

REVISIONS		
NO.	DESCRIPTION	DATE
1	REV. PAY ITEMS, QUANTITIES & NOTES	03-15-16
2	REV. PAY QUANTITIES	11-15-16
3	REV. NOTES	11-06-17

**TRAFFIC SIGNAL GENERAL CONSTRUCTION NOTES**

SYMBOLS AND LEGENDS ARE DIAGRAMMATIC ONLY AND LOCATIONS SHALL BE ADJUSTED FOR EXISTING FIELD CONDITIONS, BUT NO MAJOR ALTERATIONS OR RELOCATIONS WILL BE MADE WITHOUT FIRST CONSULTING WITH THE TRAFFIC ENGINEERING DIVISION AT (405)521-2861.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE HE MAY INFLICT TO THE EXISTING UNDERGROUND UTILITIES WITHIN THE PROJECT AREA AS A RESULT OF HIS DIGGING, TRENCHING, BORING, ETC.... PRIOR TO DIGGING NEAR THE UTILITIES, THE CONTRACTOR SHALL CALL FOR A LIST OF ALL UNDERGROUND FACILITIES REGISTERED IN THE AREA OF CONSTRUCTION LISTED WITH THE FOLLOWING AGENCIES:  
 THE "OKIE" NOTIFICATION CENTER 811 OR (405)522-6543 OR WWW.CALLOKIE.COM OR THE LOCAL COUNTY CLERK'S OFFICE.

**TRAFFIC SIGNAL PAY QUANTITY NOTES**

(TL-35) SEE SERVICE POLE SCHEDULE; FOR ADDITIONAL INFORMATION CONCERNING THE SERVICE POLE, CONTACT THE FOLLOWING PRIOR TO INSTALLATION: PERSON'S NAME.....STUART CHAI, WITH THE COMPANY/CITY OF.....OKLAHOMA CITY, COMPANY'S/CITY'S TELEPHONE NO.(405)297-2003.

(TP-1) PAYMENT FOR THIS ITEM WILL BE BASED ON PLAN QUANTITY. SEE THE 2009 SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

(1) P.C. CONCRETE AND/OR POLYMER CONCRETE PULL BOXES SHALL BE USED. POLYMER CONCRETE PULL BOXES SHALL HAVE A POLYMER CONCRETE COVER, FRAME AND BODY AND A MINIMUM LOAD RATING OF 20,000 LBS. POLYMER CONCRETE PULL BOXES SHALL BE ARMORCAST, QUAZITE OR AN APPROVED EQUAL. FIBERGLASS AND/OR PLASTIC PULL BOXES OR COMPOSITES OF SAME WILL NOT BE ACCEPTED.

(2) THE HAND HOLES AT THE BASE OF THE POLES SHALL BE PLACED AT 135 DEGREES CLOCKWISE FROM THE MAST ARMS IN ORDER TO AVOID CONFLICTS WITH THE PEDESTRIAN PUSH BUTTONS AND SIGNS BEING INSTALLED ON THIS PROJECT.

(3) THIS PAY ITEM IS TO BRING POWER TO THE CONTROLLER CABINET FROM THE SERVICE POLE.

**3** (4) CONTRACTOR SHALL SUPPLY A TRAFFIC SIGNAL CABINET AND CONTROLLER MANUFACTURED BY NAZTEC, INC. THAT SHALL OPERATE AS SHOWN ON THE SIGNAL PLANS AND DETAIL SHEETS. PROVIDE A 900 ATC CONTROLLER.

CONTROLLER MUST BE ABLE TO COMMUNICATE OVER THE EXISTING CITY OF OKLAHOMA CITY VERIZON CELLULAR SYSTEM. PROVIDE TWO (2) SIERRA AIRLINK GX450 MODEMS, TWO (2) SIX (6) FEET LENGTH OF STRAIGHT THROUGH YELLOW ETHERNET CABLE, TWO (2) ANTENNA PLUS AP-AP-CC-Q-S22-WH ANTENNA (WHITE) INSTALLED BY THE CONTRACTOR. ALL DEVICES INSTALLED MUST BE COMPATIBLE WITH EXISTING CITY CELLULAR SYSTEM. THE CITY WILL VERIFY COMMUNICATION EXISTS WITH THE CONTROLLER AT THIS LOCATION PRIOR TO FINAL ACCEPTANCE. COST OF ALL EQUIPMENT AND INSTALLATION NECESSARY TO ESTABLISH COMMUNICATION WITH CITY OF OKLAHOMA CITY CELLULAR SYSTEM SHALL BE INCLUDED IN THE COST OF THIS ITEM. THE CONTROLLER CABINET SHALL BE POWDER COATED WITH TIGER DRYLAC SUPER DURABLE SERIES 38 (038/91020), ANODIZED SILVER, IN A LIGHT MATTE FINISH.

