

ADDENDUM No. 1
Central Avenue Stormwater Improvements
CITY OF LAKE STATION
PROJECT NUMBER: 2022.00047

OCTOBER 14, 2025

CITY OF LAKE STATION
1969 CENTRAL AVE.
LAKE STATION, IN
46405

PREPARED BY:

AMERICAN STRUCTUREPOINT, INC.
116 E. BERRY STREET, SUITE 1515
FORT WAYNE, IN 46802

This Addendum forms part of the Contract Documents and modifies the original Bidding Documents as noted below. Acknowledge receipt of the Addendum in the space provided in the Acknowledgement Form (Attachment 4). Failure to do so may subject Bidder to disqualification.

REVISIONS TO PROJECT MANUAL:

1. Replace Bid Sheets with **Attachment 1** (Bid Sheet-1R thru Bid Sheet-2R, Attachment 1)
2. Replace Technical Specifications as noted below with **Attachment 2** (Technical Specifications, Revised Per Addendum 1).
 - 33 31 00 Sanitary Sewer Piping Installation: 1.2 Measurement and Payment Revised
 - 33 39 13 Sanitary Utility Sewerage Manholes: 1.2 Measurement and Payment Revised
 - 33 41 00 Storm Utility Piping Installation: 1.2 Measurement and Payment Revised

REVISIONS TO PLANS (Attachment 3)

1. Replace sheet C-110 thru C-112 with revised sheets noting all 30" to 36" pipe material shall be either RCP or PVC.
2. Replace sheets C-122 with revised sheet C-122 noting all 30" to 36" pipe material shall be either RCP or PVC.
3. Replace sheet C-125 with revised sheet C-125 noting stone to be used under manholes.
4. Replace sheet C-127 with revised sheet C-127 noting the updated pipe bedding and backfill detail.
5. Replace sheet C-201 thru C-203 with revised sheets noting the revised aggregate subbase in the typical sections.
6. Replace sheet C-204 with revised sheet C-204 noting the removal of the gas relocation.

7. Replace sheets C-229 thru C-233 with revised sheets noting the additional information on compacted aggregate and the new milling and resurfacing detail.

QUESTIONS AND ANSWERS:

Note to Bidder: Line Item names and numbers have been revised. Please refer to the revised bid sheet in attachment 1

1. **Question:** Can you confirm if the piano key crosswalk is thermoplastic or multi component.
Answer: Either alternative is acceptable.
2. **Question:** Please add a bid item for “Pavement Removal” in Phase 1.
Answer: There is no pavement removal in Phase 1 because all pavement removal in this phase shall fall within the trenching limits.
3. **Question:** Please add a bid item for “Roadway Excavation” in Phase 1 & 2.
Answer: No. The “Pavement Removal” pay item shall include all costs associate with pavement removal and roadway excavation outside of the trench required for full road restoration.
4. **Question:** Please add a bid item for “Compacted Aggregate (#53) (Road Subbase)” in Phase 1.
Answer: The pay item has been revised to “Compacted Aggregate (#53)” and has been added to phase 1. Compacted Aggregate (#53) is to be used under sidewalks, ADA Curb Ramps, Concrete Drives, as the road subbase and elsewhere as noted in the construction plans.
5. **Question:** Please provide a pay item description for the “Compacted Aggregate (#53) (Road Subbase)”
Answer: The Compacted Aggregate (#53) pay item is to be used as the compacted aggregate subbase required for the full road restoration. Full road restoration is to take place along Vermillion Street, Vanderburg Street, and Wayne Street as noted in the construction plans. Additionally, Compacted Aggregate (#53) is to be used under sidewalks, ADA Curb Ramps, Concrete Drives, and as noted in the construction plans.
6. **Question:** Please add a bid item for “Imported Borrow” in Phase 1 & 2.
Answer: A bid item for “Imported Borrow” will not be added. Native fill is to be used when appropriate for this project.
7. **Question:** Please add a bid item for “Depressed Curb” for the Combined Curb & Gutter.
Answer: Use the existing pay items. See sheet 229 of the construction plans for the curb transition detail.
8. **Question:** For Phase 2 Bid Item “Pavement Removal” – Please confirm this quantity. Also provide a description of how this is measured, is it only over the trench line, outside trench line, ect.
Answer: See the revised bid tab in Attachment 1 for the “Pavement Removal” quantity. The “Pavement Removal” pay item shall include all costs associate with

pavement removal and roadway excavation outside of the pipe trench that is required for full road restoration (Vermillion Street, Vanderburg Street, Wayne Street). Any pavement removal required for trenching activities is to be paid for within the cost of the pipe.

9. **Question:** Please confirm what permits the contractor will be required “if any” to obtain & pay for, and a contact information.

Answer: The Construction Stormwater General permit, IDEM 401 permit, and Army Corps permit have been submitted by the Engineer and are waiting approval. Please note that the Army Corps permit will be contingent on the Government reopening. Contractors will be required to obtain Road Cut permits and any other permits required by the City. The cost of any City permits will be waived.

10. **Question:** Is CAD linework available for this project? Could this be provided to aid with quantities and takeoff.

Answer: No CAD linework will be provided for bidding purposes.

11. **Question:** Please confirm if a Union affiliated letter is required at the time of bid submittal as mentioned at the pre-bid meeting. If so, please provide where this information can be located in the contract documents.

Answer: Contractors must submit documentation confirming participation in a state-approved employee drug testing program. This requirement may be satisfied by a letter from a union stating that the Contractor is under agreement with the union, and that the union’s contract includes compliance with a state-approved drug testing program. If the Contractor cannot provide such a union letter, the Contractor must submit independent documentation verifying that a compliant program is in place. Failure to provide this documentation will render the bid nonresponsive under IC 36-1-12-24. If the Contractor has submitted the required documentation to the City within the past 12 months, resubmission is not required.

12. **Question:** Would you be able to review the proposed trench backfill quantities, specifically for phase 2? The depths of the pipe and the proposed pipe size do not appear to be enough for the quantity listed in the proposed bid.

Answer: Please refer to the updated bid sheet in attachment 1. Note that all aggregate for bedding 12” above the pipe is included in the cost of the pipe.

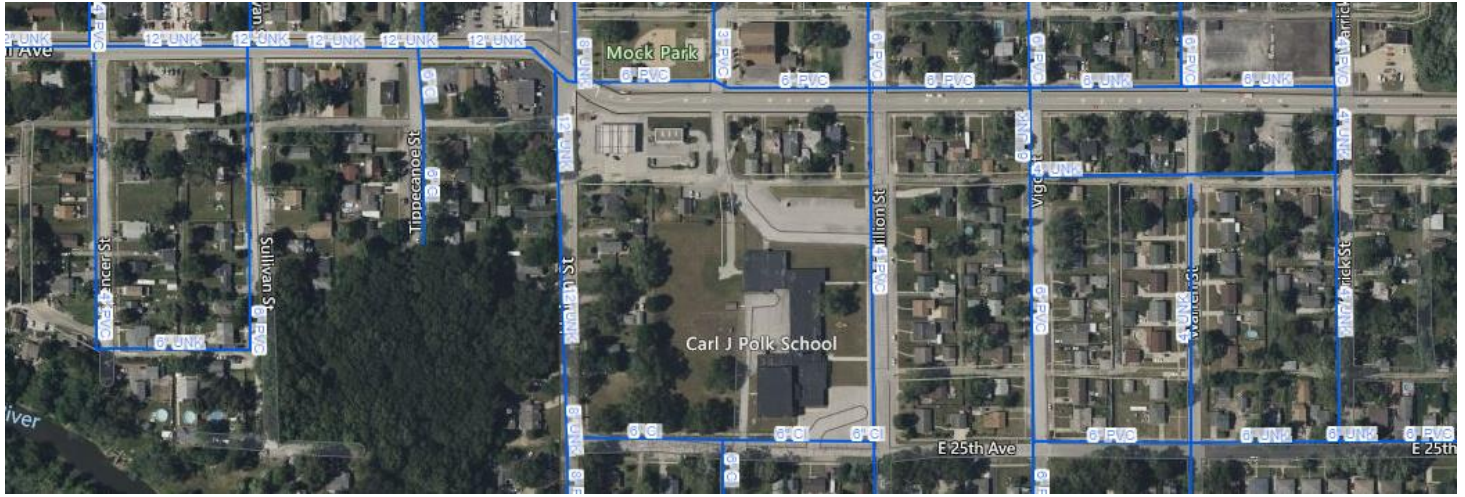
13. **Question:** Can you please confirm if the bid should be received at the public notice address of 4325 Liverpool Road in Lake Station, or the address provided on the Bid form 1969 Central Avenue, Lake Station?

Answer: All bids will be delivered to 4325 Liverpool Road in Lake Station. However, bid forms can be hand delivered to Amy Byers at 1969 Central Avenue, Lake Station.

14. **Question:** Instructions state the bid must be given in numbers and words, but there is no place where that should be documented. The itemized bid for the project has small wording that is badly pixelated and cannot make out what it says. Also says the document is fillable, it is not.

Answer: A space for written numbers has been added to the bid sheet. A fillable excel sheet will be provided with Addenda 01 where the footnotes will be legible.

15. **Question:** The checklist item 2 states to identify and tab Section 00 41 00 but I do not see that in the package.
Answer: Section 00 41 00 refers to the Bid Form C-410 which is already included in the contract documents.
16. **Question:** Item 37 already shows Addenda 1 but there has not been any, please advise.
Answer: The first Addenda will be delivered to the contractors today (10/14/2025). No other Addenda have been issues previously. A addenda acknowledgement form will be emailed to each Contractor to be signed and returned to the Engineer.
17. **Question:** The bid documents state we are to provide copies of our safety manual, our manual is 200+ pages, would a digital copy suffice?
Answer: Yes, a digital copy would suffice.
18. **Question:** Is ACBF (INDOT Approved) Slag acceptable for stone bedding, trench backfill, and any other road/curb/walks subbase?
Answer: Yes, slag may be used but shall be clean, contain no more than 10% passing the No. 200 sieve, and be otherwise suitably graded. Slag shall not be placed within 100' from the outfall to Deep River and shall not be used within 2' of the ground water table.
19. **Question:** Please review the bid quantity for Phase 1, 30" pipe & 24" pipe.
Answer: Quantities have been updated. Please refer to the revised bid sheet in attachment 1.
20. **Question:** A plan note states to fill all existing sewers with flowable fill unless otherwise noted, can you confirm all pipe will be removed and not filled with flowable fill? If we are to fill any pipes with flowable fill, are you able to add a pay item either in CYS or per LFT per pipe size to fill?
Answer: All existing sewers pipes are to be removed as noted in the construction drawings. It is not anticipated that any flowable fill will be needed.
21. **Question:** The specs state for pipe removal to include surface patching and backfill, however, there are pay items for HMA patching and structural backfill, can you confirm that we will utilize hardscape and structural backfill pay items for area's where pipe is to be removed and then patched over and not to include in this lineal foot pricing for pipe removal?
Answer: Utilize hardscape (surface patching) and structural backfill pay items for pipe removal. Note that any pavement removal required to remove the pipe is to be paid for within the cost of pipe removal.
22. **Question:** Are you able to add a pay item for any required stone under curbs/pavement/sidewalk in phase 1.
Answer: Yes, please refer to revised bid sheet in attachment 1.
23. **Question:** Can you confirm that the 3/EA water main relocations are all 6" WM lines?
Answer: According to preliminary utility coordination with Indiana American Water, the water main traveling north/south on Vermillion Street is 4" PVC, and the WM traveling east/west on 25th Avenue is 6" CI. Verification of the actual material and sizes in the field are the responsibility of the Contractor.



24. **Question:** Are there any planned, scheduled, or in-progress utility relocations? If so can you provide work plans?

Answer: No work plans have been obtained. A gas relocation will need to be coordinated with NIPSCO on Vermillion Street.

25. **Question:** Has the City/Engineer submitted the CSGP or Rule 5 Permit.

Answer: The CSGP has been submitted and is awaiting approval.

26. **Question:** Will the 4" of #53 aggregate base required under the sidewalk/curb be paid separately?

Answer: Yes, it will be paid for using the Compacted Aggregate #53 pay item. 2" of aggregate will be required for sidewalk/curb.

27. **Question:** Will the excavation for the required 4" of #53 aggregate base under the sidewalk/curb be paid separately?

Answer: No, it will be included within the existing pay items.

28. **Question:** Will the excavation and backfill for unsuitable under sidewalk/curb be paid separately?

Answer: No, it will be included within the existing pay items.

29. **Question:** Contract section 13.03B states that the Owner shall hire independent testing. Spec sections 03 00 05 1.5B, 31 23 17 1.3A and 32 12 16 3.14A contain language for testing / inspection reports must be provided. Is this the responsibility of the Owners independent tester? Is this in addition to that? Is the contractor required to use an independent testing agency?

Answer: Contractor is not responsible for hiring an independent testing agency. Independent testing will only be required if requested by the owner. All testing is to be completed by the Contractor. Inspection reports will be provided by the onsite inspector and coordinated with the Contractor.

30. **Question:** C-203 states that the depth of the milling may be greater to achieve 2% slope on Central Ave: Will the engineer provide curb elevations for the work on Central Avenue?

Answer: No

31. **Question:** C-203 states that the depth of the milling may be greater to achieve 2% slope on Central Ave: Will the Engineer provide revised elevations based on actual road elevations?

Answer: Revised elevations will be provided by the Engineer as required.

32. **Question:** C-203 states that the depth of the milling may be greater to achieve 2% slope on Central Ave: Will this additional depth be paid separately?

Answer: Yes, if approved by the Owner and Engineer, then it will be paid for separately.

33. **Question:** What is the required detour route for the work on Vermillion, Central, & Wayne.

Answer: No detour routes will be required for this project. One lane is to be open at all times for Central Avenue. Wayne Street and Vermillion Street are residential roads.

34. **Question:** Is the pavement removal item intended to pay for the removal of the existing asphalt pavement and stone in order to place the full pavement section?

Answer: Yes

OTHER:

1. Acknowledgement of Addendum (**Attachment 4**)
2. Pre-Bid Sign in sheet (**Attachment 5**)
3. Notice to Proceed is expected within the first part of December.

END OF ADDENDUM NO. 1

CERTIFIED BY:



Bryan Hood

Registered Engineer No. PE11500233
State of Indiana

ATTACHMENT 1
REVISED BID SHEET



**CENTRAL AVENUE STORM WATER IMPROVEMENTS
BID SHEET
ADDENDUM 01**

NOTE - Bidder shall complete the following Bid Schedule

Bidder will complete the Work in accordance with the Contract Documents for the following unit price(s):

Item No.	Spec Section	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
Phase 1						
1	01 11 21	MOBILIZATION AND DEMOBILIZATION (5%)	1	L.S.		
2	01 11 21	CONSTRUCTION CONTINGENCY	1	AL	\$20,000	\$20,000
3	01 55 26	MAINTENANCE AND PROTECTION OF TRAFFIC	1	L.S.		
4	01 71 16	VIDEO DOCUMENTATION OF CONDITIONS	1	L.S.		
5	01 57 13	TEMPORARY EROSION AND SEDIMENTATION CONTROL	1	L.S.		
6	31 11 00	CLEARING AND GRUBBING	1	L.S.		
7	32 92 19	FINAL GRADING AND SITE RESTORATION	1	L.S.		
8	31 23 17	SPECIAL BACKFILL, COMPACTED AGGREGATE (#8)	5,000	C.Y.		
9	31 23 17	COMPACTED AGGREGATE (#53)	14	C.Y.		
10	32 92 19	SEEDING & 4" OF TOPSOIL	1,115	S.Y.		
11	32 92 19	SODDING & 4" OF TOPSOIL	471	S.Y.		
12	32 12 16	MILLING AND ASPHALT OVERLAY, 1.5"	1,653	S.Y.		
13	32 12 16	FULL DEPTH HMA (PAVEMENT, PARKING, ALLEY)	2,216	S.Y.		
14	33 49 13	PRECAST CONCRETE HEADWALL OUTFALL	1	EA		
15	32 16 00	ADA CURB RAMP, ALL TYPES	238	S.F.		
16	32 16 00	CONCRETE SIDEWALK, REMOVE	992	S.F.		
17	32 16 00	CONCRETE SIDEWALK	992	S.F.		
18	32 16 00	CURB, CONCRETE	55	L.F.		
19	32 16 00	CURB AND GUTTER, CONCRETE	151	L.F.		
20	32 16 00	ROLLED CURB, CONCRETE	170	L.F.		
21	32 16 00	ROLLED CURB, CONCRETE DEPRESSED	154	L.F.		
22	01 11 21	GUARDRAIL, REMOVAL	27	L.F.		
23	33 05 34	36" RCP STORM SEWER (TO OUTFALL AT DEEP RIVER)	299	L.F.		
24	33 05 37	36" PVC OR RCP, STORM SEWER	646	L.F.		
25	33 05 37	30" PVC OR RCP, STORM SEWER	668	L.F.		
26	33 05 37	12" PVC, SDR 35, STORM SEWER	107	L.F.		
27	33 05 37	15" RCP STORM SEWER	8	L.F.		
28	33 05 37	18" PVC, SDR 35, SANITARY SEWER	804	L.F.		
29	33 05 37	8" PVC, SDR 35, SANITARY SEWER	31	L.F.		
30	33 49 13	84" STORMWATER MANHOLE	1	EA		
31	33 49 13	72" STORM MANHOLE	3	EA		
32	33 49 13	60" STORM MANHOLE	6	EA		
33	33 49 13	48" STORM MANHOLE	2	EA		
34	33 49 13	48" SANITARY MANHOLE	3	EA		
35	33 49 13	REMOVE EXISTING MANHOLES / INLETS	8	EA		
36	33 49 13	REMOVE EXISTING PIPES (ALL SIZES)	2,555	LF		
37	33 49 13	INLET STRUCTURES	8	EA		
38	33 49 13	CONNECT EXISTING PIPING TO NEW STORM STRUCTURES	10	EA		
39	33 49 13	CONNECT TO EXISTING SANITARY MANHOLES	3	EA		
40	33 31 00	CUT AND PLUG EXISTING PIPES	2	EA		
41	33 49 13	DRAIN TILE REPAIR (ASSUMED QUANTITY)	5	EA		
42	01 11 21	RELOCATION OF SHED AND OTHER ITEM WITHIN CONSTRUCTION LIMITS	1	AL	\$10,000	\$10,000
ESTIMATED TOTAL PHASE 1 CONSTRUCTION COSTS						

Phase 2						
1	01 11 21	MOBILIZATION AND DEMOBILIZATION (5%)	1	L.S.		
2	01 11 21	CONSTRUCTION CONTINGENCY	1	AL	\$30,000	\$30,000
3	01 55 26	MAINTENANCE AND PROTECTION OF TRAFFIC	1	L.S.		
4	01 71 16	VIDEO DOCUMENTATION OF CONDITIONS	1	L.S.		
5	01 57 13	TEMPORARY EROSION AND SEDIMENTATION CONTROL	1	L.S.		
6	31 11 00	CLEARING AND GRUBBING	1	L.S.		
7	32 92 19	SITE RESTORATION	1	L.S.		
8	32 12 16	PAVEMENT REMOVAL	5,300	S.Y.		
9	31 23 17	SPECIAL BACKFILL, COMPACTED AGGREGATE (#8)	4,000	C.Y.		
10	31 23 17	COMPACTED AGGREGATE (#53)	1,713	C.Y.		
11	32 92 19	SODDING & 4" OF TOPSOIL	2,423	S.Y.		
12	31 23 17	RIVER ROCK (#2)	6	C.Y.		
13	32 12 16	MILLING AND ASPHALT OVERLAY, 1.5"	4,355	S.Y.		
14	32 12 16	FULL DEPTH HMA (PAVEMENT, PARKING, ALLEY)	6,593	S.Y.		
15	32 16 00	ADA CURB RAMP, ALL TYPES	874	S.F.		
16	32 16 00	CONCRETE SIDEWALK REMOVAL	11,464	S.F.		
17	32 16 00	CONCRETE SIDEWALK	11,464	S.F.		
18	32 16 00	DRIVE, CONCRETE	349	S.Y.		
19	32 16 00	CURB, CONCRETE	51	L.F.		
20	32 16 00	CURB AND GUTTER, CONCRETE	3,068	L.F.		
21	32 16 00	CURB AND GUTTER, CONCRETE DEPRESSED	329	L.F.		
22	32 16 00	CURB BACK, CONCRETE (RETAINING WALL)	170	L.F.		
23	01 11 21	GUARD RAIL	218	L.F.		
24	33 05 37	24" PVC, PS 46, STORM SEWER	2,038	L.F.		
25	33 05 34	18" RCP STORM SEWER	20	L.F.		
26	33 05 37	15" PVC, SDR 35, STORM SEWER	31	L.F.		
27	33 05 37	12" PVC, SDR 35, STORM SEWER	1,378	L.F.		
28	33 05 34	12" RCP, STORM SEWER	10	L.F.		
29	33 49 13	60" STORM MANHOLE	2	EA		
30	33 49 13	48" STORM MANHOLE	11	EA		
31	33 39 13	REMOVE EXISTING MANHOLES / INLETS	9	EA		
32	33 49 13	REMOVE EXISTING PIPES (ALL SIZES)	677	LF		
33	01 11 21	REMOVE EXISTING UTILITY POLE	2	EA		
34	33 49 13	INLET STRUCTURES	35	EA		
35	33 49 13	CONNECT EXISTING PIPING TO NEW STORM STRUCTURES	2	EA		
36	33 31 00	CUT AND PLUG EXISTING PIPES	4	EA		
37	33 11 00	WATER MAIN RELOCATION	3	EA		
38	33 49 13	DRAIN TILE REPAIR (ASSUMED QUANTITY)	5	EA		
39	32 12 16	TRANSVERSE MARKING THERMOPLASTIC, STOP LINE, WHITE 24"	103	L.F.		
40	32 12 16	LINE, THERMOPLASTIC, SOLID, YELLOW, 4"	1,607	L.F.		
41	32 12 16	LINE, THERMOPLASTIC, SOLID, WHITE, 4"	479	L.F.		
42	32 12 16	LINE, MULTI-COMPONENT, SOLID, WHITE 4"	1,818	L.F.		
43	32 12 16	LINE, MULTI-COMPONENT, SOLID, WHITE 6"	1,371	L.F.		
44	32 12 16	CROSSWALK, PIANO KEY, 24"	230	L.F.		
45	32 12 16	STREET SIGNAGE	21	EA		
46	32 92 19	CANOPY TREE	24	EA		
47	32 92 19	ORNAMENTAL TREE	19	EA		
ESTIMATED TOTAL PHASE 2 CONSTRUCTION COSTS						
TOTAL PHASE 1 CONSTRUCTION COSTS BID						
TOTAL PHASE 2 CONSTRUCTION COSTS BID						
TOTAL PHASES 1 AND 2 CONSTRUCTION COSTS BID						

Unit Prices have been computed in accordance with the General Conditions

Bidder acknowledges that estimated quantities are not guaranteed and are solely for the purposes for comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities provided, determined as provided in the Contract Documents

A. Total of Phase 1 Construction Cost (in words):		(In figures)
		\$
B. Total of Phase 2 Construction Cost (in words):		(In figures)
		\$
C. Total of Phase 1 and Phase 2 Construction Cost (in words):		(In figures)
		\$

ATTACHMENT 2
REVISED SPECIFICATIONS

SECTION 33 31 00

SANITARY SEWER PIPING INSTALLATION

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all buried piping, and special items. The Work includes the following:
 - a. All types and sizes of buried sanitary sewer piping, except where buried piping installations are specified under other Sections.
 - b. Unless otherwise shown or specified, this Section includes all buried sanitary sewer piping Work required, beginning at the outside face of structures or structure foundations.
 - c. Work on or affecting existing buried piping.
 - d. Installation of all jointing and gasket materials, special items, flexible couplings, mechanical couplings, and other Work required.
 - e. Supports.
 - f. Pipe encasements, with the exception of piping embedded in concrete within a structure or foundation.
 - g. Field quality control, including testing.
 - h. Cleaning.
 - i. Incorporation of special items shown or specified into piping systems in accordance with the Contract Documents and as required.

B. Coordination:

1. Review installation procedures under this and other sections and coordinate installation of items to be installed with or before buried sanitary sewer piping Work.
2. Coordinate with appropriate piping materials sections of Division 33.

C. Related Sections:

1. Section 31 00 05, Trenching and Earthwork
2. Section 33 39 13, Sanitary Utility Sewerage Manholes

1.2 MEASUREMENT AND PAYMENT

A. **Pipe Installation:**

1. Pipe installation shall include the furnishing and installation complete in place, all labor, materials and equipment necessary for the construction of each pipe material and size.
2. The bid price shall include, but will not be limited to, all cost for the pipe of the required sizes, joint materials, installation of pipe, bedding materials up to 12" above the pipe, excavation, dewatering, removal and disposal of excavated materials, sheeting, shoring, protection of existing structures, testing, cleanup, and all other operations necessary to complete the work as shown on the plans or specified.

B. Pipe Cut and Plug (Bulkheads)

1. The payment quantity shall be the number of cut and plugs actually completed and installed.
2. Payment under this item shall be on a unit price basis regardless of plug/cap size.
3. This price shall include all cost associated with: removal of surface improvements, excavation, disposal of excavated material, temporary sheeting, shoring, or bracing; dewatering, furnishing and placing Class A concrete for the bulkhead.; furnishing, placing and compacting required backfill; and placing required surfacing.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:

1. ASTM International.
 - a. ASTM D2321, Practice for Underground Installation of Thermoplastic Pipe for Sewers and other Gravity-Flow Applications.
 - b. ASTM D2774, Practice for Underground Installation of Thermoplastic Pressure Piping.
 - c. ASTM D3262, Fiberglass (Glass-Fiber-Reinforced Thermosetting-Resin) Sewer Pipe.
 - d. ASTM F2164, Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure.
2. American Water Works Association.
 - a. ANSI/AWWA C600, Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - b. ANSI/AWWA C605, Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
 - c. AWWA M23, PVC Pipe - Design and Installation.
 - d. AWWA M45, Fiberglass Pipe Design.
3. American Society of Civil Engineers/Structural Engineering Institute
 - a. ASCE 37, Design and Construction of Sanitary and Storm Sewers.
4. Indiana Administrative Code, Title 327 Water Pollution Control Board
 - a. Indiana Administrative Code-327 IAC 3-6-12.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements and recommendations of authorities having jurisdiction over the Work, including.
 - a. 327-IAC , Water Pollution Control Board
 - b. Indiana Department of Environmental Management
2. Obtain required permits for Work beneath roads, in rights-of-way, beneath railroads, and in other areas of the Work, as required by Authorities Having Jurisdiction listed above.

1.5 SUBMITTALS

A. Informational Submittals: Submit the following:

1. Field Quality Control Submittals:
 - a. Results of each specified field quality control test.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Material delivery, storage and handling must conform to requirements in Contract Documents. Refer to Section 01 65 00 Product Delivery Requirements and Section 01 66 00 Product Storage and Handling Requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Piping materials are shown on the Drawings.
- B. Piping materials shall conform to Specifications for each type of pipe and piping appurtenances in applicable sections of Division 33.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Install piping as shown, specified, and as recommended by pipe and fittings manufacturer.
 - 2. In the event of a conflict between manufacturer's recommendations and the Contract Documents, request interpretation from Engineer before proceeding.
 - 3. Engineer will observe excavations and bedding prior to Contractor laying pipe. Notify Engineer in advance of excavating, bedding, pipe laying, and backfilling operations.
 - 4. Minimum cover over buried piping shall be 4 feet, unless otherwise shown or approved by Engineer.
 - 5. Earthwork is specified in Section 31 00 05 Trenching and Earthwork.
 - 6. The width of trenches shall be such as to provide a clearance of not less than 6 inches or not more than 15 inches on each side of the pipe. All pavements shall be cut with an abrasive saw. Concrete driveways, walks, alleys, etc., shall be cut to the nearest joint unless approved by Engineer.
 - 7. Excavation in excess of that required or shown, and that is not authorized by Engineer shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 31 00 05, Trenching and Earthwork.
- B. Separation of Sewers and Potable Water Piping:
 - 1. Horizontal Separation:
 - a. Where possible, proposed sanitary sewers shall be separated from existing potable water mains and service lines horizontally by a clear distance of at least 10 feet, measured edge to edge.

- b. If local conditions preclude the specified clear horizontal separation, installation will be allowed if potable water main is in a separate trench or on an undistributed earth shelf on one side of sewer and with bottom of potable water main at least 18 inches above the crown of the sewer.
 - c. Exceptions:
 - 1) Where it is not possible to provide minimum horizontal separation, construct sewer pipe of pressure pipe complying with public water supply design standards of authority having jurisdiction. Hydrostatically test newly installed pressure piping to a minimum of 125 psi, meeting the testing requirements in Field Quality Control of this specification.
 - 2) Sewer in water grade pipe shall extend from manhole to manhole.
- 2. Vertical Separation:
 - a. Provide minimum vertical distance of 18 inches between outside of potable water main and outside of sewer when sewer crosses above or below potable water main.
 - b. Center a section of potable water main pipe at least 17.5 feet long over sewer so that sewer joints are equidistant from potable water main joints.
 - c. Provide adequate structural support where potable water main crosses above or below sewer. At minimum, provide compacted select backfill for 10 feet on each side of crossing.
 - d. This deviation may allow installation of the sewer closer to the water main, provided that the water is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at horizontal separation of at least ten feet measured edge to edge.
 - e. Exception:
 - 1) Where it is not possible to provide minimum horizontal separation described above, construct sewer pipe of pressure pipe complying with public water supply design standards of authority having jurisdiction. Hydrostatically test newly installed pressure piping to a minimum of 125 psi, meeting the testing requirements in Field Quality Control of this specification.
 - 2) Sewer in water grade pipe shall extend from manhole to manhole.
- C. Separation of Sewer Mains and Potable Water Structures:
 - 1. Maintain a 50 feet minimum distance from water supply wells or other water supply sources and structures.
- D. Plugs (Bulkheads):
 - 1. Temporarily plug installed pipe at end of each day of Work or other interruption of pipe installation to prevent entry of animals, liquids, persons, and deleterious materials into pipe.
 - 2. Install standard plugs in bells at dead ends, tees, and crosses. Cap spigot and plain ends.
 - 3. Fully secure and block plugs, caps, and bulkheads installed for testing to withstand specified test pressure.
 - 4. Where plugging is required for phasing of the Work, abandonment of existing utilities, or subsequent connection of piping, install watertight, permanent type plugs, caps, or bulkhead acceptable to Engineer.
- E. Bedding Pipe: Bed pipe as specified and in accordance with details on the Drawings:

1. Trench excavation and backfill, and bedding materials shall conform to the Contract Documents.
2. Where over excavation is required by Engineer, due to unsuitable soil in trench or excavation subgrade, remove and replace unsuitable material with approved granular material furnished, placed, and compacted in accordance with the Contract Documents. Payment for removal and replacement of unsuitable soils will be made under the unit price payment items in the Contract Documents.
3. Bedding installation and materials shall be in accordance with the Drawings and as specified in Section 31 00 05 Trenching and Earthwork.
4. Excavate trenches below bottom of pipe by amount shown and indicated in the Contract Documents. Remove loose and unsuitable material from bottom of trench.
5. Do not bring pipe into position until preceding length of pipe has been bedded and secured in its final position.

F. Alignment:

1. Install pipe accurately to line and grade shown and indicated in the Contract Documents, unless otherwise approved by Engineer.
2. Slope piping uniformly as shown on the Drawings.
3. Maintain reference line and grade with laser equipment daily for adjustment and accuracy. Correct deficiencies in equipment, reference line and reference grade. Take precautions to prevent deflections in reference line and grade.
4. Contractor shall verify every other section of installed sewer pipe for compliance with design slope. In the event that the as-built slope exceeds the indicated deviation, notify Engineer in writing. Removal and replacement of pipe as directed by the Engineer shall be at no additional cost to the Owner.

G. Laying Pipe:

1. Conform to manufacturer's instructions and requirements of standards and manuals listed below, as applicable:
 - a. Thermoplastic Pipe: ASTM D2321, ASTM D2774, ANSI/AWWA C605, AWWA M23, AWWA M45, AWWA, M55.
 - b. Sanitary and Storm Sewers: ASCE 37.
2. Do not lay pipe in water. Maintain dry trench conditions until jointing and backfilling are complete. Keep clean and protect interiors of pipe, fittings, valves, and appurtenances.
3. Start laying pipe at lowest point and proceed towards higher elevations, unless otherwise approved by Engineer.
4. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by Engineer.
5. Excavate around joints in bedding and lay pipe so that pipe barrel bears uniformly on trench bottom.
6. For push-on jointed pipe, do not push past the manufacturer's specified home position.
7. Deflections at joints shall not exceed 50 percent of amount allowed by pipe manufacturer, unless otherwise approved by Engineer.
8. Carefully examine pipe, fittings, and specials for cracks, damage, and other defects while suspended above trench before installation. Immediately remove defective materials from the Site and replace with acceptable products.
9. Inspect interior of all pipe, fittings, and specials and completely remove all dirt, gravel, sand, debris, and other foreign material from pipe interior and joint recesses before pipe

and appurtenances are moved into excavation. Bell and spigot-type mating surfaces shall be clean and dry immediately before pipe is laid.

10. Field cut pipe, where required, with machine specially designed for cutting the type of pipe being installed. Make cuts carefully, without damage to pipe, coating or lining, and with smooth end at right angles to axis of pipe. Cut ends on push-on joint type pipe shall be tapered, and sharp edges shall be filed off smooth. Do not flame-cut pipe.
11. Do not place blocking under pipe, unless specifically approved by Engineer for special conditions.
12. Touch up protective coatings in manner satisfactory to Engineer prior to backfilling.
13. Notify Engineer in advance of backfilling operations.
14. On steep slopes, take measures acceptable to Engineer to prevent movement of pipe during installation.
15. Exercise care to avoid flotation when installing pipe in cast-in-place concrete, and in locations with high groundwater.

H. Jointing Pipe:

1. Thermoplastic Pipe Joints:
 - a. Bell and Spigot Joints:
 - 1) Bevel pipe ends, remove all burrs, and provide a reference mark at correct distance from pipe end before making joints.
 - 2) Clean spigot end and bell thoroughly before making the joint. Insert O-ring gasket while ensuring that gasket is properly oriented. Lubricate spigot with manufacturer's recommended lubricant. Do not lubricate bell and O-ring. Insert spigot end of pipe carefully into bell until reference mark on spigot is flush with bell.
 2. Mechanical Coupling Joints:
 - a. Mechanical couplings include: sleeve-type flexible couplings, split flexible couplings, ANSI/AWWA C606 grooved or shouldered end couplings, plasticized PVC couplings, and other mechanical couplings specified.
 - b. Prior to installing and assembling mechanical couplings, thoroughly clean joint ends with wire brush to remove foreign matter.
 - c. For mechanical couplings that incorporate gaskets, after cleaning apply manufacture's recommended lubricant to rubber gasket or inside of coupling housing and to joint ends. After lubrication, install gasket around joint end of previously installed piece and mate joint end of subsequent piece to installed piece. Position gasket and place coupling housing around gasket and over grooved or shouldered joint ends. Insert bolts and install nuts tightly by hand. Tighten bolts uniformly to produce an equal pressure on all parts of housing. When housing clamps meet metal to metal, joint is complete and further tightening is not required.
 - d. For plasticized PVC couplings, loosen the stainless steel clamping bands and remove clamps from coupling. Slide coupling over plain ends of pipes to be joined without using manufacture's recommended lubricants. Place clamps over each end of coupling at grooved section and tighten with torque wrench to torque recommended by manufacturer.

I. Backfilling:

1. Conform to applicable requirements of the Contract Documents. Refer to Section 31 00 05, Trenching and Earthwork.

2. Place backfill as Work progresses. Backfill by hand and use power tampers until pipe is covered with at least one foot of backfill.
- J. Transitions from One Type of Pipe to Another:
1. Provide necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.
- K. Closures:
1. Provide closure pieces shown or required to complete the Work.
- L. Service Connections:
1. Provide service connections in accordance with the requirements of the Contract Drawings.
 2. The trench shall be fully backfilled in accordance with this specification and the Contract Drawings.
- M. Concrete Cradle and Encasement:
1. Where subgrade conditions, in the opinion of the Engineer, warrant extra precautions for the bedding or encasement of pipe, the Engineer may order the construction of a concrete cradle and/or encasement to be installed in conformance with the size and dimensions indicated on the plans. All concrete used in the concrete cradle shall be in accordance with Section 03 00 05, Concrete.

