City of Phoenix
Office of the City Engineer
Design and Construction Procurement
200 W. Washington Street, 6th Floor
Phoenix, Arizona 85003-1611

PROJECT NO. ST87600114-3
GRAND CANAL BIKE AND PEDESTRIAN IMPROVEMENTS
FEDERAL AID NO. PHX-0(BFG)F

ADDENDUM NO. 5

ISSUE DATE: September 20, 2017

Bidders are hereby notified that the Bidding and Contract Documents for the above project, for which Bids are to be received on Tuesday, October 3, 2017**,** are amended as follows:

Q1.	Item 5.15 – Electrical Power Service Pedestal Cabinet, 100A, Single Phase, Including Utility Company Related Costs & Requirements (9) Each. In reviewing the Special Provisions there does not appear to be any information related to the item. Can we get a clear defined scope specifically related to "Including Utility Company Related Costs & Requirements"? For example, are we responsible for the cost related to hook up charges? Are we responsible for conductors that feed from the point of service to the service pedestal? Are we responsible for utility bills until the project is turned over to the City? Etc. Historically when we attempt to call the respective utility company they won't/can't provide related costs. We have seen on past projects two separate items one specifically for the foundation and associated service pedestal and another force account item for Utility Company fees. Without a clear defined scope it is nearly impossible to estimate a cost when the Utility won't/can't provide a quote. We want to make sure that all parties are on a level playing field during the bidding process.
A1.	Contractor shall be responsible for trenching and installing conduit from the point of service to the service pedestal. Utility Company (thru City) will install conductors and energize the service pedestal. The electric meter will be in the City's name and City shall be responsible for electric utility bills. Contractor shall be responsible for all trenching, conduit and conductors "downstream" of the service pedestal.
Q2.	Item 6.10-6.20 - In the current plan set there does not appear to be a conductor and cable schematic for the HAWK & RRFB signals. Are conductors and cables required by the Contractor or City forces? If Contractor, when will a schematic be provided for each signal?
A2.	HAWK signal wiring shall be per Phoenix standard signal details available at: https://www.phoenix.gov/streetssite/Documents/COP_Standard_Traffic_Signal_Details_09152017a.pdf
Q3.	Item 6.16 – Plan sheet 2.160 is calling for an 8 Phase Controller Cabinet under the "Install (By Contractor) note however there is no Foundation shown under the Proposed

	Foundation Schedule and the “C” is not shown in the layout. Please confirm if required.
A3.	A Control Cabinet is not required for RRFB signal. Note removed from plans.
Q4.	Item 6.19 – Plan sheet 3.85 under Remove note calls for 1 each under Remove Conductors but the layout calls for 2 locations. Please confirm 2 locations are required.
A4.	Quantity is 2 locations.
Q5.	Item 6.19 – Plan sheet 3.86 under Remove note calls for 1 Remove Existing Street Light. The layout is missing a callout for the Existing Light Pole on the west side of 44th as shown on the previous sheet. Please confirm 2 Remove Existing Street Light is required.
A5.	Two (2) Street light removals are required as shown on sheet 3.85. Removal notes have been removed from sheet 3.86 to avoid confusion.
Q6.	Item 6.20 – Plan sheet 3.87 the layout shows conduit runs but there are no callouts for size of conduit. Please advise what size conduit is required for each run.
A6.	Conduit sizes have been added to plans.
Q7.	Item 6.14 – Plan sheet 2.156 shows luminaires on the G & W signal poles in the layout but under the equipment notes there does not appear to be a callout. Please confirm these are required.
A7.	Both poles shall have LED luminaires. See updated equipment notes.
Q8.	PDF Page 39, Special Conditions 22, Section 2- at Union Pacific Railroad Flagman, at Measurement and Payment, second paragraph – The paragraph says “Payment for this work will be made under the bid item Railroad Flagger and Right of Entry Permit.” There is no such bid item in the Bid Proposal. Please clarify.
A8.	A new bid item is added for this purpose. See revised bid tab attached.
Q9.	PDF Page 141, DBE Program, Section IV.A.1., Attachment A (Outreach Efforts) – The section mentions documentation due at the time of bid which is not included in the list on PDF Page 8, Information for Bidders, Section H, Bid Submittal Checklist. The section describes an “Attachment A (Outreach Efforts).” a) Is Attachment A required with the bid? b) If yes, please provide Attachment A
A9.	Please see Addendum 4.
Q10.	Item 6.18 – Plan sheet 2.164 shows an “SQ” foundation on the proposed foundation schedule however on the Hawk Equipment Notes the plans are calling for an ADOT Type W Pole. What is the correct pole for this location?
A10.	The correct pole and foundation is an ADOT type W pole. See updated foundation schedule.
Q11.	Plan sheet 2.169 shows conflicting information. Please confirm bollards or light fixtures on 15’ poles.
A11.	Those are bollard lights and should have been note 5. See revised sheet SE2.3.
Q12.	Volume 2 Page 2.003 shows a table of bid items and quantities. Item # M3400407 calls for Concrete Sidewalk with WWF (welded wire fabric). Similar bid items for the path for example ex. Volume 1 page 1.04 calls for Concrete Sidewalk Std Detail 1230 7” thk

	Class AA. The pavement section drawings call out PCCP, not sidewalk. Is this path PCCP or sidewalk? Is WWF required.
A12.	Pathway shall be Concrete Sidewalk Std Detail 1230 7" thick Class AA. See revised Sheets 3.05
Q13.	Will the joints for the path be tooled (Sidewalk) or can they be sawcut (PCCP)?
A13.	Construction of joints shall be per Std Detail P1230.
Q14.	The material is called out as weathering for the structure, mesh, and bar grating. However later in the specifications, it mentions "colorant for galvanized metal" and mentions Natina Stain. What is the finish for the bridge? If galvanized and stained, are we still required to use A588 material instead of the standard A500?
A14.	See page S.P. – 70 of the special provisions for the material requirements of the Prefabricated Steel Bridge. The material requirements listed on page S.P. – 71 and 72 are applicable to the Steel Handrail details located on Sheet 2.127.
Q15.	The safety rail calls a welded wire mesh with 4" openings. Are there additional specs regarding the thickness of this mesh? Standard panels are a 11 ga with 2" openings , but with 4" we will need thicker bars to provide more strength against loading.
A15.	The requirements for the design of the Welded Wire Fabric for Safety Fence of the Prefabricated Steel Bridge can be found on page S.P. – 70. The gage of the mesh shall be determined by the truss supplier. Mesh and frames for the Steel Handrails is indicated on detail XII STEEL HANDRAIL WITH 3"X3" MESH PANELS, and XIII WIRE MESH FRAME, on Sheet 2.127
Q16.	Clarify - 7.16/7.65 Gabion Boxes: 243 counted, 283 listed in bid tabs.
A16.	Gabion Boxes 270
Q17.	Clarify - 7.64 River Rock: quantity to reflect correct box count?
A17.	River Rock 405 Tons
Q18.	Clarify - 7.25-7.26 Controllers: Found 9 total in plans, bid tabs call out 14 total.
A18.	12 Station Controller Qty=4 6 Station Controller = 4 18 Station Controller = 1
Q19.	Clarify - 7.31-7.32 Backflow Preventers/Master Valves: 12 on plans, 14 in Bid tabs.
A19.	Backflow Prevention Units 12
	Master Valves and Flow Sensors 11
Q20.	Clarify - 7.33-7.35 Remote Control Valves/Wye Strainers/Pressure Regulators: Counted 74, Bid tabs list 82 of each.
A20.	Remote Control Valves/Wye Strainers/Pressure Regulators Correct Quantity 64
Q21.	Clarify - 7.42 Flush Caps: 96 counted, 105 listed in bid tabs.
A21.	Flush Caps Correct Quantity 109
Q22.	Clarify - 7.43 Quick Couplers: Not shown on Segment 1 plan sheets, only on cover sheet. Please clarify locations.
A22.	Quick Couplers are located per Overview Sheet at nodes
Q23.	Clarify - 7.44 Mainline Gate Valves: 19 counted, 21 called out in bid tabs. Segment 2 has none shown on plans. Is this correct?
A23.	Segment 2 has 15 Mainline Gate Valves to be placed as noted on legend

