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ADDENDUM NO. 1

Pleasant Valley Road
Bridge Replacement #04609
CTDOT Project #9027-4609
Clinton CT

Bid #PVBRDG-DPW-2020

July 8, 2020

Ladies and Gentlemen:

This is an addendum to the above bid. Special attention should be given to this addendum to preserve the validity of any proposal submitted in response to this request. Bid responses must include the addenda executed accordingly.

This addendum includes a total of 4 pages.

This addendum must be acknowledged and included with your sealed bids.

Sincerely,

DIVERSIFIED TECHNOLOGY CONSULTANTS



Graham Curtis
Project Manager

cc: Todd Hajek, Director DPW

DIVERSIFIED TECHNOLOGY CONSULTANTS (DTC)

2321 WHITNEY AVENUE SUITE 301 HAMDEN CT 06518

203 239 4200 PH www.teamdtc.com

ADDENDUM NO. 1

Pleasant Valley Road
Bridge Replacement
Clinton CT

This addendum incorporates clarifications to the Plans/Specifications accordingly due to the receipt of questions during the Q/A period noted in the bid documents as follows:

1. **Updated wage rates have been downloaded from CTDOL Website and attached herein.**
2. Question; Is the project funded? **The project is funded by the Town and the State of CT CTDOT Local Bridge Program.**
3. Question; Is there an engineer's estimate or Town budget for the project? **Engineers estimate is \$1,330,000.**
4. Question; Does this project require the Contractor to have a CONN 16. Also is it grouped under a certain category based upon DOT Pre qualifications? **Yes; bidders are required to be CTDOT Pre-Qualified in Category 8 (Small Bridge).**
5. Question; Item #41 Granite Parapet Cap is 72 EA. This should be 72 LF. The actual quantity is closer to 66 LF. **Correct; unit bid should be LF.**
6. Question; Item #28 Parapet Concrete is paid by the LF. Is this supposed to be by the CY like the other concrete bid items? **Unit bid should be LF.**
7. Question; Item #33 Masonry Facing is shown on the concrete bridge parapets to be installed with adjustable anchors and built in wall slots. Usually stone veneer is 4" thick and needs a minimum 4" shelf for support. **Build/Price per detailed provided in the documents.**
8. Question; Regarding the above-referenced bid, it states that we must include a Non-Collusion Affidavit. **Use the attached form when submitting your bid.**
9. **Clarification; bids are due on July 15th at 11AM (the 10:30AM reference is in error).**
10. Question; Is there a plan holder list you could send me please? **There is no official plan holder list being kept. Bid results will be posted after opening and placed on the Town of Clinton's Website for viewing shortly after 15 July.**
11. **Clarification; Any reference to CTDOT Form 816 should read CTDOT Form 817.**
12. Question; Do you anticipate extending the bid due date? **We do not anticipate extending the bid date.**
13. Question; What additional details are you willing to provide, if any, beyond what is stated in bid documents concerning how you will identify the winning bid? **No additional details will be provided beyond what is stated in the documents.**
14. Question; Other than your own website, where was this bid posted? **Bid was advertised in local newspapers and CT DAS Website.**
15. Question; When does the Town anticipate awarding this project and issuing an NTP? **As soon as practical upon review by the Town & CTDOT.**
16. Question; The granite coping that goes on the bridge parapets has no special finish on it or bevels of any kind and is mortared in place. Please verify this as there is no spec. for this item and only shows it to be 20" wide by 2" thick. **There is a specification**

Information contained in this document is proprietary and confidential and may not be disseminated to any party other than the intended recipient without the written consent of DTC.

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Pleasant Valley Road
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Clinton CT

