

NOBLESVILLE, INDIANA

CITY STANDARDS

NOBLESVILLE COMMON COUNCIL

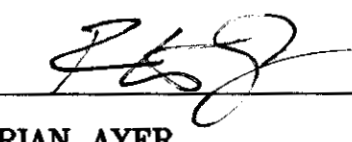

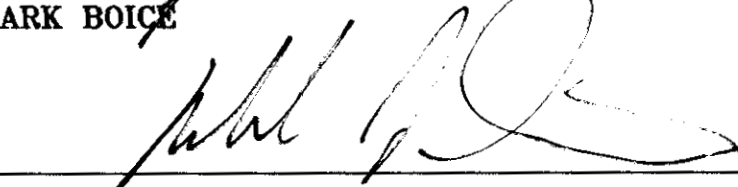
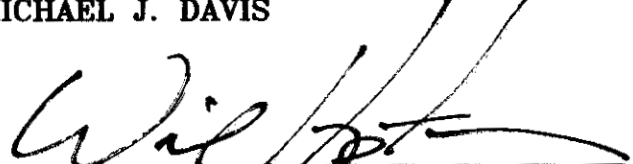
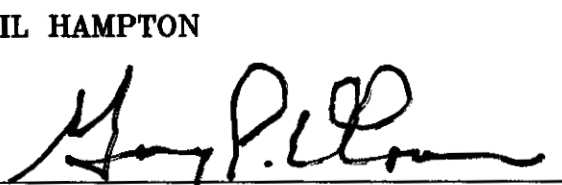
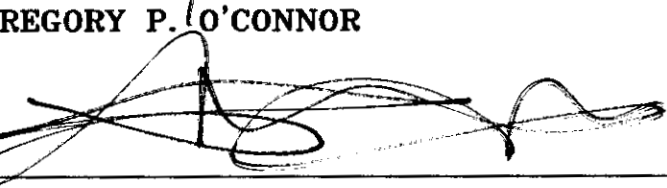
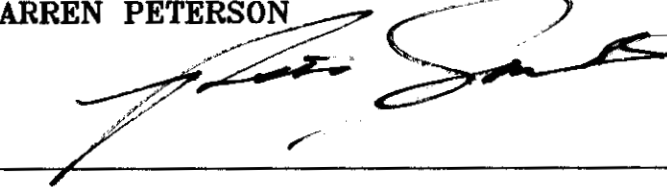
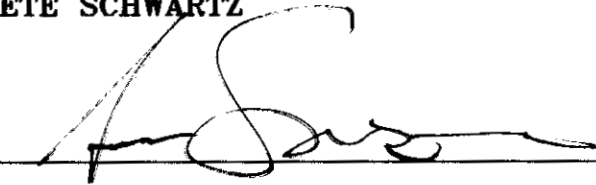
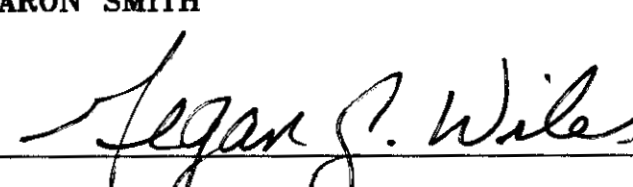
	
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AARON SMITH	MEMBER
	
MEGAN G. WILES	MEMBER

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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 sets 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. Details 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.
3. Individual Noblesville Standards that do not apply shall be crossed-out by the design engineer through the placement of a single large 'X' over the detail. Minor reference notations may be placed adjacent to individual standard titles for coordination. However, the Standards themselves shall not be modified in any way.
4. 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:
 - 4.1. Noblesville Standards
 - 4.2. Unified Development Ordinance
 - 4.3. Noblesville Stormwater Technical Standards
 - 4.4. Noblesville Roundabout Standards
 - 4.5. Noblesville Traffic Calming Standards
 - 4.6. Noblesville Arboriculture Specifications Manual and Street Tree Ordinance
 - 4.7. Noblesville Standards: Pervious Concrete Pavement Design Requirements
 - 4.8. Noblesville Plastic Pipe Guidelines
 - 4.9. Noblesville Force Main Standards
 - 4.10. INDOT Standards and Specifications / Indiana Design Manual / Indiana Manual on Uniform Traffic Control Devices / INDOT Work Zone Safety Manual
 - 4.11. "Ten State Standards" prepared by Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers and Sanitary Engineers
 - 4.12. ASTM and/or AWWA Standards and Specifications
 - 4.13. Project's Written Specifications
 - 4.14. Project's Plans
5. 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.
6. 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. All requests for deviations 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 PROJECT AND CITY STANDARDS 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 pre-construction 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 2021, 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 datum. 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. Electronic drawings submittal for both construction drawings and as-builts 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 by the Noblesville Department of Engineering.
6. As-built record drawings, prepared by outside sources, shall be accompanied with a detailed inventory of all fixed assets. Electronic as-built drawings in ACAD & PDF formats shall be submitted to the Noblesville Department of Engineering and shall comply with the City's GIS Coordinator's guidelines. A certified letter of attestation shall accompany the drawings. The letter of attestation shall be certified by a registered Land Surveyor. As-builts are required for sanitary sewer system, storm sewer system, BMP's, ditches/swales, roadways, trails, sidewalks, final site grading, controller cabinets, conduits, lights, signs, and all other infrastructure within Public Rights-of-Way and/or easements.
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 Work Zone Safety Manual, required on public ways near the project.
8. Geotech report and traffic impact studies may be required. Coordinate with Department of Engineering.
9. Any deviation from these Standards requires a design exception letter.
10. All sites shall have an accessible route from the building to the R/W, following the shortest route possible, and following PROWAG guidelines while within public R/W and ADA Guidelines while in private development.

NOBLESVILLE MAYOR

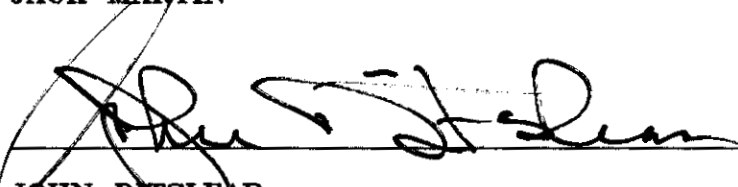


CHRIS JENSEN **MAYOR**

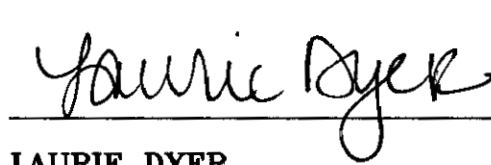
BOARD OF PUBLIC WORKS AND SAFETY



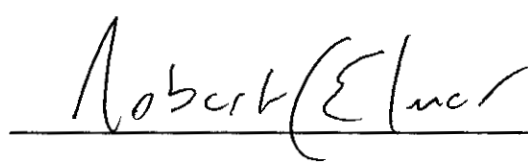
JACK MARTIN **PRESIDENT**



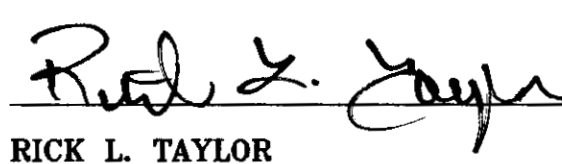
JOHN DITSLER **MEMBER**



LAURIE DYER **MEMBER**



ROBERT J. ELMER **MEMBER**



RICK L. TAYLOR **MEMBER**

NOBLESVILLE CLERK-TREASURER



EVELYN L. LEES **CLERK**

NOBLESVILLE CITY ATTORNEY

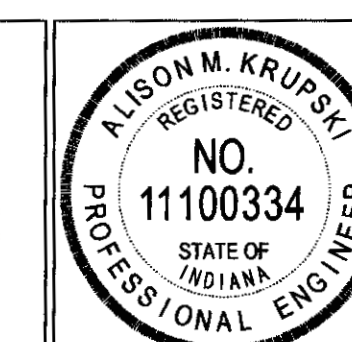
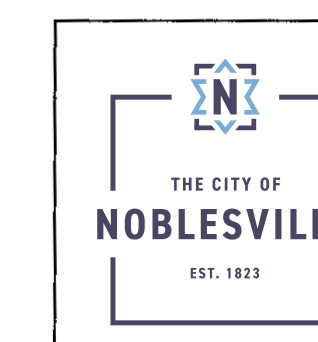


LINDSEY BENNETT **CITY ATTORNEY**

NOBLESVILLE PLANNING COMMISSION



GRETCHEN A. HANES **PRESIDENT**



CITY OF NOBLESVILLE

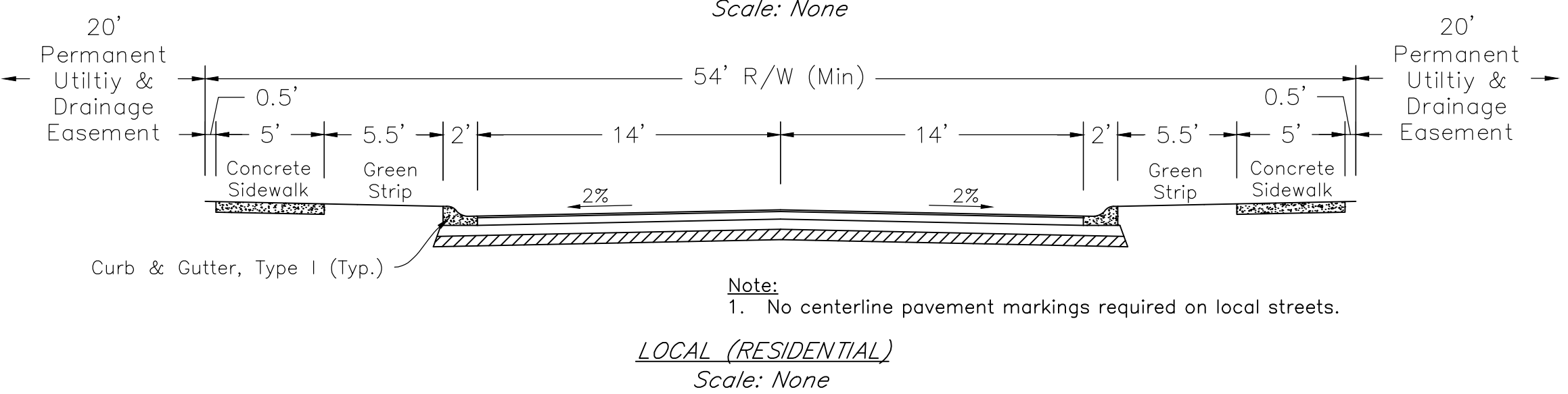
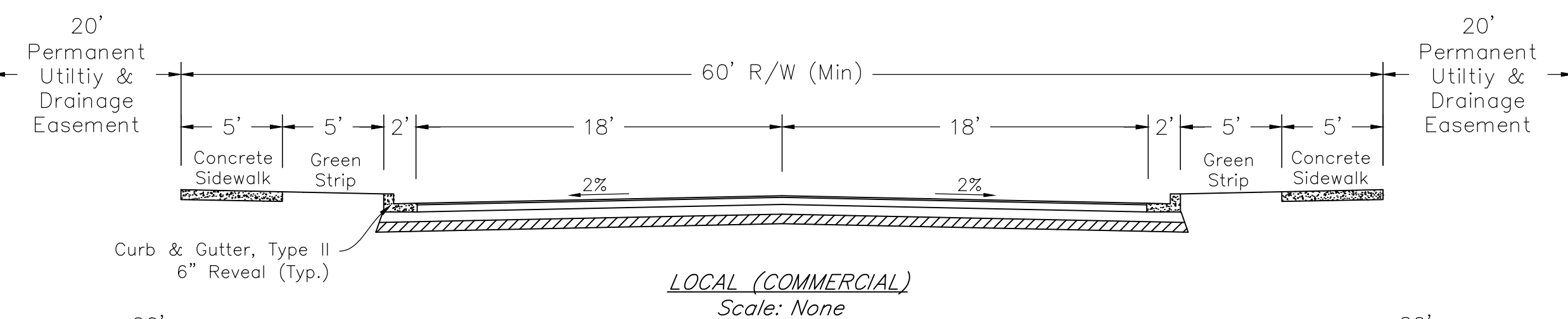
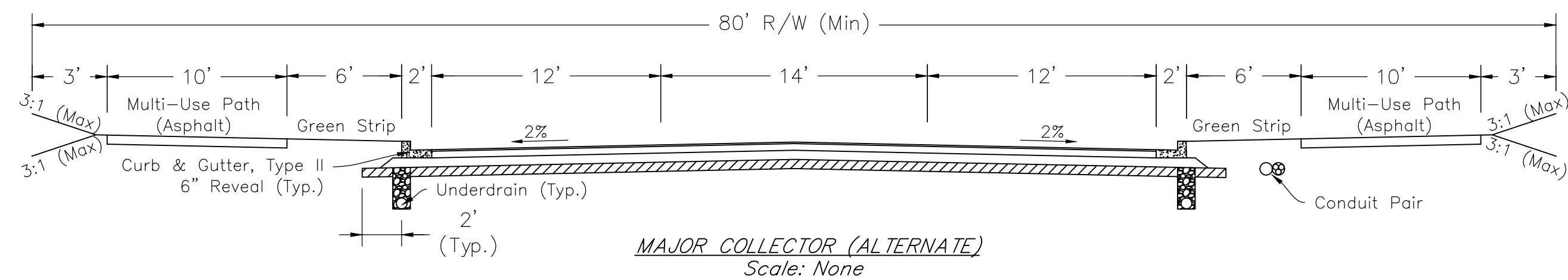
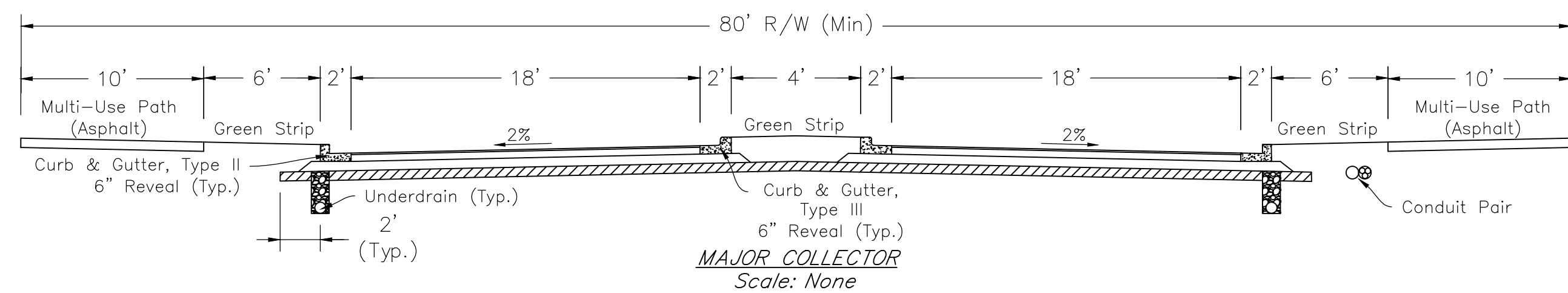
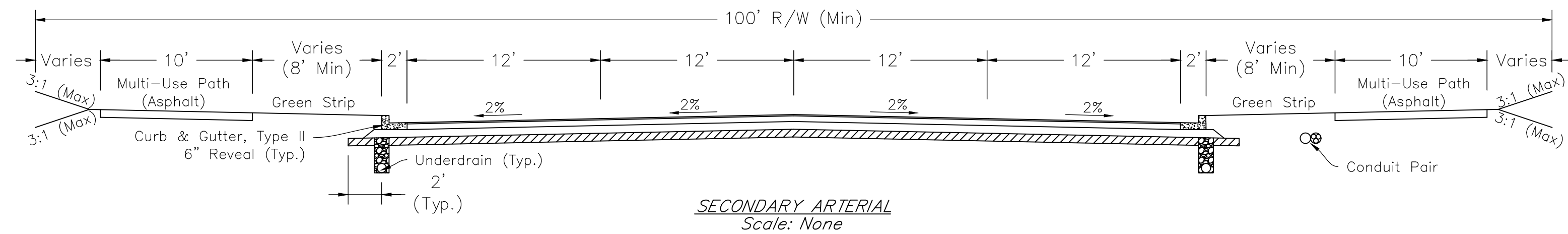
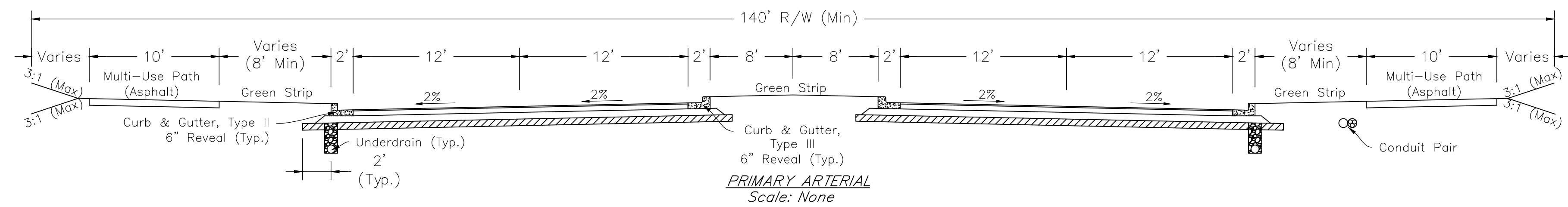
Directions for Use and General Notes

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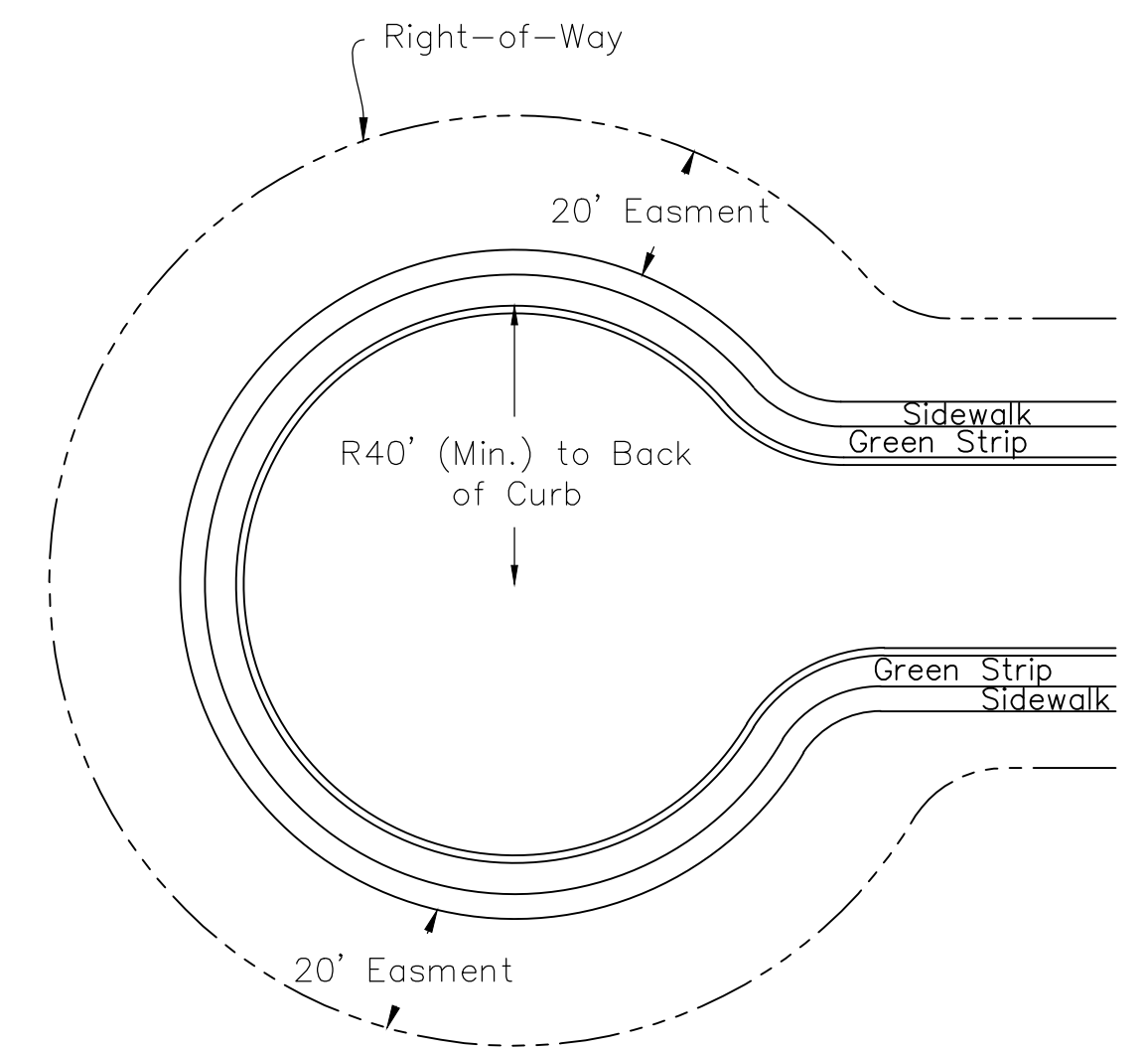
Alison M. Krupski 7/5/2021

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. The contractor shall review the plat and the plans to confirm the various widths indicated on this sheet and shall report any discrepancy to the 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 5 feet, whichever is greater.
- Standard pavement markings shall be placed 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 multi-component.
- 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. Contact Fire Marshall and City Engineer for placement location of blue RPMs on roadways with more than two-lanes.
- Curb reveals 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.
- 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 sub-base 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 existing culverts and bridge structures within the limits of the development.
 - Developer shall only be responsible for improving existing thoroughfare roadways, between the limits of the development. See Widening Without Curb and Gutter detail, Sheet 3.
 - Roadside and drainage improvements shall be included with the pavement widening, such as re-grading 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.
 - Developer shall provide intersection sight distance study for all entrances on roadways shown on the Noblesville Thoroughfare Plan or as required by City Engineer.
 - Contractor to clear Right-of-Way as necessary to achieve line of sight requirements within five days of start of construction.
- Material tickets shall be provided to the Noblesville Department of Engineering within seven 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, landscaping, irrigation system, and/or pet containment systems. All work and/or improvements in the Right-of-Way requires written approval by the City, typically, a Right-of-Way encroachment permit.
- Any guardrail required for thoroughfare roads shall conform to INDOT Standard Drawings and Specifications. Any guardrail required for local roads shall be steel-backed timber guardrail, see Sheets 20 - 24.

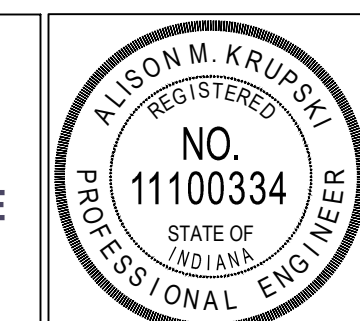
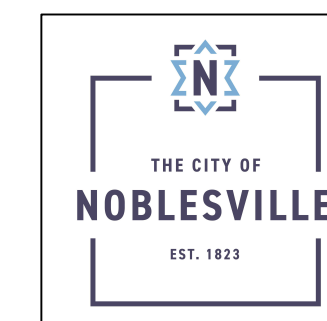


Note:
1. No centerline pavement markings required on local streets.



Note:
1. Cul-De-Sacs shall be a maximum of 600 feet in length.

CUL-DE-SAC
Scale: None



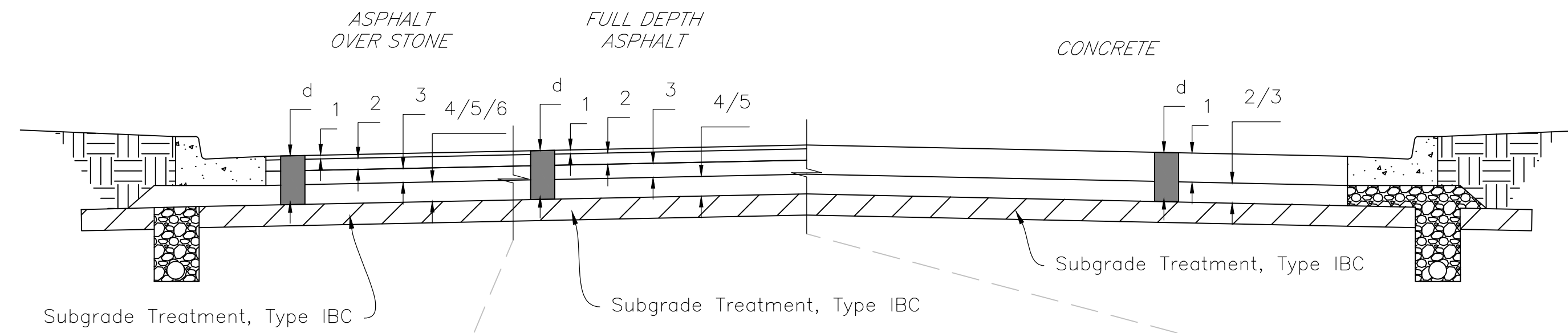
CITY OF NOBLESVILLE
Typical Sections, Right-of-Way, & General Notes

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Alison M. Krupski 7/18/2021

GENERAL NOTES

- Asphalt pavement shall be in accordance with the most current INDOT Standard Specifications Section 401. For all local (non-Federal Aid) projects, all HMA acceptance and testing requirements shall be in accordance with Section 402. Patching and Widening shall be in accordance with Section 304.
- PCCP pavement shall be in accordance with the most current INDOT Standard Specifications Section 502.
- The Arterial pavement section thickness shown are minimums. 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.
- Compacted Aggregate shall be in accordance with the most current INDOT Standard Specifications Section 301. 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 acceptance of maintenance surety. One in-place density test shall be completed for each lift for every 400 linear feet per traffic lane.
- Subgrade Treatment for all roadway sections shall be Type IBC in accordance with the most current INDOT Standard Specifications, Section 207. The mix design and construction procedure shall be submitted to the Noblesville Department of Engineering for approval. Upon completion and prior to placement of underdrains, the subgrade shall be proof rolled in accordance with INDOT Standard Specifications Section 203.26 and shall be inspected by the Noblesville Department of Engineering. Areas in which failures occur during proof roll tests shall be marked in the field by the Noblesville Engineering Department and shall be corrected and retested until passing the City inspection
- Wherever concrete pavement is to be used, the contractor shall submit a detailed paving plan to the Noblesville Department of Engineering. The paving plan shall include a joint layout indicating location and type of joints and shall meet the requirements of the most recent INDOT Standard Drawings and Specifications.
- For cold-weather concrete placement, the contractor shall comply with provisions of ACI 306R for protection from physical damage or reduced strength. For hot weather concrete placement, the contractor shall comply with provisions of ACI 305R for protection from physical damage or reduced strength 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 placing the asphalt intermediate course.
- Temporary asphalt pavement (hot or cold mix) shall be placed and compacted at the milled joints to smooth the transition between the surfaces. Milling operations and milled pavement areas are considered construction zones and shall be signed accordingly. Milled surfaces shall be covered within 14 calendar days of start of pavement milling operations.
- Alternate paving material requests shall be made to the Noblesville Department of Engineering.



d= 12.5"

- 1.5" - 165#/SYD. QC/QA-HMA, 2, 64, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 2, 64, Intermediate, 19.0 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 2, 64, Base, 25.0 mm on
- 6" - Compacted Aggregate, No. 53

LOCAL (RESIDENTIAL)

d= 16"

- 1.5" - 165#/SYD. QC/QA-HMA, 3, 70, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 3, 64, Intermediate, 19.0 mm on
- 4" - 440#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on
- 2" - 200#/SYD. QC/QA-HMA, 3, 76, Intermediate, OG 19.0 mm on
- 6" - Compacted Aggregate, No. 53

COLLECTOR

d= 19"

- 1.5" - 165#/SYD. QC/QA-HMA, 3, 70, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 3, 64, Intermediate, 19.0 mm on
- 4" - 440#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on
- 2" - 200#/SYD. QC/QA-HMA, 3, 76, Intermediate, OG 19.0 mm on
- 3" - 330#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on
- 6" - Compacted Aggregate, No. 53

ARTERIAL / LOCAL (COMMERCIAL)

ASPHALT OVER STONE

Scale: None

d= 10.5"

- 1.5" - 165#/SYD. QC/QA-HMA, 2, 64, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 2, 64, Intermediate, 19.0 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 2, 64, Base, 25.0 mm on
- 4" - 440#/SYD. QC/QA-HMA, 2, 64, Base, 25.0 mm on

LOCAL (RESIDENTIAL)

d= 13"

- 1.5" - 165#/SYD. QC/QA-HMA, 3, 70, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 3, 64, Intermediate, 19.0 mm on
- 4" - 440#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on
- 2" - 200#/SYD. QC/QA-HMA, 3, 76, Intermediate, OG 19.0 mm on
- 3" - 330#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on

COLLECTOR

d= 16"

- 1.5" - 165#/SYD. QC/QA-HMA, 3, 70, Surface, 9.5 mm on
- 2.5" - 275#/SYD. QC/QA-HMA, 3, 64, Intermediate, 19.0 mm on
- 4" - 440#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on
- 2" - 200#/SYD. QC/QA-HMA, 3, 76, Intermediate, OG 19.0 mm on
- 6" - 660#/SYD. QC/QA-HMA, 3, 64, Base, 25.0 mm on

ARTERIAL / LOCAL (COMMERCIAL)

FULL DEPTH ASPHALT

Scale: None

d= 12"

- 6" - PCCP on
- 6" - Compacted Aggregate, No. 53

LOCAL (RESIDENTIAL)

d= 18"

- 9" - PCCP on
- 3" - Compacted Aggregate, No. 8 on
- 6" - Compacted Aggregate, No. 53

COLLECTOR

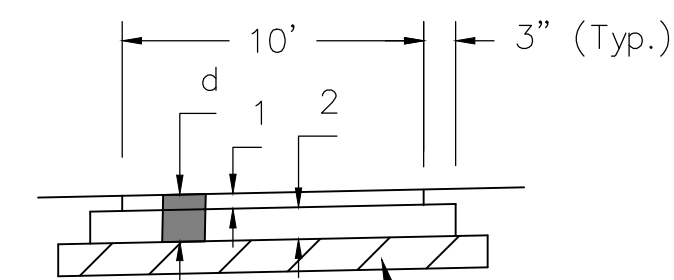
d= 19"

- 10" - PCCP on
- 3" - Compacted Aggregate, No. 8 on
- 6" - Compacted Aggregate, No. 53

ARTERIAL / LOCAL (COMMERCIAL)

CONCRETE

Scale: None



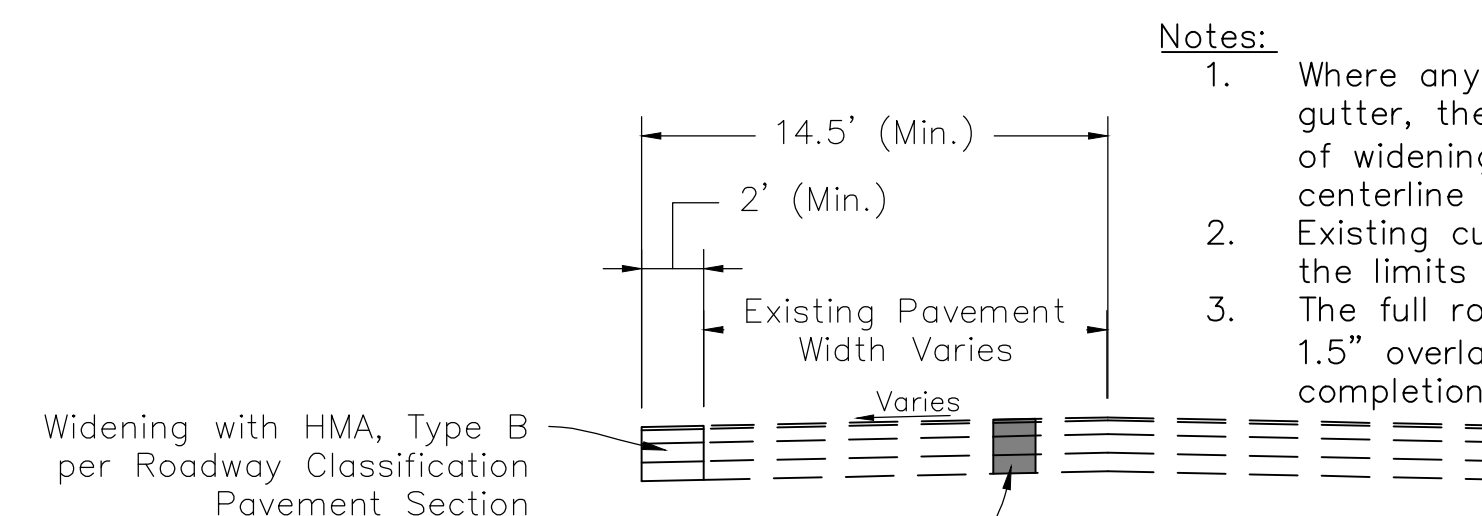
Subgrade Treatment, Type III

d= 9"

- 3" - HMA for Sidewalk, Type B (Placed in One Lift) 330#/SYD. HMA Surface, Type B, 9.5mm on
- 6" - Compacted Aggregate, No. 53

MULTI-USE PATH

Scale: None



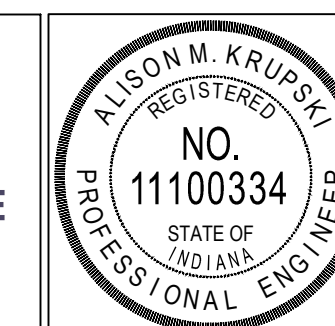
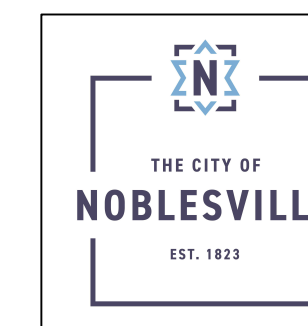
If Existing Pavement is Less Than 6", Pavement Shall be Overlayed with Intermediate Prior to Surface to Achieve 6" Minimum Depth.

WIDENING WITHOUT CURB AND GUTTER

Scale: None

Notes:

- Where any pavement improvement is to occur without curb and gutter, the existing roadway shall be widened with minimum 2 ft of widening, or as necessary, to achieve 14.5 ft (Min.) from centerline to edge of pavement.
- Existing culverts and bridge structures shall be widened within the limits of the pavement improvements.
- The full roadway width within the project limits shall receive a 1.5" overlay of HMA Surface according to its classification after completion of the required widening.



CITY OF NOBLESVILLE

Pavement Details and Notes

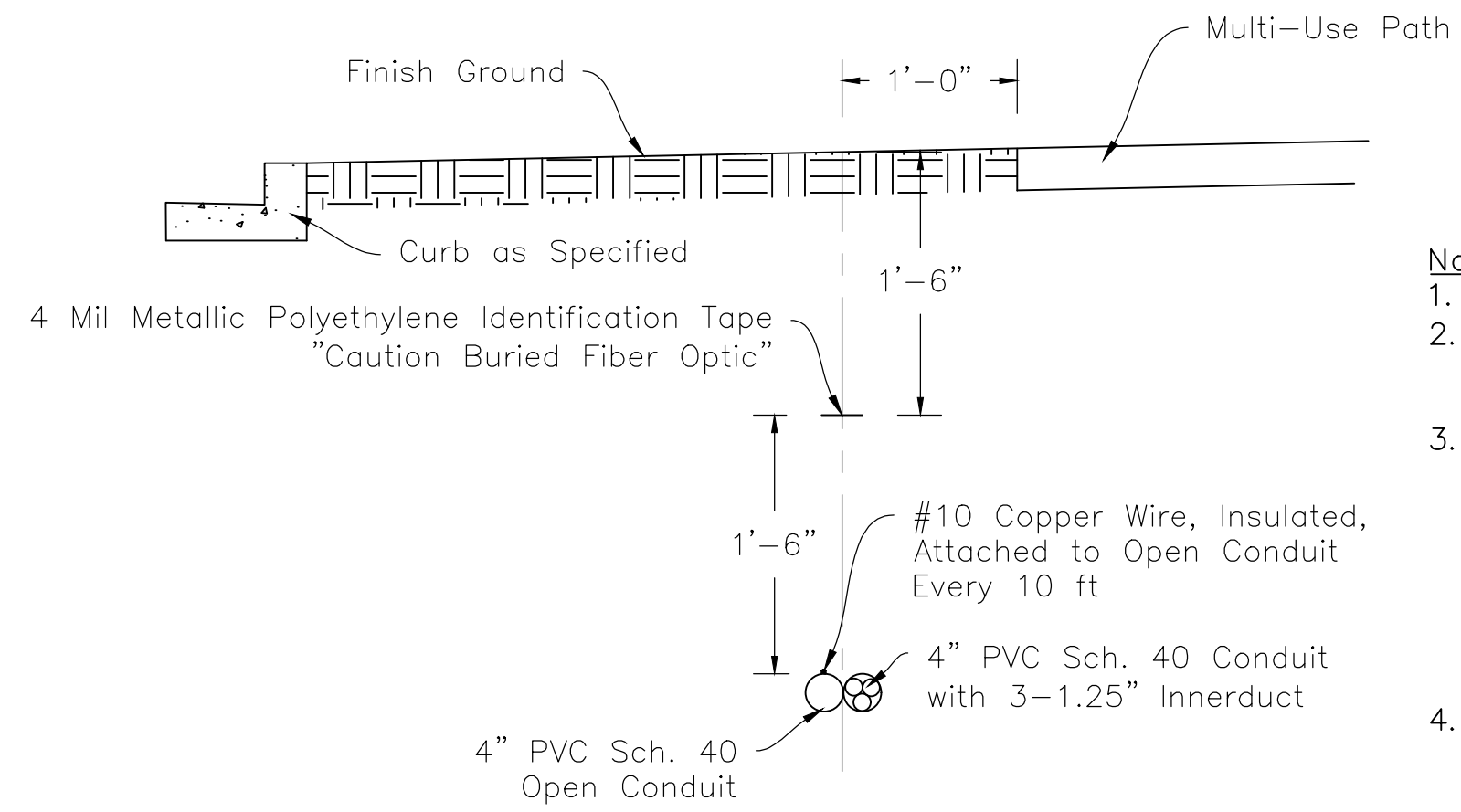
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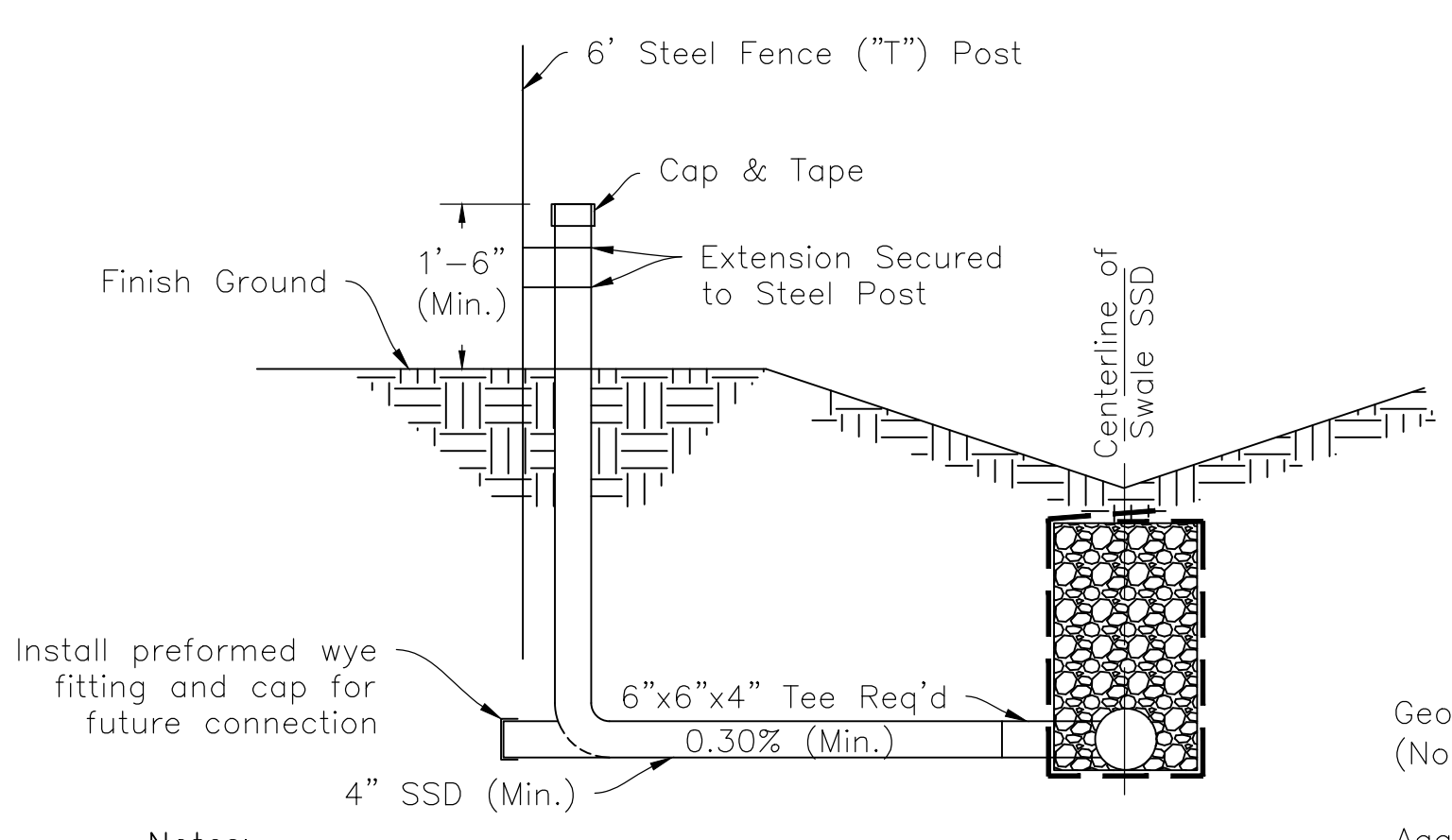
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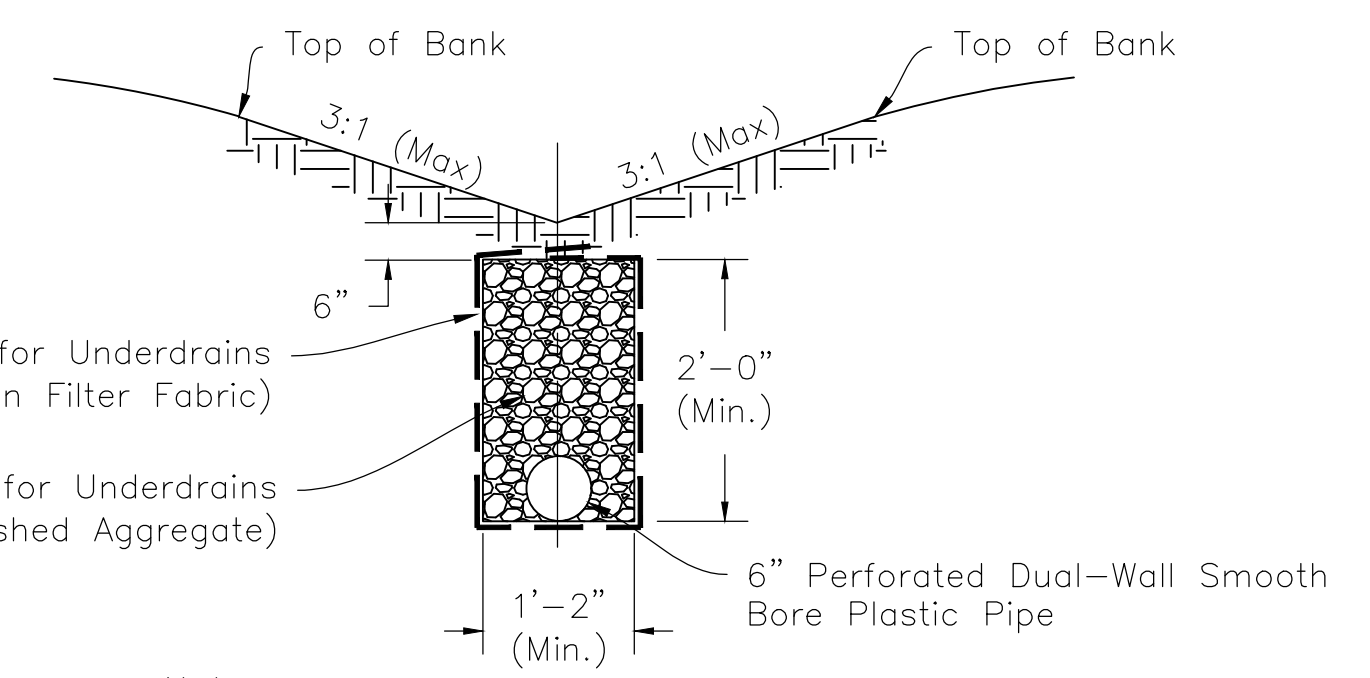
- Notes:**
1. Pull strings are required for future use.
 2. The interior 1.25" Innerduct conduit shall be delineated with three contrasting colors.
 3. Handholes shall be placed at location designated by City Engineer, but no greater than 400 feet apart. Handholes shall be Quazite part no. PG1730BA24, Channell Bulk 4 Series, per INDOT signal handhole detail E-805-SGCF-04, or approved equal. Fiberglass handholes shall conform to tier 15 load rating.
 4. Developer shall submit shop drawings of innerduct and handhole for review and approval.

CONDUIT PAIR DETAIL
Scale: None



- Notes:**
1. Down spouts from roof guttering is not permitted to discharge into the shown subsurface drain.
 2. The temporary extension, above ground, shall be removed upon connection to house.
 3. 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.

SSD LATERAL TO SWALE SSD



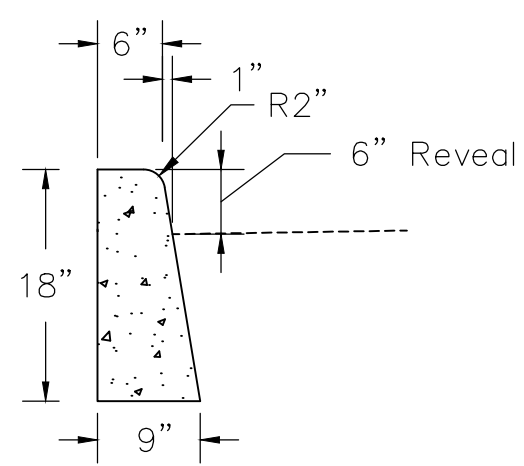
- Notes:**
1. All drainage swales shall contain underdrain, which shall be video inspected and a copy of video inspection shall be provided to the Noblesville Department of Engineering.

SWALE SSD

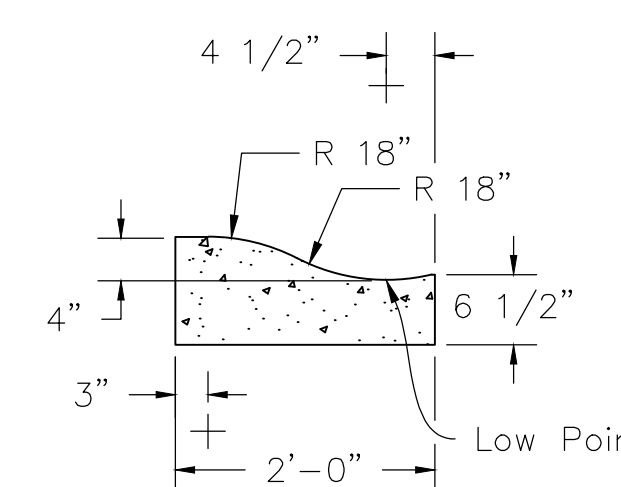
SWALE SSD DETAILS
Scale: None

GENERAL CURBING NOTES

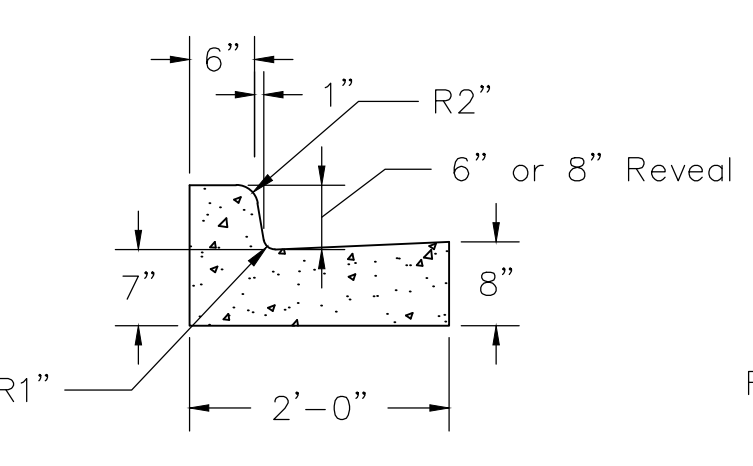
1. Curbing shall be in accordance with the most current INDOT Standard Specifications Section 605.
3. No backfilling or compaction may occur 12 ft from curb within five days of pouring.
4. Dampen subgrade before pouring concrete.
5. Control joints shall be saw cut every five feet (Max.) along radii otherwise every 10 feet (Max.). Preformed expansion joints shall be placed every 50 feet (Max.).
6. Contraction joints shall be saw cut in continuously poured curbs to a minimum depth of 2".



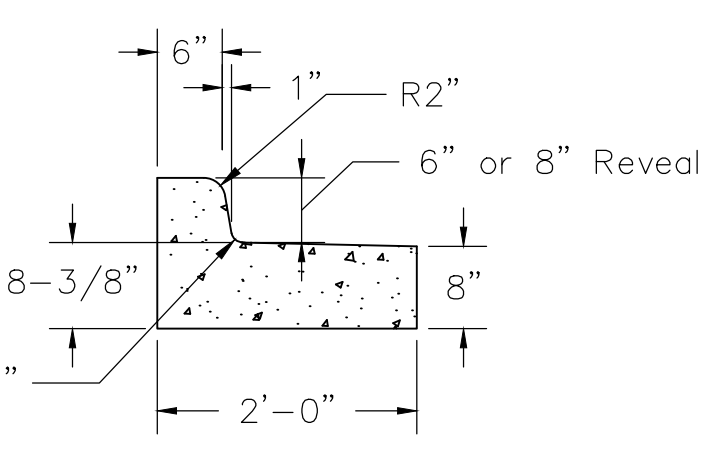
18" BOX CURB
Scale: None



TYPE I (Roll Curb)

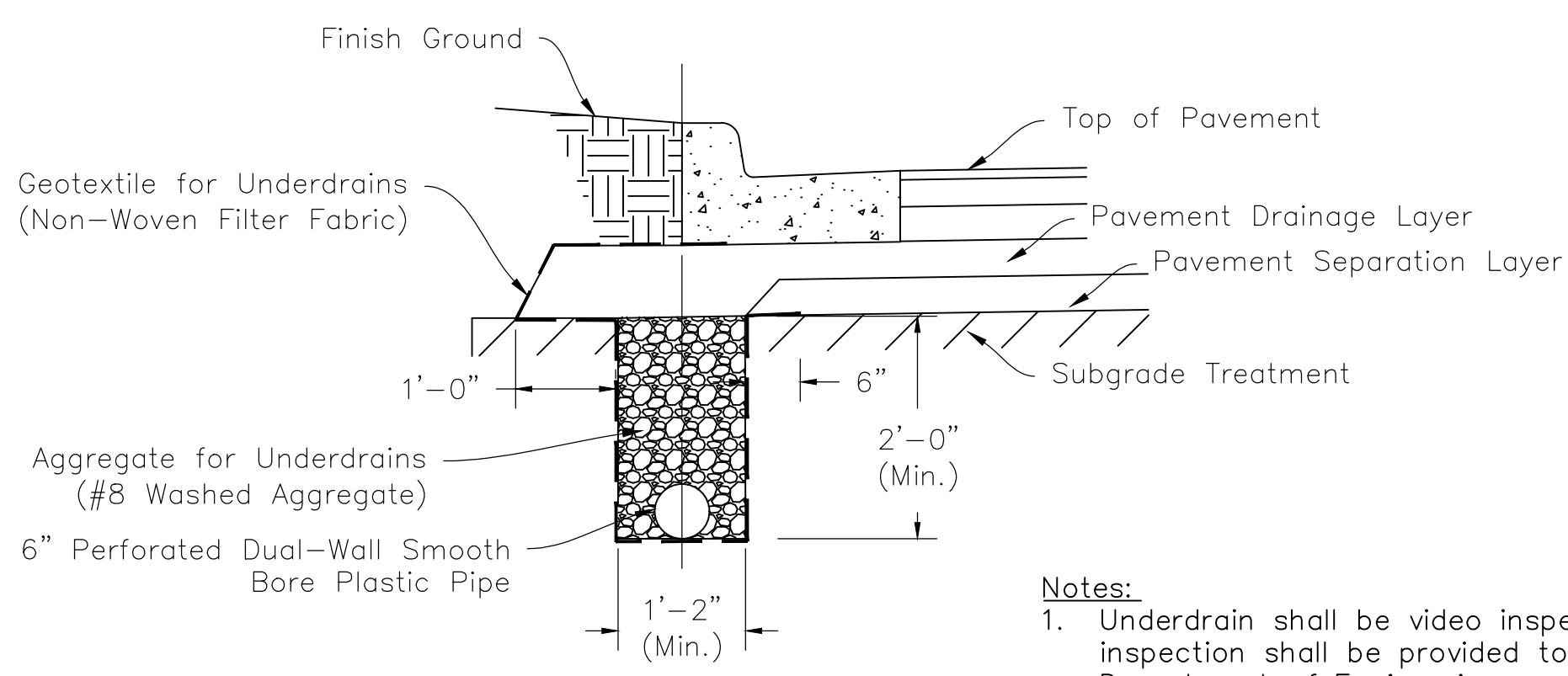


TYPE II

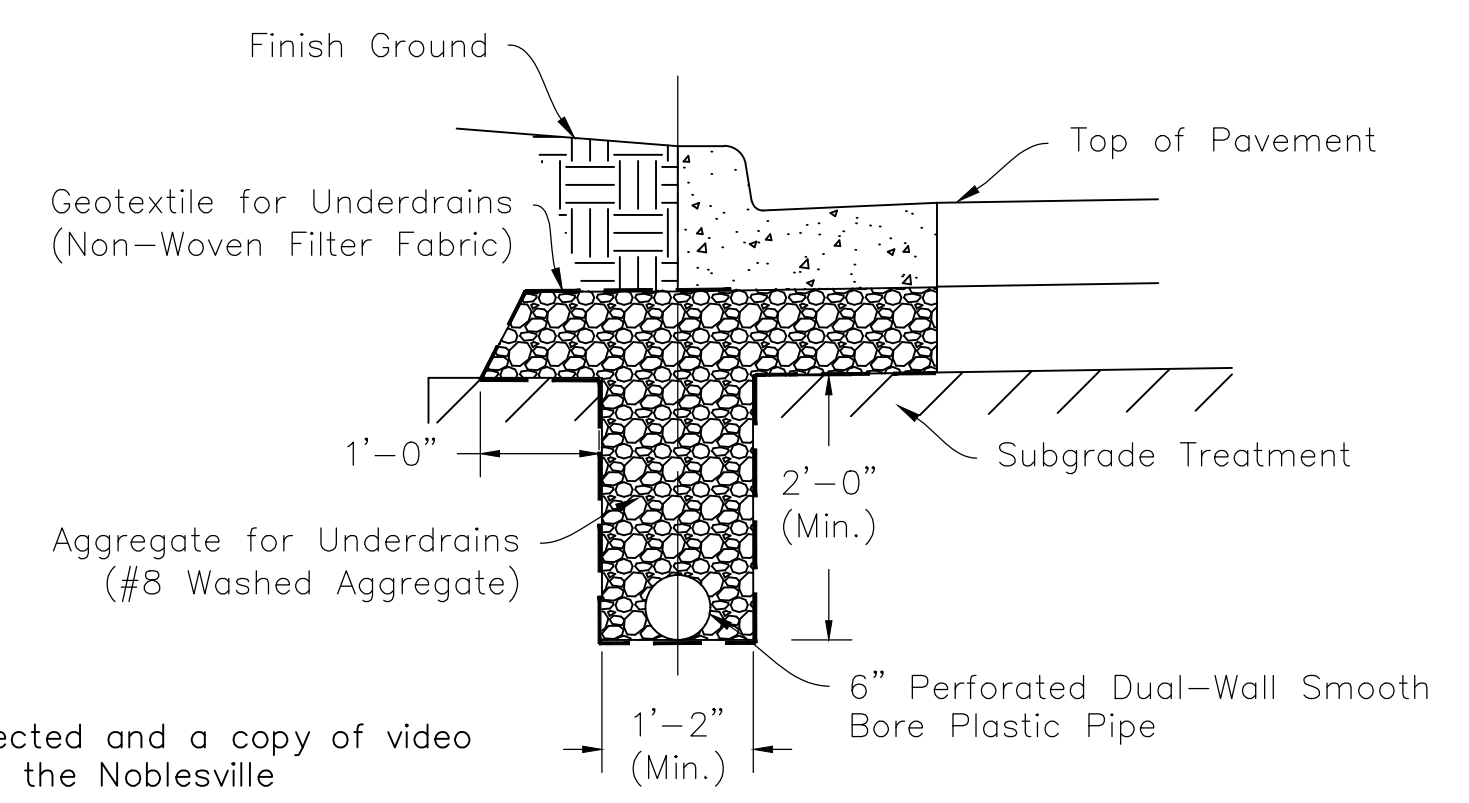


TYPE III (Dry Curb)

2' COMBINED CONCRETE CURB & GUTTER DETAILS
Scale: None



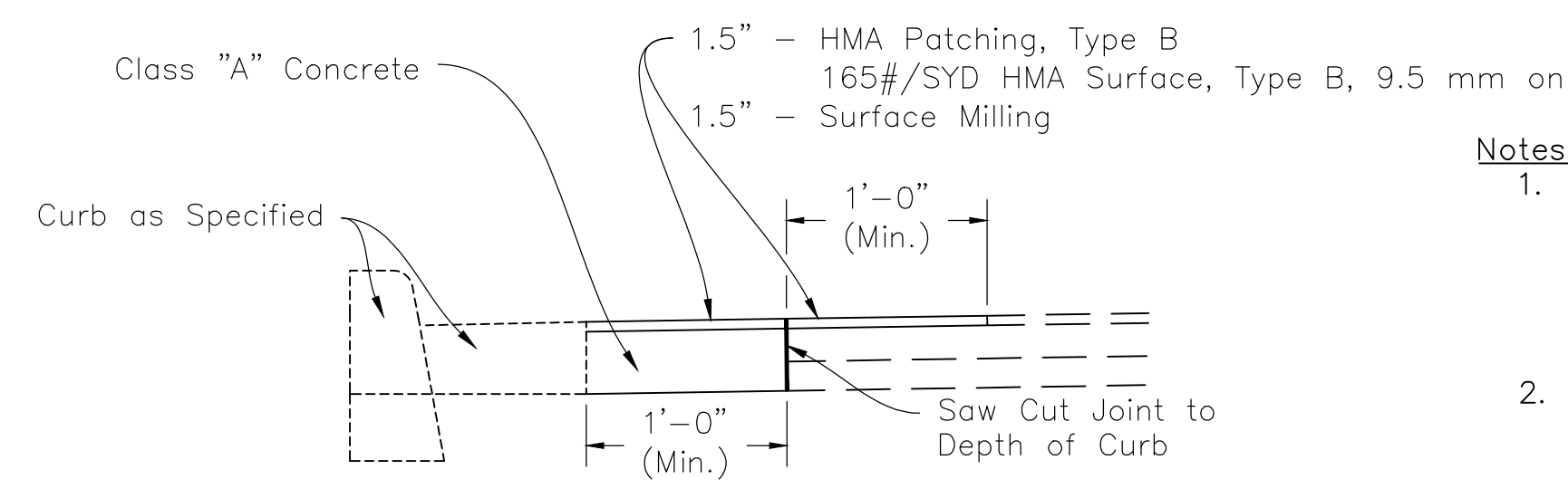
UNDERDRAIN (ASPHALT)



UNDERDRAIN (CONCRETE)

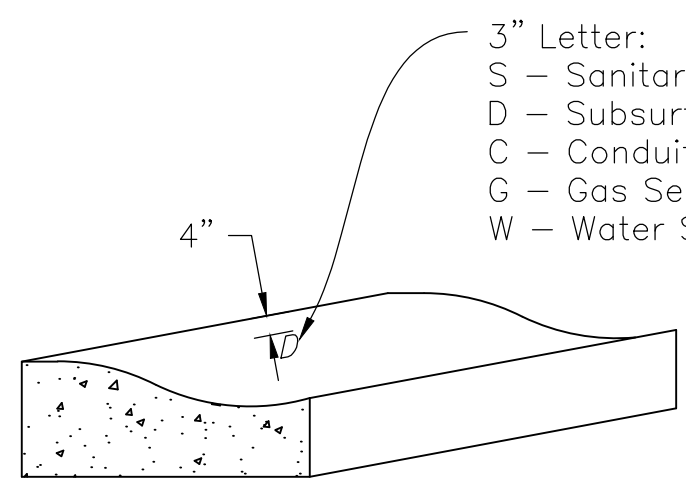
ROADWAY UNDERDRAIN DETAILS
Scale: None

- Notes:**
1. Underdrain shall be video inspected and a copy of video inspection shall be provided to the Noblesville Department of Engineering.



NEW CURB ADJACENT TO EXISTING ASPHALT PAVEMENT
Scale: None

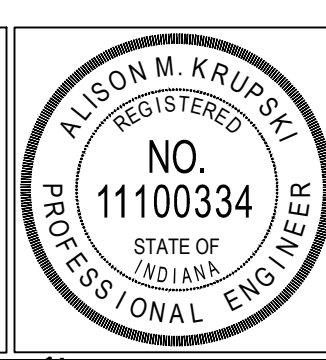
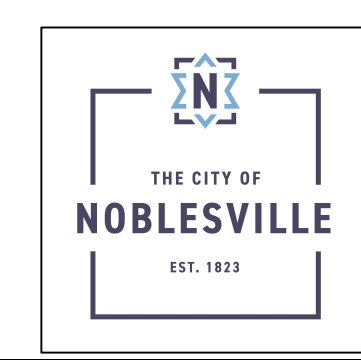
- Notes:**
1. Saw cuts shall provide a vertical, neat, and uniform edge. Pavement shall be clean of debris and loose asphalt before installing curb.
 2. Existing underdrain, filter fabric, and stone drainage envelope shall be preserved.



CURB STAMP DETAIL
Scale: None

- 3" Letter:
S - Sanitary Sewer Lateral
D - Subsurface Drain
C - Conduit
G - Gas Service
W - Water Service

- Notes:**
1. Curb shall be stamped at all locations where any of the above pass under a curb.
 2. Letter shall be stamped prior to concrete setting up, whenever possible.
 3. Stamp shall be 1/2" deep.



