**GENERAL NOTES:**

**General Requirements and Covenants:**

Contractor questions on this project are to be addressed to the following individuals:

*Wendy Starkes, P.E.* – Area Engineer

Area.Engineer@Txdot.gov

*Name*    – Assistant Area Engineer

Assistant Area.Engineer@Txdot.gov

Questions may be submitted via the Letting Pre-Bid Q&A web page.  This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

[https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors?%](https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors?%25)

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

All roadside signs, mailbox supports, delineators, and object markers located within the project limits shall be plumbed as part of the final cleanup.  This work will not be paid for separately but will be considered subsidiary to the various bid items.

**ITEM 5 – Control of the Work:**

Prior to contract letting, bidders may request a free electronic copy of the files that contain the earthwork information from the District Office in Atlanta. If printed copies of the actual cross-sections in addition to, or instead of, the electronic files are requested, prospective bidders may purchase prints of earthwork cross sections from the District Office in Atlanta.

Place construction points, stakes, and marks at intervals of no more than 100 ft., or as directed. Place stakes and marks so as not to interfere with normal maintenance operations.

It is the Contractor’s responsibility to verify the accuracy of any department provided control points prior to use.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with “Standard Operating Procedure for Alternate Precast Proposal Submission” found online at: <https://www.txdot.gov/business/resources/highway/bridge/bridge-publications.html#design>

Acceptance or denial of an alternate is at the sole discretion of the Engineer.  Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Contact all utility companies for the exact location of underground utilities before boring, trenching or any other work that might interfere with or damage existing utilities.

Repair any damage caused to utilities by Contractor operations at own expense and restore service in a timely manner.

Work on any project will not be accepted until all components have been shown to be fully operational.

**ITEM 6 - Control of Material:**

**(THE FOLLOWING NOTE IS REQUIRED ON EVERY FEDERALLY FUNDED PROJECT)**

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link.

<https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html> for clarification on material categorization.

Pre-qualified products can be found at <http://www.txdot.gov/business/resources/producer-list.html>

**ITEM 7 – Legal Relations and Responsibilities:**

 ***(Use the following PSL related notes if you have COE permits on a project or when wetland delineation sheets are used. When in doubt check with district environmental)***

The Contractor shall not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area that have not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to, haul roads, equipment staging areas, borrow and disposal sites. Associated defined here means materials are delivered to or from the PSL. The permit area includes all waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. The Contractor shall be responsible for any and all consultations with the USACE regarding activities, including project specific locations (PSLs) that have not been previously evaluated by the USACE. The Contractor shall provide the Department with a copy of all consultation(s) or approval(s) from the USACE prior to initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non‑jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The Contractor is solely responsible for documenting any determination(s) that their activities do not affect a USACE permit area. The Contractor shall maintain copies of their determination(s) for review by the Department or any regulatory agency.

The Contractor must document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

1. **Restricted Use of Materials for the Previously Evaluated Permit Areas.** The Contractor will document both the project specific location (PSL) and their authorization. The Contractor will maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:
	1. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area,
	2. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
	3. Unsuitable excavation or excess excavation [“Waste”] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.
2. **Contractor Materials from Areas Other than Previously Evaluated Areas.** The Contractor will provide the Department with a copy of all USACE coordination or approval(s) prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to, haul roads, equipment staging areas, borrow and disposal sites:
3. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
4. Unsuitable excavation or excess excavation [“Waste”] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

Negotiate and obtain any additional permits required by the Corps of Engineers for construction methods not covered by the original permit. The original U.S. Army Corps of Engineer’s Section 404 permit is on file at the Engineer's office. The Department will make copies of this permit available to prospective bidders upon request. The Department will furnish a copy of this permit to the successful bidder at the pre-construction conference.

The permit for this project expires on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, 20\_\_\_.

The Engineer will conduct a meeting with the Contractor detailing the terms and conditions of this permit prior to beginning construction activities. The Engineer will notify U. S. Army Corps of Engineers (USACE) Regulatory Branch having jurisdiction over this project,of the preconstruction meeting at least two weeks in advance of the meeting and provide written confirmation to the USACE that the meeting was held, within two weeks following the meeting. ***(Only to be used on projects where coordination with the Corps is necessary, check with District ENV).***

This project is covered by a U.S. Army Corps of Engineers Nationwide 23 permit. Negotiate and obtain any additional permits required by the Corps of Engineers for construction methods not covered by the original permit. The permit is on file at the Engineer's office.

This project is covered by a U.S. Army Corps of Engineers Nationwide XXX permit with no coordination. Obtain a copy of permit and conditions at the Engineer’s office.

The total area disturbed for this project is 16.90 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs) within 1 mile of the project limits will be used to establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the ROW. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the ROW to the Engineer and to the local government that operates a separate storm sewer system.

