

NOTIFICATION OF ADDENDUM

ADDENDUM NO. 1

DATED 7/05/2016

Control	0077-06-098
Project	NH 1602(297)
Highway	US 67
County	TOM GREEN

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: NH 1602(297)

CONTROL: 0077-06-098

COUNTY: TOM GREEN

LETTING: 07/07/2016

REFERENCE NO: 0629

PROPOSAL ADDENDUMS

- PROPOSAL COVER
- BID INSERTS (SH. NO.:
- GENERAL NOTES (SH. NO.: SHEET A THRU SHEET O

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

DELETED:

- SPECIAL SPECIFICATIONS:
- ADDED:

DELETED:

- OTHER:

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

SEE CHANGES OUTLINED BELOW:

GENERAL NOTES:

REPLACED ALL GENERAL NOTES SHEETS DUE TO NOTE REVISIONS AND
 SHIFTING FROM ITEMS LISTED BELOW.
 ITEM 316 - FIRST SENTENCE REPLACED
 ITEM 344 - ADDED ALL NOTES

PLAN SHEETS:

SHEET 2 - REVISED
 SHEET 12 - REPLACED
 SHEET 12A - REPLACED
 SHEET 12B - REPLACED
 SHEET 12C - REPLACED
 SHEET 12D - REPLACED
 SHEET 12E - REPLACED
 SHEET 12F - REPLACED
 SHEET 12G - REPLACED
 SHEET 14 - REVISED
 SHEET 70 - REVISED

DESCRIPTION OF ABOVE CHANGES
(INCLUDING PLANS SHEET CHANGES)

(CONTINUED)

SHEET 94 - REVISED
SHEET 106 - ADDED

BASIS OF ESTIMATE

Item No.	Description	Usage	Area	Rate	Estimated Quantity
150	Blading		20 STA	1.3 HR/STA	25 HR
168	Vegetative Watering	Side Slope	7464 SY	20 GAL/SY	149 MG
310	Prime Coat		10560 SY	0.3 GAL/SY	2640 GAL
316	Seal Coat	Asphalt	10560 SY	0.4 GAL/SY	3696 GAL
316	Seal Coat	Aggregate	10560 SY	100 1 CY/SY	106 CY
344	Superpave Mixtures	Surface Course	41229 SY	165 LB/SY	3401 TON
344	Superpave Mixtures	Base Course	10560 SY	110 LB/SY-IN	2033 TON

Quantity is shown for Contractor's information only (not a pay item).

COMPACTION REQUIREMENTS

Item No.	Description	Course	Percent Minimum Density
247	Flexible Base	all	100%
400	Excavation and Backfill for Structures	all	98%

Note: Density will be tested in accordance with Tex-113-E, Tex-114-E, and Tex-115-E.

**SUMMARY OF SURFACING AREAS
(SQUARE YARDS)**

Item No.	247	310	316	344	354
Description	Flexible Base	Prime Coat	Seal Coat	Superpave Mixtures	Planing and Texturing Pavement
Main Lanes	11144	8848	8848	38919	10438
Driveways And Turnouts	435	173	173	173	-
Total Area	11579	9021	9021	39093	10438

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GENERAL NOTES

The following Standard Sheets have been modified: Concrete Curb and Curb and Gutter CCCG-12.

Locate the project bulletin board at an approved location within the project limits such as at a field office, staging area, or stockpile, and make accessible to the public at all times. Do not remove the bulletin board from the project until approved. If a construction site notice is required for the project, post a copy at each geographically separated work location.

In those instances where fixed features require, vary the governing slopes indicated in these plans from within the limits to the extent determined.

If Contractor elects to establish a pit within 200 ft. of a public road, construct a barrier or other device in accordance with Natural Resources Code, Chapter 133, and Section 133.041.

Do not use salt water with solids in excess of 10,000 parts per million, as determined by evaporation.

