

ALAMAR PH. 1

AVONDALE BLVD NORTH

STREET LIGHT IMPROVEMENTS

NOTE:

ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE CITY OF AVONDALE'S SUPPLEMENT TO THE M.A.G. SPECIFICATIONS AND STANDARD DETAILS CURRENTLY ON FILE AND AVAILABLE AT THE CITY OF AVONDALE ENGINEERING DEPARTMENT OR ONLINE AT THE CITY OF AVONDALE'S WEBSITE.

DEVELOPER

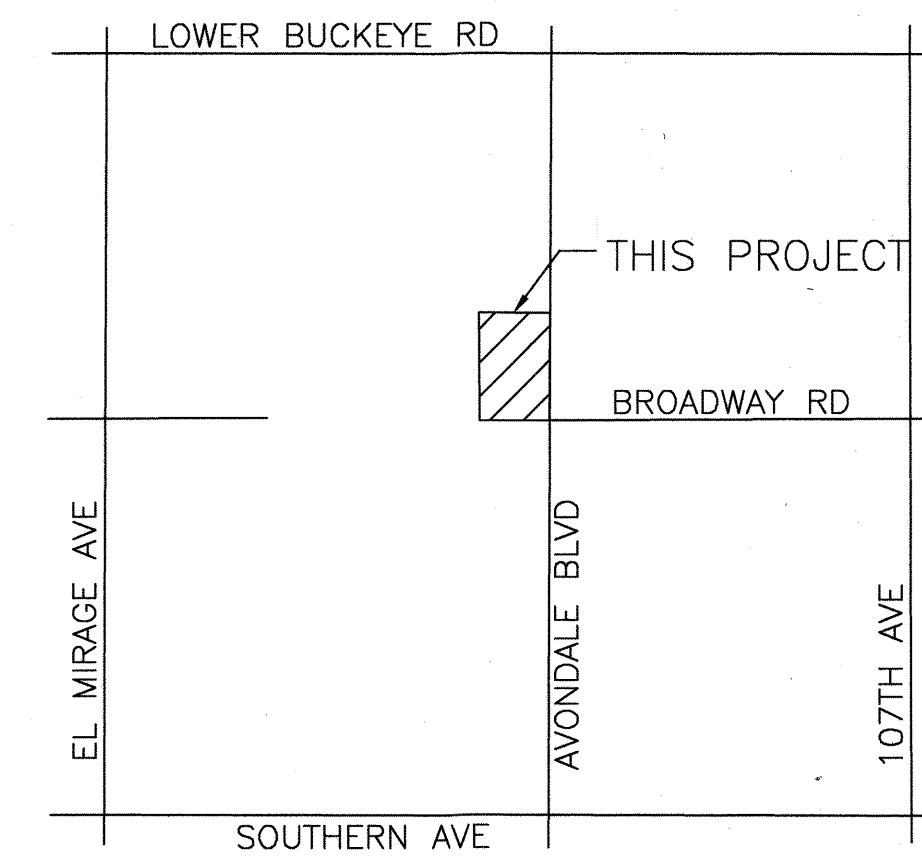
BROOKFIELD RESIDENTIAL
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SCOTTSDALE, AZ 85254
PHONE: (602) 903-7509
CONTACT: ROGER THEIS

ELECTRICAL ENGINEER

WRIGHT ENGINEERING CORPORATION
165 EAST CHILTON DRIVE
CHANDLER, ARIZONA 85225
PHONE: (480) 497-5829
FAX: (480) 497-5807
CONTACT: ADAM BOWERS

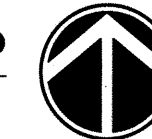
CIVIL ENGINEER

WOOD, PATEL & ASSOCIATES, INC
2051 WEST NORTHERN AVE, SUITE 100
PHOENIX, ARIZONA 85021
PHONE: (602) 335-8500
CONTACT: FRANK KOO, P.E.



VICINITY MAP

N.T.S.



SHEET INDEX:

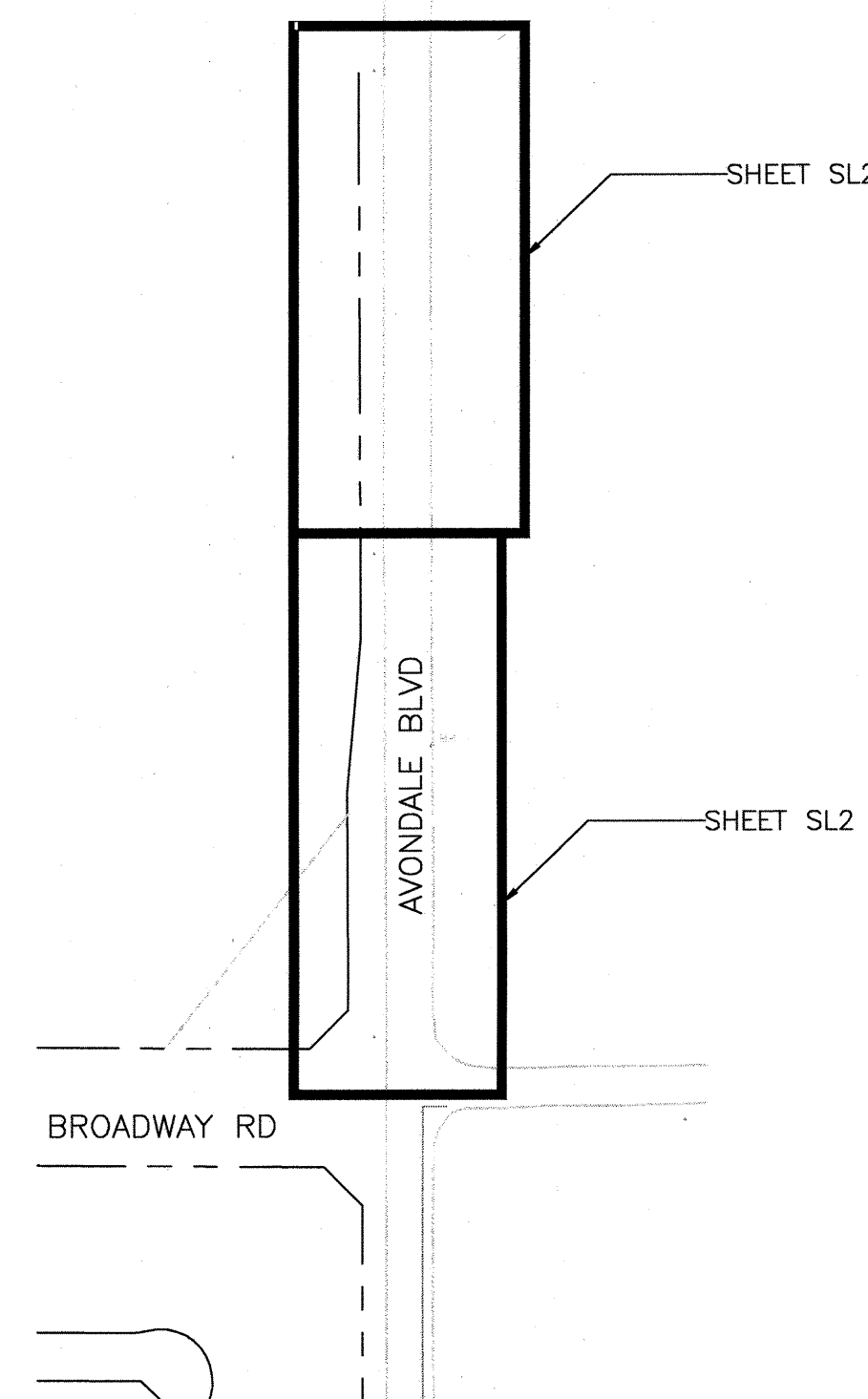
SHEET SL1	COVER SHEET
SHEET SL2	STREET LIGHT DESIGN
SHEET SL3	DETAILS SHEET
SHEET PH1	PHOTOMETRICS

