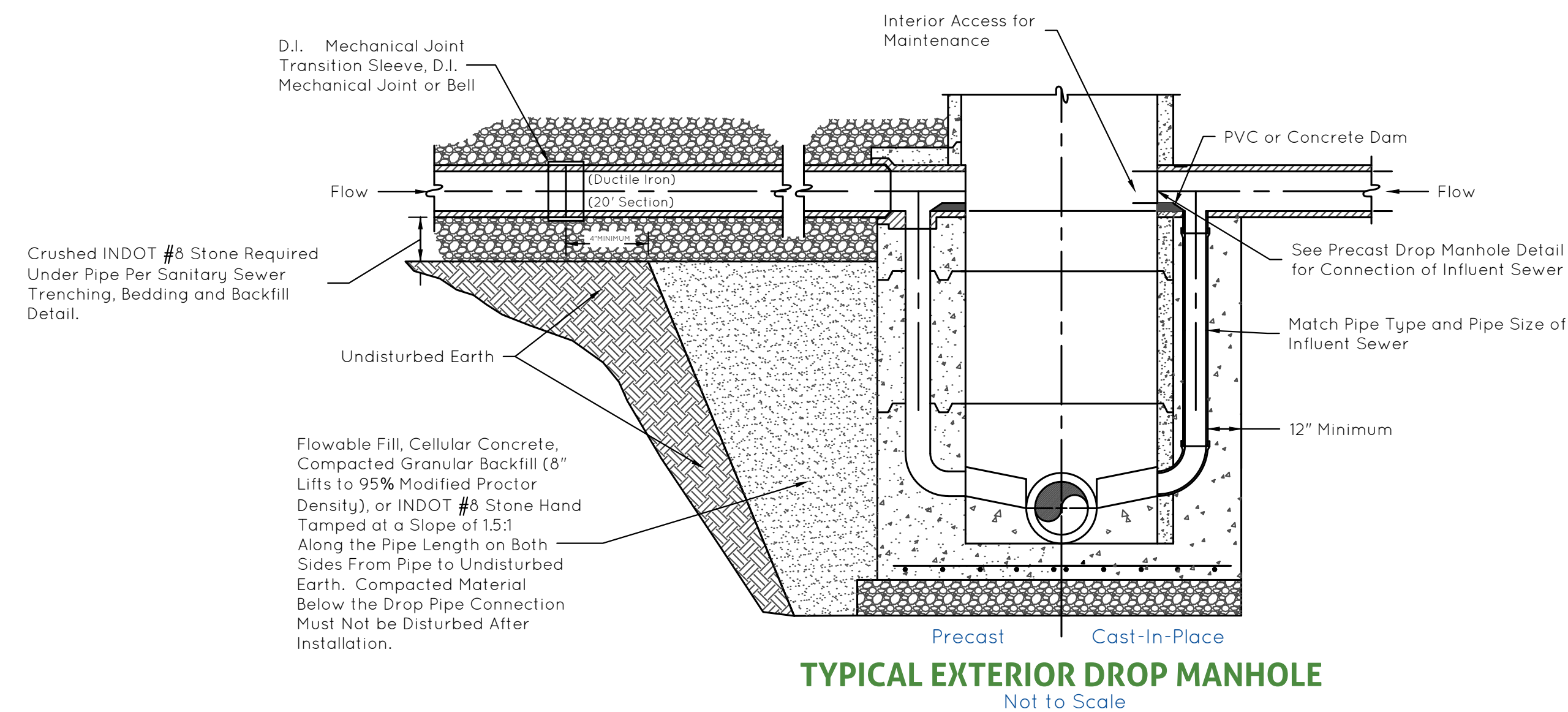
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
SANITARY SEWER STRUCTURE
DETAILS

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MANHOLE CASTING TABLE		
LOCATION	MODEL	COVER
18" Inches or More Above 100 Year Flood Elevation of All Waterway	East Jordan 1060-Z1 or Neenah R-1712-B OR Equivalent	Heavy Duty Solid
Less Than 18" Above 100 Year Flood Elevation of All Waterways	East Jordan 1050-Z1WT OR Neenah R-1916-E OR Equivalent	Heavy Duty Solid
LID		
OWNERSHIP	LETTERING	
Private or Fishers	"Sanitary Sewer"	

All Castings to be Supplied With Four (4) Anchor Bolt Holes

- Notes:
- Grease Trap Shall Conform to ASTM C 478 Utilizing 4,000 PSI Concrete. Contractor May Supply Grease Trap as Manufactured by ZURN Series Z-1170 or Jay R. Smith Manufacturing Company Series 8000.
 - Exterior Installation Must be Concrete or Cast Iron. Steel Grease Traps Shall Only be Installed Inside a Building.



- Notes:
- Exterior grease traps must be sized according to the Indiana State Department of Health, Environmental Public Health Division Rule 410 IAC 6-10.1, "Commercial On-Site Sewage Systems" and per local requirements and codes. The sizing method for all structures must be approved by City of Fishers.
 - Top of casting shall extend 0.20 feet minimum above finished grade. Unless approved by City of Fishers, castings must not be within one (1) foot horizontal distance of any paved or concrete surfaces.
 - Shop drawings must be submitted to City of Fishers for review and approval.
 - Alternate equivalent must be approved by Director of Public Works.

EXTERIOR GREASE INTERCEPTOR
Not to Scale

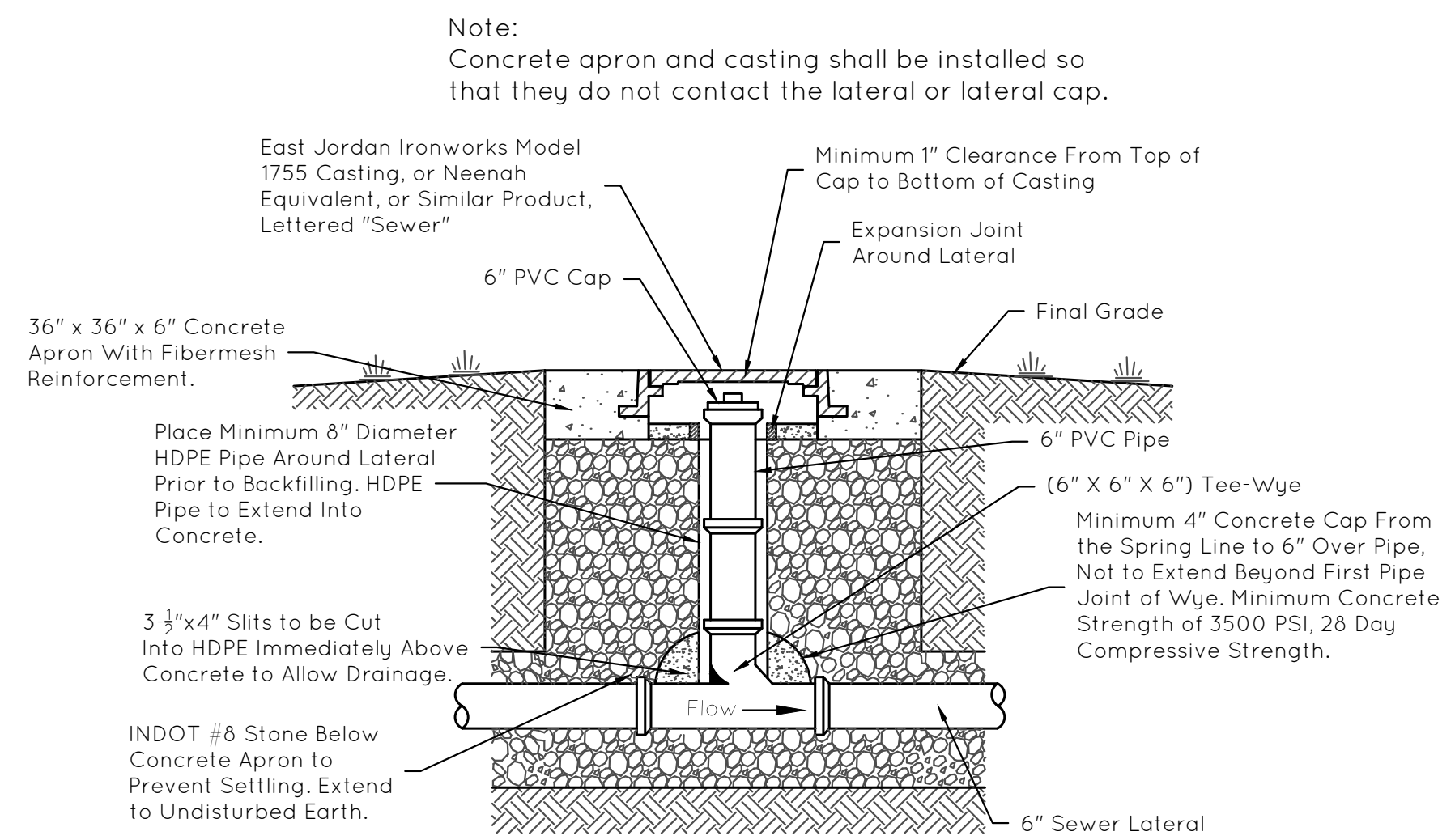
THESE SANITARY SEWER DETAILS AND FISHERS SANITARY SEWER SPECIFICATIONS ARE COMPLEMENTARY IN NATURE AND SHOULD NOT BE INTERPRETED INDIVIDUALLY WITHOUT REFERENCE TO THE OTHER.

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CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
SANITARY SEWER STRUCTURE
DETAILS

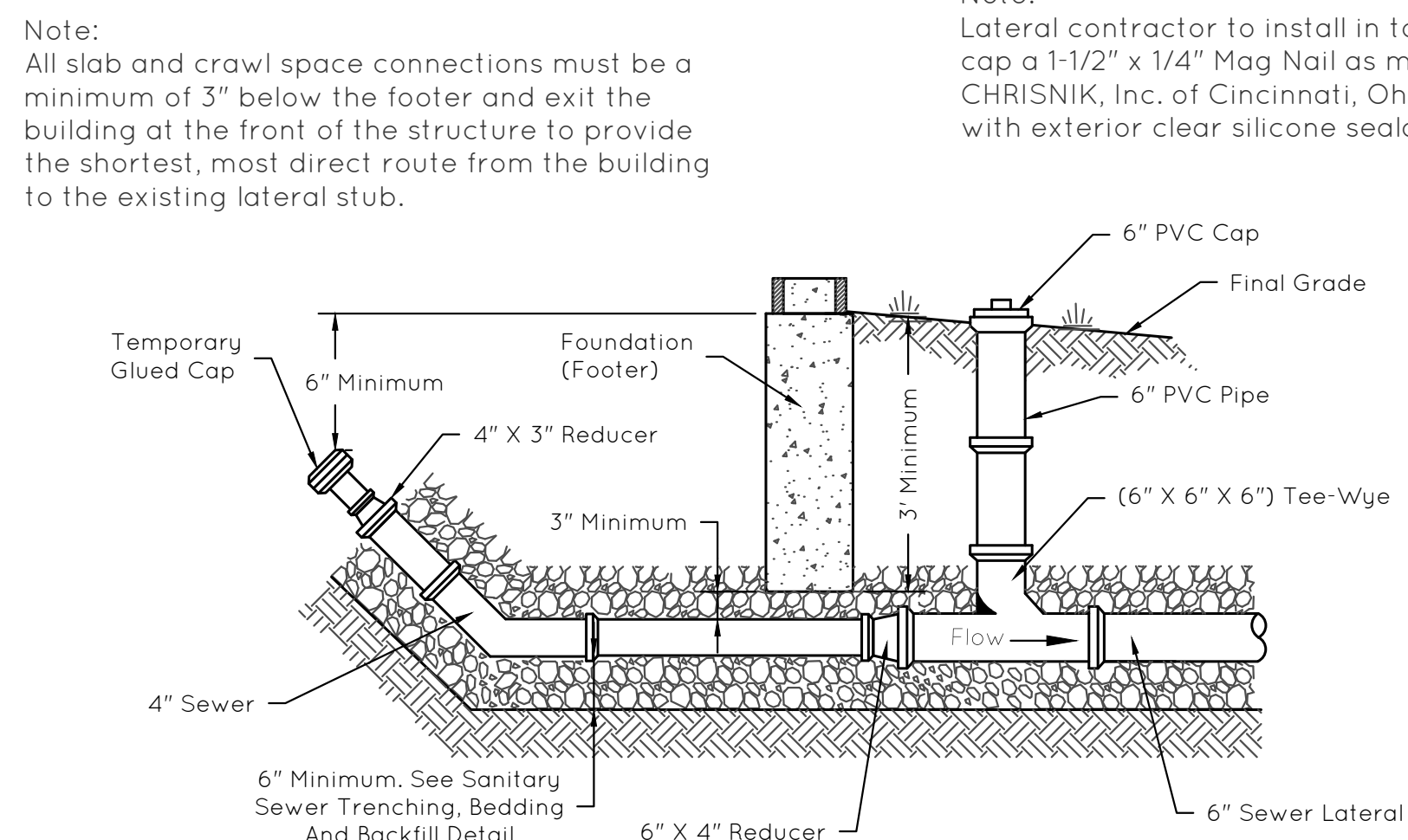
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CLEANOUT TYPE 2

(Hardscape Surfaces and All Other Installations Beyond Three Feet of Building)

- Notes:
- 1) Top of casting or cleanout cap shall extend 0.20 feet minimum above finished grade unless constructed within pedestrian or vehicular traffic way. Unless approved by Engineer, sanitary sewer castings or cleanouts must not be within one (1) foot horizontal distance of any paved or concrete surfaces.
 - 2) All cleanout pipes and fittings to be PVC Schedule 40 or SDR 35 when shallower than twelve (12) feet. At depths greater than twelve (12) feet, material of construction will be determined by Engineer.

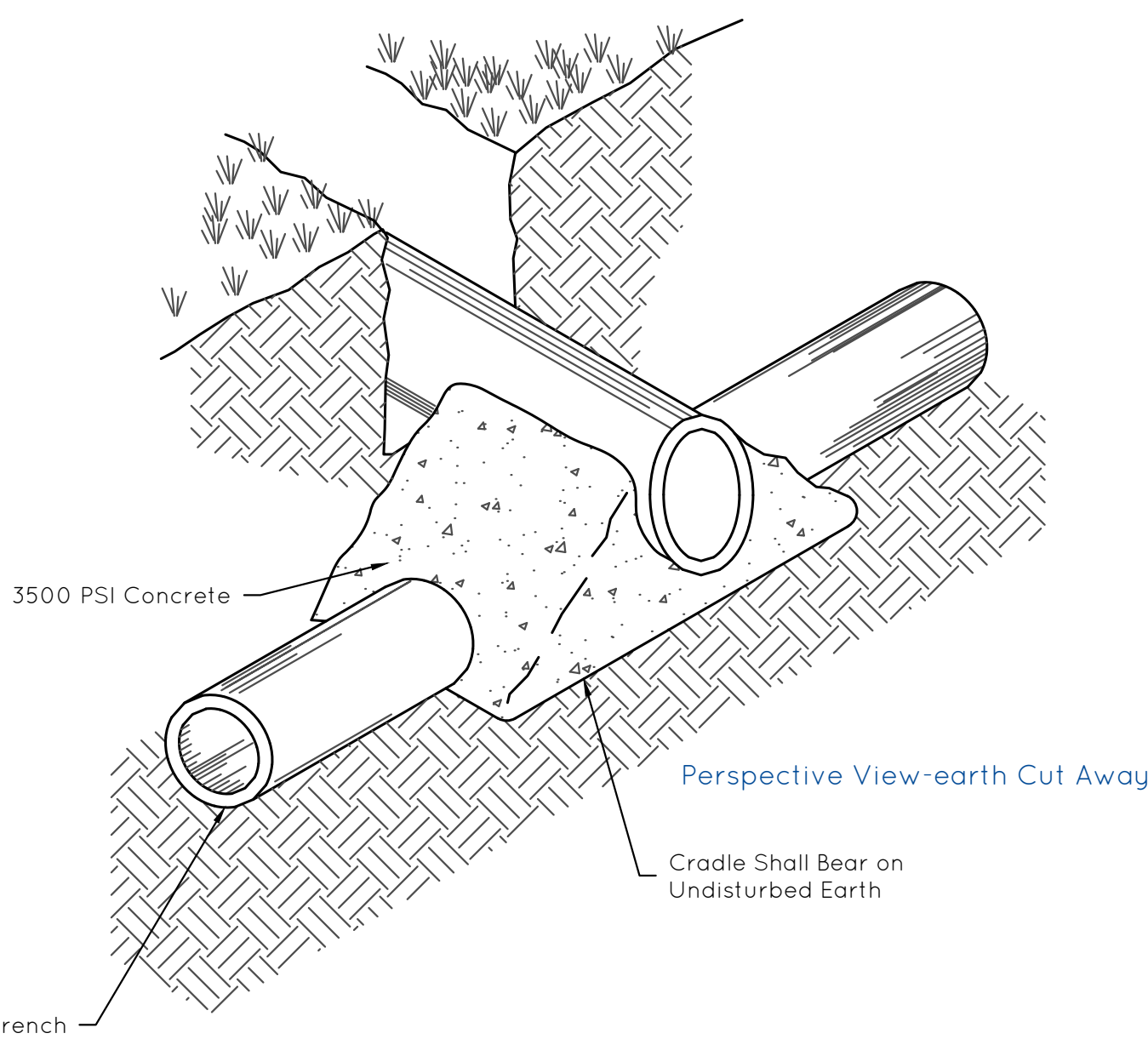


CLEANOUT TYPE 1

(Only Landscaped Surfaces Within Three Feet of Building)

TYPICAL CLEANOUTS

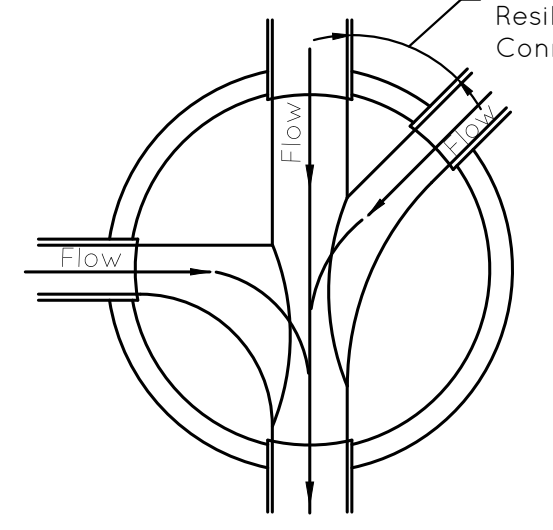
Not to Scale



CONCRETE CRADLE

Not to Scale

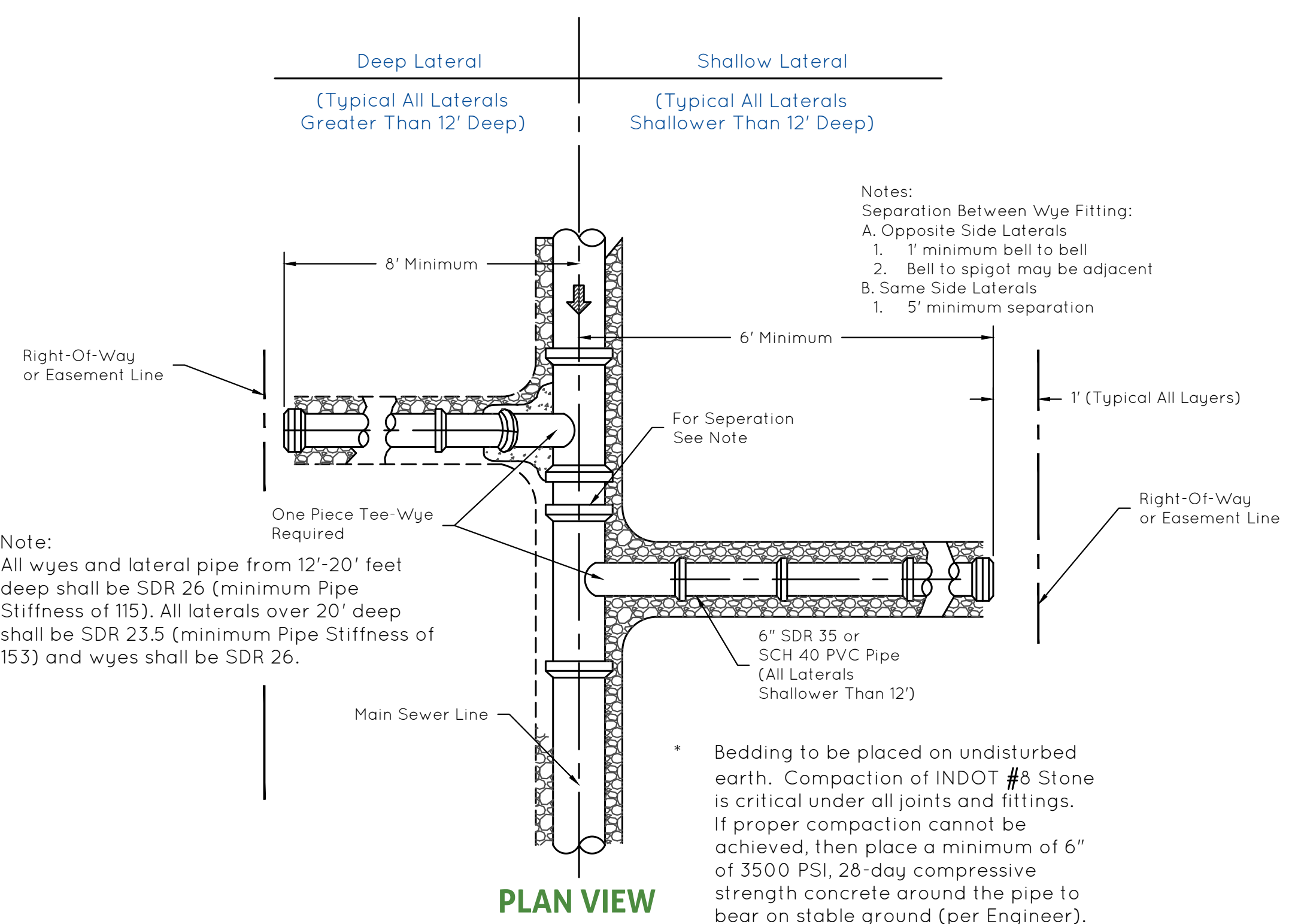
- Note:
- 1) To be used when clear distance (from exterior pipe diameter to exterior pipe diameter) between sanitary sewer piping (mains, laterals, force mains, etc.) and all other pipes is 18" or less, per Engineer's direction, or where noted on the construction plans. A minimum clear distance of 3" must be provided to maintain structural integrity of the concrete. Concrete must not come into contact with force main. At least 3" of sand must be placed as a cushion around the force main. If the conflict is between a water main and any sanitary sewer piping, 18" clearance must be maintained, or note above applies and only granular fill may be used.



