

Town of Clarkdale
890 Main Street Clarkdale, Arizona 86324



REQUEST FOR BID

FOR THE FOLLOWING DESCRIBED WORK:

**TOWN OF CLARKDALE
BITTER CREEK BRIDGE
PROJECT NO. 223289**

***INVITATION FOR BIDS — DESIGN-BID-BUILD PUBLIC WORKS
CONSTRUCTION (COMPETITIVE SEALED BIDDING PER A.R.S. TITLE 34)
BID MANUAL AND SPECIAL PROVISIONS***

Advertised Date:

July 18, 2026

July 25, 2026

Prepared By:

Ardurra Group, INC.

1001 N Central Ave

Phoenix, AZ 85004

Phone: (602) 263-1177

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NOTICE TO BIDDERS
REQUIRED BID FORMS

THE FOLLOWING ITEMS MUST BE COMPLETED BY THE BIDDING CONTRACTOR AND SUBMITTED WITH **THIS COMPLETE AND INTACT BID PACKAGE** FOR THIS BID TO BE CONSIDERED RESPONSIVE. ANY AND ALL DEFICIENCIES OF ITEMS LISTED BELOW WILL BE CONSIDERED ADEQUATE REASON **TO REJECT THE BID IN ITS ENTIRETY.**

- COMPLETE BID PACKAGE (PROJECT MANUAL)
- BID PROPOSAL EXECUTION SHEET (SEE PAGE 8)
- BID SCHEDULE (SEE PAGE 11)
- SIGNATURES, SEALS & NOTARIES (WHEREVER NECESSARY)

This information is provided for your use in preparing all documents as required for a complete Bid Submittal. Please double-check all requirements and if you have any questions regarding what is required with a submittal, please call and ask.

Town of Clarkdale – Bitter Creek Bridge
Project Number 223289

July 15, 2026

INVITATION TO BID TOWN OF CLARKDALE BITTER CREEK BRIDGE

Notice is hereby given that sealed Bids are being solicited from qualified general contractors for construction of the replacement of the Bitter Creek Bridge.

The types of work on this project shall include, but not be limited to the following:

- Furnish and Construct 2254 SY Asphalt pavement.
- Obtain Town supplied and Erect Eight (8) 42” Utah Bulb Tee Girders
- Furnish and construct 209 CY concrete bridge superstructure
- Remove and Replace Roadway on Broadway Street
- Install eleven (11) Streetlights
- Construct associated retaining wall for bridge 152 CY
- Construct 901 gabion mattresses for erosion control in Bitter Creek
- Install 76 SY Grouted riprap in Bitter Creek for erosion control

The construction time to complete the project is **360** calendar days from the date of the Notice to Proceed.

The Town of Clarkdale will receive sealed bids until 2:00 pm on **September 17, 2026**, at the Office of the Town Clerk, 39 N 9th Street, Clarkdale, Arizona 86324, (928) 639-2400. Sealed bids received after that time will not be accepted. Bids will be publicly opened by the Town Clerk at 2:00 pm on September 17, 2026, and read aloud. The Town of Clarkdale reserves the right to reject any or all bids. Nevertheless, except when rejections of bids are required by law, the Town reserves the right to waive any informalities of the Bid.

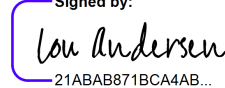
It is the intent of the Town to award a construction contract to the lowest responsible bidder for the Bid.

A MANDATORY pre-bid meeting will be held at the Town of Clarkdale Clark Memorial Clubhouse (19 N. Ninth St., Clarkdale AZ 86324) at 1:00 pm on August 25, 2026, with a field visit to follow. Bidding requirements will be reviewed at the pre-bid meeting. Potential bidders are encouraged to visit the site individually and submit questions in writing.

Bona fide Bidders may secure copies of the Drawings, Bid Manual and Special Provisions electronically through Ardurra Group, Inc. on or after July 15, 2026. Contact Curtis Krausman at ckrausman@ardurra.com, 602-267-1177 or 623-303-5823 to arrange for digital files of Contract Documents.

Posting Date: 07-15-2026

Publishing Dates: 07-18-2026
07-25-2026

Signed by:

21ABAB871BCA4AB...

Lou Andersen
Town Manager

INSTRUCTIONS TO BIDDERS

1. General

No clarification as to the meaning of the plans, specifications or other pre-bid documents will be made to any Bidder orally. Should conflicts occur between drawings and/or specifications, the Bidder shall be deemed to have estimated the most expensive interpretation of the conflict, unless the Bidder asks for written clarifications before submission of the Bid. All plan holders including plan holders/bidders obtaining documents from plan rooms shall be registered with Ardurra. All requests for such clarifications shall be in writing addressed to:

Registration and/ Questions:

Curtis Krausman, P.E.

Ardurra Group, Inc.

1001 E Central Ave

Phoenix, AZ 85004

ckrausman@ardurra.com

PHONE: 602-267-1177 or 623-303-5823

To be given consideration, a request for written clarification must be received at least seven (7) days prior to the bid opening. All such clarifications and any supplemental instructions will be in the form of a written addendum to the specifications. All such addenda will be transmitted to the Bidders five (5) days prior to bid opening. All addenda so issued shall become part of the Contract Documents.

Bidder's attention is called to the fact that no bid is acceptable without the return the entire properly completed Proposal.

Bids are to be made upon the Proposal Form(s) contained in and submitted with this contract specification book. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

Each Bid must be submitted in a sealed envelope, addressed to TOWN CLERK, Town of Clarkdale, 39 N 9th Street, Clarkdale, Arizona 86324. Bids will be returned unopened if not submitted properly sealed.

Each sealed envelope containing a BID must be plainly marked on the outside as BID for Town of Clarkdale BITTER CREEK BRIDGE PROJECT. The envelope should bear on the outside the name of the BIDDER and his address. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to the OWNER at OFFICE OF THE TOWN CLERK, Town of Clarkdale, 39 N 9th Street, Clarkdale, Arizona 86324.

The successful BIDDER shall submit or apply for a Town of Clarkdale Sales Tax License upon award of the contract. Applications can be obtained from the Town of Clarkdale, 39 N 9th Street, Clarkdale, Arizona 86324 or <https://www.clarkdale.az.gov/>.

2. Pre-Bid Meeting

A MANDATORY pre-bid meeting will be held at 1:00 pm at the Town of Clarkdale Town Hall Council Chambers on August 25, 2026, all potential bidders must attend for their bids to be considered. Bidding requirements will be reviewed at the pre-bid meeting. A site visit will be conducted immediately following the meeting. Potential bidders are encouraged to visit the site and submit questions in writing. All questions from the Pre-bid meeting as well as a list of attendees will be issued as a bid addendum.

3. Standard Specifications

The governing documents for this project are the construction plans, bid manual and the Town of Clarkdale Town Code. The Maricopa Association of Governments (MAG) Uniform Standard Specifications for Public Works Construction are the specifications for the Contract, as amended by the General Conditions and Special Provisions. The ADOT Standard Specifications for Road and Bridge Construction may be applied as specified in the plans. These standard Specifications are not attached to these contract documents and may be purchased from the Maricopa Association of Governments or accessed online. The Town of Clarkdale Universal Core Procurement Terms (Tier 1), attached to this Bid Manual, are incorporated into and made part of the Contract Documents; by submitting a Bid, the Bidder acknowledges receipt of and agrees to be bound by these Terms.

4. Acknowledgement of Addenda

If any addenda are published prior to the bid due date, the acknowledgement page must be signed by the contractor and returned with the bid documents. If they are not included, the bid will be disqualified.

5. Bid Protests

Any bidder objecting to the recommendation of award, the rejection of a bid, or the solicitation procedures, or any portion thereof (the Protester), must submit a written protest to the Town Clerk within five (5) business days from notification of the recommendation and prior to the Town Council meeting at which the recommendation is on the agenda for award or rejection.

BID TIMELINE
Town of Clarkdale
BITTER CREEK BRIDGE
PROJECT
PROJECT NO. 223289

BID PACKAGES AVAILABLE:

July 15, 2026
Digitally from Curtis Krausman –
ckrausman@ardurra.com

MANDATORY PRE-BID MEETING:

1:00 pm on August 25, 2026
Town of Clarkdale, Town Hall
Council Chambers
[Field Visit to follow](#)

BIDS DUE:

2:00 PM on September 17, 2026
Office of the Town Clerk
Town of Clarkdale
39 N 9th Street
Clarkdale, Arizona 86324

ANTICIPATED CONTRACT AWARD:

October 27, 2026

ANTICIPATED NOTICE TO PROCEED:

November 6, 2026

Questions regarding the specifics of the project should be directed to Curtis Krausman, P.E. of Ardurra Group, Inc., email: ckrausman@ardurra.com phone: 602-263-1177 or 623-303-5823, in writing.

BIDDING DOCUMENTS

(The following documents in this section are required to be submitted as your bid)

TOWN OF CLARKDALE, ARIZONA

Proposal

TO: Honorable Mayor and Council
39 N 9th Street
Clarkdale, Arizona 86324

In compliance with the Advertisement for Bids, by the Town Engineer, the undersigned Bidder:

Having carefully examined the Contract Documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed, and agrees to execute the Contract Documents and furnish the required Bonds and Certificates of Insurance for the completion of said work, at the locations and for the prices set forth on the BID SCHEDULE.

Understands that construction of this project shall be in accordance with all applicable Standard Specifications and Standard Drawings and as otherwise required by the Project Plans, General Provisions and Special Provisions.

Understands that this proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check or surety bond (in accordance with Title 34, ARS) for an amount not less than ten percent of the total amount bid.

Agrees that upon receipt of Notice of Award from the Town of Clarkdale, he will execute the contract documents.

Work shall be completed within 360 calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead time for obtaining the necessary material and/or equipment. Bidder agrees to pay, as liquidated damages, the sum as stated in the latest revision of the MAG Specifications. Liquidated Damages shall be based upon the final contract amount.

The Bidder hereby acknowledges receipt of and agrees his proposal is based on the following Addenda. (If there are no addenda, write NONE below).

_____The Town of
Clarkdale retains the right to reject any or all proposals and to waive minor defects and technicalities or withhold the award, as may be deemed best for the interest of the Town.

This proposal shall be valid for a period of thirty days.

THIS PROPOSAL IS SUBMITTED BY _____, a corporation
organized under the laws of the State of _____, a partnership consisting of _____
_____ or individual trading as _____
_____ of the Town of _____ and is the holder of Arizona
State Contractor's License(s):

Classification(s) _____

No.(s) _____

Respectfully submitted,

Firm

Address

By (Officer & Title) (Signature in Ink)

Date

ATTEST:

(Officer and Title)

Witness (if Bidder is an Individual) (Signature in Ink)

Bid Schedule

Firm Name: _____

Mailing Address: _____

City _____ State _____ Zip _____

Telephone _____

PURSUANT to and in compliance with the Bid Package, Notice of Invitation to Bid, Instructions to Bidders and the Contract Documents relating to the construction of:

**TOWN OF CLARKDALE
BITTER CREEK BRIDGE
PROJECT NO. 223289**

This is to certify that the above documents, as well as the site upon which work is to be performed and any and all conditions affecting the work, have been carefully examined, that the amount and nature of the work to be accomplished is thoroughly understood and that at no time will misunderstanding of the drawings, specifications or conditions to be overcome be alleged or pled as a basis for change orders, damages or non-performances,

I (We) acknowledge that the following Bid Schedule and table is for the convenience of the Town of Clarkdale to analyze the individual components of the Bid and to provide a means for partial payments during the course of the project. The sum of the extended unit prices shall be the final price for constructing the project in accordance with the plans and specifications. The total price listed on the Bid Schedule shall be the same as listed on the proposal to the Town of Clarkdale.

BID SCHEDULE INSTRUCTIONS:

1. Bidders must bid on all items for all projects they are bidding.
2. All items will be paid for on a unit price basis at the Contractor's Unit Price, except items expressly designated Lump Sum (LS). In the case of errors in extension of prices, the unit price will govern. The "ENGINEERS ESTIMATED QUANTITY" and the "CONTRACTORS UNIT PRICE" will be used as a means of computing progress payments and as a basis for any Change Orders incurred.
3. The Owner reserves the right to recalculate the following Schedules if they appear malapportioned.
4. The Lump Sum amounts indicated below are to include the Contractor's cost of

administration, mobilization, bonds, insurance, pavement markings, traffic control, and any other miscellaneous items required for the project.

5. The Contractor is prohibited from adding additional bid items to their bid. The addition of bid items may be grounds for rejection of bid.

BID SCHEDULE Town of Clarkdale BITTER CREEK BRIDGE					
Item No.	Description	Est. Quantity	Units	Unit Price	Total Price
DEMOLITION					
1	SAWCUT EXISTING PAVEMENT TO A CLEAN STRAIGHT EDGE.	377	LF		
2	CLEAR AND GRUB SITE	2.5	AC		
3	REMOVE AND DISPOSE EXISTING ASPHALT PAVING AS REQUIRED FOR NEW ROADWAY	1562	SY		
4	REMOVE AND RELOCATE UTILITY POLE. TO BE COMPLETED BY APS.	4	EA		
5	SHED RELOCATION	1	EA		
6	REMOVE AND RELOCATE FENCE	125	LF		
7	REMOVE AND DISPOSE EXISTING CURB & GUTTER	172	LF		
8	REMOVE AND DISPOSE EXISTING GUTTER & SIDEWALK	98	LF		
9	REMOVE AND SALVAGE EXISTING SIGN	1	EA		
10	REMOVE AND DISPOSE EXISTING SIGN	5	EA		
11	SAWCUT AT EDGE OF BRIDGE	141	LF		
12	REMOVE AND SALVAGE EXISTING STREET LIGHT	1	EA		
13	REMOVE & DISPOSE EXISTING DOWNSTREAM GROUTED RIPRAP	227	SY		
14	REMOVE & DISPOSE EXISTING POST	1	EA		
15	SAWCUT REMOVE & REPLACE AC PAVEMENT	4	SY		
16	REMOVE & DISPOSE EXISTING SEWER SERVICE	44	LF		
17	REMOVE & DISPOSE EXISTING SIDEWALK	737	SF		
ROADWAY					
18	INSTALL SURVEY MONUMENT PER M.A.G. STANDARD DETAIL 120 TYPE 'A'	1	EA		
19	INSTALL SURVEY MONUMENT PER M.A.G. STANDARD DETAIL 120 TYPE 'B'	6	EA		
20	INSTALL TYPE '2' REMOVEABLE BOLLARDS PER M.A.G. STANDARD DETAIL 140	6	EA		

BID SCHEDULE Town of Clarkdale BITTER CREEK BRIDGE					
21	FENCE RECONSTRUCTION	106	LF		
22	CONSTRUCT ASPHALT PAVEMENT PER DETAIL 'B' ON DWG C1	2,254	SY		
23	CONSTRUCT TEMPORARY ASPHALT RAMP	1	EA		
24	CONSTRUCT TYPE 'A' VERTICAL CURB & GUTTER PER M.A.G. STANDARD DETAIL 220-1	844	LF		
25	CONSTRUCT TYPE 'B' RIBBON CURB PER M.A.G. STANDARD DETAIL 220-1	110	LF		
26	CONSTRUCT CURB TERMINATION PER M.A.G. STANDARD DETAIL 222	9	EA		
27	CONSTRUCT CONCRETE SIDEWALK PER M.A.G. STANDARD DETAIL 230	586	SF		
28	INSTALL 2'x 8' DETECTABLE WARNING STRIP AT BOTTOM OF RAMP	1	EA		
29	CONSTRUCT PARALLEL CURB RAMP PER M.A.G. 238-3 MODIFIED TO USE EXISTING RETAINING WALL FOR BACK RAMP CURB.	1	EA		
30	CONSTRUCT DRIVEWAY ENTRANCE PER M.A.G. STANDARD DETAIL 250-1 WITHOUT SIDEWALK	50	LF		
31	INSTALL LOCKABLE GATE TO PROHIBIT PEDESTRIAN ACCESS TO EXISTING GANGWAY BOARDWALK	2	EA		
32	INSTALL 8" RECLAIM WATERLINE (C-900 PVC) INCLUDING ALL APPURTENANCES PER M.A.G. SPEC. SECTIONS 610 & 616. TRENCH, EXCAVATION, BACKFILLING AND COMPACTION PER M.A.G. SPEC. SECTION 601 AND M.A.G. STD. DTL. 200-3.	574	LF		
33	INSTALL 8" RECLAIM WATERLINE (DIP CLASS 350 - RESTAINED) INCLUDING ALL APPURTENANCES PER M.A.G. SPEC. SECTIONS 610 & 616. TRENCH, EXCAVATION, BACKFILLING AND COMPACTION PER M.A.G. SPEC. SECTION 601 AND M.A.G. STD. DTL. 200-3.	191	LF		
34	INSTALL 8" GATE VALVE (CLASS 250) EPOXY COATED, RESILIENT SEAT PER M.A.G. SPEC. SECTION 630. VALVE BLOCKIGN PER M.A.G. STD. DTL. 301. VALVE BOX AND COVER PER M.A.G. STD .DTL. 391.	2	EA		
35	INSTALL CASING END SEAL PER DETAILS AND MANUFACTURE SPECIFICATIONS.	4	EA		

BID SCHEDULE Town of Clarkdale BITTER CREEK BRIDGE					
36	CAP END OF NEW RECLAIM WATER LINE FOR FUTURE CONNECTION.	2	EA		
37	INSTALL 2" AIR/VACUUM RELEASE VALVE ASSEMBLY PER M.A.G. SPEC. SECTION 630.	1	EA		
38	CONSTRUCT 8" (DIP CLASS 350 - RESTRAINED) RECLAIMED WATERLINE VERTICAL REALIGNMENT WITH 4-45-DEGREE BENDS PER M.A.G. STD. DTL. 370. ALL BENDS SHALL BE RESTRAINED PER M.A.G. SPEC. SECTION 610.	3	EA		
39	REMOVE FRAME & COVER, ADJUSTMENT RINGS AND CONE SECTION - INSTALL FLAT TOP MH ON BASE OF MH AND ADJUST FRAME & COVER TO FINISH GRADE PER M.A.G. 420-1.	1	EA		
40	INSTALL CARRIER PIPE SPACERS PER DETAIL ON SHEET R1 AND MANUFACTURER SPECIFICATIONS.	152	LF		
41	INSTALL NEW 4" SEWER SERVICE PER MAG DTL 440 - TUNNEL UNDER EXISTING RETAINING WALL.	47	LF		
42	PLACE LOOSE ROCK RIP-RAP D50=6" WITH GEOTEXTILE FILTER FABRIC (CONTECH C200 OR APPROVED EQUIVALENT) 1' DEEP.	2.8	CY		
43	INSTALL 18" CMP STORM DRAIN PIPE PER M.A.G. STANDARD DETAIL 510 AND SPEC. SECTION 621. TRENCH, EXCAVATION, BACKFILLING, AND COMPACTION PER M.A.G. SPEC. SECTION 601 AND M.A.G. STD. DTL 200-3	54	LF		
44	CONSTRUCT CMP RISER PER DETAIL 'C' ON DWG C1	1	EA		
45	CONSTRUCT TYPE 'D' CATCH BASIN PER M.A.G. STD. DETAIL 533-1, 17' WING	1	EA		
46	CONSTRUCT SPILLWAY INLET AND OUTLET PER M.A.G. STD. DETAIL 550	1	EA		
47	PLACE 3'x3'x3' GABIONS WITH FILTER FABRIC PER M.A.G. SPECIFICATION 796.2.3 CLASS 'A'	901	EA		
48	PLACE GROUTED RIP RAP APRON BETWEEN EXISTING BRIDGE BOTTOM AND GABIONS	76	SY		
49	INSTALL SEDIMENT CONTROL BERM PER DETAIL ON EC01	178	LF		
50	INSTALL FILTER INLET PROTECTION	2	EA		
51	INSTALL FILTER INLET PROTECTION	151	LF		

BID SCHEDULE Town of Clarkdale BITTER CREEK BRIDGE					
52	INSTALL STREET LIGHT PER SCHEDULE ON SHEET C7.	11	EA		
53	INSTALL 2" SCHED. 40 PVC CONDUIT WITH CONDUCTORS PER SCHEDULE ON SHEET C7.	1,166	LF		
54	INSTALL #3 1/2 PULL BOX FOR STREET LIGHTING.	11	EA		
55	INSTALL MILBANK METER PEDESTAL MODEL #CP3B11115A22 ON A FOUNDATION PER ADOT DETAIL T.S.2-6	1	EA		
56	INSTALL BARRIER JUNCTION BOX PER ADOT DETAIL T.S. 1-9 REVISED TO FIT SINGLE SLOPE BARRIER ON BRIDGE DECK.	1	EA		
57	INSTALL (2) 2" CONDUIT FOR FUTURE COMMUNICATION	710	LF		
58	INSTALL (3) EMPTY 2" CONDUITS FOR FUTURE USE	313	LF		
59	INSTALL NO. 7 PULL-BOX	7	EA		
STRIPING & SIGNAGE					
60	RE-STRIPE EXISTING CROSSWALK WITH 4" WHITE STRIPING IN ACCORDANCE WITH ADOT STANDARD SPECIFICATION 709 (EPOXY).	97	LF		
61	INSTALL 12" STOP BAR IN ACCORDANCE WITH ADOT STANDARD SPECIFICATION 709 (EPOXY).	36	LF		
62	INSTALL 6" DOUBLE YELLOW STRIPE IN ACCORDANCE WITH ADOT STANDARD DRAWING M-19 AND SPECIFICATION 709 (EPOXY).	810	LF		
63	RELOCATE SALVAGED SIGN ON NEW POST PER M.A.G. DETAIL 131 TYPE 'A'	1	EA		
64	REINSTALL A NEW OM3-L OBJECT MARKER SIGN ON EXISTING POST	5	EA		
65	INSTALL W8-13 "ICE FORMS ON BRIDGE BEFORE ROAD" SIGN ON POST PER M.A.G 131 TYPE 'A'	2	EA		
STRUCTURES					
66	STRUCTURE EXCAVATION	720	CY		
67	STRUCTURE BACKFILL	996	CY		
68	TEMPORARY SHORING	1	EA		
69	36" CAST-IN-DRILLED-HOLE PILE	814	LF		
70	REINFORCING BAR (CIDH PILES)	41,752	LBS		
71	STRUCTURAL CONCRETE (BRIDGE SUBSTRUCTURES)	375	CY		
72	REINFORCING BAR (BRIDGE SUBSTRUCTURES)	49,503	LBS		

BID SCHEDULE Town of Clarkdale BITTER CREEK BRIDGE					
73	BIAXIAL POLYPROPYLENE GEOGRID	1,545	SQYD		
74	CONSTRUCT GABION RETAINING WALL (3'X3'X12' GABIONS)	152	CY		
75	ERECT 42" UTAH BULB TEE GIRDERS (70-80 FEET, OWNER FURNISHED)	8	EA		
76	18" WELDED STEEL PIPE CONDUIT	328	LF		
77	MISCELLANEOUS METAL (PIPE PIN RESTRAINT)	1,466	LBS		
78	STRUCTURAL CONCRETE (BRIDGE SUPERSTRUCTURE)	209	CY		
79	REINFORCING BAR (BRIDGE SUPERSTRUCTURE)	25,769	LBS		
80	CONCRETE BARRIER (38" SINGLE SLOPE CONCRETE BRIDGE BARRIER)	436	LF		
81	STRUCTURAL CONCRETE, BARRIER SLAB	57	CY		
82	REINFORCING BAR, BARRIER SLAB	2,732	LBS		
83	TURN DOWN WALL	255	CY		
84	JOINT SEALS	64	LF		
ALLOWANCES					
85	ROCK EXCAVATION	2,000	CY		
86	SUBGRADE STABILIZATION FOR UNSUITABLE MATERIAL	2,248	SY		
GENERAL CONDITIONS					
87	CONSTRUCTION SURVEYING	1	LS		
88	TRAFFIC CONTROL	1	LS		
89	STORM WATER POLLUTION PREVENTION PLAN/EROSION PROTECTION	1	LS		
90	CONSTRUCTION MATERIAL SAMPLING AND TESTING	1	LS		
91	10% ALLOWANCE FOR CONSTRUCTION CONTINGENCY	1	LS		
92	MOBILIZATION / DE-MOBILIZATION	1	LS		
TOTAL CONSTRUCTION BID:					

Total Bid In Words: _____

NOTE: All quantities shown are approximate and are furnished solely for the contractor's convenience. Payment will be made at the Contractor's unit prices for measured quantities, except items designated Lump Sum. The individual items are for use by the Town to analyze bids, use as a basis for any supplemental agreements, and for partial progress payments.

Subcontractors and Material Suppliers List

Please list below **all** proposed subcontractor(s) and/or material supplier(s) for this project.
RETURN THIS FORM WITH THE REQUEST FOR PROPOSAL.

Firm Name Address Phone Number	% of Bid	Describe Work to be Performed or Material supplied	Dollar Amount
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Bid Bond
Town of Clarkdale – Bitter Creek Bridge
PROJECT NO. 223289

PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 1
OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must not be less than 10% of the BASE Bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That,

(Hereinafter "**Principal**"), as Principal, and

A corporation organized and existing under the laws of the State of _____

With its Principal offices in the City of _____

(Hereinafter "**Surety**"), as Surety, are held and firmly bound unto the Town of Clarkdale, Arizona (hereinafter "**Oblige**"), in the amount of

_____ (Dollars)

(\$ _____), for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted Bid for

Town of Clarkdale – Bitter Creek Bridge
PROJECT NO. 223289

Now, therefore, if the Oblige shall accept the proposal of the Principal and the Principal shall enter into a Contract with the Oblige in accordance with the terms of the proposal and give bonds and certificates of insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of the Contract and for the prompt payment of labor and materials furnished in the prosecution of the Contract, or in the event of the failure of the Principal to enter into the contract and give the bonds and certificates of insurance, if the Principal pays to the Oblige the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Oblige may in good faith Contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise, it remains in full

July 15, 2026

force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of the section to the extent as if it were copied at length herein. The venue for any litigation arising here from shall be in the Yavapai County Superior Court.

Witness our hands this _____ day of _____, 2026.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

TOWN OF CLARKDALE – BITTER CREEK BRIDGE
INFORMATION REQUIRED TO BE PROVIDED TO THE TOWN PURSUANT TO
GENERAL CONDITIONS SECTION 102.1 ENTITLED
“ELIGIBILITY AND PREFERENCE”

Information Regarding Past Performance

The Bidder shall provide the following information on which it understands that the Town will rely in the Town’s effort to determine if the Bidder has performed previous contracts in accordance with the relevant Contract Documents. The Bidder by its Bid submittal, and in order to be considered for the above referenced Contract, hereby agrees that the Town shall have the right to contact the following individuals (and others of Town’s chosen) to make such determination. Bidder further agrees that neither the Town nor the contact listed below nor the entity for which the contact speaks will incur any liability for comments made to Town relating to any inquiry made by the Town as to Bidder’s previous performance.

Bidder shall list the entity name, contact person, the phone number of the person and address of the person for the 4 most recent bridge projects performed by Bidder which exceeded \$5,000,000. This information informs the Town’s determination of Bidder responsibility and does not operate as an automatic disqualification.

Entity Name	Contact Person	Phone Number	Address

Bidder shall list any litigation arising out of a construction contract including the date(s), substance, parties and outcome of the litigation for the last five (5) years.

Date(s) of Litigation	Substance of Litigation	Parties to the Litigation	Outcome of the Litigation

Affidavit Demonstrating Lawful Presence in the United States

ARS§1-150 requires that any person who applies to the City for a local public benefit (defined as a grant, contract, loan or public housing) must demonstrate through the presentation of one of the following documents that he/she is lawfully present in the United States.

LAWFUL PRESENCE IN THE UNITED STATES CAN BE DEMONSTRATED BY PRESENTATION OF ONE (1) OF THE DOCUMENTS LISTED BELOW

Please place a check mark next to the applicable document and present the document to the City employee.