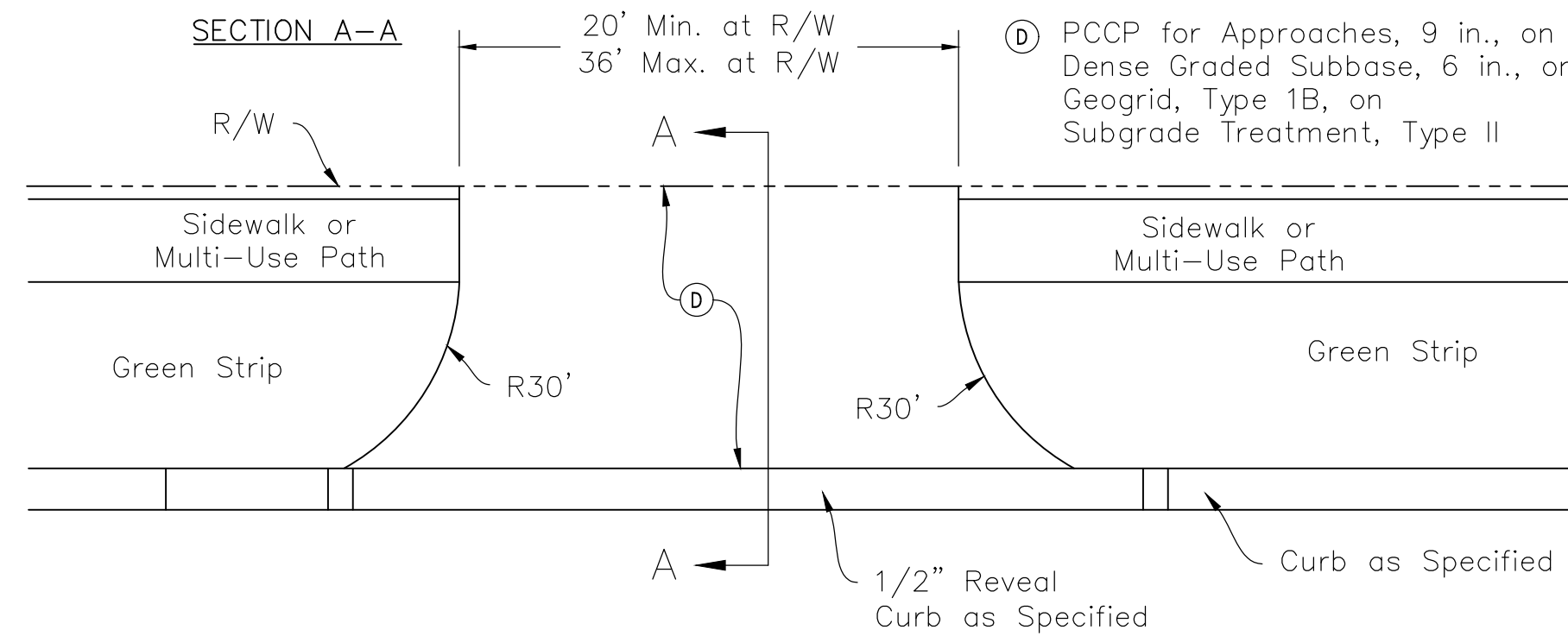
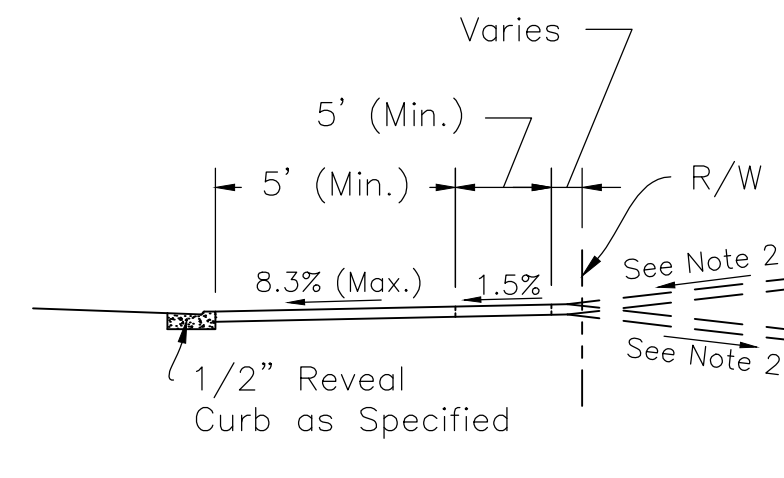
CITY OF NOBLESVILLE
Miscellaneous Roadway Details

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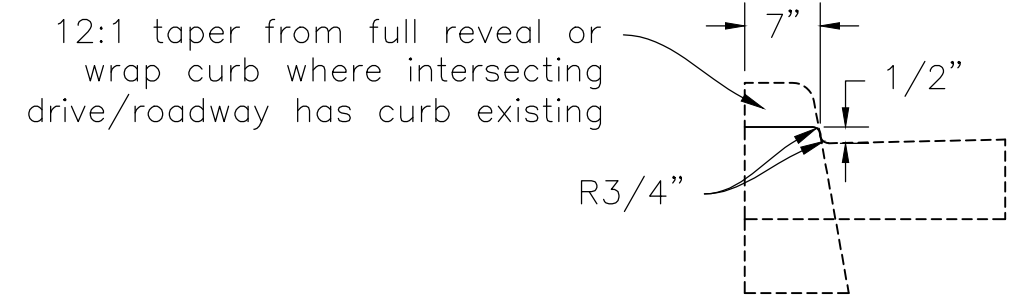
Alison M. Krupski 7/18/2021

GENERAL NOTES

1. Driveways shall be in accordance with the most current INDOT Standard Specifications Section 610.
2. The maximum algebraic difference in grades for any 10 foot interval shall not exceed 8% for crest vertical curves, and 12% for sag vertical curves for all drives. The maximum grades for any drive shall be 15% up and 14% down.
3. Control joints are required at a maximum of 10 feet each direction for all concrete drives and shall be laid out in the field by the contractor.
4. 1/2" preformed joint filler is required between drive and existing sidewalk, curb, and other concrete.
5. A drive cut permit shall be obtained from the Noblesville Department of Engineering for approval of a new residential or commercial drive, any entrance to a public Right of Way, or the relocation of an existing drive.
6. Alternate custom drives within City of Noblesville Right-of-Way may be used upon receiving expressed written permission from the City of Noblesville. Custom drives shall be the financial responsibility of the property owner. In the event that the City of Noblesville must replace a custom drive approach, the City reserves the right to install its standard drive.
7. All drives shall provide positive drainage towards the roadway. Slope between the curb and sidewalk shall be between 1% and 8.3%. Sidewalk cross slope shall be 1.5%. Slope behind the sidewalk shall be between 1% and 12%. The frontage of all lots shall drain to adjacent streets except with the prior written approval of Noblesville Planning Department.
8. A maximum residential driveway width of 30 feet at Right-of-Way line may be used if the following criteria are met:
 - 8.1. The residence has a three car garage
 - 8.2. The lot frontage is 80 feet or greater.
9. Driveways shall be poured independently of sidewalks and sidewalk transitions.
10. 45 degree tapers on commercial drive approaches are permitted in lieu of 30 ft. radii, if approved by Noblesville Department of Engineering.



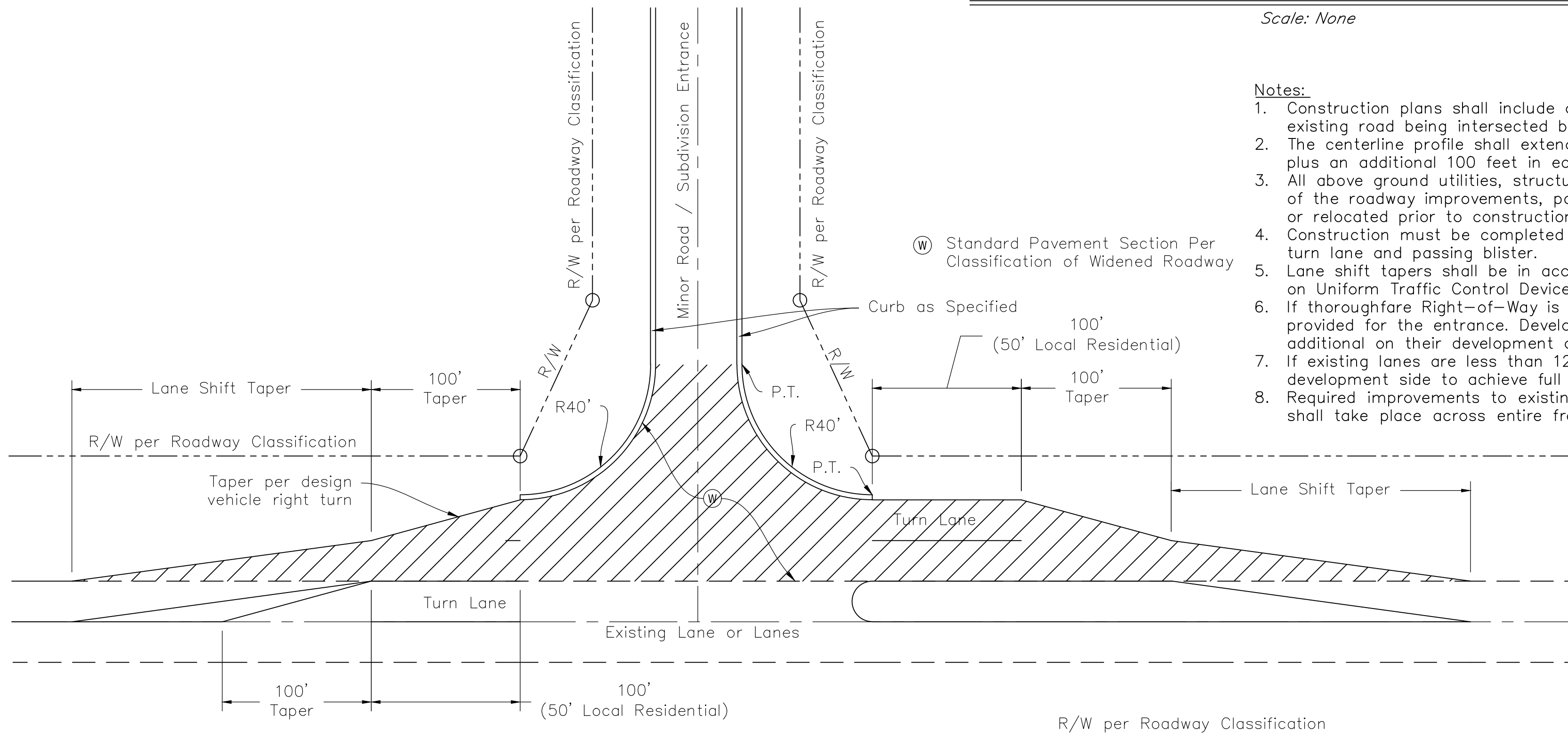
COMMERCIAL DRIVE
Scale: None



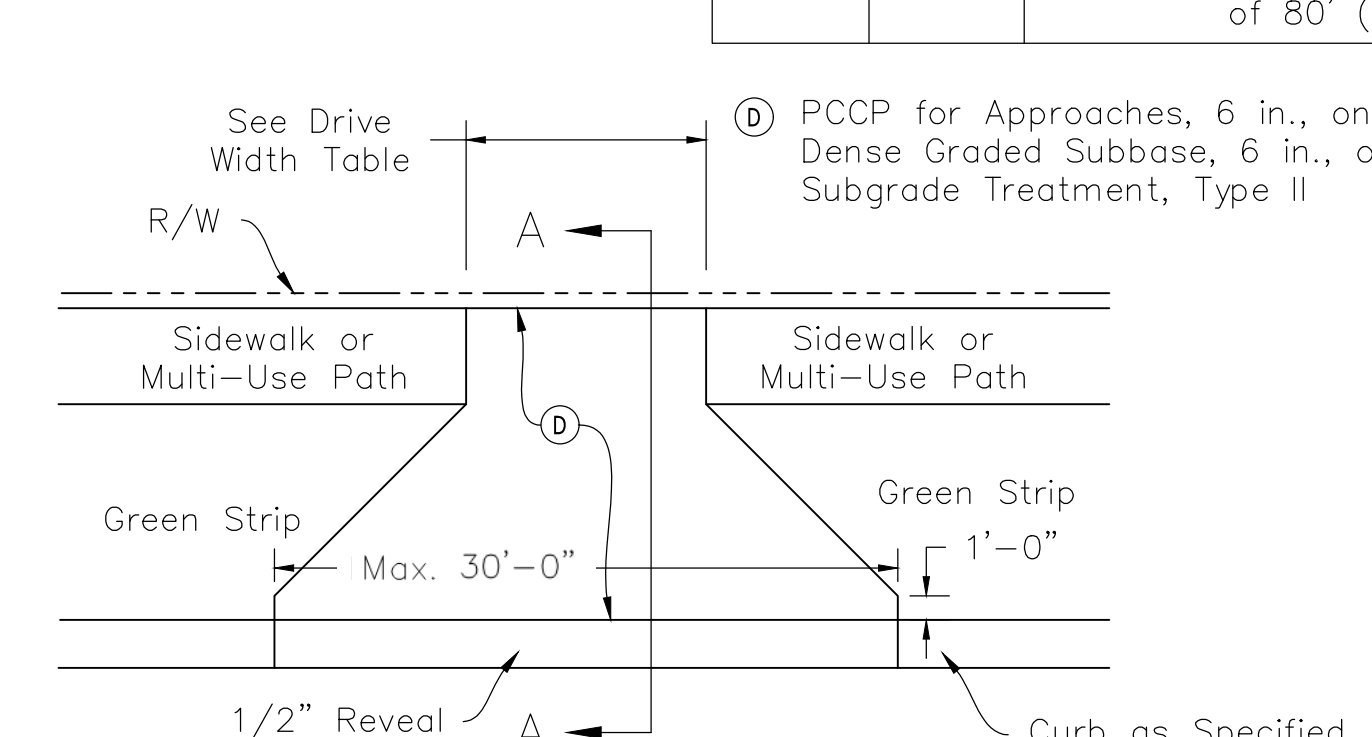
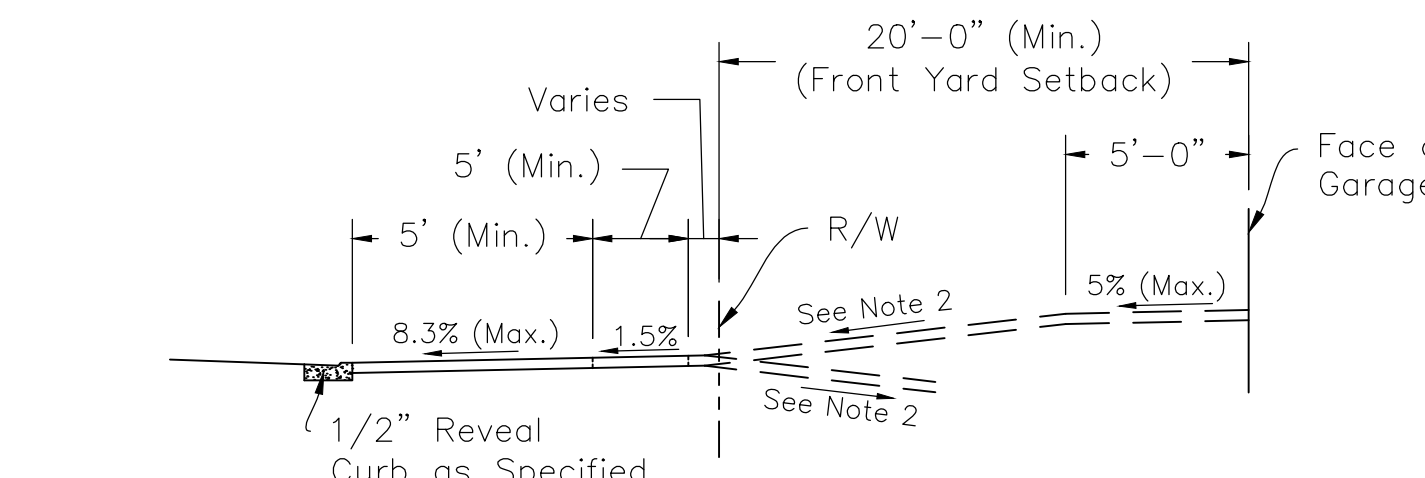
CURB REVEAL THROUGH INTERSECTION OR DRIVE APPROACH
Scale: None

Notes:

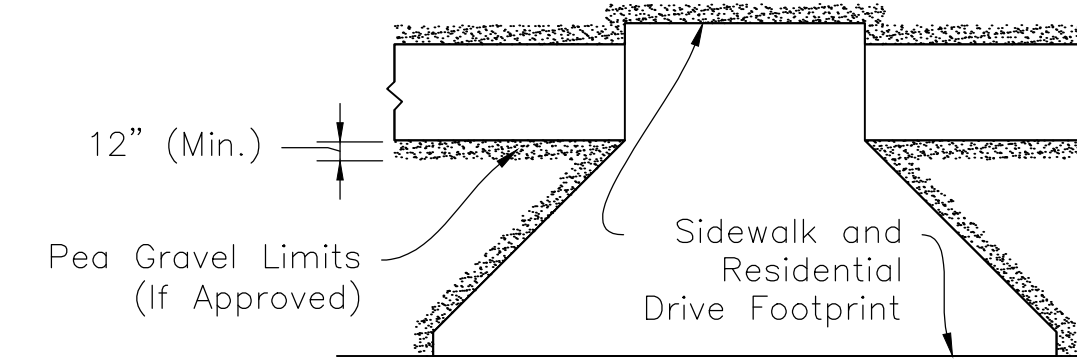
1. Construction plans shall include centerline profile and cross section of the existing road being intersected by the entrance.
2. The centerline profile shall extend the entire length of the lane improvements plus an additional 100 feet in each direction.
3. All above ground utilities, structures, plantings, or other conflicts within 12 feet of the roadway improvements, passing blister, and turn lanes shall be removed or relocated prior to construction.
4. Construction must be completed within 14 days from start of excavation for the turn lane and passing blister.
5. Lane shift tapers shall be in accordance with latest edition of the Indiana Manual on Uniform Traffic Control Devices.
6. If thoroughfare Right-of-Way is not sufficient, additional Right-of-Way shall be provided for the entrance. Developer may acquire on opposite side, or provide additional on their development controlled side.
7. If existing lanes are less than 12 feet in width, pavement shall be widened to development side to achieve full 12 foot lanes.
8. Required improvements to existing road including widening to development side shall take place across entire frontage of property.



PREFERRED SUBDIVISION ENTRANCE / TURN LANE STANDARD
Scale: None

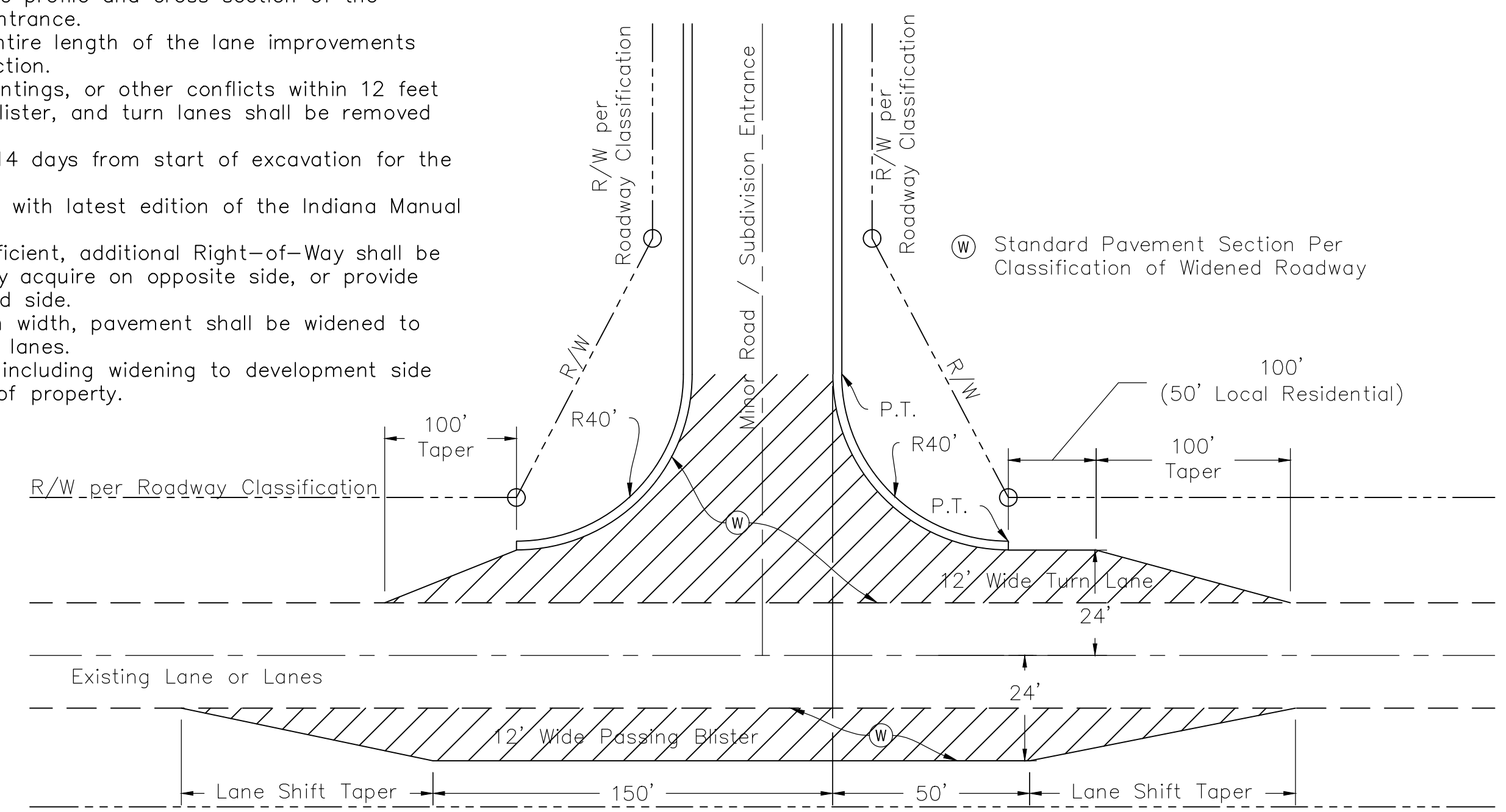


RESIDENTIAL DRIVE
Scale: None

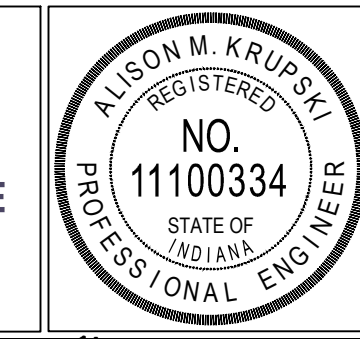
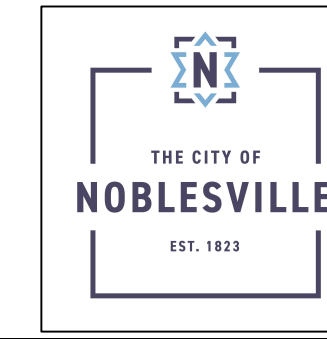


PEA GRAVEL BASE SUBSTITUTE FOR RESIDENTIAL DRIVE
Scale: None

Drive Width at R/W Line Table		
Min.	Max.	Scenario
12'-0"	24'-0"	Single-car garage or building setback 40' (min.) feet from R/W
16'-0"	24'-0"	Two- or three-car garage with lot width less than 80'
24'-0"	30'-0"	Three-car garage with a lot width of 80' (min.)



MINIMUM SUBDIVISION ENTRANCE / TURN LANE STANDARD
Scale: None



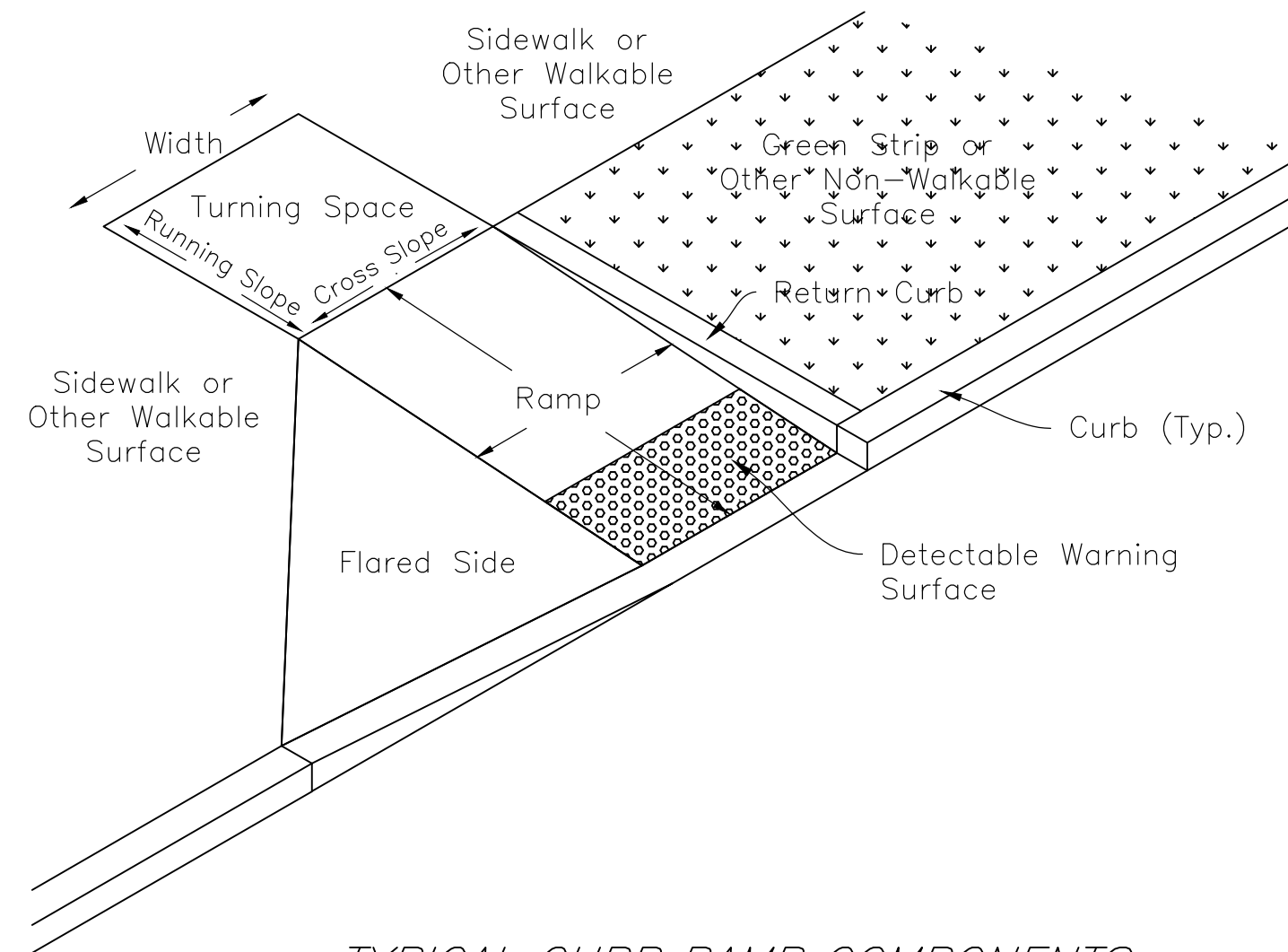
CITY OF NOBLESVILLE
Drive and Entrance Details and Notes

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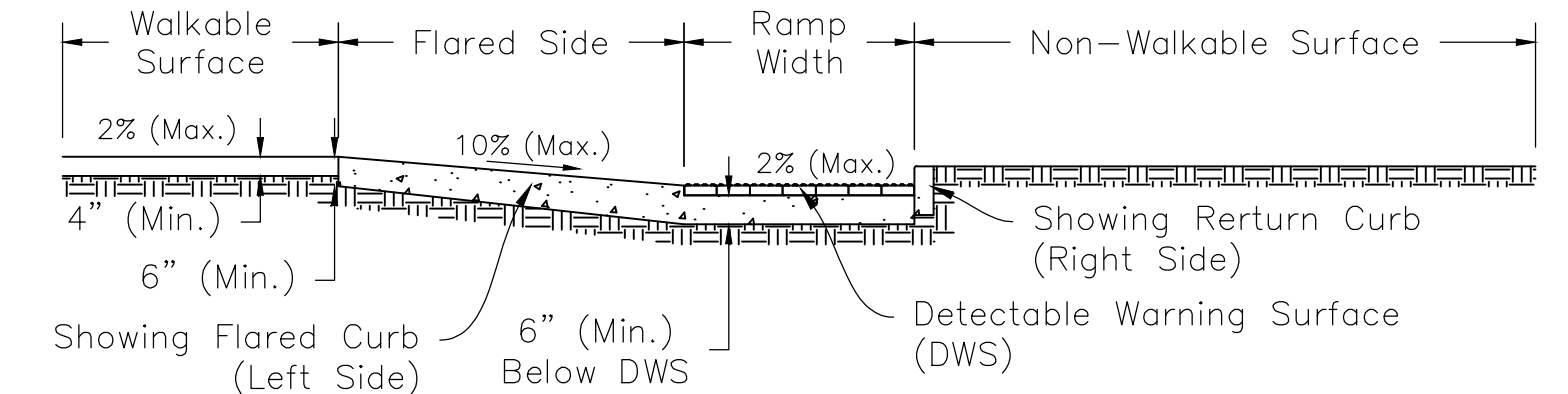
Alison M. Krupski 7/18/2021

GENERAL NOTES

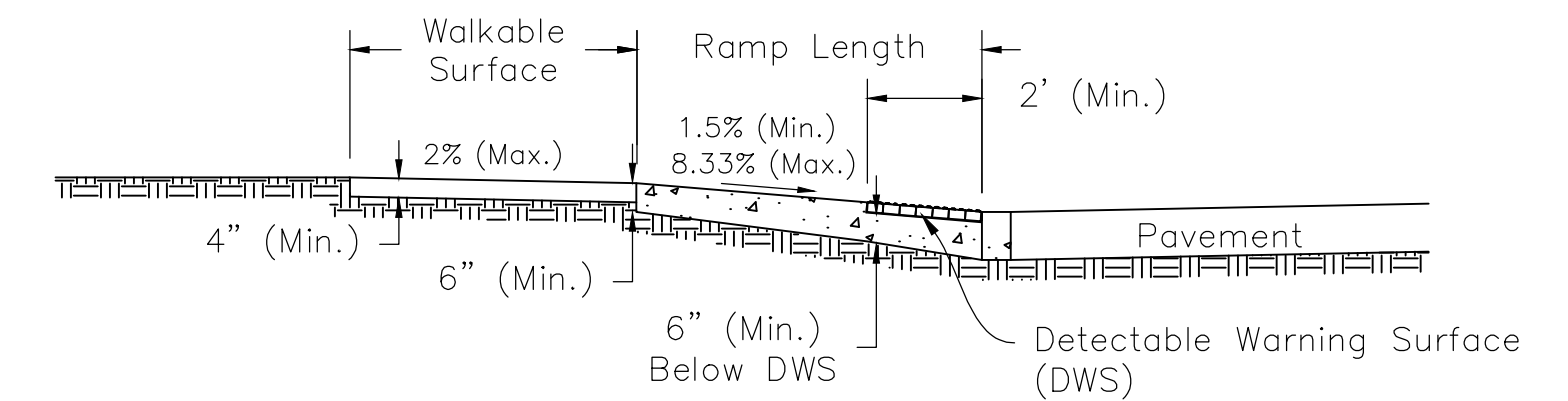
1. Curb ramps and sidewalks shall be constructed in accordance with INDOT Standard Specifications, Section 604.
2. All sidewalks and curb ramps within Noblesville Right-of-Way shall meet PROWAG requirements and shall meet ADA requirements on private property.
3. 1/2" preformed joint filler shall be incorporated when abutting concrete curbs, structures, walls, fixed objects, and every 48 feet of walk.
4. All exposed surfaces shall be broom finished and sidewalks shall be framed 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.
5. The distance between contraction joints shall be consistent between driveways.
6. Sidewalks shall mostly follow the adjacent roadway's profile except at curb ramps.
7. All sidewalk and drive connections shall have blended transitions.
8. The minimum width of curb ramps (not including flares) shall be that of adjacent sidewalk, shared-use path.
9. Perpendicular and/or parallel curb ramps shall be provided at every public roadway intersection including alleys. Perpendicular ramps shall also be provided at crosswalks in the vicinity of hospitals, medical centers, or athletic stadiums. Bi-directional ramps are not permitted unless approved by the City of Noblesville Department of Engineering. Any deviation from these details require the prior written approval of the Noblesville Department of Engineering
10. Curb ramps are to be located as shown on the plans or as directed by the Noblesville Department of Engineering. Drainage structures shall not be placed in line with ramps. The location of ramps shall take precedence over the location of drainage structures.
11. Curb ramps shall direct pedestrians perpendicularly across the roadway to align with receiving ramps.
12. The normal gutter line profile shall be maintained through the ramp.
13. Coordinate with the City of Noblesville for specifications on type of Detectable Warning Elements to be used. Detectable Warning Elements are to be installed in accordance with INDOT Standard Drawing No. E604-SWCR-14, or latest detail. If bricks are to be used, G2 Gator-Maxx polymeric sand (color to be specified by the City of Noblesville), or approved equal, shall be used to sweep in joints.



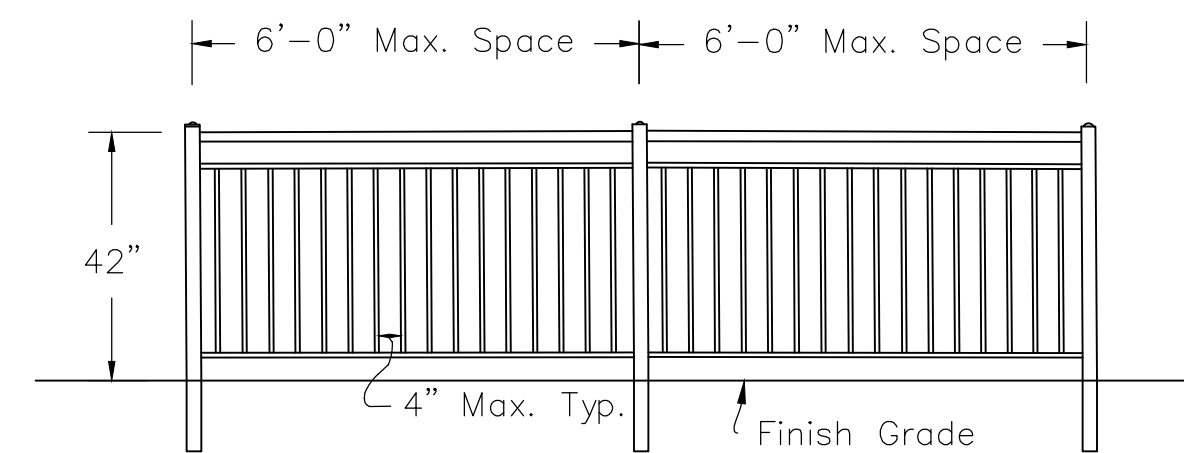
TYPICAL CURB RAMP COMPONENTS
Scale: None



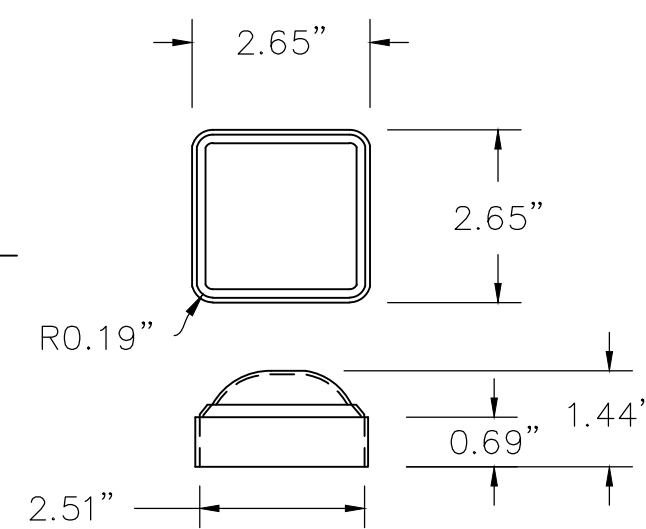
TYPICAL CURB RAMP CROSS SLOPE SECTION
Scale: None



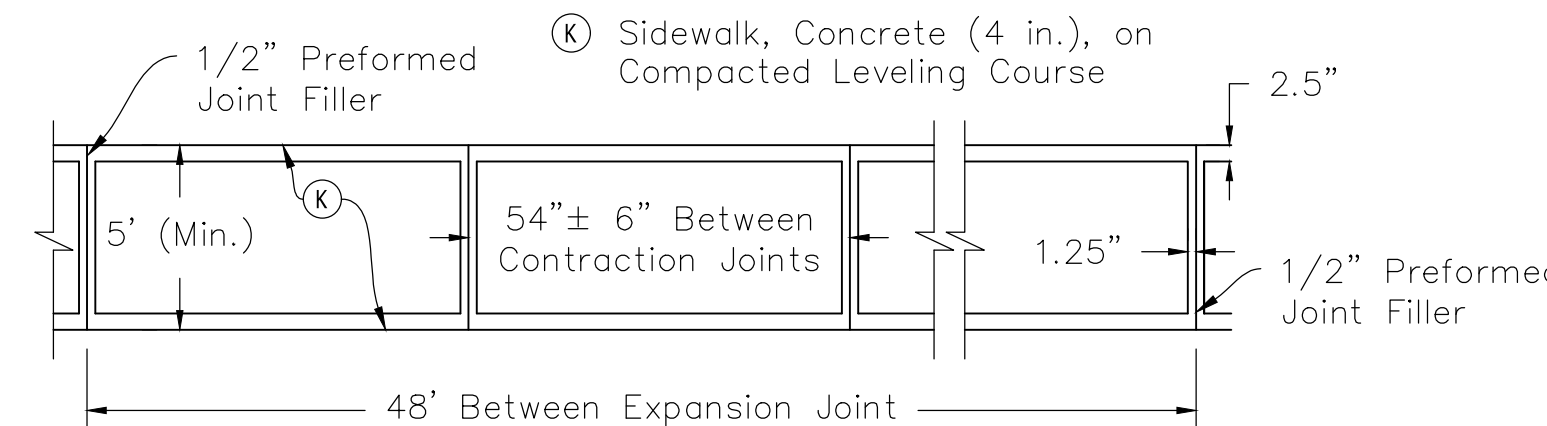
TYPICAL CURB RAMP RUNNING SLOPE SECTION
Scale: None



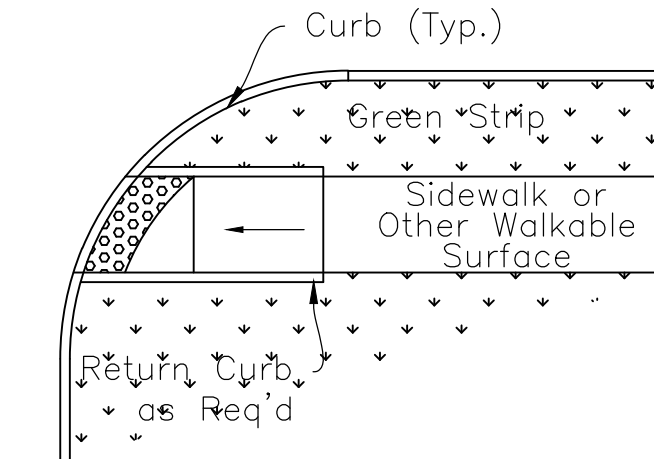
TYPICAL ELEVATION RAIL VIEW



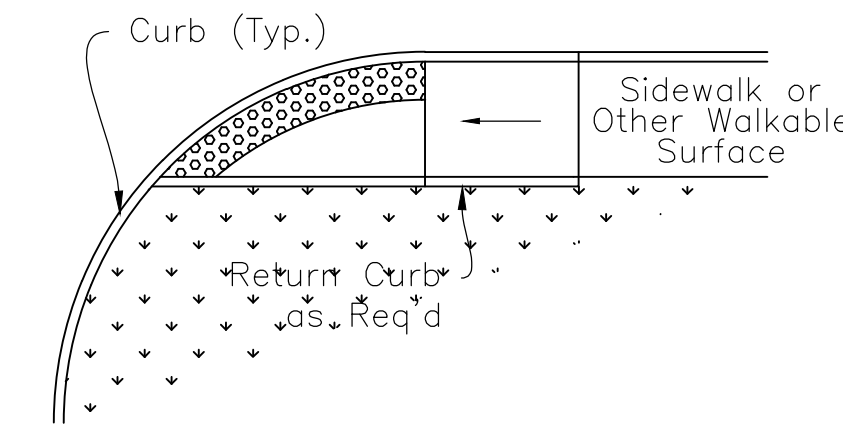
WAGNER #5104 CAP



SIDEWALK DETAIL
Scale: None

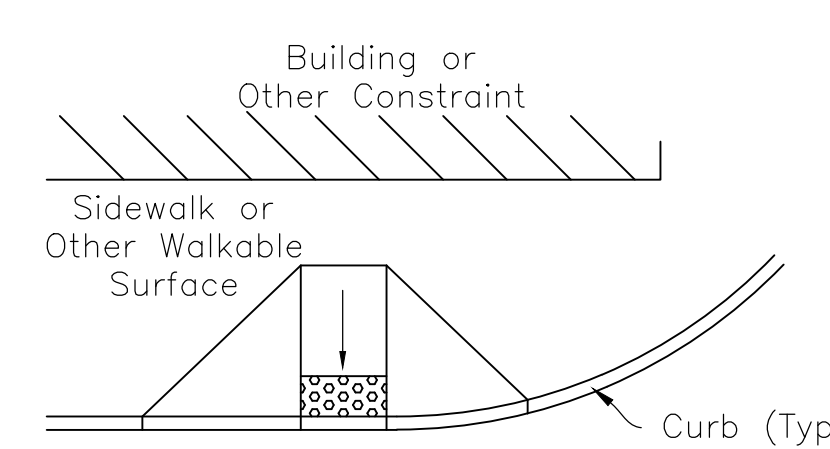


RAMP WITH BUFFER

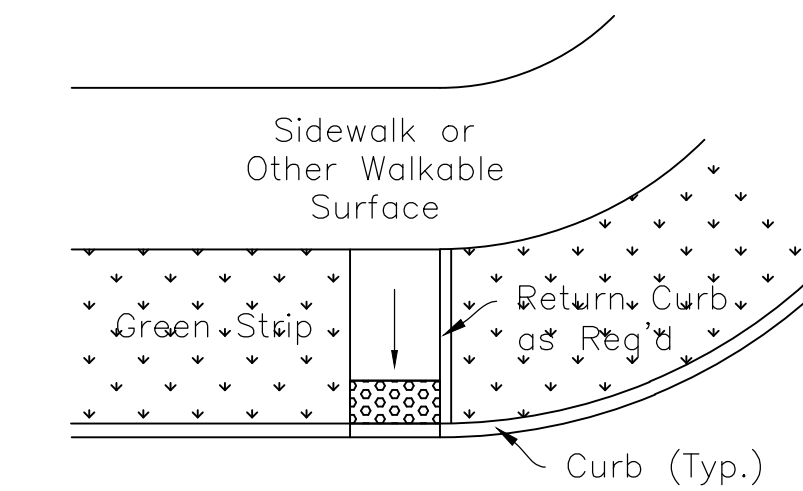


RAMP ADJACENT CURB

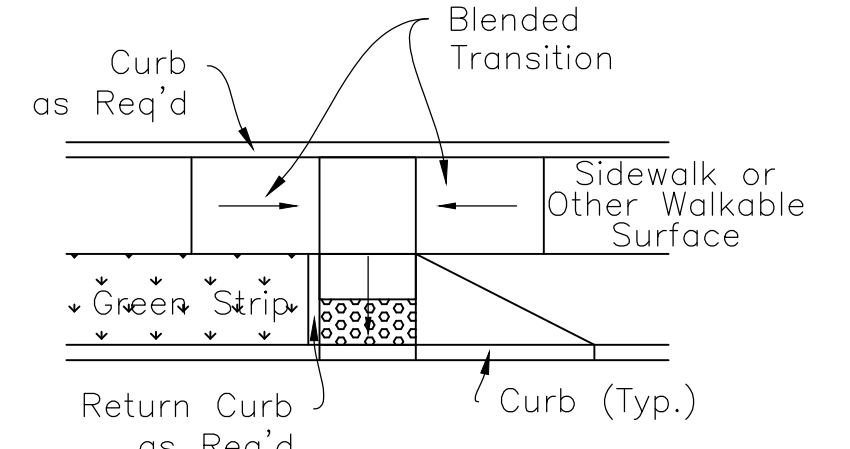
ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP EXAMPLES
Scale: None



RAMP ADJACENT TO WALKABLE SURFACE

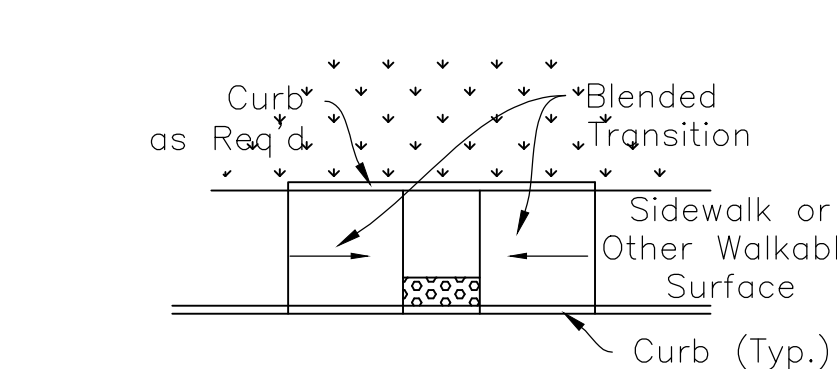


RAMP ADJACENT TO NON-WALKABLE SURFACE

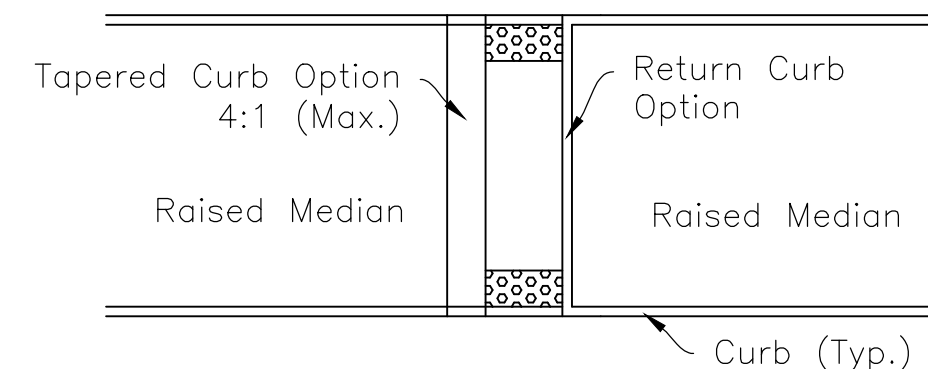


RAMP WITH GRADE TIERING

PERPENDICULAR CURB RAMP EXAMPLES
Scale: None

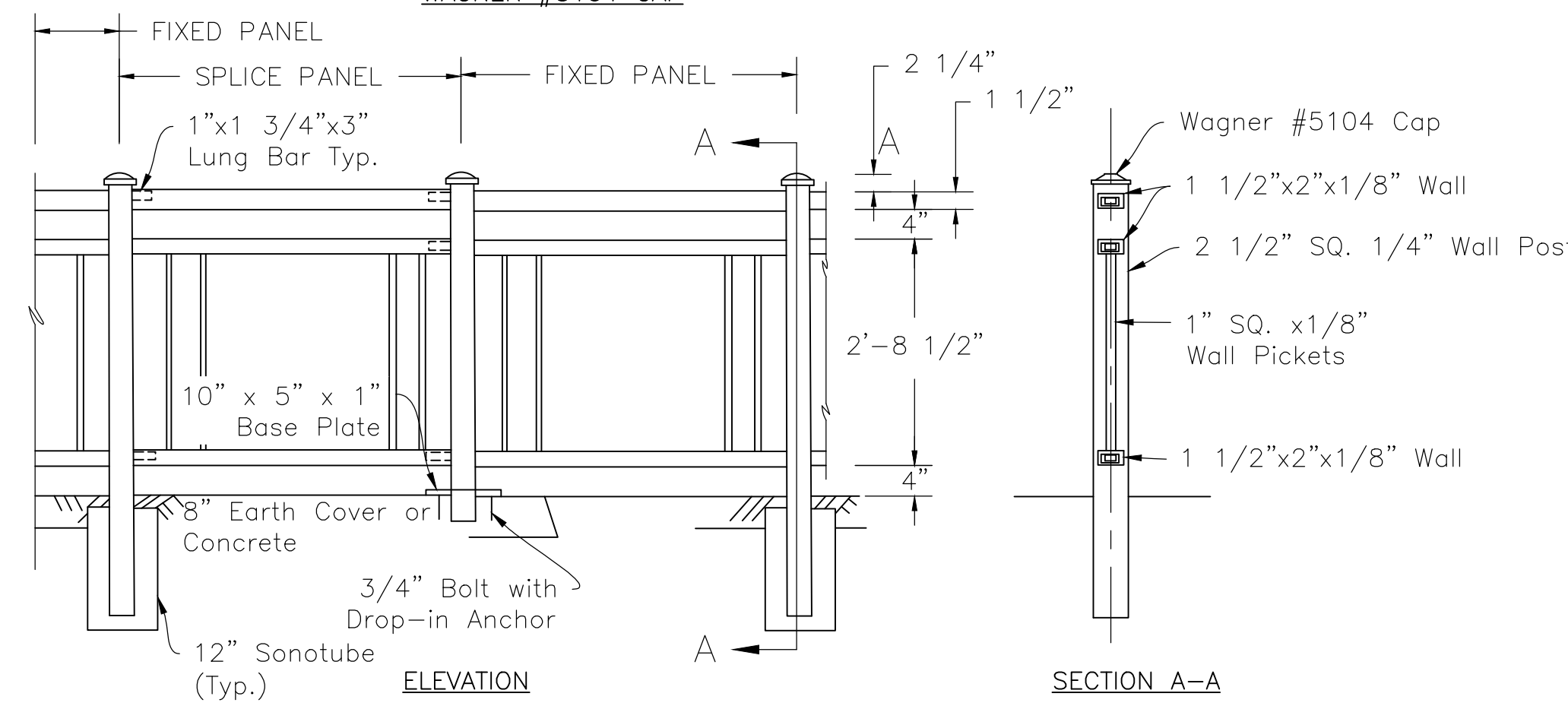


PARALLEL CURB RAMP EXAMPLE
Scale: None

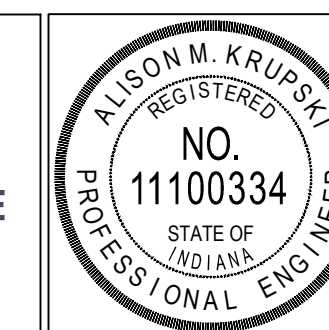
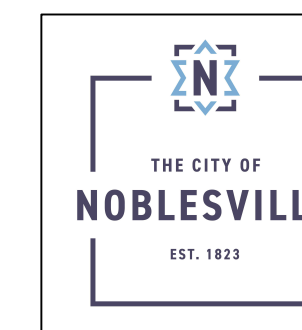


MEDIAN CURB RAMP EXAMPLE
Scale: None

- Notes:**
1. All extrusions aluminum 6061-T6 or 6063-T6.
 2. System to receive a Pine Green (RAL 6028) or approved equal powder coat finish.
 3. Fixed panel sections will consist of two to three 6' maximum post pace sections welded as an assembly.
 4. Spike panel sections will consist of a loose top rail section and a welded pick panel section field assembled onto the 1" x 1 3/4" x 3" long bar supports.
 5. Field measurements will be taken once the wall is in place. No fabrication will be done till then.
 6. Drop-in anchor shall have a minimum allowable tensile capacity of 3,000 LBS.
 7. Footing and post embedment to be designed by the manufacturer. The use of the base plate/drop-in anchor option may be approved by the Department.



HANDRAIL DETAILS
Scale: None



CITY OF NOBLESVILLE
Sidewalk and Curb Ramp Details and Notes

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Alison M. Krupski 7/18/2021

UTILITY GENERAL NOTES

- The design engineer 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 activities.
 - Not conflict with or damage other utilities during construction or maintenance.
- Abandoned utility infrastructure shall be completely removed after newly constructed, upgraded, or relocated facilities are accepted and in service. 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 in these standards.
- Additional easement or Right-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 engineer to contact the utilities to determine if this is necessary.
- An Encroachment Permit shall be obtained for any planned work within public Right-of-Way or easement from the Noblesville Planning Department, subject to review by any and all applicable City departments.

STORM SEWER GENERAL NOTES

- The City of Noblesville Stormwater Technical Standards Manual (STSM) shall be referenced for all stormwater design standards. These standards shall include, but are not limited to, the following:
 - Storm sewer pipe material shall be in accordance with Ch. 400 of the STSM. Storm sewer pipe in public Right-of-Way and/or public easements, of other material not meeting these specifications shall require the prior written approval of the Noblesville Department of Engineering.
 - The minimum diameter of all storm sewer pipe shall be 12 inches, with the exception of subsurface underdrain pipe.
- Upon request, the contractor shall submit all necessary information to the Noblesville Department of Engineering to illustrate conformance with all STSM specifications.
- 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 areas. This includes, but is not limited to, downstream ditch improvements, culvert improvements, or constructing positive outlet for detention facility.
- Pipe end sections will not be permitted for use as an inlet when inlet/manhole structures can serve the property for stormwater collection.
- Pre-fabricated galvanized animal and debris guard shall be installed on the upstream end of all pond outfalls. Debris guards shall meet the minimum standards of the Hamilton County Surveyor's Office, Detail D-12. Underdrain table may be required by the City Engineer. Table shall be in the format required by the Indiana Department of Transportation (INDOT).

STORM SEWER REINFORCED CONCRETE PIPE

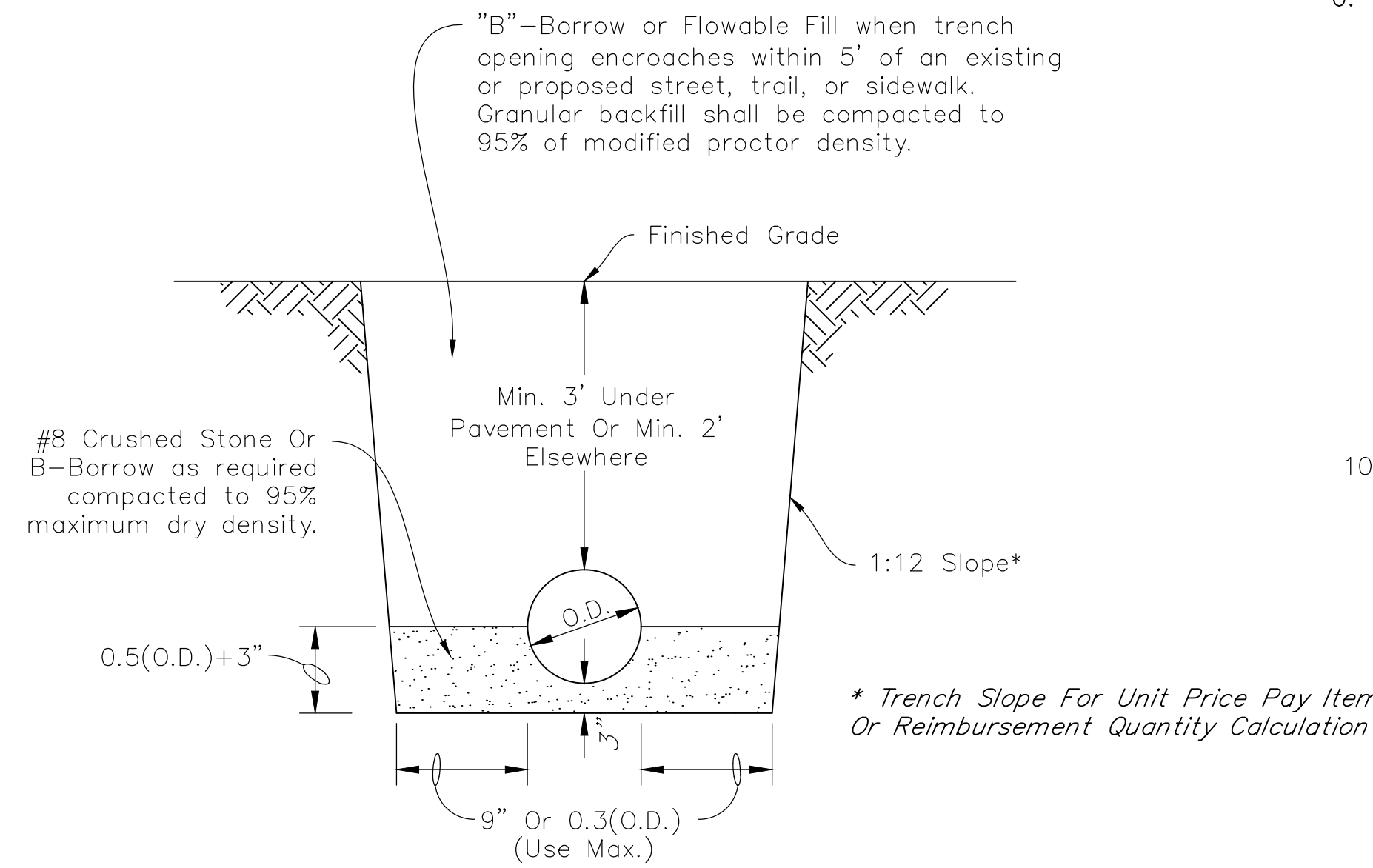
- Reinforced Concrete Pipe (RCP) shall be Class III, IV, or V as specified in ASTM C-76.

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 INDOT Standard Specifications, latest edition.
- Fittings and specifications shall be in accordance with the specifications for the type of pipe material 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 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 material 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 outlet protection/energy dissipation. Specifications and bedding of toe-walls shall be determined by the design engineer based on the velocity of discharge and soil type. Specifications for the rip-rap outlet protection/energy dissipation shall be in accordance with the SWPPP Specifications included herein, and sizing shall be specific to each application. Headwalls shall also be considered if the previously stated items are not sufficient and conditions warrant.
- 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.

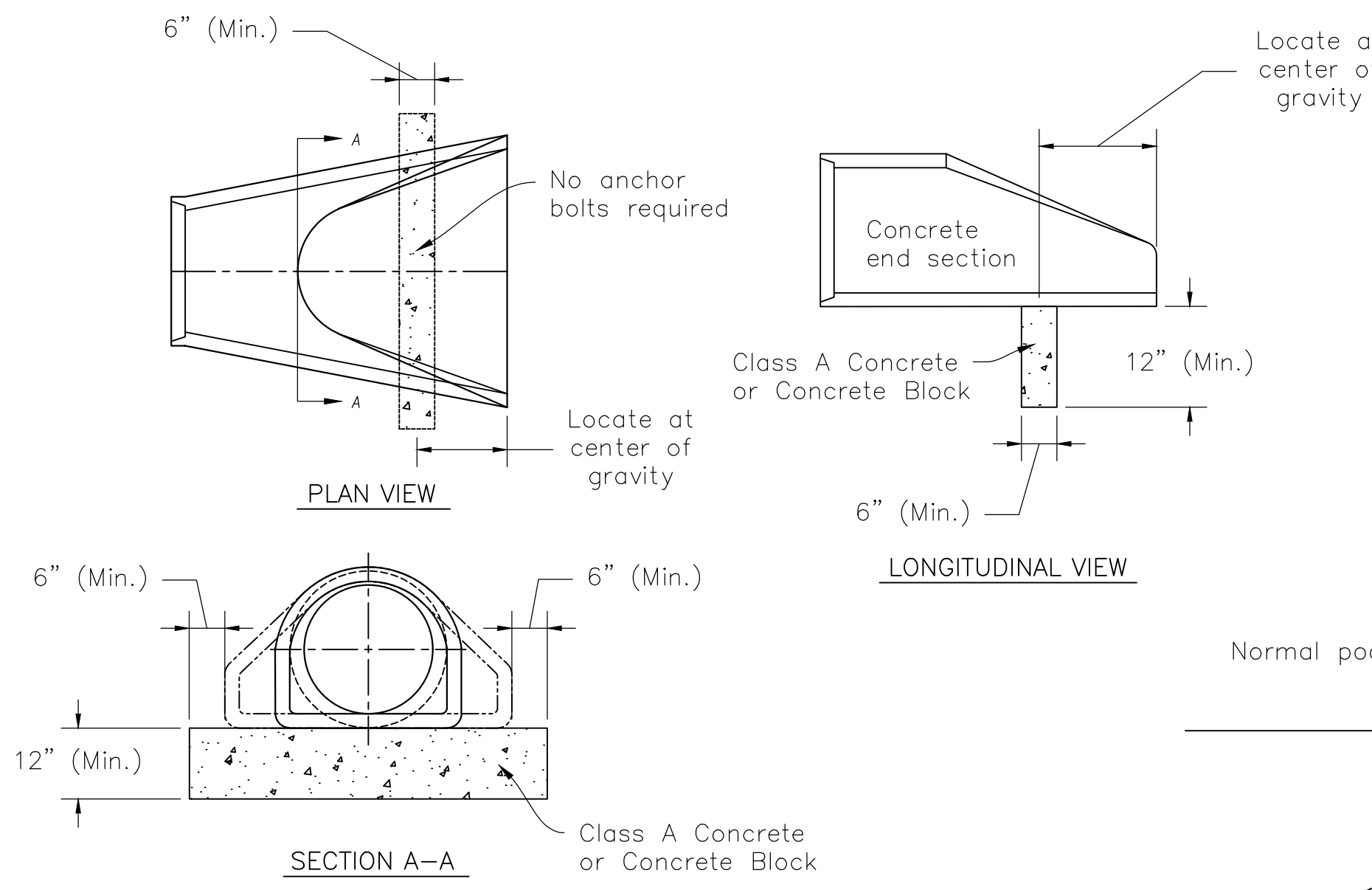
STORM SEWER PIPE TELEVISIONING AND AS-BUILT DRAWINGS

- Closed circuit television (CCTV) inspection shall be performed in compliance with NASSCO's Pipeline Assessment Certification Program (PACP) standards on all publicly owned pipe installed within the City of Noblesville to be used for the purposes of conveying storm water runoff.
- 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 CCTV 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.
- The contractor shall bear all costs of line segment cleaning, debris removal and disposal, and through subsequent invoicing from the Noblesville Department of Engineering, the CCTV inspection.
- Contractor shall submit as-built drawings, electronic and hardcopy, within 30 days of successful completion of all testing and CCTV requirements. Electronic as-built drawings submittal shall be submitted to the Noblesville Department of Engineering and comply with the City's GIS Coordinator's guidelines.
- Contractor shall supply digital video to the City of Noblesville Engineering Department that is compatible with Windows Media Viewer with indexed chapters to allow instant access to points of observation.