BENCHMARK

BRASS CAP IN HAND HOLE AT MCDOWELL ROAD AND AVONDALE BOULEVARD AT THE NEC OF SECTION 1, T1N, R1W, CNR 54000-1, ELEVATION 1000.426 (NAVD 88) AS SHOWN IN BOOK 694, PAGE 38, MCR. DATE SHOT: 01/2007

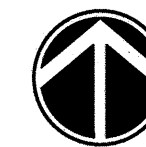
QUANTITIES LIST (STREET LIGHTS)

TOTAL	UNIT	DESCRIPTION
6	EACH	133W LED WITH 40" MOUNTING HEIGHT



KEY MAP

N.T.S.



UTILITY CONFLICT NOTIFICATION

THESE PLANS HAVE BEEN SUBMITTED TO THE FOLLOWING UTILITY COMPANIES. WHERE THE WORK TO BE DONE CONFLICTS WITH ANY OF THESE UTILITIES, THE CONFLICTS SHALL BE RESOLVED AS SPECIFIED IN THE SPECIAL NOTES AND/OR AS OTHERWISE NOTED ON THESE PLANS. CONFLICTS ARISING DURING THE COURSE OF CONSTRUCTION FROM UNFORESEEN CIRCUMSTANCES SHALL BE REPORTED TO THE INTERESTED UTILITY COMPANY AND BE RESOLVED BY THEM AND THE DESIGN ENGINEER.

SALT RIVER PROJECT POWER	02/26/19
	DATE
ARIZONA PUBLIC SERVICE	02/26/19
	DATE
CENTURY LINK	02/26/19
	DATE
COX COMMUNICATIONS	02/26/19
	DATE
SOUTHWEST GAS	02/26/19
	DATE
S.R.V.W.U.A.	02/26/19
	DATE
ROOSEVELT IRRIGATION DISTRICT	02/26/19
	DATE
KINDER-MORGAN	02/26/19
	DATE

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE "AS-BUILT" MEASUREMENTS AS SHOWN OR NOTED HEREON WERE MADE BY MYSELF OR UNDER MY SUPERVISION AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SIGNATURE _____ DATE _____ REGISTRATION NUMBER _____

NAME/COMPANY:
ADDRESS:
CITY/STATE/ZIP CODE:
PHONE:

APPROVED BY:

Adam M. Bowers

DEVELOPMENT SERVICES AND ENGINEERING DEPARTMENT

THE CITY APPROVES THESE PLANS FOR CONCEPT ONLY AND ACCEPTS NO LIABILITY FOR ERRORS OR OMISSIONS.

11465 W. CIVIC CENTER DR.
SUITE 120
AVONDALE, AZ 85323
PHONE: (623) 333-4200
FAX: (623) 333-0420

5-8-19
DATE

WRIGHT ENGINEERING
PROJECT NO:

18184

DESIGN BY: JDM
DRAWN BY: JDM
CHECKED BY: AMB

WRIGHT
engineering corporation
ELECTRICAL ENGINEERING AND DESIGN
165 EAST CHILTON DRIVE • CHANDLER, ARIZONA 85225
PHONE 480.497.5829 • FAX 480.497.5807
www.wrightengineering.us

PROJECT: TITLE:

AVONDALE, ARIZONA
ALAMAR PH. 1
AVONDALE BLVD NORTH
STREET LIGHT PLAN

NO. DATE SUBMITTALS/REVISIONS (DESCRIPTIONS)

1	FEB 2019	1ST SUBMITTAL
2	APR 2019	2ND SUBMITTAL

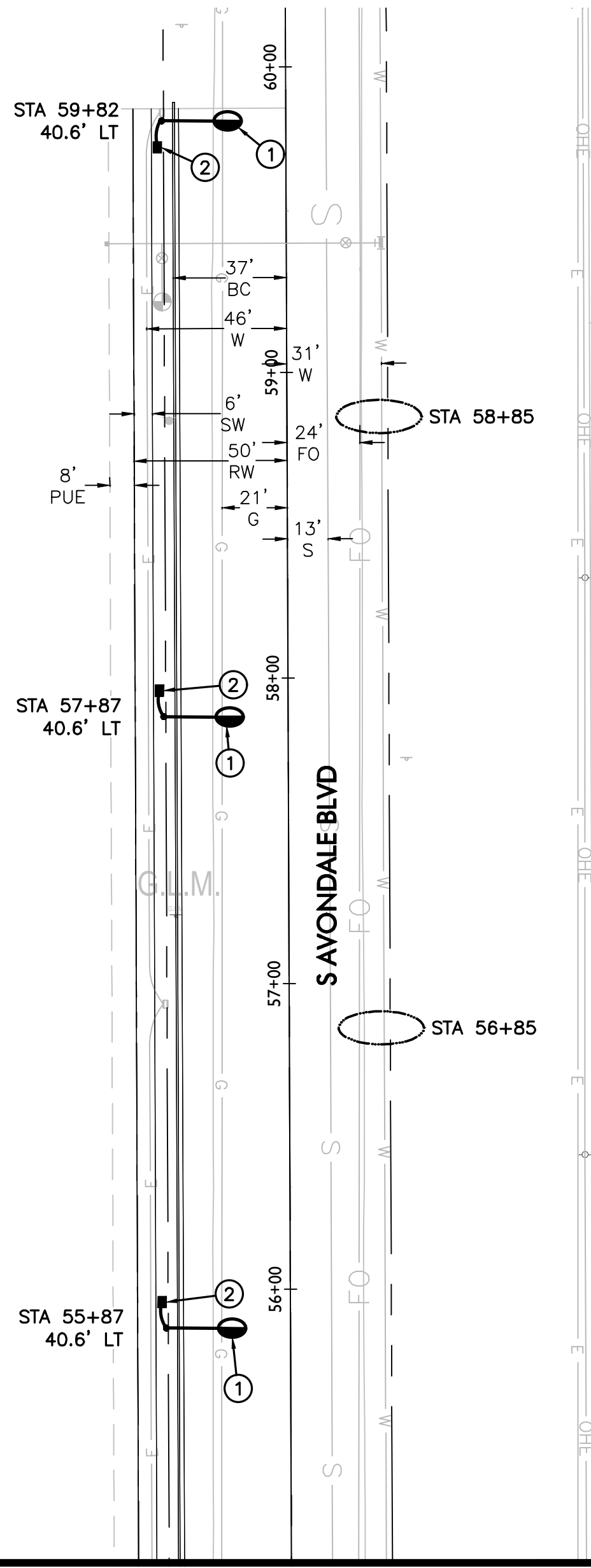
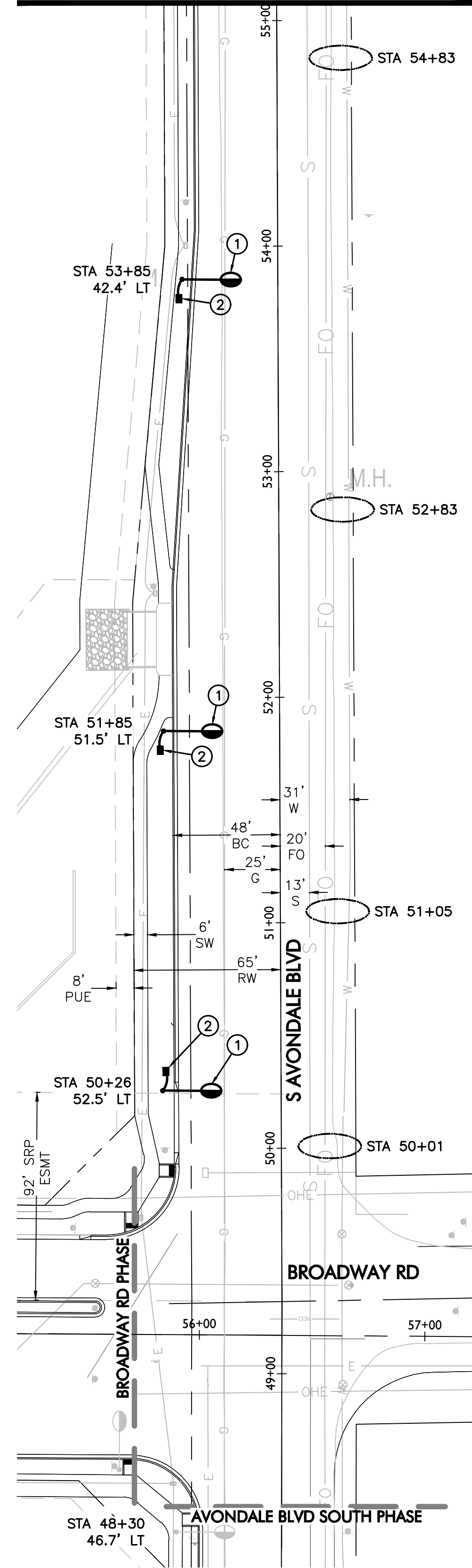


