



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
DNRB12099

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
FRANK WHITTAKER 304-558-2316

RFQ COPY
 TYPE NAME/ADDRESS HERE

VENDOR

SHIP TO

DIVISION OF NATURAL RESOURCES
 PARKS & RECREATION SECTION
 324 4TH AVENUE
 SOUTH CHARLESTON, WV
 25303-1228 304-558-3397

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
01/23/2012				

BID OPENING DATE: 02/09/2012 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
***** ADDENDUM NO. 1 *****						
THIS ADDENDUM IS ISSUED TO:						
EXTEND THE DEADLINE FOR TECHNICAL QUESTIONS TO 01/26/2012 AT 4:00 PM.						
PROVIDE THE ATTACHED MANDATORY PRE-BID SIGN-IN SHEET.						
PROVIDE THE ATTACHED BID CLARIFICATION DATED 01/19/2012						
PROVIDE THE ATTACHED REVISED FORM OF PROPOSAL DATED 01/19/2012.						
PROVIDE THE ATTACHED SECTION 03200. SEGMENTAL RETAINING WALLS, TO BE INCORPORATED INTO THE CONTRACT DOCUMENTS.						
***** END ADDENDUM NO. 1 *****						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

GENERAL TERMS & CONDITIONS REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.
 2. The State may accept or reject in part, or in whole, any bid.
 3. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
 4. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods this Purchase Order/Contract becomes void and of no effect after June 30.
 5. Payment may only be made after the delivery and acceptance of goods or services.
 6. Interest may be paid for late payment in accordance with the *West Virginia Code*.
 7. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
 8. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
 9. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
 10. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern the purchasing process.
 11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
 12. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.
 13. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, is available online at www.state.wv.us/admin/purchase/vrc/hipaa.html and is hereby made part of the agreement provided that the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
 14. **CONFIDENTIALITY:** The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.
 15. **LICENSING:** Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, and the West Virginia Insurance Commission. The vendor must provide all necessary releases to obtain information to enable the director or spending unit to verify that the vendor is licensed and in good standing with the above entities.
 16. **ANTITRUST:** In submitting a bid to any agency for the State of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the State of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.
- I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership, or person or entity submitting a bid for the same material, supplies, equipment or services and is in all respects fair and without collusion or Fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division. Complete all sections of the quotation form.
2. Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Unit prices shall prevail in case of discrepancy. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
4. All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130
5. Communication during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited (W.Va. C.S.R. §148-1-6.6).

PRE-BID CONFERENCE
SIGN IN SHEET

Request for Quotation Number DNRB2099 Date 1/17/2012 Park Canaan Valley Contract 7

PLEASE PRINT LEGIBLY. THIS INFORMATION IS ESSENTIAL TO CONTACT THE ATTENDEE IN A TIMELY MANNER. FAILURE TO DO SO MAY RESULT IN DELAYS IN YOUR COMPANY GETTING IMPORTANT BID INFORMATION.

<p>Firm Name: <u>BRL CAROLINA LLC</u></p> <p>Firm Address: <u>908 UFF STREET</u> <u>SUITE 1400</u> <u>CHARLES TOWN WV 25301</u></p> <p>Representative Attending: <u>R. Todd Colby</u></p> <p>Phone Number: <u>304-345-1300</u></p> <p>Fax Number: <u>304-345-1304</u></p> <p>Email Address: <u>tcobly@bblcentral.com</u></p>	<p>Firm Name: <u>Brechtbill and Helms Const Co</u></p> <p>Firm Address: <u>1115 S. Seller Ave</u> <u>Chamberburg, Pa</u> <u>17701</u></p> <p>Representative Attending: <u>Dorell Brechtbill</u></p> <p>Phone Number: <u>717 263-4621</u></p> <p>Fax Number: <u>717 263-7072</u></p> <p>Email Address: <u>estimating@brechtbillandhelms.com</u></p>
<p>Firm Name: <u>G.A. Brown & Son</u></p> <p>Firm Address: <u>215 Mill St.</u> <u>Fairmont, WV 26554</u></p> <p>Representative Attending: <u>Andy Taylor</u></p> <p>Phone Number: <u>304.363.4500</u></p> <p>Fax Number: <u>304.366.9456</u></p> <p>Email Address: <u>jbrown1@GABrown.com</u></p>	<p>Firm Name: <u>Veritas Contracting LLC</u></p> <p>Firm Address: <u>1233 Safe 1</u> <u>Pineview Dr</u> <u>Morgantown WV 26505</u> <u>Ron Joseph</u></p> <p>Representative Attending: <u>Ron Joseph</u></p> <p>Phone Number: <u>304-598-2385</u></p> <p>Fax Number: <u>304-598-2787</u></p> <p>Email Address: <u>ksalanick@veritaswv.com</u></p>
<p>Firm Name: <u>DL Woods Lumber Co</u></p> <p>Firm Address: <u>7105 DORLAND RD</u> <u>Davis WV 26214</u></p> <p>Representative Attending: <u>David Hoff</u></p> <p>Phone Number: <u>304 866 1961</u></p> <p>Fax Number: <u>304 866 8764</u></p> <p>Email Address: <u>DHOFF@DLWOODS.COM</u></p>	<p>Firm Name: <u>JARNET Construction Services</u></p> <p>Firm Address: <u>PO BOX 6250 CHARLESTON WV</u> <u>25361</u></p> <p>Representative Attending: <u>Richard Wolford</u></p> <p>Phone Number: <u>304 344 9140</u></p> <p>Fax Number: <u>304 344 9142</u></p> <p>Email Address: <u>R.WOLFORD@JARNET-CONSTRUCTION.COM</u></p>

