CITY OF FORT WAYNE MASTER UPDATED: 03/12/2018

SECTION

NTS: This specification is intended to be used for parking lots, access roads, streets, and other projects that experience standard traffic loads. Tailor it to fit actual project conditions. Although this section references standard roadway or highway specifications, it is not applicable for Contract Documents that include, partially or in their entirety, Indiana Department of Transportation or Allen County Highway Department specifications modified by special provisions.

This Master Specification is not a “Standard” specification and thus requires careful and experienced editing to fit your specific project needs. Ensure that this Section is coordinated with the Standard Details and with the requirements of the Authority Having Jurisdiction of the project area.

1. GENERAL
	1. DEFINITIONS
		1. Combined Aggregate: All mineral constituents of asphalt concrete mix, including mineral filler and separately sized aggregates.
		2. RAP: Reclaimed asphalt pavement.
		3. Provide hot-mix asphalt paving according to materials, workmanship, and other applicable requirements in accordance with the Indiana Department of Transportation (INDOT) Standard Specifications latest edition, Section 402.
		4. Related Sections:

NTS: List below list of sections covering products, construction and equipment that a user might expect to find in this section, but are specified elsewhere. Do not list administrative and procedural Division 01 sections.

* + - 1. Section 31 00 05, Trenching and Earthwork.

NTS: Section “1.2” is to be included if project is bid on unit price basis. Section to be deleted or revised if project is to be bid on lump sum basis.

NTS: Specifier must verify that a pay item is included for Article “1.2” as applicable for each specific project or if the pay item(s) will be included as part of the contract unit price for pavement restoration.

NTS: Insert at (--1--) and (--2--) below the asphalt paving and milling to be used for project. Adjust Section “1.2” below for additional work item numbers as needed.

NTS: Edit the patching pay limits width listed in Article “1.2” below based on project specific requirements.

* 1. MEASUREMENT AND PAYMENT
		1. Hot Mix Asphalt Patching
			1. Work Item Number and Title

 **32 12 16-A (--1--) HMA Patching**

 **32 12 16-B (--2--) HMA Patching**

* + - 1. The payment for HMA asphalt patching shall be based on the Contract unit price per square yard for the depth shown and shall include tack coat. HMA patching shall not include surface course.
			2. The asphalt patching shall be measured in square yards per the thickness installed. The pay limits shall be equal to the pay limits of the trench width plus 2 feet. (O.D. +30”+ 2’).
		1. Asphalt Surface Overlay
			1. Work Item Number and Title

 **32 12 16-C (--1--) Asphalt Surface Overlay**

 **32 12 16-D (--2--) Asphalt Surface Overlay**

* + - 1. The payment for asphalt surface overlay shall be based on the unit price per square yard for the depth and shall include tack coat. This work item does not include a base or intermediate course.
			2. The overlay of asphalt surface pavement shall be measured in square yards per the thickness installed. The pay limits shall be as shown on the project drawings or field determined by the Engineer or their representative.
		1. Milling
			1. Work Item Number and Title

 **32 12 16-E (--1--) Milling**

 **32 12 16-F (--2--) Milling**

* + - 1. Payment under this item shall be on a unit price basis per the thickness completed.
			2. The pay quantity shall be the square yards for the depth specified as shown on the plans or directed by the Engineer and actually milled.
			3. The unit price shall constitute full compensation for providing all labor, materials, and equipment, both temporary and permanent, and all other cost associated with pavement removal. This work item does not include the cost for milling over the trench.

NTS: Edit “D” below for project specific requirements. Coordinate with Section 32 13 00 Rigid Paving if rigid and asphalt pavement are used on the same project. Measurement and Payment shall only be located in one section and should clearly state that payment of pavement markings include both asphalt pavement and rigid pavement.

NTS: Add additional work items as necessary for pavement markings types and layouts.

