700's – Wearing Surfaces

The pavement wearing surface is a key aspect of how the public judges the quality of a construction project. Because of that, the finished wearing surface must provide a smooth ride. If work on the wearing surface is not producing a smooth ride, require the Contractor to modify processes and procedures such that it produces a smooth riding surface, as well as meets other requirements.

Section 00705 – Emulsified Asphalt Prime Coat and Emulsified Asphalt Fog Coat

This work consists of applying asphalt, with or without aggregate cover materials, to a prepared surface. The prime coat is a penetration treatment applied to aggregate surfaces to bind the material with a hard surface like asphalt concrete pavement. A fog coat is a treatment applied to existing asphalt concrete pavement surfaces to renew and seal the pavement surface.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures* – Field Tested Materials Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality, performs sampling and testing as specified, and provides copies of test results to the Quality Control Compliance Specialist (QCCS).
- The Contractor samples the liquid asphalt and submits the sample to ODOT, as specified.
- ODOT performs verification sampling and testing as specified

Gather and submit required quality documentation.

Construction

Ensure that:

- Limits for the work are identified and marked and both the Contractor and Inspector understand the markings.
- Cover aggregates, if required, comply with specified requirements.

- A document accompanies shipment of emulsified asphalt showing delivered material matches the approved material.
- The Contractor's equipment is applying the material uniformly and at the specified application rate.
- The distributor's spray bar is set at the correct height to provide triple lap coverage of liquid asphalt.
- Weather conditions are as specified to perform the work and to allow the asphalt to cure or set.
- Emulsified asphalt is applied to only one designated lane at a time.
- The surfaces, upon which the application is to be made, meet the conditions specified.
- Cover aggregate, if required, is applied immediately after the emulsified asphalt is spread and before the emulsified asphalt starts to cure or set.
- Only the fog coat surface may be power broomed, as required, to remove loose aggregate.
- If traffic or construction equipment is running on the treated surface, the Contractor repairs and maintains the treated surface as needed.

Measurement

Unless specified otherwise, measurement for emulsified asphalt will be by weight. As work is performed, gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. If only a partial load is used, ensure that the vehicle is weighed and the weight used is properly determined. If possible, weigh the vehicle on the project before it returns to the plant. Calculate the sum of all emulsified asphalt used daily and submit that calculation, with the weight ticket or Weigh Memo - Material Receipt form as a source document to justify payment.

Section 00706 – Emulsified Asphalt Slurry Seal Surfacing

This work consists of applying one or more layers of slurry seal consisting of asphalt, water, aggregate, and additives on a prepared surface.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures*– Field Tested Materials Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality, has qualified technicians to perform sampling and testing as required, and provides copies of test results to the QCCS.
- The Contractor samples the liquid asphalt, as specified, and submits the sample to ODOT.
- The Contractor submits the Job Mix Formula (JMF) to ODOT for approval, as specified.
- ODOT performs verification sampling and testing as specified.

Gather and submit required quality documentation.

Construction

Ensure that:

- The surface and air temperature are above 45° F and rising before placing slurry seal, and it is not raining or predicted to rain before the slurry seal has cured.
- A document or documents identifying that the delivered mix matches the approved JMF is provided with the deliveries.
- Limits for the work are identified and marked and both the Contractor and Inspector understand the markings
- The Project Manager has accepted the sample strip and street cleaning details before slurry seal surfacing proceeds.
- The surfaces, upon which the application is to be made, meet the conditions specified. The surfaces may be wetted by fogging, as specified.
- The mixer is specifically designed for slurry seal. Concrete transit mixer trucks are not used as mixers.
- There is a back-up mixer on-site and another off-site.
- Aggregates comply with specified requirements.
- The Project Manager has accepted the mixer calibration before proceeding with slurry seal surfacing.
- The Contractor's equipment is applying the material uniformly and at the specified application rate.
- Both the emulsified asphalt and the aggregate are applied uniformly at appropriate rates to leave a streak free surface.
- The spreading equipment has a steering device, flexible strike-off, adjustable width, only one tail rubber, and a Project Manager approved drag.

- The slurry does not segregate, lump, ball, or cure (break) in the spreading equipment.
- Only self-propelled steel-wheeled or pneumatic-tired type rollers with a water spray system are used, if specified.
- If specified, the surfaced areas receive a minimum of two full coverage passes by the roller.
- If construction equipment is running on the treated surface, the Contractor repairs and maintains the treated surface as needed.
- Hand work is limited to the beginning and end of panels.
- The treated area is protected from traffic for the full cure period, or as specified otherwise.

Measurement

Measurement for slurry seal surfacing will be by area, unless specified otherwise. As work is performed sketch and calculate the area of slurry seal surfacing placed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00710 – Single Application Emulsified Asphalt Surface Treatment

Section 00715 – Multiple Application Emulsified Asphalt Surface Treatment

This work consists of applying emulsified asphalt and graded aggregates, either in a single application or multiple applications.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures* – Field Tested Materials Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality, has qualified technicians to perform sampling and testing as required, and provides copies of test results to the QCCS.
- The Contractor samples the liquid asphalt, as specified, and submits the sample to ODOT for approval. Sampling should be witnessed by the Inspector or QCCS for proper sampling technique, container, etc.

- ODOT performs verification sampling and testing as specified.

Gather and submit required quality documentation.

