

GENERAL CONSTRUCTION NOTES

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION 2009 ENGLISH STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDED HEREIN.

THE CONTRACTOR SHALL WORK IN COOPERATION WITH THE CITY OF NORMAN TO ESTABLISH, INSTALL, MAINTAIN AND OPERATE COMPLETE, ADEQUATE AND SAFE TRAFFIC CONTROLS DURING THE ENTIRE CONSTRUCTION PERIOD. ALL TRAFFIC CONTROL DEVICES SHALL BE APPROVED BY THE CITY OF NORMAN. CONTRACTOR SHALL PROVIDE AND MAINTAIN A TRAFFIC CONTROL PLAN TO BE APPROVED BY THE ENGINEER PRIOR TO ANY CONSTRUCTION. AN ORANGE CONSTRUCTION FENCE WITH TOP WIRE SHALL BE INSTALLED AND MAINTAINED AROUND THE LIMITS OF CONSTRUCTION FOR THE DURATION OF THE PROJECT.

THIS PROJECT SHALL BE CONSTRUCTED WITHOUT CLOSING THE EXISTING ROAD TO LOCAL AND THROUGH TRAFFIC. SEE O.D.O.T. STANDARDS AND DETAIL DRAWINGS FOR MAINTENANCE OF LOCAL AND THROUGH TRAFFIC.

ANY DAMAGE CAUSED BY THE CONTRACTOR TO ANY STRUCTURES, ROADWAY SURFACES, STRIPING, RAISED PAVEMENT MARKERS, GUARDRAIL, SLOPES, AND SIGNS SHALL BE REPLACED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ENGINEER.

THIS PROJECT SHALL BE CONSTRUCTED WITHOUT CLOSING TRAFFIC ON CROSS STREETS. A MINIMUM OF ONE LANE IN EACH DIRECTION SHALL BE MAINTAINED AT ALL TIMES. SEE O.D.O.T. STANDARDS AND DETAIL DRAWINGS FOR MAINTENANCE OF LOCAL AND THROUGH TRAFFIC.

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 (405) 840-5032 OR 1-800-522-6543, THE LOCAL COUNTY CLERK'S OFFICE. DEPTH OF EXISTING UTILITIES SHALL ALSO BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL STATUTES GOVERNING SAFETY, HEALTH AND SANITATION. THE CONTRACTOR SHALL PROVIDE ALL SAFEGUARDS, SAFETY DEVICES, AND PROTECTIVE EQUIPMENT AND TAKE ANY OTHER NEEDED ACTIONS ON AS HIS OWN RESPONSIBILITY OR AS THE ENGINEER MAY DETERMINE REASONABLY NECESSARY TO PROTECT PROPERTY IN CONNECTION WITH PERFORMANCE OR WORK COVERED BY THE CONTRACT.

ALL WASTE FROM THE REMOVAL OF ASPHALT, CONCRETE, DRIVEWAYS, SIDEWALKS, CURBS, TREES, INLETS AND OTHER INCIDENTAL ITEMS SHALL BECOME THE SOLE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION TRAFFIC CONTROL PLAN, PRIOR TO ANY WORK.

ALL EXCAVATION, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U.S. DEPARTMENT OF LABOR, OSHA, "CONSTRUCTION SAFETY AND HEALTH REGULATIONS" AND ANY AMENDMENTS THERETO.

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

ALL TRAFFIC SIGNAL EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE CITY. IT SHALL BE DELIVERED TO THE CITY OF NORMAN AT 1311 DAVINCI STREET. THE PRICE BID SHALL INCLUDE THE REMOVAL OF ALL FOOTINGS BELOW GROUND LEVEL OR AS DIRECTED BY THE ENGINEER. FOOTINGS TO BECOME THE PROPERTY OF THE CONTRACTOR.

ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL MEET ODOT'S, "QUALITY STANDARDS FOR TEMPORARY TRAFFIC CONTROL DEVICES."

THE CONTRACTOR SHALL PROVIDE A PERSON TO BE ON 24 HOUR CALL AS NEEDED AS DETERMINED BY THE ENGINEER. THIS PERSON SHALL HOLD A CURRENT CERTIFICATION FROM THE AMERICAN TRAFFIC SAFETY SERVICE ASSOCIATION (ATSSA) OR THE OKLAHOMA TRAFFIC ENGINEERING ASSOCIATION (OTEA) AS A TRAFFIC CONTROL TECHNICIAN OR TRAFFIC CONTROL SUPERVISOR."

(C-6) 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 (ϕ) 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 FT² (0.23 M²);

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.

