ADDENDUM NO. 2

SAUERMAN WOODS
DRAINAGE IMPROVEMENTS – PHASE 2

FEBRUARY 14, 2024

CITY OF CROWN POINT
101 N. EAST STREET
CROWN POINT, IN 46307

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 Bid Form. Failure to do so may subject Bidder to disqualification.

REVISIONS TO PROJECT MANUAL:

1. Spec 26 05 33-5, 3.02 – Should read:
   3.02 RACEWAY USAGE

   A. For this project, all above grade conduits shall be rigid aluminum and below grade conduits shall be minimum schedule 40 PVC. Elbow transitions shape be rigid aluminum. Rigid aluminum in contact with the earth shall be coated with an elastomer asphalt coating to prevent corrosion. Conduits under road or driving surfaces shall be PVC coated galvanized rigid steel.

   B. For this project EMT conduit may be utilized for all indoor runs in electrical rooms, mechanical rooms.

2. *Replace* Section 31 00 05 – Trenching and Earthwork with Section 31 00 05 – Trenching and Earthwork (Addendum 2)
3. *Replace* Section 32 12 16 – Asphalt Paving with 32 12 16 – Asphalt Paving (Addendum 2)
4. *Replace* Section 32 16 00 – Curbs, Gutters, Sidewalks, Ramps and Driveways with Section 32 16 00 – Curbs, Gutters, Sidewalks, Ramps and Driveways (Addendum 2)
5. *Replace Bid sheets 3A of 9 and 3B of 9 with 3A of 9 (addendum No. 2) and 3B of 9 (addendum No.2).*

CONTRACT DRAWINGS

Sheet C-18:	Revised Full Depth Pavement Section to read: 1.5" surface, 3" Binder, 10" of subbase.
Sheet C-27:	Removed detail RD-2. Refer to typical sections.
Sheet C-28:	Removed detail RD-13. Refer to typical sections.
Sheet E-02	Note #11 should read: IN-GROUND SECURED EVENT RECEPTACLE BOX WITH QUAD GFCI PROTECTED OUTLETS - LEGRAND WIREMOLD OUTDOOR GROUND BOX PART XB814C520C2 OR APPROVED ALTERNATE – FOLLOW MANUFACTURES INSTRUCTIONS.
Sheet E-04	Add note #8 pointing to light fixture: 8. 48" LED Light Fixture, "L6"
Sheet E-07	The breaker for WEST EVENT RECEPTACLES and EAST EVENT RECEPTACLES should both be 20A-1P, matching the panel schedule on E-11.
Sheet E-08	Note #21 should read: 21. SOUTH LOW VOLTAGE LOAD CENTER "SL2", 100A, 20A MCB, 120/240V, 1PH, 3W, 10KAIC
Sheet E-11	South LV Load Center Schedule - Change Main breaker to 20A Main CB

CLARIFICATIONS/QUESTIONS AND ANSWERS:

1. **Clarification:** Regarding Sheets E-08 & E-11 as noted above; (Optional) Contractor may substitute a 60A load center with a single 20A-2P branch breaker as the main CB to save money. Contractor may substitute a 5kva transformer for the 3kva, but it is not necessary.

2. **Question:** Can you verify the actual quantity of concrete pads/junction boxes?
   Per the electrical plans, each concrete pad gets an in-ground junction box.
   Drawing C03, C05, C07, C23, C90, L01, E02&E03 show 7 concrete pads. Drawing E-01 shows 17 concrete pads.

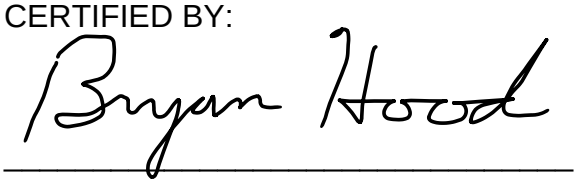
   Answer: Initially there will be 7 concrete pads. Other pads as shown are to be installed in the future. We have a total of 89 12"x12"x18" Quasite pull boxes and 19 bigger 24"x24"x24" Quasite pull boxes. On drawing E-01 see note #14. "IN-GROUND JUNCTION BOX, TYPICAL OF 89".
   However, the contractor should be responsible for his own count of these pull boxes .. and he could use more or less as he sees fit.

OTHER:

1. Acknowledgement of Addendum No. 2

END OF ADDENDUM NO. 2

CERTIFIED BY:



Bryan Hood
Registered Engineer No. PE 11500233
State of Indiana

SECTION 31 00 05

TRENCHING AND EARTHWORK
Addendum 2

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:
1. Contractor shall provide all labor, materials, equipment and incidentals required to perform all excavating, backfilling, filling and grading, and disposing of materials as shown, specified, and required for construction of structures, manholes, vaults, utilities, conduits, pipelines, roads, and any other facilities required to complete the Work in every respect.
2. All necessary preparation of subgrade for walks, drives, slabs, and pavements is included in this item of Work.
3. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof.

B. Related Sections:
1. Section 01 57 00, Temporary Controls.
2. Section 01 71 33, Protection of Work and Property.
3. Section 31 05 19, Geosynthetics for Earthwork.
4. Section 33 41 00, Storm Utility Piping Installation.
5. Section 33 44 13, Drainage Structures.
6. Section 33 49 13, Storm Drainage Manholes.

C. Definitions
1. Backfill – Material that is placed within an excavation. Material shall be in accordance with Section 2.1A of this section, approved on-site or off-site materials are acceptable.
2. Fill – Material that is placed on an existing surface to increase the elevation of the final surface. Material shall be in accordance with Section 2.1A of this section, approved on-site or off-site materials are acceptable.
3. Special Backfill – Material that is placed within an excavation and provides structural support. Material shall be in accordance with Section 2.1B of this section, and an approved off-site material.

1.2 MEASUREMENT AND PAYMENT

A. Excavation:
1. Excavation is to be included in overall Contract Price, as part of the various items of Work involved, and not as a separate Work item.

B. Special Backfill
1. Work Item Number and Title

31 00 05-A Granular Backfill – Road, Porch, Parking Areas, and Sidewalk Areas

2. Payment for Special Backfill shall be on a unit price basis for special backfill successfully installed.
3. The pay quantity for Special Backfill shall be the actual quantity of special backfill actually installed, as measured and described below.
4. The payment of Special Backfill shall be based on the unit price per cubic yard as listed on the submitted Basis of Bid Form for required sub-grade and base under asphalt paving, sidewalk, and concrete approaches. All other required backfill shall be included in the cost of the item.
5. Such unit price shall include all costs to furnish all labor, materials, equipment, tools, and compacting required to place and compact Special Backfill material described as herein. Special Backfill is to be placed under pavements, parking lots, sidewalks, trails, and driveways, or as shown on the Drawings.
6. The cost for complete removal and hauling away of excavated material is included in respective specification for pipe material, manholes, structures, etc.
7. The quantity of Special Backfill for piping shall be calculated by the following equation:

$$yd^3 = \frac{(L)(D)(W)}{27}$$

Where:

yd^3 = The quantity of Special Backfill in cubic yards
L = The actual length of a cut at the surface in feet requiring backfill material (ft)
D = The vertical distances in feet from surface to a point one foot above the top of the pipe (ft)
W = The width of the trench, in feet, having a maximum pay width of outside diameter + 2.5 ft

8. The quantity of Special Backfill underneath asphalt pavement sections shall be calculated with a maximum pay depth as shown on the Drawings.
9. The quantity of Special Backfill underneath trail repair sections shall be calculated with a maximum pay depth as shown on the Drawings.
10. The quantity of Special Backfill underneath PCCP drive approaches shall be calculated with a maximum pay depth as shown on the Drawings.
11. The quantity of Special Backfill underneath concrete pads shall be included under other pay items.
12. Such unit price shall include all costs to furnish all labor, materials, equipment, tools, and compacting required to place and compact clay embankment material described as herein. Embankment (clay) is to be placed within the pond area as shown on the Drawings.

C. Grout

1. Grout is to be included in overall Contract Price, as part of the various items of Work involved, and not as a separate Work item.

D. Riprap

1. Riprap is to be included in overall Contract Price, as part of the various items of Work involved, and not as a separate Work item.

E. Other Trenching and Earthwork:
   1. All other Trenching and Earthwork items are to be included in overall Contract Price, as part of the various items of Work involved, and not as a separate Work item.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:
   1. ASTM International:
      a. ASTM C495, Test Method for Compressive Strength of Lightweight Insulating Concrete.(Flowable Fill)
      b. ASTM D422, Test Method for Particle-Size Analysis of Soils.
      c. ASTM D698, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft – lbf/ft3).
      d. ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft – lbf/ft3)
      e. ASTM D2166, Test Method for Unconfined Compressive Strength of Cohesive Soils.
      f. ASTM D4318, Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
   2. Indiana Department of Transportation (INDOT) - Standard Specifications:
      a. 211, B Borrow and Structural Backfill
      b. 213, Flowable Backfill
      c. 616.05, Placing Revetment Riprap
      d. 901.01(b), Portland Cement
      e. 901.02, Fly Ash as a Pozzolan
      f. 904.01, Aggregates
      g. 904.02, Fine Aggregate
      h. 904.03, Coarse Aggregate
      i. 904.04, Riprap
      j. 912.03, Admixtures for Use in Concrete
      k. 913.01, Water

1.4 QUALITY ASSURANCE

A. Testing Services:
   1. General: Testing of materials, testing for moisture content during placement and compaction of fill materials, and testing of compaction for compliance with technical requirements of these Specifications shall be performed by a testing laboratory as specified in the Contract Documents. Testing shall conform to ASTM D422, ASTM D427, ASTM D1557, ASTM D 2166, ASTM D 698, and ASTM D4318.
   2. Contractor's Laboratory Services Scope:
      a. Test proposed materials in the laboratory and/or field for compliance with the Contract Documents.

b. Perform field moisture content and density tests to verify that the specified compaction of backfill materials has been obtained.
c. Inspect and approve subgrades and fill layers are in compliance with the Contract Documents before further Work is performed thereon.
d. Report test results to the Engineer.

3. Authority and Duties of Testing Agency: Technicians representing the testing laboratory shall inspect the materials in the field, perform tests, and report their findings to the Engineer and Contractor. When the materials furnished or the Work performed fails to fulfill Specification requirements, the technician will direct the attention of the Engineer and Contractor to such failure.
   a. The technician shall not act as foreman or perform other duties for Contractor. Work will be checked as it progresses. Failure to detect any defective Work or materials at the time of installation shall not in any way prevent later rejection of the Work if defects are later discovered, nor shall it obligate the Engineer for final acceptance. Technicians are not authorized to revoke, alter, relax, enlarge, or release any requirements of the Contract Documents, nor to approve or accept any portion of the Work.
4. Responsibilities and Duties of Contractor, relative to testing:
   a. The use of testing services shall in no way relieve Contractor of the responsibility to provide Work in full compliance with the Contract Documents.
   b. To facilitate testing services, Contractor shall:
      1) Secure and deliver to the Engineer or to the testing agency, without cost, preliminary representative samples of the materials the Contractor proposes to use which are required to be tested.
      2) Furnish such casual labor as is necessary to obtain and handle samples at the Site or at other sources of material.
      3) Advise the laboratory service at least two days in advance of any backfill operations to allow for completion of quality tests and for the assignment of personnel.
   c. It shall be the responsibility of the Contractor to accomplish the specified compaction for backfill, fill, embankment, and other earthwork. It shall be the responsibility of the Contractor to control their operations by confirmation tests to verify and confirm that Contractor has complied, and is complying at all times, with the requirements of these Specifications concerning compaction, control, and testing.
   d. Contractor shall demonstrate the adequacy of compaction equipment and procedures to the Engineer before exceeding any of the following amounts of earthwork quantities:
      1) 200 linear feet of Special Trench Backfill.
      2) 10 cubic yards of structural backfill.
      3) 100 cubic yards of embankment work.
      4) 50 cubic yards of base material.
   e. Until the specified degree of compaction on the previously specified amounts of earthwork is achieved, no additional earthwork of the same kind shall be performed.
   f. Periodic compliance tests may be made by the Engineer to verify that compaction is conforming to the requirements previously specified, at no cost to Owner. Contractor shall remove the overburden above the level at which the Engineer

wishes to test and shall backfill and recompact the excavation after the test is complete.

g. If compaction fails to conform to the specified requirements, Contractor shall remove and replace the backfill at proper density or shall bring the density up to specified level by other means acceptable to the Engineer. Subsequent tests required to confirm and verify that the reconstructed backfill has been brought up to specified density shall be paid by Contractor. Contractor confirmation tests shall be performed in a manner acceptable to the Engineer. Frequency of confirmation tests for remedial Work shall be double the amount specified for initial confirmation tests.

