

2022
SAUK COUNTY HIGHWAY DEPARTMENT

SCOPE OF WORK FOR

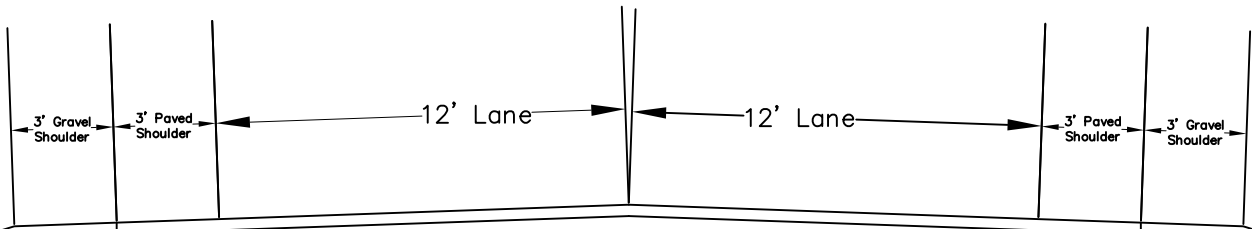
C.T.H. A
CTH T/Bunker Rd TO Bunker Rd

PAVING PROJECT

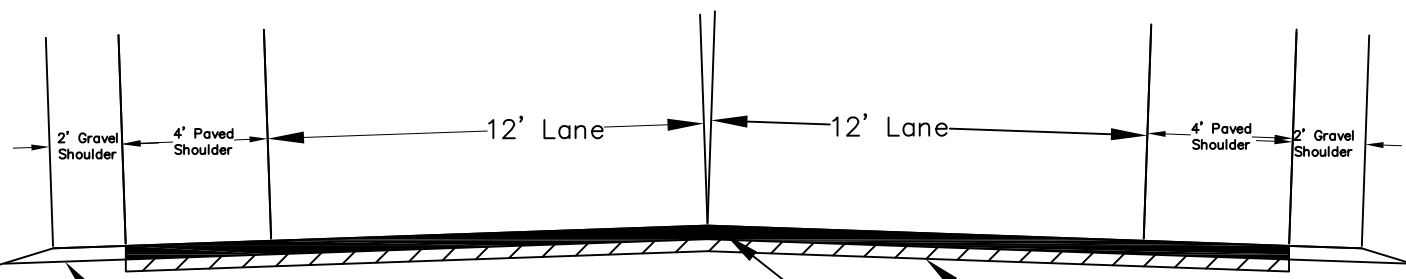
SAUK COUNTY HIGHWAY DEPARTMENT
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Patrick J. Gavinski, HIGHWAY COMMISSIONER



Typical Existing Section



Base Aggregate Dense $\frac{3}{4}$ "

4" Cold In Place Recycled HMA Pavement

4.5" HMA Pavment
 1.75" Upper Layer 4 MT 58-28
 2.75" Lower Layer 3MT 58-28

Typical Finished Section

ASPHALT CONCRETE PAVEMENT CONSTRUCTION

DESCRIPTION:

This item shall consist of the construction of asphaltic pavement surfaces shall conform to Section 460 of the State of Wisconsin Department of Transportation Standard Specifications for Road and Bridge Construction, 2022 Edition. Type 4MT58-28 AND 3MT58-28 as specified in Section 460 of the state specifications and the aggregates to be used for base, binder and surface course shall conform to the gradation requirements in 460.

The 3MT58-28 binder course will be the nominal thickness of 2.75 inches.

The 4MT58-28 surface course will be the nominal thickness of 1.75 inches to be paved in after completion of the binder course.

CONSTRUCTION METHODS:

- A. The contractor shall provide adequate trucks and paving train equipment to assure a continuous paving operation and avoid frequent delays.
- B. After the asphaltic concrete pavement has started, the contractor shall proceed to complete the project at the earliest possible date. If the contractor should determine it necessary to stop the paving operation, the contractor shall make a request to the owner for permission to stop work.
- C. All work shall conform to the requirements specified in section 450 of the State Highway Commission of Wisconsin, standard specifications for road and bridge construction for the particular class, type and grade of material specified.
- D. The contractor shall guarantee all materials and workmanship for one year from the date of substantial completion.

PREPARATION:

- A. All existing bituminous intersection and driveways shall be resurfaced at limits to be determined by the County in the field.
- B. Prior to the application of the tack coat or bituminous surfacing, the surface of the prepared foundation shall be cleaned by brooming therefrom all dust, dirt, debris or other foreign or loose material.
- C. Leveling or wedging course may be required in various areas of the project, to effect the required roadway cross sectional contour. These areas will be located by the County in the field.