ELECTRONIC COPIES OF THE CONTROLLER CABINET SHEET SHALL BE PROVIDED TO THE CITY OF OKLAHOMA CITY VIA NAZTEC. COST TO BE INCLUDED IN THIS ITEM.

THIS ITEM SHALL INCLUDE A "MMU TO TS2 CONTROLLER DATA CABLE", NAZTEC PART NUMBER 10225-2103.

THIS ITEM SHALL ALSO INCLUDE TWO (2) DYMEC KY-3170EMX MANAGED (LAYER 2) ETHERNET SWITCHES AND EIGHT (8) - CAT5E CABLES. THE EIGHT (8) CAT5E CABLES ARE TO BE TWO (2)-12' LENGTH AND SIX (6) -6' LENGTH CABLES.

(5) THE TRAFFIC SIGNAL CONTROLLER(S) PROVIDED ON THIS PROJECT SHALL MEET ALL SPECIFICATION REQUIREMENTS AS CONTAINED WITHIN THE SPECIAL PROVISIONS TECHNICAL CONTROLLERS FURNISHED MUST HAVE A REMOVABLE DATA TRANSFER DEVICE. THE DATA TRANSFER DEVICE SHALL ALLOW THE TRANSFER OF PROGRAMMING DATA FROM ONE CONTROLLER TO ANOTHER BY COPYING DATA FROM A SOURCE CONTROLLER TO THE DEVICE IN ORDER TO BE LOADED INTO RAM ON ANOTHER CONTROLLER.

**3** (6) THE TRANSIENT VOLTAGE SURGE SUPPRESSOR MUST BE COMPATIBLE WITH THE CITY OF OKLAHOMA CITY'S EXISTING SYSTEM. THE SUPPRESSOR SHALL BE MOUNTED ON THE SIDE OF THE CABINET IMMEDIATELY ADJACENT TO THE AC TERMINAL BLOCK.

**3** (7) THIS BID ITEM CONSISTS OF THE INSTALLATION OF FOUR RADAR PRESENCE DETECTORS (RPD), WAVETRONIX SMARTSENSOR MATRIX MODEL 225 OR APPROVED EQUAL AND FOUR CONTINUOUS TRACKING ADVANCE DETECTOR (CTAD) WAVETRONIX SMARTSENSOR ADVANCE MODEL 200V OR APPROVED EQUAL, ASSOCIATED WIRING/CABLES, CONTROLLER MODULES AND ALL OTHER NECESSARY ITEMS OF WORK FOR A COMPLETE OPERATIONAL VEHICLE DETECTION SYSTEM. THE RPD SHALL BE DESIGNED WITH A MATRIX OF 16 RADARS AND SHALL BE ABLE TO DETECT AND REPORT PRESENCE IN UP TO 10 LANES WITHIN A 90 DEGREE FIELD OF VIEW WITH BOUNDARIES AS CLOSE AS 6 FEET FROM THE BASE OF THE POLE ON WHICH THE RPD IS MOUNTED. THE RPD SHALL BE ABLE TO DETECT AND REPORT PRESENCE IN CURVED LANES AND AREAS WITH ISLANDS AND MEDIANS.

THE CTAD SHALL DETECT RANGE AND SPEED TO THE STOP BAR FOR VEHICLES OR CLUSTERS OF VEHICLES MOVING IN THE USER-SELECTED DIRECTION OF TRAVEL. THE CTAD SHALL SYNCHRONICALLY TRACK AND UPDATE THE ESTIMATED TIME OF ARRIVAL (ETA) FOR EACH VEHICLE AS IT APPROACHES THE STOP-BAR; EACH NEWLY-MEASURED ETA RESULT WILL BE CONTINUALLY COMPARED AGAINST THE PRE-DETERMINED ETA RANGES THAT DEFINE THE DILEMMA ZONE, AND A GREEN LIGHT EXTENSION REQUEST WILL BE PROVIDED TO THE CONTROLLER WHEN ONE OR MORE VEHICLES ARE WITHIN THAT RANGE. THE CTAD SHALL ALSO DETECT INSTANTANEOUS ROADWAY EFFICIENCY.

