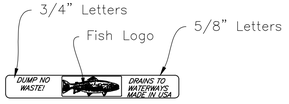
GENERAL NOTES

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 than these dimesions 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.

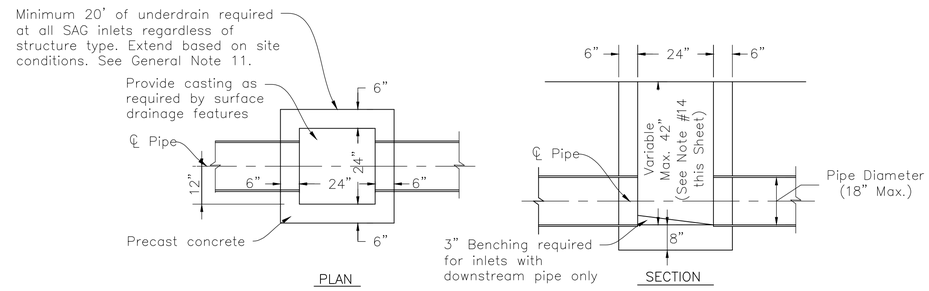


INLET STORM CASTING DETAIL

Scale: None

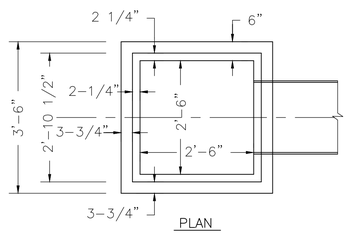
COMPATIBILITY OF INLET STRUCTURES AND CASTINGS

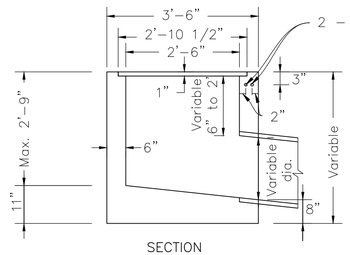
INLET TYPE	INDOT CASTING TYPES					NEENAH CASTING TYPES					EAST JORDAN IRON WORKS CASTING TYPES					
	2	3	7	8	10	R–3287–10V	R–3405–A	R–3501–TR	R–3501–TL	R–4215–C	5250	6610	7030 w/ M2 Grate & T1 Back	7495M1	7495M2	7495M4
A	X	X		X			X				X					
E			X							X		X				
F			X							X		X				
J					X	X		X	X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



INLET, TYPE A

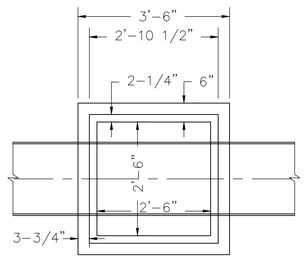
Scale: None

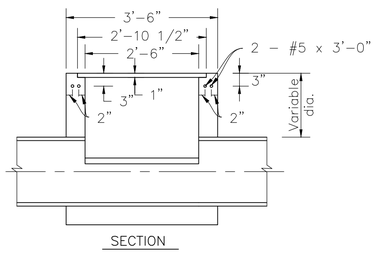




INLET, TYPE E

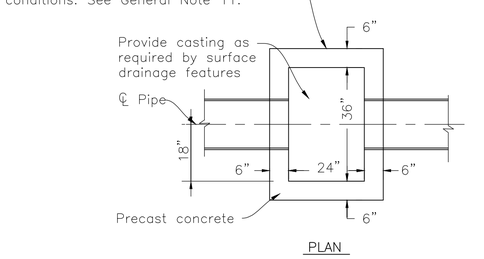
Scale: None

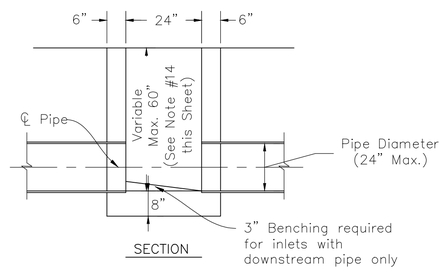




INLET, TYPE F

Scale: None





INLET, TYPE M/J

Scale: None

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Storm Inlet Details and Notes

SHEET 8 OF 29

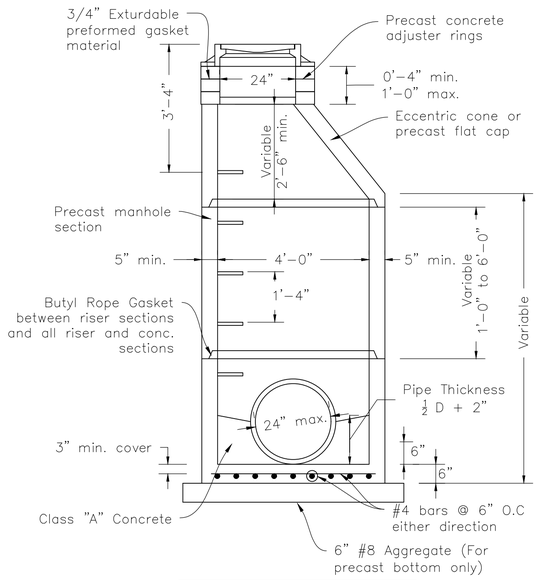
GENERAL NOTES

1. 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.
2. 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.
3. Manholes shall be installed at distances not greater than 400 feet.
4. 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.
5. 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.
6. Castings which drain swales shall be beehive types listed, or as approved by the Noblesville Department of Engineering.
7. 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.
8. 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 ± 0.1' of finish grade. All other castings shall be constructed with a tolerance of ± 0.2' of finish grade. Elevations will be checked with the as–built drawings.
9. 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.
10. For Type C Manholes, the base and first riser section of the precast concrete manhole shall be integrally cast as one complete unit.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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 LID CASTING DETAIL

Scale: None

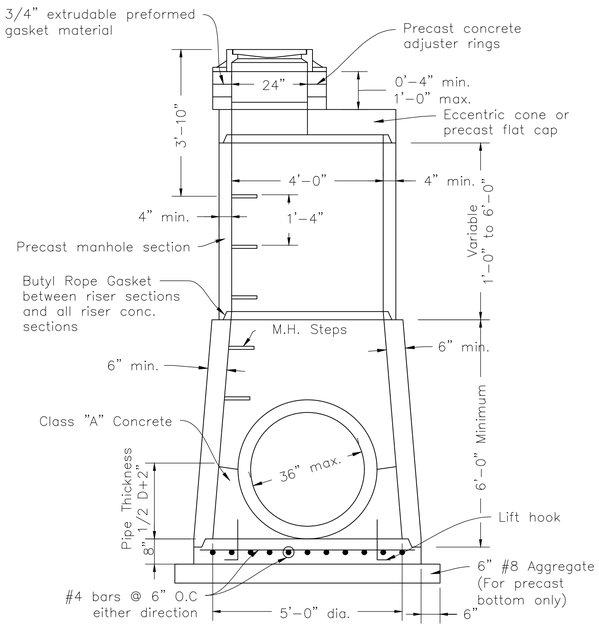
COMPATIBILITY OF MANHOLE STRUCTURES AND CASTINGS									
MANHOLE TYPE	INDOT CASTING TYPES			NEENAH CASTING TYPES			EAST JORDAN IRON WORKS CASTING TYPES		
	2	4	8	R–2502–D	R–4342	R–1772	1022 w/ Type A Lid	1022 w/ M1 or M3 Grate	6489
C	X	X	X	X	X	X	X	X	X
H	X	X	X	X	X	X	X	X	X
J	X	X	X	X	X	X	X	X	X
K	X	X	X	X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

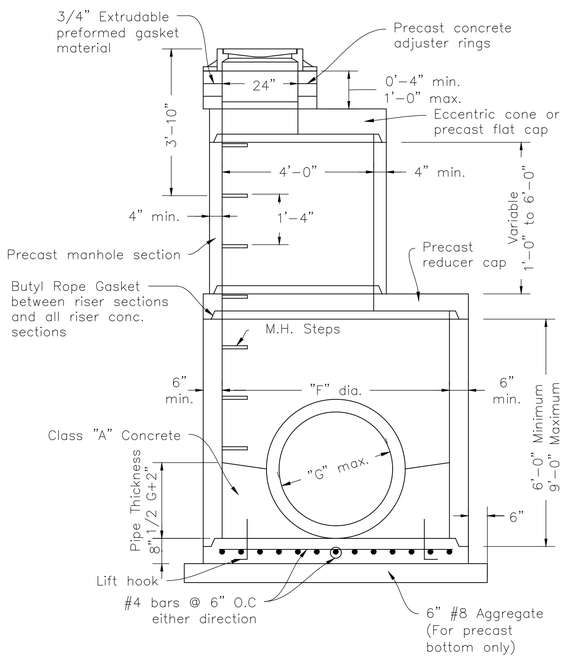
Scale: None



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

THE CITY OF NOBLESVILLE EST. 1823

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CITY OF NOBLESVILLE

Storm Manhole Details and Notes

SHEET 9 OF 29

Alison M. Krupski 7/8/2021

GENERAL SANITARY NOTES

1. 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.

2. All couplers used for repairs to existing sanitary infrastructure shall be completed by using Fernco Shielded Non–Shear Couplings, or approved equal.

3. 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.

4. 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

1. 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.
2. Joints shall be flexible gasket push–on–compression type conforming to ASTM D–3212 and ASTM F–477. No solvent cement joints shall be allowed.
3. Lateral size 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.
4. 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.
5. 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.
6. Contractor shall, when curbs are available, engrave a 3–inch high by 1/8–inch deep "S" on the curb directly above each service lateral. Where curbs are not available, contractor shall notch the sidewalk directly above each service lateral. See Curb Stamp Detail, Sheet 4.
7. 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.
8. 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.
9. The approval of a new sanitary sewer service lateral or the modification of an existing service lateral requires an approved City of Noblesville permit.
10. 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

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. Installation shall be in accordance with ASTM recommended practice D–2321.
7. Pipe size and classification shall be called out in Plan and Profile of Construction Drawings.
8. 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 TELEVISING AND AS–BUILT DRAWINGS

1. 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. Televising shall be completed after leakage and deflection testing is accepted.
2. 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.
3. 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.
4. Contractor shall bear all costs of line segment cleaning, debris removal and disposal, and, the CCTV inspection.
5. Contractor shall submit as–built drawings, electronic and hardcopy, and all leakage and deflection certification of attestment within 30 days of successful completion of all testing requirements.
6. Electronic as–built drawings submittal shall be submitted to the Noblesville Department of Engineering and comply with the City's GIS Coordinator's guidelines.
7. 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.

SANITARY SEWER DEFLECTION TESTING

1. 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.
2. 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.
3. 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

1. 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.
2. At a stable internal air pressure within 0.5 PSIG of the initial internal air pressure, timing shall commence with a stopwatch or similar device of 99.8 percent accuracy, timing shall end when the internal air pressure drops 1 PSIG below the stable internal air pressure.
3. The line shall be accepted if the time shown in Table 1 for the designated pipe size and length elapses before the air pressure drops 1 PSIG below the stable internal air pressure at which time the test can be discontinued for the accepted line.
4. Should contractor excavate pipe for the purpose of repairing a leak, then the entire mainline segment shall be retested for both leakage and deflection.
5. 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: 53*	*11: 52*	*13: 51*	*15: 49*	*17: 48*
12	*11: 20*	*199*	*3.418L*	*11: 20*	*11: 20*	*11: 24*	*14: 15*	*17: 05*	*19: 56*	*22: 47*	*25: 38*
15	*14: 10*	*159*	*5.342L*	*14: 10*	*14: 10*	*17: 48*	*22: 15*	*26: 42*	*31: 09*	*35: 36*	*40: 04*
18	*17: 00*	*133*	*7.692L*	*17: 00*	*19: 13*	*25: 38*	*32: 03*	*38: 27*	*44: 52*	*51: 16*	*57: 41*
21	*19: 50*	*114*	*10.470L*	*19: 50*	*26: 10*	*34: 54*	*43: 37*	*52: 21*	*61: 00*	*69: 48*	*78: 31*
24	*22: 40*	*99*	*13.674L*	*22: 47*	*34: 11*	*45: 34*	*56: 58*	*68: 22*	*79: 46*	*91: 10*	*102: 33*
27	*25: 30*	*88*	*17.306L*	*28: 51*	*43: 16*	*57: 41*	*72: 07*	*86: 32*	*100: 57*	*115: 22*	*129: 48*
30	*28: 20*	*80*	*21.366L*	*35: 37*	*53: 25*	*71: 13*	*89: 02*	*106: 50*	*124: 38*	*142: 26*	*160: 15*
33	*31: 10*	*72*	*25.852L*	*43: 05*	*64: 38*	*86: 10*	*107: 43*	*129: 16*	*150: 43*	*172: 21*	*193: 53*
36	*34: 00*	*66*	*30.768L*	*51: 17*	*76: 55*	*102: 34*	*128: 12*	*153: 50*	*179: 29*	*205: 07*	*230: 46*

NOTE:

For more efficient testing of long test sections and/or sections of larger diameter pipes, a timed pressure drop of 0.5 PSIG may be used in lieu of the 1.0 PSIG timed pressure drop. If a 0.5 PSIG pressure drop is used, the required test time shall be exactly half as long as those shown above.

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Sanitary Sewer General Notes and Specifications

SHEET 10 OF 29

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 manufacture'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 manufacture'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.

THE CITY OF NOBLESVILLE EST. 1823

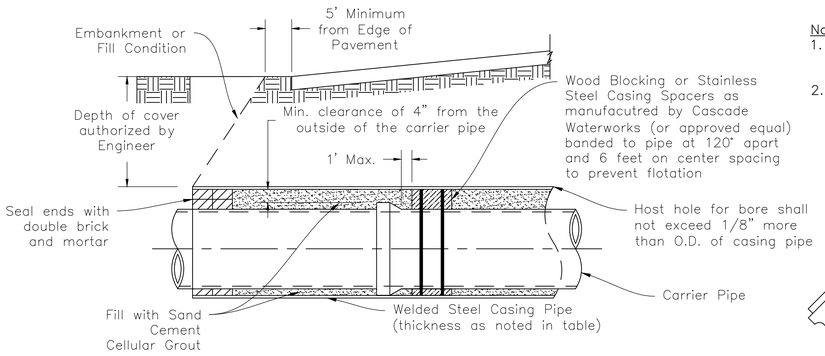
ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

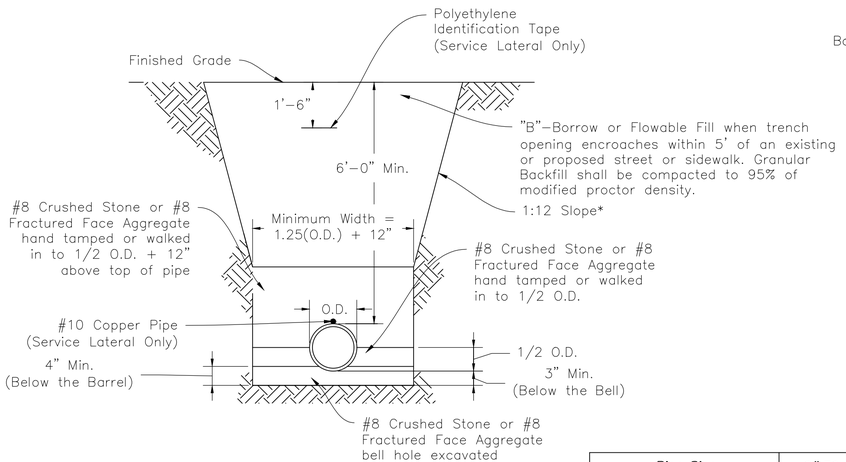
Sanitary Sewer General Notes and Specifications

SHEET 11 OF 29



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

NOMINAL WALL THICKNESS					
		Railroad Crossings		Roadway Crossings	
Nominal Size	Actual O.D.	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



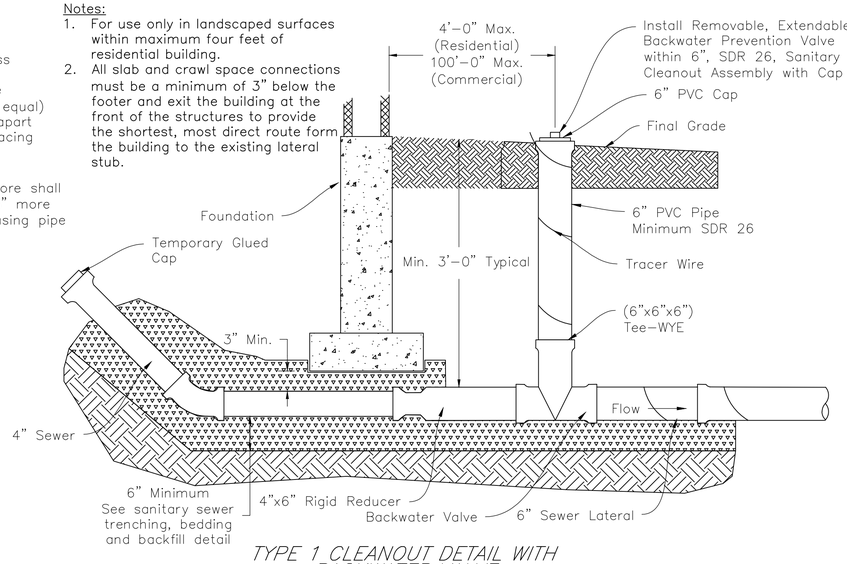
PVC PIPE BEDDING DETAIL

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"*

Notes:
1. For use only in landscaped surfaces within maximum four feet of residential building.
2. 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 form the building to the existing lateral stub.



