

ALAMAR BROADWAY ROAD STREET LIGHT IMPROVEMENTS

DEVELOPER

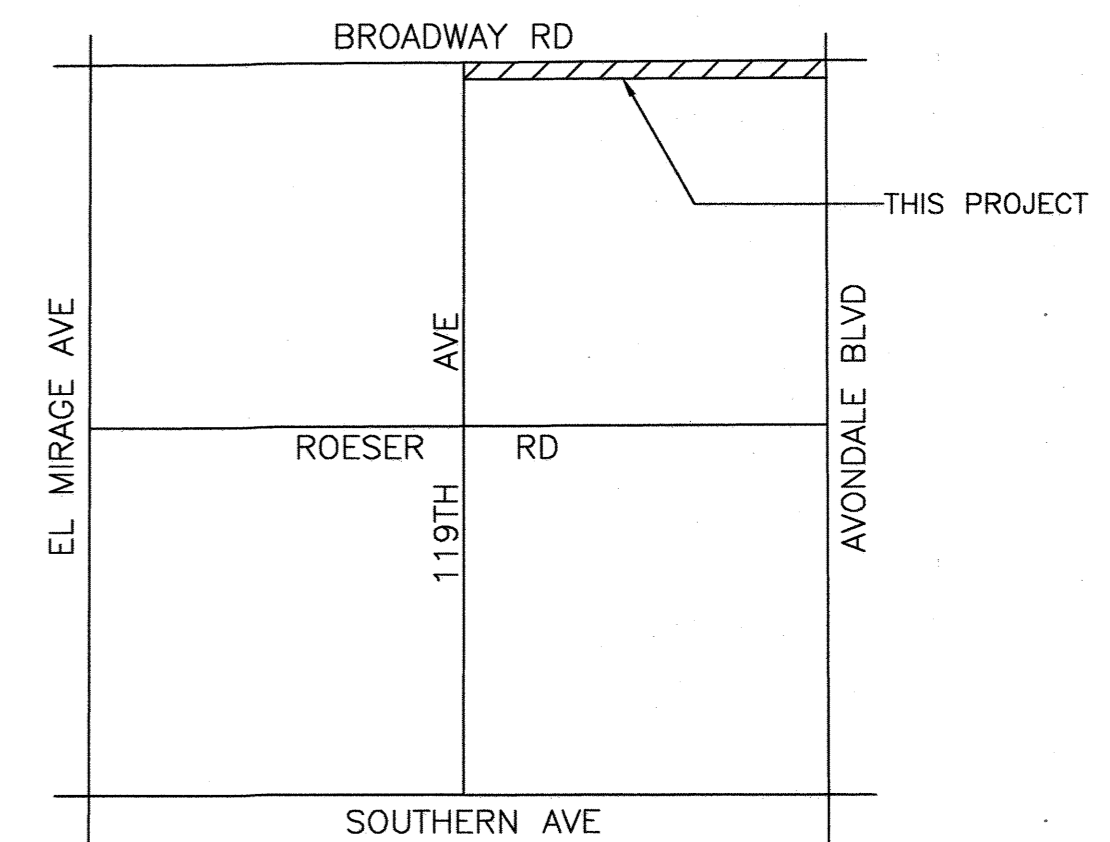
BROOKFIELD RESIDENTIAL
14646 N. KIERLAND BLVD, SUITE 165
SCOTTSDALE, AZ 85254
PHONE: (602) 903-7509
CONTACT: ROGER THEIS