In order to integrate traffic signals on Sherwood Way into the City network, this project is approved for sole source procurement for traffic signal equipment listed below:

- Siemens M62 ATC Traffic Signal Controller
- EDI MMU 16 ELip Smart Monitor
- Iteris Vantage Color Cameras with 7" Color Monitor/BNC Connector
- Iteris Vantage Ethernet Communication Module with Quad View
- Iteris Edge 2 Processor
- Iteris Lens Adjustment Module (LAM) Unit.

Item 2, "Instructions to Bidders"

For questions, contact:
Casey McGee, P.E.
San Angelo Area Engineer
2802 Armstrong
San Angelo, Texas 76903
(325) 486-3801
Casey.McGee@txdot.gov

Item 5, "Control of the Work"

Place a row of 4 blue-tops at each station throughout the length of the proposed roadway for both subgrade and top lift of base course.

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Responsibility for construction surveying shall conform to Section 5.9.3., "Method C."

Make suitable advance notification to affected non-participating municipalities regarding Class B underground facilities, call the Department's San Angelo District Traffic Office at telephone number (325) 947-9208 to have the Department's existing traffic signal and illumination utilities located, and call the Department's San Angelo District Maintenance Office at telephone number (325) 947-9322 to have the Department's existing irrigation utilities located.

A copy of the cross-sections and earthwork data may be obtained by qualified bidders by sending a request to the following email address: SJT_ShopPlanReview@txdot.gov. Cross-sections and earthwork data as provided is for non-construction purposes only and it is the responsibility of the prospective bidder to validate this information with the appropriate plans and Specifications.

Item 7, "Legal Relations and Responsibilities"

All motor vehicle equipment having an obstructed view to the rear shall have a reverse signal alarm audible above the surrounding noise level.

Item 8, "Prosecution and Progress"

Submit the sequence of work and estimated progress schedule on paper or as a Portable Document Format (PDF) electronic file compatible with Adobe Systems Incorporated "Acrobat Reader X".

Restricted work hours are from 7:30 A.M to 8:30 A.M. and from 5:00 P.M. to 6:00 P.M.

Lead time is required for securing materials for signalized intersection construction.

Item 9, "Measurement and Payment"

Provide a conversion rate for units of payment for work subcontracted to disadvantaged business enterprises if units of payments differ from those shown on the plans.

The progress payment period shall end two working days before the last working day of the month. Deliver invoices to be paid as material on hand on or before the end of the progress payment period.

Item 150, "Blading"

1. A survey of ground nesting birds is required prior to disturbing the ground or stockpiling materials within the existing ROW. Contact Becki Perkins (325) 947-9261 at the San Angelo TxDOT office for the survey.

2. Clear the proposed ROW by blading for the D-1, N-2, and HH connector alignments prior to April 1st to discourage ground nesting birds from occupying these work areas.

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Install erosion controls after blading. Blading should be complete by April 1st for activities occurring between April 1st and October 1st.

Item 204, “Sprinkling”

Apply water for dust control to un-surfaced bases during the work day, at the end of each work day, and on non-work days as directed.

Item 247, “Flexible Base”

Stockpile flexible base produced for this project separately from any other stockpiled material and label stockpile with project number, material type, and grade.

Place flexible base in lifts of 4 in. maximum.

Provide 24 hours written notice of intent to begin crushing operations. Materials produced prior to this notice will not be accepted.

Item 302, “Aggregates for Surface Treatments”

Stockpile aggregates separately and label stockpiles with project number, material type, and grade.

The target value for the desired percent by weight of residual bitumen coating for virgin limestone aggregate is 1.2%. If using aggregate other than virgin limestone, notify the Engineer prior to pre-coating. The Engineer will determine the target value for the percent residual bitumen coating for non-limestone aggregate.

Pre-coat limestone rock asphalt with 0.6% flux oil.

Item 310, “Prime Coat”

If planing operations expose base material:

1. Refinish exposed base material in accordance with Item 251, Type D. This work will not be measured or paid for separately, but will be considered as included in payment for Item 310.
2. Place prime coat on refinished base material in accordance with Item 310.
3. Place one-course seal coat on primed base material in accordance with Item 316.