	Mainline Gate Valves Total for the project is 34
Q24.	Clarify - 7.54 25G Shrubs: Counted 125, bid tabs list 97.
A24.	25 G Shrubs Correct Quantity 126
Q25.	Clarify - 7.55/7.71 Ocotillos: Segment one plans contain 11 and Segment 3 plans contain 16. Bid tabs call out 28 and 117 respectively.
A25.	Ocotillos Correct Quantity 144
Q26.	Clarify - 7.63 Rip Rap: Color to match DG? Mountain Vista Brown?
A26.	Rip Rap is to Match D.G. Mountain Vista Brown
Q27.	Clarify - 7.70 Stabilized DG: Color listed in plan sheets as Desert Gold. Please confirm.
A27.	Stabilized D.G. is Desert Gold
Q28.	Clarify - 7.72-7.73 Box Tree Sizes & Quantities: Segment 2 and 3 call out all trees by dimensions and caliper. Bid tabs call out box size. ANA standards are hazy when it comes to multi-trunk trees. Also, the planting legend quantities call out 283 total trees. Bid tabs for 24" & 36" Box trees add up to 224 total trees. Please clarify.
A28.	Trees to be bid by box size. Tree height, caliper, and spread to comply with ANA standards as applicable. Multi trunk trees to comply with ANA standard for height and spread per current standards.
	24" Box Trees Qty = 197 36" Box Trees = 157
Q29.	Clarify - 7.78 Gel Pacs: All plants listed are either 15 gallon or large box trees. Application rates are not listed for these sizes in the detail. DryH20 manufacturer's recommendations for 15 gallon plants are for 3 tubes. Recommended rates for trees >36" box are 8 tubes per tree. If using these application rates, 403 tubes with 2 gel pacs each will be needed for the entire project. Bid tabs call out 12.
A29.	Bid Item quantity refers to number of applications (12 applications) for the entire project from initial installation through the 6 month maintenance period at 45 day intervals.
	Number of gel packs per application per manufacturer based on size of plant container size at initial installation and at 45 day intervals.
Q30.	Clarify - 7.79 65 Gallon Shrubs: 114 counted, 116 listed in bid tabs.
A30.	65 Gallon Shrubs Correct Qty = 117
Q31.	Are there CAD files available for the Grand Canalscape Phase 2 project?
A31.	CAD files will be provided to the selected contractor once they're under contract with the City of Phoenix for this project. The bidders shall use the PDF plans provided for bidding purposes.

1. **REPACE:** Delete Pages P.1 to 6 from Section II, (1) Bid Proposal, and replace with the attached Pages P.1 to 7 (Revised).

Technical Specifications

1. **ADDITION: Part 477, Intersection Lighting:** Add Part 477- Intersection Lighting Specification as attached.

2. **REPLACE: Part 475, Service Pedestal and Controller Cabinet – Section 475.2.2 Controller Cabinet Assembly:** Delete this section and replace with the text below to read:

   475.2.2 Controller Cabinet Assembly: Cabinet types and configurations shall be supplied as specified on the Approved Traffic Signal Plans, COP Traffic Signal Standard Details, and in accordance with these specifications.

   The Contractor shall supply the following traffic signal controller:

   Econolite Controller and Integrated Ancillary Equipment:

   1. Cobalt Classic NEMA Controller (Includes Ethernet Module & USB port)
   2. TS2/Type 1 "P" Plug-N-Go Cabinet 8 phase Cabinet with two fans (Includes flasher, flash transfer relay, jumpers, detectors and all necessary equipment). The exterior of the cabinet shall be finished with a 2.5 mil high gloss white powder coating.
   3. EDI Bus Interface Unit - Part # - EDI-BIU700 (3 per cabinet)
   4. EDI Malfunction Management Unit Smart Monitor
      Part # - EDI-MMU16LEip (1 per cabinet)
   5. Ruggedcom RS900-HI-D-TX-TX-TX Non-Fiber Network Switch - Switch must be a "Managed" switch, At least three levels of security, has to be IP addressable, minimum of (9) Ethernet ports, must have serial and Ethernet interface access ports, must be AC+ powered, and must meet the same temperature specs as the controller 160 degree operating range.

      Our local representative for the above cabinet and integrated equipment is Lori MacIntyre, Cell – (714)-392-2318, e-mail: lmacintyre@econolite.com.

   The Contractor shall deliver the signal controller and controller cabinet assembly to Traffic Signal Shop, 2141 E. Jefferson Street for final configuration testing and programming. The Contractor shall coordinate the proposed delivery date and time with the Traffic Signal Warehouse (602) 495-2083 at least 3 weeks prior to the Contractor's anticipated installation date.

   A 12" high cabinet extension ring shall be provided for each cabinet. Extension ring shall be bolted to the cabinet during installation in the field. The ring shall be made of 10 Ga. aluminum sheeting and finished with a 2.5 mil high gloss white powder coating.

Plan Sheets:

1. **Sheet TS-2.156 (Thomas Road & Canal HAWK Signal):** Replace this sheet with the revised Sheet TS 2.156.

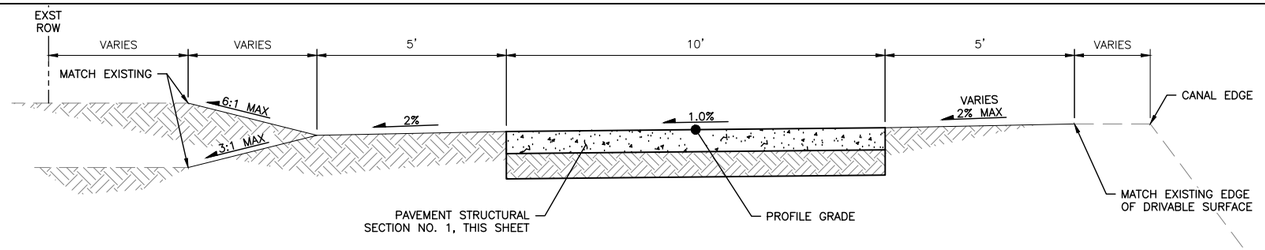
2. **Sheet TS-2.160 (Oak Street & Canal RRFB):** Replace this sheet with the revised Sheet TS 2.160.

3. **Sheet TS-2.164 (32nd Street & Canal HAWK Signal):** Replace this sheet with the revised Sheet TS 2.164.

