

CONTRACT DOCUMENTS

FOR

DOWTOWN REVITALIZATION PHASE 1

City of Page Department of Public Works

> PO Box 1180 697 Vista Ave Page, Arizona 86040

February 19, 2024

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1 BID DOCUMENTS

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1-1 NOTICE OF INVITATION FOR BID

NOTICE IS HEREBY GIVEN that sealed bids will be received by the City Clerk for the City of Page, Page City Hall, 697 Vista Avenue, Page, Arizona, until **4:30 PM Thursday March 28th, 2024**. At that time, bids will be opened and publicly read aloud and recorded by the City Clerk. Bidders are invited but not required to be present at the bid opening. Bids must be in the actual possession of the City Clerk's Office on or prior to the exact time and date indicated above. Late bids shall not be considered and will be returned unopened. The prevailing clock shall be the City Clerk's clock.

Bids must be submitted on the forms furnished and in a sealed envelope. The Invitation for bid's <u>project name and bidder's name and address</u> should be clearly indicated on the outside of the envelope. Bids sent through Federal Express or other express mail agencies must have the bid documents sealed within an additional envelope inside the outer mailer.

The City of Page, Arizona is seeking bids from qualified contractors for construction of new street and streetscape improvements. The work consists of new curb, gutter, sidewalk, utility relocation, decorative asphalt, irrigation and landscaping, traffic signal and intersection lighting, and additional concrete structures on Lake Powell BLVD between N. Navajo BLVD and Vista Ave in the City of Page boundaries.

Questions and requests for additional specifications and/or bid documents shall be directed to: Kyle Christiansen, Director of Public Works, City of Page, PO BOX 1180, Page, Arizona 86040, 928-645-4302. RFB packages may also be accessed on the City of Page website at www.cityofpage.org. Persons with disabilities may call the City's Human Resources Director at (928) 645-4231 or text telephone (TDD) (928) 645-4216 regarding availability of information in alternative formats.

All bid must be accompanied by a bond or a cashier's check of the company, drawn on a national bank, in an amount equal to ten percent (10%) of the Bid amount, as a guarantee on the part of the Bidder that it will, if called upon to do so, accept and enter into a contract based on the obligations and conditions set forth in the Bid Documents.

The successful Bidder, prior to entering into the contract, shall file with the City a Payment Bond in the amount equal to one hundred percent (100%) of the Contract Price, a Performance Bond in an amount equal to one hundred percent (100%) of the Contract price, and a certificate of Insurance. Bids may not be withdrawn for a period of sixty (60) days after the bid opening.

The City of Page reserves the right to reject any or all bids or parts thereto and to waive any informality in the bids received.

City Clerk

Publish each week for two consecutive weeks in the Lake Powell Chronicle. See publications dated *February 21st and February 28th, 2024*.

1-2 INSTRUCTIONS TO BIDDERS

1. <u>PREPARATION OF BID</u>. All BIDs shall be on the forms provided in this Invitation for Bid package. It is the responsibility of all BIDDERs to examine the entire BID DOCUMENTS package and seek clarification of any requirement that may not be clear and to check all responses for accuracy before submitting a BID.

The Bid Form shall be submitted with an original ink signature by the person authorized to sign the BID. Erasures, interlineations, or other modifications in the BID shall be initialed in original ink by the authorized person signing the BID. CITY shall not reimburse the cost of developing, presenting, or submitting any response to this solicitation. BIDs submitted should be prepared simply and economically, providing adequate information in a straightforward and concise manner.

2. <u>MANDATORY PRE-BID MEETING.</u> NONE SCHEDULED.

3. <u>SUBMISSION OF BID</u>. Submission of a BID shall be considered prima-facie evidence that the Contractor is familiar with and understands all the conditions under which the BID and subsequent CONTRACT is to be awarded, performed, and administered. The CONTRACTOR, if awarded the CONTRACT, shall not be allowed extra compensation by reason of any matter or thing which such CONTRACTOR might have more fully explored or been informed prior to submitting a BID. After the submission of the BID, no complaint or claim that there was any misunderstanding as to the conditions or nature of the work will be entertained.

Submission of additional terms, conditions, or agreements with the BID DOCUMENTS may result in rejection of the BID. BIDDER shall return all BID DOCUMENTS, with the exception of CONSTRUCTION DOCUMENTS, intact and completed as directed.

4. <u>METHOD OF DELIVERY</u>. There are five (5) methods by which BIDDERs can forward this bid package to CITY: Regular U.S. Postal Service (No delivery to CITY Hall- Use P.O. Box); U.S. Postal Express Mail (No delivery to CITY Hall-Use P.O. Box); Federal Express; United Parcel Service; hand delivery. Facsimile BIDs shall not be accepted.

The mailing address for CITY is:

City of Page

Office of the CITY Clerk P.O. Box 1180 Page, AZ 86040-1180

The physical address for CITY is:

City of Page Office of the CITY Clerk 697 Vista Avenue Page, AZ 86040 5. <u>QUESTIONS, OMMISSIONS, DISCREPANCIES, INTERPRETATIONS AND ADDENDA</u>. All questions regarding discrepancies in, or omissions from, the Scope of Services, or other BID DOCUMENTS, or doubts as to their meaning should be submitted in writing to the Department Director specified in the Notice of Invitation for Bid.

No oral interpretations shall be made to any BIDDER as to the meaning of any of the BID DOCUMENTS, and CITY shall not be bound by any oral interpretation of the BID DOCUMENTS. Oral interpretations or clarifications will be without legal effect.

Any amendment or addendum issued will be forwarded within 5 days to any known recipient of the original IFB. For purposes of receiving any addendum issued, it shall be the sole responsibility of each potential bidder to notify CITY that they have obtained a copy of the original IFB and intend to submit a BID and provide contact information for the receipt of amendments or addendum. The City of Page hereby reserves the right to extend the period of time in which to submit bids.

6. <u>WITHDRAWL OF BID</u>. At any time prior to the specified Bid submission deadline, a BIDDER may withdraw or revise the BID. Any withdrawal or revision request must be received in writing prior to said deadline. All revisions must be submitted in the same form and manner as the original BID. No BIDDER may withdraw his BID for Sixty (60) days after the time established for receiving BIDs. The award of the CONTRACT to another party does not constitute a waiver of this condition.

7. <u>LATE BIDS</u>. Late BIDs shall not be considered. Page is considered a rural area by most express delivery carriers and thus, they do not guarantee priority or next day delivery. BIDDERs are encouraged to keep this in mind when arranging delivery of their BIDs and are advised herein that late BIDs shall be rejected and returned to the BIDDER regardless of reason for being late.

8. <u>PRICES</u>. In the event of discrepancy or conflict between the prices quoted in the BID in words and those quoted in figures, the words shall control. The price quoted shall be the total cost the CITY will pay for the project, including furnishing of all materials, equipment, tools, and all other facilities, all applicable taxes, and the performance of all labor and services necessary or proper for completion of the work. Prices quoted shall also include any and all payment incentives available to the CITY.

9. <u>REFERENCES</u>. The BIDDER shall provide a list of five (5) current and five (5) former clients. References should have similar scope and requirements to those outlined in these BID DOCUMENTS. Unacceptable references, as determined by the CITY of Page, may be sufficient reason to deny award of this project to BIDDER.

10. <u>STATEMENT OF QUALIFICATIONS</u>. As evidence of his competency to perform THE WORK, BIDDER shall complete and submit with his BID the Statement of Bidder Qualifications. Low bidders may be asked to furnish additional data to demonstrate competency. By submitting a BID, BIDDER certifies that he is skilled and regularly engaged in the general class and type of work called for in the BID DOCUMENTS. Additionally, BIDDER shall comply with all provisions of Arizona Revised Statutes, Title 32, Chapter 10.

11. <u>SUBCONTRACTORS</u>. The CONTRACTOR may subcontract any part of the work to be performed under this CONTRACT as long as resulting charges to CITY do not exceed the Lump Sum BID quoted in the Bid Form and the subcontractor(s) is/are licensed to perform the work required by the CONTRACT. The BIDDER shall submit the List of Subcontractors and Supplier form, listing all of the subcontractors and major suppliers it intends to use in the performance of THE WORK. CITY reserves the right to reject any BID based on submission of an incomplete list of subcontractors and major material suppliers as non-responsive. CITY reserves the right to reject, prior to award of the CONTRACT, the bidder's request for substitution of subcontractors or major material suppliers provided, however, substitute subcontractors may be considered as long as they comply with the requirements of these CONTRACT DOCUMENTS.

12. <u>DETERMINATION OF SUCCESSFUL BIDDER</u>. Except where CITY exercises the reserved right herein, the CONTRACT shall be awarded by CITY to the RESPONSIVE and RESPONSIBLE BIDDER who has submitted the lowest lump sum BID.

CITY may conduct such investigation as CITY deems necessary to assist in the evaluation of any BID and to establish the responsibility, qualifications, and financial ability of BIDDERs, proposed subcontractors and other persons and organizations to do THE WORK in accordance with the BID DOCUMENTS.

13. <u>AWARD OF CONTRACT</u>. Notwithstanding any other provision in these BID DOCUMENTS, CITY reserves the right to (a) waive any immaterial defect or informality; or (b) reject any or all BIDs, or portions thereof; (c) withdraw, cancel, or reissue this IFB; (d) issue addenda or amend the IFB, including extending deadlines; (e) request additional information and/or clarification from BIDDER; (f) accept any part/portion of any bid with exclusion to other parts/portions; (g) negotiate and/or award a contract only when it is in the best interest of the CITY; and/or (h) take other actions the CITY deems is in the best interest of the CITY. Within Sixty (60) days after opening of the bids, CITY shall act upon them. The acceptance of a BID shall be a written NOTICE OF AWARD and no other act shall constitute acceptance.

14. <u>BID SECURITY AND BONDING</u>. Each bid must be accompanied by a bond or a cashier's check of the Company, drawn on a national bank, in an amount equal to ten percent (10%) of the Bid, as a guarantee on the part of the Contractor that it will, if called upon to do so, accept and enter into a contract based on the obligations and conditions set forth herein to perform the work covered by such Bid and at the cost stated therein. Checks and bonds will be returned promptly after the City and the selected contractor have executed the contract, or, if no contractor's bid has been selected within sixty (60) days after the date of the opening of the bids, upon demand of the contractor at any time thereafter, so long as he has not been notified of the acceptance of his proposal. Failure to execute the Contract within ten (10) business days will, at the option of the City, constitute a breach and the City will be entitled to forfeiture of the required bond accompanying the Bid, not as a penalty, but as liquidated damages.

Pursuant to A.R.S. § 34-222, the Contractor shall post a 100% Performance Bond and 100% Labor and Material Payment Bond with the City before the Contract is executed and Notice to Proceed issued.

15. <u>TIME FOR EXECUTING CONTRACT</u>. Any BIDDER whose BID has been accepted shall be required to execute the CONTRACT and return it to CITY within ten (10) days after receipt of the NOTICE OF AWARD, complete with required bond forms and insurance certificates. Failure or neglect to do so shall constitute a breach of the *7* agreement effected by the NOTICE OF AWARD.

The rights and obligations provided for in the CONTRACT shall become effective and binding upon the parties only with its formal execution by the CITY.

The damages to CITY for such breach shall include loss from interference with its construction program and other items whose accurate amount shall be difficult or impossible to compute. The amount of the Bid Bond, if any, accompanying the BID of such BIDDER shall be retained by CITY as liquidated damages for such breach.

16. <u>SUSPENSION & DEBARMENT</u>. CITY reserves the right to reject the BID of any person or corporation that has previously defaulted on any contract with CITY or has engaged in conduct that constitutes a cause for debarment or suspension.

17. <u>PROTEST PROCEDURE</u>. The award determination of the Page City Council shall be final.

18. <u>PUBLIC RECORD</u>. All BIDS submitted in response to this invitation shall become the property of CITY and shall become a matter of public record; provided, however, that the BIDDER shall clearly identify information that he considers to be confidential. To the extent that CITY agrees, and current Arizona law supports such designation, such information will be held in confidence whenever possible.

1-3 BID FORM

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

Bidder's Company Name: _____

The undersigned bidder has carefully examined the BID DOCUMENTS and the site of the work for the [title of project] for the City of Page, and shall provide all necessary machinery, tools, apparatus, and other means of construction and do all THE WORK and furnish all materials called for in the BID DOCUMENTS.

THE BIDDER AGREES TO PERFORM ALL OF THE NECESSARY WORK DESCRIBED IN THE BID DOCUMENTS FOR THE TOTAL BID PRICE OF:

_____ Dollars (\$_____)

Accompanying this BID is a Bid Bond for Ten Percent (10%) of the lump sum bid payable to CITY, which is to be forfeited as liquidated damages, if, in the event that this bid is accepted, the undersigned fails to execute the CONTRACT and furnish satisfactory performance and payment bonds under the conditions and within the time specified in the BID DOCUMENTS; otherwise said Bid Bond is to be returned to the undersigned.

Date		
Name of Bidder		
Signature of Bidder		
Title of Bidder		
Address		
Telephone Number		
Fax Number		

BIDDER shall have the following License(s) to perform THE WORK specified herein:

Arizona General Contractor's License No.	
Federal Tax ID No.	

1-4 BID SCHEDULES

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

BIDDER shall complete the unit prices in the Bid Schedules, below. The BIDDER agrees to perform all of the services necessary to accomplish the work described in the specifications and shown on the plans for the unit prices listed in each Bid Schedule. The CITY shall pay BIDDER for completion of the Work in accordance with the Contract Documents in current funds based on the Bid Schedule unit prices and actual quantities of work installed.

The quantities appearing in the Bid Schedule are approximate only. In the event the total amount of the lowest acceptable bid exceeds the amount of funds available for the project, the scope of work will be modified as determined by the CITY and the ENGINEER. The right is reserved to increase or decrease the quantities listed in each Bid Schedule or to entirely eliminate certain Bid Items or Bid Schedules if found desirable or expedient. The BIDDER is cautioned against unbalancing his Bid by prorating his overhead into one or two bid items. The overhead and indirect charges should be prorated on all items in the Bid Schedule.

CITY OF PAGE DOWNTOWN REVITALIZATION PH1

BID SCHEDULE

Item #	Item Description	Quantity	Unit	Unit Price	Total
	GENERAL CONDITIONS				
1	CONSTRUCTION SURVEY & LAYOUT	1	LS		
2	AZPDES (NPDES) CONSTRUCTION PERMIT REQUIREMENTS	1	LS		
3	MOBILIZATION/ DEMOBILIZATION	1	LS		
4	TRAFFIC CONTROL	1	LS		
		GENERAL CON	DITIONS S	SUB-TOTAL	\$
	REMOVALS				
5	SAWCUT AND REMOVE ASPHALTIC CONCRETE	3,838	SY		
6	REMOVE CONCRETE CURB AND GUTTER	1,375	LF		
7	REMOVE CONCRETE SINGLE CURB	99	LF		
8	REMOVE CONCRETE SLAB	10,793	SF		
9	REMOVE CONCRETE CATCH BASIN	2	EA		L
10	REMOVE STORM DRAINPIPE	10	LF		
11	MISCELLANEOUS REMOVALS AND RELOCATIONS	1			
		RE	MOVALS	SUBTOTAL	\$
	ROADWAY IMPROVEMENTS				
12	SUBGRADE PREPARATIONS	1,985	SY		<u> </u>
13	PAVEMENT SECTION NO 1 (LAKE POWELL BLVD/ DRIVEWAYS: 5" AC/ 12" AB)	1,241	SY		
14	PAVEMENT SECTION NO 2 (ON-STREET PARKING: 9" PCCP / 4" AB)	6,690	SF		
15	PAVEMENT SECTION NO 3 (LAKE POWELL BLVD: SLURRY SEAL)	2,316	SY		
16	CONCRETE VERTICAL CURB WITH GUTTER (MAG STD 220-1, TYPE A)	1,493	LF		
17	Construct "depressed Lip" curb and gutter (MAD std DET 220-1, Type A modified)	278	LF		
18	Concrete header cub (DET 2, DWG CV-3.01)	96	LF		
19	Concrete single curb (MAG STD DET 222, Type A)	33	LF		
20	Concrete Ribbon Curb (MAG std DET 220-1, Type B)	48	LF		
21	Concrete Driveway (MAG std DET 250-1)	2,018	SF		
22	Concrete Valley Gutter (MAG std DET 240)	1,314	SF		
23	Adjust Valve box & cover (MAD std DET 391)	20	EA		
24	Replace meter box & cover, Tier 22 (MAG std DET 319)	7	EA		
25	Remove and replace backflow preventer? Water service	1	EA		
26	Concrete catch basin, (MAG std DET 530)	1	EA		
27	Concrete catch Basin, Wing=6' (MAD std DET 542, Type-I)	3	EA		

28	Slotted Drain, (ADOT STD DET c013.60)	70	LF		
29	Trench Drain, ADS Heavy Traffic Duraslot drain or approved equal 25 LF				
30	Concrete Storm Drain Manhole "Shallow Type" (MAG STD DET 424-2, 520 & 522) 1 EA				
31	18" RGRCP Storm Drainpipe 96 LF				
32	18" ADS Storm Drainpipe	235	LF		
33	18" Tee RGRCP Fitting	2	EA		
34	Concrete Scupper, 4" Width (MAG STD DET 206)	1	EA		
35	Safety Rail (Decorative, Special Detail)	15	LF		
36	Dumped Riprap w/ Filter Fabric (D50=6", Thickness=12")	3	CY		
37	Flow by Scupper (DET 1, DWG CV-3.01)	2	EA		
	F	REOADWAY IMPRO	/EMENTS	SUBTOTAL	\$
	SIGNING & MARKINGS IMPROVE	EMNTS			
38	Stripe Obliteration	1	LS		
39	Permanent Traffic Paint (White, 4" Equivalent)	6,000	LF		
40	Permanent Traffic Paint (Yellow, 4" Equivalent)	3,000	LF		
41	Thermoplastic Traffic Paint (White, 4" Equivalent)	6,000	LF		
42	Thermoplastic Traffic Paint (Yellow, 4" Equivalent)	3,000	LF		
43	Thermoplastic Arrows	12	EA		
44	Thermoplastic Legends	6	EA		
45	Remove Sign Panel, Post and Anchor	3	EA		
46	Remove Sign Panel	5	EA		
47	Traffic Sign Post	70	LF		
48	Foundation and Anchor	6	EA		
49	Traffic Sign Panel	85	SF		
		SINGING & MARK	INGS IMP	SUBTOTAL	\$
	UTILITY RELOCATIONS				
50	Utility Service Adjustments	1	LS		
		UTILITY REL	OCATION	SUBTOTAL	\$
	MULTI-MODAL IMPROVEMEN	NTS		•	
51	Multi-Use Path: 4" PCCP (6'Wide)	551	SF		
52	Multi-Use Path: 4" PCCP (8' Wide)	4,487	SF		
53	Multi-Use Path: 4" PCCP (10' Wide)	5,496	SF		
54	Multi-Use Path: 4" PCCP Exposed Aggregate/ 4" AB	2,440	SF		
55	Multi-Use Path: 6" PCCP (8' Wide)	848	SF		
56	Landscape Bench (6' Metal)	7	EA		
57	Litter Receptacle	7	EA		
58	Tree Grates (Metal)	7	Each		
59	Stamped Asphalt (Crosswalks)	598	SF		
		MULTI-MO	DAL IMP S	UBTOTAL	\$

	LANDSCAPE AND IRRIGATION				
60	36" Box Trees	7	EA		
61	24" Box Trees	15	EA		
62	5 Gallon Shrubs	135	EA		
63	1 Galln Shrubs	33	EA		
64	1/2" Screened Decomposed Granite (Palomino Gold)	9 <i>,</i> 840	SF		
65	Water Meter (3/4")	1	WA		
66	Backflow Preventers (3/4")	1	EA		
67	Irrigation Controllers (Solar)(Control Wire included)	1	EA		
68	1" Ball Valve Assembly	2	EA		
69	Quick Coupler Valve Assembly	2	EA		
70	Drip Lateral End Cap Flush Valve Assembly (Valve Box Inlcuded)	4	EA		
71	Multi-Outlet Emitter Assembly	105	EA		
72	Electronic Control Valve Assembly (Valve Box Included)	4	EA		
73	1" SCH 40 Mainline Pipe with SCH 80 Fittings	95	LF		
74	.75" SCH 40 Drip Lateral Pipe with SCH 40 Fittings	3,180	LF		
75	SCH 40 Sleeves (Pipes 3" and smaller)	810	LF		
76	1.25" Gray SCH 40 Electrical Conduit (2-wire path)	100	LF		
	LANDSCAP	E AND IRR	RIGATION	SUBTOTAL	\$
	ELECTRICAL				-
77	New Electrical Service Entrance Section and Control Equipment	1	EA		
78	Conduit and Wire, Sized Per Plans, Including Trenching and Backfill, Jumpers and Bond Wires	1	LS		
79	Pull Box, Including Splices	14	EA		
80	LED Street Light Fixture, 30' Steel Pole, and Foundation, Including Banner Arms and Receptacle	7	EA		
81	LED Pedestrian Light Fixture, 18' Steel Pole, and Foundation, Including Banner Arms and Receptacle	7	EA		
82	120V GFCI Duplex Receptacle with Mounting Post, Including Installation	7	EA		
		ELEC	CTRICAL	SUBTOTAL	\$
	TRAFFIC SIGNAL			1	
83	TRAFFIC SIGNAL PEDESTRIAN POST	2	EA		
84	TRAFFIC SIGNAL 'A' POLE (10')	1	LS		
85	FOUNDATION FOR TYPE PED OR 'A' POLE	3	EA		
86	EQUIPMENT RELOCATION	1	LS		
87	6'X40' QUADRUPOLE LOOP DETECTOR	3	EA		
88	2" SCH 40 PVC CONDUIT	75	LF		
89	TRAFFIC SIGNAL CONDUCTORS AND CABLES	1	LS		
		TRAFFIC	SIGNAL S	SUBTOTAL	\$
	Electrical			T	
83	Traffic Signal Pedestrian Post	2	EA		

BASE BID	
PROJECT SUBTOTAL	\$
CONTINGENCY (15%)	\$
PROJECT TOTAL	\$

1-5 CONTRACTOR'S REFERENCE PAGE

To Submit with Bid. ALL REFERENCES WILL BE TREATED AS THE CONTRACTOR'S CONFIDENTIAL BUSINESS INFORMATION. CITY may contact some or all of the references provided in order to determine Bidder's RESPONSIBILITY and performance record on work of similar scope. CITY reserves the right to contact references other than those provided in the response and to utilize the information gained from them in the evaluation process.

Previous work for CITY may be used as references. Complete each item for all 10 references (5 Current and 5 Former):

Current References:

1	Owner/Agency	
	Address	
	City, State, Zip	
	Phone	
	Contact Person	
	Project Name and	
	Scope of Work	

2	Owner/Agency	
	Address	
	City, State, Zip	
	Phone	
	Contact Person	
	Project Name and	
	Scope of Work	

3	Owner/Agency	
	Address	
	City, State, Zip	
	Phone	
	Contact Person	
	Project Name and	
	Scope of Work	

Former References:

1	Owner/Agency	
	Address	
	City, State, Zip	
	Phone	
	Contact Person	
	Project Name and	
	Scope of Work	

	Owner/Agency	
	Address	
	City, State, Zip	
2	Phone	
2	Contact Person	
	Project Name and	
	Scope of Work	

	Owner/Agency	
	Address	
3	City, State, Zip	
	Phone	
	Contact Person	
	Project Name and	
	Scope of Work	

1-6 LIST OF SUBCONTRACTORS AND MATERIAL VENDORS

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

To Submit with Bid. In compliance with the Instructions to Bidders, the undersigned submits the following names of subcontractors and material vendors to be used in performing the work for this project. Where subcontractor or material vendor does not apply, write "N/A."

Subcontractor's or Material Vendor's Trade	Subcontractor's Name	Vendor's Name
Demolition		
Earthwork		
Soil Treatment		
Paving and Surfacing		
Site Improvements		
Concrete Reinforcing		
Cast-in-Place Concrete		
Masonry		
Structural Steel		
Steel Joists		
Steel Decking		
Light Gage Metal Framing		
Metal Fabrication		
Rough Carpentry		
Architectural Woodwork		
Damp Proofing		
Insulation		
Roofing		
Flashing and Sheet Metal		
Sealants		
Sheet Metal Roofing		
Metal Doors and Frames	17	

Subcontractor's or Material Vendor's Trade	Subcontractor's Name	Vendor's Name
Wood Doors		
Special Doors		
Metal Windows		
Hardware		
Glazing		
Lath and Plaster		
Gypsum Wallboard		
Ceramic Tile		
Acoustical Panel Ceilings		
Resilient Flooring		
Carpeting		
Painting		
Signage		
Plumbing		
Fire Protection System		
HVAC		
Electrical		
Irrigation		
Landscape		
Other (specify)		

1-7 STATEMENT OF BIDDER QUALIFICATION

If bidder is a corporation, answer the following:

Date of Incorporation		
State of Incorporation		
President's Name		
Vice President's Name		
Secretary/Clerk's Name		
Treasurer's Name		
If bidder is a partnership, and	swer the following:	
Date of Organization General or Limited Partnership		
Name and Address of All Pa	artners:	
If other than a corporation or	partnership, describe the organization and name principals:	

Major types of work done by the organization:

How many years has your organization been in business as a contractor under your present business name? _____

How many years' experience in the proposed type and scale of construction work has your organization had?

- A. As a general contractor: _____
- B. As a subcontractor: _____

What is the construction experience of the principal individuals of your organization?

Individual's Name	Present Position or Office	Years Construction Experience	Magnitude and Type of Work	In What Capacity

1-8 ARIZONA STATUTORY BID BOND

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

PURSUANT TO TITLE 34, ARIZONA REVISED STATUTES, (Penalty of this bond must not be less than 10% of bid amount), KNOW ALL MEN BY THESE PRESENTS THAT:

_______(hereinafter "Principal"), as Principal, and _________(hereinafter "Surety"), a corporation organized and existing under the laws of the State of ______, with its principal offices in the City of ______, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto the City of Page, Arizona (hereinafter "Obligee"), in the sum of Ten Percent (10%) of the amount of the bid of Principal, submitted by Principal to Obligee for the work described below, for payment of which sum, the Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for the work titled above.

NOW, THEREFORE, if the oblige shall accept the proposal of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of the proposal and give the bonds and insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of this contract and for prompt payment of labor and materials furnished in the prosecution of this contract, or in the event of the failure of the Principal to enter into this contract and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise, it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of that section to the extent as if it were copied at length herein.

Witness our hands this	day of	, 20
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B	٧	(Surety)
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2 CONTRACT AGREEMENT DOCUMENTS

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2-1 NOTICE OF AWARD

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

CONTRACTOR		

DATE _____, 2024

The City of Page, having duly considered the bid submitted on March 28th, 2024 for the City of Page **CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1** as outlined in the CONTRACT DOCUMENTS, and it appearing that your BID for performing the work is fair, equitable, and in the City's best interest, said BID is hereby accepted at the lump sum price contained therein, and in accordance with all terms, conditions, covenants, and provisions set forth in the CONTRACT DOCUMENTS.

In accordance with the terms of the CONTRACT DOCUMENTS, you are required to execute the formal CONTRACT and furnish the required Payment and Performance Bonds within ten (10) consecutive calendar days from and including the date of receipt of this Notice.

In addition, you are requested to furnish at the same time, the required certificates of insurance evidencing compliance with the requirements for insurance stated in the CONTRACT DOCUMENTS.

The Bid Bond submitted with your bid will be retained until the CONTRACT has been executed and the required Payment and Performance Bonds have been furnished and approved.

Kyle Christiansen Director of Public Works

RECEIVED AND ACCEPTED BY CONTRACTOR:

By _	
Name	
Date _	

2-2 CONTRACT

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY

CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

CONTRACTOR

The following Agreement contains terms and conditions which CONTRACTOR must be prepared to accept upon receipt of a NOTICE OF AWARD.

IN CONSIDERATION of the mutual promises and agreements set forth herein, it is agreed by and between the CITY and CONTRACTOR, as follows:

1. <u>CONTRACT DOCUMENTS</u>. The following documents are hereby incorporated by reference into this CONTRACT, and shall be referred to as the CONTRACT DOCUMENTS:

A. Bid Documents to include the (1) Notice of Invitation for Bid; (2) Instructions to Bidders; (3) Bid Form; (4) Bid Schedules; (5) Contractor's Reference Page; (6) List of Subcontractors and Material Vendors; (7) Statement of Bidder Qualification; and (8) Arizona Statutory Bid Bond.

B. Contract Agreement Documents to include the (1) Notice of Award; (2) Contract; (3) Arizona Statutory Payment Bond; (4) Arizona Statutory Performance Bond; and (5) Notice to Proceed.

- C. General Conditions
- D. Technical Specifications
- E. Addenda to the Plans and Specifications, if any
- F. Project Construction Plans

G. <u>Uniform Standard Specifications for Public Works Construction</u>, latest edition as administered by the Maricopa Association of Governments.

The above-named documents are essential parts of this CONTRACT, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complimentary and to describe and provide for a complete work. CONTRACTOR agrees to be bound by all terms, conditions, covenants, and obligations in the CONTRACT DOCUMENTS as if each were again fully set forth verbatim herein. In the event any document conflicts or contradicts this instrument, this instrument shall be controlling.

2. The date of commencement of the project shall be the date fixed in the "Notice to Proceed" issued by the City of Page. The Contract Time shall be measured from the date of commencement.

The CONTRACTOR shall achieve substantial completion of the entire project not later than June 30, 2024, subject to adjustments of this contract time with approval of the CITY. The Parties acknowledge that time is of the essence and that completion of this project within the monetary and time constraints placed on the project is of utmost importance and CITY has considered and relied on CONTRACTOR'S representations as to its quality of service commitment in entering into this CONTRACT. The Parties further recognize that quantified standards of performance are necessary and appropriate to ensure that the project is completed competently within budget and on time. The Parties further recognize that if CONTRACTOR fails to achieve the performance standards, CITY and its residents will suffer damages and that it is and will be impracticable and extremely difficult to ascertain and determine the exact amount of damages that CITY will suffer. Therefore, the Parties agree that in the event the CONTRACTOR fails to complete this CONTRACT on or before the completion date as specified herein, liquidated damage shall be assessed in the amount of \$500.00 per day that the CONTRACT remains unfinished. This amount represents a reasonable estimate of the amount of such damages considering all of the circumstances existing on the date of this CONTRACT, including the relationship of the sums to the range of harm to CITY and its residents that reasonably could be anticipated and recognition that proof of actual damages would be costly or inconvenient.

3. PAYMENT. In consideration of the services specified in this CONTRACT, CITY agrees to pay CONTRACTOR in the manner hereinafter specified.

CONTRACTOR shall provide detailed documentation in support of requested progress payments in accordance with A.R.S. § 34-221. CITY shall then make payments in accordance with its obligation as provided by A.R.S. § 34-221. Any payments made shall not prevent the Owner from subsequently objecting to charges after payment therefore in appropriate cases, or from seeking reimbursement for any such charges. Retention will be in accordance with A.R.S. § 34-221.

In no event shall the total payment(s) paid to the CONTRACTOR under this CONTRACT exceed \$_____

Nothing in this CONTRACT shall create any obligation on the part of CITY to pay or see to the payment of any money due any subcontractor, except as may be required by law.

4. SCOPE OF SERVICES. CONTRACTOR shall provide for CITY all labor, materials and equipment necessary to perform THE WORK provided for in the CONTRACT DOCUMENTS. All work shall be done in a skillful and workmanlike manner per specifications called for in the CONTRACT DOCUMENTS.

5. CONTRACTOR/SUBCONTRACTOR PERFORMANCE. CONTRACTOR shall perform the work in accordance with the terms of this CONTRACT and to the best of CONTRACTOR'S ability. CONTRACTOR agrees to exercise the skill and care, which would be exercised by comparable professional Contractors performing similar services at the time and in the locality such services are performed. Furthermore, CONTRACTOR shall perform the work or services in accordance with generally accepted methods and standards.

CONTRACTOR shall employ suitably trained and skilled personnel to perform all work or services under this CONTRACT. If failure to meet acceptable standards results in faulty work, CONTRACTOR shall undertake, at CONTRACTORS own expense, corrective adjustments, modifications, or repair.

CONTRACTOR shall be fully responsible for all acts and omissions of its subcontractor(s) and of persons directly or indirectly employed by subcontractor(s).

6. INSURANCE. CONTRACTOR, at his own expense, shall purchase and maintain the herein stipulated minimum insurance with companies duly licensed and subject to legal process within the State of Arizona, possessing a current A.M. Best, Inc. Rating of A- or better.

All insurance required herein shall be maintained in full force and effect until all work or services required to be performed under the terms of this CONTRACT is satisfactorily completed; failure to do so may, at the sole discretion of CITY, constitute a material breach of this CONTRACT.

CONTRACTOR's insurance shall be primary insurance in regard to the CITY, and any insurance or self-insurance maintained by CITY shall not contribute to it. The insurance policies shall contain a waiver of transfer rights of recovery (subrogation) against CITY, its agents, officers, officials and employees for any claims arising out of CONTRACTOR's acts, errors, mistakes, omissions, work or services. The City shall be named as an additional insured.

Prior to commencing work or services under this CONTRACT, CONTRACTOR shall furnish the CITY with Certificates of insurance, or formal endorsements as required by this CONTRACT, issued by CONTRACTOR's insurer(s), as evidence that policies providing the required coverage, conditions and limits required herein are in full force and effect. All Certificates of Insurance shall be identified with the bid number and title.

If a policy does expire during the life of this CONTRACT, a renewal certificate must be sent to CITY fifteen days prior to the expiration date. Insurance required herein shall not expire, be cancelled, or materially changed without thirty (30) days written notice to CITY.

The CONTRACTOR shall carry at all times the following insurance coverage:

Comprehensive Commercial General Liability: Limits: Combined single Limit Bodily Injury/Property damage- not less than \$1,000,000.

Automobile Liability:

Limits: Bodily Injury-	\$250,000 each person
	\$500,000 each occurrence
Property Damage-	\$100,000 each occurrence

Workers' Compensation:

The CONTRACTOR shall carry Workers' Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction over the Contractor's employees engaged in the performance of the work or services; and Employer's Liability insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee, and \$500,000 disease policy limit.

In case any work is subcontracted, this CONTRACT will require the Subcontractor to provide Workers' Compensation and Employer's Liability to at least the same extent as required of this CONTRACTOR.

7. INDEMNIFICATION. To the fullest extent permitted by law, CONTRACTOR shall indemnify, defend and hold harmless CITY, its agents, officers, officials and employees from and against any and all claims, demands, suits, actions, proceedings, loss, cost and damages of every kind and description, including any reasonable attorney fees, which may be brought or made against or incurred by CITY on account of (1) loss or damage to any property or interest of CITY, its officers, employees and agents, or any damages, injury to person or property, or death of any person arising out of, relating to, or alleged to have resulted from any acts, errors, omissions, work, or services of CONTRACTOR, its employees, agents, representatives, or subcontractors, their employees, agents, or representatives, (2) any workers' compensation claims, unemployment compensation claims or unemployment disability claims of employees of CONTRACTOR or claims under similar such laws or obligations. This indemnification shall not extend to any loss, damage, injury, or death to the extent caused by the negligence or willful misconduct of CITY, or its employees.

The amount and type of insurance coverage requirements set forth within this CONTRACT shall in no way be construed as limiting the scope of the indemnity as set forth herein.

8. INDEPENDENT CONTRACTOR STATUS. Both parties agree that: (a) the work contracted for in this CONTRACT falls within the distinct nature of CONTRACTOR'S business; (b) the nature of the work contained within this CONTRACT is specialized, and CITY has elected to contract out the work rather than attempt to perform the work with its current workforce; (c) CONTRACTOR is an incorporated business that possesses the personnel and materials necessary to perform the work; (d) the relationship of the work provided by CONTRACTOR has no relationship to the regular business conducted by CITY; (e) it is understood and agreed that CONTRACTOR is an independent contractor, and nothing herein contained shall constitute, create, give rise to, or otherwise recognize an employment relationship, joint venture, partnership, or formal business association or organization of any kind between the parties hereto, other than as contracting parties, nor shall CONTRACTOR or any subcontractor, or any employee of CONTRACTOR or any subcontractor be deemed to be employed by CITY or entitled to any remuneration or other benefits from the CITY, other than as set forth in this CONTRACT.

9. ASSIGNMENT. CONTRACTOR shall not assign its rights to this CONTRACT, in whole or in part, without prior written approval of CITY. Approval may be withheld at the sole discretion of CITY, provided that such approval shall not be unreasonably withheld.

10. AUTHORITY TO CONTRACT. CONTRACTOR warrants its right and power to enter into this CONTRACT. If any court or administrative agency determines that CITY does not have authority to enter into this CONTRACT, CITY shall not be liable to CONTRACTOR or any third party by reason of such determination or by reason of this CONTRACT.

11. CANCELLATION FOR CONFLICT OF INTEREST. This CONTRACT is subject to cancellation for conflict of interest pursuant to A.R.S. § 38-511, the pertinent provisions of which are incorporated into this CONTRACT by reference.

12. TERMINATION OF CONTRACT FOR CAUSE. If, through any cause, CONTRACTOR shall fail to fulfill in timely and proper manner its obligations under this CONTRACT, or if CONTRACTOR shall violate any of the covenants, provisions, or stipulations of this CONTRACT, CITY shall thereupon have the right to terminate this CONTRACT by giving written notice to CONTRACTOR of such termination and specifying the effective date thereof, at least ten (10) days before the effective date of such termination.

In such event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports prepared by CONTRACTOR shall, at the option of CITY, become its property and CONTRACTOR shall be paid an amount based on time and expenses incurred by CONTRACTOR prior to the termination date; however, no payment shall be allowed for anticipated profits on unperformed work or services. Notwithstanding the above, CONTRACTOR shall not be relieved of liability to CITY for damages sustained by CITY by virtue of any breach of this CONTRACT by CONTRACTOR and CITY may withhold payments to CONTRACTOR for purpose of set-off until such time as the exact amount of damages due the CITY from CONTRACTOR are determined.

13. TERMINATION FOR CONVENIENCE. CITY may terminate this CONTRACT at any time by giving written notice to CONTRACTOR of such termination and specifying the effective date thereof, at least thirty (30) days before the effective date of such termination. If this CONTRACT is terminated by CITY as provided herein, CONTRACTOR shall be paid an amount based on the time and expense incurred by CONTRACTOR prior to the termination date, however, no payment shall be allowed for anticipated profit on unperformed work or services.

14. NON-APPROPRIATION OF FUNDS. Notwithstanding any other provision of this CONTRACT, this CONTRACT may be terminated without penalty to the CITY, if for any reason there are not sufficient appropriated and available monies for the purpose of maintaining CITY or other public entity obligations under this CONTRACT. CITY shall have no further obligation to CONTRACTOR, other than to pay for services rendered prior to termination.

15. WARRANTY. CONTRACTOR warrants that work performed will conform to the CONTRACT DOCUMENTS and is free of any defect in equipment, material or design furnished, or workmanship performed by the CONTRACTOR or any of its subcontractors or suppliers at any tier. This warranty shall continue for a period of one (1) year from the date of final acceptance of the WORK. CONTRACTOR shall remedy at CONTRACTOR'S expense any failure to conform, or any defective work.

16. REMEDIES. Either party may pursue any remedies provided by law for breach of this CONTRACT. No right or remedy is intended to be exclusive of any other right or remedy and each shall be cumulative and in addition to any other right or remedy existing at law or at equity or by virtue of this CONTRACT.

17. WAIVER. Failure of either party to insist on one or more instances upon the full and complete compliance with any of the terms or provisions of this CONTRACT to be performed on the part of the other, or to take any action permitted as a result thereof, shall not be construed as a waiver or relinquishment of the right to insist upon full² and complete performance of the same, or any other covenant or condition, either in the past or in the future. The Acceptance by either party of

sums less than may be due and owing it at any time shall not be construed as an accord and satisfaction.

18. CHOICE OF LAW/VENUE. Any dispute, controversy, claim or cause of action arising out of or related to this CONTRACT shall be governed by Arizona law. The venue for any such dispute shall be in Coconino County, Arizona. Each party waives the right to object to venue in Coconino County for any reason.

19. ENTIRE AGREEMENT. This CONTRACT constitutes the entire agreement between the parties pertaining to the subject matter hereof, and all prior or contemporaneous agreements and understandings, oral or written, are hereby superseded and merged herein. This CONTRACT may be modified, amended, altered or extended only by a written amendment signed by the parties. Additionally, nothing in the CONTRACT shall be deemed to guarantee CONTRACTOR a minimum amount of rentals, services, or business to the CITY.

20. A.R.S. § 41-4401. The contractor warrants compliance with all Federal immigration laws and regulations relating to employees and subcontractors and warrants its compliance with A.R.S. § 41-4401 including the E-verify program. A breach of this section shall be deemed a material breach of the CONTRACT that is subject to penalties up to and including termination of the CONTRACT. CITY retains the legal right to inspect the papers of CONTRACTOR or any subcontractor employee who works on the CONTRACT to ensure compliance with this provision.

21. CONSTRUCTION OF THIS CONTRACT. This CONTRACT shall be construed and interpreted according to its plain meaning, and no presumption shall be deemed to apply in favor of, or against the party drafting this CONTRACT. The parties acknowledge and agree that each has had the opportunity to seek and utilize legal counsel in the review of and entry into this CONTRACT.

22. NOTICES. All notices, requests, demands, payments and other communications hereunder shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, or sent by overnight carrier to the following address on the date received:

City of Page

Contractor:

697 Vista Avenue P.O. Box 1180 Page, Arizona 86040

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23. Pursuant to A.R.S. § 35-393 et seq., Contractor certifies that it is not currently engaged in, and agrees for the duration of this Contract not to engage in, a boycott of Israel.

IN WITNESS WHEREOF, the parties have executed this CONTRACT on the dates set forth below.

City of Page

Contractor:

An Arizona municipal corporation

By:

By29

Date	Date:
Attested By:	Approved as to Form:
Kim Larson, City Clerk	City Attorney

2-3 ARIZONA STATUTORY PAYMENT BOND

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

PURSUANT TO TITLE 34, ARIZONA REVISED STATUTES, (Penalty of this bond must be 100% of this CONTRACT amount), KNOW ALL MEN BY THESE PRESENTS THAT:

______(hereinafter "Principal"), as Principal, and _______(hereinafter "Surety"), a corporation organized and existing under the laws of the State of ______, with its principal offices in the City of _______, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto the City of Page, Arizona (hereinafter "Obligee"), in the amount of \$______, for the payment whereof, Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written CONTRACT with Obligee, dated the _____ day of ______, 2024, for the work titled above, which contract is hereby referred to and made part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal promptly pays all monies due to all persons supplying labor or materials to the Principal or the Principal's subcontractors in the prosecution of the work provided for in the contract, this obligation is void. Otherwise, it remains in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bind shall be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by the court.

Witness our hands this	day of	, 20
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By_____ (Surety)

2-4 ARIZONA STATUTORY PERFORMANCE BOND

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY

CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

PURSUANT TO TITLE 34, ARIZONA REVISED STATUTES, (Penalty of this bond must be 100% of this CONTRACT amount), KNOW ALL MEN BY THESE PRESENTS THAT:

______(hereinafter "Principal"), as Principal, and _______(hereinafter "Surety"), a corporation organized and existing under the laws of the State of ______, with its principal offices in the City of ______, holding a certificate of authority to transact surety business in Arizona issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1, as Surety, are held and firmly bound unto the City of Page, Arizona (hereinafter "Obligee"), in the amount of \$_____, for the payment whereof, Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written CONTRACT with the Obligee, dated the <u>day of</u>, 2024, for the work titled above, which contract is hereby referred to and made part hereof as fully and to the same extent as if copied at length herein.

WHEREAS, payment shall be made by Surety to Obligee upon failure of Principal to faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of the Contract regarding the performance of the contract and presentation of such to Surety by a claim, which has been prepared and signed by the Obligee's representative and witnessed by a notary, stating that: "The Principal is in default, such condition has existed for over 90 days, and the Obligee is hereby exercising its rights under bond no._____."

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION IS SUCH, that if the Principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the contract during the original term of the contract and any extension of the contract, with or without notice to the Surety, and during the life of any guaranty required under the contract, and also performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise, it remains in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions, conditions and limitations of Title 34, Chapter 2, Article 2, Arizona Revised Statutes, to the same extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by the court. 32

Witness our hands this ______day of _____, 20____.

By _____ (Principal)

By_____ (Surety)

2-5 NOTICE TO PROCEED

PROJECT CITY OF PAGE DOWNTOWN REVITALIZATION PHASE 1

CITY CITY OF PAGE 697 VISTA AVENUE PAGE, ARIZONA 86040

CONTRACTOR

DATE

You are hereby authorized to proceed with work effective ______, 2024 and fully complete all work within **seventy-five (75) consecutive calendar days** from this date. The completion date for this Project is therefore June 30, 2024. Liquidated damages of \$ One Hundred Twenty Five Dollars (\$500.00) per day are applicable for each day past June 30, 2024, for which work on this Project is not complete, unless otherwise provided.

Kyle Christiansen Director of public works

RECEIVED AND ACCEPTED BY CONTRACTOR:

Ву	
Name	
Date	

3 GENERAL CONDITIONS

3-1	GENERAL CONDITIONS	.32
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3-1 GENERAL CONDITIONS

The following Provisions are general in scope and may refer to conditions which will not be encountered in the performance of THE WORK included in this CONTRACT and which are not applicable thereto. Any requirements, provisions or other stipulation of these General Conditions which pertain to a non-applicable condition shall be excluded from the scope of this CONTRACT.

1. <u>DEFINITIONS</u>. Whenever in these Bid Documents, or in any document of instruction where these Bid Documents govern, the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

Bid: The offer of the BIDDER for the work when properly made out on forms containing the Bid Form supplied by CITY and properly submitted signed and guaranteed.

Bid Documents: Consists of all CONTRACT DOCUMENTS and may be used interchangeably with said term.

Bidder: Any individual, firm or corporation, qualified as herein provided, legally submitting a Bid for the work contemplated, acting directly or through an authorized representative.

City: The CITY of Page, an Arizona municipal corporation.

Construction Documents: The drawings, technical plans, and specifications, supplementary general and/or special conditions for THE WORK.

Contract: The written agreement covering the performance of THE WORK and the furnishing of labor, equipment, and materials in the construction for THE WORK.

Contract Documents: Includes the Notice of Invitation for Bid, Definitions, Scope of Work and/or Plans, Drawings, and Technical Specifications, Instructions to Bidders, General Conditions, Special Conditions (if any), Arizona Statutory Bid Bond, Arizona Statutory Performance Bond, Arizona Statutory Payment Bond, Contract, Contractor's Reference List, List of Subcontractors & Material Vendors, Statement of Bidder Qualifications, Bid Form, Notice of Award, and Notice to Proceed.

Contractor: The successful BIDDER selected by the Council that enters into the CONTRACT to perform THE WORK.

Extra Work: Work, including materials, for which no price agreement is contained in the CONTRACT and which is deemed necessary for the proper completion of the work.

Notice of Award: The official written notice from CITY to the BIDDER selected by CITY to perform THE WORK.

Notice to Proceed: The official written notice from CITY to CONTRACTOR to begin performance of THE WORK.

Responsible Bidder: A BIDDER determined by CITY:
- A. To have the ability, capability, experience and skill to provide the goods and/or services in accordance with the bid specifications;
- B. To have the ability to provide the goods and/or services promptly, or within the time specified, without delay or interference;
- C. To have equipment, facilities and resources of such capacity and location to enable the BIDDER to provide the goods and/or services;
- D. To be able to provide future maintenance, repair, parts and service for the use of the goods purchased, when applicable;
- E. To have the quality and adaptability of the materials, supplies or services required or necessary to the particular use; and
- F. To possess the financial resources to perform the CONTRACT.

Responsive Bidder: A BIDDER determined by CITY to have submitted a bid that conforms in all material respects to the requirements of the BID DOCUMENTS.

Special Conditions: Additional conditions to the General Conditions, which are conditions or requirements peculiar to the project under consideration. In the event Special Conditions are in conflict with the General Conditions, the Special Conditions shall be controlling.

Surety: The corporate body, who is primarily liable, that agrees to be responsible for the payment of all debts pertaining to the acceptable performance of the work for which the CONTRACTOR has contracted.

The Work: All of the work or services, including the labor and materials, specified in the CONTRACT DOCUMENTS.

2. <u>CERTIFICATION</u>. By signature of the Bid Form, BIDDER certifies:

A. The submission of the BID did not involve collusion or other anti-competitive practices.

B. The BIDDER shall not discriminate against any employee, or applicant for employment in violation of Federal Executive Order 11246, or A.R.S. § 31-1461 et seq.

C. The BIDDER has not given, offered to give, nor intends to give at any time hereafter, any economic opportunity, future employment, gift, loan, gratuity, special discount, trip, favor, or service to a public servant in connection with the submitted BID.

D. The BIDDER submitting the offer hereby certifies that the individual signing the BID is an authorized agent for the BIDDER and has authority to bind the BIDDER to the CONTRACT.

E. That no person has been employed or retained to solicit or secure this CONTRACT upon an agreement or understanding for a commission, percentage, brokerage or contingency fee, and that no member of the CITY Council or CITY employee has any interest, financial or otherwise, in the Contracting firm.

3. <u>COMPLIANCE WITH LAW</u>. The CONTRACTOR, in the execution of THE WORK, shall conform to all applicable Federal, State, and local laws, rules and regulations. If CONTRACTOR observes that the CONTRUCTION DOCUMENTS are at variance therewith, it shall promptly notify CITY in writing, and any necessary changes shall be made as provided in this CONTRACT

for changes in work. CONTRACTOR shall bear all costs arising from work performed contrary to such laws, rules and regulations, and without such notice to CITY.

