CITY STANDARD DETAILS FOR THE CITY OF RUSHVILLE RUSH COUNTY, INDIANA

DECEMBER, 2019

CITY OF RUSHVILLE

MEMBER

LIST OF DRAWINGS

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- 1 TITLE SHEET, AND LIST OF DRAWINGS
- 2 STREET AND ROAD DETAILS
- 3 STREET AND ROAD DETAILS 2
- DRIVES, SIDEWALKS, AND CURB AND GUTTER DETAILS
- 5 STREET CUT AND TRNCH DETAILS
- 6 STORM SEWER BEDDING DETAILS
- STORM SEWER AND MANHOLE DETAILS
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LIFT STATION NOTES AND CLEANOUT AND BACKFLOW PREVENTER

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DIRECTIONS FOR USE

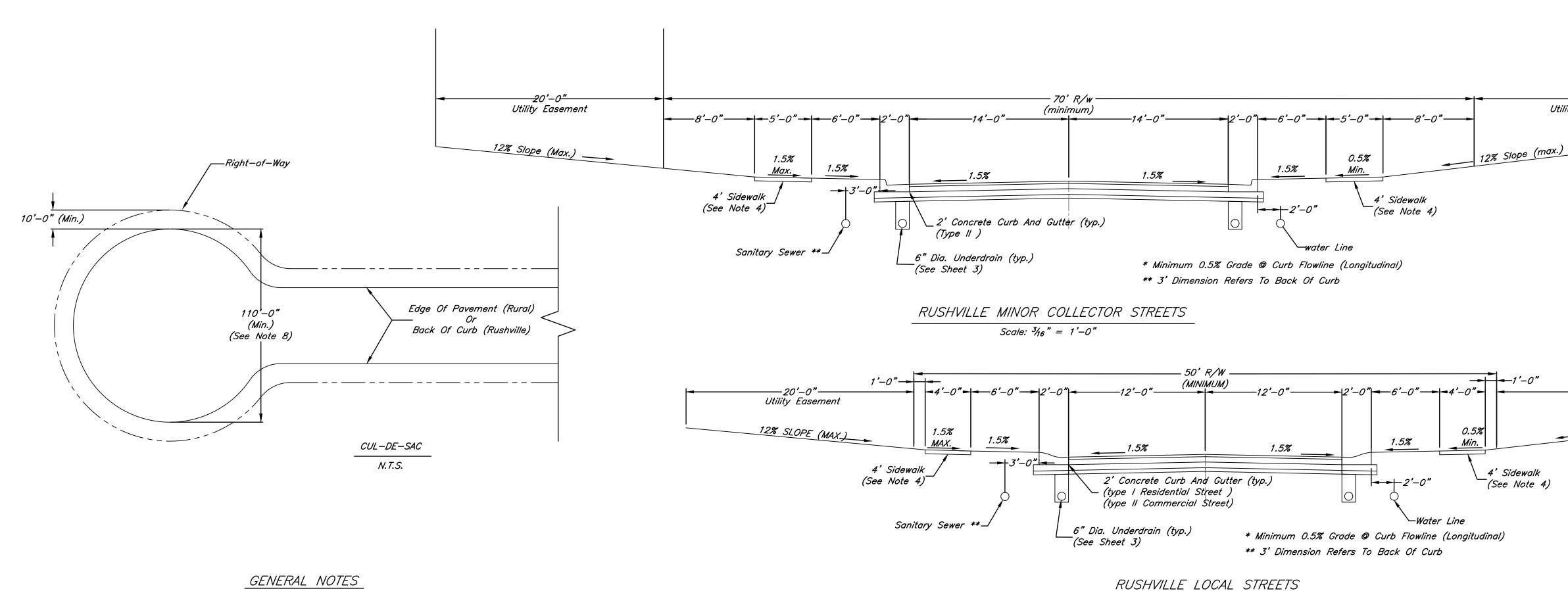
- 1.) The Entire Set Of Full Size Rushville Standards Shall Be Attached to The Construction Drawings And Shall Be Considered Part Thereto.
- 2.) Details Prepared By Outside Sources Shall Be Included In The Construction Drawings when Said Details Cover Work Which Is Covered By The Rushville Standards.
- 3.) Individual Rushville Standards That Do Not Apply May Be Crossed—Out By Design Engineer Through The Placement Of A Single Large X Over 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.
- 4.) Details Prepared By Outside Sources Covering Work Which Is Not Covered By The Rushville Standards Are The Sole Responsibility Of The Design Engineer And Shall Be Placed On Sheets Other Than The Rushville Standards Sheets.

GENERAL NOTES

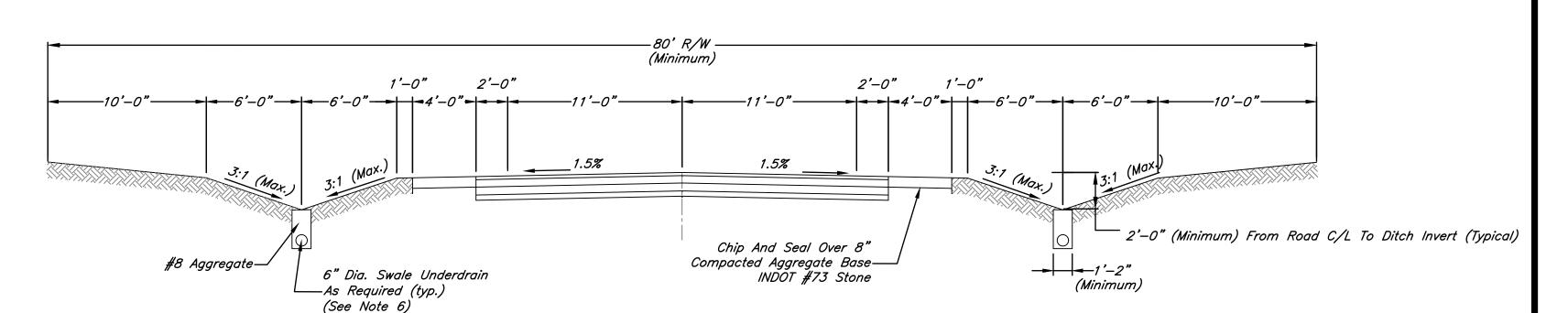
- 1.) Contractor Shall Verify The Exact Location Of All Existing Utilities At Least 2 Full Working Days Prior To Any Construction Or Excavation. During Construction, All Utilities Shall Be Adequately Supported To Minimize Damage. The Contractor Shall Be Responsible For Repairing Or Replacing Damaged Utilities To The Satisfaction Of The City Of Rushville And The OWner Of The Affected Utility.
- 2.) All Benchmarks And Elevations Shall Be The North American Vertical Datum of 1988.
- 3.) Whenever Trench Opening Encroaches Within 5' Of An Existing Or Proposed Street Or Sidewalk, B—Borrow Compacted In Accordance With The Most Recent INDOT Standard Specification Shall Be Required. Approved Backfill May Be Used Under Proposed Sidewalks Provided Sidewalks Are Constructed 6 Months After Backfilling Of Trench.
- 4.) Developers Are Advised That Mud And Dust Control Within Developments And Along Public Roads Shall be Required To The Satisfaction Of The Rushville Street Commissioner. Additional Erosion Control Measures May Be Required By The City of Rushville Above And Beyond Those Shown On the Plans.

629 WASHINGTON STREET COLUMBUS, IN 47201 812 372-9911 812 372-7190 FAX WWW.STRAND.COM



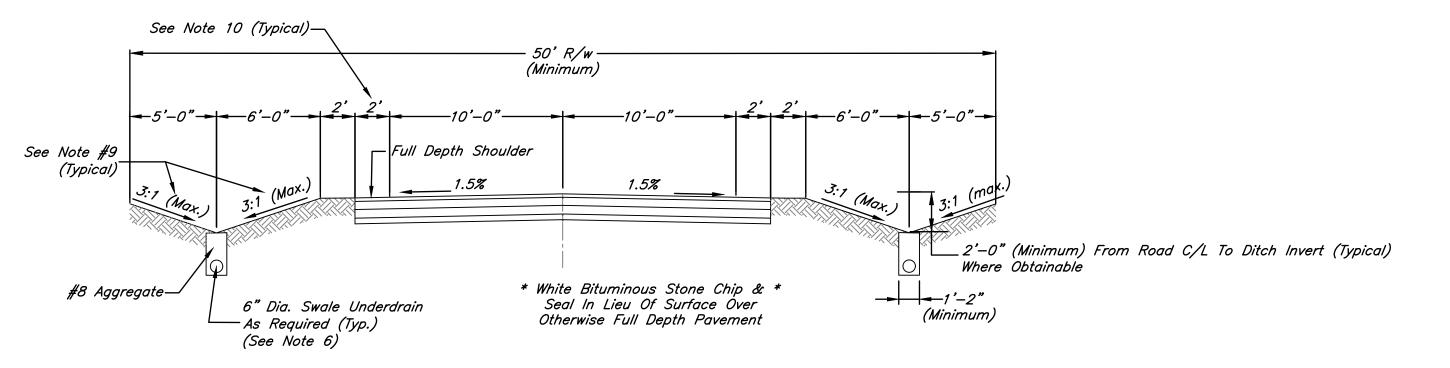


- 1.) The Right-Of-Way Widths, Pavement Widths And Easement Widths Indicated On This Sheet Are Minimum Distances Required By The Rushville Board of Works. Greater Widths May Be Provided. The Contractor Shall Review The Plat And The Plans To Confirm The Various Widths Indicated On This Sheet And Shall Report Any Discrepancy To The Rushville Board Of Works Prior To Proceeding With Construction.
- 2.) The Location Of Proposed Utilities As Indicated Herein Are Based Upon The Experience Of The Rushville Board of Works And Are So Indicated To Ensure The Orderly Development Of The Land. Strict Adherence To The Indicated Location Is Required. Request To Change The Location Of The Proposed Utilities Shall Be Submitted In Writing To The Rushville Board of Works. Utilities Not Meeting These Requirements Shall Be Removed And Replaced As Directed By The Rushville Board of
- 3.) Primary Arterial Streets And Divided Arterial Streets Are To Be Coordinated With The Rushville Board of Works.
- 4.) A Written Request For Variance May Be Submitted To The Rushville Board of Works To Allow For The Deletion Of The 5 Foot Wide Sidewalk From Rushville Collector Streets. The Sidewalks Shall Be Constructed Unless A Written Variance Is Issued By The Rushville Board of Works.
- 5.) Where New Sidewalk Connects To Existing Sidewalk, The Width Of New Sidewalk Shall Match The Width Of Existing Sidewalk Or Be A Minimum Of 4 Feet For Local Streets And 5 Feet For Collector Streets, Whichever Is Greater.
- 6.) A Written Request For Variance May Be Submitted To The Rushville Board of Works To Allow For The Deletion Of The 6" Dia. Swale Underdrain From Rural Collector Roads And/Or Rural Local Roads. The Written Request For Variance Shall Be Accompanied With A Geotechnical Report, Which Supports The Omission Of Swale Underdrains. The 6" Dia. Swale Underdrain, As Shown on Sheet 7, Shall Be Constructed Unless A Written Variance Is Issued By The Rushville Board of Works.
- 7.) Standard Pavement Markings Shall Be Placed In Streets/Roads, In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices. All Pavement Markings Shall Be Thermoplastic. 4" Wide Solid White Thermoplastic Lines Shall Be Placed To Denote Edge Of Pavement. 4" Wide Yellow, Either Solid Or Dashed, Thermoplastic Lines Shall Be Placed To Denote Separation Of Directional Traffic.
- 8.) Minimum Pavement Width, Measured Either From Back-Of-Curb To Back-Of-Curb For Rushville Areas Or From Edge Of Pavement To Edge Of Pavement For Rural Areas, Shall Be Constructed For All Cul-De-Sacs.
- 9.) When Right-Of-Way Conditions Do Not Accommodate A 3:1 Swale Side Slope, A Written Request For Variance Shall Be Submitted To The Board of Works For Design Approval.
- 10.) For A Rural Local Road With Guardrail, Use 3'-0" In Lieu Of 2'-0" To Allow For Guardrail Installation.



RURAL COLLECTOR ROADS Scale: $\frac{3}{16}$ " = 1'-0"

Scale: $\frac{3}{16}$ " = 1'-0"



RURAL LOCAL ROADS Scale: $\frac{3}{16}$ " = 1'-0"

Utility Easement

-----20'-0"-----Utility Easement

_____ 12% Slope (Max.)

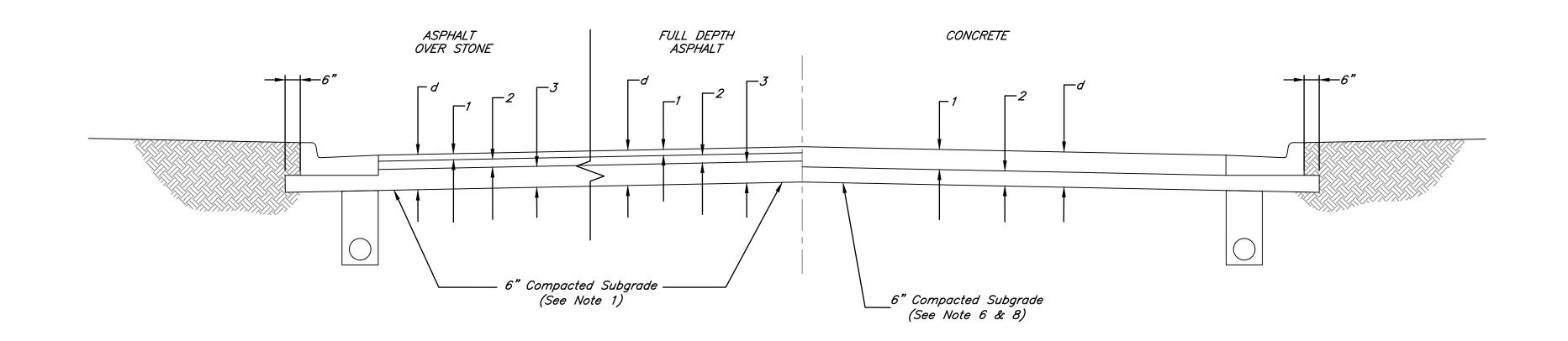
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> JOB NO. 3882.001

PROJECT MGR. **TONY AKLES**



SHEET



PAVEMENT CONSTRUCTION

GENERAL NOTES

1.) The Contractor Shall Notify The Rushville Street Commissioner A Minimum Of 48 Hours Prior To Each Day's Placement Of Aggregate Base, Curb, Asphalt, Or Concrete.

SUBBASE AND SUBGRADE REQUIREMENTS

1.) Subbase And Subgrade Shall Be Tested In Accordance With INDOT 509 — Dynamic Cone Penetrometer. Tests Shall Be At The Contractor's Expense And Shall Be Performed By An Independent Testing Laboratory. Test Results Shall Be Submitted To The Rushville Street Commissioner Prior To Placing Any Material On The Subbase Or Subgrade. One Test Shall Be Completed For Every 400 Linear Feet Of Traffic At the Discretion Of The Street Commissioner, The Commissioner, The Testing May Be Waived And The Adequacy Of Subbase And Subgrade Shall Be Determined Solely By The Rushville Street Commissioner Based On A Contractor Performed Proofroll With A Fully Loaded Single Axle Dump Truck.

FLEXIBLE PAVEMENT REQUIREMENTS

- 1.) INDOT Specification (Current Edition) Shall Be The Basis For Construction Of Flexible Pavements In The City Of Rushville. The Contractor Shall Be Responsible For All Aspects Of Process Control Of The Mixtures Insuring They Meet All Requirements Of The INDOT Standard Specifications. All Test Data Shall Be Submitted To The Rushville Street Commissioner For Review.
- 2.) When Flexible Pavement Is Constructed, The Following Standards Apply:

 Seal Coat INDOT (Current Edition) Section 404

 Prime Coat INDOT (Current Edition) Section 405

 Tack Coat INDOT (Current Edition) Section 406
- 3.) At The Discretion Of The Street Commissioner, The Contractor May Use Lime Modification To Aid Compaction Efforts On The Subgrade Soil. Lime Modification and Lime—Kiln Dust Modification Shall Be In Accordance With The Current INDOT Standard Specifications Section 215. Hydrated Lime or Lime—Kiln Dust May Be Used To Modify The Soil To A Depth Of 16 Inches. Lime Shall Be Performed Only With A Minimum Soil Temperature, Measured 4 Inches Below The Subgrade, Of 45 Degrees F, And With The Air Temperature Rising. Hydrated Lime Or Lime—Kiln Dust Shall Not Be Mixed With Frozen Soils Or With Soil Containing Frost. Following Soil Modification, Compaction Of The Lime Modified Mixture Shall Provide A Density Not Less Than 100 Pecent Of The Maximum Dry Density Within The Special Subgrade Treatment Zone Or 95 Percent Of The Maximum Dry Density Below The Special Subgrade Treatment Zone. Maximum Dry Densities Shall Be Determined In Accordance With INDOT Laboratory Design Procedure. The Proposed Mix Design And Construction Procedures Shall Be Submitted To The Street Commissioners Prior To Approval Of The Use Of Lime Modification.

RIGID PAVEMENT REQUIREMENTS

- 1.) Concrete Pavement Shall Be Constructed In Accordance With Section 500 Of The Current INDOT Standard Specifications Except Concrete May Be Placed, Consolidated, And Finished With Equipment Appropriately Sized For The Project, Or By Hand Methods As Authorized By The Rushville Street Commissioner. Texturing Shall Be By Brooming Or By A Drag Acceptable To The Rushville Street Commissioner.
- 2.) At The Discretion Of The Street Commissioner, The Contractor May Use Lime Modification To Aid Compaction Efforts On The Subgrade Soil. Lime Modification and Lime—Kiln Dust Modification Shall Be In Accordance With The Current INDOT Standard Specifications Section 215. Hydrated Lime or Lime—Kiln Dust May Be Used To Modify The Soil To A Depth Of 16 Inches. Lime Shall Be Performed Only With A Minimum Soil Temperature, Measured 4 Inches Below The Subgrade, Of 45 Degrees F, And With The Air Temperature Rising. Hydrated Lime Or Lime—Kiln Dust Shall Not Be Mixed With Frozen Soils Or With Soil Containing Frost. Following Soil Modification, Compaction Of The Lime Modified Mixture Shall Provide A Density Not Less Than 100 Pecent Of The Maximum Dry Density Within The Special Subgrade Treatment Zone Or 95 Percent Of The Maximum Dry Density Below The Special Subgrade Treatment Zone. Maximum Dry Densities Shall Be Determined In Accordance With INDOT Laboratory Design Procedure. The Proposed Mix Design And Construction Procedures Shall Be Submitted To The Street Commissioners Prior To Approval Of The Use Of Lime Modification.
- 3.) Wherever Rigid Pavement Is To Be Used, The Contractor Shall Submit A Detailed Paving Plan To The Rushville Street Commissioner. The Paving Plan Shall Show The Location And Type Of Jointing To Be Used In The Construction. The Location And Type Of Jointing Shall Meet The Requirements Of The Most Recent INDOT Standard Details.
- 4.) For Local Streets With Concrete Pavement, The Four Inch Compacted Aggregate Base No. 53 Is Optional If Adequate Subgrade Is Present. Adequacy Of Subgrade Shall Be Determined By The Rushville Board of Works Based On A Contractor Performed Proofroll With A Fully Loaded Single Axle Dump Truck.

LOCAL ROADS/STREETS (URBAN AND RURAL)

 d=13"
 d=8.5"
 d=10"

 1 1" Surface
 1 5" Concrete

 2 3" Intermediate
 2 3" Intermediate
 2 4" Compacted Aggregate Base #53

 3 9" Compacted Aggregate Base #53
 3 4.5" Base

 (2 Lifts)

COLLECTOR STREETS/ROADS (URBAN AND RURAL)

 d=15"
 d=12"
 d=12"

 ① 1" Surface
 ① 1" Surface
 ① 8" Concrete

 ② 2" Intermediate
 ② 3" Intermediate
 ② 4" Compacted Aggregate Base #53

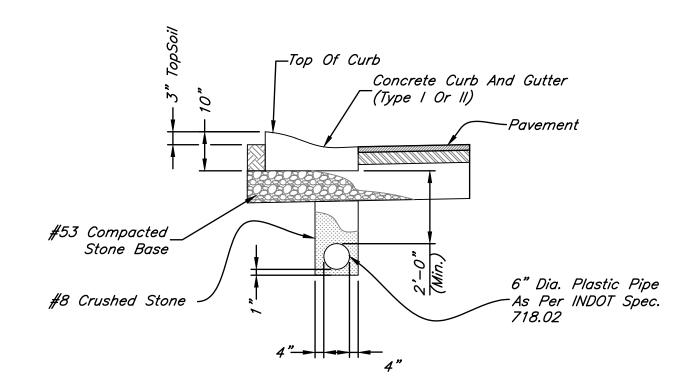
 ③ 8" Compacted Aggregate Base #53

INDUSTRIAL ARTERIAL AND BY-PASS ROUTES

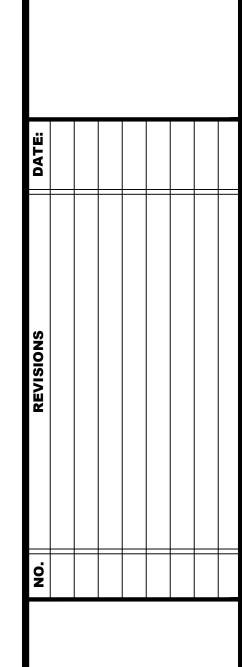
(2 Lifts)

The Asphalt Over Stone, Full Depth Asphalt And Concrete Pavement Sections Shall Be Designed Based Upon California Bearing Ratio (CBR) Tests Performed On The Subgrade Soils. Pavement Thickness Designs Shall Be Submitted to The Rushville Street Commissioner For Approval.

PAVEMENT CONSTRUCTION N.T.S.



UNDERDRAIN DETAIL



STREET AND ROAI DETAILS - 2

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TONY AKLES

STRAND ASSOCIATES®

SHEET

SIDEWALK AND ACCESSIBLE RAMP CONSTRUCTION

- 1.) All Sidewalks and Ramps Shall Meet The Requirements Of The American Disabilities Act, The Most Recent INDOT Standard Specifications, And The Requirements Set Forth By The City Of Rushville And Drawings.
- 2.) Minimum Width Of Curb Ramp Shall Be 4 Feet, Not Including Flares. Maximum Slope Of Ramps Shall Be 12:1.
- 3.) Ramps Are To Be Located As Shown On The Plans Or As Directed By The Rushville Street Commissioner. Provide Details For All Ramps Including Spot Elevations And Grades.
- 4.) Type E Ramps Shall Be Provided At The Point of Tangency Of The Radius At All Corners Of Every Street Intersection Where There Is An Existing Or Proposed Sidewalk And Curb. In Case Of "T"-Intersection, A Type C Ramp Shall Be Provided Adjacent To Each Corner Ramp. Type C Ramps Also Shall Be Provided At Walk Locations At Mid-Block In Vicinity Of Hospitals, Medical Centers Or Athletic Stadiums. The Use Of Details Contrary To These Shown Herein Shall Require The Prior Written Approval Of The Rush County Area Planning Commission.
- 5.) Surface Texture Of The Ramp Shall Be That Obtained By A Coarse Brooming Transverse To The Slope Of The Ramp.
- 6.) A Sidewalk Transition Shall Be Provided Where The Driveway Curb Extends Across The Sidewalk. The Driveway Curb Shall Be Flush With The Driveway Adjacent To The Sidewalk.
- 7.) Care Shall Be Taken To Assure A Uniform Grade On All Ramps With No Breaks In Grade.
- 8.) Drainage Structures Shall Not Be Placed In Line With Ramps Except Where Existing Drainage Structures Are Being Utilized In The New Construction. Location Of The Ramps Shall Take Precedence Over Location Of Drainage Structures.

