

NO	DESCRIPTION OF REVISIONS				MADE BY	DATE
	1	2	3	4		

CODE	JUNCTION BARS
A	THREE-POSITION MOLDS
B	FIVE-POSITION MOLDS
C	EIGHT-POSITION MOLDS
D	TWO-POSITION GEL PACKS
N	NO CONNECTORS

8655. _____
8656. _____
8657. _____

SEE NOTE 10 AND 11
SMALL BOX
SEE NOTE 10 AND 12
MEDIUM BOX
SEE NOTE 13
LARGE BOX
IF APPLICABLE
G = APS GROUT PROVIDED
IF APPLICABLE
L = LIGHTS
D = DUSK-TO-DAWN
SECONDARY WIRE CODES
JUNCTION BARS

NOTES:

1. CONCRETE GROUT SHALL BE PREMIX, APN 71301280 OR EQUIVALENT.

2. PENTA-HEAD BOLTS SHALL BE INSTALLED PRIOR TO ENERGIZING NEW UNDERGROUND SYSTEMS. LOST OR MISPLACED PENTA-HEAD BOLTS SHALL BE REPLACED WITH APN 71402608.

3. BRINGING ALL CABLE/CONDUITS AND GROUND ROD INTO THE SAME END OF THE BOX TO ENABLE CABLES TO BE RAISED AND LOWERED EASILY. CONDUIT SWEEPS SHALL BE POSITIONED AND ALIGNED SO THAT WHEN TWO AND FOUR POSITION JUNCTION BARS ARE SPECIFIED, THE ST. LT., SECONDARY AND SERVICE CONDUITS SHALL BE INSTALLED AS SHOWN IN DETAIL "A". WHEN SIX POSITION JUNCTION BARS ARE SPECIFIED, THE ST. LT., SECONDARY AND SERVICE CONDUITS SHALL BE INSTALLED AS SHOWN IN DETAIL "B".

4. COMPACTION BENEATH AND AROUND JUNCTION BOX SHALL BE A MINIMUM OF 85 PERCENT.

5. REPLACEMENT LID FOR MEDIUM PLASTIC JUNCTION BOX IS 33100981. PENTAHEAD BOLTS AND EMS MARKER MUST BE REUSED FROM OLD LID.

6. ADDITIONAL TRENCH DEPTH IS USUALLY REQUIRED AT ALL EQUIPMENT LOCATIONS. SEE 8648 FOR THE MINIMUM TRENCH DEPTHS AND THE DEGREE OF SLOPE ALLOWED AS THE TRENCH DEPTH CHANGES.

7. ON 277 VOLT STREET LIGHT CIRCUITS, INSTALL "277 VOLT" RED MICARTA TAG (APN 00080796) PROVIDED BY SPEC 8129.

8. TORQUE BOLTS TO 5 FT - LBS (60 IN - LBS).

aps

ARIZONA PUBLIC SERVICE COMPANY
T&D CONSTRUCTION STANDARDS

BY	LDR.	MGR.	DATE	REV.
LMO	B. BOOKER	R. CANDRA	12/2015	10

SUBSTRUCTURES
JUNCTION BOX
LIGHT DUTY PLASTIC
FOR SECONDARY AND SERVICE

SH 1 OF 2
8655
THRU
8657

9. CONDUIT SWEEPS SHALL BE 90 DEGREES.

10. GEL PACK CONNECTORS ARE PREFERRED FOR ALL TWO POSITION APPLICATIONS FOR CABLE SIZES #1/0 AL AND SMALLER.

11. THE SMALL JUNCTION BOX (8655) IS SUITABLE FOR USE WITH THE THREE POSITION JUNCTION BARS. CONDUIT POSITIONS ENTERING THE JUNCTION BOX SHALL BE LIMITED TO THREE (INCLUDES ST LT CONDUIT) OR LESS. USE THE MEDIUM OR LARGER JUNCTION BOX FOR #4/0 AL AND LARGER CABLE. THIS BOX IS RECOMMENDED FOR SECONDARY/SERVICE CABLE #1/0 AL AND SMALLER. FOR STREET LIGHT CIRCUITS WHERE THE JUNCTION BOX MUST BE INSTALLED IN THE SIDEWALK, 8663 IS THE PREFERRED BOX.

12. THE MEDIUM JUNCTION BOX (8656) IS SUITABLE FOR USE WITH THE THREE OR FIVE POSITION JUNCTION BARS. CONDUIT POSITIONS ENTERING THE JUNCTION BOX SHALL BE LIMITED TO FIVE (INCLUDES ST LT CONDUIT) OR LESS. THIS BOX IS RECOMMENDED FOR SECONDARY/SERVICE CABLE #4/0 AL AND SMALLER.