4. <u>LICENSES</u>. THE WORK to be performed under the CONTRACT will be subject to the provisions on Title 34 of the Arizona Revised Statutes (A.R.S. § 34-101 through 34-461, as amended), if applicable. All BIDDERs and their subcontractors shall be duly licensed to perform THE WORK at the time the BID is submitted pursuant to all applicable laws, rules and regulations. At all times thereafter, while performing THE WORK, CONTRACTOR shall maintain in current status all licenses, permits, certifications, approvals and authorizations necessary to perform all obligations as set forth in the BID DOCUMENTS. It shall be the CONTRACTOR's responsibility to verify that its subcontractors have all appropriate licenses, permits, certifications, approvals and authorizations prior to their performing CITY of Page work on behalf of the CONTRACTOR.

5. <u>PROVISIONS REQUIRED BY LAW</u>. All applicable Federal, State and local laws, rules and regulations of all authorities having jurisdiction over construction for the project shall apply to the CONTRACT throughout, and they shall be deemed to be included in the CONTRACT the same as if each were fully set forth verbatim herein. Contractor shall be familiar with and at all times shall observe said laws, rules and regulations.

6. <u>CHANGE ORDERS FOR CHANGED OR EXTRA WORK</u>. The CITY reserves the right at any time during the progress of THE WORK to make necessary alterations of, deviations from, additions to, or deletions from the CONTRACT, or may require the performance of EXTRA WORK neither covered by the specifications nor included in the BID, but forming a part of THE WORK contracted for; provided however, the CONTRACTOR shall not proceed with any such change or EXTRA WORK without a written CHANGE ORDER approved by the CITY. Adjustments, if any, in the amount to be paid to the CONTRACTOR by reason of any such change shall be agreed upon by the Parties prior to issuance of the CHANGE ORDER.

No claim for any changed or EXTRA WORK of any kind shall be allowed unless the work is ordered and approved in writing by the CITY in the form of a CHANGE ORDER. No anticipated profits shall be allowed for work deleted.

In the event any written instructions appear to the CONTRACTOR to involve a change or EXTRA WORK for which, in his opinion, he should receive extra compensation, he shall make a written request to the Department Director named herein, or his properly authorized agent, for a written CHANGE ORDER. The matter shall then be submitted to the CITY for final determination as to whether or not a change or EXTRA WORK was involved, and if so, the amount due to the CONTRACTOR. Any claim for extra cost pursuant to this provision, together with supporting documents and receipts must be filed within ten (10) consecutive calendar days after performing the work for which the extra cost is claimed.

If CONTRACTOR, in the course of THE WORK, finds any discrepancy between the CONSTRUCTION DOCUMENTS and the physical conditions of the locality, or any errors or omissions in the CONSTRUCTION DOCUMENTS or in the layout as given by points and instructions, it shall be CONTRACTOR's duty to immediately inform CITY, in writing, and CITY shall promptly verify the same. Any work done after such discovery, until authorized in writing, shall be done at CONTRACTOR's risk.

7. <u>PROTECTION OF WORK/PROPERTY</u> **38** he CONTRACTOR, at no additional expense to CITY, shall at all times safely guard and protect Contractor's own work; provide, erect, and

City of Page COP Downtown Revitalization PH1 February 19, 2024 Bidder's Initials maintain suitable barriers around all excavations or obstructions to prevent accidents; and provide, place and maintain during the night sufficient lights, signals, and signs for this purpose on or near the work. The CONTRACTOR shall at all times, until its completion and final acceptance, protect his work apparatus, equipment, and material from accidental or other damage; and make good any damages thus occurring at no additional cost to CITY.

The CONTRACTOR, at no additional expense to the CITY, shall at all times be responsible for the preservation of all public and private property on the surface and subsurface, along and adjacent to the work and shall conduct its operations so as to insure the prevention of injury or damage thereto. In the event damage or injury is done to public or private property on account of any act, omission, neglect, or misconduct in the execution of THE WORK, such property shall be restored by CONTRACTOR.

CONTRACTOR shall exercise care to protect from injury all water lines, sanitary sewer lines, gas mains, telephone cables, electric cables, services pipes, and all other utilities and fixtures which may be encountered during the progress of work. All utilities and other service facilities or fixtures if damaged, shall be repaired by CONTRACTOR without additional compensation.

Until written final acceptance of the work by CITY, CONTRACTOR shall be responsible for and take every precaution against injury or damage to any part of THE WORK from any cause, whether arising from the execution or non- execution of THE WORK. CONTRACTOR shall rebuild, repair, restore, and make good all injuries or damages of any portion of THE WORK occasioned by any cause, with the exception of negligence or willful misconduct of the CITY, before final acceptance and shall bear the expense thereof.

8. <u>SUBCONTRACTS</u>. CONTRACTOR agrees that it is as fully responsible to CITY for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

9. <u>CLEAN UP</u>. CONTRACTOR shall, as directed by CITY, remove from CITY's property and from all public and private property, at its own expense, all temporary structures, rubbish, and waste materials resulting from its operation. All surplus materials and all materials and equipment removed and not reused as a condition of this CONTRACT shall remain or become the property of the CONTRACTOR, unless otherwise so stated in writing.

10. <u>CITY'S RIGHT TO DO WORK</u>. If CONTRACTOR should neglect to prosecute THE WORK properly or fail to perform any provision of this CONTRACT, CITY, after notice to CONTRACTOR, may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due CONTRACTOR.

11. <u>SCHEDULES</u>. CONTRACTOR shall submit at such times as may be requested by CITY, schedules which shall show the order in which CONTRACTOR proposes to carry on THE WORK with dates at which CONTRACTOR shall start the several parts of THE WORK and estimated dates of completion of the several parts.

12. <u>OWNERSHIP OF DOCUMENTS</u>. All original drawings, boring logs, field data, estimates, field notes, plans, specifications, documents, reports, calculations, maps and models, and other information developed by CONTRACTOR under this CONTRACT shall vest in and become the property of CITY and shall be delivered to CITIgupon completion or termination of the services, but CONTRACTOR may retain record copies thereof.

City of Page COP Downtown Revitalization PH1 February 19, 2024 Bidder's Initials _____ 13. <u>INSPECTION OF WORK</u>. CITY representatives shall at all times have access to THE WORK wherever it is in preparation or progress. If the specifications, CITY's instructions, laws, ordinances, or any public authority, require any work be specifically tested or approved, CONTRACTOR shall give CITY timely notice of its readiness for inspection and if the inspection is by an authority other than CITY, of the date fixed for such inspection. Inspections by CITY shall be promptly made, and where practicable at the source of the supply. If any work should be covered up without approval or consent of CITY, it must, if required by CITY, be uncovered for inspection at CONTRACTOR's expense.

Re-examination of questioned work may be ordered by CITY, and if so ordered the work must be uncovered by CONTRACTOR. If such work is found to be in accordance with the BID DOCUMENTS, CITY shall pay the costs of re-examination and replacement. If such work is found not to be in accordance with the BID DOCUMENTS, CONTRACTOR shall pay such costs.

4 CONSTRUCTION PLANS

Full Plan Set Pages43 PagesFinal Specs 02-05-2496 pages

City of Page COP Downtown Revitalization PH1 February 19, 2024 Bidder's Initials _____





VICINITY MAP

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12.	GEOMETRIC CONTROL PLAN	CV-404
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LAKE POWELL BOULEVARD STREETSCAPE IMPROVEMENTS: NORTH NAVAJO DRIVE TO VISTA AVENUE





CITY OF PAGE

MAYOR **BILL DIAK**

VICE MAYOR JOHN KOCJAN

COUNCIL MEMBERS

THERESA LEE DAVID AUGE **BRIAN CAREY RICHARD LEIGHTNER** MICHAEL FARROW

CITY MANAGER

DARREN COLDWELL

LANDSCAPE ARCHITECT

J2 DESIGN JEFF BENTZ, PLA 4649 E. COTTON GIN LOOP, SUITE B2 PHOENIX, AZ 85040 PHONE: (602) 438-2221 EMAIL: JBENTZ@J2DESIGN.US

CIVIL ENGINEER & SURVEY

DIBBLE ENGINEERING DREW SPEAR, PE 7878 N. 16TH STREET, SUITE 300 PHOENIX, AZ 85020 PHONE: (602) 957-1155 EMAIL: DREW.SPEAR@DIBBLECORP.COM

OWNER

CITY CLERK

KIM LARSON

CITY OF PAGE DARREN COLDWELL **CITY MANAGER** 697 VISTA AVENUE PAGE, ARIZONA 86040 DCOLDWELL@PAGEAZ.GOV

ELECTRICAL

WRIGHT ENGINEERING CLIFF TOLMAN, PE 165 E CHILTON DRIVE CHANDLER, AZ 85225 PHONE: (480) 497-5829 EMAIL: CTOLMAN@ WRIGHTENGINEERING.US



CITY ENGINEERING DEPARTMENT

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

DATE

AASHTO ABAND ABC AC AC ACFC ACI ACP ACSC ADA ADOT AHD AISC	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS ABANDONED AGGREGATE BASE COURSE ACRES ASPHALT CONCRETE ASPHALT CONCRETE FRICTION COURSE AMERICAN CONCRETE INSTITUTE ASBESTOS CEMENT PIPE ASPHALT CONCRETE SURFACE COURSE AMERICANS WITH DISABILITIES ACT ARIZONA DEPARTMENT OF TRANSPORTATION AHEAD AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AFS	ARIZONA FOBLIC SERVICE
ASLD	ARIZONA STATE LAND DEPARTMENT
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AVE	AVENUE
By C	BACK OF CORB
BC	BRASS CAP
BCF	BRASS CAP FLUSH
BCHH	BRASS CAP IN HANDHOLE
BCR	BEGIN CURB RETURN
BKFL	BACK
BKFL	BACKFILL
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCHMARK
BOT	BOTTOM
C C&G CAP CATV CB CIP CIP CIP CK € CLR CMP CO COMM CONC CONST COR COR COR COR COR COR COR COR COR COR	CONCRETE ELEVATION CONDUIT CURB AND GUTTER CORRUGATED ALUMINUM PIPE CABLE TELEVISION CATCH BASIN CAST IRON PIPE CAST IN PLACE CURED IN PLACE PIPE CHECKED CENTERLINE CLEAR CORRUGATED METAL PIPE CLEAN OUT COMMUNICATION CONCRETE CONSTRUCTION CORNER CORRECTION CORRUGATED STEEL PIPE CEMENT TREATED BASE
D/W	DRIVEWAY
DB	DUCT BANK
DES	DESIGN
DET	DETAIL
DG	DECOMPOSED GRANITE
DIP	DUCTILE IRON PIPE
DR	DRIVE
DRN	DRAWN
DRNG	DRAINAGE
DWG	DRAWING
E E/P EA ECR EGL ELEC ESMT EVAC EXST	EAST, EASTING EDGE OF PAVEMENT EACH ELECTRIC PULLBOX END CURB RETURN ENERGY GRADE LINE ELEVATION ELECTRIC EASEMENT EAST VALLEY ASPHALT COMMITTEE EXISTING
F F/C FCDMC FF FG FH FHWA FL FL FL FL FND FO FT	FAX NUMBER FACE OF CURB FLOOD CONTROL DISTRICT OF MARICOPA COUNTY FINISH FLOOR ELEVATION FINISH GRADE ELEVATION FIRE HYDRANT FEDERAL HIGHWAY ADMINISTRATION FIRE LINE FLOWLINE FLANGE FOUND FIBER OPTIC FOOT OR FEET
G GAF GB GM GND GV	GUTTER ELEVATION GAS GRID ADJUSTMENT FACTOR GRADE BREAK GAS METER GROUND GAS VALVE
H	HORIZONTAL
HDPE	HIGH DENSITY POLYETHYLENE
HDWL	HEADWALL
HGL	HYDRAULIC GRADE LINE
HP	HIGH PRESSURE
HW	HIGH WATER
HWY	HIGHWAY
ID	INSIDE DIAMETER
INV	INVERT
IRR	IRRIGATION
IV	IRRIGATION VALVE
L	LENGTH OF CURVE
LF	LINEAR FEET
LOC	LIMITS OF CONSTRUCTION
LS	LUMP SUM

LT	LEFT
MAG MAX MB MCDOT MCESD ME MH MI MIN MJ MJ MOD MW	MARICOPA ASSOCIATION OF GOVERNMENTS MAXIMUM MAILBOX MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION MARICOPA COUNTY ENVIRONMENTAL SERVICES DEPARTMENT MATCH EXISTING MANHOLE MILES MINIMUM MECHANICAL JOINT MONUMENT LINE MODIFIED MONITORING WELL
N NC NO NPDES NPI NSF NTS NW	NORTH, NORTHING NORMAL CROWN NORTHEAST NUMBER NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM NON-PAY ITEM NATIONAL SANITATION FOUNDATION NOT TO SCALE NORTHWEST
OC OD OHE OHT	ON CENTER OUTSIDE DIAMETER OVERHEAD ELECTRIC OVERHEAD TELEPHONE
P PB PC PCC PCC PE PGL PGL PIP PIP PIP PLSS POT PPR PC PSI PVC PVI PVC PVI PVRC PVT	PAVEMENT ELEVATION PHONE NUMBER PULLBOX POINT OF CURVATURE POINT OF COMPOUND CURVATURE PORTLAND CEMENT CONCRETE PAVEMENT POLYETHYLENE PIPE TELEPHONE PEDESTAL PROFILE GRADE LINE POTHOLE NUMBER POINT OF INTERSECTION PROTECT IN PLACE PROPERTY LINE PUBLIC LAND SURVEY SYSTEM POINT ON CURVE POINT ON TANGENT POWER POLE POINT OF REVERSE CURVATURE PROPOSED POUNDS PER SQUARE INCH POINT OF TANGENCY POINT PUBLIC UTILITY EASEMENT POLY VINYL CHLORIDE POINT OF VERTICAL INTERSECTION PAVEMENT POINT OF VERTICAL REVERSE CURVATURE POINT OF VERTICAL REVERSE CURVATURE POINT OF VERTICAL TANGENCY
R R/W RCBC RCP RD RDWY RELOC RGRCP RR RT	RADIUS RANGE RIGHT-OF-WAY REINFORCED CONCRETE BOX CULVERT REINFORCED CONCRETE PIPE ROAD ROADWAY RELOCATE RUBBER GASKET REINFORCED CONCRETE PIPE RAILROAD RIGHT
S S/W SD SE SEC SF SG SHLDR SF SC SRP SSD ST STA STD STL SW SWG SY	SLOPE SOUTH SIDEWALK STORM DRAIN SOUTHEAST SECTION SQUARE FOOT SUBGRADE ELEVATION SHOULDER SHEET SPECIFICATIONS SALT RIVER PROJECT SANITARY SEWER STOPPING SIGHT DISTANCE STREET STATION STANDARD STEEL SOUTHWEST SOUTHWEST SOUTHWEST GAS COMPANY SQUARE YARD
T T/W TBM TC TCE TEL TEMP TN TOE TRAN TS TYP	TOWNSHIP TANGENT LENGTH TOP OF WALL TEMPORARY BENCHMARK TOP OF CURB TEMPORARY CONSTRUCTION EASEMENT TELEPHONE TEMPORARY TOP OF NUT TOE OF EMBANKMENT TRANSITE PIPE TRAFFIC SIGNAL TYPICAL
UNK UPRR	UNKNOWN UNION PACIFIC RAILROAD
V VC VCP VG	VERTICAL VERTICAL CURVE VITRIFIED CLAY PIPE VALLEY GUTTER

STANDARD ABBREVIATIONS & LEGEND

VNAE VEHICULAR NON ACCESS EASEMENT

w	WFST
Ŵ	WATER
W/	WITH
W/O	WITHOUT
ŴМ	WATER METER
WSE	WATER SURFACE ELEVATION
WV	WATER VALVE

XFMR TRANSFORMER

	EXISTING		NEW
	BENCHMARK		BENCHMARK
\bigcirc	BRASS CAP FLUSH	\bigcirc	BRASS CAP FLUSH
	BRASS CAP IN HANDHOLE		BRASS CAP IN HANDHOLE
0330	BACKFLOW PREVENTER	0	BACKFLOW PREVENTER
	CACTUS	- □ BH#X	BORING LOCATION
	DRYWELL	\$\$ \$ \$	CACTUS
	FIRE HYDRANT		DRYWELL
	FIRE DEPT CONNECTION		FIRE HYDRANT
P	FLAG POLE	<i>₹</i>	FIRE DEPT CONNECTION
	GATE	ľ	FLAG POLE
	GRATE		GATE
	GUY WIRE		HEADWALL
	HEADWALL	MB	MAILBOX
MB	MAILBOX	\bigwedge	MANHOLE
(COM)	MANHOLE (TYPE NOTED)		METER
FM	METER (TYPE NOTED)		PIPE PIUG
TV	PEDESTAL (TYPE NOTED)		POTHOLE LOCATION
[FR]	PULLBOX (TYPE NOTED)	\bigvee	PULLBOX
	RIPRAP		RIPRAP
	ROCK	0,0,0,0, (7)	ROCK
	SHRUB	ب ه	SHRUB
d	SIGN	• 1	SIGN
 0	STREET LIGHT	' ● ४——०	STREET LIGHT
	TRFF	En al at	TRFF
≪ ^{₩V}	VALVE (TYPE NOTED)	Ø	VALVE
		J. J	
	BUILDING SETBACK		BUILDING SETBACK
	DISTRICT BOUNDARY OR CITY LIMITS		CENTERLINE
	EASEMENT		EASEMENT
I I	FOREST BOUNDARY LINE		LIMITS OF CONSTRUCTION
	MID-SECTION		RIGHT-OF-WAY
	PROPERTY LINE		
	RIGHT-OF-WAY		
	SECTION		
<u> </u>	CHANNEL	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	BASE FLOOD ELEVATION
	CURB & GUTTER		CHANNEL
	EDGE OF PAVEMENT		CURB & GUTTER
	FENCE WOOD	C	DAYLIGHT LINE, CUT
X	FENCE WIRE	F	DAYLIGHT LINE, FILL
O	FENCE CHAINLINK		EDGE OF PAVEMENT
	FLOWLINE	o	FENCE WOOD
<u> </u>	GUARDRAIL	×	FENCE WIRE
	MASONRY WALL/RETAINING WALL	o	FENCE CHAINLINK
1,150	MAJOR CONTOUR		FLOWLINE
\sim	MINOR CONTOUR	<u> </u>	GUARDRAIL
++	RAILROAD		MASONRY WALL/RETAINING
	SINGLE CURB	1,150	MAJOR CONTOUR
	SIDEWALK	\sim	MINOR CONTOUR
			SIDEWALK

EXISTING

— — CATV — —	CABLE TV
— — СОММ — —	COMMUNICATION
— — · E · — —	ELECTRIC (UNDERGROUND)
— — OHE — —	ELECTRIC (OVERHEAD)
— — FO — —	FIBER OPTIC
— — FL — —	FIRE LINE
— — 2"G — —	GAS
— —12" IRR— —	IRRIGATION LINE 18" OR SMALLER
24" IRR	IRRIGATION LINE 21" OR LARGER
— — 12" RW— —	RECLAIMED WATER 18" OR SMALLER
24" RW	RECLAIMED WATER 21" OR LARGER
— — T — —	TELEPHONE
— — 12" S— —	SEWER LINE 18" OR SMALLER
24" S	SEWER LINE 21" OR LARGER
— —12" SD— —	STORM DRAIN 18" OR SMALLER
24" SD	STORM DRAIN 21" OR LARGER
— — 12" W — —	WATER LINE 18" OR SMALLER
24" W	WATER LINE 21" OR LARGER

<u>NEW</u>

_		
_		
=	 	

STORM DRAIN UTILITY LINE SLOTTED TRENCH DRAIN

ETAINING WALL

SINGLE CURB



PROFILE ELEVATIONS LEGEND
(U) = UNKNOWN
(S) = FIELD MEASUREMENT - SURVEY
(PH)= FIELD MEASUREMENT - POTHOLE
(R) = RECORD DRAWING (DESIGN/AS-BUILT)

ENGINEER'S NOTES

- 1. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONSTRUCTION STAKING FOR THE PROJECT. THI CONSTRUCTION STAKING SHALL BE PERFORMED BY A PROFESSIONAL SURVEYOR, REGISTERED WITH THE ARIZONA.
- ALL DIMENSIONS AND CURVE DATA ARE REPORTED TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
- WHERE REPLACEMENT AND/OR NEW INSTALLATION OF MONUMENTATION FOR SECTION CORNERS. QUARTER CORNERS, CENTER OF SECTION, AND ROADWAY GEOMETRY IS REQUIRED; THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE STATE OF ARIZONA BOARD OF TECHNICAL REGISTRATION PUBLICATION "ARIZONA BOUND SURVEY MINIMUM STANDARDS" AND THE STATE OF ARIZONA REVISED STATUTES 33-103, 33-104, 33-105 ANI 33-106.
- 4. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CONTRACT DRAWINGS, SPECIAL PROVISIC TECHNICAL SPECIFICATIONS, SUPPLEMENTAL GENERAL CONDITIONS, MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION), MAG UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION) AND THE CITY OF PAGE STANDARD DETAILS AND SPECIFICATIONS (LATEST EDITION)
- 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING BLUE STAKE (800-782-5348) OR BY DIALING 811 FOR UTILITY LOCATION A MINIMUM OF 48 HOUR IN ADVANCE OF ANY EXCAVATION. UTILITY LOCATIONS SHALL BE PROTECTED, MAINTAINED AND UPDATED IN ACCORDANCE WITH APPLICABLE STATE AND MUNICIPAL LAWS.
- 6. PRIOR TO THE START OF ANY WORK ACTIVITIES, THE CONTRACTOR SHALL PROVIDE NOTIFICATION TO THE OWNER AND THE ENGINEER. A PRE-ACTIVITY MEETING (PRECONSTRUCTION CONFERENCE) MAY BE REQUIRED.
- 7. EXISTING UTILITIES AND OTHER FACILITIES HAVE BEEN SHOWN ON THE CONTRACT DRAWINGS BASED ON FIELD SURVEYS, EXISTING MAPS AND OTHER INFORMATION GATHERED BY THE ENGINEER DURING DESIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT LOCATIONS OF ALL UTILITIES IMPACTING CONSTRUCTION AND PROTECTION OF SAID UTILITIES. IF RELOCATION OF UTILITIES IS REQUIRED. THE CONTRACTOR SHALL COORDINATE THE RELOCATION WITH THE OWNER. UTILITIES DAMAGED BY CONTRACTORS ACTIVITIES SHALL BE REPAIRED WITH NEW MATERIALS AT NO COST TO THE OWNER AND TO THE OWNER'S SATISFACTION. CONTRACTOR SHALL SUPPORT AND PROTECT IN-PLACE UTILITIES WITHIN THE EXCAVATION IN ACCORDANCE WITH
- MAG SPECIFICATIONS, UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER OF THE UTILITY.
- 9. EXISTING FEATURES AND FACILITIES WHICH ARE NOT SPECIFICALLY LOCATED WITH HORIZONTAL AND VERTICAL CONTROLS ARE LOCATED APPROXIMATELY WITH THE BEST AVAILABLE INFORMATION. VARIATIONS BETWEEN PLAN LOCATION AND ACTUAL DIMENSIONS WILL NOT BE A BASIS FOR A MODIFICATION OF THE CONTRACT AMOUNT.
- 10. THE OWNER HAS OBTAINED PERMIT APPROVAL FROM DESIGNATED AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING PERMITS, PAYING PERMIT FEES, COORDINATING DESIGNATED AGENCY INSPECTIONS AND CLOSURE OF PERMITS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE DESIGNATED PERMITS AND THE REGULATIONS OF THE PERMITTING AGENCIES
- 11. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S REQUIREMENTS. CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS TO THE GOVERNING AGENCIES AS REQUIRED BY THE AGENCY.
- 12. CONTRACTOR'S WORK ACTIVITIES SHALL BE SCHEDULED AND PHASED SO AS NOT TO UNDULY IMPEDE OR PREVENT ACCESS TO PRIVATE RESIDENCES, PUBLIC FACILITIES, SCHOOLS, OR BUSINESS EXCEPT BY PRIOR WRITTEN AGREEMENT WITH THE IMPACTED OWNER(S) OR OPERATORS.
- 13. ALL EQUIPMENT, MATERIALS, VEHICLES AND CONSTRUCTION ACTIVITIES SHALL REMAIN WITHIN PUBLIC RIGHTS-OF-WAY OR DESIGNATED EASEMENTS.
- 14. ANY EXISTING FEATURES OR FACILITIES DISTURBED BY THE CONTRACTOR SHALL BE REPLACED IN KIND WITH NEW MATERIALS MEETING THE OWNER'S APPROVAL AT NO ADDITIONAL COST TO THE OWNER.
- 15. THE CONTRACTOR SHALL PROVIDE CLEAR AND ACCURATE REDLINES TO THE OWNER FOR PREPARATION OF RECORD DRAWINGS. THE REDLINES SHALL BE UPDATED ON A DAILY BASIS TO REFLECT THE CURRENT CONSTRUCTION ACTIVITIES AT ALL TIMES AND MAY BE INSPECTED BY THE OWNER/ENGINEER AT ANY TIME UPON REQUEST.
- 16. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY ON THE CONSTRUCTION SITE. THE CONTRACTOR SHALL IMPLEMENT AN APPROVED SAFETY PLAN, AND ALL PERSONNEL ON THE JOB SHALL FOLLOW THE APPROVED SAFETY PLAN.
- 17. THE CONTRACTOR SHALL PROVIDE SUITABLE PROTECTION FOR EXCAVATIONS. AT A MINIMUM, OSHA REGULATIONS REQUIRE PROTECTION FROM CAVE-INS FOR EXCAVATIONS GREATER THAN FIVE FEET IN DEPTH. WHERE EXCAVATIONS ARE DEEPER THAN TWENTY FEET, EXCAVATION PLANS AND SHORING SYSTEM DESIGN SHALL BE SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF ARIZONA.
- 18. TRENCH EXCAVATION, BACKFILL, AND SURFACE REPLACEMENT SHALL BE AS SHOWN ON THE DRAWINGS AND/OR REQUIRED BY THE CONTRACT DOCUMENTS. IN NO CASE SHALL TRENCH EXCAVATION, BACKFILL AND SURFACE REPLACEMENT BE LESS STRINGENT THAN MAG REQUIREMENTS, EXCEPT AS MAY BE SPECIFICALLY ALLOWED IN WRITING BY THE ENGINEER. UNLESS OTHERWISE DESIGNATED, ALL COMPACTION DENSITIES SHALL MEET THE REQUIREMENTS OF MAG SPECIFICATION SECTION 601, TYPE I.
- 19. CONTRACTOR SHALL USED EXTREME CAUTION WHILE WORKING IN THE VICINITY OF ALL GAS AND POWER LINES. THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF THE GAS AND POWER TRENCHES AND PIPELINES AT ALL TIMES. SPECIAL ATTENTION SHALL BE GIVEN TO BRACING AND SUPPORT FOR UNDERGROUND POWER CROSSINGS. POLE BRACING MAY BE REQUIRED BY THE POWER COMPANY WHEN EXCAVATING NEAR POWER POLES.
- 20. RECLAIMED ASPHALT PAVEMENT (RAP) SHALL NOT BE UTILIZED IN PIPE OR TRENCH BACKFILL
- 21. CONTRACTOR SHALL CONTACT ATLASONE PRIOR TO ANY CONSTRUCTION OR ADJUSTMENTS OF MONITORING WELLS (TEST, VAPOR, OR GROUNDWATER). SPECIAL CARE SHALL BE TAKEN WHEN LOWERING MONITORING WELLS. 22. REFER TO SPECS FOR DATA SHEETS FOR FURNISHING MONITORING WELL COVERS.

<u> </u>	
STATE	OF

UTILITY CONTACT LIST

	OWNER	CONTACT	PHONE	PLANS SUBMITTED
	ALLIANT GAS	DINDY BYRD	928-614-8250	9/12/2023
	ATLAS	WAYNE FELLER	480-355-4628	9/12/2023
DARY	LUMEN	KEVIN WAGNER	815-245-9640	9/12/2023
D	PAGE ELECTRIC	PHIL FAULK	928-645-2419	9/12/2023
NS, MAG)	S CENTRAL UTAH TELEPHONE ASSOCIATION INC.	MICHAEL SAVAGE	435-616-0508	9/12/2023





	POINT DATA TABLE				
POINT NO.	GROUND NORTHING	GROUND EASTING	ELEVATION	DESCRIPTION	
2	2154966.705	833402.572	4271.13	FND-BCHH 36325	
4	2156188.382	830246.079	4031.92	FND-BCF Q404 BM	
5	2156938.532	829260.460	3957.97	FND-BCF GLO	
6	2159590.169	831896.949	4155.77	FND-BCF BLM	
7	2154310.177	831920.724	4278.70	FND-BCF BLM	
8	2155137.327	832825.992	4255.44	FND-BCHH 36325	
9	2155062.689	833136.963	4266.43	FND-BCHH 36325	
10	2155066.669	833120.448	4265.22	FND-BCHH	
11	2156071.212	833596.888	4258.01	FND-BCHH BOR	
12	2155226.886	833521.425	4269.24	FND-BCHH BOR	
13	2154122.256	833090.993	4285.58	FND-BCF	
14	2154979.275	833967.999	4283.53	FND-BCF	
15	2154693.001	833771.554	4285.20	FND-BCHH 36322	
16	2154065.681	834344.776	4309.92	FND-BCHH 36325	
17	2155028.763	833400.376	4271.16	FND-ACF 18297	
18	2155023.309	833385.853	4270.32	FND-ACF 18297	
19	2155098.807	833174.205	4267.09	FND-ACF 18297	
20	2155112.742	833166.483	4267.18	FND-ACF 18297	
21	2154717.748	833747.214	4284.64	FND-BCHH	
30	2155125.512	833107.910	4266.31	FND-RB 21776	
318	2155121.601	833115.382	4265.87	FND-BCF 36323	

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- TO CONSTRUCTION.
- 4. PROJECT METADATA: <u>UNITS:</u>

 - VERTICAL DATUM: NAVD '88
- PROJECT BENCHMARK: POINT NUMBER 4
- SURVEY MEASUREMENTS.

NORTHWEST QUARTER OF SECTION 32 TOWNSHIP 41 NORTH, RANGE 9 EAST

- MID-SECTION LINE



11





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(6) MAG CATCH BASIN 533 (MODIFIED)





9 SLOTTED TRENCH DRAIN DETAIL

· ____

PLAN

PROFILE

9" MIN

11" MAX

4"

MAX 45°



VERTICAL CURB & GUTTER

SECTION A-A

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LINE TABLE				
)	LENGTH	BEARING		
1	11.84'	S23*	08'	37 " E
2	8.18'	S66 '	51'	23 " W
3	22.63'	N20*	38'	47 " W
4	13.42'	S28*	47'	22 " W
5	15.83'	S27•	59'	32 " W
6	24.14'	N75'	22'	15"E

CURVE TABLE					
ID	Δ	LENGTH	RADIUS	TANGENT	
C50	92 ° 11 ' 55"	32.18'	20.00'	20.78	
C51	5•53'25"	132.74'	1291.16'	66.43	
C52	134•47'24"	4.71'	2.00'	4.80	
C53	1•59'42"	45.57'	1308.74'	22.79	
C54	45°29'11"	3.97'	5.00'	2.10	
C55	85°04'41"	29.70'	20.00'	18.35	
C56	90 ° 19'20"	31.53'	20.00'	20.11	
C57	2°03'27"	46.36'	1291.16'	23.18	
C58	44°21'24"	1.55'	2.00'	0.82	

	LINE TA
ID	LENGTH
L70	7.42'
L71	9.85'

LINE TABLE					
ID LENGTH BEARING					
L4	10.85'	N32 31'24"E			
L5	10.84'	N33 41'50"E			
L7	14.90'	N40° 34' 17"E			

CURVE TABLE				
ID	Δ	LENGTH	RADIUS	TANGENT
C13	57•56'33"	10.11'	10.00'	5.54
C14	84•36'20"	14.77'	10.00'	9.10
C15	64 ° 50'29"	22.63'	20.00'	12.70
C16	75•13'01"	26.26'	20.00'	15.41
C17	74 ° 18'30"	12.97'	10.00'	7.58
C18	57•56'33"	10.11'	10.00'	5.54
C19	0°07'51"	2.85'	1245.82'	1.42
C20	57 ° 56'33"	10.11'	10.00'	5.54
C21	39•02'08"	6.81'	10.00'	3.54
C23	90•55'53"	31.74'	20.00'	20.33
C24	2*49'51"	62.02'	1255.32'	31.02
C25	90°00'00"	62.83'	40.00'	40.00
C26	51°34'16"	9.00'	10.00'	4.83
C27	53°02'30"	9.26'	10.00'	4.99

		CURVE T
ID	Δ	LENGTH
C73	0*25'36"	9.61'
C74	134°51'00"	7.06'
C75	135°26'20"	4.73'

LINE TABLE						
ID	LENGTH	BEARING				
L72	8.08'	S7 46' 50'				
L73	10.56'	N82°04'55				

CURVE TABLE				
ID	Δ	LENGTH	RADIUS	TANGENT
C59	2*48'41"	64.22'	1308.74'	32.11
C60	44 ° 54'17"	3.92'	5.00'	2.07
C61	2°03'04"	46.22'	1291.16'	23.11
C62	44 ° 10'52"	1.54'	2.00'	0.81
C63	5•44'58"	131.33'	1308.74'	65.72
C64	44 ° 44'15"	3.90'	5.00'	2.06
C65	0°49'10"	18.46'	1291.16'	9.23
C66	100 ° 10'55"	34.97'	20.00'	23.91

	LINE TABLE					
ID	LENGTH	BEARING				
L57	22.63'	S10 53 00"E				
L58	24.22'	N82 04' 55"E				
L59	22.71'	S1° 34' 06"E				
L60	24.46'	N34 19' 53"E				

CURVE TABLE				
ID	Δ	LENGTH	RADIUS	
C40	0°24'34"	8.96'	1253.74'	
C41	148•43'59"	5.19'	2.00'	
C42	9 ° 40'31"	9.46'	56.00'	
C43	121 ° 18'35"	3.18'	1.50'	
C44	15 ° 06'11"	5.80'	22.00'	
C45	114•19'34"	3.99'	2.00'	

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		Point Tal	ole	
Point #	Description	Elevation	Northing	Easting
1	ME	4266.58	2155114.62	833154.87
2	ME	4266.51	2155099.61	833150.31
3	ME	4266.40	2155076.22	833142.65
4	ME	4266.90	2155070.14	833166.77
5	ME	4267.52	2155059.75	833204.04
6	ME	4267.86	2155052.67	833227.26
7	ME	4268.57	2155038.21	833270.41
8	ME	4269.03	2155027.73	833298.88
9	ME	4269.26	2155021.53	833314.80
10	ME	4269.84	2155004.71	833355.17
11	ME	4270.12	2154996.88	833372.75
12	ME	4271.70	2154965.08	833437.77
13	ME	4271.92	2154958.79	833449.62
14	ME	4272.41	2154947.11	833470.90
15	ME	4272.59	2154943.01	833478.50
16	ME	4272.80	2154938.63	833485.71
17	ME	4273.00	2154934.25	833493.21
18	ME	4274.79	2154900.55	833547.33
19	ME	4275.50	2154889.57	833563.76
20	ME	4275.97	2154882.14	833574.55
21	ME	4276.85	2154868.11	833594.36
22	ME	4277.16	2154862.93	833601.46
23	ME	4277.46	2154857.85	833608.34
24	ME	4277.68	2154852.13	833616.04
25	ME	4280.29	2154811.66	833666.82
26	ME	4282.87	2154769.35	833714.85
27	ME	4283.53	2154755.69	833729.36
28	ME	4284.01	2154742.88	833742.58

Point Table					
Point #	Description	Elevation	Northing	Easting	
29	ME	4284.59	2154722.63	833762.	
30	ME	4284.12	2154746.37	833778.	
31	ME	4284.06	2154766.64	833792.	
32	G	4266.70	2155113.62	833158.	
33	G	4266.42	2155098.61	833153.	
34	G	4266.78	2155074.01	833167.	
35	G	4267.38	2155063.03	833205.	
36	G	4267.82	2155055.93	833228.	
37	G	4268.42	2155041.43	833271.	
38	G	4268.87	2155030.92	833300.	
39	G	4269.15	2155024.71	833316.	
40	G	4269.34	2155027.36	833318.	
41	G	4269.38	2155038.25	833313.	
42	G	4269.58	2155041.46	833321.	
43	G	4270.22	2155023.96	833363.	
44	G	4270.06	2155002.78	833371.	
45	G	4270.03	2154999.99	833374.	
46	G	4270.40	2154993.31	833392.	
47	G	4270.37	2155008.15	833399.	
48	G	4270.60	2155020.40	833406.	
49	G	4270.96	2155008.82	833438.	
50	G	4271.25	2154993.22	833430.	
51	G	4271.10	2154978.58	833422.	
52	G	4271.56	2154968.11	833439.	
53	G	4271.83	2154961.80	833451.	
54	G	4272.33	2154950.07	833472.	
55	G	4272.48	2154945.85	833480.	
56	G	4272.50	2154945.65	833481.	

Point Table							
Point #	Description	Elevation	Northing	Easting			
141	ME	4283.83	2154724.84	833719.16			
142	ME	4284.68	2154699.87	833744.40			
143	ME	4284.38	2154670.47	833725.48			
144	ME	4284.39	2154659.65	833709.11			
145	ME	4284.38	2154657.58	833703.61			
146	G	4265.93	2155004.04	833123.09			
147	G	4266.01	2155026.43	833129.95			
148	G	4266.56	2155039.94	833154.08			
149	G	4267.00	2155033.13	833179.28			
150	G	4267.07	2155026.35	833185.69			
151	G	4267.01	2155019.45	833192.49			
152	G	4268.40	2154993.96	833269.53			
153	G	4269.79	2154963.50	833344.74			
154	G	4270.03	2154964.36	833354.39			
155	G	4270.34	2154965.16	833364.16			
157	G	4270.77	2154938.34	833373.84			
158	G	4270.75	2154955.09	833381.88			
159	G	4271.30	2154943.71	833405.01			
160	G	4271.37	2154928.47	833397.31			
161	G	4271.63	2154938.30	833419.02			
162	G	4271.92	2154930.09	833424.38			
163	G	4272.08	2154921.94	833429.63			
164	G	4273.50	2154892.27	833481.77			
165	G	4273.70	2154891.56	833490.64			
166	G	4273.71	2154891.51	833501.25			
167	G	4274.48	2154866.91	833504.40			
168	G	4274.25	2154881.73	833513.84			
169	G	4275.16	2154867.70	833535.36			

Point Table								
Point #	Description	Elevation	Northing	Easting				
170	G	4275.58	2154860.09	833534.67				
171	G	4275.94	2154857.29	833552.83				
172	G	4276.33	2154850.35	833555.12				
173	G	4276.77	2154841.62	833559.33				
174	G	4278.31	2154818.00	833591.61				
175	G	4278.55	2154816.62	833601.20				
176	G	4278.65	2154816.54	833608.51				
177	G	4278.75	2154813.23	833612.79				
178	G	4279.36	2154788.82	833612.32				
179	G	4279.42	2154803.38	833625.80				
180	G	4280.98	2154778.14	833656.23				
181	G	4281.75	2154764.80	833671.56				
182	G	4283.86	2154722.57	833716.98				
183	G	4284.39	2154666.01	833717.64				
184	G	4284.35	2154663.05	833709.46				
185	G	4284.30	2154659.90	833701.10				
186	С	4265.98	2155021.35	833129.02				
187	С	4266.48	2155019.61	833134.76				
188	С	4266.73	2155036.88	833163.15				
189	С	4267.23	2155031.08	833161.60				
190	WALK	4267.31	2155026.33	833160.33				
191	WALK	4267.01	2155016.67	833157.75				
192	WALK	4267.69	2155007.87	833189.07				
193	WALK	4269.10	2154982.62	833265.36				
194	WALK	4270.46	2154952.46	833339.84				
195	С	4270.65	2154947.20	833375.19				
196	С	4271.16	2154949.79	833369.73				
197	С	4271.34	2154940.75	833365.46				

<u>POINT DATA TABLES</u>

	Point Table						
ng	Point #	Description	Elevation	Northing	Easting		
2.75	57	G	4272.68	2154941.59	833487.43		
8.34	58	G	4272.88	2154937.21	833494.91		
2.18	59	G	4272.79	2154940.56	833499.34		
8.14	60	G	4272.56	2154947.74	833497.46		
3.58	61	G	4272.64	2154945.25	833487.93		
7.78	62	G	4272.57	2154951.74	833504.88		
5.01	63	G	4274.31	2154917.77	833559.36		
8.29	64	G	4275.22	2154895.54	833563.64		
1.55	65	G	4275.38	2154892.35	833565.74		
D.10	66	G	4275.85	2154884.95	833576.50		
6.06	67	G	4276.72	2154870.88	833596.36		
8.63	68	G	4277.04	2154865.69	833603.49		
3.98	69	G	4277.05	2154865.32	833604.94		
1.50	70	G	4277.29	2154864.18	833611.30		
3.58	71	G	4277.34	2154860.60	833610.38		
1.55	72	G	4277.56	2154854.83	833618.07		
4.16	73	G	4277.60	2154857.63	833622.85		
2.54	74	G	4277.20	2154865.64	833621.75		
9.55	75	G	4277.37	2154868.65	833628.93		
6.29	76	G	4279.86	2154827.76	833680.30		
8.23	77	G	4282.44	2154784.35	833729.55		
3.08	78	G	4283.28	2154761.18	833730.21		
2.69	79	G	4283.41	2154758.17	833731.72		
9.36	80	G	4283.76	2154745.32	833744.98		
1.24	81	G	4283.90	2154748.30	833775.52		
2.56	82	G	4284.00	2154768.57	833789.36		
0.03	83	BOW	4267.21	2155111.93	833164.50		
1.52	84	С	4266.85	2155096.77	833159.90		

		Point Ta	ble			Point Table					
Point #	Description	Elevation	Northing	Easting	Point #	Description	Elevation	Northing	Easting		
85	С	4267.28	2155079.89	833169.33	113	WALK	4277.29	2154885.53	833606.95		
86	DW	4267.88	2155068.46	833206.61	114	ME	4276.57	2154906.37	833591.39		
87	DW	4268.32	2155061.33	833229.99	115	ME	4277.44	2154892.01	833611.64		
88	WALK	4267.89	2155080.38	833210.12	116	ME	4278.01	2154874.83	833633.20		
89	WALK	4268.33	2155073.17	833233.73	117	ME	4283.08	2154789.62	833734.87		
90	ME	4267.76	2155088.05	833212.39	118	С	4284.25	2154753.59	833746.05		
91	ME	4268.20	2155080.80	833236.13	119	WALK	4283.97	2154761.76	833754.02		
92	DW	4268.91	2155046.69	833273.42	120	ME	4284.10	2154766.78	833758.91		
93	DW	4269.35	2155036.14	833302.09	121	С	4284.40	2154752.08	833770.13		
94	WALK	4269.11	2155058.47	833277.60	122	ME	4284.56	2154772.28	833783.92		
95	WALK	4269.55	2155047.82	833306.55	123	ME	0.00	2155004.84	833119.84		
96	ME	4269.23	2155065.98	833280.36	124	ME	0.00	2155027.37	833126.66		
97	ME	4269.67	2155055.29	833309.40	125	ME	4266.38	2155048.57	833133.60		
98	ME	4270.20	2155049.29	833324.83	126	ME	4266.68	2155043.25	833154.94		
99	ME	4270.83	2155031.38	833367.13	127	ME	4267.12	2155036.36	833180.19		
100	С	4271.01	2155018.19	833396.98	128	ME	4267.43	2155031.73	833196.18		
101	С	4271.67	2154997.35	833439.62	129	ME	4268.68	2155005.91	833273.80		
102	DW	4272.32	2154966.72	833453.88	130	ME	4270.10	2154975.02	833350.13		
103	DW	4272.83	2154954.94	833475.30	131	ME	4270.46	2154968.03	833365.58		
104	WALK	4272.27	2154977.73	833459.80	132	ME	4271.64	2154941.27	833420.50		
105	WALK	4272.65	2154965.83	833481.42	133	ME	4271.90	2154933.34	833435.62		
106	ME	4272.39	2154984.77	833463.59	134	ME	4273.32	2154903.29	833488.48		
107	ME	4272.50	2154972.81	833485.35	135	ME	4273.83	2154894.36	833503.04		
108	ME	4273.22	2154959.12	833508.89	136	ME	4276.02	2154860.33	833554.87		
109	ME	4274.95	2154924.69	833564.31	137	ME	4276.59	2154852.10	833566.74		
110	DW	4276.36	2154889.60	833579.73	138	ME	4278.13	2154828.24	833599.33		
111	DW	4277.23	2154875.46	833599.68	1 3 9	ME	4278.70	2154819.41	833610.80		
112	WALK	4276.42	2154899.80	833586.82	140	ME	4281.86	2154767.14	833673.57		

		Point Table								
	Point #	Description	Elevation	Northing	Easting					
7	198	С	4271.40	2154933.92	833402.20					
3	199	С	4271.96	2154930.85	833408.22					
2	200	С	4272.03	2154921.95	833403.65					
3	201	С	4272.75	2154911.30	833423.91					
1	202	WALK	4274.17	2154881.92	833475.55					
C	203	С	4274.26	2154874.35	833506.80					
1	204	С	4274.81	2154877.93	833501.14					
9	205	С	4274.96	2154869.46	833495.83					
2	206	С	4275.49	2154857.92	833531.99					
C	207	С	4276.00	2154854.54	833537.00					
3	208	С	4276.19	2154846.26	833531.40					
5	209	WALK	4277.44	2154831.76	833552.35					
3	210	WALK	4278.98	2154808.36	833584.32					
4	211	С	4279.30	2154796.86	833615.41					
5	212	С	4279.81	2154800.62	833610.68					
C	213	С	4279.96	2154792.78	833604.48					
2	214	G	4280.11	2154786.83	833630.41					
5	215	G	4280.22	2154784.57	833631.74					
5	216	С	4281.52	2154767.64	833650.68					
C	217	С	4282.03	2154763.69	833655.26					
3	218	С	4282.08	2154756.14	833648.70					
5	219	WALK	4282.25	2154756.13	833663.89					
7	220	WALK	4282.39	2154748.74	833657.35					
5	221	WALK	4284.35	2154715.00	833708.17					
4	222	WALK	4284.45	2154707.84	833701.18					
9	223	С	4284.32	2154684.08	833727.15					
3	224	С	4284.82	2154688.14	833722.73					
5	225	WALK	4284.57	2154680.47	833711.15					

Point Table								
Point #	Description	Elevation	Northing	Easting				
226	ME	4284.63	2154678.19	833709.07				
227	ME	4266.56	2155002.38	833129.30				
228	WALK	4266.61	2155011.43	833132.18				
229	WALK	4266.92	2155019.44	833147.16				
230	G	4271.00	2154922.57	833366.28				
231	ME	4271.21	2154916.01	833376.99				
232	G	4271.28	2154909.42	833387.69				
233	ME	4271.87	2154906.46	833393.56				
234	WALK	4271.98	2154914.84	833397.80				
235	WALK	4272.17	2154917.39	833412.44				
236	G	4274.79	2154857.76	833498.56				
237	ME	4274.77	2154850.65	833508.91				
238	G	4275.57	2154843.52	833519.24				
239	G	4279.73	2154776.57	833602.51				
240	ME	4280.37	2154764.04	833617.97				
241	G	4281.28	2154751.51	833633.42				
242	EOP	4270.90	2154951.70	833381.83				
243	EOP	4271.38	2154941.60	833402.35				
244	EOP	4274.38	2154878.37	833513.38				
245	EOP	4275.25	2154865.92	833532.47				
246	ME	4267.68	2155106.29	833221.22				
247	ME	4268.17	2155099.62	833242.97				
248	ME	4269.90	2155080.61	833284.95				
249	ME	4270.65	2155073.02	833313.27				
250	ME	4272.22	2154998.86	833471.17				
251	ME	4273.52	2154986.69	833493.30				
252	ME	4274.23	2154953.15	833534.43				
253	ME	4274.40	2154950.72	833539.69				

	Point Table								
g	Point #	Description	Elevation	Northing	Easting				
.07	254	ME	4276.97	2154919.51	833600.52				
.30	255	ME	4278.33	2154904.98	833621.02				
.18	256	ME	0.00	2154861.29	833663.74				
.16	257	ME	0.00	2154857.64	833668.29				
.28	258	ME	4281.73	2154819.64	833707.03				
.99	259	ME	4281.94	2154814.94	833712.42				
.69	260	Р	4280.11	2154792.16	833632.64				
.56	261	Р	4280.20	2154793.19	833635.84				
.80	262	Р	4280.59	2154787.47	833642.74				
.44	263	Р	4280.65	2154783.96	833641.16				
.56	264	WALK	4271.10	2155023.77	833402.02				
.91	265	G	4271.00	2155011.89	833440.14				
.24	266	ME	4271.52	2155014.05	833442.46				
.51	267	FG	4270.91	2155008.52	833444.02				
.97	268	FG	4271.80	2154997.67	833464.85				
.42	269	FG	4271.87	2154991.54	833461.55				

LEGEND:

BOW	BACK OF WALK ELEVATION
C	CONCRETE ELEVATION
DW	DRIVEWAY ELEVATION
EOP	EDGE OF PAVEMENT ELEVATION
G	GUTTER ELEVATION
ME	MATCH EXISTING ELEVATION
Ρ	PAVEMENT ELEVATION
WALK	SIDEWALK ELEVATION

CITY OF PAGE LAKE POWELL BLVD STREETSCAPE IMPROVEMENTS STAKING DATA TABLES	CLIENT:	CAMELBAC SUITE 201 ENIX, AZ 85 02.957.1195	
	LAKE POWELL BLVD	STREETSCAPE IMPROVEMENTS	STAKING DATA TABLES

Contact Arizona 811 at least two full working days before you begin excavation ARZONA811. Call 811 or click Arizona811.com

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1061							<u> </u>	217	_F 18" SD @	S=+1.40%		<u> </u>		Ø S=+2.10%		
4204							<u> </u>	<u> </u>	7 							
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		E	EXST GROUND							· · · · · · · · · · · · · · · · · · ·		<u> </u>				
4264		FO (11)		LF 24" SD			· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	É.(U	J)		GRADE	· · · · · · · · · · · · · · · · · · ·	
			@	S=+0.30%	-						PROTECT IN PLAC	E Armana				
4260			EXST 24" SD @ S=	=+0.3%		3" G (U) 54 LF	- 18" @ S	5=3.00%±							· · · · · · · · · · · · · · · · · · ·	
						TO PROVIDE AT LEAST DF VERT SEPARATION F	1' FROM SD						—19 LF 18"SD @	S=+5.00%	· · · · · · · · · · · · · · · · · · ·	
4256						- 8" S						S	TA 13+23, 34.9 RT IV=4260.18			
			12" W (PVC	C)(U)		PROTECT IN PLACE							ONNECT TO SD W/ (SPING LINE TO SPRIN	CONC COLLAR IG LINE)		
			CONNECT TO EX	ST SD		- CONNECT TO EXST S	D · · · · ·									
			13+21, 33.8 INV=4259.9	35'RT 9± (S)		INV=4259.9± (S)	· · · · · · · · · · · · · · · · · · ·									
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	NOTE: CATCH BASIN & IN	LET "G" FIFV	ATION PROVIDED IS	THEORFTICAL												
	GUTTER GRADE ELE	VATION WITHC	OUT THE INLET DEPI	RESSION.												
	CONTRACTOR SHALL	_ CONTACT DI	NDY BYRD, [(928) R UPON EXPOSING	614-8250], AT The gas main										SHALI FXPOSF	EXISTING LITH ITIF	
	AND PRIOR TO INS	TALLATION OF	NEW STORM DRAIN ST 48 HOURS SHAL	N PIPE. LL BE PROVIDED.									VERIFY LOCAT	ION AND SHALL E WEEK IN ADVA	PROVIDE RESULTANCE OF UTILITY	TS TO ENGINEER CONSTRUCTION.
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PAVEMENT MARKING NOTES

- 1. THE CONTRACTOR SHALL REMOVE EXISTING PAVEMENT MARKERS IN CONJUNCTION WITH THE CONSTRUCTION OPERATIONS. THERE SHALL BE NO MEASUREMENT OR PAYMENT FOR THE REMOVAL OF EXISTING PAVEMENT MARKERS
- 2. THE DIMENSIONS SHOWN TO PAVEMENT STRIPING ARE TO THE CENTER OF THE STRIPING OR, IN THE CASE OF DOUBLE STRIPING, TO THE CENTER OF DOUBLE STRIPING
- 3. FINAL STRIPING SHALL BE 90 MIL (0.090 INCHES) THICK ALKYD EXTRUDED THERMOPLASTIC REFLECTORIZED STRIPING PLACED OVER THE EXISTING STRIPING, PLACED AT A MINIMUM OF 30 CALENDAR DAYS AFTER THE INITIAL STRIPING. ALL OTHER MARKINGS SHALL BE APPLIED AT THE SAME TIME.
- 4. AT THE COMPLETION OF THE FINAL PAVEMENT SURFACE EACH DAY, CENTER LINES, LANE LINES, EDGE LINES AND STOP BARS SHALL BE STRIPED WITH ONE APPLICATION OF STANDARD REFLECTORIZED TRAFFIC PAINT AT THE LOCATIONS OF THE PERMANENT STRIPING. THE PAINT SHALL HAVE A MAXIMUM THICKNESS OF 15 MILS WET (5 MILS DRY). ALL PAINTED STRIPING SHALL BE 4 INCHES WIDE. HOWEVER, EACH PAINTED STOP BAR AND SOLID WHITE LINE SHALL BE AT LEAST 12 INCHES WIDE.
- 5. ALL REFLECTIVE RAISED PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE REFLECTIVE FACE OF EACH MARKER IS FACING THE DIRECTION OF TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW. TYPE C PAVEMENT MARKERS SHALL BE INSTALLED SO THAT THE CLEAR REFLECTIVE FACE OF EACH MARKER IS FACING APPROACHING TRAFFIC AND IS PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW.
- 6. ALL REFLECTIVE RAISED PAVEMENT MARKERS SHALL HAVE AN ABRASION-RESISTANT COATING ON THE FACE OF THE PRISMATIC REFLECTORS AND SHALL CONFORM TO DETAILS M-18 OR M-19 OF THE ADOT STANDARD DRAWINGS. THEY SHALL BE INSTALLED WITH A BITUMINOUS ADHESIVE WHICH IS ON THE ADOT APPROVED PRODUCTS LIST.
- 7. THE CONTRACTOR SHALL CLEAN THE ROADWAY SURFACE TO THE SATISFACTION OF THE ENGINEER. BY SWEEPING AND AIR-JET BLOWING, IMMEDIATELY PRIOR TO THE PLACEMENT OF ALL PAVEMENT MARKINGS. THE ROADWAY SURFACE SHALL BE DRY AND THE AIR AND PAVEMENT TEMPERATURES SHALL BE A MINIMUM OF 55°F AND RISING FOR THE PLACEMENT OF THERMOPLASTIC STRIPING AND SHALL NOT BE LESS THAN 55°F FOR THE INSTALLATION OF EXTRUDED THERMOPLASTIC.
- 8. PAVEMENT MARKING SYMBOLS AND LEGENDS SHALL BE INSTALLED IN ACCORDANCE WITH ADOT STANDARD DRAWINGS.
- 9. ALL FINAL STOP BARS, CROSSWALK LINES, PAVEMENT ARROWS, AND "ONLY" LEGENDS SHALL BE 90 MIL (0.090 INCH) THICK, EXTRUDED THERMOPLASTIC REFLECTORIZED MARKINGS.
- 10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FINAL SURFACE COURSE IS PLACED SO THAT THE STRIPING IS OFFSET ONE FOOT CLEAR OF ANY CONSTRUCTION JOINT. UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- 11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF PERMANENT PAVEMENT MARKINGS ON THE FINAL SURFACE COURSE FOLLOWING CONTROL POINTS THAT HAVE BEEN SET NO MORE THAN 50 FEET APART ALONG THE LINES TO BE STRIPED.
- 12. WATER BLASTING IS THE ONLY APPROVED METHOD FOR OBLITERATION. PAINTING OVER STRIPING, REMOVAL OF PAVEMENT, AND OVERLAYING PAVEMENT DO NOT CONSTITUTE STRIPE **OBLITERATION.**
- 13. THE PAVEMENT MARKING DRAWINGS ARE SCHEMATIC ONLY AND NOT TO SCALE. THE CONTRACTOR SHALL FOLLOW ALL DIMENSIONS AND DETAILS WHEN INSTALLING PAVEMENT MARKINGS.
- 14. THE CITY OF PAGE PUBLIC WORKS DIRECTOR. OR THEIR DESIGNATED REPRESENTATIVE, AND THE ENGINEER HOLD SOLE DISCRETION TO MODIFY THE PAVEMENT MARKING PLANS.