ELECTRICAL ENGINEER

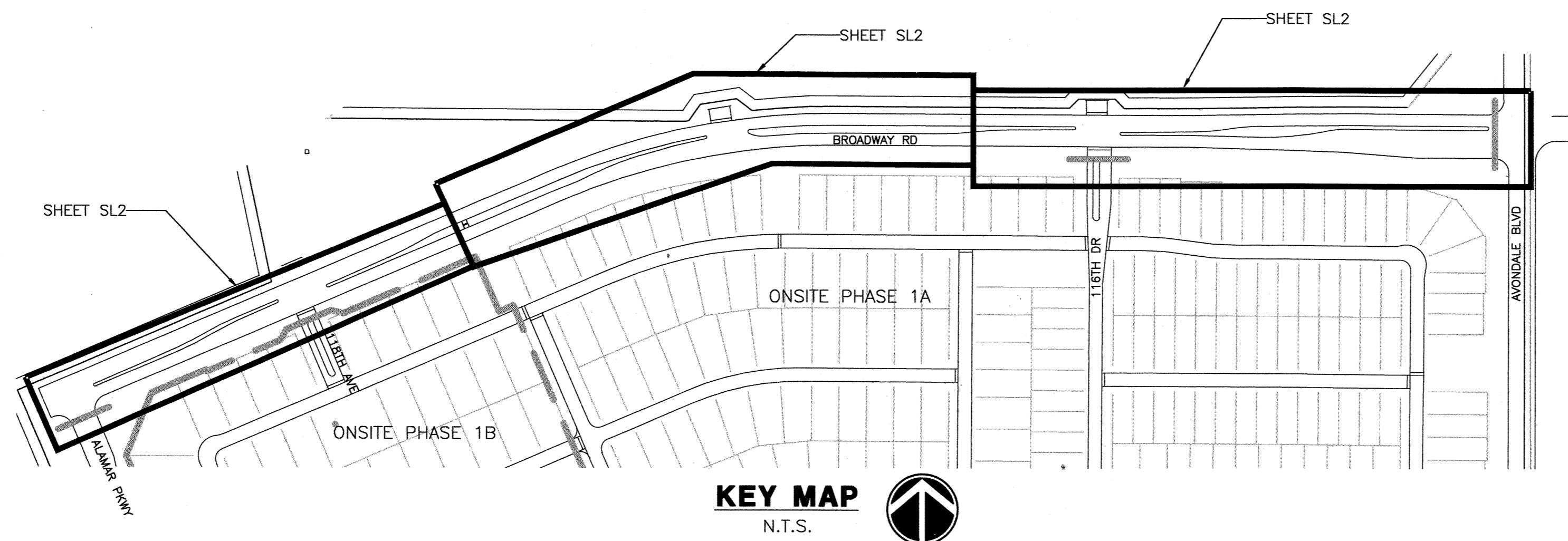
WRIGHT ENGINEERING CORPORATION
165 EAST CHILTON DRIVE
CHANDLER, ARIZONA 85225
PHONE: (480) 497-5829
FAX: (480) 497-5807
CONTACT: ADAM BOWERS

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.



KEY MAP
N.T.S.

SHEET INDEX:

SHEET SL1	COVER SHEET
SHEET SL2	STREET LIGHT DESIGN
SHEET SL3	DETAIL SHEET
SHEET PH-1	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

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	CRAIG EITEL COMPANY REPRESENTATIVE	10/12/18 DATE
ARIZONA PUBLIC SERVICE	KATHY GARCIA COMPANY REPRESENTATIVE	10/12/18 DATE
CENTURY LINK	CHRIS LERTIQUE COMPANY REPRESENTATIVE	10/12/18 DATE
COX COMMUNICATIONS	LIN MORRIL COMPANY REPRESENTATIVE	10/12/18 DATE
SOUTHWEST GAS	SUE NEWSOM COMPANY REPRESENTATIVE	10/12/18 DATE
S.R.V.W.U.A.	BOB MAURER COMPANY REPRESENTATIVE	10/12/18 DATE
ROOSEVELT IRRIGATION DISTRICT	STAN ASHBY COMPANY REPRESENTATIVE	10/12/18 DATE
EL PASO NATURAL GAS	RON BROWN COMPANY REPRESENTATIVE	10/12/18 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:

QUANTITIES LIST (STREET LIGHTS)		
TOTAL	UNIT	DESCRIPTION
7	EACH	133W LED WITH 40" MOUNTING HEIGHT
16	EACH	(2) 133W LED WITH 40" MOUNTING HEIGHT

APPROVED BY:

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

Adam M. Bowers
2-27-19

DATE

WRIGHT ENGINEERING
PROJECT NO:

