

April 13, 2010

TO: All Bidders

REF: **WVARNG Armed Forces Reserve Center, Fairmont, West Virginia**
West Virginia Army National Guard
RFQ No: DEFK 10017

SUBJ: **Addendum Bulletin No. 1**

This Addendum Bulletin shall be incorporated in the Construction Documents including the Drawings and Specifications for the Project referenced above. All work amended as listed herein shall be included in your Bid Proposal and the bidder shall acknowledge this addendum bulletin in accordance with the Request for Quotation.

The Construction Contract Documents shall be amended as follows:

SPECIFICATIONS:

1. Table of Contents: DELETE Table of Contents. ADD Table of Contents in enclosures of this addendum.
2. Bid Form Sections I, II, III: DELETE Bid Forms Sections I, II, III ADD Bid Form Sections I, II, III (Revised 13 April 2010) in enclosures of this addendum.
3. Division 00, Section 001000: DELETE Section 001000 Information and Instructions to Bidders. ADD Section 001000 Information and Instructions to Bidders (Revised 13 April 2010)
4. Division 01, Section 011000: REPLACE Section 011000. See enclosures.
5. Division 08, Section 087100, Hardware Set 27: ADD Door B119B.
6. Division 08, Section 087100, Door C104: ADD Surface Closer 4011-689 LCN to Hardware Set.
7. Division 08, Section 087100, Door C117: ADD Surface Closer 4011-689 LCN to Hardware Set.
8. Division 08, Section 087100, Hardware Set 30: DELETE Door C119.
9. Division 08, Section 087100, Hardware Set 44: DELETE Door B130.

10. Division 08, Section 087100, Hardware Set 47: DELETE Door B132.
11. Division 08, Section 087100, Hardware Set 55: DELETE Door C106.
12. Division 08, Section 087100, Hardware Set 55: DELETE Door C106A.
13. Division 08, Section 087100, Hardware Set 61: DELETE Door C122H.
14. Division 09, Section 096519: ADD Section 096519 Resilient Tile Flooring.
15. Division 26, Section 261910: ADD Section 261910 Mass Notification System.
16. Division 26, Section 263213, 2.1, D, 1: REVISE size of generator to be 750KW/938KVA.
17. Division 27, Section 270100: ADD paragraph 1.1D as follows: "Installation Information Infrastructure Architecture (I3A) Technical Guide date July 2008"
18. Division 27, Section 271500, 3.1.I: REPLACE paragraph 3.1, I with the following: "Provide "J" hooks for all cables not installed in raceways or cable tray. "J" hooks shall be spaced no greater than five feet (60") on center. Do not exceed 20 cables or 50% fill capacity, whichever is less."
19. Division 27, Sections 270100, 270800, 271100, 271300, 271500 and 271510: REMOVE any reference to 'Category 6e' cabling and replace with 'Category 6'.

DRAWINGS:

1. Drawing L-1: DELETE Drawing L-1 dated 25 March 2010, ADD Drawing L-1 with revision date of 2 April 2010.
2. Drawing A-1.3: ADD Tag W-11 to window in West wall of Room A110. Window to be 8' wide by 7'-8" high.
3. Drawing A-1.4: CHANGE Door B100B to swing out instead of into room B100A.
4. Drawing A-1.5: CHANGE Door C114A to swing out instead of into room C114A.

5. Drawing A-1.5: CHANGE Door C116 to swing out instead of into room C116.
6. Drawing A-1.5: CHANGE Door C118 to swing out instead of into room C118.
7. Drawing A-1.8: CHANGE Door C206 to swing out instead of into room C206.
8. Drawing A-1.5: CHANGE Door C123 to swing out instead of into room C123.
9. Drawing A-1.8: CHANGE Door C122G to swing out instead of into room C122.
10. Drawing A-1.11 & A-1.12: ADD Tag E (Underlavatory Guards) to all exposed sink traps.
11. Drawing A-7.3: CHANGE Ceiling to GWB as shown on A-5.1 Room Finish Schedule.
12. Drawing A-5.2: DELETE Drawing A-5.2 dated 25 March 2010, ADD Drawing A-5.2 with revision date of 13 April 2010.
13. Drawing A-1.13: ADD N.I.C. (Not in Contract) to Kitchen Equipment Schedule Items – 10, 11, 12, 13, 16, 19, 33, 34, 35 and 55.
14. Drawing A-5.2: REPLACE Drawing with enclosed drawing A-5.2 revised 13 April 2010.
15. Drawing A-1.0: CHANGE Room A106 name to WVARNG Classroom.
16. Drawing A-5.1: CHANGE Room A101 (Main Lobby) finishes on all walls from DCMU/GWB-P to DCMU.
17. Drawing A-5.1: CHANGE Ceiling height in rooms C205A and C205B from 9'-0" to 10'-0".
18. Drawing ES-0.1: CHANGE Coded Note 5 to 8.
19. Drawing ES-0.1: CHANGE Coded Note 8 to 5.
20. Drawing SK-3: CHANGE Layout of room C107D and C109.
21. Drawing C1-1: Revised assumed WVDOH right of way.
22. Drawing C1-1.1: Revised assumed WVDOH right of way.