- provided. Granite topping to be consistent with (similar) product used on the Rt 1 Indian River bridge (downtown) just west of the Town Hall and Annex.**
17. Question; In your Request for Proposals you state that this project is 50% State funded. You then state that a minimum of 25% of the State funded portion of the contract amount be set aside for DAS certified subs. Please verify that 25% of the bid amount is not the set aside goal. **The goal is clear; 25% (of half the Contract Price) of the State funded portion is required to be set-aside, or 12.5% of the total bid price.**
 18. Question; Can you provide a boring location plan to show where Boring 1 and 2 were taken? The borings only go to a depth of 50'. Is there a reason for this when the piles have to be driven to a depth of 70'? There is no indication of pile depth other than the quantity provided of 2,100 lf and the quantity of 30 shown on the plans. Are the test pile depths of 30' and 35' correct? One of the borings shows rock at 50 foot depth. I presume refusal depth is acceptable and no drilling is required. **See attached geo-tech report for clarification. Boring locations are shown on the plans (Sheet S-1). Check your take-off (62 piles shown on plans). Test pile depths are correct, and intent is piles are to be driven to refusal. The Engineer will determine the blows required to achieve acceptable seating into bedrock after the test piles are placed.**
 19. Question; The bid items pertaining to steel piles 34-37 have no Specs. but they are DOT numbers. There are no pay items for things like testing, pile points, splices, coatings, etc. Is this intentional and the bid items are to be all inclusive? These piles are 70 feet long and would be cost prohibitive to transport. Are pile splices acceptable? Are they payable? **Reference response to question 18 above. Plans provide details for splicing (if needed) and costs are inclusive for bid items requested.**
 20. Question; Will the sheeting shown on Drawing S-3 (identified as Handling Water) be left in place? **Sequence of construction (Sheet #26) calls for its removal. This sheeting shown is labeled as "Handling Water Typical" which is a Contractor and his Engineer's responsibility to design, install, etc. Final decision will be based upon that approved submittal.**
 21. Question; Bid item #54 Removal of Existing Masonry is a lump sum item. According to the DOT Spec. it is payable by the CY. Does this include the stone masonry bridge substructure walls and adjacent stone masonry retaining walls? Question; Bid Item #22 Removal of Superstructure is a lump sum item. Does this include the bridge deck and supporting walls or just the bridge deck? Does this include the stone parapet walls as well or is this paid under Removal of Existing Masonry? **The intent of both items is to include the removal of the entire structure. Both items were chosen due to what can visibly be seen and accounted for. Plans note that no original design or as-built drawings are available for this structure. It can be assumed (based upon historical information of bridges built in Clinton) that reinforced concrete is part of the sub-structure behind the masonry and that the old structure most likely was built on wooden piles to be removed, as well, if discovered.**

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END OF ADDENDUM NO. 1

Signed: _____ **Company:** _____

Date: _____

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2321 WHITNEY AVENUE SUITE 301 HAMDEN CT 06518

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Heavy Rates

County	Town	Classification	Hourly Rate	Hourly Benefit
Middlesex	Chester	27) Linemen, Cable Splicers, Dynamite Men	\$41.22	6.5% + 12.20
Middlesex	Chester	28) Material Men, Tractor Trailer Drivers, Equipment Operators	\$35.04	6.5% + 10.45
Middlesex	Clinton	1) Boilermaker	\$33.79	34% + 8.96
Middlesex	Clinton	1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	\$35.72	33.16
Middlesex	Clinton	2) Carpenters, Piledrivermen	\$34.53	25.64
Middlesex	Clinton	2a) Diver Tenders	\$34.53	25.64
Middlesex	Clinton	3) Divers	\$42.99	25.64
Middlesex	Clinton	03a) Millwrights	\$34.94	26.19
Middlesex	Clinton	4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	\$52.25	22.55
Middlesex	Clinton	4a) Painters: Brush and Roller	\$35.62	22.55
Middlesex	Clinton	4b) Painters: Spray Only	\$38.62	22.55
Middlesex	Clinton	4c) Painters: Steel Only	\$37.62	22.55
Middlesex	Clinton	4d) Painters: Blast and Spray	\$38.62	22.55
Middlesex	Clinton	4e) Painters: Tanks, Tower and Swing	\$37.62	22.55
Middlesex	Clinton	5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	\$39.00	29.91+3% of gross wage
Middlesex	Clinton	6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	\$36.67	37.62 + a
Middlesex	Clinton	7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9) ---LABORERS----	\$44.63	32.95
Middlesex	Clinton	8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	\$31.00	22.15
Middlesex	Clinton	9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	\$31.25	22.15

Heavy Rates

County	Town	Classification	Hourly Rate	Hourly Benefit
Middlesex	Clinton	10) Group 3: Pipelayers	\$31.50	22.15
Middlesex	Clinton	11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	\$31.50	22.15
Middlesex	Clinton	12) Group 5: Toxic waste removal (non-mechanical systems)	\$33.00	22.15
Middlesex	Clinton	13) Group 6: Blasters	\$32.75	22.15
Middlesex	Clinton	Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	\$32.00	22.15
Middlesex	Clinton	Group 8: Traffic control signalmen	\$18.00	22.15
Middlesex	Clinton	Group 9: Hydraulic Drills	\$29.30	18.90
Middlesex	Clinton	----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air:----		
Middlesex	Clinton	13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	\$33.23	22.15 + a
Middlesex	Clinton	13b) Brakemen, Trackmen	\$32.26	22.15 + a
Middlesex	Clinton	----CLEANING, CONCRETE AND CAULKING TUNNEL----		
Middlesex	Clinton	14) Concrete Workers, Form Movers, and Strippers	\$32.26	22.15 + a
Middlesex	Clinton	15) Form Erectors	\$32.59	22.15 + a
Middlesex	Clinton	----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
Middlesex	Clinton	16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	\$32.26	22.15 + a
Middlesex	Clinton	17) Laborers Topside, Cage Tenders, Bellman	\$32.15	22.15 + a
Middlesex	Clinton	18) Miners	\$33.23	22.15 + a
Middlesex	Clinton	----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: - ---		
Middlesex	Clinton	18a) Blaster	\$39.72	22.15 + a