(C-7) CONT'

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 (ϕ) OF 22 DEGREES, AND EFFECTIVE UNIT WEIGHT OF SOIL (γ') OF 120 PCF.

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

TRAFFIC LIGHTING PAY QUANTITY NOTES

(TL-44) INCLUDED IN THE COST OF THIS ITEM, THE CONTRACTOR SHALL EITHER COMPLETELY REMOVE THE EXISTING CONCRETE LIGHT POLE FOOTING(S) OR CUT OFF THE TOP PORTION OF THE FOOTING(S) TO A MINIMUM OF ONE FOOT BELOW GRADE. THE RESULTING HOLE(S) SHALL BE BACKFILLED, COMPACTED AND ALL DEBRIS DISPOSED OF IN A MANNER APPROVED BY THE ENGINEER.

TRAFFIC SIGNING PAY QUANTITY NOTES

(TS-6) SHOP DRAWINGS FOR ATTACHING SIGNS TO LIGHT AND/OR SIGNAL POLES AND MAST ARMS SHALL BE SUBMITTED TO THE TRAFFIC ENGINEER FOR APPROVAL BEFORE FABRICATION. NO HOLES SHALL BE PERMITTED IN ANY LIGHT AND/OR SIGNAL POLE OR MAST ARM. THE PRICE BID SHALL INCLUDE ALL MATERIALS, LABOR, HARDWARE, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK AS DESCRIBED.

(TS-19) QUANTITY SHOWN INCLUDES 0 L.F. TRAFFIC STRIPE (PLASTIC)(WHITE) AND 70 L.F. TRAFFIC STRIPE (PLASTIC)(YELLOW) AND WILL BE MEASURED BY THE LINEAR FOOT OF FOUR INCH (4") WIDE TRAFFIC STRIPE.

(TS-21) QUANTITY SHOWN INCLUDES 0 L.F. TRAFFIC STRIPE (PLASTIC)(WHITE) AND 50 L.F. TRAFFIC STRIPE (PLASTIC)(YELLOW) AND WILL BE MEASURED BY THE LINEAR FOOT OF EIGHT INCH (8") WIDE TRAFFIC STRIPE.

(TS-23) QUANTITY SHOWN INCLUDES 179 L.F. TRAFFIC STRIPE (PLASTIC)(WHITE) AND WILL BE MEASURED BY THE LINEAR FOOT OF TWENTY-FOUR (24") WIDE TRAFFIC STRIPE.

TRAFFIC SIGNAL PAY QUANTITY NOTES

(TC-25) ALL CONSTRUCTION TRAFFIC CONTROL WILL BE IMPLEMENTED ACCORDING TO CONSTRUCTION PLANS, AND INSTALLED IN A MANNER APPROVED BY THE ENGINEER, IN ACCORDANCE WITH CHAPTER VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (CURRENT EDITION), AND COMPLIANT WITH APPLICABLE O.D.O.T. STANDARD DRAWINGS. PRICE BID OR THIS ITEM SHALL BE PAYMENT IN FULL FOR THE INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF ALL NECESSARY CONSTRUCTION TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS REQUIRED FOR COMPLETION OF THE PROJECT.

ALL SIGNS AND BARRICADES, WHICH ARE SHOWN WITH TYPE "A" LIGHTS IN THE STANDARD DRAWINGS SHALL HAVE THE CORRESPONDING LIGHT ATTACHED DURING NON-DAYLIGHT HOURS.

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

(ITS-2) THE INSTALLATION OF THE FIBER OPTIC CABLE, SPLICES, AND TERMINATIONS SHALL BE THE RESPONSIBILITY OF THE FIBER CONTRACTOR FOR THIS PORTION OF THE PROJECT. THE FIBER CONTRACTOR SHALL BE REQUIRED TO MEET ALL SPECIFICATIONS OF THE "FIBER OPTIC CABLE, TERMINATIONS, AND SPLICING REQUIREMENTS". NO WORK ON ANY PORTION OF THE FIBER OPTIC SYSTEM SHALL BE PERFORMED BY ANYONE OTHER THAN THE FIBER CONTRACTOR.

(ITS-6) THE FIBER OPTIC CABLE SHALL BE PULLED WITH MULE TAPE, BY NEPTCO, INC., OR AN APPROVED EQUAL. NO GREATER THAN A 600 POUND PULL STRENGTH.

(ITS-7) THE INSTALLED FIBER OPTIC CABLE SHALL BE OTDR TESTED AND SHALL MEET INDUSTRY STANDARDS. LIGHT LOSS AS TESTED SHALL BE NO GREATER THAN .10 DB FOR THE ENTIRE FIBER RUN.