23. Drawing C1-1.2: Revised start and start of demolition.
24. Drawing C1-3: Relocated wash rack, loading ramp, and updated concrete pavement.
25. Drawing C1-3.1: Revised utility crossings.
26. Drawing C1-3.2: Revised utility crossings.
27. Drawing C1-4: Updated grading per concrete pavement, and screening berm revision.
28. Drawing C1-4.1: Updated grading per concrete pavement, and screening berm revision.
29. Drawing C1-4.2: Updated grading per concrete pavement, and screening berm revision.
30. Drawing C1-4.3: Revised profiles per grading and drainage changes.
31. Drawing C1-4.4: Revised profiles per grading and drainage changes.
32. Drawing C1-4.5: Revised utility locations.
33. Drawing C1-4.6: Revised utility locations.
34. Drawing C1-4.7: Revised utility locations.
35. Drawing C1-4.8: Revised utility locations.
36. Drawing C1-4.9: Revised utility locations.
37. Drawing C1-6: Relocated utilities.
38. Drawing C1-6.1: Relocated utilities and revised profiles.
39. Drawing C1-6.2: Revised profiles.
40. Drawing C2-7: Revised oil/water separator elevations.
41. Drawing ES-0.1: Electrical Site Plan
 - a. Coded Note No. 5 should be No. 8 and Coded Note No. 8 should be No. 5.
 - b. Trench Details 2/ES-0.2, 3/ES-0.2, 4/ES-0.2, 11/ES-0.2 and 12/ES-0.2 are for reference only. This trenching will be by GC.

- c. Delete four Type S01 light fixtures. See enclosed sketch SKE-1.
42. Drawing ES-0.2: Electrical Site Plan Details – Trench Details 2/ES-0.2, 3/ES-0.2, 4/ES-0.2, 11/ES-0.2 and 12/ES-0.2 are for reference only. This trenching will be by GC.
43. Drawing E-1.3: First Floor Lighting Plan Zone 'C'
- a. In Comsec C104, replace type G06 fixture with type G06P.
 - b. On Lighting Fixture Schedule, add Note 7 as follows:

"EC to verify that all light fixtures meet government 'Made in the USA' requirements".
44. Drawing E-2.1: REPLACE drawing with Drawing E-2.1 revised April 13, 2010.
45. Drawing E-2.2: REPLACE drawing with Drawing E-2.2 revised April 13, 2010.
46. Drawing E-2.3: REPLACE drawing with Drawing E-2.3 revised April 13, 2010.
47. Drawing E-2.4: REPLACE drawing with Drawing E-2.4 revised April 13, 2010.
48. Drawing E-4.1: First Floor Mechanical Equipment Plan
- a. In Medical Section C107D, add 60A, single-pole disconnect switch fused at 60A and provide power DWH-7 on east wall from circuit '1H1-17' referencing connection detail 2-E-4.2. Coordinate exact location with PC.
 - b. In Break C109, relocate DWH-4 to west wall instead of east wall.
49. Drawing E-4.2: Second Floor & Maintenance Mechanical Equipment Plan, Details and Schedules – On Mechanical Equipment Schedule, Add DWH-7 with the same requirements as DWH-6.
50. Drawing E5.1: Electrical Symbols & Abbreviations –
- a. Revise sheet title to be 'Riser & Single-Line Diagrams'
 - b. On Single-Line Diagram, revise circuit breaker feeding Panelboard 1H1 to be 225A/3P.

- c. On Riser Diagram, revise feeder tag to Panelboard 1H1 to be Feeder Tag 6.
- d. Detail 1/E-5.1 Main Switchboard 'MSBD' Front Elevation, revise circuit breaker number 13 feeding Panelboard 1H1 to be 225A/3P.
- e. Revise Emergency Generator to be 750KW/938KVA.
- f. Revise circuit breaker in Emergency Generator feeding Fire Pump to be 175A.
- g. Revise Fire Pump to be 75HP.
- h. Revise Feeder Tag No. 16 as follows:

TAG	SETS	CONDUIT (PER SET)		CONDUCTORS (PER SET)									SIZE OF OVERCURRENT PROTECTION
				PHASE			NEUTRAL			GROUND			
		SIZE	TYPE	NO.	SIZE	TYPE	NO.	SIZE	TYPE	NO.	SIZE	TYPE	
16	1	2"	EMT	3	2/0AWG	CU THWN	1	2/0AWG	CU THWN	1	6AWG	CU THWN	175A

51. Drawing E-5.2: Panelboard Schedules –

- a. Revise Panelboard 1H1 to be 225A with main lugs only.
- b. Add 60A/1P circuit breaker in Panelboard 1H1, circuit 17 for DWH-7.

