

LIGHTING FIXTURE SCHEDULE			
TYPE	DESCRIPTION	MANUFACTURER & CAT. NO. (OR APPROVED EQUAL)	LAMP(S)
A	COBRA HEAD TYPE LUMINAIRE, 250W HPS, SUITABLE FOR WET LOCATIONS, WITH MULTI-TAP (CONNECTED 240V) HPF -20 F CLASS H BALLAST, DIECAST ALUMINUM HOUSING, SEMI-SPECULAR ALUMINUM REFLECTOR (TYPE 2 BEAM PATTERN), TEMPERED GLASS LENS, PHOTO-ELECTRIC CONTROL (WITH RECEPTACLE MTD. ON TOP OF LUMINAIRE) 6' LONG TAPERED ALUMINUM ARM & 8.5 METER OCTAGONAL TAPERED BASE MTD. (WITH BASE COVER) CONCRETE POLE (NATURAL AGGREGATE FINISH)	LUMINAIRE: HUBBELL RM-CD-25S-28-PE-1A5-0-M53 G.E. M2AC-25S-0H-PE-G-MC2-1-U  POLE: AMERON MBO-8.5-113  ARM: AMERON MO-AE-6	(1) LU250
B	SAME AS TYPE 'A' EXCEPT EMBEDDED TYPE POLE	LUMINAIRE: HUBBELL RM-CD-25S-28-PE-1A5-0-M53 G.E. M2AC-25S-0H-PE-G-MC2-1-U  POLE: AMERON MEO-8.5-113  ARM: AMERON MO-AE-6	(1) LU250
C	SAME AS TYPE 'A' EXCEPT EMBEDDED TYPE 7 METER POLE, 6' ARM & 150W	LUMINAIRE: HUBBELL RM-CD-15S-28-PE-1A5-0-M53 G.E. M2AC-15S-0H-PE-G-MC2-1-U  POLE: AMERON MEO-7-113  ARM: AMERON MO-AE-4	(1) LU150

- LEGEND** (APPLICABLE TO ALL ELECTRICAL DRAWINGS):
- BELOW GRADE CONDUIT
  - STREET LIGHTING JUNCTION BOX
  - A STREET LIGHT (A INDICATES FIXTURE TYPE, TYPICAL)

APPROVED  
JUL 22 1998  
BY: *[Signature]*

REVISIONS		BY
Δ	PER CITY OF 3/24/98 FEMALE COMMENTS	KK
KENNETH KOK, P.E. ELECTRICAL ENGINEER 208 THIRD STREET LYNDEN, WA 98944 TEL. (360) 354-4151 FAX (360) 354-6194		
CORRELL PARK P.U.D. HOMESTEAD NORTHWEST, INC.		
STREET LIGHTING PLAN, FIXTURE SCHEDULE & LEGEND		
DATE: 19 MAR 98		
SCALE: 1" = 40'-0"		
DRAWN: KL		
DESIGNED: KK		
SHEET OF 2		
- 1 - SHEETS		