Heavy Rates

County	Town	Classification	Hourly Rate	Hourly Benefit
Middlesex	Clinton	19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	\$39.52	22.15 + a
Middlesex	Clinton	20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	\$37.54	22.15 + a
Middlesex	Clinton	21) Mucking Machine Operator	\$40.31	22.15 + a
Middlesex	Clinton	----TRUCK DRIVERS---->(*see note below)		
Middlesex	Clinton	Two axle trucks	\$29.86	25.79 + a
Middlesex	Clinton	Three axle trucks; two axle ready mix	\$29.97	25.79 + a
Middlesex	Clinton	Three axle ready mix	\$30.03	25.79 + a
Middlesex	Clinton	Four axle trucks, heavy duty trailer (up to 40 tons)	\$30.08	25.79 + a
Middlesex	Clinton	Four axle ready-mix	\$30.13	25.79 + a
Middlesex	Clinton	Heavy duty trailer (40 tons and over)	\$30.35	25.79 + a
Middlesex	Clinton	Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	\$30.13	25.79 + a
Middlesex	Clinton	----POWER EQUIPMENT OPERATORS----		
Middlesex	Clinton	Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	\$42.45	25.30 + a
Middlesex	Clinton	Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver (\$3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	\$42.11	25.30 + a
Middlesex	Clinton	Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	\$41.32	25.30 + a
Middlesex	Clinton	Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	\$40.91	25.30 + a

Heavy Rates

County	Town	Classification	Hourly Rate	Hourly Benefit
Middlesex	Clinton	Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24	\$40.28	25.30 + a
Middlesex	Clinton	Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	\$40.28	25.30 + a
Middlesex	Clinton	Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	\$39.95	25.30 + a
Middlesex	Clinton	Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24	\$39.59	25.30 + a
Middlesex	Clinton	Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	\$39.17	25.30 + a
Middlesex	Clinton	Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	\$38.71	25.30 + a
Middlesex	Clinton	Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	\$36.54	25.30 + a
Middlesex	Clinton	Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	\$36.54	25.30 + a
Middlesex	Clinton	Group 12: Wellpoint Operator.	\$36.48	25.30 + a
Middlesex	Clinton	Group 13: Compressor Battery Operator.	\$35.86	25.30 + a
Middlesex	Clinton	Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	\$34.66	25.30 + a
Middlesex	Clinton	Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	\$34.23	25.30 + a
Middlesex	Clinton	Group 16: Maintenance Engineer/Oiler	\$33.54	25.30 + a
Middlesex	Clinton	Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	\$38.11	25.30 + a
Middlesex	Clinton	Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	\$35.53	25.30 + a
Middlesex	Clinton	**NOTE: SEE BELOW		
Middlesex	Clinton	----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----		

Heavy Rates

County	Town	Classification	Hourly Rate	Hourly Benefit
Middlesex	Clinton	20) Lineman, Cable Splicer, Technician	\$48.19	6.5% + 22.00
Middlesex	Clinton	21) Heavy Equipment Operator	\$42.26	6.5% + 19.88
Middlesex	Clinton	22) Equipment Operator, Tractor Trailer Driver, Material Men	\$40.96	6.5% + 19.21
Middlesex	Clinton	23) Driver Groundmen	\$26.50	6.5% + 9.00
Middlesex	Clinton	23a) Truck Driver	\$40.96	6.5% + 17.76
Middlesex	Clinton	----LINE CONSTRUCTION----		
Middlesex	Clinton	24) Driver Groundmen	\$30.92	6.5% + 9.70
Middlesex	Clinton	25) Groundmen	\$22.67	6.5% + 6.20
Middlesex	Clinton	26) Heavy Equipment Operators	\$37.10	6.5% + 10.70
Middlesex	Clinton	27) Linemen, Cable Splicers, Dynamite Men	\$41.22	6.5% + 12.20
Middlesex	Clinton	28) Material Men, Tractor Trailer Drivers, Equipment Operators	\$35.04	6.5% + 10.45
Middlesex	Cromwell	1) Boilermaker	\$33.79	34% + 8.96
Middlesex	Cromwell	1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	\$35.72	33.16
Middlesex	Cromwell	2) Carpenters, Piledrivermen	\$34.53	25.64
Middlesex	Cromwell	2a) Diver Tenders	\$34.53	25.64
Middlesex	Cromwell	3) Divers	\$42.99	25.64
Middlesex	Cromwell	03a) Millwrights	\$34.94	26.19
Middlesex	Cromwell	4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	\$52.25	22.55
Middlesex	Cromwell	4a) Painters: Brush and Roller	\$35.62	22.55
Middlesex	Cromwell	4b) Painters: Spray Only	\$38.62	22.55