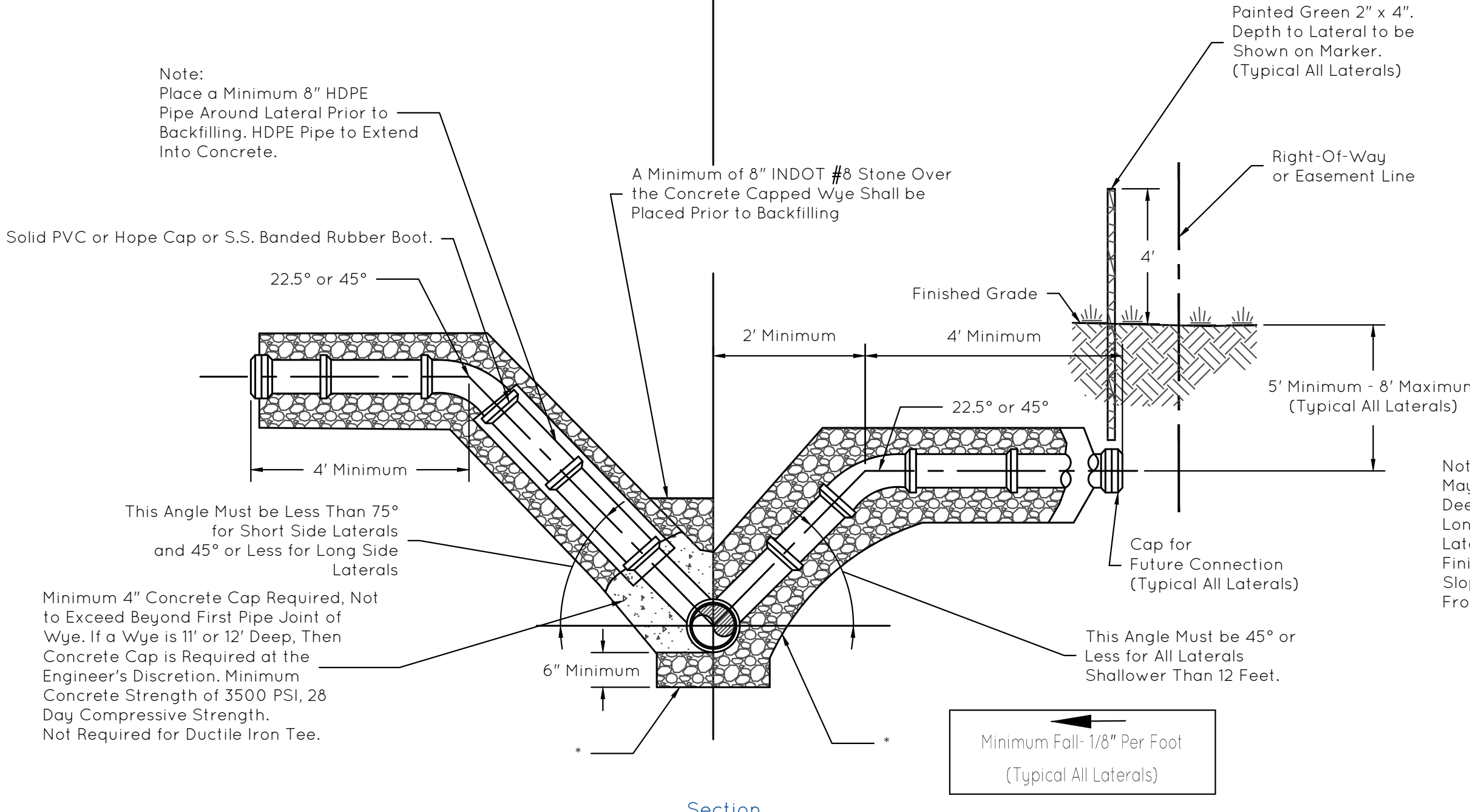
FLOW CHANNEL

Not to Scale

- Note:
- 1) If manhole has only one (1) influent pipe which is approximately 90 degrees to an effluent pipe, then contractor shall maintain a radiused channel of same width as influent pipe.
 - 2) If separation is between 8" and 18", then additional reinforcement (rebar or mesh area) shall be increased as deemed necessary by Engineer.



PLAN VIEW



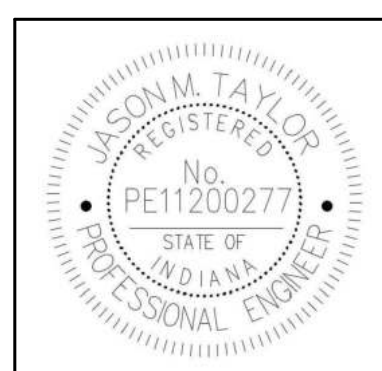
Section

- Notes:
- 1) Depth of service lateral shall be measured from finished grade to the top of main sewer line.
 - 2) All piping from wye to 45°/22.5° fitting at 5'-8' below grade shall be SDR 26 to 20' deep or SDR 23.5 greater than 20' deep.
 - 3) All lateral bedding shall be against undisturbed trench.

SERVICE LATERAL

Not to Scale

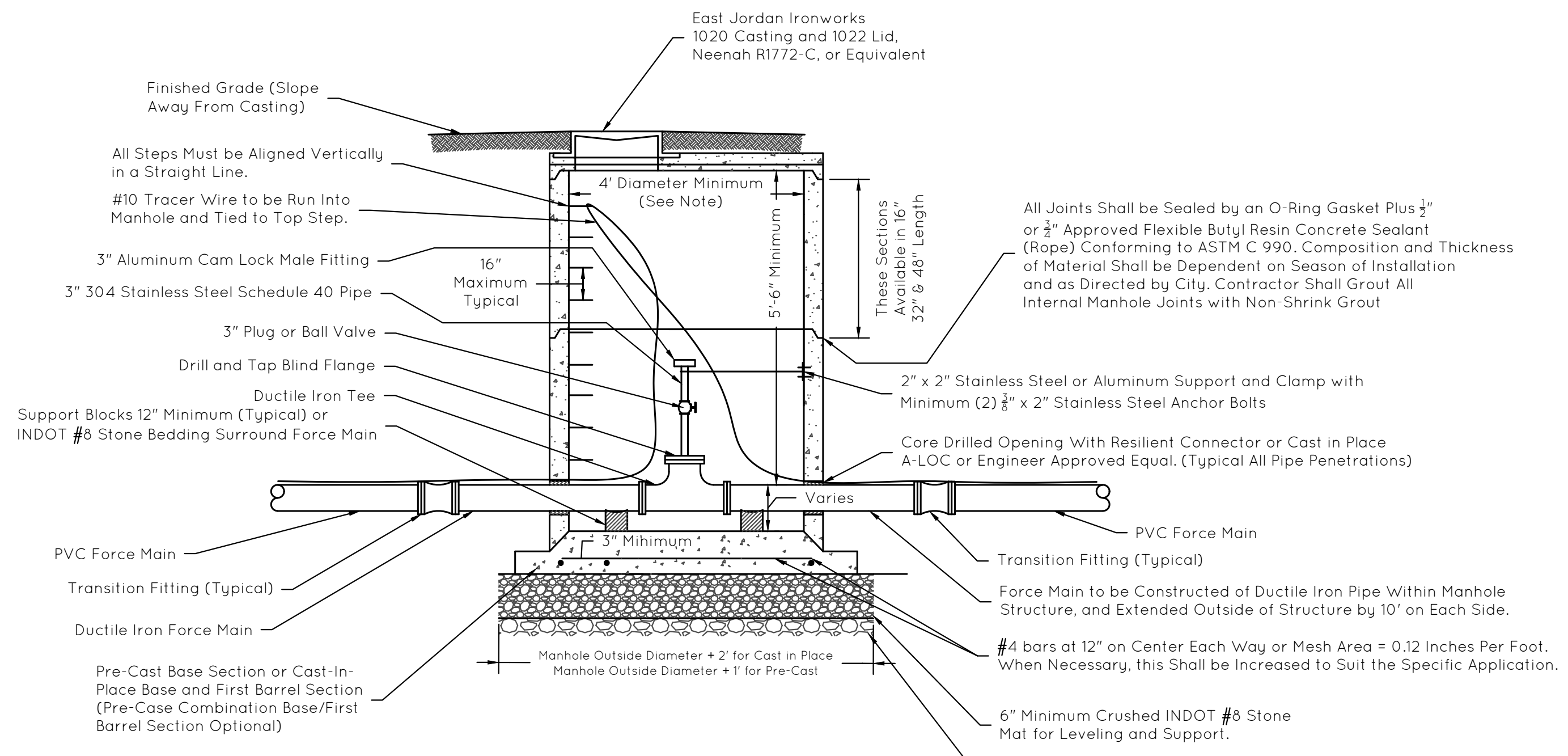
THESE SANITARY SEWER DETAILS AND FISHERS SANITARY SEWER SPECIFICATIONS ARE COMPLEMENTARY IN NATURE AND SHOULD NOT BE INTERPRETED INDIVIDUALLY WITHOUT REFERENCE TO THE OTHER.



CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
 SANITARY LATERAL CONNECTION,
 CLEAN OUT, & MISC. DETAILS

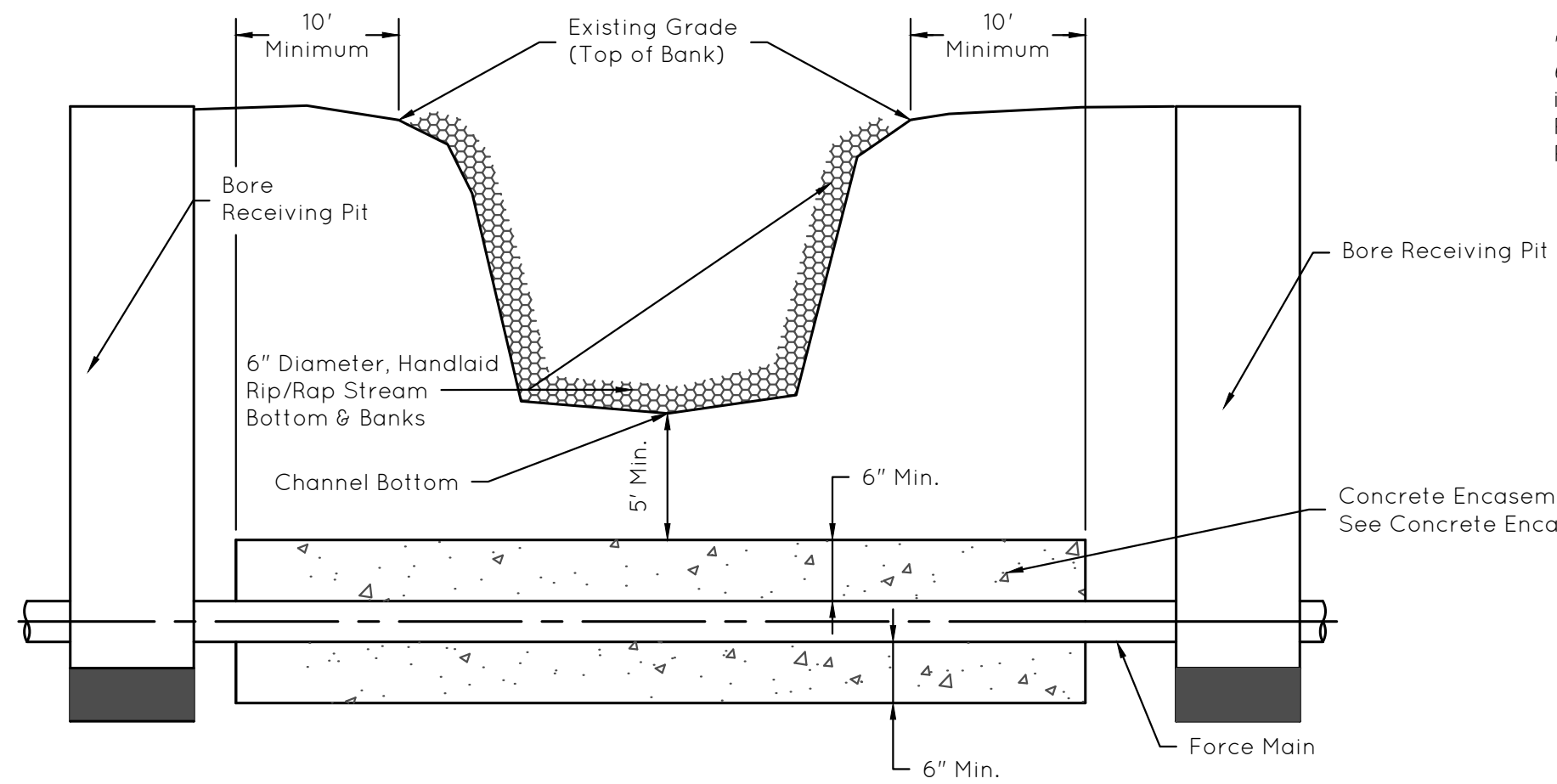
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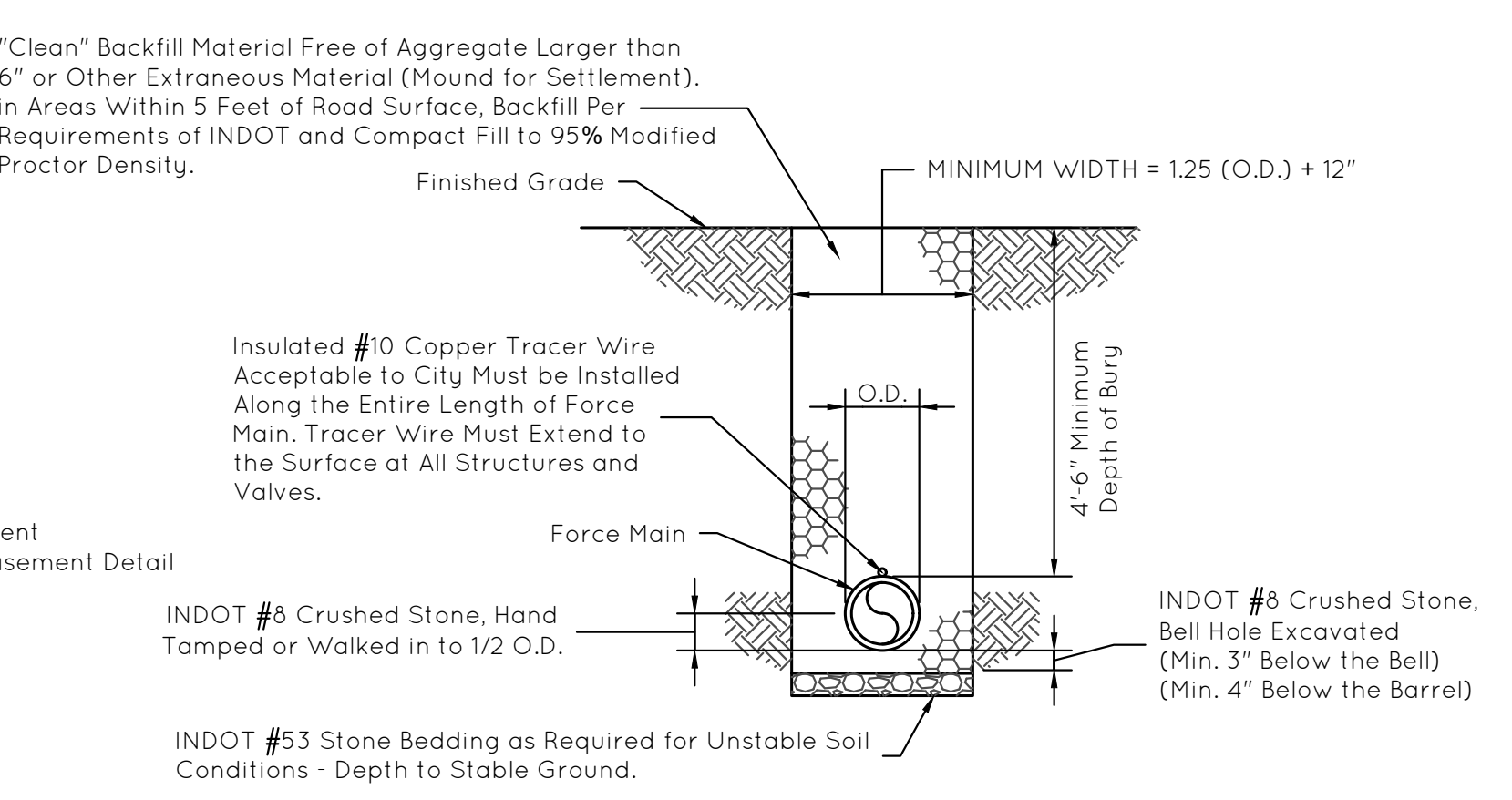


- Notes:
- 1) Manhole sections shall conform to ASTM C 478 utilizing 4,000 psi concrete. Joints shall conform to ASTM C 443. Four (4) feet diameter manhole for 6" force main or smaller, or five (5) feet diameter manhole for 8" force main or larger.
 - 2) Top of casting shall extend 0.20 feet minimum above finished grade.

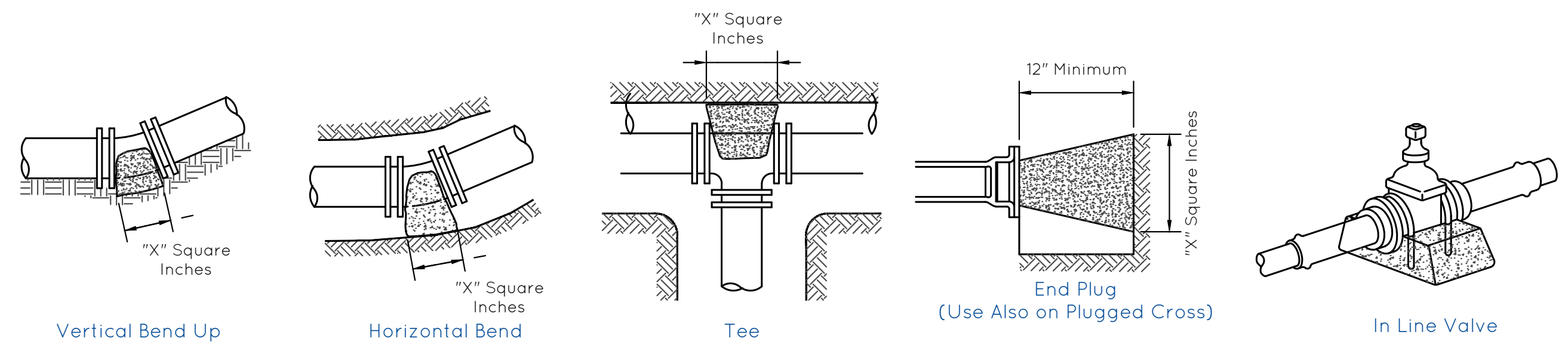
FORCE MAIN CLEAN-OUT MANHOLE
Not to Scale



STREAM CROSSING - FORCE MAIN
(Refer to Hamilton County Surveyors Detail)
Not to Scale



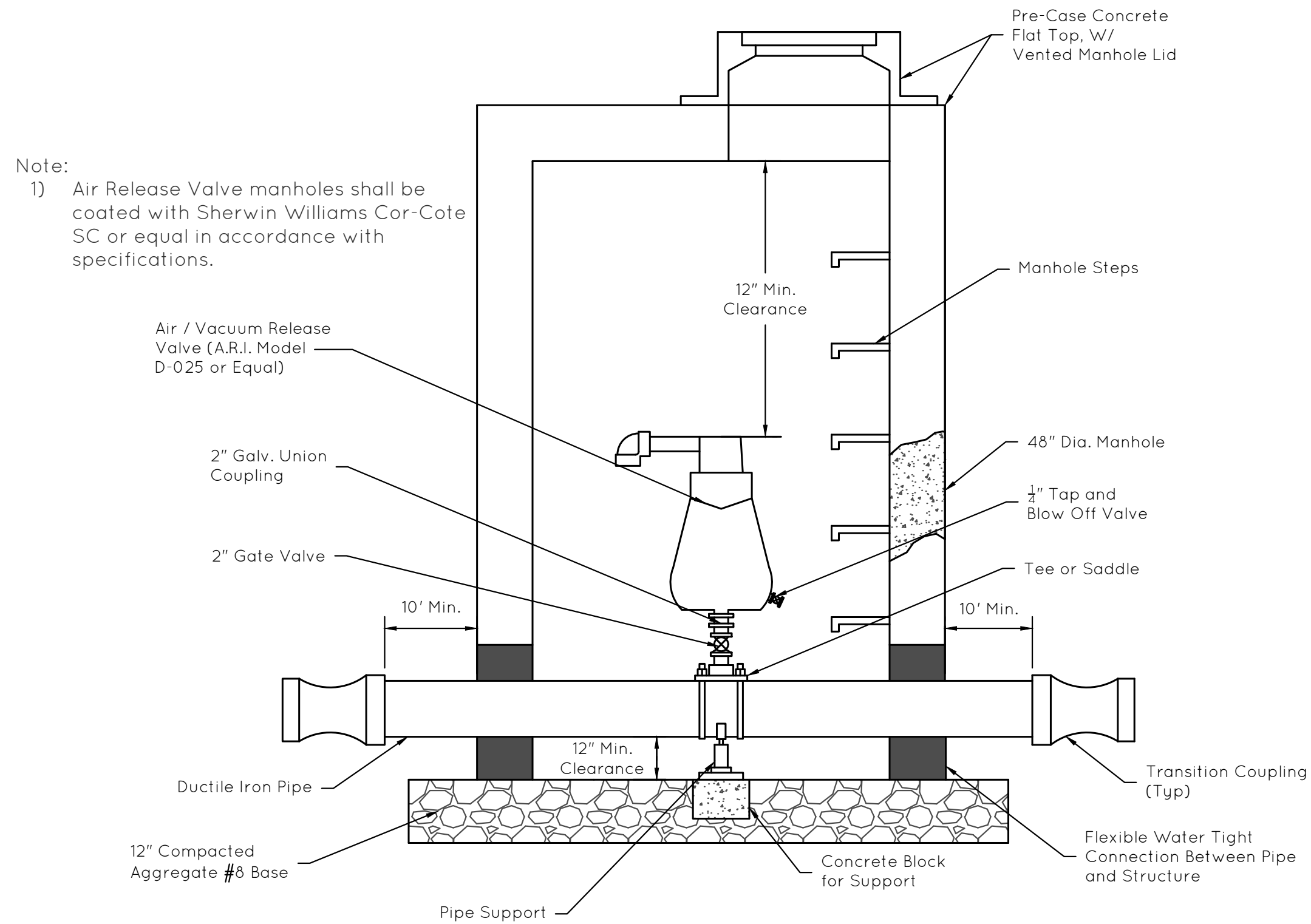
FORCE MAIN TRENCH
Not to Scale



- Notes:
- 1) Blocks designed for 100 psi pressure, for higher pressures contact City of Fishers.
 - 2) Vertical bends downwards (3" and greater) shall be individually designed using flanged or restrained joints.
 - 3) Concrete for thrust blocks to be 3750 psi laid to undisturbed bearing wall of the trench in the form of a wedge with the wide end against the trench wall.
 - 4) Thrust blocking is required for all force main locations where the main changes direction by 11.25° or more.