(ITS-12) SPLICING WILL BE DONE BY THE FUSION WELD METHOD AND THE WELDING PROCESS SHALL BE SPECIFICALLY DESIGNED FOR SPLICING SINGLE-MODE FIBERS IN BOTH THE LVD AND DVD DESIGN. OPTIC LOSS PER SPLICE SHALL BE EQUAL TO OR LESS THAN .10 DB. OPTICAL LOSS FOR PIGTAIL SPLICES IN THE FIBER TERMINATION BOX SHALL BE LESS THAN OR EQUAL TO .8 DB.

(ITS-15) THE CONTRACTOR SHALL PROVIDE "AS-BUILT" DOCUMENTATION FOR ALL FIBER OPTIC CABLE ROUTES (TO/FROM), INDIVIDUAL FIBERS, TERMINATIONS, SPLICES, FINAL DESTINATIONS, AND OTDR READINGS.

(ITS-22) THE COST BID FOR THIS ITEM SHALL INCLUDE THE COST OF SHIELD ISOLATION PEDESTAL (RELIABLE SIP40), THE W-FLANGE POST, 2.5 LBS. FT., TWO FIBER OPTIC SIGNS, TAGGING AND IDENTIFYING OF EACH FIBER OPTIC CABLE AND THE #6 AWG GROUND WIRE RUN BETWEEN THE SHIELD ISOLATION PEDESTAL AND THE SPLICE POINT REGARDLESS OF ITS LOCATION IN A SPLICE BOX, A GROUND BOX, A 332 CABINET, A COMMUNICATION HUT, ETC. COST TO INCLUDE ALL APPURTENANCES AND MATERIAL NECESSARY TO CONNECT ALL SPLICES TO THE SHIELD ISOLATION PEDESTAL. (PEDESTAL STAKE MARCONI MS1342; GROUND ROD ERICO 6138529.)

- (SP-1) POLE LOCATIONS SHALL BE APPROVED BY THE TRAFFIC ENGINEER PRIOR TO DRILLING OF THE BASES.
- (SP-2) THE HEAD SPACING SHALL BE APPROVED BY THE TRAFFIC ENGINEER AFTER POLE BASES HAVE BEEN POURED.
- (SP-3) LUMINAIRE SHALL BE INSTALLED AT END OF LUMINAIRE ARM, 110 VOLTS TO BE SUPPLIED ON SEPARATE CIRCUIT FROM SERVICE TO STANDARD BASE AND IDENTIFIED WITH YELLOW TAPE, 5 AMP FUSE TO BE INSTALLED IN SIGNAL BASE THE PAYMENT FOR INSTALLATION AND THE RELATED EQUIPMENT (250W LED LAMP, 120 V PHOTO CELL, IN LINE FUSE HOLDER, AND 5 AMP KTK FUSE) SHALL BE INCLUDED IN THE PAY ITEM MODULAR TRAFFIC SIGNAL MAST ARM AND POLE WITH LUMINAIRE EXTENSION.
- (SP-4) THIS PROJECT WILL REQUIRE AUDIBLE SIGNAL CAPABILITIES. THE PEDESTRIAN PUSH BUTTON ASSEMBLY SHALL BE THE 2-WIRE NAVIGATOR ACCESSIBLE PEDESTRIAN SIGNAL (APS) AS MANUFACTURED BY POLARA ENGINEERING INC. OF FULLERTON CA., OR APPROVED EQUAL.
- (SP-5) INCLUDES THE FOLLOWING ITEMS: AUDIBLE SYSTEM CENTRAL CONTROL UNITS, GTI LED COUNTDOWN PEDESTRIAN SIGNAL MODULES (16"x18") MANUFACTURED BY GENERAL ELECTRIC OR APPROVED EQUALS, AND HANDHELD REMOTE NAVIGATOR CONFIGURATOR. CCU'S SHALL BE 2-WIRE NAVIGATOR CENTRAL CONTROL UNITS MANUFACTURED BY POLARA ENGINEERING INC. OF FULLERTON, CA OR APPROVED EQUALS. PUSH BUTTON SIGNS SHALL BE MUTCD R10-3E OPTION T.
- (SP-6) THE SURGE PROTECTORS TO BE SUPPLIED ON THIS PROJECT SHALL BE EATON INNOVATIVE TECHNOLOGY 60 AMP MODEL NO. HS-P-SP-120-60-RJ, OR APPROVED EQUAL.
- (SP-7) ALL LED TRAFFIC SIGNAL LENSES 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. THE LED'S SHALL BE OF THE INCANDESCENT LOOK.
- (SP-8) THIS PROJECT INVOLVES THE INSTALLATION OF A VIDEO VEHICLE DETECTION SYSTEM. THEREFORE THE CONTRACTOR SHALL FURNISH AND INSTALL AN ECONOLITE AUTOSCOPE ENCORE MACHINE VISION SYSTEM OR APPROVED EQUAL WITH EASYLOCK CONNECTORS. ALL NECESSARY CABLES, HARNESSSES, MATERIALS AND FITTINGS NECESSARY TO PROVIDE A COMPLETE AND OPERATING SYSTEM AT THE INTERSECTION. ALL CAMERAS, SUNSHIELDS, AND MOUNTING HARDWARE SHALL BE BLACK.