SIGNING NOTES

- 1. ALL SIGNS SHALL BE IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT) SIGNING & MARKING STANDARD DRAWINGS, THE ADOT TRAFFIC ENGINEERING MANUAL OF APPROVED SIGNS, AND THE ADOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2021).
- 2. THE SIGN LOCATIONS AND THE POST LENGTHS ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE SIGN LOCATIONS AND ACTUAL POST LENGTHS WITH THE ENGINEER PRIOR TO INSTALLING SIGNS.
- 3. THE BOTTOM OF EACH SIGN SHALL BE AT LEAST 7 FEET ABOVE THE NEAREST EDGE OF PAVEMENT AND AT LEAST 7 FEET ABOVE THE GROUND UNDER THE SIGN.
- 4. OFFSETS FOR ALL SIGNS SHALL BE MEASURED FROM THE EDGE OF THE ROADWAY TO THE NEAREST EDGE OF THE SIGN
- 5. ALL NEW SIGNS SHALL BE FABRICATED OF FLAT SHEET ALUMINUM AS INDICATED IN ADOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (2021), SECTION 608.
- 6. THE RETROREFLECTIVE SHEETING ON ALL NEW SIGNS SHALL MEET CRITERIA ESTABLISHED IN SECTION 1007 OF THE STANDARD SPECIFICATIONS AND IN SECTION 380 OF ADOT'S TRAFFIC POLICIES, GUIDELINES AND PROCEDURES.
- 7. ALL NEW SIGNS SHALL BE INSTALLED ON NEW 2" SQUARE TUBE POSTS AND CONCRETE FOUNDATIONS, AS INDICATED IN ADOT STANDARD DRAWINGS.
- 8. THE CITY OF PAGE PUBLIC WORKS DIRECTOR, OR THEIR DESIGNATED REPRESENTATIVE, AND THE ENGINEER HOLD SOLE DISCRETION TO MODIFY THE SIGNING PLANS.
- 9. SHOP DRAWINGS WILL BE REQUIRED FOR REVIEW AND APPROVAL.
- 10. THE CONTRACTOR SHALL REMOVE EXISTING SIGNING WHERE INDICATED ON THE PLANS.
- 11. THE CONTRACTOR SHALL PRESERVE ALL ROADWAY SIGNS, SIGN SUPPORTS, OBJECT MARKERS, AND MILEPOST MARKERS NOT IDENTIFIED FOR REMOVAL. THE CONTRACTOR SHALL REPLACE ANY SIGNS, SIGN SUPPORTS, AND MARKERS DAMAGED AS A RESULT OF THE CONSTRUCTION AT THE CONTRACTOR'S EXPENSE.
- 12. THE CONTRACTOR SHALL INVENTORY ALL SIGNS TO BE REMOVED OR COVERED AND NOTE DAMAGED SIGNS TO THE ENGINEER AT THE TIME OF COVERING OR REMOVAL. ALL SIGNS DAMAGED BY COVERING OR REMOVAL SHALL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

3. TOP OF SIGNAL POLE FOUNDATIONS SHALL BE AT THE SAME ELEVATION AS ADJACENT SIDEWALK.

5. MOUNTING LOCATION AND ORIENTATION OF ALL PEDESTRIAN INDICATIONS AND SIDE MOUNT SIGNAL INDICATIONS SHALL BE CONFIRMED WITH PINAL COUNTY TRAFFIC SIGNAL INSPECTOR IN THE FIELD PRIOR TO DRILLING POLE FOUNDATIONS.

6. ALL TRAFFIC SIGNAL EQUIPMENT, MATERIALS, TOOLS AND LABOR SHALL BE SUPPLIED BY THE CONTRACTOR PER THE SPECIAL PROVISIONS AND ADOT SPECIFICATIONS TO PROVIDE FOR A FULLY FUNCTIONAL RRFB SYSTEM.

7. CONTRACTOR SHALL PROVIDE CONCRETE ADA ACCESS PAD TO PEDESTRIAN PUSH BUTTON TO MEET ALL ADA REQUIREMENTS. PUSH BUTTON MUST BE LOCATED NEXT TO A LEVEL LANDING PAD (48" X 48" MINIMUM). LEVEL IS DEFINED AS HAVING A SLOPE LESS THAN 2% IN ALL DIRECTIONS. THE PUSH BUTTON MUST BE WITHIN 10 INCHES REACH OF THE LEVEL LANDING PAD AND MUST BE WITHIN 5 FEET OF EXTENSION OF CROSSWALK LINE. PUSH BUTTON MUST BE LOCATED WITHIN 6 FEET (PREFERRED) OR 10 FEET (MAXIMUM) FROM THE CURB. TWO PUSH BUTTONS ON THE SAME CORNER SHOULD BE SEPARATED BY AT LEAST 10 FEET.

8. THE CONTRACTOR SHALL INSTALL ALL WIRING IN AN ORGANIZED, CONCISE, AND CLEAN MANNER TO THE SATISFACTION OF THE ENGINEER AND THE PINAL COUNTY TRAFFIC SIGNAL INSPECTOR.

9. AT LEAST TWO IMSA CERTIFIED TRAFFIC SIGNAL TECHNICIANS SHALL BE ON SITE DURING ALL PHASES OF RRFB WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE VERIFICATION OF CERTIFICATION

RRFB EQUIPMENT NOTES

1. INSTALL ALL TRAFFIC POLES AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS, ADOT STANDARD DRAWINGS, AND ADOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

2. LOCATION OF UTILITIES SHOWN ARE FOR REFERENCE ONLY, THE ENGINEER DOES NOT GUARANTEE THESE LOCATIONS NOR THE FACT THAT SOME MAY BE LEFT OUT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT AZ811 AND ALL INVOLVED AGENCIES & UTILITY PROVIDERS PRIOR TO CONSTRUCTION.

4. RRFB SYSTEM SHALL UTILIZE A WIRELESS COMMUNICATION SYSTEM BETWEEN CONTROLLERS

STRIPING LEGEND

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CONSTRUCTION AMENITIES SCHEDULE

DESCRIPTION	QTY.	MANUFACTURER	MODEL	MATERIAL	COLOR	FINISH	DETAIL	NOTES	SUF
HARDSCAPE ELEMENT	·S-								CVI.
4" CONCRETE WALK/ PAVING	SEE SURFACE MATERIALS LEGENI	N/A	N/A	MAG A CONCRETE	STD. GREY	MEDIUM BROOM	DTL. 2, SHT. HS-301	MOCK UP REQUIRED	<u>511</u>
4" EXPOSED AGGREGATE CONCRETE PAVING	SEE SURFACE MATERIALS LEGENI	N/A	N/A	CONCRETE CLASS A	STD. GREY	EXPOSED AGGREGATE	DTL. 2, SHT. HS-301	MOCK UP REQUIRED	
6" CONCRETE WALK/ PAVING	SEE SURFACE MATERIALS LEGENI	N/A	N/A	CONCRETE CLASS A	STD. GREY	MEDIUM BROOM	DTL. 2, SHT. HS-301	MOCK UP REQUIRED	4
STAMPED ASPHALT	SEE SURFACE MATERIALS LEGENI	N/A	N/A	ASPHALT	TERRACOTTA	STAMPED	PER SHOP DRAWINGS	MOCK UP REQUIRED	
SITE AMENITIES-	!				<u>.</u>				
6'-0" BENCH WITH BACK	7 EACH	LANDSCAPE FORMS	PARC VUE, 72" BACKED, SURFACE MOUNT, W/ END ARMS AND DIVIDER	STEEL	COLOR: CRANBERRY	POWDERCOAT	DTL. 3, SHT. HS-301	INSTALL PER MANUFACTURER SPECIFICATIONS	
TREE GRATE (3' X 5') W/ FRAME	7 EACH	IRONSMITH	MARKET STREET 6030	IRON	-	UNFINISHED	DTL. 1 & 2, SHT. HS-302	INSTALL PER MANUFACTURER SPECIFICATIONS	
LITTER/ RECYCLE RECEPTACLE	7 EACH	LANDSCAPE FORMS	CHASE PARK, SIDE OPENING, LITTER RECEPTACLE, DUAL USE	STEEL & ALUMINUM	COLOR: CRANBERRY	POWDERCOAT	DTL. 4, SHT. HS-301	INSTALL PER MANUFACTURER SPECIFICATIONS	
	I	I	1	1	1	1		1 I	

URFACE MATERIAL LEGEND

MATERIAL/DESCRIPTION:	<u>DETAILS:</u>	<u>QTYS:</u>
" CONCRETE PAVING - /IEDIUM BROOM FINISH	SEE DTL 2 SHEET HS-301	10,534 SQ. FT.
" CONCRETE PAVING - EXPOSED AGGREGATE	SEE DTL 2 SHEET HS-301	2,440 SQ. FT.
STAMPED, COLORED ASPHALT	SEE CIVIL PLANS	598 SQ. FT.
" CONCRETE PAVING - /IEDIUM BROOM FINISH	SEE DTL 2 SHEET HS-301	848 SQ. FT.
DECOMPOSED GRANITE SIZE: ¾" MINUS COLOR: DESERT BROWN	SEE DTL 3 SHEET LS-401	9,840 SQ. FT.

	A649 E COTTON GIN PHOENIX, AZ 85 602.438.222	D D D D D D D D D D
	CLIENT:	ITY OF
2	LAKE POWELL BLVD STREETSCAPE IMPROVEMENTS	HARDSCAPE PLAN
	# DATE DESCRIPTION	
10'	DESIGNED BY: CHECKED BY: CHECKED BY: DRAWING NO: DRAWING NO: CHECKED ADDITIONAL DESIGNED COMPANY CHECKED BY: CHECKED BY: CHECK	ABS BY: JV 02/08/2024

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	CONSTRUCTION KEYNOTES:					
ΈΥ #	DESCRIPTION	DETAIL				
	HARDSCAPE ELEMENTS					
1	4" CONCRETE PAVING	DETAIL 2, SHEET HS301				
2	4" EXPOSED AGGREGATE/ CONCRETE PAVING	DETAIL 2, SHEET HS-301				
3	6" CONCRETE PAVING	DETAIL 2, SHEET HS-301				
3B)	STAMPED, COLORED ASPHALT	SEE CONSTRUCTION AMENITIES SCHEDULE ON SHEET HS-101				
4	EXPANSION JOINT, TYP.	DETAIL 1, SHEET HS-301				
5	CONTROL JOINT, TYP.	DETAIL 1, SHEET HS-301				
6	ADA RAMP, TYP.	SEE CIVIL PLANS				
7	PLANTER, TYP.	SEE LANDSCAPE PLANS				
	SITE AMEN	IITIES				
8	6'-0" STANDARD BENCH	DETAIL 3, SHEET HS-301				
9	LITTER RECEPTACLE	DETAIL 4, SHEET HS-301				
10	TREE GRATE	DETAIL 1 &2 , SHEET HS-302				
11	STREET LIGHTING, TYP.	SEE LIGHTING PLANS				
12	PEDESTRIAN LIGHT, TYP.	SEE LIGHTING PLANS				

	deage consultant(s)	COTTON GIN DENIX, AZ 8 602.438.222	S S S S S S S S S S
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S: 301 301 301 301 301 301 301 301	CITY OF PAGE I AKF POWFI I RI VD	STREETSCAPE IMPROVEMENTS	HARDSCAPE PLAN
301 HS-302			
6			
5	# DATE	DESCRIPTION	
	Regist	A Condscope CRUFICATENO 35538 JEFFREY T. VELASQUEZ A PHOMATUS A PHOMATUS A PHOMATUS	NICONIECT
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	CONSTRUCTION KEYNOTES:					
EY #	DESCRIPTION	DETAIL				
HARDSCAPE ELEMENTS						
1	4" CONCRETE PAVING	DETAIL 2, SHEET HS301				
2	4" EXPOSED AGGREGATE/ CONCRETE PAVING	DETAIL 2, SHEET HS-301				
3	6" CONCRETE PAVING	DETAIL 2, SHEET HS-301				
3B)	STAMPED, COLORED ASPHALT	SEE CONSTRUCTION AMENITIES SCHEDULE ON SHEET HS-101				
4	EXPANSION JOINT, TYP.	DETAIL 1, SHEET HS-301				
5	CONTROL JOINT, TYP.	DETAIL 1, SHEET HS-301				
6	ADA RAMP, TYP.	SEE CIVIL PLANS				
7)	PLANTER, TYP.	SEE LANDSCAPE PLANS				
	SITE AMEN	IITIES				
8	6'-0" STANDARD BENCH	DETAIL 3, SHEET HS-301				
9	LITTER RECEPTACLE	DETAIL 4, SHEET HS-301				
10	TREE GRATE	DETAIL 1 &2 , SHEET HS-302				
11	STREET LIGHTING, TYP.	SEE LIGHTING PLANS				
12	PEDESTRIAN LIGHT, TYP.	SEE LIGHTING PLANS				

SCALE: 1"=20'

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6030
MARKET STREE
TREE GRATE

36" x 60" tree grate in two sections.

1/2 Maximum square opening for pedestrian safety and A.D.A Compliance. For pedestrian loads only.

Cast from 100% recycled gray Iron, Aluminum, or Cast C854 Copper Alloy.

Tree opening: 12", 18" Grates can be ordered with or later expanded to these openings. Please specify when ordering.

Finish: unfinished or Black dip or Enamel paint or Polyurethane Paint or Powder coat

Specify finish and color Use frame model: 36x60F

Weight: Iron= 256 lb/ 116 Kg Aluminum=92 lb/44 Kg

41-701 Corporate Way #3

Palm Desert, CA 92260 800.338.4766

ANDSCAPING GENERAL NOTES	LA	INDSCAPING
ALL LANDSCAPE AND IRRIGATION INSTALLED WITHIN THE PUBLIC RIGHT-OF-WAY OR OTHER CITY MAINTAINED AREAS SHALL BE INSTALLED PER THE APPROVED PLANS. ALL LANDSCAPING APPROVED AS A PART OF THE SITE PLAN PROCESS SHALL BE INSTALLED PER THE APPROVED PLANS. ANY DEVIATIONS TO THE APPROVED PLANS REQUIRE CITY APPROVAL.	17.	THE JOB SITE, AT THE CO OF ANY DEBRIS OR SPOIL BE CONSIDERED COMPLE HAVE BEEN SWEPT CLEA MONUMENTS ARE INSTAL
PERMITS ARE REQUIRED FOR ELECTRICAL CONNECTIONS, INCLUDING ELECTRIC METER INSTALLATION, BACKFLOW PREVENTERS AND WORK WITHIN THE CITY RIGHT-OF-WAY OR CITY DEDICATED PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THESE PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.	18.	ALL EQUIPMENT AND MAT IN THE SPECIFICATIONS E INSTALLATION, SHALL BE CONTRACT WORK.
ALL LANDSCAPE PROJECTS REQUIRING CITY MAINTENANCE OR WITHIN THE CITY	19.	ALL LANDSCAPE SHALL C AND THESE SPECIFICATIO
.1. PLANT LOCATIONS: THESE LOCATIONS SHALL BE STAKED IN THE FIELD WITH IDENTIFICATION AS TO TREES OR SHRUBS, OR HOLES FOR THE PLANT MATERIALS MAY BE DUG WITH IDENTIFICATION OF PLANT TYPE. USE OF THIS METHOD DOES NOT RELIEVE THE CONTRACTOR OF ANY PLANT	20.	LANDSCAPE REMOVAL IS VEGETATIVE REMOVAL SI ASSOCIATED WITH EACH
 RELOCATIONS MADE BY THE CITY. 3.2. SUBSTANTIAL COMPLETION: AN INSPECTION AT COMPLETION OF THE LANDSCAPE AND IRRIGATION INSTALLATION WILL BE MADE. ANY DEFICIENCIES IN THE INSTALLATION WILL BE NOTED AND CORRECTED BY THE CONTRACTOR DURING THE MAINTENANCE PERIOD. 3.3. FINAL ACCEPTANCE: A FINAL INSPECTION IS REQUIRED PRIOR TO CITY ACCEPTANCE OF THE LANDSCAPE AND IRRIGATION IMPROVEMENTS. 	21.	ALL EXISTING TREES AND PLACE. THE REMAINDER NOTED OTHERWISE SHAL DEMOLITION PHASE OF TH REMOVED FROM PROJEC CONTRACTOR'S EXPENSE AREAS DESIGNATED FOR REPORT AND SCARIFY EX
INSTALLATION, BACKFLOW PREVENTER AND ELECTRICAL CONNECTIONS. CALL CITY A MINIMUM OF 24 HOURS PRIOR TO ARRANGE FOR THESE INSPECTIONS.	22.	AREAS TO BE PLANTED).
. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIALS, INSTALLATION, AND REQUIRED PERMIT FEE COST FOR THE WATER METER(S) DESIGNATED TO SERVE THE IRRIGATION SYSTEM.		THE AMERICAN ASSOCIAT THE CURRENT "ARIZONA M.A.G. SPEC 795.7. SHOU ARIZONA NURSERY ASSO
PLANTINGS SHALL NOT INTERFERE WITH ANY TRAFFIC CONTROL SIGNS AND SHALL MAINTAIN A MAXIMUM HEIGHT OF 24" WITHIN ANY VISIBILITY TRIANGLES.	23.	LANDSCAPE ARCHITECT A
INSTALLATION OF THE LANDSCAPE INCLUDING ADDITION OF GROUND PLANE MATERIALS SHALL NOT IMPEDE THE FLOW OF DESIGNED DRAINAGE FACILITIES NOR DECREASE THE DESIGN VOLUME OF ANY DETENTION/RETENTION BASINS.		FOR ANY SUCH INSPECTION
THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UNDERGROUND UTILITIES DURING THE LANDSCAPE INSTALLATION.	24.	THE CONTRACTOR SHALL THE LANDSCAPE ARCHITE CONTRACTOR SHALL REC
ALL TREES SHALL MAINTAIN A MINIMUM OF 6'-0" CLEARANCE FROM ANY CITY WATER OR SEWER LINE. ALL PLANTINGS SHALL MAINTAIN A SUFFICIENT DISTANCE TO ANY SANITARY AND STORM SEWER MANHOLES TO ALLOW ACCESS BY MAINTENANCE VEHICLES.	25.	IT IS THE CONTRACTOR'S FAMILIAR WITH ALL EXIST INSTALLATION OF ANY WO A BID.
0. ALL ROCK GROUNDCOVER AREAS SHALL BE SPRAYED WITH PRE-EMERGENT HERBICIDE BY A LICENSED APPLICATOR AS PART OF INSTALLATION AS FOLLOWS (A MINIMUM OF THREE (3) APPLICATIONS ARE REQUIRED): 10.1. PRIOR TO THE APPLICATION OF GRANITE: PER MANUFACTURER'S RECOMMENDED BATES	26.	THE CONTRACTOR IS AD PROJECT'S EXISTING PAV NOT NOTED ON THE PLAN TO BE REPAIRED AT THE
 10.2. AFTER GRANITE APPLICATION: PER MANUFACTURER'S RECOMMENDED RATES. 10.3. PRIOR TO FINAL ACCEPTANCE: PER MANUFACTURER'S RECOMMENDED RATES THE CITY SHALL BE FURNISHED WITH WRITTEN DOCUMENTATION OF THE SOLIED HER OF ADDITION DATES. 	27.	THE CONTRACTOR IS RES DEBRIS RESULTING FROM SHALL ANY OF THIS MATE ADJOINING STREET OR A
1. AS-BUILT DRAWINGS OF THE LANDSCAPE AND IRRIGATION SYSTEM ARE REQUIRED PRIOR TO ACCEPTANCE BY THE CITY AND FOR PROJECTS WITHIN THE CITY RIGHT-OF-WAY OR CITY OWNED PROPERTY. THE AS-BUILT DRAWINGS SHALL BE HARD COPY BOND SCANNED TO PDF SHOWING THE LOCATIONS OF ALL PLANTINGS AND THE DIMENSIONS TO FIXED POINTS OF ALL IRRIGATION EQUIPMENT, PIPING ETC.	28.	QUANTITIES ARE GIVEN O VERIFY ALL LANDSCAPE O IMMEDIATELY. IN CASE OF OF ANY SPECIES QUANTIT GRANITE, CONCRETE HEA DRAWINGS AND THE TOTA TAB, THE DRAWINGS SHA
2. ALL TREES WITHIN VEHICULAR SIGHT DISTANCE/VISIBILITY CLEAR ZONES SHALL HAVE A VERTICAL CANOPY CLEARANCE/CLEAR TRUNK TO 7' ABOVE THE NEAREST CURB.	29.	CONTRACTOR SHALL VER AND PROPOSED UNDERG STARTING ANY WORK. RE
3. SUBSTANTIAL INSPECTION - AN INSPECTION AT COMPLETION OF THE LANDSCAPE AND IRRIGATION INSTALLATION WILL BE MADE BY THE CITY OF PAGE. ANY DEFICIENCIES IN THE INSTALLATION WILL BE NOTED AND CORRECTED BY THE	20	DAMAGE BY THE CONTRA REPAIRED BY THE CONTRA
4.LANDSCAPE MAINTENANCE PERIOD - THE CONTRACTOR SHALL NOTIFY THE CITY	30.	DECOMPOSED GRANITE. COMPACTED AS SPECIFIE
ANAGER WHEN ALL LANDSCAPING IS COMPLETED AND READY FOR A LANDSCAPE AND IRRIGATION INSPECTION. THE CITY SHALL ISSUE A LETTER TO BEGIN THE LANDSCAPE MAINTENANCE PERIOD. THE LANDSCAPE MAINTENANCE	31.	FOR SITE OBSERVATIONS REFER TO THE PLANS AN
PERIOD SHALL BE FOR A MINIMUM OF NINETY (90) DAYS AND EXTEND UNTIL ALL PLANT MATERIAL IS ESTABLISHED AND ACCEPTED BY THE CITY FOR ONE FULL GROWING SEASON. IF NOT HEALTHY AT THE END OF THE MAINTENANCE PERIOD, MAINTENANCE SHALL BE CONTINUED UNTIL THE PLANT MATERIAL IS APPROVED BY THE CITY.	32.	FOR ADDITIONAL CONSTR AND IRRIGATION PLANS A

GENERAL NOTES CONT.

DMPLETION OF THE CONSTRUCTION, SHALL BE CLEANED RESULTING FROM THE CONSTRUCTION. NO JOB WILL ETE UNTIL ALL CURBS, PAVEMENT, AND SIDEWALKS N OF ALL DIRT AND DEBRIS, AND ALL SURVEY LED ACCORDING TO THE PLANS AND SPECIFICATIONS.

TERIALS NOT SHOWN OR SPECIFIED ON THE PLANS OR BUT WHICH ARE REQUIRED TO COMPLETE THIS SUPPLIED BY THE CONTRACTOR AS PART OF THIS

COMPLY WITH CITY STANDARDS, MAG SPECIFICATIONS ONS.

A NON PAY ITEM (N.P.I.) AND THE COST FOR HOULD BE INCLUDED IN SITE PREPARATION WORK ITEM OF WORK.

SHRUBS UNLESS NOTED ARE TO BE PROTECTED IN OF EXISTING VEGETATION (WEEDS, ETC.) UNLESS L BE REMOVED AND DISPOSED OF AS PART OF THE HIS CONTRACT (NPI). ALL MATERIALS ARE TO BE CT AREA AND DISPOSED OF PROPERLY OFF-SITE AT THE UNLESS OTHERWISE NOTED. (COMPACT THOSE PAVEMENT TO 95% OR AS SPECIFIED IN THE SOILS XISTING SUBGRADE A MINIMUM OF 6-INCH DEPTH IN

HER THAN TREES, SHALL CONFORM TO GRADING, TYPE, "HE AMERICAN STANDARD FOR NURSERY STOCK" BY TION OF NURSERYMEN. ALL TREES SHALL CONFORM TO NURSERY ASSOCIATION TREE SPECIFICATIONS" AND LD ANY CONFLICTS IN SPECIFICATIONS OCCUR. THE DCIATION'S SPECIFICATIONS SHALL PREVAIL.

AND CITY REPRESENTATIVE RESERVES THE RIGHT TO ONTAINERIZED TREES FOR CONDITION OF ROOT BALLS. ION WHICH MAY DESTROY ROOT BALL, CONTRACTOR IAL PLANTS AT NO COST TO THE CITY.

_ HAVE THE PLANT PITS INSPECTED AND APPROVED BY ECT AND CITY REPRESENTATIVE PRIOR TO PLANTING. QUEST INSPECTION 48 HOURS IN ADVANCE.

S RESPONSIBILITY TO INSPECT THE JOB SITE TO BECOME FING CONDITIONS THAT COULD AFFECT THE ORK SET FORTH IN THESE PLANS PRIOR TO SUBMITTING

VISED THAT DAMAGE TO ANY PORTION OF THIS VEMENT, CURBING AND SURROUNDING AREA THAT IS NS TO BE REMOVED, AS A RESULT OF THIS PROJECT, IS CONTRACTOR'S EXPENSE.

SPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ANY 1 THE DEMOLITION AND CONSTRUCTION. AT NO TIME ERIAL OBSTRUCT THE NORMAL OPERATION OF ANY NY AREAS ASSOCIATED WITH THIS PROJECT.

ONLY FOR REFERENCE PURPOSES. CONTRACTOR TO QUANTITIES AND REPORT ANY DISCREPANCIES A DISCREPANCY BETWEEN THE NUMBER OF PLANTS TIES OF TURF, RIVER RUN ROCK, DECOMPOSED ADER AND ALL OTHER MATERIALS INDICATED ON THE AL NUMBER INDICATED ON THE MATERIALS LIST OR BID ALL BE ACCEPTED AS CORRECT.

RIFY THE EXISTENCE AND LOCATION OF ALL EXISTING GROUND UTILITIES AND STRUCTURES PRIOR TO EPORT IMMEDIATELY TO THE OWNER ANY CASES SHALL BE RELOCATED TO AVOID THE UTILITIES. ACTOR TO ANY WORK SHALL BE REPLACED AND/OR RACTOR AT THEIR EXPENSE.

SHALL HAVE AN APPLIED TOPPING OF EITHER FINISH GRADE AREAS ARE TO BE RAKED AND ED IN MAG SECTIONS 430 AND LEFT SMOOTH AND EVEN.

S DURING THE CONSTRUCTION PHASE OF PROJECT ID SPECIFICATIONS.

RUCTION NOTES REFER TO LANDSCAPE, HARDSCAPE, AND THE SPECIFICATIONS.

NOTE: CONTRACTOR SHALL REFER TO SPECIFICATIONS FOR SOIL ANALYSIS, SOIL AMENDMENTS / SUPPLEMENTS, FERTILIZERS, ETC.

GENERAL NOTES TO CONTRACTOR

- 1. PRIOR TO ANY LANDSCAPE OR IRRIGATION CONSTRUCTION IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST 48 HOURS IN ADVANCE OF INSTALLATION WORK.
- 2. PRIOR TO ANY CONSTRUCTION OR UTILITY WORK STARTING WITHIN A CITY RIGHT-OF-WAY, WHICH WILL AFFECT EXISTING CITY-OWNED AND MAINTAINED LANDSCAPING OR IRRIGATION SYSTEMS, THERE WILL BE A MEETING ON SITE TO SHOW THAT THE EXISTING SYSTEMS OR LANDSCAPED AREAS ARE IN PROPER REPAIR AND FUNCTION. AT THE COMPLETION OF THE CONSTRUCTION WORK THERE WILL BE ANOTHER MEETING AND INSPECTION ON SITE. THE SAME AREAS AND SYSTEMS WILL AGAIN BE REVIEWED. ANY DAMAGE TO THE LANDSCAPING OR TO THE IRRIGATION SYSTEM WILL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR UTILITY COMPANY AND MUST BE REPAIRED TO THE SATISFACTION OF THE CITY WITHIN FIVE (5) WORKING DAYS. IF THIS WORK IS NOT COMPLETED WITHIN THE ALLOTTED TIME, THE CITY WILL MAKE THE REPAIRS OR CORRECTIONS AND MONEY WILL BE DEDUCTED OR BILLED TO THE GENERAL CONTRACTOR ON THE PROJECT. THE INDIVIDUALS WHICH SHOULD BE REPRESENTED AT THESE ON-SITE MEETINGS SHALL BE: A REPRESENTATIVE FROM THE CONTRACTOR, A REPRESENTATIVE FROM THE CITY RESPONSIBLE FOR THE CONSTRUCTION INSPECTION, A REPRESENTATIVE FROM THE CITY ENGINEER'S OFFICE, AND A REPRESENTATIVE FROM THE DESIGN TEAM.
- 3. SEE DEMOLITION PLANS FOR REMOVALS AND PROTECTED IN PLACE PLANT MATERIALS. SEE SHEETS CV-201 & CV-202.

SURFACE MATERIAL LEGEND					
SYMBOL	DESCRIPTION	DETAIL	QUANTITY		
	DECOMPOSED GRANITE SIZE: 3/4" MINUS, 2" MIN. DEPTH COLOR: DESERT BROWN	SEE DTL. 3, SHT. LS-401	9,840 SF		
NOTE: 1 SEE DEMOLI	TION PLANS FOR REMOVALS AN	D PROTECTED IN PLACE	PI ANT MATERIAI S		

PLANT SCHEDULE						
SYMBOL: BOTANICAL / COMMON:	<u>QTYS:</u>	<u>SIZE:</u>				
TREES:						
د محتاظ Acacia aneura محتال محتال محتاط Mulga	10	24" BOX				
^{ع) +} + الحب <i>Acacia salicina</i> کمہر کر Willow Acaia	5	24" BOX				
Fraxinus velutina Arizona Ash	4	36" BOX				
ک ^۲ + ^۲ + ^۲ <i>Quercus virginiana</i> کمبیر ^۲ Southern Live Oak	3	36" BOX				
SHRUBS:						
Calliandra eriophylla Pink Fairy Duster	24	5 GAL.				
ج کے کی	30	5 GAL.				
Salvia chamaedryoides Mexican Blue Sage	15	5 GAL.				
GROUNDCOVERS:						
<i>Geremophila glabra 'Mingenew Gold'</i> Outback Sunrise Emu	16	1 GAL.				
Comparison officinalis 'Prostratus' Trailing Rosemary	12	1 GAL.				
Lantana montevidensis 'Trailing Yellow' Yellow Trailing Lantana	6	1 GAL.				
ACCENTS:						
Aloe X 'Blue Elf' Blue Elf Aloe	51	5 GAL.				
Hesperaloe parviflora Brakelights Yucca	20	5 GAL.				

1. SEE DEMOLITION FLANS FOR REMOVALS AND PROTECTED IN FLACE FLANT MATERIALS.

				CLIENT:	Dep B2 5040 1
SURFAC SYMBOL:	CE MATERIAL LEC	DETAILS:	QTYS:	CITY OF PAGE LAKE POWELL BLVD STREETSCAPE IMPROVEMENTS	SURFACE MATERIALS PLAN
	4" CONCRETE PAVING -	SEE DTL 2	10.534 SQ. FT.		
	4" CONCRETE PAVING -	SHEET HS-301	2,440 SQ. FT.		
	STAMPED, COLORED ASPHALT	TBD	598 SQ. FT.	# DATE DESCRIPTION REVISIONS	
	6" CONCRETE PAVING - MEDIUM BROOM FINISH	SEE DTL 2 SHEET HS-301	848 SQ. FT.	e a Landscape	
	DECOMPOSED GRANITE SIZE: ¾" MINUS COLOR: DESERT BROWN	SEE DTL 3 SHEET LS-401	9,840 SQ. FT.	35538 JEFFREY T. VELASQUEZ	it ect
			20' 40' ALE: 1"=20'	DESIGNED BY: BS DRAWN BY: JB CHECKED BY: JB SCALE: 1"=20' DATE: DRAWING NO.: SHEET NO.: LS-301 27	BS DBY: JV 02/08/2024 OF 43

ADJACENT CONCRETE -EDGE

3

2. ALL D.G. SLOPES IN EXCESS OF 6:1 SHALL BE COMPACTED BY WATER & ROLLING.

3. PRE-EMERGENT HERBICIDE SHALL BE PLACE A MINIMUM OF THREE (3) TIMES. APPLY PRE-EMERGENT HERBICIDE PRIOR TO INSTALLING D.G., AFTER FINAL RAKING, AND 30 DAYS PRIOR TO THE END OF THE MAINTENANCE PERIOD. REFER TO PROJECT SPECIFICATIONS.

DECOMPOSED GRANITE

N.T.S.

IRRIGATION CONTRACTOR NOTES:

- PRIOR TO ANY LANDSCAPE OR IRRIGATION CONSTRUCTION IN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE CITY'S CONSTRUCTION COORDINATOR AT LEAST 48 HOURS IN ADVANCE OF INSTALLATION OF WORK
- 2. PRIOR TO ANY CONSTRUCTION OR UTILITY WORK STARTING WITHIN A CITY RIGHT-OF-WAY, WHICH MAY AFFECT EXISTING CITY OWNED AND MAINTAINED LANDSCAPING OR IRRIGATION SYSTEMS, THERE WILL BE A MEETING ON SITE TO SHOW THAT THE EXISTING SYSTEMS OR LANDSCAPED AREAS ARE IN PROPER REPAIR AND FUNCTIONING. AT THE COMPLETION OF THE CONSTRUCTION WORK THERE WILL BE ANOTHER MEETING AND INSPECTION ON SITE. THE SAME AREAS AND SYSTEMS WILL AGAIN BE REVIEWED. ANY DAMAGE TO THE LANDSCAPING OR TO THE IRRIGATION SYSTEM WILL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND MUST BE REPAIRED TO THE SATISFACTION OF THE CITY WITHIN FIVE (5) WORKING DAYS. IF THIS WORK IS NOT COMPLETED WITHIN THE ALLOTTED TIME, THE CITY WILL MAKE THE REPAIRS OR CORRECTIONS AND MONEY WILL BE DEDUCTED OR BILLED TO THE GENERAL CONTRACTOR ON THE PROJECT. THE INDIVIDUALS WHICH SHOULD BE REPRESENTED AT THESE ON-SITE MEETINGS SHALL BE: A REPRESENTATIVE FROM THE CONTRACTOR AND A REPRESENTATIVE FROM THE ENGINEERING FIRM AND/OR CITY RESPONSIBLE FOR THE CONSTRUCTION INSPECTION.
- 3. PRIOR TO ANY WORK, THE CONTRACTOR SHALL PERFORM A SURVEY TO ESTABLISH THE WORK LIMITS.
- 4. PRIOR TO COMMENCEMENT OF ANY WORK, THE CONTRACTOR SHALL CONTACT ARIZONA 811 BLUE STAKE (1-800-782-5348) TO VERIFY LOCATIONS AND DEPTHS OF UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY THIS WORK AND SHALL BE RESPONSIBLE FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF THE WORK.
- CONTRACTOR SHALL READ THOROUGHLY AND BECOME FAMILIAR WITH THE PLANS, INSTALLATION DETAILS, PROJECT SPECIFICATIONS, AND ANY APPLICABLE CITY STANDARD DETAILS & SPECIFICATIONS FOR THIS AND RELATED WORK PRIOR TO CONSTRUCTION.
- 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND COMPLYING WITH ALL PERMITS REQUIRED TO COMPLETE THE WORK COVERED BY THESE PLANS.
- 7. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL LAWS, CODES AND REGULATIONS APPLICABLE TO THE WORK COVERED BY THESE PLANS.
- 8. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION.
- 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, COORDINATION, AND SEQUENCING DURING CONSTRUCTION UNLESS SPECIFICALLY ADDRESSED OTHERWISE IN THESE PLANS AND SPECIFICATIONS.
- 10. ONCE CONSTRUCTION OPERATIONS HAVE COMMENCED, IT IS THE INTENTION OF THIS PROJECT THAT THE JOB SITE BE FULLY MANNED / STAFFED UNTIL THE COMPLETION OF THE WORK WITHOUT GAPS IN PROGRESS
- 11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPENSATING THE OWNER FOR ANY DESIGN CHANGES MADE AS RESULT OF DEVIATION BY THE CONTRACTOR FROM THESE PLANS AND SPECIFICATIONS OR DUE TO ERRORS FAULTY MATERIAL, OR FAULTY WORKMANSHIP.
- 12. THE CONTRACTOR SHALL VERIFY AND ACCEPT ALL SITE CONDITIONS AND ROUGH GRADES PRIOR TO STARTING ANY WORK. ALL DRAINAGE FLOWS SHALL BE PROTECTED AND MAINTAINED THROUGHOUT CONSTRUCTION UNLESS PLANS SPECIFICALLY NOTE OTHERWISE.
- 13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL DURING CONSTRUCTION AND SHALL ACQUIRE A DUST CONTROL PERMIT FROM THE COUNTY. ALL COSTS ASSOCIATED WITH DUST CONTROL AND PERMITS IS CONSIDERED INCIDENTAL TO THE PROJECT.
- 14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF STATE, COUNTY, 10. THE PLANS INDICATE A DETAILED LAYOUT OF IRRIGATION MAINLINE PIPES, AND CITY SALES TAXES.
- 15. THE CONTRACTOR AGREES TO INDEMNIFY AND HOLD HARMLESS THE CITY, ITS OFFICERS, AGENTS AND EMPLOYEES, AND ANY JURISDICTION OR AGENCY ISSUING PERMITS FOR ANY WORK INCLUDED IN THE PROJECT FROM ALL SUITS, INCLUDING ATTORNEY'S FEES AND COST OF LITIGATION, ACTIONS, LOSS DAMAGE, EXPENSE, COST OR CLAIMS OF ANY CHARACTER OR NATURE ARISING OUT OF THE WORK DONE IN FULFILLMENT OF THE TERMS OF THESE PLANS OR SPECIFICATIONS, OR FROM ANY CLAIM OR ACT UNDER THE WORKMAN'S COMPENSATION LAW, OR ARISING OUT OF THE CONTRACTOR TO CONFORM TO ANY SUITS, REGULATION, LAW OR COURT DECREE.
- 16. CONTRACTOR SHALL VERIFY SITE INSTALLATION CONDITIONS PRIOR TO START OF CONSTRUCTION AND NOTIFY OWNER OR OWNER'S REPRESENTATIVE IMMEDIATELY IF ANY CONFLICTS OR DISCREPANCIES ARE FOUND BETWEEN PROPOSED PLANS AND SITE CONDITIONS THAT WILL OBSTRUCT OR DELAY CONSTRUCTION ACTIVITIES THAT ARE NOT ALREADY KNOWN

GENERAL IRRIGATION NOTES:

- OTHERWISE.

- MAINLINE PIPE.

- LESS.

CONTRACTOR'S MAINTENANCE PERIOD OF IRRIGATION SYSTEM SHALL BE 90 DAYS DURATION BEGINNING ONCE SUBSTANTIAL COMPLETION ACCEPTANCE IS GRANTED BY OWNER. SUBSTANTIAL COMPLETION ACCEPTANCE IS TYPICALLY GRANTED AFTER THE INITIAL PUNCH WALK IS PERFORMED AND AFTER CONTRACTOR ADDRESSES ANY DEFICIENCIES IDENTIFIED BY THE SUBSTANTIAL PUNCH WALK REPORT. THIS ACCEPTANCE IS ONLY GRANTED BY THE OWNER AND SHOULD BE **OBTAINED BY CONTRACTOR IN WRITING / EMAIL**

CONTRACTOR'S WARRANTY PERIOD OF IRRIGATION SYSTEM PRODUCTS AND INSTALLATION INCLUDING LABOR SHALL BE 1 YEAR (365 DAYS) DURATION BEGINNING ONCE FINAL COMPLETION ACCEPTANCE IS GRANTED BY OWNER. FINAL COMPLETION ACCEPTANCE IS TYPICALLY GRANTED AT THE END OF THE CONTRACTOR'S DEFINED MAINTENANCE PERIOD, HOWEVER A FINAL COMPLETION PUNCH WALK SHALL BE PERFORMED AND CONTRACTOR SHALL ADDRESS ANY DEFICIENCIES IDENTIFIED BY THE FINAL PUNCH WALK REPORT PRIOR TO FINAL ACCEPTANCE BEING GRANTED. THIS ACCEPTANCE IS ONLY GRANTED BY THE OWNER AND SHOULD BE OBTAINED BY CONTRACTOR IN WRITING / EMAIL. UPON FINAL ACCEPTANCE THE MAINTENANCE RESPONSIBILITY SHALL TRANSITION FROM CONTRACTOR TO OWNER.

3. ALL MATERIALS UTILIZED ON THIS PROJECT ARE INTENDED TO BE NEW AND OF THE BEST GRADE AVAILABLE. NO USED. SALVAGED. RECLAIMED. OR SECONDS WILL BE ACCEPTED UNLESS PLANS SPECIFICALLY STATE

ANY QUANTITIES PROVIDED WITHIN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES AND SITE CONDITIONS PRIOR TO BIDDING THE WORK.

ALL IRRIGATION EQUIPMENT TO BE INSTALLED PER IRRIGATION DETAILS. PROJECT SPECIFICATIONS, AND PER MANUFACTURER'S SPECIFICATIONS

6. ALL ITEMS SHALL BE BID AS NOTED. AFTER BID IS AWARDED CONTRACTOR MAY PROPOSE PRODUCT SUBSTITUTIONS OF EQUAL OR BETTER PRODUCTS TO THAT SPECIFIED IN PLANS DURING THE PRODUCT SUBMITTAL PROCESS AS OUTLINED PER THE PROJECT SPECIFICATIONS DURING THIS PROCESS ALL PROPOSED PRODUCTS TO BE INSTALLED SHALL BE SUBMITTED BY CONTRACTOR TO OWNER AND / OR OWNER'S REPRESENTATIVE FOR REVIEW AND THEY SHALL EITHER APPROVE OR DENY USE OF SUBMITTED PRODUCTS. ONCE THIS PROCESS IS COMPLETED NO FURTHER SUBSTITUTIONS WILL BE ALLOWED UNLESS PRIOR APPROVAL IS OBTAINED IN WRITING FROM OWNER OR OWNER'S REPRESENTATIVE.

ONLY APPROVED PRODUCTS THROUGH THE PRODUCT SUBMITTAL PROCESS ARE PERMITTED TO BE INSTALLED. ANY UNAPPROVED PRODUCTS FOUND INSTALLED SHALL BE SUBJECT TO REVIEW BY OWNER AND POTENTIALLY TO BE REMOVED AND REPLACED WITH APPROVED ITEM AT NO ADDITIONAL EXPENSE TO OWNER BEYOND THE COST OF APPROVED ITEM AND INSTALLATION OF THAT ITEM ONLY.

8. ALL CONTROL WIRES SHALL BE SLEEVED SEPARATELY IN UL APPROVED SCH 40 PVC ELECTRICAL CONDUIT SIZED AS NOTED PER PLANS IN SAME MAINLINE PIPE PER TRENCHING DETAIL. IF CONTROL WIRES MUST BE INSTALLED WITHOUT MAINLINE OR OTHER PIPES, THEN WIRES SHALL BE INSTALLED IN CONTINUOUS CONDUIT AT MINIMUM OF 18" DEPTH FOR LENGTH OF TRENCH UNTIL REACHING JOINT TRENCH LOCATION WITH PIPES AND AN APPROVED WARNING TAPE 2" MINIMUM WIDTH SHALL BE **INSTALLED AT 6" ABOVE CONDUIT**

9. ALL MAINLINE PIPES SHALL BE INSTALLED AT DEPTHS AS NOTED PER TRENCHING DETAIL (18" MINIMUM DEPTH) AND SHALL HAVE AN APPROVED WARNING TAPE 3" MINIMUM WIDTH INSTALLED AT 6" ABOVE MAINLINE PIPE OR 6" ABOVE HIGHEST PIPE INSTALLED WITHIN SAME TRENCH AS

LATERAL PIPES, AND EQUIPMENT LOCATIONS; PIPES INTENDED TO BE IN JOINT TRENCH ARE TYPICALLY SHOWN PARALLEL AND EVENLY SPACED TOGETHER. DUE TO GRAPHICAL CLARITY, SOMETIMES LINES REPRESENTING PIPES OR SLEEVES AND SOMETIMES EQUIPMENT SYMBOLS MAY BE SHOWN DIAGRAMMATICALLY BEYOND THE LIMITS OF PLANTING AREAS. THE CONTRACTOR SHALL FOLLOW THE INTENT OF THE PLAN LAYOUT AND SHALL CONTACT DESIGNER FOR CLARIFICATION IF INTENT IS NOT CLEAR.