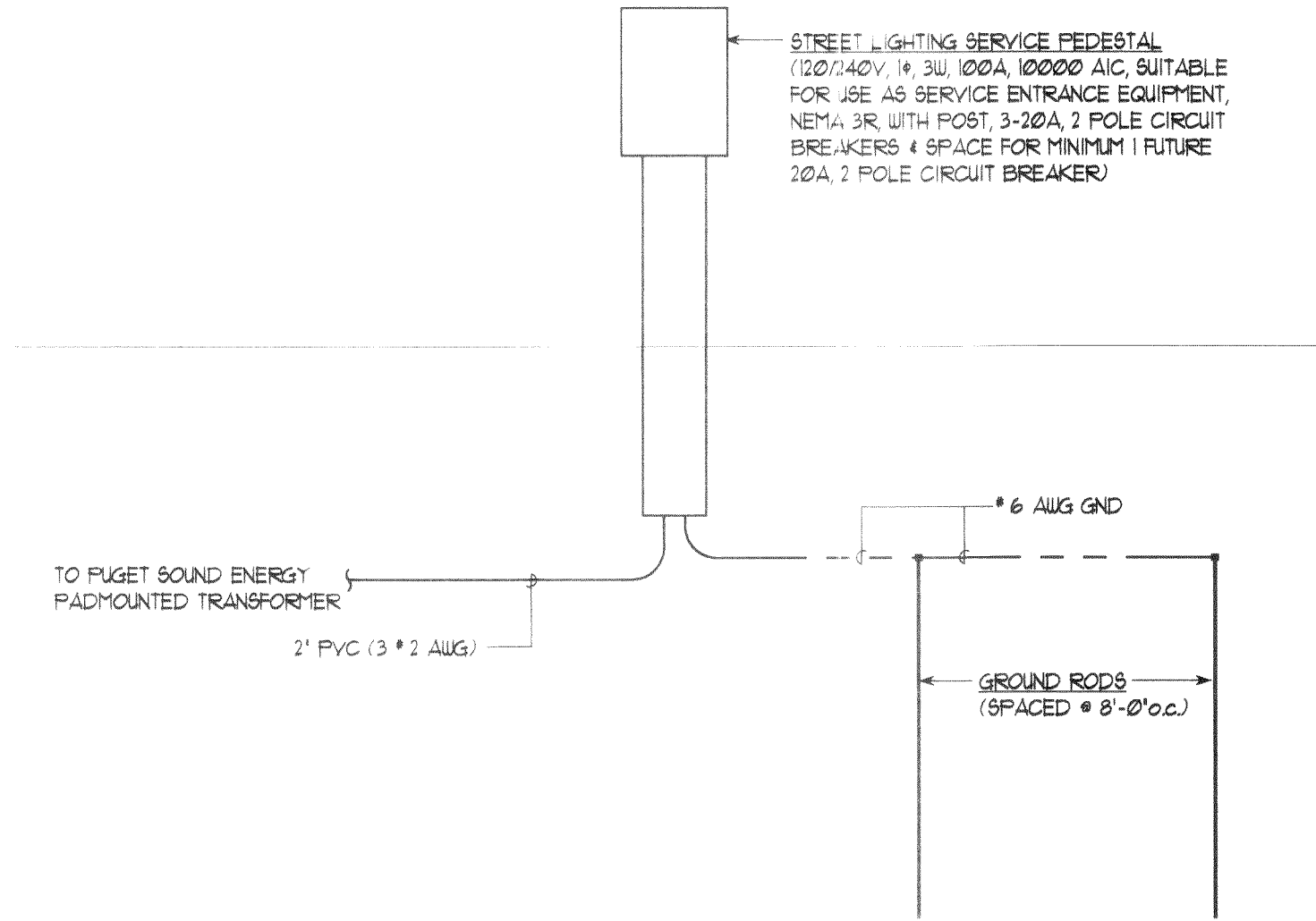
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