18184

DESIGN BY: NBG
DRAWN BY: NBG
CHECKED BY: AMB

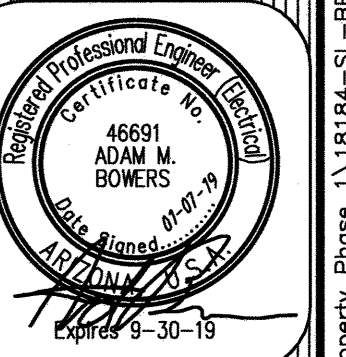
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PHONE: (480) 497-5829 • FAX: (480) 497-5807
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PROJECT: TITLE:

AVONDALE, ARIZONA
ALAMAR
BROADWAY RD
STREET LIGHT PLAN

NO. DATE SUBMITTALS/REVISIONS (DESCRIPTIONS)

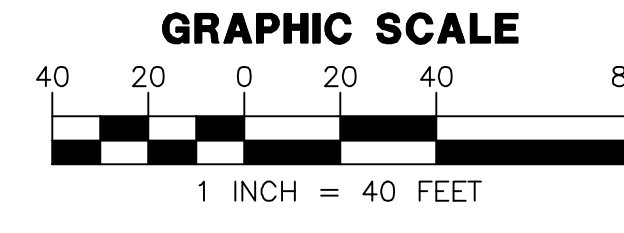
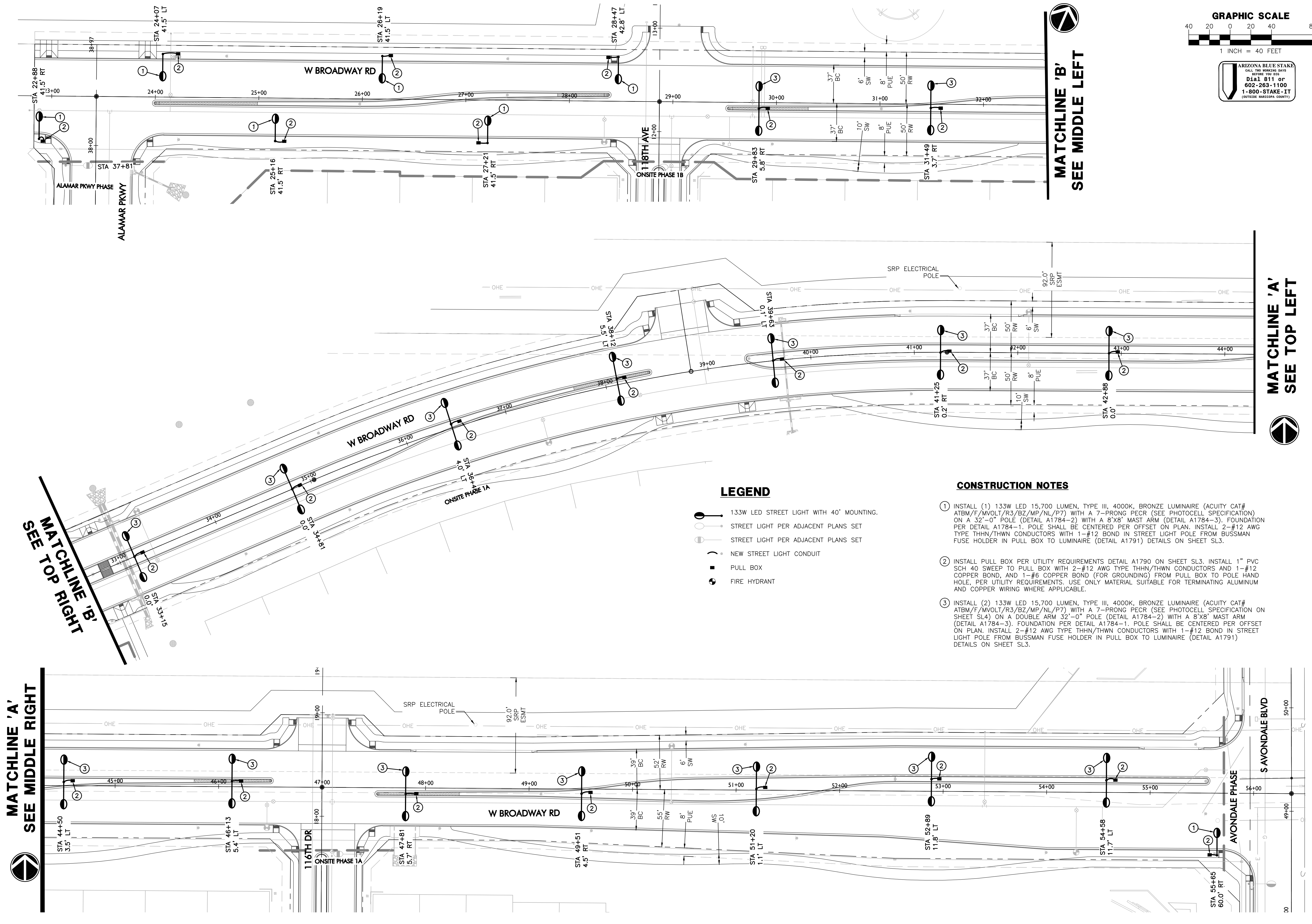
1	AUG 2018	1ST SUBMITTAL
2	OCT 2018	2ND SUBMITTAL



