

# NOTIFICATION OF ADDENDUM

## ADDENDUM NO. 1

**DATED 4/16/2012**

<b>Control</b>	<b>0008-02-069</b>
<b>Project</b>	<b>CC 8-2-69</b>
<b>Highway</b>	<b>US 180</b>
<b>County</b>	<b>PARKER</b>

Ladies/Gentlemen:

Attached please find an addendum on the above captioned project. Included in the attachment is an addendum notification which details the changes and the respective proposal pages which were added and/or changed.

Except for new bid insert pages, it is unnecessary to return any of the pages attached.

Bid insert pages must be returned with the bid proposal submitted to the Department, unless your firm is submitting a bid using a computer print out. The computer print out must be changed to reflect the new bid item information.

Contractors and material suppliers, etc. who have previously been furnished informational proposals are not being furnished a copy of the addendum. If you have a subcontractor on the above project, please advise them of this addendum. Acknowledgment of this addendum is not requested if your company has been issued a proposal stamped "This Proposal Issued for Informational Purposes."

You are required to acknowledge receipt of this addendum on the Addendum Acknowledgement form contained in your bid proposal by placing a mark in the box next to the respective addendum.

Failure to Acknowledge receipt of this addendum in your bid proposal will result in your bid not being read.

SUBJECT: PLANS AND PROPOSAL ADDENDUMS

PROJECT: CC 8-2-69

CONTROL: 0008-02-069

COUNTY: PARKER

LETTING: 05/02/2012

REFERENCE NO: 0416

**PROPOSAL ADDENDUMS**

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- \_ PROPOSAL COVER
- \_ BID INSERTS (SH. NO.:
- X GENERAL NOTES (SH. NO.: L, M, N

- \_ SPEC LIST (SH. NO.:
- \_ SPECIAL PROVISIONS:
- ADDED:

DELETED:

- \_ SPECIAL SPECIFICATIONS:
- ADDED:

DELETED:

X OTHER: SEE CHANGES BELOW

DESCRIPTION OF ABOVE CHANGES  
(INCLUDING PLANS SHEET CHANGES)

GENERAL NOTES: SHEET L - REVISED NOTE 5 OF ITEM 680.  
SHEETS M, N - REVISED DUE TO SHIFTING.

PLAN SHEETS: SHEETS 9E, 9F REVISED DUE TO ABOVE CHANGES.  
SHEET 95 - REVISED NOTE # 2.

**Project Number:** CC 8-2-69

**Sheet:**

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

**GENERAL NOTES:**

Basis of Estimate  
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Item	Description	Rate	Unit
166	Fert (16-8-8)	600 lb/acre*	Ton
168	Vegetative Watering	169,400 gal/acre	MG
260	Lime (Hydrd, Comm Or Quicklime)(Slry)	150 lb/CY	Ton
310	Asph Mat'l (AE-P)(Flex Base)	0.3 gal/SY**	Gal
340	Hot Mix (Ty D)	115 LB/SY/IN	Ton

- \* Non-Pay, for Contractor's Information Only.
- \*\* Based On 50% Asphalt Residue.

Compaction Requirements for Base Courses:  
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(Percent of Density As Determined By Compaction Ratio Test Tex-113-E)

ITEM	MATERIAL	COURSE	MIN DENSITY
247	Flex Base	All	100 %

**Special Notes:**

Use appropriate TxDOT Excel templates to calculate and record all test data. These forms are available on the TxDOT website at [www. TxDOT.gov/forms/construction.htm](http://www.TxDOT.gov/forms/construction.htm) under the "SiteManager" heading. Submit test results within 24 hours of test completion by email or CD.

Existing storm sewers and utilities are shown from the best available information. Verify the location of all underground facilities prior to starting work.

Mail box manipulation made necessary because of construction shall be done in accordance with Item 560, except that this work will not be paid for directly, but will be considered subsidiary to the various bid items.

**Project Number:** CC 8-2-69

**Sheet:**

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

Provide all-weather surface for temporary ingress and egress to adjacent property, as directed. Materials, labor, equipment, and incidentals necessary to provide temporary ingress and egress will not be paid for directly, but will be subsidiary to the various bid items.

Locations and lengths of all private entrances are approximate only. The actual locations, lengths, lines, and grades are to be established in the field.