RCP PIPE BEDDING DETAIL

Scale: None

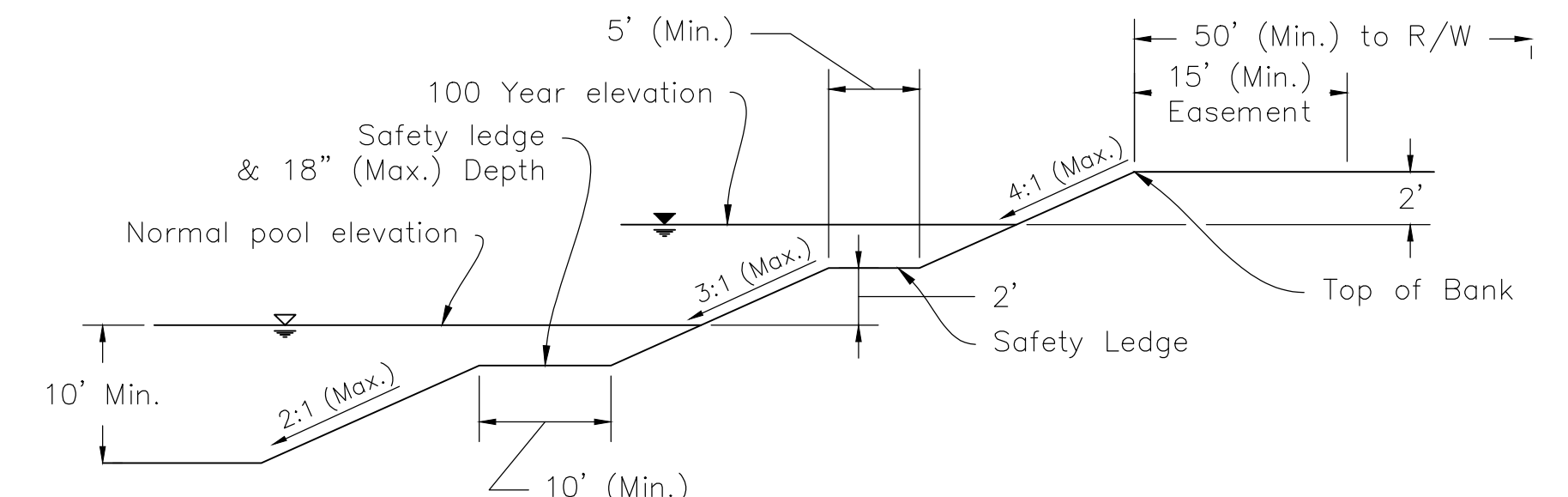


CONCRETE END SECTION TOE ANCHOR DETAIL

Scale: None

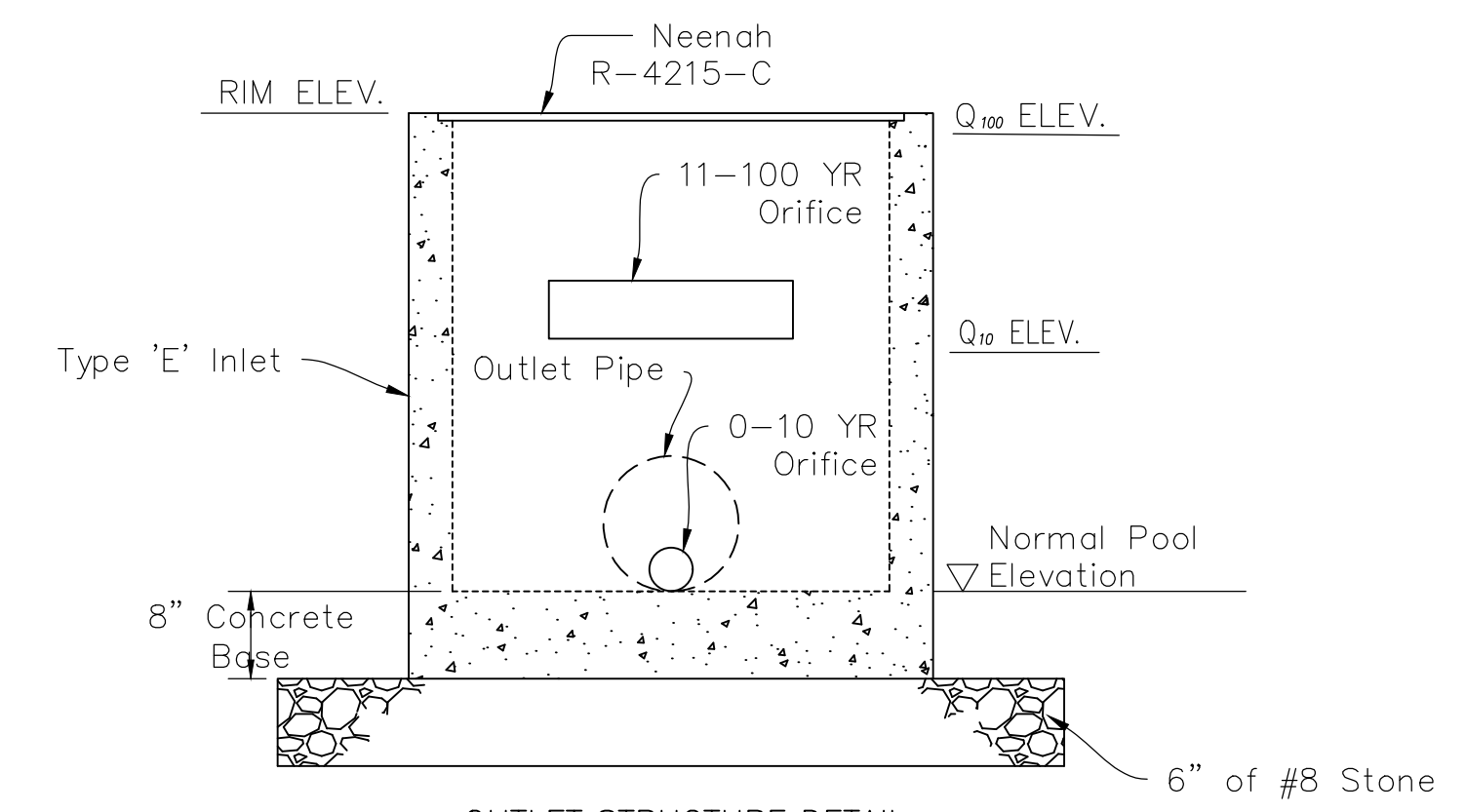
DETENTION BASIN GENERAL NOTES

- All detention basins and outlet structures shall be designed in accordance with Chapter 300 of the City of Noblesville Stormwater Technical Standards Manual (STSM).
- 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 4. The traverse grade shall be 2% minimum.
- The Noblesville Department of Engineering or Stormwater/MS4 may approve alternate detention pond/basin sections. Wet ponds being design as post-construction water quality measures shall be designed in accordance with Chapter 700 of the STSM and the Stormwater BMP - Pond Details, Sheet 29).
- Outlet structures for all detention basins shall be Inlet Type 'E' with Neenah Casting R-4215-C, East Jordan No. 6610, or approved equal by the Noblesville Department of Engineering. Outlet control orifice shall be pre-cast into the structure. The location of the outlet structure shall be in accordance with the outlet structure detail, this sheet.
- The design of all wet-bottom detention facilities shall include an aeration facility. Design calculations shall be provided to substantiate the effectiveness of the proposed aeration facility. The aeration facility shall be able to, at a minimum, turn the volume of the stored water over every 24 hours. See Section 302.06.4 of the City of Noblesville Stormwater Technical Standards Manual.
- All detention facilities shall be separated from road Right-of-Way by a minimum of fifty (50) feet, measured from the top of bank, or peak 100-yr. Elevation if no defined top of bank is present. Use of guardrails, berms, or other structural measures may be considered in lieu of the noted setbacks. See guardrail details, Sheets 20-24.

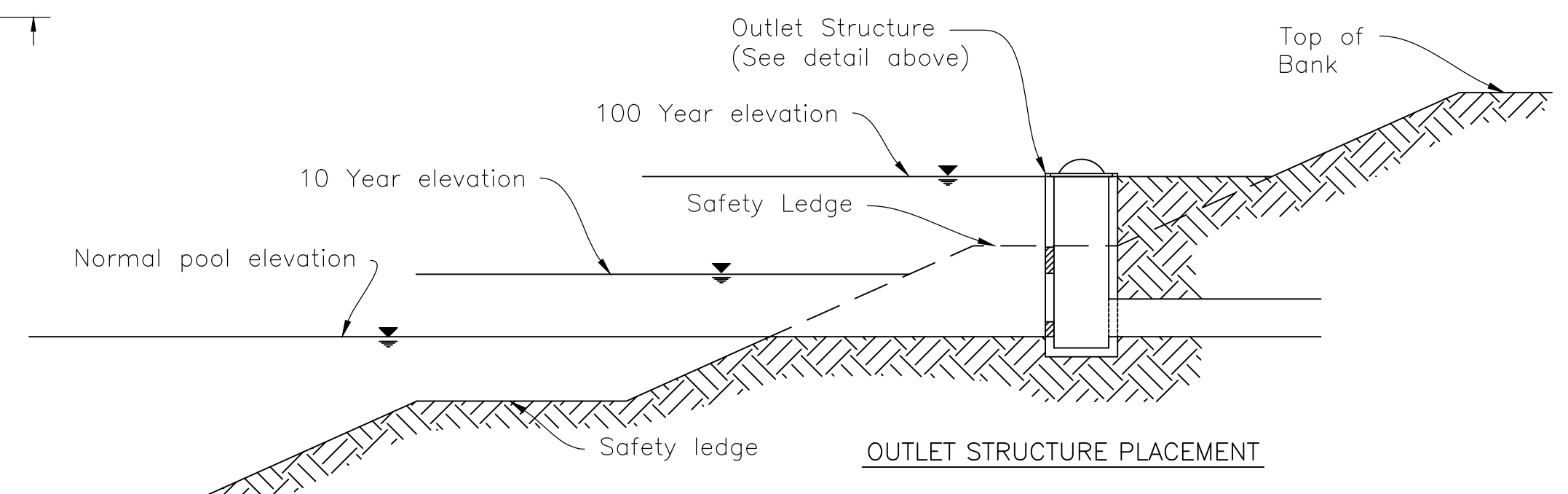


TYPICAL DETENTION POND SECTION

Scale: None

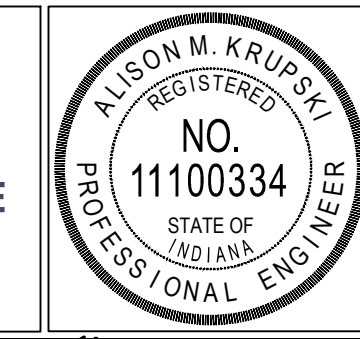
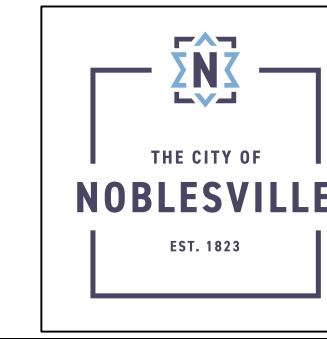


OUTLET STRUCTURE DETAIL



TYPICAL OUTLET STRUCTURE DETAILS

Scale: None



CITY OF NOBLESVILLE

Storm Sewer Bedding and Detention Notes & Details

SHEET 7 OF 29

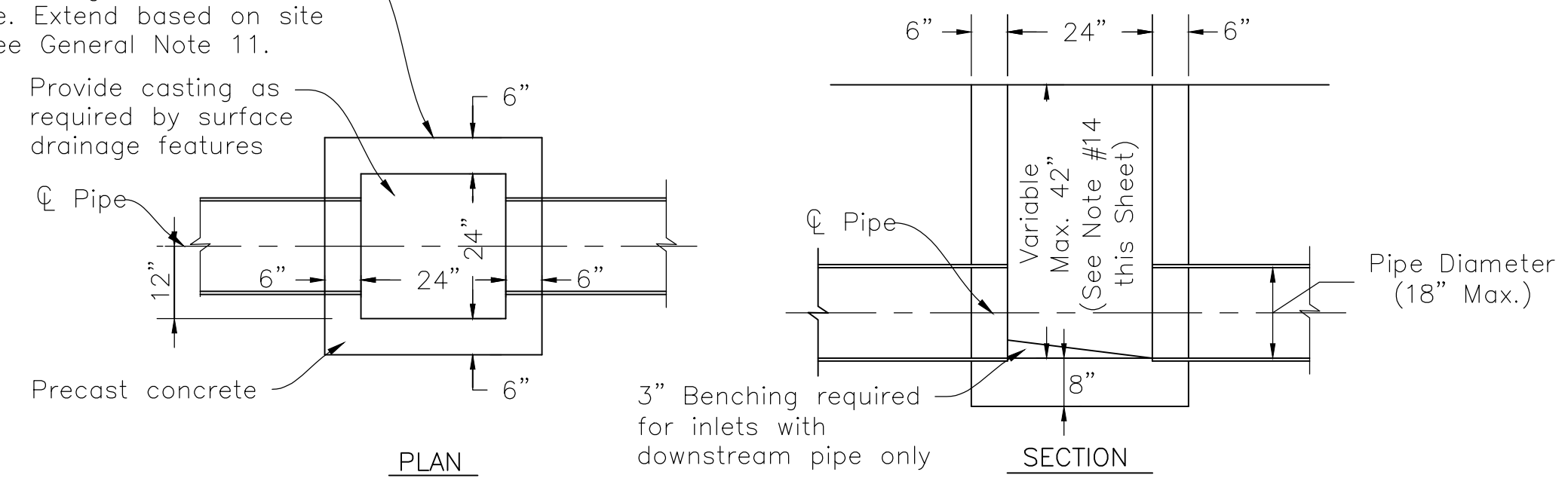
Alison M. Krupski 7/18/2021

GENERAL NOTES

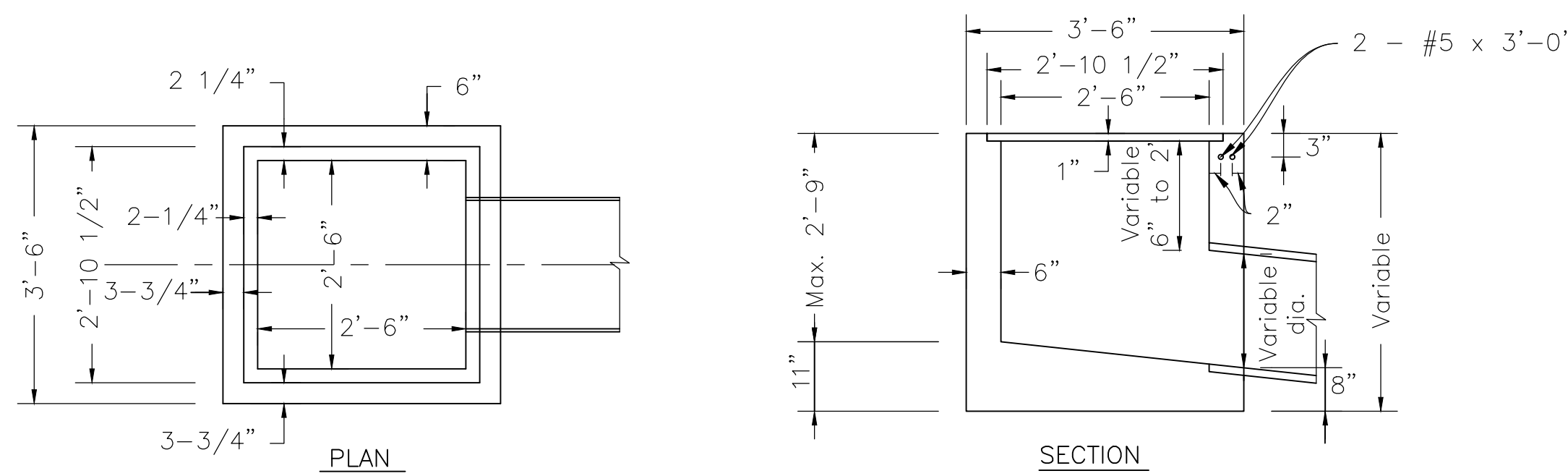
1. Curb castings shall be checked to meet requirement of inlet design and ensure compatibility with curb specified, swales, ponds, etc.
2. All inlet castings shall be in accordance with the Compatibility of Inlet Structures and Castings table, this sheet, unless otherwise approved by the Noblesville Department of Engineering.
3. 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.
4. An Inlet Type E/F shall be used to drain all drainage swales and as the outlet structure on all wet/dry detention basins, unless otherwise approved by the Noblesville Department of Engineering.
5. 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.
6. 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.
7. If coring is 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.
8. If a catch basin is used, sump shall be 24" below lowest pipe invert elevation within catch basin.
9. Site grading as-builts shall be provided in electronic formats (CAD & PDF) upon acceptance by Department of Engineering. Engineer shall refer to GIS coordinator for as-built standards and format.
10. 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.
11. Final adjustment in elevation of the frame, cover, or casting shall be accomplished by the use of a four 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. Contractor may use HDPE risers and composite materials as approved by the Noblesville Department of Engineering.
12. Minimum 20 feet of underdrain pipe 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. See underdrain detail.
13. Pipe end sections will not be permitted for use as an inlet when inlet/manhole structures can serve the property for stormwater collection.
14. Inlet structures shall not exceed a maximum depth of 42-inches for Type A inlets and 60-inches for Type M/J inlets from top of casting to the outlet pipe invert. Any depths greater than these dimensions shall use a manhole structure.
15. The use of INDOT Type B and C Inlets is prohibited unless approved by the Noblesville Department of Engineering.

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

Minimum 20' of underdrain required at all SAG inlets regardless of structure type. Extend based on site conditions. See General Note 11.

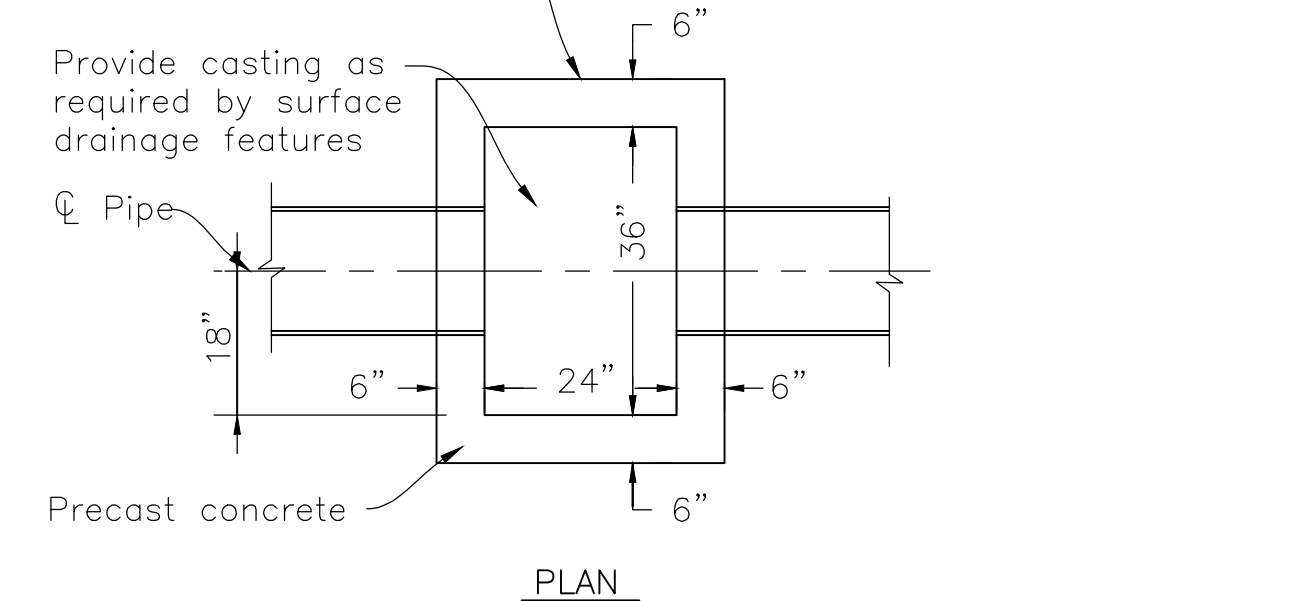


INLET, TYPE A
Scale: None

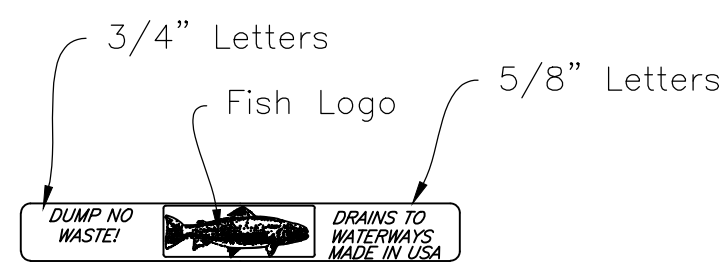


INLET, TYPE E
Scale: None

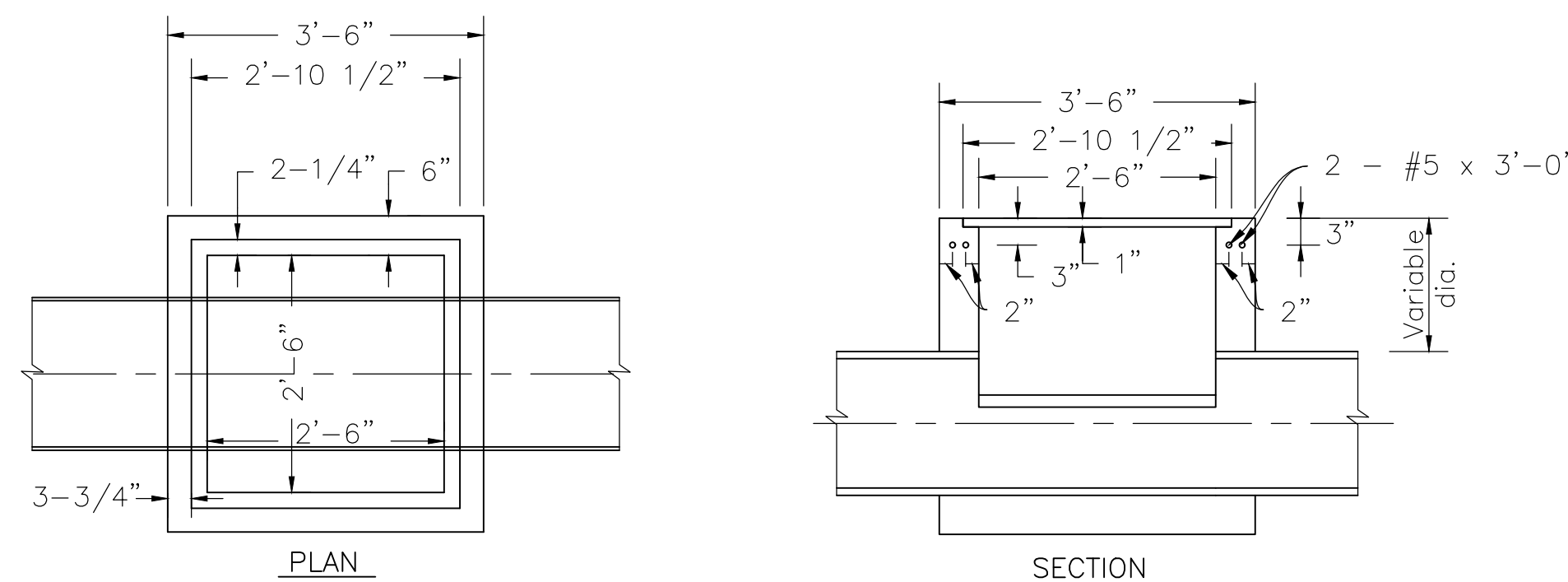
Minimum 20' of underdrain required at all SAG inlets regardless of structure type. Extend based on site conditions. See General Note 11.



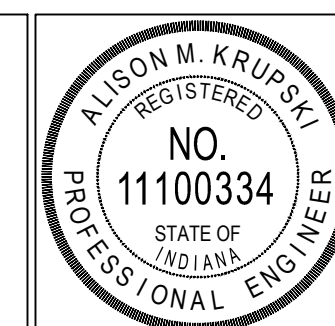
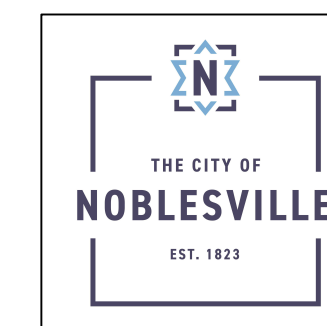
INLET, TYPE M/J
Scale: None



INLET STORM CASTING DETAIL
Scale: None



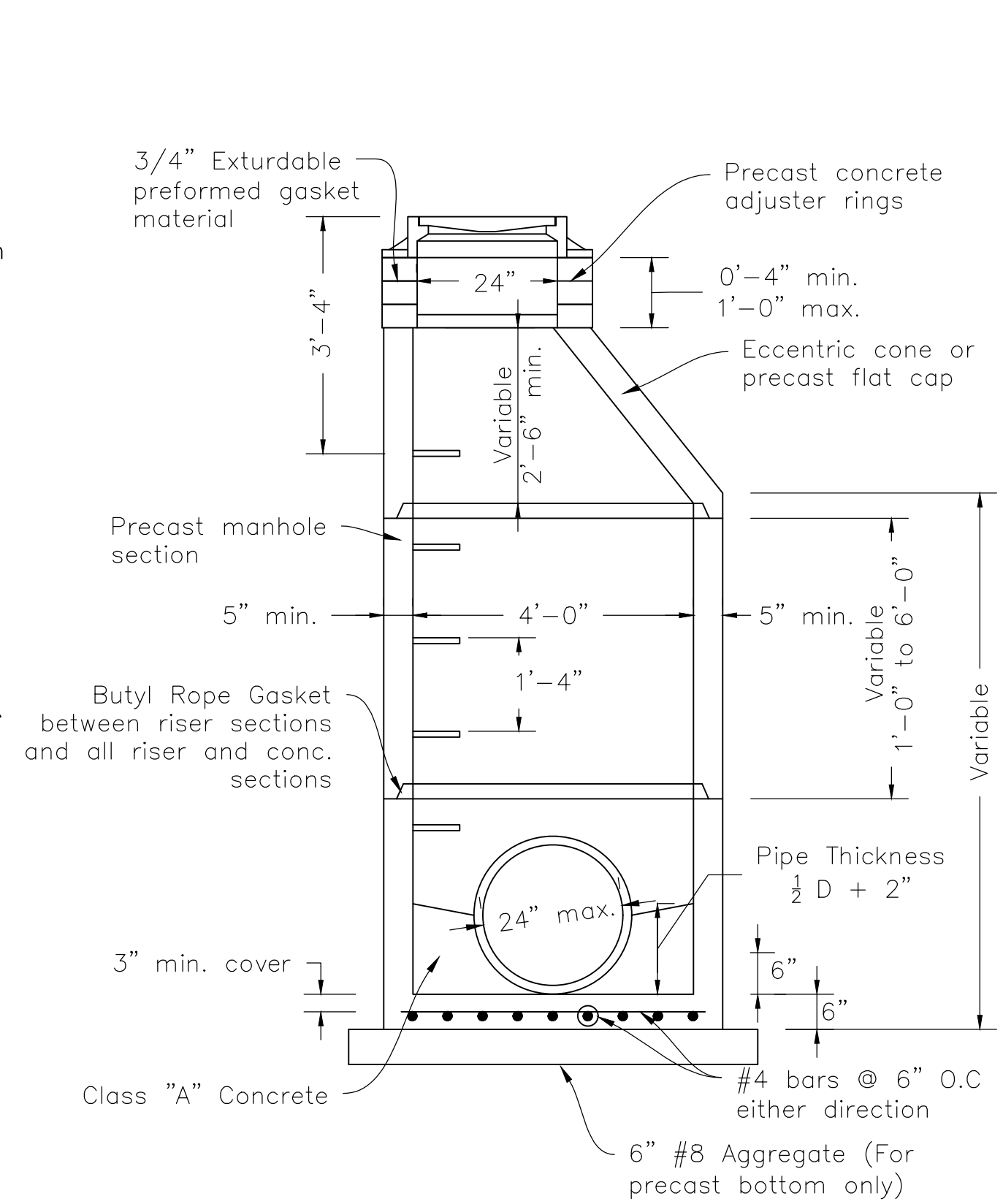
INLET, TYPE F
Scale: None



GENERAL NOTES

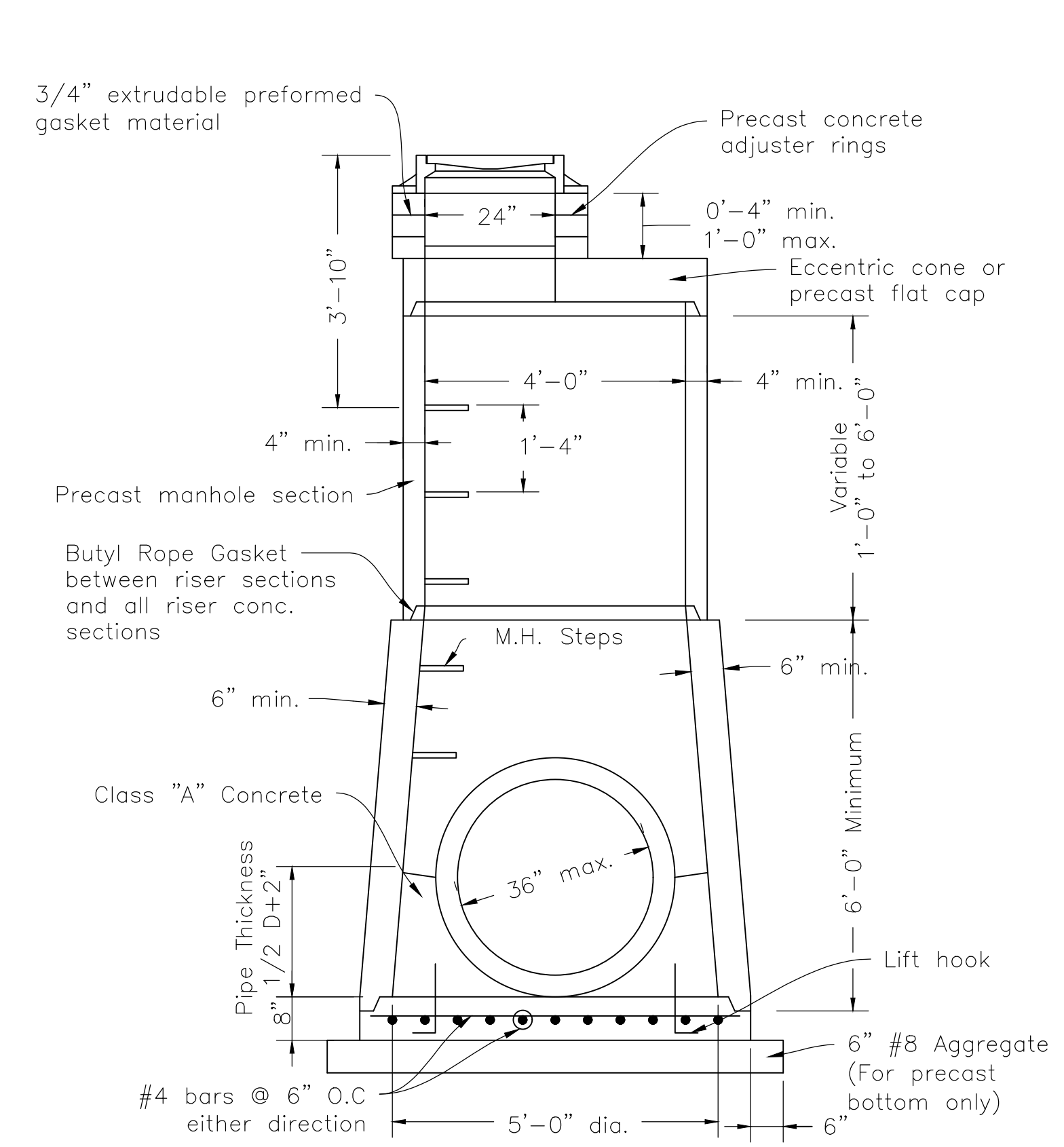
- Storm manholes require a minimum depth, as detailed herein. If the depth of the storm sewer is not sufficient to meet the minimum depth required for the barrel sections of Type J, K, L, M and N manholes, "F" diameter manhole sections may be used for the entire depth of the manhole.
- Manholes shall 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. Castings 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 open pavement areas without curbing shall be flat top open grate types listed, or as approved by the Noblesville Department of Engineering.
- Castings which drain swales shall be beehive types listed, or as approved by the Noblesville Department of Engineering.
- Castings which do not drain surface runoff shall be flat top without grate types listed, or as approved by the Noblesville Department of Engineering and shall be stamped according to the Manhole Lid Casting Detail.
- Castings shall not be buried and shall be flush with the adjacent finished grade. Castings in asphalt or concrete shall be constructed with a tolerance of $\pm 0.1'$ of finish grade. All other castings shall be constructed with a tolerance of $\pm 0.2'$ of finish grade. Elevations will be checked with the as-built drawings.
- Manholes shall be placed on a bedding of 6 inches of No. 8 Aggregate. If poor soils are encountered, or if contractor's operations have adversely changed the condition of the soils, the existing soil shall be removed and replaced with 6 inches on No. 2 Aggregate.
- 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 inlet shall enter and exit perpendicular to pre-cast 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.
- Inlets structures shall not exceed a maximum depth of five (5) feet from top of casting to the outlet pipe invert. Any depths greater than five (5) feet shall use a manhole structure.
- If coring is required, core shall not be made at joints between structure sections. Coring into structure for underdrain tie-in shall be prohibited if precast structure was fabricated with underdrain tie-ins.
- Site grading as-builts shall be provided in electronic formats (CAD & PDF) upon acceptance by the Department of Engineering. Engineer shall refer to GIS Coordinator for as-built standards and format.
- 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 four 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. The contractor may use HDPE risers and composite materials as approved by the Noblesville Department of Engineering.

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



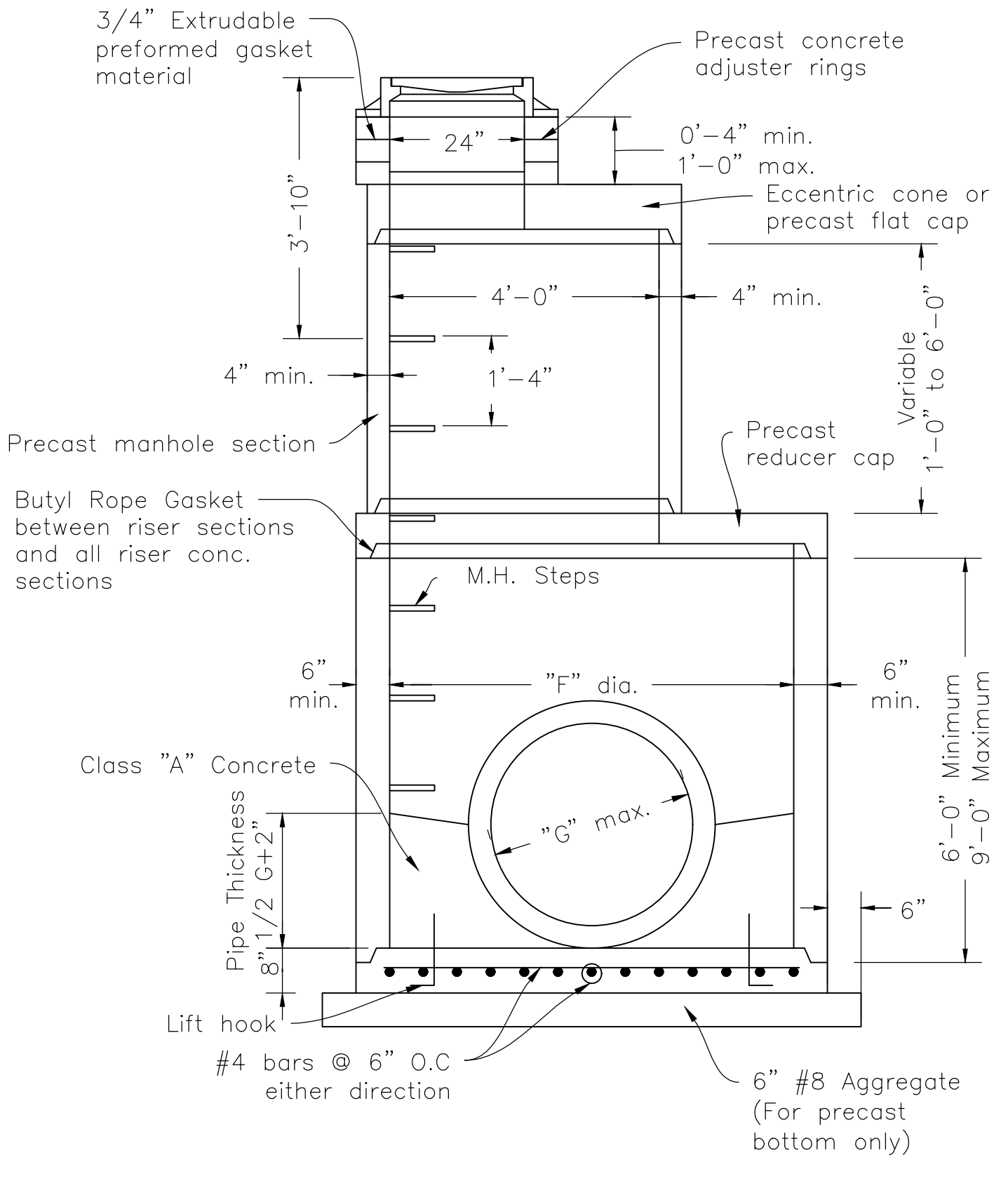
MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting at 0°-45° bend	Pipe Entering / Pipe Exiting at 45°-90° bend
24"	21"

MANHOLE, TYPE C
Scale: None



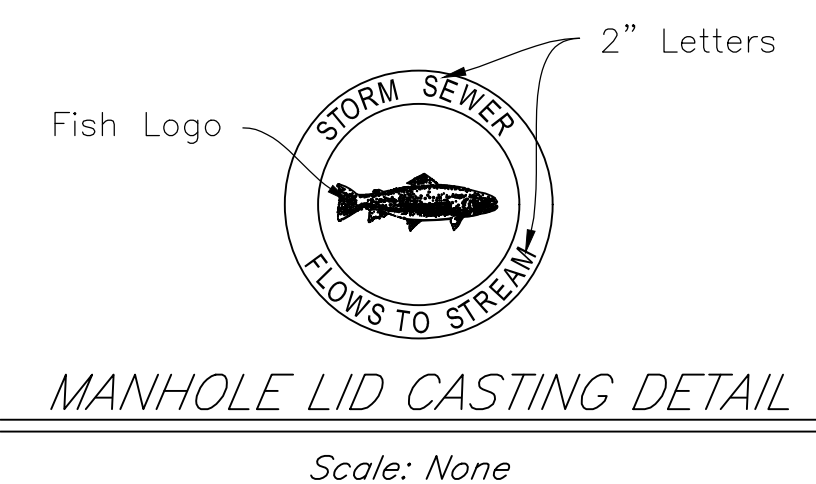
MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting at 0°-45° bend	Pipe Entering / Pipe Exiting at 45°-90° bend
36"	30"

MANHOLE, TYPE H
Scale: None

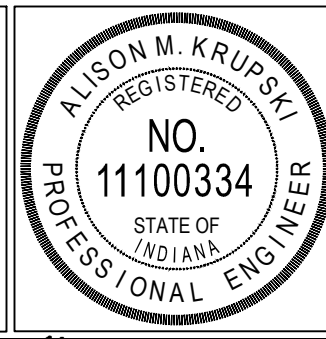
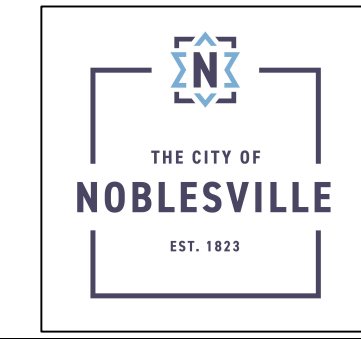


Manhole Type	Manhole Diameter "F"	MAXIMUM PIPE SIZE "G"	
		Pipe Entering / Pipe Exiting At 0°-45° Bend	Pipe Entering / Pipe Exiting At 45°-90° Bend
J	60"	36"	33"
K	72"	48"	36"
L	96"	54"	48"
M	102"	72"	66"
N	108"	84"	72"

MANHOLE, TYPE J, K, L, M & N
Scale: None



MANHOLE LID CASTING DETAIL
Scale: None



CITY OF NOBLESVILLE
Storm Manhole Details and Notes

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GENERAL SANITARY NOTES

- Service To Adjoining Parcels: Sanitary sewer facilities shall be designed to accommodate the connection of all future subdivision sections and/or unsewered parcels within the service area. The design of the development project shall include a sanitary sewer extension across the parcel boundary to the upstream end of the subject property to be extended by future sections or adjacent parcels. The sanitary sewer extension shall be installed at a depth no less than six (6) feet below the lowest grade of the property's frontage or alignment of the sewer masterplan. Any requested increase in the required depth of any sanitary extension that is part of a sewer masterplan may be reimbursable.
- All couplers used for repairs to existing sanitary infrastructure shall be completed by using Fernco Shielded Non-Shear Couplings, or approved equal.
- All developments shall comply with the requirements of Ordinance No. 23-4-05: City of Noblesville Illicit Discharge and Connection Stormwater Ordinance and Section 501.06: Connections to Storm Sewer System of the City of Noblesville Stormwater Technical Standards Manual. As such, all non-stormwater runoff shall be prohibited from connecting to the City's separate storm water system; rather, shall be connected to the City's sanitary sewer system, unless exempted by Section 7: Discharge Prohibitions of Ordinance No. 23-4-05 or approved by the City of Noblesville. Typical non-stormwater runoff discharges may include, but are not limited to: covered dumpster enclosure drains, non-exterior parking garage floor drains, garage and basement floor drains and water softener discharge, and swimming pool drains that have not been de-chlorinated. Non-stormwater runoff shall be pre-treated by an appropriate grease/grit interceptor, or other acceptable method, prior to discharge to the sanitary system, unless otherwise approved. The grease/grit interceptor shall be sized by the design engineer and approved by the City of Noblesville, and shall be in accordance with the Oil/Grease Trap requirements, Sheet 15.
- The use of a low pressure sewer system shall be approved by the Noblesville Department of Engineering. All components of the low pressure sewer system including, but not limited to: grinder pump, tank capacity, and force main size shall be designed and certified by a professional engineer and approved by the City. The minimum system for a single-family residential use shall be an E/One Extreme Series DH071 Grinder Pump Station, or approved equal, with 70 gal./700 GPD capacity.

SANITARY SEWER LATERAL PIPE AND FITTINGS

- Service laterals shall be SDR-26 pipe from the sewer main to the building. One (1) 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 (1) exterior 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. An additional clean-out shall also be installed at any change in direction along the lateral. In any event, a clean-out shall be located no farther than four (4) feet from the building in residential developments.
- 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 4.
- A removable, extendable backwater prevention valve shall be provided for each sanitary sewer lateral. The backwater prevention valve shall be housed in a 6-inch diameter, SDR-26, sanitary clean-out assembly with cap. The backwater prevention valve shall be readily accessible at all times, and located in the first sanitary clean-out immediately downstream of the building.
- 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 service lateral or the modification of an existing service lateral requires an approved City of Noblesville permit.
- 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.

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 summarization of Cell Classification 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 P.V.C. 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 TELEVISION AND AS-BUILT DRAWINGS

- Closed circuit television inspection shall be performed in compliance with NASSCO's Pipeline Assessment Certification Program (PACP) standards on all pipe to be used for the purposes of conveying sanitary sewer. Televisioning shall be completed after leakage and deflection testing is accepted.
- 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 CCTV 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, the CCTV inspection.
- Contractor shall submit as-built drawings, electronic and hardcopy, and all leakage and deflection certification of attestation within 30 days of successful completion of all testing requirements.
- Electronic as-built drawings submittal shall be submitted to the Noblesville Department of Engineering and comply with the City's GIS Coordinator's guidelines.
- Contractor shall supply digital video to the City of Noblesville Engineering Department that is compatible with Windows Media Viewer with indexed chapters to allow instant access to points of observation.

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.

SANITARY SEWER DEFLECTION TESTING

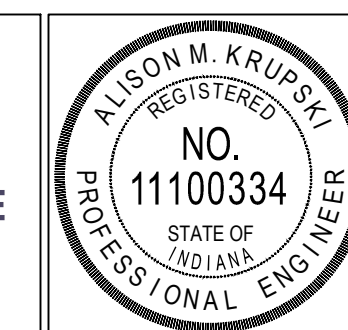
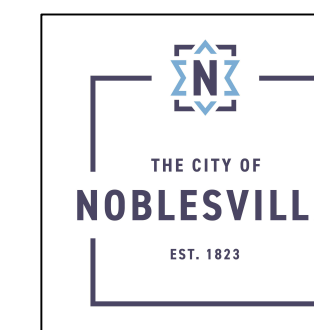
- An in-place deflection test shall be performed on all flexible pipe to be used for the purposes of conveying sanitary sewage. Testing for an allowable deflection of 5 percent internal pipe diameter (ID) shall not commence until after all backfilling has been in place for 30 days. A nine-point, "go-no-go" 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.

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.

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	9:26	9:53	11:52	13:51	15:49	
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	30.768L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	



CITY OF NOBLESVILLE
Sanitary Sewer General Notes and Specifications

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Alison M. Krupski 7/8/2021

HIGH DENSITY POLYETHYLENE (HDPE) PIPE

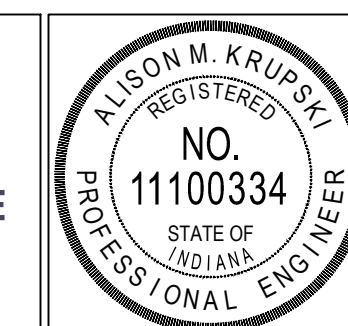
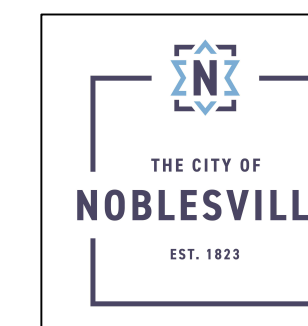
1. See related specifications for Horizontal Directional Drilling Specifications.
2. HDPE pipe shall have a minimum wall thickness Dimension Ratio (DR) of DR-11. Material used in the manufacture of HDPE pipe shall conform to the HDPE standard code PE3408. All HDPE pipe shall have the equivalent outside diameter as Ductile Iron (DI) pipe for the nominal size indicated. The Working Pressure Rating (WPR) of all HDPE pipe shall have a Wall Thickness Dimension Ratio of 11.
3. HDPE sections proposed to be fused together shall be a minimum of 20 feet in length unless otherwise approved by the City Of Noblesville Engineering Department.
4. A minimum of three (3) 10-gauge tracer wires shall be pulled with all HDPE pipe. Tracer wire must have a minimum break load of 1,150lbs and a minimum HDPE insulation of 45 ml.
5. HDPE Fittings shall be made from the same resins and material designations, cell classifications, and dimensions as the HDPE pipe.
6. Pipe And Fitting Jointing/Connections
 - 6.1. Butt Fusion – The Butt (or Heat) Fusion technique shall be used to join all HDPE pipe sections and connect HDPE fittings to the HDPE pipe. The joints shall conform to ASTM D2657 and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment should be capable of meeting all conditions recommended by the manufacturer, including but not limited to, temperature requirements of 400 to 450 degrees Fahrenheit, alignment, and a minimum interfacial fusion pressure of 75 psi. The fusion joining shall produce a joint weld strength equal to or greater than the tensile strength of the pipe itself.
 - 6.2. Sidewall Fusion – The Sidewall (or Heat) Fusion technique shall be used to connect HDPE fittings to the HDPE pipe. The joints shall conform to ASTM D2657 and shall be performed in strict accordance with the pipe manufacturer's recommendations. The sidewall fusion heating irons shall have an inside diameter equal to the outside diameter of the HDPE pipe and shall be ¼-inch wider than the size of the fitting being attached. The fusion joining shall produce joint weld strength equal to or greater than the tensile strength of the pipe itself.
 - 6.3. Pipe Mechanical Joining – Mechanical joining shall be used to make connections to PVC fittings and/or non-HDPE pipe. The permitted method of HDPE joining is listed below.
 - 6.3.1. HDPE Pipe to Non-HDPE pipe – Mega Lug Restrainers (manufactured for use with PVC pipe) combined with a MJ Harvey Adapter and mechanical joint, solid short sleeves. The HDPE side of the connection shall also be restrained by a concrete thrust anchor as per the plans. The non-HDPE pipe shall be reinforced with joint restrainers a minimum of three (3) joints beyond each HDPE to PVC connection, when the connection is linear.
7. HDPE pipe shall be installed using the horizontal directional drilling method as per City Of Noblesville Department Of Engineering And City Of Noblesville Utilities Department. Locations where pipe material transitions are required, i.e. HDPE/PVC, may be installed by open cut.
8. Shop drawings and manufacturer's literature for all contractor supplied materials shall be promptly submitted to the City of Noblesville Engineering for approval. The following items shall be submitted before delivery of HDPE pipe, tubing, or fittings:
 - 8.1. Pipe: Certification by the manufacturer that the HDPE material and pipe was manufactured and tested in accordance with all applicable specifications and requirements.
 - 8.2. Manufacturer's installation instruction and literature to the contractor so that manufacturer's recommended procedure and practice of installing pipe and fittings are followed.
9. Pipe Joining:
 - 9.1. The HDPE pipe shall be assembled and joined at the site using the butt-fusion method to provide a leak proof joint. Threaded or solvent-cement joints and connections are not permitted. All equipment and procedures used shall be used in strict compliance with the manufacturer's recommendations. Fusing shall be accomplished by personnel trained as fusion technicians by a manufacturer of polyethylene pipe and/or fusing equipment.
 - 9.2. Square the pipe ends by using the fusion machine facing tool. In the fusion machine, pipe ends shall meet squarely so that the entire area to be fused is covered. The pipe ends shall make firm contact without applying pressure to the heat plate. The heat plate temperature shall be as required by the pipe manufacturer's recommendations. The melt bead shall be according to pipe diameter and as recommended by the pipe manufacturer. Pipe ends shall be carefully moved away from heat plate once the appropriate melt bead is achieved. The pipe ends shall be joined quickly without slamming. The butt-fused joint shall be true alignment and shall have uniform roll back beads resulting from the use of proper temperature and pressure. The joint shall be allowed adequate cooling time before removal of pressure. The fused joint shall be watertight and shall have tensile strength equal to that of the pipe. All joints shall be subject to acceptance by the City Of Noblesville prior to insertion.
 - 9.3. All defective joints shall be cut out and replaced at no cost to the City of Noblesville. Any section of the pipe with a gash, blister, abrasion, nick, scar, or other deleterious fault greater in depth than ten percent (10%) of the wall thickness, shall not be used and must be removed from the site. However, a defective area of the pipe may be cut out and the joint fused in accordance with procedures stated above. In addition, any section of pipe having other defects such as concentrated ridges, discoloration, excessive spot roughness, pitting, variable wall thickness or any other defect of manufacturing or handling as determined by the City Of Noblesville shall be discarded and not used.
10. Contractor or subcontractor performing any fusion (heat or electrofusion) on the HDPE pipe shall be able to provide evidence and references for satisfactory service in at least 3 projects of similar pipe diameter and with similar service types.
11. The Contractor shall perform any and all testing on the HDPE pipe as directed and required by the City of Noblesville. A representative of the City of Noblesville shall be present for all testing associated with the HDPE pipe.

HORIZONTAL DIRECTIONAL DRILLING SPECIFICATIONS

1. See Related Specifications for High Density Polyethylene (HDPE) Pipe.
2. The contractor or sub-contractor performing any HDD installations shall have performed at least five (5) HDD projects of similar pipe diameter and length in the last three (3) years. The contractor shall ensure that appropriate equipment is provided to facilitate the installation. Equipment shall be matched to the size of pipe being installed and shall have appropriate torque and thrust/pullback capacity for the diameter and length of the intended drilling sections. The contractor will ensure that the drill rod can meet the bend radius required for the proposed installation.
3. Drilling Fluids:
 - 3.1. A mixture of bentonite clay or other approved slurry and potable water shall be used as the cutting and soil stabilization fluid. The viscosity shall be varied to best fit the soil conditions encountered. Water shall be clean and fresh. No other chemicals or polymer surfactant is to be used in the drilling fluid without the written consent of the City Of Noblesville and after a determination is made that the chemicals to be added are not harmful or corrosive to the facility and are environmentally safe.
 - 3.2. The contractor shall identify the source of fresh water for mixing the drilling mud. The contractor shall be responsible for approvals and permits required for such sources as streams, rivers, ponds, or fire hydrants. Any water source other than potable water may require a pH Test.
 - 3.3. Monitoring of the drilling fluids such as the pumping rate, pressures, viscosity, and density is required during the pilot bore, back reaming, and pipe installation stages, to ensure adequate removal of soil cuttings and the stability of the bore hole. Relief holes can be used as necessary to relieve excess pressure down hole. To minimize heaving during pullback, the pull back rate is determined in order to maximize the removal of soil cuttings without building excess down hole pressure. Excess drilling fluids shall be contained at entry and exit points until they are recycled or removed from the site. Entry and exit pits shall be of sufficient size to contain the expected return of drilling fluids and soil cuttings.
 - 3.4. The contractor shall ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate local, state, or federal regulatory agencies. When drilling in suspected contaminated ground, the drilling fluid shall be tested for contamination and disposed of appropriately. Any excess material shall be removed upon completion of the bore.
 - 3.5. Restoration for damage to any transportation facility or non-transportation facility caused by heaving, settlement, escaping drilling fluid (fracout) or the directional drilling operation, is the responsibility of the contractor. Any pavement heaving or settlement damage requires restoration/replacement of the pavement per applicable City Of Noblesville standards.
4. General Construction Requirements:
 - 4.1. The pipe shall be installed in the location and to the line and grade designated on the drawings.
 - 4.2. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
 - 4.3. All surfaces shall be finish graded to original contours and ground cover.
 - 4.4. All materials delivered to the project shall be neatly stored. Excavated material, which is not removed from the immediate work site, shall be stockpiled so as to cause as little inconvenience to the property owners as possible. Driveways and street crossings must be kept clear.
 - 4.5. Excavation for entry, recovery pits, slurry sump pits, or any other excavation shall be carried out in accordance with City Of Noblesville Specifications for applicable work. Sump areas or holding tanks are required to contain drilling fluids.
 - 4.6. After completing installation of the product the work site shall be restored. The work site shall be cleaned of all excess slurry left on the ground. Removal and final disposition of excess slurry or spoils as the product is introduced shall be the responsibility of the contractor.
 - 4.7. Excavated areas shall be restored in accordance with the City Of Noblesville Specifications. The cost of restoring damaged pavement, curb, sidewalk, driveways, lawns, storm drains, landscape, and other facilities is the responsibility of the contractor.
 - 4.8. If underground utilities and/or structures not shown on the Drawings are encountered, notify the City Of Noblesville and do not proceed until instructions are obtained. Notify the City Of Noblesville if springs or running water are encountered.
5. Specific Requirements:
 - 5.1. Utility Verification (Potholing)
 - 5.1.1. Contractor shall conduct prior to the start of sanitary main construction the verification of all underground utilities (potholing) that may conflict with Sanitary Force Main construction.

HORIZONTAL DIRECTIONAL DRILLING SPECIFICATIONS (CONT.)

- 5.1.2. Potholing results shall be presented to the City Of Noblesville on a full set of drawings showing accurate locations of utilities. Information marked on the plans should include horizontal tie downs as well as depths related to USGS elevation.
- 5.1.3. Alignment of the proposed sanitary force main (horizontal and vertical) may be adjusted in the field upon review of potholing results by the Engineer/City Of Noblesville.
- 5.2. Back Ream Hole Diameter – The back ream hole diameter shall be no greater than the sum of the maximum product outside diameter (OD) plus 6-inches.
- 5.3. Testing – When there is any indication a pipe has sustained damage and may leak, the work is to be stopped and the damage investigated. The City Of Noblesville may require a pressure test. The testing may consist of one of the following methods but shall always meet or exceed City Of Noblesville's testing requirements:
 - 5.3.1. Manufacturer's pressure testing recommendations for the type of pipe being installed are followed. The City Of Noblesville shall be notified and be present during the test for review of the test results for compliance. The pressure test shall be performed within twenty-four (24) hours. A copy of the test results shall be furnished to the The City Of Noblesville. If the pipe is not in compliance with specifications, the City Of Noblesville may require it to be filled with flowable fill.
 - 5.3.2. Product carrier pipes installed without a casing must meet pressure requirements set by the City Of Noblesville. A copy of the test results shall be furnished to the The City Of Noblesville. If the pipe is not in compliance with specifications the City may require it to be filled with flowable fill.
- 5.4. Locating and Tracking – The contractor shall describe the method of locating and tracking the drill head during the pilot bore. The City Of Noblesville recognizes walkover, wire line, and wire line with surface grid verification, or any other system as approved by the City Of Noblesville, as the accepted methods of tracking directional bores. The locating and tracking system shall be capable of ensuring that the proposed installation is installed as intended. The locating and tracking system shall provide information on:
 - 5.4.1. Clock and Pitch Information.
 - 5.4.2. Depth.
 - 5.4.3. Battery Status.
 - 5.4.4. Position (x,y).
 - 5.4.5. Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility.)
 - 5.4.6. Alignment readings or plot points shall be taken and recorded every five (5) feet.
 - 5.4.7. Before commencement of a directional drilling operation, proper calibration of the equipment (if required) shall be undertaken.
- 5.5. All facilities shall be installed in such a way that their location can be readily determined by electronic designation after installation. For non-conductive installations this shall be accomplished by attachment of three (3) 10-gauge tracing wires, as per these City Of Noblesville Standards.
6. Quality Control:
 - 6.1. A representative of the contractor must be in control of the operation at all times. The representative must have a thorough knowledge of the equipment and the procedures to be performed, and must be present at the job site during the installation.
 - 6.2. The City Of Noblesville must be notified forty-eight (48) hours in advance of starting work. The installation shall not begin until the City Of Noblesville is present at the job site and agrees that proper preparations have been made.
7. Testing and Cleanup:
 - 7.1. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
 - 7.2. All surfaces shall be finish graded to original contours and ground cover. All surplus excavated material shall be disposed of off-site in a legal manner by the contractor.



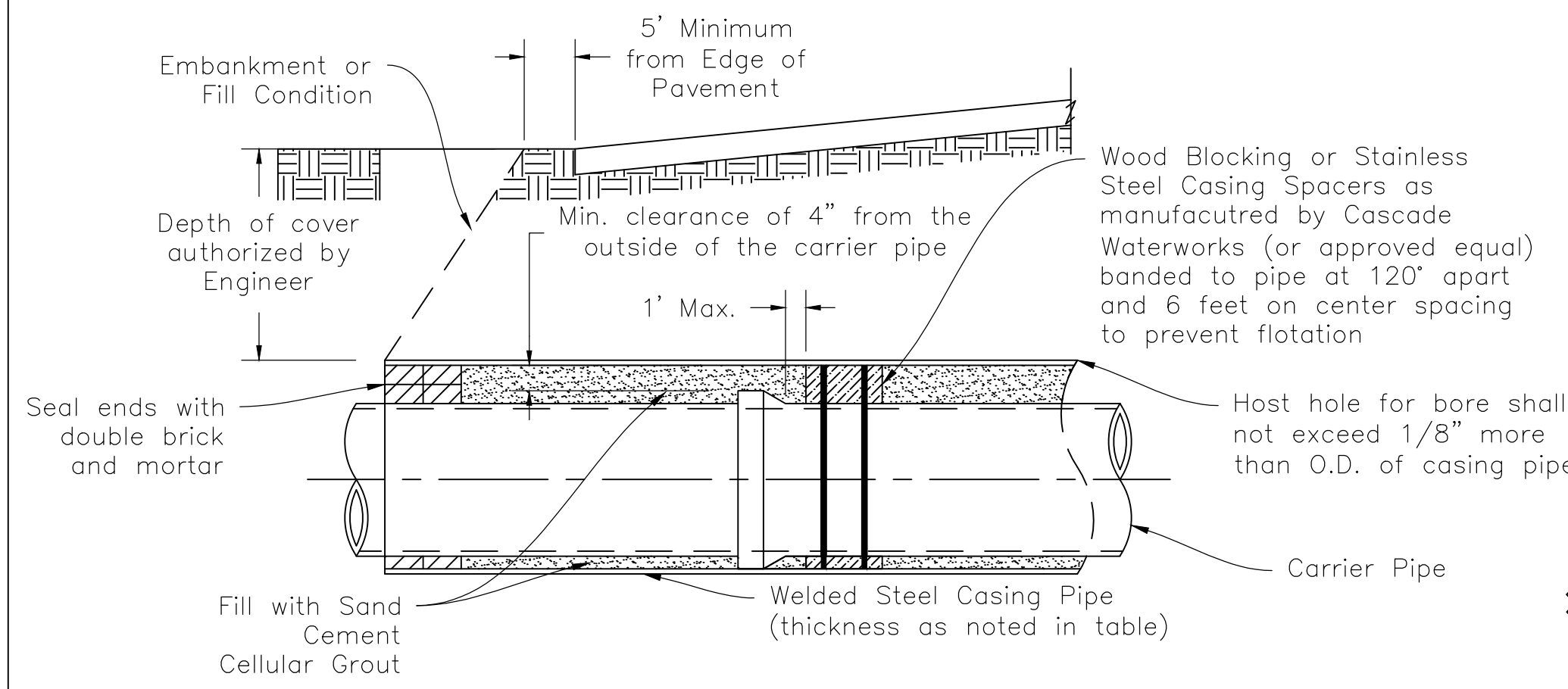
CITY OF NOBLESVILLE

Sanitary Sewer General Notes and Specifications

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Alison M. Krupski 7/18/2021

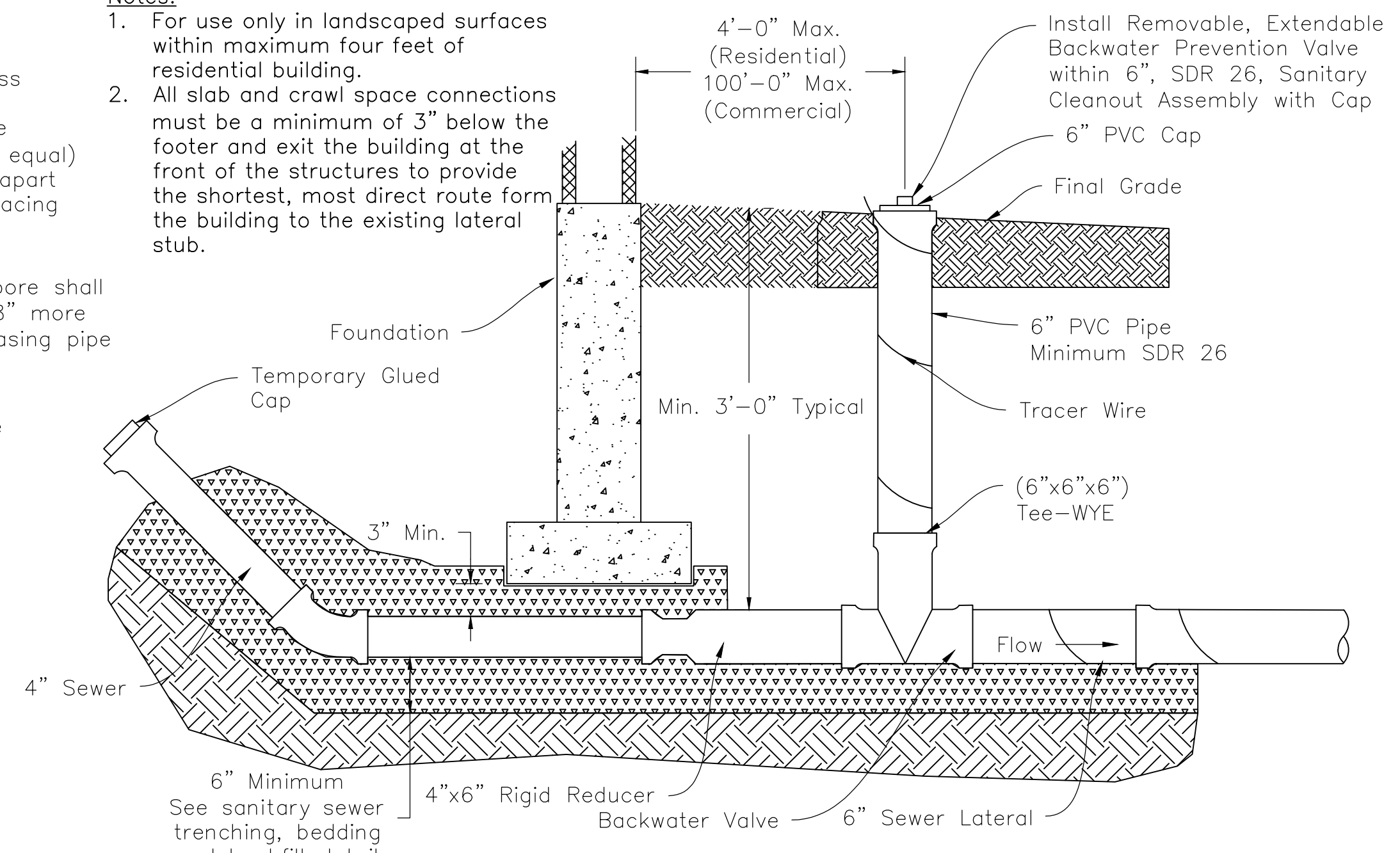


*Casing Pipe shall be joined using 36 KSI Min. welded joints

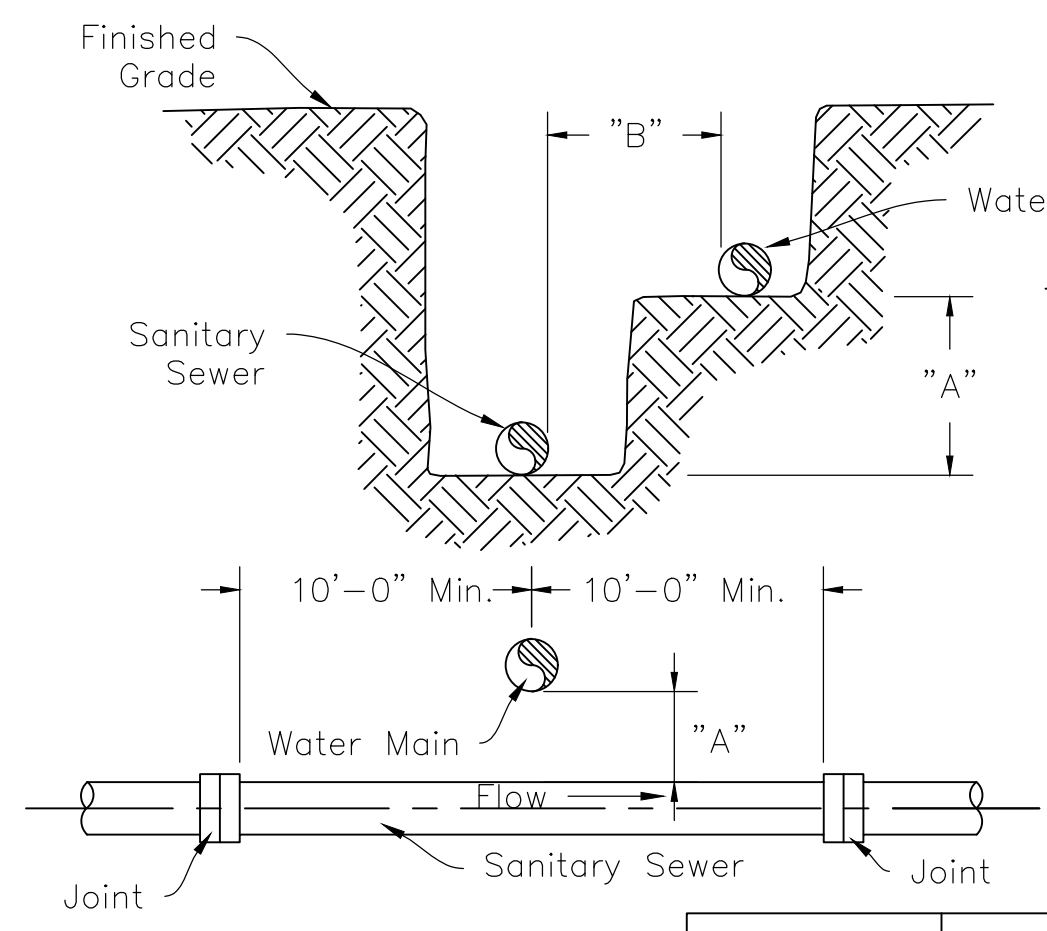
NOMINAL WALL THICKNESS					
Nominal Size	Actual O.D.	Railroad Crossings		Roadway Crossings	
		Bare	Protective Coated	Bare	Protective Coated
8"	8 5/8"	0.250	0.188	0.250	0.188
10"	10 3/4"	0.250	0.188	0.250	0.188
12"	12 3/4"	0.250	0.188	0.250	0.188
14"	14"	0.281	0.219	0.250	0.219
16"	16"	0.281	0.219	0.250	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

Notes:

- For use only in landscaped surfaces within maximum four feet of residential building.
- All slab and crawl space connections must be a minimum of 3" below the footer and exit the building at the front of the structures to provide the shortest, most direct route from the building to the existing lateral stub.