PRE-BID CONFERENCE
SIGN IN SHEET

Request for Quotation Number DNR 15 12099 Date 11/17/2012 Park Canaan Valley Contract 7

PLEASE PRINT LEGIBLY. THIS INFORMATION IS ESSENTIAL TO CONTACT THE ATTENDEE IN A TIMELY MANNER. FAILURE TO DO SO MAY RESULT IN DELAYS IN YOUR COMPANY GETTING IMPORTANT BID INFORMATION.

<p>Firm Name: <u>Wiseman Construction Co, Inc</u> Firm Address: <u>1516 6th Avenue</u> <u>Charleston, WV 25307</u></p> <p>Representative Attending: <u>J.C. Linkinmyer</u> Phone Number: <u>304-344-1208 ext 212</u> Fax Number: <u>304-344-1281</u> Email Address: <u>JLinkin@wisc.com</u></p>	<p>Firm Name: <u>OVAL CONSTRUCTION Co.</u> Firm Address: <u>P.O. BOX 101</u> <u>Charleston, WV 25322</u></p> <p>Representative Attending: <u>David Henrichs</u> Phone Number: <u>(304) 347-3920</u> Fax Number: <u>(304) 347-3944</u> Email Address: <u>J.CARNEY@OVALCONSTRUCTION.COM</u></p>
<p>Firm Name: <u>W. Harley Miller Contractors</u> Firm Address: <u>P.O. Box 945</u> <u>MARTINSBURG, WV 25401</u></p> <p>Representative Attending: <u>TERRY AIKENS</u> Phone Number: <u>304-267-8959</u> Fax Number: <u>304-267-3847</u> Email Address: <u>Eflowers@whmcontractors.com</u></p>	<p>Firm Name: <u>BNV Heating & Cooling</u> Firm Address: <u>165 Macomber church Rd</u> <u>Rowlesburg WV 26425</u></p> <p>Representative Attending: <u>Robert Ayersman III</u> Phone Number: <u>304-454-9714</u> Fax Number: <u>304-454-9716</u> Email Address: <u>Bob.Ayersman@Yahoo.com</u></p>
<p>Firm Name: <u>Danhill Const. Co.</u> Firm Address: <u>P.O. Box 685</u> <u>Gouley Road, W. Va.</u> <u>25085</u></p> <p>Representative Attending: <u>Dan Hill</u> Phone Number: <u>304-632-1600</u> Fax Number: <u>304-632-1501</u> Email Address: <u>Ddanhill@hotmail.com</u></p>	<p>Firm Name: <u>Manheim Corp.</u> Firm Address: <u>2025 Greentree RD</u> <u>Pittsburg, PA. 15220</u></p> <p>Representative Attending: <u>Bob Ayersman</u> Phone Number: <u>412-306-0534</u> Fax Number: <u>412-306-0535</u> Email Address: <u>B.Scott@Manheimcorp.com</u></p>

SIGN IN SHEET

Request for Quotation Number ARB12099 Date 1/17/2012 Park Cassan Valley Contract 7

PLEASE PRINT LEGIBLY. THIS INFORMATION IS ESSENTIAL TO CONTACT THE ATTENDEES IN A TIMELY MANNER. FAILURE TO DO SO MAY RESULT IN DELAYS IN YOUR COMPANY GETTING IMPORTANT BID INFORMATION.