In those instances, where necessary, the governing slopes indicated may be varied from the limits shown as directed.

Remove the grass from the crown of shoulders or pavement edges by blading or other approved methods. Payment for this work will not be made directly, but shall be considered subsidiary to the various items of the contract.

Remove any obstructions to existing drainage due to the Contractor's operations, as required, at the Contractor's expense.

Provide temporary drain openings at all low points or other drainage structures, as required, at the Contractor's expense.

#### **Item 5. Control of the Work**

The responsibility for the construction surveying on this contract will be in accordance with Article 5.6.c, "Method C".

The locations of all signal related items, pavement markings, signing, etc. are diagrammatic only and may be shifted to accommodate field conditions and/or as directed by Engineer.

#### **Item 7. Legal Relations and Responsibilities**

Do 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" as 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. 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. Maintain copies of their determination(s) for review by the Department or any regulatory agency.

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 Previously Evaluated Permit Areas.**

Document both the project specific location (PSL) and its authorization. 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:

- a. 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;
- b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
- c. 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.**

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:

- a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
- b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

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, for the Contract will further 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

**Project Number:** CC 8-2-69

**Sheet:**

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

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.

**Item 100. Preparing Right of Way**

Measurement for this item shall be along the centerline of the project with the limits of measurements as shown on the plans.

**Item 105. Removing Stabilized Base and Asphalt Pavement**

The Contractor will retain ownership of removed materials.

**Item 110. Excavation**

Cross sections for pay quantity determination of earthwork may be developed photogrammetrically.

Review proposed waste sites to determine if any site is located in a "Base Floodplain" or "Floodway" as defined by the Federal Emergency Management Agency (FEMA).

If waste material from this project is placed in a base floodplain as defined by FEMA, a permit will have to be obtained from the local community responsible for enforcing National Flood Insurance Program (NFIP) regulations. The Contractor is responsible for ensuring that the owner of the property receiving the waste has obtained the necessary permit.

**Item 132. Embankment**

Do not provide Type B embankment material with a Plasticity Index (PI) higher than 35.

At all locations where guardrail is shown to flare, widen the embankment as necessary to accommodate the guardrail.

Test off-site borrow sources for soluble sulfates in accordance with Test Method Tex-145-E and Tex-146-E. High sulfate levels are those defined above 7,000 PP and shall not be allowed on the project.

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

**Item 162. Sodding for Erosion Control**

Furnish and place Bermudagrass sod.

**Item 164. Seeding for Erosion Control**

Apply seeding required between December 1 and January 31 using seed types and mixtures as shown in Item 164.2.A, Table 3. If, in the opinion of the Engineer, this does not provide an effective vegetative cover, apply "straw or hay mulch" as specified in Item 164.3.E as soon as possible. After February 1 apply warm season seeding in order to establish a permanent protective vegetative cover.

**Item 166. Fertilizer**

Fertilize all areas of project to be seeded or sodded.

**Item 168. Vegetative Watering**

Furnish and install an approved rain gauge at the project site, as directed. Furnishing and installation of the rain gauge will not be paid for directly, but will be considered subsidiary to Item 168.

Apply vegetative watering for an establishment period of thirteen weeks following application of seed or installation of sod, at a rate of ½" of water depth per week (approximately 13,030 gallons per acre). During the first four weeks after seeding, apply watering twice per week, on non-consecutive days, each at half the weekly application rate. For the remainder of the establishment period, apply vegetative watering once per week during the months of January through June or September through December, at the weekly application rate; apply watering twice per week, on non-consecutive days during the months of July and August, each at one-half the weekly application rate.

Average weekly rainfall rates for the District are as follows:

January – 0.39"	April – 0.86"	July – 0.48"	October – 0.68"
February – 0.46"	May – 1.00"	August – 0.47"	November – 0.46"
March – 0.48"	June – 0.63"	September – 0.74"	December – 0.37"

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

**Item 247. Flexible Base**

(TY A, GR 4) Furnish crushed stone, gravel, or crushed gravel aggregate conforming to the following requirements:

Gradation:

<u>Retained on Sieve Size</u>	<u>Percent (%) by Weight</u>
1-3/4 in.	0 – 5
7/8 in.	5 – 35
No. 4	40 – 75
No. 40	65 – 85

Plasticity Index (PI)	12 max., 4 min.
Liquid Limit	45 max.
Wet Ball Mill	50 max.
Wet Ball Mill, %	20 max.
Increase Passing the No. 40	

Place material in two or more equal lifts unless otherwise directed.