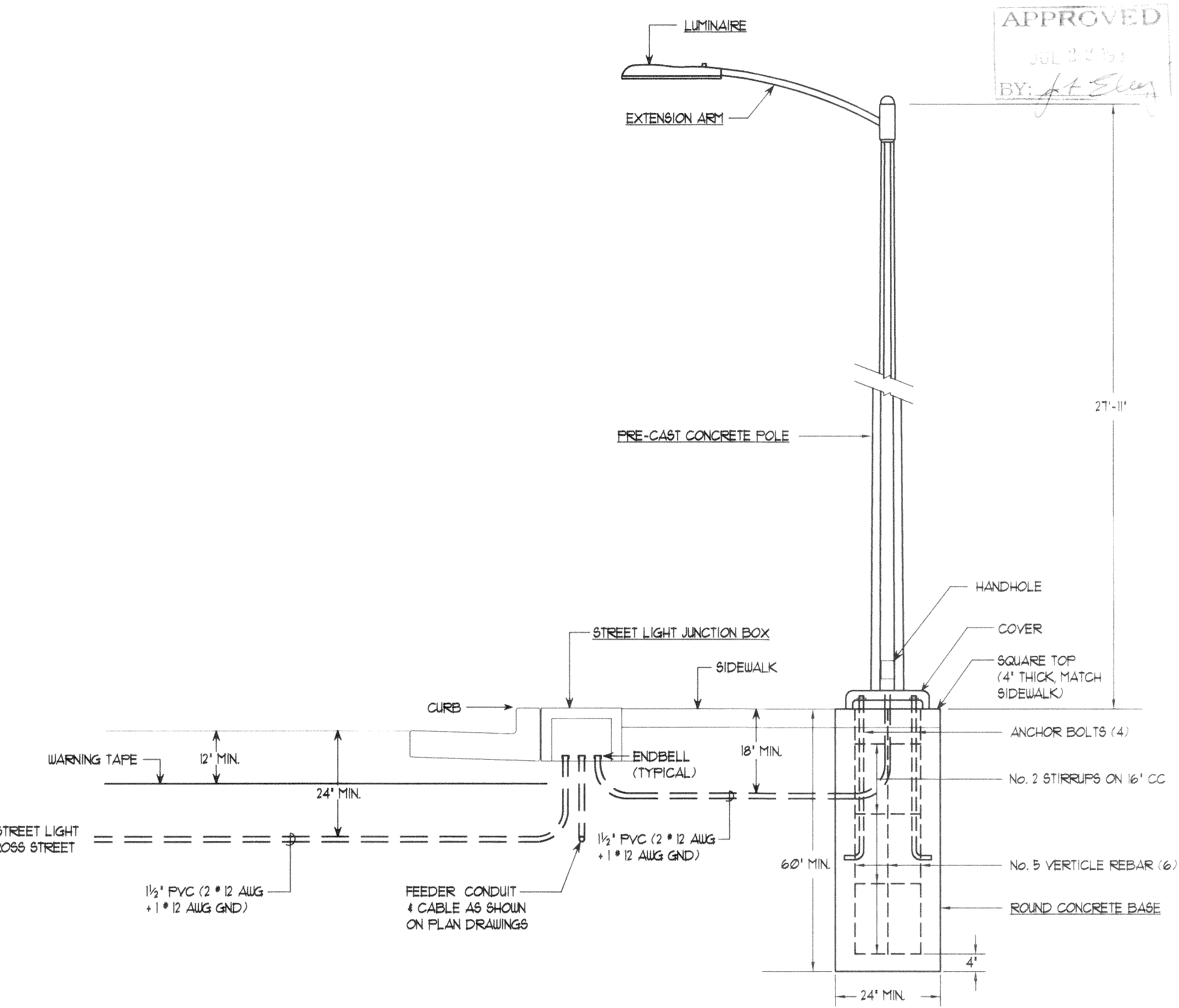
STREET LIGHTING SPECIFICATION