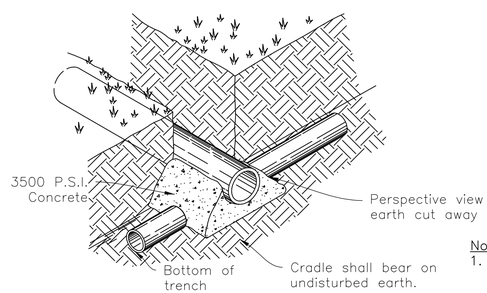
TYPE 1 CLEANOUT DETAIL WITH BACKWATER VALVE

Scale: None

CONCRETE ENCASEMENT DETAIL

Scale: None

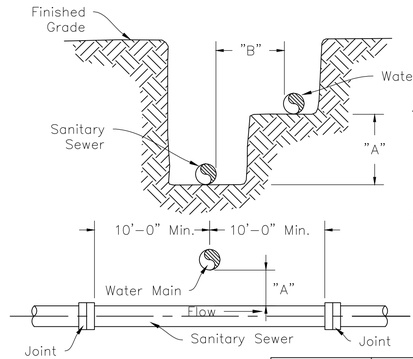
Note:
1. Concrete shall be High–Early Yield and shall be backfilled until Engineer Deems the concrete adequately cured.
2. To be used when cover over top of pipe is less than 4 feet to finished grade, per Engineer's direction or where noted on the construction plans.



CONCRETE CRADLE DETAIL

NOT TO SCALE

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

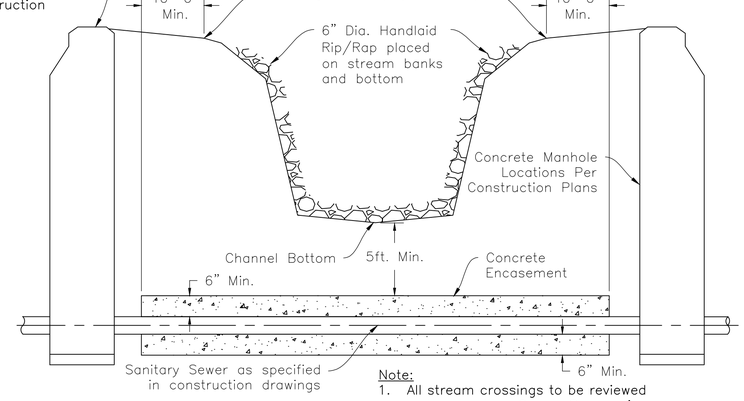


Notes:
1. Separation distances from water supplies and pipe classifications shall conform to the Indiana State Board of Health's "On–Site Water Supply and Wastewater Disposal for Public and Commercial Establishments – Bulletin S.E. 13".
2. Water Mains shall be located on an undisturbed ledge.

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



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

THE CITY OF NOBLESVILLE EST. 1823

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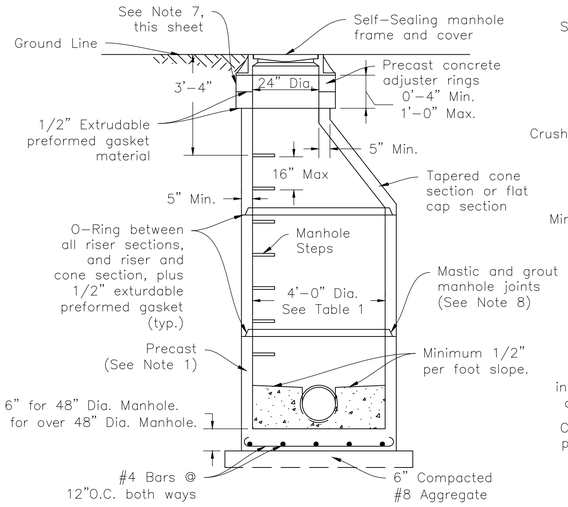
Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Sanitary Sewer Pipe and Bedding Details

SHEET 12 OF 29



TYPICAL MANHOLE TYPE A

Scale: None

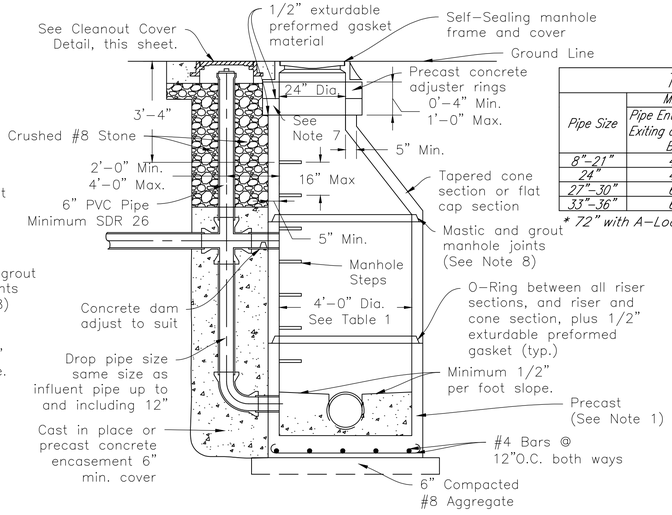
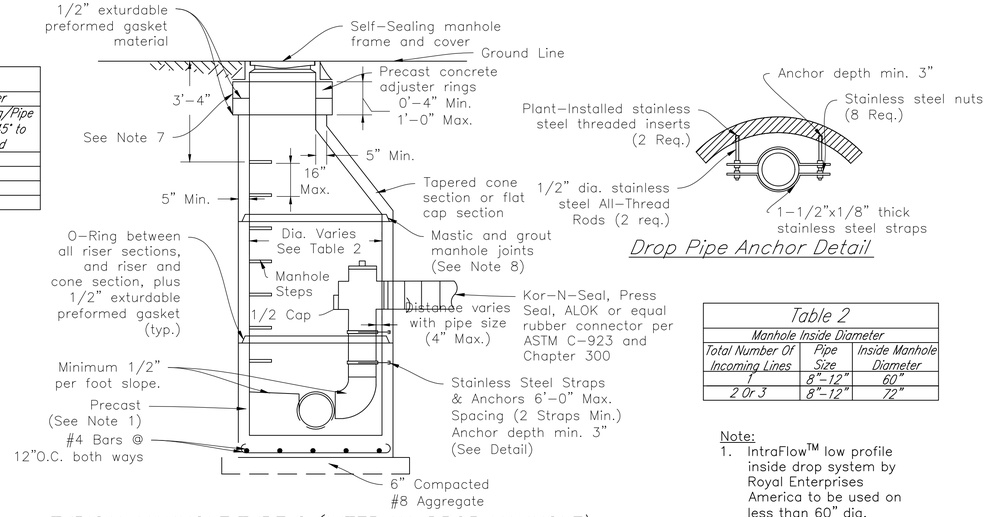


Table 1		
	Minimum Manhole Diameter	
Pipe Size	Pipe Entering/Pipe Exiting at 0° to 45° Bend	Pipe Entering/Pipe Exiting at 45° to 90° Bend
8"-21"	48"	48"
24"	48"	60"
27"-30"	60"	60"
33"-36"	60"*	72"

* 72" with A-Lock Connector

TYPICAL MANHOLE TYPE B (EXTERIOR DROP MANHOLE)

Scale: None



TYPICAL MANHOLE TYPE C (INTERNAL DROP MANHOLE)
(60" DIAMETER OR GREATER)

Scale: None

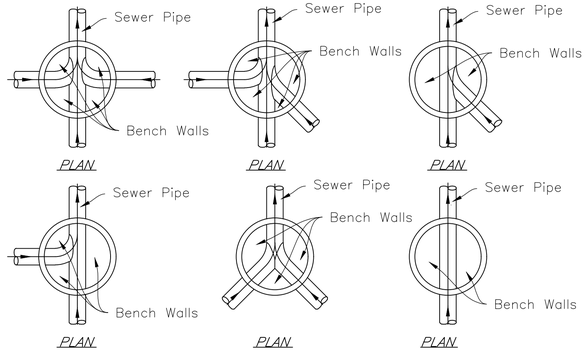
Drop Pipe Anchor Detail

Table 2		
Manhole Inside Diameter		
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

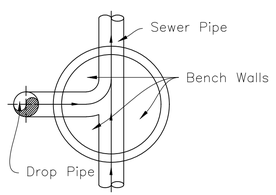
1. Precast concrete manholes shall conform to ASTM C-478, with rubber type gaskets equal to ASTM C-443. Monolithic cast-in-place manholes shall only be used with the prior written approval of the City of Noblesville. The base and first riser section of the precast concrete manhole shall be integrally cast as one complete unit. Precast concrete cones shall be of the eccentric cone type. No "see through" lift holes shall be allowed on precast concrete manholes 48 inches in diameter or less. In addition to the rubber type gaskets, all joints shall receive a 1/2 inch diameter non-asphaltic mastic (Kent-Seal or City approved equal) conforming to AASHTO M-198 and federal specifications 55-5-210a. Manhole/sewer connection shall be made with a flexible watertight connection.
2. Final adjustment in elevation of the frame and cover shall be accomplished by the use of a 4 inch minimum thickness adjusting ring as detailed herein to a maximum combined thickness of 12 inches. Brick or block shall not be used in the construction of a manhole or to adjust the elevation of the frame and cover.
3. Manhole ladder rungs shall be Neenah No. R-1981-J, East Jordan Iron Works No. 8512, M. A. Industries No. PS 1-PF or as approved by the Noblesville Department of Engineering.
4. Manhole frame and cover shall be Neenah R-1772 with gasketed lid, East Jordan 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.
5. The lowest internal plumbing elevation to receive gravity sanitary service must be one (1) foot above the top of manhole casting elevation of either the first upstream or downstream manhole on the public sewer to which connection is to be made. Those portions of the building not meeting the stated gravity sanitary service requirement shall be provided and maintained by the property owner with a grinder pump system or the Noblesville Department of Engineering approved equal discharging to the gravity building connection outside of the Public Right-of-Way. (see Acceptable Connection Detail-Sheet 14.)
6. Manholes shall be installed at distances not greater than 400 feet.
7. Contractor shall install an external rubber sleeve sealing system wrapped over the flange of the manhole frame to 2 inches below the bottom of the lowest adjusting ring. The external rubber sealing sleeve shall have a minimum thickness of 60 mils and meet the requirements of ASTM C-923, ASTM C-443 and ASTM F-477. The rubber sleeve shall be Infi-Shield external manhole seal, or as approved by the Noblesville Department of Engineering.
8. Apply bituminous coating, Hydracide 700 Mastic, on the external face at all manhole section joints. Hydracide mastic shall be applied to 6" above and below each joint.
9. For an industrial property, developer shall submit to the Noblesville Department of Engineering, the proposed location of an industrial monitoring/sampling station. Said submittal shall also address the station's size and material of construction.
10. After manhole assembly and backfilling, a city representative will visually inspect each structure for leakage or evidence thereof. In addition, all manholes installed shall be vacuum tested in accordance with ASTM C1244-93. If any manhole shows leakage or signs thereof, said manhole shall be repaired to the satisfaction of the Noblesville department of engineering and retested. The design engineer or his/her representative shall certify that all manholes were vacuum tested, with successful results, in accordance with ASTM C1244-93.
11. Any vacuum testing and equipment shall be provided by the contractor. Any repairs shall be the responsibility of the contractor.
12. Contractor shall permanently secure casting to eccentric cone or flat cap section by installation of four (4) equally spaced 3/8" 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.
13. Castings shall not be buried and shall be flush with the adjacent finished grade. Castings which are surrounded by asphalt or concrete shall be constructed within a tolerance of ± 0.1' of the designed elevation. All other castings shall be constructed within a tolerance of ± 0.2' of the designed elevation. Elevations will be checked with the as-built drawings.
14. There shall be a minimum of 0.1 feet of fall between the upstream invert(s) and the downstream invert in the structure for pipes of the same diameter. For pipes of differing diameters, the crown of the upstream pipe shall match the crown of the downstream pipe. An outside drop manhole is required for upstream inverts which are two feet (2') higher than the downstream invert.
15. 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.



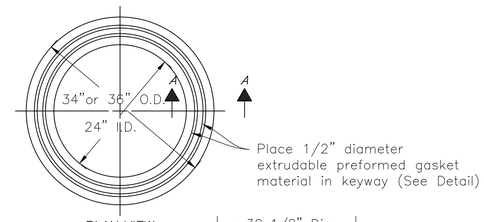
Note: All Bench Walls To Be Sloped @ 1/2"/Ft.