TYPE 1 CLEANOUT DETAIL WITH BACKWATER VALVE
Scale: None

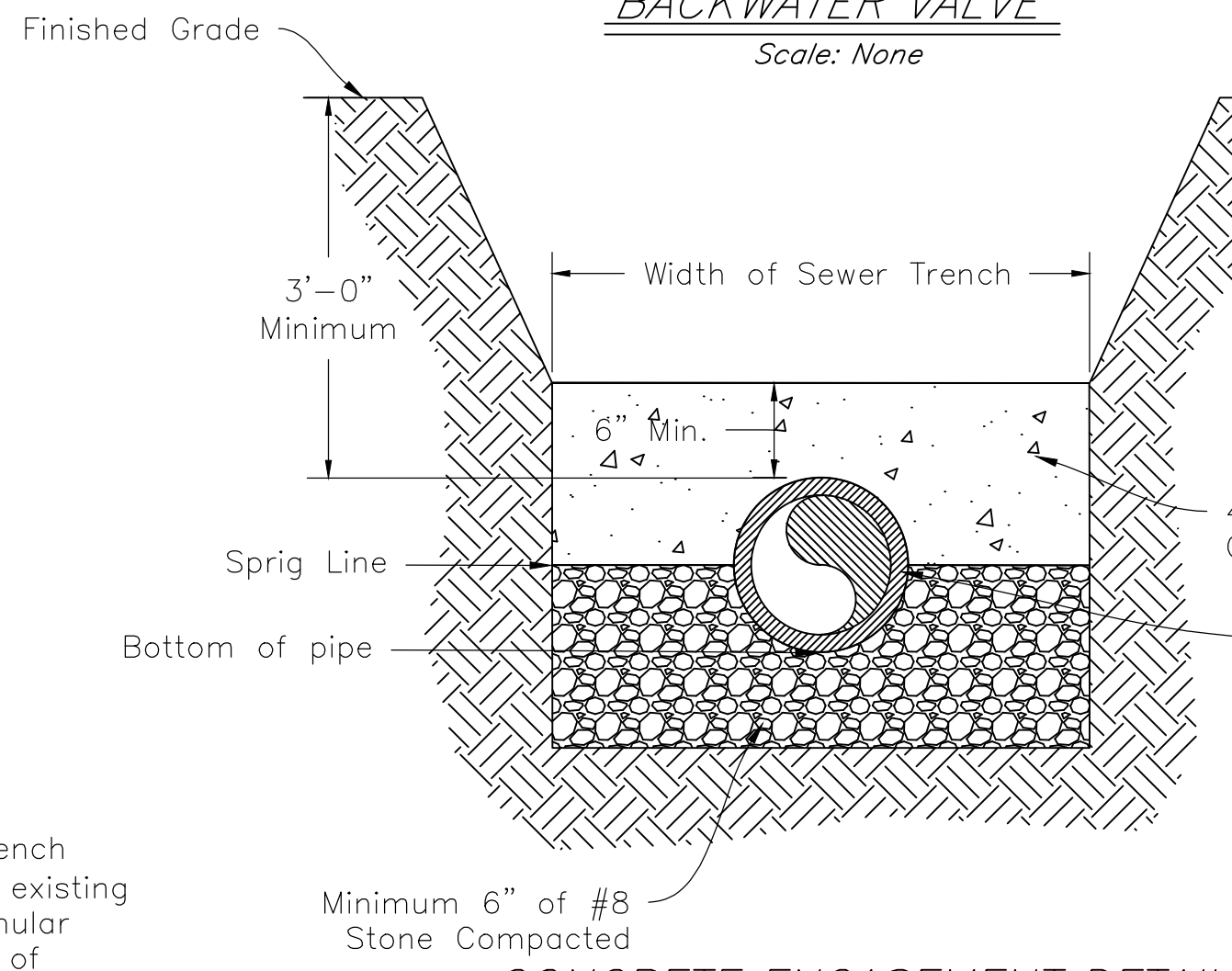


Notes:

- Separation distances from water supplies and pipe classifications shall conform to the Indiana State Board of Health's "On-Site Water Supply and Wastewater Disposal for Public and Commercial Establishments - Bulletin S.E. 13".
- Water Mains shall be located on an undisturbed ledge.

If "A" Is	If "B" Is	Then Sanitary Sewer Pipe Segment Shall Be:
18" Or More	10" Or More	No Special Pipe Material Or Grade Requirements
Less Than 18"	Less Than 10"	PVC (Either ASTM D2241 (SDR 21) ANSI/AWWA C900 (DR18) ANSI/AWWA C905 (DR21) DUCTILE IRON (CLASS 51 Min.)

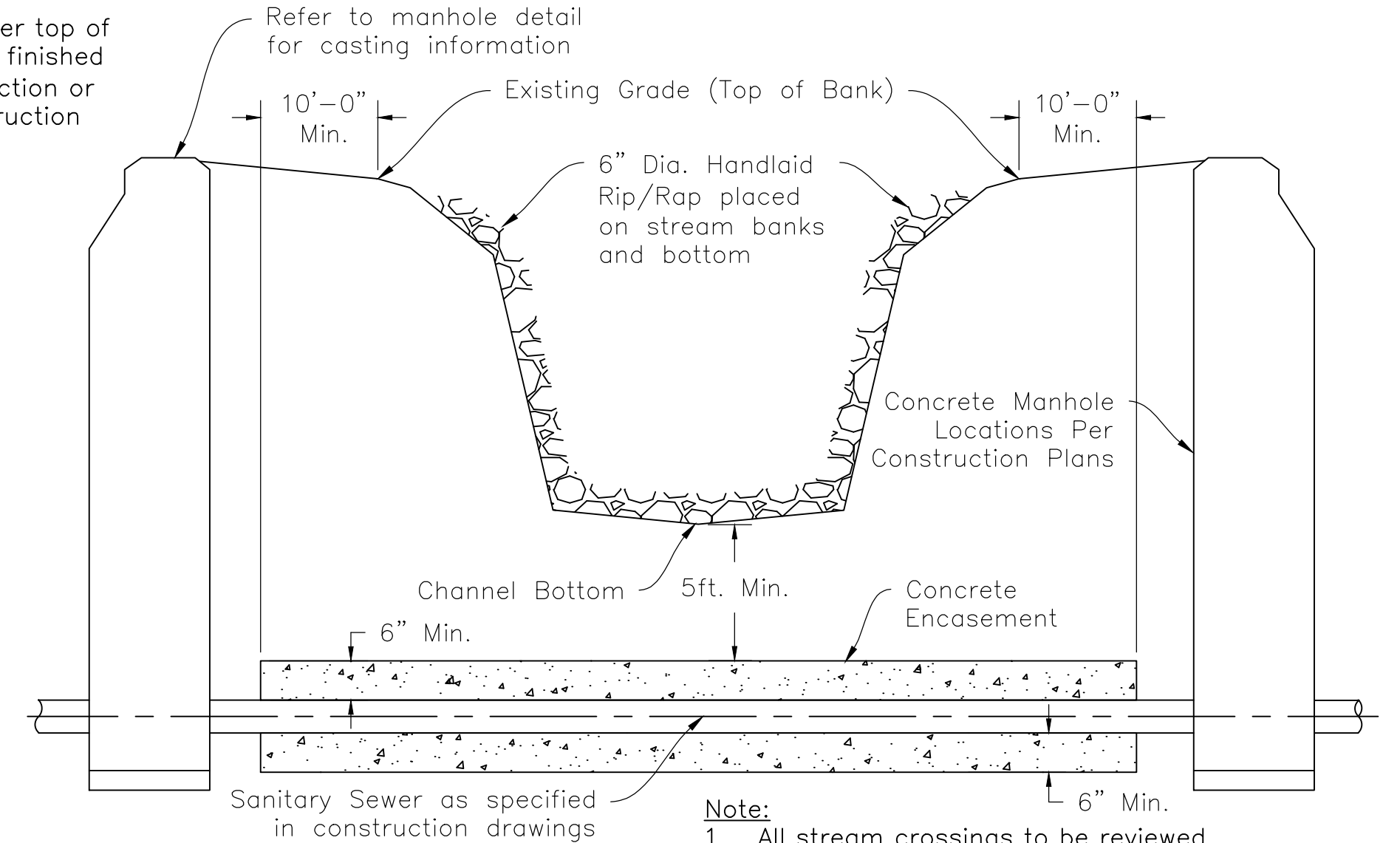
WATER LINE CROSSING DETAIL
Scale: None



CONCRETE ENCASEMENT DETAIL
Scale: None

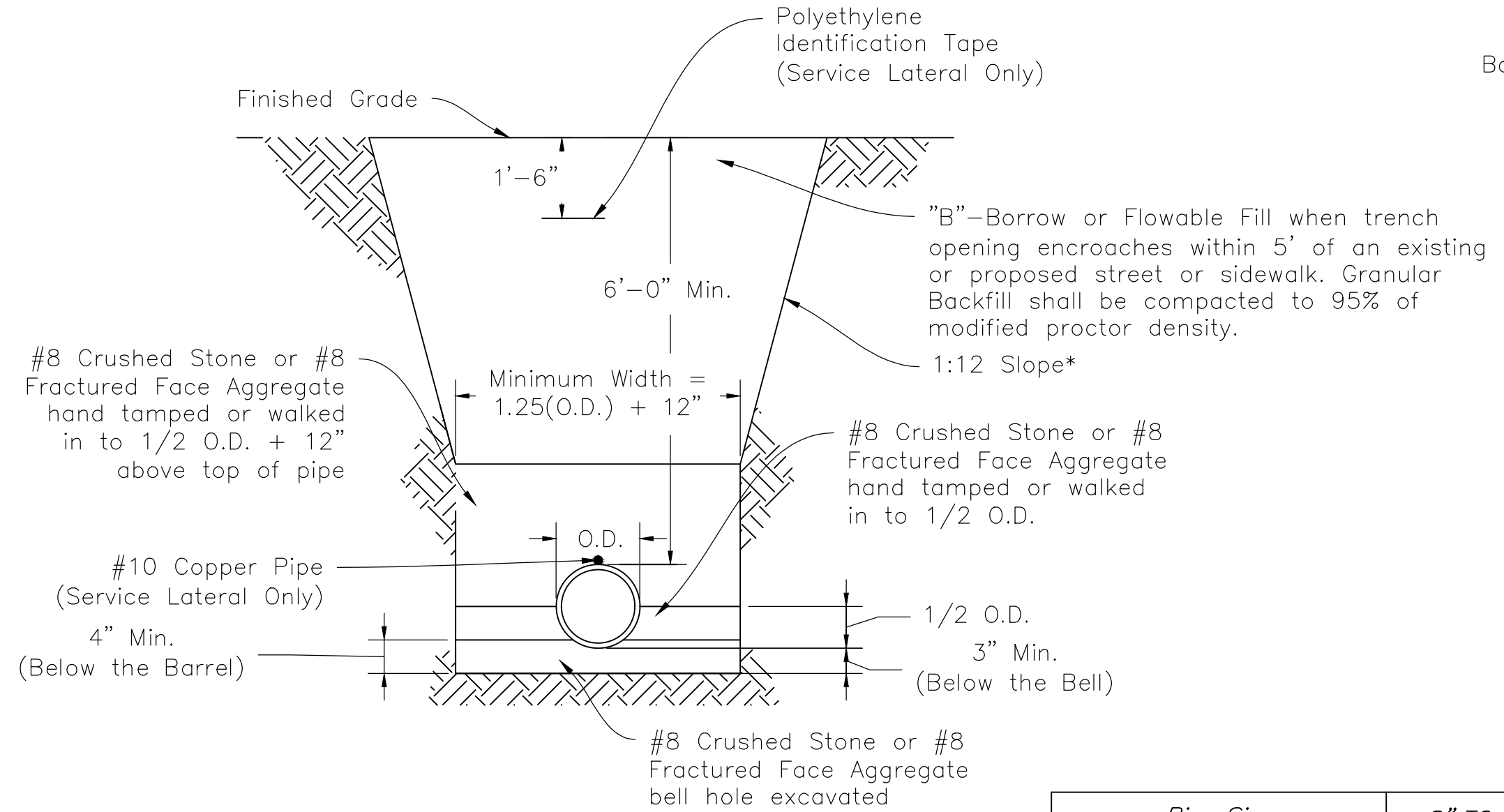
Note:

- Concrete shall be High-Early Yield and shall be backfilled until Engineer Deems the concrete adequately cured.
- To be used when cover over top of pipe is less than 4 feet to finished grade, per Engineer's direction or where noted on the construction plans.



Note:

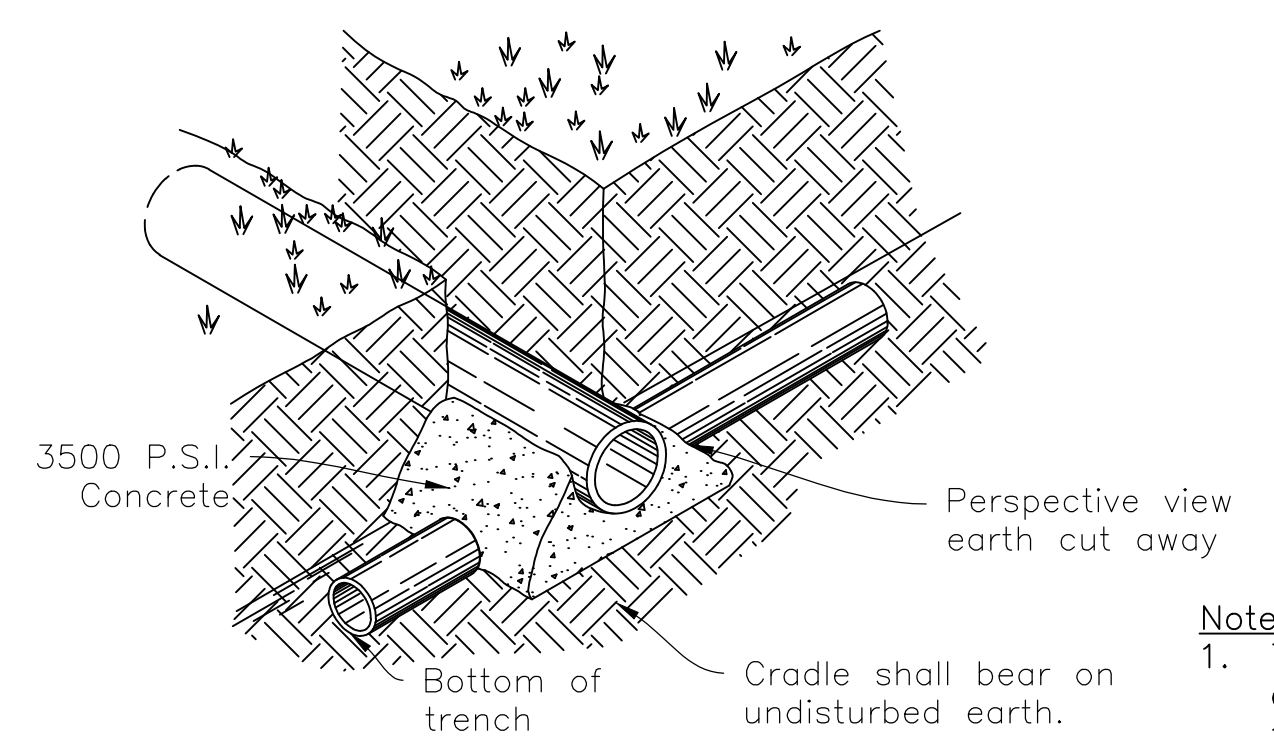
- All stream crossings to be reviewed by the Hamilton County Surveyor's Office and adhere to their construction details and specifications.



PVC PIPE BEDDING DETAIL
Scale: None

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

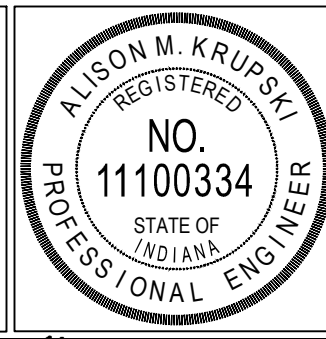
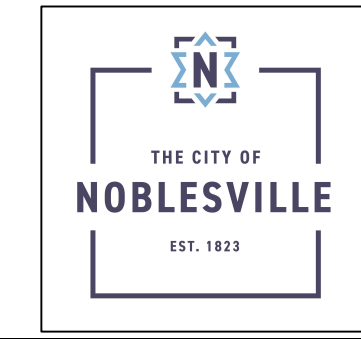
Pipe Size	8" TO 15"	18" And Over
Bedding Below The Pipe Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"



CONCRETE CRADLE DETAIL
NOT TO SCALE

Note:

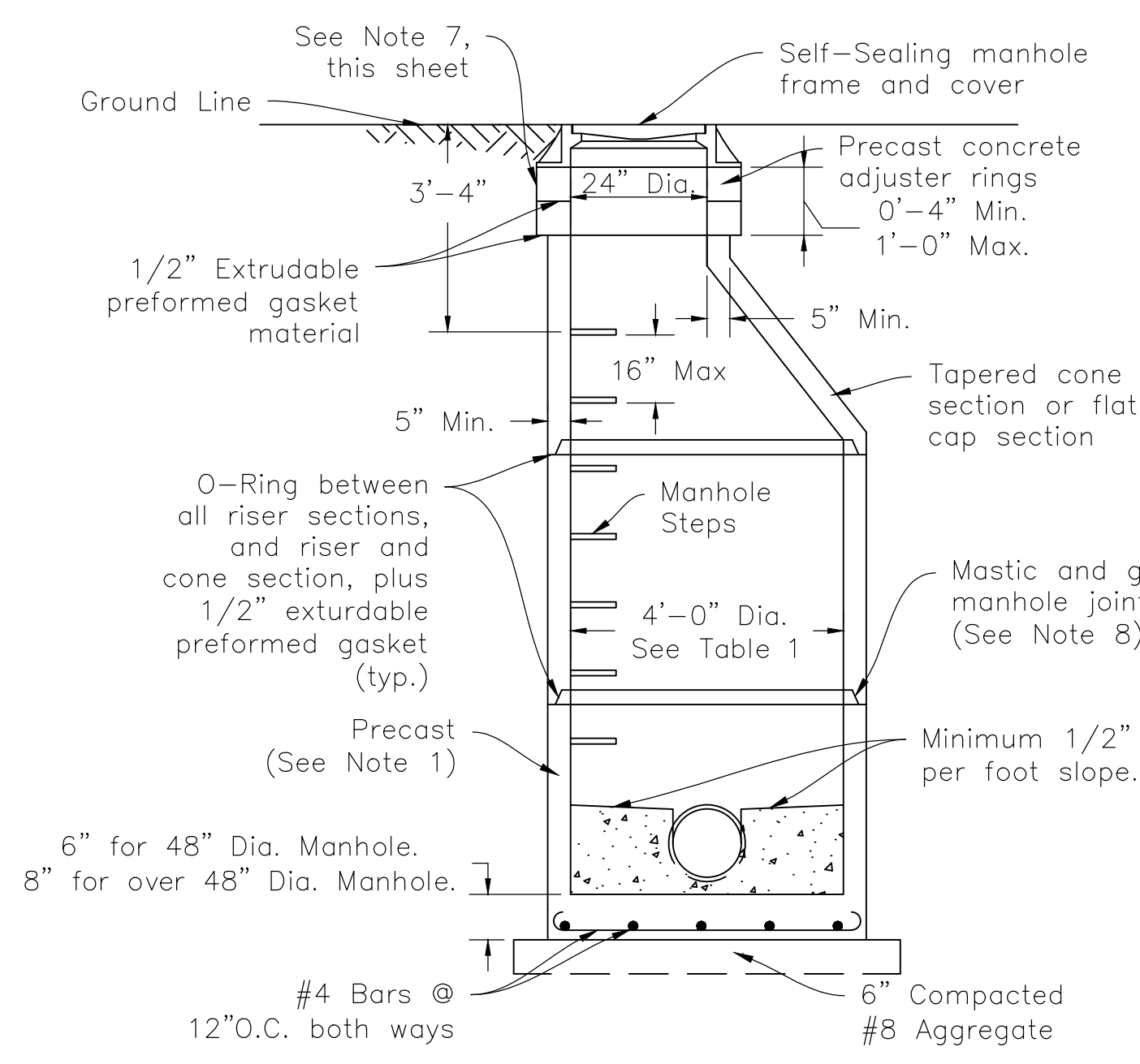
- To be used when clear distance between pipes is 18" or less, or where noted on the drawings.



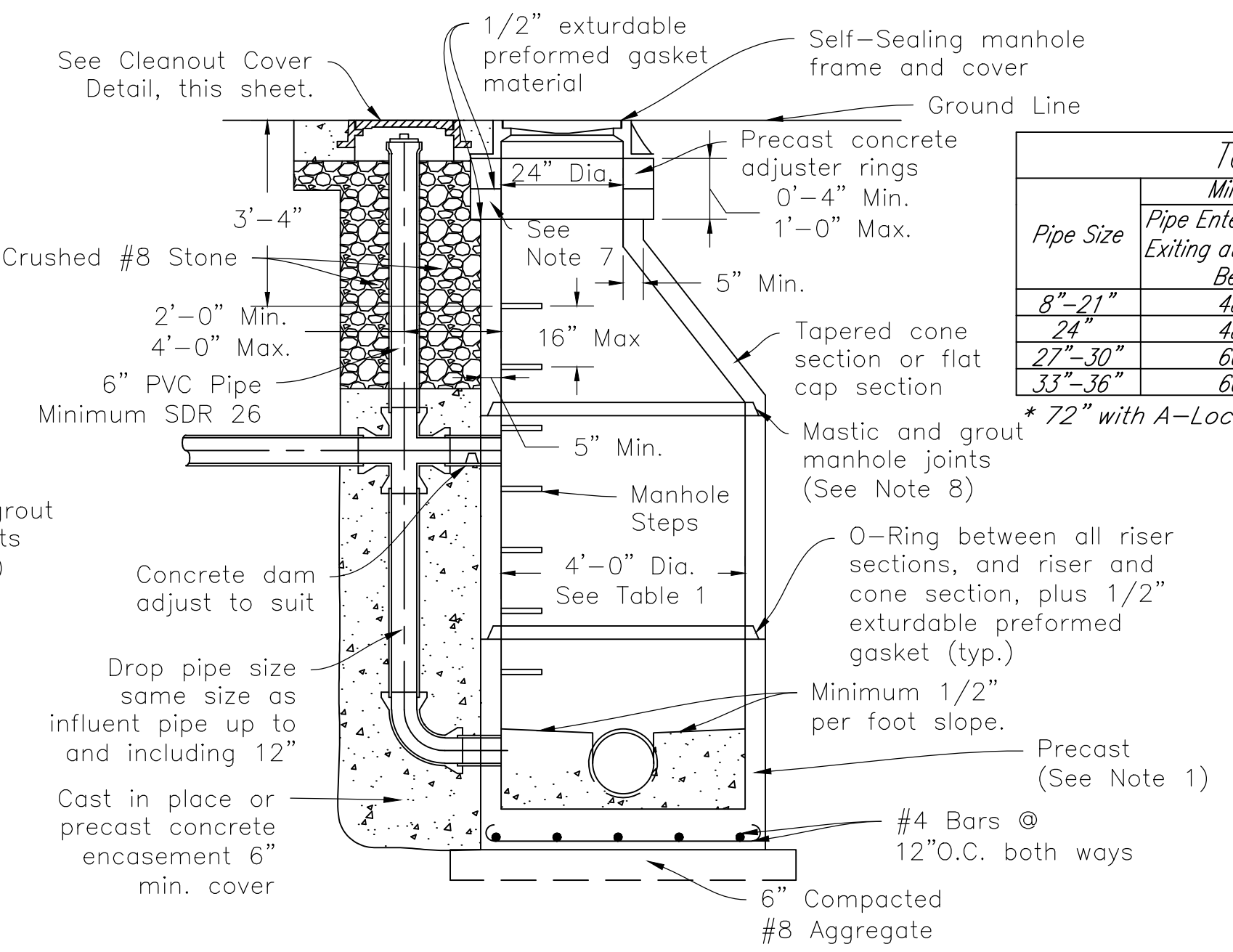
CITY OF NOBLESVILLE
Sanitary Sewer Pipe and Bedding Details

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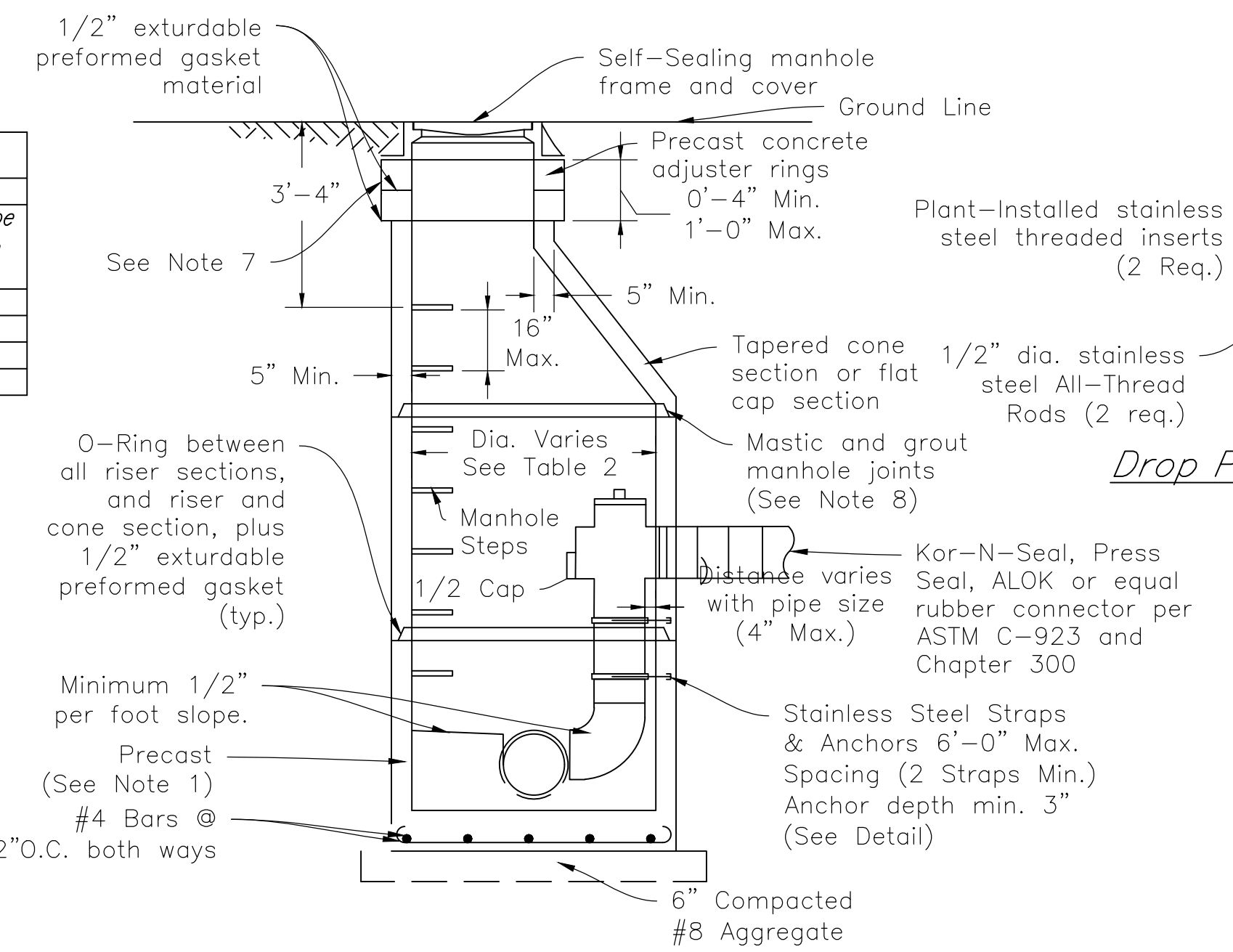
TYPICAL MANHOLE TYPE A
Scale: None



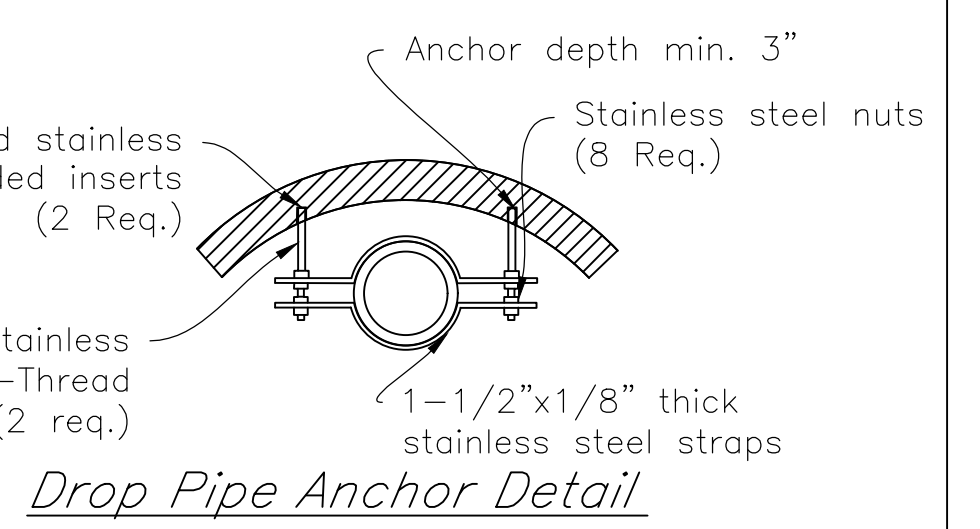
TYPICAL MANHOLE TYPE B (EXTERIOR DROP MANHOLE)
Scale: None

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



TYPICAL MANHOLE TYPE C (INTERNAL DROP MANHOLE)
(60" DIAMETER OR GREATER)
Scale: None



Drop Pipe Anchor Detail

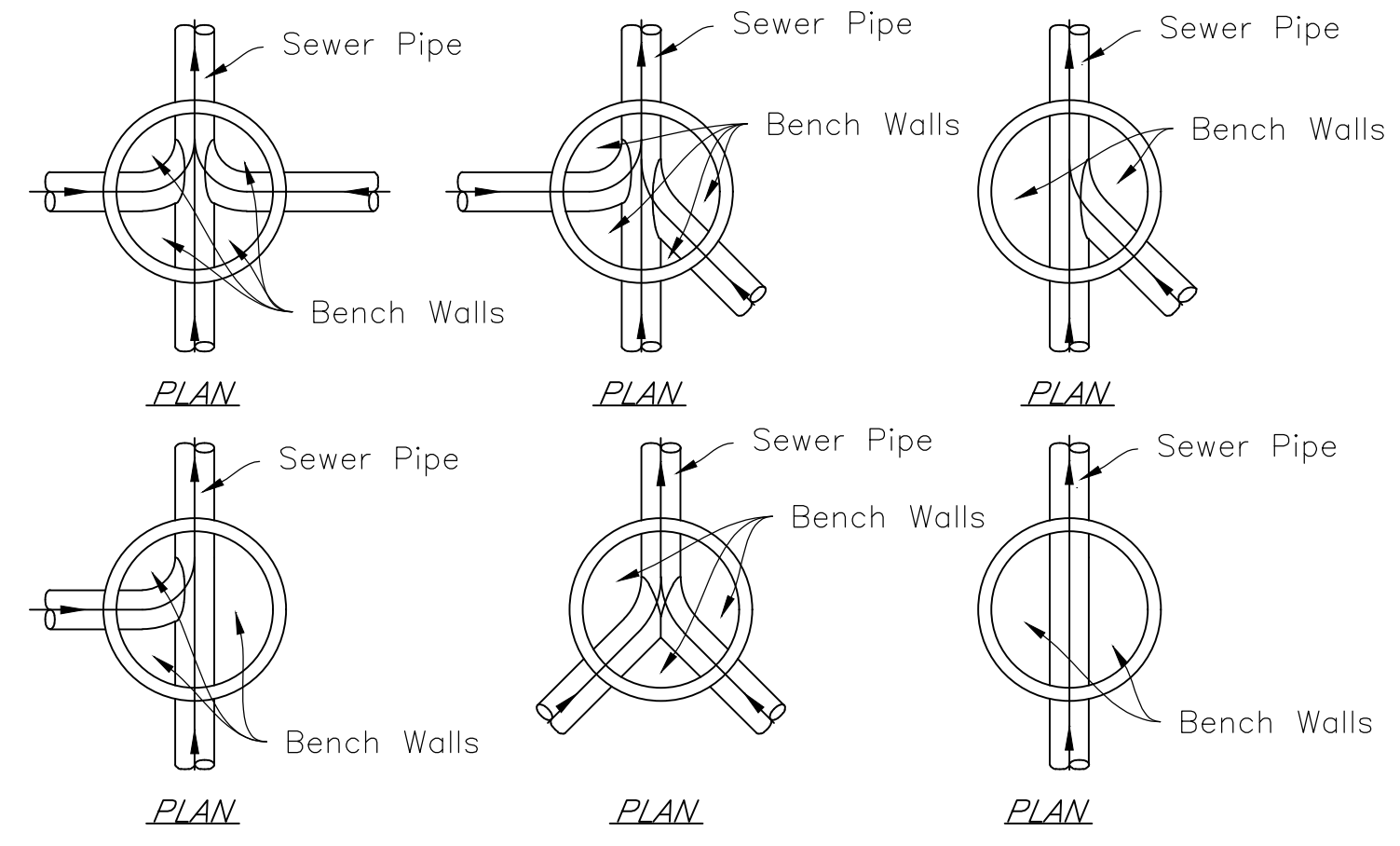
Total Number Of Incoming Lines	Pipe Size	Inside Manhole Diameter
1	8"-12"	60"
2 Or 3	8"-12"	72"

Note:
1. IntraFlow™ low profile inside drop system by Royal Enterprises America to be used on less than 60" dia. manholes.

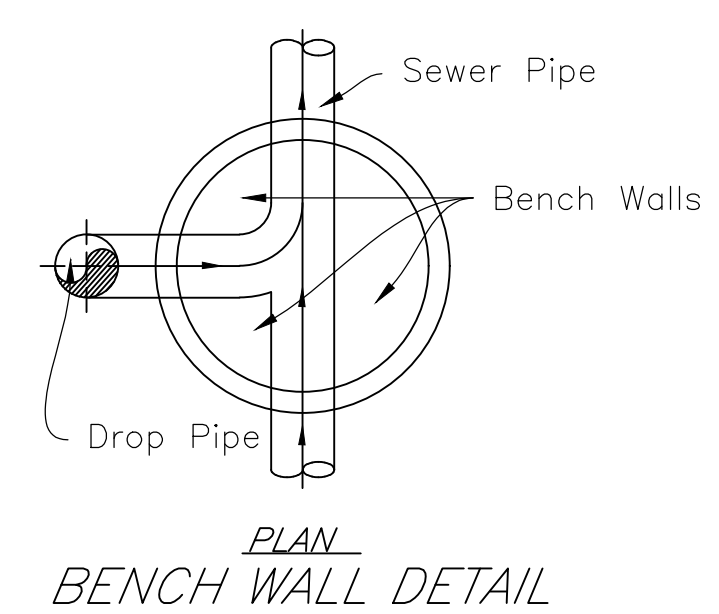
MANHOLES

- 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.
- 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.
- 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.
- Manhole frame and cover shall be Neenah R-1772 with gasketed lid, East Jordan 1022-Z1 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 1022-Z1 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.
- 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. (see Acceptable Connection Detail-Sheet 14.)
- Manholes shall be installed at distances not greater than 400 feet.
- 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

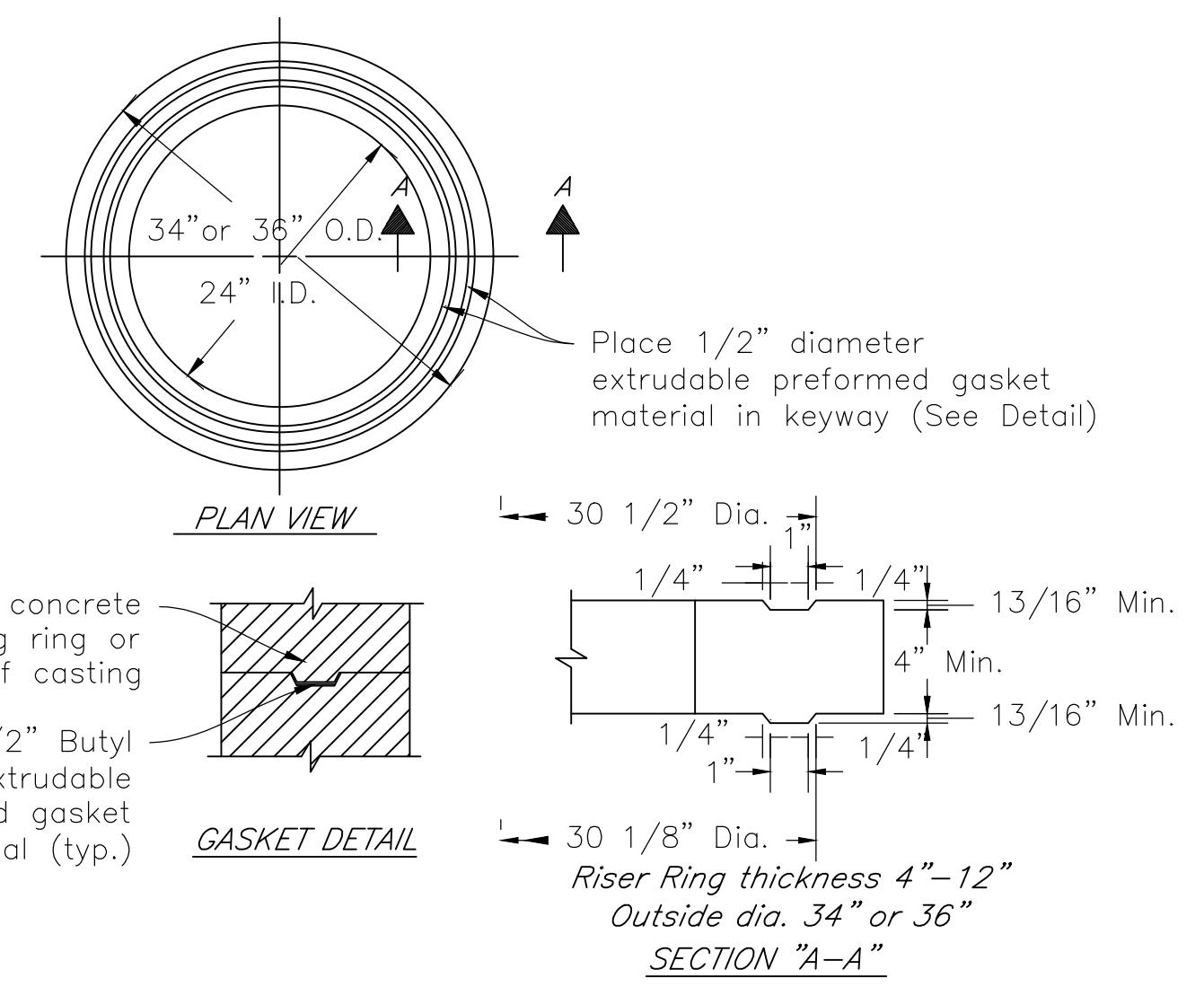
- thickness of 60 mils and meet the requirements of ASTM C-923, ASTM C-443 and ASTM F-477. The rubber sleeve shall be Infi-Shield external manhole seal, or as approved by the Noblesville Department of Engineering.
- Apply bituminous coating, Hydracide 700 Mastic, on the external face at all manhole section joints. Hydracide mastic shall be applied to 6" above and below each joint.
- 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.
- 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.
- Any vacuum testing and equipment shall be provided by the contractor. Any repairs shall be the responsibility of the contractor.
- Contractor shall permanently secure casting to eccentric cone or flat cap section by installation of four (4) equally spaced 3/8" diameter 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.
- 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.
- 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.
- Any permitted internal drop manholes that are less than 60" diameter structures shall use IntraFlow™ low-profile inside drop system by Royal Enterprises America, or as approved by Noblesville Department of Engineering.



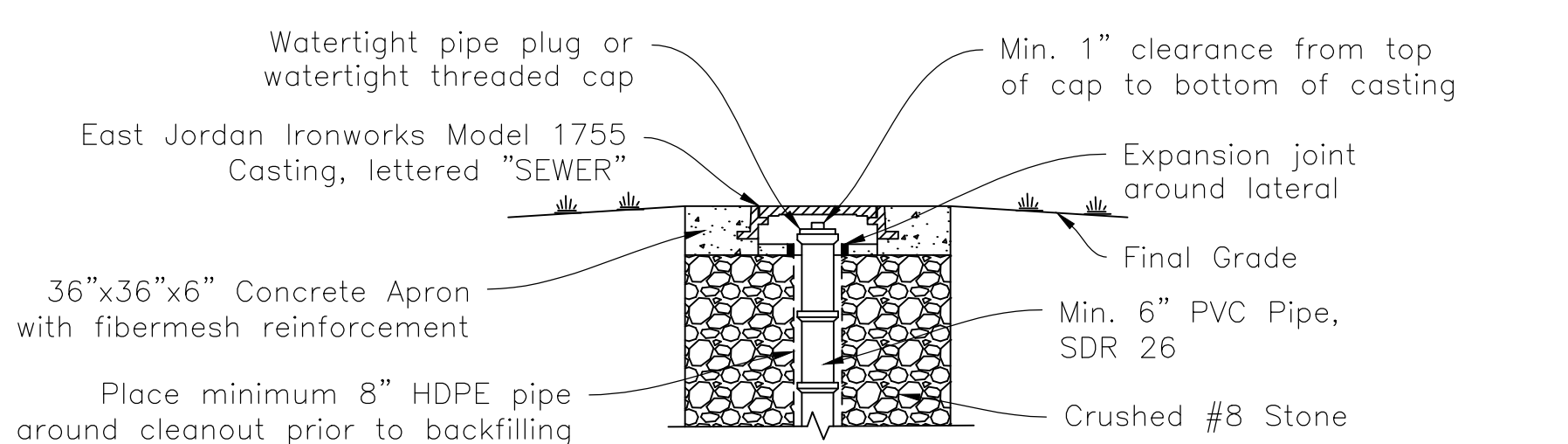
BENCH WALL DETAILS
Scale: None



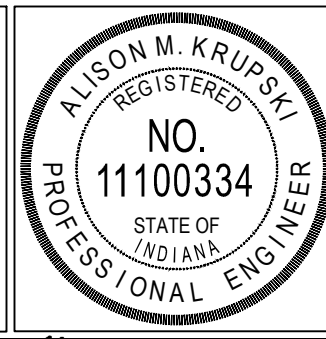
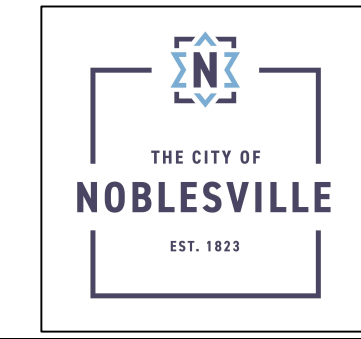
BENCH WALL DETAIL



PRECAST ADJUSTING RING
Scale: None



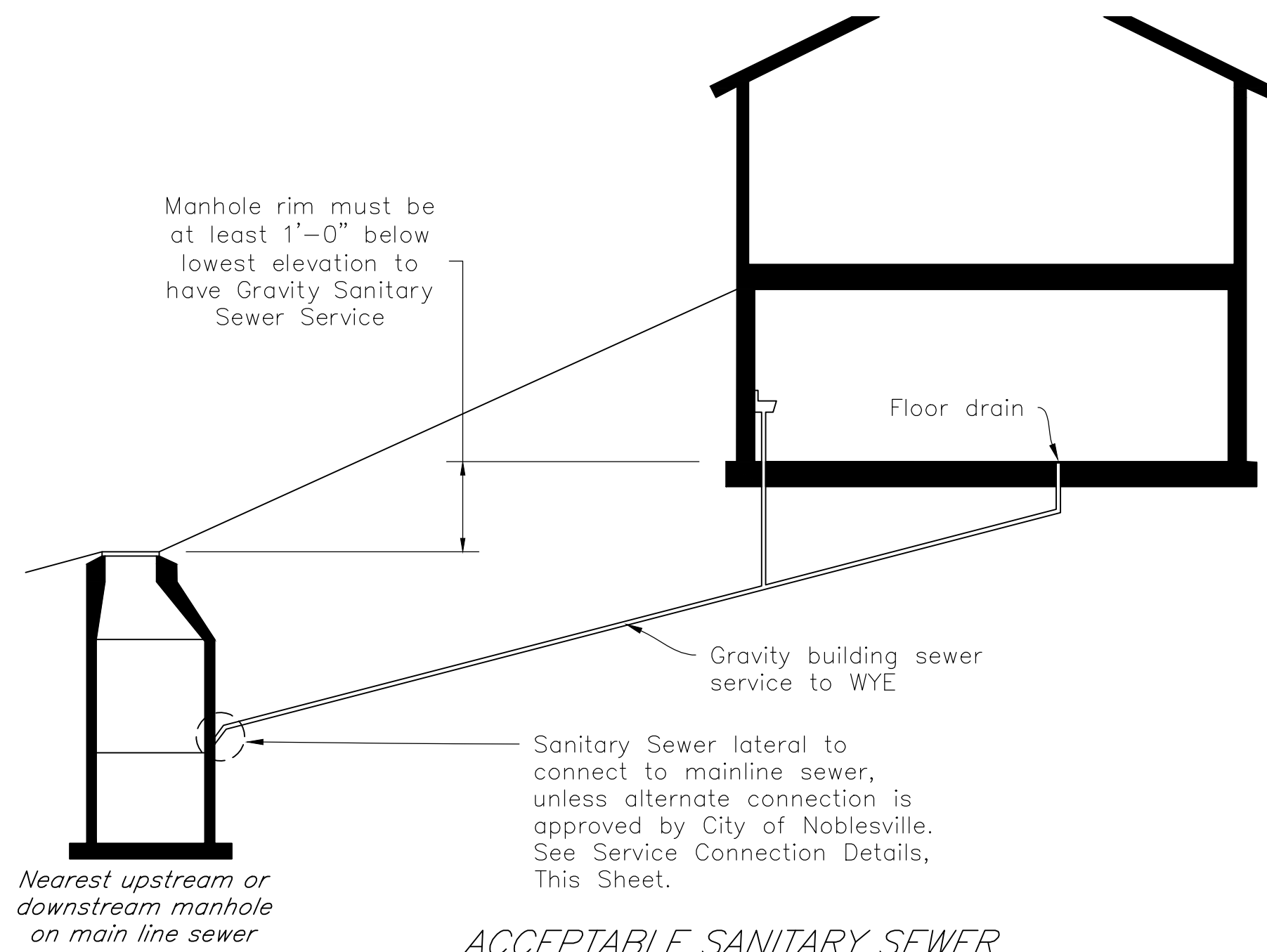
CLEANOUT COVER DETAILS
Scale: None



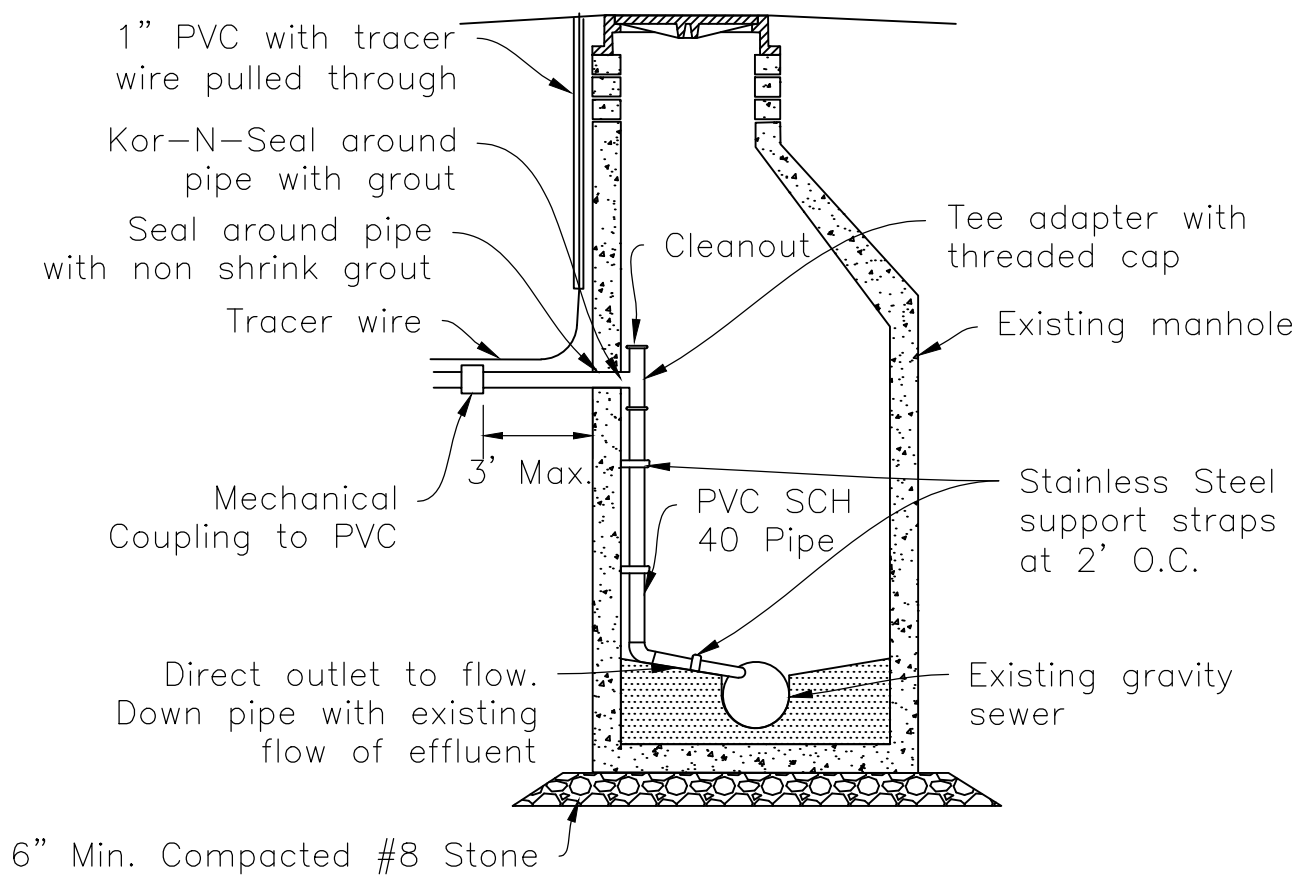
CITY OF NOBLESVILLE
Sanitary Sewer Structures and Connection Details

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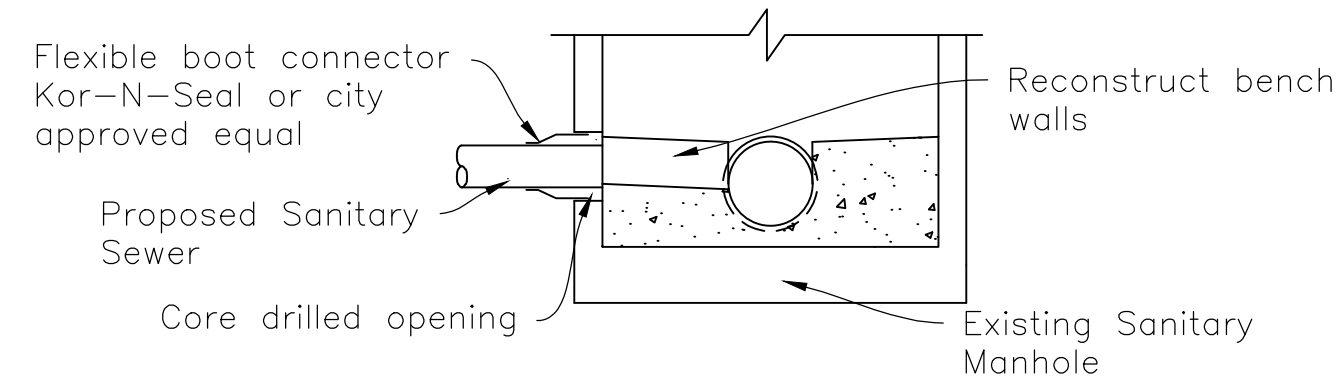
Alison M. Krupski 7/8/2021



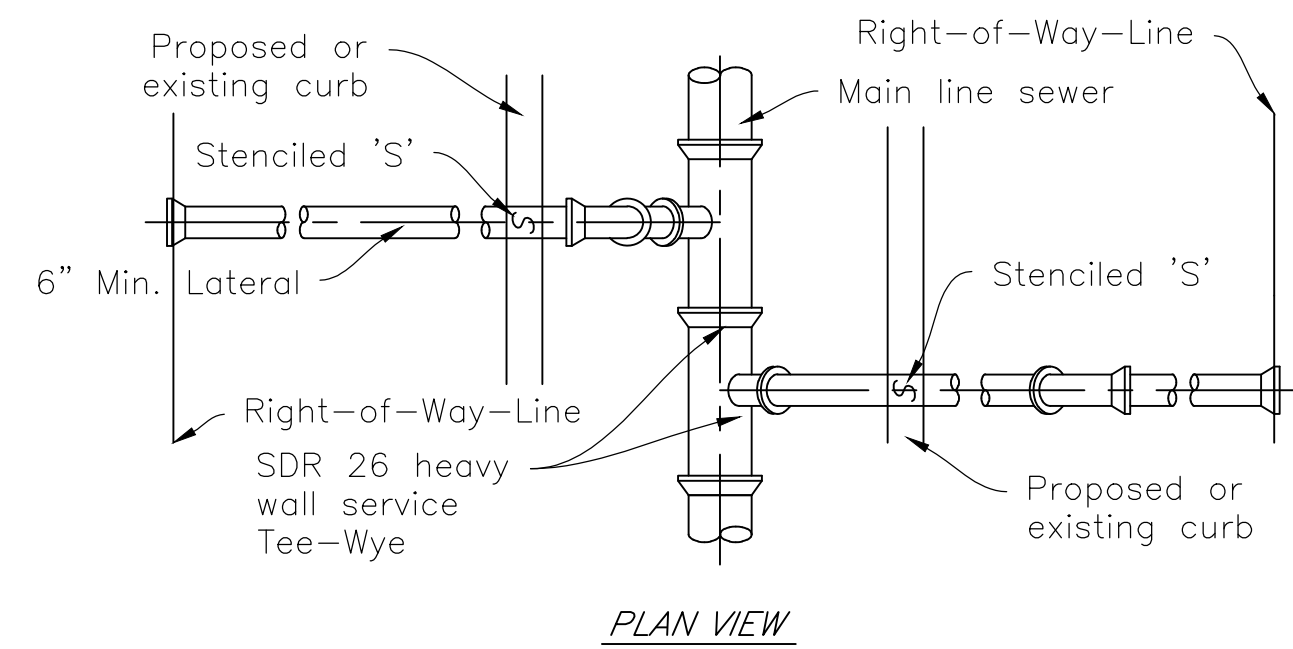
ACCEPTABLE SANITARY SEWER CONNECTION DETAIL
Scale: None



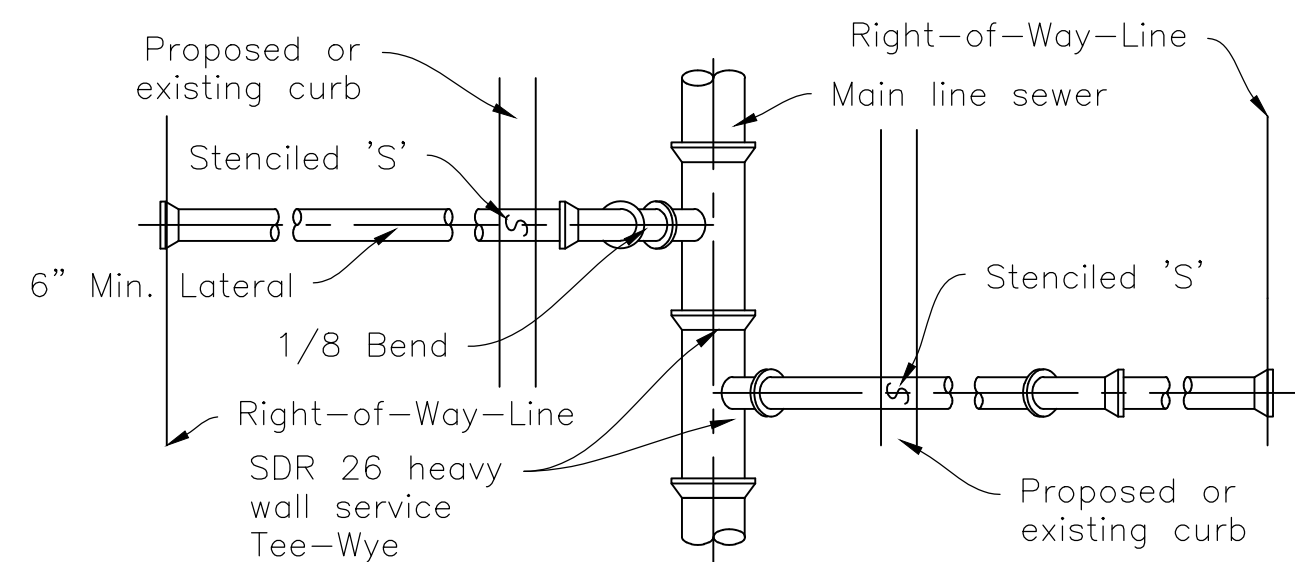
FORCE MAIN TO MANHOLE DETAIL FOR 4" DIAMETER PIPE OR SMALLER
Scale: None



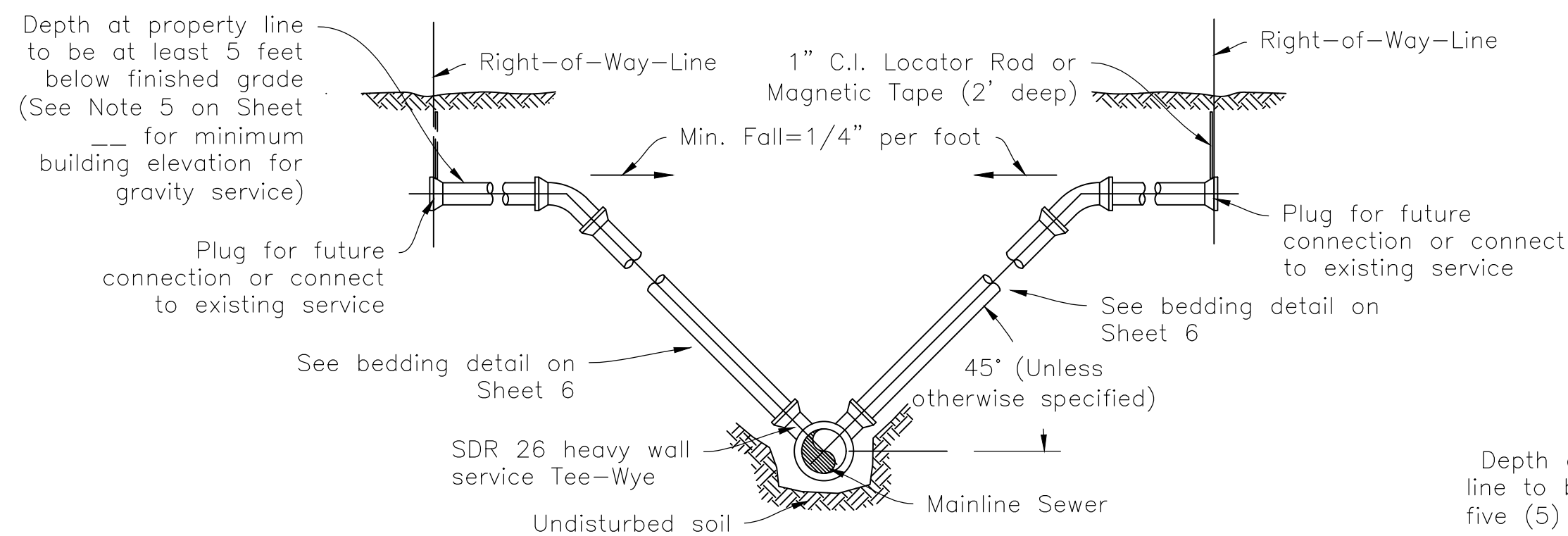
EXISTING MANHOLE CONNECTION DETAIL
Scale: None



PLAN VIEW

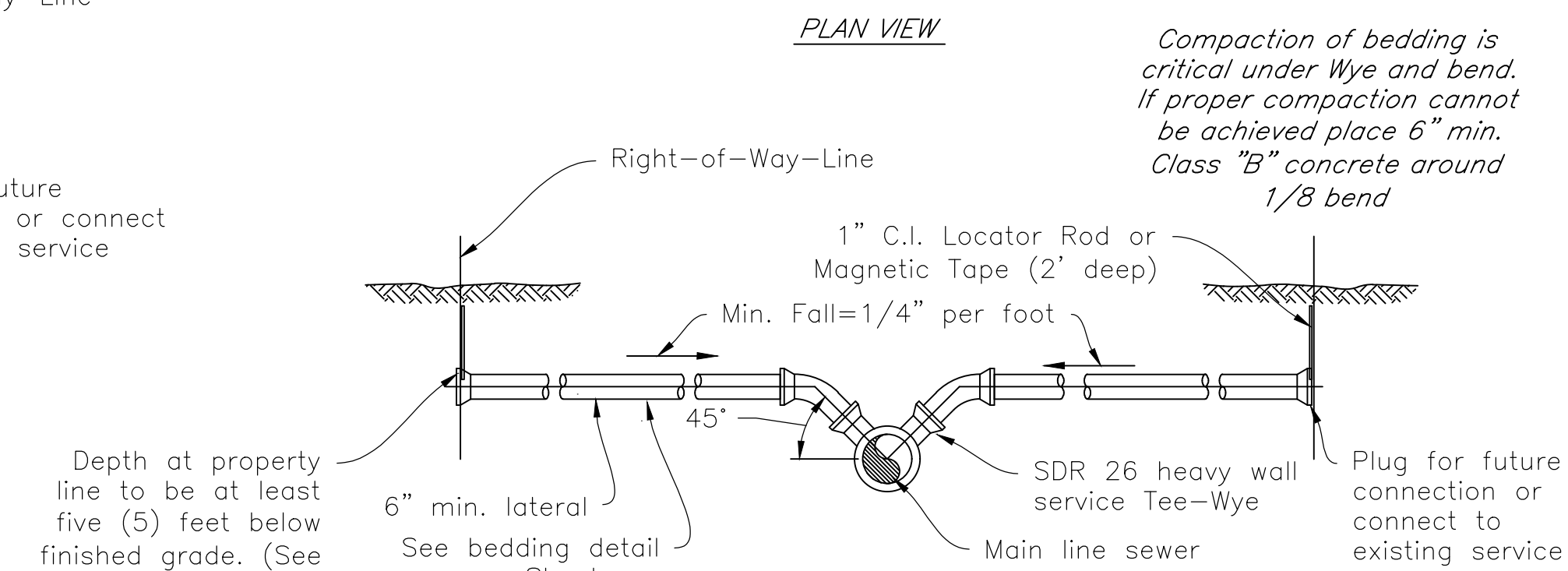


PLAN VIEW



ELEVATION VIEW

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

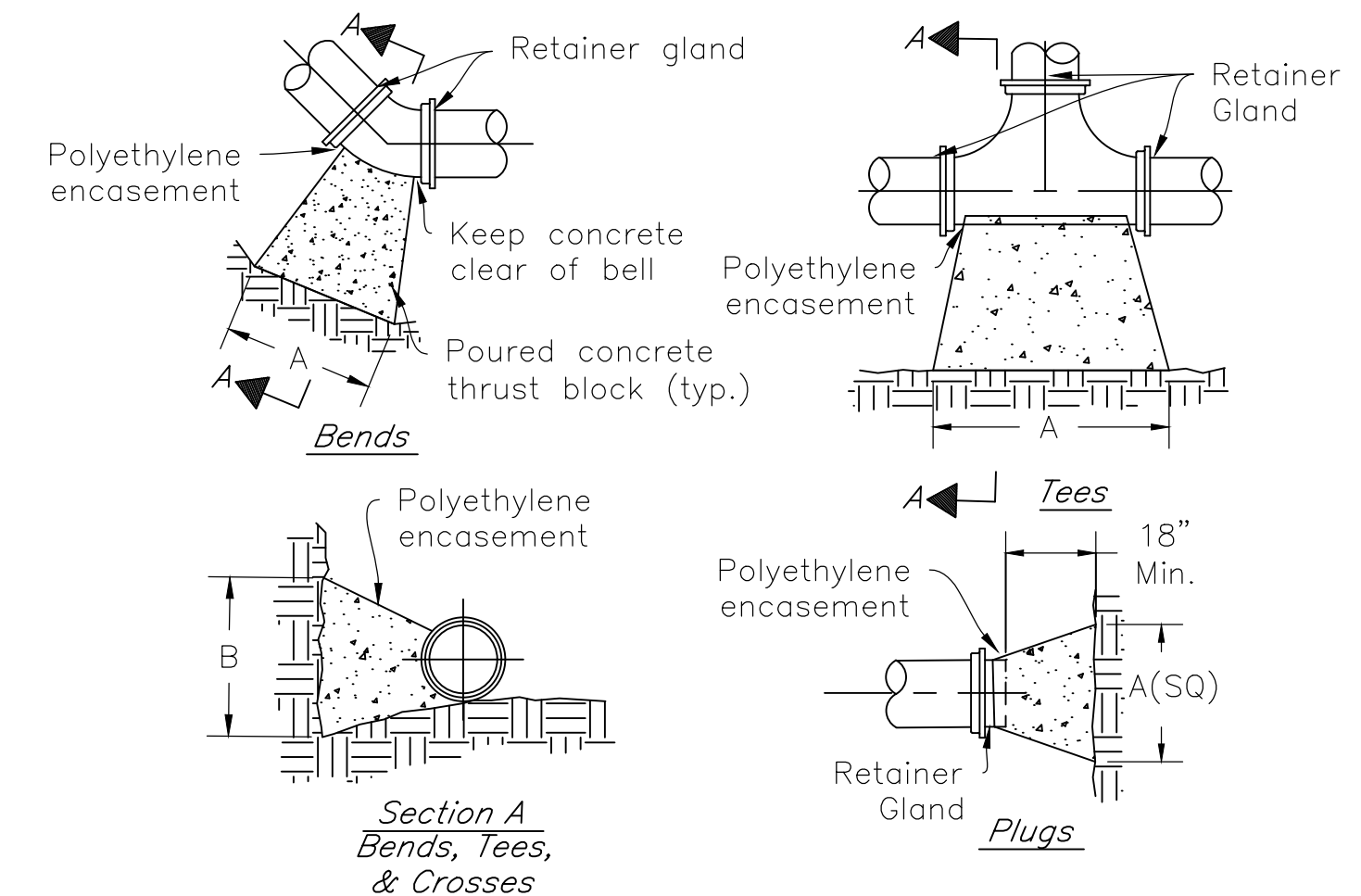


ELEVATION VIEW

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

ALLOWABLE LEAKAGE PER 1000 FT. OF PIPELINE*---GALLON/HOUR										
Length of pipe to be restrained in each direction from C of Bend based on 150 PSI test pressure										
Degree Of Bend	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
90°, Tees, & Plugs	27'	35'	42'	50'	58'	65'	73'	80'	95'	115'
45°	7'	9'	11'	13'	15'	17'	19'	21'	24'	29'
22-1/2°	3'	4'	5'	6'	7'	8'	9'	10'	12'	14'
11-1/4°	2'	2'	3'	3'	4'	4'	4'	5'	6'	7'

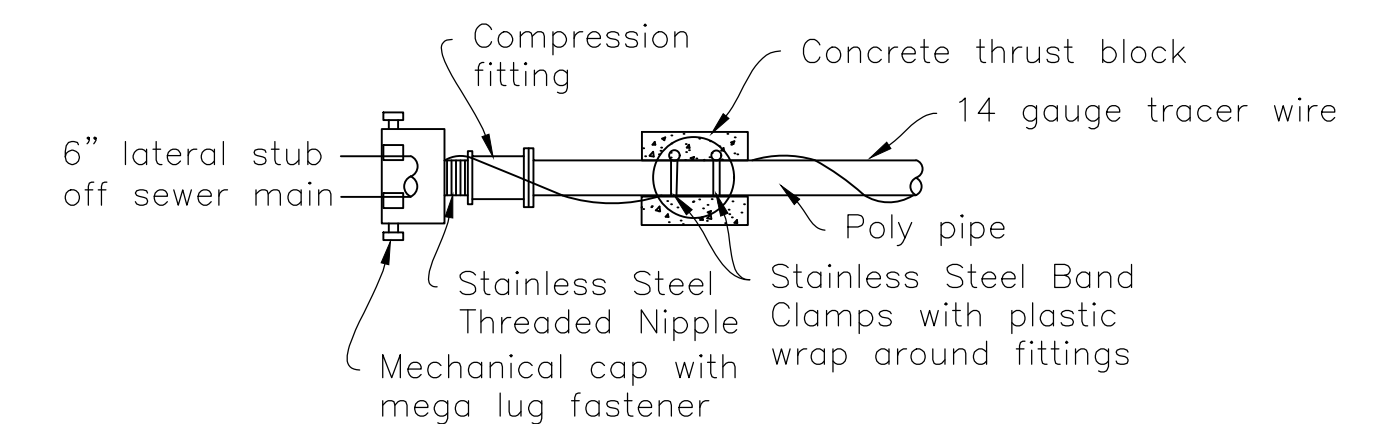
- Note:
1. Restrained joints shall be mechanical joint with retainer glands, US Pipe TR Flex Joint System, US Pipe Field Lock Gasket System, or equal.
 2. The above restrained joint lengths are minimum lengths. The Design Engineer shall determine if longer lengths are required.



