

SPECIFICATIONS FOR CONSTRUCTION

In general, unless specifically set forth herein, the work, materials, and methods of measurement and payment shall conform to the applicable divisions and paragraphs (as noted on the Bid Proposal or in the plans) of the most current edition of the:

**State of Ohio
Department of Transportation**

1. Construction and Material Specifications
2. Construction and Material Supplemental Specifications
3. Standard Construction Drawings

**City of Cincinnati
Department of Water Works**

1. Construction and Material Specifications
2. Standard Drawings

SCOPE OF WORK

A. **BEACON HILLS SUBDIVISION STREETS**

- Pavement planing
- Pavement repairs
- Stress Absorbing Membrane Interlayer (SAMI)
- Asphalt Concrete Surface Course
- Asphalt rejuvenating agent
- Pavement marking
- Manhole adjustments

Engineer's Estimate of Probable Construction Cost: \$665,000

SPECIAL PROVISIONS

ITEM 207 - TEMPORARY SEDIMENT AND EROSION CONTROLS

The Contractor shall take extreme care to prevent unnecessary erosion, water pollution and siltation at all points of the project. Temporary seeding and mulching, straw bales, slope drains, etc., shall be used as necessary or as directed by the Engineer. The cost of all temporary erosion control measures shall be incidental to the Contract.

FULL-DEPTH PAVEMENT SAWING

All existing pavement to be widened and/or removed shall be sawed full depth at the limits of removal, using a diamond saw blade to provide a uniform edge and prevent damage to pavement that is to remain in place. The cost of the sawing shall be incidental to the applicable pavement removal item.

ITEMS 251 / 252 / 253 / 255 - PAVEMENT REPAIR

The plans show dimensions and locations of pavement areas which are to be repaired under "Item 251, Partial Depth Pavement Repair", "Item 252, Full Depth Rigid Pavement Removal and Flexible Replacement," "Item 253, Pavement Repair," or "Item 255, Full Depth Pavement Removal and Rigid Replacement." The Contractor shall note that these dimensions and locations are only approximations and may be changed and/or adjusted. The final areas to be repaired under these items will be designated in the field by the Engineer and the quantity of work to be covered under these items will be based upon the measurement of those designated areas.

The unit price bid for Item 251, Partial Depth Pavement Repair, shall include all the costs incurred in the removal of the existing concrete pavement to a depth specified by the Engineer, and the placing of the asphalt pavement as per plan.

The unit price bid for Item 252, Full Depth Rigid Pavement Removal and Flexible Replacement, shall include all the costs incurred in the removal of the existing concrete pavement and subgrade, the compaction of the existing subgrade material as required, and the reconstruction of the subgrade and asphalt pavement as per plan.

The unit price bid for Item 253, Pavement Repair, shall include all the costs incurred in the removal of the existing asphalt pavement, the compaction of the subgrade as required, and the construction of the pavement courses as per plan.

The unit price bid for "Item 255, Full Depth Pavement Removal and Rigid Placement" shall include all costs incurred in the saw cutting and removal of the existing concrete pavement, the compaction of the subgrade as required, the placement of expansion material and dowels, and new concrete pavement as per plan.

Item 253, "Pavement Repair, Miscellaneous: Slag Stabilization," shall be paid for under a separate item and is included in the Contract as a contingency item for the repair and replacement of unsound base material as directed by the Engineer.

The pavement repair will be marked in the field by the inspector, promptly upon the completion of the pavement planing operations, but prior to the placement of the SAMI. The inspector shall make a record of the noted pavement repairs with regard to the location, size, and type of repair to be made. Weather permitting, the Contractor shall complete the pavement repairs within three (3) working days from when the pavement planing operations are completed.

The Contractor shall be required to place the asphalt surface course no later than twenty (20) working days after the original pavement planing operations.

All curb repairs, asphalt repairs and utility adjustments are to be completed before the asphalt surface work begins.

The unit price for the required pavement repairs shall include all costs incurred for all labor and materials noted in the pavement repair details, including the removal and replacement of the asphalt intermediate course.

ITEM 253 - PAVEMENT REPAIR, MISCELLANEOUS: SLAG STABILIZATION

A contingency quantity of slag has been provided under a separate bid item to be used as directed by the Engineer for subgrade stabilization. The unit price bid for Item Special, Slag Stabilization, shall include all costs incurred in the excavation of the existing subgrade, disposal of the excavated material, the compaction of the existing subgrade material as required, and the reconstruction of the subgrade with slag to include a 3-inch choker course of crushed stone or gravel, Item 304.

ITEM 254 - PAVEMENT PLANING

The work of this item consists of removing the existing asphalt wearing surface to the depths and limits specified or as directed by the Engineer, the intent of which is to restore adequate curb height and/or to remove deteriorated portions or irregularities in the existing wearing surface. Removal shall be by the method of cold surface planing, as described in Item 254.

The Contractor shall be responsible for notifying all residents of parking restrictions 24 hours in advance of any and all planing operations. Care shall be exercised during planing operations so as not to damage manhole covers, grates, chambers, valves, valve boxes, etc. Any utility castings damaged by the Contractor's operations shall be replaced by the Contractor at his expense.

After removing the wearing course, the Contractor shall immediately clean and tack coat an area at least four feet (4') in radius around all utility castings within the removal area and place an asphalt concrete wedge, thoroughly compacted in accordance with Item 401, around the castings in the four-foot (4') radius area. As an alternate method, the Contractor may choose at the time the wearing course is removed to leave a four-foot radius wedge of existing surface course around the utility casting to protect traffic, but will not be allowed to remove these wedges until the day previous to placing asphalt concrete surfacing on the street. Where manholes or valve chambers within an area where wearing course is removed have previously been adjusted with adjusting rings, the Contractor shall also have the option of removing the adjustment ring.

If the Contractor chooses to remove the adjustment rings, he shall re-install the rings immediately prior to resurfacing the street. No additional compensation will be paid for the placing of asphalt wedges, the removal and re-installation of adjustment rings, or the separate removal of existing wearing course left around the castings. These costs shall be included in the cost of removing the wearing course. All material removed shall be the property of the Contractor.

The Contractor shall note that the maintenance of proper drainage patterns will be of special concern, especially where proposed work is to meet existing pavement. The Contractor may be required to survey areas in question, using an automatic level or other appropriate equipment to assure proper grade and cross-slope. The cost of all operations required to assure and to demonstrate that proper drainage patterns have been maintained shall be included in the unit price bid for the pertinent pavement removal item.

The Contractor shall place the SAMI, Type 1 within 24 hours of the completion of the pavement repairs. The asphalt concrete surface course shall be placed within 48 hours of the completion of the placing of the SAMI, Type 1.

ITEM 304 - SUBGRADE REPAIR

A contingency amount of Item 304 aggregate base course material for repair and replacement of unsound subgrade material as directed by the Engineer is included under this item. The cost of all labor, equipment and material necessary to excavate and dispose of the unsuitable subgrade material and to place and compact the aggregate as required shall be included in the unit price bid for Item 304, Aggregate Base.

ITEM 401 - SEALING EDGES

All edges of the asphalt concrete surface course constructed under this Contract shall be sealed with asphalt cement as directed by the Engineer, the cost of same to be included in the unit price bid for Item 448, Asphalt Concrete. After completion of the surface course, gutters shall be sealed with asphalt cement as directed by the Engineer. The material shall be applied at a uniform width of approximately 4 inches and at a rate just sufficient to fill surface voids. Sealing edges at building walls, foundations, or other visible surfaces shall be done neatly and without more than one-half (1/2) inch of the sealant being visible on the surface. Any extra sealant applied to visible surfaces shall be carefully and thoroughly removed by the Contractor at no additional cost to the Owner.

ITEM 401 - ASPHALT CONCRETE PAVEMENTS

401.16 Compaction: Add: Achieve an in-place density of the compacted material ranging between 92.0% and 96.9% as determined by the material testing consultant.

ITEM 423 - CRACK SEALING

In areas where the plans call for the existing pavement to be resurfaced or sealed, the Contractor shall clean and seal all cracks prior to the application of the tack coat or the seal coat.

The Contractor shall be responsible for the thorough cleaning of the existing cracks by routing and removal of existing asphalt cement crack sealant where necessary; blowing out using compressed air and a hot-air lance; and the neat and thorough sealing of the crack with a rubberized asphalt cement product meeting AASHTO specification M301-85 (ASTM D3405-78).

