

SERVICE STREET STORM SEWER IMPROVEMENTS LAKE STATION, INDIANA

NEW STORM SEWER ALONG SERVICE STREET FROM THE DRIVEWAY OF THE CHURCH OF JESUS CHRIST TO APPROXIMATELY 790' EAST DISCHARGING INTO GRAND BOULEVARD LAKE. ALL IN SECTION 18, TOWNSHIP 36 NORTH, RANGE 7 WEST, ON THE U.S.G.S CROWN POINT QUADRANGLE. ALL IN HOBART TOWNSHIP, LAKE COUNTY, CITY OF LAKE STATION INDIANA.

STORMWATER UTILITY BOARD

BILL WESTMORELAND	PRESIDENT
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KEN RIPPE VICE-PRESIDENT

DAN MORA MEMBER

GROSS LENGTH: 0.15 MI
NET LENGTH: 0.15 MI.

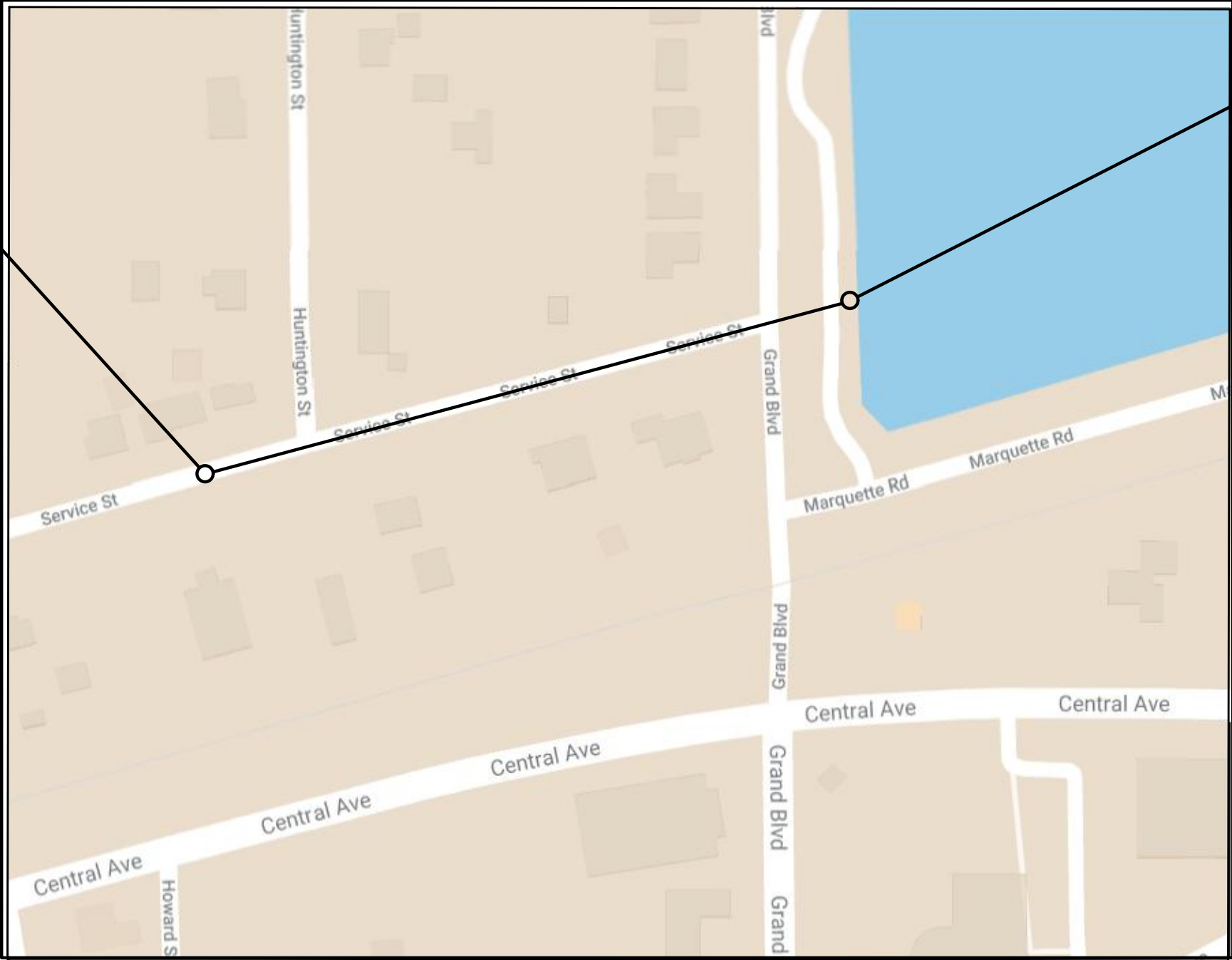
SCALES:

PLAN { LONG: 1"=20'
TRANS: 1"=20'

PROFILE { HORIZ:1"=20'
VERT:1"=5'

BEGIN CONSTRUCTION
P.O.T. Sta. 10+70.50 "A"

END PROJECT
P.O.T. Sta. 18+20.30 "A"



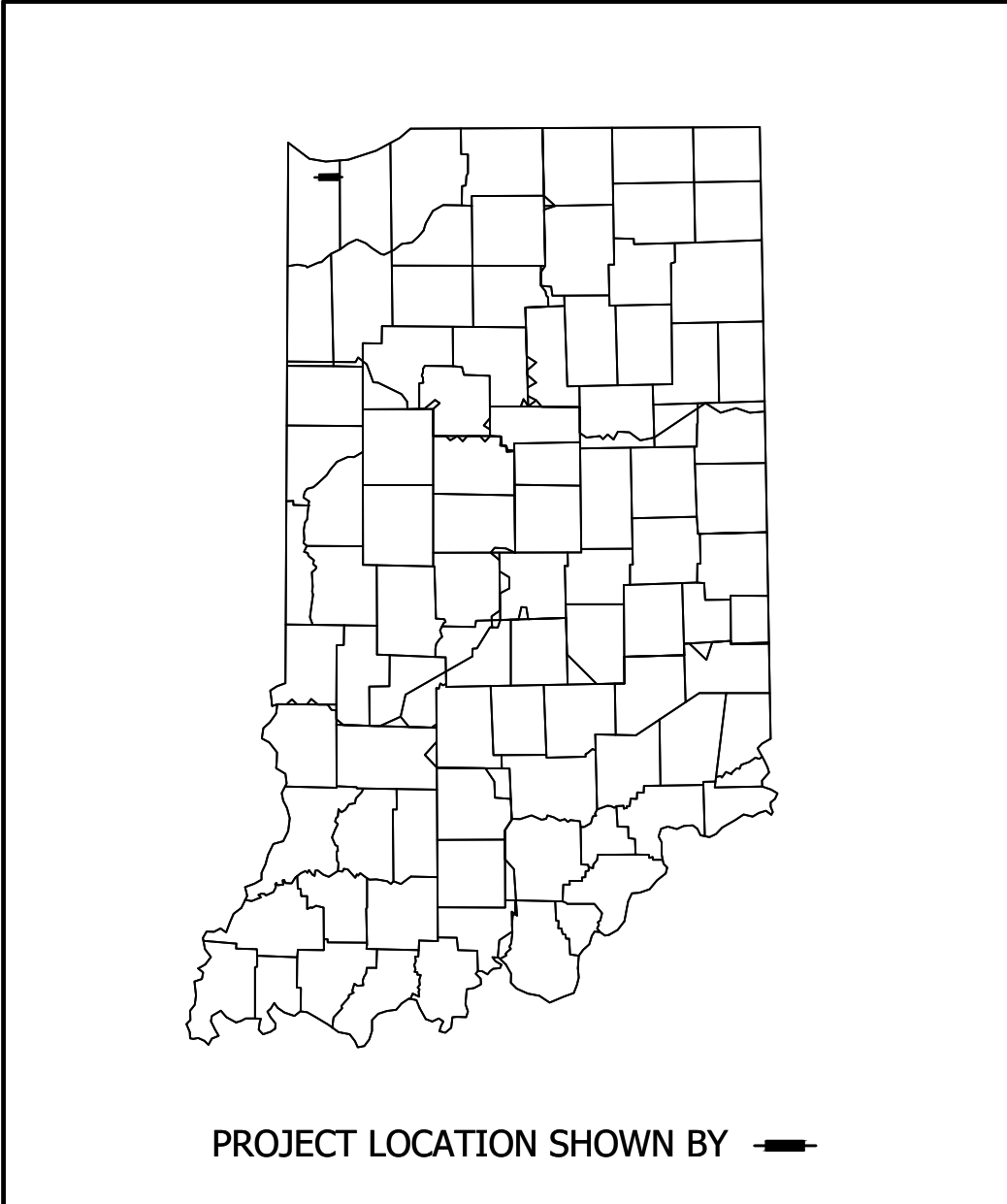
VICINITY MAP

LAKE COUNTY



CAUTION

LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED UPON ABOVE GROUND EVIDENCE (including, but not limited to, manholes, inlets, valves, and marks made upon the ground by others) AND ARE SPECULATIVE IN NATURE. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. THE EXACT LOCATIONS OF SAID EXISTING UNDERGROUND UTILITIES SHOULD BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY AND ALL CONSTRUCTION.



Approx. 41°34'20" N. Lat. & 87°15'46" W. Long.

INDEX

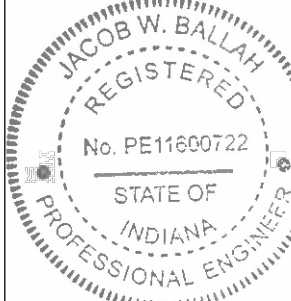
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Headquarters
8450 WESTFIELD BLVD., SUITE 300
INDIANAPOLIS, IN. 46240-8302
TEL 317-713-4615
FAX 317-713-4616
www.BFSEngr.com



Branch Locations

FORT WAYNE	260-459-1532
LOUISVILLE	502-593-1996
LAFAYETTE	765-423-5602
MERRILLVILLE	219-769-2333
PLAINFIELD	317-839-3242



CERTIFIED BY: Joe Sullivan 12/22/2020
DATE

	FILE		
	DESIGNATION		
SURVEY BOOK	SHEET		
	1	OF	9
CONTRACT	PROJECT		

BFS NO. 648100.9802

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STORM SEWER GENERAL NOTES

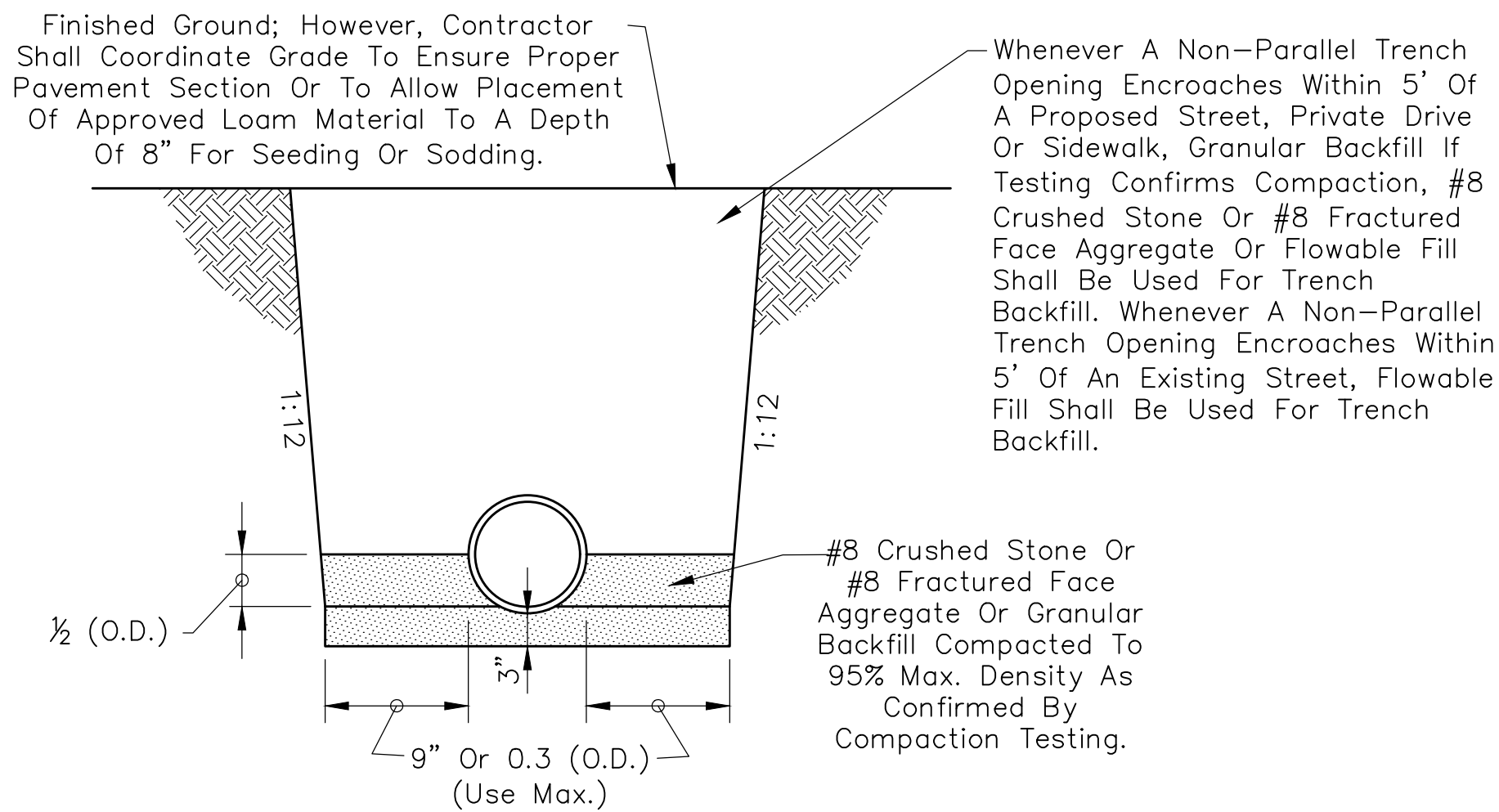
- Storm Sewer Pipe Of Other Material Or Material Not Meeting These Specifications Shall Require The Prior Written Approval Of The City Of Lake Station.
- The Contractor Shall Submit Information To The City Showing Conformance With These Specifications Upon Request.
- As-Built Drawings Shall Be Submitted To The City Of Lake Station.
- The Centerline Of Storm Water Quality Structures Shall Be Located As Required So As To Be Within 15' From Edge Of Pavement. Structure Cone Sections Shall Be Rotated Towards The Street.
- Pipe Grade Shall Be Such That, In General, A Minimum Of 2.0 Feet Of Cover Is Maintained Over The Top Of The Pipe. If The Pipe Is To Be Placed Under Pavement, Then The Minimum Pipe Cover Shall Be 2.5 Feet From Top Of Pavement To Top Of Pipe. Pipe Cover Less Than The Minimum May Be Allowed Per Manufacturer's Specifications Or Recommendation And used Only upon Written Acceptance From The City Of Lake Station.
- Contractor To Field Verify Sanitary And Water Service Conflicts Prior To Construction.

