City of Sedona Public Works Department
102 Roadrunner Drive Sedona, AZ 86336
(928) 204-7111 · Fax: (928) 282-5348

To Whom It May Concern:

The City of Sedona, Arizona is issuing **Addendum #2** to the plans and specifications as originally issued at the time of solicitation for bids for the re-bid of **SR 179 Pedestrian Crossing at Oak Creek.** For any bid to be considered responsible and responsive, receipt of this addendum must be acknowledged.

This Addendum further extends the bid period beyond the extension issued under Addendum 1, providing a new date for which sealed bids must be submitted; responds to questions related to the project plans and specifications; and provides for revisions made to the project specifications and drawings.

As specified in the Instructions to Bidders this Addendum upon issuance becomes a part of the Contract Documents. This Addendum consists of 5 pages including this page (excluding attachments).

This Addendum changes or adds the following:

1. ADVERTISMENT FOR BIDS

Replace the first sentence of the first paragraph on Page 2 of the Contract Documents written as "Sealed bids for the construction of the SR 179 Pedestrian Crossing at Oak Creek will be received by the Public Works Department, located at 102 Roadrunner Drive, Sedona, Arizona, until 2:30 P.M. local time, March 14, 2023." [*date as revised by Addendum 1]* **with the following:**

"Sealed bids for the construction of the SR 179 Pedestrian Crossing at Oak Creek will be received by the Public Works Department, located at 102 Roadrunner Drive, Sedona, Arizona, until 2:30 P.M. local time, **March 23, 2023**."

2. ADVERTISMENT FOR BIDS

Replace the fourth listed item under the third paragraph on page 3, written as "AND RECEIVED: At the Public Works Department until 2:30 P.M. local time, March 14, 2023 (as determined by reference to www.time.gov ref Arizona area)." *[date as revised by Addendum 1]* **with the following:**

"AND RECEIVED: At the Public Works Department until 2:30 P.M. local time, **March 23, 2023** (as determined by reference to www.time.gov ref Arizona area)".

3. REQUEST FOR INFORMATION:

3.1. **Question** – Plan Sheet D12 has a quantity of 120 CY for 'Remove Existing Gabion Mattress', however, the bid schedule has a quantity of 120 SF. What unit of measure should be used?

Response *– CY should be used. The Bid Schedule will be modified accordingly.*

3.2. **Question** – On the Demolition Plan Sheet C6 there are the following construction notes with no associated bid items in the Bid Schedule; How should the contractor address these items?

Response *– The Demo plan will be updated for Item Consistency with Specifications*

a. ***"3 - Relocate Existing Irrigation Valve Per AWC Specifications."*** *Item added to specification for clarification.*
b. ***"5 - Remove & Salvage Existing Decorative Boulder."*** ***I****tem will be removed from Demo Plan, not applicable.*
c. ***"14 - Remove Existing 2" Blow Off Assembly and Replace With 90 Degree MJ Elbow, 6 LF of 6" DIP, and Transition Couplings."*** *Item added to specification for clarification.*

d. ***"6 - Relocate Existing Water Valve."*** *Specification has been updated for consistency and clarification.*
e. ***"13 - Replace & Relocate Existing 2" Water Service Connection."*** *Item added to specification for clarification.*

3.3. **Question** – The Bid Item 2.2.15 "Relocate Water Meter' and 2.2.16 'Relocate Existing Light Pole' do not have any associated construction note in the plan sheets. Can the location of these be provided?

Response – *Design will provide a construction note on Sheet 7 – C7*

3.4. **Question** – Specs Page 31: Under Submittals, Note 2, there is a reference to automatic recording devices. These are very costly time consuming and have no benefit for this project. Manual logging of the drilling/driving, mixing, and injecting should be allowed.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.5. **Question** – Specs Page 28: Under References, Item C, the cited standards do not apply to permeation grouting. ASTM D4219 and 4320 have both been withdrawn from the ASTM Standards.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.6. **Question** – Specs Page 33: Under Products, Item B4, calls for grouted soil strength of 2,500 psi which is too high for permeation grout. Around 200 psi is what the standard of the industry is.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.7. **Question** – Specs Page 34: Under Products, Item B, Cement and Micro-Fine Cement Grout, Items 13-17 are for testing other types of grouts than what is specified for use here. They do not apply to this type of grout and should be deleted.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.8. **Question** – Specs Pages 34: Under Execution,

a. Item A2, sleeve port grout pipes are not practical due to headroom and site restrictions. The open-end method of injection pipe installation should be allowed.
b. Item A3, coring through the grouted soil, if possible, should not be expected to give meaningful strength test results. Even if it were possible to get a core, there is no ASTM Specification by which to test it.
c. Item A4, there is no ASTM Specification for this strength test.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.9. **Question** – Specs Page 35: Under Pre-Production Test Program,

a. Item C2, the rock coring (ASTM D 2113) specified does not apply to this work.
b. Item C3, the concrete strength testing (ASTM C 42) specified does not apply to this work either.
c. Item C7, the packer permeability test should be deleted since the work is not for reducing permeability, but rather increasing strength.

Response – *Permeation Grout Specification has been updated per typical ADOT specifications.*

3.10. **Question** – Specs Page 41: Under Cement and Microfine Cement Grouting Procedures,

a. Item D, the Wet Grout Testing of bleed and viscosity does not apply to the type of grouting specified and should be deleted.

Response *– Permeation Grout Specification has been updated per typical ADOT specifications.*

3.11. **Question** – Specs Page 41: Under Measurement and Payment,

a. A base amount of injection pipe and grout with an add or deduct needs to be provided for us to bid to:
   1. Injection pipe installation, per linear foot, and
   2. Grouting, per gallon injected.

Response *– Permeation Grout Specification has been updated per typical ADOT specifications.*

3.12. **Question** – These specifications are haphazard and disjointed. There are artifacts within them from other projects. Some of the requirements apply to other soil modification techniques, generally much more involved than what is contemplated here.

Response – Permeation Grout Specification has been updated per typical ADOT specifications.

3.13. **Question** – Bid Item No. 2.2.4 "Remove and Salvage Existing Property Wall" and Note 7 on C6 "Remove Exist Property Wall" are in conflict. Should "and Salvage" be removed from the bid item description?

Response *– The CMU portions of the lower don't need to be saved or salvaged, just the ornamental aspects of the wall, such as the wall column caps, flowerpots/containers and plants, and tile pieces making up the triangular ribbon along the top of wall.*

4. BID PROPOSAL:

4.1. **Replace** the **"**Bid Schedule" beginning on page 26 and ending on page 30 of the Contract Documents." **with the following:**

"Bid Schedule (Rev. 3/2/23)" beginning on page 26 and ending on page 30 as provided in listed attachment 1 of this Addendum 2.

Noted changes to the Bid Schedule are as follows:

- Bid Schedule Item 2.2.4. REMOVE AND SALVAGE EXST PROPERTY WALL, was **retitled** to read "REMOVE EXISTING PROPERY WALL AND SALVAGE ARCH FEATURES".
- Bid Schedule Item 2.2.11 REMOVE EXST GABIONS – The Unit has been **revised** from CF to CY.
- Specification Item 2.2.14 REMOVE EXST BLOW-OFF ASSEMBLY AND REPLACE WITH ELBOW, was **added** to the bid schedule.
- Bid Schedule Item 2.2.13 RELOCATE FIRE HYDRANT 5, was **renumerated** and **retitled** to read "2.2.15 RELOCATE EXST FIRE HYDRANT AND WATER VALVE.
- Bid Schedule Item 2.2.13 RELOCATE FIRE HYDRANT 5, was **renumerated** and **retitled** to read "2.2.15 RELOCATE EXST FIRE HYDRANT AND WATER VALVE.
- Bid Schedule Item 2.2.37 PERMEATION GROUTING, was **renumerated** and **retitled** to read "2.2.38 PERMEATION GROUT" and the Unit cost for the work was **redefined** under the **added** Bid Schedule sub-Items "2.2.38.1 PERMEATION GROUTING PLACEMENT" and "2.2.38.2 PERMEATION GROUTING (DRILL GROUT HOLES)"

Additional changes to the Bid Schedule include renumeration of some Item Numbers to accommodate additions or other.

5. PROJECT TECHNICAL SPECIFICATIONS:

5.1. **Replace** the entire "Final Technical Specifications" [Page 1 of 66 through Page 66 of 66] **with the following:**

"Final Technical Specifications, Addendum 2" [Page 1 of 54 through Page 54 of 54] as provided in listed attachment 2 of this Addendum.

Noted changes to the Final Technical Specifications include the following:

- Miscellaneous corrections to the Table of Contents.
- Specification and Bid Schedule Item 2.2.4 REMOVE AND SALVAGE EXST PROPERTY WALL, was **retitled** to read "REMOVE EXISTING PROPERY WALL AND SALVAGE ARCH FEATURES" and **revised** to clarify architectural wall features to be salvaged and reused.
- Specification Item 2.2.13 REMOVE EXST BLOW-OFF ASSEMBLY AND REPLACE WITH ELBOW, was **added** to the specifications, to include work to be completed by the Contractor.
- Specification Item 2.2.13 RELOCATE FIRE HYDRANT 5, was **renumerated and retitled** to read "2.2.15 RELOCATE EXST FIRE HYDRANT AND WATER VALVE" and **revised** to clarify the Hydrant and Valve as an assembly to be relocated together.
- Specification Item 2.2.15 RELOCATE WATER METER, was **renumerated** as "2.2.16" and **revised** to clarify the work.
- Specification Item 2.2.37 PERMEATION GROUTING was **renumerated** and **replaced** with "2.2.38 PERMEATION GROUT"
- Specification Item 3.1 POTHOLING, The 2nd paragraph was **revised** to remove the first and second sentences regarding measurement and payment.
- Specification Item 3.2 EARTHWORK, **revised** to clarify that no separate payment will be made for EARTHWORK (see last paragraph of section).
- Specification Item 4.1, Alternative Bid Item 1 – WATERWHEEL was **revised** to provide for measurement and payment consistent with the Bid Schedule.

6. DRAWINGS:

6.1. **Replace** plan sheet number 5 of 45 (C5), **with the following:**

Revised sheet 5 of 45 (C5) revision dated 3/3/2023, as provided in listed attachment 3.1 of this Addendum 2.
*Quantities were **updated**.*

6.2. **Replace** plan sheet number 6 of 45 (C6), **with the following:**

Revised sheet 6 of 45 (C6) revision dated 3/3/2023, as provided in listed attachment 3.2 of this Addendum 2.
*Removal Notes 3 and 10 were **revised**.*

6.3. **Replace** plan sheet number 7 of 45 (C7), **with the following:**

Revised sheet 7 of 45 (C7) revision dated 3/3/2023, as provided in listed attachment 3.3 of this Addendum 2.
*Construction Notes 14 and 15 were **added**.*

This Addendum includes the following attachments:

1. Bid Schedule (Rev. 3/2/23), pages 26 through 30.
2. Final Technical Specifications, Addendum 2 [Page 1 of 54 through Page 54 of 54]
3. Drawings:
   3.1. Revised sheet no. 5 of 45 (C5) revision 1, dated 3/3/2023
   3.2. Revised sheet no. 6 of 45 (C6) revision 1, dated 3/3/2023
   3.3. Revised sheet no. 7 of 45 (C7) revision 1, dated 3/3/2023

END OF ADDENDUM #2

ACKNOWLEDGEMENT

I have received addendum #2 for the re-bid of **SR 179 Pedestrian Crossing at Oak Creek** as described above and acknowledge it as part of the Contract Documents for the project.

_____ _____

Signature Date

_____

Print Business Name

Addendum #2 issued by J. Andy Dickey, PE, Assistant City Manager and Director of Public Works/City Engineer

_____ 3/9/23

J. Andy Dickey, PE Assistant City Manager and Director of Public Works/City Engineer Date

Bid Schedule (Rev. 3/2/23)

City of Sedona – SR 179 Pedestrian Crossing at Oak Creek
Project # 2022 SIM-4C

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1.8	MATERIALS TESTING	JOB	1	$	$
1.9	CONSTRUCTION SURVEY AND LAYOUT	JOB	1	$	$
1.10	AS-BUILT PREPARATION	JOB	1	$	$
2.2.1	MOBILIZATION/DEMOBILIZATION	JOB	1	$	$
2.2.2	MAINTENANCE AND PROTECTION OF TRAFFIC	JOB	1	$	$
2.2.3	STORM WATER POLLUTION PREVENTION PLAN	JOB	1	$	$
2.2.4	REMOVE EXISTING PROPERTY WALL AND SALVAGE ARCH FEATURES	LF	78	$	$
2.2.5	REMOVE EXST SITE WALL	LF	22	$	$
2.2.6	REMOVE AND SALVAGE EXST POLE WITH WIND ART	EACH	3	$	$
2.2.7	REMOVE AND SALVAGE EXST TLAQUEPAQUE ARCH SIGN	EACH	1	$	$
2.2.8	REMOVE EXST ASPHALTIC CONCRETE PAVEMENT	SY	15	$	$
2.2.9	REMOVE EXST CONCRETE SIDEWALK	SF	381	$	$
2.2.10	REMOVE AND STOCKPILE EXISTING EROSION PROTECTION	LSUM	1	$	$
2.2.11	REMOVE EXST GABIONS	CY	120	$	$
2.2.12	REMOVE AND RELOCATE EXST WATER QUALITY BOX	EACH	1	$	$
2.2.13	REMOVE EXST BLOW-OFF ASSEMBLY AND REPLACE WITH ELBOW	EACH	1	$	$
2.2.14	RELOCATE FIRE HYDRANT AND WATER VALVE	EACH	1	$	$
2.2.15	RELOCATE EXSTING PROPERTY WALL LIGHTS	EACH	2	$	$
2.2.16	RELOCATE WATER METER	EACH	1	$	$
2.2.17	RELOCATE EXST LIGHT POLE	EACH	2	$	$

2.2.18	RELOCATE EXST CATV BOX	EACH	1	$	$
2.2.19	ADJUST VALVE BOX AND COVER TO GRADE PER MAG STD DTL 270	EACH	1	$	$
2.2.20	REMOVE EXST DUMPED RIPRAP	CY.	735	$	$
2.2.21	RELOCATE EXST TELCO PEDESTAL	EACH	2	$	$
2.2.22	TREE PROTECTION SHORING	LSUM	1	$	$
2.2.23	TEMPORARY FILL STABILIZATION	LSUM	1	$	$
2.2.24	SUBGRADE PREP	SY	724	$	$
2.2.25	CHANNEL EXCAVATION (INCL. HAUL OFFSITE)	CY	1,765	$	$
2.2.26	AGGREGATE BASE COURSE	TON	151	$	$
2.2.27	CONCRETE SIDEWALK PER MAG STD DTL 230 WITH MESH	SF	6,200	$	$
2.2.28	CONCRETE PAVERS	SF	104	$	$
2.2.29	RETAINED CURB	LF	218	$	$
2.2.30	MEDIAN BOLLARDS AND CHAIN (SPECIAL DETAIL)	EACH	2	$	$
2.2.31	3-FT MAN GATE WITH LOCK	EACH	1	$	$
2.2.32	REINFORCED CONCRETE CANTILEVER RETAINING WALL	SF	2,689	$	$
2.2.33	MASONRY PROPERTY WALL	SF	700	$	$
2.2.34	SHORT CONCRETE GRAVITY WALL	SF	51	$	$
2.2.35	REINFORCED CONCRETE SLAB OVERHANG	SF	566	$	$
2.2.36	NEW MODIFIED MAG 206 CONCRETE SCUPPER	EACH	1	$	$
2.2.37	NEW DRAIN INLET	EACH	4	$	$
2.2.38	PERMEATION GROUT				
2.2.38.1	PERMEATION GROUTING PLACEMENT	CYD	440	$	$
2.2.38.2	PERMEATION GROUTING (DRILL GROUT HOLES)	LF	930	$	$
2.2.39	PLACE SALVAGED DUMPED RIVER ROCK	CY	340	$	$
2.2.40	GABION MATTRESS AND BASKETS	CY	31	$	$

2.2.41	LANDSCAPING	LSUM	1	$	$
2.2.42	IRRIGATION	LSUM	1	$	$
2.2.43	TLAQUEPAQUE PROPERTY SYCAMORE TREE PROTECTION	LSUM	1	$	$
2.2.44	CONCRETE BARRIER	LF	208	$	$
2.2.45	CONCRETE BARRER WITH HANDRAIL	LF	52	$	$
2.2.46	DECORATIVE RAILING	LF	663	$	$
2.2.47	DECORATIVE RAILING WITH HANDRAIL	LF	216	$	$
2.2.48	HANDRAIL (WALL ATTACHMENT)	LF	243	$	$
2.2.49	TRASH RECEPTACLE	EACH	3	$	$
2.2.50	SIGN POST (PERFORATED) (2 S)	LF	32	$	$
2.2.51	SIGN POST (PERFORATED) (2 1/2 S)	LF	32	$	$
2.2.52	FOUNDATION FOR SIGN POST (CONCRETE)	EACH	5	$	$
2.2.53	WARNING, MARKER, OR REGULATORY SIGN PANEL	SF	14	$	$
2.2.54	FLAT SHEET ALUMINUM SIGN PANEL	SF	32	$	$
2.2.55	WATERBORNE-TYPE I PAVEMENT MARKING (PAINTED)(YELLOW)	LF	126	$	$
2.2.56	ELECTRICAL CONDUIT (1") (PVC)	LF	80	$	$
2.2.57	ELECTRICAL CONDUIT (1 1/2") (PVC)	LF	760	$	$
2.2.58	PULL BOX (NO. 5)	EACH	4	$	$
2.2.59	PULL BOX (6" x 6" In Wall)	EACH	3	$	$
2.2.60	PULL BOX (8" x 6" In Wall)	EACH	9	$	$
2.2.61	CONDUCTOR (NO. 12)	LF	1,920	$	$
2.2.62	CONDUCTOR (NO. 10)	LF	540	$	$
2.2.63	CONDUCTOR (NO. 8)	LF	1,520	$	$
2.2.64	CONDUCTOR (INSULATED BOND)	LF	840	$	$
2.2.65	METER PEDESTAL CABINET (LIGHTING)	EACH	1	$	$

2.2.66	MISCELLANEOUS WORK (LED Rope)	LF	40	$	$
2.2.67	MISCELLANEOUS WORK (POLE (14') (Decorative))	EACH	5	$	$
2.2.68	MISCELLANEOUS WORK (POLE FOUNDATION (STANDARD BASE))	EACH	5	$	$
2.2.69	MISCELLANEOUS WORK (MAST ARM (Decorative))	EACH	5	$	$
2.2.70	MISCELLANEOUS WORK (LUMINAIRE (LED) (GBLF3 Decorative))	EACH	5	$	$
2.2.71	MISCELLANEOUS WORK (Step Light Wall Fixture)	EACH	20	$	$
2.2.72	PAINT EXST ADOT FACILITIES	LSUM	1	$	$
2.2.73	CONCRETE STAIN COLOR TREATMENT	EACH	1	$	$
2.2.74	WINDOW AND FRAME ART PANEL	LSUM	2	$	$
2.2.75	BARREL SIGN BASE	EACH	3	$	$

Total Direct Base Bid Costs: $ _____

Alternative Bid Item 1

1.8	MATERIALS TESTING	JOB	1	$	$
1.9	CONSTRUCTION SURVEY AND LAYOUT	JOB	1	$	$
1.10	AS-BUILT PREPARATION	JOB	1	$	$
2.2.1	MOBILIZATION/DEMOBILIZATION	JOB	1	$	$
4.1.2	9-FOOT WATERWHEEL	EACH	1	$	$
4.1.2	WHEEL SUPPORT COLUMN	EACH	1	$	$
4.1.3	WHEEL SCUPPER AND SUPPORT SYSTEM	EACH	1	$	$
4.1.4	WATER BASIN AND CONTAINMENT TROUGH	EACH	1	$	$
4.1.5	IRONWORKS WATER GRADE (8-INCH RIVER ROCK FINISH)	LF	20	$	$
4.1.6	POND PUMP	EACH	1	$	$
4.1.7	WATER METER AND BACKFLOW PREVENTER	EACH	1	$	$
4.1.8	AGT GLOW STONE	SF	32	$	$

4.1.9	CIP SEAT WALL	LF	10	$	$
4.1.10	HAND WATER PUMP AND ACTIVATOR	EACH	1	$	$
4.1.11	1-INCH SCH 40 PVC	LF	135	$	$
4.1.12	2-INCH SCH 40 PVC SLEEVE	EACH	22	$	$
4.1.13	FLAT SHEET ALUMINUM SIGN PANEL	SF	5	$	$
4.1.14	CONDUCTOR (NO.8)	LF	50	$	$

Total Alternative Bid Item 1 Costs: $ _____

CIP: COMPLETE IN PLACE

The lowest bidder, Owner reserves the right to vary the quantities shown at their discretion. The contractor will accept the quantities if no corrections are made at the conclusion of the pre-bid meeting. All facilities incidental to the item are included in the unit price estimate. Bid Prices submitted include all local, state, and federal taxes.

The lowest bidder will be defined based upon a combination of the base bid amount plus alternative bid item(s), or a combination of alternative bid items as determined by the City of Sedona to be in its best interest.

UNIT PRICES SHALL BE USED WHEN EXTENSION OF UNIT PRICES AND TOTAL AMOUNT CONFLICT. WRITTEN UNIT PRICES SHALL BE USED WHEN WRITTEN AND NUMERICAL UNIT PRICES CONFLICT. BID PRICES SUBMITTED INCLUDE ALL LOCAL, STATE AND FEDERAL TAXES.

The City of Sedona reserves the right to reject all bids, or to award only the base bid, or to award a bid based upon the total of the Base Bid plus additive alternate(s) as selected for award from the additive alternate bid schedule, if additive alternate bid schedule is applicable.

The Additive or Alternative Bid Schedule Items are for improvement work that the City of Sedona, at its sole discretion, may authorize for inclusion in the contract as additive or alternate work following closure of bidding. Additive or Alternative Bid items are not guaranteed to be part of the awarded contract work and the City of Sedona may select any one or combination of Additive or Alternative Bid items from the Additive or Alternative Bid Schedule(s) for inclusion in the contract work.

BIDDERS MUST COMPLETE AND PROVIDE PRICING FOR BOTH THE BASE BID SCHEDULE AND ALL ADDITIVE/ALTERNATIVE BID SCHEDULES. FAILURE TO COMPLETE AND SUBMIT PRICING FOR THE BASE BID SCHEDULE AND ALL ADDITIVE/ALTERNATIVE BID SCHEDULES MAY RENDER A BID NON-RESPONSIVE AND MAY BE GROUNDS FOR REJECTION OF THE BID.

FINAL TECHNICAL SPECIFICATIONS

2 Addendum 2

FOR

CITY OF SEDONA PROJECT

SR179 PEDESTRIAN CROSSING AT OAK CREEK

NEW PEDESTRIAN CROSSING

wsp

Registered Professional Engineer (Civil)
CERTIFICATE NO.
58889
ANGELA GRACE GALIETTI
03/08/2023
Date Signed
ARIZONA, U.S.A.