GRAND CANALSCAPE PHASE II

SEGMENT 3

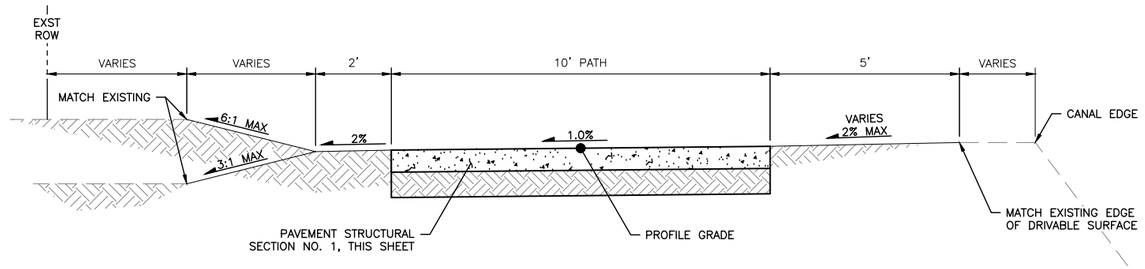
40TH ST TO 56TH ST ALIGNMENT



TYPICAL SECTION NO. 1

NTS

STA 220+20 TO STA 228+00
STA 256+25 TO STA 257+25
STA 259+00 TO STA 260+00
STA 264+75 TO STA 267+20
STA 270+75 TO STA 273+20
STA 273+70 TO STA 275+00
STA 291+25 TO STA 298+25
STA 303+25 TO STA 309+35
STA 314+75 TO STA 318+25



TYPICAL SECTION NO. 2

NTS

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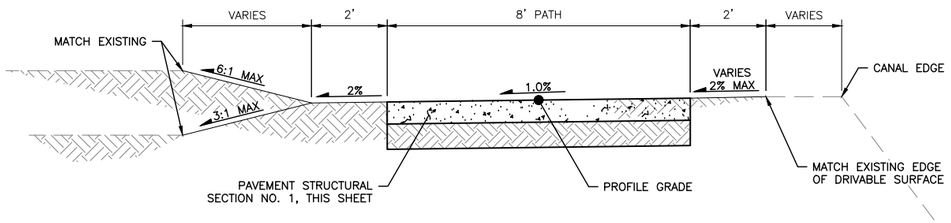
STA 228+00 TO STA 228+75
STA 258+00 TO STA 258+25
STA 267+20 TO STA 270+00
STA 275+00 TO STA 289+75
STA 285+00 TO STA 286+00
STA 301+25 TO STA 302+50
STA 310+00 TO STA 314+00



TYPICAL SECTION NO. 3

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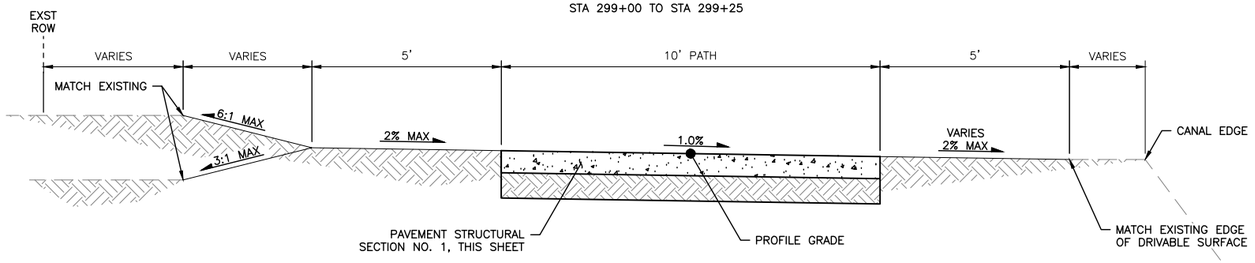
STA 299+00 TO STA 299+25



TYPICAL SECTION NO. 4

NTS

STA 262+00 TO STA 263+00
STA 273+35 TO STA 273+55

Addendum 5

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE

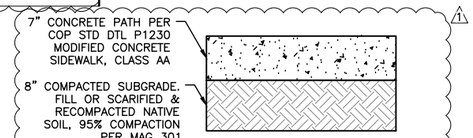
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE
1	STRUCTURAL SECTION NO. 1	BLK	CSJ	9/17

Registered Professional Engineer — Christian S. Javieri — 43820 — Date Signed 12/29/17 — Arizona, U.S.A. — EXPIRES 03-31-18

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	3.05	3.99

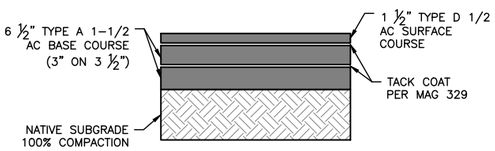
TRACE CONSULTING
1201 E. Jefferson St.
Suite 3
Phoenix, AZ 85034



NOTE:
PAVEMENT STRUCTURAL SECTION PER GEOTECHNICAL REPORT PROVIDED BY CITY OF PHOENIX AND PREPARED BY ACS SERVICES LLC, DATED DECEMBER 16, 2016. SEE REPORT FOR DETAILED RECOMMENDATIONS.

PAVEMENT STRUCTURAL SECTION NO. 1

NTS



PERMANENT PAVEMENT REPLACEMENT PER MAG 336 AND CITY SUPPLEMENTS

PAVEMENT STRUCTURAL SECTION NO. 2

NTS

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

TYPICAL SECTIONS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 3: 40TH ST TO 56TH ST
ST87600114

DR: BRR	DES: GRS	CK: CSJ	SHEET NO:	TOTAL SHEETS
DATE: 07/17	DATE: 07/17	DATE: 07/17		
SCALE: NTS		REVISED	3.05	3.99

GRAND CANALSCAPE PHASE II

SEGMENT 1

I-17 TO 15TH AVE

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
Wright Project # 16033

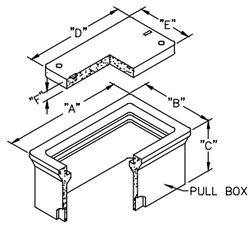
Registered Professional Engineer (Electrical) Certificate No. 57159 CLIFFORD M. TOLMAN 9-15-17 Date Signed ARIZONA U.S.A. Expires 3-31-20

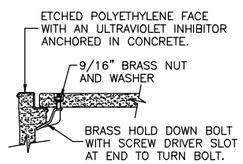
F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	1.61	1.62

TRACE CONSULTING
1201 E. Jefferson St.
Suite 3
Phoenix, AZ 85034

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE



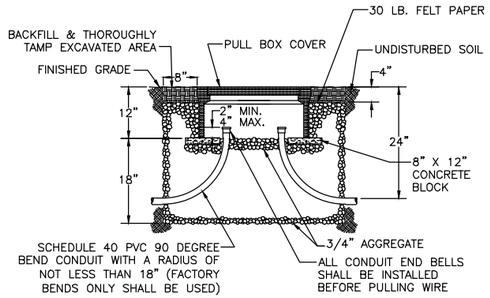


HOLD DOWN BOLT DETAIL

LID 'A'

LID 'A' REINFORCED CONCRETE W/HOLD DOWN BOLTS

DATA TABLE						
PULLBOX TYPE	PULLBOX LENGTH	PULLBOX WIDTH	PULLBOX HEIGHT	LID LENGTH	LID WIDTH	LID HEIGHT
	"A"	"B"	"C"	"D"	"E"	"F"
#3 1/2	19-3/4"	14-1/4"	12"	15-1/4"	10"	1-3/4"
#5	25-1/4"	15-3/4"	12"	20-5/8"	10-1/2"	2"
#7	34-3/4"	21-3/4"	12"	30-1/8"	17-5/8"	2"



GENERAL NOTES:

1. THE PULL BOX SHALL BE MADE OF A HIGH DENSITY REINFORCED CONCRETE MATERIAL WITH END & SIDE KNOCKOUTS, & NONSETTLING SHOULDERS TO MAINTAIN GRADE, MANUFACTURED WITH APPROXIMATE DIMENSIONS AS SHOWN.
2. STEEL REINFORCEMENT SHALL BE AS REGULARLY USED IN STANDARD PRODUCTS OF THE RESPECTIVE MANUFACTURER.
3. COVER LETTERING SHALL BE 1" LETTERS CAST IN STANDARD MARKINGS: "ELECTRIC" OR "HIGH VOLTAGE". AS REQUIRED.
4. THE PULL BOX SHALL HAVE AN ETCHED POLYETHYLENE FACE WITH AN ULTRAVIOLET INHIBITOR ANCHORED IN CONCRETE.
5. ALL CABLE & CONDUCTOR SPLICES SHALL BE CONNECTED WITH TYCO ELECTRONICS GELCAP-SL, NSI INDUSTRIES ESSLK-2/0, OR COPPER COMPRESSION H-TAP CONNECTOR OR APPROVED EQUAL & INSULATED WITH 3M SCOTCHCAST SPLICE KIT 85 SERIES, TYCO ELECTRONICS GELCAP SL, NSI INDUSTRIES GSS SERIES OR APPROVED EQUAL.