B. Quality Control Testing During Construction: Testing service shall inspect and approve subgrades and fill layers before construction Work is performed thereon. Tests of subgrades and fill layers shall be taken as follows:

1. The frequency of Contractor confirmation tests shall be not less than as follows: Each test location for trenches shall include tests for each layer, type, or class of backfill from bedding to finish grade.
    1) Trenches for Underground Facilities:
        a) In open fields: Two locations every 1,000 linear feet.
        b) Along dirt or gravel roads or off traveled Right-of-Way: Two locations every 500 linear feet.
        c) Crossing paved roads: Two locations along each crossing.
        d) Under pavement cuts or within two feet of pavement edges: One location every 400 linear feet.
    2) For Structural Backfill: On 30-foot intervals on all sides of the structure for every compacted lift, but no less than one per lift on each side of the structure for structures less than 60 feet long on a side.
    3) In Embankment or Fill: One per 1,000 square feet on every compacted lift.
    4) Base Material: One per 1,000 square feet on every compacted lift.
2. Copies of the test reports shall be submitted promptly to the Engineer. Contractor tests shall be performed by a soils testing laboratory acceptable to the Engineer.
3. Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least 1 test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Engineer.

C. Permits and Regulations:

1. Contractor shall obtain all necessary permits for Work in roads, right-of-ways, railroads, and other property where permits are required. Also, obtain permits as required by local, state and federal agencies for discharging water from excavations.
2. Perform excavation Work in compliance with applicable requirements of governing authorities having jurisdiction.

1.5 SUBMITTALS

A. Action Submittals: Submit the following:

1. Product Data:
    a. Submit source of materials, and gradation for all stone used, submit gradation test for each type of material specified.

B. Informational Submittals: Submit the following:
   2. Delegated Design Submittals:
      a. Contractor shall prepare Shop Drawings for the following items:
         1) Sheeting and bracing, or other protective system(s).
         2) Dewatering Plan
         3) Dewatering system.
         4) Cofferdams.
      b. Shop Drawings shall be prepared by a Professional Engineer, registered in the State of Indiana, recognized as expert in the specialty involved. Also, submit for approval, calculations and all other pertinent information. Contractor, however, will be responsible for designing, installing, operating and maintaining the system(s) as required to satisfactorily accomplish all necessary sheeting, bracing, protection, underpinning, and dewatering.
      c. Drawings shall be prepared by a Professional Engineer, registered in the State of Indiana, recognized as expert in the specialty involved. Drawings shall be submitted to Engineer for record purposes only. Calculations shall not be submitted. Drawing submittals will not be checked and will not imply approval by Engineer of the Work involved. Contractor shall be solely responsible for designing, installing, operating and maintaining whatever system is necessary to satisfactorily accomplish all necessary sheeting, bracing, protection, underpinning, and dewatering.

   3. Site Quality Control Submittals:
      a. Test Reports for Borrow, Backfill, and Grading: Testing laboratory shall submit copies of the following reports directly to Engineer, with copy to the Contractor:
         1) Tests on borrow material.
         2) Test of excavation subgrade, including footers.
         3) Field density tests.
         4) Optimum Moisture: Maximum density curve for each soil used for backfill.
         5) Tests of actual unconfined compressive strength or bearing tests of each strata.
         6) Tests of Grout.
      b. Submit the proposed compaction procedure and equipment to be used.
      c. Submit the proposed sheet shoring and bracing procedure and equipment to be used.
      d. Submit any additional reports from required field testing as specified in Part 3 of this specification.
   4. Qualifications Statements:
      a. Submit qualifications for earthwork testing agency.

1.6 JOB CONDITIONS

A. Subsurface Information: Data on subsurface conditions is included in the Project Manual. It is not intended as a representation or warranty of continuity of conditions between soil borings nor of groundwater levels at dates and times other than date and time when measured. Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data is solely made available for the convenience of Contractor.
   1. Additional test borings and other exploratory operations may be made by Contractor, at no additional cost to the Owner.

B. Existing Underground Facilities: The Drawings show certain surface and underground facilities and utilities adjacent to the Work. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of Contractor. Contractor shall explore ahead of the required excavation to determine the exact location of all such facilities. They shall be supported and protected from damage by Contractor. If they are broken or damaged due to the Contractor's construction activities, then they shall be restored immediately by Contractor at no additional cost to the Owner.
   1. Locate existing Underground Facilities in the areas of the Work. If facilities are to remain in place, provide adequate means of protection during all operations.
   2. Should uncharted or incorrectly charted piping, structures, or other utilities be encountered during excavation, consult utility owner and Engineer immediately for directions as to how to proceed. Cooperate with Owner and utility owner in keeping services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
   3. In general, service lines to individual houses and businesses are not shown. Contractor shall assume that services exist for each utility to each house or business.
   4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, except when permitted in writing by Engineer and utility owner and then only after acceptable temporary utility services have been provided.
   5. Demolish and completely remove from the Site existing Underground Facilities indicated to be removed. Coordinate with utility owner for shut-off of services if lines are active.

C. The use of explosives will not be permitted.

D. Protection of Work and Property must conform to requirements in Contract Documents. Refer to Section 01 71 33, Protection of the Work and Property.

E. Dust Control must conform to requirements in Contract Documents. Refer to Section 01 57 00, Temporary Controls.

F. Roadways and Walks: Unless otherwise approved by Engineer, excavated material and materials of construction shall be stockpiled, and the Work shall be conducted to maintain open and free for pedestrian traffic in all crosswalks, and for vehicular traffic, provide a roadway driving lane not less than ten feet wide. All hydrants, valves, fire alarm boxes, letterboxes, and other facilities which may require access during construction shall be kept accessible for use. During the progress of the Work, Contractor shall maintain such crosswalks, sidewalks, and roadways in satisfactory condition, and the Work shall at all times be conducted to cause a minimum inconvenience to public travel and to permit safe and convenient access to private and public property along the line of the Work.

PART 2 PRODUCTS

2.1 MATERIALS

A. Backfill and Fill:
   1. Materials acceptable for use as backfill against walls, foundations, underground ductbanks, and other structures shall be stockpiled native sandy clay or granular soils obtained from on-site excavations and which are uniformly mixed, contain no organic

matter, nor contain rocks or fragments greater than 3 inches in size, nor have greater than 40 percent passing the 200 sieve. The maximum expansion of on-site materials shall be 1.5 percent as performed on a sample remolded to approximately 95 percent of the maximum dry density as determined in accordance with ASTM D698 at two percent below optimum moisture content under a 100 psf surcharge pressure.

2. Backfill and fill materials from off-site sources shall consist of silty or clayey sand soils that are uniformly mixed, contain no organic matter and which have a Plasticity Index less than ten. The maximum particle size of imported soils shall be 3-inches or less, if required to satisfy trenching, landscaping, or other requirements. The maximum expansion of off-site materials shall be 1.5 percent as performed on a sample remolded to approximately 95 percent of the maximum dry density as determined in accordance with ASTM D698 at two percent below optimum moisture content under a 100 psf surcharge pressure.
3. All materials for use as backfill and fill material shall be tested by the laboratory services, as requested by the Engineer.
4. If on-site material is unsuitable, Special Backfill or approved off-site fill shall be used.

B. Special Backfill:
1. Special backfill for use beneath structures, concrete slabs and asphalt pavements (and where shown or specified below and around structures) shall be in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications latest edition, Sections 211 and 904.
2. The material shall be acceptable quality, free from large or frozen lumps, wood, or other extraneous matter.
3. Special backfill shall be in accordance with gradations for No. 53 or No. 73 coarse aggregate in accordance with the gradation requirements of INDOT Standard Specifications latest edition, Section 904.03(e). Coarse Aggregate No. 53 or No. 73 shall be crushed stone or air-cooled blast furnace slag (ACBF), Class D or higher.

C. B-Borrow
1. B-Borrow is defined in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications latest edition, Sections 211 and 904. The material shall be acceptable quality, free from large or frozen lumps, wood, or other extraneous matter. Material shall compliance with gradations for No. 30 to 1 1/2 inch in accordance with the gradation requirements of INDOT 211.

2.2 BEDDING MATERIALS – FOR UTILITY PIPING AND STRUCTURES

A. Pipe Classifications
1. The following pipe materials are classified as Rigid:
   a. Reinforced Concrete Pipe (RCP)
2. The following pipe materials are classified as Flexible:
   a. Polyvinyl Chloride (PVC)
   b. High Density Polyethylene (HDPE)
   c. Corrugated Metal Pipe (CMP)
3. Bedding for Rigid Pipes
   a. Compacted Granular Bedding Material: The compacted granular bedding shall consist of angular 1/4 inch to 1 1/2 inch, graded stone. INDOT Classification No. 8,

No. 9, and No. 73 with a 50% mechanical crush count are acceptable. Required backfill is then placed on top of the compacted granular bedding.

b. Shaped Subgrade Bedding with compacted granular bedding: The subgrade material shall be No. 8 crushed stone. The compacted granular bedding shall consist of angular, 1/4 inch to 1 ½ inch graded stone. INDOT Classification No.8 or No. 9 is acceptable. Required backfill is then placed on top of the compacted angular bedding.

4. Bedding for Flexible Pipes
   a. All flexible pipes shall be bedded in Class "F" (crushed stone) bedding. INDOT Classifications No. 8, No. 9, and No. 73 are acceptable. The crushed stone shall be placed from a minimum depth beneath the pipe of the outer pipe diameter divided by eight (4 inch minimum) to the pipe's springline. Compacted granular bedding material is then placed on top of the crushed stone, level across the trench, to a point a minimum of 12 inches above the crown of the pipe. The compacted granular bedding material shall consist of angular, graded stone. INDOT Classification No. 8, No. 9, and No. 73 are acceptable. Required backfill is then placed on top of the compacted angular bedding.
5. Bedding for Precast Concrete Structures
   a. Precast concrete base sections for structures shall be placed on a well graded, compacted granular bedding material. The compacted granular bedding material shall consist of angular, graded stone. INDOT Classification No. 8, No. 9, or No. 73 in accordance with INDOT 211, is acceptable. The bedding course shall extend to the limits as shown on the Drawings.

2.3 INDOT Sieve Analysis Requirements

A. The following lists the coarse aggregate sieve analysis requirements in accordance with INDOT Section 903:

INDOT – Sieve Analysis Requirements

Sieve Sizes	COARSE AGGREGATE SIZES (PERCENT PASSING)									
	COARSE GRADED								DENSE GRADED	
	2	5	8	9	11	12	43(1)	91	53(1)	73(1)
4 in. (100 mm)										
3 1/2 in. (90 mm)										
2 1/2 in. (63 mm)	100									
2 in. (50 mm)	80-100									
1 1/2 in. (37.5 mm)		100					100		100	
1 in. (25 mm)	0-25	85-98	100				70-90	100	80-100	100
3/4 in. (19 mm)	0-10	60-85	75-95	100			50-70		70-90	90-100
1/2 in. (12.5 mm)	0-7	30-60	40-70	60-85	100	100	35-50		55-80	60-90
3/8 in. (9.5 mm)		15-45	20-50	30-60	75-95	95-100				
No. 4 (4.75 mm)		0-15	0-15	0-15	10-30	50-80	20-40		35-60	35-60
No. 8 (2.36 mm)		0-10	0-10	0-10	0-10	0-35	15-35		25-50	
No. 30 (600 µm)						0-4	5-20		12-30	12-30
No. 200 (75 µm)(2)							0-6.0		5.0-10.0(4)	5.0-12.0
Decant (PCC)(3)		0-1.5	0-1.5	0-1.5	0-1.5	0-1.5		0-1.5		
Decant (Non-PCC)	0-2.5	0-2.5	0-3.0	0-2.5	0-2.5	0-2.0		0-2.5		

Notes: 1. The liquid limit shall not exceed 25 (35 if slag) and the plasticity index shall not exceed 5. The liquid limit shall be determined in accordance with AASHTO T 89 and the plasticity index in accordance with AASHTO T 90. 2. Includes the total amount passing the No. 200 (75 μm) sieve as determined by AASHTO T 11 and T 27. 3. Decant may be 0-2.5 for stone and slag. 4. When slag is used for separation layers as defined in 302.01, the total amount passing the No. 200 (75 μm) sieve shall be 10.0 to 12.0.

2.4 RIP RAP

A. Revetment Riprap
   1. Provide revetment Riprap in accordance with INDOT Section 904.04, class F or higher, with a maximum dimension of 3 times the minimum dimension.
   2. The aggregate shall be as defined by INDOT Standards for revetment riprap, must be crushed stone, and must meet the following gradations:

INDOT Revetment Riprap Gradation	
Percent Smaller	
Size, in.	**Revetment**
30	
24	
18	100
12	90-100
8	
6	20-40
3	0-10
1	
Depth of Riprap	18 inches

2.5 GROUT

A. Grout may be utilized at utility crossings, utility abandonment and other such instances as determined by the Engineer.