DRAWING NO:

SL1
OF 4

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ARIZONA BLUE STARK
CALL TWO WORKING DAYS
BEFORE YOU BID
Dial 811 or
602-263-1100
1-800-STAKE-IT
(OUTSIDE MARICOPA COUNTY)

WRIGHT ENGINEERING CORPORATION
PROJECT NO: 18184
DESIGN BY: NBG
DRAWN BY: NBG
CHECKED BY: AMB

WRIGHT engineering corporation
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PHONE 480.497.5829 • FAX 480.497.5807
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PROJECT: TITLE:

AVONDALE, ARIZONA
ALAMAR BROADWAY RD
STREET LIGHT PLAN

NO.	DATE	SUBMITTALS/REVISIONS (DESCRIPTIONS)
1	AUG 2018	1ST SUBMITTAL
2	OCT 2018	2ND SUBMITTAL

Professional Engineer
46691
ADAM M. BOMERS
Exp. 09-30-19

DRAWING NO:
SL2
OF 4

MATCHLINE 'B'
SEE TOP RIGHT

MATCHLINE 'A'
SEE MIDDLE RIGHT

MATCHLINE 'B'
SEE MIDDLE LEFT

MATCHLINE 'A'
SEE TOP LEFT

LEGEND

- 133W LED STREET LIGHT WITH 40' MOUNTING.
- STREET LIGHT PER ADJACENT PLANS SET
- STREET LIGHT PER ADJACENT PLANS SET
- NEW STREET LIGHT CONDUIT
- PULL BOX
- FIRE HYDRANT

CONSTRUCTION NOTES

- 1 INSTALL (1) 133W LED 15,700 LUMEN, TYPE III, 4000K, BRONZE LUMINAIRE (ACUIY CAT# ATBM/F/MVOLT/R3/B2/MP/NL/P7) WITH A 7-PRONG PECR (SEE PHOTOCCELL 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.
- 3 INSTALL (2) 133W LED 15,700 LUMEN, TYPE III, 4000K, BRONZE LUMINAIRE (ACUIY CAT# ATBM/F/MVOLT/R3/B2/MP/NL/P7) WITH A 7-PRONG PECR (SEE PHOTOCCELL SPECIFICATION ON SHEET SL4) ON A DOUBLE ARM 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.

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POLE FUSING DETAIL (SRP)

POLE FUSING DETAIL (APS)

POLE GROUNDING DETAIL

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 5/8\"/>
- ALL POLES (APS AREA) SHALL BE WIRED USING TWO (2) #12 AWG TYPE THHN/THWN SOLID COPPER CONDUCTORS, 600 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 THHN/THWN SOLID COPPER CONDUCTORS, 600 VOLT, NEC APPROVED AND ONE (1) #12 SOLID BARE OR GREEN COPPER BOND WIRE. BOND WIRE 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 THHN/THWN. ALL CONDUCTORS SHALL BE STRANDED AND ALL BOND WIRES SHALL BE SOLID.

