

# NOTIFICATION OF ADDENDUM

## ADDENDUM NO. 1

**DATED 6/28/2011**

<b>Control</b>	<b>0389-13-055</b>
<b>Project</b>	<b>STP 1102(142)HES</b>
<b>Highway</b>	<b>SH 146</b>
<b>County</b>	<b>HARRIS</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: STP 1102(142)HES

CONTROL: 0389-13-055

COUNTY: HARRIS

LETTING: 07/08/2011

REFERENCE NO: 0627

**PROPOSAL ADDENDUMS**

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\_ PROPOSAL COVER

X BID INSERTS (SH. NO.: 6-6 )

\_ GENERAL NOTES (SH. NO.: )

X SPEC LIST (SH. NO.: 3-3 )

\_ SPECIAL PROVISIONS:

ADDED:

DELETED:

X SPECIAL SPECIFICATIONS:

ADDED: 8777

DELETED: 8776

X OTHER: PLAN SHEET 6A

DESCRIPTION OF ABOVE CHANGES

(INCLUDING PLANS SHEET CHANGES)

BID INSERTS

SHEET 6-6: REMOVE ITEM 8776-2001 AND REPLACE WITH ITEM 8777-2001

SPECIFICATION LIST: REMOVE SPECIAL SPECIFICATION ITEM 8776 AND REPLACE WITH  
SPECIAL SPECIFICATION ITEM 8777

PLANS

SHEET 6A: REMOVE ITEM 8776-2001 AND REPLACE WITH ITEM 8777-2001

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	416	2032	001	DRILL SHAFT (TRF SIG POLE) (36 IN) DOLLARS and CENTS	LF	15.000	1
	416	2033	001	DRILL SHAFT (TRF SIG POLE) (42 IN) DOLLARS and CENTS	LF	34.000	2
	416	2034	001	DRILL SHAFT (TRF SIG POLE) (48 IN) DOLLARS and CENTS	LF	22.000	3
	500	2001	005	MOBILIZATION DOLLARS and CENTS	LS	1.000	4
	502	2001	033	BARRICADES, SIGNS AND TRAFFIC HAN- DLING DOLLARS and CENTS	MO	5.000	5
	506	2034	012	TEMPORARY SEDIMENT CONTROL FENCE DOLLARS and CENTS	LF	250.000	6
	531	2010		CURB RAMPS (TY 7) DOLLARS and CENTS	EA	9.000	7
	531	2017		CURB RAMPS (TY 21) DOLLARS and CENTS	EA	7.000	8
	618	2034		CONDT (PVC) (SCHD 80) (2") DOLLARS and CENTS	LF	895.000	9
	618	2035		CONDT (PVC) (SCHD 80) (2") (BORE) DOLLARS and CENTS	LF	490.000	10

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	618	2038		CONDT (PVC) (SCHD 80) (3") and DOLLARS CENTS	LF	515.000	11
	618	2039		CONDT (PVC) (SCHD 80) (3") (BORE) and DOLLARS CENTS	LF	120.000	12
	618	2040		CONDT (PVC) (SCHD 80) (4") and DOLLARS CENTS	LF	376.000	13
	618	2041		CONDT (PVC) (SCHD 80) (4") (BORE) and DOLLARS CENTS	LF	140.000	14
	620	2007	001	ELEC CONDR (NO. 4) BARE and DOLLARS CENTS	LF	282.000	15
	620	2008	001	ELEC CONDR (NO. 4) INSULATED and DOLLARS CENTS	LF	565.000	16
	620	2009	001	ELEC CONDR (NO. 6) BARE and DOLLARS CENTS	LF	2,441.000	17
	621	2004		TRAY CABLE (4 CONDR) (12 AWG) and DOLLARS CENTS	LF	1,832.000	18
	624	2014	014	GROUND BOX TY D (162922) W/APRON and DOLLARS CENTS	EA	13.000	19
	628	2105	003	ELC SRV TY D 120/240 070 (NS)SS(N)SP(O) and DOLLARS CENTS	EA	1.000	20
	666	2042		REFL PAV MRK TY I (W) 12"(SLD)(100MIL) and DOLLARS CENTS	LF	985.000	21