B. Grout: Self-compacting flowable cementitious concrete material shall be produced from the following:
   1. Cementitious material (Portland cement and flyash): 100 to 350 lbs
   2. #23 washed sand: 2000 to 3000 lbs
   3. Water: 30 to 40 lbs (water to cement ratio= 1.0 to 1.5)
   4. Air: 10 to30% (Use Flowable Fill Performance Admixture – Eucon Easy Fill or equal)
   5. Maximum 200 psi compressive strength recommended

C. Diameter of spread shall be greater than or equal to 8 inch.

PART 3 EXECUTION

3.1 INSPECTION

A. Provide Engineer with 2 business days' notice and with means to examine the areas and conditions under which excavating, filling, and grading are to be performed. Engineer will notify Contractor, in writing, if conditions are found that may be detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.2 TEST PITS

A. General:
   1. Contractor shall excavate and backfill, in advance of the construction, test pits to determine conditions or location of the existing utilities and structures. Contractor shall perform all the Work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and replacing pavement for the test pits.
      a. Contractor shall be responsible for the definite location of each existing facility involved within the area of excavation for the Work under this Contract. Care shall be exercised during such location work to avoid damaging and/or disrupting the affected facility. Contractor shall be responsible for repairing, at his expense, damage to any structure, piping, or utility caused by his Work.

3.3 EXCAVATION

A. Perform all excavations required to complete the Work as shown, specified and required. Excavations shall include earth, sand, clay, gravel, hardpan, boulders not requiring drilling and blasting for removal, decomposed material, pavements, rubbish, abandoned utilities and all other materials within the excavation limits.

B. Provide excavation protection system(s) required by ordinances, codes, Laws, and Regulations to prevent injury to workers and to prevent damage to new and existing structures or utilities.

C. Where the structure or utility is to be placed below the ground water table, use well points, cofferdams or other acceptable methods to permit construction of said structure or pipeline under dry conditions. Dry conditions shall be maintained until concrete has reached sufficient strength to withstand earth and hydrostatic loads and until the pipelines are properly jointed, tested and acceptably backfilled. Water level shall be maintained below subgrade until backfilling and compaction is completed.

D. Pumping of water from excavations shall be completed in such a manner to prevent the carrying away of unsolidified concrete materials, and to prevent damage to the existing subgrade.

E. When excavations are made below the required grades, without the written order of Engineer, they shall be backfilled with compacted gravel or concrete, as directed by Engineer in writing, at the expense of Contractor.

F. Subgrades for roadways, structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud, muck, and other soft or unsuitable materials; and shall remain firm and intact under all construction operations. Subgrades which

are otherwise solid, but which become soft or mucky on top due to construction operations, shall be reinforced with crushed stone or gravel. The finished elevation of stabilized subgrades shall not be higher than subgrade elevations shown.

G. Prior to placement of aggregate base for roadways, subgrade more than 100 feet in length shall be proof-rolled with a tri-axle dump truck loaded with 20 tons and approved by the Engineer. There shall be one or two complete coverages as directed by the Engineer. Tire tracks, irregularities, or failures shall be corrected.

H. Pipe Trench Preparation:
   1. No more than 100 feet of trench may be opened in advance of pipe laying. Trenches in rock shall be fully opened at least 30 feet in advance of where pipe is being laid.
   2. Trench width shall be minimized to the greatest extent practical, but shall conform to the following:
      a. Sufficient to provide room for installing, jointing and inspecting piping.
      b. Sufficient for shoring and bracing, or shielding and dewatering.
      c. Sufficient to allow thorough compaction of backfill adjacent to bottom half of pipe.
      d. Where the existing material beneath the bedding material is considered unsuitable by Engineer, Contractor shall remove and replace it with backfill or fill material as approved by Engineer.
   3. Depth of trench shall be as shown. If required and approved by Engineer, in writing, depths may be revised.

I. Material Storage: Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
   1. Locate and retain soil materials away from edge of excavations.
   2. Do not store within drip line of trees to be protected.
   3. Dispose of excess soil material and waste materials as specified hereinafter.
   4. Stockpiled excavated soils for use as subsequent fill shall be classified by laboratory as on-site granular or sandy clay soils. Use and placement of fill shall be performed as specified for each class.
   5. Excess soil from excavations shall be disposed off-site. Disposal shall be in accordance with state and local regulatory requirements.

3.4 UNAUTHORIZED EXCAVATION

A. All excavation outside the lines and grades shown, and which is not approved by Engineer, together with the removal and disposal of the associated material shall be restored at Contractor's expense. Unauthorized excavations shall be filled and compacted with backfill, or fill material as approved by Engineer, or concrete by Contractor at no additional cost to the Owner. Claims and damages resulting from unauthorized excavation will be the sole responsibility of the Contractor.

3.5 EROSION CONTROL, DRAINAGE AND DEWATERING

A. Erosion control, drainage, and dewatering must conform to requirements in Contract Documents. Refer to Section 01 57 00, Temporary Controls and 01 57 13, Erosion and Sedimentation Control.

3.6 SHEETING, SHORING AND BRACING

A. General:
   1. Material utilized for sheeting, shoring, and bracing shall be in good condition, not damaged or excessively pitted. All steel or wood sheeting designated to remain in place shall be new. New or used sheeting may be used for temporary Work.
   2. Unless otherwise shown, specified, or directed, all materials used for temporary construction shall be removed when Work is completed. Such removal shall be made in a manner not injurious to the structure or its appearance or to adjacent Work.
   3. Safe and satisfactory sheeting, shoring and bracing shall be the entire responsibility of Contractor.

B. Shop Drawings for sheeting, shoring and bracing shall be submitted for record; they will not be reviewed.

3.7 TRENCH SHIELDS

A. Excavation of earth material below the bottom of a shield shall not exceed the limits established by Ordinances, Codes, Laws, and Regulations.

B. When using a shield for the installation of structures, the bottom of the shield shall not extend below the top of the bedding for the structures.

C. When a trench shield is removed or moved ahead, care shall be taken to prevent the movement of pipe or structures and the disturbance of the placed bedding and backfill for pipe or structures. Pipe, structures, bedding and backfill that are disturbed shall be removed and reinstalled as specified.

3.8 GENERAL REQUIREMENTS FOR BEDDING, BACKFILL, AND COMPACTION

A. Furnish, place and compact all Special Backfill, backfill, fill and other materials required for structures, embankments, pipelines, duct banks, and other requirements.

B. Provide the finished grades as shown and as described herein to be furnished, placed and compacted by Contractor.

C. Backfill excavations as promptly as Work permits, but not until completion of the following:
   1. Inspection, successful completion and acceptance of testing, approval, and recording of locations of Underground Facilities.
   2. Removal of concrete formwork.
   3. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
   4. Removal of trash and debris.

D. Fill containing organic materials or other unacceptable material shall be removed and replaced with approved fill material as specified.

E. Placement of Bedding

1. Bedding materials, both below the bottom and above the crown of the pipe, classes of bedding to be used, and placement and compaction of bedding materials shall conform to the following requirements:
    a. Granular bedding shall be spread and the surface graded to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle. After each pipe has been graded, aligned, placed in final position on the bedding material and shoved home, sufficient pipe bedding material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof to hold the pipe in proper position and to maintain alignment during subsequent pipe jointing and bedding operations. Bedding material shall be deposited and compacted uniformly and simultaneously on each side of the pipe to prevent lateral displacement. The bedding material shall then be placed and compacted to a level elevation 12 inches above the top of pipe across the trench.
    b. Compacted backfill shall be required for the full depth of the trench above the granular pipe bedding material. Where the trench for one pipe passes beneath the trench for another pipe or electrical ductbank, the lower trench shall be compacted to the level of the bottom of the upper trench.
    c. Each layer of bedding material shall be compacted by at least two complete coverages of all portions of the surface of each lift using approved compaction equipment. One coverage is defined as the conditions reached when all portions of the fill lift have been subjected to the direct contact of the compacting surface of the compactor.
    d. The method of compaction and the equipment used shall be appropriate for the material to be compacted and shall not transmit damaging shocks to the pipe.
    e. The degree of compaction required for granular bedding is expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D698.

F. General - Placement of Special Backfill, Backfill, and Fill:
1. Special backfill and backfill shall be placed to the grades shown. Bring special backfill, backfill around structures and piping up evenly on all sides. The lift thickness and compaction moisture content range given herein is approximate. These values shall be finally determined from the laboratory test results on the materials.
2. All special backfill shall be placed in horizontal loose lifts, not exceeding 8 inches in thickness, and shall be mixed and spread in a manner assuring uniform lift thickness after placing. Each lift shall be compacted by not less than two complete coverages of the specified compactor. Special backfill shall be placed to the underside of all concrete slabs. The material shall extend a minimum of 2 feet outside the face of each structure and be 12 inches below finished grade on all structures. When used under concrete slabs with exposed edges, the maximum slope of special backfill to the subgrade shall be one vertical to one horizontal.
3. Backfill and fill around and outside of structures and over special backfill shall be deposited in layers not to exceed 8 inches in uncompacted thickness and mechanically compacted, using platform type tampers.
4. Keep excavations dry during backfilling operations. No special backfill, backfill or fill material shall be placed when free water is standing on the surface of the area where the fill is to be placed.

G. General – Compaction of Special Backfill, Backfill, and Fill:

1. Compaction of structures backfilled by rolling will be permitted provided the desired compaction is obtained and damage to the structure is prevented.
2. Compaction of special backfill and/or backfill by inundation with water will not be permitted. All materials shall be deposited as specified herein and as shown on the Drawings.
3. The material shall be placed at a moisture content and density as specified. Contractor shall provide equipment capable of adding measured amounts of water to the backfill and/or special backfill material to bring it to a condition within the range of the required moisture content.
4. Contractor shall provide equipment capable of discing, aerating, and mixing the soil to ensure reasonable uniformity of moisture content throughout the fill material and to reduce the moisture content of the borrow material by air drying, if necessary. If the subgrade or lift of earth material must be moisture conditioned before compaction, the fill material shall be sufficiently mixed or worked on the subgrade to ensure a uniform moisture content throughout the lift of material to be compacted. Materials at moisture content in excess of the specified limit shall be dried by aeration or stockpiled for drying.
5. No compaction of fill will be permitted with free water on any portion of the fill to be compacted. No fill shall be placed or compacted in a frozen condition or on top of frozen material.
6. Any fill containing organic materials or other unacceptable material previously described shall be removed and replaced with approved fill material prior to compaction.
7. Compaction shall be performed with equipment suitable for the type of material being placed. Contractor shall select equipment that is capable of providing the minimum density required by these Specifications. Hand operated compacting equipment shall be used within a distance of ten feet from the wall of any completed below grade structure. Equipment shall be provided that is capable of compacting in restricted areas next to structures and around piping. The effectiveness of the equipment selected by Contractor shall be tested at the commencement of compaction Work by construction of a small section of material within the area where the material is to be placed. If tests on this section of material show that the specified compaction is not obtained, Contractor shall increase the amount of coverage, decrease the lift thicknesses or obtain a different type of compactor.
8. Levels of special backfill or backfill against concrete walls shall not differ by more than 2 feet on either side of walls, unless walls are adequately braced or all floor framing is in place up to and including grade level slabs. Particular care shall be taken to compact structure special backfill or backfill, which will be beneath pipes, roads, or other surface construction or structures. In addition, wherever a trench passes through structure special backfill or backfill, the structure special backfill or backfill shall be placed and compacted to an elevation 12 inches above the top of the pipe before the trench is excavated. Compacted areas, in each case, shall be adequate to support the item to be constructed or placed thereon.
9. The compaction requirements specified are predicated on the use of normal materials and compaction equipment. In order to establish criteria for the placement of a controlled fill so that it will have compressibility and strength characteristics compatible with the proposed structural loadings, a series of laboratory compaction and/or compressive strength tests shall be performed on the samples of materials submitted by Contractor. From the results of the laboratory tests, the final values of the required percent

compaction, the acceptable compaction moisture content range, and the maximum permissible lift thickness will be established for the fill material and construction equipment proposed.

10. Control the water content of fill material during placement within the range necessary to obtain the compaction specified. In general, the moisture content of the fill shall be within three percent of the optimum moisture content for compaction as determined by laboratory tests. Perform all necessary Work to adjust the water content of the material to within the range necessary to permit the compaction specified.
11. Compact fill shall be compacted by at least 2 coverages of all portions of the surface of each lift by compaction equipment. One coverage is defined as the condition obtained when all portions of the surface of the fill material have been subjected to the direct contact of the compactor.
12. If the specified densities are not obtained because of improper control of placement or compaction procedures, or because of inadequate or improperly functioning compaction equipment, Contractor shall perform whatever Work is required to provide the required densities. This Work shall include complete removal of unacceptable special backfill, backfill and fill areas, and replacement and recompaction until acceptable material is provided, at no additional cost to the Owner.
13. Contractor shall repair, at his own expense, any after settlement that occurs, during the warranty period. Contractor shall make all repairs and replacements required within 30 days after notice from Engineer or Owner.