13. THE LARGE JUNCTION BOX (8657) IS SUITABLE FOR USE WITH THE FIVE OR EIGHT POSITION JUNCTION BARS. WHEN MORE THAN FIVE (INCLUDES ST LT CONDUIT) CONDUIT POSITIONS WILL BE ENTERING THE J-BOX, THE LARGE JUNCTION BOX IS PREFERABLE. THIS BOX IS RECOMMENDED FOR SECONDARY/SERVICE CABLE 500 KCMIL AL AND SMALLER.

14. THESE JUNCTION BOXES SHALL NOT BE INSTALLED IN A VEHICULAR TRAFFIC AREA.

15. AN ELECTRONIC MARKER IS PROVIDED WITH THE J-BOX. THE MARKER IS SCREWED INTO THE J-BOX LID.

16. THIS SPEC WILL NOT AUTOMATICALLY SUPPLY GROUT FROM APS. THE LETTER "G" MUST BE PLACED AT THE END OF THE CODE FOR THE GROUT TO BE SUPPLIED BY APS AND TO BE ORDERED ON THE BILL OF MATERIALS.

17. FOR 277 VOLT STREET LIGHT CIRCUITS, THE "277 VOLT" RED MICARTA TAGS (APN 00080796) ARE PROVIDED BY SPEC 8129.

18. SEE 1226 FOR CABLE MARKER INSTALLATION DETAILS.

19. MINIMUM BENDING RADIUS FOR CABLE IS SPECIFIED IN SPEC 6210.

DETAIL "A"

SPACE ALLOTMENT FOR CONDUITS AND GROUND ROD NOTE 3

DETAIL "B"

SPACE ALLOTMENT FOR CONDUITS AND GROUND ROD NOTE 3

CODE		8655	8656	8657	MATERIAL LIST		
ITEM	QTY	VAR	VAR	VAR	DESCRIPTION	APN	
1	VAR	VAR	VAR	VAR	BAR INSUL - SEE 2508 AND 2725-29		
2	1	-	-	-	BOX JUNCTION 10"x15"x12"	33100960	
3	-	1	-	-	BOX JUNCTION 14"x24"x15"	33100990	
4	-	-	1	-	BOX JUNCTION 17"x30"x18"	33100993	
5	VAR	VAR	VAR	VAR	CONCRETE PRE-MIX 25#	71301280	
6	VAR	VAR	VAR	VAR	RING, PVC SEC SERVICE ID	72202162	
7	VAR	VAR	VAR	VAR	TIE CABLE MAX 2 IN OD	00103864	

aps

ARIZONA PUBLIC SERVICE COMPANY
T&D CONSTRUCTION STANDARDS

BY	LDR.	MGR.	DATE	REV.
LMO	B. BOOKER	R. CANDRA	12/2015	10

SUBSTRUCTURES
JUNCTION BOX
LIGHT DUTY PLASTIC
FOR SECONDARY AND SERVICE

SH 2 OF 2
8655
THRU
8657

APS PULLBOX STANDARD DETAIL

DESIGN	A GUPTA	DATE	3/17
DRAWN	A CICCARELLO		3/17
CHECKED	A GUPTA		3/17

TRANSPORTATION

AECOM TECHNICAL SERVICES, Inc.
7750 N. 16th Street, Suite 100
Phoenix, Arizona 85020
T 602.371.1100

AECOM
www.aecom.com

ROUTE	LOCATION
SR 287	FLORENCE BLVD PEDESTRIAN HYBRID BEACON

TRACS NO.	T0055 01C	HSIP-CSG-0(206)T
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ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
TRAFFIC ELECTRICAL DESIGN