3.2 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Underground Facilities:
1. Locations of existing underground facilities shown on the Drawings should be considered approximate.
 2. Determine the true location of existing underground facilities to which connections are to be made, crossed, and that could be disturbed, and determine location of underground facilities that could be disturbed prior to beginning of excavation and backfilling operations, or that may be affected by the Work.
- B. Taking Existing Pipelines and Underground Facilities Out of Service:
1. Do not take pipelines or underground facilities out of service unless specifically listed in the Contract Documents, or approved by Engineer.
 2. Notify Engineer in writing prior to taking pipeline or underground facilities out of service. Shutdown notification shall be provided in advance of the shutdown in accordance with the Contract Documents.
- C. Work on Existing Pipelines or Underground Facilities:
1. Cut or tap piping or underground facilities as shown or required with machines specifically designed for cutting or tapping pipelines or underground facilities, as applicable.
 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
 3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.

3.3 FIELD QUALITY CONTROL

A. General:

1. Test all piping, except as exempted by the Engineer or Owner's representative in writing.
2. When authorities having jurisdiction are to witness tests, notify Engineer and authorities having jurisdiction in writing at least 48 hours in advance of testing.
3. Conduct all tests in presence of Engineer or Owner's representative.
4. Remove or protect pipeline-mounted devices that could be damaged by testing.
5. Provide all apparatus and services required for testing, including:
 - a. Test pumps, compressors, hoses, calibrated gauges, meters, test containers, valves, fittings, and temporary pumping systems required to maintain Owner's operations.
 - b. Temporary bulkheads, bracing, blocking, and thrust restraints.
6. Provide air if an air test is required, power if pumping is required, and gases if gases are required.
7. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.
8. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest structure. Piping not installed by Contractor and that fails the test shall be repaired upon authorization of Owner. Unless otherwise included in the Work, repair of existing piping or underground facilities will be paid as extra Work.

B. Test Schedule:

1. Unless otherwise specified, required test pressures are at lowest elevation of pipeline segment being tested.
2. For piping not listed in Piping Schedule:
 - a. Use exfiltration testing, low-pressure air testing, or vacuum testing for other piping.

C. Sewer Testing for Inside Pipe Diameters Less than or Equal to 24-inches with Low Pressure Air:

1. Plug and bulkhead ends of pipe segment to be tested.
 - a. One plug shall have an orifice through which to pass air and a second orifice shall be continuously connected to a pressure gauge having a range from 0 to 10 psi, minimum divisions of 0.10 psi, and accuracy of plus or minus 0.04 psi.
2. The air supply line shall have a positive on-off valve and suitable means for readily disconnecting from the control panel.
3. The section of pipe shall be pressurized to approximately 4 psi.
4. The air shall be shut off and allowed to stabilize for a minimum of 2 min. If during this time the pressure drops below 3.5 psi, more air shall be added to raise pressure to a minimum of 3.5 psi.
5. After the air has stabilized, the airline shall be disconnected and testing will begin.
6. The time of test, in minutes, will be equivalent to one-half of the nominal diameter of the pipe being tested.
7. The maximum allowable pressure drop during the specified time period will be 1.0 psi.

D. Vacuum Testing:

1. Pipe Segments
 - a. Plug and bulkhead ends and lateral connections of pipe segment to be tested.

- b. Following set-up of test apparatus, draw vacuum of ten inches of mercury on pipe segment being tested.
 - c. Brace all plugs to prevent the plug or pipe from being dislodged and drawn into a manhole, when vacuum testing.
 - d. Start test upon reaching specified test vacuum. Test duration shall be 15 minutes.
 - e. Record vacuum drop at end of test. If vacuum drop is greater than one inch of mercury, pipe segment or manhole fails the test and shall be repaired and retested. If vacuum drop is less than one inch of mercury, pipe segment or manhole passes the test.
2. Manholes
- a. Temporarily plug pipe connections entering manhole to be tested.
 - b. All pipes entering the manhole shall be temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.
 - c. Following set-up of test apparatus, draw vacuum of ten inches of mercury on manhole being tested. The time shall be measured for the vacuum to drop nine inches mercury.
 - d. Start test upon reaching specified test vacuum. Test duration shall be in accordance with ASTM C1244.
 - 1) Minimum test times for various manhole diameters shall conform to the following table per ASTM C1244 or be 1 minute; whichever is longer:

Depth (ft)	Diameter, in.													
	48	54	60	66	72	78	84	90	96	102	108	114	120	
Time, in seconds														
<4	60													
6														
8														
10														
12								62	67	71	63	67	71	
14						62	67	72	78	83	89	94	100	
16						69	70	76	83	89	95	101	108	114
18				65	73	79	86	93	100	107	114	121	128	
20			65	72	81	88	95	103	111	119	126	135	142	
22		64	72	79	89	97	105	114	122	131	139	148	156	
24		64	78	87	97	106	114	124	133	143	152	161	170	
26	64	75	85	94	105	114	124	134	144	155	164	175	185	
28	69	81	91	101	113	123	133	145	155	167	177	188	199	
30	74	87	98	108	121	132	143	155	166	178	189	202	213	

Note: Table per ASTM C1244

- e. Record vacuum drop at end of test. If vacuum drop is greater than one inch of mercury, pipe segment or manhole fails the test and shall be repaired and retested. If vacuum drop is less than 1 inch of mercury, manhole passes the test.
- E. Vertical Deflection Test for Flexible Pipe:
1. Conduct vertical deflection test at least thirty days after backfill has been placed.
 2. Use rigid ball or mandrel for deflection test, which shall have diameter of at least 95 percent of base inside diameter or average inside diameter of piping, depending on which

is specified in applicable ASTM standard, including appendix, to which pipe is manufactured.

3. Perform test without mechanical pulling devices.
4. Re-install and retest pipe segments that exceed deflection of 5 percent.

F. Televised Inspection:

1. Televiser completed sewer and appurtenant structures, including manholes and chambers, and provide to Engineer copy of video on digital video disc (DVD). Repair apparent leaks and re-televiser the pipe until acceptance by Engineer.
2. Inspection shall be performed by Subcontractor certified in Pipeline Assessment Certification Program (PACP) by National Association of Sewer Service Companies (NASSCO). Provide copy of PACP certification prior to starting inspection. Televising shall conform to coding and reporting standards and guidelines specified in PACP. Identify report annotations, pipe conditions, and pipe defects in accordance with PACP. Severity ratings shall be calculated in accordance with PACP.
3. Camera for main line shall be pan-and-tilt, radial viewing, pipe inspection camera that pans plus-or-minus 275 degrees and rotates 360 degrees. Use camera with an accurate footage counter that displays on television monitor exact distance of camera from centerline of starting manhole. Use camera with height adjustment so that lens is always centered at one-half inside diameter or higher, in pipe being televised. Provide lighting system that allows features and condition of pipe to be clearly seen. Camera shall operate in 100 percent humidity. Camera, television monitor, and other components of video system produce a minimum 450-line resolution colored video picture. Picture quality and definition shall be satisfactory to Engineer. Camera for lateral televising shall be fixed and capable of moving from main line 80 feet up lateral, and conform in other respects to requirements for main line camera.
4. Repair apparent leaks in pipe Work in manner satisfactory to Engineer without additional cost to Owner and re-televiser the pipe.

3.4 CLEANING

A. Cleaning, General: Clean pipe systems as follows:

1. Thoroughly clean all piping, in manner approved by Engineer, prior to placing in service.

++ END OF SECTION ++

SECTION 33 39 13

SANITARY UTILITY SEWERAGE MANHOLES

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install all precast and cast-in-place structures.

B. General:

1. Manholes and structures shall conform in shape, size, dimensions, material, and other respects to the details shown or as directed by Engineer.
2. Cast-iron frames, grates and covers shall be the standard frame and grate or cover unless otherwise shown.
3. Concrete for cast-in-place manholes and structures and for inverts in precast manholes and structures shall be Class "A", type II cement.
4. Manholes and structures shall be precast construction, unless otherwise shown.
5. Access hatches shall be as specified in Section 05 54 63, Access Hatch Covers.

C. Related Sections:

1. Section 03 00 05, Concrete.
2. Section 05 56 00, Metal Castings.
3. Section 31 00 05, Trenching and Earthwork.
4. Section 33 31 00, Sanitary Sewer Piping Installation.

1.2 MEASUREMENT AND PAYMENT

A. Concrete Manholes and Structures Various Sizes and Depths

1. Payment for Concrete Manholes and Structures shall be on a unit price basis for each size and type.
2. The pay quantity shall be the actual number of sanitary manholes and structures in each size and type actually furnished and installed.
3. This Work will be at the unit price as listed on the submitted Bid schedule for size and type of the concrete manholes and structures and shall include the following: temporary bypass pumping, pavement removal, excavation, disposal of excess excavated material, base stabilization, dewatering, sheeting, riser rings, utility marking posts, castings and lids, external wraps and seals, precast sections or cast in place concrete, channels, inverts, drop piping, granular backfill material, connecting pipes, placing and compacting backfill, testing, utility adjustments, temporary pavement replacement if necessary, and any other requirements to complete the Work in accordance with the drawings and specifications, unless otherwise classified as a separate Work item.

B. Sanitary Connection to Existing Manhole

- 1 This item is measured on a lump sum basis for Work shown on the Drawings, otherwise specified, or necessary to complete the Work shown on the drawings.
2. Payment for modifications to existing manholes shall be paid based on the number of structures successfully completed per the Contract Documents or as shown on the drawings.
3. This item shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, for manhole modifications associated with Work shown on the Drawings including, but not limited to: cleaning existing manhole as required to perform the Work, excavation, riser ring, castings, chimney seals, furnishing and installing concrete for patching abandoned inlets/outlets, and core drilling existing structures to facilitate construction. The Work includes protection of existing utilities, installation of concrete plugs, site restoration and incidentals for performing all Work as specified unless otherwise classified as a separate Work Item.

C. Remove Existing Manholes, Inlet Structures and Pipe

1. This item is measured on an each basis for Work shown on the Drawings, otherwise specified, or necessary to complete the Work shown on the drawings.
4. The removal of existing structures and pipes shall be done in accordance with the project drawings or as determined by the Engineer.
5. Contractor shall dispose of all removed pipes and structures away from the project Site.
6. This item shall include costs to furnish labor, materials, tools, and equipment, both permanent and temporary, for removal of existing structure including surface patching and backfill.
7. The cost of backfill material and pavement restoration for pipe removal is included in other payment items.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:

1. ASTM International.
 - a. ASTM C478, Standard Specification for Precast Reinforced Concrete Manhole Sections.
 - b. ASTM C923, Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
 - c. ASTM C990, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
2. American Association of State Highway and Transportation Officials.
 - a. AASHTO M198, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
 - a. Submit manufacturer's Shop Drawings showing design and construction details for sanitary utility sewage manholes per type.

- b. Submit detailed Shop Drawings showing design and construction details for any special structures. Includes CSO Outfall Structure 032.

1.5 QUALITY ASSURANCE

- A. Qualifications
 - 1. Manufacturer
 - a. Sanitary Utility Sewerage Manholes shall be from a source listed in the INDOT List of Certified Precast Concrete Producers, in accordance with ITM 813.
- B. Component Supply
 - 1. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer. Such inspection may be made at the place of manufacture, or on the Project Site, or at both places and the materials shall be subject to rejection at any time on account of failure to meet any of the requirements specified herein. Material rejected after delivery to the Project Site shall be marked for identification and shall be removed from the Site immediately. All materials, which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.
 - 2. At the time of inspection, the materials shall be carefully examined for compliance with the ASTM standards specified in this specification section and with the approved manufacturer's Shop Drawings. All precast manhole sections shall be inspected for general appearance, dimension, "scratch-strength," blisters, cracks, roughness, soundness, etc. The surface shall be dense and close textured.
- C. Imperfections in precast manhole sections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that a strong and permanent repair will result. Repairs shall be carefully inspected before final approval.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Any manhole section damaged in the process of transportation or handling, shall be rejected and immediately removed from the Site, and the damaged manhole sections shall be replaced at no increase in Contract Amount.
- B. Material delivery, storage and handling must conform to requirements in Contract Documents. Refer to Section 01 65 00 Product Delivery Requirements and Section 01 66 00 Product Storage and Handling Requirements.

PART 2 PRODUCTS

2.1 PRECAST CONCRETE MANHOLES AND STRUCTURES

- A. Precast manholes and structures shall conform to the details shown. Provide cast-in-place concrete bases where shown.

- B. Except where otherwise specified, precast manhole components shall consist of reinforced concrete sections especially designed for manhole construction and manufactured in accordance with ASTM C478, except as modified herein.
- C. Precast, reinforced concrete manhole bases, riser sections, flat slabs and other components shall be manufactured by wet cast methods or dry cast methods, using forms which will provide smooth surfaces free from irregularities, honeycombing or other imperfections.
- D. Provide manhole with tongue and groove joints. Seal joints with one of the following method:
 - 1. Rubber Gasket in accordance with ASTM C443
 - a. Manufactures: Provide rubber gasket from the following:
 - 1) O-Ring Gasket, by Press-Seal Gasket Corporation.
 - 2) Or equal.
 - 2. Preformed Flexible Joint Sealant in accordance with ASTM C990 and AASHTO- M198.
 - a. Manufacturers: Provide joint sealant from the following:
 - 1) EZ Stik, by Press-Seal Gasket Corporation.
 - 2) Kent Seal #2, by Hamilton-Kent.
 - 3) RU 106 RUB'RNEK LTM, by Henry Co.
 - 4) or equal.
 - 3. Butyl Rubber Backplaster.
 - a. Manufacturers: Provide joint sealant from the following:
 - 1) Trowelable EZ Stik #3, by Press-Seal Gasket Corporation
 - 2) or equal.
 - 4. Polyethylene Plastic Sheeting Film
 - a. Manufacturers: Provide joint sealant as required to protect the joint from backfill operations:
 - 1) 6 mm polyethylene plastic sheeting film by Visqueen.
 - 2) or equal.
- E. All precast manhole components shall be of approved design and of sufficient strength to withstand the loads imposed upon them. They shall be designed for a minimum earth cover loading of 120 pounds per cubic foot, an H-20 wheel loading, and an allowance of 30 percent impact.
- F. Mark date of manufacture and name or trademark of manufacturer on inside of barrel.
- G. The barrel of the manhole shall be constructed of various lengths of riser pipe manufactured in increments of one foot to provide the correct height with the fewest joints.
- H. Except as approved by Engineer for large pipes, openings in the barrel of the manholes for pipe connections will not be permitted closer than one foot from the nearest joint. Special manhole base or riser sections shall be furnished as necessary to meet this requirement.
- I. A precast or cast-in-place slab or precast eccentric cone, as shown or approved, shall be provided at the top of the manhole barrel to receive the metal casting frame and cover.

2.2 MISCELLANEOUS METALS

- A. Metal casting frames and covers and similar required items shall be provided as shown.

2.3 RISER RINGS

- A. Riser rings must conform to the requirements in the Contract Documents.

PART 3 EXECUTION

3.1 POURED-IN-PLACE MANHOLE BASES

- A. Poured-in-place bases shall be placed on suitable foundations, as shown in details, after the pipes are laid.
- B. They shall be cast using class “A” concrete and conform to the requirements of Section 03 00 05, Concrete.
- C. They shall be cast monolithically to an elevation at least 7 inches above the top of the highest pipe entering the manhole, except where a drop connection is to be installed.
- D. Base, walls and bottom shall be at least of the thickness shown and reinforced to withstand the loads to be expected.

3.2 PRECAST MANHOLE BASES

- A. Precast bases shall be set at the proper grade and carefully leveled and aligned.

3.3 PRECAST MANHOLE SECTIONS

- A. Install sections, joints and gaskets in accordance with these specifications and the manufacturer’s recommendations.
- B. Join riser cone, cone and flat top sections with preformed flexible joint sealant compound in accordance with manufacture’s recommendations, except that install sufficient sealing compound so as to show a “squeeze-out” on the outside of the joint.
- C. Apply trowelable grade butyl rubber backplaster material 1/4 inch minimum thickness, when dry, on the outside of the manhole at each joint, extending 6 inches above and below the joint. Next, apply shrink wrap or Visquene to the outside of each joint to protect the backplaster material.
- D. Lifting holes, if used in manhole components, shall be repaired using a conical precast concrete plug, properly sealed into place using non-shrink cement or epoxy grout. The repair shall be clean and neat to ensure water tightness.

3.4 MANHOLE CHANNELS

- A. Flow Channel

1. All invert channels through manholes and structures shall be constructed of Class "A" concrete conforming to the requirements of Section 03 00 05, Concrete. Channels shall be properly formed to the sizes, cross sections, grades and shapes shown or as ordered.
2. For all manholes with equal diameter influent and effluent pipes in a straight through alignment, a minimum 0.10 foot drop between the inverts of the influent and effluent pipes shall be maintained.
3. Flow channels through a manhole shall be made to conform in shape, and slope to that of the connecting sewers. The channel walls shall be shaped or formed to the full height of the springline of the outlet sewer so that maintenance, inspection, and flow in the manhole are not obstructed.

B. Bench

1. Benches shall be provided on each side of the manhole channel when the pipe diameter(s) are less than the manhole diameters.
2. Benches shall be built up to the heights shown, and shall be sloped no less than 1/2-inch per foot (4 percent), or as directed by the Engineer and given a uniform wood float finish.
3. Care shall be taken to slope all benches for proper drainage to the invert channel.

3.5 BEDDING AND BACKFILLING AT MANHOLES AND STRUCTURES

- A. Conform to applicable requirements of the Contract Documents. Refer to Section 31 00 05, Trenching and Earthwork.

3.6 GRADING AT MANHOLES AND STRUCTURES

- A. All manholes and structures in unpaved areas shall be built, as shown or directed by the Engineer, to an elevation higher than the original ground. The ground surface shall be graded to drain away from the manhole. Fill shall be placed around manholes to the level of the upper rim of the manhole frame, and the surface evenly graded on a 1 to 5 slope to the existing surrounding ground, unless otherwise shown or directed by the Engineer. The slope shall be covered with 4-inches of topsoil, seeded and maintained until a satisfactory growth of grass is obtained.
- B. Manholes and structures in paved areas shall be constructed to meet the final surface grade. In paved areas on state highways, all manholes and structures shall be 1/2-inch below final wearing surfaces. Manholes and structures shall not project above finished roadway pavements to prevent damage from snowplows.
- C. Contractor shall be solely responsible for the proper height of all manholes and structures necessary to reach the final grade at all locations. Contractor is cautioned that Engineer's review of Shop Drawings for manhole components will be general in nature and Contractor shall have at its disposal an adequate supply of random length precast manhole riser sections to adjust any manhole to meet field conditions for final grading.

3.7 FLEXIBLE PIPE JOINT AT MANHOLE BASE

- A. An approved flexible joint shall be provided between each pipe entering and exiting the manhole. Pipe to manhole connections shall conform to the details shown on Drawings. The joint into the manhole base shall be completely watertight.
- B. Provide products manufactured as listed below and meeting requirements of ASTM C923:
 - 1. For pipes 36 inch diameter and smaller:
 - a. Press-Seal PSX: Positive Seal
 - b. NPC Kor-N-Seal II 306 Series
 - 2. For pipes larger than 36 inch diameter:
 - a. A-Lok Premium
 - b. Press-Seal WS 30 Waterstop Grouting Ring

3.8 FIELD QUALITY CONTROL

- A. All manholes and structures shall be free of visible leakage and meet the testing requirements of the piping system, as specified in section 33 31 00 Sanitary Sewer Piping Installation.
- B. Each manhole shall be tested for leaks and inspected, and all leaks shall be repaired in a manner subject to Engineer's approval.
- C. Each manhole may be tested with the piping, as a complete system, or individually. If tested individually, each manhole shall be vacuum tested in accordance with Section 33 31 00, Sanitary Sewer Piping Installation.

3.9 CLEANING

- A. All new manholes shall be thoroughly cleaned of all silt, debris, and foreign matter of any kind, prior to final inspection.

+ + END OF SECTION + +

SECTION 33 41 00

STORM UTILITY PIPING INSTALLATION

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all buried piping, and specials. The Work includes the following:
 - a. Installation of all types and sizes of buried storm utility piping, except where buried piping installations are specified under other sections.
 - b. Unless otherwise shown or specified, this section includes all buried piping Work required, beginning at the inside face of structures or structure foundations, including piping beneath structures, and extending away from structures.
 - c. Work on or affecting existing buried piping.
 - d. Installation of all jointing and gasket materials, specials, flexible couplings, mechanical couplings, and other Work required.
 - e. Supports and restraints.
 - f. Pipe encasements.
 - g. Field quality control, including testing.
 - h. Cleaning.
 - i. Incorporation of special items shown or specified into piping systems in accordance with the Contract Documents and as required.

B. Coordination:

1. Review installation procedures under this and other sections, and coordinate installation of items to be installed with or before buried piping Work.
2. Coordinate with appropriate piping material sections of Division 33, Utilities.

C. Related Sections:

1. Section 31 00 05, Trenching and Earthwork.
2. Section 33 05 34.13, Concrete Non-Pressure Utility Piping.
3. Section 33 05 37.13, PVC Non-Pressure Utility Piping.
4. Section 33 44 13, Drainage Structures.
5. Section 33 49 13, Storm Drainage Manholes.

1.2 MEASUREMENT AND PAYMENT

A. Pipe Installation

1. Pipe installation shall include the furnishing and installation complete in place, all labor, materials and equipment necessary for the construction of each pipe material and size.
2. The bid price shall include, but will not be limited to, all cost for the pipe of the required sizes, joint materials, installation of pipe, bedding materials up to 12" above the pipe,

excavation, dewatering, removal and disposal of excavated materials, sheeting, shoring, protection of existing structures, testing, cleanup, and all other operations necessary to complete the work as shown on the plans or specified.

B. Cut & Plug Existing Pipes (All sizes)

1. The payment quantity shall be the number of plugs actually installed.
2. Payment under this item shall be on a unit price basis regardless of plug size.
3. This price shall include all cost associated with: removal of surface improvements, excavation, disposal of excavated material, temporary sheeting, shoring, or bracing; dewatering, furnishing and placing Class A concrete for the bulkhead; furnishing, placing and compacting required backfill; and placing required surfacing.

1.3 REFERENCES

A. Standards referenced in this section are listed below:

1. INDOT
 - a. Indiana Department of Transportation Standard Specifications, latest edition.
2. American Society for Non-Destructive Testing
 - a. ASNT-TC-1A, Recommended Practice, Personnel Qualification, and Certification in Non-destructive Testing.
3. American Association of State Highway and Transportation Officials.
 - a. AASHTO M198, Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
4. ASTM International
 - a. ASTM C443, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
 - b. ASTM C924, Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Test Method.
 - c. ASTM D2321, Practice for Underground Installation of Thermoplastic Pipe for Sewers and other Gravity-Flow Applications.
 - d. ASTM F1417, Test Method for Installation Acceptance of Plastic Gravity Sewer Lines using Low-Pressure Air.
5. American Water Works Association.
 - a. AWWA M23, PVC Pipe - Design and Installation.
6. American Society of Civil Engineers/Structural Engineering Institute
 - a. ASCE 37, Design and Construction of Sanitary and Storm Sewers.
7. American Concrete Pipe Association
 - a. Concrete Pipe Design Manual.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements and recommendations of authorities having jurisdiction over the Work, including:
 - a. Indiana Department of Environmental Management
2. Obtain required permits for Work in roads, rights-of-way, railroads, and other areas of the Work, as required by Authorities Having Jurisdiction listed above.

B. Informational Submittals. Submit the following:

1. Field Quality Control Submittals
 - a. Field Quality Control Reports
 - 1) Results of each specified field quality control test.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Material delivery, storage and handling must conform to requirements in Contract Documents. Refer to Section 01 65 00 Product Delivery Requirements and Section 01 66 00 Product Storage and Handling Requirements.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Piping materials are located on the Drawings.
- B. Piping materials shall conform to Specifications for each type of pipe and piping appurtenances in applicable sections of Division 33, Utilities.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General:
 1. Install piping as shown, specified, and as recommended by pipe and fittings manufacturer.
 2. In the event of conflict between manufacturer's recommendations and the Contract Documents, request interpretation from Engineer before proceeding.
 3. Engineer will observe excavations and bedding prior to laying pipe by Contractor. Notify Engineer in advance of excavating, bedding, pipe laying, and backfilling operations.
 4. Minimum cover over buried storm piping shall be 3 feet, unless otherwise shown on Drawings or approved by Engineer.
 5. Excavation in excess of that required or shown on Drawings, and that is not authorized by Engineer shall be backfilled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 31 00 05, Trenching and Earthwork.
 6. The width of trenches shall be such as to provide a clearance of not less than 6 inches or not more than 15 inches on each side of the pipe. All pavements shall be cut with an abrasive saw. Concrete driveways, walks, alleys, etc., shall be cut to the nearest joint unless approved by Engineer.
 7. Excavation in excess of that required or shown, and that is not authorized by Engineer shall be filled at Contractor's expense with granular material furnished, placed, and compacted in accordance with Section 31 00 05, Trenching and Earthwork.
- B. Separation of Sewers and Potable Water Piping:

1. Horizontal Separation:
 - a. Where possible, proposed sanitary sewers shall be separated from existing potable water mains and service lines horizontally by a clear distance of at least ten feet, measured edge to edge.
 - b. If local conditions preclude the specified clear horizontal separation, installation will be allowed if potable water main is in a separate trench or on an undistributed earth shelf on one side of sewer and with bottom of the potable water main at least 18 inches above the crown of the sewer.
 2. Vertical Separation:
 - a. Provide minimum vertical distance of 18 inches between outside of potable water main and outside of sewer when sewer crosses potable water main.
 - b. Center a section of potable water main pipe at least 17.5 feet long over sewer so that sewer joints are equidistant from potable water main joints.
 - c. Provide adequate structural support where potable water main crosses under sewer. At minimum, provide compacted select backfill for ten feet on each side of crossing.
 - d. This deviation may allow installation of the sewer closer to the water main, provided that the water is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at horizontal separation of at least 10 feet measured edge to edge.
- C. Separation of Sewer Mains and Potable Water Structures:
1. Maintain a 50 feet minimum distance from water supply wells or other water supply sources and structures.
- D. Plugs (Bulkheads):
1. Temporarily plug the installed pipe at end of each day of Work or other interruption of pipe installation to prevent entry of animals, liquids, and persons into pipe, and entrance or insertion of deleterious materials into pipe.
 2. Install standard plugs in bells at dead ends, tees, and crosses. Cap spigot and plain ends.
 3. Fully secure and block plugs, caps, and bulkheads installed for testing to withstand specified test pressure.
 4. Where plugging is required for phasing of the Work, abandonment of existing utilities, or subsequent connection of piping, install watertight, permanent type plugs, caps, or bulkhead acceptable to Engineer.
- E. Bedding Pipe: Bed pipe as specified and in accordance with details on the Drawings.
1. Trench excavation and backfill, and bedding materials shall conform to the Contract Documents. Reference Section 31 00 05, Trenching and Earthwork.
 2. Where over excavation is required by Engineer due to unsuitable soil in trench or excavation subgrade, remove and replace unsuitable material with approved granular material furnished, placed, and compacted in accordance with the Contract Documents. Payment for removal and replacement of unsuitable soils will be made under the unit price payment items in the Contract Documents.
 3. Excavate trenches below bottom of pipe by amount shown and indicated in the Contract Documents. Remove loose and unsuitable material from bottom of trench.
 4. Carefully and thoroughly compact pipe bedding with hand held pneumatic compactors.
 5. Do not lay pipe until Engineer approves bedding condition.

6. Do not bring pipe into position until preceding length of pipe has been bedded and secured in its final position.

F. Alignment:

1. Install pipe accurately to line and grade shown and indicated in the Contract Documents, unless otherwise approved by Engineer.
2. Slope piping uniformly between elevations shown.
3. Maintain reference line and grade with laser equipment daily for adjustment and accuracy. Correct deficiencies in equipment, reference line and reference grade. Take precautions to prevent deflections in reference line and grade.
4. Contractor shall install sewer pipe in compliance with slope requirements shown on the Drawings. All sewer pipes shall have a maximum slope deviation no greater than the indicated percents for the following pipe sizes:

<u>Pipe Diameter</u>	<u>Pipe Slope Deviation</u>
12 inch	±20%
18 inch	±20%
24 inch	±20%
36 inch	±20%

5. Contractor shall test every other section of installed sewer pipe for compliance with design slope. In the event that the as-built slope exceeds the indicated deviation notify Engineer in writing. Removal and replacement of pipe as directed by the Engineer shall be at no additional cost to the Owner.

G. Laying Pipe:

1. Conform to manufacturer's instructions and requirements of standards and manuals listed below, as applicable:
 - a. Concrete Pipe: ASHTO M198.
 - b. Thermoplastic Pipe: ASTM D2321, AWWA M23, AWWA M45, AWWA, M55.
 - c. Sanitary and Storm Sewers: ASCE 37.
2. Do not lay pipe in water. Maintain dry trench conditions until jointing and backfilling are complete. Keep clean and protect interiors of pipe, fittings, valves, and appurtenances.
3. Start laying pipe at lowest point and proceed towards higher elevations, unless otherwise approved by Engineer.
4. Place bell and spigot-type pipe so that bells face the direction of laying, unless otherwise approved by Engineer.
5. Excavate around joints in bedding and lay pipe so that pipe barrel bears uniformly on trench bottom.
6. For push-on jointed pipe, do not push past the manufacturer's specified home position.
7. Carefully examine pipe, fittings, and specials for cracks, damage, and other defects while suspended above trench before installation. Immediately remove defective materials from the Site and replace with acceptable products.
8. Inspect interior of all pipe, fittings, and specials and completely remove all dirt, gravel, sand, debris, and other foreign material from pipe interior and joint recesses before pipe and appurtenances are moved into excavation. Bell and spigot-type mating surfaces shall be clean and dry immediately before pipe is laid.
9. Field cut pipe, where required, with a machine specially designed for cutting the type of pipe being installed. Make cuts carefully, without damage to pipe, coating or lining, and

with smooth end at right angles to axis of pipe. Cut ends on push-on joint type pipe shall be tapered and sharp edges filed off smooth. Do not flame-cut pipe.

10. Do not place blocking in trench under pipe, unless specifically approved by Engineer for special conditions.
11. Touch up protective coatings in manner satisfactory to Engineer prior to backfilling.
12. Notify Engineer in advance of backfilling operations.
13. On steep slopes, take measures acceptable to Engineer to prevent movement of pipe during installation.
14. Exercise care to avoid flotation when installing pipe in cast-in-place concrete and in locations with high groundwater.

H. Jointing Pipe

1. Thermoplastic Pipe Joints:
 - a. Bell and Spigot Joints:
 - 1) Bevel pipe ends, remove all burrs, and provide a reference mark at correct distance from pipe end before making joints.
 - 2) Clean spigot end and bell thoroughly before making the joint. Insert O-ring gasket while ensuring that gasket is properly oriented. Lubricate spigot with manufacturer's recommended lubricant. Do not lubricate bell and O-ring. Insert spigot end of pipe carefully into bell until reference mark on spigot is flush with bell.

I. Backfilling:

1. Conform to applicable requirements of the Contract Documents. Refer to Section 31 00 05, Trenching and Earthwork.
2. Place backfill as Work progresses. Backfill by hand and use power tampers until pipe is covered by at least one foot of backfill.

J. Transitions:

1. Provide necessary adapters, specials, and connection pieces required when connecting different types and sizes of pipe or connecting pipe made by different manufacturers.

K. Closures:

1. Provide closure pieces shown or required to complete the Work.

3.2 WORK AFFECTING EXISTING PIPING

A. Location of Existing Underground Facilities:

1. Locations of existing underground facilities shown on the Drawings should be considered approximate.
2. Prior to beginning excavation, determine the true location of existing underground facilities to which connections are to be made, crossed, and that could be disturbed, and determine location of underground facilities that could be disturbed during excavation and backfilling operations, or that may be affected by the Work.

B. Taking Existing Pipelines and Underground Facilities Out of Service:

1. Do not take pipelines or underground facilities out of service unless specifically listed in Contract Documents, or approved by Engineer.

2. Notify Engineer in writing prior to taking pipeline or underground facilities out of service. Shutdown notification shall be provided in advance of the shutdown in accordance with the Contract Documents.
- C. Work on Existing Pipelines or Underground Facilities:
1. Cut or tap piping or underground facilities as shown or required with machines specifically designed for cutting or tapping pipelines or underground facilities, as applicable.
 2. Install temporary plugs to prevent entry of mud, dirt, water, and debris into pipe.
 3. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.

3.3 FIELD QUALITY CONTROL

- A. General:
1. Test all piping, except as exempted by the Engineer or Owner's representative in writing.
 2. When authorities having jurisdiction are to witness tests, notify Engineer and authorities having jurisdiction in writing at least 48 hours in advance of testing.
 3. Conduct all tests in presence of Engineer or Owner's representative.
 4. Remove or protect pipeline-mounted devices that could be damaged by testing.
 5. Provide all apparatus and services required for testing, including:
 - a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required to maintain Owner's operations.
 - b. Temporary bulkheads, bracing, and blocking.
 6. Provide air if an air test is required
 7. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.
 8. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest valve. Piping not installed by Contractor and that fails the test shall be repaired upon authorization of Owner. Unless otherwise included in the Work, repair of existing piping or Underground Facilities will be paid as extra Work.
- B. Vertical Deflection Test for Flexible Pipe:
1. Conduct vertical deflection test at least thirty days after backfill has been placed.
 2. Use rigid ball or mandrel for deflection test, which shall have diameter of at least 95 percent of base inside diameter or average inside diameter of piping, depending on which is specified in applicable ASTM standard, including appendix, to which pipe is manufactured. Perform test without mechanical pulling devices. Re-install and retest pipe segments that exceed deflection of 5 percent.
- C. Cleaning, General: Clean pipe systems as follows:
1. Thoroughly clean all piping, in manner approved by Engineer, prior to placing in service.
- D. All manholes, inlets, and other installed structures shall be thoroughly cleaned, in a manner approved by Engineer, prior to placing in service.

END OF SECTION 33 41 00

ATTACHMENT 3
REVISED CONSTRUCTION DRAWINGS

ATTACHMENT 4
ADDENDUM 01 ACKNOWLEDGEMENT FORM

ADDENDUM NO. 1

Central Avenue Storm Water Improvements Project

City of Lake Station

October 14, 2025

**NOTICE TO BIDDERS – IT IS MANDATORY THAT, UPON RECEIPT OF THIS ADDENDUM, YOU 1) SIGN, 2) DATE, 3) WRITE IN YOUR COMPANY NAME, AND 4) RETURN THIS SHEET TO BRYAN HOOD AND MIKE ISAKSON OF AMERICAN STRUCTUREPOINT:
BHOOD@STRUCTUREPOINT.COM,
MISAKSON@STRUCTUREPOINT.COM
THANK YOU.**

IF YOU HAVE ANY QUESTIONS CONCERNING THIS ADDENDUM, PLEASE CALL MIKE ISAKSON:

1. Please sign below to acknowledge receipt of this addendum. _____	2. Please insert date of receipt. Date: _____	3. Please insert your company name _____	4. Please return to Bryan Hood and Mike Isakson: bhood@structurepoint.com, misakson@structurepoint.com
--	--	---	--

This addendum is being issued as a supplement to the specifications, drawings and shall be considered an integral part of the same. This addendum will become part of the contract documents.

ATTACHMENT 5
PRE-BID SIGN IN SHEET

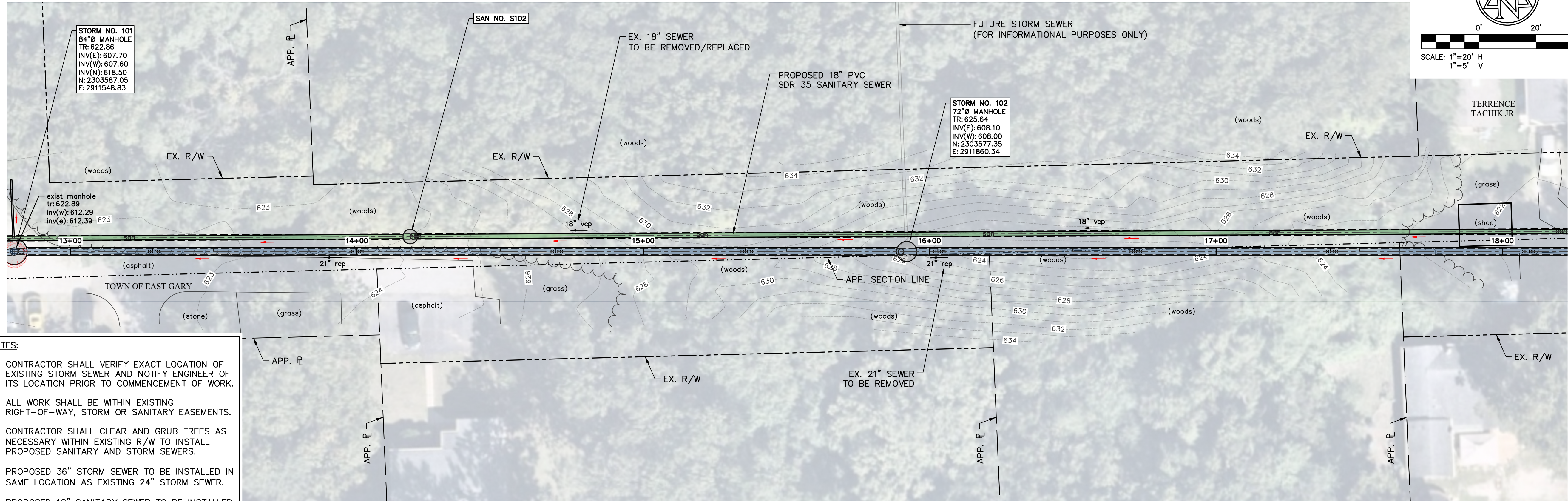
Pre-Bid Meeting

10/9/2025

[illegible]

TERRENCE TACHIK JR.