Do not add field sand to modify the final material to meet the requirements.

**Item 260. Lime Treatment (Road-Mixed)**

Test soils to be lime treated for soluble sulfates in accordance with Test Method Tex-145-E and Tex-146-E.

High sulfate levels are those defined above 7,000 PP and shall not be allowed within the treatment area. Excavate high sulfate areas to a depth of one foot below and laterally to one foot outside the proposed treatment limits. Removal of the high level material shall be measured and paid for in accordance with Item 110 and replacement with suitable material shall be measured and paid for in accordance with Item 132.

**Item 301. Asphalt Antistripping Agents**

Furnish a liquid antistripping agent unless directed.

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

**Item 310. Prime Coat**

Apply AE-P as specified in Item 314. Allow the material to remain undisturbed for a minimum of 24 hours unless otherwise directed by the Engineer.

Provide the material as supplied by the manufacturer. Do not dilute at any time to include at the refinery.

**Item 340. Dense-Graded Hot-Mix Asphalt (Method)**

Target laboratory molded density is 97.0%.

Provide aggregate with a Surface Aggregate Classification value of B.

Provide a PG 70-22 asphalt for the surface course, with any of the following modification alternatives:

\*PG 64-22 modified with SBS at the refinery

\*PG 64-22 modified with SBR Latex at the Hot Mix Plant

\*AC-10 modified with SBR Latex at the Hot Mix Plant

\*PG 64-22 modified with Crumb Rubber and Vestenamer (TOR) at the Hot Mix Plant.

When modified at the Hot Mix Plant, provide the PG 64-22 refinery certification.

The Hamburg Wheel Test Requirements per Table 6 are reduced by 5,000 passes for each binder grade.

Furnish CSS-1P with greater than 50% asphalt residue for the tack coat on this project. Dilution of the tack coat is not allowed.

From Table 5: The tensile strength is waived for this project.

Use the boil test, Test Method Tex-530-C, and provide only mixes that produce zero percent (0%) stripping for design verification and during production.

Include the approved mix design number on each delivery ticket.

If the Contractor elects to use Warm Mix Asphalt (WMA) use the following notes.

Use an Evotherm DAT Warm Mix Asphalt (WMA), a SASOBIT WMA, a Rediset WMX WMA, or an Advera WMA product additive for all mix applications. Delivery temperature shall be a maximum of 235° F. Delivery and roll out

temperatures will be modified by the supplier and accepted by the Engineer. All work related to WMA product additives is subsidiary to this item.

To produce an Evotherm WMA use Evotherm DAT or Evotherm 3G. Evotherm 3G is metered into the asphalt between 0.5% and 0.7% by total asphalt weight. Evotherm DAT, a chemical solution, is metered into the asphalt between 5.0% and 7.0% by total asphalt weight.

To produce a SASOBIT WMA, the mix production facility will receive SASOBIT from the solution supplier. SASOBIT is metered into the asphalt line at a rate of 1.5% by weight of total binder content.

To produce a Rediset WMX WMA, preblend with the asphalt or dose into the mixing drum via the RAP belt or port. Use 1.5% or 2.0% by weight of asphalt dependent upon the mix type.

To produce an Advera WMA, the mix production facility will receive Advera from the solution supplier. Advera is added into the mixing drum at a rate of 0.25% by weight of mix to create a foaming effect in the binder. Advera WMA is a synthetic zeolite (hydrated aluminosilicate, containing 18-21% water).

An authorized representative of the WMA product additive supplier shall be present onsite during the first day of asphalt placement.

### **Item 360. Concrete Pavement**

The provisions of Article 360.6.B will not be a requirement and the pavement will not be cored.

Include the approved mix design number on each delivery ticket.

### **Item 400. Excavation and Backfill for Structures**

Class "B" bedding will be permitted in lieu of Class "C" bedding.

### **Item 416. Drilled Shaft Foundations**

Stake the locations and have them approved by the inspector before installation of foundations. This will ensure that all luminaires and mast arms are clear of all overhead

**County:** Parker

**Control:** 0008-02-069

**Highway:** US 180

lines and underground utilities before drilling begins. The signal inspector together with the contractor will calculate the vertical signal head clearance before placing any traffic signal pole foundation.