STORM SEWER REINFORCED CONCRETE PIPE

- Reinforced Concrete Pipe Shall Be Class **III, IV, Or V** As Specified In ASTM C76.
- Reinforced Elliptical Concrete Pipe Shall Be Class HE-**II** Or HE-**IV** As Specified In ASTM C507.
- Lift Holes Are Not Allowed For Pipe Less Than 24 Inches In Diameter. A Maximum Of Two Lift Holes Are Allowed For Pipe 24 Inches In Diameter Or Larger. Lift Holes Shall Be Repaired According To Most Recent INDOT Standard Specifications.
- Fittings And Specialties Shall Be In Accordance With The Specifications For The Type Of Pipe Being Used.
- Each Pipe Section Shall Be Marked With Date Of Manufacture, Size And Class Of Pipe, Specification Designation, Manufacturer And Plant Identification.
- Pipe Shall Be Furnished With A Bell Or Groove On One End Of A Unit Of Pipe And A Spigot Or Tongue On The Adjacent End Of The Adjoining Pipe. All Joints Shall Have A Groove On The Spigot For Placement Of A Rubber "O"-Ring Or Profile Gasket In Accordance With ASTM C443. The Gasket Shall Be A Continuous Ring Which Fits Snugly Into The Annular Space Between The Overlapping Surfaces Of The Assembled Pipe Joint.

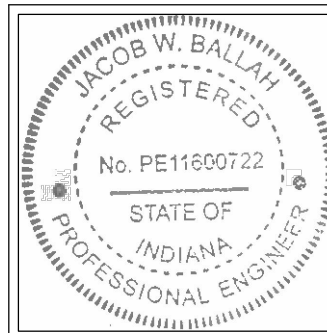
STORM SEWER DEFLECTION TESTING AND TELEVISING

- Deflection Testing Is Required For All Mainline Flexible Pipe And The City Of Lake Station Shall Be Given 24 Hour Written Notice Of Deflection Testing. An Allowable Deflection Of 5 Percent Inside Pipe Diameter Will Be Acceptable After All Backfilling Has Been In Place For 30 Days. A Nine-Point "Go-No-Go" Mandrel Shall Be Used For The Deflection Test. A Proving Ring Shall Be Provided For Each Mandrel. All Pipe Exceeding The Allowable Deflection Shall Be Televised To Determine The Extent Of Replacement Or Rerounding Required. The Reworked Section Shall Be Retested 30 Days After Completion. Contractor Shall Bear All Testing Costs. The "Go-No-Go" Mandrel Shall Be Manually Pulled Without The Use Of Mechanical Devices.
- Televising Is Required For All Pipe Installations. City Of Lake Station Shall Be Given 24 Hour Written Notice Of Televising. A Camera Equipped With Remote Control Devices To Adjust Light Intensity And 1,000 Linear Feet Of Sewer Cable Shall Be Provided. The Camera Shall Transmit A Continuous Image To The Television Monitor As It Is Being Pulled Through Pipe. The Image Shall Be Clear Enough To Enable The City Of Lake Station Representative And Others Viewing The Monitor To Easily Evaluate The Interior Condition Of The Pipe. The Camera Shall Stamp The Video Tape With Linear Footage And Project Number, And An Audio Voice-Over Shall Be Made During The Inspection Identifying Problems. Contractor Shall Bear All Televising Costs.
- The Pipe Shall Be Thoroughly Cleaned Before Inserting Camera And Commencing Televising.
- If Any Pipe And/Or Joint Is Found To Be Leaking In Such A Way As Soil Migration Is Likely In The Sole Judgment Of The City, The Contractor Shall Repair That Portion Of The Work To The Satisfaction And Approval Of The City Of Lake Station.



RCP PIPE BEDDING DETAIL

Not To Scale



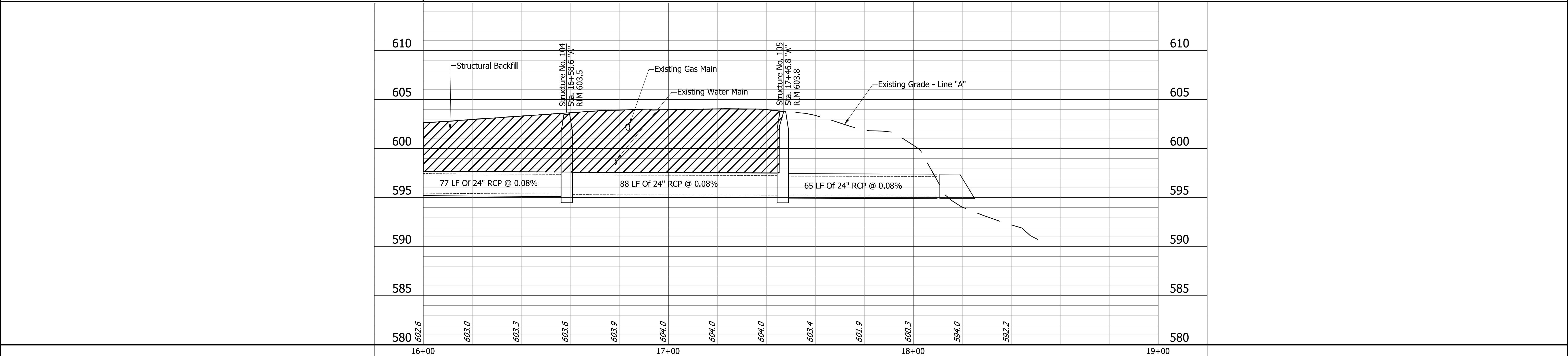
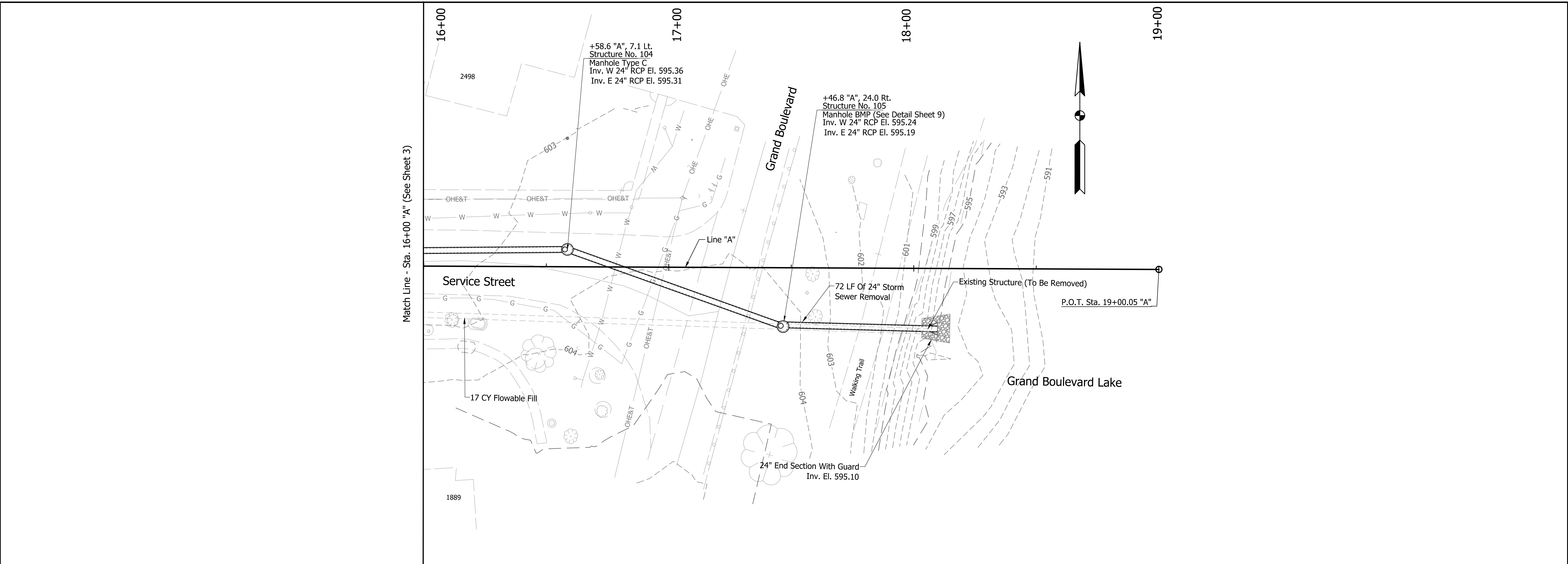
RECOMMENDED FOR APPROVAL:	<i>Jacob W. Ballah</i>	12/22/2020
	DESIGN ENGINEER	DATE
DESIGNED:	JWB	DRAWN: AMB
CHECKED:	SWM	CHECKED: JWB

SERVICE STREET STORM SEWER IMPROVEMENTS GENERAL NOTES	
LAKE STATION	INDIANA
Headquarters 8450 WESTFIELD BLVD., SUITE 300 INDIANAPOLIS, IN 46240-8302 TEL 317-713-4615 FAX 317-713-4616 www.BFSeng.com	
BFS CIVIL ENGINEERS	
Branch Locations FORT WAYNE LOUISVILLE LAFAYETTE MERRILLVILLE PLAINFIELD SOUTH BEND 260-459-1532 502-593-1996 785-423-5602 219-769-2353 317-839-3242 574-288-5727	

HORIZONTAL SCALE	BRIDGE FILE
N/A	
VERTICAL SCALE	DESIGNATION
N/A	
SURVEY BOOK	SHEET
	2 OF 9
CONTRACT	PROJECT

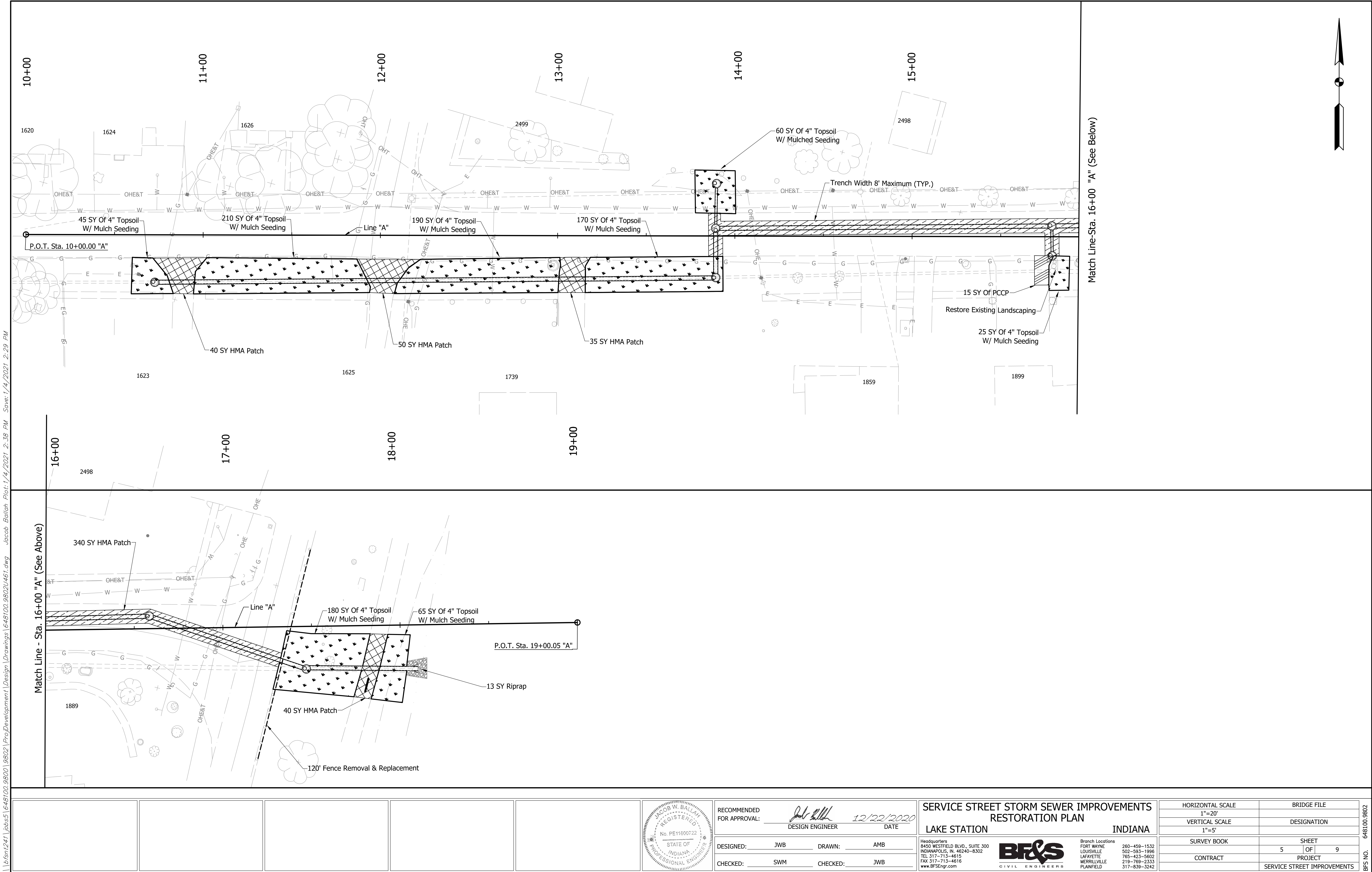
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						RECOMMENDED FOR APPROVAL: DESIGN ENGINEER DATE: 12/22/2020	SERVICE STREET STORM SEWER IMPROVEMENTS PLAN AND PROFILE LAKE STATION INDIANA Headquarters: 8450 WESTFIELD BLVD., SUITE 300, INDIANAPOLIS, IN 46240-8302, TEL 317-713-4615, FAX 317-713-4616, www.BFSeng.com Branch Locations: FORT WAYNE, LOUISVILLE, LAFAYETTE, MERRILLVILLE, PLAINFIELD	HORIZONTAL SCALE 1"=20'	BRIDGE FILE
						DESIGNED: JWB DRAWN: AMB		VERTICAL SCALE 1"=5'	DESIGNATION
						CHECKED: SWM CHECKED: JWB		SURVEY BOOK	SHEET 4 OF 9
								CONTRACT	PROJECT SERVICE STREET IMPROVEMENTS