TERRENCE TACHIK JR.



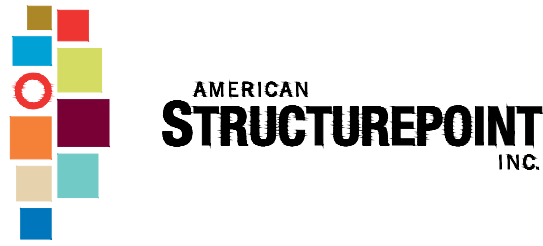
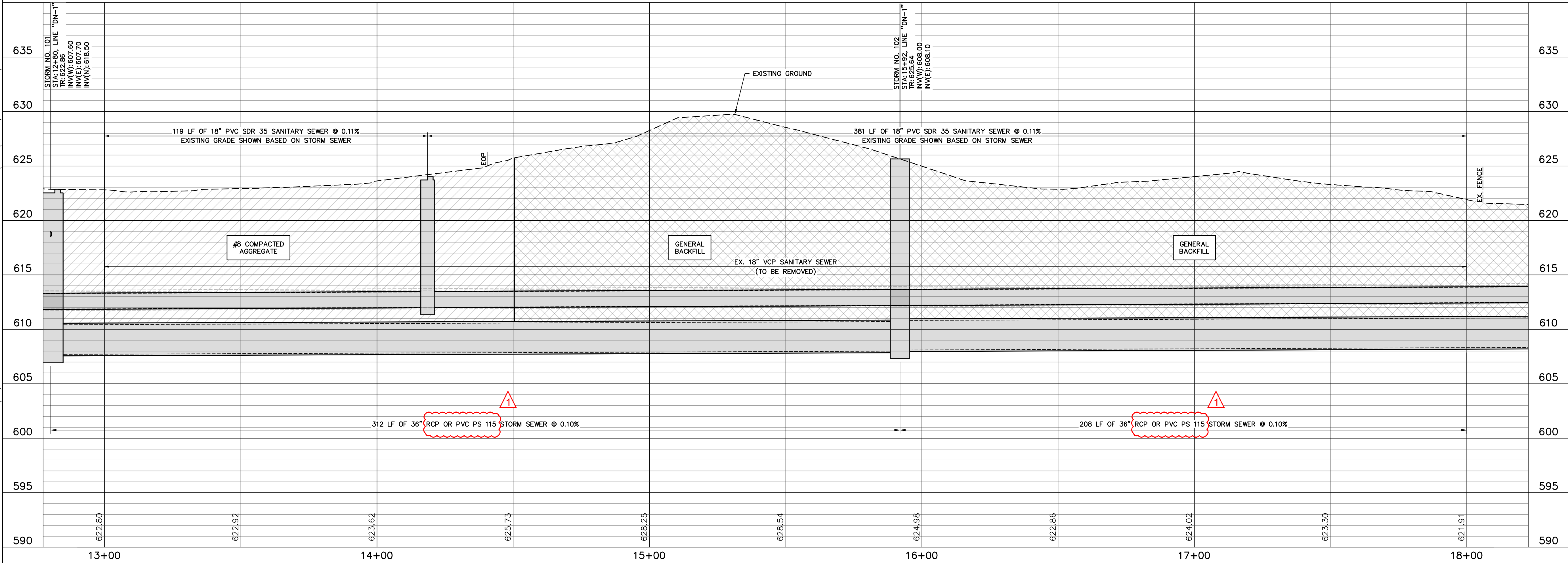
- NOTES:
- CONTRACTOR SHALL VERIFY EXACT LOCATION OF EXISTING STORM SEWER AND NOTIFY ENGINEER OF ITS LOCATION PRIOR TO COMMENCEMENT OF WORK.
 - ALL WORK SHALL BE WITHIN EXISTING RIGHT-OF-WAY, STORM OR SANITARY EASEMENTS.
 - CONTRACTOR SHALL CLEAR AND GRUB TREES AS NECESSARY WITHIN EXISTING R/W TO INSTALL PROPOSED SANITARY AND STORM SEWERS.
 - PROPOSED 36" STORM SEWER TO BE INSTALLED IN SAME LOCATION AS EXISTING 24" STORM SEWER.
 - PROPOSED 18" SANITARY SEWER TO BE INSTALLED IN SAME LOCATION AS EXISTING SANITARY SEWER.
 - FOR ADDITIONAL STORM OUTFALL INFORMATION, SEE DETAIL SHEETS.

MICHELLE WORIES

SONIA VEGA

SONIA VEGA

ELEAZER HERNANDEZ



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

STORM SEWER
PLAN AND PROFILE
LINE "DN-1"

C-110

PLOT SCALE: 1" = 0.833' PLOT DATE: 10/14/2025 1:30 PM EDITED BY: PIRAMSKI DRAWING FILE: P:\2022\00047.D DRAWINGS\UTILITY INFRASTRUCTURE\202200047.U1PP.DWG

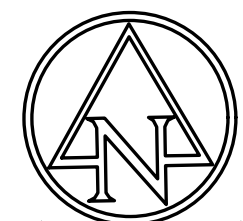
INLET NOTE:
ALL INLET SEWERS TO BE 12" PVC
SDR 35 PIPE, UNLESS OTHERWISE NOTED.

TERRENCE
TACHIK JR.

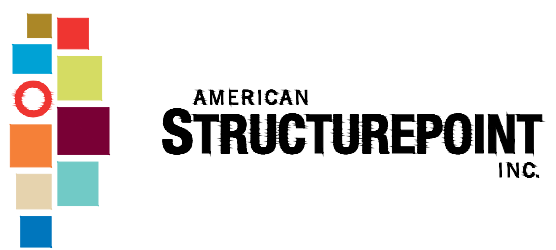
CONTRACTOR TO RECONNECT EX. SEWER
IN SUCH MANNER AS TO AVOID CONFLICT

SCHOOL
TOWN OF EAST GARY

SCHOOL
TOWN OF EAST GARY



SCALE: 1"=20' H
1"=50' V



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Haddad 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

STORM SEWER PLAN AND PROFILE LINE "DN-1"

C-111

NOTE:
EXISTING SEWERS TO BE ABANDONED IN PLACE
AND FLOWABLE FILLED, UNLESS OTHERWISE NOTED.

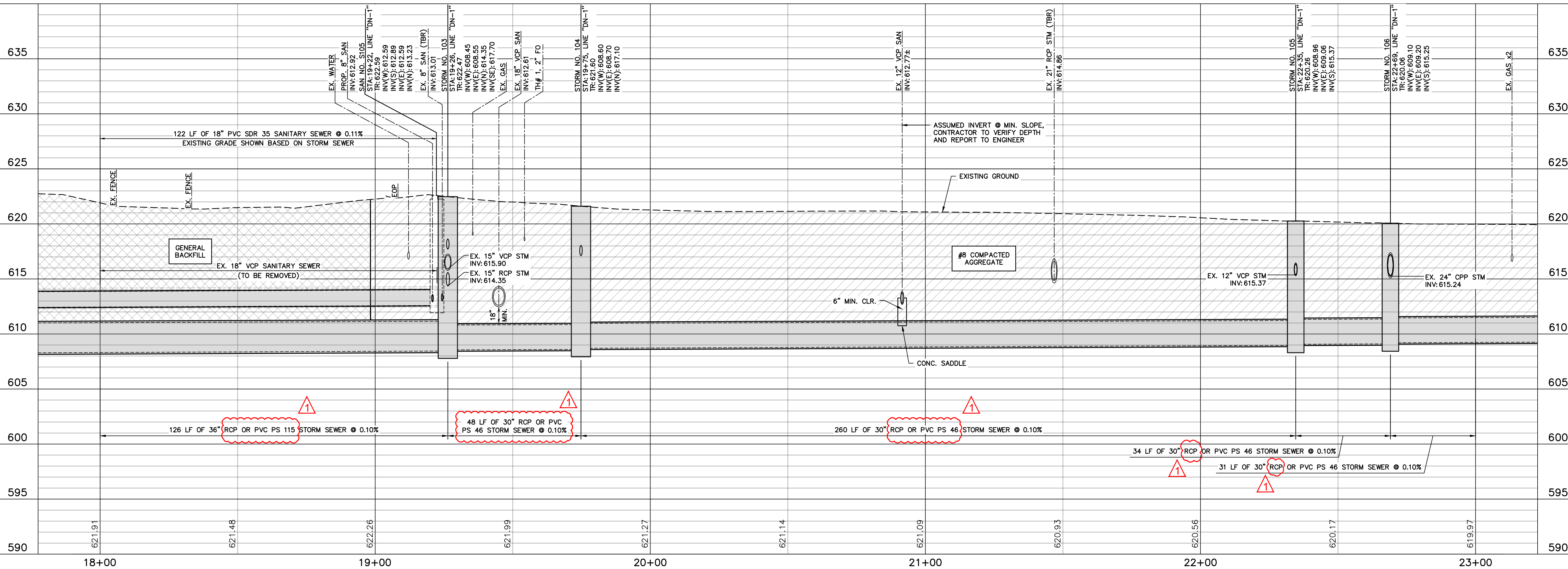
ELEAZER
HERNANDEZ

FREDERICK ARMENTH
& SUSANNA HARTLINE

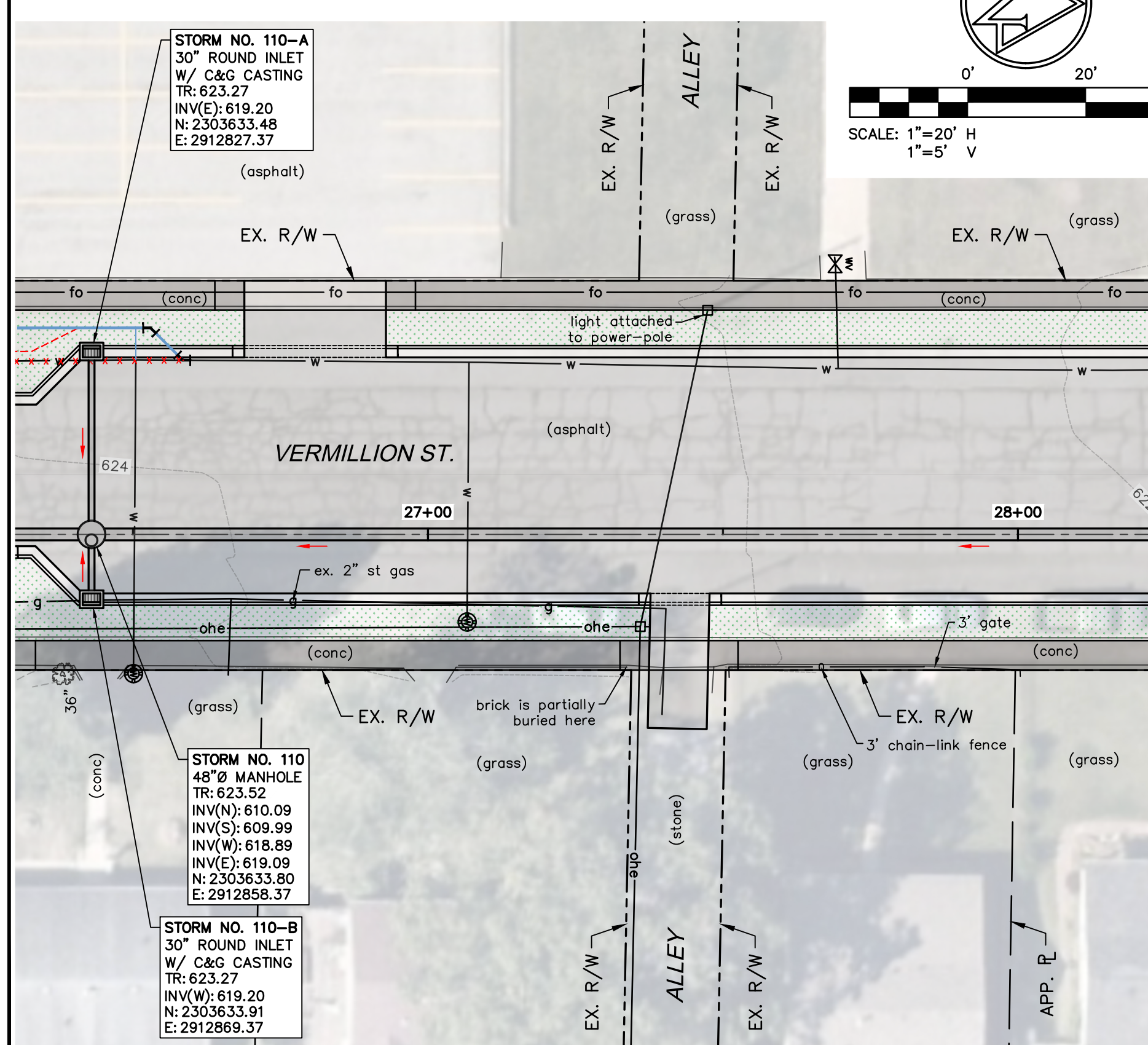
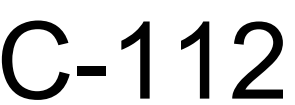
FRANCISCO VALLE
GARCIA & MICHAELINA FLORES

MILLIE BURSAC

SABRINA ROGERS



SCHOOL
TOWN OF EAST GARY

DALE A. &
CYNTHIA L. DANIELS

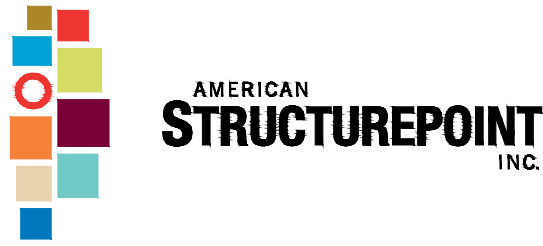
PLOT SCALE: 1" = 40.00' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: P. TRAWINSKI DRAWING FILE: P:\2022\00047\01.DRAWINGS\UTILITY INFRASTRUCTURE\202200047\UTB.SD.DWG

STORM STRUCTURE DATA TABLE

STR. NO.	STR. LOCATION	STR. STATION	STR. INFO. (SIZE TYPE CASTING)	STR. TOP EL.	STR. DEPTH	INCOMING PIPE DATA (DIRECTION FROM STR. NO.)	OUTGOING PIPE DATA (DIRECTION TO STR. NO.)	OUTGOING PIPE LENGTH	OUTGOING PIPE SLOPE	OUTGOING PIPE TO STR. NO.	ADDITIONAL INFO
101	N: 2303587.05 E: 2911548.83	12+80.3, LINE "DN-1"	84"Ø MANHOLE	622.86	15.3'	36" PVC PS 115, INV. 607.70 (E) (102) 6" PVC SDR 21, INV. 618.50 (N) ()	36" RCP CL IV, INV. 607.60 (W) ()	299 LF	5.51%	OUTFALL	PROPOSED OUTFALL STRUCTURE, INV. 591.15±, RECONNECT EX. 6" SEWER FROM NORTH
102	N: 2303577.35 E: 2911860.34	15+92.0, LINE "DN-1"	72"Ø MANHOLE	625.64	17.6'	36" PVC PS 115, INV. 608.10 (E) (103)	36" PVC PS 115, INV. 608.00 (W) (101)	312 LF	0.10%	101	CONTRACTOR TO VERIFY CLEARANCE AND LOCATION OF NEARBY SANITARY SEWER PRIOR TO INSTALLATION, ROTATE STORM MANHOLE AND PLACE OFF CENTER AS REQUIRED.
103	N: 2303566.93 E: 2912194.62	19+26.4, LINE "DN-1"	72"Ø MANHOLE	622.47	14.0'	30" PVC PS 46, INV. 608.55 (E) (104) 15" RCP CL IV, INV. 614.35 (N) () 12" PVC SDR 35, INV. 617.70 (SE) (105-A)	36" PVC PS 115, INV. 608.45 (W) (102)	334 LF	0.10%	102	RECONNECT EX. 12" FROM NORTH
104	N: 2303583.78 E: 2912239.99	19+74.8, LINE "DN-1"	72"Ø MANHOLE	621.60	13.0'	30" PVC PS 46, INV. 608.70 (E) (105) 12" PVC SDR 35, INV. 617.10 (N) (104-A)	30" PVC PS 46, INV. 608.60 (W) (103)	48 LF	0.10%	103	
104-A	N: 2303600.81 E: 2912240.16	19+74.8, LINE "DN-1"	30" ROUND INLET W/ GRATED CASTING	621.33	4.1'		12" PVC SDR 35, INV. 617.27 (S) (104)	17 LF	1.00%	104	
105	N: 2303581.25 E: 2912499.79	22+34.6, LINE "DN-1"	60"Ø MANHOLE	620.26	11.3'	30" PVC PS 46, INV. 609.06 (E) (106) 12" VCP, INV. 615.37 (S) ()	30" PVC PS 46, INV. 608.96 (W) (104)	260 LF	0.10%	104	RECONNECT EX. 12" FROM SOUTH
105-A	N: 2303554.12 E: 2912210.14	19+36.5, LINE "DN-1"	30" ROUND INLET W/ GRATED CASTING	621.55	3.6'		12" PVC SDR 35, INV. 617.90 (NW) (103)	20 LF	1.00%	103	
106	N: 2303580.91 E: 2912534.22	22+69.0, LINE "DN-1"	60"Ø MANHOLE	620.06	11.0'	30" PVC PS 46, INV. 609.20 (E) (107) 24" CPP, INV. 615.25 (S) ()	30" PVC PS 46, INV. 609.10 (W) (105)	34 LF	0.10%	105	RECONNECT EX. 24" FROM SOUTH
107	N: 2303579.40 E: 2912688.77	24+23.6, LINE "DN-1"	60"Ø MANHOLE	620.37	11.0'	30" PVC PS 46, INV. 609.46 (E) (108) 12" VCP, INV. 615.56 (S) () 12" PVC SDR 35, INV. 615.46 (N) (107-A)	30" PVC PS 46, INV. 609.36 (W) (106)	155 LF	0.10%	106	RECONNECT EX. 12" FROM SOUTH
107-A	N: 2303586.27 E: 2912689.03	24+23.8, LINE "DN-1"	30" ROUND INLET W/ GRATED CASTING	620.27	4.7'		12" PVC SDR 35, INV. 615.53 (S) (107)	7 LF	1.02%	107	
108	N: 2303578.02 E: 2912830.32	25+65.2, LINE "DN-1"	60"Ø MANHOLE	623.84	14.2'	30" PVC PS 46, INV. 609.71 (E) (109) 12" PVC SDR 35, INV. 619.38 (N) (108-A)	30" PVC PS 46, INV. 609.61 (W) (107)	142 LF	0.10%	107	
108-A	N: 2303590.05 E: 2912830.44	25+68.3, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	623.57	3.2'		12" PVC SDR 35, INV. 619.50 (S) (108)	12 LF	1.00%	108	
109	N: 2303585.45 E: 2912858.86	25+94.7, LINE "DN-1"	60"Ø MANHOLE	623.97	14.2'	24" PVC PS 46, INV. 609.94 (N) (110) 21" RCP CL IV, INV. 615.52 (E) () 12" PVC SDR 35, INV. 619.61 (NE) (109-A)	30" PVC PS 46, INV. 609.74 (W) (108)	29 LF	0.10%	108	RECONNECT EX. 21" FROM EAST
109-A	N: 2303590.45 E: 2912866.02	25+99.5, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	623.73	3.0'		12" PVC SDR 35, INV. 619.70 (SW) (109)	9 LF	1.00%	109	
110	N: 2303633.80 E: 2912858.37	26+43.0, LINE "DN-1"	48"Ø MANHOLE	623.52	13.5'	24" PVC PS 46, INV. 610.09 (N) (111) 12" PVC SDR 35, INV. 618.89 (W) (110-A) 12" PVC SDR 35, INV. 619.09 (E) (110-B)	24" PVC PS 46, INV. 609.99 (S) (109)	48 LF	0.10%	109	
110-A	N: 2303633.48 E: 2912827.37	26+43.0, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	623.27	4.1'		12" PVC SDR 35, INV. 619.20 (E) (110)	31 LF	1.00%	110	
110-B	N: 2303633.91 E: 2912869.37	26+43.0, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	623.27	4.1'		12" PVC SDR 35, INV. 619.20 (W) (110)	11 LF	1.00%	110	
111	N: 2303932.92 E: 2912855.29	29+42.1, LINE "DN-1"	48"Ø MANHOLE	620.57	10.2'	24" PVC PS 46, INV. 610.49 (N) (112) 12" PVC SDR 35, INV. 615.99 (W) (111-A) 12" PVC SDR 35, INV. 616.19 (E) (111-B)	24" PVC PS 46, INV. 610.39 (S) (110)	299 LF	0.10%	110	
111-A	N: 2303932.60 E: 2912824.29	29+42.1, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	620.31	4.0'		12" PVC SDR 35, INV. 616.30 (E) (111)	31 LF	1.00%	111	
111-B	N: 2303933.03 E: 2912866.28	29+42.1, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	620.31	4.0'		12" PVC SDR 35, INV. 616.30 (W) (111)	11 LF	1.00%	111	
112	N: 2304014.86 E: 2912854.44	30+24.1, LINE "DN-1"	48"Ø MANHOLE	620.79	10.2'	24" PVC PS 46, INV. 610.67 (N) (113) 15" PVC SDR 35, INV. 613.48 (W) (409)	24" PVC PS 46, INV. 610.57 (S) (111)	82 LF	0.10%	111	
113	N: 2304244.86 E: 2912852.07	32+54.1, LINE "DN-1"	48"Ø MANHOLE	623.24	11.8'	24" PVC PS 46, INV. 611.01 (N) (114) 12" PVC SDR 35, INV. 618.69 (W) (113-A) 12" PVC SDR 35, INV. 618.89 (E) (113-B)	24" PVC PS 46, INV. 610.91 (S) (112)	230 LF	0.10%	112	
113-A	N: 2304244.54 E: 2912821.07	32+54.1, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	622.98	4.0'		12" PVC SDR 35, INV. 619.00 (E) (113)	31 LF	1.00%	113	
113-B	N: 2304244.97 E: 2912863.07	32+54.1, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	622.98	4.0'		12" PVC SDR 35, INV. 619.00 (W) (113)	11 LF	1.00%	113	
114	N: 2304318.76 E: 2912851.31	33+28.0, LINE "DN-1"	60"Ø MANHOLE	625.41	13.9'	24" PVC PS 46, INV. 611.28 (E) (115)	24" PVC PS 46, INV. 611.08 (S) (113)	74 LF	0.10%	113	
115	N: 2304318.58 E: 2912900.27	33+76.9, LINE "DN-1"	48"Ø MANHOLE	625.07	13.4'	24" PVC PS 46, INV. 611.43 (E) (116) 12" PVC SDR 35, INV. 620.89 (N) (115-A)	24" PVC PS 46, INV. 611.33 (W) (114)	49 LF	0.10%	114	
115-A	N: 2304343.58 E: 2912900.36	33+76.9, LINE "DN-1"	33" ROUND INLET W/ C&G CASTING	625.34	4.2'	12" PVC SDR 35, INV. 621.24 (W) (115-B)	12" PVC SDR 35, INV. 621.14 (S) (115)	25 LF	1.00%	115	FINAL TOP OF RIM/CASTING ELEVATION TO BE DETERMINED DURING PROPOSED CURB AND GUTTER CONSTRUCTION, CONTRACTOR TO ADJUST TO GRADE AS REQUIRED
115-B	N: 2304353.44 E: 2912854.37	33+30.9, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	625.30	3.6'	12" PVC SDR 35, INV. 621.81 (W) (115-C)	12" PVC SDR 35, INV. 621.71 (E) (115-A)	47 LF	1.00%	115-A	FINAL TOP OF RIM/CASTING ELEVATION TO BE DETERMINED DURING PROPOSED CURB AND GUTTER CONSTRUCTION, CONTRACTOR TO ADJUST TO GRADE AS REQUIRED
115-C	N: 2304353.13 E: 2912825.40	33+28.0, LINE "DN-1"	30" ROUND INLET W/ C&G CASTING	625.16	3.1'		12" PVC SDR 35, INV. 622.10 (E) (115-B)	29 LF	1.00%	115-B	FINAL TOP OF RIM/CASTING ELEVATION TO BE DETERMINED DURING PROPOSED CURB AND GUTTER CONSTRUCTION, CONTRACTOR TO ADJUST TO GRADE AS REQUIRED
116	N: 2304317.67 E: 2913144.42	36+21.1, LINE "DN-1"	48"Ø MANHOLE	622.46	10.8'	24" PVC PS 46, INV. 611.78 (E) (117) 12" PVC SDR 35, INV. 614.88 (N) (116-A)	24" PVC PS 46, INV. 611.68 (W) (115)	244 LF	0.10%	115	

STORM SEWER NOTES:

1. GENERAL DEPTH IS REFERENCED FROM EXISTING GRADE WHERE APPLICABLE.
2. VERMILLION ST. AND VANDERBURG ST. DEPTH IS REFERENCED FROM PROPOSED GRADE.
3. FOR STORM SEWER PLAN AND PROFILES, SEE SHEETS C-109 TO C-119.
4. ALL 30" TO 36" PIPE MATERIAL SHALL BE EITHER RCP OR PVC.
RCP SHALL BE CL IV, PVC SHALL BE PS 115 OR PS 46 AS NOTED PER PLAN/TABLE.



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

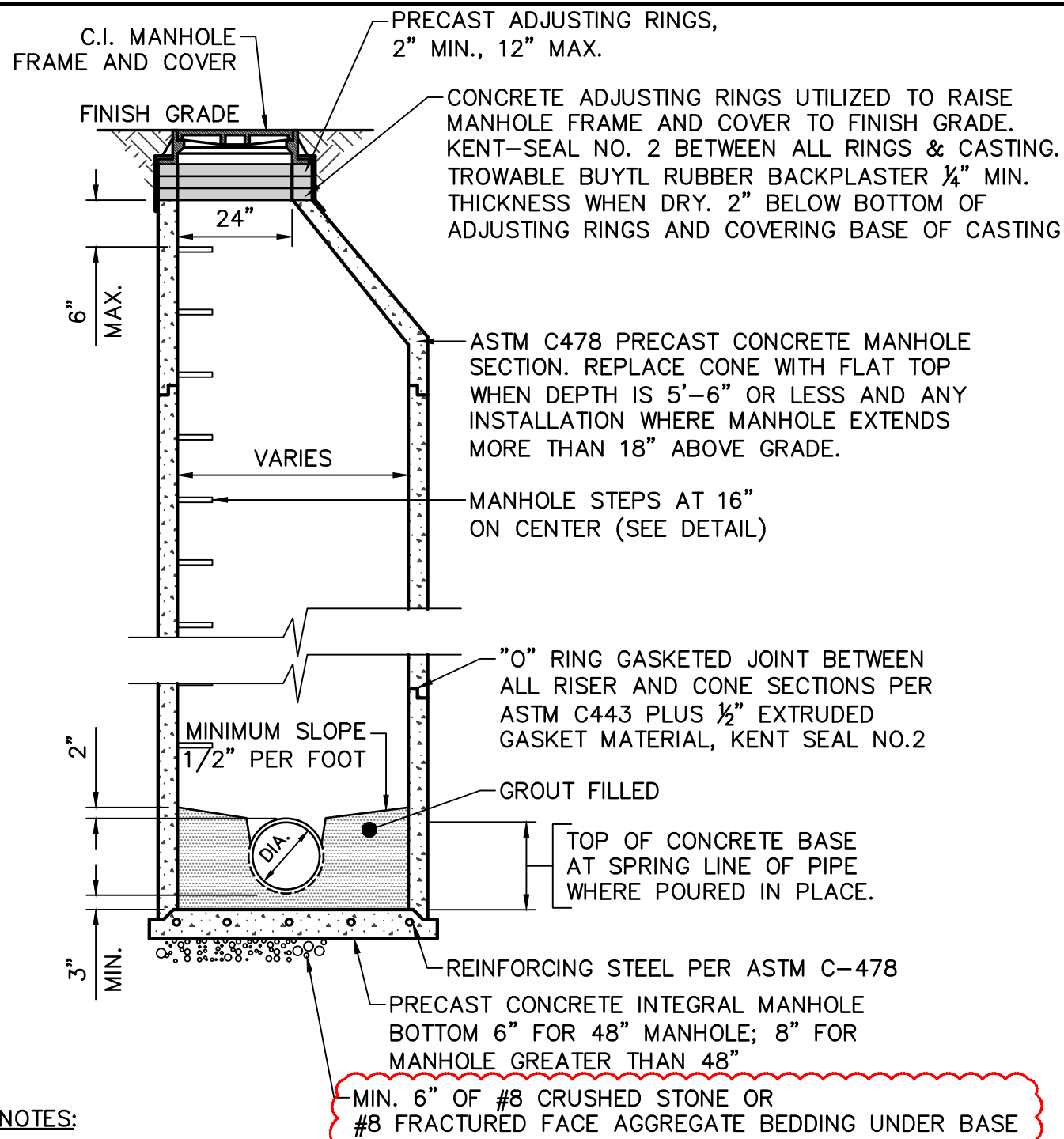
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

STRUCTURE
DATA TABLE

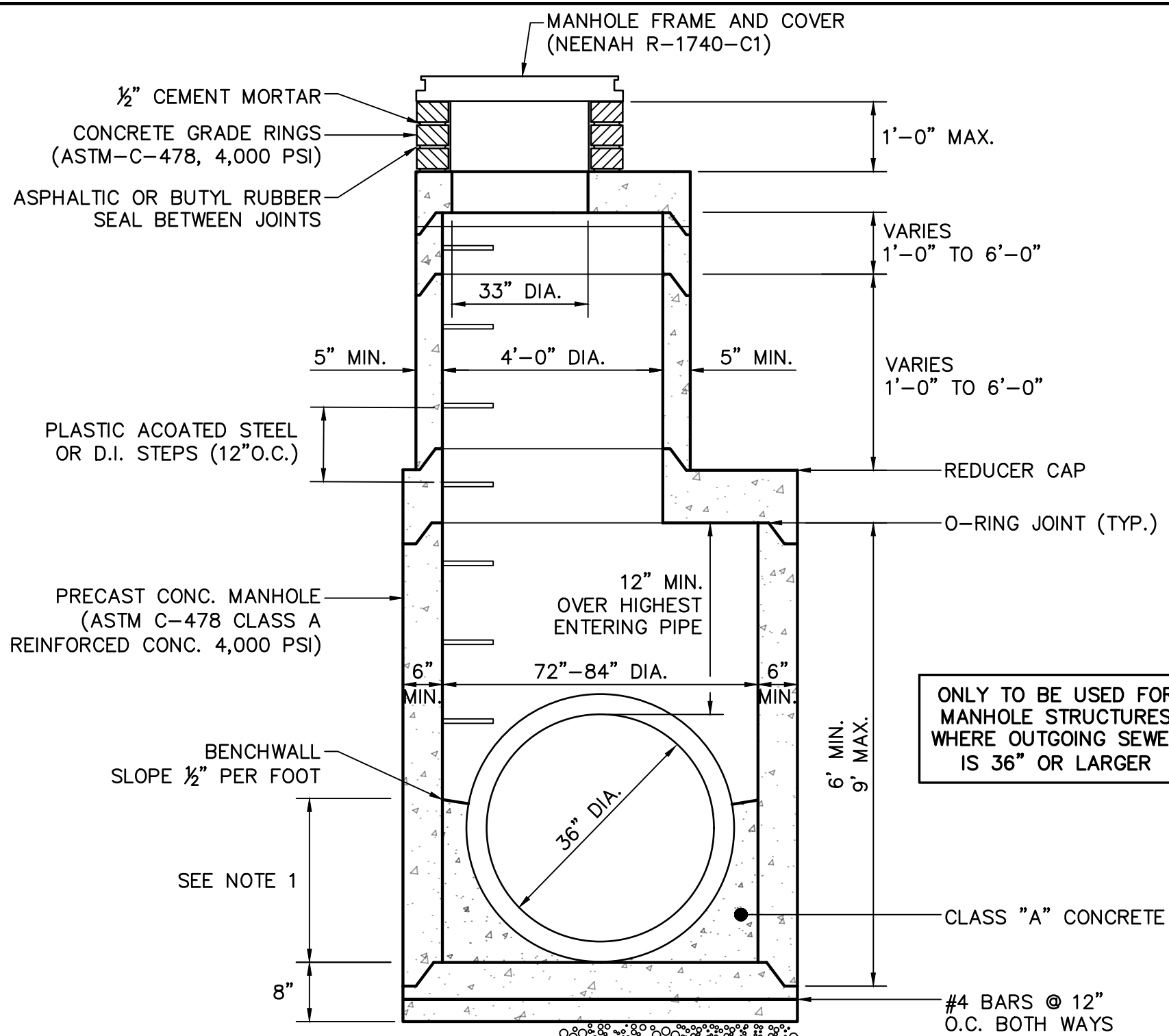
C-122

PLOT SCALE: 1" = 0.833' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: PIRAWINSKI DRAWING FILE: P:\2022\00047\0 DRAWINGS\UTILITY INFRASTRUCTURE\202200047\01.DWG



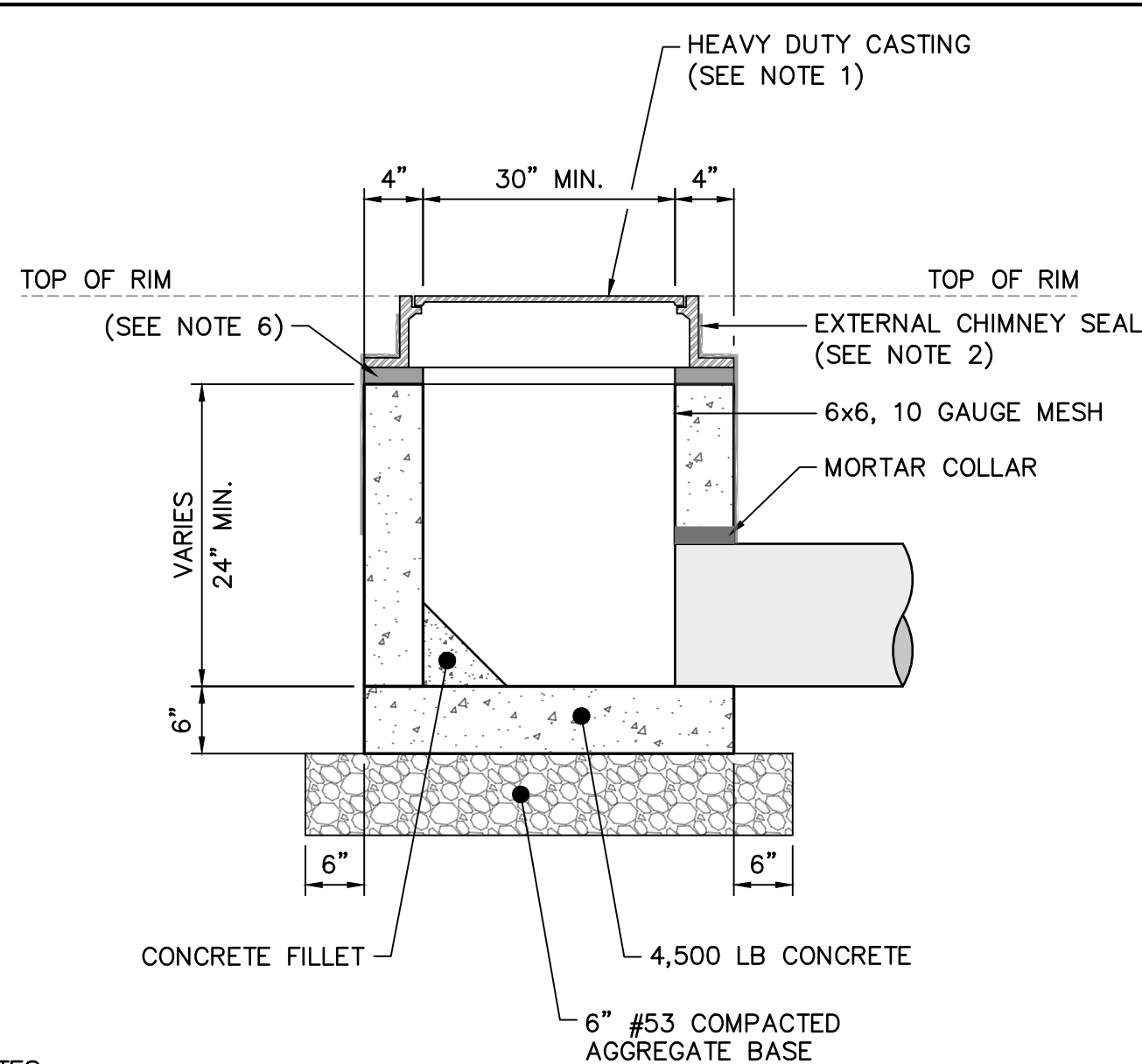
- NOTES:**
- MANHOLE SHALL CONFORM TO ASTM C-478.
 - JOINTS SHALL CONFORM TO ASTM C-433.
 - PIPE CONNECTIONS TO MANHOLES SHALL BE MADE WITH WATERTIGHT FLEXIBLE RUBBER BOOTS WITH STAINLESS STEEL BANDS OR FLEXIBLE WATERTIGHT GASKETS. ACCEPTABLE PRODUCTS ARE: KORE-N-SEAL AS MANUFACTURED BY CORE AND SEAL COMPANY, DURA-SEAL III AS MANUFACTURED BY DURA TECH, INC., PSX AS MANUFACTURED BY THE PRESS SEAL GASKET CORPORATION, OR APPROVED EQUAL. PIPE SEAL SHALL MEET ASTM C-443.
 - PIPE OPENINGS IN BASE AND RISER SECTIONS SHALL BE FORMED OR CORE-DRILLED.