Notify the Inspector 48 hours prior to forming and placing concrete in any unit of all the Signal Pole and Controller Foundations. Do not place concrete without an inspector present. Failure to inform the inspector and provide adequate time to arrive on the job site may result in removing and replacing the foundation.

### **Item 421. Hydraulic Cement Concrete**

For Class P and S Concrete Only: For concrete plants equipped with 2 aggregate bins and/or no calibrated metering system, blend manufactured and natural sand at the aggregate source only. For concrete plants equipped with a minimum of 3 bins and a calibrated metering system, blending of the separate sands on-site is permitted to meet gradation and AIR requirements.

The strength testing equipment for concrete will be capable of producing an electronic printout of the test results.

Air entrainment requirements are waived for all classes of concrete except all Class S and all Class P Concrete.

Concrete will not be rejected for low air content. Adjustment to the dosage of air entrainment will be as directed or allowed by the Engineer.

Include the approved mix design number on each delivery ticket.

### **Item 502. Barricades, Signs, and Traffic Handling**

Any sign not detailed in the plans but called for in the layout shall be as shown in the current "Standard Highway Sign Designs for Texas".

When traffic is obstructed, arrange warning devices in accordance with arrangements indicated in the latest edition of the "Texas Manual on Uniform Traffic Control Devices".

Cover or remove any work zone signs when work or condition referenced is not occurring.

Sign and treat edge conditions in accordance with Edgecon.

**Item 504. Field Office and Laboratory**

Furnish the following structures for this project:

<u>Type</u>	<u>No.</u>
Field Lab (Ty. D)	1

**Item 528. Colored Textured Concrete and Landscape Pavers**

Ensure that all signal pole foundations, sign bases, electrical ground boxes, manholes, inlets, and other appurtenances within the area to be paved are constructed to the proper finished grade.

Provide a herringbone pattern and weathered terra cotta color.

**Item 540. Metal Beam Guard Fence**

The locations and lengths of guard fence shown on the plans are approximate. Actual lengths and locations are to be determined in the field.

The tops of timber posts shall be domed. Beveled tops will not be permitted for timber or steel posts.

When holes for timber posts are drilled below bottom of post elevation, backfill the excessive depth with an acceptable sand. The furnishing and installation of the sand backfill will not be paid for directly but shall be considered subsidiary to this Item.

When guardrail posts are placed in a finished surface, backfill the top 4 inches with an asphaltic material, domed to carry water away from the posts or as shown on the plans. The furnishing and installation of the asphaltic material backfill will not be paid for directly but shall be considered subsidiary to this Item.

**Item 662, 672 & 8251 – Work Zone Pavement Markings, Raised Pavement Markers & Reflectorized Pavement Markings with Retroreflective Requirements**

Prior to beginning paving operations, reference to all existing striping.

Collection of retro-reflectivity readings using a mobile retro-reflectometer is the preferred method. If retro-reflectivity readings are collected using a portable/handheld unit, then measurement is defined as a collective average of at least 20 readings taken along a 200-foot test section. A minimum of three measurements will be required per mile of roadway. Measurements collected on a centerline stripe will be averaged separately for

stripe in each direction of travel. A TxDOT inspector must witness the calibration and collection of all retro-reflectivity data.

**Item 618. Conduit**

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 it is connected.

Ensure only a flat, high tensile strength polyester fiber pull tape is used for pulling conductors through the PVC conduit system.

Use materials from prequalified material producers list as shown on the Texas Department of Transportation (TxDOT) materials producers list. Category is “Roadway Illumination and Electrical Supplies.”

**Item 620. Electrical Conductors**

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

**Item 628. Electrical Services**

TxDOT will make application to the Electric Utility Company for service. Contact TEIM @ (817) 370-6745 to make arrangements.

Time-charge suspension due to the availability of power shall not be considered unless all arrangements for power have been submitted within fifteen (15) days after the project work has begun.

**Item 656. Foundations for Traffic Control Devices**

Stake the locations and have them approved by the inspector before installation of foundations. This will ensure that all luminaires and mast arms are clear of all overhead lines and underground utilities **before** drilling begins. The signal inspector together with the contractor will calculate the vertical signal head clearance before placing any traffic signal pole foundation.

