

STORM SEWER HIGH DENSITY POLYETHYLENE (H.D.P.E.) CORRUGATED PIPE

- 1.) Requirements For Test Methods, Dimensions And Markings Are Those Found In A.A.S.H.T.O. Specification M-294.
- 2.) Pipe And Fittings Shall Be Made Of Polyethylene Compounds Which Meet Or Exceed The Requirements Described In ASTM D-3350.
- 3.) Minimum Pipe Stiffness Values Shall Be In Accordance With A.A.S.H.T.O. Specifications M-294.
- 4.) The H.D.P.E. Corrugated Pipe Shall Have An Integrally Formed Smooth Interior.
- 5.) Male And Female Pipe Ends Which Allow The Construction Of Overlapping, Gasket Joints, Shall Be Made In Conformance With ASTM D-3212. Elastomeric Rubber Gaskets Shall Meet ASTM F-477.
- 6.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.
- 7.) H.D.P.E. Pipe Less Than 12 Inches In Diameter Or Greater Than 18 Inches In Diameter Shall Not Be Allowed For Use In The City Of Lebanon, Without Written Approval From Lebanon Utilities.
- 8.) H.D.P.E. Pipe 12 Inches Through 18 Inches In Diameter May Be Used Within The Public Right-Of-Way Subject To The Bedding Requirements For Flexible Pipe.
- 9.) Precast Flared Reinforced Concrete End Sections Shall Be Used At Exposed Pipe Ends.

STORM SEWER H.D.P.E. PIPE TELEVISION

- 1.) Closed Circuit Television Inspection Shall Be Performed On All Flexible Pipe Installed Within The City Of Lebanon For The Purposes Of Conveying Storm Water.
- 2.) The City Of Lebanon Shall Be Given 48 Hour Written Notice Of The Required Television Procedure 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 City Of Lebanon Representative And Others Viewing The Monitor To Easily Evaluate The Interior Condition Of The Pipe. The Camera Shall Stamp The Video Tape With Linear Footage And Project Number. An Audio Voice-Over Shall Be Made During The Inspection Identifying Any Problems.
- 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 Faulty, The Contractor Shall Repair That Portion Of The Work To The Satisfaction And Approval Of The City Of Lebanon.
- 5.) The VHS Tape Of The Entire Sewer Line And Reproduction Map Indicating The Pipe Segment Numbers Of All The Pipe That Has Been Televised, Shall Be Submitted To Lebanon Utilities For Their Records. Contractor Shall Submit VHS Tape(s) Within 30 Days Of Successful Completion Of All Testing Requirements.

