

SPECIAL PROVISIONS

ITEM 201 - TREE REMOVAL

This work consists of removing trees, stumps, and roots as designated on the plans, and removing all vegetation and construction debris from the limits shown on the plans. Preserve all vegetation and objects not designated for removal. Trees shall be removed in a manner that will not jeopardize the public safety or damage structures including utility lines or services, or adjacent trees. Special care shall be taken to avoid damage to existing walks, roadways, other trees, buildings, structures, overhead wires, or other property. Any damage done by the contractor shall be repaired by him at his expense.

The stumps including the major root system of all trees directed to be removed shall be removed to a depth of six (6) inches below the surface of the pavement adjacent to the site of removal. Excavations caused by the removal of trees in other than paved areas shall be backfilled as directed with approved fill and/or loam and be seeded, all to the satisfaction of the Engineer. It is intended by this specification to require that the area where any tree, stump, or root has been removed shall be reconstructed in such manner as will not detract from the appearance of the area next adjacent to the site of the removal and that the removal of a tree shall include also the removal of all branches, leaves, bark chips, or other parts or debris caused by said cutting, transportation removal or disposal.

The City will measure and make payment for the completed and accepted quantity by each individual unit. The City will consider payment as full compensation for all work required under this section.

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 / 253 - PAVEMENT REPAIR

The plans show dimensions and locations of pavement areas which are to be repaired under "Item 251, Partial Depth Pavement Repair" or "Item 253, Pavement Repair," 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 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 Contractor shall plane off the existing pavement as shown on the typical details. The Engineer will then mark the location, size and type of repair to be made. Weather permitting, the Contractor shall complete the pavement repairs within five (5) working days from when the planing operations have been completed.

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

ITEM 253 - PAVEMENT REPAIR, MISCELLANEOUS: SLAG STABILIZATION

A contingency quantity of slag has been provided 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.

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 441 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 441 - ASPHALT PAVEMENT COURSE WITH FIBER REINFORCEMENT**Description**

Furnish all material, equipment, labor, and incidentals for mixing aramid fiber into HMA per this specification. Aramid fibers must be treated to prevent them from becoming airborne during the mixing process, and the treatment must become soluble in the asphalt. Treated aramid fiber shall be continuously fed and mixed into HMA per dosage and mixing requirements of this specification. A certified QA/QC mixing technician shall perform continuous feeding of the treated aramid fibers into the asphalt during plant mixing operations for all of the Fiber Reinforced HMA quantities requires for the project and a P.E.-stamped certification report must be submitted upon project completion.

Definitions

- a. "HMA" is hot mix asphalt, without aramid fiber.
- b. "Fiber Reinforced HMA" is hot mix asphalt including aramid fibers.
- c. "Aramid Fiber" is pure aramid fiber meeting the material properties of this specification, without additive materials.
- d. "Treatment" is the binder material used to facilitate the proper amount of the aramid fiber into the HMA so that the aramid fiber does not become airborne.
- e. "Dosage rate" is the minimum weight of treated aramid per ton of asphalt that is to be continuously fed into HMA.
- f. "Continuous feeding" is metering and delivering, in a constant stream-like manner, the dosage rate of treated aramid into the HMA during the asphalt mixing process at the plant.
- g. "Manufacturer" is the company that produces the aramid fiber from raw materials.
- h. "Supplier" is the company that offers an aramid product.

Materials

Meet the following Aramid and Treatment material properties:

<u>Aramid Properties</u>	<u>Measure</u>
Material	Aramid Fiber (50-51% by weight)
Form	Filament Yarn
Length	1.5 +/-0.03 (inch)
Tensile Strength	2.4-3.6 (GPa)
Elongation at Break	3.0-4.4 (%)
Modulus	60.80 (GPa)

Specific Gravity	1.44-1.45 g/cm ³
Decomposition Temperature	>930° F
<u>Treatment Properties</u>	<u>Measure</u>
Treatment Type	Sasobit [®] Wax (49-50% by weight)
Treatment Melting Temperature	>190° F

Submittals

Provide the following from the product supplier at least two weeks prior to asphalt production:

1. Identify the mixing plant and type (Batch or Continuous Drum).
2. Material data sheet for the treated aramid fiber describing aramid fiber and treatment properties, including the type, weight, and flash point of treatment material.
3. A certified QA/QC mixing plan including procedures for continuously feeding the aramid fiber into the asphalt. The fiber supplier must approve the QA/QC mixing plan and provide certification of the QA/QC mixing technician at the asphalt mixing plant who is responsible for continuous feeding of the fiber into the HMA. The continuous feeding can be accomplished by using either manual or machine operated dosing equipment for the entire fiber mixing process.