BENCH WALL DETAILS

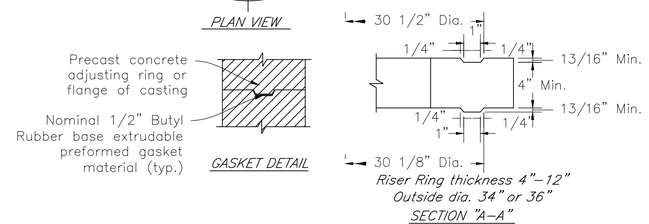
Scale: None



BENCH WALL DETAIL

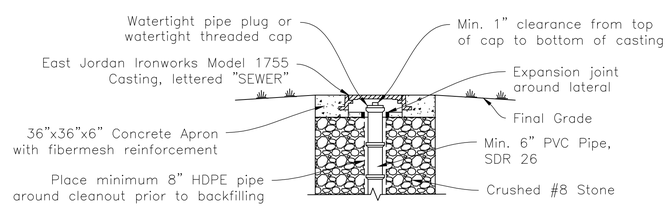


PLAN VIEW



PRECAST ADJUSTING RING

Scale: None



CLEANOUT COVER DETAILS

Scale: None

THE CITY OF NOBLESVILLE EST. 1823

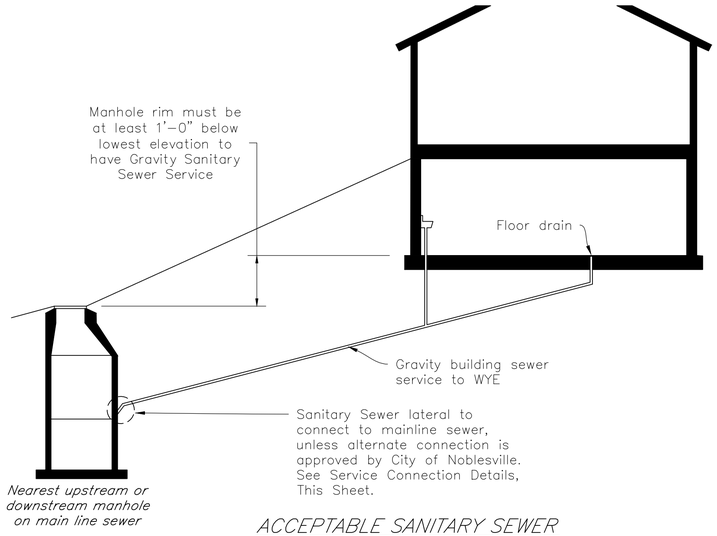
ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

CITY OF NOBLESVILLE

Sanitary Sewer Structures and Connection Details

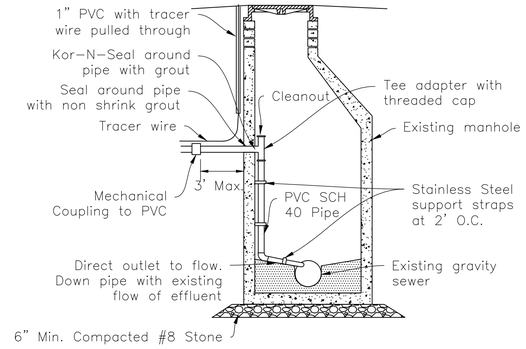
SHEET 13 OF 29

Alison M. Krupski 7/8/2021



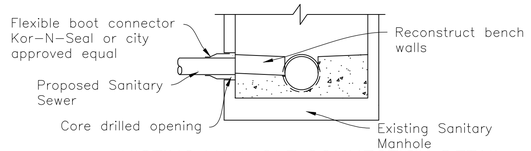
ACCEPTABLE SANITARY SEWER CONNECTION DETAIL

Scale: None



FORCE MAIN TO MANHOLE DETAIL FOR 4" DIAMETER PIPE OR SMALLER

Scale: None

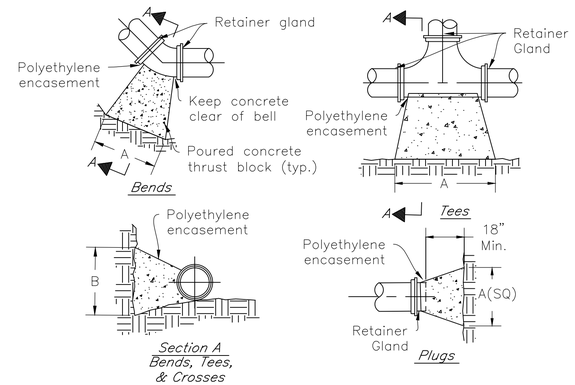


EXISTING MANHOLE CONNECTION DETAIL

Scale: None

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'

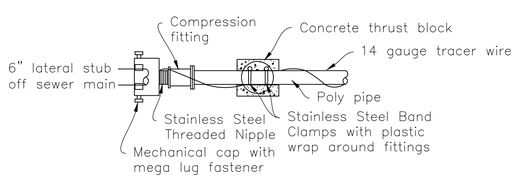
Note:
1. Restrained joints shall be mechanical joint with retainer glands, US Pipe TR Flex Joint System, US Pipe Field Lock Gasket System, or equal.
2. The above restrained joint lengths are minimum lengths. The Design Engineer shall determine if longer lengths are required.



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.

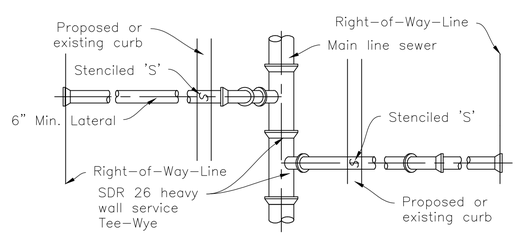
Thrust Block Detail

Scale: None

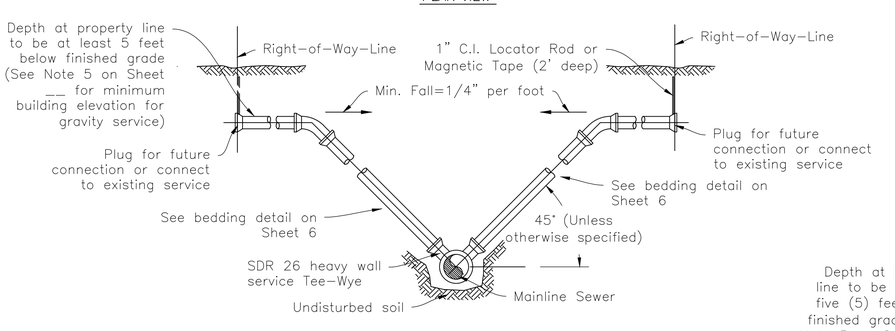


PRIVATE GRINDER PUMP TYING INTO EXISTING LATERAL STUB

Scale: None



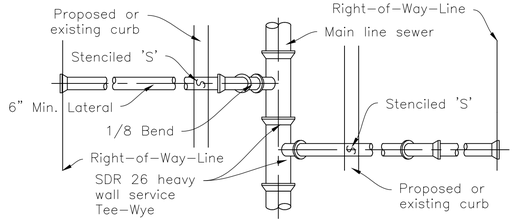
PLAN VIEW



ELEVATION VIEW

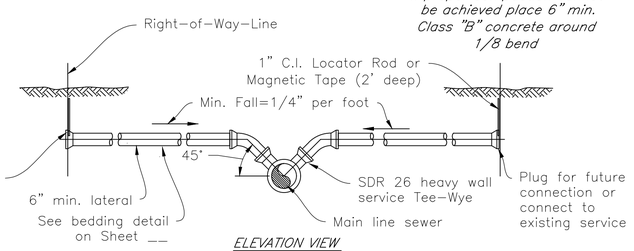
SERVICE CONNECTION FOR DEEP SEWERS (15' DEEP AND OVER)

Scale: None



PLAN VIEW

Compaction of bedding is critical under Wye and bend. If proper compaction cannot be achieved place 6" min. Class "B" concrete around 1/8 bend



ELEVATION VIEW

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

Scale: None

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Sanitary Sewer Structures and Connections Details

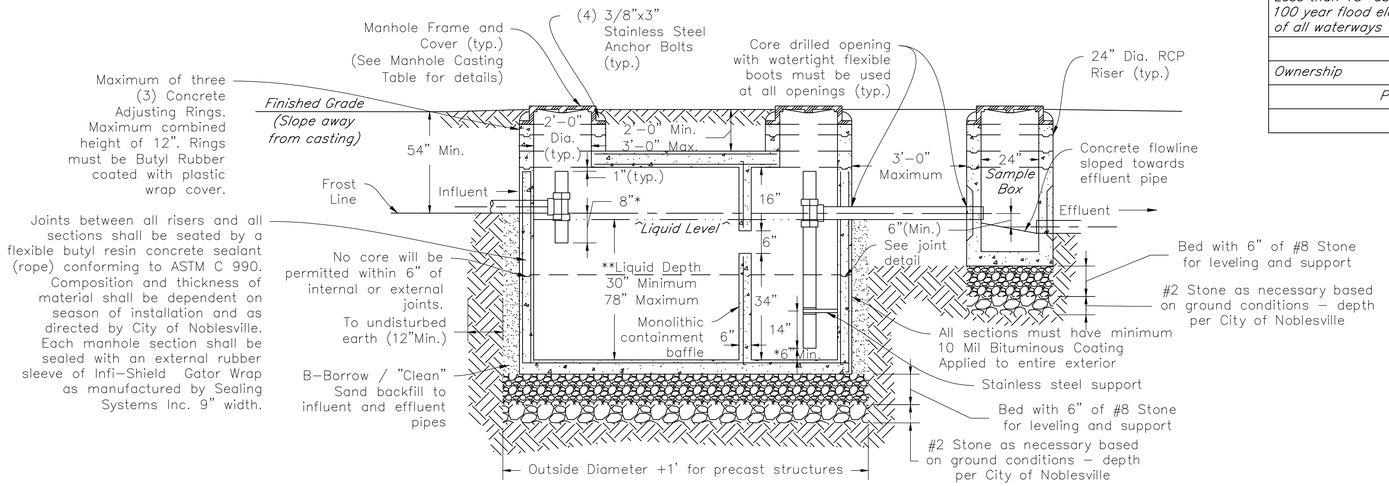
SHEET 14 OF 29

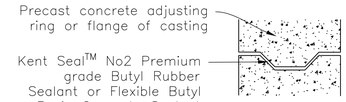
OIL / GREASE TRAP REQUIREMENTS

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.





JOINT DETAIL

* *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"*	

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

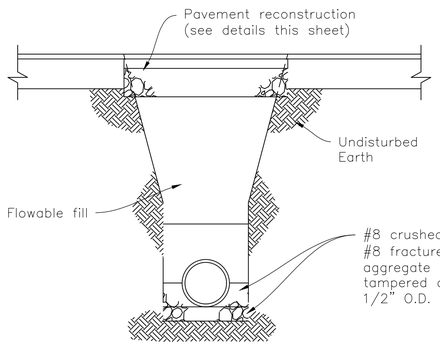
Sanitary Sewer Oil/Grease Trap Specifications

GENERAL NOTES

1. 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.
2. Type II backfill may be used when the trench has adequate space to allow entrance of proper equipment and materials to achieve the required 95% compaction of modified proctor density.
3. The Noblesville Board of Public Works and Safety or the City Engineer shall have the authority to require Type I trench backfill when, in their opinion, minimum compaction cannot be obtained.
4. The contractor shall notify the City of Noblesville permitting agency at least 24 hours prior to beginning backfill of excavation. If the permanent patch placement is to be a separate operation, the contractor shall also notify the City of Noblesville permitting agency 24 hours prior to placement of patch.
5. The contractor shall be responsible for maintaining and repairing any and all open cuts permitted within the City of Noblesville Right–of–Way for a period of one year upon final acceptance by the permitting agency.
6. Trench backfill and pavement restoration shall be conducted in an expedient manner.
7. Surface patch shall extend from face of curb to face of curb unless otherwise approved by City of Noblesville Board of Public Works.
8. Prior to conducting any work within City of Noblesville Right–of–Way caused by, or related to, new construction, contractor shall secure a Utility Coordination Permit from the Noblesville Department of Engineering.
9. Prior to conducting any work within City of Noblesville Right–of–Way on existing facilities, contractor shall secure an Encroachment Permit from the Noblesville Street Department.

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*

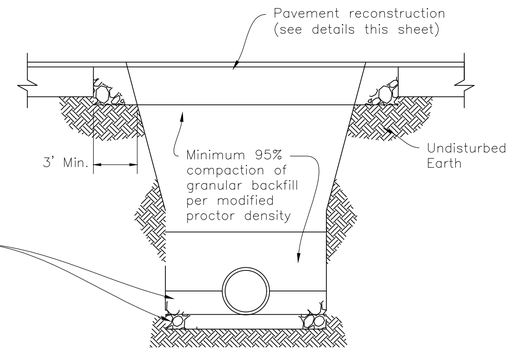
I.D. = Pipe or Conduit Inside Diameter



notes:
1. Trench spoil is to be removed from the work site and disposed of out of the Right–of–Way.
2. Flowable Fill is to be poured into the trench to serve as backfill, to the dimensions and specifications listed in this detail.
3. The Flowable Fill mix design shall have been previously reviewed and approved by the Noblesville Street Department or Department of Engineering
4. The compressive strength of the Flowable Fill shall not be less than 50 PSI nor greater than 100 PSI at 28 days.
5. When Type I Trench Backfill is used, the existing paved surface is not required to be over–cut 2 feet minimum each side. Saw cut existing pavement so that cut provides a vertical, neat and uniform edge.
6. Flowable Fill shall be mixed and placed as specified in the latest INDOT Standard Specifications, Section 213.

TRENCH BACKFILL – TYPE I FLOWABLE FILL DETAIL

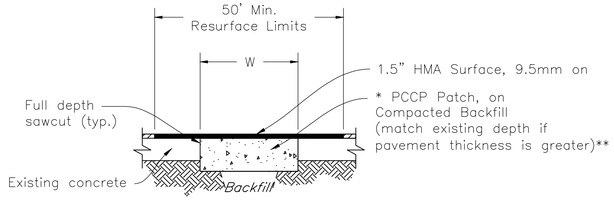
Scale: None



notes:
1. Saw cut existing pavement so that cut provides a vertical, neat and uniform edge.
2. Trench spoil is to be removed from the work site and disposed of out of the Right–of–Way.
3. Trench Backfill – Type II shall only be permitted when conducted under the presence of an independent testing laboratory. Proctor tests and field density (compaction) tests shall be conducted at the sole expense of the contractor. All test results shall be submitted to the Noblesville Street Department or Department of Engineering within 30 days of backfill completion.

TRENCH BACKFILL – TYPE II GRANULAR FILL DETAIL

Scale: None



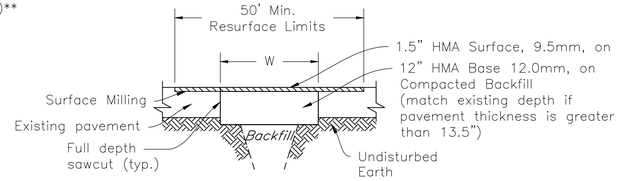
* PCCP Patch thickness to be 12" for arterial/collector/commercial streets and 8" for local streets.

** 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:
1. Saw cuts shall provide a vertical, neat and uniform edge.
2. All materials shall comply with specifications as required by the Noblesville Department of Engineering.
3. Concrete surface shall be broom finish at right angles to traffic flow.
4. All concrete shall be air entrained (5% ±1%)–6 bags per cubic yard minimum 4000 PSI compressive strength concrete. Prior to exposing concrete patch to vehicular traffic, compressive strength test results of cylindrical concrete specimens shall be supplied to the Noblesville Department of Engineering. Compressive strength tests shall be conducted in accordance with ASTM C39.
5. 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.
6. A two (2) inch wide band of crack sealant is to be applied along the joint between the existing and new asphalt surface. Sealant is to be applied in accordance with INDOT Standard Specifications, Section 305.
7. 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.
8. Refer to Pavement Restoration Table for W. See general notes for additional details.

CONCRETE W/BITUMINOUS SURFACE PATCH

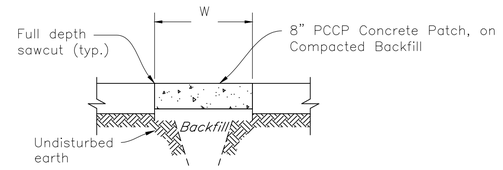
Scale: None



Notes
1. Saw cuts shall provide a vertical, neat, and uniform edge.
2. All materials shall comply with specifications as required by the Noblesville Department of Engineering.
3. 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.
4. 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.
5. 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.
6. Refer to Pavement Restoration Table for W. See general notes for additional details.