Refinish material that does not receive prime coat within one working day following acceptance of flexible base.

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Item 316, “Seal Coat”

AC 10 or CRS-2 are allowed for use as Item 316-6001 Asph (Multi Option).

If cutback asphalt is used for the first surface treatment course, a minimum of 2 days curing time shall be required before placing the second course. The Department will assume interim maintenance of the first course during the curing period provided that other items of work including clean-up have been completed as directed.

Cover or protect the following, as applicable: railings, bridge joints, utility covers, railroad crossings, and exposed concrete such as curbs, bridge approach slabs, bridge decks, sidewalks, mow strips, and concrete pavement.

Do not place wet aggregate.

Use medium pneumatic rollers that meet the requirements of Item 210, "Rolling." If trap rock aggregate is used, the Engineer may require steel wheel rollers.

Item 320, “Equipment for Asphalt Concrete Pavement”

Provide production equipment that ensures a uniform continuous production rate of at least 150 tons per hour.

A Type D Structure is not required.

Item 340, “Dense-Graded Hot-Mix Asphalt (Small Quantity)”, Item 341, “Dense-Graded Hot-Mix Asphalt”, Item 344, “Superpave Mixtures”

Liquid antistripping agents are not allowed.

Do not dump and reload hot mix asphalt into a material transfer device, truck, or asphalt paver using a front-end loader.

Should the paving operation stop three times in one day due to equipment malfunction or mixture flow interruption, the Engineer may require the Contractor to immediately suspend operations until the next working day.

Hauling equipment is subject to weight verification.

Design a mixture with a gradation that has stone-on-stone contact and passes within the reference zone shown in Table 8. Verify stone-on-stone contact using the method given in the Superpave design procedure in Tex-204-F, Part IV.

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Item 344, “Superpave Mixtures”

Provide non-tracking tack coat emulsion at a rate of 0.10 to 0.13 GAL/SY or as otherwise directed. Place non-tracking tack coat emulsion on all surfaces, including vertical joints, prior to paving. Non-tracking tack coat emulsion will not be measured or paid for separately, but will be considered as included in payment for this item.

Item 354, “Planing and Texturing Pavement”

Remove and dispose of existing raised pavement markers, jiggle bars, and traffic buttons before planing.

Mark and saw cut straight lines at the boundaries of planed areas. Do not saw cut pavement until the lines are approved.

Take measures to prevent reclaimed asphalt pavement (RAP) from entering storm drain grates, inlets and waterways.

All reclaimed asphalt pavement (RAP) not incorporated into the project shall become the property of the Contractor.

Furnish, install, and maintain temporary sediment control fence around the stockpile of reclaimed asphalt pavement (RAP) material at all times. When the existing RAP stockpile is enclosed by temporary sediment control fence, remove and replace fencing as necessary to add or remove RAP. Leave fencing in place at the conclusion of the project. This shall be measured and paid for as Item 506, “Temporary Erosion, Sedimentation, and Environmental Controls.”

Furnish, install, and maintain biodegradable erosion control logs around the stockpile of reclaimed asphalt pavement (RAP) material at all times. When the existing RAP stockpile is enclosed by erosion control logs, remove and replace erosion control logs as necessary to add or remove RAP. This shall be measured and paid for under the appropriate item.

Maintain approved sediment control measures around the stockpile of reclaimed asphalt pavement (RAP) material at all times. This shall not be paid for directly but shall be considered as included in payment for this item.

Item 400, “Excavation and Backfill for Structures”

If excavating beyond the dimensions shown on the plans, furnish and install cement stabilized backfill in such areas at no cost.

Use Class C bedding.

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Item 421, “Hydraulic Cement Concrete”

Provide sulfate-resistant concrete (containing Type II cement) for all concrete identified as structural concrete in Table 8, except for the following: bridge railing, approach slabs, concrete traffic barrier, prestressed concrete panels, Class H concrete, and Class S concrete.