TABLE OF CONTENTS

1 GENERAL TECHNICAL REQUIREMENTS

The project includes median improvements along SR 179 and adjacent to the existing SR 179 Oak Creek bridge crossing to incorporate improvements for a new grade-separated pedestrian pathway crossing. The proposed work consists of new sidewalk, curb and gutter, retaining walls, pedestrian handrail, pedestrian safety rail, and removal and replacement of a portion of the existing Tlaquepaque property wall. The project also includes striping, path signing, irrigation and landscaping. The project documents include additional information for a bid alternatives for a waterwheel feature.

In the event a conflict exists on the Plans or between the Plans and referenced specifications or these Construction Special Provisions, the order of precedence shall be as follows:

1. Addenda
2. The Project Special Provisions
3. City of Sedona Construction Contract General Conditions
4. The Project Plans
5. City of Sedona Infrastructure Design Guidelines and Details
6. MAG Uniform Standard Details for Public Works Construction, 2015 Edition, 2019 Revisions
7. Manual on Uniform Traffic Control Devices for Streets and Highways, latest edition

8. Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest revisions
9. Arizona Department of Transportation Materials Testing Manual, latest revisions
10. Arizona Water Company Construction Specifications and Details

The following items are non-payment items being considered incidental to the project, the costs of which are to be included in project overhead or within a specific bid item.

1.1 Additional Reference Standards

- The "MAG Specifications" is more particularly defined as the Maricopa Association of Governments (MAG), Uniform Standard Specifications and Details for Public Works Construction, 2020 Edition with 2021 revisions.
- Latest revisions and amendments to City of Sedona, City Code, Chapter 15.05 (Building) and Chapter 13.50 (Storm Water Discharge)
- Arizona Department of Transportation, Standard Specifications for Road and Bridge Construction, 2021.
- Arizona Department of Transportation, Highways Division, Traffic Signals & Lighting Standard Drawings, with updates up to and including August 2019.
- Arizona Department of Transportation, Signing and Marking Standard Drawings, with updates up to and including February 2021.
- Arizona Department of Transportation, Structures Standard Drawings, 2020.
- Arizona Department of Transportation, Roadway Engineering Construction Standard Drawings, May 2017.
- U.S. Department of Transportation, Manual on Uniform Traffic Control Devices (MUTCD), 2009 Edition with latest revisions and Arizona Supplement to MUTCD, January 2012 or latest edition.
- Latest revisions of ASTM, AWWA, ANSI, or Federal specifications, standards and details
- In the event of a conflict between the Construction Drawings and the Contract language, the Contract language shall prevail.
- In the event of a conflict between the ASTM, AWWA, ANSI, or Federal specifications, standards and details and the MAG Uniform Standard Specifications and Details for Public Works Construction or the City Construction Specifications, the City Construction Specifications shall prevail.
- In the event of a conflict between the AWWA, ANSI, or Federal specifications, standards and details and the Contract language, the Contract language shall prevail.
- All other City of Sedona Department policies and procedures where applicable.

1.2 Project Videotape

The Contractor, in the presence of the City's inspector, shall make a video (DVD format, indexed) of the entire project area prior to commencing any construction activities. The Contractor and City's Inspector will review the video for completeness immediately after recording, and any areas that are not clearly covered and defined, shall be re-recorded. The Contractor shall turn over a copy of the video to the City's Inspector at completion of the recording.

1.3 Soil and Subsurface Conditions

The following is added to MAG Specification Section 102.4, Examination of Plans, Special Provisions and Site of Work: A report titled Pedestrian Crossing at Oak Creek Geotechnical Evaluation Report, by WSP USA dated August 29, 2022, is hereby referenced and made part of this document. The report is available at the City of Sedona Engineering Services office. The Contractor may use this report and shall make his own determinations as to the soil and subsurface conditions, including rock, clay, and ground water, and shall complete the work in whatever material and under whatever conditions may be encountered or created, without extra cost to the City.

1.4 Other Agency/Utility Company Notifications/Protection of Existing Facilities

The Contractor shall conduct his operations as set forth in Section 105.6 of the MAG Standard Specifications. The Contractor is responsible for protecting all existing facilities during construction at no additional cost to the City. This may include but is not limited to coordinating, potholing and monitoring as directed by the individual utility companies. The locations of existing underground utilities have been shown on the plans to the best of the Design Engineer's knowledge; however, it shall be the Contractor's responsibility to field verify all utility locations and to coordinate in a timely manner with the pertinent utility companies so that any obstructing utility installation may be adjusted without delay to the Contractor's project schedule. The Contractor shall be responsible for potholing all utility conflicts in a timely manner.:

1.4.1 Contacts:

The following utilities have facilities in the vicinity of the project limits:

Utility Owner	Contact	Phone
APS-Prescott	Matthew Herrera	928-646-8502
Arizona Water Co-Sedona	Casey Goff	928-282-7092
ADOT	Joe Reed	928-527-0189
ADOT	Bob Garza	602-371-7989
CenturyLink	Armen McNerlin	928-634-2102
City of Sedona	Bob Welch	928-203-5120
NPG Cable, LLC Sedona, DBA Suddenlink Comm.	Sanford Yazzie	928-266-0672
UniSource Energy Services	Taylor Mathe	928-203-1214

1.4.2 Coordination:

Coordination with the pertinent utility companies has been a part of the development of this project. Construction activities shall be coordinated and scheduled to incorporate the following applicable utility construction activities.

- The contractor shall call “BLUE STAKE” (1-800-STAKE-IT) and notify the appropriate private, public and municipal utility companies 48 hours prior to any construction work to verify location and depth of all utility lines in the area of work. Utilities if indicated on plans are approximate locations only, taken from the utility company maps. If the contractor encounters any lines not indicated on the drawings or marked in the field by the utility company that may interfere with his work, he shall notify the appropriate utility company immediately for disposition of those facilities.

- Water, sewer, gas, electric, cable, and telephone will need to be protected in place during construction. The contractor to coordinate with the City Project Manager and the utility companies.

- Light poles, fire hydrant, irrigation lines, water valves, electric vaults and water quality box relocations and removals as indicated on the plans.

1.4.3 Site Access:

The contractor shall ensure that all existing sidewalks on this project remain open and safely usable at all times. Such measures as backfilling, ramping to existing sidewalks or providing alternate sidewalk access

adjacent to existing sidewalks may be used. In high pedestrian use areas, the Engineer may request temporary hard-surface walkways, such as plywood sheets to be installed at no additional cost to the City.

The Contractor shall maintain Fire Department Access at all times to project site and adjacent property homes and businesses.

The Contractor shall maintain driveway access and striped parking stalls for businesses adjacent to the project site at all times during construction.

1.5 Inter-Agency Agreement (IGA)

No IGA is required for this project.

1.6 Submittals

1.6.1 General

All submittals shall conform to the requirements of MAG Standard Specifications Section 105.2, except as modified by Section 25 of the Contract's General Conditions and as noted herein.

1.6.2 Format, Distribution and Review

Shop drawing submittals shall be on no larger than 24"x36" or 11"x17" sheets as needed. All drawings shall indicate the name of the job, the City's job number, date, names of the Contractor and subcontractor, and the date of approval by the Contractor. All other technical data, catalog cut sheets, material/fabrication certificates or material mix design reports shall be presented in a 3-hole, bound, 8 ½" x 11" format. Faxed documents are not acceptable. Each submittal package must have a separate transmittal document, cover sheet and index. The Contractor must also create and update a standardized, itemized submittal tracking log spreadsheet and attach with each submittal or re- submittal.

The Contractor shall first review all submitted data for compliance with the specifications and job requirements prior to any submittal. Clearly indicate what specific item, type, model, class, color, size, etc. is to be used and note any Contractor comments or recommendations on the submitted data. One (1) pdf format Contractor approved copy along with a letter of transmittal and the tracking log sheet shall be delivered to the City or its authorized representative.

The Contractor shall anticipate and schedule for a review period of ten (10) business days by the City and/or its designee during which time the submittal(s) will either be accepted, accepted with comments, rejected, asked to be revised, or additional information may be requested. One (1) reviewed copy, stamped/noted accepted or otherwise, will be returned by e-mail to the Contractor by the City or its authorized representative. The latter three directions will require a re-submittal and subsequent additional ten-day review period. Re-submittals shall be made within seven (7) business days. The process will be repeated until all required, submitted materials have been approved. Approved shop drawings and other material submittals shall become a portion of the Contract Documents as they are returned to the Contractor.

1.6.3 Materials/Product Data

The following materials/product data shall be submitted for review and approval:

- Project Sign
- Resident Notification Letter
- Pipe fittings, prefabricated tees and connections, paint, pvc pipe and perforated pipe, epoxy adhesive, structural anchorage systems
- Geotextile (filter fabric)
- Valves, valve boxes, debris caps, valve key extensions, fire hydrants, tapping sleeves, air/vacuum valve assemblies, corporation/curb stops and service saddles, encasements, end seals and other appurtenances
- Valve vaults, manholes and other precast structures
- Drain Inlet

- Samples such as paint, stains, integral color, signing, marking, lighting, controllers, video detection equipment, and other materials/products
- Samples of the following materials with the applicable properties including (color, size, specific gravity, durability test results, mix design, and source of the materials to be used):
    - Decomposed Granite
    - ABC
    - Asphalt
    - ¼" washed rock
    - Rip-Rap
    - Concrete pavers
- Equipment Rates
- City Notice of Intent (NOI)
- Storm Drain Access Barrier Material Certifications

Product data shall include information such as the manufacturer's printed recommendations, compliance with recognized trade association standards, application of testing agency labels and seals, product dimensioning, and notation of coordination requirements. Data shall also include the source location and quantity of materials that are or will be available for the project. The Contractor shall provide materials that have uniformity in color, size, and appearance.

1.6.4 Certificates

The following certificates shall be submitted for review and approval:

- Piping materials
- Reinforcing Steel

Certificates shall be prepared by the manufacturer or testing agency thereof and should include technical specifications and compliance with industry trade association and testing agency standards.

1.6.5 Mix Designs

The following mix designs shall be submitted for review and approval:

- Asphalt Concrete (AC) Pavement
- Portland Cement Concrete
- Aggregate Base Course (ABC) material

Controlled Low Strength Material (CLSM) - The mix designs shall directly compare the proposed mix components and properties with those of the referenced standard mix or as modified within the designated specifications.

1.6.6 Shop Drawings

The following shop drawings or documents shall be submitted for review and approval:

- Traffic control plans-haul routes, staging areas, contractor's office location
- Utility protection plans
- Construction schedules
- 24-hour emergency contacts (names and phone numbers)
- Special fabrications/hardware (Including light poles and drilled shaft foundations)
- Shoring/trench box protection details (sealed by an Arizona registered professional structural engineer)
- Utility testing and disinfection documentation
- Geotechnical/material testing results
- Reinforcement shop drawings
- Concrete mix designs

- Aggregate Base Course Material
- Decomposed Granite/Landscape Materials
- Striping and Signage
- Erosion Control Materials
- Quality Control and Material Testing Plan
- Safety Plan
- Temporary Shoring and Bracing
- Temporary Soil Stabilization
- Pedestrian channelization fencing, handrail and safety railing
- All proposed changes/modifications (the required details and certification as stipulated by the engineer)
- As-built plan drawings

All dimensions and identification of products and materials included, along with notation of any coordination requirements and established field dimensions/measurements shall be clearly shown or noted. As-built plans will be provided to the City Engineer.

1.6.7 Poured in Place Concrete

The consistency of the concrete shall be determined and regulated on the basis of the slump test as described by ASTM C-143. Slump tests shall be provided by the Contractor throughout the progress of the project. Concrete shall be of the class and strength indicated on the Contract Plan Drawings or as otherwise directed by these Specifications.

For additional information see City of Sedona General Conditions Section 58.

All exposed concrete shall be Davis colors: Yosemite Brown, Cocoa or Rustic Brown as approved by the City. The color additive ratio shall be as per Manufacturers recommendation for selected color. Variations in the additive to accomplish the selected color shall be subject to City Engineer approval. Contractor to supply 3 - 4'x4' mockup concrete panels with each color additive on site for review and selection of final color by the Engineer.

1.6.8 Warranties

Furnish written warranties and reports on the findings of all tests that are specifically required by the Specifications. Delivery of such warranties and test results shall not relieve the Contractor from any obligation assumed under any other provisions of the Contract.

1.7 Permits

The City of Sedona Engineering Right-of-Way Permit fee will be waived for this project. All required permits will be the Contractor's responsibility to obtain and pay for including but not limited to; ADEQ Dust Control permit and Arizona Water Company fire hydrant meter fees, if applicable. The cost for all permits shall be included in the Contractor's schedule of values.

As a part of the project design and development an Encroachment Permit has been initiated with ADOT Northcentral District and a draft addendum has been provided as a part of the Bid Package. The Contractor shall comply with all requirements outlined in the ADOT Encroachment Permit and provide supplemental documentation or other as prescribed by ADOT to complete the application and obtain approval.

1.8 Quality Control and Testing

Quality Control and Testing shall be completed per Section 58 of the General Conditions and as supplemented in this section. For quality control purposes, the Contractor shall provide and pay for all geotechnical services including material sampling and testing. This work shall be paid as a lump sum item. Samples shall be taken under the direction of the City or its authorized representative. Testing shall be performed by an independent testing laboratory, pre-approved by the City or its authorized representative,

under the supervision of a professional civil or geotechnical engineer registered in the State of Arizona. Written test reports shall be sent directly to the City or its authorized representative within five (5) business days after the tests are conducted. Each report shall indicate the location at which the test was made, the date of the test, type and source of material tested, test designation being used and the name of the person who performed the test. The Contractor shall pay for any retesting as a result of a failed test.

1.8.1 Poured In Place Concrete

The consistency of the concrete shall be determined and regulated on the basis of the slump test as described by ASTM C-143. Slump tests shall be provided by the Contractor throughout the progress of the project. Concrete shall be of the class and strength indicated on the Contract Plan Drawings or as otherwise directed by these Specifications.

Not less than four (4) cylinder specimens shall be made by the Contractor for each 50 cubic yards of each class of concrete with a minimum of four (4) specimens for each class placed or not less than 4 specimens for each half-day of placement. Specimens shall be tested in accordance with ASTM C-42. Two (2) cylinders shall be tested at fourteen (14) days. If the tested strength meets or exceeds the minimum 14-day requirements, the City may accept the concrete. The City or its authorized representative may have the other two cylinders tested at 28 days or discard at 60 days. Retesting as a result of failure shall be done at the Contractor's expense.

1.8.2 Aggregate Base Materials Compaction Tests

One (1) compaction test will be required on the compacted base material every 500 feet of pavement cut or fraction thereof. Areas of less than 500 feet in length will require a minimum of two (2) tests. The City or its authorized representative will choose the location and depth of in-place density tests. If any test made should fail, the area must be reworked and two (2) additional tests shall be taken at the Contractor's expense. The compacted base material shall be compacted to one hundred (100%) percent of maximum density for the full depth when tested in accordance with MAG Specifications Section 301.3 and 310.2. Aggregate base material shall not be placed on subgrade until final compaction tests of the subgrade have confirmed that the subgrade meets the compaction requirements of these Specifications.

1.8.3 Asphalt Concrete Pavement Testing

- One (1) Marshall test, gradation test and oil content test per day, or per 1,000 tons of asphalt placed, whichever is more frequent
- One (1) nuclear density gauge test every 300 lineal feet per lane per mix
- Asphalt pavement cores shall be taken in accordance with MAG Standard Specification Section 321.6. If the test cores indicate deficiencies, additional cores shall be required per MAG. Any associated additional testing costs shall be the contractor's responsibility.

1.9 Construction Survey and Layout

The Contractor shall be required to employ and retain at the Work Site, a surveyor with the experience and capability of performing all survey, control and layout tasks required of the Contractor to properly construct the Work. The surveyor must be an independent land surveyor registered in the State of Arizona, subcontracted to the Contractor and be acceptable to the City. The surveyor shall verify the elevations and grades shown on the plans and inform the City Engineer or his Representative of any discrepancies with the plans. Field adjustments may be necessary with prior approval of the City Engineer or his Representative.

1.9.1 General

- From established primary control points, Contractor shall furnish all required lines, measurements, grades and elevations for construction of all facilities, structures, pipelines, street construction and all other site improvements.
- Contractor shall establish a base line for the project based upon the control information provided in the Contract Documents and establish a minimum of three benchmarks suitable to the work.

- Contractor shall develop and make all detailed surveys, measurements and staking needed for construction including all temporary benchmarks, control points, work lines, stationing, grade / slope elevations, pipe / structure inverts, batter boards, off-sets, and cut sheets.
- Contractor shall keep current, accurate, organized and legible as-built notes and measurements of the constructed work. Surveyor shall maintain a complete and accurate log of all control and survey work as it progresses. All survey data, field notes and computations shall be recorded and kept in industry standard hard bound field books, all in accordance with recognized established professional surveying standards.
- Contractor shall be held responsible for the preservation of all benchmarks, points, marks, and stakes made or established for the work. Contractor shall reestablish and replace the same, at no additional cost to the City, any construction surveying / staking that has been accidentally, carelessly or willfully destroyed by any party.

1.9.2 Survey Staking Guidelines and Tolerances

- Alignment Staking – Every 50 ft on tangent and every 25 ft on curves.
- Slope Staking – Every 50 ft on tangent and every 25 ft on curves; re-stake every 10 ft in elevation.
- Easement Staking – Every 50 ft on tangent and every 25 ft on curves; wooden lath with flagging at 100 ft maximum spacing.
- Structures – Line stationing and at least two corners for location with two sets of off-sets plus centerline of inlets/outlets; elevations of bottom or floor and inlet/outlet inverts as necessary.
- Pipelines – Line stationing at appropriate offset dimensions with invert elevations for all pipe, fittings, horizontal and vertical bends, manholes, valves, fire hydrants and all appurtenances.
- Flat Concrete Pavement – Cut or fill elevations to top concrete two ft offsets; each corner and centerline of road.
- Roadway – Blue tops every 50 ft on tangent and every 25 ft on curves for subgrade, subbase and edge of pavement.
- Pavement Replacement – Where trench work requires pavement replacement the excavation, backfill, compaction and pavement shall follow MAG Detail 200, “T” Top construction. The contractor shall provide blue tops, where necessary, to establish subgrade and finished grades prior to paving operations.
- Asphalt Pavement – Provide a thorough check of the proposed pavement elevations and adjacent existing improvements verifying acceptable drainage flow following existing drainage patterns, prior to placement of new asphalt.
- Record Staking – Provide permanent stake at stub-outs, services and end-of-lines.
- Horizontal accuracy of easement staking shall be plus or minus 0.1 ft. Accuracy of all other staking shall be plus or minus 0.04 ft horizontally and plus or minus 0.02 ft vertically.
- Survey calculations shall include an error analysis sufficient to demonstrate the required accuracy.

1.10 As-built Record Drawings

As-built record drawings shall be completed as described in Sections 15, 26, 31, and 32 of the General Conditions and as described below.

- All excavation is to remain open and no backfill shall take place until all underground fittings including but not limited to tees, valves, horizontal bends, vertical bends, stub-outs, and any other required facilities have been as-built. Contractor must make items accessible in which the Contractor’s Surveyor can as-built survey and properly document the elevation and location of all items listed above. Any item which is backfilled without being as-built shall be re-excavated at the Contractor’s expense to allow the Surveyor to as-built.
- The Contractor shall maintain a full size set of blue/black line drawings on- site and continuously update these drawings to reflect any and all field adjustments, changes, additions, deletions etc. as they occur during the course of construction. Changes to the original Plan Drawings shall be

made by striking through the original information with a single line. The as-built changes shall be noted with the letters 'AB' after the correction. The as-built changes shall be shown in both plan and profile as appropriate. Changes in horizontal alignment shall be noted on the plan and tied down by stationing and offsets from the monument line. Any portions of the Work not constructed shall be clearly labeled "Deleted" and marked with an "X" through the deleted work.

- The City or its authorized representative will check the Contractor's as-built drawings set for accuracy and completeness on a monthly basis. The Contractor shall certify with each monthly pay request that the as-built drawings are current.
- At project completion, the Contractor shall submit a final, clean, full size set of blue/black line record plan drawings showing the entire project with the as-built information as described above. This final set shall be prepared, reviewed and sealed by the Contractor's surveyor. The City shall review the final paper set for completeness and acceptability. If rejected, the Contractor shall correct or complete the as-built drawings and resubmit for an additional review.
- After City review and approval of the final paper set as-built record drawings, the City shall give the Contractor's surveyor the project's permanent, original design set of plan drawings on which the surveyor shall cleanly and professionally mark-up to prepare the "official" sealed set of certified project record drawings and then return these as-built record drawings to the City. This submittal will be required to obtain final acceptance and final payment for the project.
- The Contractor shall submit to the City a copy of the As-Built plans in the following formats: AutoCAD 2013 format (or earlier version), PDF format, 24"x36" hard copy.
- The Contractor shall prepare a copy of the As-Built submittal in accordance with standards required by the ADOT Encroachment Permit.

1.11 Safety Fence Requirement for Trenches and Excavations

Work in and around trenches and excavations shall comply with Section 16 of the General Conditions and the following:

The Contractor shall provide safety construction fencing around all open trenches and excavations during all non-working hours. In addition, the Contractor shall provide safety fencing around the project site during working hours in order to ensure public safety.

The Contractor shall provide for the safety and welfare of the general public by adequately fencing all excavations and trenches that are permitted by the Engineer to remain open when construction is not in progress.

Fencing shall be securely anchored to approved steel posts located six (6) feet on center, having a minimum height of six (6) feet, and shall consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

The fencing, when installed about the periphery of excavations and trenches, shall form an effective barrier against intrusion by the general public into areas of construction. The contractor, at all times when construction is not in progress, shall be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, shall take immediate action to rectify any deficiency. Prior to the start of any excavation or trenching required for the execution of the proposed work, the contractor shall submit to the Engineer for approval, detailed plans showing types of materials and methods of fabrication for the protective fencing.

There will be no separate measurement or payment for furnishing, installing, or maintaining protective fencing. The cost shall be considered incidental to the cost of other items

1.12 Environmental Mitigation Measures

1. Contractor shall implement Best Management Practices during construction to prevent the introduction and spread of noxious and invasive species, such as cleaning construction equipment

and vehicles prior to arriving on site at commencement of construction, and again prior to leaving the site at completion of construction.

2. Revegetation will occur following construction and will follow the ADOT Roadside Vegetation Management Guidelines: https://azdot.gov/sites/default/files/2019/06/Vegetation-Management-Guidelines.pdf

3. Contractor shall implement Best Management Practices during construction and vegetation clearing activities to prevent potential impacts to Yellow-billed cuckoos. During the breeding season (April 15 and September 1), the Contractor will not have any equipment or construction noise prior to 8:30 am to minimize disturbance to YBCUs, if present. Should a YBCU be detected during construction, contractor shall cease construction or other activities in that particular area until the cuckoo leaves of its own volition.

4. Contractor shall comply with the Migratory Bird Treaty Act requirements. If vegetation clearing will occur during the migratory bird breeding season (March 1- August 31), the contractor shall hire a qualified biologist to conduct a pre-construction nesting bird survey within 2 weeks prior to commencing with clearing. Contractor shall avoid any active bird nests. During the non-breeding season (September 1- February 28) vegetation removal is not subject to this restriction.