BFS NO. 648100.9802

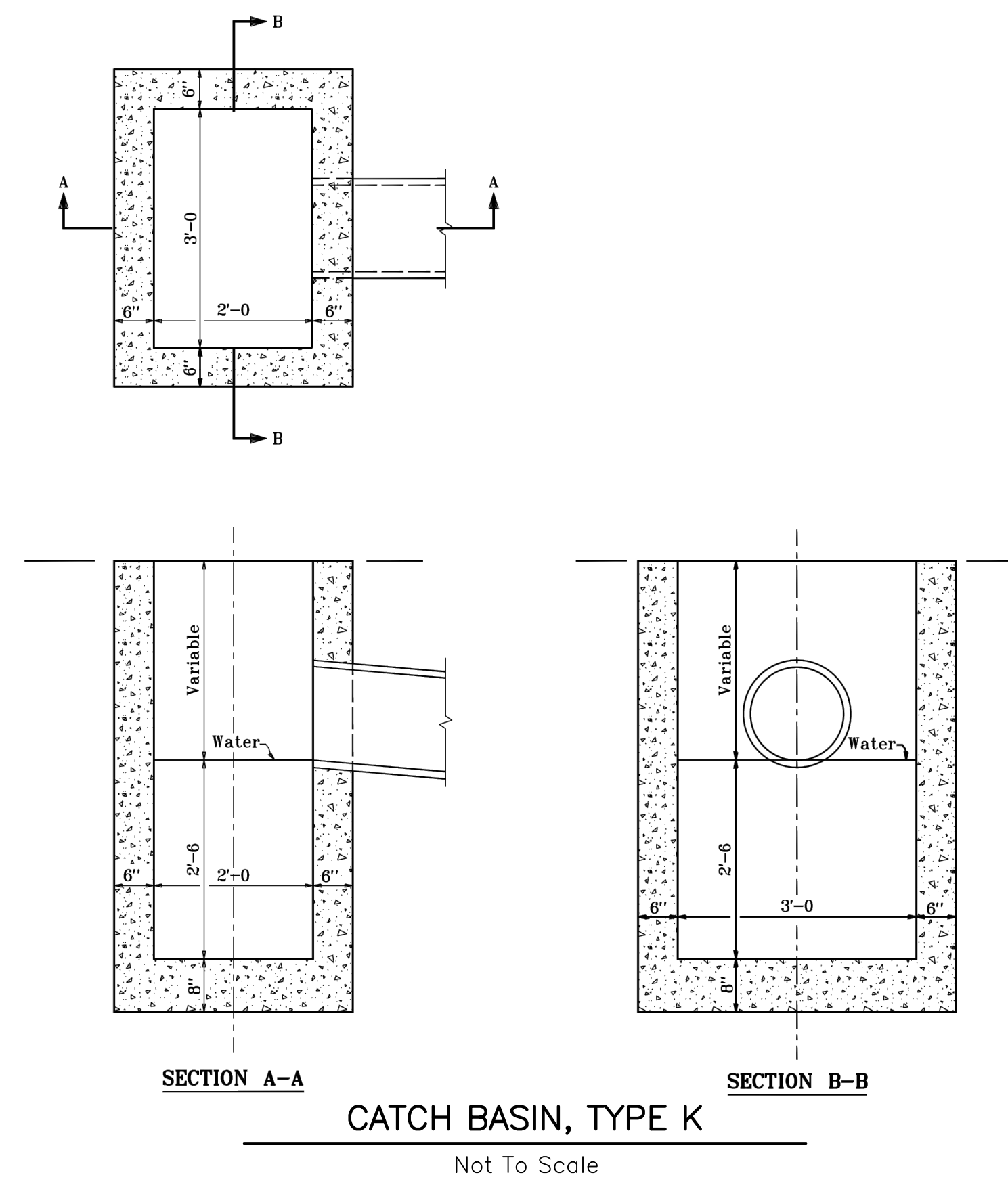
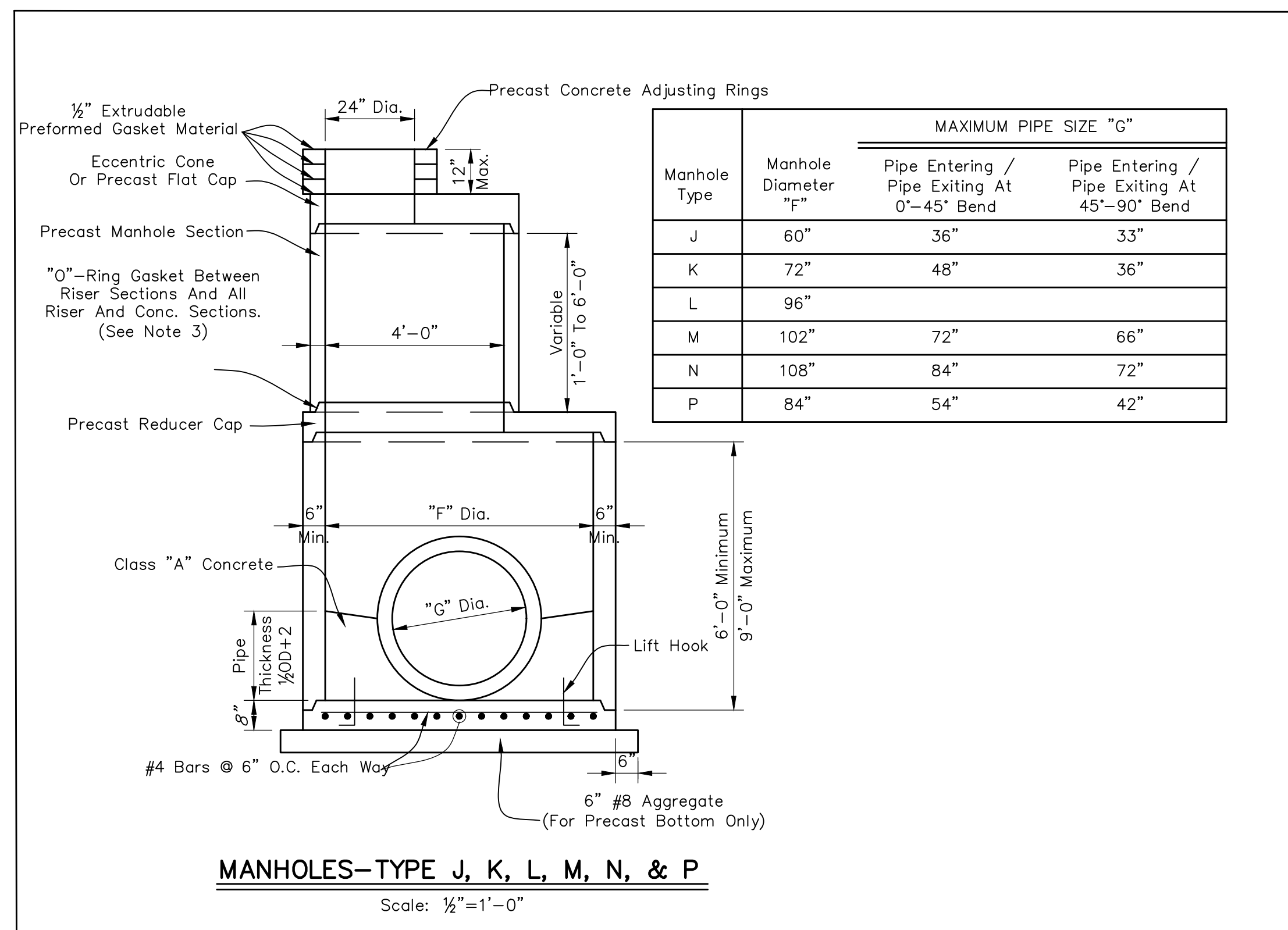
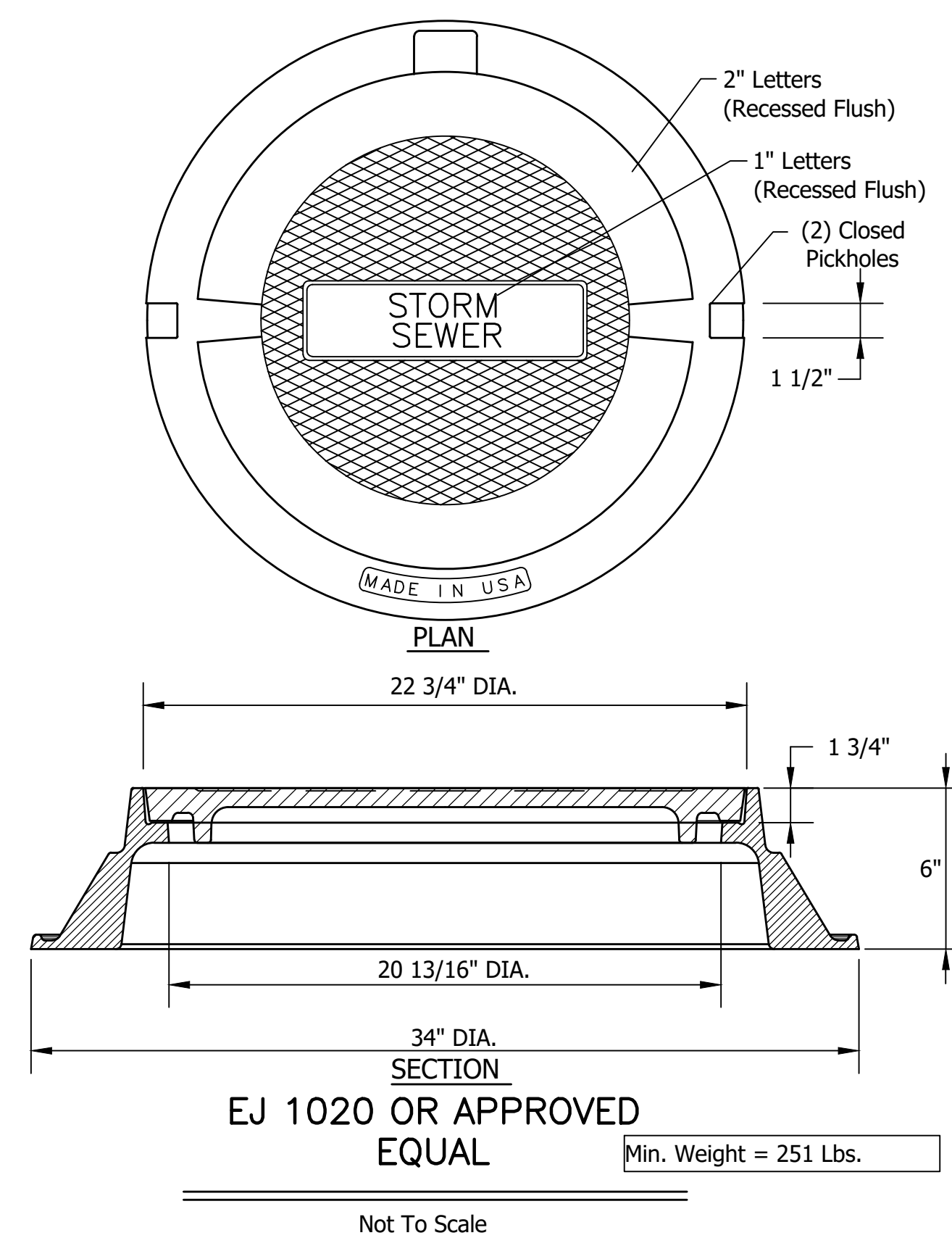
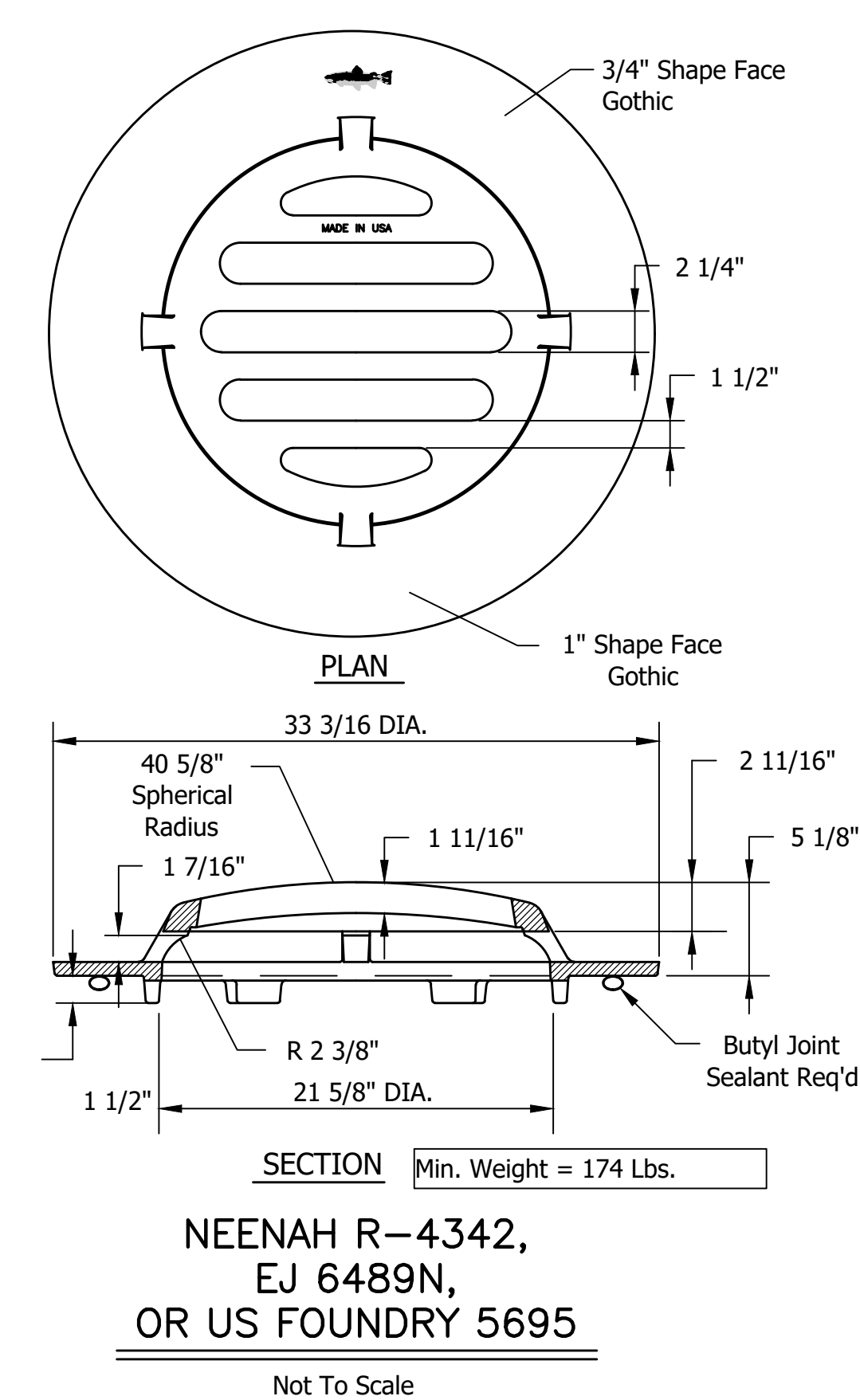
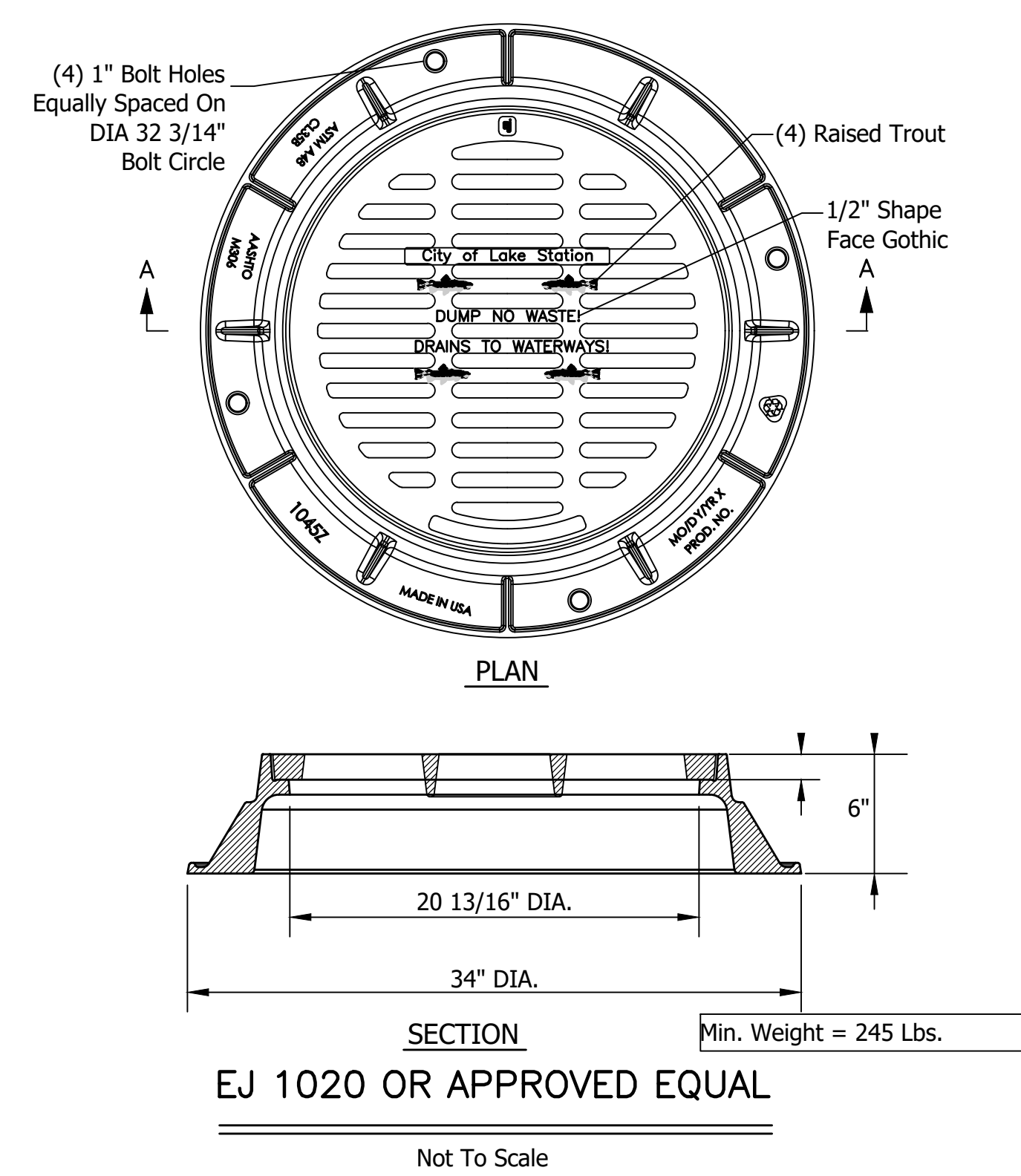
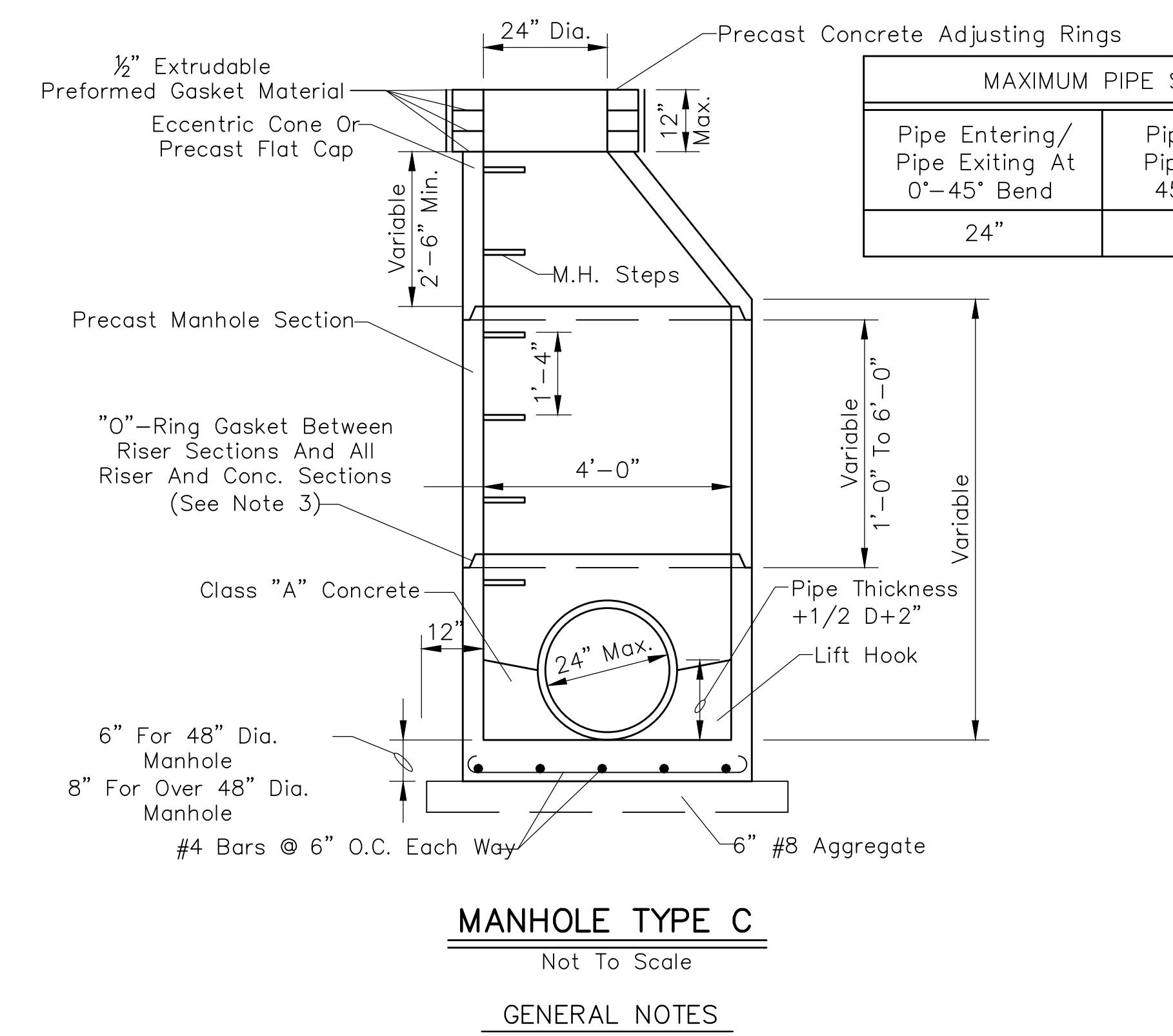


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						RECOMMENDED FOR APPROVAL: 12/22/2020 DESIGN ENGINEER DATE		SERVICE STREET STORM SEWER IMPROVEMENTS RESTORATION PLAN LAKE STATION INDIANA		HORIZONTAL SCALE 1"=20'		BRIDGE FILE			
						DESIGNED: JWB DRAWN: AMB		Headquarters 8450 WESTFIELD BLVD., SUITE 300 INDIANAPOLIS, IN 46240-8302 TEL 317-713-4615 FAX 317-713-4616 www.BF&Seng.com				VERTICAL SCALE 1"=5'		DESIGNATION	
						CHECKED: SWM CHECKED: JWB		Branch Locations FORT WAYNE 260-459-1532 LOUISVILLE 502-593-1996 LAFAYETTE 765-423-5602 MERRILLVILLE 219-768-2333 PLAINFIELD 317-839-3242				SURVEY BOOK		SHEET 5 OF 9	
												CONTRACT		PROJECT SERVICE STREET IMPROVEMENTS	

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JACOB W. BALLAH
REGISTERED
No. PE11800722
STATE OF
INDIANA
PROFESSIONAL ENGINEER

RECOMMENDED
FOR APPROVAL: *[Signature]* 12/22/2020
DESIGN ENGINEER DATE

DESIGNED: JWB DRAWN: AMB
CHECKED: SWM CHECKED: JWB

SERVICE STREET STORM SEWER IMPROVEMENTS
DETAILS
LAKE STATION INDIANA

Headquarters
8450 WESTFIELD BLVD., SUITE 300
INDIANAPOLIS, IN 46240-8302
TEL 317-713-4615
FAX 317-713-4616
www.BF&Seng.com

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CIVIL ENGINEERS

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HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION
SURVEY BOOK	SHEET
CONTRACT	PROJECT
	SERVICE STREET IMPROVEMENTS