- ☐ 1. **An Arizona driver license issued after 1996.** ☐☐☐☐
Print first 4 numbers/letters from license:
- ☐ 2. **An Arizona non-operating identification License.** ☐☐☐☐
Print first 4 numbers/letters:
- ☐ 3. **A birth certificate or delayed birth certificate issued in any state, territory or possession of the US.**
Year of birth: _____ Place of birth: _____
- ☐ 4. **A United States Certificate of Birth abroad.**
Year of birth: _____ Place of birth: _____
- ☐ 5. **A United States passport.** ☐☐☐☐
Print first 4 numbers/letters on Passport:
- ☐ 6. **A foreign passport with a United States Visa.**
Print first 4 numbers/letters on Passport ☐☐☐☐
Print first 4 numbers/letters on Visa. ☐☐☐☐
- ☐ 7. **An I-94 form with a photograph.** ☐☐☐☐
Print first 4 numbers/letters on I-94:
- ☐ 8. **United States Citizenship and Immigration Services Employment Authorization Document (EAD).**
Print first 4 numbers/letters on EAD: ☐☐☐☐
- ☐ 9. **Refugee travel document.**
Date of Issuance: _____ Refugee Country: _____
- ☐ 10. **A United States Certificate of Naturalization.**
Print first 4 digits of CIS Reg. No.: ☐☐☐☐
- ☐ 11. **A United States Certificate of Citizenship.**
Date of Issuance: _____ Place of Issuance: _____
- ☐ 12. **A tribal or Bureau of Indian Affairs Affidavit of Birth.**
Year of Birth: _____ Place of Birth: _____

In accordance with the requirements of State Law, I do swear or affirm under penalty of perjury that I am lawfully present in the United States and that the document I presented to establish this presence is true.

Print Name of Applicant or Principal

Business/Company if applicable

Signature

Business Address if applicable

Date:

City, State, Zip Code

Office Use Only	Employee Name: _____	Ref. No.: _____
Promptly report all observed violations of federal immigration law to 1-866-347-2434.		
☐ Reported violation (check if applicable); Date/Time Reported: _____		

CONTRACT DOCUMENTS

(The following documents are required for the Contract issuance)

Agreement

This Agreement, made and entered into this _____ day of _____ 20____ by
and between the Town of Clarkdale, an Arizona municipality (“Owner”) and _____
_____ (“Contractor”).

WITNESSETH, that in consideration of the mutual covenants hereinafter contained, the parties hereto agree with each other as follows:

1. It is understood by both parties hereto that the construction work hereinafter referred to is to be done on the premises of the Owner at Clarkdale, Arizona. The Owner may award to others contracts for additional work, and the Contractor shall cooperate with any such other contractors and coordinate his work as directed by the Owner with the work included under any such other contracts.
2. The Contractor shall furnish and deliver all of the materials and perform all of the work described in the Specifications for **Town of Clarkdale Bitter Creek Bridge** and as shown on plans included in the back of the Specifications, it being understood that said Specifications and Plans are as fully a part of this Contract as if herein set forth, and that they are the property of the Owner. The Contract Documents also include the Bid Manual, General Conditions, Special Provisions, all addenda, and the Universal Core Procurement Terms (Tier 1), each of which is incorporated into this Contract.
3. That the work shall be completed within 360 calendar days and shall be delivered to the Owner free of all liens, claims and demands of any kind for materials, equipment, supplies, services, labor, taxes and damages to property or persons. If the work is not completed within the Contract time, Contractor shall pay liquidated damages as stated in the latest revision of the MAG Specifications (Section 108.9, Table 108-1).
4. If the Bidder to whom an award is made, fails or refuses to execute the required Agreement within the time specified in Paragraph entitled “PROPOSAL” of these requirements, or such additional time as may be allowed, the proceeds of his proposal guaranty shall become subject to deposit in the Treasury of the municipality as monies available to compensate the Owner for damages as provided by ARS 34-201 for the delay in execution of the agreement and bonds and the performance of work hereunder, and the necessity of accepting a higher or less desirable bid from such failure or refusal to execute agreement and bond as required. If the successful Bidder has submitted a certified check or cashier’s check as a proposal guaranty, the check will be returned after execution of this

agreement. The certified check or cashier's check of other Bidders will be returned at the expiration of thirty (30) days from the date of opening of proposals or sooner, if the agreement is executed prior to that time.

5. The Contractor shall keep the premises and work clear and free of all mechanics' liens.
6. It is hereby mutually agreed between the parties hereto that the sum to be paid by the Owner to the Contractor for said work and materials shall be per the proposal bid schedule, which amount includes all federal, state, and local taxes. This amount shall be payable through monthly progress payments, subject to the following conditions:
 - a. Contractor shall promptly submit all proper invoices necessary for the determination of the prices of labor and materials;
 - b. Progress payments shall be made in the amount of ninety percent (90%) of the value of labor and materials incorporated in the work, based on the sum of the Contract prices of labor and material, and of materials stored at the site, on the basis of substantiating paid invoices, as estimated by the Engineer, less the aggregate of all previous payments, until the contract is fifty percent (50%) complete. When and after the contract is fifty (50%) complete, the ten percent (10%) of value previously retained may be reduced to five percent (5%) of value completed if the Contractor is making satisfactory progress as determined by the Town and providing that there is no specific cause or claim requiring a greater amount to be retained. If at any time the Owner determines that satisfactory progress is not being made, the ten percent (10%) retention shall be reinstated for all subsequent progress payments made under the contract;
 - c. The Town shall have the right to finally determine the amount currently due to the Contractor;
 - d. Monthly progress payments will be made by the Owner on or before fourteen (14) calendar days after the estimate of the work completed is certified and approved, in accordance with A.R.S. § 34-221;
 - e. Contractor agrees that title to all materials incorporated in the work and stored at the site shall vest with the Owner upon receipt of the progress payment;
 - f. The remainder of the Contract price, after deducting all such monthly payments, will be paid within sixty (60) days after acceptance of the

completed work by the Owner; lien waivers from the Contractor and from all subcontractors covering work performed and materials supplied on the project must be supplied by the Contractor to the Owner prior to the release of retention or alternate surety.

7. The Contractor shall not assign this Contract in whole or in part without the written consent of the Owner.
8. All prior negotiations, proposals, and understandings of the parties are merged in and superseded by this Contract, and there is no verbal or written contract, agreement, or understanding of any kind whereby the terms and conditions hereof are or can be changed, varied, modified, or explained in any manner whatsoever.
9. The Contractor shall not enter into any subcontract or issue any purchase order for the complete work, or any substantial part of the work, unless in each instance written approval shall have been given by the Owner. The Contractor shall be fully responsible to the Owner for the acts and omissions of the Contractor, subcontractors and all persons either directly or indirectly employed by them.
10. The Contractor shall comply with all federal immigration laws and warrants compliance with A.R.S. § 41-4401 and A.R.S. § 23-214 (E-Verify).

IN WITNESS **WHEREOF**, the parties hereto have executed this instrument the day and year first above written.

CONTRACTOR

By _____

Title

TOWN OF CLARKDALE

ATTEST

Robyn Prud'homme-Bauer, Mayor

Charity Brooks, Town Clerk

APPROVED AS TO FORM:
Clarkdale Contract Documents

Stephen W. Polk, Town Attorney

PROJECT NAME: Town of Clarkdale Bitter Creek Bridge

All insurance policies or certificates shall include an endorsement providing for thirty (30) days prior written notice to the Town of any cancellation or reduction of coverage. Liability Insurance policies or certificates shall name the Town of Clarkdale as an Additional Insured.

Combined single limit for Bodily Injury and Property Damage,
in an amount not less than \$1,000,000 each occurrence
\$2,000,000 aggregate

Combined single limit for Bodily Injury and Property Damage,
in an amount not less than **\$1,000,000**

Statutory; Employers' Liability not less than \$1,000,000

Not less than full amount of Contract \$

Project Name: _____ Signature: _____

Contractor:_____

Insurer: _____ Policy Number(s): _____

Expiration Date: _____

Agency of Record: _____

Agency Address: _____

Authorized Signature: _____ Date: _____

TOWN OF CLARKDALE, ARIZONA

Payment Bond

PROJECT NAME: Town of Clarkdale – Bitter Creek Bridge

STATUTORY PAYMENT BOND PURSUANT TO TITLE 34
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____ (hereinafter called the Principal), as Principal, and, _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the Town of _____ (hereinafter called the Surety), as Surety, are held and firmly bound unto the Town of Clarkdale, Arizona (hereinafter called the Obligee), in the amount of _____ Dollars (\$_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated this _____ day of, 20____, to _____ in the Town of Clarkdale which Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

Now, therefore, the condition of this obligation is such, that if the principal promptly pays all monies due to all persons supplying labor or materials to the principal or the principal's subcontractors in the prosecution of the work provided for in the contract, this obligation is void. Otherwise, it remains in full force and effect.

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

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

Witness our hands this _____ day of _____ 20____.

Principal (Seal)

By: _____

Surety (Seal)

By: _____

Agency of Record

Clarkdale Contract Documents

Agency Address

Performance Bond

PROJECT NAME: Town of Clarkdale Bitter Creek Bridge

PROJECT NO. 223289

STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That,

(hereinafter called the Principal), as Principal, and,

_____ ,

a corporation organized and existing under the laws of the State of _____ ,

with its principal office in the Town of _____

(hereinafter called the Surety), as Surety, are held and firmly bound unto the Town of
Clarkdale, Arizona (hereinafter called the Obligee),

in the amount of _____

Dollars (\$_____) for the payment whereof, the said Principal
and Surety bind themselves, and their heirs, administrators, executors, successors and assigns,
jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee,
dated this _____ day of _____, 2026 in the Town of Clarkdale which Contract
is hereby referred to and made a part hereof as fully and to the same extent as if copied at length
herein.

Now, therefore, the condition of this obligation is such, that if the principal faithfully
performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of
Contract during the original term of the Contract and any extension of the Contract, with or without
notice to the surety, and during the life of any guaranty required under the Contract, and also
performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all
duly authorized modifications of the Contract that may hereafter be made, notice of which
modifications to the surety being hereby waived, the above obligation is void. Otherwise, it
remains in full force and effect.

Provided, however, that this bond is executed pursuant to the provisions of title 34, chapter
2, article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in

accordance with the provisions of title 34, chapter 2, article 2, Arizona Revised Statutes, to the extent as if it were copied at length in this agreement.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court. The venue for any litigation arising here from shall be in the Yavapai County Superior Court.

Witness our hands this _____ day of _____ 2026.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

GENERAL CONDITIONS

INTRODUCTION

The governing specifications for the Contract are defined in Town of Clarkdale Town Code, this Bid package, the Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction (MAG), the Arizona Department of Transportation (ADOT) Standard Specifications for Road and Bridge Construction, and Construction Standard. Should any criteria set forth by these documents conflict, the more stringent criteria shall be adhered to as determined by the Engineer.

MAG UNIFORM STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

SECTION 101 ABBREVIATIONS AND DEFINITIONS

101.2 DEFINITIONS AND TERMS

Revised to Include:

The following definitions have been modified or added. All other definitions and terms not mentioned below, but used in this bid package are as defined in MAG Section 101.

- | | | |
|----|-----------------------|--|
| A. | "City" or "Owner" | Town of Clarkdale |
| B. | "Contracting Agency" | Town of Clarkdale |
| C. | "City Representative" | Town of Clarkdale Town Manager or Designee |
| D. | "FHWA" | Federal Highway Administration |
| E. | "District" | ADOT, North Central District |
| F. | "Inspector" | Town of Clarkdale Town Manager or Designee |
| G. | "Sub-Contractor" | Any person, firm or corporation other than any employee of the Contractor, supplying for and under agreement with the Contractor for labor and materials at the project site in connection with this Contract. |
| H. | "MAG" | The Uniform Standard Specifications for Public Works Construction by the Maricopa Association of Governments, latest edition. |
| I. | "Engineer" | Town Representative as designated at the Pre-Construction meeting. |

END OF SECTION

SECTION 102 BIDDING REQUIREMENTS AND CONDITIONS

102.1 ELIGIBILITY AND PREFERENCE

Revised to Include:

Bidders on this project shall be licensed under the latest appropriate provisions of the Arizona Revised Statutes and shall agree to conform with the laws of the State of Arizona as they apply to the Contract being bid. Bidders must conform to all Federal, State and Local laws including but not limited to the E-verification requirements regarding legal right to work.

Town of Clarkdale may make such investigations as it deems necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Town all such information and data for this purpose as the Town may require. The Town reserves the right to reject any Bid if the evidence submitted by or investigation of such Bidder fails to satisfy the Town of Clarkdale that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

102.4 EXAMINATION OF PLANS, SPECIAL PROVISIONS AND SITE OF WORK

Revised to Include:

The Contractor acknowledges that he/she has satisfied himself/herself as to the nature and location of the work, the general and local conditions, including but not limited to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, sanitation facilities, roads and uncertainties of weather, the conformation and condition of the ground, the character, quality and quantity of surface and subsurface materials to be encountered, and the character of equipment and facilities needed preliminary to and during the prosecution of the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself/herself with all the available information concerning these conditions will not relieve him/her from the responsibility of estimating properly the difficulty or cost of successfully performing the work.

The Contractor shall review any existing geotechnical or other reports available. The contractor may do such testing, including but not limited to borings or excavation of surface or sub-surface material to satisfy his obligations hereunder. Contractor is required to follow standard procedures for Blue stake, notifications, traffic control plans, permits etc. prior to commencing any field investigations.

Prior to submitting a Bid, Bidders shall carefully read the specifications and other Contract Documents, visit the work sites and fully inform themselves as to all existing and local conditions and limitations. The Contract Documents show conditions as they are believed to exist, but is not intended to infer or guarantee that the conditions as shown therein constitute a representation by the Town or any of its officers that such conditions actually exist, nor shall the Town or any of its officers be liable for any loss sustained by

the contractor as a result of any variance between conditions as indicated in the Contract Documents and the actual conditions revealed during the progress of the work or otherwise.

The submission of the proposal hereunder shall be considered as evidence that the Bidder has made the necessary investigation and is prima facie evidence that the Bidder is satisfied with respect to the conditions to be encountered, quantity and quality of the work or materials to be performed or furnished, and the requirements and provisions of the Contract Documents and that the Bidder agrees that, if he/she is awarded the Contract, he/she will make no claim against the Town based on mistakes, ignorance, or misunderstanding of the Contract provisions.

102.10 WITHDRAWALS OR REVISION OF PROPOSAL

Revise first Sentence:

Delete the word “telegram” and replace with “email.”

Revised to Include:

Any Bid may be withdrawn prior to the scheduled time for the opening of the Bids or authorized postponement thereof.

102.12 DISQUALIFICATION OF BIDDERS

Revised to Include:

The Town may consider invalid and may reject any Bid not prepared and submitted in accordance with the provisions hereof. The Town reserves the right to reject all Bids without cause and to re-bid this project. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a Bid within sixty (60) days after the actual date of the opening, i.e., submitted Bids shall remain valid for 60 days after the actual date of the bid opening.

There shall be no modification made to the Bid Proposal by any Bidder. Modified, conditional or qualified Bids shall be considered non-responsive and not acceptable. Failure to provide a Bid Bond shall be cause for rejection of the Bid. The successful Bid will remain fixed throughout the duration of the project work.

END OF SECTION

SECTION 103 AWARD AND EXECUTION OF CONTRACT

103.7 EXECUTION AND APPROVAL OF CONTRACT

Revised to Include:

Once the Town Council has approved the Bid and a Notice of Award has been given to the Contractor, the Contractor must submit the signed contract, Payment Bond, and the Performance Bond.

A Notice to Proceed will be issued to the Contractor on the date shown on the Bid Timeline.

The successful Bidder must furnish a Performance Bond and Payment Bond in the amount of one hundred percent (100%) of the total award amount, as computed on the Bid Form, from a Surety Company holding a permit from the State of Arizona.

The successful Bidder will sign two (2) identical Contracts with the Town of Clarkdale for the work specified herein at the price of his/her Bid including any alternate Bid awarded. Both signed Contracts will be returned to the Town. The Town Manager will then sign all copies and a fully executed original will be returned to the successful Bidder.

103.8 FORFEITURE OF PROPOSAL GUARANTEES

Revised to Include:

The successful Bidder, upon his/her failure or refusal to execute and deliver the Contract and Bonds required within ten (10) days after he/she has received notice of the acceptance of his/her Bid, shall forfeit, to the Town as liquidated damages for such failure or refusal, the cashier's check, certified check or Bid Bond deposited with his/her Bid.

END OF SECTION

SECTION 104: SCOPE OF WORK

104.1 WORK TO BE DONE

104.1.1 General

Revised to Include:

The Contractor is to verify all existing topographic features since these may have changed since the field survey was conducted. Prior to the commencement of any construction activities, the Contractor shall digitally video and photograph the existing project areas. The Contractor shall furnish to the Town two copies of the video and photos in thumb drive format detailing, but not limited to the following:

- Landscape features within or near the right-of-way, private property, and water meter boxes
- Existing driveway conditions
- Existing road conditions
- Business Accesses
- Existing adjacent fences

All haul routes for removals, excavation, and dirt moving must be approved by the Town of Clarkdale prior to commencement of operations.

RECORD DRAWINGS: The contractor is responsible for maintaining a set of as-built record drawings until the end of construction at which time the as-builts shall be turned over to the Town.

104.1.2 MAINTENANCE OF TRAFFIC

Revised To Include:

The Contractor shall perform all construction activities in a manner that allows at least 10 feet of vehicle access. No full shutdown will be allowed – two-way traffic shall be maintained through project whenever possible. Limited scheduled restrictions and shutdowns will be permitted through the Town.

Within one week after the date of the Notice to Proceed, the selected Contractor shall submit a Traffic Control and Public Involvement Plan that shall also include temporary signage, on and offsite, to direct local and tourist vehicles and pedestrians to locations of significance.

The selected Contractor must also be responsive to additional signage which may be requested by other local businesses and should be prepared to reasonably negotiate with them on the type and location of such signage.

The Contractor shall notify the adjacent property owners, tenants, Town of Clarkdale Departments which may be affected, such as sanitation, police, fire department, etc., and any other parties which may be affected in writing and distribute the notice at least 72 hours prior to, and no earlier than one (1) week prior to performing the work that affects access to property or interrupts water or sewer service. Notification letters shall be approved by the Town. If there are any delays in the construction, the property owners shall be re-notified.

The Contractor shall coordinate with the owner and the Town prior to beginning work on private property. The Contractor shall contact the owner, in person, a minimum of 48 hours prior to commencing work on the property. If the first attempt is unsuccessful, second and third attempts shall be made in person and in writing. If the

owner is unavailable for coordination after three attempts, the Contractor may commence work after obtaining the Inspector's approval.

Any damage to or alteration of existing conditions on private or Town owned property while working outside the roadway, including markings placed during "Blue Stake" investigation, shall be repaired or replaced to the satisfaction of the owner and the Town Inspector by the Contractor at no additional cost to the Town. Existing conditions as defined herein shall include, but not be limited to: plants, rocks and other landscaping materials, plastic lining under rock, masonry walls, driveways unless otherwise noted on the Approved Plans, planters, electrical lines, lighting, septic systems, and underground sprinkler systems. Damaged irrigation or sprinkler lines shall be isolated and repaired within 24 hours. No payment for landscape restoration on private property shall be made for work not keynoted on the plans.

Two-way traffic is to be maintained through the project whenever possible. Restrictions to one-lane and temporary scheduled shutdowns during the work will require approval in advance by the Public Works Director or Town Engineer. A certified Flagger may be required to facilitate traffic flow safely through a construction zone, at the sole discretion of the Town. The contractor shall adhere to the Manual on Uniform Traffic Control Devices (MUTCD) for all traffic control plans. Any equipment or other obstructions left on the road surface after sunset must be barricaded with lighted barricades. The Town Police Department and the Clarkdale Fire District must be notified for emergency routing. No open trenches shall be allowed to remain overnight. Parking will not be allowed on either side of the street in the area of work. The Contractor is to receive approval from the Town on the length of lane closures to be implemented at any one time.

At all times, the selected Contractor is to maintain contact with local businesses to assure that appropriate business/customer access is preserved during the work.

All underground work must be completed to the satisfaction of the Town prior to the start of any surface work, unless the Contractor can provide a sequence of work schedule and traffic control plan which shall demonstrate, to the satisfaction of the Town, that neither traffic safety nor Contractor operations shall be adversely impacted. The Town shall have total discretion and authority to accept or reject the Contractor's proposed sequence of work schedule and traffic control plan.

104.1.3 Cleanup and Dust Control

Revised to Include:

The Contractor shall be cognizant of nuisance or inconvenience to the public and of excessive blowing of dust, dirt or refuse which can affect the adjacent properties and public areas and shall institute measures to control such, at the direction of the Town.

The Contractor shall be responsible for containing all construction activities within the limits of construction illustrated on the plans. The Contractor shall keep the site free from accumulations of waste materials, rubbish, and other debris resulting from construction operations. The Contractor shall provide on-site containers for collection and removal of waste materials in accordance with applicable regulations. The Contractor shall provide all required work and materials necessary to clean the site on a daily basis to the satisfaction of the Town Inspector.

104.2 ALTERATIONS OF WORK

104.2.1 By the Contracting Agency

Revised to Include:

The Town shall have the right to make such alterations, deletions and/or additions in or to the work herein described, or require such extra work as it shall find necessary in order to best accomplish the object and purpose hereof, and the same shall in no way affect or make void the Contract nor release the surety or sureties on any bond or bonds given to ensure the performance thereof to protect laborers or material suppliers.

The Town shall have authority to order minor changes in the work not inconsistent with the purposes thereof. However, no extra work or changes shall be made, except on written order of the Town first being obtained by the Contractor. Unless such order is first obtained, the Contractor shall not be entitled to payment for extra work. The Town shall be entitled to deductions from or credits to the Contract price for any changes reducing the costs of the work whether or not such order is first obtained.

There shall be no "extras" and/or added cost to the Contract price unless written prior approval is given by the Town three (3) working days, or more, in advance of the work being done by the Contractor. Such approval for extra cost shall be signed by the Town prior to such work being done by the Contractor.

When extra work or changes in the work are ordered by the Town, the Contractor shall furnish all labor, tools, material and equipment that may be necessary for the performance and completion thereof, and shall immediately proceed to perform or make the same. For such extra work or changes, the Contractor shall receive compensation based upon the detailed cost estimate quoted in the Contractor's proposal or upon prices previously agreed to in writing.

END OF SECTION

SECTION 105 CONTROL OF WORK

105.2 PLANS AND SHOP DRAWINGS

Revised to Include:

The Contractor shall include a cover sheet with all submittals listing the submittal items and if there are any deviations from the standard that are being requested for any item OR if they are per specification.

105.2.1 RECORD DRAWING (As-Built Plans):

Revised to Include:

The Contractor shall be required to provide a record drawing (as-built) set of construction plans that fully describes work that deviated from the approved contract documents. The redlined plan set will be reviewed at each weekly meeting with the Town's PM and the Engineer to assure that all deviations from the plans are being noted. The redlined plan set needs to be legible and contain accurate information. As-Built elevations are required to be documented at all utility crossing locations to verify that the separations distances have been met or exceeded.

As-built plans will be prepared by the Engineer from contractor redlines and surveyed points and submitted by the Engineer to ADEQ with the Engineer's Certificate of Completion for the 8" reuse waterline.

105.5 COOPERATION OF CONTRACTOR

Revised to Include:

The Contractors shall coordinate his/her work with other Contractors, the Town, individual property owners and other emergency service organizations within the project area.

The Contractor shall have on the project site at all times during work, a competent superintendent and any necessary assistants, all satisfactory to the Town. The superintendent shall not be changed except with the prior consent of the Town, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his/her employ. The superintendent shall represent the Contractor in his absence and all directions given to him/her shall be as binding as if given to the Contractor. Representations made by the Contractor's designated Superintendent shall be binding on the Contractor. Sub-contractors and/or sub-contractor personnel will not be considered as authorized superintendents for the Contractor.

PRE-CONSTRUCTION CONFERENCE: The Contractor and all subcontractors shall attend a pre-construction conference meeting at a time and location designated by the Town. The Contractor shall be prepared and ready to present to the Town all required

schedules, plans, etc. as described elsewhere in these special provisions and within the MAG Standard Specifications.

WEEKLY MEETINGS: The Contractor shall plan for and attend weekly construction progress meetings with the Town at a location and designated time determined by the Town. The Contractor shall include in the construction schedule adequate time for weekly construction progress meetings. The Contractor shall submit an additional two-week schedule for future meetings at the weekly meetings.

The Engineer will provide written meeting minutes prior to the next weekly meeting for review.

CONSTRUCTION FIELD OFFICE: A construction field office is required for this project by the Town of Clarkdale.

105.6 COOPERATION WITH UTILITIES

Revised to Include:

The Contractor shall be responsible for coordinating with the Town of Clarkdale for any necessary hydrant meters and backflow preventers for water usage. The Contractor shall coordinate the locations of all construction meters with the Town.

UTILITIES BY OTHERS: Contractor shall coordinate the dry utility activities by others such as gas, electric, telephone, and cable. The following table provides contact information for the various utilities which could be affected by the work. Contractor shall verify this contact information prior to construction.

NAME	COMPANY	UTILITY	ADDRESS	TEL. NO.
Kevin Brady	APS	Electric	4360 E Coury Drive Cottonwood, AZ 86326	928.227.7560
Josh Tomerlin	Town of Clarkdale	Storm Drains, Wastewater, Water	890 Main Street Clarkdale, AZ 86324	928.300.1910
Doug Hamilton	Cable One - Cottonwood	Coaxial/Fiber	3201 Tower Rd. Prescott, AZ 86305	928.443.3305
Jason Perkins	Unisource Energy Services	Gas	500 S Willard St. Cottonwood, AZ 86326	928.203.1220
Armen McNerlin	CenturyLink	Telephone	500 S Calvary Way Cottonwood, AZ 86326	928.821.4609

105.6.1 Notification Requirement in the Event of Any Damage to or Dislocation of Underground Facilities

Revised to Include:

The existing 4" gas line will remain in place and in operation throughout this project. All reasonable efforts must be made to protect the gas line. This gas line is critical to the gas supply to the Town of Clarkdale. If any construction activities cause damage or leaks to the existing gas line, the Contractor will be required to repair the line and get it back in operation within 6 hours. The Contractor shall have supplies on hand to deal with an emergency repair of the gas line. Emergency response 911 (as applicable), Unisource, the Town and Engineer will be notified immediately when the existing gas line is impacted.

105.8 CONSTRUCTION STAKES, LINES AND GRADES

MAG Section 105.8, Construction Stakes, Lines and Grades is deleted and replaced by the following:

General:

The Contractor shall furnish all materials, personnel, and equipment necessary to perform all surveying, staking, laying out of control lines and verifications of the accuracy of all existing control points which are delineated in the Contract Documents. The work shall be done under the direction of a Registered Land Surveyor licensed to practice in the State of Arizona.

Staking Outline:

Prior to beginning any survey operations, the Contractor shall furnish to the Town's Contract Administrator, for approval, a written outline detailing the method of staking, interval of stakes, marking of stakes, grade control for various courses of materials, referencing, structure control, and any other procedures and controls necessary for survey completion. A part of this outline shall also be a schedule showing the sequencing of the survey and layout work, throughout the course of the contract, listing a percentage of completion for each month.

Field Books:

The Contractor shall furnish field books to be used for recording survey data, swing ties and field notes. These books shall be available for inspection by the Town of Clarkdale at any time and shall become the property of the City upon completion of the work.

Survey Control Verification:

Control Points (horizontal and vertical) - The existence and location of all survey monuments, bench marks and control points shall be verified prior to demolition or construction activity. Immediately notify the Town of Clarkdale when location discrepancies greater than two-hundredths (0.02) foot horizontal or one-hundredth (0.01) foot vertical are found. All datum shall be Town of Clarkdale.

Control Lines: Construction control lines with grade breaks, transition points, horizontal and vertical curves, etc., shall be established and referenced prior to construction.

Temporary Benchmarks: Temporary benchmarks shall be established and referenced.

Pre-Construction Location Survey: All existing features which are located prior to construction shall be referenced to survey monuments along control lines by stationing in accordance with the construction documents and by offset distance from the control lines. All features shall be re-locatable after construction. Distances measured shall be within one-hundredth (0.01) foot.

Survey Staking:

Survey monuments - all survey monuments that lie within the construction area that may be disturbed shall be referenced to a specific point on at least four (4) stable objects by distance measurement. Reference objects shall be located no greater than three hundred (300) ft from the survey monument being referenced.

Water and Sewer line appurtenances: Water and sewer line surface appurtenances such as manholes, valves, cleanouts and horizontal/vertical bends or deflections that lie within the construction area shall be located and noted on the Contractor's approved construction documents prior to any demolition or excavation.

Match Points and Removals: Verify the location (horizontal and vertical) of existing facilities to which the project connects. Immediately notify the Inspector when location discrepancies of connecting facilities greater than one-tenth (0.10) foot horizontal or two-hundredths (0.02) foot vertical are found.