The Engineer shall inspect and approve each step of the crack sealing process before the Contractor is permitted to proceed to the next step. Any crack sealing, which is determined by the Engineer to be substandard or not done in a workmanlike manner shall be removed and redone by the Contractor at no additional compensation. The cost of sealing the cracks on each street to be resurfaced shall be paid for on a per-gallon basis under "Item 423 - Crack Sealing."

ITEM 441 - MEETING EXISTING PAVEMENT

Where an asphalt concrete resurfacing project begins or ends, the surface course shall meet the existing on a neat, straight line. Unless otherwise directed by the plans, the Contractor shall construct a ten- foot (10') long butt joint (see detail).

ITEM 448 - ASPHALT CONCRETE

448.03 Reports and 448.04 Acceptance: Acceptance requirements have been modified in these Special Provisions to adjust for smaller quantity projects and assure each day of paving meets the design criteria of the Job Mix Formulas (JMF). Except as modified in this provision, all other requirements of the ODOT 441 Specification still apply.

Acceptance of all 448 asphalt will be based on the results of extraction and gradation tests performed by the material testing consultant. The testing consultant will obtain four (4) samples for each day of paving in accordance with ODOT Supplement 1035. The consultant will do extraction and gradation tests, in accordance with ODOT Supplements 1038 and 1039, for two (2) of the samples, the other two (2) will be hold samples. A Lot as used in 403.08 will be defined by the total cubic yards of asphalt placed for each specific pay item for each JMF. Acceptance of a Lot will be based on the average of a minimum of four (4) tests. In addition to each Lot, each day of paving will be subject to the tolerance criteria shown in Tables 403.08-1 and 403.08-2.

The Contractor is still required to perform all tests and submit reports per ODOT 441.

ITEM 448 - BROOMING AND CLEANING

The existing surface shall be cleaned and prepared in accordance with Item 401.12. The cost for such work is to be included in the unit price bid for Item 441, Asphalt Concrete.

ITEM 452 - PLAIN CONCRETE PAVEMENT, MISCELLANEOUS: CONCRETE DRIVEWAY APRON

The unit price bid for Item 452 shall include all labor, material, and equipment necessary for the removal and disposal of the existing concrete or asphalt apron, the placement of the new concrete apron, and the restoration of the grass areas adjacent to the apron with topsoil, seed and mulch.

In the event the apron has settled, a stone fill leveling course shall be added to bring the apron back to the grade of the existing sidewalk or curb, and shall be incidental to the apron replacement item.

The finish applied to the concrete aprons shall be a light broom finish. All joints and outside edges of the pavement shall be tooled with an edger or joint tool after brooming or hand finishing of the final finish.

The Contractor shall take great care to protect existing walk and curb not marked for repair. Any walk or curb not marked for repair and damaged by the Contractor, shall be replaced per plans and specifications at the Contractor's expense.

The Contractor must notify the affected residents or businesses in writing at least 24-hours prior to closing driveways. If the residents and businesses have not been notified 24-hours in advance of

the anticipated drive closure, the Contractor will be prohibited from making these closures until such time as the proper advance notification is made.

The maximum time period for driveway closure shall be ninety-six (96) hours. The Contractor shall place new curbs twenty-four (24) hours after curb removal and aprons and walks across the driveway twenty-four (24) hours after the curb is poured.

The Contractor shall keep driveways closed for a forty-eight (48) hour period after concrete placement to permit the curing of concrete curbs, driveway aprons, and sidewalks across driveways.

No concrete removal may take place on a Thursday or Friday unless the Contractor will pour concrete on a Saturday.

It is the Contractor's responsibility to protect the new concrete surface until it cures.

All existing driveway aprons shall be removed and replaced with concrete, unless noted otherwise.

The areas indicated on the plans may not be the final replacement areas and are subject to adjustment in the field by the Engineer.

ITEM 499 - CONCRETE - GENERAL

If the averages of all sets of three consecutive strength test results meet the following strengths, an extended guarantee will be required on all concrete work.

- a) 3500 psi to 3799 psi - 3 year guarantee
- b) 3800 psi to 3999 psi - 2 year guarantee

ITEM 503 - SHEETING AND SHORING

The Contractor shall furnish, put in place, and maintain such piling, sheeting, bracing, etc., as is required by the Industrial Commission and the Department of Industrial Relations, State of Ohio, in their Bulletin No. 1C-3, "Specific Safety Requirements Relating to Building and Construction Work," as revised. The Contractor shall furnish, put in place, and maintain and remove such sheeting, shoring, planking and bracing as may be required to support the sides of the excavations and to prevent any movement which could in any way injure the work, human life, or adjacent structures and property, obstruct surface drainage channels or waterways, or otherwise injure or delay the work. If required at any time by the Engineer, the Contractor shall furnish and install such additional sheeting, shoring and bracing as may be necessary to protect the work, but compliance with such orders or failure on the part of the Engineer to give such orders shall in no case release the Contractor from liability for any damages or injuries caused by weak or insufficient sheeting, shoring and bracing, nor from his responsibility to protect the work or adjacent property.

Except when ordered left in place, all wood sheeting above the top of the pipe, steel sheet piling, braces, shorer, walers or stringers, shall not be withdrawn until the backfill is practically complete. As the backfill progresses to the elevation of a set of walers and braces, such bracing shall be removed. All sheeting and bracing specified, shown on the plans, or directed by the Engineer to be left in place shall not be removed. All sheeting left in place shall be cut off at least two (2) feet below final finish grade. During the removal of sheeting, care must be taken to prevent movement of the sides of the excavation. All voids left by the withdrawal of sheeting shall immediately be carefully refilled by ramming with tools adapted to the purpose, pneumatic or other approved type, or by flushing sand into the voids.

Whenever the Engineer, in writing, orders any type sheeting, shoring, bracing or foundation material left in place, or when so shown on the plans or specified, the Contractor will be paid for the actual amount so left in place at prices stipulated for the applicable items. Sheeting, shoring and bracing left in place by the Contractor for his own convenience will not be paid for under any item.

ITEM 608 - WALKS, CURB RAMPS, AND STEPS

The unit price bid for Item 608 shall include all labor, material, and equipment necessary for the removal and disposal of the existing concrete walk, the placement of the new concrete walk, and the restoration of the grass areas adjacent to the walk with topsoil and seed. The walk shall be five (5) inches in thickness, except in walk areas through the driveway aprons and curb ramps, where the thickness shall be increased to seven (7) inches.

The Engineer shall mark in the field the walk to be replaced under this item. Replacement walk shall match the line and grade of the existing walk and the same joint pattern shall be maintained. Preformed expansion joint material, 1/2-inch thick, shall be placed adjacent to all existing remaining walk or structures. Where integral lug curb is a part of the walk to be repaired, the cost of replacement of the curb shall be included in the price bid for the walk.

Curb ramp construction shall conform to Item 608.07. Curb ramp standard dimensions will be adjusted as required by the Engineer in the field to provide adequate access for handicapped persons in the vicinity of poles or other fixed objects behind the curb. Curb ramps in both new and existing concrete walks will be measured as the number of each complete and shall include the cost of any additional materials, grading, forming and finishing not included in the concrete walk item (separate), which is measured through the curb ramp area.

Curb ramp construction shall conform to Item 608.07. Curb ramp standard dimensions will be adjusted as required by the Engineer in the field to provide adequate access for handicapped persons in the vicinity of poles or other fixed objects behind the curb. Curb ramps in new concrete walk will be measured by the number of each completed curb ramp. Curb ramps in existing walk will be measured by the number of square feet of finished surface completed. Payment shall include the cost for saw cutting, excavation, disposal of material, backfill, base course material, reinforcing steel, expansion joint material, grading, forming, all materials, finishing of the curb and walk of the ramp, restoration, installation of the truncated domes, detectable warning inserts, and incidentals necessary to complete the specified items.

It is the Contractor's responsibility to protect the new surface until it cures.

ITEMS 608 / 452 - SIDEWALK AND/OR DRIVE APRON FINISH

The finish applied to the Portland Cement concrete surface used as a sidewalk or driveway apron shall be a broom finish. All joints and outside edges of the pavement shall be tooled with an edger or joint tool after brooming the final finish. Final finish, joints, and edges shall be subject to the approval of the Engineer.

It is the Contractor's responsibility to protect the new surface until it cures.