**Item 680. Installation of Highway Traffic Signals**

This project shall consist of the installation of all of the materials necessary for complete signal systems as follows:

1. Provide submittal literature for all traffic signal equipment before installation. Approval by the Engineer does not relieve the Contractor of his responsibilities to meet the requirements of the specifications and plans.
2. Furnish, and install all required materials, incidentals, and any equipment necessary to make a **fully operational** traffic signal.
3. Provide a qualified technician on the project site to place the traffic signals in full operation.
4. Where work requires the removal of power from the controller and cabinet assembly, erect temporary stop sign panels. Remove the stop sign panels after the traffic signals are in operation.
5. For Contractor supplied material deliver the cabinet, controller, accessories, and three complete sets of signal construction plans to the TxDOT Fort Worth District Signal Shop, 2501 SW Loop 820 at McCart Street, Fort Worth for testing. Notify the Signal Shop at 817-370-6505 two working days prior to delivery of the cabinet. Furnish and install a RTC Model TR-3 or McCain GPS Time Source or equivalent for the GPS clock.
6. VIVDS installation: Use mounting bracket to the desired location. When mounting presence cameras on mast arms contact the Fort Worth District Signal Shop for further mounting instructions.
7. **VIVDS Zones Setup:** The signal technicians from the Fort Worth District Signal Shop are responsible for verification of video imaging vehicle detection zones set by the Contractor. Contact Mr. J. D. Gore with the Fort Worth District Signal Shop at 817-370-6505 to coordinate a suitable meeting time to verify proper camera locations in accordance with the VDZ-05(FTW) sheets. At this time, the Fort Worth District Signal Shop begins their one-week inspection. Any discrepancies they find shall be corrected and/or repaired. Upon the satisfactory completion of repairs or corrections, the signals shall operate in a flashing mode for two or three days prior to the beginning of the test period for full signal operation.
8. TxDOT Signal Shop will not assume responsibility for the maintenance of the traffic signals until the project is completed and accepted.

9. Wire the signal installation to operate in accordance with phase diagrams in these plans. Timing and phasing will be changed and maintained by the Fort Worth District Traffic Engineering Group during all phases of construction. A copy of all revisions to the original timing and phasing plans will be delivered to the Fort Worth Traffic Engineering group and one copy is to stay in the controller cabinet at the completion of the project.
10. **Place the traffic signal into operation after all required striping is complete and all conflicting signing is removed.**
11. **Project Inspection:** For electrical project inspection, the Area Office and Chief Inspector should contact the TEIM office in advance of needed inspections. At the time of the final electrical inspection, the TEIM office will create a punch list of discrepancies to be corrected before signal is put into flash mode.
12. **Signal Turn-On:** Notify TEIM at 817-370-6745, Michael Rooney with the Traffic Engineering Group at 817-370-6873 and Mr. J. D. Gore with Fort Worth District Signal Shop approximately 48 hours in advance of the signal turn on. Signal technicians from the Fort Worth District Signal Shop must be present when the signals are placed in full operation. Unless otherwise directed, place the signal in full operation between 9:00 A.M. - 12:00 (NOON) on Tuesdays, or Wednesdays only.
13. During the thirty-day test period, the Fort Worth District Signal Shop will be the First Responders to all trouble calls. They will, in turn contact the Contractor. Provide qualified personnel to respond to these and all trouble calls. Repair and diagnose any malfunctions to signal equipment supplied for the project. Provide a local telephone number, not subject to frequent changes and available to receive calls on a 24-hour basis. Respond to reported calls within a reasonable travel time, (i.e. from a Dallas address), but not more than 2 hours maximum. Make appropriate repairs within 24 hours. Place a logbook in each controller cabinet and keep a record of each trouble call reported. Notify the Engineer of each trouble call. The error log in the conflict monitor shall not be cleared during the thirty-day test period without approval. If it is necessary to replace equipment, such as a controller, in order to return the signals to normal operation, TxDOT will replace the equipment with loaned equipment until the original equipment is repaired and then replaced.

### **Item 682. Vehicle and Pedestrian Signal Heads**

Provide all signal heads from the same manufacturer.

Provide all LED traffic signal lamp units, as well as the various components of the signal heads to be installed within this project.