You may not amend or alter this form in any way whatsoever

NONCOLLUSION AFFIDAVIT
Connecticut Department of Transportation

This entire document shall be completed, notarized and attached to your Bid Proposal. **FAILURE** to return this Affidavit with your bid proposal will result in the rejection of your bid as nonresponsive. If the subject bid is being submitted by a joint venture, a separate noncollusion affidavit must be submitted by each of the Joint Venturers.

State Project No.(s): _____
F.A.P. No(s): _____
Town(s) of: _____
Summary Description of Project: _____

The undersigned, being duly sworn, states that (a) he/she is authorized to make this affidavit on behalf of the bidder, and (b) the bidder has not directly or indirectly entered into any agreements, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with the subject bid. I understand that false statements made herein may be subject to criminal prosecution.

Name of Bidder (i.e. Person or Organization)

Signature and Title of Official

Typed/Printed Name of Official

Subscribed and sworn to before me, this _____ day of _____, _____

Notary Public/Commissioner of the Superior Court

My Commission Expires _____

WELTI GEOTECHNICAL, P.C.

Formerly Dr. Clarence Welti, PE. PC.

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

February 8, 2017

Mr. Andrew Bevilacqua, P.E.
Diversified Technology Consultants
2321 Whitney Avenue, Suite 301
Hamden, CT 06518

Re: Preliminary Geotechnical Study for the Replacement of Pleasant Valley Road Bridge over Menunketesuck River, Clinton, CT

Dear Andy:

1.0 Herewith are the boring data pertaining to the subject bridge project. Two test borings were drilled to a maximum depth of 55 feet below the road surface. Both of the borings were cored 5 feet into the bedrock. One boring was taken in the approach road behind each abutment as shown on the attached plan. *The boring data were drilled by Clarence Welti Associates solely to obtain indications of subsurface conditions as part of a geotechnical evaluation. No services were performed to evaluate subsurface environmental conditions.*

2.0 The **Subject Project** is for the replacement of the existing bridge carrying Pleasant Valley Road over the Menunketesuck River. The existing bridge consist of a single span deck with a span of 24 feet span on simple supports atop full abutments. The wing walls have stone masonry or dry rubble construction. The substructure is comprised of stone masonry abutments and wing walls. The roadway is about 20 feet wide across the bridge. The average pavement grade on the structure is Elev. 17 and the river channel is about Elev. 6 beneath the deck.

2.1 The **Structure Type Study** indicates the bridge structure type could be a precast three sided culvert or with precast concrete voided slabs atop concrete abutments. The substructure will be supported on piles to address the potential scour. The precast three sided culvert and splayed wing walls would be supported on footings/pile caps atop piles. The precast concrete voided slab would be supported by cantilever abutments, with the abutments and spayed wing walls supported on footings/pile caps atop piles. The writer has assumed that any reconstruction of the approach roadways will include only minor geometric changes so that any effects on the existing embankments would be insignificant.

2.2 There is about 11 feet of topographic relief from the bridge deck to the channel bottom below.

The upstream and downstream topographies outside the river channel range from about Elev. +9 to Elev. +15. The roadway was apparently constructed atop an embankment up to about 6 feet in height above the natural grades.

3.0 The Geologic Origin of the natural inorganic soils at the site and environs is from glacial lake deposits atop the bedrock. There is existing fill overlying organic silt atop the lake deposits. The bedrock from geologic mapping and the rock cores is Brimfield Schist consisting of inter-layered schist and gneiss.

3.1 The Soil/ Rock Cross Section from the borings is generally as follows:

From approximate roadway Elev. 17

Boring B-1 (east side of bridge)

Asphalt to 4"

FILL; fine to coarse SAND, little Gravel, trace Silt to 7 feet, medium compact to loose

Organic SILT to 8.5 feet, very soft

Fine to coarse SAND, little Silt and Gravel to 18 feet, medium compact

SILT, trace fine Sand to 30 feet, loose to medium compact

Fine to coarse SAND, little Silt and Gravel to 44 feet, medium compact

Fine to coarse SAND, some Silt, little Gravel to the top of bedrock at 50 feet, medium compact

Bedrock; Schist and Gneiss

Note: Cored rock from 50 to 55 feet with a recovery of 92% and an RQD of 65%

Boring B-2 (west side of bridge)

Asphalt to 5"