No significant traffic generator events.

**ITEM 8 – Prosecution and Progress:**

Working days will be charged in accordance with Section 8.3.1. standard work week. Milestones will be charged in accordance with calendar days.

The plans include a milestone for phase 1.. This milestone is used to expedite the construction of specific areas of a phase or step to address potential safety concerns.

Substantially complete Milestone 1 in 23 working days. The disincentive/incentive for completion is $7,747per day with a maximum of 20 working days for computing the credit. The time charges for Milestone 1 will begin once TCP is set within the defined limits shown on the plan sheets and end once PCTB/TCP is adjusted, as shown or described, in the plans.

**ITEM 100 – Preparing Right of Way:**

 Do not burn trash, debris, etc. within the City limits without prior written city approval.

**ITEM 105 – Removing Treated and Untreated Base and Asphalt Pavement:**

Stockpile salvaged material at the following location: ***(Contact the AE, Maintenance supervisor and district maintenance in one email and determine if material is wanted and if so where to stockpile.)***

Stockpile material in accordance with Article 247.4, “Construction” or as directed.

Remove existing asphalt pavement before disturbing base. Stockpile each material separately.

Reduce the asphalt pavement so it will pass a one-inch sieve.

**ITEM 110 - Excavation:**

Compact subgrade in earth cut sections, in accordance with section 132.3. 4. ***1***

As cut slopes are constructed, round off the tops of back slopes to blend into the natural ground.

Excavation of existing stabilized materials will be measured and paid for as excavation (roadway).

Remove abandoned underground utility lines encountered. This work will be subsidiary to the pertinent bid items.

Flare ditches to prevent erosion of the toe of slope in areas of transition from cut to fill.

Excavated materials not meeting the requirements for Type A or Type C embankment will be considered waste. Dispose of as directed.

SPECIFICATION DATA

TEST TO BE IN ACCORDANCE WITH DEPARTMENT OF

TRANSPORTATION TEST METHODS

|  |  | GRADING REQUIREMENTSPERCENT RETAINED - SIEVES | SOIL CONSTANTS |
| --- | --- | --- | --- |
| ITEM | DESCRIPTION |  2-1/2” 1-3/4” No. 4 No. 40  |  L.L P.I. MAX. MAX. MIN. |
| 132 | Embankment (Type C) |  |  50 25 4 |
| 247 | Flex Base (GR 4)\*\* |  0 0-10 45-75 55-85 |  40 12 3 |

|  |  |
| --- | --- |
| \*\*LATERAL PRESSUREPSI | \*\*MIN. COMPRESSIVE STRENGTHPSI |
| 0 | 35 |
| 15 | 175 |

\*\* COMPRESSIVE STRENGTH TESTING REQUIRED

**ITEM 132 – Embankment:**

Furnish material with an organic content less than 1.0%. The Engineer will test using UV-VIS equipment and procedure determined by TxDOT. Allow two weeks for testing.

Compact subgrade in earth cut sections, in accordance with section 132.3. 4.1

Test borrow sources and furnish results to the Engineer.

Where fill height is 5 feet or more above natural ground, the specified density will not be required on the first 2 feet of embankment, unless otherwise directed.

Remove deleterious material, organic matter, and sediment, etc., from all ponds, lakes, sloughs, channels, and existing roadway ditches prior to placement of embankment. This work will be subsidiary to this item.

This item will be used to cover foundations from ground level to the three-inch minimum level below the top of foundations. ***(For use on projects with signals or luminaires)***

Drill or dig one or more holes for thickness measurement, refill, and re-compact material at the location and frequency as directed. This work is considered subsidiary to this item.

Beginning with the final lift of embankment, measure the cross slope during pavement structure operations, at the completion of each land, and prior to covering with another course or lift to ensure that the cross slope is uniform and in compliance with the cross slope shown in the plans.  Measure the cross slope at a minimum frequency of one measurement every 100 feet.  The number of measurements may be reduced by demonstrating consistently acceptable results, with the approval of the Engineer.  Furnish a digital measuring device approved by the Engineer for the measurement of cross slope.  Make this measuring device available at the jobsite for the Engineer’s use.   Report the cross slope to the nearest 0.1%.  Record all measurements on an approved form signed and dated certifying correct and submit to the Engineer the next working day for documentation.  The Engineer will determine the number of verification measurements.

**ITEM 164 – Seeding for Erosion Control:**

**PERMANENT PLANTING MIXTURE**

Species and Rates

(lb. PLS/ac.)