<p>Firm Name: <u>ARZEL INC.</u> Firm Address: <u>P.O. Box 0358 Cumberland, MO 21502</u></p> <p>Representative Attending: <u>Mike Thompson</u> Phone Number: <u>301-729-5303</u> Fax Number: <u>301-729-0163</u> Email Address: <u>Kennedy@thebeltgroup.com</u></p>	<p>Firm Name: <u>Chapman Technical Group</u> Firm Address: <u>200 Sixth Avenue St. Albans, WV 25177</u></p> <p>Representative Attending: <u>Joe Bond</u> Phone Number: <u>304-727-5501</u> Fax Number: <u>304-727-5580</u> Email Address: <u>jbond@chaptech.com</u></p>
<p>Firm Name: <u>Lombardi Development</u> Firm Address: <u>820 Donegal Dr. East Follansbee, WV 26037</u></p> <p>Representative Attending: <u>Jim Hadian</u> Phone Number: <u>304-748-5920</u> Fax Number: <u>304-748-8488</u> Email Address: <u>bernie@lombardi-development.com</u></p>	<p>Firm Name: <u>WV DNR</u></p> <p>Representative Attending: <u>Brad Leslie, Debbie Deinger</u> Phone Number: Fax Number: Email Address: <u>Brad.S.Leslie@WV.DNR</u></p>
<p>Firm Name: <u>JDOT Contractor</u> Firm Address: <u>RT. 1 BOX 3717 MARLINTON WVA</u></p> <p>Representative Attending: <u>Johanny Moore</u> Phone Number: <u>799-4022</u> Fax Number: Email Address: <u>JDOT GenCom@Hotmail.com</u></p>	<p>Firm Name: Firm Address: Representative Attending: Phone Number: Fax Number: Email Address:</p>

**Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 – Building Renovations
Requisition DNRB12099
Addendum No. 1
January 19, 2012**

1. Date for receipt of technical questions shall be changed to January 26, 2012.
2. List of attendees of the pre-bid meeting are attached.
3. Notes from Pre-bid Conference are attached.
4. The attached Form of Proposal marked "REVISED January 19, 2012" shall be used for submittal of bids.
5. The time of completion is 240 days. All work shall be completed no later than November 30, 2012.
6. Non-refundable deposit for plans and specifications is \$150.00.
7. Roof work shall require a 2-year maintenance bond.
8. Existing building materials not indicated to be removed or replaced that is damaged by new construction or construction required for new equipment shall be replaced with similar materials to match existing or adjacent materials. If the removal of existing equipment or finishes results in the exposure of existing surfaces that do not match adjacent surfaces, such areas shall be patched and/or painted to match adjacent surfaces.
9. Furnishings shall be delivered and installed by the furnishings supplier.
11. Lockers shall be furnished and installed by the Contractor.
12. Reference Specification Section 08710 Door Hardware:

Hardware Set G13: Include One I-C Cylinder, K620/K640 (as required by door mfr.) 606 finish, Yale.
13. Attached Specification Section 03200, Segmental Retaining Walls, shall be incorporated into the Contract Documents.
14. Bidders should indicate receipt of this addendum in the space provided on the Request for Quotation.

-- end of addendum, not including attachments --
-- four (4) attachments are included --



Butler
1/19/12



Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 – Building Renovations
Requisition DNR B12099

Pre-Bid Conference Notes
January 17, 2012

1. Brad Leslie reviewed bidding requirements emphasizing the following:
 - Mandatory pre-bid, bidders must sign in.
 - Reviewed invitation to bid and form of proposal.
 - Reviewed instruction to bidders. Bidders must follow bidding requirements of the RFQ.
 - Reviewed bid opening date, time and place.
 - Reviewed procedure for issuing addenda.
 - Reviewed insurance and bond requirements.
 - Reviewed Owner's line of contract administration authority.
 - Reviewed contract completion time.
 - Reviewed liquidated damages.
 - Reviewed pay application procedures.
 - Reviewed process for requesting substitutions. Requests must come from bidders attending the pre-bid conference and should be submitted to Frank Whittaker.
2. The deadline for technical questions will be extended to January 26, 2012. Technical questions must be submitted to Frank Whittaker.
3. The non-refundable deposit for plans and specifications is \$150.00.
4. The bid form will be in accordance with the one in the Project Manual. It will be included in the first addendum.
5. There is an allowance for furnishing in Section 01210.
6. Roof work will require a 2-year maintenance bond.
7. The first addendum will include specifications for the segmental retaining wall.
8. Joe Bird reviewed the technical aspects of the project.
9. The telecommunications aspects were discussed. Some of the telecommunications work will need to be coordinated with other contractors. Telephone equipment is not included in the contract.
10. The pre-bid conference concluded with a tour of the project site.