BITUMINOUS PATCH (PREFERRED)

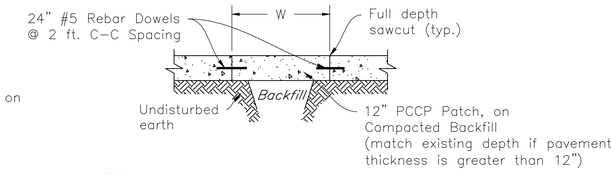
Scale: None



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

FOR TEMPORARY REPAIR PATCH

Scale: None



Notes
1. Saw cuts shall provide a vertical, neat, and uniform edge.
2. All materials shall comply with specifications as required by the Noblesville Department of Engineering.
3. Surface of repair shall be broom finished at right angles to traffic flow.
4. All concrete shall be air entrained (5% ± 1%)–6 bags per cubic yard minimum 4000 psi compressive strength concrete. Prior to exposing concrete patch to vehicular traffic, compressive strength test results of cylindrical concrete specimens shall be supplied to the Noblesville Department of Engineering. Compressive strength tests shall be conducted in accordance with ASTM C39.
5. Contractor shall contact the Noblesville Department of Engineering to determine if anchors are required on existing concrete pavement repairs.
6. Refer to Pavement Restoration Table for W. See general notes for additional details.

CONCRETE PATCH WITHIN CONCRETE STREETS

Scale: None

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

CITY OF NOBLESVILLE

Backfill and Patching Details

SHEET 16 OF 29

Alison M. Krupski 7/8/2021

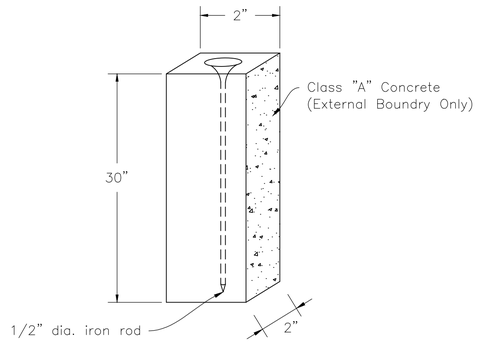
MONUMENTATION GUIDELINES

INDIVIDUAL LOT BOUNDARIES

1. 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.
2. Monuments shall be installed within one season of acceptance of secondary plat.
3. 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.
4. 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.
5. 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

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.

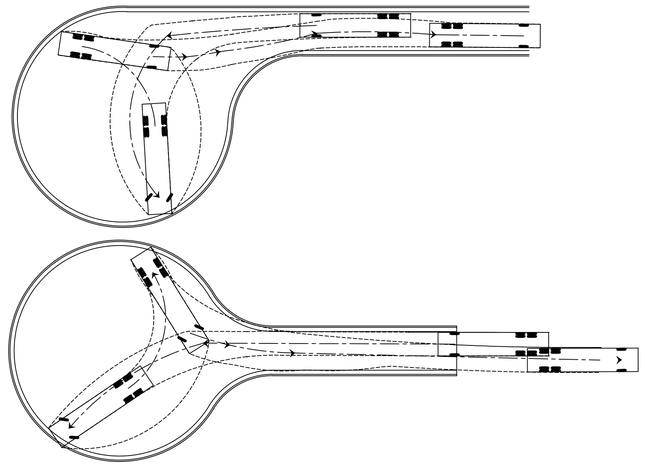


MONUMENT DETAIL – EXTERNAL BOUNDARIES/ROADWAY

Scale: None

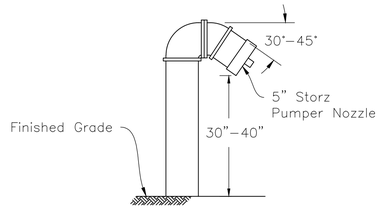
GENERAL NOTES

1. Fire apparatus access road shall be constructed and made serviceable prior to issuance of a building permit.
2. Fire hydrants shall be installed, functional, and approved by the fire marshal prior to issuance of a building permit.
3. Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The apparatus roads shall have an unobstructed width of 20 feet at all times.
4. Commercial and apartment buildings with a fire alarm system or sprinkler system shall install an emergency access key box that shall contain the necessary keys to access all protected areas of the building.
5. Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access roads shall extend to within 150' of all portions of the facility or any portion of the exterior wall of the first story of the building.
6. Dead–end fire apparatus access roads in excess of 150' in length shall be designed to allow the turning around of the longest piece of fire apparatus.
7. Refer to the Fire Marshal for dry hydrant specifications and fire lane details.
8. All other items not specifically stated herein shall be in accordance with the most recent adopted edition of the Indiana Fire Code.
9. As–built electronic submittal shall be submitted for all fire department connections and fire hydrants to GIS coordinator in compliance with electronic submittal guidelines.



FIRE ENGINE DESIGN VEHICLE TURN–AROUND SCHEMATIC

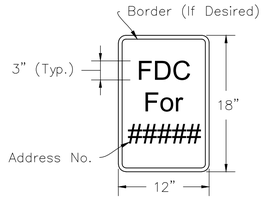
Scale: None



Notes:
1. The FDC shall meet or exceed the requirements of the most recent State of Indiana adopted edition of NFPA 13 and NFPA 14.
2. The FDC shall be located off the building in a location approved by the City of Noblesville Fire Marshal.
3. The FDC shall be provided with a single 5" Storz connection that shall face towards the nearest point of fire department access.
4. A minimum of a 4" FDC service pipe shall be utilized on a fire service line that is 6" or larger.
5. Any FDC pipe that is not located within the fire service vault shall be painted with Sherwin–Williams "Safety Red (SW 4081)" or equivalent approved by the Noblesville Fire Department.
6. The FDC shall be constructed of a material not susceptible to degradation.
7. The FDC shall not be located more than 100 feet from the nearest fire hydrant.

FIRE DEPARTMENT CONNECTION (FDC)

Scale: None



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

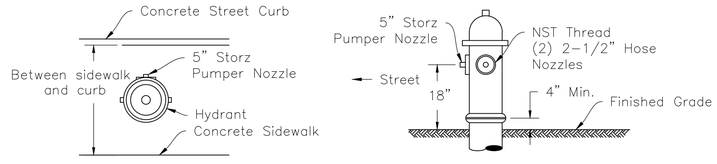
FDC SIGN

Scale: None

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

FIRE LANE PARKING DETAIL

Scale: None



Notes:
1. A water distribution plan, with fire hydrants identified, shall be submitted and approved by the Fire Marshal of the City of Noblesville prior issuance of an Improvement Location Permit.
2. All on–site fire hydrants shall be located between the curb and sidewalk in the Right–of–Way. The 5" Storz connection shall face the street.
3. The number, size, and arrangement of outlets, the size of the main valve opening and the size of the barrel shall be suitable for the required fire protection.
4. All fire hydrant spacing shall comply with the following requirements:
   - Residential: 500' (250' maximum distance hydrant and a structure.)
   - Apartment: 400'
   - Commercial: most recent edition of the Indiana Fire Code
5. Fire hydrants shall have a maintained three foot radial clear space at all times.
6. The type and installation of fire hydrants shall be approved by the respective water utility. Fire hydrants shall meet the following criteria:
   - 6.1. Mechanical joint connection for 6" service pipe.
   - 6.2. Minimum 5–1/4" diameter main valve opening.
   - 6.3. Two 2–1/2" 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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

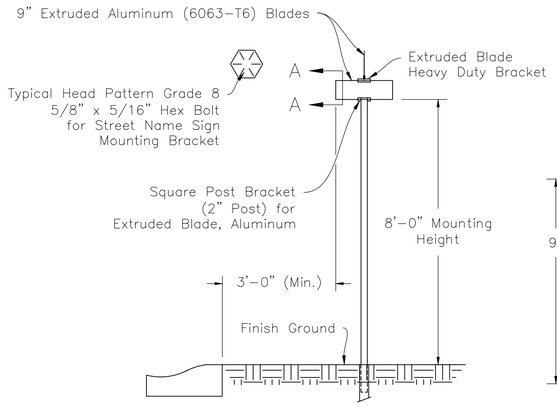
CITY OF NOBLESVILLE

Monumentation Guidelines and Fire Department Notes & Details

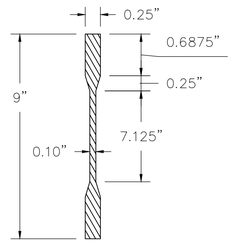
SHEET 17 OF 29

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 DETAILS



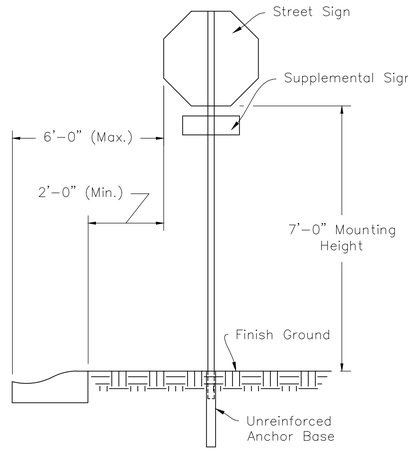
SECTION A–A

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

STREET NAME SIGN

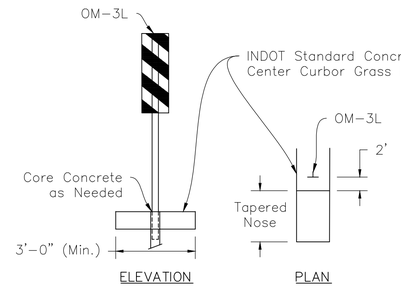
TYPICAL STREET NAME SIGN

Scale: None



TYPICAL STREET SIGN

Scale: None



ELEVATION PLAN

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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Street Sign Details and Notes

SHEET 18 OF 29

GENERAL STREET LIGHTING NOTES

1. Street lighting is required on new Local and Collector streets being constructed with a plat and shall be shown on the lighting plan. Lighting is required at entrances and intersections, within cul-de-sacs and at specified locations requiring additional lighting. Lighting plans shall be submitted to the Noblesville Department of Engineering for approval.

2. Street lighting shall be considered at any of the following locations:
   - 2.1. Pedestrian crosswalks
   - 2.2. Roadway Intersections
   - 2.3. Changes in horizontal alignment
   - 2.4. Commercial Drives
   - 2.5. As directed by the City Engineer

3. It shall be the responsibility of the developer to provide and install all street lighting.
   - 3.1. Street light locations shall be shown on the approved subdivision plans. The type of luminaire and pole used, with illumination information should be included on the plans or by separate submittal prior to construction.
   - 3.2. The Homeowners' Association covenants shall clearly indicate that the cost of maintenance and the order of any new lights will be the responsibility of the Homeowners' Responsibility as the owner and customer for the lighting.
   - 3.3. Billing and the work order information shall be in the Homeowners' Association name and address.
   - 3.4. 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.
   - 3.5. All other applicable City Standards shall be observed during the planning and completion of work.
   - 3.6. At the time work commences, requests for inspection of work shall be directed to the Engineering Department in a manner that is commensurate with the process for the inspection of other elements of subdivision work.

4. All lighting plans submitted for approval shall include, but not be limited to, the following:
   - 4.1. Location of each light standard and the service point or junction box serving each luminary.
   - 4.2. Plan notations showing conduit and wire size for each conduit run.
   - 4.3. Manufacturer's catalog cut sheets and specifications for light fixtures, appurtenances, service points, and junction boxes.
   - 4.4. Paint color specimen samples and material composition.

GENERAL TRAFFIC SIGNAL NOTES

1. All intersections warranting, or proposed to become, a signalized intersection shall consider a roundabout as a viable alternative or solution for the intersection improvement.

2. All traffic signal controllers shall be selected and approved by the City Engineer.

3. Signals shall be actuated with loop detection.

4. Pedestrian crossings shall be actuated by a pedestrian push button unless pedestrian traffic volumes warrant a protected pedestrian crosswalk movement at every signal cycle.

5. Intersections which have existing or proposed sidewalks or trails shall have the signal and intersection configured to accommodate pedestrian crossings.

6. Signals shall be installed with preemptive devices for emergency vehicle detection. The system should be a matched component system that will be fully compatible with the existing system already in place. The system shall be able to have security and identification. The system 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:
   - 6.1. M711 Detector
   - 6.2. M721 Detector
   - 6.3. M722 Detector
   - 6.4. M752 Phase Selector
   - 6.5. M754 Phase Selector
   - 6.6. M760 Card Rack
   - 6.7. M5575 Confirmation Kit
   - 6.8. M138 Detector Cable
   - 6.9. M792H Emitters

7. Traffic signal cabinet's exterior color shall match the color of the traffic signal poles for which it controls.

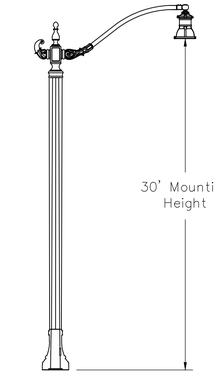
8. Traffic signal heads shall be LED.

9. Traffic signal shall be equipped with a manual override at the controller cabinet.

10. Contact the Department of Engineering for requirements for hand holes, service points, and/or controller cabinets.

11. Lighting with decorative arm and luminaire may be mounted post top as required per plan.

12. Foundation for pole shall be designed to the requirements of INDOT Standard Drawing No. E 805-SGSC-02 and other related drawings.



TYPICAL STREET LIGHT

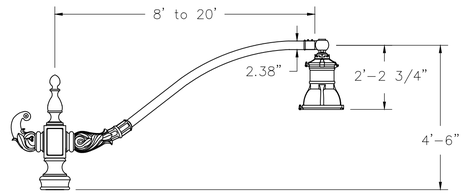
Scale: None

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 luminare 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)

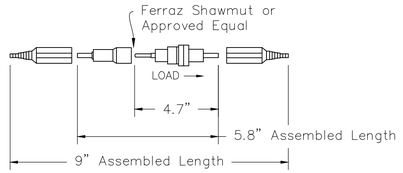
* Higher intensity lighting may be required on specific roadways

Notes:
1. Contact Department of Engineering for requirements for hand holes and/or cabinets.
2. Luminaire and arm shall be leveled and plumb by the contractor during installation.



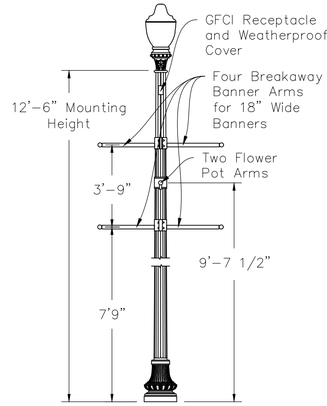
DECORATIVE ARM AND LUMINAIRE DETAIL

Scale: None



BREAKAWAY FUSE DETAIL

Scale: None



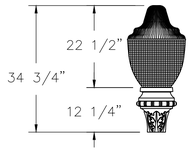
URBAN STREET LIGHT

Scale: None

URBAN STREET LIGHT SPECIFICATIONS

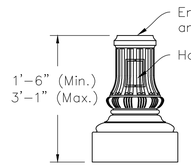
Pole:	5" O.D. (Min.) 16 flat flute pole or approved equal
Base:	"Washington style" aluminum two-piece clamshell decorative base, painted breakaway transformer base or approved equal.
Luminaire:	Acorn style acrylic globe with type III prismatic section and decorative luminare holder, or approved equal. 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:
1. Contact Department of Engineering for requirements for hand holes and/or cabinets.
2. 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.
3. A HID ballast and socket assembly shall be provided for each luminaire.