(Season: February 1 to May 15)

Green Sprangletop 0.4

Bermudagrass 2.4

Sand Lovegrass 1.0

Lance-Leaf Coreopsis 1.25

**(**Season: September 1 to November 30)

Bermuda (Unhulled) 12

Crimson Clover 10

**TEMPORARY SEEDING FOR EROSION CONTROL**

Warm Season

(Season: May 15 to August 31)

Bermudagrass 6

Foxtail Millet 34

Cool Season

(Season: September 1 to November 30)

Tall Fescue 4.5

Oats 24

Wheat 34

Adjust the seeding mixture and rates if directed.

Inoculate crimson clover seed with a legume inoculant. Sow inoculated seed dry, with either hand operated or mechanical equipment, after the fertilizer is placed.

Do not use Bahia grass.

Use crimper immediately after spreading mulch. Apply ballast to machine to achieve an anchoring depth of 2 to 3 inches to form soil-binding mulch and to prevent loss or bunching of the mulch by wind. Anchor the machine to prevent the formation of ridges and ruts. Use coulters at least ten inches in diameter. Traverse slopes horizontally. The number of passes needed, not to exceed three, will be as directed. In areas where an anchoring machine cannot be used, the Department will require a tacking agent be used in the mulch as directed.

Use broadcast seeding for temporary erosion control, when and as directed. This will not be paid for directly but is subsidiary to the various bid items.

Use additional temporary seeding if permanent seeding is placed outside the optimum growing season shown for this item, if directed.

Finish slopes with a tracked vehicle running vertically up and down the slope.

Mow tall growing vegetation as directed, to provide optimum growing conditions for temporary or permanent seeded areas in accordance with Item 730 “Roadside Mowing” except for measurement and payment. This work will be subsidiary to pertinent bid items.

Repair mulch sod, damaged by causes other than the Contractor’s operations, as directed using mulch sod, seeding, and fertilizer. This work will be measured and paid for in accordance with the applicable bid items of the contract.

**ITEM 166 - Fertilizer:**

When seeding between September 1 and January 1, place one-half of the amount of fertilizer specified for seeding with the seeds and place the remainder the following spring unless otherwise directed. When seeding is placed between January 1 and June 1, place one-half the amount of fertilizer specified for seeding with the seeds and place the remainder 30 days later unless otherwise directed.

Apply fertilizer (13-13-13) at a rate of 300 lbs. /5000 sq. yds.

**ITEM 247 – Flexible Base:**

Drill or dig one or more holes for thickness measurement, refill, and re-compact material at the location and frequency as directed. This work is considered subsidiary to this item.

Furnish material with an organic content less than 1.0%. The Engineer will test using UV-VIS equipment and procedure determined by TxDOT. Allow two weeks for testing.

The Engineer will test each stockpile. A minimum of 14 days will be required for testing after stockpile has been sampled.

Target grading required.

Do not use iron ore. Stockpile 10,000 cu. yds. minimum or the estimated volume from the plan quantity.

 Place a maximum of 10 layers. Maximum size of stockpile will be 15,000 cu. yds.

Beginning with the final lift of embankment, measure the cross slope during pavement structure operations, at the completion of each land, and prior to covering with another course or lift to ensure that the cross slope is uniform and in compliance with the cross slope shown in the plans.  Measure the cross slope at a minimum frequency of one measurement every 100 feet.  The number of measurements may be reduced by demonstrating consistently acceptable results, with the approval of the Engineer.  Furnish a digital measuring device approved by the Engineer for the measurement of cross slope.  Make this measuring device available at the jobsite for the Engineer’s use.   Report the cross slope to the nearest 0.1%.  Record all measurements on an approved form signed and dated certifying correct and submit to the Engineer the next working day for documentation.  The Engineer will determine the number of verification measurements.

Moist cure the layer by sprinkling in accordance with ITEM 204, “Sprinkling” until primed or the next successive course is placed.  The Engineer will measure the moisture content in the upper two inches of the layer using Tex-115E Part I, Nuclear Gauge Method.  When the moisture content at any location within a land is more than 2 percent points below optimum the Contractor will prime or cover with the next successive course within three days unless approved otherwise.

Furnish clean 5-gallon plastic buckets with lids and wire handles for sampling, transporting, and shipping aggregate and base to the District Lab.

**ITEM 275 – Cement Treatment (Road-Mixed):**

Furnish material with an organic content less than 1.0%. The Engineer will test using UV-VIS equipment and procedure determined by TxDOT. Allow two weeks for testing.

Apply all cement in an essentially dust free manner as approved.

Rates of application of cement for subgrade shown in the plans are for estimating purposes only.  Actual rate of application will be determined during construction for each land by the Engineer.  The estimated rate of application is 34 lbs/sy.  Pretreat with lime Item 260 when the soil Plasticity Index is greater than 18 %.  The application rates will be determined by the Engineer.

**When the addition of Item 260 is required, the additional Item will be considered "extra work" in accordance with Article 9.7.**

Drill or dig one or more holes for thickness measurement, refill, and re-compact material at the location and frequency as directed. This work is considered subsidiary to this item.