H. Backfill or Special Backfill in Pipe Trenches:

1. Place all backfill or special backfill in pipe trenches which are below structures, other pipes, or paved areas, in horizontal layers or lifts not exceeding 6 inches in depth and thoroughly compact each before the next layer or lift is placed. In other pipe trenches, compacted layers shall be 6 inches up to the pipe center line and 8 inches thereafter.
2. Where pipe is laid in rock excavation, crushed stone or gravel bedding shall be carefully placed and tamped over the rock before the pipe is laid. Depth of crushed stone or gravel shall be at least 6 inches for pipe that is 16 inches and smaller and 9 inches for pipe that is 18 inches and larger. After laying pipe, the balance of the backfill shall be placed as described herein.
3. Prior to the installation of pipes which are to be installed in fill sections, place the fill as described herein, until a minimum height of two feet above the soffit of the pipe is reached, unless otherwise required in other Sections. The fill for the trench width shall then be excavated and the pipe installed and backfilled. The remainder of the fill shall then be placed.
4. Pipeline trenches may be backfilled prior to pressure testing, but no structure shall be constructed over any pipeline until it has been tested.

I. Backfill or Special Backfill Around Manholes and Drainage Structures:

1. Backfill or special backfill should be placed evenly around manhole in 6-inch maximum lifts and should be thoroughly tamped to standard proctor density referenced below, before the next layer is installed.
2. Backfill material shall be subject to approval by the Engineer.

J. Compaction Density Requirements:

1. The degree of compaction required for all types of fills shall be 95 percent density as determined by the Modified Proctor Test or as approved by Engineer. Compaction may be obtained by mechanically tamping the material in 6-inch lifts. Material shall be moistened or aerated as necessary to provide the moisture content that will facilitate obtaining the specified compaction.
    a. All backfill, special backfill and fill must be wetted and thoroughly mixed to achieve +2% or -1% of the optimum moisture content, with the following exceptions: On-site clayey soils optimum to plus 3 percent.
    b. Natural undisturbed soils or compacted soil subsequently disturbed or removed by construction operations shall be replaced with materials compacted as specified above.
2. Testing service shall perform tests required to provide data for selection of backfill, special backfill and fill material and control of placement water content.
3. Field density tests, to ensure that the specified density is being obtained, shall be performed by testing service during each day of compaction Work.
4. If the tests indicate unsatisfactory compaction, Contractor shall provide the additional compaction necessary to obtain the specified degree of compaction. All additional compaction Work shall be performed by Contractor, at no additional cost to the Owner, until the specified compaction is obtained. This Work shall include complete removal of unacceptable (as determined by the Engineer) fill areas and replacement and recompaction until acceptable backfill, special backfill and fill is provided.

K. Replacement of Unacceptable Excavated Materials: In cases where over-excavation for the replacement of unacceptable soil materials is required, the excavation shall be backfilled to the required subgrade with special backfill material and thoroughly compacted as specified. Sides of the excavation shall be sloped in accordance to the maximum inclinations specified for each structure location.

3.9 GROUT

A. Grout: Provide all labor, materials, equipment, and tools required to fill those pipes to be abandoned in place and completely fill the pipes to be abandoned.

3.10 RIPRAP

A. Revetment Riprap
1. Install revetment riprap in accordance with INDOT Section 616.05. Riprap may be placed by dumping and shall be placed to the required thickness. The finish surface shall be free from clusters of small stones or of large ones. The finished surface shall vary from a true plane no more than 9 inches for revetment riprap as indicated on drawings.
2. Install an aggregate separation geosynthetic layer in accordance with Section 31 05 19, Geosynthetics for Earthwork.

3.11 EMBANKMENTS

A. To the maximum extent available, use excess earth obtained from structure and trench excavations for construction of embankments. Obtain additional material from borrow pits as necessary. After preparation of the embankment area, level and roll the subgrade so that

surface materials of the subgrade will be compact and well bonded with the first layer of the embankment. All material deposited in embankments shall be free from rocks or stones, brush, stumps, logs, roots, debris, and organic or other objectionable materials. Construct embankments in horizontal layers not exceeding 8 inches in uncompacted thickness. Spread and level material deposited by excavating and hauling equipment prior to compaction. Thoroughly compact each layer by rolling or other method acceptable to the Engineer to 95 percent of the maximum density at optimum moisture content as determined by ASTM D1557. If the material fails to meet the density specified, compaction methods shall be altered. Wherever a trench passes through a fill or embankment, the fill or embankment material shall be placed and compacted to an elevation 24 inches above the top of the pipe before the trench is excavated.

1. Compact Clay Embankment for pond areas as engineered fill discussed in Section 4.5 of the Soils Report.

3.12 GRADING

A. General: Uniformly grade areas within limits of grading as shown or specified, including adjacent transition areas. Smooth subgrade surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:

1. Turfed Areas or Areas Covered with Gravel, Stone, Wood Chips, or Other Special Cover: Finish areas to receive topsoil or special cover to within not more than 1-inch above or below the required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 1-inch above or below the required subgrade elevation.
3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2 inch above or below the required subgrade elevation.

C. Compaction:

1. After grading, compact subgrade surfaces to the depth and percentage of maximum required for each area classification.

3.13 PAVEMENT SUBBASE COURSE

A. General: Place subbase material, in layers of specified thickness, over subgrade surface to support pavement base course.

1. Refer to Division 32 Specifications for paving requirements.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

C. Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to

thickness of each subbase course layer. Compact and roll at least a 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.

D. Placing: Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.
   1. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

3.14 DISPOSAL OF EXCAVATED MATERIALS

A. Materials removed from the excavations which do not conform to the requirements for fill or are in excess of that required for backfill shall be hauled away from the Site by Contractor and disposed of in compliance with ordinances, codes, Laws and Regulations, at no additional cost to the Owner.

B. Contractor shall notify Owner in writing of all offsite locations for the disposal of excavated material.

C. Pavement, gutters, curbs, sidewalks, driveways or roadways disturbed or damaged by Contractor operations, except in areas designed as proposed Work, shall be restored by Contractor at his own expense to a condition equal to or greater than they were previous to the commencement of the Work and in accordance with applicable local and state highway Specifications or requirements.

END OF SECTION 31 00 05

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SECTION 32 12 16

ASPHALT PAVING
Addendum 2

PART 1 GENERAL

1.1 DESCRIPTION

A. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install hot-mix asphalt (HMA) paving according to materials, workmanship, and other applicable requirements in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications latest edition, Section 402.

B. Related Sections:
   1. Section 31 00 05, Trenching and Earthwork.
   2. Section 31 05 19, Geosynthetics for Earthwork.

1.2 DEFINITIONS

A. Combined Aggregate: All mineral constituents of asphalt concrete mix, including mineral filler and separately sized aggregates.

B. RAP: Reclaimed asphalt pavement.

1.3 MEASUREMENT AND PAYMENT

A. Asphalt Pavement
   1. Work Item Number and Title
      32 12 16-A Asphalt Paving
   2. Payment for asphalt paving shall be on a unit price basis for asphalt pavement successfully installed.
   3. The pay quantity for repair shall be the actual quantity of asphalt pavement successfully installed as measured by the square yard of asphalt pavement, to the thickness shown on the Drawings. Such unit prices shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, to install the asphalt pavement as shown and specified. This Work includes, but is not limited to, all excavation, backfill, grading, compaction, tack, furnishing and placing asphalt pavement materials, pavement markings, testing of materials, restoration and replacement of all disturbed items not included under other Work items, protection of existing utilities and structures, and all incidentals for performing all Work as specified unless otherwise provided for as a separate Work item.
   4. Pavement markings shall be installed in accordance with 2011 Indiana Manual on Uniform Traffic Control Devices with Revisions 1 & 2 & 3.

B. Signage
   1. Work Item Number and Title
      32 12 16-B Signage
   2. Payment for signage shall be on a lump sum basis for signs successfully installed.
   3. The lump sum for signage shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, to install the signs as shown and specified. This Work includes, but is not limited to, all excavation, backfill, compaction, furnishing and placing mounting hardware, signs, sign posts, and footer materials, restoration and replacement of all disturbed items not included under other Work items, protection of existing utilities and structures, and all incidentals for performing all Work as specified unless otherwise provided for as a separate Work item.
   4. All materials and work associated with the installation of traffic shall comply with Sections 802, 910.14 and 919 of the current INDOT Standard Specifications. Signs shall be installed in accordance with 2011 Indiana Manual on Uniform Traffic Control Devices with Revisions 1 & 2 & 3.

C. Asphalt Path
   1. Work Item Number and Title
      32 12 16-C 9' Asphalt Path
   2. Payment for asphalt path shall be on a unit price basis for asphalt path successfully installed.
   3. The pay quantity for asphalt path shall be the actual quantity of asphalt path successfully installed as measured by the square yard of asphalt path to the thickness shown on the Drawings. Such unit prices shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, to install the asphalt path as shown and specified. This Work includes, but is not limited to, all excavation, backfill, grading, compaction, tack, furnishing and placing asphalt pavement materials, testing of materials, restoration and replacement of all disturbed items not included under other Work items, protection of existing utilities and structures, and all incidentals for performing all Work as specified unless otherwise provided for as a separate Work item.

1.4 REFERENCES

A. Standards referenced in this Section are listed below:
   1. ASTM International:
      a. ASTM D242, Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
      b. ASTM D692, Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
      c. ASTM D1073, Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
      d. ASTM D3666, Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials.
      e. ASTM D3910, Standard Practices for Design, Testing, and Construction of Slurry Seal.
   2. Asphalt Institute (AI):
      a. MS-22, Principles of Construction of Hot Mix Asphalt Pavements
   3. Indiana Department of Transportation (INDOT) - Standard Specifications:

a. Section 402, Hot Mix Asphalt, HMA, Pavement.
b. Section 406, Tack Coat.
c. Section 808, Pavement Traffic Markings.
d. Section 904, Aggregates.
e. Section 916, Materials Certifications.

4. Indiana Department of Transportation (INDOT) – Design Manual:
   a. Chapter 17, Quantity Estimating.
5. Indiana Department of Transportation (INDOT) – ITM
   a. ITM 583- Certified Hot Mix Asphalt Producer Program

1.5 SUBMITTALS

A. Job Mix Designs: For each asphalt mix design the Contractor shall submit a copy of the following information on an INDOT Material and Test Division standard form or similar:
   1. Mixture course
   2. HMA mix type
   3. Source of each asphalt material
   4. Binder
   5. Material content and percentages
   6. Proposed gradation for each aggregate to be used in flexible paving. Submit gradation test results for the dame material furnished on a previous project.
   7. Indicate proportion of bituminous material from reclaimed asphalt pavement.

B. Provide a copy of the INDOT list of certified hot mix asphalt producers, dated within the last 12 months and highlight the plant name and certification number, on the list.

C. Provide a copy of the INDOT list of approved HMA mix design laboratories, dated within the last 12 months and highlight the laboratory name and certification number, on the list.

D. Shop Drawings: Provide shop drawings for signs used on project.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be an INDOT certified hot mix asphalt producer, in accordance with ITM 583, and shall be listed on the most recent version of the INDOT list of certified hot mix asphalt producers, unless otherwise approved by the Owner.

B. Laboratory Qualifications: Testing laboratory shall be an INDOT certified hot mix asphalt laboratory and shall be listed on the most recent version of the INDOT list of certified hot mix asphalt laboratories, unless otherwise approved by the Owner.

C. Testing Agency Qualifications: Testing agency shall be qualified according to ASTM D 3666 for testing indicated.

D. Regulatory Requirements: Comply with INDOT Standard Specifications latest edition, Section 402 and provisions thereto for asphalt paving Work.
   1. Asphalt-Paving Publication: Comply with Asphalt Institute (AI) MS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:
   1. Tack Coats: Minimum surface temperature of 60 deg F.
   2. Slurry Coat: Comply with weather limitations of ASTM D 3910.
   3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
   4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

PART 2 PRODUCTS

2.1 AGGREGATES

A. General: All aggregates used in asphalt mixture shall be in accordance with INDOT Standard Specifications latest edition, Section 904. Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D 692, hard, strong; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.

C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.

D. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Hot Mix Asphalt (HMA) material shall conform to applicable requirements of the INDOT Standard Specification latest edition, Sections 402.

B. Tack Coat: Rapid-cure liquid asphalt conforming to INDOT Standard Specification latest edition, Section 406.

C. Water: Potable.

D. Reclaimed Asphalt Pavement (RAP): Per INDOT Standard Specifications latest edition, Section 402.08 for Recycled Asphalt Pavement shall not exceed 25% by weight (mass) of the total mixture.