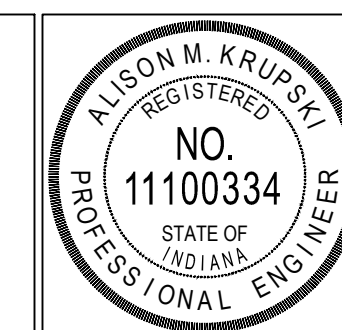
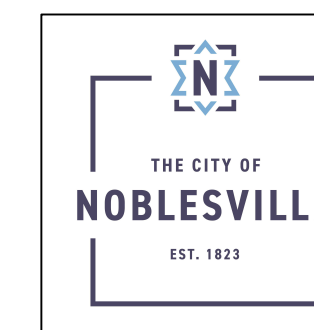
Section A Bends, Tees, & Crosses

- Notes:
1. Thrust block dimensions shall be provided by the design engineer.
 2. Thrust blocks shall be installed against undisturbed soil with adequate bearing to prevent movement of fitting.
 3. No thrust blocks to be placed in sewer lateral ditches.
 4. Thrust blocking must fit in easement, in some cases additional restraint may be required.
 5. Design to be based on 200 PSI hydrostatic water pressure (150 PSI static pressure plus 50 psi water hammer).
 6. Install polyethylene encasement on all D.I. Pipe and fittings prior to pouring concrete.
 7. Pipe joints and bolts must be accessible.
 8. Allow sufficient clearance between concrete and bolts for future maintenance.
 9. All anchor bolts shall be corrosion resistant, and sized per specification.
 10. Thrust blocking details are shown here for typical installations. In some cases, additional restraint may be required.
 11. Concrete used for thrust blocks shall be min. 3000 PSI concrete.
 12. For unstable soil conditions, the engineer shall verify thrust block dimensions.

Thrust Block Detail
Scale: None



PRIVATE GRINDER PUMP TYING INTO EXISTING LATERAL STUB
Scale: None



CITY OF NOBLESVILLE

Sanitary Sewer Structures and Connections Details

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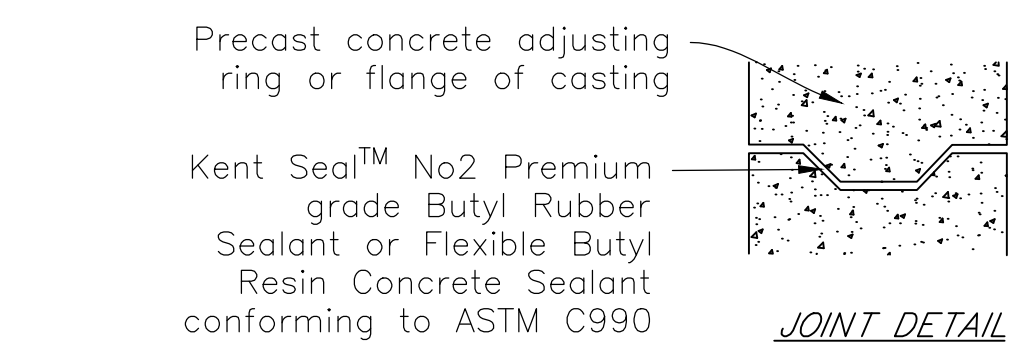
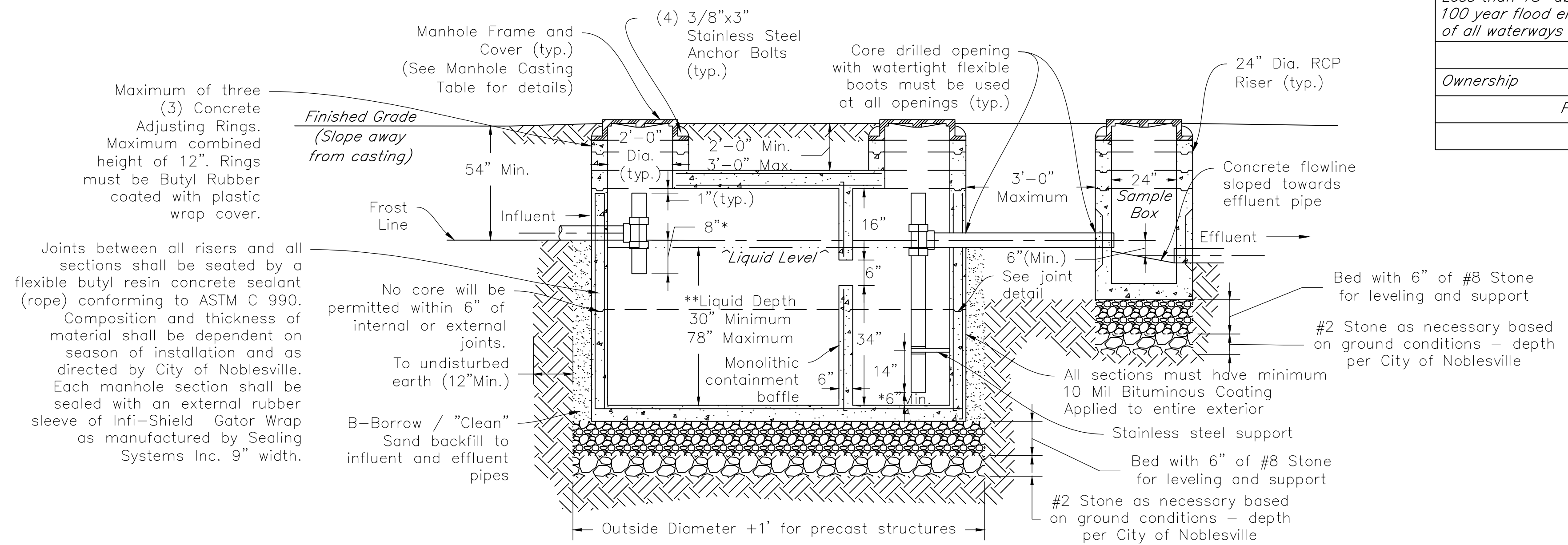
Alison M. Krupski 7/18/2021

OIL / GREASE TRAP REQUIREMENTS

1. All new commercial or industrial entities, which either generate and/or waste oil, grease or the by-products thereto, 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.
2. Toilets, urinals and other similar fixtures shall not discharge waste through the grease trap. All other waste shall enter through the grease trap, through the inlet pipe only.
3. The grease trap and sampling box 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, fittings designed for grease interception, and a downstream sampling box.
4. The oil/grease trap shall be located outside the building and at a distance far enough to allow soluble grease/oil to become insoluble.
5. A backwater prevention valve shall be located downstream of oil/grease trap.
6. Shop drawings shall be submitted to City of Noblesville for review and approval of all Grease Traps prior to installation.
7. Grease Traps installed during remodels are required to be sized for a minimum of 20 gpm flow rate. Detailed sizing calculations in accordance with Note #1 of this section shall be completed by the design engineer and submitted for approval by the City of Noblesville.

GENERAL NOTES

1. All Grease Traps must be sized according to the Indiana State Department of Health Bulletin S.E.1.3. The sizing method must be approved by the City of Noblesville.
2. Shop drawings must be submitted to the City of Noblesville for review and approval.
3. Grease Trap and Sample Box are property of Owner and will not be maintained by the City of Noblesville.
4. Top of casting shall extend 0.20 feet minimum above finished grade. Unless approved by City of Noblesville, castings must not be within one (1) foot horizontal distance of any paved or concrete surfaces.
5. Grease Trap shall conform to ASTM C 478 utilizing 4,000 PSI concrete.
6. Exterior installation must be concrete or cast iron. Steel interceptors/separators shall be only installed inside the building.

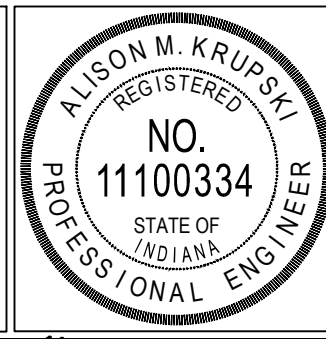
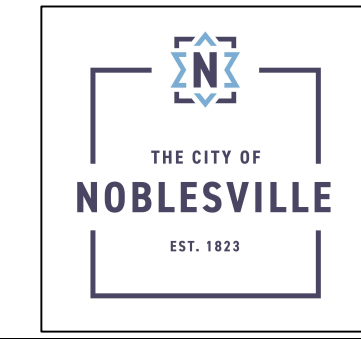


* Distance may be increased based on the constituents of the waste water flows. Consult City of Noblesville prior to shop drawing submittal.
 ** Minimum liquid depth may be reduced on a case-by-case basis as approved by City of Noblesville.

GREASE TRAP AND SAMPLING BOX DETAIL

Scale: None

Manhole Casting Table		
Location	Model	Cover
18" or more above 100 year flood elevation of all waterways	Neenah R-1772 or East Jordan 1022-Z1	Heavy duty solid
Less than 18" above 100 year flood elevation of all waterways	Neenah R-1916-F or East Jordan 1040-1WT (GREASE TRAP)	Heavy duty solid
Lid		
Ownership		Lettering
Private		"Grease"



CITY OF NOBLESVILLE
 Sanitary Sewer Oil/Grease Trap Specifications

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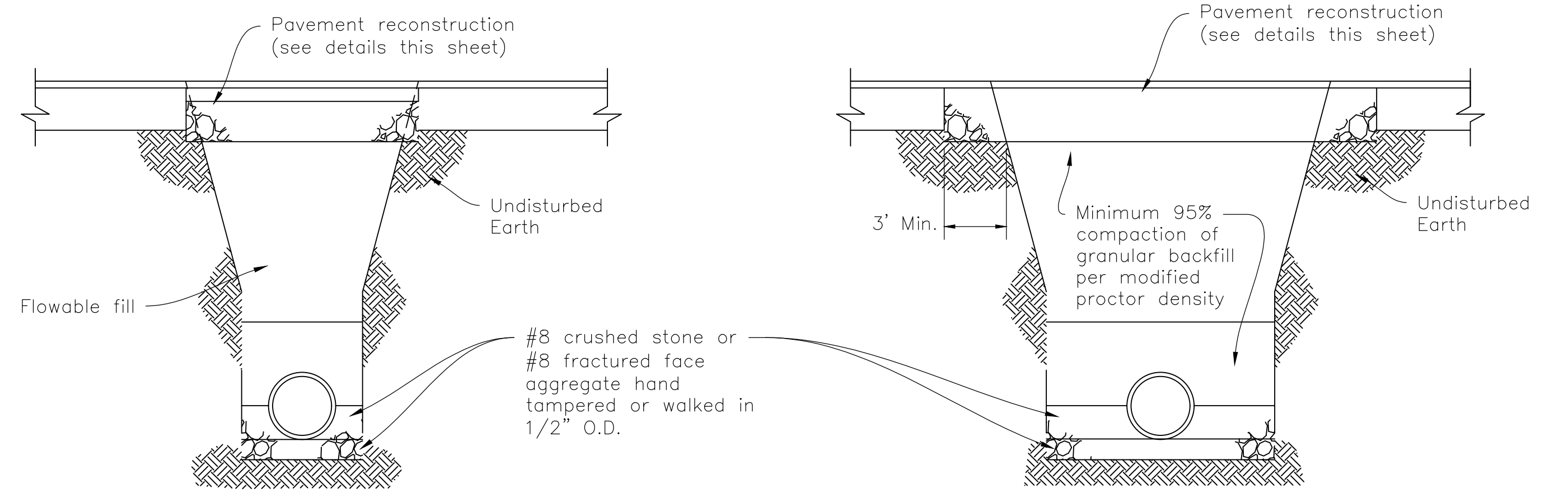
Alison M. Krupski 7/18/2021

GENERAL NOTES

- Any excavation and/or trench within five feet of existing or proposed roadway, alley, or sidewalk/trail shall be Type I or Type II as shown.
- 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.
- 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.
- 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.
- 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.
- Trench backfill and pavement restoration shall be conducted in an expedient manner.
- Surface patch shall extend from face of curb to face of curb unless otherwise approved by City of Noblesville Board of Public Works.
- 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.
- 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.

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



notes:

- Trench spoil is to be removed from the work site and disposed of out of the Right-of-Way.
- Flowable Fill is to be poured into the trench to serve as backfill, to the dimensions and specifications listed in this detail.
- The Flowable Fill mix design shall have been previously reviewed and approved by the Noblesville Street Department or Department of Engineering. The compressive strength of the Flowable Fill shall not be less than 50 PSI nor greater than 100 PSI at 28 days. 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.
- Flowable Fill shall be mixed and placed as specified in the latest INDOT Standard Specifications, Section 213.

TRENCH BACKFILL - TYPE I FLOWABLE FILL DETAIL

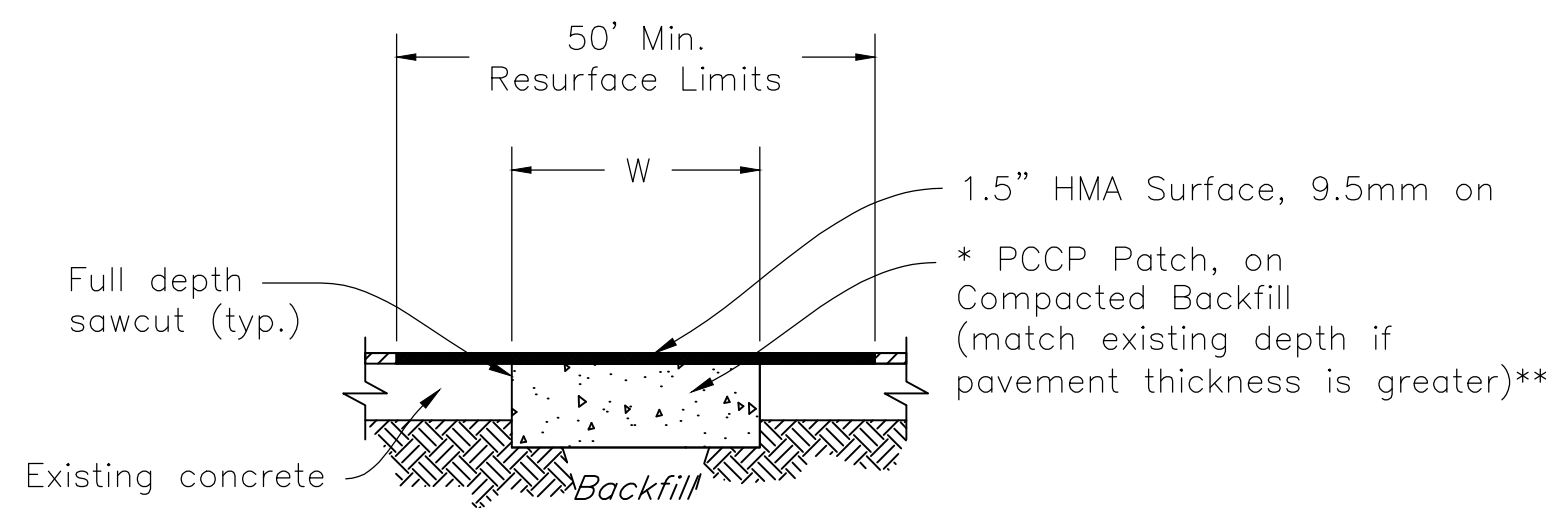
Scale: None

notes:

- Saw cut existing pavement so that cut provides a vertical, neat and uniform edge.
- Trench spoil is to be removed from the work site and disposed of out of the Right-of-Way.
- 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



* PCCP Patch thickness to be 12" for arterial/collector/commercial streets and 8" for local streets.

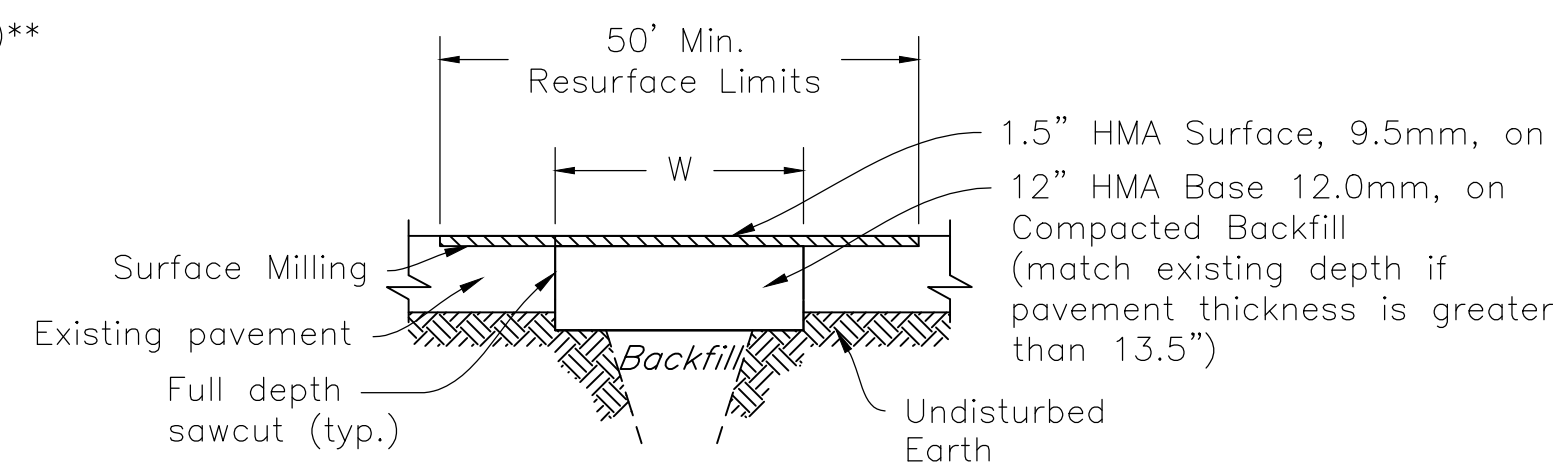
** PCCP Patch thickness to be increased if existing pavement section is greater than 13.5" for collector/arterial/commercial streets, and 9.5" for local streets..

Notes:

- Saw cuts shall provide a vertical, neat and uniform edge.
- All materials shall comply with specifications as required by the Noblesville Department of Engineering.
- Concrete surface shall be broom finish at right angles to traffic flow.
- 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.
- The concrete pavement and the existing vertical edge of pavement are to be tack coated prior to the placement of new asphalt. The new surface pavement grade shall match the existing surface pavement grade.
- 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.
- Contractor shall surface mill (1.5") existing pavement 25' in each direction from trench centerline, replace with 1.5" HMA surface, and appropriate pavement markings.
- Refer to Pavement Restoration Table for W. See general notes for additional details.

CONCRETE W/BITUMINOUS SURFACE PATCH

Scale: None

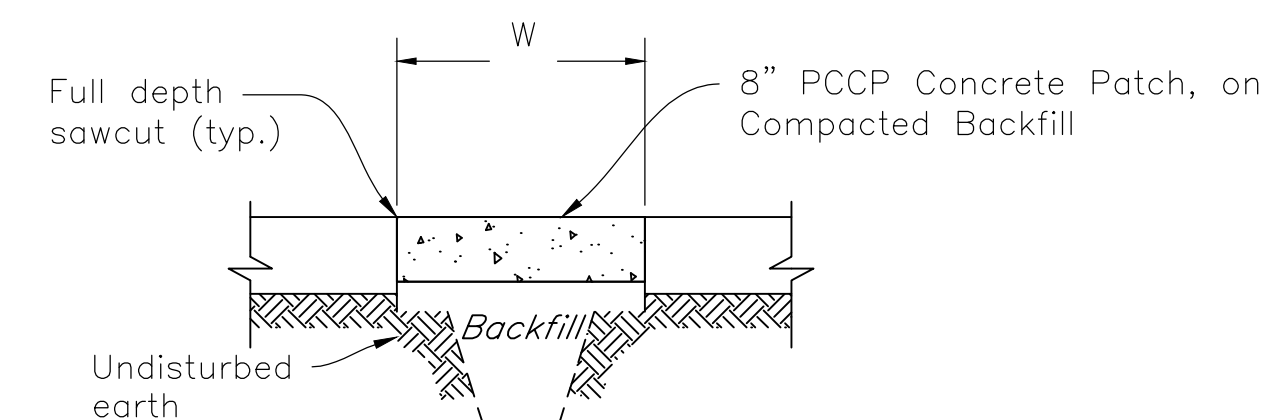


Notes

- Saw cuts shall provide a vertical, neat, and uniform edge.
- All materials shall comply with specifications as required by the Noblesville Department of Engineering.
- Contractor shall surface mill (1.5") existing pavement 25 ft. in each direction from trench centerline from face-of-curb to face-of-curb or edge-of-roadway, replace with 1.5" HMA surface, 9.5mm, and appropriate pavement markings.
- The existing milled surface and concrete patch is to be tack coated prior to the placement of new asphalt. The new surface pavement grade shall match the existing surface pavement grade.
- 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.
- Refer to Pavement Restoration Table for W. See general notes for additional details.

BITUMINOUS PATCH (PREFERRED)

Scale: None

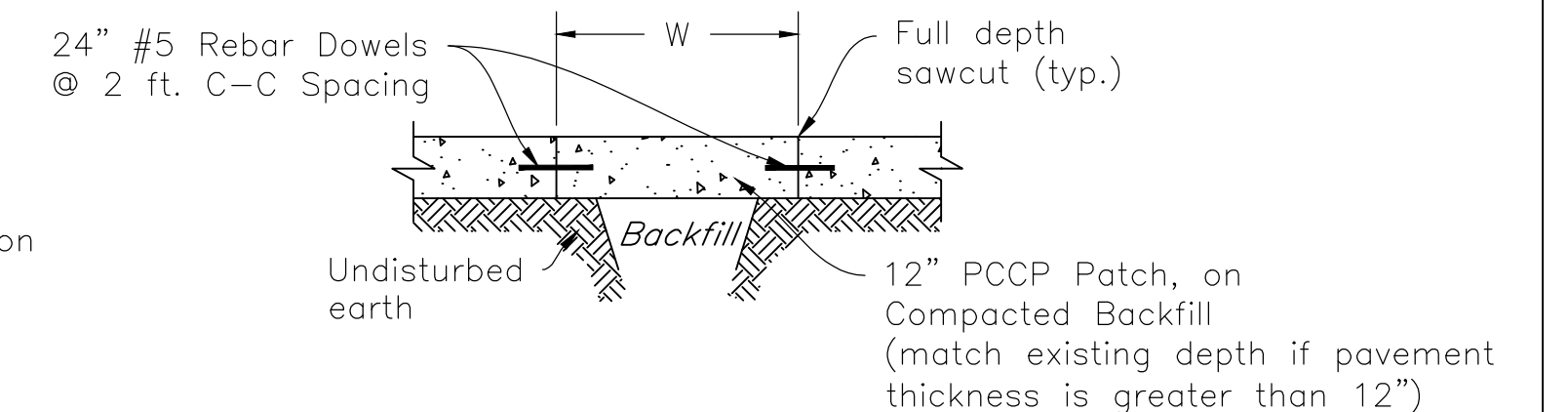


Notes

- Saw cuts shall provide a vertical, neat, and uniform edge.
- All materials shall comply with specifications as required by the Noblesville Department of Engineering.
- Temporary concrete patch to be poured flush with existing pavement grade.
- Refer to Pavement Restoration Table for W. See general notes for additional details.
- Temporary repair patch is required when restoration work occurs between November 15 and April 15.
- Contractor shall refer to the Noblesville Encroachment Ordinance #13-3-01, for maintenance of repair of temporary patch.

FOR TEMPORARY REPAIR PATCH

Scale: None

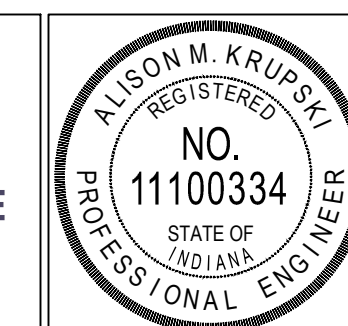
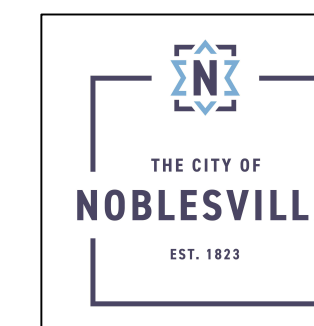


Notes

- Saw cuts shall provide a vertical, neat, and uniform edge.
- All materials shall comply with specifications as required by the Noblesville Department of Engineering.
- Surface of repair shall be broom finished at right angles to traffic flow.
- 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.
- Contractor shall contact the Noblesville Department of Engineering to determine if anchors are required on existing concrete pavement repairs.
- Refer to Pavement Restoration Table for W. See general notes for additional details.

CONCRETE PATCH WITHIN CONCRETE STREETS

Scale: None



CITY OF NOBLESVILLE

Backfill and Patching Details

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Alison M. Krupski 7/18/2021

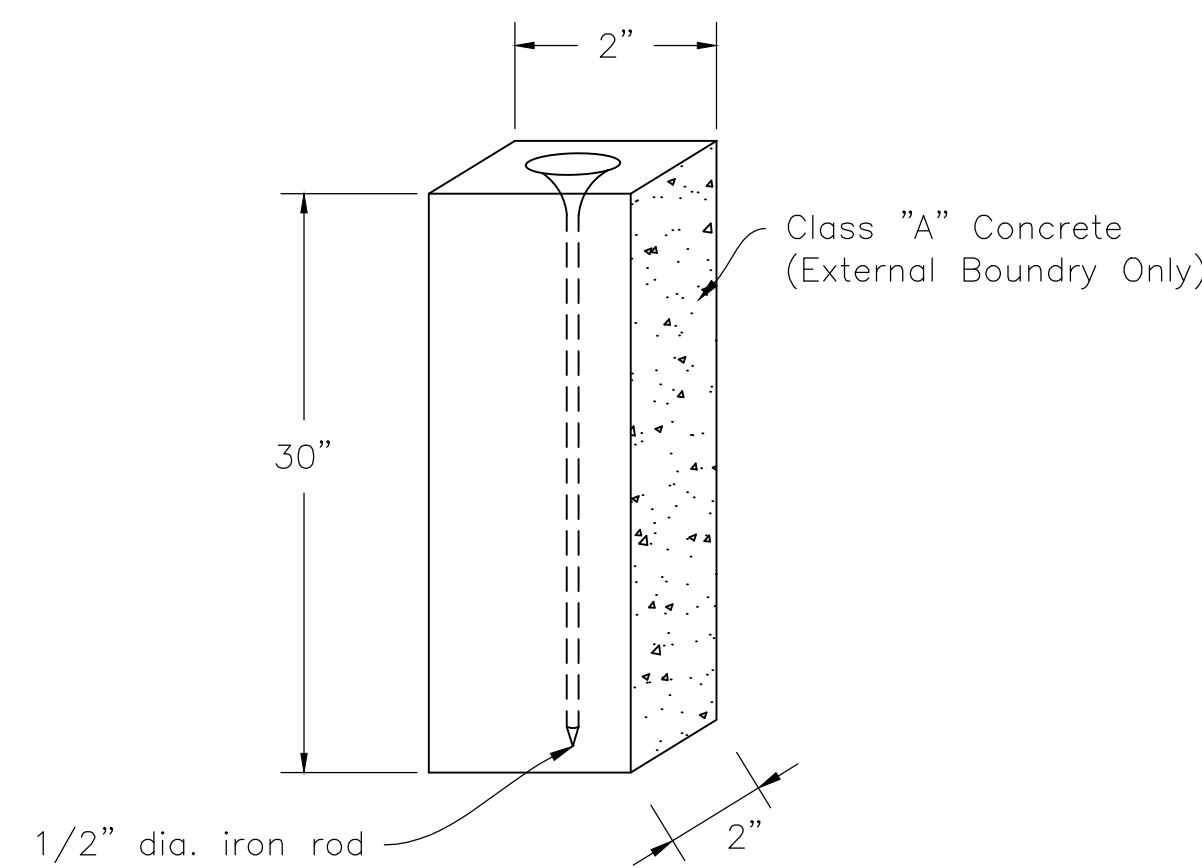
MONUMENTATION GUIDELINES

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.
- If any plat monuments are unable to be set due to subdivision improvements a reference monument shall be set. If a reference monument not shown on the recorded plat is set a Monument Affidavit shall be recorded and cross referenced to the recorded plat.

EXTERNAL BOUNDARIES/ROADWAY MONUMENTATION

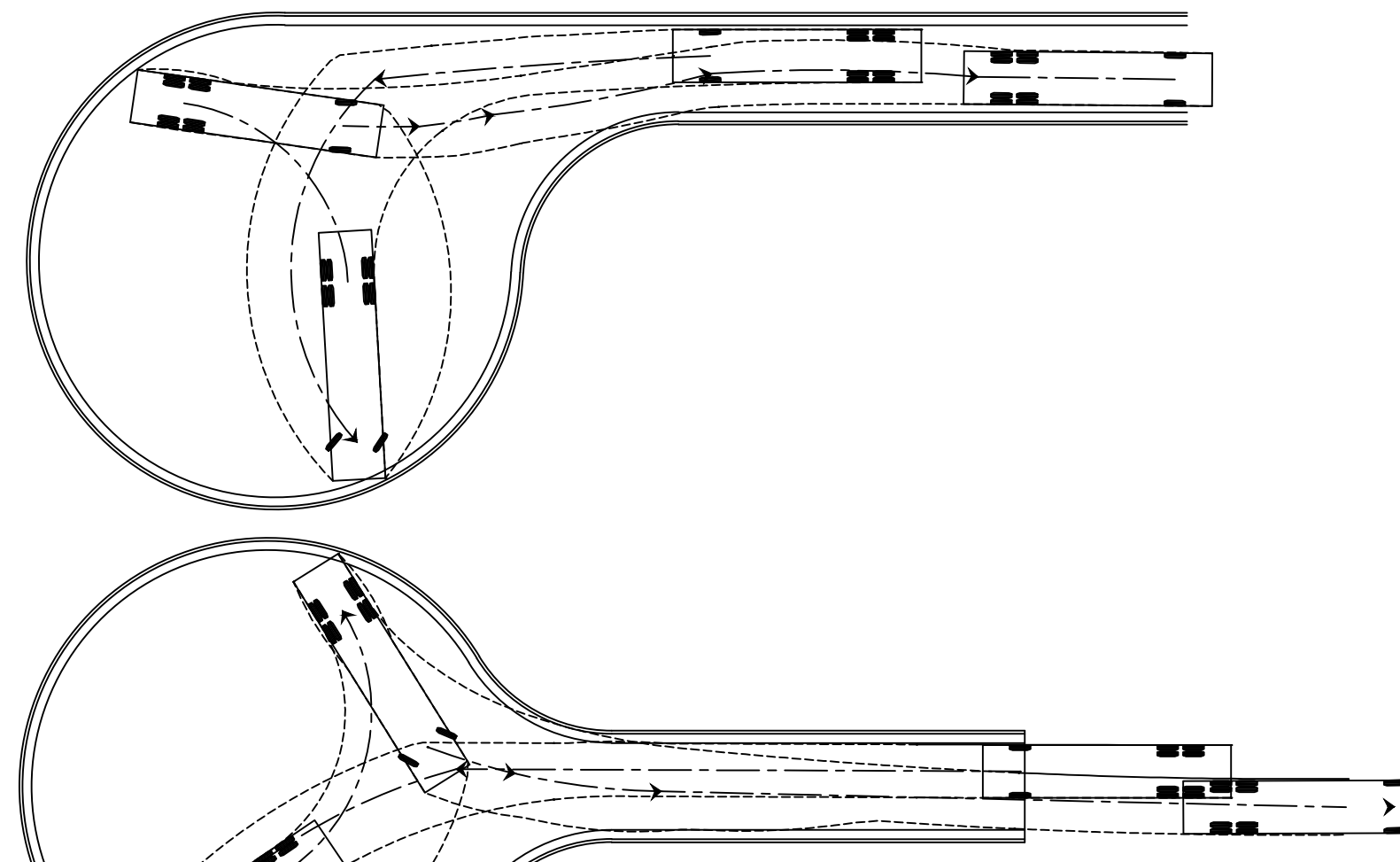
- Monuments shall be placed for the purpose of accurately denoting the center of each roadway. Monuments shall be a steel rod with minimum of one inch (1") diameter by five inches (5") long. As a minimum, monuments shall be placed at points of tangency, points of curvature, and intersection of another 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.
- If any plat monuments are unable to be set due to subdivision improvements a reference monument shall be set. If a reference monument not shown on the recorded plat is set a Monument Affidavit shall be recorded and cross referenced to the recorded plat.



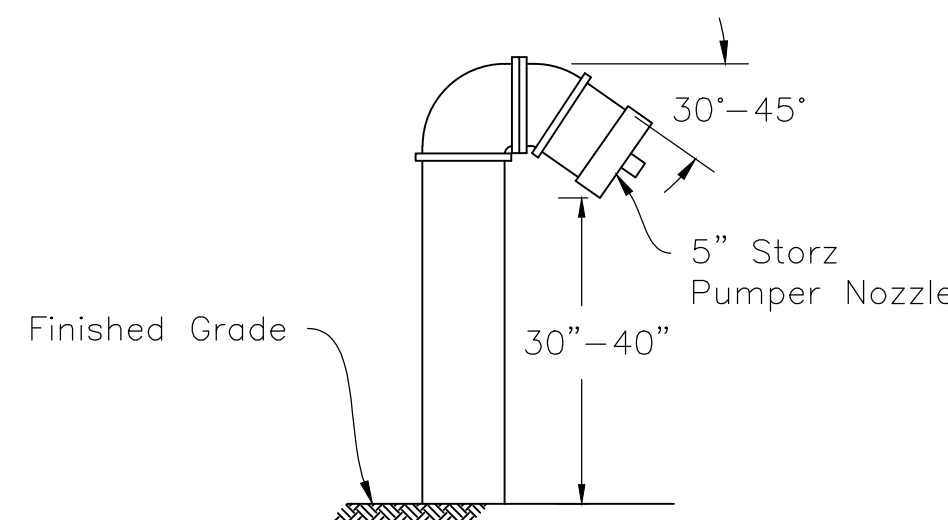
MONUMENT DETAIL - EXTERNAL BOUNDARIES/ROADWAY
Scale: None

GENERAL NOTES

- Fire apparatus access road shall be constructed and made serviceable prior to issuance of a building permit.
- Fire hydrants shall be installed, functional, and approved by the fire marshal prior to issuance of a building permit.
- 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 20 feet at all times.
- 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.
- 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.
- 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.
- Refer to the Fire Marshal for dry hydrant specifications and fire lane details.
- All other items not specifically stated herein shall be in accordance with the most recent adopted edition of the Indiana Fire Code.
- As-built electronic submittal shall be submitted for all fire department connections and fire hydrants to GIS coordinator in compliance with electronic submittal guidelines.

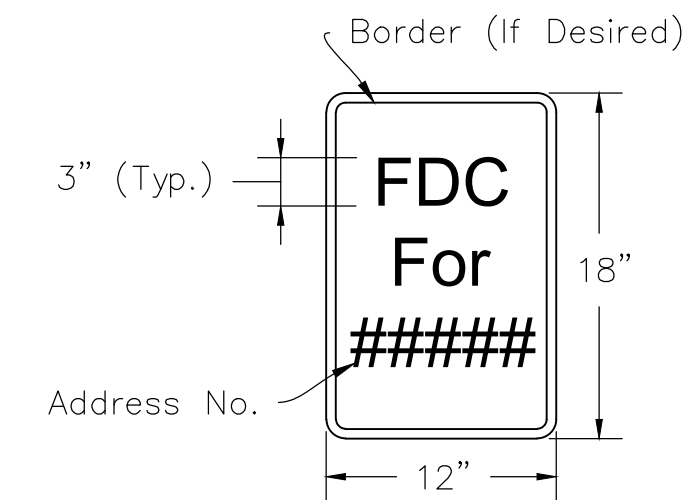


FIRE ENGINE DESIGN VEHICLE TURN-AROUND SCHEMATIC
Scale: None



- Notes:**
- The FDC shall meet or exceed the requirements of the most recent State of Indiana adopted edition of NFPA 13 and NFPA 14.
 - The FDC shall be located off the building in a location approved by the City of Noblesville Fire Marshal.
 - The FDC shall be provided with a single 5" Storz connection that shall face towards the nearest point of fire department access.
 - A minimum of a 4" FDC service pipe shall be utilized on a fire service line that is 6" or larger.
 - 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.
 - The FDC shall be constructed of a material not susceptible to degradation.
 - The FDC shall not be located more than 100 feet from the nearest fire hydrant.

FIRE DEPARTMENT CONNECTION (FDC)
Scale: None



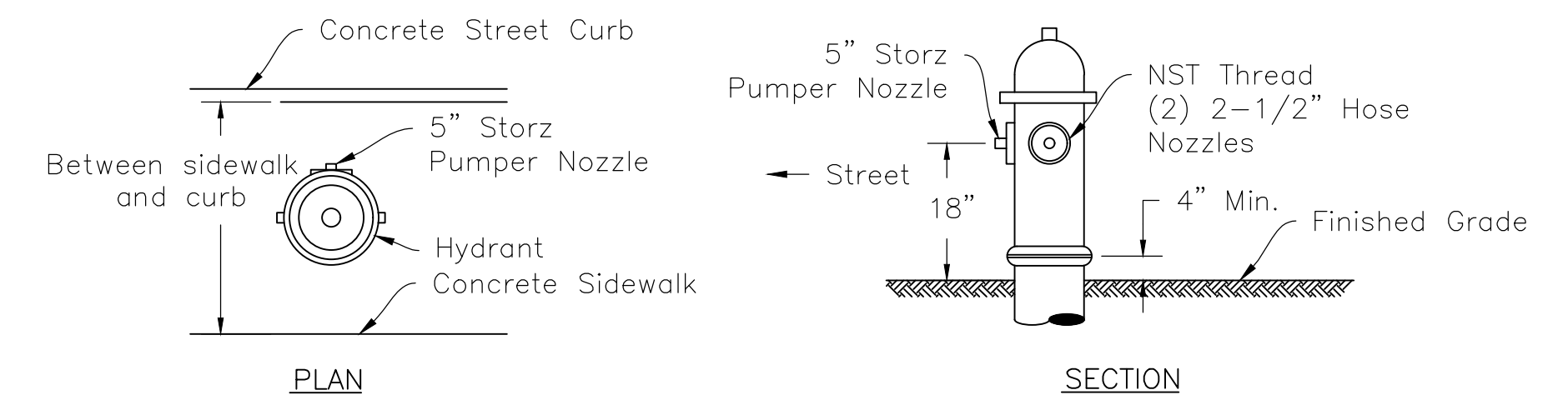
- Notes:**
- The sign shall be constructed out of a material that is not susceptible to degradation. The sign material shall be approved by the Fire Marshal.
 - The sign lettering (and optional border) shall be Red in color.
 - The sign shall be supported by an approved, permanent post or attached to the FDC pipe by an approved method.
 - If freestanding, the top of the sign shall be mounted between 36" and 48" from finished grade.

FDC SIGN
Scale: None



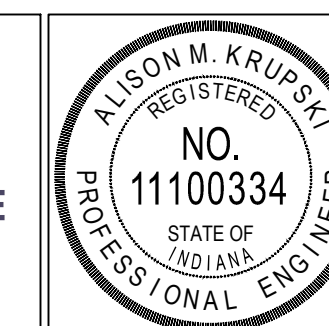
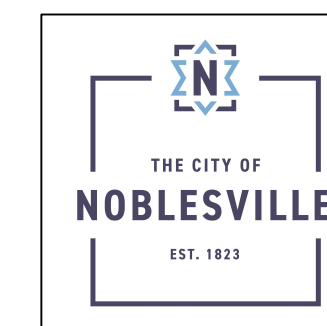
- Notes:**
- The "NO PARKING FIRE LANE" message shall be six feet in depth from edge of pavement or curb.
 - The letters shall be two feet in height and a minimum of four inches wide.
 - The "NO PARKING FIRE LANE" message shall be placed every 50 feet.
 - The striping shall be a minimum of four inches wide at a 45 degree angle and five feet on center.
 - All markings shall be Yellow.

FIRE LANE PARKING DETAIL
Scale: None



- Notes:**
- 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.
 - 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.
 - 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.
 - 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
 - Fire hydrants shall have a maintained three foot radial clear space at all times.
 - 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 2-1/2" 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 drain holes in the bottom to prevent freezing.
6.8. The base shall be surrounded by at least six 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 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 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)

FIRE HYDRANT DETAIL
Scale: None



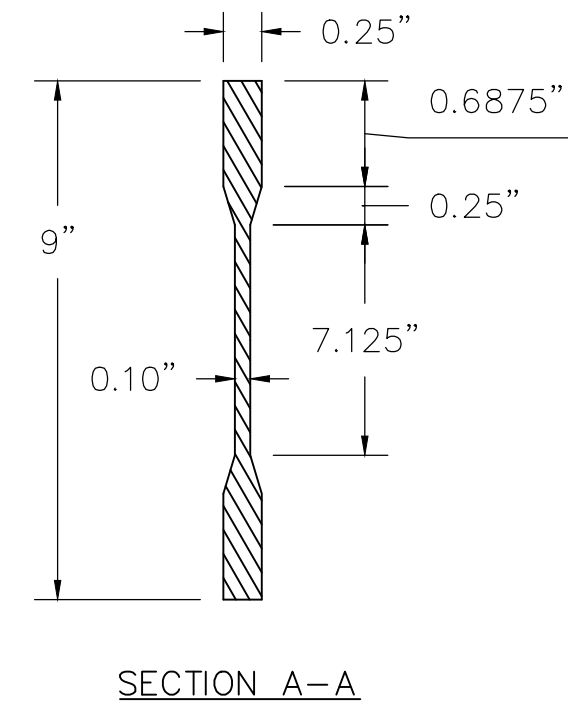
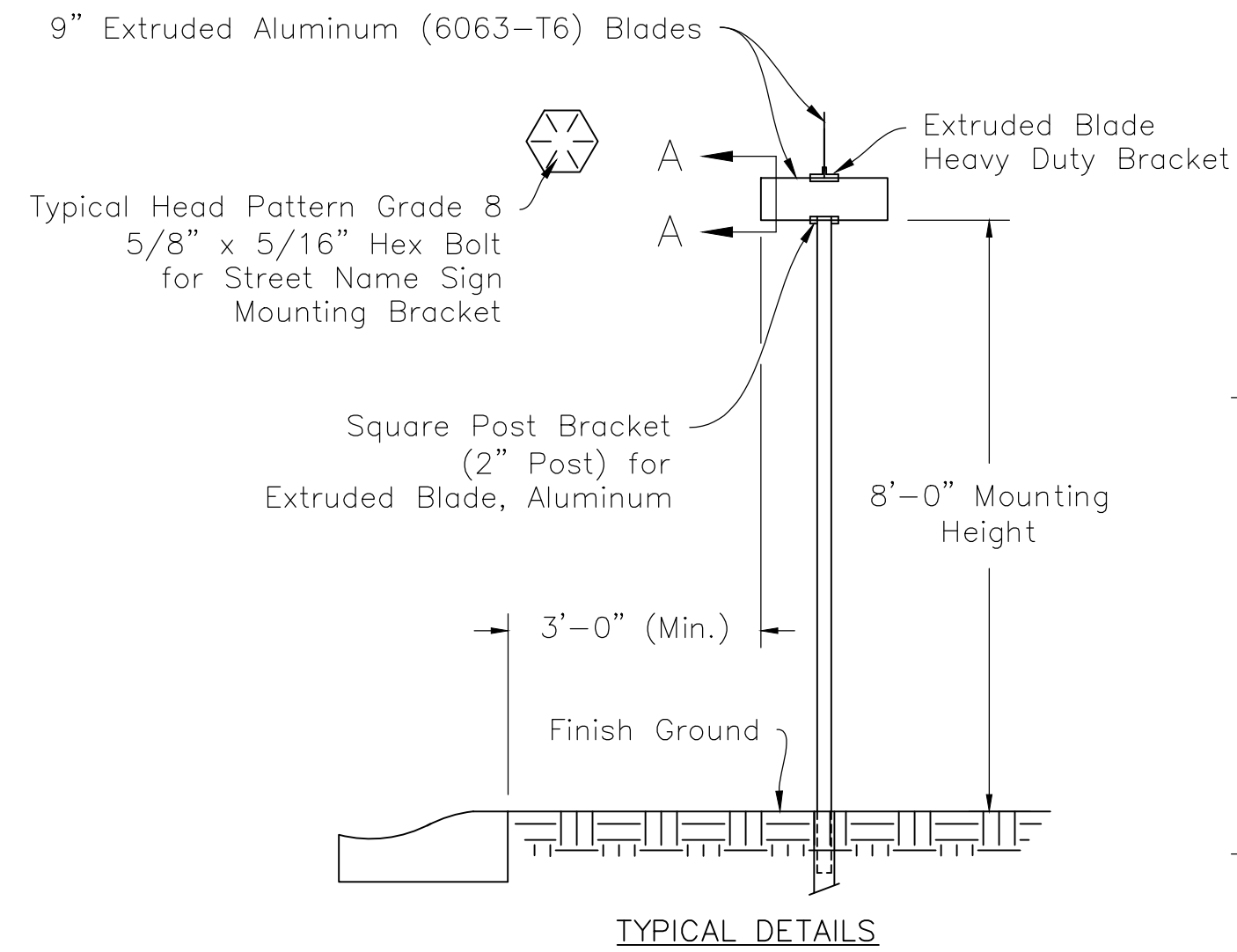
CITY OF NOBLESVILLE
*Monumentation Guidelines and Fire
Department Notes & Details*

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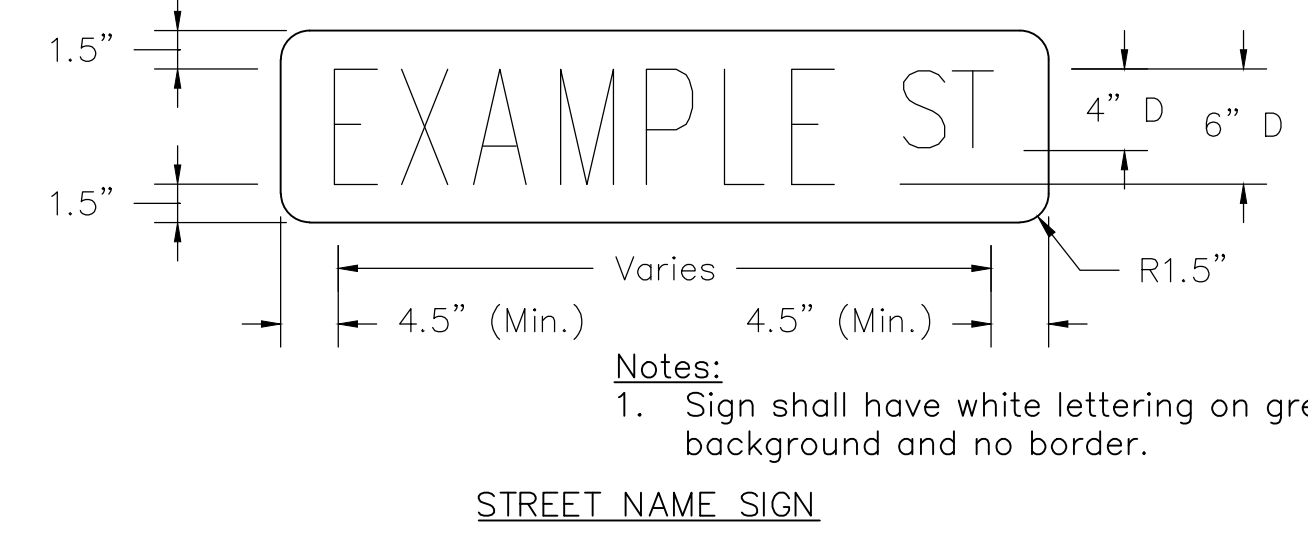
Alison M. Krupski 7/18/2021

GENERAL NOTES

1. All signs shall be in accordance with the latest Manual on Uniform Traffic Control Devices and Standard Highway Signs and Markings.
2. Shop drawings shall be submitted for all non-standard signs and all street name signs.
3. All sign posts shall be 2" x 2" (Type 2) posts and shall be in accordance with INDOT Std. Dwgs. E-802-SNGS-06 thru E-802-SNGS-09.
4. All signs shall be placed within five days of placement of traversable pavement, such as HMA Intermediate, HMA Base, or concrete pavement.
5. All signs shall be attached to posts with two bolts per sign per post (min.). For signs over 6" in height, galvanized or aluminum bolts are acceptable.
6. Signs shall be tagged on the rear of the sign with an adhesive label with the month and year that the signs were installed. Remaining required traffic control shall be in place prior to the release of the first occupancy permit.
7. Streets shall be signed at all intersections with two street name sign assemblies on opposite corners.
8. Street name signs shall be mounted on post top with a cast aluminum 2SXQ bracket with all hex bolts required. All double/cross mounted street name signs shall be mounted using a cast aluminum BA7A bracket and secured with all hex bolts required per sign.
9. Stop sign shall be 36" in size for roads classified as Arterials or Collectors and 30" in size for roads classified as local.
9. An all way stop intersection requires an "ALL WAY" supplementary sign. A two way stop controlled intersection requires a "CROSS TRAFFIC DOES NOT STOP" supplementary sign.
10. 25 mph signs shall be located at each subdivision entrance. A "FOR ALL STREETS" supplementary sign shall be located below each.
11. 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.

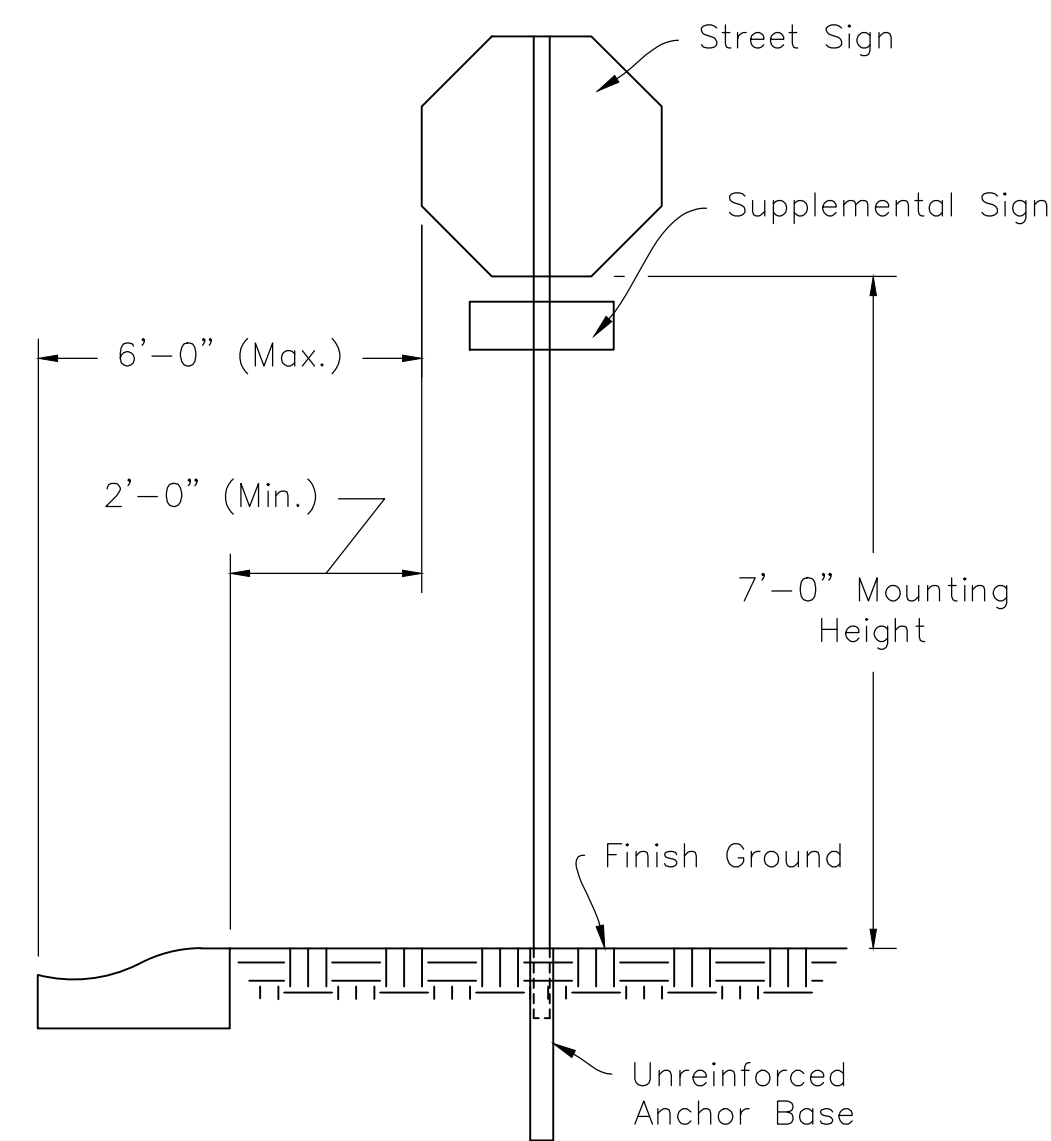


TYPICAL STREET NAME SIGN
Scale: None

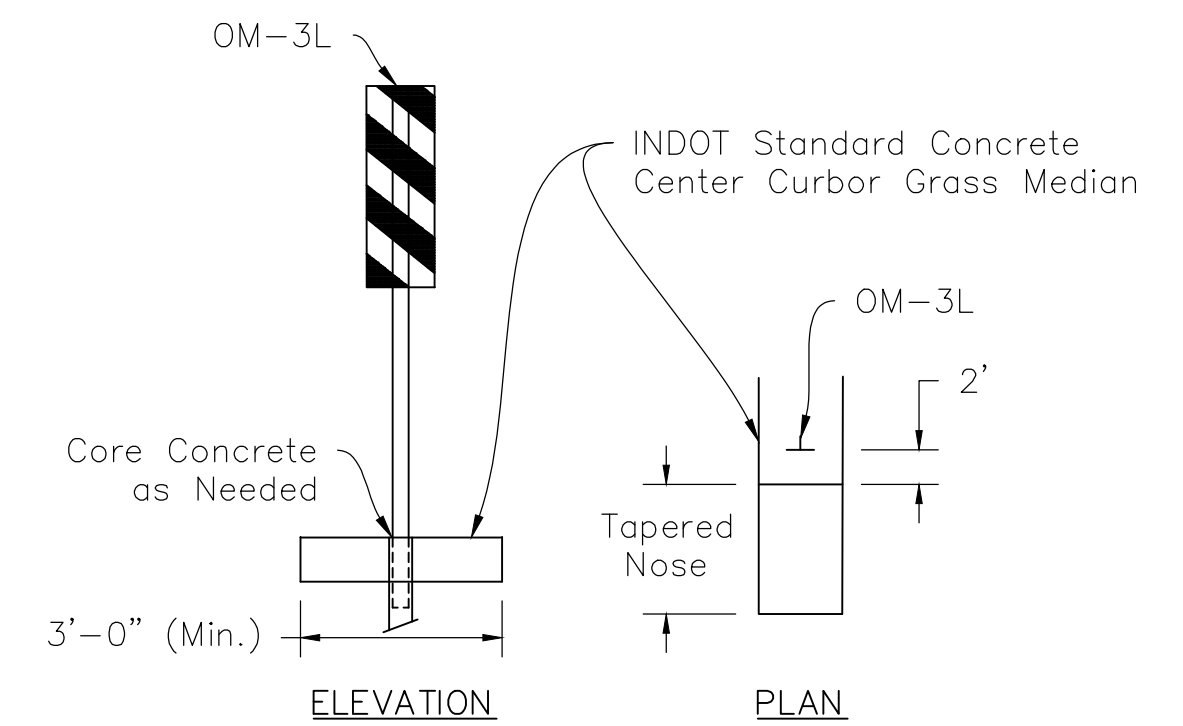


Notes:
1. Sign shall have white lettering on green background and no border.

STREET NAME SIGN

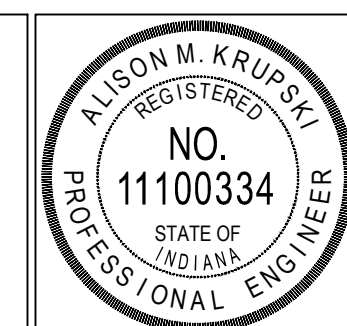
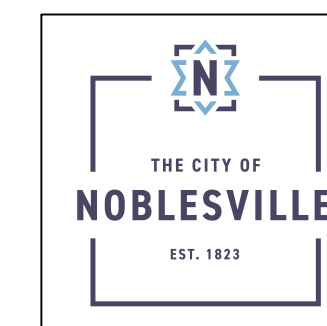


TYPICAL STREET SIGN
Scale: None



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

MEDIAN END TREATMENT
Scale: None



CITY OF NOBLESVILLE

Street Sign Details and Notes

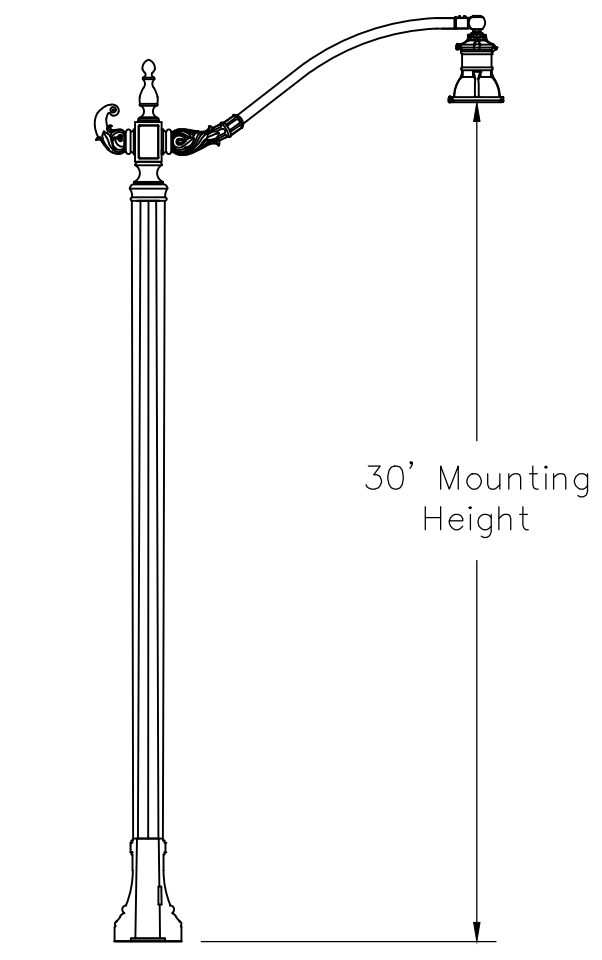
SHEET

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OF
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Alison M. Krupski 7/18/2021

GENERAL STREET LIGHTING NOTES

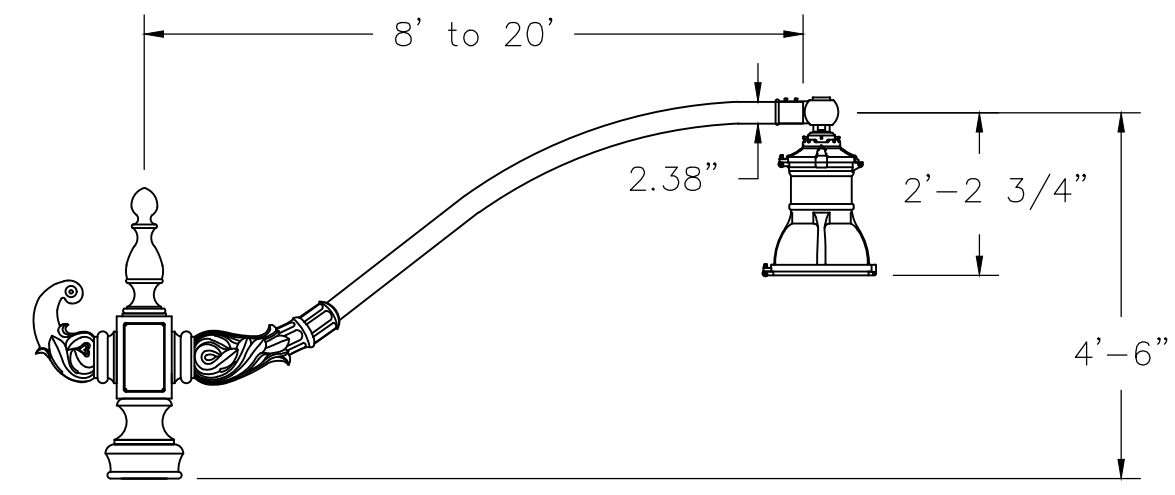
- Street lighting is required on new Local and Collector streets being constructed with a plat and shall be shown on the lighting plan. Lighting is required at entrances and intersections, within cul-de-sacs and at specified locations requiring additional lighting. Lighting plans shall be submitted to the Noblesville Department of Engineering for approval.
- Street lighting shall be considered at any of the following locations:
 - Pedestrian crosswalks
 - Roadway Intersections
 - Changes in horizontal alignment
 - Commercial Drives
 - As directed by the City Engineer
- It shall be the responsibility of the developer to provide and install all street lighting.
 - 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.
 - 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 Homeowners' Responsibility as the owner and customer for the lighting.
 - Billing and the work order information shall be in the Homeowners' Association name and address.
 - Encroachment permits shall be obtained for all work associated with installation. Lighting plans should match or amend those submitted. A copy of the work order should accompany the permit.
 - All other applicable City Standards shall be observed during the planning and completion of work.
 - 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 the inspection of other elements of subdivision work.
- All lighting plans submitted for approval shall include, but not be limited to, the following:
 - Location of each light standard and the service point or junction box serving each luminary.
 - Plan notations showing conduit and wire size for each conduit run.
 - Manufacturer's catalog cut sheets and specifications for light fixtures, appurtenances, service points, and junction boxes.
 - Paint color specimen samples and material composition.