Beginning with the final lift of embankment, measure the cross slope during pavement structure operations, at the completion of each land, and prior to covering with another course or lift to ensure that the cross slope is uniform and in compliance with the cross slope shown in the plans.  Measure the cross slope at a minimum frequency of one measurement every 100 feet.  The number of measurements may be reduced by demonstrating consistently acceptable results, with the approval of the Engineer.  Furnish a digital measuring device approved by the Engineer for the measurement of cross slope.  Make this measuring device available at the jobsite for the Engineer’s use.   Report the cross slope to the nearest 0.1%.  Record all measurements on an approved form signed and dated certifying correct and submit to the Engineer the next working day for documentation.  The Engineer will determine the number of verification measurements.

Moist cure the layer by sprinkling in accordance with ITEM 204, “Sprinkling” until primed or the next successive course is placed.  The Engineer will measure the moisture content in the upper two inches of the layer using Tex-115E Part I, Nuclear Gauge Method.  When the moisture content at any location within a land is more than 2 percent points below optimum the Contractor will prime or cover with the next successive course within three days unless approved otherwise.

**ITEM 301 – Asphalt Antistripping Agents:**

Add hydrated lime to the aggregate by the following method only: mix in an approved pug mill mixer with damp aggregate containing water at least 2% above saturated surface dry conditions.

**ITEM 302 – Aggregates for Surface Treatment:**

Furnish material in accordance with Atlanta District’s QA Program for Surface Treatment Aggregates. This program is available at TxDOT Atlanta District.

**ITEM 316 – Seal Coat:**

The Department may require the use of emulsion instead of AC if conditions so dictate. Apply AC unless otherwise directed.

Asphalt season starts May 1 and ends August 31. Obtain written approval before placing asphaltic materials between August 31 and May 1.

Cure the surface treatment under traffic a minimum of 14 days before placement of any subsequent surface courses.

**ITEM 360 – Concrete Pavement:**

Use Class 3 (hot poured rubber) joint sealing compound for concrete pavement.

Obtain written approval from the Engineer if the concrete design requires greater than 5.5 sacks of cementitious material per cubic yard.

Air powered pneumatic hammer drills will not be permitted.  Perform drilling operations using either an electric rotary hammer drill or a core drill, unless otherwise approved by the engineer.

Demonstrate, through simulated job conditions that the bond strength of the epoxy-grouted tiebar meets pullout strength of at least ¾ of the yield strength of the tiebar when tested in accordance with ASTM E 488 within 3hr. after grouting.

Air-entrainment is not required for class P or HES concrete.

Do not bend tie bars.

Use the manual method for placement of dowel bars. Contractor must demonstrate a successful method of placement when using a slipform paver by placing lands not to exceed 250 feet per pour until the method is approved by the Engineer.

Use epoxy coated tie bars and dowels.

**ITEM 416 – Drilled Shaft Foundations:**

Foundation locations will be staked by the Contractor. The Engineer will be given a minimum of 3 days advance notice to ensure placement is in the proposed design location. Chamfer or tool exposed edges or joints of concrete as directed.

**ITEM 420 – Concrete Substructures:**

Chamfer or tool exposed edges or joints of concrete as directed.

Bent concrete will be a plans quantity item.

When unstable foundation materials are encountered, the Engineer will have the option of directing the placement of a foundation seal of Class "A" concrete instead of an undercut.

**ITEM 432 - Riprap:**

Provide ½” expansion joint material with an area equal to the area of contact between the two concrete surfaces. The joint material will be visually inspected for approval.

**ITEM 464 – Reinforced Concrete Pipe:**

Backfill driveway culverts to obtain a minimum cover of 6 inches. Place backfill in accordance with section 132.3.4.1 “Ordinary Compaction” using approved equipment.

The Engineer will determine flow lines of pipes under private driveways.

**ITEM 465 – Junction Boxes, Manholes, and Inlets:**

A 1’-6” concrete apron is required for the Precast Area Zone Drain.

When unstable foundation materials are encountered, the Engineer will have the option of directing the placement of a foundation seal of Class "A" concrete instead of an undercut.

**ITEM 467 – Safety End Treatments:**

Provide precast safety end treatments with a toewall measuring at least 12 inches. Construct toewalls for cast-in-place safety end treatments as shown in the plans.

Remove trees, bushes, and underbrush as directed. This work will be subsidiary to the pertinent bid items.

***d***

**ITEM 502 – Barricades, Signs, and Traffic Handling:**

The Contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement*.*

Install temporary rumble strips in accordance with WZ(RS) wherever short duration or short-term stationary lane closures are in place and workers are present.

The Contractor's responsible person (CRP) will be responsible for ensuring that the signs and traffic control devices are in place and functioning properly.