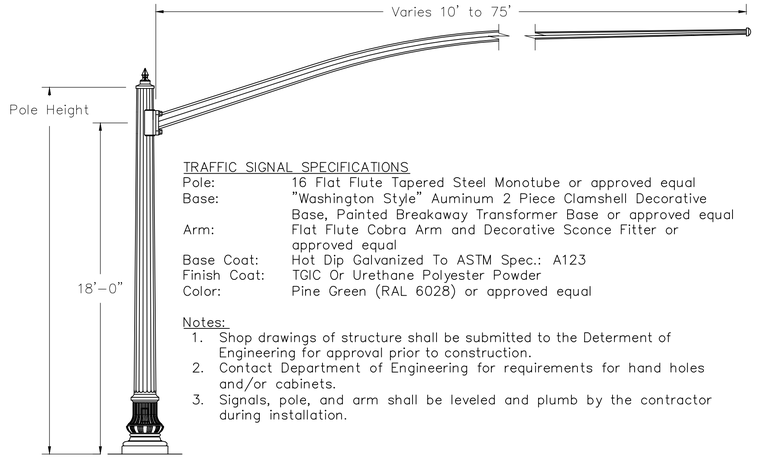
ACORN LUMINAIRE ASSEMBLY DETAIL

Scale: None



DECORATIVE BASE DETAIL

Scale: None



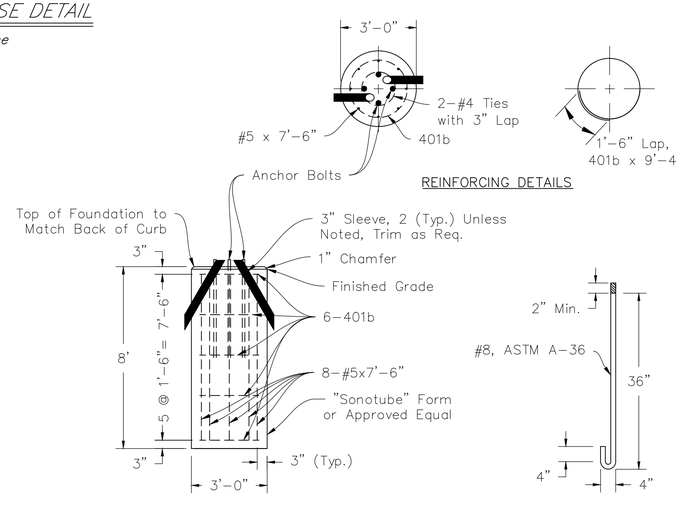
TRAFFIC SIGNAL SPECIFICATIONS

Pole:	16 Flat Flute Tapered Steel Monotube or approved equal
Base:	"Washington Style" Auminum 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:
1. Shop drawings of structure shall be submitted to the Determent of Engineering for approval prior to construction.
2. Contact Department of Engineering for requirements for hand holes and/or cabinets.
3. 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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

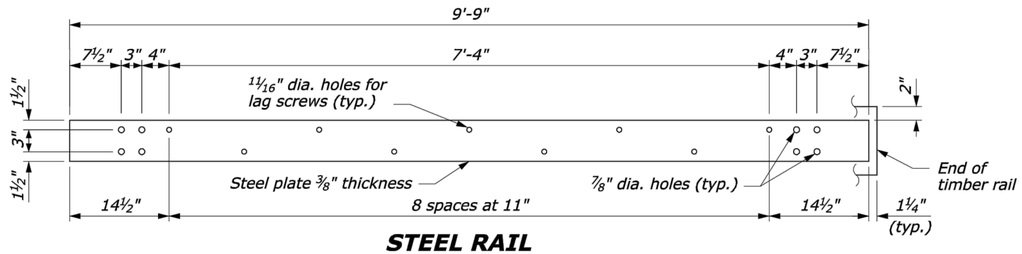
Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Street Lighting Details and Notes

SHEET 19 OF 29

STATE	PROJECT	SHEET NUMBER



STEEL RAIL

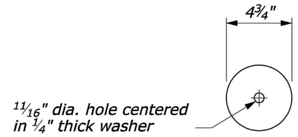
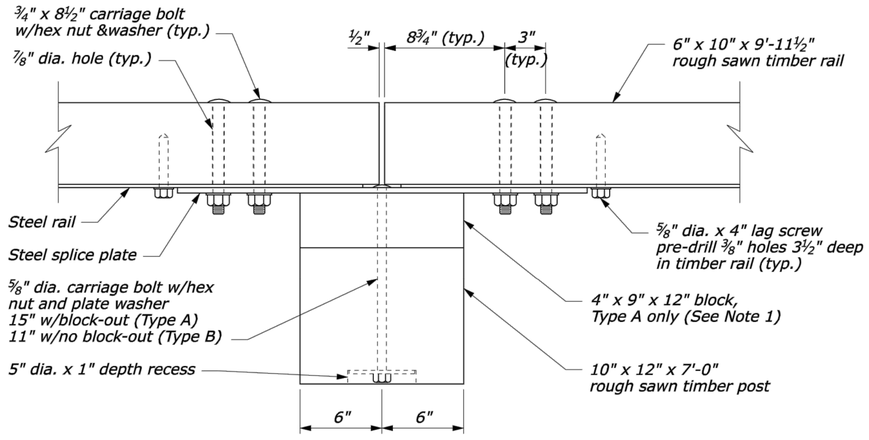


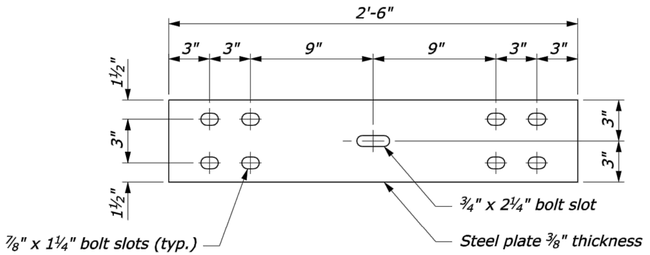
PLATE WASHER

NOTE:

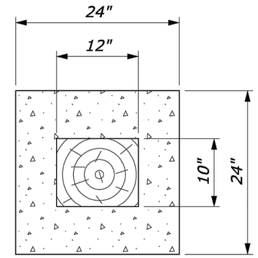
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified in the plans.
2. Use weathering steel for all structural steel and fastener hardware as specified.
3. Place a terminal section (See Standards 617-61 and 617-62) on both approach and trailing ends of barrier installations.

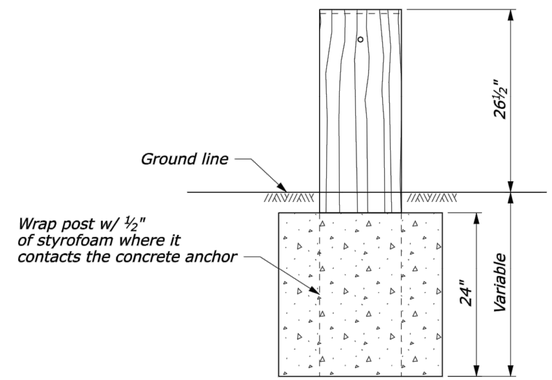


PLAN



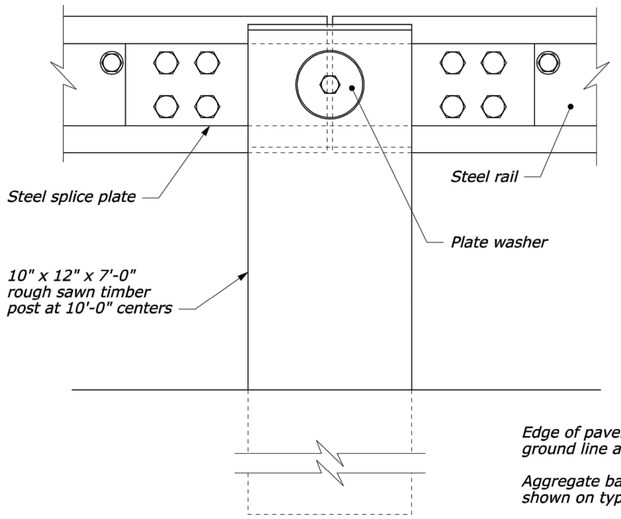
STEEL SPLICE PLATE





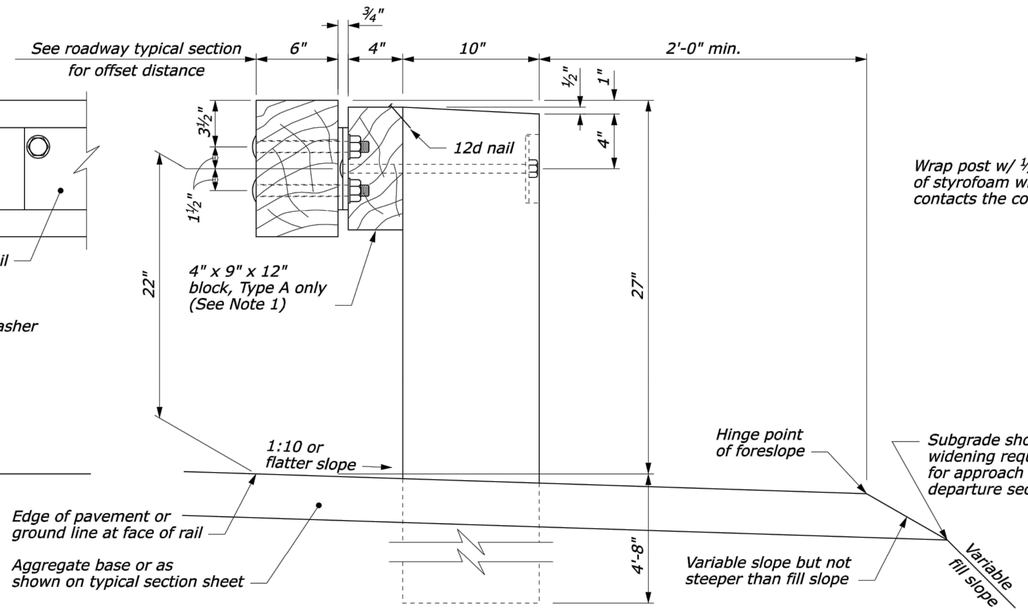
24" dia. round anchor is an acceptable alternative.
Reduced size acceptable in solid rock.

CONCRETE ANCHOR FOR SHORT GUARDRAIL POST



ELEVATION

POST CONNECTION



TYPICAL GUARDRAIL CROSS SECTION

NO SCALE

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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

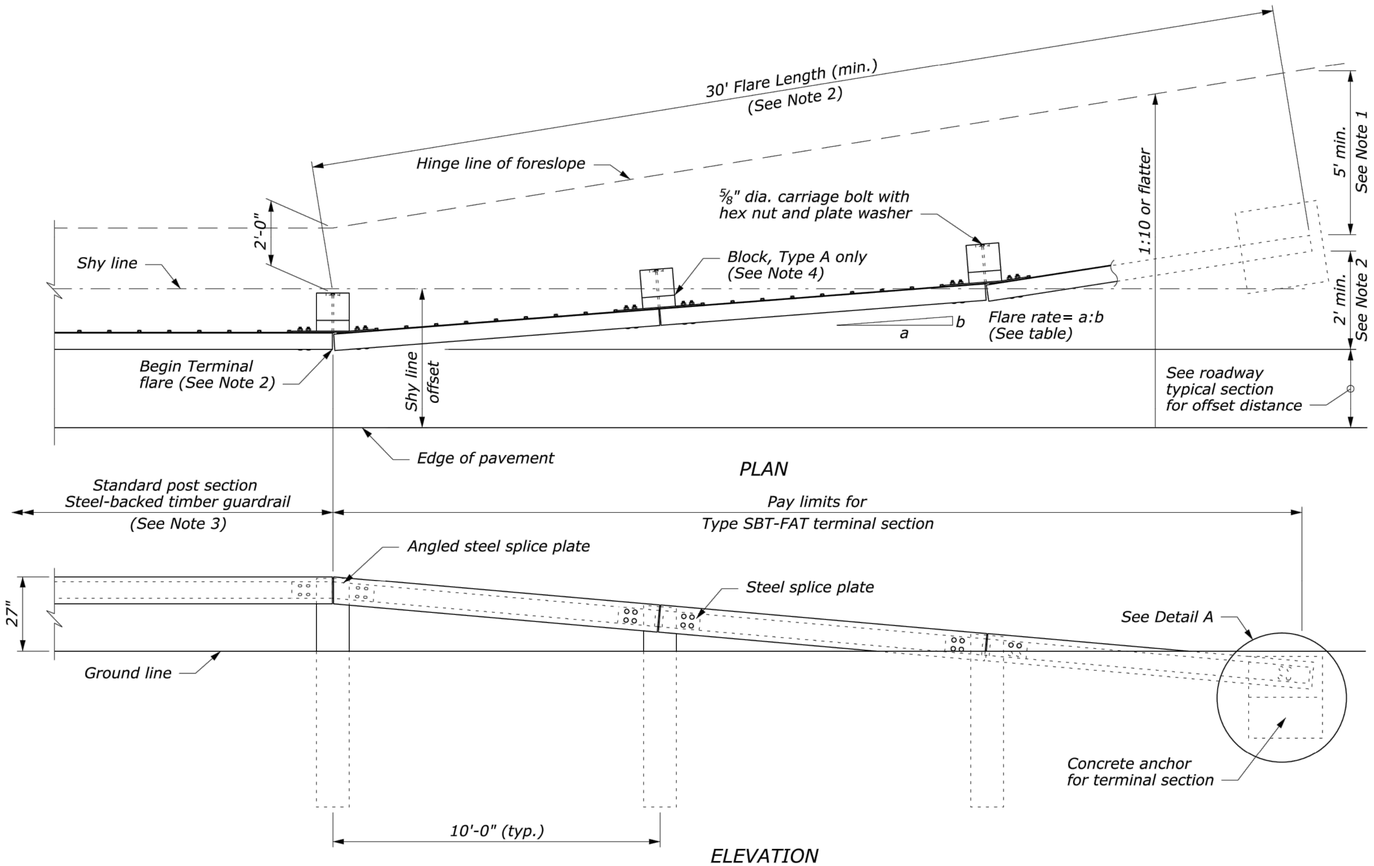
Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

FHWA Timber Guardrail Details

SHEET 20 OF 29

STATE	PROJECT	SHEET NUMBER



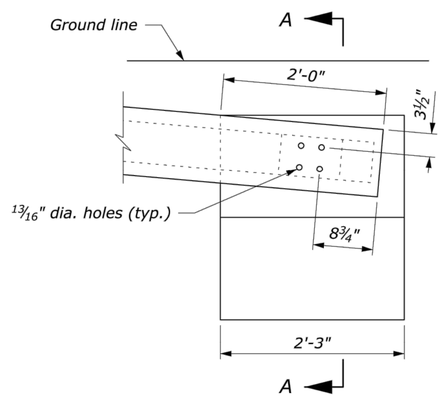
APPROACH & DEPARTURE FLARE WITH FLARED ANCHOR TERMINAL (FAT)

NOTE:

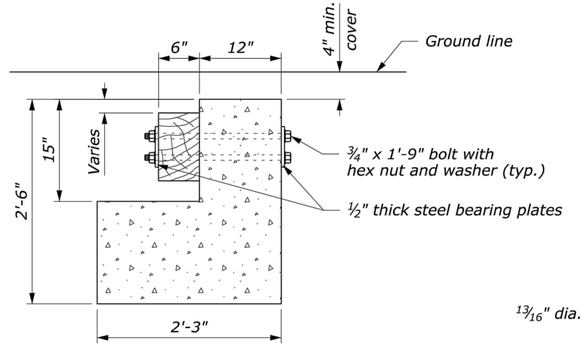
1. *Extend the fill widening a minimum of 5 feet behind the guardrail, unless otherwise directed by the CO.*
2. *The guardrail flare shown in the plan view is the minimum length and rate required. As directed by the CO, flare the guardrail so that the terminal section is outside the clear zone. If the 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.*