Edge Of

Pavement

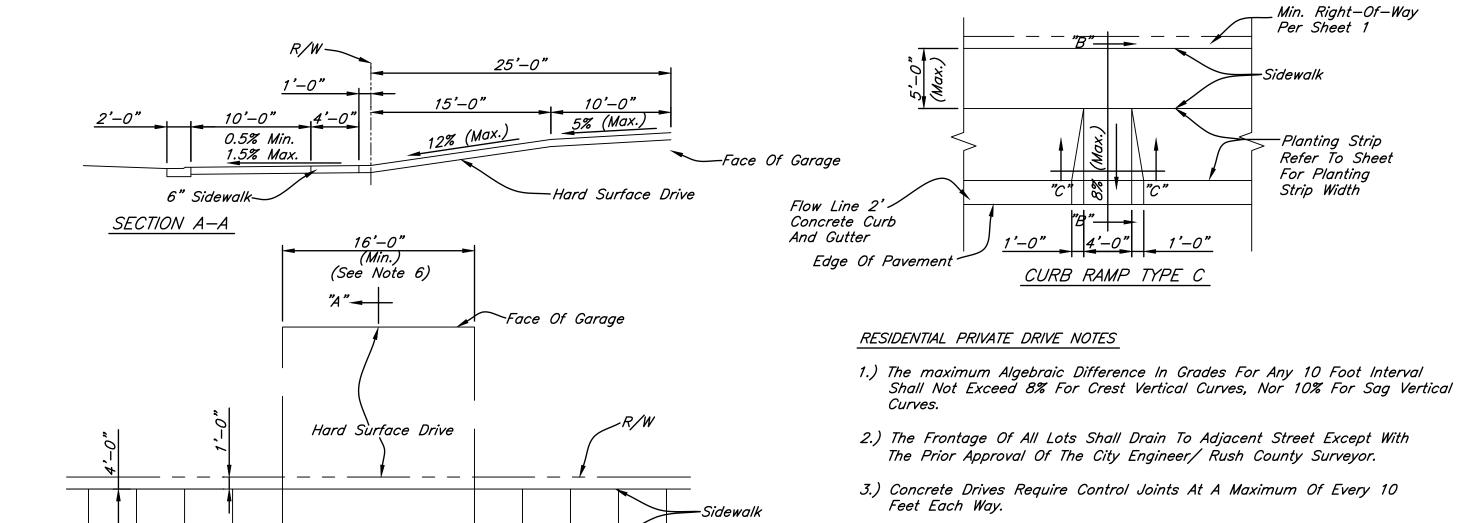
6" Min. Thickness Concrete

(See Note 7)

Required Within Right-Of-Way

TYPE /

- 9.) The Normal Gutter Line Profile Shall Be Maintained Through The Area Of The Ramp. Vertical Changes In Grade Must Be Less Than 1/4" At Ramp.
- 10.) Expansion Joint For The Ramp Shall Be A Maximum 1/2" Wide. The Top Of The Joint Filler For All Ramp Types Shall Be Flush With Adjacent Concrete.
- 11.) Crosswalk And Stop Line Marking, If Used, Shall Be So Located As To Stop Traffic Short Of Ramp Crossing.
- 12.) Slope Of Ramp May Be Warped When Field Conditions Warrant And When Approved By The Rushville Street Commissioner.
- 13.) Cast in Place Replaceable Detectable Warning Surface Tiles By ADA Solutions, Inc. or City Approved Equal. Radius and/or Rectangular Tiles as Required. Brick Red (R) Color Per Federal Standard 595B Table IV, Color No. 20109. Detectable Warning Surfaces Are Not Required Unless The Drive Is Signalized.



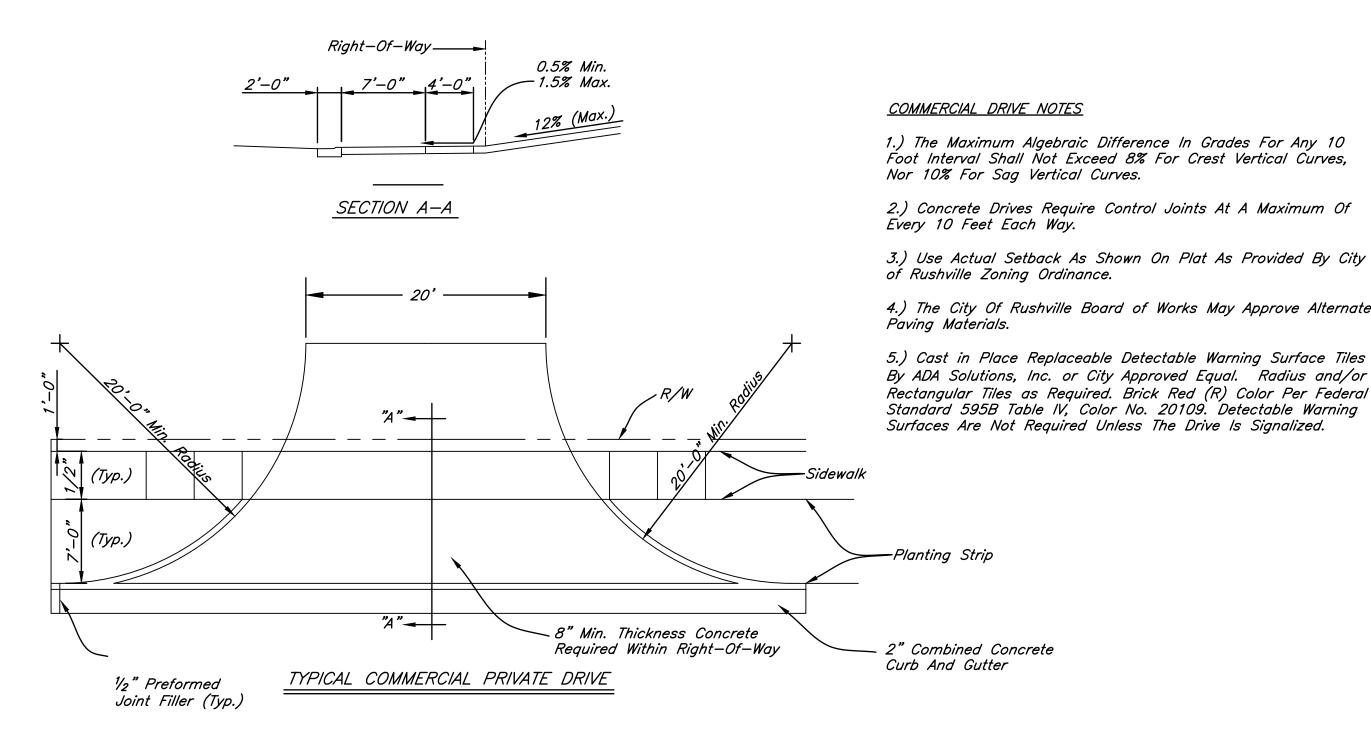
-Planting Strip

Curb And Gutter

" Combined Concrete

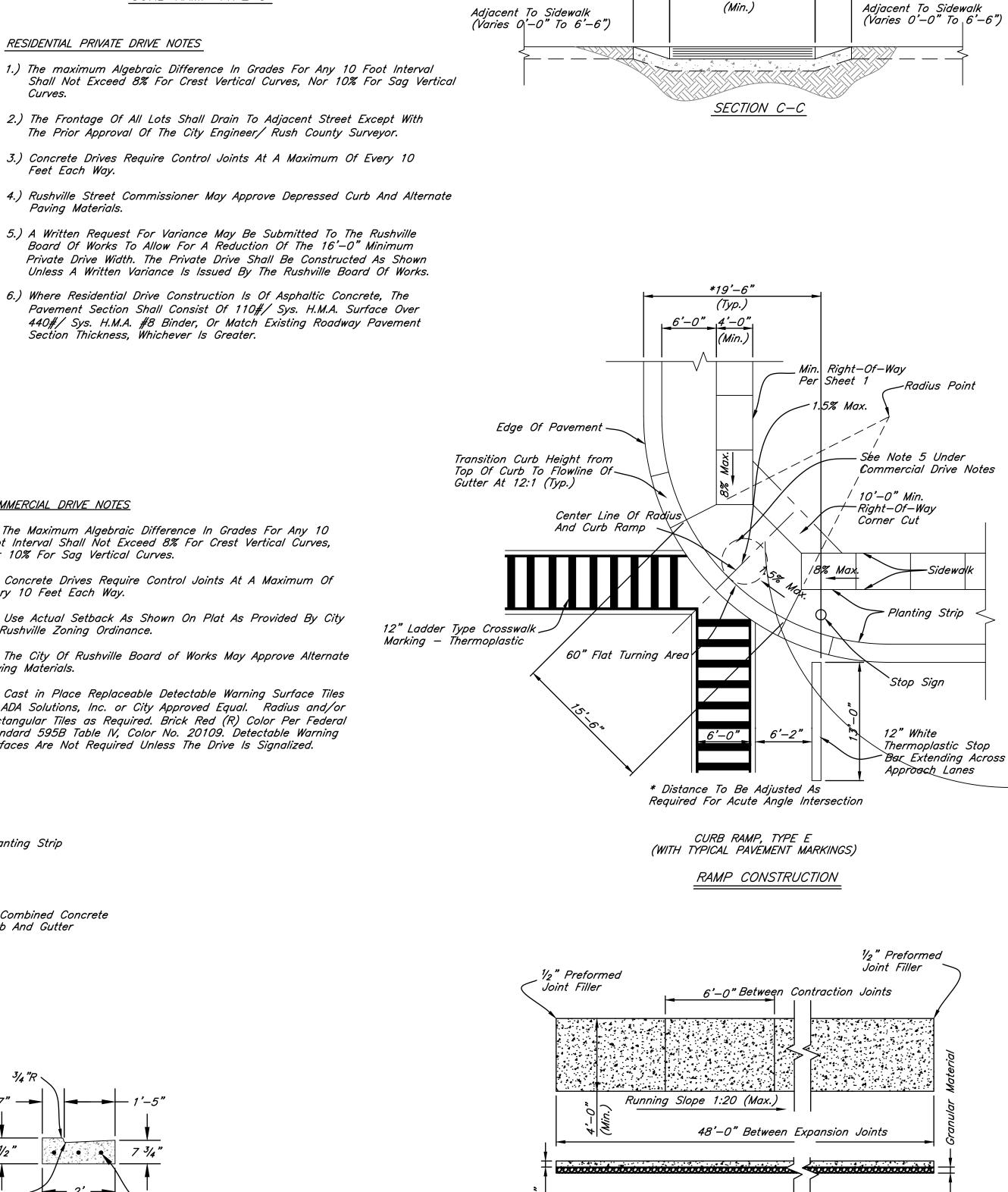
Paving Materials.

Section Thickness, Whichever Is Greater.



″A ″ -

TYPICAL RESIDENTIAL PRIVATE DRIVE



SIDEWALK DETAIL

Sidewalk And Planting Strip

(1.5% Max. - 0.5% Min.)

Variable

(Slope 12:1 Max.)

1/2" Preformed

_Adjacent To Planting Strip (Varies 0'–0" To 1'–0")

AND ETAIL

AKS, ER D

SIDE/

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DRIVES, URB AND

JOB NO.

3882.001 PROJECT MGR.

TONY AKLES

STRAND

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DARD OF RUS

STANI CITY (USH C

Joint Filler

4'-0"

SECTION B-B

4'-0"

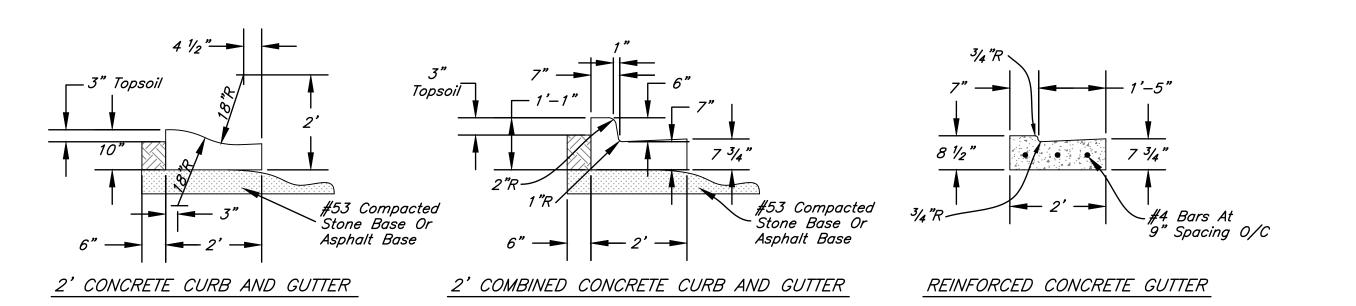
(Min.)

Adjacent To Planting Strip (Varies 0'-0" To 1'-0")



- 1.) Type I Curb Shall Only Be Used On Residential Streets.
- 2.) Type II Curb Shall Be Used On All Non-Residential Urban Streets.
- 3.) Curb Shall Be Constructed In Accordance With The Dimensions And Details Shown Herein And Section 605.04 Of The (Current) INDOT Standard Specifications. Class 'A' Concrete, In Accordance With Section 702 Of The Standard Specifications, Shall Be Used.

Reinforced Concrete Gutter Is Required At All Private Drives That Intersect An Urban Public Road With Type II 2' Combined Concrete Curb And Gutter Or Similar.



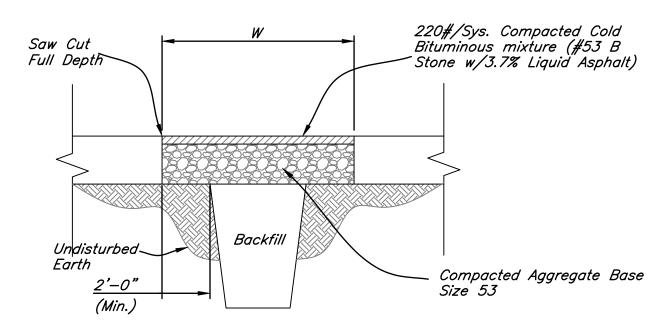
TYPE II

GENERAL NOTES

- 1.) Trench Backfill Within Streets, Alleys Or Sidewalks Shall Be Type I Or Type II As
- 2.) Type II Backfill May Be Used If The Trench Has Adequate Space To Allow The Éntrance Of Proper Equipment And Material To Achieve The Required 95 Percent
- 3.) The City Of Rushville Board of Works Shall have The Authority To Require Type I Trench Backfill When. In The Board's Opinion, Minimum Compaction Cannot Be Obtained.
- 4.) The Contractor Shall Notify The Rushville Street Commissioner At Least 24 Hours Prior To Beginning Backfill Of Excavation. If The Permanent Patch Placement Is To Be A Separate Operation, The Contractor Shall Also Notify The Rushville Street Commissioner 24 Hours Prior To Placement Of Patch.
- 5.) The Contractor Shall Be Responsible For Maintaining And Repairing Any And All Open Cuts Permitted Within Rushville For A Period Of One Year Upon Final Acceptance By The City.
- 6.) Contractor, Not Homeowner, Is Responsible For Proper, Timely Repairs, And 1 Year
- 7.) Trench Backfill And Pavement Restoration Shall Be Conducted In A Prompt

REQUIRED CASING PIPE SIZE AND THICKNESS				
CARRIER PIPE	STEEL CASING PIPE			
O.D. (Inches)	I.D. (Inches)	THICKNESS (Inches)		
≤4"	6"	<i>0.25"</i>		
>4"≤6"	8"	0.25"		
>6"≤10"	12"	<i>0.25"</i>		
>10 <u>~</u> 12"	18"	<i>0.25"</i>		
>12 <u>"</u> 20"	24" 0.312"			
>20"	Consult The Rushville Street Commissioner			

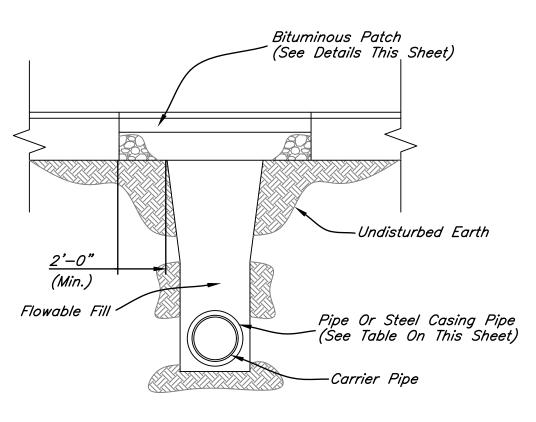
PAVEMENT	RESTORATION TABLE
UTILITY DEPTH RANGE (FEET)	MAXIMUM TRENCH WIDTH AT FINISHED GRADE, W (FEET)
0 TO 5	I.D. +5
5 TO 8	I.D. +8
8 TO 10	I.D. +10
10 TO 12	I.D. +12
12 TO 14	I.D. +14
14 TO 16	I.D. +16
16 TO 18	I.D. +18
18 TO 20	I.D. +20



<u>NOTES</u>

- 1.) Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
- 2.) All Materials Shall Comply With Specifications As Required By The Rushville Street Commissioner.
- 3.) The Contractor Shall Seek Direction From The Rushville Street Commissioner As To The Required Thickness Of The Compacted Aggregate Base.
- 4.) Temporary Repair Patch Is Required When Restoration Work Occurs Between November 15 and April 15.

TEMPORARY REPAIR PATCH DETAIL DETAIL



NOTES

- 1.) Trench Soil Is To Be Removed From The Work Site And Disposed Of Out Of The Right-Of-Way.
- 2.) Flowable Fill Is To Be Poured Into The Trench To Serve As Backfill, To The Dimensions And Specifications Listed In This Detail.
- 3.) The Flowable Fill Mix Design Shall Have Been Previously Reviewed And Approved By The Rush County Highway Department/Rushville City Engineer.
- 4.) The Compressive Strength Of The Flowable Fill Shall Not Be Less Than 50 PSI Nor Greater Than 100 PSI at 28 Days.
- 5.) Flowable Fill Shall Be Mixed And Placed As Specified In The Current Standard INDOT Specifications, Section 213.

TRENCH BACKFILL-TYPE I FLOWABLE FILL DETAIL

Install Banded Casing

1.) Bored Or Jacked Crossings Require Intimate Knowledge Of Site

2.) Casings Depicted Herein Do Not Necessarily Comply With INDOT

Provisions Prepared By The Design Engineer.

Cut Of Such Roads Is Not Permitted.

Conditions; Therefore, Construction Is Subject To Certified Special

Permit Requirements, But Are Intended To Be Used For Crossing Of

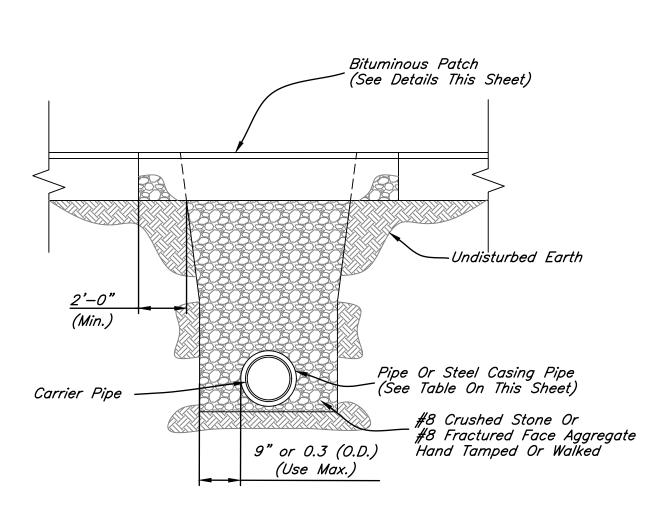
TYPICAL STREET CASING DETAIL

Public Roads Under The Jurisdiction Of The City Of Rushville When Open

End Seal

Steel Casing Pipe—

<u>NOTES</u>



NOTES

Street Surface—

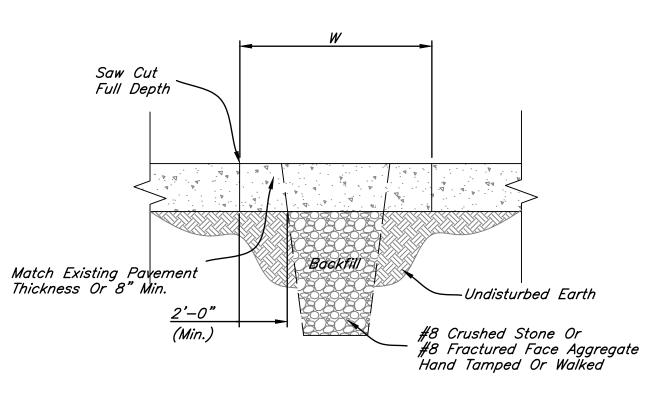
Wood Blocking Or

Floatation)

Cascade Casing Spacers (Banded To Pipe To Prevent

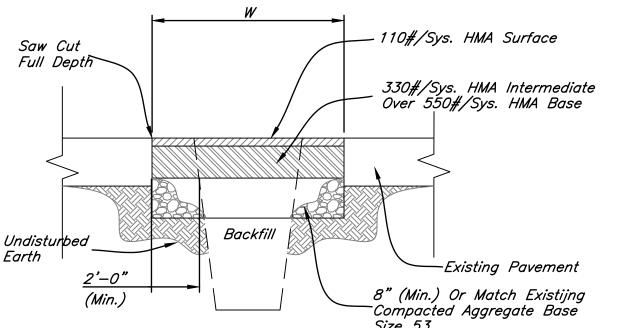
- 1.) Saw Cut Existing Pavement So That Cut Provides A Vertical, Neat And Uniform Edge.
- 2.) Trench Spoil Is To Be Removed From The Work Site And Disposed Of Out Of The Right-Of-Way.
- 3.) Contractor Shall Place Backfill In 6 Inch Loose Lifts. Each Lift Shall Be Compacted To 95 Percent Of Maximum Dry Density.

TRENCH BACKFILL-TYPE II GRANULAR FILL DETAIL



- 1.) Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
- 2.) All Materials Shall Comply With Specifications As Required By The Rushville Street Commissioner.
- 3.) Surface Of Repair Shall Be Broom Finish At Right Angles To Traffic
- 4.) All Concrete Shall Be Air Entrained (5% \pm 1%)-6 Bags Per Cubic Yard, Minimum 4000 PSI Compressive Strength Concrete.
- 5.) Contractor Shall Contact The Rushville Street Commissioner To Determine If Anchors Are Required On Existing Concrete.
- 6.) Refer To Pavement Restoration Table For W.

CONCRETE PATCH DETAIL

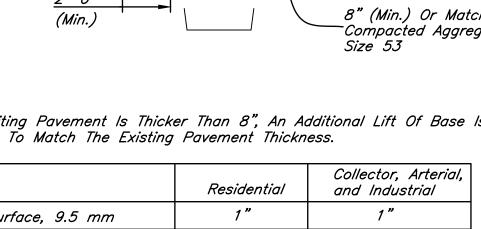


* If Exisiting Pavement Is Thicker Than 8", An Additional Lift Of Base Is To Be Used To Match The Existing Pavement Thickness.

	Residential	Collector, Arterial, and Industrial
Surface, 9.5 mm	1 "	1"
Intermediate, 19 mm	3"	4"
Base, 25 mm	<i>5"</i>	8 "

- 1.) Saw Cuts Shall Provide A Vertical, Neat, And Uniform Edge.
- 3.) The Existing Vertical Edge Of Pavement Is To Be Tack Coated Prior To The Laying Of New Asphalt. Tack Coat Is To Be Applied As Specified In The Latest Standard INDOT Specifications, Sections 406 And 902.
- 4.) The New Surface Pavement Grade Shall Match The Existing Surface Pavement
- 5.) A 2 (Two) 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 Specifications, Section 408
- 6.) Refer To Pavement Restoration Table For W.