E. Reclaimed Asphalt Shingles (RAS) shall not be used on design mix formulas or job mix formulas.

2.3 PAVEMENT MARKING MATERIALS

A. Pavement marking materials shall be in accordance with INDOT Standard Specifications latest edition, Section 808 for Pavement Traffic Markings.

B. Colors:
   1. Roadway Center Markings Between Opposing Traffic Lanes: Yellow.
   2. Roadway Side Striping: White, unless otherwise shown or specified. On roads with divided median, right-side striping of each direction shall be white, and left-side striping shall be yellow.
   3. Roadway Miscellaneous Lane Markings (turn lane arrows and text): White.
   4. No-Parking Areas: Yellow.
   5. Handicap Parking Spaces: Unless otherwise indicated with signs, provide handicap symbol on pavement with white paint on blue background.

2.4 SIGN MATERIAL

A. Signs
   1. All signs shall be of a thickness that complies with Section 919.01(a)1 of the current INDOT Standard Specifications. All signs shall meet the requirements of the current MUTCD and FHWA Standard Highway Signs for size, color, shape, legend and border. The prismatic reflective material shall be in compliance with Section 919.01(b) of the current INDOT Standard Specifications. The letters, numbers and symbols shall be from non-reflective material that complies with Section 919.01(b)2 of the current INDOT Standard Specifications.

B. Sign Posts
   1. After installation, all posts shall be vertical. All new sign posts shall be a minimum of 2¼ inch square posts made of a minimum of 14 gauge steel. All posts shall be installed on a minimum 36 inch break away anchor. All posts installed on concrete, asphalt or another hard surface shall be installed on a break out coupler. This coupler shall be a Skidril Break-Out Coupler for 2¼ inch post or approved equal. All signs shall be attached to square posts with 3/8 inch aluminum or zinc drive rivets with a 3/4 inch round head with a plastic washer. When signs are attached to an existing channel post, the signs shall be attached with a flat washer, plastic washer and either a lock nut and washer or a lock nut.

2.5 MIXES

A. Hot-Mix Asphalt (HMA): Provide dense, hot-laid, hot-mix asphalt plant mixes with the following requirements:
   1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
   2. Surface Course: INDOT HMA Surface Type B per the drawings.
   3. Intermediate Course: INDOT HMA Intermediate Type B per the drawings.

PART 3 EXECUTION

3.1 GENERAL

A. Traffic Control:

1. Provide traffic control in accordance with Section 01 55 26, Maintenance and Protection of Traffic.
2. Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt.

B. Driveways: Re-pave driveways as specified in the Construction Documents. Leave driveways in as good or better condition than before start of Work.

C. Plant discharge temperature shall not be greater than 315 deg F with PG 58-28, PG 64- 22, or PG 70-22 binders. And not greater than 325 deg F with PG 70-28 or PG76-22 binders.

3.2 WEATHER LIMITATIONS

A. HMA courses less than 110 lb/sq yd are to be placed when the ambient and surface temperature are 60° F or above.

B. HMA courses equal to or greater than 110 lb/sq yd but less than 220 lb/sq yd are to be placed when the ambient and surface temperatures are 45° F or above.

C. HMA courses equal to or greater than 220 lb/sq yd and HMA curbing are to be placed when the ambient and surface temperatures are 32° F or above.

D. Mixture shall not be placed on a frozen subgrade. However, HMA courses may be placed at lower temperatures, provided the density of the HMA course is in accordance with 402.16.

E. Do not place HMA Surface mix after October 1st.

3.3 LINE AND GRADE

A. Provide and maintain intermediate control of line and grade, independent of underlying base, to meet finish surface grades and minimum thickness.

B. Shoulders: Construct to line, grade, and cross-section shown.

3.4 PREPARATION

A. Prepare subgrade as specified in Section 31 00 05, Trenching and Earthwork or INDOT Standard Specifications latest edition, Section 402.11.

B. Existing Roadway:
1. Modify profile by grinding, milling, or overlay methods as approved, to provide transition to existing adjacent pavement and surfaces and to produce smooth riding connection to existing facility.
2. Remove existing material to a minimum depth of 1 1/2 inches.
3. Paint edges of existing adjacent pavement with tack coat prior to placing new pavement.

C. Thoroughly coat edges of contact surfaces (curbs, manhole frames) with emulsified asphalt or asphalt cement prior to laying new pavement. Prevent staining of adjacent surfaces.

3.5 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.6 PATCHING

A. Pavement Removal: Saw cut perimeter of pavement to be removed and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Portland Cement Concrete (PCCP) Pavement: Break cracked slabs and roll as required to reseat concrete pieces firmly.
   1. Pump hot undersealing asphalt under rocking slabs until slab is stabilized or, if necessary, crack slab into pieces and roll to reseat pieces firmly.
   2. Remove disintegrated or badly cracked pavement. Excavate rectangular or trapezoidal patches, extending into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Recompact existing unbound-aggregate base course to form new subgrade.

C. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.000251 Ton/Syd (0.06 Gal/Syd) per INDOT Design Manual latest edition, Chapter 17 – Quantity Estimating.
   1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
   2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

D. Patching Base: Fill excavated pavement with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.

E. Patching Surface: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.7 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
   1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

B. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.00251 Ton/Syd (0.06 gal/Syd) per INDOT Design Manual latest edition, Chapter 17 – Quantity Estimating.
   1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.8 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
   1. Place hot-mix asphalt surface course in single lift.
   2. Mix temperature at time of spreading shall not be less than 18 deg F the minimum mixing temperature listed on the approved design mix formula.
   3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.
   4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
   1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

D. Paver speed shall not exceed 50 feet per minute.

3.9 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.
   1. Clean contact surfaces and apply tack coat to joints.
   2. Offset longitudinal joints, in successive courses, a minimum of 6 inches and located within 12 inches of the lane line, as applicable.
   3. Offset transverse joints, in successive courses, a minimum of 24 inches.
   4. Construct transverse joints as described in INDOT Standard Specifications latest edition, Section 402.14.
   5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
   6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.10 COMPACTION

A. General: Compaction shall conform to INDOT Standard Specifications latest edition, Section 402.15 for the minimum number of rollers and coverage. Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still at the highest temperature where the mixture does not exhibit any possibility for distortions.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled sufficiently to prevent distortions.

3.11 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:
   1. Base Course: Plus or minus 1/2 inch.
   2. Surface Course: Plus 1/4 inch, no minus.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10 foot straightedge applied transversely or longitudinally to paved areas:
   1. Base Course: 1/4 inch.
   2. Surface Course: 1/8 inch
   3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.12 PAVEMENT OVERLAY

A. Preparation:
   1. Remove fatty asphalt, grease drippings, dust, and other deleterious matter.
   2. Surface Depressions: Fill with asphalt concrete mix, and thoroughly compact.
   3. Damaged Areas: Remove broken or deteriorated asphalt concrete and patch as specified in Article Patching.

4. Portland Cement Concrete Joints: Remove joint filler to minimum 1/2 inch below surface.

B. Application:
   1. Tack Coat: As specified in this section.
   2. Place and compact asphalt concrete as specified in Article Pavement Application.
   3. Place first layer to include widening of pavement and leveling of irregularities in surface of existing pavement.
   4. When leveling irregular surfaces and raising low areas, the actual compacted thickness of any one lift shall not exceed 2 inches.
   5. Actual compacted thickness of intermittent areas of 120 square yards or less may exceed 2 inches, but not 4 inches.
   6. Final wearing layer shall be of uniform thickness, and meet grade and cross section as shown.

3.13 RESTORING AND RESURFACING EXISTING ROADWAYS AND FACILITIES

A. Place a 4" thick temporary CMA surface immediately after backfilling trenches in traveled roadways, driveways, sidewalks, or otherwise improved surfaces, which are to be retained for permanent use. The type of temporary surface shall be approved by the Engineer, or approved in accordance with authorized cut permits. Maintain the surface of the paved area over the trench in good and safe condition during progress of the entire Work, and promptly fill all depressions over and adjacent to the trench caused by settlement of backfilling. Immediately prior to constructing permanent pavement, remove and dispose of temporary surface. The permanent replacement pavement shall be in accordance with the Contract Documents. Permanent restoration shall be completed within thirty (30) days after installation of the utility, if in proper construction season.

B. Pavement, gutters, curbs, sidewalks, driveways or roadways disturbed or damaged by Contractor operations, except in areas designed as proposed Work, shall be restored by Contractor at his own expense to a condition equal to or greater than they were previous to the commencement of the Work and in accordance with applicable local and state highway Specifications or requirements

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.
   1. Testing agency will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to INDOT Standard Specifications latest edition, Sections 402.13 and 402.15.

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

F. All required testing must be witnessed and approved by the Resident Project Representative, assigned by Owner.

3.15 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project Site.
   1. Do not allow excavated materials to accumulate on-site.

3.16 TESTING FREQUENCY

A. Quality Control Tests:
   1. Asphalt Content, Aggregate Gradation: Once per every 500 Tons of mix or once every 4 hours, whichever is greater.
   2. Mix Design Properties, Measured Maximum (Rice's) Specific Gravity: Once every 1,000 Tons or once every 8 hours, whichever is greater.

B. Density Tests: Once every 500 Tons of mix or once every 4 hours, whichever is greater.

3.17 PAVEMENT MARKINGS

A. All pavement markings removed or damaged during the course of construction shall be replaced.

B. Pavement Markings: Provide pavement markings where shown or indicated.
   1. Preparation:
      a. Sweep surface with power broom supplemented by hand brooms to remove loose material and dirt.
      b. Do not begin marking bituminous concrete pavement until approved by Engineer.
      c. When reflective glass beads are required, mix with paint prior to paint application.
      d. Application: Using mechanical equipment, provide uniform, straight edges in two separate coats. Apply in accordance with paint manufacturer's recommendations.

3.18 SIGNS

A. All existing signs removed or damaged during the course of construction shall be replaced.

B. Signs: Provide signs where shown or indicated.

C. All materials and work associated with the installation of signs shall comply with Sections 802, 910.14 and 919 of the current INDOT Standard Specifications. Signs shall be installed in accordance with 2011 Indiana Manual on Uniform Traffic Control Devices with Revisions 1 & 2 & 3.

END OF SECTION 32 12 16

SECTION 32 16 00

CURBS, GUTTERS, SIDEWALKS, RAMPS AND DRIVEWAYS
Addendum 2

PART 1 GENERAL

1.1 DESCRIPTION

A. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install Portland Cement Concrete (PCCP) curbs and gutters and concrete sidewalks.

B. Related Sections:
   1. Section 31 00 05, Trenching and Earthwork.

1.2 MEASUREMENT AND PAYMENT

A. Curb and Gutter
   1. Work Item Number and Title
      32 16 00-A Curb and Gutter
   2. Curb and gutter will be measured by the linear foot along the front face of the section at the finished grade elevation of the type specified.
   3. The accepted quantities of curb and gutter Work will be paid at the unit price per linear foot as listed on the submitted Bid schedule for curb and gutter.

B. Curb and Gutter
   1. Work Item Number and Title
      32 16 00-B Curb
   2. Curb will be measured by the linear foot along the front face of the section at the finished grade elevation of the type specified.
   3. The accepted quantities of curb Work will be paid at the unit price per linear foot as listed on the submitted Bid schedule for curb.

C. Concrete Sidewalk
   1. Work Item Number and Title
      32 16 00-C Sidewalk, 4" Concrete
   2. Payment for Sidewalk shall be on a unit price basis for sidewalk successfully installed.
   3. The pay quantity for Sidewalk shall include removal of sidewalk as necessary to complete Work as shown on the Drawings.
   4. The pay quantity for Sidewalk shall be the actual quantity of sidewalk actually installed, as measured by the square yard of finished sidewalk surface.
   5. The payment of sidewalk shall be based on the unit price per square yard as listed on the submitted Basis of Bid Form for sidewalk successfully installed. Such unit price shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, to install the sidewalk as shown and specified. This Work includes, but is not limited to, furnishing and placement of concrete sidewalk, testing of materials, restoration

and replacement of all disturbed items not included under other Work items, protection of existing utilities and structures, and all incidentals for performing all Work as specified unless otherwise provided for as a separate Work item.

D. ADA Curb Ramps
   1. Work Item Number and Title
      32 16 00-D ADA Ramps, All Types
   2. Payment for ADA Curb Ramps shall be on a unit price basis for all types.
   3. The pay quantity for ADA Curb Ramps will be the actual number constructed complete in place according to applicable standards.

