

# NOBLESVILLE, INDIANA

## NOBLESVILLE STANDARDS



### DIRECTIONS FOR USE

1. The Entire Set Of Signed, Full Size Standards Shall Be Attached To The Construction Drawings And Shall Be Considered Part Thereto. Partial Set May Be Used For Small Projects When Approved By The City Of Noblesville Planning Director And/Or City Engineer.
2. Details Prepared By Outside Sources Shall Not Be Included In The Construction Drawings When Said Details Cover Work Which Is Contained In The Noblesville Standards.
3. Individual Noblesville Standards That Do Not Apply Shall Be Crossed-Out By Design Engineer Through The Placement Of A Single Large X Over Detail. Minor Reference Notation 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 Noblesville Standards Are The Sole Responsibility Of The Design Engineer And Shall Be Placed On Sheets Other Than The Noblesville Standards Sheets.
5. For Details, Specifications, And Design Guidelines Not Covered In These Standards, Refer To The Documents Stated Below. In The Event That These Standards Are Used, Referenced, Or Incorporated Into Any Publicly Or Privately Funded Project And A Conflicting Standard(s) And/Or Specification(s) Exist, The Following Order Shall Govern:
  - 5.1. Noblesville Standards
  - 5.2. Unified Development Ordinance
  - 5.3. Noblesville Stormwater Technical Standards
  - 5.4. Noblesville Roundabout Standards
  - 5.5. Noblesville Arboriculture Specifications Manual and Street Tree Ordinance
  - 5.6. Noblesville Standards: Pervious Concrete Pavement Design Requirements
  - 5.7. INDOT Standards and Specifications / Indiana Manual on Uniform Traffic Control Devices / INDOT Work Zone Safety Manual
  - 5.8. "Ten State Standards" Prepared By Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers and Sanitary Engineers
  - 5.9. ASTM and/or AWWA Standards and Specifications
  - 5.10. Project's Written Specifications
  - 5.11. Project's Plans
6. Design Professional Certifying The Plans For The Project Acknowledges Their Professional Responsibility For Ensuring That All Work Is Correct, Accurate, And Complies With All Appropriate Laws, Standards, Regulations, And Ordinances. If Such An Error And/or Omission Is Found, The Design Professional Accepts Full Responsibility And Shall Determine A Solution That Complies With All Appropriate Laws, Standards, Regulations, And Ordinances. If Such An Error Or Omission Is Found, The Developer Is Not Relieved To Comply With All Appropriate Laws, Standards, Regulations, And Ordinances.
7. All Requests For Interpretations And/Or Clarification With The Standards Shall Be Done In Writing To The City Engineer. All Official Responses By The City Engineer Will Be Done In Writing.

### GENERAL NOTES

1. Contractor Shall Verify The Exact Location Of All Existing Utilities At Least 48 Hours 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 Noblesville Department Of Engineering And The Owner Of The Affected Utility.
2. At The Preconstruction Conference, All Construction Drawings Shall Be Submitted To The Noblesville Department Of Engineering In Paper And Electronic Format. Acceptable Forms Of Electronic Format Include: AutoCAD 2002, Or Most Current Format. In Addition, A Full Size PDF Version Shall Be Submitted. All Coordinate Data Shall Be Compliant With The State Plane Coordinate System With Units Provided In U.S. Survey Feet. All Benchmarks And Elevations Shall Be From The NAD 1983 (Conus) Datum. Electronic Submittal Shall Include Plot Files. Reference "Digital Record Drawing Submittal Requirements" From The Noblesville Wastewater Utility Department For Additional Guidelines For Electronic Submittals.
3. Wherever Proprietary Equipment Is Specified, All Proposals For Substitution Shall Be Submitted In Writing To The Noblesville Department Of Engineering And Shall Be Subject To The Findings Thereto.
4. Plan And Profile Drawings And Individual Details Prepared By Outside Sources Shall Be Provided For Review By The Technical Advisory Committee (T.A.C.). Any Project With Public Works Infrastructure Improvements Or Dedications Shall Receive T.A.C. Approval Within 6 Months Of Initial T.A.C. Meeting For Detailed Construction Plans And Shall Commence With Construction No Later Than 6 Months From T.A.C. Approval, Or Shall Be Subject To A Subsequent T.A.C. Approval.
5. As-Built Record Drawings, Prepared By Outside Sources, Shall Be Accompanied With A Detailed Inventory Of All Fixed Assets. Two Full Sets Of As-Built Drawings On Mylar Shall Be Submitted To The Noblesville Department Of Engineering. A Certified Letter Of Attestment Shall Accompany The Drawings. The Letter Of Attestment Shall Be Certified By A Registered Land Surveyor. As-Built Are Required For Sanitary Sewer System, Storm Sewer System, BMPs, Ditches/Swales, Roadways, Trails, Sidewalks, Final Grading, Controller Cabinets, Conduits, Lights, Signs, And All Other Infrastructure Within Public Rights-Of-Ways And/Or Easements.
6. Electronic Drawings Submittal For Both Construction Drawings And As-Built Shall Comply With Guidelines Set By City's GIS Coordinator. Electronic Construction Drawing Submittal Shall Be Submitted And Approved After T.A.C. Approval Prior To Pre-Construction Conference. As-Built Drawing Submittal Shall Be Submitted And Approved After Infrastructure Has Been Inspected And Approved.
7. The Contractor Is Responsible For Maintaining A Safe Construction Site And For Keeping Surrounding Streets Neat And Clean. The Contractor Shall Provide All Traffic Control, In Accordance With Most Recent Version Of INDOT Workzone Safety Manual, Required On Public Ways Near The Project


### BOARD OF PUBLIC WORKS AND SAFETY

-   
 \_\_\_\_\_  
 JOHN DITSLEAR MAYOR
-   
 \_\_\_\_\_  
 LAWRENCE J. STORK MEMBER
- \_\_\_\_\_  
 JACK E. MARTIN MEMBER

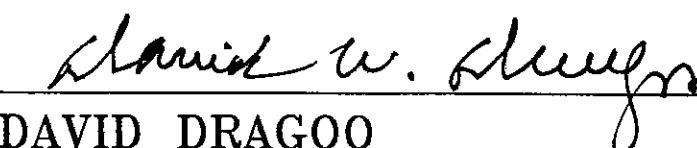
### NOBLESVILLE CLERK-TREASURER

\_\_\_\_\_  
 JANET JAROS DATE





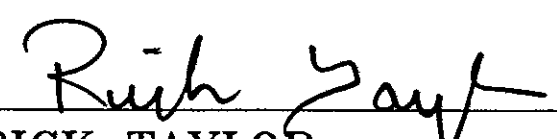
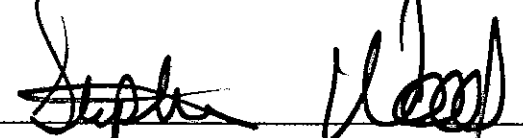
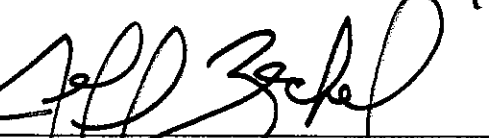
### NOBLESVILLE CITY ATTORNEY

  
 \_\_\_\_\_  
 MICHAEL A. HOWARD CITY ATTORNEY

### NOBLESVILLE PLANNING COMMISSION

  
 \_\_\_\_\_  
 DAVID DRAGOO PRESIDENT

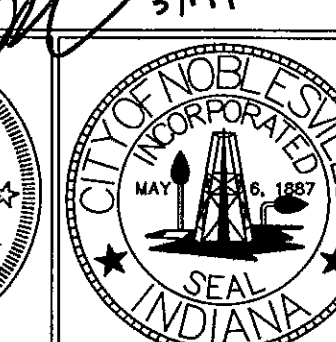
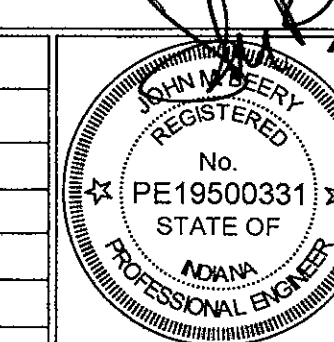
### NOBLESVILLE COMMON COUNCIL

-   
 \_\_\_\_\_  
 BRIAN AYER MEMBER
-   
 \_\_\_\_\_  
 MARK BOICE MEMBER
-   
 \_\_\_\_\_  
 GREG O'CONNOR MEMBER
-   
 \_\_\_\_\_  
 ROY JOHNSON MEMBER
-   
 \_\_\_\_\_  
 RICK TAYLOR MEMBER
-   
 \_\_\_\_\_  
 STEPHEN WOOD MEMBER
-   
 \_\_\_\_\_  
 JEFF ZECKEL MEMBER

### TABLE OF CONTENTS

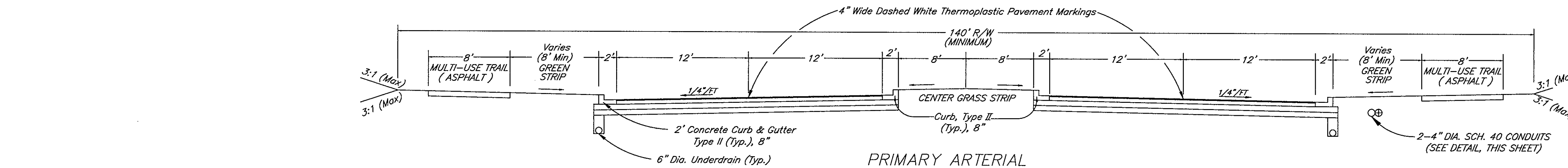
Sheet	Description
1.	Directions For Use and General Note
2.	Right-Of-Way & Utility Easement Guidelines
3.	Pavement, Curb & Sidewalk Details and Notes
4.	Storm Sewer Bedding Details and Notes
5.	Storm Sewer Details and Notes
6.	Sanitary Sewer Bedding Details and Notes
7.	Sanitary Sewer Details and Notes
8.	Miscellaneous Detail and Notes I
9.	Miscellaneous Detail and Notes II
10.	Miscellaneous Details and Notes III
11.	Street Cut Details
12.	Street Lighting & Traffic Signal Standards, Details, and Notes
13.	Landscape Planting And Seeding Details And General Notes

REVISIONS		
Rev. No.	Description	Date
4	Revisions Underlined Or In Bubble Cloud	1/10/2012

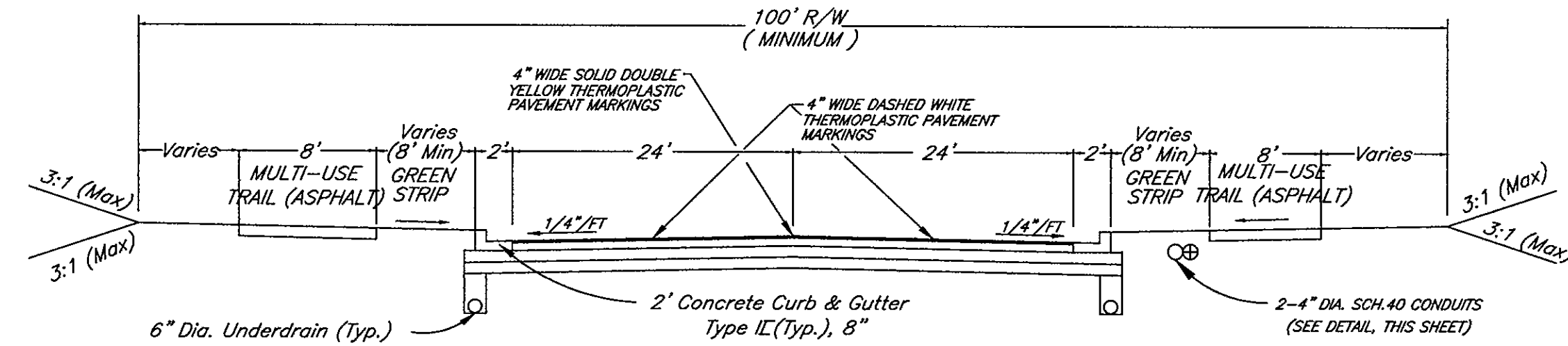


CITY OF NOBLESVILLE	SHEET
Directions For Use, & General Notes	1 OF 13

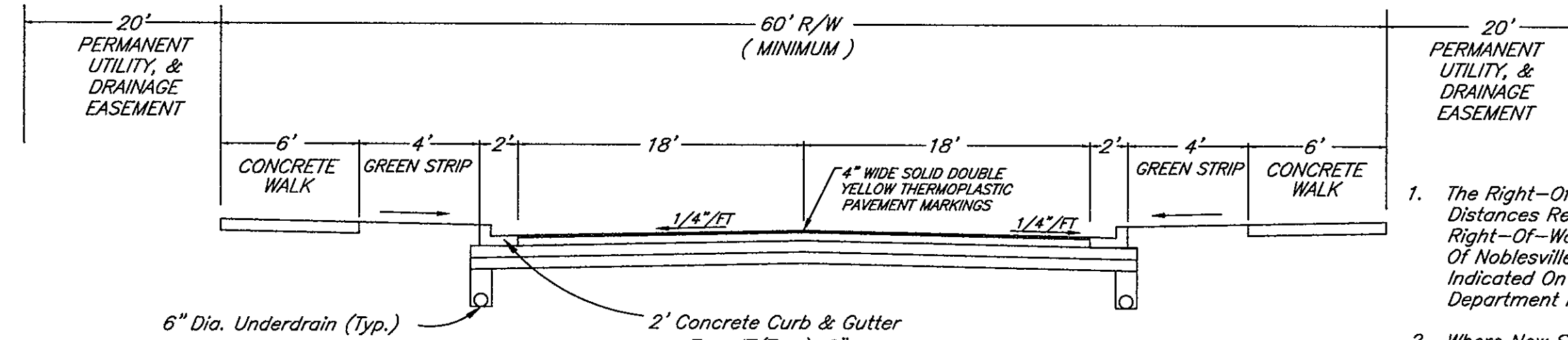
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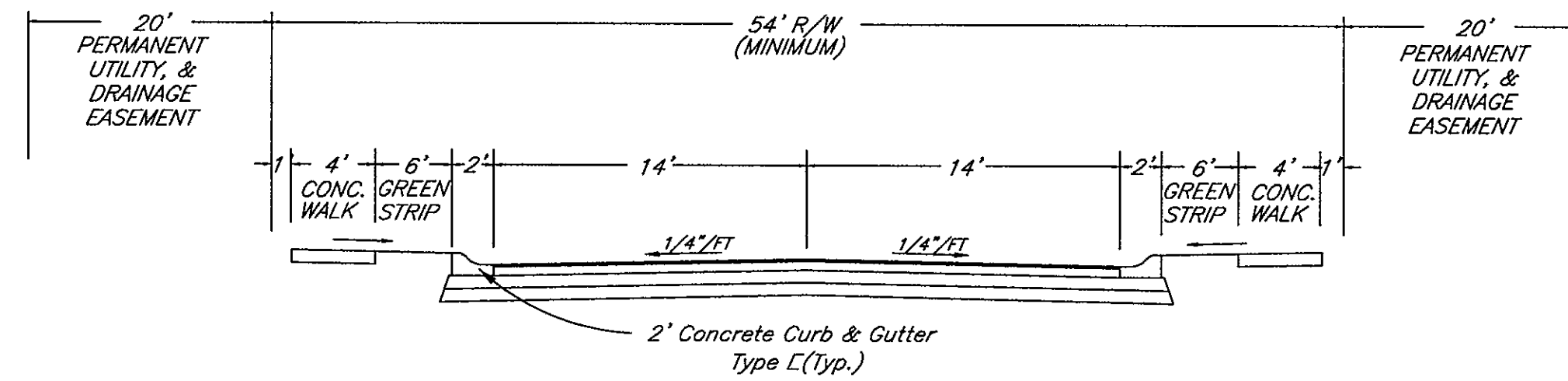
PRIMARY ARTERIAL



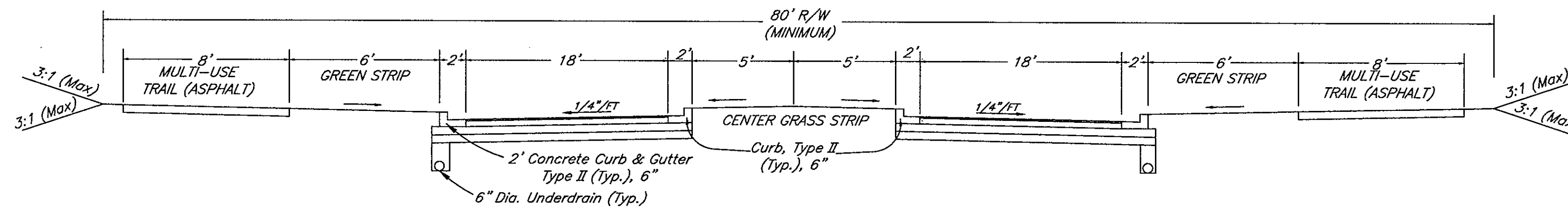
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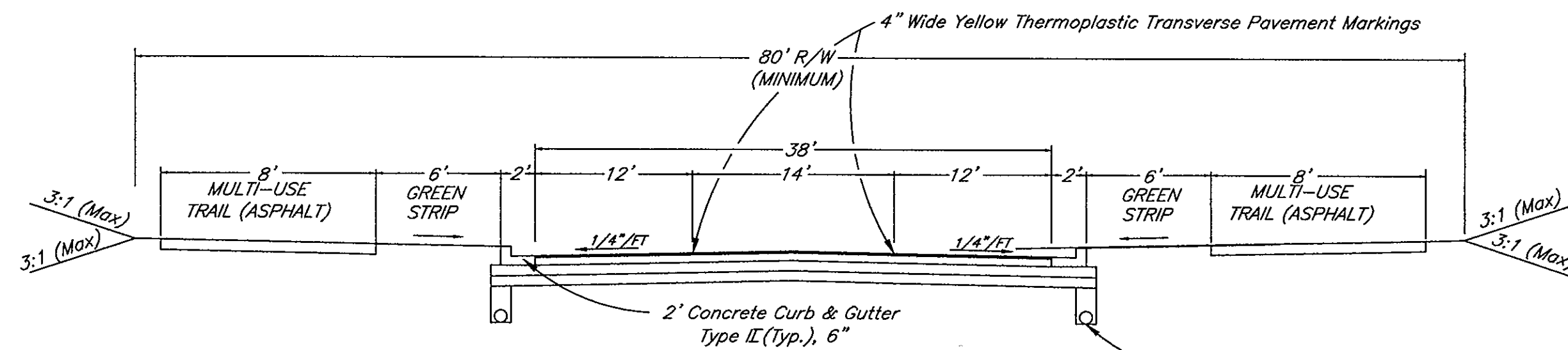
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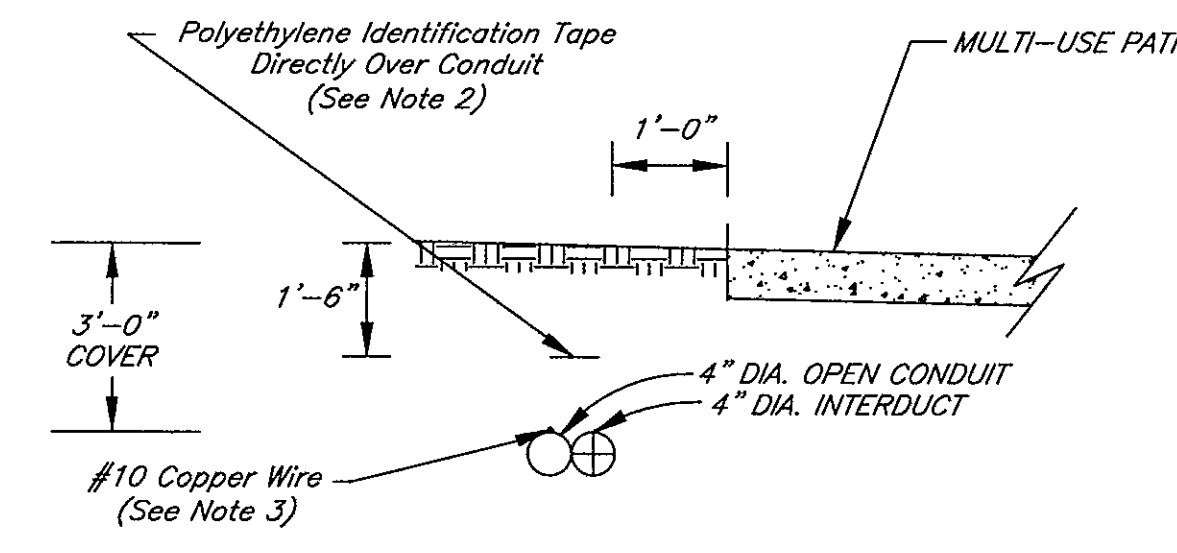
LOCAL RESIDENTIAL STREETS



MAJOR COLLECTOR



MAJOR COLLECTOR ALTERNATE A

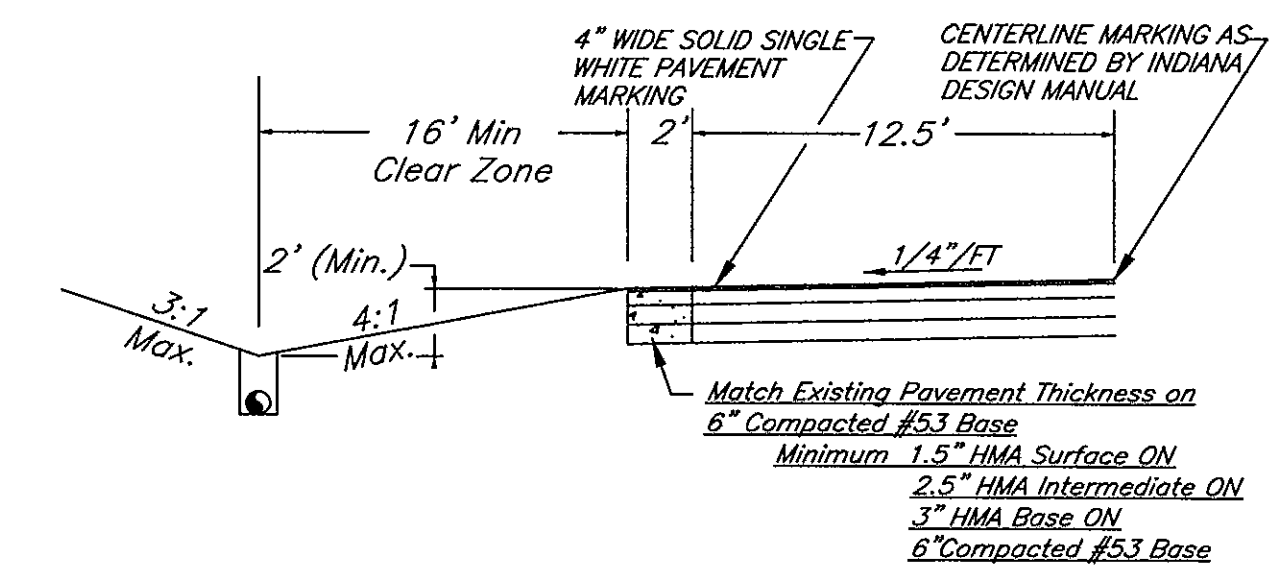


CONDUIT PAIR DETAIL

NOTES:

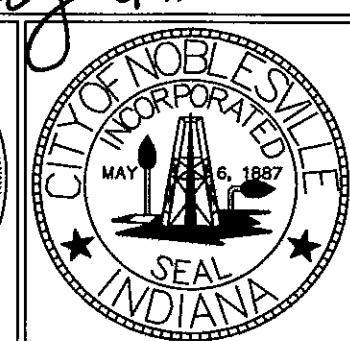
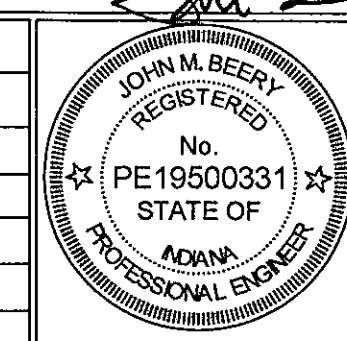
- 4" Dia. Interduct Conduit Shall Be PVC Schedule 40 Multi-Guard (R) Multi-Cell Raceway. By Prime Conduit Or Approved Equal. The Interior Of Each Interduct Shall Be Specifically Delineated With 4 Contrasting Colors. Other Conduit Shall Be PVC Schedule 40. Pull Strings Are Required For Future Use.
- The Polyethylene Identification Tape Shall Be Metallic And Have A Minimum Thickness Of 4 Mils. The Tape Shall Read "Caution Buried Fiber Optic". Tape Shall Be Placed Directly Over Pipe, 18" Below Final Grade.
- 10 Gauge Insulated, Solid Copper Wire Shall Be Attached Directly To The Outside Of The Open Conduit Every 10 Feet.
- Handholes Shall Be Placed At Location Designated By City Engineer, But No Greater Than 400 Feet Apart. Handholes Shall Be Quartzite Part No. PG1730BA24. Per INDOT Signal Handhole Detail E 805 SGC 04. Or Approved Equal. Fiberglass Handholes Shall Conform To TIER 15 Load Rating.
- Developer Shall Submit Shop Drawings Of Interduct And Handhole, For Review And Approval.

- GENERAL NOTES**
- The Right-Of-Way Widths, Pavement Widths And Easement Widths Indicated On This Sheet Are Minimum Distances Required By The City Of Noblesville. Greater Widths May Be Provided Or Required. Additional Right-Of-Way Width Will Be Required In Proximity Of All Intersections With Thoroughfare Roads, Per City Of Noblesville. The Contractor Shall Review The Plans To Confirm The Various Widths Indicated On This Sheet And Shall Report Any Discrepancy To The City Engineer And Noblesville Planning Department Prior To Proceeding With Construction.
  - Where New Sidewalk Connects To Existing Sidewalk, The Width Of New Sidewalk Shall Match Width Of Existing Sidewalk Or Be A Minimum Of 4 Feet, Whichever Is Greater.
  - Standard Pavement Markings Shall Be Placed In Streets/Roads As Shown, In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices. For Asphalt Pavements, All Pavement Markings Shall Be Thermoplastic. For Concrete Pavements, All Pavement Markings Shall Be Epoxy.
  - Snowplowable Raised Pavement Markers (RPMs) Shall Be Placed On All Thoroughfare Roads, In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices. Blue RPMs Shall Be Used When Adjacent To A Fire Hydrant. Contract Fire Marshall And City Engineer For Placement Location Of Blue RPMs On Roadways With More Than Two-Lanes.
  - Type II Curb Heads Are To Terminate With 12:1 Slope.
  - Acceleration/Deceleration Lanes And Passing Blisters Shall Be Constructed For All New Development Entrances, Which Connect To A Primary Arterial, Secondary Arterial, Major Collector, Or INDOT Right-Of-Way. See Subdivision Entrance From A Thoroughfare Detail, Standards Sheet 8.
  - For Any Development, Which Directly Adjoins A Primary Arterial, Secondary Arterial, Or Major Collector, As Depicted On The Noblesville Thoroughfare Plan, The Developer Shall Conduct The Following For Said Roadway(s).
    - Hire An Independent Testing Laboratory To Collect Pavement Core Samples Every 400 Feet, But No Less Than Two Samples Per Roadway, A Written Summary, Which Illustrates The Aggregate Subbase Thickness And Pavement Thickness, Shall Be Submitted To The Noblesville Department Of Engineering.
    - Developer Shall Repair All Pavement Failures, As Determined By The Noblesville Department Of Engineering.
    - Developer Shall Widen Adjacent Travel Lane And Shoulder, As Shown Below.
    - Developer Shall Widen Existing Culverts And Bridge Structures Within The Limits Of The Development.
    - Following The Successful Completion Of Widening The Adjacent Travel Lane(s), The Entire Roadway Shall Receive An 1.5" Overlay Of HMA Surface. The Thickness Of The Overlay Shall Be Increased As Required To Produce A Minimum Total Pavement Thickness Of 6". Maximum Depth Of HMA Surface Shall Not Exceed 1.5". Additional HMA Material Shall Be HMA Intermediate.
    - Developer Shall Only Be Responsible For Improving Existing Thoroughfare Roadways, Between The Limits Of The Development.
    - Road Side And Drainage Improvements Shall Be Included With The Pavement Widening, Such As Regrading Of Drainage Swales, Removal Of All Obstructions In The Right-Of-Way, Including But Not Limited To Trees, Fence, Stumps, etc., And/Or Installation Of Roadway Pipe Culverts. See Detail.
    - Developer Shall Provide Intersection Sight Distance Study For All Entrances On Roadways Shown On The Noblesville Thoroughfare Plan Or As Required By City Engineer.
  - Material Tickets Shall Be Provided To The Noblesville Department Of Engineering Within Seven (7) Calendar Days Of Placing Materials. All Concrete, Asphalt, And Aggregate Materials Must Be Produced And/Or Supplied From An INDOT Approved Source And Meet INDOT Specifications.
  - City Is Not Responsible For Maintaining, Repairing, Or Replacing Non-Public Infrastructure Within Right-Of-Way. Non-Public Infrastructure Includes, But Is Not Limited To, The Following: Landscaping, Irrigation System, And/Or Pet Containment Systems.



THOROUGHFARE ROAD IMPROVEMENTS WITHOUT CURB AND GUTTER

REVISIONS		
Rev. No.	Description	Date
4	Revisions Underlined Or In Bubble Cloud	1/10/2012



**CITY OF NOBLESVILLE**

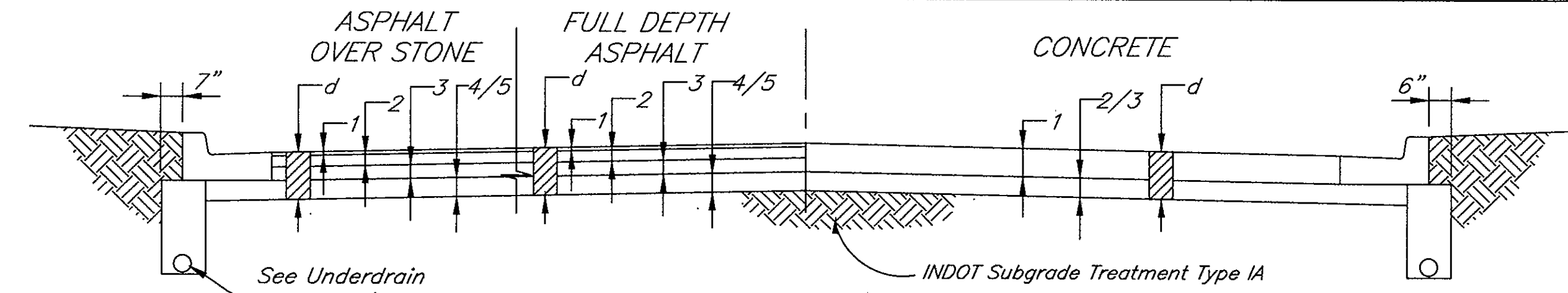
Right-of-Way &  
Utility Easement  
Guidelines

**SHEET**  
2  
**OF**  
13

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**PAVEMENT CONSTRUCTION**

- Specifications For Asphalt Paving Operations, Placement Methods, And Weather Limitations Shall Conform To The Most Current INDOT Specifications Section 402.
- Specifications For Portland Cement Concrete Pavement (PCCP) Paving Operations, Placement Methods, And Weather Limitations Shall Conform To The Most Current INDOT Specifications Section 502
- Subbase And Subgrade Shall Be Placed To At Least 100 Percent Of Maximum Dry Density, In Accordance With AASHTO T99. Compaction Tests Shall Be At The Contractor's Expense And Shall Be Performed By An Independent Testing Laboratory. Test Results Shall Be Submitted To The Noblesville Department Of Engineering For Consideration Of Maintenance Surely. One In-Place Density Test Shall Be Completed For Each Lift For Every 400 Linear Feet Per Traffic Lane. Coarse Aggregate Shall Not Be Placed On Frozen Subbase Or Subgrade.
- For New Pavement Construction, Subgrade Treatment Shall Be Subgrade Treatment IA Per INDOT Standards And Specifications Section 207. Subgrade Treatment Process And Materials Must Be An INDOT Approved And Provide Documentation Upon Request. Chemical Soil Modification Shall Be Performed Only With A Minimum Soil Temperature, Measured 4 Inches Below The Subgrade, Of 45°F, And With The Air Temperature Rising. Soil Treatment Materials Shall Not Be Mixed With Frozen Soils Or With Soil Containing Frost. Following Soil Modification, Compaction Of The Modified Mixture Shall Provide A Density Not Less Than 100% Of The Maximum Dry Density Within The Special Subgrade Treatment Zone Or 95% Of The Maximum Dry Density Below The Special Subgrade Treatment Zone. Maximum Dry Densities Shall Be Determined In Accordance With AASHTO T99. The Mix Design Shall Be Determined In Accordance With INDOT Laboratory Proposed Design Procedure. The Mix Design And Construction Procedure Shall Be Submitted To The Noblesville Department Of Engineering For Approval. Following The Completion Of The Soil Modification Efforts, The Noblesville Department Of Engineering Shall Conduct A Subgrade Evaluation (Proof Roll).
- Wherever Rigid Pavement Is To Be Used, The Contractor Shall Submit A Detailed Paving Plan To The Noblesville Department Of Engineering. The Paving Plan Shall Illustrate 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.
- The Primary And Secondary Arterial Pavement Section Thickness Shown Are Minimum Requirements. California Bearing Ratio (CBR) Tests Shall Be Performed To Verify Pavement Thickness Designs. CBR Tests Shall Be Submitted To The Noblesville Department Of Engineering As Part Of The T.A.C. Submittal.
- Concrete Curbs And Sidewalks Shall Be Constructed In Accordance With INDOT Specifications, Sections 604 And 605. Control Joints Shall Be Spaced 10 Feet Apart. Saw Cuts Or Tooled Joints Shall Be Uniform, Vertical And Neat.
- For Cold-Weather Concrete Placement, Contractor Shall Comply With Provisions Of ACI 306R For Protection From Physical Damage Or Reduced Strength, For Hot Weather Concrete Placement, Contractor Shall Comply With Provisions Of ACI 305R For Protection From Physical Damage Or Reduced Strength, As Associated With Rapid Moisture Loss.
- The Roadway Pavement Cross Section Shall Be Completed Within 60 Calendar Days From The Start Of The Subgrade Treatment. The Surface Asphalt Course May Be Placed More Than 60 Calendar Days After Subgrade Treatment, But Shall Be Placed Within One Calendar Year Of Placement Of Asphalt Intermediate Course.
- Proof Roll Tests Shall Be Passed Prior To Placement Of Underdrains And First Lift Of Roadway Base Material. Proof Roll Tests Shall Not Be Conducted On Frozen Subgrade And The Ambient Temperature For The Previous 72 Hours Prior To The Proof Roll Test Shall Be Above 32° F. Subgrade Shall Be Free From Excess Moisture.
- Areas In Which Failures Occur During Proof Roll Test Are To Be Marked In The Field By The Engineering Department. Failures Shall Be Corrected And Retested Until Passing Inspection.
- Roadways Which Have Exposed Milled Areas Shall Place And Compact Temporary Asphalt Pavement, Cold Mix Or Hot Mix, At The Milled Joints To Smooth The Transition Between The Milled Surface And Unmilled Surface. Milling Operations And Milled Pavement Areas Are Considered Construction Zones And Shall Be Marked Accordingly. Milled Surfaces Shall Be Covered Within 14 Calendar Days Of Start Of Pavement Milling Operations.