5. The contractor shall not cause injury or death to swallows, including eggs and nestlings. If work will occur that will directly impact nesting swallows from February 1 to August 31 of any calendar year. the contractor shall adhere to the following:

    - The contractor shall completely remove all existing swallow nests within 100 feet of work areas after August 31 but prior to February 1 to prevent swallows from reusing those nests.

    - The contractor shall implement exclusionary measures to prevent swallows from building new nests within areas directly impacted by construction activities. Exclusionary measures shall be implemented in all areas where swallows are likely to nest, and may include (a) continually removing nesting materials during early nest construction when eggs or nestlings are not present, (b) installing exclusionary netting (wire or plastic mesh 0.75 inch or less in diameter), (c) installing deterrent spike strips, and/or (d) installing polytetrafluoroethylene (Teflon) sheeting

    - The contractor shall not disturb any active swallow nests (completed or partially completed nests that contain eggs or nestlings). If any active nest is discovered within 100 feet of construction activities, work shall stop and the Arizona Department of Transportation Environmental Planning biologist shall be contacted (602.622.9622 or 602.712.6819) to evaluate the potential for disturbance of nests.

    - The contractor shall monitor and maintain the effectiveness of exclusionary measures daily. Netting shall be maintained such that it remains in place without any loose areas or openings that could trap and/or entangle birds. Spike strips shall be maintained such that they remain in place. Teflon sheeting shall be reapplied as often as necessary to remain effective.

6. If swallow exclusion measures fail, the contractor shall:

    - Inform the Engineer as soon as swallow nest building occurs and determine whether the area can be avoided until nests are no longer active;

    - Hire a qualified biologist to survey bird nests within 100 feet of construction areas and provide a report to the Environmental Planning biologist (602.622.9622 or 602.712.6819) with the number of affected nests for each species of bird. The resume for the selected

biologist shall be approved by the Engineer in coordination with the ADOT Biologist prior to conducting the survey.

- Determine whether to wait for the nestlings to fledge or apply for a US Fish and Wildlife Service Migratory Bird Treaty Act Special Purpose permit from the USFWS Regional office in Albuquerque, New Mexico.
- If the permit is approved, hire a wildlife rehabilitator licensed by USFWS to relocate and rehabilitate all affected eggs or nestlings.
- Any costs incurred as a result of delays related to failure of swallow exclusion measures, including waiting until the nests are not active and/or time required to obtain a Migratory Bird Treaty Act relocation permit and the eggs or nestlings to be relocated from the work area shall be the contractor's responsibility.
- The contractor shall remove all exclusionary measures after project completion to the satisfaction of the Engineer.

7. Construction within Oak Creek shall comply with the Clean Water Act Section 404 and 401 permitting processes and follow all 404 and 401 requirements.

2 MEASUREMENT AND PAYMENT

2.1 General

Measurement for each bid item shall be done in the units installed or percent complete as indicated in the Contract's Price Sheet. Measurement shall be for all work that is satisfactorily completed in place, with no allowance for waste, and that which is verified by field measurements.

In general, payments to the Contractor shall be in accordance with Section 31 of the Contract's General Conditions. Specific payment guidelines shall be in accordance with the MAG Specifications as applicable or as more particularly described below in Section 2.2, Items of Work, of these Technical Specifications. Payment will be made at the unit price or lump sum price that was bid and is shown on the Bid Schedule and shall constitute payment in full for furnishing all materials, equipment, appurtenances, labor, plant and tools necessary to provide a complete project in a workmanlike and satisfactory manner as shown by the Contract Drawings and described herein.

2.2 Items of Work

The item numbers listed below correspond to the item numbers listed in the Bid Schedule.

2.2.1 MOBILIZATION AND DEMOBILIZATION

The City shall compensate the Contractor for a one-time mobilization of the contractor's personnel equipment, supplies and incidentals, establishment of offices, buildings and other facilities, required for the performance of the work on the project, as well as preparatory work and operations prior to the commencement of the work on the project site. Mobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization, measured as provided above, shall be made per Section 33 of the General Conditions.

The City shall compensate the Contractor for a one-time demobilization of the contractor's personnel equipment, supplies and incidentals, removal of offices, buildings and other facilities, required following performance of the work on the project. Demobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization, measured as provided above, shall be made per Section 33 of the General Conditions.

2.2.2 MAINTENANCE AND PROTECTION OF TRAFFIC

The Contractor shall submit a traffic control plan for acceptance by the City prior to proceeding with any work. The contractor shall submit any changes to the traffic control plan to the City for acceptance at least 72 hours prior to any traffic control changes. Lane restrictions on SR 179 shall be conducted Monday through Thursday, nighttime only. Lane restrictions will not be permitted during the daytime on weekends during the months of March and April.

A separate set of Construction Traffic Control Plans shall be provided by the Contractor and approved by the City a minimum of 3 business days prior to the start of any activity. This item shall also consist of providing traffic control devices, arrow-boards, at least two variable message boards, barricades, flagmen, and pilot cars if necessary consistent with the approved traffic control plans. This work shall be in conformance with Section 18, Paragraph D of the Contract's General Conditions.

Payment for Traffic Control will be on a lump sum basis with the payment amount being prorated (overall project percent completion) over the project's duration.

2.2.3 STORM WATER POLLUTION PREVENTION PLAN

This work will be paid on a lump sum basis and consists of preparing and implementing a stormwater pollution prevention plan in accordance with the Sedona City Code, Chapter 14 and Section 16 of the General Conditions.

2.2.4 REMOVE EXST PROPERTY WALL AND SALVAGE ARCH FEATURES

The work under this item is for the removal of a portion of the existing south Tlaquepaque property wall in conflict with the proposed path for the limits as shown in the plans. Existing architectural elements, including column caps and wall architectural triangular features, shall be salvaged and reused. The existing property wall foundation shall be protected in place, unless it is determined that there is a conflict with proposed. If a conflict is discovered, the conflicting portion of existing foundation shall be sawcut and removed. A ½" bituminous joint filler shall be placed adjacent to any existing concrete and new pours.

The existing CCTV camera and arm mount shall be removed, salvaged and repositioned after wall reconstruction. Contractor shall coordinate with the City of Sedona for final positioning before installation. Contractor shall provide a fully function CCTV. Any required mounting hardware cost shall be incidental. Methods shall conform to MAG Section 350.

Measurement and payment for removing the existing south Tlaquepaque property wall shall be at the lump sum unit price and include all labor and materials required to remove the wall per the limits specified in the plans.

2.2.5 REMOVE EXST SITE WALL

The work under this item is for the removal of the existing site wall at the location as shown in the plans.

Payment for removal of the site wall shall be at the unit price per linear foot as specified in the Bid Schedule and shall include all labor and materials required to remove the wall.

2.2.6 REMOVE AND SALVAGE EXST POLE WITH WIND ART

The work under this item is for the removal and salvage of existing poles with art located near the existing Tlaquepaque arch area, including the pole foundations, as shown in the plans.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to remove and salvage the pole and art. The Contractor shall coordinate delivery of the salvaged poles and art with the City and Tlaquepaque.

2.2.7 REMOVE AND SALVAGE EXST TLAQUEPAQUE ARCH SIGN

The work under this item is for the removal and salvage of the existing metal Tlaquepaque sign located on the existing masonry arch sign. The sign shall be replaced once new masonry arch has been constructed.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to remove and salvage the sign. The Contractor shall coordinate storage of the salvaged sign with the City and Tlaquepaque.

2.2.8 REMOVE EXST ASPHALTIC CONCRETE PAVEMENT

The work under this item is for the sawcutting and removal of existing asphaltic concrete pavement, including base course if necessary.

Payment for sawcutting and removing asphaltic concrete pavement, including base course if necessary, shall be at the unit price per square yard specified in the Bid Schedule and shall include all labor and materials required to remove and dispose of the asphaltic concrete pavement, including base course if necessary, to a location off of the project site.

2.2.9 REMOVE EXST CONCRETE SIDEWALK

The work under this item consists of the removal of the existing sidewalk as noted on the plans.

Measurement and payment for this item shall be by square foot of sidewalk removed. All equipment and materials required for removal shall be included in the unit price.

2.2.10 REMOVE AND STOCKPILE EXISTING EROSION PROTECTION

The work under this item consists of the removal and stockpiling of existing erosion protection.

Measurement and payment for this item shall be by Lump Sum. All equipment and materials required for removal and stockpiling of any existing erosion protection shall be included in the unit price.

2.2.11 REMOVE EXST GABIONS

The work under this item consists of the removal of gabion baskets and gabion mattresses including geotextile fabric, backfill, compaction and disposal. Methods shall conform to MAG Section 350. Contractor shall take means necessary during removal to allow for new gabion mattress to be connected to the existing mattress. Contractor shall take means necessary to re-tie and secure severed gabions at removal limits per the manufacturer's requirements.

Measurement and payment for removing mattress shall be at the unit price per cubic yard as specified in the Bid Schedule and shall include all labor and materials required to remove the gabion baskets and gabion mattresses.

2.2.12 REMOVE AND RELOCATE EXST WATER QUALITY BOX

The work under this item consists of the removal and relocation of the existing water quality box, solar panel, rainfall gauge, and water sensors. The existing cabinet shall be mounted on the abutment wall in the location specified on the plans at the same approximate height as the current box location, with a bottom bracket with expanding anchor bolts and through the back of the cabinet with expanding anchor bolts. The velocity gauge and sample suction tubing shall be routed together in a single conduit. The junction boxes along the conduit from the new cabinet location to the existing pipe shall be 10' to 12' maximum. The existing solar panel for box power shall be relocated to be mounted in the abutment wall directly above the new cabinet location. New conduit shall be provided to the new cabinet location. The down time of the water quality meter due to relocation shall not exceed 14 days. The Contractor shall notify the City and ADOT at least 14 days prior to starting removal work on the existing water quality box or appurtenances.

Measurement and payment for relocation of the cabinet and appurtenances shall be at the unit price per each as specified in the Bid Schedule and shall include all labor and materials required to relocate the cabinet and appurtenances.

2.2.13 REMOVE EXST BLOW-OFF ASSEMBLY AND REPLACE WITH ELBOW

The scope of work for this item involves the removal of the existing 2” blow-off assembly and replacing it with a 90-degree MJ Elbow, 6 LF of 6” DIP, and transition couplings, as per the plans provided. All work shall be coordinated with Arizona Water Company and work shall be conducted in accordance with Arizona Water Company requirements and specifications included in the plans.

The Contractor to ensure that the installation of the new components shall conform to the latest AWC standards and specifications. Any necessary coordination with utility companies, municipal authorities or other entities shall be carried out promptly, and all relevant safety protocols and procedures shall be followed.

Measurement and payment for the removal and replacement of the existing 2” blow-off assembly shall be based on the unit price per each specified in the Bid Schedule, which includes full compensation for labor, materials, and other relevant costs as indicated in the project plans.

2.2.14 RELOCATE EXST FIRE HYDRANT AND WATER VALVE

The work under this item consists of removing and relocating the existing fire hydrant location shown in the plans. All work shall be coordinated with Arizona Water Company and work shall be conducted in accordance with Arizona Water Company requirements and specifications included in the plans. The hydrant shall be delivered intact to the Arizona Water Company. Disassembly of the hydrant unit will not be allowed.

Payment shall be at the unit price per each as specified in the Bid Schedule and shall include all labor and materials including but not limited to trenching and back filling, pipe cutting and plugging, valve abandonment, and hydrant delivery required to remove the existing fire hydrant.

2.2.15 RELOCATE EXISTING PROPERTY WALL LIGHTS

The work under this item consists of removing existing property wall lights and the associated mountings, storing and transporting to the new location and mounting in the new wall. This item shall also include demolishing, removing and disposing of existing hardware, wiring and conduit. New conduit, wiring and any new hardware or mountings required are incidental to this item. The Contractor shall coordinate relocation of the existing property wall lights with the City and Tlaquepaque.

Payment for removal shall be at the unit price per each specified in the Bid Schedule and shall include all labor and materials required to locate the property wall lights. The Contractor shall coordinate storage and relocation of lights with the City and Tlaquepaque.

2.2.16 RELOCATE WATER METER

The work under this item will consist of removing and relocating the existing water meter, box, water valve and cover as shown on the plans. The water meter will be relocated close to the existing location and be rotated by 90 degrees to accommodate the tight space. All necessary adjustments to the service pipeline will be made to accommodate this change. All materials and installation methods shall comply with Arizona Water Company standards and specifications, and any necessary permits and approvals shall be obtained prior to the commencement of work. It is important to note that there shall be one meter per service line, and all methods employed must adhere to MAG Section 631. Before proceeding with the installation of the meter, the contractor shall submit it to Arizona Water Company for inspection. In case a new meter is deemed necessary, the City shall provide one. All work shall be coordinated with Arizona Water Company and work shall be conducted in accordance with Arizona Water Company requirements and specifications included in the plans.

Measurement and payment for removing pipe and connection pieces for existing water service shall be at the unit price per each specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

2.2.17 RELOCATE EXST LIGHT POLE

The work under this section shall consist of removing an existing light pole and its associated mast arm and luminaire, storing and transporting to the new location and mounting on a new foundation. The item shall also include demolishing, removing and disposing of existing foundations. The existing foundation shall be removed to a depth of at least 2 feet below the final grade, or as directed by the Engineer. All voids shall be filled and made level with the surrounding ground. Any disturbed ground shall be restored to match the surrounding area. The Contractor shall be responsible for replacement of any materials that are damaged through removal, handling, and transportation. The Contractor is advised to make note of, and take pictures of, any material that appears damaged before removal. The Inspector shall verify any claim of damaged existing material prior to removal. The luminaire and attached decorative stanchion shall be rotated back towards the path to avoid aerial breach into the SR 179 roadway.

Measurement and payment for relocating the existing light pole shall be at the unit price per each specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

2.2.18 RELOCATE EXST CATV BOX

The work under this item will consist of relocating the existing CATV box as shown on the plans. The new box location and all work is to be approved and coordinated with Century Link.

Measurement and payment for relocating the CATV box shall be at the unit price per each as specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

2.2.19 ADJUST VALVE BOX AND COVER TO GRADE PER MAG STD DTL 270

The work under this item will consist of adjusting frames, covers and valve boxes for public utility valves to finished grade as shown on the plans. Methods shall conform to MAG Section 345.

Measurement and payment for adjusting public utility frames, covers and valve boxes shall be at the unit price per each item specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

2.2.20 REMOVE EXST DUMPED RIPRAP

The work under this item provides for removal and salvage of existing dumped riprap used for erosion protection, that is located in front of the west abutment of SR179 and as identified on the project plans. The work under this item shall consist of furnishing all labor, equipment and materials required to remove and salvage the existing dumped riprap, at the locations shown on the plans and in accordance with these Project Specifications.

The Contractor shall remove the designated dumped riprap, in a manner as to prevent any damage and the salvaged erosion protection, and carefully stockpile or store the rock within a secured area on the project site.

The item will be measured and paid for as Lump Sum, which shall be full compensation for all materials and work required to remove, salvage and store the existing dumped riprap, as shown on the project plans and as described in these Project Specifications.

2.2.21 RELOCATE EXST TELCO PEDESTAL

The work under this item provides for relocation of the existing Telco Pedestal. The work under this item shall consist of the removal of the telco pedestal, the work associated with burying the slice, the placement of the marker and installation of the pedestal at a new location by connecting both with a 36” deep and 15 feet long trench, with two copper cables. The existing sidewalk shall be maintained at all times.

The item will be measured and paid for as Lump Sum, which shall be full compensation for all materials and work required to remove, salvage and store the existing pedestal, as shown on the project plans and as described in these Specifications.

2.2.22 TREE PROTECTION SHORING

The work under this item is for the use of shoring as indicated on the plan sheets for excavation near the Sycamore trees. Tree protection excavation, backfilling and compaction methods shall conform to Section 601 of the MAG Standard Specifications.

The Contractor shall hire a Certified Arborist to assist in the development of a shoring plan to minimize disturbance to the existing Sycamore trees and ensure tree survival. The plan shall guide ground disturbing activity and the use of heavy machinery around tree root zones. The Certified Arborist shall provide oversite and monitor all ground disturbing activities within the tree root zones to ensure proper care is taken during excavation activity. All efforts shall be made to minimize disturbance to tree canopies and roots. All cuttings of roots that are larger than 1" diameter shall be approved by the Certified Arborist and be made as clean cuts with hand tools. Ripping of roots with large machinery shall not be allowed.

The Contractor shall provide trench bracing, sheathing or shoring necessary to perform and protect the excavation, as well as to minimize the disturbance to the Sycamore tree roots, as required for safety and conformance to governing laws. Shoring shall be located no more than two feet from the back of the required footing heel and as indicated in the plan sheets only. The Contractor shall not utilize shoring methods that including nailing or other penetration up-slope that may create disturbance to the Sycamore tree roots. The Contractor shall submit a working plan to the Engineer for review prior to construction.

Measurement and payment for this item shall be by Lump Sum. All equipment and materials required for the bracing, sheathing, or shoring, and the removal of the same, shall be included in the unit price.

2.2.23 TEMPORARY FILL STABILIZATION

The work under this item is for the temporary fill stabilization adjacent to the existing SR 179 retaining walls. In order to avoid undermining the retaining wall footings, the existing fill shall be stabilized through methods of slurry or shotcrete, or as otherwise approved by the Engineer. Stabilization shall be in place for no longer than 90 days in order to perform reinforced concrete cantilever retaining wall and concrete short gravity wall construction.

Measurement and payment for this item shall be by Lump Sum complete in place.

2.2.24 SUBGRADE PREP

This item is for all excavation, fill, grading, and compaction to prepare the subgrade and graded shoulders in accordance with MAG Sections 205 and 301.

This Section shall govern the following:

- Preparation of natural or excavated areas prior to the placement of sub-base material, pavement, curbs and gutters, driveways, sidewalks or other structures
- Preparation of the subgrade to the required line and grade for paved or unpaved shoulders, tapers, turnouts, and driveways, and at all other project locations where aggregate base and/or select material courses are used in accordance with the Project Plans.
- Structural excavation for removal of material for the construction of foundations for bridges, manholes, retaining walls, box culverts, head walls for culverts, and other structures, and other excavation designated on the plans or in these specifications as structure excavation
- Stripping and disposal of all unsuitable material including existing pavement and obstructions such as stumps, roots, rocks, etc., from the area to be paved
- Structure backfill consisting of furnishing material, if necessary, and placing and compacting backfill material around structures to the lines designated on the plans, or specified or directed by the Engineer
- Structure excavation and structure backfill including the furnishing of all materials and equipment and the providing of other facilities, which may be necessary to perform the excavations and

place and compact the backfill, and the subsequent removal of these facilities, except where they are required or permitted by the plans, special provisions or Engineer to remain in place

Construction Requirements:

Preparation of Subgrade: In the areas where new construction is required, the moisture content shall be brought to that required for compaction by the addition of water, by the addition and blending of dry, suitable material or by the drying of existing material. The material shall then be compacted to the specified relative density. If pumping subgrade should become evident at any time prior to paving, the Engineer may require proof rolling with a pneumatic-tire roller or other approved equipment in order to identify the limits of the unacceptable area. The proof rolling will be performed at no additional cost to the City.

The Contractor may use removed existing asphalt concrete and other existing bituminous roadway surfacing materials originating on the project site, as embankment fill. All materials used shall be thoroughly crushed to sizes not exceeding four inches, or as approved by the Engineer. These asphalt/bituminous materials shall be placed not less than two feet below finished subgrade elevation.

All unsuitable material and all excess material shall be disposed of in accordance with the requirements of Sections 205.2 and 205.6, respectively. When additional material is required for fill, it shall conform to Section 210.

Relative Compaction: The subgrade shall be scarified and loosened to a depth of 6 inches. Rock 6-inches or greater in size that becomes exposed due to scarification shall be removed from the scarified subgrade. When fill material is required, a layer of approximately 3 inches may be spread and compacted with the subgrade material to provide a better bond. The subgrade cut and fill areas shall be constructed to achieve a uniform soil structure having the following minimum compaction, measured as a percentage of maximum dry density when tested in accordance with AASHTO T-99, Method A, and T191 or ASTM D6938 with the percent of density adjusted in accordance with the rock correction procedures for maximum density determination, ARIZ-227c1 to compensate for the rock content larger than that which will pass a No. 4 sieve. Unless otherwise noted in the project plans or project specifications, compaction shall be performed within 2 percentage points of the optimum moisture content.

(A) Below pavement, curb and gutter, attached sidewalk, roadway shoulders, and other areas within right-of-way subject to vehicular traffic - 95 percent

(B) Below detached sidewalk not subject to vehicular traffic - 85 percent

Subgrade Tolerances: Subgrade upon which pavement, sidewalk, curb and gutter, driveways, or other structures are to be directly placed shall not vary more than 1/4 inch from the specified grade and cross-section without approval from the Engineer. Subgrade upon which sub-base or base material is to be placed shall not vary more than 3/4 inch from the specified grade and cross-section without approval from the Engineer. Variations within the above specified tolerances shall be compensating so that the average grade and cross-section specified are met.

Grading of Areas Not To Be Paved: Areas where grade only is called for on the plan shall be graded to meet the tolerances for the subgrade where subbase or base material is to be placed. The surface shall be constructed to a straight grade from the finished pavement elevations shown on the plans to the elevation of the existing ground at the extremities of the area to be graded.

Protection of Existing Facilities: The Contractor shall exercise extreme caution to prevent debris from falling into manholes or other structures. In the event that debris should fall into a structure, it shall immediately be removed.

Foundation Material Treatment: When footing concrete or masonry is to rest upon rock, the rock shall be fully uncovered and the surface thereof shall be removed to a depth sufficient to expose sound rock. The rock shall be roughly leveled off or cut to approximate horizontal and vertical steps, and shall be roughened.

Seams in the rock shall be grouted under pressure or treated as the Engineer may direct and the cost thereof will be paid for as extra work. When no piles are used and footing concrete or masonry is to rest on an excavated surface other than rock, care shall be taken not to disturb the bottom of the excavation and final removal of the foundation material to grade shall not be made until just before the concrete or masonry is placed. Excavation below grade shall be replaced with the same class of concrete specified for the structure or with 1 ½ sack controlled low strength material as specified in Section 728. When the replacement material is structural concrete, the material shall be placed at the same time as the structure material. Placement of controlled low strength material shall be per Section 604, which will require a time lag between placement of the material and the structural concrete. The placement of the additional material shall be at no cost to the City except when over-excavation is directed by the Engineer.

The excavation for structures shall be completed to the bottom of the footings before any piles are driven therein, and excess material remaining in the excavation after pile driving shall be removed to the elevation of the bottom of the footings.

When piles are used and ground displacement results from pile driving operations, the Contractor shall at his expense excavate or backfill the footing area to the grade of the bottom of the footing as shown on the plans with structure backfill material.

Inspection: When any structure excavation is completed, the Contractor shall notify the Engineer who will make an inspection of the excavation. No concrete or masonry shall be placed until the excavation has been approved by the Engineer.