11. CONTRACTOR MUST OBTAIN WRITTEN APPROVAL FROM THE OWNER OR OWNER'S REPRESENTATIVE FOR ANY CHANGES TO LAYOUT AS SHOWN PER PLANS AND SHALL CLEARLY DOCUMENT ANY SUCH CHANGES FOR USE WITH RECORD DRAWINGS (AS-BUILTS)

12. CONTRACTOR SHALL VERIFY PRESSURE AT IRRIGATION SYSTEM POINT OF CONNECTION PRIOR TO INITIATING ANY WORK. STATIC PRESSURE (TAKEN WHEN WATER IS AT REST) MUST BE 60 PSI MINIMUM FOR SYSTEM TO OPERATE PROPERLY AS DESIGNED. NOTIFY IRRIGATION DESIGNER PRIOR TO COMMENCING WITH CONSTRUCTION IF PRESSURE IS FOUND TO BE

- 13. ADJUST IRRIGATION OPERATING TIMES TO ACCOMMODATE FOR PLANT MATURITY, SOIL TYPE, PLANT EXPOSURE, SLOPE CONDITIONS, AND SEASONAL REQUIREMENTS.
- 14. ALL CONTROL VALVE & PIPE SIZES SHALL BE INSTALLED AS NOTED PER 3. INSTALL EMITTERS PER PLAN DETAILS. PLANS. ANY DEVIATIONS TO INSTALLED PIPE SIZES MUST BE APPROVED IN WRITING BY OWNER OR OWNER'S REPRESENTATIVE PRIOR TO 4. USE RIGID 3/4" SCH 40 PVC AS DRIP LATERAL PIPES UNLESS INSTALLATION OF SUCH PIPE OR EQUIPMENT. ALL PVC PIPES WERE SPECIFICALLY NOTED OTHERWISE IN PLANS. USE SCHEDULE 40 PVC DESIGNED TO FLOW AT A MAXIMUM VELOCITY OF 5.0 FPS AND ALL FITTINGS ONLY FOR ALL PVC LATERAL PIPE FITTINGS. COPPER PIPES AT A MAXIMUM VELOCITY OF 7.5 FPS, HOWEVER MANY TIMES PIPES ARE PURPOSELY SIZED TO EXCEED THESE REQUIREMENTS CONTRACTOR MAY INSTALL RIGID 1/2" SCHEDULE 40 PVC EMITTER IN EFFORTS TO REDUCE FRICTION LOSS AND PRESSURE LOSS THROUGH LATERAL PIPES (NOT SHOWN IN PLANS) AS REQUIRED AT A MAXIMUM **IRRIGATION SYSTEM.** ACCUMULATIVE LENGTH OF 15'-0" FROM THE 3/4" DRIP LATERAL PIPES 15. ALL MASTER & CONTROL VALVES SHALL INCLUDE IDENTIFICATION TAGS (SHOWN IN PLANS) TO DESIRED MULTI-PORT EMITTER LOCATIONS.
- INSTALLED ON WIRES PRIOR TO INSTALLATION OF WIRE CONNECTORS . EMITTER TUBES (DISTRIBUTION TUBING) SHALL BE VINYL MATERIAL WITH CORRESPONDING INFORMATION AS IDENTIFIED PER PLANS CLEARLY PRINTED ON ONE SIDE ON TAG USING BLACK PERMANENT MARKER AT SIZED AS REQUIRED TO FIT THE APPROVED EMITTER TYPE AND EACH TUBE SHALL NOT EXCEED 10'-0" IN LENGTH. EMITTER TUBES SHALL BE MINIMUM OF 1" SIZE TEXT. WIRE TAGS SHALL BE STANDARD SIZE, BLANK BOTH SIDES, & YELLOW COLOR WHEN USED WITH POTABLE WATER BURIED A MINIMUM OF 2" BELOW FINISH GRADE OF SOIL (NOT FINISH GRADE OF DG) AND SHALL NOT BE INSTALLED WHERE TUBES ARE SYSTEMS OR SHALL BE MAXI SIZE. BLANK ONE SIDE WITH BILINGUAL PINCHED OR KINKED RESULTING IN RESTRICTED FLOW. ALL TUBES 'WARNING- DO NOT DRINK' PRINTED ON OPPOSITE SIDE BY SHALL BE INSTALLED WITH ENDS OF TUBES LOCATED PER MANUFACTURER, & PURPLE COLOR WHEN USED WITH ANY NON-POTABLE INSTALLATION DETAILS WITH ALL ENDS OF TUBES EXPOSED AND CUT AT WATER SYSTEM. 1" - 2" ABOVE THE FINISH GRADE OF SURFACE MATERIAL (DG, RIP-RAP,
- 16. PVC MAINLINE PIPES SIZED 3" AND LARGER SHALL USE EITHER BELL END OR TURF). GASKET PIPE CONNECTIONS AND / OR DUCTILE IRON FITTINGS WITH RESTRAINTS AND / OR THRUST BLOCKS AS NOTED PER PLANS INSTALLED INSTALL FLUSHING END CAPS AT ENDS OF DRIP LATERAL PIPES AS AT 24" MINIMUM DEPTH OR AS NOTED PER TRENCHING DETAIL. PVC SHOWN PER PLANS. INSTALL ALL FLUSHING END CAPS IN A MINIMUM 10" MAINLINE PIPES SIZED 2 1/2" AND SMALLER SHALL BE SOLVENT WELD DIA. CIRCULAR PURPLE VALVE BOX WITH T-STYLE BOLT DOWN COVERS. USING SCHEDULE 80 PVC FITTINGS INSTALLED AT 18" MINIMUM DEPTH OR A MAXIMUM OF TWO FLUSHING END CAPS MAY SHARE A SINGLE VALVE AS NOTED PER TRENCHING DETAIL. ALL LATERAL PVC PIPES SHALL BE BOX IF THEY ARE LOCATED WITHIN CLOSE PROXIMITY IN PLANS. SOLVENT WELD USING SCHEDULE 40 PVC FITTINGS INSTALLED AT 12" 8. INSTALL ALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS AND MINIMUM DEPTH OR AS NOTED PER TRENCHING DETAIL. ALL THREADED SPECIFICATIONS AND PROVIDE 100% WATER COVERAGE TO ALL PLANTS. PVC CONNECTIONS SHALL USE SCHEDULE 80 PVC FITTING WITH TEFLON SEALANT. ALL COPPER PIPE SHALL BE TYPE 'K' COPPER WITH LEAD-FREE WIRE PATH NOTES: SOLDERED WROUGHT FITTINGS. ALL PVC PIPE MATERIAL TYPES SHOULD BE AS IDENTIFIED PER PLANS.
- 17. PVC PIPE SLEEVES SHALL BE INSTALLED AT DEEPEST PIPE DEPTH OF PIPES INSTALLED WITHIN SLEEVE OR AT 36" MINIMUM COVER WHEN INSTALLED UNDER VEHICULAR DRIVING HARDSCAPE SURFACES.
- 18. ANY PVC ELECTRICAL CONDUITS CONTAINING LOW VOLTAGE CONTROL WIRES, 2-WIRE PATH CABLES, COMMUNICATION CABLES, OR GROUNDING WIRES SHALL BE INSTALLED WITHIN UL APPROVED PVC CONDUIT SIZED AS NOTED PER PLANS AND INSTALLED AT PIPE SLEEVE DEPTHS OR AT 20" MINIMUM COVER.
- 19. PVC SOLVENT CEMENT SHALL BE USED WITH PURPLE COLOR PRIMER PER 2. ALL COMMON AND SPARE WIRES SHALL BE #14 GAUGE SOLID WIRE. ALL MANUFACTURER'S SPECIFICATIONS. SPECIFIC SOLVENT AND PRIMER CONTROL WIRES SHALL BE #14 GAUGE SOLID WIRE. ALL WIRES SHALL PRODUCTS TO BE USED MUST BE SUBMITTED WITH PRODUCT SUBMITTAL BE INSTALLED WITHIN APPROVED CONTINUOUS GRAY COLOR PVC PROCESS AND CORRESPOND WITH PVC PIPE MATERIALS BEING USED. ELECTRICAL CONDUIT WHEN BELOW GRADE AND EMT CONDUIT WHEN ABOVE GRADE.
- TRENCH AS MAINLINE PIPE LOCATED HORIZONTAL TO AND BELOW TOP OF 20. HAND DIG ANY EXCAVATIONS WITHIN 2'-0" OF ALL ELECTRICAL OR IRRIGATION STRUCTURES.
 - 3. ALL 24 VOLT CONTROL WIRE CONNECTIONS SHALL BE MADE WITH 3M 21. SEE PROJECT SPECIFICATIONS FOR FURTHER PRODUCT DESCRIPTIONS. #DBR/Y-6 GEL FILLED CONNECTOR SEALING PACKS OR APPROVED EQUAL PER IRRIGATION CONTROLLER MANUFACTURER'S 22. CONTRACTOR SHALL PROVIDE RECORD DRAWINGS (AS-BUILT PLANS) PER SPECIFICATIONS. PROJECT SPECIFICATIONS INCLUDING, BUT NOT LIMITED TO,
 - DOCUMENTING ANY DEVIATIONS FROM PLANS AND PROVIDING DIMENSIONS TO LOCATE TRENCHES, SLEEVE ENDS, AND EQUIPMENT FROM FIXED LOCATIONS AS IDENTIFIABLE IN BOTH FIELD AND ON PLANS.

VALVE BOX NOTES:

- 1. ALL VALVE BOX BODIES & COVERS TO BE INTEGRAL TAN COLOR WITH T-STYLE BOLT DOWN COVERS AND STAINLESS STEEL WASHER & BOLT.
- 2. EMBOSS VALVE BOX COVERS WITH 2" TALL STENCIL LETTERS/ NUMBERS PER THE VALVE BOX INSTALLATION DETAIL IN THIS SET.
- ALL VALVE BOXES SHALL BE SIZED AS NOTED PER PLANS WITH BOLT DOWN T-STYLE COVERS (EXCEPT EMITTER BOXES). ALL BOLT DOWN HARDWARE SHALL BE STAINLESS STEEL. WHEN IRRIGATION SYSTEM UTILIZES POTABLE WATER ALL VALVE BOX BODIES & COVERS SHALL BE TAN COLOR WHEN LOCATED IN GRANITE OR GREEN COLOR WHEN LOCATED IN TURF. WHEN SYSTEM UTILIZES NON-POTABLE WATER ALL VALVE BOX BODIES & COVERS SHALL BE INTEGRAL PURPLE COLOR. ALL BOX COVERS (EXCEPT EMITTER BOXES) SHALL BE EMBOSSED WITH STENCIL LETTERS / NUMBERS TO DESIGNATE EQUIPMENT TYPE AS NOTED PER PLANS.

EMITTER NOTES:

- 1. INSTALL MULTI-PORT EMITTERS WITH FLOWS AND QUANTITIES OF EMITTER TUBES TO EACH PLANT PER 'EMITTER SCHEDULE' ON IR-102.
- 2. INSTALL ALL EMITTER TUBES UP SLOPE FROM PLANT MATERIAL.

1. ALL CONVENTIONAL CONTROL WIRES SHALL BE TYPE UF & TWU IN ACCORDANCE TO NATIONAL ELECTRIC CODE FOR OPERATION AT A POTENTIAL OF 600 VOLTS OR LESS AND AT A TEMPERATURE OF 75°C OR LESS. LISTED BY UL, ETL, OR CSA. CONDUCTORS SHALL BE OF SOFT DRAWN BARE COPPER MEETING THE REQUIREMENTS OF ASTM SPECIFICATION B-3 OR B-8. TEMPERATURE RATING OF -10°C + 75°C. INSULATION SHALL BE POLYVINYL CHLORIDE RATED TO 75°C CONFORMING TO UL STANDARDS 493 AND 83. INSULATION SHALL BE MARKED WITH MANUFACTURER'S NAME, VOLTAGE RATING, SIZE AND TYPE. LISTING FILE NUMBERS. RoHS.

- 4. DIRECT BURY OF WIRE SPLICES IS NOT ACCEPTABLE. WIRE SPLICES SHALL ONLY OCCUR INSIDE VALVE BOXES AT VALVES AS SHOWN PER DETAILS AND INSIDE DEDICATED WIRE SPLICE BOXES WHERE WIRES TEE IN DIFFERENT DIRECTIONS AND WHERE WIRE RUNS EXCEED 2,500 LF. ALL WIRE ENDS INSIDE WIRE SPLICE BOXES SHALL BE LABELED WITH ASSOCIATED STATION NUMBERS.
- 5. CONTROL WIRES MUST MAINTAIN A MINIMUM OF 9'-0" HORIZONTAL CLEARANCE FROM ANY GROUNDING RODS / PLATES.

AILSYM	Л. Г	DESCRIPTION		QUANTITIES	
	M	POTABLE WATER METER	.75" WATER METER FOR THE POTABLE IRRIGATION SYSTEM PER CIVIL UTILITY PLANS		
	B	BACKFLOW PREVENTOR	0.75" REDUCED PRESSURE ASSEMBLY BACKFLOW PREVENTOR PER CIVIL UTILITY PLANS. ENCLOSED IN AN INSULATED STRONGBOX #SBBC-22-ALI SECURITY CAGE.		
	ĉ	IRRIGATION CONTROLLER	HUNTER XC HYBRID CONTROLLER #XCH-600-SSP WITH 6 STATIONS, SOLAR PANEL, AND STAINLESS STEEL ENCLOSURE; MOUNT CONTROLLER ON HUNTER 4'-0" HT. STAINLESS STEEL MOUNTING POLE #XCHSPOLE WITH STEEL MOUNTING BRACKET #XCHSPB; INCLUDE HUNTER MINI-CLIK RAIN/FREEZE SENSOR WITH STAINLESS STEEL SENSOR ENCLOSURE #SG-MC; ALL REMOTE CONTROL VALVES & MASTER VALVE MUST USE COMPATIBLE DC LATCHING SOLENOIDS AS NOTED PER DESCRIPTIONS BELOW; INSTALL PER MANUFACTURER SPECIFICATIONS.	1 EA	
)1) S⊢	NOT IOWN	CONVENTIONAL CONTROL WIRE	CONTROL WIRES SHALL BE PAIGE #P7001D OR APPROVED EQUAL #14 AWG SOLID CORE UNDERGROUND FEEDER TYPE UF & TWU WIRES; REMOTE CONTROL VALVE CONTROL WIRE (HOT) = RED COLOR, COMMON (NEUTRAL) = WHITE COLOR, SPARE = GREEN COLOR; PROVIDE ONE (1) <u>CONTINUOUS</u> SPARE WIRE FROM CONTROLLER IN EACH DIRECTION LOOPING IN AND OUT OF EACH REMOTE CONTROL VALVE BOX UNTIL TERMINATING AT FURTHEST REMOTE CONTROL VALVES (DO <u>NOT</u> CUT SPARE WIRES IN EACH BOX); ALL WIRES INSIDE VALVE BOXES SHALL HAVE 3' OF COILED WIRE LENGTH.	COMMON: 100 LF CONTROL: 210 LF SPARE: 100 LF	CONSULTANT(S):
			ALL WIRE CONNECTORS SHALL BE 3M #DBRY-6 WATERPROOF WIRE CONNECTORS RATED AT 600V OR APPROVED EQUAL; ALL WIRE SPLICES SHALL OCCUR IN EQUIPMENT VALVE BOXES OR IN A WIRE SPLICE BOX: CARSON #910 10" ROUND TAN COLOR WITH BOLT DOWN T-COVER EMBOSSED WITH 2" STENCIL LETTERS "WS" PER VALVE BOX INSTALLATION DETAIL IN THIS SET.		
01		ISOLATION BALL VALVE ASSEMBLY	SPEARS COMPACT 2000 SCH. 80 PVC BALL VALVE RATED TO 150 PSI (SIZE BALL VALVE PER PIPE SIZE PIPE IT IS INSTALLED ON); INSTALL IN CARSON #1220 JUMBO TAN COLOR VALVE BOX WITH BOLT DOWN T-COVER EMBOSSED WITH 2" STENCIL LETTERS "BV" PER VALVE BOX INSTALLATION DETAIL IN THIS SET	1.0" = 2 EA	
01	•	DRIP REMOTE CONTROL VALVE ASSEMBLY	1" HUNTER DRIP CONTROL ZONE KIT #ICZ-101-LF-40 GLASS-FILLED NYLON GLOBE STYLE BODY REMOTE CONTROL VALVE WITH FLOW CONTROL, LOW FLOW DESIGN (0.5 - 15.0 GPM), 150 MESH WYE FILTER, 40 PSI PRESSURE REGULATOR, AND 1" INLET WITH 0.75" OUTLET; INCLUDE HUNTER DC LATCHING SOLENOID #458200; 1" SPEARS COMPACT 2000 SCH 80 PVC BALL VALVE RATED TO 150 PSI; CHRISTY'S STANDARD YELLOW ID TAG WITH 'CONTROLLER LETTERS-STATION NO. (PER VALVE TAGS AS SHOWN IN PLANS) <u>CLEARLY</u> WRITTEN OR PRINTED ON ONE SIDE OF TAG AND INSTALLED ON CONTROL WIRE; IN CARSON #1220 JUMBO TAN VALVE BOX WITH BOLT DOWN T-STYLE COVER EMBOSSED WITH 2" STENCIL LETTERS / NUMBERS OF CONTROLLER LETTER & STATION # TO MATCH WIRE ID TAG PER VALVE BOX INSTALLATION DETAIL IN THIS SET.	4 EA	CLIENT:
12		QUICK COUPLER VALVE ASSEMBLY	1" HUNTER #HQ-44RC TWO-PIECE BRASS BODY WITH YELLOW COLOR RUBBER COVER; HUNTER #HSJ-1-3-S-2-12 PVC SNAPLOK COMBO KIT SWING JOINT WITH 1" MPT INLET, 1" MALE BRASS NPT SNAPLOK, SINGLE-TOP OUTLET, & 12" LAY LENGTH; #4 GALVANIZED REBAR STAKE WITH TWO STAINLESS STEEL HOSE CLAMPS; INSTALL IN CARSON #910 10" ROUND TAN COLOR VALVE BOX WITH BOLT DOWN T-COVER EMBOSSED WITH 2" STENCIL LETTERS "QC" PER VALVE BOX INSTALLATION DETAIL IN THIS SET	2 EA	
)2	•	DRIP LATERAL END CAP FLUSH VALVE ASSEMBLY	0.75" PVC FLEX PIPE RISER WITH TWO 0.75" SCH 40 PVC MALE ADAPTERS AND 0.75" SCH 40 PVC FEMALE HOSE THREAD CAP; INSTALL IN CARSON #910 ROUND 10" TAN VALVE BOX WITH BOLT DOWN T-COVER EMBOSSED WITH 2" STENCIL LETTERS "FC" PER VALVE BOX INSTALLATION DETAIL IN THIS SET (TWO END CAPS MAX. MAY BE INSTALLED WITHIN SAME VALVE BOX IF LOCATED IN SAME VICINITY)	4 EA	
N 02 S⊢	NOT IOWN	MULTI-OUTLET EMITTER ASSEMBLY	HUNTER MULTI-OUTLET EMITTERS #MPE-20 (RED) 2.0 GPH FOR ALL TREES, #MPE-10 (BLACK) 1.0 GPH FOR ALL SHRUBS & GROUND COVERS, & #MPE-05 (BLUE) 0.5 GPH FOR ALL CACTI - SEE 'EMITTER LEGEND' THIS SHEET FOR REQUIRED FLOWS TO EACH PLANT SPECIES; 1/2" PVC FLEX PIPE RISER WITH TWO 1/2" SCH 40 PVC MALE ADAPTERS; INSTALL IN NDS 6" ROUND TAN COLOR EMITTER BOX; EMITTER (DISTRIBUTION) TUBES SHALL BE VINYL MATERIAL SIZED TO FIT EMITTER	105 EA	
	X"	MAINLINE PIPE:	SCHEDULE 40 PVC PIPE WITH SCH 80 PVC SOLVENT WELD FITTINGS; ALL MAINLINES SHALL HAVE 18 AWG BLUE COLOR TRACER WIRE & BLUE COLOR 3" WARNING TAPE INSTALLED AT 6" ABOVE TOP OF PIPES	1.0" = 95 LF	
		TREE DRIP LATERAL PIPE:	0.75" SCH 40 PVC PIPE WITH SCH 40 PVC SOLVENT WELD FITTINGS	0.75" = 1,600 LF	
		SHRUB DRIP LATERAL PIPE:	0.75" SCH 40 PVC PIPE WITH SCH 40 PVC SOLVENT WELD FITTINGS	0.75" = 1,580 LF	
	X"PS	PIPE SLEEVES (PS)	2" & 3" SCH 40 PVC PIPE (WHITE) SLEEVES UNDER HARDSCAPE- SIZE AS NOTED PER PLANS;	2"PS = 85 LF 3"PS = 725 LF	
	x"ws	WIRE SLEEVES (WS)	GRAY ELECTRICAL SCH 40 PVC SLEEVES (SIZE AS NOTED PER PLANS)	1"WS = 100 LF	

BOTANICAL NAME /	QUANTITY /	# PORTS /	VOLUME			
COMMON NAME:	TYPE:	VOLUME:	PER PLANT:			
ACACIA ANUERA		8/20 CPH	16.0 CPH			
MULGA	27100211	072.0 GFTT	10.0 GFTT			
	2 / MULTI	8/20 GPH	16.0 GPH			
	27 100211	072.00111				
FRAXINUS VELUTINA	2 / MULTI	10 / 2.0 GPH	20.0 GPH			
	2 / MULTI	12 / 2.0 GPH	24.0 GPH			
HERITAGE LIVE OAR						
UALLIANDRA ERIUPHTILLA DINK ENDY DUSTED	1 / MULTI *	1 / 1.0 GPH	1.0 GPH			
CIMARRON SAGE	1 / MULTI *	1 / 1.0 GPH	1.0 GPH			
SALVIA CHAMAEDRYOIDES						
MEXICAN BLUE SAGE	1 / MUL11 *	1 / 1.0 GPH	1.0 GPH			
OVERS:						
EREMOPHILA GLABRA 'MINGENEW GOLD'	1 / MULTI *	1 / 1.0 GPH	1.0 GPH			
OUTBACK SUNRISE EMU						
RUSMARINUS UFFICINALIS PRUSTRATUS	1 / MULTI *	1 / 1.0 GPH	1.0 GPH			
I ANTANA MONTEVIDENSIS 'TRAILING YELLOW'						
YELLOW TRAILING LANTANA	1 / MULTI *	1 / 1.0 GPH	1.0 GPH			
ALOE 'BLUE ELF'	1 / N/I II TI *					
BLUE ELF ALOE		1 / U.5 GPH	U.S GPH			
HESPERALOE PARVIFLORA 'BRAKELIGHTS'	1 / MI II TI *	1/10 GPH	1.0 GPH			
BRAKELIGHTS HESPERALOE						

* = MULTI PORT EMITTERS SHALL BE SHARED BETWEEN ADJACENT PLANT WITHIN 8'-0" MAX EMITTER TUBE REACH WITH SAME EMITTER TYPE.









- MIN LENGTH. (WRAP AROUND 1/2" PIPE 15
- TERMINATING AT FURTHEST VALVE FROM



VALVE BOX WITH BOLT DOWN 'T' COVER

WATERPROOF WIRE SPLICE KIT PER **IRRIGATION LEGEND - INSTALL PER** MANUFACTURERS SPECIFICATIONS. WIRE TAG

FINISH GRADE

3/8" WASHED PEA GRAVEL SUMP AT

6" MIN. DEPTH OVER NON-WOVEN

CLASS 'B' GEOTEXTILE FABRIC PER

VALVE BOX TO REST ON GRAVEL SUMP

MIN

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MAG SECTION 796.2.2

WITH BRICK SUPPORTS (1 OF 3)

IRRIGATION WIRING PER IRRIGATION LEGEND.

NOTE

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- 1. FOR ALL WIRE SIZES NO. 14,12,&10.
- 2. ALL CONNECTIONS IN VALVE BOXES ONLY. 3. FOR 1-10 CONTROL WIRES: CARSON #910 ROUND 10" VALVE BOX WITH BOLT

SCH 80 PVC NIPPLE

- DOWN T-COVER OR APPROVED EQUAL 4. FOR 11 OR MORE CONTROL WIRE: CARSON #1220 JUMBO VALVE BOX WITH
- BOLT DOWN T-COVER OR APPROVED EQUAL.
- 5. INSTALL VALVE BOX AND BRANDING PER VALVE BOX INSTALLATION DETAIL 6. LABEL ALL WIRES ENDS IN SPLICE BOX.
- **TYPICAL IRRIGATION WIRE CONNECTION** SCALE:NTS 10" ROUND VALVE BOX -WITH BOLT DOWN T-COVER FINISH GRADE -SUBGRADE

GEOTEXTILE FABRIC PER MAG SECTION 796.2.2 VALVE BALL VALVE ASSEMBLY (2.5" OR SMALLER)

SCALE:NTS

NON-WOVEN CLASS 'B









LAKE POWELL BLVD STREETSCAPE SITE ELECTRICAL PAGE, ARIZONA

GENERAL ELECTRICAL NOTES

- 1. ELECTRICAL WORK SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (LATEST EDITION), FEDERAL, STATE AND LOCAL JURISDICTION CODES.
- 2. ALL WORK SHALL BE DONE IN A NEAT, WORKMANLIKE, FINISHED AND SAFE MANNER, ACCORDING TO THE LATEST PUBLISHED NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION STANDARDS OF INSTALLATION, UNDER COMPETENT SUPERVISION.
- 3. VISIT THE SITE PRIOR TO BIDDING TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND ALL OTHER FACTORS WHICH MAY AFFECT THE EXECUTION OF THIS WORK. INCLUDE ALL RELATED COSTS IN THE INITIAL BID PROPOSAL
- 4. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATIONS OF ALL EXISTING UTILITIES AND AVOIDING DAMAGE TO SAME. CONTRACTOR TO CALL 811 FOR BLUE STAKE. FOR ALL MUNICIPAL OR PRIVATELY OWNED UTILITIES EXISTING WITHIN LIMITS OF WORK OF PROJECT, CONTRACTOR TO PRIVATELY LOCATE UTILITIES. IRRIGATION LINES LESS THAN 2" WILL NOT TYPICALLY BE MARKED AND CAUTION SHOULD BE USED TO AVOID DAMAGE. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL UTILITIES CAUSED AS A RESULT OF CONTRACT WORK, ALL DAMAGES TO BE REPAIRED IN KIND.
- 5. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING WALKS, WALLS, DRIVES, CURBS, ETC. DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
- 6. PROPER PROTECTION OF THE CONSTRUCTION AREA FOR SAFETY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COVER ALL TRENCHES AT THE END OF EACH WORK DAY. BARRICADES SHALL BE INSTALLED AS DIRECTED BY THE OWNER OR THE PROJECT INSPECTOR. THE SITE AND ALL WORK SHALL CONFORM TO OSHA REQUIREMENTS.
- 7. ALL EXISTING LANDSCAPE, HARDSCAPE AND SPRINKLER SYSTEMS DAMAGED OR DISTURBED DURING THE CONSTRUCTION OF THIS PROJECT BY THE CONTRACTOR SHALL BE REPLACED IN KIND.
- 8. CONTRACTOR SHALL PAY FOR PERMITS AND INSPECTIONS AS MAY BE REQUIRED AND PROVIDE A CERTIFICATE OF INSPECTION TO THE OWNER.
- 9. PROTECT ALL MATERIAL AND EQUIPMENT INSTALLED AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS OR ANY OTHER CAUSES. EQUIPMENT FOUND DAMAGED OR IN OTHER THAN NEW CONDITION WILL BE REJECTED AS DEFECTIVE. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS, AND LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK.
- 10. LEAVE THE SITE CLEAN, REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND ALL MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THE WORK DURING CONSTRUCTION.
- 11. ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, BURIED 24" MINIMUM BELOW FINISHED GRADE, UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS OR IN DETAILS.
- 12. PROVIDE EMT INDOOR AND GRS OUTDOOR FOR ABOVE GROUND CONDUIT. WHERE METALLIC CONDUITS COME IN CONTACT WITH DIRT, THEY SHALL BE HALF LAP WRAPPED WITH SCOTCH 50 TAPE TO 12" AFG. FITTINGS SHALL BE STEEL, THREADED TYPE WITH INSULATED THROATS. SECURELY ATTACH ALL SURFACE MOUNTED CONDUIT EVERY 10 FEET AND WITHIN 3 FEET OF EACH JUNCTION BOX, PER NEC ARTICLE 344.30.
- 13. MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS OR IN DETAILS.
- 14. ALL FEEDERS AND BRANCH CIRCUIT WIRE SHALL BE COPPER TYPE XHHW (75 DEGREE C) FOR BELOW GRADE INSTALLATIONS (AND CONDUIT RISERS) AND THHN/THWN (75 DEGREE C) FOR ABOVE GRADE INSTALLATIONS. MINIMUM SIZE SHALL BE #12 AWG, UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS OR IN DETAILS. ALL WIRING SHALL BE IN CONDUIT. FOR NEW WIRING IN COMMERCIAL APPLICATIONS, THE USE OF TYPES NM, NMC, NMS (ROMEX) CABLES IS NOT PERMITTED. ALL CONDUCTORS SHALL BE NEW UNLESS NOTED OTHERWISE IN PLANS.
- 15. A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR (BOND) SHALL BE INSTALLED WITHIN EACH RACEWAY, INCLUDING WITHIN EMT CONDUIT. EQUIPMENT GROUNDING CONDUCTOR SHALL BE SIZED PER NEC TABLE 250.122.
- 16. BOND ALL ENCLOSURES PER NEC ARTICLE 250.96.
- 17. CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIAL, ETC. NECESSARY FOR A COMPLETE AND WORKABLE ELECTRICAL SYSTEM WHETHER OR NOT THESE ITEMS ARE SPECIFICALLY NOTED ON THESE DRAWINGS. INCIDENTAL ITEMS NOT INDICATED ON THE DRAWINGS. NOR MENTIONED IN SPECIFICATIONS THAT CAN BE LEGITIMATELY AND REASONABLY INFERRED TO BELONG TO THE WORK DESCRIBED OR BE NECESSARY IN GOOD PRACTICE TO PROVIDE A COMPLETE SYSTEM, SHALL BE FURNISHED AND INSTALLED AS THOUGH ITEMIZED HERE IN EVERY DETAIL.
- 18. CONTRACTOR IS RESPONSIBLE FOR AND SHALL PROVIDE ALL LABOR, MATERIAL, TRENCHING, CONDUIT, TRANSFORMER PAD AND OTHER REQUIRED EQUIPMENT PER UTILITY COMPANY PLANS AND SPECIFICATIONS NECESSARY FOR A COMPLETE UNDERGROUND CONDUIT SYSTEM FROM THE UTILITY POINT OF SERVICE TO THE UTILITY CO. TRANSFORMER AND FROM THE UTILITY CO. TRANSFORMER TO THE ELECTRICAL SERVICE ENTRANCE SECTION.
- 19. ALL TRENCHING, CONDUITS, ETC. SHALL BE ROUTED AND INSTALLED IN SUCH A MANNER THAT WILL NOT DAMAGE EXISTING FACILITIES. SHOULD DAMAGE OCCUR, IT WILL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR DAMAGE TO THE SATISFACTION OF THE OWNER OR INSPECTOR.
- 20. ALL CONDUIT RUNS SHOWN ON THIS PLAN ARE SCHEMATIC IN NATURE. THE CONTRACTOR SHALL MAKE SURE THAT ALL CONDUIT, ETC. FALLS WITHIN THE CONSTRUCTION AREA/RIGHT OF WAY. (THIS INCLUDES MAINTAINING ALL REQUIRED CLEARANCES.)
- 21. WHEN CROSSING PATHWAYS OR SIDEWALKS, CONTRACTOR SHALL BORE UNDER EXISTING CONCRETE WALKS AND SAWCUT ASPHALT WALKS. ASPHALT WALKS SHALL BE REPLACED IN KIND.
- 22. CONTRACTOR SHALL GUARANTEE WORK INSTALLED UNDER THE CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS, USUAL WEAR EXCEPTED, AND SHOULD ANY SUCH DEFECTS DEVELOP WITHIN A PERIOD OF ONE YEAR AFTER ACCEPTANCE OF THE PROJECT BY THE OWNER, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE ANY DEFECTIVE ITEMS AND DAMAGE RESULTING FROM FAILURE OF THESE ITEMS, AT NO EXPENSE WHATSOEVER TO THE OWNER.
- 23. CONTRACTOR SHALL IDENTIFY SERVICE ENTRANCE SECTION MAIN SERVICE DISCONNECT(S) WITH 3/32-INCH THICK LAMINATED PHENOLIC TYPE NAMEPLATES WITH 1/4-INCH MINIMUM HEIGHT LETTERS. NAMEPLATE TO BE BLACK MATTE FINISH SURFACE WITH WHITE LETTER ENGRAVING. ATTACH NAMEPLATE TO THE OUTSIDE PANEL FACE WITH TWO STAINLESS STEEL SELF-TAPPING SCREWS. NAMEPLATE SHALL READ "SERVICE DISCONNECT" PER NEC ARTICLE 230.70(B).
- 24. ALL CIRCUITS SHALL BE LEGIBLY IDENTIFIED AT THE PANEL, JUNCTION BOXES AND AT ALL EQUIPMENT IN A PERMANENT MANNER (I.E. ETCHED PLATES, CONDUCTOR TAG, PERMANENT MARKER, ETC.). THE LABELING SHALL INCLUDE PANEL CIRCUIT NUMBER, "TO" AND "FROM" IDENTIFICATION, AND MARKED "SPARE" WHERE APPLICABLE.
- 25. CONTRACTOR SHALL TEST ELECTRICAL SYSTEM FOR SHORT CIRCUITS AND MEGGER TEST FEEDER CIRCUIT WIRING. PROVIDE CERTIFIED TEST RESULTS FOR MEGGER TEST TO OWNER UPON COMPLETION OF PROJECT.

38. THE SUBMITTALS SHALL BE NEATLY GROUPED AND ORGANIZED. PERTINENT INFORMATION SHALL BE HIGHLIGHTED. AND THE SPECIFIC PRODUCT SHALL BE IDENTIFIED. ALL SUBMITTALS SHALL BE COMPLETE, AND PRESENTED IN ONE PACKAGE. THE SUBMITTAL SHALL INCLUDE A COMPLETE LIST OF THE EQUIPMENT AND MATERIALS, INCLUDING THE MANUFACTURER'S NAME, PRODUCT SPECIFICATION, DESCRIPTIVE DATA, TECHNICAL LITERATURE, PERFORMANCE CHARTS, CATALOG CUTS, INSTALLATION INSTRUCTIONS, AND SPARE PART RECOMMENDATIONS FOR EACH DIFFERENT ITEM OF THE EQUIPMENT SPECIFIED.

26. ALL CONDUIT SHOWN SHALL BE CONCEALED WHEN POSSIBLE. WHEN NOT POSSIBLE, CONDUIT MAY BE SURFACE MOUNTED WITH PERMISSION OF THE OWNER OR OWNER'S REPRESENTATIVE.

27. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT CONNECTIONS WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN. PROVIDE ADDITIONAL FUSED DISCONNECT SWITCHES AND CONTROLS IF OVERCURRENT PROTECTION OR CONTROLS IS NOT INTEGRAL WITH UNITS.

28. ALL EQUIPMENT SHALL BE FUSE SIZED PER MANUFACTURES RECOMMENDATIONS AND BEAR U.L. APPROVAL. COORDINATE WITH ENGINEER/OWNER.

29. ELECTRICAL DEVICES, DISCONNECT SWITCHES, ETC., SHALL BE SUPPORTED INDEPENDENT OF AND ISOLATED FROM EQUIPMENT VIBRATIONS.

30. ALL OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA-3R OR NEMA-4 ENCLOSURES.

31. CONDUITS OR RACEWAYS ROUTED FROM INDOORS TO OUTDOORS OR AS DESCRIBED IN NEC 300.7(A). SHALL BE SEALED WITH A PLIABLE SEALING COMPOUND AT A CONDUIT BODY OR AT A JUNCTION BOX BEFORE THE CONDUIT ENTERS THE COLDER ENVIRONMENT.

32. CONDUITS OR RACEWAYS INSTALLED IN AREAS WHERE ELEVATION CHANGES MAY CAUSE WATER OR MOISTURE TO ENTER THE ELECTRICAL EQUIPMENT THROUGH THE CONDUIT SHALL BE SEALED WITH A HERMETIC CONDUIT SEAL AT BOTH ENDS OF THE CONDUIT OR RACEWAY.

33. ALL POLE LIGHTS SHALL BE PROVIDED WITH A TWO POLE FUSE HOLDER BUSSMANN #HEX OR A SINGLE POLE FUSE HOLDER BUSSMANN #HEB OR EQUAL FOR INLINE FUSING, PROVIDE 5 AMP FUSING IN FUSEHOLDER.

34. PRIOR TO POURING THE POLE BASES OR COVERING ANY ELECTRICAL CONDUITS, CONTACT THE INSPECTION DEPARTMENT 24 HOURS IN ADVANCE FOR APPROVAL.

35. MATERIALS SHALL BE NEW AND OF THE BEST QUALITY WITH MANUFACTURER'S NAME PRINTED THEREON. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH NEMA, ANSI, UNDERWRITER'S LABORATORY OR OTHER APPLICABLE STANDARDS AND RATED FOR HEAVY DUTY SERVICE.

36. ALL WIRING DEVICES SHALL BE SPECIFICATION GRADE. ALL 15 AND 20 AMP, 125 AND 250 VOLT, NONLOCKING RECEPTACLES INSTALLED OUTDOORS SHALL BE LISTED WEATHER-RESISTANT TYPE. RECEPTACLE COVERS IN WET LOCATIONS SHALL BE EXTRA DUTY PER NEC 406.9(B). ALL WEATHERPROOF WHILE IN-USE RECEPTACLE COVERS SHALL BE METAL.

37. SELECTION OF MATERIALS SHALL BE IN STRICT ACCORDANCE WITH THE DRAWINGS AND/OR SPECIFICATIONS. THE USE OF MANUFACTURER'S NAME, MODEL, AND NUMBER IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS AND BID PRICE. CONTRACTOR SHALL SUBMIT TO THE OWNER OR OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL (PRIOR TO ORDERING MATERIALS) COPIES OF EQUIPMENT SHOP DRAWINGS AS FOLLOWS: LIGHT FIXTURES, POLES, POLE BASES, SERVICE ENTRANCE SECTION, ELECTRICAL EQUIPMENT, DISCONNECT SWITCHES, TIME CLOCKS AND OTHER CONTROLS, LIGHTING CONTACTORS AND PULL BOXES. AT THE TIME OF EACH SUBMITTAL, THE CONTRACTOR SHALL DEFINE AND DELINEATE IN WRITING ANY DEVIATIONS FROM THE CONTRACT DOCUMENTS. THE REVIEW WILL BE ONLY FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE WORK AND FOR COMPLIANCE WITH THE INFORMATION CONTAINED IN THE CONTRACT DOCUMENTS. THE REVIEW OF A SPECIFIED ITEM, AS SUCH, WILL NOT INDICATE REVIEW OF THE ASSEMBLY IN WHICH THE ITEM FUNCTIONS. REVIEW BY THE OWNER OR OWNER'S REPRESENTATIVE WILL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS IN THE SUBMITTALS NOR FROM HIS RESPONSIBILITY FOR COMPLYING WITH THE CONTRACT DOCUMENTS.







VICINITY MAP NO SCALE





	<u>WI</u>	<u>RE & C(</u>	<u>)NDUIT</u>	TAB	<u>SLE</u>
COI	NDUIT		WIRE		REMARKS
NO.	SIZE	POWER	GROUND	TYPE*	(CKT #)
50	1"	2-#12	1-#12	CU	TYPICAL
51	1"	2-#10	1-#10	CU	TYPICAL
60	1.5"	PULL ROPE			SPARE
100	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A-6
101	1"	2-#12	1-#10	CU	A(1,3)
		2-#10		CU	A-6
102	1"	2-#12	1-#12	CU	A(1,3)
		2-#12	″	CU	A-8
103	1"	2-#12	1-#12	CU	A(5.7)
		2-#12		CU	A-10
104	1"	2-#12	1-#10	CU	A(5.7)
		2 - # 10		CU	A-12
105	1"	2-#12	1-#12	CU	A(1,3)
100		2 # 12 2-#12			$\Delta - 2$
		$2 \pi 12$ 2-#12	-		\wedge (5.7)
	1"	$2 - \frac{1}{2}$	1 #0		A(3,7)
		2 - # 10	$-1^{-#0}$		A-0
	1 5"	2-#0	1 // C		A-0
	1.5	2-#8	- 1-#6		A-10
		2-#8	_		A-12
		2-#6			A-4
106	1"	2-#12	11	CU	A(1,3)
		2-#12	_	CU	A-2
		2-#12		CU	A(5,7)
	1.5"	2-#10	1-#6	CU	A-8
		2-#8		CU	A-12
		2-#6		CU	A-4
107	1"	2-#12	1-#10	CU	A(1,3)
		2-#12		CU	A(5,7)
		2-#10		CU	A-8
	1"	2-#10	1-#6	CU	A-12
		2-#6		CU	A-4
108	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
		2-#12	-	CU	A-8
	1"	2-#10	1-#8	CU	A-12
		2-#8		CU	A-4
109	1"	2-#12	1-#12	CU	A(1.3)
		2 - # 12		CU	A(5,7)
	1"	2-#8	1-#8		A-6
	'	2-#8	\dashv "		A-10
110	1"	$2 - \frac{\pi 0}{2 - \frac{4}{12}}$	1_#12		$\Delta(1,3)$
110		$2 - \frac{\pi}{2}$	\neg π'		$\Delta(5,7)$
	1 "	$\frac{2}{2} \frac{\pi}{2}$	1_#10		A-6
		2 # 12	-		
1 1 1	1 ''	$2 - \pi + 0$	1 // 1 0		A = 10
		2 - # 12	$\neg \neg = \# \land \angle$		A(1,3)
	<u>ب</u> ب	2-#12	4 // 4 0		A(3,7)
		2-#12	- −# ¹²		A-6
4.1.0		2-#12			A-10
112	1"	2-#12	11	CU	A(1,3)
		2-#12			A(5,7)
	1"	2-#10	11	CU	A-10
		2-#8		CU	A-6
113	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
	1"	2-#10	1-#10	CU	A-10
		2-#10		CU	A-6
* THIS (DENTIFIES THE			



CONSTRUCTION NOTES

CU = COPPER, AL = ALUMINUM.

- (1) 2.5" SCH. 40 PVC CONDUIT TO POINT OF SERVICE, CONTRACTOR SHALL VERIFY POINT OF ELECTRIC SERVICE LOCATION AND SPECIFICATIONS WITH POWER CO. PLANS & INSTALL CONDUIT TO THIS LOCATION. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
- (2) 200 AMP, 120/240V, 1Ø, 3W, METERED ELECTRIC PEDESTAL, SEE DETAIL 1 ON SE-301.
- (3) #3-1/2 CONCRETE PULL BOX, SEE DETAIL 2 ON SE-301.
- (4) CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY. INSTALL 3" SCH 40 PVC CONDUIT SLEEVE UNDER ROADWAY. INSTALL CONDUIT IN SLEEVE.
- (5) STUB OUT 5' OF 1" CONDUIT WITH PULL ROPE AS SHOWN ON SITE PLAN, FOR FUTURE USE. CAP CONDUIT AT GRADE AND MARK LOCATION ON AS-BUILT DRAWINGS.
- (6) ARLINGTON GARD-N-POST WITH 20A 120V GFCI DUPLEX RECEPTACLE WITH METAL WEATHERPROOF WHILE-IN-USE AND LOCKABLE COVER, SEE DETAIL 3 ON SE301. COORDINATE EXACT LOCATION WITH LANDSCAPE ARCHITECT. INSTALL RECEPTACLE POST AT BASE OF TREE AS CLOSE TO EDGE OF TREE GRATE OPENING AS POSSIBLE TO ALLOW SPACE FOR TREE TRUNK GROWTH.
- \bigcirc 20A 120V GFCI DUPLEX RECEPTACLE ON STREET LIGHT POLE FOR HOLIDAY LIGHTING, SEE DETAIL 4 ON SE-302
- (8) 20A 120V GFCI DUPLEX RECEPTACLE ON PEDESTRIAN LIGHT POLE FOR HOLIDAY LIGHTING, SEE DETAIL 5 ON SE-302
- (9) REMOVE EXISTING STREET OR PEDESTRIAN LIGHT, POLE, AND FOUNDATION. JACKHAMMER ANY FOUNDATION TO A POINT 24" BELOW GRADE, BACKFILL WITH CLEAN FILL, COMPACT, AND REPAIR GRADE TO MATCH EXISTING AS NEEDED. VERTICAL CONDUIT SWEEPS ARE TO BE REMOVED, LATERAL RUNS ARE TO BE ABANDONED IN PLACE.
- (10) #5 CONCRETE PULL BOX, SEE DETAIL 2 ON SE-301.

			LIGHT FI	XTURE	SCHE	DULE	
SYMBOL	LETTER ID	MANUFACTURER	CATALOG NUMBER	FINISH COLOR	VOLTS	LAMP	LUME (MIN
• ••	A	COOPER LIGHTING	TT-D6-830-U-T4-PM-GM	GRAY	240	97W LED	8,77
•••	В	COOPER LIGHTING	TT-D1-830-U-T4-PM-GM	GRAY	240	29W LED	2,95



	LIGHT FIXTURE SCHEDULE									
SYMBOL	LETTER ID	MANUFACTURER	CATALOG NUMBER	FINISH COLOR	VOLTS	LAMP	LUMENS (MIN)	ССТ	MOUNTING HEIGHT	DETAIL
⊷ ‡	A	COOPER LIGHTING	TT-D6-830-U-T4-PM-GM	GRAY	240	97W LED	8,771	3000K	30'-0"	STREET LIGHT SEE DETAIL 4 SHEET SE-302
-0	В	COOPER LIGHTING	TT-D1-830-U-T4-PM-GM	GRAY	240	29W LED	2,959	3000K	18'-0"	PEDESTRIAN LIGHT SEE DETAIL 5 SHEET SE—302

LEGEND

	200A 120/240V 1ø PEDESTAL
	NEW PULL BOX
C	120V GFCI DUPLEX RECEPTACLE
~->	NEW UNDERGROUND CONDUIT
A-1	CIRCUIT NUMBER
	FIRE HYDRANT
⊶()	EXISTING STREET LIGHT TO BE REMOVED
⊶XX	EXISTING PEDESTRIAN LIGHT TO BE REMOVED
•	EXISTING PEDESTRIAN LIGHT TO REMAIN

- 1 2.5" SCH. 40 PVC CONDUIT TO POINT OF SERVICE, CONTRACTOR SHALL VERIFY POINT OF ELECTRIC SERVICE LOCATION AND SPECIFICATIONS WITH POWER CO. PLANS & INSTALL CONDUIT TO THIS LOCATION. POWER CO. PLANS WILL DETERMINE EXACT LOCATION OF CONDUIT AND TAKE PRECEDENCE OVER THESE DRAWINGS.
- (3) #3-1/2 concrete pull box, see detail 2 on se-301.
- (4) CONTRACTOR TO HORIZONTAL BORE UNDER EXISTING ROADWAY, CURB, GUTTER, AND SIDEWALK AS NECESSARY. INSTALL 3" SCH 40 PVC CONDUIT SLEEVE UNDER ROADWAY. INSTALL CONDUIT IN SLEEVE.
- 5 STUB OUT 5' OF 1" CONDUIT WITH PULL ROPE AS SHOWN ON SITE PLAN, FOR FUTURE USE. CAP CONDUIT AT GRADE AND MARK LOCATION ON AS-BUILT DRAWINGS.
- 6 ARLINGTON GARD-N-POST WITH 20A 120V GFCI DUPLEX RECEPTACLE WITH METAL WEATHERPROOF WHILE-IN-USE AND LOCKABLE COVER, SEE DETAIL 3 ON SE301. COORDINATE EXACT LOCATION WITH LANDSCAPE ARCHITECT. INSTALL RECEPTACLE POST AT BASE OF TREE AS CLOSE TO EDGE OF TREE GRATE OPENING AS POSSIBLE TO ALLOW SPACE FOR TREE TRUNK GROWTH.
- SEE DETAIL 4 ON SE-302
- (8) 20A 120V GFCI DUPLEX RECEPTACLE ON PEDESTRIAN LIGHT POLE FOR HOLIDAY LIGHTING, SEE DETAIL 5 ON SE-302
- 9 REMOVE EXISTING STREET OR PEDESTRIAN LIGHT, POLE, AND FOUNDATION. JACKHAMMER ANY FOUNDATION TO A POINT 24" BELOW GRADE, BACKFILL WITH CLEAN FILL, COMPACT, AND REPAIR GRADE TO MATCH EXISTING AS NEEDED. VERTICAL CONDUIT SWEEPS ARE TO BE REMOVED, LATERAL RUNS ARE TO BE ABANDONED IN PLACE. (10) #5 CONCRETE PULL BOX, SEE DETAIL 2 ON SE-301.