Construction Stakes: The Contractor shall set construction stakes and marks establishing lines and grades for road work, curbs, gutters, sidewalks, structures, centerlines for utilities and necessary appurtenances and other work as indicated in the Contract Documents and shall be responsible for their conformance with the plans and specifications. The stakes shall be established in accordance with the following guidelines which represent the minimum standard, and the Contractor shall provide additional stakes and controls necessary to perform the work. The Contractor shall be held responsible for the preservation of all stakes and marks and will replace, at no additional cost to the Town of Clarkdale; any construction stakes or marks which have been carelessly or willfully destroyed by acts of nature or other parties.

Curbs, Curb and Gutter, Valley Gutter:

Curb and gutter shall be staked and installed prior to sidewalk, driveway and corner ramp construction. Cut/fill stakes for rough grade shall be set at one hundred (100) ft intervals with cuts to the top of curb.

Finish grade stakes shall be set to curb grade at twenty-five (25) ft intervals, at grade brakes, angle points, transitions, returns, driveways, alley entrances, sidewalk ramps and other curb control points. The stakes shall be tacked for line on a 2-foot offset to the back of curb. Face of

curb forms shall be checked for grade at flow line prior to placing concrete where longitudinal grades are one-tenth percent (0.10%) or less.

Face of curb forms shall be checked for grade at gutter line prior to placing concrete for transitions at 30-foot intervals. Valley gutter stakes shall be set offset five (5) ft from the centerline of the valley gutter at twenty-five (25) ft intervals, marked with cuts to the flowline of the valley gutter.

Roadway:

Subgrade stakes shall be set to subgrade elevation at fifty (50) ft intervals on straight sections, twenty-five (25) ft intervals through vertical curves, on horizontal curves with radius of six hundred (600) ft, or less, and/or slopes of less than four-tenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and grade breaks. Stakes shall be set at crown lines, at grade break lines and at edges of pavement which do not abut concrete curb and gutter or at the edge of pavement abutting vertical curbs or other structures whose surface grade will not be flush with the finished pavement grade. Quarter lines will be staked where the distance between the crown line stakes, and the curb and gutter face exceeds twenty (20) ft. Subgrade blue tops shall be approved by engineer before placement of Aggregate Base Course.

ABC stakes shall be set to ABC elevation at thirty-three (33) ft intervals on straight sections, twenty-five (25) ft intervals through vertical curves, on horizontal curves with radius of six hundred (600) ft, or less, and/or slopes of less than four-tenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and grade breaks. Stakes shall be set at crown lines, at grade breaks and at edges of pavement which do not abut concrete curb and gutter or at the edge of pavement abutting vertical curbs or other structures whose surface grade will not be flush with the finished pavement grade. Quarter lines will be staked where the distance between the crown line stakes, and the curb and gutter face exceeds twenty (20) ft. ABC blue tops shall be approved by engineer before placement of asphalt.

Select material shall be staked the same as sub grade.

Pavement edges shall be controlled by utilizing a wire control mechanism or screeding along a concrete gutter or other structure whose surface grade is flush with the finished pavement grade. Stakes shall be set to finished elevation at thirty-three (33) ft intervals on straight sections, twenty-five (25) ft intervals on curves with radius of six hundred (600) ft, or less, and/or slopes of less than four-tenths of one percent (0.4%), the beginning and end of horizontal and vertical curves and grade breaks.

Sidewalks and Bike Paths:

- (1) Stakes are not required for sidewalks five (5) ft or less in width which are adjoining existing curb and gutter.
- (2) Sidewalk stakes shall be set to grade on an offset and tacked for line at twenty-five (25) ft intervals at the beginning and end of horizontal and vertical curves and grade breaks.

Traffic Signing, Striping and Detector Loops:

- (1) The Contractor shall delineate the procedures and controls to be utilized in the Staking Outline.

Landscaping: The Contractor shall delineate the procedures and controls to be utilized in the Staking Outline.

Sanitary Sewer: All cuts will be to the invert of the pipe, given to the nearest one-hundredth (0.01) of a foot.

- (1) Stakes for sanitary sewer will be driven flush with the existing ground, set on an offset at twenty-five (25) feet intervals and tacked for line. Stakes will be marked with the offset and indicated cut.
- (2) Wyes for laterals will be marked with a line only stake.
- (3) Manholes shall be marked with the offset and indicated cut to top of manhole grade and inverts.
- (4) Cut sheets shall be supplied to the Contractor and Town Inspector.

Storm Sewer and Drainage: All cuts will be to the invert of the pipe, given to the nearest one-hundredth (0.01) of a foot.

- (1) Stakes for storm sewer will be driven flush with the existing ground, set on an offset at fifty (50) feet intervals. Stakes will be marked with the offset and indicated cut.
- (2) Wyes for laterals will be marked with a line only stake.
- (3) Manholes shall be marked with the offset and indicated cut to top of manhole grade and inverts.
- (4) Stakes for storm water inlets, two (2) per inlet, will be set on a line normal to the roadway at the center line of the inlet five (5) and ten (10) feet from the face of curb. The stakes will be marked with the offset to the face of curb and the cut or fill to the top of curb and inverts.
- (5) Cut sheets shall be supplied to the Contractor and Town Inspector.

Water: All cuts will be to the invert of the pipe, given to the nearest one-tenth (0.10) of a foot.

- (1) Stakes for water will be driven flush with the existing ground, set on an offset at fifty (50) feet intervals and specified grade breaks. Stakes will be marked with the offset and indicated cut.

- (2) Fittings or other critical points such as tees will be marked with a line only stake.
- (3) Fire hydrants will be located with two (2) stakes per hydrant set parallel with the roadway five (5) feet from the centerline of the hydrant. The stakes will be marked with the offset to the hydrant and indicated cut to the top of curb at the centerline of the hydrant.
- (4) Water meters will be located with two (2) stakes per meter set parallel with the roadway five (5) feet from the centerline of the meter. The stakes will be marked with the offset to the meter and indicated cut to the top of curb at the centerline of the meter.
- (5) Cut sheets shall be supplied to the Contractor and Town Inspector.

Pipe Culverts: All cuts will be to the invert of the pipe, given to the nearest one-hundredth (0.01) of a foot.

- (1) Stakes for culverts will be driven flush with the existing ground, set on an offset at fifty (50) feet intervals. Stakes will be marked with the offset and indicated cut.
- (2) Cut sheets shall be supplied to the Contractor and Town of Clarkdale Inspector.

Concrete Box Culverts:

- (1) Cut stakes for Box Culvert floor slab subgrade excavation will be driven flush with the existing ground, set on an offset at twenty five (25) feet intervals. Stakes will be marked with the offset and indicated cut given to the nearest one-hundredth (0.01) of a foot.
- (2) Blue top grade stakes for Box Culvert floor slab ABC will be set at grade on a 2-foot offset, each side of the slab, at twenty five (25) feet intervals.
- (3) Two line and grade stakes at ten (10) feet intervals shall be placed on the centerline extension of each wingwall. Stakes will be marked with the offset and indicated cut to the top of wall and top of footing.

Re-establishment Survey:

Monument locations will be marked with "straddlers" (four nails with metal "shiners") driven into the pavement, placed in pairs approximately six feet apart and opposite to each other. Lines connecting opposing pairs shall form a ninety-degree cross with three foot legs. The center of the cross will signify the exact location of the center of the monument to be set. Monuments will be drilled or punched after they have been set.

Manhole, valve box and cleanout locations shall be painted on the pavement.

Inspection and Acceptance of Work:

The Town of Clarkdale reserves the right to make inspections and random checks of any portion of the staking and layout work. If, in the Town of Clarkdale's opinion, the work is not being performed in a manner that will assure proper control and accuracy of the work, the Town of Clarkdale will order any or all of the staking and layout work redone at no additional cost.

Measurement and Payment:

Construction surveying will be measured as a single complete item of work and paid at the Lump Sum price indicated on the Bid Schedule, which amount shall be considered full compensation for the work as described herein and required to provide all necessary construction surveying and control. The approved schedule showing the sequencing and percentage of the survey and layout work shall be the basis on which monthly progress payments shall be made. This schedule shall be subject to periodic review, at the request of either party, if the survey and layout work lags or accelerates. If necessary, the schedule will be revised to reflect changes in survey and layout progress. When approved, the revised schedule will become the basis for payment.

105.12 MAINTENANCE DURING CONSTRUCTION

Revised to Include:

The Contractor assumes full responsibility for the safe keeping of all materials and equipment and for the protection of all unfinished work until final acceptance by the Town and if any of it is damaged or destroyed from any cause, he/she shall replace it at his own expense.

FLOODING PROTECTION: Contractor shall protect construction site from flooding during storm events. Town of Clarkdale shall not be responsible for additional cost associated with flood damage during storm events.

MARSHALLING YARD: The contractor shall provide a marshalling yard for storage of construction materials in a location approved by the Town. All material shall be stored in the marshalling yards and will not be strung out along the project. Marshalling yards shall be returned to preconstruction conditions upon abandonment of yard. Documentation of preconstruction conditions shall be provided by the Contractor.

The Town will provide marshalling yards along the project limits at no cost to the Contractor. Additional marshalling yards on private property shall be submitted to the Town for approval.

No excess material from removal or demolition will be stored on site.

105.13 FAILURE TO MAINTAIN ROADWAY OR STRUCTURE

Revised to Include:

Any damages to the roadway as a result of the Contractor's work will be repaired by the Contractor. Any detours, haul roads, etc., required as a part of the Contract will be the

responsibility of the Contractor to construct and repair/restore following completion of the work.

105.15 ACCEPTANCE

105.15(B) Revised to Include:

The Contractor will provide written notice that the entire project is substantially complete. This notice indicates that the owner can occupy or utilize the work for its intended use. The Town will make a final inspection and will notify the Contractor in writing of all incomplete or defective work. The Contractor shall immediately take measures as are necessary to remedy such deficiencies.

The Contractor shall not receive final payment until all incomplete or defective work has been completed or corrected and the entire project has been accepted by the Town.

END OF SECTION

SECTION 106 CONTROL OF MATERIALS

106.2 SAMPLES AND TESTS OF MATERIALS

Revised to Include:

Contractor is required to provide certifications and test results to the Town for all materials incorporated into the project in a timely manner. Compaction test results shall be submitted to the Town within 30 days if cutting, but not less than 5 days prior to patching for hard surfaced streets.

The Town has the right to ask for literature and samples of items to be used in the construction of the project by the Contractor as noted in the Contract Documents.

The Contractor shall pay for all samples required, including but not limited to, sample, shipping and delivery charges. Materials testing and certified results shall be provided to the Town at the Contractors expense.

Failed tests will require re-excavation, re-compaction and new testing at the expense of the contractor. The Contractor will notify the Town Engineer of any failed tests prior to advancing to the next stage of construction.

Failure for not submitting compaction results to the Town or not completing the compaction test will result in an extended warranty period of two (2) years; fees will be withheld from posted deposit and may affect the approval of future street cut permits.

106.4 TRADE NAMES AND SUBSTITUTIONS

Revised to Include:

- J. That the equipment, tools or materials proposed for substitution are equal to or superior to that specified in the Contract, and further, that the equipment named in the specifications cannot be delivered to the job in time to complete the work in proper sequence of work of other contractors, due to conditions beyond the control of the Contractor. To receive consideration, requests for substitutions must be accompanied by documentary proof of equality of difference in price and delivery time, if any, in the form of certified quotations from suppliers of both specified and proposed equipment.
- K. In case of a difference in cost, the Town shall receive all benefits of the difference in cost involved in any substitution, and the Contract shall be altered by change order to credit the Town with the savings so obtained. If the substituted equipment, tools, or materials are more expensive, the additional expense shall be borne by the Contractor.

106.5 STORAGE OF MATERIALS:

Revised to Include:

A temporary storage of materials may not be located beyond the disturbance limits of the project right of way without a separate agreement with the town and/or private property owners. The Contractor shall coordinate with the Town or with private property owners if a temporary storage is needed. Upon approval the Contractor shall construct and remove the temporary access and erosion control best management practices for the storage yard. This activity shall be shown on the contractor's schedule and include both the construction and removal of the temporary access, erosion control and storage yard. The Contractor shall notify the Town of any schedule changes that impacts this activity. The removal of the temporary access and storage yard shall be incidental to other bid items. Due to the length of time associated with the project materials shall be protected from the sun and weather if longer term storage is required.

106.6 HANDLING MATERIALS

Revised to Include:

The Contractor shall be responsible to ensure that the installation and workmanship of all materials and equipment is performed in strict accordance with the manufacturer's recommendations.

END OF SECTION

SECTION 107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

107.1 LAWS TO BE OBSERVED

Revised to Include:

Where drawings, specifications, or special provisions conflict with the laws or codes the law shall be followed, but where drawings, specifications or special provisions are over and above the requirements of law, the drawings, specifications and special provisions shall be followed.

107.2 PERMITS:

Shall be replaced by the following:

The Contractor shall, at their own expense, procure all permits, certificates and licenses required of them by law for the execution of his work. The Contractor shall, at their own expense, obtain any necessary permits required by laws or codes to perform the work specified herein. It shall be the responsibility of the Contractor to obtain and provide payment for all required permits for construction. All Town of Clarkdale permit fees will be waived or paid for by the Town.

Erosion Protection and Site Restoration

A NOI permit is required because the project is more than 1 acre or is required. The Contractor shall use best management practices (BMP) in controlling stormwater runoff. An Erosion control Plan has been included in the construction documents for the Contractor's use. The contractor shall develop and maintain a SWPPP inspection and maintenance binder that is to be kept on site during construction. This plan is to be reviewed by the Town prior to construction.

107.5 SAFETY, HEALTH AND SANITATION PROVISIONS

Revised to Include:

The Contractor shall comply with the provisions of William Steiger Safety and Health Act of 1970 and the Occupational Safety and Health Act, 1972. The Contractor shall require all their employees to wear approved safety vests while in the Town right of way.

107.7 BARRICADES AND WARNING SIGNS

Revised to Include:

The Contractor shall design, provide, and maintain throughout the performance of the Contract work such signage, barriers and other safeguards as may be required for traffic and pedestrian safety and control.

Maintenance Roads constructed by this project should be signed "Closed" and barricaded from public access during construction until final fencing, gates and locks are installed.

107.8 USE OF EXPLOSIVES:

Revised to Include:

Blasting may not be allowed on the project depending on location, timing, and conditions, and should not be anticipated as an available method for rock removal. The Contractor shall be required to coordinate with YCFCD and Engineer if blasting is needed in areas of the project. No blasting shall be done without approval from the YCFCD and Engineer. Any permits that result in blasting shall be obtained by the Contractor. The schedule and plan in-place shall be coordinated with the YCFCD and Engineer.

107.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

Revised to Include:

The Contractor shall be financially responsible for safe-guarding of the existing buildings, utilities and property, and persons during construction from damage or injury.

The Contractor shall be responsible for all damages to existing items, including but not limited to, roadways, piping systems, electrical systems, vegetation, or other property caused by his/her work owned by Town or other entities/individuals. He/she shall repair, at his/her expense, all damage so caused and in a manner satisfactory to the Town. It is the Contractor's responsibility to inform the Town of any needed repairs prior to start of repairs.

Contractor shall salvage and/or relocate existing landscape. Contractor will be responsible for restoring all other landscape and hardscape damaged by Contractor's work to original condition. Should perceived damages occur to private or Town property or otherwise as an apparent result of construction activities and the Contractor cannot verify or produce visual evidence of the pre-existing conditions, the Contractor shall be held responsible for the damages.

END OF SECTION

SECTION 108 COMMENCEMENT, PROSECUTION, AND PROGRESS

108.1 NOTICE TO PROCEED

Revised to Include:

The Contractor shall be issued a NOTICE TO PROCEED which sets the date the Contractor shall begin. This Contract shall be completed within the calendar day period stated in the Invitation to Bid beginning the date of the "Notice to Proceed".

108.4 CONTRACTORS CONSTRUCTION SCHEDULE

Revised to Include:

This Contract requires a construction schedule. The construction schedule shall be in sufficient detail so that the Town may plan their work on the project. A detailed

proposed construction schedule and sequence of basic operations meeting the general Contract requirements shall be submitted to the Town prior to or at the Pre-Construction meeting. The Contractor's work sequence and schedule shall be approved by the Town before any work commences.

The Contractor shall be responsible for planning, scheduling, and reporting the progress of the work as to ensure timely completion of the work called for in the contract. The Contractor shall submit a schedule of the work prior to beginning construction which shall include a list of work items and the start and stop dates of each item.

The Contractor shall make three (3) copies and submit updated schedules and reports in one-week increments commencing from the date of the Notice to Proceed in conformance with the following:

- A. The Town shall determine if the schedule requires revision in whole or in part, and shall inform the Contractor of such revisions and of non-compliance with contract schedule within five (5) calendar days of such non-compliance.
- B. The report shall show the activities or portion of activities completed during the two-week period and the portion completed on the project to date. Actual start and finish dates shall be shown plus future activities for the next two (2) week period.
- C. The report shall state the percentage of contract amount actually earned as of the report date.
- D. The report shall include a narrative of job progress, problem areas, current and anticipated delaying factors and their anticipated effect, and any corrective actions proposed or taken. This report shall identify departures from earlier schedules or changes sequence by explaining the circumstances causing changes.

Acceptance of the Contractor's schedules by the Town shall not relieve the Contractor of his obligation to complete the contract work within the contract time, nor as granting or rejecting Contractor requests for adjustments to the contract completion date, nor as acceptance of claims for additional compensation. Any time extension requests shall be processed in strict compliance with other relevant provisions of the contract.

No direct payment will be made to Contractor for costs relating to preparation and submission of schedules and reports and revisions thereto.

Failure of the Contractor to comply with the requirements of this Section will be grounds for withholding an additional ten (10) percent of the monthly progress payment. Upon compliance, the additional money withheld will be paid to the Contractor on the next scheduled monthly progress payment.

108.5 LIMITATION OF OPERATIONS

Revised to Include:

The Contractor shall plan construction activities between regular working hours. Regular working hours are defined as 5:00 a.m. to 7:00 p.m., Monday through Friday, 7:00 am – 7:00 pm on Saturdays and Sundays excluding federal and state holidays per Town Code. **Only at the Town's request or its approval will work be conducted outside of these hours.**

Work outside these hours is permissible provided a construction schedule has been prepared, submitted to and found acceptable by the Town of Clarkdale. The Town retains the right to retract approval of a revised schedule if complaints are received. The schedule shall identify the work to be performed including the location and duration of planned activities. Submittals shall be made a minimum of seven days prior to the planned work to allow sufficient time for the Town to review the request and schedule any necessary inspections.

The detailed proposed construction schedule and sequence of the construction of each segment of waterline shall be submitted to the Town prior to or at the Pre-Construction meeting. The Contractor's work sequence and schedule shall be approved by the Town before any work commences. Modifications to the schedule should be presented to staff for approval 2 weeks before a change will occur.

108.7 DETERMINATION AND EXTENSION OF CONTRACT TIME

Delete last Paragraph and Replace with the Following:

The Contract time may only be changed by a Change Order. Any claims for an extension in the Contract time shall be based on written notice delivered to the Town within two (2) days of the occurrence of the event giving rise to the claim. All claims for adjustment in the Contract time shall be determined by the Town, if Town and Contractor cannot otherwise agree. Any change in the Contract time resulting from any such claims shall be incorporated in a Change Order.

The Contract time will be extended by an amount equal to time lost due to delays beyond the control of the Contractor if they make a claim. Such delays shall include, but not be limited to, acts or neglect by any separate Contractor (not subcontractor of Contractor) employed by the Town, fires, floods, labor disputes, epidemics, or acts of God.

The contract time, including final clean-up of the project site and storage areas, may be extended as a result of weather conditions that cannot be reasonably anticipated. The number of actual days that the scheduled work is actually impacted by adverse weather shall be recorded monthly during the construction period. The Contractor shall submit claims for the delay of critical work within two working days of experiencing adverse weather and associated project delays.

The Contractor will be entitled to a contract time extension if the actual adverse weather days experienced during the work exceed the anticipated adverse weather days. Included

in the time to complete the project stated in the Invitation to Bid are two (2) anticipated adverse weather days for every thirty (30) days of contract time. If more than two (2) adverse weather days occur within each thirty (30) days of the contract, the Contractor may submit a Change Order for the time extension within two days of the occurrence of the adverse weather. Winter shutdowns are not included in this calculation.

The Contractor's schedule must reflect the above anticipated adverse weather delays on all weather dependent activities and must show all weekends and holidays.

108.8 GUARANTEE AND WARRANTEE PROVISIONS

Revised to Include:

Except as specifically provided otherwise, the Contractor shall guarantee all work against defective material for a period of one (1) year from the date of the Final Acceptance by the Town of the Contract work. Workmanship warranties will be provided for a period of two (2) years from the date of Final Acceptance.

Defective work, noticed to Contractor prior to final payment, requiring replacement or repair shall be done immediately by the Contractor at his/her own expense. In case of failure of the Contractor to make such corrections or replacements at Contractor's expense, the Town will withhold any money due the Contractor, under his/her Contract, in an amount equal to the expense so incurred. In case this expense is in excess of any balance due said Contractor under the Contract, Contractor shall pay the amount of such excess to the Town. Contractor shall be disqualified from future Town bids until the balance due is paid to Town.

The Town shall give notice to the Contractor, via certified mail, of work found defective within the established warranty periods. The Contractor has fourteen (14) calendar days after receipt of said notice to give a schedule as to when the defective work shall be repaired/replaced at the Contractors expense. Failure to respond and schedule the respective repair/replacement work items(s) shall disqualify the Contractor from bidding on any future Town contracts. Disqualification shall be lifted after Contractor completes the work, at his own expense or after the Town has the work completed and that work expense is paid by the Contractor to the Town.

108.9 FAILURE TO COMPLETE ON TIME

Revised to Include:

If work is not completed within the contract time and no time extensions have been issued, or by the date of the last time extension, liquidated damages in the amount equal to the amount shown in table 108-1, MAG section 108.9 shall be applied. No work on this project shall commence without a written Notice to Proceed and an approved construction schedule and traffic control plan. No time extension will be granted for delays caused by failure to submit an approved schedule within the time set forth herein. If the Notice to Proceed is issued prior to the approval of the construction schedule

because of delay by the Contractor in providing said schedule, the intervening days will be lost by the Contractor.

108.11 TERMINATION OF CONTRACT

Revised to Include:

If the Contractor shall be adjudged bankrupt, or if he/she should make general assignment for the benefit of his/her creditors, or if a receiver should be appointed on account of his insolvency, or if he/she should persistently or repeatedly refuse or should fail to supply enough properly skilled workmen or proper materials, or if he/she should fail to make prompt payment to subcontractors for material for labor, or persistently disregard laws, ordinances, or the instructions of the Inspector, or otherwise be guilty of a material violation of any provision of the Contract, then the Town may without prejudice to any other right or remedy and after giving the Contractor and his surety, if any, seven (7) calendar days written notice, terminate the employment of the Contractor and take possession of the premises and all materials, tools and appliances thereon and finish the work by whatever method the Town may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract price shall exceed the expense of finishing the work including compensation for additional engineering, managerial and administration expenses, such excess shall be paid the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Town.

Standard termination of this Contract will occur three (3) years after the Notice of Award date, i.e., if Contractor fails to complete inspection punch-list items, call for inspection, etc. by that date. Town reserves the option to complete work and close out the project account without further payment to the Contractor.

END OF SECTION

SECTION 109 MEASUREMENTS AND PAYMENTS

109.2.1 TAXES AND FEES

Revised to Include:

The Contractor shall not include taxes and fees on exempt items, as outlined in the most current edition of the Arizona Revised Statutes. The Contractor shall furnish the Town with a list of suppliers including materials and equipment furnished by each, which are exempt.

109.4 COMPENSATION FOR ALTERATION OF WORK:

Revised to Include:

Project Allowances are included in the Bid schedule for the following possible conditions that may be encountered in this project. An estimate of quantities for these items are in

the bid schedule, but field verification and approval by the Engineer in writing of all of the allowance items will be required. These items will be included in the competitive bid but will only be paid for if encountered and approved by the Engineer.

1. Rock Excavation (CY) – If rock is encountered in the trenching or drilling/ road etc. operations of the reuse, storm drain or utility conduits, it will be paid for by the allowance Unit price. A Geotechnical study has been completed for portions of the project limits and is available in the Technical Specifications. Refer to Modification to MAG SS 601.2 in the Technical Specifications for the project.
2. Subgrade Stabilization for Unsuitable Material (SY) - If unsuitable material and subgrade conditions are encountered during construction of the paved roadways that do not meet the requirements of MAG 301 and the Geotechnical Report, subgrade stabilization will be required, written authorization from the Engineer is required and will be paid for based on the Allowance Unit price. Subgrade Stabilization shall be Geogrid Tensar BX1200 or approved equal per MAG Section 796 Type 2 with an additional 12” of aggregate base.

109.5.4.1 WORK PERFORMED BY SUBCONTRACTORS

Revised to Include:

The Contractor shall be responsible for the work of all subcontractors as stated herein.

The Contractor shall indemnify and save harmless the Town against any claims filed for non-payment of his/her bills for subcontractors, labor and/or materials used in connection with the Contract work.

109.7 PAYMENT FOR BOND ISSUE AND BUDGET PROJECTS

Revised to Include:

It is mutually agreed between the parties to the Contract that no certificate given or payment made under the Contract, except the final certification of final payment, shall be conclusive evidence of the performance of the Contract, and no payment shall be construed to be an acceptance of any defective work or improper material.

Progress payments shall be made on this Contract.

Requests for payment shall be received by the Town by the end of each month prior to the month in which payment will be made. Otherwise, the Contractor should expect at least a forty-five (45) day delay in being paid without exception. The following is the procedure to be followed in order to receive payment in a timely manner:

Submit an invoice to the Town with the following information:

1. Quantities and percentage complete by the end of each month.
2. Invoice number.
3. Retention amount.

4. Pay request number.
5. Prior payments, retention amounts and change orders.

The payment of the **retention monies** shall be made within sixty (60) calendar days after the written acceptance of the completed Contract work by Town, upon receipt of a payment request and "Affidavit of Completion" from the Contractor, but only if there are no unresolved performance issues or credit to owner issues.

109.7 PAYMENT FOR BOND ISSUE AND BUDGET PROJECTS

Revised to Include:

After completion of all Contract work, the Contractor shall file with the Town his/her affidavit, sworn to before a Notary Public, stating that all workmen and persons employed, all firms supplying materials, and all subcontractors on the project have been paid in full and there are no bills outstanding against the project for either labor or materials, except certain items, if any, to be set forth in such affidavit, covering disputed claims, or items in connection with which notices to withhold have been filed.

The affidavit shall also state that all completed work under this Contract is guaranteed for a period of one (1) year or as stipulated by Arizona State Law from the date of Final Acceptance by the Town except where specified herein.

The filing of such affidavit by the Contractor shall be a prerequisite to the making of the final payment on the Contract by the Town.

END OF SECTION

SPECIAL PROVISIONS

**ARIZONA DOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE
CONSTRUCTION ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:**

SECTION 603 PILING ABBREVIATIONS AND DEFINITIONS

603-2.02 CAST-IN-PLACE CONCRET PILES:

Replace entire subsection with:

Pile Installation Plan

Submit a pile installation plan. Include complete descriptions, details, and supporting calculations for:

1. Concrete mix design, certified test data, and trial batch reports
2. Drilling or coring methods and equipment
3. Proposed method for casing installation and removal, if necessary
4. Methods for placing, positioning, and supporting bar reinforcement
5. Methods and equipment for determining:
 - 5.1. Depth of concrete
 - 5.2. Theoretical volume of concrete to be placed, including the effects on volume if casings are withdrawn
 - 5.3. Actual volume of concrete placed
6. Methods and equipment for verifying the bottom of the drilled hole is clean before placing concrete
7. Methods and equipment for preventing upward movement of reinforcement, including the means of detecting and measuring upward movement during concrete placement operations
8. Drilling plan and sequence
9. Concrete sequence and placement plan
10. If inspection pipes are required, methods for ensuring the inspection pipes remain straight, undamaged, and properly aligned during concrete placement

For concrete placed under slurry, submit the additional information:

1. Concrete batching, delivery, and placing systems, including time schedules and capacities. Time schedules must include the time required for each concrete placing operation at each pile.
2. Concrete placing rate calculations. If requested, base calculations on the initial pump pressures or static head on the concrete and losses throughout the placing system, including anticipated head of slurry and concrete to be displaced.