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	666	2048		REFL PAV MRK TY I (W) 24"(SLD)(100MIL) DOLLARS and CENTS	LF	240.000	22
	677	2007		ELIM EXT PAV MRK & MRKS (24") DOLLARS and CENTS	LF	375.000	23
	678	2004		PAV SURF PREP FOR MRK (12") DOLLARS and CENTS	LF	985.000	24
	678	2006		PAV SURF PREP FOR MRK (24") DOLLARS and CENTS	LF	240.000	25
	680	2002		INSTALL HWY TRF SIG (ISOLATED) DOLLARS and CENTS	EA	1.000	26
	681	2001	002	TEMP TRAF SIGNALS DOLLARS and CENTS	EA	1.000	27
	682	2001	001	BACK PLATE (12 IN) (3 SEC) DOLLARS and CENTS	EA	13.000	28
	682	2003	001	BACK PLATE (12 IN) (5 SEC) DOLLARS and CENTS	EA	2.000	29
	682	2014	001	PED SIG SEC (12 IN) LED (2 INDICATIONS) DOLLARS and CENTS	EA	16.000	30
	682	2021	001	VEH SIG SEC (12 IN) LED (HOUSING ONLY) DOLLARS and CENTS	EA	49.000	31
	682	2022	001	VEH SIG SEC (12 IN) LED (GRN ARW) DOLLARS and CENTS	EA	2.000	32

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	682	2023	001	VEH SIG SEC (12 IN) LED (GRN) DOLLARS and CENTS	EA	15.000	33
	682	2024	001	VEH SIG SEC (12 IN) LED (YEL ARW) DOLLARS and CENTS	EA	2.000	34
	682	2025	001	VEH SIG SEC (12 IN) LED (YEL) DOLLARS and CENTS	EA	15.000	35
	682	2027	001	VEH SIG SEC (12 IN) LED (RED) DOLLARS and CENTS	EA	15.000	36
	682	2043	001	PED SIG SEC (12")(2 IND)(HOUSING ONLY) DOLLARS and CENTS	EA	16.000	37
	684	2007		TRF SIG CBL (TY A) (12 AWG) ( 2 CONDR) DOLLARS and CENTS	LF	2,687.000	38
	684	2009		TRF SIG CBL (TY A) (12 AWG) ( 4 CONDR) DOLLARS and CENTS	LF	2,902.000	39
	684	2012		TRF SIG CBL (TY A) (12 AWG) ( 7 CONDR) DOLLARS and CENTS	LF	3,225.000	40
	686	2041		INS TRF SIG PL AM(S) 1 ARM (40') LUM DOLLARS and CENTS	EA	1.000	41
	686	2045		INS TRF SIG PL AM(S) 1 ARM (44') LUM DOLLARS and CENTS	EA	1.000	42
	686	2145		INS TRF SIG PL AM(S) 2 ARM (40-36')LUM DOLLARS and CENTS	EA	1.000	43

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	686	2185		INS TRF SIG PL AM(S) 2 ARM (50-36')LUM DOLLARS and CENTS	EA	1.000	44
	687	2001	004	PED POLE ASSEMBLY DOLLARS and CENTS	EA	9.000	45
	6006	2001		SPREAD SPECTRUM RADIO DOLLARS and CENTS	EA	2.000	46
	6006	2003		HELIAX CABLE DOLLARS and CENTS	LF	50.000	47
	6006	2005		ANTENNA (UNI-DIRECTIONAL) DOLLARS and CENTS	EA	2.000	48
	6007	2001		REMOVING TRAFFIC SIGNALS DOLLARS and CENTS	EA	1.000	49
	6266	2001	017	VIVDS PROCESSOR SYSTEM DOLLARS and CENTS	EA	1.000	50
	6266	2002	017	VIVDS CAMERA ASSEMBLY DOLLARS and CENTS	EA	6.000	51
	6266	2003	017	VIVDS SET-UP SYSTEM DOLLARS and CENTS	EA	1.000	52
	8260	2001		LED COUNTDOWN PEDESTRIAN MODULE DOLLARS and CENTS	EA	16.000	53
	8703	2001		AUBIBLE PEDESTRAIN SIGNAL UNITS DOLLARS and CENTS	EA	15.000	54