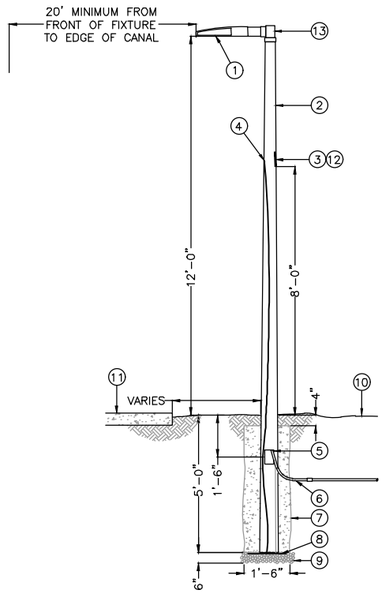
3 PULL BOX INSTALLATION

NO SCALE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

1. LED LIGHT FIXTURE WITH IES PHOTOMETRIC DISTRIBUTION PER PLANS. ALL FIXTURES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
2. DIRECT-BURIED, TAPERED, SQUARE, PRE-STRESSED, REINFORCED, SPUN CONCRETE POLE. POLES SHALL HAVE CHARCOAL COLOR, EXPOSED AGGREGATE FINISH WITH ANTI-GRAFFITI SEALER (PROVIDE SAMPLES WITH SUBMITTALS FOR COLOR APPROVAL). ALL POLES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
3. FLUSH MOUNTED HANDHOLE WITH FLUSH, TAMPERPROOF, STAINLESS STEEL SECURITY SCREWS (BUTTON TORX WITH CENTER PIN). POLE MANUFACTURER TO PLACE HANDHOLE SO THAT IT WILL BE LOCATED ABOVE FINISHED GRADE AT HEIGHT NOTED IN DETAIL TO CENTER OF HANDHOLE AFTER INSTALLATION. INSTALL POLE WITH HANDHOLE FACING AWAY FROM PATH/SIDEWALK, WHERE POSSIBLE. WHERE POLE IS INSTALLED AGAINST WALL, HANDHOLE TO FACE PATH/SIDEWALK.
4. POLE MANUFACTURER TO PROVIDE A FACTORY INSTALLED GROUND WIRE WHICH IS CONNECTED TO THE STEEL REINFORCING IN THE POLE. CONNECT THE ELECTRICAL SYSTEM GROUND WIRE TO THIS POLE GROUND WIRE.
5. APERTURE IN POLE BASE FOR UNDERGROUND WIRING. APERTURE SIZED 1-1/2" BY 5" MINIMUM. PROVIDE TWO (2) EACH POLE AT 180 DEGREES FROM EACH OTHER AND 90 DEGREES FROM HANDHOLE. TAPE OPENINGS PRIOR TO BACKFILLING THE DRILLED HOLE.
6. PVC SCHEDULE 40 CONDUIT INTO POLE BASE FOR ELECTRICAL BRANCH CIRCUIT. SEE LIGHTING SITE PLAN FOR SIZES AND QUANTITIES. CONDUITS ARE TO BE INSTALLED IN POLE TO A POINT 12" ABOVE GRADE MINIMUM.
7. AFTER POLE HAS BEEN ALIGNED AND IS PLUMB, BLOCK POLE IN PLACE UNDERGROUND, BACKFILL HOLE WITH CEMENTITIOUS EARTH BACKFILL TO A POINT 4" BELOW FINISHED GRADE, BACKFILL THE REMAINING 4" WITH SURROUNDING SOIL. CEMENTITIOUS EARTH BACKFILL - MIX ONE PART DRY CEMENT POWDER TO FIFTEEN PARTS CLEAN, WASHED SAND.
8. COIL 20' OF #8 SOLID COPPER BOND 2" BELOW POLE BASE. RUN BOND THROUGH POLE TO FACTORY INSTALLED GROUND WIRE IN HAND HOLE.
9. 1" WASHED RIVER ROCK FOR DRAINAGE, COMPACT BEFORE SETTING POLE.
10. FINISHED GRADE.
11. WHERE LIGHTS ARE INSTALLED NEXT TO PATHWAY OR SIDEWALK, MAINTAIN CLEARANCE FROM EDGE TO CENTER OF POLE AS SHOWN ON SITE PLAN.
12. PROVIDE BUSSMAN #HEB FUSE HOLDER, ON EACH UNGROUNDED CONDUCTOR, WITH 5 AMP FUSES FOR INLINE FUSING. WHERE CIRCUIT IS SPLICED IN HANDHOLE, MAKE ALL SPLICES WITH UL486D WET LISTED WIRE NUTS, EQUAL TO DRYCONN AQUA WATERPROOF CONNECTORS. PROVIDE 18" MINIMUM OF SLACK IN THE CONDUCTORS.
13. TENON MOUNT SLIPFITTER PROVIDED BY POLE MANUFACTURER, CONTRACTOR TO COORDINATE SIZE OF SLIPFITTER SO THE FIXTURE COVERS ENTIRE TENON DOWN TO THE POLE TOP MOUNTING PLATE. PAINT EXPOSED METAL MOUNTING PLATE ON TENON TO MATCH FIXTURE.



4 SQUARE CONCRETE POLE AREA LIGHT DETAIL

NO SCALE

LIGHTING NOTES

- AREA LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE II IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120-277 VARIABLE INPUT VOLTAGE
  5. 40 WATTS MAXIMUM
  6. 3,500 LUMEN OUTPUT MINIMUM
  - 6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. DIMMING REQUIREMENTS
  - 7.1. LINE VOLTAGE, TWO INPUT CIRCUIT DIMMING OF LED BOARD TO 50% LIGHT OUTPUT FOR LOWER DIM STATE AND 100% LIGHT OUTPUT FOR HIGHER DIM STATE.
  8. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  9. MATCH AESTHETIC APPEARANCE OF PHASE 1
  10. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1

1

- CONCRETE AREA LIGHT POLES ARE TO MATCH PHASE 1 POLES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  - 1.1. PRE-STRESSED, REINFORCED, SPUN CONCRETE POLE
  - 1.2. INTERNAL SPIRAL REINFORCEMENT SHALL BE NOT LESS THAT 13 GAUGE
  - 1.3. INTERNAL STEEL REINFORCEMENT TO BE A MINIMUM OF 3/4" FROM OUTER SURFACE OF POLE
  - 1.4. 28-DAY COMPRESSIVE STRENGTH OF 7000 PSI AFTER ATMOSPHERIC CURING
  - 1.5. UNIFORM SHAPE
  - 1.6. UNIFORM FINISH
  - 1.7. SURFACE TREATED WITH ANTI-GRAFFITI COATING
  2. (2) APERTURES IN BASE FOR UNDERGROUND WIRING
  3. FACTORY INSTALLED GROUNDING WIRE
  4. RAISED HANDHOLE
  - 4.1. HANDHOLE AT 8'-0" AFG OR ABOVE
  5. MATCH AESTHETIC APPEARANCE OF PHASE 1

- BOLLARD LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE V IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120-277 VARIABLE INPUT VOLTAGE
  5. 30 WATTS MAXIMUM
  6. 650 LUMEN OUTPUT MINIMUM
  - 6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  8. MATCH AESTHETIC APPEARANCE OF PHASE 1
  9. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1

- ALL FIXTURES AND POLES MUST BE APPROVED BY THE CITY PRIOR TO ACCEPTANCE.
- ALL FIXTURES AND POLES ARE TO COMPLY WITH THE FEDERAL 'BUY AMERICA' REQUIREMENTS.