DRAWING NO:

SL1
OF 4

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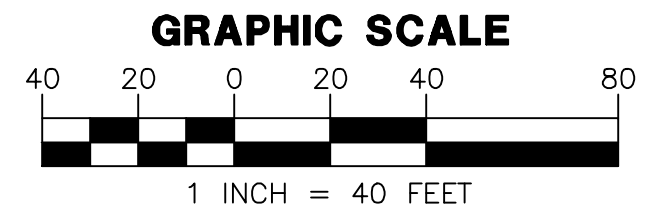
MATCHLINE 'A'
SEE ABOVE LEFT

CONSTRUCTION NOTES

- ① INSTALL (1) 133W LED 15,700 LUMEN, TYPE III, 4000K, BRONZE LUMINAIRE (ACUITY CAT# ATBM/F/MVOLT/R3/BZ/MP/NL/P7) WITH A 7-PRONG PECR (SEE PHOTOCELL SPECIFICATION) ON A 32'-0" POLE (DETAIL A1784-2) WITH A 8'X8' MAST ARM (DETAIL A1784-3). FOUNDATION PER DETAIL A1784-1. POLE SHALL BE CENTERED PER OFFSET ON PLAN. INSTALL 2-#12 AWG TYPE THHN/THWN CONDUCTORS WITH 1-#12 BOND IN STREET LIGHT POLE FROM BUSSMAN FUSE HOLDER IN PULL BOX TO LUMINAIRE (DETAIL A1791) DETAILS ON SHEET SL3.
- ② INSTALL PULL BOX PER UTILITY REQUIREMENTS DETAIL A1790 ON SHEET SL3. INSTALL 1" PVC SCH 40 SWEEP TO PULL BOX WITH 2-#12 AWG TYPE THHN/THWN CONDUCTORS AND 1-#12 COPPER BOND, AND 1-#6 COPPER BOND (FOR GROUNDING) FROM PULL BOX TO POLE HAND HOLE, PER UTILITY REQUIREMENTS. USE ONLY MATERIAL SUITABLE FOR TERMINATING ALUMINUM AND COPPER WIRING WHERE APPLICABLE.

LEGEND

- 133W LED 15,700 LUMEN STREET LIGHT WITH 40' MOUNTING HEIGHT.
- NEW STREET LIGHT CONDUIT
- PULL BOX
- FIRE HYDRANT
- FUTURE LIGHT

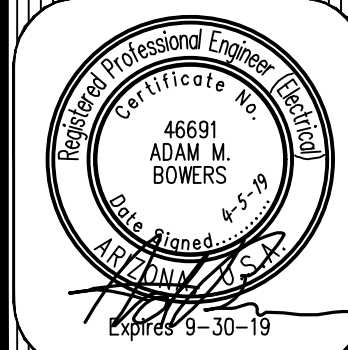


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PROJECT: TITLE:

AVONDALE, ARIZONA
ALAMAR PH. 1
AVONDALE BLVD NORTH
STREET LIGHT PLAN

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1	FEB 2019	1ST SUBMITTAL
2	APR 2019	2ND SUBMITTAL



DRAWING NO:
SL2
OF 4

WRIGHT ENGINEERING
PROJECT NO:
18184
DESIGN BY: JDM
DRAWN BY: JDM
CHECKED BY: AMB

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SPECIFICATIONS:

DESIGN CRITERIA: POLE SHALL BE DESIGNED FOR 100 MPH STEADY WINDS

POLE SHAFT: THE POLE SHAFT IS FABRICATED FROM A WELDABLE GRADE HOT-ROLLED SQUARE TUBING THAT MEETS OR EXCEEDS THE REQUIREMENTS OF ASTM A500B. IT HAS A MINIMUM YIELD STRENGTH OF 46,000 PSI.

ANCHOR BASE: THE BASE PLATE IS FABRICATED FROM A STRUCTURAL QUALITY HOT-ROLLED CARBON PLATE THAT MEETS OR EXCEEDS THE REQUIREMENTS OF ASTM A36. IT HAS A MINIMUM YIELD STRENGTH OF 36,000 PSI.