1. GENERAL
- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL THE ELECTRICAL WORK FOR A COMPLETE STREET ILLUMINATION SYSTEM.
- B. COORDINATE ELECTRICAL/ILLUMINATION WORK WITH RELATED WORK SHOWN AND SPECIFIED ELSEWHERE.
- C. ALL ELECTRICAL MATERIALS SHALL BE "UL" (UNDERWRITER'S LABORATORIES, INC.) LISTED, LABELED AND APPROVED FOR THE SERVICE INTENDED WHERE UL STANDARDS HAVE BEEN ESTABLISHED.
- D. THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, THE WASHINGTON STATE RULES AND REQUIREMENTS FOR INSTALLING ELECTRIC WIRES AND EQUIPMENT, AND THE REQUIREMENTS OF THE CITY OF FERDALE.
2. WORK INCLUDED
- A. THE CONTRACTOR SHALL PERFORM ALL THE WORK REQUIRED (INCLUDING THE FURNISHING OF ALL SUPERVISION, LABOR, SERVICES, TOOLS, MATERIALS AND EQUIPMENT AND THE PERFORMANCE OF ALL OPERATIONS AND INCIDENTALS NECESSARY) FOR A COMPLETE, SAFE AND RELIABLE ELECTRICAL/ILLUMINATION INSTALLATION, ADJUSTED, TESTED AND READY FOR OPERATION. THE ELECTRICAL/ILLUMINATION WORK IS GENERALLY DESCRIBED AS FOLLOWS:
1. STREET LIGHT STANDARDS, LUMINAIRES, LAMPS AND BASES.
2. STREET LIGHTING SERVICE PEDESTALS AND SERVICES FROM POINT OF CONNECTION WITH PUGET SOUND ENERGY, INCLUDING ALL NECESSARY COORDINATION WITH THE UTILITY.
3. GROUNDING.
4. CONDUIT, WIRING, JUNCTION BOXES, ETC.
5. TRENCHING AND BACKFILLING.
6. TESTING AND COMPLETING.
- B. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED LICENSES, PERMITS, INSPECTIONS, ETC.
3. SUBMITTALS
- A. SUBMIT FOUR COPIES OF SHOP DRAWINGS AND/OR PRODUCT DATA FOR ALL CONTRACTOR SUPPLIED EQUIPMENT AND MATERIALS TO THE ENGINEER FOR APPROVAL BEFORE ORDERING. ALL EQUIPMENT AND MATERIAL SHALL BE OBTAINED FROM A SOURCE APPROVED BY THE ENGINEER.
- B. SUBMITTALS SHALL PROVIDE SUFFICIENT DETAIL SO COMPLIANCE WITH THE DRAWINGS AND SPECIFICATIONS CAN BE ASCERTAINED. IDENTIFY EACH ITEM BY MANUFACTURER, BRAND, TRADE NAME, NUMBER, SIZE, RATING, OR WHATEVER OTHER DATA IS NECESSARY TO PROPERLY IDENTIFY AND REVIEW MATERIALS AND EQUIPMENT.
4. STREET LIGHTING SERVICES
- A. SERVICES SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF PUGET SOUND ENERGY.
- B. SERVICE PEDESTALS SHALL BE DIRECT BURIED TYPE, NEMA 3R, 120/240 VOLT, 1 PHASE, 3 WIRE, 100 AMP, SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT, COMPLETE WITH 3 \* 20 AMP, 2 POLE CIRCUIT BREAKERS & A MINIMUM OF 1 DOUBLE POLE CIRCUIT BREAKER SPACE. ENCLOSURE SHALL BE HEAVY DUTY ZINC COATED STEEL WITH CORROSION RESISTANT FINISH.
5. CONDUIT
- A. PVC CONDUIT SHALL BE FURNISHED AND INSTALLED AS INDICATED ON THE PLANS, DIRECT BURIED A MINIMUM DEPTH OF 24 INCHES BELOW FINISHED GRADE, EXCEPT SHORTS TAPS MAY BE 18" BELOW GRADE.