Job Mix Formula

When treated aramid fiber is required as a mixture ingredient, modification to the job mix formula is not required.

Storage Requirements

Store treated aramid product in a dry environment and do not allow it to be in contact with moisture.

Dosage and Mixing Requirements

The aramid dosage rate is 2.1 ounces (+/- 5%) per ton of HMA. This does not include the treatment weight. For uniform disbursement, treated aramid shall be metered and continuously fed in a constant stream-like manner. It shall be mixed with the heated aggregates before injection of the liquid asphalt during the asphalt mixing process at the Batch or Continuous Drum Plant below.

1. Batch Plant

Feed treated aramid manually, or with machine-operated dosing equipment, onto RAP or aggregate belts, or directly into the pug mill or weigh hopper. Standard project HMA batch mixing times apply. Metering shall be based on batch size (tons) and dosage rate (oz/ton). Feeding shall occur in a constant stream-like manner during the heated aggregate mixing batch time. If necessary, increase the mixing time with heated aggregates to ensure the aramid fibers are uniformly distributed.

2. Continuous Drum Plant

Feed treated aramid manually, or with machine-operated dosing equipment, onto RAP belt or directly into the mixing drum through the RAP collar. Standard project HMA asphalt production rates apply. Metering shall be calibrated based on the asphalt production rate (tons/hr), and the dosage rate (oz/ton). Feeding shall occur in a constant stream-like manner. If necessary, increase the mixing time with heated aggregates to ensure the aramid fibers are uniformly distributed.

Inspection

Visual inspection shall be performed during the mixing process to verify uniform distribution of aramid fiber.

Fiber Reinforced HMA Placement

All construction, mixture and density requirements of the asphalt as detailed in the Standard Specifications shall apply.

Pre-Approved Products, Manufacturers, Suppliers, and QA/QC Mixing

Product: ACE Fiber™
Manufacturer: Surface Tech
Distributor: Site Supply Inc.
Contact: Matt Kirby
(513) 383-8408
mattkirby@sitefabric.com
33 Glendale-Milford Road
Loveland, OH 45140

Acceptance

Acceptance of the reinforced HMA will include the following factors:

1. The Owner/Specifier shall receive from the Contractor, a Professional Engineer-stamped QA/QC report which certifies that the metering and continuous feeding was performed per the dosage rate and all other requirements of this specification by a certified technician, and that visual inspection was performed during the mixing process to certify that no clumping of aramid fiber or treatment product occurred.
2. All other construction, mixture, and density requirements of the asphalt as detailed in the Standard Specifications shall apply.

Basis of Payment

Each ton of Fiber Reinforced HMA placed according to this specification will be measured and paid for at the contract unit bid price per ton, and shall include full compensation for furnishing all material labor, tools, equipment, QA/QC mixing and reporting, and incidentals for doing all the work involved in metering and feeding the treat aramid fiber, and placement and compaction of the Fiber Reinforced HMA.

Pay Item

441 Asphalt Pavement Surface with Fiber Reinforcement

ITEM 407 - TACK COAT

A tack coat shall be applied to the area to be surfaced in accordance with Item 407, Tack Coat. The residual asphalt content of the tack coat shall be 0.04 to 0.06 gallons per square yard. SS-1, SS-1h, CSS-1, or CSS-1h materials used shall be diluted 50 percent with potable water. Over-spray on curbs, adjoining pavements, and other roadside facilities shall not be tolerated, and the Contractor shall be responsible for clean-up of any areas or facilities receiving over-spray.

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 441 - 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 441 - 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 601 - 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 606 - GUARDRAIL, MISC.: REMOVE & REPLACE GUARDRAIL ASSEMBLY AND DELINEATOR

This work consists of constructing or reconstructing guardrail, guardrail posts, bridge terminal assemblies, end terminals, and impact attenuators, including the furnishing, assembling, and erecting of all component parts and materials.

All work performed under this item shall conform to the current edition of the Ohio Department of Transportation Construction and Material Specifications, Section 606 - "GUARDRAIL".

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 - 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 construction of underdrains, trench drains, conduits, catch basins or other drainage facilities shall be regraded to drain properly and then restored with top soil, seeding and mulching. The cost of restoration of these soil areas is to be included in the unit price bid for the pertinent drainage item.