-- end of meeting notes --

**Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 - Building Renovations**

DIVISION OF NATURAL RESOURCES

FORM OF PROPOSAL

REVISED JANUARY 19, 2012

Name of Bidder:

Address of Bidder:

Phone Number of Bidder:

WV Contractors License No.

We, the undersigned, having examined the site and being familiar with the local conditions affecting the cost of the work and also being familiar with the general conditions to bidders, drawings, and specifications, hereby proposes to furnish all materials, equipment, and labor to complete all work in a workmanlike manner, as described in the Bidding documents.

Base Bid

The Base Bid shall consist of the renovations of Buildings A, B, and G, including associated sitework and other incidental construction as detailed by the contract documents. Work indicated as Additive Alternates shall not be included in the Base Bid.

Base Bid: Lump sum for all labor, materials, and equipment as stipulated in the Bidding Documents, written in numbers.

Base Bid: Lump sum for all labor, materials, and equipment as stipulated in the Bidding Documents, written in words.

**Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 - Building Renovations**

DIVISION OF NATURAL RESOURCES

FORM OF PROPOSAL

REVISED JANUARY 19, 2012

Additive Alternates

The following Additive Alternate Bid Items are not to be included in the Base Bid. If the Additive Alternate is selected by the Owner, the work described in the Additive Alternate shall be added to the Contract and the amount indicated for the Additive Alternate shall be added to the Base Bid. The cost for each alternate is the net addition to the Base Bid to add the alternate to the Work. No other adjustments shall be made to the Base Bid or Contract amount.

No.	Description	Amount in Words	Amount in Figures
1	Furnishings for Building B.		
2	Replacement of existing windows for Buildings A and B.		
3	Exterior painting of Buildings A and B.		
4	New concrete steps and retaining wall along south side of Building A.		
5	New concrete steps and HC ramp on west side of Building A.		
6	Renovation of Building C, excluding gutter replacement.		

The bidder understands that to the extent allowed by the West Virginia Code, the Owner reserves the right to waive any informality or irregularity in any Bid, or Bids, and to reject any or all Bids in whole or in part; to reject a bid not accompanied by the required bid security or

Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 - Building Renovations

DIVISION OF NATURAL RESOURCES

FORM OF PROPOSAL

REVISED JANUARY 19, 2012

by other data required by the Bidding Documents; to reject any condition of the bid by the Bidder that is in any way inconsistent with the requirements, terms and conditions of the Bidding Documents; or to reject a bid that is in any way incomplete or irregular.

The Bidder, if successful and awarded the contract, agrees that all work is to be completed within **240** consecutive calendar days following receipt of the Owner's written Notice to Proceed and no later than **November 30, 2012**. For each calendar day of delay in achieving completion, the Contractor shall be liable for, and shall pay the Owner liquidated damages in the amount of \$250 per day.

Any work performed or any materials contracted for prior to the receipt of the Owner's written Notice to Proceed, shall be at the Bidder's risk.

PROGRESS PAYMENTS - The CONTRACTOR will make current estimates in writing once each month on AIA Forms G702 and G703 on or before the date set by the OWNER at the time of starting the WORK. The progress payments shall be a true estimate of the materials complete in place and the amount of WORK performed in accordance with the CONTRACT during the preceding month and the value thereof figured at the CONTRACT unit prices or based on the approved schedule of value. Should there be any doubt of the OWNER as to the integrity of any part of the COMPLETED work, the estimates for that portion will not be allowed modified by the CONTRACTOR accordingly. CONTRACTOR shall submit evidence to document the extent of progress payments as required by the OWNER.

Progress payments will not be made when the total value of the WORK done since the last estimate amounts to less than Five Hundred Dollars (\$500.00). From the total of the amounts ascertained as payable, an amount equivalent to and in accordance with Article 9 of A201-2007 Supplementary Conditions of the State of West Virginia will be deducted and retained by the OWNER until completion of the entire CONTRACT in an acceptable manner. The balance, less all previous payments, will be certified for payment by the OWNER.

When the WORK under contract has been completed and its acceptance is recommended by the OWNER, the retainage shall be released and paid to the CONTRACTOR.

Canaan Valley Resort State Park
Ski Area Improvements Project
Contract 7 - Building Renovations

DIVISION OF NATURAL RESOURCES

FORM OF PROPOSAL

REVISED JANUARY 19, 2012

ADDENDUM ACKNOWLEDGEMENT

I hereby acknowledge receipt of the following checked addendum and have made the necessary revisions to my bid or proposal.