GUARDRAIL FLARE RATE TABLE

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

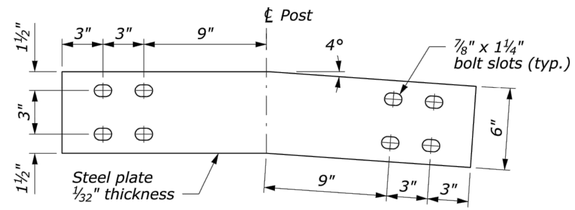


DETAIL A

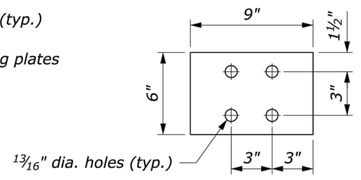


SECTION A-A

CONCRETE ANCHOR



ANGLED STEEL SPLICE PLATE



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-FAT

STANDARD APPROVED FOR USE 1/1990
REVISED: 4/1994 6/2005
DRAFT: 12/2013

STANDARD 617-61

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

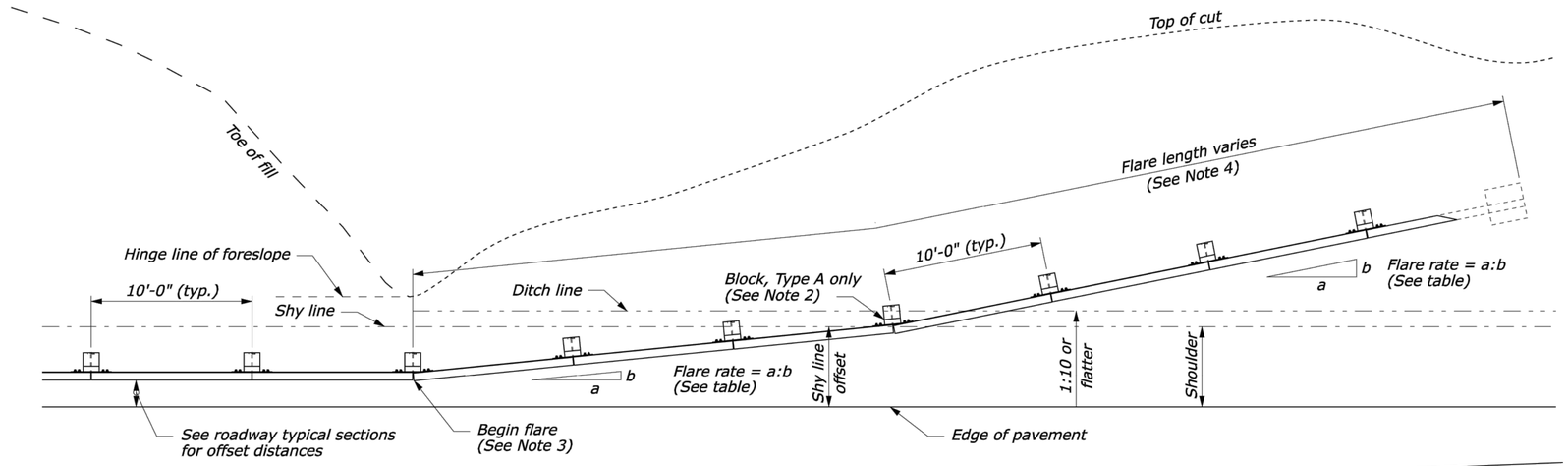
Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

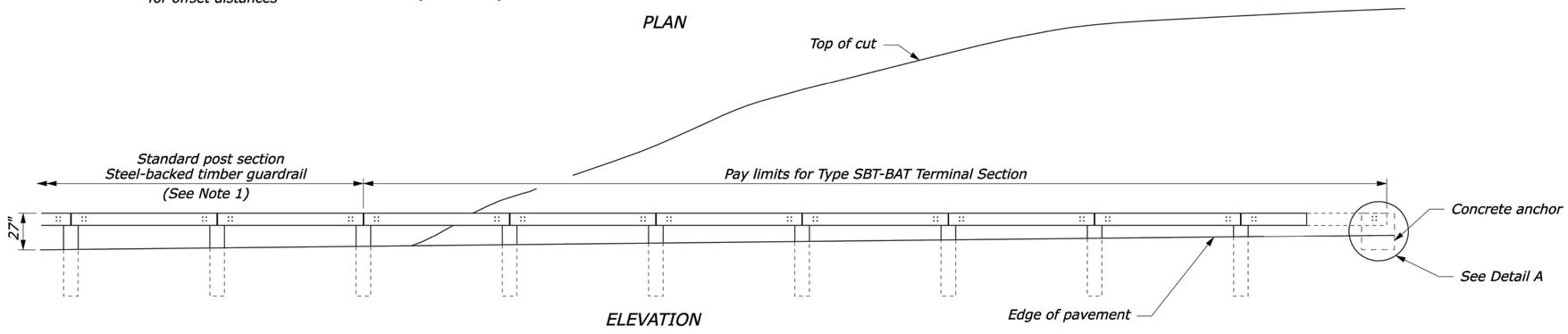
FHWA Timber Guardrail Details

SHEET 21 OF 29

STATE	PROJECT	SHEET NUMBER



PLAN



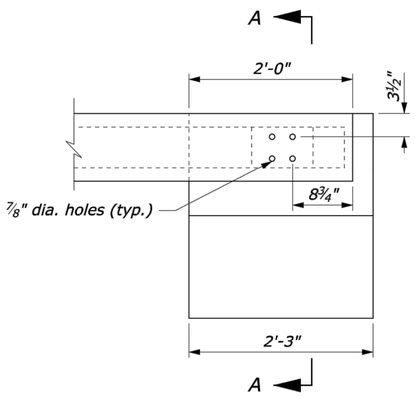
ELEVATION

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

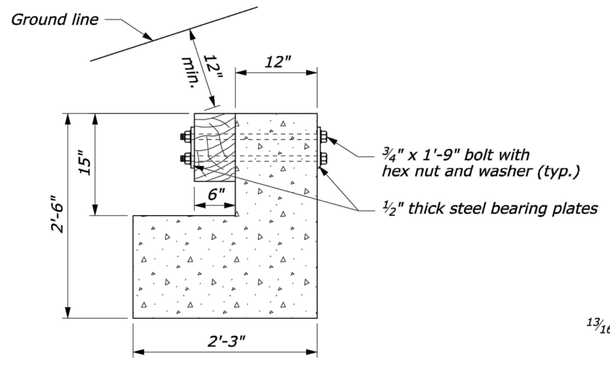
NOTE:

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.*

GUARDRAIL FLARE RATE TABLE			
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

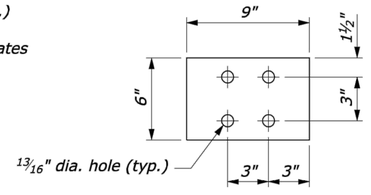


DETAIL A



SECTION A-A

CONCRETE ANCHOR



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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

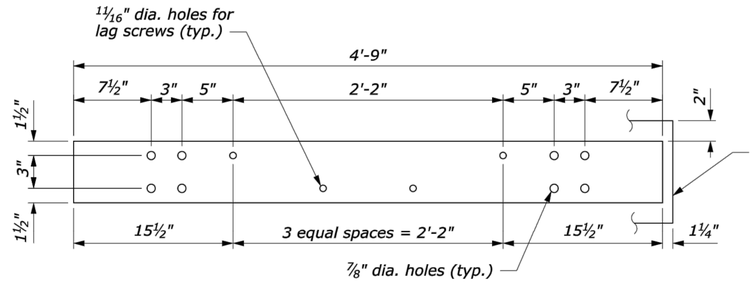
Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

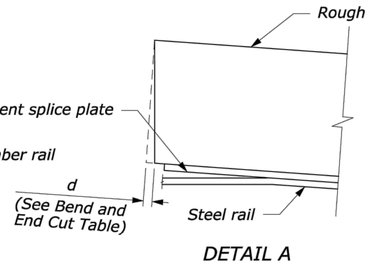
FHWA Timber Guardrail Details

SHEET 22 OF 29

STATE	PROJECT	SHEET NUMBER



STEEL RAIL
6" x ⅜" x 4'-9"



DETAIL A

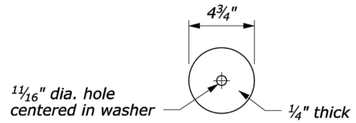
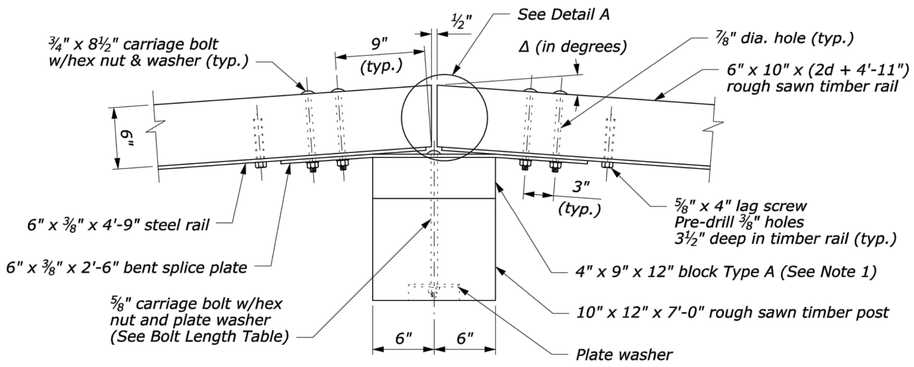


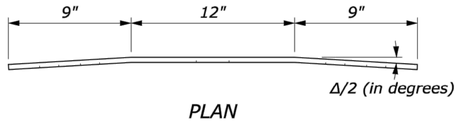
PLATE WASHER DETAIL

NOTE:

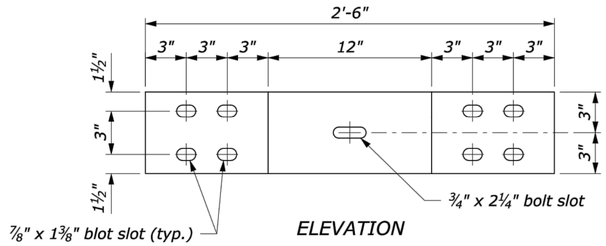
1. Use the Type A, blocked-out, system or the Type B, non-blocked-out, system as specified.
2. Use the weathering steel for all structural steel and fastener hardware.
3. Furnish shop bent splice plates. Use the minimum bend angle shown in the table below.
4. See Sheet 2 of 2 for Plan View Layout.



PLAN



PLAN

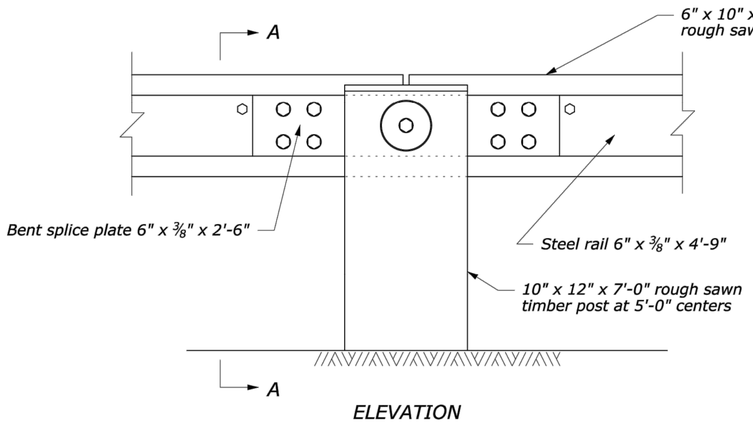


ELEVATION

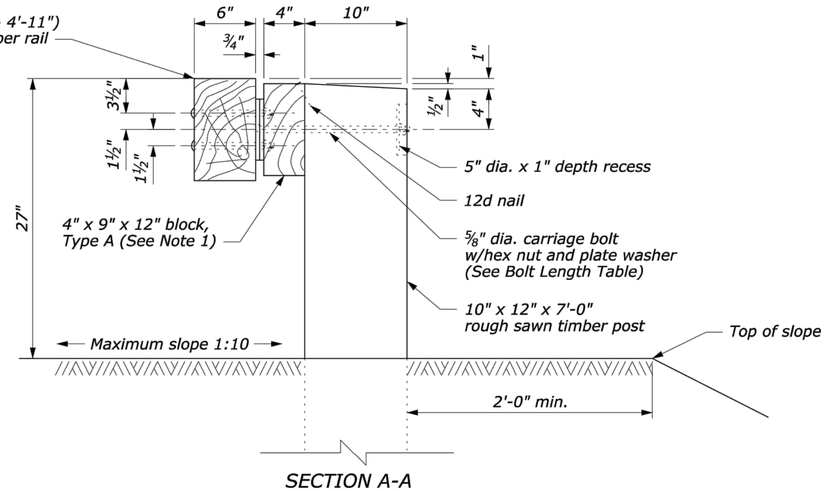
BENT SPLICE PLATE
6" x ⅜" x 2'-6"

BEND AND END CUT TABLE		
Radius R ft	Δ/2 degrees	d in
20	7.18	¾
25	5.74	⅝
30	4.78	½
35	4.10	7/16
40	3.58	⅜
45	3.18	⅓
50	2.87	5/16
55	2.61	¼
60	2.39	¼
65	2.20	¼
70	2.05	¼
over 70	flat	0

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



ELEVATION



SECTION A-A

POST CONNECTION

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 1 of 2

STANDARD APPROVED FOR USE 6/2005

REVISED:

STANDARD 617-63

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

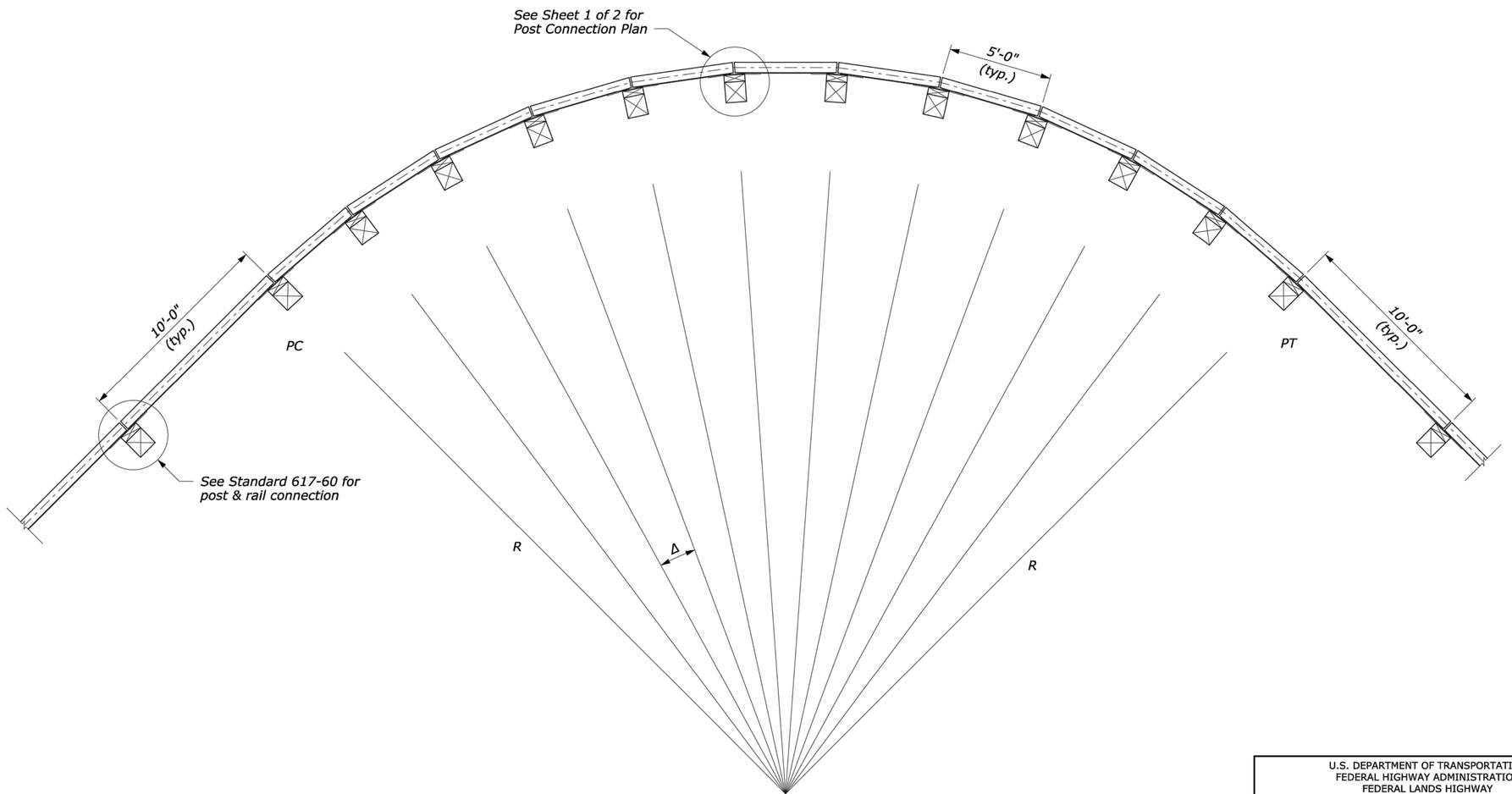
FHWA Timber Guardrail Details

SHEET 23 OF 29

STATE	PROJECT	SHEET NUMBER

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
REVISED:	617-63

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

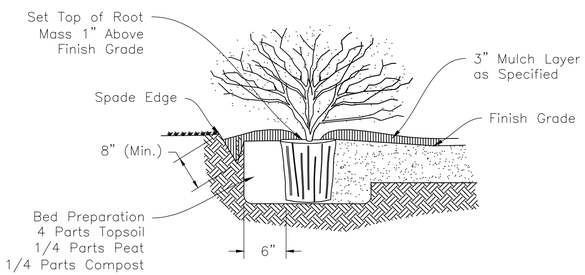
CITY OF NOBLESVILLE

FHWA Timber Guardrail Details

SHEET 24 OF 29

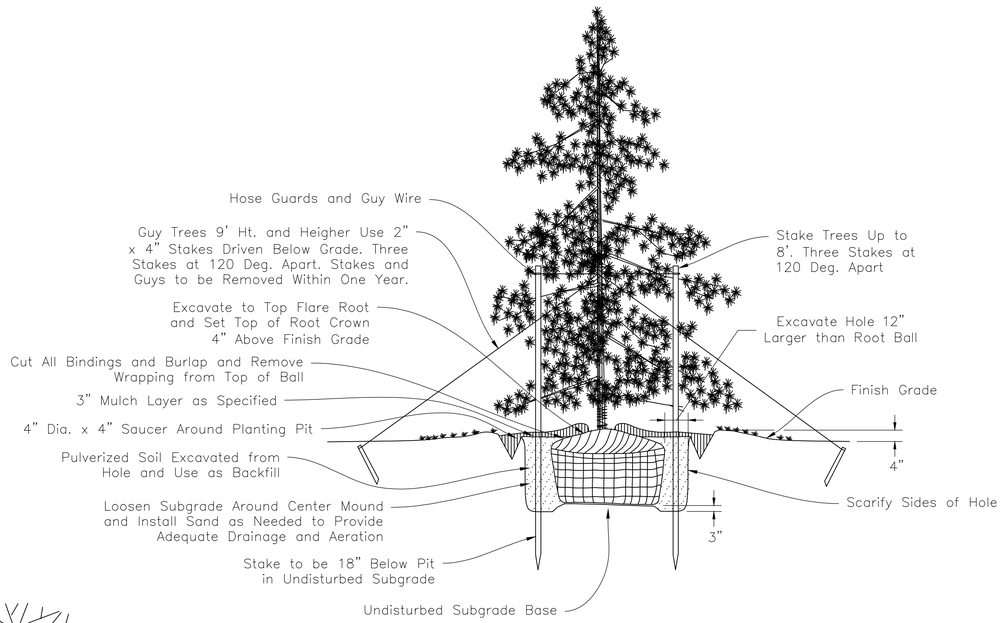
GENERAL NOTES

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.



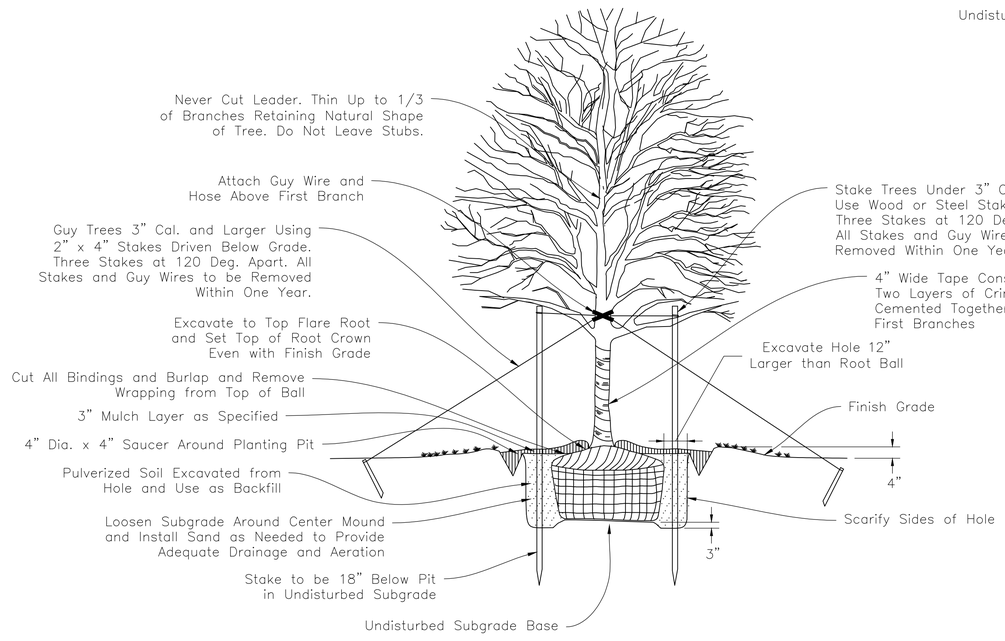
SHRUB AND SMALL TREE PLANTING DETAIL

Scale: None



EVERGREEN PLANTING DETAIL

Scale: None



SHADE TREE PLANTING DETAIL

Scale: None

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Landscape and Planting Details and Notes

SHEET 25 OF 29

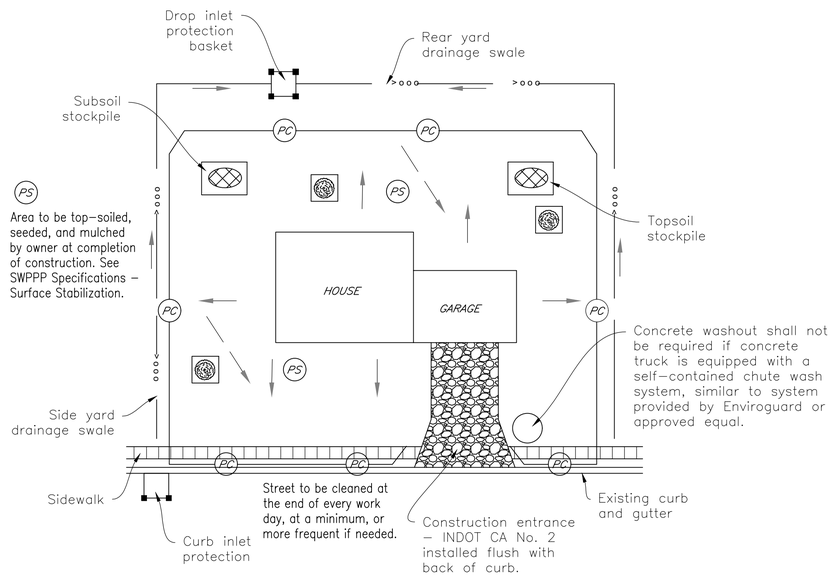
GENERAL SWPPP NOTES FOR INDIVIDUAL LOTS

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.



INDIVIDUAL LOT STORM WATER POLLUTION & PREVENTION DETAIL

NOT TO SCALE

Notes:

1. Erosion/ sediment control measures must be functional and be maintained throughout construction.
2. Maintain positive drainage away from the structure.
3. Contractor to clean streets at a minimum at the end of every work day, or more frequent if needed.
4. Perimeter protection should be installed before excavation of basement/foundation has begun. Perimeter protection on lots shall remain in place until the lot is stabilized meeting the cover requirements of SWPPP Specifications – Surface Stabilization and Noblesville Department of Engineering.
5. All trash and construction debris shall be disposed properly into an enclosed waste receptacle.
6. Street to be cleaned at the end of every work day, at a minimum, or more frequent if needed.

EROSION CONTROL PLAN LEGEND

- PROPERTY LINE/ DRAINAGE SWALE
- EXISTING DRAINAGE
- FINISHED DRAINAGE
- TREE CONSERVATION WITH FENCING AT DRIP LINE
- PC — PERIMETER CONTROLS
- TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD
- BASKET INLET PROTECTION (COMBINATION INLET FILTER FOR CURB HOODS)
- BASKET INLET PROTECTION (ROUND OR RECTANGULAR INLET FILTER)
- TOPSOIL / SUBSOIL STOCKPILE
- PS — PERMANENT SEEDING / SOD

THE CITY OF NOBLESVILLE EST. 1823

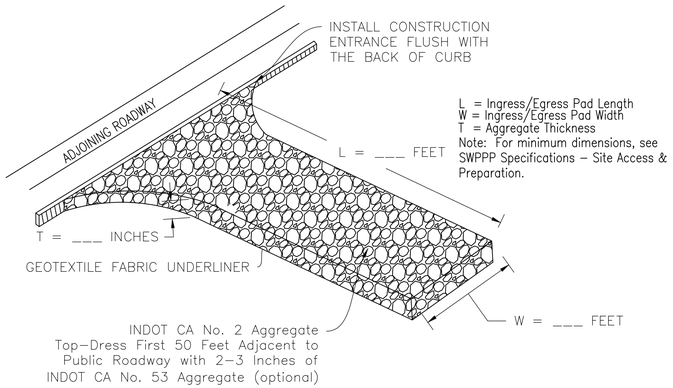
ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

SWPPP Details

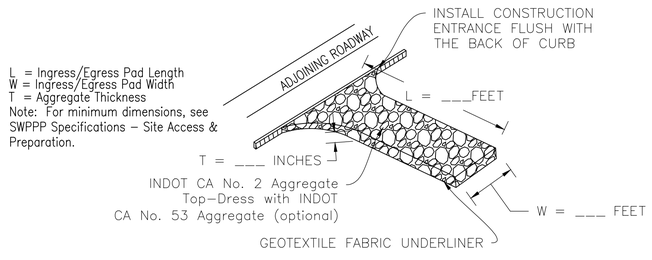
SHEET 26 OF 29



L = Ingress/Egress Pad Length
W = Ingress/Egress Pad Width
T = Aggregate Thickness
Note: For minimum dimensions, see SWPPP Specifications – Site Access & Preparation.

TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (LARGE SITES – TWO ACRES OR LARGER)

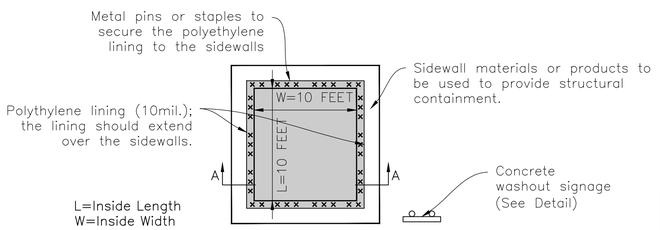
NOT TO SCALE



L = Ingress/Egress Pad Length
W = Ingress/Egress Pad Width
T = Aggregate Thickness
Note: For minimum dimensions, see SWPPP Specifications – Site Access & Preparation.

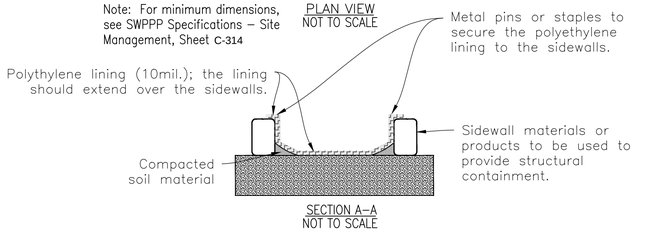
TEMPORARY CONSTRUCTION INGRESS/EGRESS PAD (SMALL SITES – LESS THAN TWO ACRES)

NOT TO SCALE



L=Inside Length
W=Inside Width
Note: For minimum dimensions, see SWPPP Specifications – Site Management, Sheet C-314

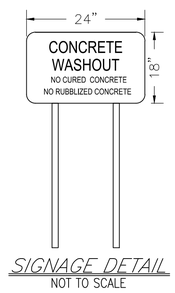
PLAN VIEW
NOT TO SCALE



SECTION A–A
NOT TO SCALE

CONCRETE WASHOUT DETAIL (ABOVE GRADE)

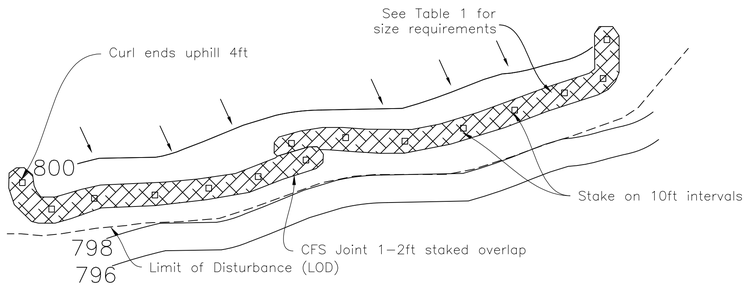
NOT TO SCALE

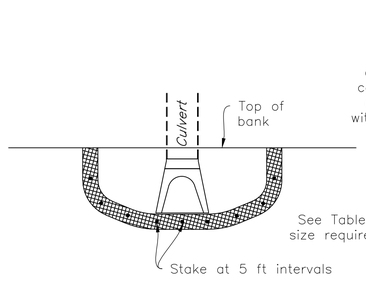


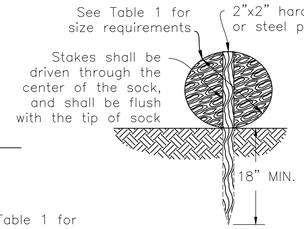
SIGNAGE DETAIL

NOT TO SCALE

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

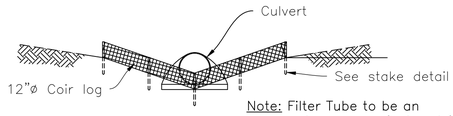






STAKE DETAIL

NOT TO SCALE



Note: Filter Tube to be an approved pre-manufactured filter, and shall meet requirements of the Indiana Storm Water Quality Manual, latest edition.