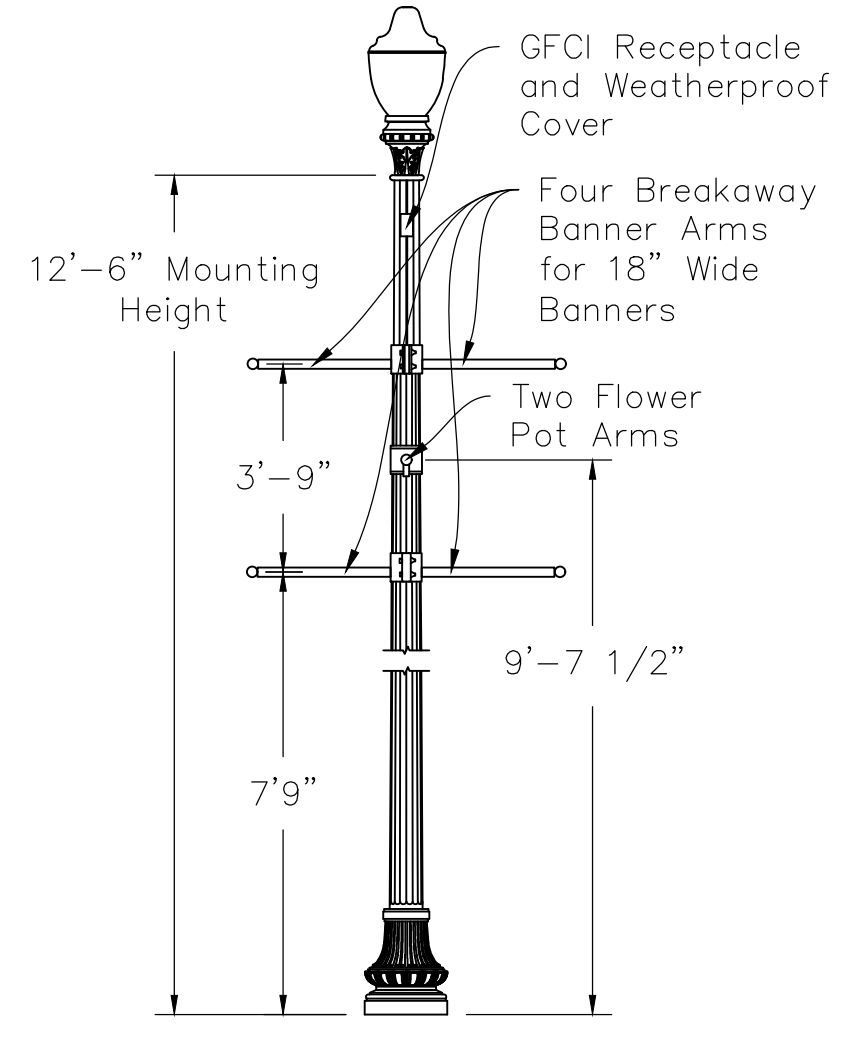
TYPICAL STREET LIGHT
Scale: None

- TYPICAL STREET LIGHT SPECIFICATIONS**
- Pole: 12 flat flute tapered pole or approved equal
 - Base: "Washington style" aluminum two-piece clamshell decorative base, painted breakaway transformer base or approved equal
 - Arm: Decorative cobra arm and decorative sconce fitter or approved equal
 - Luminaire*: LED luminaire with flat glass lens and decorative luminaire holder, 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: Pine Green (RAL 6028)

- * Higher intensity lighting may be required on specific roadways
- Notes:**
- 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.



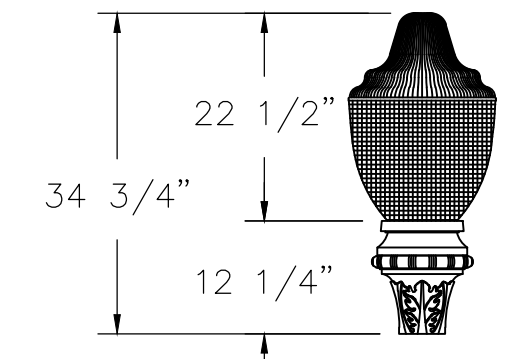
DECORATIVE ARM AND LUMINAIRE DETAIL
Scale: None



URBAN STREET LIGHT
Scale: None

- URBAN STREET LIGHT SPECIFICATIONS**
- Pole: 5" O.D. (Min.) 16 flat flute pole or approved equal
 - Base: "Washington style" aluminum two-piece clamshell decorative base, painted breakaway transformer base or approved equal
 - Luminaire: Acorn style acrylic globe with type III prismatic section and decorative luminaire holder, or approved equal. 4000 Lumen, 120V, 4000k lighting unit with heat-sink and driver.
 - Base Coat: Hot dip galvanized to ASTM spec.: A123
 - Finish Coat: TGIC or urethane polyester powder
 - Color: Pine Green (RAL 6028) or Black within downtown district

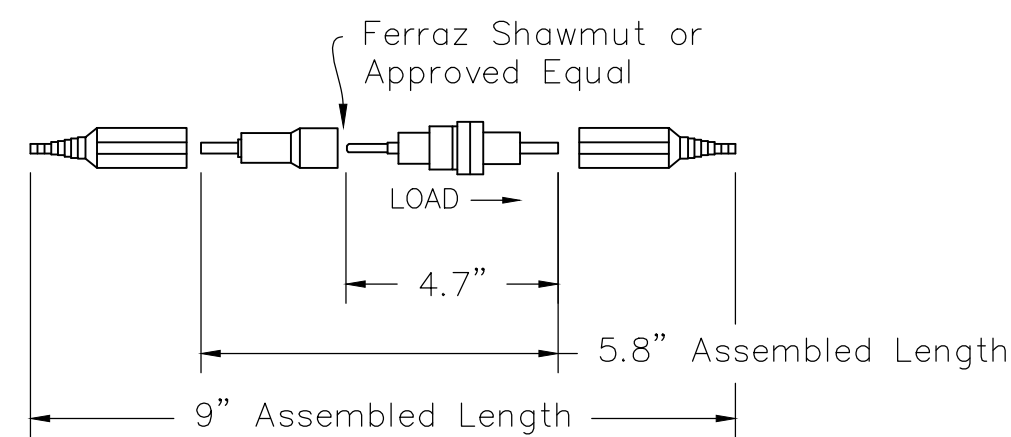
- Notes:**
- Contact Department of Engineering for requirements for hand holes and/or cabinets.
 - Shop drawings for the luminaire assembly detail (including dimensions), mounting assembly and styles and all incidentals shall be provided by the supplier for approval by the City of Noblesville prior to manufacturing.
 - A HID ballast and socket assembly shall be provided for each luminaire.



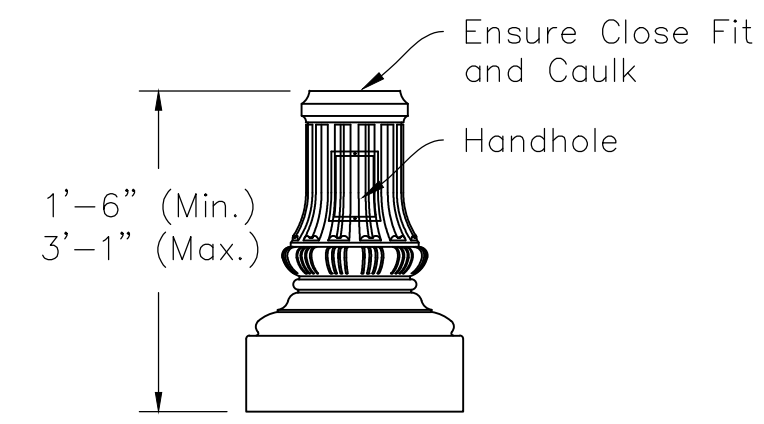
ACORN LUMINAIRE ASSEMBLY DETAIL
Scale: None

GENERAL TRAFFIC SIGNAL NOTES

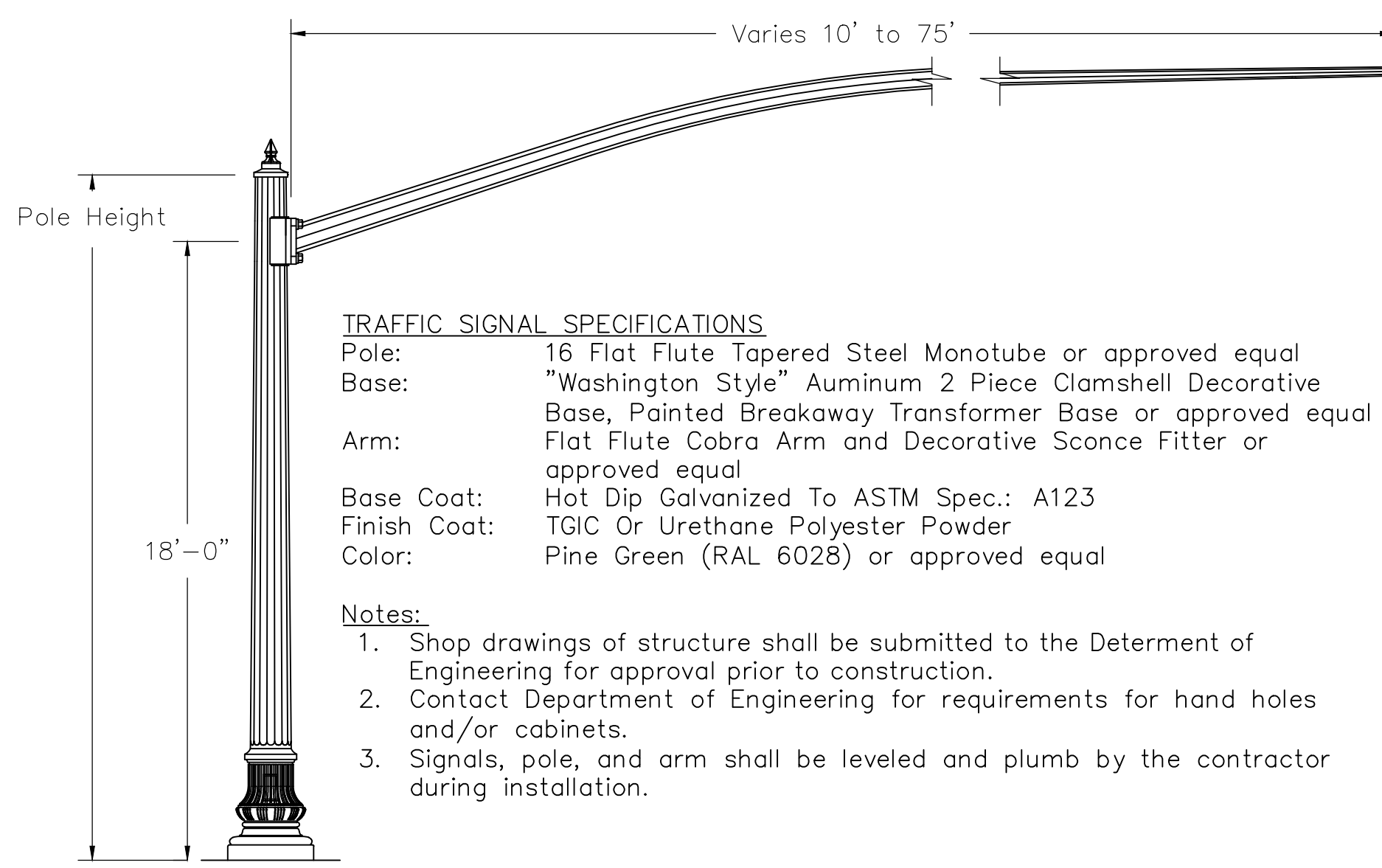
- All intersections warranting, or proposed to become, a signalized intersection shall consider a roundabout as a viable alternative or solution for the intersection improvement.
- All traffic signal controllers shall be selected and approved by the City Engineer.
- Signals shall be actuated with loop detection.
- Pedestrian crossings shall be actuated by a pedestrian push button unless pedestrian traffic volumes warrant a protected pedestrian crosswalk movement at every signal cycle.
- Intersections which have existing or proposed sidewalks or trails shall have the signal and intersection configured to accommodate pedestrian crossings.
- 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 shall be able to identify every 3M High/Low priority emitter and log the information. The system shall meet all NEMA standard requirements. The system shall have a 5/5 year warranty. The system shall include the following Models:
 - M711 Detector
 - M721 Detector
 - M722 Detector
 - M752 Phase Selector
 - M754 Phase Selector
 - M760 Card Rack
 - M5575 Confirmation Kit
 - M138 Detector Cable
 - M792H Emitters
- Traffic signal cabinet's exterior color shall match the color of the traffic signal poles for which it controls.
- Traffic signal heads shall be LED.
- Traffic signal shall be equipped with a manual override at the controller cabinet.
- Contact the Department of Engineering for requirements for hand holes, service points, and/or controller cabinets.
- Lighting with decorative arm and luminaire may be mounted post top as required per plan.
- Foundation for pole shall be designed to the requirements of INDOT Standard Drawing No. E 805-SGSC-02 and other related drawings.



BREAKAWAY FUSE DETAIL
Scale: None



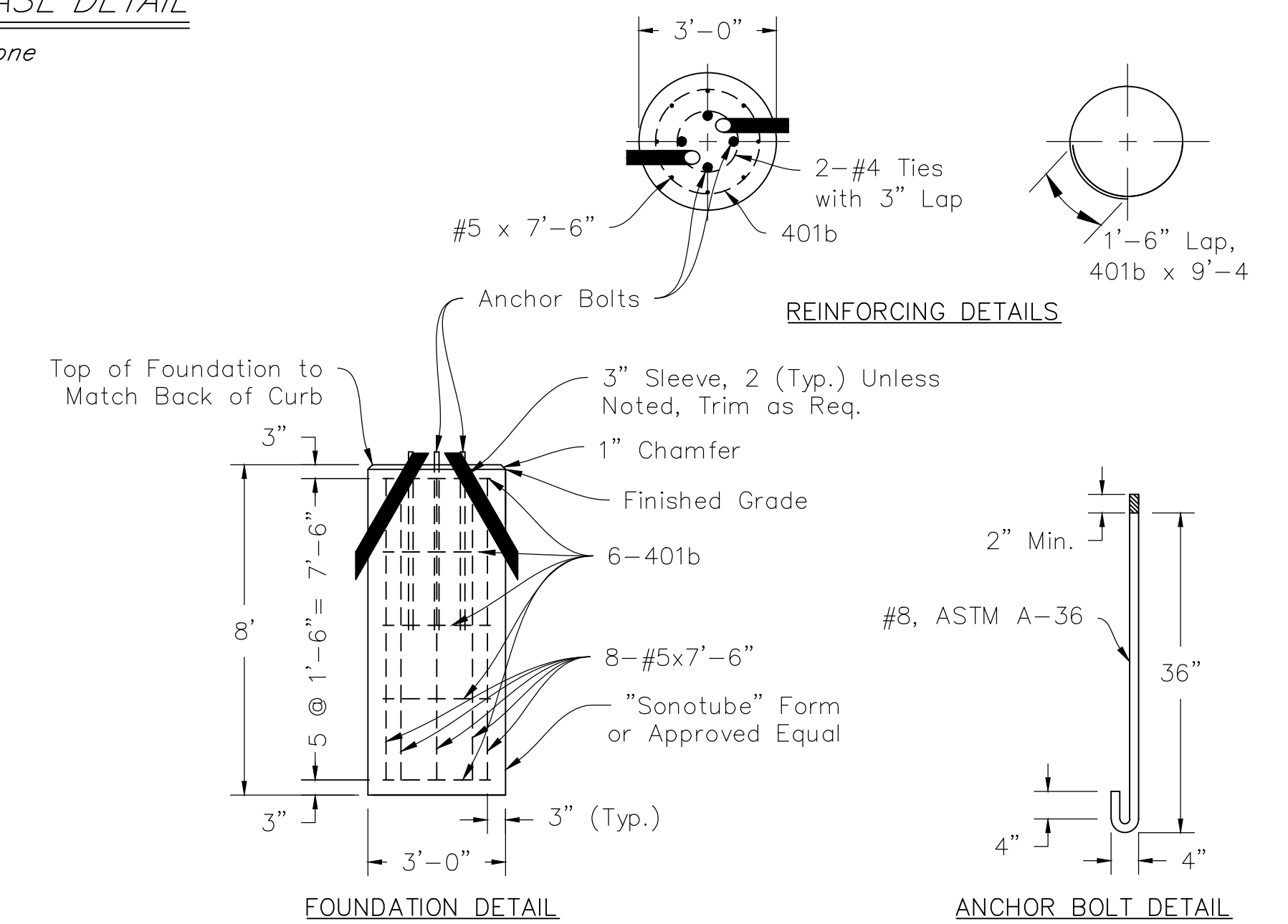
DECORATIVE BASE DETAIL
Scale: None



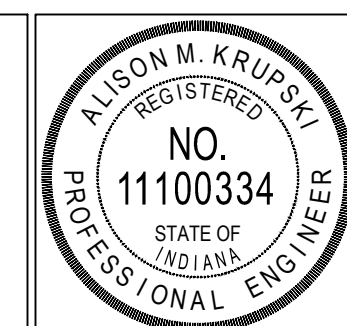
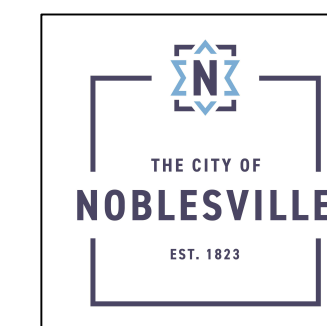
- TRAFFIC SIGNAL SPECIFICATIONS**
- Pole: 16 Flat Flute Tapered Steel Monotube or approved equal
 - Base: "Washington Style" Aluminum 2 Piece Clamshell Decorative Base, Painted Breakaway Transformer Base or approved equal
 - Arm: Flat Flute Cobra Arm and Decorative Sconce Fitter or approved equal
 - Base Coat: Hot Dip Galvanized To ASTM Spec.: A123
 - Finish Coat: TGIC Or Urethane Polyester Powder
 - Color: Pine Green (RAL 6028) or approved equal

- Notes:**
- Shop drawings of structure shall be submitted to the Determent of Engineering for approval prior to construction.
 - Contact Department of Engineering for requirements for hand holes and/or cabinets.
 - Signals, pole, and arm shall be leveled and plumb by the contractor during installation.

TYPICAL TRAFFIC SIGNAL POLE
Scale: None



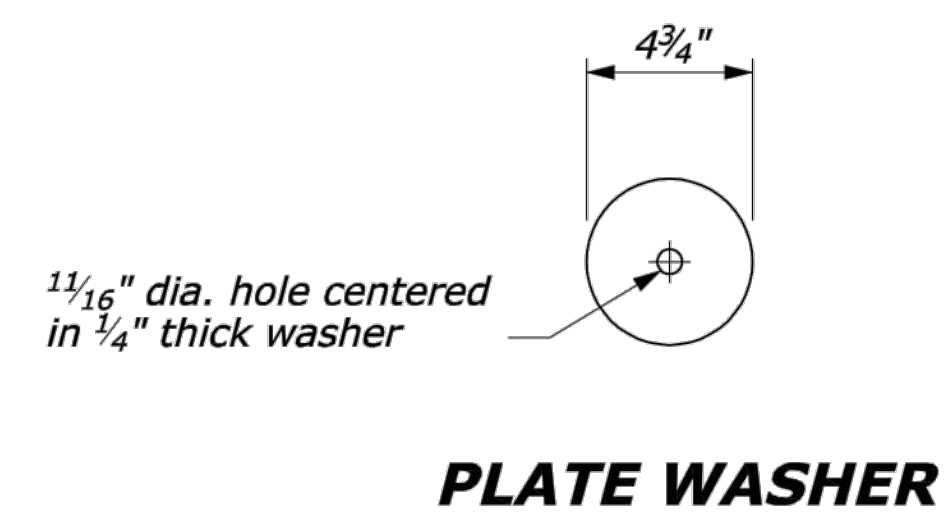
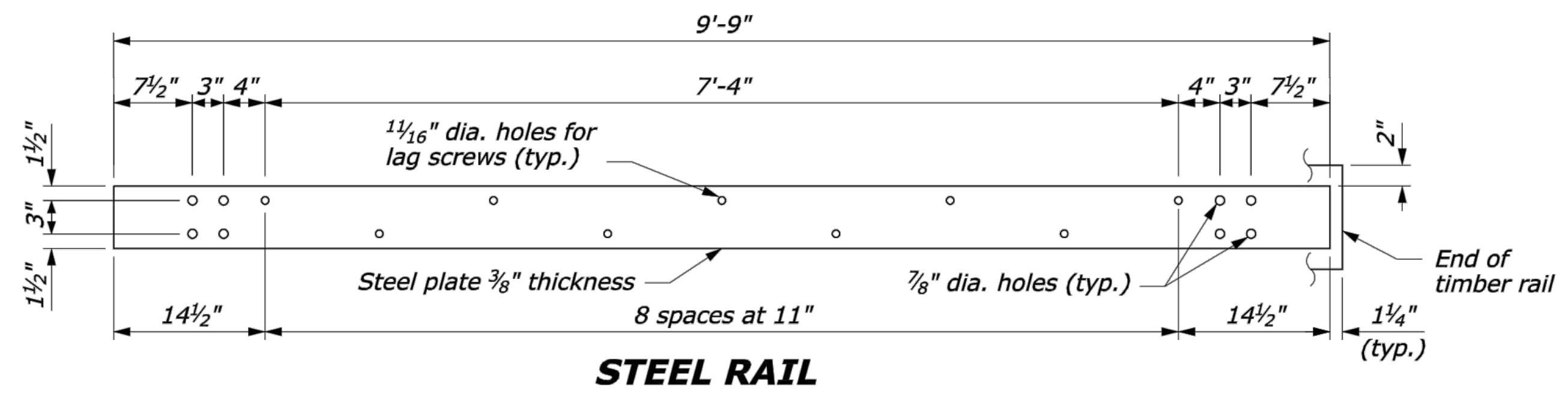
STREET LIGHT FOUNDATION
Scale: None



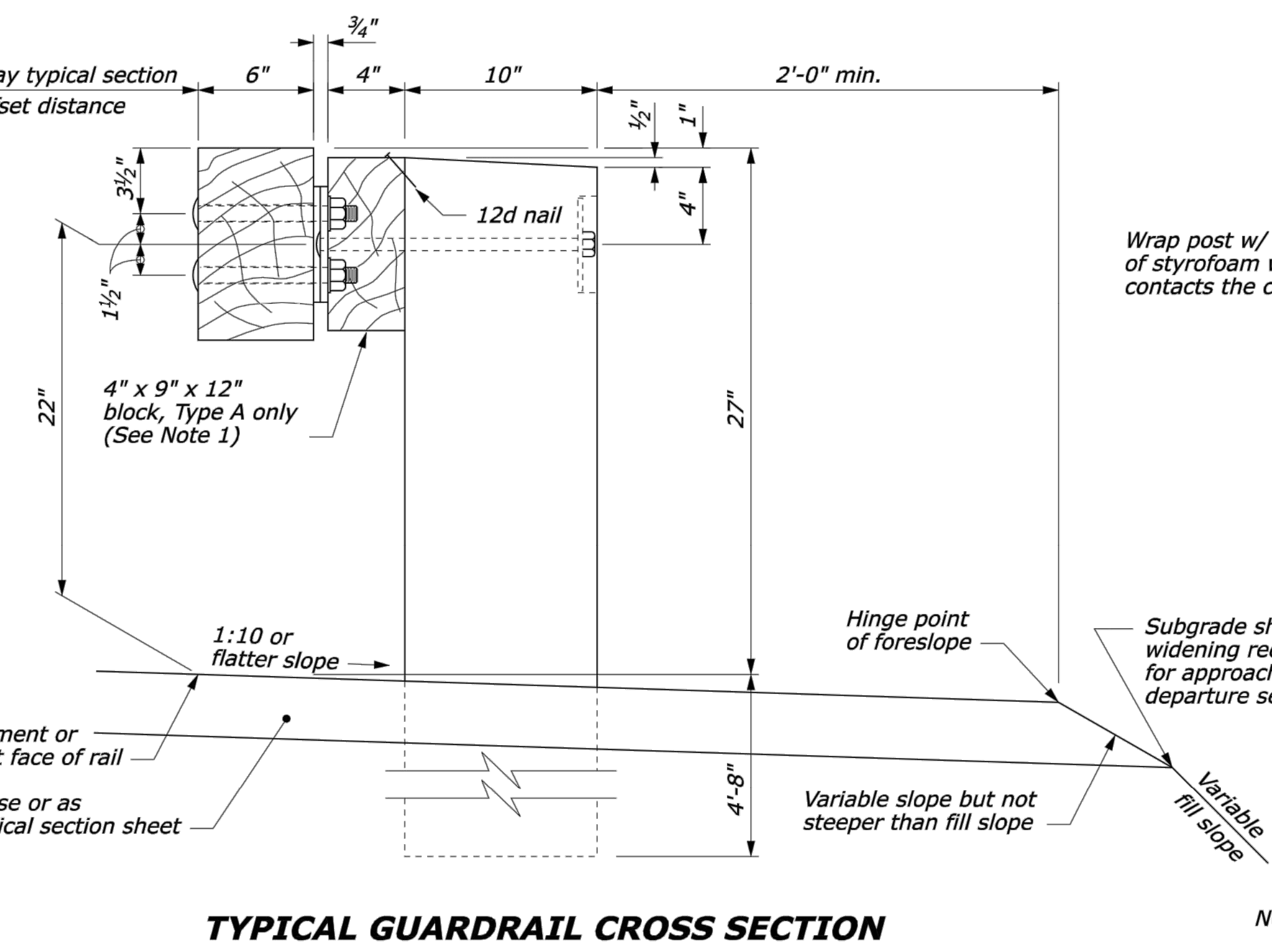
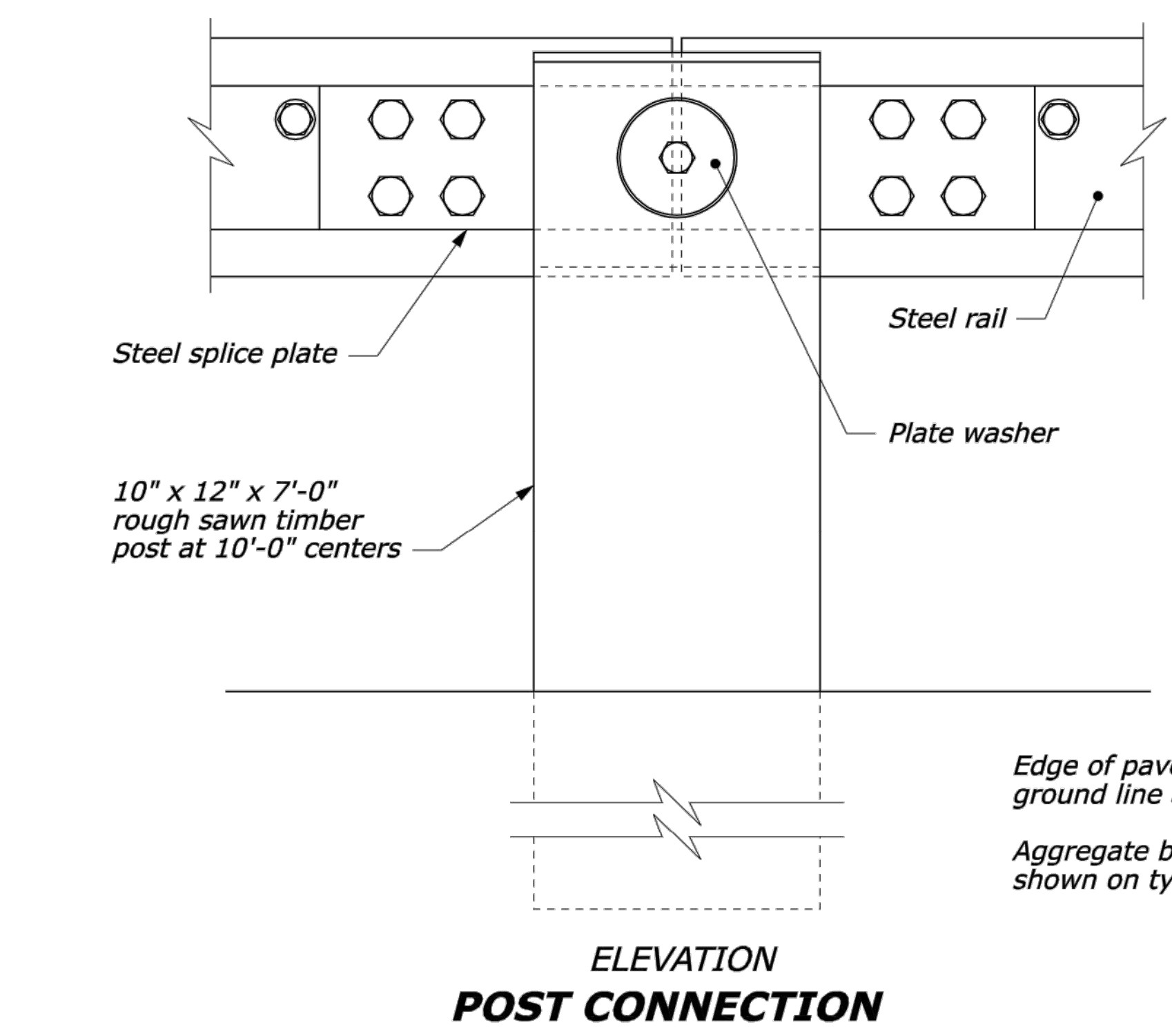
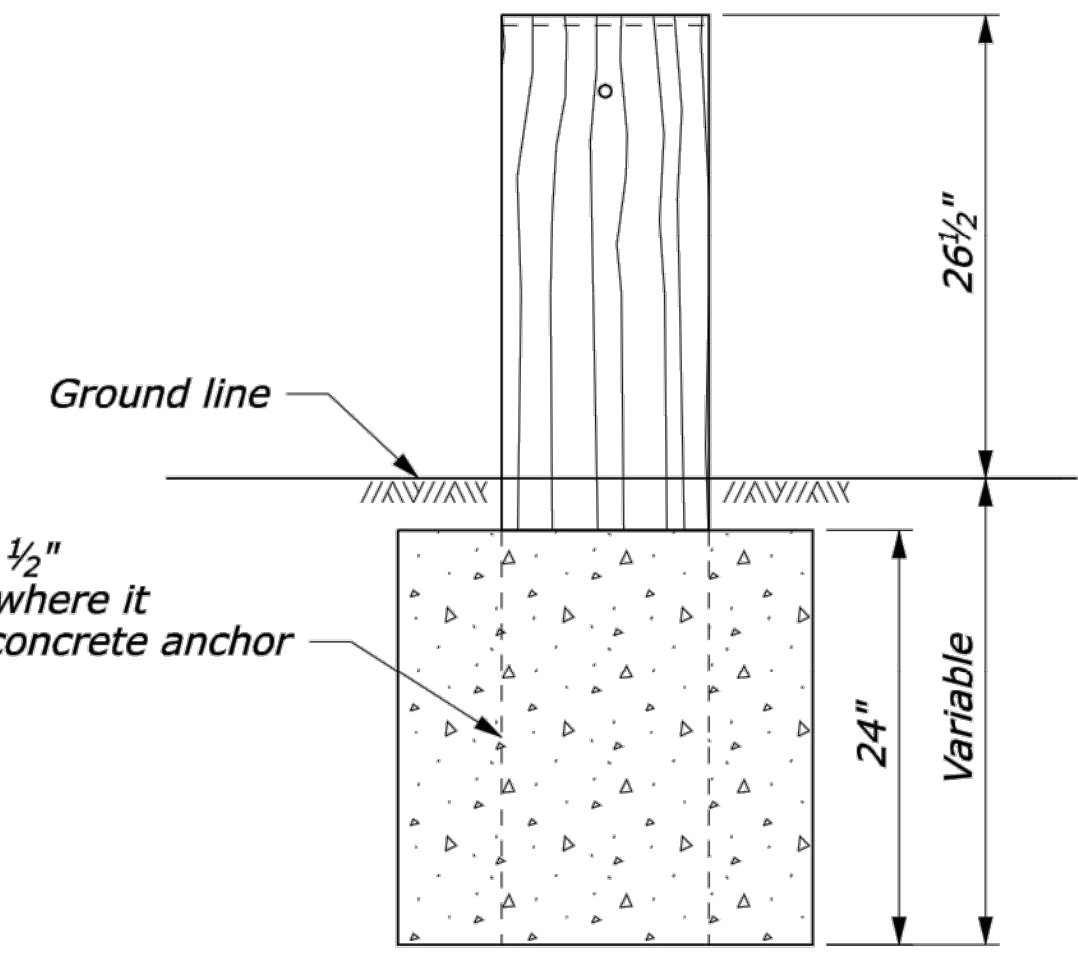
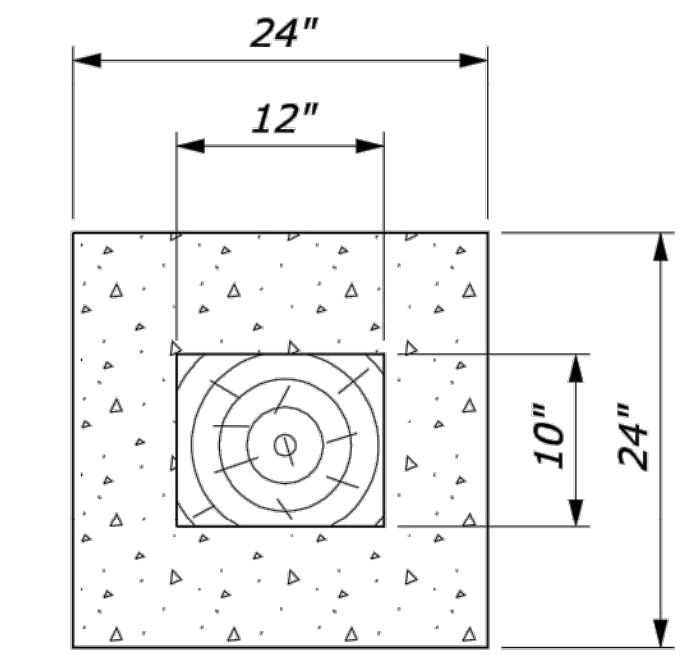
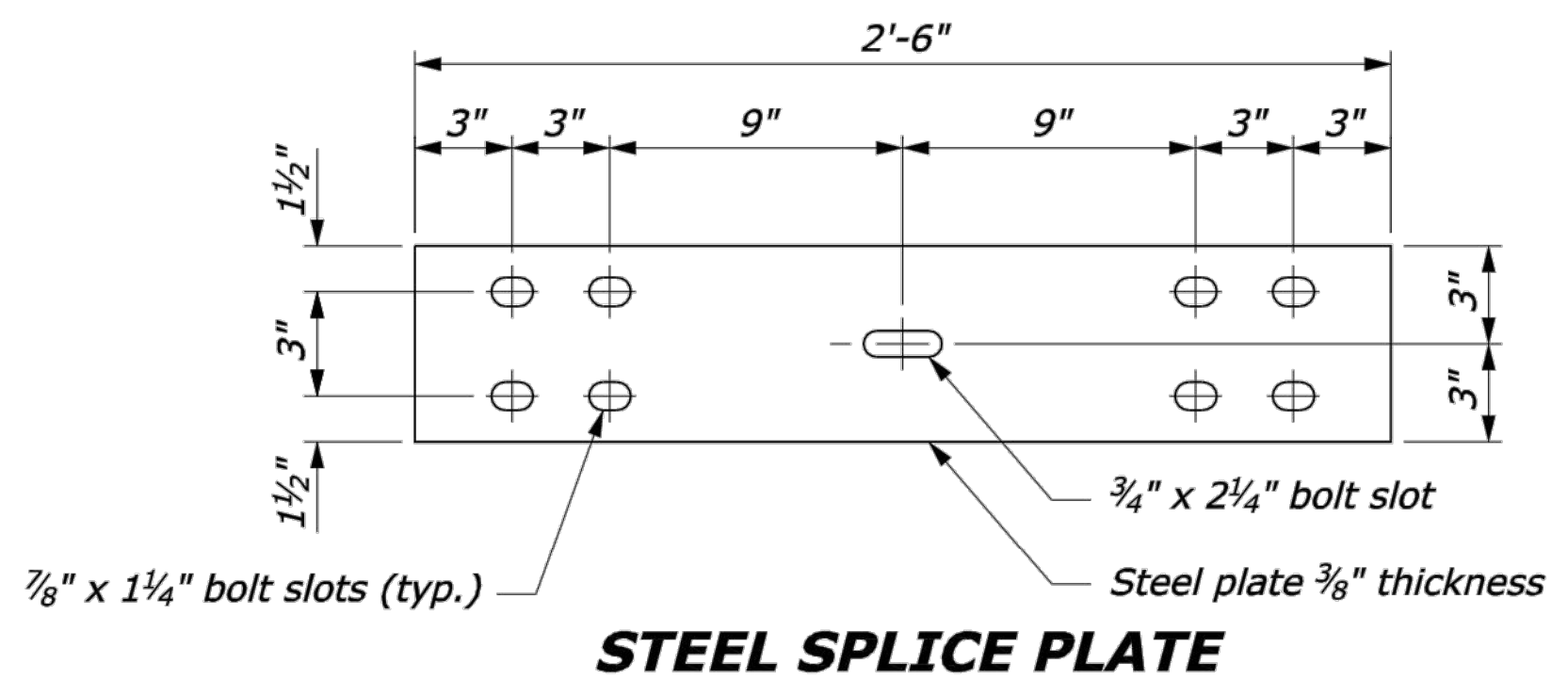
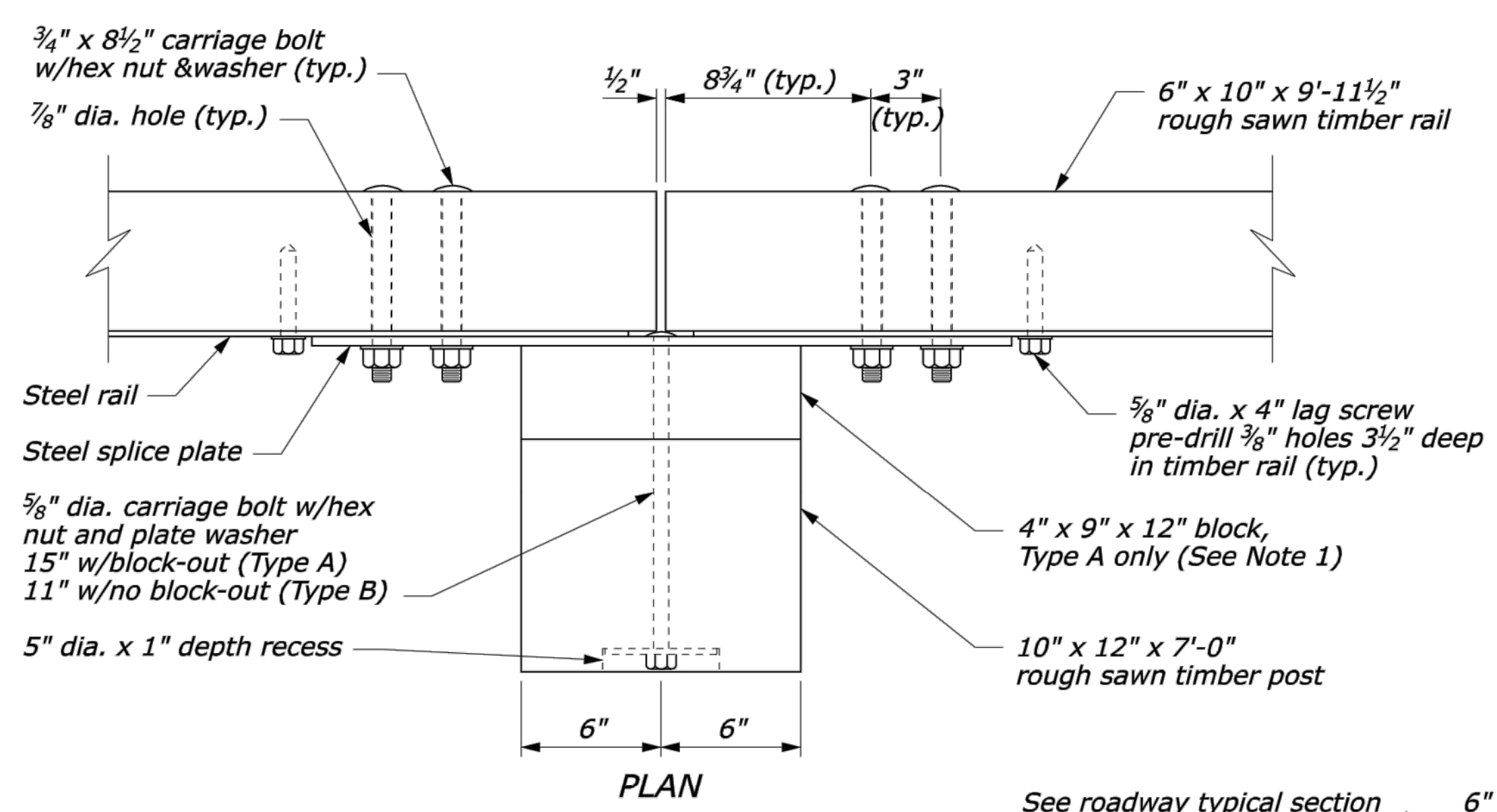
CITY OF NOBLESVILLE
Street Lighting Details and Notes

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Alison M. Krupski 7/18/2021



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

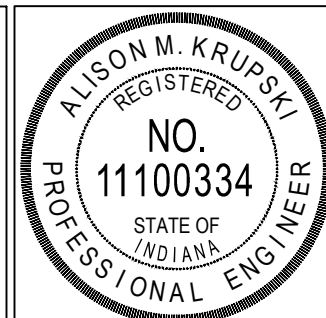
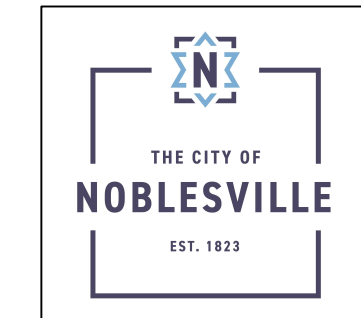


24" dia. round anchor is an acceptable alternative. Reduced size acceptable in solid rock.

CONCRETE ANCHOR FOR SHORT GUARDRAIL POST

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

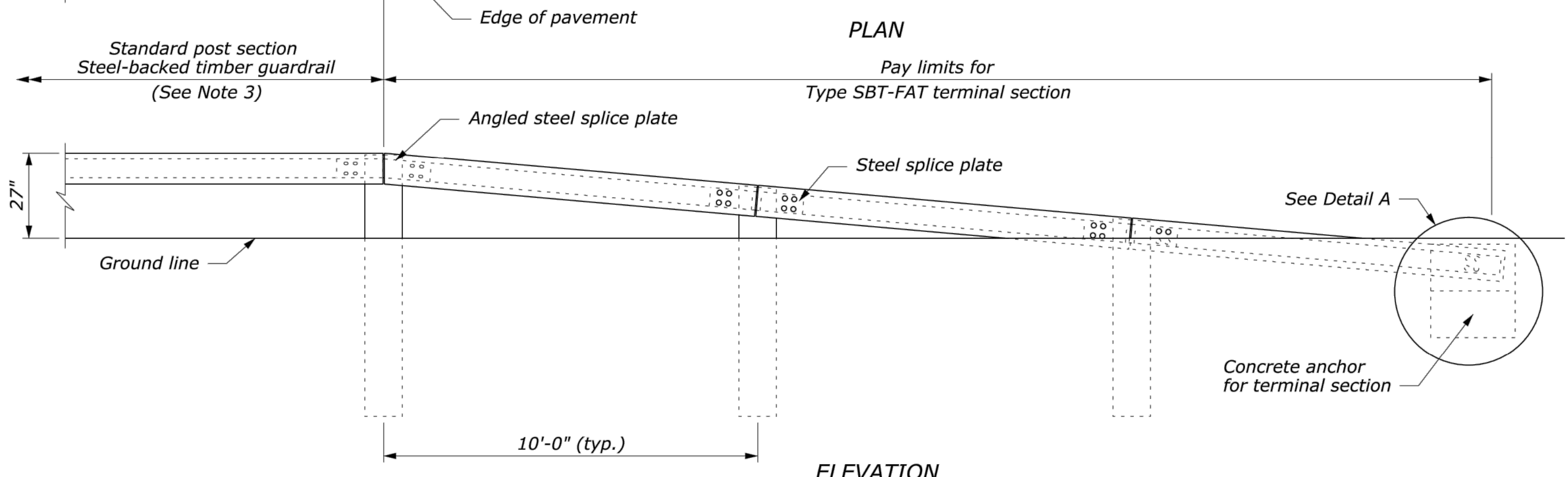
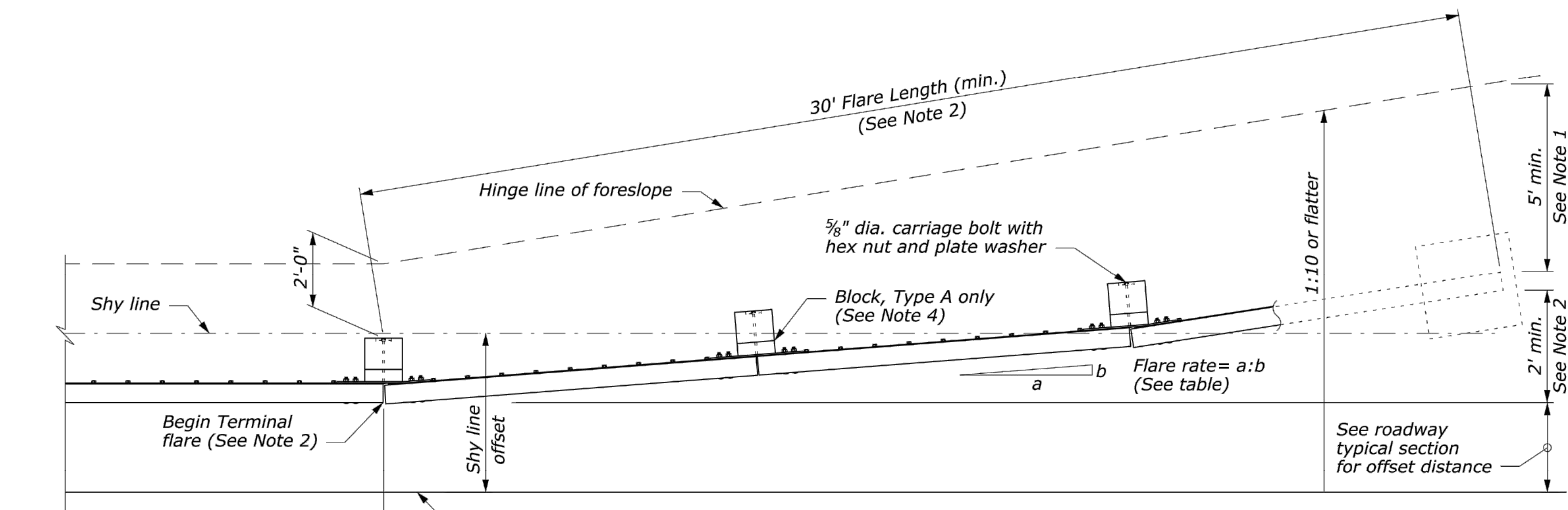
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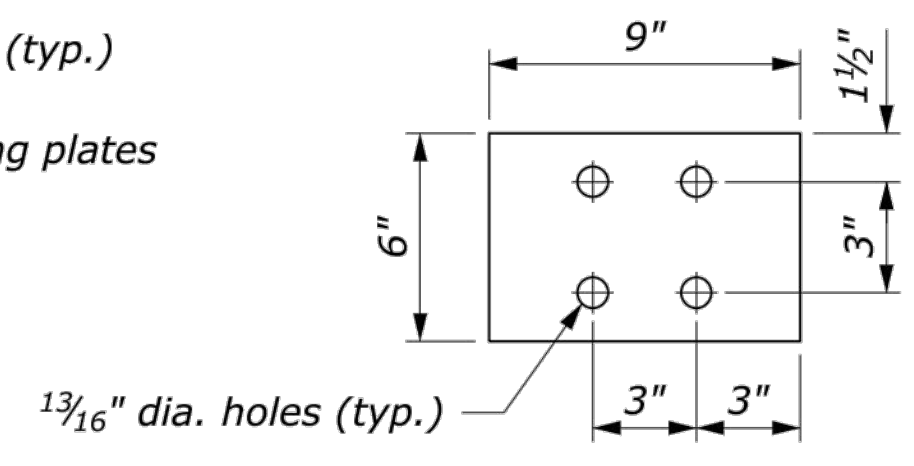
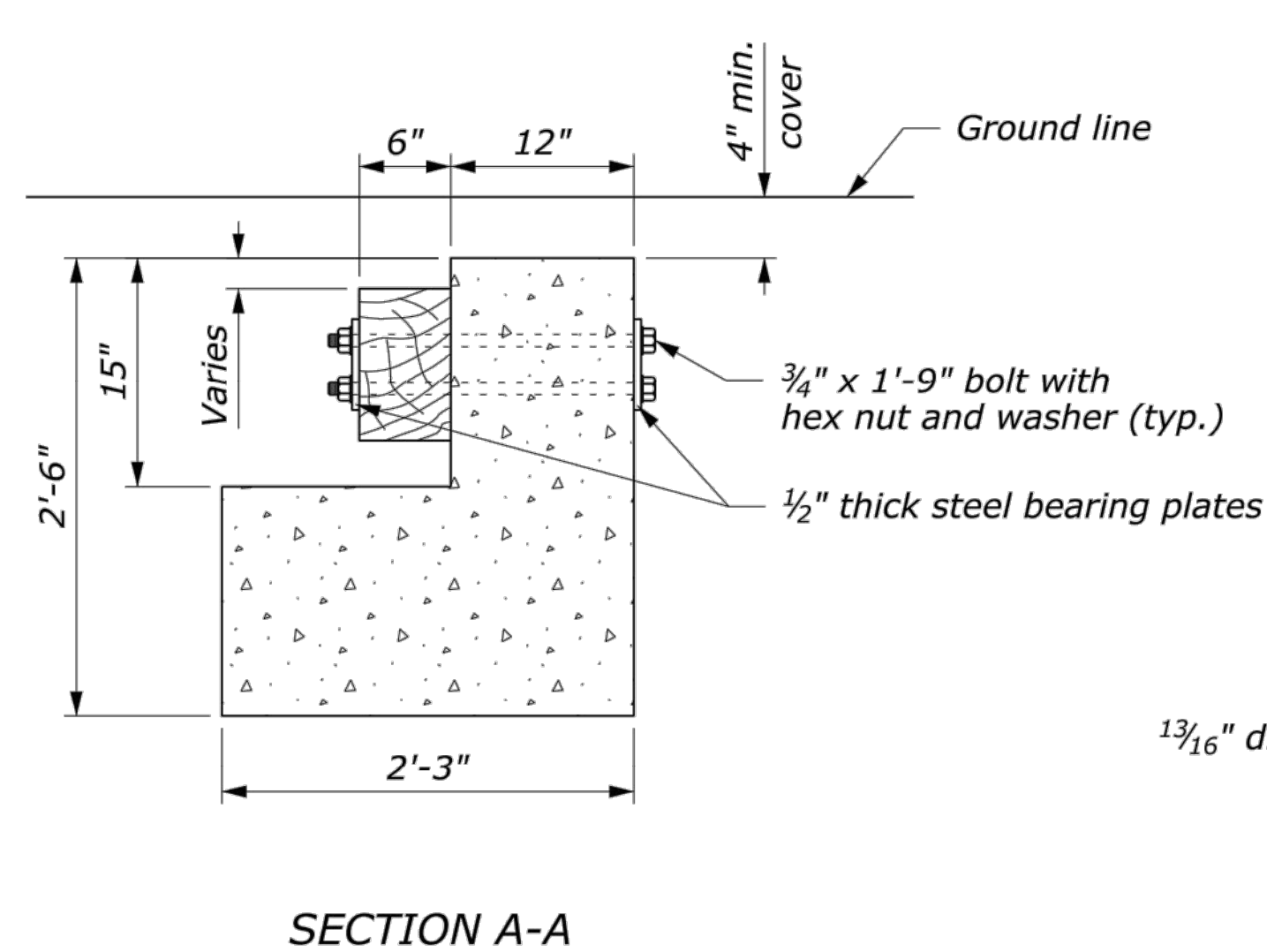
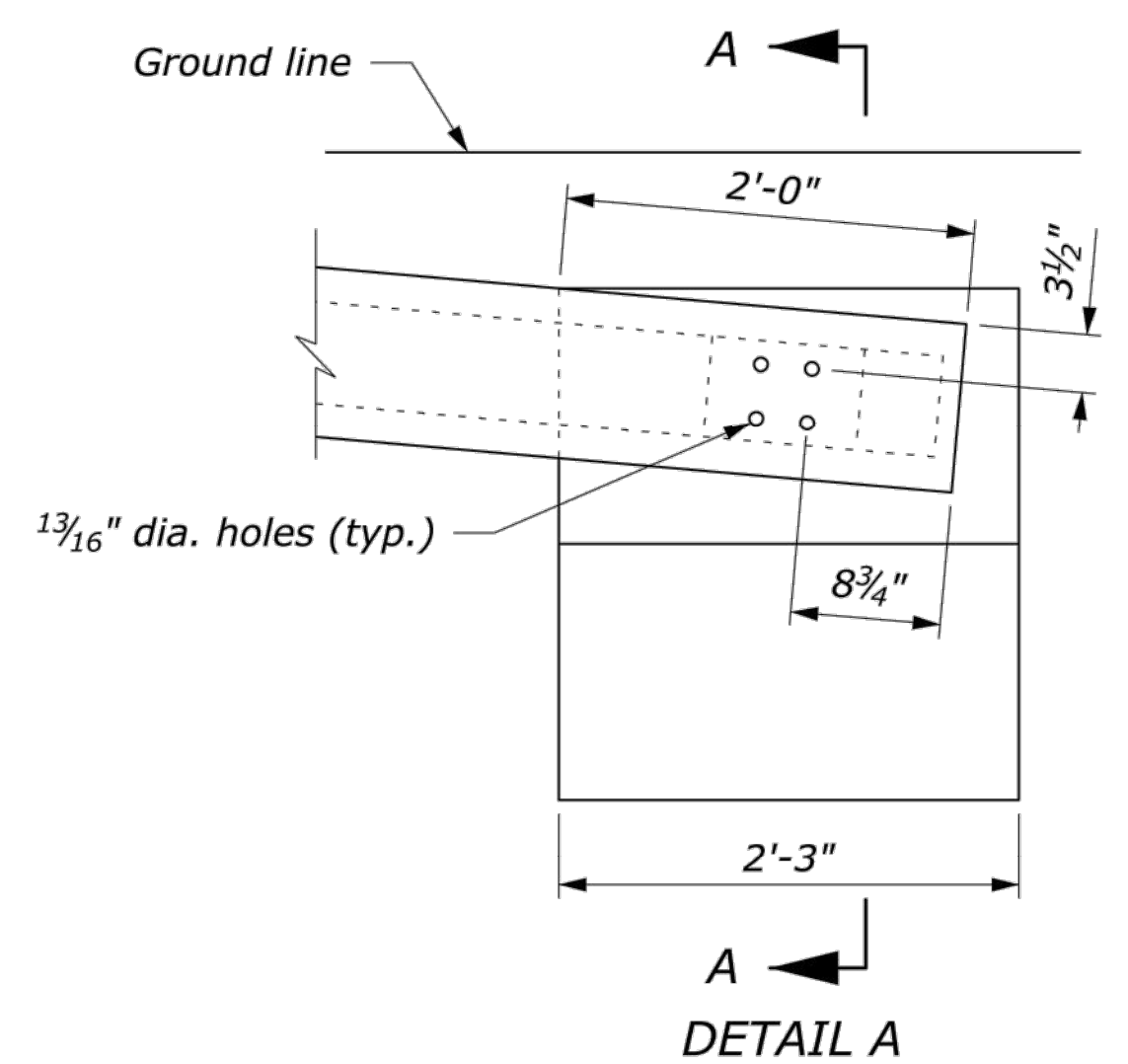
CITY OF NOBLESVILLE
FHWA Timber Guardrail Details

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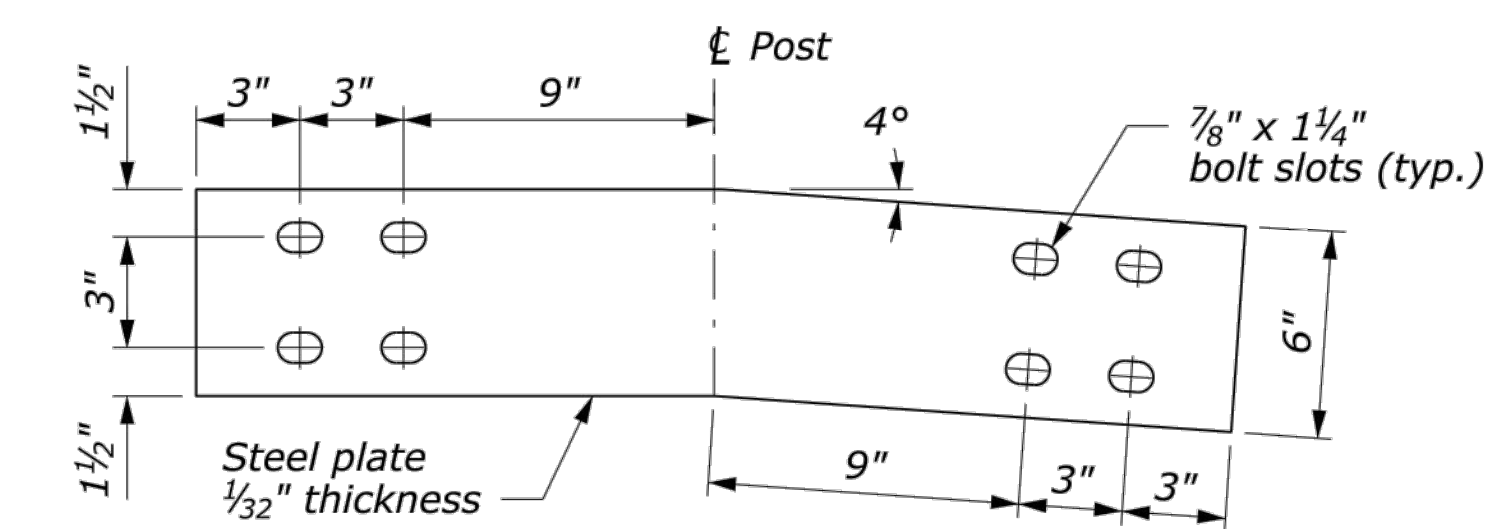
Alison M. Krupski 7/18/2021



APPROACH & DEPARTURE FLARE WITH FLARED ANCHOR TERMINAL (FAT)



Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	3.5	13:1	7:1



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

U.S. CUSTOMARY STANDARD

**STEEL-BACKED TIMBER GUARDRAIL
TERMINAL SECTION
TYPE SBT-FAT**

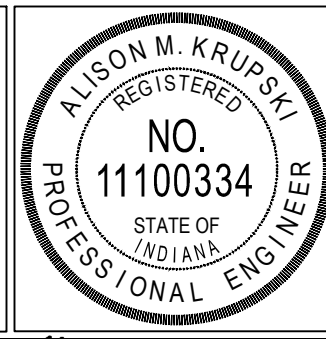
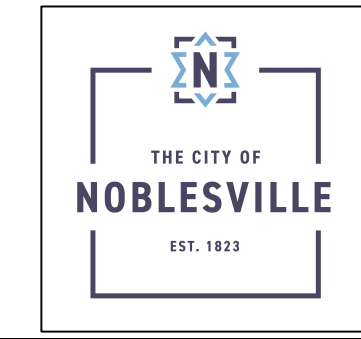
STANDARD APPROVED FOR USE 1/1990

REVISOR: 4/1994 6/2005
DRAFT: 12/2013

STANDARD 617-61

NOTE:

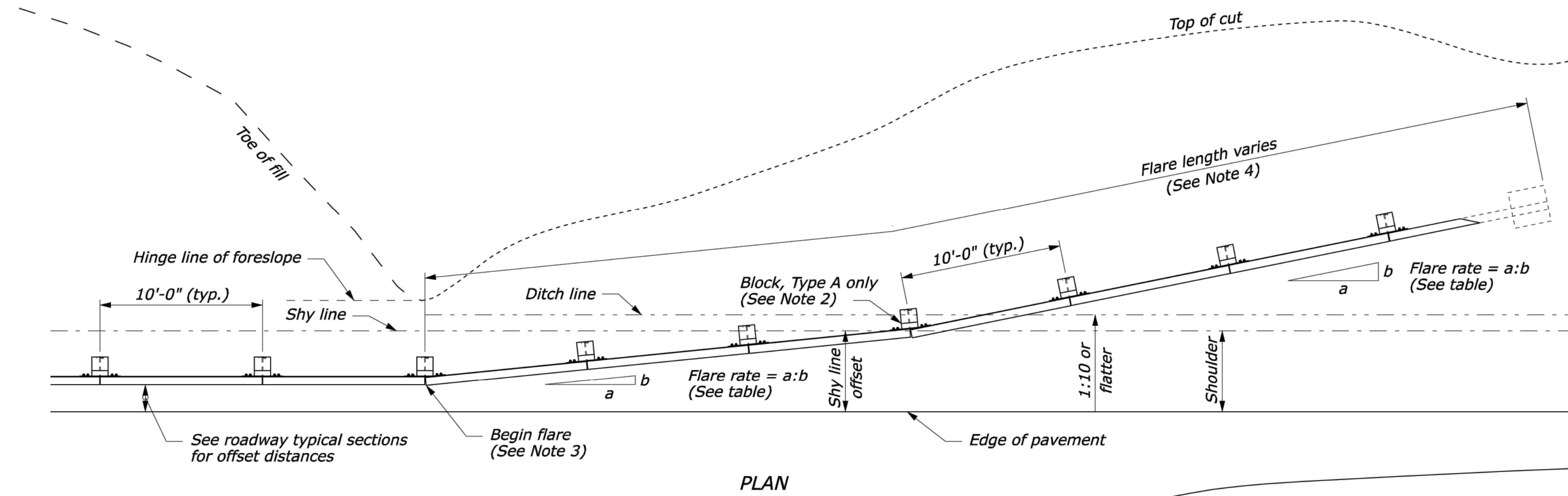
1. Extend the fill widening a minimum of 5 feet behind the guardrail, unless otherwise directed by the CO.
2. The guardrail flare shown in the plan view is the minimum length and rate required. As directed by the CO, flare the guardrail so that the terminal section is outside the clear zone. If the terminal section cannot be located outside the clear zone, it should be flared as far as practical from the road at the maximum rate indicated on the Guardrail Flare Rates table.
3. See Standard 617-60, Steel-Backed Timber Guardrail, Type SBTA and SBTB, for timber, structural steel, and hardware details.
4. On the Type A, blocked-out guardrail, include the blocks in terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.