FORCE MAIN THRUST BLOCKING
Not to Scale

Type of Soil	SIZE OF THRUST BLOCK IN SQUARE INCHES															In Line Valve											
	1/2 (11 1/4") & 1/6 (22 1/2") Bend					1/8 (45°) Bend					1/4 (90°) Bend						Tee & End Plug										
	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"	3"	4"	Coordinate With Engineer	
Loose Sand & Gravel, Soft Clay	20	30	40	60	100	40	60	80	110	190	70	100	140	210	340	50	70	100	150	240							
Compacted Sand & Gravel, Dense Silt, Firm Till & Stiff Clay	10	20	20	30	50	20	30	40	60	100	40	50	70	110	170	30	40	50	80	120							
Very Stiff Clay, Dense Till, Shale or Rock	10	10	20	20	40	20	20	30	40	70	30	40	50	70	120	20	30	40	50	80							



TYPICAL AIR RELEASE VALVE WITH CONNECTION
Not to Scale

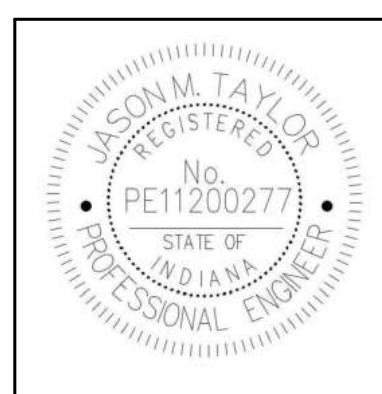
DUCTILE IRON PIPE SIZE	DEPTH OF COVER (INVERT TO FINAL GRADE)	THICKNESS CLASS
6" - 8"	Up to 20 Feet Over 20 Feet Contact Engineer	Class 50
10" - 12"	Up to 20 Feet Over 20 Feet Contact Engineer	Class 51
14" - 16"	Up to 20 Feet Over 20 Feet Contact Engineer	Class 52
18" - 20"	Up to 20 Feet Over 20 Feet Contact Engineer	Class 54
24"	Up to 20 Feet Over 20 Feet Contact Engineer	Class 55
Greater Than 24" Diameter	Greater Than 20 Feet Deep	Contact Engineer (Either Case)

NOTE: No Pressure Rated Pipe Will be Permitted

- Note:
- 1) Manhole sections shall conform to ASTM C 478 utilizing 4,000 psi concrete. Joints shall conform to ASTM C 443. Four (4) feet diameter manhole for 6" force main or smaller, or five (5) feet diameter manhole for 8" force main or larger.

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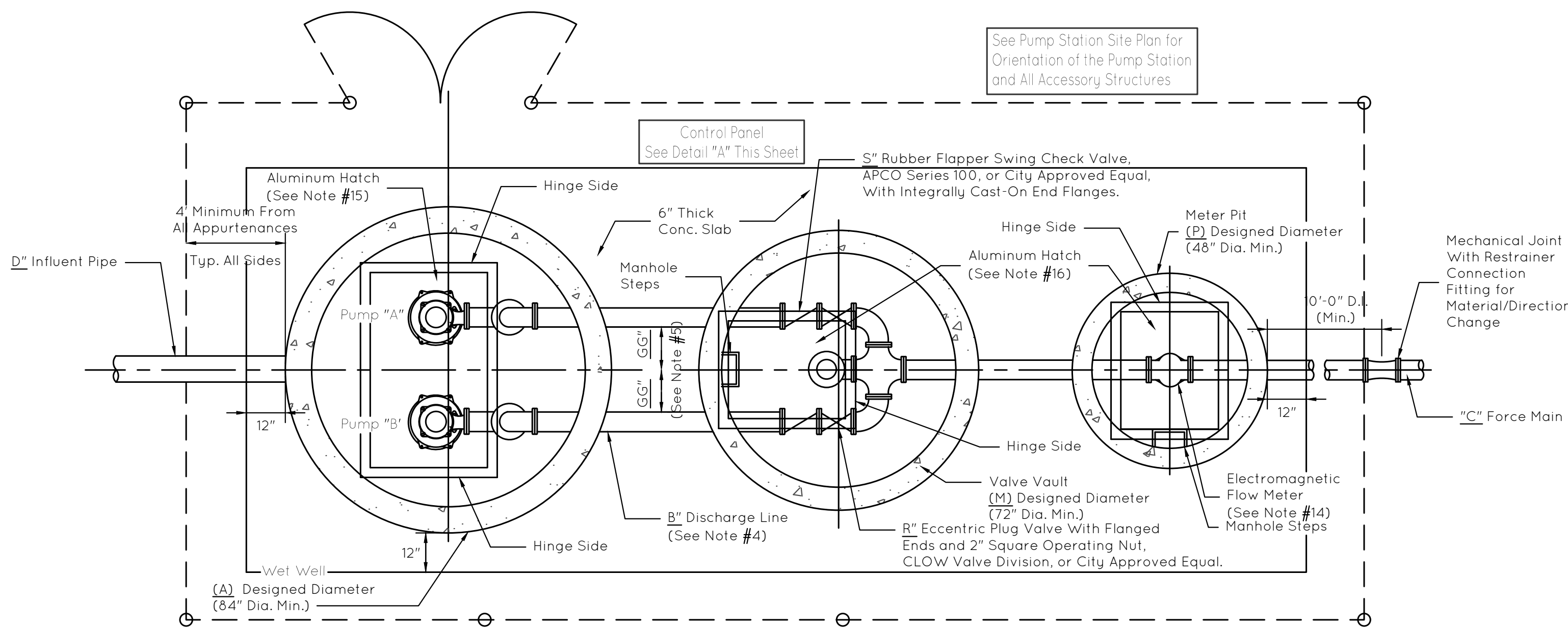
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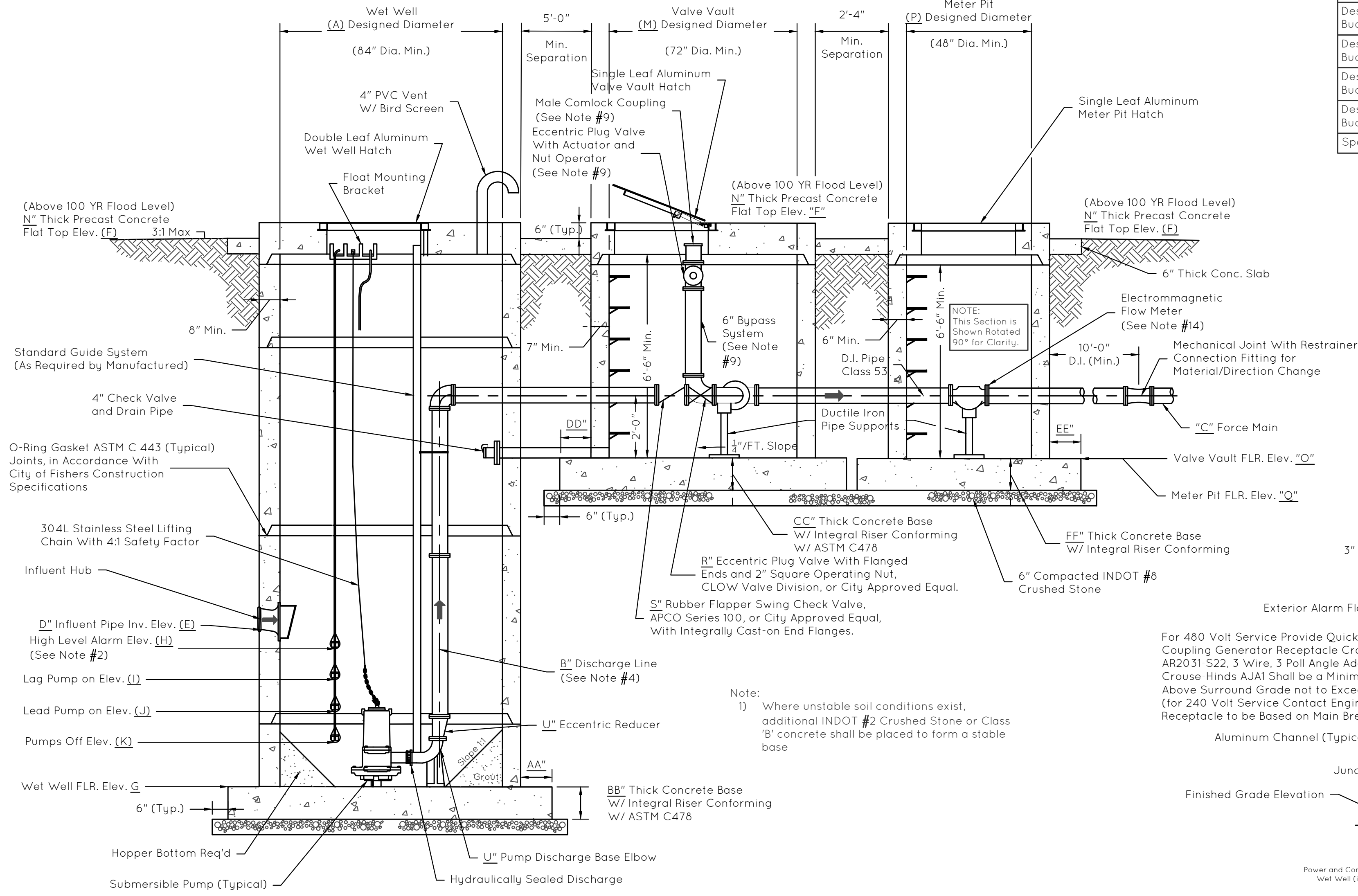
CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
SANITARY SEWER FORCE MAIN DETAILS

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22
of
29

NOTE: *ONLY FOR LIFT STATIONS COVERED TO FISHERS*



PLAN VIEW
Not to Scale



SECTION VIEW
Not to Scale

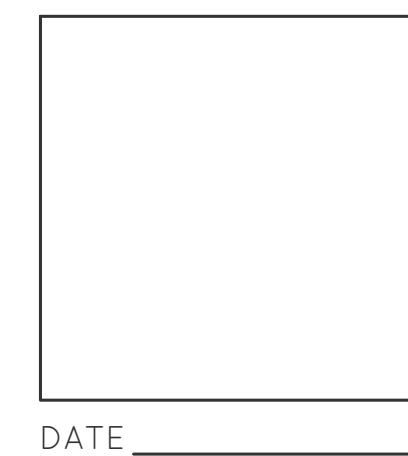
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SUBMERSIBLE PUMP STATION SCHEDULE			
DESCRIPTION	SYMBOL	DATA (1)	ADDITIONAL INFORMATION
Pump Model Number			
Pump Capacity - GPM Each			
Total Dynamic Head - FT.			
Pump Discharge Size Ø			
Motor H.P.			
Motor RPM			
Wet Well Diameter	A		
Discharge Pipe Diameter	B		
Force Main Diameter	C		
Gravity Influent Pipe Diameter	D		
Gravity Influent Inv. EL. - FT.	E		
Wet Well, Valve Vault, & Meter Pit Top of Str. EL.	F		
Wet Well Floor EL.	G		
High Water Alarm EL. Level	H		
Lag Pump Start EL. Level	I		
Lead Pump Start EL. Level	J		
Pumps Off EL. Level	K		
(Not Used)	L		
Valve Vault Diameter	M		
Precast Concrete Flat Top (Min. 12")	N		
Valve Vault Floor EL.	O		
Meter Pit Diameter	P		
Meter Pit Floor EL.	Q		
Plug Valve	R		
Check Valve	S		
(Not Used)	T		
Eccentric Reducer	U		
Discharge Elbow Size	V		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	AA		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	BB		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	CC		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	DD		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	EE		
Design Engineer to Set Dimension, Supported by Buoyancy Calculations	FF		
Spacing Between Discharge Piping	GG		

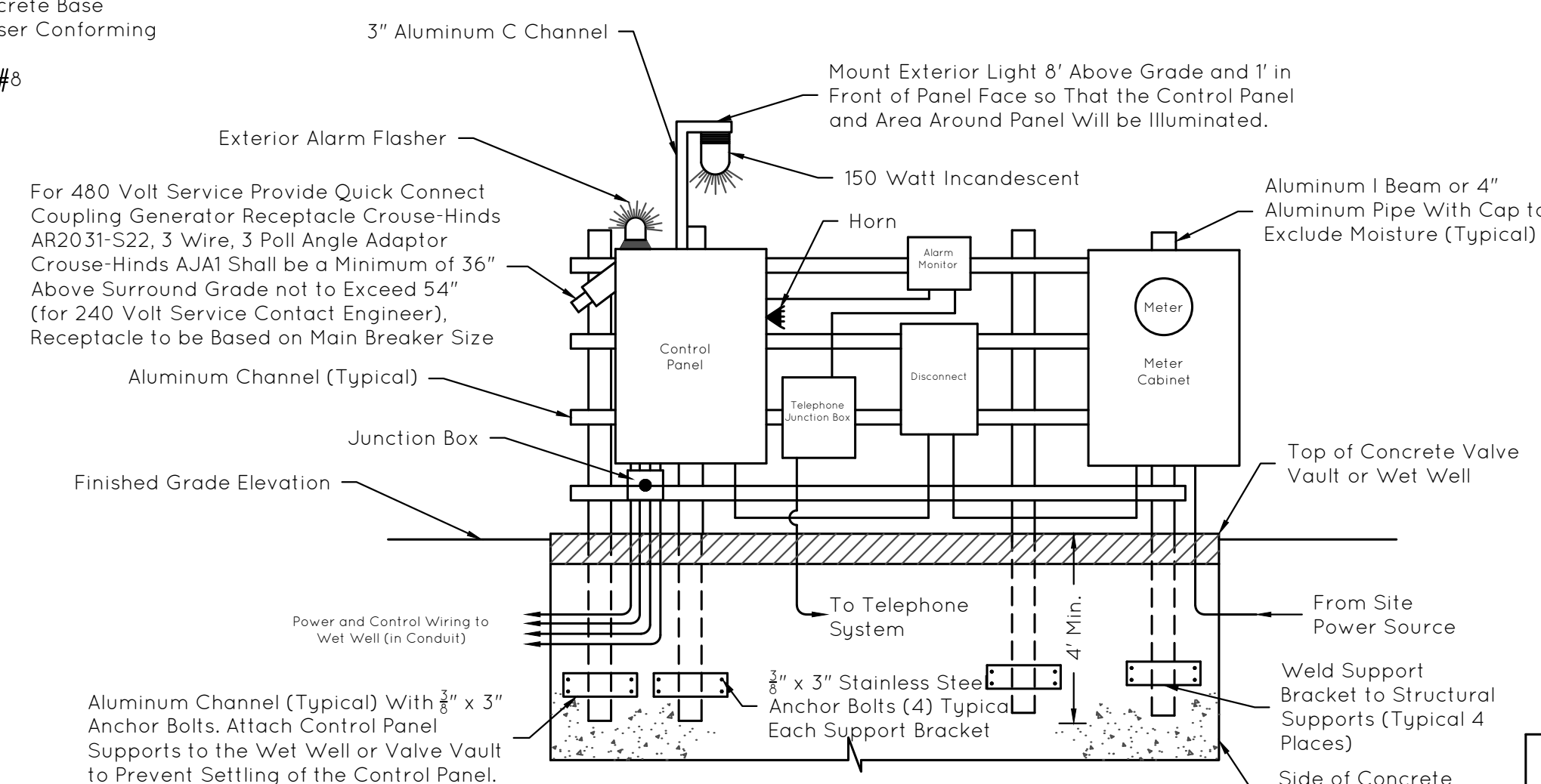
Design Engineers Certification of Actual Pump Station Dimensions, Control Settings, & Pump Selection as Indicated on Pump Station Schedule.

Reminder - For Pump Station Site Plan Data Project Engineer Shall Provide:

- 1) Wet Well and Valve Vault Orientation
- 2) Control Panel Location
- 3) Fencing and Gate Locations
- 4) Asphalt Access Drive from Public Right-of-Way
- 5) Parking Stops
- 6) Grading and Drainage Arrows
- 7) Boundary of Pump Station Parcel to be Granted to Fishers'
- 8) Area for Emergency Generator
- 9) All Other Information That Will Allow for a Detailed Review of the Site Plan



Notice: This certification is limited to those standards and guidelines per this sheet, and does not include information written into Pump Station Schedule. Construction is subject to construction drawings, shop drawings, and Design Engineer's design data written into Pump Station Schedule, and its certification thereof.

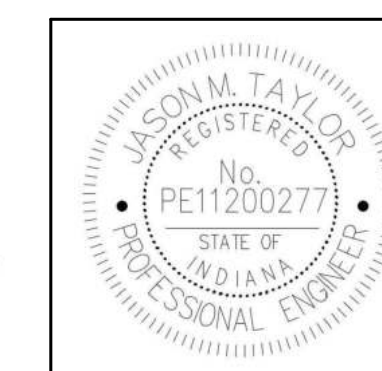


CONTROL PANEL DETAIL "A"
Not to Scale

STANDARD PUMP STATION NOTES

- 1) Actual pump station dimensions, control settings, and pump selection to be as indicated by the design engineer's certification of the data written into the Submersible Pump Station Schedule, this sheet.
- 2) High level alarm elevation shall be set at least 6" below the lowest incoming gravity pipe.
- 3) Glycerin-filled pressure gauges shall be provided as manufactured by Ashcroft, or equal. The gauges shall have an operating range appropriate for the system pressure and shall display in both feet and psi. Each gauge shall be provided with an in-line snubber and a shut-off valve. The pipe shall be drilled and tapped wherever possible.
- 4) Piping in and within the zone of influence of the excavation of the wet well, valve vault, and meter pit structure, shall be Class 53 flanged D.I. pipe or Class 50 D.I. pipe for direct bury. The minimum dimension for D.I. pipe outside of a structure is ten (10) feet. All fasteners within pump station structures, shall be 316 S.S.
- 5) Design engineer shall space discharge piping in accordance with pump and piping dimensions and pump manufacturer's recommendations.
- 6) Piping and fittings in wet well, valve vault, and meter pit shall be in accordance with City of Fishers construction specifications.
- 7) Butyl rubber shall be applied to all exterior structure joints that are below grade. The Butyl rubber shall extend six (6) inches above and below the joint.
- 8) Pump Station wet well, valve vault, and meter pit manholes shall be pre-cast concrete in accordance with ASTM C-478, with rubber gaskets, in accordance with the City of Fishers Construction Specifications.
- 9) Comlock coupling and eccentric plug valve on by-pass line shall be 6 inch diameter with transition to force main size occurring with concentric reducer placed on the top of base elbow. The plug valve's operating nut shall be directly accessible with a standard tee wrench. Show location on the structure layout sketch required in Note 15.
- 10) Sewer connections and force main penetrations of wet well, valve vault, and meter pit structure shall be KOR-N-SEAL, A-LOK, or Dura-Seal, in accordance with the City of Fishers Construction Specifications. Portland cement grout may be used to seal penetrations on non-sewer connections.
- 11) Generator receptacle, with factory sealed switch, shall match to receive of the City of Fishers' portable generator set.
- 12) Provide an Allen Bradley or "Engineer Approved" SCADA System that incorporates: 1 spare input/output, 1 input for flowmeter 4-20mA signal, 5 outputs to control being lead remote on, lead remote off, lag remote on, lag remote off and remote alarm acknowledgement, and 10 inputs from control being hatch(es) open alarm, panel(s) open alarm, Pump "A" on, Pump "B" on, Pump "A" fail, Pump "B" fail, phase fail alarm, power fail alarm, high water alarm and pump(s) seal failure, remote lead pump override and remote lag pump override.
- 13) Electromagnetic Flowmeter shall be a Siemens series 5100W or "Engineer Approved", flanged, with remote transmitter and accidental submergence kit. Interconnecting cable for power to transmitter shall be provided of appropriate length for application. Flowmeter transmitter shall be integral mounted and shall produce a 4-20mA signal for use by the SCADA System. Flowmeter size shall be based upon the projected flow through the force main, the force main size, and per the manufacturer's recommendation for highest accuracy over the operational range of the lift station.
- 14) Provide an aluminum double-door access hatch and frame assembly with safety man catches for pump station wet well to be installed in concrete top. Pump manufacturer shall size door opening in order to facilitate ease in removing pumps from wet well. Contractor and pump manufacturer shall coordinate to match size and location of opening in concrete top to dimensions of hatch provided by pump manufacturer.
- 15) Provide an aluminum single-door access hatch and frame assembly with safety man catches for valve vault and meter pit, respectively, to be installed in concrete top. The contractor and pump manufacturer shall provide a dimensionally accurate sketch of the valve vault and meter pit showing all valves, piping, and equipment to confirm the proper location and size of the access hatch for the structure.