* + 1. Pavement Markings
			1. Work Item Number and Title

 **32 12 16-G (--1--) Pavement Markings**

* + - 1. This item is measured on a lump sum basis for work shown on the plans, otherwise specified, or necessary to complete work shown on the Drawings.
			2. Payment for pavement marking work shall be paid based on the percentage of the lump sum contract price corresponding to the percentage successfully completed of work specified in the Contract Documents or shown on the plans.
			3. Pavement marking layout shall be confirmed with City of Fort Wayne Traffic Engineering prior to construction of the markings.
			4. This work shall include all costs to furnish all labor, materials, tools, and equipment, both permanent and temporary, associated with pavement traffic markings work shown on the Contract Drawings and shall include the following: recording locations of existing pavement and curb markings prior to construction, cleaning pavement or curb to be painted or marked, furnishing and installing permanent pavement markings in accordance with City of Fort Wayne Traffic Engineering, and any other requirements to complete the Work in accordance with these Drawings and Specifications, unless otherwise classified by the Engineer as a separate Work item.

NTS: Typically temporary trench repair is used during cold weather, when asphalt plants are not operational. Based on project specific requirements retain paragraph “E” below. Insert at (--1--) the project specific thickness. The preferred thickness is 3-inches, less than that doesn’t bind, and more than that can deform. If project contains rigid pavement coordinate the following work item with Section 32 13 00- Rigid Pavement.

Currently Cold Mixed Asphalt is specified for the temporary patch material; edit the following work item, Part 2- Products and Part 3 Execution if a different material is required for project.

* + 1. Temporary Trench Repair
			1. Work Item Number and Title

 **32 12 16-H (--1--) Temporary Pavement Repair**

* + - 1. Temporary pavement repair shall be utilized with permanent pavement is not available.
			2. Contractor shall avoid removing concrete panels to the nearest joint.
			3. Temporary pavement repair shall be measured by the square yard of the thickness specified including additional base aggregate as necessary, complete in place.
			4. Limits shall be equal to the pay limits of the trench width plus 1 foot. (O.D. +30”+ 1’).
			5. This item shall include all costs for furnishing and placing all materials including furnishing additional base aggregate to construct the temporary pavement level with existing paved surfaces, placing and temporary Cold Mixed Asphalt (CMA) as shown on the Drawings, removal of CMA and base aggregate as necessary to construct permanent surface restoration, base aggregate and removal as necessary for placement of final patching.
			6. 75 percent of the payment for each square yard of temporary pavement repair will be paid for installation and maintenance of said temporary surface. Upon removal of temporary surface the remaining percentage will be paid per square yard.
			7. Contractor shall also monitor and repair temporary pavement surface as necessary until the permanent surface restoration.
		1. Chip & Seal Patching
			1. Work Item Number and Title

 **32 12 16-I (--1--) Chip & Seal Patching**

* + - 1. The payment for chip & seal patching shall be based on the Contract unit price per square yard for the depth shown and shall include tack coat. Chip & seal patching shall not include surface course.
			2. The chip & seal patching shall be measured in square yards per the thickness installed. The pay limits shall be equal to the pay limits of the trench width plus 2 feet. (O.D. +30”+ 2’)
			3. The cost of 10” compacted No. 53 aggregate shall be included in the chip & seal patching pay item.
			4. This item shall include all cost to furnish all labor, materials, tools and equipment, both temporary and permanent, and all other costs associated with pavement patching.
		1. Chip & Seal Surface Overlay
			1. Work Item Number and Title

 **32 12 16-J (--1--) Chip & Seal Surface Overlay**

* + - 1. The payment for chip & seal surface overlay shall be based on the unit price per square yard for the depth installed. This work item includes the surface over the trench repair.
			2. The overlay of chip & seal surface overlay shall be measured in square yards per the thickness installed. The pay limits shall be as shown on the project drawings or field determined by the Engineer or their representative.
	1. REFERENCES

NTS: Retain all applicable standards below. Add others as required.