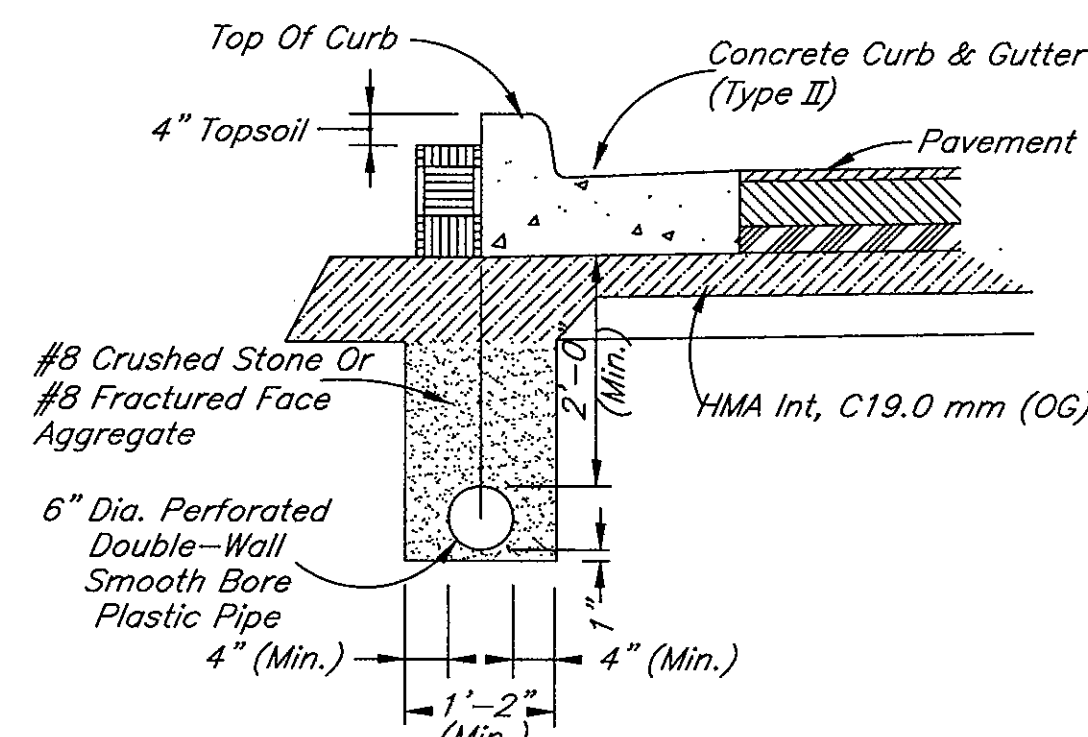
- LOCAL RESIDENTIAL**
- d= 12.5"
- 1.5" HMA Surface, Type A, 9.5mm ON
  - 2.5" HMA Intermediate, Type A, 19.0 mm ON
  - 2.5" HMA Base, Type A, 25.0 mm ON
  - 6" Compacted Aggregate, #53 ON
  - INDOT Subgrade Treatment Type IA
- d= 10.5"
- 1.5" HMA Surface, Type A, 9.5mm ON
  - 2.5" HMA Intermediate, Type A, 19.0 mm ON
  - 2.5" HMA Base, Type A, 25.0 mm ON
  - 4" HMA Base, Type A, 25.0 mm ON
  - INDOT Subgrade Treatment Type IA
- d= 12"
- 6" PCCP ON
  - 6" Compacted Aggregate, #53 ON
  - INDOT Subgrade Treatment Type IA

- COLLECTOR**
- d= 16"
- 1.5" HMA Surface, Type B, 9.5mm ON
  - 2.5" HMA Intermediate, Type B, 19.0 mm ON
  - 4" HMA Base, Type B, 25.0 mm ON
  - 2" HMA Int., C19.0 mm (OG) ON
  - 6" Compacted Aggregate, #53 ON
  - INDOT Subgrade Treatment Type IA
- d= 13"
- 1.5" HMA Surface, Type B, 9.5mm ON
  - 2.5" HMA Intermediate, Type B, 19.0 mm ON
  - 4" HMA Base, Type B, 25.0 mm ON
  - 2" HMA Int., C19.0 mm (OG) ON
  - 3" HMA Base, Type B, 25.0 mm ON
  - INDOT Subgrade Treatment Type IA
- d= 18"
- 9" PCCP ON
  - 3" Compacted Aggregate, #8 ON
  - 6" Compacted Aggregate, #53 ON
  - INDOT Subgrade Treatment Type IA

- ARTERIAL / COMMERCIAL**
- d= 19"
- 1.5" HMA Surface, Type B, 9.5mm ON
  - 2.5" HMA Intermediate, Type B, 19.0 mm ON
  - 4" HMA Base, Type B, 25.0 mm ON
  - 2" HMA Int., C19.0 mm (OG) ON
  - 3" HMA Base, Type B, 25.0 mm ON
  - 6" Compacted Aggregate, #53 ON
  - INDOT Subgrade Treatment Type IA
- d= 16"
- 1.5" HMA Surface, Type B, 9.5mm ON
  - 2.5" HMA Intermediate, Type B, 19.0 mm ON
  - 4" HMA Base, Type B, 25.0 mm ON
  - 2" HMA Int., C19.0 mm (OG) ON
  - 5" HMA Base, Type B, 25.0 mm ON
  - 6" HMA Base, Type B, 25.0 mm ON
  - INDOT Subgrade Treatment Type IA

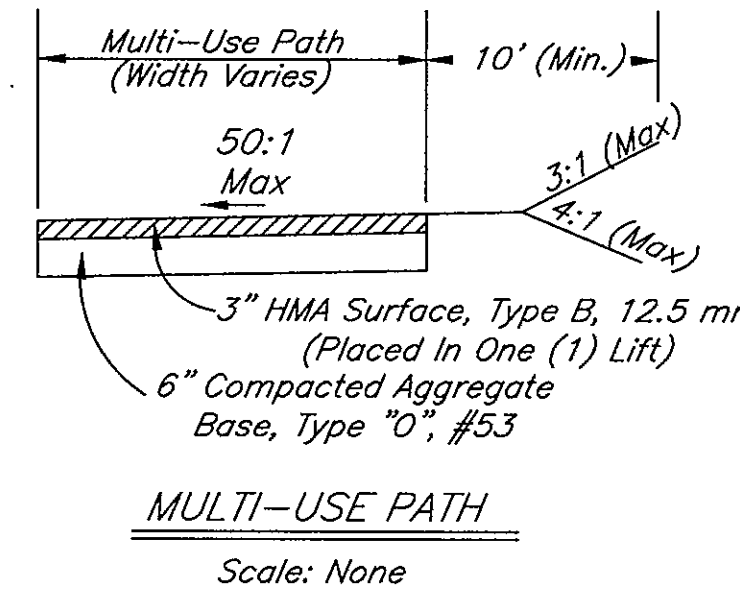
**PAVEMENT CONSTRUCTION**

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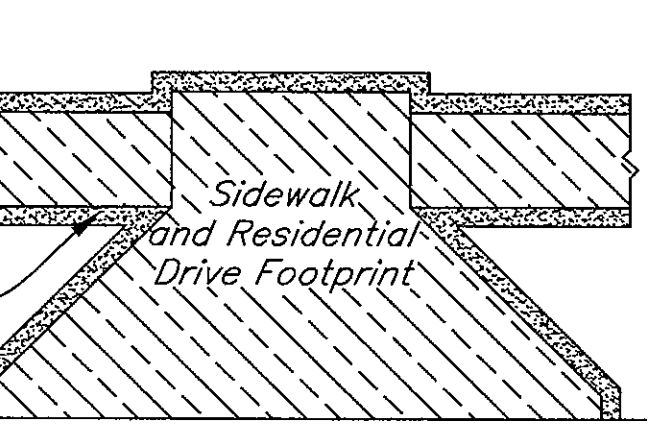
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Scale: None



**MULTI-USE PATH**

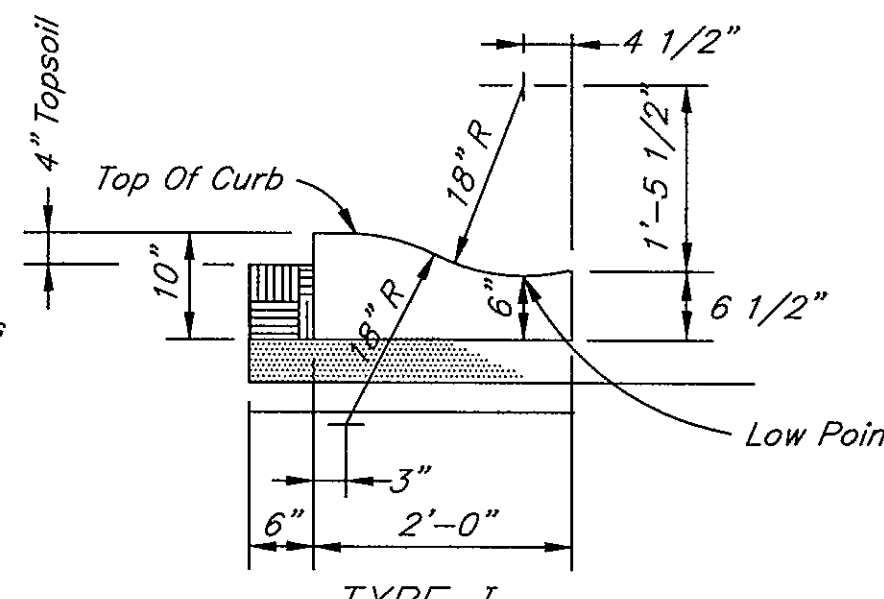
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**PEA GRAVEL DETAIL**

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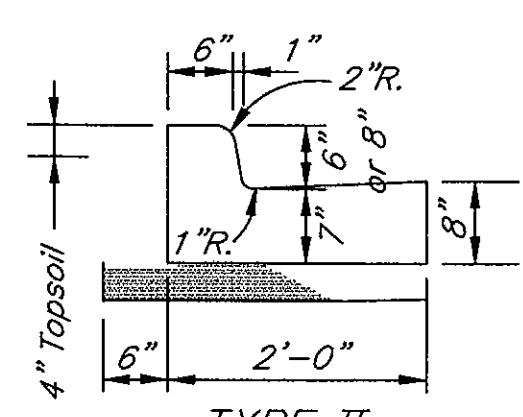
- If Pea Gravel Used As Base For Residential Drive And Sidewalks, Shall Be Placed Minimum 12" Beyond Edge Of Paved Drive/Walk.



**TYPE I**

**2' CONCRETE ROLL CURB & GUTTER**

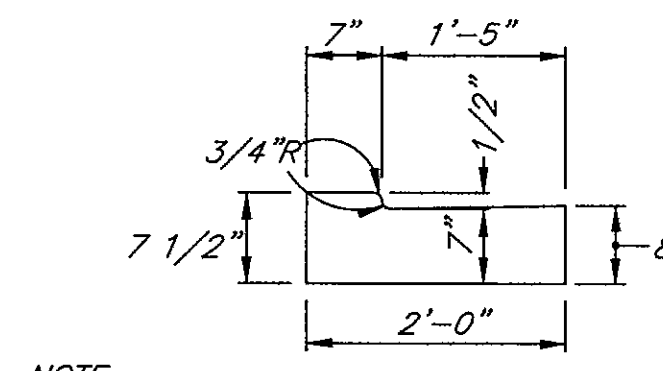
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**TYPE II**

**2' COMBINED CONCRETE CURB & GUTTER**

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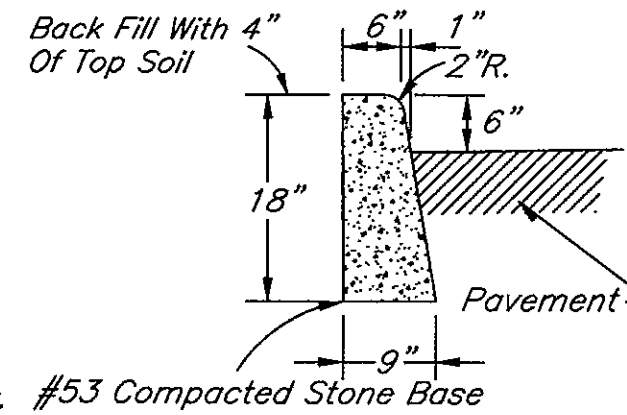


NOTE:

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

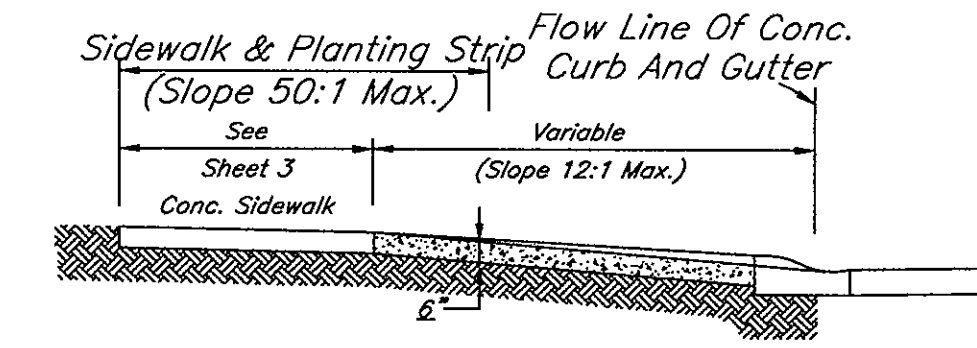
**DEPRESSED CONCRETE GUTTER**

Scale: None



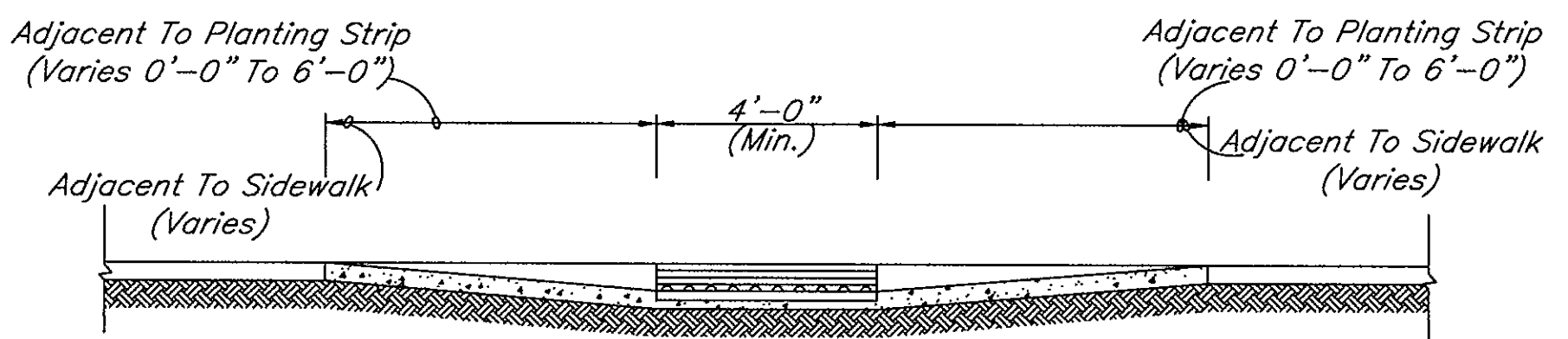
**18" BOX CURB WITH 6" FACE**

Scale: None



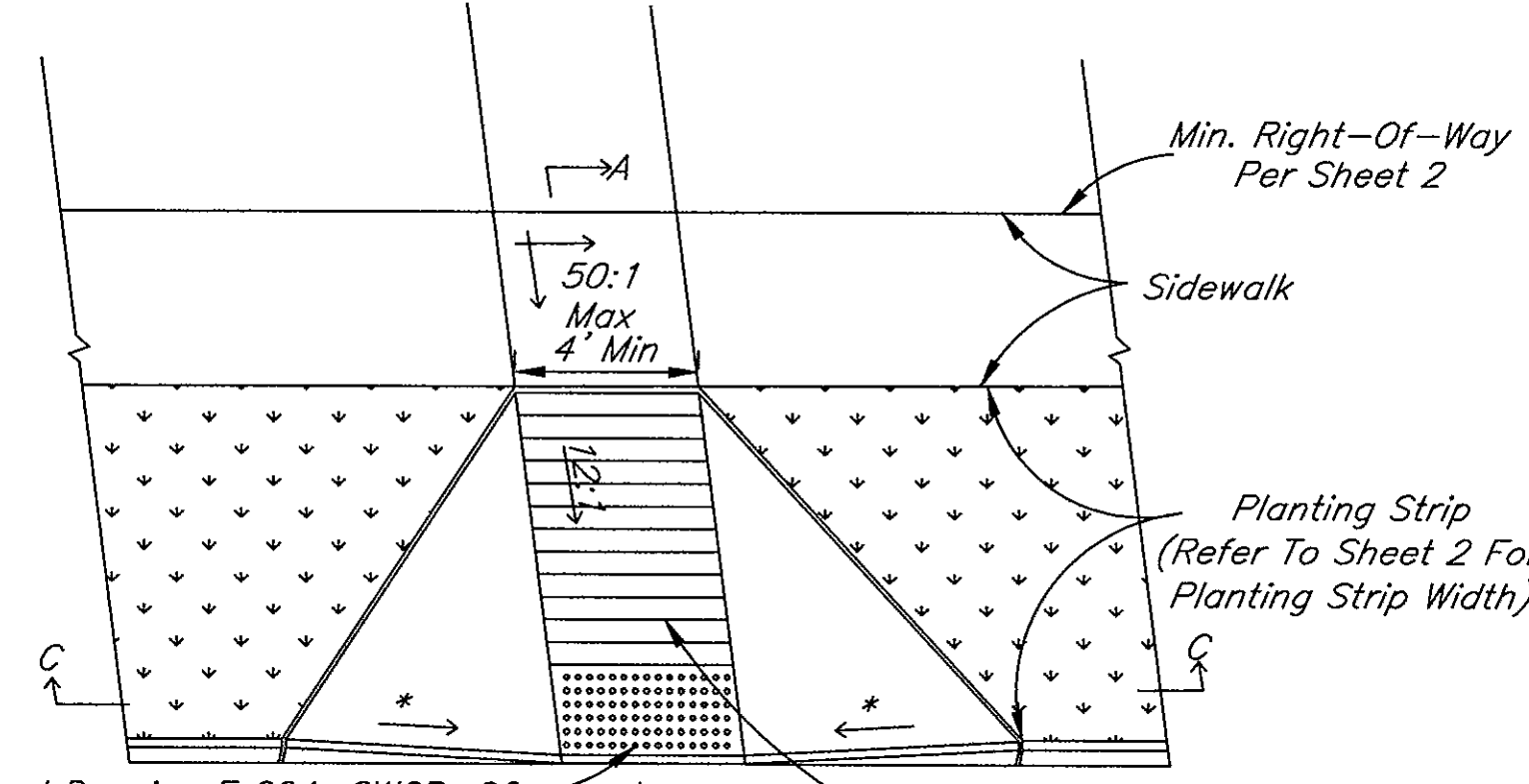
**SECTION A-A**

Scale: None



**SECTION C-C**

Scale: None



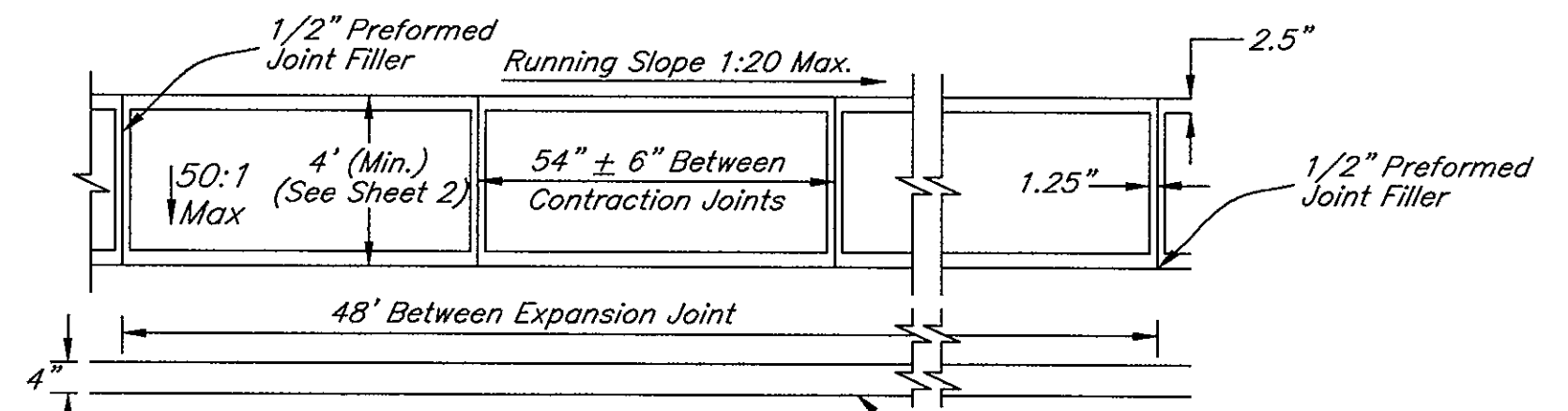
See INDOT Standard Drawing E 604-SWCR-02 For Details Of The Detectable Warning. Detectable Warning Shall Be Constructed Of Brick Or Cast Iron With Waterbased Asphaltic Coating, Unless Otherwise Approved.

**CURB RAMP, TYPE C**

Scale: None

**SIDEWALK RAMP CONSTRUCTION**

- Refer To INDOT Standard Drawings For Alternate Sidewalk Ramp Configurations And Construction Details.
- Wing Slope To Be 2:1 If Entirely Adjacent To Greenspace, 12:1 If Adjacent To Sidewalk.

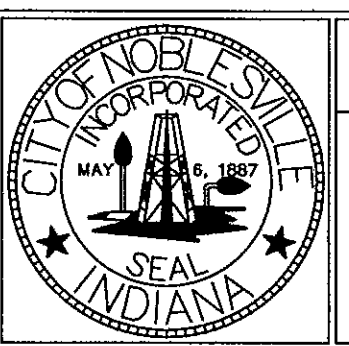
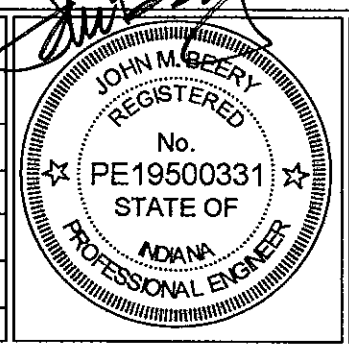


**SIDEWALK DETAIL**

Scale: None

- Care Shall Be Taken To Assure A Uniform Grade On All Ramps With No Grade Breaks.
- 1/2" Preformed Joint Filler Shall Be Incorporated When Abutting Concrete Curbs, Structures, Other Walls, Other Fixed Objects, And A Spacing Of 48 Feet Of Walk.
- Surface Texture Shall Be That Obtained By A Coarse Brooming, With A 2.5" Wide Smooth Trowel Finish For The Perimeter Of Each Sidewalk Panel. At Construction Joints, The Abutting Smooth Trowel Finish Shall Be 1.25" Wide.
- Distance Between Contraction Joints Shall Be Consistent Between Driveways.
- All Concrete Sidewalks Shall Be 4" Thick, Except At Residential Drive Crossings Where The Minimum Thickness Shall Be 6". At Commercial Drives, The Concrete Sidewalk Thickness Shall Be 8".
- All Concrete Shall Be Air Entrained (5%±1%) - 6 Bags Per Cubic Yard, Minimum 4000psi Compressive Strength.
- A Minimum Of 4" Thick Compacted Granular Base Or 4" Pea Gravel Bed Extended Minimum Of 12" Beyond Edge Of Paved Sidewalk To Account For Spreading Shall Be Placed Prior To The Construction Of The Sidewalk.
- Sidewalk Longitudinal Grade Shall Be Within ±1% Of The Adjacent Roadway's Longitudinal Grade Except At Curb Ramps.
- Sidewalks And Trails Shall Have A Minimum Of 10 Feet To Both Sides Of The Sidewalk/Trail To A Side Slope No Greater Than 4:1 For Down Hill Grades And 3:1 On Up Hill Grades.

REVISIONS		
Rev. No.	Description	Date
4	Revisions Underlined Or In Bubble Cloud	1/10/2012



**CITY OF NOBLESVILLE**

Pavement,  
Curb & Sidewalk  
Details And Notes

**SHEET**  
3  
OF  
13

**STORM SEWER REINFORCED CONCRETE PIPE**

- Reinforced Concrete Pipe Shall Be Class III, IV, Or V As Specified In ASTM C-76.  

DEPTH OF FILL OVER PIPE	CLASS
Between 2 Feet And 10 Feet	III
Between 10 Feet And 16 Feet	IV
16 Feet Or Greater	V
- Reinforced Elliptical Concrete Pipe Shall Be Class HE-III Or HE-IV As Specified In ASTM C-507.  

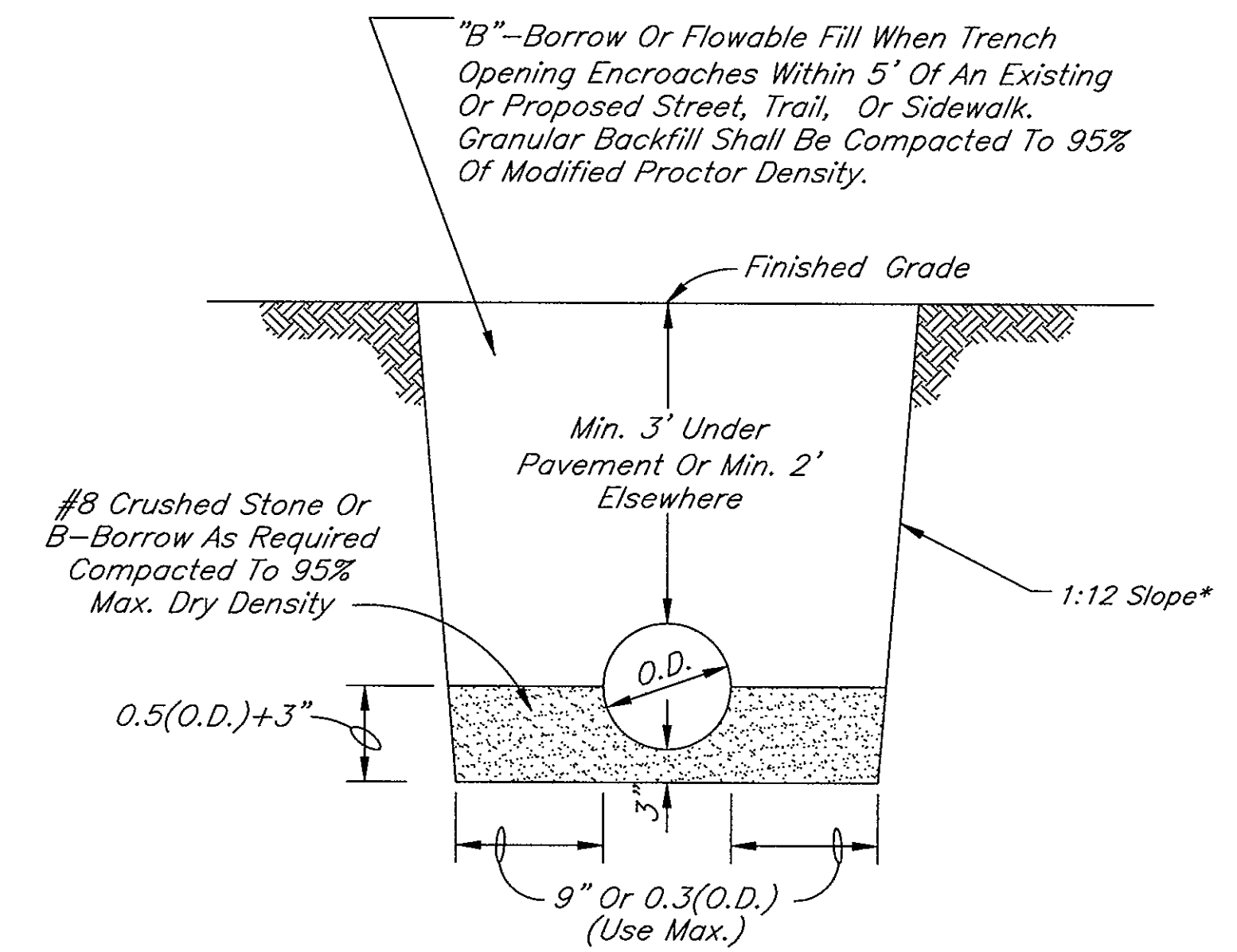
DEPTH OF FILL OVER PIPE	CLASS
3 Feet Or Less	HE-IV
Between 3 Feet And 8 Feet	HE-III
- Lift Holes Are Not Allowed For Pipe Less Than 24 Inches In Diameter. A Maximum Of Two Lift Holes Are Allowed For Pipe 24 Inches In Diameter Or Larger, Lift Holes Shall Be Repaired In Accordance With The Most Recent INDOT Standard Specifications.
- Fittings And Specifications Shall Be In Accordance With The Specifications For The Type Of Pipe Being Used.
- The Outside Of Each Pipe Section Shall Be Legibly Marked With The Date Of Manufacture, Class Of Pipe, Specification Designation, Name Or Trademark Of Manufacturer And Identification Of Plant/Location. The Interior Of The Pipe Shall Also Be Marked With Same Information As The Exterior Of The Pipe In A Location That Can Be Seen During The Closed Circuit Television (CCTV) Inspection.
- 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.
- Pipe Size And Classification Shall Be Called Out In Plan And Profile Of Construction Drawings.
- All Culverts Or Ends Of Storm Pipe That Do Not Connect Directly To A Structure Shall Require Flared End Sections With PreCast Toe Walls And Rip-Rap. Specifications And Bedding Of Toe-Walls And Rip-Rap Requirements Shall Be Determined By The Design Engineer Based On The Velocity Of Discharge And Soil Type. Headwalls Shall Also Be Considered If The Previously Stated Items Are Not Sufficient.
- Storm Sewer Pipe Shall Have A Minimum Horizontal Separation Of 10 Feet From Sanitary Sewer Pipe Or Water Main Pipe. All Pipe Crossings Shall Be At Angles Greater Than 45° With A Minimum Vertical Separation Of 1.5 Feet. Dimensions Are Measured From The Outside Of Pipe To Outside Of Pipe.

**STORM SEWER PIPE TELEVISION AND AS-BUILT DRAWINGS**

- Closed Circuit Television Inspection Shall Be Performed On All Publicly Owned Pipe Installed Within The City Of Noblesville For The Purposes Of Conveying Storm Water.
- The Contractor Installing The Storm Sewer Pipe Shall Employ/Hire The Contractor Responsible For The Television Inspection Services. The Developer Shall Contact The Noblesville Department Of Engineering To Schedule The Closed-Circuit Television Inspection, Immediately Following The Thorough Cleaning Of All Segments.
- 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 Noblesville Department Of Engineering.
- Contractor Shall Bear All Costs Of Line Segment Cleaning, Debris Removal & Disposal, And, Through Subsequent Invoicing From The Noblesville Department Of Engineering, The Closed-Circuit Television Inspection.
- One Hard Copy Of As-Built Drawings Shall Be Submitted To The Department Of Engineering. Electronic As-Built Drawings Submittal Shall Be Submitted And Comply With City GIS Coordinator's Guidelines. Contractor Shall Submit As-Built Drawings Within 30 Days Of Successful Completion Of All Testing Requirements.
- Contractor Shall Supply Digital Video Of Video Inspection To Department Of Engineering On 700 mB Compact Disks In The Following Format:
  - Minimum 640 X 480 Pixel Dimension
  - Minimum 24 fps (Frames Per Second)
  - Indexed Chapters To Allow Instant Access To Points Of Observation
  - Cross-Platform Compatible To Allow For Viewing On Any Operating System

**STORM SEWER GENERAL NOTES**

- Storm Sewer Pipe, For In Public Right-of-Way And/Or Public Easements, Of Other Material Or Material Not Meeting These Specifications Shall Require The Prior Written Approval Of The Noblesville Department Of Engineering.
- Upon Request, The Contractor Shall Submit Information To The Noblesville Department Of Engineering Illustrating Conformance With These Specifications.
- The Smallest Permissible Storm Sewer Pipe Diameter Is 12 Inches, With The Exception Of Subsurface Underdrain Pipe.
- Stormwater Technical Standards Manual Shall Be Referenced For Stormwater Design.
- Prior To Earthwork, Pipe Construction, Or Other Activity That May Affect Or Alter Stormwater Runoff, The Downstream Receiving End Of Stormwater Shall Be Secured And Stabilized To Accommodate All Upstream Runoff, Including Offsite. This Includes, But Not Limited To Downstream Ditch Improvements, Culvert Improvements, Or Constructing Positive Outlet For Retention Facility.
- Pre-Fabricated Galvanized Animal And Debris Guard Shall Be Installed On The Upstream End Of All Pond Outfalls.
- Underdrain Table May Be Required By The City Engineer. Table Shall Be In The Format Required By The Indiana Department Of Transportation (INDOT).