Addendum 5

REVISED

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

"PER CITY OF PHOENIX CITY CODE CHAPTER 2, SECTION 2-28, THESE PLANS ARE FOR OFFICIAL USE ONLY & MAY NOT BE SHARED WITH OTHERS EXCEPT AS REQUIRED TO FULFILL THE OBLIGATIONS OF YOUR CONTRACT WITH THE CITY OF PHOENIX."

ELECTRICAL DETAILS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 1: I-17 TO 15TH AVE
ST87600114

DR: DVG	DES: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 8/13	DATE: 8/13	DATE: 8/13		
SCALE:	**SE3.2**		1.61	1.62

GRAND CANALSCAPE PHASE II
SEGMENT 1
I-17 TO 15TH AVE

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
Wright Project # 16033

Registered Professional Engineer (Electrical)
Certificate No. 57159
CLIFFORD M. TOLMAN
Date Signed 9-15-17
ARIZONA U.S.A.
Expires 3-31-20

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	1.62	1.62

TRACE CONSULTING
1201 E. Jefferson St.
Suite 3
Phoenix, AZ 85034

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX

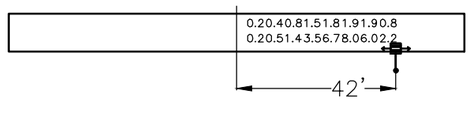
NO.	DESCRIPTION	REV BY	CHK BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

PHOTOMETRIC ANALYSIS

TYPICAL RESULTS FOR 12' MOUNTING HEIGHT

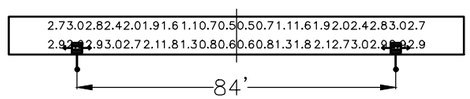
VERTICAL FC RESULTS:

MINIMUM FOOT-CANDLE 0.2
(MEASURED AT 4.9' AG FACING DIRECTION OF TRAVEL)



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	3.5
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	0.8
UNIFORMITY OF LIGHT (AVG/MIN)	4.0
(MEASURED AT GRADE)	



1

LEGEND:

LED POLE MOUNTED LIGHT FIXTURE
2700K, TYPE II DISTRIBUTION
12' MOUNTING HEIGHT
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

Addendum 5

REVISED

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TYPICAL LIGHT SPACING EXHIBIT

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 1: I-17 TO 15TH AVE
ST87600114

DR: DVG	DES: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 8/13	DATE: 8/13	DATE: 8/13		
SCALE:	**SE4.1**		1.62	1.62

GRAND CANALSCAPE PHASE II

16TH STREET TO 36TH STREET

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
Wright Project # 16027

Registered Professional Engineer (Retired) Certificate No. 57159 CLIFFORD M. TOLMAN Date Signed 4-12-17 ARIZONA U.S.A. Expires 3-31-20

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	2.181	2.182

eec ENGINEERING & ENVIRONMENTAL CONSULTANTS
CONSULTING ENGINEER

DES: DVG	DR: DVG	CK: CMT	DATE: 07/14/17

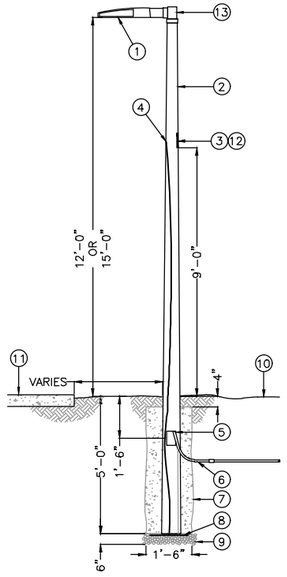
REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

1. LED LIGHT FIXTURE WITH IES PHOTOMETRIC DISTRIBUTION PER PLANS. ALL FIXTURES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
2. DIRECT–BURIED, TAPERED, SQUARE, PRE–STRESSED, REINFORCED, SPUN CONCRETE POLE. POLES SHALL HAVE CHARCOAL COLOR, EXPOSED AGGREGATE FINISH WITH ANTI–GRAFFITI SEALER (PROVIDE SAMPLES WITH SUBMITTALS FOR COLOR APPROVAL). ALL POLES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
3. FLUSH MOUNTED HANDHOLE WITH FLUSH, TAMPERPROOF, STAINLESS STEEL SECURITY SCREWS (BUTTON TORX WITH CENTER PIN). POLE MANUFACTURER TO PLACE HANDHOLE SO THAT IT WILL BE LOCATED ABOVE FINISHED GRADE AT HEIGHT NOTED IN DETAIL TO CENTER OF HANDHOLE AFTER INSTALLATION. INSTALL POLE WITH HANDHOLE FACING AWAY FROM PATH/SIDEWALK, WHERE POSSIBLE. WHERE POLE IS INSTALLED AGAINST WALL, HANDHOLE TO FACE PATH/SIDEWALK.
4. POLE MANUFACTURER TO PROVIDE A FACTORY INSTALLED GROUND WIRE WHICH IS CONNECTED TO THE STEEL REINFORCING IN THE POLE. CONNECT THE ELECTRICAL SYSTEM GROUND WIRE TO THIS POLE GROUND WIRE.
5. APERTURE IN POLE BASE FOR UNDERGROUND WIRING. APERTURE SIZED 1–1/2" BY 5" MINIMUM. PROVIDE TWO (2) EACH POLE AT 180 DEGREES FROM EACH OTHER AND 90 DEGREES FROM HANDHOLE. TAPE OPENINGS PRIOR TO BACKFILLING THE DRILLED HOLE.
6. PVC SCHEDULE 40 CONDUIT INTO POLE BASE FOR ELECTRICAL BRANCH CIRCUIT. SEE LIGHTING SITE PLAN FOR SIZES AND QUANTITIES. CONDUITS ARE TO BE INSTALLED IN POLE TO A POINT 12" ABOVE GRADE MINIMUM.
7. AFTER POLE HAS BEEN ALIGNED AND IS PLUMB, BLOCK POLE IN PLACE UNDERGROUND, BACKFILL HOLE WITH CEMENTITIOUS EARTH BACKFILL TO A POINT 4" BELOW FINISHED GRADE, BACKFILL THE REMAINING 4" WITH SURROUNDING SOIL. CEMENTITIOUS EARTH BACKFILL – MIX ONE PART DRY CEMENT POWDER TO FIFTEEN PARTS CLEAN, WASHED SAND.
8. COIL 20' OF #8 SOLID COPPER BOND. RUN BOND THROUGH POLE TO FACTORY INSTALLED GROUND WIRE IN HAND HOLE.
9. 1" WASHED RIVER ROCK FOR DRAINAGE, COMPACT BEFORE SETTING POLE.
10. FINISHED GRADE.
11. WHERE LIGHTS ARE INSTALLED NEXT TO PATHWAY OR SIDEWALK, MAINTAIN CLEARANCE FROM EDGE TO CENTER OF POLE AS SHOWN ON SITE PLAN.
12. PROVIDE BUSSMAN #HEB FUSE HOLDER, ON EACH UNGROUNDED CONDUCTOR, WITH 5 AMP FUSES FOR INLINE FUSING. WHERE CIRCUIT IS SPLICED IN HANDHOLE, MAKE ALL SPLICES WITH UL486D WET LISTED WIRE NUTS, EQUAL TO DRYCONN AQUA WATERPROOF CONNECTORS. PROVIDE 18" MINIMUM OF SLACK IN THE CONDUCTORS.
13. TENON MOUNT SLIPFITTER PROVIDED BY POLE MANUFACTURER, CONTRACTOR TO COORDINATE SIZE OF SLIPFITTER SO THE FIXTURE COVERS ENTIRE TENON DOWN TO THE POLE TOP MOUNTING PLATE. PAINT EXPOSED METAL MOUNTING PLATE ON TENON TO MATCH FIXTURE.