- Notes:
- 1) See Fishers' Pump Station and Force Main Specifications Sheet for details of equipment.
 - 2) This plan is for design purposes only.
 - 3) Access drive from nearest public Right-of-Way to pump station must be provided.
 - 4) The access drive must have a minimum of 14 feet of clearance from all utility or power poles.
 - 5) All station piping must be Ductile Iron.
 - 6) A "live" yard hydrant shall be installed inside fence area (if possible) and close to fence, to provide water service for pump station maintenance purposes. Backflow preventer as required by water company



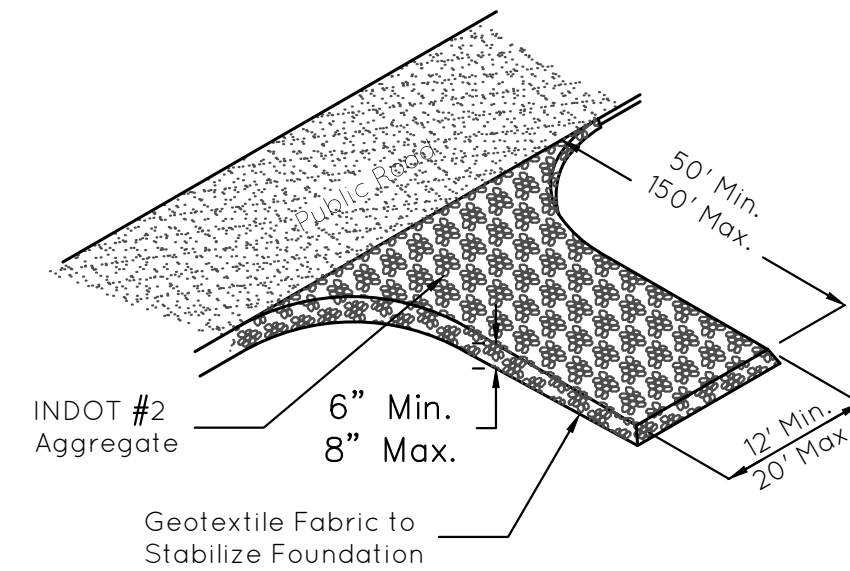
J. Taylor
1/18/2022

GENERAL SWWP NOTES FOR INDIVIDUAL LOTS

- All storm water quality measures, including erosion and sediment control, necessary to comply with the requirements for 327 IAC 15-5, Rule 5, City of Fishers, and/or general construction practices must be implemented in accordance with the plan and sufficient to satisfy Chapter 7 of the City of Fishers STSM.
- Provisions for erosion and sediment control on individual building lots regulated under the original permit of a project site owner must include the following requirements:
 - The individual lot operator, whether owning the property or acting as the agent of the property owner, shall be responsible for erosion and sediment control requirements associated with activities on individual lots.
 - Installation and maintenance of a stable construction site access.
 - Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
 - Sediment discharge and tracking from each lot must be minimized throughout the land disturbing activities on the lot until permanent stabilization has been achieved.
 - Clean-up of sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
 - Adjacent lots disturbed by an individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
- In accordance with Chapter 7 of the City of Fishers STSM, final stabilization of an individual lot project site is achieved when:
 - All land disturbing activities have been completed
 - The establishment, at a uniform density of seventy percent (70%) across one-hundred percent (100%) of the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.

CONSTRUCTION SEQUENCE FOR INDIVIDUAL LOTS

- Clearly delineate areas of trees, shrubs, and vegetation that are to be undisturbed. To prevent root damage, the areas delineated for tree protection should be at least the same diameter as the crown.
- Install perimeter silt fence at construction limits. Position the fence to intercept runoff prior to entering drainage swales.
- Avoid disturbing drainage swales if vegetation is established. If drainage swales are bare, install erosion control blankets or sod to immediately stabilize.
- Install appropriate inlet protection for all inlets on the property.
- Install curb inlet protection, on both sides of the road, for all inlets along the property frontage and along the frontage of adjacent lots, or install temporary catch basin inserts in each inlet and frequently clean.
- Install gravel construction entrance flush with the back of existing curb, extending from the street to the building pad.
- Perform primary grading operations.
- Contain erosion from any soil stockpiles created on-site with silt fence around the base.
- Establish temporary seeding and straw mulch on disturbed areas.
- Construct the home and install utilities.
- Install downspout extenders once the roof and gutters have been constructed. Extenders should outlet to a stabilized area.
- Re-seed any areas disturbed by construction and utilities installation with temporary seed mix that will be left inactive for seven (7) days.
- Grade the site to final elevations. Add topsoil as needed to minimize erosion of underlying soil and to quickly establish grass.
- Install permanent seeding or sod.

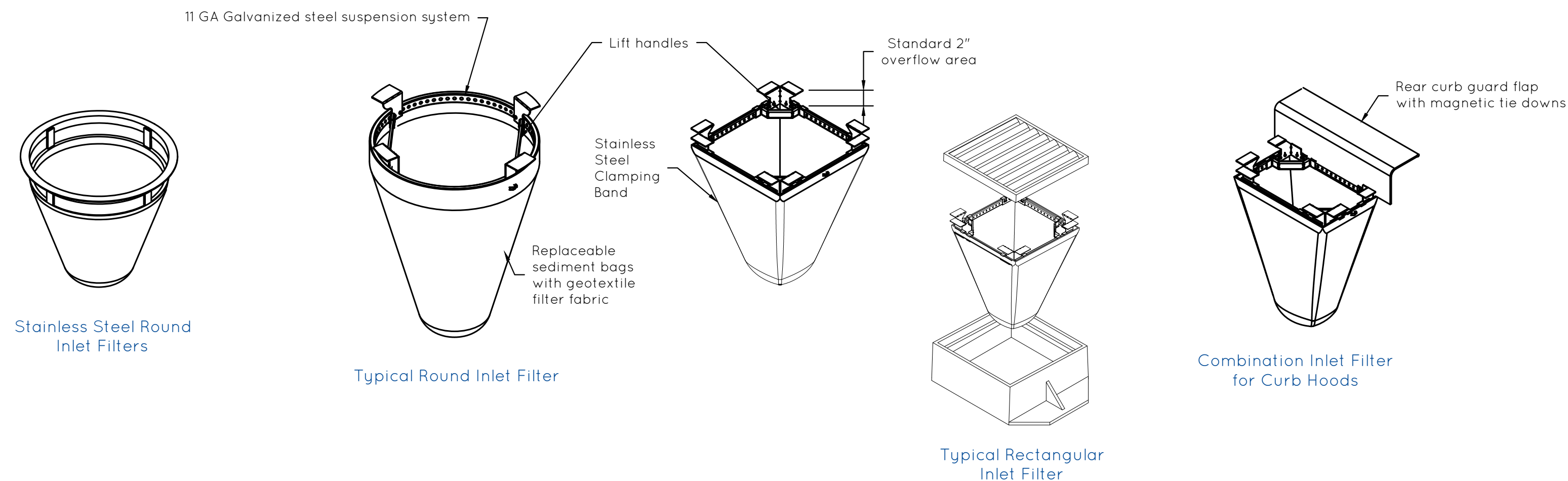


- Notes:
- Must keep top of stone at road elevation.
 - Width to be adjusted to match wider entrance, if required.

Site Size	Entrance Width	Entrance Length	Stone Depth
Less than 2 acres	12' min	50' min	6" min
2 acres or more	20' min	150' min	8" min

TEMPORARY GRAVEL CONSTRUCTION ENTRANCE

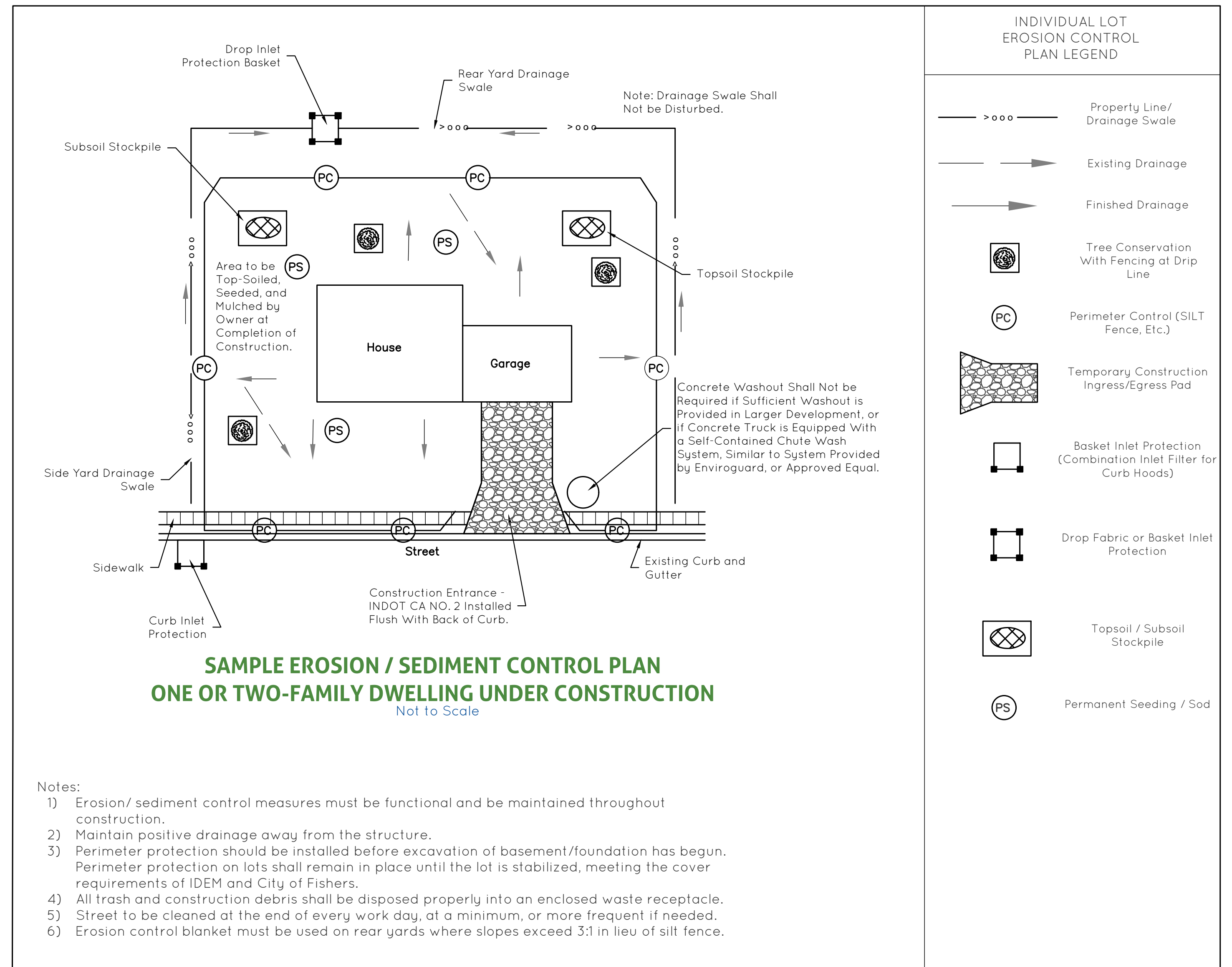
Not to Scale



- Note:
- Measures to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations

BASKET INLET PROTECTION

Not to Scale



SAMPLE EROSION / SEDIMENT CONTROL PLAN ONE OR TWO-FAMILY DWELLING UNDER CONSTRUCTION

Not to Scale

Notes:

- Erosion/ sediment control measures must be functional and be maintained throughout construction.
- Maintain positive drainage away from the structure.
- Perimeter protection should be installed before excavation of basement/foundation has begun. Perimeter protection on lots shall remain in place until the lot is stabilized, meeting the cover requirements of IDEM and City of Fishers.
- All trash and construction debris shall be disposed properly into an enclosed waste receptacle.
- Street to be cleaned at the end of every work day, at a minimum, or more frequent if needed.
- Erosion control blanket must be used on rear yards where slopes exceed 3:1 in lieu of silt fence.

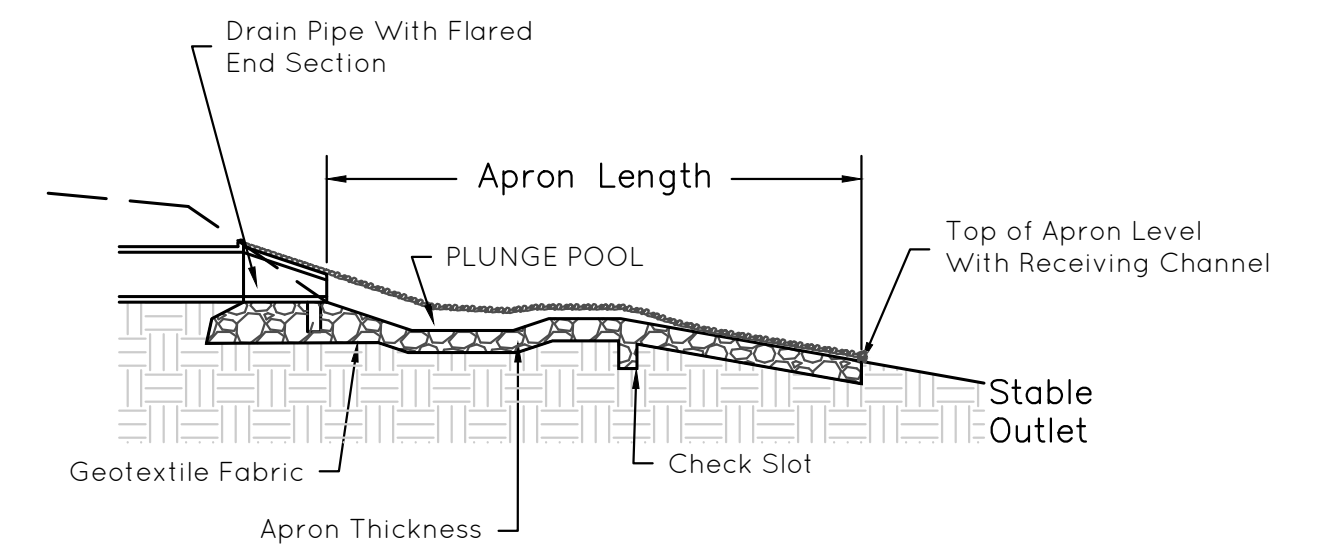
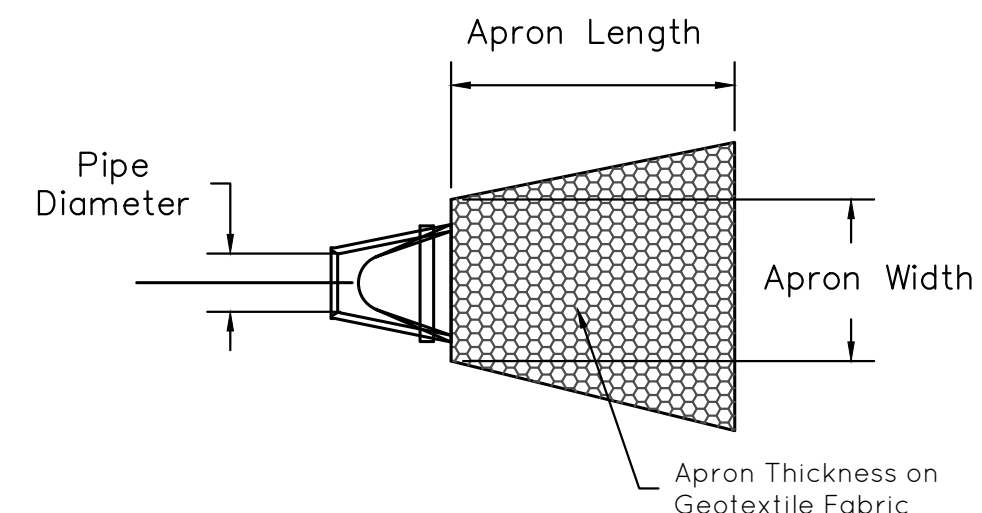
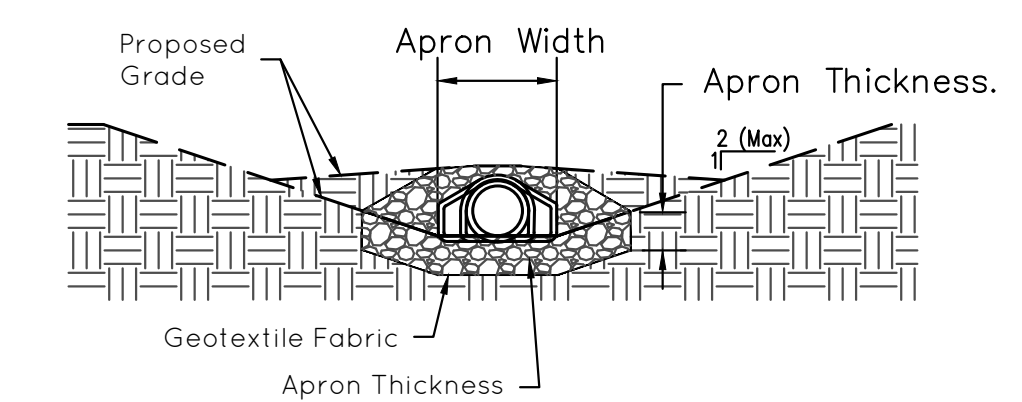


Table 1. Sizing for Flow Dissipaters at end Sections¹

PIPE SIZE	AVG. RIPRAP DIAMETER	APRON ² WIDTH	APRON ³ LENGTH
8 in.	3 in.	2 to 3 ft.	5 to 7 ft.
12 in.	5 in.	3 to 4 ft.	6 to 12 ft.
18 in.	8 in.	4 to 6 ft.	8 to 18 ft.
24 in.	10 in.	6 to 8 ft.	12 to 22 ft.
30 in.	12 in.	8 to 10 ft.	14 to 28 ft.
36 in.	14 in.	10 to 12 ft.	16 to 32 ft.



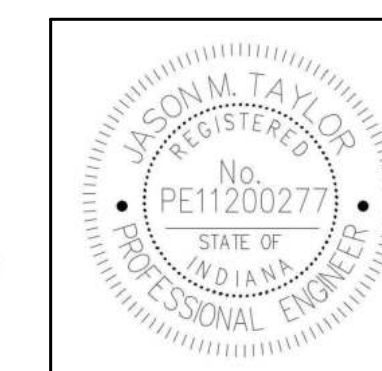
Apron Thickness = 1.2 Times the Max Stone Diameter for a D50 Stone Size of 15 Inches or Larger
Apron Thickness = 1.5 Times the Max Stone Diameter for a D50 Stone Size of 15 Inches or Less

ENERGY DISSIPATER (OUTLET PROTECTION)

Not to Scale

- For Larger or Higher Flows Consult a Registered Engineer
- Apron Width at the Narrow End of Apron (Pipe or Channel Outlet)
- Select Length Taking Into Consideration the Low Flow (Nor Pressure Head) or High Flow (Pressure Head) Conditions of the Culvert Pipe.

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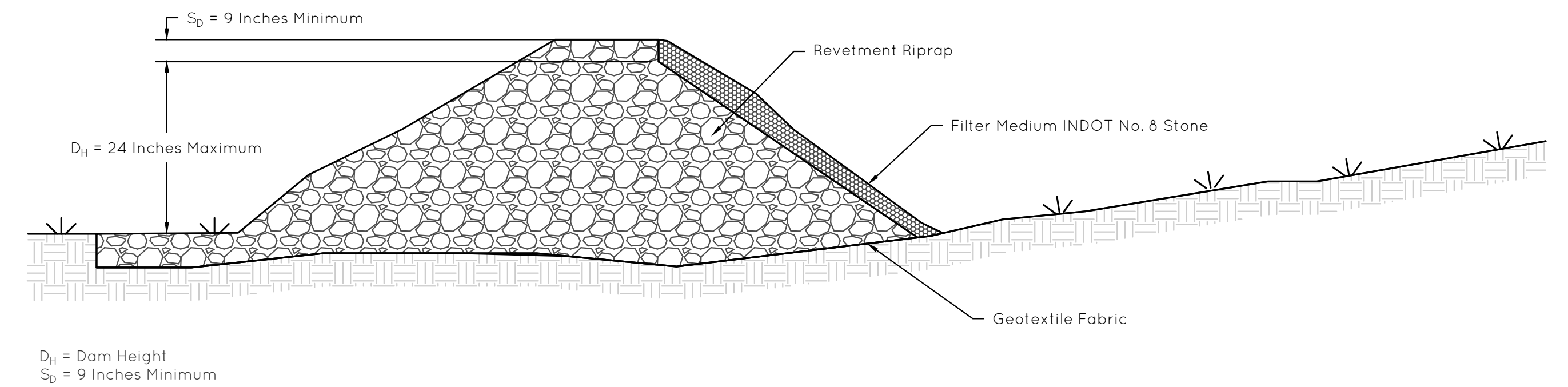
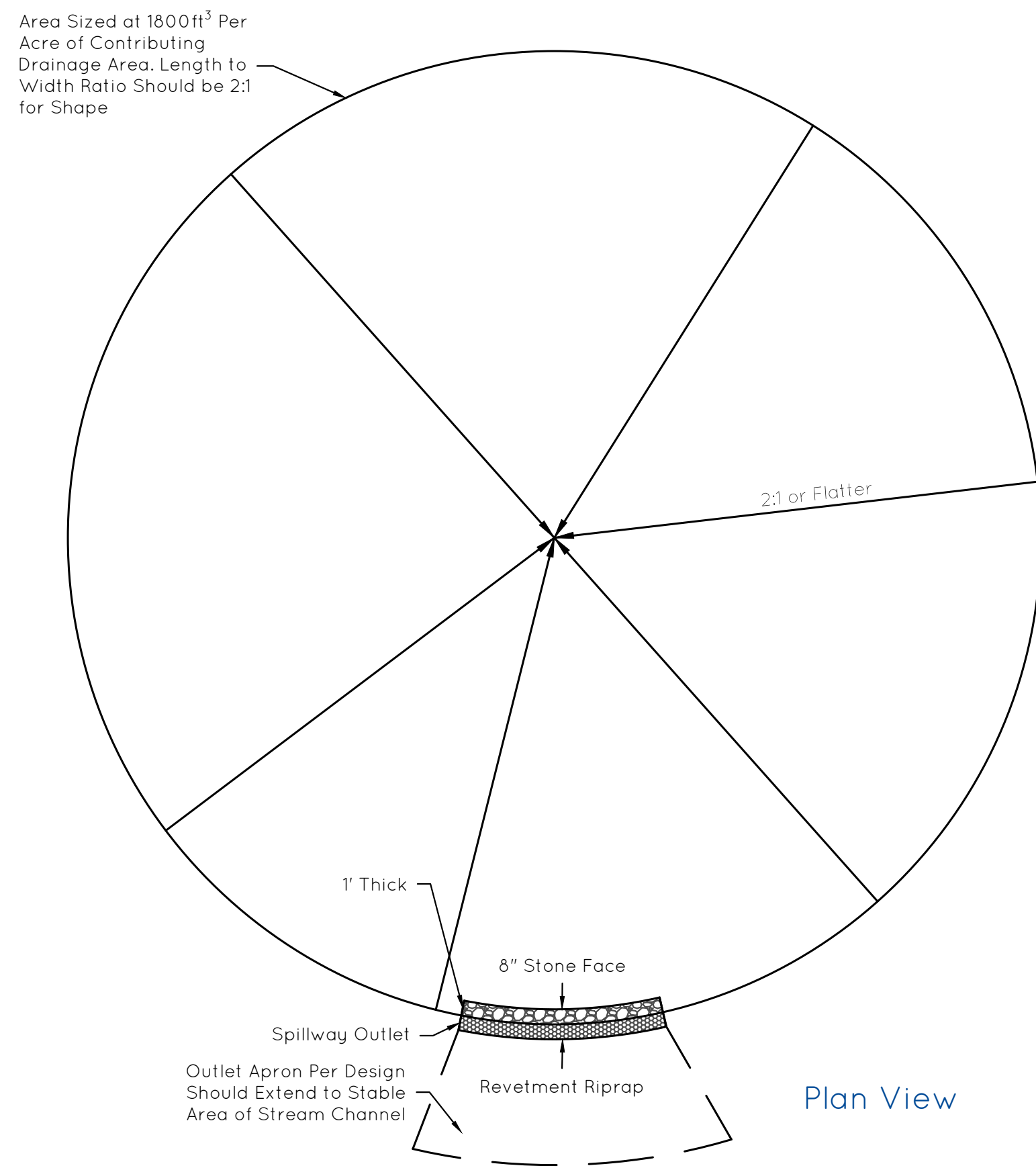


CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

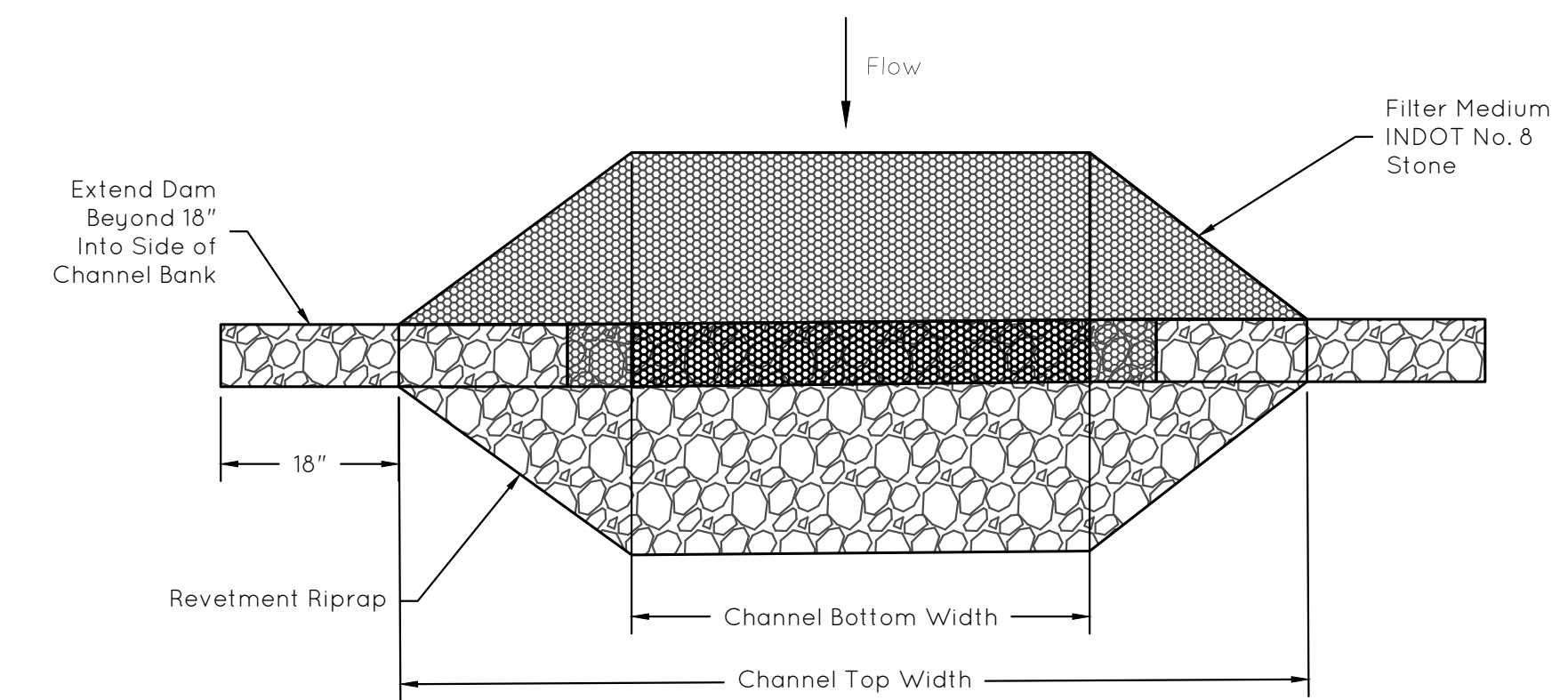
EROSION CONTROL DETAILS

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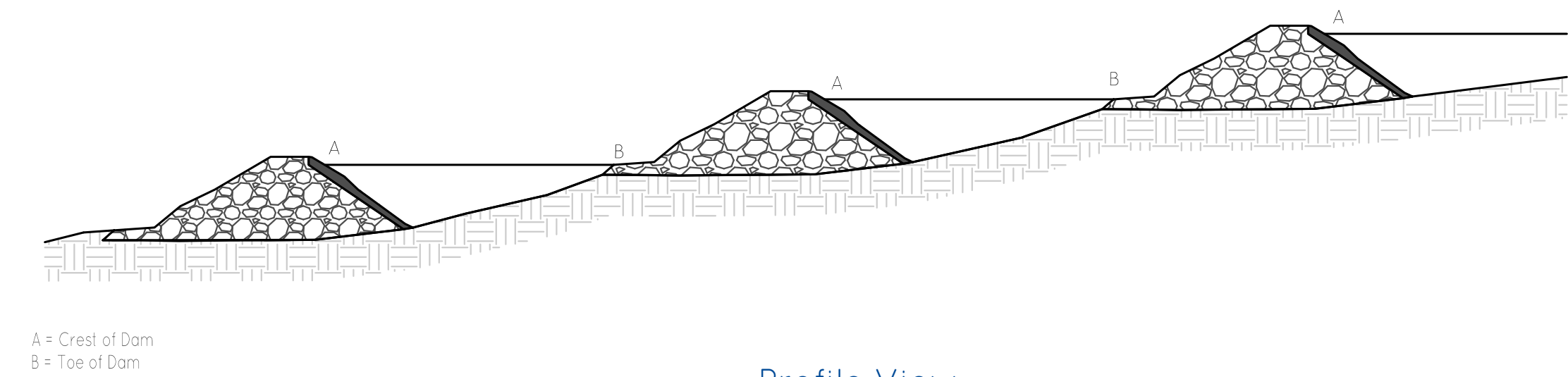
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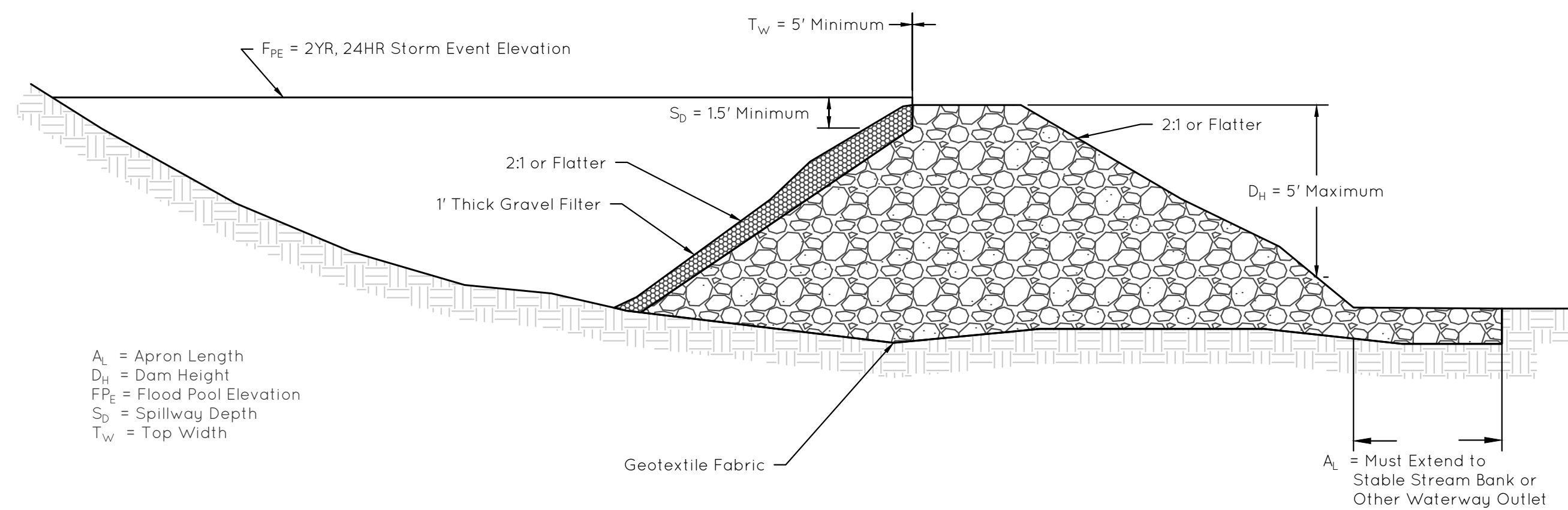
Profile View



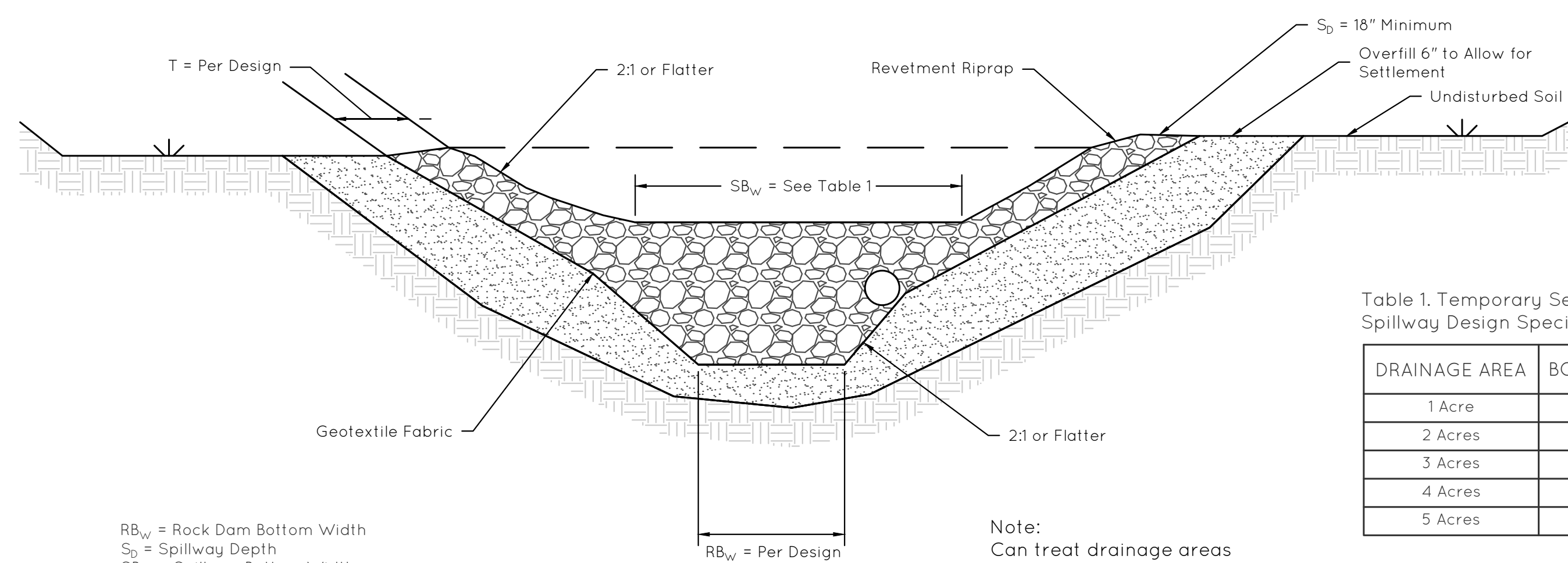
Plan View



Profile View



Profile View

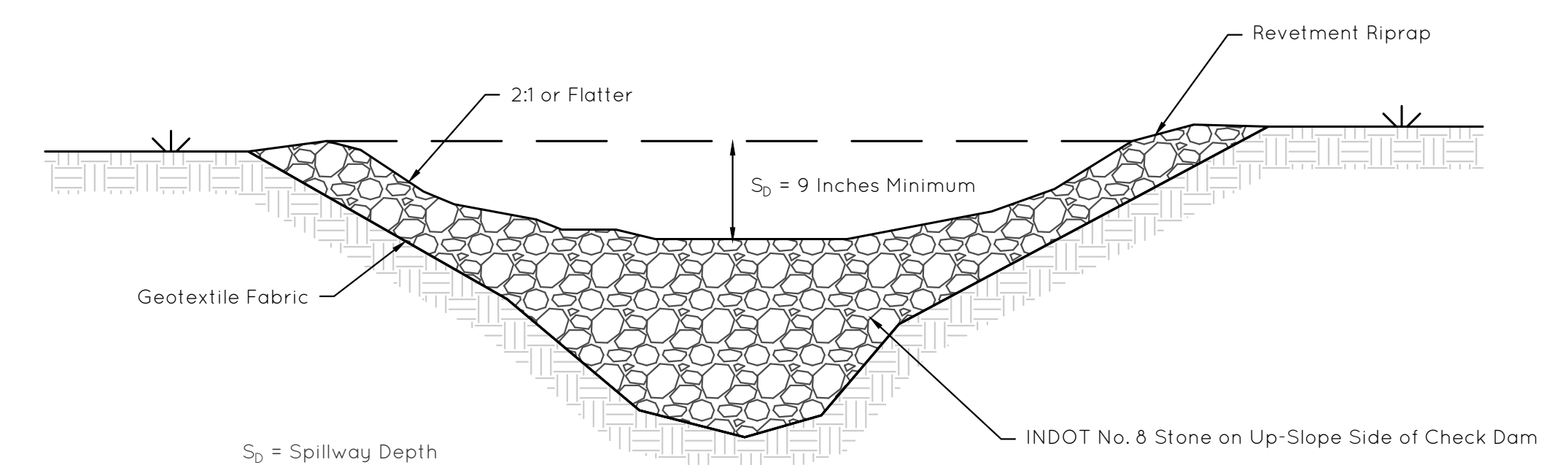


Cross-Section View

Table 1. Temporary Sediment Trap Spillway Design Specifications

DRAINAGE AREA	BOTTOM WIDTH
1 Acre	4 Feet
2 Acres	6 Feet
3 Acres	8 Feet
4 Acres	10 Feet
5 Acres	12 Feet

Note:
Can treat drainage areas up to five (5) acres



Cross Section View

TEMPORARY ROCK CHECK DAM
Not to Scale

TEMPORARY SEDIMENT TRAP
Not to Scale

J. Taylor

1/18/2022

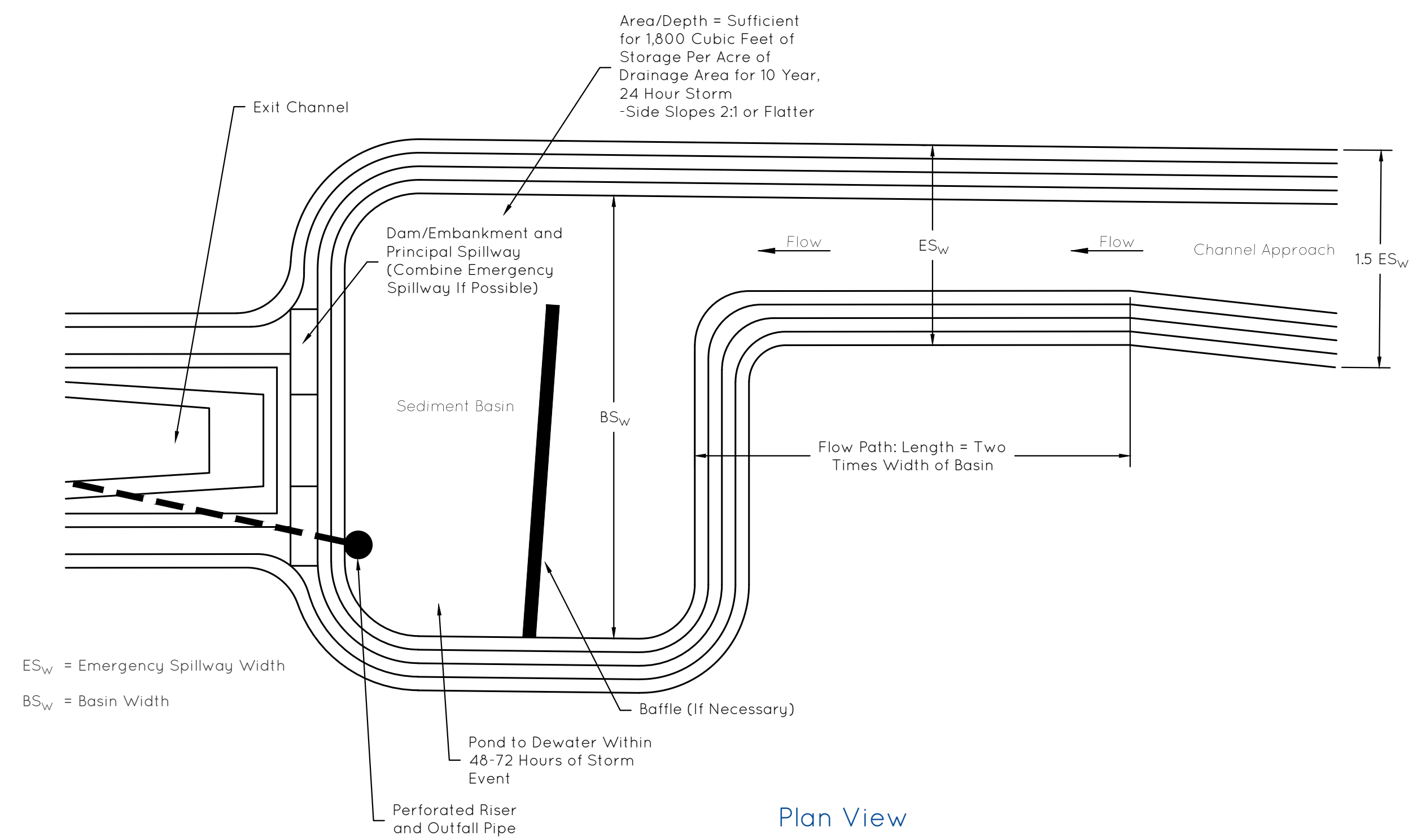


CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

EROSION CONTROL DETAILS

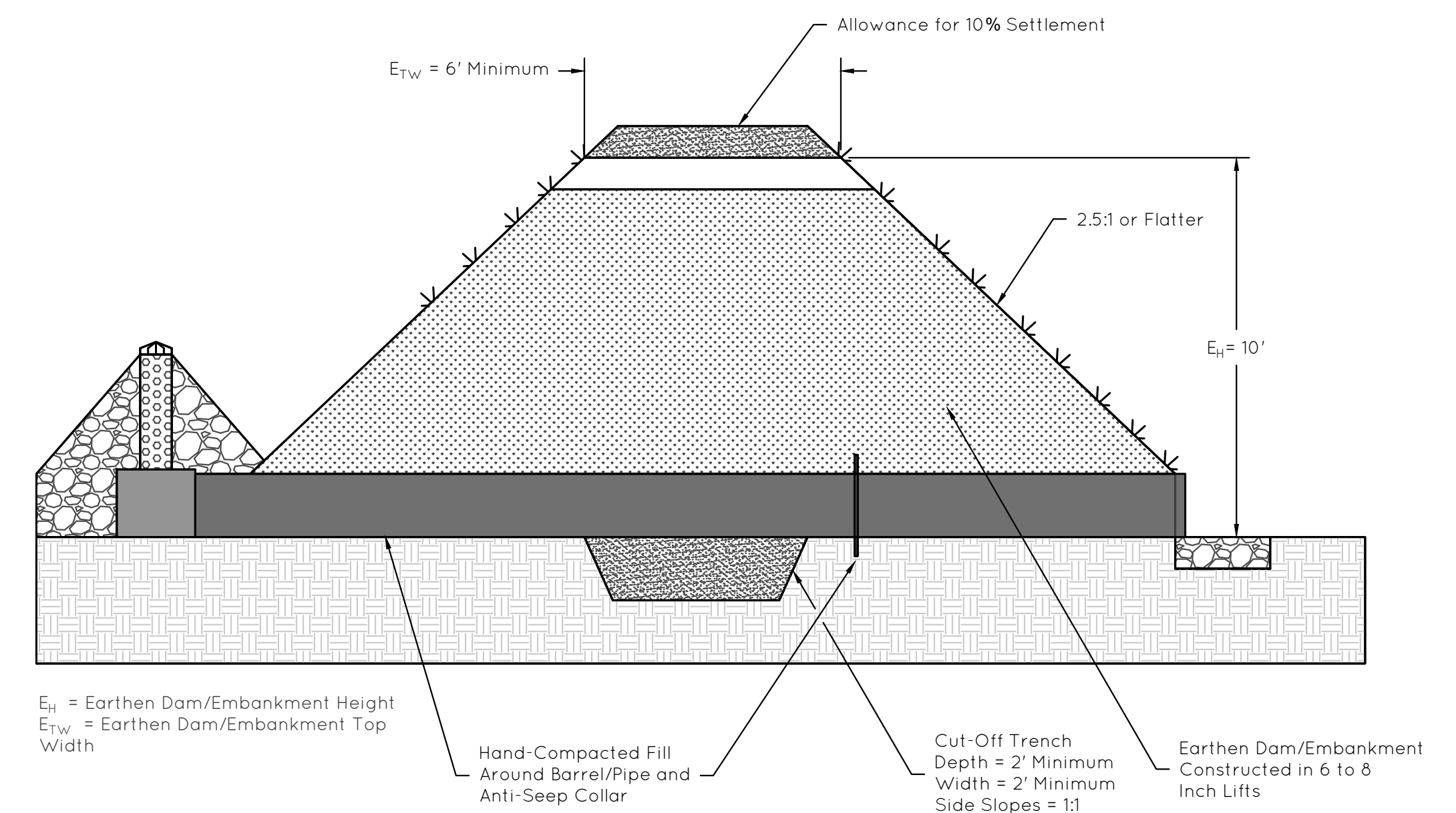
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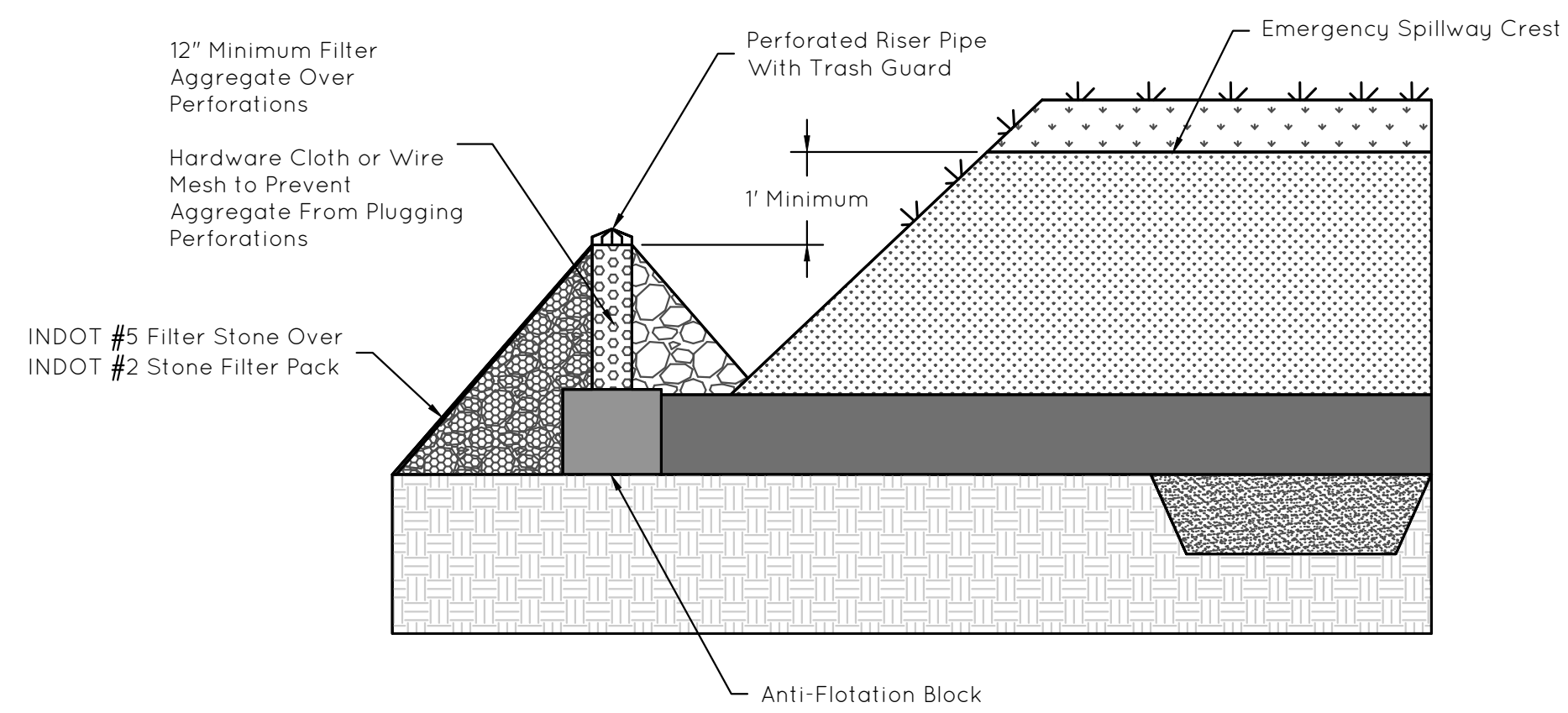