Entrained air is required in all slip formed concrete, but is not required for other structural concrete. Adjust the dosage of air entraining agent for low air content as directed by the Engineer. If entrained air is provided where not required, only the upper limits of the applicable Special Provision will be enforced.

Item 427, “Surface Finishes for Concrete”

Provide rub finish to Surface Area I.

Item 432, “Riprap”

Furnish and install 1/2-in. thick joint filler board conforming to DMS-6310, “Joint Sealants and Fillers” between concrete riprap and adjacent existing concrete, and where directed.

Item 440, “Reinforcement for Concrete”

Reinforcing steel shall be epoxy-coated in bridge slabs, in top slabs of culverts that require Class S concrete, in bridge approach slabs, in concrete railings and in permanent concrete barriers.

Item 496, “Removing Structures”

This item shall include the complete removal and proper disposal of existing structures, including but not limited to the following: culvert barrels, railing, wingwalls, headwalls, retaining walls, safety end treatments, pipe runners, riprap, deck, overlay, approach slabs, joints, beams, bracing, drains, conduits, pipes, bents, abutments, columns, pilings, footings, web-walls, drilled shafts, reinforcing steel, bridge protective assemblies, clearance signs, etc. Portions of the structure at least 2 ft. below the permanent ground line may be left in place as directed.

Structures to be removed have surface coatings which may contain hazardous materials. Follow applicable safety standards.

Steel railing posts to be removed have surface coatings which contain hazardous materials. Removal of the existing railing posts shall be accomplished by unscrewing existing nuts and removing the steel posts. The use of a cutting torch or any other means that will produce fumes or stripping of paint shall not be used. Proper disposal is required for all of the railing elements. Follow applicable safety standards.

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Item 502, “Barricades, Signs and Traffic Handling”

The contractor force account “Safety Contingency” that has been established for this project is for work zone enhancements that were unforeseen in the project planning and design stage, but would improve the effectiveness of the traffic control plan. 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 doing so does not slow implementation of work zone enhancements.

Use high level warning flags on advance warning signs during daytime operations.

Furnish and install signs CW21-1T “GIVE US A BRAKE” as shown on Standard Sheet WZ(BRK).

Provide flaggers at such times and locations as directed to ensure the safe passage of traffic through construction areas. When flaggers are used to control traffic, furnish and install signs CW20-7 “FLAGGER SYMBOL”, CW20-7aD “FLAGGER AHEAD”, and CW3-4 “BE PREPARED TO STOP”. Flaggers shall use 24 in. STOP/SLOW paddles.

Use static message boards where portable changeable message signs are shown on the plans. Contractor may elect to use portable changeable message signs conforming to Special Specification 6001, “Portable Changeable Message Sign” instead of static message boards; however, no measurement or payment will be made for this substitution.

Use portable changeable message signs instead of static message boards. These shall be measured and paid for as Item 6001, “Portable Changeable Message Sign.”

Warning reflectors mounted on plastic drums may be substituted in place of Type C steady burn warning lights.

Install orange plastic construction fencing around the perimeter of trenches and excavations to remain open at night, and at other locations shown on the plans or as directed. Construction fence shall be orange plastic, highly visible, 4 ft. high, and as approved. Construction fence supports shall be steel t-posts with safety caps, wooden posts having minimum dimension of 1 1/2 in, or plastic drums. Embed steel or wooden posts sufficiently as directed. Steel or wooden supports shall extend to top of construction fence. Attach construction fence to supports sufficiently as directed. Do not exceed 8 ft. between supports. Do not use steel reinforcing bars as supports for construction fence.

As directed, furnish and install signs R9-8 “PEDESTRIAN CROSSWALK”, R9-9 “SIDEWALK CLOSED”, R9-10DBL “SIDEWALK CLOSED ↔ USE OTHER SIDE”, R9-11L(R) “SIDEWALK CLOSED AHEAD ← CROSS HERE”, and R9-11aL(R) “SIDEWALK CLOSED ← CROSS HERE”. Place other additional appropriate warning or

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protective devices as directed for pedestrian safety. Do not obstruct pedestrian paths unless designated for closure.