TESTING:

- A. If requested by the County, submit samples of all proposed materials for test and analysis. The material shall not be used until approved. Job mix formula shall be provided by the contractor to County for approval.

PAYMENT:

- A. Asphaltic tack coat measurement shall be per gallon applied in place. The contractor shall supply the County with load tickets to verify the amount of material used. Payment shall be made at the contract unit price bid per gallon for asphaltic material for tack coat applied.
- B. Asphaltic concrete pavement type 4MT 58-28 Binder:
Measurement shall be per ton of asphaltic concrete pavement compacted in place. The contractor shall supply the County with load tickets to verify the amount of material used. Payment shall be made at the contract unit price bid per ton for asphaltic concrete pavement binder installed.
- C. Asphaltic concrete pavement type 3MT 58-28 Binder:
Measurement shall be per ton of asphaltic concrete pavement compacted in place. The contractor shall supply the County with load tickets to verify the amount of material used. Payment shall be made at the contract unit price bid per ton for asphaltic concrete pavement surfacing installed
- D. Asphaltic concrete pavement type 4MT 58-28 surfacing:
Measurement shall be per ton of asphaltic concrete pavement compacted in place. The contractor shall supply the County with load tickets to verify the amount of material used. Payment shall be made at the contract unit price bid per ton for asphaltic concrete pavement surfacing installed.
- E. Load Tickets showing weights, date, time and truck numbers shall be presented to the County's representatives at the time of delivery.

TRAFFIC CONTROL:

Closure of one lane may be used during daylight hours while flagpersons are on duty and appropriate traffic control devices are in place, as outline in the Wisconsin Manual of Traffic Control Devices.

Base Aggregate Dense 3/4"

Furnish and place material following section 305 of Wisconsin DOT Standard Specifications. Payment will be by the Ton placed.

Cold-In-Place Recycled Asphalt Pavement

A. Description

Cold-in-place recycling (CIR) consists of:

- Milling existing asphalt pavement to a depth of approximately 4 inches
- Processing and mixing RAP with an asphalt stabilizing agent and water (if required), and
- Placing and compacting the mixture.

B. Materials

B.1 Reclaimed Asphalt Pavement (RAP) Material

- (1) The RAP shall be milled from the existing roadway and processed in-place.
- (2) The RAP shall be free of contamination of base material, shoulder material, concrete, silt, clay, or other deleterious materials.
- (3) The milled and processed material shall conform to the following gradation prior to addition of the stabilizing agent:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 ½" (37.5 mm)	98 to 100
1"	90 to 100

B.2 Asphalt Stabilizing Agent

- (1) Use one of the following asphalt stabilizing agents, as specified in the contract documents:

- A. Foamed Asphalt
- B. Emulsion CSS-1 or HFMS-2S

B.2.1 Foamed Asphalt

- (1) Foamed asphalt shall be produced with a performance graded asphalt binder; without polymer modification; in accordance to (WDOT) standard spec 455.
- (2) Asphalt binder performance grade for foamed asphalt shall be PG 46-34 or PG 52-34.
- (3) Asphalt binder shall be sufficiently heated to meet the expansion and half-life criteria; not to exceed 375⁰ F.
- (4) Asphalt binder shall produce asphalt foam with a minimum expansion ratio of 8 and half-life of no less than 6 seconds.

B.2.2 Emulsion Type CSS-1 or HFMS-2S

- (1) CSS-1 or HFMS-2S type emulsion shall meet the requirements of (WDOT) standard spec 455.

B.2.3 Water

- (1) Water may be added to the RAP at the milling head and/or in a mixing chamber.
- (2) Water added to the RAP, used for foaming asphalt, or incorporated with the asphalt emulsion shall meet the requirements of standard spec 501.2.4.

B.3 Mixture Design

- (1) Unless otherwise stated in the contract documents, do not perform a mix design process for standard asphalt emulsion or foamed asphalt. Use the following application rates per square yard inch of compacted thickness when no mix design is performed.

Asphalt Stabilizing Agent	Application Rate (/yd ² /in)	Application Rate (/m ² /mm)
Standard Asphalt Emulsion	0.30 gallons (emulsion)	1.325 L
Foamed Asphalt	0.0011 tons (asphalt binder)	1.175 kg

C. Construction

C.1 General

- (1) Unless the contract provides otherwise, keep the road open to traffic during construction.
- (2) Perform CIR operations; only when the air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is above 50⁰F and when the nighttime ambient air temperature is above 45⁰F the night prior and following; unless approved otherwise by the engineer.
- (3) Do not perform CIR operations during inclement weather; such as rain or fog; that will not allow proper mixing, placing, and/or compacting of the mixture.

