LIGHT FIXTURE SCHEDULE

FIXTURE TYPE	EST. QTY.	MANUFACTURER	CATALOG NO.	DESCRIPTION	IES DIST.	LAMPS	COLOR TEMP.	CRI	VOLTAGE	WATTAGE	LIGHT LOSS FACTOR (LLF)	MIN. INITIAL LUMENS	KEYED NOTES
A1	17	AMERICAN ELECTRIC LIGHTING	ATB2-60LED70-480-R3	AUTOBAHN SERIES ATB2	TYPE III	LED	4000K	70	480	133	0.88	17128	1 2 3 4 5 6
A2	3	AMERICAN ELECTRIC LIGHTING	ATB2-80LED10-480-R4	AUTOBAHN SERIES ATB2	TYPE IV	LED	4000K	70	480	274	0.88	29567	1 2 3 4 5 6
A3	2	AMERICAN ELECTRIC LIGHTING	ATB2-80LED10-480-R4-HS	AUTOBAHN SERIES ATB2	TYPE IV	LED	4000K	70	480	274	0.88	29567	1 2 3 4 5 6
B	6	HOLOPHANE	W4PLED-30C-700-40K-T3M-480-DF-LWG-GYSDP	WALLPACK IV GLASS LED	TYPE III	LED	4000K	70	480	67	0.88	5200	4 5 6 7

OKLAHOMA DEPARTMENT OF TRANSPORTATION

FED. ROAD DIST. NO.	STATE	JOB PIECE NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
6	OKLA.	24963(04)			

DESCRIPTION	REVISIONS	DATE

LIGHTING DESIGN GENERAL NOTES:

1. CONTRACTOR SHALL SUBMIT DIMENSIONED PHOTOMETRIC LAYOUTS OF ALL AREAS TO BE LIT AS INDICATED HEREIN. LAYOUTS SHALL UTILIZE IES PHOTOMETRIC FILES SUPPLIED BY THE MANUFACTURER FOR THE PROPOSED LIGHT FIXTURES. PHOTOMETRIC MODELING SHALL BE PERFORMED BY AN INDUSTRY ACCEPTED LIGHTING MODELING SOFTWARE PACKAGE: VISUAL 2016 EDITION, AGI32, OR AN APPROVED EQUAL. MODELING SHALL TAKE INTO ACCOUNT ALL EXISTING AND PROPOSED STRUCTURES, ALL GRADE CHANGES, ETC. TO CORRECTLY MODEL THE LIGHTING ENVIRONMENT. ALL LIGHTING DESIGN CRITERIA LISTED HEREIN SHALL BE MET OR EXCEEDED IN PERFORMANCE BY THE PROPOSED EQUIPMENT AND LAYOUT NON-DEPENDENT WHETHER THE EQUIPMENT IS LISTED IN THE DRAWINGS OR IF IT IS AN APPROVED EQUAL. EQUIPMENT AND LAYOUTS WHICH DO NOT MEET OR EXCEED DESIGN REQUIREMENTS WILL BE REJECTED BY THE ENGINEER DURING SUBMITTAL STAGE. INSTALLATIONS WHICH PASS THE SUBMITTAL STAGE AND DO NOT MEET OR EXCEED MEASURED PHOTOMETRIC VALUES IN THE FIELD WILL BE REJECTED BY THE ENGINEER, AND THE SYSTEM WILL BE REPLACED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER AND ENGINEER.
2. FOLLOWING THE SYSTEM INSTALLATION, PRIOR TO PROJECT CLOSEOUT, THE CONTRACTOR SHALL TAKE IN-FIELD MEASUREMENTS OF ALL THE LIT SURFACES AND SUBMIT TO THE ENGINEER FOR REVIEW. MEASUREMENTS FOR HIGHWAY LIGHTING SHALL BE TAKEN ON A GRID WITH ONE POINT IN THE CENTER OF EACH LANE, AT INTERVALS OF 25'. CONTRACTOR SHALL PLOT ON A FULL-SIZE DRAWING SET EACH MEASUREMENT TAKEN. GRIDS SHALL BE ORIENTED SUCH THAT THEY ARE SYMMETRICAL ABOUT THE ALIGNMENT CENTERLINE.
3. ALL LAYOUT MODELING AND FIELD MEASUREMENTS SHALL BE TAKEN HORIZONTALLY ON THE PAVED SURFACES AT 0'-0" AFG.
4. ANY CONTRACTOR PROPOSED ALTERNATE TO FIXTURES SHOWN ON THE LIGHT FIXTURE SCHEDULE OR LISTED IN THE ALTERNATE LIGHT FIXTURES NOTES SHALL BE REVIEWED BY THE ENGINEER, CITY OF TULSA, AND ODOT, AND SHALL MEET ALL REQUIREMENTS LISTED IN THE TABLE.
5. ALL FIXTURES SHALL BE MOUNTED AND ORIENTED AS SPECIFIED ON THE APPROPRIATE LIGHTING TABLE PLAN SHEETS. UNLESS SPECIFIED OTHERWISE, ALL FIXTURES SHALL BE ORIENTED SO THAT THE FIXTURE "FRONT" AS DEFINED BY THE .IES PHOTOMETRIC FILE EXTENDS FROM THE CENTERLINE AT AN ANGLE OF 90°. HOWEVER, CONTRACTOR SHALL ADJUST FIXTURE AIMING AND ORIENTATION AS REQUIRED BY THE ENGINEER IN THE FIELD TO MEET THE LIGHTING DESIGN CRITERIA.
6. ALL LIGHT FIXTURES SHALL BE MODELED WITH LLF AS SPECIFIED HEREIN OR AS RECOMMENDED BY THE MANUFACTURER FOR THE INTENDED APPLICATION AND ENVIRONMENTAL CONDITIONS.
7. CONTRACTOR SHALL NOTE THAT ALL ELECTRICAL DISTRIBUTION SYSTEM COMPONENTS (CONDUIT, WIRE, PANELS, PULL BOXES, ETC.) ARE DESIGNED AND SIZED AROUND THE EQUIPMENT SPECIFIED. IF ALTERNATES ARE PROPOSED, IT IS THE CONTRACTOR'S RESPONSIBILITY DURING SUBMITTAL STAGE TO SUBMIT PROOF THAT THE NEW ALTERNATE WILL WORK WITH THE ELECTRICAL INFRASTRUCTURE SPECIFIED HEREIN THESE CONTRACT DOCUMENTS. IF IT WILL NOT SUPPORT THE PROPOSED ALTERNATE, THE CONTRACTOR SHALL SUBMIT WHAT MODIFICATIONS ARE REQUIRED AND THESE WILL BE MADE BY THE CONTRACTOR AT HIS/HER EXPENSE FOLLOWING APPROVAL BY THE ENGINEER.
8. PROVIDE ALL LIGHT POLES WITH FRONT FACING HAND HOLE PULL POINTS AT THE BASE OF THE POLE WITH REMOVABLE COVER WITH CHAIN, WATERPROOF GROMMET, AND TAMPERPROOF CAPTIVE SCREWS.
9. PROVIDE VIBRATION DAMPENERS FOR ALL POLES. THESE SHALL BE INDICATED IN THE SUBMITTALS AND SHOP DRAWINGS.
10. LIGHT POLE OFFSETS SHALL COMPLY WITH THE LIGHT POLE CLEARANCE TABLE AND DETAILS ON ODOT STANDARD DRAWING TYPICAL LIGHT POLE PLACEMENT DETAILS PPD1-2-00.
11. THE CONTRACTOR SHALL SUBMIT ALL LIGHT FIXTURES, LIGHT POLES, AND FIXTURES ARMS TO ENGINEER FOR APPROVAL PRIOR TO PROCUREMENT.
12. ALL ELECTRICAL WORK AND MATERIAL SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NFPA 70 (2020) NATIONAL ELECTRIC CODE, NFPA 101 (2018) LIFE SAFETY CODE, NFPA 780 (2020) STANDARD FOR THE INSTALLATION OF LIGHTNING PROTECTION SYSTEMS, STATE ELECTRICAL CODE, LOCAL ELECTRIC CODE, AND ALL CITY OF TULSA AND ODOT STANDARDS.
13. LIGHT FIXTURE POLE LOCATION, MOUNTING AND CONSTRUCTION SHALL CONFORM WITH ODOT STANDARDS UNLESS SPECIDIFIED OTHERWISE HEREIN.
14. ALL EXPOSED CONDUIT SHALL BE GALVANIZED REGID STEEL CONDUIT (GRSC) OF QUANTITY AND SIZE INDICATED. INSTALL ALL CONDUIT AS SHOWN ON PLANS.
15. ALL CONDUIT IN BARRIER SHALL BE GALVANIZED RIGID STEEL CONDUIT (GRSC), INSTALL ALL CONDUIT AS SHOWN ON PLANS.
16. ALL BELOW GRADE CONDUIT SHALL BE PVC CONDUIT, INSTALL ALL CONDUIT AS SHOWN ON PLANS.
17. ALL UNDERGROUND PVC CONDUIT SHALL TRANSITION TO PVC COATED GALVANIZED RIGID STEEL CONDUIT 3' PRIOR TO EMERGENCE ABOVE GRADE.
18. ALL GALVANIZED RIGID STEEL CONDUIT IN CONCRETE SHALL TRANSITION TO PVC COATED GALVANIZED RIGID STEEL CONDUIT PRIOR TO EMERGENC FROM CONCRETE.
19. REFER TO ODOT STANDARD DETAIL SHEET CCD1-1-00 AND CCD2-1-00 FOR CONDUIT INSTALLATION NOTES AND DETAILS.
20. CONNECT ELECTRICAL EQUIPMENT ENCLOSURES, CONCRETE REBAR, GROUND RODS, STEEL CONDUIT, AND LIGHT POLES TO RESPECTIVE GROUNDING SYSTEM(S) USING #6 AWG SDBC BONDING JUMPER AND EXOTHERMIC WELDS.
21. GROUNDING SYSTEM(S) SHALL FULLY COMPLY WITH NEC SECTION 250.
22. ALL LIGHT POLES AND FIXTURES THAT ARE GROUND MOUNTED (BM) OR MEDIAN BARRIER MOUNTED (MBM) SHALL HAVE THEIR OWN DEDICATED GROUND ROD. BOND GROUND ROD TO LIGHT POLE AND GROUNDING SYSTEM.
23. INSTALL CONDUIT EXPANSION DEVICES COMPLETE WITH A GROUND STRAP AT ALL BRIDGE JOINTS. A CONDUIT EXPANSION DEVICE SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS::