				IAD	' La La
CON			WIRF		REMARKS
NO	SIZE	POWER		TYPF*	(CKT #)
50	1"	2-#12	1 - # 12		
51	1"	2 # 10	1 - # 10		
60	1 5"				SDARE
100	1.0	POLL NOFL	1 #10		
100		2 - # 12	'-#'2		A(1,5)
101	1 "	$2 - \frac{1}{2}$	1 // 1 0		A = 0
		2 - # 12	1 1 - # 10		A(1,5)
100	1 "	2 - # 10	1 #10		A = 0
102		2 - # 12	<i>—</i> # ∠ 		A(1,3)
107	1 "	2 - # 12	1 // 1 0		A-8
105		$2 - \frac{\pi}{2}$	<i>—</i> # ∠ 		A(5,7)
104	1 "	2 - # 12	1 // 1 0		A = 10
104		2-#12	<i>-</i> # 0 		A(5,7)
105		2-#10	4 // 4 0		A - 12
105		2-#12	-# 2		A(1,3)
		2-#12	-	CU	A-2
	. 22	2-#12			A(5,7)
	1	2-#10	1 1-#8	CU	A-8
	"	2-#8		CU	A-6
	1.5	2-#8	1 1-#6	CU	A-10
		2-#8	-	CU	A-12
		2-#6		CU	A-4
106	1″	2-#12	1-#12	CU	A(1,3)
		2-#12	-	CU	A-2
		2-#12		CU	A(5,7)
	1.5"	2-#10	1-#6	CU	A-8
		2-#8	-	CU	A-12
		2-#6		CU	A-4
107	1"	2-#12	1-#10	CU	A(1,3)
		2-#12	-	CU	A(5,7)
		2-#10		CU	A-8
	1 "	2-#10	1-#6	CU	A-12
		2-#6		CU	A-4
108	1 "	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
		2-#12		CU	A-8
	1 "	2-#10	1-#8	CU	A-12
		2-#8		CU	A-4
109	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
	1"	2-#8	1-#8	CU	A-6
		2-#8		CU	A-10
110	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
	1"	2-#12	1-#10	CU	A-6
		2-#10		CU	A-10
111	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
	1"	2-#12	1-#12	CU	A-6
		2-#12		CU	A-10
112	1"	2-#12	1-#12	CU	A(1,3)
		2-#12		CU	A(5,7)
	1"	2-#10	1-#8	CU	A-10
		2-#8]	CU	A-6
113	1"	2-#12	1-#12	CU	A(1,3)
		2-#12	1 "	CU	A(5,7)
	1"	2-#10	1-#10	CU	A-10
		2-#10	1 "	CU	A-6

* THIS COLUMN IDENTIFIES THE CONDUCTOR MATERIAL TYPE. CU = COPPER, AL = ALUMINUM.

GRAPHIC SCALE

1 INCH = 20 FEET

CONSTRUCTION NOTES

- (2) 200 AMP, 120/240V, 1ø, 3W, METERED ELECTRIC PEDESTAL, SEE DETAIL 1 ON SE-301.
- (7) 20A 120V GFCI DUPLEX RECEPTACLE ON STREET LIGHT POLE FOR HOLIDAY LIGHTING,



Arizona Blue Stake, Inc.



Design

4649 E COTTON GIN LOOP B2 PHOENIX, AZ 85040 602.438.2221

WWRIGH engineering corporation

ELECTRICAL ENGINEERING AND DESI

165 EAST CHILTON DRIVE CHANDLER, ARIZONA 85225

PHONE: 480.497.5829 FAX: 480.497.5807 www.wrightengineering.us

Wright Project # 22599

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CONSULTANT(S):

WIRE & CONDUIT TARIE



(M













STREET LIGHT & PEDESTRIAN LIGHT CUT SHEET NO SCALE



TT TopTier

	Color Temperature	Voltage	Distribution	Mounting	Color			
Imens Imens Jmens Jmens Jmens Jumens Jumens Lumens Lumens	735=70 CRI, 3500K CCT 740=70 CRI, 4000K CCT 750=70 CRI, 5000K CCT 830=80 CRI, 3000K CCT AMB=Amber 590nm ¹⁶	U=120-277V H=347-480V ⁴ 1=120V 2=208V 3=240V 4=277V 8=480V ⁴ 9=347V	5CQ=Type 5, Concentrate 5MQ=Type 5, Medium 5WQ=Type 5, Wide RW=Rectangular Wide ⁶ T4=Type 4 ⁵	ed PM =Pole Mount	NW=White AP=Gray BZ=Bronze BK=Black DP=Dark Platinum GM=Graphite Metallic			
 ^{8,10} ^{1,10} ^{1,10} Immable, < 8' Mounting ^{8,13} Immable, 8' - 20' Mounting ^{8,13} Immable, 21' - 40' Mounting ^{8,13} avelooth Programmable, 15' - 40' Mounting ^{8,15} aylight, Bluetooth Programmable, 7' - 15' Mounting ^{8,15} aylight, Bluetooth Programmable, 7' - 15' Mounting ^{8,15} aylight, Bluetooth Programmable, 15' - 40' Mounting ^{8,15} bylight, WAC Programmable, 7' - 15' Mounting ^{8,15} Daylight, WAC Programmable, 7' - 15' Mounting ^{8,15} Daylight, WAC Programmable, 7' - 15' Mounting ^{8,15} Daylight, WAC Programmable, 15' - 40' Mounting ^{8,16} Daylight, WAC Programmable, 15' - 40' Mounting ^{8,16} Daylight, 4' 1' Ing Height ^{8,11} Ing Hei			Accessories (Order Se MA1252=Replacement 10 OA/RA1016=NEMA Photo OA/RA1027=NEMA Photo OA/RA1027=NEMA Photo OA/RA1013=Photocontro OA/RA1014=120V Photocontro OA/RA1014=120V Photocontro OA/RA1014=120V Photocontro OA/RA1014=200 Tenc MA1037-XX=2@180° Tenc MA1190-XX=2@90° Tenc MA1190-XX=2@90° Tenc MA1191-XX=2@90° Tenc MA1038-XX=3@120° Tenc MA1038-XX=3@120° Tenc MA1039-XX=2@180° Tenc MA1039-XX=2@180° Tenc MA1039-XX=2@10° Tenc MA1192-XX=2@00° Tenc MA1192-XX=2@00° Tenc MA1195-XX=3@0° Tenc FSIR-100=Wireless Confi WOLC-7P-10A=WaveLinx Lite Bluetooth Programmable WOF-WH=WaveLinx Lite Bluetooth Programmable SWPD4-WH=WaveLinx So 7' - 15' Mounting ^{12,14,16} or additional support information. t of 1979 (TAA), respectively. Please r	Accessories (Order Separately) MA1252=Replacement 10kV Surge Module OA/RA1016=NEMA Photocontrol Multi-Tap - 105-285V OA/RA1027=NEMA Photocontrol - 480V OA/RA1027=NEMA Photocontrol - 480V OA/RA1013=Photocontrol Shorting Cap OA/RA1013=Photocontrol Shorting Cap OA/RA1013=Photocontrol Shorting Cap OA/RA1013=Photocontrol MA1036-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon MA1197-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon MA1188-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1189-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1190-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1190-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1190-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1038-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon MA1038-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon MA1039-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1193-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1193-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1195-XX=3@90° T				
s. ng high and k k component controls pag urability: Ord men package	ow modes, sensitivity, time delay ar ts in appropriate quantities. e for details. ler WAC-PoE and WPOE-120 (10V tc e D1.	nd more. POE injector) power supply i	f needed. Not required for WaveLinx Li	ite Commercial (LC) application	15.			
ensor has an i	integral photocell.							
ing nd /	 Greater than 90% hours IP66 rated 120-277V 50/60H operation 10kV surge modul 0-10V dimming st 	lumen maintenanc z, 347V 60Hz or 48 le standard andard GIC powder coat thi	e at 50,000 • Ca ha ra DV 60Hz War • Fi ckness	oastal Construction (our salt spray rating ting of 9 per ASTM [ranty ve-year warranty	(CC) available, providing 5,0 per ASTM B117 with a scril 01654			

PS50020321 page 2 September 1, 2022 8:37 PM

before you be





113 points HORIZONTAL F Average Maximum Minimum Avg:Min Max:Min Coef Var	FOOTCAN 0.6 1.5 0.3 2.17 5.00 0.33
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PHOTOMETRIC RESULTS

Ö, sp 10ft by 10ft CANDLES

CANDLES

PHOTOMETRIC LEGEND

Pedestrian Light candela file 'TT-D1-830-U-T4-PM.ies' 4 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.863, watts per luminaire = 29 mounting height= 18 ft number locations= 7, number luminaires= 7 kw all locations= 0.2

⊶

New Street Light candela file 'TT-D6-830-U-T4-PM.ies' 2 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.864, watts per luminaire = 97 mounting height= 30 ft number locations= 8, number luminaires= 8 kw all locations= 0.8

Existing Pedestrian Light candela file 'GE8591.IES' •— 1 lamp(s) per luminaire, 6300 initial lumens per lamp Light Loss Factor = 0.820, watts per luminaire = 70 mounting height= 18 ft number locations= 1, number luminaires= 1 kw all locations= 0.1

o→p[↑] Traffic Signal Luminaire candela file 'rfm-160w48led3k-g2-r2m.ies' 1 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.910, watts per luminaire = 161 mounting height= 40 ft mounting height= 40 ft number locations= 4, number luminaires= 4 kw all locations= 0.6

ROADWAY DESIGN CRITERIA							
STREET	TYPE	PEDESTRIAN CONFLICT	AVG FC	AVG/MIN			
N LAKE POWELL BLVD	COLLECTOR	HIGH	1.2	4:1			











PHOTOMETRIC RESULTS

N Lake Powel	l Blvd			
217 points at	z=0,	sp 10ft	by	10ft
HORIŻONTAL F	OOTCAN	IDLES	-	
Average	1.3			
Maximum	3.8			
Minimum	0.7			
Avg:Min	1.83			
Max:Min	5.43			
Coef Var	0.43			
UnifGrad	1.38			

Sidewalks 113 points HORIZONTAL FOOTCANDLES

Average	0.6
Maximum	1.5
Minimum	0.3
Avg:Min	2.17
Max:Min	5.00
Coef Var	0.33

PHOTOMETRIC LEGEND

- Pedestrian Light candela file 'TT-D1-830-U-T4-PM.ies' 4 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.863, watts per luminaire = 29 mounting height= 18 ft number locations= 7, number luminaires= 7 kw all locations= 0.2
- New Street Light candela file 'TT-D6-830-U-T4-PM.ies' 2 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.864, watts per luminaire = 97 mounting height= 30 ft number locations= 8, number luminaires= 8 kw all locations= 0.8 ⊶—●
- Existing Pedestrian Light ←□ candela file 'GE8591.IES' candela file GE8591.IES 1 lamp(s) per luminaire, 6300 initial lumens per lamp Light Loss Factor = 0.820, watts per luminaire = 70 mounting height= 18 ft number locations= 1, number luminaires= 1 kw all locations= 0.1
- o___a[♠] ↑ Traffic Signal Luminaire candela file 'rfm-160w48led3k-g2-r2m.ies' 1 lamp(s) per luminaire, photometry is absolute Light Loss Factor = 0.910, watts per luminaire = 161 mounting height= 40 ft number locations= 4, number luminaires= 4 kw all locations= 0.6

	ROADW	AY DESIGN C	RITERIA	
STREET	TYPE	PEDESTRIAN CONFLICT	AVG FC	AVG/MIN
LAKE POWELL BLVD	COLLECTOR	HIGH	1.2	4:1



CMT

02/07/2024

43 OF 43

CMT

SHEET NO .:

Design

4649 E COTTON GIN LOOP B2 PHOENIX, AZ 85040

602.438.2221

CONSULTANT(S):







CITY OF PAGE, ARIZONA

PROJECT MANUAL

Lake Powell Boulevard Streetscape Project

N. Navajo Boulevard to Vista Avenue

<u>Mayor</u> Bill Diak, Mayor

City Council

John Kocjan, Vice Mayor David Auge, Councilor Richard Leightner, Councilor Theresa Lee, Councilor Brian Carey, Councilor Michael Farrow, Councilor

Prepared by J2 Engineering and Environmental Design 4649 East Cotton Gin Loop, Suite B2 Phoenix, Arizona 85040

> Dibble Engineering 7878 North 16th Street, Suite 300 Phoenix, Arizona

> > Wright Engineering 165 East Chilton Drive Chandler, Arizona 85225

> > > February 5, 2024

Table of Contents Technical Specifications

All Public improvement construction for this project within the public right-of-way and onsite shall be constructed in accordance with, and conform to, the latest edition of the *"Uniform Standard for Public Works Construction and Uniform Standard Details for Public Works Construction"*, both as published by the Maricopa Association of Governments (MAG) (2023).

SECTION 105.6 COOPERATION WITH UTILITIES

SECTION 105.8 CONSTRUCTION STAKES, LINES AND GRADES

SECTION 340 – CONCRETE CURB, GUTTER, SIDEWALK, SIDEWALK RAMPS, DRIVEWAY AND ALLEY ENTRANCES

- SECTION 346 DECORATIVE ASPHALT PAVING
- SECTION 401- TRAFFIC CONTROL
- SECTION 403 SIGNING
- SECTION 430 LANDSCAPING AND PLANTING
- SECTION 431 STRUCTURAL SOIL
- **SECTION 432 ROOT BARRIER**
- SECTION 440 SPRINKLER IRRIGATION SYSTEM INSTALLATION
- **SECTION 450 PAVEMENT MARKING**

SECTION 470 - GENERAL REQUIREMENTS FOR TRAFFIC SIGNAL AND INTERSECTION LIGHTING SYSTEMS

- SECTION 471 ELECTRICAL UNDERGROUND INSTALLATION
- SECTION 475 LOOP DETECTORS
- SECTION 477 INTERSECTION LIGHTING
- SECTION 478 ELECTRICAL CONDUCTORS
- SECTION 479 EMERGENCY PRE-EMPTION
- SECTION 480 INTERNALLY ILLUMINATED STREET NAME SIGNS
- SECTION 505 CONCRETE STRUCTURES

SECTION 515 – STEEL STRUCTURES (BUS SHELTERS, WAYFINDING ELEMENTS, & ENTRY MONUMENTS)

SECTION 631 - WATER METER AND METER SERVICE CONNECTIONS

SECTION 757 – SPRINKLER IRRIGATION SYSTEM

SECTION 801 - ELECTRICAL

SECTION 105.6 COOPERATION WITH UTILITIES:

Delete the section and replace with the following:

105.6 COOPERATION WITH UTILITIES:

The Contractor shall perform all requirements as prescribed in ARS 40-360.21 through 32. Contractor shall call BLUE STAKE CENTER for information relative to the location of buried utilities. The number to call is 602-263-1100.

The location of the underground and overhead utilities as shown on the Plans is based on the best available information obtained from utility companies and supplemented by surveying and potholing. The Contractor shall not assume that this represents an exact location of the line. No guarantee is made to the accuracy of the location shown on the Plans. The Contractor shall determine for himself the exact location of all utilities.

The Contractor is responsible for maintaining and supporting all utilities (not identified for relocation or removal) crossing the open trench for the length of the Project. All utilities crossing the open trench shall be protected to the satisfaction of the Utility Owner. Any damage to the existing utilities within the construction area shall be repaired by the Contractor to the satisfaction of the Utility Owner at no additional cost to the City.

Utility Companies:		
Description	Representative	Phone
Alliant Gas	Dindy Byrd	(928) 614-8250
ATC Group Services	Wayne Feller	(480) 355-4628
Lumen (formerly, CenturyLink Communications)	Kevin Wagner	(815) 245-9640
Page Electric	Phil Faulk	(928) 645-2419
City of Page– Water	Tamra Tibbetts	(928) 645-4300
City of Page – Sewer	Tamra Tibbetts	(928) 645-4300
SC Utah Tele Association	Michael Savage	(435) 616- 0508

Location of any underground water, sewer, CATV, electrical, or telephone lines shall be field verified by calling the **Blue Stake Center, Telephone: 602-263-1100**.

105.6.2 ATC Group Services

ATC Group Services owns numerous vapor monitoring wells and groundwater monitoring wells within the limits of the project. Contractor shall adjust existing box and covers to grade per the special provisions.

105.6.3 Page Electric

Page Electric owns overhead and underground electrical facilities throughout the project. Contractor shall be signs identifying overhead electrical lines. All exposed underground crossings shall be protected in place. Contractor shall use caution when operating around electrical lines and facilities.

105.6.4 Lumen

Lumen owns both above ground and underground facilities throughout the length of the project. Contractor shall use caution and protect facilities in place during construction activities

105.6.5 SC Utah Telephone Association

SC Utah Telephone owns both coaxial and fiber underground facilities within the limits of the project. Contractor shall use caution and protect facilities in place during construction activities

105.6.6 City of Page Water & Sewer

There are both water and sewer facilities throughout the project limits. Contractor shall use caution and protect facilities in place during construction activities.

Relocations and adjustments to grade are anticipated for water valve boxes and manhole frame and covers.

Replacement of water meters and backflow preventors are anticipated at the following locations:

- STA 17+50 Lt..... Replace water meter box
- STA 17+73 Lt..... Replace water meter box
- STA 18+54 Lt..... Replace water meter box
- STA 19+41 Lt..... Replace water meter box & backflow preventor
- STA 19+45 Lt..... Replace water meter box

The Contractor shall schedule construction work with The City of Page and affected property owners at least 5 business days in advance. The Contractor shall provide advance notice of at-least 7 business days to the City of Page and property owners for any water shutdowns.

SECTION 105.8 CONSTRUCTION STAKES, LINES AND GRADES:

Delete the section and replace with the following:

The Contractor shall be responsible for construction staking. As a first element of work, the Contractor shall verify data and datum for geometric layout and basis of bearings. Any discrepancies shall be immediately brought to the attention of the Engineer prior to start of any construction activities included in these construction documents.

The Contractor shall carefully preserve all construction stakes, reference points and other survey points including City of Page control points and benchmarks. In the case of their loss or destruction, the Contractor shall replace them under the supervision of a licensed Arizona Land Surveyor. The replacement of all survey monuments will require that the surveyor reinstalls, certifies and completes the required forms as specified on the City's horizontal and vertical control.

The Contractor shall also be responsible to hire an Arizona Land Surveyor to mark the location of the traffic signal poles and foundations.

The Contractor will be responsible for the surveying and the recording of as-built field data.

The Contractor shall keep a full size set of drawings on-site and continuously update them to reflect any and all field adjustments, changes, additions and deletions as they occur during the course of constructing the project. All changes to information shown on the original construction drawings shall be made by striking through the original information with a single line. As-built information shall be shown legibly using red pencil or red ink. All underground utilities shall be referenced to semi-permanent or permanent physical objects. The word "AS-BUILT FIELD DATA" with the as-built date shall appear in the lower right area of each sheet.

The "AS-BUILT FIELD DATA" redlines shall be made available for inspection by the City's representative whenever requested during construction and shall be jointly inspected for accuracy and completeness by the Contractor, the City's representative and consultant prior to each monthly pay application.

The Contractor shall deliver a complete and accurate set of preliminary final as-built field data drawings to the City within thirty (30) calendar days of the date of the City's final acceptance of the work completed under this contract. Pending City review, if the City Inspector determines that the preliminary final as-builts contain errors and/or omissions the City Inspector will return the as-built to the Contractor for correction. The contractor shall make corrections and return the corrected as-builts to the City Inspector within 10 working days of receipt.

The City will not release any retention or make final contract payment to the Contractor until the Contractor's as-built drawings have been accepted as accurate and complete by the City.

Payment for construction staking, layout shall be made on a lump sum basis under the item **Construction Survey, Layout, & As-builts** in the bid schedule.

SECTION 109.11 MEASUREMENT AND PAYMENTS:

Add the following Section:

Bid Schedules

This project, Lake Powell Blvd Streetscape Project will be advertised with two separate bid schedules. The work outlined in each bid tab is funded by different funding sources. As such, the work on this project has been divided into 2 distinct elements of work, each with its own corresponding bid schedule as described below:

- Bid Schedule A...... Lake Powell Blvd Streetscape Project: Navajo Blvd to Vista Avenue
- Bid Schedule B...... Circle K Remediation Improvements: In Public Right of Way

The contract will be awarded to a single Contractor based on the cumulative low bid amount for the two bid schedules summed together. The structure of the schedules have been established for the sole purpose of construction administration of the project by the City of Page, the Contractor, and the Engineer. The Contractor is required to submit all progress payment requests, including constructed bid quantities, in accordance with the established bid schedules and as further defined on the project plans. No additional payment will be made to the Contractor for these construction administration efforts.

<u>SECTION 340 – CONCRETE CURB, GUTTER, SIDEWALK, SIDEWALK RAMPS,</u> <u>DRIVEWAY AND ALLEY ENTRANCES</u>

340.1 DESCRIPTION:

Delete the paragraph and replace with the following:

The various types of concrete curb, gutter, sidewalk, sidewalk ramps, driveways, and alley entrances shall be constructed to the dimensions and depths indicated on the plans, details, and standard detail drawings.

4" PEDESTRIAN CONCRETE PAVING 6" REINFORCED PEDESTRIAN CONCRETE PAVING at DRIVEWAYS 6" CONCRETE HEADER BETWEEN DECOMPOSED GRANITE and PROJECT LIMITS

SECTION 340.5 MEASUREMENT:

Delete the second paragraph and replace with the following:

Concrete curbs, sidewalks, driveways, alley intersections, valley gutters and aprons will be measured to the nearest square foot complete in place. When concrete sidewalk, driveways,

alley intersections, valley gutters, and/or aprons are cut during trenching operations, the square foot measurement for payment will be in accordance with Section 336.

Concrete sidewalk ramps will be measured as each.

SIDEWALK RAMP (MAG STD DET 235-1, TYPE A)EACHSIDEWALK RAMP (MOD MAG STD DET 235-1, TYPE A)EACH

SECTION 345 ADJUSTING FRAMES, COVERS, AND VALVE BOXES:

345.1 DESCRIPTION:

Section 345.1 of the MAG Standard Specifications, REMOVE the second paragraph and ADD the following:

The Contractor shall remove old frames, covers, and valve boxes and then install new frames and/or boxes in accordance with standard detail drawings at no additional cost to the Contracting Agency.

Section 345.1 of the MAG Standard Specifications, ADD the following:

Vapor Monitoring Well and Groundwater Monitoring Well valve boxes and covers shall be installed in accordance with the project plans, special provisions, and the requirements of MAG Specifications.

Contractor shall furnish Model 418 Test Well frame and cover manufactured by Morrison Bros or approved equivalent. Contractor shall submit shop drawings of frame and covers to the Engineer for review and approval.

345.7 PAYMENT:

Section 345.7 of the MAG Standard Specifications, ADD the following:

Payment for adjustments to monitoring wells shall be made at the contract unit price per each, and shall constitute full compensation for furnishing all material, labor, tools and equipment and accomplishing all work associated with removing existing, furnishing and adjusting the box and appurtenances complete in place as described in the special provisions and on the construction plans.

SECTION 346 – DECORATIVE ASPHALT PAVING

Decorative Asphalt Paving shall be in accordance with Section 343 of the MAG Standard Specifications and City of Sierra Vista Supplements with the following modifications. Crosswalk areas and banding at crosswalks shall be IR Reflective for heat reduction. All other Decorative Asphalt areas do not need to contain IR Reflective material. Add the following paragraphs to this section:

346.1 Decorative Asphalt Paving General

The Contractor shall furnish all the necessary labor, material, tools, and equipment to complete the proper installation of the asphalt print paving used in decorative pavement crosswalks or as

otherwise noted in the Contract Documents. This includes furnishing a 10-foot straight edge to accomplish the level test specified for the finished decorative pavement. Pattern and color of finished surface shall be as shown in the project plans and details.

346.2 Materials:

346.2.1 Aggregate Base Course and Paving Section: Shall be per Civil Plans and MAG specifications.

346.2.2 Asphalt Concrete Pavement: Asphalt concrete pavements shall be MAG 321 and as specified in the Contract Documents.

346.2.3 DP 200 IR Reflective Colored Asphalt Coating or approved alternate

Physical Characteristics & Technical Data

A) System thickness 8 - 10 wet mils per coat. Standard application is three to four coats

B) Coverage 175 - 200 sq ft per 5 gallon unit

C) Abrasion - (Taber-H 10) ASTM D-4060 < 0.16 mg loss @ 1,000 for 1,000 cycles

D) Impact resistance (ASTM D-2794) Passes Direct > 160 inch lbs Reverse > 160 inch lbs

E) Flexibility Mandrel @70°F ASTM D1737 (low 1") Passes ASTM D1737 (high 2") Passes

F) Tensile Strength ASTM D412 >675 psi

G) Degree of Gloss- <3@85□F H) QUV ASTM G- 53 400 Hours 1 HIE Units ASTM G154(ASTM G154)

I) Chemical Resistance

Environment	Immersion	Splash or spill
Motor Oil	R	R
Alkali	R	R
Fuel	R	R
Salts	R	R
Water	R	R

NR- Not Recommended LR-Limited Recommendation R – Recommended

J) Density (lbs/gal) ASTM D1475 13.7

K) Flash Point ASTM D-3278 >195°F (93°C)

L) % pigment (by weight incl. cement) ASTM D-3723 64%

- M) Solids Content by Weight 78%
- N) Solids Content by Volume 68%

 O) Cure Time at 77□F Dry to touch 20 Minutes Recoat 20 Min – 3 Hrs Light foot traffic 2 - 4 Hrs Light Vehicular traffic 2 - 4 Hrs Full cure 5-7 Days

P) VOC < 25g per liter

Q) Adhesion (PLI) to an asphalt substrate: ASTM D-4840 ~ Cohesive failure of asphalt prior to adhesive failure.

R) Temperature Limits for Service Dry, Cured Material -35°F to 155°F

346.3 Installation

A) Prepare surface by careful and thorough removal of laitance, grease, and foreign matter.

B) Apply first coat of Floric Polytech DP-200 Decorative Pavement Coating by sprayer and soft bristle brush. Apply second, third and fourth coat by sprayer and soft bristle brush.

Product Availability & Technical Assistance

Floric Polytech, Inc. Phone# (928) 669-1680 Fax# (928) 669-1686 www.floricpolytech.com

It shall be required that onsite samples and mock-ups be made by the applicator. One 10'x10' mock up shall be constructed for each of the following: Crosswalk Treatment, Major Intersection Medallion Treatment, and Minor Intersection Medallion Treatment. Representative test sections must be produced for the Owner's approval in writing and to ensure that applicators are familiar with the product and installation procedures.

346.4 DP 100 Clear-coat Sealer or approved alternate shall be installed on all Decorative Asphalt areas to provide ease of long-term maintenance and to reduce tire markings on colored asphalt.

DP 100 Clear-coat Sealer shall be installed per manufacturer's specifications

Product Availability & Technical Assistance

Floric Polytech, Inc. PH# (928) 669-1680 Fax# (928) 669-1686 Local Representative: Mr. Hadar Rahav Decorative Paving Solutions 480-446-9000 Hadar@decorativepavingsolutions.com

346.5 Measurement & Payment:

Measurement and payment for Decorative Asphalt Paving shall be made on the basis of the bid price per square foot of Decorative Asphalt Pavement for Crosswalk Treatment (with IR Reflective Material). Measurement and payment for Decorative Asphalt Paving Medallions shall be made on the basis of the bid price per each. Measurement and payment for Decorative Asphalt Paving shall be made on the basis of the bid price per square foot of Decorative Asphalt Paving shall be made on the basis of the bid price per square foot of Decorative Asphalt Pavement for Interior Intersection (Std Gray). The bid prices shall be full compensation for the systems complete in place as described herein and on the plans.

PEDESTRIAN CROSSWALK STAMPED ASPHALT (WITH IR REFLECTIVE COATING)

SECTION 350 REMOVAL OF EXISTING IMPROVEMENTS

350.1 DESCRIPTION: *is modified to add:*

The work shall consist of the movement of existing features and specialty items to accommodate project construction. Relocation is the horizontal change in location of an existing item to a different location, as shown or described on the project plans. Adjustment is a change in the vertical position of an existing feature or item, typically required to accommodate a change in grade at the location of the existing feature. The term water meter shall be used to describe the water meter, box, lid and connecting pipe materials. The term gate shall be used to describe the gate, posts, brackets, supports, etc.

SECTION 401 TRAFFIC CONTROL

This section is modified to add:

401.1 DESCRIPTION

Maintenance and protection of traffic shall conform to the applicable paragraphs of Section 401 of the MAG Specifications and these Special Conditions.

Local access shall be maintained to all properties on the project at all possible times. When local access cannot be maintained, the Contractor must notify the affected property owner at least 24 hours in advance and restore access as soon as possible.

Traffic Control Plans:

Construction shall not commence or proceed without a City of Page approved Traffic Control Plan (TCP). The Contractor shall submit traffic control plans for review along with the required application form to the City of Page. The TCP shall show placement of all traffic control devices including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan is to be professionally drawn on a 24 inch x 36 inch reproducible medium and shall be submitted to the Engineer at the preconstruction meeting. The City of Page requires three (3) working days (72 hours) for review of all traffic control plans. If the TCP is denied, the City of Page will again require an additional three (3) working days (72 hours) for a re-review. Traffic/Pedestrian control shall comply with

the latest editions to the MUTCD (Part 6), City of Phoenix Barricade Manual, MAG Section 401. The contractor will be required to maintain minimum 11' wide traffic lanes during all construction activities unless otherwise directed by the Engineer. At the time of the pre-construction conference, the Contractor shall also submit for review preliminary traffic control plans for advance closure signing. The Contractor shall submit a preliminary traffic control plan at the pre-construction meeting outlining the anticipated traffic control, phasing and anticipated devices that will be used during construction. A final traffic control plan(s) shall be later submitted in accordance with this specification and shall include any review comments provided as a result of the pre-construction meeting. A copy of the accepted TCP shall be on-site at all times during construction and available for review by the City of Page.

If the project is constructed in multiple phases, a separate TCP shall be submitted and approved for each phase.

In order to eliminate the possibility of causing or exacerbating air quality violations resulting from construction activities, any traffic control plans which include temporary traffic detours involving adjacent streets or alternate routes must be approved by the Engineer.

Air Pollution:

In the event that the Governor declares an air pollution emergency, pursuant to ARS 49-465.B, which restricts work schedules for all employees of the state and its political subdivisions, the Engineer will direct the Contractor to suspend all work activities until further notice. The Contractor shall discontinue all current work activities as soon as possible, but not later than four hours after notification by the Engineer. The Contractor will be compensated for labor costs incurred through the end of the work shift in which the notification occurs. No payment adjustments will be made for equipment or overhead costs resulting from the suspension of work. An extension of the time allowable under the contract will be granted. In the event that any local air quality authority declares anair pollution advisory, the cooperation of the Contractor is requested in complying with the actions recommended by the local authority to the maximum extent possible.

401.2 TRAFFIC CONTROL DEVICES:

It shall be the Contractor's responsibility to provide, erect, and maintain and remove all necessary signs, barricades, temporary paved travel lanes, barriers, high level warning devices, light, delineators, flagmen and other devices necessary to properly mark and control the construction areas for the safe and efficient movement of traffic. Temporary traffic control warning signs and devices shall be installed prior to the start of any work. The Contractor shall provide other adequate devices or measures deemed necessary by the Engineer. The Contractor shall inspect the traffic control measures at the end of each work shift to ensure that all required traffic control devices are in place. The Contractor shall also remove any unnecessary traffic control devices and remove construction equipment from the roadway at the completion of each work shift to open the roadways to traffic to the maximum extent practical.

All temporary traffic control devices shall be ballasted with sandbags or other approved ballast. Ropes, flagging, fencing and woven plastic tape may be required at open excavations and/or used between barricades and channeling devices to provide additional guidance and security. The **"SPEED LIMIT 25"** sign shall be posted where the existing pavement has been removed, on traffic lanes that are severely restricted or as directed by the Engineer.

The Contractor shall provide and maintain all necessary temporary traffic control devices as indicted on the City approved TCP. The City of Page will not allow devices that, in their judgment, fall into the "unacceptable" category. Should the City determine that the traffic control devices fall into the "unacceptable" category the contractor shall be immediately informed by the City and take necessary steps to bring the traffic control devices into compliance with the approved TCP. Failure of the contractor to take such action will result in the City issuing a Cease Work Order. The Contractor shall secure the work zone and remove all traffic control devices from the roadway immediately and the contractor could be subject to penalty by the City.

The traffic control devices shall be set in place in accordance with the approved traffic control plan and maintained by a traffic control technician certified by a recognized organization such as ATTSA or IMSA or other organizations recognized by the City of Page.

The Contractor shall provide complete and accurate 24 hour emergency contact information to the City.

The Contractor shall designate an on-site employee during work hours who is ATSSA certified in construction traffic control to monitor and respond immediately to correct traffic control measures as necessary. This individual shall be authorized to receive and carry out requests from the Engineer. Requests and information given by the Engineer to this individual shall be considered as having been given to the Contractor.

Variable Message Boards:

The Contractor shall install advance warning variable message boards. Phased traffic control restrictions requested by the Contractor may require placement of additional variable message boards as required by the City. Final locations shall be as determined by the Engineer. All message boards shall be in place a minimum of seven (7) days prior to the start of traffic control restrictions. The Contractor shall coordinate with the Engineer what message will be displayed on each board. Display message shall be limited to two pages of text.

401.3 FLAGMEN AND UNIFORMED OFFICERS:

Flagmen and uniformed officers shall consist of providing sufficient personnel and off-duty law enforcement officers as needed to expedite the safe passage of traffic.

City of Page uniformed off-duty law enforcement officers shall be provided when construction activities occur within 300 feet of a signalized intersection. In the event that city officers are not available, alternative arrangements shall be made by the Contractor to provide a replacement off-duty officer in accordance with these Specifications and as approved by the Engineer.

Requests for City of Page Police Officers must be received at least five (5) working days prior to when they will be needed. All work associated with providing and payment for Off-Duty Police Officers shall follow City of Page guidelines.

The Contractor or its insurance carrier must also submit a certificate of insurance indicating:

- a) Liability Insurance
- b) A statement (usually written in the "description of operations" box) as follows: Coverage is extended to the assigned officer(s) of the Page Police Department.

If a certificate of insurance prepared as indicated is not received prior to the event, the off duty officer(s) will be cancelled.

Officers shall be knowledgeable of city and state traffic control systems and their manual use. A key for the traffic control cabinet, along with any special instructions, shall be obtained from the City of Page.

Off-duty uniformed police officers are required at all major intersections when restrictions are present and may be required at additional locations and stages of the traffic control as requested by the Engineer.

All persons used as flaggers shall be properly trained and certified by a recognized source prior to their use on the project.

Allowable hours must be directed by the City. Partial payment requests must be supported by timesheets or invoices.

401.4 GENERAL TRAFFIC REGULATIONS:

The Contractor shall maintain or relocate all warning signs, **STOP**, **YIELD** and street name signs. These signs shall be maintained erect, cleaned and in full view of the intended traffic at all times. Portable signs should be used to supplement blocked or removed signs. All unnecessary traffic signs shall be covered or removed and stored.

Access to all properties and emergency services shall be maintained at all times where possible. In no case shall the access be restricted for more than four hours without Engineer approval. The Contractor shall give 48 hours notification to the affected responsible person concerning all restrictions. If prolonged access restriction is required by construction, the Contractor and/or Engineer shall notify the property owner/resident before closing the road or driveway. The Contractor shall also notify emergency services, fire department, police department and the local school district.

Construction Schedule:

In addition to the schedule requirements contained in Subsection 108.4 "Commencement, Prosecution and Progress" of the Standard Specifications and as modified in these Special Conditions, the Contractor shall provide separate construction progress schedules for each individual construction activity and the required traffic control for those activities. The schedule shall specify the limits of the work activities and related traffic control plan by station or milepost, by day and by time of day.

The schedule and the related traffic control shall be developed in such ways that access or alternative access is maintained at all times to all adjacent residences and businesses. The schedule should be developed in such a manner that it can be released to the public. The schedule shall be updated as necessary.

Traffic Restrictions:

The traffic-carrying capacity of the roadways and structures within the limits of the project shall not be reduced without the approval of the Engineer. Restrictions will not be permitted during recognized holidays. If special events will be occurring during construction for the City of Page or the Page Unified School District, the Contractor will be notified two weeks in advance by the Engineer to make adjustments to traffic control to accommodate event traffic. Contractor shall coordinate with City of Page staff and design team to accommodate scheduled festivals, parades, and high school events in the downtown area.

The recognized holidays for the calendar year 2024 are:

New Year's Day	Monday, January 1, 2024
Martin Luther King Jr.	Monday, January 19, 2024
President's Day	Monday, February 19, 2024
Memorial Day	Monday, May 27, 2024
Independence Day	Thursday, July 4, 2024
Labor Day	Monday, September 2, 2024
Veterans Day	Monday, November 11, 2024
Thanksgiving Day	Thursday, November 28, 2024
Day after Thanksgiving	Friday, November 29, 2024
Christmas Day	Wednesday, December 25, 2024

Holidays within subsequent calendar years shall be recognized and restrictions will not occur without approval by the City Engineer.

Access Requirements and Notification to Property Owners, Businesses, and Public Streets:

Access shall be maintained to adjacent businesses at all times during their hours of operation. Access may be maintained by such measures as constructing driveways in half sections, or by providing bridging over new concrete. Properties having more than one point of access shall not have more than one access restricted for more than 14 calendar days at any given time. Access to adjacent driveways shall be provided during all non-working hours. All business restrictions shall be coordinated with the affected business in writing at least one week prior to imposing restrictions.

Pedestrians:

The Contractor shall maintain safe and passable walkways on at least one side of the roadway at all times. The Contractor shall ensure that all sidewalks on this project remain open and safely usable at all times. Backfilling or ramping to existing sidewalks or providing alternate sidewalk areas adjacent to existing sidewalks may be used. In high pedestrian use areas, the Engineer may request temporary hard-surface walkways such as plywood sheets or temporary asphalt to be installed and removed at no additional cost.

The Contractor must provide and maintain clean, safe and adequate pedestrian walkways and sidewalks that are free of mud, dust, debris and equipment. They must also maintain access to all transit facilities and bus stops by providing temporary BUS STOP signs as needed (if any).

Schools:

The Contractor shall maintain adequate signing, safe pedestrian access, school traffic access and school bus access to all schools within the vicinity of the project during all hours the schools are in use. The Contractor shall coordinate all roadway and walkway restrictions with the schools in writing at least one week in advance of instituting the restriction.

Special Sign Requirements:

The Contractor shall provide, erect and maintain advance notification, informational and directional access signs (for businesses, churches, hospitals, etc.) that may be required by the Engineer.

Side Streets:

All side streets shall remain open at all times, unless otherwise approved by the Engineer.

401.5 MEASUREMENT:

Measurement for payment of the uniformed off-duty law enforcement officer will be the <u>actual</u> <u>number of man-hours used</u>. As part of the payment request for Off-Duty Police Officer, the Contractor shall provide the Engineer with copies of all request forms and invoices as backup information showing the actual cost incurred.

Measurement of all remaining traffic control work, as described herein and as required for the Project, will be measured on a lump sum basis.

401.6 PAYMENT:

Payment for traffic control shall be made at the contract unit price, lump sum, under the item **Traffic Control** in the Bid Schedule. Price shall be full compensation for the work, including labor, materials, traffic control devices including variable message boards, and miscellaneous incidentals necessary to complete the work. This includes flagging services.

TRAFFIC CONTROL

LUMP SUM

Payment for Off-Duty Uniformed Officer shall be made at the contract unit price, per Hour, under the item Off-Duty Uniformed Officer in the Bid Schedule. Price shall be full compensation for the work, including labor and materials.

OFF-DUTY UNIFORMED OFFICER

HOUR

Add the following section:

SECTION 403 SIGNING

403.1 DESCRIPTION OF WORK:

The work under this section shall consist of furnishing and installing all roadside signs, sign supports, support foundations and object markers as indicated on the plans and constructed in accordance with Section 607, 608 and 703 of the Arizona Department of Transportation Standard Specifications for Road and Bridge Construction 1990 revisions and stored special provisions.

Removal of Traffic Control Signs:

The Contractor shall coordinate the removal of existing traffic control signs as designated on the construction plans with the City of Page a minimum of 24 hours in advance.

Installation of Traffic Control Signs:

The Contractor shall install traffic control signs prior to or simultaneously with the striping of the roadway or intersection. The roadway or intersection shall not be open to traffic until such time as the striping and signage is complete.

403.2 MEASUREMENT AND PAYMENT:

Measurement and payment will be made for Permanent Traffic Signs and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals complete in place as indicated in the plans and as specified herein.

PERMANENT TRAFFIC SIGN

Measurement and payment will be made for Perforated Sign Post & Foundation and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals complete in place as indicated in the plans and as specified herein.

PERFORATED SIGN POST & FOUNDATION

Add the following section:

SECTION 430 – LANDSCAPING AND PLANTING

Landscaping and planting shall conform to Section 430 of the MAG Uniform Standard Specifications except as modified herein.

430.1 – Description

Modify the first paragraph to read:

This section shall govern the preparation and planting of landscape areas as depicted and as required in the plans and specifications. All materials and products shall be in accordance with MAG Section 795.

Modify the second paragraph to read:

Existing utilities and improvements not designated for removal or relocation shall be protected in place. Determine the location of underground utilities (call Blue Stake) and perform all work in a

SQUARE FEET

EACH

manner which will avoid possible damages to the utility. The Contractor shall repair any damages at no additional cost to the Owner. Hand excavate around utilities as required.

Add the following:

The work under this section shall consist of furnishing all labor, materials, and equipment to install decomposed granite, trees, shrubs, ground covers, and potted plant materials designated for installation.

430.2 – General

Add the following:

The Contractor shall furnish all labor, materials, equipment, and incidental and appurtenant items of work needed to install the landscape, to the lines and details shown in the plans.

Applicable publications listed below form a part of this specification:

Arizona Nursery Association Growers Committee Recommended Tree Specification (Revised August 2005). American Standard for Nursery Stock (2004)

The Contractor shall perform all work in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work and provide for all inspections and permits required by Federal, State and local authorities in furnishing, transporting and installing materials as shown or for completing the work identified herein.

All planting areas shall be left free of construction debris including but not limited to concrete, grout, re-bar, wood, nails, debris and/or toxic material and graded to a level to permit landscape and irrigation construction. Trenches, foundation backfill or other filled excavations shall be compacted prior to turning the site over to the Landscape Contractor. Compaction of fill areas for planting shall be at 85 percent maximum standard proctor method. No soil preparation or planting shall begin before the site has been cleared and cleaned of debris. The Engineer shall approve the condition of all planting areas prior to commencement of soil preparation for planting. Commencement of work indicates acceptance of job site conditions by the Contractor.

The Contractor shall cooperate and coordinate with other contractors and trades working in and adjacent to landscape areas.

The Contractor shall maintain stakes set by others until all parties concerned mutually agree upon their removal.

The Contractor shall ship materials with Certificates of Inspection required by governing authorities.

If any of the specified plant material is not obtainable, submit proof of non-availability, together with a proposal for use of equivalent materials, similar in appearance, ultimate height, shape, habit of growth and general soil requirements. The Contractor may make substitutions of a larger size of the same species and variety with the approval by the Engineer and at no additional cost to the Owner.

Before delivery, submit Certificates of Compliance certifying that materials meet the specified requirements. Submit certified copies of the compliance reports for the following materials:

- 1. Transporting of cacti and landscape plant materials (from the Arizona Department of Agriculture)
- 2. Soil amendments and conditioners

Certification shall indicate suppliers name, address, telephone number, date of purchase, name, model number and technical description of item purchased, and quantity of each item purchased.

The Engineer reserves the right to take and analyze samples of materials for conformity to the specifications at any time. The Contractor shall furnish the samples upon request. Contractor shall immediately remove rejected materials from the site at the Contractor's expense. The Contractor shall pay for the cost of removing any materials not meeting specifications.

All herbicide/pesticide applicators shall be properly licensed for application of non-restricted use chemicals with an A-20 license or an A-21 license with Pesticide Endorsement from the State Registrar of Contractors and Structural Pest Control Commission. All Landscape Contractors are required to furnish a copy of their application from the Registrar of Contractors, which shall list the names of those employees approved as applicators by the Registrar of Contractors. Application of non-restricted use pesticides shall not take place until the Engineer receives a copy of the application.

As directed by the Engineer, treat all non-paved areas with a chemical contact herbicide, such as Round Up or approved equal, to kill existing weeds. Clear, grub and remove the weeds from these areas after establishing the weed kill to the satisfaction of the Engineer.

Finished grades for landscape areas shall be a smooth, uniform surface, free of abrupt grade changes or depressions. Finished soil grades adjacent to paving, curbs or headers shall be as shown in the drawings and may be adjusted by the Engineer for surface materials.

During the installation of landscape plantings, keep pavements clean and work areas in a neat and orderly condition on a daily basis. Remove all debris, trash and excess materials generated by the landscape installation. Sweep, scrub or hose affected areas as directed by the Engineer to maintain a clean and neat work area.

Landscape Contractor shall call for "blue stake" as required. Exercise extreme caution in all planting operations, as there are underground electric and telephone cables, sewer lines and water lines throughout the entire area. Contractor shall study and be familiar with the location of these obstructions and underground utilities. Place plantings where shown on the plans. If there are obstructions or underground utilities, relocate plants clear of any interference at the direction of the City inspector. Landscape Contractor shall repair all damages caused by him to obstructions and underground utilities at no expense to Owner.

Determine location of underground utilities and perform work in a manner, which will avoid possible damage. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes until removal is mutually agreed upon by all parties concerned. The Contractor shall layout all plant material using stakes or flags to indicate the location of all plant materials. Spacing of shrub and groundcover material shall be as specified

in schedule on plans. Determine the location and spacing of trees by the plan scale and locate as accurately as the scale permits. Accomplish preliminary adjustments to conform to actual site conditions acquire the approval of the City Inspector or his authorized representative on the stakeout of all plant material.

Note: Contractor shall not begin planting operations until landscape grading and irrigation system has been installed and is fully operable.

Subsection 430.4 Decomposed Granite: Delete in its entirety and replace with:

A. <u>Decomposed Granite</u>

- 1. Decomposed granite shall be native, local, desert, decomposed granite stone at the size and color specified on the plans. The decomposed granite shall be from a single source, free from coating, clay, caliche or organic matter. Contractor shall provide City Inspector with a sample of material for approval before installation. Multiple samples may be required.
- 2. Contractor shall examine the subgrade, verify the elevations, and observe the conditions under which the work is to be performed. The existing grade shall be fine graded and raked free of organic matter and other debris 1-inch diameter and larger. Contractor shall apply one application of pre-emergent herbicide as per manufacturer's directions prior to installing granite, one application after granite has been installed, compacted and raked level and one application 30 days prior to the end of the maintenance period. The City Inspector is to be notified prior to all pre-emergent applications.
- 3. Installed granite shall be raked to remove any irregularities. Installation shall provide a two-inch depth of decomposed granite after compacting. Methods of compacting such as rolling, water settling, etc., shall be approved by the City Inspector. Unless otherwise specified in the drawings, granite finish grade shall be one (1) inch below top of curb or adjacent sidewalk surfaces.
- 4. All disturbed (non-seed) areas shall be treated with a pre-emergent weed spray "Gallery", or an approved equal. In addition, any existing weeds or Bermuda grass shall be treated with a post-emergent spray, such as "Round-up", or an approved equal. Any existing or new trees or vegetation shall be protected from the spray drift. There will be no separate payment for the weed spraying. Bermuda grass or weeds must be completely eradicated where designated by the Engineer from landscape, sand or decomposed granite areas.

430.4-1 Decomposed Granite 3/4-Inch Minus Decomposed Granite: Contractor shall supply and place decomposed granite in areas designated on the plans. Gradation requirements for the Items Decomposed Granite 3/4" Screened and Decomposed Granite are as follows:

Decomposed Granite 3/4 Inch Minus		
Sieve Size Sieve	Percent Passing	
2 Inch	100	
1¼Inch	100	
1 Inch	84-82	

Lake Powell Boulevard, Page, Arizona

3/4 Inch	40-38
1/2 Inch	4-2
#4	2-0.5

Contractor shall provide samples to the City of Page for all granite specified above for approval by City prior to placement.

All disturbed areas shall be treated with a pre-emergent per the plans and details and any active weed growing area with a post-emergent spray, such as "Round-up" or an approved equal. There will be no separate payment for the weed spraying. Bermuda grass or weeds must be completely eradicated where designated by the City of Page from landscape or decomposed granite areas. All weed control products and the City of Page shall approve herbicides for use prior to any applications. Contractor shall submit copies of all manufacture specifications and application rates to the City for review and approval prior to application. Herbicides and weed control shall only be performed by a licensed applicator; contractor shall supply information on applicator to the City of Page for approval. Contractor shall apply two applications of preemergent herbicide- the first at the time of granite installation and the second within one week prior to the end on the maintenance period. The contractor shall contact the Engineer prior to herbicide application so that the Engineer can inspect the proper mixing and application of the herbicide. The contractor shall guarantee a weed free condition will exist for a 6 month period following the end of maintenance of the project. Should any weeds occur the contractor shall remove and dispose of all weeds and reapply the pre-emergent herbicide again at no cost to the City. The contractor shall again guarantee a weed free condition for an additional 6 months.

Subsection 430.5 Tree, Shrub and Ground Cover Planting Shall Include the Following:

- 1. The Contractor shall coordinate pre-approval of plant material and delivery with the City and applicable nurseries as required.
- Upon delivery to the site, all nursery stock shall be planted as soon as possible. Until planting, plants shall not be exposed to excessive sun or drying winds. Stock, which is not satisfactory in the opinion of the City Inspector, shall be immediately replaced with acceptable stock.
- 3. The planting of all trees shall be performed during favorable weather conditions, during the season or seasons, which are normal for such work, as determined by acceptable local practice.
- 4. Planting pits for trees, shrubs, and groundcover shall be excavated per the landscape details but shall not be deeper than the container. Planting pit backfill soil shall be per the landscape details. No additional payment shall be made for removal and disposal of excavated topsoil, as it is considered part of the tree planting unit cost.
- 5. Tree, shrub, and groundcover plant pits shall be water-settled to a grade sufficient, that in the setting of the plant, the finish grade level after settlement will be the same as that at which the plants were grown (see details in landscape plans). No additional payment shall be made for supply of the backfill soil or amendments, as it is considered part of the tree planting unit cost.
- 6. Fertilizer and soil conditioner for all plantings shall be mixed in and applied to the planting backfill at the ratios recommended in the geotechnical report. Fertilizer tablets shall be installed in the plant pits as indicated in subsection 430.5.6 of these special provisions.
- 7. Container Removal: Remove container by turning plant upside down, supporting root ball with hand and tapping container gently to dislodge plant. Support root ball with both hands until planted in pit. Do not injure root ball, or hold plant by the stem.
- 8. Box Removal: Remove bottom of plant boxes before planting. Remove sides of box without damage to root ball after positioning plant.
- 9. Set container and boxed stock on undisturbed native soil, plumb, and hold rigidly in center of pit or trench with top of ball at elevation as shown on planting details. When set, place additional soil backfill and fertilizer tablets around base and sides of ball, and work each layer to settle planting soil backfill to eliminate voids and air pockets. Working in 6-inch lifts of planting backfill mix water settle the area every twelve (12) inches of depth applied around plant thoroughly before placing next two lifts, repeat process until completed.
- 10. After removal of plants from containers or sides from boxes superficially cut edge-roots with a sharp knife on one side and tease out feeder roots to assure positive contact and embedment into planting soil.