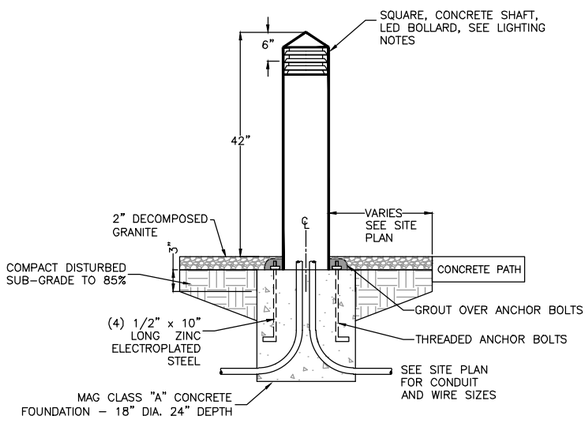


4 SQUARE CONCRETE POLE AREA LIGHT DETAIL

NO SCALE

LIGHTING NOTES

- AREA LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE II IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120–277 VARIABLE INPUT VOLTAGE
  5. 40 WATTS MAXIMUM
  6. 3,500 LUMEN OUTPUT MINIMUM
  6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. DIMMING REQUIREMENTS
  7.1. LINE VOLTAGE, TWO INPUT CIRCUIT DIMMING OF LED BOARD TO 50% LIGHT OUTPUT FOR LOWER DIM STATE AND 100% LIGHT OUTPUT FOR HIGHER DIM STATE.
  8. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  9. MATCH AESTHETIC APPEARANCE OF PHASE 1
  10. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1 1
- CONCRETE AREA LIGHT POLES ARE TO MATCH PHASE 1 POLES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  1.1. PRE–STRESSED, REINFORCED, SPUN CONCRETE POLE
  1.2. INTERNAL SPIRAL REINFORCEMENT SHALL BE NOT LESS THAT 13 GAUGE
  1.3. INTERNAL STEEL REINFORCEMENT TO BE A MINIMUM OF 3/4" FROM OUTER SURFACE OF POLE
  1.4. 28–DAY COMPRESSIVE STRENGTH OF 7000 PSI AFTER ATMOSPHERIC CURING
  1.5. UNIFORM SHAPE
  1.6. UNIFORM FINISH
  1.7. SURFACE TREATED WITH ANTI–GRAFFITI COATING
  2. (2) APERTURES IN BASE FOR UNDERGROUND WIRING
  3. FACTORY INSTALLED GROUNDING WIRE
  4. RAISED HANDHOLE
  4.1. HANDHOLE AT 8'–0" AFG OR ABOVE
  5. MATCH AESTHETIC APPEARANCE OF PHASE 1
- BOLLARD LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE V IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120–277 VARIABLE INPUT VOLTAGE
  5. 30 WATTS MAXIMUM
  6. 650 LUMEN OUTPUT MINIMUM
  6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  8. MATCH AESTHETIC APPEARANCE OF PHASE 1
  9. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1
- ALL FIXTURES AND POLES MUST BE APPROVED BY THE CITY PRIOR TO ACCEPTANCE.
- ALL BOLLARDS, FIXTURES AND POLES ARE TO COMPLY WITH THE FEDERAL 'BUY AMERICA' REQUIREMENTS.



5 SQUARE BOLLARD LIGHT DETAIL

NO SCALE

Addendum 5

REVISED

Two working days before you dig, CALL FOR THE BLUE STAKES 602–263–1100 Blue Stake Center

"CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL UNDERGROUND UTILITIES WITHIN THE PROJECT AREA."

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CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 2: 16TH ST TO 36TH ST
ST87600114

DES: DVG	DR: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 07/17	DATE: 07/17	DATE: 07/17		
SCALE: **SE3.3**			2.181	2.182

GRAND CANALSCAPE PHASE II

16TH STREET TO 36TH STREET

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
Wright Project # 16027

Registered Professional Engineer (Retired) Certificate No. 57159 CLIFFORD M. TOLMAN Date Signed 4-17-17 ARIZONA U.S.A. Expires 3-31-20

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	2.182	2.182

eec ENGINEERING & ENVIRONMENTAL CONSULTANTS
CONSULTING ENGINEER

DES: DVG	DR: DVG	CK: CMT	DATE: 07/14/17

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CKD BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

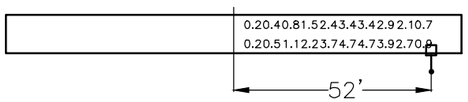
PHOTOMETRIC ANALYSIS

TYPICAL RESULTS FOR 15' MOUNTING HEIGHT

15' MOUNTING HEIGHT TO BE USED AS STANDARD FIXTURE HEIGHT, EXCEPT WHERE OVERHEAD ELECTRICAL IS PRESENT.

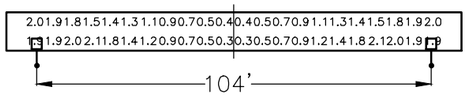
VERTICAL FC RESULTS:

MINIMUM FOOT-CANDLE 0.2
(MEASURED AT 4.9' AG FACING DIRECTION OF TRAVEL)



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	2.5
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	0.8
UNIFORMITY OF LIGHT (AVG/MIN)	4.0
(MEASURED AT GRADE)	



LEGEND:

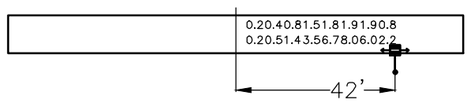
LED POLE MOUNTED LIGHT FIXTURE
2700K, TYPE II DISTRIBUTION
15' MOUNTING HEIGHT
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

TYPICAL RESULTS FOR 12' MOUNTING HEIGHT

12' MOUNTING HEIGHT TO BE USED ONLY WHERE OVERHEAD ELECTRICAL IS PRESENT.