Structure Backfill: Prior to the placement of structure backfill, the Contractor shall remove all loose, unstable materials from the sides of the structure excavation that may constitute a safety concern or impact proposed backfill operations. The Contractor shall then compact the bottom of the remaining open structure excavation to a uniform density of not less than 95 percent maximum dry density. With the approval of the compaction of the bottom of the open structure excavation by the Engineer, the Contractor may start the placement of the Structure Backfill.

Structure Backfill to be placed against concrete structures designed to retain earth loads, such cantilever concrete retaining walls, short concrete gravity walls and masonry walls:

(A) Shall conform to the material and the gradation requirements for Select Material, Type A or B in Table 702-1 unless otherwise approved by the Engineer.

(B) Shall not be placed until the concrete has reached its full design strength.

(C) Shall be placed in layers not more than 8 inches in depth before compaction, when compacted by pneumatic or mechanical tamping devices.

(D) Shall be uniformly compacted to at least 95 percent of maximum density.

Structure Backfill placed against concrete structures not designed to retain earth loads:

(A) Shall not be placed until the concrete has attained a minimum compressive strength of 2500 psi in compression as specified in Section 725 and in no case less than 72 hours after casting.

(B) Shall be uniformly compacted to at least 95 percent of maximum density.

Where a structure is located within an existing street, proposed street, or paved area shall be compacted to the minimum density specified in Table 601-2, for Type I or shall be filled with ½ sack or 1 sack controlled low strength material as specified in Sections 604 and 728.

Minor structures, as defined in Section 505.1.1, when furnished as precast structures, shall be placed on a compacted layer of Structure Backfill at least 6 inches in depth that conforms to the material requirements of Section 206.4.2. The layer shall be shaped to fit the bottom surface of the precast unit and compacted

to not less than 100 percent maximum density. The Structure Backfill shall be at or near optimum moisture content, as approved by the Engineer. After the unit has been initially set in place and checked for line and grade, it shall be removed, and any defects in its bearing area or line and grade shall be corrected by trimming and by placing and compacting similarly moistened Structure Backfill and the unit reset in place. If in the opinion of the Engineer the bearing area, line, or grade of a set precast unit is defective, the Contractor shall remove the unit, correct the bearing area and reset the unit at no additional cost to the City.

Precast units shall be installed on compacted, shape-conformed Structure Backfill in reasonable conformity with the lines and grades shown on the project plans.

Unless otherwise provided in the plans and/or special provisions the maximum density shall be determined using procedures defined in Section 301.

Measurement:

Measurement for Subgrade Preparation will be by the square yard. The area to be measured will be the total accepted area of new asphalt concrete pavement and new Portland cement concrete pavement (PCCP), including paved shoulders, tapers, turnouts, and unpaved roadway shoulders. Subgrade Preparation area measured will also include the accepted surface area of sidewalk and driveways that are surfaced with aggregate base, select materials and non-surfaced areas designated for vehicle traffic, and areas requiring retaining wall and toe-down sidewalk footing installation.

Except for PCCP, the area under Portland cement concrete surfaces such as concrete curb and gutter, sidewalk, concrete driveways and driveway entrances, and concrete alley entrances will not be included in the Subgrade Preparation measurement.

Project earthwork quantities for Roadway Excavation, Borrow Excavation, and Fill Construction shall not be separately measured. Payment for said earthwork items shall be included in the unit price for Subgrade Preparation and the contraction or installation of the items to which such excavation and backfill are incidental or appurtenant.

Payment:

Payment shall be compensation in full for stripping, scarifying, grading, excavating, hauling, filling, compacting, and disposing of excess or unsuitable materials, together with all costs incidental thereto.

No additional measurement for payment will be made for excavation resulting from lack of side support for structure excavations, nor due to carelessness of the Contractor.

Hauling, placing, and compacting surplus earthwork in embankments, or otherwise disposing of the material, shall be included in the contract price paid for Subgrade Preparation.

2.2.25 CHANNEL EXCAVATION (INCL. HAUL OFFSITE)

This item consists of excavating and exporting earthwork as specified in the plans. Channel excavation will be in accordance with section 210 of the MAG Std Specifications. Excavated material not used for backfill will be exported off site.

Payment will be made at the contract unit price bid per cubic yard, to the nearest yard, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to excavate and export earth material for the channel excavation as described or specified in the contract documents. The contractor is encouraged to review the Geotechnical Report for the project.

2.2.26 AGGREGATE BASE COURSE

The work under this item is for the installation of aggregate base course, including materials, excavation, backfill, and compacting. Methods and materials shall conform to MAG Standard Specification 310 except as modified herein.

Measurement for Aggregate Base Course shall be per ton. The accepted quantities for Aggregate Base Course measured as provided above will be paid for at the contract unit price, which will be full compensation for the work complete in place, as shown on the plans and as specified in the specifications.

2.2.27 CONCRETE SIDEWALK PER MAG STD DTL 230 WITH MESH

The work under this item will consist of the construction of concrete sidewalk, complete in place, as shown on the plans. Mesh shall be included unless otherwise noted on the plans. Concrete shall be Class B per MAG Section 725. Methods shall conform to MAG Section 340. Welded wire fabric shall be per MAG Section 727 and placed per MAG Section 505. The surface shall be broom finished.

Measurement and payment for this item shall be at the unit price per square foot as specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

2.2.28 CONCRETE PAVERS

The work under this item will consist of the construction of concrete pavers, complete in place, as shown on the plans. Construction of pavers shall be in accordance with Section 342 of the MAG Standard Specifications. The color of the pavers shall be approved by the Engineer and shall match the color of the existing pavers located in the adjacent Tlaquepaque property parking area and conform to ASTM C 979.

Measurement and payment for this item shall be at the unit price per square foot as specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

2.2.29 RETAINED CURB

The work under this item will consist of construction of the retained curb detail complete in place per the detail in the plans. This includes curb terminations and transitions as shown on the plans as well as the decorative steel railing. Concrete shall be Class A per MAG Section 725. Methods shall conform to MAG Section 340. Measurement and payment for this item shall be by the linear foot at the unit price specified in the Bid Schedule and shall include all labor and materials required to construct as specified.

Measurement for curb terminations and transitions shall be included with the linear measurement of the modified MAG single curb as shown on the plans.

2.2.30 MEDIAN BOLLARDS AND CHAIN (SPECIAL DETAIL)

The work under this item will consist of installing two bollards, chain, and latching mechanism per plans detail and at locations shown in the plans. Methods shall conform to MAG Standard Det 222.

Measurement and payment for procuring and installing two bollards, chain, and latching mechanism with all needed hardware. Measurement and payment shall be at the unit price per each item specified in the Bid Schedule and will be full compensation for all, labor, and materials as shown on the plans.

2.2.31 3-FT MAN GATE WITH LOCK

The work under this item consists of installation of a 3-ft man gate along the railing adjacent to the existing storm drain outlet as shown in the plans. Posts and rails shall match the material used for the adjacent railing. Construction shall follow MAG Section 520, and 420 (where applicable). Fencing components shall be painted in accordance with Section 530 and the aesthetic plans.

Measurement and payment shall be at the unit price per each as specified in the Bid Schedule and will be full compensation for all labor and materials as shown in the plans.

2.2.32 REINFORCED CONCRETE CANTILEVER RETAINING WALL

The work under this item will consist of construction of reinforced concrete cantilever retaining walls in place. This item includes footing, keyway construction and retaining wall buildout details as specified on the plans. Reinforced concrete cantilever retaining wall construction shall conform to Section 914 of the ADOT Standard Specifications. Geocomposite Wall Drain requirements shall conform to Section 203.503 (C) of the ADOT Standard Specifications. See plans for rustication requirements.

The Contractor may submit for approval an alternate material of concrete masonry block for the cantilever retaining wall. Approval by the Engineer will be based on the alternative being adequate for the ground conditions, workspace constraints and water pressures at the location(s) for which the alternative method is intended. Material and construction shall conform to MAG 510 specifications. Contractor shall submit wall and foundation calculations and shop drawings for Engineer and City approval. Shop drawings and calculations shall be prepared by and bear the seal and signature of a Professional Engineer. Contractor shall provide details, materials and color submittals as needed to accomplish the aesthetic treatments as shown on the plans if using alternative wall construction methods, for approval by the City Representative. Additional material and color field mockup/samples shall also be provided for approval by the City Representative prior to construction for all aesthetic treatments.

Measurement and payment for this item shall be by square foot of wall constructed and measured along front face of wall from top of footing to top of wall. Pay item includes all labor and materials required for necessary excavation, footings, backfilling, drainage, reinforced concrete wall with footing and applicable rustication and color coating as described herein and on the project plans.

2.2.33 MASONRY PROPERTY WALL

The work under this item will consist of the construction of the new masonry property wall. This item includes foundation construction, masonry wall construction, placement of reinforcement and grout in cells, arch sign reconstruction, epoxy anchors, bituminous joint filler, polystyrene and relocation of the salvaged stone cap and abode tile. Methods of concrete masonry wall construction shall conform to MAG Section 510. Dowel anchor methods shall conform to MAG Section 505.4.

Compact backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

Aesthetic treatment to match existing wall. Paint samples shall be submitted for acceptance. Final treatments shall be approved by the Engineer.

Concrete masonry unit material requirements shall be per MAG Section 775.

Measurement and payment for this item shall be by square foot of wall constructed and measured along front face of wall from top of footing to top of wall The pay item includes all labor and materials required for necessary excavation, foundation, backfilling, aesthetic surface treatment and relocation of the salvaged stone cap and adobe tiles to match the existing wall.

2.2.34 SHORT CONCRETE GRAVITY WALL

The work under this item will consist of the construction of the short concrete gravity wall.

Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis.

Joint seal behind wall shall be two layers of 30# smooth roofing paper or geotextile fabric. Mop all contract surfaces of concrete and roofing paper or geotextile fabric with cut-back asphalt. Stop roofing paper or geotextile fabric 6” below top of wall.

Aggregate drainage layer with weep holes shall be provided at the back of wall. Aggregate shall be per MAG Table 605-1 F1 or F2. Geosynthetic fabric shall be per MAGE Table 796-2 Class B. Provide a continuous 1’x1’ clean gravel or crushed rock drain. Wrap drainage area with geotextile fabric. Provide 8”x8” galvanized mesh with ¼” openings, at the inside end of the PVC drainpipe. Provide 2” diameter PVC drainpipe (Sch. 40) at 10 ft. maximum spacing.

Measurement and payment for this item shall be by square foot of exposed face of wall. The cost of reinforcing steel, face texture, finish, joint seal, drainpipes, drainage layer, galvanized mesh, and geotextile fabric to be included in the contract unit price.

2.2.35 REINFORCED CONCRETE SLAB OVERHANG

The work under this item will consist of the construction of the reinforced concrete slab overhang. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis. The surface shall be broom finished to match concrete sidewalk.

Measurement and payment for this item shall be by square foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, finish, falsework and formwork to be included in the contract unit price.

2.2.36 NEW MODIFIED MAG 206 CONCRETE SCUPPER

This work will consist of the installation of a Concrete Scupper as shown on the construction plans and details. All concrete shall be Class B, Sedona Red, in accordance with MAG Section 725. Reinforcing steel shall be in accordance with MAG Section 727.

The unit price bid for Each shall be made per unit price. Payment shall be compensation in full for the item complete in place including any and all associated cost for material and labor for construction.

2.2.37 NEW DRAIN INLET

This item includes providing and installing a drain inlet that is equal or equivalent to the following:

Nyloplast 12” Inline Drain part number 2712AG08D (schedule 80);

Nyloplast 12” square, Pedestrian H-10 grate;

Nyloplast 8” diameter riser section part number 2908AG to a height sufficient to comply with the plans and details;

or approved equal. Appurtenant fittings required to install the drain inlet may be required.

The unit price bid for Each shall be full compensation to provide and install the unit in place and functional according to these specifications and the manufacturers recommendations. Filter fabric shall be considered incidental. Cut sheets for the proposed drain inlet with details showing the installation configuration shall be submitted for approval prior to construction.

2.2.38 PERMEATION GROUT

2.2.38.1 PERMEATION GROUT PLACEMENT

2.2.38.2 PERMEATION GROUTING (DRILL GROUT HOLES)

The work under these items shall consist of furnishing the labor, equipment, and materials necessary to supply and place grout associated with the foundation preparation of retaining walls in accordance with the details shown on the plans and the requirements of these specifications as scour protection required for the pedestrian path. The Contractor may submit for approval alternate methods for providing equivalent scour protection to bedrock. Approval by the Engineer will be based on the alternative being adequate for the ground conditions, workspace constraints and water pressures at the location(s) for which the alternative method is intended.

The first 100 cubic feet of grout placed shall be considered as a test panel and shall be constructed under the observation of the Engineer. The test panel shall be placed, within the designated limits of the grout, at a location and area designated by the Engineer. Further placement of grout will be dependent upon the acceptance of the test panel, to meet the requirements of these specifications, by the Engineer.

Contractor shall use permeation grouting to create a scour-resistant mass that extends from top of bedrock to bottom of footing beneath planned walls as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

A Grouting Contractor that specializes in permeation grouting shall perform the work. The Contractor shall have a minimum of 5 years of continuous experience in planning and directing work dealing with permeation grouting and in the mixing and injection of grout.

The Contractor shall submit a list of personnel to be used on this project outlining the firm's and employees' experience with permeation grouting. The grouting supervisor shall have a minimum of 3 years of actual on-the-job supervisory experience in similar applications and shall be assisted by an experienced grouting foreman on each shift. Prior to grouting activities the Contractor shall determine on the ground, the vertical and horizontal projection of the exterior limits of all underground structures and utilities.

Definitions:
A. Permeation Grout Placement – A process by which a flowable, low-viscosity grout is injected under pressure through a sleeve port (grout) pipe inserted to fill voids.

B. Grout Injection Point (Grout Pipe) – A point on ground surface through which the Contractor inserts the sleeve port pipe for the purpose of conducting grouting. The grout injection points shall consist of drilling holes, including setting up and removing equipment involved at each location where the permeation grouting is performed.

Submittals:
Prior to performing permeation grouting operations the Contractor shall submit 3 copies, for approval by the Engineer, a draft written grouting program outlining the proposed work plan for the permeation grouting operation. No permeation grouting operations shall be performed until the written grouting program has been approved by the Engineer. The written program shall include, but not be limited to:

1. A list of personnel to be used in this project outlining their experience with permeation grouting;
2. A list of at least five (5) previously completed permeation grouting projects of similar scope and purpose, including a contact name and phone number;
3. Grout mix design and grout material specifications;
4. Proposed layout and depth of grout holes, grout pressures, and construction sequence within the treated zone;
5. Equipment and methods for measuring and recording stroke and back pressures, including pressure surges, at the top of the injection point;
6. Equipment and methods for measuring and recording pumping rates and grout volumes with calibration procedures and certification of the equipment;
7. Grout termination criteria for each lift;
8. Complete description of the materials, equipment, including size and type, and methods to be used in each grouting operation, including inclination and depth of grout pipes;
9. A pre-grouting survey to establish baseline conditions;
10. A proposed verification plan after the completion of the test panel;
11. A ground movement monitoring plan during and after grouting operations;
12. Sample forms for drilling logs, grouting logs and monitoring logs;

The Engineer will have five (5) working days to review the written grouting programs. If revisions are required, as determined by the Engineer, the Contractor shall revise and resubmit three (3) copies of the written grouting programs. The Engineer will have five (5) working days to review the revisions. Upon the Engineer's approval of the written grouting programs, three (3) approved copies of the written grouting programs, incorporating the required changes, shall be submitted to the Engineer.

Materials:
A flowable, low-viscosity grout mix shall be used. The mix shall be a combination of Portland cement, fine aggregate, coarse aggregate, and water. The materials shall conform to the following ADOT Standard Specifications:

Portland cement	1006-2.01
Water	1006-2.02
Aggregate	1006-2.03

Replace the gradation requirements for Fine & Coarse Aggregate presented in the ADOT Standard Specifications as follows:

> Fine aggregate shall be well graded and have between 10 and 30 percent passing the No. 200 sieve and a minimum of 85 percent of content passing the No. 8 sieve. Fine aggregate shall be graded to eliminate sand blocking at the grout working pressures specified elsewhere in these special provisions.
>
> Coarse aggregate shall conform to the requirements of ASTM C404. Coarse aggregate shall be no larger than 3/8 inch and shall comprise less than 5 percent of the total aggregate.

The cement content of the grout shall not be less than 12 percent, by weight of the dry aggregate materials. The unconfined compressive strength of the grout shall be at least 1,000 pounds per square inch at 28 days when tested in accordance with AASHTO T22 and T23. Any fly ash and chemical admixtures shall conform to the requirements of Standard Specification 1006-2.04 and the Engineer's approval.

Water shall be added to the grout mix in an amount to provide a moderately high slump (6-8 inches) as determined by ASTM C143. The Engineer shall determine the frequency of testing. Materials shall be accurately proportioned and thoroughly mixed and agitated to provide grout of uniform consistency.

Alternative mix designs proposed by the Contractor shall be subject to approval by the Engineer based on site conditions and available subsurface information.

Construction Requirements:
For grout pipe installation the contractor shall use the following:

1. Flush joint steel casing with a minimum inside diameter of 2 inches;
2. Steel casing that has adequate strength to maintain the hole and to withstand the required jacking and pumping pressures;
3. Drilling equipment and methods capable of simultaneously drilling the hole and advancing the casing in a manner to prevent collapsing of the hole.
4. Air or air-foam mixtures to install the grout pipes. The Contractor shall not use drill fluids, unless approved by the Engineer.

The casing shall be installed such that there is no leakage and premature upward movement of the casing during the grout injection. External packing shall be used as required to assure grout delivery to the bottom of the hole.

The Contractor shall furnish a pugmill type compaction-grouting mixer of sufficient capacity to continuously deliver grout of the specified slump at a maximum pressure of 200 pounds per square inch, as measured at the grout pipe head, at a maximum flow rate of 2 cubic feet per minute. The Contractor shall provide grout hoses with a minimum inside diameter of 2 inches with sufficient strength for the specified pressures and rates of flow.

The Contractor shall continuously monitor the grouting pressure and flow rate at the grout pipe head and at the pump by pressure gauges and flow meters that are suitably protected to prevent grout clogging or damage from handling, vibration or shock.

The grout shall be injected under continuous pressure using a bottom-up method with the grout casing withdrawn in consistent increments of less than 12 inches through the grout zone. When one of the following criteria occurs the Contractor shall raise the grout pipe to the next increment:

1. The maximum allowable grout pressure of 200 pounds per square inch at the gauge located at the grout pipe head has been achieved.
2. The injected grout volume exceeds 9 cubic feet for the interval.
3. Upward heave of the ground surface of greater than 2 inches.

The Contractor shall provide access to the Engineer for inspection to ascertain the Contractor's work and to perform independent monitoring of the ground surface for movement.

The Contractor shall monitor and record data at each grout point including location, pumping rate, minimum and maximum grout pressure, and volume of grout pumped. Two copies of complete recorded data for drilling and grouting at each grout injection point shall be submitted to the Engineer. The drilling report shall contain the following information: name of driller, type of drill and method being used, location of hole, depth of hole, date and time started, date and time completed, method used to flush the hole and type and depth of materials encountered. The grouting report, for each grout pipe, shall contain the following information: name of grouting technician, constituents and proportions of grout, log of grout quantity injected per foot of hole, total grout volume, date and time started, time and date completed, rate of pumping, grout pressures, ground movements and refusal criteria.

The Engineer may delete sections or locations from the grouting program should naturally acceptable foundation conditions be encountered, should conditions not appropriate for compaction grouting be encountered, or should unacceptable grouting results be obtained, such as performance criteria not being satisfied.

The Contractor shall take precautions as necessary to prevent drill cuttings, equipment exhaust, oil, wash water and grout from defacing existing improvements or the landscape. The Contractor shall clean up all waste resulting from the drilling and grout placement operations.

Measurement and Payment

Permeation grout placement will be measured for payment by the cubic foot of grout injected, as determined from flow gauge readings and other methods determined by the Engineer. Grout placement will be paid for at the contract unit price per cubic foot. Payment will constitute full compensation for all materials, labor, equipment, mixing, pumping, waste, cleanup and reporting.

Permeation grouting (drill grout holes) will be measured by the linear footage of holes drilled and cased. Additional footage for holes drilled deeper than required by the plans shall not be measured, unless directed by the Engineer. Permeation grouting (drill grout Holes), will be paid for at the contract unit price per linear foot. Payment will constitute full compensation for furnishing all labor and materials necessary for drilling holes, furnishing and installing casing and connection fittings and the disposal of drill cuttings.

2.2.39 PLACE SALVAGED DUMPED RIVER ROCK

This item consists of placing salvaged river rock in the excavated channel in accordance with the plans, details, and section 210 of the MAG Std Specifications.

Payment will be made at the contract unit price bid per cubic yard, to the nearest yard, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to place the dumped river rock as described or specified in the contract documents.

2.2.40 GABION MATTRESS AND BASKETS

This work shall consist of furnishing, assembling, and filling woven wire mesh gabions with rock as specified in the contract to the dimensions, lines and grades shown on the plans. The term “gabion” refers to both gabion baskets and gabion mattresses in this section.

Materials

- Woven Wire Mesh
  Wire (Zinc Coated)
  All tests on the wire must be performed prior to manufacturing the mesh.
  - Tensile strength: both the wire used for the manufacture of gabions and the lacing wire, shall have a maximum tensile strength of 75,000 psi (515 MPa), in accordance with ASTM A641/A641M.
  - Elongation: the test must be carried out on a sample at least 12 in. (30 cm) long. Elongation shall not be less than 12%, in accordance with ASTM A370.
  - Zinc coating: minimum quantities of zinc according to ASTM A641/A641M, Class III soft temper coating.

- Adhesion of zinc coating: the adhesion of the zinc coating to the wire shall be such that, when the wire is wrapped six turns around a mandrel having four times the diameter of the wire, it does not flake or crack when rubbing it with the bare fingers, in accordance with ASTM A641/A641M.

Galvanized (zinc coated) woven wire mesh gabions (8 x 10 mesh type):

- Wire mesh: Diameter - 0.120 in. (3.05 mm)
- Selvedge wire: Diameter - 0.153 in. (3.90 mm)
- Mesh opening: Nominal Dimension D = 3.25 in. (83 mm)

Galvanized (zinc coated) lacing wire and internal stiffeners:

- Lacing wire: Diameter - 0.087 in. (2.20 mm)
- Cross tie/stiffener wire: Diameter - 0.087 in. (2.20 mm)
- Preformed Stiffener: Diameter – 0.153 in. (3.9 mm) internal.

Steel Mesh Properties

- Mesh Tensile Strength shall have a minimum strength of 3500 lb/ft (51.1 kN/m) when tested in accordance with ASTM A975 section 13.1.1
- Punch Test Resistance shall have a minimum resistance of 6000 lb (26.7 kN) when tested in accordance with ASTM A975 section 13.1.4
  Connection to selvedges shall have a minimum resistance of 1400 lb/ft (20.4 kN/m) when tested in accordance with ASTM A975.

Spenax Fasteners (Overlapping Fasteners):

Overlapping fasteners may be used in lieu of, or to complement, lacing wire for basket assembly and installation.

High tensile fasteners shall have a nominal spacing of 4 in. (100 mm) not to exceed 6 in (150 mm) for all assembly and installation. This is based on a 1,400 lb/ft (20.4 kN/m) pull apart resistance for galvanized mesh with this spacing (ASTM A975 section 13.1.2).