- B. CONDUIT SHALL BE HEAVY-WALL (SCHEDULE 40) PVC, FLAME RETARDANT, SUITABLE FOR USE WITH 90C CABLE, SHALL NOT DISTORT FROM THE HEAT IT WILL NORMALLY ENCOUNTER, AND SHALL BE RESISTANT TO LOW TEMPERATURE AND SUNLIGHT EFFECTS, IMPACT AND CRUSHING. CONDUIT FITTINGS, COUPLINGS, ETC. SHALL BE OF THE SAME TYPE AND MANUFACTURER AS THE CONDUIT.
- C. NO CONDUIT SHALL BEND MORE THAN 180 DEGREES BEFORE THE END OF ITS RUN. BENDS IN CONDUITS SHALL BE MADE WITHOUT FLATTENING, KINKING OR REDUCING THE CROSS-SECTIONAL AREA OF THE CONDUIT. CONDUIT CUTS SHALL BE MADE SQUARE WITH A PROPER CUTTING TOOL. THE INSIDE AND OUTSIDE OF ALL CONDUIT ENDS SHALL BE REAMED TO ELIMINATE BURRS AND ROUGH EDGES, THEN WIPED CLEAN.
- D. JOINTS IN UNDERGROUND CONDUIT SYSTEM SHALL BE SOLVENT WELDED TO PREVENT THE ENTRANCE OF MOISTURE. FOR ALL EMBEDDED (DIRECT BURIED) LIGHT STANDARDS, PROVIDE CONDUIT FROM THE ADJACENT STREET LIGHTING JUNCTION BOX TO WITHIN 8 INCHES OF THE POLE & SEAL AT THAT POINT WITH A SEALANT THAT CAN BE REMOVED FOR REPAIRS.
- E. SUITABLE BUSHINGS AND ENDBELLS SHALL BE USED ON ALL CONDUIT TERMINATIONS.
- F. CONDUIT SYSTEMS SHALL BE COMPLETE, SNAKED AND CLEANED BEFORE PULLING ANY CABLE.
6. JUNCTION BOXES
- A. JUNCTION BOXES CONFORMING TO STANDARD PLAN J-11A (WITH THE EXCEPTION THAT THE LIDS SHALL BEAR THE LEGEND "LIGHTING") SHALL BE FURNISHED AND INSTALLED AT LOCATIONS SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER. ALL LIDS, COVER PLATES AND OTHER METAL SURFACES SHALL BE HOT-DIPPED GALVANIZED.
- B. JUNCTION BOXES SHALL BE PLACED ON A 6-INCH CRUSHED SURFACING TOP COURSE CUSHION. JUNCTION BOXES SHALL BE INSTALLED PLUMB AND TRUE, AND SHALL BE SQUARE WITH ADJACENT ROADWAYS, SIDEWALKS, PROPERTY LINES, ETC.
- C. CONDUIT INTO JUNCTION BOXES SHALL BE NO MORE THAN 5 INCHES AND NO LESS THAN 3 INCHES FROM THE BOTTOM OF THE BOX SURFACE. CONDUIT ENTERING THE BOTTOM OF A JUNCTION BOX SHALL BE LOCATED NEAR THE END WALLS TO LEAVE THE MAJOR PORTION OF THE BOX CLEAR. AT ALL OUTLETS, CONDUIT SHALL ENTER FROM THE DIRECTION OF THE RUN, TERMINATING WITHIN 3 INCHES OF THE BOX WALL NEAREST ITS ENTRY LOCATION AND HAVE BELL ENDS. CARE SHALL BE TAKEN TO ENSURE A NEAT AND CONVENIENT ARRANGEMENT OF CONDUIT, CABLES AND SPLICES/TAPS/TERMINATIONS.
- D. IF MORE THAN 1 POLE IS ON A CIRCUIT, IF ANY POLE IS MORE THAN 50 FEET FROM THE SERVICE, OR IF ANY POLE IS BURIED IN A SIDEWALK, A TYPE I JUNCTION BOX SHALL BE FURNISHED AND INSTALLED WITHIN 5 FEET OF THE BASE OF THAT POLE.
- E. WIRING SHALL BE FURNISHED AND INSTALLED IN JUNCTION BOXES AT TAPS TO STREET LIGHTING STANDARDS/LUMINAIRES. FUSE HOLDERS SHALL BE WATER-TIGHT TYPE, DOUBLE POLE, BUSBAR TYPE (BREAK-A-WAY TYPE) WITH 1/4 TYPE KTK-R FUSES, OR PRIOR APPROVED EQUAL.