3. Suppliers' test reports on the physical and chemical properties of the slurry and any proposed slurry chemical additives, including SDSs.
4. Slurry testing equipment and procedures.
5. Methods of removal and disposal of excavation, slurry, and contaminated concrete, including removal rates.
6. Methods and equipment for slurry agitating, recirculating, and cleaning.

Concrete Placement Log

Submit the concrete placement log as an informational submittal within 2 business days of completion of concrete placement in the hole.

The log must:

1. Show the pile location, tip elevation, cutoff elevation, dates of excavation and concrete placement, total quantity of concrete placed, length and tip elevation of any casing, and details of any hole stabilization method and materials used.
2. Include an 8-1/2 by 11 inch graph of concrete placed versus depth of hole filled as follows:
 - 2.1. Plot the graph continuously throughout concrete placement. Plot the depth of drilled hole filled vertically with the pile tip at the bottom and the quantity of concrete placed horizontally.
 - 2.2. Take readings at each 5 feet of pile depth, and indicate the time of the reading on the graph.

CIDH Preconstruction Meeting

Schedule and hold a preconstruction meeting for CIDH concrete pile construction (1) at least 5 business days after submitting the pile installation plan and (2) at least 10 days before the start of CIDH concrete pile construction. You must provide a meeting facility.

The meeting must include the Engineer, your representatives, and any subcontractors involved in CIDH concrete pile construction.

The purpose of this meeting is to:

1. Establish contacts and communication protocol between you and your representatives, any subcontractors, and the Engineer
2. Review the construction process, acceptance testing, and anomaly mitigation of CIDH concrete piles

The Engineer conducts the meeting. Be prepared to discuss:

1. Pile placement plan, dry and wet
2. Acceptance testing, including gamma-gamma logging, cross-hole sonic logging, and coring
3. Pile Design Data Form

4. Mitigation process
5. Timeline and critical path activities
6. Structural, geotechnical, and corrosion design requirements
7. Future meetings, if necessary, for pile mitigation and pile mitigation plan review
8. Safety requirements, including applicable Arizona Division of Occupational Safety and Health (ADOSH) requirements

Reinforcing steel shall be as shown on the project plans and shall conform to the provisions of Section 1003 of the specifications.

SECTION 914 WALLS AND MISCELLANEOUS STRUCTURES

914-4 METHOD OF MEASUREMENT:

Replace entire subsection with:

Measurement of this work will be made by the cubic yard of gabion wall constructed and will be measured by the volume of gabion baskets only.

914-5 Basis of Payment:

Replace entire subsection with:

Payment for this work will be made at the contract price per cubic yard, which price shall be full compensation for the item complete, including necessary excavation, backfilling, compacting, rock baskets, geogrid and all accessories as described herein and on the project plans.

TECHNICAL SPECIFICATIONS

SECTION 201 – CLEARING AND GRUBBING

201.6 Measurement, Removal and Disposal of Trees

Revised to state:

All Trees regardless of diameter will be included in the bid price for clearing and grubbing or excavation and no additional compensation will be allowed, therefore.

201.7 PAYMENT, REMOVAL AND DISPOSAL OF TREES:

Revised to state:

The Contractor shall dispose as green waste to a permitted landfill or find another disposal method.

SECTION 336 – PAVEMENT MATCHING AND SURFACING REPLACEMENT

336.1 DESCRIPTION

(Revised to include the following)

Asphalt concrete roadway trench repairs shall be constructed as indicated in the plans.

Regrade Driveway or Road Trench repairs shall be constructed as indicated in the plans and shall include reconstruction to match the existing surface material and grades. Maintain access to private properties and coordinate with property owners if temporary closures are necessary.

SECTION 601 – TRENCH EXCAVATION, BACKFILLING AND COMPACTION

601.2 EXCAVATION

(Revised to include the following)

Remove and Dispose of Rock

The attached Geotechnical Report has identified multiple locations within the project limits where rock excavation is likely within the project limits. Due to the amount of rock that may be encountered a separate line item has been included as an allowance per Section MAG SS 109.4 as modified by the General Conditions. Prior to payment for the rock trenching, stationing limits, trench depth and trench width of the rock must be field verified and approved by the Engineer and documented by the contractor. Trench widths should not exceed the limits indicated in Table 601-1 Trench Widths.

Whenever rock is encountered in the trench bottom, it shall be over-excavated to a minimum depth of six inches below the bottom of the pipe barrel. This over-excavation shall be filled with bedding material placed with the minimum possible compaction.

601.7 PAYMENT

(Revised to include the following)

Quantities of rock trenching excavation will be paid for at the contract unit price per cubic yard against the allowance total. Such price shall include excavation and disposal of material.

ATTACHMENTS

- 1. Universal Core Procurement Terms (Tier 1)**
- 2. Geotechnical Report**
- 3. Construction Plans**

ATTACHMENT 1

UNIVERSAL CORE PROCUREMENT TERMS (TIER 1)

1. Definitions. 1.1 "Contractor" means the entity entering into a contract with the Town of Clarkdale for goods, construction, or services. 1.2 "Agreement" means the procurement contract, task order, or agreement between the Town and Contractor incorporating these Terms. 1.3 "Town" means the Town of Clarkdale, Arizona.

2. Non-Appropriation. Every payment obligation of the Town is conditioned upon the availability of funds appropriated and allocated for the payment of such obligation. If funds are not appropriated or allocated, the Agreement may be terminated at the end of the funded fiscal period without penalty or further obligation.

3. Compliance with Procurement Law. By submitting a bid or proposal, Contractor certifies that it will comply with all applicable federal, state, and local procurement requirements, including the Town's adopted procurement procedures, in connection with any Agreement awarded under this solicitation.

4. No Contingent Fees. By submitting a bid or proposal, Contractor certifies that it has not employed or retained any person or company to solicit or obtain an award under this solicitation on a contingent-fee basis, and that it will not do so prior to award. A violation of this certification shall entitle the Town to reject the bid, terminate any resulting Agreement, or recover the contingent fee from the contract price.

5. Termination. 5.1 Termination for Convenience. The Town may terminate any Agreement at any time without cause by written notice. The Town shall pay for undisputed services or goods delivered prior to the effective termination date. 5.2 Termination for Cause. Either party may terminate for material breach not cured within thirty (30) days of written notice. 5.3 Suspension. The Town may suspend work by written notice. The Contractor shall resume work upon written notice to proceed.

6. Contractor Disclosure. By submitting a bid or proposal, Contractor certifies that no actual or potential conflict of interest exists as of the date of submission. Contractor shall disclose in writing to the Town's Procurement Officer any actual or potential conflict of interest arising before or during the performance of the Agreement, including any relationship between Contractor's personnel and Town employees, promptly upon becoming aware of such conflict.

7. Organizational Conflicts. Likewise, if Contractor has a parent, affiliate, or subsidiary organization, Contractor certifies that no organizational conflict of interest exists that would impair its ability to perform impartially under the Agreement. Contractor shall disclose any organizational conflict of interest as soon as it becomes aware of one.

8. Statutory Conflict Cancellation. Pursuant to A.R.S. § 38-511, the Town may cancel the Agreement without penalty if any person significantly involved in the contract process becomes an employee or agent of the Contractor with respect to the Agreement.

9. Gratuities and Ethical Conduct. The Contractor shall not offer or give any gift, gratuity, favor, entertainment, loan, or other item of value to any Town officer, employee, or agent in connection with a procurement or Agreement. Violation constitutes a material breach and may result in termination.

10. Fraud Prevention and Reporting. 10.1 Contractor shall establish and maintain internal controls sufficient to detect and prevent fraud, waste, and abuse in the performance of this Agreement. 10.2 Contractor shall immediately report to the Town's Procurement Officer any known or suspected instance of fraud, waste, or abuse in connection with this Agreement.

11. Immigration Compliance (E-Verify). 11.1 The Contractor shall comply with A.R.S. § 41-4401 and A.R.S. § 23-214 and warrants compliance with federal immigration laws. 11.2 The Town may verify compliance and inspect employment documentation as permitted by law.

12. Non-Discrimination and Executive Orders. The Contractor shall comply with all applicable federal and state nondiscrimination laws including the Americans with Disabilities Act and Arizona Executive Orders 2023-01 and 2009-09.

13. Israel Boycott Certification (A.R.S. §§ 35-393 through 35-393.03). 13.1 To the extent applicable, by submitting a bid or proposal, Contractor certifies that it is not currently engaged in, and agrees that for the duration of any resulting Agreement it will not engage in, a boycott of goods or services from Israel. 13.2 A violation of this certification shall constitute a material breach and may result in rejection of the bid or termination of any resulting Agreement.

14. Forced Labor of Ethnic Uyghurs (A.R.S. § 35-394). 14.1 Contractor certifies that it does not currently, and agrees for the duration of the contract that it will not, use: (A) the forced labor of ethnic Uyghurs in the People's Republic of China; (B) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (C) any contractors, subcontractors or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China. 14.2 If Contractor becomes aware during the term of the contract that it is not in compliance with this certification, it shall notify the public entity within five business days after becoming aware of the noncompliance. If Contractor does not provide the public entity with a written certification that it has remedied the noncompliance within one hundred eighty days after notifying the public entity of the noncompliance, the contract terminates, except that if the contract termination date occurs before the end of the remedy period, the contract terminates on the contract termination date.

15. Records Retention and Audit. Contractor shall retain all records relating to the Agreement for at least five (5) years after completion and shall make such records available for inspection or audit by the Town at reasonable times.

16. Assignment. The Contractor may not assign the Agreement or any rights under it without the prior written consent of the Town.

17. Governing Law and Venue. The Agreement shall be governed by the laws of the State of Arizona. Venue shall lie exclusively in Yavapai County, Arizona.

18. Antitrust Assignment. The Contractor assigns to the Town any claim for overcharges resulting from antitrust violations relating to materials or services supplied to the Contractor toward fulfillment of the Agreement.

19. Severability. If any provision is held invalid, the remaining provisions shall remain in effect.

20. Non-Waiver. Failure by either party to enforce any provision shall not constitute a waiver.

21. Attorney's Fees. In any action arising out of the Agreement, the prevailing party may recover reasonable attorneys' fees and costs to the extent permitted by Arizona law.

22. Counterparts and Electronic Signatures. The Agreement may be executed in counterparts and by electronic signature.

Bidder hereby acknowledges receipt of the Universal Core Procurement Terms.

Signature: _____ Date: _____

Printed Name: _____ Title: _____

Company Name: _____



Western Technologies
An **RMA** Company

ATTACHMENT 2
GEOTECHNICAL REPORT

GEOTECHNICAL EVALUATION REPORT

BITTERCREEK BRIDGE REPLACEMENT

North Broadway
Clarkdale, Arizona
WT Job No. 25-224326-0

PREPARED FOR:

Ardurra
75 Kallof Place
Sedona, Arizona 86336
Attn: Mr. Curtis Krausman, P.E.

December 12, 2024



Gregory L. E. Burr, P.E., R.G.
Geotechnical Department Manager



Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

GEOTECHNICAL

ENVIRONMENTAL

INSPECTIONS

NDT

MATERIALS

2400 East Huntington Drive
Flagstaff, Arizona 86004

(928)-774-8700

rma-western.com



December 12, 2024

Ardurra
75 Kallof Place
Sedona, Arizona 86336

Attn: Mr. Curtis Krausman, P.E.

Re: Geotechnical Evaluation
Bittercreek Bridge
North Broadway
Clarkdale, Arizona

Job No. 25-224326-0

Western Technologies Inc. has completed the geotechnical evaluation for the bridge replacement to be located in Clarkdale, Arizona. This study was performed in general accordance with our proposal number 25-224326-P dated September 18, 2024. The results of our study, including the boring location diagram, laboratory test results, boring logs, and the geotechnical recommendations are attached.

We have appreciated being of service to you in the geotechnical engineering phase of this project and are prepared to assist you during the construction phases as well. If design conditions change, or if you have any questions concerning this report or any of our testing, inspection, design and consulting services, please do not hesitate to contact us. We look forward to working with you on future projects.

Sincerely,

WESTERN TECHNOLOGIES, INC.

Geotechnical Engineering Services

Gregory L. E. Burr, P.E., R.G.
Geotechnical Department Manager

Copies to: Addressee (emailed)

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**GEOTECHNICAL EVALUATION
BITTERCREEK BRIDGE REPLACEMENT
NORTH BROADWAY
CLARKDALE, ARIZONA
JOB NO. 25-224326-0**

1.0 PURPOSE

This report contains the results of our geotechnical evaluation for the proposed bridge replacement to be located on North Broadway where it crosses Bitter Creek in Clarkdale, Arizona. The purpose of these services is to provide information and recommendations regarding:

- Subsurface conditions
- Groundwater
- Foundation design parameters
- Seismic considerations
- Earthwork guidelines
- Drainage
- Corrosivity (soil to concrete)

Results of the field exploration, field tests, and laboratory testing program are presented in the Appendices.

2.0 PROJECT DESCRIPTION

Based information supplied by Mr. Raymond Macy, P.E. of Ardurra, the proposed project will consist of a new two-span bridge crossing Bitter Creek. Preliminary information indicates the two span bridge will be about 30 feet wide and approximately 130 feet long supported on either end by cast-in-place concrete wingwalls of varying heights. The maximum loads provided for our analysis for a fixed head condition were 237 kips axial and 7.5 kips lateral. The location of the new alignment will be downstream of the existing bridge. We understand that the maximum scour depth has not been established at this time. Should any of our information or assumptions not be correct, we request that the Client notify Western Technologies (WT) immediately.

3.0 SCOPE OF SERVICES

3.1 Field Exploration

Five borings were drilled to depths of about 6 to 61 feet below existing site grades. The borings were at the approximate locations shown on the attached Boring Location Diagram.

A field log was prepared for each boring. These logs contain visual classifications of the materials encountered during drilling as well as interpolation of the subsurface conditions between samples. Final logs, included in Appendix A, represent our interpretation of the field logs and include modifications based on laboratory observations and tests of the field samples. The final logs describe the materials encountered, their thicknesses, and the locations where samples were obtained.

The Unified Soil Classification System was used to classify soils. Soil and rock classification symbols appear on the boring logs and are briefly described in Appendix A. Local and regional geologic characteristics were used to estimate the seismic design criteria and liquefaction potential.

3.2 Laboratory Analyses

Laboratory analyses were performed on representative soil samples to aid in material classification and to estimate pertinent engineering properties of the on-site soils for preparation of this report. Testing was performed in general accordance with applicable standard test methods. The following tests were performed and the results are presented in Appendix B.

- Water content
- Dry density
- Compression
- Shear strength
- Remolded expansion potential
- Maximum density/optimum moisture (proctor)
- Gradation
- Plasticity
- Water soluble salt/sulfate/chloride content

Test results were utilized in the development of the recommendations contained in this report.

3.3 Analyses and Report

This geotechnical engineering report includes a description of the project, a discussion of the field and laboratory testing programs, a discussion of the subsurface conditions, and design recommendations as appropriate to the purpose. The scope of services for this project does not include, either specifically or by implication, any environmental assessment of the site, discovery of underground storage tanks or other underground structures, or identification of contaminated or hazardous materials or conditions. If there is concern about the potential for such contamination, other studies should be undertaken. We are available to discuss the scope of such studies with you.

4.0 SITE CONDITIONS

4.1 Surface

At the time of our exploration, the site contained an existing bridge that crossed Bitter Creek. The existing bridge was a four span bridge that is about 150 feet long and 20 feet wide, in fair condition with some exposed reinforcement and cracking in the concrete observed. This area was bordered on the north by an existing railroad track, on the south by a residential subdivision, and on the east and west by the east-west oriented Bitter Creek that is about 200 to 230 feet wide and 15 to 30 feet deep that directs flow to the east. The ground surface in the area of the proposed bridge piers and abutments contained embedded large cobbles and boulders, and exhibited a gentle to steep slope down to the east. Site surface drainage appeared to be good to fair by means of sheet flow into the wash that directs all flow to the east. Vegetation on the site surrounding the previously developed areas consisted of a heavy growth of bushes, cacti, grasses and weeds.

4.2 Subsurface

As presented on the boring logs, surface soils extending to depths of about 22 to 39 feet in Borings 4 and 5 and to the full depth of exploration in the other three borings consisted of dense to very dense Silty SANDS with variable amounts of gravel; dense to very dense

Poorly Graded GRAVELS with variable amounts of clay, silt and sand; and very dense Silty, Clayey GRAVELS with variable amounts of sand. All surface soils encountered contained random amounts of non-plastic to low plasticity fines, cobbles and boulders. Surface soils in Borings 4 and 5 were underlain by hard, near-high plasticity Sandy CLAYS with variable amounts of gravel. Refusal to auger penetration occurred in Borings 1 and 3 at depths of about 6 and 10 feet on dense cobbles and boulders. Groundwater was not encountered in any boring at the time of exploration. The logs in Appendix A show details of the subsurface conditions encountered during the field exploration.

The borings logs included in this report are indicators of subsurface conditions only at the specific location and date noted. Variations from the field conditions represented by the borings may become evident during construction. If variations appear, we should be contacted to re-evaluate our recommendations.

5.0 GEOTECHNICAL PROPERTIES AND ANALYSIS

5.1 Laboratory Tests

Laboratory test results (see Appendix B) indicate that on-site subsoils located near the anticipated bottom of bridge pier and abutment foundation levels exhibit low to moderately high compressibility at existing water contents. Low to moderately high compression occurs when the water content is increased. Shear strength testing was performed on four representative samples of the bearing soils. The soils exhibited high shear strengths at water contents approaching saturation.

Near-surface soils contain non-plastic to low plasticity fines. These soils exhibit low expansion potential when recompacted, confined by loads approximating floor loads and saturated. On-site surface soils have a low potential for heaving if the water content of the soil increases.

5.2 Field Tests

The site soils located below anticipated bridge abutment and pier foundations exhibit high resistance to penetration using test method ASTM D3550. The penetration resistance values exhibited some variability between test locations and with depth. This represents a

potential for differential movement within structures supported on existing soils in their present condition.

6.0 RECOMMENDATIONS

6.1 General

Recommendations contained in this report are based on our understanding of the project criteria described in Section 2.0 and the assumption that the soil and subsurface conditions are those disclosed by the explorations. Others may change the plans, final elevations, number and type of structures, foundation loads, and floor levels during design or construction. Substantially different subsurface conditions from those described herein may be encountered or become known. Any changes in the project criteria or subsurface conditions shall be brought to our attention in writing. This report does not encompass the effects, if any, of underlying geologic hazards or regional groundwater withdrawal and expresses no opinion regarding their effects on surface movements at the project site.

6.2 Design Considerations

Laboratory test results indicate that the site soils become weaker and collapsible with an increase in moisture content. These soils are not suitable for support of shallow column foundations with the high imposed loads in their present state. Drilled shafts socketed into dense subsoils are recommended for support. Proper drainage should be provided to help prevent infiltration of moisture into foundation areas.

6.3 Axial Drilled Shaft Analyses

The proposed structure may be supported on drilled shaft foundations. Drilled shafts will derive their load capacities from skin friction between the native clay/granular soils and the shaft concrete and end bearing of the shaft.

The downward single-shaft dead- plus live-load capacities and upward capacities of various diameter shafts (2-, 3-, and 4-foot diameters) computed using the computer program Allpile v2007 by CivilTech are presented as a function of shaft length in Appendix C. A minimum shaft embedment depth of 38 feet past maximum scour depth is recommended for a 2-foot diameter shaft, 23 feet past maximum scour depth is

recommended for a 3-foot diameter shaft, and 15 feet past maximum scour depth is recommended for a 4-foot diameter shaft to obtain the maximum required axial capacity of 237 kips. The shaft resistance was estimated using resistance factors from the LRFD Design Specifications, Table 10.5.5.2.3-1 in accordance with IBC 2018. The results presented in Appendix C are calculated using clay LRFD resistance factors of 0.45 for skin friction and 0.40 for end bearing. LRFD factored compressive geotechnical resistances (total resistance) are based on a combination of the estimated strength of the soils for side shear resistance (skin friction) and end-bearing (tip resistance). A resistance factor of 0.80 can be used for extreme events including seismic. Actual shaft capacities may be controlled by the structural strength of the drilled shafts. A one-third increase in downward axial capacity may be used when considering wind or seismic loads.

Estimated total settlements for drilled shafts are 1 inch or less for the maximum anticipated loads. Quoted capacities are based on the strength of the soils; the compressive and tensile strength of the shaft sections should be designed by a structural engineer to assure the structural capacity of the shafts.

The capacity of an individual pile is diminished when part of a pile group. The axial capacities given in Appendix C are for individual piles and should be reduced according to the following efficiency formula (for axial capacity) for piles placed in groups:

$$E = 1 - \frac{D(m(n-1) + n(m-1) + \sqrt{2}(m-1)(n-1))}{Smn\pi}$$

where:

- E = Efficiency = Capacity of pile in group/capacity of isolated pile
- D = Diameter of pile in feet.
- S = Pile spacing, center to center, in feet.
- m = Number of rows of piles.
- n = Number of piles per row.

Shafts in groups should be drilled and filled alternately, allowing the concrete to set at least twelve hours before drilling an adjacent shaft. Concrete should be placed with special equipment so the concrete does not fall against the excavation walls or reinforcing steel. Shaft excavations should not be allowed to stand open over night; concrete should be placed as soon as possible after inspection.

If a protective steel casing is required to hold the excavation open, it should be removed as the concrete is placed. However, the protective steel casing should not be removed until the concrete is above any groundwater level. A minimum head of 5 feet of concrete should be maintained above the bottom of the casing during withdrawal and the contractor should prevent concrete from "hanging-up" inside the shell which can cause soil and water intrusion below the shell. If groundwater is encountered, we recommend that the concrete be placed into the drilled shaft through a tremie pipe. The concrete should be maintained above the bottom of the tremie pipe, so the water will be forced out the top of the hole during concrete placement.

6.4 Lateral Drilled Shaft Analyses

The lateral analyses were performed using the computer program ALLPILE v2007 L-pile module from CivilTech. The program calculates p-y curves for lateral and overturning moment based on fixed head conditions. The results are presented in Appendix D. Soil strength and density parameters used in the analyses were selected from the field and laboratory testing performed for this evaluation. The following table summarizes the input parameters for each analysis:

SOIL PROFILE						
Layer Depth (ft)	Soil Type*	Effective Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (psf)	Soil Modulus K (pci)	Strain Factor E ₅₀ **
0-22	Gravels	115.2	37.0	0	278.0	N/A
22-61	Clays	120.1	35.0	400	2456.2	0.33
* The soil types and depths presented are based soil profiles created from compilations of the borings located at the project site. Granular soils should be modeled as Sand/Gravel and the cohesive soils should be modeled as "Silt (cemented c-phi)" to input both cohesion and phi angle in the analysis. ** These values can be left as zero in LPILE and GROUP for the software to select these parameters based on the friction angle and cohesion. N/A – Not Applicable						

Lateral analyses were performed for the fixed-head condition for 2, 3, and 4-foot diameter shafts at each respective location. The shaft lateral resistance was estimated using resistance factors from the LRFD Design Specifications, Table 10.5.5.2.3-1 in accordance with IBC 2018. The results presented are calculated considering an LRFD resistance factor of 1.00. The results of the analysis are presented in Appendix C.

In accordance with Section 1810.2.5 of the IBC, if the shaft spacings are less than 8 times the diameter of the drilled shaft in any direction, lateral capacity of the individual shafts should be reduced using a P-multiplier for group action. The drilled shaft lateral capacity graphs presented in Appendix C were modeled using a center-to-center spacing of 3 shaft diameters. In addition, another factor would be applied if a pile cap is used for the pile group. The P-multiplier depends on various factors including the shaft spacing, shaft diameter, and the shaft position (row and column) with respect to the group. Groups considered for this project will likely consist of varying diameters of drilled shafts. We recommend the use of the commercial software GROUP, by Ensoft Inc, or similar program for analyzing the lateral capacities of the pile groups. The software GROUP has the built-in capacity to include P-multipliers and pile cap factors. In general, the following P-multiplier values (for lateral capacity) are applicable based on spacing and location:

Design P-Multiplier						
Pile Spacing (Center to Center)	3D	4D	5D	6D	7D	≥8D
Lead Row	0.8	0.85	0.9	0.95	1.0	1.0
2 nd Row	0.5	0.6	0.7	0.8	0.9	1.0
3 rd and high Rows	0.35	0.48	0.61	0.74	0.87	1.0

Review of drilled shaft excavations is critical to verify subsurface conditions and proper construction methods. Western Technologies, Inc. should perform the observations. The following observations should be documented for each drilled shaft:

- Diameter and depth
- Occurrence and thickness of various subsurface strata. Shaft lengths may need to be extended depending on variable subsurface conditions encountered
- Any offset of the drilled shaft from design location
- Plumbness of the shaft
- Date and time drilling was completed
- Date, time and amount of slough of the final cleanout (shaft cleanout immediately prior to the placement of reinforcing steel and concrete)
- Date and time reinforcing cage placed
- Date and time concrete placement started and completed
- Tremie plugged and extended to the base of the shaft prior to concrete placement
- Actual and theoretical concrete volumes

6.5 Lateral Design Criteria

For retaining walls/abutments located above any free water surface with no surcharge loads, recommended allowable equivalent fluid pressures and coefficients of base friction for unrestrained elements are:

- Active:
 - Undisturbed subsoil40 psf/ft
 - Compacted granular backfill30 psf/ft
 - Compacted low expansive potential site soils35 psf/ft
 - Compacted clay site soils not recommended for use
 - Passive:
 - Shallow wall footings220 psf/ft
 - Shallow column footings.....325 psf/ft
 - Drilled shafts500 psf/ft
 - Coefficient of base friction.....0.35*
- * The coefficient of base friction should be reduced to 0.25 when used in conjunction with passive pressure.

Where the design includes restrained elements, the following equivalent fluid pressures are recommended:

- At-rest:
 - Undisturbed subsoil68 psf/ft
 - Compacted granular backfill55 psf/ft

The equivalent fluid pressures presented herein do not include the lateral pressures arising from the presence of:

- hydrostatic conditions, submergence or partial submergence
- sloping backfill, positively or negatively
- surcharge loading, permanent or temporary
- seismic or dynamic conditions

The 2018 IBC requires for structures assigned to Seismic Design Categories D, E or F, that the design of retaining walls supporting more than 6 feet of backfill height include additional seismic lateral earth pressures. The structural engineer should determine the Seismic Design Category. The lateral seismic pressure acting on a non-restrained wall can be estimated by the following equation, where the dynamic (seismic) lateral thrust, ΔP_{AE} , (per linear foot of wall) may be determined as follows:

$$\Delta P_{AE} = 3/8(k_h)H^2\gamma$$

where:

- k_h is equal to $S_{DS}/2.5$
- H is the height of the wall, in feet
- γ is equal to the total unit weight of the backfill material, in pcf
- S_{DS} is Design Spectral Response Acceleration at 0.2 sec period for the site

The lateral seismic pressure acting on a rigid, non-yielding wall can be estimated by the equation given below, where the dynamic (seismic) lateral thrust, ΔP_E (per linear foot of wall) is approximated at:

$$\Delta P_E = k_h H^2 \gamma$$

where:

- k_h is equal to $S_{DS}/2.5$
- H is the height of the wall, in feet
- γ is equal to the total unit weight of the backfill material, in pcf
- S_{DS} is Design Spectral Response Acceleration at 0.2 sec period for the site

The resultant dynamic force acts at a distance of $0.6H$ above the base of the wall. These equations apply to level backfill and walls that retain no more than 15 feet. Any surcharge from adjacent loadings should be added to the retaining wall pressures as a constant value throughout the entire height of the wall using a factor of 0.30 for unrestrained walls and 0.45 for restrained walls. As indicated, the aforementioned pressures assume no build-up of hydrostatic pressure.

We recommend a free-draining soil layer or manufactured geosynthetic material be constructed adjacent to the back of any retaining walls. A filter may be required between the soil backfill and drainage layer. This drainage zone should help prevent development of

hydrostatic pressure on the wall. This vertical drainage zone should be tied into a gravity drainage system at the base of the wall. It is important that all backfill be properly placed and compacted. Backfill should be mechanically compacted in layers. Flooding or jetting should not be permitted. Care should be taken not to damage the walls when placing the backfill. Backfills should be observed and tested during placement.

Fill against footings, stem walls and retaining walls should be compacted to densities specified in **EARTHWORK**. Medium to high plasticity clay soils should not be used as backfill against walls. Compaction of each lift adjacent to walls should be accomplished with hand-operated tampers or other lightweight compactors. Over-compaction may cause excessive lateral earth pressures that could result in wall movements.