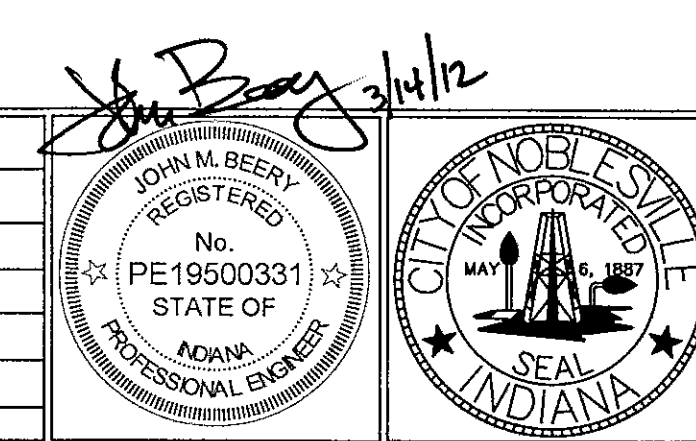


**RCP PIPE BEDDING DETAIL**

Scale: None

\* Trench Slope For Unit Price Pay Item Or Reimbursement Quantity Calculation

REVISIONS		
Rev. No.	Description	Date
4	Revisions Underlined Or In Bubble Cloud	1/10/2012

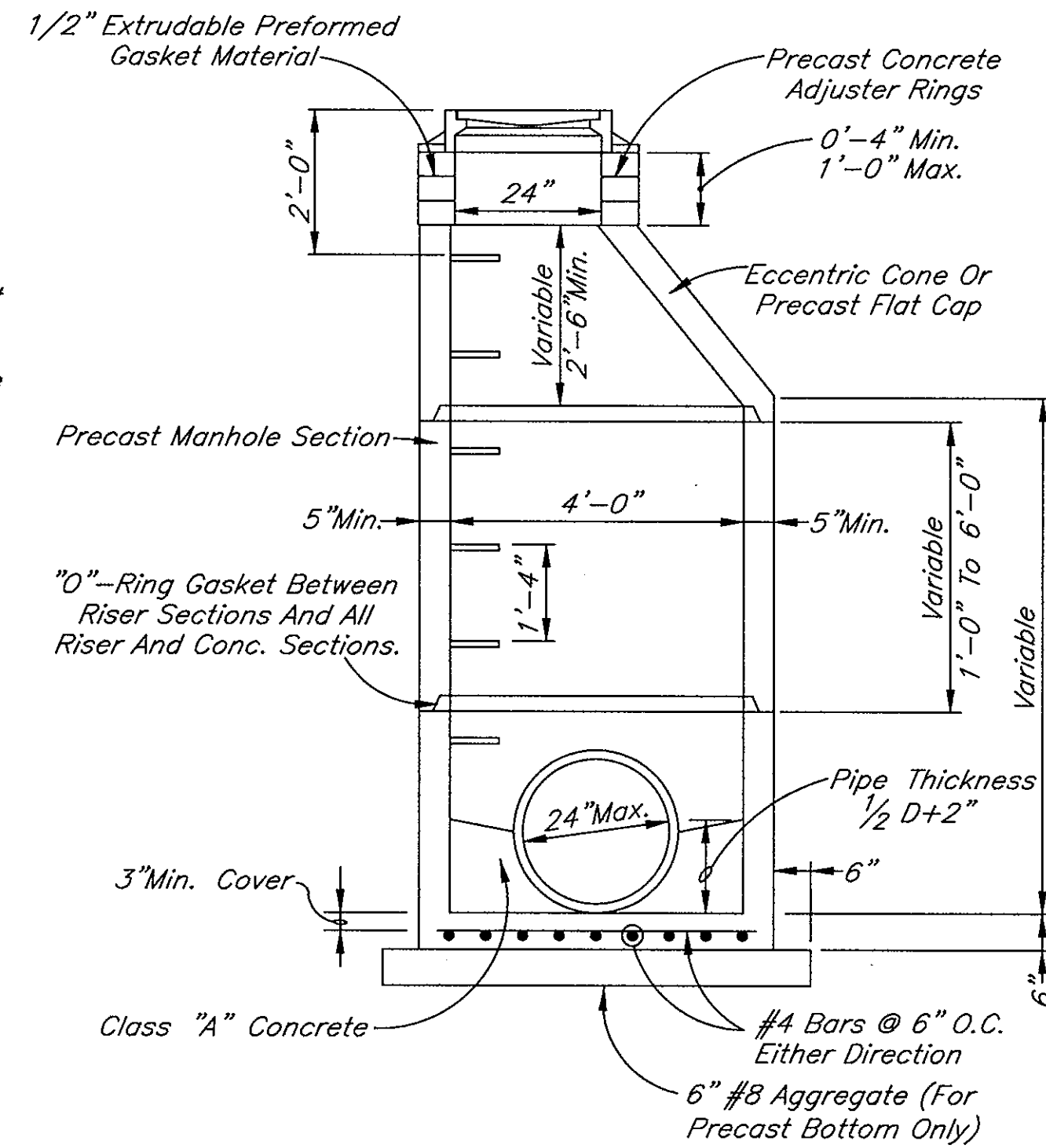


CITY OF NOBLESVILLE  Storm Sewer Bedding And Notes	SHEET 4 OF 13
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**GENERAL NOTES**

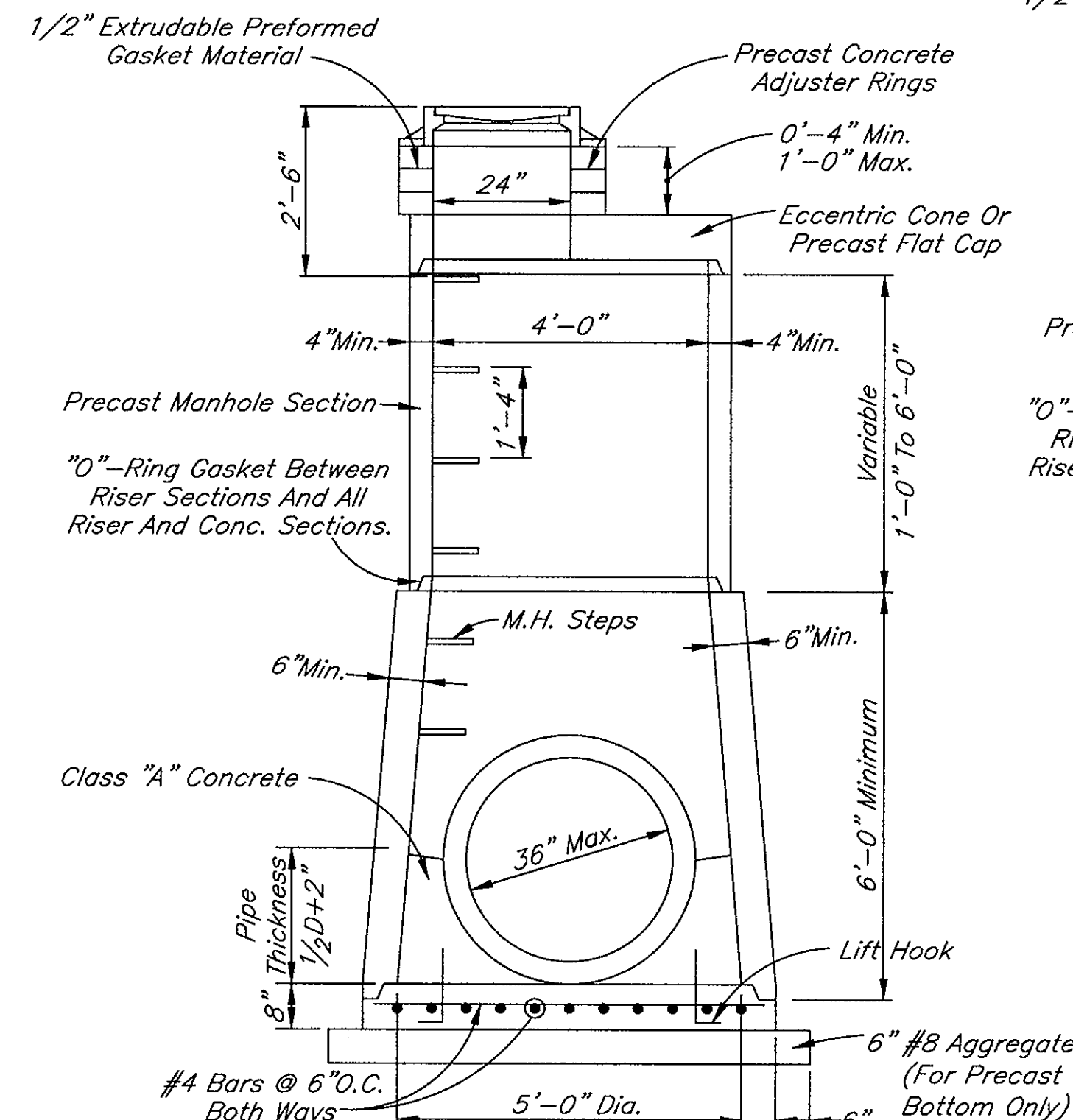
- All Dry Drainage Swales Shall Contain 6" Double Wall Smooth Bore Perforated Pipe. All Subsurface Underdrains Shall Be Televised Per Specifications On Sheet 5 Of Noblesville Standards.
- Type J, K, L, M, And N Manholes As Detailed Herein Require A Certain Minimum Depth. In Cases Where The Depth Of The Storm Sewer Is Not Sufficient To Meet The Minimum Depth As Required By The Detail, "F" Diameter Manhole Section May Be Used Throughout The Depth Of The Manhole.
- 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 Noblesville Department Of Engineering. Regardless Of The Type Of Casting Used, The Casting Shall Be Centered Over The Manhole Steps.
- Manholes Shall Be Installed At Distances Not Greater Than 400 Feet.
- Manhole Steps Shall Be Neenah R-1981-J, East Jordan No. 8512, M.A. Industries PS 1-PF, Or As Approved By The Noblesville Department Of Engineering.
- Castings Which Drain Roll Curb And Gutter, Type I Curbing, Shall Be Neenah R-3501-TR Or R-3501-TL, East Jordan No. 7495M1 Or 7495M2 Or 7495M4 Or As Approved By The Noblesville Department Of Engineering. Inlet Type A Required.
- Castings Which Drain Combined Curb And Gutter, Type II Curbing, Shall Be Neenah R-3246, East Jordan No. 7030 With M2 Grate And Type T1 Back Or As Approved By The Noblesville Department Of Engineering. Inlet Type B Required.
- Castings For Inlets Which Drain Open Pavement Areas Without Curbing Shall Be Neenah R-3405-A, East Jordan No. 5250 Or As Approved By The Noblesville Department Of Engineering. Inlet Type A Required.
- Castings For Manholes Which Drain Open Pavement Areas Without Curbing Shall Be Neenah R-2502-D, East Jordan No. 1022 With Type M1 Or M3 Grate, Or Equivalent As Approved By The Noblesville Department Of Engineering.
- Castings For Use On Inlets Which Drain Swales Or Dry Detention Basins Shall Be Neenah R-4215-C, East Jordan No. 6610, Or As Approved By The Noblesville Department Of Engineering. INDOT Inlet Type E or F Required. Detail Per INDOT Standard Drawing E 720-INST-04.
- Castings For Use On Manholes Which Drain Swales Or Dry Bottom Detention Basins Shall Be Neenah R-4342, East Jordan No. 6489 Or As Approved By The Noblesville Department Of Engineering.
- Castings For Manholes Which Do Not Drain Surface Water Shall Be Neenah R-1772, East Jordan No. 1022 With Type A Lid, Or Equivalent As Approved By The Noblesville Department Of Engineering. All Covers Shall Be Stamped, See Storm Casting Detail This Sheet, With 2" Raised Letters.
- Castings Shall Not Be Buried And Shall Be Flush With The Adjacent Finished Grade. Castings Which Are Surrounded By Asphalt or Concrete Shall Be Constructed Within A Tolerance Of  $\pm 0.1'$  Of The Designed Elevation. All Other Castings Shall Be Constructed Within A Tolerance Of  $\pm 0.2'$  Of The Designed Elevation. Elevations Will Be Checked With The As-Built Drawings.
- The Contractor Shall Remove Soils Under A Precast Bottom, Which In Its Natural State, Have Good Bearing Strength And Which Have Had Its Characteristics Adversely Changed By The Contractor's Operations And Replace With 6 Inches Of #2 Stone.
- For Type C Manholes, The Base And First Riser Section Of The Precast Concrete Manhole Shall Be Integrally Cast As One Complete Unit.
- Storm Sewer Pipe Which Connects To Either A Catch Basin Or An Inlet Shall Enter And Exit Perpendicular To Precast Concrete Walls. In Cases Where A Perpendicular Connection Cannot Be Made, A Manhole Structure Shall Be Used With An Appropriate Cap To Accommodate Required Casting Type.
- If Core Required, Core Shall Not Be Made At Joint Between Structure Sections. Coring Into Structure For Curb Underdrain Tie-In Shall Be Prohibited If Precast Structure Was Fabricated With Underdrain Tie-Ins. If Core Required, Core Shall Not Be Made At Joint Between Structure Sections.
- If Catch Basin Is Used, Sump Shall Be 24" Below Lowest Pipe Invert Elevation Within Catch Basin.
- Site Grading As-Built Shall Be Provided In Both Mylar And Electronic (ACAD & PDF) Formats Upon Acceptance By Department Of Engineering.
- There Shall Be A Minimum Of 0.1 Feet Of Fall Between The Upstream Invert(s) And The Downstream Invert In The Structure For Pipe With The Same Diameter. For Pipes Of Differing Diameters, The Crown Of The Upstream Pipe Shall Match The Crown Of The Downstream Pipe.
- Final Adjustment In Elevation Of The Frame, Cover, Or Casting Shall Be Accomplished By The Use Of A 4 Inch Minimum Thickness Adjusting Ring Or Collar. Brick Or Block Shall Not Be Used In The Construction Of A Structure Or To Adjust The Elevation Of Frame Or Casting.
- 20 Feet Of 6" Diameter Perforated Double-Wall Smooth Bore Plastic Underdrain Pipes Shall Be Installed At All Sag Inlets Under The Curb Or Pavement Which Drains To The Structure. Minimum Of Two Underdrain Lines Per Structure. Open Ends Of Underdrains Shall Be Capped. Underdrains Shall Be Bedded In #8 Stone With Minimum Of Two Feet (2') Of Cover.



MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting At 0°-45° Bend	24"
Pipe Entering / Pipe Exiting At 45°-90° Bend	21"

**MANHOLE TYPE C**

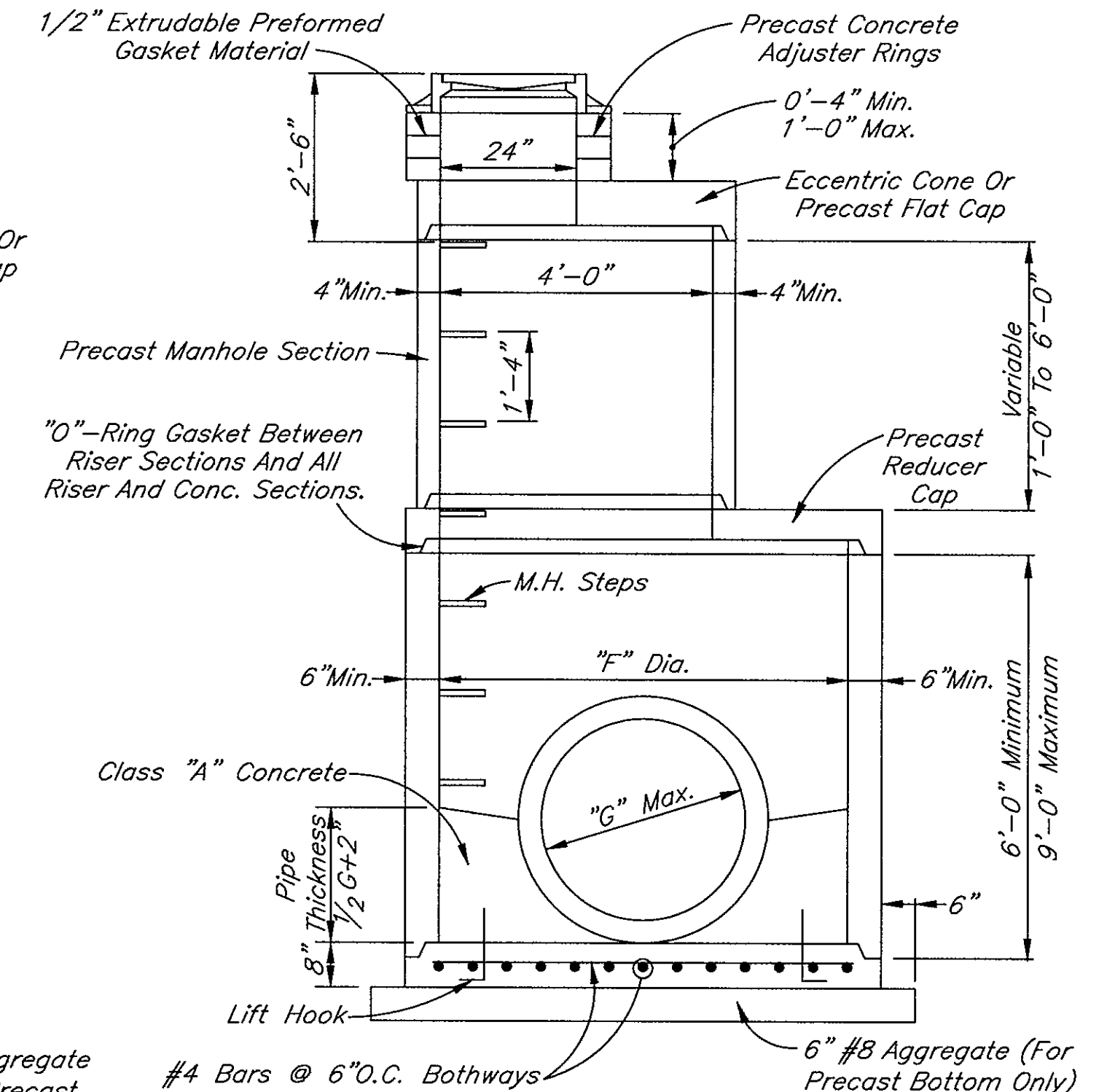
Scale: None



MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting At 0°-45° Bend	36"
Pipe Entering / Pipe Exiting At 45°-90° Bend	30"

**MANHOLE TYPE H**

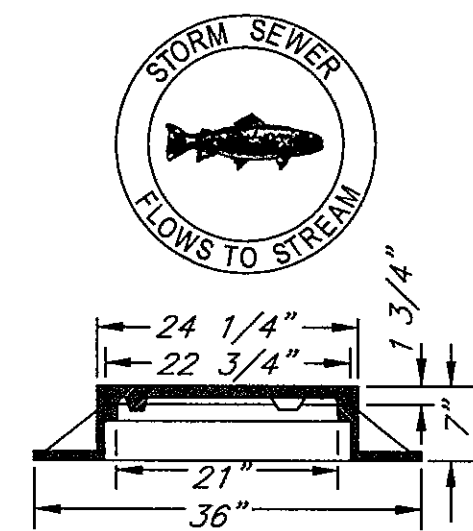
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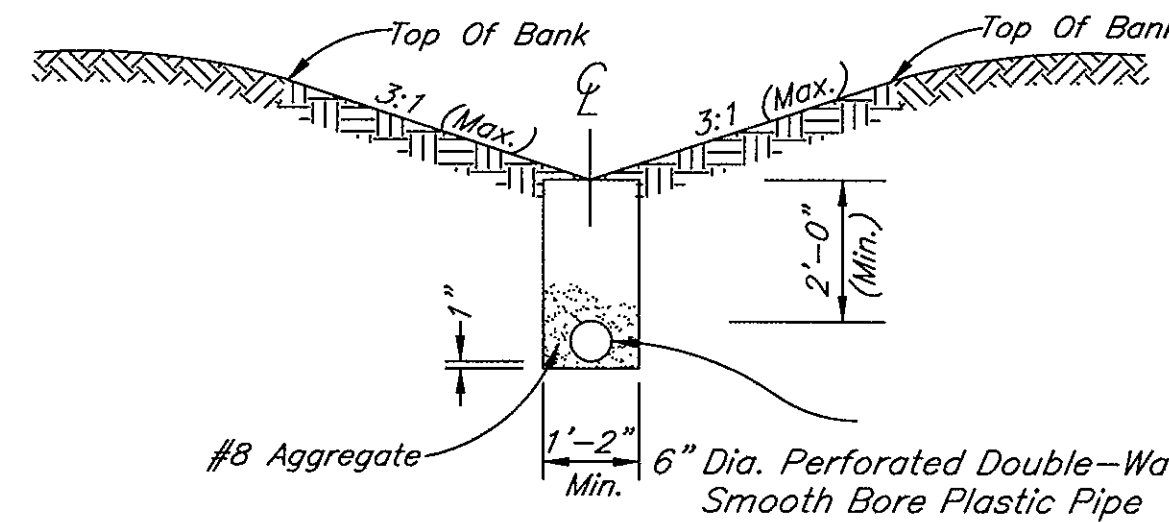
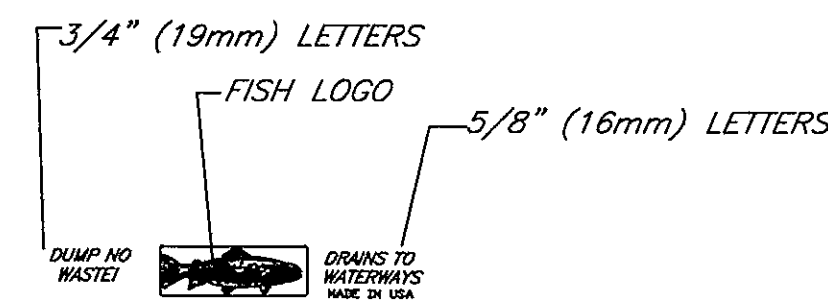
Manhole Type	Manhole Diameter "F"	MAXIMUM PIPE SIZE "G"	
		Pipe Entering / Pipe Exiting At 0°-45° Bend	Pipe Entering / Pipe Exiting At 45°-90° Bend
J	60"	36"	33"
K	72"	48"	36"
L	96"	54"	48"
M	102"	72"	66"
N	108"	84"	72"

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

Scale: None

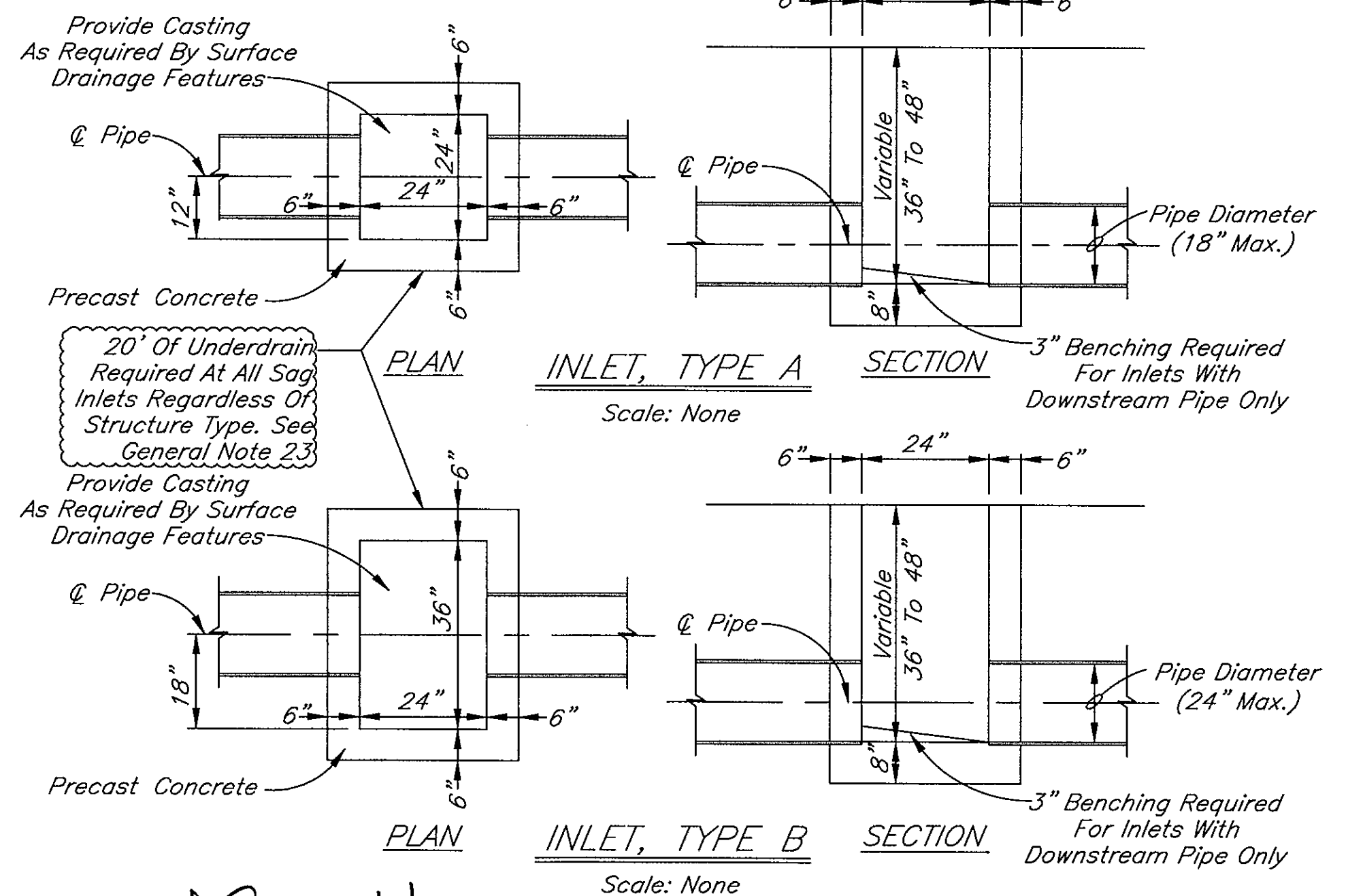


**STORM CASTING DETAIL**



**SWALE UNDERDRAIN DETAIL**

Scale: None



**PLAN INLET, TYPE A**

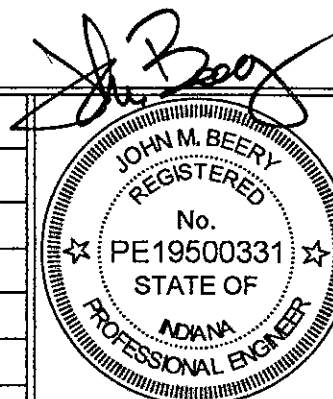
**SECTION INLET, TYPE A**

**PLAN INLET, TYPE B**

**SECTION INLET, TYPE B**

Scale: None

REVISIONS		
Rev. No.	Description	Date
4	Revisions Underlined Or In Bubble Cloud	1/10/2012



**CITY OF NOBLESVILLE**  
Storm Sewer Manholes, Inlets,  
& General Notes

**SHEET**  
5  
**OF**  
13

**SANITARY SEWER POLYVINYL CHLORIDE (P.V.C.) PIPE**

- P.V.C. 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-B, 12454-C, 12364-C, Or 13364-B. Reference Should Be Made To ASTM D-1784 For A Summary Of Cell Class Properties. P.V.C. Pipe Diameters Greater Than 15 Inches Shall Meet Or Exceed All Requirements Of ASTM F-679, And Shall Have A Minimum Cell Classification Of 12454-C Or 12364-C.
- When Depth Of Soil Cover Over The Pipe Is Less Than 12 Feet The Minimum Wall Thickness Of P.V.C. Pipe, 6 Inches Through 15 Inches In Diameter, Shall Conform To SDR-35, Type PSM, As Specified In ASTM D-3034. When Depth Of Soil Cover Over The Pipe Is 12 Feet Or Greater, The Minimum Wall Thickness Of PVC Pipe, 6 Inches Through 15 Inches In Diameter, Shall Conform To SDR-26, Type PSM, As Specified In ASTM D-3034. The Minimum Wall Thickness For P.V.C. Pipe Greater Than 15 Inches Shall Conform To T-1 Or T-2, As Specified In ASTM F-679. P.V.C. 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. P.V.C. SDR-26 Pipe Shall Have A Minimum Pipe Stiffness Of 115 Pounds Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412.
- The Assembly Of Joints Shall Be In Accordance With Pipe Manufacturers' Recommendations And ASTM D-3212. Solvent Cement Joints Shall Not Be Allowed For Mainline Pipe.
- Pipe Fittings Shall Be SDR-26 Manufactured Fittings Made Of P.V.C. Plastic Having A Cell Classification Of 12454-B, 12454-C, Or 13343-C, As Defined In ASTM D-1784. Saddle Connections Shall Not Be Allowed For New Construction, Lateral Connections Shall Occur At SDR-26 Tee-Wyes.
- In Accordance With ASTM D-3034, The Outside Of Each Pipe Section Shall Be Legibly Marked With The Date Of Manufacture, Class Of Pipe, Specification Designation, Name Or Trademark Of Manufacturer And Identification Of Plant/Location. When Possible, The Interior Of The Pipe Shall Also Be Marked With Same Information As The Exterior Of The Pipe In A Location That Can Be Seen During The Closed Circuit Television (CCTV) Inspection.
- Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.
- Pipe Size And Classification Shall Be Called Out In Plan And Profile Of Construction Drawings.
- Sanitary Sewer Pipe Shall Have A Minimum Horizontal Separation Of 10 Feet From Storm Sewer Pipe Or Water Main Pipe. All Pipe Crossings Shall Be At Angles Greater Than 45° With A Minimum Vertical Separation Of 1.5 Feet. Dimensions Are Measured From The Outside Of Pipe To Outside Of Pipe.

**SANITARY SEWER LEAKAGE TESTING**

- A Leakage Test Shall Be Performed For All Mainline Segments. Low Pressure Air Shall Be Slowly Introduced Into The Sealed Line Until The Internal Air Pressure Reaches 4 PSIG Plus The Groundwater Head Divided By 2.31 (Maximum Test Pressure Is 9 PSIG). Testing For Leakage Shall Not Commence Until After All Backfill Has Been In Place For 30 Days.
- 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 Of 99.8 Percent Accuracy, Timing Shall End When The Internal Air Pressure Drops 1 PSIG Below The Stable Internal Air Pressure.
- 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.
- Should Contractor Excavate Pipe For The Purpose Of Repairing A Leak, Then The Entire Mainline Segment Shall Be Retested For Both Leakage And Deflection.
- The Design Engineer Or His/Her Representative Shall Attest That Each Mainline Segment Was Tested For Leakage, With Successful Results, In Compliance With Stated Leakage Testing Requirements.

**SANITARY SEWER DEFLECTION TESTING**

- An In-Place Deflection Test Shall Be Performed On All Flexible Pipe To Be Used For The Purposes Of Conveying Sanitary Sewage. Testing For An Allowable Deflection Of 5 Percent Internal Pipe Diameter Shall Not Commence Until 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 Replaced. A Replaced Section Shall Be Retested 30 Days After Replacement. 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. Should Corrective Measures Be Conducted, The Entire Segment Shall Be Tested Again For Leakage, As Stated Above.
- The Design Engineer Or His/Her Representative Shall Attest That Each Mainline Segment Was Tested For Deflection, With Successful Results, In Compliance With Stated Deflection Testing Requirements.

**OIL / GREASE TRAP REQUIREMENTS**

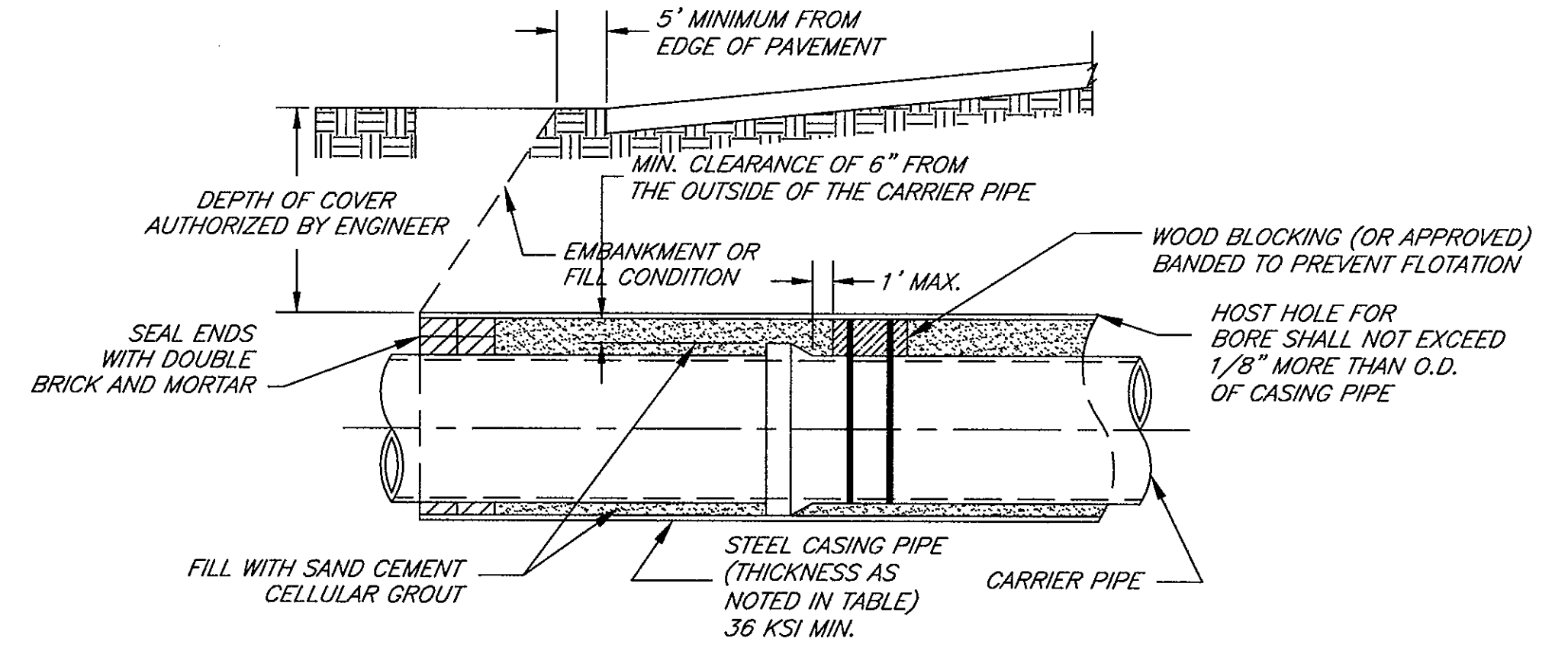
- All New Commercial Or Industrial Entities, Which Either Generate And/Or Waste Oil, Grease Or The By-Products Thereof, Shall Construct A 1,000-Gallon (Minimum) Grease Trap. The Design Engineer Shall Submit Detailed Calculations For Size Justification Of Said Trap. Calculations Shall Be Accompanied With References, Specifically Denoting Origin Of Sizing/Calculation Method.
- Toilets, Urinals And Other Similar Fixtures Shall Not Waste Through The Grease Interceptor. All Other Waste Shall Enter Through The Grease Interceptor, Through The Inlet Pipe Only.
- The Grease Interceptor And Grease Trap Shall Be Designed Such That It Is Easily Accessible, For Inspection/Sampling And Cleaning, At All Times. The Grease Trap Shall Have A Minimum Of Two (2) Compartments, With Fittings, Designed For Grease Interception.
- The Oil/Grease Trap Shall Be Located Outside The Building And At A Distance Far Enough To Allow Soluble Grease/Oil To Become Insoluble.
- A Backwater Prevention Valve Shall Be Located Downstream Of Oil/Grease Trap.

**SANITARY SEWER TELEVISION AND AS-BUILT DRAWINGS**

- Closed Circuit Television Inspection Shall Be Performed On All Pipe To Be Used For The Purposes Of Conveying Sanitary Sewer. Television Shall Be Done After Leakage And Deflection Testing.
- The Contractor Installing Pipe Shall Employ/Hire The Contractor Responsible For The Television Inspection Services. The Contractor/Developer Shall Contact The Noblesville Department Of Engineering To Schedule The Closed-Circuit Television Inspection, Immediately Following The Thorough Cleaning Of All Line Segments.
- 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 Noblesville Department Of Engineering.
- Contractor Shall Bear All Costs Of Line Segment Cleaning, Debris Removal And Disposal, And, Through Subsequent Invoicing From The Noblesville Department Of Engineering, The Closed-Circuit Television Inspection.
- Contractor Shall Submit As-Built Drawings, Electronic And Hardcopy, And All Leakage And Deflection Certification Of Attestment Within 30 Days Of Successful Completion Of All Testing Requirements.
- Two Sets Of As-Built Mylar Drawings Shall Be Submitted To The Department Of Engineering. Electronic As-Built Drawings Submittal Shall Be Submitted And Comply City's GIS Coordinator's Guidelines.
- Contractor Shall Supply Digital Video To Client On 700 mB Compact Disks In The Following Format:
  - Minimum 640 X 480 Pixel Dimension
  - Minimum 24 fps (Frames Per Second)
  - Indexed Chapters To Allow Instant Access To Points Of Observation
  - Cross-Platform Compatible To Allow For Viewing On Any Operating System

**SANITARY SEWER LATERAL PIPE AND FITTINGS**

- Service Laterals Shall Be SDR-26 Pipe From The Sewer Main To The Building. One Lateral Shall Be Installed Per Building. All Laterals Shall Be Inspected By The Noblesville Department Of Engineering Prior To Backfilling.
- 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.
- Lateral Size Shall Be A Minimum Of 6 Inches In Diameter Between Mainline Sewer And Clean-Out Closest To Building. Lateral Size Shall Be A Minimum Of 4 Inches In Diameter Between Building And First Downstream Clean-Out.
- A Minimum Of One Clean-Out Shall Be Installed 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 Length. In Any Event, A Clean-Out Shall Be Located No Farther Than 4 Feet From The Building.
- In Accordance With Sanitary Sewer Connection Policy No. 85-W2, Approval Consideration Of A Lateral Connection Requires The Owner Of The Residence Or Business To Provide The Following Information On A Legible Diagram: Name Of Property Owner, Address, Telephone Numbers Of Both Property Owner And Contractor, Depth And Position Of Lateral Between Mainline Sewer To The Building, Location Of Connection Point Referenced To Any Permanent Object, Length And Size Of Pipe To Be Installed, Pipe Material, Slope Of Pipe, Bedding Type, Pipe Contractor, And Method Of Connection.
- 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. See Curb Stamp Detail, Sheet 10.
- A Backwater Prevention Valve Shall Be Provided For Each Sanitary Sewer Lateral. The Backwater Prevention Valve Shall Be Housed In A 18" Diameter (Minimum) Meter Pit, Readily Accessible At All Times, And Located No More Than 2.5' Deep. The Backwater Prevention Valve Shall Be Installed Immediately Upstream Of The First Clean-Out.
- For Service Laterals, Contractor Shall Install 10-Gauge Insulated, Solid Copper Wire And Polyethylene Identification Tape. Both Items Shall Be Highly Resistant To Alkalis, Acids And Other Destructive Agents Found In Soil. The 10-Gauge Tracer Wire Shall Be Attached Directly To The Outside Of The PVC Service Lateral Every 10 Feet. The Polyethylene Identification Tape Shall Have A Minimum Thickness Of 4 Mils And Shall Be Placed Directly Over Pipe, 1'-6" Below Final Grade.
- The Approval Of A New Sanitary Sewer Lateral Or The Modification Of An Existing Service Lateral Requires The Procurement Of A Sewer Connection Permit From The Noblesville Department Of Engineering.
- In Accordance With ASTM D-3034, The Outside Of Each Pipe Section Shall Be Legibly Marked With The Date Of Manufacture, Class Of Pipe, Specification Designation, Name Or Trademark Of Manufacturer And Identification Of Plant/Location. Pipe Shall Be Rotated In Such A Manner That The Markings Are Easily Readable During Sanitary Lateral Inspection.