CITY OF NOBLESVILLE

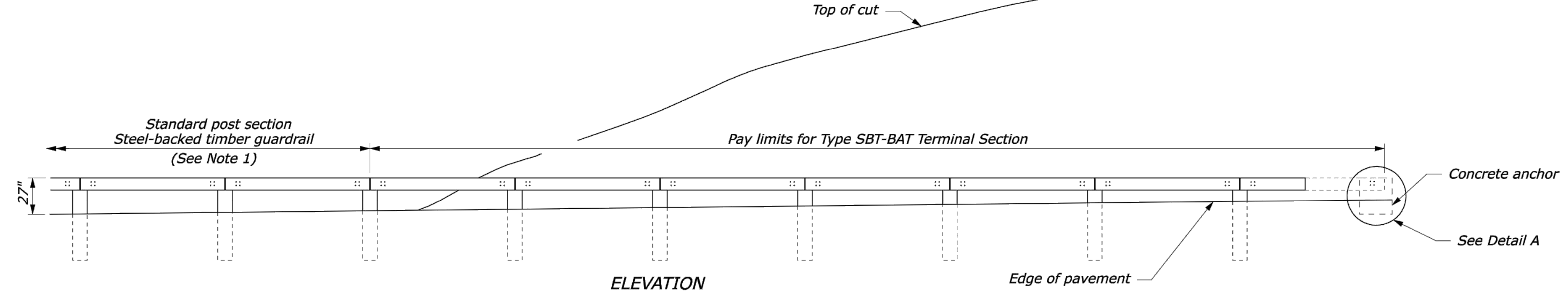
FHWA Timber Guardrail Details

Alison M. Krupski 7/18/2021



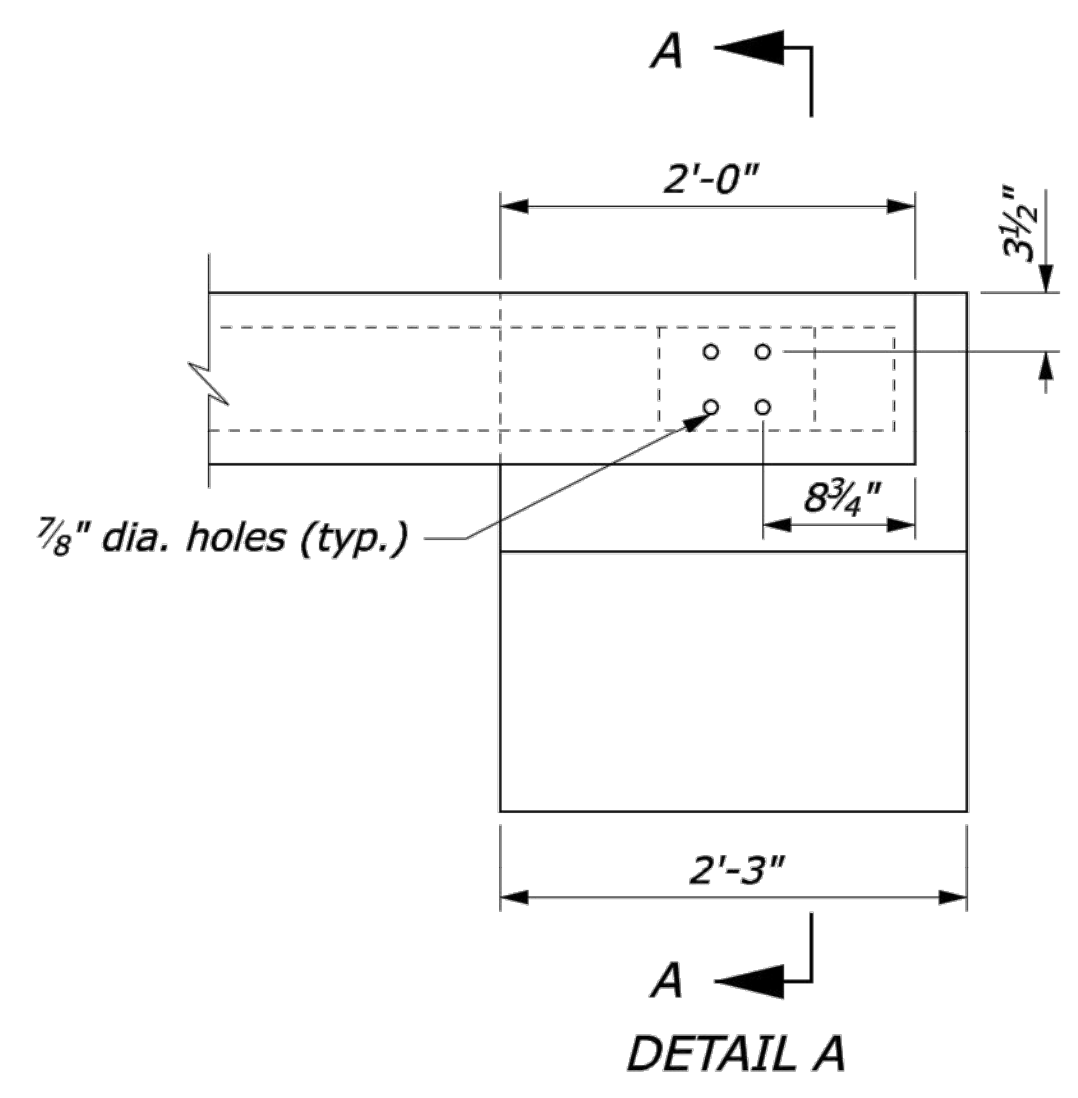
NOTE:

1. See Standard 617-60, SBTA and SBTB for timber, structural steel, and hardware details.
2. On the Type A, blocked-out guardrail, include the blocks in the terminal section, except on the concrete anchor. For the Type B, non-blocked-out guardrail, no blocks are included.
3. Begin the cut flares at the nearest post to a transition point between fill and cut as directed by the CO.
4. Extend the flare into the cut until a minimum 1-foot cover is obtained over the guardrail end.

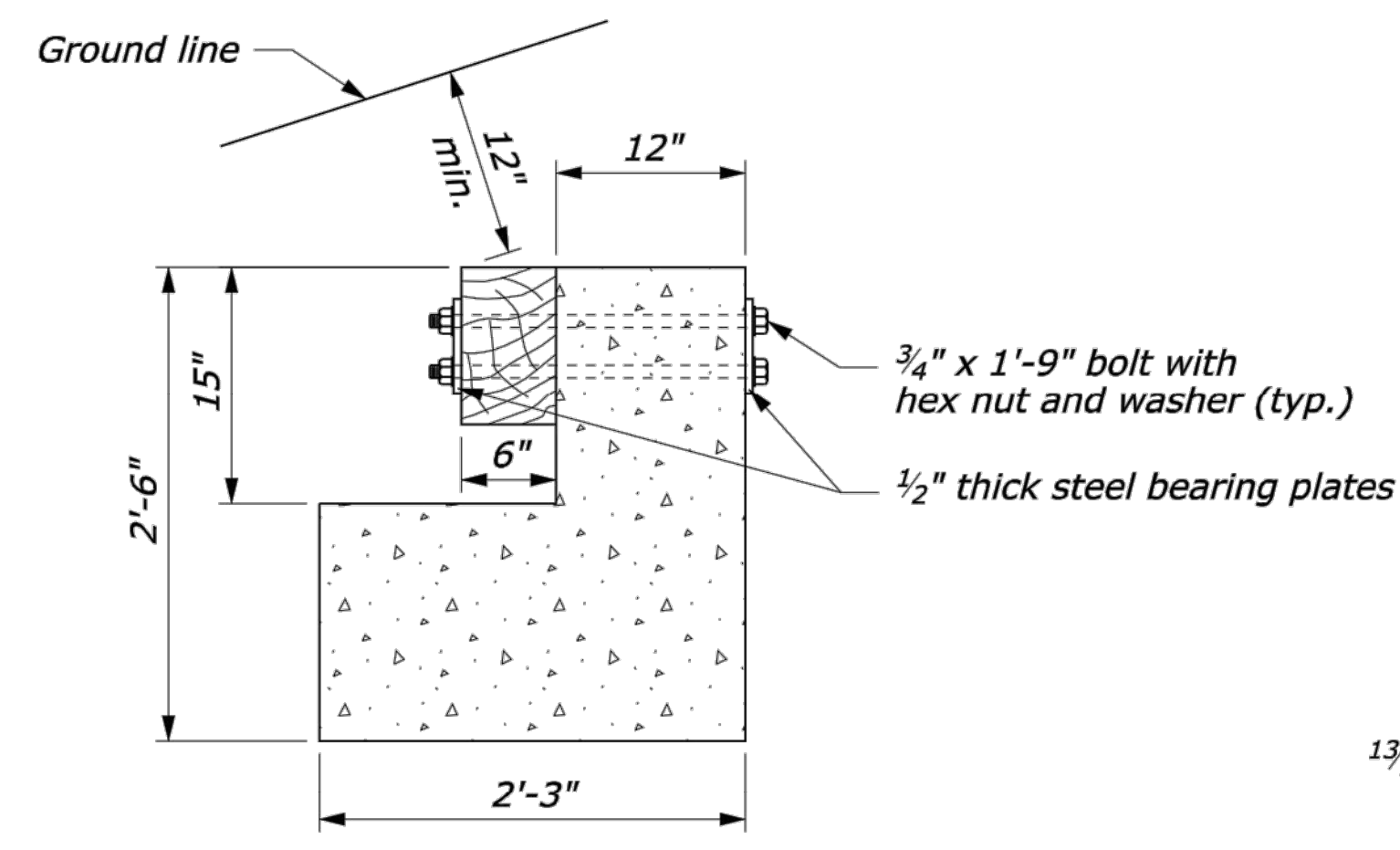


APPROACH & DEPARTURE FLARE WITH BACK SLOPE ANCHOR TERMINAL (BAT)

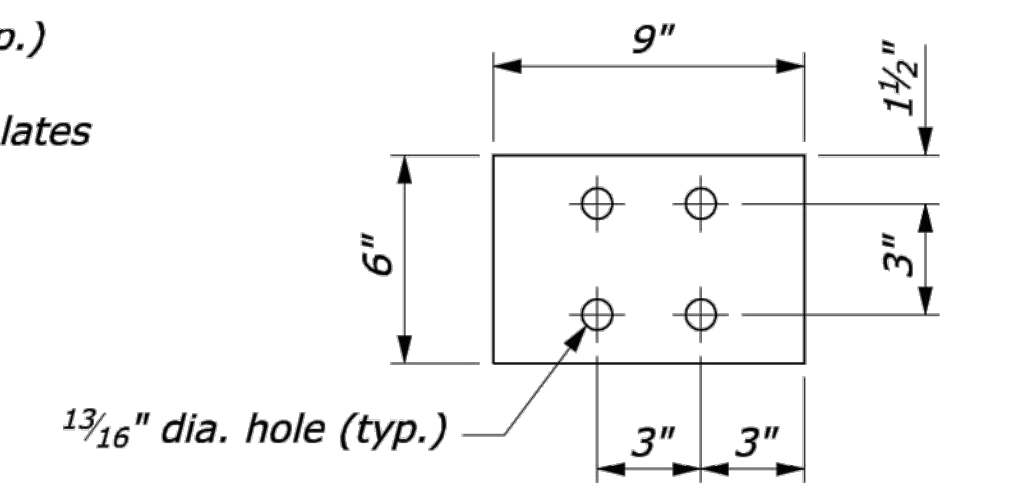
Design Speed (mph)	Shy line offset (ft)	Flare rate inside shy line (a:b)	Flare rate outside shy line (a:b)
60	8.0	26:1	14:1
50	6.5	21:1	11:1
40	5.0	16:1	8:1
30 and less	3.5	13:1	7:1



CONCRETE ANCHOR



SECTION A-A



STEEL BEARING PLATE

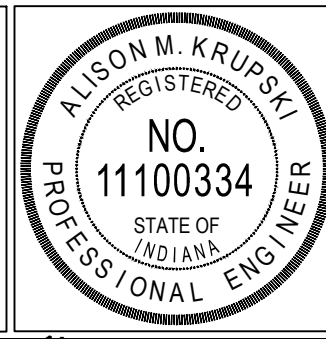
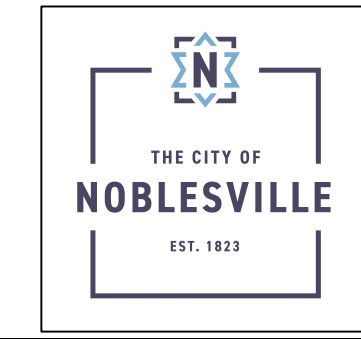
NO SCALE

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

U.S. CUSTOMARY STANDARD
**STEEL-BACKED TIMBER GUARDRAIL
TERMINAL SECTION
TYPE SBT-BAT**

STANDARD APPROVED FOR USE 3/1990
REVISED: 4/1994 6/2005

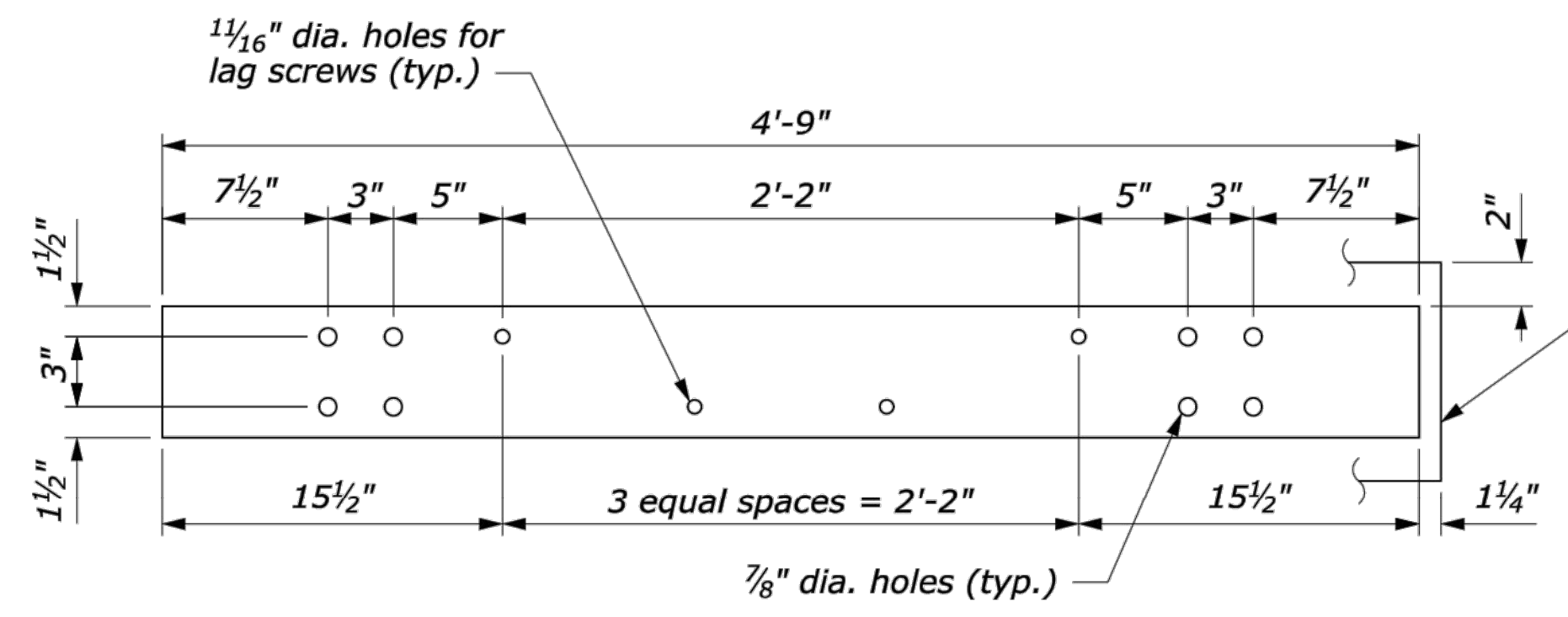
STANDARD
617-62



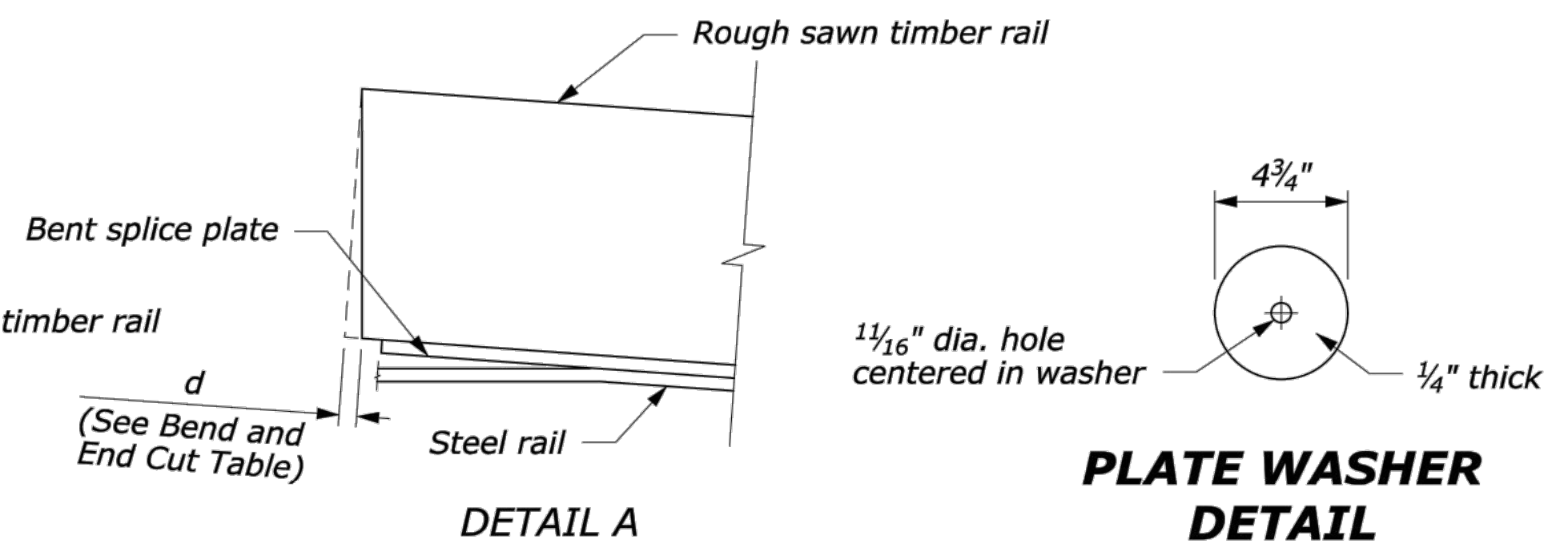
CITY OF NOBLESVILLE
FHWA Timber Guardrail Details

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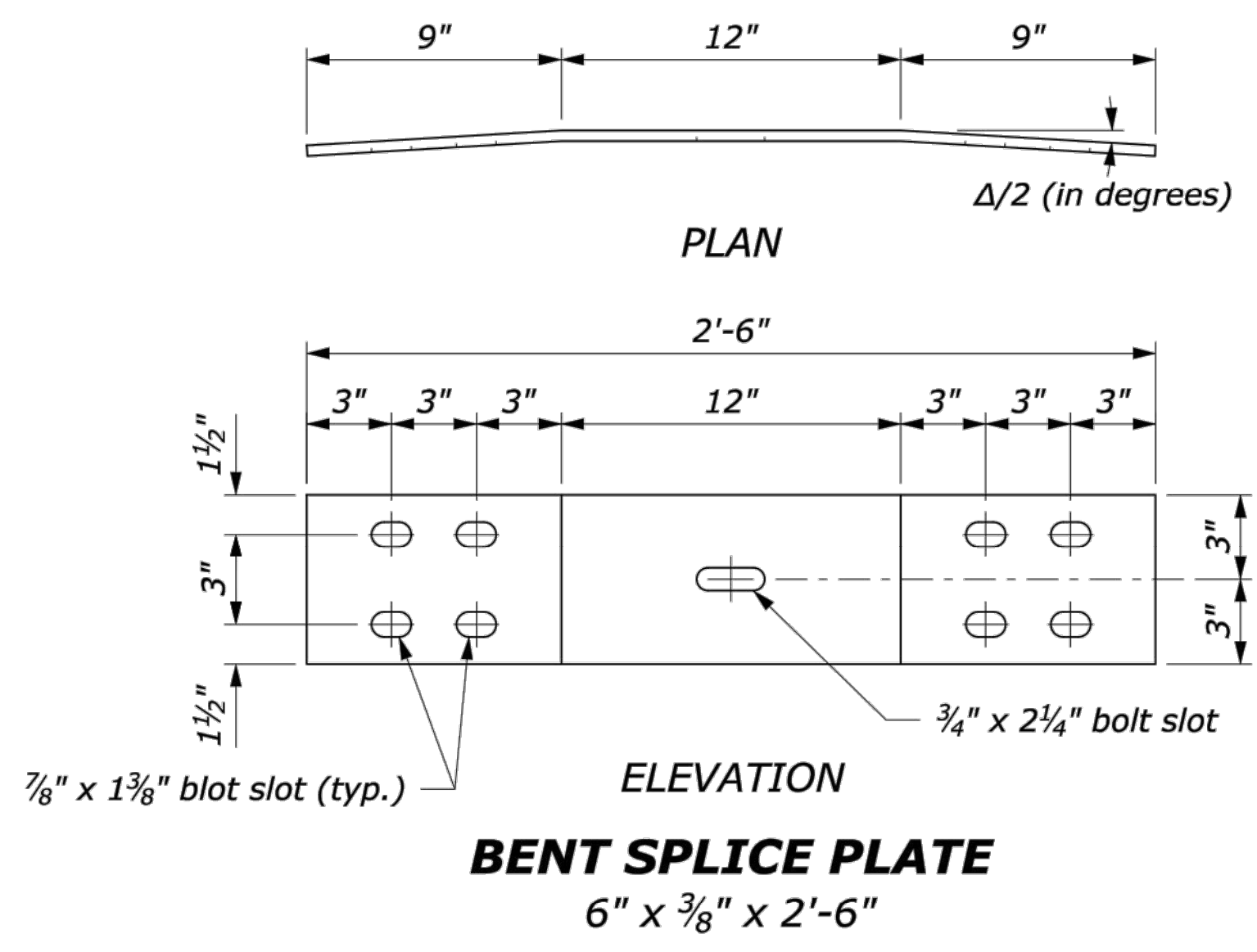
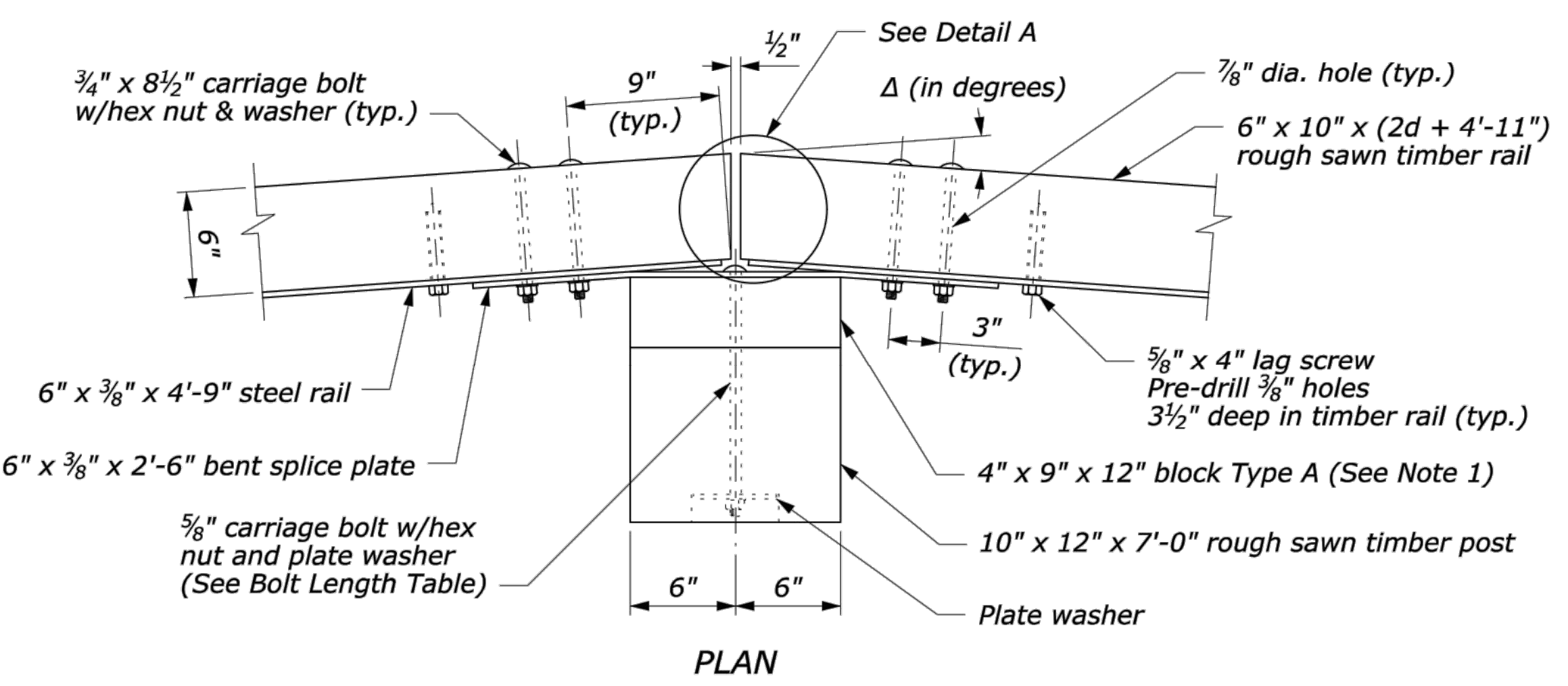
Alison M. Krupski 7/18/2021



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

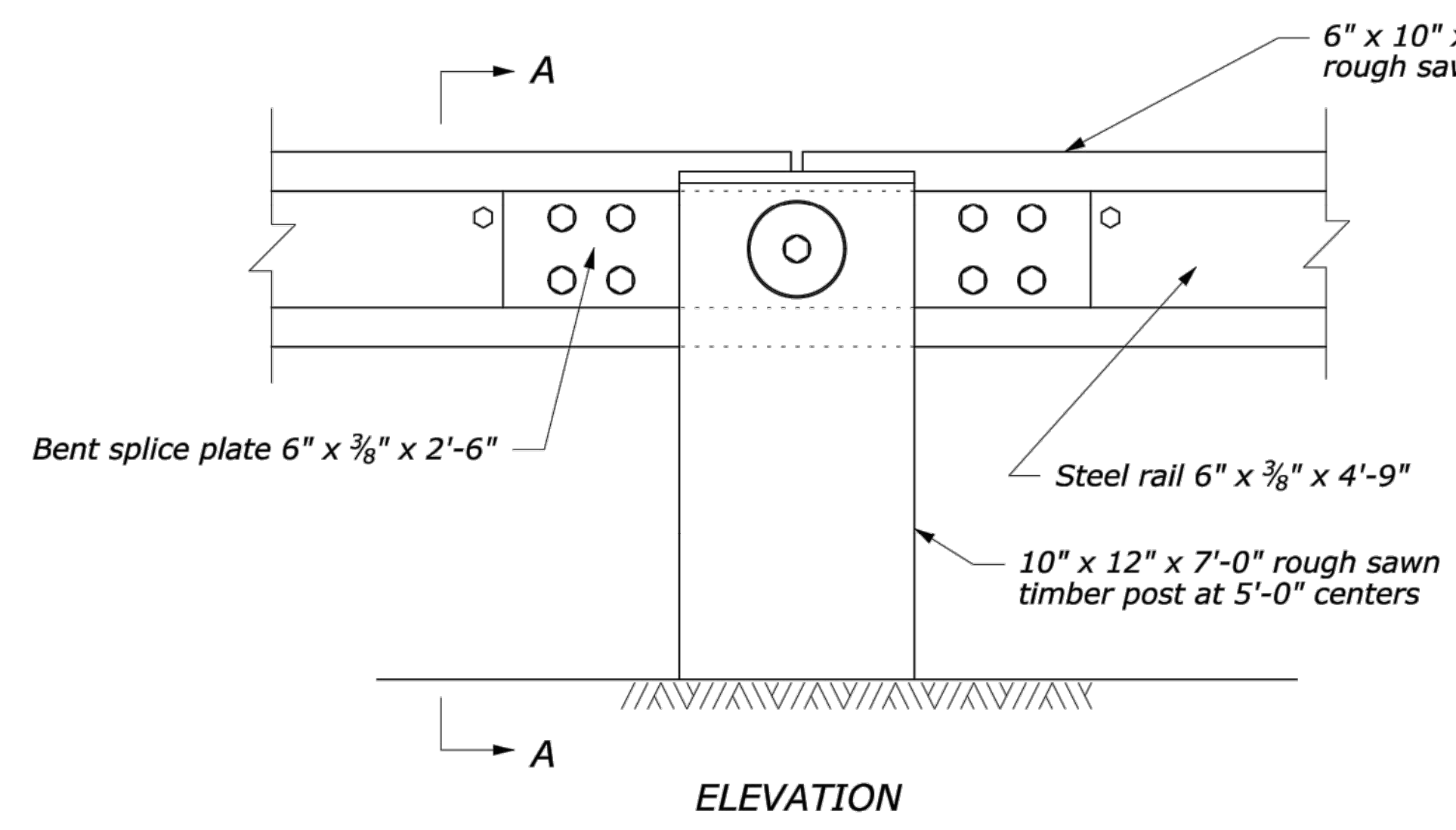


- NOTE:**
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified.
 2. Use the weathering steel for all structural steel and fastener hardware.
 3. Furnish shop bent splice plates. Use the minimum bend angle shown in the table below.
 4. See Sheet 2 of 2 for Plan View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

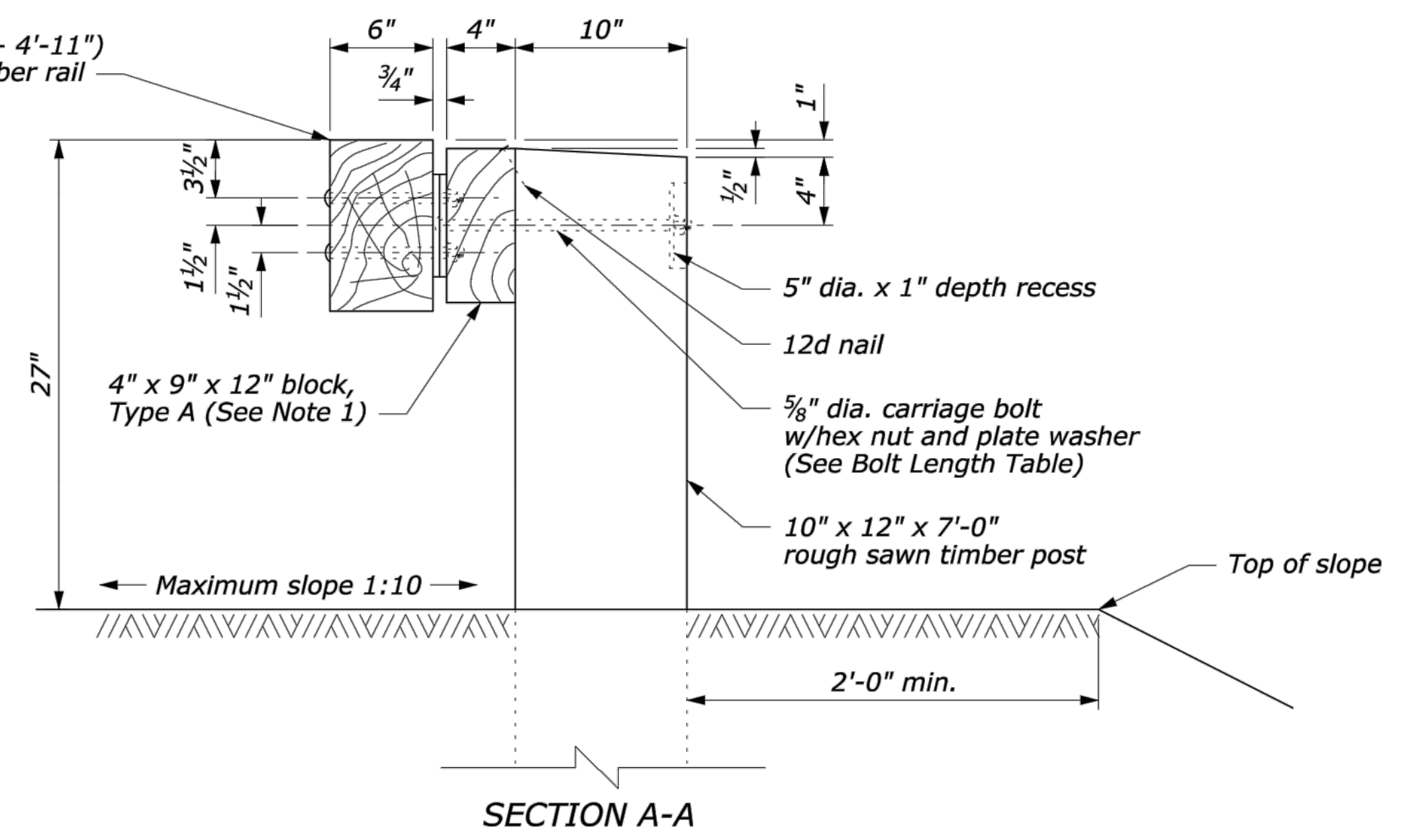


BENT SPLICE PLATE
6" x 3/8" x 2'-6"

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



POST CONNECTION



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

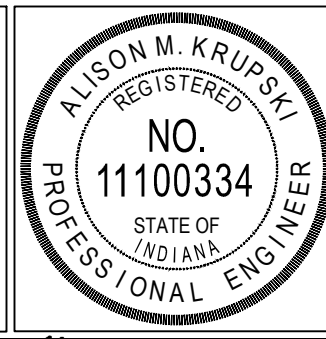
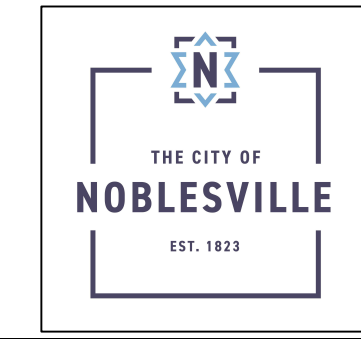
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
FEDERAL LANDS HIGHWAY

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

STANDARD APPROVED FOR USE 6/2005
REVISED:

STANDARD
617-63

NO SCALE



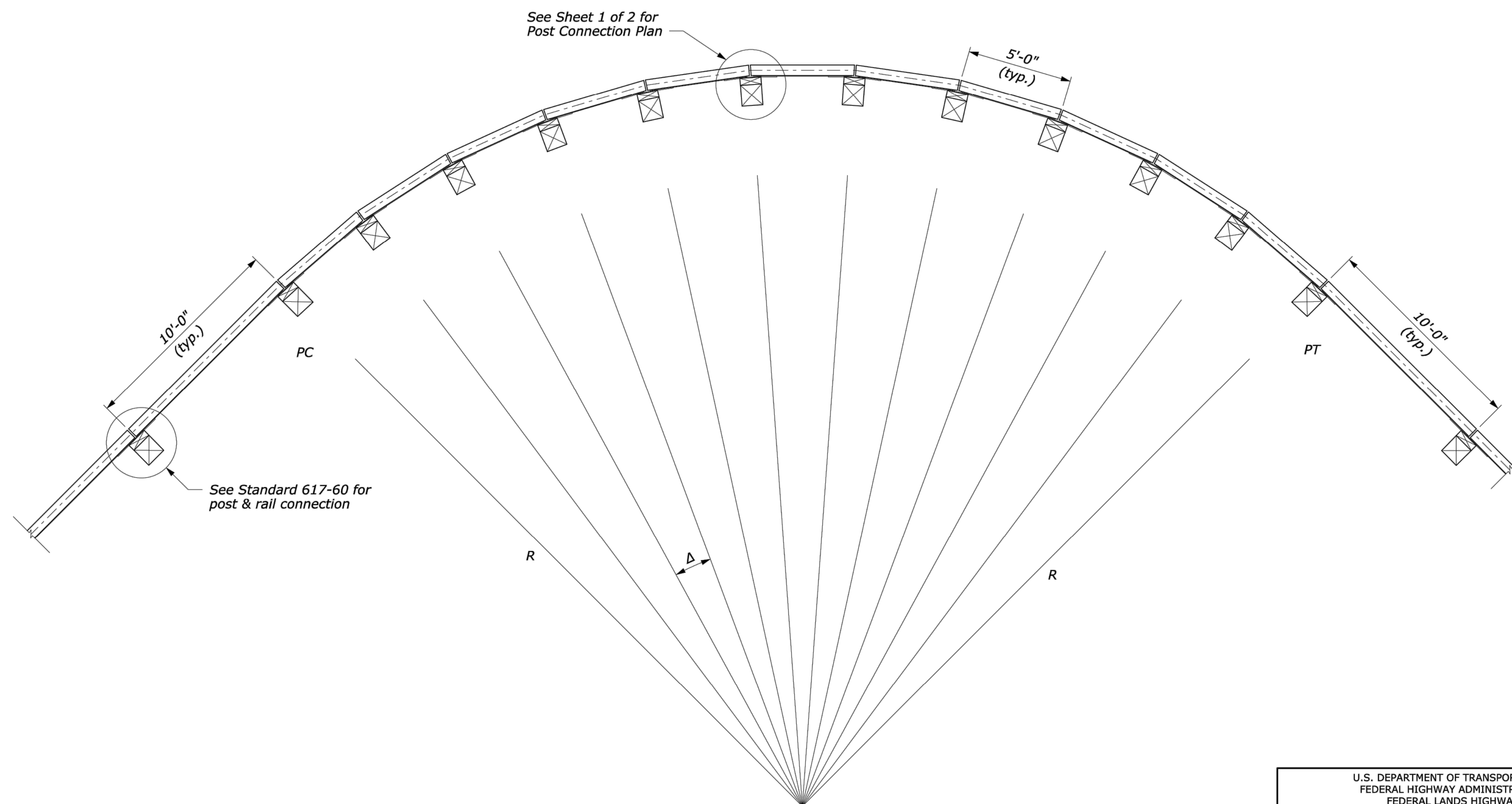
CITY OF NOBLESVILLE
FHWA Timber Guardrail Details

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OF
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Alison M. Krupski 7/8/2021

NOTE:

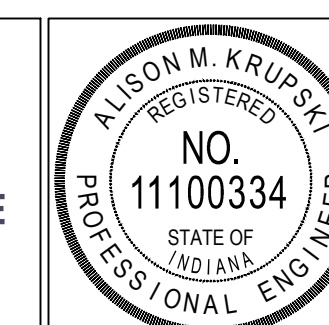
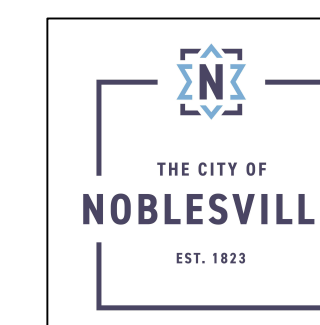
1. Δ is the central angle which subtends a 5'-0" chord.
2. R is measured from the center of the circle to the back surface of the rough sawn timber rail.



PLAN VIEW LAYOUT

NO SCALE

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



CITY OF NOBLESVILLE

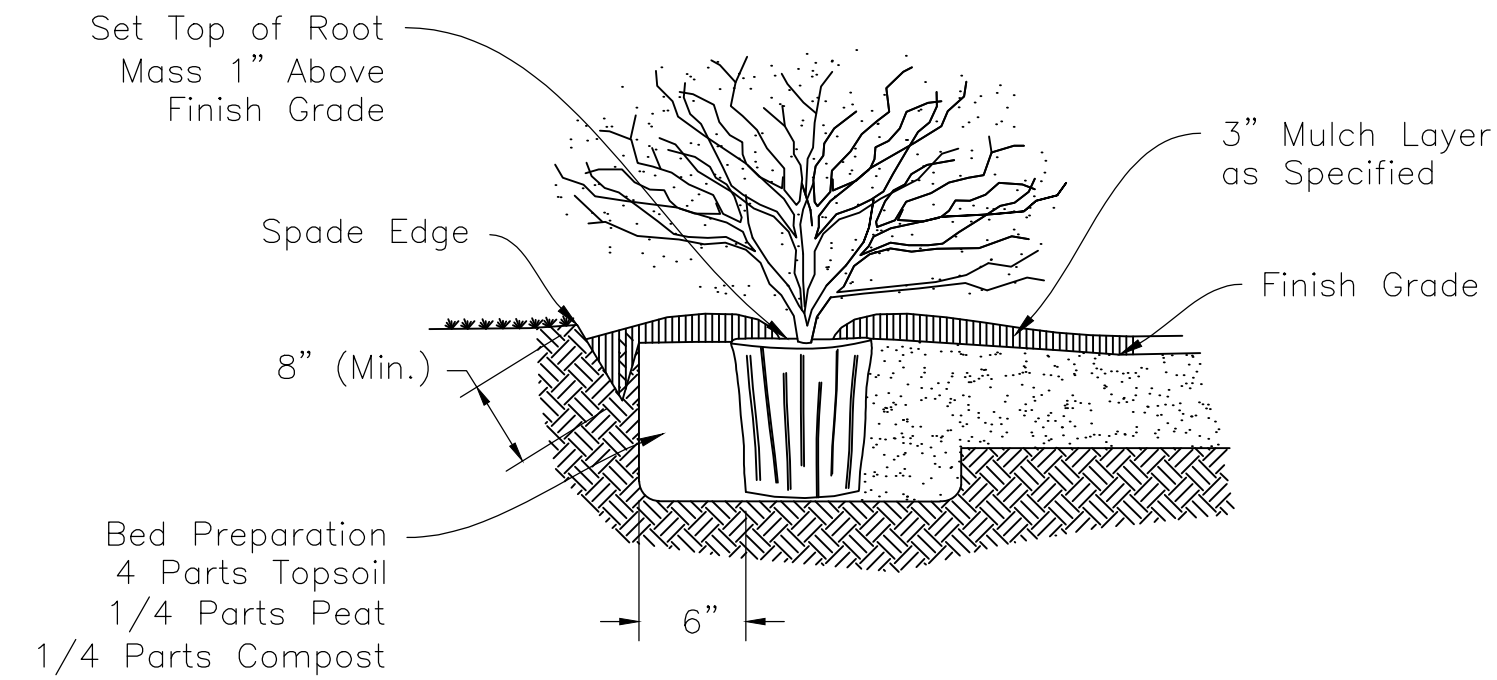
FHWA Timber Guardrail Details

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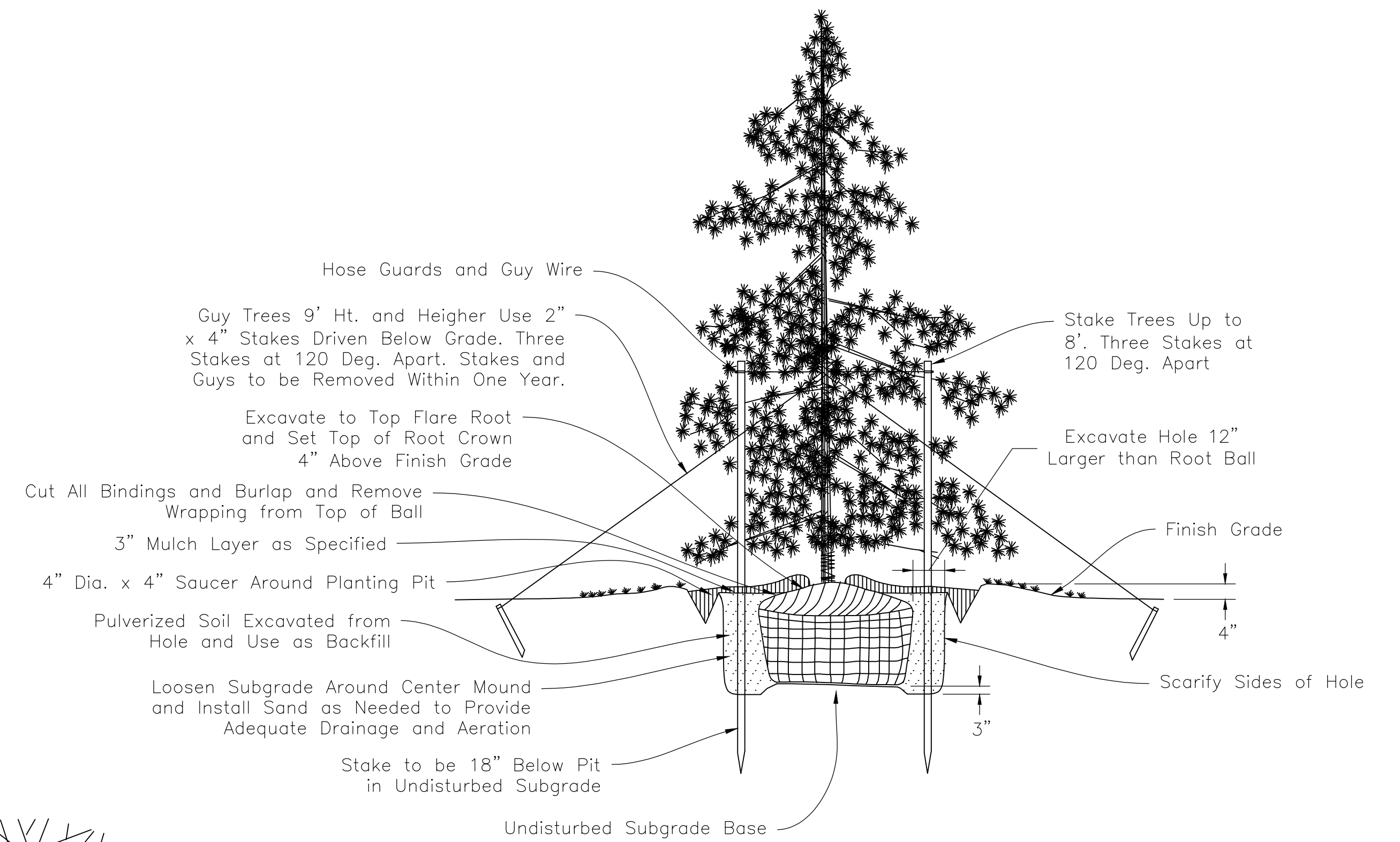
GENERAL NOTES

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.
3. All trees and planting beds shall have a 4 foot 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 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, latest 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 plantings shall be guaranteed for a period of one year after installation and acceptance. The contractor will be required to replace plantings that die during this period at the contractor's expense.
10. All disturbed lawn areas shall be hydro-seeded 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. Areas 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.
13. Seed beds, if not loose, shall be loosened to a depth of three inches.
14. Topsoil shall be spread to sufficient depth to produce the thickness specified after it has been compacted lightly.
15. 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.
16. The 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 70% germination shall be replaced with no additional payment.
17. Seeding without mulch shall not be done between May 1 and August 15.



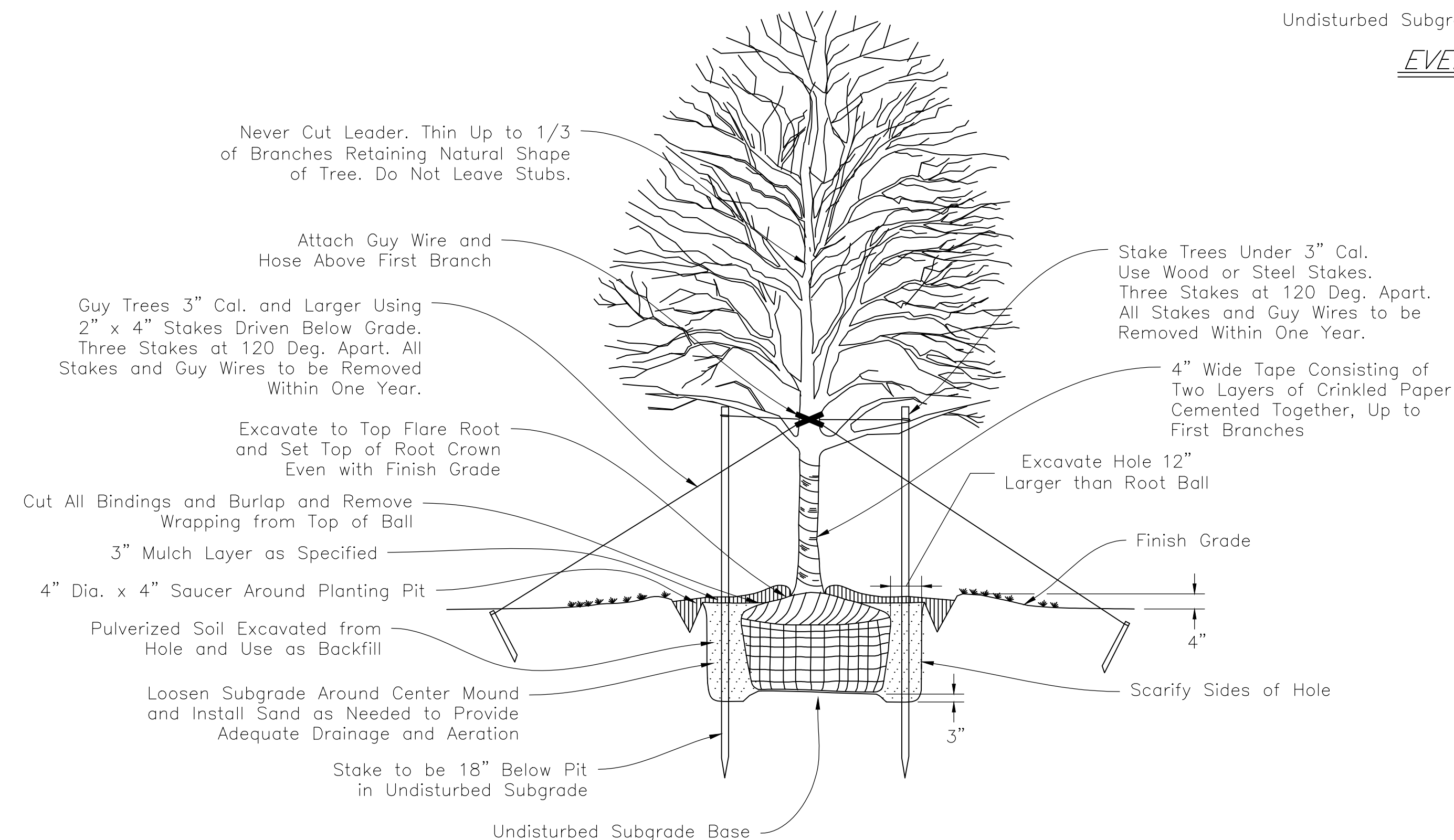
SHRUB AND SMALL TREE PLANTING DETAIL

Scale: None



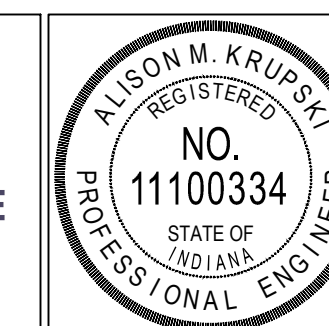
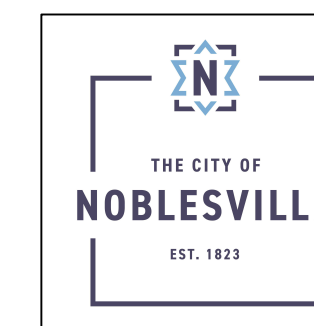
EVERGREEN PLANTING DETAIL

Scale: None



SHADE TREE PLANTING DETAIL

Scale: None



CITY OF NOBLESVILLE

Landscape and Planting Details and Notes

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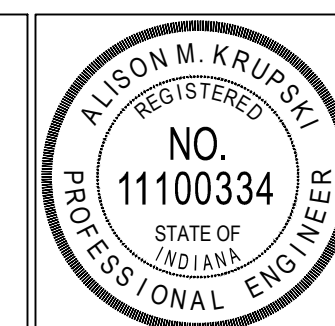
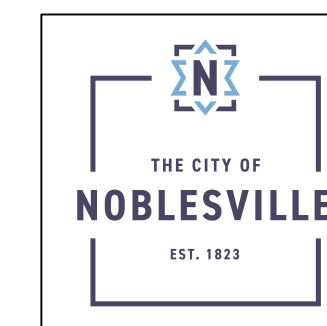
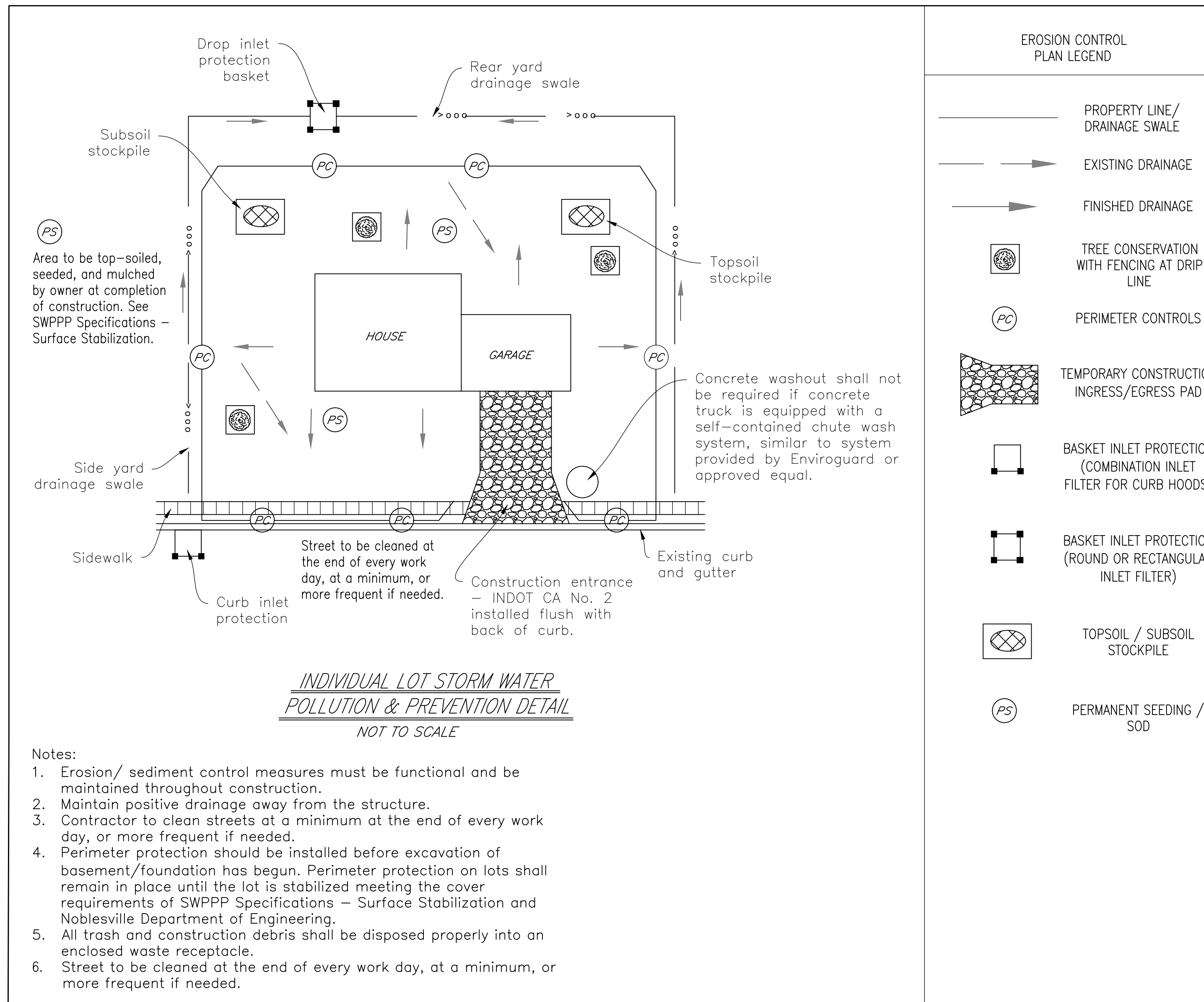
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GENERAL SWPPP NOTES FOR INDIVIDUAL LOTS

1. All storm water quality measures, including erosion and sediment control, necessary to comply with the requirements for 327 IAC 15-5, Rule 5 and/or general construction practices and/or City of Noblesville Improvement Location Permit must be implemented in accordance with the plan and sufficient to satisfy Section 600 of the City of Noblesville Stormwater Technical Standards (STSM).
2. Provisions for erosion and sediment control on individual building lots regulated under the original permit of a project site owner must include the following requirements:
 - 2.1. The individual lot operator, whether owning the property or acting as the agent of the property owner, shall be responsible for erosion and sediment control requirements associated with activities on individual lots.
 - 2.2. Installation and maintenance of a stable construction site access.
 - 2.3. Installation and maintenance of appropriate perimeter erosion and sediment control measures prior to land disturbance.
 - 2.4. Sediment discharge and tracking from each lot must be minimized throughout the land disturbing activities on the lot until permanent stabilization has been achieved.
 - 2.5. Clean-up of sediment must be redistributed or disposed of in a manner that is in compliance with all applicable statutes and rules.
 - 2.6. Adjacent lots disturbed by and individual lot operator must be repaired and stabilized with temporary or permanent surface stabilization.
3. In accordance with Chapter 600 of the Noblesville STSM, final stabilization of an individual lot project site is achieved when:
 - 3.1. All land disturbing activities have been completed
 - 3.2. The establishment, at a uniform density of seventy percent (70%) across the disturbed area, of vegetative cover or permanent non-erosive material that will ensure the resistance of the soil to erosion, sliding, or other movement.

CONSTRUCTION SEQUENCE FOR INDIVIDUAL LOTS

- Construction sequence on individual lots should be as follows:
1. Clearly delineate areas of trees, shrubs, and vegetation that are to be undisturbed. To prevent root damage, the areas delineated for tree protection should be at least the same diameter as the crown.
 2. Install perimeter silt fence at construction limits. Position the fence to intercept runoff prior to entering drainage swales.
 3. Avoid disturbing drainage swales if vegetation is established. If drainage swales are bare, install erosion control blankets or sod to immediately stabilize.
 4. Install drop inlet protection for all inlets on the property.
 5. Install curb inlet protection, on both sides of the road, for all inlets along the property frontage and along the frontage of adjacent lots, or install temporary catch basin inserts in each inlet and frequently clean.
 6. Install gravel construction entrance flush with the back of existing curb, extending from the street to the building pad.
 7. Perform primary grading operations.
 8. Contain erosion from any soil stockpiles created on-site with silt fence around the base.
 9. Establish temporary seeding and straw mulch on disturbed areas.
 10. Construct the home and install utilities.
 11. Install downspout extenders once the roof and gutters have been constructed. Extenders should outlet to a stabilized area.
 12. Re-seed any areas disturbed by construction and utilities installation with temporary seed mix within 3 days of completion of disturbance.
 13. Grade the site to final elevations. Add topsoil as needed to minimize erosion of underlying soil and to quickly establish grass.
 14. Install permanent seeding or sod.