ITEM SHALL INCLUDE 2 TS-2 S DLC CABINET INTERFACES (CI) WAVETRONIX CLICK! MODEL 656 OR APPROVED EQUAL. CI SHALL BE AN ENCLOSED UNIT, SUITABLE FOR PLACEMENT ON A CONTROLLER CABINET SHELF. CI SHALL HAVE A MASTER POWER SWITCH, INDIVIDUAL SENSOR POWER SWITCHES, AND STANDARD 120VAC POWER PLUG. EACH CI SHALL PROVIDE UP TO 64 DETECTOR CHANNELS USING THE NEMA TS-2 S DLC CONNECTION. SENSOR CONNECTIONS TO THE CI SHALL BE ACCOMPLISHED BY COLOR-CODED, QUICK-CONNECT INSULATION DISPLACEMENT TERMINATIONS. CI SHALL HAVE A OLED ILLUMINATED DISPLAY PANEL AND SIX-BUTTON KEYPAD FOR NAVIGATION AND SETTINGS ENTRY/REVISION. CI SHALL BE CONFIGURABLE VIA ETHERNET RJ-45 PORT USING A STANDARD WEB BROWSER.

SYSTEM CONFIGURATION & INSTALLATION SHALL BE SUPERVISED BY A REPRESENTATIVE OF THE MANUFACTURER, OR A CONTRACTOR REPRESENTATIVE TRAINED & CERTIFIED BY THE MANUFACTURER TO PERFORM THIS WORK.

INSTALLATION TO INCLUDE A WATERPROOF JUNCTION BOX FOR EACH SENSOR.

**3** (8) CONTRACTOR SHALL PROVIDE A PEDESTRIAN SIGNAL PUSH BUTTON THAT IS COMPATIBLE WITH THE CITY OF OKLAHOMA CITY'S EXISTING CONTROLLER SYSTEM. R10-3B PEDESTRIAN PUSH BUTTON SIGNS SHALL BE USED. PUSH BUTTON HOUSING SHALL BE POWDER COATED WITH TIGER DRYLAC SUPER DURABLE SERIES 38 (38/91020), ANODIZED SILVER, IN A LIGHT MATTE FINISH TO MATCH SIGNAL POLES IN COLOR AND FINISH.

(9) RED, YELLOW AND GREEN LED TRAFFIC SIGNAL HEADS SHALL BE FURNISHED AND INSTALLED ON THIS PROJECT. THE LED TRAFFIC MODULES, LENSES, AND ALL ASSOCIATED MATERIAL AND EQUIPMENT SHALL CONFORM TO I.T.E. VEHICLE TRAFFIC CONTROL SIGNAL HEAD (VTC) STANDARDS IN EFFECT AT THE TIME THAT THE ORDER IS PLACED. LED HEADS SHALL BE CAPABLE OF OPERATING WITHOUT A REFLECTOR.

(10) LED INTERNATIONAL HEADS DISPLAYING INCANDESCENT LOOKING FULLY-ILLUMINATED SYMBOLS (WALKING PERSON AND UPRaised HAND) SHALL BE REQUIRED ON THIS PROJECT. THESE PEDESTRIAN HEADS SHALL ALSO BE COUNTDOWN TYPE HEADS.

(11) PAY ITEM IS TO RUN FROM THE PEDESTRIAN PUSH BUTTONS TO THE TERMINAL STRIP AT THE BASE OF THE POLES.

(12) THE PREEMPTION CONTROL SYSTEM SHALL INTERFACE WITH THE TRAFFIC CONTROLLER TO GIVE EMERGENCY VEHICLES APPROACHING THE INTERSECTION A GREEN WITH ALL OTHER INDICATIONS BEING RED. THE SYSTEM SHALL BE CAPABLE OF TWO PRIORITY LEVELS AND LOG THE LAST 100 EVENTS WITH TIME DATE STAMP. EMITTER SHALL BE SELECTABLE TO TRANSMIT UP TO 9999 VEHICLE CODES. ALL EQUIPMENT IN THE SYSTEM SHALL MEET NEMA ENVIRONMENTAL STANDARDS

THE MANUFACTURER OR MANUFACTURER'S REPRESENTATIVES SHALL PROVIDE ASSISTANCE TO THE CONTRACTOR OR AGENCY INSTALLING THE EQUIPMENT AS TO THE BEST LOCATION FOR THE DETECTOR PLACEMENT AT EACH INTERSECTION INVOLVED WITH THE PROJECT. ALL EQUIPMENT MUST BE PLAINLY MARKED AS TO THE MANUFACTURER OF THE EQUIPMENT TO PROVIDE CLEAR IDENTIFICATION AS TO THE MANUFACTURER'S MODEL AND SERIAL NUMBER OF EACH UNIT. NEMA CERTIFICATION, TEST REPORTS SHALL BE PROVIDED UPON REQUEST BY THE ENGINEER.