PEDESTRIAN HYBRID BEACON
DETAILS

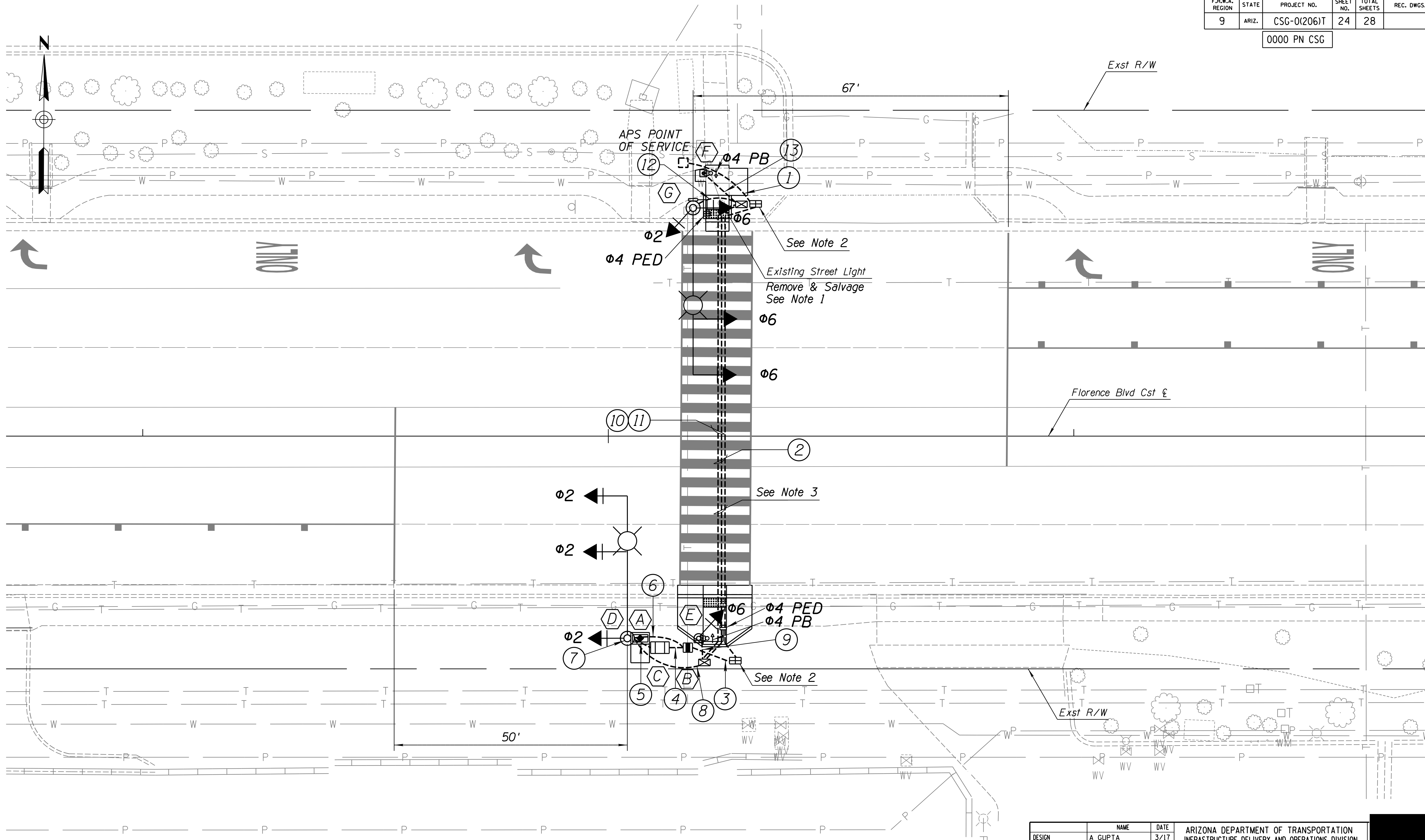
DWG NO: T-09.02

OF

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3/23/2017 @ 2:16:00 PM by: ciccarelloa

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	REC. DWGS.
9	ARIZ.	CSG-0(206)T	24	28	

0000 PN CSG

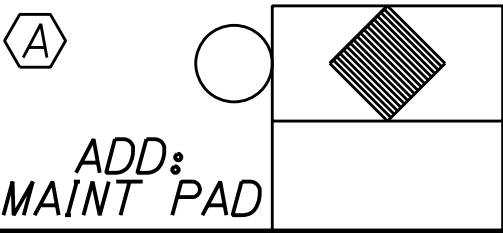
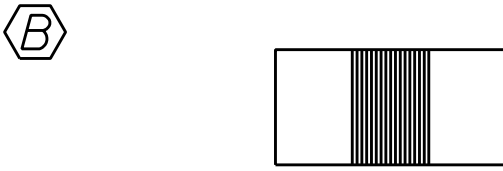
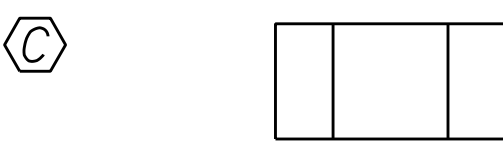


