

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

TRAFFIC SIGNAL GENERAL CONSTRUCTION NOTES

THE STRUCTURAL DESIGN OF ALL POLES, MAST ARMS, HIGH-MAST POLES, AND OTHER SUPPORTS FOR SIGNS, LUMINAIRES, AND SIGNALS AS WELL AS THEIR CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS. THE MANUFACTURER SHALL ENSURE THE FOLLOWING ARE APPLIED TO THE DESIGN:

THE MINIMUM DESIGN WIND SPEED AND DESIGN LIFE AS REQUIRED IN THE AASHTO SPECIFICATIONS;

THE CALCULATED STRESSES AND FORCES FROM THE DESIGN LOADINGS DO NOT EXCEED THOSE REQUIRED IN THE AASHTO SPECIFICATIONS;

A CATEGORY I FATIGUE IMPORTANCE FACTOR (IF) FOR ALL STRUCTURES; NO VIBRATORY MITIGATION SHALL BE ALLOWED. TRUCK-INDUCED GUSTS SHALL BE APPLIED TO ALL OVERHEAD TRAFFIC SIGNAL SUPPORTS.

ALL MEMBERS ARE AT LEAST THE MINIMUM THICKNESS AS REQUIRED IN THE AASHTO SPECIFICATIONS;

LUMINAIRE MAST ARMS SHALL BE DESIGNED TO SUPPORT AT LEAST A 50 LB. (22.7 KG) LUMINAIRE WITH AN EFFECTIVE PROJECTED AREA OF 2.5 FT<sup>2</sup> (0.23 M<sup>2</sup>); THE ANCHOR BOLT DESIGN AND AMOUNT OF ANCHOR BOLTS TO BE USED SHALL BE AS REQUIRED IN THE AASHTO SPECIFICATIONS.

SIGNAL MAST ARMS AND POLES SHALL BE DESIGNED FOR SPECIFIC SIGNAL HEAD AND SIGN PLACEMENT.

UNLESS SITE SPECIFIC GEOTECHNICAL DATA IS AVAILABLE, FOUNDATIONS SHALL BE DESIGNED UTILIZING THESE PARAMETERS; SHEAR STRENGTH OF COHESIVE SOIL (C) OF 500 PSF, ANGLE OF INTERNAL FRICTION (F) OF 22 DEGREES, AND EFFECTIVE UNIT WEIGHT OF SOIL (G) OF 120 PCF.

MINIMUM HAND HOLE SIZE OF 3 INCH WIDTH BY 5 INCH HEIGHT.

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.

(4) THE CONTROLLER FURNISHED ON THIS PROJECT SHALL BE A NAZTEC SERIES 900 TS2 TYPE 2. A MINIMUM OF SIXTEEN (16) LOAD SWITCH RECEPTACLES SHALL BE FURNISHED AND WIRED TO THE MOUNTING FRAME. ALL WIRING FROM THE FIELD TERMINALS SHALL BE WIRED TO THE MOUNTING FRAME FOR 8 PHASE OPERATION. ALL CORRESPONDING RECEPTACLE WIRING IN THE CABINET AND THE FIELD WIRING SHALL BE INSTALLED FOR THE CONTROLLER AS REQUIRED EXCEPT FOR ADDITIONAL DETECTOR CONNECTOR CABLES WHEN THE CONTROLLER IS EXPANDED. CONTROLLER(S) SHALL BE CAPABLE OF PERFORMING AS SHOWN ON THE PHASE AND SEQUENCE DIAGRAMS. PEDESTRIAN ISOLATION SHALL BE PROVIDED IN THE CONTROLLER CABINET. THE CONTROLLER CABINET SHALL BE A TS2 TYPE 1 CABINET AND SHALL BE POWDER COATED WITH TIGER DRYLAC SUPER DURABLE SERIES 38 (038/91020), ANODIZED SILVER, IN A LIGHT MATTE FINISH.

(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.

(6) AN INNOVATIVE TECHNOLOGY MODEL #HS-P-SP-120A-30A-RH PROTECTOR TRANSIENT VOLTAGE SURGE SUPPRESSOR OR EQUIVALENT SHALL BE INSTALLED BETWEEN THE AC POWER AND CABINET. THE SUPPRESSOR SHALL BE MOUNTED ON THE SIDE OF THE CABINET IMMEDIATELY ADJACENT TO THE AC TERMINAL BLOCK.