ALT	ITEM-CODE			UNIT BID PRICE ONLY. WRITTEN IN WORDS	UNIT	APPROX QUANTITIES	DEPT USE ONLY
	ITEM NO	DESC CODE	S.P. NO.				
	8777	2001		LED RDWY LUMINAIRE (.25KW EQ) DOLLARS and CENTS	EA	4.000	55

CONTROL : 0389-13-055  
PROJECT : STP 1102(142)HES  
HIGHWAY : SH 146  
COUNTY : HARRIS

TEXAS DEPARTMENT OF TRANSPORTATION

**GOVERNING SPECIFICATIONS AND SPECIAL PROVISIONS**

ALL SPECIFICATIONS AND SPECIAL PROVISIONS APPLICABLE TO THIS PROJECT ARE IDENTIFIED AS FOLLOWS:

STANDARD SPECIFICATIONS: ADOPTED BY THE TEXAS DEPARTMENT OF  
----- TRANSPORTATION JUNE 1, 2004.  
STANDARD SPECIFICATIONS ARE INCORPORATED  
INTO THE CONTRACT BY REFERENCE.

- ITEMS 1 TO 9 INCL., GENERAL REQUIREMENTS AND COVENANTS
- ITEM 416 DRILLED SHAFT FOUNDATIONS (420)(421)(440)(448)
- ITEM 500 MOBILIZATION
- ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING
- ITEM 506 TEMPORARY EROSION, SEDIMENTATION, AND ENVIRONMENTAL CONTROLS (432)(556)
- ITEM 531 SIDEWALKS (104)(360)(420)(421)(440)(529)(530)
- ITEM 618 CONDUIT (400)(445)(476)(622)
- ITEM 620 ELECTRICAL CONDUCTORS
- ITEM 621 TRAY CABLE
- ITEM 624 GROUND BOXES (420)(421)(432)(440)(618)(620)
- ITEM 628 ELECTRICAL SERVICES (441)(445)(449)(618)(620)(627)(656)
- ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (316)(318)(662)(677)(678)
- ITEM 677 ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS (300)(302)(316)
- ITEM 678 PAVEMENT SURFACE PREPARATION FOR MARKINGS (677)
- ITEM 680 INSTALLATION OF HIGHWAY TRAFFIC SIGNALS (610)(625)(627)(634)(636)(656)
- ITEM 681 TEMPORARY TRAFFIC SIGNALS (628)(680)
- ITEM 682 VEHICLE AND PEDESTRIAN SIGNAL HEADS
- ITEM 684 TRAFFIC SIGNAL CABLES
- ITEM 686 TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL) (416)(421)(441)(442)(445)(449)
- ITEM 687 PEDESTAL POLE ASSEMBLIES (445)(449)(656)(4003)

SPECIAL PROVISIONS: SPECIAL PROVISIONS WILL GOVERN AND TAKE  
----- PRECEDENCE OVER THE SPECIFICATIONS ENUMERATED  
HEREON WHEREVER IN CONFLICT THEREWITH.

REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS  
(FORM FHWA 1273, MARCH, 1994)

WAGE RATES

SPECIAL PROVISION "PARTNERING" (000---002)  
SPECIAL PROVISION "NOTICE TO ALL BIDDERS" (000---003)  
SPECIAL PROVISION "NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO  
ENSURE EQUAL EMPLOYMENT OPPORTUNITY" (000---004)  
SPECIAL PROVISION "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY  
CONSTRUCTION CONTRACT SPECIFICATIONS" (000---006)  
SPECIAL PROVISION "CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT"  
(000---009)  
SPECIAL PROVISION "DEPARTMENT DIVISION MAILING AND PHYSICAL ADDRESS"  
(000---011)  
SPECIAL PROVISION "NOTICE OF CHANGES TO U.S. DEPARTMENT OF LABOR  
REQUIRED PAYROLL INFORMATION" (000--1483)  
SPECIAL PROVISION "SCHEDULE OF LIQUIDATED DAMAGES" (000--1493)  
SPECIAL PROVISION "ON-THE-JOB TRAINING PROGRAM" (000--1676)  
SPECIAL PROVISION "DISADVANTAGED BUSINESS ENTERPRISE IN FEDERAL AID  
CONTRACTS" (000--1966)  
SPECIAL PROVISION TO ITEM 1 (001---015)  
SPECIAL PROVISION TO ITEM 2 (002---017)  
SPECIAL PROVISION TO ITEM 3 (003---033)  
SPECIAL PROVISION TO ITEM 4 (004---017)  
SPECIAL PROVISION TO ITEM 5 (005---004)  
SPECIAL PROVISION TO ITEM 6 (006---030)  
SPECIAL PROVISION TO ITEM 7 (007---806)  
SPECIAL PROVISION TO ITEM 8 (008---119)  
SPECIAL PROVISIONS TO ITEM 9 (009---009)(009---015)  
SPECIAL PROVISION TO ITEM 300 (300---032)  
SPECIAL PROVISION TO ITEM 302 (302---010)  
SPECIAL PROVISION TO ITEM 316 (316---016)  
SPECIAL PROVISION TO ITEM 360 (360---003)  
SPECIAL PROVISION TO ITEM 416 (416---001)  
SPECIAL PROVISION TO ITEM 420 (420---002)  
SPECIAL PROVISION TO ITEM 421 (421---035)  
SPECIAL PROVISION TO ITEM 440 (440---005)  
SPECIAL PROVISION TO ITEM 441 (441---006)  
SPECIAL PROVISION TO ITEM 442 (442---016)  
SPECIAL PROVISION TO ITEM 448 (448---002)  
SPECIAL PROVISION TO ITEM 500 (500---005)  
SPECIAL PROVISION TO ITEM 502 (502---033)  
SPECIAL PROVISION TO ITEM 506 (506---012)  
SPECIAL PROVISION TO ITEM 610 (610---010)  
SPECIAL PROVISION TO ITEM 620 (620---001)  
SPECIAL PROVISION TO ITEM 624 (624---014)  
SPECIAL PROVISION TO ITEM 628 (628---003)  
SPECIAL PROVISION TO ITEM 636 (636---014)  
SPECIAL PROVISION TO ITEM 681 (681---002)  
SPECIAL PROVISION TO ITEM 682 (682---001)  
SPECIAL PROVISION TO ITEM 687 (687---004)  
SPECIAL PROVISION TO SPECIAL SPECIFICATION ITEM 6266 (6266--017)

SPECIAL SPECIFICATIONS:

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ITEM 4003 SCREW-IN TYPE ANCHOR FOUNDATIONS  
ITEM 6006 SPREAD SPECTRUM RADIOS FOR TRAFFIC SIGNALS  
ITEM 6007 REMOVING TRAFFIC SIGNALS  
ITEM 6266 VIDEO IMAGING VEHICLE DETECTION SYSTEM  
ITEM 8260 LED COUNTDOWN PEDESTRIAN SIGNAL MODULE (682)  
ITEM 8703 ACCESSIBLE PEDESTRIAN SIGNAL UNITS (618)(624)(682)(684)  
(688)  
ITEM 8777 LED ROADWAY LUMINAIRE

GENERAL: THE ABOVE-LISTED SPECIFICATION ITEMS ARE THOSE UNDER WHICH  
----- PAYMENT IS TO BE MADE. THESE, TOGETHER WITH SUCH OTHER  
PERTINENT ITEMS, IF ANY, AS MAY BE REFERRED TO IN THE ABOVE-  
LISTED SPECIFICATION ITEMS, AND INCLUDING THE SPECIAL  
PROVISIONS LISTED ABOVE, CONSTITUTE THE COMPLETE SPECIFI-  
CATIONS FOR THIS PROJECT.