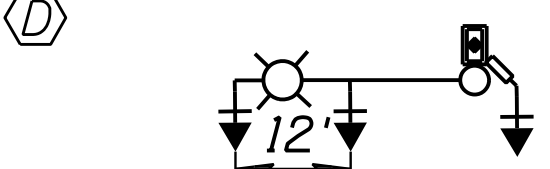
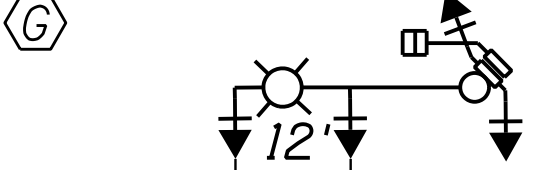
- NOTES:**
1. Remove foundation a minimum of 2' below grade.
 2. APS Furnished Pull Box
 3. Conduit run numbers 2,10 and 11 shall be HDPE conduits, installed by directional drilling. All other conduit runs shall use PVC conduits.

	NAME		DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION TRAFFIC ELECTRICAL DESIGN
DESIGN	A GUPTA		3/17	
DRAWN	A CICCARELLO		3/17	
CHECKED	A GUPTA		3/17	
TRANSPORTATION AECOM TECHNICAL SERVICES, Inc. 7720 N. 16th Street, Suite 100 Phoenix, Arizona 85020 T 602.371.1100 AECOM www.aecom.com				PEDESTRIAN HYBRID BEACON PLAN
ROUTE		LOCATION		
SR 287		FLORENCE BLVD PEDESTRIAN HYBRID BEACON		
TRACS NO.		T0055 01C	HSIP-CSG-0(206)T	DWG NO: T-10.01 ___ OF ___

NO	1	2	3	4
MADE BY				
DATE				
DESCRIPTION OF REVISIONS				

POLE SCHEDULE

TRAFFIC SIGNAL CONTROLLER		REMARKS	AUX. CONTROL	LOCATION
CABINET	TYPE			
	ATC CABINET HOUSING 2 (POLE MOUNTED)	MPS, 8-PHASE MENU DRIVEN W/LCD DISPLAY		STA. 190+04.09 44.2' Rt
	TYPE I METER PEDESTAL	FULLY-METERED SERVICE 120 VAC	T.S. 2-6 T.S. 3-5	20-AMP FUSED LIGHTING CONTACTOR AND PHOTOCELL
	BATTERY BACKUP			STA. 190+11.09 45.4' Rt

POLE	TYPE	MAST ARM		SIGNALS		PPB SIGN	REMARKS	LOCATION
		SIG.	LUM.	MTG.	FACE			
	TYPE Q	30'	20'	II II V	T T T		MVOLT 25L 3000K LED LUMINAIRE	STA. 190+04.09 43.4' Rt
	TYPE A (10')			IV V	T M/H	R10-3e(R)		STA. 190+19.41 43.4' Rt
	PED PB POST					R10-3e(L)		STA. 190+20.43 56.5' Lt
	TYPE Q	35'	20'	II II VII V	T T (2)T M/H		MVOLT 25L 3000K LED LUMINAIRE	STA. 190+18.21 49.0' Lt

NOTES:

- A RAISED PCC PAD, 48"X4"X48" SHALL BE PLACED BY THE CONTRACTOR IN FRONT OF THE CABINET. PAD SHALL BE SLOPED AWAY FROM THE CABINET FOR DRAINAGE (2% MIN). ALL LABOR, EQUIPMENT AND MATERIALS FOR MAINTENANCE PAD SHALL BE PAID UNDER ITEM 9080245 CONCRETE (MAINTENANCE PAD).
- ELECTRICAL SERVICE SHALL BE METERED.
- SEE DRAWINGS T-7.01 AND T-7.02 SIGNS MOUNTED ON MAST ARMS AND/OR POLES.
- THE CONTRACTOR SHALL CONTACT THE ADOT TRAFFIC SIGNAL INSPECTOR, TONY BARCELO AT (520) 838-2842, FOR REVIEW AND APPROVAL BEFORE DRILLING POLES FOR PED BUTTONS & SIGNAL MOUNTINGS.
- LED COUNTDOWN PEDESTRIAN SIGNALS SHALL BE USED.
- EXACT LOCATIONS AND ORIENTATIONS OF ALL POLES, PULL BOXES AND CABINETS SHALL BE FIELD VERIFIED WITH AND APPROVED BY THE ENGINEER PRIOR TO EXCAVATION, AVOIDING CONFLICTS WITH EXISTING UTILITIES AND FEATURES.
- A SEPARATE 20-CONDUCTOR IMSA CABLE SHALL RUN UNSPLICED FROM CONTROLLER CABINET TO THE SIDE MOUNT TERMINAL COMPARTMENT OF EACH POLE. 10-CONDUCTOR IMSA CABLE SHALL BE USED FOR CONNECTING THE SIGNAL HEAD, PEDESTRIAN SIGNAL HEAD AND PUSHBUTTON ON THE A-POLE TO THE CABINET AND SHALL RUN UNSPLICED. 7-CONDUCTOR IMSA CABLES SHALL BE USED FROM SIDE MOUNT TERMINAL COMPARTMENT TO EACH MAST ARM SIGNAL HEAD. 4-CONDUCTOR IMSA CABLES SHALL BE USED FROM SIDE MOUNT TERMINAL COMPARTMENT TO EACH PEDESTRIAN SIGNAL AND PEDESTRIAN PUSH BUTTON.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	REC. DWGS.
9	ARIZ.	CSG-0(206)T	25	28	