SHALL BE REMOVED IN A MANNER APPROVED BY THE ENGINEER. AFTER REMOVAL, THE HOLES SHALL BE PATCHED WITH CONCRETE. THE NEW LOCATION OF SIGN FOOTINGS IN CONCRETE ISLAND SHALL BE SAWED IN A MANNER APPROVED BY THE ENGINEER. CONCRETE PATCHING, SAWING, LABOR, AND ALL OTHER ASSOCIATED COSTS SHALL BE INCLUDED IN OTHER ITEMS OF WORK.

(13) SIGNAL POLE HANDHOLE COVERS SHALL BE ONE PIECE FORMED FROM ABS PLASTIC, MATCHING SIGNAL POLES IN COLOR AND SHALL BE SUITABLE FOR EXPOSURE TO SUNLIGHT AND ALL WEATHER CONDITIONS. HANDHOLE COVERS SHALL LATCH WITH TWO SCREW LATCHES AND SHALL FIT TIGHTLY TO THE ENCLOSURE RING TO CREATE A RAINPROOF SEAL. LATCH SCREWS SHALL BE 1/4-20 STAINLESS STEEL FLAT SOCKET HEAD SCREWS WITH TAMPER-RESISTANT FEATURES. THE HAND HOLE COVERS SHALL MATCH THE EXISTING PROJECT 180 ARCHITECTURAL DESIGN IN THIS AREA OF DOWNTOWN.

(14) TRAFFIC SIGNAL POLES AND MAST ARMS AND PEDESTRIAN POLES TO BE POWDER COATED WITH TIGER DRYLAC SUPER DURABLE SERIES 38 (038/91020), ANODIZED SILVER, IN A LIGHT MATTE FINISH.

(15) THE FACEPLATES SUPPLIED FOR EACH HEAD ON THIS PROJECT SHALL BE CURVED FACEPLATES AND MOUNTING BRACKETS.

(16) QUANTITY SHOWN IS TO BE INSTALLED ADJACENT TO 3" CONDUIT AND LEFT EMPTY. OTHERS WILL INSTALL FIBER IN THE EMPTY 2" CONDUIT AT A LATER DATE.

**3** (17) ROADWAY LUMINAIRE SHALL BE A BEGA #9252 LED POLE TOP MODIFIED LUMINAIRE IN ORDER TO MATCH THE EXISTING PROJECT 180 ARCHITECTURAL DESIGN IN THIS AREA OF DOWNTOWN.

**3** (18) EQUIPMENT INCLUDING CONTROLLER, SIGNAL POLES, MAST ARMS, LUMINAIRES, MINI POWER ZONES, PEDESTRIAN POLES, BACKPLATES/FACEPLATES, ETC. ON THIS PROJECT SHALL MATCH ALL EQUIPMENT UTILIZED FOR PROJECT 180. THE LATEST STANDARDS AND SPECIFICATIONS FOR PROJECT 180 ARE TO BE USED FOR THESE ITEMS. STRUCTURAL MODIFICATIONS MADE TO THE DESIGN OF THE SIGNAL POLES DURING AND AFTER PROJECT 180 SHALL ALSO BE INCLUDED IN THE STRUCTURAL DESIGN OF THESE POLES.

**3** (19) THE CONTRACTOR SHALL CONTACT NORMAN LEE WITH OG&E AT (405)740-7750 TO DETERMINE THE LOCATION OF THE MINI POWER ZONE CLOSEST TO THE TRAFFIC SIGNAL FOR USE ON THIS PROJECT.