Construction

Ensure that:

- Limits for the work are identified and marked and both the Contractor and Inspector understand the markings.
- Aggregates comply with specified requirements and are stockpiled as specified.
- A document accompanies shipment of emulsified asphalt showing delivered material matches the approved material.
- The Contractor's equipment is applying the emulsified asphalt uniformly and at the specified application rate.
- The distributor's spray bar is set at the correct height to provide a triple lap coverage of liquid asphalt.
- The surfaces, upon which the application is to be made meet the conditions specified and are approved by the Project Manager.
- The application process works toward the aggregate stockpile from the furthest section of the project, unless otherwise approved by the Project Manager.
- The Contractor schedules and performs its operations as specified to ensure that the required widths of travel lanes and roadway are completed daily.
- Longitudinal joints are not placed within the travel lane, unless approved by the Project Manager.
- The emulsified asphalt is applied to completely cover the intended surface, but does not overlap adjacent coverages. If overlaps occur, ensure that excess asphalt is removed with a squeegee, etc. to prevent a bump or area with excess asphalt.
- The moisture content of the aggregate is maintained so that the aggregate is surface damp at the time of placement on the emulsified asphalt.
- Aggregate is spread uniformly at the specified rate on the emulsified asphalt immediately after its application and before the emulsified asphalt starts to set or cure (break).
- The aggregate is applied to completely cover the intended surface, but not to overlap adjacent coverages. If overlaps occur, ensure that excess aggregate is removed to prevent a bump or area with excess aggregate.
- Buildup of aggregate (piles) is immediately removed.
- Compaction is performed immediately behind the aggregate application.

- Only steel-wheeled or pneumatic-tired rollers are used.
- A minimum of 2 pneumatic-tired and 1 steel-wheeled rollers are used.
- The surfaced areas receive a minimum of 2 coverages with a pneumatic-tired roller and 1 coverage with a steel-wheeled compactor for a Single Application, and 4 full coverage passes by the rollers, as directed by the Project Manager, for a Multiple Application.
- Speed of the compactors is compatible with the surface treatment operation, but no greater than 5 MPH, and the compactors do not pick up aggregates from the surface.
- The treated surface is swept to remove loose aggregate as specified.
- The Contractor measures the finished surface of Multiple Applications as specified with a straightedge to ensure specified smoothness, and corrects all deficiencies in surface tolerance.
- Traffic is controlled until the treatment is cured and the loose aggregate is removed.
- Damage, including that resulting from traffic, is repaired.
- Unless specified otherwise or allowed by the Project Manager, the work is completed at least 3 hours before sunset.
- The pavement is not opened to traffic until authorized by the Project Manager.

Measurement

Measurement for the emulsified asphalt and aggregate will be by weight, unless specified otherwise. As work is performed, gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. If only a partial load is used, ensure that the vehicle is weighed and the weight used is properly determined. Reweigh the vehicle on the project, if possible. Calculate the sum of all emulsified asphalt used daily and submit that calculation, with the Weigh Memo - Material Receipts form, as a source document to justify payment.

Measurement for the asphalt surface treatment of approaches will be by unit basis, unless specified otherwise. Count each location where an approach is treated. Sketch and calculate the number of approaches completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00730 – Emulsified Asphalt Tack Coat

This work consists of furnishing and placing emulsified asphalt on a prepared surface to ensure bond between lifts of surfacing.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures* – Field Tested Materials Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality and has qualified technicians to perform sampling as required.
- The Contractor performs sampling, as specified, before additional water is added, and submits the sample to ODOT for approval.
- ODOT performs verification sampling as specified

Ensure that:

- The emulsified asphalt is not contaminated.

Gather and submit required quality documentation.

Construction

Ensure that:

- A document accompanies shipment of emulsified asphalt showing delivered material matches the approved material.
- Emulsified asphalt is diluted as specified and approved by the Project Manager.
- Emulsified asphalt is not excessively pumped prior to application, as specified.
- The distributor is applying the material uniformly and at the specified application rate.
- The distributor's spray bar is set at the correct height to provide triple lap coverage of liquid asphalt.
- Temperature and climatic conditions are as specified.
- Traffic, other than appropriate construction equipment, will not operate over the tacked surface.
- Tack is not applied to more than one half the traveled way width at one time.
- The surface, to receive the application, is cleaned and dry as specified.
- Tack is applied uniformly to the entire surface, including the vertical surfaces, on or against which the surfacing will be placed.
- Asphalt in the material separates from the water (breaks), but the material has not lost its tackiness, before surfacing material is placed on it.

Measurement

Measurement for emulsified asphalt tack coat will be by weight, unless specified otherwise. As work is performed, gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. Ensure that weight of the haul vehicle or distributor is measured to determine the quantity of material used. Calculate the sum of all emulsified asphalt tack coat used daily and submit that calculation, with the Weigh Memo - Material Receipt form, as a source document to justify payment.

Section 00735 – Emulsified Asphalt Concrete Pavement

This work consists of furnishing and placing aggregate and emulsified asphalt material to construct an emulsified asphalt concrete (EAC) pavement.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures* – Field Tested Materials Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality, has certified technicians to perform sampling and testing as specified, and provides copies of test results to the Inspector.
- The Contractor has developed and submitted a job mix formula (JMF) for approval by the Project Manager.
- The Contractor samples the emulsified asphalt, as specified, and submits the sample to ODOT.
- During aggregate production sampling and testing is done, with copies of test results provided to the QCCS.
- Aggregates are handled in a manner that prevents segregation or intermixing of sizes. (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix.)
- ODOT performs verification sampling and testing as specified.
- Aggregates and asphalt are of the specified quality.
- Material is stockpiled as specified.
- Failing or unacceptable material is separated and not incorporated, as specified.

Ensure that:

- Materials are not contaminated at any time.

- The mixing and placement processes produce a product that meets specified requirements.
- The Contractor measures the finished surface as specified to ensure specified smoothness and corrects all deficiencies in surface tolerance.

Gather and submit required quality documentation.

Construction

A key element in constructing a quality pavement is ensuring that the mixture is consistently and uniformly delivered and placed.

Check that:

- Prior to starting paving work, appropriate Contractor and ODOT personnel meet for the required pre-paving conference.

Ensure that:

- For delivery of the mixture to the paving machine:
    - A document or documents identifying that the delivered mix matches the approved JMF is provided with the deliveries.
    - Mixture is delivered to the paving machine with no detrimental change in its characteristics.
    - Haul vehicle beds prevent leakage of hauled EAC or any liquids.
    - Haul vehicle beds are clean and treated with an approved release agent – use of diesel oil is prohibited.
    - Mixture is loaded into the haul vehicles such that segregation is minimized (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix.)
    - The number of haul vehicles is sufficient to allow EAC placement to be performed as continuously as possible. If the number of vehicles is not sufficient, suspend operations until sufficient vehicles are provided or sufficient mixture is supplied to resume normal operation.
    - Mixture is unloaded without segregation, or bumping or moving the paving machine.
- For placement and compaction of the EAC mixture:
    - Paving limits are clearly marked, including location and dimensions for approaches, road or driveway connections, guardrail flares, and mailbox

turnouts, etc., and both the Contractor and Inspector understand the markings.