CONDUCTOR SCHEDULE

CONDUCTOR SCHEDULE														0000 PN CSG	
	CONDUIT RUN NUMBER		1	2	3	4	5	6	7	8	9	10	11	12	13
	CONDUIT SIZE IN INCHES		2 1/2	3	2 1/2	2	2	2	**	3	2	3	3	3	2
AWG	CIRCUIT PHASE		NUMBER OF WIRES												
IMSA ✱	20-CONDUCTOR IMSA CABLE								1	1			1	1	
	10-CONDUCTOR IMSA CABLE									1	1				
	7-CONDUCTOR IMSA CABLE								3						
	4-CONDUCTOR IMSA CABLE													1	1
#8	INSULATED BOND (GREEN) 					1	1	1	1	1	1	1	1	1	1
	SERVICE 120 VOLT BLACK					1	1	1	2	1		1		1	
	SERVICE 120 VOLT WHITE					1	1	1	2	1		1		1	
	COMMON (WHITE)								1	1		1	1	1	
◇	SERVICE 120 VOLTS		◇	◇	◇										

* ALL IMSA CABLE SHALL BE #14 AWG IMSA 19-1, SOLID CONDUCTOR.

● A CRIMP CONNECTION SHALL BE USED FOR SPLICING IN PULL BOX.

◇ CONDUCTORS BY APS. CONDUIT WITH MULE TAPE, CONDUIT PER APS REQUIREMENTS.

** 2 1/2" CONDUIT NIPPLE, SEE DWG NO. T-12.03

IMSA CABLE ASSIGNMENTS

IMSA CABLE 19-1, #14 AWG SOLID, 4-CONDUCTOR & 7-CONDUCTOR

HYBRID BEACON HEADS	
7 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	RED1
BLACK	RED2
GREEN	SPARE
ORANGE	YELLOW
BLUE	SPARE
WHITE	COMMON
WHITE/BLK TR	SPARE

PEDESTRIAN HEAD	
4 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	DONT WALK
BLACK	SPARE
GREEN	WALK
WHITE	COMMON

PEDESTRIAN PUSHBUTTON	
4 CONDUCTOR CABLE	
BASIC COLOR	SIGNAL INTERVAL
RED	PUSHBUTTON
BLACK	SPARE
GREEN	SPARE
WHITE	PPB COMMON

IMSA CABLE 19-1, #14 AWG, 20-CONDUCTOR

	CONDUCTOR COLOR		SIGNAL INTERVAL/USE
	BASIC COLOR	TRACER STRIPE	
PEDESTRIAN HYBRID BEACON CABLE ASSIGNMENTS	RED	WHITE	
	BLACK	WHITE	
	GREEN	WHITE	
	RED		RED1
	ORANGE		YELLOW
	GREEN		
	BLACK	RED	
	ORANGE	RED	
	BLUE	RED	
	RED	BLACK	RED2
	ORANGE	BLACK	
	GREEN	BLACK	
	BLUE		WALK
	BLACK		DONT WALK
	WHITE	BLACK	PUSH BUTTON
	BLUE	WHITE	
	RED	GREEN	
	WHITE	RED	
	WHITE		P.B. COMMON
	BLUE	BLACK	