DETAIL NO. A1791 **Avondale STANDARD DETAIL** **FUSING AND GROUNDING DETAILS** APPROVED BY: *Daniel J. Jones* DATE: 8-24-16

JUNCTION BOX INSTALLATION SRP AREA

PLASTIC JUNCTION BOX

JUNCTION BOX INSTALLATION APS AREA

NOTES:

- BACKFILL WITH EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
- WHERE PULL BOXES ARE INSTALLED IN CONCRETE AREAS, 1/2\"/>
- CONDUCTORS SHALL HAVE A MINIMUM OF 36\"/>
- 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: *Daniel J. Jones* DATE: 8-24-16

ARCHITECTURAL STYLE STREET LIGHT FOUNDATION

NOTES:

- REINF A615 GRADE 60 EXCEPT #3 GRADE 40
- TOP OF FOUNDATION SHALL BE FINISHED WITH A SMOOTH SURFACE WITH A 1\"/>
- POLE FOUNDATION SHALL CURE FOR 14 DAYS BEFORE INSTALLING LIGHT POLES.
- ALL FINISHED POLE FOUNDATIONS SHALL BE AT SIDEWALK GRADE.
- ANCHOR BOLTS SHALL BE FULLY GALVANIZED PER ASTM A-153.
- CONCRETE PLACEMENT SHALL FOLLOW MAG SPECIFICATIONS.
- DO NOT FREEFALL CONCRETE IN EXCESS OF 5'.
- A VIBRATOR SHALL BE USED TO DISTRIBUTE CONCRETE & REDUCE AIRVOIDS.
- MAXIMUM SLUMP SHALL NOT EXCEED 5\"/>
- GROUT BASE AFTER POLE HAS BEEN LEVELLED.
- TOP 1' OF FOUNDATION SHALL HAVE A 24\"/>

DETAIL NO. A1784-1 **Avondale STANDARD DETAIL** **ARCHITECTURAL STYLE STREET LIGHT FOUNDATION** APPROVED BY: *Daniel J. Jones* DATE: 8-24-16

ARCHITECTURAL STYLE STREET LIGHT POLE

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 1\"/>

HANDHOLE: THE HANDHOLE CONSISTS OF A 3\"/>

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: *Daniel J. Jones* DATE: 8-24-16