Fasteners used for assembly and installation of the units on the field shall be tested for compliance with the ASTM A975 section 13.1.2.2 Pull-Apart Resistance. Producer or supplier of the wire mesh shall provide certification no later than 15 days prior of starting construction.

When tested in accordance with section 13.1.2.1, the average maximum resistance of the fasteners from the field shall not be lower than 90% of the resistance provided in the certification.

Galvanized Fasteners: Diameter = 0.120 in. (3.05 mm), according to ASTM A764, Type B, Class 3.

Tensile strength: 230,000 to 273,000 psi (1586-1882 MPa) in accordance with ASTM A764 Table 2.

Proper installation of rings: A properly formed Spenax fastener shall have a nominal overlap of one (1) in. after closure.

Anchorage to concrete: Epoxy adhesive, galvanized eyebolts or J hook bolts, and galvanized steel bar per Manufacturer’s recommendations.

Tolerances

Wire: Zinc coating, in accordance with ASTM A641/A641M, Class III soft temper coating.

Gabion sizes: ± 5 % on the length, width, and height.

Mesh opening: Tolerances on the hexagonal, double twisted wire mesh opening shall not exceed ± 10% on the nominal dimension (3.25" for a mesh type of 8x10).

Standard Unit Size

Table of sizes for gabions			
L=Length ft (m)	W=Width ft (m)	H=Height ft (m)	# of cells
6 (1.8)	3 (0.9)	3 (0.9)	2
9 (2.7)	3 (0.9)	3 (0.9)	3
12 (3.6)	3 (0.9)	3 (0.9)	4
6 (1.8)	3 (0.9)	1.5 (0.45)	2
9 (2.7)	3 (0.9)	1.5 (0.45)	3
12 (3.6)	3 (0.9)	1.5 (0.45)	4
6 (1.8)	3 (0.9)	1 (0.3)	2
9 (2.7)	3 (0.9)	1 (0.3)	3
12 (3.6)	3 (0.9)	1 (0.3)	4
4.5 (1.4)	3 (0.9)	3 (0.9)	1

All sizes and dimensions are nominal. Tolerances of ± 5% of the width, length, and height of the gabions shall be permitted.

- Fabrication
  Gabions shall be manufactured and shipped with all components mechanically connected at the production facility. The front, base, back and lid of the gabions shall be woven into a single unit. The ends and diaphragm(s) shall be factory connected to the base. All perimeter edges of the mesh forming the basket and top, or lid, shall be selvedged with wire having a larger diameter.
  The gabion is divided into cells by means of diaphragms positioned at approximately 3 ft (1 m) centers. The diaphragms shall be secured in position to the base so that no additional lacing is necessary at the jobsite.

- Rock
  The rock for gabions shall be hard, angular to round, durable and of such quality that they shall not disintegrate on exposure to water or weathering during the life of the structure. Gabion rocks shall range between 4 in. (0.10 m) and 8 in. (0.20 m). The range in sizes may allow for a variation of 5% oversize and/or 5% undersize rock, provided it is not placed on the gabion exposed surface. The size shall be such that a minimum of two layers of rock must be achieved when filling the gabions. Salvage rock from removed gabion mattresses and from channel excavation if it meets these requirements.

Construction Requirements

- Assembly
  Gabions are supplied folded flat and packed in bundles. The units are assembled individually by erecting the sides, ends, and diaphragms, ensuring that all panels are in the correct position, and the tops of all sides are aligned. The four corners shall be connected first, followed by the internal

diaphragms to the outside walls. All connections should use lacing wire or fasteners as previously described in Section 2.2.37.1.
The procedure for using lacing wire consists of cutting a sufficient length of wire, and first looping and/or twisting to secure the lacing wire to the wire mesh. Proceed to lace with alternating double and single loops through every mesh opening approximately every 6 in. (150 mm) pulling each loop tight and finally securing the end of the lacing wire to the wire mesh by looping and/or twisting.
The use of fasteners shall be in accordance with the manufacturer's recommendations as specified in Section 2.2.37.1.

- Installation
  After assembly, the gabion baskets are carried to their final position and are securely joined together along the vertical and top edges of their contact surfaces using the same connecting procedure(s) described in the Assembly portion of this section. Whenever a structure requires more than one layer, the upper empty baskets shall also be connected to the top of the lower layer along the front and back edges of the contact surface using the same connecting procedure(s) described in the Assembly portion of this section.

- Filling
  Baskets shall be filled with rock as specified in the Rock portion of Section 2.2.37.1. During the filling operation some manual stone placement is required to minimize voids. It is also recommended to slightly overfill the baskets by 1 to 2 in. (25 to 50 mm) to allow for settlement of the rock. The exposed faces of vertical structures may be carefully hand placed to give a neat, flat, and compact appearance.

  The cells shall be filled in stages so that local deformation may be avoided. That is, at no time shall any cell be filled to a depth exceeding 1-foot (0.30 m) higher than the adjoining cell. Behind gabion walls, compact the backfill material simultaneously to the same level as the filled gabions.

Method of Measurement

- The payment quantities for excavation shall be determined by the outside limits of the gabion structure. Quantities will be determined from cross sections and the linear distance and paid for under the appropriate excavation bid items.
- The quantity to be paid for "In place gabions" shall be the number of cubic yards of gabions measured in their final position. Project conditions and material availability will determine the actual size of gabions to be used.
- Excavated material beyond the limits of the gabions shall be backfilled with gravel, crushed rock or other material approved by the engineer.
- This bid price shall include the installed in place cost of all materials, equipment, and labor, including gabions, rock, and backfill material.

Basis of Payment

Accepted gabions will be paid for at the unit price for each pay item included in the contract.

2.2.41 LANDSCAPING

Plant materials: plant materials shall be quality material having the habit of growth which is normal for the species; sound, vigorous, healthy, free from weeds and insects, plant diseases and injury. Can, ball and height and spread dimensions shall be measured according to accepted standards on the Arizona nursery association and good practice.

Topsoil: topsoil shall be screened, fertile, friable soil from well drained arable land and free from nut grass, refuse, roots, heavy clay, noxious weeds or any material toxic to plant growth. Topsoil content shall be as

follows: silt 20-45%; clay 15-20%; sand 30-60%; with a minimum of 5% organic material (natural or added). Topsoil existing on the site may be used if it meets the above specification. Ph shall not be lower than 5.5 nor exceed 8.3 and soluble salts shall not exceed 1500 ppm.

Soil preparation: planting pit backfill for all trees and shrubs shall be as follows: two parts excavated soil thoroughly mixed with one part nitrolized wood mulch; one pound of gypsum and four ounces of soil sulphur per tree or one-half pound of gypsum and two ounces of soil sulphur per shrub.

All trees and shrubs shall receive agriform 21 (20-10-5) plant tabs at the rates noted on the plans. Set tablets 6" below finished grade and space evenly around plant's perimeter.

Weed control: non-selective contact herbicide(s), non-selective systemic herbicide(s), or pre-emergent herbicide(s) shall not be permitted within environmentally sensitive areas. Manual weed removal methods are permitted for use within environmentally sensitive areas.

Decomposed granite: decomposed granite shall be of the size and color indicated on plans, shall be free from lumps or balls of clay and shall not contain calcareous coating, caliche, organic matter or deleterious substances. Color and source of decomposed granite shall be as per the plans. All material shall be from a single production source and shall present a uniform appearance. Material containing clumps which will not disintegrate with a shovel blow shall be rejected.

No material or method shall affect the landscape planting and establishment. Materials and methods must conform to federal, state and local regulations.

Tree stakes: tree stakes shall be 2" diameter x 8' new lodge pole pine or approved equal single or double stake. See plant legend remarks and details.

Tree guys: tree guys shall be as shown on the plans.

Nitrolized wood mulch: nitrolized wood mulch shall consist of a ground or processed wood product derived from redwood, ground or shredded fir, redwood or ponderosa bark. It shall have a nitrogen content of 1%. See soil preparation materials, planting backfill material and plan notes.

EXECUTION

Planting operations: plants not dimensioned as to precise locations shall be scaled from the plans and the plant placed in the appropriate relationship indicated.

Weed control: the applicator of all weed control materials shall be licensed by the state of Arizona as a pest control operator and a pest control advisor in addition to holding any subcontractor licenses that are required.

Grading: bring all planting areas to finish grade after soil prepping which shall be per the depths shown on plans and details below the adjacent paving and curbs or as noted by spot elevations. Special attention shall be given to maintaining continuous and even flow lines. Drainage away from structures and providing positive drainage to inlets and from outlets.

Grades shall be established to drain all water away from structures and behind walls. When drainage is difficult to achieve, notify the landscape architect and request a solution before continuing. Grades in shrub areas shall be established prior to planting to insure proper final planting heights. Final grading shall include the knocking down of watering basins prior to planting of ground cover. On hillside planting water basins shall be retained.

Decomposed granite: prior to placing, the area shall be totally free of weeds, using manual weed control if necessary. Decomposed granite shall be at the depth shown on the plans and evenly distributed at the designated areas.

After placing and grading; lightly water to remove fine material from the surface and water settle to an extent satisfactory to the City or its authorized representative. Remove weeds with approved methods a second time between 2 and 4 weeks after installation or prior to the start of the maintenance period, whichever comes first.

Clean-up: remove promptly any soil, mulch or other material dropped into paved areas by hauling operations or otherwise, keeping these areas clean at all times. Upon completion of planting, remove all excess soil, stones and debris.

Start of maintenance period: when all landscape improvements have been installed in accordance with the plans and specifications, the contractor shall notify the City or its authorized representative and request a "start of maintenance" inspection. If the City or its authorized representative determines the work to be substantially complete and in conformance with the plans and specifications, the contractor will be advised in writing that the maintenance period is started.

Measurement and payment for this item shall be by Lump Sum complete in place.

2.2.42 IRRIGATION

This work will be paid on a lump sum basis and consists of:

General: materials throughout the system shall be as shown on the drawings and shall be new.

Protect work and materials from damage during construction and storage. Protect polyvinyl chloride (PVC) pipe and related fittings from direct sunlight. Beds on which pipe is stored must be full length of pipe. Do not use any pipe or fitting that has been damaged or dented.

Plastic pipe: plastic pipe furnished shall be polyvinyl chloride plastic pipe conforming to the requirements of ASTM d2241 for SDR-PR pipe PVC 1120 or PVC 1220. Plastic pipe shall be SDR 21 or heavier.

Mainline fittings: PVC fittings shall be schedule 40, polyvinyl chloride.

Lateral fittings: PVC fittings shall be schedule 40, polyvinyl chloride.

Copper pipe and fittings: copper pipe shall be type ‘k”. Copper fittings wrot schedule 40 standard weight.

Control wire: solid copper wire, ul approved for direct burial in ground. Minimum gauge #14. For common wire and #14 for wire to valve from controller.

Splicing materials: 3-m dby-6 connector. As specified on plans.

Automatic valves: automatic valves shall be specified on plans.

Manual valves: manual valves shall be as specified on plans.

Plastic valve box and locking cover: valve boxes and locking covers shall be specified on plans.

Emitters: emitters shall be as specified on plans.

EXECUTION

Layout: contractor shall install all irrigation equipment as shown on plans. Where connections to stubouts are required, make necessary adjustments to layout as necessary to install around existing work. Contractor shall guarantee full coverage upon completion of job.

Excavating and trenching: perform all excavations as required for installation of work including shoring of earth banks. Trenching depths, widths, and backfill shall be as shown on the plans.

This site shall be Arizona 811 staked prior to any construction. Should utilities not shown on the plans be found during excavations, contractor shall promptly notify City or its authorized representative for

instructions as to further action. Failure to do so will make contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities.

Grades: before starting work, check all grades from known elev. (see landscape construction or civil plans) to be sure that rough grades are properly established and that all pipeline will be at the proper grade or lower upon the completion of final grading.

Sleeving: conduits for control wire and sleeves for irrigation piping shall be installed by the contractor. Sleeving to extend 12" beyond edge of concrete or pavement.

Pipeline assembly: solvent weld PVC pipe and fittings using solvents and methods recommended by manufacturer, except where threaded connections are required. Clean pipe and fittings of dirt and moisture before reassembly. PVC pipe may be assembled on ground surface beside trench. Make all connections between PVC pipe and metal valves or pipe threaded fittings using sch.80 toe nipples.

Irrigation control valves: install control valves in valve boxes where shown on plans and group boxes together where practical. Place no closer than 12" from walk edges and median curb. Top of valve boxes shall be 1” above finish grade. One valve maximum per valve box.

Control wiring: install control wires with mainline in common trenches whenever possible. Lay to side and below pipeline. Provide looped slack at valves and tape wires in bundles in 10' intervals. Control wire splices will be allowed only in controller or valve boxes. Crimp wires together and seal connections with specified splicing materials.

Closing of pipe and flushing of lines: cap all openings as soon as lines have been installed to prevent entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

Potable water shall be provided to thoroughly flush out all water lines before installing valves and other hydrants.

Inspections and test: submit request for inspections to City or its authorized representative at least 72 hours prior to anticipated inspection.

Inspection of completed installation will be made by the landscape architect prior to backfilling of trenches.

Make hydrostatic tests when welded PVC joints have cured at least 24 hours. Apply continuous available static water pressure as follows:

1. All piping on the non-pressure side of control valves shall pass a visual inspection before backfilling.

2. All piping on the pressure side of control valves shall be tested for 2 hours at 120 psi minimum without loss of pressure. Leaks resulting from tests shall be repaired and tests repeated until system passes test. Pressure testing shall be from a portable water source and pump with potable water.

Backfilling and compacting: after system is operating and required tests and inspections have been made, backfill excavation and trenches with clean soil, free of debris and rocks.

Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to 95% minimum density under payments, 85% under planted areas.

Compact all trenches by thoroughly flooding during and after backfill operation. Jetting process may be used in those areas. Dress off all areas to finish grade. Notify landscape architect for final coverage inspection prior to final acceptance.

Clean up: keep all areas of work clean and orderly at all times. Keep paved areas clean during installation. All debris shall be removed from the entire project prior to final acceptance.

Final irrigation acceptance: work under this section will be accepted by City or its authorized representative upon satisfactory completion of all work. No planting shall begin before all irrigation is complete and 100% functional.

Warranty/guarantee: in addition to manufacturer's guarantees or warranties, all work shall be warranted/guaranteed as provided in the landscape specifications against defects in material, equipment and workmanship by the contractor. Warranty shall also cover repairs to any part of the premises resulting from leaks or other defects in materials. Submit a written warranty letter to the City or its authorized representative.

Measurement and payment for this item shall be by Lump Sum complete in place.

2.2.43 TLAQUEPAQUE PROPERTY SYCAMORE TREE PROTECTION

The work under this item shall consist of the protection of the Tlaquepaque property's sycamore trees during path, property wall and arch sign removal and construction. Means and methods to be coordinated with the City and Tlaquepaque property owner prior to construction in the specified area. The Contractor shall hire a Certified Arborist to assist in developing a working plan around the Sycamore trees to minimize disturbance and ensure tree survival. The contractor shall employ the same Arborist to provide over site and monitoring of the work plan in the vicinity of the existing Sycamore trees.

The work zone shall be defined prior to Construction. Sycamore tree and root ball protection shall be ensured for the trees located at the North East corner of the east Tlaquepaque parking lot near Sta 11+20 and Sta 11+67.

During construction activities necessary infrastructure for tree health management procedures shall be set up, including but not limited to protection to the tree trucks, branches, root zone soil and roots, including but not limited to heavy mulch layers placed on top of root beds, trucks wrapped with protective layer heavy wood staves or corrugated plastic pipe. Heavy equipment will not be allowed for excavation near trees and any excavation shall require clean cutting and sealing of roots to avoid rot.

Measurement and payment for this item shall be paid for Lump Sum and shall include all labor and materials required to protect the sycamore trees.

2.2.44 CONCRETE BARRIER

The work under this item will consist of the construction of the decorative concrete barrier. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, finish, falsework and formwork to be included in the contract unit price.

2.2.45 CONCRETE BARRIER WITH HANDRAIL

The work under this item will consist of the construction of the decorative concrete barrier. Concrete shall be Class A per Section 725 of MAG Standard Specifications. Reinforcing Steel shall be ASTM A615, Grade 60. ASTM A185 Smooth or ASTM A497 deformed welded wire fabric (WWF) may be substituted on an equal area basis. Handrail and attachments shall be per Section 520 of the MAG Standard Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of reinforcing steel, handrail, handrail attachments, finish, falsework and formwork to be included in the contract unit price.

2.2.46 DECORATIVE RAILING

The work under this item shall include furnishing all labor, equipment and materials necessary to construct the decorative railing at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans and the requirements of MAG Standard Specifications unless noted otherwise.

All materials shall be in accordance with the details in the project plans. The decorative railing shall be in accordance with A53, Grade A and shall be galvanized after fabrication in accordance with A123 and shall also be painted. Prior to painting, the galvanization shall be etched. The decorative railing shall be painted in accordance with the color scheme noted in the project plans. The color of the paint shall be submitted to the Engineer for approval. Painting shall conform to Section 530 of the MAG Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. Item shall be measured horizontally along the top of the rail.

2.2.47 DECORATIVE RAILING WITH HANDRAIL

The work under this item shall include furnishing all labor, equipment and materials necessary to construct the decorative railing at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans and the requirements of MAG Standard Specifications unless noted otherwise. Handrail and attachments shall be per Section 520 of the MAG Standard Specifications.

All materials shall be in accordance with the details in the project plans. The decorative railing shall be in accordance with A53, Grade A and shall be galvanized after fabrication in accordance with A123 and shall also be painted. Prior to painting, the galvanization shall be etched. The decorative railing shall be painted in accordance with the color scheme noted in the project plans. The color of the paint shall be submitted to the Engineer for approval. Painting shall conform to Section 530 of the MAG Specifications.

Measurement and payment for this item shall be by linear foot and shall include all labor and materials required to construct as specified. The cost of handrail and associated attachments shall be included in the contract unit price. Item shall be measured horizontally along the top of the rail.

2.2.48 HANDRAIL (WALL ATTACHMENT)

The work under this item shall consist of constructing the metal handrails along the backwall and sidewalls of the existing SR 179 Bridge. All work shall be in accordance with the project plans and the requirements of Section 520 of the MAG Specifications.

All materials shall be in accordance with the details shown on the project plans. The metal handrail shall be galvanized after fabrication in accordance with ASTM A123 and shall also be painted. Prior to painting, the galvanization shall be etched. Paint color shall be color chip No. 20059 from Federal Standard 595B. Rail shall be 1.5” Schedule 40 steel pipe ASTM A 53, Grade B. Rail shall be painted Sedona Red. All sharp edges shall be removed.

Measurement and payment for this item shall be by linear foot, complete in place. The cost of galvanization, painting, attachment to existing wall to be included in the contract unit price.

2.2.49 TRASH RECEPTACLE

The work shall consist of providing the Trash Receptacle and associated concrete pad, complete as shown and detailed on the plans.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work as described or specified in the contract documents. Receptacle and Lid color to be Standard Dumor color ‘Almond’.

2.2.50 SIGN POST (PERFORATED) (2 S)
2.2.51 SIGN POST (PERFORATED) (2 1/2 S)
2.2.52 FOUNDATION FOR SIGN POST (CONCRETE)
2.2.53 WARNING, MARKER, OR REGULATORY SIGN PANEL
2.2.54 FLAT SHEET ALUMINUM SIGN PANEL

2.2.55 WATERBORNE-TYPE I PAVEMENT MARKING(PAININTING)(YELLOW)

Single and telescoping perforated posts shall be square tube fabricated from galvanized sheet steel. The sheet steel shall have a thickness of 0.105 inches (12 gauge) or 0.135 inches (10 gauge) as required by the project specifications. Sheet steel shall conform to the requirements of ASTM A653 for either SQ Grade 40 or SQ Grade 50 Class 1, and be galvanized in accordance with the requirements of Coating Designation G-90. The posts shall have a wall thickness, including coating, of 0.097 to 0.116 inches for 12 gauge and 0.127 to 0.146 inches for 10 gauge. Posts shall be welded directly in the corner by high frequency resistance welding or equal. The outside edges of the posts shall be scarfed as necessary to produce a standard corner radii of 5/32 ± 1/32 inch. External welded surfaces and scarfed areas shall be re-galvanized after fabrication. When specified on the plans, holes 7/16 ± 1/64 inch in diameter shall be provided on 1-inch centers along all four sides over the entire length of the post. The holes shall be laterally centered on the longitudinal centerline of each face. Hole positioning and spacing shall be the same on all four faces, such that the hole centerlines for each group of four holes shall pass through a common point on the longitudinal centerline of the tube. For telescoping posts, holes shall be in proper alignment to allow 3/8-inch diameter bolts to pass through the entire post. The finished posts shall be straight and have a smooth, uniform finish. All consecutive sizes of posts shall be freely telescoping for not less than 10 feet of their length without the necessity of matching any particular face to any other face.

Bolts shall conform to the requirements of SAE Specification J429, Grade 5, or ASTM A449, Type 1. Nuts shall conform to the requirements of ASTM A563, Grade A. Washers shall conform to the requirements of ASTM F844. Bolts, nuts, and washers shall be zinc coated in accordance with the requirements of ASTM B633 or cadmium plated in accordance with the requirements of ASTM B766.

Perforated sign post lengths shall be determined by the contractor at the time of construction staking. Posts shall be cut to the proper lengths in the field. Splicing will be permitted for single perforated posts; however, splices will be limited to one per each post installation and the splicing shall be accomplished in accordance with the details shown on the plans. The minimum length of any spliced piece of post shall be 2 feet.

Sign panels shall be flat sheet aluminum with direct-applied, digitally-imaged, electronic-cut, or screen-printed characters. Shipment, storage, and handling of sign panels shall conform to the recommendations of the manufacturers of the sign panel components. Fabricated signs and overlay sheets shall be shipped on edge. Damage to the sign panel or legend resulting from banding, crating, or stacking may be cause for rejection of the signs. Signs shall be fabricated in accordance with the recommendations established by the manufacturer of the sign sheeting. All processes and materials used to make a sign shall in no way impact the performance, uniform appearance (day and night), or durability of the sheeting, or invalidate the sign sheeting manufacturers' warranty. All sheeting used for background and legend shall be from the same manufacturer. Sign panels shall not be overlaid. All text and numerals shall all be installed at the same orientation: either zero degrees or 90 degrees. Design of letters and numbers shall be in accordance with the project plans with a tolerance of ± 1/16 of an inch. The contractor shall not paint the bolts or the washers unless otherwise specified.

Panels shall be fabricated from 0.125-inch thick 5052-H36, or 5052-H38 Aluminum Alloy conforming to the requirements of ASTM B209. Panel facing shall be prepared and covered with retroreflective sheeting in accordance with the recommendations of the sheeting manufacturer. The color of the sheeting shall be as specified on the plans. All surfaces not covered shall be etched to reduce glare from reflected sunlight. Splicing of retroreflective sheeting shall not be allowed on sign panels having a minimum dimension up to

and including 4 feet. Messages shall be reflectorized white or, if called for on the plans, opaque black, and shall be produced by either screen printing, direct-applying, digital imaging, or electronic cutting.