BITUMINOUS PATCH DETAIL



- 2.) All Materials Shall Comply With Specifications As Required By The Rushville Street

ASSOCIATES[®] **SHEET**

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JOB NO. 3882.001

PROJECT MGR. **TONY AKLES**

STANDARD I CITY OF RUS USH COUNTY

REINFORCED CONCRETE PIPE (RCP)

Type Class Standard

1.) Reinforced III, IV, or V ASTM C 76

2.) Reinforced HE-III Or HE-IV ASTM C 507 Elliptical

- 3.) 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 INDOT Specifications.
- 4.) Fittings and Specialties Shall Be In Accordance With The Specifications For The Type Of Pipe Being Used.
- 5.) Each Pipe Section Shall Be Marked With Date Of Manufacture, Size And Class Of Pipe, Specification Designation, Manufacturer And Plant Identification.
- 6.) 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 C 443. The Gasket Shall Be A Continuous Ring Which Fits Snugly Into The Annular Space Between The Overlapping Surfaces Of The Assembled Pipe Joint To Form A Flexible Soil—Tight Seal.

POLYVINYL CHLORIDE (PVC) SEWER PIPE

- 1.) Pipe Diameters Of 12 Inches And 15 Inches Must Meet Or Exceed All The Requirements OF ASTM D-3034, And Shall Have A Minimum Cell Classification Of 12454-C. Reference Should Be Made To ASTM D-1784 For A Summarization Of Cell Class Properties. Pipe Diameters Greater Than 15 Inches Must Meet Or Exceed All Requirements Of ASTM F-679, And Shall Have A Minimum Cell Classification Of 12454-C.
- 2.) The Minimum Wall Thickness Of 12 Inches And 15 Inches In Diameter Shall Conform To SDR-35, Type PSM, As Specified In ASTM D-3034. The Minimum Wall Thickness For Pipe Diameters Greater Than 15 Inches Shall Conform To T-1 As Specified In ASTM F-679. SDR 35, Type PSM, Pipe Shall Have A Minimum Pipe Stiffness Of 46 Pounds Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412.

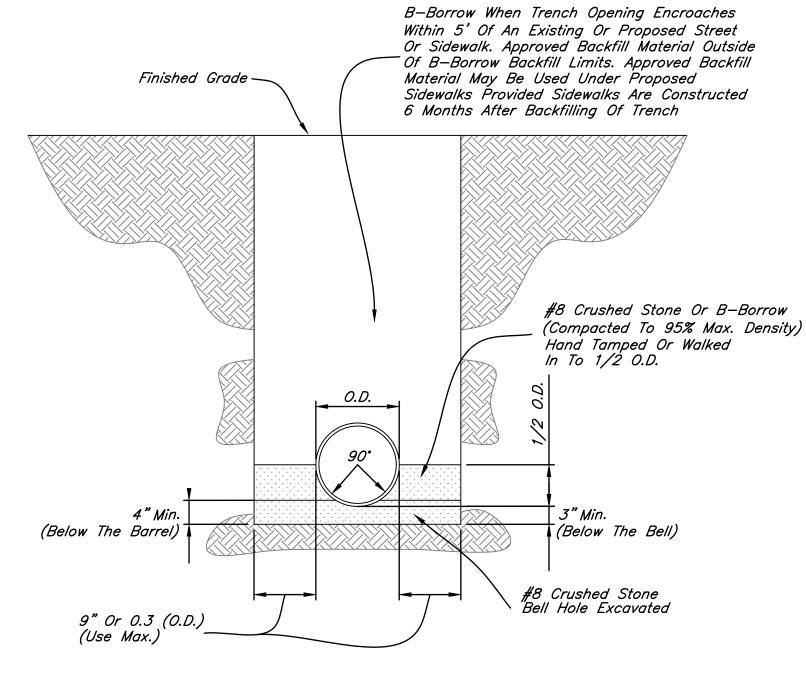
PVC Ribbed Sewer Pipe Shall Meet Or Exceed All Requirements Of ASTM F-794 Or ASTM F-949. The Minimum Cell Classifications Of 12454-C Shall Be Required.

Pipe Joints Shall Have A Bell Wall, Gasket Groove And Spigot Which Is Integral With The Pipe. The Assembly Of Joints Shall Be In Accordance With Pipe Manufacturers Recommendations And ASTM D-3212. No Solvent Cement Joints Shall Be Allowed.

- 3.) Gasket Material Will Be Constructed Of Styrene Butadiene Or Butyl Rubber And Meet The Requirements Of ASTM F-477.
- 4.) Each Pipe Section Shall Be Marked With Name of Manufacturer, Trademark Or Tradename, Nominal Pipe Size, Production/Extrusion Code; Material And Cell Class Designation; ASTM Number.
- 5.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.

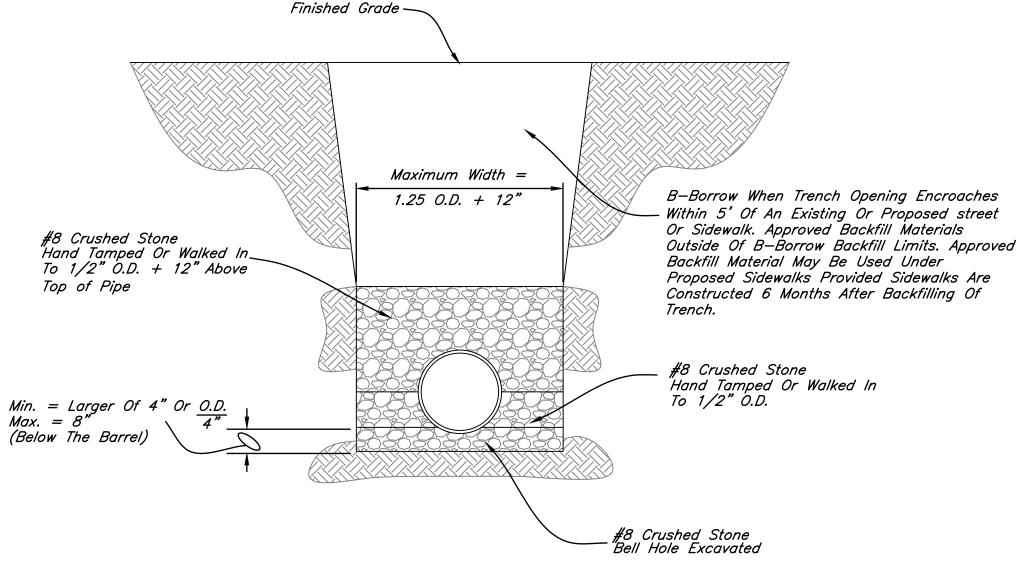
HIGH DENSITY POLYETHYLENE (HDPE) DUAL WALL CORRUGATED PIPE

- 1.) Requirements For Test Methods, Dimensions And Markings Are Those Found In A.A.S.H.T.O. Specifications M-252 And M-294.
- 2.) Pipe And Fitting Shall Be Made Of Polyethylene Compounds Which Meet Or Exceed The Requirements Of Type III, Category 4 Or 5, Grade P33 or P34, Class C Per ASTM D-1248 With The Applicable Requirements Defined In ASTM D-1248.
- 3.) Minimum Pipe Stiffness Values Shall Be In Accordance With AASHTO Specifications M-294..
- 4.) The HDPE Corrugated Pipe Shall Have Integrally Formed Smooth Interior.
- 5.) Male And Female Pipe Ends Which Allow The Construction Of Overlapping, Gasketed Joints, Shall Be In Conformance With ASTM D-3212. Neoprene Gaskets Shall Meet ASTM F-477.
- 6.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.



PIPE SIZE	8"	То	<i>15</i> "	18"	And	Over
Bedding Below The Pipe Barrel		4"	•	O. Min	D./4 . =8"	

RCP PIPE BEDDING DETAIL

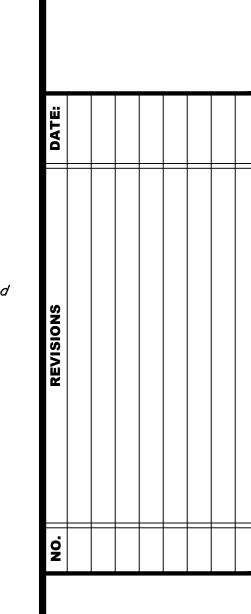


PIPE SIZE	8" To 15"	18" And Over
Bedding Below The Pipe Barrel	4"	0.D./4 Min. =8"

FLEXIBLE (PVC OR HDPE) PIPE BEDDING DETAIL

GENERAL NOTES

- 1.) The City Of Rushville Shall Be Given 24 Hour Written Notice Of The Required Deflection Testing Procedure To Be Performed By The Contractor. An In-Place Deflection Test Shall Be Performed On All Mainline Flexible Pipe Installed Within The City Of Rushville For The Purposes Of Conveying Storm Drainage. An Allowable Deflection Of 5 Percent Internal 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 And A Proving Ring Shall Be Provided For Each Mandrel. All Pipe Exceeding The Allowable Deflection Shall Be Replaced Or Rerounded. The Replaced Or Rerounded Section Shall Be Tested 30 Days After Replacement Or Rerounding. The Contractor Shall Bear All Costs For Testing And Testing Equipment. The "Go-No-Go" Mandrel Shall Be Manually Pulled Without The Use Of Any Winching Or Other Mechanical Device.
- 2.) Storm Sewer Pipe Of Other Material Not Meeting These Specifications Shall Require The Prior Written Approval Of The Board of Works.
- 3.) The Contractor Shall Submit Information To The Board Of Works Showing Conformance With These Specifications Upon Request.
- 4.) As-Built Drawings Shall Be Submitted To The Board Of Works With An Electronic Copy (PDF) Submitted To The City's Street Department.



STORM SEWER
SEDDING DETAILS
STANDARD DETAILS
CITY OF RUSHVILLE
RUSH COUNTY, INDIANA

JOB NO. 3882.001 PROJECT MGR.

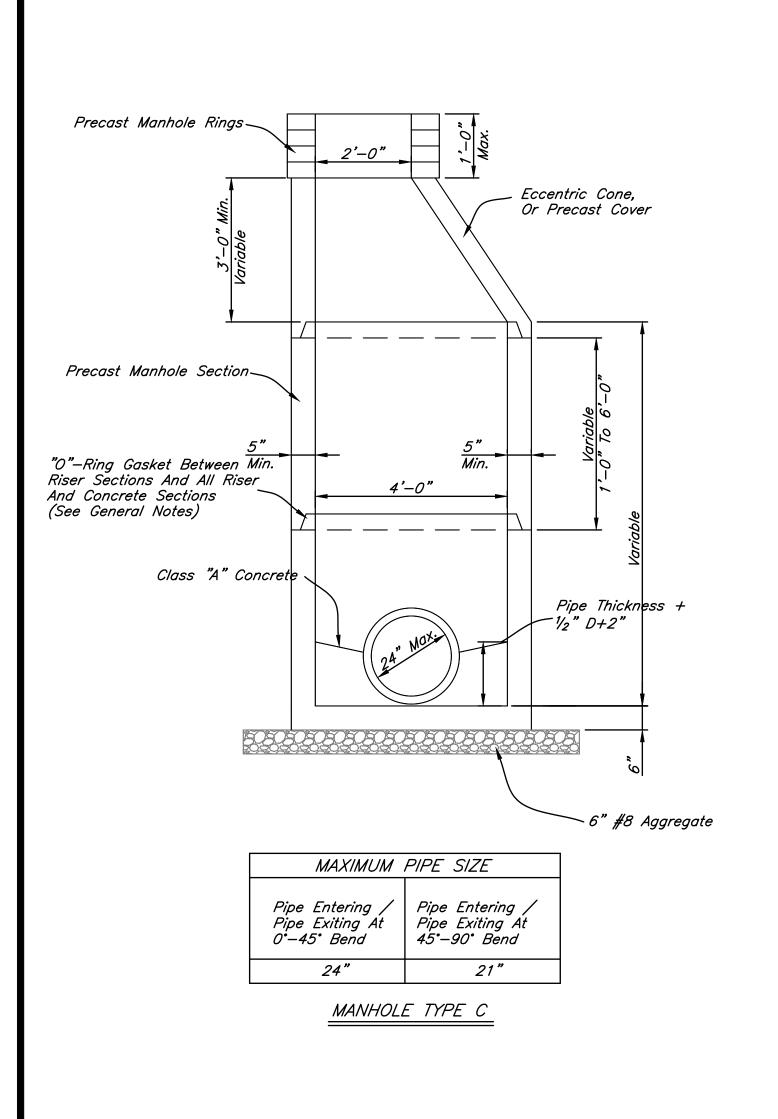
TONY AKLES

STRAND ASSOCIATES®

SHEET

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1.) Swales Shall Be Constructed With A Minimum 0.5 Percent Profile Grade Provided That A 6 Inch Diameter Underdrain Is Provided For Swales With Less Than A 1.0 Percent Profile Grade. See Detail Shown On This Sheet. See Also The Swale Regulation On Residential

2.) Type J, K, L. M, And N Manholes As Detailed Herein Require A Certain Minimum Depth. In

As Required By The Detail, "F" Diameter Manhole Section May Be Used Throughout The

3.) Manholes Shall Conform To ASTM C-478. Joints Shall Conform To ASTM C-443. The Use Of Cast-In-Place Concrete Structures Shall Require The Prior Written Approval Of The

4.) Castings Which Drain Combined Curb And Gutter, Type II Curbing Shall Be Neenah R-3287-10V, EJ 7510, Or As Approved By The Board of Works. Inlet, Type B Required.

5.) Castings Which Drain Roll Curb And Gutter, Type I Curbing Shall Be Neenah R-3501-TR/TL

Or EJ V4520, Or As Approved By The Board of Works. Inlet, Type A Required. Manhole's

6.) Castings For Inlets Which Drain Open Pavement Areas Without Curbing Shall Be Neenah

8.) Casting For Use On Inlets Or Manholes Which Drain Swales Or Dry Bottom Detention

7.) Castings For Manholes Which Drain Open Pavement Areas Without Curbing Shall Be Neenah

9.) Casting For Manholes Which Do Not Collect Surface Water Shall Be Neenah R-1772-B, EJ

1020 Z/A Or As Approved By The Board Of Works. Lids Shall Be Stamped With "STORM."

Basins Shall Be Neenah R-4342 Casting for Stand Pipe, EJ 1324 Or As Approved By The

Manholes Shall NOT Be Use To Drain Combined Curb And Gutter, Type II Curbing.

Shall NOT Be Used To Drain Roll Curb And Gutter, Type I Curbing.

R-3402-E Or EJ V5622 Or As Approved By The City Engineer.

R-2502-B, EJ 1020M Or As Approved By The Board Of Works.

Cases Where The Depth Of The Storm Sewer Is Not Sufficient To Meet The Minimum Depth

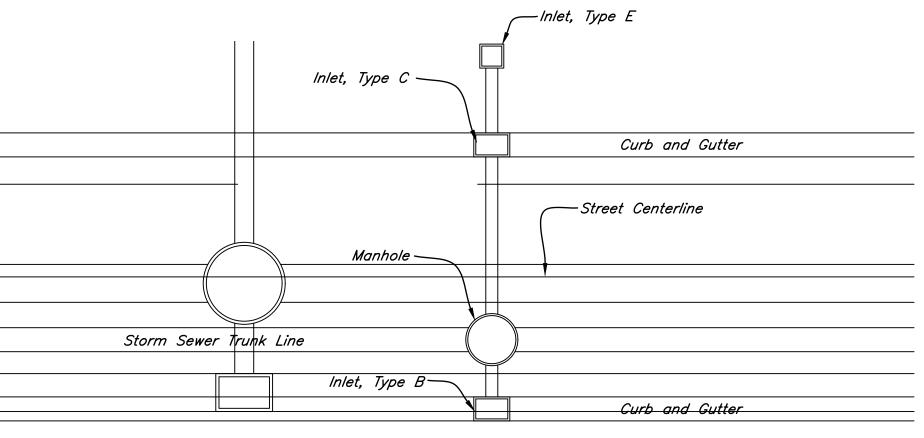
Board Of Works. Regardless Of The Type Of Casting Used, The Casting Shall Be Offset As

Shown Above. Precast Manhole Shall Be Manufactured By McCreary Concrete Products Inc.

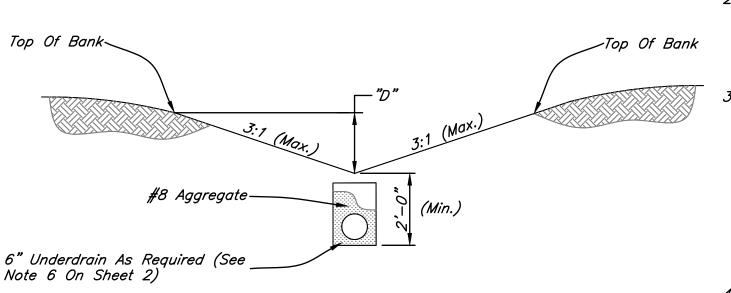
Precast Manhole Rings Eccentric Cone, Or Precast Cover Minimum 3" Embedment Precast Manhole Section-"O"-Ring Gasket Between Riser Sections And All Riser - Precast Reducer Cap And Concrete Sections Manhole (See General Notes) Ladder Rungs Class "A" Concrete 6" #8 Aggregate

		MAXIMUM PIPE SIZE		
Manhole Type	Manhole Diameter (F)	Pipe Entering / Pipe Exiting At 0°-45° Bend	Pipe Entering / Pipe Exiting At 45*–90* Bend	
J	60"	<i>36"</i>	33"	
K	72"	48"	<i>36"</i>	
L	96"	<i>54"</i>	48"	
М	102"	72"	<i>66"</i>	
۸/	108"	84"	72"	

MANHOLES-TYPE J, K, L, M & N

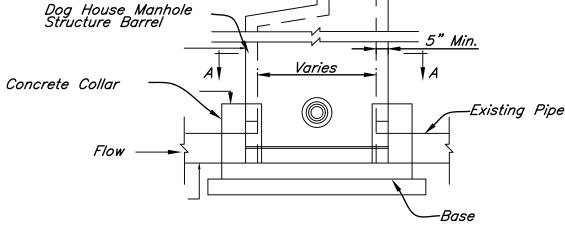




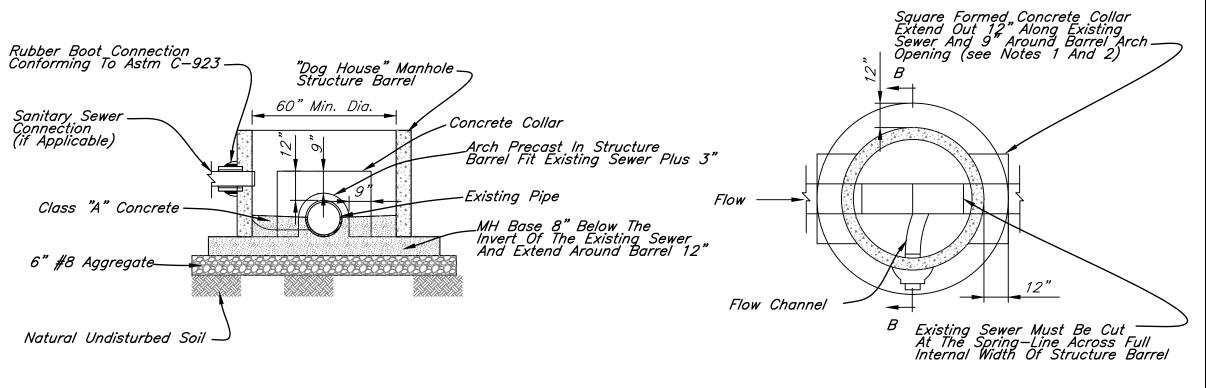


SWALE UNDERDRAIN DETAIL

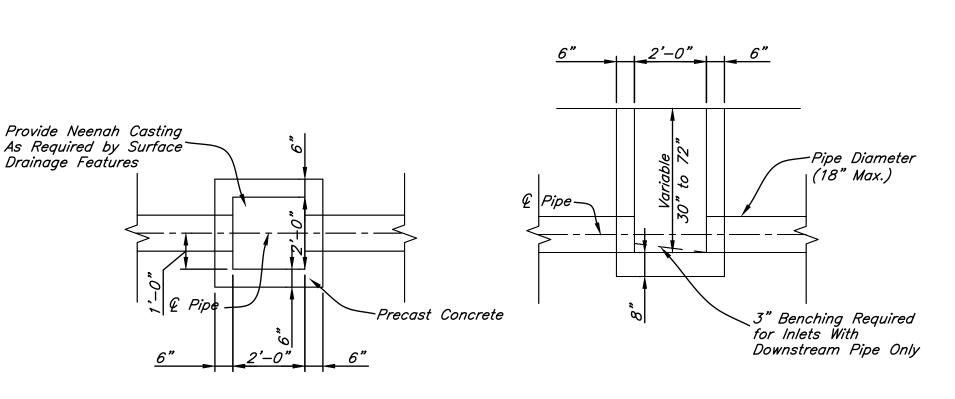
- 1. All Poured-In-Place Concrete Must Be 4000 PSI Non-Shrink Mix.
- 2. A Curved Integral Arch Form Must Be Used During Collar Concrete Fill. No Brick, Morter, Or Debris Is To Be Used In Place Of Consolidated Concrete.



DOG HOUSE MANHOLE PROFILE



SECTION B - B SECTION A - A



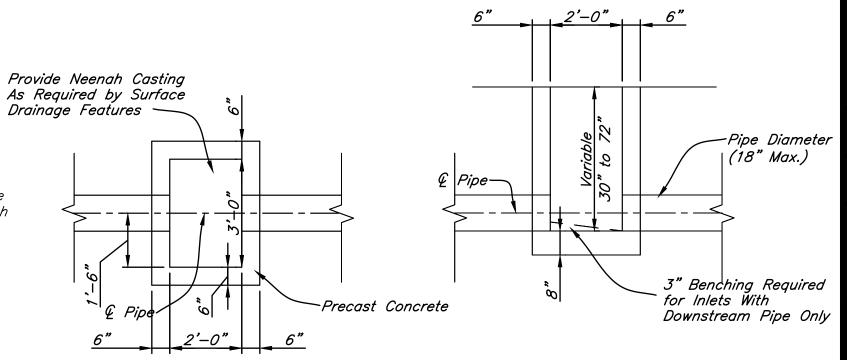
INLET, TYPE F

SWALE REGULATIONS ON DEVELOPED LOTS

- 1.) Swales Shall Not Be Constructed In Front Yards. The Front Portion Of Lots Shall Be Graded Toward The Street And/Or Side Yard Lines.
- 2.) Swales Shall Be Constructed With A Minimum 0.5 Percent Profile Grade Provided That a 6-inch Diameter Underdrain Is Provided For Swales With Less Than 1.0-Percent Profile Grade. See Detail On This Sheet.
- 3.) Maximum Swale Depth "D" Shall Be In Accordance With The Following Table:

Lot Area	Maximum Swale Depth "D"	Minimum Usable Rear Yard Depth
(square feet)	(Inches)	(feet)
6000-8000 Greater Than 80 Greater Than 10		20 25 30

- 4.) Minimum Unusable Rear Yard Depth Must Lie Between The Farthest Rear Portion Of The Residence And The Top Of Bank Of The Near Swale Slope. The Maximum Slope In This Area Shall Be 5.0 Percent.
- 5.) Swales Must Be Graded With Side Slopes No Steeper Than 3H:1V And Lay Totally Within The Drainage Easement Limits.



INLET, TYPE F

DARD OF RU SEWER DET STO

JOB NO. 3882.001 PROJECT MGR.

TONY AKLES

ASSOCIATES

SHEET

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GENERAL NOTES

Lots Detail And Notes on Sheet 2.