1. VIDEO DETECTION-GENERAL
 THIS SPECIFICATION SETS FOR THE MINIMUM REQUIREMENTS FOR A SYSTEM THAT MONITORS VEHICLES ON A ROADWAY VIA PROCESSING OF VIDEO IMAGES. THE DETECTION OF VEHICLES PASSING THROUGH THE FIELD-OF-VIEW OF AN IMAGE SENSOR SHALL BE MADE AVAILABLE TO A LARGE VARIETY OF END USER APPLICATIONS AS SIMPLE CONTACT CLOSURE OUTPUTS THAT REFLECT THE CURRENT REAL-TIME DETECTOR OR ALARM STATES (ON/OFF) OR AS SUMMARY TRAFFIC STATISTICS THAT ARE REPORTED LOCALLY OR REMOTELY. THE CONTACT CLOSURE OUTPUTS SHALL BE PROVIDED TO A TRAFFIC SIGNAL CONTROLLER AND COMPLY WITH THE NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) TYPE C OR D DETECTOR RACK OR TO INPUT FILE RACK STANDARDS.

THE SYSTEM ARCHITECTURE SHALL FULLY SUPPORT ETHERNET NETWORKING OF SYSTEM COMPONENTS THROUGH A VARIETY OF INDUSTRY STANDARD AND COMMERCIALY AVAILABLE INFRASTRUCTURES THAT ARE USED IN THE TRAFFIC INDUSTRY. THE DATA COMMUNICATIONS SHALL SUPPORT DIRECT CONNECT, [MODEM], AND MULTI-DROP INTERCONNECTS. SIMPLE, STANDARD ETHERNET WIRING SHALL BE SUPPORTED TO MINIMIZE OVERALL SYSTEM COST AND IMPROVE RELIABILITY. UTILIZING EXISTING INFRASTRUCTURE AND EASE OF SYSTEM INSTALLATION AND MAINTENANCE. BOTH STREAMING VIDEO AND DATA COMMUNICATIONS SHALL OPTIONALLY BE INTERCONNECTED OVER LONG DISTANCES THROUGH FIBER OPTIC, MICROWAVE, OR OTHER COMMONLY USED DIGITAL COMMUNICATIONS TRANSPORT CONFIGURATIONS.

ON THE SOFTWARE APPLICATION SIDE OF THE NETWORK, THE SYSTEM SHALL BE INTEGRATED THROUGH A CLIENT-SERVER RELATIONSHIP. A COMMUNICATIONS SERVER APPLICATION SHALL PROVIDE THE DATA COMMUNICATIONS INTERFACE BETWEEN AS FEW AS ONE TO AS MANY AS HUNDREDS OF MACHINE VISION PROCESSOR (MVP) SENSORS AND A NUMBER OF CLIENT APPLICATIONS. THE CLIENT APPLICATIONS SHALL EITHER BE HOSTED ON THE SAME PC AS THE COMMUNICATIONS SERVER OR MAY BE DISTRIBUTED OVER A LOCAL AREA NETWORK OF PC'S USING THE INDUSTRY STANDARD TCP/IP NETWORK PROTOCOL. MULTIPLE CLIENT APPLICATIONS SHALL EXECUTE SIMULTANEOUSLY ON THE SAME HOST OF MULTIPLE HOSTS, DEPENDING ON THE NETWORK CONFIGURATION. ADDITIONALLY, A WEB-BROWSER INTERFACE SHALL ALLOW USE OF INDUSTRY STANDARD INTERNET WEB BROWSERS TO CONNECT TO MVP SENSORS FOR SETUP, MAINTENANCE, AND PLAYING DIGITAL STREAMING VIDEO.

DESIGN	CEM	02/16	BOYD ST. AND UNIVERSITY BLVD.
DRAWN	CEM	02/16	
CHECKED	NDT	02/16	
APPROVED			
SQUAD	GARVER		STATE JOB NO. 24285(04) SHEET NO. 3

NOTES