Addendum No.	Date

I understand that failure to confirm the receipt of the Addendum is cause for rejection of my bid or proposal.

Respectfully submitted:

Date:

WV Vendor
Registration Number:

By: (signature in ink)

Title:

Firm Name:

Firm Address:

CANAAN VALLEY RESORT STATE PARK
CONTRACT 7 - BUILDING RENOVATIONS

11022
12/11

SECTION 03200 - SEGMENTAL RETAINING WALL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete segmental retaining wall units.
- B. Geosynthetic reinforcement
- C. Leveling pad base
- D. Drainage aggregate
- E. Reinforced Backfill
- F. Drainage pipe
- G. Pre-fabricated Drainage Composite
- H. Geotextile Filter
- I. Impervious Materials
- J. Construction Adhesive

1.02 RELATED SECTIONS

- A. Section 02300 - Earthwork: For finish grading.

1.03 DEFINITIONS

- A. Concrete Segmental Retaining Wall (SRW) Units: Dry-stacked masonry units used as the retaining wall fascia.
- B. Reinforced Backfill: Soil which is used as fill behind the SRW unit, and within the reinforced soil mass (if applicable).
- C. Drainage Aggregate: Material used (if applicable) within, between, and directly behind the concrete retaining wall units.
- D. Geotextile Filter: Material used for separation and filtration of dissimilar soil types.
- E. Foundation Soil: Soil mass supporting the leveling pad and reinforced soil zone of the retaining wall system.
- F. Geosynthetic Reinforcement: Polymeric material designed specifically to reinforce the soil mass.
- G. Pre-fabricated Drainage Composite: three-dimensional geosynthetic drainage medium encapsulated in a geotextile filter, used to transport water.
- H. Impervious Materials: Clay soil or low permeability geosynthetic used to prevent water percolation into the drainage zone and reinforced backfill behind the wall.
- I. Global Stability: The general mass movement of a soil reinforced segmental retaining wall structure and adjacent soil mass.
- J. Project Geotechnical Engineer: A registered engineer who provides site observations, recommendations for foundation support, and verifies soil shear strength parameters.

1.04 SUBMITTALS

SEGMENTAL RETAINING WALL
03200 - 1

CANAAN VALLEY RESORT STATE PARK
 CONTRACT 7 - BUILDING RENOVATIONS

11022
 12/11

Due to the design-build nature of Segmental Retaining Wall Systems, contractors shall provide a system specific submittal package to the Architect at least thirty (30) days prior to construction for approval. Incomplete submittal packages will not be reviewed.

- A. Submit the following at least thirty (30) days prior to construction for approval:
1. Product Data
 - a. Material description and installation instructions for each manufactured product specified including Segmental Retaining Wall Units (SRW) and Geosynthetic Reinforcement.
 - b. Name and address of the production facility where the proposed SRW units will be manufactured. All units to be manufactured at the same facility.
 2. Samples:
 - a. Furnish one unit demonstrating the color, face pattern, and texture of the SRW unit if specified by the project Architect or Owner.
 - b. Furnish 12-inch square or larger piece of the geosynthetic reinforcement specified.
 3. Retaining Wall Installer Qualifications:
 - a. The Retaining Wall Installer shall furnish five (5) project references of similar size and scope to this project including the wall(s) height and square footage. References shall include the contact information of Owner or General Contractor.
- B. Submit the following at least thirty (30) days prior to start of construction for approval:
1. Retaining Wall Final Design Submittals
 - a. Shop Drawings: Four (4) sets of the retaining wall system design, including wall elevation views, geosynthetic reinforcement layout, pertinent details, and drainage provisions.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Concrete Retaining Wall Units and Accessories: Deliver, store, and handle materials in accordance with manufacturer's recommendations, in such a manner as to prevent damage. Check the materials upon delivery to assure that proper material has been received. Store above ground on wood pallets or blocking. Remove damaged or otherwise unsuitable material, when so determined, from the site.
1. Exposed faces of concrete wall units shall be free of chips, cracks, stains, and other imperfections detracting from their appearance, when viewed from a distance of 10 feet.
 2. Prevent mud, wet cement, adhesives and similar materials that may harm appearance of units, from coming in contact with system components.