ITEM 608 - SIDEWALK WITH INTEGRAL CURB

The spacing of Contraction joints for the curb shall be five (5) feet to match walk joint spacing. Expansion joints shall be constructed on a maximum spacing of forty (40) feet.

It is the Contractor's responsibility to protect the new surface until it cures.

ITEM 609 - CURBING, CONCRETE MEDIANS, AND TRAFFIC ISLANDS

The unit price bid for Item 609 shall include all labor, equipment and material necessary to saw cut, remove and dispose of existing curb, construct the replacement curb, and restore the adjacent grass areas with topsoil, seeding, and mulching. The replacement curb shall, in general, match the existing curb as to line and grade, except where there are existing drainage problems. The Contractor shall grade the new curb to drain in conformance with the drainage patterns of the street.

It is the Contractor's responsibility to protect the new surface until it cures.

Existing Contraction joint pattern in the curb shall be maintained, but the maximum spacing between Contraction joints shall be ten (10) feet. Expansion joints shall be constructed on a maximum spacing of forty (40) feet. Where replacement curb begins or ends at an existing expansion joint, the Contractor shall install new expansion joint material, the cost of which is to be included in the unit price bid for the curb replacement. Finish of the replacement curb shall be a light brush finish.

Unless otherwise directed by the Engineer, where curb is to be replaced at driveway locations the Contractor shall construct the curb so as to facilitate ingress and egress of vehicles and to match the grade of the existing drive. If required, the Contractor shall construct the portion of the curb through the drive entrance as a drop curb with transition areas on each side of the driveway approach. The Contractor shall note that the concrete curb details, as shown on the plans, may be modified by the Engineer in the field in order to properly match the various dimensions of the existing curb, which is to be removed.

Existing downspout leaders outletting at the curb shall be replaced as per the detail, "Downspout Extension detail". The cost for the labor and material necessary to replace the downspout leader shall be incidental to the pertinent curb replacement item for each downspout replaced three (3) feet in length. Topsoil and seeding shall be incidental costs. If more than three (3) feet of downspout needs to be replaced to obtain positive slope, the additional work shall be paid on a per foot basis in bid item 611, 3" PVC pipe SCH 40. However, all new downspout pipe shall be installed with as few joints as possible, regardless of how payment is made. Any necessary vertical or horizontal bends shall be included and paid for on the above basis.

ITEM 611 - SLOPE AND CHANNEL PROTECTION

Item 601 is provided in the plans for erosion control. Rock or turf of a stable nature will not be removed in order to place any of these items. The Engineer shall check and non-perform quantities or adjust locations and quantities for this item as warranted by field conditions during construction.

ITEM 611 - REVIEW OF DRAINAGE FACILITIES

Before any work is started on the project and again before final acceptance by the Owner, the Contractor, with the Engineer, shall make an inspection of the existing sewers within the work limits, which are to remain in service and which may be affected by the work. The condition of the existing conduits and their appurtenances shall be determined from field observations. Written records of the inspection and/or photographic documentation shall be kept by the Engineer.

All existing sewers inspected initially by the above-mentioned parties shall be maintained and left in a condition reasonably comparable to that determined by the original inspection. Any change in the condition resulting from the Contractor's operations shall be corrected by the Contractor to the satisfaction of the Engineer. All existing and/or new conduits, inlets, catch basins, and manholes constructed and/or cleaned as a part of the project shall be free of all foreign matter and in a clean condition before the project will be accepted by the Owner. Payment for all operations described above shall be included in the unit prices bid for the pertinent item.

ITEM 611 - RESTORATION OF AREAS DISTURBED BY DRAINAGE FACILITIES

Soil areas disturbed by installation of new underdrains, trench drains, conduits, catch basins or other drainage features shall be regraded to drain properly and then restored with topsoil, seeding and mulching. The cost of these soil areas is to be included in the unit price bid for the pertinent drainage feature.

If new pavement, walks, drives, curbs, etc. **are shown** to be constructed at the location of the drainage feature, the cost for the repairs/replacement of the affected pavement, walks, drive, curbs, etc. shall be paid for at the unit price for the pertinent new pavement, walks, drives, curbs, etc. item.

If new pavement, walks, drives, curbs, etc. **are not shown** to be constructed at the location of the drainage feature, the cost for the repairs/replacement of the affected pavement, walks, drives, curbs, etc. shall be incidental to the associated drainage feature unit cost.

ITEM 611 - TRENCH FOR SEWER CONSTRUCTION

Trench excavation for sewer construction shall be adequately maintained and protected with barricades at all times.

Placement of proposed sewer pipe and backfill material shall follow as closely as possible behind excavation operations. The length of sewer trench, which is open at any one time, shall be held to a minimum and shall, at all times, be subject to the approval of the Engineer.

ITEM 611 - PIPE CUT-OFFS

When bell-and-spigot pipe is used, any necessary pipe cut-offs shall be made at the spigot end of the length of pipe adjacent to the end length. When tongue-and-groove pipe is used, the length of pipe next to the end length shall be cut and a butt joint formed with a collar as detailed in Standard ODOT Drawing DM-1.1.

ITEM 611 - CONDUIT END TREATMENT

Immediately after placement of any conduits, the Contractor shall construct the end treatments required by the plans at both the outlet and inlet ends. This shall include headwalls, concrete riprap, rock channel protection, sodding, etc. The cost of the necessary reconstruction and/or regrading of swales or disturbed areas at the inlets and outfalls of all proposed conduits shall be included in the price bid for the pertinent conduit and inlet items.

ITEM 611 - MANHOLES, CATCH BASINS AND INLETS

All castings for manholes, catch basins and inlets shall conform to those specified in the standard construction drawings. Grated inlet tops shall be placed as specified on the plans. Tops of casting elevations are subject to final adjustments as approved by the Engineer. All castings used shall be subject to the final approval of the Engineer.

The unit price for Item 611, "Sanitary Manholes Adjusted to Grade with Rings," shall include the cost of picking up said rings at the Metropolitan Sewer District Storage Yard at 225 West Galbraith Road, hauling said rings to the site and installing said rings at the required locations. The Contractor shall contact the Division of Sewer Maintenance, Metropolitan Sewer District, to arrange for the furnishing of the required rings.

ITEM 611 - INLET / CATCH BASIN RECONSTRUCTION

The Contractor shall remove and clean the existing castings, remove the existing concrete slab tops, and remove the existing walls down to any point of cracking or wall failure, as directed by the Engineer. The Contractor will then rebuild the walls using brick and mortar, set castings, and/or concrete slab tops at the proper final grade. Castings and concrete slab tops will be inspected by the Engineer to determine their suitability for re-use. As directed by the Engineer, broken or deteriorated castings and/or concrete slab tops shall be replaced during the catch basin reconstruction work.

All catch basins designated as CB-3 or CB-3A are similar but not necessarily exactly equal to current ODOT Standards. Contractor to verify prior to ordering any parts.

Existing frames, grates and hoods are to be reused on the rebuilt catch basins unless noted otherwise, or as directed by the Engineer.

Any conduit necessary for the relocation and construction of inlets / catch basins shall be incidental to the pertinent item.

Payment for "Item 611, Catch Basin Reconstructed to Grade," "Inlet Reconstructed to Grade" shall include all labor, equipment and materials necessary to remove inlet / catch basin tops, rebuild walls, and reset castings and/or concrete slab tops on a per-unit basis, including, but not limited to pavement repair, curb replacement, etc.

Payment for providing new castings shall be on a per-unit basis under "Item 611, Frame and Grate."

Payment for providing new concrete slab tops shall be on a per-unit basis under "Item 611, New Concrete Slab Top."

ITEM 611 - CATCH BASIN ADJUSTMENT

Payment for "Item 611, Catch Basin Adjusted to Grade," shall include all labor, equipment and materials necessary to raise catch basin frame and grate with brick and mortar to proper elevation when roadway is resurfaced.

ITEM 611 - CONCRETE BLOCKOUTS

The unit price bid for "Item 611, Concrete Blockout at Double Gutter Inlet" or "Item 611, Concrete Blockout at Single Gutter Inlet," shall include the cost of all labor, material and equipment required to carefully remove the existing concrete blockout from the inlet; replace and/or place dowel bars, expansion joint material and other items as required; and construct a new concrete blockout. All work performed under this item shall be in compliance with ODOT Standard Drawings CB-3 or CB-3A, whichever is applicable.