52. Drawing E-7.1: REPLACE drawing with Drawing E-7.1 revised April 13, 2010.

53. Drawing E-7.2: REPLACE drawing with Drawing E-7.2 revised April 13, 2010.

54. Drawing E-7.3: REPLACE drawing with Drawing E-7.3 revised April 13, 2010.

55. Drawing E-7.4: REPLACE drawing with Drawing E-7.4 revised April 13, 2010.

56. Drawing E-7.5: REPLACE drawing with Drawing E-7.5 revised April 13, 2010.

57. Drawing E-7.6: Telecommunications Riser Diagram –

- a. In NG-TR B100A – Add one additional item A01 (19" Floor Mounted Open Rack). Add four additional items C02 (48 Port Category 6 Patch Panel).
- b. In NG-TER C116 – Add one additional item C02 (48 Port Category 6 Patch Panel).

- c. In USAR –TER C118 – Add one additional item C02 (48 Port Category 6 Patch Panel).
- d. In NG-TR C206 – Add one additional item A01 (19" Floor Mounted Open Rack). Add one additional item C02 (48 Port Category 6 Patch Panel).
- e. Remove any reference to 'Category 6e' cabling and replace with 'Category 6'.
- f. In NG-TER C116 – Add four additional items C10 (72 port Fiber Optic Distribution Shelf).
- g. In NG-TR B100A – Add one additional item C10 (72 port Fiber Optic Distribution Shelf).
- h. In NG-TR C206 – Add one additional item C10 (72 port Fiber Optic Distribution Shelf).
- i. In USAR-TER C118 – Add one additional item C10 (72 port Fiber Optic Distribution Shelf).
- j. In NG-TR D103 – Add one additional item C09 (12 port Fiber Optic Distribution Shelf).
- k. In SIPRNET C117 – Add one additional item C09 (12 port Fiber Optic Distribution Shelf).
- l. Remove any reference to '66 blocks' and replace with '110 blocks' Remove any reference to '66 blocks' and replace with '110 blocks'

FOR CLARIFICATION / INFORMATION

1. Pre-Construction Meeting Minutes and Sign-in Sheet are included with this addendum.
2. This project is not tax exempt and the contractor will be required to pay all applicable state and local taxes.
3. The shop drawing submittal schedule is to be submitted indicating when submittals are anticipated to be submitted and the required time for return. Long lead time items such as foundation and framing steel drawings and submittals that require MEP or Civil review are to be given extra time for consultant review.

4. Control joints in the masonry shall be provided as required by the masonry notes on Drawing S-0.1 and Contractor will provide proposed joint locations for approval by Architect.

REQUESTS FOR INFORMATION:

Be it known that the following written requests for information were received through the end of business April 13, 2010. Each written request for information is followed by the appropriate answer.

1. **Q:** Are the drawings going to be available for viewing online at internet plan rooms?

A: Most of the plan rooms have the availability to view documents on line depending on membership, contractors will need to contact plan rooms as listed in the specifications.

2. **Q:** Will an Excel Spreadsheet be acceptable for bidding the unit prices?

A: Yes. However, the owner cannot be responsible for any items omitted as a result of transferring information from the bid form to an Excel Spreadsheet.

3. **Q:** The Insurance certificate & Liquidated Damages section in <<image001.png>> The General Provision contain garbled text. Please clarify.

A: A legible copy of the Insurance certificate and Liquidated Damages sections will be included in this Addendum, see the enclosures.

4. **Q:** Is there going to be a specific line item for the Maintenance Building or is it to be included in the Main Building?

A: The Revised Bid Form will include a specific line item for the Maintenance Building.

5. **Q:** There is a conflict between the bid form and the allowances section for allowance #2. The Bid form states \$60,000.00 and section 012100 states allowance #2 to be \$10,000.00. We assume the \$10,000.00 is the correct value. Is this assumption correct?

A: Yes, \$10,000.00 is the correct value.

6. **Q:** There have been many subcontractors unable to attain the bid documents from the builder's exchanges and printers, due to this fact we respectfully request a bid extension of 1 week to allow all interested parties to properly prepare their bids for this project.

A: *Due to the time constraints of the Funding Agency a bid extension is not possible.*

7. **Q:** We request an extension of the deadline for questions of 1 week as well for the same document procurement problem above.

A: *Due to the State Purchasing requirements, an extension of the deadline for questions would require an extension of the bid date. As described in item #6 above, an extension of the bid date is not possible.*

8. **Q:** We request that all addendum documents be issued in pdf format to alleviate the printing problem described in item #2 above.

A: *The addendum will be in .pdf format which is a State Purchasing requirement.*

9. **Q:** In reference to Section 51200 Structural Steel. There is a very limited group of AISC certified erectors that has the potential to cause a lack of competition in this portion of the bid. We request that the AISC certifications for the structural steel erectors be waived for this project.

A: *This is a quality control requirement that will remain as originally specified.*

10. **Q:** In reference to bid alternates. Our assumption is that the alternates will be decided at the award of the contract and all alternate pricing will expire upon the notice to proceed with the base bid. Is this correct?

A: *The bid form states that the owner has the option to accept alternates at the bid price by change order to the contract for a period of 120 days after the contract award.*

11. **Q:** Specification section 0181136 (018113) – Sustainable Design requirements has been omitted from our bid manual. Please provide this section.