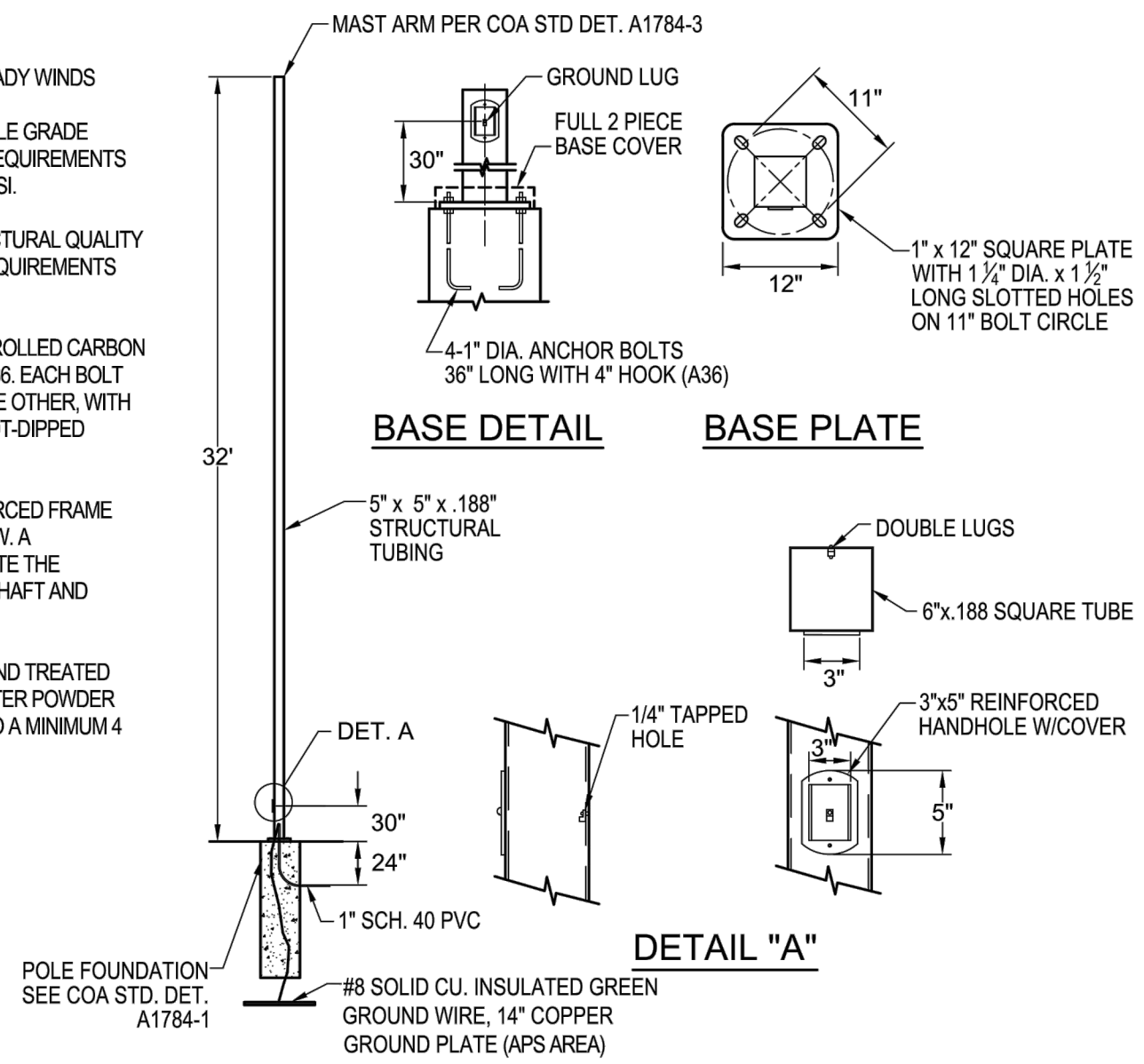
ANCHOR BOLTS: ANCHOR BOLTS ARE FABRICATED FROM HOT-ROLLED CARBON STEEL BAR THAT MEET OR EXCEED REQUIREMENTS OF ASTM A36. EACH BOLT HAS AN "L" BEND ON ONE END AND A MINIMUM 4" THREAD ON THE OTHER, WITH 2 NUTS AND 2 WASHERS (ASSEMBLED). THE ANCHOR BOLT IS HOT-DIPPED GALVANIZED PER ASTM A153.

HANDHOLE: THE HANDHOLE CONSISTS OF A 3"x5" OVAL REINFORCED FRAME WITH 16 GAUGE COVER, STEEL ATTACHMENT BAR AND 1/2" SCREW. A GROUNDING LUG IS INSTALLED INSIDE THE POLE SHAFT OPPOSITE THE HANDHOLE OPENING. THE HANDHOLE IS WELDED IN THE POLE SHAFT AND LOCATED AT 30" ABOVE THE BASE.

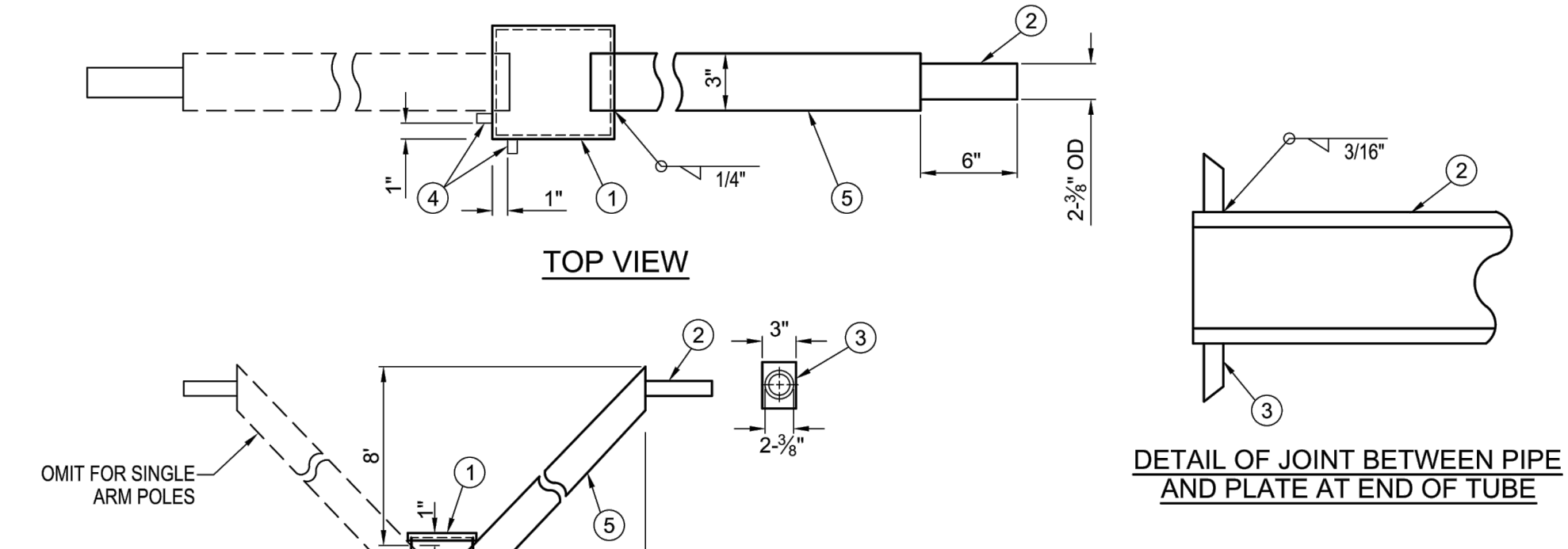
FINISH: THE POLE IS SAND BLASTED TO A NEAR WHITE FINISH AND TREATED WITH AN IRON PHOSPHATE SOLUTION. A HIGH QUALITY POLYESTER POWDER (BRONZE) IS THEN ELECTROSTATICALLY APPLIED AND CURED TO A MINIMUM 4 MIL THICKNESS.