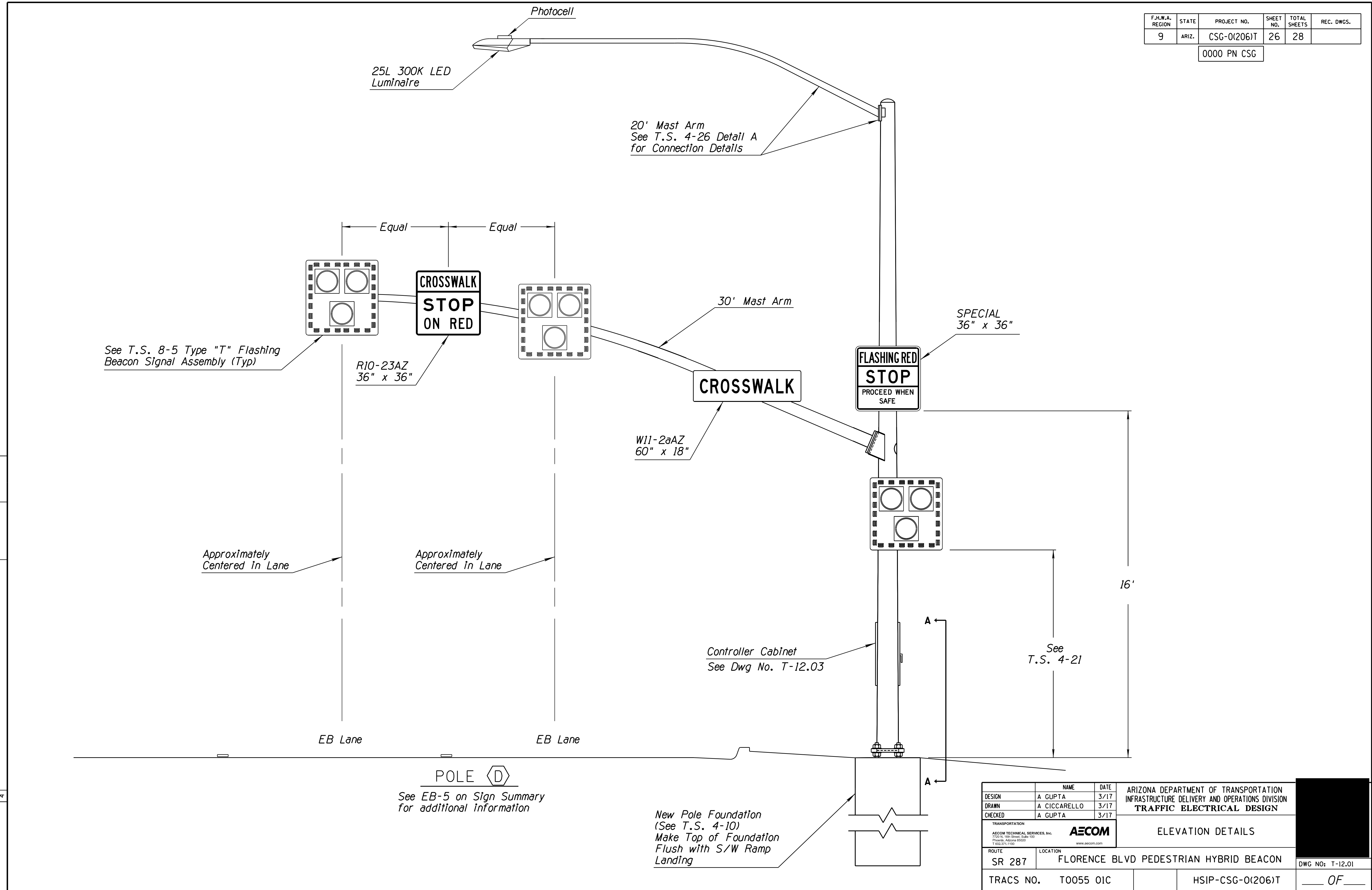
INDIVIDUAL CONDUCTORS IN THE CABLE SHALL BE TAGGED AS TO ASSIGNED SIGNAL INTERVAL/USE.

	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION TRAFFIC ELECTRICAL DESIGN
DESIGN	A GUPTA	3/17	
DRAWN	A CICCARELLO	3/17	
CHECKED	A GUPTA	3/17	
TRANSPORTATION			PEDESTRIAN HYBRID BEACON POLE & CONDUCTOR SCHEDULES
AECOM TECHNICAL SERVICES, Inc. 7750 N. 16th Street, Suite 100 Phoenix, Arizona 85020 T 602.371.1100 www.aecom.com			
ROUTE			
LOCATION			
SR 287			FLORENCE BLVD PEDESTRIAN HYBRID BEACON
TRACS NO.		T0055 01C	HSIP-CSG-0(206)T

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	REC. DWGS.
9	ARIZ.	CSG-0(206)T	26	28	