6.6 Seismic Considerations

Structures should be designed in accordance with applicable building codes. The seismic design parameters presented in the following tables, in accordance with the 2018 International Building Code and ASCE 7-16, are applicable to the project site:

Seismic Design Parameters International Building Code 2018, ASCE 7-16	
Soil Site Class	C
Mapped Spectral Response Acceleration at 0.2 sec period (S_s)	0.308g
Mapped Spectral Response Acceleration at 1.0 sec period (S_1)	0.097g
Site Coefficient for 0.2 sec period (F_a)	1.3
Site Coefficient for 1.0 sec period (F_v)	1.5
Design Spectral Response Acceleration at 0.2 sec period (S_{DS})	0.267g
Design Spectral Response Acceleration at 1.0 sec period (S_{D1})	0.097g

The soil site class is based upon conditions identified in the exploratory borings and local knowledge of the geotechnical conditions in the vicinity of the site. Based upon the density of the on-site soils, the shallow dense cobble and boulder conditions and lack of groundwater, the potential settlement and lateral spread due to liquefaction is not considered to be a significant concern on this site.

6.7 Drainage

The major cause of soil problems in this vicinity is moisture increase in soils below structures. Therefore, it is extremely important that positive drainage be provided during construction and maintained throughout the life of the silos. In areas immediately adjoining the various structures, protective slopes should be provided with an outfall of five percent for at least 10 feet from the perimeter. Any utility lines should be properly installed to avoid possible sources for subsurface saturation. It is important that all utility trenches be properly backfilled. It should be understood that these recommendations will help minimize the potential for soil movement and resulting distress, but will not eliminate this potential.

6.8 Corrosivity to Concrete

The chemical test results indicate that the soils at the site classify as moderately corrosive to concrete (Class S1 in accordance with Table 19.3.1.1 of ACI 318-19). Concrete should be made with a cement that provides sulfate resistance and that has a maximum water-cementitious materials ratio and minimum compressive strength set forth in Table 19.3.2.1 of ACI 318-19.

6.9 Pavements

Based on existing subgrade conditions, the following pavement sections are recommended for the areas indicated:

Traffic Area	Asphalt Concrete (in.)	Portland Cement Concrete Pavement (in.)	Base Course (in.)
North Broadway (high traffic frequency)	4	--	5
North Broadway (high traffic frequency)	--	6	4

Bituminous surfacing should be constructed of dense-graded, central plant-mix, asphalt concrete. Base course, asphalt concrete and portland cement concrete should conform with Yavapai County current specifications.

Material and compaction requirements should conform to the recommendations presented under **EARTHWORK**. The gradient of paved surfaces should ensure positive drainage. Water should not pond in areas directly adjoining paved sections. The native subgrade soils will soften and lose stability if subjected to conditions which result in an increase in water content.

The concrete should have a minimum 28-day compressive strength of 4,000 psi. Concrete quality will be important to produce the desired flexural strength and long-term durability. Assuming a nominal maximum aggregate size of 1 to 1-3/8 inches, the concrete is recommended to have entrained air content of 5 percent (+/- 1 percent) and a maximum water cement ratio of 0.45.

Proper joint placement and design is critical to pavement performance. Contraction joints should be placed at a maximum of 15 feet on-center. The contraction joints should be saw cut as soon as possible after placement of the concrete, but before shrinkage cracks occur. The concrete should be saw cut at least 3/8-inch wide and 2 inches deep.

Isolation joints should be placed where the pavement will abut any drainage inlets, manholes, T- and unsymmetrical intersections, and anywhere differential movement between the pavement and a structure may take place. The isolation joints should be 0.5 inch wide.

All joints should be properly cleaned and sealed as soon as possible to avoid infiltration of water, small gravel, and other debris. Either cold-pour or hot-poured sealing material may be used. Backing should be provided to hold the isolation joint sealant in place. Manufacturers' instructions for mixing and installing the joint materials should be followed.

6.9.1 Pavement Analyses

The recommended pavement sections are based on the following conditions. This firm should be contacted if any of these conditions change so that revised recommendations can be provided, if necessary.

- a. A correlated R-value of 52 for the on-site soils which corresponds to a resilient modulus of approximately 20,200 pounds per square inch. Any required fills

should be constructed using on-site or imported materials with subgrade support characteristics equal to or greater than the subgrade soils in the area being filled.

- b. Structural coefficients of 0.40 for asphalt concrete and 0.12 for aggregate base course material.
- c. A present serviceability index of 4.5, a terminal serviceability index of 2.5, an overall standard deviation of 0.35, a reliability factor of 85 percent, a drainage coefficient of 0.85, a seasonal variation factor of 2.3, and a design life of 20 years.
- d. A total 18-kip equivalent single axle load (ESAL) of 200,000 was assumed for North Broadway.

7.0 EARTHWORK

7.1 General

The conclusions contained in this report for the proposed construction are contingent upon compliance with recommendations presented in this section. Any excavating, trenching, or disturbance that occurs after completion of the earthwork must be backfilled, compacted and tested in accordance with the recommendations contained herein. It is not reasonable to rely upon our conclusions and recommendations if any future unobserved and untested trenching, earthwork activities or backfilling occurs.

7.2 Site Clearing

Strip and remove existing vegetation, any fill, pavement materials, structural remnants, debris, and any other deleterious materials from the 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.

7.3 Excavation

We anticipate that excavations into the site soils for foundations and utility trenches for the proposed construction can be accomplished with conventional equipment. Excavations penetrating the underlying dense cobbles and boulders will require the use of heavy-duty, specialized equipment possibly together with the use of large pneumatic hammer, to facilitate removal. The speed and ease of excavation is dependent on the nature of the deposit, the type of equipment used, and the skill and experience of the equipment operator.

On-site soils may pump or become unworkable at high water contents. Workability may be improved by scarifying and drying. Over-excavation of wet zones and replacement with imported granular materials may be necessary. The use of lightweight excavation and compaction equipment may be required to minimize subgrade pumping.

7.3.1 Temporary Excavations and Dewatering

Temporary, non-surcharged construction excavations should be sloped or shored. The individual contractor should be made responsible for designing and constructing stable, temporary excavations as required to maintain stability of both the excavation sides and bottom. All excavations should be sloped or shored in the interest of safety following local and federal regulations, including current OSHA excavation and trench safety standards. OSHA recommends a maximum slope inclination of $\frac{3}{4}$:1 (horizontal:vertical) for Type A soils, 1:1 for Type B soils, and $1\frac{1}{2}$:1 for Type C soils.

As a safety measure, it is recommended that all vehicles and soil piles be kept a minimum lateral distance back from the crest of the slope at least equal to the slope height. The exposed slope face should be protected against the elements.

If any excavation, including a utility trench, is extended to a depth of more than 20 feet, it will be necessary to have the side slopes designed by a professional engineer.

Temporary dewatering may be required to facilitate construction. Contractors should determine the necessity and/or method of temporary dewatering. Depending on the depth and time of the excavations, the exposed soils may be saturated and unsuitable for support of foundations and construction equipment. It may be necessary to stabilize and/or replace the saturated soils. This typically may be accomplished by over-

excavating the material below design grade and then stabilizing the material by working in select granular material generally 3 to 6 inches in size. The select granular material should be worked in until a stable base is established. Once the base is in a stable condition, the excavation may be brought to grade as required.

We recommend that the contractor retain a geotechnical engineer to observe the soils exposed in all excavations. This will provide an opportunity to classify the soil types encountered, and to modify the excavation slopes as necessary. This also allows the opportunity to analyze the stability of the excavation slopes during construction.

7.4 Pavement Preparation

Prior to placement of fill and/or pavement materials, the exposed subgrade soils should be proof-rolled and observed by the geotechnical engineer or his qualified representative to verify that stable subgrade conditions exist. Any loose, soft, disturbed, or otherwise unsuitable materials should be over-excavated and replaced with engineered fill. The subgrade should then be scarified, moisture conditioned as required, and recompactd for a minimum depth of 8 inches.

7.5 Materials

- a. Clean on-site soils with low expansive potentials and a maximum dimension of 6 inches or imported materials may be used as fill material for the following:
 - Pavement areas
 - Exterior backfill in non-slab areas
 - Landscape areas
- b. Frozen soils should not be used as fill or backfill.

c. Imported soils should conform to the following:

- Gradation (ASTM C136): percent finer by weight
 - 6" 100
 - 4" 85-100
 - $\frac{3}{4}$ " 70-100
 - No. 4 Sieve 50-100
 - No. 200 Sieve 40 (max)
- Maximum expansive potential (%)¹ 1.5
- Maximum soluble sulfates (%) 0.10

d. Base course should conform to current Yavapai County specifications.

7.6 **Placement and Compaction**

- a. Place and compact fill in horizontal lifts, using equipment and procedures that will produce recommended water contents and densities throughout the lift.
- b. Uncompacted lift thickness should not exceed 8 inches.
- c. No fill should be placed over frozen ground.
- d. Materials should be compacted to the following:

Minimum Percent Material Compaction (ASTM D698)

- On-site or imported soil, reworked and fill:
 - Below exterior slabs-on-grade 95
 - Below pavements 95
 - Utility trenches 90

¹ 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.

**Minimum Percent
Material Compaction (ASTM D698)**

- Aggregate base
 - Below exterior slabs-on-grade..... 95
 - Below pavements..... 95
 - Structural backfill..... 95
 - Nonstructural backfill..... 90
- e. On-site and imported soils with low expansive potential and aggregate base course materials should be compacted with a moisture content in the range of 3 percent below to 3 percent above optimum.

7.7 **Compliance**

Recommendations for foundations supported on compacted fills or prepared subgrade depend upon compliance with the **EARTHWORK** recommendations. To assess compliance, observation and testing should be performed under the direction of a WT geotechnical engineer. Please contact us to provide these observation and testing services.

8.0 ADDITIONAL SERVICES

The recommendations provided in this report are based on the assumption that a sufficient schedule of tests and observations will be performed during construction to verify compliance. At a minimum, these tests and observations should be comprised of the following:

- Observations and testing during site preparation and earthwork,
- Observation of foundation excavations, and
- Consultation as may be required during construction.

Retaining the geotechnical engineer who developed your report to provide construction observation is the best way to verify compliance and to help you manage the risks associated with unanticipated conditions.

9.0 LIMITATIONS

This report has been prepared assuming the project criteria described in **2.0 PROJECT DESCRIPTION**. If changes in the project criteria occur, or if different subsurface conditions are encountered or become known, the conclusions and recommendations presented herein shall become invalid. In any such event, WT should be contacted in order to assess the effect that such variations may have on our conclusions and recommendations. If WT is not retained for the construction observation and testing services to determine compliance with this report, our professional responsibility is accordingly limited.

The recommendations presented are based entirely upon data derived from a limited number of samples obtained from widely spaced explorations. The attached logs are indicators of subsurface conditions only at the specific locations and times noted. This report assumes the uniformity of the geology and soil structure between explorations, however variations can and often do exist. Whenever any deviation, difference, or change is encountered or becomes known, WT should be contacted.

This report is for the exclusive benefit of our client alone. There are no intended third-party beneficiaries of our contract with the client or this report, and nothing contained in the contract or this report shall create any express or implied contractual or any other relationship with, or claim or cause of action for, any third party against WT.

This report is valid for the earlier of one year from the date of issuance, a change in circumstances, or discovered variations. After expiration, no person or entity shall rely on this report without the express written authorization of WT.

10.0 CLOSURE

We prepared this report as an aid to the designers of the proposed project. The comments, statements, recommendations and conclusions set forth in this report reflect the opinions of the authors. These opinions are based upon data obtained at the location of the explorations, and

from laboratory tests. Work on your project was performed in accordance with generally accepted standards and practices utilized by professionals providing similar services in this locality. No other warranty, express or implied, is made.



Not to Scale



Approximate Test Boring Location



BITTERCREEK BRIDGE REPLACEMENT

Boring Location Diagram

Western Technologies, Inc.

Job No. 25-224326-0

Plate: 1

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.



DEFINITION OF TERMINOLOGY

PLATE

A-1

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1½-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED



METHOD OF CLASSIFICATION

PLATE

A-2

The number shown in "**BORING NO.**" refers to the approximate location of the same number indicated on the "Boring Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features.

"**DRILLING TYPE**" refers to the exploratory equipment used in the boring wherein **HSA** = **hollow stem auger**, and the dimension presented is the outside diameter of the HSA used, and **ODEX** = percussion hammer drilling.

"**R**" in "**BLOW COUNTS**" refers to a 3-inch outside diameter ring-lined split barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 12 inches is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "**R**" blow count. The "**R**" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows per foot. An **X** within the symbol indicates no sample recovery. A half-filled **X** within the symbol indicates sample disturbance.

"**SAMPLE TYPE**" refers to the form of sample recovery, in which **R** = Ring-lined sample and **G** = Grab sample.

"**DRY DENSITY (LBS/CU FT)**" refers to the laboratory-determined dry density in pounds per cubic foot.

"**WATER (MOISTURE) CONTENT**" (% of Dry Wt.) refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"**USCS**" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring location. The transition between materials is approximate and may be more or less gradual than indicated.



BORING LOG NOTES

PLATE

A-3

Project: Bittercreek Bridge Replacement	BORING NO. 1	 Western Technologies An RMA Company
Project Number: 25-224326-0		

Date(s) Drilled 10/30/24	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA/ODEX	Drill Bit Size/Type 6"HSA	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

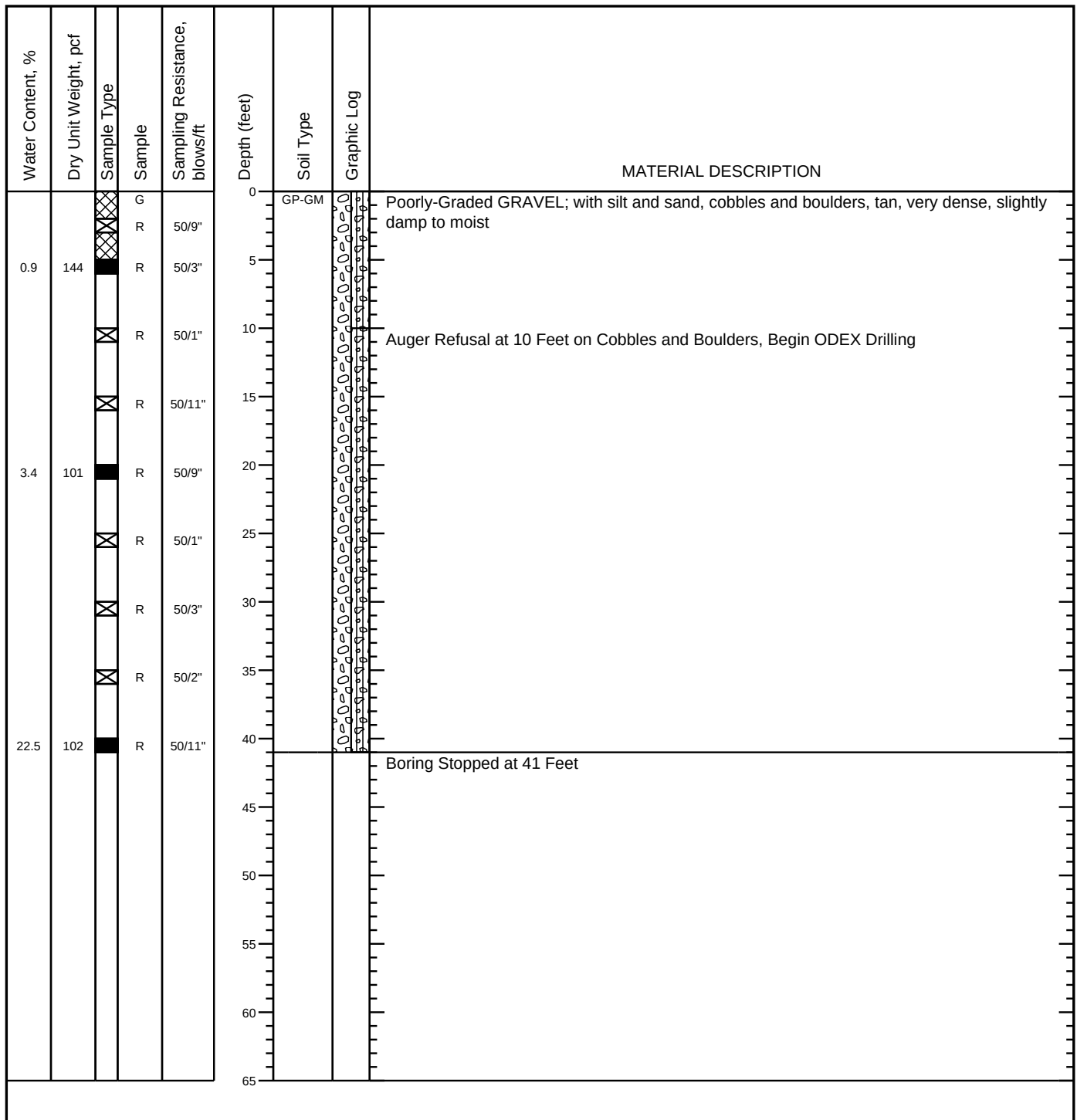


Figure A-4

Project: Bittercreek Bridge Replacement	BORING NO. 2	 Western Technologies An RMA Company
Project Number: 25-224326-0		

Date(s) Drilled 10/30/24	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA	Drill Bit Size/Type 6"HSA	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

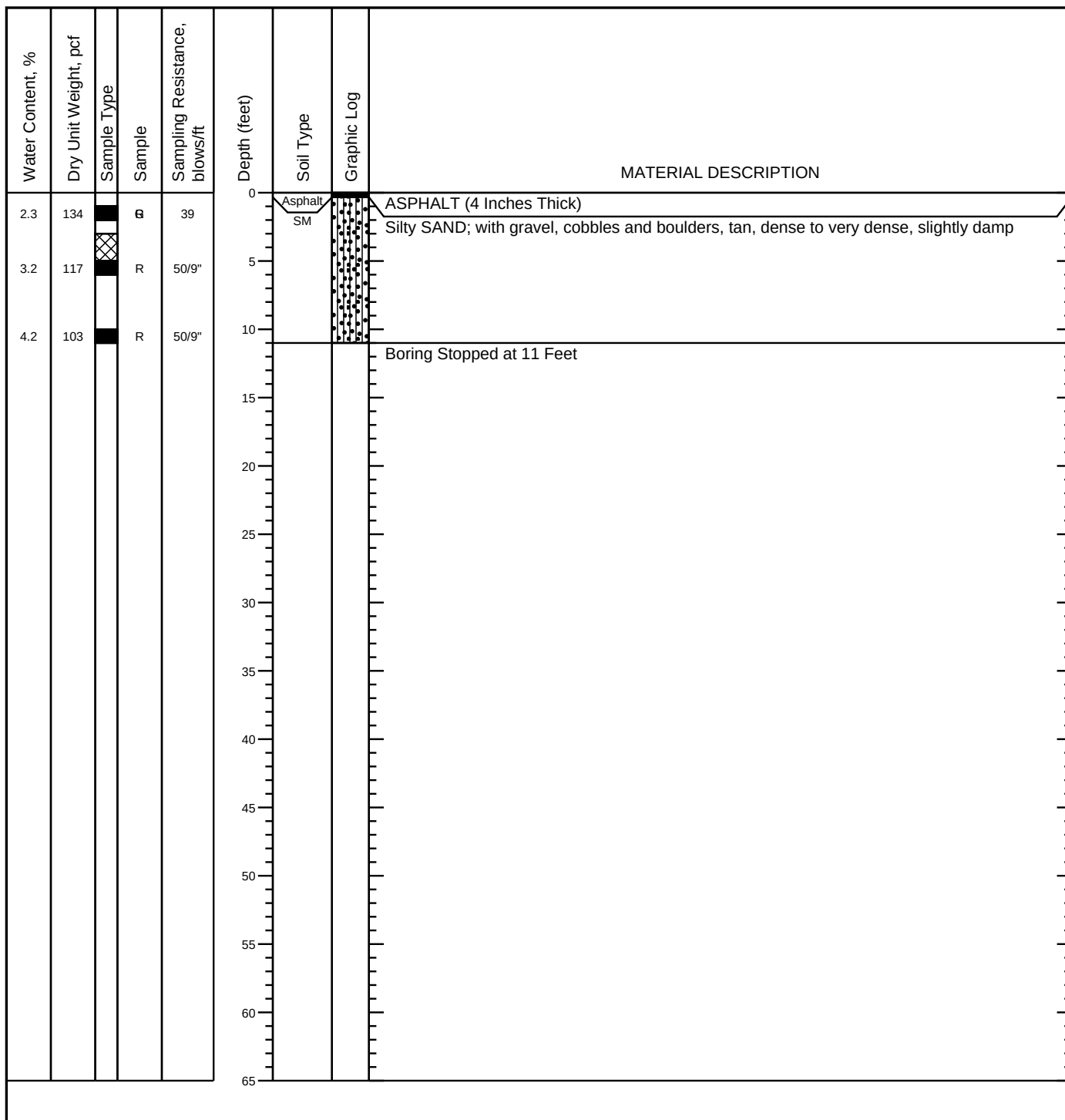


Figure A-5

Project: Bittercreek Bridge Replacement Project Number: 25-224326-0	BORING NO. 3	 Western Technologies An RMA Company
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Date(s) Drilled 10/30/24	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA	Drill Bit Size/Type 6"HSA	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

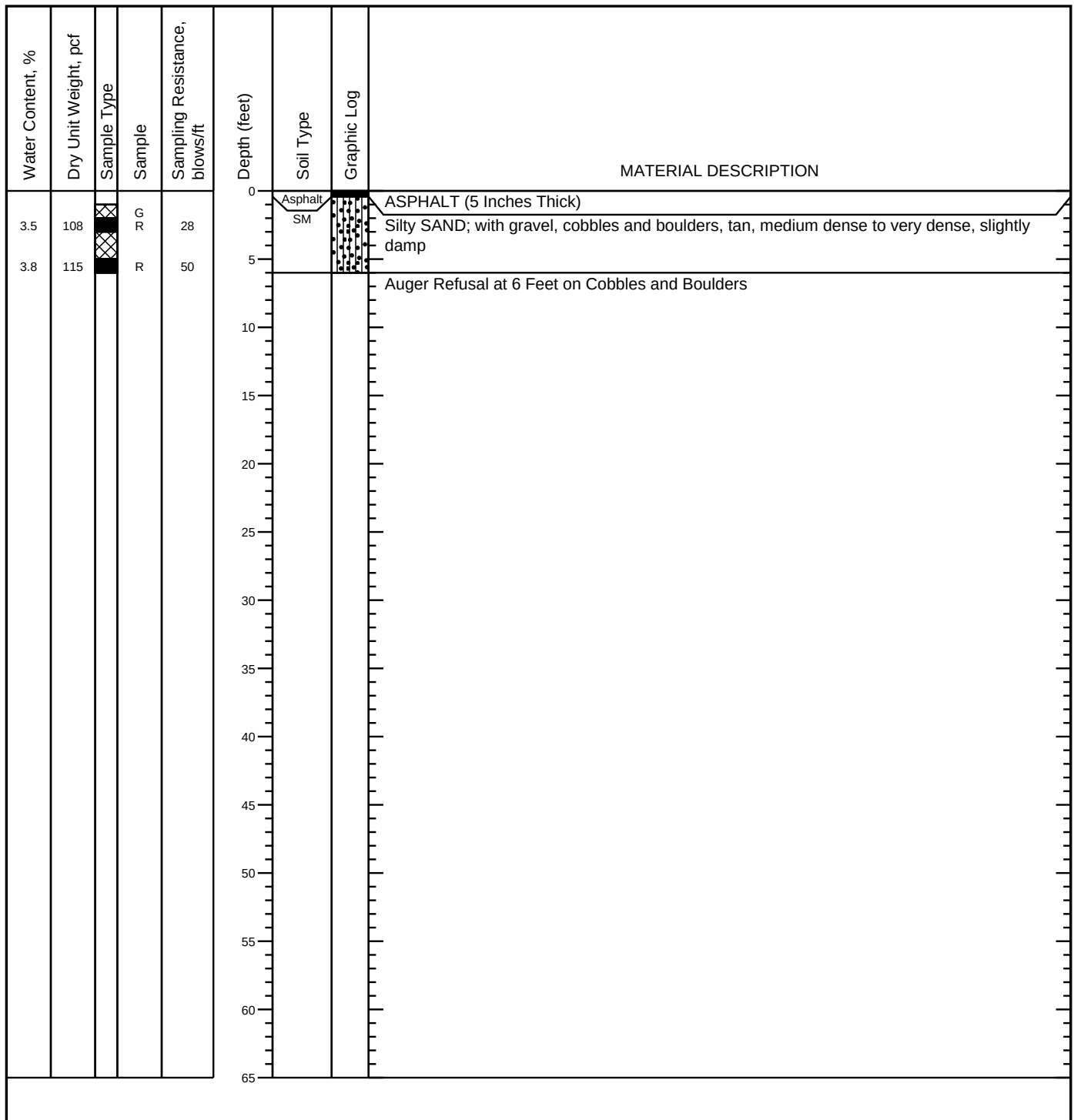


Figure A-6

Project: Bittercreek Bridge Replacement	BORING NO. 4	 Western Technologies An RMA Company
Project Number: 25-224326-0		

Date(s) Drilled 10/30/24	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA	Drill Bit Size/Type 6"HSA	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

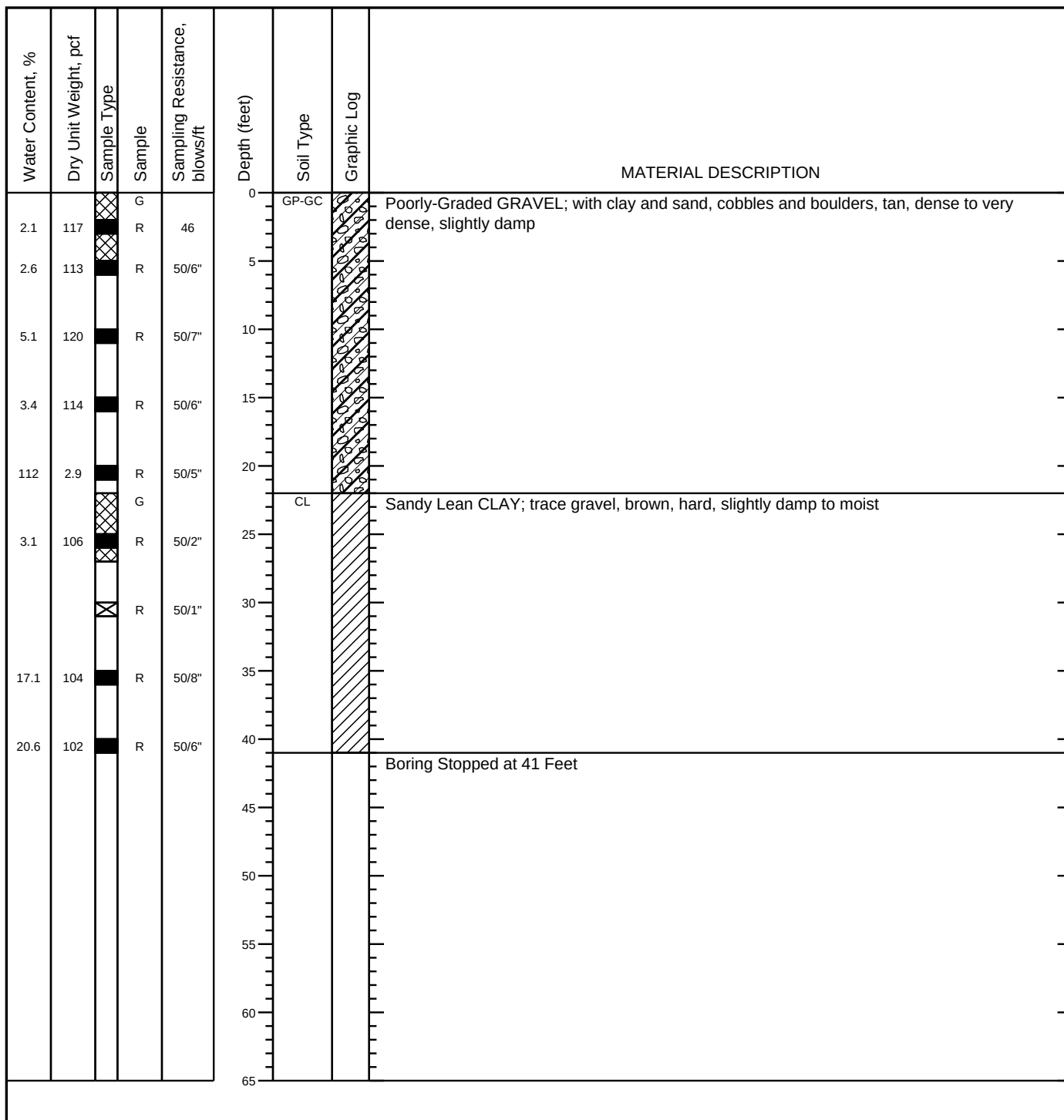


Figure A-7

Project: Bittercreek Bridge Replacement	BORING NO. 5	 Western Technologies An RMA Company
Project Number: 25-224326-0		