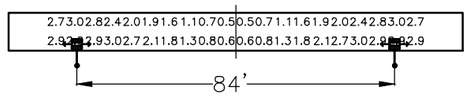
VERTICAL FC RESULTS:

MINIMUM FOOT-CANDLE 0.2
(MEASURED AT 4.9' AG FACING DIRECTION OF TRAVEL)



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	3.5
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	0.8
UNIFORMITY OF LIGHT (AVG/MIN)	4.0
(MEASURED AT GRADE)	



LEGEND:

LED POLE MOUNTED LIGHT FIXTURE
2700K, TYPE II DISTRIBUTION
12' MOUNTING HEIGHT
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

TYPICAL RESULTS FOR BOLLARD LIGHTS

HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	1.5
MINIMUM FOOT-CANDLE	0.1
AVERAGE FOOT-CANDLE	0.6
UNIFORMITY OF LIGHT (AVG/MIN)	5.9

LEGEND:

LED BOLLARD LIGHT FIXTURE
2700K, TYPE V DISTRIBUTION
3'-6" MOUNTING HEIGHT

Two working days before you dig, CALL FOR THE BLUE STAKES 602-263-1100 Blue Stake Center

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CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 2: 16TH ST TO 36TH ST
ST87600114

DES: DVG	DR: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 07/17	DATE: 07/17	DATE: 07/17		
SCALE:	**SE4.1**		2.182	2.182

Addendum 5

REVISED

GRAND CANALSCAPE PHASE II

SEGMENT 3

40TH ST TO 56TH ST

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV BY	CHK BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

WRIGHT engineering corporation
ELECTRICAL ENGINEERING AND DESIGN
165 EAST CHILTON DRIVE
CHANDLER, ARIZONA 85225
PHONE: 480.497.5829
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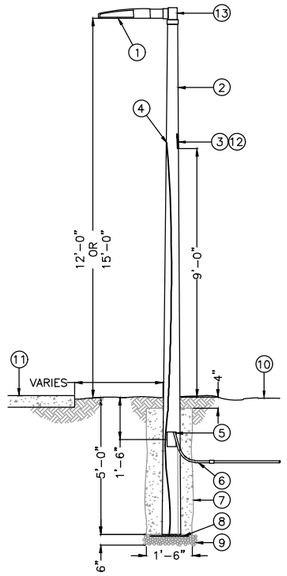
www.wrightengineering.us
Wright Project # 16033

Registered Professional Engineer (Electrical) Certificate No. 57159 CLIFFORD M. TOLMAN Date Signed 9-15-17 ARIZONA U.S.A. Expires 3-31-20

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	3.98	3.99

TRACE CONSULTING
1201 E. Jefferson St.
Suite 3
Phoenix, AZ 85034

1. LED LIGHT FIXTURE WITH IES PHOTOMETRIC DISTRIBUTION PER PLANS. ALL FIXTURES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
2. DIRECT–BURIED, TAPERED, SQUARE, PRE–STRESSED, REINFORCED, SPUN CONCRETE POLE. POLES SHALL HAVE CHARCOAL COLOR, EXPOSED AGGREGATE FINISH WITH ANTI–GRAFFITI SEALER (PROVIDE SAMPLES WITH SUBMITTALS FOR COLOR APPROVAL). ALL POLES ARE TO BE PROVIDED FROM THE SAME MANUFACTURER. SEE LIGHTING NOTE THIS SHEET.
3. FLUSH MOUNTED HANDHOLE WITH FLUSH, TAMPERPROOF, STAINLESS STEEL SECURITY SCREWS (BUTTON TORX WITH CENTER PIN). POLE MANUFACTURER TO PLACE HANDHOLE SO THAT IT WILL BE LOCATED ABOVE FINISHED GRADE AT HEIGHT NOTED IN DETAIL TO CENTER OF HANDHOLE AFTER INSTALLATION. INSTALL POLE WITH HANDHOLE FACING AWAY FROM PATH/SIDEWALK, WHERE POSSIBLE. WHERE POLE IS INSTALLED AGAINST WALL, HANDHOLE TO FACE PATH/SIDEWALK.
4. POLE MANUFACTURER TO PROVIDE A FACTORY INSTALLED GROUND WIRE WHICH IS CONNECTED TO THE STEEL REINFORCING IN THE POLE. CONNECT THE ELECTRICAL SYSTEM GROUND WIRE TO THIS POLE GROUND WIRE.
5. APERTURE IN POLE BASE FOR UNDERGROUND WIRING. APERTURE SIZED 1–1/2" BY 5" MINIMUM. PROVIDE TWO (2) EACH POLE AT 180 DEGREES FROM EACH OTHER AND 90 DEGREES FROM HANDHOLE. TAPE OPENINGS PRIOR TO BACKFILLING THE DRILLED HOLE.
6. PVC SCHEDULE 40 CONDUIT INTO POLE BASE FOR ELECTRICAL BRANCH CIRCUIT. SEE LIGHTING SITE PLAN FOR SIZES AND QUANTITIES. CONDUITS ARE TO BE INSTALLED IN POLE TO A POINT 12" ABOVE GRADE MINIMUM.
7. AFTER POLE HAS BEEN ALIGNED AND IS PLUMB, BLOCK POLE IN PLACE UNDERGROUND, BACKFILL HOLE WITH CEMENTITIOUS EARTH BACKFILL TO A POINT 4" BELOW FINISHED GRADE, BACKFILL THE REMAINING 4" WITH SURROUNDING SOIL. CEMENTITIOUS EARTH BACKFILL – MIX ONE PART DRY CEMENT POWDER TO FIFTEEN PARTS CLEAN, WASHED SAND.
8. COIL 20' OF #8 SOLID COPPER BOND. RUN BOND THROUGH POLE TO FACTORY INSTALLED GROUND WIRE IN HAND HOLE.
9. 1" WASHED RIVER ROCK FOR DRAINAGE, COMPACT BEFORE SETTING POLE.
10. FINISHED GRADE.
11. WHERE LIGHTS ARE INSTALLED NEXT TO PATHWAY OR SIDEWALK, MAINTAIN CLEARANCE FROM EDGE TO CENTER OF POLE AS SHOWN ON SITE PLAN.
12. PROVIDE BUSSMAN #HEB FUSE HOLDER, ON EACH UNGROUNDED CONDUCTOR, WITH 5 AMP FUSES FOR INLINE FUSING. WHERE CIRCUIT IS SPLICED IN HANDHOLE, MAKE ALL SPLICES WITH UL486D WET LISTED WIRE NUTS, EQUAL TO DRYCONN AQUA WATERPROOF CONNECTORS. PROVIDE 18" MINIMUM OF SLACK IN THE CONDUCTORS.
13. TENON MOUNT SLIPFITTER PROVIDED BY POLE MANUFACTURER, CONTRACTOR TO COORDINATE SIZE OF SLIPFITTER SO THE FIXTURE COVERS ENTIRE TENON DOWN TO THE POLE TOP MOUNTING PLATE. PAINT EXPOSED METAL MOUNTING PLATE ON TENON TO MATCH FIXTURE.



4 SQUARE CONCRETE POLE AREA LIGHT DETAIL

NO SCALE

LIGHTING NOTES

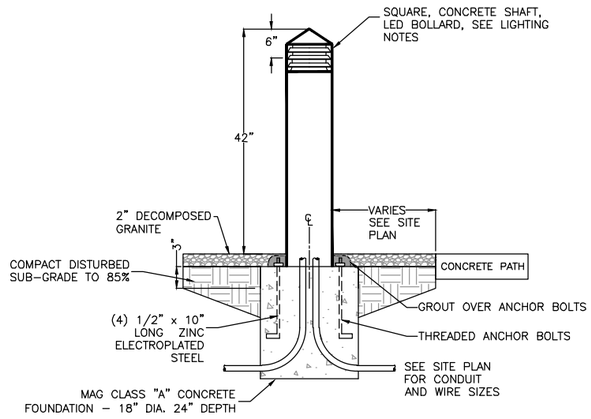
- AREA LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE II IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120–277 VARIABLE INPUT VOLTAGE
  5. 40 WATTS MAXIMUM
  6. 3,500 LUMEN OUTPUT MINIMUM
     6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. DIMMING REQUIREMENTS
     7.1. LINE VOLTAGE, TWO INPUT CIRCUIT DIMMING OF LED BOARD TO 50% LIGHT OUTPUT FOR LOWER DIM STATE AND 100% LIGHT OUTPUT FOR HIGHER DIM STATE.
  8. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  9. MATCH AESTHETIC APPEARANCE OF PHASE 1
  10. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1