NOTES:

- ALL WELDS SHALL BE GROUND SMOOTH, AND ALL BURRS AND SHARP EDGE SHALL BE REMOVED PRIOR TO PAINTING.
- ALL HARDWARE IS TO BE FURNISHED WITH POLE. HARDWARE SHALL BE CORROSION RESISTANT.



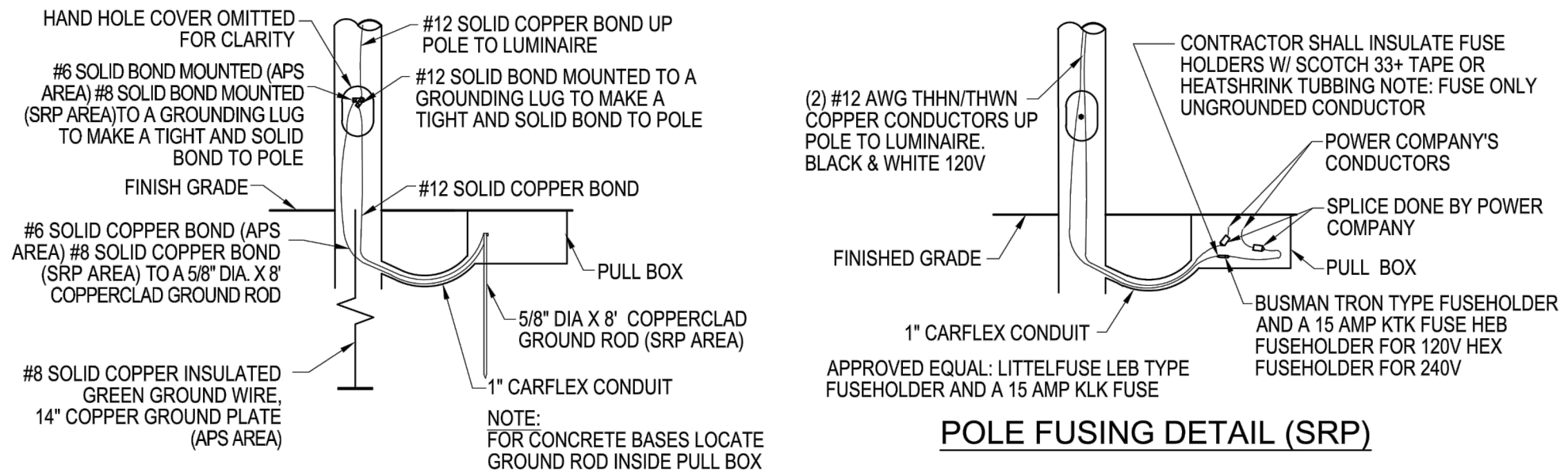
DETAIL NO. A1784-2	Avondale STANDARD DETAIL	ARCHITECTURAL STYLE STREET LIGHT POLE	APPROVED BY: <i>[Signature]</i> DATE: 8 24 16
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CODE	QTY	DESCRIPTION
1	1	CAP. METAL 5-1/2" x 5-1/2" x 3/4"
2	1	PIPE, STEEL, 2" SCHEDULE 40, 6-3/4" LONG (MAX. 2-3/8" O.D.) (42 KSI)
3	1	PLATE, 3" x 4.243" x 3/16"
4	4	SET SCREW, HEXAGON, 1/2" x 1/2", ZINC PLATED
5	1	TUBE, 3" x 3" x 11'-6", 0.188 WALL STEEL (ASTM A-500, GRADE B)
6	1	TUBE, 5-1/2" x 5-1/2" x 12", 0.188 WALL STEEL (ASTM A-500, GRADE B)

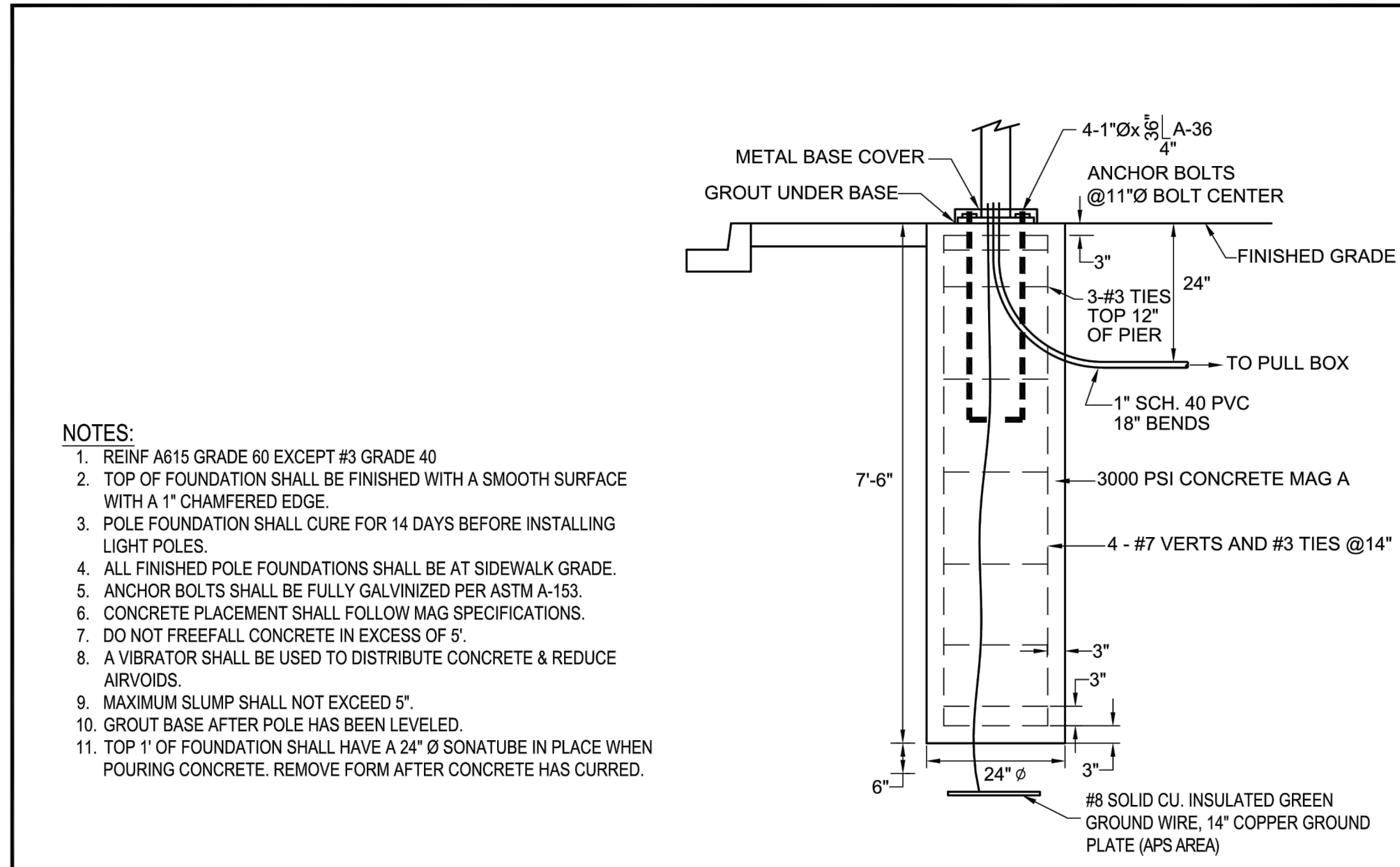
- NOTES:**
- ALL WIRE ENTRANCE AND EXIT HOLES SHALL BE FREE OF BURRS AND ROUGH EDGES.
 - THE MAST ARM IS SAND BLASTED TO A NEAR WHITE FINISH AND TREATED WITH AN IRON PHOSPHATE SOLUTION. A HIGH QUALITY POLYESTER POWDER (BRONZE) IS THEN ELECTROSTATICALLY APPLIED AND CURED TO A MINIMUM 4 MIL THICKNESS.