The CRP will inspect and ensure any deficiencies are corrected each and every day throughout the duration of this contract. Notify the Engineer in writing of the name, address, and telephone number of this employee or these employees.

Length of lane closures will be as directed based on the demonstrated ability to prosecute the work within the closed section.

Maintenance of driveways and intersections will not be paid for directly but is subsidiary to the pertinent bid items.

Restrict the movement of equipment across traffic lanes to an absolute minimum.

Use strobe lights or rotating beacons on all motorized equipment, operating on or adjacent to the road surface.

**ITEM 506 – Temporary Erosion, Sedimentation, and Environmental Controls:**

Sprinkle water for dust control. Meet the requirements of Item 204, “Sprinkling” except for measurement and payment. Sprinkling will be considered subsidiary to this Item.

**ITEM 529 – Concrete Curb, Gutter, and Combined Curb and Gutter:**

Use an approved curb template that will match the existing curb.

At the Contractor’s option, place the Type II curb and gutter monolithically.

Before placing machine laid curb, paint the surface with a coating of cement paste, having the consistency of a thick paint, or with another approved adhesive.

**ITEM 536 – Concrete Medians and Directional Islands:**

Before placing the concrete median, paint the surface with a coating of cement paste, having the consistency of a thick paint, or other approved adhesive.

Before placing machine laid curb, paint the surface with a coating of cement paste, having the consistency of a thick paint, or with another approved adhesive.

**ITEM 540 – Metal Beam Guard Fence:**

Furnish round timber posts unless otherwise shown.

Place sufficient dry batch concrete mix in holes to ensure minimum of 2-inch embedment of tubes and posts.

**ITEM 542 – Removing Metal Beam Guard Fence:**

Stockpile salvageable metal beam guard fence, fittings, and appurtenances on the right of way at the following locations:

**ITEM 544 – Guardrail End Treatments:**

Place sufficient dry batch concrete mix in holes to ensure minimum of 2-inch embedment of tubes and posts.

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**ITEM 610 – Roadway Illumination Assemblies:**

Luminaire foundations will require an apron as shown on standard RID(FND) or as directed.

There will not be any stockpiles on the job site from illumination installations. Remove any additional soil, rock, and concrete from job site the same day that they are produced.

**ITEM 613 – High Mast Illumination Poles:**

High mast lighting foundation locations will be staked by the Contractor. The Engineer will be given a minimum of 3 days advance notice to ensure placement is in the proposed design location.

**ITEM 618 – Conduit:**

When the specifications for electrical items require UL listed products, it will be understood to mean UL listed or Any Nationally Recognized Testing Lab (NRTL).

Aluminum conduit is acceptable for this project where rigid metal conduit is used. Aluminum conduit specification will be submitted to the Engineer for approval. The aluminum conduit will be new and unused and UL-Listed. Notify the Engineer that aluminum conduit will be used on this project. Aluminum conduit will be installed, measured, and payed for under item 618.

Install a continuous bare or green insulated copper wire, No. 6 awg or larger, except where shown on the plans, in the conduit throughout the electrical system in accordance with the electrical detail sheets, and the latest edition of the National Electrical Code.

The locations of conduit as shown are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval.

All conduit placed under existing pavement will be bored as directed. Cutting, trenching or jacking across roadways or driveways will not be permitted without approval.

Install a 3-inch warning tape on trenched conduit runs during backfill operations. The tape will be red polyethylene marked “CAUTION-BURIED ELECTRIC LINE”. Place the tape 12 inches above the conduit. Measurement and payment are subsidiary to Item 618, “Conduit”.

When backfilling bore pits, ensure the conduit does not become damaged. Place select backfill in three equal lifts to the bottom of the conduit or place sand to a point 2 inches above the conduit. Compact the backfill to obtain a density equal to the existing, adjacent soil. Prevent backfill material from entering the conduit.

Excavate bore pits no closer than 2 feet from the edge of pavement or base.

The vertical and horizontal tolerances of bored conduits are not to exceed 18 inches as measured from the target point.

Ensure that all PVC conduit and fittings will be schedule 40.

Bell end fittings will be used at the ends of all non-metallic conduits. (e.g., metal junction box).

Where PVC, duct cable, and HDPE conduit 1” and larger is allowed and installed as per TxDOT standards, provide a PVC elbow in place of the galvanized rigid metal elbow required by the Electrical Detail Standards. Ensure the PVC elbow is of the same schedule rating as the conduit to which is connected. Ensure only a flat, high tensile strength polyester fiber pull tape is used for pulling conductor through the PVC conduit system.

**ITEM 620 – Electrical Conductors:**

Grounding conductors sharing the same conduit, junction box, ground box or structure will be bonded together at accessible points in accordance with the current edition of the National Electrical Code.