FILL; fine to coarse SAND, little Gravel, trace Silt to 5.5 feet, medium compact to loose

Organic SILT to 9.5 feet, very soft

Fine to coarse SAND, little Gravel, trace Silt to 15 feet, medium compact

Fine to medium SAND, trace Silt to 18 feet, medium compact

SILT, trace fine Sand to 23 feet, medium compact

Fine to coarse SAND, little Gravel, trace Silt to 38 feet, medium compact

Fine to coarse SAND, some Silt, little Gravel to the top of bedrock at 44 feet, medium compact

Bedrock; Schist and Gneiss

Note: Cored rock from 44 to 49 feet with a recovery of 93% and an RQD of 47%

3.2 The Water Table was evident in the bore holes at 10 feet below the road surface at the completion of the borings. In general, the water table will be close to the level in the brook. The area is subject to Zone AE flooding according to FEMA mapping. The FIRM panel for the site shows the upstream 100 year return period water surface level as Elev. 18. The preliminary design scour has been reported by the Engineer to be in excess of 20 feet deep at the abutments. *No other hydraulic information were available for this study.*

4.0 This Evaluation pertains to providing conceptual foundation types and geotechnical parameters for the replacement bridge and wing walls. The design will be in accordance with either the AASHTO Load and Resistance Design (LRFD) or with the Allowable Stress Design (ASD) method and in U.S. customary units.

4.1 The Criteria for Foundation Type and Loading are as follows:

1. The maximum total settlement should not exceed 1" and the maximum differential settlement should not exceed ½ the maximum settlement.
2. The applicable seismic requirements of the CT DOT and AASHTO bridge design manuals should be considered in the foundation type and structure.
3. Scour will probably have to be addressed by the foundations.

The above criteria are preliminary may have to be revised when the final bridge design and hydraulic parameters have been determined. If the owner, the architect, the engineers find the criteria as unacceptable, the writer shall be informed to permit additional geotechnical input.

4.2 Regarding seismic assessment, a detailed seismic analysis for this short, single span bridge is not required by the AASHTO and ConnDOT bridge specifications. The usual requirement will be to satisfy structural and geometric criteria for connection restraint and minimum support length. The Seismic Site Soil Profile Classification is "D".

5.0 The Preliminary Foundation Type can be with pile foundations bearing on the rock based on apparent scour criteria. It has been assumed that pile foundations would have a conventional pile layout.

5.1 The tentative pile type can be with H-piles bearing on the bedrock. The nominal geotechnical resistance in the strength limit state was calculated using the Canadian Foundation Engineering Manual method, which gives the nominal unit bearing of piles driven to rock as, $q_p = 3q_u K_{sp} d$. The calculated value for the rock subject site was $q_p = 15,000$ psi. The factored geotechnical compressive resistance in the strength limit state are calculated using a resistance factor, $\phi_r = 0.45$. The factored geotechnical compressive resistance in the extreme and service limit state are calculated using a resistance factor, $\phi_r = 1.0$. **For an HP10x57 pile the factored axial compression resistance is, $0.45 \times 15 \text{ ksi} \times 16.8 = 113$ Kips for the strength limit state and 251 Kips for the extreme and service limit states.** The CTDOT Geotechnical Manual states historically with working stress designs of piles driven to bedrock, the structural capacity of a Grade 36 pile, not the geotechnical limit controls the pile axial design. Using the unit bearing resistance of 24 ksi would indicate a factored axial compression resistance of 181 Kips for the strength limit state and 403 Kips for the extreme and service limit states.

5.2 The **Static Lateral Soil Loading** on conventional abutments and wing walls can be based on normal active pressure. The friction angle (δ) between the concrete and gravel backfill is typically 0.6 to 0.8 times the angle of internal friction. The ultimate (nominal) value would be 30° and the design value can be $\delta = 20^\circ$.

5.3 The **Summary of Preliminary Foundation Design Parameters:**

Factored Geotechnical Pile Resistance			
PARAMETER	Strength Limit State	Extreme and Service Limit State $\phi_r = 1.0$	COMMENTS
HP10x57 Pile Compression Capacity Bearing on Rock	113 Kips/pile with $\phi_r = 0.45$	251 Kips/pile ¹	From Canadian Foundation Engineering Manual
HP10x57 Pile Uplift Capacity	33 kips Tons/pile with $\phi_r = 0.35$	94 Kips/pile	
Other Parameters			
PARAMETER	VALUE	LIMIT STATE	COMMENTS

¹ The values calculated using the Canadian Geotechnical Society method are generally quite low and in most cases appear unrealistic, based on numerous pile load test