- 11. After watering, any settlement within basins shall be refilled to required grade with native soil.
- 12. Prune, thin out and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by the City Inspector, do not cut tree leaders, and remove only injured or dead branches.
- 13. Excessively pruned or malformed stock resulting from improper pruning shall be removed from site and replaced at no additional cost to the Owner.
- 14. Stake trees as identified on the plans.
- 15. Any rock or other underground obstructions shall be removed, if possible, to the depth necessary to permit proper planting, according to plans and specifications. If underground construction, obstructions, or rock are encountered in the excavation of planting areas, other locations of the planting may be selected by the Contractor only upon approval of the City Inspector. Prior to any work, the Contractor must be knowledgeable of the locations of all existing underground installations, and their protection is his responsibility. All damage will be corrected at the expense of the Contractor to the satisfaction of the City Inspector. Coordinate all work with other trades so conflicts will not exist or delay the work in any way. Coordinate grades with earthwork and with placement of irrigation systems fixtures.

All trees specified for staking shall be staked in line with prevailing winds. Stakes shall be 2inch round knot-free pine, length as required and installed as follows: Stakes shall be placed immediately adjacent to, but in no case through, the root ball, and penetrate at least 6 inches into undisturbed soil, be aligned vertically, be pointed at one end, and be aligned so as not to interfere with the existing branch structure of the tree, extending 5 to 6 feet above grade. Vinyl for fastening trees to stakes shall be stapled to the wood stakes, or otherwise attached to prevent removal of the vinyl. Provide not less than two (2) stakes spaced equally around trees (see tree staking details).

430.5.5 – Ground Cover Areas

<u>Delete this entire section and replace with the following:</u> All ground cover plants shall be planted in accordance with Section 430.5.6.

430.5.6 - Shrub and Tree Pits

Sub Section 430.5.6 is modified to add:

<u>Plant Layout</u> – The Contractor shall stake the location of individual trees, shrubs, accent plants, and ground covers in accordance with the plans for the Engineer to approve. The Contractor shall also make adjustments in the plant locations as directed by the Engineer and plant trees, shrubs, ground covers and accent plants after final grades and plant locations are established and approved by the Engineer.

<u>Delivery</u> - Deliver plants just prior to planting. All packaged materials that will be utilized during the planting operation shall be delivered in containers showing weight, analysis and name of manufacturer. Contractor shall protect materials from deterioration during delivery and while stored on site. Submit certification of contents, quantity and source of all plants and planting materials to the Engineer for approval.

<u>Protection of Plant Materials</u> - If planting is delayed more than 6 hours after delivery, protect the plants from the sun, wind and mechanical damage. Keep roots and root balls moist watering as often as necessary to maintain good health and vigor. Remove and replace all damaged and unhealthy plants as directed by the Engineer. Do not bend or bind any plants in such a manner as to damage bark, break branches or destroy their natural shape. Provide adequate protection for root systems. Do not handle container plants by their foliage, branches or trunks.

<u>Pre-Delivery Inspection of Materials</u> - Prior to delivery of any species to the project site, the Contractor shall make the necessary arrangements with the Engineer for an inspection of the plant material. The Contractor will pay for travel and expenses to non-local nurseries, out of the metropolitan Phoenix area, when requested by the Contractor. Any plants found to be unsuitable in growth habit or condition, or plants which are not true to the specification, shall be removed immediately from the site and replaced with acceptable plants.

The Contractor shall notify the Engineer at least 48 hours in advance for any inspection of the plant material at the offsite location. Prior to notifying the Engineer, the Contractor shall physically verify that all of the designated plant material meets the specified sizes and conditions.

<u>Construction of Plant Pits and Trenches</u> - Prior to planting, a percolation test shall be performed on all plant pits to determine that adequate drainage exists. Fill the pits half-full with water. Allow the pits 24 hours to drain. If any pit has not substantially drained, a rock caisson shall be installed. Each caisson shall have a 4-foot deep by 8-inch diameter hole filled with 1-1/2-inch diameter crushed stone filled to the bottom of the pit. Increase the depth of the caissons if ground water, caliche, or impervious rock is encountered.

Sub Section 430.5.6 second paragraph is modified to read as follows:

<u>Plant backfill mix</u> - The planting backfill mix for trees, shrubs, ground covers and accent plants shall be as shown on the plans and specified herein along with compliance with Sub Section 430.5 as listed above. Include 20-10-5 slow release fertilizer tablets at the following rates: 1 gallon - 1 tab, 5 gallon - 2 tabs, 15 gallon - 4 tabs, 24" box - 6 tabs, 30" box - 8 tabs, 36" box - 10 tabs, 48" box - 12 tabs.

Sub Section 430.5.6 is modified to add:

Provide proper surface drainage within all planted areas. Any grading conditions found in the plans or specifications, in obstructions on the site, or in prior work done by another party that the Contractor feels precludes establishing proper drainage, shall be brought to the attention of the Engineer in writing for resolution.

430.8 - Plant Guarantee and Maintenance is modified to add:

- 1. Contractor shall begin maintenance immediately after the Engineer has accepted entire plantings.
- 2. Contractor shall maintain landscape work until final acceptance, but in no case less than 90 days after the work has been accepted by the Engineer.
- 3. NOTE: Instruct City Maintenance personnel in the proper maintenance of landscape work.
- 4. The Contractor shall furnish all labor, materials, equipment, tools, services, skill, etc., required to maintain the landscape in an attractive condition throughout the contract period. Maintenance of plant materials shall include, but not be limited to, pruning, weed control, fertilizing, irrigation programming, pest control, and landscaped areas debris clean up, per specifications. Maintenance shall be performed a minimum of once a week throughout the maintenance period.
- 5. Contractor Supervisor shall be responsible for the training and supervision of the maintenance personnel's performance of their duties during the maintenance period.
- 6. All materials as noted (but not limited to this list) shall conform to the bid specifications:
 - a. Pre-emergent
 - b. Fertilizer
 - c. Plant material
 - d. Decomposed granite
 - e. Stabilizer

TREE AND SHRUB CARE

Maintain trees and shrubs in a healthy, growing condition by performing necessary operations, including the following:

- 1. Pruning: The Contractor shall prune and shape only as necessary to maintain the usual form of the plant, to stimulate growth, to maintain growth within space limitations, and to maintain a natural appearance.
- 2. Staking: Stakes are to be inspected weekly and adjusted or removed as necessary.
- 3. Weed Control: In groundcover area, keep areas between plants free of weeds. Use recommended, legally approved, herbicides whenever possible. Avoid frequent soil cultivation.

GROUNDCOVER CARE

Foster attractiveness at all times by following these practices:

- 1. Decomposed Granite and Riprap Areas: Landscape granite shall be inspected weekly. Man-made debris shall be removed and weeds and grass controlled with chemicals. Any erosion that has occurred in any granite areas shall be remedied, repaired and granite replaced by the contractor at the contractor's expense.
- Weed Control: Keep all landscape areas free of broadleaf or grassy weeds, with preemergent and/or selective contact herbicides. Cultivating or hoeing weeds is not an allowed practice. Project shall not be accepted until all noxious weeds are eradicated. Treat all planting areas with pre-emergent herbicide prior to granite installation.

Unless otherwise authorized, the Contractor shall maintain all landscape areas on a continuous basis as they are completed during the course of work and until final project acceptance by the Engineer. The Contractor shall provide adequate and experienced personnel to accomplish the maintenance. Maintenance shall include keeping the landscape areas free of debris on a weekly basis, chemical control and hand removal of weeds, fertilization as needed, cultivating the planting areas, and repairing tree stakes. An Arizona pesticide licensed contractor shall perform all chemical control.

All plant material and installation shall be 100 percent guaranteed by the Contractor for an additional 90 Calendar Days following completion of the Plant Establishment Period and the acceptance of the planting areas by the Engineer.

Make replacements of plants within seven (7) days of notification from the Engineer. Remove and replace dead, damaged or vandalized plants within seven days of notification. Replacements shall be of the same kind and size as originally specified and shall be installed as described in the contract documents.

Plants shall be kept in a healthy, growing condition by watering, pruning, spraying, weeding and any other necessary operation of maintenance. Plant beds shall be kept free of weeds, grass and other undesirable vegetation. Plants shall be inspected by the Contractor at least once per week and appropriate maintenance performed. Pruning and re-staking shall be required as needed to remove any plant growth conflicting with vehicular or pedestrian movement.

The Contractor shall maintain the irrigation system as specified in Section 440 and make any necessary repairs regardless of cause to assure a complete and operational system as originally designed and constructed. Repairs shall be made within 48 hours of detection.

The Contractor shall notify the Engineer 48 hours prior to the application of any chemical treatments. Chemical mixing and the use of application equipment shall be done by qualified personnel in the presence of the Engineer. An Arizona pesticide licensed contractor shall perform all chemical control. The Engineer shall approve the personal, materials and methods of application of chemicals prior to beginning the operation.

There shall be no separate measurement and payment for the Plant Guarantee and Maintenance Period. This cost shall be included in landscape bid items for: plant materials and inert groundcover. Ten percent of each landscape bid item amount in addition to retention will be held for distribution until after the maintenance and establishment period.

430.9 – Plant Establishment Period

Delete the entire section and replace with the following:

The Contractor shall request an inspection by the Engineer when the Contractor believes the landscape work is substantially complete and the planting and related work has been accomplished. After this initial inspection, and subject to his approval of the work, the Engineer will issue a written field notification to the Contractor setting the effective, beginning date for the Plant Establishment Period. The plant establishment period for trees, shrubs, and ground cover shall be for a period of 90 days, but is subject to extension by the Engineer if the landscape planting is improperly maintained, appreciable plant replacement is required, or other corrective

work becomes necessary. This work will be considered incidental to ITEMS 430-1 through 430-11 within this section and no separate payment will be made for the Plant Establishment Period.

Contractor shall apply two application of pre-emergent herbicide- the first at the time of granite installation and the second within one week prior to the end on the maintenance period. The contractor shall contact the Engineer prior to herbicide application so that the Engineer can inspect the proper mixing and application of the herbicide. The contractor shall guarantee a weed free condition will exist for a 6 month period following the end of maintenance of the project. Should any weeds occur the contractor shall remove and dispose of all weeds and reapply the pre-emergent herbicide again at no cost to the City. The contractor shall again guarantee a weed free condition for an additional 6 months.

The contractor shall do a monthly inspection of the landscape and irrigation with the City of Page inspector. All necessary work items noted during the inspection including but not limited to plant replacements, erosion repairs and irrigation repairs shall be completed prior to the following monthly inspection. Should noted repairs not be completed prior to the following monthly inspection the plant establishment period shall be extended for another month.

Removal and disposal of all trash and other debris is included as a part of the plant establishment work. The trash includes materials generated by the contractor and all other outside sources. Trash shall be removed on a weekly basis, minimum.

At final project acceptance or at the end of the plant establishment period, a final acceptance inspection of the planted areas will be made by the Engineer.

One year plant warranty shall be per MAG Section 430.

430.10 Measurement and Payment: *is modified to add:*

Payment for the landscape and planting shall be made on the basis of the bid price for each element of work identified on the bid schedule. These unit cost prices shall be full compensation for the system complete and in-place as described herein and on the plans. No additional payment will be made for plant establishment, maintenance, or warranty – the costs being considered incidental to the planting items.

TREE (36" BOX) TREE (24" BOX) TREE (15 GAL) SHRUB / ACCENT (5 GALLON) GROUND COVER (1 GALLON) SHRUBS / ANNUALS (1 GAL, 5 GAL, AND FLATS FOR PLANTER POTS) DECOMPOSED GRANITE (TO MATCH EXISTING ADJACENT D.G. SIZE AND COLOR) DECOMPOSED GRANITE (1/2" SCREENED)

SECTION 440 - SPRINKLER IRRIGATION SYSTEM INSTALLATION

Sprinkler Irrigation System Installation shall conform to Section 440, 757 of the MAG Uniform Standard Specifications, and the City of Page Specifications and details except as modified herein.

440.1 – Description:

Replace the first paragraph with the following:

The Contractor shall furnish all labor, materials, tools, equipment, and services necessary for the execution and completion of an automatic irrigation system as indicated on the drawings and as described in these specifications and the General Conditions for all landscaping areas having plant material and turf.

440.2 - General

Add the following:

The plans indicate a detailed layout of irrigation lines, laterals, sprinklers, and emitter locations; however, some of the piping may be shown diagrammatically outside of the planting areas for graphic clarity. The contractor shall follow the intent of the plan layout and shall review and obtain written approval from the Owner's Authorized Representative for any requested changes.

Due to the scale of the drawings, it is not possible to indicate all offsets, fittings and sleeves that may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all of his work and plan his work accordingly, furnishing such offsets, fittings and sleeves as may be required to meet such conditions. All work called for on the drawings by notes or details shall be furnished and installed whether or not specifically mentioned in the specifications.

The irrigation system shall be constructed using the emitters, valves, piping, fittings, controllers, wiring, and other components, of sizes and types as shown on the drawings and as called for in these specifications. The system shall be constructed to grades and conform to areas and locations as shown on the drawings.

The project scope involves the installation of new irrigation systems in landscape areas where none exist or where privately owned systems may exist. The new system shall be installed to City of Page standards. The City of Page will operate and maintain the completed systems. Repair or modification to existing irrigation systems will be required.

If quantities are furnished either in specifications or on drawings, quantities are furnished for information only. It is Contractor's responsibility to determine actual quantities of material, equipment, and supplies required by the project and to complete independent estimate of quantities and wastage.

All irrigation equipment and materials shall be supplied by the manufacturers as indicated on the plans, details and specifications. If no manufacturer is specified, the contractor shall supply as part of his submittal package complete manufacturer cut sheets detailing materials, construction methods and standards

New City of Page water meters, backflows, controllers, drip control valves, and emitter systems will be installed to provide water to the new landscape.

No new 120 volt electrical work will be required on the project. All new controllers will be solar powered.

Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until unsatisfactory conditions have been corrected.

440.2.1 References: Conform to the requirements of reference information listed below except where requirements that are more stringent are shown or specified in the Contract Documents.

American Society of Testing Materials (ASTM) - Specifications and Test Methods specifically referenced in this Section, and Underwriter Laboratories (UL) - UL wires and cables, City of Page Supplements to MAG and MAG Standards.

Provide work and materials in accordance with latest edition of National Electric Code, Uniform Plumbing Code as published by the International Association of Plumbing and Mechanical Officials, and applicable laws, regulations and codes of governing authorities.

440.2.2 Quality Assurance: Work involving plumbing for installation of meters, vaults, meter boxes, water taps, copper piping, backflow preventer(s) and related work shall be executed by licensed and bonded contractors. Secure a permit from City of Page at least 48 hours prior to start of installation.

Tolerances: Specified depths of mains and lateral pipes are minimums. Settlement of trenches is cause for removal of finish grade treatment, refilling, re-compaction, and repair of finish grade treatment.

Coordinate work with other trades.

For a period of one year from Final Acceptance, the Contractor shall guarantee/warranty irrigation materials, equipment, and workmanship against defects. The Contractor shall replace any pavement damage resulting from the installation of the irrigation system, repair damage to grading, soil preparation, or planting at no additional costs to the Owner and make repairs within 48 hours following notification by the Engineer.

440.3 - Materials

Add the following:

440.3.1 Submittals:

Shop Drawings and Product Information:

Prepare and make submittals in accordance with conditions of the Contract, and as follows: A minimum of thirty (30) days prior to beginning work on the irrigation system the Contractor shall submit one (1) pdf copy of manufacturers' literature including name and part numbers covering materials listed below and any other items requested by the Engineer. Contractor shall also submit all shop drawings specified at this time. **Do not order materials until the products and shop drawings are approved by the Engineer**. Multiple submittals may be required. Any deviation from the contract documents shall conform to Section 105.

Items to be submitted:

All materials and equipment proposed to be utilized on the project including but not limited to: (Refer to Plans and Section 757 for materials list)

Backflow Preventer Backflow Preventer Enclosure Solar Powered Controllers Automatic Control Valves with DC Latching Solenoids Pressure Regulators and Filters Emitters Emitter (Distribution) Tubes Flush Caps Valve Boxes **Ball Valves** Quick Coupler Swing Joints Pipe Pipe Wrap Fittings and Solvents Wire and Waterproof Connectors **PVC** nipples Valve I.D. Tags Tracer Wire and Warning Tape

All items shall be those specified and approved by the Engineer. Substitutions will not be allowed without approval.

440.3.2 Equipment to be Furnished: All materials to be new and bear the appropriate National Association seal of approval for example, NSF, US, etc. Similar equipment shall be procured from the same manufacturer and internal parts shall be common and interchangeable.

440.3.4 Record Drawings: The Contractor shall maintain project record (as-built) plans on site. Maintain on-site and separate from documents used for construction, one complete set of contract documents as Project Record Documents. Keep documents current on a daily basis. Current up-to-date Record Drawings are a prerequisite for scheduled payments. Do not permanently cover work until Record Drawing information is recorded.

The Contractor shall dimension from two permanent points of reference, building corners, sidewalk, or road intersections, etc., the location of the following: Connection to water lines Location of Irrigation Controller Location of Backflow Prevention Unit Routing of Main Pressure lines (dimension at a minimum of 100 feet along routing) Routing of Lateral Lines Remote Control Valves Routing of Control Wiring Wire Splices Each Sleeve End Other related equipment as directed by the City Prior to Final Review, obtain from the Engineer a reproducible copy of the drawings. Using technical drafting pens, duplicate information contained on the project drawings maintained on site. Label each sheet "Record Drawing". Completion of the Record Drawings will be a prerequisite for the Final Review. The City will not certify payment requests or make final payment if as-built plans are not current or complete.

440.3.5 Controller Charts: The City shall approve Project Record As-Built drawings before controller charts are prepared. The chart shall show the area controlled by the automatic controller and shall be the maximum size, which will fit inside the controller door, and still be legible. Identify the area of coverage of each remote control valve, using a distinctively different color, drawing over the entire area of coverage. Following review of the charts by the City, they shall be hermetically sealed between two layers of 20-mm thick plastic sheets. These charts shall be completed and approved prior to final inspection of the irrigation system.

440.3.6 Operation and Maintenance Manuals: Submit 4 operation and maintenance manuals to the City for review prior to final acceptance. The manuals should include the complete technical description of materials and products used, guarantee statement, complete operating and maintenance instructions on all major equipment. Contractor to provide a demonstration to maintenance personnel, with owners representative present, of how to adjust and maintain all sprinkler head types, controller functions, and recommended controller programs, as established by the Contractor. Contractor also to review recommended watering rates for new plant materials.

440.3.7 Equipment to be furnished: Prior to final close out the following equipment and spare parts shall be furnished to the owner. Before final inspection evidence that the Owner has received this material must be shown to the Engineer.

Equipment to be furnished:

- 1. Irrigation controller keys two (2) keys for each controller installed
- 2. Remote Control Valves with Solenoids two (2) of each type and size valve installed
- 3. Pressure Regulator two (2) of each type, size, pre-set pressure, and flow volume installed
- 4. Drip (wye) Filter two (2) of each type and size installed with screens
- 5. Ball Valves two (2) of each type and size installed
- 6. Emitters ten (10) of each size and volume emitter (multi and single) installed
- 7. Drip Lateral Flush End Cap two (2) complete assemblies
- 8. Valve Box with Lid- provide two (2) of each size and color valve box installed, include lids for each box
- 9. Emitter Box ten (10) of each size and color, include lids for each box.
- 10. Quick Coupler two (2) key and two (2) swivels of each type and size specified
- 11. Waterproof Wire Spices five (5) of each type

The equipment to be furnished to the City shall be provided at no additional cost, the cost shall be considered incidental to other items.

440.4 – Landscape Irrigation System Removal and Restoration Add the following:

The project scope involves the installation of new improvements in areas where privately owned irrigation systems may exist. The work under this item shall consist of testing, reconstructing

and/or modifying the existing irrigation systems that are damaged by the improvements or by other construction activities within the project limits. Where there are existing systems the contractor shall cut, cap and modify the existing systems as necessary so that the system continues to operate and provide water to the plant materials that remain on the private property. All private irrigation systems shall be repaired to working condition within a 24 hour period.

Replace paragraph three with the following:

The contractor shall replace all disturbed private irrigation systems with new equipment of the same manufacture and size as the original.

Replace paragraph six with the following:

The contractor shall include all required material, labor, equipment, testing and system guarantees in his quoted cost to repair all damaged existing irrigation systems.

440.5 – Trench Excavation and Backfill

Add the following:

Bedding sand shall be required under asphalt and concrete pavements such as roadways and parking surfaces.

Water pipe continuously pressurized (Mainline) – 18 inches minimum coverage for 2-1/2-inch and smaller pipes, 24 inches minimum coverage for 3-inch and 4-inch and 36 inches minimum coverage for 6-inch and larger pipe.

Irrigation Control wire – 18 inches minimum coverage below grade. Where sleeves are required locate wires in own sleeve separate from pipe sleeves.

Drip Lateral lines – 12 inches minimum coverage for 2-inch and smaller pipes, 18 inches minimum coverage for 2-1/2-inch and larger pipes.

Each irrigation pipe or wire located beneath drivable surfaces shall be installed in a Schedule 40 PVC sleeve that is a minimum of twice the combined diameter of the pipe or wires contained within the sleeve and noted on the plans at a minimum depth of 36 inches.

Each irrigation pipe or wire located beneath all hardscape surfaces that require sleeves shall be installed in a Schedule 40 PVC sleeve that is a minimum of twice the combined diameter of the pipe or wires contained within the sleeve and noted on the plans at the depth of the deepest pipe or a minimum of 18 inches, whichever is deeper.

Pipe trenches shall be straight but if obstructions necessitate a change of direction, the limits of curvature for each pipe material and size utilized shall be followed in strict accordance with pipe manufacturer recommendations.

Trenches and excavations shall be backfilled with clean material from excavations. Remove organic material as well as rocks larger than 1/2-inch in diameter. Place acceptable material in lifts, the height of which shall not exceed that which can be effectively compacted, depending on the type of equipment and methods used.

Mark with powdered lime or construction marking paint (white in color), the routing of pressure supply line (mainline) and stake locations of controller, ball valves, control valves, quick couplers, and any other irrigation equipment as directed by City. Unless otherwise specified, the system layout shall be considered schematic. Preliminary adjustments to conform to actual site conditions shall be accomplished during staking. Should changes be required, the Contractor shall obtain approval of the Irrigation Designer prior to actual work being performed.

440.6 – Pipe Installation

Add the following:

Provide pipe, schedule and size as shown on the drawings and per Section 757 and as specified herein.

Snake pipe in trench as much as possible to allow for expansion and contraction. Provide a firm, uniform bearing for the entire length of each pipe line to prevent uneven settlement. Installation of pipe shall be installed in accordance with ASAE Standard; ASAE 376. Pipe shall be clean prior to installation and shall be maintained in that condition during installation. When pipe laying is not in progress, the open ends of the pipe shall be closed by means approved by the Engineer.

When PVC to metal pipe connections is required, these connections shall be accomplished first. A PVC adapter with internal pipe thread should be used, screwing it into the metal external pipe threads. Use Teflon tape, or equal, on all plastic to metal threaded joints. The joint shall be hand-tightened. Utilize a light wrench, as necessary, to prevent leaks.

Piping or conduit of different trades crossing each other shall be separated by a minimum of 6 inches in the vertical direction.

440.6.1 Sleeving: Piping located under asphalt, concrete, or other pavements shall be sleeved, size and schedule as noted on the plans. If not noted, sleeves shall be Schedule 40, and 2 times larger than the pipe being sleeved. Use separate sleeve for wiring, or as directed by Engineer.

Boring will be permitted only where pipe must pass under obstructions which cannot be removed or when approved by the Engineer. When any cutting or removal of asphalt and/or concrete work is necessary, it shall be saw cut in accordance with Section 601. All sleeve trenches shall incorporate MAG 200-1 T-Top trench repairs. Cost of trenching and patching shall be considered incidental to the sleeve installation. Permission to cut asphalt or concrete shall be obtained from the Engineer. When piping on the drawings is shown in paved area, but running parallel and adjacent to planted areas, the intent of the drawings is to install the piping in the planted area.

Extend sleeve ends twelve inches beyond edge of hardscape, or sidewalks. Cap sleeve ends and mark with stakes. Provide rope or wire through sleeve and secure to a stake at surface grade, at each end for future sleeve location. Sleeve ends shall be covered with duct tape prior to backfill. Boring operations and/or asphalt cut and patch operations necessary for sleeve installation shall be considered incidental to the sleeve installation. All asphalt cutting shall be done with proper equipment to allow straight and true cuts through the entire depth of the asphalt being removed. Compact the trench backfill to 95% with a minimum of a 6-inch ABC base and 6-inch asphalt top patch cover. Contractor shall replace any patch work if the patch compacts more than ½-inch or if any of the patches becomes dislodged within one year. All asphalt shall comply with MAG section 336.

440.7 – Valves, Valve boxes, and Special Equipment Installation Add the following:

Refer to Section 631 for water meter for the irrigation system.

Valve boxes shall be tan in granite, green in turf, or purple when used with non-potable water.

Valve boxes shall not house more than one valve, or other type of equipment other than multiple (two) flush caps are permitted in same box.

Align valve boxes at right angles to adjacent hardscape whenever possible. When valve boxes are grouped together, allow a minimum of 12 inches between valves boxes.

The valve boxes shall be branded with the letters and/or numbers of contents in valve as noted per details. The letter and number sizes shall be no smaller than 2 inches. Depth of branding shall not be more than 1/8 inch into the valve box lid. All labeling shall utilize stencils and be neat and legible.

All valve boxes shall be installed with six inches minimum of clean washed gravel sump over filter fabric with valve located 2" clear above rock sump.

Install all drip control valves with DC latching solenoids, wye or basket filter, and pressure regulator in suitable valve access box of proper size as required for easy access to the installed components and as specified in the plans.

Backflow Prevention Assembly: The Backflow Prevention Assembly shall be installed per the details shown on the drawings and associated governing code requirements. Connect the backflow prevention assembly to the water meter with type K hard copper. Place the backflow prevention unit within two feet of the water meter. The water meter shall be provided to the irrigation contractor by the general engineering contractor, see plans and specifications for more detail. Provide enclosure to properly secure the assembly. The irrigation system shall not be operated until the assembly has been tested and certified to meet the requirements of the City of Page. Backflow Prevention Assembly enclosure shall be powder coated by manufacturer a color as specified in plans. Contractor shall submit paint color chip sample to Engineer for approval prior to painting of enclosure if other than as noted per plans.

After the backflow assembly has been properly installed by the Contractor and approved by the Engineer, the system shall be inspected by the City of Page and tested to ensure that it is operating correctly and meets with the City of Page's approval. Turn over back flow certifications to the Engineer.

Lateral flush end caps shall be installed at the end of all drip lateral pipes for the purpose of flushing the pipeline of debris. The flush end caps shall be installed per the plan details at the location shown on the plans or as directed by the Engineer.

Quick Coupler Valves shall be installed per the plan details at the location shown on the plans or as directed by the Engineer within suitable valve access box of proper size as required for easy access to the installed components and as specified in the plan.

Isolation Gate/Ball Valves shall be installed per the plan details at the location shown on the plans or as directed by the Engineer within suitable valve access box of proper size as required for easy access to the installed components and as specified in the plans.

440.9 – Automatic Control System Installation

Add the following:

Install new controller(s) of the size shown on the plans in accordance with the plan details.

All wiring for remote control valve operation shall be direct burial single solid copper conductor with PVC insulation, per controller manufacturer specifications. Tape bundle wire at 20 foot centers, allowing for expansion at all changes in direction. No splices in wire will be allowed unless the wire length exceeds 2500 feet. All allowed splices shall be contained within valve boxes marked as Wire Splice. Install in accordance with controller manufacturer's specifications.

All new controller(s) to be grounded per the controller manufacturer specifications with bare copper wire to copper grounding rod within suitable valve access box of proper size as required for easy access to the installed components and as specified in the plans. Grounding to match the minimum requirements available from the American Society of Irrigation Consultants (ASIC) Guideline 100-2002. Soil amendments may be required to get the required ohm resistance reading.

Wiring shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines whenever possible and shall never be installed above or below the pipe.

An expansion curl shall be provided within 3 feet of each wire connection. Expansion curl shall be of sufficient length at each splice connection at each electric control, so that in case of repair the valve bonnet may be brought to the surface without disconnection of the control wires. Control wires shall be laid loosely in trench without stress or stretching of control wire conductors.

Field splices between the automatic controller and electrical control valves will not be allowed without prior approval of the Owner's Representative.

<u>All</u> control wiring installed under paving shall be installed in UL listed Schedule 40 electrical conduit. Conduit shall terminate at least one (1) foot inside of a planting area. Conduit joints and fittings shall be solvent weld. Size shall be as noted per plans. Conduits shall be separate from pipe sleeves.

All wire connectors shall have a two-piece PVC housing which, when filled with resin epoxy and pressed together, forms a permanent, one-piece, moisture-proof wire splice. All connectors shall be UL listed, rated 600 volt, for PVC insulated wire. No wire splices shall be buried.

Provide a 24-inch excess length of wire in an 8-inch diameter expansion loop at each 90-degree change of direction, at both ends of sleeves, and at 100-foot intervals along the wire routing. Do not tape wiring within expansion loops.

Wire shall be red control with white common and a green spare wire looped through all boxes.

A wiring schematic shall be placed in each controller cabinet. The schematic shall show all wire connections including the wire connections at the controllers and field splices in pull or junction boxes, such as those not occurring in scheduled and planned valve boxes.

440.11 – Flushing and Testing Add the following:

Provide all necessary pumps, bypass piping, storage tanks, meters, supply piping, and fittings in order to properly perform testing. Backfill the trench to prevent movement of the pipe under pressure. Expose couplings and fittings. Purge air from pipeline before test.

Replace any defective pipe, fitting, joint, valve, or appurtenance. Repeat the test until the subject mainline pipe meets the above maximum allowable volume loss during the test period.

Operational Tests: Perform an operational test of the irrigation system in the presence of the Engineer and a representative from the City of Page Maintenance Division. Contact the Engineer and City of Page Authorized Representative five working days prior to testing.

The Contractor shall adjust or replace any type of irrigation heads or equipment to ensure proper distribution of water throughout the course of the Plant Establishment Guarantee and Maintenance Period.

Arrange for a preliminary walk-through with the City and the Engineer, when the entire system is operational. Operate each zone in its entirety, additionally, open all valve boxes and expose items covered, if directed. The City and Engineer will generate a list of items to be corrected and make adjustments, "fine tuning" the entire system by regulating valves, adjusting patterns and break-up devices, and setting pressure regulators at proper and similar pressure to provide optimum and efficient coverage. Flush and adjust all sprinkler heads for optimum performance and to prevent overspray onto walks, roadways, and buildings as much as possible. Adjustments may include, at no additional cost to the City, changes in nozzle sizes, and degree of arcs.

Arrange for a Substantial Completion walk-through when all items generated from the preliminary walk-through have been corrected. Items deemed not acceptable by the City shall be reworked to complete satisfaction. The maintenance period will not begin unless authorized by the City. All accessories, charts, record drawings and equipment, as required, will be provided before scheduling the Final walk-through.

Following the Landscape Maintenance Period a Final walk-through inspection will be scheduled to review the system and make adjustments to the watering schedules.

Add the following: 440.11.1 – MAINTENANCE

Maintain irrigation system for a duration of 90 calendar-days from formal written acceptance by Engineer. Make periodic examinations and adjustments to irrigation system components in order to achieve the most desirable application of water.

Following completion of Contractor's maintenance period, Owner will be responsible for maintaining system in working order during remainder of guarantee/warranty period, for performing necessary minor maintenance, for protecting against vandalism, and for preventing damage after landscape maintenance operation.

For a period of one year from Final Acceptance, guarantee/warranty irrigation materials, equipment, and workmanship against defects. The Contractor shall replace any pavement damage resulting from the installation of the irrigation system and repair damage to grading, soil preparation, seeding, sodding, or planting at no additional cost to the City of Page. Make repairs within 48 hours following notification by the Engineer. The City of Page has the right to make emergency corrections and back-charge to the contract for his/her costs when determined necessary by the Engineer.

Add the following:

440.11.1 – CLEAN UP

Remove from site machinery, tools, excess materials, and rubbish upon completion of work.

Maintain a clean and orderly jobsite on a daily and ongoing basis. Trash, discarded material and other debris shall not be allowed to blow around on the project. Discard all materials off site at an approved sanitary landfill.

Maintain a secure jobsite. Fence off jobsite to restrict general public access.

Any open trenches that are not backfilled the same day shall be flagged with yellow warning tape and tri-pod reflective warning stands.

Add the following section:

SECTION 450 PAVEMENT MARKING

Section 450, as included in these Special Provisions, is currently not included in the MAG Specifications and is therefore considered by the City of Page as an added specification required solely for the purpose of constructing pavement markings within the City. The City requires all pavement markings to be constructed in accordance with the latest edition of the Arizona Department of Transportation (ADOT) standard specification and details unless otherwise noted in these special provisions. Any references to ADOT standard specifications are noted and include any required modifications and revisions as required by the City.

These sections are the City of Page's amendments or additions to the ADOT and MAG Standard Specifications.

450.1 DESCRIPTION OF WORK:

Installation of roadway pavement markings in the City of Page shall be performed in accordance with the requirements of the latest editions of the Manual on Uniform Traffic Control Devices for Streets and Highways, Arizona Supplement to MUTCD, the Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, Arizona Department of Transportation Signing and Marking Standard Drawings and these project plans and specifications.

The Contractor shall furnish labor, materials, tools, transportation and supplies required to complete the work in accordance with the plans, project construction specifications and these pavement-marking specifications. The work under this section shall consist of:

- A. Cleaning and preparing the final surface course and the pavement marking layout
- B. Applying temporary paint or permanent paint in accordance with the plans & specifications
- C. Installing raised pavement markers in accordance with the plans & specifications

450.2 CONTROL OF WORK:

No pavement markings shall be applied to the project by the Contractor until field inspection of the striping layout is completed and approved by the Engineer. Any pavement markings placed prior to inspection and approval of the Engineer is subject to removal and reinstallation at the Contractor's expense.

In the event conflicts exist between actual field conditions and striping plans, Contractor shall notify the Engineer immediately.

Contractor shall maintain appropriate traffic control during the work and shall comply with these special conditions.

450.3 COORDINATION AND SEQUENCE OF WORK:

450.3.1 Striping Limits:

Contractor shall verify the striping limits of the project with the Engineer before beginning work. Striping limits may exceed the construction project limits to match existing striping as determined by the Engineer.

450.3.2 Removal of Existing Markings:

Removal of existing pavement markings shall be completed prior to the layout and marking activity and shall be performed in accordance with Section 470 of these specifications.

Pavement markings shall not be removed until proper traffic control has been installed as directed by the Engineer and City inspector. Any conflicting signs or striping shall be removed prior to pavement marking removal.

450.4 MATERIALS:

The paint shall not bleed, curl or discolor when being applied to the roadway surface. If bleeding, curling or discoloration occurs, the unsatisfactory areas shall be corrected by the contractor to the satisfaction of the Engineer at no additional cost to the City and given additional coat(s) of paint to correct the problem. In the event that the additional coat(s) are not sufficient, the Engineer will determine what method of correction may be used. Such corrections will be at Contractor's expense.

450.4.1 Temporary or Permanent Traffic Paint:

All pavement marking paint, temporary or permanent, shall conform to the requirements of the City of Page and as set forth in Section 708 of the latest edition of the ADOT Standard Specifications for Road and Bridge Construction and these special conditions or the "Manual on Uniform Traffic control Devices (MUTCD) latest edition as applicable guidelines and warranties shall be in accordance with the MUTCD most current edition

Unless otherwise directed, all final location lane striping including crosswalks and stop bars shall be thermoplastic material applied at a minimum thickness of 60 mils. All Pavement symbols, arrows, and lettering shall be thermoplastic, Type I (permanent) preformed pavement markings. Temporary pavement markings shall be reflectorized traffic paint. Temporary striping or half-street roadway striping shall be paint.

450.4.2 Raised Pavement Markers:

All Raised Pavement Markers shall be installed in accordance with ADOT Standard Drawings 4-M-2.02, 4-M-2.03, 4-M-2.03.2, and 4-M-2.04 and shall conform to Section 706 of the latest edition of the ADOT Standard Specifications for Road and Bridge Construction.

450.5 CONSTRUCTION REQUIREMENTS:

450.5.1 Methods and Equipment:

The methods and equipment used for this work shall be according to Section 704, 705, 706, 707, and 708 of the latest edition of the ADOT Standard Specifications for Road and Bridge Construction and these special conditions.

450.5.2 Cleaning and Preparing the Pavement Surface:

Before applying any paint or thermoplastic to the roadway surface, the surface shall be free of dirt, grease, oils, acids, laitance or other foreign matter that would reduce the bond between the pavement marking and the road.

Area that cannot otherwise be satisfactorily cleaned shall be scrubbed with a biodegradable chemical called Citrus Solv Plus or approved equal.

After a thorough cleaning, the surface shall be rinsed with water and completely dried before applying any paint, thermoplastic, or raised pavement markers. The roadway surface shall be dry and the air and pavement surface temperature shall not be less than 50° F and shall be rising for placement of temporary, permanent paint and thermoplastic striping.

450.5.3 Field Layout and Marking:

The Contractor shall coordinate with the City of Page three working days (72 hrs) in advance of any pavement marking to obtain preliminary striping layout approval <u>prior</u> to placement of any pavement markings. This includes any temporary pavement markings required prior to placement of thermoplastic striping. Contact the City of Page to schedule for striping layout approval.

The preliminary striping layout shall only be completed after all pavement marking Inspectors have been contacted, coordinated with, and are on site to review and approve the preliminary striping layout. The striping contractor shall make all necessary field adjustments that will be required by each of the Inspectors.

Any pavement marking completed prior to the City's inspection shall be removed if it is not consistent with the requirements included in these special provisions and the project plans. The cost of the removal shall be paid for by the Contractor and not the City of Page.

The Contractor shall establish a string line or other method when laying out the striping in the field and shall properly spot mark all pavement markings.

All new longitudinal lane lines exceeding 200 feet in length shall be spot marked at 25 foot intervals all longitudinal lane lines less than 200 feet in length shall be spot marked at 10 foot intervals. Spot marking must include any angle points, interval changes and begin/end taper points.

Final striping shall not occur until preliminary striping layout approval has been completed by the Inspector. The Contractor is responsible for paying all construction costs needed to complete the pavement marking approval process, including restriping, striping obliteration and mobilization/remobilization costs. The cost of the approval process shall be considered incidental to the pavement marking bid item.

All signing and marking work shall be completed at the same time. All new signs shall be installed prior to or concurrently with the striping work. Any conflicting new traffic sign installed prior to striping work shall be covered so they cannot be read. In addition any existing signs that will be in conflict with the new striping shall be removed or covered prior to the completion of the striping work. The Contractor shall coordinate with the City prior to removing/covering any new or existing signs.

Upon completion, the Contractor shall notify the Engineer that the project is ready for final inspection. The Inspector will inspect the project and either accept the work or identify unsatisfactory work within three (3) working days.

The completed roadway shall not be open to public travel, with exception to approved traffic control, until after all striping and signing has been completed unless the Contractor has prior approval by the City of Page.

450.5.4 Tolerances:

New pavement striping shall not vary more than one-half inch (1/2") in 50 feet from the specified striping design. The longitudinal deviation of pavement marking segment and gap shall not vary more than 6 inches in a 40 foot cycle.

450.5.4.1 Pavement Markings:

Unless otherwise directed, all final location lane striping including crosswalks and stop bars shall be thermoplastic material applied at a minimum thickness of 60 mils. All Pavement symbols, arrows, and lettering shall be thermoplastic, Type I (permanent) preformed pavement markings. The Contractor shall submit paint materials specifications and manufacturer's data sheets for approval by the Engineer prior to use in accordance with Section 105 of these special provisions.

All measurements as shown on the plans for parallel lines shall be taken from center of stripe to center of stripe or center of stripe to face of curb.

450.5.4.2 Preformed Pavement Marking Tape:

Preformed Pavement Marking Tape shall be installed in accordance with manufacturer's recommendations.

Preformed Pavement Marking Tape shall be installed in accordance with manufacturer's recommendations.

450.5.4.3 Crosswalks and Stop Bars:

All crosswalks and stop bars shall be constructed in accordance with the Plans. Measurement for crosswalk lines shall be from inside the line to inside the line, not center to center.

450.5.4.4 Raised Pavement Markers:

All Raised Pavement Markers shall be installed in accordance with ADOT Standard Drawings 4-M-2.02, 4-M-2.03, 4-M-2.03.2, and 4-M-2.04 and shall conform to Section 706 of the latest edition of the ADOT Standard Specifications for Road and Bridge Construction.

450.5.5 Inspection of Work:

The City will conduct two field inspections of the signage and pavement markings. The first inspection shall be made during the preliminary layout. The second inspection shall be made after all markings have been installed.

Inspection and approval of spot markings shall not relieve the Contractor from the obligation of obtaining a final inspection.

If it is decided by the Engineer that more than two (2) coats of paint are required it will be done at the expense of the Contractor. If the paint has to be applied in more than two (2) coats, each previous coat shall be thoroughly dry before each new coat is applied.

450.6 MEASUREMENT AND PAYMENT:

Measurement and payment for these items will be made at the unit bid price per linear feet and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals complete in place as indicated in the plans and as specified herein.

PAINT STRIPE, WHITE, 4"	LINEAR FEET
PAINT STRIPE, YELLOW, 4"	LINEAR FEET
THERMOPLASTIC TRAFFIC STRIPE, WHITE, 4"	LINEAR FEET
THERMOPLASTIC TRAFFIC STRIPE, YELLOW, 4"	LINEAR FEET

Measurement and payment will be made at the unit price per each and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals complete in place as indicated in the plans and as specified herein.

PAINT ARROW	EACH
THERMOPLASTIC ARROW	EACH
ADA SYMBOL	EACH
RAISED PAVEMENT MARKER (TYPE D)	EACH
RAISED PAVEMENT MARKER (TYPE G)	EACH
RAISED PAVEMENT MARKER (BLUE)	EACH

Add the following section:

SECTION 470 - GENERAL REQUIREMENTS FOR TRAFFIC SIGNAL AND INTERSECTION LIGHTING SYSTEMS

470.1 DESCRIPTION:

It is the purpose of this section to provide general information necessary for completion of the installation of traffic signal and intersection lighting in accordance with the details shown on the Traffic Signal Plan, the City of Avondale Traffic Signal Details, and the MCDOT Details.

All electrical systems and appurtenances shall be complete, functional and in operating condition at the time of acceptance.

470.2 DEFINITIONS:

The words defined in the following section shall for the purpose of these specifications have the meanings ascribed to them pertaining to signals and lighting.

470.2.1 Actuation: The operation of any type of controller initiated by a detector.

470.2.2 Back Plate: A thin metal strip extending outward parallel to the signal face on all sides of a signal housing to provide suitable background for the signal indications.

470.2.3 Controller: That part of the controller assembly, which performs the basic timing and logic functions for the operation of the traffic signal.

470.2.4 Controller Assembly: The cabinet and complete assembly for controlling the operation of a traffic signal, consisting of a controller unit, and all auxiliary and external equipment housed in a weatherproof cabinet.

470.2.5 Coordinated Traffic Signal System: A group of signals timed together to provide a specific relationship among signal phases.

470.2.6 Cycle: A complete sequence of signal indications.

470.2.7 Detector: A device for indicating the passage or presence of vehicles or pedestrians.

(A) Inductive Loop Detector: A detector capable of sensing the passage or presence of a vehicle by a change in the inductance characteristics of the wire loop.

(B) Magnetometer Vehicle Detector: A detector capable of being actuated by the magnetic disturbance cause by the passage or presence of a vehicle.

(C) Pedestrian Detector: A detector for pedestrians, usually of the push button type.

(D) Loop Detector: Loop induction detector capable of detecting the presence or passage of vehicles or pedestrians.

470.2.8 Flasher: A device used to open and close signal circuits at a repetitive rate.

470.2.9 Flashing Feature: This feature, when operated, discontinues normal signal operation and causes a predetermined combination of flashing signal lights.

470.2.10 Interval: The part or parts of the signal cycle during which signal indications do not change.

470.2.11 Luminaire: The assembly, which houses the light source and controls the light emitted from the light source. Luminaires consist of a housing, lamp socket, reflector and glass globe or refractor when specified.

470.2.12 Manual Operation: The operation of a signal controller unit by means of a hand-operated switch.

470.2.13 Mounting Assembly: The framework and hardware required to mount the signal face(s) and pedestrian signal(s) to the pole.

470.2.14 Pedestrian Signal: A traffic control signal for the exclusive purpose of directing pedestrian traffic at signalized locations.

470.2.15 Pre-timed Controller Assembly: A controller assembly for operating traffic signals in accordance with a predetermined fixed-time cycle.

470.2.16 Red Clearance Interval: A clearance interval, which follows the yellow, change

interval during which both the terminating phase and the next right-of-way phase display red.

470.2.17 Signal Face: An assembly controlling traffic in a single direction and consisting of one or more signal sections. Circular and arrow indications may be included in a signal assembly. The signal face assembly shall include back plate and visors.

470.2.18 Signal Indication: The illumination of a signal section or other device, or of a combination of sections or other devices at the same time.

470.2.19 Signal Section: A complete unit for providing a signal indication, consisting of a housing, lens, reflector, lamp receptacle and lamp, or LED unit.

470.2.20 Traffic Phase: A part of the time cycle allotted to any traffic movement or combination of movements receiving the right-of-way during one or more intervals.

470.2.21 Traffic-Actuated Controller Assembly: A controller assembly for operating traffic signals in accordance with the varying demands of traffic as registered with the controller unit by detectors.

470.2.22 Vehicle: Any motor vehicle normally licensed for highway use.

470.2.23 Yellow Change Interval: The first interval following the green right-of-way interval in which the signal indication for the phase is yellow.

470.3 REGULATIONS AND CODES: All electrical equipment shall conform to the current standards of the National Electrical Manufacturers Association (NEMA), National Electric Safety Code (NESC), Underwriters' Laboratory Inc. (UL), when applicable. All material and workmanship shall conform to the requirements of the National Electric Code (NEC), Illumination Engineers Society (IES), Standards of the American Society for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (ASHTO), requirements of the Traffic Signal Plan, these specifications, the special provisions, and to any other codes, standards, or ordinances which may apply. Whenever references are made to any of the standards mentioned, the reference shall be interpreted to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

470.4 SOURCE OF SUPPLY:

The Contractor shall furnish all traffic signal material and equipment required to complete the work except as noted otherwise.

470.4.1 Quality Requirements: Only materials and equipment conforming to the requirements of these specifications shall be incorporated into the work. Material and equipment shall be new except as may be provided in the special provisions.

The City of Page reserves the right to reject proposed traffic signal material or equipment if, in the judgment of the Engineer any or all the following may apply:

- 1) The equipment does not meet the requirements of the specifications.
- 2) The material or equipment is not in the best interest of the City of Page and the public.

- 3) The material or equipment past field performance has been unsatisfactory.
- 4) The material or equipment is not compatible with the material or equipment presently in use, which may cause the need to purchase additional spare parts, provide additional training, and/or long term maintenance problems.

In addition, the City of Page reserves the right to pre-approve traffic signal material and equipment by brand name model or part number which in the judgment of the Engineer meets the intended purpose of these specifications. Pre-approved items are posted on MCDOT's Procurement website:

http://www.mcdot.maricopa.gov/technical/home.htm

Deviations from the pre-approved materials list, if any, will be listed in the project special provisions or construction plans.

470.4.2 Approval of Material and Equipment:

All traffic signal materials and equipment shall be approved by the Engineer prior to incorporation in the work. Any work in which materials or equipment not previously approved are used shall be performed at the Contractor's risk and may be considered as unauthorized and unacceptable and not subject to the payment provisions of the contract. Such materials or equipment may be subject to removal at the discretion of the Engineer.

The Contractor shall obtain the Engineer's approval before ordering or installing any material or equipment. The Contractor shall submit four (4) copies of each proposed material and/or equipment list, including shop drawings. Submittal shall be to the City at the pre-construction conference. To be acceptable, the list shall be complete and comprehensive containing all items to be supplied on the project by the Contractor, including pre-approved items. The City of Page reserves the right to reject any incomplete or unclear material submittal. All items on the list shall be identified by manufacturer's part number, model, specification or other pertinent catalogue information. The materials from any catalog cuts shall be clearly indicated by the contractor. One (1) copy will be returned to the Contractor for further action.

All equipment or material specified or shown on signal plans, or other drawings, by brand name, part number, or model number is intended to be descriptive of the type and quality of material or equipment desired. Another equal brand name, part number, or model number may be substituted so long as it is in accordance with these specifications and is equal in form, fit, function, performance, reliability, and is approved by the Engineer.

The contractor shall provide complete wiring diagrams for controller assemblies and auxiliary controller cabinets at the time of delivery for testing. A mylar original and four sets of prints shall be provided with each controller assembly. The wiring diagram shall illustrate all circuits and components in detail. All components shall be identified by name or number so as to be clearly noted in the drawings.

It is the Contractor's responsibility to ensure adequate lead time in ordering signal equipment to prevent project delay. The Contractor shall notify the Engineer in the event signal equipment is not received in a timely manner.