Complete splices using approved splicing methods and insulate with an approved thermosetting compound, heavy duty heat shrinkable tubing with sealant, or heat shrinkable tape with sealant suitable for outdoor use.

Electrical certification for this project will be as per Item 7 of the current Texas Standard Specifications and any special provisions to Item 7.

For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse holder as shown on the Texas Department of Transportation (TXDOT) materials producers list. Category is “Roadway Illumination and Electrical Supplies”. Fuse holder is shown on list under Items 610 and 620. Provide 10-amp time delay fuses.

When the specifications for electrical items require UL listed products, it will be understood to mean UL listed or Any Nationally Recognized Testing Lab (NRTL).

Aluminum conduit is acceptable for this project where rigid metal conduit is used. Aluminum conduit specification will be submitted to the Engineer for approval. The aluminum conduit will be new and unused and UL-Listed. Notify the Engineer that aluminum conduit will be used on this project. Aluminum conduit will be installed, measured, and payed for under item 618.

Install a continuous bare or green insulated copper wire, No. 6 awg or larger, except where shown on the plans, in the conduit throughout the electrical system in accordance with the electrical detail sheets, and the latest edition of the National Electrical Code.

The locations of conduit as shown are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval.

All conduit placed under existing pavement will be bored as directed. Cutting, trenching or jacking across roadways or driveways will not be permitted without approval.

Install a 3-inch warning tape on trenched conduit runs during backfill operations. The tape will be red polyethylene marked “CAUTION-BURIED ELECTRIC LINE”. Place the tape 12 inches above the conduit. Measurement and payment is subsidiary to Item 618, “Conduit”.

When backfilling bore pits, ensure the conduit does not become damaged. Place select backfill in three equal lifts to the bottom of the conduit or place sand to a point 2 inches above the conduit. Compact the backfill to obtain a density equal to the existing, adjacent soil. Prevent backfill material from entering the conduit.

Excavate bore pits no closer than 2 feet from the edge of pavement or base.

The vertical and horizontal tolerances of bored conduits are not to exceed 18 inches as measured from the target point.

Ensure that all PVC conduit and fittings will be schedule 40.

Bell end fittings will be used at the ends of all non-metallic conduits. (e.g., metal junction box).

Where PVC, duct cable, and HDPE conduit 1” and larger is allowed and installed as per TxDOT standards, provide a PVC elbow in place of the galvanized rigid metal elbow required by the Electrical Detail Standards. Ensure the PVC elbow is of the same schedule rating as the conduit to which is connected. Ensure only a flat, high tensile strength polyester fiber pull tape is used for pulling conductor through the PVC conduit system.

**ITEM 624 – Ground Boxes:**

Locations of ground boxes are approximate. Final locations will be as approved.

Ground boxes will require an apron as directed by the Engineer as shown on standard ED (4).

When ground boxes are placed in existing concrete sidewalk, saw cut sidewalk and repair any damage to the surrounding concrete. This work will not be paid for separately but considered subsidiary to this item.

**ITEM 628 – Electrical Services:**

The power company will connect the power to the service lines at the weather heads and will furnish and install meters.

The power companies require a non-fuse safety disconnect switch on all 240/480-volt services. The non-fuse safety disconnect will be mounted on the side of pedestal services (U) or steel pole (O) as shown in the plans or as directed by the Engineer.

Make arrangements with the appropriate electric power company to provide electric service. Notify the electric power company at least 3 weeks in advance of the need for the service connection. Time suspension will not be issued to Contractor for awaiting utility service connection.

Make all arrangements for electrical service and comply with local standards and practices for proper installation.

When the specifications for electrical items require UL listed products, it will be understood to mean UL listed or Any Nationally Recognized Testing Lab (NRTL).

Aluminum conduit is acceptable for this project where rigid metal conduit is used. Aluminum conduit specification will be submitted to the Engineer for approval. The aluminum conduit will be new and unused and UL-Listed. Notify the Engineer that aluminum conduit will be used on this project. Aluminum conduit will be installed, measured, and payed for under item 618.

Install a continuous bare or green insulated copper wire, No. 6 awg or larger, except where shown on the plans, in the conduit throughout the electrical system in accordance with the electrical detail sheets, and the latest edition of the National Electrical Code.

The locations of conduit as shown are for diagrammatic purposes only and may be varied to meet local conditions, subject to approval.

All conduit placed under existing pavement will be bored as directed. Cutting, trenching, or jacking across roadways or driveways will not be permitted without approval.

Install a 3-inch warning tape on trenched conduit runs during backfill operations. The tape will be red polyethylene marked “CAUTION-BURIED ELECTRIC LINE”. Place the tape 12 inches above the conduit. Measurement and payment are subsidiary to Item 618, “Conduit”.