DETAIL NO. A1784-3	Avondale STANDARD DETAIL	ARCHITECTURAL STYLE STREET LIGHT MAST ARM	APPROVED BY: <i>[Signature]</i> DATE: 8 24 16
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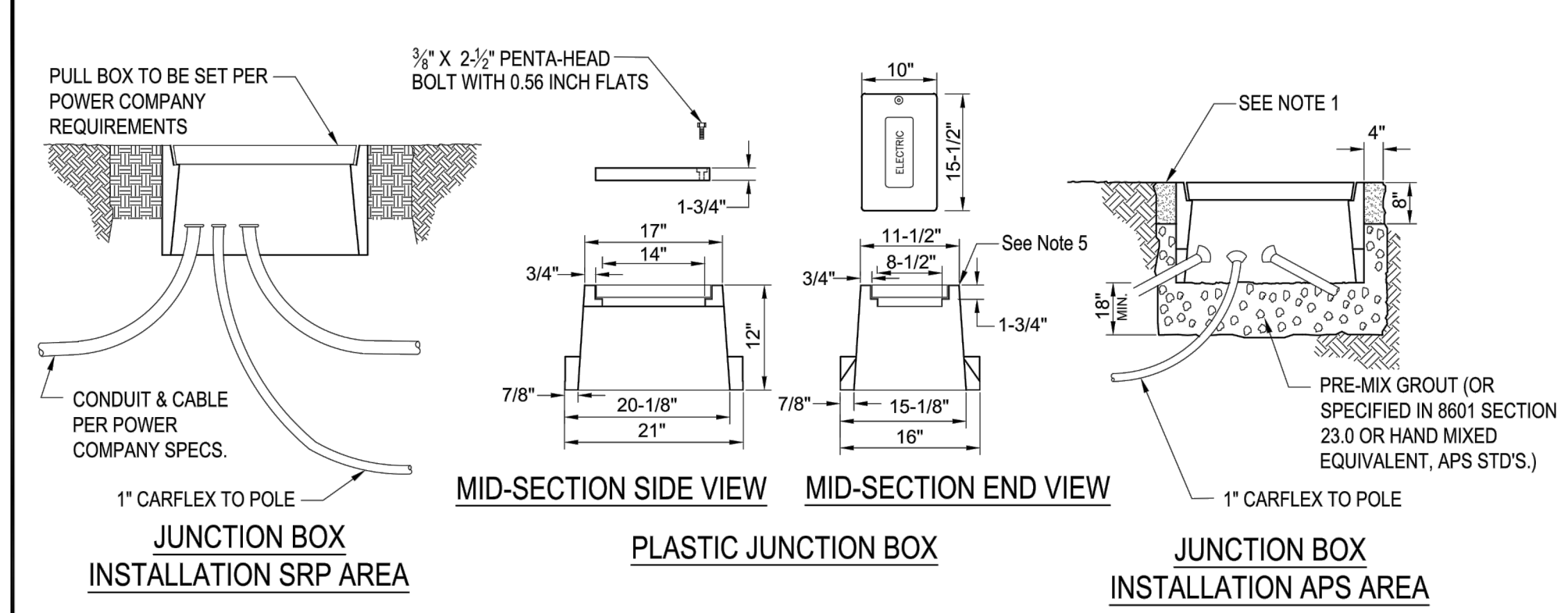


- NOTES:**
- ALL SPLICES SHALL BE DONE USING A BLACKBURN WR-7, WR-8, WR-189, OR WR-279 H TYPE CRIMP CONNECTOR. CRIMPING SHALL BE DONE USING A BURNDY TOOL NO. OS-50 WITH 58" DIE SHALL BE USED TO CRIMP THE WR-7, WR-8, A BURNDY TOOL NO. MD6-8 WITH O DIE SHALL BE USED TO CRIMP THE WR-189. A BURNDY TOOL NO. MD6-8 WITH O3 DIE SHALL BE USED TO CRIMP THE WR-279.
 - ALL POLES (APS AREA) SHALL BE WIRED USING TWO (2) #12 AWG TYPE THINWALL SOLID COPPER CONDUCTORS, 800 VOLT, NEC APPROVED AND ONE (1) #12 SOLID BARE COPPER BOND WIRE. WIRES SHALL RUN FROM THE LUMINAIRE TO A MINIMUM OF TWELVE (12) INCHES BELOW POLE HAND HOLE, FOR TERMINATION.
 - ALL POLES (SRP AREA) SHALL BE WIRED USING TWO (2) #12 AWG TYPE THINWALL SOLID COPPER CONDUCTORS, 800 VOLT, NEC APPROVED AND ONE (1) #12 SOLID BARE COPPER BOND WIRE. BOND WIRES SHALL RUN FROM THE LUMINAIRE TO A MINIMUM OF TWELVE (12) INCHES BELOW POLE HAND HOLE, FOR TERMINATION. CONDUCTORS SHALL RUN FROM LUMINAIRE TO PULL BOX.
 - ALL STREETLIGHT CONDUCTORS AND BOND WIRES SHALL BE COPPER. CONDUCTORS FROM PULL BOX TO HAND HOLE SHALL BE AWG TYPE UF INSULATION. CONDUCTORS FROM HAND HOLE TO LUMINAIRE SHALL BE AWG TYPE THINWALL. ALL CONDUCTORS SHALL BE STRANDED AND ALL BOND WIRES SHALL BE SOLID.

DETAIL NO. A1791	Avondale STANDARD DETAIL	FUSING AND GROUNDING DETAILS	APPROVED BY: <i>[Signature]</i> DATE: 8 24 16
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DETAIL NO. A1784-1	Avondale STANDARD DETAIL	ARCHITECTURAL STYLE STREET LIGHT FOUNDATION	APPROVED BY: <i>[Signature]</i> DATE: 8 24 16
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- NOTES:**
- BACKFILL WITH EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
 - WHERE PULL BOXES ARE INSTALLED IN CONCRETE AREAS, 1/2" PRE-MOLDED EXPANSION JOINT SHALL BE INSTALLED AROUND PULL BOX.
 - CONDUCTORS SHALL HAVE A MINIMUM OF 36" SLACK FROM CONDUIT AND BELL.
 - WHERE A PULL BOX EXTENSION IS NEEDED, TWO PULL BOXES MAY BE STACKED ONE ON TOP OF ANOTHER.
 - HANDHOLES ARE TO BE INSTALLED FLUSH WITH FINAL GRADE.
 - INSTALL THIS NONTRAFFIC-BEARING HANDHOLE OUTSIDE OF CONCRETED AREAS, OR PEDESTRIAN AND VEHICULAR TRAFFIC AREAS.
 - COMPACTION BENEATH AND AROUND HANDHOLE SHALL BE A MINIMUM OF 85 PERCENT OF THE MAXIMUM DENSITY PER MAG SPECIFICATIONS.
 - DIMENSIONS ARE APPROXIMATE DUE TO VARIATIONS BETWEEN MANUFACTURERS.
 - THIS HANDHOLE IS SUITABLE FOR USE WITHOUT JUNCTION BARS OR WITH THE TWO-POSITION JUNCTION BARS OR FOR MAINTENANCE OF HANDHOLES EXISTING WITH FOUR-POSITION JUNCTION BARS.