Depth Of The Manhole.

Board Of Works.

STRAND

SANITARY SEWER POLYVINYL CHLORIDE (PVC) PIPE

- 1.) PVC Pipe Diameters Of 4 Inches Through 15 Inches Shall Meet Or Exceed All The Requirements of ASTM D-3034, And Shall Have A Cell Classification of 12454 Or 12364. Reference Should Be Made To ASTM D-1784 For A Summarization Of Cell Class Properties. PVC Pipe Diameters Greater Than 15 Inches Shall Meet Or Exceed All Requirements Of ASTM F-679, And Shall Have A Cell Classification of 12454 Or 12364.
- 2.) The Minimum Wall Thickness Of PVC Pipe, 6 Inches Through 15 Inches In Diameter, Shall Conform To SDR-35, Type PSM, As Specified In ASTM D-3034 (See Note 5 For Fittings). The Minimum Wall Thickness For PVC Pipe Greater Than 15 Inches Shall Be As Specified In ASTM F-679.

 PVC SDR-26 Pipe Shall Have A Minimum Pipe Stiffness Of 115 Pound Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412. PVC SDR-35 Pipe Shall Have A Minimum Pipe Stiffness of 46 Pounds Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412.
- 3.) PVC Open Profile Or Closed Profile Sewer Pipe Shall Meet Or Exceed All Requirements Of ASTM F-949, Or ASTM F-1803, And Shall Have A Minimum Cell Classification OF 12454 And A Minimum Uniform Pipe Stiffness Of 60 Pounds Per Square Inch For Up to 18 Inches and 46 Pounds Per Square Inch For 21 Inches and Larger When Measured At 5 Percent Deflection And Tested In Accordance With ASTM D-2412 (See Note 5 For Fittings). Contractor May Only Use PVC Open Profile Or Closed Profile Pipe Where Sewer Pipe Diameter Is Between 18 Inches And 30 Inches. Pipe Joints Shall Have A Bell Wall, Gasket Groove, And Spigot Which Is Integral With The Pipe.
- 4.) The Assembly Of Joints Shall Be In Accordance With Pipe Manufacturers' Recommendations And ASTM D-3212. Solvent Cement Joints Shall Not Be Allowed.
- 5.) Pipe Fittings Shall Be Manufactured Fitting Made Of PVC Plastic Having a Cell Classification Of 12454 Or As Defined In ASTM D-1784.
- 6.) Saddle Connections Shall Not Be Allowed For New Construction. Lateral Connections For New Construction Shall Be Made With A "Tee-Wye" Fitting Only. If A Lateral Replacement Is Necessary For An Existing Facility, A UH Service Saddle, By General Engineering Co., OR Equal, May Be Used With The Approval Of The Rushville Utilities.
- 7.) Each Pipe Section Shall Be Marked With The Name Of Manufacturer, Trademark Or Trade Name, Nominal Pipe Size, Production/ Extrusion Code, Material And Cell Classification, And ASTM Number.
- 8.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321

SANITARY SEWER REINFORCED CONCRETE PIPE (RCP)

- 1.) Reinforced Concrete Pipe For Use As Sanitary Sewers Shall Be Greater Than 18 Inches In Pipe Diameter And Shall Be Class III, IV, Or V As Specified By The Design Engineer Per ASTM C-76. Lift Holes Shall Not Be Permitted.
- 2.) Each Section Of Reinforced Concrete Pipe Shall Be Vacuum Tested By The Manufacturer Prior To Delivery To The Job Site. Only Pipe Sections Passing Vacuum Test Shall Be Marked As "Vacuumed Tested." Vacuum Tested Requirements Are As Follows:
 - a. Each Section Of Pipe Shall Be Tested In Accordance With ASTM C 1214, Latest Edition.
- b. Any Pipe Section Failing To Meet This Test Shall Not Be Permitted For Use As Sanitary Sewer In The City Of Rushville.
- 3.) Lateral Connections Shall Be Made With Kor-N-Tee, Inserta-Tee Or Rushville Utilities Approved Equal.
- 4.) Each Pipe Section Shall Be Marked With The Date Of manufacture, Size And Class Of Pipe, Specification Designation, Manufacturer And Plant Identification.
- 5.) Pipe Shall Be Furnished With A Bell On One End Of A Unit Of Pipe And A Spigot 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 C-1628. The Gasket Shall Be A Continuous Ring Which Fits Snugly Into The Annular Space Between The Overlapping Surfaces Of The Assembled Pipe Joint To Form A Flexible Watertight Joint Under All Conditions Of Service.

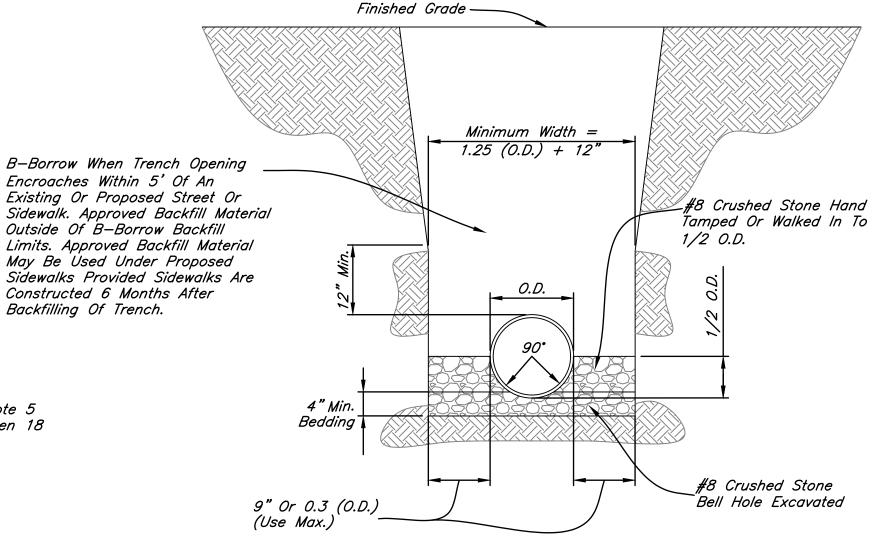
Table 1

SPECIFICATION TIME REQUIRED FOR A $\underline{1.0~PSIG~PRESSURE~DROP}$ FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

					Spec	cification Til	me For Lei	ngth (L) Si	nown (Min.:	Sec.)	
1	2	3	4								
Pipe Diameter (in.)	Minimum Time (Min:Sec)	Length For Minimum Time (Ft.)	Time For Longer Length (Sec.)	100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	350 Ft.	400 Ft.	450 Ft.
4	3.46	597	.380L	3:46	3.46	3.46	3.46	3.46	3.46	3.46	3.46
5	5:40	398	.854L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692L	17:00	19:13	25:38	32:03	38:27	44:42	51:16	57:41
21	19:50	114	10.470L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30:00	88	17.306L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20:00	80	21.366L	<i>35:37</i>	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10:00	72	25.852L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00:00	66	30.768L	<i>51:17</i>	76:55	102:34	128:12	153:50	179:29	205:07	230:46

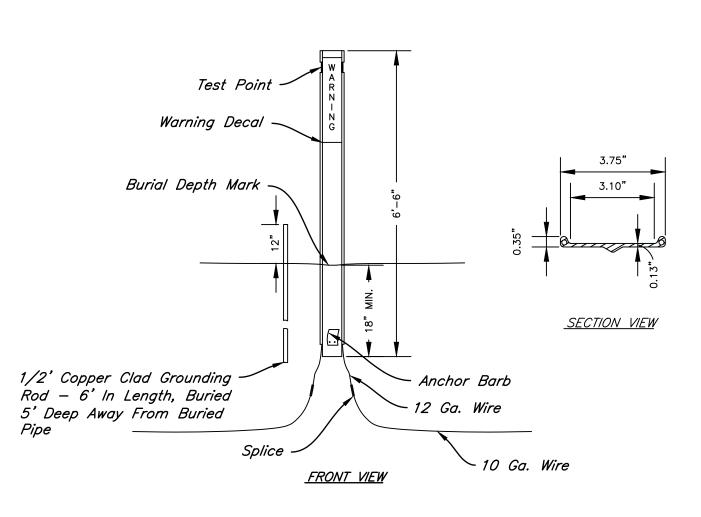
NOTE:

For More Efficient Testing Of Long Test Sections And/Or Sections Of Larger Diameter Pipes, A Timed Pressure Drop Of 0.5 PSIG May Be Used In Lieu Of The 1.0 PSIG Timed Pressure Drop. If 0.5PSIG Pressure Drop Is Used, The Required Test Time Shall Be Exactly Half As Long As Those Shown Above



PIPE SIZE	8" To 15"	18" And Over
Bedding Below The Pipe	4"	0.D./4 Min. =8"

RCP BEDDING DETAIL



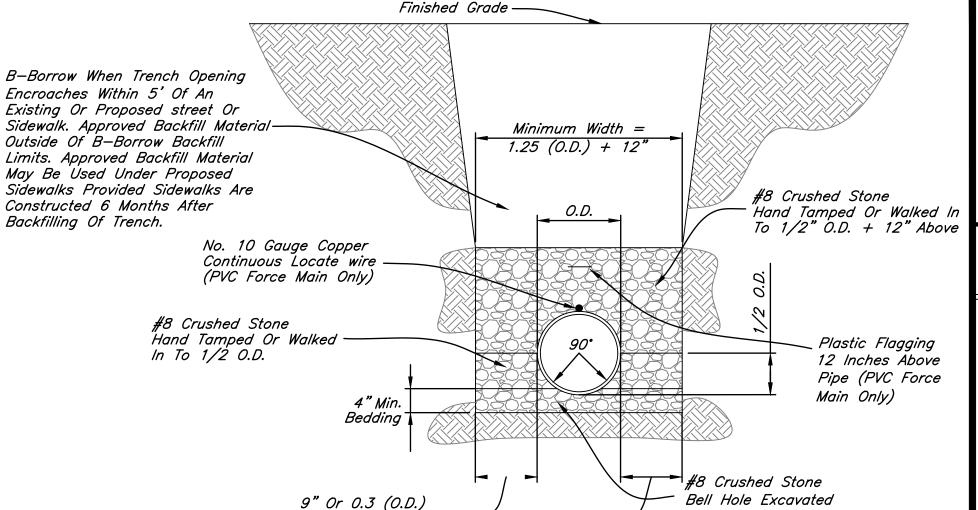
The Locator Wire Shall Be Installed Along The Top Of The Pipe. The Wire Shall Be Taped To The Pipe A Minimum Of 3 Times Per Length Of Pipe.

One (1) Testing Apparatus Shall Be Located Every 1000 Feet Of Force Main And Connected To The Locator Wire. Any Splices In The Locator Wire Shall Be Soldered And Fitted With Heat Strink, Insulated Watertight Boot.

TESTING MARKER

SANITARY SEWER DEFLECTION TESTING AND TELEVISING

- 1.) Deflection Testing Is Required For All Mainline Flexible Pipe Installed In The City Of Rushville. Rushville Utilities Shall Be Given 24 Hour Written Notice Of The Time The Contractor Will Perform The Deflection Testing. An Allowable Deflection Of 5 Percent Internal 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. The Replaced 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 Any Winching Or Mechanical Devices.
- 2.) Televising Is Required For Pipe That Fails Mandrel Testing, Or As Directed By The Rushville Utilities. The Rushville Utilities Shall Be Given 24 Hour Written Notice Of Televising To Be Performed By The Contractor. A Camera Equipped With Remote Control Devices To Adjust The 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 The Pipe. The Image Shall Be Clear Enough To Enable The Rushville Utility Representative And Others Viewing The Monitor To Easily Evaluate The Interior Conditions Of The Pipe. The Camera Shall Stamp The Video Tape With Linear Footage And Project Number. An Audio Voice—Over Shall Be Made During The Inspection Identifying Any Problems. Contractor Shall Bear All Televising Costs.
- 3.) The Pipe Shall Be Thoroughly Cleaned Before The Camera Is Installed And Televising Is Commenced.
- 4.) If Any Pipe And/Or Joint Is Found To Be Leaking, The Contractor Shall Repair That Portion Of The Work To The Satisfaction And Approval Of The City Of Rushville.



(Use Max.)

PIPE SIZE	8" To 15"	18" And Over
Bedding Below The Pipe	4"	0.D./4 Min. =8"

PVC PIPE BEDDING DETAIL

MINIMUM SANITARY SEWER PIPE SLOPE				
Pipe Diameter (In.)	Minimum Slope (Ft./100 Ft.)	Maximum Slope (Ft./100 Ft.)		
8	.40	5.34		
10	.28	3.97		
12	.22	3.11		
14	.17	2.53		
15	.15	2.31		
16	.14	2.12		
18	.12	1.81		
21	.10	1.47		
24	.08	1.23		
27	.067	1.06		
30	.058	0.92		
33	.052	0.81		
36	.046	0.72		

SANITARY SEWER LEAKAGE

- 1.) Rushville Utilities Shall Be Given 48 Hour Written Notice Of The Required Leakage Testing Procedure To Be Performed By The Contractor. Low Pressure Air Shall Be Slowly Introduced Into The Sealed Line Until The Internal Pressure Reaches 4 PSIG Plus The Groundwater Head Divided By 2.31 (Maximum Test Pressure Is 9 PSIG).
- 2.) At A Stable Internal Air Pressure Within 0.5 PSIG Of The Initial Internal Air Pressure, Timing Shall Commence With A Stopwatch Or Similar Device. Timing Shall End When The Internal Air Pressure Drops 1 PSIG Below The Stable Internal Air Pressure.
- 3.) The Line Shall Be Accepted If The Time Shown In Table 1 For The Designated Pipe Size And Length Elapses Before The Air Pressure Drops 1 PSIG Below The Stable Internal Air Pressure At Which Time The Test Can Be Discontinued For The Accepted Line.

SANITARY SEWER GENERAL NOTES

- 1.) As—Built Drawings, Including The Location And Distance Of Each Lateral From The Downstream Manhole, Shall Be Made By The Contractor. As—Builts Shall Be Delivered To The Rushville City Utilities Office Within 30 Days After All Testing Has Been Successfully Completed.
- 2.) Tracer Wire and Testing Markers Shall Be Installed As Required By The City.
- 3.) Non-Residential Food Service Shall Provide Grease Trap.

SANITARY SEWER LATERAL PIPE AND FITTINGS

- 1.) Service Laterals Shall Be Either SDR-35 Or SDR-26.
- 2.) Joints Shall Be Flexible Gasket Push-On-Compression Type Conforming To ASTM D-3212 And ASTM F-477. No Solvent Cement Joints Shall Be Allowed.
- 3.) Lateral Size Between Mainline Sewer And Right-Of-Way Shall Be A Minimum 6 Inches In Diameter.
- 4.) All Laterals Shall Be Inspected By Rushville Utilities Prior To Backfilling.
- 5.) A Minimum Of One Clean—Out Shall Be Installed Within 5'—O" Of The Structure For Each Lateral. Where The Length Of A Lateral Exceeds 100 Feet, Then One Clean—Out Shall Be Installed For Every 100 Feet Of Lateral Lenath.
- 6.) Contractor Shall, When Curbs Are Available, Engrave A 3—Inch High By 1/8—Inch Deep "S" On The Curb Directly Above Each Service Lateral. Where Curbs are Not Available, Contractor Shall Notch The Sidewalk Directly Above Each Service Lateral.

NO.
REVISIONS
DATE:

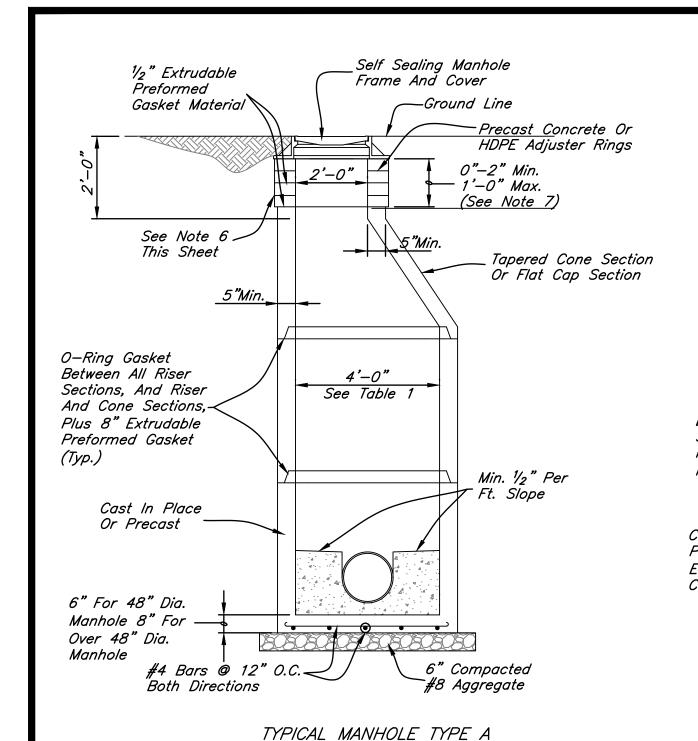
ANITARY SEWEF DETAILS

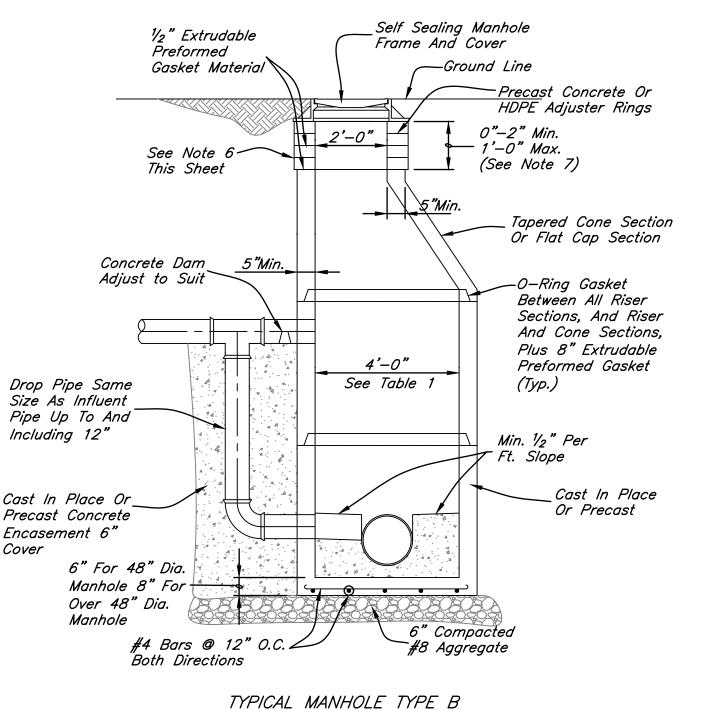
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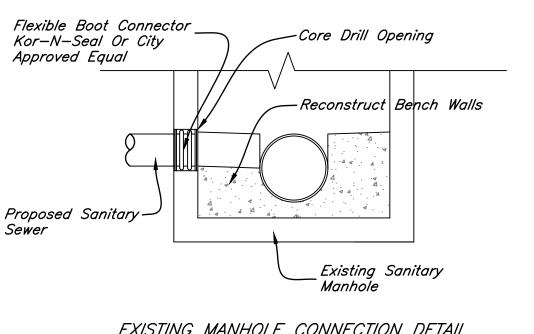
PROJECT MGR.
TONY AKLES



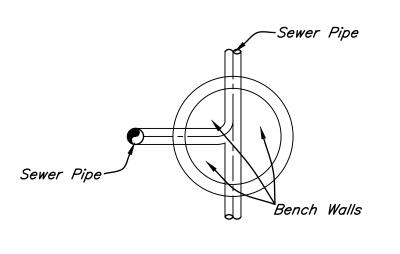
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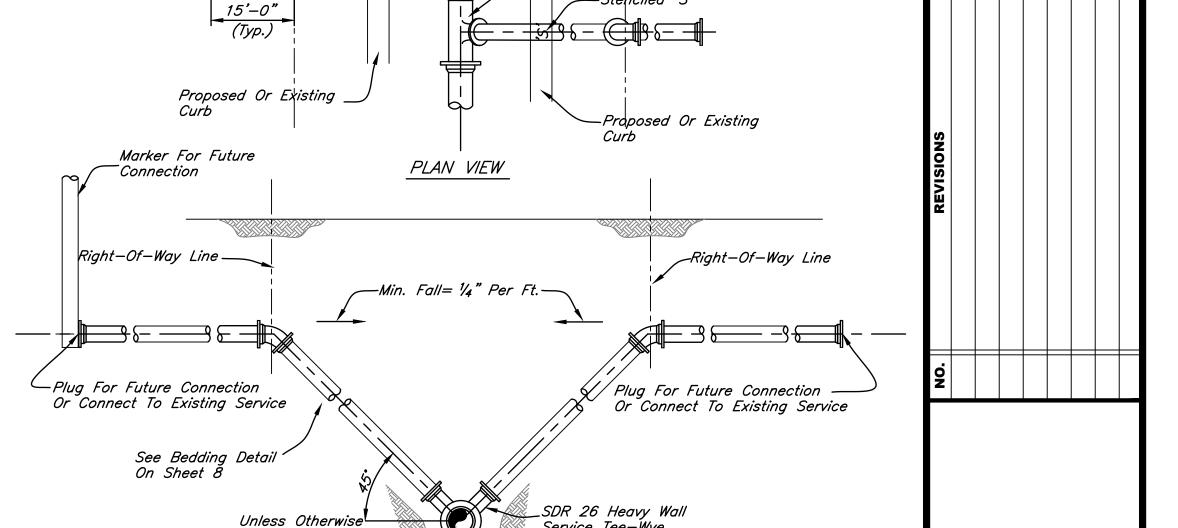












Service Tee-Wye

-Proposed Or Existing

-Right-Of-Way Line

Curb

-Main Line Sewer

SDR 26 Heavy Wall Service Tee-Wye

-Stenciled 'S'

Right-Of-Way Line

TY OF RUSH COUNTY

JOB NO.

3882.001

PROJECT MGR.

TONY AKLES

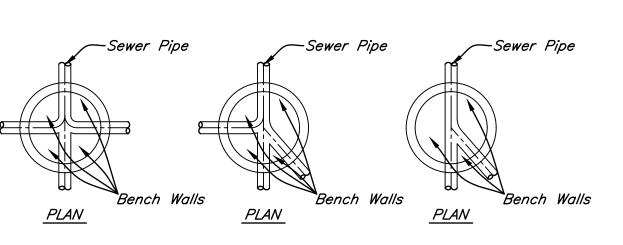
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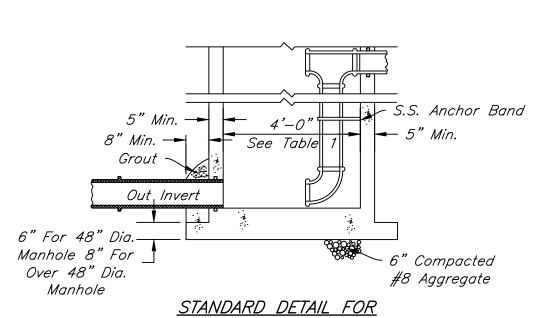
9 of 17

BENCH WALL DETAIL

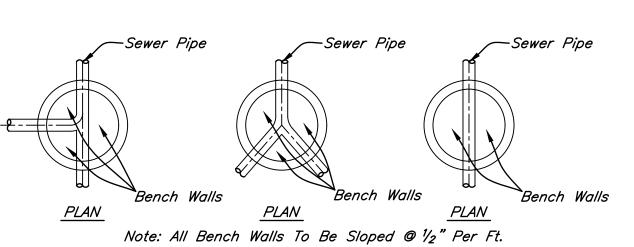


SERVICE CONNECTION FOR DEEP SEWERS

(15' DEEP AND OVER)



INSIDE DROP MANHOLE



30 ½" Dia.