- Longitudinal joints for successive lifts are offset as specified.
- Longitudinal joints in the wearing course do not occur within the area or width of a travel lane, unless approved by the Project Manager.
- There is enough equipment to ensure that the paving machine can place EAC without stopping, as nearly as possible.
- Weather and surface conditions are as specified for construction of EAC pavement.
- The underlying surface is finished and has been cleaned and tack coat applied, as specified.
- If required, depressions, potholes, etc. have been prepared and filled.
- The pick-up machine, if used, picks up substantially all mixture from roadway.
- EAC is uniformly coated, does not segregate or otherwise result in a non-uniform finished product, and all defects are repaired. Involve the Project Manager, who may involve the Region QAC or the Pavement Quality Engineer, if unable to resolve this or other issues. (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix. Areas with segregation have a rougher surface texture appearance than the surrounding areas.)
- EAC that has segregated, separated, is solidifying, or is crusting is rejected.
- The Contractor and Inspector verify the pavement is constructed to the specified width, thickness, line, grade, cross section, and smoothness.
- Compaction is performed with a steel-wheeled or pneumatic-tired roller, as specified, including:
    - The Contractor develops and performs rolling patterns to ensure uniform and adequate coverage, as specified.
    - Rollers are operated at acceptable speeds, but no greater than 3 MPH.
    - The drive wheel of each roller is nearest the paver.
    - All roller marks are removed.
    - Areas not accessible to rollers are compacted by other means to specified density.
- The Contractor removes or disposes of unacceptable material and replaces it with acceptable material.
- Choke aggregate is applied as specified and does not create unacceptable dust under traffic.

  - Loose choke aggregate is removed as specified.
  - Choke aggregate, or other acceptable material, is used to control excess asphalt on the pavement surface.
  - The Contractor measures surface smoothness and corrects deficiencies and roughness, as specified.
  - Each lift of EAC cures for at least 72 hours before the next lift is placed.
  - The mat has a uniform appearance and is free of longitudinal seams, tears, or other blemishes or defects.
- The Contractor cleans up and disposes of unwanted materials – use of diesel oil to coat or clean equipment is prohibited.

Measurement

Refer to the specifications for the method of measurement.

If measurement is by weight, ensure that the Contractor has a scale to measure the weight of each load. Ensure that overweight loads are not allowed on the roadway.

Establish a procedure to safely gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. Calculate the sum of all loads delivered each day and submit that calculation, with the Weigh Memo - Material Receipt form as a source document to justify payment.

If measurement is by volume in the haul vehicle, measure each haul vehicle and record those measurements. As work is performed calculate the volume of aggregate placed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00744 – Minor Hot Mixed Asphalt Concrete (MHMAC) Pavement

Section 00745 – Hot Mixed Asphalt Concrete (HMAC)

This work consists of constructing a hot plant mixed, uniformly coated mixture of asphalt cement, graded aggregate and additives to result in an asphalt concrete (HMAC) pavement.

It is expected that the Inspector be a Certified Hot Mixed Asphalt Concrete Inspector to inspect this work.

Quality

Quality requirements are specified and in the *Manual of Field Test Procedures* – Field Tested Materials Guide. Unless specified otherwise, acceptance of the MHMAC mixture will be by visual inspection by the Project Manager.

For HMAC check that:

- The Contractor is aware of its responsibilities regarding material quality, has certified technicians to perform sampling and testing as required, and provides copies of test results to the QCCS.
- The Contractor has developed and submitted a job mix formula (JMF) for approval by the Project Manager.
- ODOT performs verification sampling and testing as specified.
- For production of the aggregates:
    - Material is stockpiled as specified.
    - Failing or unacceptable material is separated and not incorporated, as specified.
- For production of the HMAC mixture:
    - The Contractor performs required testing and takes appropriate corrective action if test results or other indicators show that the mixture is deviating from specified or JMF requirements.
    - Aggregates are handled in a manner that prevents segregation or intermixing of sizes. (Segregation is defined as separation of the coarse aggregate particles in the mix from the fine aggregate particles.)

For HMAC, ensure that:

- Material is not contaminated.
- The mixing and placement processes produce a product that meets specified requirements.
- The Contractor measures the finished surface as specified to ensure specified smoothness, and corrects all deficiencies in surface tolerance .

Gather and submit required quality documentation.

Construction

A key element in constructing a quality pavement is ensuring that the mixture is consistently and uniformly produced.

Document daily the workers, hours, equipment, stations paved, course depth, width, tonnage, yield, weather, temperature, tack spread rate, and problems encountered. Complete the General Daily Progress Report (form 734-3474) or the attached Paving Inspectors Daily Report to document this information.

Complete the HMAC Checklist for your information.

Check that:

- Prior to starting paving work, appropriate Contractor and ODOT personnel meet for the required pre-paving conference.
- For delivery of the MHMAC and HMAC mixture to the paving machine:
    - A document or documents identifying that the delivered mix matches the approved JMF is provided with the deliveries.
    - Mixture is loaded into the haul vehicles such that segregation is minimized. (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix.)
    - Mixture is unloaded without segregation or bumping or moving the paving machine.
    - Mixture is delivered to the paving machine with no detrimental change in its characteristics.
    - Haul vehicle beds are clean and treated with an approved release agent – use of diesel oil is prohibited for M/HMAC.
    - Loads are covered, as specified, or otherwise protected to maintain specified temperature of the mixture.
    - Estimate the required number of delivery trucks using the attached Mix Delivery Production Calculation Form.
    - For M/HMAC, the number of haul vehicles is sufficient to allow mixture placement to be performed as continuously as possible. If the number of vehicles is not sufficient, suspend operations until sufficient vehicles are provided or sufficient mixture is supplied to resume normal operation.
    - M/HMAC is rejected before placing if it is below the specified placing temperature limit, slumping, separating, solidifying, crusting or absorbing moisture.
- For placement and compaction of the MHMAC and HMAC mixture:
    - Calculate the anticipated length paved for the first 10 loads (plan length X plan width X plan thickness X specific gravity of mix X 62.4 X (%

compaction/100) / 2000 = tons of mix). Compare with actual tons placed to check yield. Document yield calculation on Material Delivery and Yield Check Sheet (form 734-2792).