Traffic signal heads shall be yellow aluminum with black aluminum back plates. Signal heads mounted on poles and mast arms shall be level and plumb and aimed as directed. Cover all signal faces until placed in operation.

The internal arrangements of each louver shall consist of five vanes with a 7-degree cut-off right of center. All louvers shall have a flat black finish on the inside surfaces. Each louver shall be of suitable weight and size to fit inside the full circle visor furnished for the intended signal section.

#### **Item 684. Traffic Signal Cables**

Identify each cable as shown on the plans (cable 1, etc.) with pre-numbered identification tags of plastic, tape or marking labels at each signal head, ground box, terminal block, pole base and controller.

All cables shall be continuous without splices from terminal point to terminal point or as directed or approved. All proposed signal cable and number of conductors required shall be as shown on the plans. Terminate **all** electrical conductors from the controller at the termination block in the signal pole hand hole whether in use or not.

Provide an extra 10' for each cable terminating in the controller cabinet. All cables shall be continuous without splices from terminal point to terminal point. Provide the number of conductors as shown on the plans.

VIVDS Cable: **Camera mounting hardware must allow for vertical or horizontal mounting to the camera enclosure.**

All connection cables must be continuous from the equipment cabinet to the camera. No splices of any type will be permitted. For each cable terminating at the controller cabinet, an extra 10-foot length will be provided for final installation into the controller. All costs associated with the installation of the cameras onto the luminaire arms will be considered subsidiary to this item.

#### **Item 686. Traffic Signal Pole Assemblies (Steel)**

Provide all signal poles from the same manufacturer.

For poles where luminaires are to be installed, provide 10 amp time delay fuses.

Use materials from the prequalified material producer lists as shown on the Texas Department of Transportation (TxDOT) material producer list (MPL). Category is "Roadway Illumination and Electrical Supplies."

**Item 6006. Spread Spectrum Radios for Traffic Signals**

Furnish, install, and make **fully operational** the spread spectrum radio systems to provide communications for the proposed traffic control system. Integrate this communications system with the traffic control system software and hardware as well as the local controllers.

Provide separate lightning protection for all radio units, including the radios at any water towers. This shall not be paid for directly, but considered subsidiary to this item.

**Item 6266. Video Imaging Vehicle Detection System**

Furnish, install, and make **fully operational** the Vehicle Imaging Video Detection System (VIVDS). This includes all cameras, mounting hardware, and cable, field set up devices, black and white monitor, detection processor, connectors and surge suppression panel for AV & Video.

**Item 6834. Portable Changeable Message Sign**

Use the message signs as directed by the Engineer.

Provide two (2) electronic portable changeable message sign units. Message sign units and arrow panels shall have a photoelectric device to allow for automatic dimming of operations to approximately 50% of their normal brightness when ambient light drops to approximately five footcandles and then increase back again for daytime operations.

Program into each message sign unit's permanent memory the following 15 messages:

1. Exit Closed Ahead
2. Use Other Routes
3. Right Lane
4. Left Lane
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Prepare To Stop
10. Merging Traffic

11. Expect 15 Minute Delay
12. Max Speed \*\* MPH
13. Merge Right
14. Merge Left
15. No Exit Next \*\* Miles

### **8615. Radar Advance Detection Devices**

Furnish, install, and make fully operational the Radar Advance Detection Devices (RADD.) The RADD will be mounted directly onto a mounting assembly fastened to a pole, overhead mast-arm or other solid structure. Mounting height of the sensor shall be a maximum of 40 ft. and minimum of 17 ft. 6 in. If the sensor is higher than 30 ft., a lateral offset should be used that is less than 50 ft. to increase the accuracy.

The RADD will provide two or more communication ports that can be accessed simultaneously using any RADD-supported protocol.

This item shall include an installation kit supplied by the contractor, for use while installing and configuring the radar advance detection device (RADD), or continuous tracking advance detectors (CTAD), or in-cabinet contact closure and communication connectivity devices (ICD).

The RADD, CTAD, or ICD shall be installed and configured using a manufacturer supplied installation kit that includes the following elements: a handheld computer equivalent to the Socket Mobile SoMo 650, a serial to USB adapter equivalent to the Socket Serial USB to serial adapter and pertinent documentation.

All unused equipment including the installation kit will become property of the State at the completion of the project and shall be turned in to the TEIM office.