Screen-printed letters, numerals, arrows, symbols, and borders, shall be applied on the retroreflective sheeting background of the sign by direct or reverse screen process. Messages and borders of a color darker than the background shall be applied to the retroreflective sheeting by direct process. Messages and borders of a color lighter than the sign background shall be produced by the reverse screen process. Opaque or transparent colors, inks, and paints used in the screen process shall be of the type and quality recommended by the manufacturer of the retroreflective sheeting. The screening shall be performed in a manner that results in a uniform color and tone, with sharply defined edges of legends and borders and without blemishes on the sign background that will affect intended use. Signs, after screening, shall be air dried or baked in accordance with the manufacturer's recommendations to provide a smooth hard finish. Any signs on which blisters appear during the drying process will be rejected. Direct-applied letters, numerals, symbols, borders, and other features of the sign message shall be cut from black opaque or retroreflective sheeting of the color specified and applied to the retroreflective sheeting of the sign background in accordance with the instructions of the manufacturer of the retroreflective sheeting. Direct-applied legend may be moved vertically 1/2 inch to avoid placing only a small amount of material over the adjacent extruded panel. The bottom of all characters for a line of legend shall line up within 1/8 of an inch. Electronic-cut characters shall be cut from translucent acrylic sheeting using computerized automated cutting processes. Digitally-imaged characters shall consist of characters produced through ultraviolet jet-printing or thermal transfer. Signs with digitally-imaged characters shall be manufactured using matched component ink, transparent electronic-cuttable film, and/or overlay film as supplied by the reflective sheeting manufacturer. For digitally-imaged copy on white sheeting, the coefficient of retroreflection shall be not less than 70 percent of the original values for the corresponding integral color. When characters are spread over two adjacent extruded panels, the characters shall align with each other within 1/16 of an inch.

Panels shall be cut to size and shape and shall be free of buckles, warps, dents, cockles, burrs, and defects resulting from fabrication. Fabricated signs shall be stored indoors and kept dry during storage. If packaged signs become wet, all packaging material shall be removed immediately and the signs allowed to dry. The signs may be repackaged using new dry materials. If outdoor storage is necessary, all packaging materials shall be removed. Signs shall be stored on edge, above ground, in an area where dirt and water will not contact the sign face. Materials used to support stored signs shall not contact sign faces. During fabrication of the sign panels, the contractor shall ensure the bolt holes on each sign panel are placed so the holes will not coincide with any legend and any bolts, washers, or other hardware used will not cover any portion of the legend. If the bolt holes on a sign panel do not comply with these requirements, the Engineer may reject the sign panel or accept the sign panel and require the contractor to paint the bolts, washers, and any hardware coinciding with the sign legend to match the color of the legend.

Minor scratches and abrasions resulting from fabrication, shipping and installation of panels may be patched; however, patching shall be limited to one patch per 50 square feet of sign area with the total patched area being less than 5 percent of the sign area. Panels requiring more patching than the specified limit will be rejected. Patches shall be edge sealed by a method approved by the retroreflective sheeting manufacturer. Sign panels shall be attached to the posts with hex head bolts as shown in the Standard Drawings; slotted head bolts shall not be used. A cadmium-plated or zinc-plated fender washer shall be placed between the bolt head and panel face. Bolts shall be fastened with a cadmium-plated or zinc-plated fender washer and two standard nuts. Nylon washers shall not be used. The fender washer shall be placed against the sign post, the first nut shall be tightened against the fender washer, and the second nut shall be tightened against the first nut. Bolts shall be tightened from the back by holding the bolt head stationary on the face of the panel. Twisting of the bolt head on the panel face will not be allowed.

Sign panel sheeting shall conform to criteria listed in the most current version of ASTM D4956 for the applicable type and class, unless otherwise specified. Sheeting for permanent warning signs and regulatory signs, including all sign legends and borders, shall be ASTM Type XI. Sheeting for all warning

signs with yellow backgrounds shall be Type XI fluorescent retroreflective yellow. Sheeting for information signs, ground-mounted guide signs, and marker signs, including all sign legends and borders, shall be ASTM Type IX or XI. When more than one sheeting type is allowed, the contractor may use any of the types listed, provided that materials used for a particular application shall be of the same ASTM type, manufacturer, and product for all signs of the same type in the project. Opaque films used with sheeting shall be acrylic type films. Direct-applied and demountable black characters shall be non-reflective.

Standard colors specified for sheeting, processing inks, and films shall, as applicable, match visually and be within the color tolerance limits required by Highway Tolerance Charts issued by the Federal Highway Administration. Additionally, for the retroreflective sheeting, unless otherwise noted, the Luminance Factor (Daytime Luminance) and Color Specification Limits (Daytime) shall conform to the applicable requirements of ASTM D4956. In addition to the luminance and color requirements, fluorescent orange sheeting and fluorescent yellow sheeting shall have the capacity to effectively fluoresce outdoors under low light conditions. For all applications requiring fluorescent orange sheeting or fluorescent yellow sheeting, the contractor shall provide a letter to the Engineer from the manufacturer certifying that the sheeting to be used is fluorescent.

The coefficient of retroreflection shall meet the minimum requirements of ASTM D4956 for the type of retroreflective sheeting specified. All black opaque films shall have a maximum coefficient of retroreflection of 1.0 or less at an observation angle of 0.2 degrees and entrance angle of -4.0 degrees. Transparent and opaque inks used for post or pre-screen printing of signs shall be of a type and quality specified by the sheeting manufacturer, and shall conform to the applicable requirements of the MUTCD and the Federal Highway Administration for traffic signs. The inks shall be applied in a manner, and with equipment, that is consistent with the ink manufacturer's recommendations. Additionally, the signs produced shall have a uniform legend of consistent stroke width and sharply defined edges, without blemishes that would negatively impact appearance, color or required retroreflectivity. Reflective sheeting and film adhesives shall be Class I as specified in ASTM D4956 and as modified herein. Pressure sensitive adhesive shall be an aggressive tack type that requires no heat, solvent or other pre-application preparation of the sheeting or film for its adhesion to clean aluminum, plywood, or reflective sheeting surfaces. Pretreatment of plastic surfaces shall be done as recommended by the sheeting manufacturer. The adhesive shall form a tight weatherproof durable bond that shall endure under all weather conditions for the required time of durability for that material. During this period the material shall remain bonded to its surface without discoloration, cracking, crazing, peeling, blistering, dimensional change or alignment change. The sheeting, inks, clear coats (if required), and films shall be applied as specified by the manufacturer. The applied sheeting or film shall not have bubbles, wrinkles or foreign materials beneath the reflective sheeting, ink or film.

The work under this section shall consist of cleaning and preparing the pavement surface, furnishing all materials and applying white or yellow, water-borne, lead-free, rapid-dry traffic paint and reflective glass beads at the locations and in accordance with the details shown on the plans, MUTCD or as directed by the Engineer.

All material used in the formulation of the pavement marking paint shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

Certificates of Compliance conforming to the requirements of Subsection 106.05 shall be submitted for each lot or batch of paint prior to its use.

Composition Requirements:
The pavement marking paint shall be a ready-mixed, one component, water-borne lead-free traffic line paint, of the correct color, to be applied to either asphaltic or Portland cement concrete pavement. The composition of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to produce a pigmented water-borne paint containing all the necessary co-solvents, dispersant, wetting agents, preservatives and all other additives, so that the paint shall retain its viscosity, stability and all of the properties as specified herein. The manufacturer shall certify that the product does

not contain mercury, lead, hexavalent chromium, toluene, chlorinated solvents, hydrolyzable chlorine derivatives, ethylene-based glycol ethers and their acetates, and not any carcinogen, as defined in 29 CFR 1910.1200. Lead content shall not exceed 0.06 percent of weight of the dry film, and the test for chromium content shall be negative. No glass beads will be allowed in the pavement marking paint. Glass beads will be applied after the paint has been applied.

Manufacturing Formulations:
The manufacturer shall formulate the pavement marking paint in a consistent manner and notify the Engineer of any change of formulation. The formulation of the paint shall be determined by the manufacturer. It will be the manufacturer's responsibility to formulate paint which will meet the quantitative and qualitative requirements of this specification. Any change in the formulation of the paint must be approved by the Engineer.

Quantitative Requirements of Mixed Paints:

Pigment	White	Yellow:
Percent by weight, ASTM D 3723, allowable variation from qualifying sample	± 2.0	± 2.0
Non-Volatile Content: Percent by weight, ASTM D 2369, allowable variation from qualifying sample	± 2.0	± 2.0
Viscosity: Krebs Units at 77 ± 1 oF, ASTM D 562	70 - 85	70 - 85
Weight per Gallon: pounds per gallon 77 ± 1 oF, ASTM D 1475P, allowable variation from quali fying sample	± 0.3	± 0.3
Vehicle Composition: Vehicle Infrared Spectra, ASTM D 2621, allowable variation from qualifying sample	None	None
PH: ASTM E 70, allowable variation from quali fying sample	± 1.0	± 1.0
Fineness of Dispersion: HEGMAN, minimum, ASTM D 1210	3.0	3.0
Volatile Organic Compounds: pounds per gallon of paint, maximum, ASTM D 3960 according to 7.1.2.	2.1	2.1
Flash Point : Degrees F., minimum, ASTM D 93, Method A	100	100
Dry Time to No Pick Up: with no beads: minutes, maximum, ASTM D 711	10	10
Dry Through Time: Minutes, ASTM D 1640 except no thumb pressure is used when thumb is rotated 90 degrees on paint film	20	20
Flexibility: TT-P-1952D	Pass	Pass

Qualitative Requirements:

(1) Color of Yellow Paint :
The color of the yellow paint shall closely match Federal Standard 595b, Color No. 33538. The color shall be checked visually, and will be checked against Tristimulus Values for the color according to Federal Test Method Standard No. 141.

(2) Dry Opacity:
Dry opacity for the paint will be determined using a black-white Leneta Chart, Form 2C Opacity and a Photovolt 577 Reflectance Meter or equal. Using a 10-mil gap doctor blade, a film of paint is drawn down, covering both black and white portions of the chart . The film shall be allowed to dry 24 hours. After calibrating the Reflectance Meter according to the manufacturer 's instructions, measure the reflectance over the white and black portions with the green Tristimulus filter. Dry Opacity is calculated as follows:

$$\text{Dry Opacity} = \frac{\text{Reflectance over black}}{\text{Reflectance over white}}$$

Dry Opacity for both white and yellow paint shall be a minimum 0.90.

(3) Yellowness Index:
Yellowness Index for white paint will be determined as described for dry opacity, only use a 15-mil gap doctor blade to draw down the paint. After 24 hours for drying, measure the reflectance of the paint film, using the green, blue, and amber Tristimulus filters. Calculate the Yellowness Index as follows:

$$\text{Yellowness Index} = \frac{\text{Amber - Blue}}{\text{Green}} \times 100$$

Yellowness Index for the white paint shall be a maximum of 10.

(4) Reflectance:
Reflectance for both white and yellow paint will be determined using the same 15-mil draw-down film as for the Yellowness Index. For white paint the same sample may be utilized for both the Yellowness Index and Reflectance. Measure the ref lectance of the paint film using the green Tristimulus filter. Reflectance for the white paint shall be a minimum of 85. Reflectance for the yellow paint may range from 42 to 59, inclusive.

(5) UV Color Durability:
UV Color Durability shall be determined using a QUV Weatherometer, with Ultra Violet Light and Condensate Exposure according to ASTM G 53, for 300 hours total. The repeating cycle shall be four hours UV exposure at 60 degrees C followed by four hours condensate exposure at 40 degrees C. After 300 hours of exposure, the Yellowness Index for white paint shall not exceed 12, and yellow paint must still match Federal Standard 595b, Color No. 33538.

(6) Static Heat Stability:
To determine static heat stability for the paint, place one pint of paint in a sealed can and heat in an air circulation oven at 120 ± one degrees F for a period of one week. Remove the paint from the oven and check the viscosity in Krebs Units at 77 ± one degrees F according to ASTM D 562. The viscosity measured must be in the range from 68 to 90, inclusive. Also, check for any signs of instability.

(7) Heat-Shear Stability:
To determine heat-shear stability for the paint, one pint of the paint is sheared in a Waring Blender at high speed to 150 degrees F. The blender should have a tight fitting lid taped onto it to minimize volatile loss. When the paint reaches 150 degrees F, stop the blender, immediately pour the paint into a sample can, and apply a cover to seal the can. Let the paint cool overnight and examine for jelling or other signs

of instability . Measure viscosity in Krebs Units at 77 ± one degrees F according to ASTM D 562. The viscosity measured must be in the range from 68 to 95 inclusive. If not within the upper limit, run total solids on the sheared paint and adjust solids, if necessary, by adding water to reach the original solids content. If the solids content required adjustment, again check the viscosity of the paint. The viscosity must be in the range from 68 to 95 inclusive.

(8) Scrub Resistance:
Scrub Resistance will be determined according to ASTM D 2486. Use an appropriate doctor blade to provide a dry film thickness of three to four mils. Allow the paint to cure for 24 hours. Perform the scrub resistance test at 77 ± one degrees F and 50 ± five percent humidity. Record the number of cycles to remove the paint film. The number of cycles recorded must be a minimum of 800.

(9) Spraying Properties:
The paint shall be applied at a 15 mils wet film thickness in the field. The paint shall show the following properties at ambient temperatures of 50 to 100 degrees F with a paint spray temperature of 150 degrees F, maximum, and six to eight pounds of post-applied glass beads per gallon of paint. Beads shall conform to subsection 708-2.02 of these specifications.
(a) Dry to a no-track condition in five minutes or less when the line is crossed over in a passing maneuver with a standard-sized automobile.
(b) Produce a clean-cut, smooth line with no overspray or puddling.
(c) Paint immediately after application shall accept glass beads so that the spheres shall be embedded into the paint film to a depth of 50 percent of their diameter.
(d) Paint when heated to the temperature necessary to obtain the specified dry time, shall show no evidence of instability such as viscosity increase, jelling, or poor spray application.

(10) Freeze-Thaw Properties:
The paint viscosity or consistency shall not change significantly when the paint is tested for resistance to five cycles of freeze-thaw according to ASTM D 2243.

(11) Road Service Rating:
Test stripes of the paint shall be applied transversely across the road, four inches in width and approximately 12 feet long at a location approved by the Engineer. Wet film thickness of the test stripes shall be approximately 15 mils as determined according to ASTM D 4414 and ASTM D 713 prior to test stripe application. To aid in obtaining the correct film thickness, a length of roofing paper placed by the side of the road can be used. Place a rigid metal test panel on the roofing paper in the path of a test line. Immediately after the test line is applied by the striper, measure the wet film thickness. If not satisfactory, adjust the spray pressure and repeat until the target wet film thickness is attained. It is important that no glass beads be present that would give a false wet film thickness. When the wet film thickness is correct, apply a test line across a tared metal test panel. After this, apply another test line across a different tared metal test panel, this time also adding the beads. These samples are necessary to determine the initial bead retention.

Glass beads conforming to the requirements of Subsection 708-2.02 of these specifications (moisture proof type) will be applied after the paint has been applied, but during the same striping operation at a rate such that the initial bead retention on the test line is a minimum of six pounds of beads per gallon of wet paint. The initial bead retention will be determined analytically by the ADOT Materials Group concurrently with the determination of the dry paint thickness utilizing tared metal test panels. The paint shall accept the glass beads so that the spheres are embedded into the paint film to a depth of 50 percent of their diameter. Test stripes will be observed for a period of 180 days from date of application. Paints will be evaluated for wear according to ASTM D 913.

After 180 days of service, on a visual rating scale of 0 to 100 percent, paints must have a rating of 92 percent or better to be acceptable. All ratings will be taken in the wheel track area. Glass beads shall show no more than a 30 percent loss after 180 days of test. This will be determined by taking close-up photographs of the paint film and by count determining the average bead loss. The road service test may be waived at the option of the Engineer or evaluated for a period of time less than 180 days.

(12) Workmanship:
Paint shall be free from foreign materials, such as dirt, sand, fibers from bags, or other material capable of clogging screens, valves, pumps, and other equipment used in a paint striping apparatus. The paint pigment shall be well ground and properly dispersed in the vehicle. The pigment shall not cake or thicken in the container, and shall not become granular or curdled. Any settlement of pigment in the paint shall result in a thoroughly wetted, soft mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sidewise manual motion of a paddle across the bottom of the container, to form a smooth uniform product of the proper consistency. If the paint cannot be easily redispersed, due to excessive pigment settlement as described above or due to any other cause, the paint shall be considered unfit for use.

The paint shall retain all specified properties under normal storage conditions for 12 months after acceptance and delivery. The contractor shall be responsible for all costs and transportation charges incurred in replacing paint that is unfit for use. The properties of any replacement paint, as specified herein, shall remain satisfactory for eight months from the date of acceptance and delivery.

(F) Manufacturing Requirements:

(1) Inspection:
The manufacturer of the paint shall advise the Engineer when paint is to be manufactured, shall furnish the Engineer free access to all parts of the plant involved in the paint manufacture, and shall furnish every reasonable facility for sampling both the paint and the raw materials during the process of manufacturing. All materials used in formulation shall meet the requirements herein specified. Any materials not specifically covered shall meet the approval of the Engineer.

All manufactured paint shall be prepared at the factory ready for application. When paint is shipped to a distributor or paint applicator who will store the paint prior to its use, the distributor or paint applicator shall furnish the Engineer free access to all parts of the facility where paint is stored and shall furnish every reasonable facility for sampling the paint.

Paint shall normally be sampled at the place of storage either at a warehouse or on the site prior to application of the paint. Application of the paint will not be permitted until the paint has been approved by the Engineer. It is the contractor's responsibility to notify the Engineer a minimum of 14 working days prior to any traffic painting operation and to allow access at that time for paint sampling at the storage location. A minimum of one paint sample shall be obtained from each lot of paint.

Check-samples of finished paint while being applied will be taken at intervals as determined by the Engineer.

(2) Testing:
All tests will be conducted in accordance with the latest test methods of the American Society for Testing and Materials, Federal Test Method Standard No. 141, and methods in use by the Materials Group, Highways Division, and the Arizona Department of Transportation as specified herein. Evidence of adulteration or improper formulation shall be cause for rejection.

(3) Packaging:
All shipping containers for paint must comply with the Department of Transportation Code of Federal Regulations, Hazardous Materials and Regulation Board, Reference 49 CFR. The container and lids must be lined with a suitable coating so as to prevent attack by the paint or by agents in the air space above the paint. The lining must not come off the container or lid as skins.

Containers shall be colored white, including lids, and containers shall have an identifying band of the appropriate color around and within the top one third of the container. All containers shall be properly sealed with suitable gaskets, shall show no evidence of leakage, and shall remain in satisfactory

condition for a period of 12 months after delivery to a distributor or paint applicator. The contractor shall be responsible for all costs and transportation charges incurred in replacing paint and containers.

(4) Marking:
All containers of paint shall be labeled showing the manufacturer 's name, date of manufacture, paint color, product code, manufacturer 's batch number, and quantity or weight of paint on both the side of the container and also the lid. Containers shall be clearly marked or labeled Rapid or Fast Dry lead-free Water-Borne Traffic Paints. All containers of paint shall be labeled to indicate that the contents fully comply with all rules and regulations concerning air pollution control in the State of Arizona, Maricopa County. The manufacturer of the paint shall be responsible for proper shipping labels with reference to whether the contents are toxic, corrosive, flammable, etc., as outlined in the U.S. Department of Transportation, Hazardous Materials Regulations, Reference 49 CFR.

(5) Unused Paint :
Disposal of unused quantities of traffic paint shall be the responsibility of the contractor and must meet all applicable Federal regulations for waste disposal. Paint which is saved to be used later shall be packaged as specified previously and shipped to a storage location. Unused paint must be identified on the container. Unused paint may be utilized on a future project provided the paint still conforms to all specifications contained herein.

Construction Requirements:

Equipment:
The traffic paint and beads shall be placed on the pavement by a spray-type pavement marking machine except that temporary striping during construction may be placed with other equipment designed for application of paint and beads.

The application equipment to be used on roadway installation shall have, as a minimum, the following characteristic and/or apparatus:

The machine shall be capable of applying clear-cut lines of the width specified on the project plans. The machines shall be equipped with a mechanical device capable of placing a broken reflectorized line with a 10-foot painted segment and a 30-foot gap. The machine shall be equipped with an air-operated glass bead drop-in dispenser controlled by the spray gun mechanism. A glass bead dispenser which is capable of placing the glass beads into the paintline as the paint is applied to the pavement shall be utilized. This dispenser shall provide satisfactory marking and delineation.

Application:
Pavement markings shall be applied when the pavement surface is dry and the weather is not foggy, rainy, or otherwise adverse to the application of markings. The surface shall be free from excess asphalt or other deleterious substances before traffic paint, beads or primer are applied. The contractor shall remove dirt, debris, grease, oil , rocks or chips from the pavement surface before applying markings. The method of cleaning the pavement surface and removal of detrimental material is subject to approval by the Engineer and shall include sweeping and the use of high-pressure air spray. The placing of traffic markings shall be done only by personnel who are experienced in this work.

Painting shall not be performed when the atmospheric temperature is below 50 degrees F when using water-borne paint, nor when it can be anticipated that the atmospheric temperature will drop below said 50 degrees F temperature during the drying period. Water-borne paints shall not be applied if rain is expected within one hour of its application, unless otherwise approved by the Engineer. Water-borne paint shall not be heated to a temperature greater than 150 degrees F to accelerate drying.

The volume of paint in place shall be determined by measuring the paint tank with a calibrated rod. At the option of the Engineer, if the striping machine is equipped with air-atomized spray units (not air less) and paint gauges, the volume of paint may be determined by utilizing said gauges.

The quantity of glass reflectorizing beads in place shall be determined by measuring the glass reflectorizing bead tank with a calibrated rod. The contractor shall provide the necessary personnel and equipment to divert traffic from the installation area where the work is in progress and during drying time when, in the opinion of the Engineer, such diversion of traffic is necessary.

Tolerances for Placing Paint, Beads, and Primer:
The length of painted segment and gap shall not vary more than six inches in a 40-foot cycle.
The finished line shall be smooth, aesthetically acceptable and free from undue waviness. Painted lines shall be four, eight, or 12 inches wide as shown on the plans with a tolerance of ± 1/8 inch and shall be placed at a minimum rate of 16 gallons per mile for a solid four- inch line and four gallons per mile for a broken four-inch line, based on a 10-foot stripe and a 30-foot gap (40-foot cycle aggregate). Glass reflectorizing beads shall be applied on the wet paint at a minimum rate of six pounds per gallon of paint. Wet thickness shall not be less than 15 mils.