When backfilling bore pits, ensure the conduit does not become damaged. Place select backfill in three equal lifts to the bottom of the conduit or place sand to a point 2 inches above the conduit. Compact the backfill to obtain a density equal to the existing, adjacent soil. Prevent backfill material from entering the conduit.

Excavate bore pits no closer than 2 feet from the edge of pavement or base.

The vertical and horizontal tolerances of bored conduits are not to exceed 18 inches as measured from the target point.

Ensure that all PVC conduit and fittings will be schedule 40.

Bell end fittings will be used at the ends of all non-metallic conduits. (e.g., metal junction box).

Where PVC, duct cable, and HDPE conduit 1” and larger is allowed and installed as per TxDOT standards, provide a PVC elbow in place of the galvanized rigid metal elbow required by the Electrical Detail Standards. Ensure the PVC elbow is of the same schedule rating as the conduit to which is connected. Ensure only a flat, high tensile strength polyester fiber pull tape is used for pulling conductor through the PVC conduit system.

**ITEM 636 - Signs:**

Ensure the location and details of the fabrication, assembly and erection of the aluminum signs are in accordance with the details shown on the plans.

Ensure the Contractor's working drawings, for extruded aluminum signs, conform to the details shown on the plans.

Transport signs in such a manner as to not damage the high intensity reflective sheeting. Carry signs in a standing position within a divider rack assembly.

Ensure new sign panels have edge molding as detailed in the edge molding standard sheet. Edge molding will be subsidiary to this item. Install sign clamps on the sign before the installation of the edge molding.

**ITEM 644 – Small Roadside Sign Assemblies:**

Type A signs will be made of flat aluminum.

Existing sign assemblies will be removed after the proposed sign is installed. Contractor will leave existing sign in place while proposed sign goes up. The existing sign will be removed immediately after the proposed sign is installed.

For this project, the standard triangular slip base two bolt casting will be used. This casting must be furnished from an approved manufacturer.

Erect the proposed signs an appropriate distance from adjacent signs in accordance with the Texas MUTCD, as directed and as shown on the plans.

Verify the elevation difference between the edge of the travel lane and bottom of the sign.

Do not remove existing sign assemblies until signs are ready to be installed on new mounts.

Sign assemblies associated with warning signs or stop or yield signs will require Omni -Directional Post Wrap. Retroreflective sheeting wrapped around a warning sign is yellow.  Stop or Yield signs will require red sheeting. Retroreflective sheeting wrapped around a sign has a height on the post of at least 12 inches. The bottom of the retroreflective sheeting will be placed two feet below the bottom of the sign. The Engineer will approve the retroreflective sheeting wrap prior to any installation. This work will not be paid for separately; but will be subsidiary to this Item.

Flat aluminum signs removed on the project will remain property of the State. The signs are to be delivered to the nearest Atlanta District Maintenance office yard, coordinate delivery with the Engineer. Mounting hardware and supports will remain property of the contractor to dispose of in accordance with federal, state and local regulations. This work will not be paid for separately but will be subsidiary to this Item.

**ITEM 658 – Delineator and Object Marker Assemblies:**

Install only round posts meeting the requirements of DMS-4400 or as directed.

**ITEM 662 – Work Zone Pavement Markings:**

Removable work zone markings shall be buttons.

**ITEM 666 - Reflectorized Pavement Markings:**

Furnish and place a double drop of Type II and Type III drop-on glass beads.

Place pavement markings only after the surface treatment has cured to the satisfaction of the Engineer.

Place pavement markings within 14 days after completion of the final surface.

Mark the lateral locations of pavement markings with pilot lines. Obtain approval of the location and alignment of the pilot lines before application of permanent markings.

A mobile unit will be required to take reflectivity readings, readings will be taken on all lines in both directions. The mobile reflectivity readings will not be paid for separately but will be subsidiary to this bid item. Strict compliance with report output will be exercised in accordance to this general note. Information for each road must be together in the same file and submitted on a USB thumb drive. Submit a table of contents for each USB thumb drive. Each thumb drive will contain a customer interactive report that generates a color-coded map where the user can verify passing and failing sections of roadway. The color-coded map should match the color-coded graphs generated by the data in the computer. The graphs should have a color-coded portion or shaded area representing failing and passing. The map should be standard Google earth maps or equal. Reports need to be in numerical order by reference number, concurrent with direction, labeled and separated by color, and include the posting date. The format will require prior acceptance by the Engineer.

Record the location of “passing” and “no passing” zones before beginning roadway work to re-establish these zones in their original location. Provide a copy of the record to the Engineer.

The Engineer will determine locations of no-passing zones.

**ITEM 677 – Eliminating Existing Pavement Markings and Markers:**

Furnish a high-pressure water blasting system for removing paint, thermoplastic, epoxy, and preformed tape materials from the following surfaces without causing any grooves or trenching of that surface, including asphalt, concrete, friction coarse asphalt, grooved asphalt, and grooved concrete.