Backfill Unit Weight	125 pcf	-	Typical Value when Compacted to 95% MOD
Angle of Internal Friction ϕ , Backfill	34°	-	Typical Value when Compacted to 95% MOD
Active Pressure Coefficient (level backfill)	0.28	-	Compacted Pervious Backfill
Interface Friction Angle Backfill to Abutment	20°	30°	
Seismic Site Soil Profile Classification	D	-	AASHTO/IBC Value

* The cited values are based on Gravel Backfill conforming to Section 6.0

6.0 The Backfill for highway structures is assumed to be free draining Granular Fill, which should meet the requirements of ConnDOT M.02.06, Grading B. This material when compacted to 95+% of modified optimum density would have a unit weight of 125 pcf and an angle of internal friction of 34°. All controlled fill and backfill must be compacted to at least 95% of modified optimum density in accordance with ASTM D-1557.

7.0 Regarding Earthwork, excavations in the soils at the site will be classified as OSHA Type C, which will require sloping of unshored excavations exceeding 5 feet in height to slopes less than 34° from the horizontal (1.5H:1V).

7.1 In general, the foundation excavations below the water table will require tightly sealed cofferdams to allow construction of the foundations in acceptable dry conditions. Cofferdams must be driven to acceptable depth to address seepage and subgrade stability. The cofferdam designs should account for the probability that sheet lines might settle excessively during H-pile driving in the loose granular deposits. There may be requirements to provide lateral support of embankments in the approach roadways between construction stages. Sheet pilings should conform to the requirements of CTDOT Form 816. Cofferdams and de-watering are contractor provided items and must be designed by Connecticut licensed Professional Engineer.

7.2 Long Term Slopes in earth should be 2H:1V, or flatter. Steeper slopes would require riprap cladding. Because of the natural loose and saturated soils, global stability analyses may have to be performed on the final slope designs in the final study.

7.3 There may be requirements to place channel armor and riprap on the slopes for erosion and scour mitigation. Channel armor and riprap will probably require underlay materials. The channel should be maintained acceptably dry to permit placement of the armor system and underlay materials. The design of armor and filter materials should be based on the final hydraulic parameters when they are

available.

8.0 This report has been prepared for specific application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyzes and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Wolti Geotechnical, P.C., should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented as they were intended.

If you have any questions, please call our office.

Very truly yours,



John Bear, P. E.



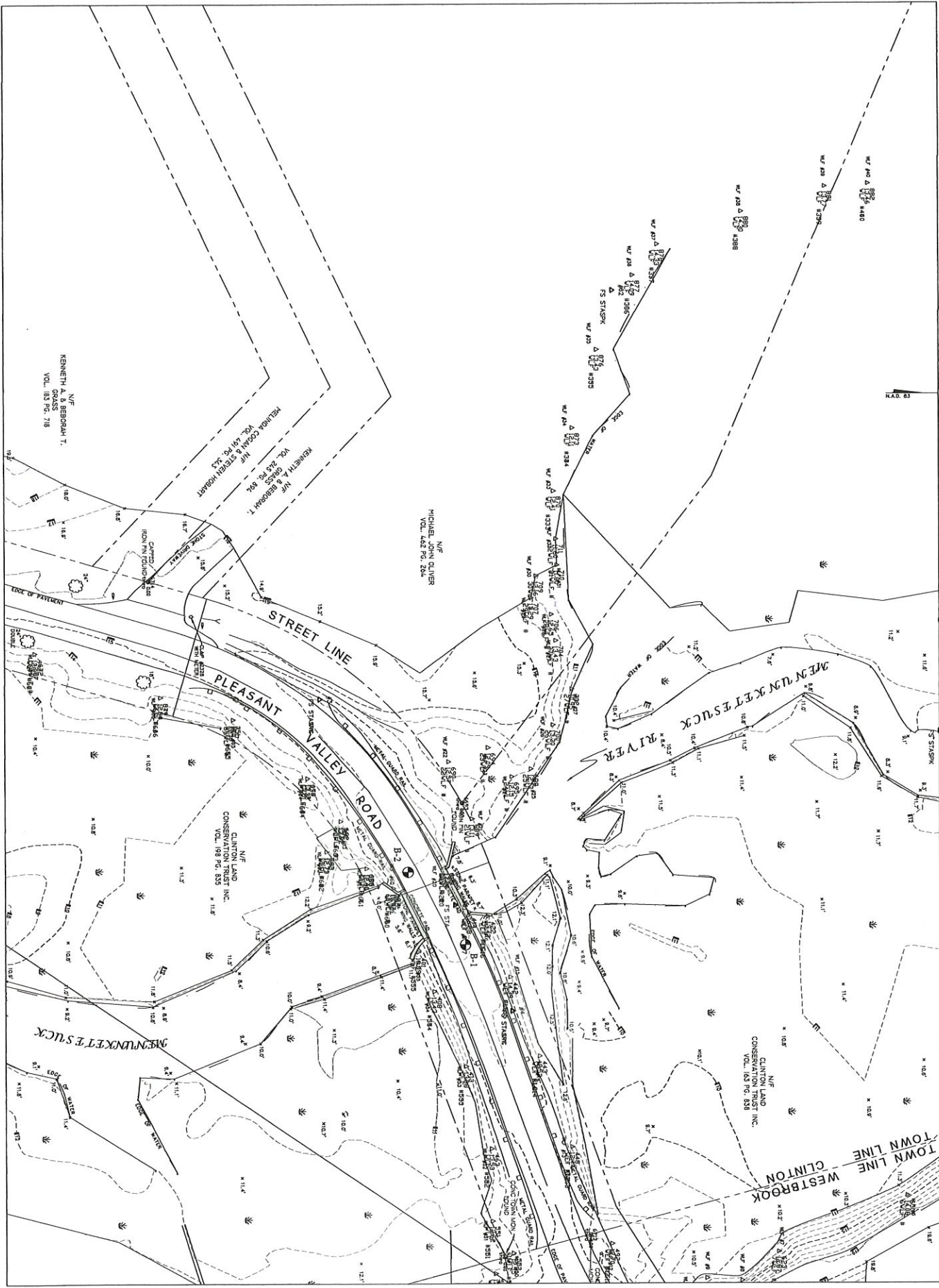
Clarence Wolti Ph.D., P. E.
Vice President