Furnish and install anti-skid steel road plates suitable for pedestrian and vehicular traffic to cross trenches as needed for access to adjacent property and where directed. Where steel road plates are used, furnish and install signs CW8-24 "STEEL PLATE AHEAD".

Prior to each work day, make provisions to exclude vehicles from parking within work areas.

Temporarily relocate existing permanent sign assemblies to temporary supports as shown on the plans, or as directed.

Omit advance warning signs and furnish and install reduced size signs CW20-1 "ROAD WORK AHEAD" mounted back to back with reduced size signs G20-2 "END ROAD WORK" signs at intersecting city streets and county roads.

Furnish and install signs CW20-1D "ROAD WORK AHEAD", G20-1aT "ROAD WORK ←NEXT X MILES, NEXT X MILES→", and G20-2 "END ROAD WORK" at intersecting state highways.

Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls"

The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance with the Act's policies and regulations. Migration patterns would not be affected by the proposed project. Remove non-active migratory bird nests from structures where work would be performed from September 1 through the end of February. Prevent migratory birds from building nests from March 1 to August 31. In the event that migratory birds are encountered on-site during project construction, avoid adverse impacts on protected birds, active nests, eggs, and/or young.

Item 585, "Ride Quality for Pavement Surfaces"

Surface test type A shall be used to evaluate ride quality.

Item 610, "Roadway Illumination Assemblies"

Steel poles conforming to the Department's Roadway Illumination Poles Standard Sheets do not require shop drawings. Alternate designs and/or aluminum poles require the submission of shop drawings for approval.

Draw controlled 480-volt single-phase power for illumination from existing service poles. Wire roadway illumination assemblies in a 480-volt phase-to-phase configuration for Type A and C electrical services.

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For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse-holders as noted on the Department's Material/Producer List for Roadway Illumination and Electrical Supplies.

Install riprap at roadway illumination assembly foundations in accordance with the details shown on Standard Sheet RID(FND).

Item 618, "Conduit"

Where PVC, duct cable, and HDPE conduit 1 in. diameter and larger is allowed and installed as per Department standards, optionally provide PVC elbows in place of the galvanized rigid metal elbows required by the Electrical Details standard sheets. Provide PVC elbows of the same schedule rating as the conduits to which they connect. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system that uses PVC elbows.

Secure permission from the proper authority before cutting into or removing any walks or curbs.

Install conduit under existing pavement by an approved boring method unless otherwise directed. Do not construct boring pits within 2 ft. of the edge of the pavement unless otherwise directed. When conduits are bored, the vertical and horizontal tolerances shall not exceed 18 in. as measured from the intended target point.

Do not use a pneumatically driven device for punching holes beneath the pavement, commonly known as a "missile."

Install a pull rope in conduit runs in excess of 60 ft.

Furnish and install duct seal at ends of conduits.

Furnish and install access fittings in bridges for conduit.

Optionally substitute HDPE conduit meeting the requirements of Item 622, "Duct Cable" for bores requiring PVC Schedule 40 and Schedule 80 conduit when approved. HDPE shall be the same size as the PVC conduit shown on the plans. No additional compensation will be paid when HDPE is substituted for this purpose.

Install a continuous bare or green insulated copper wire number 8 AWG or larger in every conduit throughout the electrical system in accordance with the electrical detail sheets and the NEC.

Item 620, "Electrical Conductors"

Grounding conductors that share the same conduit, junction box, ground box or structure shall be bonded together at every accessible point in accordance with the NEC.

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For both transformer and shoe-base type illumination poles, provide double-pole breakaway fuse-holders as noted on the Department's Material/Producer List for Roadway Illumination and Electrical Supplies.

Item 628, "Electrical Services"

Costs for utility-owned power line extensions, connection charges, meter charges, and other charges will be paid for by the City of San Angelo. The City of San Angelo will reimburse the contractor only the amount billed by the utility. No additional amount for supervision of the utility's work will be paid.

Item 636, "Signs"

Install the prismatic sheeting for overhead signs material to within 30 degrees of the manufacturer-specified orientation.