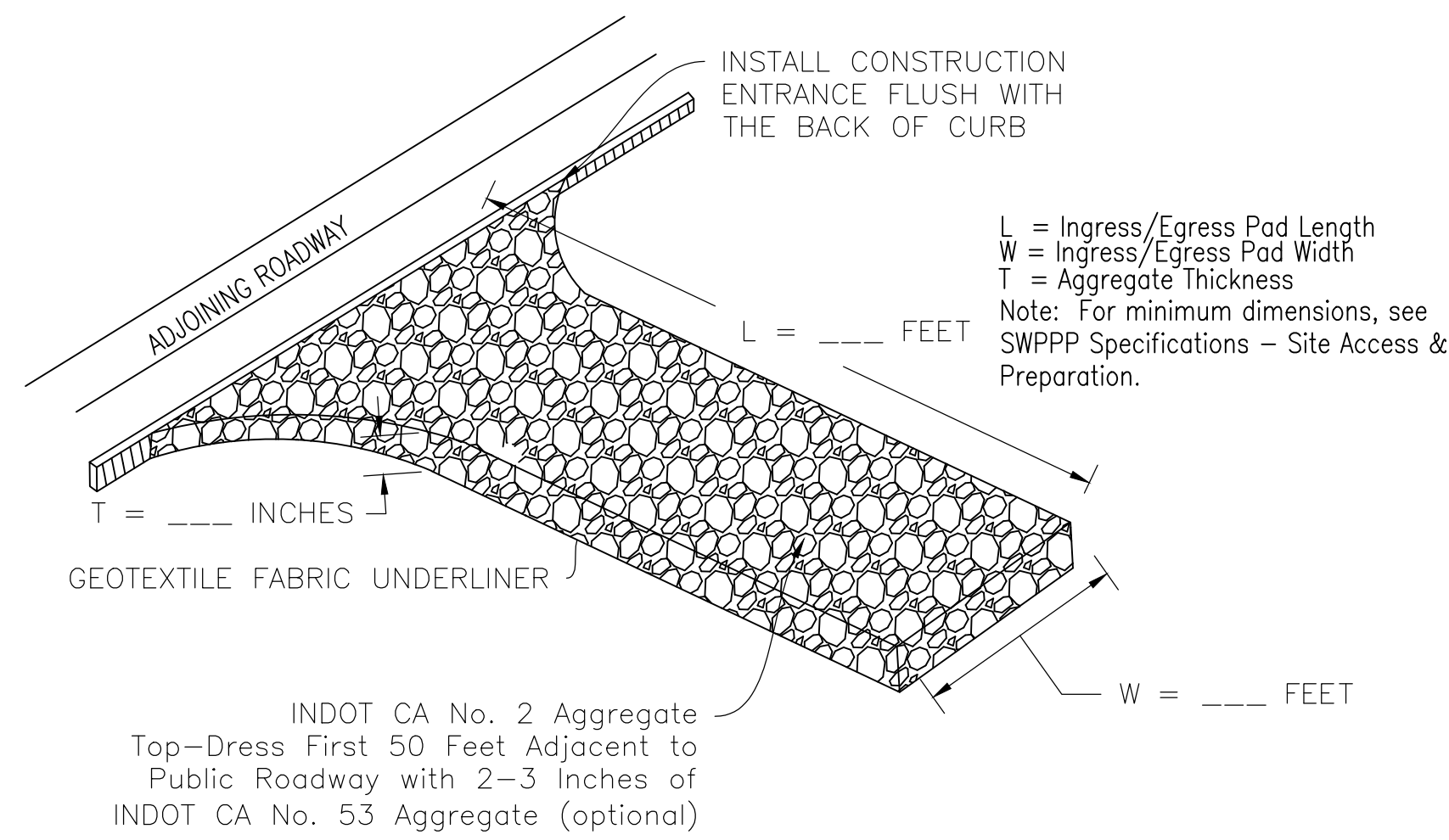
CITY OF NOBLESVILLE

SWPPP Details

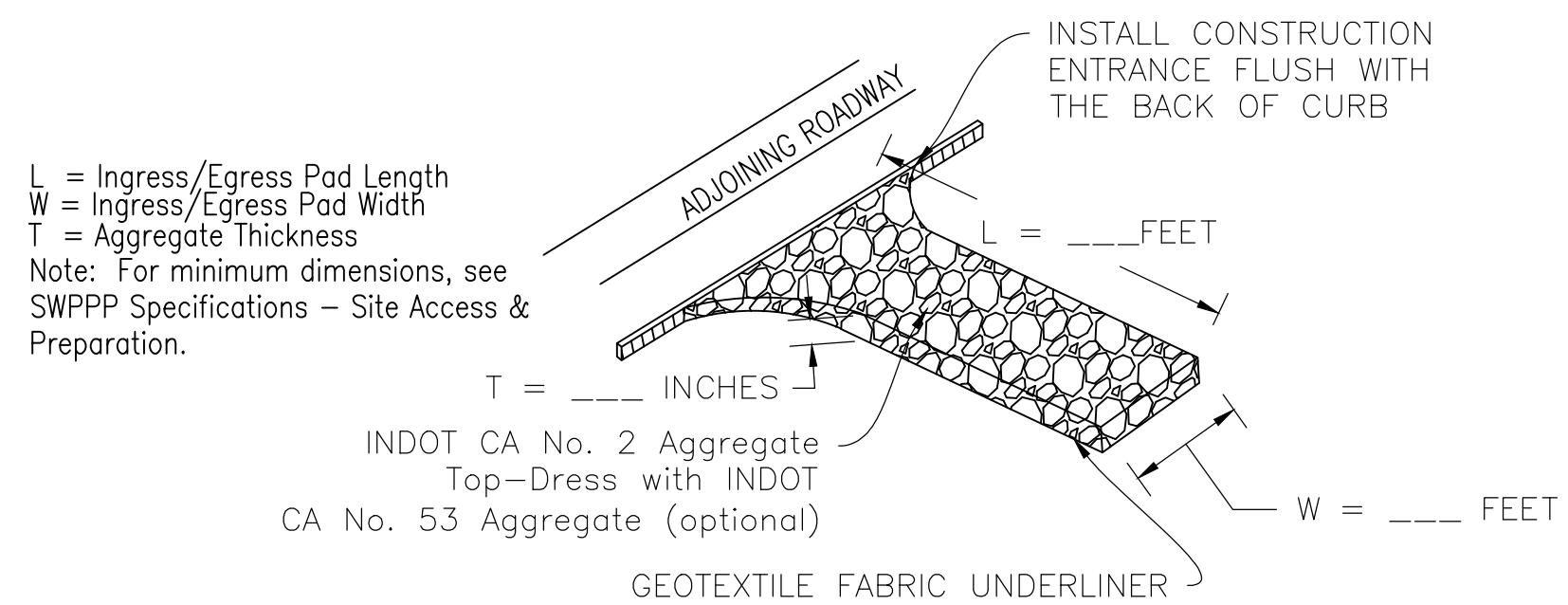
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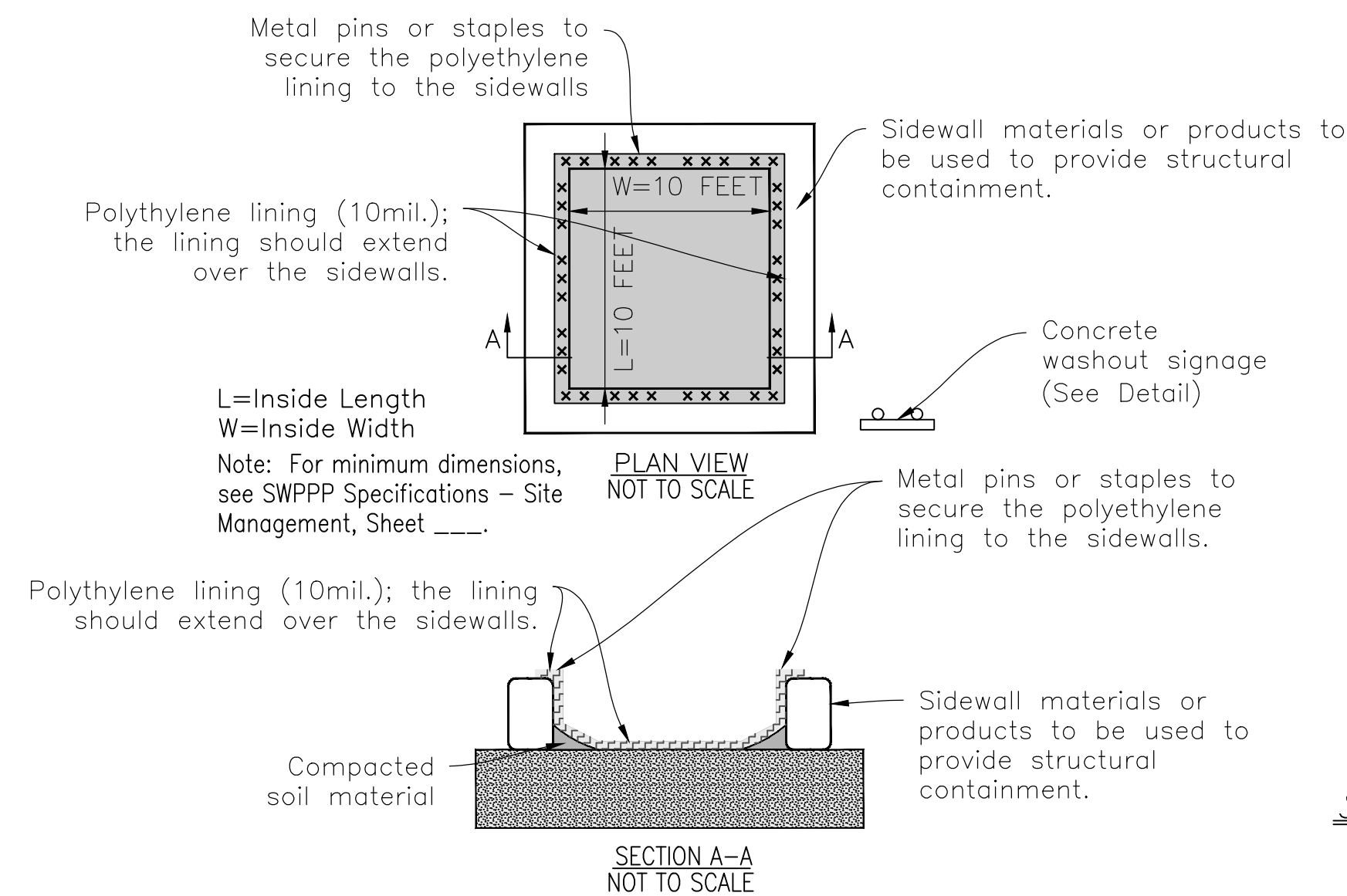
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TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD
(LARGE SITES - TWO ACRES OR LARGER)
NOT TO SCALE

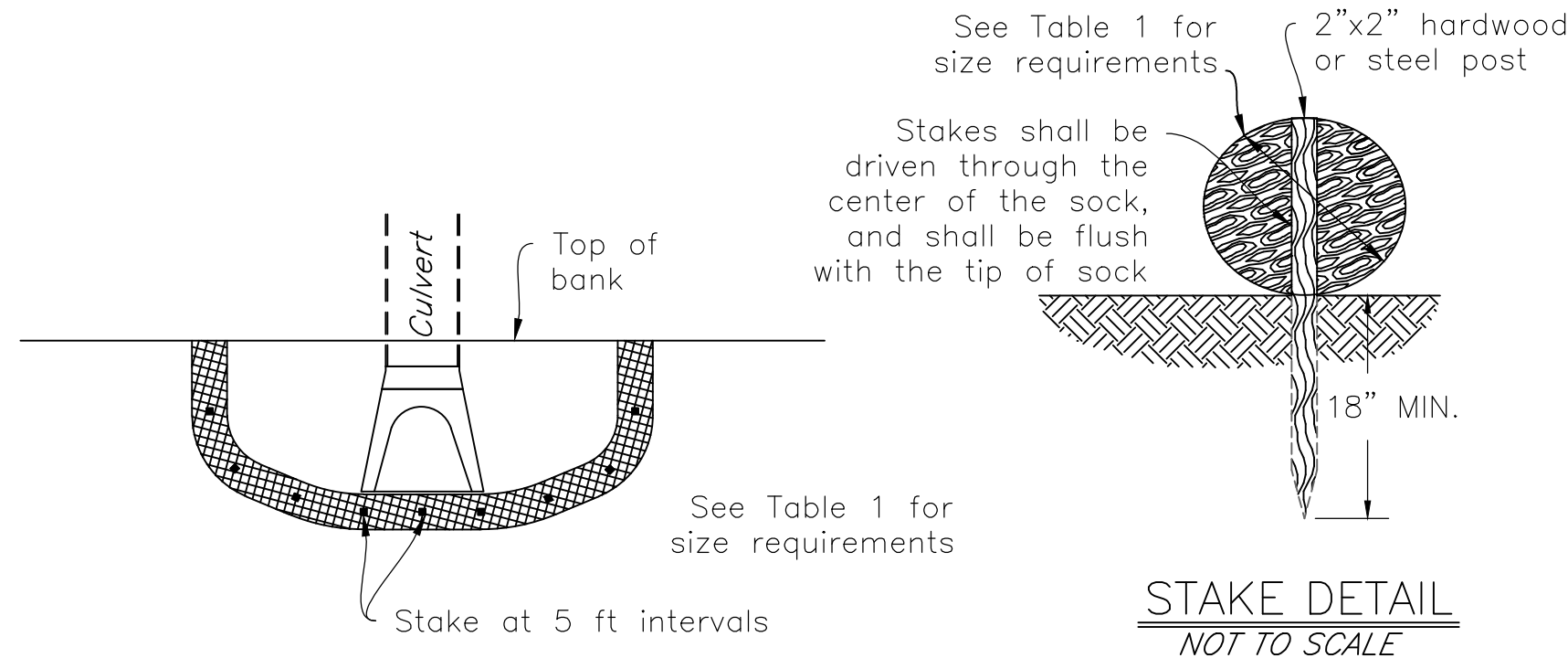
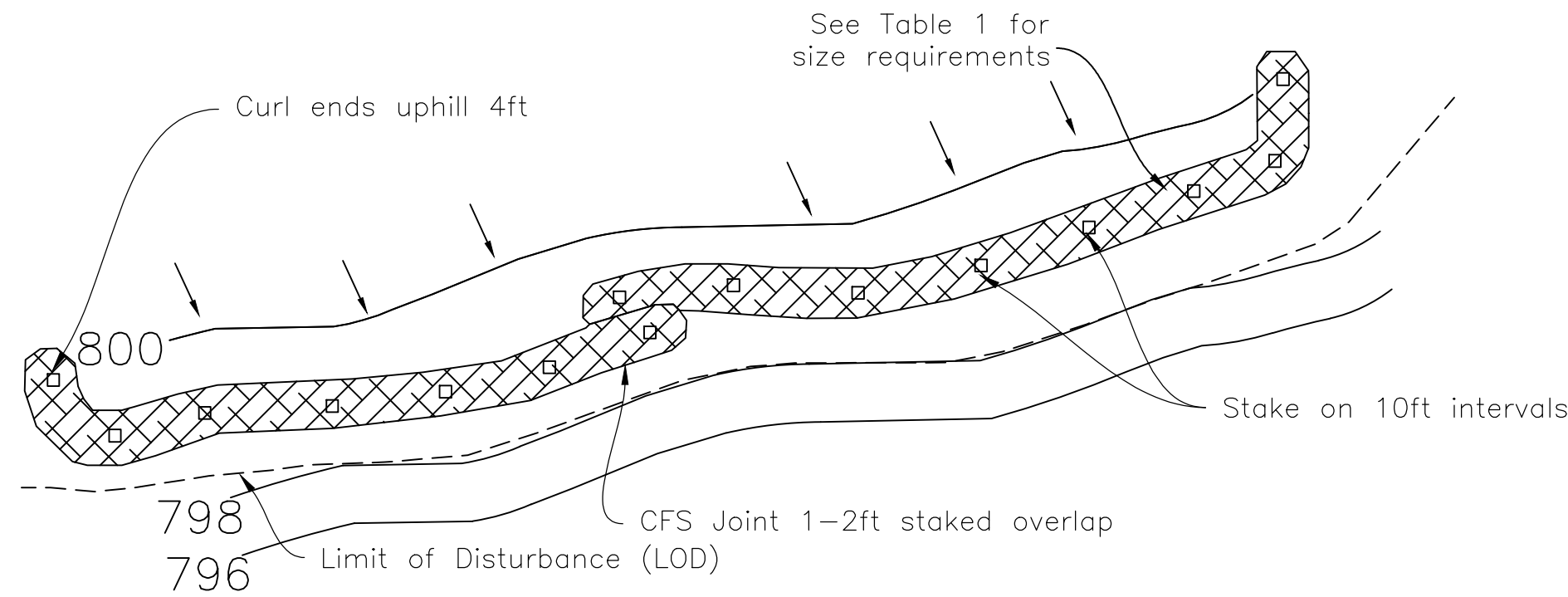


TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD
(SMALL SITES - LESS THAN TWO ACRES)
NOT TO SCALE



CONCRETE WASHOUT DETAIL (ABOVE GRADE)
NOT TO SCALE

* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations



STAKE DETAIL
NOT TO SCALE

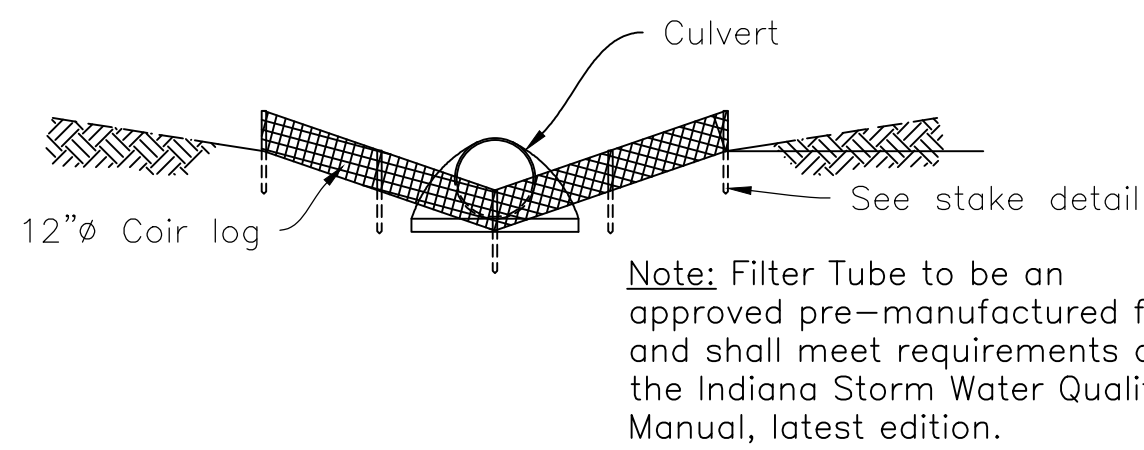
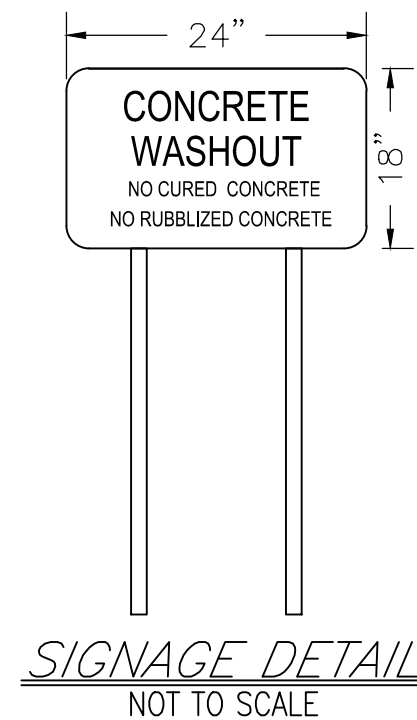


Table 1: Filter Sock Size Requirements, Sheet Flow Application

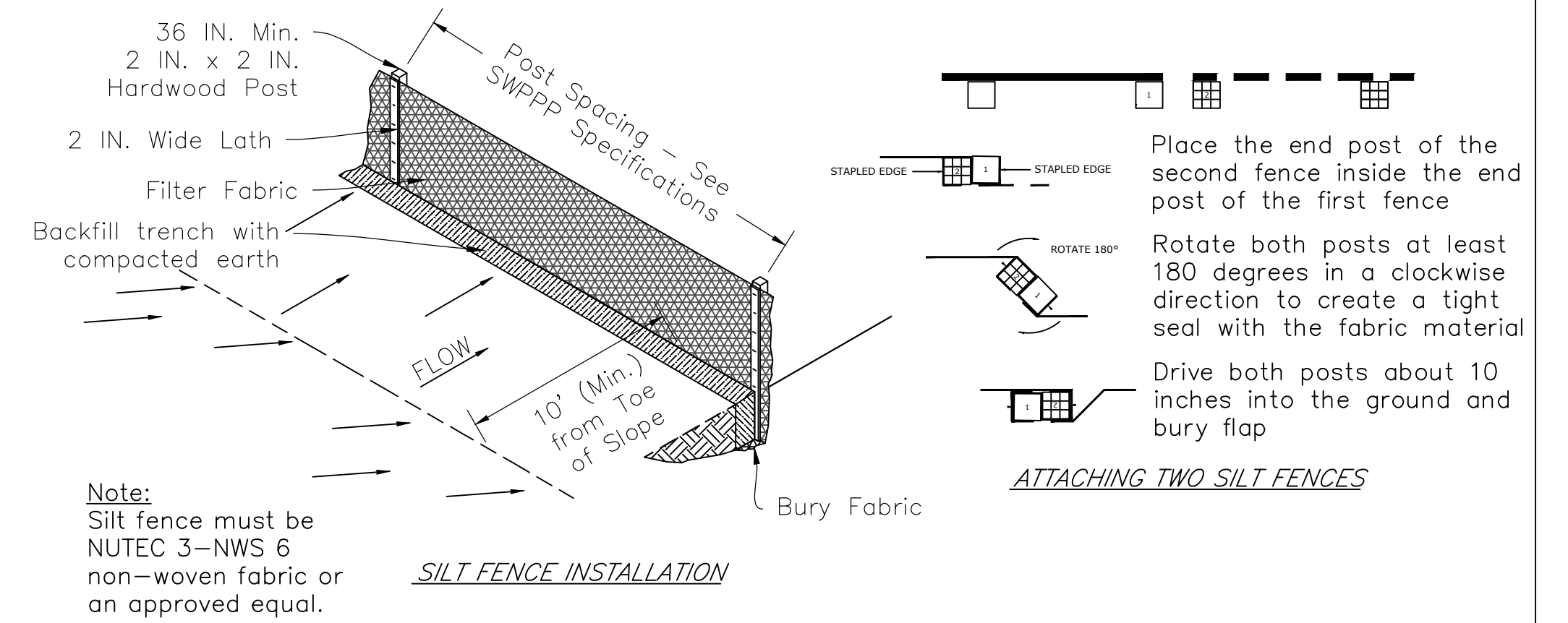
Slope	Sock (linear feet) for Minimum Filter Sock Size	Sock (linear feet)			
		8 inch	12 inch	18 inch	24 inch
0% - 2%	< 50:1	125	125	125	125
2% - 10%	50:1 to 10:1	100	100	100	100
10% - 20%	10:1 to 5:1	75	75	75	75
20% - 33%	5:1 to 3:1	25	25	25	25
> 33%	> 3:1	10	10	10	10

FILTER TUBE/FILTER SOCK
NOT TO SCALE

* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations

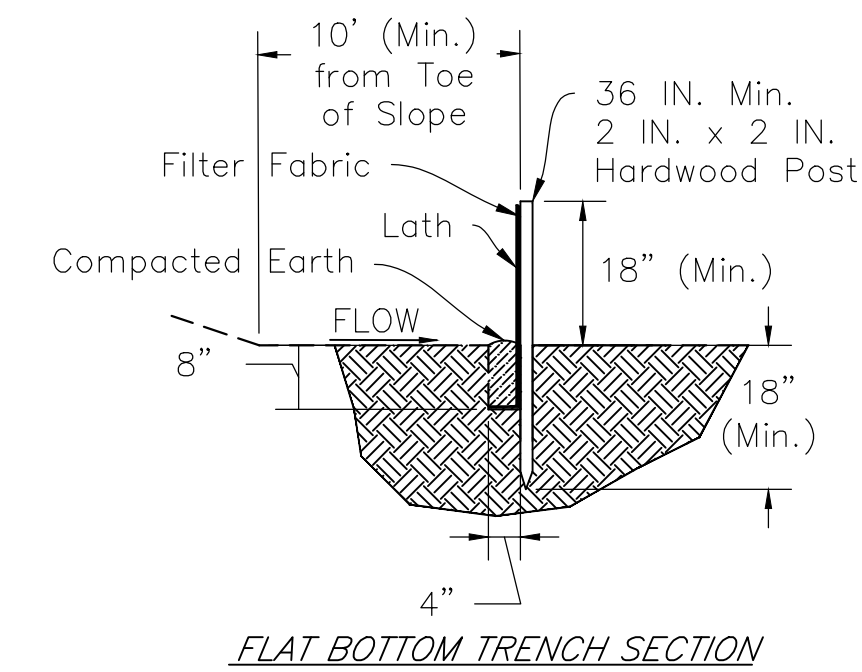


SIGNAGE DETAIL
NOT TO SCALE



SILT FENCE INSTALLATION

Note: Silt fence must be NUTEC 3-NWS 6 non-woven fabric or an approved equal.



FLAT BOTTOM TRENCH SECTION

Table 1. Slope Steepness Restrictions

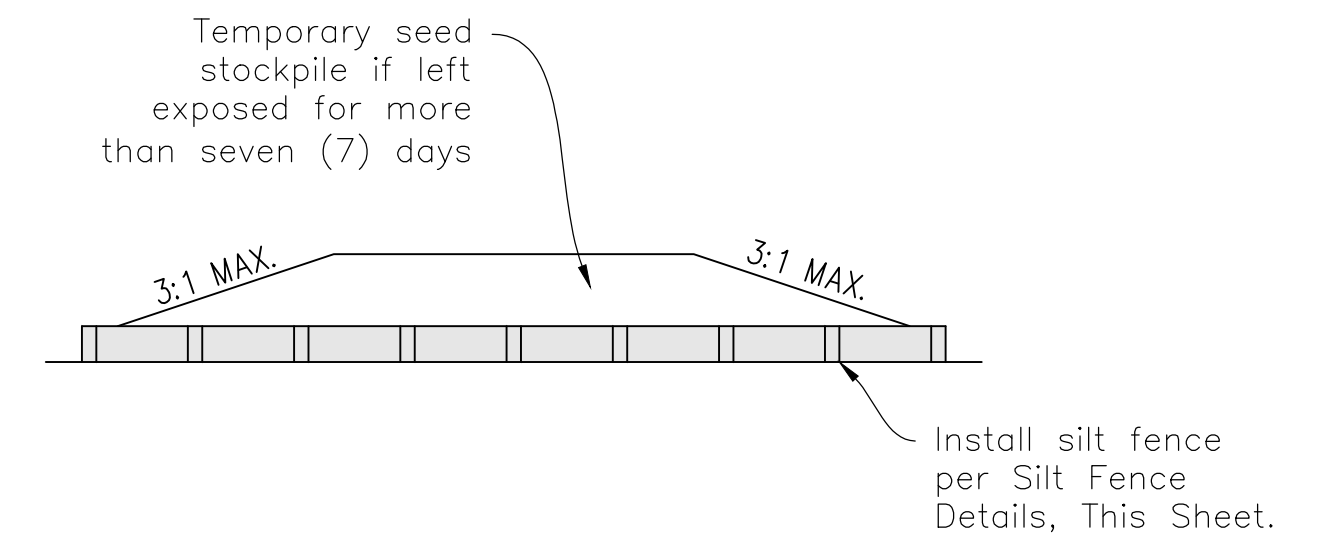
Percent Slope	Maximum Distance	
	< 50:1	100 Feet
< 2%	< 50:1	100 Feet
2% - 5%	50:1 to 20:1	75 Feet
5% - 10%	20:1 to 10:1	50 Feet
10% - 20%	10:1 to 5:1	25 Feet
> 20%	> 5:1	15 Feet

¹ Consider other alternatives.
Note:
- Minimum of 10 feet beyond the toe of slope to provide a broad, shallow sediment pool.
- Multiple rows of silt fence are not recommended on the same slope

PERIMETER CONTROLS
SILT FENCE DETAIL
NOT TO SCALE

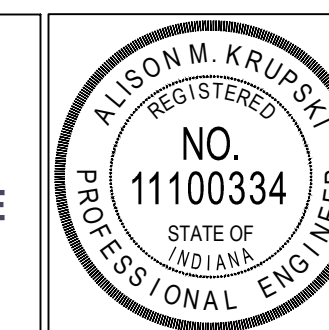
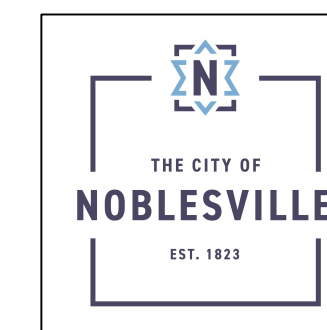
* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations

- Note:
- Limited to one-quarter acre per 100 linear feet of barrier.
 - Five to 10 feet from toe of slope (10 feet preferred).



TOPSOIL STOCKPILE DETAIL
NOT TO SCALE

- Note:
- Topsoil shall always be salvaged and stockpiled on-site, unless infeasible.
 - Stockpile outside rooting zone of trees to be protected.
 - Temporary topsoil stockpiles shall be maintained with a slope no greater than 3:1 and a height of no greater than twenty (20) feet above grade of the adjacent roadway. - "Temporary topsoil stockpiles" means any stockpile associated with the same phase of construction and will be gone at the end of the permitted phase that it was created.
 - Permanent topsoil stockpiles shall be maintained with a slope of no greater than 4:1 and a height of no greater than fifteen (15) feet above the grade of the adjacent roadway. - ORD #24-04-15 - "Permanent topsoil stockpiles" means a stockpile left over after a particular phase of construction has achieved its own dirt balance and is surplus or left for future phase.



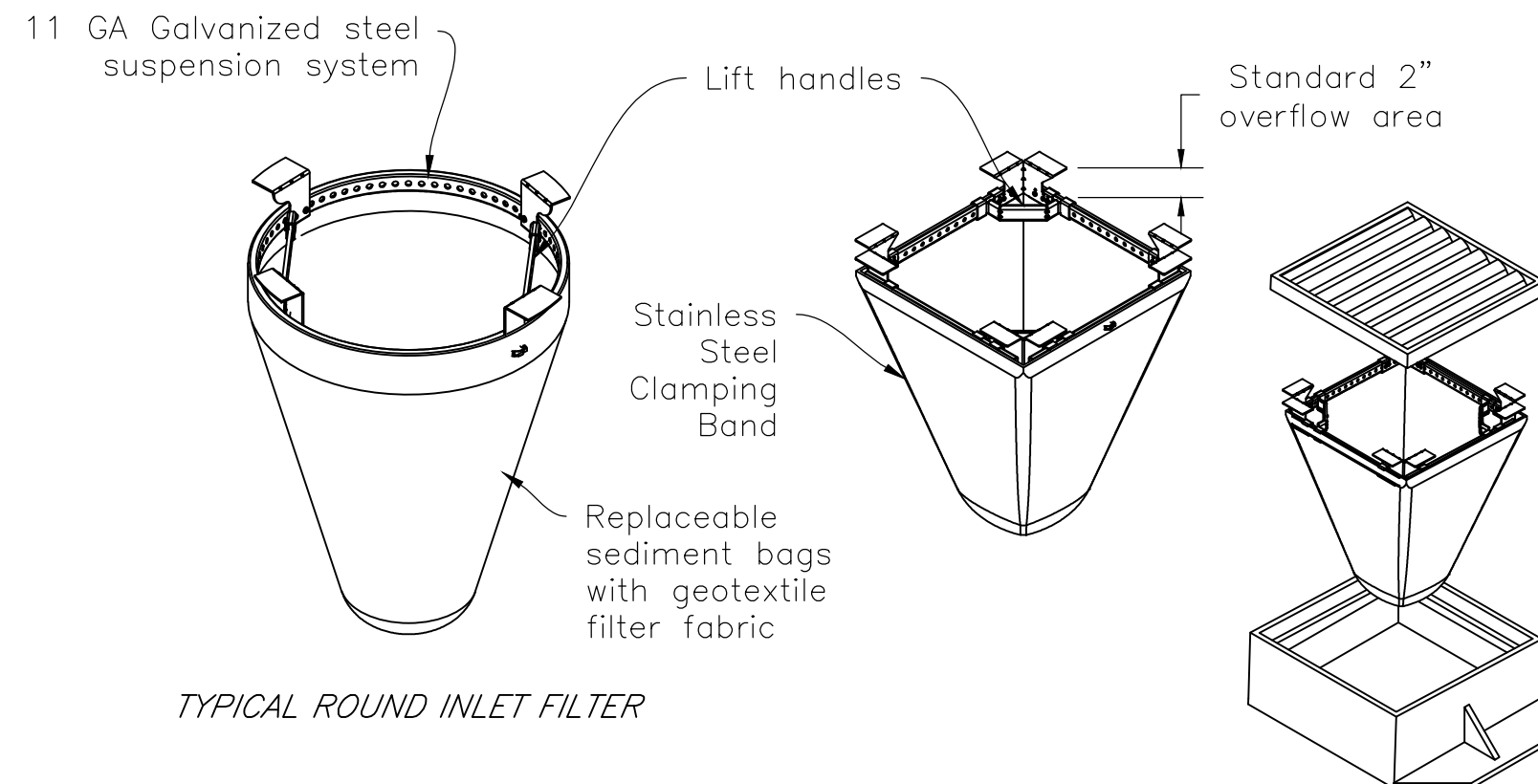
CITY OF NOBLESVILLE

SWPPP Details

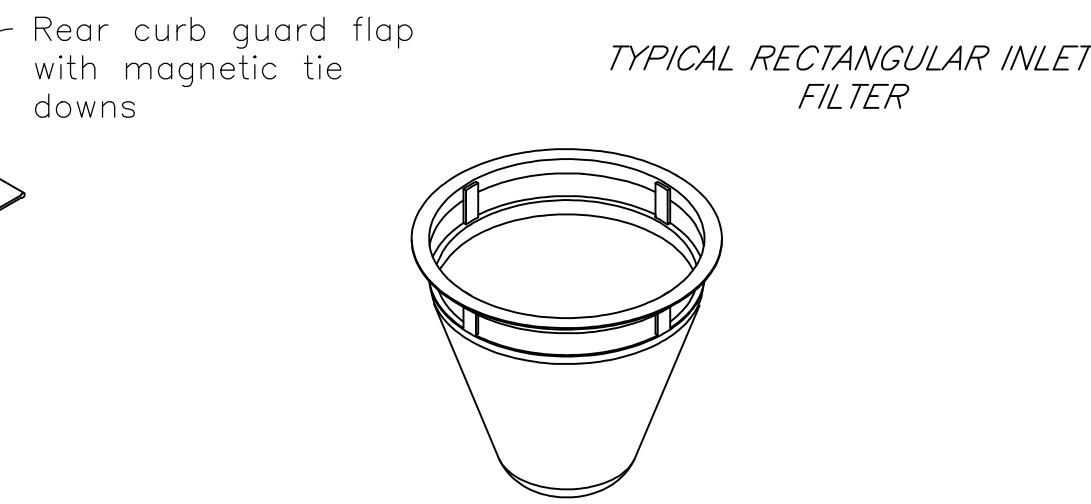
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TYPICAL ROUND INLET FILTER



TYPICAL RECTANGULAR INLET FILTER

COMBINATION INLET FILTER FOR CURB HOODS

STAINLESS STEEL ROUND INLET FILTERS

BASKET INLET PROTECTION
NOT TO SCALE

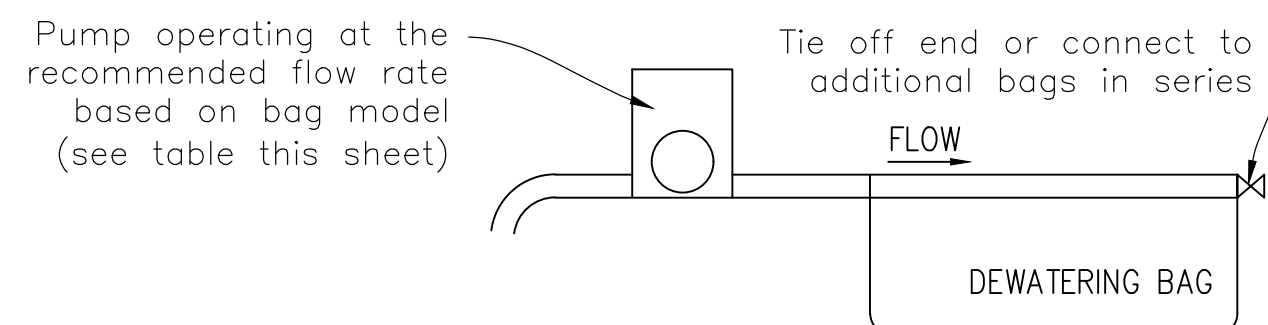
* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations

SINGLE-USE DEWATERING BAG SPECIFICATIONS

Model	OD (ft)	Inlet/Outlet hose connection (in)	Recommended flow rate (gpm)	Capacity (cft)	Standard material Nonwoven liner (oz)
SC-DW 1260	1 X 5	3	2-15	3	8.0
SC-DW 2460	2 X 5	3	3-30	5	8.0
SC-DW 46	4 X 6	3	8-80	10	8.0
SC-DW 1010	10 X 10	3	35-350	45	8.0
SC-DW 1215	12 X 15	3	60-600	80	8.0

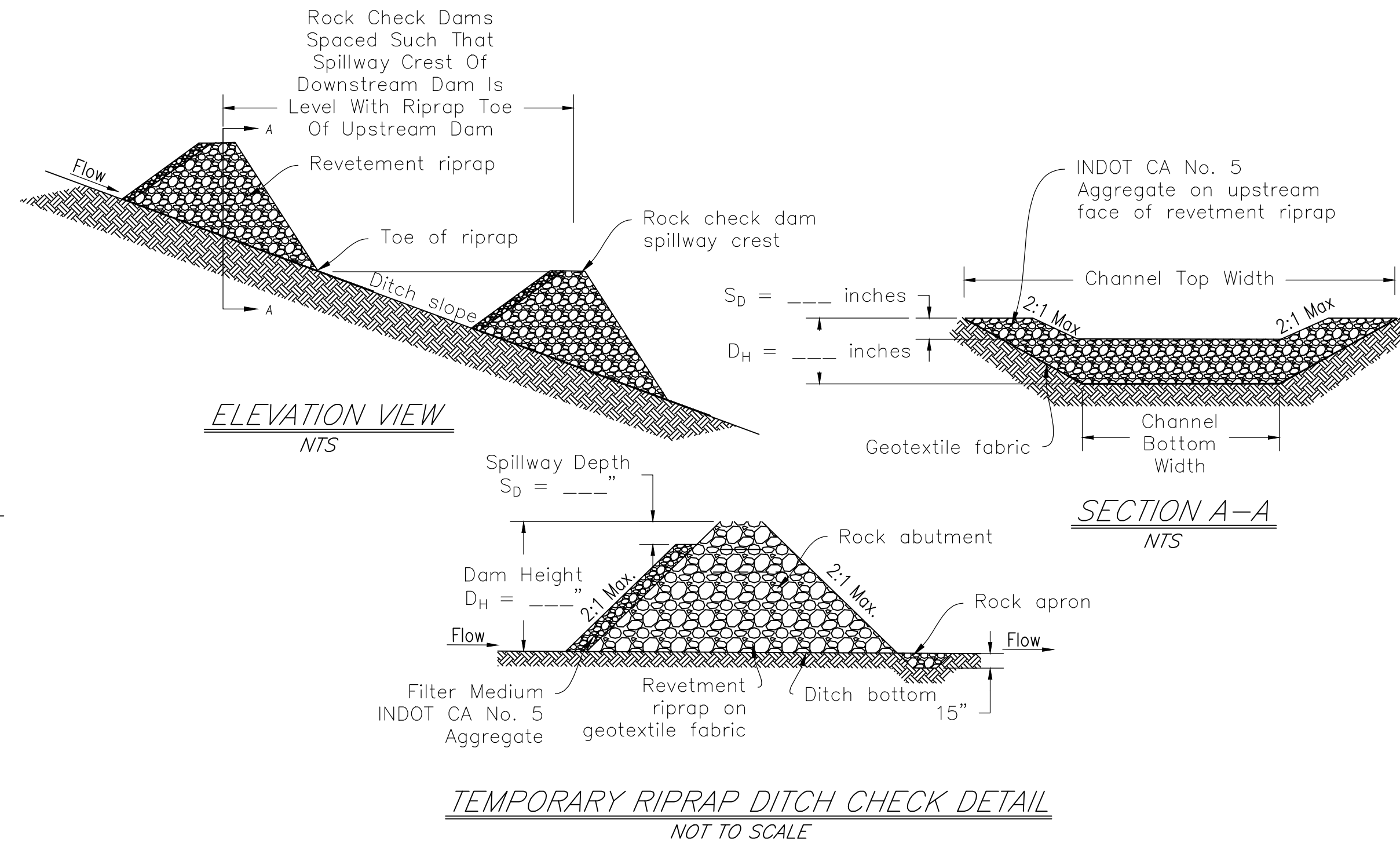
REUSABLE DEWATERING BAG SPECIFICATIONS

Model	OD (ft)	Inlet/Outlet hose connection (in)	Recommended flow rate (gpm)	Capacity (cft)	Standard material Nonwoven liner (oz)
SC-DW 467	4 X 6	3	8-80	10	8.0
SC-DW 1010Z	10 X 10	3	35-350	45	8.0
SC-DW 1215Z	12 X 15	3	60-600	80	8.0
SC-DW 1515Z	15 X 15	3	80-800	100	8.0

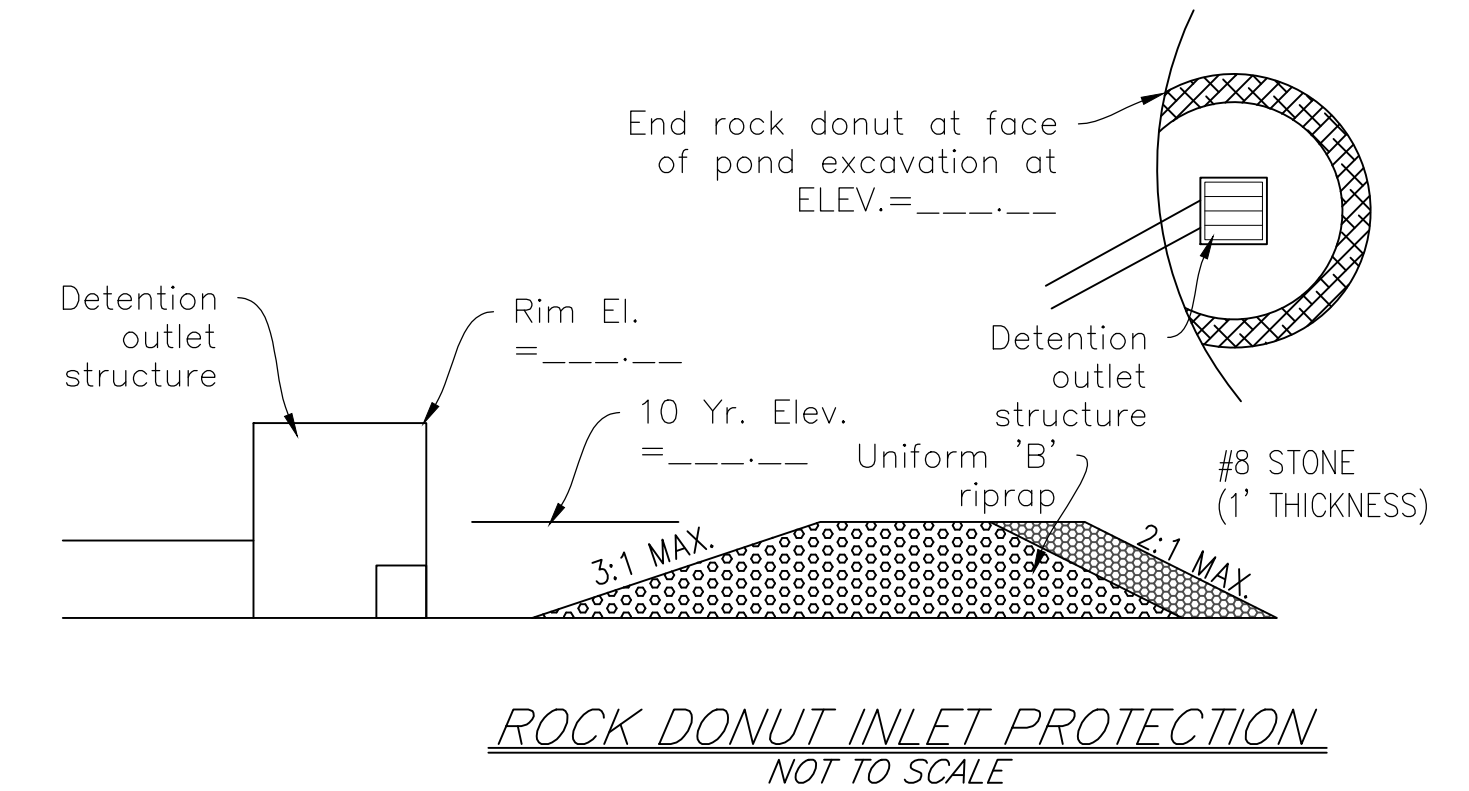


DEWATERING BAG DETAIL
NOT TO SCALE

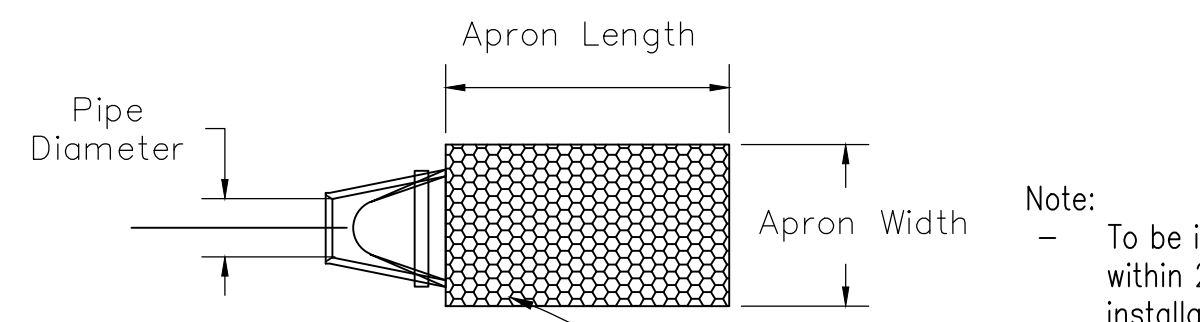
* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations



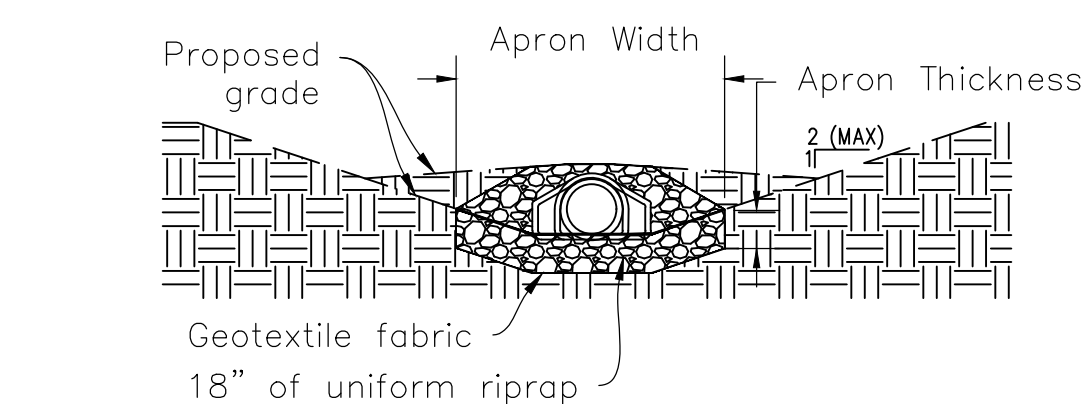
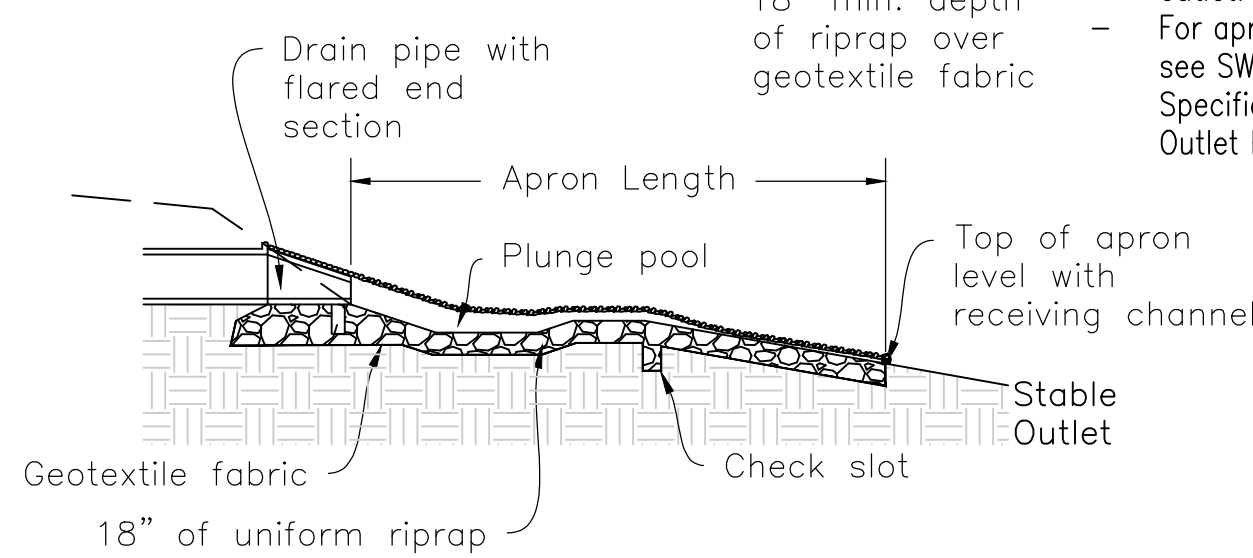
TEMPORARY RIPRAP DITCH CHECK DETAIL
NOT TO SCALE



ROCK DONUT INLET PROTECTION
NOT TO SCALE



Note:
- To be installed within 24 hours of installation of the outlet.
- For apron sizing, see SWPPP Specifications - Outlet Protection.



Sizing for Flow Dissipaters at Culvert Pipe Outlets¹

Pipe Size	Average Riprap Diameter	Apron Width ²	Apron Length ³
12 in.	5 in.	3 to 4 ft.	6 to 12 ft.
18 in.	8 in.	4 to 6 ft.	8 to 18 ft.
24 in.	10 in.	6 to 8 ft.	12 to 22 ft.
30 in.	12 in.	8 to 10 ft.	14 to 28 ft.
36 in.	14 in.	10 to 12 ft.	16 to 32 ft.

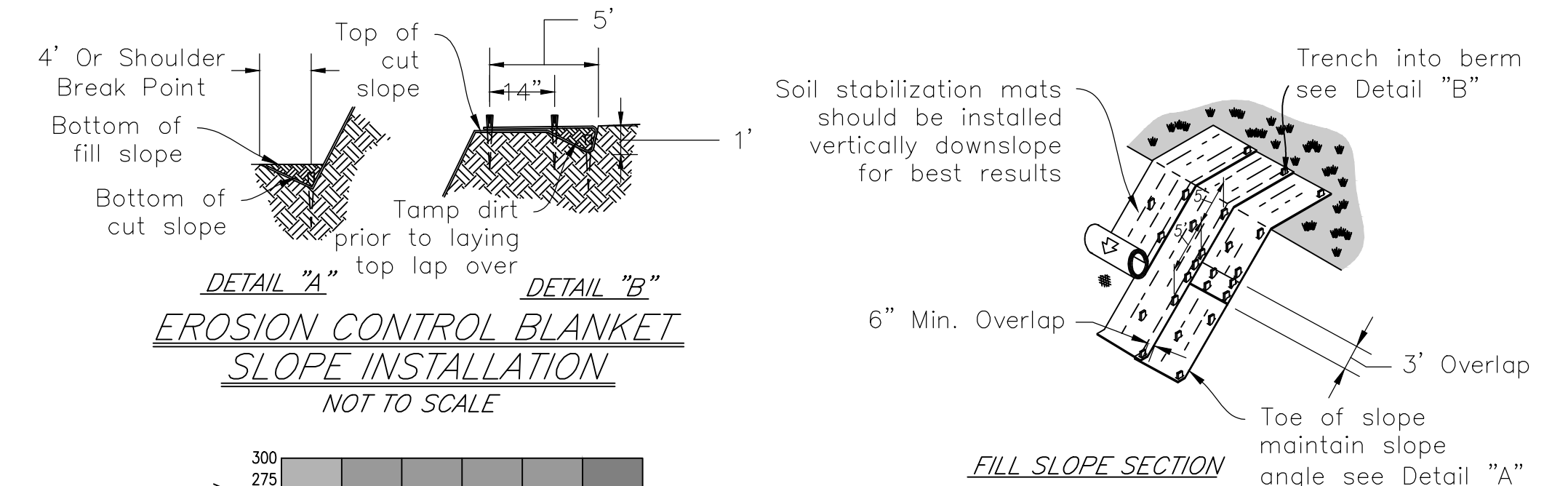
¹ For larger or higher flows consult a registered engineer.
² Apron width at the narrow end of apron (pipe or channel outlet).
³ Select length taking into consideration the low flow (no pressure head) or high flow (pressure head) conditions of the culvert pipe.

ENERGY DISSIPATER (OUTLET PROTECTION)
NOT TO SCALE

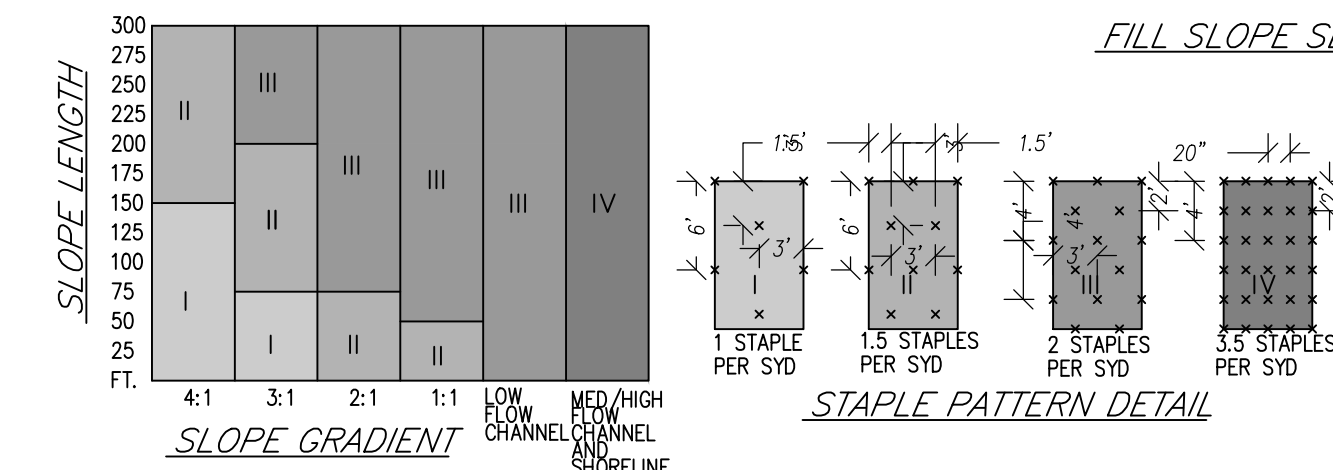
Mulch Specifications

Material	Rate per Acre	Comments
Straw or hay	2 tons	Should be dry, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (see table 2).
Wood fiber or cellulose	1 ton	Apply with a hydraulic mulch machine and use with tacking agent

¹ Mulching is not recommended in concentrated flows. Consider erosion control blankets or other stabilization methods.

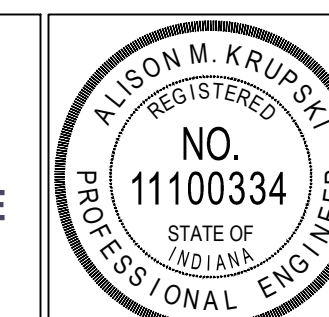
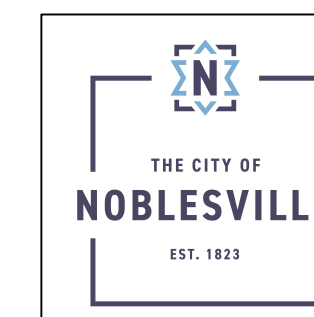


EROSION CONTROL BLANKET SLOPE INSTALLATION
NOT TO SCALE



EROSION CONTROL BLANKET

* Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations



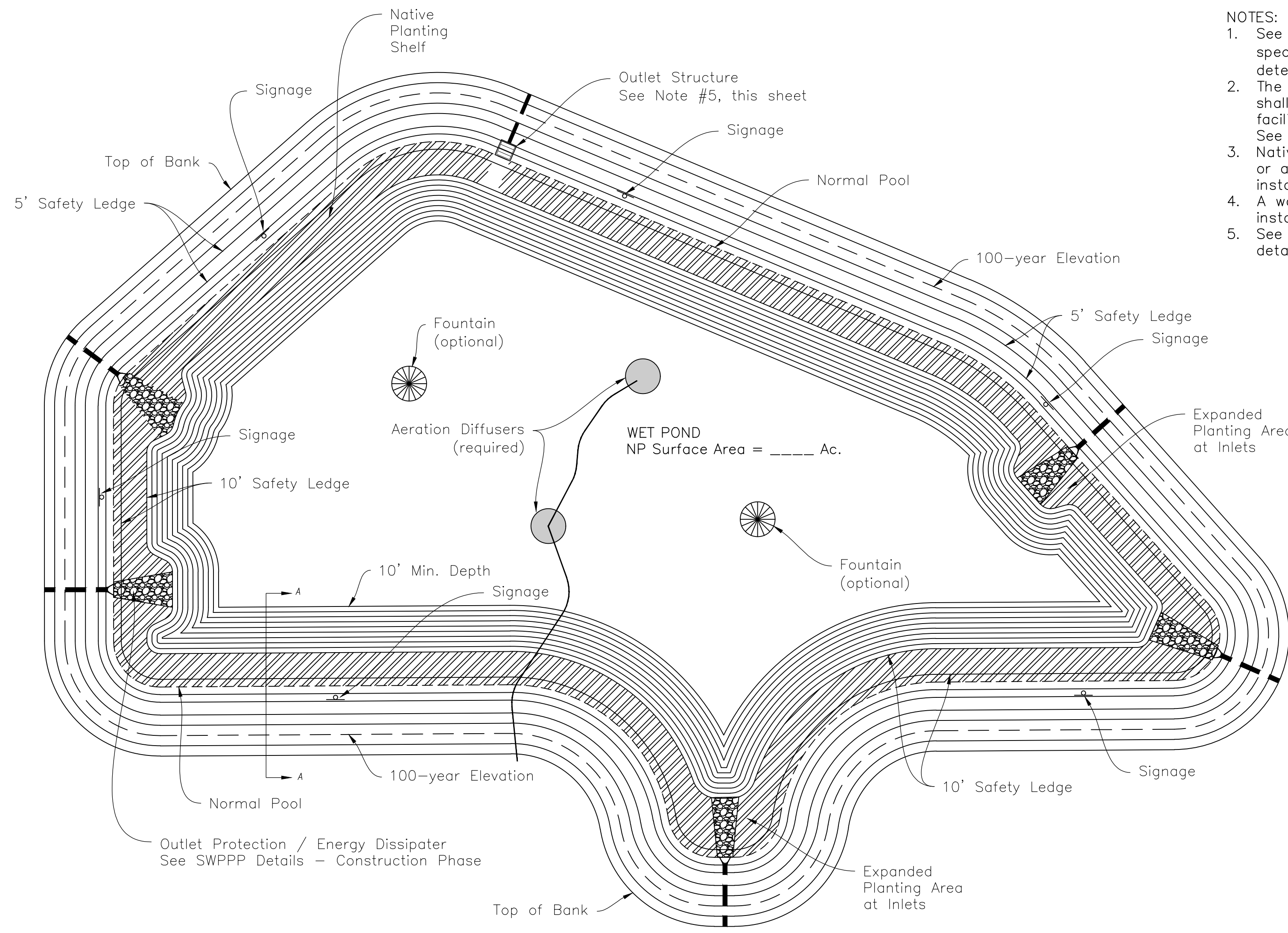
CITY OF NOBLESVILLE

SWPPP Details

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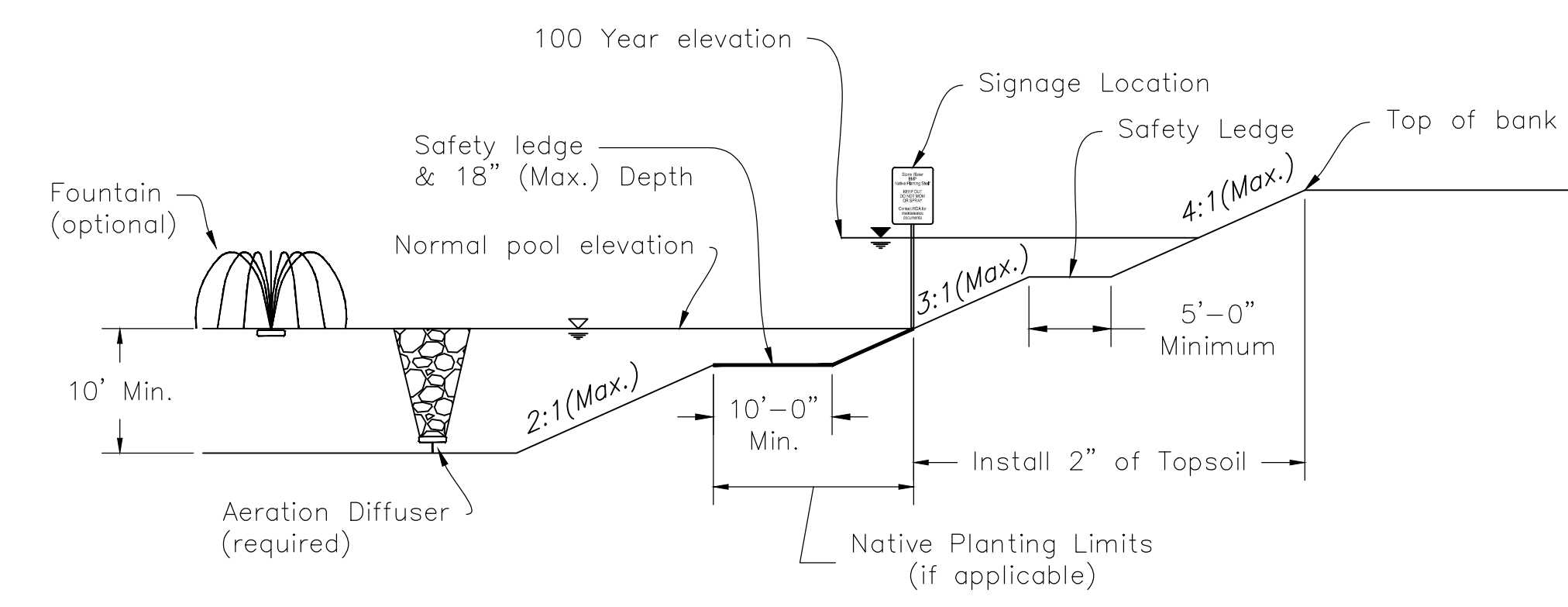
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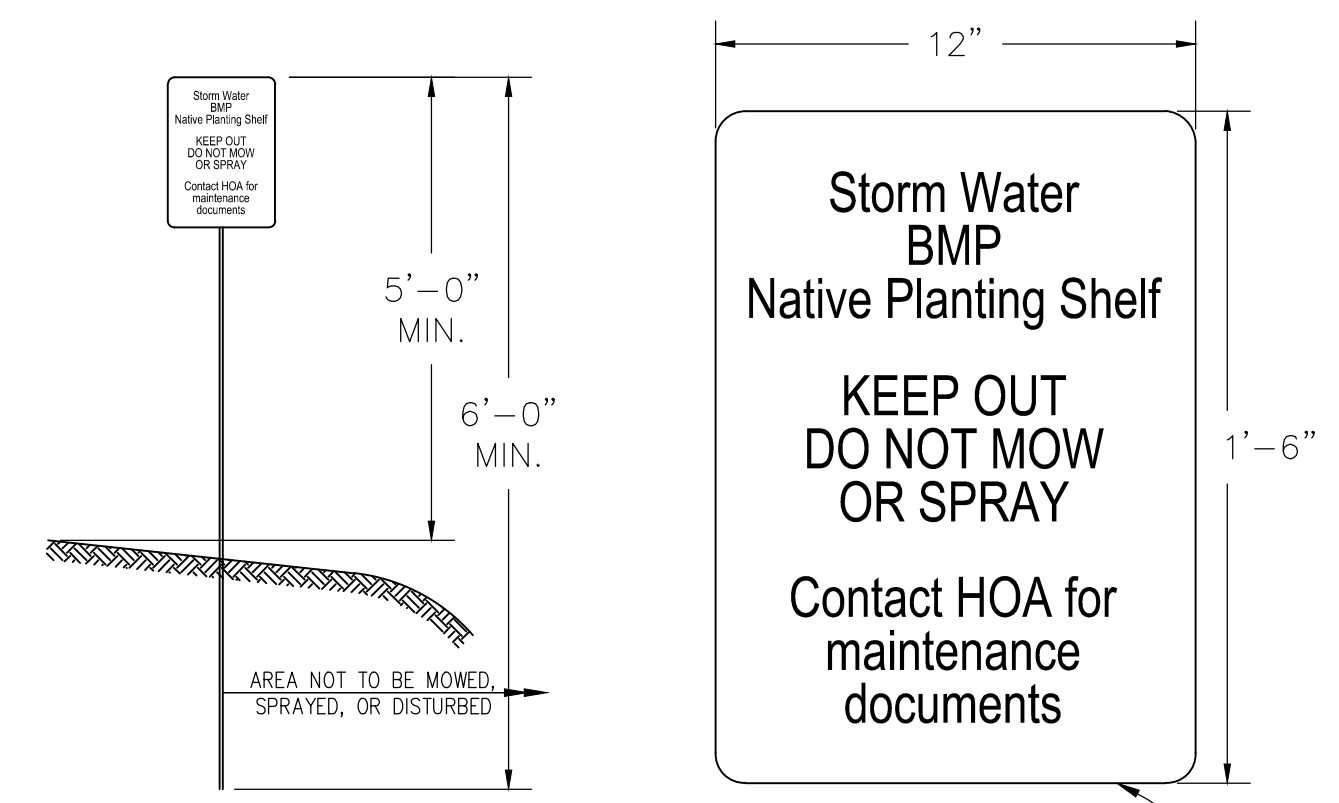


TYPICAL WET POND – STORMWATER BMP
NOT TO SCALE

- NOTES:
1. See Sheet 7, Storm Sewer Bedding and Detention Notes & Details, for detention pond details and specifications. The Noblesville Department of Engineering or Stormwater/MS4 may approve alternate detention pond/basin sections.
 2. The design of all wet-bottom detention facilities shall include an aeration facility. Design calculations shall be provided to substantiate the effectiveness of the proposed aeration facility. The aeration facility shall be able to, at a minimum, turn the volume of the stored water over every 24 hours. See the City of Noblesville Stormwater Technical Standards Manual for additional information.
 3. Native plantings shall be installed in mid to late spring, specifically between April 1st and July 1st, or as per supplier recommendations. Coordinate with City of Noblesville for acceptance prior to installation of native plantings.
 4. A waterfowl exclusion fence is to be installed with the native planting areas. The fence shall be installed per planting supplier recommendations.
 5. See TYPICAL OUTLET STRUCTURE DETAILS on Sheet 7 of these standards for outlet structure design details, placement details, and specifications.



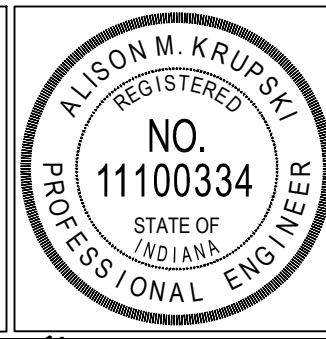
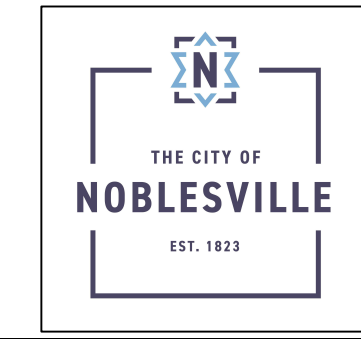
SECTION A-A
NOT TO SCALE



SIGN INSTALLATION NOT TO SCALE
SIGN DETAILS NOT TO SCALE
White sign with black letters

- NOTES:
1. Signs to be placed 200' apart around the perimeter with no less than 4 signs per pond.
 2. Signs to place within 2' of the normal pool perimeter.

BMP SIGNAGE DETAILS
NOT TO SCALE



CITY OF NOBLESVILLE
Stormwater BMP – Pond Details

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