STORM SEWER H.D.P.E. DEFLECTION TESTING

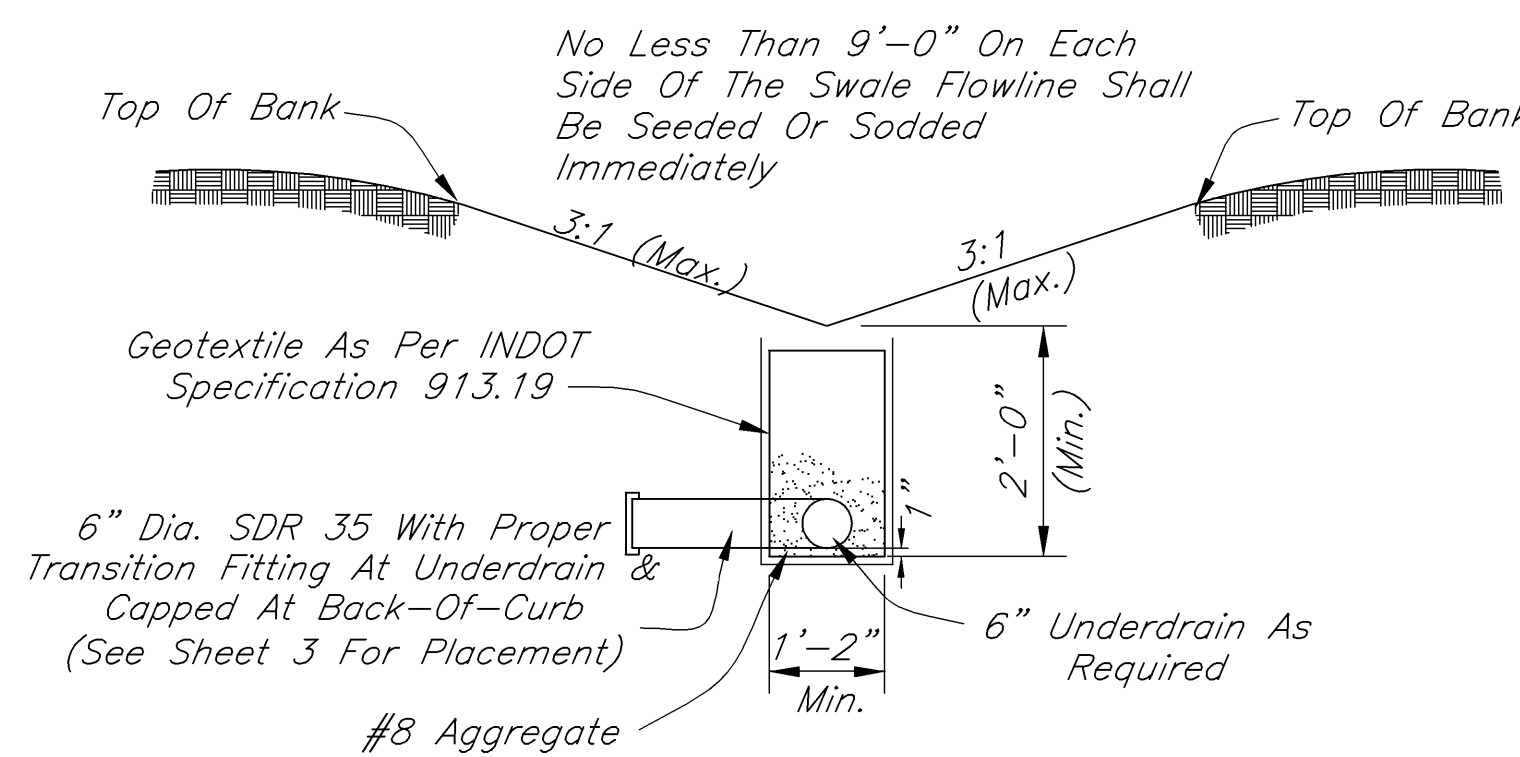
- 1.) Lebanon Utilities Shall Be Given 48 Hour Written Notice Of The Required Deflection Testing Procedure To Be Performed By The Contractor. An In-Place Deflection Test Shall Be Performed On All Flexible Storm Sewer Pipe Installed Within The City Of Lebanon With Manholes At End Of The Pipe Run. Deflection Testing Shall Not Be Required For Pipe Runs With Inlets Or Catch Basins On One End Of The Pipe Run. 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.
- 2.) All Pipe Exceeding The Allowable Deflection Shall Be Replaced Or Rerounded. The Replaced Or Rerounded Section Shall Be Retested 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.

STORM SEWER REINFORCED CONCRETE PIPE

- 1.) Reinforced Concrete Pipe Shall Be Class III, IV, Or V As Specified In ASTM C-76.
- 2.) Reinforced Elliptical Concrete Pipe Shall Be Class HE-III Or HE-IV As Specified In ASTM C-507.
- 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 Most Recent INDOT Standard 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 Manufacturer, 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 A Shall Have 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.