1

- CONCRETE AREA LIGHT POLES ARE TO MATCH PHASE 1 POLES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. MATCH BUILD AND FINISH QUALITY OF PHASE 1
     1.1. PRE–STRESSED, REINFORCED, SPUN CONCRETE POLE
     1.2. INTERNAL SPIRAL REINFORCEMENT SHALL BE NOT LESS THAT 13 GAUGE
     1.3. INTERNAL STEEL REINFORCEMENT TO BE A MINIMUM OF 3/4" FROM OUTER SURFACE OF POLE
     1.4. 28–DAY COMPRESSIVE STRENGTH OF 7000 PSI AFTER ATMOSPHERIC CURING
     1.5. UNIFORM SHAPE
     1.6. UNIFORM FINISH
     1.7. SURFACE TREATED WITH ANTI–GRAFFITI COATING
  2. (2) APERTURES IN BASE FOR UNDERGROUND WIRING
  3. FACTORY INSTALLED GROUNDING WIRE
  4. RAISED HANDHOLE
     4.1. HANDHOLE AT 8'–0" AFG OR ABOVE
  5. MATCH AESTHETIC APPEARANCE OF PHASE 1

- BOLLARD LIGHT FIXTURES ARE TO MATCH PHASE 1 FIXTURES AS CLOSE AS POSSIBLE IN THE FOLLOWING:
  1. TYPE V IES PHOTOMETRIC DISTRIBUTION
  2. MEET LIGHTING REQUIREMENTS AS SEEN IN PHOTOMETRIC CALCULATIONS
  3. 2,700K CORRELATED COLOR TEMPERATURE OF LIGHT
  4. 120–277 VARIABLE INPUT VOLTAGE
  5. 30 WATTS MAXIMUM
  6. 650 LUMEN OUTPUT MINIMUM
     6.1. MINIMUM LUMEN OUTPUT MUST MATCH OR EXCEED
  7. MATCH BUILD AND FINISH QUALITY OF PHASE 1
  8. MATCH AESTHETIC APPEARANCE OF PHASE 1
  9. MATCH ELECTRICAL CERTIFICATIONS OF PHASE 1

- ALL FIXTURES AND POLES MUST BE APPROVED BY THE CITY PRIOR TO ACCEPTANCE.
- ALL BOLLARDS, FIXTURES AND POLES ARE TO COMPLY WITH THE FEDERAL 'BUY AMERICA' REQUIREMENTS.



5 SQUARE BOLLARD LIGHT DETAIL

NO SCALE

Addendum 5

REVISED

Contact Arizona 811 at least two full working days before you begin excavation
ARIZONA811
Call 811 or click Arizona811.com

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ELECTRICAL DETAILS

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 3: 40TH ST TO 56TH ST
ST87600114

DR: DVG	DES: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 7/13	DATE: 7/13	DATE: 7/13		
SCALE:	**SE3.3**		3.98	3.99

GRAND CANALSCAPE PHASE II
SEGMENT 3
40TH ST TO 56TH ST

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
Wright Project # 16033

Registered Professional Engineer (Electrical) Certificate No. 57159 CLIFFORD M. TOLMAN Date Signed 9-15-17 ARIZONA U.S.A. Expires 3-31-20

F.H.W.A. REGION	STATE	PROJ. NO.	NO.	TOTAL
9	ARIZ.	ST87600114	3.99	3.99

TRACE CONSULTING
1201 E. Jefferson St.
Suite 3
Phoenix, AZ 85034

REVISION BY CITY OF PHOENIX

NO.	DESCRIPTION	REV BY	CHK BY	DATE

REVISION BY CITY OF PHOENIX

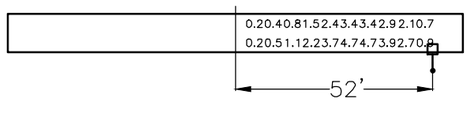
NO.	DESCRIPTION	REV BY	CHK BY	DATE
1	ADDENDUM 5	DVG	CMT	9-17

PHOTOMETRIC ANALYSIS

TYPICAL RESULTS FOR 15' MOUNTING HEIGHT

15' MOUNTING HEIGHT TO BE USED AS STANDARD FIXTURE HEIGHT, EXCEPT WHERE OVERHEAD ELECTRICAL IS PRESENT.

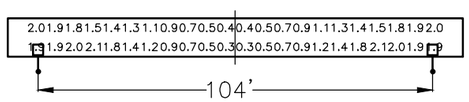
VERTICAL FC RESULTS:
MINIMUM FOOT-CANDLE 0.2
(MEASURED AT 4.9' AG FACING DIRECTION OF TRAVEL)



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	2.5
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	0.8
UNIFORMITY OF LIGHT (AVG/MIN)	4.0

(MEASURED AT GRADE)

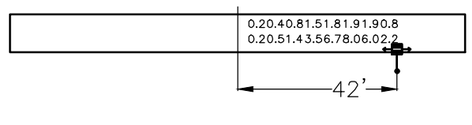


LEGEND:
LED POLE MOUNTED LIGHT FIXTURE
2700K, TYPE II DISTRIBUTION
15' MOUNTING HEIGHT
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

TYPICAL RESULTS FOR 12' MOUNTING HEIGHT

12' MOUNTING HEIGHT TO BE USED ONLY WHERE OVERHEAD ELECTRICAL IS PRESENT.

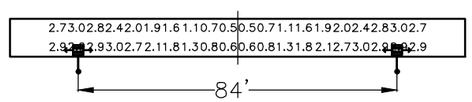
VERTICAL FC RESULTS:
MINIMUM FOOT-CANDLE 0.2
(MEASURED AT 4.9' AG FACING DIRECTION OF TRAVEL)



HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	3.5
MINIMUM FOOT-CANDLE	0.2
AVERAGE FOOT-CANDLE	0.8
UNIFORMITY OF LIGHT (AVG/MIN)	4.0

(MEASURED AT GRADE)

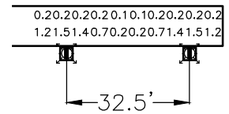


LEGEND:
LED POLE MOUNTED LIGHT FIXTURE
2700K, TYPE II DISTRIBUTION
12' MOUNTING HEIGHT
5' BACK OF PATH (TYPICAL, SOME LOCATIONS VARY SLIGHTLY)

TYPICAL RESULTS FOR BOLLARD LIGHTS

HORIZONTAL FC RESULTS:

MAXIMUM FOOT-CANDLE	1.5
MINIMUM FOOT-CANDLE	0.1
AVERAGE FOOT-CANDLE	0.6
UNIFORMITY OF LIGHT (AVG/MIN)	5.9



LEGEND:
LED BOLLARD LIGHT FIXTURE
2700K, TYPE V DISTRIBUTION
3'-6" MOUNTING HEIGHT

Addendum 5

REVISED

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ARIZONA811
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TYPICAL PATH LIGHT SPACING EXHIBIT

CITY OF PHOENIX, ARIZONA
STREET TRANSPORTATION DEPARTMENT

GRAND CANALSCAPE PHASE II
SEGMENT 3: 40TH ST TO 56TH ST
ST87600114

DR: DVG	DES: DVG	CK: CMT	SHEET NO:	TOTAL SHEETS
DATE: 7/13	DATE: 7/13	DATE: 7/13		
SCALE:	**SE4.1**		3.99	3.99