

# TECHNICAL SPECIFICATIONS

FOR



## Various Roadway Resurfacing and Repairs

May 2022

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**PREPARED FOR:**

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## VARIOUS ROADWAY RESURFACING AND REPAIRS

### TECHNICAL SPECIFICATIONS

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## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

###### A. Temporary Controls:

1. Barriers.
2. Enclosures and fencing.
3. Security.
4. Water control.
5. Equipment & material storage / parking.
6. Progress cleaning and waste removal.
7. Erosion and sediment control.
8. Dust control.
9. Noise control.
10. Pest and rodent control.
11. Pollution control.

##### 1.2 REFERENCES

###### A. ASTM International:

1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

##### 1.3 TEMPORARY FACILITIES

###### A. Temporary Provisions Provided by the General Contractor:

1. Temporary barriers, barricades, covered walkways, fencing, exterior closures, and interior closures.
2. Cleaning during construction.

###### B. Each Contractor: Coordinate provisions with General Contractor and provide the following items as necessary for execution of the Work including associated costs:

1. Construction aids.
2. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
3. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.

4. Temporary tree and plant protection.
5. Temporary provisions for protection of installed Work.
6. Security of all stored materials and equipment left on site during and after work hours.
7. Cleaning during construction.

#### 1.4 EQUIPMENT & MATERIAL STORAGE / PARKING

- A. Contractor shall coordinate with the Owner to establish parking areas to accommodate construction personnel.
- B. Tracked vehicles shall not be permitted on paved areas.
- C. Permanent Pavements and Parking Facilities:
  1. Before Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
  2. Avoid traffic loading beyond paving design capacity. Tracked vehicles are not allowed.
- D. Maintenance:
  1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, ice, and the like.
  2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original or better condition at no additional cost to the Owner.
- E. Removal, Repair:
  1. Repair existing facilities damaged by use, to original or better condition at no additional cost to the Owner.
- F. Mud from Site vehicles: Provide means of removing mud from vehicle wheels before entering streets.

#### 1.5 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from Site periodically and dispose of off-Site in a legal and ethical manner.

#### 1.6 TRAFFIC REGULATION

- A. Signs and Devices shall be in conformance with the IN MUTCD:
  1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.

2. Traffic Cones, Drums, Flares, and Lights: As approved by authorities having jurisdiction.
  3. Flag Person Advance Signage and Equipment: As required by authorities having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Haul Routes:
1. Consult with authorities having jurisdiction and establish public thoroughfares to be used for haul routes and Site access.
  2. Confine construction traffic to designated haul routes.
  3. Provide traffic control at critical areas of haul routes to regulate traffic and to minimize interference with public traffic.
- E. Removal:
1. Remove signs, equipment, and devices when no longer required.
  2. Repair any damage caused by installation.
  3. Remove post settings to depth of two (2) feet.

#### 1.7 FIRE-PREVENTION FACILITIES

- A. Prohibit smoking within the construction and demolition site.
- B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.
1. Provide, at minimum, one fire extinguisher on each project site during active construction operations.

#### 1.8 EROSION AND SEDIMENT CONTROL

- A. Provide methods, means, and facilities to minimize erosion and sediment produced by construction operations.
- B. Provide methods, means, and facilities to control and capture sediment produced by construction operations.
- C. Remove erosion and sediment control elements from the project locations only when the work is complete and any disturbed vegetation is reestablished.

1.9 DUST CONTROL

- A. Provide methods, means, and facilities to minimize dust produced by construction operations. Fugitive dust must be controlled and eliminated where possible.

1.10 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.11 PEST AND RODENT CONTROL

- A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work.
- B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.12 POLLUTION CONTROL

- A. Provide methods, means, and facilities to minimize all pollution produced by construction operations.

PART 2 - MATERIALS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 50 00

## SECTION 02 41 00

### DEMOLITION

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. This section includes demolition and removal information for the following items:
1. Sign, Remove and Reset; Concrete Headwall, Remove; Guardrail, Remove; Tree, Remove; Clearing and Grubbing
  2. Reference to INDOT Standard Specifications
  3. Unit Prices – Measurement and Payment

##### 1.2 REFERENCE STANDARDS

- A. INDOT Standard Specifications
1. The work related to demolition shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition.

##### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Sign, Remove and Reset
1. Measurement: By Each (EACH)
  2. Payment: Includes all materials, labor, and equipment required to remove each sign from each post, remove each post, and reset post in new location.
- B. Concrete Headwall, Remove
1. Measurement: By Each (EACH)
  2. Payment: Includes all materials, labor, and equipment required to full depth saw cut, excavate or otherwise remove the concrete headwall, and haul and dispose of material.
- C. Guardrail, Remove
1. Measurement: By Linear Foot (LFT)
  2. Payment: Includes all materials, labor, and equipment required to remove guardrail, posts, and all associated components, and haul and dispose of material.
- D. Tree, Remove
1. Measurement: By Each (EACH)
  2. Payment: Includes all materials, labor, and equipment required to remove tree and haul and dispose of material.