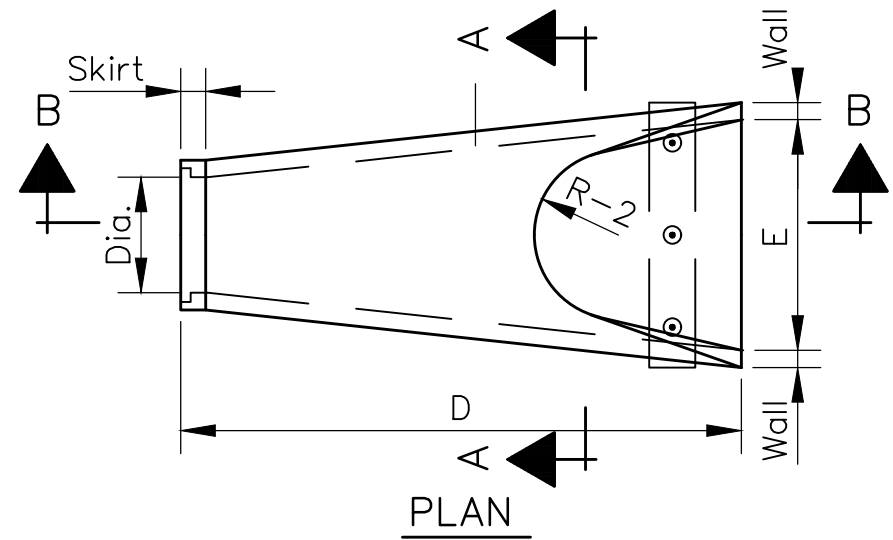
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DIA.	WALL	G or T	WT. SEC.	A	B	C	D	E	DIA.+1"	R-1	R-2	SKIRT	Y	Z
12	2	1 1/2	530	4	24	48 7/8	72 7/8	24	13	10 1/16	9	3 1/2	12	24
15	2 1/4	2	740	6	27	46	73	30	16	12 1/2	11	3 1/2	12	24
18	2 1/2	2 1/2	990	9	27	46	73	36	19	15 1/2	12	4	12	24
21	2 3/4	2 1/2	1280	9	35	38	73	42	22	16 1/8	13	4	12	36
24	3	2 1/2	1520	9 1/2	43 1/2	30	73 1/2	48	25	16 11/16	14	4 1/2	18	36
27	3 1/4	2 1/2	1930	10 1/2	48	25 1/2	73 1/2	54	28	17 3/4	14 1/2	4 1/2	12	36
30	3 1/2	3	2190	12	54	19 3/4	73 3/4	60	31	18 5/16	15	5	12	36
33	3 3/4	3 3/8	3150	13 1/2	58 1/2	39 1/4	97 3/4	66	34	23 3/4	17 1/2	5 1/2	18	36
36	4	3 1/2	4100	15	63	34 3/4	97 3/4	72	37	24 1/16	20	5 1/2	18	36
42	4 1/2	3 3/4	5380	21	63	35	98	78	43	27 1/4	22	5 1/2	24	36
48	5	4 1/4	6550	24	72	26	98	84	49	28 1/8	22	5 3/4	24	36
54	5 1/2	4 3/4	8040	27	65	35	100	90	55	32 7/8	24	6 1/4	30	36
60	6	5	8750	30	60	39	99	96	61	36 3/4	24	6 3/4	30	36
66	6 1/2	5 1/2	10630	24	78	21	99	102	67	35 11/16	24	7 1/4	30	36
72	7	6	12520	34	78	21	99	108	73	38 5/8	24	7 3/4	36	36
78	7 1/2	6 1/2	14430	24	78	21	99	114	79	41 15/16	24	8 1/2	36	36
84	8	7	16350	24	78	21	99	120	85	44 13/16	24	9	39	36

NOTES:

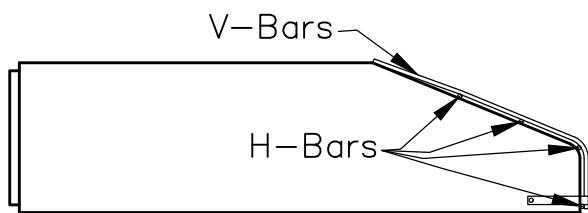
- Precast Flared Reinforced Concrete Pipe End Sections Shall Be Used At Exposed Pipe Ends. Concrete Toe Anchors Shall Be Required. Plastic Pipe Shall Require A Full Length Section Of Reinforced Concrete Pipe Jointed By A Concrete Collar Prior To The Precast Concrete Pipe End Section.
- Revetment Riprap In Accordance With The Most Recent INDOT Channel Design Guide Set On Geotextile In Accordance With The Most Recent INDOT Standard Specifications Shall Be Required At Inlet And Outlet Precast Flared Reinforced Concrete Pipe End Sections.
- Pipe End Sections Shall Have Appropriately Designed Riprap Outlet Protection. Refer To Outlet Protection Details On Sheets 21-25.



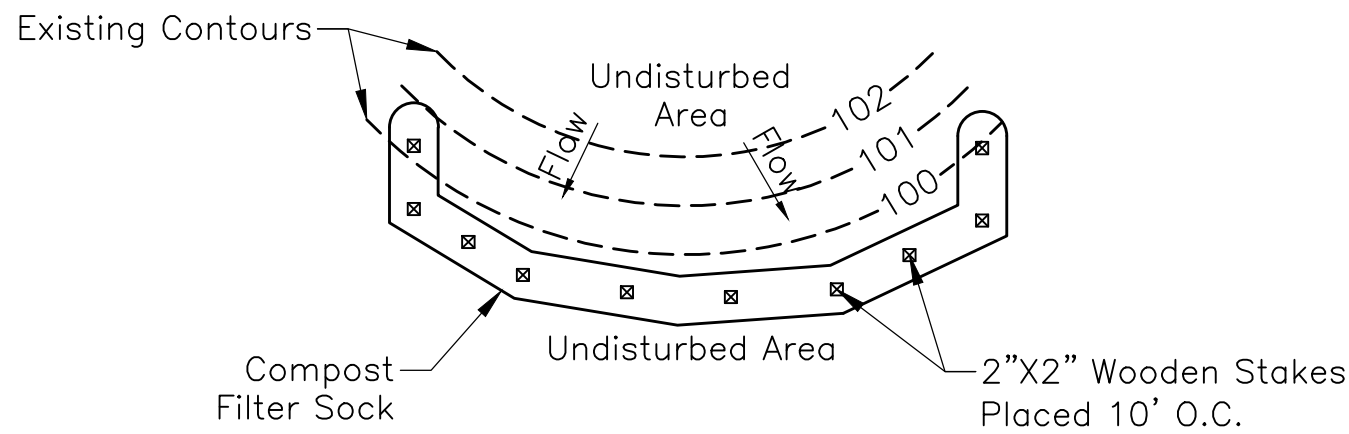
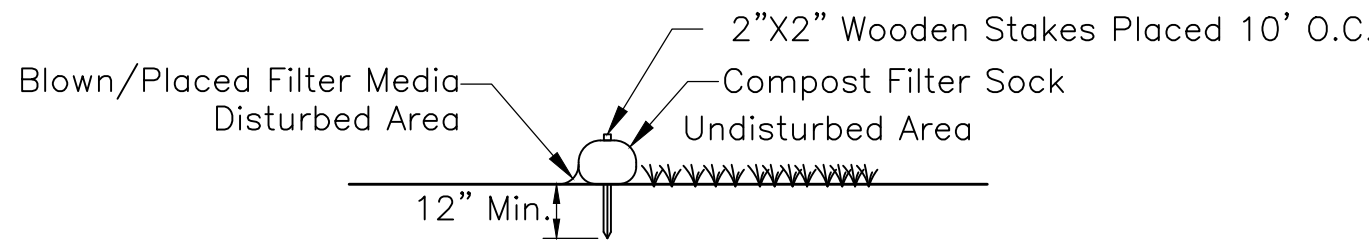
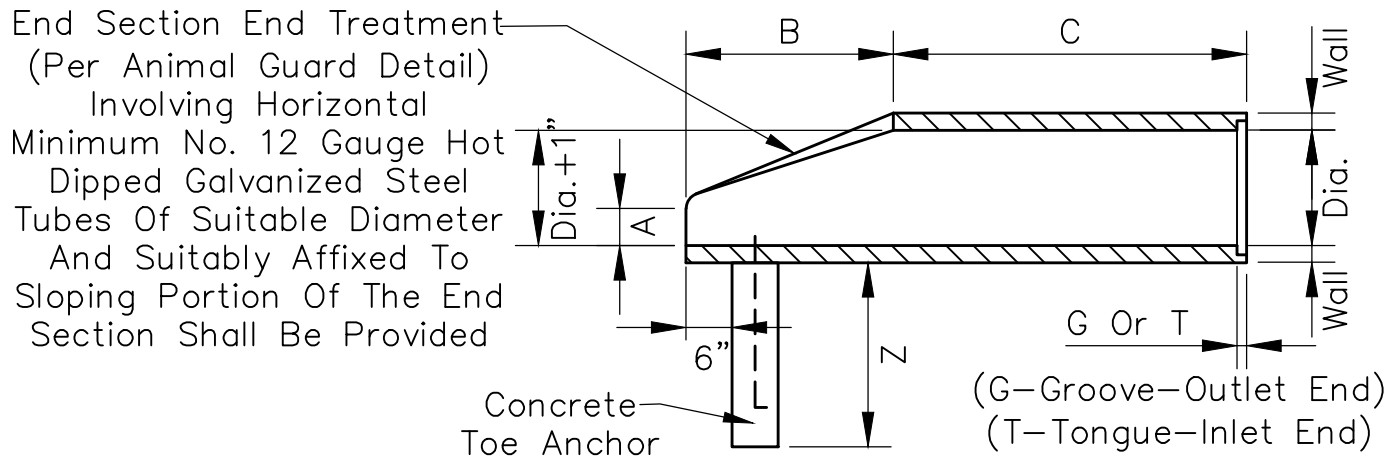
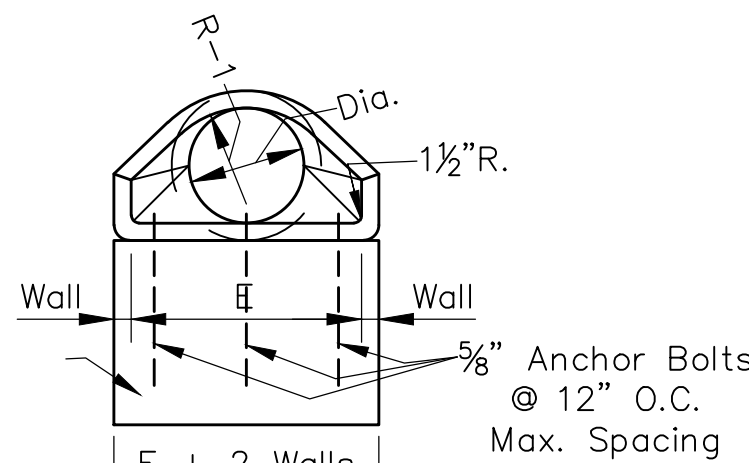
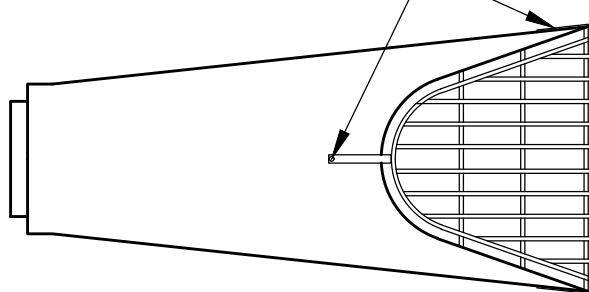
APRON SIZE	V-BAR SIZE (ø)	H-BAR SIZE (ø)	No. OF H-BARS	BOLT DIA.	"A" DIM
12	1/2	3/8	3	1/2	4
15	1/2	3/8	3	1/2	4 1/2
18	1/2	3/8	4	1/2	4 1/2
21	1/2	3/8	4	1/2	5
24	3/4	3/4	4	1/2	5
27	3/4	3/4	4	1/2	5 1/2
30	3/4	3/4	4	1/2	5 1/2
36	3/4	1	4	3/4	6
42	3/4	1	4	3/4	6
48	3/4	1	5	3/4	6
54	3/4	1 1/2	5	3/4	6
60	3/4	1 1/2	5	3/4	6
66	3/4	1 1/2	5	3/4	6
72	3/4	1 1/2	5	3/4	9
84	3/4	1 1/2	5	3/4	10
90	3/4	1 1/2	5	3/4	10

NOTES:

- Animal Guard Is Not Required For Culvert Crossings



Bolt To Apron 6" From Edge Of Concrete 3 Bolt Plates Required: 4"x10"x14"



NOTES:

Installation:

Filter Sock Should Maintain Solid Contact With The Soil And Be Installed In A Manner That Minimizes Gaps Between The Bottom Of The Sock And The Underlying Substrate.

Filter Socks Should Be Installed Parallel To The Contour With Both Ends Of The Sock Extended Upslope At A 45 Degree Angle To The Rest Of The Sock.

Socks Placed On Earthen Slopes Should Be Staked In The Center Of The Sock Or Immediately Downslope Of The Sock At The Interval Recommended By The Manufacturer. Socks Installed On Paved Surfaces Shall Have Concrete Blocks Placed Immediately Downslope Of The Sock At An Interval Recommended By The Manufacturer.