The Contractor shall conduct all of his operations under this item so as to ensure that no damage is done to the existing catch basin, grate, etc. Rectification of any damage done to the catch basin by the Contractor's operations will be the responsibility of the Contractor.

ITEMS 611 - REMOVAL OF EXISTING PIPE AND HEADWALLS

Where proposed conduit and/or catch basin construction requires the removal of existing pipe and/or headwalls, the removal of same shall be included in the respective unit prices bid for Items 611 and 611. Where existing conduit, headwalls, and/or other facilities are to be removed and no proposed drainage facilities are to be constructed, the cost of the necessary removals shall be included in either the removal item, if specified, or in the pertinent excavation item.

ITEM 614 - MAINTAINING TRAFFIC

The Contractor shall maintain traffic through the project at all times in conformance with Item 614.

During the removal of the asphalt wearing course, the repair of the base pavement and/or the construction of the asphalt courses for the roadway, the Contractor will be permitted to close one lane of pavement while maintaining traffic in the other lane on an alternating flow basis. The Contractor will be held strictly to the flagging requirements listed under Item 614.08.

- A. Specific attention will be directed toward the proper use of flaggers, lights, drums, and temporary pavement markings. In general, the Contractor shall utilize ODOT Standard Construction Drawing MT-97.11 for flagging operation. The Contractor shall furnish, effect and maintain all necessary signs and provide temporary striping. The contractor shall also provide all plating, temporary pavement and pavement control measures necessary. The cost

of all temporary traffic control items necessary to maintain traffic shall be included with payment for Item 614-Maintaining Traffic. The closing of the lane to traffic will be permitted during the above operations and for the periods of time consistent with the requirements of the specifications for the protection of the completed asphalt concrete courses.

- B. The Contractor shall give written notice to residents two (2) working days prior to commencing work which will temporarily restrict access.
- C. The cost for all material and labor to place, maintain, and remove all items necessary for maintaining traffic (including for emergency purposes) shall be included in for Item 614-Maintaining Traffic.

Maintenance of traffic shall be ongoing throughout the duration of the project, including all periods of inactivity by the Contractor, until final acceptance of the project.

If, at the completion of the normal working day, any trench for pavement construction and/or construction of proposed sewer has not been completely backfilled and restored, a temporary cover, such as a metal plate or another approved device, shall be placed over that portion of the trench remaining open.

The Contractor shall notify the residents and businesses at least 24 hours in advance of when their drives will be blocked during construction. In those areas where existing pavement is to be resurfaced or removed and replaced, the Contractor shall conduct his operations so as to maintain driveway traffic through the construction area. If two approved access points serve the same parking area, and traffic flow permits, the Contractor will be permitted to close one access at a time. The Contractor will be permitted to close paved areas to traffic for a minimum period of time, consistent with the requirements of the specifications for the protection of completed asphalt concrete courses. If business property is involved, an alternate access must be provided if blockage exceeds one (1) hour. Repeated blocking must allow at least a 15-minute interval of traffic access every hour. Length of residential driveway closures shall be kept to a minimum.

The Contractor shall note that any interim material used for providing driveway ingress and egress will not be a separate pay item, and the cost of said interim material shall be included in the lump sum price bid for Item 614.

MAINTENANCE OF TRAFFIC NOTES

The Contractor must maintain interrupted two-way traffic at all times. The only exception to maintaining interrupted two-way traffic at all times is during the application of the Stress-Absorbing Membrane Interlayer and Asphalt Surface Course. A closure on the cul-de-sac streets will be permitted at such time duration is appropriate to protect both the Stress-Absorbing Membrane Interlayer and the Asphalt Surface Course.

Since these are residential streets, no work shall take place at night. These restricted hours are 10:00 PM to 7:00 AM, Monday through Friday; no work will take place on Saturday, Sunday, and legal holidays.

The Contractor shall be aware that the application of the Stress-Absorbing Membrane Interlayer (SAMI) and the Asphalt Surface Course will not be permitted the day before or the day of trash collection. In addition, the Contractor shall, within 5 working days of the scheduled Stress-Absorbing Membrane Interlayer and the Asphalt Surface Course application, give written notification to the trash collector (Rumpke) of the Contractor's intended schedule for the application(s). The normal trash collection schedule for this area is the Friday of each week, see attached Curbside Collection Route map; however, the Contractor shall verify the trash collection date, five (5) working days in advance of the Stress-Absorbing Membrane Interlayer (SAMI) and the Asphalt Surface Course application(s).

Two (2) working days advance notice shall be given to the City of Springdale Public Works Department and Police Department prior to any lane closures in this vicinity.

ITEM 644 - PAVEMENT MARKING

The unit price bid for Item 644 shall include the layout for the work to be performed.

The contractor shall pre-mark all pavement markings with the City Inspector reviewing and approving the pre-marking, before the final pavement markings are applied.

The pavement markings shall be applied to the asphalt pavement a minimum of 72 hours after the asphalt rejuvenating agent, has been applied to the asphalt surface.

ITEM 659 - SEEDING AND MULCHING

A Class1 – lawn mixture shall be used for the areas that need to be restored with seed and mulch.

Cost for this work shall be incidental to the project.

ITEM 659 - COMMERCIAL FERTILIZING

All areas to be seeded and mulched under Item 659 shall have commercial fertilizer (12-12-12) applied to the rate of 20 pounds per 1000 square feet, the cost of which shall be incidental to the Contract.

Cost for this work shall be incidental to the project.

ITEM SPECIAL

STRESS-ABSORBING MEMBRANE INTERLAYER (SAMI SYSTEM)

1.0 DESCRIPTION

The work covered under this provision consists of furnishing all materials, equipment, labor, and preparation necessary for the application of a Stress-Absorbing Membrane Interlayer (SAMI). The applied materials shall completely seal the entire pavement surface and provide a uniform textured surface, suitable for the placement of hot mixed asphalt overlays, micro-surfacing or slurry surfacing overlays.

2.0 MATERIALS

POLYMER MODIFIED BITUMINOUS EMULSION BINDER

EMULSION PROPERTY METHOD	<u>MINIMUM</u>	<u>MAXIMUM</u>	<u>TEST</u>
SF VISCOSITY, 50 C (sec)	50	400	ASTM D 244
PERCENT SOLIDS (%)*	70		ASTM D 244
STORAGE STABILITY, 24 hrs (%)		1.0	ASTM D 244
SIEVE TEST, #20 mesh (%)		0.1	ASTM D 244

RESIDUE PROPERTY METHOD	<u>MINIMUM</u>	<u>MAXIMUM</u>	<u>TEST</u>
PENETRATION, 100g, 5 sec, 25 C (dmm)	70	100	ASTM D 5
SOFTENING POINT, RING & BALL (C)	65		ASTM D 36
ELASTIC RECOVERY, 4C, 10CM (%)**	70	1.0	ASTM D 6084
FORCE DUCTILITY, 4C, 40cm***		0.1	ASTM D 113 ¹

¹Modified

** The specimen is extended 10 cm. The extended area is severed immediately in the middle using a pair of shears. After one hour at the test temperature, the severed ends are returned to contact and the ductilometer reading is made again. The sample must recover at least 70 percent of the original 10 cm distance.

*** ASTM D 113 as modified by the addition of a load cell to the standard ductility test apparatus. The load cell is calibrated in pounds per square centimeter. Reading is measured at 40 cm. Reading is multiplied by 6.45 to yield pounds per square inch force required to extend the test specimen.

The asphalt modifier shall be a thermoplastic elastomer type polymer. The modifier shall be added to the asphalt cement prior to the emulsification process.

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AGGREGATECape Seal Light: Utilize #9 AggregateCape Seal Standard: Utilize #8 Aggregate

The surface cover aggregate shall be 100% crushed material from quarried stone, natural gravel, or other high quality aggregate and meet the following requirements.

PHYSICAL REQUIREMENTS

<u>TEST</u>	<u>DESCRIPTION SPECIFICATION</u>	
AASHTO T96 (ASTM C 131)	L.A. Abrasion Test	40% max
ASTM C 142	Deleterious Materials	1.0 max
ASTM D 5821	Crushed pieces	100%
AASHTO T104 (ASTM C 88)	Sodium sulfate soundness test, 5 cycle	15

GRADING REQUIREMENTS

ASTM C 117

<u>SIEVE SIZE</u>		<u>TYPE I</u>	<u>TYPE II</u>
1 inch	(25 mm)	100	100
3/4 inch	(19 mm)	100	90-100
1/2 inch	(12.5 mm)	95-100	20-50
No. 4	(4.75 mm)	5-25	0-10
No. 8	(2.36 mm)	0-10	0-5
No. 200	(75 um)	2	2

STORAGE OF MATERIALS

Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work.