E. Clearing and Grubbing

1. Measurement: By Square Yard (SYS)
2. Payment: Includes all materials, labor, and equipment required to clear and grub area and haul and dispose of material.

1.4 QUALITY ASSURANCE

- A. Contractor is required to repair all damage to existing features not designated for removal or demolition at no additional cost to the Owner.
- B. Contractor must repair all turf damaged as a result of removing elements within turf areas to the Owner's satisfaction at no additional cost to the Owner.
- C. Contractor must dispose of all materials in accordance with all laws and within all ethical standards.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 02 41 00



## SECTION 03 33 00

### CAST-IN-PLACE CONCRETE

#### PART 1 - GENERAL

##### 1.1 RELATED SECTIONS

##### 1.2 SUMMARY

A. Section includes cast-in-place concrete for the following items:

1. Concrete, Class A
2. Reference to INDOT Standards.

##### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Concrete, Class A:

1. Basis of Measurement: By Cubic Yard (CYS).
2. Basis of Payment: Includes all materials, labor, and equipment to form, construct, place, and cure concrete headwalls and associated items as defined in the plans as well as any grading around headwalls, culvert connections, grouting, and any other work as defined by the plans. All materials, labor, and equipment to meet the standards laid out by structural plans.

B. Reinforcing Bars:

1. Basis of Measurement: By Pounds (LBS).
2. Basis of Payment: Includes all materials, labor, and equipment to move and install reinforcing bars in concrete headwalls and associated items. All materials, labor, and equipment to meet the standards laid out by structural plans.

##### 1.4 REFERENCE STANDARDS

A. American Concrete Institute:

1. ACI 305R - Guide to Hot Weather Concreting.
2. ACI 306.1 - Standard Specification for Cold Weather Concreting.

B. INDOT Standards

##### 1.5 SUBMITTALS

A. Design Data:

1. Submit concrete mix design for each concrete strength.
2. Submit separate mix designs if admixtures are required for following:

- a. Hot and cold weather concrete Work.
    - b. Air entrained concrete Work.
  - 3. Identify mix ingredients and proportions, including admixtures.
  - 4. Identify chloride content of admixtures and whether or not chlorides were added during manufacture.
- 1.6 QUALITY ASSURANCE
- A. Comply with ACI 305R when pouring concrete during hot weather.
  - B. Comply with ACI 306.1 when pouring concrete during cold weather.
  - C. Acquire cement and aggregate from one source for Work.
- 1.7 AMBIENT CONDITIONS
- A. Maintain concrete temperature after installation at minimum 50 degrees F (10 degrees C) for minimum seven days.
- 1.8 EXAMINATION
- A. Verify requirements for concrete cover over reinforcement.
  - B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.
- 1.9 PREPARATION
- A. Previously Placed Concrete:
    - 1. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent.
    - 2. Remove laitance, coatings, and unsound materials.
  - B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with non-shrink grout.
  - C. Remove debris and ice from formwork, reinforcement, and concrete substrates.
  - D. Remove water from areas receiving concrete before concrete is placed.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 03 33 00

## SECTION 31 20 00

### EARTHWORK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This section includes information for the following items:

1. Reference to the INDOT Standard Specifications
2. Unit Prices – Measurement and Payment

##### 1.2 REFERENCE STANDARDS

A. INDOT Standard Specification

1. The work related to earthwork shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition Section 200 Earthwork.

##### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Excavation, Common

1. Measurement: By Cubic Yard (CYS)
2. Payment: Includes all materials, labor, and equipment required to clear the site, excavate, remove pipe, asphalt, and other items in excavation limits, redistribute, grade, haul, and dispose of soil material, asphalt, pipe, and other associated items and debris encountered to achieve proper grade, compaction, and ensure the slope compliance and proper drainage of the finished product.

##### 1.4 QUALITY ASSURANCE

A. Contractor must dispose of all materials in accordance within all laws and within all ethical standards.

#### PART 2 - MATERIALS – NOT USED

#### PART 3 - EXECUTION – NOT USED

END OF SECTION 31 20 00

SECTION 32 01 16

ASPHALT MILLING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reference to INDOT Standard Specifications
2. Unit Prices – Measurement and Payment

1.2 REFERENCES

A. INDOT Standard Specification

1. The work related to pavement marking shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition, Section 306- MILLING

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

A. Mill, 1.5”

1. Basis of Measurement: By Square Yard (SYS).
2. Basis of Payment: The work includes surface preparation, milling, loading and haul of millings, disposal of unwanted millings, site sweeping, temporary traffic control, and related items.