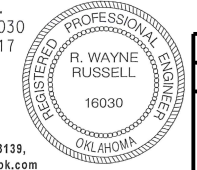
**TRAFFIC SIGNAL PAY QUANTITIES**

Oklahoma City Blvd. at Walker Ave., Hudson Ave. and Robinson Ave. in OKC, OK

0300 TRAFFIC		Oklahoma City Blvd.					
ITEM	DESCRIPTION	UNIT	Walker	Hudson	Robinson	TOTAL	
802(B) 8340	2" PVC SCH. 40 PLASTIC CONDUIT BORED (TP-1)(16)	LF	310	360	335	1005	
802(B) 8342	2" PVC SCH. 40 PLASTIC CONDUIT TRENCHED (TP-1)	LF	295	415	240	950	
802(B) 8344	3" PVC SCH. 40 PLASTIC CONDUIT BORED (TP-1)	LF	310	440	335	1085	
802(B) 8346	3" PVC SCH. 40 PLASTIC CONDUIT TRENCHED (TP-1)	LF	100	170	110	380	
803(A) 8066	PULL BOX (SIZE II) (1)	EA	4	4	4	12	
804(A) 2915	STRUCTURAL CONCRETE (TP-1)	CY	12.6	12.4	13.2	38.2	
804(B) 2916	REINFORCING STEEL (TP-1)	LB	1749.8	1729.9	1851.6	5331.3	
<b>DELETED</b>							
<b>3</b> 806(A) 8352	32' MH POLE, 20' TS & 10' LMA (G.STL.) (2,13,14,16)	EA		2		2	
806(A) 8351	32' MH POLE 25', TS & 10' LMA (G.STL.) (2,13,14,16)	EA	1			1	
806(A) 8350	32' MH POLE, 30' TS & 10' LMA (G.STL.) (2,13,14,16)	EA	1			1	
806(A) 8312	32' MH POLE 40' TS & 10' LMA (G.STL.) (2,13,14,16)	EA	2	1	4	7	
<b>3</b> 806(A) 8313	32' MH POLE 45' TS & 10' LMA (G.STL.) (2,13,14,16)	EA		1		1	
806(B) 8897	12' MTG. HT. TS PED. POLE (ALUMINUM) (14,16)	EA	4	4	4	12	
809(A) 8090	ROADWAY LUMINAIRE (17,16)	EA	4	4	4	12	
810(A) 3118	SERVICE POLE <b>3</b> (TL-35)(18,19)	EA	1	1	1	3	
811 8040	1/C NO. 6 ELECTRICAL CONDUCTOR (TP-1)(3)	LF	200	200	200	600	
811 8044	1/C NO. 10 ELECTRICAL CONDUCTOR (TP-1)	LF	1920	2135	2245	6300	
825 8550	TRAFFIC SIGNAL CONTROLLER ASSEMBLY (4,5,6,16)	EA	1	1	1	3	
828 8132	(PL)DETECTION SYSTEM (VIDEO) (7)	LSUM	1	1	1	1	
830 8000	PEDESTRIAN PUSH BUTTON (8,16)	EA	8	8	8	24	
831 8231	1WAY3SEC. ADJ. SIG. HD. S-6 (9,16)	EA	8	8	8	24	
831 8280	1WAY4SEC. ADJ. SIG. HD. S-13 (9,16)	EA	2	2	4	8	
<b>DELETED</b>							
831 8295	1WAY2SEC. ADJ. PED. SIG. HD. S-20 (10,15,16)	EA	8	8	8	24	
833 3030	BACKPLATE (15,16)	EA	10	10	12	32	
834(A) 8207	5/C TRAFFIC SIGNAL ELECTRICAL CABLE (TP-1)	LF	3115	3135	3435	9685	
834(A) 8208	7/C TRAFFIC SIGNAL ELECTRICAL CABLE (TP-1)	LF	125	140	265	530	
834(A) 8213	21/C TRAFFIC SIGNAL ELECTRICAL CABLE (TP-1)	LF	840	930	990	2760	
834(B) 8220	2/C SHIELDED LOOP DETECTOR LEAD-IN CABLE (TP-1)(11)	LF	40	40	40	120	
840(A) 8592	E.P.S. OPTICAL EMITTER (12)	EA	2			2	
840(B) 8593	E.P.S. OPTICAL DETECTOR (12)	EA	4	4	4	12	
840(C) 8594	E.P.S. OPTICAL DETECTOR CABLE (TP-1)(12)	LF	1015	1170	1255	3440	
840(D) 8595	E.P.S. 2 CHANNEL PHASE SELECTOR (12)	EA	2	2	2	6	
850(C) 8118	MAST ARM MOUNTED SIGNS (ALUMINUM) (16)	SF	66	66	84	216	

*R. Wayne Russell*  
 R. WAYNE RUSSELL, P.E. # 16030  
 C.A. # 1160, RENEWAL 06-30-17

11-13-15  
 DATE



Design	RWR	11/07/17
Drawn	SB	11/07/17



**TRAFFIC SIGNAL PAY QUANTITIES AND NOTES**

I:\07\17 G:\0\Projects\17-2417B Downtown Blvd WP 5/C Task 6\CAD\QUANT SIG REV 2.dgn