- Paving limits are clearly marked, including location and dimensions for approaches, road or driveway connections, guardrail flares, and mailbox turnouts, etc., and both the Contractor and Inspector understand the markings.
- Longitudinal joints for successive lifts are offset as specified.
- Longitudinal joints in the wearing course do not occur within the area or width of a travel lane, unless approved by the Project Manager.
- There is enough equipment to ensure that the paving machine can place M/HMAC without stopping, as nearly as possible.
- Weather and surface conditions are as specified for construction of M/HMAC pavement.
- The underlying surface is finished and has been cleaned, tack coat applied with triple lap coverage, and approved, as specified, prior to the start of paving.
- The entire paving train (mixture delivery, pick-up machine, paver hopper, paver augers, paver screed, paver screed operator, raker, breakdown roller, intermediate roller and finish roller) is observed.
- The pick-up machine, if used, picks up substantially all mixture from roadway.
- M/HMAC that is below the specified placing temperature limit, slumping, separating, solidifying, crusting or absorbing moisture is rejected.
- The longitudinal and transverse joints are tight, even and straight.
- Compaction is performed with a steel wheeled or vibratory roller to achieve the specified density, including:
    - Vibratory rolling is not performed for lifts thinner than 2 times the maximum aggregate size.
    - The Contractor, its workers, and its testing technicians are working together to achieve the required product quality and are resolving all problems.
    - Performing breakdown and intermediate rolling before the M/HMAC drops below 180° F, or as otherwise specified.
    - The Contractor develops and performs rolling patterns to ensure uniform coverage and compaction, accelerating or delaying rolling patterns as necessary to resolve tenderness problems.
    - Rollers are operated at acceptable speeds.
    - Rollers are not parked on the pavement when it is hot.

        - The drive wheel of each roller is nearest the paver.
        - All roller marks are removed.
        - Areas not accessible to rollers are compacted to specified density by other methods.
        - If the Contractor cannot achieve the required density and other requirements, it must modify its processes to achieve an acceptable product. Involve the Project Manager, who may involve the Region QAC or the Pavement Quality Engineer, if this or other problems cannot be resolved.
        - Contractor notifies the Project Manager if compaction exceeds 95% of maximum density.
    - The Contractor and Inspector verify the pavement is constructed to the specified width, thickness, line, grade, cross section, and smoothness.
    - The Contractor removes or disposes of unacceptable material and replaces it with acceptable material as needed.
    - The mixture does not segregate or otherwise result in an improper finished product and all defects are repaired. Ensure that the Contractor immediately addresses and resolves the cause of the segregation and other defects. (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix. Areas with segregation have a rougher surface texture appearance than the surrounding areas.)
    - The mat has a uniform appearance and is free of longitudinal seams, tears, or other blemishes or defects. Clumps, crusted mix, etc. are removed and replaced with acceptable mixture.
    - Locations, where a connection, flare, turnout, etc. must be constructed, are constructed in such a condition to allow a good joint and connection to the future work.
    - The pavement is protected from damage and all damage is acceptably repaired.
- For placement and compaction of the MHMAC mixture:
    - Compaction is performed to achieve the required density, including:
        - Performing breakdown and intermediate rolling until the entire surface has been compacted by at least 6 coverages of the roller.
    - MHMAC is removed and replaced if it is loose, broken, mixed with dirt, too much/too little asphalt, or is defective in any way.
- For placement and compaction of the HMAC mixture:
    - The base/foundation is approved by the Project Manager prior to placement of HMAC.

- HMAC in transit at the time adverse conditions occur is placed only if it has been covered during transit, the HMAC temperature is satisfactory, it is placed on a foundation free from pools or flow of water, and all other requirements are met.
- Temperature behind the paver is as specified.
- The Contractor performs all specified compaction testing.
- Compaction is performed to achieve the specified density, including:
    - Pneumatic rollers are operated no faster than 3 MPH and vibratory rollers are operated at frequencies of at least 2,000 vibrations per minute.
    - For thin pavement (leveling, patches, or less than 2″ thickness) performing breakdown and intermediate rolling until the entire surface has been compacted by at least 4 coverages of the roller, but not to a specified density.
    - For open graded HMAC use of only steel-wheeled rollers and performing breakdown and intermediate rolling until the entire surface has been compacted by at least 4 coverages of the roller, but not to a specified density.

Measurement

Unless specified otherwise, measurement for M/HMAC is by weight. Ensure that the Contractor has a scale to measure the weight of each load. Ensure that overweight loads are not allowed on the roadway.

Establish a procedure to gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. Record the load data on the Material Delivery Record and Tally Sheet (form 734-2792), the General Daily Progress Report (form 734-3474), or the Paving Inspectors Daily Report. As work is performed a sketch of where the loads are placed may also be prepared on an Installation Sheet (form 734-2605). Calculate the sum of all loads delivered each day and submit that calculation, with the Weigh Memo - Material Receipt form, Material Delivery and Yield Check Sheet and/or Installation Sheet as a source document to justify payment.

Section 00758 – Reinforced Concrete Pavement Repair

This work consists of saw cutting and removing existing concrete pavement and constructing new reinforced and continuously reinforced portland cement concrete pavement repairs as shown and specified.

Quality

Quality requirements are specified and in the Manual of Field Test Procedures, along with Non-Field Tested Materials Acceptance Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality and has qualified technicians to perform sampling as required for production.
- The Contractor performs sampling, as specified, and submits the sample to ODOT for approval.
- ODOT performs verification sampling as specified
- The concrete mix design is a 1½ inch concrete mix as specified.

Gather and submit required quality documentation.