ARCHITECTURAL STYLE STREET LIGHT MAST ARM

TOP VIEW

SIDE VIEW

DETAIL OF JOINT BETWEEN PIPE AND PLATE AT END OF TUBE

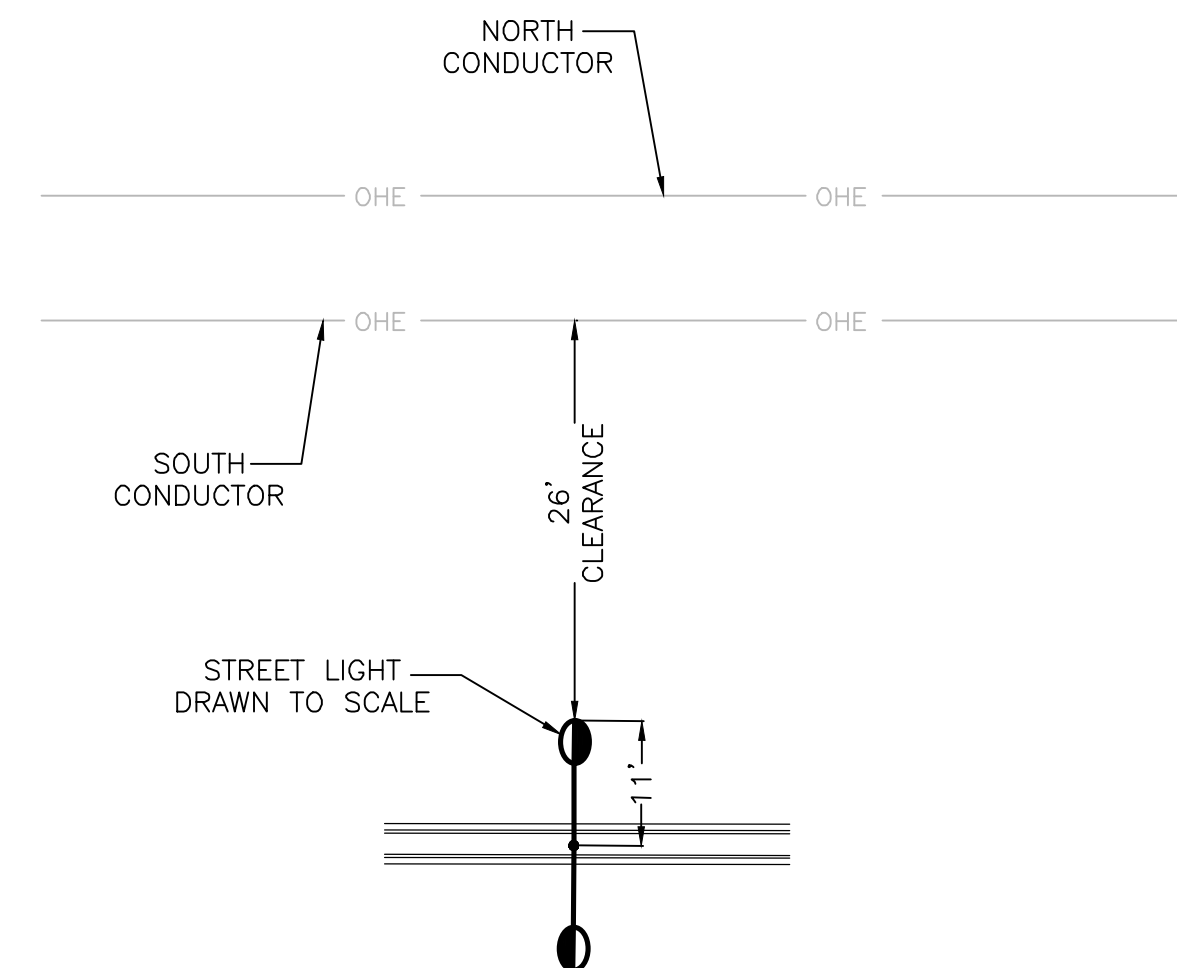
CODE	QTY.	DESCRIPTION
1	1	CAP, METAL 5-1/2\"/>
2	1	PIPE, STEEL, 2\"/>
3	1	PLATE, 3\"/>
4	4	SET SCREW, HEXAGON, 1/2\"/>
5	1	TUBE, 3\"/>
6	1	TUBE, 5-1/2\"/>

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: *Daniel J. Jones* DATE: 8-24-16

1 SRP STREET LIGHT EASEMENT CLEARANCE
STA 52+89 & 54+88



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.

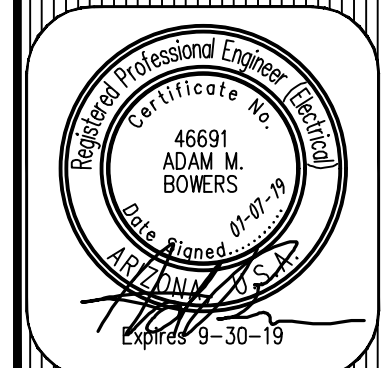
WRIGHT ENGINEERING
PROJECT NO:
18184
DESIGN BY: NBG
DRAWN BY: NBG
CHECKED BY: AMB

WRIGHT engineering corporation
ELECTRICAL ENGINEERING AND DESIGN
165 EAST CHILTON DRIVE • CHANDLER, ARIZONA 85225
PHONE 480.497.5820 • FAX 480.497.5807
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PROJECT: TITLE:

AVONDALE, ARIZONA
ALAMAR BROADWAY RD
STREET LIGHT PLAN

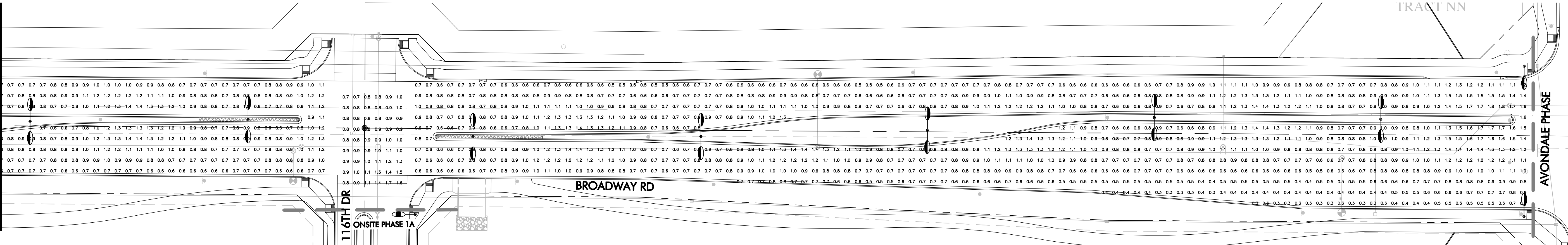
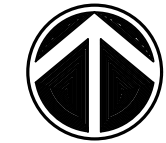
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1	AUG 2018	1ST SUBMITTAL
2	OCT 2018	2ND SUBMITTAL



DRAWING NO:
SL3
OF 4

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MATCHLINE 'A'
SEE MIDDLE RIGHT

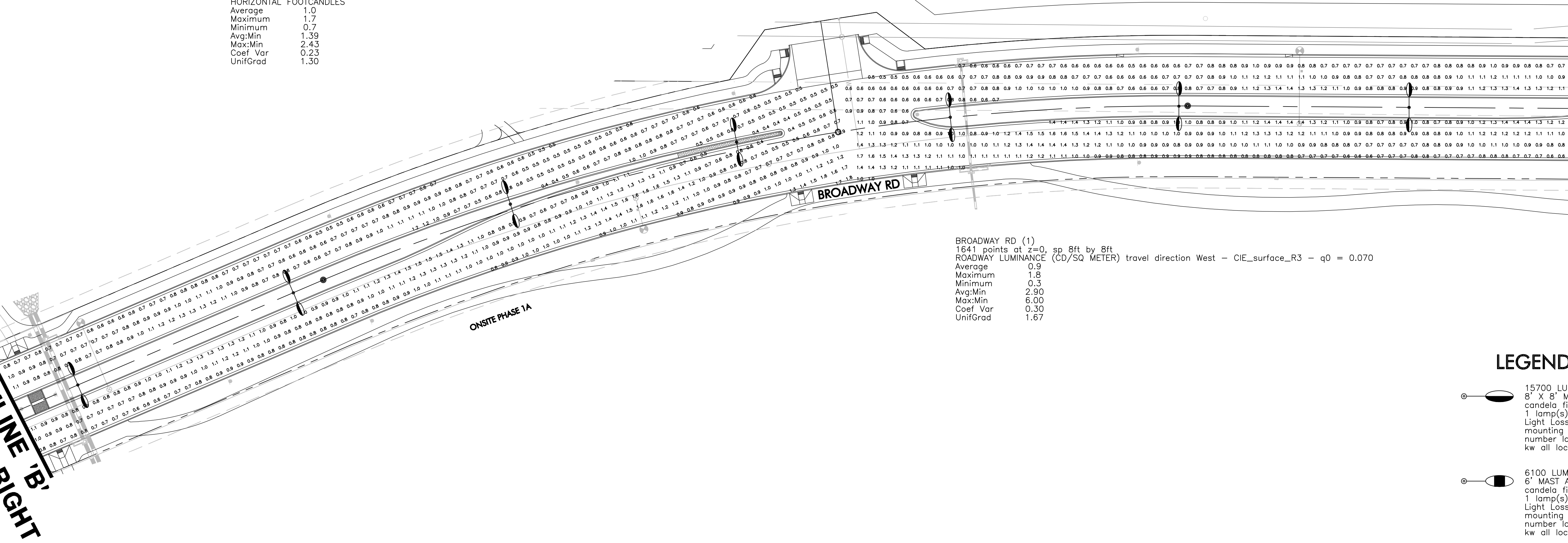


INT - BROADWAY RD & 116TH DR
 54 points at z=0, sp 8ft by 8ft
 HORIZONTAL FOOTCANDLES
 Average 1.0
 Maximum 1.7
 Minimum 0.7
 Avg:Min 1.39
 Max:Min 2.43
 Coef Var 0.23
 UnifGrad 1.30