1/4"

30 1/8" Dia.

1/4"

1/4"

Riser Ring Thickness 2" – 12" Outside Dia. 34" Or 36"

SECTION A

BENCH WALL DETAILS

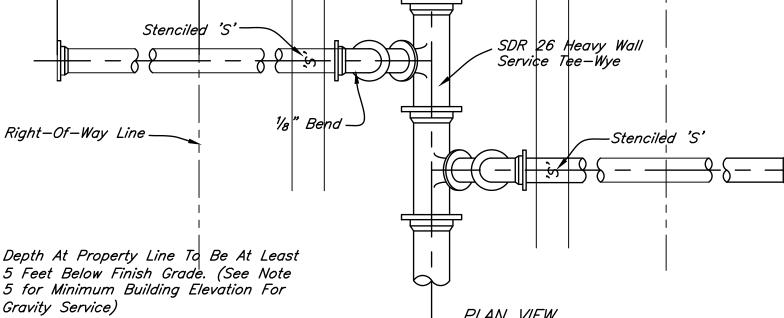
PRECAST ADJUSTING RING

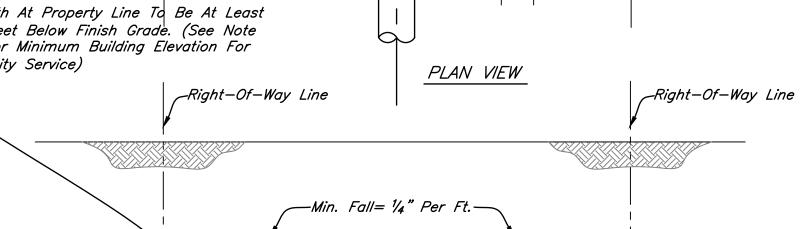
-Main Line Sewer Proposed Or Existing 15'-0" (Typ.) Stenciled 'S' Right-Of-Way Line ____ Depth At Property Line To Be At Least 5 Feet Below Finish Grade. (See Note 5 for Minimum Building Elevation For

Directed

Right-Of-Way Line —

Stenciled





Plug For Future Connection— See Bedding Detail Or Connect To Existing Service On Sheet 8

> SERVICE CONNECTION FOR SHALLOW SEWERS (LESS THAN 15' DEPTH)

MANHOLES

Mixture.

In Corrosive Environments,

Admixture Such As Xypex

Bio-San C500, Shall Be

Added To The Concrete

An Anti-Corrosion

1.) Precast Concrete Manholes Shall Conform To ASTM C-476, With Rubber Type Gaskets Equal To ASTM C-443. Monolithic Cast-In-Place Manholes Shall Only Be Used With The Prior Written Approval Of Rushville Utilities. The Base And First Riser Section Of The Precast Concrete Manhole Shall Be Integrally Cast As One Complete Unit. Precast Concrete Cones Shall Be Of The Eccentric Cone Type. No "See Through" Lift Holes Shall Be Allowed On Precast Concrete Manholes 48 Inches In Diameter Or Less. In Addition To The Rubber Type Gaskets All Joints Shall Receive A 1/2 Inch Diameter Non-Asphaltic Mastic (Kent-Seal Or City Approved Equal) Conforming To AASHTO M-198 And Federal Specifications, Specifications SS-S-210A, Manhole/Sewer Connection Shall Be Made With A Flexible Watertight Connection.

TABLE 1

Pipe Entering / Pipe Exiting At

45°-90° Bend

48"

60"

60"

72"

Pipe Entering

0°-45° Bend

8"-21"

24"

27"-30

33"–36"

Pipe Exiting At

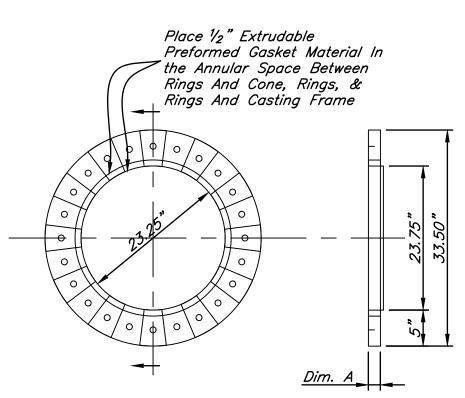
48"

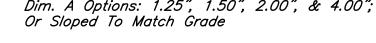
48"

60"

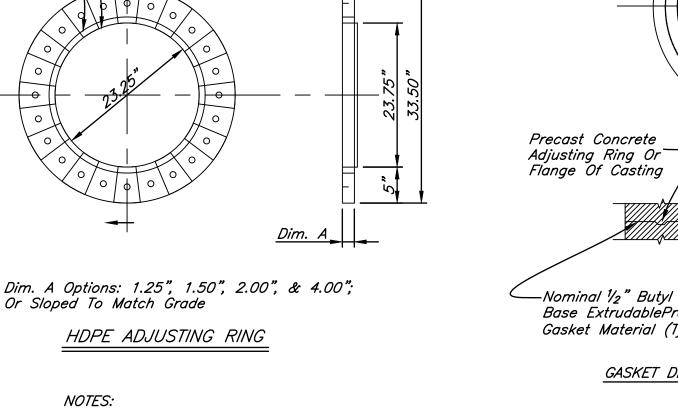
60"

- 2.) Final Adjustment In Elevation of The Frame And Cover Shall be Accomplished By The Use Of Adjusting Ring As Detailed Herein To A Maximum Combined Thickness of 12 Inches. Brick Or Block Shall Not Be Used In The Construction Of A Manhole Or to Adjust The Elevation Of the Frame And Cover.
- 3.) Manhole Frame And Cover Shall Be Neenah R-1772-C With Gasketed Lid, (EJ 1022-2), Or As Approved By Rushville Utilities. When Watertight Frame And Cover Is required By Rushville Utilities Or Developer, Neenah R-1771-C With Locking Lid, (EJ 1022-3WT) With Locking Lid, Or As Approved By Rushville Utilities Shall Be Provided. All Covers Shall Be Stamped "SANITARY SEWER" With 2" Raised Letter.
- 4.) Manhole Connection Shall Be Made Using Flexible, Watertight Connections Such As A-Lok, PSX Press Seal, Kor-N-Seal Or Rushville Utilities Approval Equal.
- 5.) The Lowest Elevation To Receive Gravity Sanitary Service Must Be One (1) Foot Above The Top Of Manhole Casting Elevation Of Either The First Upstream Or Downstream Manhole On The Public Sewer To Which Connection Is To Be Made. Those Portions Of the Building Not Meeting The Stated Gravity Sanitary Service Requirement Shall Be Provided And Maintained By The Property Owner With A Grinder Pump System Or Rushville Utilities Approved Equal Discharging To The Gravity Building Connection Outside Of the Public Right-Of-Way.
- 6.) Manholes Shall Be Installed At Distances Not Greater Than 400 Feet. Drop Through Manholes Shall Be A Minimum Of 0.1 Feet.
- 7.) Contractor Shall Install An External Rubber Sleeve Sealing System Wrapped Over The Flange Of The Manhole Frame To 2-Inches Below The Bottom Of The Lowest Adjusting Ring. The External Rubber Sealing Sleeve Shall Have A minimum Thickness OF 60 Mils And Meet The Requirements OF ASTM C-877. The Rubber Sleeve Shall Be Infi-Shield External Manhole Seal, Or As Approved By Rushville Utilities.
- 8.) Adjusting Ring Height Shall Be Maximized To Minimize The Number Of Joints. (For Example: If 7" Adjustment Is Needed, A 5" And A 2" Ring Shall Be Used.)
- 9.) Backwater Valves Shall Be Provided And Installed In All Building Sanitary Sewer Laterals. The Backwater Prevention Valve Shall Be Located On The Inside Of Basements or Crawl Spaces And Be Readily Accessible At All Times. The Backwater Prevention Valve For Buildings Located On Slabs Shall Be Installed On The Building Side Of The Clean Out. Valves Shall Be Clean Check Backwater Valve By Rector Seal, Adapt-A-Valve By Mainline Backflow Products, Or As Approved By Rushville Utilities. Valves For Buildings Located On Slabs Shall Be Installed In A Water-Tight Access Pit With Fitted Cover To Provide Access For Maintenance, Inspection, And Cleaning.



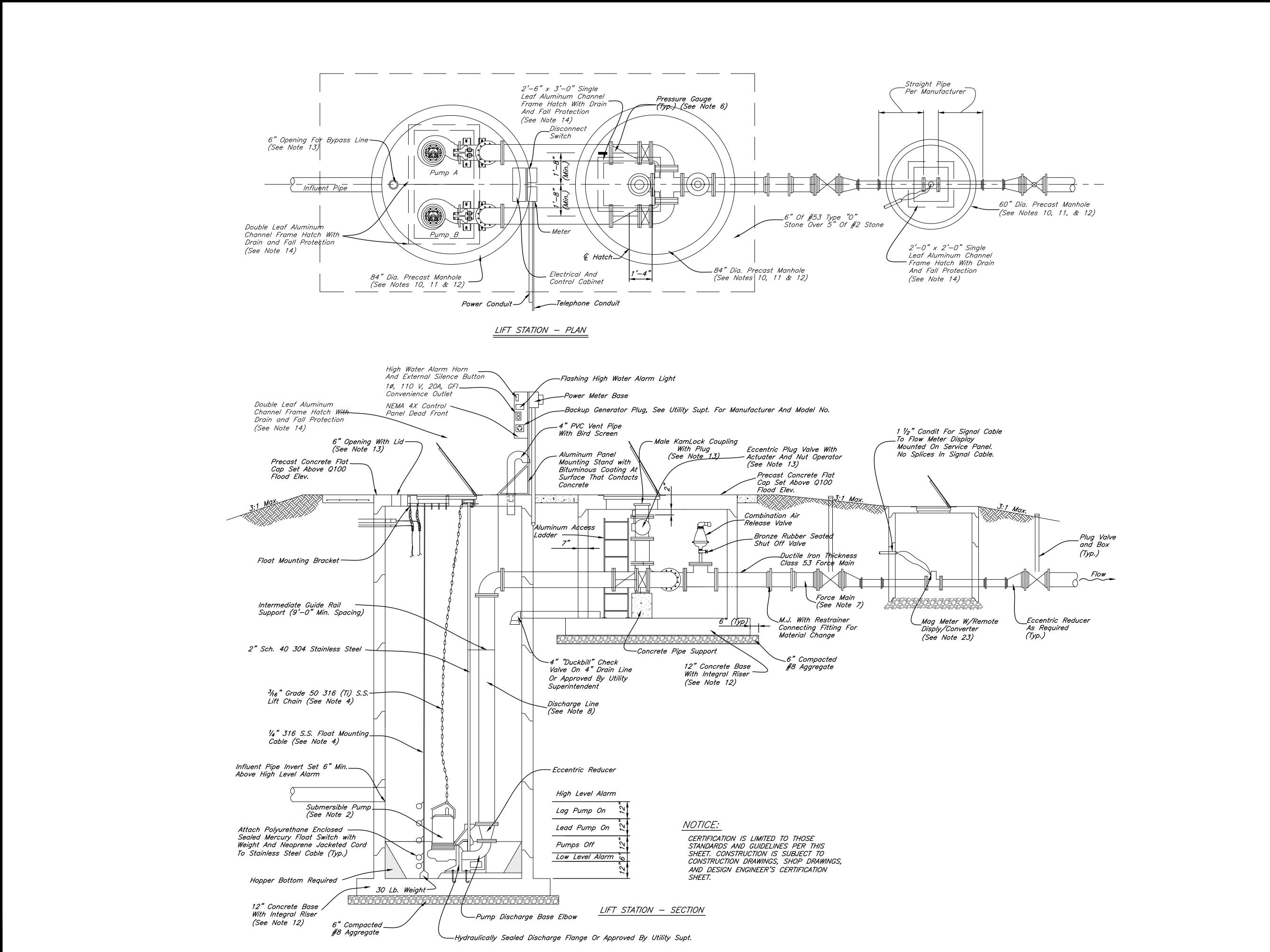


Or Approved Equal, And Installed in Accordance With The Manufacturer's Recomendations.



-Nominal 1/2" Butyl Rubber Base ExtrudablePreformed Gasket Material (Typ.) GASKET DETAIL 1.) Either HDPE Or Precast Concrete Adjusting Rings are Allowable In The City Of Rushville.

2.) HDPE Rings Shall Be injection Molded — Recycled HDPE As Manufactured By Ladtech, Inc.,



NO.

BEVISIONS

DATE:

LIFT STATION DETAILS

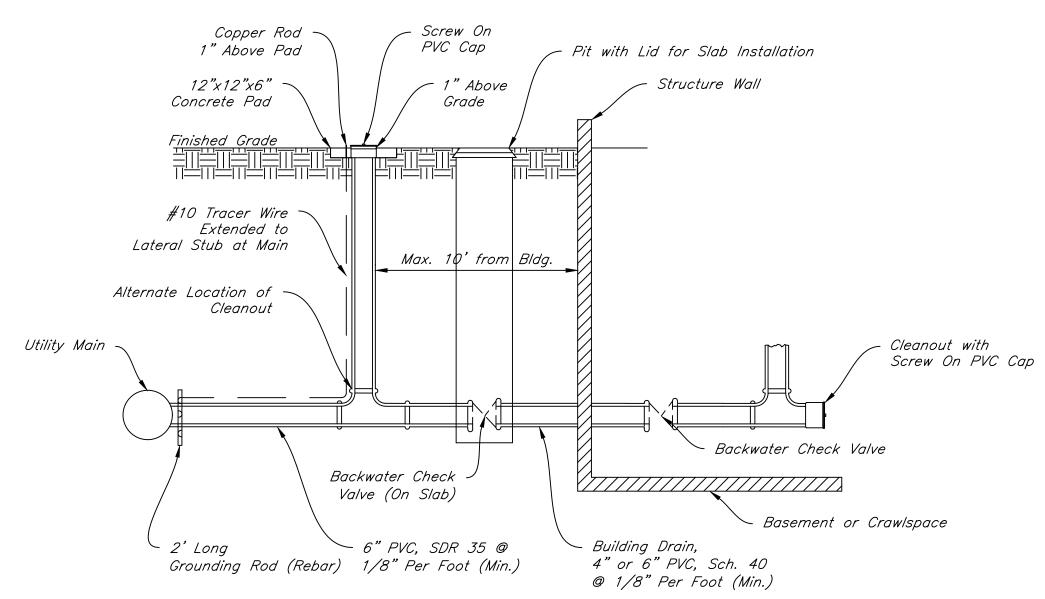
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Note: Trace Wire to Be Wrapped Around Ground Rod Min. 3 Times.



SERVICE CLEANOUT
NO SCALE

GENERAL NOTES:

- 1.) Actual Lift Station Dimension, Control Settings, & Pump Selection To Be As Indicated By The Design Engineer's Certification Sheet.
- 2.) Pumps "A" And "B" Shall Be Identical, Centrifugal, Submersible, Solids Handling, Non—Clog Design Capable Of Handling 3" Sphere Solids, Fibrous Material, Sludge, And Material Found In Typical Raw Sewage. Fit Replaceable Bronze Wear Ring To Volute. Pumps Shall Be Hydromatic, Myers, Flygt, Or Rushville Utilities Approved Equal. Manufacturer Shall Warrant The Pumps For Five Years After Installation. Pumps Shall Be 3 Phase.

All mating Surfaces Intended To Be Watertight Shall Be Machined And Fitted With Nitrile Rubber O—Rings With Sealing Complete When Metal—To Metal Contact Is Made. Resulting In Controlled Compression OF O—Rings Without Specific Torque Limit. Fasteners Shall Be 316 S.S.

Mechanical Shaft Seal System Running In An Oil Reservoir Shall Have Separate, Constantly Lubricated Lapped Seal Faces. The Lower Seal Unit Between Media and Oil Reservoir Shall Consist Of One Stationary Seat And One Rotating Ring Held In Place By Its Own Spring. The Rotating Seat Ring And The Stationary Seat Ring Shall Be Of Tungsten—Carbide. The Lower Seal Shall Be Removable Without Disassembling The Seal Chamber. The Upper Seal Between Seal Chamber And Motor Shall Be Of The Same Design With Its Own Spring. Seals Shall Be Maintenance Free, But Shall Be Easily Inspectable.

The Lift Station Control Panel Shall Be Stainless Steel Construction, NEMA 4X Rating Mounted On An Aluminum Pedestal. The Control Cabinet Shall House The Following Controls And Indication: Flow Meter Display, Warning Lights For Each Pump, Indicator Lights, Common Alarm, H-O-A Switches, Silence Button, Pump Alternator, Warning Reset Buttons, Relays, Heater, Surge Protection, Phase Monitoring, Hour Meters, And A GFI 110 Volt, Single Phase Convenience Outlet And A Convenience Light.

Lower Seal Failure Alarm Shall Be Engaged By Seal Failure Sensor Provided In The Seal Chamber Which Senses Water Intrusion Through Lower Seal. A Mini-Float In The Motor Chamber Which Signals Pump Shut-Down And Alarm Upon Water Intrusion. Through Upper Seal May Be Acceptable When Approved By Rushville Utilities.

Overtemperature Alarm And Pump Shut—Down Shall Be Engaged By Heat Sensor Attached To The Motor Windings. Motor Winding And Stator Lead Insulation Shall Be Class F With Maximum Temperature Capability of 155° C. Housing Shall Be Filled With High—Dielectric Oil. Air Filled Housing May Be Acceptable When Approved By Rushville Utilities. Pump And Motor Shall Be Designed To Operate Partially Or Fully Submerged In Pump Media Without The Use Of Cooling Jackets.

Alarm Conditions To Be Transmitted To The Utility's ILEX SCADA System Shall Be All Pump Failures, Pump Seal Failure, Overcurrent Alarm, High Level Alarm, Pump Run With Low Level Cut Out On, Power Failure Alarm, And Pump Failure. All Alarms Shall Be Wired Such That They Will Remain On Until Manually Reset.

Rail System Shall Enable The Easy Removal Of The Pump Without The Need For A Person To Enter The Wet Well. Two Schedule 40 Stainless Steel Guide Rails Shall Be Provided For Each Pump. The Guide Rail Shall Be Supported At The Bottom By The Discharge Elbow, Aligned Perfectly Plumb And Securely Affixed To Access Frame. One Intermediate Guide Rail Support Is Required For Each 9' Of Guide Rail Length.

- 3.) Check Valve Shall Use Packing Material To Seal The Integral Shaft Or Hinge Pin, O-Ring Side Plug And O-Ring Shall Not Be Used To Seal Integral Shaft Or Hinge Pin. Check Valve Shall Be Provided With Bolted Covers For Easy Access To The Discs And Shall Be Outside Adjustable Weight & Lever And Shall Be Clow 1106LW Or Approved By Rushville Utilities.
- 4.) Provide Sufficient Lift Chain, FogRod Mounting Cable, And Pump Power & Sensor Cable To Enable Non-Spliced Field Adjustment. Lift Chain Shall Have A Minimum Work Load Limit Of 1100 Pounds. FogRod Mounting Cable Shall Be Held In Place By Mounting Bracket And S Hook. Pump Power & Sensor Cable Shall Be Suitable For Submersible Pump Applications And This Shall Be Indicated By A Code/Legend Permanently Embossed On The Cable.
- 5.) Plug Valve Shall Be Hand Lever Operated And Shall Be Dezurik Fig.344, Clow 6412, Or Rushville Utilities Approved Equal.
- 6.) Pressure Gauge Shall Be Trerice Model 450 LFB Or Rushville Utilities Approved Equal. Drill & Tap Run Of Pipe To Install Pressure Gauge.
- 7.) Piping Not Within 2 Feet Of Wet Well And Valve Pit Shall Be DI AWWA C151, PVC ASTM D2241, PVC AWWA C900. Or Rushville Utilities Approved Equal. See Design Engineer's Certification Sheet For Class.
- 8.) Piping In And Within 2 Feet Of Wet Well And Valve Pit Shall Be Class 53 Flanged Ductile Iron Pipe.
- 9.) Piping, Valves, And Fittings In Wet Well And Valve Pit Shall Be Factory Primed Tnemec Series N140–1211 To A Dry Film Thickness Of 5.0 to 11.0 Mils And Shall Be Field Painted With Tnemec Series 69–Color To A Dry Film Thickness of 5.0 to 6.0
- 10.) Dampproof All Exterior Vertical Surfaces Which Are Backfilled Against With Bituminous Coating, Hydrocide 700 Mastic.
- 11.) Lift Station, Valve Pit, And Flow Meter Manholes Shall Be Pre-Cast Concrete In Accordance With ASTM C-478, With Rubber Gaskets Equal To ASTM-443 With 1/2' Kent-Seal Extrudable Preformed Gasket Material Or Rushville Utilities Approved Equal. See Sanitary Sewer Details And Notes Sheet.
- 12.) Horizontal Projections From Precast Integral Base And Riser May Be Required To Enable The Weight Of The Vertical Soil Ring Above The Projection To Resist Buoyancy Forces. See Design Engineer's Certification Sheet.
- 13.) Kamlock Model 633–LBS Flanged Coupler And 634–A Dust Ring Shall Be Used Within Valve Vault. Kamlock Coupling And Eccentric Plug To Force Main Size Occurring With Concentric Reducer Placed On Top Of Base Elbow. Fix Operating Nut For Eccentric Plug In Vertical Position To Enable Wrench Operation From Surface. Layout Of All Valve Vault Fitting And Equipment To Be Based Upon By—Pass Line Being Up Close To Hatch Opening As Shown.

- 14.) Aluminum Hatches Shall Be Bilco Type "J-3AL" Or Rushville Utilities
 Approved Equal. Leaf Shall Be 1/4' Aluminum Diamond Plate Live Load To
 300 PSF. Channel Frame Shall Be 1/4" Extruded Aluminum With A Mill Finish
 And Bituminous Coating On Exterior Surfaces. Hatch Shall Be Provided With
 Type 316 S.S. Hardware Throughout, Compression Spring Operators, Automatic
 Hold-Open Arm With Release Handle, Recessed Lock Hasp With Flush Cover,
 Slam Lock With Recessed Handle, And 1-1/2" Drain Coupling.
 Hatch Shall Be Equipped With Fall Protection Containing System.
- 15.) Sewer Connection To Wet Well Shall Be KOR-N-SEAL, A-LOK, Dura-Seal, Or Rushville Utilities Approved Equal.
- 16.) Force Main Penetrations Of Wet Well And Valve Pit Shall Be Core Drilled And Made Watertight Through The Use Of KOR-N-Seal, A-LOK, Dura-Seal, Or Rushville Utilities Approved Equal.
- 17.) Automatic Pump Control System Shall Include All Necessary Items And Appurtenances Which Might Normally Be Considered A Part Of A Complete System. System Shall Be Supplied By One Manufacturer, Shall Be Factory Assembled, Wired, And Tested, And Shall Be Per Complete Electrical Drawings And Instructions. Major Components And Sub—Assemblies Shall Be Identified As Function With Laminated, Engraved, Bakelite Nameplates. System Shall Be Built In A NEMA 4X S.S. Enclosure Suitable For The Specified Horsepower And Voltage Of The Pumps.

The Outer Door Of The Panel Shall be A Hinged Dead Front With Provisions For Padlocking. Inside Shall Be A Separate Hinged Panel To Protect All Electrical Components, H-O-A Switches, Run Lights, Circuit Breakers, Etc. Mounted Such That Only The Faces Protrude Through Said Panel With No Wiring Fixed To Said Panel. The Manufacturer Shall Warrant The Control Center For One Year After Installation Covering 100% Parts And Labor.

Provide The Services Of A Factory—Trained, Qualified Representative To Inspect, To Adjust, And To Place The System In Trouble—Free Operation And To Instruct The Operating Personnel In The Proper Operation And Care Of The System

All Major Components Of Control Center Shall Be American—Made And Available From Local Sources. Pump Manufacturer Shall Accept The Control Center In Writing To Ensure Unit Responsibility And Warranty.