Maintenance:

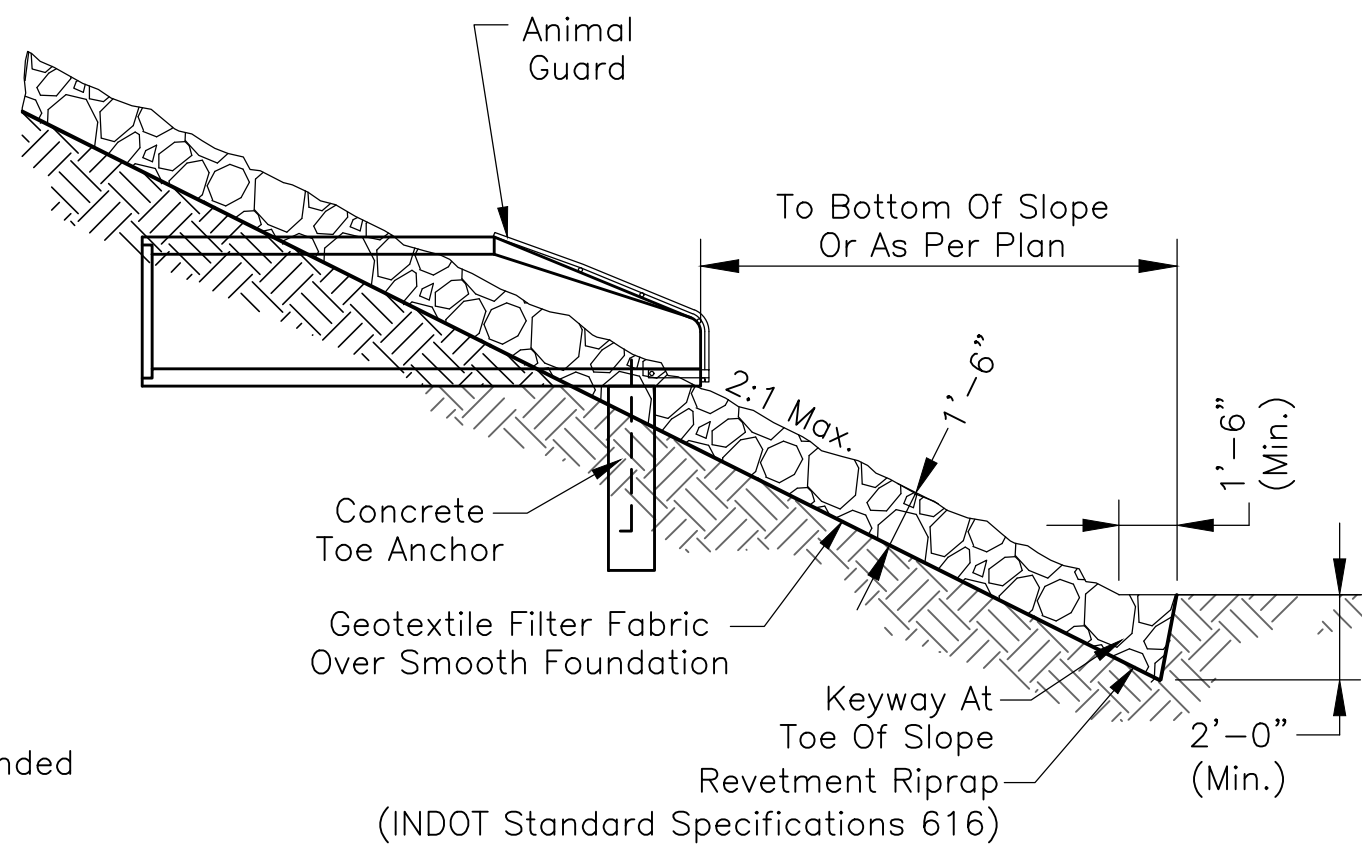
Traffic Shall Not Be Permitted To Cross Filter Socks.

Inspect The Structure Weekly And After Each Rainfall Event. Damaged Socks Shall Be Repaired According To The Manufacturer's Specifications Or Replaced Within 24 Hours Of Inspection.

Remove Deposited Sediment When It Reaches Half The Height Of The Filter Sock At Its Lowest Point.

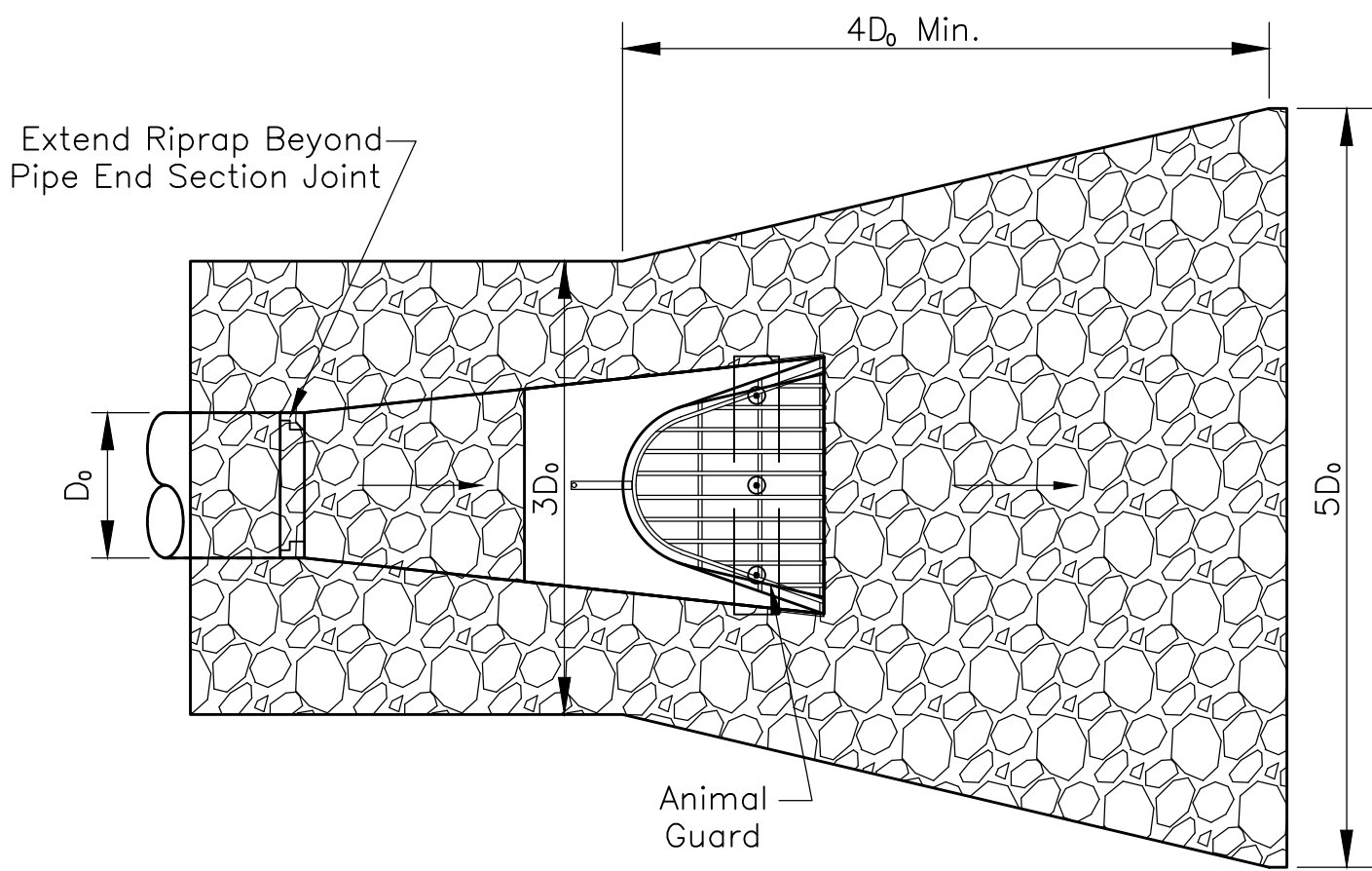
Take Care To Avoid Undermining The Filter Sock During Clean Out.

After The Contributing Drainage Area Has Been Stabilized, Remove And Properly Dispose Of Any Unstable Sediment And Construction Material, And Stabilize.



PRECAST CONCRETE END SECTION W/ RIP RAP ENERGY DISSIPATOR

Not To Scale



PLAN

NOTES:

Installation:

Excavate Only Deep Enough For Both Filter And Riprap. Compact Any Fill Material To The Density Of The Surrounding Undisturbed Soil.

Cut A Keyway In Stable Material At The Base Of The Slope To Reinforce The Toe; Keyway Depth Should Be 1 1/2 Times The Design Thickness Of The Riprap And Should Extend A Horizontal Distance Equal To The Design Thickness.

Place Geotextile Fabric On The Smoothed Foundation, Overlapping The Edges 12 Inches Min. Secure With Anchor Pins Spaced Every 3 Feet Along The Overlap.

Immediately After Installing The Filter, Add The Riprap To Full Thickness In One Operation. Do Not Dump Through Chutes Or Use Any Method That Causes Segregation Of Rock Sizes Or That Will Dislodge Or Damage The Underlying Filter Material.

If Fabric Is Damaged, Remove The Riprap And Repair By Adding Another Layer Of Fabric, Overlapping The Damaged Area By 12 Inches.

Place Smaller Rock In Voids To Form A Dense, Uniform, Well Graded Mass. Blend The Rock Surface Smoothly With The Surrounding Area To Eliminate Protrusions Or Over-Falls.

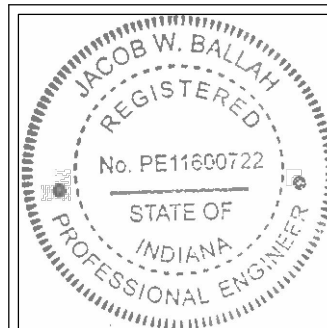
Inspect Periodically For Displaced Rock Material, Slumping, And Erosion At Edges, Especially Downstream Or Downslope.

Maintenance:

Inspect Periodically For Displaced rock Material, Slumping And Erosion At Edges, Especially Downstream Or Downslope.