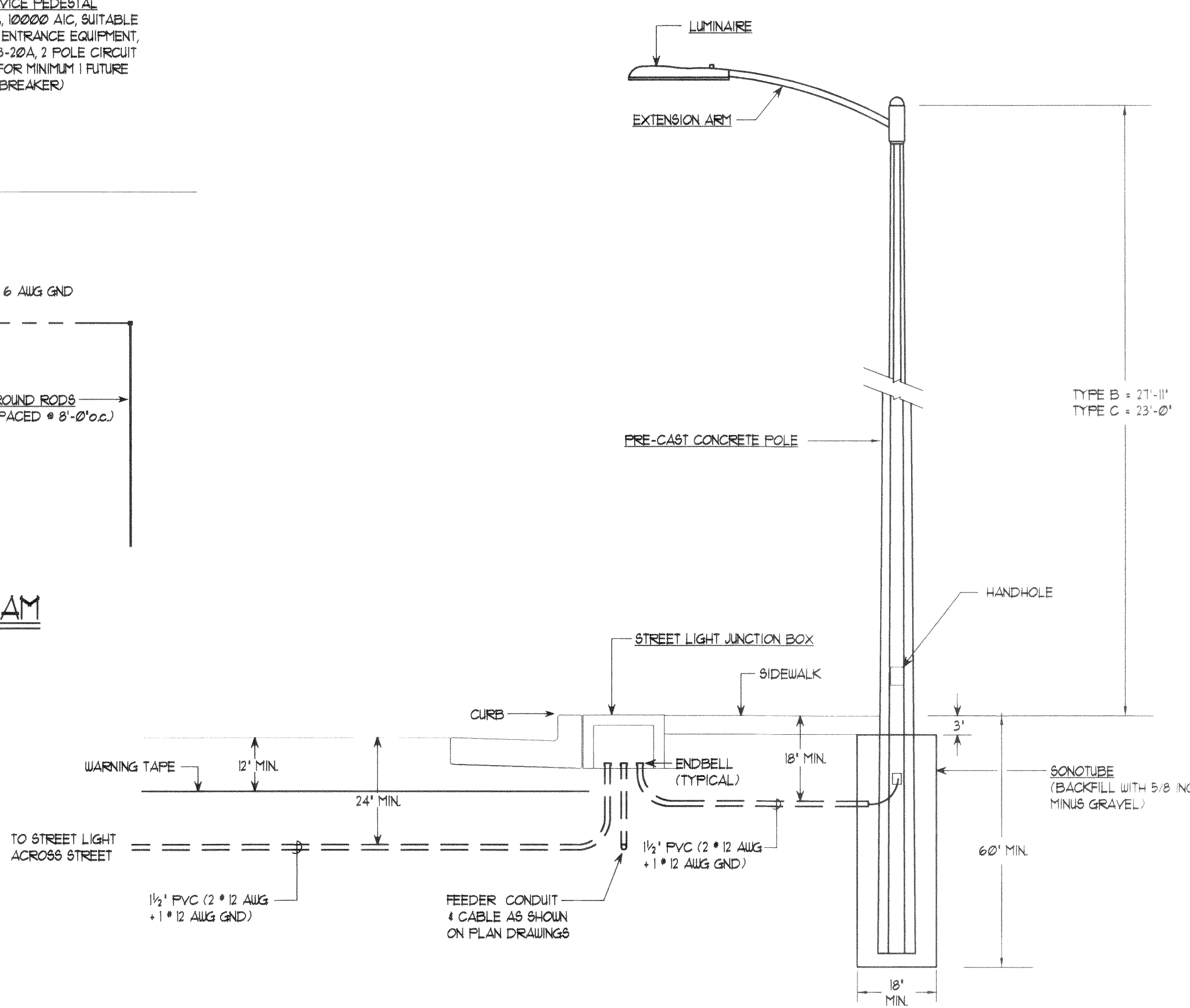
7. STREET LIGHTING STANDARDS & LUMINAIRES
- A. STREET LIGHTING STANDARDS, LUMINAIRES, ETC. SHALL BE FURNISHED AND INSTALLED WHERE SHOWN ON THE PLANS &/OR AS DESIGNATED BY THE ENGINEER.
- B. TYPE 'A' STREET LIGHTING STANDARDS (POLES) SHALL BE OCTAGONAL, TAPERED PRE-STRESSED CONCRETE, ANCHOR BASE TYPE HOLLOW STANDARDS, MACHINE MADE IN STEEL MOLDS BY THE CENTRIFUGAL PROCESS. PRE-STRESSING WIRE, CAGING AND OTHER REINFORCEMENT SHALL BE PLACED IN A MANNER THAT ASSURES NO CRACKING DURING NORMAL HANDLING. POLES SHALL HAVE AN INSERT ON THE SIDE FOR A HANDHOLE. THE POLES SHALL BE AMERON TYPE MBO-8.5 METER POLES OR PRIOR APPROVED EQUAL WITH EXPOSED NATURAL AGGREGATE FINISH #13 AND HAVE A 21 FOOT, 11 INCH POLE HEIGHT ABOVE GROUND.
- C. TYPE 'B' & 'C' STREETLIGHTING STANDARDS (POLES) SHALL BE OCTAGONAL, TAPERED PRE-STRESSED CONCRETE, EMBEDDED (DIRECT BURIED) TYPE HOLLOW STANDARDS MACHINE MADE IN STEEL MOLDS BY THE CENTRIFUGAL PROCESS. PRE-STRESSING WIRE, CAGING AND OTHER REINFORCEMENT SHALL BE PLACED IN A MANNER THAT ASSURES NO CRACKING DURING NORMAL HANDLING. THE POLES SHALL HAVE CAST-IN INSERTS ON THE SIDE FOR A HANDHOLE (ABOVE GRADE) & A CABLE INSERT (BELOW GRADE). TYPE 'B' POLES SHALL BE AMERON MEO-8.5 METER POLES OR PRIOR APPROVED EQUAL WITH A 21 FOOT 11 INCH HEIGHT ABOVE GROUND. TYPE 'C' POLES SHALL BE AMERON MEO-1 METER POLES OR PRIOR APPROVED EQUAL, WITH 23 FEET 0 INCH HEIGHT ABOVE GROUND. FINISH ON POLES SHALL BE EXPOSED NATURAL AGGREGATE #13.
- D. STREET LIGHTING LUMINAIRES SHALL BE THE CUTOFF TYPE, COBRA-HEAD STYLE, SUITABLE FOR UET LOCATIONS, WITH DIECAST ALUMINUM HOUSING, SEMI-SPECULAR FORMED ALUMINUM REFLECTOR & FLAT TEMPERED/IMPACT RESISTANT GLASS LENS. REFLECTOR SHALL BE PROVIDED AND THE LAMP POSITION SELECTED SUCH THAT THE FIXTURE PRODUCES AN (E6/A6) SHORT TYPE II DISTRIBUTION PATTERN WITH ESSENTIALLY COMPLETE LIGHT CUTOFF ABOVE 15 DEGREES FROM NADIR. LUMINAIRE HOUSINGS SHALL BE MOUNTED TO POLE WITH AN EXTRUDED ALUMINUM EXTENSION ARM. BALLASTS SHALL BE AUTOREGULATOR TYPE, CLASS H INSULATED, RATED FOR OPERATION AT 240 VOLT AC AND DOWN TO -20F. LAMPS FOR TYPE 'A' & 'B' LUMINAIRES SHALL BE 250 WATT HIGH PRESSURE SODIUM. LAMPS FOR TYPE 'C' LUMINAIRES SHALL BE 50 WATT HIGH PRESSURE SODIUM. LUMINAIRES SHALL HUBBELL RM-80 SERIES, G.E. M250A2 FOUR-DOOR, OR PRIOR APPROVED EQUAL.