## SPECIAL SPECIFICATION

8777

### LED Roadway Luminaire

**1. Description.** Furnish, fabricate, and install light-emitting diode (LED) roadway luminaire.

**2. Materials.** Provide new materials that comply with the details shown on the plans, the requirements of this Item, and the pertinent requirements of the following Items:

- Item 441, “Steel Structures”
- Item 442, “Metal for Structures”
- Item 445, “Galvanizing”
- Item 446, “Cleaning and Painting Steel”
- Item 449, “Anchor Bolts”
- Item 616, “Performance Testing of Lighting Systems”
- Item 620, “Electrical Conductors”

Provide 6 sets of submittals for the complete luminaire and photometric files in .ies format to the Engineer at the project address. Obtain the Engineer’s approval on the submittals before purchasing materials and beginning work.

Provide LED roadway luminaire with IES type II or III light distribution pattern.

**A. General Requirements.** Provide LED luminaires UL listed to UL1598 and suitable for use in wet locations. Ensure that optical compartment meets IEC Standard 60529-IP65. Place permanent labels inside of fixture indicating date of manufacture, IP rating, and UL listing.

Rate luminaire for a minimum operational life of 60,000 hours, with operating temperature rated between -30 degrees C and 40 degrees C.

**B. Housing.** Construct fixture housing, lens frame, and door from 96% copper-free, die-cast aluminum. Provide for fixture mounting to a 2-in. pipe arm, capable of adjustments  $\pm 5^\circ$  from level. Meet ANSI 136.31, 3.0 G vibration requirements.

Equip fixture with a three-prong photocell receptacle with shorting cap installed.

Paint fixtures light gray when installing on galvanized poles. For all other poles, paint fixtures to match the color of the pole as directed. Use a thermoset powder-coat paint system. Ensure that paint exceeds 1000-hr. salt-spray test in accordance with ASTM B117. Ensure a nominal paint thickness of 2.5 mil.

Fabricate hardware, brackets, nuts, bolts, washers, ballast tray, and parts from stainless steel or aluminum of adequate thickness as approved.

Ensure weight of the fixture is less than 60 pounds and the effective projected area is less than 1.6 sq. ft.

- C. **Electronic Driver and LED Modules.** Provide fixture with replaceable LED driver modules that will operate at 120V and 240V line voltage or 240V and 480V line voltages as shown in plans.

Provide fixture with surge protection devices (SPD), in addition to driver's internal protection, to withstand repetitive noise transients from utility line switching, nearby lightning strikes, and other interference. Provide SPD that will protect the luminaire from common mode transient peak voltages up to 10 kV (minimum) and transient peak currents up to 5 kA (minimum). Provide SPD that conforms to UL 1449 or UL 1283, and has been tested per the latest version of IEEE/ANSI C62.41 for category C (standard).

Provide a two-position barrier-type terminal block secured to housing. Provide lugs with captive screws for wire sizes up to 6AWG. Identify each terminal position.

Do not place fuses in pole-mounted luminaires. Provide wall- or underpass-mounted luminaires with internal 10-amp, time-delay fuses and fuse holders.

Construct fixture with LED modules that can be replaced or repaired without replacement of the whole luminaire.

Construct LED modules so that catastrophic loss or failure of an individual LED will not result in the loss of the entire luminaire.

Provide LED modules with a color temperature between 3500K-5000K.

Provide sufficient thermal management of the heat generated by the fixture to ensure a minimum operable life of 60,000 hours with an average operating time of 12 hours per night. Provide a passive thermal management system. Fans or other mechanical cooling systems will not be allowed. Fixture will be considered at end of life when the total light output of the fixture is below 70% of the initial output.