Provide A Service Entrance Rated Manual Transfer Switch Housed In A Separate NEMA 4X S.S. Enclosure With External Operation Handle Capable Of Being Locked In The "OFF" Position. Provide A Generator Receptacle (Thomas & Betts Model DF2404FRABO) Wired To The Manual Transfer Switch.

An Incoming Power Terminal Block Shall Be Located At The Bottom Of The Control Enclosure. A Lightning Arrestor Shall Be Provided At The Terminal Block And Connected To Each Line Of The Incoming Side Of The Power Switch Of Adequate Size To Provide Power For Control, Operation And Appurtenant Components Shall Be Provided. Provide A Circuit Breaker And Magnetic Starter Terminals. A Single Main Fusible /Breaker Disconnect Switch With Each Leg. Manual Reset Overload Protected For Each Pump. Starters Shall Have Auxiliary Contacts On 3Ø Applications To Operate Both Pumps Simultaneously. Provide A Circuit Breaker And Transformer To Power The Control Panel With 1Ø, 115 Volt Service For All Control Functions. Provide A Green "Run" Light And H—O—A Switch To Enable Field Connections.

Materials And Installation Of The Required Equipment Grounding Shall Be In Accordance With NEC Section 250–83(c). All Wiring Shall Have Not Less Than 600 Volt Insulation. Wiring And Buss Shall Be In Accordance With NEC, State, Local, And NEMA Standards. All Wiring Shall Be Color Coded.

Minimum 4" Diameter, Schedule 40 Conduit Shall Be Provided From Wet Well To Control Panel Enabling Pump Power & Sensor Cables And FogRod Cable To Be Easily Pulled. Seal Conduit At Control Panel To Prevent Sewer Gases From Entering. All Conduits, Fittings, Or Connections Shall Enter From The Bottom Of Enclosures. Provide An 18" Air Gap In Conduit Between Control Panel And Concrete Slab. Provide Free Air Cable Guard.

Sump Level Rise To Lead Pump Run Level Causes Lead Pump To Operate.
Lead Pump Operating And Sump Level Falling To Pumps Off Level Causes
Lead Pump To Shut Off. Lead Pump Operating And Sump Level Rising To Lag
Pump Run Level Causes Lag Pump To Operate. Lag Pump Operating And
Sump Level Falling To Pumps Off Level Causes Both Pumps To Shut Off.
Sump Level Rise To High Level Alarm Causes High Level Alarm To Operate.
Sump Level Fall To Low Level Alarm Causes Low Level Alarm To Operate. An
Alternating Relay Shall Be Provided To Cause Pumps To Alternate Whenever
Pumps Are Shut Off. If One Pump Fails For Any Reason, The Remaining
Pump Shall Operate Upon Sump Level Rise To Lag Pump Run Level. An
Hour Meter Shall be Provided For Each Pump To Record The Elapsed
Operating Time Of Each Pump.

- 18.) Four Manuals And A PDF Copy Shall Be Presented To The City Which Shall Include The Following Minimum Information: 1) Operation Instructions, 2) Maintenance Instructions, 3) Recommended Spare Parts List, 4) Lubrication Schedule, 5) Structural Diagrams, 6) As—Built Wiring Diagrams, 7) Bill of Materials, And 8) Warranty.
- 19.) Provide Telephone Conduit Without Conductors So That The Telephone Conductors May Be Pulled At A Future Date.
- 20.) Contractor Shall Construct A 12 Foot Wide Asphaltic Concrete Access
 Drive From Existing Edge Of Pavement To Proposed Edge Of Stone Lot. The
 Asphaltic Concrete Pavement Section Shall Comply With The Asphalt Pavement
 Reconstruction Detail Shown On Sheet 6.
- 21.) Telemetry System Shall Be Esteem 195es Radio With Allen Bradley PLC#
 1763—L16BWA Or Rushville Utilities Approved Equal. Telemetry System
 Operate From A 120 Volt, 60 Hertz Power Source And Communicate Via A
 900 Megahertz Radio Interface. Options To Be included With The Telemetry
 System Include Battery Backup, Low Temperature Strip Heater And AN RS—232
 Interface.
- 22.) Provide 1 ½" Conduit From Flow Meter Display On Service Panel To Flow Meter And Install Manufacturer Furnished Cable In Conduit.
- 23.) A Flanged Sch. 40 Steel Pipe "Spool" Of The Same Laying Length As The Flow Meter Flow Tube, With Allowance For Gasket And Grounding Ring Clearances, Shall Be Furnished To Owner.

LIFT STATION
NOTES
STANDARD DETAILS

JOB NO. 3882.001

PROJECT MGR. TONY AKLES



SHEET

WATER MAIN MATERIALS

- 1.) All PVC Pipe Provided For Use In The City Of Rushville Water System Shall Be Manufactured By J-M Pipe, Or City Approved Equal. All DI pipe Provided For Use In The City Of Rushville Water System Shall be Manufactured By Griffith, U.S. Pipe, Or City Approved Equal. All Fittings Provided For Use In The City Of Rushville Water System Shall Be Manufactured By Clow, Tyler, Union Foundry, Mueller, Or As Approved By Rushville Utilities.
- 2.) DI Pipe For Water Mains Shall Be Centrifugally Cast And Shall Conform To The Latest Revision Of ANSI Specification A21.5 And AWWA C151. DI Pipe, 10 Inches In Diameter Or Less, With Push—On Or Mechanical Joints Shall Be Special Thickness Class 50. DI Pipe, 12 Inches In Diameter Or Larger, With Push—On Or Mechanical Joints Shall be Pressure Class 350. The Pipe Shall Be Provided With A Minimum Laying Length Of 18 Feet.
- 3.) PVC Pipe For Water Mains, 4 Inches Through 160 Inches, Shall Conform To The Standards For Polyvinyl Chloride Plastic Pipe AWWA C-900 PVC Pipe For Water Mains. The Material Used Shall Conform To ASTM Specifications D-1784, Standard Specification Of Rigid PVC And Chlorinated PVC Compounds, Class 12454. PVC C-900 Pipe, With Push-On Or Mechanical Joints, Shall Be Class 165 or 235. The Pipe Shall Be Provided With A Minimum Laying Length Of 20 Feet.
- 4.) DI Fittings, 3 Inches Through 48 Inches, Shall Conform To The Latest Revision
 Of ANSI Specification A21.10 And AWWA C110. DI Compact Fittings, 3 Inches
 Through 16 Inches Shall Conform To The Latest Revision Of ANSI Specification A21.53 And
 AWWA C153. Pipe And Fittings In And Within 2 Feet Of Structures Shall Be Flanged Ductile
 Iron. All Other Fittings Shall Be Mechanical Joint Type.
- 5.) DI Pipe Coatings Shall Conform To The Latest Revision Of ANSI A21.51, AWWA C-151 And ANSI A21.4, AWWA C-104. Interior Pipe Lining Shall Be Cement-Mortar With Asphaltic Seal Coat. Exterior Pipe Coating Shall Be Standard Asphaltic Coating, Except Exposed Piping Within Structures Shall Receive Shop Priming Compatible With Finish Painting.
- 6.) Mechanical Joints And Accessories Shall Conform To The Latest Revision Of ANSI Specification A21.10 And AWWA C110. Rubber Gaskets Shall Be Vulcanized Synthetic Rubber And Shall Conform To The Latest Revision Of ANSI Specifications A21.11 And AWWA C111.
- 7.) Flanged Ductile Iron Pipe Shall Conform To The Latest Revision Of ANSI Specification A21.15 And AWWA C-115. Rubber Gaskets Shall Be Either Ring Or Full Face And Shall Be 1/8" Thick. Bolts And Nuts Shall Conform To ANSI B18.2.1 And ANSI B18.2.2.
- 8.) Push—On Joints And Joint Components Shall Conform To The Requirements For ASTM Specification D—3139, Joint For The Plastic Pressure Pipe, Using Flexible Elastomeric Seals In Accordance With ASTM F477. The Joint Shall Be Designed So As To Provide Thermal Expansion And Contraction Experienced With A Total Temperature Change Of Seventy—Five Degrees F In Each Joint Of Pipe.
- 9.) Service Tubing From Main To Customer Shall Be Copper Water Tube, Type K, Soft
 Temper For 3/4" & 1", Hard Temper For Greater Than 1", For Underground Sevice,
 Conforming To ASTM B-88, ASTM B-251, And AWWA C-800. The Pipe Shall Be Marked With
 The Manufacturer's Name Or Trademark And Mark Indicative Of The Type Of Pipe. The
 Outside Diameter Of The Pipe And Minimum Weight Per Foot Of Pipe Shall Not Be Less Than
 That Listed In ASTM B-251, Table II.
- 10.) All Water Main Material Shall Be Installed In Accordance With AWWA C600, And With A Minimum Depth Of Cover Of 54 Inches.
- 11.) All PVC Pipe Shall Be Installed With Marker Tape And Locator Wire. Tape Shall Be Color Coded And Installed Above The Pipe In Accordance With The Tape Manufacturer's Instructions. Wire Shall Be No. 10 Solid Wire Copper With Insulation.
- 12.) Each Section Of PVC Pipe Shall Be Marked With Size And O.D. Base, PVC, DR Ratio, AWWA Pressure Class, Manufacturing Name, Production Code And NSF Seal In Accordance With AWWA C-900. The Plain End Of Each Pipe Length Shall Have Two Rings One Inch Apart Painted Around The Pipe At The Proper Location To Allow Field Checking Of The Correct Setting Depth Of The Pipe In The Bell Or Fitting.

WATER MAIN DISINFECTION AND BACTERIOLOGICAL TESTING

- 1.) Rushville Utilities Shall Be Given 48 Hours Written Notice Of The Required Disinfection, Flushing And Testing Procedures To Be Performed By The Contractor. All Newly Installed Water Mains Shall Be Disinfected In Accordance With ANSI/AWWA C-651. Liquid Chlorine, High-Test Calcium Hypochlorite (70 Percent Chlorine). Or High-Test Sodium Hypochlorite (14.7 Percent Chlorine) May Be Used To Provide An Initial Minimum Concentration Of 25 MG/L Of Free Chlorine In ALL Newly Installed Mains.
- 2.) A Minimum Concentration Of 10 MG/L Of Free Chlorine Shall Be Maintained In All Parts Of The Newly Installed Mains For 24 Hours Of Contact Time.
- 3.) Following The Initial 24 Hour Contact Time But Prior To 48 Hours Of Contact Time, All Treated Water Shall Be Dechlorinated and Thoroughly Flushed From The Newly Laid Pipe At Its Extremity Until The Replacement Water Has A Chlorine Residual Equal to Distribution System Residual.
- 4.) After Flushing, Two Consecutive Water Samples Shall Be Collected On Successive Days From The Treated Piping System As Directed By Rushville Utilities. Each Sample Shall Show Satisfactory Bacteriological Results.
- 5.) The Taking Of Samples And The Testing Of Chlorine Residual Shall Be Carried Out By
 The Contractor At The Direction Of Rushville Utilities And Using A Laboratory Approved By
 The Rushville Utilities. A Copy Of The Test Results Shall Be Provided To The Rushville
 Utilities.

WATER MAIN PRESSURE AND LEAKAGE TESTING

- 1.) Rushville Utilities Shall be Given 48 Hours Written Notice OF The Required
 Pressure And Leakage Test To Be Performed By The Contractor. The Pressure And
 Leakage Test Shall Be Performed In Accordance With The Basic Provisions Of
 AWWA C600. The Testing Procedure Shall Assume A 100 PSIG Working Pressure.
 The Test Pressure Shall Not Be Less Than 1.25 Times The Working Pressure At
 The Highest Point Along The Rest Of The Section And Not Less Than 1.5 Times The
 Assumed Working Pressure At The Point Of Testing. Test Pressure Shall Not
 Exceed Pipe Or Thrust—Restrain Design Pressures Or Rated Pressure Of The
 Valves. The Test Pressure Shall Not Vary By More Than +5 PSI For The 2 Hour
 Test Duration.
- 2.) Valves Shall Not Be Operated In Either Direction At Differential Pressures Exceeding The Rated Valve Working Pressure.
- 3.) The Pressure And Leakage Test Shall be Performed Following The General Form Of The Following:
 - A. Record Time And Line Pressure Prior To Start Of Test.
 - B. Pump Water Into New Main Until Pressure Reaches 150 PSIG, Stop Pumping When Pressure Reaches 150 PSIG, Record Time And Line Pressure.
 - C. Contractor Shall Remain At Site For One Hour. The Test Shall Be Voided If Any Adjustments Are Made To The Main, Test Equipment Or Appurtenances. Tightening Of Fittings On Test Equipment Is Allowed. Following The One Hour Period, Record Time And Line Pressure.
 - D. Pump Water Into New Main From A Calibrated Container Of Water Until Pressure Reaches 150 PSIG, Stop Pumping When Pressure Reaches 150 PSIG, Record Time, Line Pressure, And Amount Of Water Pumped To The Nearest 1/10 Gallon. The Calibrated Container Shall Have Markings At 1/10 Gallon Increments.
 - E. Repeat Steps C And D One Additional Time.
- 4.) A Test Section Of Water Main Is Considered Satisfactory If It Meets The Following:

Main Size (Inches)	Allowable Leakage (Gal./Hr./1000ft)
6"	0.55
8"	0.74
10"	0.92
12"	1.10

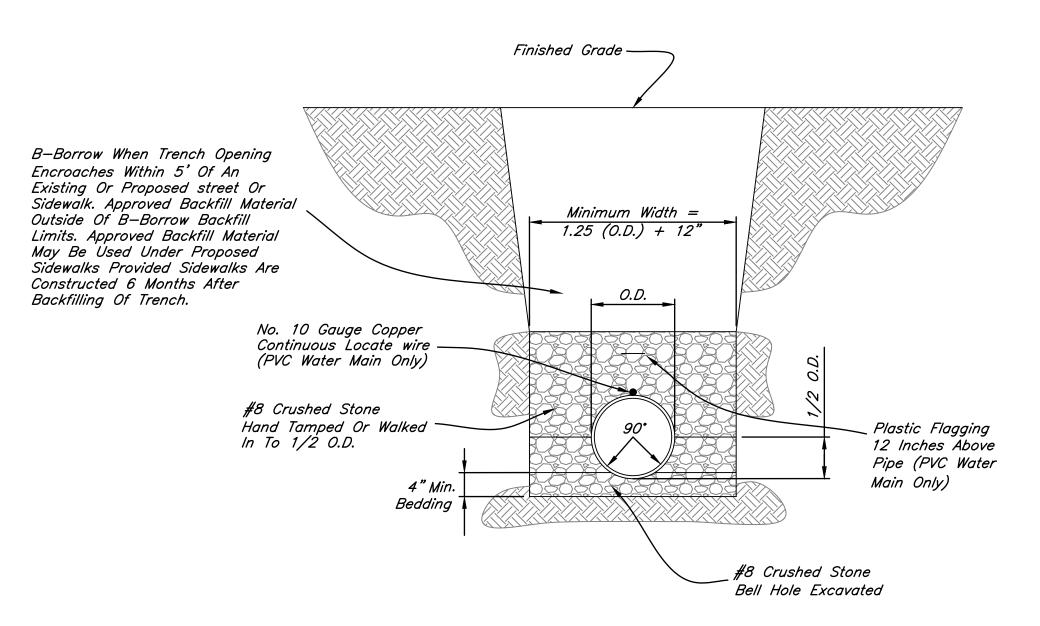
- 5.) If The Leakage From A Test Section Is Greater Than Permitted Under These Specifications, The Contractor Shall Locate And Repair The Defective Joints, Mains, And Appurtenances. The Pressure And Leakage Test Shall Then Be Repeated Until Satisfactory Results Be Obtained. All Labor And Materials Required To Meet The Requirements Of The Pressure And Leakage Test Shall Be At The Expense Of The Contractor
- 6.) The Operation Of The City Of Rushville Water System Valves And Hydrants Shall Only Be Conducted By Authorized Rushville Utilities Personnel.

RECORD DRAWINGS AND WARRANTIES

- 1.) Contractor Shall Notify Rushville Utilities In Writing And Rushville Utilities Must Agree In Writing Before Making Changes From Approved Plans.
- 2.) Record Drawings Shall Be Submitted To Rushville Utilities. Record Drawings
 Shall At A Minimum Provide Two Perpendicular Horizontal Measurements And A
 Vertical Measurement To All Fittings, Valves, And Deflections In Pipe. Where
 Applicable, Contractor Shall Dimension The Location Of The Water Main From
 Back-Of-Curb. Contractor Shall Submit Record Drawings To Rushville Utilities
 Office In Paper And Digital Format Within 30 Days Of Successful Completion Of
 All Testing Requirements.
- 3.) Contractor Is Responsible For All Leaks, Faulty Hydrants, Broken Mains, Etc., For One Year After The Date Of Acceptance By The City.

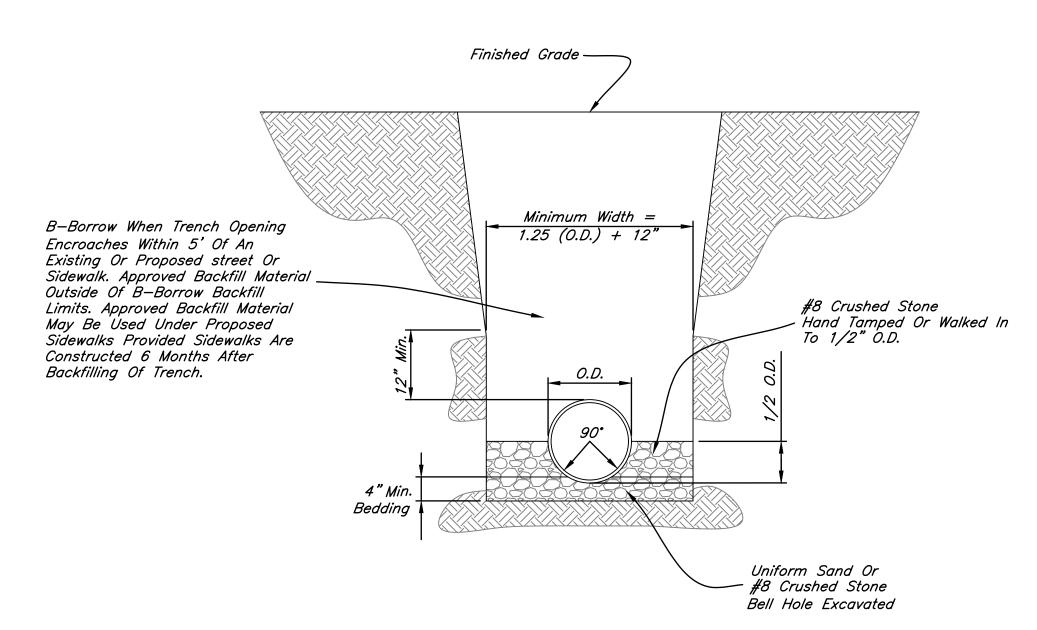
STEEL CASING REQUIREMENTS FOR WATER MAINS

1.) All Water Mains That Are At Least Two Inches In Diameter And That Are To Be
Placed Under An Existing Or Proposed Street Other Than Local Residential Street
Must Be Placed Inside A Casing Pipe. The Casing Pipe Must Be Sized
Appropriately And Installed In A Way That Is Acceptable To The Rushville Utilities
Water Department.



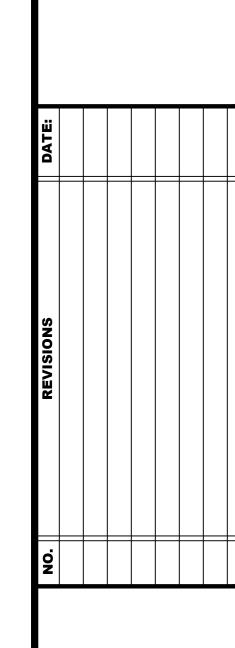
PIPE SIZE	8" To 15"	18" And Over
Bedding Below The Pipe	4"	0.D./4 Min. =8"

PVC PIPE BEDDING DETAIL



PIPE SIZE	6" To 14"	16" And Over
Bedding Below The Pipe	4"	0.D./4 Min. =8"

DI PIPE BEDDING DETAIL



VATER MAIN DETAILS

> JOB NO. 3882.001

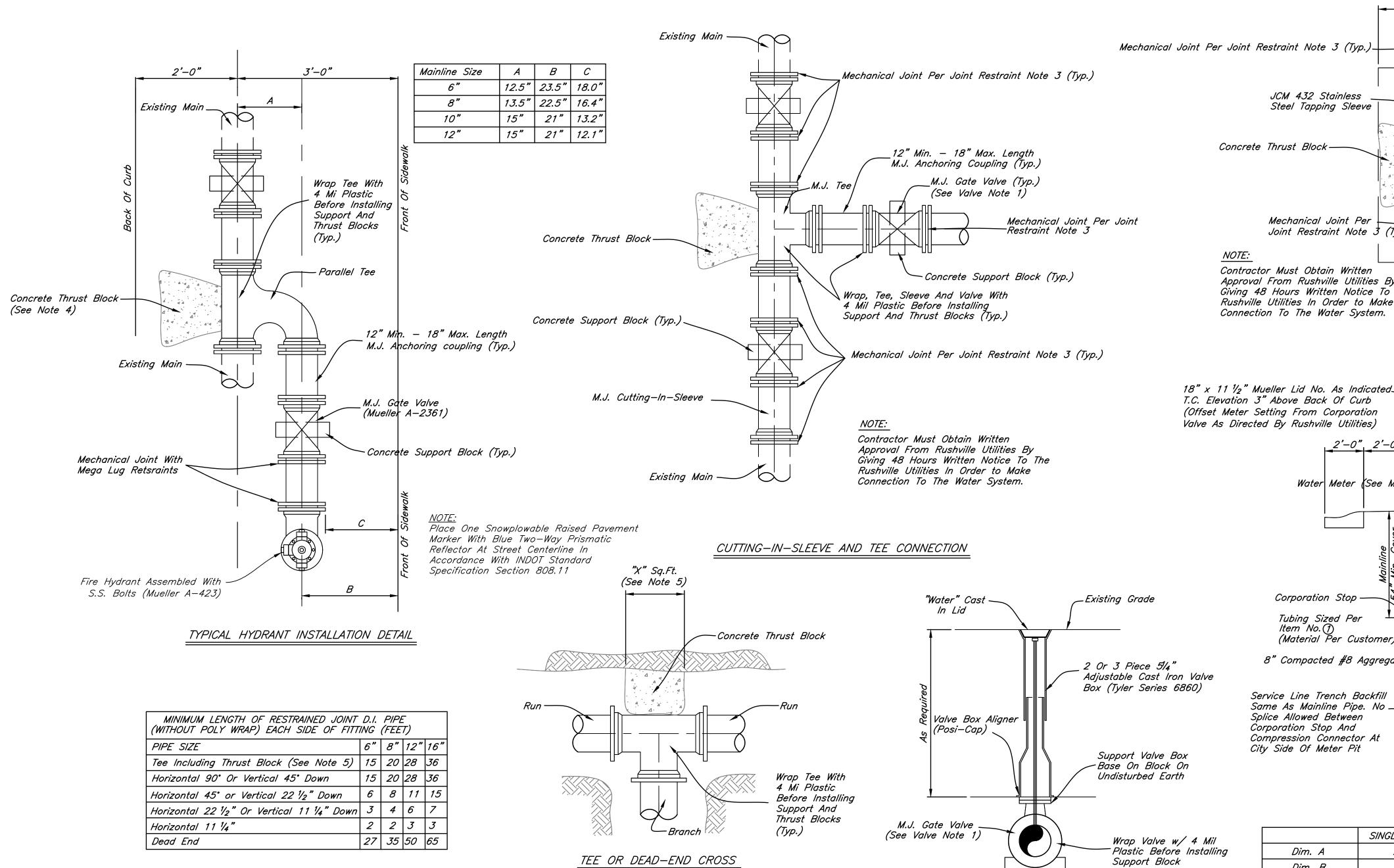
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PROJECT MGR.