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470.4.3 Warranties and Guaranties: In addition to the requirement of Section 108.8 manufacturers warranties and guaranties furnished for material and equipment used in the work, shall be delivered to the Engineer prior to acceptance of the project.

Relocation of existing traffic signal pedestrian crossing equipment, measured as lump sum, will be paid for at the contract price, said price shall be full compensation for the relocation of the traffic signal equipment, which price shall include all labor, equipment and hardware required to relocate the traffic signal pole onto the new pole per the traffic signal plans.

RELOCATE PEDESTRIAN EQUIPMENT

LUMP SUM

SECTION 471 - ELECTRICAL UNDERGROUND INSTALLATION

471.1 DESCRIPTION:

The work under this section shall consist of furnishing and installing electrical conduit, and pull boxes for traffic signals and intersection lighting including jacking, drilling, excavating placing and compacting backfill material in accordance with the locations shown on the Traffic Signal Plan, requirements of these specifications, and MAG specifications.

471.2 MATERIALS:

471.2.1 Electrical Conduit: All conduit and conduit fittings shall be listed by UL, and conform to NEC standards. Except as specified below, all conduit to be installed underground or in concrete structures shall be rigid polyvinyl chloride (PVC) conforming to the requirements of UL 651 for Rigid Nonmetallic Conduit. PVC conduit and conduit fittings shall be Schedule 40, heavy wall, manufactured from high impact material and shall be rated for use at 90° C. High Density Polyethylene (HDPE) conduit will be considered for approval for directional boring applications.

All exposed conduit and conduit fittings to be installed above ground shall be rigid metallic type manufactured of galvanized steel conforming to requirements of UL 6 for Rigid Metallic Conduit and to NEC standards.

471.2.2 Conduit Warning Tape: Conduit warning tape shall be a four (4) mil inert plastic film specially formulated for prolonged use underground and shall be a minimum of 3 inches wide. All tape shall be highly resistant to alkalis, acids, and other destructive agents found in the soil.

Tape shall have a continuous printed message warning of the location of underground conduits. The message shall be in permanent ink formulated for prolonged underground use and shall bear the words, 'CAUTION--ELECTRIC LINE BURIED BELOW' in black letters on a red background.

471.2.3 Pull Boxes: Pull boxes, pull box covers and pull box extensions shall be constructed of polymer concrete with reinforced heavy-weave fiberglass in accordance with MCDOT Details 4711 and 4712. Pull boxes and covers shall be concrete gray color and rated for no less than 8,000 lbs. over a 10" x 10" area and be designed and tested to temperatures of -55° F. Material compressive strength shall be no less than 1584 ksf. Covers shall have a minimum coefficient of friction of 0.5. Pull boxes shall be stackable for extra depth. Covers shall be secured with two (2)

3/8 inch corrosion resistant metallic hex bolts with corrosion resistant metallic washers. The bolts shall be in accordance with the requirements of MCDOT Detail 4711.

The words "TRAFFIC SIGNAL" shall be cast in the pull box covers in 1-inch high letters.

At the request of the Engineer the Contractor shall furnish pull box plans and specifications.

Chipped or cracked pull boxes, covers and extensions will not be accepted.

471.2.4 Metal Junction Boxes: Metal junction boxes and covers for installation in concrete structures shall be fabricated from a minimum of 59 mils thick type 304 stainless steel. All seams shall be continuously welded and shall conform to the dimensions and details called out for or shown on the project plans. A neoprene gasket with a thickness of 1/8 inch shall fit between the box and the cover. The cover shall be made to fit securely and shall be held in place with a minimum of four stainless steel machine screws. Tabs for ease of installation may be attached to the junction box at the option of the contractor.

471.3 CONSTRUCTION REQUIREMENTS:

471.3.1 Installation of Electrical Conduit:

(A) General Requirements: Conduit shall be furnished and installed at the locations and of the sizes shown on the Traffic Signal Plan. Unless changes are necessary to avoid underground obstructions all underground conduit shall be installed in a straight line from pull box to pull box and/or from foundation to pull box and shall be of one continuous size. Any change in conduit routing must be approved by the Engineer and documented by the Contractor on as-built traffic signal plans.

All PVC conduit shall be stored and handled in an approved manner to minimize ultraviolet deterioration due to exposure to sunlight. The PVC conduit shall be cut square and trimmed to remove all rough edges. PVC conduit connections shall be of the solvent weld type. Purple primer conforming to the requirements of ASTM F 656 shall be applied to the joined surfaces prior to use of cement. The joint cement shall be the gray PVC cement conforming to the requirements of ASTM D 2564. Where a connection is made to rigid metallic conduit, the coupling used shall be a PVC female adapter.

Expansion joint fittings shall not be installed in PVC conduit runs between pull boxes unless specified. Expansion joint fittings shall be installed in conduit runs in which both ends of the conduit are fixed in place, such as conduit runs between two foundations. Expansion joint fittings shall be installed in conduit runs which cross a concrete structure expansion joint. Approved expansion fittings shall allow for a linear thermal expansion of up to 6 inches.

Conduit embedded in concrete structures shall be securely attached to the reinforcing steel at intervals of approximately 12 inches. Expansion fittings shall be installed where conduit crosses expansion joints in the structure. Where bonding is not continuous, expansion fittings shall be provided with a bonding jumper of number 6 AWG flexible wire. Where it is not possible to use expansion fittings, sleeves of sufficient size shall be installed to provide a minimum ½ inch clearance between the conduit and the inside wall of the sleeve. The sleeve shall be discontinuous at the expansion joints.

All existing conduits and conduit embedded in concrete structures shall be cleaned out with a mandrel and blown out with compressed air.

Field PVC conduit bends shall be made without crimping or flattening, using the longest radius practical but not less than specified by the NEC. Collapsed conduit, no matter how small, is not acceptable. The number of bends between pull boxes or between pull box and foundations shall not contain more than equivalent of two quarter bends (180 degrees, total), including the bends at the pull boxes or foundations, unless authorized by the Engineer.

Conduit entering a pull box or foundation shall be fitted with a factory made 90 degree elbow with a minimum sweep radius per the table below:

Conduit Size Sweep Radius

2 inches	10 inches
3 inches	13 inches

Conduit entering pull boxes shall terminate a minimum of 3" inside the box wall. The conduit shall be between 2" and 4" above the bottom of the pull box and shall be sloped to facilitate the pulling of conductors. Conduit entering through the bottom of a pull box shall be located near the sides and ends and extend no more than 4" above the bottom of the pull box including the length of the conduit bell end in order to leave the major interior portion clear. At all outlets, conduits shall enter from the direction of the run and allow for expansion and contraction.

Conduit for future use shall have a ¼ inch nylon rope and a No. 8 AWG bare copper wire installed that extends 24 inches beyond each end of the PVC conduit run. The pull rope and bond wire shall be coiled and inserted into the conduit so as to be easily recovered from either end. Conduit ends shall be capped with conduit end cap fittings after the pull rope is installed. Conduit end cap shall remain in place until wiring is started. When end caps are removed, PVC ends shall be provided with an approved conduit end bell. End bells shall be installed prior to the installation of the conductors. Approved insulated grounding bushings shall be used on steel conduit ends.

The Contractor shall place warning tape (as specified in Section 471.2.2) in all open trenches in which conduit is placed. All warning tape shall be buried at a depth of 6" to 8" below final grade.

Where conduit is to be installed under existing roadway pavement by jacking or drilling methods, the jacking and/or drilling pits shall be kept 2 feet clear of the edge of the pavement.

Conduit stub-outs under curbs or roadway edges for loop detection lead-in conductors shall conform to the requirements of MCDOT Details 4758 and 4759. Loop detection conduit stub-outs shall not be installed until completion of curb and gutter work. A 3-inch "X" shall be chiseled into the curb directly over conduit located under curbs.

Installation of conduit for underground electrical service shall be in accordance with the Standard Details, as shown on the Traffic Signal Plan and in accordance with the requirements of the utility company providing electrical service. Conduit installed in railroad right-of-way shall be installed in accordance with the requirements of the railroad company.

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(B) Conduit Depth Requirements: Conduits installed in protected areas such as behind curbs, under side-walks, etc., that are not subject to any vehicular traffic shall be at a minimum depth of 24 inches below final grade. Conduits installed under roadways, driveways, or any open area where there is the possibility of vehicular traffic, shall be installed at a minimum depth of 36 inches below final grade. When conduit cannot be installed at the minimum depth, it shall be completely encased in 3" of class C concrete in accordance with Section 725.

(C) Trenching, Backfilling and Compaction: Trenches shall not be excavated wider than necessary for the proper placement of conduit and pull boxes. Trenching shall be done in accordance with MAG Section 601. Backfilling, compaction and bedding of conduit runs shall be in accordance with MAG Section 601.4.9.

Open trench excavation across any existing paved areas, shall have two (2) parallel cuts made at a distance not to exceed 16 inches. All removal and replacement of existing paved areas shall be in accordance with MCDOT Section 336.

Open trench excavation across an existing Portland concrete area shall have two (2) parallel cuts made at a distance not to exceed 16 inches. All removal and replacement of existing Portland concrete areas shall be done in accordance with MCDOT Section 336.

After each excavation is complete and materials in place, the Contractor shall notify the Engineer for inspection, and under no circumstances shall any underground material or equipment be covered with fill without proper approval.

471.3.2 Installation of Pull Boxes: Pull boxes of the type specified on the Traffic Signal Plan shall be furnished and installed at the locations shown on the Plan. Pull boxes shall be installed in accordance with MCDOT Detail 4713. All relocation of pull boxes to avoid driveways and/or other structures shall be approved by the Engineer and documented by the Contractor on the as-built traffic signal plans.

Pull boxes shall be set and adjusted so that they are flush at curb or sidewalk grade. When no grade is established pull boxes shall be set as requested by the Engineer.

All pull box covers shall be secured with the required bolts and washers before final acceptance of the project.

All pull boxes shall be left in a clean condition, free of dirt and debris upon completion of the work.

471.4 MEASUREMENT:

Conduit will be measured by the linear foot for each diameter size between pull boxes. No measurement shall be made for the vertical portions of conduit.

Pull boxes will be measured as a unit for each pull box size.

471.5 PAYMENT:

The accepted quantities of conduit, measured as provided above, will be paid for at the contract unit price per linear foot, which shall be full compensation for the item, COMPLETE IN PLACE,

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including excavation, backfill, warning tape, pull rope or bond wire and any incidentals necessary to complete the work. No direct payment will be made for rigid metal conduit bends or rigid non-metallic conduit bends at pull boxes, expansion fittings and coupling fittings, the cost being considered as included in the contract price for the conduit items.

CONDUIT, PVC, SCH 40, 2-INCH

CONDUIT, PVC, SCH 40, 3-INCH

The accepted quantities for pull boxes, measured as provided above, will be paid for at the contract unit price, each, which shall be full compensation for the item, COMPLETE IN PLACE, including any excavating, backfilling and landscaping necessary to complete the work.

PULL BOX, #7

PULL BOX, #7 W/ EXTENSION

SECTION 475 – LOOP DETECTION 475.1 DESCRIPTION:

The work under this section shall consist of furnishing and installing loop detection systems for traffic signals at the locations shown on the Traffic Signal Plan, according to the requirements of these specifications, and ADOT specifications.

475.2 MATERIALS:

475.2.1 Conductors: Loop detection conductors shall be #14 AWG IMSA 51-7.

475.3 CONSTRUCTION REQUIREMENTS:

Construction shall conform to ADOT standard details section TS-6.

475.4 MEASUREMENT:

Loop detectors will be measured as a unit of each loop installed

475.5 PAYMENT:

The accepted quantities of loops, measured as provided above, will be paid for at the contract unit price per each installed, which shall be full compensation for the item, COMPLETE IN PLACE, including excavation, backfill, warning tape, pull rope or bond wire and any incidentals necessary to complete the work.

22.1625.001

LINEAR FEET

LINEAR FEET

EACH

EACH

SECTION 477 - INTERSECTION LIGHTING

477.1 DESCRIPTION:

The work under this section shall consist of furnishing and installing luminaires for intersection lighting in accordance with the location shown on the Traffic Signal Plan and the requirements of these specifications.

477.2 MATERIALS:

477.2.1 General: Intersection lighting materials shall conform to the type of luminaire as indicated on the Traffic Signal Plan.

477.2. LED Luminaire: The luminaire shall be a horizontal, Type III, conform to Illumination Engineering Society Standards. Luminaires shall be furnished with an instruction sheet which clearly shows installation procedures.

477.2.2.1 Housing: Shall be fabricated from a corrosive resistant metal and shall have a baked-on grey enamel finish. Mounting shall be an internal 2 bolt slip fitter at the rear of the fixture capable of attachment to a two inch (2") inside diameter pipe. The housing shall include a removable door with integral hinges for tool-less maintenance access.

477.2.2.2 Optics: The optics shall create consistent light distributions within the optical orientations and comply with the following requirements.

- a. Have a color temperature of 4000K at an ambient temperature of 25 degrees Celsius.
- b. Have an average illumence of 1.4 foot candles at a mounting height of 30 feet and a range from 6 to 2.0 foot candles in the illuminated zone.
- c. Have backlight control to restrict illumination at the rear.
- d. Operate at sustained ambient temperatures of up to 100 degrees Fahrenheit at a minimum 70% lumen output.
- **477.2.2.3 Electrical:** The fixture shall:
 - a. Have electronic ballast capable of operation at a universal voltage (120-277VAC) at 50/60Hz and shall be accessible without removal of the LED array.
 - b. Wired for use with no photo cell and shall be energized from a remote cabinet mounted PEC.
 - c. Be designed to withstand a minimum 10Kv of transient line surge.
 - d. Incorporate natural conduction and natural convection to rapidly transfer heat from the LED source.

477.2.3 Photo Electric Control (PEC): Photo electric control is a component of the traffic controller cabinet assembly. The remote mounted photo electric control (PEC) shall be rated at 120 volt, 60 Hz AC 3000 volt-ampere. The operating temperature range shall be from -65° F to +158° F and 100 percent relative humidity. The PEC shall be a conventional glass-faced hermetically sealed $\frac{1}{2}$ " cell. A time delay shall be incorporated into the PEC circuit to prevent cycling at night by transient lights which might be focused on the PEC.

The PEC shall turn-on at 1.0 \pm 0.2 foot candles and turn-off at 1.8 foot candles. The PEC shall be UL listed for rain-tight applications. A built-in surge protector shall be provided to protect the PEC from lightning induced and line voltage transients.

22.1625.001

The PEC shall be mounted on the controller cabinet with a $\frac{1}{2}$ " diameter threaded fitting. PEC shall be (Tork 2105) or approved equal.

The PEC and a luminaire test switch shall be wired in accordance with MCDOT Detail 4737.

477.3 CONSTRUCTION REQUIREMENTS:

Luminaires of the size specified shall be furnished and installed at the locations shown on the Signal Plan. Unless otherwise specified the luminaire shall be adjusted to the horizontal. Field adjustment of the lamp socket in high pressure sodium fixtures shall not be made unless specified on the signal plan or approved by the Engineer. The lamp socket in high pressure sodium fixtures shall be adjusted at the factory to achieve the light distribution as specified herein. All wiring shall be in compliance with the NEC, the requirements of MCDOT Detail 4737 and as shown on the plans. The intersection lighting circuit shall not be connected to the same service leg to which the controller

cabinet assembly is connected.

477.4 MEASUREMENT:

Luminaires will be measured as a unit for each type of luminaire furnished and installed.

477.5 **PAYMENT**:

The accepted quantities of luminaires measured as provided above, will be paid for at the contract unit price. Payment shall be full compensation for the work, COMPLETE IN PLACE.

LUMINAIRE, 240V, 250W

EACH

SECTION 478 - ELECTRICAL CONDUCTORS

478.1 DESCRIPTION:

The work under this section shall consist of furnishing and installing electrical conductors for traffic signals and intersection lighting in accordance with the Traffic Signal Plan, requirements of these specifications, and MAG specifications.

The 91st Avenue SE corner traffic signal pole relocation will require specific cables to be replaced from the controller cabinet to the new pole location and to the devices including emergency pre-emption cabling, roadway lighting, signal wires and cables, and video detection cables.

478.2 MATERIALS

478.2.1 Electrical Conductors: The wire shall be annealed copper and shall be uncoated unless otherwise specified. The wire shall be solid for number 10, 12 and 14 AWG and smaller diameter wire, conforming to the requirements of ASTM B3 for annealed bare copper wire. Conductors for sizes number 8 AWG and larger diameter wire shall be stranded and shall conform to ASTM B8 for Class B stranding, unless otherwise specified, the conductors shall be insulated with THW grade thermoplastic compound and shall meet the requirements of UL 83. Insulation colors shall be permanent and an integral part of the insulation and shall not be applied as a surface treatment of coating. The insulation thickness shall conform to the

requirements of the NEC. Conductor insulation shall be a solid color unless otherwise specified. The color shall be continuous over the entire length of the conductor.

Wire and cable shall be UL listed and rated at 600 volts. The UL label shall be present on each reel, coil or container of wire or cable. When requested, the Contractor shall submit to the Engineer the manufacturer's written certification that the product conforms to the requirements of these specifications.

All single conductors shall have plain, distinctive and permanent markings on the outer surface throughout their entire length showing the manufacturer's name or trademark, insulation type, conductor size, voltage rating and the number of conductors in the cable. Insulation colors shall be permanent and an integral part of the insulation and shall not be applied as a surface treatment coating.

Conductor colors and sizes for use in traffic signal and intersection lighting shall be as specified on the Traffic Signal Plan conductor schedule, and MCDOT Details 4799-1and 4799-2.

(A) Loop Detector Lead-In Cables: Loop detector lead-in shielded cables shall be two conductor, stranded, twisted pair, tinned copper, polyethylene insulated cable with a polyethylene jacket, rated at 600 volts and 140 degrees Fahrenheit and shall be in conformance with IMSA Specification 50-2.

(B) Wire Tagging: Individual conductors for each vehicular and pedestrian phase group shall be secured together by two layers of plastic electrical tape and tagged with an approved wire I.D. marker (3M Scotchcode Wire Marker Tape or approved equal). Cables for each vehicular and pedestrian phase group shall be wrapped with two layers of plastic electrical tape and tagged with an approved wire I.D. marker (Scotchcode Wire Marker Tape or approved equal). Wires and cables shall be individually marked in all cabinets and in pull boxes.

When IMSA cable is specified, wire insulation color assignment shall be in accordance with MCDOT Details 4799-1 and 4799-2.

(C) IMSA Cables: IMSA cable shall be used when specified on the plans. IMSA cables shall be polyethylene insulated copper conductors, polyvinyl chloride jacketed, rated at 600 volts for use in underground conduit or as aerial cable conforming to IMSA Specification 19-1.

The IMSA 19-1 cable shall be provided with the number and size of conductors as specified on the plans. The colors and tracers shall be permanent and an integral part of the insulation and shall not be painted, surface coated or adhered to surface. Ink strips are unacceptable. Conductor insulation colors shall be standard IMSA colors (as shown by the following table). Cable conductor color, phase and interval assignments shall be in accordance with MCDOT Details 4799-1 and 4799-2.

(C) Telephone Communication Cable: Telephone communication cable shall be used when specified on the plans. Telephone communication cable shall be in accordance with IMSA Specification 40-2. Cable shall be 19 AWG, 25 conductor, solid, twisted pair, polyethylene jacketed, with a rating of 300 volts.

Insulation Color	Stripe Color	Conductor Number	Insulation Color	Stripe Color
Black		11	Blue	Black
White	 Dago 53	12	Black	White
Red		13	Red	White
Green		14	Green	White
	Insulation Color Black White Red Green	Insulation ColorStripe ColorBlackWhite Page 53RedGreen	Insulation ColorStripe ColorConductor NumberBlack11White Page 5312Red13Green14	Insulation ColorStripe ColorConductor NumberInsulation ColorBlack11BlueWhite Page 5312BlackRed13RedGreen14Green

478.3. WIRING PROCEDURES:

478.3.1 General Requirements: All wiring shall be in conformance with the NEC and the requirements of these specifications. All wire nuts and other wiring devices shall be UL listed. Conductor sizes and colors shall be as specified on the Traffic Signal Plan conductor schedule. Conductors shall be pulled into runs in a smooth continuous manner, avoiding contact with sharp objects that might damage the insulation. Approved lubricants shall be used for inserting conductors in conduit. Before installation, conductors' ends shall be taped for moisture protection until connections are made. Splices are permitted in pull boxes, pedestals and cabinets.

Conductors shall have a minimum of 36 inches of slack from the conduit end bell in the pull box.

All phase wiring shall be boxed at the intersection, terminated and spliced in the number seven (# 7) pull boxes.

478.3.2 Conductor Splices: Splices shall be made utilizing wire nut connectors (Ideal model numbers 451, 452 and 454, or approved equal). Wire stripping length and wire size combinations shall be in accordance with the manufacturer's instructions supplied with the wire nut connector. Soldered connections will not be permitted. All phases shall be spliced in all pull boxes and unused phase wiring shall be spliced to the ground rod in the controller cabinet.

Splices shall be dipped or brushed with a minimum of three coats of liquid waterproof splicing compound (3M Scotch Kote or approved equal). The finished splices shall be such that their electrical and mechanical characteristics and insulation quality are equal to those of the original cable.

478.3.3 Bonding and Grounding: All metallic enclosures such as cabinets, pedestals, poles, conduit and cable sheaths shall be bonded to form a continuous grounded system. Non-metallic portions of the system, such as PVC conduit, shall have a No. 8 AWG bare copper bond wire installed with suitable connections to form a continuous grounded system.

At each service disconnect, cabinet foundation, or where otherwise specified, an approved copper-plated ground rod shall be installed. Each ground rod shall be a one-piece solid rod of the copper weld type or approved equal and shall be a minimum of 5/8 inch in diameter and 10.0 feet long. The rod shall be driven vertically into the ground to a minimum 9.0 feet below the surface. If the rod cannot be driven vertically it shall be installed in accordance with article 250-83 of the NEC. The ground rod may be located in a pull box. The service equipment neutral (grounded conductor) and the system grounding conductor (No. 8 AWG bond, solid) shall be connected to the ground rod with a copper-plated bolt or a brass bolt on the ground clamp.

The grounding electrode system shall be in accordance with articles 250-81 and 250-83 of the NEC.

Pole foundations shall have 25 feet of number 4 AWG bare copper conductor coiled and placed at the bottom of the excavation before concrete is poured. Pole foundation grounding electrodes shall be connected to the pole grounding screw in the hand hole with an approved lug connector. A ground resistance test shall be performed for each installed ground rod prior to final connection of the utility service. Pole foundation coil grounds shall be tested as determined by the Engineer in the field.

The ground resistance shall be measured with a three terminal, fall of potential, direct reading, battery powered earth tester with a 0.50 to 500 ohm scale or digital read-out. The 25 ohm reading shall be approximately at mid scale.

The test shall be performed according to the manufacturer's instructions and OSHA requirements. Two auxiliary copper clad ground rods shall be driven into the ground a minimum of 3 feet. The lateral spacing for each test rod shall be given in writing on the test report form and the spacing shall be approved by the Engineer.

All tests shall be performed in the presence of the Engineer and the test results shall be written down, dated and given to the Engineer for approval.

Each ground rod or foundation ground shall be isolated with the bond wires disconnected when the test is being performed. The resistance to ground shall be 25 ohms or less. If it is not, additional ground rods shall be installed as required at least 15 feet from the original ground and shall be bonded to it. The test shall then be repeated for multiple grounds as necessary to achieve proper grounding below 25 ohms. As many additional ground rods shall be installed as is necessary to achieve proper grounding of 25 ohms or less.

The test shall be performed when the soil is dry. The contractor shall not add any chemical or salt solutions to any portion of the grounding system. All grounding rods and foundation grounds to be tested shall be installed a minimum of ten days prior to testing unless otherwise determined by the Engineer in the field.

478.4 MEASUREMENT:

Conductors for traffic signals and intersection lighting will be measured on a lump sum basis.

478.5 **PAYMENT**:

Conductors, measured as provided above, will be paid for at the contract lump sum price, which price shall be full compensation for the item, COMPLETE IN PLACE.

TRAFFIC SIGNAL CONDUCTORS AND CABLES

LUMP SUM

SECTION 479 – EMERGENCY PRE-EMPTION

479.1 Description

The acceptable system shall utilize infrared optical communications technology to process valid optical signals emitted from system vehicles and place calls to traffic controller preempt inputs to effect preemption of normal traffic control signals.

Major components of the system shall consist of infrared optical emitters mounted on system vehicles and infrared receivers mounted in the intersections and interfaced to traffic controllers via an optical signal processor.

Optical emitters shall emit infrared optical signals on either the industry standard high-priority carrier frequency (Emergency band) or the industry standard low-priority carrier frequency (Transit band).

Receivers shall consist of optical detectors mounted to view the approach to an intersection, an optical signal processor (OSP) installed in the traffic control cabinet and detector cable connecting the optical detectors to the OSP.

As emitter-equipped vehicles approach receiver-equipped intersections, the optical detectors shall convert the incoming optical signal into an electronic signal. The OSP shall decode the electronic signal delivered by the detector cable, determine the priority of the vehicle, arbitrate priority between any simultaneously approaching vehicles, and place appropriate calls to controller inputs.

Receiver systems shall always give precedence to high priority vehicles over low priority vehicles.

Receiver system shall be capable of detecting emitter-equipped vehicles at a range of up to 2,500 feet (762 meters) under clear atmospheric conditions.

Receiver systems shall interface with all NEMA TS-1 and TS-2 and Type 170 controllers equipped with preemption routines with no compromise to normal traffic controller functions.

479.2 Components

- A. Optical Emitter (Approved Optical Emitters: Tomar Model 2060 or 3060):
 - 1. Optical emitters shall generate the optical signal required to activate the receiver equipment in the intersection. The light pulses shall consist of a fixed base frequency signal for standard preemption systems.
 - 2. Optical emitters' power supplies shall be powered by the vehicle's electrical system. The emitter power supply input voltage shall range from 10 to 30VDC.
 - 3. The optical emitter shall perform these functions:
 - a. The first function shall be to transmit the industry standard carrier frequency for Emergency band signals (14.035 +/- 0.003Hz) or for Transmit Band signals (9.639 +/- 0.003Hz).
 - b. The section function shall be to effect range adjustment of the system using optical emitters positioned at the desired distance while the optical signal processor range adjustment features are activated in the traffic cabinet. The range of each system intersection approach shall be adjustable between 300' (90m) and 2,500' (762m).

- c. The third function of the optical emitter shall be to conduct self-diagnostic and display its status via a single indicator light located on the control switch.
- 4. Optical emitters shall operate over a temperature range of 30°F (-34°C) to +140°F (+60°C).
- 5. The optical emitter shall have a cut-out option which can be wired to disable the emitter automatically when the vehicle is in park or neutral.
- 6. Optical emitters shall be software-programmable to emit individual vehicle identification codes when desired by the user.
- B. Optical Detector (Approved optical detectors: Tomar Model 2090-SD or 2091-SD):
 - 1. Optical detectors shall be manufactured from black glass-filled UV stabilized polycarbonate suitable for all weather use. The detector shall be sealed and weatherproof.
 - 2. Optical detectors shall sense and transform optical energy from optical emitters into electrical signals to be decoded by the optical signal processor.
 - 3. The optical detector shall sense optical emitter signals over an adjustable range of 300' (90 m) to 2,500' (762 m) in optimum atmospheric conditions.
 - 4. Optical detectors shall transmit electrical signals to the optical signal processor via up to 1,000' (_____ m) of optical detector cable.
 - 5. Optical detectors shall have an internal terminal strip with wiring label for convenient positive connection to the detector cable.
 - 6. Optical detectors shall have a nominal conical 13° field of view centered about the view-port normal axis. The optical detector shall be capable of operating with a standard length or optional short scope when a greater than 13° field of view is desired.
 - 7. Optical detectors shall operate over a range of 12 to 30 VDC and current of up to 50 ma maximum.
 - 8. Acceptable configurations for optical detectors shall be of one-channel/onedirection only with a ½" FNPT mounting connection. Hardware shall be available from the manufacturer to allow mounting the optical detector to mast arm, pan wire and various other possible intersection mounting configurations.
- C. Optical Detector Cable:
 - General Three conductor-shielded control cables with foil shield overall and ground wire. Meets the requirements of IPCEA-S-61-402/NEMA WC5, Section 7.4, 600-Volt Control Cable, rated for 75°C, Type B, and the following:

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- a. Conductors
 - Quantity 3
 - Gauge AWG #20 (7 x 28) stranding
 - Conductor Material Individually tinned copper strands
 - Insulation PVC, 80C, 600V, 25 mil minimum average thickness
 - Color 1 Blue, 1 Orange and 1 Yellow
- b. Shield
 - Aluminized polyester film or approved equal applied with a nominal 20% overlap to provide 100% shield coverage
- c. Drain Wire
 - Gauge AWG #20 (7 x 28) stranding
 - Material Individually tinned copper strands
 - Non-insulated and in contact with the shield conductive surface
- d. Electrical Characteristics
 - Drain and conductor DC resistance shall not exceed 11.0 ohms per 1,000'
 - Capacitance from one conductor to the other two conductors and shield shall not exceed 48 pf/ft at 1,000Hz
 - e. Jacket
 - Minimum average wall thickness 0.45"
 - Temperature rating 80°C
 - Voltage rating 600V
 - Material black PVC
 - Nominal O.D. over jacket .35" maximum
- 2. The optical detector cable shall be of durable construction to allow the following types of installations:
 - a. Direct-burial

- b. Conduit and mast arm pull
- c. Exposed (overhead, as with span wire)
- D. Optical Signal Processor (Approved manufacturers are: Tomar Model 2080-MXSPM)
 - Optical signal processors shall be installed in the traffic controller cabinet to decode the electrical signals from optical detectors. The optical signal processor shall interface directly with California/New York Type 170/179 and newer 2070 series controllers with compatible software and NEMA TS-1 and TS-2 with suitable system interface equipment and software.
 - Optical signal processors shall be powered from 120VAC (95VAC to 135VAC), 60Hz mains and have an on-board regulated power supply which supports up to 10 optical detectors.
 - 3. Optical signal processors front panel shall have the following features:
 - a. A power on-off switch with corresponding LED indicator.
 - b. LED indicator for emergency and transit priority reception status for each available channel
 - c. Test switches for activating internal diagnostics.
 - d. A range arm switch for enabling the setting of detection range. Any number of channels shall be able to be armed simultaneously for range set.
 - e. enable/disable switches for each available channel shall disconnect the optical signal processor from the Traffic Controller during test, set-up and range set operations.
 - 4. Optical Signal Processors shall be plug-and-play and modular by design.
 - 5. Optical Signal Processors' motherboards shall be plug-and-play expandable from one-, two-, three-, and four-channel configurations.
 - 6. Optical Signal Processors shall be plug-and-play upgradeable to full Vehicle ID and Software Communications capability on user demand.

479.3 Environmental

- A. All equipment supplied as part of the optical preemption traffic control system intended for use in the controller cabinet shall meet the electrical and environmental specifications spelled out in the NEMA Standards Publications TSI-1983 Part 2 where applicable:
 - 1. Line voltage variations per NEMA TS1-2.1.2
 - 2. Primary power interruptions per NEMA TS1-2.1.04.A.1

- 3. Power Source frequency per NEMA TS1-2.1.2
- 4. Power Source noise transients per NEMA TS1-2.16.1
- 5. Power Source high-energy transients per NEMA TS1-2.1.6.2
- 6. Non-destructive transient immunity per NEMA TS1-2.1.8
- 7. Input-output noise immunity per NEMA TS1-2.1.7
- 8. Temperature range per NEMA TS1-2.1.5.1
- 9. Humidity per NEMA TS1-2.1.5.2
- 10. Shock test per NEMA TS1-2.1.13
- 11. Vibration per NEMA TS1-2.1.12

479.4 Measurement:

The emergency preemption units will be measured each in place.

479.5 Payment:

The accepted quantities of Emergency Preemption Unit, measured as provided above, will be paid for at the contract unit price, COMPLETE IN PLACE.

EMERGENCY PRE-EMPTION DETECTION

EACH

SECTION 505 – CONCRETE STRUCTURES

505.12 Payment:

Delete the first paragraph and replace with the following:

Payment for Concrete Structures shall be made per the price bid per the bid schedule.

SECTION 515 – STEEL STRUCTURES, WAYFINDING ELEMENTS

515.1 DESCRIPTION, add the following:

The work under this section shall consist of furnishing all labor, materials, equipment, tools, insurance, permits, services, and licenses necessary to complete the work as indicated by the wayfinding and signage plans and contract documents. However, the scope of the contract shall include all work necessary to achieve the proper execution and completion of this project, which is clearly and reasonably inferable from these documents.

FABRICATOR RESPONSIBILITIES

(A) The fabricator shall supervise, direct and be solely responsible for the work, using his best skill and attention to detail.
(B) The fabricator shall confine operations at the site to areas permitted by law, ordinances, permits, and the contract documents, and shall not unreasonably encumber the site with any materials or equipment.

(C) The contractor shall perform all work in a professional manner and in accordance with the requirements of the contract documents. including the furnishing of all materials, services, implements; machinery, equipment. tools, supplies, transportation, labor, and all other items necessary for the satisfactory prosecution and completion of the project in full compliance with the requirements of the contract documents.

(D) The fabricator shall not be relieved from his obligation to perform the work in accordance with the contract documents whether by the contract, or by inspections, tests, or approvals, required or performed by persons other than the fabricator.

(E) Fabricator shall coordinate with other trades to assure proper and adequate provision in work of those trades for interface with the work of this specification. Fabricator shall also coordinate schedules for installation of the work of this specification with schedules for other installations, to provide orderly progress of the total construction sequence.

(F) Upon completion of the project, the fabricator shall promptly remove all implements, surplus property and debris from the project site.

(G) Fabricator is responsible for errors and omissions in submittals or deviations from Contract Documents and is not relieved by Designer's review of submittals.

(H) Notify Designer in writing of deviations from requirements of Contract Documents at time submittals are made.

(I) A "deviation" shall be construed to mean a minor change to the sequence indicated on Drawings or specified.

- (J) A "deviation" is not intended to allow substitutions or product options.
- (k) In addition to notifying Designer in writing of deviations, circle deviations on shop drawings.

All ideas, designs and configurations represented by these drawings are the sole property of the listed designer and were created for the one time use. None of the ideas, designs or configurations may be used for any other purpose, including the creation of merchandising items, without the written permission of said designer nor may the materials or ideas contained herein be disclosed to any other individual, firm or corporation without written permission from such.

The designer shall have the right to request a credit line on any design or any visual representations such as drawings, models or photographs used for the contractor's internal promotional purposes. The credit shall also be included in any publication of the design.

Types of signs and graphics are indicated on the drawings and require various materials, various finishes, and various fabrication and installation techniques.

It is the responsibility of the fabricator / installer to transport, deliver, handle, and store finished elements and related materials at the job site in such manner as to prevent damage, including

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damage to finishes and damage which might result from the intrusions of foreign matter or moisture from any source.

Maintain packaged materials in manufacturer's original container with seals unbroken and labels intact until they are incorporated into the Work. Packages showing indications of damage that may affect conditions of content are not acceptable

515.1.1 SHOP DRAWINGS, add the following:

515.1.1 SHOP DRAWINGS AND SAMPLES

(A) Description: Original scaled drawings prepared by fabricator, subcontractor, supplier, or distributor, which illustrates the work, including, but not necessarily limited to fabrication, layout, erection and attachment details.

(B) Accompany submittals with transmittal letter containing:

- 1. Date both original submittal and any revision dates.
- 2. Project title and number.
- 3. Fabricator's name and address.
- 4. Description of data contained in submittals.
- 5. Listing of any letters containing description of deviations from Contract Documents.
- 6. Other pertinent data necessary for a comprehensive review of the submittal.

(C) Cross reference shop drawings to contract Drawings and Specifications and detail all work included. Indicate dimensions, materials, fastening, anchorage, joining methods, sealing, backing, utility requirements, rough-in, and adjacent related conditions.

(D) Submit for approval, shop drawings for all drawing items including:

- 1. Complete fabrication and installation drawings for each element type.
- 2. Full size pattern layout of each graphic element, if requested.
- 3. Placement, letter spacing, size, spelling, typestyle, legibility and other information, which describes the layout.
- 4. All letter styles, faithfully reproduced.
- 5. Structural calculation, when required and as specified by contract documents, or local and state requirements.
- Details for load bearing structural elements necessary for element support and assembly. A structural engineer registered in the state where the project is located shall seal structural design by the fabricator.
- 7. Submittals require a 7 working day review time from the time designer receives files and returns them to the distributing party. Fabricator will make no claims that work is being

delayed unless prior written arrangement and agreement between all parties has been made for a shorter review time.

(E) SUBMITTAL REVIEW

All shop drawings will be reviewed and approved for conformance with the design intent of these drawings. Do not begin work that requires submittals until submittals have been returned with approval stamp and initials or signature indicating review and approval. The fabricator will be responsible for any results of fabrication from unapproved working drawings, material selection, shop drawings or any other agreements.

(F) PRODUCT OR CATALOG DATA

- 1. Submit only pertinent pages or manufacturer's standard drawings modified to delete non-applicable data.
- 2. Manufacturer's catalog sheets, brochures, diagrams, schedules, charts, illustrations, test results, and other standard descriptive data.
- 3. Mark-up each copy to identify pertinent materials, products, or models.
- 4. Clearly mark-up each copy of the submittal data to identify the Section, page number, and Article of the Specifications to which it is references.
- 5. Show dimensions and clearances required.

(G) SAMPLES

As part of the shop drawing submittal, include physical samples to illustrate materials, equipment or workmanship, and to establish standards by which completed work will be judged as follows:

- 1. Submit (3) samples of size, configuration and quantity as outlined in the drawings:
- 2. Each type of exposed metal used for major elements of work with respective finish.
- 3. Each type adhesive vinyl film, cut from sample graphic indicated.
- 4. Each specified paint colors on intended substrate.
- 5. Any additional samples as outlined in the drawings.
- 6. All samples to allow sufficient area for stamp approval.
- (H) GRAPHIC CONTENT / TYPOGRAPHY
 - 1. All typefaces and fonts have been identified within the drawing package.
 - 2. All type shall be straight and accurately spaced with square corners, uniform curves, correct spelling and punctuation, and all finishes smooth with no visible imperfections.
 - 3. Typeface or style not described in the drawing package may not be used. Modifications to the typefaces, such as condensing, expanding or compressing are not acceptable, unless specifically outlined in the Drawings.

(J) ADA ACCESSIBILITY GUIDELINES

1. All elements must comply with current ADA Accessibility Guidelines where applicable, including, but not limited to: lettering and graphics, protruding objects. Should conflicts or questions arise, notify the designer before proceeding.

Add the following:

Section 515.1.4 Design Criteria

(A) Structural design: Details on Drawings indicate a design approach for structures but do not necessarily include all fabricating details required for the complete structural integrity of the elements, including consideration for static, dynamic and erection loads during handling, erecting, and service at the installed locations, nor do they necessarily consider the preferred shop practices of individual fabricators. It shall, therefore, be the responsibility of the fabricator to perform the complete structural design of the outlined elements and to incorporate all the reasonable safety factors necessary to protect the Designer and fabricator against public liability. Design must meet all applicable local, State, and national codes, as well as testing laboratory listings where required.

1a. Include foundations when a part of the described work.

1b. Submit calculations, signed and sealed by a registered professional engineer for review.

1c. When required because of size or weight of element, provide lifting eyes as an integral part of design. Lifting eyes shall be inconspicuous in the finished work as approved by Designer.

Add the following:

Section 515.1.5 Reference Specifications and Standards

(A) Reference Specifications and Standards: Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:

- 1. ACI: 347 Recommended Practice for Concrete work.
- 2. ANSI: B18.22.1 Plain Washers.
- 3. ASTM: A53 Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
- 4. ASTM: A153 Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- 5. ASTM: A167 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- 6. ASTM: A269 Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- 7. ASTM: A307 Carbon Steel Externally and Internally Threaded Standard Fasteners.
- 8. ASTM: A3 12 Seamless and Welded Austenitic Stainless Steel Pipe.
- 9. ASTM: A366 Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- 10. ASTM: A525 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, General Requirements.
- 11. ASTM: A526 Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
- 12. ASTM: B32 Solder Metal.
- 13. ASTM: B137 Measurement of Weight of Coating on Anodically Coated Aluminum.
- 14. ASTM: B209 Aluminum-Alloy Sheet and Plate.
- 15. ASTM: C523 Test for Specular Gloss.

- 16. ASTM: E84 Surface Burning Characteristics of Building Materials.
- 17. ASTM: F468 Non-Ferrous Bolts, Hex Cap Screws, and Studs for General Use..
- 18. AWS: DI .1 Structural Welding Code Steel.
- 19. 19. CRSI: Concrete Reinforcing Steel Institute Manual of Standard Practice.
- 20. NAAMM: Metal Finishes Manual.
- 21. SMACNA: Architectural Sheet Metal Manual.
- 22. WWPA: Grading Rules.

515.2.1 MISCELLANEOUS METAL FABRICATION, add the following:

A. General: For fabrication of exposed metal work, use only materials which are smooth and free of surface blemishes including pitting, roughness, seam marks, roller marks, and trade names. Do not use materials with stains and discoloration. Provide sheet stock from a mill that has been stretcher leveled to highest standard of flatness commercially available.

B. Sheet aluminum: 5000 Series for anodized finish, and Alloy 3000 Series for painted finish. Provide with mil finish for work that will receive a painted finish.

1. Not less than the strength and durability properties specified in ASTM B-109.

C. Extruded aluminum: Alloy 6063-T5. Provided mill finish for work that will receive a painted finish.

1. Not less than the strength and durability properties specified in ASTM B-221.

D. Aluminum in contact with steel other than non-magnetic stainless steel, shall have adequate protection to eliminate any possibility of electrolysis. Isolate aluminum surfaces in contact with steel, masonry, concrete or plaster with even coat of alkali resistant asphaltum base paint.

E. Metal thickness: Provide metal thickness indicated on Drawings. When metal thickness is not indicated on Drawings, provide thickness most appropriate for the fabrication condition to prevent warping or distortion.

- 1. For sheet steel not indicated, use not less than 20 gauge.
- 2. For non-ferrous metal not indicated, use not less than 0.063" thickness.
- F. Stainless steel: Type 302 or 304, ASTM A167.
 - 1. Matte finish: Provide exposed surfaces not otherwise indicated with No. 4 grind finish.
 - 2. Unexposed surfaces may be mill finish.
- G. Corten Steel
 - 1. ASTM A242(1), MIL-S-12505A and SAE J410.

515.3 WORKMANSHIP, add the following:

515.3.1 FABRICATION / GENERAL CONSTRUCTION

(A) INTENT OF SPECIFICATIONS

It is intended that all finished work be of the highest quality to pass eye-level examination and scrutiny by the designer and owner.

- 1. Construct all work to eliminate burrs, dents, cutting edges, and sharp corners.
- Finish welds on exposed surfaces shall be of the correct type to eliminate distortions of flat surfaces, and to be imperceptible in the finished work. At exposed connections, all flux, oxides, slag, and discolorations shall be removed so that these areas match the finish of adjacent areas. Any damage by welding must be repaired by grinding, polishing or buffing.
- 3. Except as indicated or directed otherwise, finish all surfaces smooth.
- 4. Surfaces that are intended to be flat, shall be so without dents, bulges, oil canning, gaps, or other physical deformities.
- 5. Surfaces that are intended to be curved shall be smooth and free-flowing to required shapes.
- 6. Make access panels tight-fitting, lightproof, and flush with adjacent surfaces.
- 7. Carefully follow manufacturer's recommended fabricating procedures regarding expansion and contraction, fastening, and restraining of acrylic plastic.
- 8. Exercise care to assure that polished, plated, or finished surfaces are unblemished in the finished work.
- 9. Isolate dissimilar materials. Exercise particular care to isolate nonferrous metals from ferrous metals.

(B) INSTALLATION

Field verify the exact location with the Designer for all elements. Prior to installation, fabricator must examine areas, surfaces and conditions under which work is to be installed. Fabricator shall inspect installation locations for conditions that would adversely affect execution, permanence and quality of work and shall not proceed with installation until unsatisfactory conditions have been corrected. Notify the designer in writing of these conditions.

- 1. Installation work shall be under the direct supervision of a journeyman sign erector.
- 2. Except as may be indicated otherwise on the drawings, install prefabricated work plumb, level, square, and true to line.
- 3. Securely anchor work in proper location using anchors, fasteners, or other methods approved on shop drawings. All anchors/fasteners shall be appropriate for the anchorage condition and be of non-corrosive type.
- 4. Surfaces under adhesive-applied elements shall be smooth, clean, and free of dust, oil, fingerprints, or other foreign matter. All adhesives required shall be used in accordance with the manufacturer's specifications. The element shall be permanently installed and

not removable unless indicated on the drawings. No adhesives that will fade, discolor or delaminate as a result of ultra violet light or heat shall be used.

(C) Tradeswork: It is intended that the workmanship be of the highest quality obtainable by the respective trades and crafts experienced in the fabrication of the outlined work, and that all work be done by journeymen, or by tradesmen under the direct supervision of journeymen.

1. "Journeymen" shall be interpreted to mean those craftsmen who have the qualifications and experience to meet the requirements described in the Job Classification and Descriptions for the Electric Sign Industry, as developed by the NESA/TRI-TRADES COMMITTEE.

(D) Artisans: It is intended that work of an artistic or specialized nature such as gilding, artistic carving and engraving, artistic painting, when included as part of Contract, be executed by artisans with experience, credentials, and reputation to satisfy the demands of the Designer.

515.3.2 ELECTRICAL

(A) Power Requirements: Make final connections of illuminated signage from junction boxes located adjacent to or within signage as outlined in the drawings. Materials for electrical work shall be in accordance with the requirements of the National Electrical Code, and local codes. Fabricator to provide electrical power requirements to architect or designer for coordination.

(B) Conduit: In accordance with National Electric Code requirements and as follows: Conduit shall be galvanized rigid conduit for entire installation except as noted or shown. PVC Schedule 40 may be used for direct burial where installation is a minimum of 24" below grade.

- (C) LED Lighting:
 - 1. Submittals: Submit Shop Drawings which clearly indicate type, color, quantity, etc. of all equipment to be used.
 - a. Product Data: Provide name of manufacturer, brand name, and catalog number of each item. Listing items "as specified" without both make and model or type designation is not acceptable.
 - b. Descriptive Data: Submit copies of complete description, information, and performance data covering materials and equipment which are specified but for which catalog numbers, brand names, or specific models have not been used.
 - c. Quality Assurance: Comply with UL (listed and labeled), NEMA, NFPA 70 (NEC), IES and applicable codes, rules and regulations, including all building and safety laws or regulations relating to building, public health and safety.
 - 2. Furnish with proper junction boxes, hangers, hardware, supports, plugs as required for application. Furnish complete with lighting elements of proper size, type, manufacturer, color, and voltage. Fixtures shall be furnished with wire and conduit.
 - 3. Installation: Install in accordance with manufacturer's written instruction and approved shop drawings.

515.3.3 CONCRETE

1. MATERIALS

- A. Portland Cement: ASTM C150, Type I. Use only one brand of cement from one mill throughout the work, unless otherwise approved by the COTR. The alkali content shall not exceed 0.6% unless the manufacturer certifies that no alkali reactivity is produced with the proposed combination of materials when tested in accordance with ASTM C227.
- B. Admixtures: Use only with the prior written approval of the COTR. Admixtures submitted for COTR's review shall be certified in writing by the manufacturer to be in compliance with ASTM C494. Do not use any admixtures that contain chlorides.
- C. Water: Conform to ACI 301, Chapter 2, Paragraph 2.3.
- D. Fine Aggregate: ASTM C33.
- E. Aggregate for Lightweight Concrete Fill: Rotary kiln produced expanded shale, slate, clay or slag conforming to ASTM C330.
- F. Concrete Mixes: Proportioning of Concrete
 - 1. Assume full responsibility for the strength, consistency, water/cement ratio, and handling of concrete. Design mixes in accordance with ACI 211.1 or ACI 211.2.
 - 2. Use the minimum amount of water necessary to produce a mix that can be worked readily into corners and around reinforcement without permitting segregation of materials, air pockets or free water to collect on surfaces. The maximum water-cement ratio shall be in accordance with ACI 301, Chapter 3, Paragraph 3.8, Method 1 or Method 2.
 - 3. Adjust the consistency of any mix to allow for specific placing conditions.
 - 4. Measure materials for concrete by weighing. Separately weigh each size of aggregate and the cement; each shall be accurate within 1%. Cement in sacks of ninety-four pounds need not be weighed, but weigh bulk cement and fractional packages. Measure mixing water by volume.
 - 5. Prepare design mixes, prior to the beginning of the work, in accordance with ACI 301, Chapter 3, Paragraph 3.8, Method 1 or Method 2, and Paragraph 3.8.3.
 - 6. Mix Properties: Provide concrete mix with the following minimum properties: Compressive Strength: 3000 PSI at 28 days.
- G. Concrete Coordination
 - 1. Fabricator shall provide information regarding element attachment to coordinate with concrete bases and/or areas built by others

2. EXECUTION

- A. Examination: Examine the existing substrates, adjoining construction and conditions under which the Work is to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected.
- B. Formwork: Provide formwork to retain cement floor fill in locations where fill does not terminate at vertical wall and other support surfaces. Construct flatwork to provide concrete floor fill that is level.