Design fixture so that the maximum junction temperature of the LEDs at maximum ambient temperature will not be exceeded, and will not exceed 105 degrees C.

- D. **Performance Requirements:** For each type of fixture specified by this specification, submit a photometric file in .ies format of the fixture generated from tests of an actual fixture in an independent test lab. Document that the fixture was tested according to IES LM-79. Provide photometric data for fixtures at specified color temperature and operating at 25 degrees C ambient temperature. The Department will verify the performance of the fixture in a computer simulation.

- 1) **150 Watt HPS (High Pressure Sodium) Equivalent:** The simulation will be modeled with a fixture mounted in a level position 20.0 ft. above the midpoint of either long side of the surface of a rectangular 110.0 ft. by 30.0 ft.grid, with grid points 5 ft. apart. Ensure the following parameters will be met by the file using a light loss factor (LLF) of 1.0:
  - IESNA cutoff or better
  - Minimum illuminance of 0.20 foot candle at all points on the grid
  - Average illuminance greater than 0.80 foot candle over the entire grid
  
- 2) **250 Watt HPS Equivalent:** The simulation will be modeled with a fixture mounted in a level position 40.0 ft. above the midpoint of either long side of the surface of a rectangular 190.0 ft. by 45.0 ft.grid, with grid points 5 ft. apart. Ensure the following parameters will be met by the file using a LLF of 1.0:
  - IESNA cutoff or better
  - Minimum illuminance of 0.20 foot candle at all points on the grid
  - Average illuminance greater than 0.75 foot candle over the entire grid
  
- 3) **400 Watt HPS Equivalent:** The simulation will be modeled with a fixture mounted in a level position 50.0 ft. above the midpoint of either long side of the surface of a rectangular 220.0 ft. by 60.0 ft.grid, with grid points 10 ft. apart. Ensure the following parameters will be met by the file using a LLF of 1.0:
  - IESNA cutoff or better
  - Minimum illuminance of 0.20 foot candle at all points on the grid
  - Average illuminance greater than 0.75 foot candle over the entire grid

E. **Warranty:** Provide fixture with a 5-year warranty from defects in material and workmanship in its intended use.

**3. Construction.** Perform work in accordance with the details shown on the plans and the requirements of this Item.

Sample and test fixtures in accordance with Tex-1110-T for compliance with this specification. Provide fixtures early enough in the project to allow fixtures to be shipped to an independent test lab, tested, and returned to verify fixture performance and compliance to specifications.

Use established industry and utility safety practices when installing poles or luminaires located near overhead or underground utilities. Consult with the appropriate utility company before beginning work.

Prevent scarring or marring of poles, mast arms, and fixtures. Replace damaged components. Repair damaged painted areas of roadway illumination assemblies according to manufacturer's recommendation.

Install and align each luminaire as shown on the plans. The Department may shift an luminaire's location, if necessary, to secure a more desirable location or to avoid conflict with utilities. Removed materials will remain Department's property unless otherwise directed by the Department's Engineer.

**A. Installation.** Fabricate and install LED luminaire components in accordance with the details, dimensions, and requirements shown on the plans. Test installed luminaires in accordance with Item 616, "Performance Testing of Lighting Systems."

**4. Measurement.** This Item will be measured as each LED luminaire installed.

**5. Payment.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "LED Roadway Luminaire" of the types specified. The Department will pay for electrical energy consumed by the lighting system.

This price is full compensation for furnishing, installing, and testing luminaires; drivers, LED modules, internal transformer, internal conductors, and connections; system performance testing; and equipment, labor, tools, and incidentals.

New drilled shaft foundations will be paid for under Item 416, "Drilled Shaft Foundations." New concrete riprap placed around foundations will be paid for under Item 432, "Riprap." New conduit will be paid for under Item 618, "Conduit." New conductors, except the conductors internal to the pole, will be paid for under Item 620, "Electrical Conductors." New ground boxes will be paid for under Item 624, "Ground Boxes." New electrical services will be paid for under Item 628, "Electrical Services."

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