A: *Specification section 018113 is included in this addendum. See the enclosures.*

12. **Q:** Specification Section 221113 – Facility Water Distribution was omitted from our project manual. Please provide.

A: *Specification section 221113 is included in this addendum. See the enclosures.*

13. **Q:** Specification Section 221324 – Oil Water Separator was omitted from our project manual. Please provide.

A: *Specification section 221324 is included in this addendum. See the enclosures.*

14. **Q:** These specifications are provided in the manual but not listed in the table of contents 230000, 233733, 233813, 235219, 237339, 237413, 238126, 238213, 238239, 238323 and 260000 please clarify.

A: *A revised Table of Contents is included in this addendum. See enclosures.*

15. **Q:** Our assumption in reference to the geotechnical report is that it has been provided for information of the soils conditions. Any structural recommendations or remediation recommendations in the report that may or may not have been selected by the design professionals are incorporated into the drawings and specifications. The drawings and specifications are the governing documents. Is this correct?

A: *The Geotechnical Report included in the original specification was a draft report, the addendum will remove the draft report and will include the final boring and testing data.*

16. **Q:** Section 75323 (EPDM Roofing) listed in the TOC, but not included in the specs. Confirm this section is deleted or provide.

A: *Section 075323 has been removed from the project.*

17. **Q:** Added Section 75423 (TPO Roofing), but not listed in the TOC. Confirm this section applies.

A: *This section applies. Section 075423 will be in the revised TOC. See enclosures.*

18. **Q:** Section 82200 (FRP Doors), listed in the TOC, but not included in the specs. Confirm this section is deleted or provide.

A: *Section 082200 is the correct spec section for FRP Doors. The TOC is correct. The section shows 082200 at the top of the page. The section number at the bottom of each section page should read 082200 not 08340.*

19. **Q:** Added Section 08340 (FRP Doors), but not listed in the TOC. Confirm this section applies.

A: *See answer for Q 18 above.*

20. **Q:** Section 18113 (LEED Requirements) listed in the TOC, but not included. Confirm this section is deleted or provide.

A: *Specification section 018113 is included in this addendum. See enclosures.*

21. **Q:** Section 13300 (Submittals) listed in the TOC, but not included. Confirm this section is deleted or provide.

A: *Section 013300 Submittals is included in this Addendum. See enclosures.*

22. **Q:** Added Section 233733 (Louvers), but not listed in the TOC. Confirm this sections applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

23. **Q:** Section 08710 listed as Section 087100 in the TOC. Confirm this section is revised as noted.

A: *Section 08710 Door Hardware and 087100 Door Hardware are one and the same.*

24. **Q:** Added Section 233813 (Commercial Kitchen Hoods), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

25. **Q:** Added Section 235100 (Breechings, Chimneys, & Stacks), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

26. **Q:** Added Section 235219 (Copper Fin Boilers), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

27. **Q:** Added Section 235523 (Gas Fired Radiant Heaters), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

28. **Q:** Added Section 237339 (Direct Gas Fired Heating & Ventilation Units), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

29. **Q:** Added Section 237413 (Packaged, Outdoor, Central Station AHU), but not listed in the TOC. Confirm this section Applies..

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

30. **Q:** Added Section 238126 (Split System A/C Units), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

31. **Q:** Added Section 238213 (Valance Heating Units), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

32. **Q:** Added Section 238233 (Convectors), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

33. **Q:** Added Section 238239 (Unit Heaters), but not listed in the TOC. Confirm this section applies.

A: *This section is part of the Documents. See the revised TOC in the enclosures.*

34. **Q:** Door Schedule: Many openings are shown on drawings with missing information on schedule – door/frame type, material, hardware, etc. Provide a complete schedule.

A: *See Door Schedule A-5.2 (revised 13 April 2010). See enclosures.*

35. **Q:** Payment terms indicated for Bid Items 3 & 6 note payment of GA as quarterly installments of progress with the final 25% not paid until final close-out is completed. This creates a hardship on the contractor for payment and essentially increases the retainage already being held for the project. Can these payment terms be modified to a more traditional arrangement of billings based on percentage of work complete or a fixed monthly cost.

A: *See revised Bid Form Section III dated 13 April 2010.*

36. **Q:** Section II & III of the bid form do not address any of the alternates beyond alternate 5. Please revise bid form to include these alternates and also provide the written description of each.

A: *The Bid Form (Section 1) includes a place for alternates beyond 5 and the alternate descriptions are in section 012300.*

37. **Q:** While this project was advertised on 3/26, drawings were not issued until 3/31. In addition the digital files received on 4/1 were corrupted and not usable and a follow-up CDR was required to be sent that was received on 4/7. Given that two weeks were lost to receipt of usable documents we request a one week bid extension. Please advise.