- B. Geosynthetics (including geosynthetic reinforcement, geotextile filter, pre-fabricated drainage composite) shall be delivered, stored, and handled in accordance with ASTM D4873.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Design reference standard include the following:
1. Anchor Wall, Highland Stone 3-inch and 6-inch random pattern.
 2. Redi-Scapes retaining wall, random pattern.
- B. Segmental Retaining Wall units shall meet the following requirements:
- a. Color: To be selected by Architect
 - b. Face Pattern Geometry: Stone Cut
 - c. Texture: Split Rock Face that exposes the natural aggregates.
 - d. Batter: Include an integral batter control shear connector to provide a consistent setback for each wall course. Initial wall batter shall not exceed 7 degrees.
- B. Geosynthetic Reinforcement shall be manufactured with high-tenacity polyester or HDPE in a grid or textile structure. The geosynthetic reinforcement must meet the long-term design strength, soil interaction, and connection capacity requirements as required by the design of the retaining wall.
1. Long-term Design Strength: As determined in accordance with Method A of the NCMA Design Manual for Segmental Retaining Walls, Second Edition, Second Printing, 1997.
 - a. Ultimate Tensile Strength: The ultimate tensile strength of the geosynthetic reinforcement shall be determined in accordance with ASTM D4595 or ASTM D6637.
 - b. Creep: Creep testing of the geosynthetic shall be performed in accordance with ASTM D5262. The creep reduction factor shall be determined in accordance with FHWA-NHI-00-043.
 - c. Installation Damage: The installation damage reduction factor shall be determined in accordance with ASTM D5818 and FHWA-NHI-00-043.
 - d. Durability: The durability reduction factor shall be determined in accordance with FHWA-NHI-00-044.
 2. Soil Interaction: The soil interaction properties include the coefficient of direct sliding and coefficient of interaction as determined through direct shear and pullout testing, respectively.
 - a. Pullout: Shall be determined in accordance with ASTM D6706.
 - b. Direct Sliding: Shall be tested in accordance with ASTM D5321.
 3. Connection Capacity: As determined in accordance with ASTM D6638.

C. Leveling Pad Base

1. Aggregate Base: Crushed stone or granular fill meeting the following gradation as determined in accordance with ASTM D448:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
No. 4	35 to 70
No. 40	10 to 35
No. 200	3 to 10

- a. Base Thickness: 6 inches (minimum compacted thickness).

- E. Drainage Aggregate: Clean crushed stone or granular fill meeting the following gradation as determined in accordance with ASTM D448:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 inch	100
3/4 inch	75 to 100
No. 4	0 to 60
No. 40	0 to 50
No. 200	0 to 5

- F. Reinforced Backfill: Suitable reinforced backfill soils shall be free of organics and debris and consisting of GP, GW, SP, SW, or SM type, classified in accordance with ASTM D2487 and the USCS classification system. Soils classified as SC, ML and CL are considered suitable soils for segmental retaining walls with a total height of less than 10 feet.

1. The Plasticity Index (PI) of the reinforced backfill soils shall not be greater than 20 as measured in accordance with ASTM D4318.
2. Unsuitable soils are organic soils and those soils classified as CH, OH, MH, OL, or PT.
3. The pH of the reinforced backfill shall be between 3 and 10 and be tested in accordance with ASTM G51.
4. Maximum particle size less than or equal to 4 inches.

- G. Drainage Pipe: Perforated or slotted PVC or corrugated HDPE pipe manufactured in accordance with D3034 and/or ASTM F405. The pipe may be covered with a geotextile filter to prevent fines migration into the pipe.

- J. Geotextile Filter: The geotextile filter shall be in accordance with AASHTO M288 guidelines.

- K. Impervious Material: Clay soil and/or low permeability geosynthetic shall have a coefficient of permeability of less than 10^{-6} cm/s as tested in accordance with ASTM D5084 or ASTM D4491, as applicable.

- L. Construction Adhesive: Exterior grade adhesive as recommended by the retaining wall unit manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

SEGMENTAL RETAINING WALL

03200 - 4

- A. The Project Geotechnical Engineer shall examine the areas and conditions under which the retaining wall system is to be erected, and notify the Owner and Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Promptly notify the wall design engineer of site conditions that may affect wall performance, soil conditions observed other than those assumed, or other conditions that may require a reevaluation of the wall design.
- C. Verify the location of existing structures and utilities prior to excavation.

3.02 PREPARATION

- A. Ensure surrounding structures are protected from the effects of wall excavation.
- B. Excavation support, if required, is the responsibility of the Contractor, including the stability of the excavation and its influence on adjacent properties and structures.

3.03 EXCAVATION

- A. Excavate to the lines and grades shown on the Drawings. The General Contractor shall replace any unsuitable soils discovered during excavation. Use care in excavating to prevent disturbance of the base beyond the lines shown.