STANDARD PRECAST CONCRETE MANHOLE
NOT TO SCALE



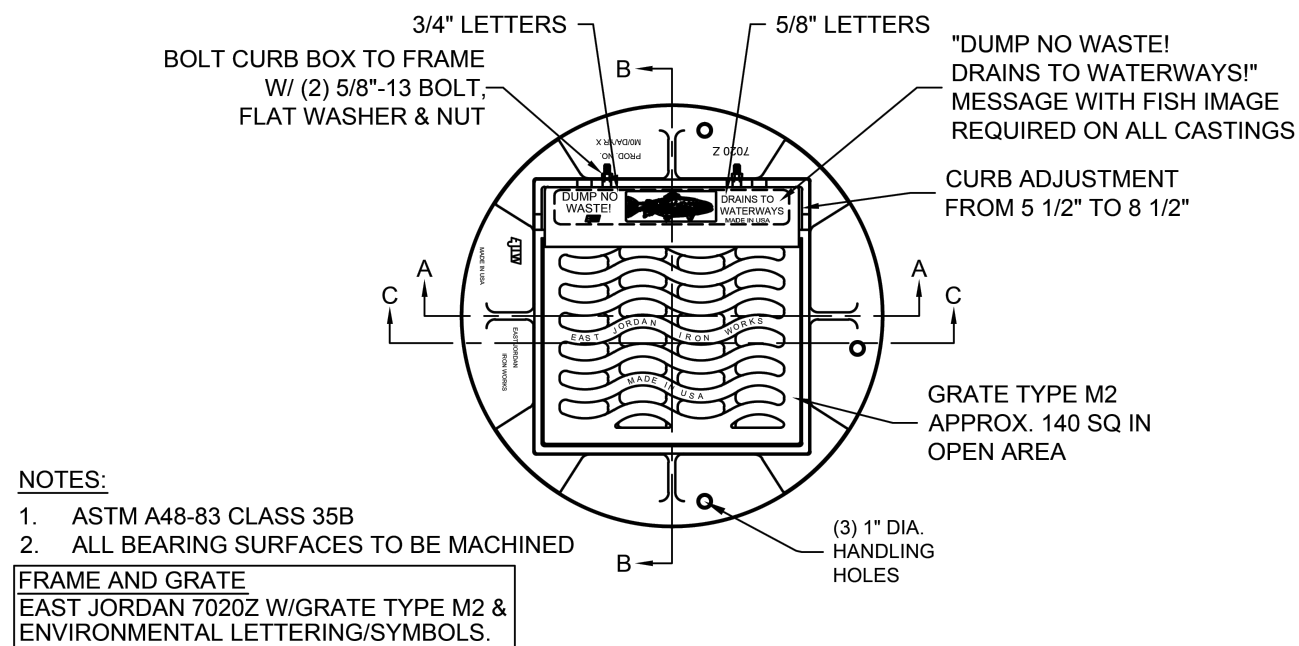
- NOTES:**
- ALL OPENINGS SHALL BE CORED.
 - ALL SANITARY PIPES, REGARDLESS OF SIZE, ENTERING THE MANHOLE SHALL USE HIGH PERFORMANCE FLEXIBLE CONNECTORS MEETING ASTM C-923.
 - ALL STORM PIPES ENTERING THE MANHOLE SHALL USE HIGH PERFORMANCE FLEXIBLE CONNECTORS MEETING ASTM C-923.
 - MANHOLE STAIRS DO NOT NEED TO ALIGN WITH MANHOLE COVER OR OPENING.

STANDARD 72"Ø TO 84"Ø MANHOLE DETAIL
NOT TO SCALE

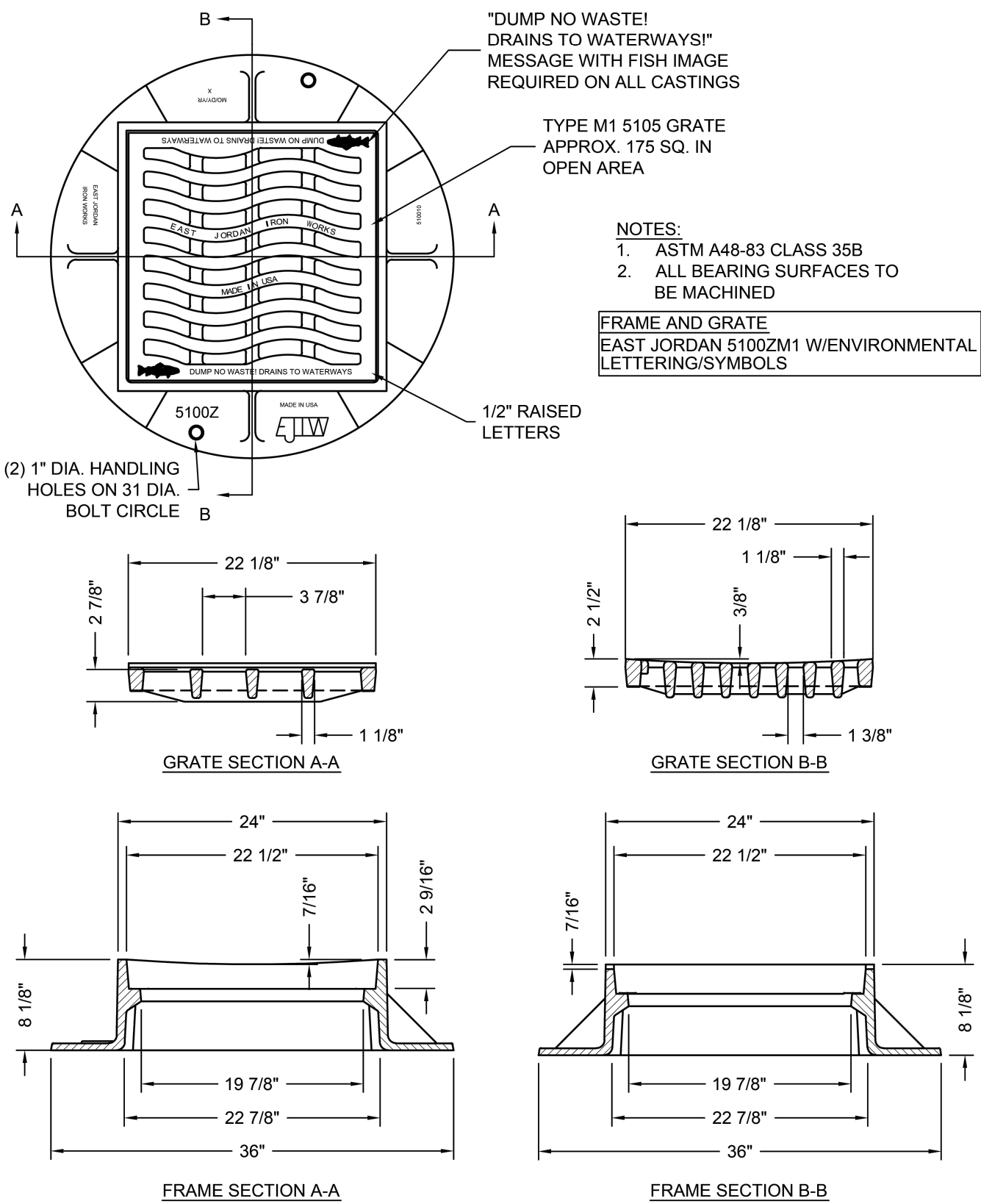


- NOTES:**
- INLET CASTING SHALL BE HEAVY DUTY RATED, STAMPED "DUMP NO WASTE! DRAINS TO WATERWAYS", SEE PLANS AND STRUCTURE DATA TABLE FOR CASTING TYPE.
 - INLET TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478 AND INDOT SPEC. 907.04.
 - ALL REINFORCING STEEL TO MEET OR EXCEED ASTM C-478.
 - EXTERNAL MANHOLE CHIMNEY SEAL REQUIRED FOR ALL MANHOLES WITHIN PAVED AREAS ONLY.
 - WHERE DEPTH OF CASTING TO INVERT IS LESS THAN 5-FEET (60"), USE FLAT TOP MANHOLE, TYPE "C" IN LIEU OF ECCENTRIC CONE.
 - WATERTIGHT SEAL IS REQUIRED BETWEEN PRECAST RISER AND PIPE.
 - 1 1/2" SQ OR RD E-Z STIK SEAL OR EQUAL CONTINUOUS AT ALL JOINTS, UNDER MANHOLE FRAME AND ADJUSTING RINGS.

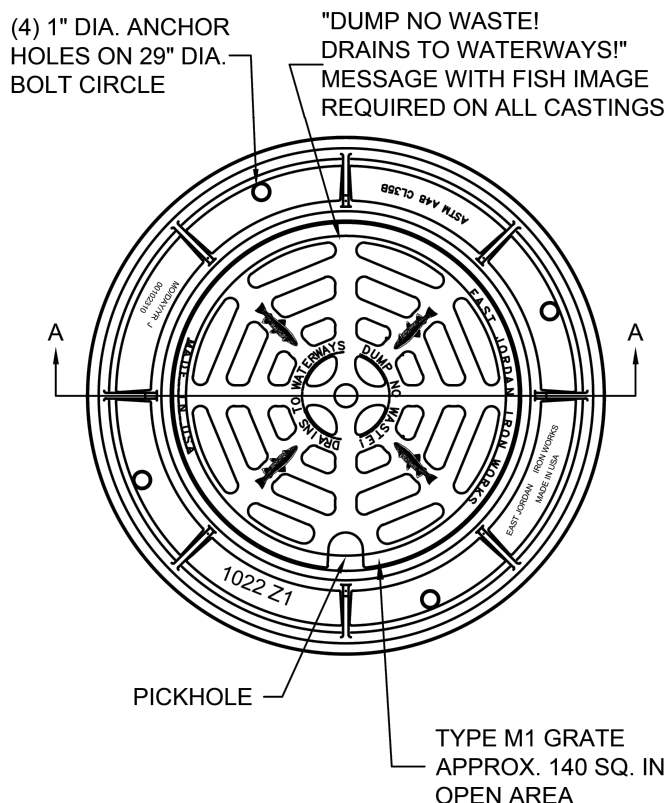
30" ROUND INLET DETAIL
NOT TO SCALE



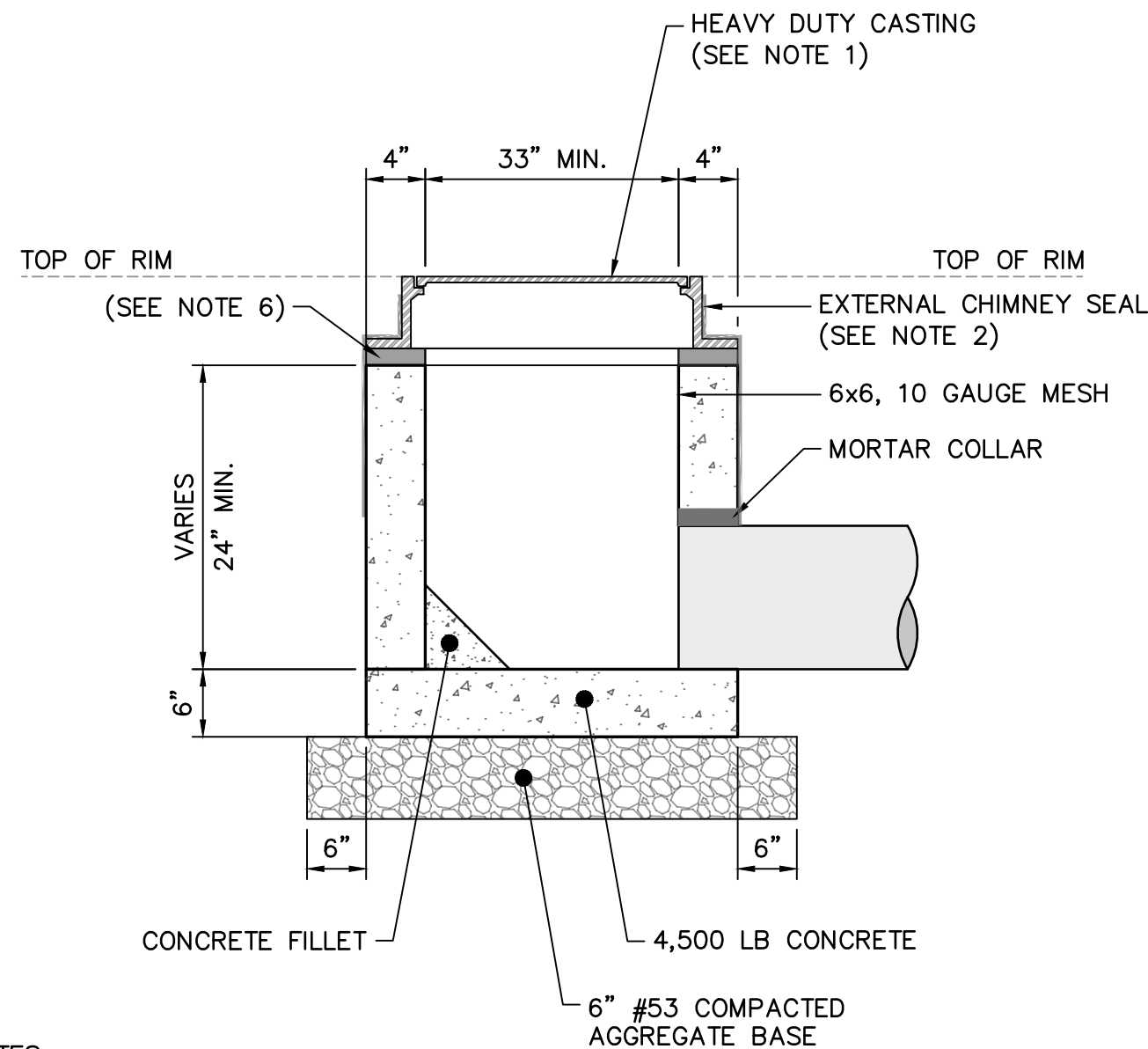
33" ROUND CURB AND GUTTER CASTING DETAIL
NOT TO SCALE



2'x2' ALLEY CASTING DETAIL
NOT TO SCALE

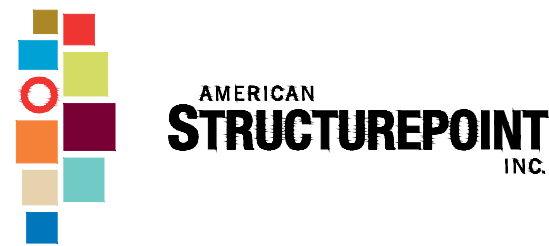


24" STORM CASTING DETAIL
NOT TO SCALE



- NOTES:**
- INLET CASTING SHALL BE HEAVY DUTY RATED, STAMPED "DUMP NO WASTE! DRAINS TO WATERWAYS", SEE PLANS AND STRUCTURE DATA TABLE FOR CASTING TYPE.
 - INLET TO BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478 AND INDOT SPEC. 907.04.
 - ALL REINFORCING STEEL TO MEET OR EXCEED ASTM C-478.
 - EXTERNAL MANHOLE CHIMNEY SEAL REQUIRED FOR ALL MANHOLES WITHIN PAVED AREAS ONLY.
 - WHERE DEPTH OF CASTING TO INVERT IS LESS THAN 5-FEET (60"), USE FLAT TOP MANHOLE, TYPE "C" IN LIEU OF ECCENTRIC CONE.
 - WATERTIGHT SEAL IS REQUIRED BETWEEN PRECAST RISER AND PIPE.
 - 1 1/2" SQ OR RD E-Z STIK SEAL OR EQUAL CONTINUOUS AT ALL JOINTS, UNDER MANHOLE FRAME AND ADJUSTING RINGS.

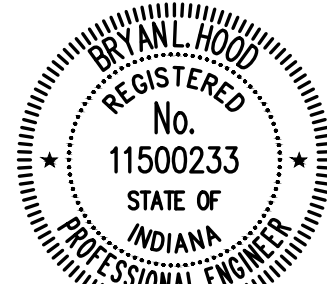
33" ROUND INLET DETAIL
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

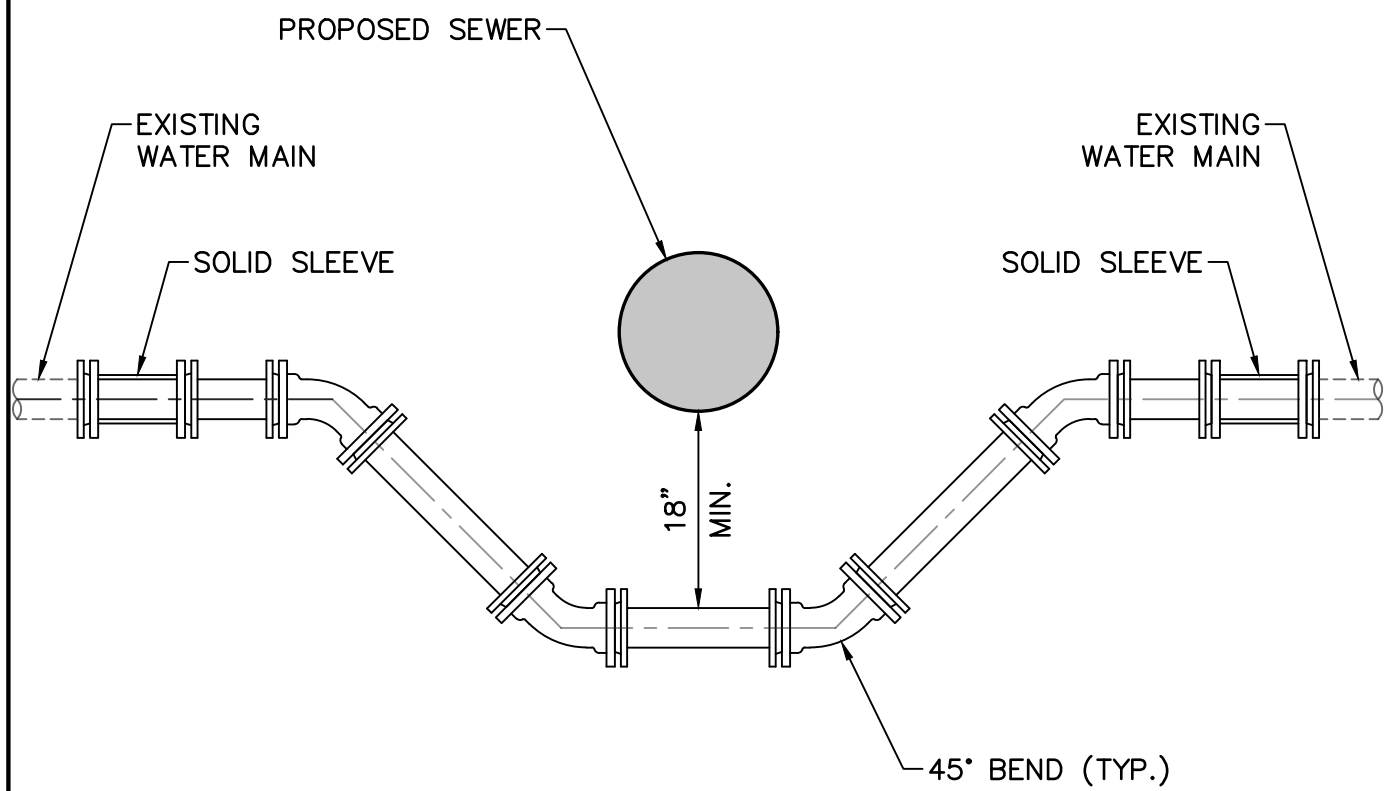
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

UTILITY
STANDARD DETAILS

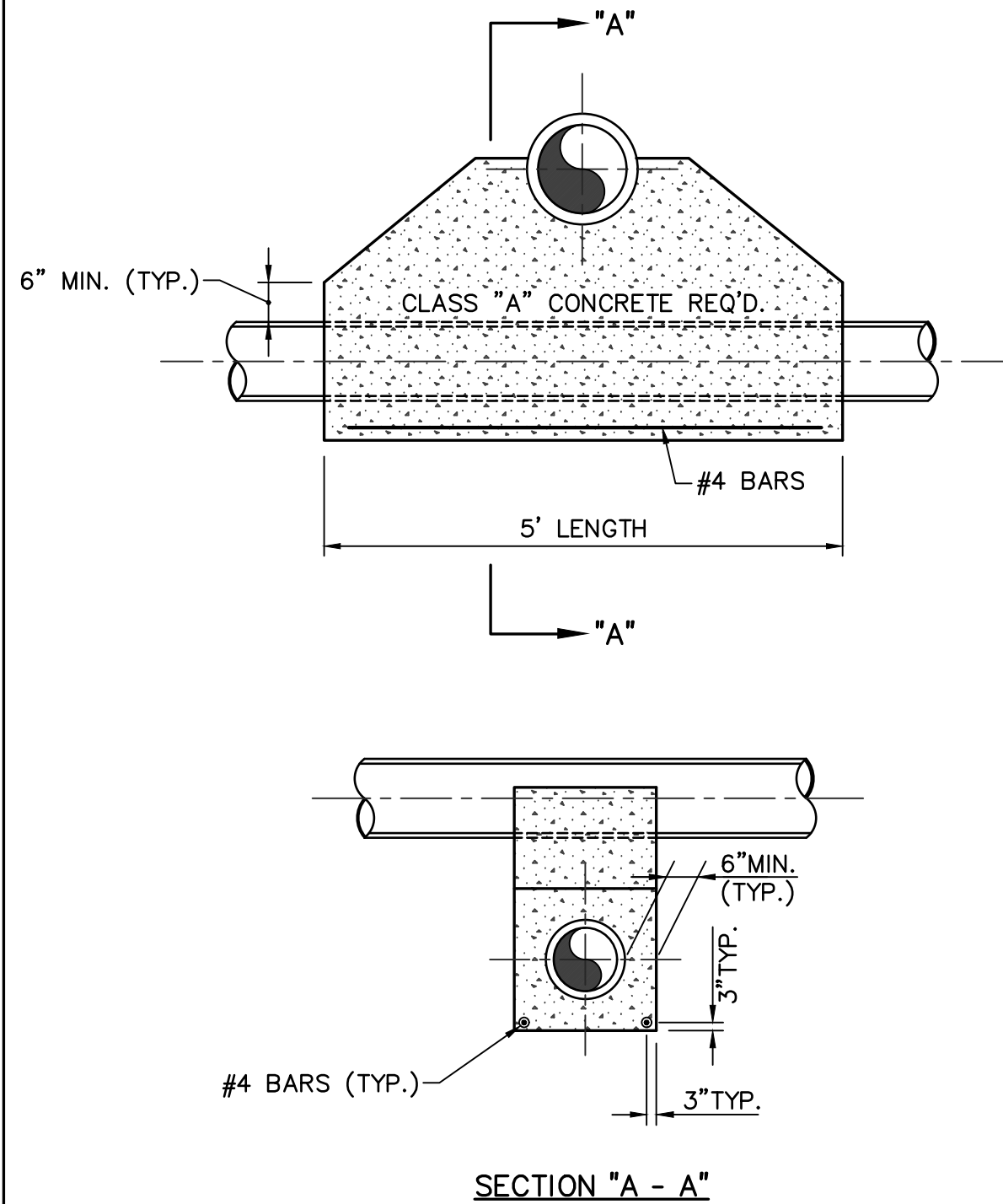
C-125

PLOT SCALE: 1" = 0833' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: PIRAWSKI DRAWING FILE: P:\2022\00047.D DRAWINGS\UTILITY INFRASTRUCTURE\202200047.D\UT.DWG



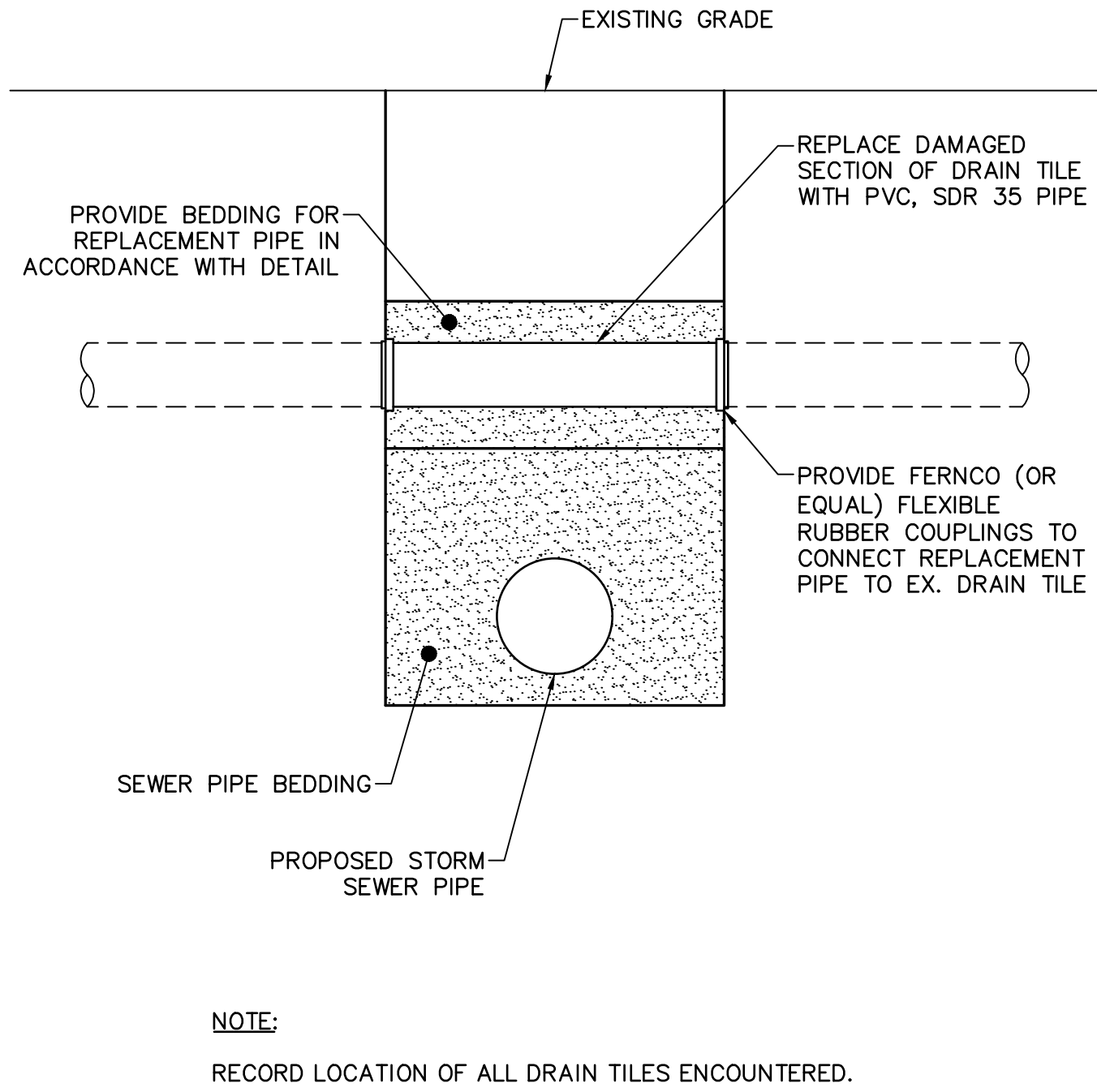
NOTE:
USE RESTRAINED JOINTS UNLESS OTHERWISE SHOWN OR SPECIFIED.

WATER MAIN RELOCATE
NOT TO SCALE

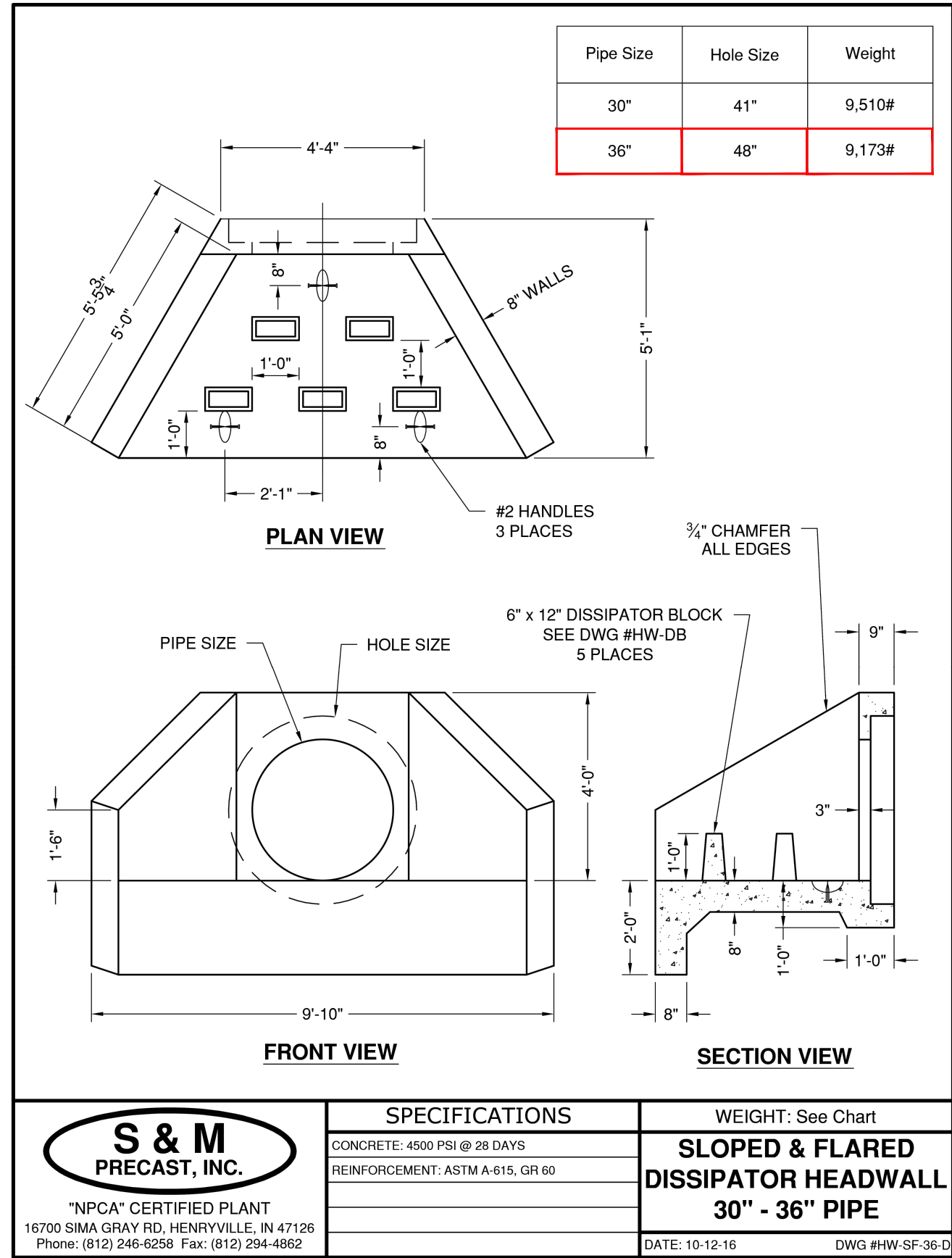


NOTE:
TO BE USED WHEN CLEARANCE BETWEEN PIPES IS 12" OR LESS, OR WHERE NOTED ON DRAWINGS.