C.2 Equipment

- (1) Equipment used for CIR shall be subject to approval by the engineer.
- (2) Tankers supplying hot stabilizing agent components shall be equipped to constantly monitor temperature within the tank.

C.2.1 Milling Machine

- (1) Milling units; not inclusive of pre-mill/wedge-cut milling units; shall be capable of milling the existing pavement full lane width to the depth shown on the plans, specified in the contract or directed by the engineer, in a single pass.
- (2) The units shall be equipped with automatic depth control, shall maintain constant cutting depth and width, uniform grade, and uniform slope.
- (3) For processes not incorporating additional screening, sizing, or crushing; the milling unit shall be capable of producing RAP sized as specified in B.1.

- (4) Use of a heating device to soften the pavement is not permitted.

C.2.2 Screening, Crushing, and Sizing Equipment

- (1) Processes requiring additional screening, sizing, or crushing, shall include a unit with a closed circuit system capable of continuously returning oversized material to the crusher until all milled material entering the screening, crushing, or sizing equipment meets the gradation requirements of section B.1.

C.2.3 Mixing Unit

- (1) Processed RAP shall be mixed with the stabilizing agent and water in a mixing unit; defined as the milling machine cutter housing, a separate mixing chamber, or a pugmill.
- (2) The asphalt stabilizing agent shall be applied; using a computer controlled additive system; uniformly at the predetermined application rate. The metering of the stabilizing agent must be monitored through a calibrated pump providing a continuous readout of quantities.
- (3) The additive system shall contain separate pumping systems for adding stabilizing agent and water. Each system shall have an inspection or test nozzle for stabilizing agent and/or water sampling.
- (4) The system shall be capable of producing a uniformly mixed homogeneous recycled pavement mixture.

C.2.4 Paving Equipment

- (1) The placement and shaping of the recycled pavement mixture shall be completed using a self-propelled paver or screed integral to the recycling equipment meeting the requirements of standard spec 450.3.1.4; revised to exclude the requirement of an activated screed or strike-off assembly.
- (2) The screed shall not be heated.
- (3) If utilizing a self-propelled paver, the material shall be transferred directly into the paver hopper from the recycling equipment or with a pick-up device. When a pick-up device is used, the entire windrow shall be removed from the milled surface and transferred to the paver hopper.

C.2.5 Compaction Equipment

- (1) Compaction equipment shall be self-propelled and meet the requirements of standard spec 450.3.1.5.
- (2) The number, weight, and types of rollers shall be as necessary to achieve the specified compaction.

C.3 Constructing CIR

C.3.1 Preparation

- (1) Prior to initiating CIR operations, remove from the roadway any vegetation, standing water, loose crack filler, and any other deleterious materials within the width of pavement to be recycled.
- (2) Inspect the pavement surface for areas of yielding subgrade. Yielding areas will be repaired by the County prior to CIR operations.
- (3) Blade the existing base aggregate roadway shoulders away from the asphaltic surface edge to provide width shown in the typical section and to minimize contamination of the CIR pavement.

C.3.2 Processing and Placement of Recycled Pavement Mixture

- (1) Mill the existing pavement to the required depth and width indicated on the plan.
- (2) Further process the milled RAP material as necessary by crushing, screening, and/or sizing to the gradation requirements of B.1.
- (3) Blend the RAP material with the specified proportions of stabilizing agent and water; produce a uniform and homogeneous recycled mixture. The engineer may vary the application rate of the asphalt stabilizing agent as required by existing pavement conditions.
- (4) Spread the recycled mixture to the grade, elevations, and slopes specified on the plans; avoiding tearing or scarring of the recycled pavement surface.
- (5) Ensure proper material transfer, handling, and spreading to prevent particle segregation.
- (6) Longitudinal joints between successive CIR operations shall be overlapped a minimum of 3 inches. Transverse joints between successive CIR operations shall be overlapped a minimum of 2 feet.

C.4 Compaction

C.4.1 Compaction Requirements

- (1) On the first day of production, construct a control strip to identify the target wet density for the CIR layer. The control strip construction and density testing will occur under the direct observation and/or assistance of the department QV personnel.
- (2) Unless the engineer approves otherwise, construct control strips to a minimum dimension of 500 feet long and one full lane width.
- (3) Completed control strips may remain in place to be incorporated into the final roadway cross-section.
- (4) Construct additional control strips, at a minimum, when:

There is a significant change in mix proportions, weather conditions, or other controlling factors, the engineer may require construction of test strips to check target density.