STORM SEWER GENERAL NOTES

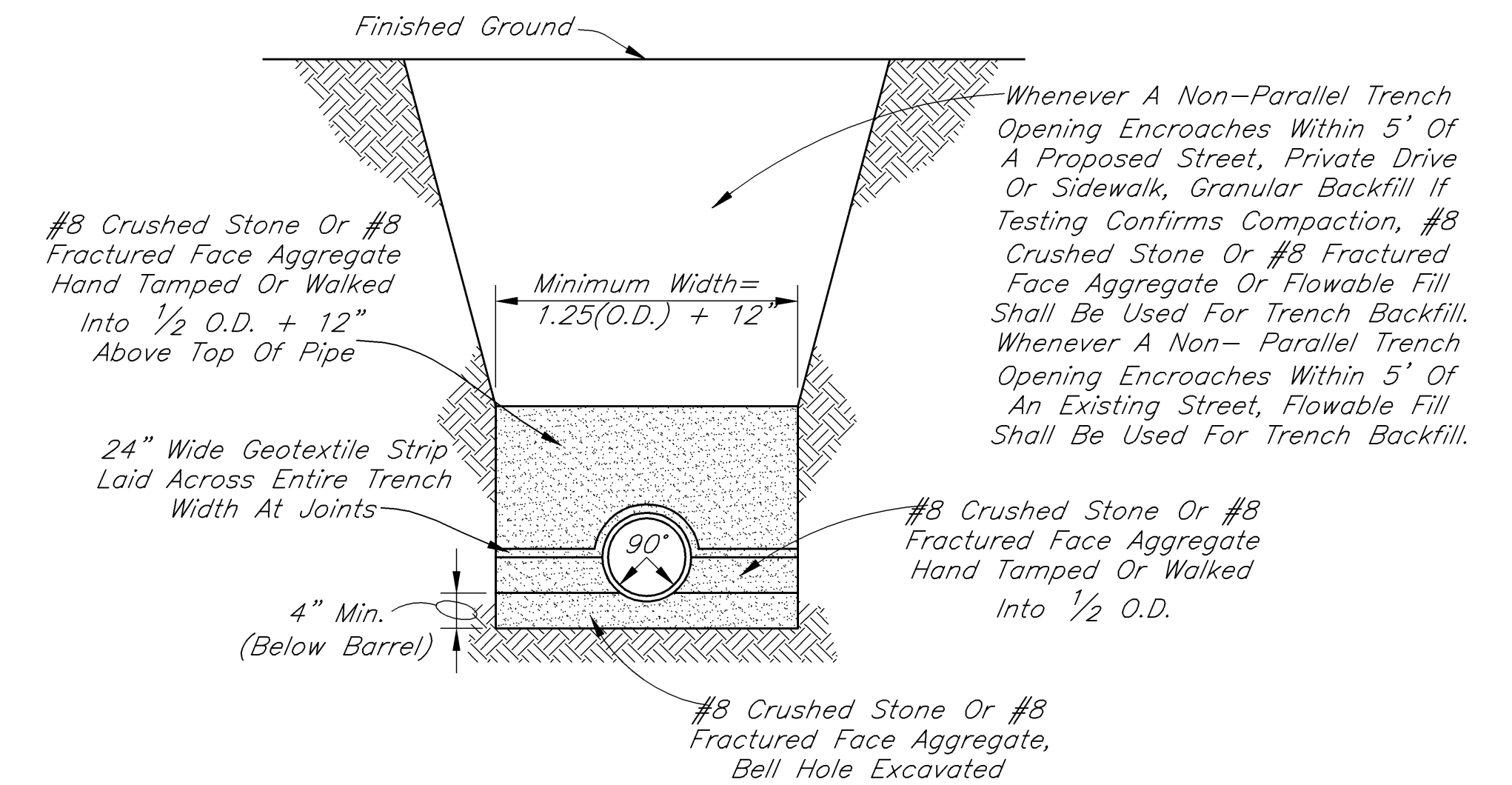
- 1.) Storm Sewer Pipe Of Other Material Or Material Not Meeting These Specifications Shall Require The Prior Written Approval Of Lebanon Utilities.
- 2.) The Contractor Shall Submit Information To The Utilities Manager Showing Conformance With These Specifications Upon Request.
- 3.) As-Built Drawings Shall Be Submitted To Lebanon Utilities Within 30 Days Of Successful Completion Of Project.
- 4.) Contractor Shall Allow Lebanon Utilities The Opportunity To Inspect The Installation Of The Pipe And Bedding Material Prior To Proceeding With Backfilling An Open Trench. Lebanon Utilities Shall Be Given 48 Hours Notice Of The Contractor's Intent To Install Storm Sewer Piping And Structures.
- 5.) The Smallest Permissible Storm Sewer Pipe Diameter Is 12 Inches.
- 6.) Drawings And Calculations For Runoff, Retention And Discharge Rates Shall Be Provided To The Lebanon Storm Water Board For Drainage Review. Drawings And Calculations Shall Be Certified By A Registered Professional Engineer.
- 7.) All Projects With Storm Sewer Systems Must Be Approved By The Lebanon Storm Water Board, As Indicated By Signature, Prior To Submittal To Lebanon Utilities.
- 8.) As-Built Drawings Shall Be Submitted To Lebanon Utilities For Their Records. Contractor Shall Submit As-Built Drawings Within 30 Days Of Successful Completion Of All Testing Requirements.