0000 PN CSG

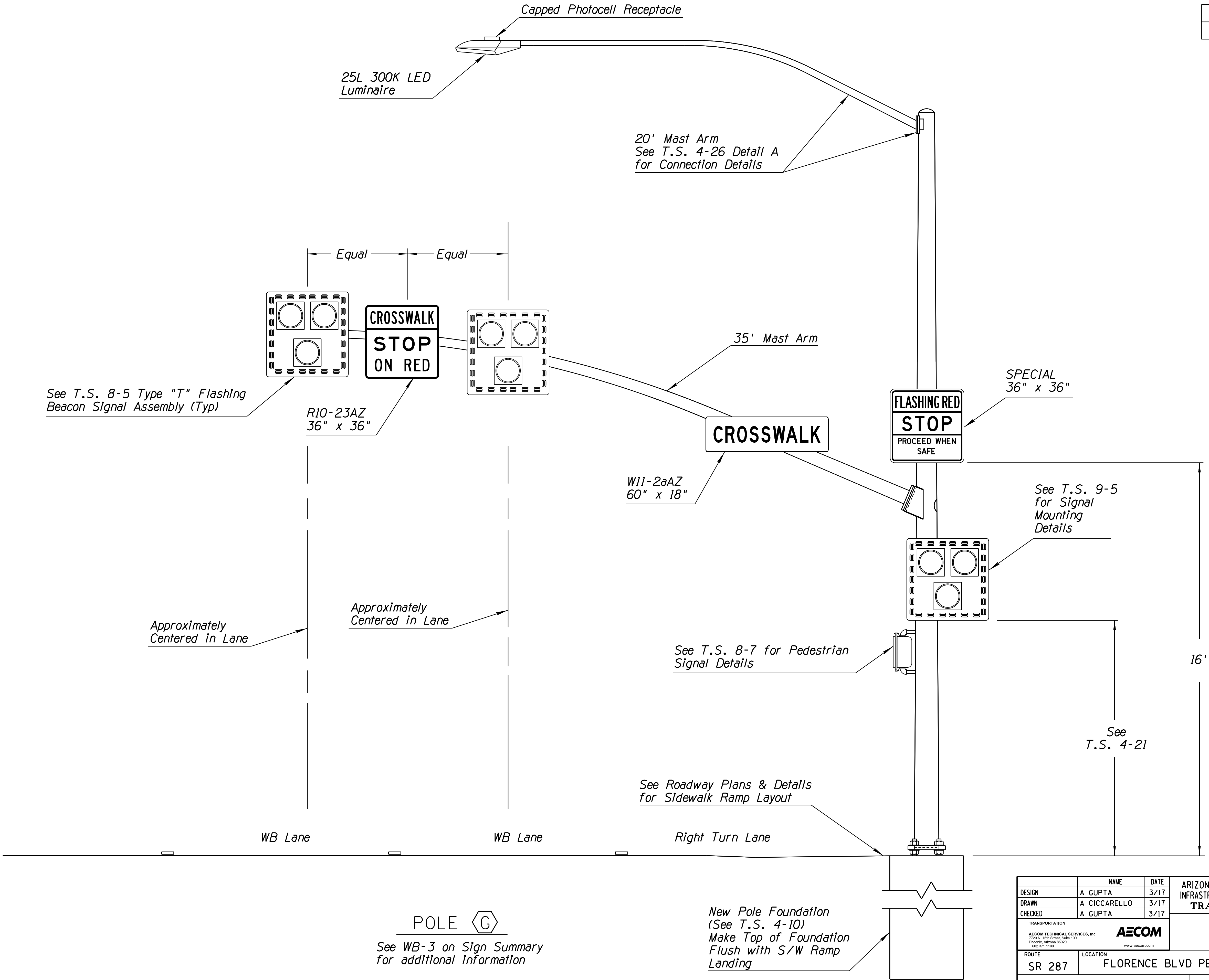
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
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F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	REC. DWGS.
9	ARIZ.	CSG-0(206)T	27	28	