A: *Plan rooms as well as contractors had the option to obtain hard copy documents in lieu of or in addition to digital copies. As described in item #6, above an extension of the bid date is not possible.*

38. **Q:** The The geotechnical recommendations indicate that if foundation concrete is not able to be poured within "a few" hours of exposure of the bottom of footing elevation that a mud mat and sealing of excavation sidewalls is required to be poured to seal the area. The report also states that if after four hours of exposure a mud mat should be placed. Given the inspection requirements of the CQC program it is not feasible to accomplish excavation, verification of compaction on subgrade, placement of rebar, inspection of rebar and placement of concrete in four hours. This would indicate that the mudmat will be required in all areas. Please confirm that the requirements of the geotechnical report will govern and that this four hour window is required. If this is the case confirm that the mudmat and wall treatment will be required..

A: *A bid item for mud mat has been added to the contract. It is required under all buildings in all areas.*

39. **Q:** In drawing C 1-6 where does the UE/Comm ductbank end. Currently this utility runs off the page. Please confirm that the routing shown on ES-0.1 is correct.

A: *Sheet C1-6 has been revised.*

40. **Q:** For drawing C 1-6 should the water line be cased at all sanitary sewer crossings? It does not appear from the section cuts that a 10' vertical spacing will be possible.

A: *Sheet C1-6 has been revised.*

41. **Q:** For drawing C 1.6 should the sanitary line be concrete encased at all storm sewer crossings? It does not appear from the section cuts that a 10' vertical spacing will be possible. If so indicate how far the encasement should go from edge of storm pipe.

A: *Sheet C1-6 has been revised.*

42. **Q:** For drawing C 1.6 should the 5" PE gas line be cased under the parking lot?.

A: *Sheet C1-6 has been revised.*

43. **Q:** Code note 5 on ES-0.1 appears to be incorrect. Please advise.

A: *Coded Notes No. 5 and No. 8 are reversed.*

44. **Q:** On ES-0.2 the trench details do not show the duct banks bearing on the bottom of excavation. Is it the intent to excavate the trench and then backfill some height to ductbank elevation? If so what is the elevation of backfill prior to duct bank elevation?

A: *Trenches on site utility drawings are schematic and are only intended to reflect the requirements of the duct back only and not the actual trenching.*

45. **Q:** Note 9 on Landscape Plan L1.0 indicates that the contractor will be responsible for soil preparation, but the Owner will be responsible for seeding all lawn areas. Specification for Turf and Grasses and Bid Items 37 and 38 imply that the seeding will be by the contractor. Please clarify who is responsible for seeding and maintenance of lawns. If the seeding is to be by the contractor, please provide locations for the type I and type II lawns.

A: *Note 9 on Landscape Plan L1.0 is to be DELETED and the specifications for Turf and Grasses will apply.*

46. **Q:** Please confirm that the basketball gym equipment is N.I.C.

A: *The basketball equipment is N.I.C.*

47. **Q:** Please confirm that the beds/bunks are N.I.C.

A: *The beds/bunks are N.I.C.*

48. **Q:** Please confirm that the “room signs” and “directory” are the only signs included in the base bid. All other signs shown on sheet A-6.4 are to be included in add alternate #15..

A: *The only sign in Alternate #15 is the Entrance Sign/Facility Sign as indicated as Layout Note 43 on C1.3 and detailed on A-6.4. All other signs are included in the base bid.*

49. **Q:** Please provide locations for the horizontal louver blinds.

A: *Windows W-6a, W-6b, W-6c, W-6d, W-7a, W-7b, W-8, W-9, W-11, SF-14, SF-16 .*

50. **Q:** Please provide a steel support detail for the gym divider curtain.

A: *Details determined once a manufacturer has been selected since installation will vary depending on vendor.*

51. **Q:** Please clarify the roof snow load for the pre-engineered maintenance building. The specs call out a roof live load of 30 psf + auxiliary load of 8 psf. The general structural notes call out a 30 psf. snow load.

A: *Roof LL=30 psf*

52. **Q:** Please provide design loads for the maintenance building.

A: *See Drawing S-0.1, General Notes.*

53. **Q:** Will the underside of the canopy roof get covered with ceiling liner? Will the canopy roof be insulated?

A: *See wall sections C3 & C4 on A-4.8 and C5 & C6 on A-4.9. No ceiling liner required, exposed deck and structure to be painted. R-30 insulation.*

54. **Q:** Can an insulated, concealed fastener wall panel with a metal liner on the back be used in place of the wall panel with insulation board and interior liner panel?

A: *Referring to the Maintenance Building, Yes.*

55. **Q:** How will excavated material that is deemed unsuitable and therefore not usable for backfill be paid?

A: *It is an incidental cost.*

56. **Q:** What is the assumed depth for over-excavation? The unit cost for Bid Item 19 is listed as per SY, should this be listed as CY?.

A: *Over-excavation remains SY. See Specification 312000, Section 3.8.D.*

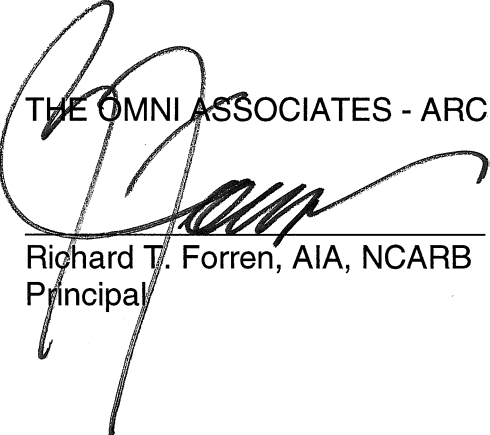
57.Q: Given the statements in the geotechnical, it appears that rock excavation will be an issue. To ensure accurate bids will a bid unit be established for rock excavation?