STOCKPILES

Stockpiling and loading methods shall be such as to permit ready identification of the aggregate materials and to minimize segregation. Sites for stockpiles shall be clean prior to storing materials. Material shall not be removed from stockpiles within one foot of the ground until final clean-up of the worksite. Materials shall be handled in a manner such that moisture content shall be reasonable minimized and uniform for each day's run.

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3.0 EQUIPMENT

Equipment shall be safe, environmentally acceptable, and capable of producing a consistent quality product.

PRESSURIZED DISTRIBUTOR APPLICATOR

The pressurized distributor shall have a computerized rate control that automatically adjusts the distributor's pump to the ground speed. The distributor shall be capable of heating and re-circulating the bituminous binder to the specified temperature. A number of nozzles shall be spaced longitudinally along the variable width spray bar for uniformly applying the bituminous material and shall include a means of controlling the operation of the nozzles.

Interchangeable nozzles and sizes shall be used for the material and rate specified and shall be properly positioned and bar height adjusted so as to provide an overlapping pattern and a uniform rate of application across the desired pavement coverage width without ridges or streaking.

The unit shall include:

- A digital speed/application readout that operates continuously and is located in the operator's view.
- A bitumen application system capable of maintaining the specified application rate with +/- 0.02 gal/sq. yd.

AGGREGATE SPREADER

The Aggregate material spreader shall be a variable width, self-propelled unit equipped so as to deliver a uniform distribution of aggregate particles across the desired pavement surface without ridges or laps at the specified rate. The aggregate spreader unit shall include:

- A ground speed control device interconnected with the aggregate applicator so as to provide a computerized application rate control of the aggregate that adjusts to the travel speed.
- A variable width application box which is adjustable to maintain a uniform application rate of aggregate to cover exposed emulsion without ridges or laps.
- Capability to apply aggregate at an application rate range of 10 to 50 lbs/sq. yd.

COMPACTING EQUIPMENT

Self-propelled pneumatic-tired roller(s), etc. shall be provided. All equipment used on the roadway shall be equipped with at least one approved flashing, rotating or oscillating amber light visible from all sides. All material storage tanks and material handling units shall be capable of heating and storing materials such as to not cause damage to the emulsion.

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MISCELLANEOUS

All equipment including hand tools, thermometers, etc., shall be provided. All equipment used on the roadway shall be equipped with at least one approved flashing, rotating or oscillating amber light visible from all sides. All material storage tanks and material handling units shall be capable of heating and storing materials such as to not cause damage to the emulsion.

4.0 CONTRACTOR QUALIFICATION AND SUBMITTAL REQUIREMENTS

To be considered for an award on this item of work, the Contractor shall submit to the Engineer, within ten (10) calendar days of the bid opening, evidence that demonstrates the ability to comply with all specifications and meet the experience requirements as stated.

Contractor is pre-qualified within the state, has operated under the same company for a minimum of two (2) years and has experience in performing the specified work in compliance with these specifications.

Contractor has performed with acceptable results a minimum of three (3) projects of equal or greater size and of similar complexity. Mix designs, quality control test reports, customer contacts, and project scope of work shall be submitted for each project.

Certification signed by the Contractor stating that all equipment used in the performance of the item of work is owned and maintained by the contractor and meets specifications for operation and safety. Included shall be a listing of all equipment proposed for the specified work.

Contractor shall provide a list of all key personnel employed by the Contractor that will have management authority, duties or responsibilities for this item of work.

Contractor shall provide a list of all proposed material sources and corresponding test reports that demonstrate compliance with the specifications.

Contractor shall provide a Safety Plan acceptable to the Engineer.

Engineer shall provide a Quality Control Plan acceptable to the Engineer.

5.0 PRE-PAVING ON SITE MEETING

A meeting between the Contractor and Engineer will be held at the project site prior to beginning work. The agenda for this meeting will include:

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- Review of Contractor's detailed work schedule
- Review of Traffic Control Plan.
- Inspection of equipment
- Calibration and adjustments to equipment

6.0 WEATHER LIMITATION

The stress absorbing membrane may be placed when the pavement and atmosphere temperature is 10° C (50° F) or above. Placement is not permitted if it is raining, the chance of rain is imminent or when the pavement surface condition is wet or when impending weather conditions are such that proper curing may not be obtained.

7.0 CONSTRUCTION

The Contractor shall follow the construction methods as described.

1. The Contractor shall establish stations, at 1000 feet intervals on the entire project, prior to placing the stress absorbing membrane. The stations shall be maintained until project completion.
2. The surface shall be thoroughly cleaned by the Contractor and shall be dry when the bituminous binder is applied. Material cleaned from the surface shall be removed and disposed of as directed by the Engineer. Removal of mud, clay, and other fine silts shall be accomplished by high pressure water.
3. Bituminous emulsion shall be heated to a temperature within the specified range and applied using an approved pressurized distributor and at a uniform and consistent rate as approved for the design of the project surface to be treated.
4. The specified aggregate shall be spread uniformly onto the bituminous binder within 120 seconds of the bituminous spray.
5. Projects greater than 12,000 Square yards in area require a minimum of two rollers to be used. Rollers shall proceed at a maximum speed of 5 MPH. The entire surface shall receive a minimum of two roller passes. The first roller pass shall be performed within one minute of aggregate spread.

8. APPLICATION OF MATERIALS**BITUMINOUS BINDER**

The bituminous binder shall be heater to the specified temperature and uniformly placed to prevent ridges or streaks in the surface.

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The bituminous binder shall be applied at a temperature of 150° F - 190° f, and at the rate specified +/- 0.02 gal/sq. yd. The supplier of the polymer modified asphalt emulsion binder is to design the application rate of the cover material and binder in relation to the surface condition to be treated. This rate shall be approved by the Engineer prior to use.

MATERIAL APPLICATION RATES

Cape Seal Light: Application rate 0.30 gal/SY +/- 0.05

Cape Seal Standard: Application rate 0.40 – 0.50 gal/SY

AGGREGATE APPLICATION RATE – shall be as determined by the supplier of polymer modified asphalt emulsion binder and project design and shall produce a completed surface with no exposed binder.

The supplier of SAMI emulsion shall determine any variances needed in the application rate for emulsion and aggregate, based on the pavement condition, aggregate type, and aggregate size. This information shall be reported to the Engineer prior to beginning work and shall include an aggregate gradation on the job specific materials.

9.0 QUALITY CONTROL

The Contractor to measure compliance shall use the methods described in this section.

- Aggregate Gradation
- Aggregate Moisture Content
- Yield check on Bituminous Binder
- Temperature Check on Bituminous Binder

If the Contractor's test results exceed any of the identified quality control tolerances, the Engineer shall be immediately notified. The Engineer will review explanation and the corrective action taken by the Contractor. Another test will be taken and if the test results still exceed the quality control tolerance, placement shall STOP. The Contractor shall immediately notify the Engineer, and identify the cause of the excessive deviation and detail corrective action necessary to bring the deficiency into compliance. The Engineer will give approval prior to resumption of work.

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10.0 DOCUMENTATION

The Contractor shall provide the Engineer a daily report with the following information:

- Control Section/Project number/County/Route
- Date/Air Temperature/Pavement Temperature
- Bituminous Binder Temperature (3 per day)
- Station Location per Test
- Beginning and Ending Stations
- Yield Check on Bituminous Binder (3 per day)
- Aggregate Gradation and Moisture (3 per day)
- Length/Width/Total Area

Other required documentation shall include:

- To be provided as requested or at project completion
- Bill of Lading on aggregate and bituminous binder

11.0 ACCEPTANCE

The Contractor shall inspect the completed Stress Absorbing Membrane during the application process for any deficiencies. The deficiencies will be limited to surface flushing, surface patterns, and loss of stone retention.

Workmanship shall be inspected for the following:

- Untreated areas (missed)
- No overlap on longitudinal joints
- No overlap on construction joints

All corrective work shall be accomplished prior to resurfacing with bituminous materials, or within 24 hours. The Contractor shall furnish materials, equipment, and labor to make corrections at no additional cost to the contract. The Engineer shall give final approval on inspection and corrective work.