0000 PN CSG

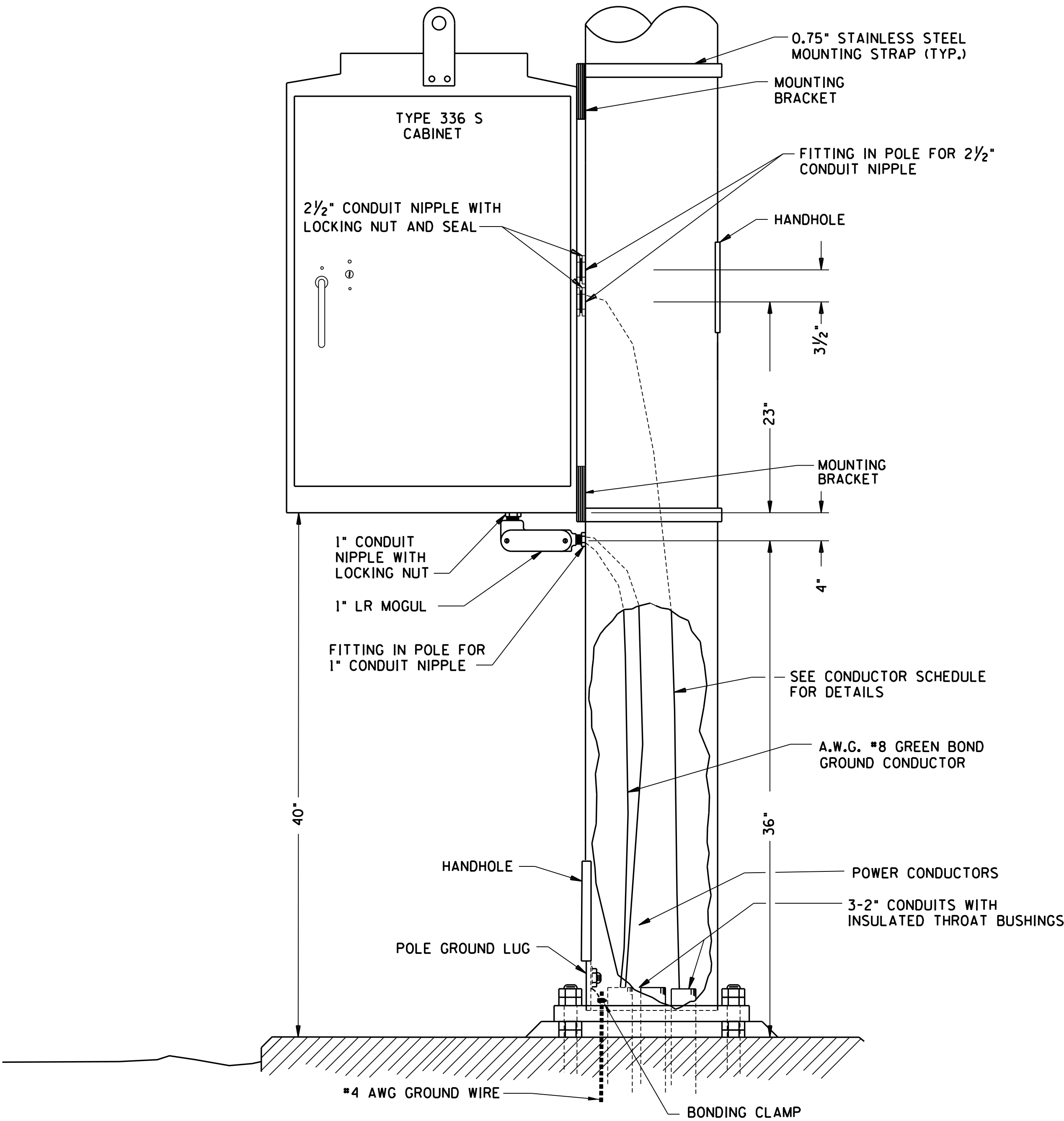
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
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DESIGN	A GUPTA	DATE	3/17	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION TRAFFIC ELECTRICAL DESIGN
DRAWN	A CICCARELLO	DATE	3/17	
CHECKED	A GUPTA	DATE	3/17	
TRANSPORTATION AECOM TECHNICAL SERVICES, Inc. 7750 N. 16th Street, Suite 100 Phoenix, Arizona 85020 T 602.371.1100				ELEVATION DETAILS DWG NO: T-12.02
ROUTE	SR 287	LOCATION	FLORENCE BLVD PEDESTRIAN HYBRID BEACON	
TRACS NO.	T0055 01C		HSIP-CSG-0(206)T	
				OF

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	REC. DWGS.
9	ARIZ.	CSG-0(206)T	28	28	

0000 PN CSG



SECTION A-A

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
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3			
4			

		NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION TRAFFIC ELECTRICAL DESIGN	ELEVATION DETAILS	DWG NO: T-12.03
DESIGN	A GUPTA		3/17			
DRAWN	A CICCARELLO		3/17			
CHECKED	A GUPTA		3/17			
TRANSPORTATION AECOM TECHNICAL SERVICES, Inc. 7750 N. 16th Street, Suite 100 Phoenix, Arizona 85020 T 602.371.1100 www.aecom.com						
ROUTE				LOCATION		
SR 287				FLORENCE BLVD PEDESTRIAN HYBRID BEACON		
TRACS NO.		T0055 01C		HSIP-CSG-0(206)T		___ OF ___