Date(s) Drilled 10/30/24	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA	Drill Bit Size/Type 6"HSA	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

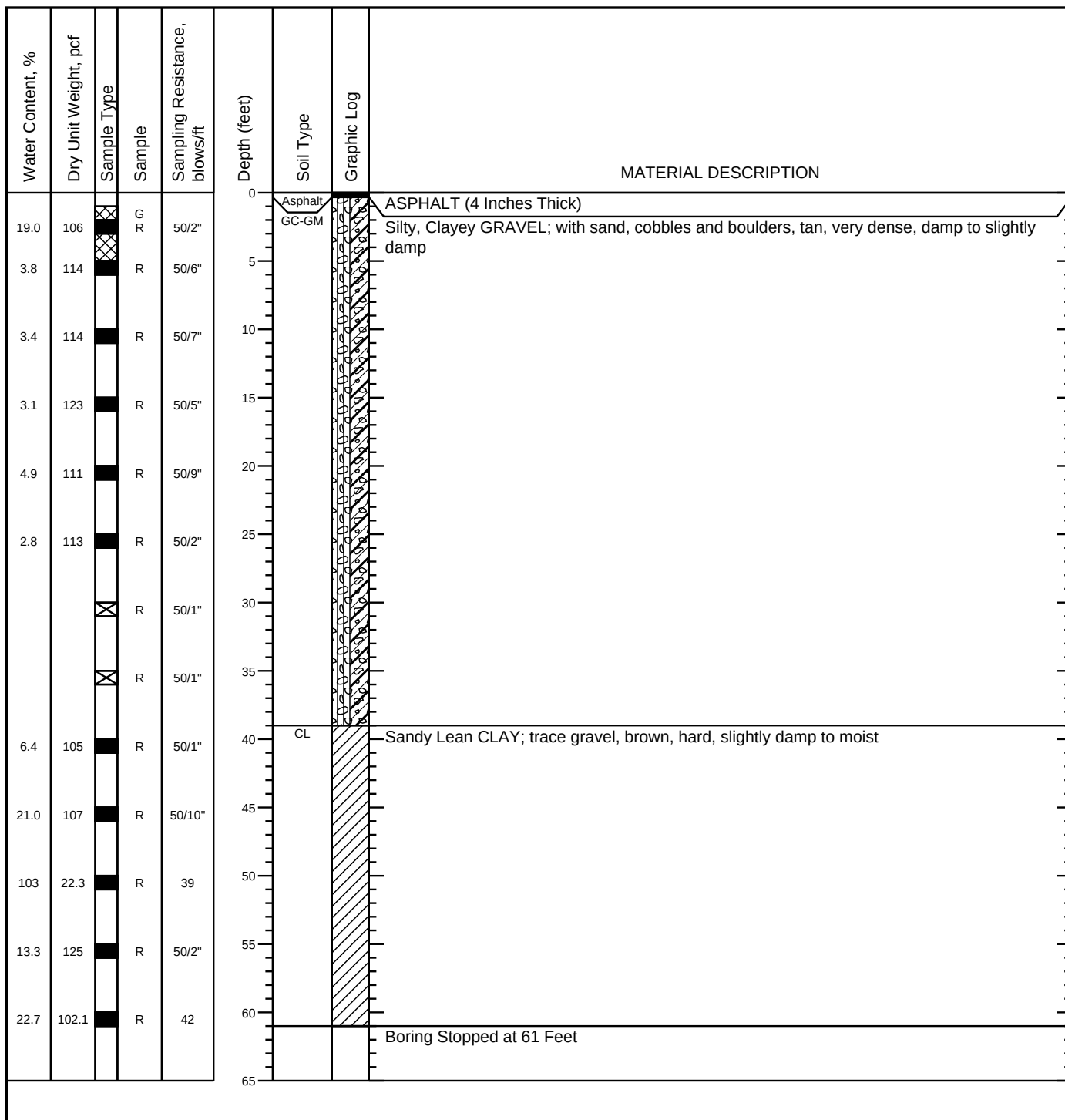


Figure A-8

Boring No.	Depth (ft)	USCS Class.	Particle Size Distribution (%) Passing by Weight							Atterberg Limits		Laboratory Compaction Characteristics			Remarks
			3"	¾"	#4	#10	#40	#200	2μ	LL	PI	Dry Density (pcf)	Optimum Moisture (%)	Method	
1	0-5	GP-GM	100	72	38	27	15	8.8			NP				2
4	0-5	GP-GC	100	67	29	19	11	7.1	5.3	22	4				2
4	22-27	CL		100	99	97	94	57.0		41	26				2
5	1-5	GC-GM	100	81	43	32	20	13.7		21	6				2

NOTE: NP = Non-plastic
μ = microns (2μ = 0.002mm)

REMARKS

Classification / Particle Size / Moisture-Density Relationship

1. Visual
2. Laboratory Tested
3. Minus #200 Only
4. Test Method ASTM D698/AASHTO T99
5. Test Method ASTM D1557/AASHTO T180
6. From the ADOT Family of Curves

 Western Technologies <i>An RMA Company</i>	PROJECT: BITTERCREEK BRIDGE REPLACEMENT JOB NO.: 25-224326-0	PLATE B-1
	SOIL PROPERTIES	

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Laboratory Compaction Characteristics			Expansion Properties		Plasticity		Soluble		Remarks
					Dry Density(pcf)	Optimum Moisture(%)	Method	Surcharge (ksf)	Expansion (%)	LL	PI	Salts (ppm)	Sulfate (ppm)	
4	0-5	GP-GC	130.1	5.5	136.5	8.9	A	0.1	0					1,2,3

Notes: Initial Dry Density and Initial Water Content are remolded.

Remarks

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Test Method ASTM D698/AASHTO T99
4. Test Method ASTM D1557/AASHTO T180
5. From the ADOT Family of Curves



PROJECT: BITTERCREEK BRIDGE REPLACEMENT
JOB NO.: 25-224326-0

SOIL PROPERTIES

PLATE
B-2

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Direct Shear		Permeability	Percent Passing #200	Soluble Sulfate (ppm)	Remarks
					Surcharge (ksf)	Total Compression (%)		Cohesion (ksf)	ϕ Angle (deg.)	k (cm/sec)			
						In-Situ	After Saturation						
4	20-21	GP-GC	111.6	2.9				0.03	37.0				2
4	35-36	CL	104.0	17.1				0.02	39.5				2
5	50-51	CL	103.1	22.3				0.19	37.8				2
5	60-61	CL	102.1	22.7				0.43	46.1				2

Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted.
NP = Non-Plastic

Remarks

1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.)
2. Submerged to approximate saturation.
3. Slight rebound after saturation.
4. ASTM D5856 - Falling Head Procedure
5. ASTM D2434 – Constant Head Procedure
6. Sample disturbance observed.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT
JOB NO.: 25-224326-0

SOIL PROPERTIES

PLATE
B-3



Nortest Analytical
An **RMA** Company

Reported: 11/14/2024

Received: 11/8/2024

LABORATORY ANALYSIS REPORT

Project: 25-224326-0

Lab Number
24S0234

Sample ID
4(0-5)

Test Parameter

<i>Test</i>	<i>Method</i>	<i>Result</i>	<i>Units</i>
Soluble Salts	ARIZ 237b	2,279	ppm
Sulfate	ARIZ 733b	280	ppm
Chloride	ARIZ 736b	27	ppm

COMPRESSION TEST REPORT

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _r	Swell Press. (ksf)	Clpse. %	e ₀
Sat.	Moist.											
13.9 %	3.4 %	100.5			2.65						6.4	0.645

MATERIAL DESCRIPTION										USCS	AASHTO
POORLY-GRADED GRAVEL WITH SILT AND SAND										GP-GM	

Project No. 25-224326-0 Client: ARDURRA Project: BITTERCREEK BRIDGE REPLACEMENT Source: RING SAMPLE Depth: 20-21 FEET Sample No.: BORING 1 Western Technologies, Inc. Flagstaff, AZ										Remarks: 	

Figure B-5

Graph showing Percent Strain versus Applied Pressure (ksf) for a soil specimen. The curve illustrates the relationship between pressure and strain, with a notable change in behavior (Water Added) around 2.5 ksf.

Applied Pressure (ksf)	Percent Strain
0.1	0.0
0.5	1.5
1.0	2.3
2.5	3.1
2.5	3.2
5.0	4.1

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _C (ksf)	C _C	C _r	Swell Press. (ksf)	Clpse. %	e ₀
Sat.	Moist.											
96.4 %	22.5 %	102.1			2.65						0.1	0.620

MATERIAL DESCRIPTION	USCS	AASHTO
POORLY-GRADED GRAVEL WITH SILT AND SAND	GP-GM	

Project No. 25-224326-0	Client: ARDURRA	Remarks:
Project: BITTERCREEK BRIDGE REPLACEMENT		
Source: RING SAMPLE	Depth: 40-41 FEET Sample No.: BORING 1	
Western Technologies, Inc.		
Flagstaff, AZ		Figure B-6

Figure B-6

COMPRESSION TEST REPORT

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
Sat.	Moist.											
36.0 %	5.1 %	120.3			2.65						2.6	0.376

MATERIAL DESCRIPTION										USCS	AASHTO
POORLY-GRADED GRAVEL WITH CLAY AND SAND										GP-GC	

Project No. 25-224326-0 Client: ARDURRA Project: BITTERCREEK BRIDGE REPLACEMENT Source: RING SAMPLE Depth: 10-11 FEET Sample No.: BORING 4 Western Technologies, Inc. Flagstaff, AZ				Remarks:			
---	--	--	--	-----------------	--	--	--

Figure B-7

COMPRESSION TEST REPORT

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _c (ksf)	C _c	C _r	Swell Press. (ksf)	Clpse. %	e _o
Sat.	Moist.											
26.6 %	4.9 %	111.0			2.65						5.1	0.491

MATERIAL DESCRIPTION										USCS	AASHTO
SILTY, CLAYEY GRAVEL WITH SAND										GC-GM	

Project No. 25-224326-0 Client: ARDURRA Project: BITTERCREEK BRIDGE REPLACEMENT Source: RING SAMPLE Depth: 20-21 FEET Sample No.: BORING 5 Western Technologies, Inc. Flagstaff, AZ										Remarks:

Figure B-8

Soil Resistance Test No. 1

Percent Strain

Applied Pressure - ksf

Water Added

Applied Pressure - ksf	Percent Strain
0.1	0.0
0.5	0.7
1.0	1.2
2.0	1.8
2.0	2.4
4.0	2.5

Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P _C (ksf)	C _C	C _r	Swell Press. (ksf)	Clpse. %	e ₀
Sat.	Moist.											
101.4 %	21.0 %	106.8			2.65						0.6	0.550

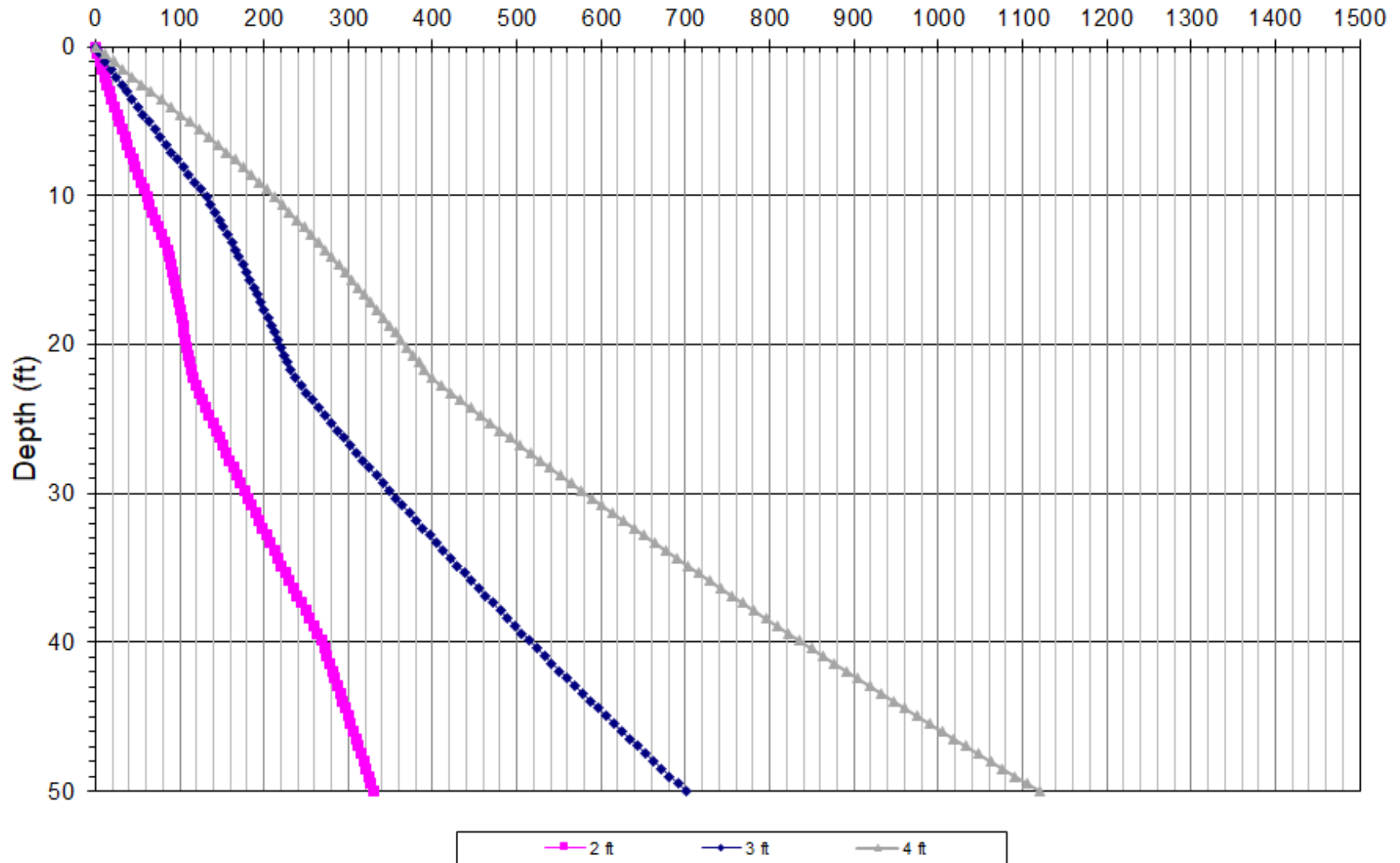
MATERIAL DESCRIPTION	USCS	AASHTO
SANDY LEAN CLAY	CL	

Project No. 25-224326-0	Client: ARDURRA	Remarks:
Project: BITTERCREEK BRIDGE REPLACEMENT		
Source: RING SAMPLE	Depth: 45-46 FEET Sample No.: BORING 5	
Western Technologies, Inc.		
Flagstaff, AZ		Figure B-9

Figure B-9

BITTERCREEK BRIDGE REPLACEMENT

DRILLED SHAFT AXIAL DOWNWARD CAPACITY CHART: Strength Limit State Condition (Kips)



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

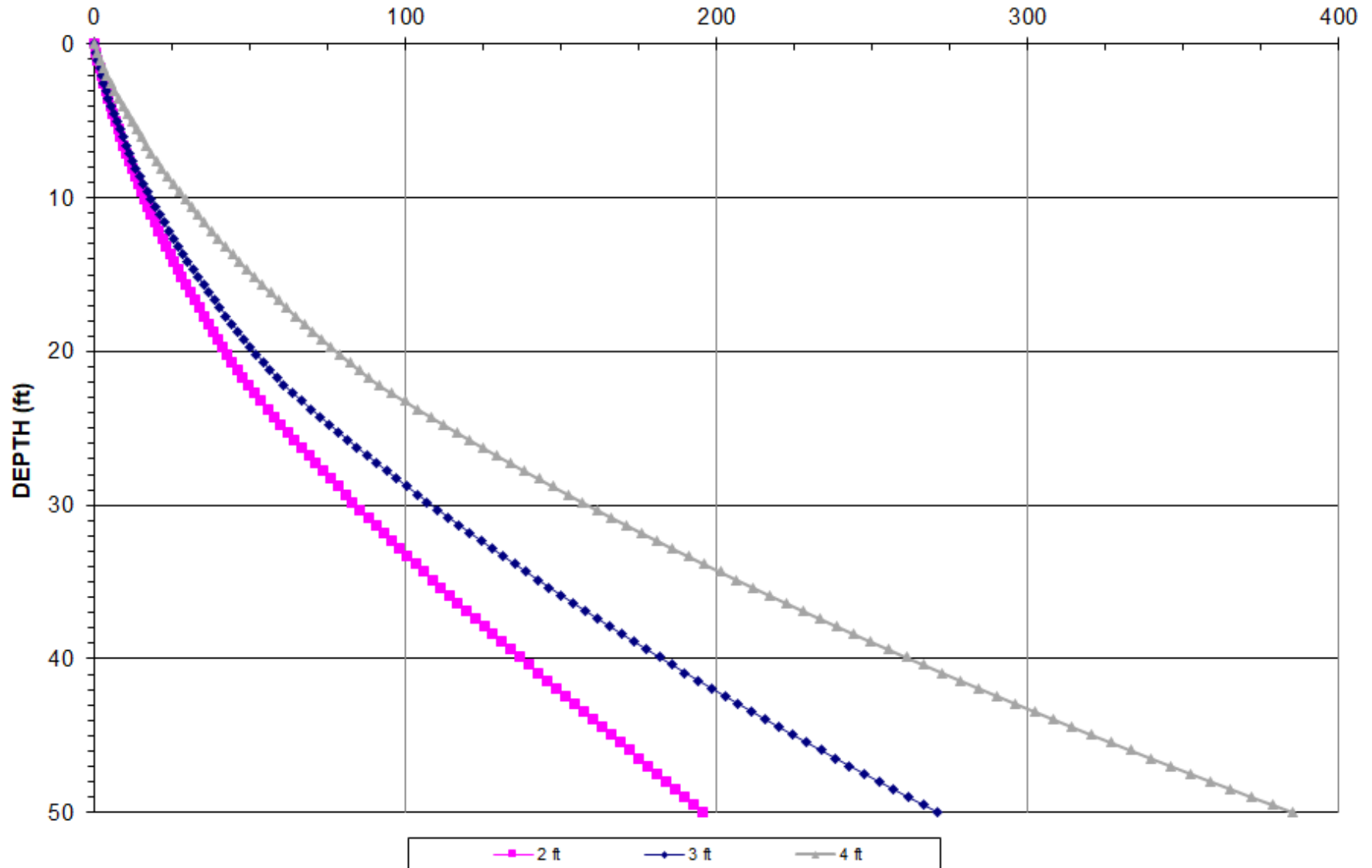
DRILLED SHAFT CAPACITY

PLATE

C-1

BITTERCREEK BRIDGE REPLACEMENT

DRILLED SHAFT AXIAL UPLIFT CAPACITY CHART: Strength Limit State Condition (Kips)



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

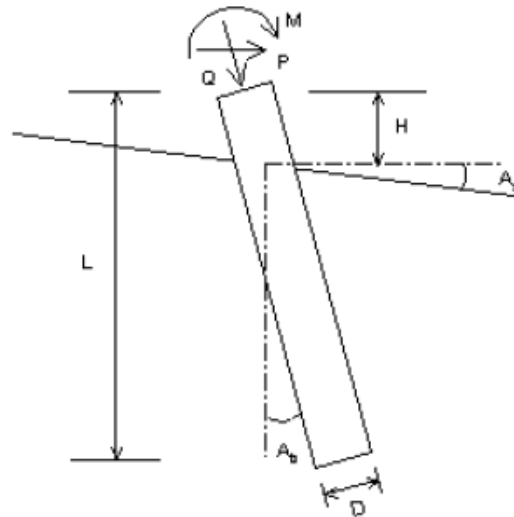
DRILLED SHAFT CAPACITY

PLATE

C-2

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 38.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
22	120.1	35.0	0.40	2456.2	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	24	452.4	75.4	16286.0	3000	0.471
20.0	24	452.4	75.4	16286.0	3000	0.471
38.0						

Single Pile Lateral Analysis:

Top Deflection, yt= 0.01270-in
Max. Moment, M= -25.92-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0127-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

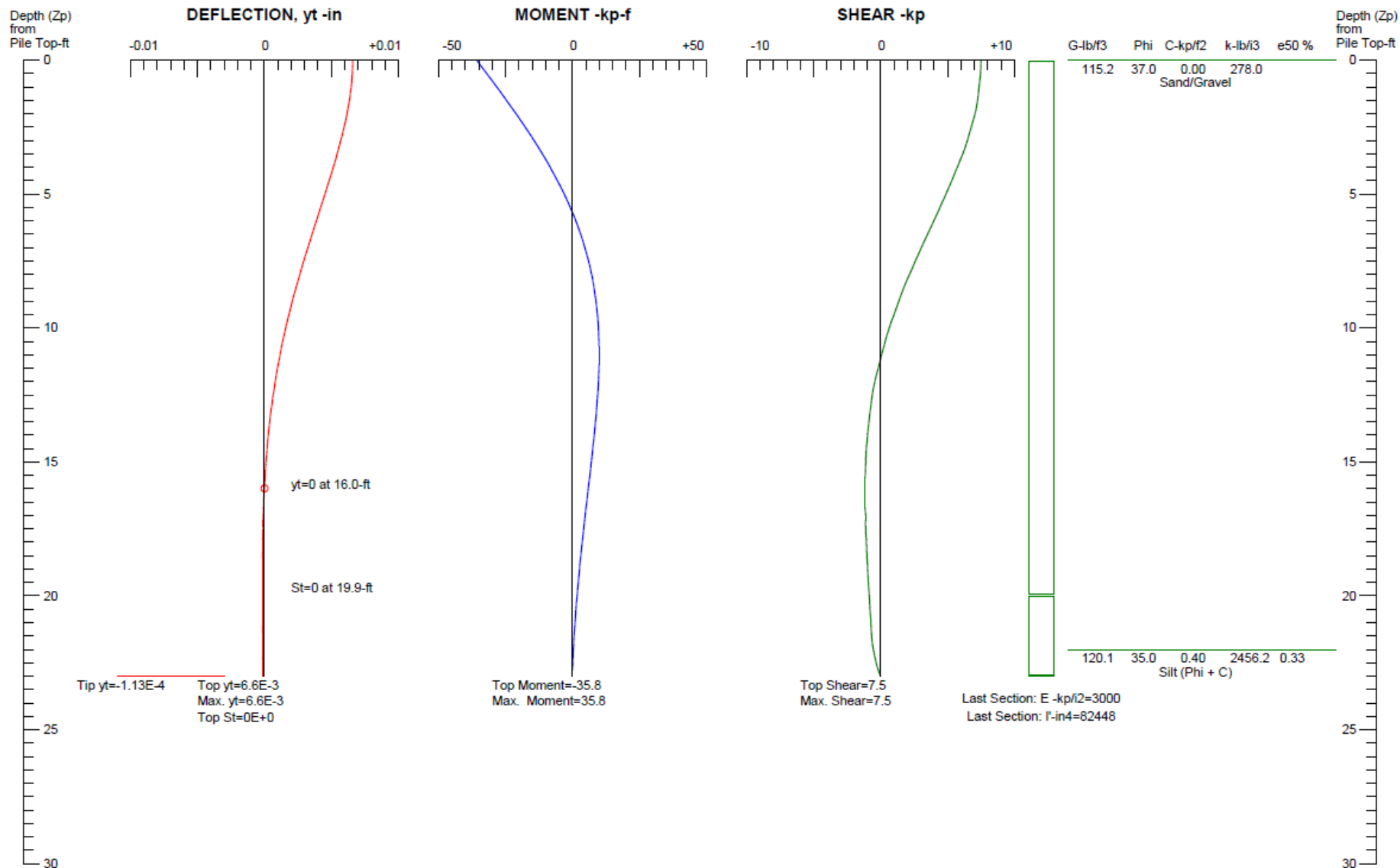
JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-3

PILE DEFLECTION & FORCE vs DEPTH Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

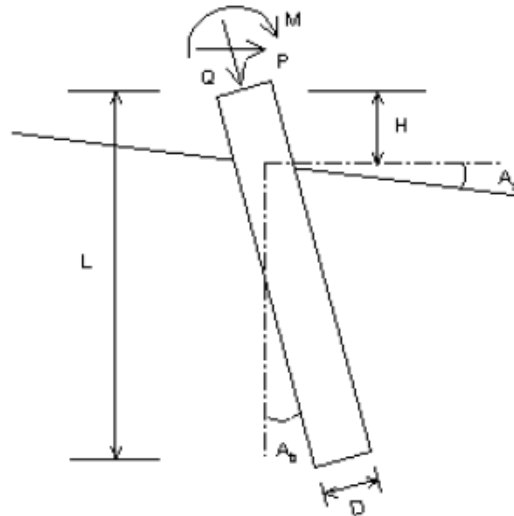
DRILLED SHAFT CAPACITY

PLATE

C-4

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 23.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi -	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
22	120.1	35.0	0.40	2456.2	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	36	1017.9	113.1	82448.0	3000	1.060
20.0	36	1017.9	113.1	82448.0	3000	1.060
23.0						

Single Pile Lateral Analysis:

Top Deflection, yt= 0.00660-in
Max. Moment, M= -35.75-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0066-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