DETAIL NO. A1790	Avondale STANDARD DETAIL	JUNCTION BOX DETAILS	APPROVED BY: <i>[Signature]</i> DATE: 8 24 16
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PHOTOCELL SPECIFICATION

THE LUMINAIRE SHALL HAVE A 7-PRONG TWIST-LOCK PHOTO-ELECTRIC CONTROL RECEPTACLE (PECR) IN ACCORDANCE WITH ANSI C136.41-2013. THE DRIVER DIMMING LEADS SHALL BE WIRED TO PRONGS FOUR AND FIVE. THE PECR SHALL BE ROTATABLE UP TO 359 DEGREES. HOUSING SHALL PROVIDE 360 DEGREE STOP TO PREVENT THE INTERNAL TWISTING OF PECR WIRE ASSEMBLIES RESULTING IN POTENTIAL ELECTRICAL SHORT. THE PECR SHALL BE CONNECTED TO THE SAME VOLTAGE AS THE LUMINAIRE.

FIXTURE SCHEDULE TABLE

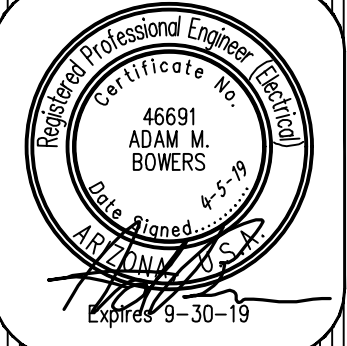
TYPE	WATTAGE	LUMENS	COLOR TEMP.	DISTRIBUTION TYPE	MANUFACTURER	CATALOG #
LED	40	4700	3000K	2	ACUITY	ATBS/E/MVOLT/R2/3K/MP/NL/P7
LED	50	6100	3000K	3	ACUITY	ATBS/G/MVOLT/R3/3K/MP/NL/P7
LED	133	15,700	4000K	3	ACUITY	ATBM/F/MVOLT/R3/BZ/MP/NL/P7

WRIGHT ENGINEERING
PROJECT NO:
18184
DESIGN BY: JDM
DRAWN BY: JDM
CHECKED BY: AMB

WRIGHT engineering corporation
ELECTRICAL ENGINEERING AND DESIGN
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PROJECT: TITLE:
AVONDALE, ARIZONA
ALAMAR PH. 1
AVONDALE BLVD NORTH
STREET LIGHT PLAN

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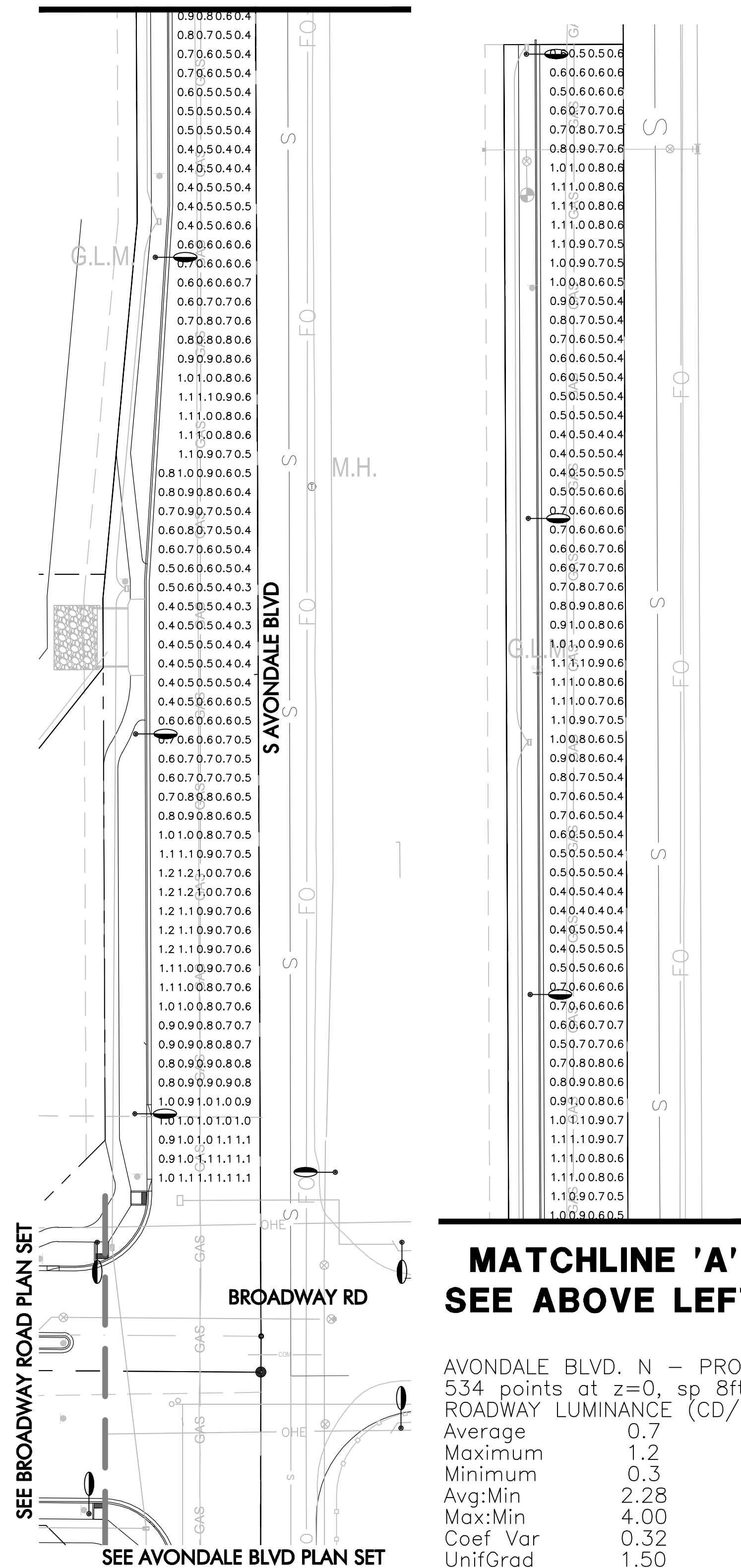