CASING PIPE SHALL BE JOINED USING 36 KSI WELDED JOINTS

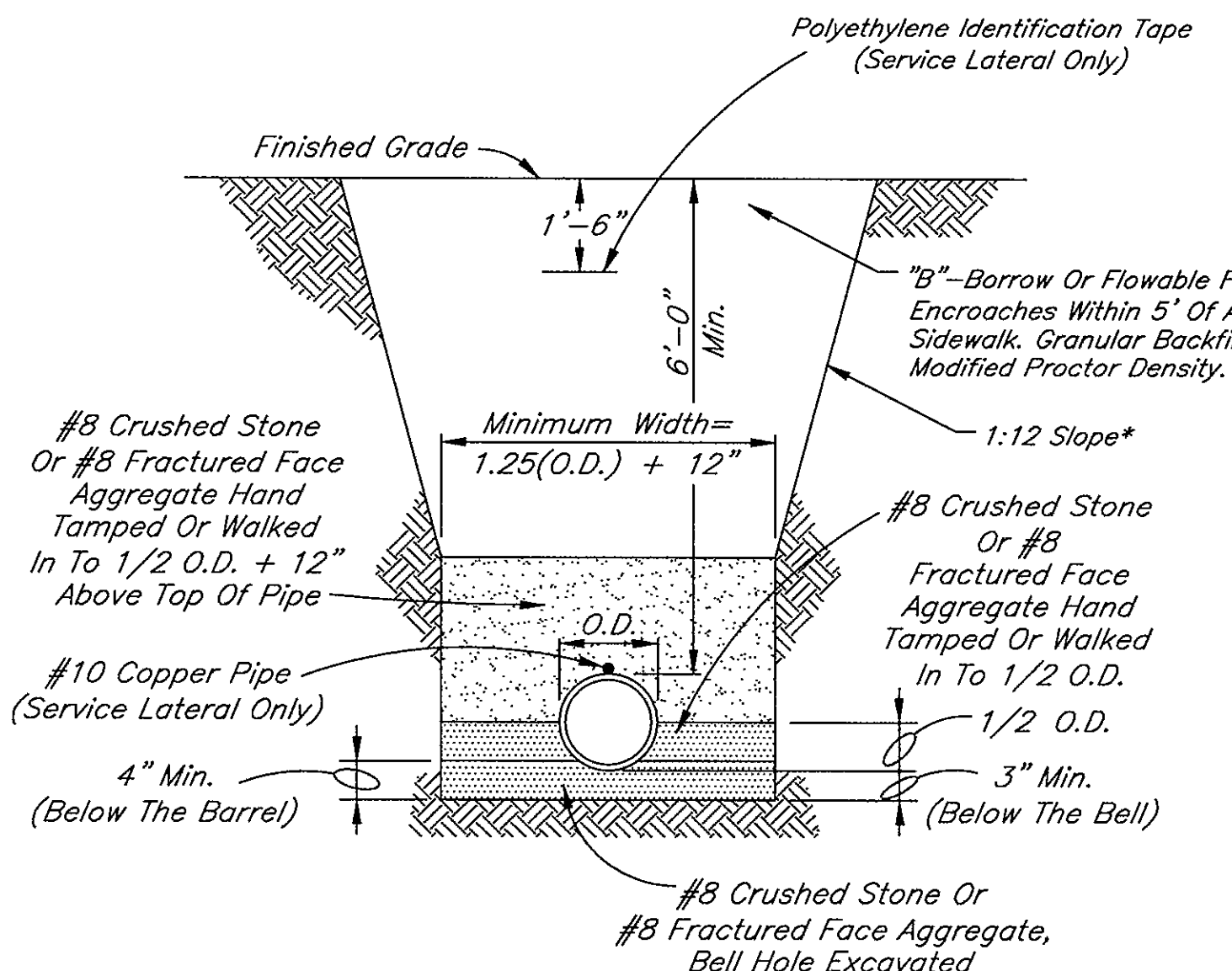
NOMINAL SIZE	ACTUAL O.D.	RAILROAD CROSSINGS		ROADWAY CROSSINGS	
		BARE	PROTECTIVE COATED	BARE	PROTECTIVE COATED
8"	8 5/8"	0.250	0.188	0.250	0.188
10"	10 3/4"	0.250	0.188	0.250	0.188
12"	12 3/4"	0.250	0.188	0.250	0.188
14"	14"	0.281	0.219	0.250	0.219
16"	16"	0.281	0.219	0.250	0.219
18"	18"	0.312	0.250	0.250	0.250
20"	20"	0.344	0.281	0.312	0.250
24"	24"	0.406	0.344	0.312	0.250
30"	30"	0.469	0.406	0.375	0.375
36"	36"	0.532	0.469	0.500	0.438
42"	42"	0.563	0.500	0.500	0.500
48"	48"	0.625	0.563	0.625	0.563
54"	54"	0.688	0.625	0.625	0.625
60"	60"	0.750	0.688	0.625	0.625
66"	66"	0.813	0.750	0.625	0.625
72"	72"	0.875	0.813	0.750	0.750

TABLE 1

SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

1 Pipe Diameter (in.)	2 Minimum Time (Min:Sec)	3 Length For Minimum Time (ft.)	4 Time For Longer Length (Sec.)	Specification Time For Length (L) Shown (Min:Sec.)							
				100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	350 Ft.	400 Ft.	450 Ft.
6	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	44:52	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	88	17.306L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
30	28:20	80	21.366L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15
33	31:10	72	25.852L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53
36	34:00	66	30.788L	51:17	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 A 0.5 PSIG 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 Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"

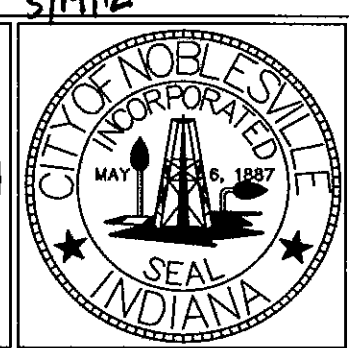
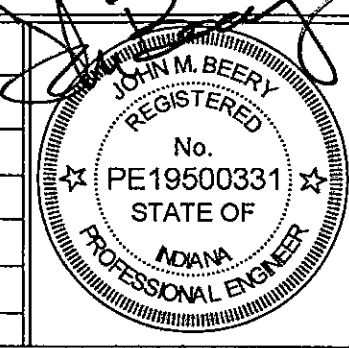
**PVC PIPE BEDDING DETAIL**

Scale: None

\* Trench Slope For Unit Price Pay Item Or Reimbursement Quantity Calculation

REVISIONS		
Rev. No.	Description	Date
1	Pipe Note 5, 7; Televising/A/B Notes 2, 4, 6, 7; Lateral Note 7, 10; Add Casing Detail & Tables; Bedding Detail - Backfill and Slope Notes; Oil/Grease Trap Note 5	12/1/06
3	Add Force Main General Notes; Add PVC Pipe Note 8	11/1/2007

- SANITARY SEWER FORCE MAIN**
- Construction Of Force Mains And Lift Station Shall Only Be Permitted When Determined To Be Required As Noted On The Sanitary Sewer Masterplan.
  - Force Mains And Lift Stations Shall Be Designed And Constructed To The Specifications And Requirements Determined By The City Engineer And Wastewater Utility Director.
  - Force Mains Shall Be Constructed With A Plastic Coated 10 Gauge Solid Copper Tracer Wire Taped To The Force Main Pipe At 10 Foot Intervals. Tracer Wire Shall Not Be Wrapped Around The Pipe. Below Grade Splices Are Not Permitted. Tracer Wire Access Boxes Shall Be Placed At Intervals Not To Exceed 600 Feet And At All Deflection Points To Gain Access To Wire For Locating The Pipe. The Top Of The Wire Access Box Shall Have A Casting With "SEWER" Permanently Engraved Or Casting Onto It. Wastewater Utility Director Shall Approve All Tracer Wire Riser Box Structures Prior To Construction.

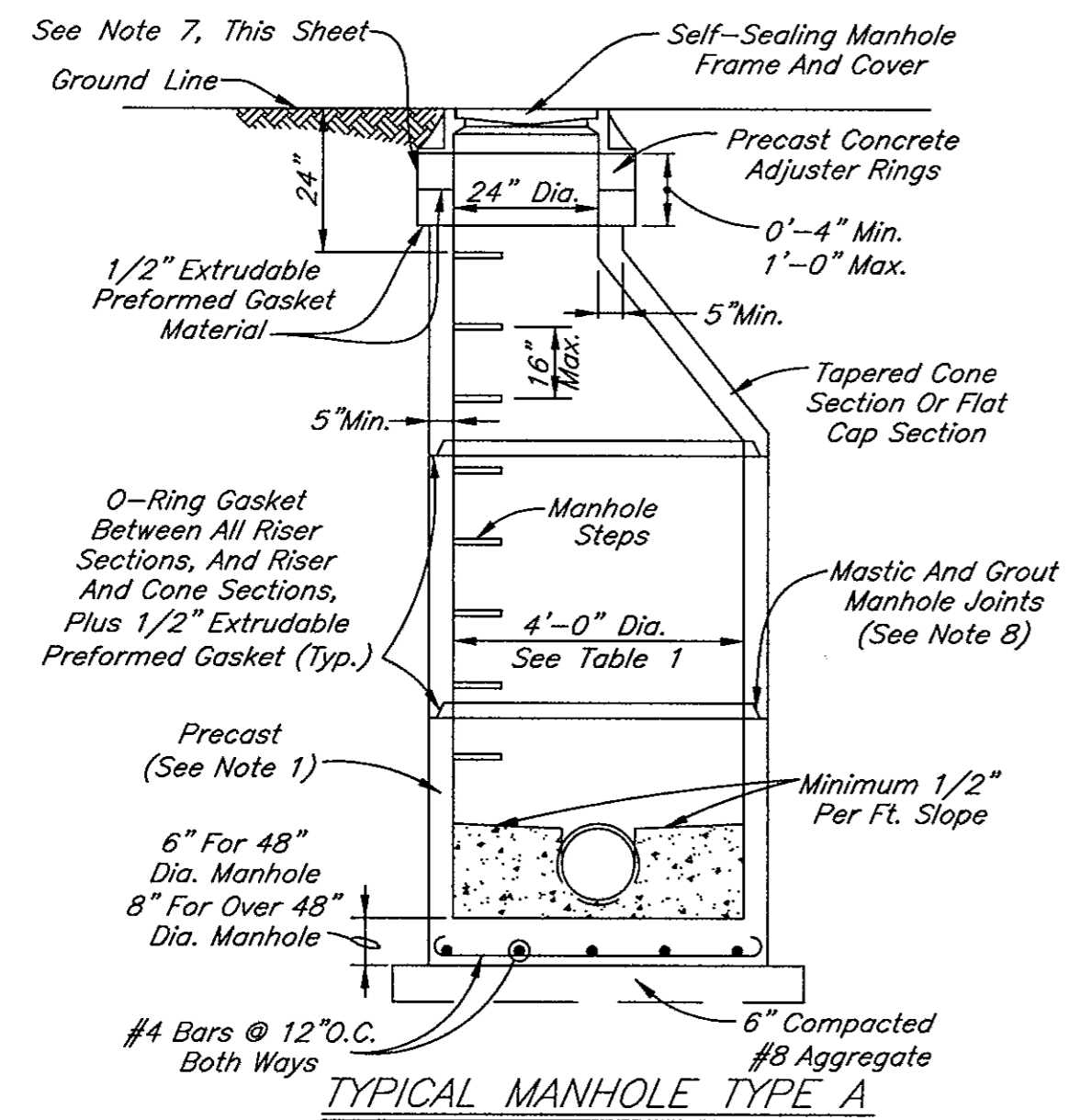


CITY OF NOBLESVILLE

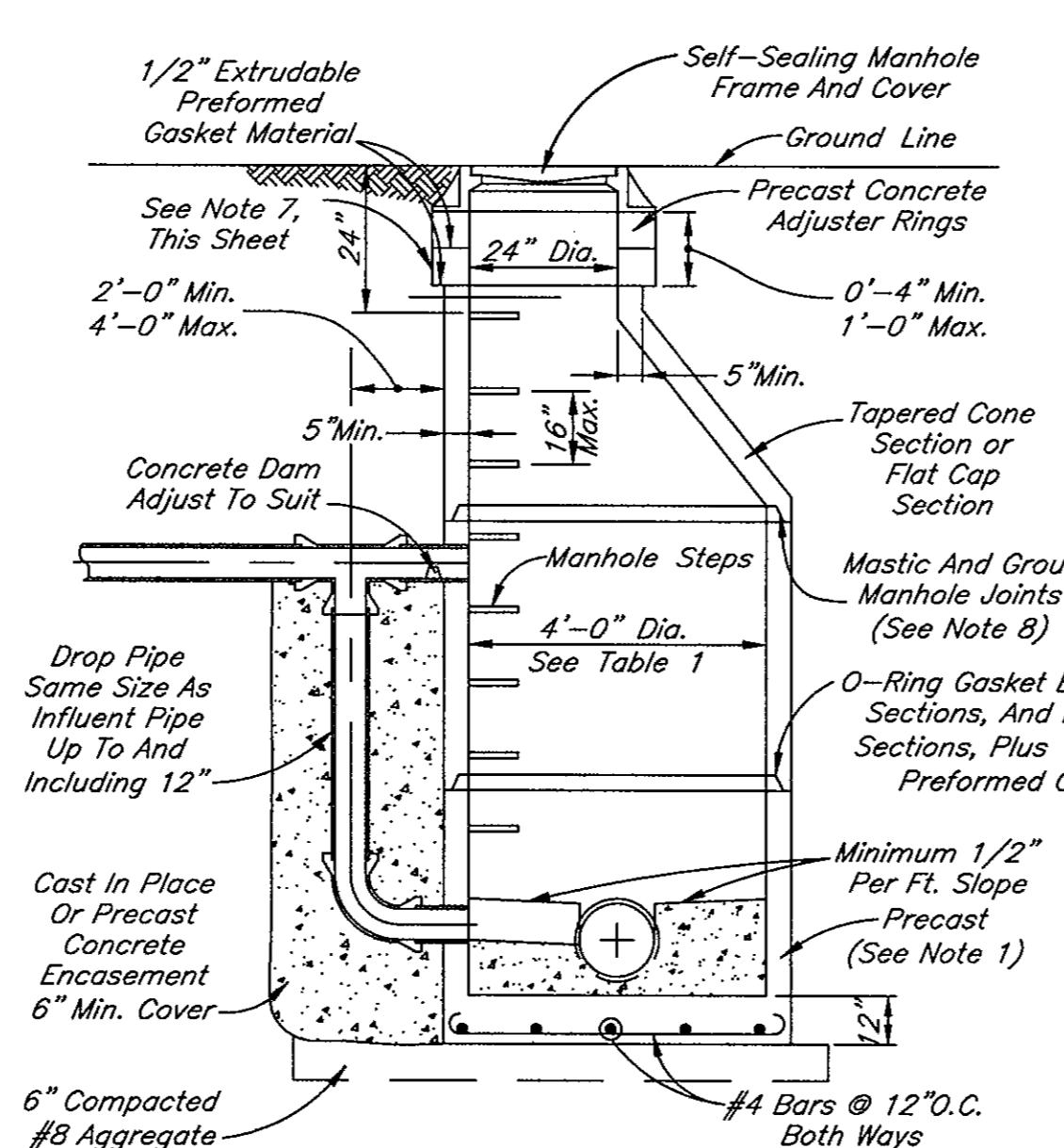
Sanitary Sewer Bedding Details And Notes

SHEET 6 OF 13

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TYPICAL MANHOLE TYPE A



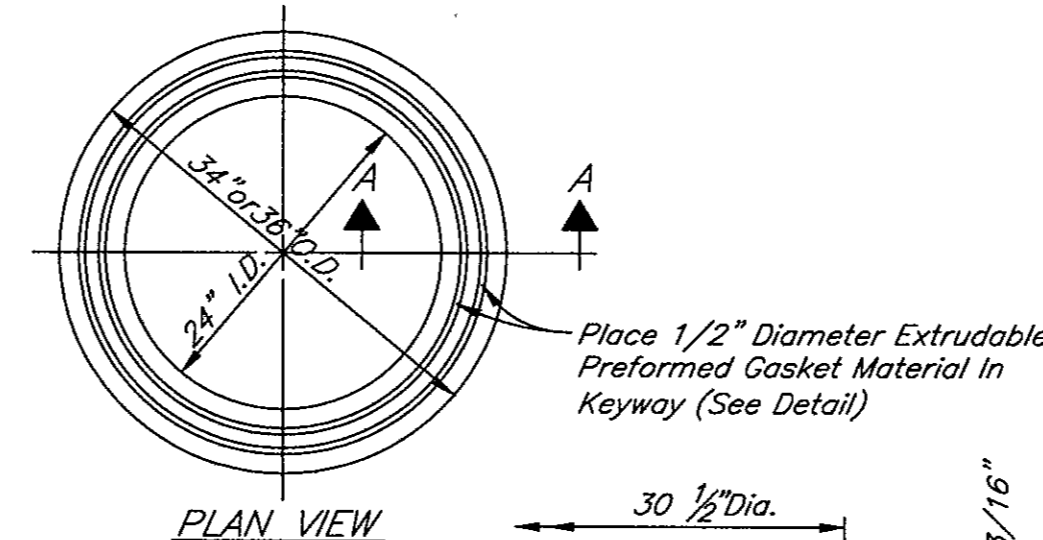
TYPICAL MANHOLE TYPE B

- MANHOLES**  
Scale: None
1. Precast Concrete Manholes Shall Conform To ASTM C-478. With Rubber Type Gaskets Equal To ASTM C-443. Monolithic Cast-In-Place Manholes Shall Only Be Used With The Prior Written Approval Of The City Of Noblesville. 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 55-5-210A. Manhole/Sewer Connection Shall Be Made With A Flexible Watertight Connection.
  2. Final Adjustment In Elevation Of The Frame And Cover Shall Be Accomplished By The Use Of A 4 Inch Minimum Thickness 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 Ladder Rungs Shall Be Neenah No. R-1981-J, East Jordan Iron Works No. 8512, M. A. Industries No. PS 1-PF Or As Approved By The Noblesville Department Of Engineering.
  4. Manhole Frame And Cover Shall Be Neenah R-1772 With Gasketed Lid, East Jordan 102221 With Gasketed Lid, Or As Approved By The Noblesville Department Of Engineering. When Watertight Frame And Cover Is Required By The Noblesville Department Of Engineering, Neenah R-1772 With Locking Lid, East Jordan 102221 With Locking Lid, Or As Approved By The Noblesville Department Of Engineering, Shall Be Provided. All Covers Shall Be Stamped "SANITARY SEWER" With 2" Raised Letters.
  5. The Lowest Internal Plumbing 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 The Noblesville Department Of Engineering 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.
  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-923, ASTM C-443 And ASTM F-477. The Rubber Sleeve Shall Be Infi-Shield External Manhole Seal, Or As Approved By The Noblesville Department Of Engineering.
  8. Apply Bituminous Coating, Hydracide 700 Mastic, On The External Face At All Manhole Section Joints. Hydracide Mastic Shall Be Applied To 6" Above And Below Each Joint. Apply Non-Shrink Mortar Or Epoxy Grout On The Internal Face At All Manhole Section Joints.
  9. For An Industrial Property, Developer Shall Submit To The Noblesville Department Of Engineering, The Proposed Location Of An Industrial Monitoring/Sampling Station. Said Submittal Shall Also Address The Station's Size And Material Of Construction.
  10. After Manhole Assembly And Backfilling, A City Representative Will Visually Inspect Each Structure For Leakage Or Evidence Thereof. In Addition, All Manholes Installed Shall Be Vacuum Tested In Accordance With ASTM C1244-93. If Any Manhole Shows Leakage Or Signs Thereof, Said Manhole Shall Be Repaired To The Satisfaction Of The Noblesville Department Of Engineering And Retested. The Design Engineer Or His/Her Representative Shall Certify That All Manholes Were Vacuum Tested, With Successful Results, In Accordance With ASTM C1244-93.
  11. Any Vacuum Testing And Equipment Shall Be Provided By The Contractor. Any Repairs Shall Be The Responsibility Of The Contractor.
  12. Contractor Shall Permanently Secure Casting To Eccentric Cone Or Flat Cap Section By Installation Of Four (4) Equally Spaced 3/8" Dia. Stainless Steel All-Thread Dowel Rods Or 3/8" Hilti Expansion Anchor. Sika Epoxy, Or Noblesville Department Of Engineering Approved Equal, Shall Be Used With Each Stainless Steel All-Thread Dowel Rod.
  13. Castings Shall Not Be Buried And Shall Be Flush With The Adjacent Finished Grade. Castings Which Are Surrounded By Asphalt Or Concrete Shall Be Constructed Within A Tolerance Of ± 0.1' Of The Designed Elevation. All Other Castings Shall Be Constructed Within A Tolerance Of ± 0.2' Of The Designed Elevation. Elevations Will Be Checked With The As-Built Drawings.
  14. There Shall Be A Minimum Of 0.1 Feet Of Fall Between The Upstream Invert(s) And The Downstream Invert In The Structure For Pipes Of The Same Diameter. For Pipes Of Differing Diameters, The Crown Of The Upstream Pipe Shall Match The Crown Of The Downstream Pipe. An Outside Drop Manhole Is Required For Upstream Inverts Which Are Two Feet (2') Higher Than The Downstream Invert.

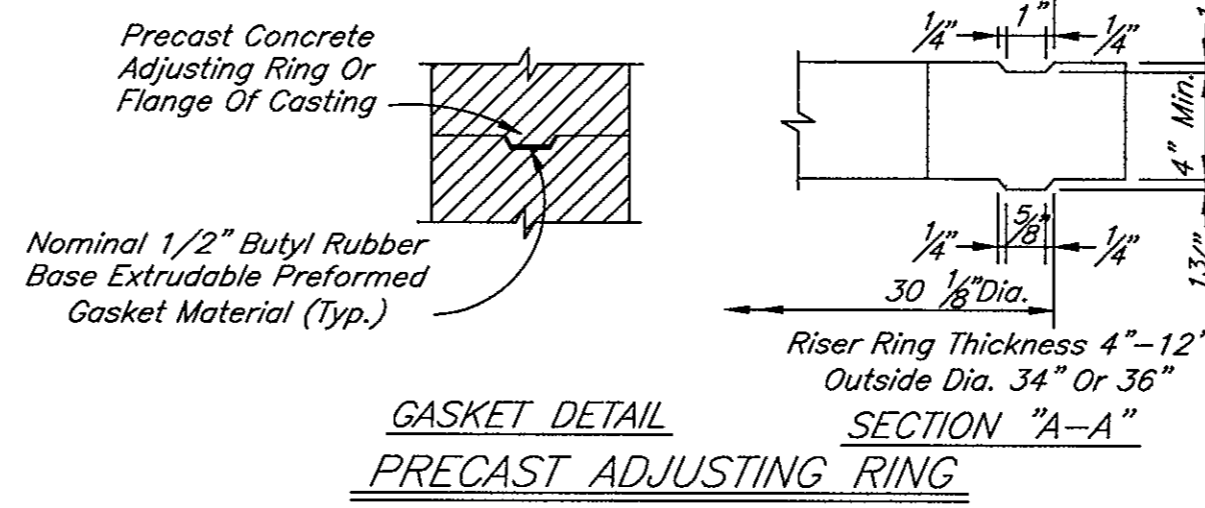
**TABLE 1**  
Minimum Manhole Diameter

Pipe Size	Pipe Entering/ Pipe Exiting At 0° To 45° Bend	Pipe Entering/ Pipe Exiting At 45° To 90° Bend
8"-21"	48"	48"
24"	48"	60"
27"-30"	60"	60"
33"-36"	60"	72"

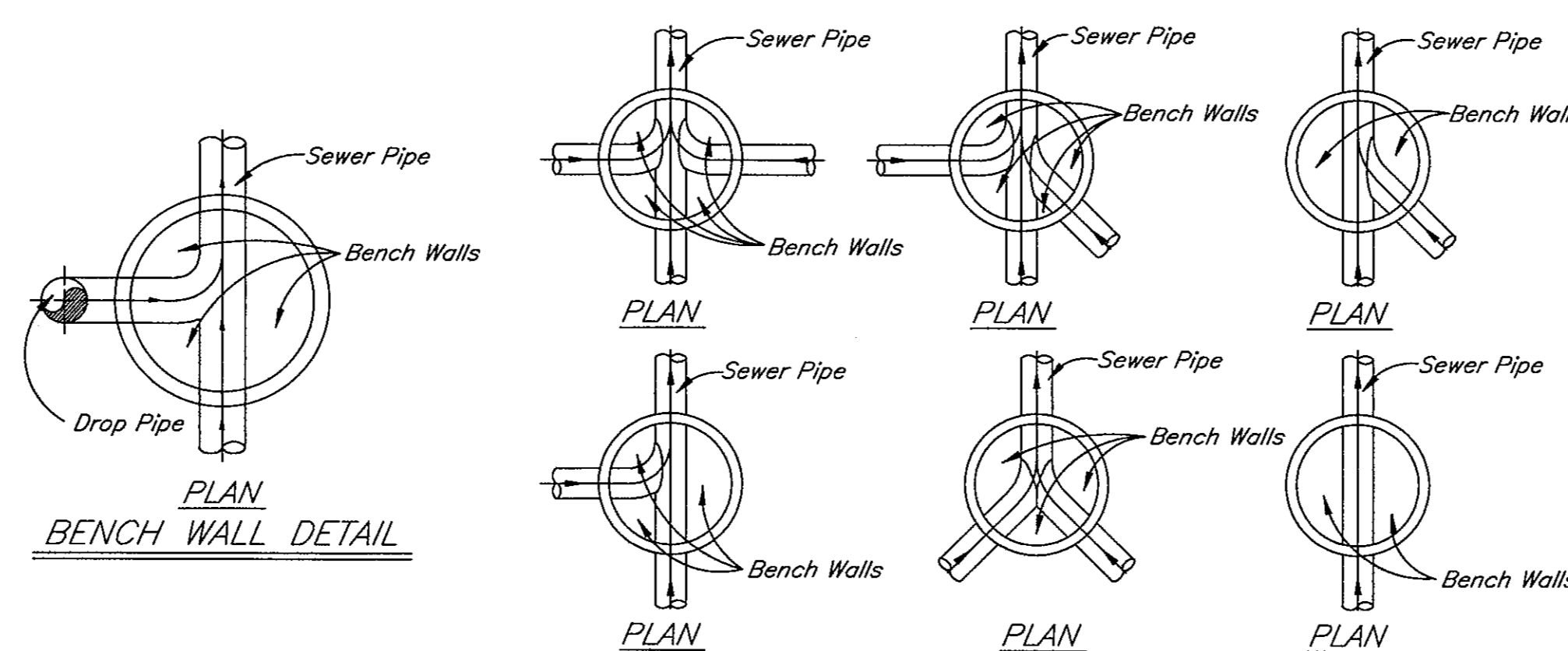
\* 72" With A-Lock Connector



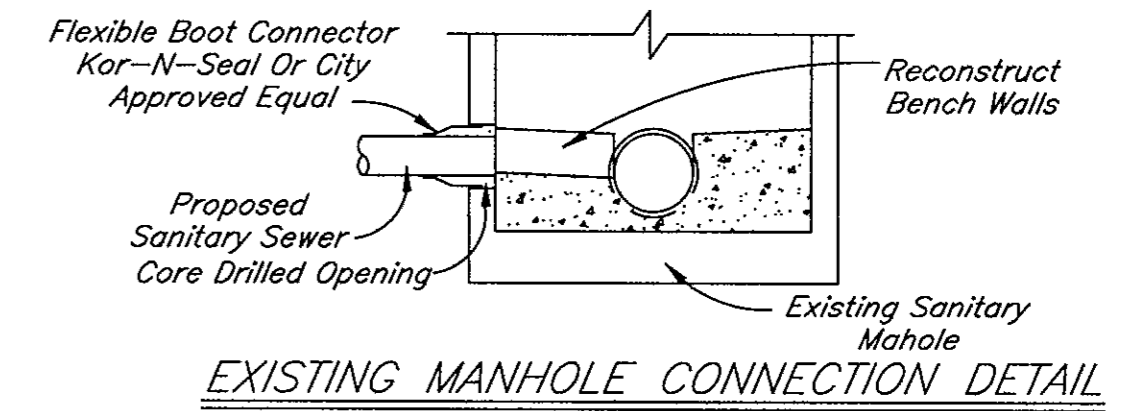
PLAN VIEW



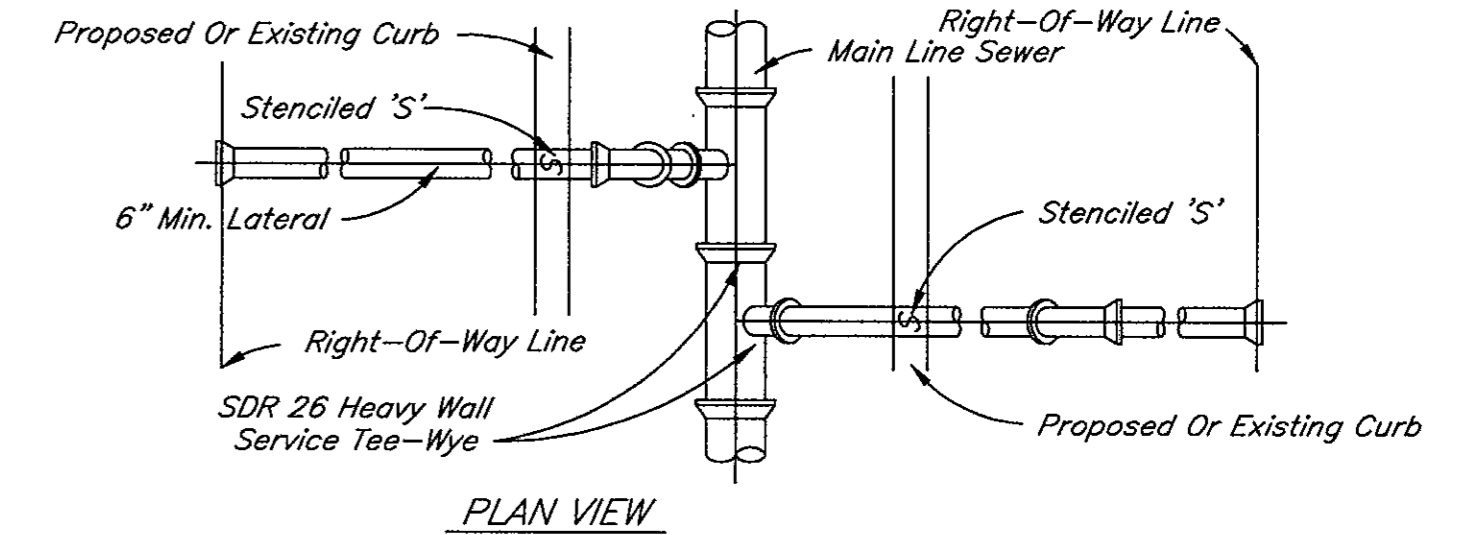
GASKET DETAIL  
PRECAST ADJUSTING RING  
Scale: None