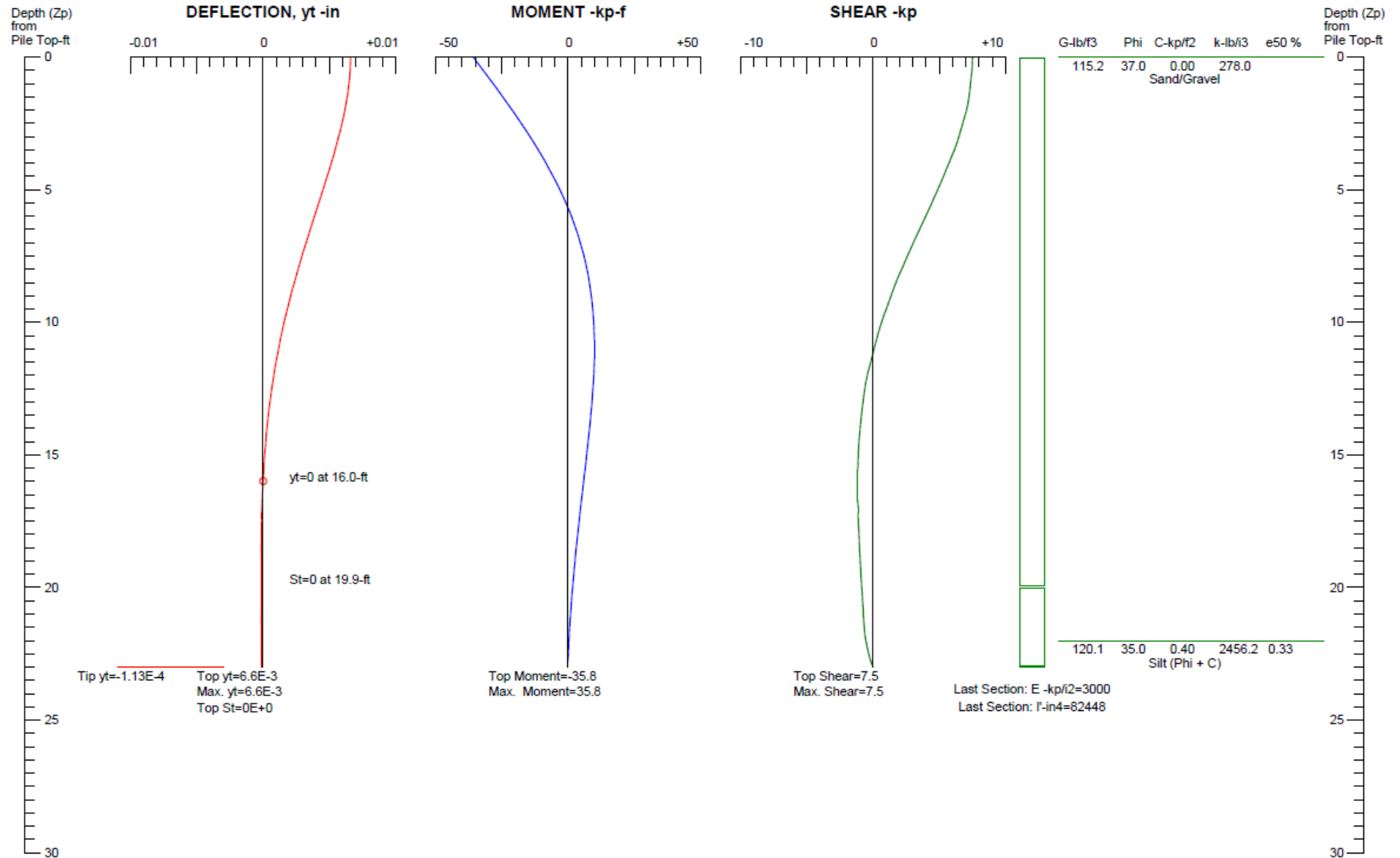
DRILLED SHAFT CAPACITY

PLATE

C-5

PILE DEFLECTION & FORCE vs DEPTH

Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

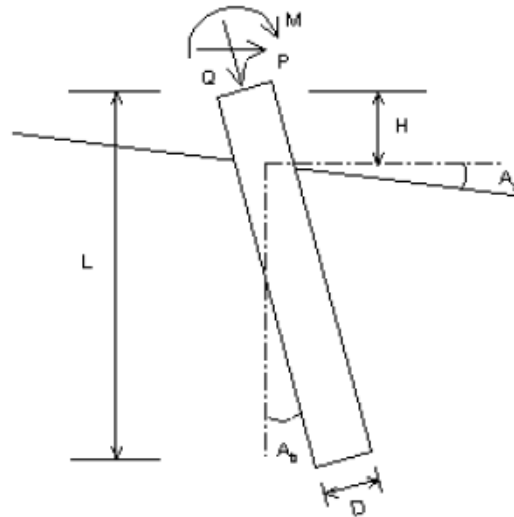
DRILLED SHAFT CAPACITY

PLATE

C-6

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 12.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi -lb/f2	C -lb/f2	K -lb/i3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
22	120.1	35.0	0.40	2456.2	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	48	1809.6	150.8	260576.3	3000	1.885
12.0	48	1809.6	150.8	260576.3	3000	1.885

Single Pile Lateral Analysis:

Top Deflection, yt= 0.00496-in
Max. Moment, M= -50.83-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0050-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

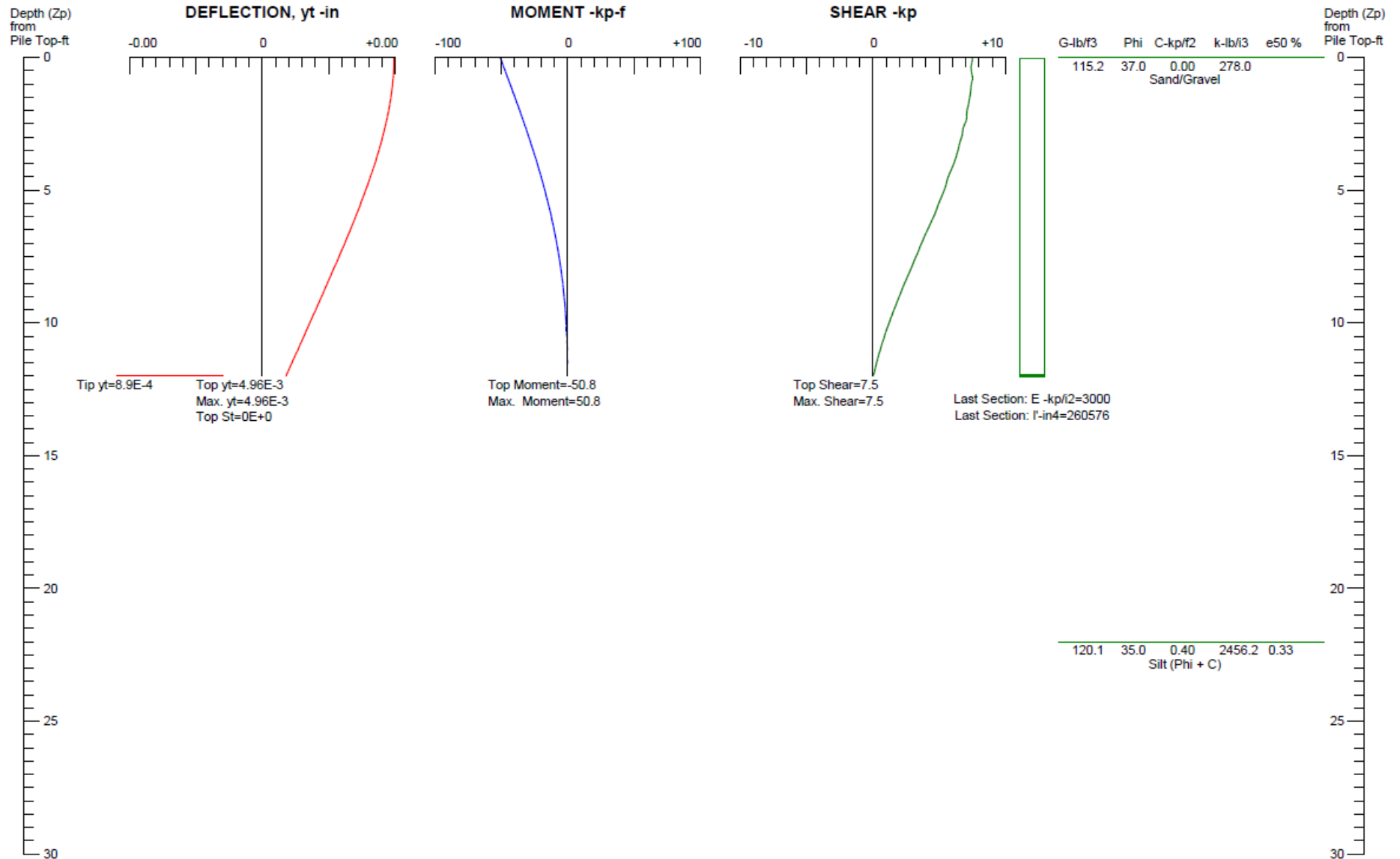
DRILLED SHAFT CAPACITY

PLATE

C-7

PILE DEFLECTION & FORCE vs DEPTH

Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT

JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-8



March 20, 2025

Ardurra
75 Kallof Place
Sedona, Arizona 86336

Attn: Mr. Curtis Krausman, P.E.

Re: Bittercreek Bridge
North Broadway
Clarkdale, Arizona

Job No. 25-224326-0
Addendum No. 1

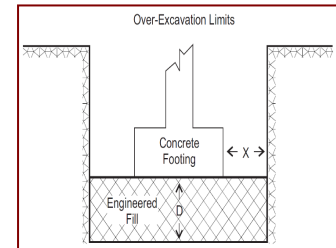
In accordance with the request of Mr. Curtis Krausman, P.E., we have reviewed our geotechnical evaluation report for the above referenced project. The purpose of the review was to provide some additional recommendations for foundation support.

We understand that the preference is to use conventional spread footings to support both reinforced concrete retaining walls and gabion basket retaining walls with maximum heights of about 25 and 15 feet, respectively. The following recommendations are provided for this approach:

Spread Footing Foundations

- The proposed structures can be supported by conventional shallow spread footings bearing on a minimum thickness of 1.5 feet of low expansive on-site soils removed and recompactd as engineered fill and/or properly compacted, imported, low expansive engineered fill. Footings located adjacent to active channel flow areas should bear at least 1.5 feet below the maximum scour depth. Footings not subject to active flow conditions should bear at least 1.5 feet below the lowest adjacent finished grade. Footings may be designed to impose a maximum dead plus live load pressure of up to 2000 pounds per square foot.
- We anticipate that total movement of the proposed structures, supported as recommended, should be less than 1 inch. Differential movement should be less than $\frac{3}{4}$ inch. Additional foundation movements could occur if water from any source infiltrates the foundation soils. Therefore, proper drainage should be provided in the final design and during construction.
- The design bearing capacity applies to dead loads plus design live load conditions. The recommended minimum widths of wall and column footings are 16 and 24 inches, respectively. The bearing values given are net bearing values and the weight of the concrete in the footings may be ignored.

- All footings, stem walls and any masonry walls should be reinforced to reduce the potential for distress caused by differential foundation movements. The use of joints at openings or other discontinuities in any masonry walls is recommended.
- In footing areas, remove existing soils to a minimum depth of 1.5 feet below the bottom of the footing (depth D in the diagram). Removal should extend a minimum of 1 foot beyond the footing edges (length X in the diagram). Replace with engineered fill material.
- We recommend that the geotechnical engineer or his representative observe the footing excavations before reinforcing steel and concrete are placed. It should be determined whether the materials exposed are similar to those anticipated for support of the footings. Any soft, loose or unacceptable materials should be undercut to suitable materials and backfilled with either lean mix or structural concrete.
- As discussed in the original report, on-site granular soils may be used as subbase fill or backfill in the retaining wall/abutment areas. If clay/clayey soils are encountered, the material will need to be evaluated and supplemental recommendations may be required.



This addendum should be attached to and become part of the original report. If you have any questions concerning this information, or require additional consultation, observation or testing services, please contact us. All of the recommendations contained in the original report remain applicable. If you have any questions concerning this information, or require additional consultation, observation or testing services, please contact us.

Sincerely,

WESTERN TECHNOLOGIES INC.

Geotechnical Engineering Services



Gregory L. E. Burr, P.E., R.G.
Geotechnical Department Manager



Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

Copies to: Addressee (emailed)

August 15, 2025

Ardurra
75 Kallof Place
Sedona, Arizona 86336

Attn: Mr. Curtis Krausman, P.E.

Re: Bittercreek Bridge
North Broadway
Clarkdale, Arizona

Job No. 25-224326-0
Addendum No. 2

In accordance with our change order dated June 16, 2025, we have completed some geotechnical engineering services for the above referenced project. The purpose of these current services is to evaluate the subsurface conditions in the wash for the proposed Bitter Creek Bridge replacement, and provide some additional recommendations for MSE wall design.

One boring was auger drilled to a depth of about 7 feet below the existing site grades in the base of the wash at the proposed bridge location. The boring was advanced past auger refusal to a depth of 51 feet using Overburden Drilling Excentric (ODEX) techniques. The boring was at the approximate location shown on the attached Boring Location Diagram. A Log of the boring is attached. Subsoils encountered during drilling were examined visually and sampled at selected depth intervals.

Samples obtained during the field exploration were tested for in-situ moisture and density, gradation, plasticity, and shear strength. Laboratory test results indicate that native subsoils located near anticipated shallow foundation levels exhibit moderate shear strengths at water contents approaching saturation. All laboratory test results are attached.

Based on the results of this additional evaluation combined with review of our original geotechnical evaluation, the following subsurface information is provided and updated capacity charts are attached:

SOIL PROFILE							
Layer Depth (ft)	Soil Type*	Effective Unit Weight (pcf)	Friction Angle (degrees)	Cohesion (psf)	Soil Modulus K (pci)	Relative Density (%)	Strain Factor E_{50}^{**}
0-10	Gravels	115.2	37.0	0	278.0	85.61	N/A
10-52	Clays	120.1	35.0	400	2456.2	N/A	0.33
52+	Clays below Groundwater	77.3	25.0	250	2466.1	N/A	0.33
* The soil types and depths presented are based soil profiles created from compilations of the borings located at the project site. Granular soils should be modeled as Sand/Gravel and the cohesive soils should be modeled as "Silt (cemented c-phi)" to input both cohesion and phi angle in the analysis. ** These values can be left as zero in LPILE and GROUP for the software to select these parameters based on the friction angle and cohesion. N/A – Not Applicable							

We understand that a Mechanically Stabilized Earth Wall (MSE) is preferred behind the bridge abutments to reduce lateral earth pressures on the abutments and drilled shaft foundations to eliminate tiebacks. The following recommendations are provided to reduce lateral earth pressures for MSE wall design:

- Cement stabilized soil may be used in place of conventional granular backfill between the MSE wall geogrid to reduce the at-rest lateral earth pressure. If this is implemented, the equivalent at-rest fluid pressure can be modeled using 20 pounds per square foot per square foot of wall (psf/ft).
- The on-site granular soils or imported soils that meet the import specifications provided in our original geotechnical evaluation may be mixed with cement. For initial cost-estimating purposes, it may be assumed that 6 percent cement (by dry weight of soil) will be required to stabilize the site soils. A mix design using the site soils or approved imported materials and the cement product proposed for use will be required to determine the final cement content.
- Low expansive potential, granular on-site and imported soils mixed with cement should be compacted to a minimum of 95 percent of the ASTM D698 maximum density within a moisture content range of 3 percent below to 3 percent above optimum.
- Construction of cement stabilization of this type should follow the methods and procedures contained in the current edition of the *Soil-Cement Inspector's Manual* by the Portland Cement Association (PCA). A soil cement stabilization specialty contractor should be consulted to assess this condition and develop the required stabilization procedures.

This addendum should be attached to and become part of the original report. All of the recommendations contained in the original report remain applicable. If you have any questions concerning this information, or require additional consultation, observation or testing services, please contact us.

Sincerely,
WESTERN TECHNOLOGIES INC.,
dba CERTERRA WESTERN TECHNOLOGIES
Geotechnical Engineering Services



Gregory L. E. Burr, P.E., R.G.
Geotechnical Department Manager

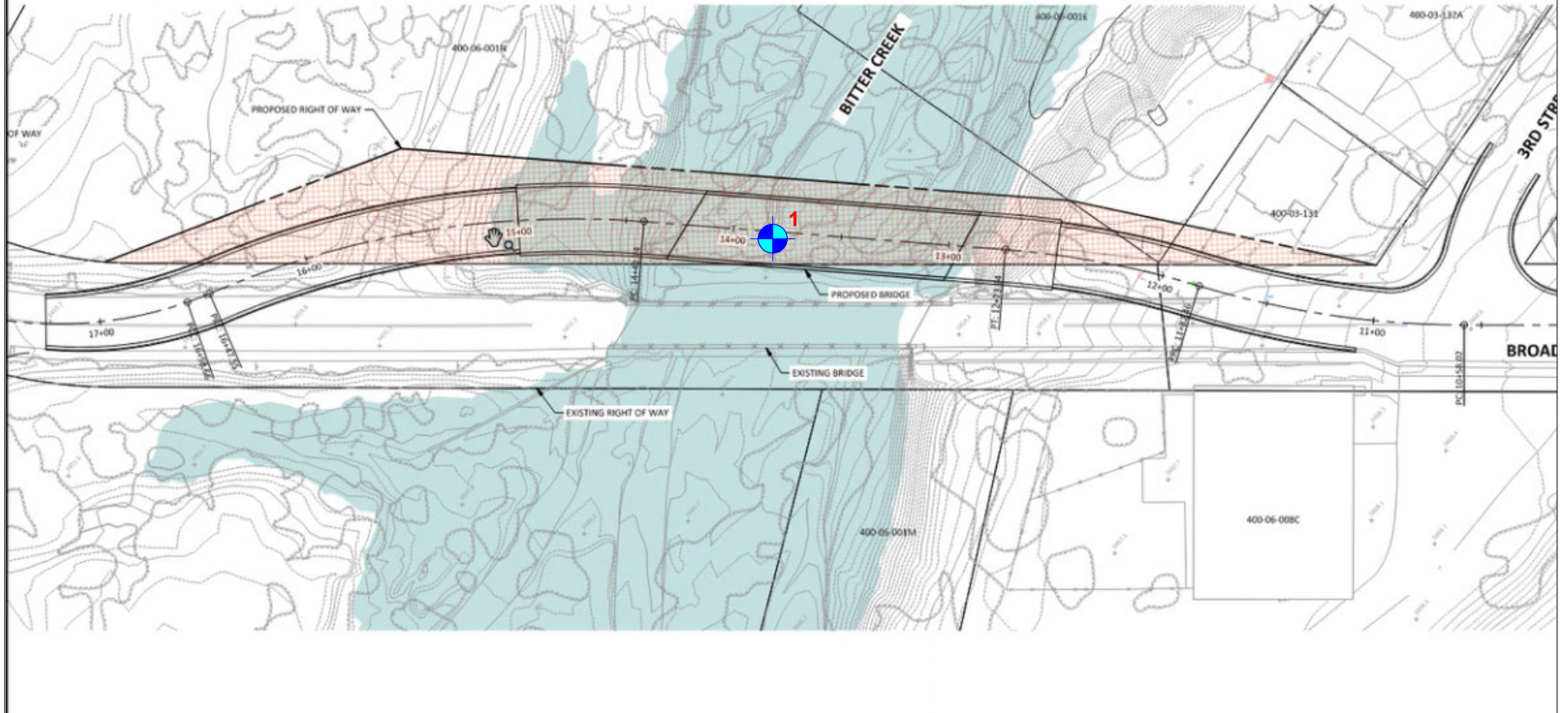


Craig P. Wiedeman, P.E.
Senior Geotechnical Engineer

Copies to: Addressee (emailed)

APN: 400-06-001E 538.70 SF
APN: 400-03-131 939.93 SF

SCALE: 1" = 30'



Not to Scale



Approximate Test Boring Location



BITTERCREEK BRIDGE REPLACEMENT - ADD. NO. 2

Boring Location Diagram

Certerra Western Technologies

Job No. 25-224326-0

Plate: 1

Allowable Soil Bearing Capacity	The recommended maximum contact stress developed at the interface of the foundation element and the supporting material.
Backfill	A specified material placed and compacted in a confined area.
Base Course	A layer of specified aggregate material placed on a subgrade or subbase.
Base Course Grade	Top of base course.
Bench	A horizontal surface in a sloped deposit.
Caisson/Drilled Shaft	A concrete foundation element cast in a circular excavation which may have an enlarged base (or belled caisson).
Concrete Slabs-On-Grade	A concrete surface layer cast directly upon base course, subbase or subgrade.
Crushed Rock Base Course	A base course composed of crushed rock of a specified gradation.
Differential Settlement	Unequal settlement between or within foundation elements of a structure.
Engineered Fill	Specified soil or aggregate material placed and compacted to specified density and/or moisture conditions under observations of a representative of a soil engineer.
Existing Fill	Materials deposited through the action of man prior to exploration of the site.
Existing Grade	The ground surface at the time of field exploration.
Expansive Potential	The potential of a soil to expand (increase in volume) due to absorption of moisture.
Fill	Materials deposited by the actions of man.
Finished Grade	The final grade created as a part of the project.
Gravel Base Course	A base course composed of naturally occurring gravel with a specified gradation.
Heave	Upward movement.
Native Grade	The naturally occurring ground surface.
Native Soil	Naturally occurring on-site soil.
Rock	A natural aggregate of mineral grains connected by strong and permanent cohesive forces. Usually requires drilling, wedging, blasting or other methods of extraordinary force for excavation.
Sand and Gravel Base Course	A base course of sand and gravel of a specified gradation.
Sand Base Course	A base course composed primarily of sand of a specified gradation.
Scarify	To mechanically loosen soil or break down existing soil structure.
Settlement	Downward movement.
Soil	Any unconsolidated material composed of discrete solid particles, derived from the physical and/or chemical disintegration of vegetable or mineral matter, which can be separated by gentle mechanical means such as agitation in water.
Strip	To remove from present location.
Subbase	A layer of specified material placed to form a layer between the subgrade and base course.
Subbase Grade	Top of subbase.
Subgrade	Prepared native soil surface.



DEFINITION OF TERMINOLOGY

PLATE

A-1

COARSE-GRAINED SOILS

LESS THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
GW	WELL-GRADED GRAVEL OR WELL-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE
GP	POORLY-GRADED GRAVEL OR POORLY-GRADED GRAVEL WITH SAND, LESS THAN 5% FINES	
GM	SILTY GRAVEL OR SILTY GRAVEL WITH SAND, MORE THAN 12% FINES	
GC	CLAYEY GRAVEL OR CLAYEY GRAVEL WITH SAND, MORE THAN 12% FINES	
SW	WELL-GRADED SAND OR WELL-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE
SP	POORLY-GRADED SAND OR POORLY-GRADED SAND WITH GRAVEL, LESS THAN 5% FINES	
SM	SILTY SAND OR SILTY SAND WITH GRAVEL, MORE THAN 12% FINES	
SC	CLAYEY SAND OR CLAYEY SAND WITH GRAVEL, MORE THAN 12% FINES	

NOTE: Coarse-grained soils receive dual symbols if they contain 5% to 12% fines (e.g., SW-SM, GP-GC).

FINE-GRAINED SOILS

MORE THAN 50% FINES

GROUP SYMBOLS	DESCRIPTION	MAJOR DIVISIONS
ML	SILT, SILT WITH SAND OR GRAVEL, SANDY SILT, OR GRAVELLY SILT	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50
CL	LEAN CLAY OF LOW TO MEDIUM PLASTICITY, SANDY CLAY, OR GRAVELLY CLAY	
OL	ORGANIC SILT OR ORGANIC CLAY OF LOW TO MEDIUM PLASTICITY	
MH	ELASTIC SILT, SANDY ELASTIC SILT, OR GRAVELLY ELASTIC SILT	SILTS AND CLAYS LIQUID LIMIT MORE THAN 50
CH	FAT CLAY OF HIGH PLASTICITY, SANDY FAT CLAY, OR GRAVELLY FAT CLAY	
OH	ORGANIC SILT OR ORGANIC CLAY OF HIGH PLASTICITY	
PT	PEAT AND OTHER HIGHLY ORGANIC SOILS	HIGHLY ORGANIC SOILS

NOTE: Fine-grained soils may receive dual classification based upon plasticity characteristics (e.g. CL-ML).

SOIL SIZES

COMPONENT	SIZE RANGE
BOULDERS	Above 12 in.
COBBLES	3 in. – 12 in.
GRAVEL	No. 4 – 3 in.
Coarse	¾ in. – 3 in.
Fine	No. 4 – ¾ in.
SAND	No. 200 – No. 4
Coarse	No. 10 – No. 4
Medium	No. 40 – No. 10
Fine	No. 200 – No. 40
Fines (Silt or Clay)	Below No. 200

NOTE: Only sizes smaller than three inches are used to classify soils

CONSISTENCY

CLAYS & SILTS	BLOWS PER FOOT
VERY SOFT	0 – 2
SOFT	3 – 4
FIRM	5 – 8
STIFF	9 – 15
VERY STIFF	16 – 30
HARD	OVER 30

RELATIVE DENSITY

SANDS & GRAVELS	BLOWS PER FOOT
VERY LOOSE	0 – 4
LOOSE	5 – 10
MEDIUM DENSE	11 – 30
DENSE	31 – 50
VERY DENSE	OVER 50

NOTE: Number of blows using 140-pound hammer falling 30 inches to drive a 2-inch-OD (1½-inch ID) split-barrel sampler (ASTM D1586).

PLASTICITY OF FINE GRAINED SOILS

PLASTICITY INDEX	TERM
0	NON-PLASTIC
1 – 7	LOW
8 – 20	MEDIUM
Over 20	HIGH

DEFINITION OF WATER CONTENT

DRY
SLIGHTLY DAMP
DAMP
MOIST
WET
SATURATED

**METHOD OF CLASSIFICATION**

PLATE

A-2

The number shown in "**BORING NO.**" refers to the approximate location of the same number indicated on the "Boring Location Diagram" as positioned in the field by pacing or measurement from property lines and/or existing features.

"**DRILLING TYPE**" refers to the exploratory equipment used in the boring wherein **HSA = hollow stem auger**, and the dimension presented is the outside diameter of the HSA used.

"**R**" in "**BLOW COUNTS**" refers to a 3-inch outside diameter ring-lined split barrel sampler driven into the ground with a 140 pound drop-hammer dropped 30 inches repeatedly until a penetration of 12 inches is achieved or until refusal. The number of blows required to advance the sampler 12 inches is defined as the "**R**" blow count. The "**R**" blow count requires an engineered conversion to an equivalent SPT N-Value. Refusal to penetration is considered more than 50 blows per foot. An **X** within the symbol indicates no sample recovery. A half-filled **X** within the symbol indicates sample disturbance.

"**SAMPLE TYPE**" refers to the form of sample recovery, in which **R** = Ring-lined sample and **G** = Grab sample.

"**DRY DENSITY (LBS/CU FT)**" refers to the laboratory-determined dry density in pounds per cubic foot.

"**WATER (MOISTURE) CONTENT**" (% of Dry Wt.) refers to the laboratory-determined water content in percent using the standard test method ASTM D2216.

"**USCS**" refers to the "Unified Soil Classification System" Group Symbol for the soil type as defined by ASTM D2487 and D2488. The soils were classified visually in the field, and where appropriate, classifications were modified by visual examination of samples in the laboratory and/or by appropriate tests.

These notes and boring logs are intended for use in conjunction with the purposes of our services defined in the text. Boring log data should not be construed as part of the construction plans nor as defining construction conditions.

Boring logs depict our interpretations of subsurface conditions at the locations and on the date(s) noted. Variations in subsurface conditions and characteristics may occur between borings. Groundwater levels may fluctuate due to seasonal variations and other factors.

The stratification lines shown on the boring logs represent our interpretation of the approximate boundary between soil or rock types based upon visual field classification at the boring location. The transition between materials is approximate and may be more or less gradual than indicated.