2.2.56 ELECTRICAL CONDUIT (1") (PVC)
2.2.57 ELECTRICAL CONDUIT (1 1/2") (PVC)
2.2.58 PULL BOX (NO. 5)
2.2.59 PULL BOX (6" x 6" In Wall)
2.2.60 PULL BOX (8" x 6" In Wall)
2.2.61 CONDUCTOR (NO. 12)
2.2.62 CONDUCTOR (NO. 10)
2.2.63 CONDUCTOR (NO. 8)
2.2.64 CONDUCTOR (INSULATED BOND)
2.2.65 METER PEDESTAL CABINET (LIGHTING)
2.2.66 MISCELLANEOUS WORK (LED Rope)
2.2.67 MISCELLANEOUS WORK (POLE (14') (Decorative))
2.2.68 MISCELLANEOUS WORK (POLE FOUNDATION (STANDARD BASE)
2.2.69 MISCELLANEOUS WORK (MAST ARM (Decorative))
2.2.70 MISCELLANEOUS WORK (LUMINAIRE (LED) (GBLF3 Decorative))
2.2.71 MISCELLANEOUS WORK (Step Light Wall Fixture)

14’ light poles shall be Holophane SSA or approved equal (Model number SSA1444C PLN FST). Shaft size shall be 4” square. All poles, mast arms and luminaires shall be painted with Pittsburgh Paints color #429-6 “Safari Brown”. All poles shall be provided with a GFCI outlet and banner arms. The pole shall be placed in the ground plumb and straight. The base of the pole shall be oriented so that the handhole is located away from the sidewalk or street. Mast arms shall be Holophane GLD model GLD 30IN 1A BO QSM or approved equal. Mast arms shall be painted to match the pole. The mast arm shall be attached to the side of the pole per manufacturer’s instructions. The end of the mast arm shall be vertical. Light poles shall be mounted on drilled shaft, balustrade foundations, or light blisters as shown on the plans. Concrete drilled shafts shall be designed by the Manufacturer or Contractor and be large and deep enough to support the light pole, including loads from luminaire, mast arm, signs and banners. A minimum of 3” of concrete cover shall be provided for rebar and/or anchor bolts. The Engineer may require foundations to be larger or deeper than on the plans because of soil conditions. All pole foundations shall set for 72 hours prior to pole installation.

Pole foundations shall include all conduit, elbows, anchor bolts, grounding wire and reinforcing steel. Cabinet foundations shall include conduit, elbows, anchor bolts and clearance pad. Concrete for drilled shaft foundations shall be Class S and shall have a required 28-day compressive strength of 3,500 pounds per square inch.

Standard anchor bolts, washers, and nuts shall be fabricated from steel conforming to the strength requirements of ASTM F1554 Grade 55. The anchor bolts, washers, and nuts shall be fully galvanized in accordance with the requirements of ASTM A153.

The excavations required for the installation of foundations and other items shall be performed in such a manner as to avoid any unnecessary damage to streets, sidewalks, landscaping, and other improvements. The trenches shall not be excavated wider than necessary for the proper construction of the foundations and other equipment. Excavation shall not be performed until immediately before construction of foundations. The material from the excavation shall be placed in a position that will minimize obstructions to traffic and interference with surface drainage. All surplus excavated material shall be removed and properly disposed of within 48 hours by the contractor, as directed by the Engineer. After each excavation is completed, the contractor shall notify the Engineer for inspection, and under no circumstances shall any underground materials or equipment be covered with fill without the approval of the Engineer. At the end of each working period, all excavations shall be barricaded or covered, or both, to provide safe passage for pedestrian and vehicular traffic. Excavations in the street or highway shall be performed in such a manner that not more than one traffic lane is restricted at any time. Sidewalk and pavement excavations shall be kept well covered and protected to provide safe passage for pedestrian and vehicular traffic until permanent repairs are made.

Signal and lighting pole foundations shall be set flush with the existing or new curb and sidewalk or flush with the finished grade where there is no curb or sidewalk, except in sloped areas they shall be as shown on the project plans. The dimensions and locations of foundations shall be as specified on the project plans; however, the Engineer may direct that changes be made in locations due to obstructions or other existing conditions. The contractor shall verify top of foundation elevations with the Engineer prior to foundation construction.

Concrete shall be placed in holes which have been augered against undisturbed earth. If the material in the bottom of the hole is not firm and stable, it shall be compacted or treated as directed by the Engineer. The walls and the bottoms of the holes shall be thoroughly moistened prior to placing the concrete. If the soil is not stable and a hole cannot be augered, forms shall be used. They shall be of the proper size and dimensions and shall be rigid and securely braced. The forms and the bottoms of the holes shall be thoroughly moistened prior to placing the concrete. Anchor bolts and conduit stubs shall be placed and held in proper alignment, position, and height during the placing and vibrating of concrete. All pole foundations shall set for three days prior to pole installation. Before the concrete for cabinet foundations has set, depressions shall be made around the anchor bolts for adjustment of the cabinet leveling nuts.

Anchor bolts, washers, and nuts required for relocating existing poles shall be furnished by the contractor. Poles shall be drilled and tapped for mounting hardware as shown on the Standard Drawings. Use of through bolts will not be permitted. Poles will be rejected if holes are not properly positioned for the required mounts. All poles shall be plumbed to the vertical with all mast arms and luminaires installed.

Sidewalks, curbs, gutters, pavement, base material, lawns, plants, and any other improvements removed, broken, or damaged by the contractor's operations shall be replaced or reconstructed with materials in accordance with these specifications. The replaced or reconstructed improvements shall be left in a serviceable condition satisfactory to the Engineer, and shall conform to these specifications where applicable. The contractor shall inspect the poles and provide the materials and work necessary to recondition the poles so they can be reused. Holes left in the shafts of existing poles, due to removal of items such as signal mounting assemblies, shall be repaired and painted with a zinc galvanized paint. If any poles are damaged by the contractor's operations, such repairs or replacements shall be at no additional cost to the city. New poles that are damaged by improper drilling of holes will be rejected.

Luminaires for path lighting shall be Holophane GlasWerks model GBLF3 P10 30K MVOLT PTH QSM AO NL1X1 or approved equal. Initial lumens shall be within the range of 3,000 to 4,000.

Where existing light poles are relocated, the existing foundation shall be removed to a depth of at least 2 feet below the final grade, or as directed by the Engineer. All voids shall be filled and made level with the surrounding ground. Any disturbed ground shall be restored to match the surrounding area. The Contractor shall take measurements of the existing foundation and anchor bolts and provide designs for the new foundations and anchor bolts. Shop drawings shall be approved by the Engineer.

The meter pedestal shall meet all APS and city requirements, and consist of the following equipment:

Padmount Style
Metered Service 120/240 Volt Single Phase 3 Wire to Include:
100 AMP Meter Socket and Support Hardware
4 Anchor Bolts, (Galvanized)

The cabinet shall be UL listed and of tamperproof construction with provisions for padlocks. The cabinet shall include a photoelectric control cell, manual control switch and contactor.

The cabinet layout shall generally conform to STD DWG TS 3-5 (Type 1 With Lighting Control). Number of circuit breakers and photocell control shall be per the panel schedule on the plans.

All wire and wiring material shall be in accordance with APS requirements.

The cabinet shall be leveled plumb and straight.

APS will furnish and install all wiring and conduit between the cabinet to the power source. The contractor shall furnish and install the wire from the luminaires and electrical equipment to the cabinet. The contractor shall notify APS five working days prior to installation to coordinate construction activities.

Electrical conductors shall be stranded or single conductor, thermoplastic insulated electrical wire or cable. Conductors shall conform to the specifications of the NEC, UL, and other applicable industry standards. Wire and cable for lighting and other electrical systems shall be UL listed and rated for 600-volt operation. The wire shall be annealed copper. The wire shall be solid for number 10 AWG and smaller, conforming to the requirements of ASTM B3 for annealed bare copper wire. Conductors for sizes number 8 AWG and larger 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. The color shall be continuous over the entire length of the conductor.

All conduit and 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) non-metallic type conforming to the requirements of UL 651 for Rigid Non-Metallic Conduit. PVC conduit and fittings shall be Schedule 40, heavy wall, manufactured from high impact material and shall be rated for use at 90 degrees C. Conduit warning tape shall be a 4-mil inert plastic film specially formulated for prolonged use underground. 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 specifically formulated for prolonged underground use and shall bear the words, “CAUTION - ELECTRIC LINE BURIED BELOW” in black letters on a red background.

Metal junction boxes and covers for installation in concrete structures shall be fabricated from a minimum of 16 gage type 304 stainless steel. All seams shall be continuously welded and shall conform to the dimensions 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.

Wall mounted pull boxes are to be 8” x 6” x 4”, or as required to accommodate wire splicing and the electronic drivers necessary for wall and other low voltage lighting. The boxes shall have a watertight cover seal and metal lid secured by tamper resistant screws.

Conduit runs shown on the project plans shall be changed to avoid underground obstructions as directed by the Engineer. The contractor may, at its option and at no additional cost to the city, use a larger size conduit than specified provided the larger size is continuous for the entire length of the run from outlet to outlet. Reducing couplings will not be permitted. Changes in the location and size shown on the project plans shall be documented by the contractor and submitted to the Engineer. The PVC conduit shall be cut square and trimmed to remove all rough edges. Conduit connections shall be of the solvent weld type. Purple primer conforming to the requirements of ASTM F656 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 D2564. Where a connection is made to steel conduit, the coupling used shall be a PVC female adapter. Expansion fittings shall be installed in conduit runs in which both ends of the conduit are fixed in place such as between two foundations. Expansion fittings shall be installed in conduit runs which cross any expansion joint in a concrete structure. Approved expansion fittings shall allow for a linear thermal expansion of up to 6 inches.

If a trench has to be left open overnight, a minimum of 6 inches of backfill material shall be used as a protective cover to eliminate contraction of the conduit system. The backfill material shall be removed if final inspection by the Engineer has not been made. Backfill containing large rock, paving materials, cinders, large or sharply angular substance, or corrosive material, shall not be placed in an excavation where materials may damage raceways, cable, or other substructures or prevent adequate compaction of fill or contribute to corrosion of raceways, cables or other substructures. Where necessary to prevent physical damage to the raceway or cable, protection shall be provided in the form of granular or selected material, suitable running boards, suitable sleeves, or other approved means. All PVC conduit shall be stored and handled in an approved manner to minimize ultraviolet deterioration due to exposure to sunlight.

Conduits in protected areas such as behind curbs, in sidewalks, etc., that are not subject to any vehicular traffic shall be at a minimum depth of 18 inches. Conduits installed under roadways, driveways or any open areas where it is possible for vehicles to drive shall be at a minimum depth of 30 inches. When conduit in protected and open areas cannot be installed at the minimum depths, it shall be encased in concrete. Where specified due to shallow trenching depths, the conduit shall be encased in a minimum of 3 inches of concrete. The conduit shall be supported with masonry block or brick on 10-foot centers, during encasement, so that the conduit will be completely encased. Installation of conduit for underground primary service shall conform to the utility company requirements and local codes. Except for factory bends, conduit bends shall have a radius of not less than that specified in the NEC. Conduit shall be bent without crimping or flattening, using the longest radius practicable.

Existing underground conduit to be incorporated into a new system shall be cleaned and blown out with compressed air. Conduit for future use shall have a number 8 AWG bare bond wire installed with at least 2 feet of pull wire doubled back into the conduit and capped. A 3-inch “Y” shall be cut into the face of the curb directly over conduit located under curbs. The contractor shall place warning tape in all trenches in which new conduit is placed. All warning tape shall be buried at a depth of 6 to 8 inches below the finished grade. Conduit entering pull boxes shall terminate a minimum of 3 inches inside the box wall. The conduit shall be between 2 and 4 inches above the bottom of the pull box and shall be sloped to facilitate pulling of conductors. Conduit entering through the bottom of a pull box shall be located near the sides and ends 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 ends shall be capped with conduit end cap fittings 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.

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 1/2-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.

Conduit shall be installed under existing pavement by jacking or drilling methods approved by the Engineer. Open trench excavation across an existing roadway shall not be permitted without the written permission of the Engineer. Jacking and drilling pits shall be kept 2 feet clear of the edge of the pavement.

Pull boxes shall be installed in accordance with the details shown on the project plans and the standard drawings. Pull boxes shall be installed flush with the finished grade and when in concrete shall have a 1/2-inch felt expansion joint installed around all sides of the pull box. Junction boxes placed in concrete structures shall be flush with the finished concrete surface.

2.2.72 PAINT EXST ADOT FACILITIES

Paint existing SR 179 bridge abutment and parapet walls within the construction area per ADOT Section 610. Contractor to submit paint samples and 3'x3' drawdowns to ADOT for review and approval. All paint shall match existing paint color.

Paint shall be pigmented water-repellent acrylic paint or approved equal meeting the requirements of ADOT Standard Specifications Section 1002.

Prior to paint application, the surfaces to be painted shall be cleaned in accordance with the manufacturer's recommendations for the removal of all dust, dirt, scale or other foreign substances which could be detrimental to the paint penetration or color. All surfaces to be painted shall be clean, completely dry and free of other foreign substances at the time of application of the paint. A minimum of two coats of paint shall be applied in accordance with the manufacturer's recommendations.

The Contractor shall cover and/or protect all other existing or new surfaces, including vegetation, in the vicinity of the painting operation.

Payment will be made at the contract Lump Sum bid, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to paint existing ADOT facilities.

2.2.73 CONCRETE STAIN COLOR TREATMENT

The work shall consist of applying 'Permeon' by Soil Tech or approved equal concrete stain to all rock formliner (Barn wood and Yosemite Stone) finishes as shown on the plans. Contractor shall cover and /or protect all other exposed surfaces to prevent overspray and coating of elements not receiving the Permeon finish. Permeon shall be applied in three color applications to provide a 'mottled' natural appearance as approved by the City. Contractor to provide a 4'x4' sample concrete panel stained as required for approval by the City prior to final stain applications. Contractor shall coordinate with Soil Tech, 702-873-2023, www.soil-tech.com for installation of the Permeon product.

Payment will be made at the contract Lump Sum bid, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary to place the Permeon as described or specified in the contract documents.

2.2.74 WINDOW FRAME AND ART PANEL

The work shall consist of providing all window frame and art panels as shown and detailed on the project plans. All steel frame components shall conform to all applicable requirements of Section 515 of the MAG Specifications. 'ChromaLuxe' art panel shall be as provided by 'Image Craft'. Contractor shall coordinate with Martha Vermeire, 602- 305-4810 or 602-232-0719 for the preparation and manufacturer of the art panels, Polycarbonate panels, spacers and tamper proof connectors as required. The City of Sedona shall provide the final images to the Contractor for use by Image Craft for manufacturer of the final art panels.

The window frame shall be powder coated with 'RAL' 6033- Mint turquoise coating, or as approved by the City. A 12"x12" mock-up steel panel shall be powder coated by the contractor for review and approval prior to final manufacturer.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work necessary as described or specified in the contract documents.

2.2.75 BARREL SIGN BASE

The work shall consist of providing the rock filled barrel base elements, complete as shown and detailed on the plans. All steel mesh elements and construction requirements shall conform to the applicable requirements of Item 2.2.37 Gabion Mattress and Baskets. Contractor shall primer and paint all exposed surfaces of the fence and handrail elements. Color to match Dunn- Edwards 'Burns Cave' #DE6098 or as approved by the City. All Painting shall conform to the requirements of Section 530 of the MAG Specifications. River rock shall be a natural occurring rounded, river rock product. Contractor to provide rock samples for review by the City prior to filling the Barrel bases.

Payment will be made at the contract unit price bid per each, and shall be full compensation for furnishing all labor, materials, tools, and equipment, and performing all work as described or specified in the contract documents.

3 MISCELLANEOUS WORK

3.1 Potholing

All utility potholing in existing paved streets shall be done using the air/vacuum type method. Dimensions for the potholing pavement cuts shall be limited to 12 inch by 12 inch square holes. All potholes shall be backfilled and patched in accordance with MAG Detail No. 212. Backfill material shall be 1-sack CLSM per MAG Spec Sec 728. Asphalt concrete pavement replacement shall use the same Marshall hot mix A.C Pavement as described on the plans. Asphalt thickness shall be 6-in minimum or match existing, whichever is greater. Asphalt shall be placed and compacted in 2-in lifts. The asphalt patch shall be crack sealed afterward. Where potholes are done outside of the roadway pavement, all excavated materials shall be replaced resulting in conditions equal to or better than those prior to pothole work.

This is an incidental item and there will be no separate payment for pot-holing.

3.2 Earthwork

It is anticipated that excavations into the site soils for the proposed construction can be accomplished with conventional equipment. Excavations penetrating the underlying sandstone will require the use of heavy-duty, specialized equipment to facilitate rock break up and removal. On-site soils will pump or become unworkable at high water contents. Workability may be improved by scarifying and drying. Over excavation of wet zones and replacement with drier granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade pumping. The following maximum slope face angles are recommended for the materials indicated:

Material	**Maximum Slope Face Angle (horizontal: vertical)**
Soil	1:1
Disturbed Soil	1.5:1

Trenches with vertical side slopes shall be protected against slope failure. Temporary earth retaining systems will be required such as trench shields, rigid prefabricated steel, timber shoring, box shoring, and telescoping shoring.

3.2.1 Site Clearing

Strip and remove existing vegetation, organic topsoils, debris, asphalt pavement, and any other deleterious materials from the proposed structure areas. The structure area is defined as that area within the structure footprint plus 5 feet beyond the perimeter of the footprint. All exposed surfaces should be free of mounds and depressions which could prevent uniform compaction. Sloping areas steeper than 5:1 (horizontal: vertical) should be benched to reduce the potential for slippage between existing slopes and fills. Benches should be level and wide enough to accommodate compaction and earth moving equipment.

3.2.2 Foundation Preparation

Scarify, moisten or dry as required, and compact all subgrade soils to a minimum depth of 8 inches. The subgrade preparation should be accomplished in a manner which will result in uniform water contents and densities after compaction. Scarifying and recompacting are not required in areas where bedrock or heavily cemented formations are encountered.

3.2.3 Materials

Clean on-site native soils with a maximum dimension of 6 inches or imported materials may be used as fill material for the following:

- foundation areas
- culvert areas
- pavement areas
- backfill

Frozen soils should not be used as fill or backfill.

Imported soils should conform to the following:

Gradation (ASTM C136):	percent finer by weight
6”	100
4”	85-100
¾”	70-100
No. 4 Sieve	50-100
No. 200 Sieve	50 (max)
Maximum expansive potential (%)*	1.5
Maximum soluble sulfates (%)	0.10
*Measured on a sample compacted to approximately 95 percent of the ASTM D698 maximum dry density at about 3 percent below optimum water content. The sample is confined under a 100 psf surcharge and submerged.	

Base course should conform to MAG specifications.

3.2.4 Placement and Compaction

Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.

Uncompacted fill lifts should not exceed 8 inches.

No fill should be placed over frozen ground.

Materials should be compacted to the following:

Material	Minimum Percent Compaction (ASTM D698)
On-site and imported soils, reworked and fill:	
Below footings 95	95
Below culverts 95	95
Below pavement 95	95
Aggregate base:	
Below culverts	95
Below pavement	100
Miscellaneous backfill	95

On-site and imported soils with low expansive potential and aggregate base course materials should be compacted with moisture content in the range of 3 percent below to 3 percent above optimum.

No separate payment will be made for Earthwork, the cost shall be considered as included in the cost of associated work.

4 ALTERNATIVE BID ITEMS

4.1 Alternative Bid Item 1 – WATERWHEEL

The work under this item is for the Alternative Bid Item to install the Waterwheel feature and all associated elements required per plans.

Work items shall include miscellaneous structural, aesthetic and drainage features required for the Waterwheel at the locations and in accordance with the details shown in the project plans. All work shall be in accordance with the project plans, Item Specs 4.2.1 and 4.2.12 unless noted otherwise.

Measurement and payment for this work will be in accordance with the following listed elements/items and their corresponding Unit of measure as provided in the Bid Schedule, complete in place, including all labor, materials, and equipment necessary for the Waterwheel feature as shown on the plans:

4.1.1 9-FOOTWATERWHEEL
4.1.2 WHEEL SUPPORT COLUMN
4.1.3 WHEEL SCUPPER AND SUPPORT SYSTEM
4.1.4 WATER BASIN AND CONTAINMENT TROUGH
4.1.5 IRONWORKS WATER GRATE (8-INCH RIVER ROCK FINISH)
4.1.6 POND PUMP
4.1.7 WATER METER AND BACKFLOW PREVENTER
4.1.8 AGT GLOW STONE
4.1.9 CIP SEAT WALL

4.1.10 HAND WATER PUMP AND ACTIVATOR
4.1.11 1-INCH SCH 40 PVC
4.1.12 2-INCH SCH 40 PVC SLEEVE

The work under the following listed elements/items shall include miscellaneous signing and power required for the Waterwheel feature at the locations and in accordance with the details shown in the project plans and Item Specs 4.2.1 and 4.2.14 unless noted otherwise. Measurement and payment for the listed elements/items shall be in accordance with their corresponding Unit of measure as provided in the Bid Schedule, complete in place, including all labor, materials, and equipment necessary for the Waterwheel feature:

4.1.13 FLAT SHEET ALUMINUM SIGN PANEL
4.1.14 CONDUCTOR (NO.8)”

ITEM DESCRIPTION	UNIT	QUANTITY TOTAL
MATERIALS TESTING	JOB	1
CONSTRUCTION SURVEY AND LAYOUT	JOB	1
AS-BUILT PREPARATION	JOB	1
MOBILIZATION/DEMOBILIZATION	JOB	1
MAINTENANCE AND PROTECTION OF TRAFFIC	JOB	1
STORM WATER POLLUTION PREVENTION PLAN	JOB	1
REMOVE EXISTING PROPERTY WALL AND SALVAGE ARCH FEATURES	LF	78
REMOVE EXST SITE WALL	LF	22
REMOVE AND SALVAGE EXST POLE WITH WIND ART	EACH	3
REMOVE AND SALVAGE EXST TLAQUEPAQUE ARCH SIGN	EACH	1
REMOVE EXST ASPHALTIC CONCRETE PAVEMENT	SY	15
REMOVE EXT CONCRETE SIDEWALK	SF	381
REMOVE AND STOCKPILE EXISTING EROSION PROTECTION	LSUM	1
REMOVE EXST GABIONS	CY	120
REMOVE AND RELOCATE EXST WATER QUALITY BOX	EACH	1
REMOVE BLOW-OFF ASSEMBLY AND REPLACE WITH ELBOW	EACH	1
RELOCATE EXST FIRE HYDRANT AND WATER VALVE	EACH	1
RELOCATE EXSTING PROPERTY WALL LIGHTS	EACH	2
RELOCATE WATER METER	EACH	1
RELOCATE EXST LIGHT POLE	EACH	2
RELOCATE EXST CATV BOX	EACH	1
ADJUST VALVE BOX AND COVER TO GRADE PER MAG STD DTL 270	EACH	1
REMOVE EXST DUMPED RIPRAP	CU. YD.	735
RELOCATE EXST TELCO PEDESTAL	EACH	2
TREE PROTECTION SHORING	LSUM	1
TEMPORARY FILL STABILIZATION	LSUM	1
SUBGRADE PREP	SY	724
CHANNEL EXCAVATION (INCL. HAUL OFFSITE)	CY	1765
AGGREGATE BASE COURSE	TON	151
CONCRETE SIDEWALK PER MAG STD DTL 230 WITH MESH	SF	6200
CONCRETE PAVERS	SF	104
RETAINED CURB	LF	218
MEDIAN BOLLARDS AND CHAIN (SPECIAL DETAIL)	EACH	2
3-FT MAN GATE WITH LOCK	EACH	1
REINFORCED CONCRETE CANTILEVER RETAINING WALL	SF	2689
MASONRY PROPERTY WALL	SF	700
SHORT CONCRETE GRAVITY WALL	SF	51
REINFORCED CONCRETE SLAB OVERHANG	SF	566
NEW MODIFIED MAG 206 CONCRETE SCUPPER	EACH	1

