

April 8, 2024

Jewell Jackson Purchasing Manager William Rainey Harper College 1200 W. Algonquin Road Palatine, IL

RE: Harper College Project No. Q01152 2024 Asphalt Pavement Maintenance Addendum #1

Jewell,

Please refer to the attached and below items regarding the proposed 2024 Asphalt Pavement Maintenance project by Harper College (project no. Q01152), which comprise Addendum #1. The Bid Documents for the project, dated March 28, 2024, shall be formally revised as described herein. Revised text in the Project Manual is denoted by *bold-italics*; omitted text is denoted by *bold-strikethrough*. Receipt of this Addendum must be acknowledged by all prospective bidders within the applicable section on the Bid Form; failure to acknowledge receipt may result in disqualification of the bid.

The Bid Documents shall be revised as follows:

PROJECT MANUAL

<u>32 12 16 – Asphalt Paving:</u>

- 1. Revise the specified asphalt sealer material to be a fiber-reinforced asphalt emulsion coating (Graphene ES or approved equal).
- 2. Revise the Sealing installation requirements to omit reference to mixing the sealer material with sand and revise the manufacturer's recommended application rate to be 45-to-55 square feet per gallon.

DRAWINGS

Sheets C1.02, C1.03, C1.06, C1.08, C1.10, C1.15, C1.16, and C1.19:

1. Revise indicated dimensions for full-depth pavement patches and other miscellaneous improvements as necessary to address erroneous scaling for lengths as previously shown.



Should you have any questions regarding the contents of this Addendum, please do not hesitate to contact me at abruder@cagecivil.com.

Yours truly, CAGE ENGINEERING, INC.

Aaron J. Bruder, PE Director of Engineering – Illinois

CC: Bidders of Record JoAnn Martinez (Harper College) Nathan Chung (Harper College) Jennifer Kulbida (Harper College) Steve Petersen (Harper College)

Attachments: Revised "32 12 16 – Asphalt Paving" specification section Revised drawing sheets C1.02, C1.03, C1.06, C1.08, C1.10, C1.15, C1.16, and C1.19

> 2200 Cabot Drive – Suite 325 Lisle, IL 60532

SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

2024 Asphalt Pavement Maintenance

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Cold milling of existing hot-mix asphalt pavement.
 - 2. Hot-mix asphalt patching.
 - 3. Hot-mix asphalt paving.
 - 4. Hot-mix asphalt paving overlay.
 - 5. Asphalt surface treatments.
 - 6. Pavement-marking paint.
 - B. Related Sections:
 - 1. Division 31 Section "Earth Moving" for aggregate subbase and base courses and for aggregate pavement shoulders.
- 1.3 DEFINITION
 - A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.
- 1.4 SUBMITTALS
 - A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
 - 1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
 - B. Samples: For each paving fabric, 12 by 12 inches minimum.
 - C. Material Certificates: For each paving material, from manufacturer.
 - D. Material Test Reports: For each paving material.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of IDOT for asphalt paving work.
- B. Preinstallation Conference: Conduct conference at Project site.



- 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review condition of subgrade and preparatory work.
 - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
 - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.
 - 1. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.
- B. Paving Geotextile labeling, shipment and storage shall meet ASTM D4873

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. HMA Temperature: Delivered between 250 deg F and 350 deg F
 - 2. Prime Coat: Minimum surface temperature of 60 deg F
 - 3. Slurry Coat: Comply with weather limitations in ASTM D 3910.
 - 4. Asphalt Base Course: Minimum surface temperature of 40 deg F in the shade and rising at time of placement.
 - 5. Asphalt Surface Course: Minimum surface temperature of 45 deg F in the shade at time of placement and rising at time of placement.
- B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F for water-based materials, and not exceeding 95 deg F. When more restrictive, manufacturer limits shall be adhered to.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.



- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel.
 - 1. Used in Surface Course: IDOT B Quality or better
 - 2. Used in Binder Course: IDOT C Quality or better
- C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, or combinations thereof.
 - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
 - 2. Quality: IDOT B Quality or better.
- D. Fractionated Reclaimed Asphalt Pavement (FRAP) shall consist of RAP from Class I HMA mixtures. Coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality or as below where more stringent. All FRAP shall be fractionated prior to testing. Testing shall be per and meet all IDOT requirements.
 - 1. Used in HMA Surface Course, N50: Coarse aggregate quality B or better.
 - a. Where FRAP is used alone, or where FRAP/RAS are used in conjunction the Maximum (virgin) Asphalt Binder Replacement (ABR) shall not exceed 35%. Where ABR exceeds 20% the low and high virgin asphalt grades shall each be reduced by one grade.
 - 2. Used in HMA Binder Coarse, N50: Coarse aggregate quality C or better.
 - a. Where FRAP is used alone, or where FRAP/RAS are used in conjunction the Maximum (virgin) Asphalt Binder Replacement (ABR) shall not exceed 40%. Where ABR exceeds 20% the low and high virgin asphalt grades shall each be reduced by one grade

2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320 and AASHTO MP 1a, PG64-28
- B. Prime Coat: ASTM D 2027, medium-curing cutback asphalt matching IDOT MC-30 per Section 1032 of the Standard Specifications for Road and Bridge construction.
- C. Tack Coat: IDOT SS-1, SS-1hP, CSS-1, CSS-1hP, emulsified asphalt or cationic emulsified asphalt, slow curing, diluted in water, per Section 1032 of the Standard Specifications for Road and Bridge Construction and of suitable grade and consistency for application.
- D. Tack Coat: Where Paving Geotextile as an interlayer is used; Performance Grade asphalt binder of the same grade as the overlaying pavement.
- E. Water: Potable.

2.3 ASPHALT SEALER

A. Fiber-reinforced asphalt emulsion coating



1. Graphene ES or approved equal.

- B. Sealers containing Coal Tar Shall Not Be Used.
- 2.4 AUXILIARY MATERIALS
 - A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
 - B. Sand: AASHTO M 29 Grade Nos. 2 or 3.
 - C. Paving Geotextile (Reflective Crack Control): AASHTO M 288-06, nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
 - 1. Weight: ASTM D1910, minimum 4.1 oz/sq. yd.
 - 2. Grab Tensile Strength: ASTM D4632, minimum 101 lbs
 - 3. Asphalt Retention: ASTM 6140, minimum 0.20 gal/sq. yd.
 - D. Joint Sealant: ASTM D 6690 or AASHTO M 324 Type II Type IV, hot-applied, singlecomponent, polymer-modified bituminous sealant.
 - E. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of no more than 15 minutes
 - 1. Color: Yellow for Public Spaces, Red for Staff/Faculty Parking.
 - 2. Color: Accessible Spaces Yellow
 - 3. Number of coats: 2.
 - F. Glass Beads: AASHTO M 247, Type 1.

2.5 MIXES

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes designed according to the Illinois Modified Strategic Highway Research Program criteria and the IDOT Special Provision "Superpave Bituminous Concrete Mixtures".
 - 1. Binder Course Mixture N50, IL-19.0, Surface Course Mixture N50, IL-9.5, Mix "D" designed in accordance with Sections 1030 and Sections 406 and 407 of the Standard Specifications for Road and Bridge Construction and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures."
 - 2. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.



- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
 - 2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.
- D. Verify that utilities, traffic loop detectors, and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of imprinted asphalt.

3.2 COLD MILLING

- A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
 - 1. Mill to a depth of 2"+/- per the plans.
 - 2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
 - a. When tested with a 16 ft. straightedge maximum variation in surface shall be 3/16 inch.
 - 3. Control rate of milling to prevent tearing of existing asphalt course.
 - 4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
 - a. Milling method may require different machine or hand method at appurtenances
 - b. Repair of damaged curbs or structures and other construction shall be accomplished in a manner satisfactory to the Owner. Where not acceptable, removal and replacement of the damaged appurtenances or construction is required.
 - 5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
 - 6. Transport milled hot-mix asphalt to asphalt recycling facility.
 - 7. Keep milled pavement surface free of loose material and dust.
 - 8. Milled surface shall be resurfaced within 7 calendar days.
- B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
 - 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.



3.3 PATCHING

- A. Hot-Mix Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base.
 - 1. Excavate rectangular or trapezoidal patches, extending 12 inches into adjacent sound pavement, unless otherwise indicated.
 - 2. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new base.
- B. Tack Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.05 to 0.15 gal./sq. yd.
 - 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.
- C. Patching: Fill excavated pavements with hot-mix asphalt base course mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

3.4 REPAIRS AND LEVELING

- A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.
 1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.
- B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of 1/4 inch.
 - 1. Clean cracks and joints in existing hot-mix asphalt pavement.
 - 2. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch wide. Fill flush with surface of existing pavement and remove excess.