TONY AKLES



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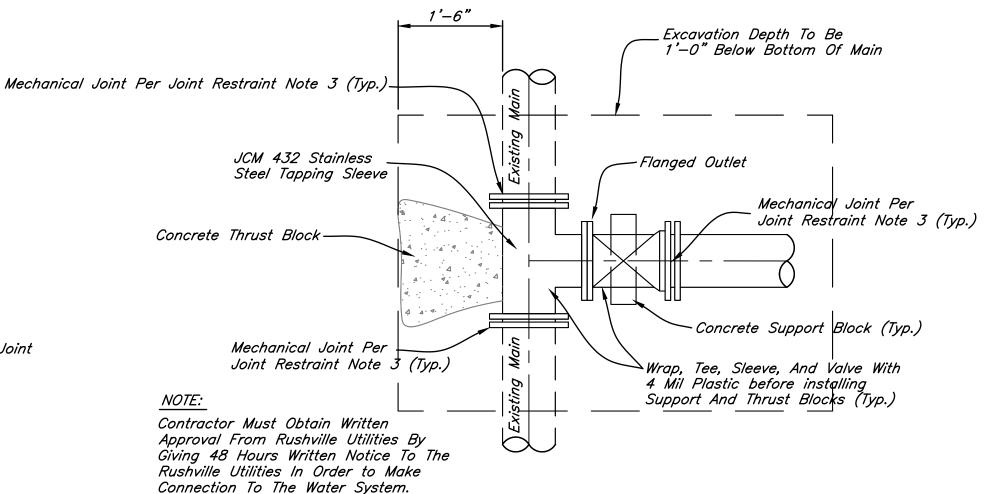


TYPICAL VALVE INSTALLATION DETAIL

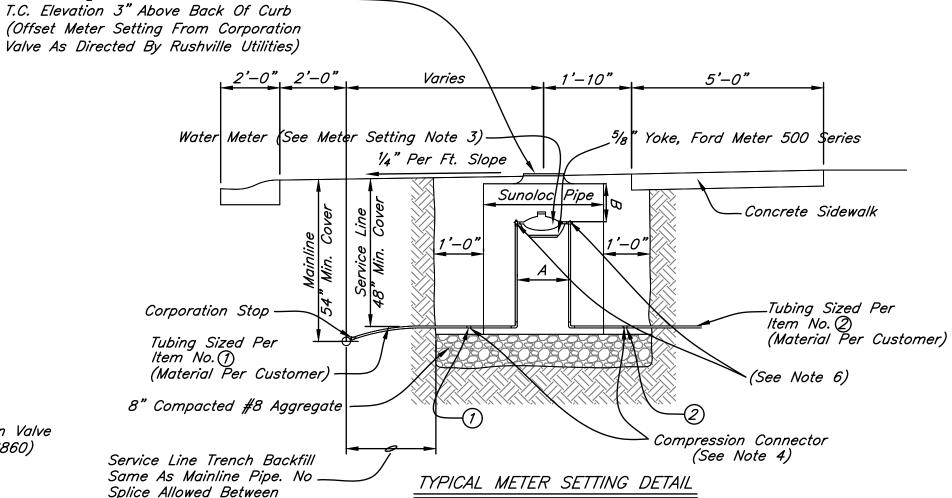
-Concrete Support Block

VALVE NOTES:

- 1.) All Gate Valves Shall Be Mueller A-2361.
- 2.) All Gate Valves Shall Be Assembled With Factory Installed Stainless Steel Bolts.
- 3.) All Valves Shall Open Counterclockwise.
- When Needed Due To Increased Depth, A 3 Piece Valve Box



TAPPING SLEEVE AND VALVE CONNECTION



SINGLE 5/8"X3/4" SINGLE 1"X1" SINGLE 1 1/2"X1 1/2" SINGLE 2"X2" 7.88" 11.125" 13.25" 17.25**"** Dim. A 16.5**"** 16.5**"** Dim. B 7" 7" *36"* 48" Sunoloc Pipe Size *36" 36"* 18" I.D. 21" I.D. 27" I.D. Lid Size 24" I.D. H-10817 Lid H-10817 Lid w/Ring H-10817 Lid w/Ring H-10817 Lid 3/4" Compression (1) 1" Compression 2" Compression 2" Compression 3/4" Compression 2" Compression 1" Compression 2 Compression

METER SETTING NOTES:

Corporation Stop And

City Side Of Meter Pit

Compression Connector At

- 1.) Provide A Mueller H5020 Or Ford 502 Yoke For 5/8" x 3/4" Meter. Contractor Provides Complete Job Including Meter.
- 2.) Provide A Mueller H5040 Or Ford 504 Yoke For 1" x 1" Meter. Contractor Provides Complete Job Including Meter.
- 3.) Provide A Mueller B2426-00 Or Ford VBB86-12-11-66 Yoke w/12" Riser For 1 1/2" x 1 1/2" Meter. Contractor Provides Complete Job Including Meter.
- 4.) Provide Mueller B246-00 Or Ford VBB87-12-11-77 Yoke w/12" Riser For 2" x 2" Meter. Contractor Provides Complete Job Including Meter.
- 5.) Meters Shall Be As Directed By The Rushville Utilities.
- 6.) For 5/8"x3/4" & 1"x1" Meters Contractor To Provide Angle Meter valves As Manufactured By Mueller Or Ford.
- 7.) For All Meter Settings Except 5/8" x 3/4" Provide By-Pass Around Meter Setting With Curb Box & Valve.

WATER I DETAILS STANDARD I CITY OF RUS USH COUNTY

* Corporation Valve Shall

Be Mueller Corp. Stop H

Or Mueller P-15008 Or

1" And Mueller P-25008

Or Ford FB-1000 For

1 1/2" And 2"

Ford F-1000 For 3/4" And

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4.) Rushville Utilities Prefers The Use Of A 2 Piece Valve Box. May Be Used.

1.) Length Of Restraint Measured From Centerline Of Fitting Requiring Restraint. Length Of

3.) Restraint To Be Accomplished With Field Lok Gaskets For Push-On Joints, Anchoring

2.) Length Of Restraint Based Upon 54" Cover, 150 PSI Pressure, And ASTM D2487 Soil Types CL, ML, SC, SM, SP, SW, GC, GM, GP, & GW. For Less Cover, Higher Pressure, Or ASTM

Coupling For Valves And Adjacent Tees, Romac Gripring Or Megalug Series 1100 For All

4.) Concrete Thrust Blocks In Lieu Of Mechanical Restraint May Be Used Only With The Written

5.) Tees And Dead-End Crosses Require Concrete Thrust Block In Addition To Branch Restrain

6.) Concrete Shall Not Be Allowed To Come In Contact With Any Joint, Flanges, Gaskets, Bolts Or Nuts. Four Mil High Density Polyethylene Plastic Shall Be Used To Cover All Fittings,

Length. "X" Area For Concrete Thrust Blocks Per Detail Shall Be As Follows:

2, 4, 6 & 10 Square Feet For 6, 8, 12, & 16 Inch Pipe, Respectively.

Restraint For Vertical Bends Up Are Equal To That For Horizontal Bends.

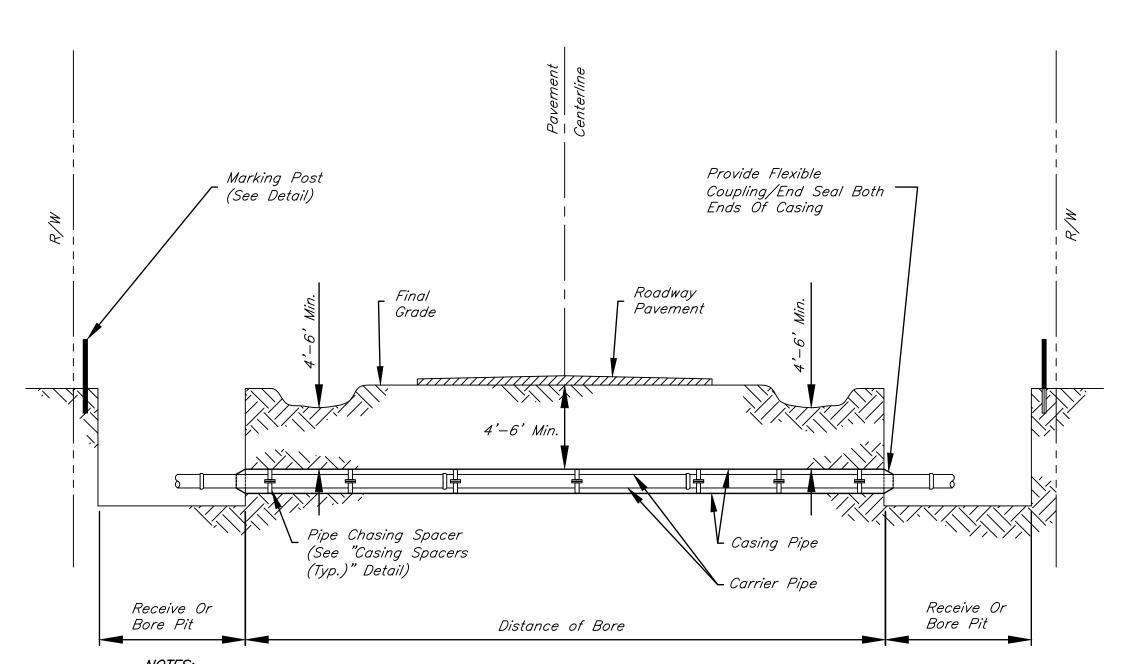
D2487 Soil Types PT, OH, CH, MH, & OL, Consult Rushville Utilities.

Mechanical Joints, Or As Approved By Rushville Utilities.

Piping And Valves Prior To Pouring The Thrust Block.

JOINT RESTRAINT NOTES:

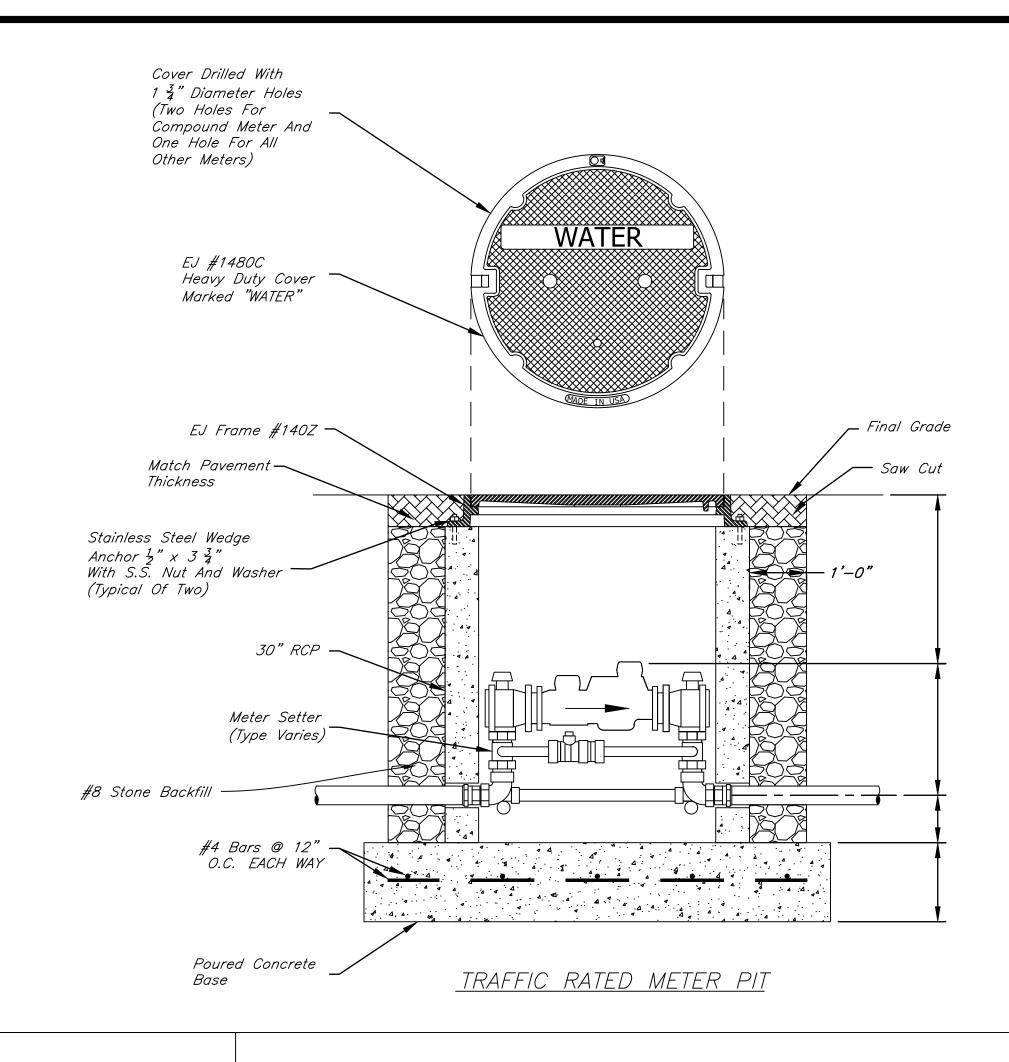
Approval Of Rushville Utilities.

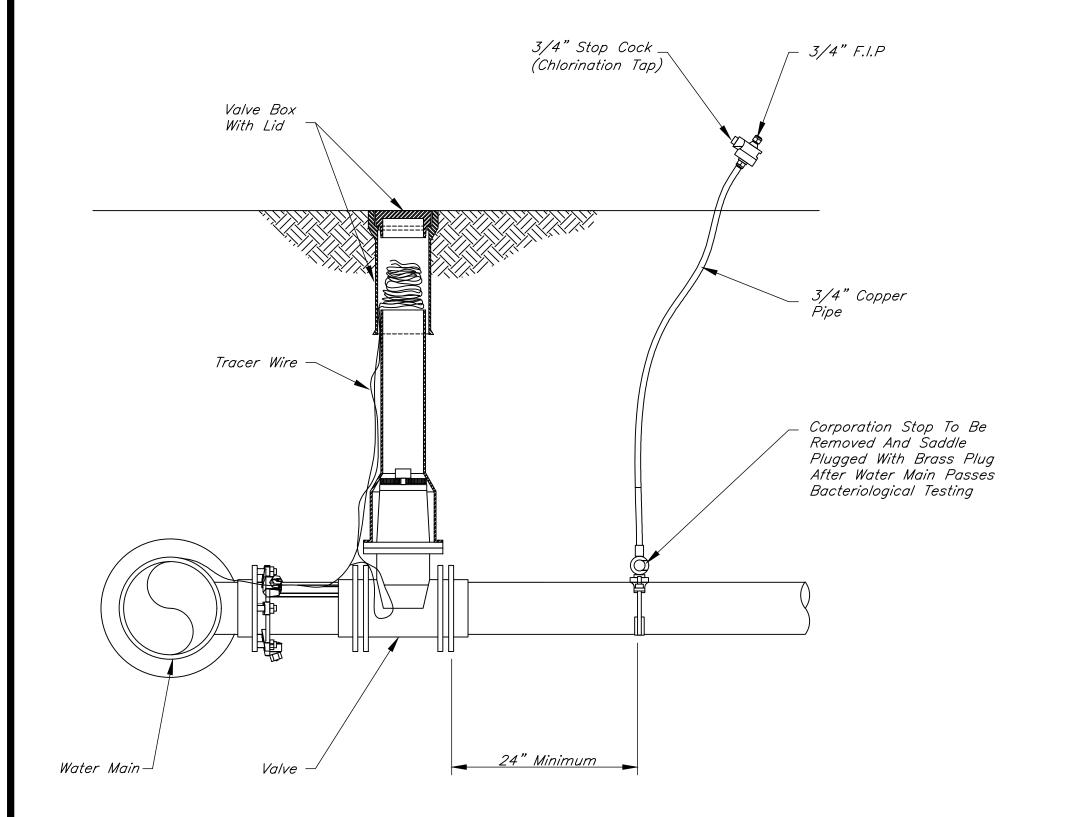


NOTES:

- 1. All Pipe Joints Within The Casing Are To Be Restrained.
- 2. Tracing Wire To Be Installed Through All Cased Borings And Connect To Marking Posts.
- 3. Steel Pipe Casing Shall Conform To The Requirements Of ASTM A283, grade B, C, Or D. All Joints Shall Be Welded. All Welding Shall Be Performed In Accordance With AWWA C206, "AWWA Standard For Field Welding Of Steel Water Pipe". Coating For Steel Casing Is <u>NOT</u> Required.
- 4. Steel Pipe Casing Shall Be Installed Symmetrical About Water Main Centerline (Typ.). Pipe Casing Shall Be Laid True To Line And Grade With No Bends Or Changes In Grade For The Full Length Of The Casing.
- 5. Two Tracer Wires Shall Be Taped To The Carrier Pipe. Contractor Shall Verify Continuity After Carrier Pipe Is Installed.

TYPICAL JACK AND BORE CASING PIPE



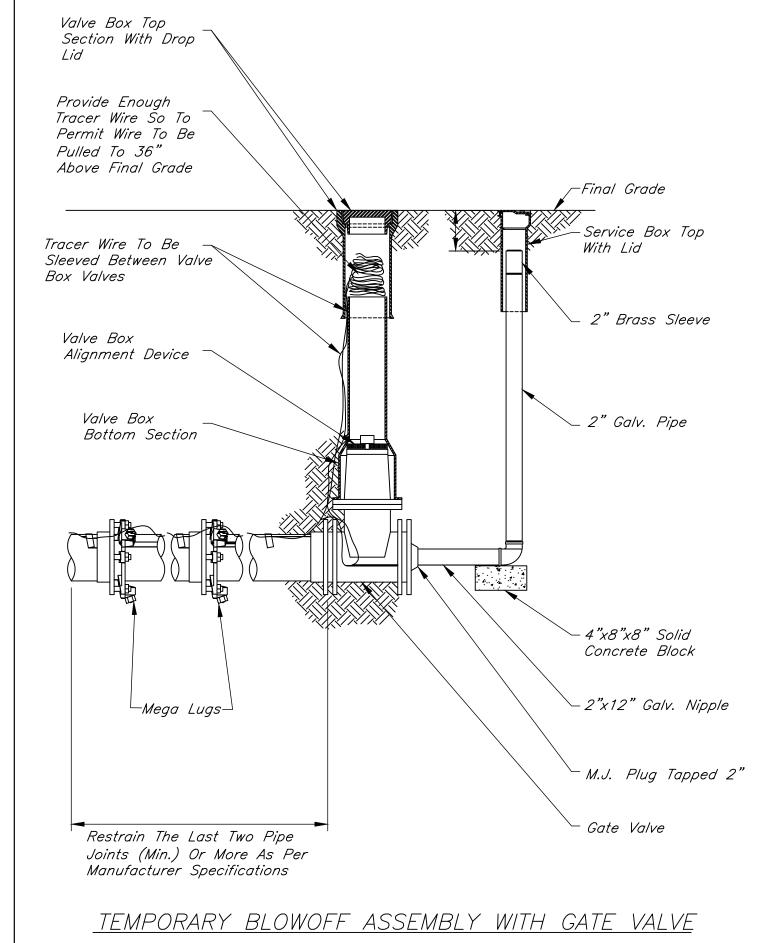


<u> NOTE</u>:

1. Remove Chlorination Tap After Water Main Passes Bacteriological Testing. Remove Corporation Stop And Plug Saddle As Indicated.

CHLORINTATION/DISINFECTION TAP TO BE USED

DURING CONSTRUCTION AND DISINFECTION OF PIPE



WATER MAIN
DETAILS - 3
STANDARD DETAILS

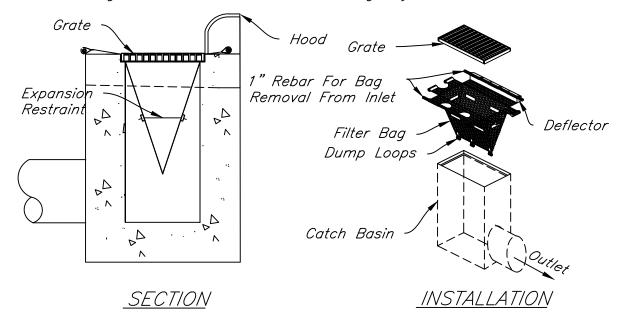
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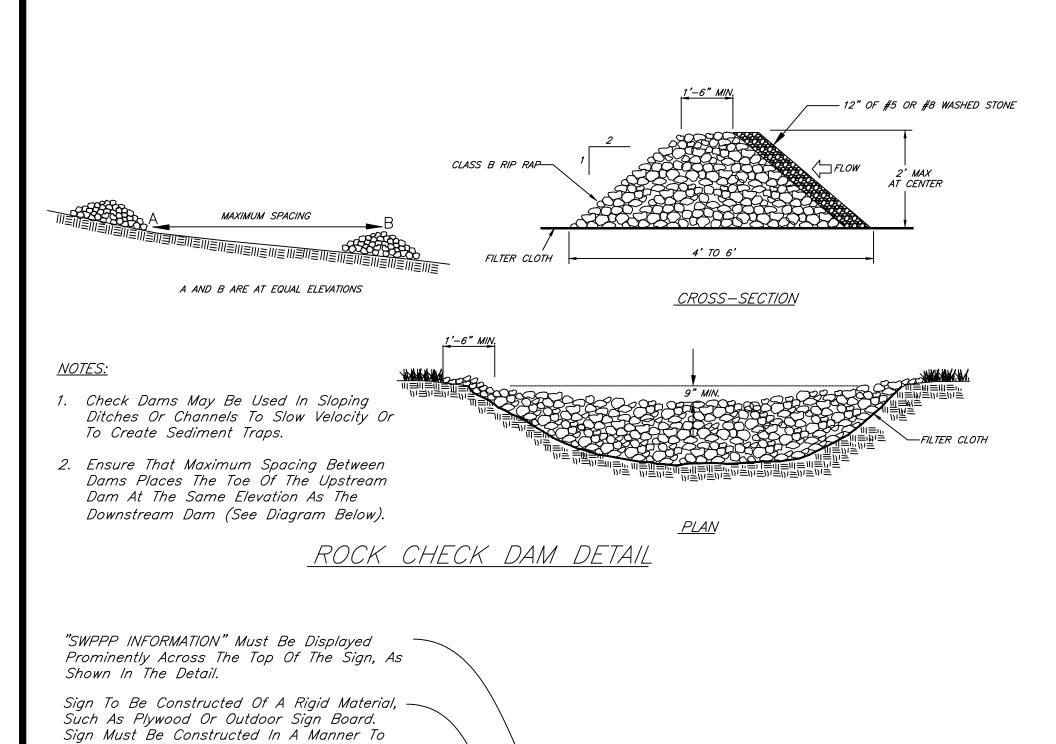


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- 1. Inlet Maintenance Shall Be Documented In Project Log Book.
- 2. Filter Types Shall Be Approved By The Inspector Prior To Installation.
- 3. Filter Bags May Be Removed When Site Is Stabilized At The Direction Of The
- 4. Filter Bags Shall Be Removed Prior To Street Acceptance.
- 5. Filter Bags Shall Be Cleaned Or Replaced On A Regular Basis (Not Be More Than Half Full At Any Time).
- 6. Filter Bags Shall Not Be Allowed In Existing City Roads.



CURB INLET PROTECTION



Protect Documents From Damage Due To Weather (Wind, Sun, Moisture, Etc.)