A: No.

58.Q: On plan C 1-5 please provide the location of Pond #1 on the contract documents. There is no reference on the site grading plan to a pond 1.

A: *Pond 1 is located at the far western portion of the Cokeworks Trust Property. This is shown on Sheet C1.7.*

THE OMNI ASSOCIATES - ARCHITECTS



Richard T. Forren, AIA, NCARB
Principal

END OF ADDENDUM

Enclosures:

1. Revised "Table of Contents"
2. Revised "Bid Form" Sections I, II, III (revised 13 April 2010)
3. Sign-In Sheet
4. Pre-bid Meeting Minutes
5. Pre-bid Civil Notes

6. List of Proposed Sub's and Equip-Material Suppliers
7. Geotechnical Engineering Report (5 April 2010)
8. Drawing: A-5.2 Schedules Door (Revision date 13 April 2010)
9. Drawing: A-1.13 Enlarged Kitchen Plan (Revision date 13 April 2010)
10. Drawing: SK-3 Medical Section C107D (Dated 13 April 2010)
11. Insurance Certificate
12. Federal General Provisions
13. Specification Section 001000 Information and Instructions to Bidders (13 April 2010)
14. Specification Section 011000 Summary
15. Specification Section 013300 Submittals
16. Specification Section 018113 Sustainable Design
17. Specification Section 052100 Steel Joist Framing
18. Specification Section 053100 Steel Decking
19. Specification Section 054000 Cold-Formed Metal Framing
20. Specification Section 096519 Resilient Tile Flooring
21. Specification Section 221113 Facility Water Distribution
22. Specification Section 221324 Oil Water Separator
23. Specification Section 231123 Exterior Facility Natural Gas Piping
24. Specification Section 312000 Earth Moving
25. Drawing C1-1
26. Drawing C1-1.1
27. Drawing C1-1.2
28. Drawing C1-3
29. Drawing C1-3.1
30. Drawing C1-3.2
31. Drawing C1-4
32. Drawing C1-4.1
33. Drawing C1-4.2
34. Drawing C1-4.3
35. Drawing C1-4.4
36. Drawing C1-4.5
37. Drawing C1-4.6
38. Drawing C1-4.7
39. Drawing C1-4.8
40. Drawing C1-4.9
41. Drawing C1-6
42. Drawing C1-6.1
43. Drawing C1-6.2
44. Drawing C2-7
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46. Drawing E-2.1
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**WVARNG Fairmont Armed Forces Readiness Center
BID FORM - SECTION I
(Base Bid and Alternates)
Revised 13 April 2010**

Dated: _____
(Bidder to insert date bid submitted)

SUBMITTED BY:

_____ *(Hereinafter called "Bidder")*

West Virginia Contractor's License Number: WV _____

SUBMITTED TO:

The State of West Virginia *(hereinafter called "Owner")*

The Bidder, being familiar with local conditions affecting the cost of the Work and the contract documents, including Instructions to Bidders, Bid Form, General Conditions, Drawings, Specifications, and any Addenda or Clarifications issued, hereby proposes to furnish all material, labor, tools, taxes, transportation and expendable equipment and all service necessary to complete in a workman like manner all the work required for:

**The Fairmont Armed Forces Reserve Center
West Virginia Army National Guard
Fairmont, Marion, West Virginia**

All in accordance with the Drawings and Specifications as prepared by Omni Associates-Architects, Inc., 1543 Fairmont Avenue, Fairmont, West Virginia 26554 (304)367-1417.

BASE BID:

For the Sum of:

_____ (\$ _____)

(The Base Bid includes the summation of items as described in Section II of the Bid Form.)

ALTERNATES:

The stated base bid is subject to the following additions for Alternates which the Owner may select. ('Provide' means 'furnish and install.' Include in bids below all related coordination and modification requirements associated with the Work of each Alternate.) The Owner shall have the option to accept alternates at the bid price by Change Order to the Contract for a period of 120 days after the contract award.

Refer to Section 012300 entitled "Alternates" for description of Alternates (*Amount to be shown in both words and numbers.*):

Alternate No. 1: Phase 2 Earthwork

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 2: Military Equipment Parking Expansion

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 3: Field Fencing

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 4: Civic Arena Parking Area

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 5: Fencing and Gate Upgrade

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 6: Vestibule A100

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 7: Landscaping

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 8: Kitchen Equipment

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 9: Generator and Switchgear Sized for Additional Emergency Power

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 10: Make-Up Air Unit for the Maintenance Building

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 11: Warm-Up Kitchen Equipment

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 12: Telescoping Stands (sections B, E & F)

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 13: Telescoping Stands (sections A & C)

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 14: Telescoping Stands (sections D & G)

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 15: Entrance Signs

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 16: Floor Boxes in Assembly Hall

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 17: Sound System in Assembly Hall

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 18: Projection Screen in Assembly Hall

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 19: Wood Athletic Flooring

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 20: Lightning Protection

ADD the sum of: _____
_____ (\$ _____).