3.04 FOUNDATION PREPARATION

- A. Excavate foundation soil as required for footing or base dimension shown on the Drawings, or as directed by the Project geotechnical engineer.
- B. The Project geotechnical engineer will examine foundation soil to ensure that the actual foundation soil strength meets or exceeds that indicated on the Drawings. Remove soil not meeting the required strength. Oversize resulting space sufficiently from the front of the block to the back of the reinforcement, and backfill with suitable compacted backfill soils.
- C. The Project geotechnical engineer will determine if the foundation soils will require special treatment or correction to control total and differential settlement.
- D. Fill over-excavated areas with suitable compacted backfill, as recommended by the Project geotechnical engineer.

3.05 BASE COURSE PREPARATION

- A. Place base materials to the depths and widths shown on the Drawings, upon undisturbed soils, or foundation soils prepared in accordance with Article 3.04.
 - 1. Extend the leveling pad laterally at least 6 inches in front and behind the lowermost concrete retaining wall unit.
 - 2. Provide aggregate base compacted to 6 inches thick (minimum).
 - 3. The Contractor may at their option, provide a concrete leveling pad as specified in Subparagraph 2.01.C.2, in lieu of the aggregate base.
 - 4. Where a reinforced footing is required by local code official, place footing below frost depth.
- B. Compact aggregate base material to provide a level, hard surface on which to place the first course of units. A thin, less than 1 inch, can be used to assist in leveling the base units.
- C. Prepare base materials to ensure complete contact with retaining wall units.

3.06 ERECTION

- A. General: Erect units in accordance with manufacturer's instructions and recommendations, and as specified herein.
- B. Place first course of concrete wall units on the prepared base material. Check units for level and alignment. Maintain the same elevation at the top of each unit within each section of the base course.
- C. Ensure that foundation units are in full contact with natural or compacted soil base or lean concrete leveling pad.
- D. Place concrete wall units side-by-side for full length of wall alignment. Alignment may be accomplished by using a string line measuring from the back of the block.
- E. Place 12 inches (minimum) of drainage aggregate directly behind the concrete wall units. Fill voids in and between retaining wall units with drainage aggregate. Provide a drainage zone behind the wall units to within 12 inches of the final grade. Cap the backfill and drainage aggregate zone with 12 inches of impervious material.
- F. Install drainage pipe at the lowest elevation possible, to maintain gravity flow of water to outside of the reinforced zone. Slope the main collection drainage pipe, located just behind the concrete retaining wall units, 2 percent (minimum) to provide gravity flow to the daylighted areas. Daylight the main collection drainage pipe to an appropriate location away from the wall system at each low point and at 50-foot (maximum) intervals along the wall.
- G. Remove excess fill from top of units and install next course. Ensure drainage aggregate and backfill are compacted before installation of next course.
- H. Check each course for level and alignment. Adjust units as necessary to maintain level and alignment prior to proceeding with each additional course. Install alignment devices (pins, clips, bars etc.) if required.
- I. Install each succeeding course. Backfill as each course is completed. Pull the units forward until the locating surface of the unit contacts the locating surface/device of the units in the preceding course. Interlock wall segments that meet at corners by overlapping successive courses. Attach concrete retaining wall units at exterior corners with adhesive specified.
- J. Install geosynthetic reinforcement in accordance with geosynthetic manufacturer's recommendations and the shop drawings.
 1. Orient geosynthetic reinforcement with the highest strength axis perpendicular to the wall face.
 2. Prior to geosynthetic reinforcement placement, place the backfill and compact to the elevation of the top of the wall units at the elevation of the geosynthetic reinforcement.
 3. Place geosynthetic reinforcement at the elevations and to the lengths shown on the Drawings.
 4. Lay geosynthetic reinforcement horizontally on top of the concrete retaining wall units and the compacted backfill soils. Ensure that the geosynthetic reinforcement extends to within one inch of the face of the concrete retaining wall units. Place the next course of concrete retaining wall units on top of the geosynthetic reinforcement.
 5. The geosynthetic reinforcement shall be laid horizontally, pulled taut and be free from wrinkles prior to placement of the backfill soils. The geosynthetic reinforcement may be secured in place with staples, stakes, soil fill or by hand tensioning until the geosynthetic reinforcement is covered by 6 inches of loose fill.