Preparation

Ensure that:

- Saw cuts are full depth through the concrete pavement before the contractor starts to remove the pavement. The depth of existing pavement is shown in the project plans.
- The saw cuts are in the locations shown on the plans or as marked by the Agency and not moved by the contractor for convenience.
- The contractor DOES NOT saw into the adjacent lane, and has the proper equipment listed in the specifications to prevent this from occurring.
- The Contractor removes existing reinforced concrete pavement full depth as shown or directed.
- Removal of concrete pavement is with equipment approved by the Engineer and does not damage remaining pavement.
- The Contractor removes the existing terminal expansion joint steel W-beam top flange and web as shown or as directed.
- The Contractor cuts the steel web so that no more than 1/4 inch remains above the existing sleeper slab.
- The Contractor repairs any damage to the existing pavement or sleeper slab due to the Contractor's operations.
- If the existing base requires removal, it is replaced it with materials conforming to the applicable parts of this Specification and to the depth shown. Note whether or not the repairs were greater or less than 2 inches deep since this affects payment.

- The Contractor places a non-woven geotextile or liquid curing compound as a bond breaker between the new plain concrete base and the new reinforced concrete pavement as shown or directed.
- If shown on the plans, the Contractor saw cuts the existing reinforced concrete pavement to a nominal depth of 2 inches.
- The Contractor removes existing concrete with jack hammers and chipping hammers that will not damage reinforced concrete pavement to remain in place or the underlying base as directed. Do not use jackhammers heavier than nominal 30 pounds class. Do not use chipping hammers heavier than nominal15 pounds class to remove concrete within 3/4 inch of reinforcing steel.
- The Contractor protects and keeps reinforcing steel clean of grease, oil, dirt, grout, or other contaminants at all times.
- Before placement of concrete, the repair area is blown clean with compressed air and a coat of epoxy grout or bonding agent is applied to all vertical surfaces.
- If full-depth saw cut and texturing with a bush hammer is shown on the plans, the contractor textures the full face of the cut as specified.

Placing Reinforcement

Ensure the Contractor:

- Places reinforcement as shown and specified.
- Laps splices according to Section 00530.
- Uses reinforcement that is straight, clean, and free of scale or other matter which would interfere with its bonding to the concrete.
- Places the reinforcement on support devices that maintains it in specified position during concrete placement.
- Ties or clips at every other transverse bar intersection, as a minimum, in a manner that does not allow for displacement.
- Ties or clips every lap splice as shown.
- Obtains approval of the proposed support devices before use.
- Places tie bars required for contact-type longitudinal joints by drilling the hardened concrete section and then inserting and grouting the tie bars into place.
- Does not damage the existing reinforcement when drilling the holes.
- Provides smooth, round dowel bars.
- Coats dowel bars with plastic, heavy oil, or other approved material that will not bond with or be harmful to the PCC.

- Places dowels in supporting framework or support devices that hold dowels parallel with each other, parallel with the surface of the pavement, and perpendicular to the joint.

Placing Concrete

Ensure the Contractor:

- Vibrates throughout the concrete until it is uniformly consolidated and does not segregate.
- Following the vibrating and strike-off operations, floats the concrete.
- Keeps the surface free from laitance, soupy mortar, marks or irregularities.
- Places the concrete in final position in one lift so a minimum of finishing will be necessary to provide a dense, homogenous pavement conforming to true grades and cross sections.

Curing Concrete

Ensure the Contractor:

- Immediately after the final floating, surface finishing and edging have been completed, and while the concrete surface is still moist, applies liquid membrane-forming compound uniformly to the concrete by pressure-spray methods at a rate of at least 1 gallon per 150 square feet so that the concrete is completely white like painting a wall.
- Uses other approved curing methods from the specifications if a curing compound is not used.

Measurement

Pavement repair will be measured on the area basis, and will be determined by measuring the width and length of each constructed panel of pavement. The width will be measured from edge-to-edge on the surface of the pavement, perpendicular to the centerline. The length will be measured from end-to-end of the pavement along the centerline, including the length of bar lap splices.

If depths are other than those specified then a proportionate volume ratio will be used for an equivalent number of square yards.

Bar lap areas will be measured on the unit basis. The reinforced bar lap area consists of an area of one 12-foot lane width and from 24 inches to 30 inches long. Where the bar lap areas consist of an area less than one lane width, the quantity of bar lap area will be

adjusted by converting to a proportionate quantity based on a 1- foot lane width. A 6-foot wide pavement repair will be counted as one-half of a bar lap area.

Section 00746 – Crack Sealing Flexible Pavements

This work consists of repairing and resealing cracks in pavements.

Quality

Quality requirements are specified and in the Non-Field Tested Materials Acceptance Guide.

Check that the Contractor is aware of those requirements and provides quality documentation before the material is incorporated.

Ensure that the material is protected so that neither it nor vehicles driving over it are damaged. If surfacing will be placed over the material, ensure that the sealing work will not affect the quality of the finished surfacing or smoothness of the ride.

Gather and submit required quality documentation.

Construction

Ensure that:

- All locations for the work are identified.
- Cracks to be sealed are cleaned and dried as specified.
- Sealing material is heated and mixed as specified and recommended by the manufacturer. (Obtain copy of manufacturer's recommendations from the material package or have the Contractor furnish before work begins.)
- Climatic conditions are as specified for installing the sealing material.
- Cracks are completely filled and the surface is finished as specified.
- When crack sealing is performed prior to a pavement overlay, the sealed cracks are completely covered with a clean sanding material, as specified.
- The work is protected from traffic as specified.

Measurement

Refer to the specifications for the method of measurement.

If measurement is by weight, ensure that the Contractor has a scale to measure the weight of each load. Ensure that overweight loads are not allowed on the roadway.

Establish a procedure to safely gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. When possible, use the procedure in the Quantities section (12-D) of the *Construction Manual* to avoid having the material receiver in the work area. Calculate the sum of all loads delivered each day and submit that calculation, with the Weigh Memo - Material Receipt form as a source document to justify payment.