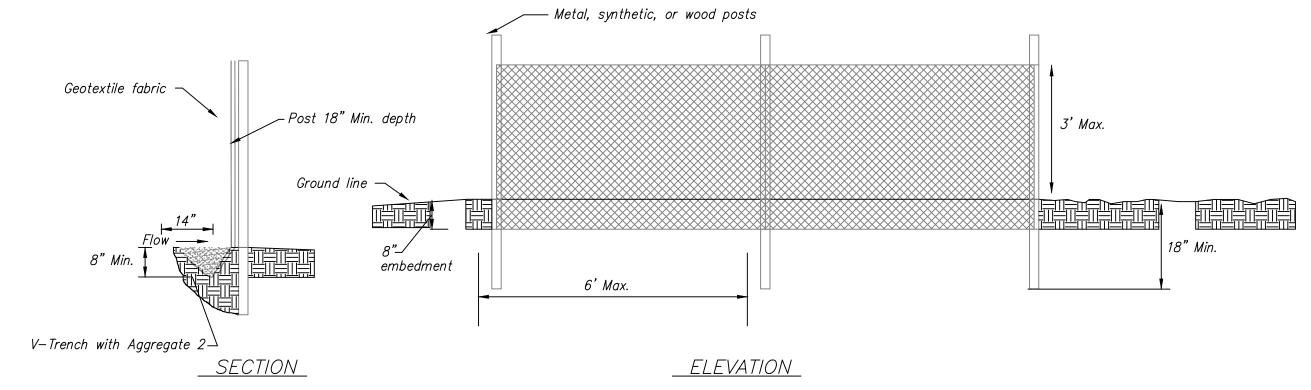
- 1. The SWPPP Information Sign Must Be Located Near The Construction Exit Of the Site, Such That It Is Accessible And Viewable By The General Public, But Not Obstructing Views As To Cause A Safety Hazard.
- 2. All Posted Documents Must Be Maintained In A Clearly Readable Condition At All Times Throughout Construction And Until The Notice-Of-Termination (NOT) Is Filled For The Permit.
- 3. Contractor Shall Post Other Storm Water And/Or Erosion And Sediment Control Related Permits On The Sign As Required By The Governing Agency.
- 4. Sign Shall Be Located Outside Of Public Right-Of-Way And Easements Unless Approved By The Governing
- 5. Contractor Is Responsible For Ensuring Stability Of The SWPPP Information

SWPPP INFORMATION SIGN

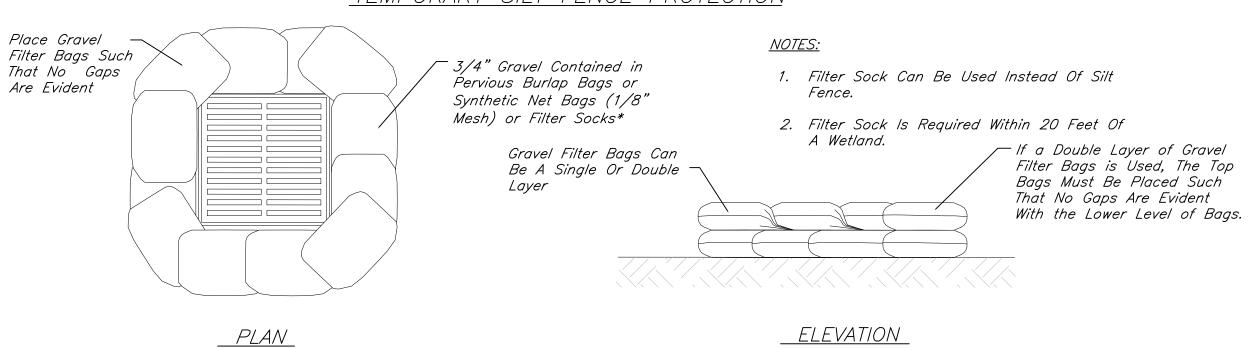
SWPPP INFORMATION

COPY OF PERMIT AUTHORIZATION

DETAILED DESCRIPTION OF THE LOCATION OF THE SWPPP DOCUMENTATION (BINDER AND SITE MAPS) ON THE SITE.



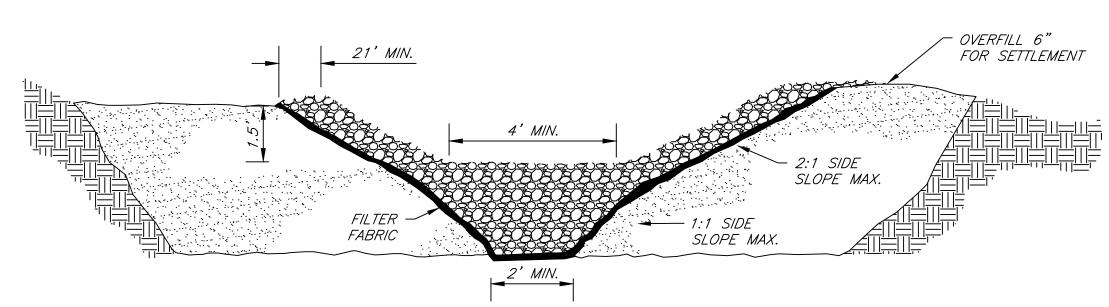
TEMPORARY SILT FENCE PROTECTION



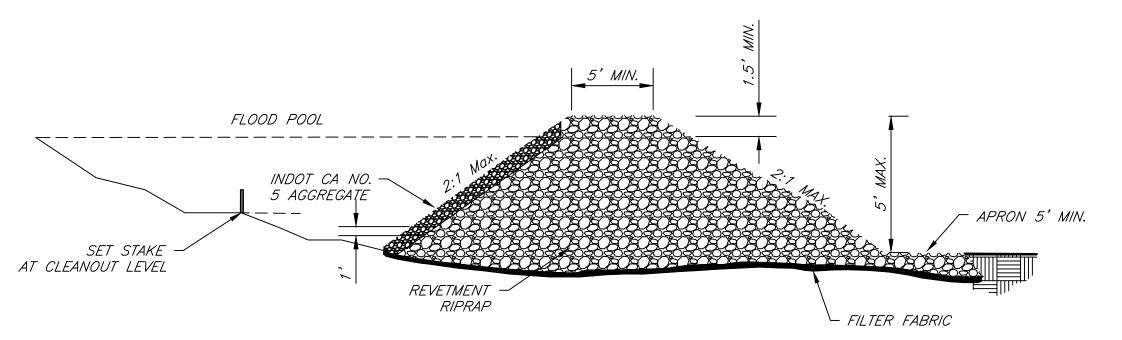
*Filter Sock Can Be Used Instead of Gravel Filter Bags

TEMPORARY INLET PROTECTION

- 1. Apron Grade Should Be No Shorter Than 5 Feet And Level, Where Feasible. With Filter Fabric Foundation In Order To Ensure That The Exit Velocity Will Not Be Erosive. Outlet Apron Length Must Extend To A Stable Area Of The Stream Channel.
- 2. Drainage Area Will Be A Maximum Of 5 Acres Per Temporary Sediment
- 3. Sediment Storage Volume Minimum Of 1,800 Cubic Feet Per Acre Of Watershed's Total Contributing Drainage Area.
- 4. Side Slopes Must Have A Ratio Of 2:1 Or Flatter.
- 5. Length To Width Ratio Of The Trap Must Be 2:1 Or Greater.
- 6. Concentrated Storm Water Inflow(s) Should Be Located As Far As Possible From The Sediment Trap Outlet.
- 7. The Pond Should Be Size To Drain Completely Within 48 To 72 Hours Of A Stormwater Runoff Event.
- 8. Embankment Fill Material Should Be Stable Mineral Soil And Machine Compacted In 6" To 8" Lifts.
- 9. Outlet Capacity Should Be Routed Two-Year Frequency, 24-Hour Storm
- 10. Bottom Width Should Be Based On Drainage Area As Follows
- 10.1. 1 Acre Drainage Area = 4 Feet Minimum Bottom Width
- 10.2. 2 Acre Drainage Area = 6 Feet Minimum Bottom Width
- 10.3. 3 Acre Drainage Area = 8 Feet Minimum Bottom Width 10.4. 4 Acre Drainage Area = 10 Feet Minimum Bottom Width
- 10.5. 5 Acre Drainage Area = 12 Feet Minimum Bottom Width
- 11. INDOT Revetment Riprap And INDOT CA NO. 5 Aggregate Should Be Used. If INDOT NO. 5 Aggregate Is Not Available, Then INDOT CA NO. 8
 Is Acceptable. INDOT CA NO. 8 May Result In More Frequent
 Overtopping Of The Structure And Will Increase The Frequency Of Structure Maintenance.



EARTH EMBANKMENT AND STONE OUTLET SECTION



CROSS-SECTION OF STONE OUTLET SECTION

STRAND ASSOCIATES

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PROJECT MGR.

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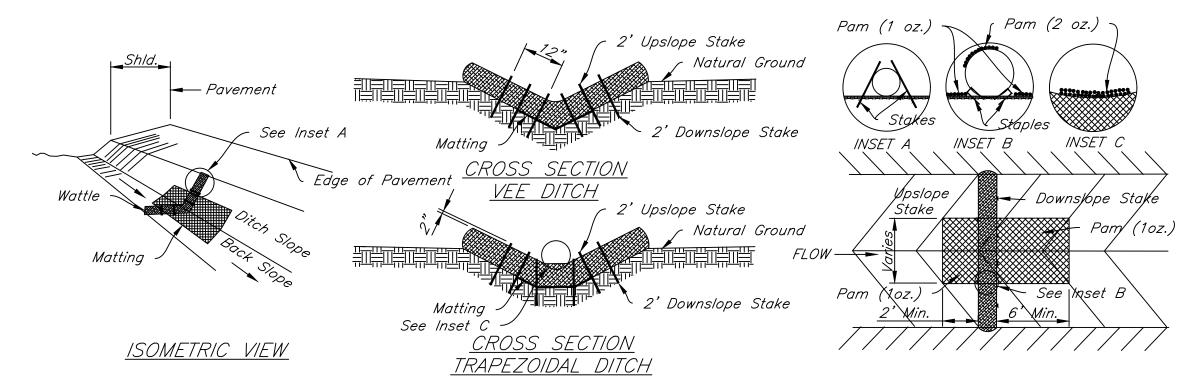
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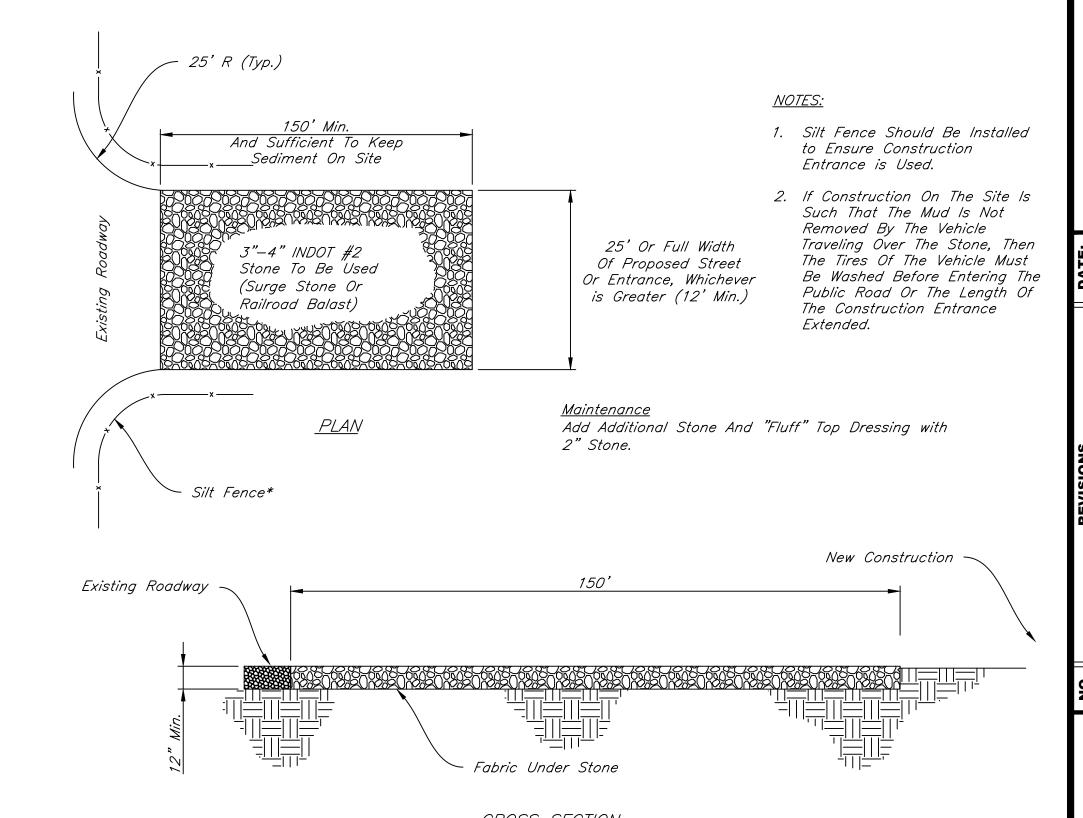
ANDARD TY OF RUSH COUNTY

TEMPORARY SEDIMENT TRAP

<u>General Notes:</u>

- 1. Use Minimum 12 Inch Diameter Filter Sock.
- 2. Use 2 Ft. Wooden Stakes With A 2 In. X 2 In. Nominal Cross
- 3. Only Install Filter Sock(s) To A Height In Ditch So Flow Will Not Wash Around Filter Sock And Scour Ditch Slopes And As
- 4. Install A Minimum Of 2 Upslope Stakes And 4 Downslope Stakes At An Angle To Wedge Filter Sock To Bottom Of Ditch.
- 5. Provide Staples Made Of 0.125 In. Diameter Steel Wire Formed Into A U Shape Not Less Than 12" In Length.
- 6. Install Staples Approximately Every 1 Linear Foot On Both Sides Of Filter Sock And At Each End To Secure It To The Soil.
- 7. Install Matting In Accordance With Manufacturers Recommendations.
- 8. Prior To Polyacrylamide (pam) Application, Obtain A Soil Sample From Project Location, And From Offsite Material, And Analyze For Appropriate Pam Flocculant To Be Applied To Each Filter
- 9. Initially Apply 2 Ounces Of Anionic Or Neutrally Charged Pam Over Filter Sock Where Water Will Flow And 1 Ounce On Matting On Each Side Of Filter Sock. Reapply Pam After Every Rainfall Event That Is Equal To Or Exceeds 0.50 In.



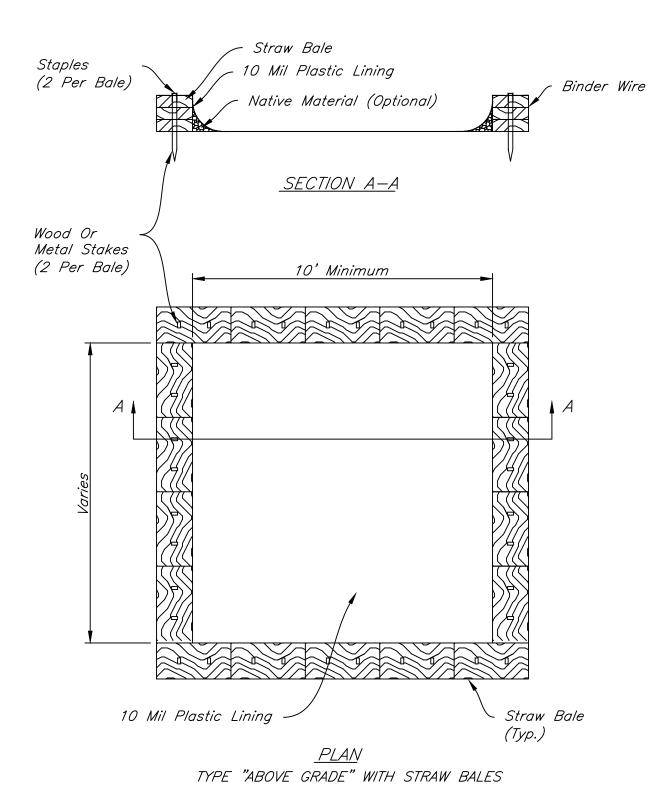


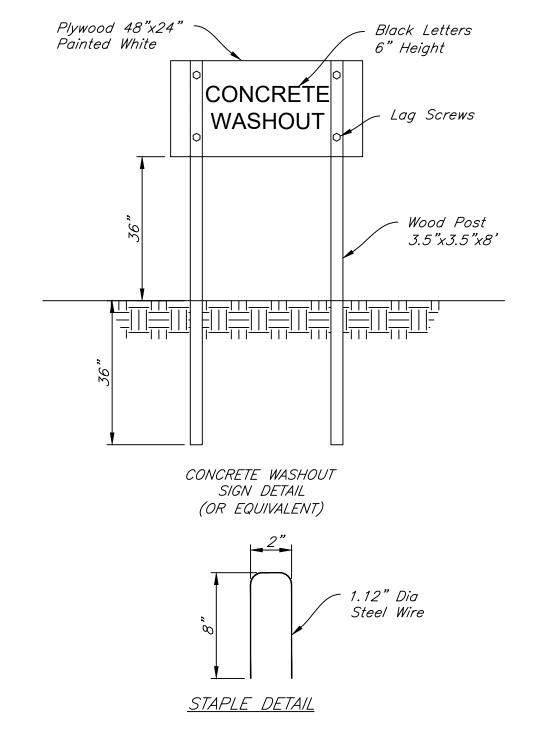
CROSS SECTION CONSTRUCTION ENTRANCE

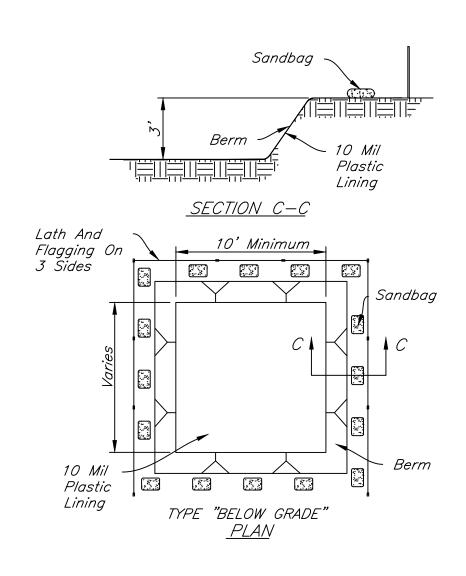
TEMPORARY FILTER SOCK CHECK DAM

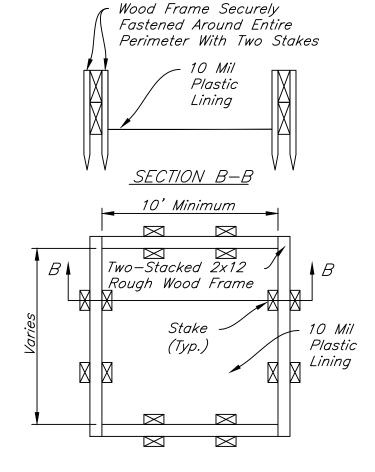
NOTES:

- Actual Layout To Be Determined In The
- 2. A Concrete Washout Sign Shall Be Installed Within 30' Of The Temporary Concrete Washout Facility.
- 3. Materials Used To Construct Temporary Concrete Washout Facilities Shall Be Removed From The Site Of The Work And Disposed Of Or Recycled.
- 4. Holes, Depressions, Or Other Ground Disturbance Caused By The Removal Of The Temporary Concrete Washout Facilities Shall Be Backfilled, Repaired, And Stabilized To Prevent Erosion.
- 5. Commercial Dumpster With Liner Can Be Used In Lieu Of These Details.









<u>PLAN</u> TYPE "ABOVE GROUND" WITH WOOD PLANKS

CONCRETE WASHOUT

STRAND ASSOCIATES®

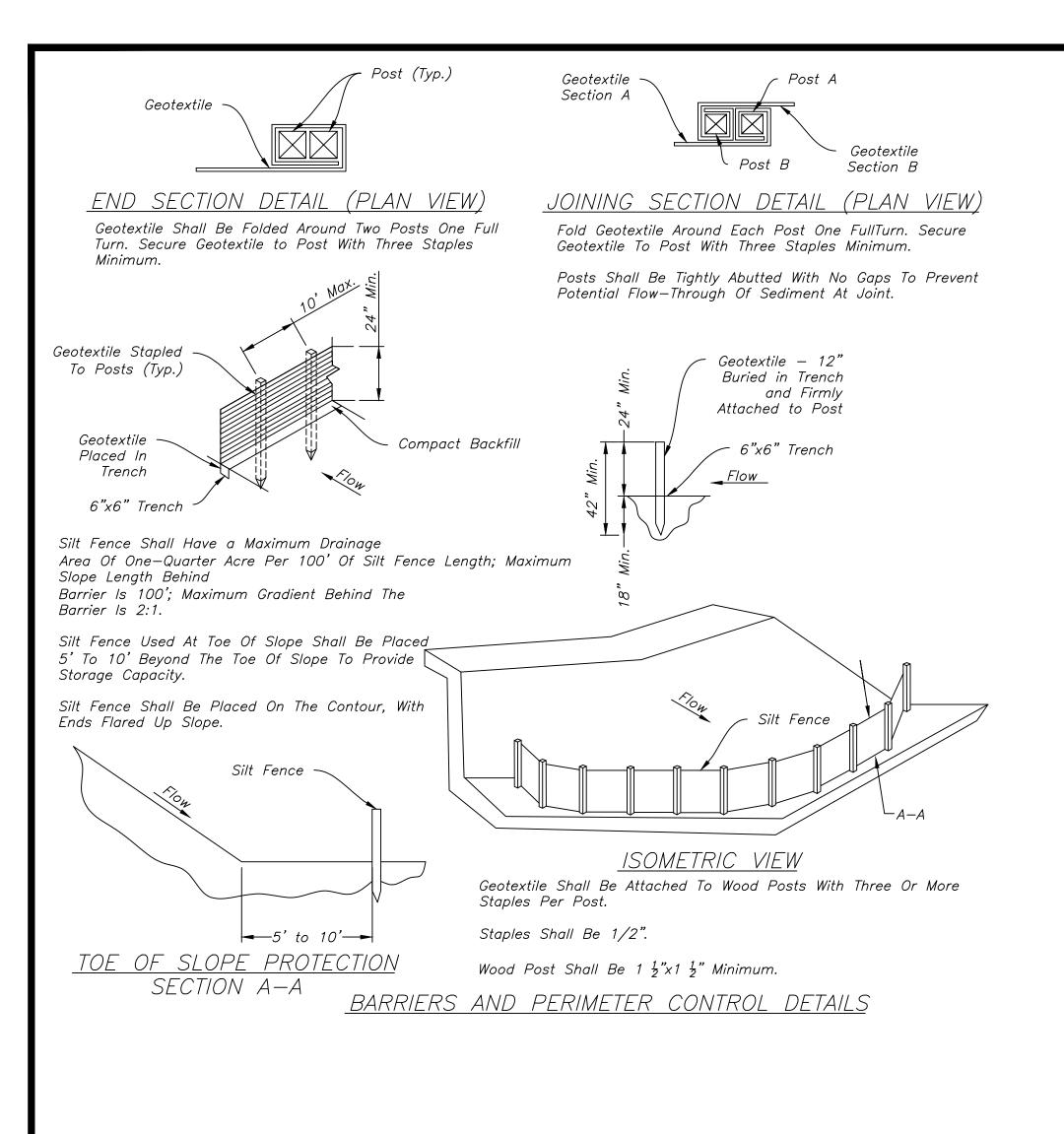
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EROSION CC DETAILS

JOB NO. 3882.001

PROJECT MGR. **TONY AKLES**



NO. REVISIONS DATE:

DETAILS - 3

JOB NO. 3882.001

PROJECT MGR.



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