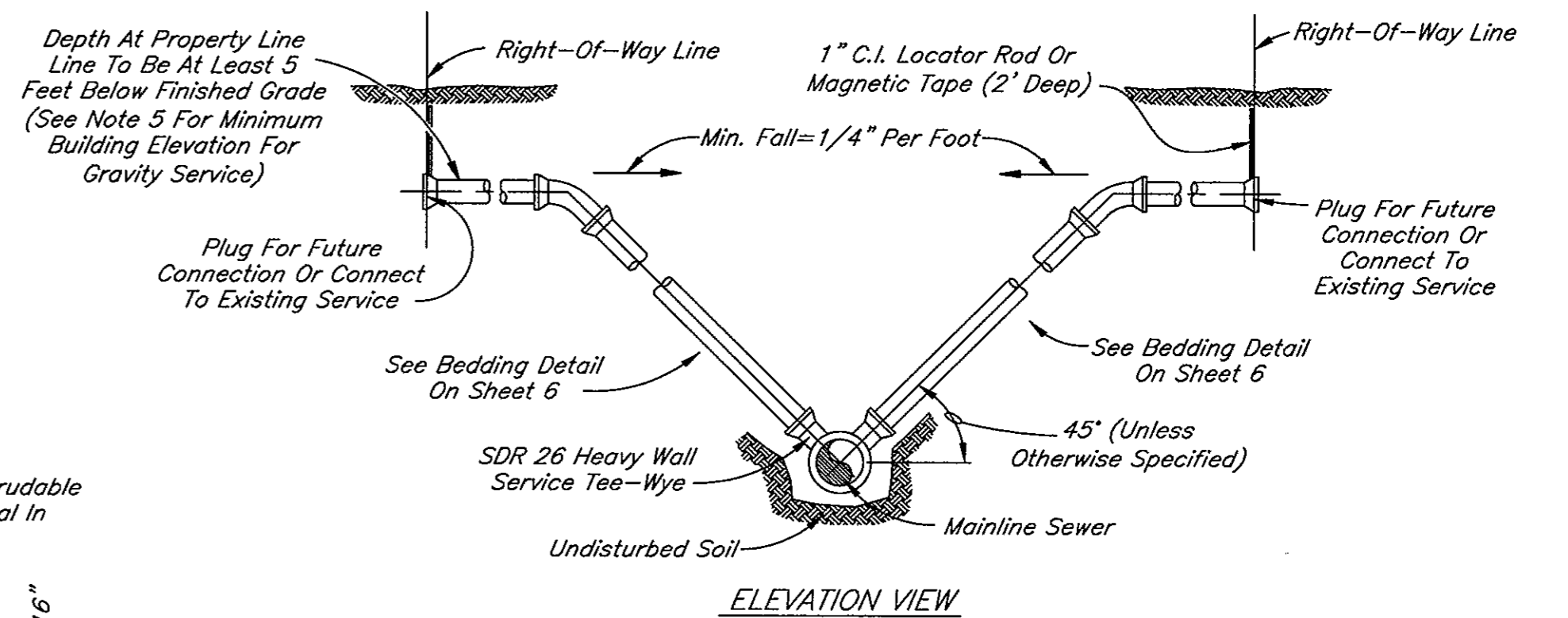
BENCH WALL DETAILS  
Scale: None



EXISTING MANHOLE CONNECTION DETAIL  
Scale: None

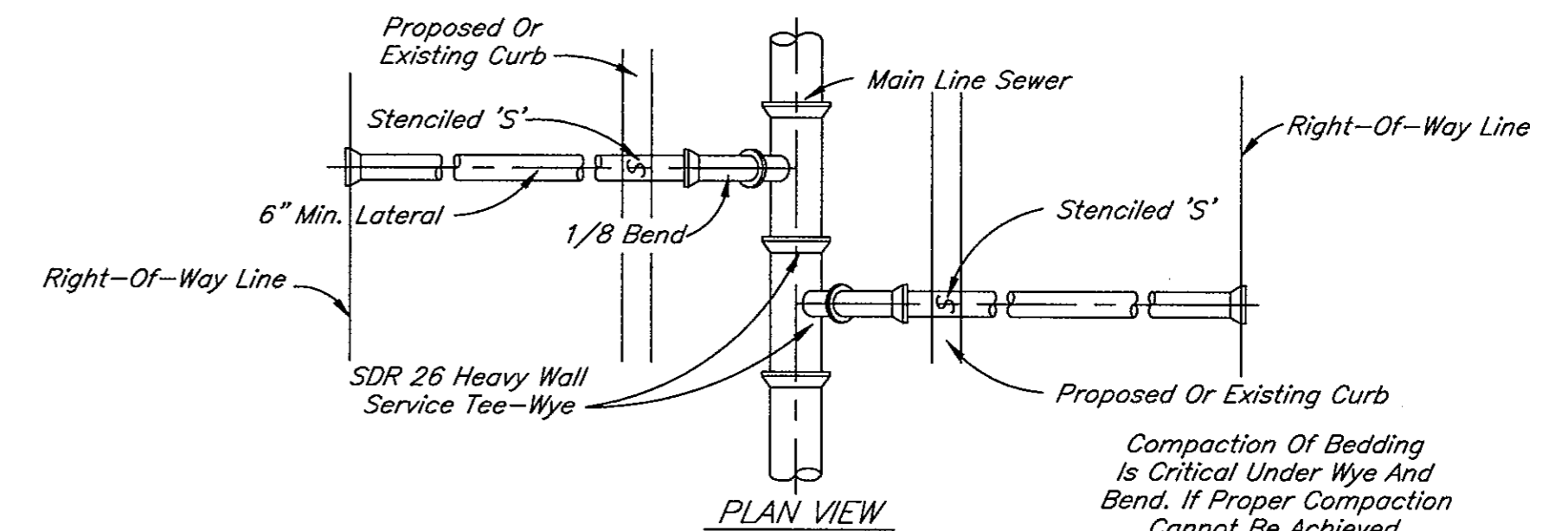


PLAN VIEW

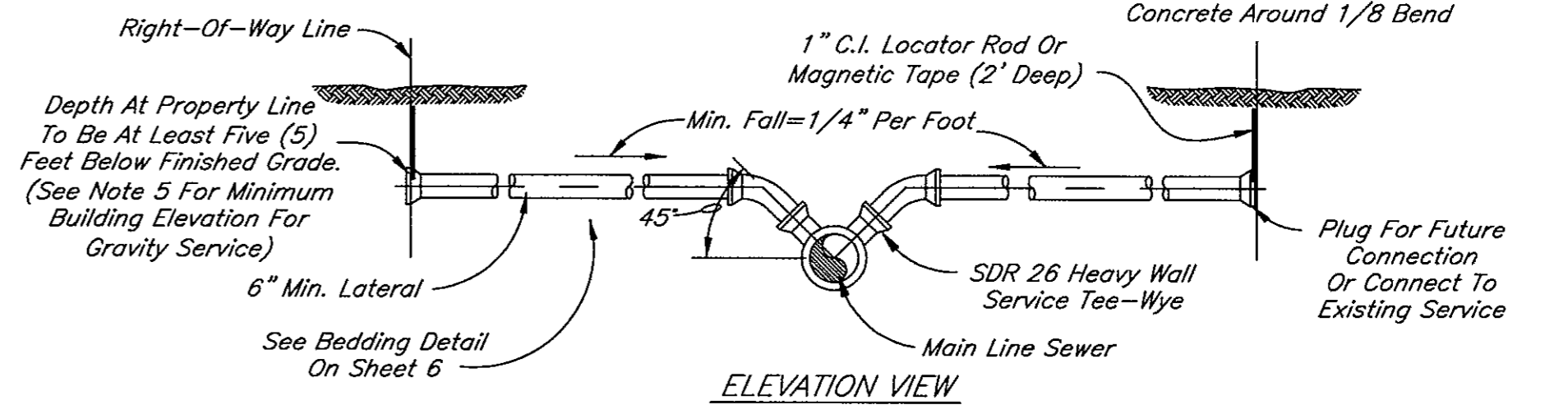


ELEVATION VIEW

SERVICE CONNECTION FOR DEEP SEWERS  
(15' DEEP AND OVER)  
Scale: None



PLAN VIEW

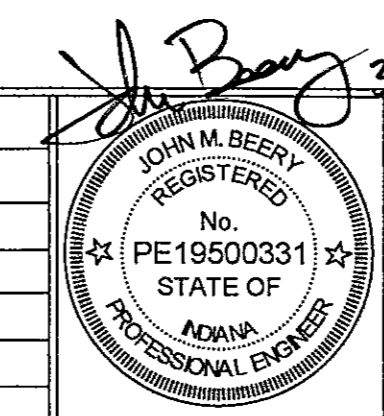


ELEVATION VIEW

SERVICE CONNECTION FOR SHALLOW SEWERS  
(LESS THAN 15' DEPTH)  
Scale: None

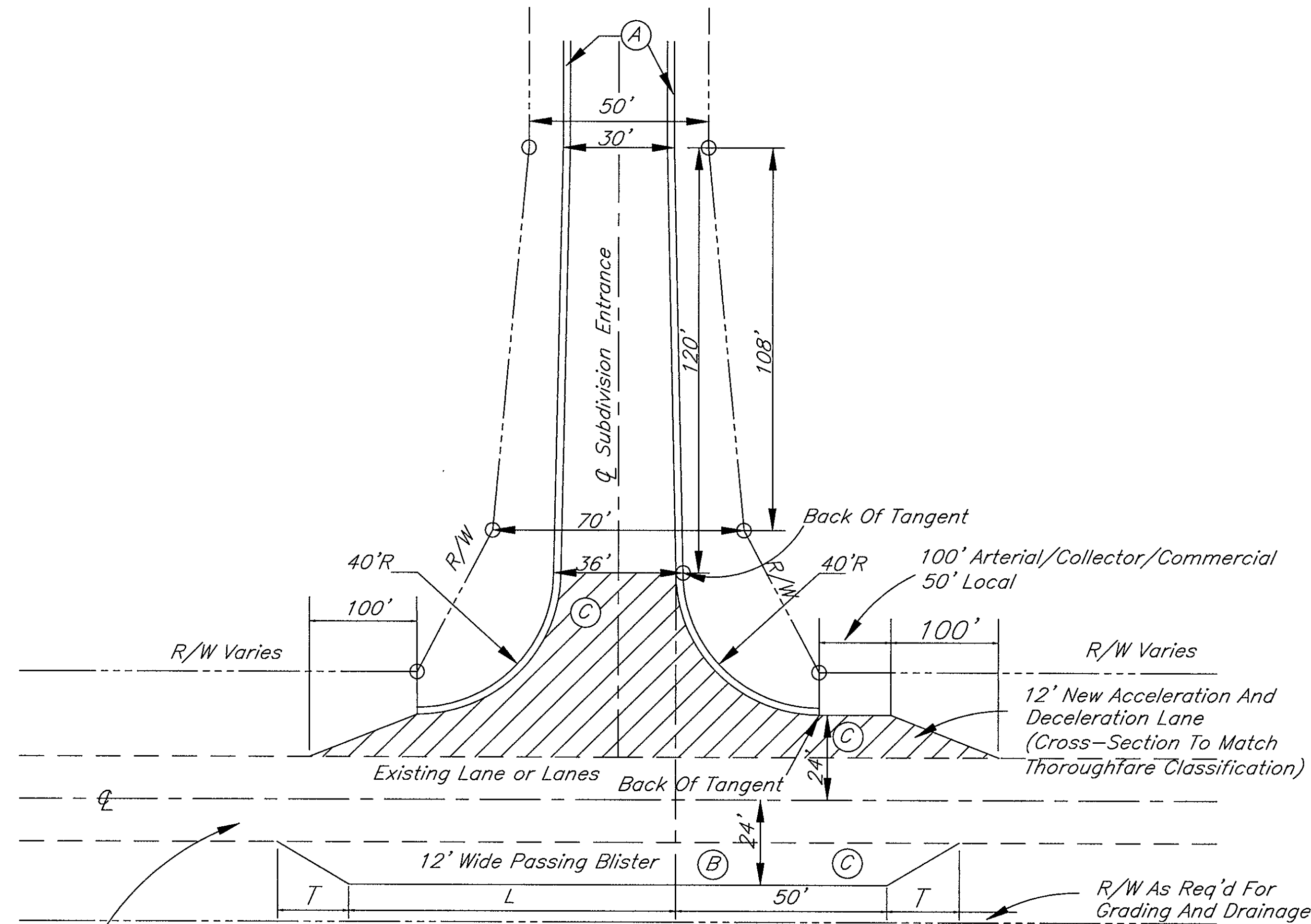
**REVISIONS**

Rev. No.	Description	Date
4	Revisions Are Underlined Or In Bubble Cloud	1/10/2012



CITY OF NOBLESVILLE  
Sanitary Sewer Details And Notes

SHEET  
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OF  
13



Required Improvements To Existing Road Will Take Place Across Entire Frontage Of Property.

**MINIMUM SUBDIVISION ENTRANCE / DECEL LANE STANDARD**

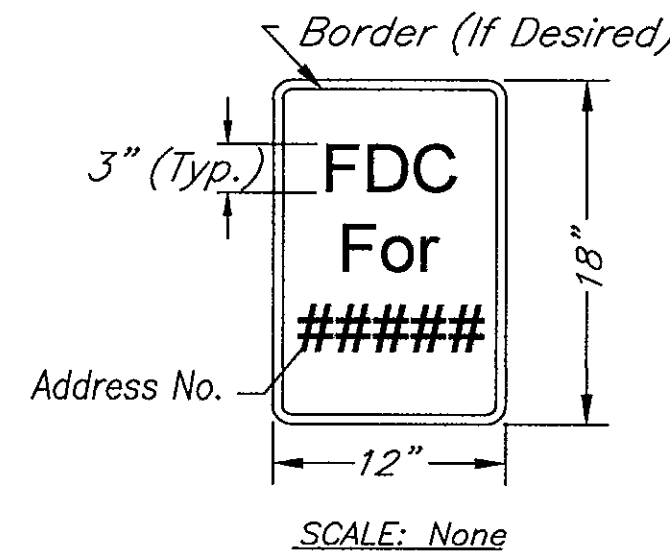
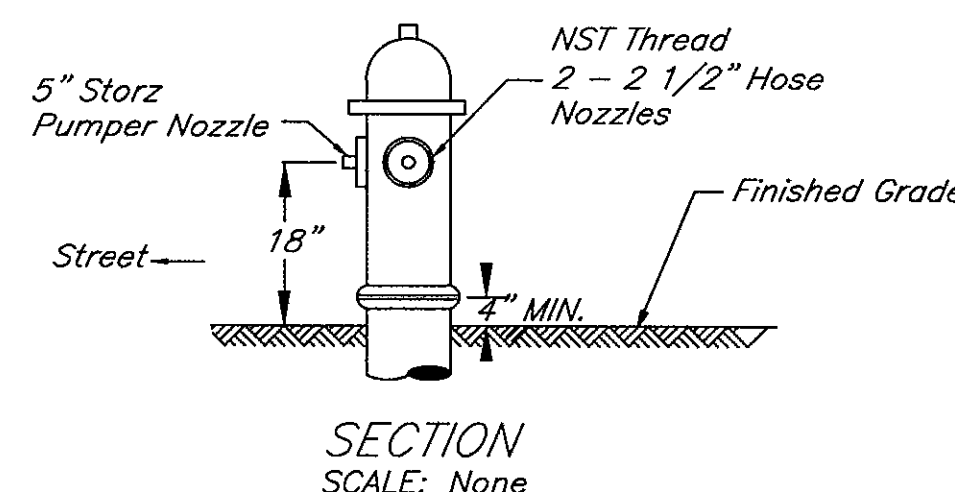
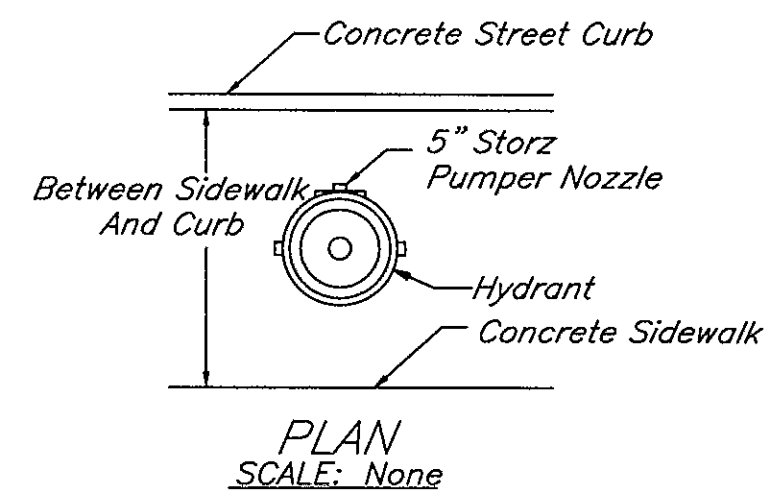
Scale: None

1. Construction Plans Shall Include Centerline Profile And Cross Section Of The Existing Road Being Intersected By The Entrance.
2. The Profile Shall Extend The Entire Length Of Lane Improvements Plus An Additional 100 Feet In Either Direction.
3. All Above Surface Utilities, Structures, Plantings, Or Other Conflict Within Twelve Feet (12') Of Roadway Improvements, Including Accel/Decel Lanes And Passing Blisters, Shall Be Removed Or Relocated Prior To Construction Of Roadway Improvements.

- (A) 2' Curb & Gutter
- (B) Passing Blister
- (C) Lane Widening Shall Match Exist. Pavement Surface Type

Classification	T (ft)	L (ft)
Local	150	150

Collector/Arterial/Commercial	200	150
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**FDC SIGN**

1. The Sign Shall Be Constructed Out Of A Material That Is Not Susceptible To Degradation. The Sign Material Shall Be Approved By The Fire Marshal.
2. The Sign Lettering (And Optional Border) Shall Be Red In Color.
3. The Sign Shall Be Supported By An Approved, Permanent Post Or Attached To The FDC Pipe By An Approved Method.
4. If Freestanding, The Top Of The Sign Shall Be Mounted Between 36" And 48" From Finished Grade.

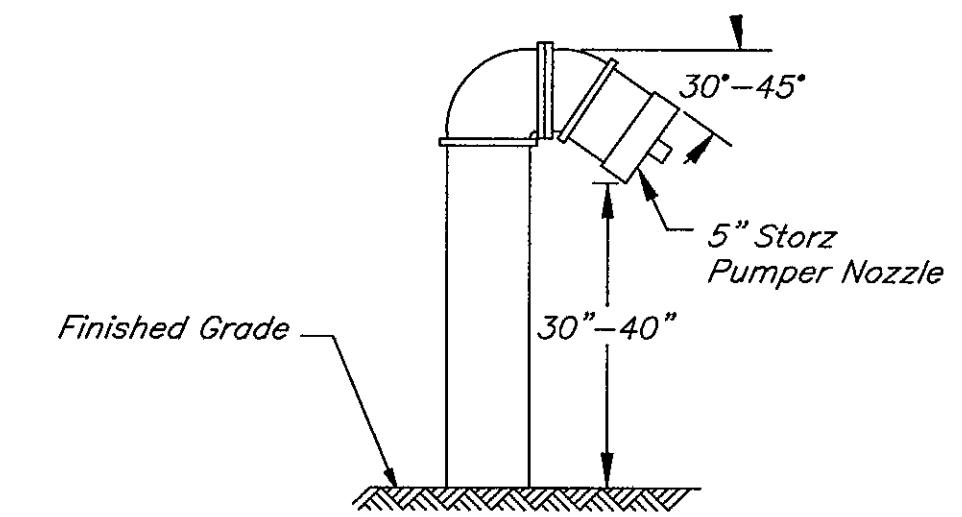


**FIRE LANE PARKING DETAIL**

1. The "No Parking Fire Lane" Message Shall Be Six (6) Feet In Depth From Edge Of Pavement Or Curb.
2. The Letters Shall Be Two (2) Feet In Height And A Minimum Of Four (4) Inches Wide.
3. The "No Parking Fire Lane" Message Shall Be Placed Every Fifty (50) Feet.
4. The Striping Shall Be A Minimum Of Four (4) Inches Wide At A Forty-Five (45) Degree Angle And Five (5) Feet On Center.
5. All Markings Shall Be Painted Traffic Yellow.

**FIRE DEPARTMENT GENERAL NOTES**

1. Fire Apparatus Access Road Shall Be Constructed And Made Serviceable Prior To Issuance Of A Building Permit.
2. Fire Hydrants Shall Be Installed, Functional, And Approved By The Fire Marshal Prior To Issuance Of A Building Permit.
3. Fire Apparatus Access Roads Shall Not Be Obstructed In Any Manner, Including The Parking Of Vehicles. The Apparatus Roads Shall Have An Unobstructed Width Of Twenty Feet (20') At All Times.
4. Commercial And Apartment Buildings With A Fire Alarm System Or Sprinkler System Shall Install An Emergency Access Key Box That Shall Contain The Necessary Keys To Access All Protected Areas Of The Building.
5. Approved Fire Apparatus Access Roads Shall Be Provided For Every Facility, Building Or Portion Of A Building Hereafter Constructed Or Moved Into Or Within The Jurisdiction. The Fire Apparatus Access Roads Shall Extend To Within 150' Of All Portions Of The Facility Or Any Portion Of The Exterior Wall Of The First Story Of The Building.
6. Dead-End Fire Apparatus Access Roads In Excess Of 150' In Length Shall Be Designed To Allow The Turning Around Of The Longest Piece Of Fire Apparatus.
7. Refer To The Fire Marshal For Dry Hydrant Specifications And Fire Lane Details.
8. All Other Items Not Specifically Stated Herein Shall Be Inaccordance With The Most Recent Adopted Edition Of The Indiana Fire Code.
9. As-Built Electronic Submittal Shall Be Submitted For All Fire Department Connections And Fire Hydrants To GIS Coordinator In Compliance With Electronic Submittal Guidelines.



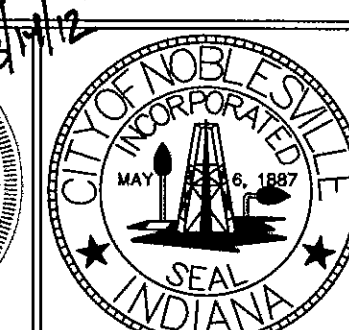
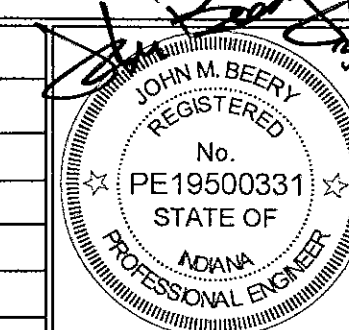
**FIRE DEPARTMENT CONNECTION (FDC)**

1. The FDC Shall Meet Or Exceed The Requirements Of The Most Recent State Of Indiana Adapted Edition Of NFPA 13 and NFPA 14.
2. The FDC Shall Be Located Off The Building In A Location Approved By The City Of Noblesville Fire Marshal.
3. The FDC Shall Be Provided With A Single 5" Storz Connection That Shall Face Towards The Nearest Point Of Fire Department Access.
4. A Minimum Of A 4" FDC Service Pipe Shall Be Utilized On A Fire Service Line That Is 6" Or Larger.
5. Any FDC Pipe That Is Not Located Within The Fire Service Vault Shall Be Painted With Sherwin-Williams "Safety Red (SW 4081)" Or Equivalent Approved By The Noblesville Fire Department.
6. The FDC Shall Be Constructed Of A Material Not Susceptible To Degradation.
7. The FDC Shall Not Be Located More Than 100' From The Nearest Fire Hydrant.

**FIRE HYDRANT DETAIL**

1. A Water Distribution Plan, With Fire Hydrants Identified, Shall Be Submitted And Approved By The Fire Marshal Of The City Of Noblesville Prior Issuance Of An Improvement Location Permit.
2. All On-Site Fire Hydrants Shall Be Located Between The Curb And Sidewalk In The Right-Of-Way. The 5" Storz Connection Shall Face The Street.
3. The Number, Size, And Arrangement Of Outlets, The Size Of The Main Valve Opening And The Size Of The Barrel Shall Be Suitable For The Required Fire Protection.
4. All Fire Hydrant Spacing Shall Comply With The Following Requirements:  
 Residential: 500' (250' Maximum Distance Hydrant And A Structure.)  
 Apartment: 400'  
 Commercial: Most Recent Edition Of The Indiana Fire Code
5. Fire Hydrants Shall Have A Maintained Three Foot (3') Radial Clear Space At All Times.
6. The Type And Installation Of Fire Hydrants Shall Be Approved By The Respective Water Utility. Fire Hydrants Shall Meet The Following Criteria:
  - 6.1. Mechanical Joint Connection For 6" Service Pipe.
  - 6.2. Minimum 5-1/4" Diameter Main Valve Opening.
  - 6.3. Two (2) 2-1/2" Male Outlets With Threads Being National Standard.
  - 6.4. Steamer Outlet Shall Be A 5" Storz Connection With A 5" Storz Cap and Chain.
  - 6.5. Main Valve Seat Shall Be Provided With Bronze To Bronze Threads.
  - 6.6. Barrel Shall Be "Break-A-Way" That Allows The Barrel To Break With Minimal Water Escaping.
  - 6.7. Four (4) Drain Holes In The Bottom To Prevent Freezing.
  - 6.8. The Base Shall Be Surrounded By At Least Six (6) Cubic Feet Of Course Gravel Or Crushed Rock For Draining.
  - 6.9. Public Hydrants Shall Be Painted "Safety Yellow", Sherwin-Williams - SW 4084 Or Equivalent Approved By The Noblesville Fire Department, With Two (2) Coats Of Paint. (Do Not Paint Storz Connection.)
  - 6.10. Private Hydrants Shall Be Painted "Safety Red", Sherwin-Williams - SW 4081 Or Equivalent Approved By The Noblesville Fire Department, With Two (2) Coats Of Paint. (Do Not Paint Storz Connection.)
  - 6.11. Hydrant Shall Be Operated By A National Standard Pentagon Operating Nut (1-1/2 Inch)

REVISIONS		
Rev. No.	Description	Date
1	Sed. Control Notes; Det Pond	11/01/02
2	Erosion Control Removed; Add Entrance Detail; Add Fire Notes & Details; Monumentation Ind. Note 2, 3; Monumentation Ext./Road Note 1	12/1/08
3	Move Monumentation To Sheet 10; Add FDC Sign Detail; Add Fire Lane Detail; Modify Entrance Detail Taper Lengths	11/1/2007

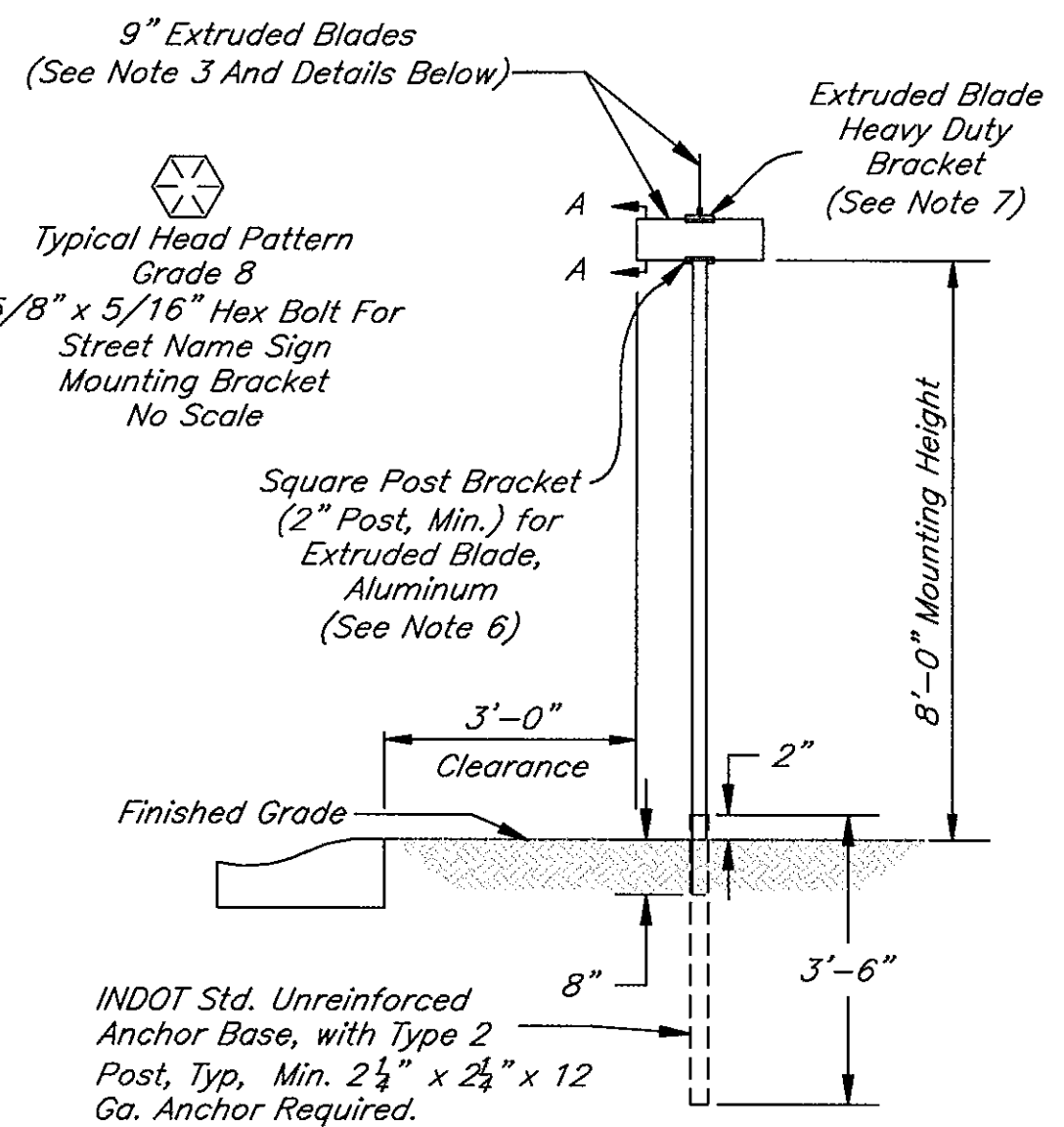


CITY OF NOBLESVILLE  
Miscellaneous Detail And Notes I

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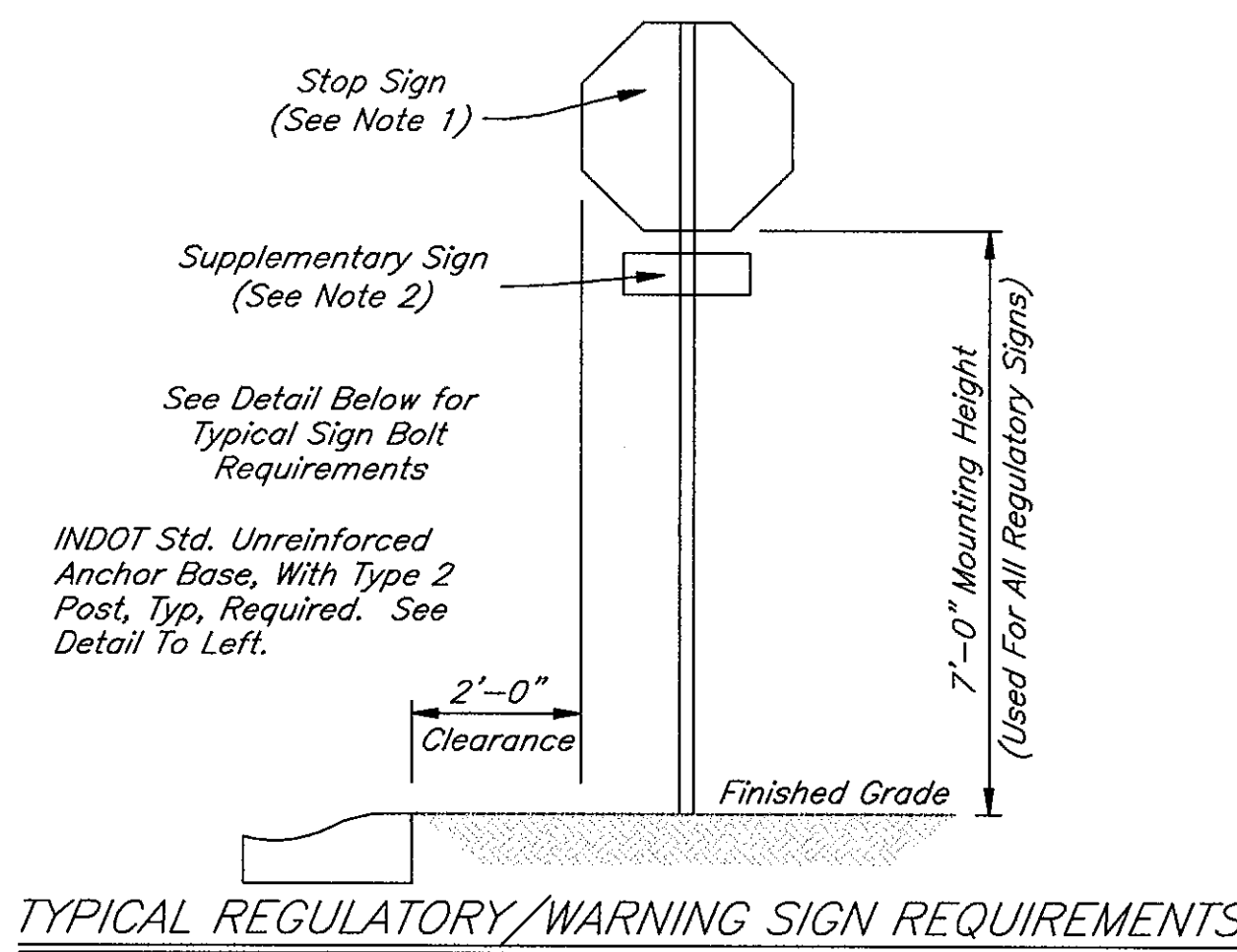




TYPICAL STREET SIGN REQUIREMENTS

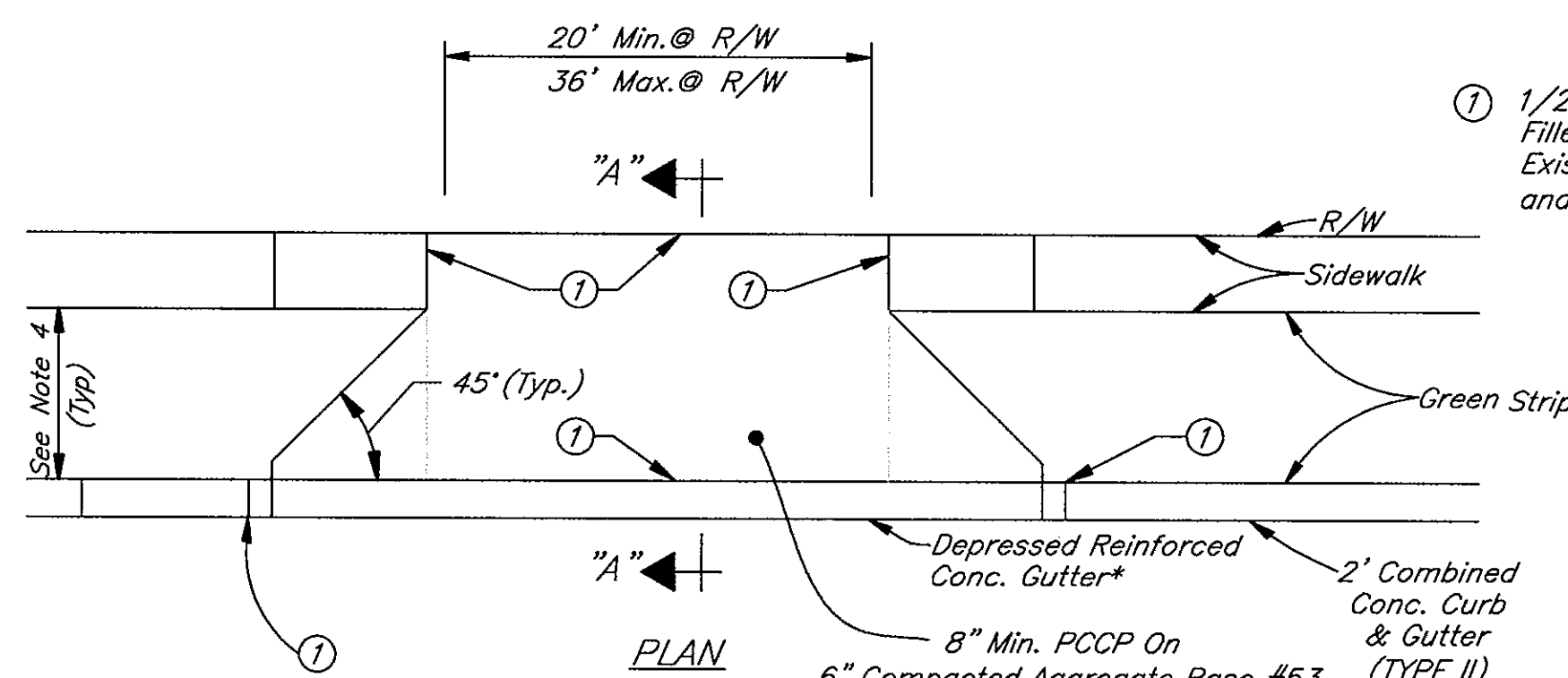
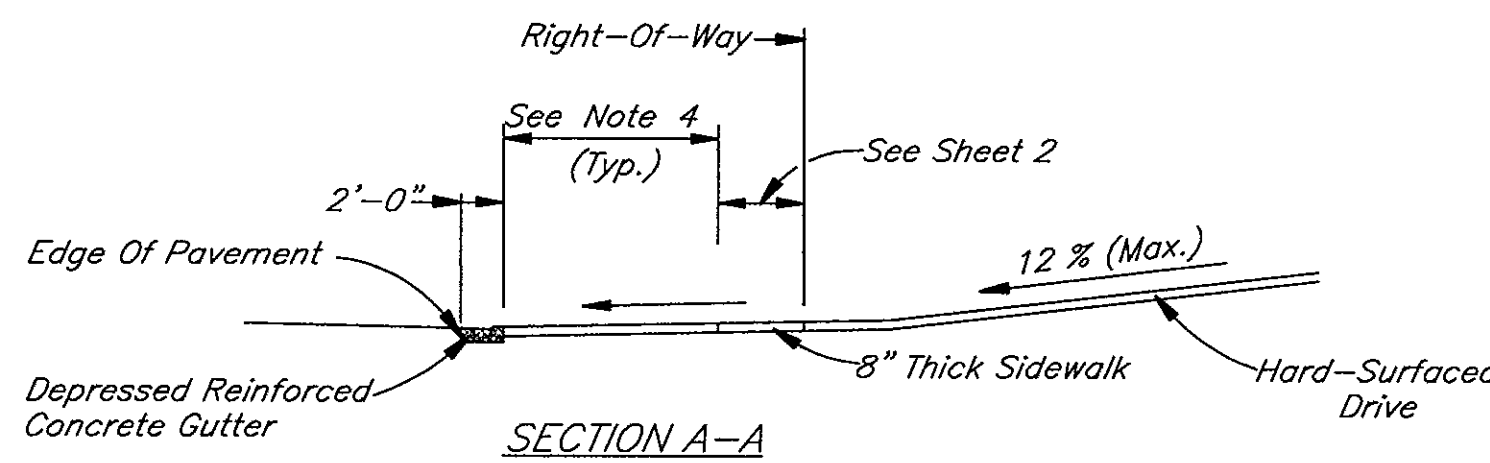
Scale: None  
GENERAL SIGN NOTES

- Streets Shall Be Signed At All Intersections With Two Such Street Sign Assemblies On Opposite Corners.
- Street Signs Shall Be Placed Within Five (5) Days Of Placement Of Traversable Pavement, Such As HMA Intermediate, HMA Base, Or Concrete Pavement.
- Street Signs Shall Be 9" Tall Extruded Reflective Green Aluminum (6063-T6) Background With 6" Tall Reflective White Letters. See Detail Of Section A-A For Cross Section For Each Street Sign Blade.
- Remaining Required Traffic Control Shall Be In Place Prior To The Release Of The First Occupancy Permit.
- All Sign Posts Shall Be 2" x 2" Square Post, 12 Gauge Wall Thickness, Minimum. (INDOT Type 2 Post).
- Street Name Signs Shall Be Mounted On Post Top With a Cast Aluminum 2SXQ Bracket With All Hex Bolts Required.
- Double/Cross Mounted Street Name Signs Shall Be Mounted Using A Cast Aluminum BAZA Bracket And Secured With All Hex Bolts Required Per Sign.
- All Street Signs Shall Be Mounted To Each Aluminum Bracket With Grade 8 5/8" x 5/16" Hex Bolts To Secure Sign. (See Street Name Sign Bolt Detail Below.)
- Shop Drawings Shall Be Submitted For All Signs.
- Minimum Type III Retroreflective Prismatic Sheeting, Per the Manual for Uniform On Traffic Control Devices, 2009, Shall Be Used For All Signs.
- All Signs Shall Be Covered Or Coated With An Acrylic Overlay Or Transparent Sheeting Over Retroreflective Sign Material.