If measurement is by length, measure and record the length of sealed cracks. As work is performed, sketch (as possible) and total the length of cracks sealed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00748 – Asphalt Concrete Pavement Repair

This work consists of removing existing asphalt concrete surfaces. Replacement of aggregate subbases, aggregate bases and asphalt concrete pavement are covered under Sections 00641, 00735, 00744 and 00745, as applicable.

Quality

Unless specified otherwise acceptance of the asphalt concrete pavement repair will be by visual inspection by the Project Manager. Tests may be requested to verify that the materials meet the appropriate specifications.

Measurement

Measurement for asphalt concrete pavement repair is by area, unless specified otherwise. Verify that material has been placed to the required depth. Where the repair depth is directed to be different than the required depth, adjust the area by converting to an equivalent area on a proportional volume basis. As work is performed, sketch and calculate the area of asphalt concrete pavement repair completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00749 – Miscellaneous Asphalt Concrete Structures

This work consists of constructing asphalt concrete in road approaches, street connections, driveways, guard rail flares, mailbox turnouts, raised traffic islands, sidewalks, footpaths, gutters, ditch linings, spillways, dikes, and other miscellaneous or minor items of asphalt concrete, except asphalt curbs.

Quality

Quality requirements are specified.

Check that the Contractor is aware of those requirements, performs required testing, and provides acceptable quality documentation before the material is incorporated.

Gather and submit required quality documentation.

Construction

Ensure that:

- The location for each miscellaneous asphalt concrete structure is marked and both the Contractor and Inspector understand the markings and requirements for the structure to be constructed.
- If earthwork will be performed, the earthwork limits include required widening for guard rail flares, mailbox turnouts, and similar construction that requires additional subgrade or roadway width.
- If specified, aggregate base is placed and compacted in the affected area.
- Aggregate or soil materials underlying the structure are compacted, smoothed, and shaped to allow the correct depth and dimension of structure to be constructed, as specified.
- If the underlying surface is concrete or bituminous material, it is dry and free of unsuitable material and a tack coat has been applied to all surfaces that will be contacted by the asphalt concrete, as specified.
- Asphalt concrete mixture has been mixed and is in a condition to allow placement and compaction as specified.
- Asphalt concrete mixture is placed, by mechanical devices or by hand methods, to specified thickness and dimensions.
- Compaction is performed to achieve the required density, including:
    - Performing breakdown and intermediate rolling until the entire surface has been compacted by at least 4 coverages of the roller, but not to a specified density.
    - In areas not practically accessible to rollers compact to a firm, dense mass.
- The Contractor checks the smoothness of the structure and corrects all deficiencies
- As required, the Contractor constructs adjacent slopes with material and smoothes, compacts, and finishes affected areas as specified

Measurement

Refer to the specifications for the method of measurement. Measurement will be by one of the following methods, unless specified otherwise.

If measurement is by the unit basis, count each location where the structure is constructed. Sketch and calculate the number of structures completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

If measurement is by area, verify that material has been placed to the required depth. As work is performed, sketch and calculate the area of asphalt concrete pavement repair completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

If measurement is by length, measure and record the length of structure along its longitudinal axis. As work is performed, sketch and total the length constructed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

If measurement is by weight, ensure that the Contractor has a scale to measure the weight of each load. Ensure that overweight loads are not allowed on the roadway.

Establish a procedure to safely gather the weight ticket or Weigh Memo - Material Receipt (form 734-3082) from each delivery vehicle. Calculate the sum of all loads delivered each day and submit that calculation, with the Weigh Memo - Material Receipt form, as a source document to justify payment.

Section 00755 – Continuously Reinforced Concrete Pavement

Section 00756 – Plain Concrete Pavement

This work consists of constructing portland cement concrete pavement.

Quality

Quality requirements are specified in the *Manual of Field Test Procedures* – Field Tested Materials Guide, and in the Non-Field Tested Materials Acceptance Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality, has certified technicians to perform sampling and testing as required, and provides copies of test reports to the Inspector.

- The Contractor has developed and submitted a mix design, and that mix design has been approved by the Project Manager.
- ODOT performs verification sampling and testing as specified.
- During production of aggregates:
    - Sampling and testing is done and test results are provided to the QCCS.
    - Material is stockpiled as specified.
    - Failing material is separated and not incorporated, as specified.
- For production of the concrete mixture:
    - Prior to starting paving work, appropriate Contractor and ODOT personnel meet for the required pre-paving conference.
    - Concrete mixing occurs in a batch plant mixer only, unless specified otherwise.
    - Aggregates are handled in a manner that prevents segregation and intermixing of sizes. (Segregation is defined as separation of the coarse aggregate particles in the mix from the fine aggregate particles.)
    - The Contractor performs required testing, rejects or modifies all unacceptable material, and provides copies of test results to the QCCS.

Ensure that:

- Material is not contaminated or damaged at any time.
- The mixing and placement processes produce a product that meets specified requirements.
- The Contractor measures the finished surface as specified to ensure specified smoothness, and corrects all deficiencies in surface tolerance.

Gather and submit required quality documentation.

Construction

A key element in constructing a quality pavement is ensuring that the mixture is consistently produced and that the placement is uniformly done such that little handwork is needed.

Check that before proceeding with paving operations a test strip is constructed and accepted by the Project Manager, as specified.

Unless specified otherwise, ensure at least two lanes are constructed in one paving strip, when the pavement consists of two or more traffic lanes.

Complete the Concrete Pavement Pour checklist for your information.

Ensure that:

- For delivery of the concrete mixture to the spreader:
  - Mixture is delivered to the spreader in non-agitating equipment, unless specified otherwise, with no unexpected change in its characteristics and within the timeframe after mixing as allowed by specification.
  - Haul vehicle beds are clean, free of build-up of any material.
  - Concrete mixture is loaded into the haul vehicles such that the mixture does not segregate. (Segregation is defined as separation of the coarse aggregate particles in the mix from the rest of the mix.)
  - Prohibit concrete delivery vehicles from driving on the subgrade or base, except for the minimum number of right angle or near right angle crossings.
  - The number of haul vehicles is sufficient to allow placement to be performed as continuously as possible and mixture is placed within the allowed timeframe after mixing.
  - Mixture is unloaded and placed into final position without segregation or damage to or displacement of reinforcement, joints, and other appurtenances.