* + 1. Standards referenced in this Section are listed below:
			1. ASTM International:
				1. ASTM D242, Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
				2. ASTM D692, Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
				3. ASTM D1073, Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
				4. ASTM D3666, Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials.
				5. ASTM D3910, Standard Practices for Design, Testing, and Construction of Slurry Seal.
			2. Asphalt Institute (AI):
				1. MS-22, Principles of Construction of Hot Mix Asphalt Pavements
			3. Indiana Department of Transportation (INDOT) - Standard Specifications:
				1. Section 402, Hot Mix Asphalt, HMA, Pavement.
				2. Section 406, Tack Coat.
				3. Section 808, Pavement Traffic Markings.
				4. Section 904, Aggregates.
				5. Section 916, Materials Certifications.
			4. Indiana Department of Transportation (INDOT) – Design Manual:
				1. Chapter 17, Quantity Estimating.
			5. Indiana Department of Transportation (INDOT) – ITM
				1. ITM 583- Certified Hot Mix Asphalt Producer Program

NTS: Specifier must discuss with Owner if any additional submittals are required in addition to those listed in Section “1.4”.

For additional information on asphalt pavements and product approval see INDOT Sections 400 and 902. For submittal reviewer reference INDOT tables have been added to at the end of this Section. Verify that the submitted mix design complies with the INDOT standards. Tables to be deleted by specifier.

* 1. SUBMITTALS
		1. 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.
		2. 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.
		3. 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.
	2. QUALITY ASSURANCE
		1. 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.
		2. 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.
		3. Testing Agency Qualifications: Testing agency shall be qualified according to ASTM D 3666 for testing indicated.
		4. 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.

NTS: A Pre-Construction Meeting is beneficial for large projects with multiple mix designs and other requirements. Paragraph “e” can be deleted on smaller projects.

* + 1. Pre-construction Meeting: Conduct conference at Project Site. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
			1. Review condition of subgrade and preparatory Work.
			2. Review requirements for protecting paving Work, including restriction of traffic during installation period and for remainder of construction period.
	1. ENVIRONMENTAL REQUIREMENTS
		1. 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.
1. PRODUCTS
	1. AGGREGATES
		1. 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.
		2. Coarse Aggregate: ASTM D 692, hard, strong; angular crushed stone, crushed gravel, or properly cured, crushed blast-furnace slag.
		3. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, properly cured blast-furnace slag, or combinations thereof.
		4. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.
	2. ASPHALT MATERIALS
		1. Hot Mix Asphalt (HMA) material shall conform to applicable requirements of the INDOT Standard Specification latest edition, Sections 402.
		2. Tack Coat: Rapid-cure liquid asphalt conforming to INDOT Standard Specification latest edition, Section 406.
		3. Water: Potable.
		4. 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.
		5. Reclaimed Asphalt Shingles (RAS) shall not be used on design mix formulas or job mix formulas.

NTS: Typically temporary pavement repair is used during cold weather, when asphalt plants are not operational. Keep this as a work item if the Work is anticipated to be completed during the winter months.

Edit the temporary pavement repair material below as required for project.

* 1. TEMPORARY PAVEMENT REPAIR
		1. Temporary pavement repair shall be Cold Mixed Asphalt (CMA) Intermediate, No. 8 or 9 in accordance with INDOT Standard Specifications latest edition, Section 403.
	2. CHIP & SEAL MATERIALS
		1. Furnish No.9 and No.11 and No.53 stone as specified in the most recent edition of the Indiana Department of Transportation (INDOT) Standard Specifications. AE-90’s Modified Sealing Asphalt shall also be supplied.

A. NTS: Edit Article “2.5”: Pavement Marking Materials below, to suit the needs of the project. Including desires of Owner and Authority Having Jurisdiction over the pavement. Regarding Handicap parking space marking verify local requirements. Delete paint colors not required for project.