B. Mill, 2”

1. Basis of Measurement: By Square Yard (SYS).
2. Basis of Payment: The work includes surface preparation, milling, loading and haul of millings, disposal of unwanted millings, site sweeping, temporary traffic control, and related items.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 32 01 16

## SECTION 32 11 16

### SUBBASE COURSES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This section includes the following items:

1. Reference to the Indiana Department of Transportation (INDOT) Standard Specifications
2. Unit Prices – Measurement and Payment

##### 1.2 REFERENCE STANDARDS

A. INDOT Standard Specification

1. The work related to all subbase items shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition Section 301 Aggregate Base.

##### 1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Compacted Aggregate No. 53

1. Measurement: By Ton (TON)
2. Payment: Includes all materials, labor, and equipment to excavate areas, furnish, install, and compact structure backfill in areas designated on plans. In accordance with the Indiana Department of Transportation Standard Specifications, 2018 Edition, Section 301.10 Basis of Payment with the unit will be in ton versus cubic yards.

B. Structure Backfill, Type 1

1. Measurement: By cubic yards (CYS)
2. Payment: Includes all materials, labor, and equipment to excavate areas, furnish, install, and compact structure backfill in areas designated on plans.

#### PART 2 - MATERIALS – NOT USED

#### PART 3 - EXECUTION – NOT USED

END OF SECTION 32 11 16

SECTION 32 12 16  
HOT MIX ASPHALT

PART 1 - GENERAL

1.1 RELATED SECTIONS

1.2 SUMMARY

A. Section Includes:

1. Reference to the 2018 INDOT Standard Specifications
2. Unit Prices – Measurement and Payment
3. Material Description

1.3 REFERENCE STANDARDS

A. INDOT Standard Specification

1. The work related to all asphalt items shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition Section 401 HOT MIX ASPHALT, HMA, PAVEMENT and 2016 Edition Section 304 ASPHALT BASES.
2. The work related to HMA Patching Type B shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition Section 402 HOT MIX ASPHALT, HMA, PAVEMENT and 2016 Edition Section 304 ASPHALT BASES.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. HMA Surface Asphalt, 9.5mm:

1. Measurement: By Ton (by weigh ticket).
2. Payment: Includes mix design, tack coat, aggregate, trucking, asphalt cement, hauling, placing, compacting, testing, and related items.

B. HMA Intermediate Asphalt, 19.0mm:

1. Measurement: By Ton (by weigh ticket).
2. Payment: Includes mix design, tack coat, aggregate, trucking, asphalt cement, hauling, placing, compacting, testing, and related items.

C. HMA Base Asphalt, 25.0mm:

1. Measurement: By Ton (by weigh ticket).
2. Payment: Includes mix design, tack coat, aggregate, trucking, asphalt cement, hauling, placing, compacting, testing, and related items.

D. HMA Patching, Type B

1. Measurement: By Square Yard (SYS) as measured in the field.

2. Payment: Includes mix design, tack coat, aggregate, trucking, asphalt cement, hauling, placing, compacting, testing, and related items including subbase as shown in the "HMA Patching Type B" detail in the plans. Town to verify areas where HMA Patching, Type B is required.

## PART 2 - MATERIALS

### 2.1 MATERIALS

- A. Overlay surface asphalt shall be HMA, 2, 64, Surface, 9.5 mm.
- B. INDOT standard asphalt testing is not required.

## PART 3 - EXECUTION – NOT USED

END OF SECTION 32 12 16



SECTION 32 17 23

PAVEMENT MARKING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reference to INDOT Standard Specifications
2. Unit Prices – Measurement and Payment

1.2 References

A. INDOT Standard Specification

1. The work related to pavement marking shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition, Section 808 PAVEMENT TRAFFIC MARKINGS

1.3 UNIT PRICE – MEASUREMENT AND PAYMENT

A. LINE, THERMOPLASTIC, SOLID, WHITE, 4 IN:

1. Measurement: By Linear Foot (LFT)
2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all lines within the project limits.

B. LINE, THERMOPLASTIC, SOLID, YELLOW, 4 IN:

1. Measurement: By Linear Foot (LFT)
2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all lines within the project limits.

C. LINE, THERMOPLASTIC, BROKEN, YELLOW, 4 IN:

1. Measurement: By Linear Foot (LFT)
2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all lines within the project limits.

D. TRANSVERSE MARKING, THERMOPLASTIC, CROSSWALK LINE, WHITE, 24 IN:

1. Measurement: By Linear Foot (LFT)
2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all crosswalk lines within the project limits.