Alternate No. 21: Additional Data Jacks

ADD the sum of: _____
_____ (\$ _____).

If awarded contract on Base Bid, I (we) agree to perform the work to completion and ready for operation and use no later than **445 days** from Notice to Proceed. In addition to liquidated damages specified in Federal Guidelines, General Provisions 54, an additional fee of \$1,250.00 per day to cover expenses to the Government will be assessed. Total liquidated damages are \$2,750.00 first day and \$1,500.00 per day thereafter for work not completed after contract completion date.

For the purpose of this contract, one calendar day is counted from midnight to midnight and also any part of that 24-hour day period shall be counted as one calendar day. The Bidder certifies that this bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this bid with any other bidder or with any competitor. The Bidder agrees that the Owner reserves the right to reject any or all bids, and to waive any formalities in the bidding. The Bidder agrees that this bid shall be good and binding and may not be withdrawn for a period of 120 days.

The Bidder acknowledges receipt of the following Addenda: (Please list by number and date.)

SIGNATURE OF BIDDER:

Firm: _____ By: _____

Address: _____ Title: _____

Address: _____ Phone: _____

Address: _____ Fax: _____

Tax Cert#: _____

END OF SECTION I

BID FORM - SECTION II – (Unit Prices)
Revised 13 April 2010

The costs indicated below are included in, and are a breakdown of, the Base Bid. In the event the total segregated prices shown below differ from the Base Bid indicated above, the Base Bid will govern.

In the event that unit quantities stated below differ from quantities required for completion of the Work, unit costs as stated below shall be the basis of adjustments in Contract Sum, in accordance with Contract Conditions, Section 012200 – Unit Prices.

Item No.	Quantity	Description	Unit	Unit Price	Amount
General Contract Administration					
1	1	Armed Forces Reserve Center (Zones A, B, C)	LS		
2	1	Maintenance Building (Zone D)	LS		
3	1	Mobilization/Demobilization	LS		
4	1	General Administration	LS		
5	1	Project Quality Control	LS		
Site General Contract Administration					
6	1	Sitework Mobilization/Demobilization	LS		
7	1	Sitework General Administration	LS		
8	1	Sitework Project Quality Control	LS		
9	1	WVDOH Encroachment Permit (Allowance No. 2)	LS		\$10,000.00
Site Preparation					
10	1	Site Preparation	LS		
11	1	Gas Line Relocation (Allowance No. 3)	LS		\$200,000.00
12	1	Sediment and Erosion Control	LS		
13	3	Sediment Pond	EA		
14	10	Waste Removal	TN		

Earthwork					
15	442,000	Unclassified Excavation	CY		
16	1	6" Lean Concrete Mat	LS		
17	1	Waterproof Coating	LS		
18	15,000	Subgrade Preparation	SY		
19	300	Soil Drying	TN		
20	3,000	Soil Conditioning-12"	SY		
21	1,000	Soil Conditioning-18"	SY		
22	3,000	Over-Excavation	SY		
23	2,300	6" Subsurface Drains	LF		
24	1,700	8" Subsurface Drains	LF		
Roads					
25	13,000	7" Concrete Paving	SY		
26	1,070	HMA Wearing Course	TN		
27	4,420	HMA Base Course	TN		
28	5,800	Free Draining Base	TN		
29	5,040	Free Draining Base Trench and Piping	LF		
30	25,900	Fabric Separation	SY		
31	4,500	Class 1 Stone	TN		
32	1	Pavement Marking	LS		
33	163	Wheel Stops	EA		
34	1,400	Concrete Curbing	LF		
35	1	Signage	LS		
36	170	Grass Pavers	SY		

37	730	Gravel Road	LF		
Miscellaneous					
38	400	Screening Berm	LF		
39	1,500	Sidewalk	SY		
40	1	Type I Lawn	LS		
41	1	Type II Lawn	LS		
42	1	Type III Ground Cover for Slopes	LS		
43	2	Force Protection Gate	EA		
44	3	24' Sliding Gate	EA		
45	2	16' Swing Gate	EA		
46	1,140	Security Fencing	LF		
47	1	Concrete Stairs	LF		
48	2	40' Flagpole	EA		
49	800	Retaining Wall	LF		
50	45	Loading Dock Wall	LF		
51	1	Vehicle Wash System	LS		
52	1	Oil/Water Separator	EA		
53	1	Loading Ramp	LS		
54	30	Bollards 8"	EA		
55	20	Bollards 12"	EA		
56	15	Bollards Removable	EA		
57	1	Trash Enclosure	LS		
Water					
58	20	2"DIP Water	LF		