BORING LOG NOTES

PLATE

A-3

Project: Bittercreek Bridge Rep. - Addendum No. 2	BORING NO. 1	 Western Technologies An RMA Company
Project Number: 25-224326-0		

Date(s) Drilled 8/8/25	Logged By S. Garcia	Checked By J. Quinlan
Drilling Method HSA	Drill Bit Size/Type 6" HSA/ODEX	Approximate Surface Elevation Not Determined
Drill Rig Type CME-75	Drilling Contractor Integrity	
Groundwater Level and Date Measured Not Encountered	Location See Location Diagram	

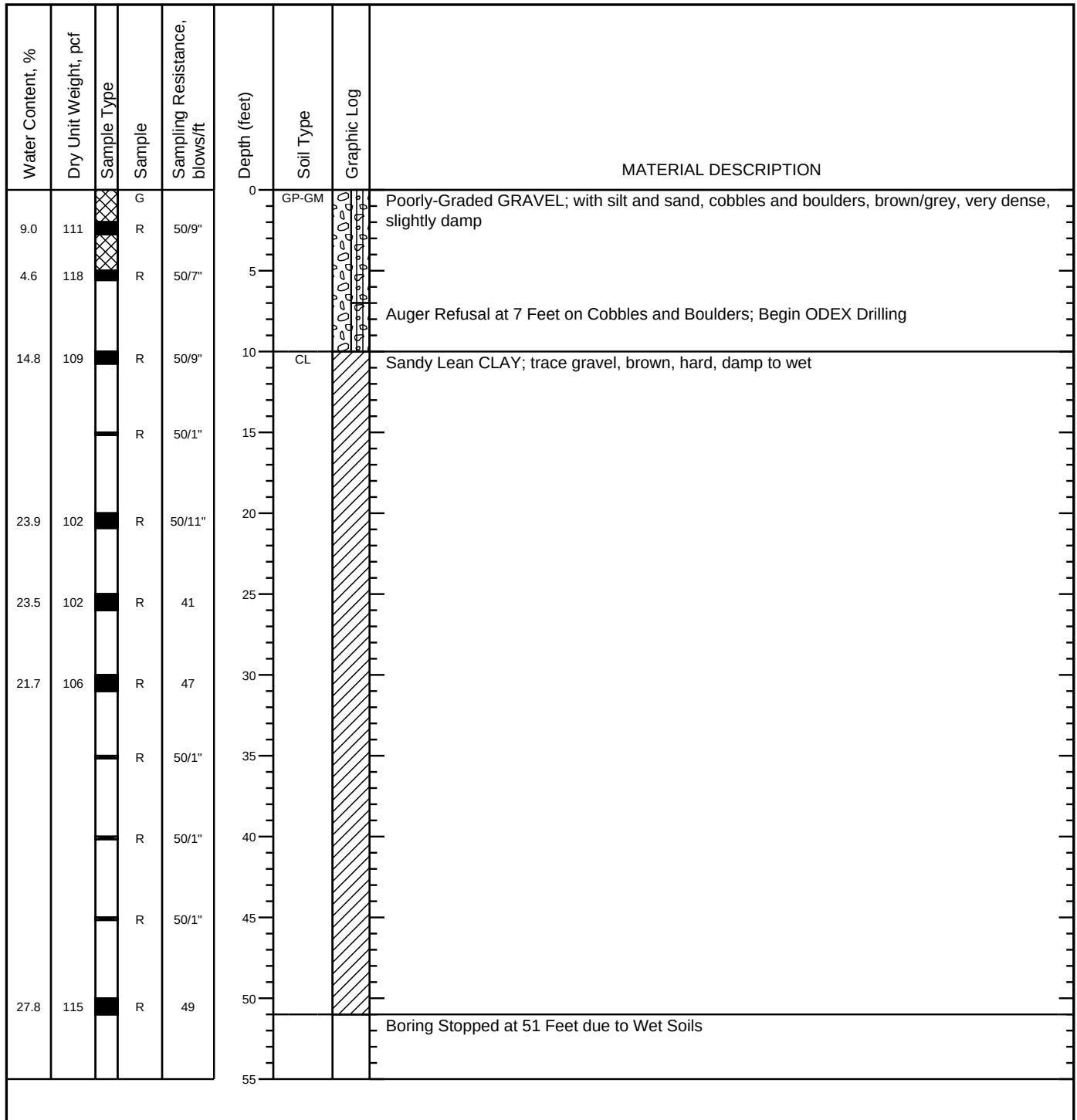


Figure A-4

Boring No.	Depth (ft)	USCS Class.	Particle Size Distribution (%) Passing by Weight							Atterberg Limits		Laboratory Compaction Characteristics			Remarks
			3"	¾"	#4	#10	#40	#200	2μ	LL	PI	Dry Density (pcf)	Optimum Moisture (%)	Method	
1	0-5	GP-GM	100	50	27	22	17	10.3		21	2				2

NOTE: NP = Non-plastic
μ = microns (2μ = 0.002mm)

REMARKS

Classification / Particle Size / Moisture-Density Relationship

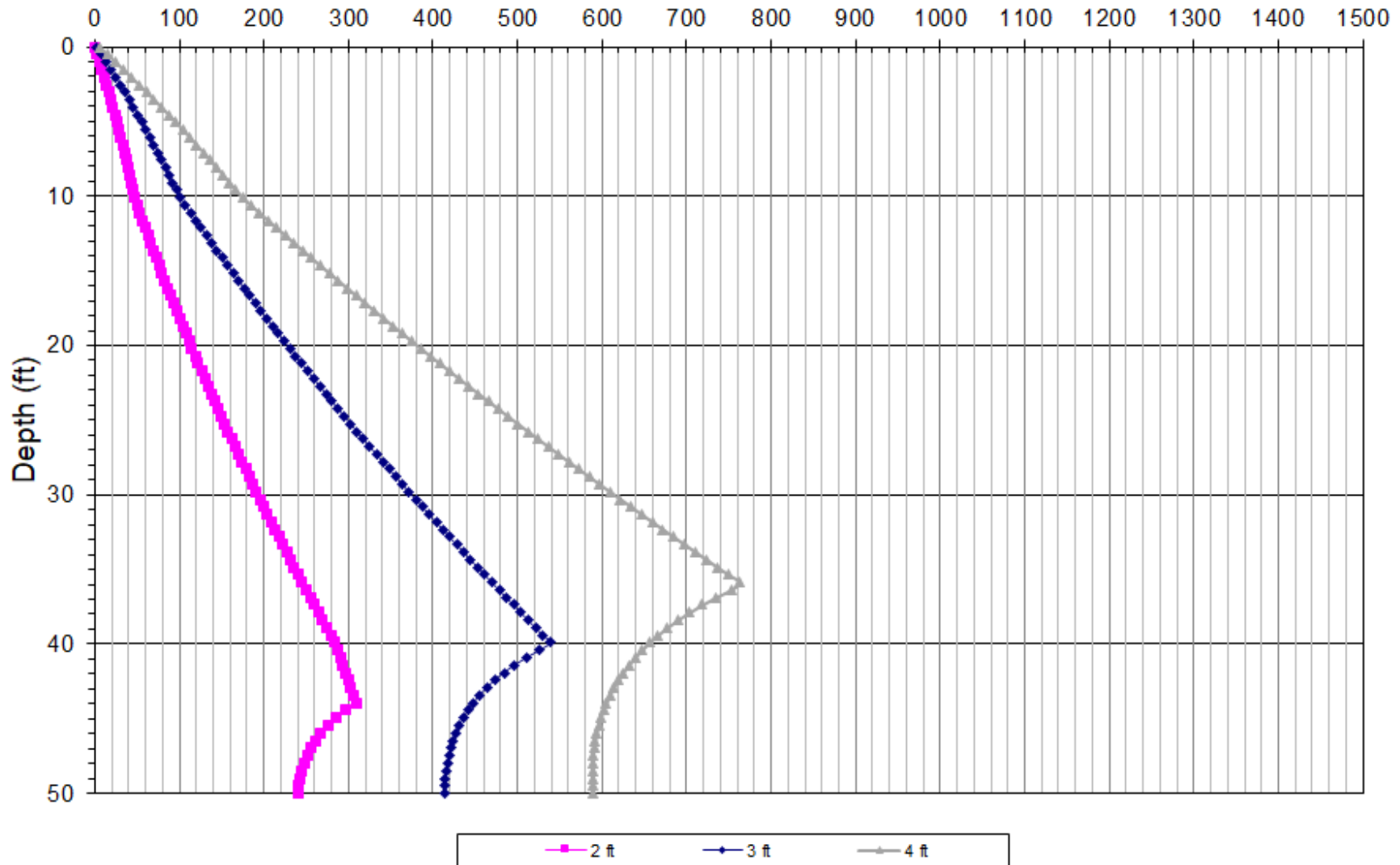
1. Visual
2. Laboratory Tested
3. Minus #200 Only
4. Test Method ASTM D698/AASHTO T99
5. Test Method ASTM D1557/AASHTO T180
6. From the ADOT Family of Curves

	PROJECT: BITTERCREEK BRIDGE REPLACEMENT – ADD. 2 JOB NO.: 25-224326-0	PLATE B-1
	Soil Properties	

Boring No.	Depth (ft.)	USCS Class.	Initial Dry Density (pcf)	Initial Water Content (%)	Compression Properties			Direct Shear		Plasticity		Percent Passing #200	Soluble Salts (ppm)	Remarks
					Surcharge (ksf)	Total Compression (%)		Cohesion (ksf)	Φ Angle (deg.)	Liquid Limit	Plasticity Index			
						In-Situ	After Saturation							
1	50-51	CL	115.4	27.8				0.26	24.5					2,5
Note: Initial Dry Density and Initial Water Content are in-situ values unless otherwise noted. NP = Non-Plastic Remarks 1. Compacted density (approx. 95% of ASTM D698 max. density at moisture content slightly below optimum.) 2. Submerged to approximate saturation. 3. Slight rebound after saturation. 4. Sample disturbance observed. 5. ASTM D3080 Procedure  PROJECT: BITTERCREEK BRIDGE REPLACEMENT – ADD. 2 JOB NO.: 25-224326-0 Soil Properties PLATE B-2														

BITTERCREEK BRIDGE REPLACEMENT

DRILLED SHAFT AXIAL DOWNWARD CAPACITY CHART: Strength Limit State Condition (Kips)



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

JOB NO.: 25-224326-0

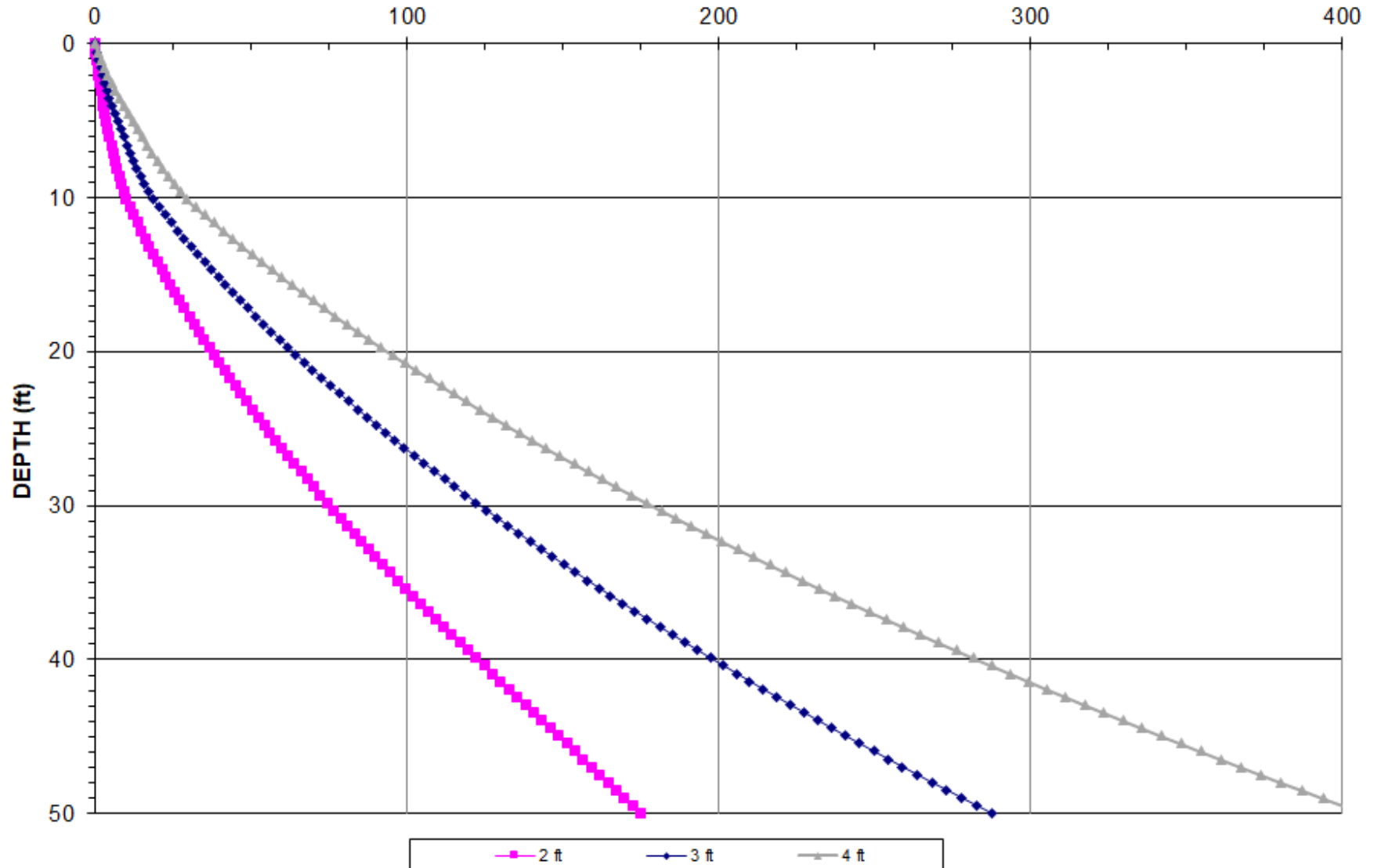
DRILLED SHAFT CAPACITY

PLATE

C-1

BITTERCREEK BRIDGE REPLACEMENT

DRILLED SHAFT AXIAL UPLIFT CAPACITY CHART: Strength Limit State Condition (Kips)



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

JOB NO.: 25-224326-0

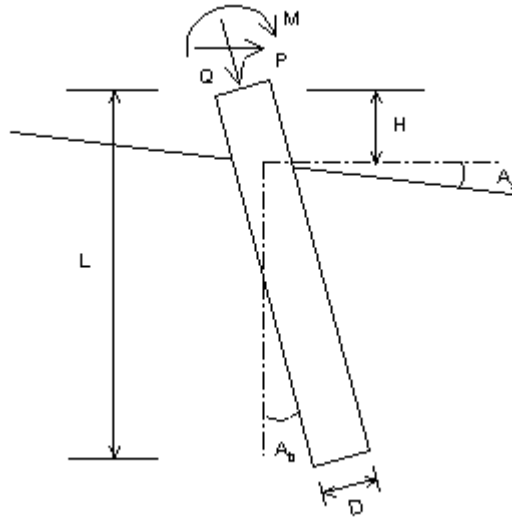
DRILLED SHAFT CAPACITY

PLATE

C-2

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 38.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
10	120.1	35.0	0.40	2456.2	0.33	50
52	77.3	25.0	0.25	2466.1	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	24	452.4	75.4	16286.0	3000	0.471
38.0	24	452.4	75.4	16286.0	3000	0.471

Single Pile Lateral Analysis:

Top Deflection, yt= 0.01260-in
Max. Moment, M= -26.00-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0126-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.
The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

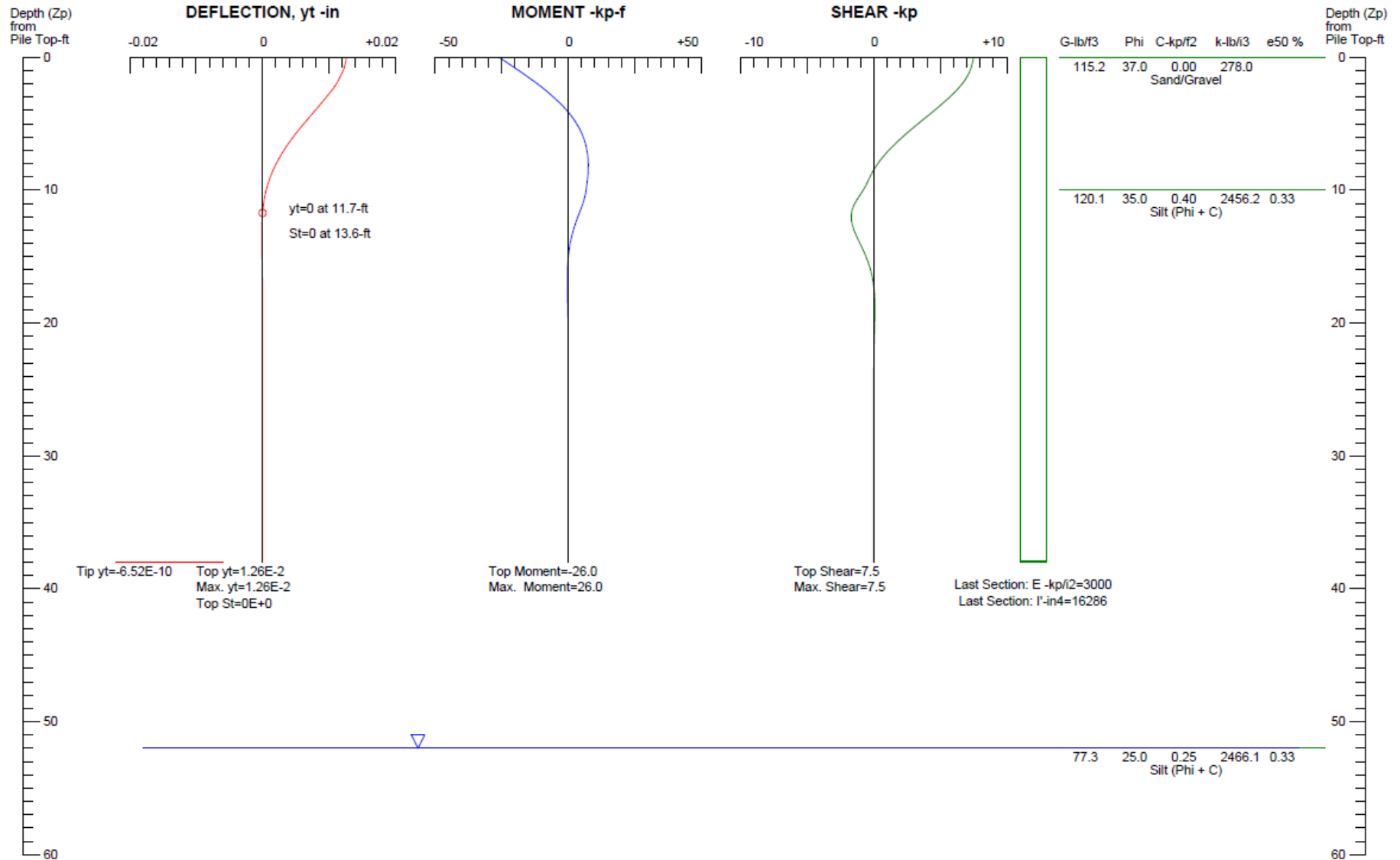
JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-3

PILE DEFLECTION & FORCE vs DEPTH Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

JOB NO.: 25-224326-0

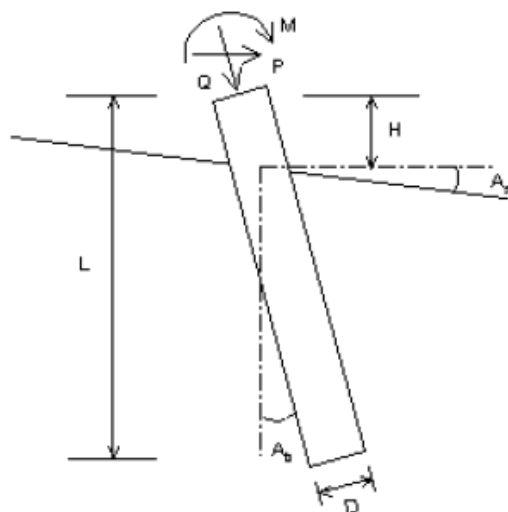
DRILLED SHAFT CAPACITY

PLATE

C-4

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 23.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/f3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
10	120.1	35.0	0.40	2456.2	0.33	50
52	77.3	25.0	0.25	2466.1	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	36	1017.9	113.1	82448.0	3000	1.060
23.0	36	1017.9	113.1	82448.0	3000	1.060

Single Pile Lateral Analysis:

Top Deflection, yt= 0.00597-in
Max. Moment, M= -36.33-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0060-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.

The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



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PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

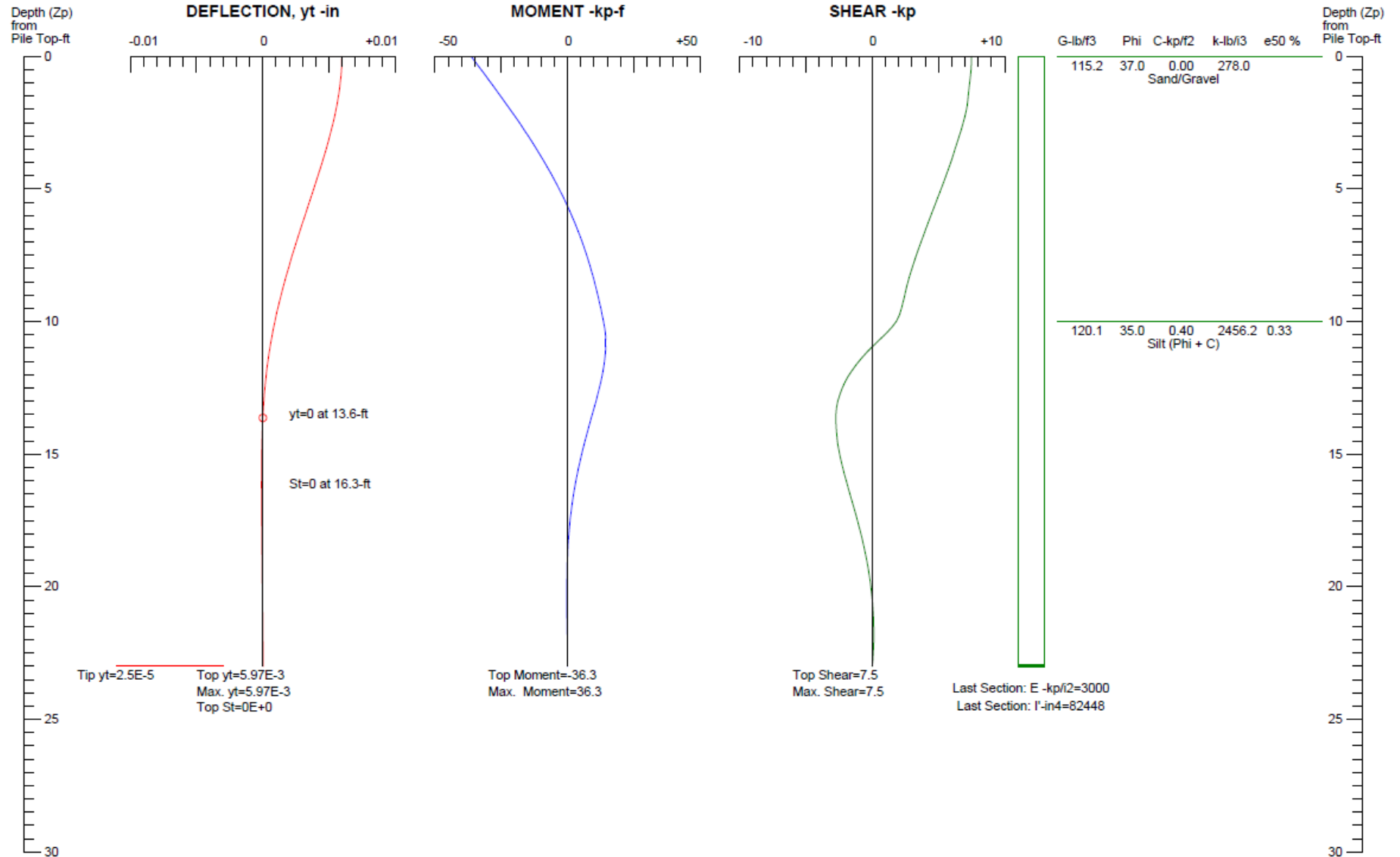
JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-5

PILE DEFLECTION & FORCE vs DEPTH Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

JOB NO.: 25-224326-0

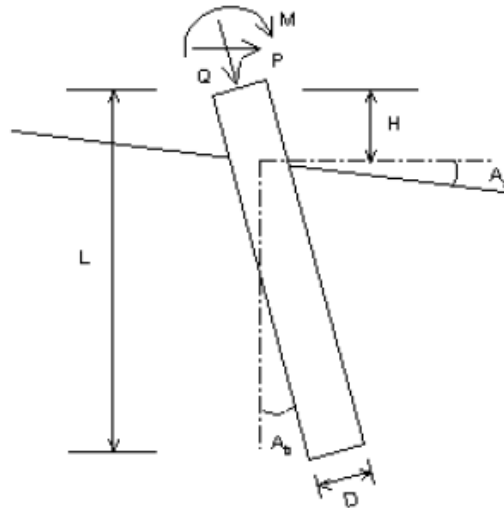
DRILLED SHAFT CAPACITY

PLATE

C-6

LATERAL ANALYSIS

Figure 2



Drilled Shaft (dia >24 in. or 61 cm)

Loads:

Load Factor for Vertical Loads= 1.0
Load Factor for Lateral Loads= 1.0
Loads Supported by Pile Cap= 0 %
Shear Condition: Static

(with Load Factor)

Vertical Load, Q= 237.0 -kp
Shear Load, P= 7.5 -kp
Slope Restrain St= 0.00000 -in/-in

Profile:

Pile Length, L= 15.0 -ft
Top Height, H= 0 -ft
Slope Angle, As= 0
Batter Angle, Ab= 0
Fixed Head Condition

Soil Data:

Depth -ft	Gamma -lb/f3	Phi	C -kp/f2	K -lb/i3	e50 or Dr %	Nspt
0	115.2	37.0	0.00	278.0	85.61	50
10	120.1	35.0	0.40	2456.2	0.33	50
52	77.3	25.0	0.25	2466.1	0.33	50

Pile Data:

Depth -ft	Width -in	Area -in2	Per. -in	I -in4	E -kp/i2	Weight -kp/f
0.0	48	1809.6	150.8	260576.3	3000	1.885
15.0	48	1809.6	150.8	260576.3	3000	1.885

Single Pile Lateral Analysis:

Top Deflection, yt= 0.00398-in
Max. Moment, M= -49.08-kp-f
Top Deflection Slope, St= 0.00000
OK! Top Deflection, 0.0040-in is less than the Allowable Deflection= 1.00-in

Note: If the program cannot find a result or the result exceeds the upper limit. The result will be displayed as 99999.

The Max. Moment calculated by program is an internal force from the applied load conditions. Structural engineer has to check whether the pile has enough capacity to resist the moment with adequate factor of safety. If not, the pile may fail under the load conditions.



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

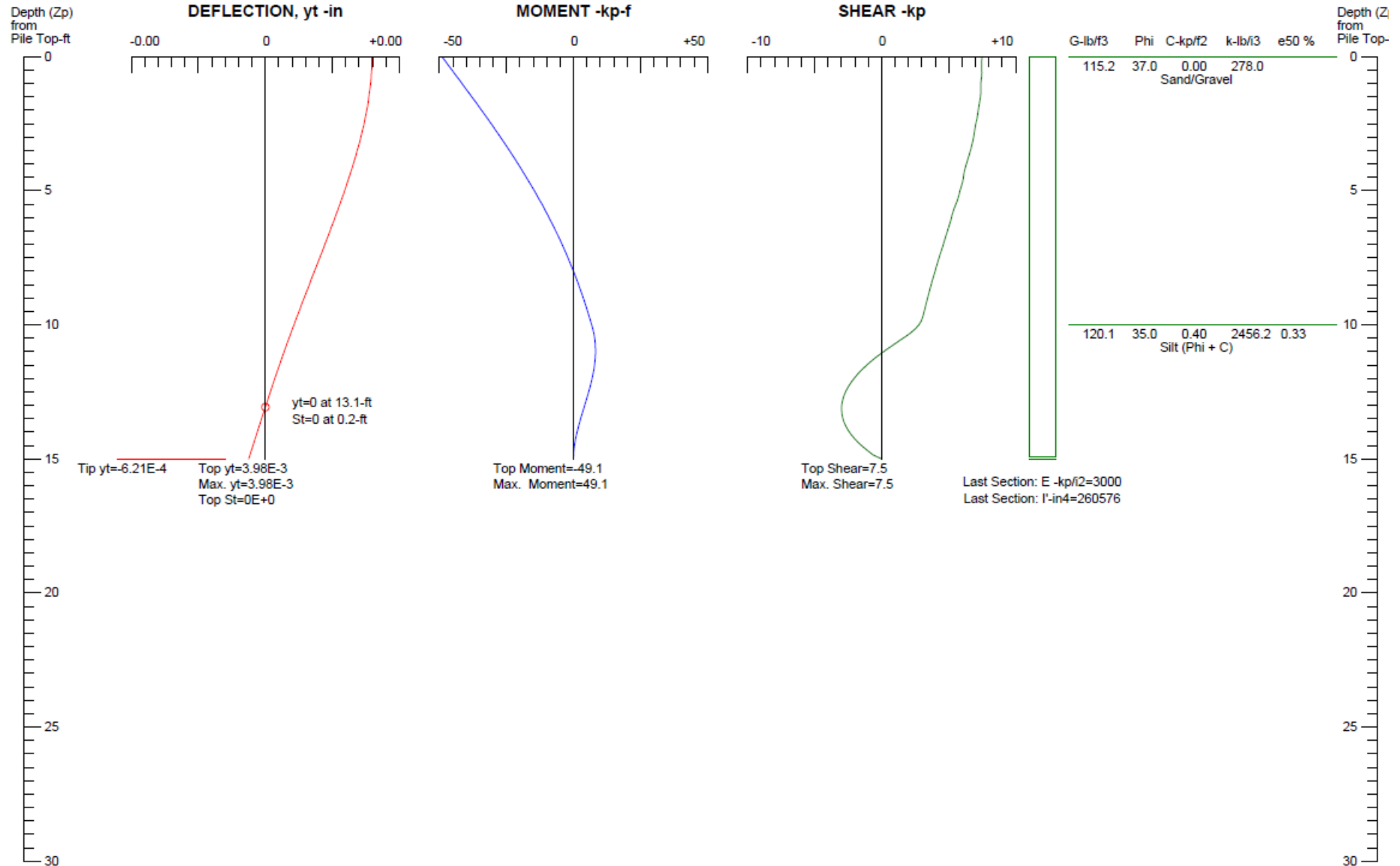
JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-7

PILE DEFLECTION & FORCE vs DEPTH Single Pile, Khead=5, Kbc=2



PROJECT: BITTERCREEK BRIDGE REPLACEMENT - ADDENDUM NO. 2

JOB NO.: 25-224326-0

DRILLED SHAFT CAPACITY

PLATE

C-8