* 1. PAVEMENT MARKING MATERIALS
		1. Pavement marking materials shall be in accordance with INDOT Standard Specifications latest edition, Section 808 for Pavement Traffic Markings.
		2. 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. MIXES

NTS: Insert at (--1--), (--2--), and (--3--) below the mixture type required for the project. Hot mix asphalt (HMA) Type A (residential or commercial driveways and parking lots), B, C or D depending on the roadway classification is to be defined in this section. Specifier must discuss the proposed typical HMA section with Owner prior to finalizing the HMA type in paragraph “A” below. Specifier to verify that the required thickness of each course of the HMA is indicated on the Contract Drawings. If not indicated on the drawings the thickness of each course will should be added to Section 2.6a in the form of total course thickness or in units of lbs/sqyd.

* + 1. 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 (--1--)
			3. Intermediate Course: INDOT HMA Intermediate Type (--2--)
			4. Base Course: INDOT HMA Base Type (--3--)
1. EXECUTION
	1. GENERAL

NTS: Coordinate this Section with Section 01 55 23 – Maintenance and Protection of Traffic.

* + 1. 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.
		2. Driveways: Re-pave driveways as specified in the Construction Documents. Leave driveways in as good or better condition than before start of Work.
		3. 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.
	1. WEATHER LIMITATIONS
		1. HMA courses less than 110 lb/sq yd are to be placed when the ambient and surface temperature are 60° F or above.
		2. 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.
		3. 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.
		4. 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.
		5. Do not place HMA Surface mix after October 1st.
	2. LINE AND GRADE
		1. Provide and maintain intermediate control of line and grade, independent of underlying base, to meet finish surface grades and minimum thickness.
		2. Shoulders: Construct to line, grade, and cross‑section shown.
	3. PREPARATION
		1. Prepare subgrade as specified in Section 31 00 05, Trenching and Earthwork or INDOT Standard Specifications latest edition, Section 402.11.

NTS: Edit the existing material depth based on project specific requirements.

* + 1. 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.
		2. 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.
	1. EXAMINATION
		1. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.
		2. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.
		3. Proceed with paving only after unsatisfactory conditions have been corrected.

NTS: Retain this article if patching existing pavement.

* 1. PATCHING

NTS: Retain Paragraph “a” if existing pavement is hot mix asphalt (HMA).

* + 1. 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.

NTS: Retain Paragraph “B” if existing pavement is Portland Cement Concrete.

* + 1. 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.
		2. 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.

NTS: Retain Paragraph “D” if a single asphalt course, preferred by the asphalt institute, is proposed, retain Paragraph “E” if separate asphalt courses such as hot mix asphalt wedge and level to re-establish the roadway cross slope are required.

* + 1. Patching Base: Fill excavated pavement with hot-mix asphalt base mix and, while still hot, compact flush with adjacent surface.
		2. 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.
	1. SURFACE PREPARATION
		1. 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.
		2. 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.
	2. HOT-MIX ASPHALT PLACING
		1. 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.
		2. 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.
		3. 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.
		4. Paver speed shall not exceed 50 feet per minute.
	3. JOINTS
		1. 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.
	4. COMPACTION
		1. 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.
		2. 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.
		3. 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.
		4. 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.
		5. 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.
		6. 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.
		7. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
		8. Erect barricades to protect paving from traffic until mixture has cooled sufficiently to prevent distortions.
	5. INSTALLATION TOLERANCES
		1. 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.
		2. 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.

NTS: Delete the following article if not applicable.

* 1. PAVEMENT OVERLAY
		1. 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.
		2. 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.
	2. CHIP & SEAL PAVEMENT INSTALLATION
		1. Install depth at shown of compacted No. 53 stone base.
		2. Provide Type 6P seal coat in accordance with INDOT Section 404.04. Refer to table below for installation requirements. Table is an excerpt from INDOT Section 404.04. .
			1.

|  |  |  |  |
| --- | --- | --- | --- |
| Type (see Note 1) | Application | Cover Aggregate Size No. and Course | Rates of Application per sq yd |
| Aggregate, lb | Asphalt Material Gal at 60 deg/ F |
| 6 or 6P | Double | Top:11Bottom:9 | 18-2228-32 | 0.62-0.680.42-0.46 |
| Note1 – AE-90S Shall be used for type P seal coats |

* + 1. Protect all castings, valve boxes and other utility structures from oil spray. Remove protections after pavement installation is complete.
		2. Place pavement in a uniform continuous spread and operations shall not proceed such that asphalt material is allowed to set up prior to installation of the cover coat.
		3. Seal stone with oil using a meter bar with emulsion spray.
		4. The area shall then be rolled with a rubber tire roller.