    A.) EACH END BLISTER FOOTING.
    B.) EACH END OF BRIDGE TANSITIONS.
24. ALL CONDUIT ROUTING, TRENCHING, EXCAVATION, AND BACKFILL SHALL COMPLY WITH ODOT STANDAR SPECIFICATIONS AND DRAWINGS.
25. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A BOLT CIRCLE TEMPLATE FOR BLISTER MOUNTED POLES. THE TEMPLATE(S) SHALL BE 1/4" THICK STEEL PLATE(S), AND BE PERMANENTLY LABELED WITH THE CONTRACTOR'S COMPANY NAME, BOLT CIRCLE DIAMETER, AND THE ANCHOR BOLT DIAMETER.
26. LIGHT FIXTURE POLE LOCATION, MOUNTING, AND CONSTRUCTION SHALL CONFORM WITH ODOT AND CITY OF TULSA STANDARDS UNLESS SPECIFIED OTHERWISE HEREIN.
27. EACH POLE SHALL RECIEVE CITY OF TULSA (COT) ID NUMBER AS WELL AS SCHEDULE. SUBMIT WEATHER RESISTANT REFLECTIVE BLACK ON WHITE LABEL FOR REVIEW.

ALTERNATE LIGHT FIXTURES NOTES:

AS AN ALTERNATE TO THE GIVEN LIGHT FIXTURES SHOWN IN THE LIGHT FIXTURE SCHEDULE TABLE, THE CONTRACTOR MAY INSTEAD PROVIDE THE FOLLOWING LIGHT FIXTURES LISTED BELOW OR AN APPROVED EQUAL WITH THE SAME OPTIONS AS STATED IN THE TABLE:

- FIXTURE TYPE A1: GAN-AF-02-LED-8-T3-AP BY EATON-STREETWORKS
- FIXTURE TYPE A2: GAN-AF-03-LED-8-T3R-AP BY EATON-STREETWORKS
- FIXTURE TYPE A3: GAN-AF-05-LED-8-T4W-AP BY EATON-STREETWORKS
- FIXTURE TYPE B: KACM-LED-20C-700-40K-R3-MVOLT BY LITHONIA LIGHTING

SIDEWALK LIGHTING DESIGN CRITERIA:

AS OUTLINED IN IESNA HANDBOOK (9TH EDITION), ODOT DESIGN MANUAL, AND IES RP-8

- DEFINED AS RESIDENTIAL AREA PER IESNA.
  - MINIMUM AVERAGE HORIZONTAL LEVELS: 0.20fc
  - MINIMUM AVERAGE ILLUMINANCE: 0.6fc

LIGHT FIXTURE SCHEDULE AND SERVICE POINT LOCATION SCHEDULE KEYED NOTES:

1. FIXTURE, POLE, AND TENON ARM SHALL BE POWER COAT BLACK COLOR AND POLE SHALL BE GALVANIZED STEEL. SUBMIT FINISH SAMPLE TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT.
2. FIXTURE SHALL BE PROVIDED WITH DOUBLE FUSING. FUSES SHALL BE INSTALLED ACCESSIBLE IN THE POLE HANDHOLE UTILIZING FUSE HOLDERS. REFER TO ODOT STANDARD DETAIL SHEET SCD1-1-00 FOR FUSING DETAILS.
3. FURNISH AND INSTALL POLE AND ARMS COMPLIANT WITH ODOT AND CITY OF TULSA STANDARD DETAILS, AASHTO REQUIREMENTS, AND SPECIFICATIONS HEREIN. POLES SHALL BE FURNISHED AND INSTALLED AS DESCRIBED IN THE ROADWAY FIXTURE LOCATION TABLES. POLES SHALL HAVE ONE 6' TENON ARM IN CONFIGURATIONS AS INDICATED IN THE LIGHT POLE SCHEDULE SHEET.
4. MOUNT FIXTURE ON POLE, BRACKET, OR STRUCTURE AS DIRECTED IN THE ROADWAY FIXTURE LOCATION TABLES. FURNISH AND INSTALL REQUIRED MOUNTING ACCESSORIES.
5. FIXTURE SHALL BE UL LISTED AND LABELED FOR WET LOCATION.
6. PROVIDE FIXTURE WITH P7 RECEPTACLE, TAMPER RESISTANT SCREWS, AND PROTECTIVE GUARD.
7. FIXTURE SHALL BE POWDER COAT BLACK COLOR; SUBMIT FINISH SAMPLE TO ENGINEER FOR REVIEW PRIOR TO PROCUREMENT, FIXTURE SHALL BE PROVIDED WITH DOUBLE FUSING, FUSES SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION PER MANUFACTURER RECOMMENDATIONS UTILIZING FUSE HOLDERS, REFER TO ODOT STANDARD DETAIL SHEET SCD1-1-00 FOR FUSING DETAILS.

ROADWAY LIGHTING DESIGN CRITERIA:

AS OUTLINED IN IESNA HANDBOOK (9TH EDITION), ODOT DESIGN MANUAL, AND IES RP-8

FOR UNION AVE, SKELLY DRIVE, AND 51st STREET:

- MAJOR ROADWAY
  - DEFINED AS RESIDENTIAL AREA PER IESNA.
  - PAVEMENT CLASSIFIED AS R3 PER IESNA.
  - REQUIRED AVERAGE MAINTAINED ILLUMINANCE: 0.90fc
  - MAXIMUM ALLOWABLE ILLUMINANCE UNIFORMITY RATIO (AVG:MIN): 3:1
  - REQUIRED MINIMUM ILLUMINANCE: 0.4fc

AS OUTLINED IN IESNA HANDBOOK (9TH EDITION), ODOT DESIGN MANUAL, AND IES RP-8

FOR I-44:

- FREEWAY A
  - AREA CLASSIFICATION NOT DEFINED PER IESNA.
  - PAVEMENT CLASSIFIED AS R3 PER IESNA.
  - REQUIRED AVERAGE MAINTAINED ILLUMINANCE: 0.90fc
  - MAXIMUM ALLOWABLE ILLUMINANCE UNIFORMITY RATIO (AVG:MIN): 3:1
  - REQUIRED MINIMUM ILLUMINANCE: 0.4fc

DESIGN	QDS	9/18
DRAWN	QDS	9/18
CHECKED	WBG	9/18
APPROVED		
SQUAD	GARVER	

OKLAHOMA DEPARTMENT OF TRANSPORTATION

LIGHT FIXTURE SCHEDULE
(SHEET 1 OF 2)

COUNTY TULSA HIGHWAY UNION AVE STATE JOB NO. 29694(04) SHEET NO. T007

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