E. Bollards
   1. Work Item Title and Number
      33 44 13-E Removable Bollards
   2. Payment for bollards shall be on a unit price basis for each bollard furnished and installed in place as shown and specified on the Drawings.
   3. The pay quantity shall be the number of bollards actually furnished and installed.
   4. This item shall include costs to furnish labor, materials, tools, and equipment, both permanent and temporary, for the construction of bollards associated with work shown on the Drawings.

F. Driveways
   1. Restoration of driveways shall be included in other Work items and shall not be paid for as a separate line item.

1.3 REFERENCES

A. Standards referenced in this Section are listed below:
   1. Indiana Department of Transportation (INDOT) - Standard Specifications:
      a. Section 502, Portland Cement Concrete Pavement, PCCP
      b. Section 604, Sidewalks, Curb Ramps, Steps, and Handrails
      c. Section 605, Curbing
      d. Section 610, Approaches and Crossovers
      e. Section 702, Structural Concrete
   2. Americans with Disabilities Act (ADA)
      a. Part II Architectural and Transportation Barriers Compliance Board

1.4 QUALITY ASSURANCE

A. Installer: Shall have a minimum of two years' experience installing PCCP curbs and gutters, concrete sidewalks, concrete ramps, and PCCP driveways.

PART 2 PRODUCTS

2.1 CONCRETE

A. Concrete shall be in accordance with INDOT Standard Specifications latest edition, Section 502 for PCCP and 702 for Concrete, Class A.

B. Unless otherwise specified on the Drawings, the Work shall be plain concrete.

C. Proportioning and Design of Class "A" Concrete Mix:
   1. Minimum compressive strength at 28 days: 4,000 psi.
   2. Maximum water-cement ratio by weight: 0.45.
   3. Minimum cement content: 564 pounds per cubic yard.

2.2 DRIVE RESTORATION

A. Pavement replacement for stone driveways shall consist of 2" of INDOT #73 on 6" of INDOT 53 compacted stone. Refer to Section 31 00 05, Trenching and Earthwork for material gradation requirements.

PART 3 EXECUTION

3.1 DESCRIPTION

A. The Work shall consist of the construction of concrete sidewalks and stone drive repair in accordance with these Specifications and in conformance with the lines and grades shown on the Drawings or established by the Engineer. Unless otherwise noted on the Drawings, all sidewalks shall be 4 inches thick and 5 inches thick through driveways. Sidewalks shall be on top of 4 inches of compacted INDOT No. 53 coarse aggregate and on top of 6 inches compacted INDOT No. 53 coarse aggregate through driveways.

B. Stone drive repair shall consist of 2" of INDOT #73 on 6" of INDOT 53 compacted stone. Refer to Section 31 00 05, Trenching and Earthwork for material gradation requirements.

C. All areas, elements and facilities intended for pedestrian access, circulation and use that are constructed, installed or altered in the public right-of-way and which are subject to Title II of the Americans with Disabilities Act (ADA) shall comply with Part II Architectural and Transportation Barriers Compliance Board, latest edition.

3.2 EXCAVATION

A. Excavation shall be made to the required depth and to a width that will permit the installation and bracing of the forms. The foundation shall be shaped and compacted to a firm, even surface conforming to the section view shown on the Drawings. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.

B. For curb installation, the excavation shall be made to the required depth, and the base upon which the curb is to be set shall be compacted to a firm, even surface in accordance with the section view shown on the Drawings. All soft and unsuitable material shall be removed and replaced with compacted INDOT No.53 coarse aggregate or as specified on the Drawings.

3.3 FORMS

A. Forms shall be of wood, metal or other approved material and shall extend for the full depth of the concrete. Forms shall be straight, free from warp and of sufficient strength to resist the pressure of the concrete without springing. Bracing and staking of forms shall be such that the forms remain in both horizontal and vertical alignment until their removal.

3.4 PLACING CONCRETE

A. Concrete shall be proportioned, mixed and placed in accordance with the requirements for the class of concrete specified. After the concrete for the curb is placed, it shall be tamped and spaded or vibrated until mortar entirely covers the surface. The top shall be floated smooth and the outer upper corner rounded to a 1/4 inch radius.

B. The face and the top of the curb shall be checked with a 10 foot straight-edge. Portions showing irregularities of 1/4 inch or more shall be removed and replaced at the expense of the Contractor.

C. Compaction of concrete placed in the forms shall be by vibration or other acceptable methods. Forms shall be left in place for 24 hours or until the concrete has set sufficiently so that they can be removed without injury to the curbing. Upon removal of the forms, the exposed curbing face shall be rubbed immediately to a uniform surface. Rubbing shall be accomplished by the use of water and a carborundum brick. For the purpose of matching adjacent concrete finishes or for other reasons, the Engineer may permit other methods of finishing. Plastering will not be permitted.

D. The foundation shall be thoroughly moistened immediately prior to the placing of the concrete. The proportioning, mixing and placing of the concrete shall be in accordance with the requirements for concrete Class A in compliance with INDOT Standard Specifications latest edition, Section 604.03(d).

3.5 FINISHING

A. Comply with INDOT Standard Specifications latest edition, Section 604.03(e) and provisions thereto for finishing Work.

B. The surface shall be finished with a float. No plastering of the surface will be permitted. All outside edges of the slab and all joints shall be edged with a 1/4 inch radius edging tool.

3.6 JOINTS

A. For curb and gutter installation, where the adjacent pavement contains joints, such joints shall be continued through the integral curb. Pavement contraction joints shall be carried through integral curb with preformed joint material 1/4 inch thick, shall conform to the cross section of the curb, and shall be set perpendicular to the face and top of the curb. Preformed expansion joints shall be placed at the beginning and end of all curb returns and also at all castings.

B. Curbing that is not constructed integral with adjacent pavement shall be constructed with intermediate planes of weakness, 1/3 depth, sawed at 10 foot intervals. The width shall not be less than 1/8 inch or more than 1/4 inch, and they shall be placed at the beginning and end of all curb returns and also at all castings.

C. Expansion joints shall be carried through the sidewalk, with preformed joint filler. Expansion joints shall be a minimum of 1/2 inch wide, full depth and spaced at a distance not to exceed 48 feet. Dummy transverse joints shall be evenly spaced between expansion joints and/or drives and steps with a maximum spacing of 6 feet. Remolded expansion joint filler 1/2 inch thick shall be provided between new and old sidewalks and driveways and abutting existing buildings or steps.

D. Construction joints shall be formed around all appurtenances such as manholes, utility poles, etc., extending into and through the sidewalks. Pre-molded expansion joint filler 1/4 inch thick shall be installed in these joints. This expansion joint material shall extend for the full depth of the sidewalk.

3.7 CURING

A. Concrete shall be cured for at least 72 hours. Curing shall be by means of moist burlap or mats or by approved curing compounds. The method and details of curing shall be subject to Engineer's approval. During the curing period, all traffic, both pedestrian and vehicular, shall be excluded.

3.8 RECONSTRUCTED CONCRETE SIDEWALKS OR PCCP DRIVEWAYS

A. This Work consists of the satisfactory removal, disposal of removed material and replacement of existing concrete walk or drives or the placing of new sidewalks or driveways at the locations indicated on the plans or as directed.

B. Where an existing concrete sidewalk or PCCP driveway is to be reconstructed, all disintegrated concrete, stone, or other material shall be completely removed and replaced with new concrete sidewalk or driveway in accordance with this specification.

C. The proposed concrete sidewalk shall be constructed the same width as the adjoining walk, or to a width of no less than 18 inches from the face of curb, or to another width as directed or shown on the Drawings.

D. The removal of a concrete sidewalk or PCCP driveway shall be to uniform lines as directed. The Contractor may be required to cut the sidewalk or driveway to be removed in a straight line with an approved power driven concrete saw if an existing joint is not available. The sawing shall be such that the portion of sidewalk or driveway to remain in place will not be damaged in any way. Any portion of the sidewalk or driveway, which is damaged or removed back of the established line, shall be replaced at the Contractor's expense.

3.9 BACKFILLING

A. After the concrete has set sufficiently, the spaces in front and behind the curb shall be refilled with suitable material to the required elevation in layers of not more than 6 inches and be thoroughly tamped.

3.10 CURB MACHINE

A. Curb machines may be used to construct curb provided the curb can be constructed to the requirement of these Specifications.

3.11 INTEGRAL CURB WORK

A. If integral curb Work is specified or required it shall be constructed as shown on the Drawings using Concrete, Class A.

3.12 DRIVEWAY CLOSURE AND RESTORATION

A. Property owners shall be notified of work at driveway a week prior to driveway closure.

B. Replace and repair driveways back to original condition or as specified.

END OF SECTION 32 16 00

Addendum No. 2

Item No.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	UNIT PRICE	AMOUNT
1	MOBILIZATION AND DEMOBILIZATION (5%)	1	L.S.		
2	CONSTRUCTION CONTINGENCY	1	L.S.	100,000.00	$100,000
3	EROSION AND SEDIMENTATION CONTROL	1	L.S.		
4	VIDEO DOCUMENTATION OF CONDITIONS	1	L.S.		
5	GRADING AND RESTORATION	1	L.S.		
6	ASPHALT PAVING (DRIVES, PARKIING AREAS)	5,540	S.Y.		
7	SIGNAGE	1	LS		
8	9 FT. ASPHALT PATH	2,780	S.Y.		
9	REMOVABLE BOLLARDS	9	EA		
10	STAMPED DYED CONCRETE	350	S.Y.		
11	CURB & GUTTER	1,960	L.F.		
12	CURB	915	L.F.		
13	ADA RAMPS, ALL TYPES	6	EA		
14	CONCRETE COMMON AREA	1,150	S.Y.		
15	CONCRETE PADS FOR VA GROUPS SCULPTURES (Total of 7 pads at 6'x6' ea.)	7	EA		
16	GRANULAR BACKFILL - ROAD, PORCH, PARKING AREAS AND SIDEWALK AREAS	3,000	C.Y.		
17	SIDEWALK, 4" CONCRETE	970	S.Y.		
18	4" SCH. 40 PVC PERFORATED PIPE	814	L.F.		
19	STORM SEWER, 24" RCP	888	L.F.		
20	STORM SEWER, 18" RCP	32	L.F.		
21	STORM SEWER, 15" RCP	234	L.F.		
22	STORM SEWER, 12" RCP	480	L.F.		
23	STORM SEWER OUTFALL HEADWALL	1	L.S.		
24	CONCRETE ANTI-SEEP COLLAR	1	L.S.		
25	30" INLETS	14	EA		
26	48" STORM DRAINAGE MANHOLE	3	EA		
27	60" STORM DRAINAGE MANHOLE	6	EA		
28	72" STORM DRAINAGE MANHOLE	1	EA		
29	AQUA SWIRL	1	L.S.		
30	1" WATER SERVICE	170	L.F.		
31	6" DUCTILE IRON WATER MAIN	120	L.F.		
32	6" DUCTILE IRON FITTINGS FOR DUCTILE IRON PIPE	3	EA		
33	6" x 6" TAPPING TEE AND VALVE	1	EA		
34	CURB STOP ASSEMBLY	1	L.S.		
35	FOOTWASH STATION	1	L.S.		
36	FIRE HYDRANT ASSEMBLY	1	EA		
37	REMOVE EXISTING FIRE HYDRANT ASSEMBLY	1	EA		
38	6" SANITARY SERVICE	145	L.F.		
39	6" SEWER TAP	1	EA		
40	CLEANOUT	5	EA		
41	TURF GRASS SEED	189,000	S.F.		
42	SOD	5,000	S.F.		
43	SOUTHERN RIVER ROCK (#2)	40	TONS		
44	PINE NEEDLE MULCH	130	CY		
45	SPLIT RAIL FENCE	100	L.F.		
46	EMERALD GREEN ARBORVITAE (6'-7' height)	129	EA		
47	POND AERATION LIGHTED FOUNTAIN, AIR PUMP, COVER, LINES (Model EFL 450 by Eagle Fountains)	1	L.S.		
48	EAST SIDE PIER	1	L.S.		
49	NORTHSIDE PIER	1	L.S.		
50	LIGHTING, ELECTRICAL, AND RELATED APPURTENANCES	1	L.S.		
51	VOLLEYBALL COURTS AND RELATED APPURTENANCES	1	L.S.		
52	PICKLEBALL COURTS AND RELATED APPURTENANCES	1	L.S.		
53	REST ROOM FACILITY AND RELATED APPURTENANCES	2	L.S.		
54	STORAGE BLDG AND RELATED APPURTENANCES	2	L.S.		
55	ELECTRICAL BUILDING (10' X 12')	1	L.S.		

	OPTIONAL BID ITEMS				
56	PAVILION w/CONCRETE PAD	1	L.S.		
57	PIER SHELTER	1	L.S.		
58	LANDSCAPING	1	L.S.		
59	BIKE RACKS	10	EA		
60	PICNIC TABLES	3	EA		
61	BENCHES AND SEATING	30	EA		
62	WASTE RECEPTACLES	15	EA		
63	DINING TABLES & CHAIRS (BUILT-IN)	20	EA		
64	10' X 10' X 8" CONCRETE DIVING PAD	1	L.S.		