MATCHLINE 'A'
SEE TOP LEFT



SEE MIDDLE RIGHT
MATCHLINE 'B'
SEE BOTTOM RIGHT



BROADWAY RD (1)
 1641 points at z=0, sp 8ft by 8ft
 ROADWAY LUMINANCE (CD/SQ METER) travel direction West - CIE_surface_R3 - q0 = 0.070
 Average 0.9
 Maximum 1.8
 Minimum 0.3
 Avg:Min 2.90
 Max:Min 6.00
 Coef Var 0.30
 UnifGrad 1.67

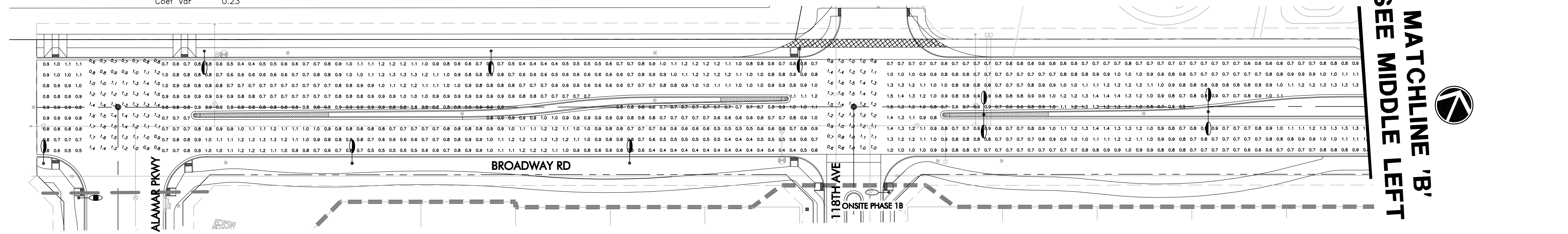
INT - BROADWAY RD & 119TH AVE
 63 points
 HORIZONTAL FOOTCANDLES
 Average 1.2
 Maximum 1.7
 Minimum 0.6
 Avg:Min 1.99
 Max:Min 2.83
 Coef Var 0.23

INT - BROADWAY RD & 118TH AVE
 45 points
 HORIZONTAL FOOTCANDLES
 Average 1.2
 Maximum 1.7
 Minimum 0.6
 Avg:Min 1.99
 Max:Min 2.83
 Coef Var 0.21

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= 61, number luminaires= 61
kw all locations= 8.1
- 6100 LUMEN
6' MAST ARM
candela file 'ATBS_G_XXXX_R3_3K (1).ies'
1 lamp(s) per luminaire, photometry is absolute
Light Loss Factor = 0.850, watts per luminaire = 50
mounting height= 32 ft
number locations= 17, number luminaires= 17
kw all locations= 0.8
- 4700 LUMEN
6' MAST ARM
candela file 'ATBS_E_XXXX_R2_3K (1).ies'
1 lamp(s) per luminaire, photometry is absolute
Light Loss Factor = 0.850, watts per luminaire = 40
mounting height= 32 ft
number locations= 103, number luminaires= 103
kw all locations= 4.1

MATCHLINE 'B'
SEE MIDDLE LEFT



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

PHOTOMETRIC CALCULATION SHEET. FOR INFORMATION ONLY.

PROJECT NAME:
ALAMAR BROADWAY RD STREETLIGHTING

WRIGHT ENG.
PROJECT NO: 18184

DESIGN BY: NBG **PH-1**

Professional Engineer Seal: ADAM M. BOWERS, License No. 46691, State of Arizona, Expires 9-30-19