TYPICAL REGULATORY/WARNING SIGN REQUIREMENTS

- Scale: None
- Stop Sign Shall Be 36" In Size For Roads Classified As Thoroughfares And 30" In Size For Roads Classified As Local. Stop Sign Shall Be High Intensity And In Accordance With Most Recent Indiana Manual On Uniform Traffic Control Devices. Other Regulatory Signs Shall Be Of The Design, Size, And Construction As Specified In Said Manual.
  - An All Way Stop Intersection Requires An "ALL WAY" Supplementary Sign 18" Wide By 6" Tall In Accordance With Said Manual. A Two Way Stop Controlled Intersection Requires A "CROSS TRAFFIC DOES NOT STOP" Supplementary Sign Of The Same Size And In Accordance With Said Manual.
  - 25 MPH Signs Shall Be Located At Each Subdivision Entrance. A "FOR ALL STREETS" Supplementary Sign Shall Be Located On Each With Design, Size, And Construction As Specified In Said Manual.
  - All Regulatory And Warning Signs Shall Be Placed Within Five (5) Days Of Placement Of The Traversable Pavement Material, Such As HMA Base, HMA Intermediate, Or Concrete Pavement. Signs Shall Be Tagged On The Rear Of The Sign With An Adhesive Label With The Month And Year That The Signs Were Installed.
  - INDOT Type 2 Post, 2 in x 2 in x 12 ga. Wall Thickness, Minimum With An Unreinforced Anchor Base, Shall Be Used For Single Post Signs With Panels Less Than Or Equal To 48" X 30" In Size.
  - Refer To INDOT Std. Dwg. E 802-SNGS-09 And E802-SNGS For Post Standards And For The Mounting Of Sign Panels Larger Than 48" X 30".
  - Signs With Panel Widths Greater Than 36" Shall Be Reinforced On The Back Side Of The Panel By An Approved Method.
  - Alternate Custom Posts May Be Used Upon Receiving Expressed Written Permission From The City Of Noblesville. Custom Posts Shall Be The Financial Responsibility Of Subdivision's Homeowner's Association. In The Event That The City Of Noblesville Must Replace Custom Sign Posts, The City Reserves The Right To Install Its Standard Steel Post.
  - ALL Regulatory, Warning, and Guides Signs In The Public Right Of Way Shall Meet Minimum Retroreflectivity And Sign Standards.



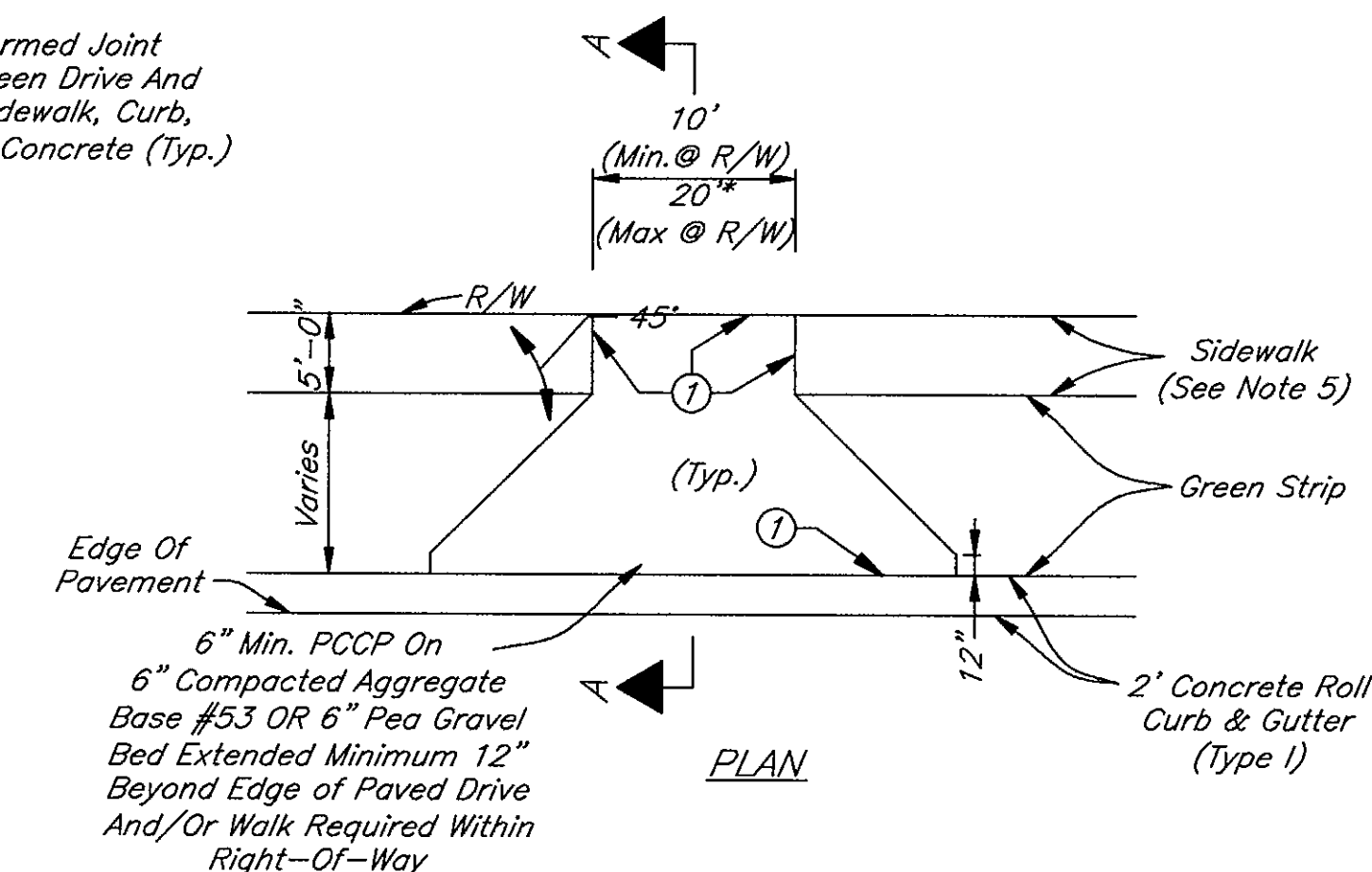
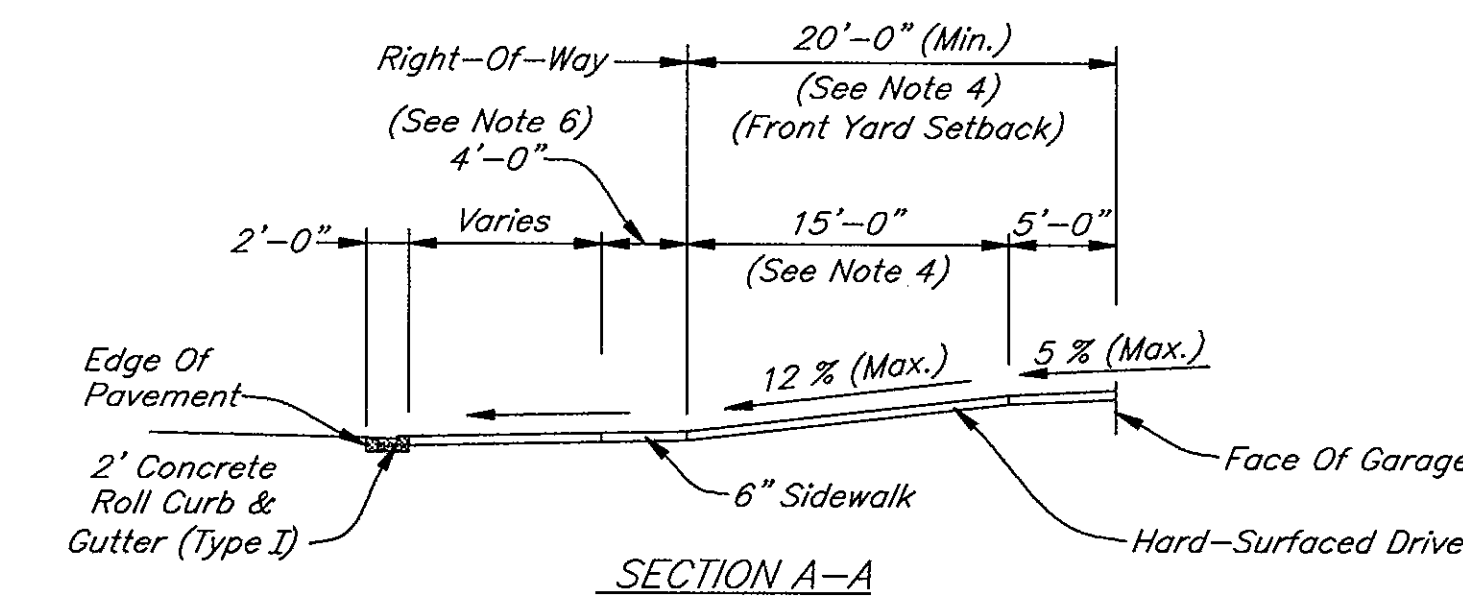
Contraction Joints Shall Be Laid Out In The Field By The Contractor And Shall Not Exceed 10 Feet In Spacing.

TYPICAL COMMERCIAL PRIVATE DRIVE

Scale: None

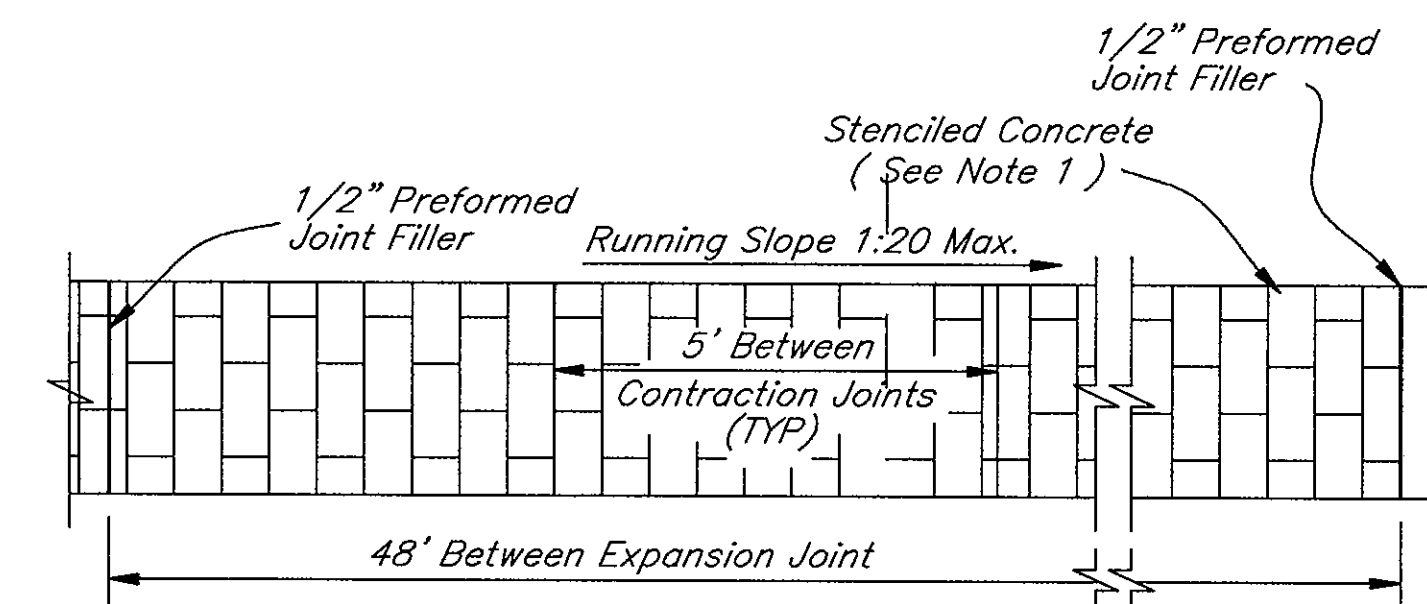
COMMERCIAL PRIVATE AND RESIDENTIAL DRIVEWAY NOTES

- This Section Shall Apply To All Driveway Approaches and Entrances.
- The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crest Vertical Curves, Nor 10% For Sag Vertical Curves For All Drives.
- Curb Shall Be Maintained, Installed,
- The Frontage Of All Lots Shall Drain To Adjacent Streets Except With The Prior Written Approval Of Noblesville Planning Department.
- Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- The Noblesville Department Of Engineering May Approve Depressed Curb And Alternate Paving Materials, Depending On Site Conditions.
- Refer To Sheet 2 For Required Width Of Concrete Sidewalk Or Multi-Use Pedestrian Asphalt Trail.
- The Approval Of A New Residential Private Drive, Commercial Drive, Any Entrance To A Public Or The Relocation Of An Existing Residential Private Drive Requires The Procurement Of A Drive Cut Permit From The Noblesville Department Of Engineering.
- Alternate Custom Drives Within City Of Noblesville Rights-of-Way May Be Used Upon Receiving Expressed Written Permission From The City Of Noblesville. Custom Drives Shall Be The Financial Responsibility Of Homeowner. In The Event That The City Of Noblesville Must Replace Custom Drive Approach, The City Reserves The Right To Install Its Standard Residential Drive.
- All Drives Shall Provide Positive Drainage Towards The Roadway. Slope Between The Curb And Sidewalk Shall Be Between 1% And 4%. Slope Along Sidewalk Shall Not Exceed 2% Per ADA Requirements. Slope Behind The Sidewalk Shall Be Between 1% And 12%.
- A Maximum Driveway Width Of 30' At Right-of-Way Line May Be Used If The Following Criteria Are Met: Residence Has Three (3) Car Garage And Lot Frontage Is 80 Feet Or Greater.



TYPICAL RESIDENTIAL PRIVATE DRIVE

Scale: None

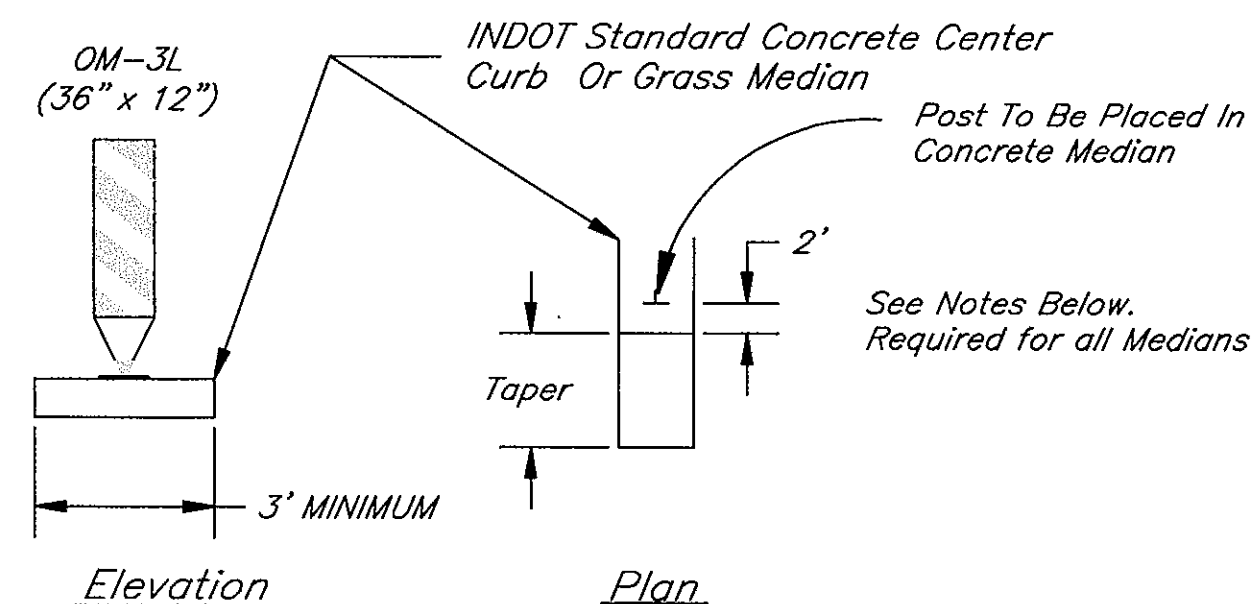
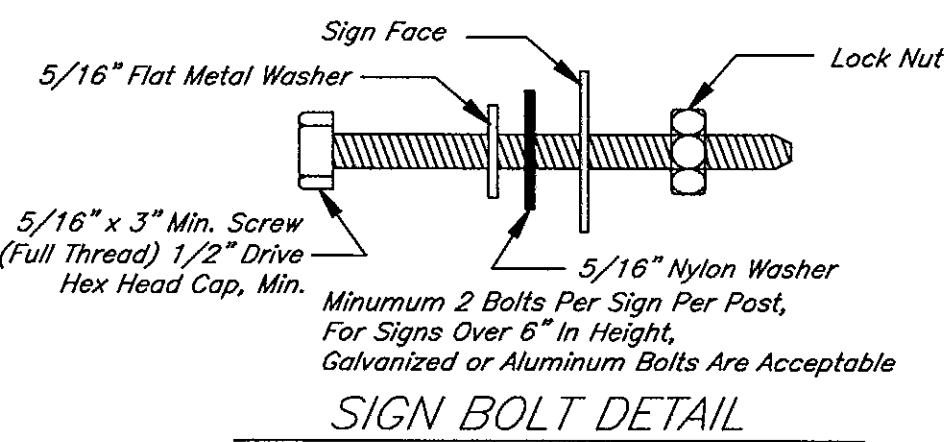


DECORATIVE SIDEWALK DETAIL

Scale: None

DECORATIVE SIDEWALK NOTES

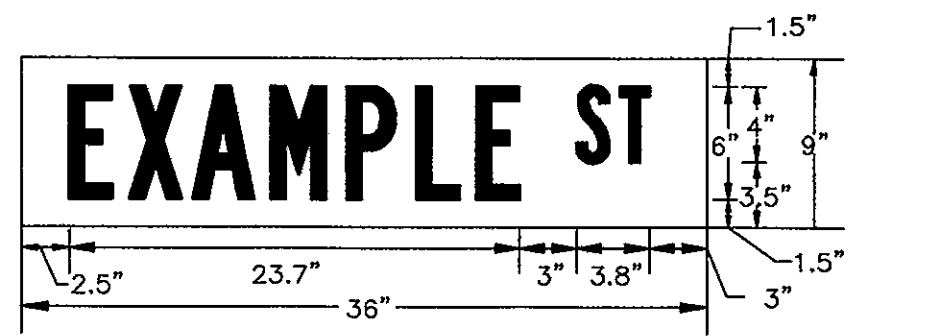
- Stencil Pattern Shall Be Running Band, As Manufactured By Artcrete, Inc. Color Hardener Shall Be Brick Red With Charcoal Gray, As Manufactured By Artcrete, Inc. Substitute Stencil Patterns And Color Hardener Will Be Considered Upon Submittal To Noblesville Department Of Engineering. The Stencil Pattern Shall Be Placed As Depicted In The Detail Above. Mock-Up Required, For Approval, Prior To Construction.
- 1/2" Preformed Joint Filler Shall Be Incorporated When Abutting Concrete Curbs, Catch Basins, Manhole Lids, Inlets, Structures, Other Walls, Other Fixed Objects. The Top Of The Joint Filler Shall Be Flush With The Adjacent Concrete.
- Decorative Sidewalks Shall Have Minimum Thickness Of 4" Except In Roadways, At Drives, Or In Alleys.
- Contraction Joints Shall Be Tooled With A Depth Of 1" Below The Surface. Contraction Joints Shall Be Uniform, Vertical, And Neat.
- A 4" Minimum Compacted Granular Base Course Will Be Required Prior To The Construction.



MEDIAN END TREATMENT

Scale: None

- All Medians Up To Four (4) Feet In Width Shall Be Constructed Of Approved Pavement Material And Apply Shown Median End Treatment.
- Medians Greater Than Four (4) Feet In Width May Contain Approved Landscaping Or Greenspace.
- All Medians Shall Contain An End Treatment.

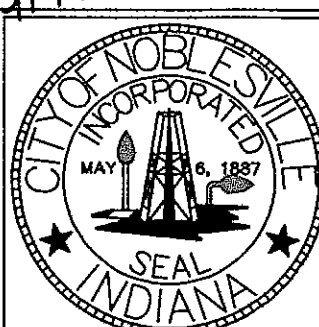
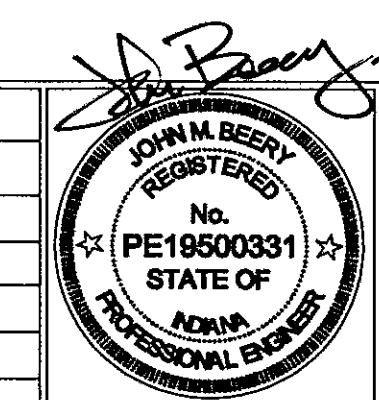


- D-3(2); No Border, White on Green
- [EXAMPLE] B; [ST] B; Minimum 2" Border On Left And Right Edges
- Maximum 12 Letter/Space Combination Street Name On 54" Blade With Type "B" Font At 100% Letter Spacing.
  - A 13 Letter/Space Combination Street Name May Be Considered With Special Approval Using Type "B" Font At 90% Letter Spacing.
  - Minimum Blade Length Is 24". Maximum Blade Length Is 54".
  - Based The Above Requirements, Special Consideration, Shop Drawings And Approval Is Required For Larger Signs.

SAMPLE STREET SIGN AND SHOP DRAWING Not to Scale

Section A-A Extruded Aluminum Street Sign Blade Section Minimum Dimension Not to Scale

Rev. No.	Description	Date
1	Sed. Control Notes; Det Pond	11/01/02
2	Add Median Detail; Residential Drive Notes 4, 7, *; Res. Dr. Detail - Stone Base Note; St. Sign Note 2, 5	12/1/06
3	Comm. Dr. Detail - Asphalt Alt. & Stone Base Note; Reg. Sign Note 1-8	
4	Modified Drive, Commercial And Residential, Cross Slopes, Base; Add Decorative Sidewalk Detail & Notes	11/1/2007
5	Modified Drive Details, Modified Signage Standards and Notes - 1-1-12	

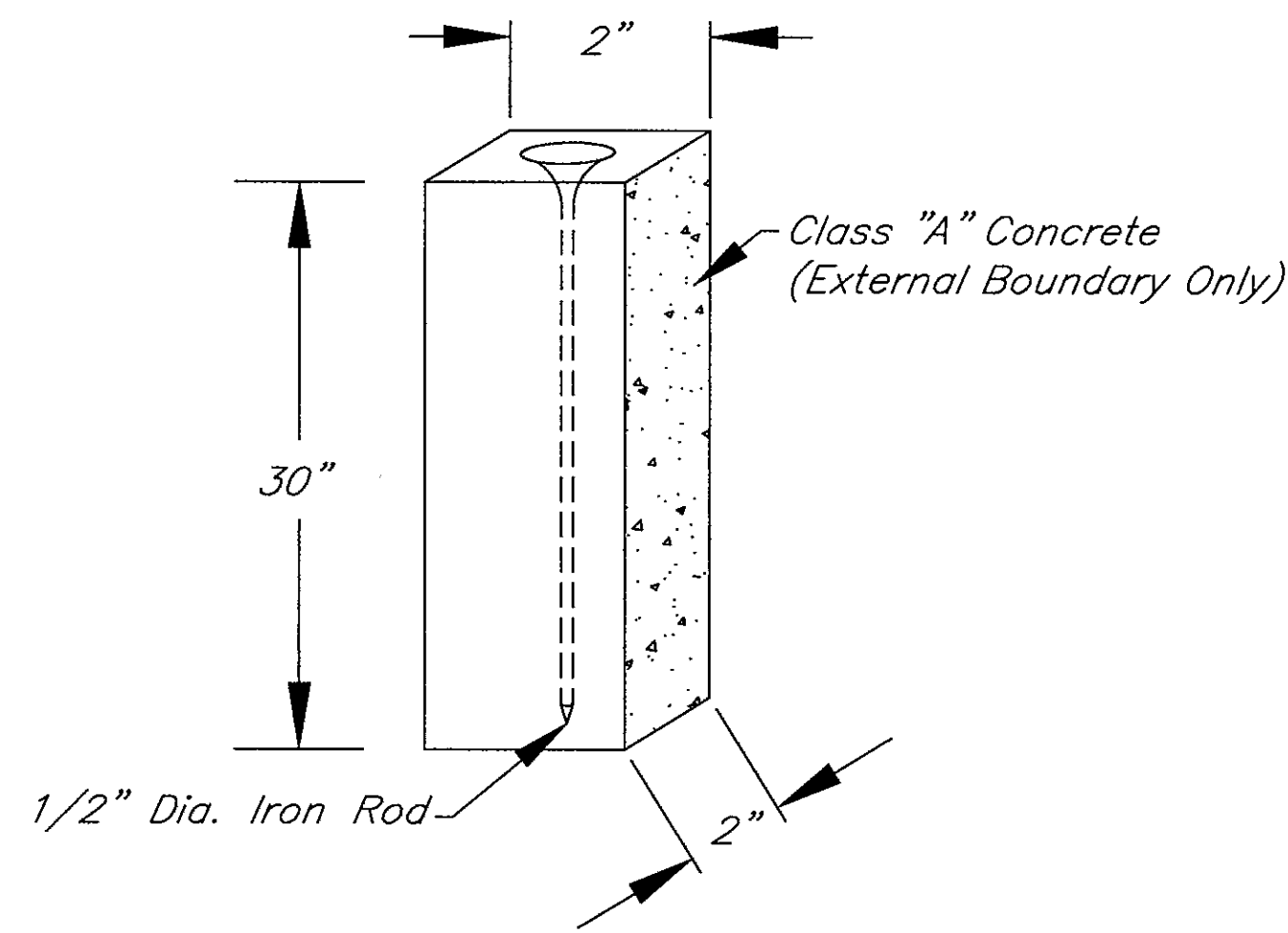


CITY OF NOBLESVILLE

Sign, Driveway, and Decorative Sidewalk Details

SHEET

9 OF 13



**MONUMENT DETAIL - EXTERNAL BOUNDARIES/ROADWAY**  
Scale: None

**MONUMENTATION GUIDELINES**

**INDIVIDUAL LOT BOUNDARIES**

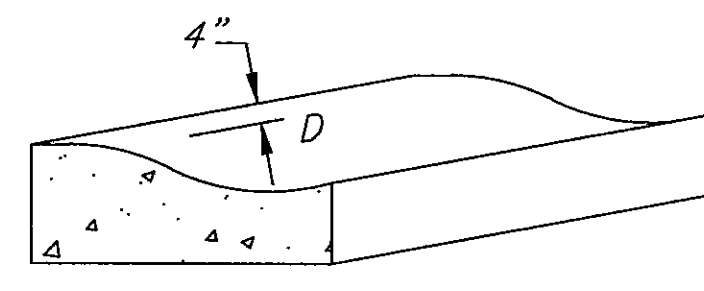
- Each Property Corner And Internal Angle Point Shall Be Monumented By The Installation Of A 2'-6" Long Iron Rod, Capped Flush At Final Grade, With A Durable Plastic Cover.
- Monuments Shall Be Installed Within One Season Of Acceptance Of Secondary Plat.
- A Land Surveyor, Registered In The State Of Indiana, Shall Attest To The Accuracy Of The Installed Individual Lot Monuments. Attestment Certifying All Monumentation Has Been Placed Shall Be Delivered With Transmittal Within One Year After Platting. Attestment Must Be Received Prior To Release Of Surety. Certified Statements Of Attestment Shall Be Submitted To The Noblesville Department Of Engineering.
- Monuments Which Are Damaged Or Altered Shall Be Reset By Party Responsible For Damage/Alteration. If A Responsible Party Can Not Be Readily Determined, Developer Shall Bear The Costs Of Having Monument Reset.

**EXTERNAL BOUNDARIES/ROADWAY MONUMENTATION**

- Monuments Shall Be Placed For The Purpose Of Accurately Denoting The Center Of Each Roadway. Monuments Shall Be A Steel Rod With Minimum Of One Inch (1") Diameter By Five Inches (5") Long. As A Minimum, Monuments Shall Be Placed At Points Of Tangency, Points Of Curvature, And Intersection Of Another Roadway. As A Minimum, Monuments Shall Be Placed No Less Than 1,320 Feet Apart In Any Straight Line. Roadway Monumentation Shall Be Placed Within Three (3) Months Of Placement Of Pavement Surface.
- A Land Surveyor, Registered In The State Of Indiana, Shall Attest To The Accuracy Of The Installed Monuments. Certified Statements Of Attestment Shall Be Submitted To The Department Of Engineering For Consideration Of Acceptance Of The Roadway By The Noblesville Board Of Public Works And Safety.
- As Denoted On The Secondary Plat, The External Boundary Of The Development Shall Be Monumented. A Land Surveyor, Registered In The State Of Indiana, Shall Attest To The Accuracy Of The Installed Monuments. Certified Statements Of Attestment Shall Be Submitted To The Noblesville Department Of Engineering For Consideration Of Acceptance Of Said Plat By The Noblesville Board Of Public Works And Safety.
- Monuments Which Are Damaged Or Altered Shall Be Reset By Party Responsible For Damage/Alteration. If A Responsible Party Can Not Be Readily Determined, Developer Shall Bear The Costs Of Having Monument(s) Reset.

**UTILITY - GENERAL NOTES**

- The Design Professional Shall Design, Configure, And Coordinate All Utilities, Public Or Private, In A Manner To:
  - Accommodate Service Connections (Existing, Proposed, Or Future)
  - Maintain Access To And Provide Sufficient Room For Maintenance
  - Not To Conflict Or Damage Other Utilities Or Infrastructure In Construction Or Maintaining.
- Abandoned Utility Infrastructure Shall Be Completely Removed After Activating Newly Constructed, Upgraded, Or Relocated Facilities. Abandoned Facilities Are Not Permitted To Remain In Place, Regardless If It Is Above Ground Or Below Ground. Below Ground Conveyance Pipe Can Be Capped And Filled With Concrete Or Flowable Fill. Trenches Of Below Ground Facilities Shall Be Properly Backfilled As Noted These Standards.
- Additional Easement Or Rights-Of-Way Widths May Be Required Beyond The Typical Minimum Width Or Area To Accommodate Utility's Infrastructure. If Determined By A Masterplan, Special Study, Or Unique Situation. It Is The Responsibility Of The Design Professional To Contact The Utilities To Determine If This Is Necessary.
- Any Work Within The Rights-Of-Way Or Public Easements Shall Secure An Encroachment Permit From The Planning Department, Subject To Review By Any And All Applicable City Departments.