Materials determined salvageable shall remain property of the Department. Deliver to the Department's maintenance section which has responsibility for the project area.

Before removal from the project site, spray-paint (with an oil-based paint), an "X" across the face of non-salvageable signs as directed.

Item 644, "Small Roadside Sign Assemblies"

Where foundations protrude through riprap or other concrete areas, wrap the foundation with 1/4-in. thick bituminous fiber sheets before placing concrete or repairing the concrete area. Bituminous fiber sheet tubes may be used for forming sign foundations instead of removable forms and shall be left in place below the finished concrete or riprap surface. Neatly trim the bituminous fiber sheets flush with the finished surface after the concrete has cured.

Drill and pour small roadside sign foundations on the same day or suitably cover the drilled hole.

Signs indicated to be mounted on the back of another sign or on a traffic signal pole or mast arm may require punch spacing different from that shown on the Standard Sheets. Adjust punch spacing on affected signs.

Cover each unfinished sign base with a reflectorized traffic cone.

Materials determined salvageable shall remain property of the Department. Deliver to the Department's maintenance section which has responsibility for the project area.

Before removal from the project site, spray-paint (with an oil-based paint), an "X" across the face of non-salvageable signs as directed.

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Item 656, “Foundations for Traffic Control Devices”

Form a 3/4-in. chamfer on the top edge of each roadside flashing beacon foundation.

Probe before drilling foundations to determine the location of buried utilities and structures.

Protect open foundation holes left unattended with traffic control devices and cover suitably, as directed.

Item 662, “Work Zone Pavement Markings”

Do not use temporary flexible-reflective roadway marker tabs to delineate stop bars, crosswalks, symbols, or words.

Use the temporary flexible-reflective roadway marker tab configuration shown on Standard Sheet TCP(7-1) for conventional roadways and use the configuration shown on WZ(STPM) for divided highways.

Item 666, “Retroreflectorized Pavement Markings”

Place glass beads for pavement markings in accordance with the following table:

Marking Types	Glass Bead (Double Drop) Types	Glass Bead Rates	
		Surface Treatment	Asphalt Concrete Pavement, Microsurfacing, Concrete Pavement
TY I markings	Type II	12 LB per 100 SF	6 LB per 100 SF
	Type III	12 LB per 100 SF	6 LB per 100 SF
TY II markings	Type II	12 LB per GAL	6 LB per GAL
	Type III	12 LB per GAL	6 LB per GAL

Apply TY II marking material at a rate of 25 gallons per mile.

The striping speed shall not exceed 5 MPH during application. Convert to gravity-flow beadings (if not in use) to obtain optimum bead application, when directed.

Clean striping tanks before use if there is a build-up of dry paint, as directed. Flush lines and guns before use.

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Reference existing markings before performing work that disturbs the markings, so that the markings can be re-established.

Provide a double-drop of Type II and Type III glass beads.

Item 668, “Prefabricated Pavement Markings”

When applying Type C specialty markings (symbols, words, etc.) over existing thermoplastic markings, first apply heat to the surface of the existing markings and roughen the surface with a shovel. Remove existing Type A, B, or C prefabricated markings prior to placing the new Type C markings.

Item 680, “Highway Traffic Signals”

Signal and sign mounts shall be as manufactured by the following, or approved equal:

<p>Pelco Products 320 West 18th Street Edmond, Oklahoma 73013 405-340-3434 www.pelcoinc.com</p>	<p>Traffic Parts Inc. P.O. Box 837 Spring, Texas 77383 800-345-6329 www.trafficparts.com</p>
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Cover new signal heads with an approved opaque material until placed in operation.

Install mast-arm-mounted signal heads in the horizontal position unless otherwise indicated.

Provide IMSA Level I personnel on the job or on-call 24 hours per day to provide traffic signal maintenance after installation of the traffic signals, during the specified test periods. Furnish the name, address and telephone number of the person responsible for traffic signal maintenance. Respond to reported trouble calls within a reasonable travel time from a San Angelo address, not to exceed thirty minutes. Make appropriate repairs within 24 hours. Furnish and install a logbook in the 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 test period without the prior approval of the Engineer.