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12.0 MEASUREME4NT AND PAYMENT

The completed work as measured will be paid for at the contract unit price for the following contract items:

<u>PAY ITEM</u>	<u>PAY UNIT</u>
Stress Absorbing Membrane Type I	Square Yard
Stress Absorbing Membrane Type II	Square Yard

Payment for Stress Absorbing Membrane includes all materials, equipment, labor, and preparation, final clean-up, and related incidentals.

ITEM SPECIAL – ASPHALT REJUVENATING AGENT

ASPHALT REJUVENATING AGENT

I. Scope

This work shall consist of furnishing all labor, material, and equipment necessary to perform all operations for the application of an asphalt rejuvenating agent to asphaltic concrete surface courses. The rejuvenation of surface courses shall be spray application of a cationic rejuvenating agent composed of petroleum oils and resins emulsified with water. All work shall be in accordance with the specifications, the applicable drawings, and subject to the terms and conditions of this Contract.

II. Material Specifications

The asphalt rejuvenating agent shall be an emulsion composed of a petroleum resin oil base uniformly emulsified with water. Each bidder must submit a certified statement from the asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the required physical and chemical requirements.

ITEM SPECIAL - ASPHALT REJUVENATING AGENT

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SPECIFICATIONS

TESTS	TEST METHOD		REQUIREMENTS	
	ASTM	AASHTO	MIN.	MAX.
Tests on Emulsion:				
Viscosity @ 25°C, SFS	D-244	T-59	15	40
Residue, % W ¹	D-244 (Mod.)	T-59 (Mod.)	60	65
Miscibility Test ²	D-244 (Mod.)	T-59 (Mod.)	No Coagulation	
Sieve Test, % W ³	D-244 (Mod.)	T-59 (Mod.)	-	0.1
Particle Charge Test	D-244	T-59	Positive	
Percent Light Transmittance ⁴	GB	GB	-	30
Tests on Residue from Distillation:				
Flash Point, COC, °C	D-92	T-48	196	-
Viscosity @ 60°C, cSt	D-445	-	100	200
Asphaltenes, % w	D-2006-70	-	0.4	0.75
Maltene Dist. Ratio	D-2006-70	-	0.3	0.6
$\frac{PC + A_1}{S + A_2}^5$				
PC/S Ratio ⁵	D-2006-70	-	0.5	-
Saturated Hydrocarbons, S ⁵	D-2006-70	-	21	28

-
- 1 ASTM D-244 Modified Evaporation Test for Percent of Residue is made by heating 50 gram sample to 149 C (300 F) until foaming ceases, then cool immediately and calculate results.
 - 2 Test procedure identical with ASTM D-244-60, except that .02 Normal Calcium Chloride Solution shall be used in place of distilled water.
 - 3 Test procedure identical with ASTM D-244, except that distilled water shall be used in place of two percent sodium oleate solution.
 - 4 Test procedure is attached.
 - 5 Chemical composition by ASTM Method D-2006-70:

PC = Polar Compounds

A₁ = First AcidaffinsA₂ = Second Acidaffins

S = Saturated Hydrocarbons

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III. Performance

The rejuvenating agent shall have a record of at least five years of satisfactory service as an asphalt rejuvenating agent and in-depth sealer. Satisfactory service shall be based on the capability of the material to decrease the viscosity and increase the penetration value of the asphalt binder as follows: The viscosity shall be reduced by a minimum of 45 percent and the penetration value shall be increased by a minimum of 25 percent. Testing shall be performed on extracted asphalt cement from a pavement to a depth of three eighths inch (3/8"). In addition, the pavement shall be in-depth sealed to the intrusion of air and water.

The Bidder must submit with his bid the manufacturer's certification that the material proposed for use is in compliance with the specified requirements. The bidder must submit with his bid previous use documentation and test data conclusively demonstrating that the rejuvenating agent has been used successfully for a period of five years by government agencies such as cities, counties, etc. and that the asphalt rejuvenating agent has been proven to perform, as heretofore required, through field testing by government agencies as to the required change in the asphalt binder viscosity and penetration number. Testing data shall be submitted indicating such product performance on a sufficient number of projects, each being tested do a minimum period of three years to insure reasonable longevity of the treatment, as well as produce consistency. RECLAMITE®, manufactured by Golden Bear Oil Corporation, is a product of know quality and accepted performance.

IV. Product Standards and Alternates

The product, RECLAMITE® for the asphalt rejuvenating agent as manufactured by Witco Corporation, is the standard for these specifications and the prices quoted on the bid sheet base bid shall be for this standard.

Bidders may offer an alternate for the standard specified in the specifications provided the Bidder adheres to the following and submits same with the bid:

- a. List the proposed alternate on the bid sheet form giving the product name and price.
- b. Furnish complete specifications and descriptive literature for the alternate as well as a one-gallon sample of the material proposed for use. Such descriptive and detailed information shall be complete and at least equal in detail to the City's requirements for the standard item for which the alternate is offered.
- c. Submit a current Material Safety Data Sheet for the alternative materials.

ITEM SPECIAL - ASPHALT REJUVENATING AGENT

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The alternate will be given consideration by the City. The Contractor may furnish only those alternate items included in his proposal and approved by the City prior to award of the contract.

If no alternate is indicated on the bid sheet, the contractor shall furnish the standard (brand) specified in the attached specifications.

V. Application Temperature / Weather Limitations

The temperature of the asphalt rejuvenating emulsion at the time of application shall be as recommended by the manufacturer. The asphalt rejuvenating agent shall be applied only when the existing surface to be treated is thoroughly dry and when it is not threatening to rain. The asphalt rejuvenating agent shall not be applied when the ambient temperature is below 40° F.

VI. Application Experience

The asphalt rejuvenating agent shall be applied by an experienced applicator of such material. The Bidder shall have a minimum of three years' experience in applying the product proposed for use. He must submit with his bid a list of five projects on which he applied said rejuvenator. He shall indicate the project dates, number of square yards treated in each and the name and phone number of the government official in charge of each project.

A project superintendent, knowledgeable and experienced in application of the asphalt rejuvenating agent, must be in control of each day's work. The Bidder shall submit a written experience outline of the project superintendent.

VII. Handling of Asphalt Rejuvenating Agent

Contents in tank cars or storage tanks shall be circulated at least forty-five minutes before withdrawing any material for application. When loading the distributor, the asphalt rejuvenating agent concentrate shall be loaded first and then the required amount of water shall be added. The water shall be added into the distributor with enough force to cause agitation and thorough mixing of the two materials. To prevent foaming, the discharge end of the water hose or pipe shall be kept below the surface of the material in the distributor which shall be used as a spreader. The distributor truck will be cleaned of all of its asphalt materials and washed out to the extent that no discoloration of the emulsion may be perceptible. Cleanliness of the spreading equipment shall be subject to the approval and satisfaction of the Engineer.

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VIII. Applying Equipment

The distributor for spreading the emulsion shall be self-propelled and shall have pneumatic tires. The distributor shall be designed and equipped to distribute the asphalt rejuvenating agent uniformly on variable widths of surface at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard of surface and with an allowable variation from any specified rate not to exceed five (5) percent of the specified rate.

Distributor equipment shall include full circulation spray bars, pump tachometer, volume measuring device and a hand hose attachment suitable for application of the emulsion manually to cover areas inaccessible to the distributor. The distributor shall be equipped to circulate and agitate the emulsion within the tank.

A check of distributor equipment, as well as application rate accuracy and uniformity of distribution, shall be made when directed by the Engineer.

The truck used for sanding shall be equipped with a spreader that allows the sand to be uniformly distributed onto the pavement. The spreader shall be able to apply 1/2 pound to three (3) pounds of sand per square yard in a single pass. The spreader shall be adjustable so as not to broadcast sand onto driveways or treelawns.

The sand to be used shall be free flowing, without any leaves, dirt, stones, etc. Any wet sand shall be rejected from the job site.

Any equipment which is not maintained in full working order, or is proven inadequate to obtain the results prescribed, shall be repaired or replaced at the direction of the Engineer.