- E. LUMINAIRE EXTENSION ARMS SHALL BE SPUN ALUMINUM, ELIPTICAL, TAPERED TYPE, LENGTH AS INDICATED, COMPLETE WITH SUITABLE POLE CAP, AMERON MO-AE TYPE, OR PRIOR APPROVED EQUAL.
- F. PHOTO-ELECTRIC CONTROLS, TURN-LOCK TYPE WITH RECEPTACLE (LC-4536-LA8), SHALL BE FURNISHED AT THE TOP OF EACH LUMINAIRE.
- G. POLE BASES FOR TYPE 'A' LIGHTING STANDARDS (POLES) SHALL BE POURED-IN-PLACE CONCRETE, OF THE SIZE & SHAPE AS RECOMMENDED BY THE POLE MANUFACTURER FOR THE SOIL CONDITIONS AT THE SITE (EXCEPT MINIMUM AS INDICATED). BASES SHALL BE GROUTED TO COVER LEVELING NUTS AND TO FILL THE VOID UNDER THE BASE PLATE WITH A NON-SHRINKING GROUT. TOP OF CONCRETE SHALL BE FLUSH WITH ADJOINING SIDEWALKS, CURBS, ETC.
- H. TYPE 'B' & 'C' LIGHTING STANDARDS (POLES) SHALL BE EMBEDDED (DIRECT BURIED) WITH THE TYPE OF EMBEDMENT AS RECOMMENDED BY THE POLE MANUFACTURER FOR THE TYPE AND SIZE OF POLE AND LUMINAIRE PROVIDED, AND THE SOIL CONDITIONS AT THE SITE, EXCEPT MINIMUM AS INDICATED.
- I. STANDARDS AND LUMINAIRES SHALL BE INSTALLED PLUMB AND TRUE, AND SHALL BE SQUARE WITH ADJACENT ROADWAYS, SIDEWALKS, PROPERTY LINES, ETC.
- J. IF AN EMBEDDED (DIRECT BURIED) TYPE POLE IS PLACED IN CONCRETE, AN 18 INCH BREAKOUT SHALL SURROUND THE POLE TO FACILITATE REPLACEMENT.
8. WIRING
- A. WIRING SHALL BE FURNISHED AND INSTALLED BETWEEN TRANSFORMER AND SERVICE PEDESTALS AND JUNCTION BOXES AND LUMINAIRES AS INDICATED ON THE PLANS. ALL WIRING SHALL CONFORM TO WSDOT SPECIFICATIONS.
- B. POWER CABLES SHALL BE SINGLE CONDUCTOR STRANDED COPPER WITH 600 VOLT TYPE USE/RH/RHW INSULATION. THE MINIMUM CONDUCTOR SIZE BETWEEN JUNCTION BOXES SHALL BE #6 AWG. THE MINIMUM CONDUCTOR SIZE FROM JUNCTION BOXES TO INDIVIDUAL STANDARDS SHALL BE #12 AWG.
- C. ALL SPLICES IN UNDERGROUND ILLUMINATION CIRCUITS SHALL BE INSTALLED AT JUNCTION BOXES, AND SHALL BE WATER-TIGHT. SPLICES SHALL EMPLOY COPPER CRIMPED CONNECTORS INSTALLED WITH AN APPROVED TOOL DESIGNED FOR THE PURPOSE. CONNECTORS SHALL THEN BE CENTERED IN CLEAR RIGID MOLDS, OR PRIOR APPROVED EQUAL, AND ENCAPSULATED IN EPOXY.
- D. SPLICES ABOVE GRADE ILLUMINATION CIRCUITS SHALL BE WITH SOLDERLESS PRESSURE TYPE CONNECTORS AND BE TAPED.
- E. BEFORE SPLICES AND CONNECTIONS ARE MADE, CONTACT SURFACES SHALL BE THOROUGHLY CLEANED. CONNECTIONS SHALL BE BOTH MECHANICALLY AND ELECTRICALLY SECURE. TAKE CARE NOT TO NICK CONDUCTORS DURING INSULATION REMOVAL.