Plan View

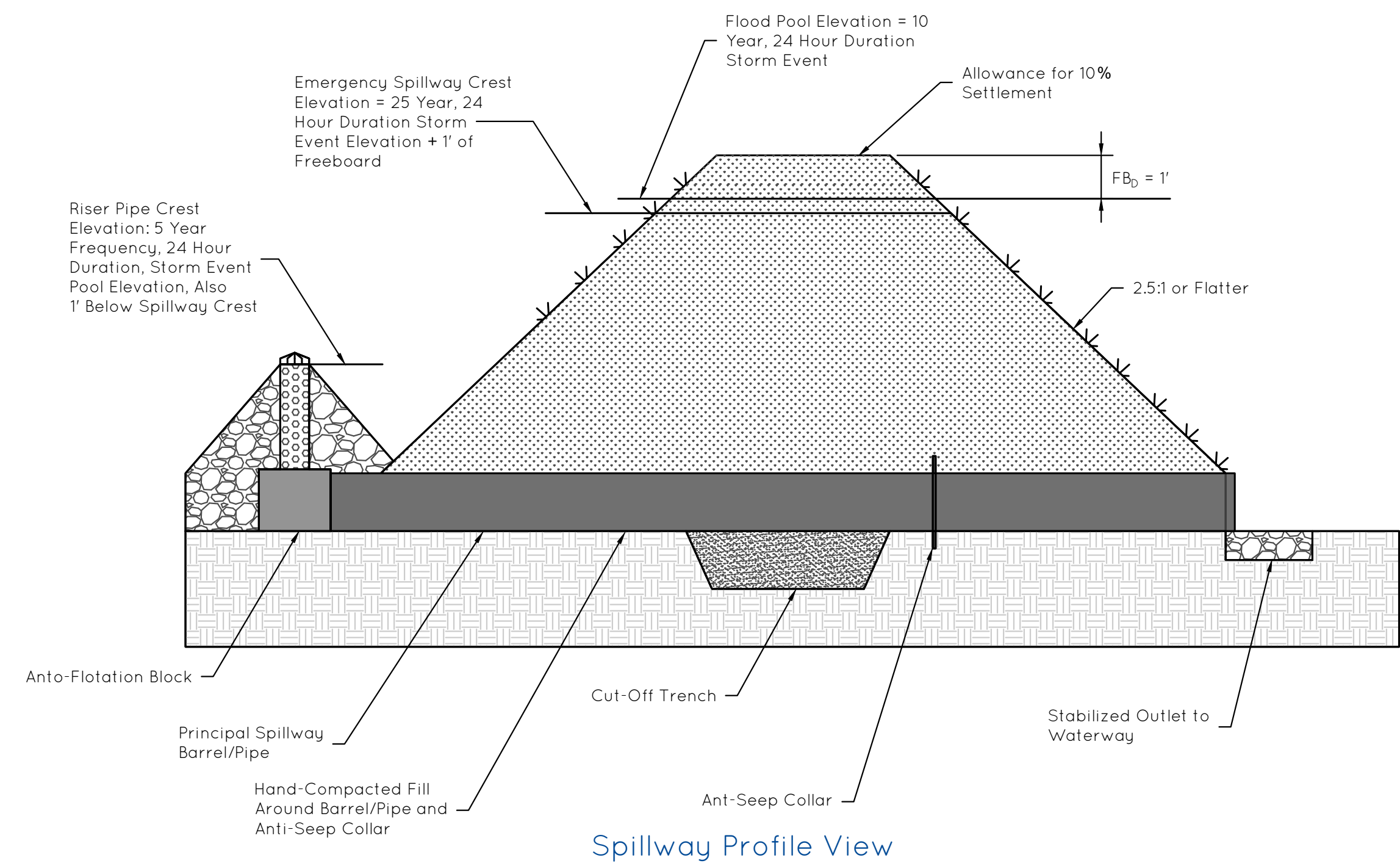
TEMPORARY SEDIMENT BASIN
Not to Scale



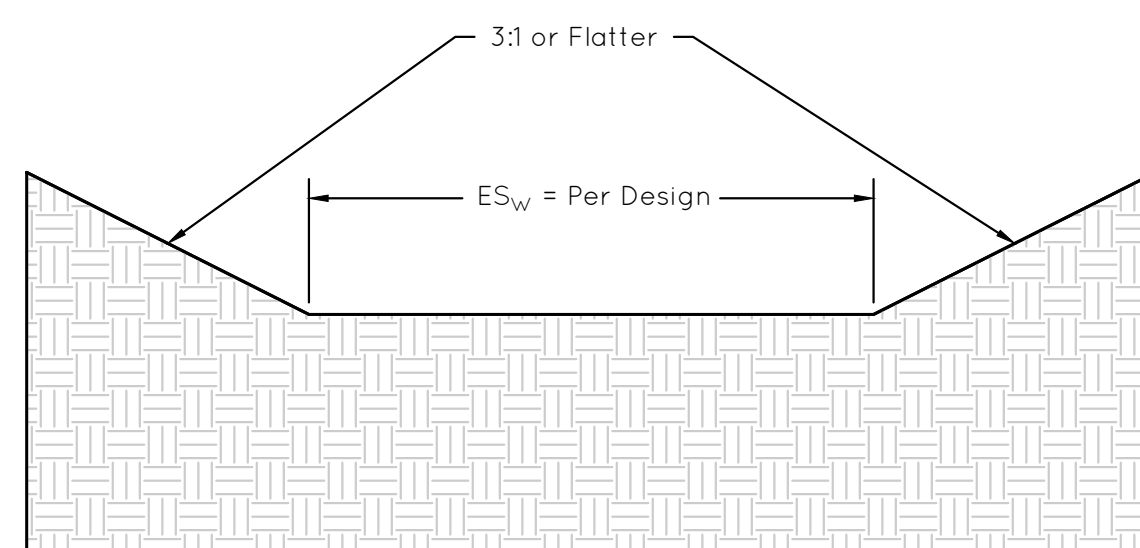
Earthen Dam/Embankment Profile View



Riser Pipe Profile View



Spillway Profile View



ES_w = Emergency Spillway Width
FB_d = Free Board Depth

Spillway Cross Section View

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1/18/2022

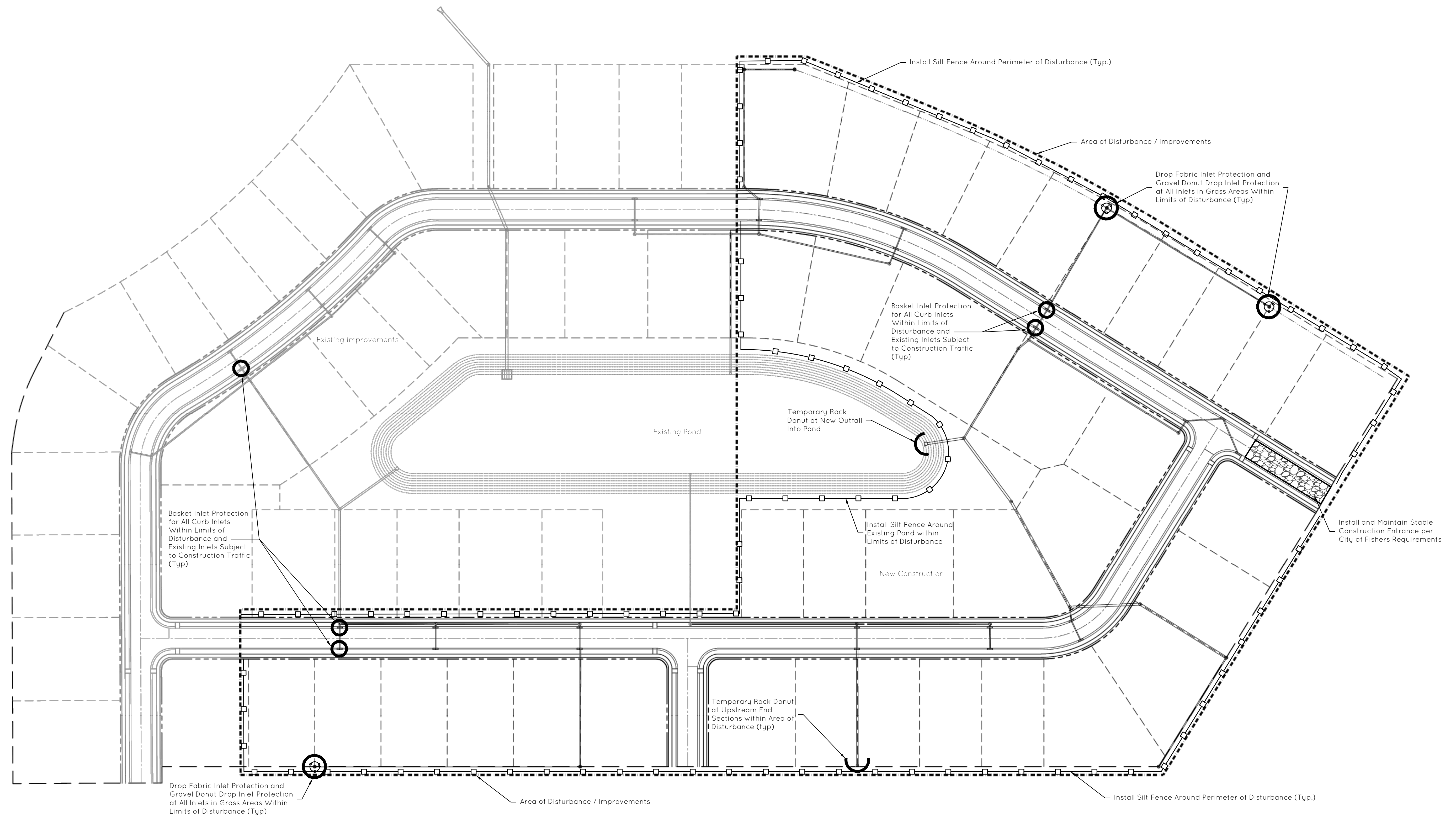


CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS

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Notes:

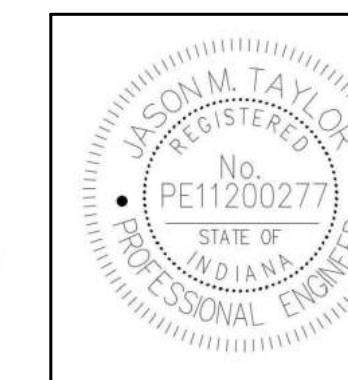
- 1) Individual lot erosion control measures to be installed per details on Sheet 24, and in accordance with Indiana Stormwater Quality Manual.
- 2) Measures to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations.
- 3) Temporary and permanent stabilization to be installed as soon as possible. Re-seed any areas disturbed by construction and utilities installation that will be left inactive for seven (7) days with temporary seed mix.
- 4) Pond protection measures shown are example only. Additional measures may be required. Site specific SWPPP to be prepared and approved by the City of Fishers.

**PROTECTION OF EXISTING DETENTION POND -
EXAMPLE MEASURES**

Not to Scale

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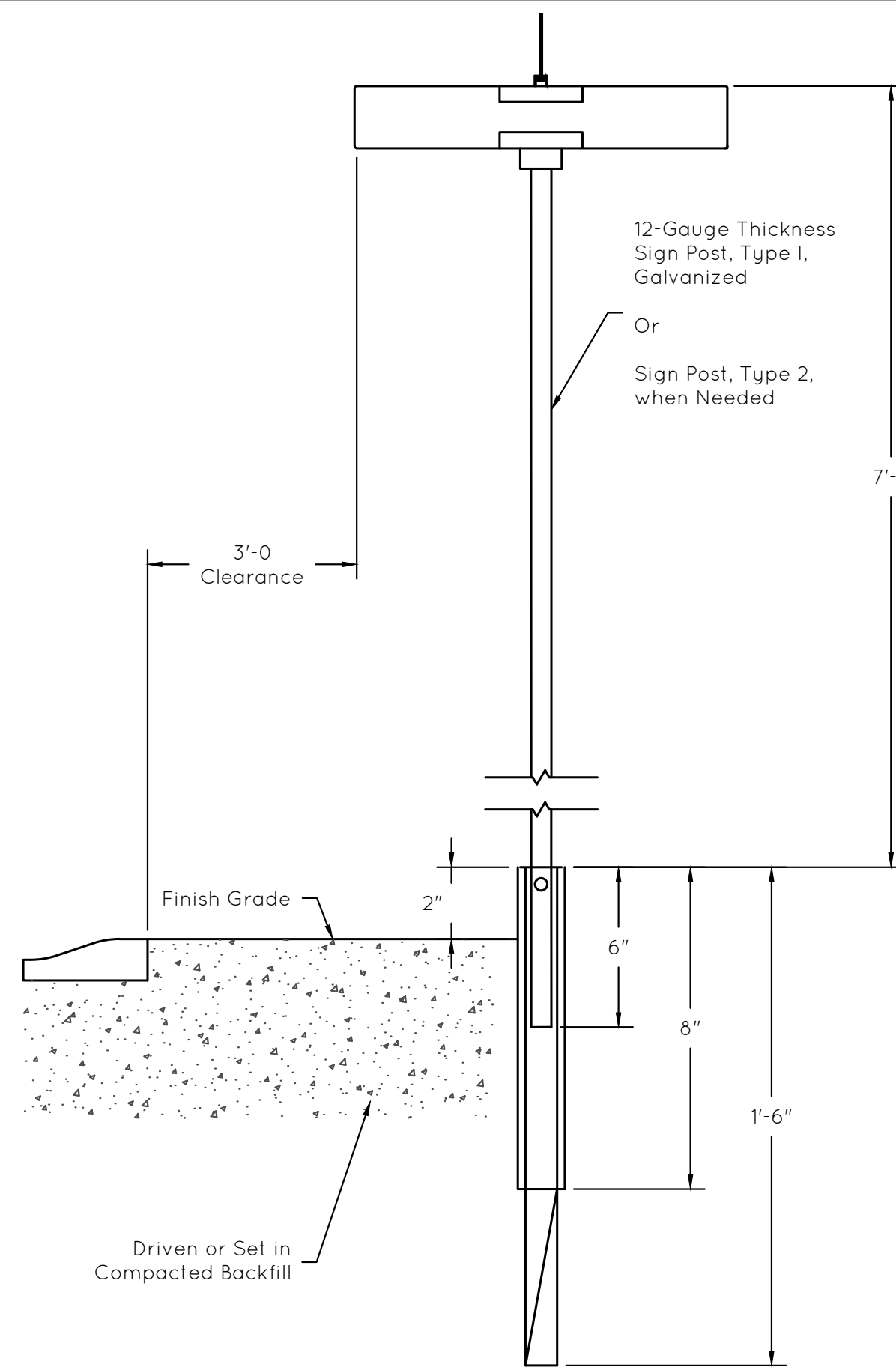


**CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS**

EROSION CONTROL DETAILS

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- Notes:
- Streets shall be signed per latest approved edition of IMUTCD.
 - Street name signs shall be 8" tall 0.1 gauge extruded aluminum sign blanks. The sign face material shall be Diamond grade retroreflective green background with white letters and shall be mix-cased in accordance with the IMUTCD.
 - All public regulatory street signs shall be diamond grade retroreflective background, including letters and border where appropriate.
 - Font and letter height shall be in accordance with IMUTCD and FHWA Standard Highway Signs.
 - Street signs shall have rounded corners and be tall enough to accommodate the above noted minimum letter heights.
 - Supr-lok cap shall be model #91UX-NU180 or equal. Supr-lok cross shall be model #990X or equal.
 - Street name signs shall be mounted on Type 1 or 2 12-gauge steel galvanized post. Whichever is required according to INDOT Standard Drawings.
 - Street name signs on roundabouts shall be on decorative 2 3/8" round post with finial, with Fishers Green finish, and with Z238 aluminum interlocking bracket set by Hall Signs or approved equal.
 - Private streets must include a vertical "PVT" symbol in 3" white lettering to the left of the street name.
 - Public street signs must include City of Fishers logo (does not have to be multi-colored) to the left of the street name.
 - Optional white privately owned/maintained signs on public roads:
 - White retroreflective background with black font may be used for street name signs, however, a maintenance agreement must be signed and submitted as these are considered privately owned and maintained signs. These signs will not be maintained by the City.
 - The City of Fishers logo is still required to the left of the street name.
 - No other logo or picture is permitted.
 - Optional black/green or decorative post/poles on public roads:
 - Any painted or coated street name or regulatory sign post/pole is permitted; however, a maintenance agreement must be signed and submitted as these are considered privately owned and maintained posts/poles. These posts/poles will not be maintained by the City.