Table 1: Filter Sock Size Requirements, Sheet Flow Application

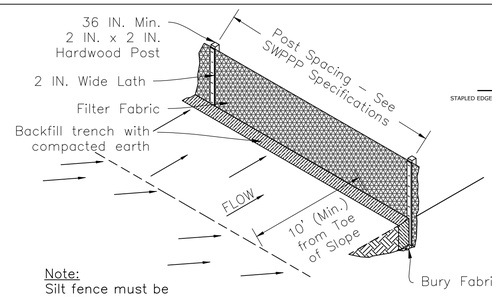
Slope		Sock (linear feet) for Minimum Filter Sock Size			
		8 inch	12 inch	18 inch	24 inch
0% – 2%	< 50:1	125	125	125	125
2% – 10%	50:1 to 10:1	100	100	100	100
10% – 20%	10:1 to 5:1	75	75	75	75
20% – 33%	5:1 to 3:1	25	25	25	25
> 33%	> 3:1	10	10	10	10

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

FILTER TUBE/FILTER SOCK

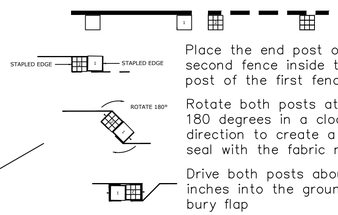
NOT TO SCALE

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



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

SILT FENCE INSTALLATION

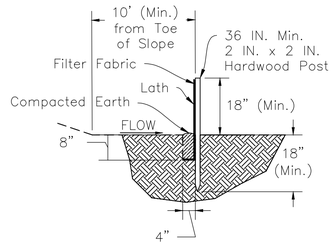


Place the end post of the second fence inside the end post of the first fence

Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material

Drive both posts about 10 inches into the ground and bury flap

ATTACHING TWO SILT FENCES



FLAT BOTTOM TRENCH SECTION

Table 1. Slope Steepness Restrictions

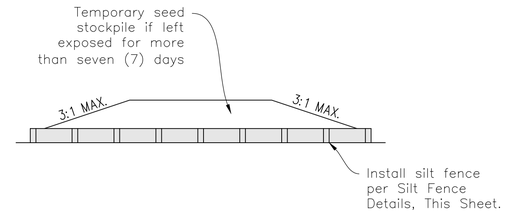
Precent Slope		Maximum Distance
< 2%	< 50:1	100 Feet
2% – 5%	50:1 to 20:1	75 Feet
5% – 10%[1]	20:1 to 10:1	50 Feet
10% – 20%[1]	10:1 to 5:1	25 Feet
> 20%[1]	> 5:1	15 Feet

[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*



TOPSOIL STOCKPILE DETAIL

NOT TO SCALE

Note:
1. Topsoil shall always be salvaged and stockpiled on–site, unless infeasible.
2. Stockpile outside rooting zone of trees to be protected.
3. 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.
4. 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.

THE CITY OF NOBLESVILLE EST. 1823

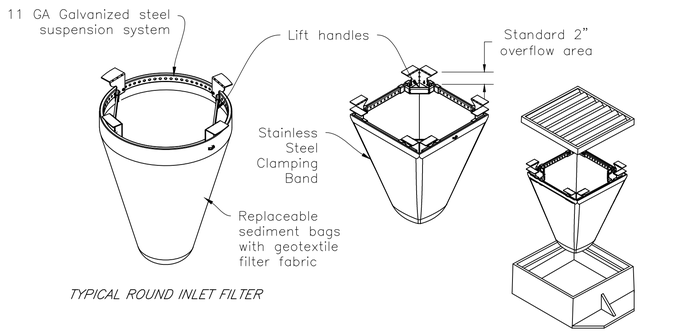
ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

CITY OF NOBLESVILLE

SWPPP Details

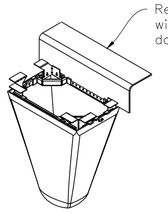
SHEET 27 OF 29

Alison M. Krupski 7/8/2021



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*

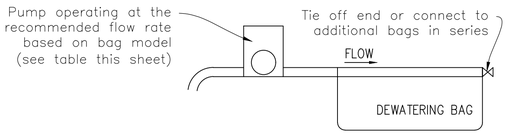
IP1 INLET PROTECTION TO BE USED IN PAVEMENT AREA INLETS.
IP2 INLET PROTECTION TO BE USED IN LAWN AREA INLETS.

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	5–30	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

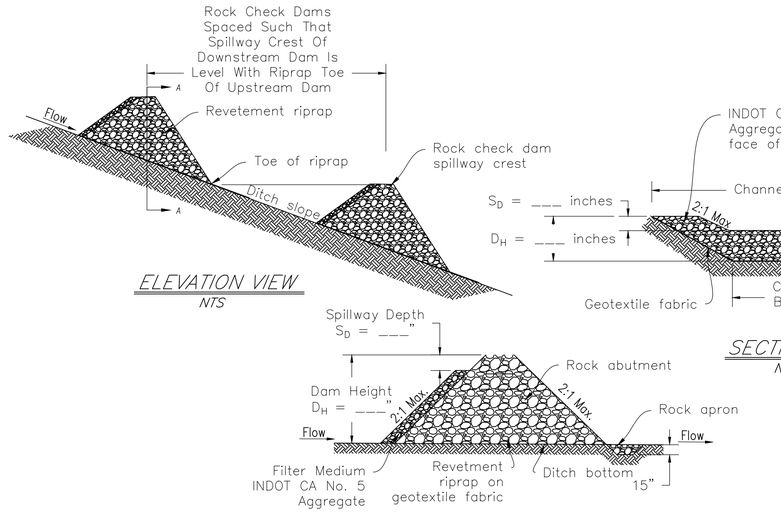
REUSABLE DEWATERING BAG SPECIFICATIONS

Model	OD (ft)	Inlet/Outlet hose connection (in)	Recommended flow rate (gpm)	Capacity (cft)	Standard material Nonwoven liner (oz)
SC–DW 46Z	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

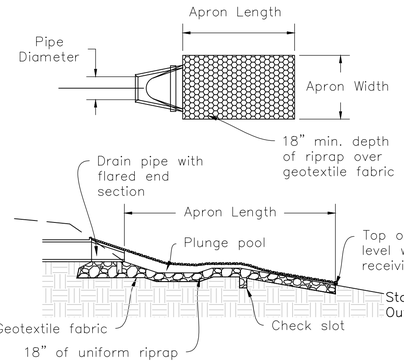
** Measure to be used in accordance with manufacturer's stated installation and maintenance specifications, and limitations*



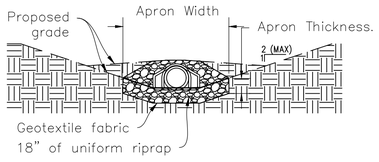
ELEVATION VIEW
NTS

SECTION A–A
NTS

TEMPORARY RIPRAP DITCH CHECK DETAIL
NOT TO SCALE



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

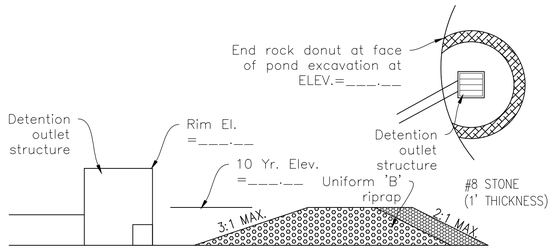


Sizing for Flow Dissipaters at Culvert Pipe Outlets[1]

Pipe Size	*Average Riprap Diameter*	*Apron Width*[2]	*Apron Length*[2]
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

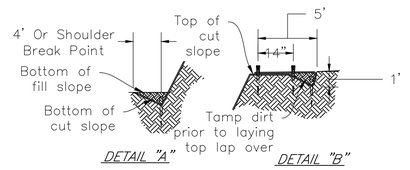


ROCK DONUT INLET PROTECTION
NOT TO SCALE

Mulch Specifications

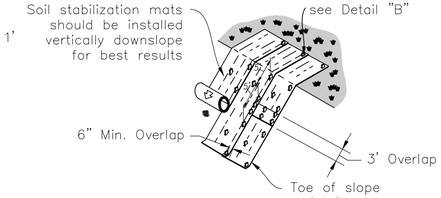
Material[1]	*Rate per Acre*	*Comments*
Straw or hay	*2 tons*	*Should be dry, free of undesirable seeds. Spread by hand or machine. Must be crimped or anchored (see table 2).*
Wood fiber or cellulose	*1 ton*	*Apply with a hydraulic mulch machine and use with tacking agent*

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

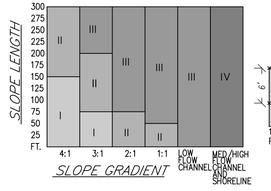


DETAIL "A" *DETAIL "B"*

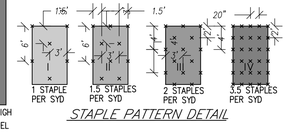
EROSION CONTROL BLANKET SLOPE INSTALLATION
NOT TO SCALE



FILL SLOPE SECTION



SLOPE GRADIENT



STAPLE PATTERN DETAIL

Note:
Slope surface shall be smooth and free of rocks, lumps of dirt, grass, and sticks. Mat shall be placed flat on surface for proper soil contact.

EROSION CONTROL BLANKET

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

THE CITY OF NOBLESVILLE EST. 1823

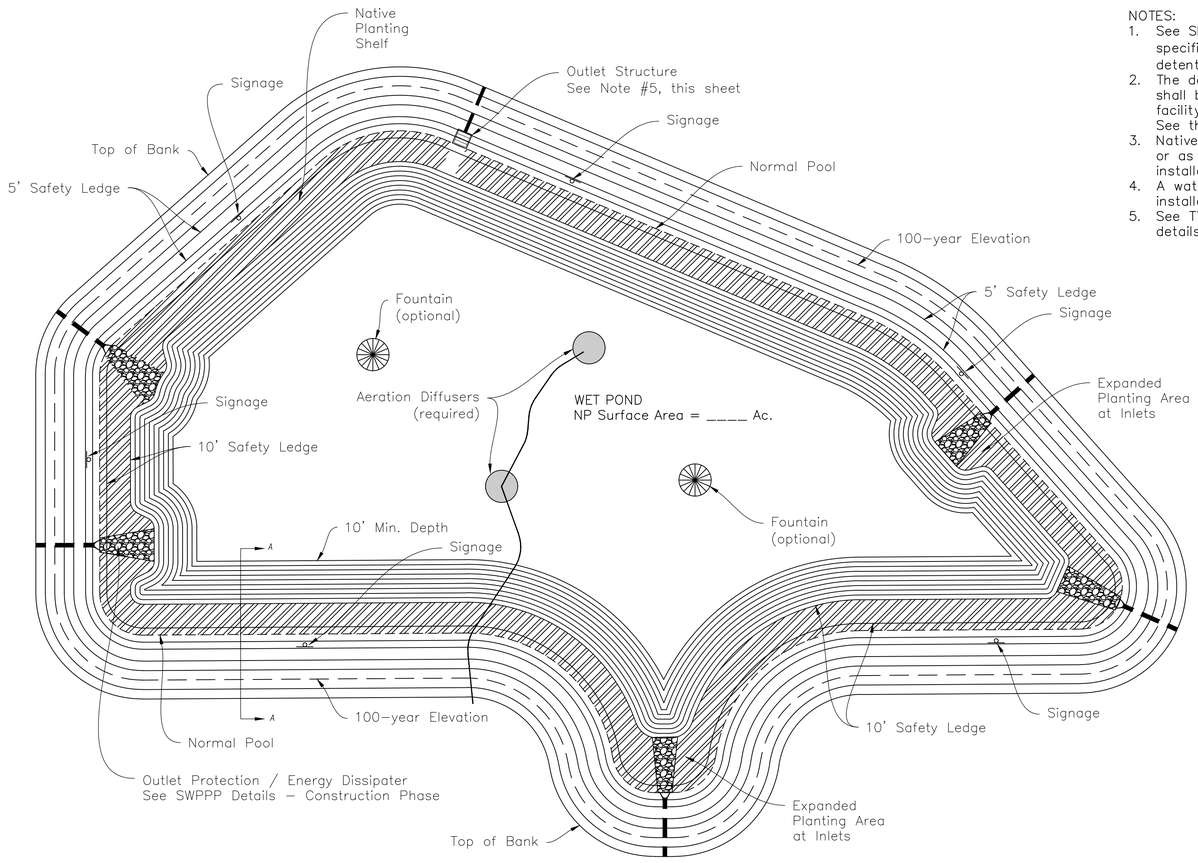
ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

SWPPP Details

SHEET 28 OF 29

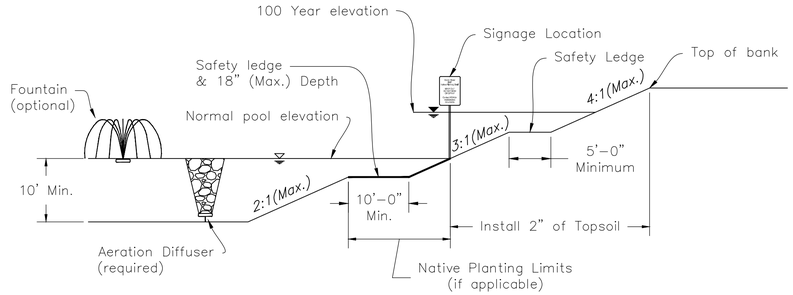


TYPICAL WET POND – STORMWATER BMP

NOT TO SCALE

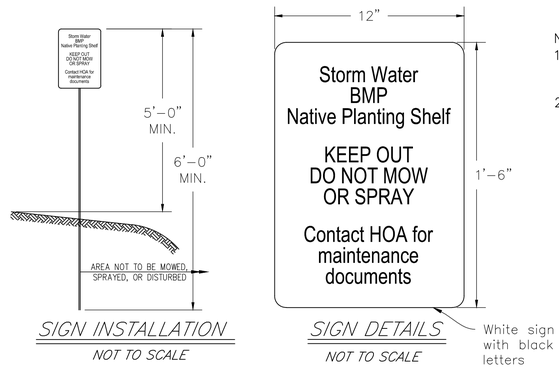
NOTES:

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

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

THE CITY OF NOBLESVILLE EST. 1823

ALISON M. KRUPSKI REGISTERED NO. 11100334 STATE OF INDIANA PROFESSIONAL ENGINEER

Alison M. Krupski 7/8/2021

CITY OF NOBLESVILLE

Stormwater BMP – Pond Details

SHEET 29 OF 29

Noblesville Plan Commission
Noblesville, Indiana

To the Noblesville City Council:

This is to certify that the Plan Commission of Noblesville, Indiana held a public hearing on the ***15th day of July, 2024*** *for a preliminary development plan and ordinance, a part of the Comprehensive Master Plan, and after due consideration, recommends that the City of Noblesville* ADOPT *said amendment.*

Request: **Application No. 0109-2024** Text Amendments to the Promenade Planned Development relating to landscaping (perimeter, parking lot, building base, trash receptacle enclosure), parking space number requirements and setbacks, driveway location, architectural roof line vertical distance for Lots 10, 12, 13 in the Promenade Commercial. Submitted by Meijer, Inc. (Kurt Adams, Rep) *Staff Reviewer – Amy Steffens*

Plan Commission Action: 6 ***Ayes*** 0 ***Nays*** 0 ***Abstentions***

Petition is forwarded with a FAVORABLE *recommendation*

Respectfully submitted,
Noblesville Plan Commission

By: Gretchen A. Hanes

Gretchen A. Hanes *President*

Caleb P. Gutshall

Caleb P. Gutshall *Secretary*