- F. WIRE AND CABLE SHALL NOT BE EXPOSED TO WEATHER OR MECHANICAL DAMAGE LONGER THAN NECESSARY. CUT ENDS OF CABLE SHALL IMMEDIATELY BE SEALED.
- G. CABLE SHALL BE UNROLLED FROM REELS, OR REMOVED FROM CARTONS, AND INSTALLED IN A MANNER WHICH WILL PREVENT KINKING, CRUSHING OR EXCESSIVE TENSION ON CONDUCTORS AND INSULATION. CABLE PULLING LUBRICANTS OF A TYPE HAVING NO DAMAGING EFFECT ON THE INSULATION SHALL BE USED TO MINIMIZE PULLING STRESSES ON THE CABLE.
- H. CABLE SHALL BE INSTALLED OR DRAWN INTO THE CONDUIT SYSTEM ONLY AFTER ALL WORK OF ANY NATURE THAT COULD CAUSE INJURY TO THE CABLE IS COMPLETED. THE CONDUIT SYSTEM SHALL BE COMPLETE, SNAKED AND CLEANED BEFORE PULLING ANY CABLE.
9. GROUNDING
- A. ALL ELECTRICAL EQUIPMENT, DEVICES, ETC. SHALL BE SUITABLY GROUNDED AND PROVIDED WITH A LOW RESISTANCE GROUND FAULT RETURN PATH.
- B. A GROUND ROD PROVIDING 15 OHMS MAXIMUM RESISTANCE, OR 2 GROUND RODS SPACED AT MINIMUM 8 FEET APART, SHALL BE DRIVEN AT EACH SERVICE JUNCTION BOX. GROUND RODS SHALL BE COPPERCLAD STEEL, MINIMUM 5/8 INCH DIAMETER BY 8 FEET LONG.
- C. GROUND CABLES SHALL BE SINGLE CONDUCTOR STRANDED COPPER WITH 600 VOLT TYPE USE/RH/RHW INSULATION. THE MINIMUM CONDUCTOR SIZE BETWEEN JUNCTION BOXES SHALL BE #10 AWG. THE MINIMUM CONDUCTOR SIZE FROM JUNCTION BOXES TO INDIVIDUAL STANDARDS SHALL BE #12 AWG.
10. TESTING AND COMPLETING
- A. THE ILLUMINATION SYSTEM SHALL BE DEMONSTRATED TO THE ENGINEER AND AT AN AGREED UPON TIME AFTER COMPLETION AND PRIOR TO FINAL APPROVAL. THE CONTRACTOR SHALL PROVIDE MANPOWER AND EQUIPMENT FOR ANY NECESSARY FINAL ADJUSTMENTS AND/OR CORRECTIONS.
- B. ALL SYSTEMS SHALL TEST FREE FROM SHORTS AND GROUNDS AND SHALL BE FREE FROM MECHANICAL AND ELECTRICAL DEFECTS.



POWER SYSTEM RISER DIAGRAM  
NO SCALE



DETAIL - TYPICAL STREET LIGHT TYPE 'A'  
NO SCALE



DETAIL - TYPICAL STREET LIGHT TYPES 'B' & 'C'  
NO SCALE

REVISIONS	BY
1. PER CITY OF 3/24/98 FERDALE COMMENTS	KK

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CORRELL PARK P.U.D.  
HOMESTEAD NORTHWEST, INC.

STREET LIGHTING  
RISER DIAGRAM, DETAILS  
& SPECIFICATION

DATE: 19 MAR 98  
SCALE: AS NOTED  
DRAWN: KL  
DESIGNED: KK  
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SHEETS

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