Use a high-pressure water blasting system that consist of a vacuum recovery system that must provide for a nearly dry surface eliminating the possibility of uncontained run-off blasting water and debris.

All components required for the complete operation of the water blasting system – Ultra High Pressure (UHP) pump, vacuum system, clean water supply, vacuum recovery storage, blasting components will be mounted and transported on a single, fully self-contained and supporting truck chassis, thereby eliminating the need for any additional water, vacuum, or other transport vehicles.

**ITEM 678 – Pavement Surface Preparation for Markings:**

Furnish a high-pressure water blasting system for removing paint, thermoplastic, epoxy, and preformed tape materials from the following surfaces without causing any grooves or trenching of that surface, including asphalt, concrete, friction coarse asphalt, grooved asphalt, and grooved concrete.

Use a high-pressure water blasting system that consist of a vacuum recovery system that must provide for a nearly dry surface eliminating the possibility of uncontained run-off blasting water and debris.

#### All components required for the complete operation of the water blasting system – Ultra High Pressure (UHP) pump, vacuum system, clean water supply, vacuum recovery storage, blasting components will be mounted and transported on a single, fully self-contained and supporting truck chassis, thereby eliminating the need for any additional water, vacuum, or other transport vehicles.

**ITEM 3077 - Superpave Mixtures:**

Use field sand with a sand equivalent value of at least 35 when sampled and tested in accordance with Tex-203-F.

The plant is the designated aggregate sampling location, unless otherwise approved by the Engineer.

Construct longitudinal joints in the surface course as shown in the plans. Construct longitudinal joints in all other courses by tapering the bituminous mat as shown in the plans or providing a 6-inch minimum offset from lift to lift. Extend the tapered portion of the mat beyond the normal lane width. Construct the tapered portion of the mat using an approved strike-off device that will provide a uniform slope and will not restrict the main screed. Apply tack coat to the in-place taper before the adjacent mat is placed. Final density requirements for the entire pavement, including the taper area will not change. Compaction of the initial taper section will be required to be as near to final density as possible. Use a small static roller (approximately 200 lbs.) located immediately behind the paver for pre-compaction of the notched wedge joint.

The Engineer will determine the correction when the total thickness of the ACP at any location, is deficient by more than ¼”. Correct by adjusting the profile grade or removing and replacing the pavement structure to the correct grade, lines and thickness as shown on the plans. Correction of defective work will be in accordance with Section 5.3.2, “Correction of Defective or Unauthorized Work”.

Construct longitudinal joints so that the hot side overlaps the cold side by 0.5 inch minimum at the joint.

Furnish clean 5-gallon plastic buckets with lids and wire handles for sampling, transporting, and shipping aggregate and base to the District Lab.

Beginning with the final lift of embankment, measure the cross slope during pavement structure operations, at the completion of each land, and prior to covering with another course or lift to ensure that the cross slope is uniform and in compliance with the cross slope shown in the plans.  Measure the cross slope at a minimum frequency of one measurement every 100 feet.  The number of measurements may be reduced by demonstrating consistently acceptable results, with the approval of the Engineer.  Furnish a digital measuring device approved by the Engineer for the measurement of cross slope.  Make this measuring device available at the jobsite for the Engineer’s use.   Report the cross slope to the nearest 0.1%.  Record all measurements on an approved form signed and dated certifying correct and submit to the Engineer the next working day for documentation.  The Engineer will determine the number of verification measurements.

For hot-mix items, in place of typical tack material shown in Table 18 under Item 300, use a tracking resistant asphalt interlayer (TRAIL) material as a tack coat. Approved TRAIL products are found on TxDOT’s Material Producer List under Asphalt Interlayer (Tracking Resistant) through [http://www.txdot.gov/business/resources/materials.html](https://nam11.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.txdot.gov%2Fbusiness%2Fresources%2Fmaterials.html&data=04%7C01%7CToby.Whitehorn%40txdot.gov%7Cb8dfb710513f4f9875a808d973c06467%7C39dba4765c094c6391dace7a3ab5224d%7C0%7C0%7C637668092411197737%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C1000&sdata=MR8zZgSm9LvTd3ncs3bXUKwkEWWaptdmpi15uS3MAAM%3D&reserved=0).

There should be little to no evidence of tracking or pickup of the tack coat on the wheels of the equipment as determined by the Engineer. Use approved release agents or misters on equipment tires as necessary.

**ITEM 6185–Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA):**

The shadow vehicle with truck mounted attenuator (TMA) will not be optional but will be required as shown on the appropriate traffic control plan sheets.

A total of one (1) shadow vehicle with TMA will be required for work. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA’s needed for the project.

A total of two (2) shadow vehicles with TMA will be required for Pavement Marking Operations.

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