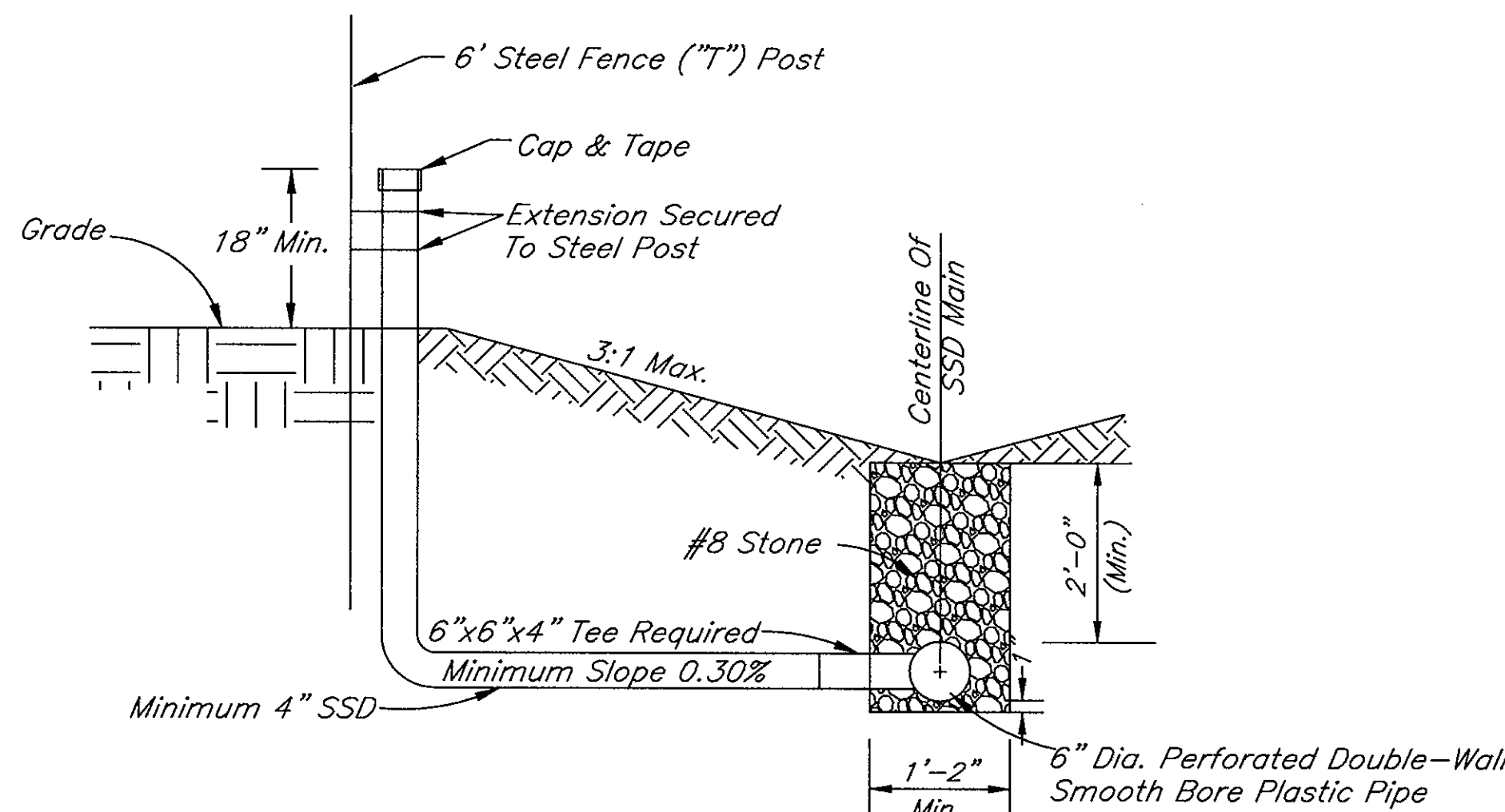


**CURB STAMP DETAIL**  
Scale: None

3" High Letter Shall Be Stamped As Follows:  
S - Sanitary Sewer Lateral  
D - Subsurface Drain  
C - Conduit  
G - Gas Service  
W - Water Service

**NOTE:**

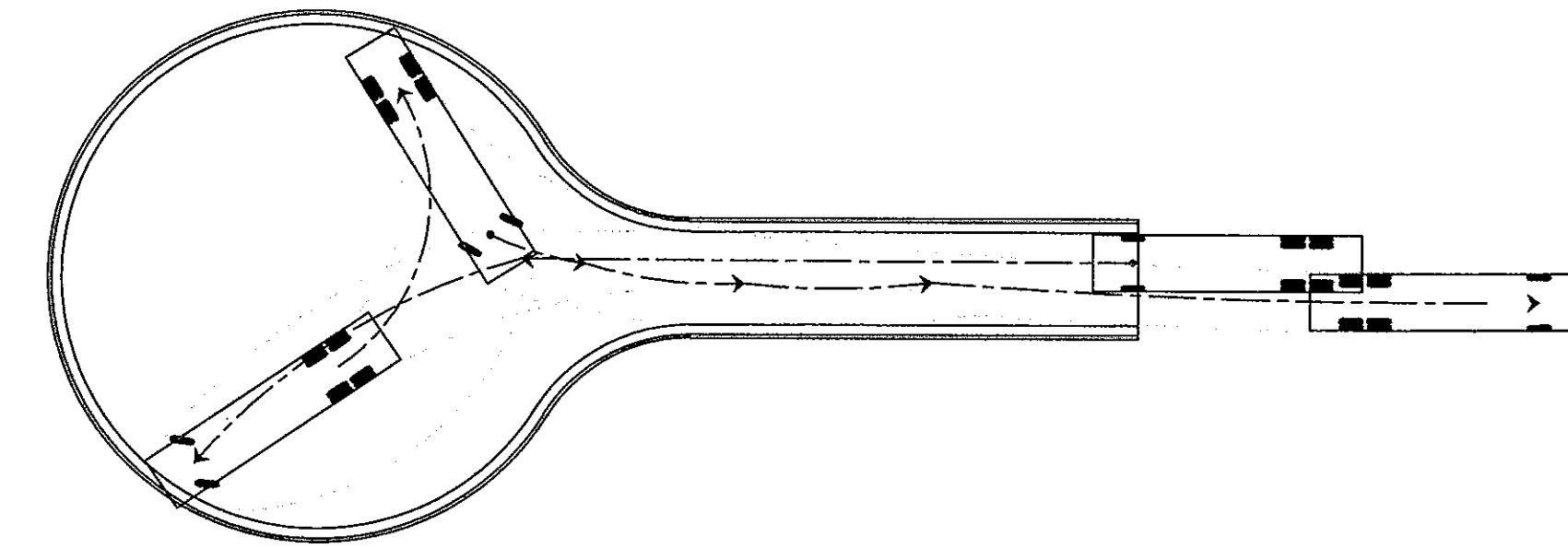
- Curb Shall Be Stamped At All Locations Where Any Of The Above Pass Under A Curb.
- Letter Shall Be Stamped Prior To Concrete Setting Up, Whenever Possible.
- Stamp Shall Be 1/2" Deep.



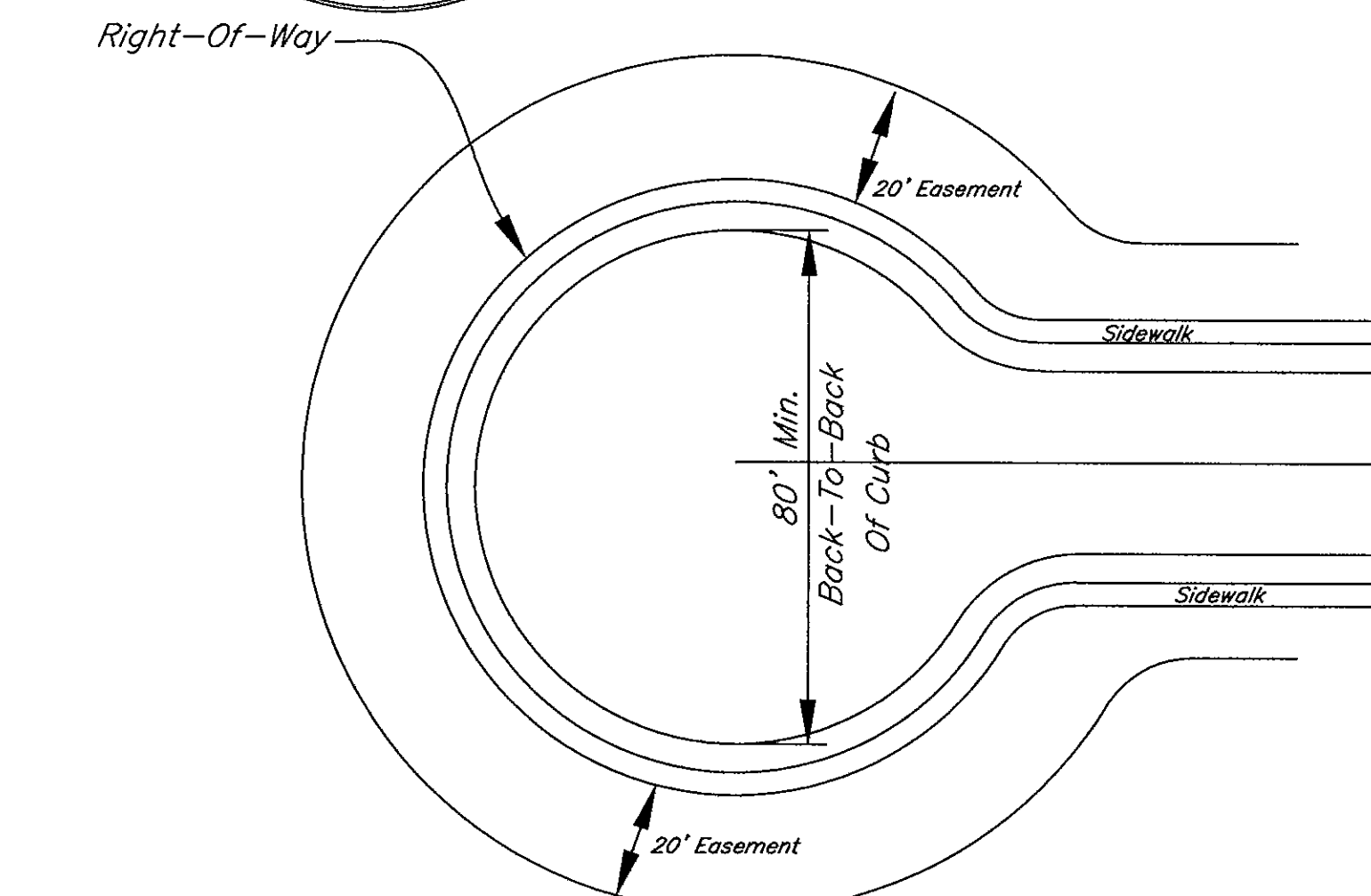
**TYPICAL SSD LATERAL TO REAR YARD SWALE**  
Scale: None

**NOTES FOR REAR YARD SWALE**

- Down Spouts From Roof Gutting Is Not Permitted To Discharge Into The Shown Subsurface Drain.
- The Temporary Extension, Above Ground, Shall Be Removed Upon Connection To House.
- If Subsurface Drain Extension Is Not Utilized, Then It Shall Be Capped Below Finished Grade Of Soil. The Termination Of A Subsurface Drain Shall Be Inspected By The Noblesville Department Of Engineering Prior To Backfilling.
- Contractor Shall, When Curbs Are Available, Engrave A 3-Inch High By 1/8" Deep "D" On The Curb Directly Above Each Subsurface Drain. Where Curbs Are Not Available, Contractor Shall Notch The Sidewalk Directly Above Each Subsurface Drain. See Curb Stamp Detail On This Sheet.

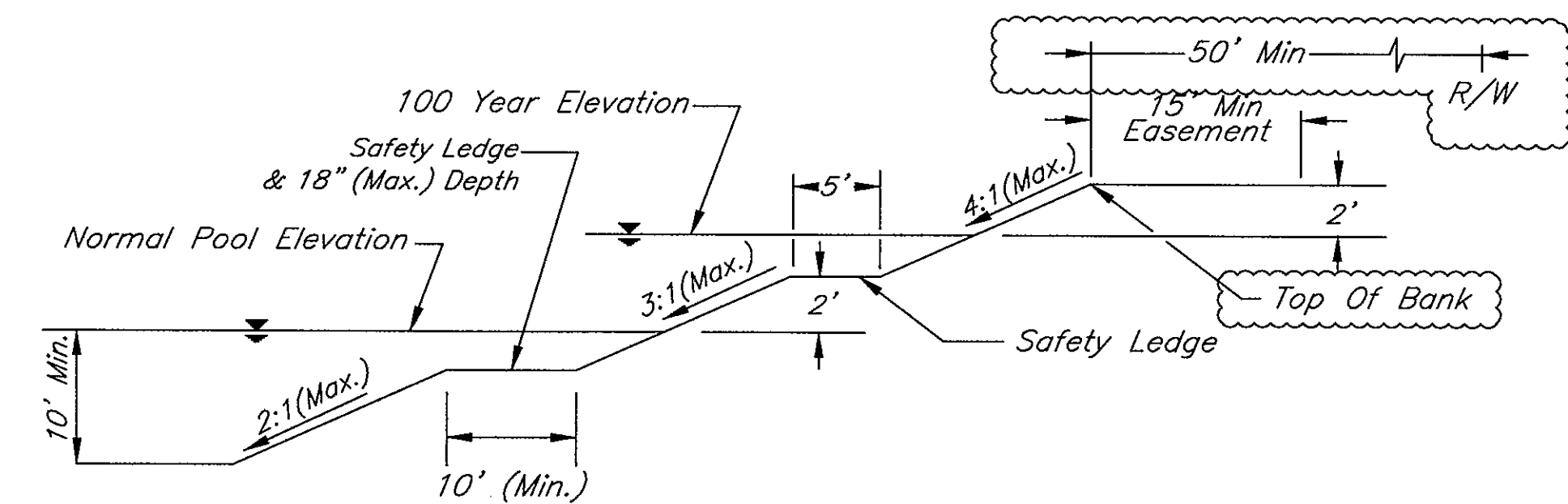


**CUL-DE-SAC**  
FIRE ENGINE DESIGN VEHICLE TURN-AROUND SCHEMATIC  
Scale: None



**CUL-DE-SAC**

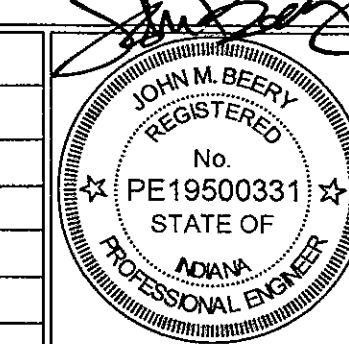
NOTE: Cul-De-Sacs Shall Be A Maximum Of 600' In Length.



**TYPICAL DETENTION POND SECTION**  
Scale: None

- Dry Bottom Detention Basins Shall Be Subject To The Maximum Of 3:1 Slope Above The Basin Floor. The Longitudinal Grade Shall Be Subject To The Ditch Requirements As Set Out On Sheet 5. The Traverse Grade Shall Be 2% Minimum.
- The Noblesville Department Of Engineering Or Stormwater/MS4 May Approve Alternate Detention Pond/Basin Sections.

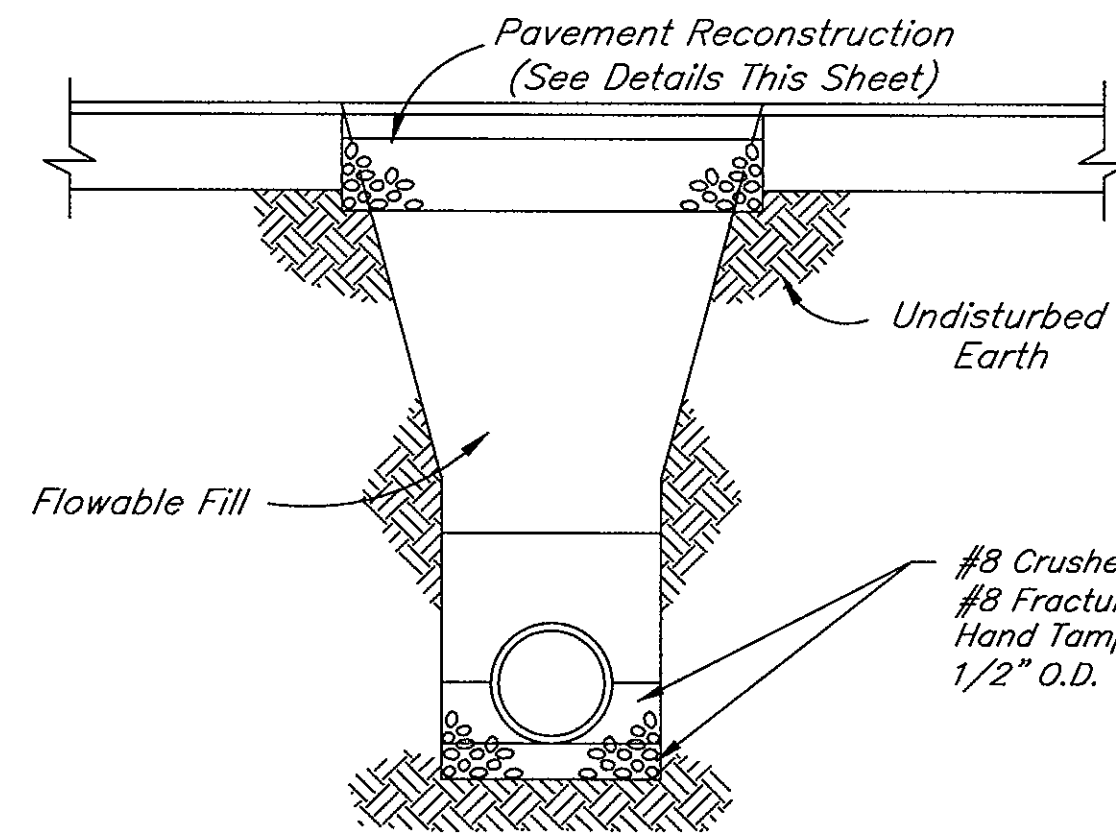
Rev. No.	Description	Date
4	Revisions Are Underlined Or In Revision Clouds	1/10/2012



**CITY OF NOBLESVILLE**  
Miscellaneous Details  
And Notes III

**SHEET**  
10  
OF  
13

S:\Engineer\Standards\Construction Standards\2011\Full\working 2012-01-10\Stand 2012-01-16 (1).dwg 2/14/2012 3:27 PM

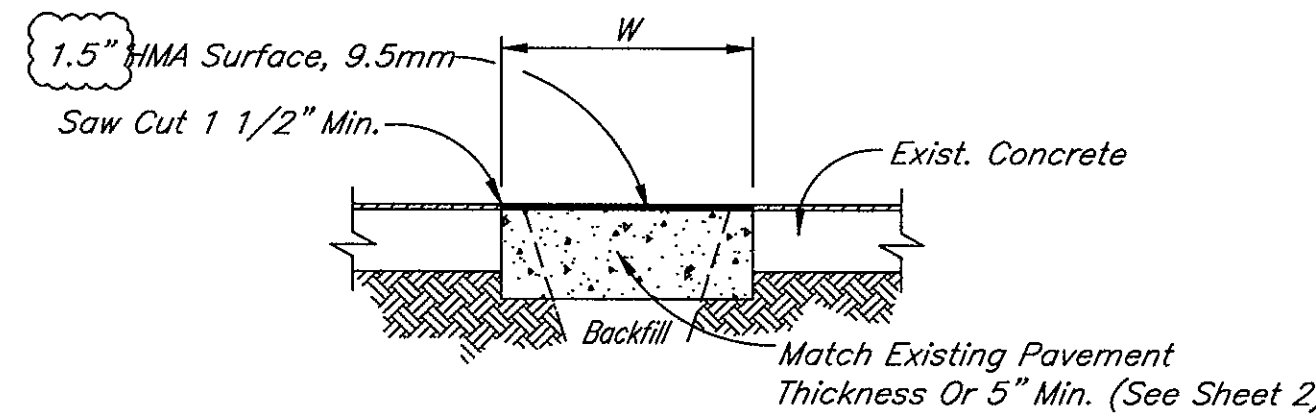


**NOTES:**

1. Trench Spoil 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 Noblesville Street Department Or Department Of Engineering
4. The Compressive Strength Of The Flowable Fill Shall Not Be Less Than 50 PSI Nor Greater Than 100 PSI At 28 Days.
5. When Type I Trench Backfill Is Used, The Existing Paved Surface Is Not Required To Be Over-Cut 2 Feet Minimum Each Side. Saw Cut Existing Pavement So That Cut Provides A Vertical, Neat And Uniform Edge.
6. Flowable Fill Shall Be Mixed And Placed As Specified In The Latest INDOT Standard Specifications, Section 213.

**TRENCH BACKFILL - TYPE I FLOWABLE FILL DETAIL**

Scale: None

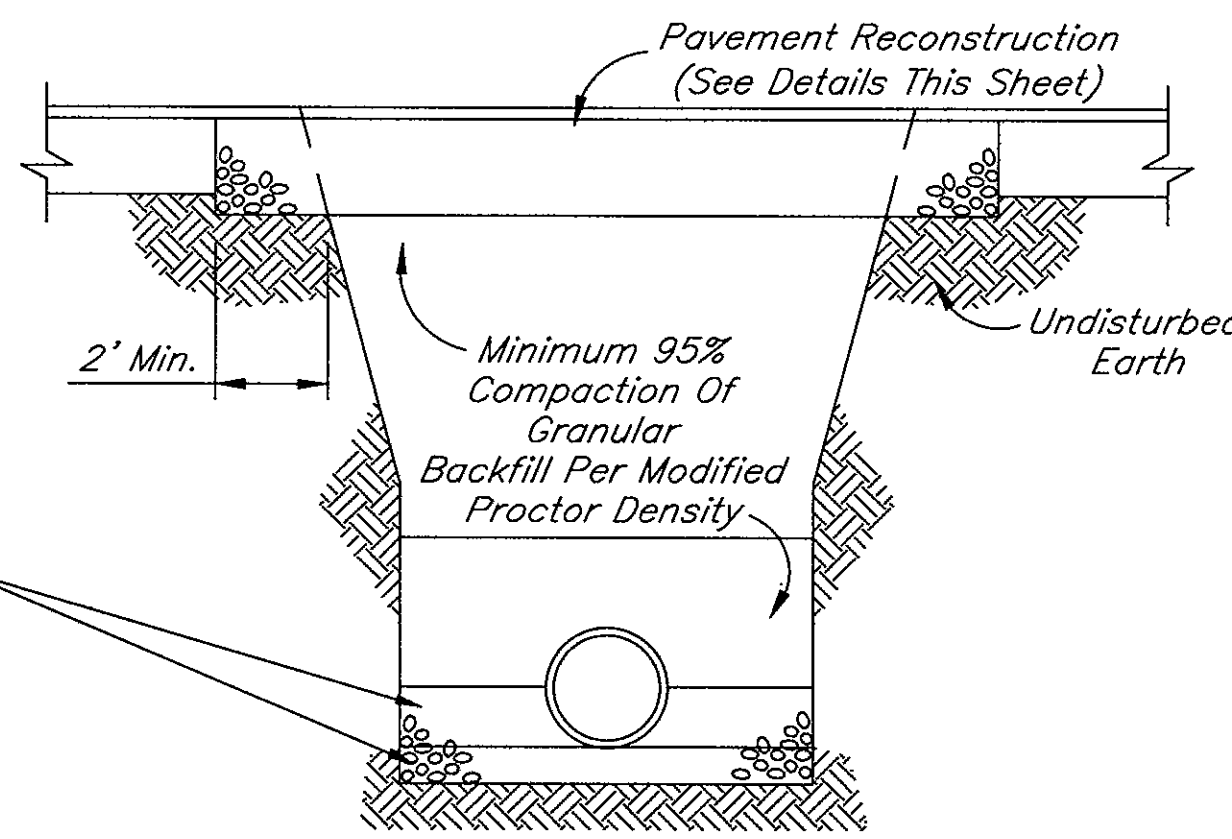


**NOTES:**

1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Noblesville Department Of Engineering.
3. Concrete Surface Shall Be Broom Finish At Right Angles To Traffic Flow.
4. All Concrete Shall Be Air Entrained (5% ± 1%) - 6 Bags Per Cubic Yard Minimum 4000 PSI Compressive Strength Concrete. Prior To Exposing Concrete Patch To Vehicular Traffic, Compressive Strength Test Results Of Cylindrical Concrete Specimens Shall Be Supplied To The Noblesville Department Of Engineering. Compressive Strength Tests Shall Be Conducted In Accordance With ASTM C39.
5. Contractor Shall Contact The Noblesville Department Of Engineering To Determine If Anchors Are Required On Existing Concrete Pavement Repairs.
6. The Concrete Pavement And The Existing Vertical Edge Of Pavement Are To Be Tack Coated Prior To The Placement Of New Asphalt. Tack Coat Is To Be Applied As Specified On Sheet 3.
7. The New Surface Pavement Grade Shall Match The Existing Surface Pavement Grade.
8. A Two (2) Inch Wide Band Of Crack Sealant Is To Be Applied Along The Joint Between The Existing And New Asphalt Surface. Sealant Is To Be Applied In Accordance With INDOT Standard Specifications, Section 305.
9. Contractor Shall Mill (1.5") Existing Pavement 25' In Each Direction From Trench Centerline, Replace With 1.5" HMA Surface, And Appropriate Pavement Markings.
10. Refer To Pavement Restoration Table For W. See General Notes For Additional Details.

**CONCRETE W/BITUMINOUS SURFACE PATCH**

Scale: None

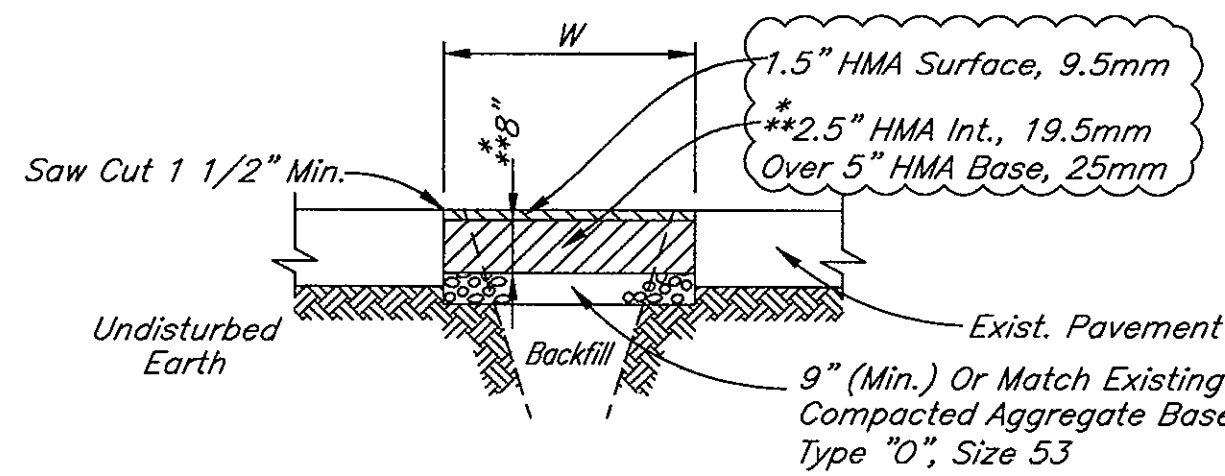


**NOTES:**

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. Trench Backfill - Type II Shall Only Be Permitted When Conducted Under The Presence Of An Independent Testing Laboratory. Proctor Tests And Field Density (Compaction) Tests Shall Be Conducted At The Sole Expense Of The Contractor. All Test Results Shall Be Submitted To The Noblesville Street Department Or Department Of Engineering Within 30 Days Of Backfill Completion.

**TRENCH BACKFILL - TYPE II GRANULAR FILL DETAIL**

Scale: None



\* If Existing Pavement Is Thicker Than 8", An Additional Lift Of HMA Base, 25mm Is To Be Used To Match The Existing Pavement Thickness.

\*\* For Collector, Arterial And Industrial Streets, Contractor Shall Increase HMA Base, 25mm Thickness To Obtain A Total Pavement Thickness Of 10".

**NOTES:**

1. Saw Cuts Shall Provide A Vertical, Neat, And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Noblesville Department Of Engineering.
3. Contractor Shall Mill (1.5") Existing Pavement 25' In Each Direction From Trench Centerline From Face-Of-Curb To Face-Of-Curb Or Edge-Of-Roadway, Replace With 1.5" HMA Surface, 9.5mm, And Appropriate Pavement Markings.
4. The Existing Vertical Edge Of Pavement Is To Be Tack Coated Prior To The Placement Of New Asphalt. Tack Coat Is To Be Applied As Specified On Sheet 3.
5. The New Surface Pavement Grade Shall Match The Existing Surface Pavement Grade.
6. A Two (2) Inch Wide Band Of Crack Sealant Is To Be Applied Along The Joint Between The Existing And New Asphalt Surface. Sealant Is To Be Applied In Accordance With INDOT Standard Specifications, Section 305.
7. Refer To Pavement Restoration Table For W. See General Notes For Additional Details.

**BITUMINOUS PATCH**

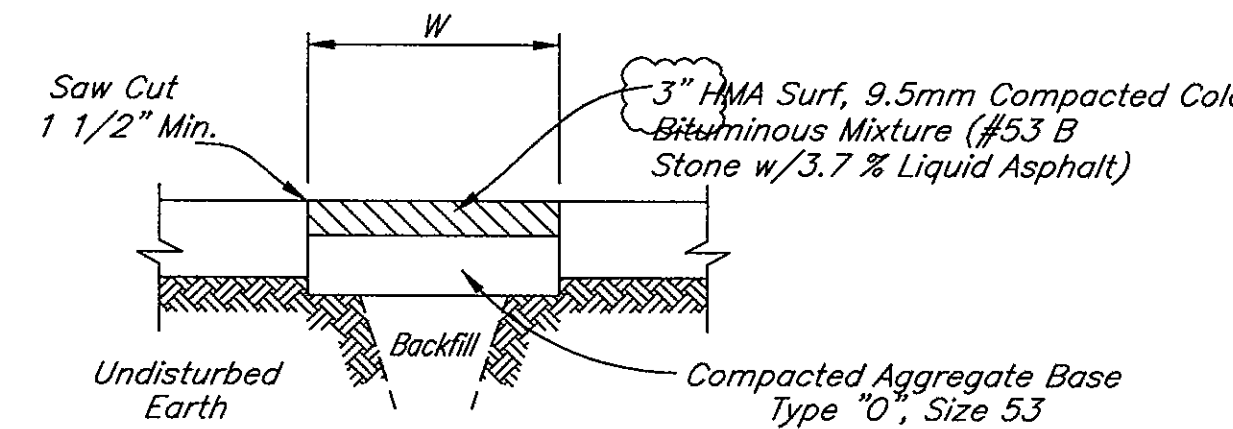
Scale: None

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

I.D. = Pipe Or Conduit Inside Diameter

**GENERAL NOTES**

1. Any Excavation And/Or Trench Within 5 Feet Of Existing Or Proposed Roadway, Alley, Or Sidewalk/Trail Shall Be Type I Or Type II Backfill As Shown.
2. Type II Backfill May Be Used When The Trench Has Adequate Space To Allow Entrance Of Proper Equipment And Materials To Achieve The Required 95% Compaction Of Modified Proctor Density.
3. The Noblesville Board Of Public Works And Safety Or The City Engineer Shall Have The Authority To Require Type I Trench Backfill When, In Their Opinion, Minimum Compaction Cannot Be Obtained.
4. The Contractor Shall Notify The City Of Noblesville Permitting Agency 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 City Of Noblesville Permitting Agency 24 Hours Prior To Placement Of Patch.
5. The Contractor Shall Be Responsible For Maintaining And Repairing Any And All Open Cuts Permitted Within The City Of Noblesville Right-Of-Way For A Period Of One Year Upon Final Acceptance By The Permitting Agency.
6. Trench Backfill And Pavement Restoration Shall Be Conducted In An Expedient Manner.
7. Surface Patch Shall Extend From Face Of Curb To Face Of Curb Unless Otherwise Approved By City Of Noblesville Board Of Public Works.
8. Prior To Conducting Any Work Within City Of Noblesville Right-Of-Way Caused By Or Related To New Construction, Contractor Shall Secure A Utility Coordination Permit From The Noblesville Department Of Engineering.
9. Prior To Conducting Any Work Within City Of Noblesville Right-Of-Way On Existing Facilities, Contractor Shall Secure An Encroachment Permit From The Noblesville Street Department.

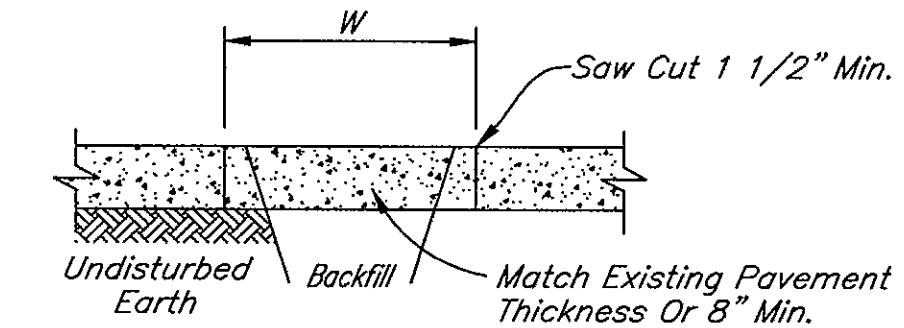


**NOTES:**

1. Saw Cuts Shall Provide A Vertical, Neat, And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Noblesville Department Of Engineering.
3. The Contractor Shall Reference Noblesville Standard Cross-Sections 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.
5. Contractor Shall Refer To The Noblesville Encroachment Ordinance #13-3-01, For Maintenance Of Repair Of Temporary Patch.

**FOR TEMPORARY REPAIR PATCH**

Scale: None



**NOTES:**

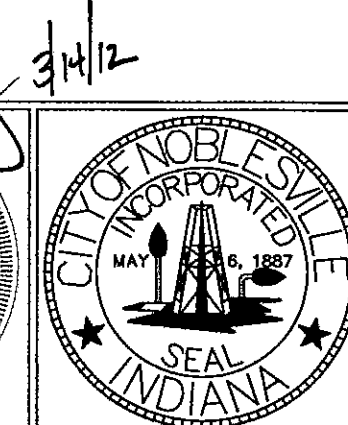
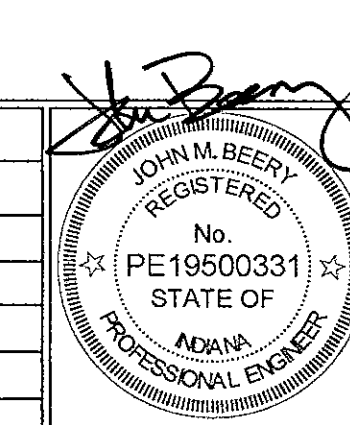
1. Saw Cuts Shall Provide A Vertical, Neat, And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Noblesville Department Of Engineering.
3. Surface Of Repair Shall Be Broom Finished At Right Angles To Traffic Flow.
4. All Concrete Shall Be Air Entrained (5% ± 1%) - 6 Bags Per Cubic Yard Minimum 4000 PSI Compressive Strength Concrete. Prior To Exposing Concrete Patch To Vehicular Traffic, Compressive Strength Test Results Of Cylindrical Concrete Specimens Shall Be Supplied To The Noblesville Department Of Engineering. Compressive Strength Tests Shall Be Conducted In Accordance With ASTM C39.
5. Contractor Shall Contact The Noblesville Department Of Engineering To Determine If Anchors Are Required On Existing Concrete Pavement Repairs.
6. Refer To Pavement Restoration Table For W. See General Notes For Additional Details.