APPENDIX

Boring Location Plan

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Test Boring Logs



LEGEND ○ BORN PIN (FOUND) ● BORN/PIN (NOT FOUND) □ UTILITY POLE (TO BE SHOWN) □ UTILITY POLE (FOUND) □ MONUMENT (FOUND) □ MONUMENT (NOT FOUND) ○ MANHOLE □ CATCH BASIN □ "C" CATCH BASIN ○ SHRUB/BUSH ○ DECIDUOUS TREES ○ EVERGREEN TREES ○ FLAG POLE ○ POST □ TRAFFIC CONTROL BOX ○ LIGHT POLE ○ GUY ANCHOR ○ UTILITY POLE ○ WATER METER ○ WATER METER ○ GAS VALVE ○ "C" GAS METER ○ TRANSFORMER ○ ELEC. METERS ○ MAIL BOX ○ HAND HOLE ○ BOTTOM BOX ○ A.C. UNIT ○ TRAFFIC CONTROL ○ TRAFFIC JUMP ○ FUEL TANK	
--- BOUNDARY LINE --- GUARD RAIL --- UNDERGROUND PIPING (Gas, Sewer) --- U/O GAS LINE --- U/O ELEC. LINE --- WATER LINE --- OVERHEAD UTILITIES --- U/O TELE. LINE --- CHAIN LINK FENCE --- TREE LINE	
TESTING LOCATIONS CLARENCE WEITH, ASSOC., INC. 1/26/17	
Surveying Associates, LLC 201 CANTON LANE, SUITE 200 WESTBROOK, VERMONT 05671	
MAPA PROJECT NO: DATE: SHEET:	DRAWN BY: CHECKED BY: SHEET:

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033			CLIENT			PROJECT NAME BRIDGE OVER MENUNKETESUCK RIVER		
			DTC			LOCATION PLEASANT VALLEY ROAD, CLINTON, CT		
	AUGER	CASING	SAMPLER	CORE BAR.	OFFSET	SURFACE ELEV. 17.0	HOLE NO. B-1	
TYPE	HSA		SS	NQ	LINE & STA.	GROUND WATER OBSERVATIONS		START DATE 1/25/17
SIZE I.D.	3.75"		1.375"	2.0"	N. COORDINATE	AT 10.0 FT. AFTER 0 HOURS		
HAMMER WT.			140lbs		E. COORDINATE	AT FT. AFTER HOURS		FINISH DATE 1/25/17
HAMMER FALL			30"					
DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS	ELEV.		
	NO.	BLOWS/6"	DEPTH					
0					ASPHALT	0.33		
	1	5-8-5-5	1.0'-3.0'		BR.FINE-CRS.SAND, LITTLE GRAVEL, TRACE SILT - FILL		15	
	2	3-3-2-2	3.0'-5.0'					
5	3	2-1-1-0	5.0'-7.0'					
	4	1-0-1-4	7.0'-9.0'		BLACK ORGANIC SILT	7.0	10	
	5	3-7-6-5	9.0'-11.0'		GREY/BR.FINE-CRS.SAND, LITTLE SILT & GRAVEL	8.5		
10								
							5	
					GREY/BR.SILT, TRACE FINE SAND	13.0		
15	6	4-5-7	15.0'-16.5'					
							0	
					BR.SILT	18.0		
20	7	2-3-5	20.0'-21.5'					
							-5	
25	8	3-5-6	25.0'-26.5'					
							-10	
30	9	15-11-9	30.0'-31.5'		BR.FINE-CRS.SAND, LITTLE SILT & GRAVEL	30.0		
							-15	
35								
LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%						DRILLER: K. CHRISTIANA INSPECTOR:		
						SHEET 1 OF 2		HOLE NO. B-1