IX. Resident Notification

The Contractor shall distribute by hand, a typed notice to all residences and businesses on the street to be treated. The notice will be delivered no more than 24 hours prior to the treatment of the road. The notice will have a local phone number that residents may call to ask questions. The notice shall be of the door hanger type which secures to the door handle of each dwelling. Unsecured notices will not be allowed. The Contractor shall also place the notice on the windshield of any parked cars on the street. Hand distribution of this notice will be considered incidental to the contract.

X. Application of Rejuvenating Agent

The temperature of the asphalt rejuvenating emulsion, at the time of application, shall be as recommended by the manufacturer. The asphalt rejuvenating agent shall be applied only when the existing surface to be treated is thoroughly dry. Additionally, application of the asphalt rejuvenating agent shall be prohibited when weather forecasts indicate a chance of a rain event in the work area, which would produce in excess of 0.10 inches of rain within four hours of the application of the asphalt agent. The asphalt rejuvenating agent shall not be applied when the ambient temperature is below 40°F (40 degrees Fahrenheit). The asphalt rejuvenating agent shall

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be applied by a distributor truck at the temperature recommended by the manufacturer and at the pressure required for the proper distribution. The emulsion shall be so applied that uniform distribution is obtained at all points of the areas to be treated. Distribution shall be commenced with a running start to insure full rate of spread over the entire area to be treated. Areas inadvertently missed shall receive additional treatment as may be required by hand sprayer application.

Application of asphalt rejuvenating agent shall be on one-half width of the pavement at a time. When the second half of the surface is treated, the distributor nozzle nearest the center of the road shall overlap the previous application by at least one-half the width of the nozzle spray. In any event, the centerline construction joint of the pavement shall be treated in both application passes of the distributor truck.

Before spreading, the asphalt rejuvenating agent shall be blended with water at the rate of two (2) parts rejuvenating agent to one (1) part water, by volume or as specified by the manufacturer. The combined mixture of asphalt rejuvenating agent and water shall be spread at the rate of 0.05 to 0.10 gallons per square yard, or as approved by the Engineer following field testing.

The Contractor, in the presence of the Engineer or his authorized representative, shall mark off two areas of pavement surface on the street equal to one square yard each. The rejuvenating agent shall be applied accurately to said test areas at the rate of 0.04 and 0.08 gallons per square yard respectively. The method of application shall be approved by the Engineer. The results of these tests shall determine the rate of application required on each street. The results of the tests shall be reported to the Engineer prior to application.

Where more than one application is to be made, succeeding applications shall be made as soon as penetration of the preceding application has been completed and approval is granted for additional applications by the Engineer.

Grades or super elevations of surfaces that may cause excessive runoff, in the opinion of the Engineer, shall have the required amounts applied in two or more applications as directed.

After the street has been treated, the area within one foot of the curb line on both sides of the road shall receive an additional treatment of the asphalt rejuvenating emulsion uniformly applied at 1/2 the established rate, using a hand spray hose.

After the rejuvenating emulsion has penetrated, a coating of dry sand shall be applied to the surface in sufficient amount to protect the traveling public, as required by the Engineer.

The Contractor shall furnish a quality inspection report, showing the source, manufacturer, and the date shipped, for each load of asphalt rejuvenating agent. When directed by the Engineer, the Contractor shall take representative samples of material for testing.

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XI. Street Sweeping

The Contractor shall be responsible for sweeping and cleaning of the streets prior to and after treatment.

Prior to treatment, the street will be cleaned of all standing water, dirt, leaves, and foreign materials by using a power broom.

All sand used during the treatment must be removed no later than 48 hours after treatment of the street. This shall be accomplished by a combination of hand and mechanical sweeping. All turnouts, cul-de-sacs, etc., must be cleaned of any material to the satisfaction of the Engineer. Street sweeping will be included in the price bid per square yard for asphalt rejuvenating agent.

If, after sand is swept and in the opinion of the Engineer a hazardous condition exists on the roadway, the Contractor must apply additional sand and sweep same no later than 24 hours following reapplication. No additional compensation will be allowed for reapplications and removal of sand.

XII. Traffic Control

The Contractor shall schedule his operations and carry out the work in a manner to cause the least disturbance and/or interference with the normal flow of traffic over the areas to be treated. Treated portions of the pavement surfaces shall be kept closed and free from traffic until penetration, in the opinion of the Engineer, has become complete and the area is suitable for traffic.

When, in the opinion of the Engineer, traffic must be maintained at all times on a particular street, then the Contractor shall apply asphalt rejuvenating agent to one lane at a time. Traffic shall be maintained in the untreated lane until the traffic may be switched to the completed lane.

The Contractor shall be responsible for all traffic control and signing required to permit safe travel. The Contractor shall notify the police and fire departments as to the streets that are to be treated each day. The signage shall include traffic signs that warn traffic of the case sand.

If, in the opinion of the Engineer, proper signing is not being used, the Contractor shall stop all operations until safe signing and barricading is achieved.

XIII. Basis for Payment

The accepted quantities, measured as provided for above, will be paid for at the contract unit price for asphalt rejuvenating agent.

Asphalt rejuvenating agent shall be paid for PER SQUARE YARD, which shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified and required.

ELECTRIC UTILITY NOTES

DUKE ENERGY

1. **DANGER** - Contractor shall contact the company prior to excavation in vicinity of electric underground facilities (approximate plan location shown) or when working near overhead electric facilities.
 - (A) For Field Inspector to locate underground electric line, in Ohio call "Ohio Utilities Protection Service" at 1-800-362-2764, and in Kentucky call "Kentucky Underground Protection Service (KUPS)" at 1-800-752-6007 (at least 48 hours in advance), excluding hours Sat., Sun., and State Legal Holidays.
 - (B) For notification of construction activity near energized electric facilities, call Mr. Bob Schroeder, 513-287-3426.
 - (C) For additional underground electric record information, call 513-287-2454.
 - (D) For electric engineering notification, agreements and correspondence, address to Mr. Tom Birkenhauer, Duke Energy Corporation, Distribution Design Engineering, Room 467A, 139 East Fourth Street, P.O. Box 960, Cincinnati, Ohio 45202-0960.
2. Contractor shall be responsible for all damages to electric facilities during construction.
3. Electric facilities to be kept in service at all times.
4. Contractor shall be responsible for supporting existing electric facilities affected by the proposed construction.
 - A. Where high pressure oil filled pipe type cable installations are exposed or otherwise interfered with by the Contractor, protection by the Contractor will be required against damage to the coating or surrounding thermal sand envelope.
 - B. Where concrete encased conduit systems or direct buried cable systems are exposed or otherwise interfered with, the Contractor shall protect the system as necessary against damage. As soon as feasible, the Contractor shall take additional appropriate steps to provide permanent measures to restore support. The methods used shall be based on conditions to be determined by the utility.
 - C. Where poles or anchors that support overhead electric facilities are exposed or otherwise interfered with, the Contractor shall protect them from damage and provide temporary support to insure the integrity of the system. As soon as feasible, the Contractor shall take additional appropriate steps to provide permanent measures to restore support. The methods used shall be based on conditions to be determined by the utility.
 - D. Where the depth of excavation for the proposed work is greater than five (5) feet, the Contractor shall sheet and shore the trench to continuously maintain the support of electric facilities at locations where the electric facilities are within the zone of influence adjacent to the excavation as determined by the natural angle of repose of the soil.
 - E. All damage to electric facilities and services requiring adjustments, relocations and/or repairs will be made at the Contractor's cost.
5. Contractor shall not backfill exposed electric facilities until the company has inspected its facility or performed any adjustments and/or maintenance that may be required.

NOTE: Should Contractor damage electric facilities, Contractor shall immediately notify the Electric Service Desk through the Company Operator (513-421-9500). Contractor shall keep everyone clear of damaged electric facilities until company personnel arrive at the work site.

GAS FACILITY NOTES

DUKE ENERGY

Gas Facility Notes

- I. For Gas Engineering Notification, agreements, and official correspondence, address to:

Duke Energy
Gas Distribution Engineering
P.O. Box 960, Room 460-A
Cincinnati, Ohio 45273-9598

- II. The gas main information provided shows the approximate locations and depths of cover and is provided to comply with statutory regulations. This information should be used only for planning, not construction.
- III. All gas main depths of cover noted are approximate depths of cover recorded at the time of installation. Any resulting grade changes since the time of the main installation will cause the existing depth of cover to be different. Extreme care must be taken to ensure safe excavation when approaching known or suspected gas facilities.
- IV. All gas services were installed at a minimum of 1'-6" of cover. See Item III above.
- V. For additional gas facility record information, call (513) 287-3636.
- VI. To comply with federal and state regulations concerning damage prevention programs, the utility companies must be contacted at least 48 hours (two working days) prior to excavation by calling the Ohio Utilities Protection Service (OUPS), toll free, at 1-800-362-2764.