- C. Substrate bonding: Clean existing substrate of all deleterious materials, prepare substrates to receive floor fill and apply surface bonding materials in accordance with the bonding agent manufacturer's written requirements.
- D. Reinforcement: Install reinforcement uniformly in all concrete. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Mixing Concrete: Ready Mixed Concrete: Comply with ASTM C94. Discharge the concrete completely at the site within 1-1/2 hours after the introduction of the cement to the aggregates. In hot weather reduce this time limit so that no stiffening of the concrete shall occur until after it has been placed. Begin the mixing operation within thirty minutes after the cement has been intermingled with the aggregates.
 - 1. Batch Mixing at Site: Comply with ACI 301, Chapter 7, Paragraph 7.2. Excessive mixing requiring the addition of water to preserve the required consistency will not be permitted. Mix concrete to a consistency which can be readily placed without segregation. Where admixtures are accepted by the COTR, equip mixers with a device for measuring and dispensing the admixture.
 - 2. Lightweight Concrete: Mix lightweight concrete in accordance with the directions of the approved lightweight aggregate manufacturer and so as to obtain the specified compressive strength for each use.
 - 3. Retempering: Comply with ACI 301, Chapter 7, Paragraph 7.5. Retempering water may be added only under the supervision and approval of the Authority's Testing Agency.
- F. Joints and Embedded Items: Construction Joints: Comply with ACI 301, Chapter 6, Paragraph 6.1.
 - Embedded Items: Comply with ACI 301, Chapter 6, Paragraphs 6.4 and 6.5. Accurately set anchorage devices by line and transit, and coordinate the locating of all anchorage devices to be set for the accommodation of the work of other trades. Locate anchor bolts as shown on the Drawings and on shop drawings. Obtain necessary templates as required for the proper setting of anchor bolts and other items for mechanical equipment, as required. Assist other trades in the installation of items are to be installed in concrete.
- G. Finishing: General Requirements for Flatwork: Strike-off top surfaces of all flatwork true and level. Use construction techniques such as adjustment of pour size, adjustable screeds, and other appropriate means to ensure compliance with these requirements. Monitor and survey pour areas prior to, during and after placement operations. Where final survey indicates non-compliance with flatness tolerances, provide corrective work to satisfy tolerance and finish requirements of the Contract Documents.

515.5 PAINTING To the first paragraph, modify the first sentence to read.

With the exception of items that are to be galvanized and elements contained in the W-series of the drawings, structural steel members and miscellaneous metal items shall have a shop prime coat of approved rust-inhibitive paint. Application shall be as specified in Section 530. The thickness of the prime coat shall be not less than one mill.

Add the following section:515.5.1 FINISHING

- A. Definitions:
 - 1. The term "paint" implies that each finish is comprised of materials and quantities recommended by the approved materials manufacturer for the surface to be finished, and includes preparation, priming/sealing, and intermediate and finish coats as applicable.
- B. Provide a Low VOC aliphatic polyurethane enamel with ultraviolet inhibitors, lightfast, weather, abrasion and wear resistant additives as supplied by:
 - a. M.A.P. Acrylic Polyurethane, Matthews Paint Co, Kenosha WI. (1-800-323-6593)
 - 1. Exact identification number to be noted on shop drawing.
 - 2. All paint finishes to be satin; not gloss, high gloss or matte, unless otherwise noted.
 - 3. All exterior painted surfaces shall be finished with a satin UV clearcoat, unless otherwise noted.
- C. Application and finish: Coatings shall be spray-applied by an applicator having facilities, equipment and experience required to apply the finish to the manufacturers specifications. All substrates shall be cleaned of any foreign substance such as oil, grease, dirt, etc. Typical finish shall consist of:
 - 1. An acid-wash prime coat shall be applied per manufacturer's specifications when using raw metal as a substrate.
 - 2. Primer / filler seal coat, properly applied to all substrates per manufacturer's specifications including dry film thickness.
 - 3. Primer / filler coat shall be sanded smooth before topcoating and coated with a minimum of two applications of acrylic polyurethane in colors indicated on the design drawings. Top coating shall be applied per manufacturer's recommendations to a minimum total dry film thickness of 2.0 mil.
 - 4. Satin finish unless otherwise noted in drawings.
- D. Coating Performance Criteria: (In addition to above)
 - 1. Dry film thickness: Within minus 5% to plus 25% of the specified thickness.
 - 2. Abrasion resistance: ASTM D968. Coefficient of abrasion; 65 minimum.
 - 3. Pencil hardness: 2H minimum.
 - 4. Salt spray: ASTM B-117 withstanding 3500 hours, 100% salt fog at 95 degrees F and retain adhesion, corrosion resistance, color and gloss with no more than minimal blisters to larger than No. 8 (ASTM D-714), and no more than 1/16"creepage or loss of adhesion from scribed line.
 - 5. Humidity test: ASTM D-2247 withstand 3500 hours 100% relative humidity at 95 to 100 degrees F and retain adhesion, corrosion resistance, color and gloss with no more than "minimal blisters to larger

that No. 8 (ASTM D-714), and no more than 1/16" creepage or loss of adhesion from scribed line.

- 6. Gloss: ATSM D523, +/- 5%, using a 60 degree glossmeter, of the gloss level selected by the designer.
- 7. Adhesion: No removal of any finish after 1/16" cross-hatching to base metal, impacting to the point of metal rupture, and subjecting to application and quick of cellophane tape.
- E. Surfaces under painted finish shall be smooth, clean, and free of dust, oil, silicones, fingerprints, or other foreign matter. Digital artwork to be accurately reproduced with all edges straight and true and all finishes smooth and with no visible imperfections.
- F. Pigmented (Opaque) finishes: Completely cover to provide an opaque, smooth surface of uniform color, appearance, and cover. Cloudiness, spotting, holidays, laps, brush marks, orange peel, runs sags, or other surface imperfections will not be acceptable.
- G. Provide clear topcoat over all painted surfaces: Matthews #42-228 Satin finish.
- H. Protect finishes on exposed surfaces from damage by application of strippable temporary protective covering prior to shipment.
- I. All painted or screen-printing shall be free of oxidation, cracking, chipping, or any defect. Fabricator shall be required to touch-up or otherwise repair any damage to painted surfaces to the satisfaction of the designer or owner.
- J. Corrosion Protection: Coat concealed surfaces which will be in contact with concrete, stone, masonry, wood, or dissimilar metals, in exterior work, with a heavy or double coat of bituminous paint.
- K. Touch Up
 - 1. Required touch-up to be done with a spray mechanism. Brushed touch-up will not be allowed. Precautions for preventing overspray to other surfaces are to be employed.
 - 2. Touch-up paint: Provide owner with one 1/2 pint can of touch-up paint in the same format used for the above and of each type and color used in the work.

Add the following section 515.8 MATERIALS

515.8.1 METALS

- A. For fabrication of exposed metal work, use only materials that are smooth and free of surface blemishes including pitting, roughness, seam marks, roller marks, and trade names. Do not use materials with stains and discoloration. Provide sheet stock from a mill that has been stretcher leveled to highest standard of flatness commercially available.
- B. Sheet aluminum: Alloy 3000 Series for painted finish. Provide with mil finish for work that will receive a painted finish.
 - 1. Not less than the strength and durability properties specified in ASTM B-109.

- C. Extruded aluminum: Alloy 6063-T5. Provided mill finish for work that will receive a painted finish.
 - 1. Not less than the strength and durability properties specified in ASTM B-221.
- D. Aluminum in contact with steel other than non-magnetic stainless steel, shall have adequate protection to eliminate any possibility of electrolysis. Isolate aluminum surfaces in contact with steel, masonry, concrete or plaster with even coat of alkali resistant asphaltum base paint.
- E. Metal thickness: Provide metal thickness indicated on Drawings. When metal thickness is not indicated on Drawings, provide thickness most appropriate for the fabrication condition to prevent warping or distortion.
 - 1. For sheet steel not indicated, use not less than 20 gauge.
 - 2. For non-ferrous metal not indicated, use not less than 0.063" thickness.
- F. Stainless steel: Type 302 or 304, ASTM A167.
 - 1. Matte finish: Provide exposed surfaces not otherwise indicated with No. 4 grind finish.
 - 2. Unexposed surfaces may be mill finish.
- G. Corten Steel
 - 1. ASTM A242(1), MIL-S-12505A and SAE J410.

SECTION 601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION

601.2.5 OVER-EXCAVATION:

Section 601.2.5 of the MAG Standard Specifications, ADD the following after the fourth paragraph:

The unmodified section of MAG applies to all instances of trenching except for the Over Excavation of the north storm drain alignment.

601.4.1 FOUNDATION:

Section 601.4.1 of the MAG Standard Specifications, ADD the following:

Over excavation of trench is required for soil remediation purposes along the northern segment of the storm drain alignment. Over excavation will be considered depth of trench from storm drain **Foundation** to ultimate bottom of trench. Contractor shall coordinate with ATC Group representatives to determine ultimate depth of trench. It can be anticipated that trench will be over excavated to 3'-5' below pipe foundation depth.

If in-situ material is deemed contaminated by an ATC Group field inspector, Contractor shall spoil material in designated treatment containers, furnished by ATC Group, that are stored either onsite or offsite. Contractor shall coordinate with ATC Group and City of Page, the timing and sequencing of loading treatment containers. ATC Group is responsible for hauling, storing, and transporting treatment containers.

Upon desired depth of excavation, the Contractor shall coordinate with ATC Group field technicians on schedule and installation of remediation material. After installation of remediation material is complete, the Contractor shall import aggregate base course for backfill material to replace contaminated material and or over excavated material. Over Excavation depth shall be backfilled and compacted in accordance with Section 601.4.5 Bedding and Section 601.4.6 Compaction Densities.

601.4.5 FINAL BACKFILL

Section 601.4.5 of the MAG Standard Specifications, ADD the following:

No extra monetary compensation or additional time will be authorized for claims that soil conditions differ from those anticipated or those indicated by monitoring well data. It is the Contractor's responsibility to make their own determination as to actual existing conditions above the trench **Foundation**.

601.6: MEASUREMENT:

Section 601.5 of the MAG Standard Specifications is modified to ADD the following:

Over Excavation of storm drain trench shall be measured separately from the construction of the storm drain. Over excavation is defined as the depth from pipe foundation depth to the designated depth determined by ATC Group representatives. Over excavation shall be measured per cubic yard (CY) of material excavated.

601.7 PAYMENT:

Section 601.7 of the MAG Standard Specifications is modified to ADD the following:

Payment for **Over Excavation** will be made at the contract unit price per cubic yard, and shall constitute full compensation for furnishing all material, labor, tool, and equipment and includes spoiling, storing, and transporting contaminated material, importing, placing, and compacting remediation chemical, and importing, placing, and compacting aggregate base course.

SECTION 618 STORM DRAIN CONSTRUCTION

618.2 MATERIALS:

Section 618.2 of the MAG Standard Specifications, REMOVE the first paragraph and list of approved pipe materials and add the following:

Pipe used for storm drain construction, including specials, joints, and gaskets, shall be according to the following Sections, or as modified by special provisions

- Rubber Gasket Reinforced Concrete Pipe (RGRCP), see Section 735. For permitted construction reinforced concrete pipe strength shall be equal to or higher than Class III, A-III, HE-III, or VE-III.
- Steel Reinforced Polyethylene (SRPE) Pipe, see Section 739.
- High Performance Polypropylene Pipe (HP Storm or approved equal), see Section 740.

618.3.1 WATER STOPS:

Section 618.3.1 of the MAG Standard Specifications, ADD the following:

Water stops will be required when connecting High Performance Polypropylene Pipe (HP Storm or approved equal) to concrete structures, manholes, etc. The water stop shall conform to the requirements of ASTM C923.

618.6 PAYMENT:

Section 618.6 of the MAG Standard Specifications, ADD the following:

Payment for storm drain pipe shall include water stop gaskets, concrete pipe collars (MAG Standard Detail 505) and lateral pipe connections (MAG Standard Detail 524) as specified on the plans; no separate payment will be made for concrete pipe collars and lateral pipe connections.

Payment for storm drain pipe will be made at the contract unit price per linear foot, and shall constitute full compensation for furnishing all material, labor, tools and equipment and accomplishing all work associated with furnishing and installing the pipe complete in place as described in the special provisions and on the construction plans.

ADD SECTION 618.9 SLOTTED TRENCH DRAINS

618.9.1 DESCRIPTION:

Section 618.9 covers slotted trench drain construction used for capturing and conveying storm drainage in streets, easements, and alley right of way, under low hydrostatic heads.

618.9.2 MATERIALS & CONSTRUCTION:

Pipe used for slotted trench drain shall be in accordance with ADOT Spec 1010. Refer to plans for pipe size requirements. The Contractor can submit, to the Engineer, shop drawings of an equivalent product for review and approval. The equivalent product shall be furnished, handled, and installed per manufacturer requirements and specifications.

Slotted trench drains shall be constructed in accordance with ADOT Spec 501.

618.9.3 MEASUREMENT:

Slotted trench drain shall be measured per linear feet of pipe (LF) laid as measured along the pipe axis.

618.9.4 PAYMENT:

Payment for storm drain pipe shall include water stop gaskets, concrete pipe collars (MAG Standard Detail 505) and lateral pipe connections (MAG Standard Detail 524) as specified on the plans; no separate payment will be made for concrete pipe collars and lateral pipe connections.

Payment for storm drain pipe will be made at the contract unit price per linear foot, and shall constitute full compensation for furnishing all material, labor, tools and equipment and accomplishing all work associated with furnishing and installing the pipe complete in place as described in the special provisions and on the construction plans.

SECTION 630 TAPPING SLEEVES, VALVES AND VALVE BOXES ON WATER LINES

This section is modified to add:

630.2 GENERAL

All valves shall be Romac type valves or approved equal.

SECTION 631 - WATER METER AND METER SERVICE CONNECTIONS

Sprinkler Irrigation System Installation shall conform to Section 440 of the MAG Uniform Standard Specifications and the City of Page Specifications and details except as modified herein.

Replace Section 631 in its entirety with the following:

631.1 – Description:

The work under this item shall include furnishing and installing new water services with meters, connections, corporation stop, curb stop, appurtenant fittings, water meter box and cover, copper service pipe and pavement replacement (if required) at the locations shown on the project plans or as directed by the Engineer. The contractor shall perform all required operations to install the new water service, including coordination, inspections, permitting, account establishment, and any fees, with the City of Page. <u>Only authorized personnel of the City of Page Water Department shall make taps for service connections to any existing lines.</u>

631.2 – Materials:

All Materials shall conform to City of Page Water Meter and Water Service Standards unless otherwise specified on the plans or in these Special Provisions.

631.3 – Installations:

Water service construction shall conform to City of Page Standards and the Details as listed in the project plans.

The contractor shall coordinate the installation of the water service, including completing any applications and obtaining any necessary permits for the water service installations.

The accounts for the meters shall be established in the name of:

City of Page Streets Department

The contractor shall be responsible to secure from the City of Page all permits, pay all fees and deposits.

The City will waive all development and impact fees normally associated with the meter installation.

Once installed the City will pay for all water delivered.

631.4 Measurement and Payment:

The contractor shall be reimbursed for the exact amounts paid to the City of Page for each water service with meter installed. The contractor shall provide the City of Page the receipts for each meter installed. The contractor may include a nominal fee for the required coordination with the City.

ITEM 631-2 WATER SERVICE WITH METER – 1"

Payment for the items WATER SERVICE WITH METER $-1\frac{1}{2}$ " shall be made on the basis of the price bid per each. Price bid shall include all costs charged by the City of Page for the installation of the water service with meter including all labor, material, and equipment, and the contractor's coordination with the City necessary to install the water service with meter 1" in accordance with the plans and Technical Specifications.

SECTION 757 – SPRINKLER IRRIGATION SYSTEM

Sprinkler Irrigation System shall conform to Section 440, 757 of the MAG Uniform Standard Specifications, and City of Page Standard Specifications and Details except as modified herein.

757.1 General: <u>Add the following:</u> Product warrenty

Add the following:

757.2.6 Pipe Products:

Pressure mainline from point of connection (P.O.C.) through backflow prevention unit: Type K copper or brass.

Mainlines (pressurized) 2-inch and smaller downstream of backflow unit: Schedule 40 solventweld PVC pipe with Schedule 80 PVC fittings unless otherwise noted.

Lateral lines (pressurized) 3/4-inch through 2-1/2-inch: Schedule 40 solvent-weld PVC pipe with Schedule 40 PVC fittings unless otherwise noted.

Pipe Sleeves 3-inch and smaller: Schedule 40 solvent-weld PVC pipe.

Wire Sleeves 2-inch and smaller: Schedule 40 solvent-weld PVC gray conduit.

All pipe and fittings shall bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating P.S.I., NSF rating, and date of extrusion.

All PVC pipe and fittings shall conform to ASTM D1120, D1220, D1784, & D2855.

PVC piping shall be white in color with potable water source or purple in color when used with non-potable water. If purple pipe is not available, white pipe may be installed within the appropriate purple pipe sock marker.

All fittings: Injection molded of an approved P.V.C. fitting compound featuring high tensile strength, high chemical resistance, and high impact strength. Fittings shall conform to ASTM D-1784, and meet the requirements of cell classification 12454B. Slip fittings shall be nested. Where threads are required in plastic fittings, these shall be injection molded also, type Dura Plastic Products, Lasco, Spears or approved equal.

All threaded nipples: Standard weight Schedule 80, with molded threads.

All threaded fittings: Use 3/4-inch size Teflon tape.

Thrust Blocks: Thrust blocking shall be used on all irrigation mainlines 3-inch diameter and larger. Thrust blocks shall be minimum 1 cubic foot of 470-C-2000 concrete or per plan details. All fittings in contact with the thrust block shall be ductile iron. No PVC pipe fittings or mainline pipe shall be allowed to come into contact with the thrust block. A pipe restraint system shall be used in lieu of thrust blocks for all bell and gasket pipe.

J-hooks: All pipe installed on grade shall be secured to the ground surface using #4 by 18 inches rebar J-hooks. All J-hooks shall be painted with black epoxy paint prior to installation. J-hooks are to be installed a minimum of 8 feet on center and as indicated on the irrigation drawings.

757.3.3 Isolation Valves:

Add the following:

Ball Valve: 2-inch and smaller shall be of the brand, size and type indicated on the irrigation plans.

Ball valves for use with remote control valves shall be constructed of schedule 80 PVC, full port design and a minimum 150 psi rated.

Install valves in planting areas and according to the construction details. Only one valve per box will be allowed. Where several valve boxes are located in the same area, arrange them in a uniform and orderly fashion.

Type: Lasco, Spears, or approved equal.

757.3.4 Remote Drip Control Valves:

Add the following:

Remote Drip control valves shall be of the brand, size and type indicated on the irrigation plans.

The remote control valve shall be normally closed, electronically-actuated, diaphragm-operated, globe patterned, remote-control valve for operation of residential and commercial irrigation

systems with flow control and bleeder pin. Includes internal filter with self-cleaning metering rod and power solenoids.

Solenoids for solar powered controllers shall be DC latching type as manufactured by the same manufacturer as the solar powered controller. Latching solenoids shall be compatible with the approved remote control valves.

The body and bonnet shall be molded of non-corrodible, glass-reinforced nylon and the valve shall have a control / shut-off stem and manual operator.

Valve shall be serviceable through captive bolts held in the bonnet

The valve shall be pressure rated up to 200 P.S.I. at 150 degrees F with an operating flow range between .01 to 300 gpm. Valves shall include a solenoid plunger that shall be spring loaded so the valve may be operated when installed in any position and shall be constructed of stainless steel. Diaphragm assembly shall be molded construction, reinforced nylon fabric and thermoplastic elastomer seating material. Valve bonnet shall be equipped with a manual bleed mechanism for manual operation of the valve at any time. Valve bonnet shall be secured to the valve body by corrosion resistant stainless steel bolts.

The filter/regulator shall be a combination filter and pressure regulator assembly. The filter/regulator will be capable of operating between 20 - 120 PSI with a flow range of between 0.5 - 15 GPM. The downstream pressure shall be 25 or 40 PSI depending on the specified model.

The filter/regulator shall be available an in-line configuration. All filter/regulator models will have either ³/₄-inch or 1-inch Male National Pipe Thread (MNPT) inlets, depending on the specified model, and ³/₄-inch Female National Pipe Thread (FNPT) outlets.

The housing and regulator shall be molded of non-corrodible PVC, rated to 150 PSI. All internal portions of the assembly shall be of molded construction and shall have durable materials that are non-destructible in severe conditions.

The filter/regulator shall be equipped with a 150 mesh stainless steel filter, so only clean water can be discharged through the regulator. The filter assembly must have removable cap for easy service and cleaning.

The filter/regulator shall be standard with a non-adjustable pressure-regulating device that is factory calibrated for the correct outlet pressure. The regulator shall be capable of reducing the outlet pressure to 25 or 40 PSI depending on the specified model when the inlet pressure is 15 PSI or greater than the regulated outlet pressure. The regulated downstream pressure shall remain constant regardless of variations in upstream pressure.

The filter/regulator shall be rated for use up to 120 degrees F (49 degrees C).

Type: RCV: Hunter ICV valve, ICZ Drip Kit; or approved equal.

Refer to Low Voltage Control Wire section for wire splice specification.

All remote control valves shall have a schedule 80 full port type shut off valve installed as part of the valve assembly immediately upstream and downstream of the control valve.

All remote control valve to have an identification tag installed on the control wire of the solenoid prior to final wire splicing. Identification Tags to be manufactured from polyurethane Behr Desopan, incorporating an integral attachment neck and reinforced attachment hole and will be capable of withstanding 180 lbs. pull out resistance. The Identification Tag shall be approximately 3" x 4" in size and .0625" thick. All lettering is capable of withstanding outdoor usage. The standard alpha-numeric designations shall incorporate alpha-numeric lettering 1.125" in height. Special lettering, designations or stampings will be the maximum size available & either hot stamped or laser printed based on the manufacturers judgement. The tag color will be yellow.

Type: Christy's ID Tags; or approved equal

757.3.6 Valves Boxes:

Delete the section and Replace with the following

All valve boxes unless otherwise specified shall be constructed of rigid high density polyethylene (HDPE) resin, chemically inert plastic, and include UV inhibitors with 6-inch extensions available where required.

All valve boxes covers unless otherwise specified shall be bolt down plastic T-style covers secured with a 3/8-inch stainless steel bolt, washer and nut. Apply the appropriate identifying letters and/or numbers with a heat-brand.

Identification letters and numbers shall be 2 inches high and heat branded onto the box cover. Identification shall be as indicated on the detail drawings. Heat branding shall be accomplished using branding irons specifically designed for this purpose utilizing stencil number/letter outlines. Heat branding shall not weaken or in any way puncture the valve box cover.

All valve box bodies and covers unless otherwise specified shall be green in color when located in turf areas, or tan in color when located in granite/desert areas, or purple in color when directed within plans to use with reclaimed/non-potable water. Reclaimed water valve boxes shall have appropriate reclaimed water warnings embossed onto the cover in English and in Spanish, as well as the international "Do Not Drink" symbol.

Round valve boxes unless otherwise specified shall be 10-inch diameter x 10 inches high. If higher round box is required, either an 18" high box shall be used or a 6" extension may be used if available.

Round emitter boxes shall be approximately 6 inches diameter x 8 inches. Emitter boxes shall be used with multi-port emitter installations only.

Rectangular valve boxes unless otherwise specified shall be 12 inches wide x 20 inches long x 12 inches high. If higher rectangular box is required, either an 15" high box shall be used or a 6" extension may be used if available.

Valve boxes used for irrigation equipment shall be as follows:

a) 6-Inch diameter round emitter boxes shall be used for multi-port emitters only.

- b) 10-inch diameter round valve boxes shall be used for gate valves, quick coupler valves, drip system flush end caps, and wire splice boxes if required.
- c) 12-inch wide x 20-inch long rectangular valve boxes shall be used for ball valves and drip remote control valve assemblies.

Type: Carson, NDS; or approved equal

757.3.5 Quick Coupler Valves:

Add the following:

Quick coupler valves shall be of the brand, size and type indicated on the irrigation plans.

Type: Potable Water: Hunter #HQ-44 or approved equal.

Quick coupler valve shall be operated only with a special connecting device known as a quick coupler key and hose swivel designed for that purpose. Quick coupler key is inserted into the valve and a positive, watertight connection shall be made between coupler key and valve.

Quick coupler to me installed with a Swing Joint (Unitized, Factory-Assembled, Assembly Kit; 1", 1¼", 1½", inlet and outlet styles, lay length as applicable) shall be rated at 315 psi. maximum working pressure @ 73° F when tested in accordance with ASTM D3139, including internal hydrostatic pressure @ 787 psi. for 60 minutes and short-term pressure of 1008 psi. without leakage or failure. Their performance shall be warranted for five years to installers and owners of irrigation systems.

Swing Joints shall be molded of rigid polyvinyl chloride (PVC). Type 1, Cell classification 12454-B per ASTM specification D 1784, with NPT threads and pipe sockets per ASTM D 2464 and D2466, respectively. Each rotating joint shall be sealed with an 0-ring, installed pre-compressed in a sealing groove free of parting lines to prevent leakage. Modified stub ACME threads shall have special engineered (S.E.) diameters and clearances to allow full circle (360°) movement and to reduce stress concentrations and joint fracture at thread roots.

A #4 by 30 inches rebar stabilizing rod and two (2) stainless steel clamps shall be used to secure the quick coupler.

Locate all quick coupling valves within 12 to 18 inches of walks, curbs, header boards, or paved areas where applicable. Locate quick coupler valves outside shrub and ground cover areas whenever possible. Quick coupling valves shall be installed such that valve top will be 3 inches below the lid of the valve box.

757.4 BACKFLOW PREVENTER ASSEMBLY:

Add the following:

Backflow prevention unit shall be of the brand, size and type indicated on the irrigation plans.

Backflow prevention units shall be approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

Backflow prevention units shall be the reduced pressure principle (R/P) type.

a. Type: R/P: Febco 825Y, 825YA, 880 Master Series, Wilkins 975XLSE, 475.

Backflow assemblies ³/₄-inch through 2-¹/₂-inch shall be installed using copper ells, unions and nipples. Backflow assemblies 3-inch and larger shall utilize ductile iron pipe and fittings, including NRS gate valves and factory valve setters.

Backflow device shall be Security Cage-Hinged Unit sized to house the backflow, with lock shield brackets. The unit shall have a high-gloss smooth field 180 lb impact coating applied. Color is to be per plan or a color selected by the engineer. Contractor to submit color samples to the City for approval prior to painting. All bolts and hardware for the hinges and hasp shall be zinc plated and tamper proof.

757.5.3 Drip Emitter Device:

Remove section and replace with the following:

Multi-port emitter assembly shall be installed as shown in drawings and details

Multi-port emitters shall provide consistent, pressure-compensated flows directly to the root zone material. Each emitter has six ports of equal flows. Emitters come in four standard flow rates – 0.5, 1.0, 2.0, and 4.0 gallons per hour. Each emitter is color-coded to indicate flow: blue is 0.5 gph, black is 1.0 gph, red is 2.0 gph, and tan is 4.0 gph. External surfaces are constructed with UV-resistant PVC material. Each emitter port has its own diaphragm, made of molded silicone, allowing for greater consistency than one standard large diaphragm. Rubber MPE Caps may be used to cap off any unused ports. Operating pressure of 5-65 psi. Emitters shall work with a minimum filtration of 150 mesh.

Type: Hunter #MPE Series or approved equal.

Drip tubing shall be 1/4-inch size constructed of flexible vinyl material. Drip tubing shall be compatible with 1/4-inch barbed fittings and emitter outlets.

Type: Rain Bird, Salco or approved equal.

Drip Lateral End Cap Flush Assembly shall be installed as shown in drawings and details.

A maximum of two (2) Flush End caps can be installed within one (1) valve box.

757.6.3 Controller Unit:

<u>Remove section and replace with the following:</u>

Irrigation Controller shall be installed as shown in drawings and details.

The controller shall be a full-featured residential and light-commercial product for the purpose of irrigation management powered by batteries or solar energy.

The solar powered controller shall require no AC electrical power to function. The solar powered controller shall generate sustaining power using only ambient light without the use of external solar panels.

The controller shall operate on minimum light requirements and shall be able to function properly even in shady conditions.

The controller shall have buttons to select values, a dial to select functions, a hard-reset feature returning existing settings to factory conditions, a removable dead front to allow access to the wiring compartment, and a sensor switch to bypass or activate a wired sensor

The controller shall be powered by the following solar panel with an 800 mAh charging cell.

The controller shall be installed within a factory stainless steel enclosure with integrated solar panel.

The controller shall have a Metal Oxide Varistors (MOV) on the power input portion to help protect the micro-circuitry from power surges.

757.6.4 Irrigation Sensing Equipment:

Remove Section" B" and replace with the following:

The sensor shall be capable of interrupting the power from the irrigation controller to the valves when rainfall exceeds a pre-selected amount, or when ambient air temperature falls below 37 degrees Fahrenheit (3 degrees Centigrade).

The sensor shall be of a two-piece configuration with a transmitting unit and a receiving unit. The receiving unit shall be wired directly to the irrigation controller and mounted in close proximity to the controller. The transmitter unit may be mounted up to 1000 feet away from the receiver. The receiver unit shall also have a built-in bypass switch to allow for overriding of the sensor. The unit shall be available in a 315 MHz model (North America), and a 433 MHz model (Europe, Australia, and other markets) to meet local codes.

The rain sensor circuitry shall be housed in an UV and corrosion resistant plastic casing and shall utilize 2 sets of hygroscopic disks to activate switches in the unit. One switch will be for the total rainfall compensation unit and the other for the Quick Response unit. The Quick Response unit will turn off the irrigation system within 5 minutes of the onset of precipitation, depending on the intensity.

The sensor shall be adjustable by turning a plastic collar on the device that regulates an opening, thus varying the rate of evaporation from the disks.

The freeze sensor circuitry shall be housed in a UV and corrosion resistant plastic casing and the sensing element shall be encased in epoxy. The switch shall be rated at 24 VAC, 6 amps.

757.6.2 Conductors: Add the following: Sizing of wire shall be in accordance with irrigation drawings and manufacturer's recommendations; in no case shall the diameter of the wire be less than #14-size.

All wiring for remote control valve operation shall be direct burial single strand copper, 600 volt. Common wire shall be 14 awg, control wire shall be 14 awg.

Tape bundle wire at 20 foot centers, allowing for expansion at all changes in direction. An expansion curl shall be provided within three (3) feet of each wire connection and at all directional changes. Expansion curls shall be sufficient length at each splice connection at each electric control valve, so that in case of repair, the valve bonnet may be brought to the surface without disconnecting the control wires. Control wires shall be laid loosely in the trench without stress or stretching of control wire conductors. A two (2) foot expansion loop shall be located every 100 feet on continuous wire runs.

Use continuous wire between controller and remote control valves, unless the single run length exceeds 2500 feet. Under no circumstances shall splices exist without prior approval. Any splices allowed shall be installed in a pull box.

All control wires shall be red in color. When more than one controller is installed use a different color wire for each controller.

All common wires and only common wires shall be white in color. When more than one controller is installed use white colored wire with a different color stripe for each controller. Color of the stripe shall match the color of the control wire.

Extra wires shall be provided for each valve in an isolated area, and for each group of five valves. In the group of five valves, the extra wire shall be extended to the farthest valve in the group. All extra wires and only extra wires shall be green in color. The extra wires shall be looped up into each valve box, and made visible for easy future use.

All wire sleeves shall have a pull rope remaining. Mark each sleeve for future use with a score mark on the adjacent concrete curb.

757.6.5 Wire Connectors:

Add the following:

All splice connectors to valves, surge protectors and controller shall be as recommended by two wire system manufacturer.

Connections between the controller and remote control valves shall be made with direct burial AWG-UF type wire, installed in accordance with valve manufacturer's wire chart and specifications.

Wiring shall be installed adjacent to the mainline whenever possible and shall never be installed above or below the pipe.

Where more than one wire is placed in a trench, the wiring shall be taped together using black electrical tape at intervals of 10 feet.

All splices shall be made using sealed waterproof connectors. Waterproof connectors shall have a two or more pre–stripped copper wires and moisture seal the connection for direct burial.

Type: 3M DBRY-6 or approved equal.

Add the following to the standard MAG specifications:

SECTION 801 - ELECTRICAL

1.0 <u>GENERAL PROVISIONS:</u>

This section describes in general, requirements of the electrical and related items and work necessary for the complete job indicated by the contract documents. The general conditions are applicable to this section and shall form a part of the contract.

- 1.1 GENERAL LIST OF WORK
 - A. The work of this section and related work described in other sections is indicated on the drawings and included, but not necessarily limited to:
 - 1. Service Entrance Section including all circuit breakers, hand off automatic switches, time clocks, control relays, pushbuttons and lighting contactors necessary to complete the job in a workmanlike manner;
 - 2. All other electrical equipment and services needed to complete a usable and operable facility in accordance with all pertinent codes and regulations;
 - 3. Electric service, complete, to point of connection with the utility company's facilities;
 - 4. Main distribution panel with metering equipment and feeder switches or circuit breakers;
 - 5. Complete branch circuit wiring system for lighting and electrical;
 - 6. Lighting fixtures, poles, pole bases;
 - 7. Trenching and backfilling for underground electrical installation.

1.2 PERMITS

A. Secure and pay for all necessary permits and licenses, services and all inspection fees as required by the City.

1.3 QUALITY ASSURANCE

A. For the actual fabrication, installations, and testing of the work of this Section, use only thoroughly trained and experienced personnel who are completely

familiar with the requirements of this work and with the installation recommendations of the manufacturers of the specified items.

B. In acceptance or rejection of installed electrical system, no allowance will be made for lack of skill on the part of the installers.

1.4 CODES AND ORDINANCES

A. Install all work in accordance with the National Electrical Code and its latest revisions, with any City of Chandler requirements, and with all pertinent requirements and standard specifications.

1.5 CERTIFICATES

A. All work included shall comply with all State and Local rules and regulations. Furnish to the Owner all certificates of inspection and approvals as required.

1.6 EXAMINATION OF PREMISES

- A. Prior to submitting proposal, the bidder shall examine all general construction drawings and visit construction site to become familiar with existing conditions under which he will have to operate and which will in any way affect the work under this contract. No subsequent allowance will be made in this connection in behalf of the Contractor for any error or negligence on his part.
- B. Prior to ordering any materials or doing any work, verify dimensions at the site. Correctness of dimensions will be this Contractor's responsibility. No extra charge or compensation will be allowed for differences between actual dimensions and dimensions indicated on drawings. Immediately report differences to Engineer and do not proceed with work until Engineer renders his decision.

1.7 CONCRETE, EXCAVATION, FILL AND BACKFILL

- A. Furnish all concrete, excavation, fill and backfill, and steel required for this work unless specifically noted otherwise.
- B. Concrete shall be Class "A", 3000 p.s.i. and shall be mixed, placed and cured in conformance with M.A.G. Specifications.
- C. Backfill conduit trenches in a manner to prevent disturbance to the pipes or conduits. Fill under and around pipes thoroughly to a point approximately 6" above the top of the pipe and compact.

- D. Compaction of backfill shall be vertical lifts not exceeding a lift height of 6". In accordance with local codes and standards, compact to 85 percent of maximum density at optimum moisture content.
- E. All existing landscape and hardscape areas must be replaced in kind after construction of electrical trenches and installation of electrical equipment.

1.8 ELECTRICAL DRAWINGS

- A. The drawings are generally diagrammatic and indicate the manner, method and nature of the installation. The Specifications denote the style and quality of material and workmanship. Where a conflict exists between the Drawings and Specifications, promptly notify the Engineer. The Engineer will make the proper interpretation and his decision will be final.
- B. Any items not mentioned in these specifications or not indicated on the plans but which are necessary for successful and efficient operation of the work shall be held to be implied and shall be furnished and installed as part of the contract.
- 1.9 STANDARD OF MATERIAL AND WORKMANSHIP
 - A. All materials shall be new and shall conform to UL Standards in every case where such a standard has been established and shall bear the UL label. All work shall be performed in a workmanship manner in accordance with the best-accepted standards and shall present a neat mechanical appearance when completed.
 - B. Ratings of all electrical equipment shall be in accordance with National Electrical Manufacturers Association (NEMA).

1.10 PAINTING

A. All exposed electrical equipment, conduit, flush panel fronts, transformers, switches, switchboards, panels, panel mounting boards, and similar items shall be painted as specified under the Painting Section of the MAG Specifications per City's request.

1.11 TEMPORARY POWER

A. Provide temporary power as required by the job. This service shall be maintained throughout the entire job as the work progresses.

1.12 CLEANING UP PROCESS

A. At all times keep the premises free from accumulation of waste materials or rubbish caused by employees. Metal floor pans shall be provided for pipe threading machines and benches and shall be used at all times to prevent concrete floors from becoming oil soaked. Upon completion of the job remove all debris, clean all switchplates, fixtures, panel trims and in general leave the premises in a clean and tidy condition.

1.13 FINAL INSPECTIONS AND TESTS

- A. Furnish all meters, cable, connection and apparatus necessary for making tests.
- B. Test system for shorts and grounding compliance. Faulty wiring shall be removed and replaced. Any device, apparatus or fixture installed showing substandard performance shall be removed and replaced as directed by the City Inspector.

1.14 UTILITIES

- A. Location Of Underground Utilities
 - 1. The Contractor shall notify the interested "Utilities" prior to the start of construction, and shall ascertain the locations of the various underground utilities either shown on the plans and/or which may be brought to his attention. The exact locations of these underground utilities shall be determined by excavations made by the Contractor prior to any trenching operations.
- B. Damage To Existing Utilities
 - 1. The Contractor shall assume full responsibility for all damage to all utilities due to his operations, and shall repair the damaged utilities as required herein, at his own expense. Damaged water and irrigation lines shall be replaced in kind.

1.15 GUARANTEE

A. Fully guarantee all work under this Section for a period of one year from the date of final acceptance by the City, against imperfect workmanship or failure or malfunction of materials and/or equipment due to faulty or imperfect workmanship. Give this guarantee in writing to the City at the time if issuing final certificate. Work found to be defective within period shall be replaced without cost to the City.

1.16 SHOP DRAWINGS

A. All data shall be submitted at one time, bound and indexed in an orderly manner. Prior to starting work, submit to the Engineer for approval, six (6) sets of shop drawings of lighting fixtures, electrical enclosures and equipment, and all other equipment to be fabricated.

1.17 DOCUMENTS

- A. The contractor shall preserve all manufacturers' paperwork that is shipped with equipment assemblies, lighting control panel components and field installed components. All literature accompanying each and every item shall be considered a part of that item such as specification sheets, installation instructions, operating and maintenance write-ups, etc.
- B. As-builts shall be provided to the City and shall be of the hightest quality. Poor quality copies will not be accepted.

2.0 PRODUCTS

- 2.1 WIRE AND CABLE
 - A. Conductors shall be soft drawn, annealed copper having conductivity of not less than 98% of that of pure copper, have a uniform in cross-section, free from flaws, scale and other imperfections.
 - B. All interior branch wiring shall be Type "XHHW" 600 volt, unless otherwise noted and a minimum of 12 AWG except for control wiring which shall be a minimum of 14 AWG.
 - C. Wire 8 AWG and larger shall be stranded.
 - D. Manufacturers shall be Simplex, General Cable, Okonite, Rome Cable, Anaconda, General Electric and Kaiser or approved equal.
 - E. No running splices in conduit shall be accepted.
 - F. Make all above ground connections and splices for #10 wire and smaller with Buchanan "B-Cap", 3-M "Scotchlok", or Ideal "Wing Nut" preinsulated wire connector (sizes as recommended by manufacturer). Make connection and splices for #8 conductors and larger with solderless pressure or compression type connectors by O.Z., Burndy, Buchanan, T & B, or Illsco. Tape all splices with plastic so insulation is at least equivalent to insulation of conductor. Thoroughly clean ends before splicing. Where plastic tape is used and there is any danger of insulation damage from pressure of joint against non-current carrying metal parts, use friction tapes for additional protection. Vinyl plastic tape shall be Scotch #33 or Plymouth.

- G. Make all underground cable and conductor splices in a pull box or j-box and connected and insulated with a Tyco Electronics Gelcap-sl or connected with copper compression h-tap connector or approved equal and insulated with a 3M Scotchcast splice kit 85 series or Tyco Electronics Gelcap or City of Chandler approved equal.
- H. All wires in panelboards, gutters, switchboards, wireways and pull boxes shall be neatly arranged with terminations located directly opposite terminals and routed in a neat and workmanlike manner through spaces where the wire passes.
- I. Exercise due care when pulling wire and cable through raceways, to prevent conductors from kinking and injuring insulations.
- J. UL approved pulling compounds may be applied to the conductors to insure ease of pulling. Under no circumstances shall any medium containing water, acid or petroleum base be used.
- K. Leave no less than 6" or wire at each outlet for connection to lighting fixture, switch receptacle, and other pieces of equipment. Where wires feed through an outlet or junction box, neatly tuck a 6" long loop in bottom of box.
- L. Control wiring and all other stranded wiring to screw connections shall be provided with T & B "STA-KON" terminals.
- M. Solid conductors shall loop tightly and completely around terminal screws on all wiring devices.

2.2 CONDUIT RACEWAYS

- A. Conduit systems shall be rigid galvanized steel, non-metallic fiber or polyvinylchloride (PVC) plastic as specified herein, or as indicated on the plans. All systems shall be continuous.
- B. Rigid steel conduit shall be heavy walled, hot dipped, galvanized or sherardized. Use rigid steel conduit in concrete slabs on grade, in exposed locations such as tunnels and equipment rooms, and where exposed to weather. Make all joints with standard couplings or unions; use of running threads is prohibited. Ream conduit ends after cutting use double lock nuts at terminations. Use insulated bushings throughout.
- C. No conduit placed in a concrete slab shall be greater than ³/₄" trade size diameter and no conduit smaller than ¹/₂" shall be installed underground. No conduit shall be imbedded in a slab that is less than 3-¹/₂" thick except for local offsets. Unless otherwise noted or specified, tops of underground conduit or ducts shall not be less than 18" below grade. Assemble joints together using approved couplings to make watertight joints.

- D. Schedule 40 PVC electrical conduit, UL listed 4" and smaller may be used for direct burial of underground branch circuits (with bond wire). All bends shall be manufactured, not field made.
- E. GENERAL: Stubs and risers above grade to panels and cabinets shall be rigid steel conduit and shall be grounded as described under "grounding".
- F. Where exposed, install conduit parallel to walls and partitions; do not crosswindow openings.
- G. All conduit bends 45 degrees and larger, and 2 inches and above shall be manufactured bends or field make with a hydraulic bender.
- H. Coat metallic conduit below grade or encased in concrete with two coats of Koppers Bitumastic, or half-lap with Scotch Wrap #50, minimum thickness to be 20 mils.

2.3 CONDUIT FITTINGS

A. Provide double lockouts and bushings at all rigid conduit terminations except at threaded hubs. Bushings shall be O.Z. type "A" molded bakelite except for 2" conduit and larger shall be O.Z. type "B" or type "BL" where grounding is required.

2.4 GUTTER, PULLBOXES AND JUNCTION BOXES

- A. Boxes shall be fabricated from code gauge steel without knockouts and a minimum 14 gauge front cover. Finish shall be galvanized steel or phosphate undercoating, with 2 finish coats hammer gray or baked enamel.
- B. Junction boxes shown outside flush or surface mounted shall be watertight all welded construction with neoprene gasketed screwed covers NEMA Type 3R.

2.5 NAMEPLATES

A. Provide lamicoid nameplates for all distribution switches, breakers, lighting and power panels, contactors, and any control equipment.

2.6 ELECTRICAL SERVICE

- A. The electrical service shall be as shown on the plans by the Utility Company.
- B. Provide all necessary material and labor required by the serving utility for delivery of power to the service entrance equipment.

2.7 SERVICE ENTRANCE EQUIPMENT

- A. Service entrance shall be 12 gauge standardized, modular formed steel dead front construction, and front accessible.
- B. The enclosure shall be weatherproofed and factory painted per City specifications with primer and rust inhibitor undercoat.
- C. The service entrance shall have space and necessary provisions for metering as required by the Power Company and P.U.E.S.R. Standards.
- D. Main and branch feeder over-current devises shall be fusible or circuit breaker type and sized as noted on the drawings.
- E. The switchgear assembly shall be braced for short circuit stress as noted on the drawings.
- F. All distribution equipment shall be of the same manufacturer. Approved manufacturers are: Cutler Hammer, RSE-Sierra, Federal Pacific, General Electric, Square D, Sylvania, Westinghouse, Milbank or Myers.
- G. All service entrance and all distribution equipment and panels shall have fully rated copper bussing.

2.8 LIGHTING FIXTURES

- A. Luminaires:
- a Certified copies of the testing laboratory's findings shall be submitted to the Engineer. No luminaires shall be ordered until approved by the Engineer.
- b Each luminaire shall be furnished with an instruction sheet, which clearly shows installation procedures.
- 2.9 POLES
 - A. GENERAL

- a Area light poles shall be as specified on the plans.
- b PVC conduit elbows shall be installed in the base as needed for conductor entry.
- 2.10 <u>LIGHTING CONTACTORS</u>
 - A. Lighting contactors shall be sized to facilitate all the lighting circuits within the pedestal or panel, and shall be Square D, Cutler Hammer, Furnas, Allen Bradley, Siemens or approved equal.

3.0 EXECUTION

3.1 GROUNDING

- A. The neutral conductors and all other exposed non-current carrying metal parts as required by Code shall be grounded. Grounding bushings shall be used as required and shall be O.Z. insulated Type "BL", or approved equal. No grounding shall be made to gas piping. Where equipment or devises are served by non-metallic ducts, enclosure shall be grounded by means of a code size bare or green insulated equipment ground wire installed in the duct with the current carrying conductors and be bonded securely in each cabinet terminating the ground wire. Copper jumpers shall bridge flexible conduit and be installed with ground wire. All service grounds shall be in accordance with the "UFER" ground.
- B. All panels containing ground or bonding wires shall be equipped with a ground bus for terminating all such wires.
- C. See Concrete Section for description of concrete reinforcement grounding.

3.2 GENERAL

- A. Work covered under this section includes manufacturing, equipping, wiring and assembling of all lighting fixtures. Provide lighting fixtures complete for each and every light outlet in the type, quality and size of fixture indicated on the drawings.
- B. Check the drawings with the fixture schedules for completeness, as numbers on the schedule are for the purpose of indicating the general type, quality and size of fixtures that will be required. The use of catalog numbers for a fixture does not necessarily include all the required accessories that may be demanded for a complete installation.
- C. Provide all light-sources, lamps and other light producing media called for and suitable for specified equipment and functions. Unless otherwise called for, all lamps operating without controlling ballasts or transformers, operate on 120 volts.
- D. The use of a vendor's name and catalog number is for convenience in specifying the quality, style, size finish and performance required and does not intentionally exclude similar equipment available from other manufacturers. A computer readout for the substitute fixtures with the above minimum levels, guaranteed by the manufacturer, shall be submitted to the Engineer for evaluation. Judgment of equality shall be by the Engineer and his acceptance or rejection shall be final.

3.3 INSTALLATION OF LIGHTING FIXTURES

A. Installation of all lighting fixtures shall be done by qualified and experienced mechanics.

- B. Protect the lighting fixtures from damage during their unloading or removal, storage or installation. Any broken fixtures, glassware, etc., must be replaced with new parts, without any additional expense to the City, undue delay or inconvenience.
- C. Upon completion of the installation of the lighting fixtures and lighting equipment, they must be in first-class operating order and in perfect condition as to finish, etc. Check for proper operation and appearance, alignment of fixtures and proper placement of lenses, louvers, lamps and other light-controlling or modifying appurtenances.
- D. Cleaning Immediately prior to final inspection, damp clean all glassware, fixture trims, reflectors; clean lamps or install new lamps as directed, with glass and fixtures free of labels.

4.0 MEASUREMENT AND PAYMENT

Bid Item 801.01 – Conduit: The work under this item consists of furnishing all labor, equipment, and materials for installing the electrical conduit, including excavation, backfill and all else necessary components to complete the work.

Measurement for the Conduit will be measured by the linear foot for each diameter size from center to center of pull boxes or from end to end of conduit when no pull boxes are used.

The accepted quantity for Conduit, as measured as provided above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for the work, complete in place. No direct payment will be made for rigid metal conduit bends or rigid non-metallic conduit bends at pull boxes, expansion fittings and coupling fittings, the cost being considered as included in the contract price for the conduit items. No separate measurement or direct payment shall be made for saw cutting, boring, jacking, trenching, pavement removal, debris disposal and pavement replacement done as part of conduit installation, the cost being considered as included in the contract price for the conduit items.

Bid Item 801.02 – Conductors: The work under these items shall consist of all labor, tools, equipment, and material necessary for the installation of electric conductors, including pulling, splicing, above ground junction boxes and appurtenances as shown on the project plans or needed to provide a complete and operational system.

Measurement for the Conductors will be made on a linear foot basis for all work and equipment.

The accepted quantity for Conductors, as measured as provided above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for the work, complete in place.

Bid Item 801.03 – Electrical Service Entrance Section and Control Equipment: The work under this item shall consist of furnishing all labor, equipment and materials required for installing a new electrical service entrance section and all distribution equipment, control enclosures and control devices per project plans within the project area. The work shall include the securing of required permits related to said electric service. The work to coordinate the service installation, coordination with utility company, setting of utility company transformer, concrete pad for service entrance section and for utility company equipment, meter enclosure, permit fee(s) documentation, connection to and coordination time and expenses borne by the contractor are intended to be covered by this per unit bid item.

Measurement for the Electrical Service Entrance Section and Control Equipment as herein specified and shown on the associated electrical plans will be made on a per unit basis for each location shown on the plans.

The accepted quantity for Electrical Service Entrance Section and Control Equipment, as measured as provided above, will be paid for at the contract per unit price, which price shall be full compensation for the work, complete in place.

Bid Item 801.05 – #5 Concrete Pull Box: The work under this item shall consist of furnishing all labor, equipment and materials required for installing a #5 concrete pull box as specified herein and on the project plans.

Measurement for the #5 concrete pull box as herein specified and shown on the associated electrical plans will be made on a per unit basis for each location shown on the plans.

The accepted quantity for #5 concrete pull box, as measured as provided above, will be paid for at the contract per unit price, which price shall be full compensation for the work, complete in place.

Bid Item 801.10 – Post Mounted Receptacle: The work under this item consists of furnishing all labor, equipment, and materials for installing electrical receptacles on a post, in accordance with the project plans. The work shall also include all compliance calculations, and submittals necessary for approval by the Engineer.

Measurement for the Post Mounted Receptacle as herein specified and shown on the associated electrical plans will be made on a per unit basis for each location shown on the plans.

The accepted quantity for Post Mounted Receptacle, as measured as provided above, will be paid for at the contract per unit price, which price shall be full compensation for the work, complete in place.

Appendix 'A'