STREET NAME AND PUBLIC STREET SIGNS

Not to Scale

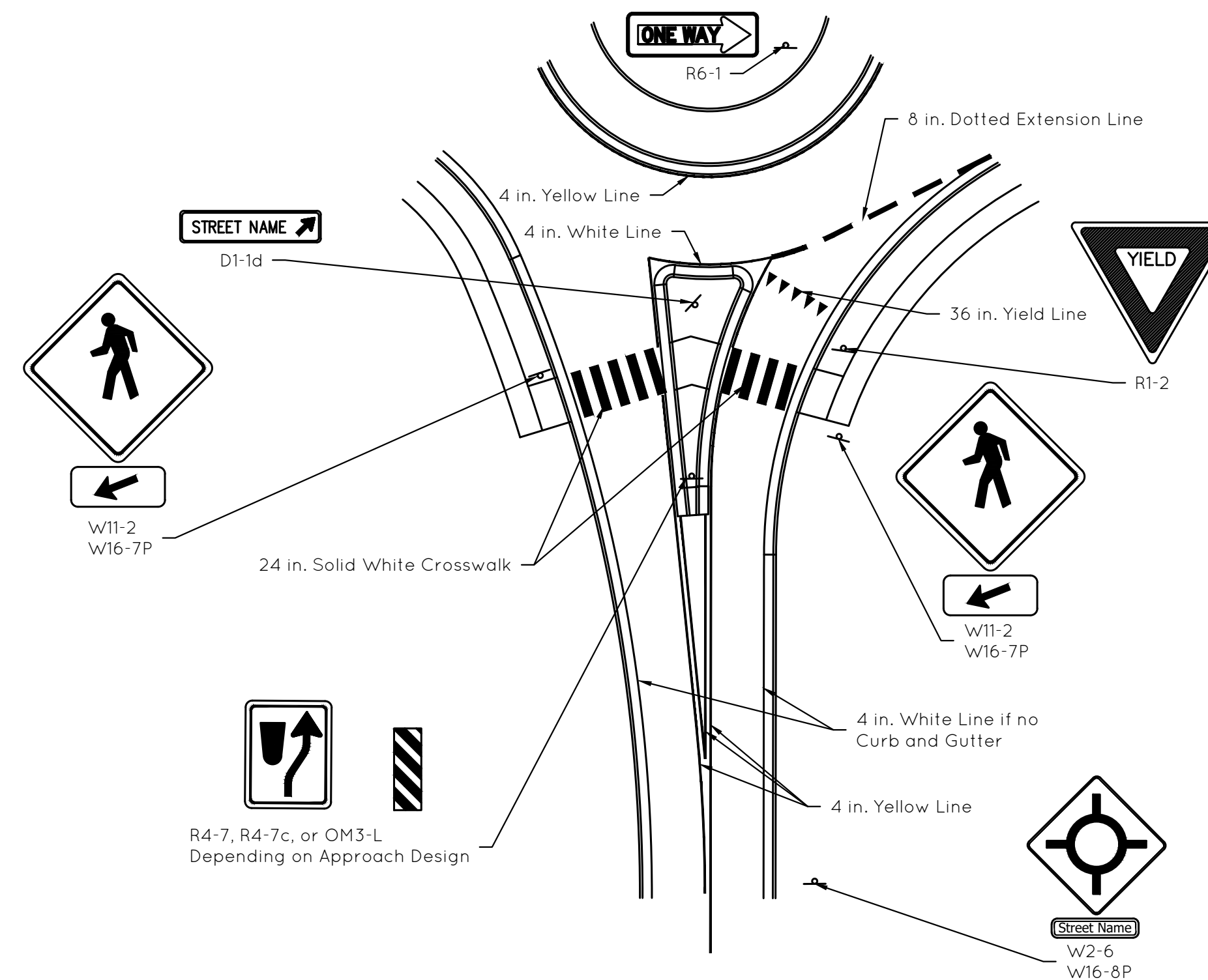


Public street signs must include City of Fishers logo (white lettering and green background) to the left of the street name. The logo size should be based on the following table:

Sign Lettering Height	Max Logo Dimension
12"	10"X10"
9"	7"X7"
8"	6"X6"
6"	4"X4"
4"	3"X3"

CITY LOGO FOR STREET SIGNS

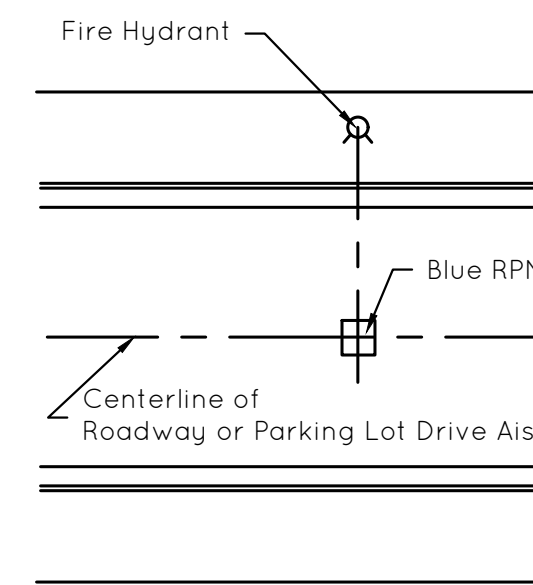
Not to Scale



- Notes:
- Signs and striping shown for only one leg of single-lane roundabout.
 - Striping and signs indicated may be optional per the latest IMUTCD, but shall be required for all roundabouts designed in the City of Fishers unless prior approval has been given by the Dept. of Engineering.
 - All striping shall be thermoplastic on asphalt pavement and multi-component on concrete pavement.
 - All white striping on concrete pavement shall have black contrast border.
 - Sign post heights and lateral offsets shall be in accordance with latest IMUTCD guidance. R6-4a signs shall not exceed 4 feet from bottom of sign to edge of circulatory roadway traveled way.
 - Lighting adjacent to roundabouts shall be per the "LAMP POSTS AND LUMINAIRES ADJACENT TO ROUNDABOUTS" detail on next sheet.

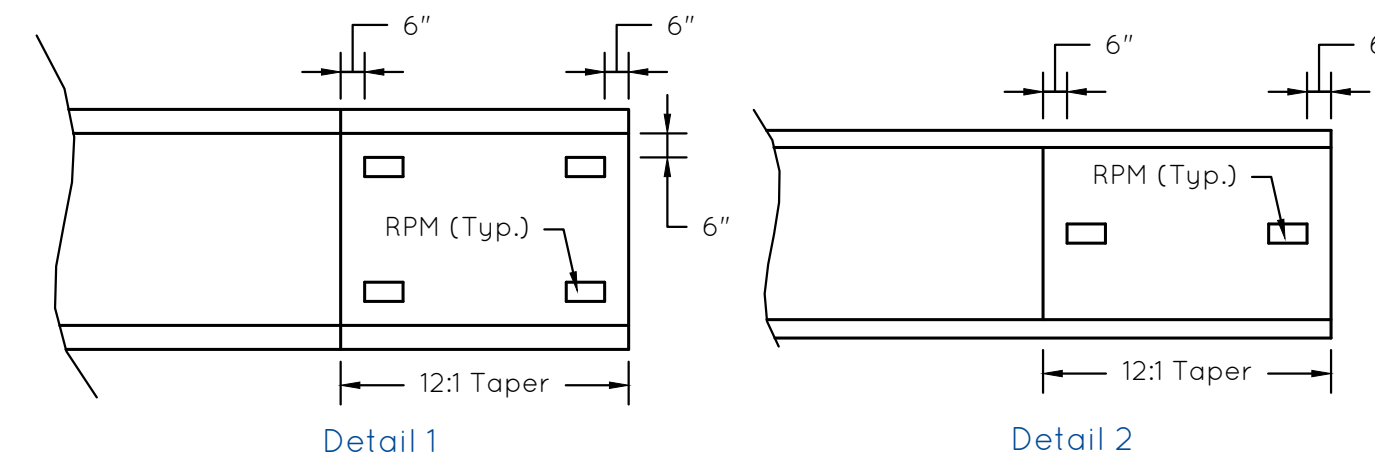
SINGLE-LANE ROUNDABOUT STRIPING EXAMPLE

Not to Scale



RAISED PAVEMENT MARKERS FOR HYDRANTS

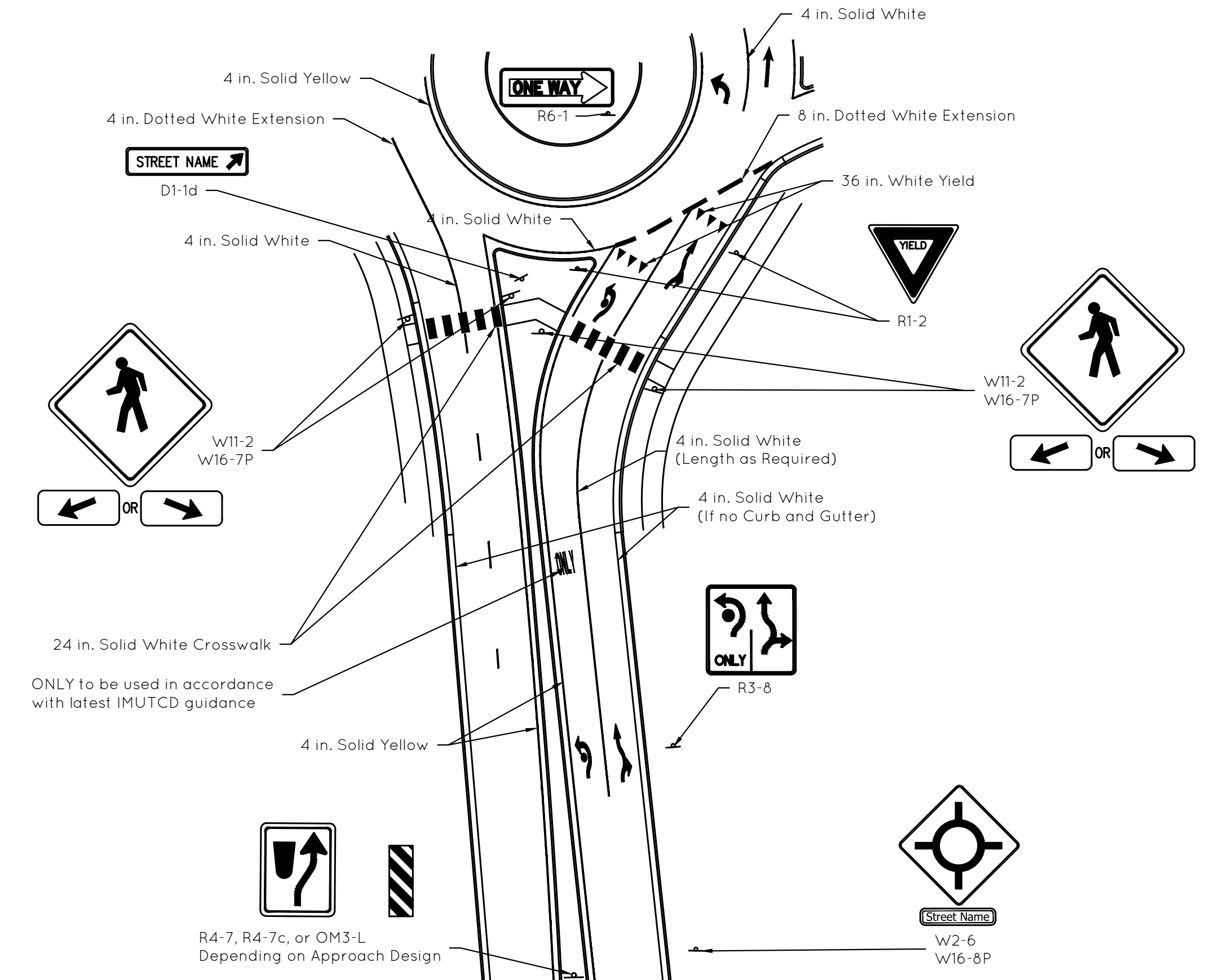
Not to Scale



- Notes:
- Width greater than 3 feet requires 4 RPMs per Detail 1. Width less than 3 feet requires 2 RPMs per Detail 2 centered on width of median.
 - RPMs shall be yellow and Ennis Flint model 101LP or approved equal.
 - RPMs on top of concrete shall be epoxied and RPMs in pavement shall be grooved and epoxied according to manufacturer specifications.

RAISED PAVEMENT MARKERS

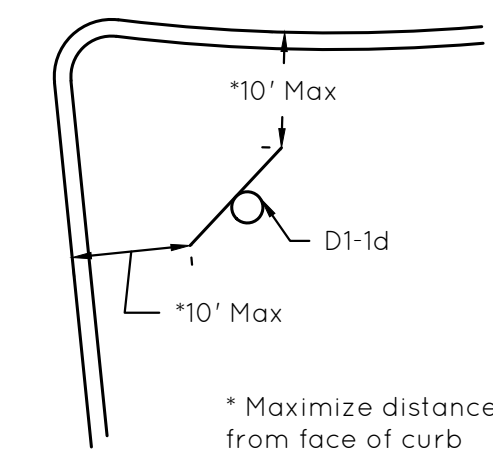
Not to Scale



- Notes:
- Signs and striping shown for only one leg of multi-lane roundabouts.
 - Striping and signs indicated may be optional per the latest IMUTCD, but shall be required for all roundabouts designed in the City of Fishers unless prior approval has been given by the Dept. of Engineering.
 - Lane Indication Arrows and circulatory roadway striping are for example. Actual lane configurations may vary.
 - All striping shall be thermoplastic on asphalt pavement and multi-component on concrete pavement.
 - All white striping on concrete pavement shall have black contrast border.
 - Sign post heights and lateral offsets shall be in accordance with latest IMUTCD guidance. R6-4a signs shall not exceed 4 feet from bottom of sign to edge of circulatory roadway traveled way.
 - Lighting adjacent to roundabouts shall be per the "LAMP POSTS AND LUMINAIRES ADJACENT TO ROUNDABOUTS" detail on next sheet.

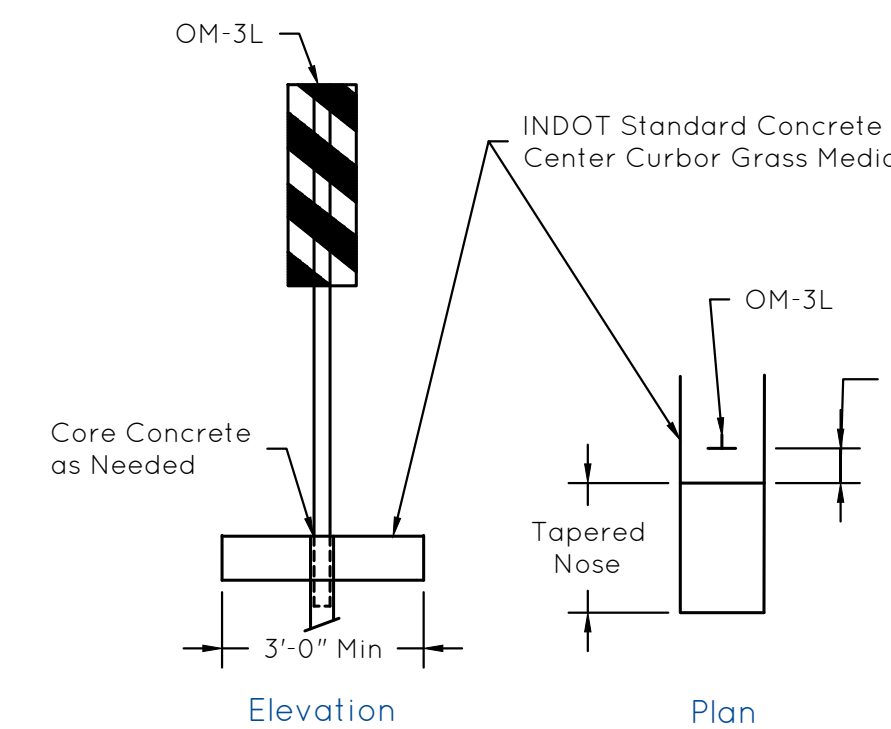
TWO-LANE ROUNDABOUT STRIPING EXAMPLE

Not to Scale



ROUNDABOUT D1-1d SPLITTER ISLAND PLACEMENT

Not to Scale



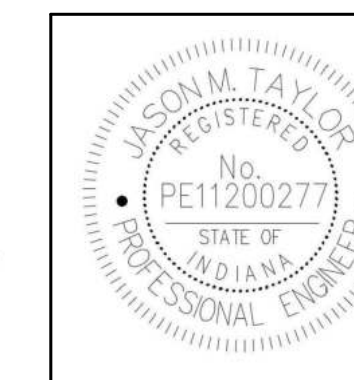
- Notes:
- All medians shall have an end treatment.
 - Medians greater than four feet in width may contain approved landscaping or grass.

MEDIAN END TREATMENT

Not to Scale

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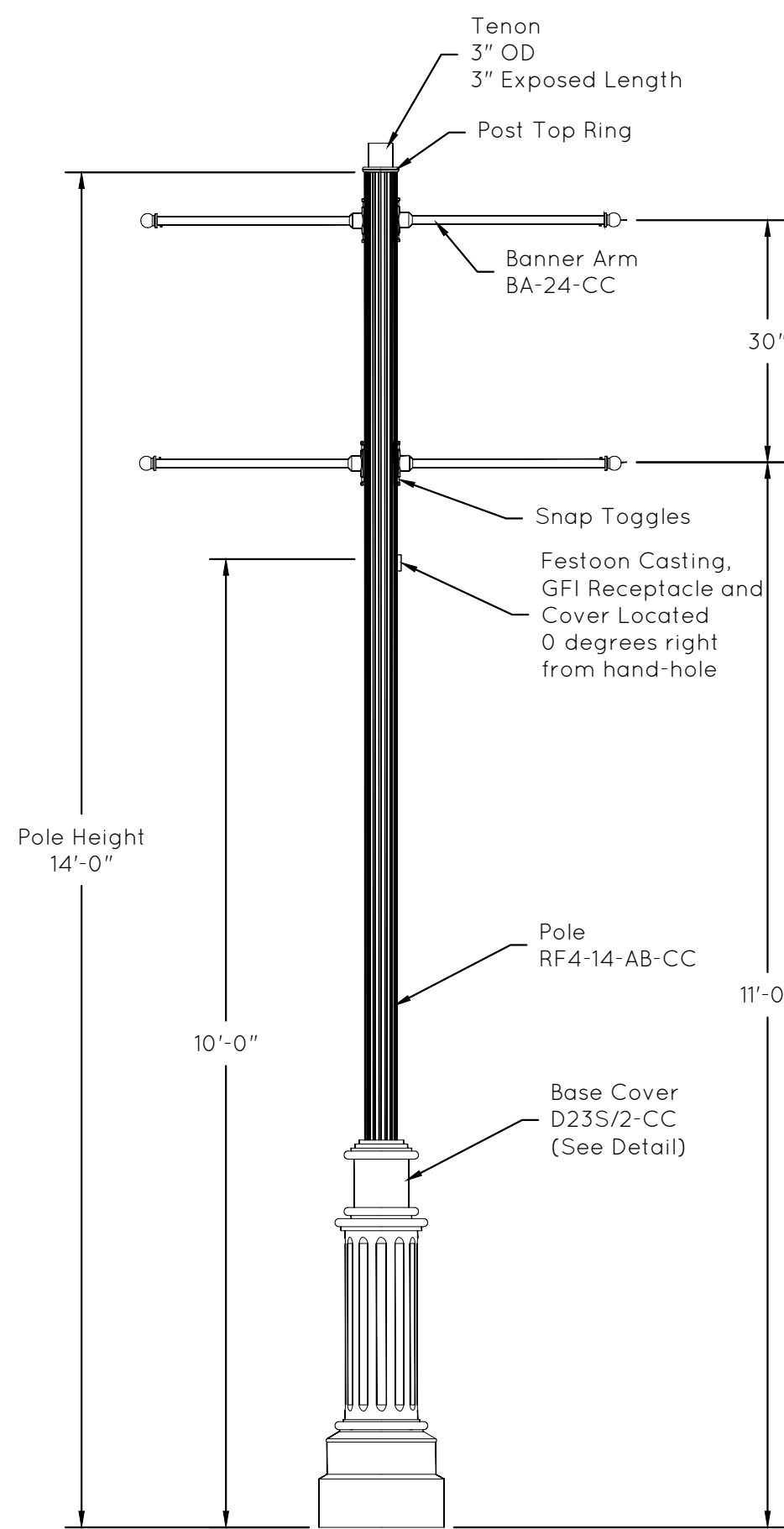


CITY OF FISHERS STANDARD CONSTRUCTION DETAILS

SIGN, PAVEMENT MARKING AND
RPM DETAILS

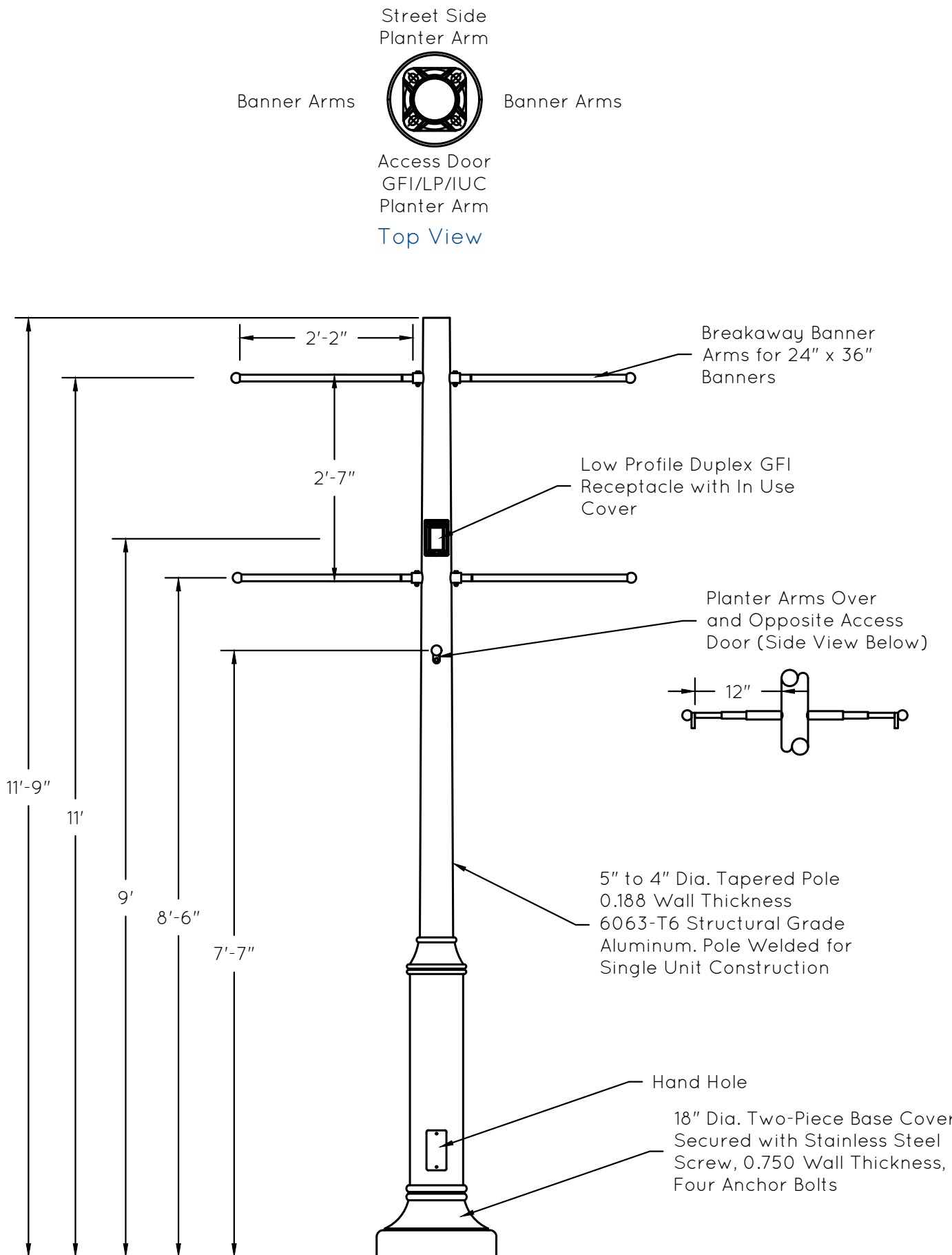
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POLE
 Model: FR4
 Top Dia: 4"
 Taper: None
 Construction: Pultruded fiberglass reinforced isophthalic polyester resin utilizing longitudinal glass roving, continuous strand mat and off-axis fibers.
 Anchor Base: Custom Top Hat Plate-ASTM A36
 Tenon: 3" OD 3" Exposed 6061-T6 Alum
 Post Top Ring: Cast Alum
 Bolt Circle: 11 1/2"
 Hand Hole: 5"x6" in anchor base. Cover to match
 Paint: UV & Cleaning chemical resistant
 Color: CC-Fishers Green
 MAX Attachment Weight: 100 lbs
 MAX Attachment EPA: 15.2
 Pole Weight: 72 lbs approx

BASE COVER
 Model: D23S/2
 Style: 2-Piece Clamshell
 Material: Elastomeric Urethane
 Color: CC-Fishers Green
 Height: 48"
 Width: 16.38"
 Weight: 52 lbs approx