ADDENDUM NO. 2

City of Crown Point

SAUERMAN WOODS
DRAINAGE IMPROVEMENTS – PHASE 2

February 14, 2024

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 OF AMERICAN STRUCTUREPOINT, BHOOD@STRUCTUREPOINT.COM – THANK YOU.

IF YOU HAVE ANY QUESTIONS CONCERNING THIS ADDENDUM, PLEASE CALL BRYAN HOOD @ (260) 417-6312.

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. bhood@structurepoint.com

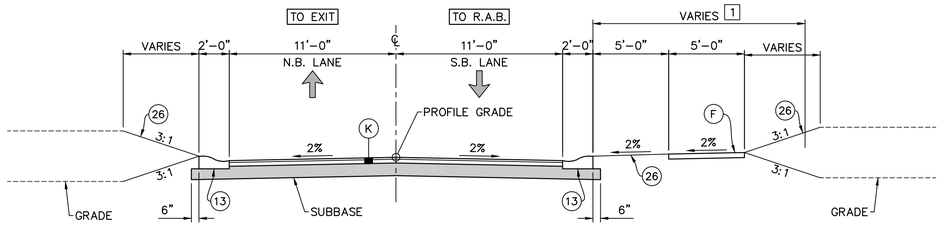
This addendum is being issued as a supplement to the specifications and drawings and shall be considered an integral part of the same. This addendum will become part of the contract documents.

LEGEND:

- (F) SIDEWALK, CONCRETE, 4"
- (F1) MULTI-USE PATH, ASPHALT, 4"
- (K) FULL DEPTH PAVEMENT, RESIDENTIAL, STREET
  (1.5") 165#/SYS HMA, SURFACE, TYPE B, ON
  (3") 330#/SYS HMA, BINDER, TYPE B, ON
  (10") 1100#/SYS SUBBASE NO. 53 LIMESTONE AGGREGATE
- (13) CURB, CONCRETE, ROLLED
- (26) SODDING, OVER 4" TOP SOIL

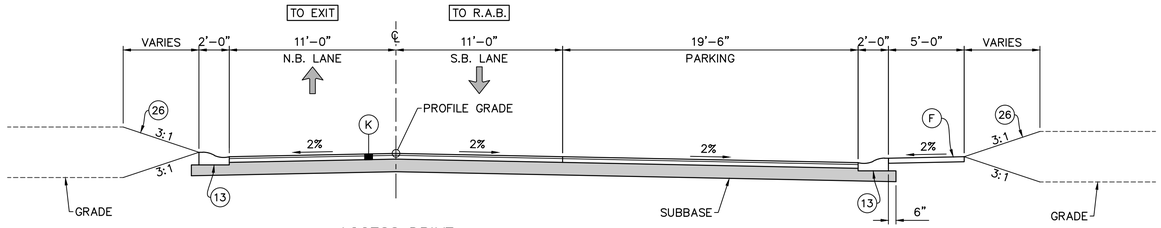
NOTE:

FOR ADDITIONAL INFORMATION, SEE CITY OF CROWN POINT MINIMUM PAVEMENT SECTION DETAIL ON SHEET C-27.

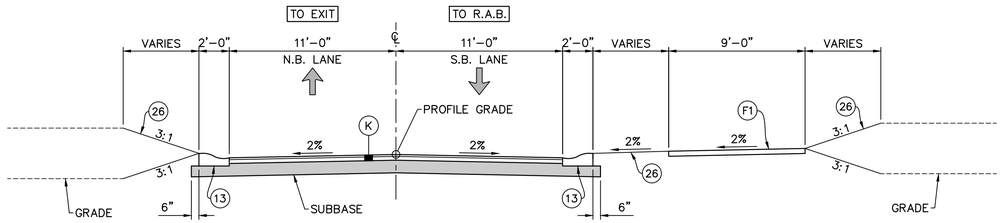


ACCESS DRIVE
STA. 100+30.26 "PR-A" TO STA. 102+88.95 "PR-A"
SCALE: 1" = 5'

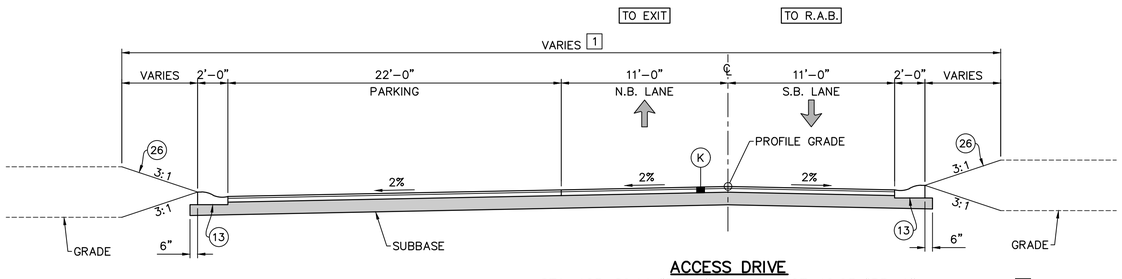
1 TRANSITION: STA. 102+88.95 "PR-A" TO STA. 103+08.47 "PR-A"



ACCESS DRIVE
STA. 103+08.47 "PR-A" TO STA. 104+06.05 "PR-A"
SCALE: 1" = 5'

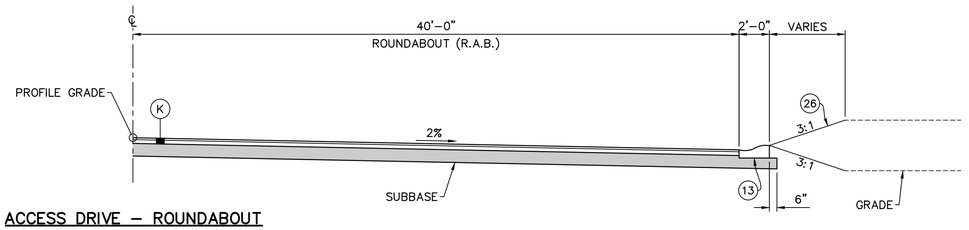


ACCESS DRIVE
STA. 104+06.05 "PR-A" TO STA. 105+89.14 "PR-A"
SCALE: 1" = 5'



ACCESS DRIVE
STA. 105+89.14 "PR-A" TO STA. 107+19.95 "PR-A"
SCALE: 1" = 5'

1 VARIES: STA. 107+19.95 "PR-A" TO STA. 107+78.14 "PR-A"
(SEE CONSTRUCTION DETAILS ON SHEET C-21)



ACCESS DRIVE – ROUNDABOUT
STA. 108+19.84 "PR-A"
SCALE: 1" = 5'

PLOT SCALE: 1" = .0833' PLOT DATE: 2/14/2024 10:37 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D. DRAWINGS\UTILITY INFRASTRUCTURE\20160221I.P2.UI.TY.DWG

CITY OF CROWN POINT

AMERICAN STRUCTUREPOINT INC.

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

BRYAN L. HOOD REGISTERED No. 11500233 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan L Hood 1/19/2024
CERTIFIED BY

ISSUANCE INDEX
DATE:
1/19/2024
PROJECT PHASE:
CONSTRUCTION DOCUMENTS

ADDENDUM SCHEDULE		
NO.	DESCRIPTION	DATE
1	AQUA SWIRL MODEL CHANGE, ADDITIONAL MISC. INFO. ADDED	2/09/24
2	COMBINED ROAD DETAIL INTO TYPICAL SECTIONS FOR CLARITY, REMOVED UNUSED DETAIL	2/14/24

Project Number 2016.02211

TYPICAL SECTIONS

C-18

TYPE	HMA SURFACE	HMA BINDER	P.C. CONCRETE	*SUBBASE No. 53	SUBGRADE TREATMENT
LOCAL	1 1/2" (165#/SYS)	3" (330#/SYS)	-	10" (1100#/SYS)	**CHEMICAL STABILIZATION
LOCAL	-	-	8"	6" (600#/SYS)	**CHEMICAL STABILIZATION
ARTERIAL/COLLECTOR	1 1/2" (165#/SYS)	3" (330#/SYS)	-	10" (1100#/SYS)	**CHEMICAL STABILIZATION
ARTERIAL/COLLECTOR	-	-	8"	6" (600#/SYS)	**CHEMICAL STABILIZATION

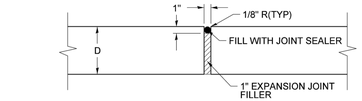
* SUBBASE SHALL BE NO. 53 LIMESTONE AGGREGATE OVER WOVEN GEOSYNTHETIC MIRAFI RS380i OR EQUAL OVER APPROVED PROOF-ROLLED SUBGRADE

** PROVIDE LIME/CEMENT STABILIZATION IF SUBGRADE CONDITIONS YIELD EXCESSIVELY UNDER PROOF ROLL TESTING. STANDARD UNDERCUTTING IS ALSO ACCEPTABLE.

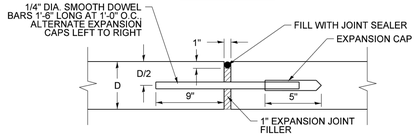
NOTES:

1. SECTIONS REPRESENT THE MINIMUM CROSS SECTIONS ALLOWED.
2. ALL ROAD SEGMENTS TO BE ACQUIRED BY THE CITY SHALL BE INSPECTED BY THE CITY OF CROWN POINT DURING CONSTRUCTION OF THE ROAD SEGMENT.
3. INSPECTION REQUIRED DURING CONSTRUCTION OF THE ROAD SEGMENT:
   a. PROOF ROLL 1 (SUBGRADE)
   b. PROOF ROLL 2 (BASE COURSE)
   c. CURBS
   d. BINDER
   e. SURFACE
4. ALL MATERIAL SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE INDOT STANDARD SPECIFICATIONS, INDOT HOT MIX SPECIFICATIONS FOR MANUFACTURING, CONSTRUCTION, AND INSPECTION TESTING.
5. SEE CITY ORDINANCES AND PLANNING CODE FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

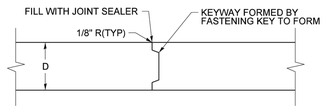
CITY OF CROWN POINT TECHNICAL STANDARDS	MINIMUM PAVEMENT SECTION		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-1



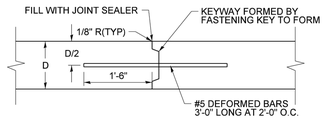
1" EXPANSION JOINT



1" EXPANSION JOINT WITH LOAD TRANSFER

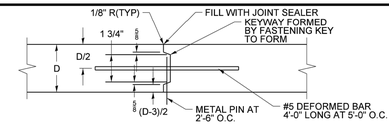


KEYWAY JOINT

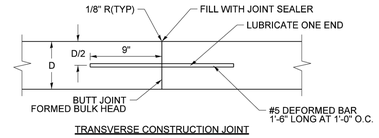


TIED TRANSVERSE CONSTRUCTION JOINT

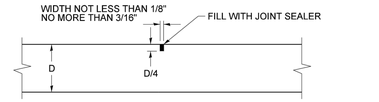
CITY OF CROWN POINT TECHNICAL STANDARDS	CONCRETE PAVEMENT JOINTS		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-3



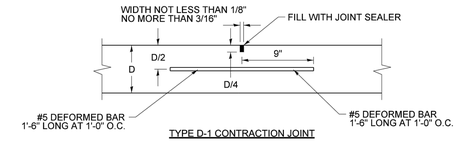
LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE CONSTRUCTION JOINT

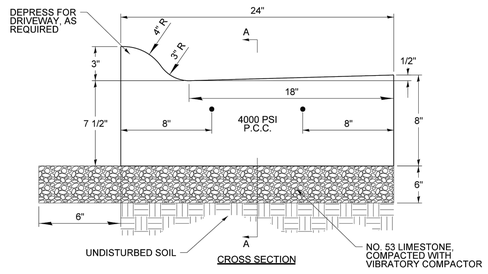


CONTRACTION JOINT

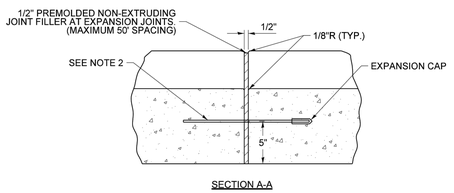


TYPE D-1 CONTRACTION JOINT

CITY OF CROWN POINT TECHNICAL STANDARDS	CONCRETE PAVEMENT JOINTS		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-4



CROSS SECTION

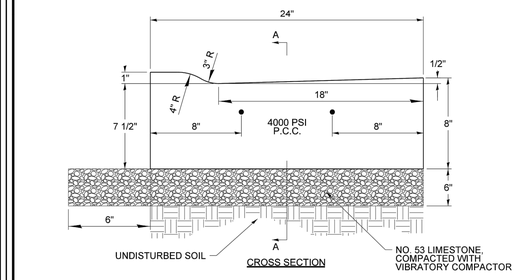


SECTION A-A

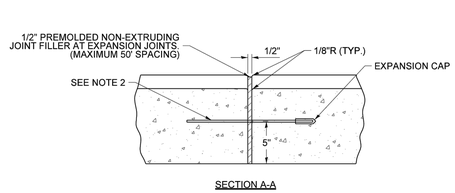
NOTES:

1. PROVIDE 2-#4 BARS (10' LONG) CENTERED IN EACH UTILITY TRENCH.
2. PROVIDE 2-#6 SMOOTH BARS WITH EXPANSION CAPS AT EACH EXPANSION JOINT.
3. CONTRACTION JOINTS SHALL BE PLACED AT EQUAL SPACES BETWEEN NORMAL EXPANSION JOINTS. CONTRACTION JOINTS SHALL BE SAW CUT 3" DEEP WITHIN 7 DAYS OF PLACEMENT AT A MAXIMUM EVERY 20 FEET.