FILTER SOCK

Not To Scale



RECOMMENDED FOR APPROVAL: Jacob W. Ballah 12/22/2020
DESIGN ENGINEER DATE

DESIGNED: JWB DRAWN: AMB

CHECKED: SWM CHECKED: JWB

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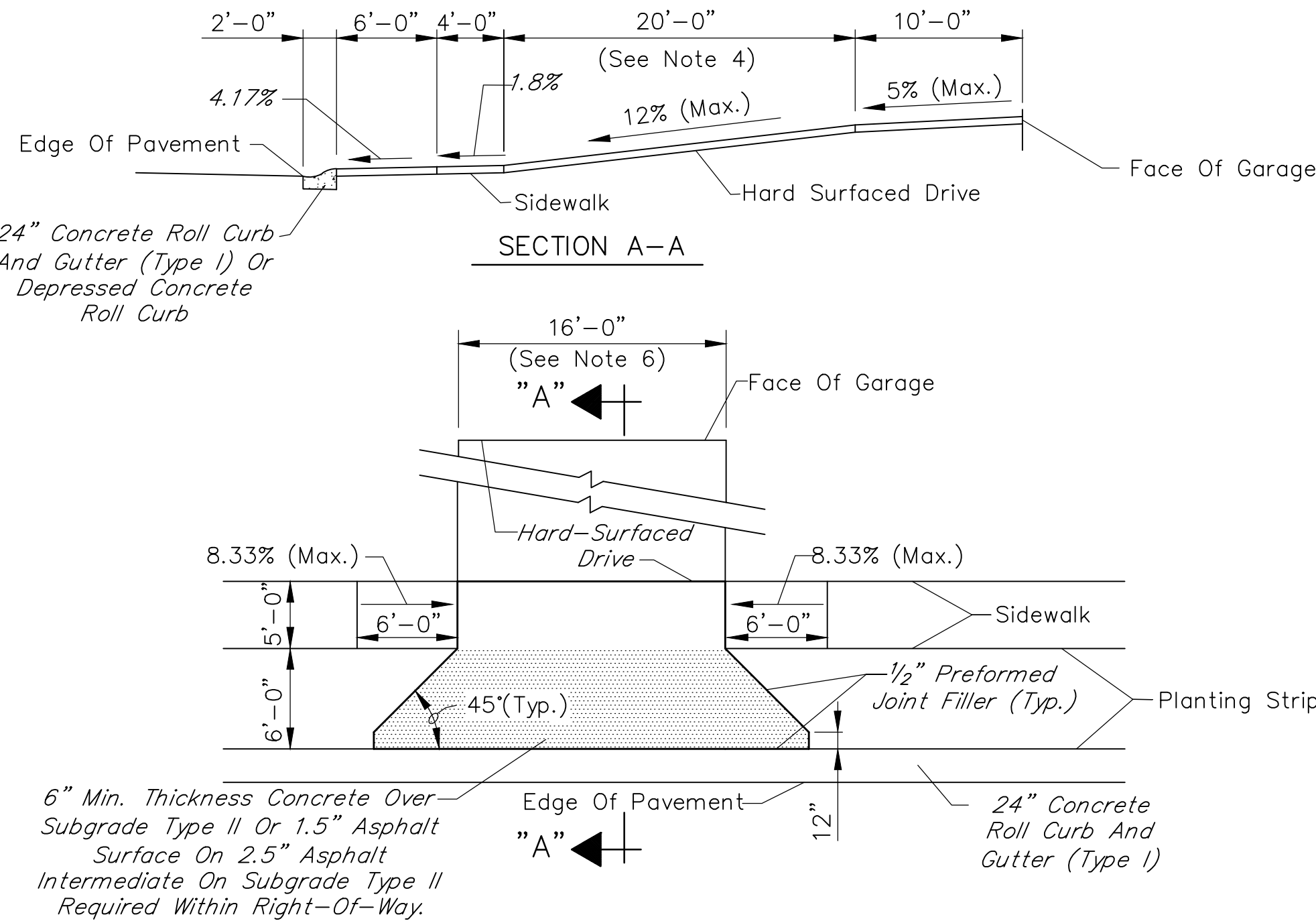
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648100.9802
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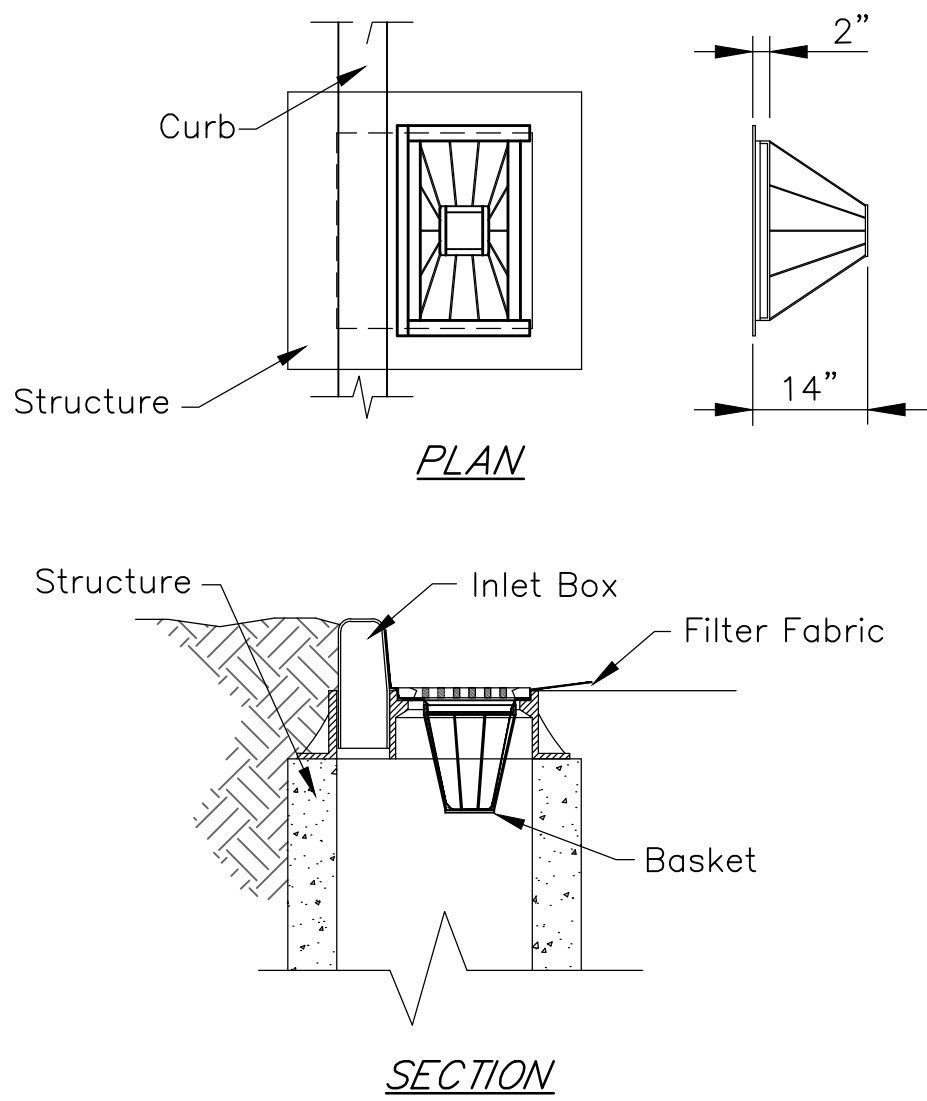
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TYPICAL RESIDENTIAL PRIVATE DRIVE

Not To Scale

- 1.) The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crests, Nor 10% For Sags.
- 2.) Frontage Of Lots Shall Drain To Adjacent Streets Except With The Prior Approval Of Town Of Griffith.
- 3.) Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- 4.) Use Actual Setback As Shown On Plat And As Provided By The Town Of Griffith Zoning Ordinance.
- 5.) The City Of Lake Station May Approve Depressed Concrete Roll Curb And Alternate Paving Materials.
- 6.) A Minimum Width Of 16 Feet Is Required And A Maximum Width Of 24 Feet May Be Approved By The City Of Lake Station.
- 7.) Material To Match City Of Lake Station Plan Call Out.



BASKET CURB INLET PROTECTION

Not To Scale

NOTES:

Installation:
Install Basket Curb Inlet Protection As Soon As Inlet Boxes Are Installed (New Development) Or Prior To Land Disturbing Activities (Existing Development).

If Necessary, Adapt Basket Dimensions To Fit Inlet Box Dimensions.

Remove The Grate And Install The Frame Into The Grate Opening. Cut And Install Geotextile Fabric According To The Manufacturer's Recommendations. Replace The Grate.

Maintenance:
Inspect Daily And After Each Storm And Remove Sediment. Replace Or Clean Geotextile Fabric As Needed. Remove Tracked On Sediment From The Street (But Not By Flushing With Water) To Reduce The Sediment Load On This Curb Inlet Practice.

NOTES:

The Following Table Is For General Seeding Information Only. Consult The [Indiana Storm Water Quality Manual](#) For Recommendations Relating To Steep Banks And Cuts, High Maintenance Areas, And Channels And Areas Of Concentrated Flow.

If Construction Activities Take Place During The Months Of November Through February, Use Dormant Seeding Practices In Place Of Temporary And Permanent Seeding Practices.

See Chapter 7 Of The [Indiana Storm Water Quality Manual](#), For Additional Seeding Recommendations.

SEEDS:

40 Percent Kentucky Bluegrass
40 Percent Creeping Red Fescue
20 Percent Annual Rye Grass

FERTILIZER:

Commercial Fertilizer (12-12-12)

STRAW:

Clean And Free Of Weed Seeds

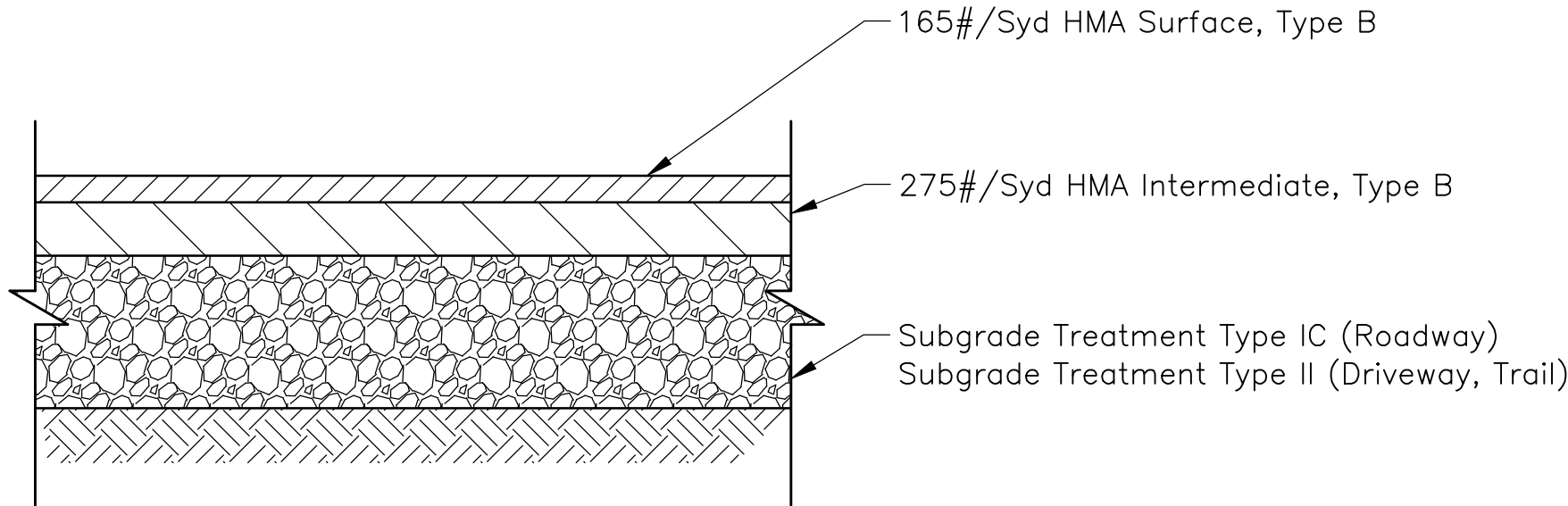
Spread Fertilizer Uniformly Over Finish Graded Surfaces At A Rate Of 20 Pounds Per 1,000 Square Feet. Thoroughly Disk, Harrow, Or Rake Fertilizer Into Soil To Depth Not Less Than 2 Inches.

Distribute Seed Mix Same Day As Fertilizer Is Applied. Spread Evenly At A Rate Of 3 Pounds Per 1,000 Square Feet. Rake Lightly And Compact Areas With 100 Pound Roller.

Cover Areas With Straw Evenly Spread At A Rate Of 2 Tons Per Acre Immediately After Seeding. Water Areas With Fine Spray. Do Not Flood Or Create Washes. Protect Seeded Areas From Erosion.

Continue Watering Of These Areas On A Daily Basis For The Remainder Of The Construction Period.

Hold Sloped Areas Steeper Than 2 (Horizontal) To 1 (Vertical) With Wire Mesh Or Stakes And Wire.



HMA Patching, Type B

Not To Scale

NOTES:

1. Contractor To Saw Cut Clean Edge Prior To Patching
2. Tack To Be Used Between HMA Lifts

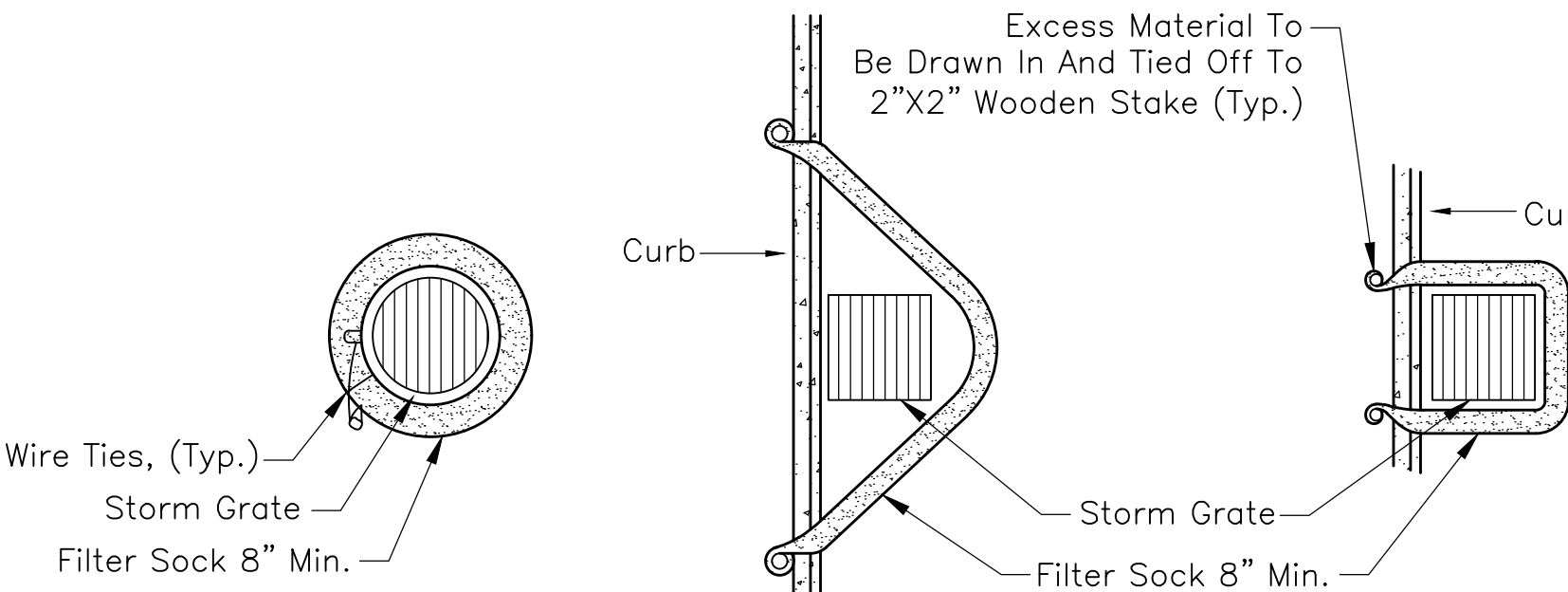
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Temporary Seeding Dates											
Permanent Seeding Dates											

■ Irrigation Required

* Seeding Dates May Be Extended 5 Days If Mulch Applied And Planted Late Summer

** Increase Seeding Rate By 50%

SEEDING



DRAIN INLET PLAN

CURBSIDE OPTION "A" PLAN

CURBSIDE OPTION "B" PLAN

NOTES:

Installation:
Filter Sock Should Maintain Solid Contact With The Surface And Be Installed In A Manner That Minimizes Gaps Between The Bottom Of The Sock And The Underlying Substrate.

Socks Placed On Unpaved Surfaces Shall Be Staked In The Center Of The Sock Or Immediately Downslope Of The Sock At The Interval Recommended By The Manufacturer. Socks Installed On Paved Surfaces Shall Have Concrete Blocks Placed Immediately Downslope Of The Sock At An Interval Recommended By The Manufacturer.

Maintenance:
Traffic Shall Not Be Permitted To Cross Filter Socks.