DRAWING NO:
SL3
OF 4

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PROPOSED PHOTOMETRICS

MATCHLINE 'A'
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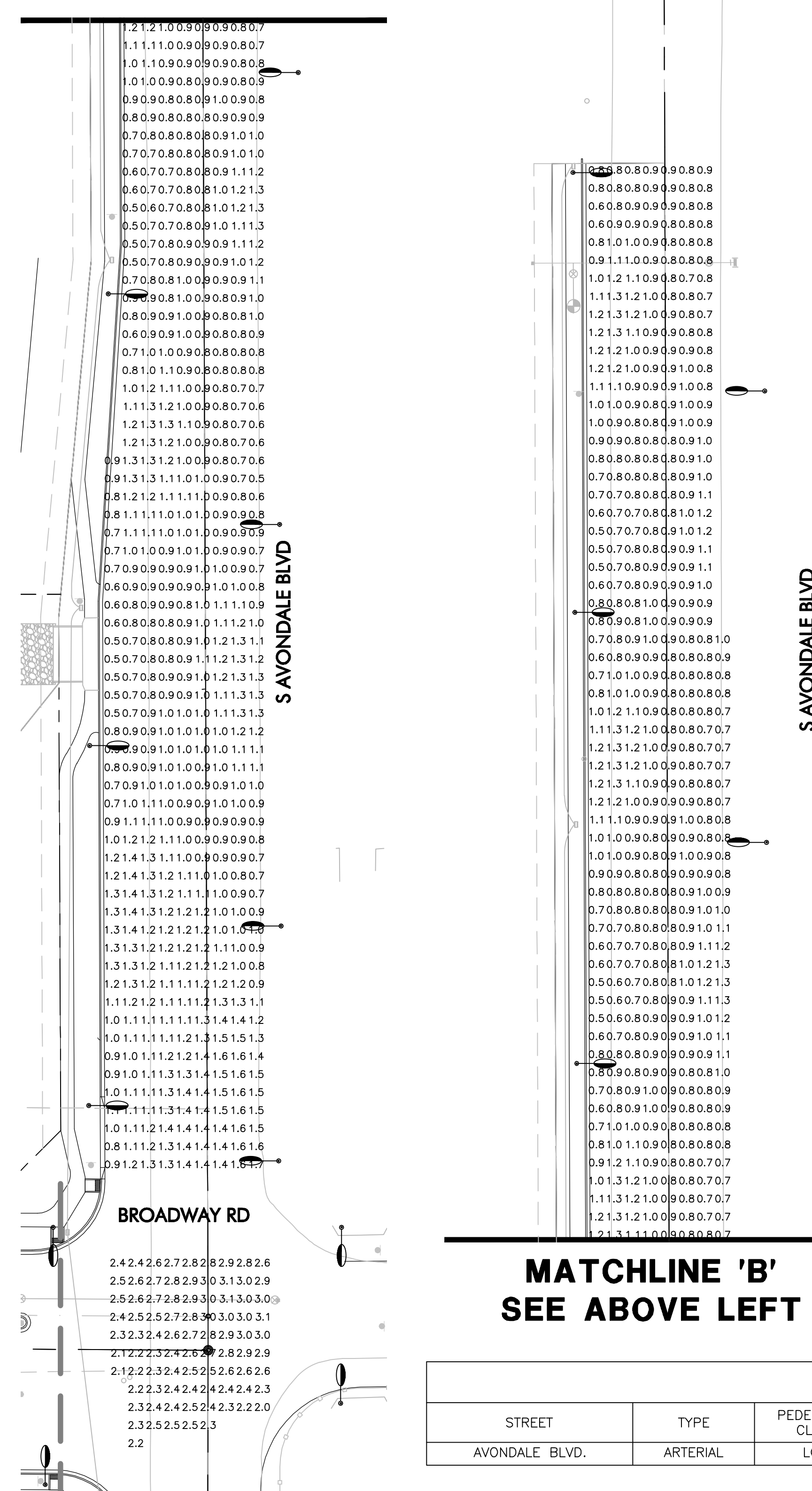
MATCHLINE 'A'
SEE ABOVE LEFT

AVONDALE BLVD. N - PROPOSED
534 points at z=0, sp 8ft by 8ft
ROADWAY LUMINANCE (CD/SQ METER) travel direction North
Average 0.7
Maximum 1.2
Minimum 0.3
Avg:Min 2.28
Max:Min 4.00
Coef Var 0.32
UnifGrad 1.50

INT - AVONDALE & BROADWAY
76 points at z=0, sp 8ft by 8ft
HORIZONTAL FOOTCANDLES
Average 2.6
Maximum 3.0
Minimum 2.1
Avg:Min 1.22
Max:Min 1.43
Coef Var 0.10
UnifGrad 1.12

FUTURE PHOTOMETRICS

MATCHLINE 'B'
SEE BELOW RIGHT



MATCHLINE 'B'
SEE ABOVE LEFT

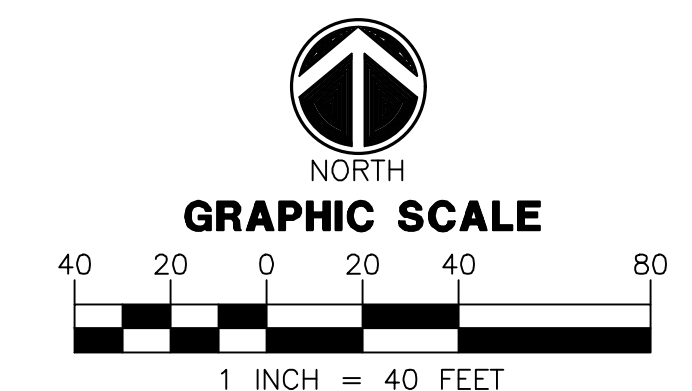
LEGEND/DESIGN CRITERIA

15700 LUMEN
8' X 8' MAST ARM
candela file 'ATBM_F_XXXX_R3_XXXX.ies'
1 lamp(s) per luminaire, photometry is absolute
Light Loss Factor = 0.850, watts per luminaire = 133
mounting height= 40 ft
number locations= 88, number luminaires= 88
kw all locations= 11.7

AVONDALE BLVD. N - FUTURE
1006 points at z=0, sp 8ft by 8ft
ROADWAY LUMINANCE (CD/SQ METER) travel direction North
Average 1.0
Maximum 1.7
Minimum 0.5
Avg:Min 1.91
Max:Min 3.40
Coef Var 0.22
UnifGrad 1.60

INT - AVONDALE & BROADWAY FUTURE
85 points at z=0, sp 8ft by 8ft
HORIZONTAL FOOTCANDLES
Average 2.6
Maximum 3.1
Minimum 2.0
Avg:Min 1.30
Max:Min 1.55
Coef Var 0.11
UnifGrad 1.15

ROADWAY DESIGN CRITERIA											
STREET	TYPE	PEDESTRIAN CLASS	AVG LUMEN (cd/m ²)	AVG/MIN	MOUNTING HEIGHT	PM DISTRIBUTION	LLF	COLOR TEMP	B	U	G
AVONDALE BLVD.	ARTERIAL	LOW	0.6	3:1	40FT	3	0.85	4000K	2	0	3



WRIGHT
engineering corporation
ELECTRICAL ENGINEERING AND DESIGN
165 EAST CHILTON DRIVE • CHANDLER, ARIZONA 85225
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PHOTOMETRIC CALCULATION SHEET. FOR INFORMATION ONLY.

PROJECT NAME:
ALAMAR
AVONDALE BLVD NORTH
STREETLIGHTING

WRIGHT ENG.
PROJECT NO: 18184

DESIGN BY: JDM PH1

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