Demonstrate that the field wiring is properly installed and then install the controller assembly on the completed foundation. Connect the field wiring to the controller assembly, set up, and turn on the controller. After it has been determined that the field wiring (including any detector loops) is satisfactory, the specified test period will begin.

The San Angelo District will take ownership of the existing traffic signal controllers at US 67 and FM 2288 once new controllers are installed. Remove and deliver mast arm assemblies, pedestrian signal heads, and traffic signal controllers to the San Angelo District Salvage Yard located at 1729 St. Ann St San Angelo, TX.

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Remove existing ground boxes that are not indicated to remain, as shown in the plans or as directed.

Controller cabinets shall be base-mounted.

Item 681, “Temporary Traffic Signals”

At Contractor’s option, provide portable traffic signals conforming to the Compliant Work Zone Traffic Control Device List (CWZTCDL).

Item 682, “Vehicle and Pedestrian Signal Heads”

Signal heads, lenses and visors shall be manufactured of polycarbonate. Signal heads shall be black or other color as approved. Mounting brackets and pipes shall not be manufactured of polycarbonate.

Signal heads mounted on poles and mast arm shall be level and plumb.

Enclose electrical wiring and traffic signal cable in an approved traffic signal device.

Item 684, “Traffic Signal Cables”

Leave a minimum of 1 ft. of each signal cable in each signal pole base and controller enclosure.

Terminate the multiconductor signal cable shown on the plans on the terminal strip in the hand hole. Do not splice the conductors at the hand hole.

Identify each cable as shown on the plans with permanent marking labels using a double-tie strap label at each ground box, pole base and controller.

Item 685, “Roadside Flashing Beacon Assemblies”

Use XHHW conductors for internal electric wiring.

Provide single-pole breakaway disconnects. For ungrounded conductors use Bussman HEBW, Littelfuse LEB, Ferraz-Shawmut FEB or approved equal. For grounded conductors use Bussman HET, Littelfuse LET, Ferraz-Shawmut FEBN or approved equal.

Inside each breakaway base, provide breakaway fuse-holders conforming to Material/Producer List, “Item 620 – Electrical Conductors” for ungrounded cables and neutral breakaway connectors for neutral cable.

Foundations shall be 6 ft. drilled shafts. Install riprap at roadside flashing beacon assembly foundations in accordance with the details shown on Standard Sheet RID(FND).

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Item 686, “Traffic Signal Pole Assemblies (Steel)”

Set anchor bolts for signal poles so that two are in tension and two are in compression.

Traffic signal pole heights and mast arm lengths are shown on the plans for bidding purposes only. Before fabrication, make field measurements to determine the actual pole height necessary to ensure a vertical clearance between 17'-6" and 19'-0" from the roadway surface to the bottom of the lowest point on the signal head assembly or mast arm, and to determine the mast arm lengths required to mount the traffic signal heads over the travel lanes. The mast arm shall be straight and level in the span area where the signal heads are attached. These field measurements and elevations shall be determined from the actual field locations of the pole foundations, considering above- and below-ground utilities and the existing roadway elevations and widths.

Item 687, “Pedestal Pole Assemblies”

Inside each breakaway base, provide breakaway fuse-holders conforming to Material/Producer List, “Item 620 – Electrical Conductors” for ungrounded cables, neutral breakaway connectors for neutral cable, and pedestrian button cables.

Item 688, “Pedestrian Detectors and Vehicle Loop Detectors”

Identify each detector cable as shown on the plans with permanent marking labels using a double-tie strap label at each ground box, pole base and controller.

Item 6001, “Portable Changeable Message Sign”

Provide a cellular telephone connection to communicate with the portable changeable message sign unit remotely.

Item 6002, “Video Imaging Vehicle Detection System”

One processor is required per intersection. Processor shall accommodate the respective number of cameras for its intersection.