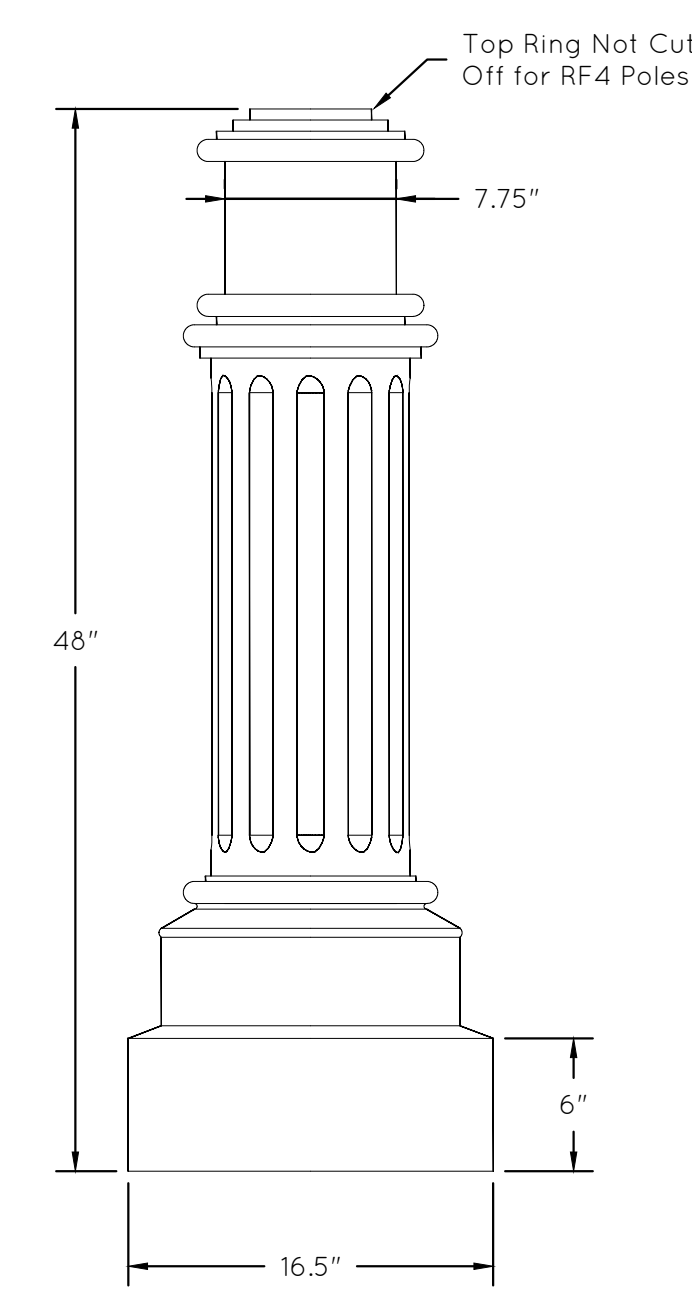


Street Side Planter Arm
 Banner Arms
 Access Door GFI/LP/UC Planter Arm
 Top View

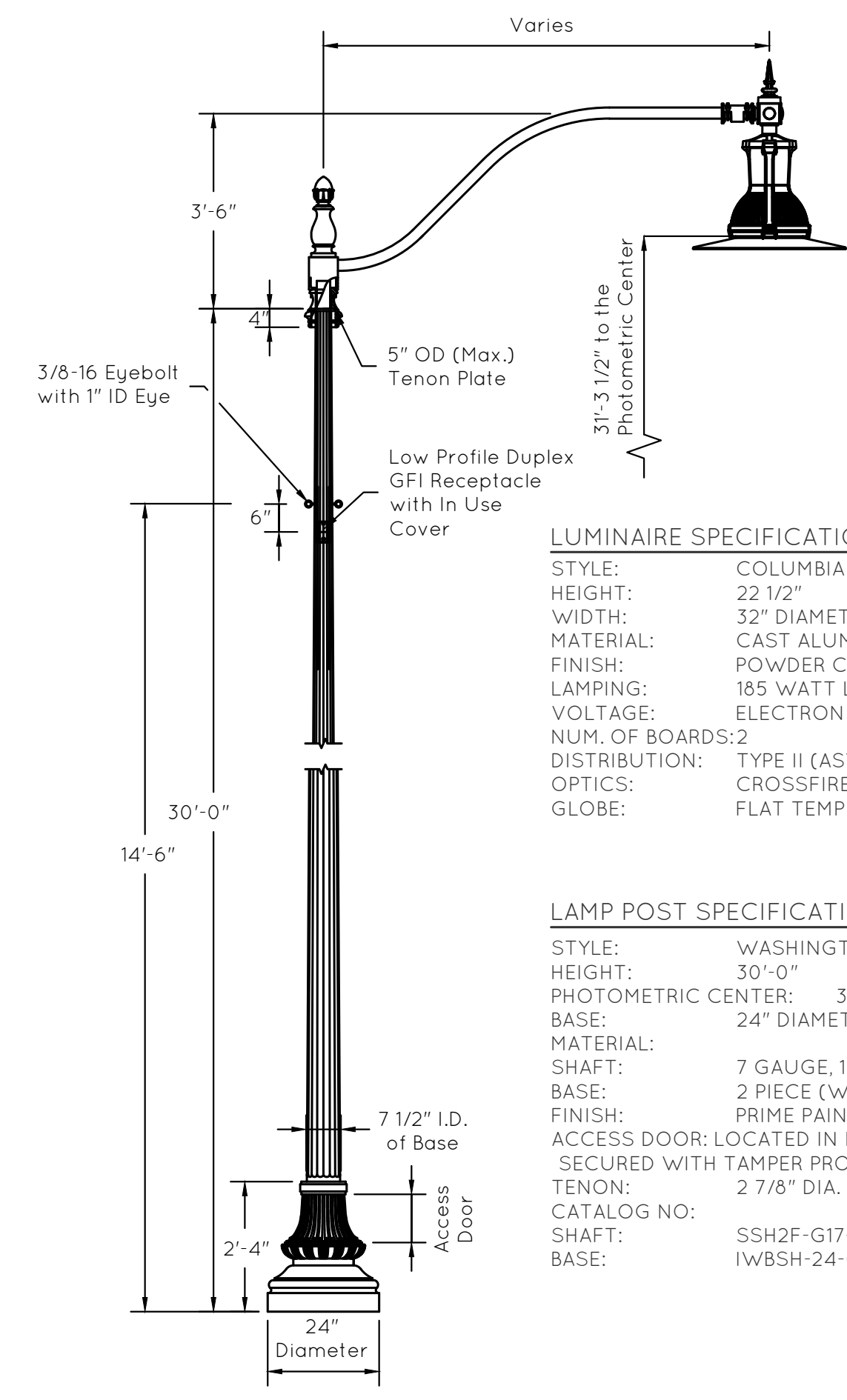
Breakaway Banner Arms for 24" x 36" Banners
 Low Profile Duplex GFI Receptacle with In Use Cover
 Planter Arms Over and Opposite Access Door (Side View Below)
 5" to 4" Dia. Tapered Pole 0.188 Wall Thickness 6063-T6 Structural Grade Aluminum. Pole Welded for Single Unit Construction
 Hand Hole
 18" Dia. Two-Piece Base Cover Secured with Stainless Steel Screw, 0.750 Wall Thickness, Four Anchor Bolts

Notes:
 1) All poles to be Fishers Green RAL 6004
 2) Outlet wiring on lamp posts shall be such that the top outlet to be on only when lights are on. Bottom outlet shall remain on continuously

LAMP POSTS
 Not to Scale



BASE COVER
 Not to Scale



LUMINAIRE SPECIFICATIONS
 STYLE: COLUMBIA WITH EDGEWATER FINIAL
 HEIGHT: 22 1/2"
 WIDTH: 32" DIAMETER
 MATERIAL: CAST ALUMINUM ALLOY ANSI 356, PER A.S.T.M. B26-95
 FINISH: POWDER COAT - CUSTOM BLUE GREEN RAL # 6004
 LAMPING: 185 WATT LED
 VOLTAGE: ELECTRONIC WIRED AT 120-277 VOLTS
 NUM. OF BOARDS: 2
 DISTRIBUTION: TYPE II (ASYMMETRIC DISTRIBUTION)
 OPTICS: CROSSFIRE REFRACTIVE
 GLOBE: FLAT TEMPERED GLASS

LAMP POST SPECIFICATIONS
 STYLE: WASHINGTON STEEL
 HEIGHT: 30'-0"
 PHOTOMETRIC CENTER: 31'-3 3/4"
 BASE: 24" DIAMETER WRAP BASE
 MATERIAL: 7 GAUGE, 12 FLAT FLUTE, STEEL MONOTUBE CONSTRUCTION
 SHAFT: 2 PIECE (WRAP AROUND) CAST IRON PER A.S.T.M. A48-83 CLASS 30
 FINISH: PRIME PAINT THEN FINISH CUSTOM BLUE GREEN RAL # 6004
 ACCESS DOOR: LOCATED IN BASE TO COINCIDE WITH HAND HOLE IN STEEL SHAFT, SECURED WITH TAMPER PROOF HEX SOCKET SECURITY MACHINE SCREWS
 TENON: 2 7/8" DIA. X 6" HIGH (TO ACCEPT CROSS ARM)
 CATALOG NO: SSH2F-G17-07.60-30.00-TN2.88/6.00-GFWN-(2)EB-CB
 BASE: IWBSH-24-CB

Note:
 1) Outlet wiring on lamp posts shall be such that the top outlet to be on only when lights are on while the bottom outlet shall remain on continuously.

LAMP POSTS AND LUMINAIRES ADJACENT TO ROUNDABOUTS
 Not to Scale

POLE
 MODEL: RF4
 TOP: DIA: 4"
 TAPER: NONE
 CONSTRUCTION: Pultruded fiberglass reinforced isophthalic polyester resin utilizing longitudinal glass roving, continuous strand mat and off-axis fibers.

ANCHOR BASE:
 Custom Top Hat Plate-ASTM A36
 Tenon: 3" OD 3" Exposed 6061-T6 Alum
 POST TOP RING: Cast Alum
 BOLT CIRCLE: 11 1/2"
 HAND HOLE: 5"x6" in Anchor Base; Cover to Match

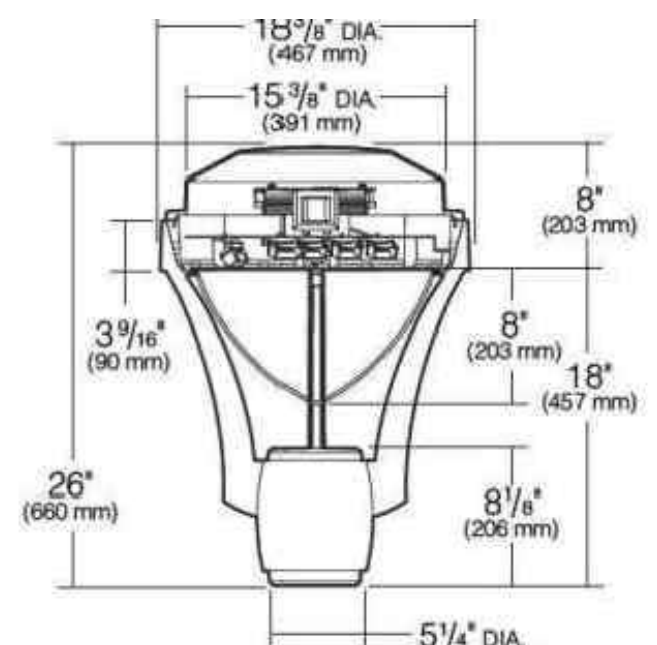
PAINT:
 UV & Cleaning chemical resistant
 COLOR: CC-Fishers Green
 MAX ATTACHMENT WEIGHT: 100 LBS
 MAX ATTACHMENT EPA: 15.2
 POLE WEIGHT: 72 LBS approx

BASE COVER
 MODEL: D23S/2
 STYLE: 2-Piece Clamshell
 MATERIAL: Elastomeric Urethane
 COLOR: CC-Fishers Green
 HEIGHT: 48"
 WIDTH: 16.38"
 WEIGHT: 52 LBS approx

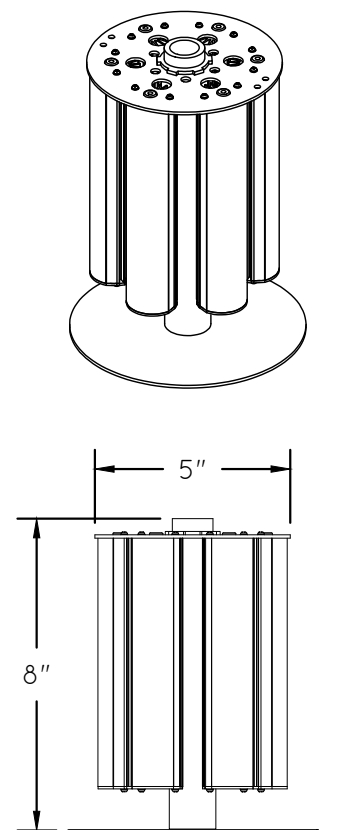
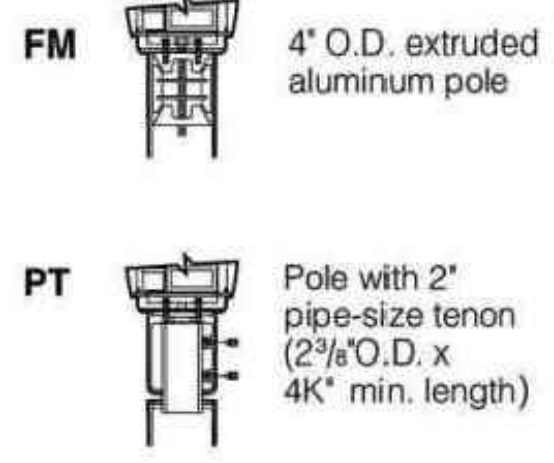
SPECIFICATIONS



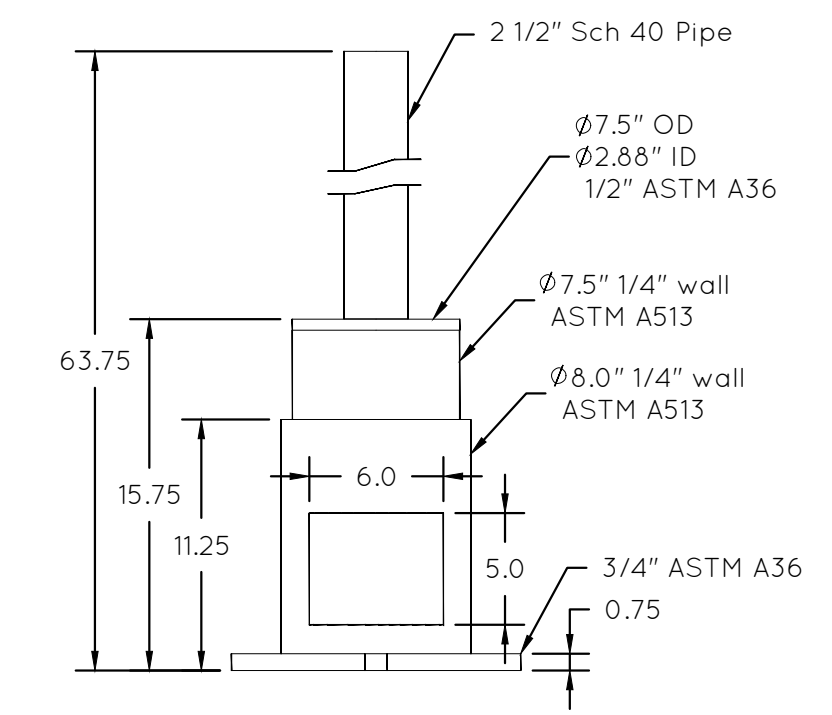
Approx. Weight = 45 lbs EPA 2.5 for 15A
 See Configuration for Additional EPAs.



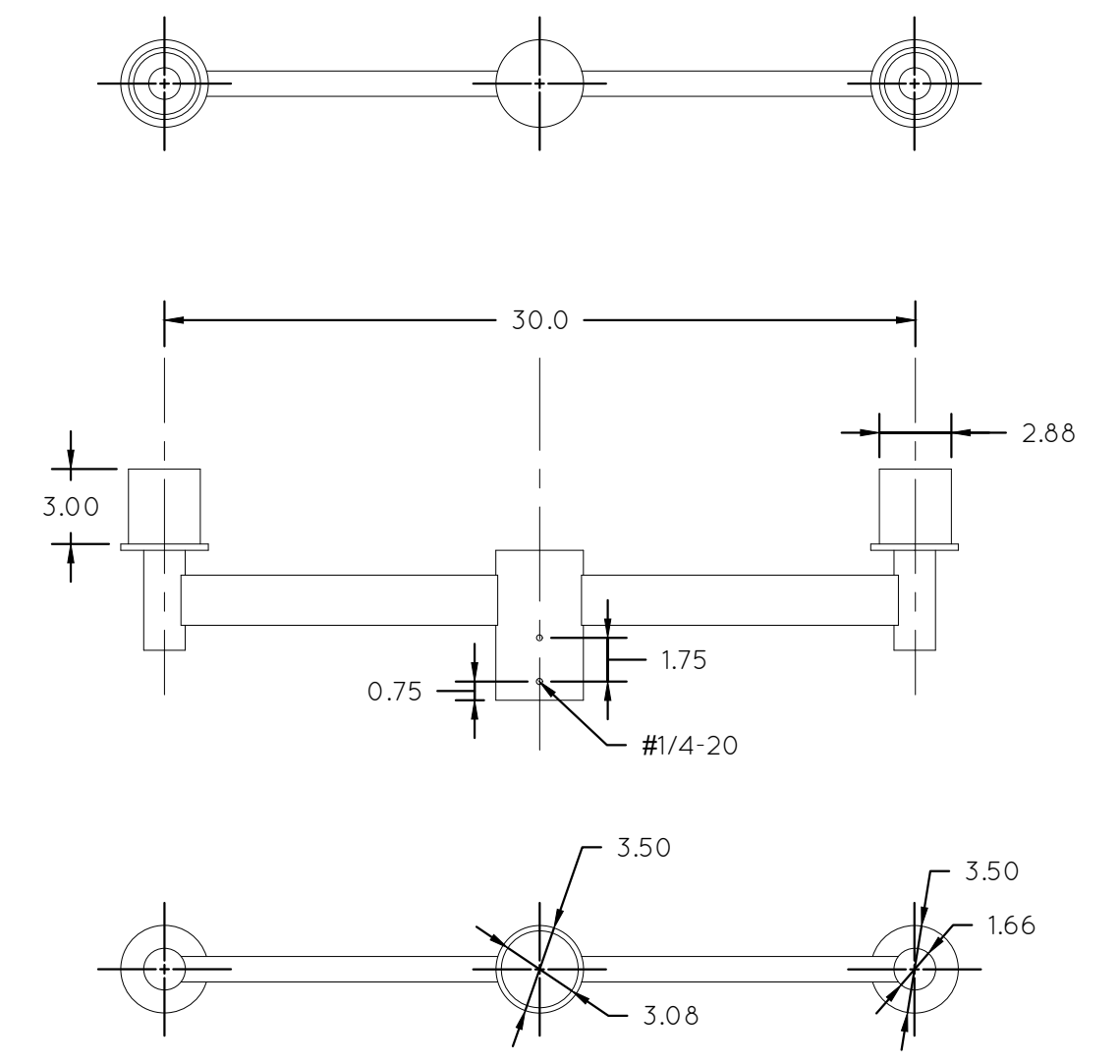
KIM LIGHTING-SOLITAIRE
 Not to Scale



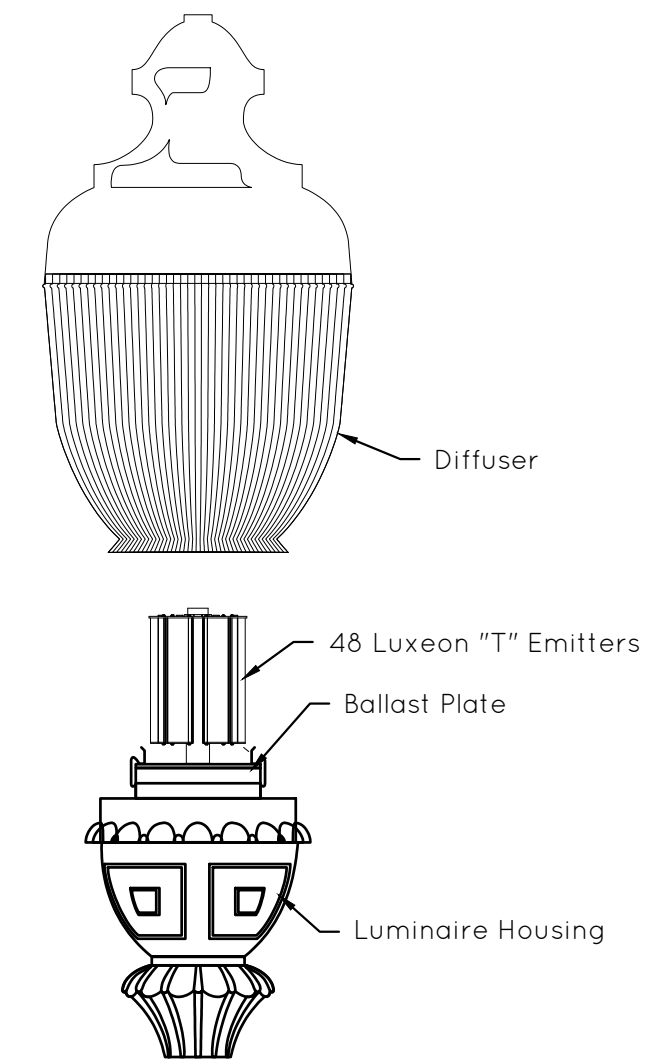
LED FIXTURES
 Not to Scale



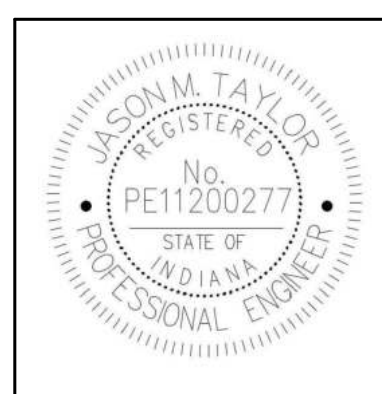
CUSTOM HAT BASE ASSEMBLY
 Not to Scale



CROSS ARM
 Not to Scale



J. Taylor
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CITY OF FISHERS
STANDARD CONSTRUCTION DETAILS
 LAMP POST & LED FIXTURE DETAILS

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