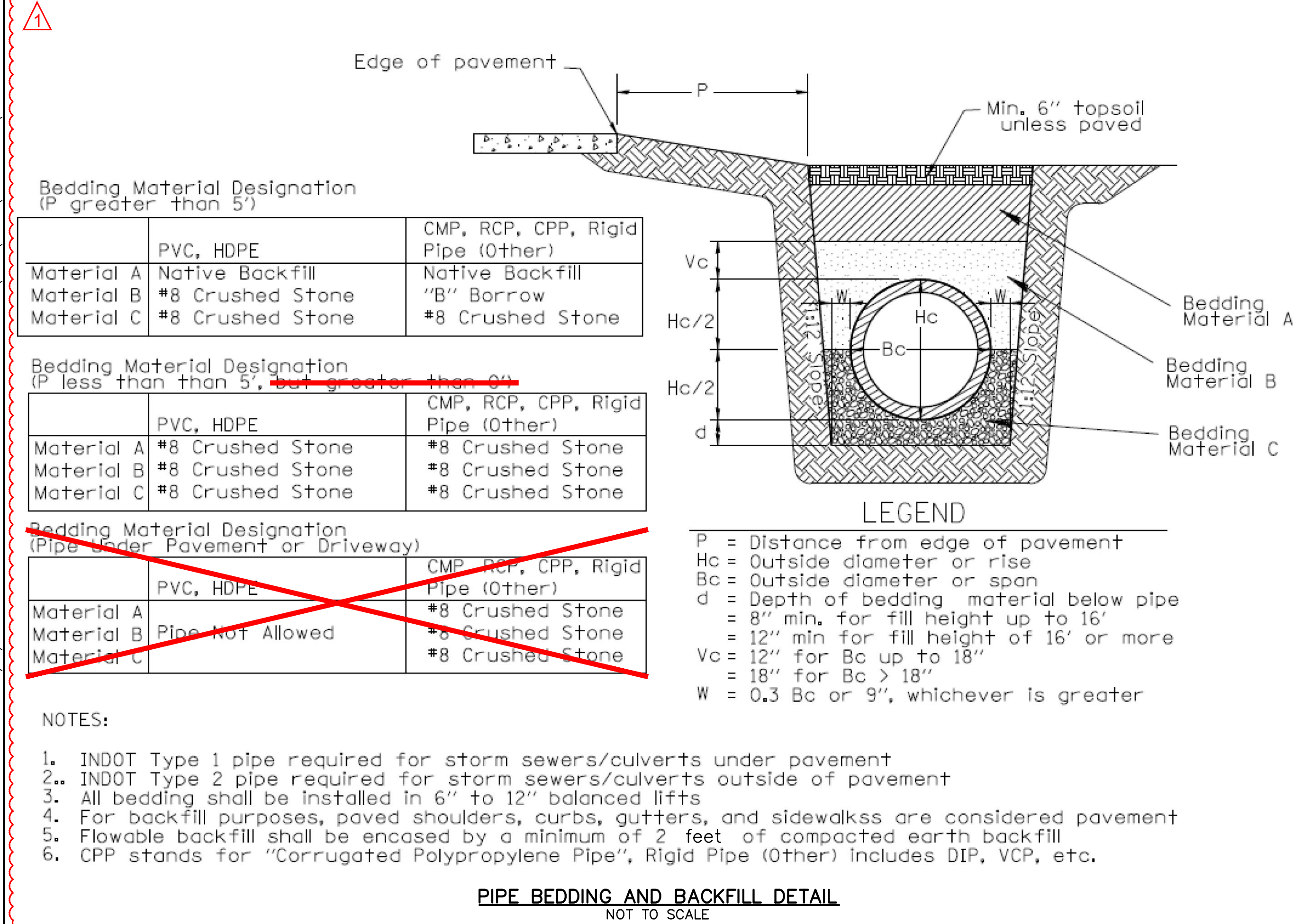
CONCRETE SADDLE DETAIL
NOT TO SCALE



DRAIN TILE REPAIR DETAIL
NOT TO SCALE



S & M PRECAST, INC. "NPCA" CERTIFIED PLANT 16700 SIMA GRAY RD. HENRYVILLE, IN 47126 Phone: (812) 246-6298 Fax: (812) 294-4862	SPECIFICATIONS	
	WEIGHT: See Chart	



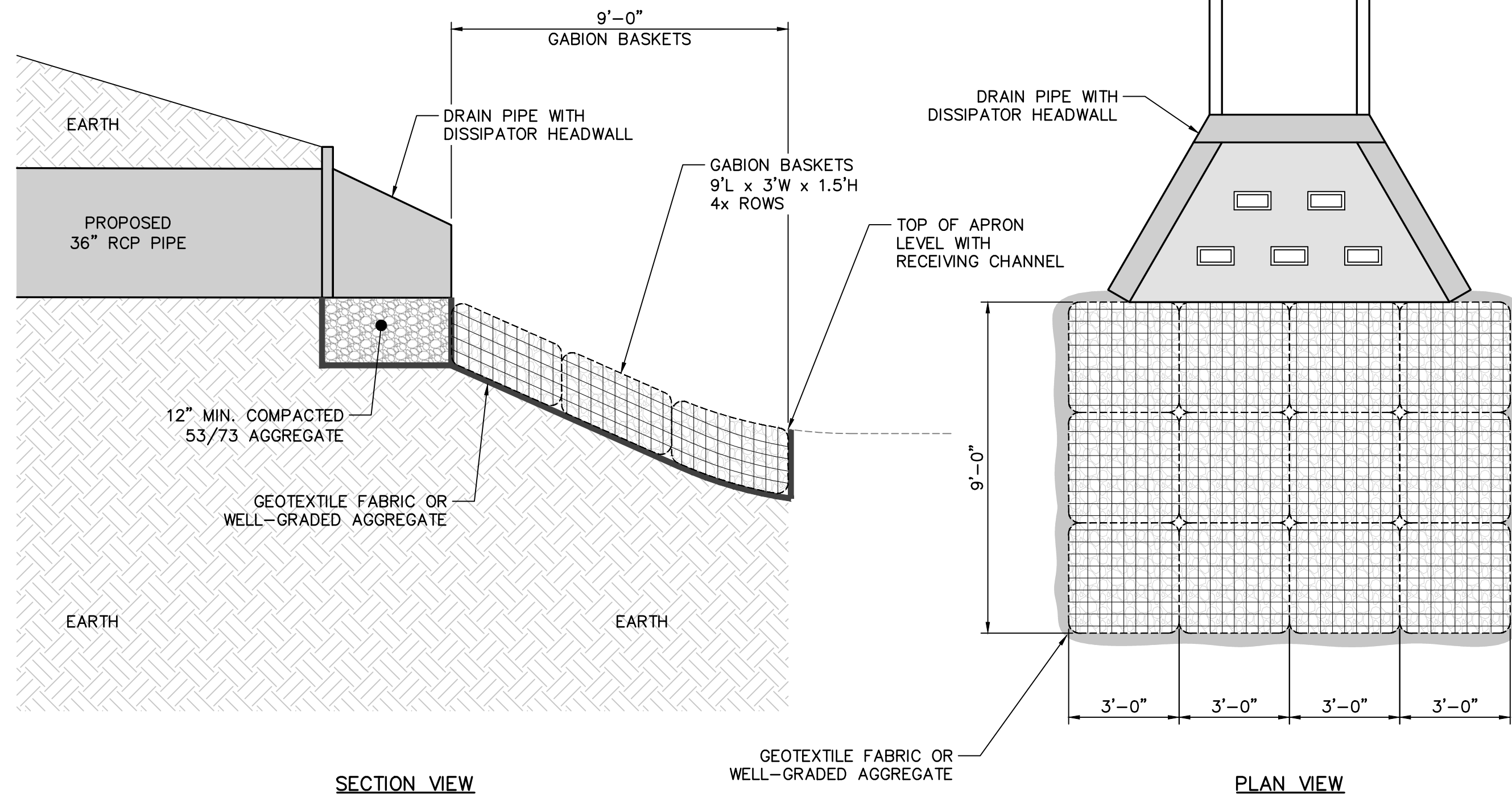
Bedding Material Designation (P greater than 5')		
	PVC, HDPE	CMP, RCP, CPP, Rigid Pipe (Other)
Material A	Native Backfill	Native Backfill
Material B	#8 Crushed Stone	"B" Borrow
Material C	#8 Crushed Stone	#8 Crushed Stone

Bedding Material Designation (P less than 5', but greater than 3")		
	PVC, HDPE	CMP, RCP, CPP, Rigid Pipe (Other)
Material A	#8 Crushed Stone	#8 Crushed Stone
Material B	#8 Crushed Stone	#8 Crushed Stone
Material C	#8 Crushed Stone	#8 Crushed Stone

Bedding Material Designation (Pipe Under Pavement or Driveway)		
	PVC, HDPE	CMP, RCP, CPP, Rigid Pipe (Other)
Material A	#8 Crushed Stone	#8 Crushed Stone
Material B	Pipe Not Allowed	#8 Crushed Stone
Material C	#8 Crushed Stone	#8 Crushed Stone

NOTES:
1. INDOT Type 1 pipe required for storm sewers/culverts under pavement
2.. INDOT Type 2 pipe required for storm sewers/culverts outside of pavement
3. All bedding shall be installed in 6" to 12" balanced lifts
4. For backfill purposes, paved shoulders, curbs, gutters, and sidewalkss are considered pavement
5. Flowable backfill shall be encased by a minimum of 2 feet of compacted earth backfill
6. CPP stands for "Corrugated Polypropylene Pipe", Rigid Pipe (Other) Includes DIP, VCP, etc.

PIPE BEDDING AND BACKFILL DETAIL
NOT TO SCALE



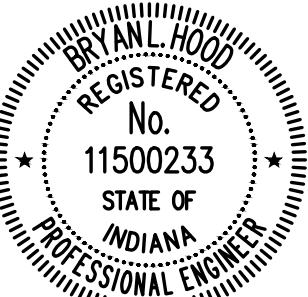
RIPRAP OUTFALL PROTECTION DETAIL
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood
9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

UTILITY
STANDARD DETAILS
C-127

PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: PIRAMINSKI DRAWING FILE: P:\2022\0047\0_DRAWINGS\UTILITY INFRASTRUCTURE\20220047\UTILITY.DWG

LEGEND:

- (A)

SIDEWALK, CONCRETE, 4"
- (B)

FULL DEPTH HMA PAVEMENT TYPE B (PAVEMENT)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- (B1)

FULL DEPTH HMA PAVEMENT TYPE B (PARKING)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- (B2)

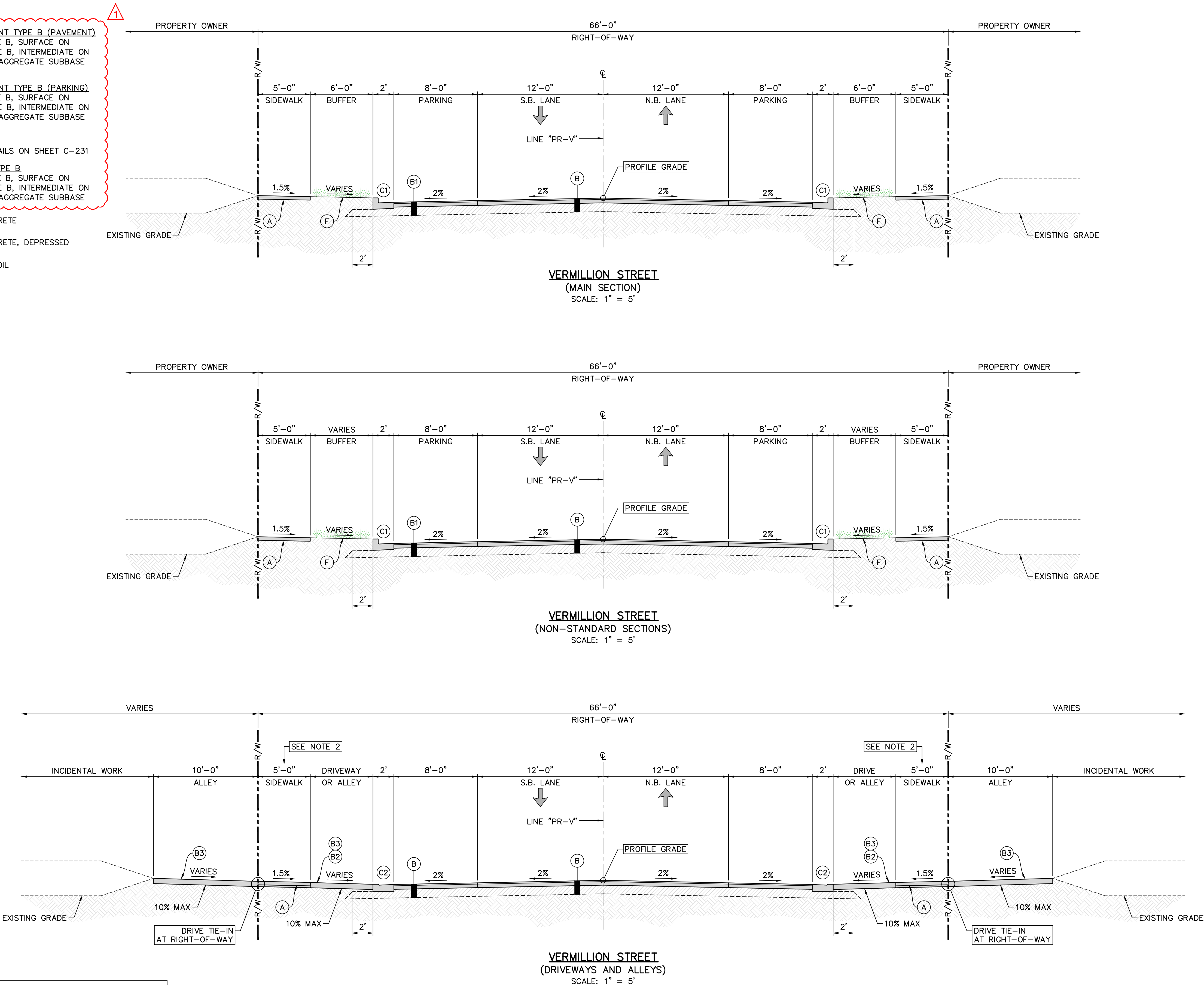
DRIVE, CONCRETE
REFER TO STANDARD DETAILS ON SHEET C-231
- (B3)

ALLEY, HMA PAVEMENT TYPE B
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- (C1)

CURB AND GUTTER, CONCRETE
- (C2)

CURB AND GUTTER, CONCRETE, DEPRESSED
- (F)

SODDING, OVER 4" TOP SOIL



- NOTES:
- FOR ADDITIONAL INFORMATION, SEE ROAD STANDARD DETAILS ON SHEETS C-229 TO C-233.
 - SIDEWALK SECTION ACCROSS DRIVEWAY OR ALLEY SHALL UTILIZE 1.5% SLOPE AND DRIVEWAY OR ALLEY PAVEMENT THICKNESS/DEPTH.



AMERICAN
STRUCTUREPOINT
INC.

116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX	
DATE:	9/25/2025
PROJECT PHASE:	CONSTRUCTION DOCUMENTS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
TYPICAL SECTIONS
C-201

PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: PIRAMINSKI DRAWING FILE: P:\2022\0047\0 DRAWINGS\UTILITY INFRASTRUCTURE\20220047\UTILITY.DWG

LEGEND:

- A

SIDEWALK, CONCRETE, 4"
- B

FULL DEPTH HMA PAVEMENT TYPE B (PAVEMENT)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- B1

FULL DEPTH HMA PAVEMENT TYPE B (PARKING)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- B2

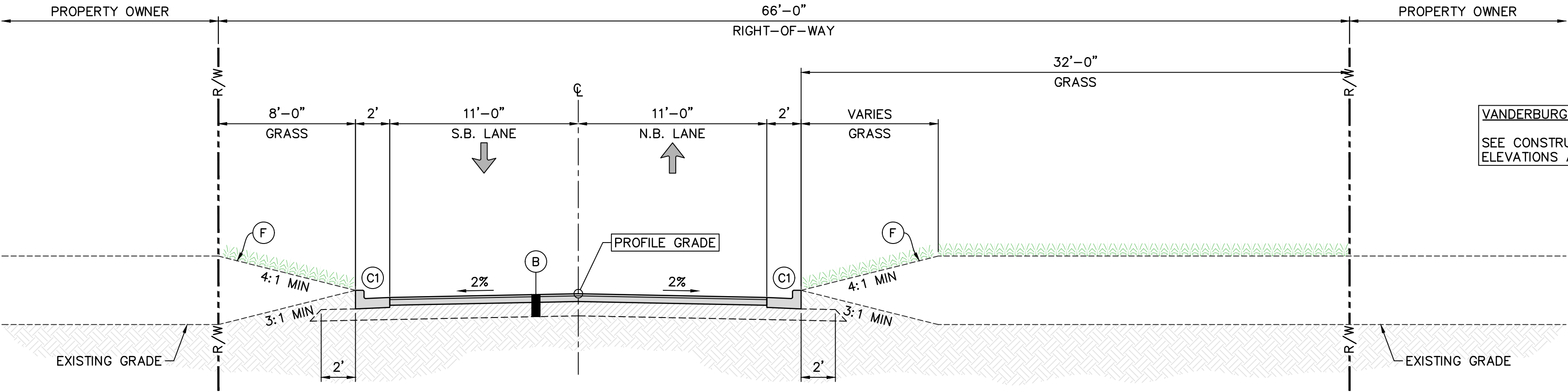
DRIVE, CONCRETE
REFER TO STANDARD DETAILS ON SHEET C-231
- B3

ALLEY, HMA PAVEMENT TYPE B
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- C1

CURB AND GUTTER, CONCRETE
- C2

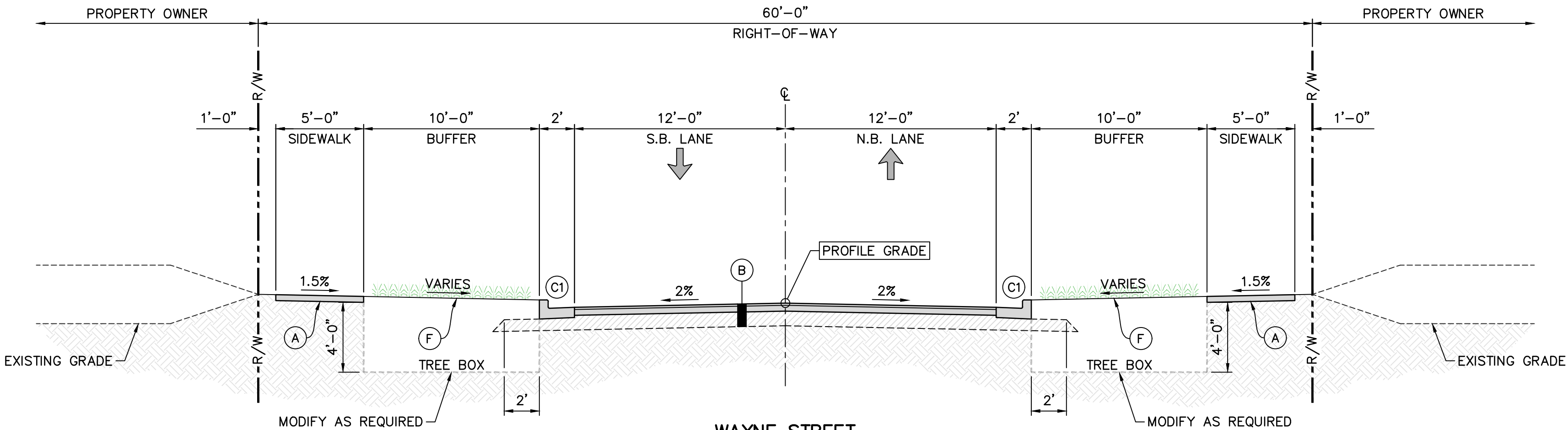
CURB AND GUTTER, CONCRETE, DEPRESSED
- F

SODDING, OVER 4" TOP SOIL

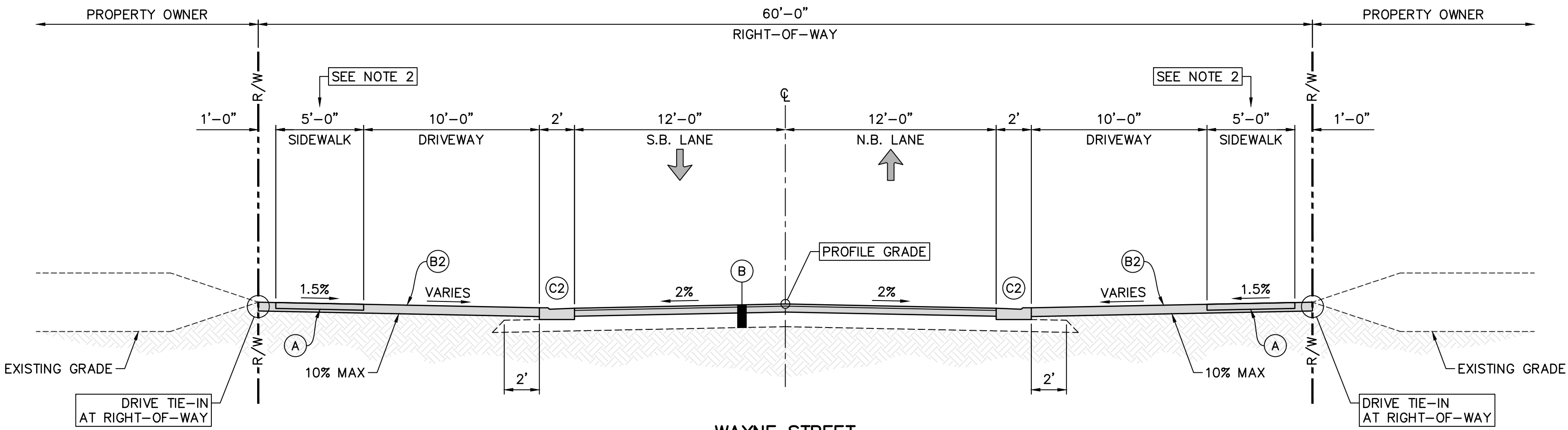


VANDERBURG NOTE:
SEE CONSTRUCTION DETAIL PLAN FOR ADDITIONAL SPOT ELEVATIONS AND SUPER ELEVATION TRANSITION AREA.

VANDERBURG STREET
(MAIN SECTION)
SCALE: 1" = 5'



WAYNE STREET
(MAIN SECTION)
SCALE: 1" = 5'



WAYNE STREET
(DRIVEWAYS)
SCALE: 1" = 5'

- NOTES:
- FOR ADDITIONAL INFORMATION, SEE ROAD STANDARD DETAILS ON SHEETS C-229 TO C-233.
 - SIDEWALK SECTION ACROSS DRIVEWAY OR ALLEY SHALL UTILIZE 1.5% SLOPE AND DRIVEWAY OR ALLEY PAVEMENT THICKNESS/DEPTH.



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX	
DATE:	9/25/2025
PROJECT PHASE:	CONSTRUCTION DOCUMENTS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
TYPICAL SECTIONS
C-202

PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:31 PM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2022\0047\0_DRAWINGS\UTILITY INFRASTRUCTURE\20220047\UTILITY.DWG

LEGEND:

- A

SIDEWALK, CONCRETE, 4"
- B

FULL DEPTH HMA PAVEMENT TYPE B (PAVEMENT)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- B1

FULL DEPTH HMA PAVEMENT TYPE B (PARKING)
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- B2

DRIVE, CONCRETE
REFER TO STANDARD DETAILS ON SHEET C-231
- B3

ALLEY, HMA PAVEMENT TYPE B
1.5" 165#/SYS HMA, TYPE B, SURFACE ON
4" 440#/SYS HMA, TYPE B, INTERMEDIATE ON
10" NO. 53 COMPACTED AGGREGATE SUBBASE
- C1

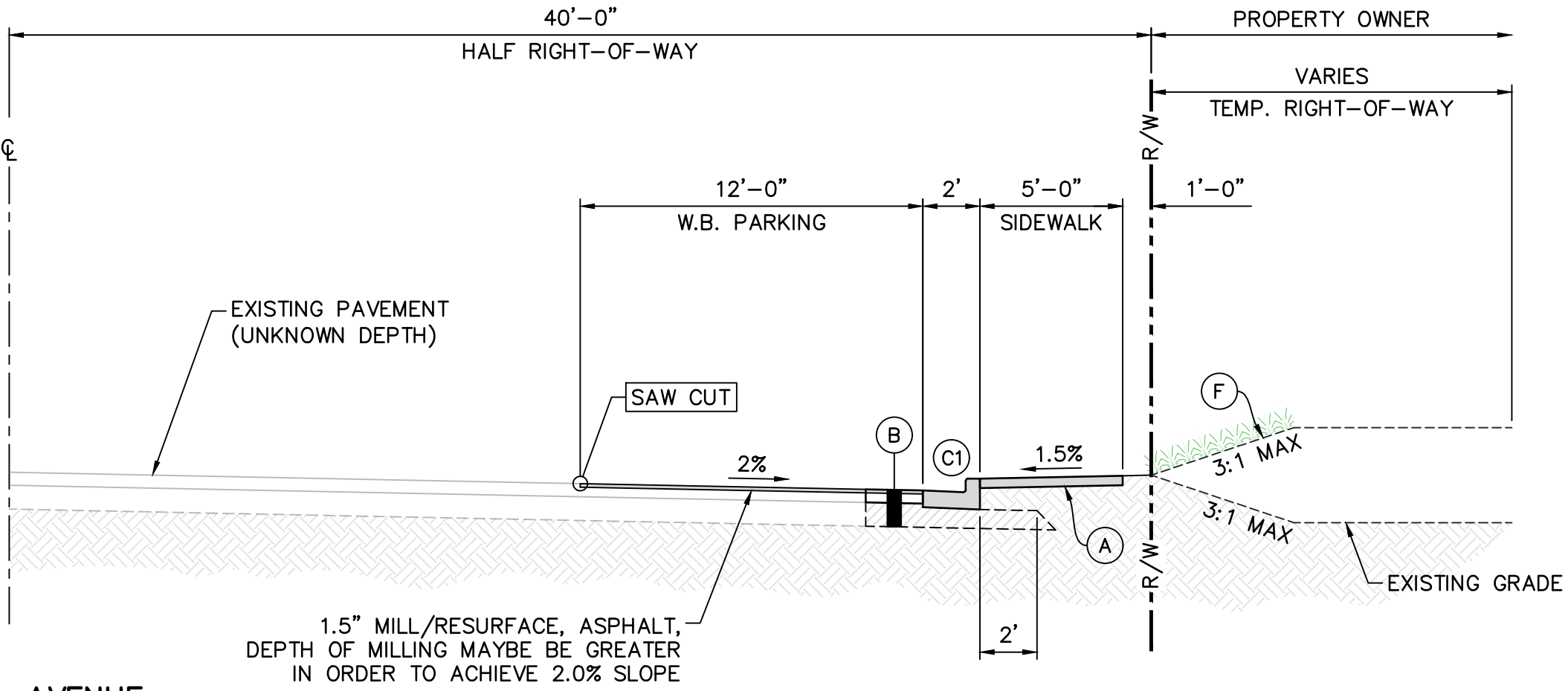
CURB AND GUTTER, CONCRETE
- C2

CURB AND GUTTER, CONCRETE, DEPRESSED
- F

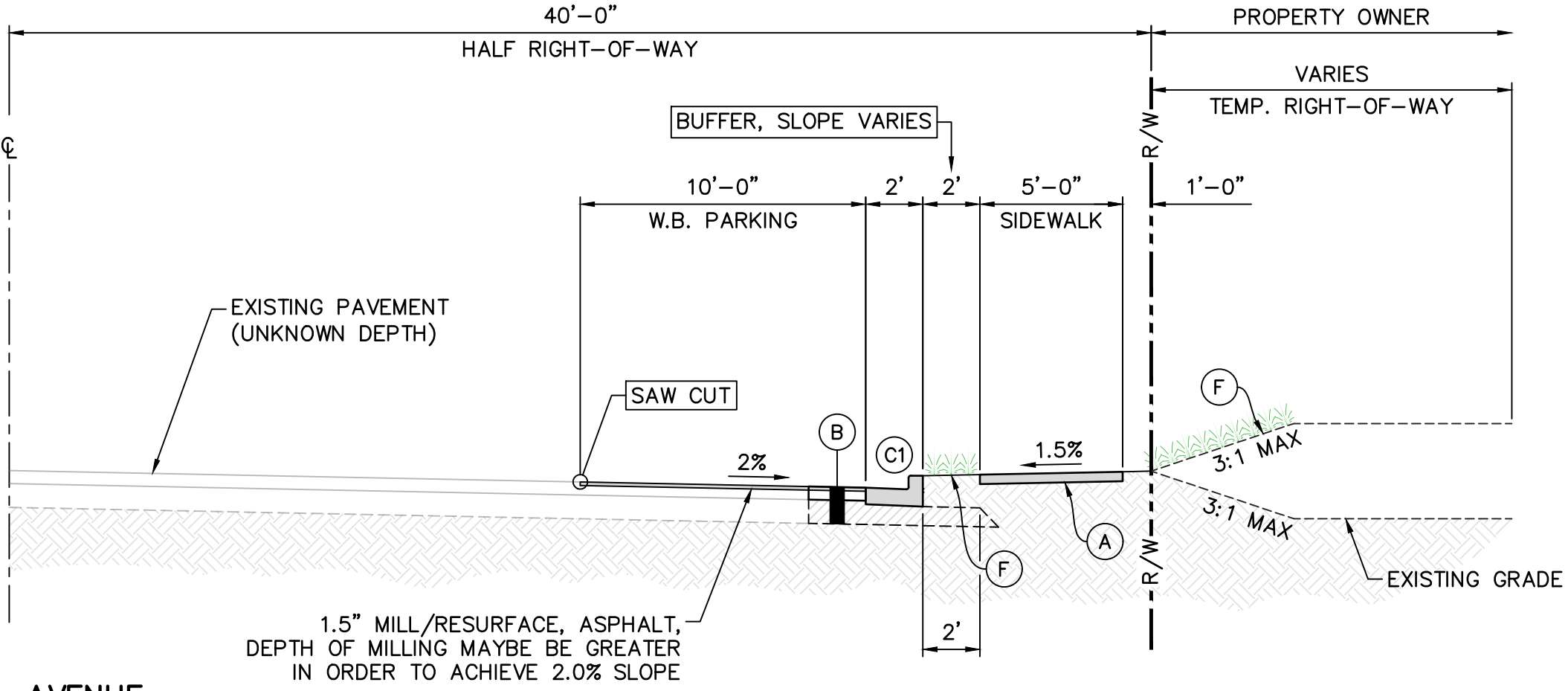
SODDING, OVER 4" TOP SOIL

NOTES:

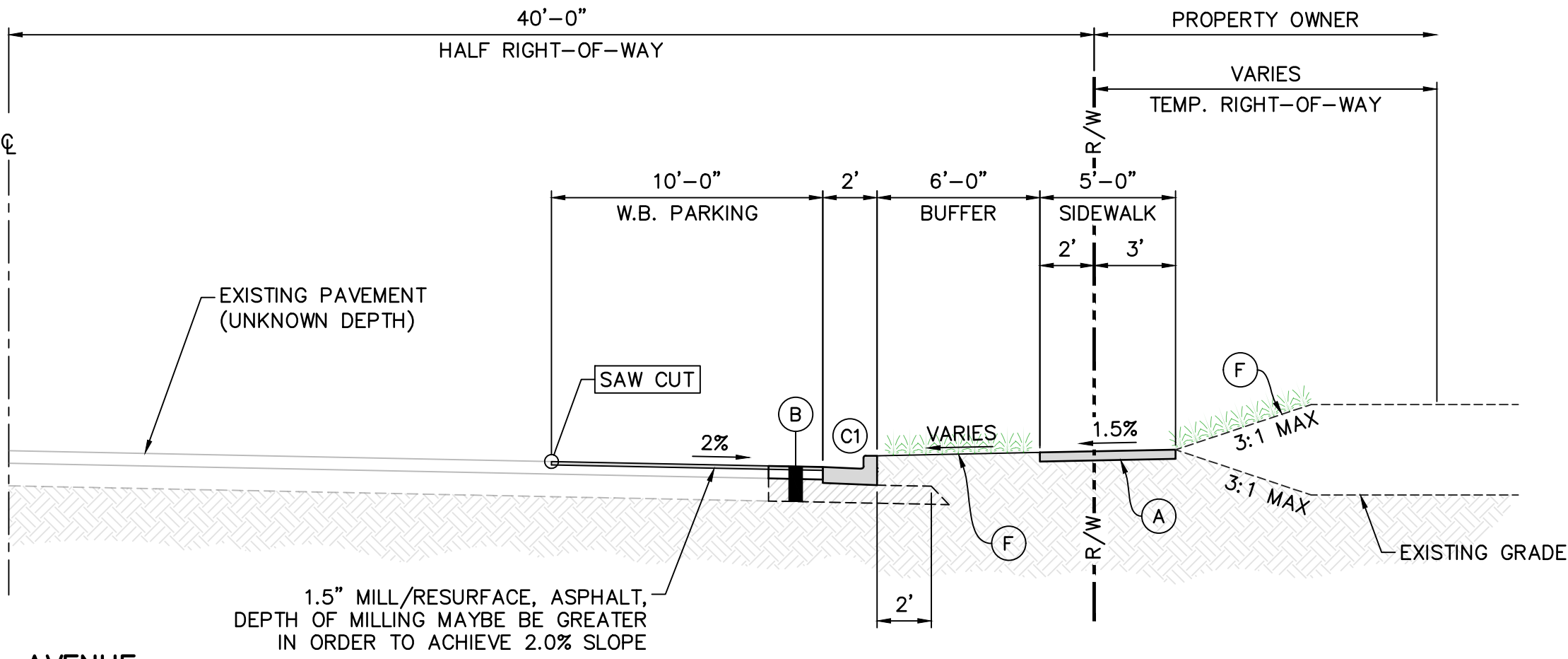
1. FOR ADDITIONAL INFORMATION, SEE ROAD STANDARD DETAILS ON SHEETS C-229 TO C-233.
2. SIDEWALK SECTION ACROSS DRIVEWAY OR ALLEY SHALL UTILIZE 1.5% SLOPE AND DRIVEWAY OR ALLEY PAVEMENT THICKNESS/DEPTH.



CENTRAL AVENUE
(12-FT SECTION)
SCALE: 1" = 5'



CENTRAL AVENUE
(10-FT WITH 2-FT BUFFER SECTION)
SCALE: 1" = 5'



CENTRAL AVENUE
(10-FT WITH 6-FT BUFFER SECTION)
SCALE: 1" = 5'



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood
CERTIFIED BY

ISSUANCE INDEX	
DATE:	9/25/2025
PROJECT PHASE:	CONSTRUCTION DOCUMENTS

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

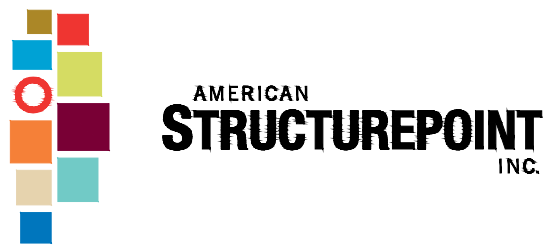
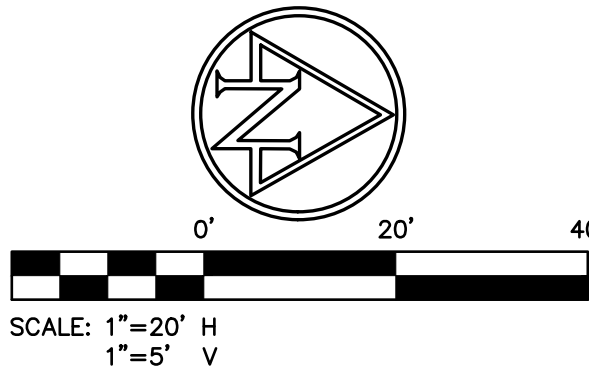
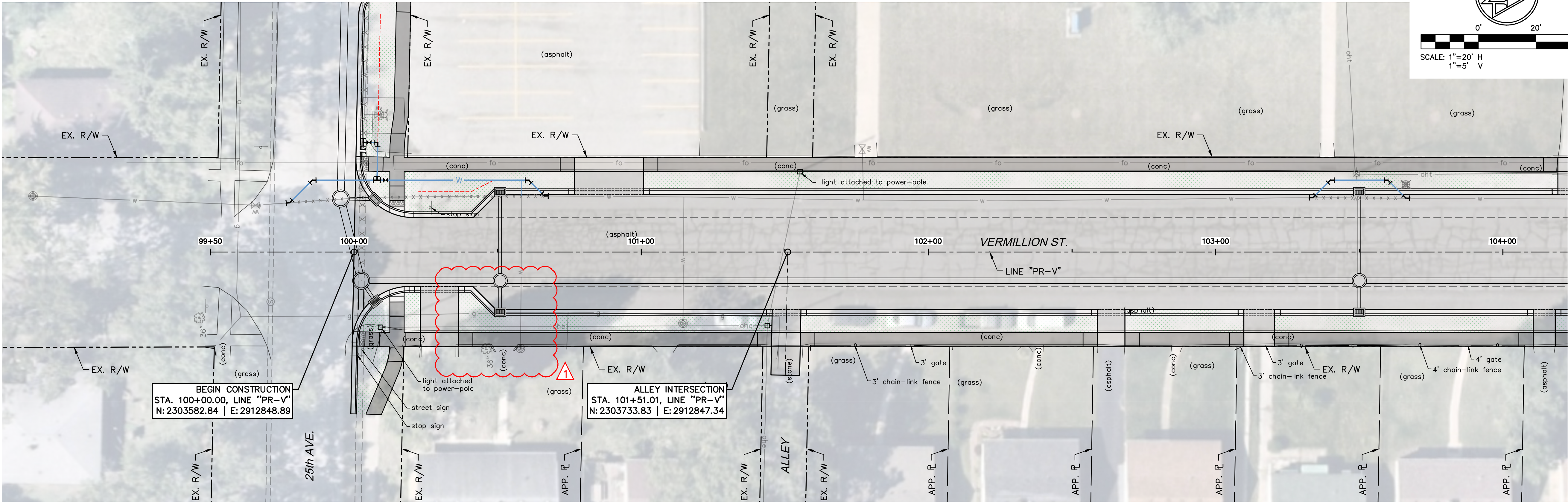
ROAD
TYPICAL SECTIONS
C-203

PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:32 PM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2022\00047\01.DRAWINGS\UTILITY INFRASTRUCTURE\202200047\UIPPR.DWG

DARREN L. THOMPSON

SCHOOL
TOWN OF EAST GARY

SCHOOL
TOWN OF EAST GARY



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

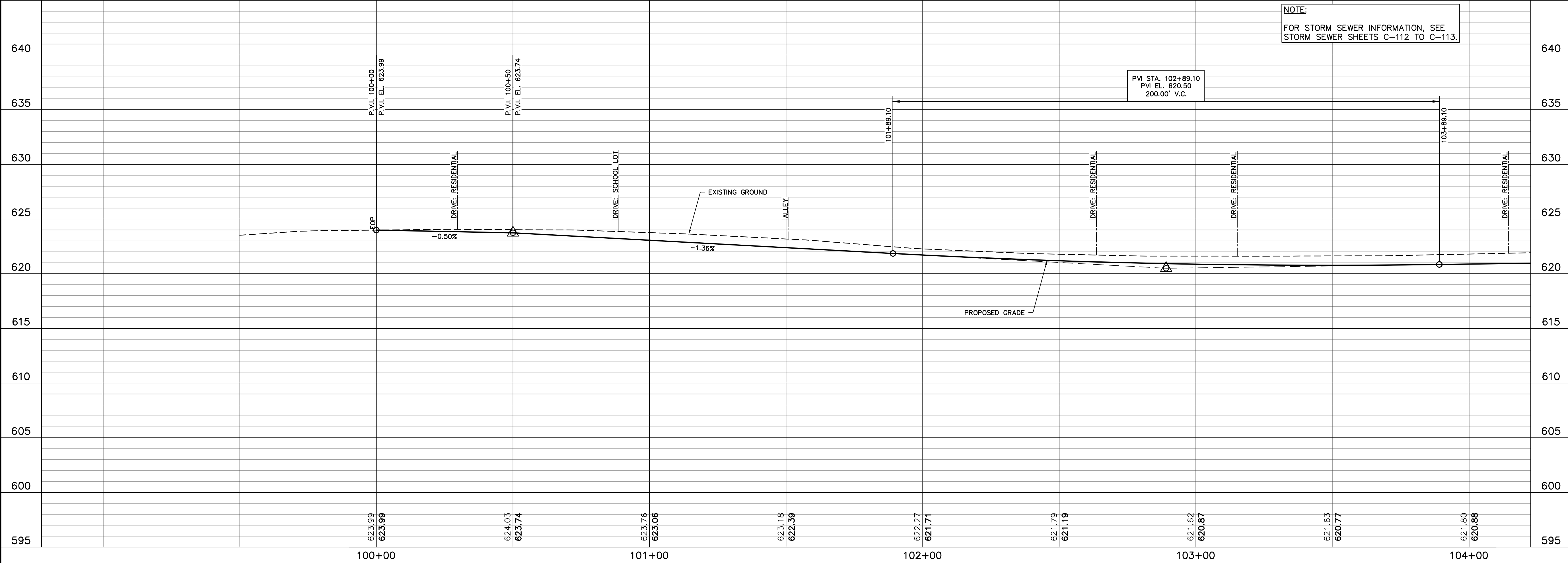
ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

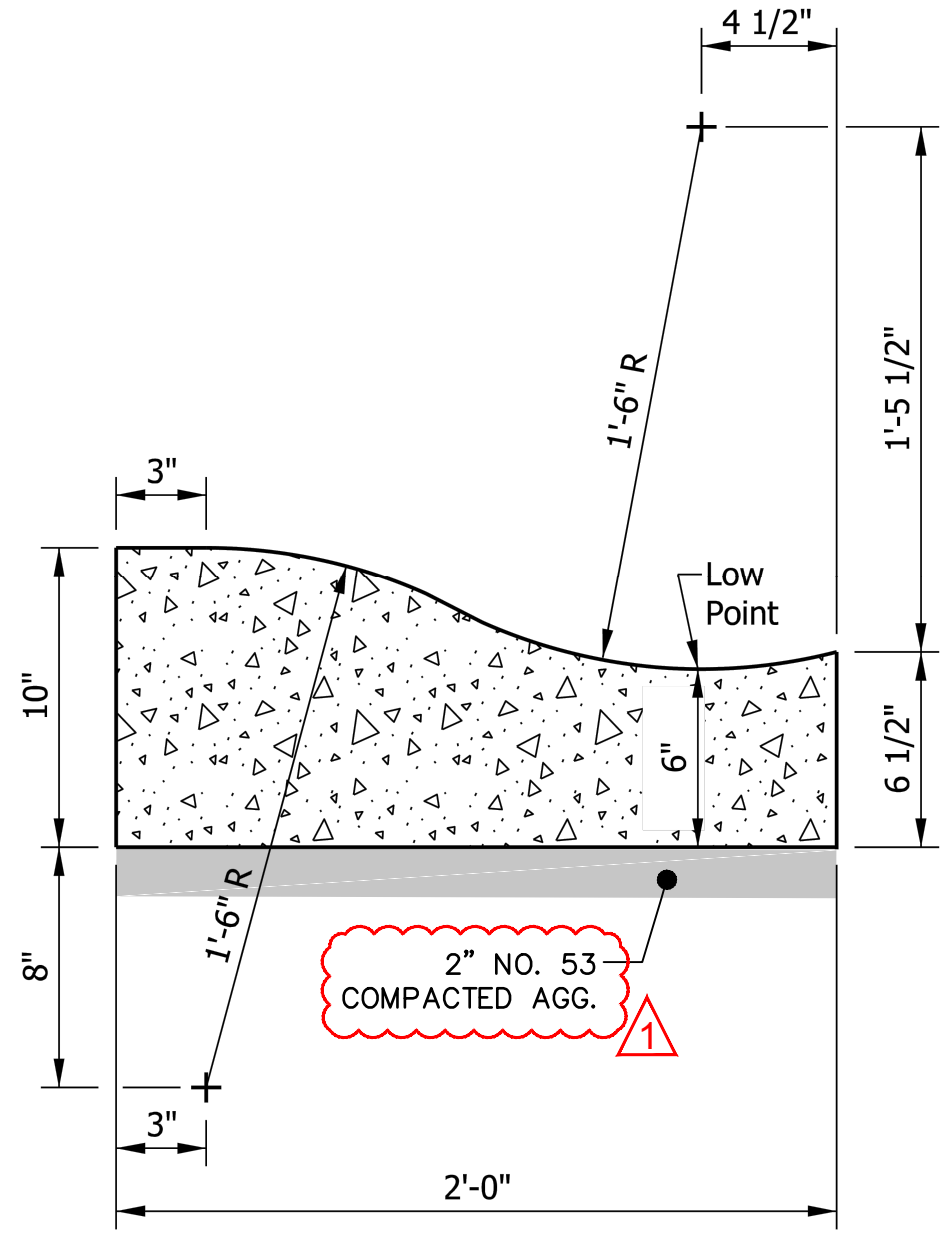
Project Number 202200047

ROAD
PLAN AND PROFILE
VERMILLION ST.