3.5 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.
- B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
 - 1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.
- C. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd and per Drawings. Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure.
 - 1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.



- 2. Protect primed substrate from damage until ready to receive paving.
- D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
 - 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.

3.6 PAVING GEOTEXTILE INSTALLATION

- A. Apply tack coat uniformly to existing pavement surfaces at a rate of 0.20 to 0.27 gal./sq. yd. and at the rate specified by the manufacturer to meet the asphalt retention properties of the geotextile and the surface being applied to.
- B. Asphalt Binder tack coat shall not exceed 320 deg F. Allow sufficient distance between applicator and fabric installation tractor to achieve temperature specified by the geotextile manufacturer for the application.
- C. Application of tack coat shall be by distributor spray bar. Hand spraying shall be kept to a minimum.
- D. Place paving geotextile promptly according to manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches and transverse joints 6 inches.
 - 1. Protect paving geotextile from traffic and other damage and place hot-mix asphalt paving overlay the same day.

3.7 SEALING

- A. Prepare substrate in exact accordance with seal coat manufacturer's instructions. Remove all hardened foreign materials by scraping and wire brushing. Remove oil and grease. Blow off all dirt, dust, and foreign matter.
- B. Both surface and ambient temperature shall be 50°F and rising during application. Do not apply if temperature is expected to drop below 50°F within 24 hours of application.
- C. Cracks shall be filled with hot applied joint sealer.
- D. Treat all grease, oil, and gasoline spots with oil spot primer.

E. Follow manufacturer's written procedures for mixing with sand (PMM 100 gallons, Sand 400 lbs).

- F. Application of mixed product shall be per manufacturer's recommendations at a rate between **45-to-55 square feet per gallon**.
- G. Apply two coats.



- H. When set sufficiently to receive foot traffic without scuffing, apply the second coat at right angles to first.
- I. Allow final coat to dry for 24 hours prior to opening to vehicular traffic.

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 base course in number of lifts and thicknesses indicated.
 - 2. Spread mix at minimum temperature of 250 deg F.
 - 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. Complete a section of asphalt base course before placing asphalt surface course.
- 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.

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 not more than 12 inches.
 - 3. Offset transverse joints, in successive courses, a minimum of 24 inches.
 - 4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints according to AI MS22, for both "Ending a Lane" and "Resumption of Paving Operations."
 - 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: 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 with vibratory-plate compactors in areas inaccessible to rollers.
 - 1. Complete compaction before mix temperature cools to 195 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 to the following density:
 - Average Density: 94 percent of reference laboratory density based on AASHTO T 209 and Illinois Modified AASHTO T 166 or "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 but not less than 92 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- 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 enough not to become marked.

3.11 INSTALLATION TOLERANCES

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

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to age for 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.
 - 1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb/gal.
 - 2. Glass beads shall only be included in paint used for all roads/roadway striping applications. Parking space pavement marking need not include glass beads.

3.13 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
- C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.
- D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to AASHTO T 168.
 - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
 - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
 - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 cores taken.
 - 3. Field density of in-place compacted pavement to be determined by "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
 - 4. Average Density: 94 percent of reference laboratory density based on AASHTO T 209 and Illinois Modified AASHTO T 166 or "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 but not less than 92 percent nor greater than 96 percent.



- E. Replace and compact hot-mix asphalt where core tests were taken.
- F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.
- 3.14 DISPOSAL
 - A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow milled materials to accumulate on-site.

END OF SECTION 32 12 16









2200 CABOT DRIVE SUITE 325 LISLE, IL 60532 P: 630.598.0007 WWW.CAGECIVIL.COM
Harper College
REVISIONS () () () () () () () () () ()
HARPER COLLEGE PROJECT NO. 001152 2024 ASPHALT PAVEME MAINTENANCE 1200 W Algonquin Rd, Palatine, IL
PROJ NO:230261 ENG : SJS, AJB, HKC DATE : 03/28/2024 SHEET TITLE SECTION 8 WORK PLAN
SHEET NUMBER C1.08

1" = 30' (HORIZONTAL)

Ņ