Pavement areas (including walks, drives, curbs, etc.) disturbed by the construction of the drainage facilities will be restored as per the applicable asphalt pavement repair detail or the concrete pavement detail. Payment for the restoration of these areas will be at the unit price bid for the pertinent pavement item.

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 - 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 catch basins shall be incidental to the pertinent item.

Payment for "Item 611, Catch Basin Reconstructed to Grade," shall include all labor, equipment and materials necessary to remove catch basin tops, rebuild walls, and reset castings and/or concrete slab tops on a per-unit basis.

Payment for providing new castings shall be on a per-unit basis under "Item 611, New Casting (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. 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.

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.

Maximum closure length shall be 96 hours. The Contractor shall place new curbs within 24 hours of removal. The Contractor shall keep driveways closed for a 48-hour period after concrete placement to permit the curing of concrete curbs, driveway aprons, or sidewalk across driveways.

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

ITEMS 638 - VALVE BOX ADJUSTED TO GRADE

Raise or lower existing valve boxes and service boxes to grade or the reuse of existing service boxes. The Contractor may reuse existing service boxes if they are in good condition, as determined by the Engineer then payment is per service box adjusted to grade.

Excavate around the valve box or service box to permit the raising or lowering of the valve box or service box. The Contractor may adjust any screw-type boxes without the use of extensions provided that ample thread remains on the box to provide adequate rigidity to the box. Provide extension sections for boxes that are not of the screw-type and boxes not having ample thread for rigidity to adjust the top to grade. The Engineer will allow inserts or adapters. Adequately secure new sections of box stem to the existing stems. Backfill the hole after the box has been adjusted to grade.

The City will measure and make payment for Valve Box Adjusted to Grade by the number of each, including any extension sections of valve boxes required.

ITEMS 641 / 642 / 644 - PAVEMENT MARKING

The unit price bid for each Item 641, 642, and 644 shall include the layout for the work to be performed. All 642 pavement marking shall be made with one (1) paint application of an alkyd traffic paint with an application of glass beads.

Location and type of pavement markings will be as existing in the area before the improvements are made or as otherwise directed by the Engineer either in these plans or in the field.

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 SPECIAL - TREE / STUMP & ROOT REMOVAL

1. Trees shall be removed in a manner that will not jeopardize the public safety or damage structures including utility lines or services, or adjacent trees. The Contractor shall examine the locations of the proposed work and determine each in their own way, the difficulties which may be encountered in the execution of the work. No additional claims for compensation will be considered due to unknown conditions.
2. Contractor shall adhere to ANSI A133:1: Pruning, Repairing, Maintaining, and Removing Trees and Cutting Brush – Safety Requirements.
3. All crew members should be wearing the appropriate safety gear; hard hats, eye protection, approved boots, hearing protection and chainsaw chaps for groundwork.

4. Tree removal price includes cutting and removal from site of trees and stump and all work complete. Tree and stump shall be removed to a point 2'-6" below grade and cleanup of all limb debris. The void created by stump removal shall be filled and compacted with soil to original grade. Cost of such backfilling and compaction shall be incidental to this item.
5. Removal of stumps includes the grinding, cutting or excavation and removal from site of an existing tree stump and work complete. Stump shall be removed to a point 2'-6" below grade. No payment shall be made for stump removal when payment is made under "Removal of Trees". The void created by stump removal shall be filled and compacted with soil to original grade. Cost of such backfilling and compaction shall be incidental to this item.
6. Contractor shall be responsible for re-grading, loosening of compacted soil, repair of access ways and any damage to turf /grounds within the work area or by an intrusion that is outside the specified work area.
7. Removal of roots shall be considered as incidental with any pay item.

ITEM 623 - CONSTRUCTION LAYOUT STAKES

This work consists of furnishing, placing, and maintaining construction layout stakes necessary to perform the Work under the Contract. This work also includes verification, placement, protection, and necessary restoration of primary project control monuments, monument assemblies, reference monuments (which include centerline monuments and centerline reference monuments), and Right-of-Way monuments.

All work performed under this item shall conform to the current edition of the Ohio Department of Transportation Construction and Material Specifications, Section 623 - "Construction Layout Stakes And Survey Monuments".

ITEM 659 - SEEDING AND MULCHING

A Class1 – lawn mixture shall be used for the areas that need to be restored with seed and mulch, the cost of which shall be incidental to the Contract.

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.

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
139 East Fourth Street
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).

**GAS FACILITY NOTES
DUKE ENERGY**

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- 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 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.

ITEM SPECIAL – MANHOLE ADJUSTED TO GRADE, SANITARY SEWER

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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.