C-204

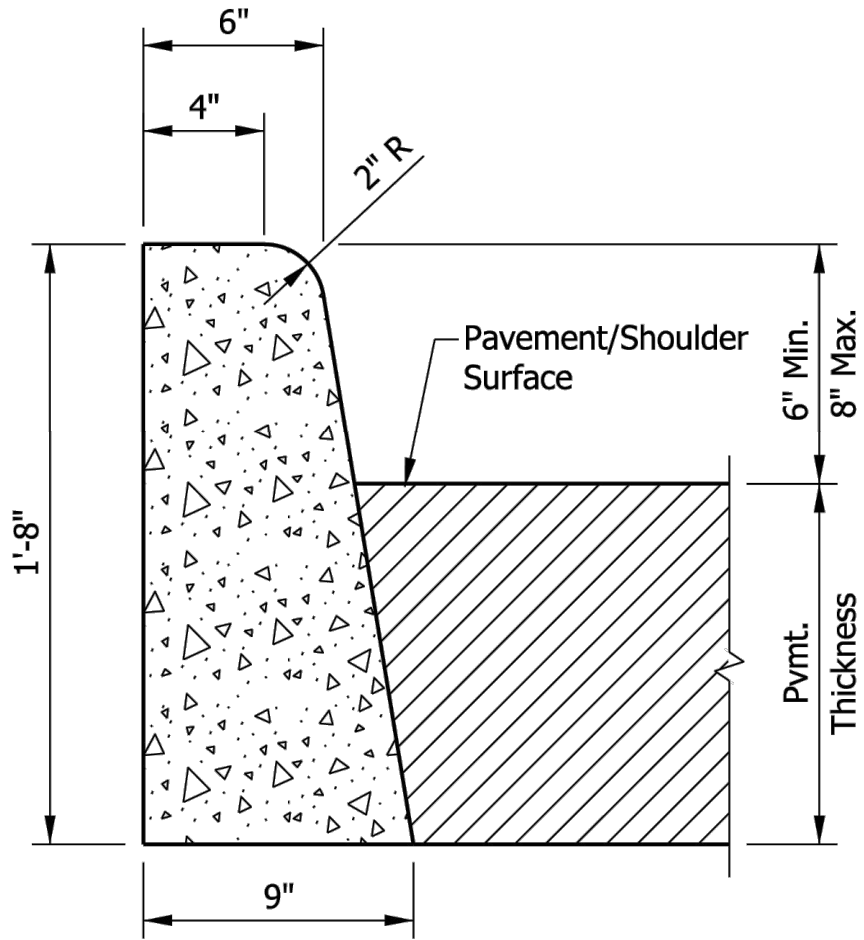


PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:32 PM EDITED BY: PIRAMINSKI DRAWING FILE: P:\2022\00047\00047.D DRAWINGS\UTILITY INFRASTRUCTURE\202200047\JLDI.DWG



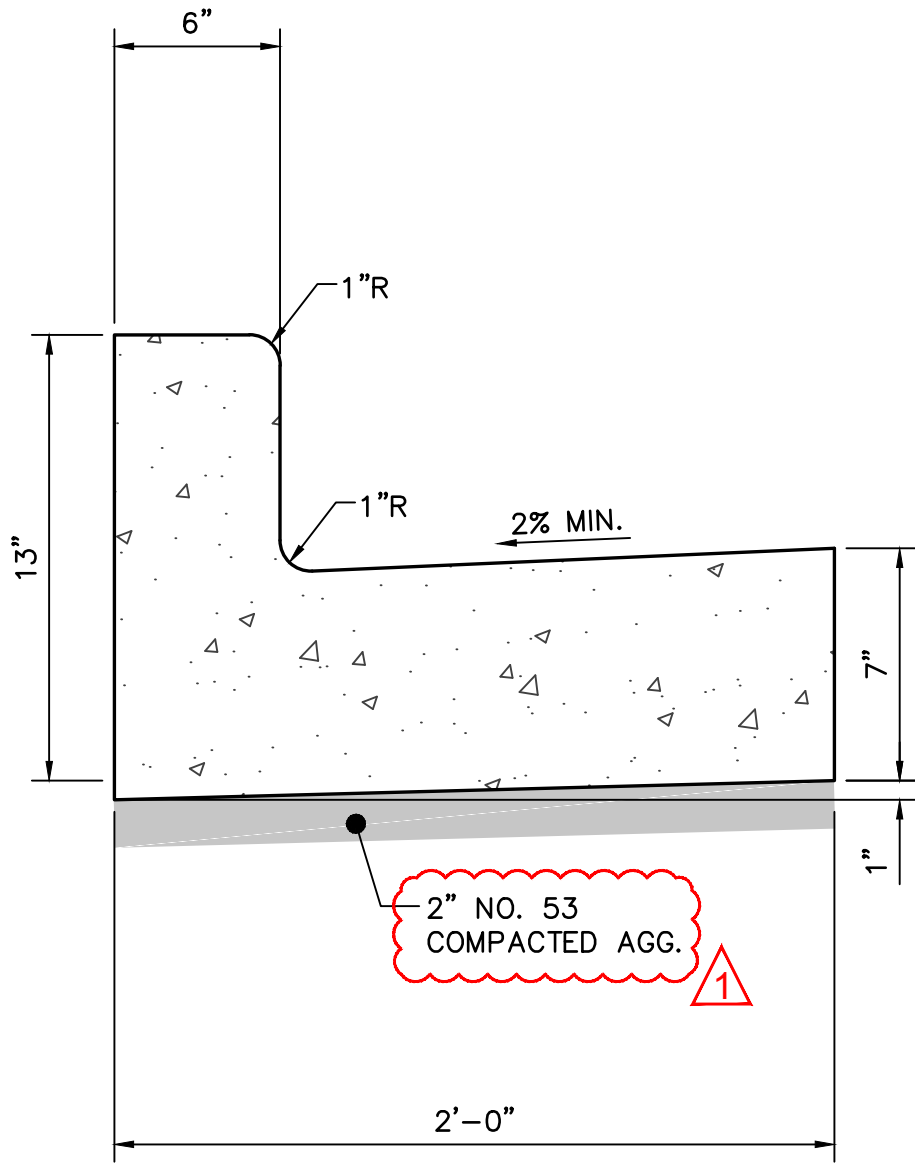
NOTE:
CURB DETAIL SHOWN IS PART OF INDOT STANDARD DRAWING NO: E-605-CCSJ-01.

ROLLED CURB DETAIL
NOT TO SCALE

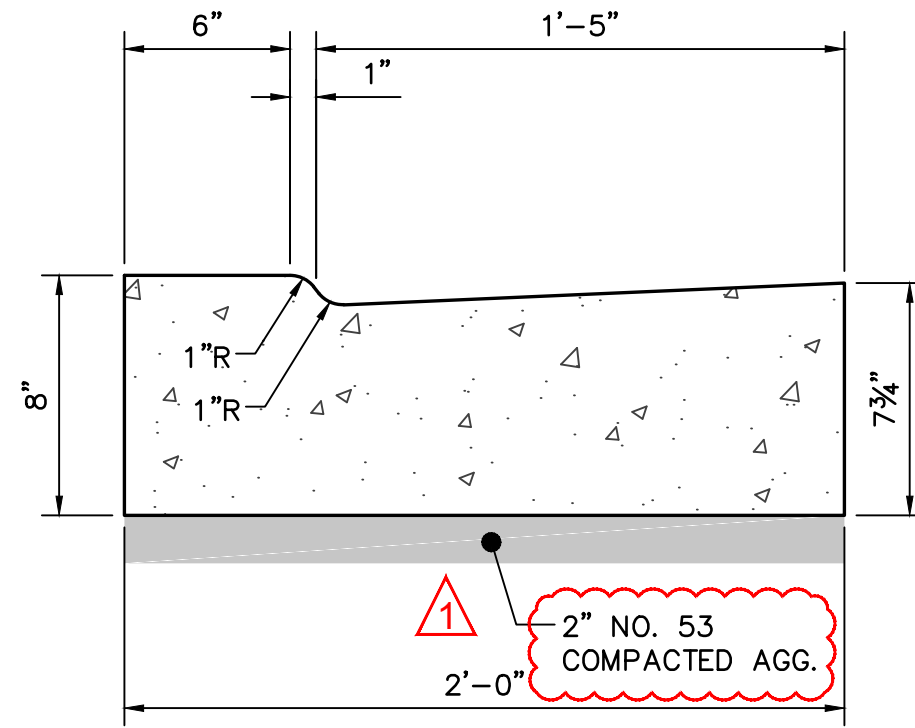


NOTE:
CURB DETAIL SHOWN IS PART OF INDOT STANDARD DRAWING NO: E-605-CCSJ-01.

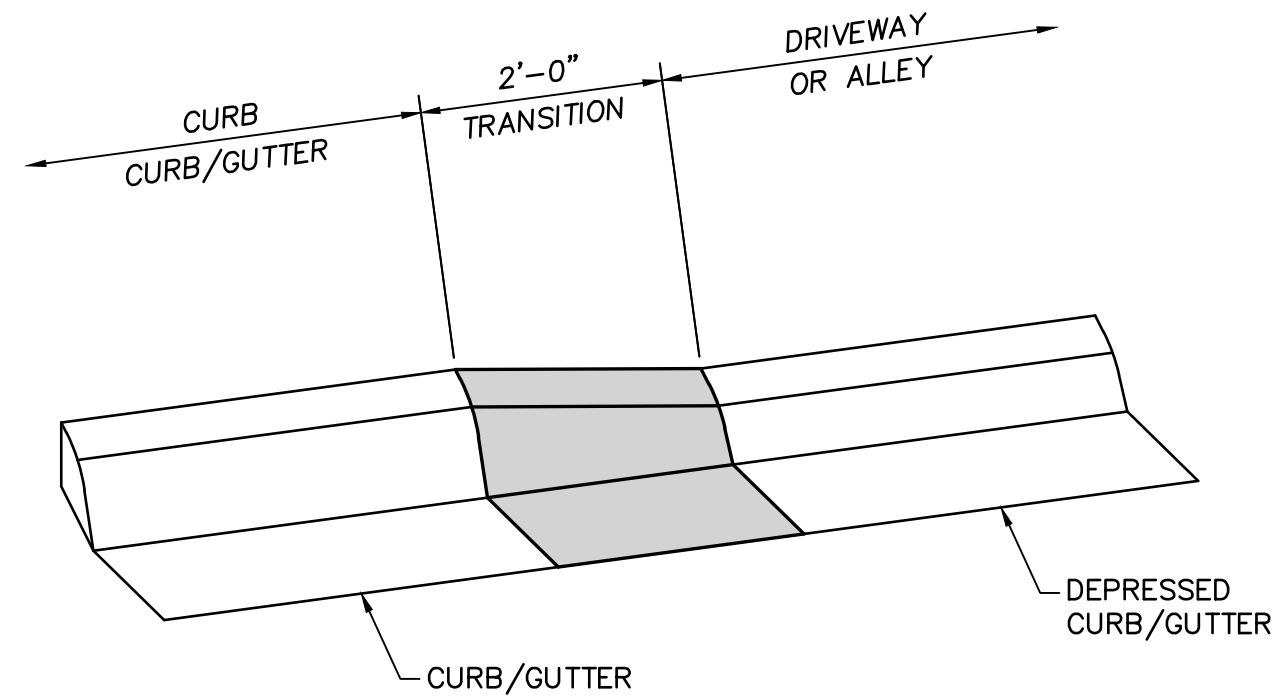
STANDARD CURB DETAIL
NOT TO SCALE



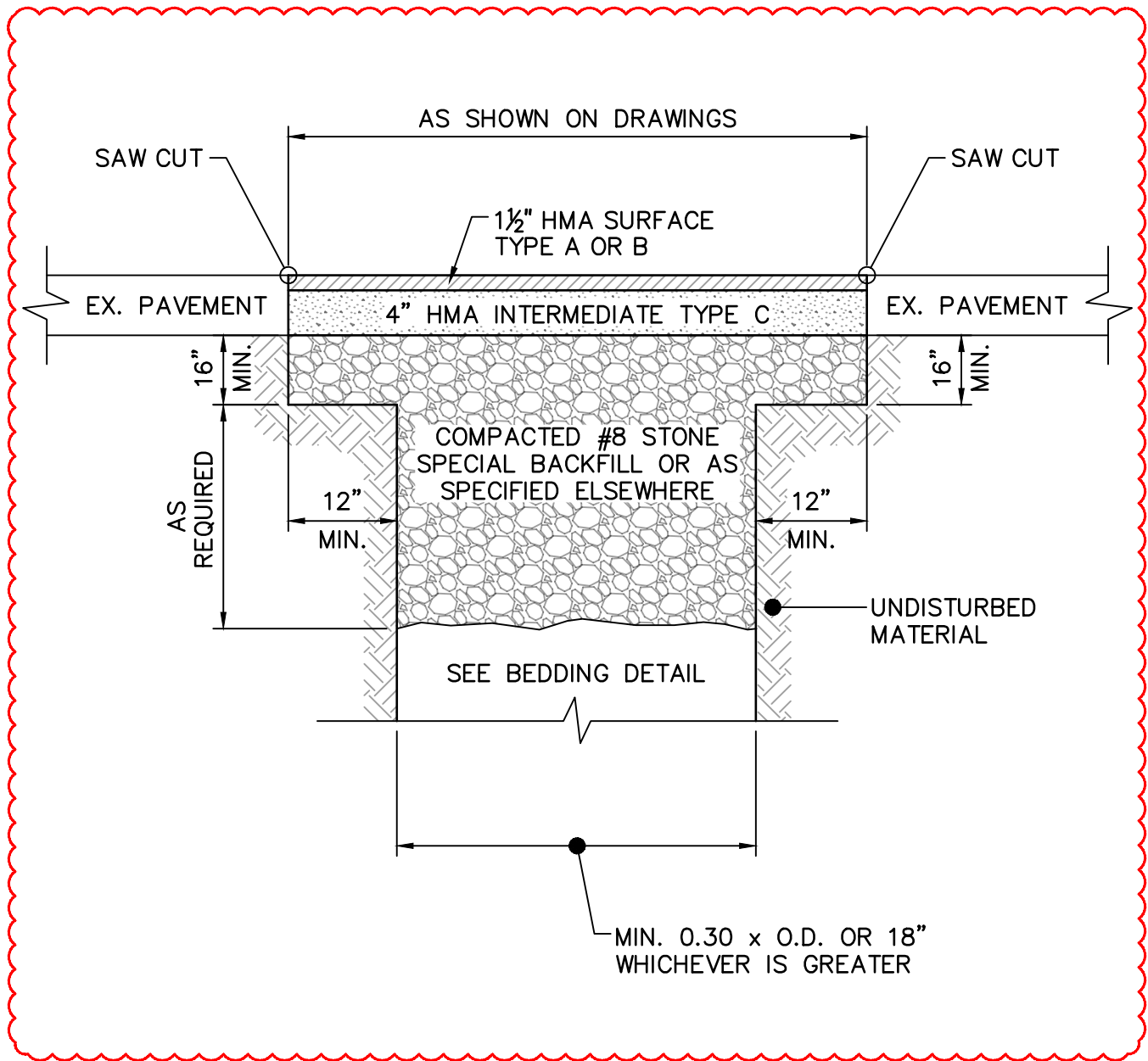
COMBINED CURB AND GUTTER DETAIL
NOT TO SCALE



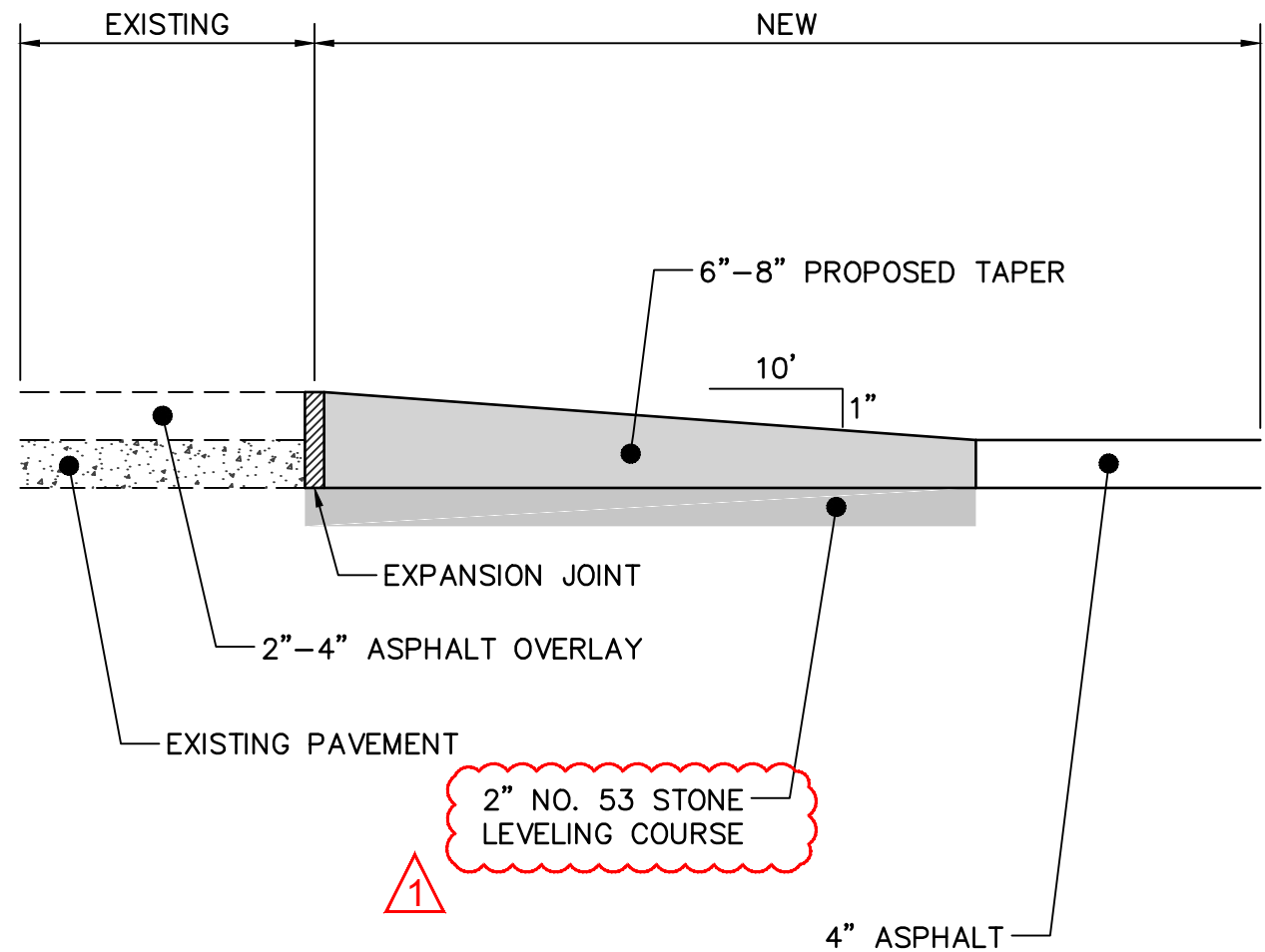
DEPRESSED CURB AND GUTTER DETAIL
NOT TO SCALE



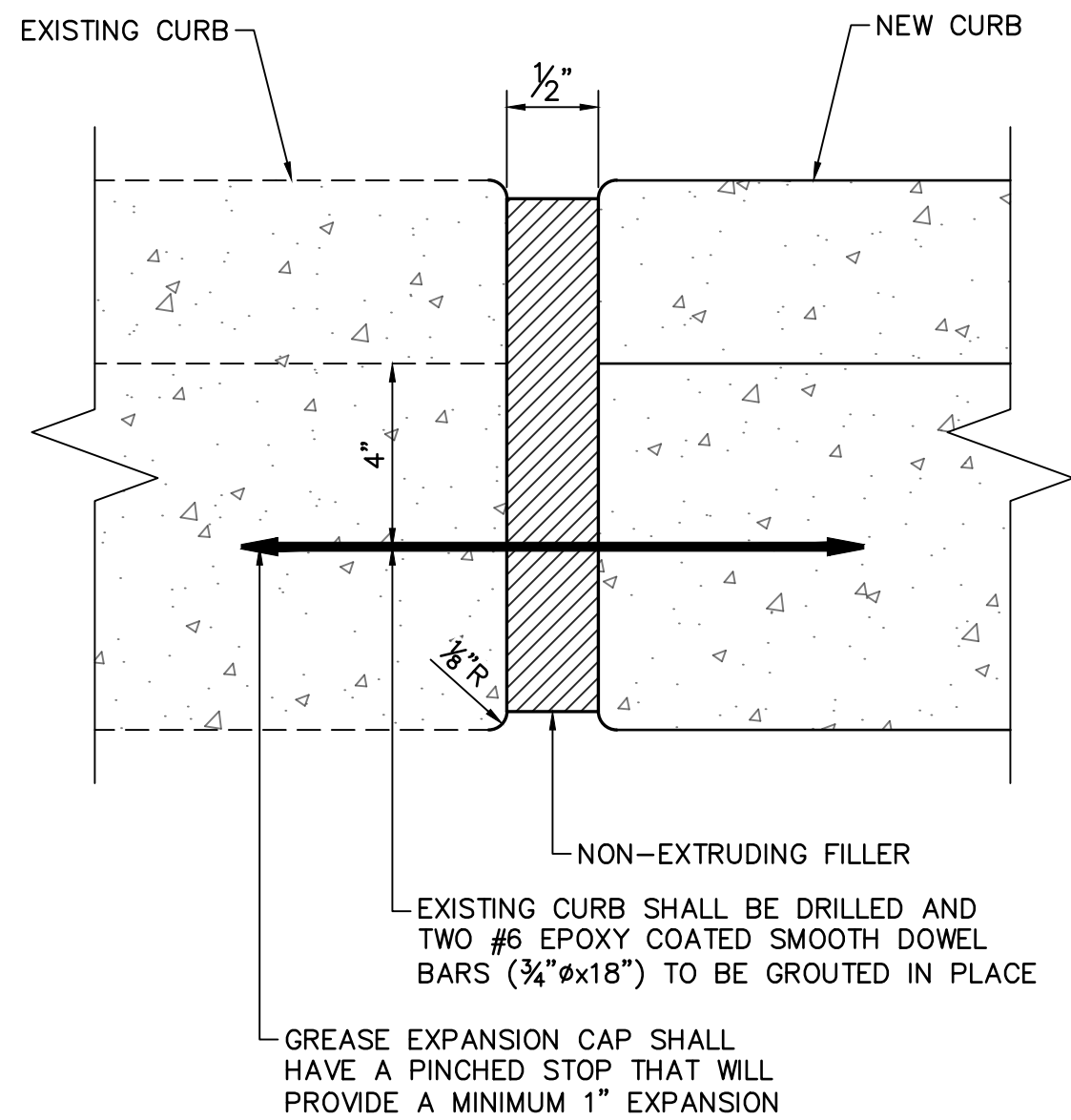
CURB TRANSITION DETAIL
NOT TO SCALE



ASPHALT PAVEMENT REPAIR WITH TRENCH DETAIL
NOT TO SCALE

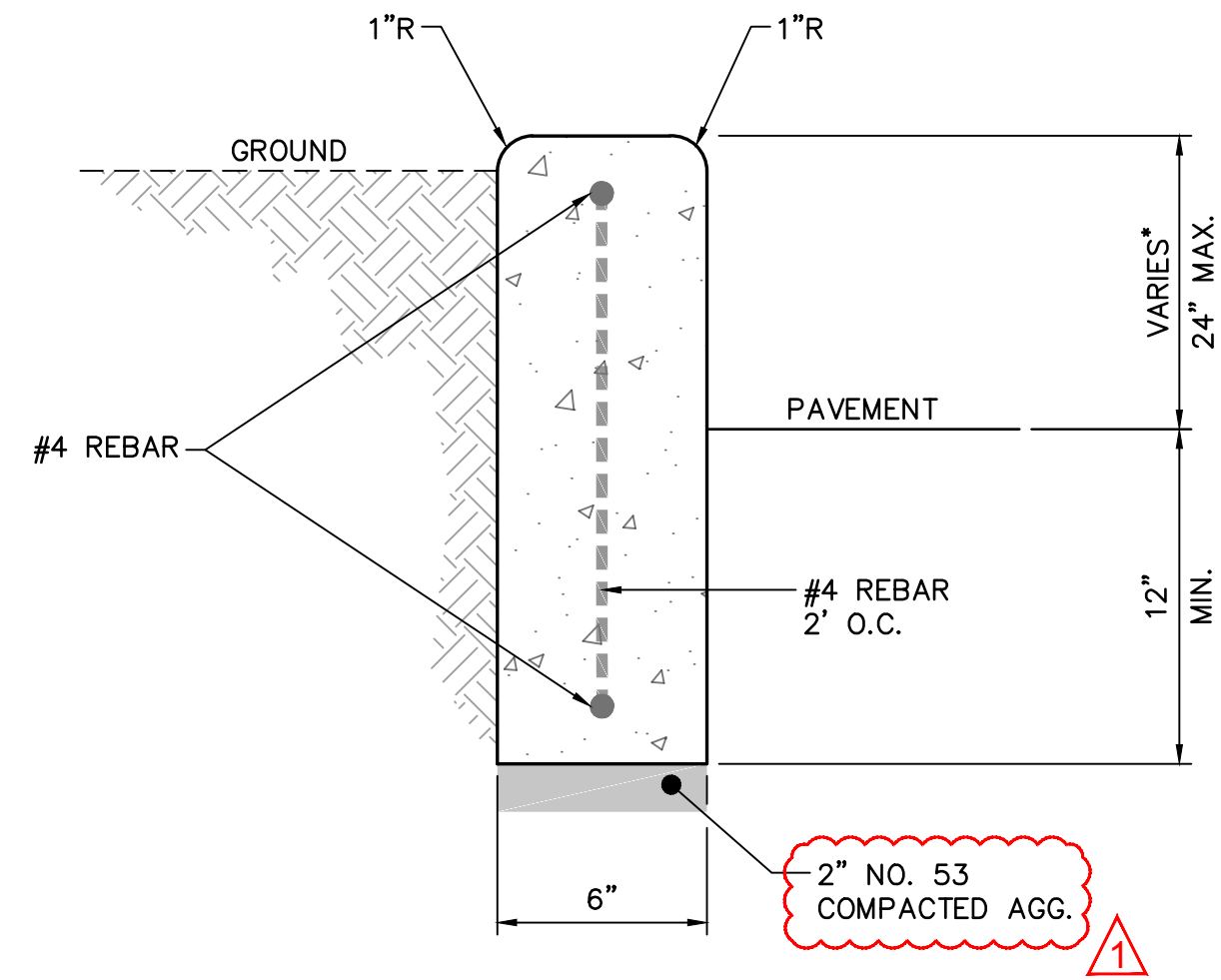


NEW PAVEMENT CONNECTION TO EXISTING PAVEMENT DETAIL
NOT TO SCALE



EXISTING CURB AND GUTTER EXPANSION JOINT DETAIL
NOT TO SCALE

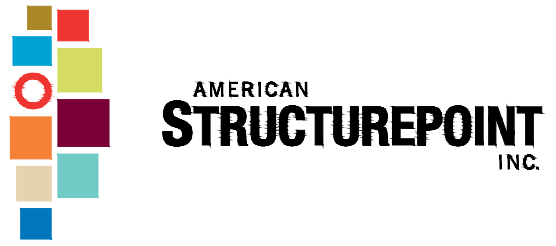
CONTRACTOR NOTE:
IF CURB HEIGHT EXCEEDS 8" HEIGHT,
UTILIZE #4 REBAR PLACEMENT AS SHOWN



MODIFIED STRAIGHT CURB DETAIL
(RETAINING WALL USE)

* HEIGHT VARIES, SEE SPOT ELEVATIONS ON CONSTRUCTION DETAILS

RETAINING WALL DETAIL
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE STORMWATER IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

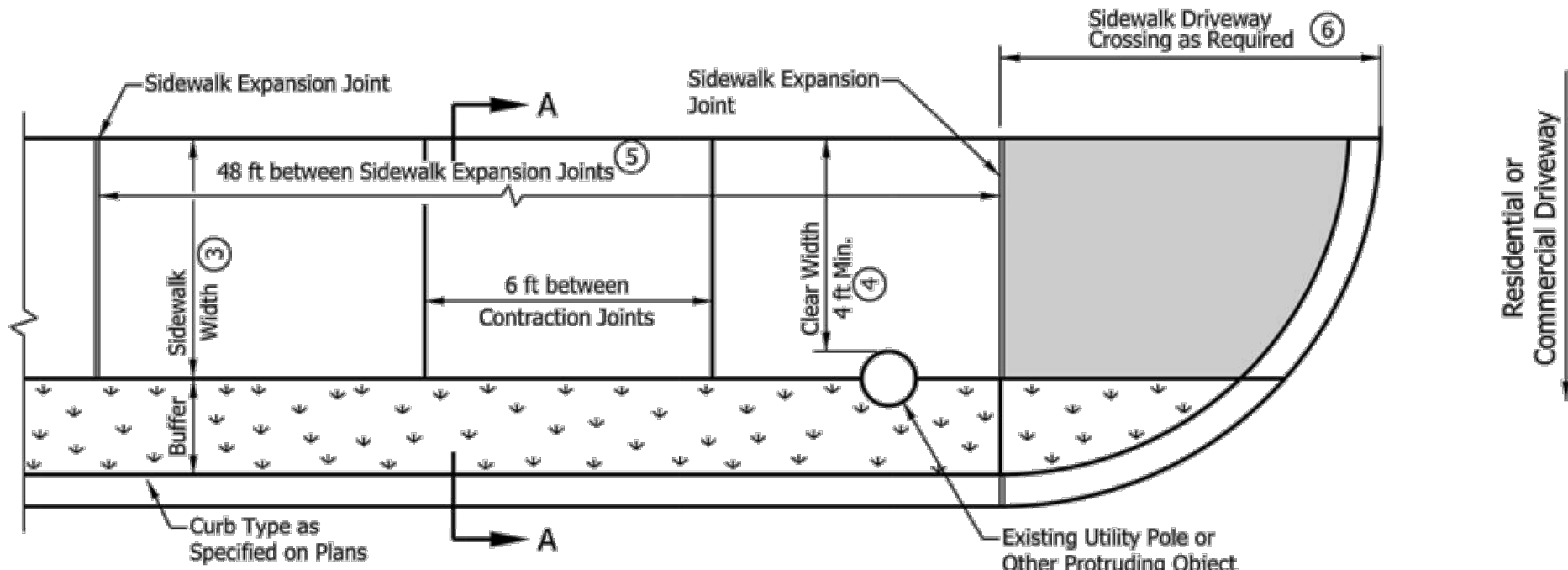
REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
STANDARD DETAILS

C-229

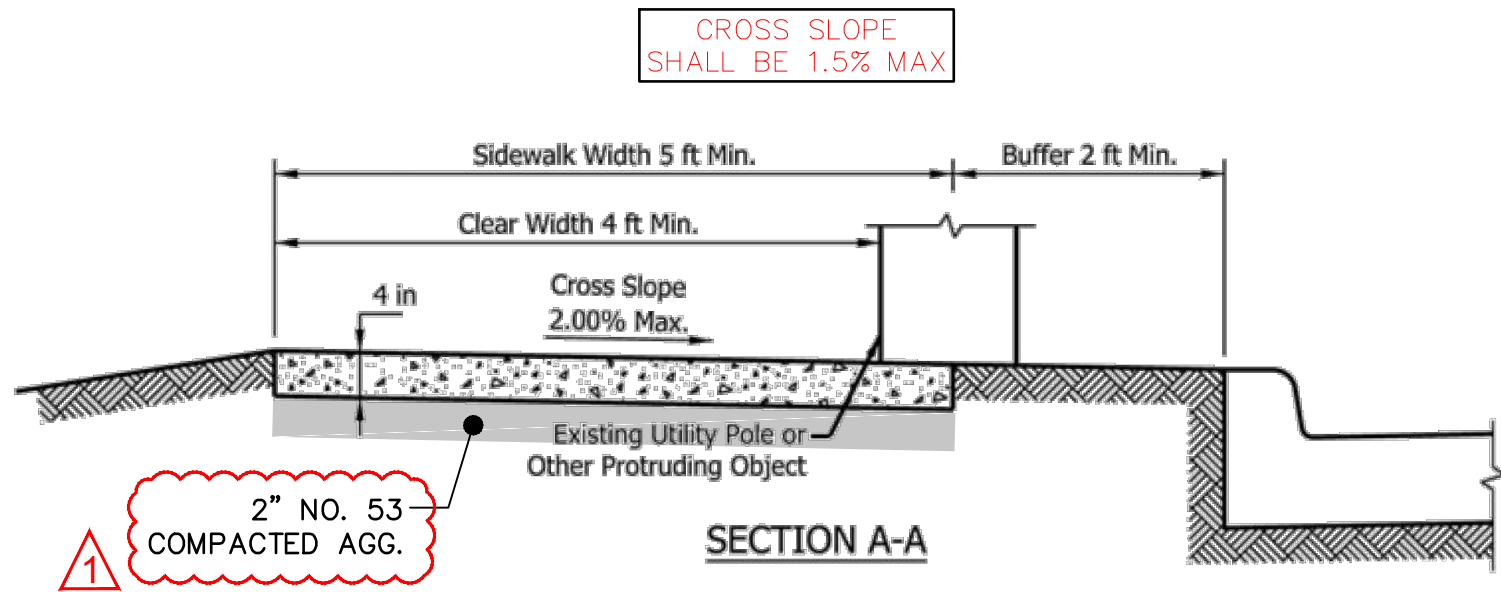
PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:32 PM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2022\00047\0 DRAWINGS\UTILITY INFRASTRUCTURE\202200047\JLDI.DWG



SIDEWALK PLAN

NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. The grade of the sidewalk is measured in the direction of pedestrian travel. The grade of the sidewalk shall not exceed the grade of the adjacent roadway. The cross slope is measured perpendicular to the direction of pedestrian travel. The cross slope of the sidewalk shall not exceed 2.00%.
- 3 Where there is a buffer between the sidewalk and curb, the preferred minimum sidewalk clear width is 5 ft.
- 4 A 4-ft minimum clear width shall be provided adjacent to street furniture, mailbox, utility pole, or other protruding object. Where the sidewalk clear width is less than 5 ft, a passing space shall be provided at 200 ft intervals. The passing space minimum clear dimension shall be 5 ft x 5 ft.
- 5 See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.
- 6 See Standard Drawing E 604-SDWK-03 for sidewalk driveway crossing configurations.