- (5) Construct control strips using equipment and methods representative of the operations to be used for constructing the CIR layer.
- (6) After compacting the control strip with a minimum of 2 passes, mark and take density measurements at 3 random locations, at least 1 ½ feet from the edge of the CIR layer. Subsequent density measurements will be taken at the same 3 locations.
- (7) After each subsequent pass of compaction equipment over the entirety of the control strip, take density measurements at the 3 marked locations. Continue compacting and testing until the increase in density measurements is less than 2.0 lb/3ft, or the density measurements begin to decrease.
- (8) Upon completion of control strip compaction, take 10 randomly located density measurements within the limits of the control strip, at least 1 ½ feet from the edge of the base. The final measurements recorded at the 3 locations under article paragraph (6) of this section may be included as 3 of the 10 measurements. Average the 10 measurements to obtain the control strip target density.

C.4.2 Compaction Requirements

- (9) Compact the CIR layer to a required density of 93% of the target density.
- (10) Perform initial rolling with a pneumatic tired roller. Perform final rolling using steel wheel rollers, either in static or vibratory mode, to eliminate pneumatic tire marks.

C.5 Surface Requirements

- (1) Test the pavement surface at regular intervals, and engineer selected locations, using a 10-foot straightedge or other engineer specified device.
- (2) The engineer may direct the repair of surface deviations greater than ¼ inch between two surface contact points. High points shall be corrected by reworking, rerolling, trimming, milling, or grinding. Depressions may be corrected by reworking or have a tack coat applied and be filled with HMA immediately prior to placement of the surface treatment.

C.6 Maintaining the Work

- (1) After compaction is complete, the contractor will determine when the CIR is stable to open to traffic.
- (2) After opening to traffic, and prior to placing a surface treatment, the surface of the recycled pavement shall be maintained in a condition suitable for safe movement of traffic.

(3) The recycled pavement surface shall be protected and maintained from standing water, deleterious substances, and/or other damage.

(4) Any damage to the recycled pavement shall be repaired by the contractor prior to placement of the upper layer or acceptance of recycled pavement from the engineer at no additional cost to the department.

C.9 Curing and Surfacing

C.9.1 Curing

(1) Application of a surface treatment will not be allowed until the moisture content of the CIR layer is not more than 0.3% above the residual moisture content or 2.5, whichever is greater.

(2) If the moisture content of the CIR layer does not reduce to 2.5%; the surface treatment may be applied after the change in moisture content is less than 0.3% for three consecutive calendar days.

(3) The engineer may adjust the drying period depending on field conditions. The CIR shall be retested until the moisture content is at or below the limits stated above.

C.9.2 Tack Coat

(1) Tack coat to be applied by Paving Contractor.

C.9.3 Surfacing

(1) Surfacing materials, equipment, and construction to be performed by Paving Contractor.

D. Measurement

(1) The department will measure the Asphalt Stabilizing Agent incorporated into the work by the ton, acceptably completed; as metered through a calibrated pump, or through delivered ticket quantity.

(2) The department will measure the Cold-In-Place Pavement Partial Depth bid items as acceptably completed by the square yard (SY).

E. Payment

(1) The department will pay for the measured quantities at the contract unit price under the following bid item:

DESCRIPTION	UNIT
Cold-In-Place Recycling Pavement Partial Depth	SY
Asphalt Stabilizing Agent – Foamed	TON
Asphalt Stabilizing Agent – Emulsion	GAL

(2) Payment is full compensation for measured quantities as specified above; all material including mixing and milling water; equipment necessary for milling and sizing, mixing, paving, compacting the completed CIR; and for furnishing all labor, tools, and incidentals necessary to mill the existing pavement for recycling, size the milled RAP, inject and mix the RAP with the stabilizing agent, place or pave, compact, and maintain the completed CIR.

(3) Payment for Asphalt Stabilizing Agent is per ton or gallon depending on the contractor's preference. See E.2 above.

(4) Repair of yielding areas will be completed by Sauk County.

(1)

Removing Pavement Butt Joints

A. Description

- a. Remove Existing asphaltic pavement for a length of 50 feet.
- b. Milling depth should start at 2.5” and taper to a depth of 0”
- c. Removing Butt Joints shall be performed at each intersection and at both ends of the project

B. Materials

- a. The removed milled pavement can be evenly distributed along the shoulder of the project to be incorporated into the finished shoulder or hauled off of the project if the contractor chooses.

C. Construction

- a. Keep the road open to traffic during construction.
- b. Construction of Butt Joints should be coordinated with the paving contractor to ensure that joints are not open to traffic for an extended period of time that would adversely impact the transition from existing pavement to new pavement.

D. Measurement

- a. The department will measure the Removing Pavement Butt Joints bid items as acceptably completed by the square yard (SY).

E. Payment

- a. The department will pay for the measured quantities at the contract unit price under the following bid item:

Description	Unit
Removing Pavement Butt Joints	SY