- For placement and finishing of the mixture:
  - Placement limits are clearly marked and both the Contractor and Inspector understand the markings.
  - Grade controls have been set.
  - Grade controls indicate a smooth grade line for the finished pavement.
  - Reinforcement size, grade, lap, ties, depth, spacing, and minimum clearance are as specified.
  - All reinforcing, joints, traffic signal detector loops, conduit, and other required appurtenances are placed, supported, and restrained as specified to prevent movement during placement and finishing of the concrete.
  - Self-supporting working platforms are located at each construction joint in continuously reinforced concrete pavement.
  - The procedure for ensuring that manholes and other devices are set in the proper location to the proper elevation and slope is effective.
  - Locations of all joints for jointed paving are clearly marked so that joints can be identified after concrete placement and are sawed in the proper location.

- End forms and needed abutting work have been constructed to the proper grade and slope.
- The spreader and finishing machine(s) has an effective means to control grade and cross-slope.
- The Contractor has tested the vibrators to ensure that they operate in the specified manner or as recommended by the manufacturer.
- The underlying surface is cleaned, smooth, compacted, and at proper grade and cross-slope.
- The surface of subgrade or base in front of the paving operation is moistened.
- Weather conditions are as specified for construction of concrete pavement.
- If cold or wet weather is expected during the curing period, the Contractor has a process and devices on site to protect the concrete.
- Quality of the concrete mixture is not affected by the placement and finishing operations.
- Concrete that has not been placed within 1 hour of mixing, has begun to take an initial set, or has been retempered with water is rejected.
- Defective material is not placed or is removed.
- The Contractor ensures that the beginning section of the pavement is constructed, including consolidation and finishing, to provide a smooth surface that matches adjoining pavement.
- Delivery of concrete mixture allows continuous operation of the spreader and finishing machines, except as allowed by specification.
- A construction joint is constructed wherever there is an interruption of 20 minutes in concrete placement operations.
- The finishing machine is operated as continuously as possible, with minimum stopping.
- The concrete is placed to the specified thickness.
- Hand work of the surfaces is minimized, including:
    - The surface is checked for irregularities and no hand finishing is done unless the check shows that it is needed.
    - No additional water is applied to the surface of the concrete mixture.
    - Hand work is only performed to correct irregularities or to seal the surface or sides of the pavement structure.
- The surface is textured, as specified, after the mixture is adequately set, but before the texturing damages the surface.

- The Contractor constructs the joint at the end of the day's work as specified, including consolidation, hand finishing, and assurance of smoothness and grade to produce a quality work and to match the adjoining surface.
- The exposed surfaces of the concrete mixture are protected immediately after final floating, surface finishing and edging for at least 72 hours to prevent moisture loss either by:
  - Application of an approved curing membrane-forming compound is as specified.
  - Placement of other materials, as specified, to prevent loss of moisture from the concrete mixture and to prevent damage to the concrete surfaces.
- **THE INSPECTOR MUST REMAIN ON-SITE UNTIL THE CURE IS COMPLETELY IN PLACE.**
- Joints are sawed, or otherwise constructed, as soon as that work can be performed, but before shrinkage of the concrete starts. If required, joints are cleaned and filled with specified filler, as specified.
- The concrete surfaces are protected from moisture loss, vehicle or equipment use, and other damage or use as long as specified.
- The Contractor cleans up and disposes of unwanted material and repairs any damaged areas, as specified.

Smoothness Testing and Correction

- The Contractor tests the smoothness of the pavement surface as specified.
- No traffic is allowed on the concrete pavement until the Contractor corrects all required deficiencies.
- The Contractor corrects all deficiencies that are greater than allowed by grinding.

Measurement

Measure the work, or ensure that measurements are taken, to allow the quantity of work to be calculated.

Measurement for continuously reinforced and plain concrete pavement is by area, unless specified otherwise. Verify that material has been placed to the required depth. As work is performed, sketch and calculate the area of concrete pavement repair completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

Section 00758 – Concrete Pavement Repair

This work consists of saw cutting and removing existing concrete pavement and constructing new reinforced and continuously reinforced portland cement concrete pavement repairs as shown and specified.

Quality

Quality requirements are specified and in the Manual of Field Test Procedures, along with Non-Field Tested Materials Acceptance Guide.

Check that:

- The Contractor is aware of its responsibilities regarding material quality and has qualified technicians to perform sampling as required for production.
- The Contractor performs sampling, as specified, and submits the sample to ODOT for approval.
- ODOT performs verification sampling as specified
- The concrete mix design is a 1 ½ inch concrete mix as specified.

Gather and submit required quality documentation.

Preparation

Ensure that:

- Saw cuts are full depth through the concrete pavement before the contractor starts to remove the pavement. The depth of existing pavement is shown in the project plans.
- The saw cuts are in the locations shown on the plans or as marked by the Agency and not moved by the contractor for convenience.
- The contractor DOES NOT saw into the adjacent lane, and has the proper equipment listed in the specifications to prevent this from occurring.
- The Contractor removes existing reinforced concrete pavement full depth as shown or directed.
- Removal of concrete pavement is with equipment approved by the Engineer and does not damage remaining pavement.
- The Contractor removes the existing terminal expansion joint steel W-beam top flange and web as shown or as directed.