SWALE UNDERDRAIN DETAIL

Scale: 1/2" = 1'-0"

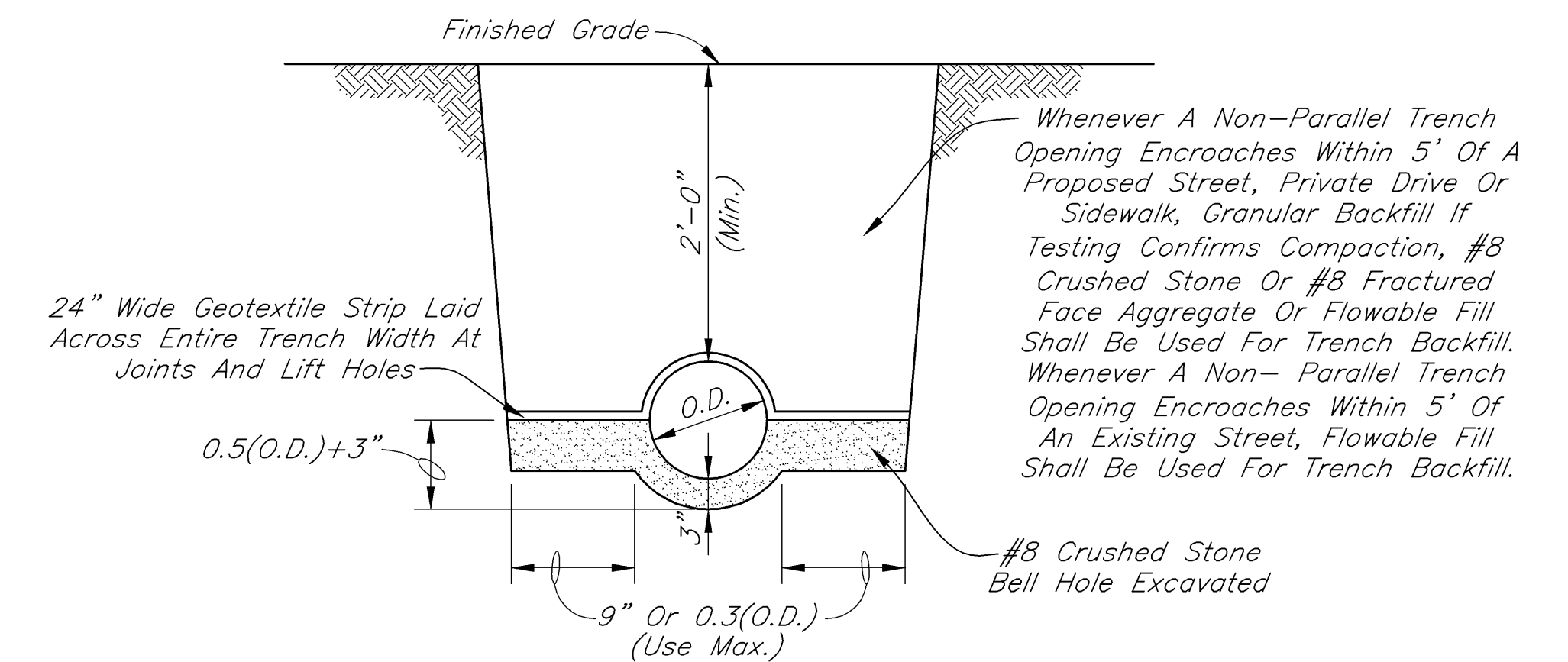
Swales Shall Be Constructed With A Minimum 0.3 Percent Profile Grade Provided That A 6 Inch Diameter Underdrain Is Provided For All Residential Swales And Commercial/ Industrial Swales With Less Than A 0.5 Percent Profile Grade.



Pipe Size	10" TO 15"	18" And Over
Bedding Below The Pipe Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"

FLEXIBLE (HDPE) PIPE BEDDING DETAIL

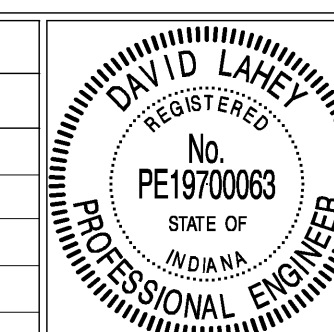
Scale: None



RCP PIPE BEDDING DETAIL

Scale: None

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>[Signature]</i>	5-4-2006
DESIGN ENGINEER		DATE
APPROVED	<i>[Signature]</i>	6-20-06
STREET COMMISSIONER		DATE

CITY OF LEBANON	SHEET
STORM SEWER BEDDING DETAILS AND NOTES	7
	OF
	18

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