CITY OF CROWN POINT TECHNICAL STANDARDS	CONCRETE ROLL CURB & GUTTER		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-5



CROSS SECTION

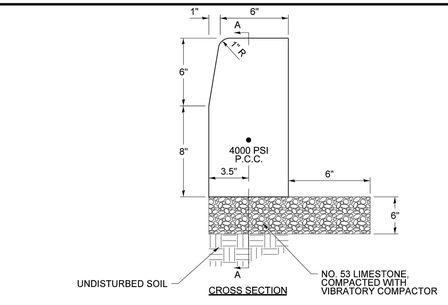


SECTION A-A

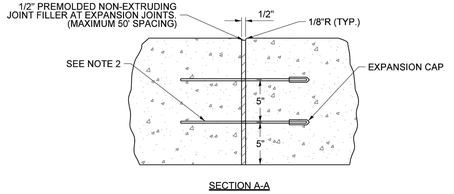
NOTES:

1. PROVIDE 2-#4 BARS (10' LONG) CENTERED IN EACH UTILITY TRENCH.
2. PROVIDE 2-#6 SMOOTH BARS WITH EXPANSION CAPS AT EACH EXPANSION JOINT.
3. CONTRACTION JOINTS SHALL BE PLACED AT EQUAL SPACES BETWEEN NORMAL EXPANSION JOINTS. CONTRACTION JOINTS SHALL BE SAW CUT 3" DEEP WITHIN 7 DAYS OF PLACEMENT AT A MAXIMUM EVERY 20 FEET.

CITY OF CROWN POINT TECHNICAL STANDARDS	DEPRESSED CONCRETE CURB & GUTTER		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-6



CROSS SECTION

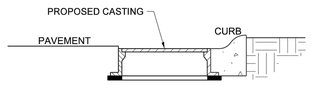


SECTION A-A

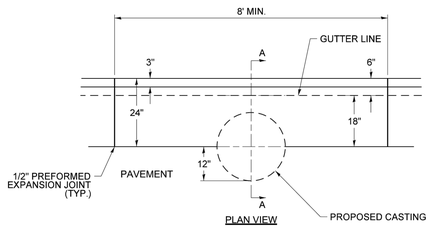
NOTES:

1. PROVIDE 2-#4 BARS (10' LONG) CENTERED IN EACH UTILITY TRENCH.
2. PROVIDE 2-#6 SMOOTH BARS WITH EXPANSION CAPS AT EACH EXPANSION JOINT.
3. CONTRACTION JOINTS SHALL BE PLACED AT EQUAL SPACES BETWEEN NORMAL EXPANSION JOINTS. CONTRACTION JOINTS SHALL BE SAW CUT 3" DEEP WITHIN 7 DAYS OF PLACEMENT AT A MAXIMUM EVERY 20 FEET.

CITY OF CROWN POINT TECHNICAL STANDARDS	CONCRETE CURB		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-8



SECTION A-A



PLAN VIEW

CITY OF CROWN POINT TECHNICAL STANDARDS	CURB AND GUTTER AT STRUCTURE		
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-9

CITY OF CROWN POINT

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SAUERMAN WOODS DRAINAGE IMPROVEMENTS PHASE II

Crown Point, Indiana

BRYAN L. HOOD REGISTERED No. 11500233 STATE OF INDIANA PROFESSIONAL ENGINEER

Bryan L Hood 1/19/2024
CERTIFIED BY

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NO.	DESCRIPTION	DATE
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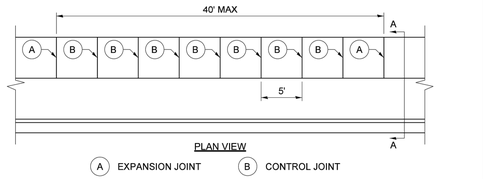
2	COMBINED ROAD DETAIL INTO TYPICAL SECTIONS FOR CLARITY, REMOVED UNUSED DETAIL	2/14/24

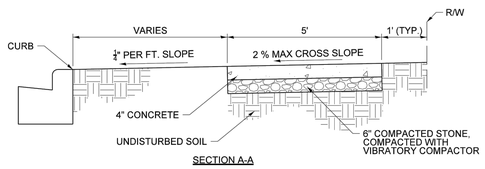
Project Number 2016.02211

SITE STANDARD DETAILS

C-27

PLOT SCALE: 1" = .0833' PLOT DATE: 2/14/2024 10:40 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D_DRAWINGS\UTILITY INFRASTRUCTURE\2016022111_P2_UI_DT_RD.DWG



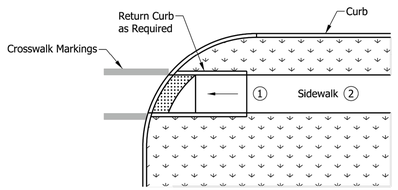


SECTION A-A

NOTES:

1. ALL CONCRETE WORK SHALL MEET THE MOST RECENT ADA REQUIREMENTS
2. PROVIDE 3/4-INCH EXPANSION JOINT CONFORMING TO ASTM D 1751 ALONG BACK OF CURBS, DRIVEWAYS, STEPS, WALLS AND ACROSS THE SIDEWALK AT INTERVALS NOT TO EXCEED 40-FEET.
3. EXTEND EXPANSION JOINT MATERIAL FULL DEPTH OF THE SLAB.
4. PROVIDE TOOLED CONTROL JOINT SPACED AT A DISTANCE EQUAL TO THE WIDTH OF THE WALK.
5. CONCRETE SHALL BE CLASS "A" & 4,000 PSI IN 28 DAYS; MEETING THE REQUIREMENTS OF THE MOST RECENT INDOT STANDARD SPECIFICATIONS MANUAL.
8. SUBBASE IS TO BE COMPACTED LIMESTONE AGGREGATE. SLAG IS NOT PERMITTED.
9. SEE CITY ORDINANCES AND CODES FOR ADDITIONAL REQUIREMENTS

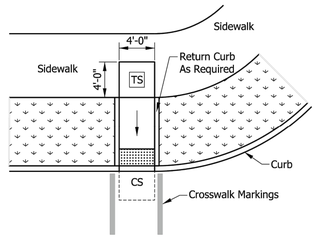
CITY OF CROWN POINT TECHNICAL STANDARDS		CONCRETE SIDEWALK	
APPROVED: 5/13/2022	REVISED:	SCALE: N.T.S.	STANDARD: RD-11



NOTE:

FOR ADDITIONAL INFORMATION, SEE INDOT DETAIL E 604-SWCR-05.

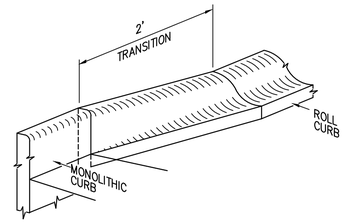
ONE-WAY DIRECTIONAL PERPINDICULAR CURB RAMP PLACEMENT DETAIL
NOT TO SCALE



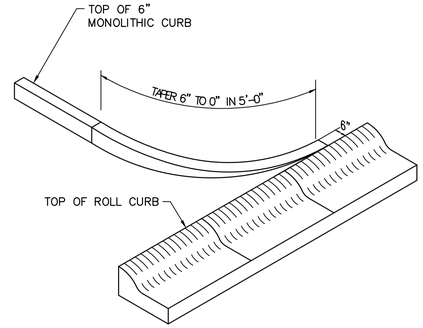
NOTE:

FOR ADDITIONAL INFORMATION, SEE INDOT DETAIL E 604-SWCR-02.

PERPENDICULAR CURB RAMP PLACEMENT DETAIL
NOT TO SCALE

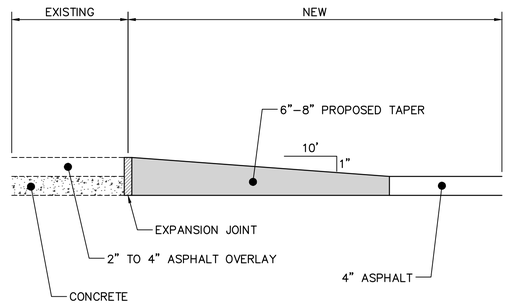


MONOLITHIC CURB TO ROLL CURB – TRANSITION

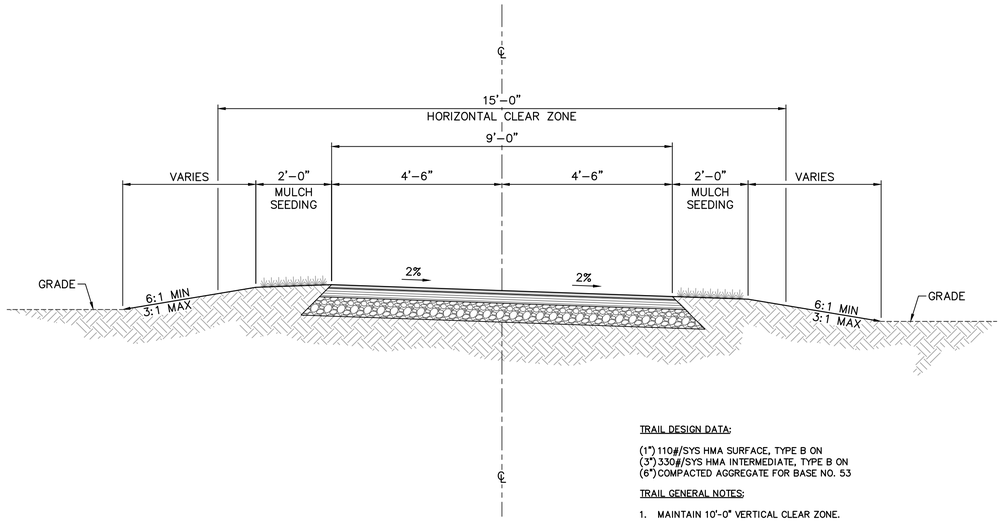


6" MONOLITHIC TO ROLL CURB TRANSITION

CURB TRANSITION DETAIL
NOT TO SCALE



NEW PAVEMENT CONNECTION TO EXISTING PAVEMENT DETAIL
NOT TO SCALE



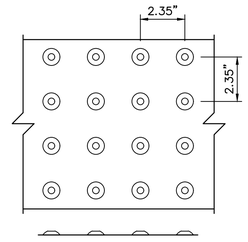
TRAIL DESIGN DATA:

(1") 110#/SYS HMA SURFACE, TYPE B ON
(3") 330#/SYS HMA INTERMEDIATE, TYPE B ON
(6") COMPACTED AGGREGATE FOR BASE NO. 53

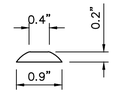
TRAIL GENERAL NOTES:

1. MAINTAIN 10'-0" VERTICAL CLEAR ZONE.

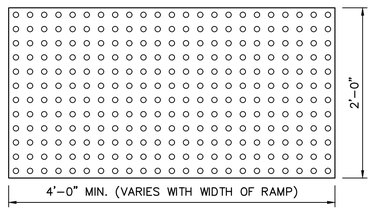
TRAIL/MULTI-USE PATH DETAIL
NOT TO SCALE



TRUNCATED DOME SPACING



TRUNCATED DOME SECTION



TRUNCATED DOME PLAN VIEW

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. DECTECTABLE 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 DOMES PLAN AND CROSS-SECTION
NOTES

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Project Number 2016.02211

SITE STANDARD DETAILS

C-28

PLOT SCALE: 1" = .0833' PLOT DATE: 2/14/2024 10:40 AM EDITED BY: PTRAWINSKI DRAWING FILE: P:\2016\02211\D_DRAWINGS\UTILITY INFRASTRUCTURE\2016022