- E. TRANSVERSE MARKING, THERMOPLASTIC, STOP BAR, WHITE, 24 IN:
  - 1. Measurement: By Linear Foot (LFT)
  - 2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all stop bars within the project limits.
  
- F. Pavement Message Marking, Thermoplastic, RR Crossing, White:
  - 1. Measurement: By Each (EACH)
  - 2. Payment: Includes all material, labor, and equipment required to complete the layout, painting, and protection of all markings within the project limits.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 32 17 23

SECTION 32 33 00  
SITE FURNISHINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes site furnishings for the following items:
  - 1. Reference to the Indiana Department of Transportation (INDOT) Standard Specifications
  - 2. Unit Prices – Measurement and Payment

1.2 REFERENCE STANDARDS

- A. INDOT Standard Specifications
  - 1. The work related to the items contained in this section shall be in conformance with the INDOT Standard Specifications.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Guardrail
  - 1. Measurement: By Linear Foot (LFT)
  - 2. Payment: Includes all materials, labor, and equipment to install and set guardrail, guardrail posts, end sections, and associated items.
- B. Raise Manhole to Grade
  - 1. Measurement: By Each (EACH)
  - 2. Payment: Includes all materials, labor, and equipment to raise manhole casting to finished grade.
- C. Raise Valve to Grade
  - 1. Measurement: By Each (EACH)
  - 2. Payment: Includes all materials, labor, and equipment to raise valve to finished grade.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION

- A. All items shall be installed per the INDOT Standard Specifications.

END OF SECTION 32 33 00



SECTION 33 42 11  
STORMWATER GRAVITY PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Items related to culvert replacement
- B. Reference to the 2018 INDOT Standard Specifications
- C. Unit Prices – Measurement and Payment

1.2 REFERENCE STANDARDS

A. INDOT Standard Specification

- 1. The work related to the stormwater piping system shall be in conformance with the Indiana Department of Transportation Standard Specifications, 2018 Edition Section 715, Pipe Culverts, and Storm and Sanitary Sewers.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. 36 IN. Reinforced Concrete Pipe:

- 1. Measurement: By Linear Foot (LFT)
- 2. Payment: In accordance with the Indiana Department of Transportation Standard Specifications, 2018 Edition, Section 715.14. Includes all material, labor, and equipment needed to set pipe, connect with headwalls, and any work required for pipe installation.

B. Pump Around Bypass System:

- 1. Measurement: By Each (EACH)
- 2. Payment: Includes all material, labor, systems, and equipment needed to bypass water flow around the construction site while the culvert, headwalls, and road are being replaced, including but not limited to, fuel, maintenance, periodic cleaning, and environmental protections.

C. Riprap, Revetment:

- 1. Measurement: By Square Yard (SYS)
- 2. Payment: In accordance with the Indiana Department of Transportation Standard Specifications. Includes all material, labor, and equipment needed to haul, set, move, and form riprap and associated items.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 33 42 11

SECTION 35 00 00

TRAFFIC CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Reference to INDOT Standard Specifications
2. Unit Prices – Measurement and Payment

1.2 REFERENCES

A. INDOT Standard Specification

1. The work related to pavement marking shall be in conformance with the Indiana Department of Transportation Standard Specifications, Section 801 – TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

1.3 UNIT PRICES – MEASUREMENT AND PAYMENT

A. Barricade, III-A:

1. Basis of Measurement: By Linear Feet (LFT).
2. Basis of Payment: In accordance with the Indiana Department of Transportation Standard Specifications, Section 801. Includes all material, labor, and equipment needed to set, move, repair, and install barricade.

B. Barricade, III-B:

1. Basis of Measurement: By Linear Feet (LFT).
2. Basis of Payment: In accordance with the Indiana Department of Transportation Standard Specifications, Section 801. Includes all material, labor, and equipment needed to set, move, repair, and install barricade.

C. Road Closure Sign Assembly:

1. Basis of Measurement: By Each (Each).
2. Basis of Payment: In accordance with the Indiana Department of Transportation Standard Specifications, Section 801. Includes all material, labor, and equipment needed to set, move, repair, and install road closure sign assembly.

D. Detour Route Marker Assembly:

1. Basis of Measurement: By Each (Each).

2. Basis of Payment: In accordance with the Indiana Department of Transportation Standard Specifications, Section 801. Includes all material, labor, and equipment needed to set, move, repair, and install detour route marker assembly.

E. Construction, Sign A:

1. Basis of Measurement: By Each (Each).
2. Basis of Payment: In accordance with the Indiana Department of Transportation Standard Specifications, Section 801. Includes all material, labor, and equipment needed to set, move, repair, and install signs.

PART 2 - MATERIALS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION 35 00 00