NTS: Insert at (--1--) the required thickness of the temporary surface. Coordinate with entity with jurisdiction and with Section 32 13 00 –Rigid Pavement. Consider the construction season and type of road, sidewalk or driveway.

Note that INDOT Cold Mix Asphalt CMA is currently specified, edit Paragraph “A” below based on project specific requirements.

* 1. RESTORING AND RESURFACING EXISTING ROADWAYS AND FACILITIES
		1. Place a (--1--) 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.

NTS: Coordinate areas designated pavement in the specifications with the drawings.

* + 1. 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
	1. FIELD QUALITY CONTROL
		1. 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.
		2. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional Work with specified requirements.
		3. 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.
		4. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
		5. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.
		6. All required testing must be witnessed and approved by the Resident Project Representative, assigned by Owner.
	2. DISPOSAL
		1. Except for material indicated to be recycled, remove excavated materials from Project Site.
			1. Do not allow excavated materials to accumulate on-site.

NTS: The test frequencies shown are for continuous production of a full day paving operation of approximately 1,000 tons or more. Engineer may waive or modify testing requirements for small jobs where quality control is not as critical.

* 1. TESTING FREQUENCY
		1. 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.
		2. Density Tests: Once every 500 Tons of mix or once every 4 hours, whichever is greater.
	2. PAVEMENT MARKINGS
		1. All pavement markings removed or damaged during the course of construction shall be replaced.
		2. . Pavement Markings: Provide pavement markings where shown or indicated.
			1. Preparation:
				1. Sweep surface with power broom supplemented by hand brooms to remove loose material and dirt.
				2. Do not begin marking bituminous concrete pavement until approved by Engineer.
				3. When reflective glass beads are required, mix with paint prior to paint application.
			2. Application:
				1. Using mechanical equipment, provide uniform, straight edges in two separate coats. Apply in accordance with paint manufacturer's recommendations.

+ + END OF SECTION + +

NTS: The flowing information lists the asphalt pavement submittal requirements and includes a brief description to aid in verifying that the mix is in compliance. This information is based on INDOT Standard Specifications. Engineer is to delete this information from the project specific specification.

**1.Mixture course –**

Review the pavement course the submittal is for, options include: Surface, Intermediate or Base.

**2. HMA mix type –**

 Based on INDOT standards, and specified by Engineer within this Section. Verify the submittal with the requirements in Article 2.7 Mixes of this Section.

**3. Source of each asphalt material –**

 INDOT certified hot mix asphalt producer and shall be listed on the most recent version of the INDOT list of certified hot mix asphalt producers

**4. PG Binder–**

 Verify that the PG binder listed in the submittal matches with the following table. Coordinate with the Mixture Type that specified in this Section. Table from Section 402.04 of the INDOT Standard Specifications.



**5. Mixture Designation and Maximum Particle Size –**

 The finished depth of any course is required to be at least 2 times, but not more than 4 times the max particle size shown on the mix design. So the depth of any mix is 2 to 4 times the max top size aggregate which is always the next sieve size up. (Example: If it is a 9.5mm mixture designation then the max particle size should be 12.5mm)

**6. Proposed gradation for each aggregate to be used in flexible paving –**

 Ensure that the Design Mix Formula (DMF) gradation percentages are within the acceptable ranges listed in the table below. Use the gradations that match with the specified mixture designation (Example- If it is a 9.5mm mixture use the gradation percentages listed within the 9.5mm column).



**7. Indicate proportion of bituminous material from reclaimed asphalt pavement (RAP)–**

Verify the submittal with the requirements listed in Article 2.2 Asphalt Materials, of this Section.