6. The geosynthetic reinforcements shall be continuous throughout its embedment length. Splices in the geosynthetic reinforcement strength direction are not allowed.
7. Do not operate tracked construction equipment directly on the geosynthetic reinforcement. At least 6 inches of compacted backfill soil is required prior to operation of tracked vehicles over the geosynthetic reinforcement. Keep turning of tracked construction equipment to a minimum.
8. Rubber-tired equipment may pass over the geosynthetic reinforcement at speeds of less than 5 miles per hour. Turning of rubber-tired equipment is not allowed on the geosynthetic reinforcement.

3.07 BACKFILL PLACEMENT

- A. Place reinforced backfill, spread and compact in a manner that will minimize slack in the reinforcement.
- B. Place fill within the reinforced zone and compact in lifts not exceeding 6 to 8 inches (loose thickness) where hand-operated compaction equipment is used, and not exceeding 12 inches (loose thickness) where heavy, self-propelled compaction equipment is used.
 1. Only lightweight hand-operated compaction equipment is allowed within 4 feet of the back of the retaining wall units. If the specified compaction cannot be achieved within 4 feet of the back of the retaining wall units, replace the reinforced soil in this zone with drainage aggregate material.
- C. Compaction testing shall be done in accordance with ASTM D1556 or ASTM D2922.
- D. Minimum Compaction Requirements for Fill Placed in the Reinforced Zone
 1. The minimum compaction requirement shall be determined by the project geotechnical engineer testing the compaction. At no time shall the soil compaction requirements be less than 95 percent of the soil's standard Proctor maximum dry density ASTM D698 for the entire wall height.
 2. Utility Trench Backfill: Compact utility trench backfill in or below the reinforced soil zone to 98 percent of the soil's standard Proctor maximum dry density ASTM D698, or as recommended by the Project geotechnical engineer. If the height from the utility to finish grade is higher than 30 feet, increase compaction to 100 percent of the standard Proctor density [modified Proctor density].
 - a. Utilities must be properly designed (by others) to withstand all forces from the retaining wall units, reinforced soil mass, and surcharge loads, if any.
 3. Moisture Content: Within 2 percentage points of the optimum moisture content for all wall heights.
 4. These specifications may be changed based on recommendations by the Project geotechnical engineer.
 - a. If changes are required, the Contract Sum will be adjusted by written Change Order.
- E. At the end of each day's operation, the wall installer shall slope the last level of compacted backfill away from the interior (concealed) face of the wall to direct surface water runoff away from the wall face.
 1. The General Contractor is responsible for ensuring that the finished site drainage is directed away from the retaining wall system.
 2. In addition, the General Contractor is responsible for ensuring that surface water runoff from adjacent construction areas is not allowed to enter the retaining wall area of the construction site.

- F. Refer to Article 3.10 for compaction testing.

3.08 CAP UNIT INSTALLATION

- A. Apply adhesive to the top surface of the unit below and place the cap unit into desired position.
 B. Cut cap units as necessary to obtain the proper fit.
 C. Backfill and compact to top of cap unit.

3.09 SITE CONSTRUCTION TOLERANCES

- A. Site Construction Tolerances
1. Vertical Alignment: Plus or minus 1-1/2 inches over any 10-foot distance, with a maximum differential of 3 inches over the length of the wall.
 2. Horizontal Location Control From Grading Plan
 - a. Straight Lines: Plus or minus 1-1/2 inches over any 10-foot distance.
 - b. Corner and Radius Locations: Plus or minus 12 inches.
 - c. Curves and Serpentine Radii: Plus or minus 2 feet.
 3. Immediate Post Construction Wall Batter: Within 2 degrees of the design batter of the concrete retaining wall units.
 4. Bulging: Plus or minus 1-1/4 inches over any 10-foot distance.

3.10 FIELD QUALITY CONTROL

- A. Installer is responsible for quality control of installation of system components.
 B. The General Contractor or Owner, at their expense, shall retain a qualified independent testing agency to perform quality assurance checks, evaluation of foundation soils, and compaction testing of the installer's work.
 C. Installer shall correct work that does not meet these specifications or the requirements shown on the Drawings at the installer's expense.
 D. An independent testing agency, at the general contractors expense, shall be contracted to perform compaction testing of the reinforced backfill placed and compacted in the reinforced backfill zone.
 1. Testing Frequency
 - a. One test for every 2 feet (vertical) of fill placed and compacted, for every 50 lineal feet of retaining wall.
 - b. Vary compaction test locations to cover the entire area of the reinforced soil zone, including the area compacted by the hand-operated compaction equipment.

3.11 ADJUSTING AND CLEANING

- A. Replace damaged units with new units as the work progresses.
 B. Remove debris caused by wall construction and leave adjacent paved areas broom clean.

END OF SECTION