1

ITEM DESCRIPTION	UNIT	QUANTITY TOTAL
NEW DRAIN INLET	EACH	4
PERMEATION GROUT PLACEMENT	CYD	440
PERMEATION GROUTING (DRILL GROUT HOLES)	LF	930
PLACE SALVAGED DUMPED RIVER ROCK	CY	340
GABION MATTRESS AND BASKETS	CY	31
LANDSCAPING	LSUM	1
IRRIGATION	LSUM	1
TLAQUEPAQUE PROPERTY SYCAMORE TREE PROTECTION	LSUM	1
CONCRETE BARRIER	LF	208
CONCRETE BARRER WITH HANDRAIL	LF	52
DECORATIVE RAILING	LF	663
DECORATIVE RAILING WITH HANDRAIL	LF	216
HANDRAIL (WALL ATTACHMENT)	LF	243
TRASH RECEPTACLE	EACH	3
SIGN POST (PERFORATED) (2 S)	L.FT.	32
SIGN POST (PERFORATED) (2 1/2 S)	L.FT.	32
FOUNDATION FOR SIGN POST (CONCRETE)	EACH	5
WARNING, MARKER, OR REGULATORY SIGN PANEL	SF	14
FLAT SHEET ALUMINUM SIGN PANEL	SF	32
WATERBORNE-TYPE I PAVEMENT MARKING(PAINTED)(YELLOW)	LF	126
ELECTRICAL CONDUIT (1") (PVC)	LF	80
ELECTRICAL CONDUIT (1 1/2") (PVC)	LF	760
PULL BOX (NO. 5)	EACH	4
PULL BOX (6" x 6" In Wall)	EACH	3
PULL BOX (8" x 6" In Wall)	EACH	9
CONDUCTOR (NO. 12)	LF	1920
CONDUCTOR (NO. 10)	LF	540
CONDUCTOR (NO. 8)	LF	1520
CONDUCTOR (INSULATED BOND)	LF	840
METER PEDESTAL CABINET (LIGHTING)	EACH	1
MISCELLANEOUS WORK (LED Rope)	LF	40
MISCELLANEOUS WORK (POLE (14') (Decorative))	EACH	5
MISCELLANEOUS WORK (POLE FOUNDATION (STANDARD BASE))	EACH	5
MISCELLANEOUS WORK (MAST ARM (Decorative))	EACH	5
MISCELLANEOUS WORK (LUMINAIRE (LED) (GBLF3 Decorative))	EACH	5
MISCELLANEOUS WORK (Step Light Wall Fixture)	EACH	20
PAINT EXST ADOT FACILITIES	LSUM	1
CONCRETE STAIN COLOR TREATMENT	EACH	1
WINDOW AND FRAME ART PANEL	LSUM	2
BARREL SIGN BASE	EACH	3

1

Symbol	Revisions	Date	Appr.
1	**ADDENDUM 2**	**3/3/2023**	**JI**

Designed by: JI
Drawn by: CPG
Checked by: JKF
Date: 03/03/2023
Scale: NOT TO SCALE
Project Code: CIVIL

Registered Professional Engineer (Civil) Certificate No. 73321 JOVAN ILIJEVSKI Date Signed 03/03/23 ARIZONA U.S.A. Expires 6/30/24

WSP USA Inc.
1230 W. Washington St.
Suite 405
Tempe, AZ 85281

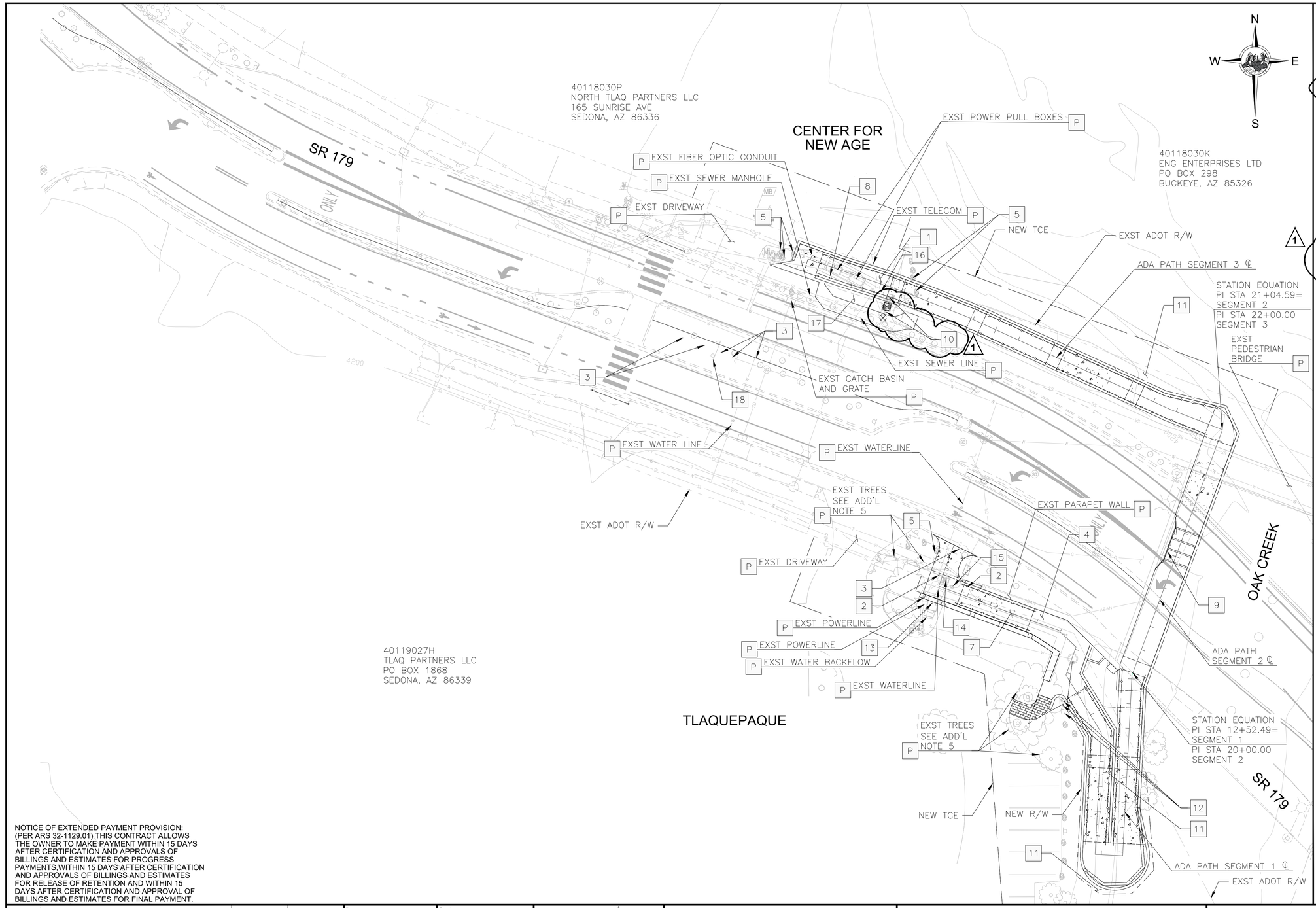
CITY OF SEDONA
PUBLIC WORKS DEPARTMENT
102 ROADRUNNER DRIVE
SEDONA, ARIZONA 86336
928-204-7111

SR 179 PEDESTRIAN CROSSING
AT OAK CREEK
SEDONA ARIZONA

QUANTITY SUMMARY SHEET

SHEET ID: C5
SHEET NO.: 5
OF: 45

DATE SAVED: 2/15/23 T:\SEDONA 179\DATA\SUM.DWG



REMOVAL NOTES

1	SAWCUT AND REMOVE ASPHALT OR CONCRETE PAVEMENT
2	RELOCATE PROPERTY WALL LIGHTS, SEE LIGHTING PLAN SHEET
3	RELOCATE EXST IRRIGATION VALVE PAYED FOR BY IRRIGATION
4	REMOVE EXST DUMPED RIPRAP
5	REMOVE AND SALVAGE EXST DECORATIVE BOULDER
7	REMOVE EXST PROPERTY WALL, SEE MASONRY WALL PLAN, SHEET S-4
8	REMOVE EXST SITE WALL
9	SALVAGE AND RELOCATE EXST WATER QUALITY BOX AND POWER SOLAR PANEL. SEE SPECIAL PROVISIONS
10	RELOCATE EXST FIRE HYDRANT AND WATER VALVE,PER AWC DTL E-9-6-1, E-9-4-1, E-9-5-1, E-9-2-1, E-9-3-1
11	REMOVE EXST GABION MATRESS AT SELECT LOCATIONS. SEE EROSION PROTECTION PLANS.
12	REMOVE AND SALVAGE EXST POLE WITH WIND ART
13	REPLACE AND RELOCATE EXISTING 2" WATER SERVICE CONNECTION, PER AWC DTL E-9-11-1
14	RELOCATE WATER METER, PER AWC DTL E-9-8-1 AND E-9-5-1
15	RELOCATE EXST TELCO PEDESTAL
16	RELOCATE EXST CATV PULLBOX
17	REMOVE EXST SIDEWALK
18	RELOCATE TRAFFIC SIGN
P	PROTECT-IN-PLACE

ADDITIONAL NOTES:

1. THIS SHEET IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING AND QUANTIFY THE EXTENT OF REMOVAL/RELOCATION WORK.
2. FOR CLARITY, SOME PROPOSED FEATURES ARE NOT SHOWN. SEE SUBSEQUENT PLAN SHEETS.
3. SEE GEOMETRY INFORMATION IN PLAN AND PROFILE SHEETS.
4. LANDSCAPE OR IRRIGATION DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE REPLACED IN-KIND AND OPERABLE AT CONSTRUCTION CLOSEOUT.
5. CONTRACTOR SHALL TAKE MEASURES NECESSARY TO ENSURE THAT ALL EXISTING SYCAMORE TREES AND ROOTS ARE NOT DISTURBED OR ADVERSELY IMPACTED DURING CONSTRUCTION AND UPON CONSTRUCTION COMPLETION. SEE SPECIAL PROVISIONS.
6. CONTRACTOR TO PROTECT-IN-PLACE EXISTING GABION MATTRESS. LIMITS OF GABION MATTRESS REMOVAL ARE SHOWN ON THE EROSION PROTECTION PLANS.

SCALE:
1" = 20' HORIZONTAL
0 20 40

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

NOTICE OF EXTENDED PAYMENT PROVISION:
(PER ARS 32-1129.01) THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 15 DAYS AFTER CERTIFICATION AND APPROVALS OF BILLINGS AND ESTIMATES FOR PROGRESS PAYMENTS,WITHIN 15 DAYS AFTER CERTIFICATION AND APPROVALS OF BILLINGS AND ESTIMATES FOR RELEASE OF RETENTION AND WITHIN 15 DAYS AFTER CERTIFICATION AND APPROVAL OF BILLINGS AND ESTIMATES FOR FINAL PAYMENT.

Symbol	Revisions	Date	Appr.
1	ADDENDUM 2	3/3/2023	JI

Designed by: JI	Date: 03/03/23
Drawn by: CPG	Scale: 1:20
Checked by: JKF	Project Code: CIVIL

Registered Professional Engineer (Civil) 73321 JOVAN ILIJEVSKI Date Signed 03/03/23 ARIZONA U.S.A. Expires 6/30/24

WSP USA Inc.
1230 W. Washington St.
Suite 405
Tempe, AZ 85281

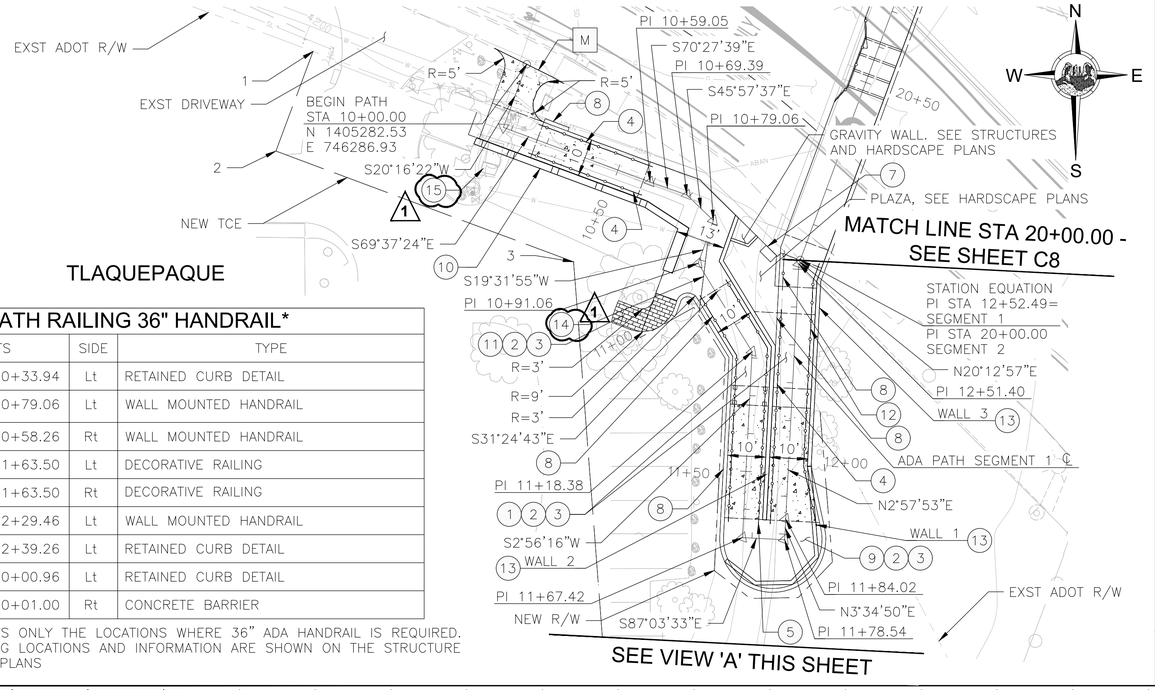
CITY OF SEDONA
PUBLIC WORKS DEPARTMENT
102 ROADRUNNER DRIVE
SEDONA, ARIZONA 86336
928-204-7111

SR 179 PEDESTRIAN CROSSING
AT OAK CREEK
SEDONA ARIZONA

DEMOLITION PLAN SHEET

SHEET ID: C6
SHEET NO.: 6 OF: 45

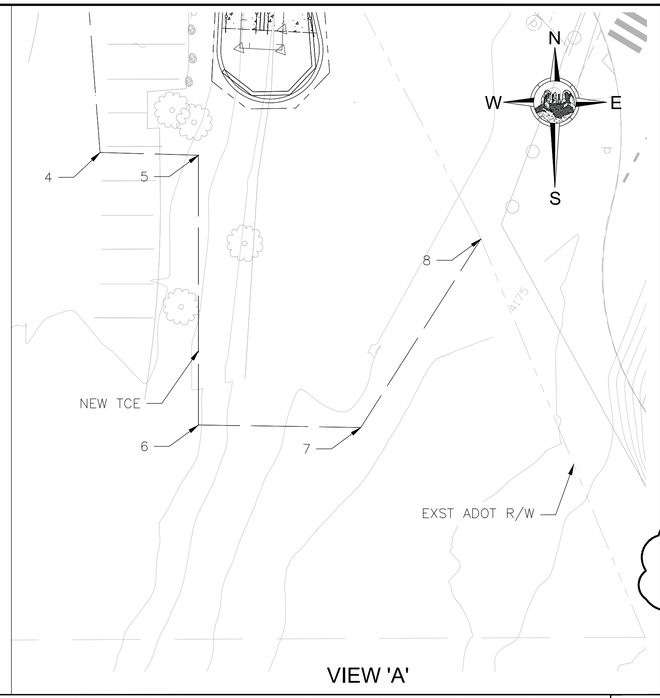
DATE SAVED: 3/6/23 T:\SEDONA 179\CIVIL\CP01.DWG



PATH RAILING 36" HANDRAIL*

STATION LIMITS	SIDE	TYPE
STA 10+26.26 TO 10+33.94	Lt	RETAINED CURB DETAIL
STA 10+33.94 TO 10+79.06	Lt	WALL MOUNTED HANDRAIL
STA 10+26.26 TO 10+58.26	Rt	WALL MOUNTED HANDRAIL
STA 10+98.50 TO 11+63.50	Lt	DECORATIVE RAILING
STA 10+98.50 TO 11+63.50	Rt	DECORATIVE RAILING
STA 11+82.49 TO 12+29.46	Lt	WALL MOUNTED HANDRAIL
STA 12+29.46 TO 12+39.26	Lt	RETAINED CURB DETAIL
STA 12+44.26 TO 20+00.96	Lt	RETAINED CURB DETAIL
STA 11+82.66 TO 20+01.00	Rt	CONCRETE BARRIER

* THIS TABLE SHOWS ONLY THE LOCATIONS WHERE 36" ADA HANDRAIL IS REQUIRED. ADDITIONAL RAILING LOCATIONS AND INFORMATION ARE SHOWN ON THE STRUCTURE AND HARDSCAPE PLANS



VIEW 'A'

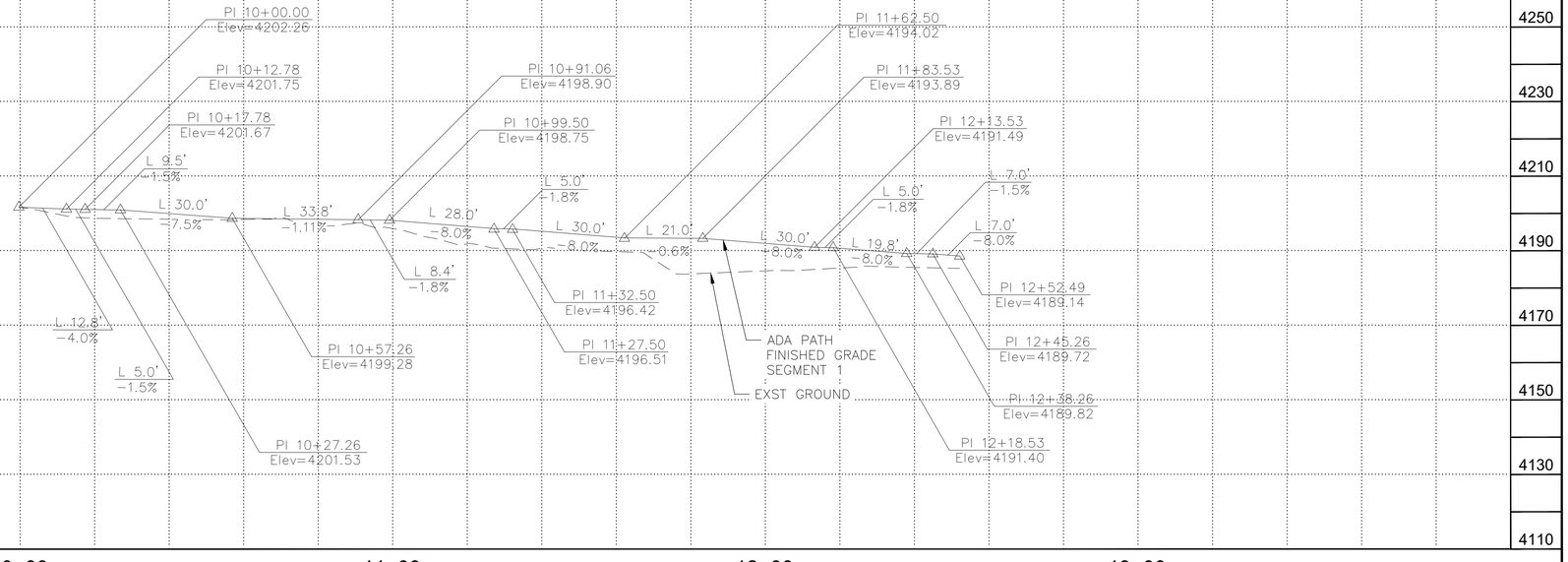
CONSTRUCTION NOTES

1. SIDEWALK PER MAG DET 230, WIDTH VARIES SEE PLANS
2. AGGREGATE BASE COURSE PER MAG SECTION 310
3. SUBGRADE PREP PER MAG SECTION 301
4. WALL MOUNTED HANDRAIL, SEE SHEET S10
5. DECORATIVE RAILING, SEE SHEET S10
7. RELOCATED WATER QUALITY BOX WITH LOCK
8. RETAINED CURB DETAIL, SEE SHEET S10
9. REINFORCED CONCRETE SLAB OVERHANG
10. MASONRY WALL, SEE WALL PLANS
11. CONCRETE PAVERS
12. DECORATIVE CONCRETE BARRIER, SEE SHEET S7
13. RETAINING WALL, SEE WALL PLANS
14. 4" PVC IRRIGATION PIPE WITH ELBOW, PAID FOR BY IRRIGATION
15. RELOCATE WATER METER, PER AWC DTL E-9-8-1 AND E-9-5-1 (1)

M MATCH EXST

ADDITIONAL NOTES:

1. CONTRACTOR TO LEAVE MINIMUM 12 FEET ACCESS WAY DURING CONSTRUCTION FOR ACCESS TO ADJACENT PROPERTIES.
2. SEE DETAIL SHEETS FOR ADDITIONAL PATH EDGE CONTROL INFORMATION.
3. RAMP HANDRAILS SHALL EXTEND HORIZONTAL ABOVE THE LANDING FOR 1-Ft BEYOND THE TOP AND BOTTOM OF RAMP RUNS.
4. CONTRACTOR SHALL TAKE MEASURES NECESSARY TO ENSURE THAT ALL EXISTING SYCAMORE TREES AND ROOTS ARE NOT DISTURBED OR ADVERSELY IMPACTED DURING CONSTRUCTION AND UPON CONSTRUCTION COMPLETION. SEE SPECIAL PROVISIONS.



TCE DATA

POINT #	NORTHING	EASTING
1	N=1405285.93	E=746230.51
2	N=1405259.63	E=746220.70
3	N=1405230.41	E=746299.28
4	N=1405130.06	E=746306.98
5	N=1405129.36	E=746332.97
6	N=1405058.15	E=746332.97
7	N=1405057.50	E=746375.80
8	N=1405107.25	E=746407.52

SCALE:
1" = 20' HORIZONTAL
1" = 2' VERTICAL
0 20 40

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Symbol	Revisions	Date	Appr.
1	**ADDENDUM 2**	**3/3/2023**	**JI**

Designed by: JI | Date: 03/03/23
Drawn by: CPG | Scale: 1:20
Checked by: JKF | Project Code: CIVIL

Registered Professional Engineer (Civil) 73321 JOVAN ILIJEVSKI Date of Signature 03/03/23 ARIZONA U.S.A. Expires 6/30/24

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PLAN & PROFILE SHEET

SHEET ID: C7
SHEET NO.: 7 OF: 45

DATE SAVED: 3/4/23 T:\SEDONA 179\CIVIL\CPP01.DWG