Construction Notes

- I. Gas facilities are to be kept in service at all times.
- II. The Contractor shall be responsible for all damages to gas facilities during or as a result of the Contractor's construction. All damage to gas facilities requiring adjustments, relocations and/or repairs will be made at the Contractor's cost.
- III. The Contractor shall sheet and shore all excavations as required to continuously support gas facilities within the zone of influence (as determined by the natural angle of repose of the soil).

- IV. Crossing buried gas facilities with heavy construction equipment may cause damage to the gas facilities. Contact the Gas Engineering Department for details on how to protect the gas facilities from damage.
- V. The Contractor shall not backfill exposed gas facilities until the utility has inspected its facilities and performed any maintenance and/or adjustments that may be required.
- VI. The Contractor is responsible for preventing any damage to our gas facilities. This includes protection of coatings and wrappings on steel gas mains. It also includes any damage with may have occurred to plastic gas mains, such as crimps or gouges.
- VII. When cast iron or similar gas facilities are exposed or interfered with by the Contractor, replacement or reinforcement by Duke Energy may be required at the Contractor's expense. Backfill with control low strength material will be required.
- VIII. Blasting or other construction procedures which may transmit loads or vibrations in the vicinity of gas facilities must be approved by Duke Energy's Gas Engineering Department. A blasting plan, identifying all pertinent information, must be submitted in writing by a blasting expert prior to any work.

Proposed Developments at Gas R/W & Easements (If Applicable)

- I. Proposed development plans around and near gas facilities within private easements must be submitted to Duke Energy's Gas Engineering Dept. for review. These plans must be approved before any work may begin within our easements.
- II. Specified easement widths must be maintained in order for Duke Energy to protect its facilities.
- III. No permanent structures may be built within the easements.
- IV. Cuts and fills are generally not permitted within the easements. Some fills may be allowed, and will be reviewed on an individual basis. Any permitted fills will be limited to an amount which will allow Duke Energy to properly maintain its facilities.
- V. Perpendicular utility crossings of gas easements are acceptable, provided proper clearances are maintained. Parallel installations are normally not allowed.

WATER WORKS NOTES

All work pertaining to water works items shall be done in strict accordance with the specifications of the City of Cincinnati Water Works and under the direction, supervision and inspection of the Water Works. Water main items are to be constructed in accordance with the provisions of the State of Ohio, Department of Transportation, Construction and Material Specifications, current edition, and modified by the latest edition of the City of Cincinnati Supplement to said State of Ohio Specifications, and any supplements or changes thereto. Copies of all pertinent specifications may be obtained from the City of Cincinnati Water Works, 4747 Spring Grove Avenue.

A cushion of 12" shall be maintained between the proposed water mains and the existing sewers, inlet connections, and drains. If a greater clearance is desired, it will be so designated. Building sewer laterals are not to be disturbed or trapped. Existing drains, sewers and culverts are not to be disturbed. If the water main is to be under culverts or pipe sewers, they shall be tunneled and backfilled with Class "T" concrete.

It shall be the Contractor's responsibility to arrange for removal and replacement of any poles and guys necessary for the installation of the proposed water mains, and any cost connected thereto shall be his expense.

All backfill to be Method "A" except where otherwise noted.

No part of any fire hydrant setting shall be installed closer than five feet to any driveway, inlet, utility pole, or guy wire anchor.

All pipe and specials shall be in accordance with City of Cincinnati Specification 40-110-76.

All valves to be purchased from the Cincinnati Water Works.

No extra payment will be made for lead joints.

ITEM SPECIAL – MANHOLE ADJUSTED TO GRADE, SANITARY SEWER

This work consists of adjusting manholes to grade with using precast concrete shim rings, brick and mortar, or mortar only adjustments. If necessary, these items also include minor repairs to the top sections of the manhole. The repairs are limited to the top 6 inches of the dome as measured below the casting.

For sanitary, storm and combined sewer manholes, in lieu of concrete shim rings, the use of the following products is permitted.

1. Injection molded high density polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc. The HDPE adjustment rings must be manufactured from polyethylene plastic as identified ASTM Designation D-1248 (Standard Specification for Polyethylene Plastic Molding and Extrusion materials.). The adjustment rings must be tested to assure compliance with the impact and loading requirements per the ASSHTO Standard Specifications for Highway Bridges. The maximum height adjustment with the HDPE rings is 6 inches.

Install per the manufacturers recommendations and per the following:

For the HDPE adjusting ring installation, all concrete and metal surfaces must be clean of sand grit and loose rust. Between all HDPE plastic rings, concrete and metal surfaces, spread a 3/8-inch continuous seal of Sikaflex 11FC or approved equal to each surface in contact with the rings. The contractor must ensure the seal between the cone, rings and metal casting have a continuous bead of sealant to ensure a complete and waterproof seal. Utilize a molded and indexed slope ring for all adjustments for matching sloped or crowned road grade.

All HDPE adjusting rings must be covered by a manufacturer's five-year warranty.

2. Infra-Riser® rubber composite riser rings as manufactured by East Jordan Iron Works. These rings must be installed per all manufacturers' recommendations including the use of a joint sealer. Place the ring just below the casting. Do not stack more than two rings high. The rings must not exceed a total height of 3 inches.

For adjustment of sewer manholes, refer to Manhole Adjustment Detailed Drawing.

Casting Adjustment Requirements:

1. Perform utility casting adjustments after the placement of the intermediate (leveling) course of asphalt pavement or after planning the surface course if no intermediate course is stipulated.
2. Saw cut a square area of pavement full depth around the casting a minimum of two feet beyond the edge of the casting to accommodate suitable mechanical compaction equipment.

3. Adjust castings to the proper height using precast concrete shims. Brick and mortar adjustments only possible with permission of the engineer.
4. After the casting has been adjusted to grade, restore the entire void in the pavement by tacking around the perimeter of the casting and saw cut edges and filling the opening around the casting with compacted Item 301 Asphalt Concrete base. The maximum compacted depth of any one layer of the 301 material for these adjustments is 4 inches. Compact the final lift of 301 base flush with the surface of the intermediate course or the planed surface if no intermediate course is used. The minimum depth of 301 material is 12 inches.
5. The use of dry mix concrete to fill the void around the casting is not permitted.
6. Upon completion of the adjustment work, immediately place a compacted 448 Type 1 hot-mix asphalt wedge around the raised casting. **For castings exposed up to one inch, place a wedge with a minimum diameter of four feet around the casting. For castings greater than one inch, place a wedge with a minimum diameter of six feet around the casting. Asphalt wedges must extend up to and be flush with the top of the casting.** Install wedges by the end of the workday in which the casting is raised.

Remove wedges immediately prior to the machine paving. The cost of wedging castings is included in the price bid Item 441 – Asphalt Concrete Surface Course and Item 441 – Asphalt Concrete Intermediate Course.

ITEM SPECIAL – MANHOLE REPAIRED AND ADJUSTED TO GRADE, SANITARY SEWER MANHOLE

This work consists of repairing the upper sections of manhole and adjusting the castings to grade using precast concrete shim or the use of injection molded high density polyethylene (HDPE) adjustment rings as manufactured by Ladtech Inc. and Infra-Riser® rubber composite riser rings to adjust sanitary, storm and combined manholes. (See Manhole, Adjusted to Grade) The scope of repair extends from a length greater than 18 inches below the casting.

Manhole repairs below the 18-inch mark will be paid by item Brick Masonry, Manhole.

**ITEM SPECIAL –
BRICK MASONRY, MANHOLE REPAIR,
SANITARY SEWER MANHOLE**

This work consists of removing and replacing deteriorated or failed portions of manhole and not paid for under other items in this Contract.

Repairs: Replace square sewer manhole castings with round manhole castings. The Metropolitan Sewer District (MSD) will furnish these and other castings broken and/or needing replacement due to no fault of the Contractor. Pick up of these items (and returned of salvaged castings) at the MSD-WWC facility located at 225 West Galbraith Road, is the responsibility of the Contractor. Include the cost of hauling castings in the contract price for this item.