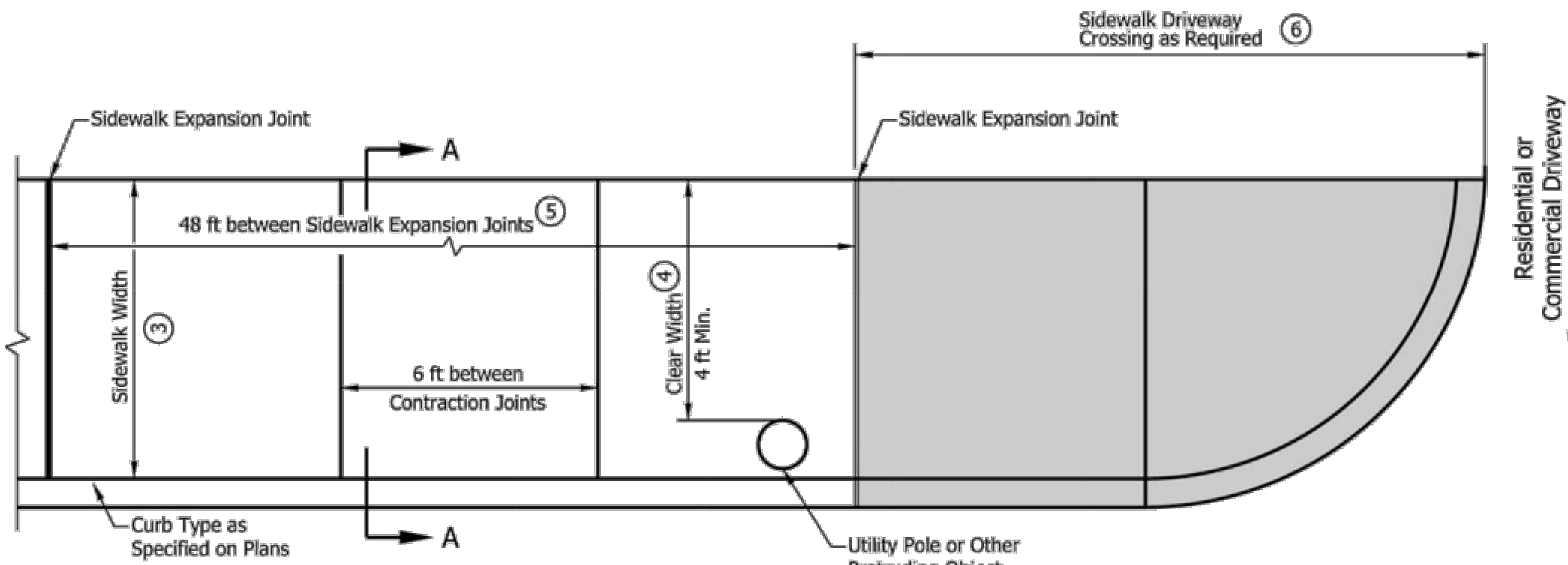


SECTION A-A

NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SDWK-01

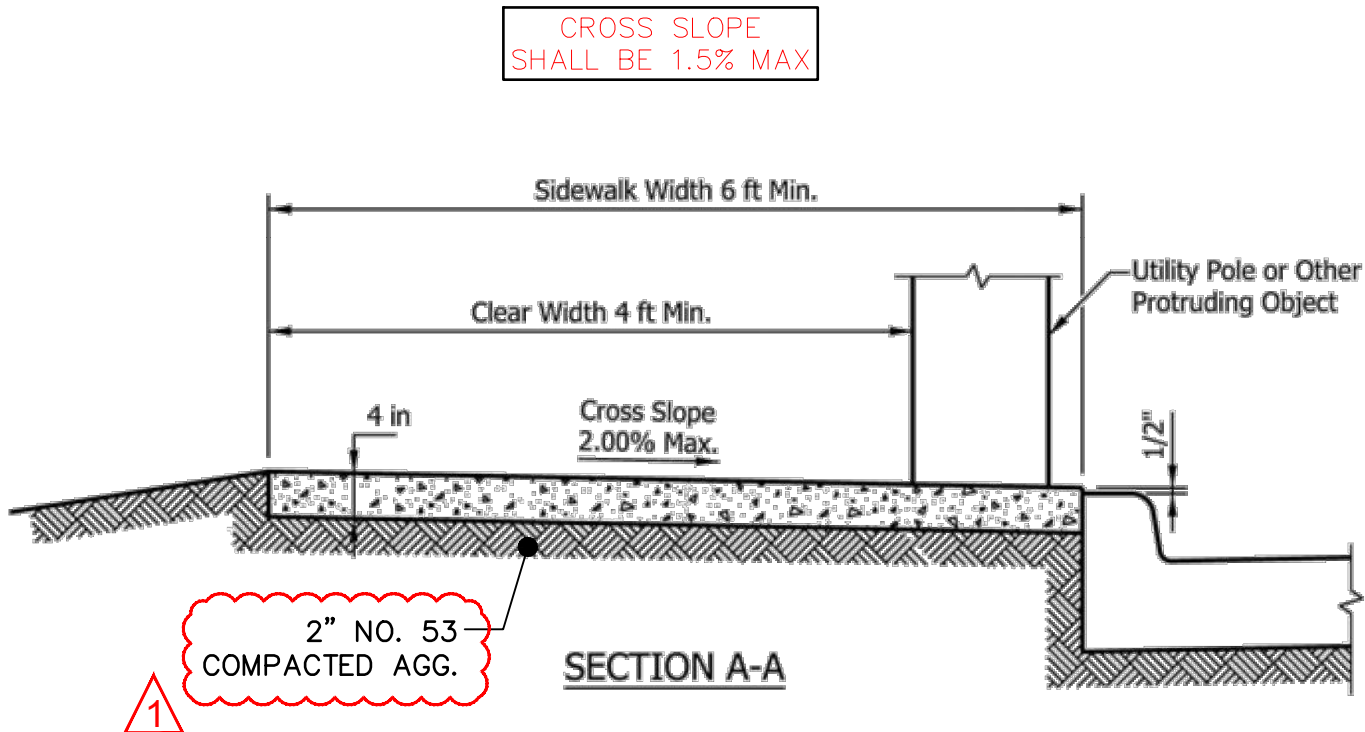
SIDEWALK WITH BUFFER DETAIL
NOT TO SCALE



SIDEWALK PLAN

NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. The grade of the sidewalk is measured in the direction of pedestrian travel. The grade of the sidewalk shall not exceed the grade of the adjacent roadway. The cross slope is measured perpendicular to the direction of pedestrian travel. The cross slope of the sidewalk shall not exceed 2.00%.
- 3 Where there is no buffer between the sidewalk and curb, the preferred minimum sidewalk width is 6 ft.
- 4 A 4-ft minimum clear width shall be provided adjacent to street furniture, mailbox, utility pole, or other protruding object. Where the sidewalk clear width is less than 5 ft, a passing space shall be provided at 200 ft intervals. See Standard Drawing E 604-SDWK-01 for sidewalk passing space details.
- 5 See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.
- 6 See Standard Drawing E 604-SDWK-03 for sidewalk driveway crossing configurations.

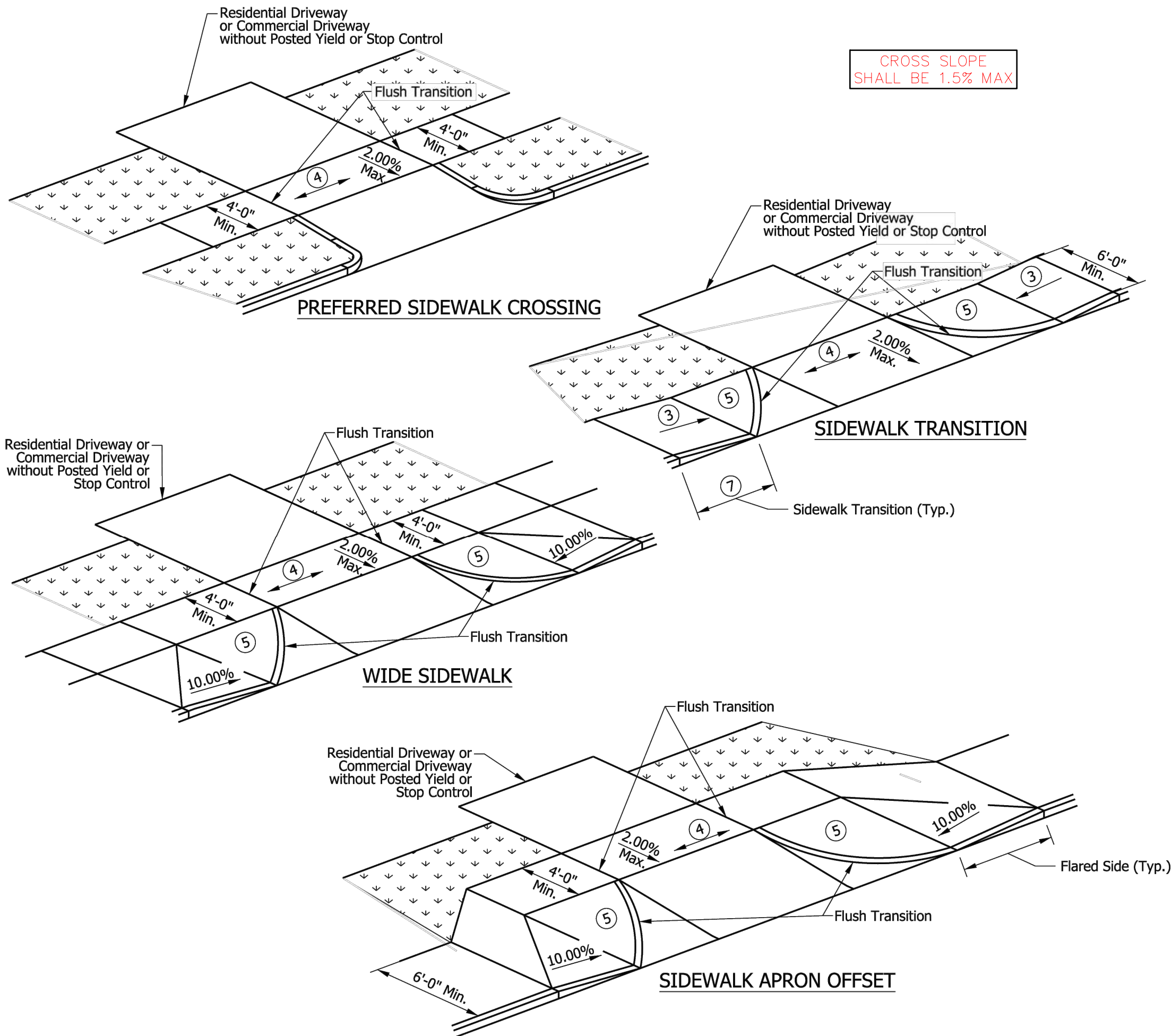


SECTION A-A

NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SDWK-02

SIDEWALK ADJACENT TO CURB DETAIL
NOT TO SCALE



NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SDWK-03

SIDEWALK DRIVEWAY CROSSING DETAIL
NOT TO SCALE

NOTES:

1. All slopes are absolute rather than relative to the sidewalk or roadway grade. Slopes at least 0.50% less than the maximum are preferred.
2. A sidewalk driveway crossing shall only be used on a sidewalk at a residential driveway or a commercial driveway without posted yield or stop control. A curb ramp shall be used at all other crossings. See Standard Drawing Series E 604-SWCR for curb ramp details.
- 3 Where a sidewalk transition is used to lower or raise the sidewalk to connect with a residential driveway or commercial driveway without posted yield or stop control, the running slope of the transition shall be 8.33% maximum.
- 4 The grade of the sidewalk across the driveway shall not exceed the grade of the adjacent roadway.
- 5 The area between the driveway and a flared side or sidewalk transition shall match the driveway profile and transverse slope.
6. A turning space is not required at the top of a sidewalk transition.
- 7 Objects such as a utility cover, vault frame, and grating shall be placed outside a sidewalk transition.
8. A detectable warning surface shall not be placed at the crossings of a residential driveway. A detectable warning surface may be placed at the crossing of a commercial driveway without yield or stop control.
9. See Standard Drawing E 604-SDWK-01 and -02 for Sidewalk Details.
10. See Standard Drawing Series E 610-DRIV for drives.



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

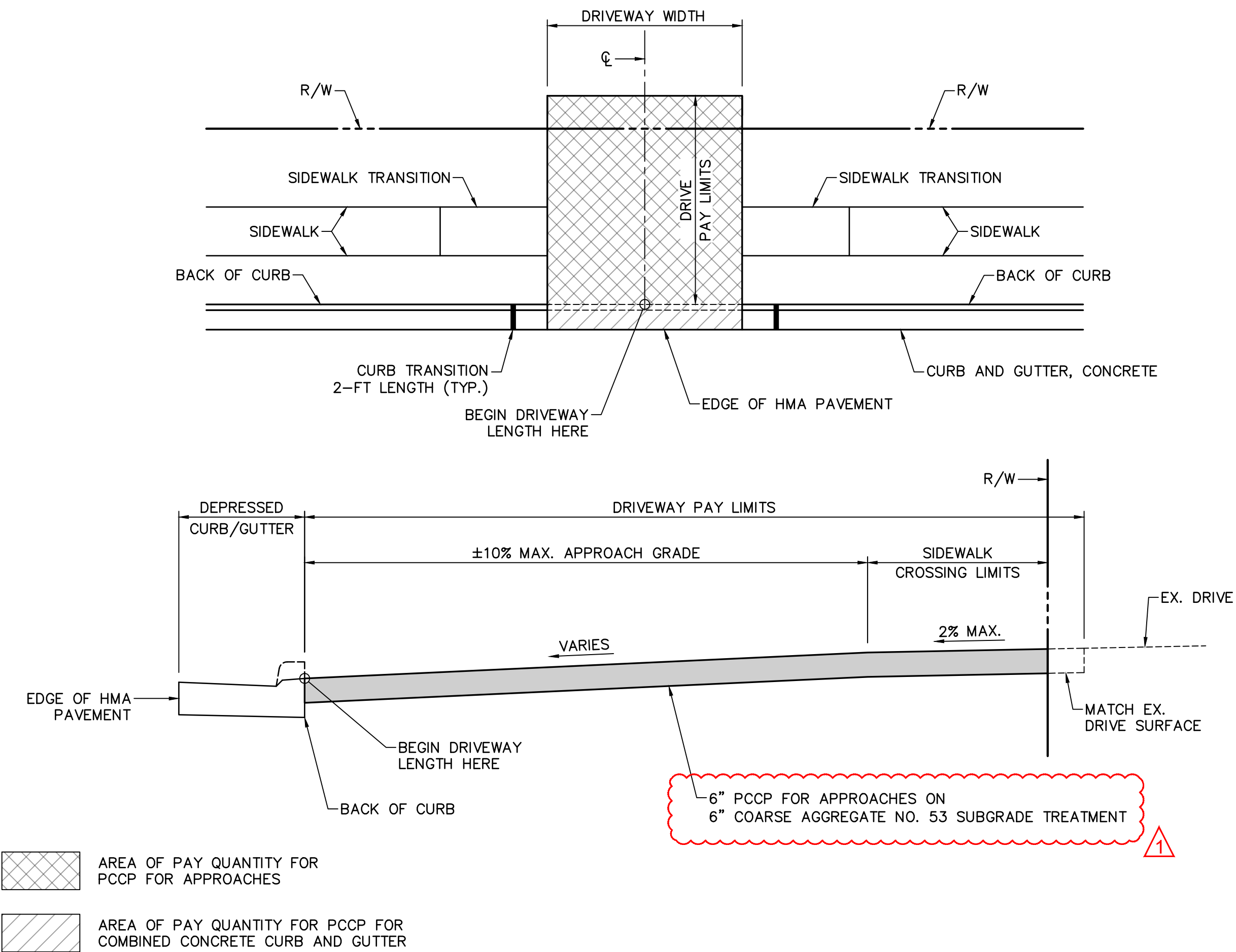
ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

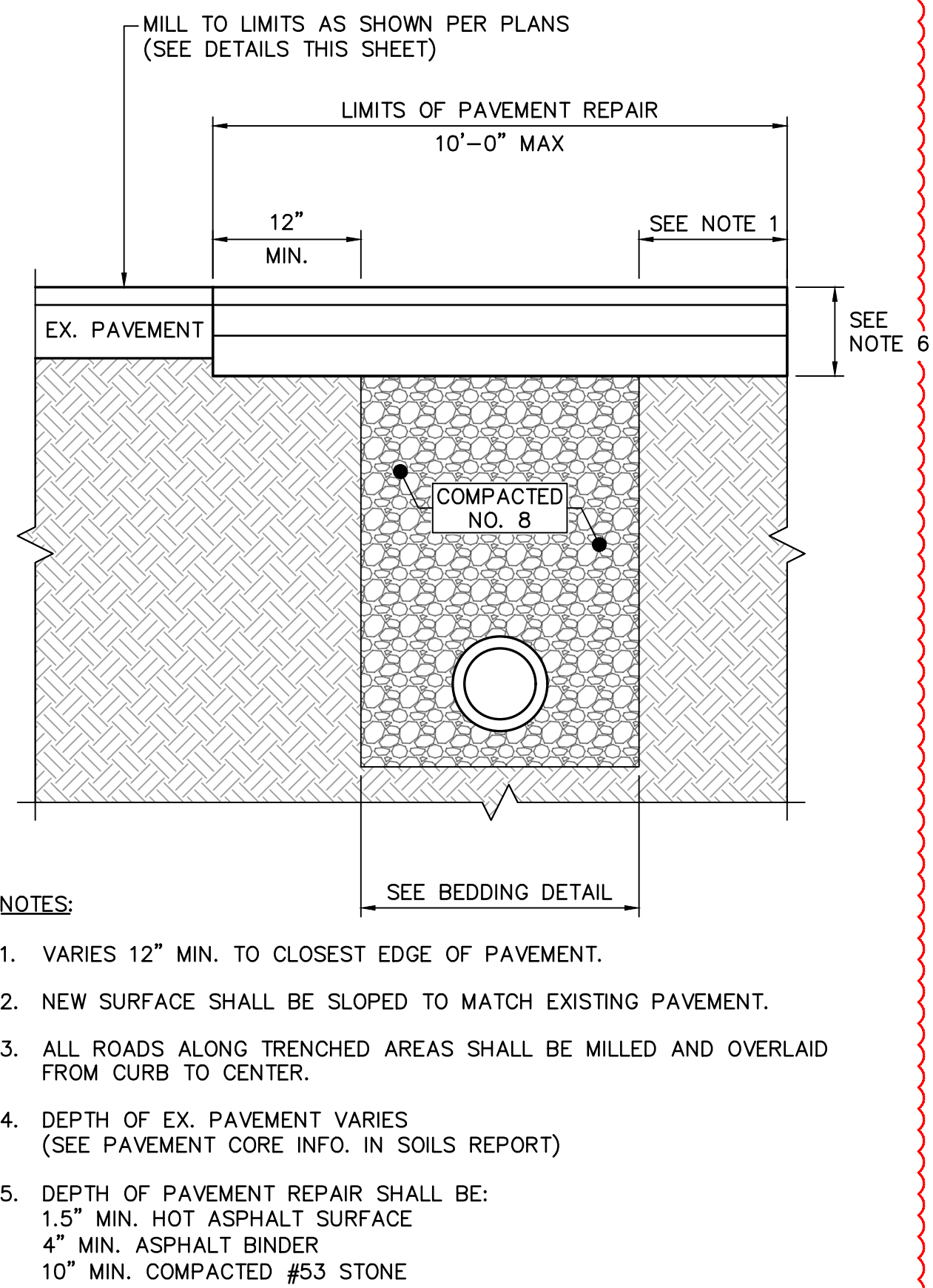
Project Number 202200047

ROAD
STANDARD DETAILS
C-230

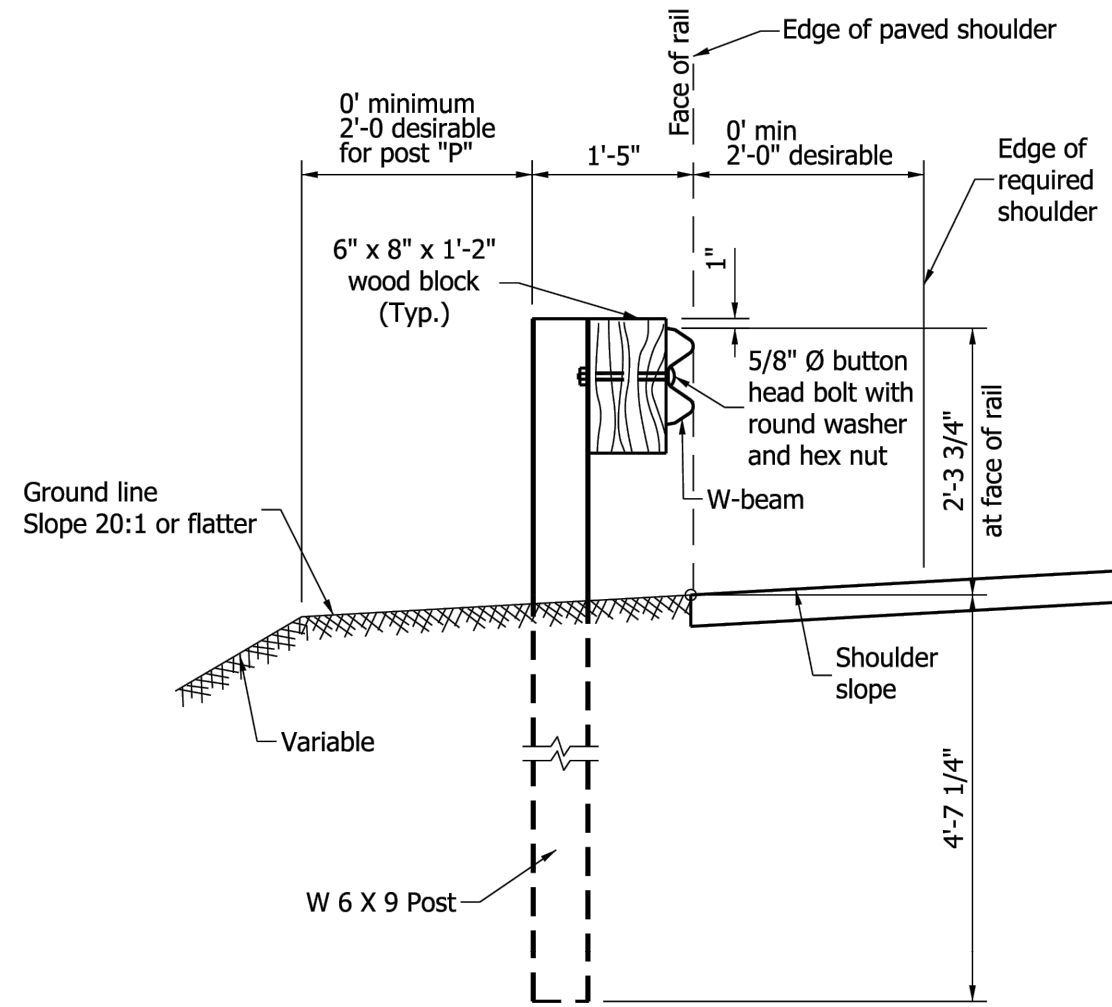
PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:32 PM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2022\00047.D DRAWINGS\UTILITY INFRASTRUCTURE\202200047\JLDI.DWG



DRIVE DETAIL
NOT TO SCALE



MILLING AND RESURFACING DETAIL
NOT TO SCALE

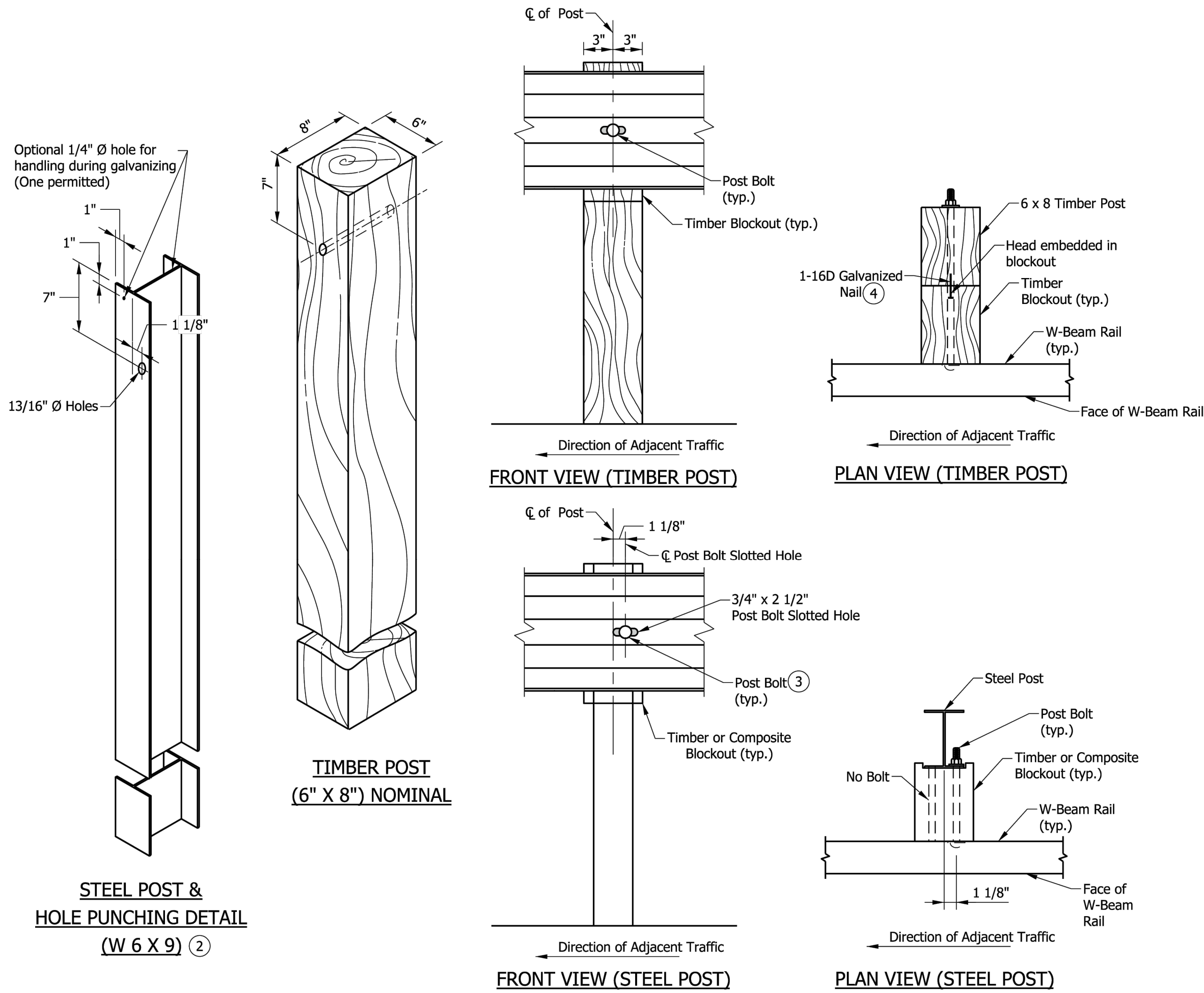


TYPICAL W-BEAM INSTALLATION

W-BEAM GUARDRAIL ASSEMBLY DETAIL
NOT TO SCALE

NOTES:

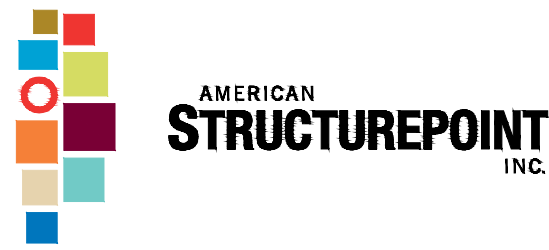
- Timber or steel posts may be used. Timber and steel posts shall not be intermixed.
- Steel guardrail post W 6 x 8.5 may be substituted for W 6 x 9.
- Steel posts shall be installed with bolt holes on approaching traffic side.
- Where a timber post and a timber blockout are installed, one 16D galvanized double head nail shall be centered at the back of the blockout and driven into the adjacent post to limit rotation.
- Blockouts of 12 in. or 16 in. depth may be utilized to increase the post offset. There is no limit to the number of posts that can have additional blockouts up to a 16 in. depth.
- Hole pattern for posts may be drilled in back flange.



NOTE:

GUARDRAIL DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-601-MGSA-04
E-601-WBGA-01

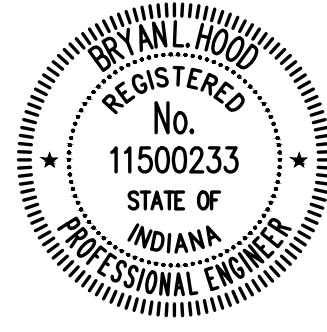
MIDWEST GUARDRAIL SYSTEM ASSEMBLY DETAIL
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hoad 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
STANDARD DETAILS

C-231

PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:32 PM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2022\00047\0 DRAWINGS\UTILITY INFRASTRUCTURE\202200047\UJDT.RD.DWG

GENERAL NOTES:

1. ALL SLOPES ARE ABSOLUTE RATHER THAN RELATIVE TO THE SIDEWALK OR ROADWAY GRADE. SLOPES AT LEAST 0.50% LESS THAN THE MAXIMUM ARE PREFERRED.
2. A RAMP OR BLENDED TRANSITION SHALL BE USED TO LOWER OR RAISE THE SIDEWALK TO CONNECTION WITH THE STREET.
3. A TURNING SPACE SHALL BE PROVIDED AT THE TOP OF A PERPENDICULAR RAMP, BOTTOM OF A PARALLEL RAMP, OR WHERE THE PEDESTRIAN TRAVEL REQUIRES A CHANGE IN DIRECTION. A COMMON TURNING SPACE MAY BE SHARED BY ADJACENT RAMPS. THE TURNING SPACE SHALL HAVE A MINIMUM CLEAR DIMENSION OF 4-FT x 4-FT. WHERE THE TURNING SPACE IS CONSTRAINED AT THE BACK OF THE SIDEWALK BY A CURB, RETAINING WALL, BUILDING, OR FEATURE OVER 2-INCHES IN HEIGHT, THE MINIMUM CLEAR DIMENSION SHALL BE 4-FT x 5-FT, WITH THE 5-FT DIMENSION IN THE DIRECTION OF THE RAMP RUNNING SLOPE.
4. A FLARED SIDE SHALL BE USED ADJACENT TO A WALKABLE SURFACE. A FLARED SIDE MAY BE USED ADJACENT TO A NON-WALKABLE SURFACE. A FLARED SIDE SHALL HAVE A MAXIMUM SLOPE OF 10.00% MEASURED PARALLEL TO THE BACK OF THE CURB.
5. A RETURN CURB IS PLACED PERPENDICULAR TO THE ROADWAY CURB. A RETURN CURB MAY BE USED ADJACENT TO A NON-WALKABLE SURFACE. A RETURN CURB SHALL NOT BE USE ADJACENT TO A WALKABLE SURFACE. THE RETURN CURB MAY BIT OMITTED WHERE THE NON-WALKABLE SURFACE IS FLARED AND THE CURB ADJACENT THE ROADWAY IS TAPERED TO MEET THE FLUSH CURB AT THE BOTTOM OF THE RAMP.
6. A CLEAR SPACE SHALL BE PROVIDED BEYOND THE BOTTOM GRADE BREAK OF A CURB RAMP WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH. THE CLEAR SPACE SHALL HAVE A MINIMUM CLEAR DIMENSION OF 4-FT x 4-FT.
7. A DETECTABLE WARNING SURFACE SHALL CONSIST OF TRUNCATED DOMES AND BE PLACED AT EACH STREET. THE DETECTABLE WARNING SURFACE SHALL EXTEND A MINIMUM OF 2-FT IN THE DIRECTION OF PEDESTRIAN TRAVEL AND BE PLACED THE ENTIRE WIDTH OF A RAMP, BLENDED TRANSITION, OR TURNING SPACE.
8. THE RUNNING SLOPE OF A RAMP, BLENDED TRANSITION, OR TURNING SPACE SHALL BE MEASURED PARALLEL TO THE DIRECTION OF PEDESTRIAN TRAVEL.
 - A. A RUNNING SLOPE OF 2.00% OR LESS IS CONSIDERED LEVEL.
 - B. A RAMP SHALL HAVE A MAXIMUM RUNNING SLOPE OF 8.33%, BUT SHALL NOT REQUIRE A RAMP LENGTH TO EXCEED 15-FT.
 - C. A BLENDED TRANSITION SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5.00%.
 - D. A TURNING SPACE SHALL HAVE A MAXIMUM RUNNING SLOPE OF 2.00%
9. UNLESS OTHERWISE NOTED, A MINIMUM WIDTH OF A RAMP, BLENDED TRANSITION, OR TURNING SPACE, EXCLUDING FLARED SIDES OR RETURN CURB SHALL BE 4-FT.
10. A GRADE BREAK AT THE TOP AND BOTTOM OF A RAMP, BLENDED TRANSITION, OR TURNING SPACE SHALL BE PERPENDICULAR TO THE RUNNING SLOPE. GRADE BREAKS SHALL NOT BE WITHIN THE RAMP, BLENDED TRANSITION, TURNING SPACE, OR DETECTABLE WARNING SURFACE. GRADE BREAKS SHALL BE FLUSH. VERTICAL DISCONTINUITIES SHALL NOT BE GREATER THAN 1/2-INCH. WHERE A DISCONTINUITY IS GREATER THAN 1/4-INCH, THE SURFACE SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1V: 2H.
11. THE CROSS SLOPE OF A RAMP, BLENDED TRANSITION, OR TURNING SPACE SHALL BE MEASURED PERPENDICULAR TO THE DIRECTION OF A PEDESTRIAN TRAVEL.
12. A COUNTER SLOPE IS THE CROSS SLOPE OF THE GUTTER OR STREET ADJACENT THE RUNNING SLOPE OF THE RAMP, BLENDED TRANSITION, OR TURNING SPACE. SEE INDOT STANDARD DRAWING E 604-SWCR-14 FOR COUNTER SLOPE DETAILS.
 - A. THE MAXIMUM CROSS SLOPE AT A PEDESTRIAN STREET CROSSING WITHOUT POSTED YIELD OR STOP CONTROL SHALL BE 5.00%.
 - B. THE MAXIMUM CROSS SLOPE AT A PEDESTRIAN STREET CROSSING WITH POSTED YIELD OR STOP CONTROL SHALL BE 2.00%.
 - C. THE MAXIMUM CROSS SLOPE AT A MIDBLOCK CROSSING SHALL BE THE ESTABLISHED GRADE OF THE ADJACENT ROADWAY.
13. OBJECTS SUCH AS A UTILITY COVER, VAULT FRAME, AND GRATING SHALL BE PLACED OUTSIDE OF THE CURB RAMP.
14. CURB RAMPS SHALL BE PLACED WITHIN THE MARKED CROSSWALK AREA.
15. DRAINAGE INLETS SHOULD BE LOCATED UPHILL FROM A CURB RAMP TO PREVENT PONDING IN THE PATH OF PEDESTRIAN TRAVEL.