**CONCRETE PATCH**

Scale: None

FOR CUTS WITHIN CONCRETE STREETS

REVISIONS		
Rev. No.	Description	Date
1	Gen. Notes 1, 2, 7-9; Conc. w/ Bitum. Note 9; Bitum Patch Note 3; Trench Backfill Type II Detail	12/1/06
4	Revisions Are Underlined Or In Bubble Cloud	1/10/12

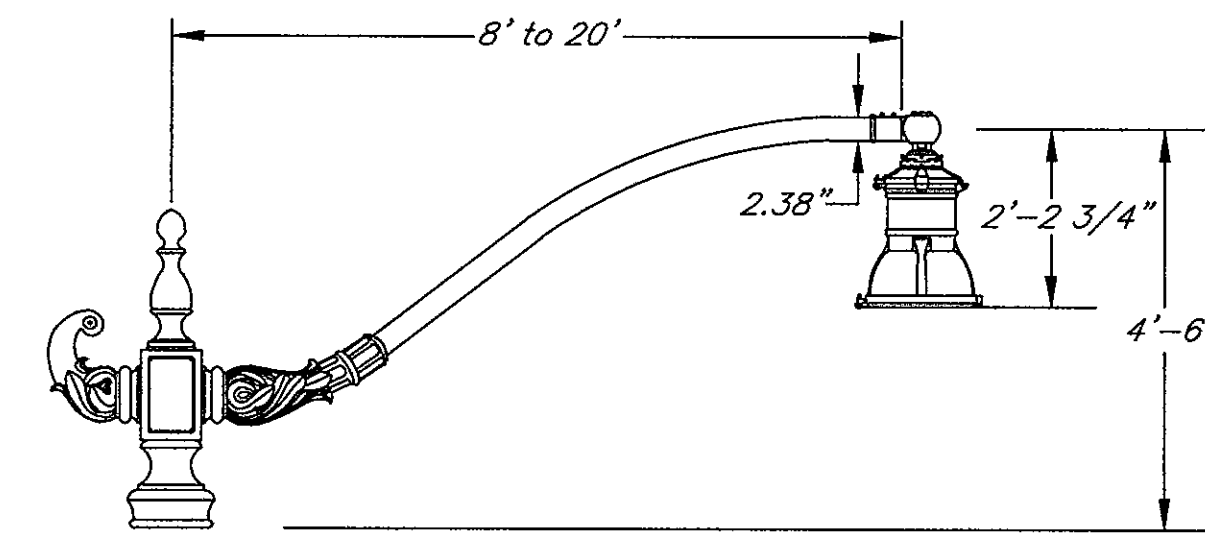
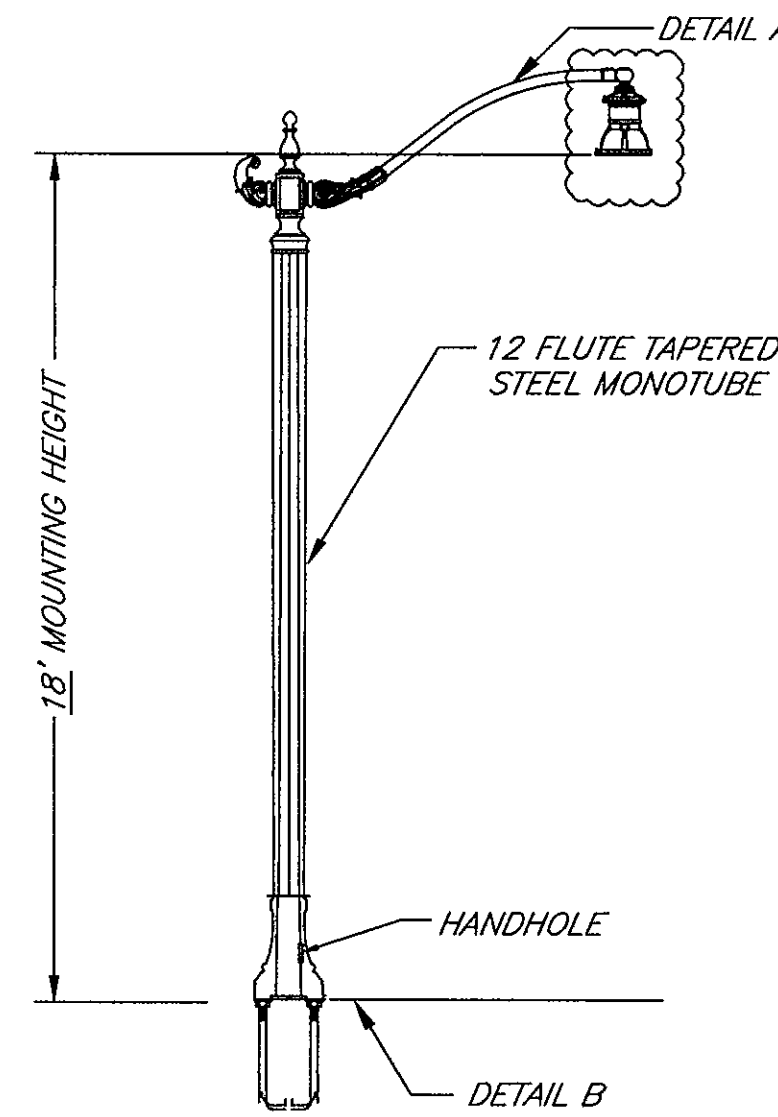


CITY OF NOBLESVILLE  
Street Cut Details

SHEET  
11  
OF  
13

**STREET LIGHTING**

1. Street Lighting Is Required On New Local And Collector Streets Being Constructed With A Plat And Shall Be Shown On The Lighting Plan. Lighting Is Required At Entrances And Intersections, Within Cul-De-Sacs And At Specific Locations Requiring Additional Lighting. Lighting Plans Shall Be Submitted To The Noblesville Department Of Engineering For Approval.
2. Street Lighting Shall Be Considered On Thoroughfare Roadways At Any Of The Following Conditions:
  - 2.1 Pedestrian Crosswalks
  - 2.2 Roadway Intersections
  - 2.3 Changes In Horizontal Alignment Of Roadway
  - 2.4 Commercial Drives
  - 2.5 As Directed By The City Engineer
3. It Shall Be The Responsibility Of The Developer To Provide And Install All Street Lighting.
  - 3.1 Street light locations shall be shown on the approved subdivision plans. The type of luminaire and pole used, with illumination information should be included on the plans or by separate submittal prior to construction.
  - 3.2 The Homeowners' Association Covenants shall clearly indicate that the cost of maintenance and the order of any new lights will be the responsibility of the Homeowner's Responsibility as the Owner and Customer for the lighting.
  - 3.3 Billing and the worker order information shall be in the Homeowners Association's Name and Address.
  - 3.4 Encroachment permits shall be obtained for all work associated with installation. Lighting plans should match or amend those submitted in Item 3.4. A copy of the work order should accompany the permit.
  - 3.5 All other applicable City Standards shall be observed during the planning and completion of work.
  - 3.6 At the time work commences, requests for inspection of work shall be directed to the Engineering Department in a manner that is commensurate with the process for other the inspection provide for other elements of subdivision work.
4. All Lighting Plans, Submitted For Approval, Shall Include, But Not Be Limited To The Following:
  - 4.1 Location Of Each Light Standard And The Service Point Or Junction Box Serving Each Luminary.
  - 4.2 Plan Notations Showing Conduit And Wire Size For Each Conduit Run.
  - 4.3 Manufacturer's Catalog Cuts And Specifications For Light Fixtures, Appurtenances, Service Points And/Or Junction Box.
  - 4.4 Paint Color Specimen Samples And Or Material Composition.



**DETAIL A**  
Alphabram Arm And Luminaire  
Scale: None

**LIGHT STANDARD SPECIFICATIONS**

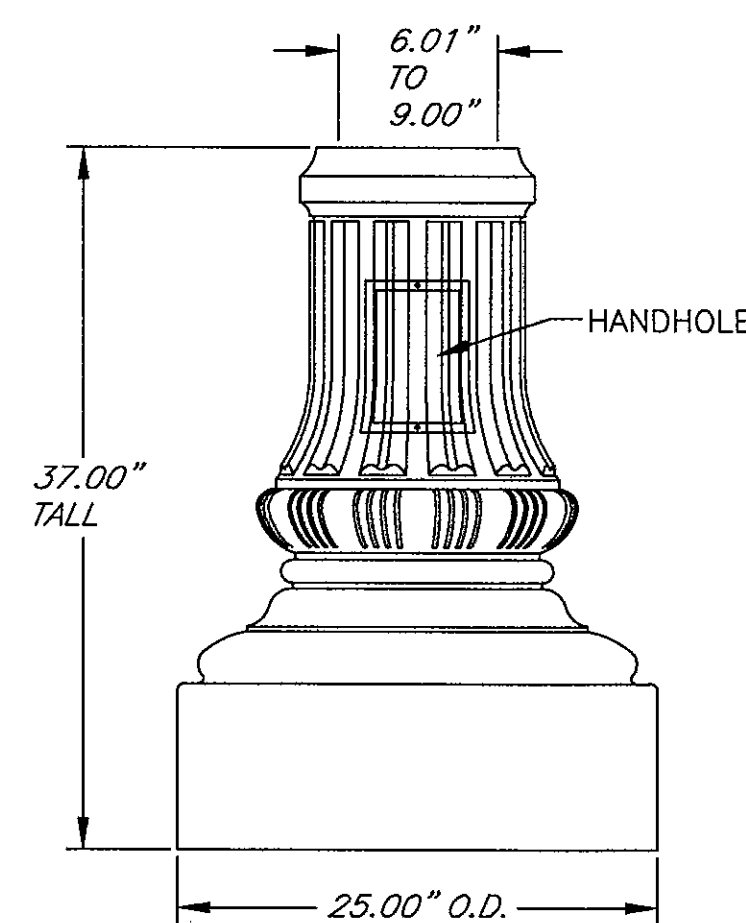
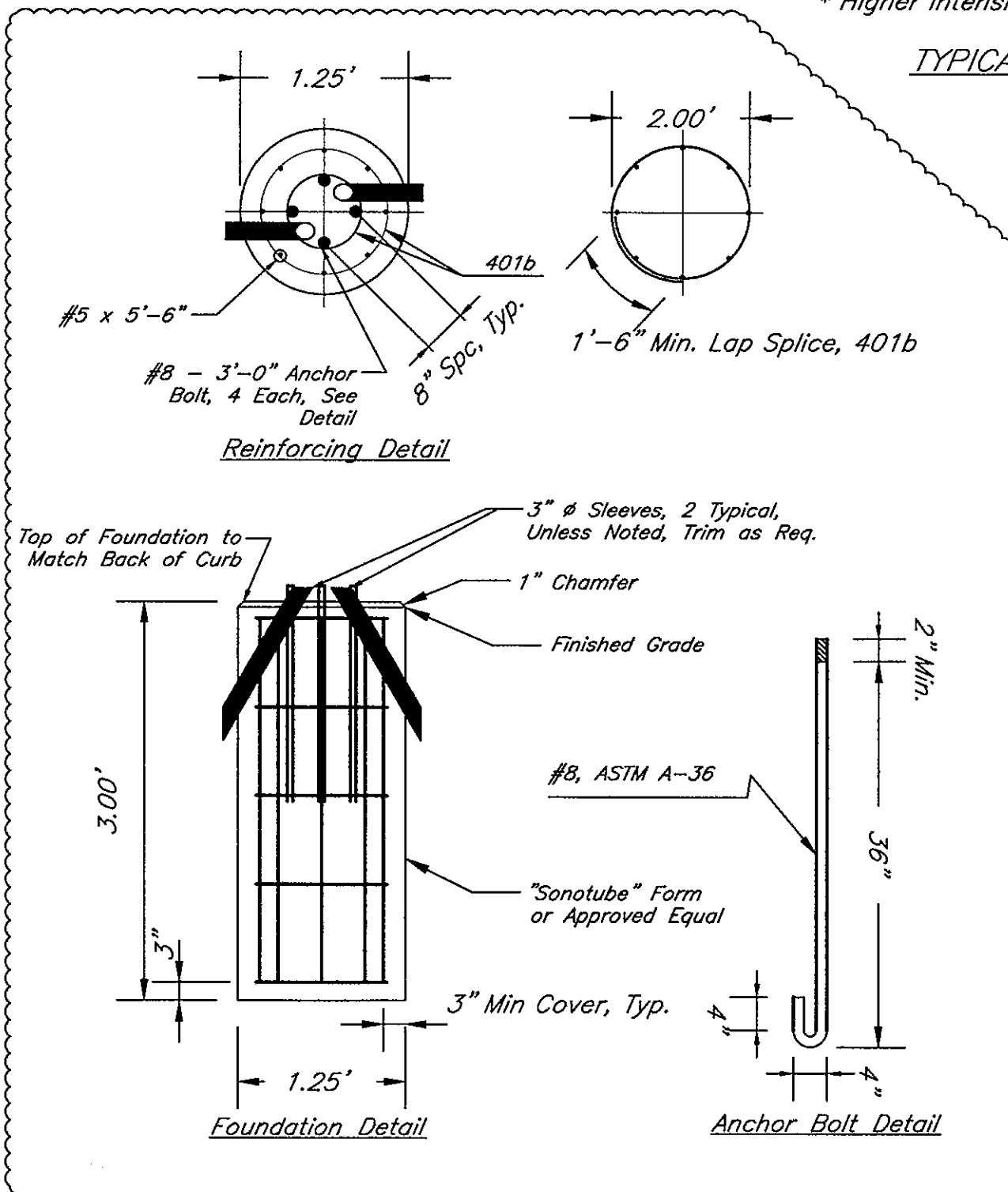
Pole: Valmont Industries 12 Flat Flute "12F" Series Or Approved Equal  
 Base: Valmont Industries Washington WA-25AB Aluminum 2 Piece Clamshell Decorative Base Or Approved Equal  
 Arm: Beacon Products Cobra Arm and Decorative Sconce Fitter Or Approved Equal  
 Luminaire\*: Columbia LED Luminaire With Flat Glass Lens And The Columbia Luminaire Holder, By Spring City Electrical Mfg. Co., Or Approved Equal. 152 Watt LED, 120 V, 6000k Lighting Unit.  
 Base Coat: Hot Dip Galvanized To ASTM Spec.: A123  
 Finish Coat: TGIC Or Urethane Polyester Powder  
 Color: Deep Hemlock (Porter Paints, Color No., 6348-5)

Contact Department of Engineering For Requirements For Hand Holes And/Or Cabinets.

Luminaire and Arm Shall Be Leveled And Plumb By The Contractor During Installation.

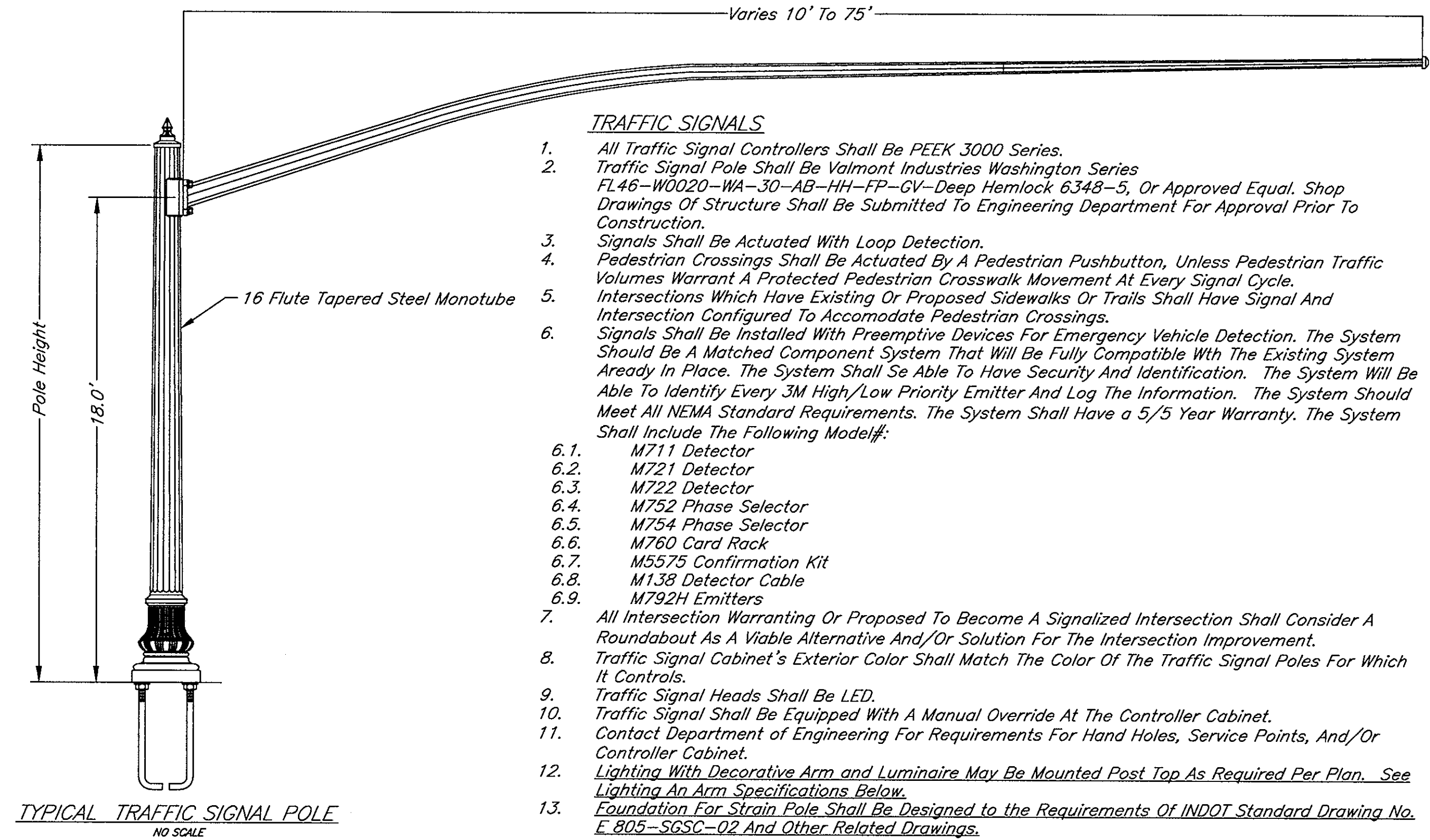
\* Higher Intensity Lighting May Required On Specific Thoroughfare Roadways

**TYPICAL STREET LIGHT ON THOROUGHFARE ROADWAYS**  
NO SCALE



**DETAIL B**  
WA25AB Decorative Base  
Scale: None

\* Painted Breakaway Transformer Base TB1-17/M09.3 By Valmont Industries, Or Approved Equal May Be Used In Lieu Of Decorative Base



**TRAFFIC SIGNALS**

1. All Traffic Signal Controllers Shall Be PEEK 3000 Series.
2. Traffic Signal Pole Shall Be Valmont Industries Washington Series FL46-W0220-WA-30-AB-HH-FP-GV-Deep Hemlock 6348-5, Or Approved Equal. Shop Drawings Of Structure Shall Be Submitted To Engineering Department For Approval Prior To Construction.
3. Signals Shall Be Actuated With Loop Detection.
4. Pedestrian Crossings Shall Be Actuated By A Pedestrian Pushbutton, Unless Pedestrian Traffic Volumes Warrant A Protected Pedestrian Crosswalk Movement At Every Signal Cycle.
5. Intersections Which Have Existing Or Proposed Sidewalks Or Trails Shall Have Signal And Intersection Configured To Accommodate Pedestrian Crossings.
6. Signals Shall Be Installed With Preemptive Devices For Emergency Vehicle Detection. The System Should Be A Matched Component System That Will Be Fully Compatible With The Existing System Already In Place. The System Shall Be Able To Have Security And Identification. The System Will Be Able To Identify Every 3M High/Low Priority Emitter And Log The Information. The System Should Meet All NEMA Standard Requirements. The System Shall Have a 5/5 Year Warranty. The System Shall Include The Following Model#:
  - 6.1. M711 Detector
  - 6.2. M721 Detector
  - 6.3. M722 Detector
  - 6.4. M752 Phase Selector
  - 6.5. M754 Phase Selector
  - 6.6. M760 Card Rack
  - 6.7. M5575 Confirmation Kit
  - 6.8. M138 Detector Cable
  - 6.9. M792H Emitters
7. All Intersection Warranting Or Proposed To Become A Signalized Intersection Shall Consider A Roundabout As A Viable Alternative And/Or Solution For The Intersection Improvement.
8. Traffic Signal Cabinet's Exterior Color Shall Match The Color Of The Traffic Signal Poles For Which It Controls.
9. Traffic Signal Heads Shall Be LED.
10. Traffic Signal Shall Be Equipped With A Manual Override At The Controller Cabinet.
11. Contact Department of Engineering For Requirements For Hand Holes, Service Points, And/Or Controller Cabinet.
12. Lighting With Decorative Arm and Luminaire May Be Mounted Post Top As Required Per Plan. See Lighting An Arm Specifications Below.
13. Foundation For Strain Pole Shall Be Designed to the Requirements Of INDOT Standard Drawing No. E 805-SGSC-02 And Other Related Drawings.

REVISIONS		
Rev. No.	Description	Date
4	Revisions Are Underlined Or In Revision Clouds	1/10/12

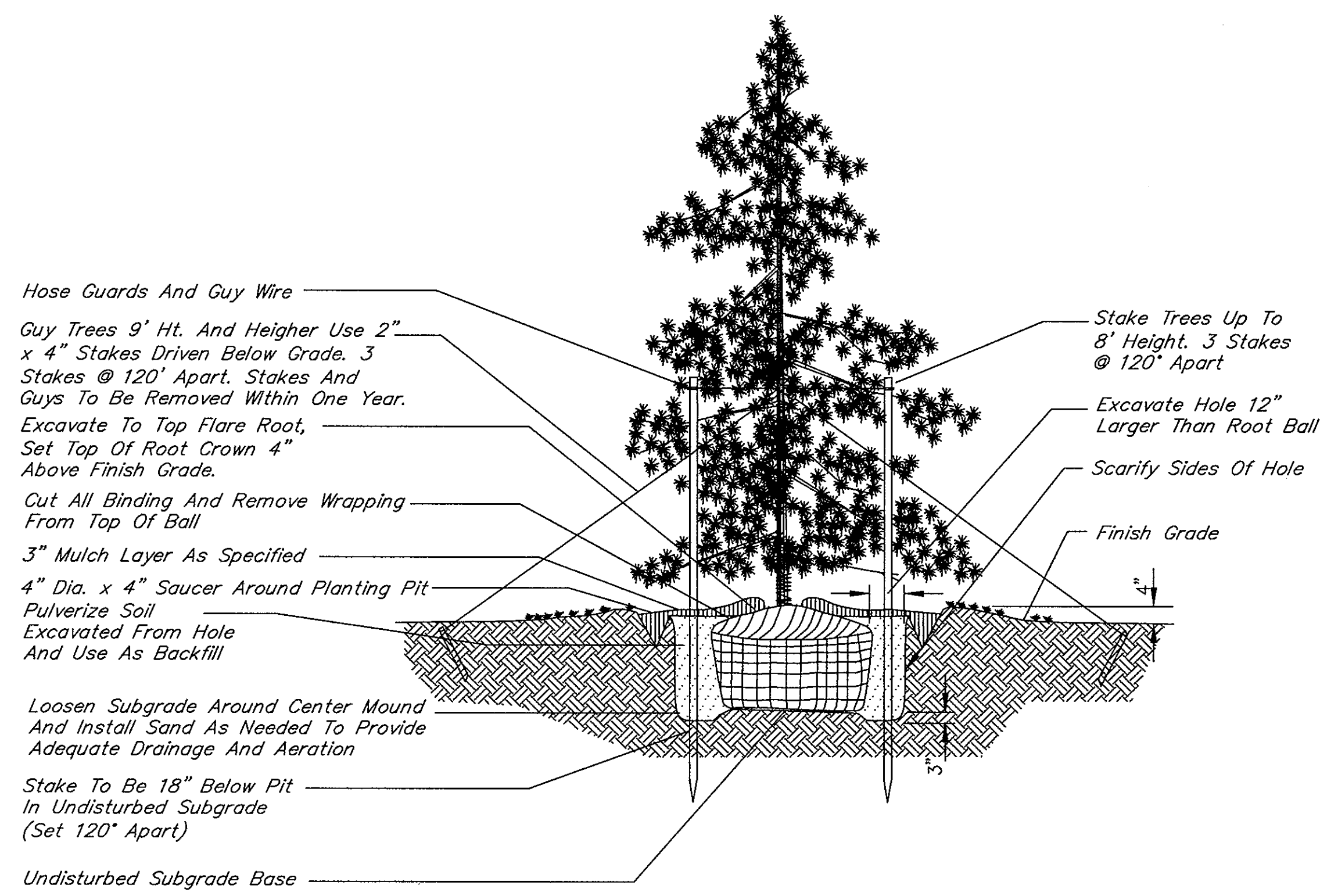
Signature: *[Handwritten Signature]* 3/14/12

**CITY OF NOBLESVILLE**

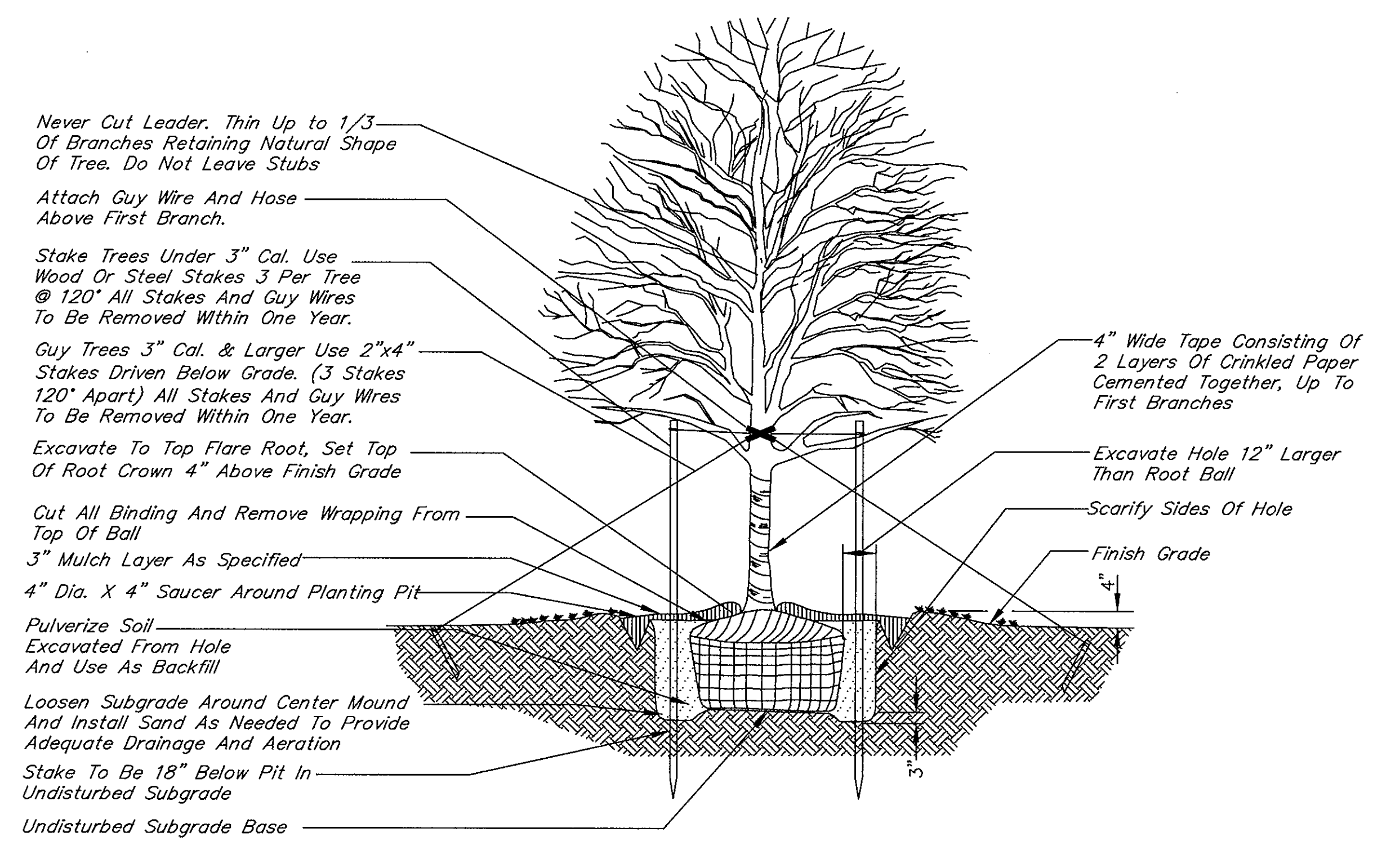
Street Lighting & Traffic Signal Standards, Details, and Notes

**SHEET 12 OF 13**

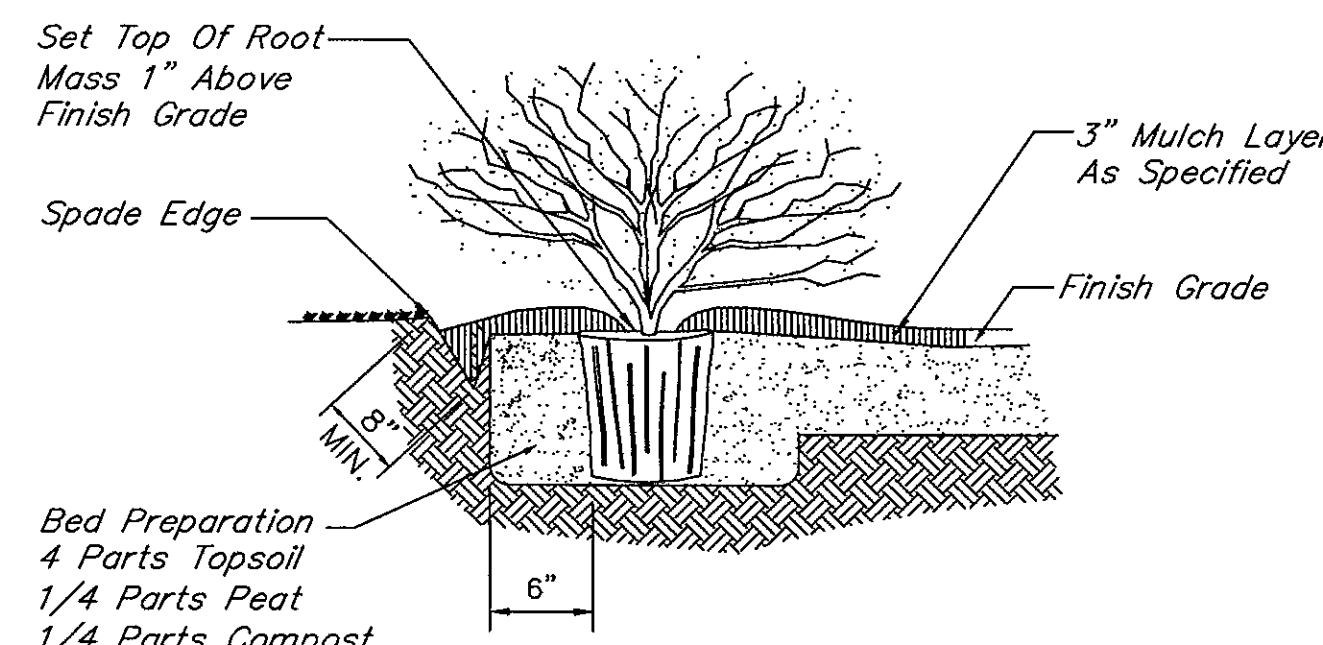
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EVERGREEN PLANTING DETAIL  
NOT TO SCALE



SHADE TREE PLANTING DETAIL  
NOT TO SCALE



SHRUB AND SMALL TREE PLANTING DETAIL  
NOT TO SCALE

NOTES FOR PLANTINGS  
IN PUBLIC RIGHT-OF-WAY

1. A Minimum Of 4" Of Topsoil Shall Be Placed On All Areas Shown To Be Seeded. Use Suitable Topsoil From Stockpiled Site Stripping. Topsoil Shall Be Free From Subsoil, Vegetation, Weeds Or Any Extraneous Or Deleterious Materials Larger Than 1". Remove Any Unsuitable And Excess Topsoil, As Determined By Engineer, From The Site. Furnish Any Additional Topsoil Needed At No Additional Cost.
2. In Case Of Discrepancies Between The Plan, The Plant List, And The Plan Approved By The City Of Noblesville Planning Commission, A Resolution Shall Be Developed That Complies With The Uniform Development Code. In The Event That The Project Is Part Of A Project That Is Publicly Bid By The City, The Plan Shall Dictate, Contact The Engineering Department.
3. All Trees Shall Have A 4' Diameter Ring Covered With A 2" To 3" Thick Layer Of Shredded Hardwood Bark Mulch. Bark Mulch Shall Be Approved By The City And Shall Be Uniform In Texture And Color. No Utility Mulch Or Processed Tree Trimmings Will Be Permitted.
4. All Planting Beds Shall Have A 2" To 3" Thick Layer Of Shredded Hardwood Bark Mulch. No Utility Mulch Or Processed Mulch Or Processed Tree Trimmings Will Be Allowed. All Planting Beds Shall Have Pre-Emergent Herbicide Applied As Per Manufacturer's Recommendation.
5. Final Placement Of Plant Materials, Etc. Shall Be Approved By The Engineer Before Planting Operations Are To Proceed. All Tree Locations Shall Be Marked With A Wooden Stake Indicating Variety And Size Of Tree.
6. No Substitutions Of Plant Material Will Be Allowed If Plants Are Shown To Be Unavailable. The Contractor Shall Notify The Engineer Prior To Bid Date In Writing. All Plants Shall Be Inspected And Tagged With Project Identification At Nursery Or Contractor's Staging Area Prior To Moving To Location Of Placement. Plants May Also Be Inspected And Approved Or Rejected On Job Site.
7. All Plants Are To Meet Or Exceed American Standards For Nursery Stock, 1986 Edition, As Set Forth By The American Association Of Nurserymen.
8. Plants And All Other Materials To Be Stored On Site Will Be Placed Where They Will Not Conflict With Construction And As Directed By Owner.
9. All New Landscape Plantings Shall Be Guaranteed For A Period Of One Year Following Final Inspection By Landscape Architect At End Of This Period. Plant Material Deemed Dead Or Unsatisfactory By Engineer Or His Designee Shall Be Replaced At No Additional Cost By Contractor.
10. All Disturbed Lawn Areas Shall Be Hydroseeded As Noted On Erosion Control Plan Or Construction Detail Sheets.
11. All Materials Used Shall Conform With The City Of Noblesville's Approved List For Landscape Plantings In Public Right-Of-Way.
12. All Plantings Shall Be Subject To Replacement For A Period Of One Year After Installation And Acceptance. The Contractor Will Be Required To Replace Plantings That Die During This Period At Contractor's Expense.

SEEDING NOTES

1. The Area To Be Seeded Shall Be Made Smooth And Uniform And Shall Be In Accordance With The Finished Grade And Cross Section Shown On The Plans Or As Otherwise Designated.
2. The Seed Bed, If Not Loose, Shall Be Loosened To A Depth Of Three (3) Inches.
3. Topsoil Shall Be Spread To Sufficient Depth To Produce The Thickness Specified After It Has Been Compacted Lightly.
4. Unless Otherwise Specified Seed Used Shall Be INDOT Standard Seed Mixture Grass Type 2: This Seed Mixture Shall Be Placed At The Rate Of 110 lb/acre (124 kg/ha). The Mixture Shall Consist Of 15 lb (7 kg) Of Smooth Bromegrass, 10 lb (4.5 kg) Of Orchardgrass, 40 lb (18 kg) Of Certified Common Kentucky Bluegrass, 30 lb (14 kg) Of Creeping Red Fescue, And 15 lb (7 kg) Of Perennial Rye Grass.
5. Contractor Shall Place A Warranty Bond For All Permanent Seeding Done Between October 16 And January 31. All Seeding Which Has Significantly Failed To Attain 20% Germination Shall Be Replaced With No Additional Payment.
6. Seeding Without Mulch Shall Not Be Done Between May 1 And August 15.

REVISIONS		
Rev. No.	Description	Date
1	New Sheet; Add Planing/Landscaping Details & Notes	12/1/2006

Professional Engineer Seal for John M. Beery, No. PE19500331, State of Indiana, dated 3/14/12.

CITY OF NOBLESVILLE  
Landscape Planting And Seeding  
Details And General Notes  
SHEET 13 OF 13

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