(7) THIS BID ITEM CONSISTS OF THE INSTALLATION OF FOUR MAST ARM MOUNTED INTEGRATED THERMAL TRAFFIC SENSORS, ASSOCIATED WIRING/CABLES, INTERFACE PANELS, NEMA TS-2 SDLC CONTROLLER INTERFACE MODULES AND ALL OTHER NECESSARY ITEMS OF WORK FOR A COMPLETE OPERATIONAL VEHICLE DETECTION SYSTEM. THE INTEGRATED THERMAL TRAFFIC SENSORS SHALL UTILIZE FORWARD LOOKING INFRARED CAMERA TECHNOLOGY AND DETECTION PROCESSING WITHIN THE SINGLE SENSOR WITHOUT REQUIRING DETECTION PROCESSORS IN THE TRAFFIC CONTROLLER CABINET, AND SHALL BE ABLE TO DETECT AND REPORT PRESENCE OF VEHICLES 24 HOURS PER DAY WITHOUT NEEDING ARTIFICIAL LIGHTING IN ALL WEATHER AND NATURAL LIGHTING CONDITIONS WITHIN A 17, 25, 35, OR 90 DEGREE FIELD OF VIEW INTEGRATED THERMAL TRAFFIC SENSORS SHALL BE ABLE TO DETECT AND REPORT PRESENCE IN CURVED LANES AND AREAS WITH ISLANDS AND MEDIANS. THE INTEGRATED THERMAL TRAFFIC SENSORS SHALL UTILIZE ONLY THREE CONDUCTOR WIRES FOR POWER AND COMMUNICATIONS AND SHALL NOT REQUIRE COAXIAL CABLE. FIELD SETUP SHALL BE DONE USING A SETUP COMPUTER RUNNING MICROSOFT WINDOWS 7/WINDOWS 8 OR A TOUCH-SCREEN TABLET RUNNING WINDOWS SURFACE PRO OPERATING SYSTEM. INTERFACE SOFTWARE SHALL BE PROVIDED TO THE CITY AT NO ADDITIONAL COST. CONTRACTOR SHALL NOT BE REQUIRED TO PROVIDE A SETUP COMPUTER OR TABLET UNLESS SPECIFICALLY CALLED OUT ELSEWHERE IN THE PROJECT SPECIFICATIONS.

SUPPLIER OF INTEGRATED THERMAL TRAFFIC SENSORS SHALL VERIFY SENSOR FIELD OF VIEW ANGLE REQUIRED FOR INDIVIDUAL APPROACHES BASED ON PROJECT PLANS AND/OR SITE SURVEY PRIOR TO ORDERING EQUIPMENT. CABINET INTERFACE FOR THE SYSTEM SHALL BE LIMITED TO A POWER/COMMUNICATIONS INTERFACE PANEL, ETHERNET COMMUNICATIONS EDGE CARD USING BROADBAND-OVER-POWER (BPO) TECHNOLOGY, AND A TS-2 SDLC MODULE AND SHALL BE COMPATIBLE WITH STANDARD NEMA TS-1 AND TS-2 LOOP DETECTOR CARD RACKS. TS-2 SDLC MODULE SHALL BE CONFIGURED SO THAT VEHICLE AND BICYCLE DETECTION OUTPUTS ARE ASSIGNED STARTING WITH TS-2 DETECTOR INPUT #17. DETECTOR INPUTS 1 THROUGH 16 ARE RESERVED FOR TECHNICIAN PANEL DETECTOR TEST SWITCHES AND SHALL NOT BE USED FOR INTEGRATED THERMAL TRAFFIC SENSOR INTERFACE.

(8) CONTRACTOR SHALL PROVIDE POLARA 2-WIRE NAVIGATOR ACCESSIBLE PEDESTRIAN SIGNAL PUSH BUTTON OR APPROVED EQUAL. 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 (VTCSH) 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 UPSRAID 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 SAWS 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.

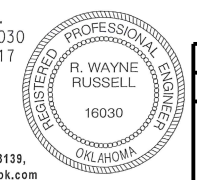
(17) ROADWAY LUMINAIRE SHALL BE A BEGA #9252 MH POLE TOP MODIFIED LUMINAIRE IN ORDER TO MATCH THE EXISTING PROJECT 180 ARCHITECTURAL DESIGN IN THIS AREA OF DOWNTOWN.

(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.

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
DELETED							
806(A) 8352	32' MH POLE, 20' TS & 10' LMA (G.STL.)	(2,13,14,18)	EA		2		2
806(A) 8351	32' MH POLE 25', TS & 10' LMA (G.STL.)	(2,13,14,18)	EA	1			1
806(A) 8350	32' MH POLE, 30' TS & 10' LMA (G.STL.)	(2,13,14,18)	EA	1			1
806(A) 8312	32' MH POLE 40' TS & 10' LMA (G.STL.)	(2,13,14,18)	EA	2	1	4	7
806(A) 8313	32' MH POLE 45' TS & 10' LMA (G.STL.)	(2,13,14,18)	EA		1		1
806(B) 8897	12' MTG. HT. TS PED. POLE (ALUMINUM)	(14,18)	EA	4	4	4	12
809(A) 8090	ROADWAY LUMINAIRE	(17,18)	EA	4	4	4	12
810(A) 3118	SERVICE POLE	(TL-35)	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	(4,5,6,18)	EA	1	1	1	3
828 8132	(PL)DETECTION SYSTEM (VIDEO)	(7)	LSUM	1	1	1	1
830 8000	PEDESTRIAN PUSH BUTTON	(8,18)	EA	8	8	8	24
831 8231	1WAY3SEC. ADJ. SIG. HD. S-6	(9,18)	EA	8	8	8	24
831 8280	1WAY4SEC. ADJ. SIG. HD. S-13	(9,18)	EA	2	2	4	8
DELETED							
831 8295	1WAY2SEC. ADJ. PED. SIG. HD. S-20	(10,15,18)	EA	8	8	8	24
833 3030	BACKPLATE	(15,18)	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	11/15/16
Drawn	SB	11/15/16



**TRAFFIC SIGNAL  
PAY QUANTITIES AND NOTES**

11/15/16 G:\0\Projects\17-2417B Downtown Blvd WP 51C Task 6\CAD\QUANT SIG REV1.dgn