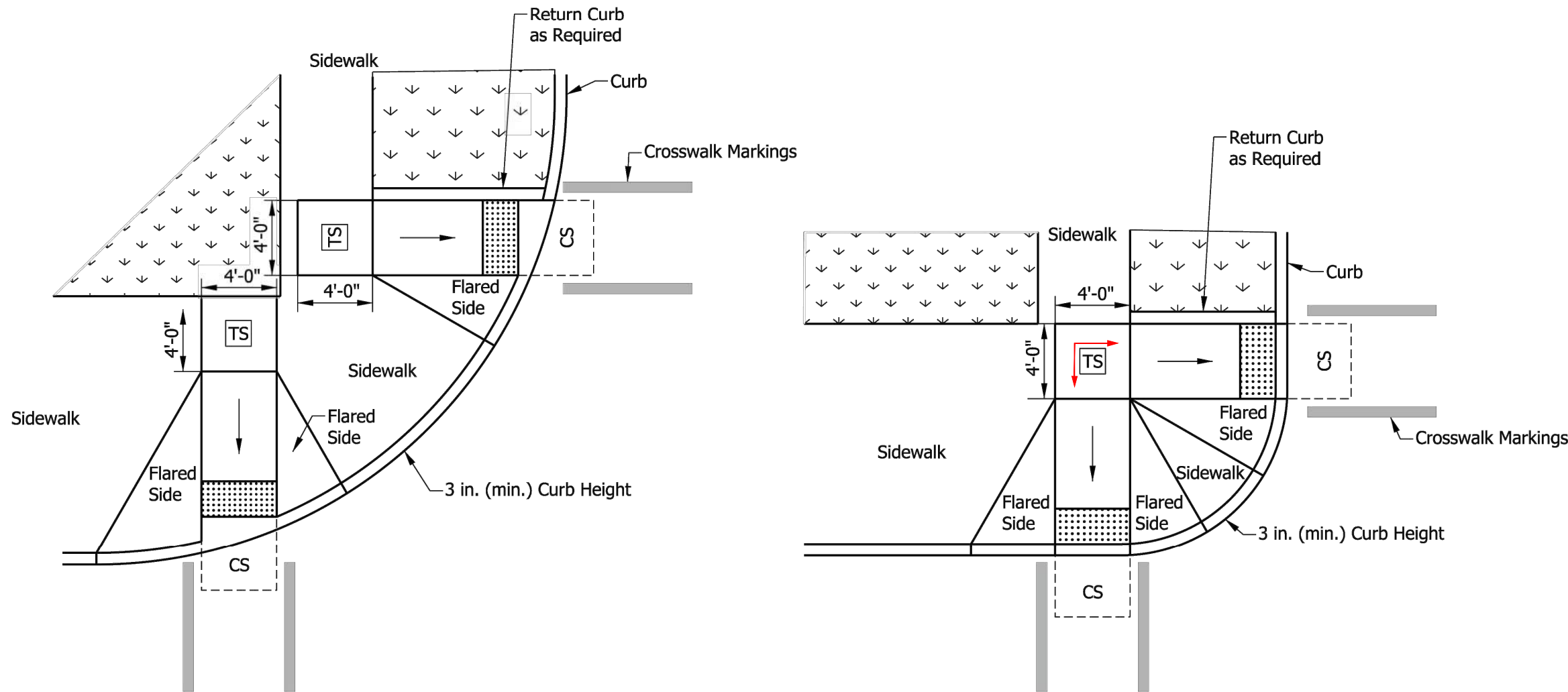
CURB RAMP GENERAL NOTES

NOTE:

1. The turning space shall have a minimum clear dimension of 4 ft x 4 ft and a running slope of 2.00% maximum. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- Turning Space
- Clear Space



PAIRED PERPENDICULAR CURB RAMPS AT LARGE RADIUS

PAIRED PERPENDICULAR CURB RAMPS AT SMALL RADIUS

NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SWCR-03

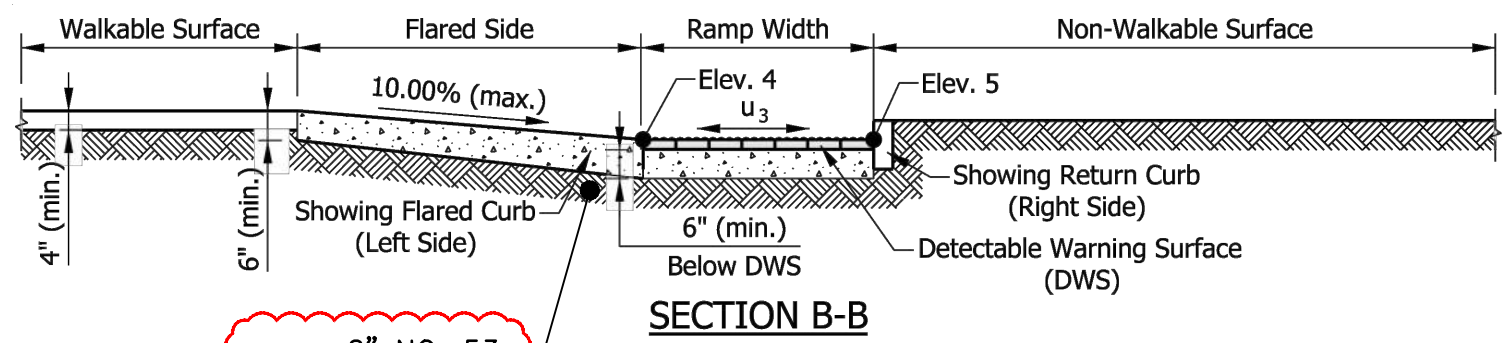
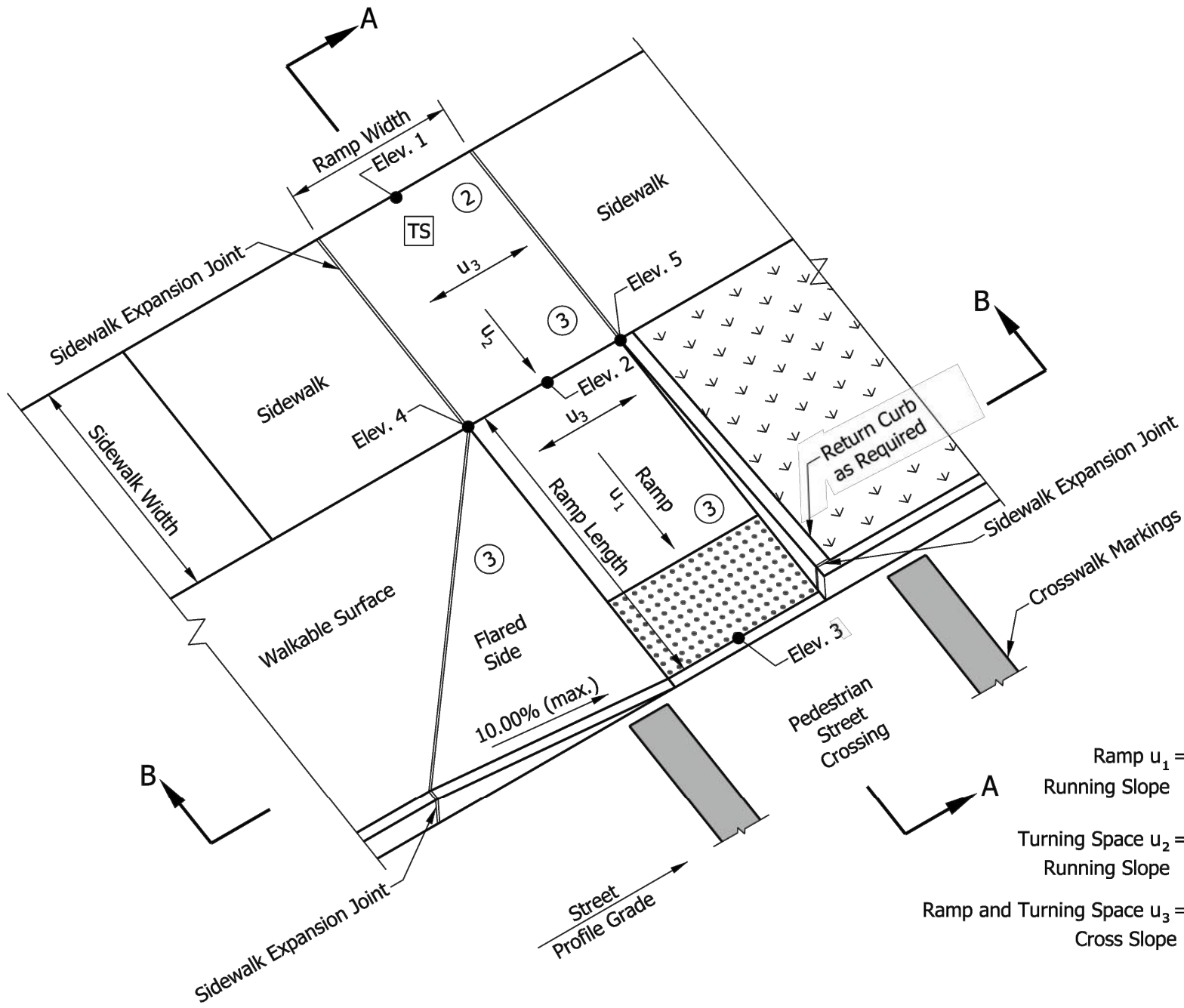
PAIRED PERPENDICULAR CURB RAMP DETAIL
NOT TO SCALE

NOTES:

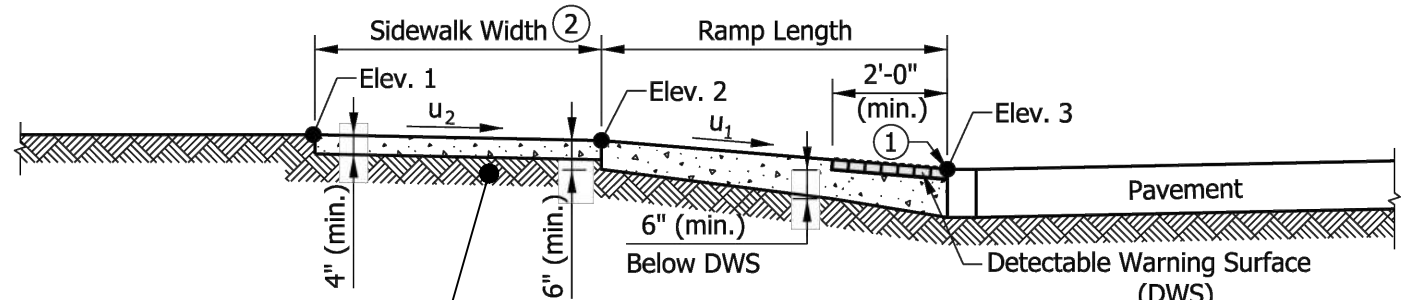
- ① The bottom edge of the ramp and top of curb shall be flush with the edge of adjacent pavement and gutter line.
- ② The turning space shall have a minimum clear dimension of 4 ft x 4 ft. Where the turning space is constrained at the back of the sidewalk, the minimum clear dimension shall be 4 ft x 5 ft, with the 5-ft dimension in the direction of the ramp running slope. Where a tiered perpendicular curb ramp is used, a constrained turning space shall have a minimum clear dimension of 5 ft x 5 ft.
- ③ Curb ramp surface shall be coarse broomed transverse to the running slope.
- ④ See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface
- Turning Space



SECTION B-B

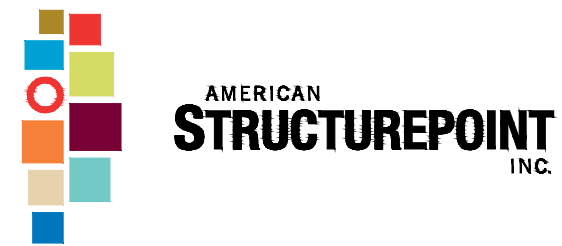


SECTION A-A

NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SWCR-04

PERPENDICULAR CURB RAMP COMPONENT DETAIL
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
STANDARD DETAILS
C-232

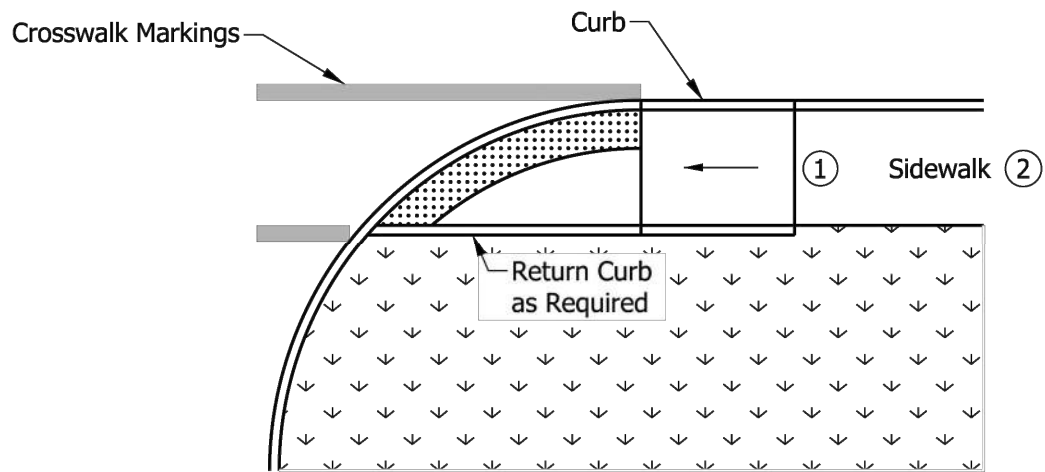
PLOT SCALE: 1" = .0833' PLOT DATE: 10/14/2025 1:33 PM EDITED BY: PTRAMINSKI DRAWING FILE: P:\2022\00047\01.DRAWINGS\UTILITY INFRASTRUCTURE\202200047\UDT.DWG

NOTES:

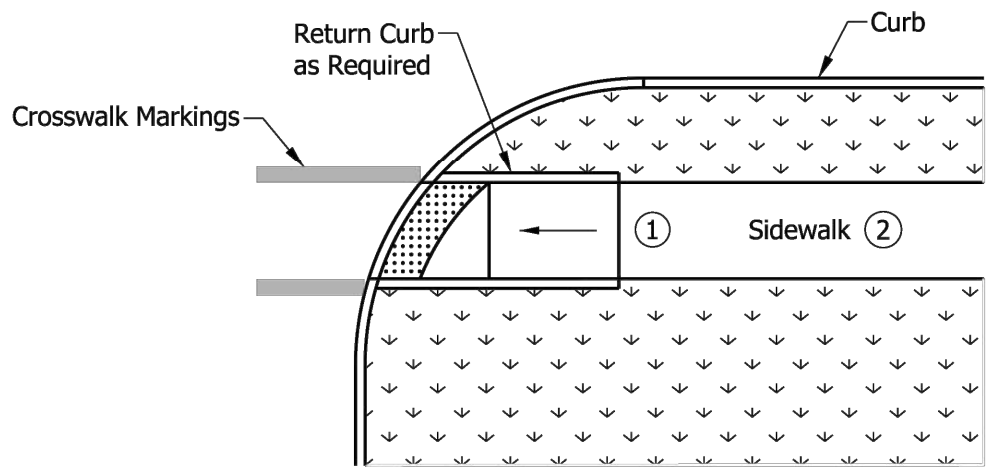
- ① A turning space is not required at the top of the ramp for a one-way directional perpendicular curb ramp.
- ② Where there is no buffer between the sidewalk and curb the preferred minimum sidewalk width is 6 ft. Where a buffer is placed between the sidewalk and curb, the preferred minimum sidewalk width is 5 ft. See Standard Drawing Series E 604-SDWK for sidewalk details.

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface



ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP ADJACENT CURB



ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP WITH BUFFER

NOTE:

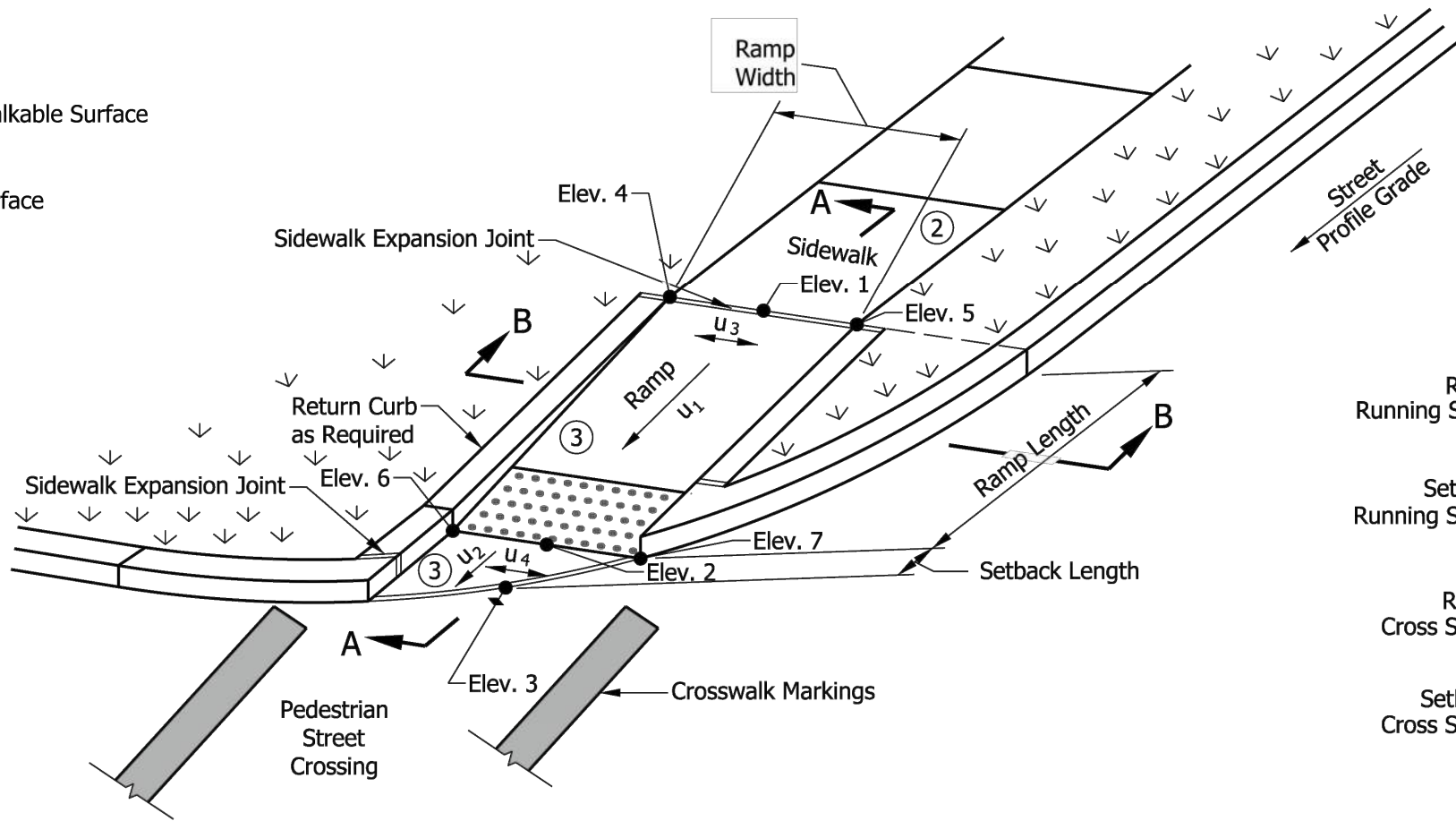
SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SWCR-05

ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP DETAIL

NOT TO SCALE

LEGEND:

- Buffer or Other Non-Walkable Surface
- Ramp
- Detectable Warning Surface



Component Slope Equations:

Running Slope $u_1 = \frac{\text{Elev. 1} - \text{Elev. 2}}{\text{Ramp Length}} \leq 8.33\%$

Setback $u_2 = \frac{\text{Elev. 2} - \text{Elev. 3}}{\text{Setback Length}} \leq \text{Profile Grade of Adjacent Street}$

Cross Slope $u_3 = \frac{\text{Elev. 4} - \text{Elev. 5}}{\text{Ramp Width}} \leq 2.00\%$

Setback $u_4 = \frac{\text{Elev. 6} - \text{Elev. 7}}{\text{Ramp Width}} \leq 2.00\%$

NOTES:

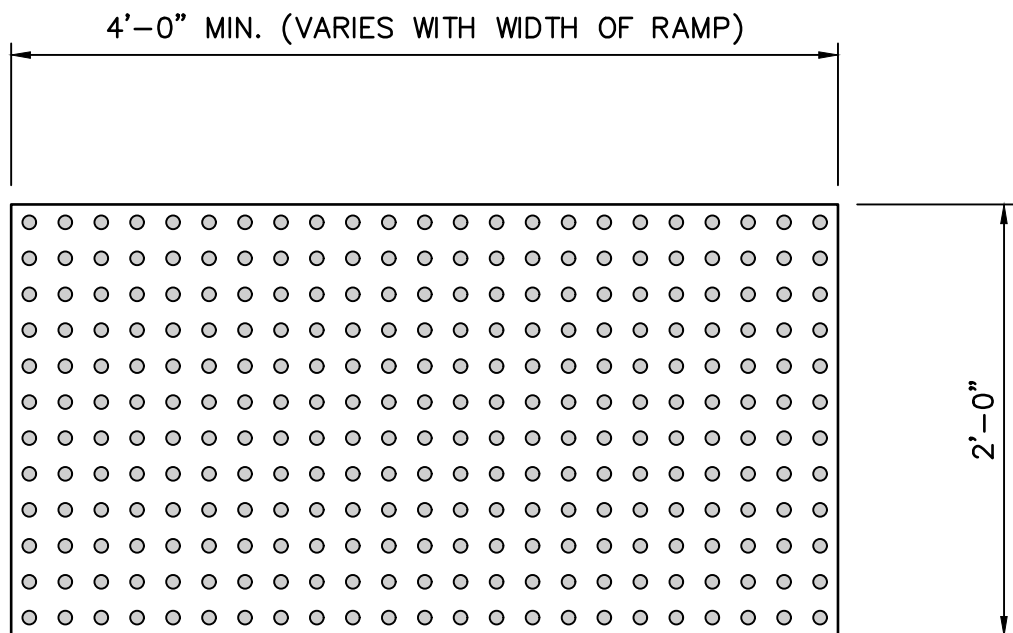
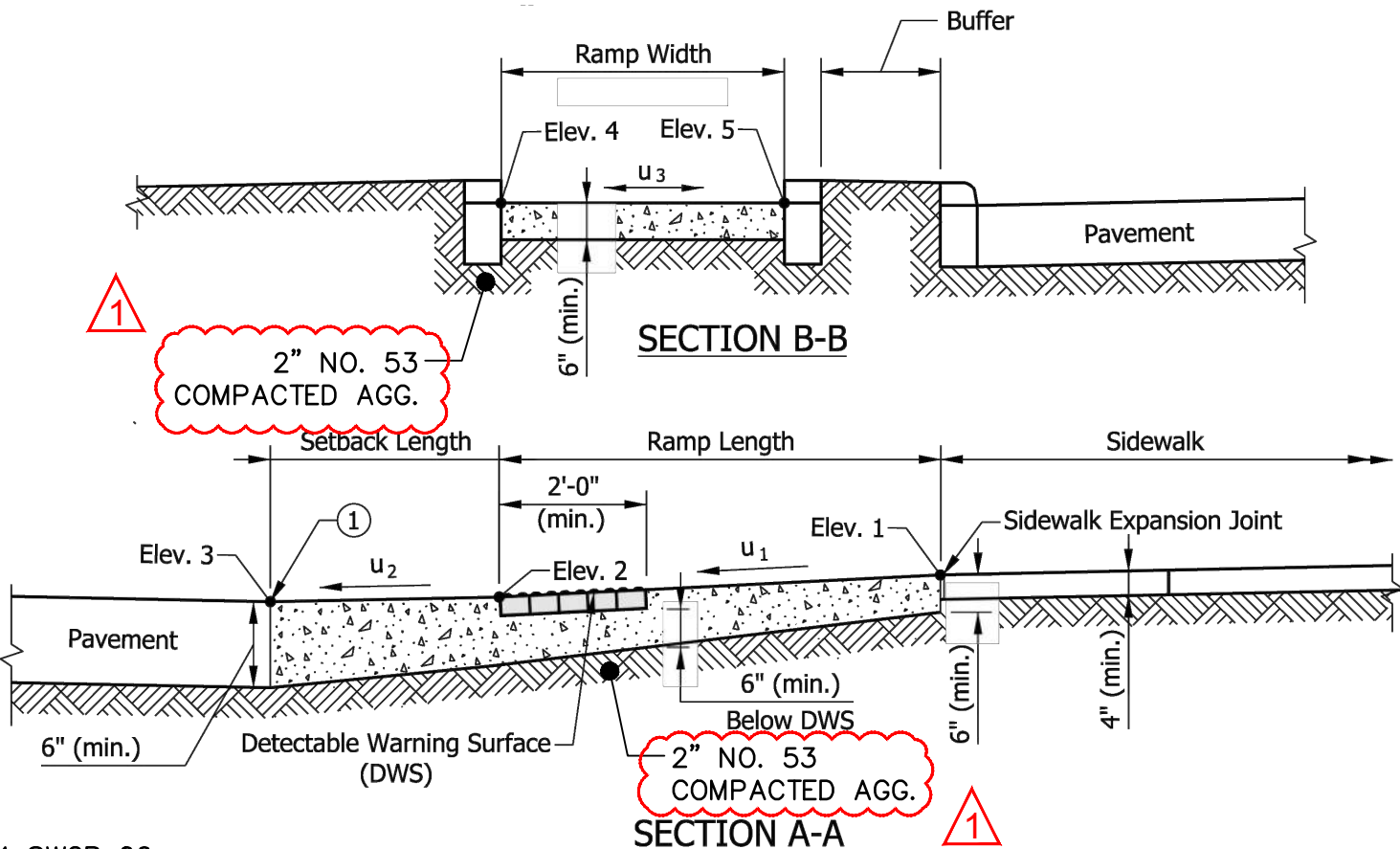
- ① The bottom edge of the ramp or setback and top of curb shall be flush with the edge of adjacent pavement and gutter line.
- ② A turning space is not required at the top of the ramp for a one-way directional perpendicular curb ramp.
- ③ Curb ramp surface shall be coarse broomed transverse to the running slope.
- ④ See Standard Drawing E 604-SWCR-01 for cross slope exceptions.
5. See Standard Drawing E 604-SWCR-12, -13, and -14 for Detectable Warning Surface placement, configuration, and details.
6. See Standard Drawing E 604-CCSJ-01 for sidewalk expansion joint details.

NOTE:

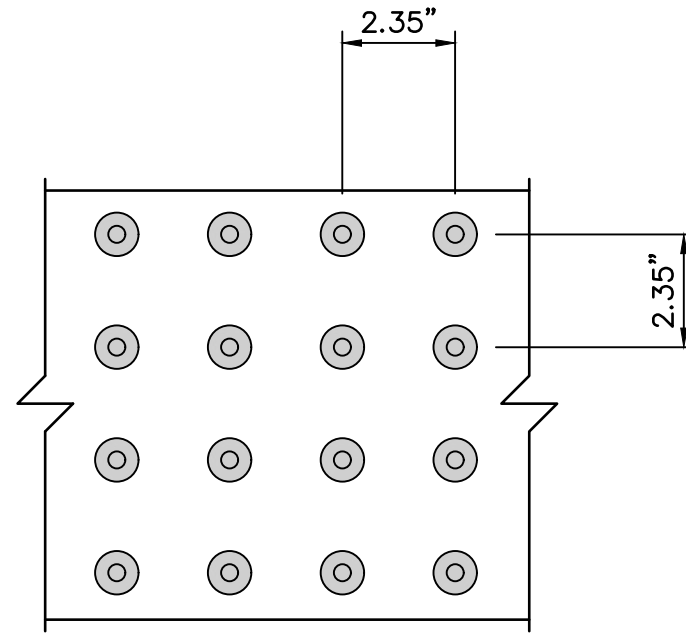
SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SWCR-06

ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP COMPONENT DETAIL

NOT TO SCALE



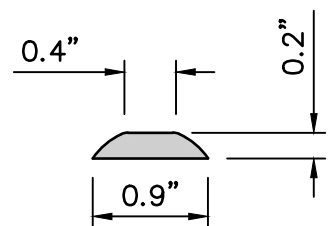
TRUNCATED DOME PLAN VIEW



TRUNCATED DOME SPACING

NOTES:

1. DETECTABLE WARNINGS SHALL BE OF THE PAVER TYPE WITH ADHESIVE PER MANUFACTURER'S SPECIFICATIONS.
2. WIDTH OF DETECTABLE WARNING AREA SHALL BE A MINIMUM OF 4 FEET AND VARY WITH WIDTH OF RAMP.
3. LENGTH OF DETECTABLE WARNING AREA SHALL BE 2 FEET REGARDLESS OF SECTION WIDTH.
4. DETECTABLE WARNING AREA CAN BE SQUARE WHERE USED IN A CURB RADIUS.
5. DETECTABLE WARNING DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
6. DETECTABLE WARNING AREA SHALL BE A CONTRASTING COLOR IN ALL LOCATIONS.
7. IF MATS ARE TO BE USED, EDGES SHALL BE BEVELED TO ELIMINATE TRIP HAZARD.



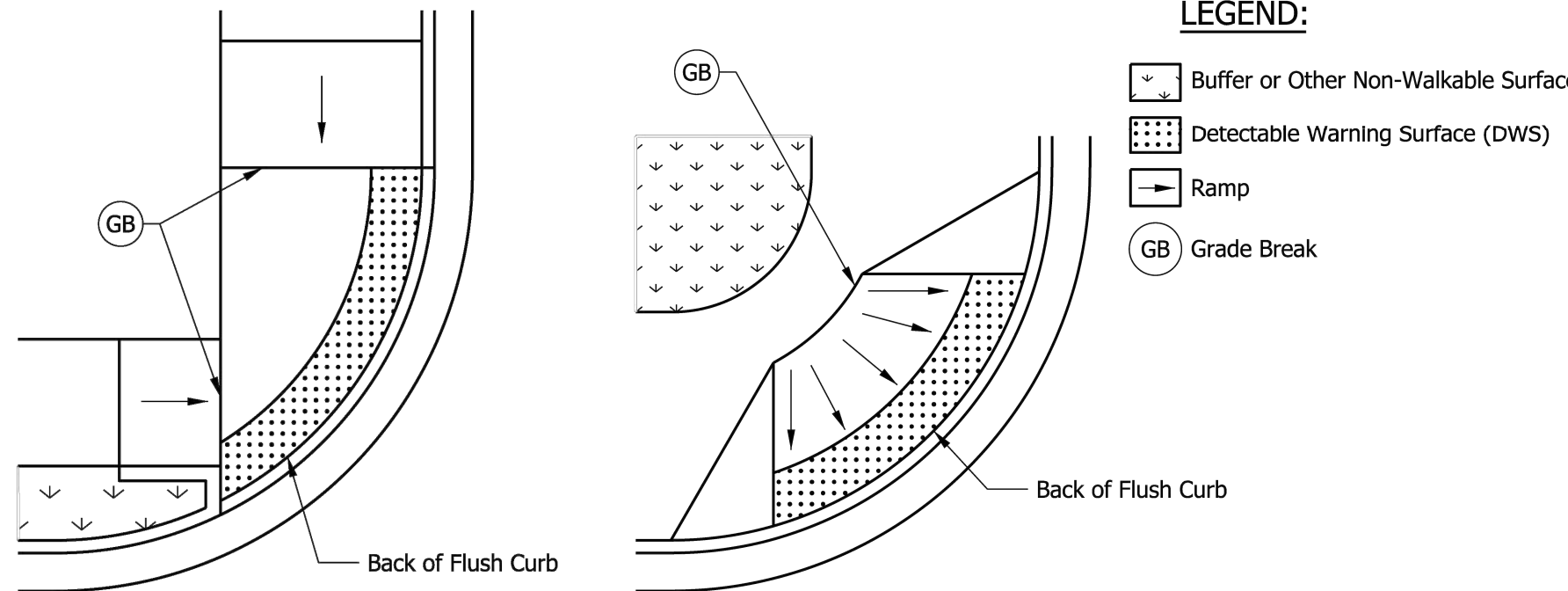
TRUNCATED DOME SECTION

TRUNCATED DOMES PLAN AND CROSS-SECTION

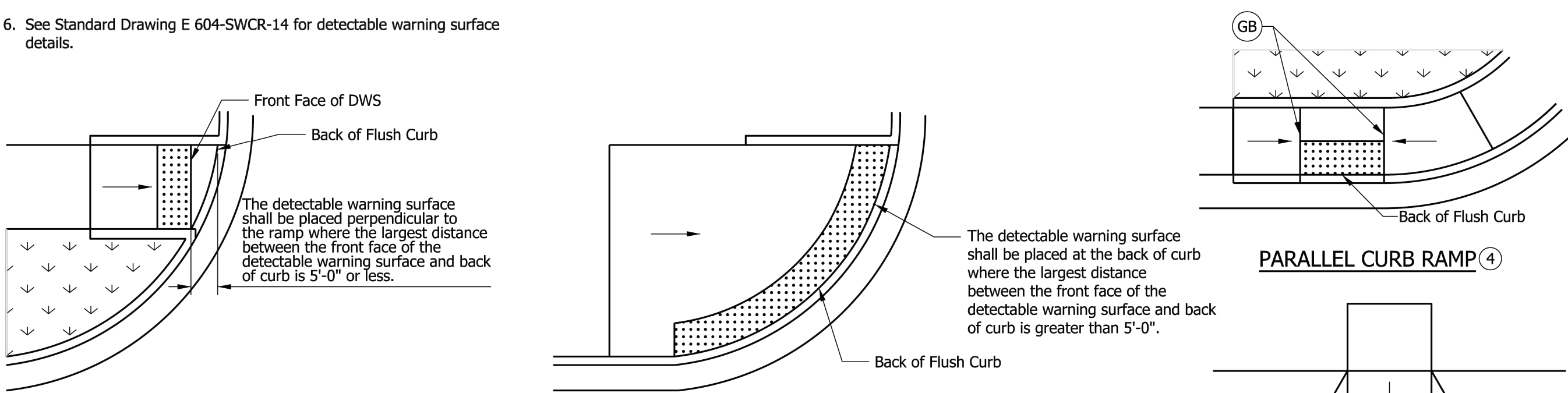
NOT TO SCALE

NOTES:

1. A detectable warning surface shall be placed at each street, highway, or railroad crossing. See Standard Drawing E 604-SDWK-03 for a detectable warning surface placement at a sidewalk driveway crossing.
2. The detectable warning surface shall extend a minimum of 2 ft in the direction of pedestrian travel and extend the full width as shown. The detectable warning surface shall not be placed across a grade break.
- ③ Where the distance from the face of the detectable warning surface is 5 ft or less from the back of curb, the detectable warning surface shall be placed perpendicular to the ramp. Where the distance from the face of the detectable warning surface is more than 5 ft from the back of curb, the detectable warning surface shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detectable warning surface placement.
- ④ The detectable warning surface on a parallel curb ramp shall be placed on the turning space at the flush transition between the street and turning space at the back of curb.
- ⑤ The detectable warning surface on a blended transition or depressed corner shall be placed at the back of curb as shown or in an alternate placement configuration. See Standard Drawing E 604-SWCR-13 for alternate detectable warning surface placement.
6. See Standard Drawing E 604-SWCR-14 for detectable warning surface details.



DEPRESSED CORNER CURB RAMP ⑤ ⑦ BLENDED TRANSITION CURB RAMP ⑤



ONE-WAY DIRECTIONAL PERPENDICULAR CURB RAMP ON A RADIUS ③

NOTE:

SIDEWALK DETAIL SHOWN IS PART OF INDOT STANDARD DRAWINGS NO: E-604-SWCR-12

DETECTABLE WARNING DETAIL

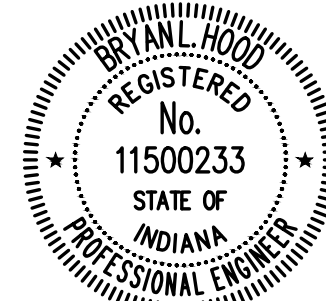
NOT TO SCALE



116 East Berry St., Ste 1515 | Fort Wayne, Indiana 46802
TEL 260.373.0600 | FAX 260.373.0608
www.structurepoint.com

CENTRAL AVENUE
STORMWATER
IMPROVEMENTS

LAKE STATION, INDIANA



Bryan L. Hood 9/25/2025
CERTIFIED BY

ISSUANCE INDEX		
DATE:	9/25/2025	
PROJECT PHASE:	CONSTRUCTION DOCUMENTS	

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE
1	ADDENDUM	10/14/25

Project Number 202200047

ROAD
STANDARD DETAILS

C-233