- The Contractor cuts the steel web so that no more than 1/4 inch remains above the existing sleeper slab.
- The Contractor repairs any damage to the existing pavement or sleeper slab due to the Contractor's operations.
- If the existing base requires removal, it is replaced it with materials conforming to the applicable parts of this Specification and to the depth shown. Note whether or not the repairs were greater or less than 2 inches deep since this affects payment.
- The Contractor places a non-woven geotextile or liquid curing compound as a bond breaker between the new plain concrete base and the new reinforced concrete pavement as shown or directed.
- If shown on the plans, the Contractor saw cuts the existing reinforced concrete pavement to a nominal depth of 2 inches.
- The Contractor removes existing concrete with jack hammers and chipping hammers that will not damage reinforced concrete pavement to remain in place or the underlying base as directed. Do not use jackhammers heavier than nominal 30 pounds class. Do not use chipping hammers heavier than nominal15 pounds class to remove concrete within 3/4 inch of reinforcing steel.
- The Contractor protects and keeps reinforcing steel clean of grease, oil, dirt, grout, or other contaminants at all times.
- Before placement of concrete, the repair area is blown clean with compressed air and a coat of epoxy grout or bonding agent is applied to all vertical surfaces.
- If full-depth saw cut and texturing with a bush hammer is shown on the plans, the contractor textures the full face of the cut as specified.

Placing Reinforcement

Ensure the Contractor:

- Places reinforcement as shown and specified.
- Laps splices according to Section 00530.
- Uses reinforcement that is straight, clean, and free of scale or other matter which would interfere with its bonding to the concrete.
- Places the reinforcement on support devices that maintains it in specified position during concrete placement.
- Ties or clips at every other transverse bar intersection, as a minimum, in a manner that does not allow for displacement.
- Ties or clips every lap splice as shown.
- Obtains approval of the proposed support devices before use.

- Places tie bars required for contact-type longitudinal joints by drilling the hardened concrete section and then inserting and grouting the tie bars into place.
- Does not damage the existing reinforcement when drilling the holes.
- Provides smooth, round dowel bars.
- Coats dowel bars with plastic, heavy oil, or other approved material that will not bond with or be harmful to the PCC.
- Places dowels in supporting framework or support devices that hold dowels parallel with each other, parallel with the surface of the pavement, and perpendicular to the joint.

Placing Concrete

Ensure the Contractor:

- Vibrates throughout the concrete until it is uniformly consolidated and does not segregate.
- Following the vibrating and strike-off operations, floats the concrete.
- Keeps the surface free from laitance, soupy mortar, marks or irregularities.
- Places the concrete in final position in one lift so a minimum of finishing will be necessary to provide a dense, homogenous pavement conforming to true grades and cross sections.

Curing Concrete

Ensure the Contractor:

- Immediately after the final floating, surface finishing and edging have been completed, and while the concrete surface is still moist, applies liquid membrane-forming compound uniformly to the concrete by pressure-spray methods at a rate of at least 1 gallon per 150 square feet so that the concrete is completely white like painting a wall.
- Uses other approved curing methods from the specifications if a curing compound is not used.

Measurement

Pavement repair will be measured on the area basis, and will be determined by measuring the width and length of each constructed panel of pavement. The width will be measured from edge-to-edge on the surface of the pavement, perpendicular to the centerline. The length will be measured from end-to-end of the pavement along the centerline, including the length of bar lap splices.

If depths are other than those specified then a proportionate volume ratio will be used for an equivalent number of square yards.

Bar lap areas will be measured on the unit basis. The reinforced bar lap area consists of an area of one 12 foot lane width and from 24 inches to 30 inches long. Where the bar lap areas consist of an area less than one lane width, the quantity of bar lap area will be adjusted by converting to a proportionate quantity based on a 12 foot lane width. A 6 foot wide pavement repair will be counted as one-half of a bar lap area.

Section 00759 – Miscellaneous Portland Cement Concrete Structures

This work consists of constructing commercial grade concrete curbs, islands, traffic separators, driveways, walks, monolithic curbs and sidewalks, miscellaneous surfaces, and stairs with metal handrail.

Quality

Quality requirements are specified and the Non-Field Tested Materials Acceptance Guide.

Check that the Contractor is aware of those requirements, performs required testing and provides copies of test results to the Inspector, and provides acceptable quality documentation before the material is incorporated.

Also check that ODOT performs required verification testing.

Inspect materials for damage. Do not allow concrete to be incorporated if it is improperly mixed or more than 90 minutes has elapsed since it was originally mixed.

Gather and submit required quality documentation.

Construction

Ensure that:

- Each structure location is accurately located and marked and both the Contractor and Inspector understand the markings.
- The underlying surface is cleaned, smooth, compacted, wetted, and at proper grade and cross-slope.
- Forms will result in a finished structure of the required dimensions and in the required locations.

- Reinforcement, dowels, joint materials, electrical conduit and devices, and other required appurtenances are placed as specified and anchored to prevent movement during placement and finishing of the concrete.
- The finished product will allow drainage of surface water.
- If extruding machines will be used to construct the structure:
    - The molds are of proper size.
    - Effective line and grade control has been established for the machine, including cross-slope if appropriate.
    - Vibrators operate properly and hydraulic or other leaks are repaired to prevent damage to the concrete or the environment.
- If cold or wet weather is expected during the curing period, the Contractor has a process and devices on site to protect the concrete.
- Concrete mixture is of quality and is placed and consolidated, as specified.
- Joints are constructed at the proper locations, as specified – contraction joints are at maximum 15-foot spacing, and ½″ thick preformed expansion joint filler is placed between new and existing concrete, unless specified otherwise.
- Finishing is performed in a timely manner.
- The surface is checked, using straightedge, string line, or other effective method, and deficiencies are corrected.
- Concrete is cured and protected as specified.
- **THE INSPECTOR MUST REMAIN ON-SITE UNTIL THE CURE IS COMPLETELY IN PLACE.**
- If forms were used during construction, the resulting surface is finished as specified after their removal.
- The Contractor cleans up and disposes of unwanted material.
- Affected areas are smoothed, restored, and finished as specified.

Measurement

Refer to the specifications for the method of measurement and payment. Measurement and payment will be by one of the following methods:

If measurement is by volume, measure each structure, and record those measurements. As work is performed sketch and calculate the volume of each structure placed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

If measurement is by area, verify that material has been placed to the required depth. As work is performed, sketch and calculate the area of structures completed daily and

submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.

If measurement is by length, measure and record the length of structure. As work is performed sketch and total the length constructed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment

If measurement is by the unit (each) basis, count each location where the structure is constructed. Sketch and calculate the number of structures completed daily and submit that calculation with an Installation Sheet (form 734-2605) as a source document to justify payment.