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT DTC	PROJECT NAME BRIDGE OVER MENUNKETESUCK RIVER
		LOCATION PLEASANT VALLEY ROAD, CLINTON, CT

DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS	ELEV.
	NO.	BLOWS/6"	DEPTH			
	10	7-8-6	35.0'-36.5'			-20
40	11	5-7-9	40.0'-41.5'		BR.FINE-CRS.SAND, TRACE SILT	40.0
						-25
45	12	9-11-12	45.0'-46.5'		BR.FINE-CRS.SAND, SOME SILT, LITTLE GRAVEL	44.0
						-30
50	13	60	50.0'-50.1'		CORED BEDROCK - SCHIST AND GNEISS	50.0
					RUN# 1 50.0' - 55.0' RECOVERED 55" RQD = 65%	-35
55					BOTTOM OF BORING @ 55.0'	55.0
						-40
60						-45
						-50
65						-55
						-55
70						-55
						-55
75						-55

LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%	DRILLER: K. CHRISTIANA INSPECTOR:	
	SHEET 2 OF 2	HOLE NO. B-1

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033				CLIENT		PROJECT NAME BRIDGE OVER MENUNKETESUCK RIVER						
						LOCATION PLEASANT VALLEY ROAD, CLINTON, CT						
						DTC		SURFACE ELEV. 17.0		HOLE NO. B-2		
AUGER		CASING		SAMPLER		CORE BAR.		OFFSET		GROUND WATER OBSERVATIONS		
TYPE		HSA		SS		NQ		LINE & STA.		AT 10.0 FT. AFTER 0 HOURS		
SIZE I.D.		3.75"		1.375"		2.0"		N. COORDINATE		START DATE 1/26/17		
HAMMER WT.				140lbs				E. COORDINATE		AT FT. AFTER HOURS		
HAMMER FALL				30"						FINISH DATE 1/26/17		
DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS						ELEV.	
	NO.	BLOWS/6"	DEPTH									
0					ASPHALT						0.40	
	1	6-8-7-4	1.0'-3.0'		BR.FINE-CRS.SAND, LITTLE GRAVEL, TRACE SILT - FILL						15	
	2	5-4-4-3	3.0'-5.0'									
5	3	2-1-0-1	5.0'-7.0'		BLACK ORGANIC SILT						5.5	
	4	1-1-1-1	7.0'-9.0'								10	
	5	3-7-9-9	9.0'-11.0'								9.5	
10					GREY/BR.FINE-CRS.SAND, LITTLE GRAVEL, TRACE SILT						5	
	6	3-3-5	15.0'-16.5'		GREY/BR.FINE-MED.SAND, TRACE SILT						15.0	
	7	5-7-9	20.0'-21.5'		BR.SILT						18.0	
20											-5	
	8	6-8-9	25.0'-26.5'		BR.FINE-CRS.SAND, LITTLE GRAVEL, TRACE SILT						23.0	
	9	3-5-9	30.0'-31.5'								-10	
35											-15	
LEGEND: COL. A:						DRILLER: K. CHRISTIANA						
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON						INSPECTOR:						
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%						SHEET 1 OF 2		HOLE NO.		B-2		

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT	PROJECT NAME
	DTC	BRIDGE OVER MENUNKETESUCK RIVER
		LOCATION
		PLEASANT VALLEY ROAD, CLINTON, CT

DEPTH	SAMPLE			A	STRATUM DESCRIPTION + REMARKS	ELEV.
	NO.	BLOWS/6"	DEPTH			
	10	4-5-8	35.0'-36.5'			-20
40	11	6-7-13	40.0'-41.5'		GREY FINE-CRS.SAND, SOME SILT, LITTLE GRAVEL	38.0
						-25
45					CORED BEDROCK - SCHIST AND GNEISS	44.0
					RUN# 1 44.0' - 49.0' RECOVERED 56" RQD = 47%	
						-30
50					BOTTOM OF BORING @ 49.0'	49.0
						-35
55						-40
60						-45
65						-50
70						-55
75						

LEGEND: COL. A: SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%	DRILLER: K. CHRISTIANA	
	INSPECTOR:	
SHEET 2 OF 2	HOLE NO.	B-2