Inspect The Structure Weekly And After Each Rainfall Event. Damaged Socks Shall Be Repaired According To The Manufacturer's Specifications Or Replaced Within 24 Hours Of Inspection.

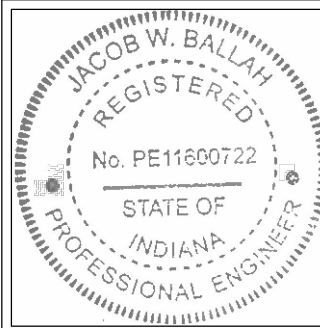
Remove Deposited Sediment When It Reaches Half The Height Of The Filter Sock At Its Lowest Point.

Take Care To Avoid Undermining The Filter Sock During Clean Out.

After The Contributing Drainage Area Has Been Stabilized, Remove And Properly Dispose Of Any Unstable Sediment And Construction Material, And Stabilize.

FILTER SOCK INLET PROTECTION

Not To Scale



RECOMMENDED FOR APPROVAL:	<i>JWB</i>	12/22/2020
DESIGN ENGINEER		DATE
DESIGNED:	JWB	DRAWN: AMB
CHECKED:	SWM	CHECKED: JWB

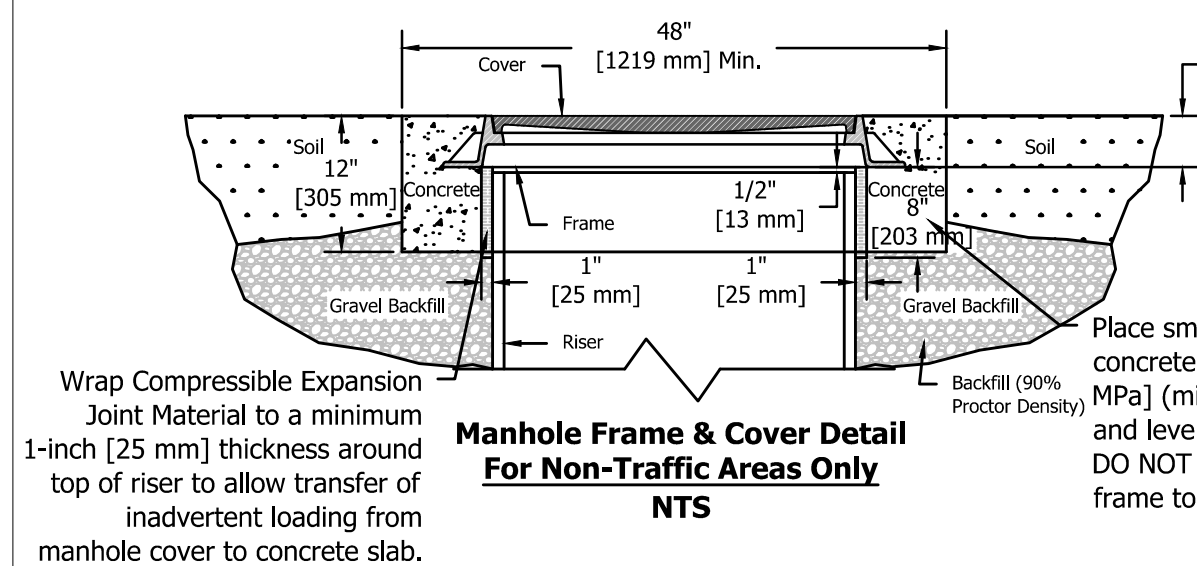
SERVICE STREET STORM SEWER IMPROVEMENTS	
DETAILS	
LAKE STATION	INDIANA
Headquarters 8450 WESTFIELD BLVD., SUITE 300 INDIANAPOLIS, IN 46240-8302 TEL 317-713-4615 FAX 317-713-4616 www.BFSeng.com	BFS CIVIL ENGINEERS
Branch Locations FORT WAYNE LOUISVILLE LAFAYETTE MERRILLVILLE PLAINFIELD SOUTH BEND	260-459-1532 502-593-1996 785-423-5602 219-768-2333 317-839-3242 574-288-5727

HORIZONTAL SCALE	BRIDGE FILE
VERTICAL SCALE	DESIGNATION
SURVEY BOOK	SHEET
CONTRACT	PROJECT

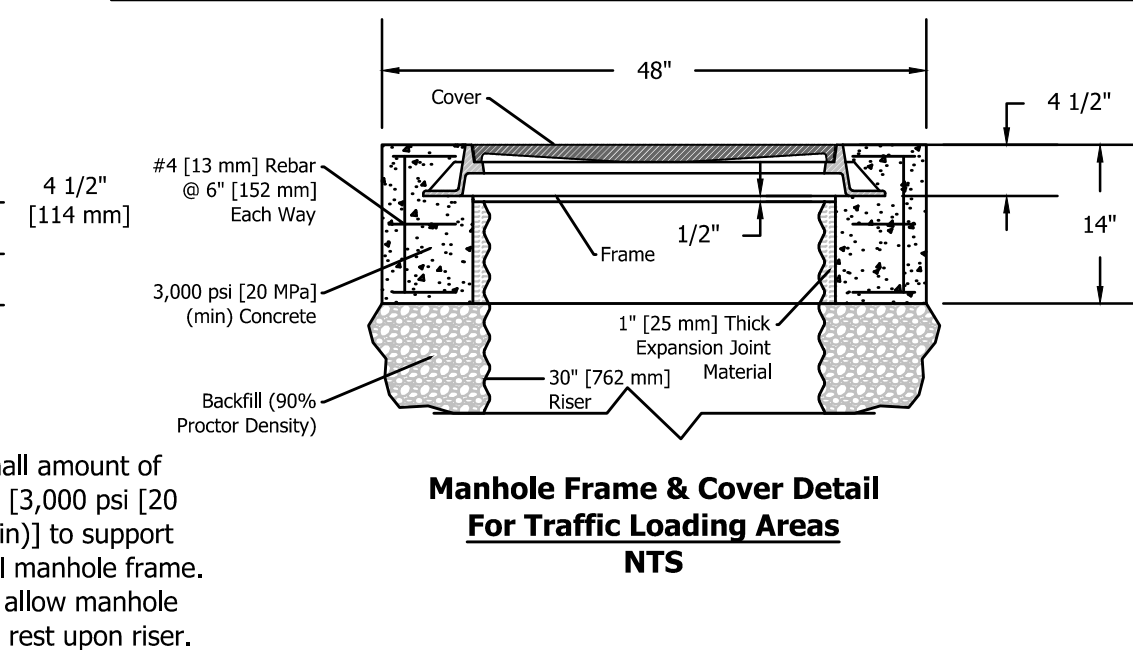
648100.9802
BFS NO.

Aqua-Swirl Polymer Coated Steel (PCS) Stormwater Treatment System

Unless other traffic barriers are present, bollards shall be placed around access riser(s) in non-traffic areas to prevent inadvertent loading by maintenance vehicles.

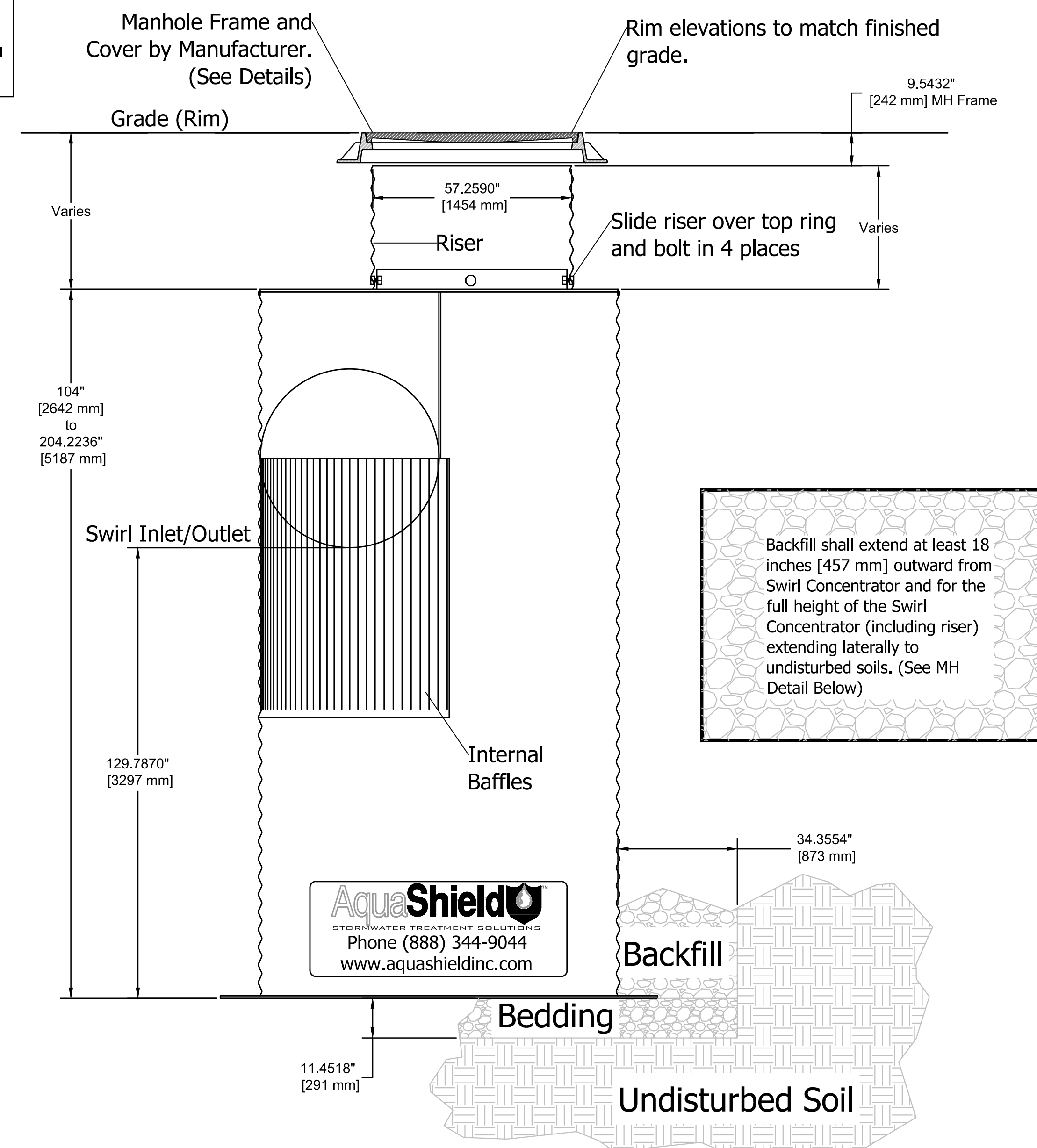


If traffic loading (HS-25) is required or anticipated, a 4-foot [1.22 m] diameter, 14-inch [356 mm] thick reinforced concrete pad must be placed over the Stormwater Treatment System Riser to support and level the manhole frame, as shown. The top of riser pipe must be wrapped with compressible expansion joint material to a minimum 1-inch [25 mm] thickness to allow transfer of wheel loads from manhole cover to concrete slab. Manhole cover shall bear on concrete slab and not on riser pipe. The concrete slab shall have a minimum strength of 3,000 psi [20 MPa] and be reinforced with #4 [13 mm] reinforcing steel as shown. Minimum cover over reinforcing steel shall be 1-inch [25 mm]. Top of manhole cover and concrete slab shall be level with finish grade.



Note: As an alternative, 42-inch OD, HS-20/25 rated precast concrete rings may be substituted. 14-inch thickness must be maintained.

*** Please see accompanied Aqua-Swirl specification notes.**
*** See Site Plan for actual system orientation.**
**** Orientation may vary from 90°, 180°, or custom angles to meet site conditions.**



Section A-A

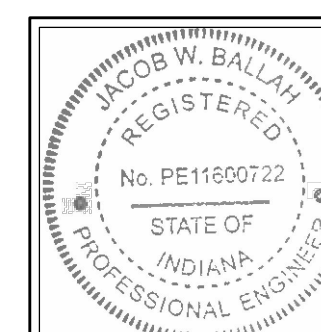
Aqua-Swirl Concentrator Model AS-4 BYP PCS Standard Detail




Document:	AS-4 PCS STD
Drawn By:	JCW
Scale:	1:20
Date:	01/06/15

U.S. Patent No. 6524473 and other Patent Pending

NOTE: BMP TO BE AQUASWIRL CONCENTRATOR MODEL AS-4BYP PCS OR APPROVED EQUAL.



RECOMMENDED FOR APPROVAL:			12/22/2020
	DESIGN ENGINEER		DATE
DESIGNED:	JWB	DRAWN:	AMB
CHECKED:	SWM	CHECKED:	JWB

LAKE STATION STORM SEWER IMPROVEMENTS DETAILS	
LAKE STATION	INDIANA
<p>Headquarters 8450 WESTFIELD BLVD., SUITE 300 INDIANAPOLIS, IN 46240-8302 TEL 317-713-4615 FAX 317-713-4616 www.BF&S.com</p>	<p>Branch Locations FORT WAYNE 260-459-1515 LOUISVILLE 502-593-1615 LAWYETTE 765-423-5616 MERRILLVILLE 219-769-2913 PLAINFIELD 317-839-3323 SOUTH BEND 574-288-5737</p>
	

	HORIZONTAL SCALE		BRIDGE FILE		648100.9802 FS NO.
	VERTICAL SCALE		DESIGNATION		
32	SURVEY BOOK		SHEET		
96			9	OF 9	
02	CONTRACT		PROJECT		
33					
42					
77					