59	160	2" PVC Water	LF		
60	330	4" PVC Water	LF		
61	1,400	6" PVC Water	LF		
62	200	6" DIP Water	LF		
63	200	8" PVC Water	LF		
64	800	12" PVC Water	LF		
65	600	12" DIP Water	LF		
66	1	PIV	EA		
67	4	Fire Hydrant	EA		
68	1	Water Vault	EA		
Sewer					
69	120	Manholes, Sanitary Sewer	VF		
70	17	Frame and Cover, Sanitary Sewer	EA		
71	1,250	6" PVC Sanitary Sewer	LF		
72	1,400	8" PVC Sanitary Sewer	LF		
73	3	Cleanout, Sanitary Sewer	EA		
Utility Extensions					
26	1,200	HMA Wearing Course	TN		
74	30	8" DIP Water	LF		
65	1,200	12" DIP Water	LF		
67	1	Fire Hydrant	EA		
69	35	Manholes, Sanitary Sewer	VF		
70	5	Frame and Cover, Sanitary Sewer	EA		
72	1,560	8" PVC Sanitary Sewer	LF		

75	850	Street Repair	LF		
76	4	Service Connections	EA		
GAS					
77	630	2" Gas Service Lines	LF		
78	700	3" Gas Service Lines	LF		
Storm Drainage					
79	800	6" PVC Storm	LF		
80	780	8" PVC Storm	LF		
81	900	12" PVC Storm	LF		
82	1,000	12" HDPE Storm	LF		
83	2,000	18" HDPE Storm	LF		
84	1,400	24" HDPE Storm	LF		
85	1,160	42" HDPE Storm	LF		
86	1,200	Type 1 Ditch	LF		
87	200	Type 2 Ditch	LF		
88	1,800	Type 4 Ditch	LF		
89	3,000	Type 5 Ditch	LF		
90	4	Junction Box	EA		
91	1	42" Junction Box	EA		
92	2	Modified Junction Box	EA		
93	14	Type "B" Drop Inlets	EA		
94	35	Type "B" Inlet Grate & Frame	EA		
95	2	Type "G" Drop Inlets	EA		
96	2	Type "G" Inlet Grate & Frame	LF		

97	1	Modified Inlet	EA		
98	1	Modified Grate & Frame	LF		
99	10	10" Yard Drains	LS		
100	12	12" In-Line Inlets	EA		
101	40	Trench Drain and Grate	LF		
102	3	Concrete Headwall	EA		
Power and Communications					
					20
103	20	Electrical Duct Bank Type 1	LF		
104	43	Electrical Duct Bank Type 2	LF		
105	62	Electrical Duct Bank Type 3	LF		
106	36	Communications Duct Bank Type 1	LF		
107	1,640	Combined Duct Bank Type 1	LS		
108	1	Transformer Pad	LS		
109	1	Emergency Generator Pad	LS		
110	2	JICCS Pad	LS		
				Bid Total	
		ALTERNATE BID ITEM #1-Phase 2 Earthwork			
Alternate Bid Item #1-Phase 2 Earthwork					98,000
15	98,000	Unclassified Excavation	CY		
19	10	Soil Drying	TN		
20	100	Soil Conditioning - 12"	SY		
22	100	Over-Excavation	SY		

23	250	6" Subsurface Drain	LF			
					Total	
ALTERNATE BID ITEM #2 - Military Equipment Parking Expansion						
						5,400
18	4,430	Subgrade Preparation	LF			
29	150	Free Draining Base Trench Piping	SY			
30	660	Fabric Separation	TN			
111	4,430	Fabric, Woven	SY			
112	3,000	AASHTO #1	TN			
31	980	Class 1 Stone	TN			
44	1	24' Sliding Gates	EA			
46	900	Security Fencing	LF		Total	
ALTERNATE BID ITEM #3 - Field Fencing						
						3
113	3	24' Double Swing Farm Gate	EA			
114	3,900	Field Fencing	LF			
					Total	
ALTERNATE BID ITEM #4 - Civic Arena Parking Area						
						11,000
21	9,900	Soil Conditioning-18"	SY			
26	800	HMA Wearing Course	TN			
27	2,125	HMA Base Course	TN			
28	2,230	Free Draining Base	TN			

29	1,800	Free Draining Base Trench & Piping	LF		
30	9,900	Fabric Separation	SY		
31	1,680	Class 1 Stone	TN		
115	1	Pavement Markings	LS		
116	1	Signage	LS		
				Total	
ALTERNATE BID ITEM #5 - Fencing and Gate Upgrade					
1					
117	1	Fencing/Gate Upgrade	1	LS	
				Total	

SECTION III – DESCRIPTION OF BID ITEMS

Bid Item 1: Armed Forces Reserve Center (Zones A, B, C)

Unit: Lump Sum (LS)

Description: The item shall consist of any and all material, equipment, and labor for items required by the contract documents to provide a complete and functional Armed Forces Reserve Center building and/or assembly as shown under Base Bid in the drawings and Specifications. The Reserve Center includes lobbies, corridors, administration space, recruiting and family support space, educational facilities, storage, locker rooms, physical training rooms, mail rooms, drills halls, toilets, janitor closets, as well as mechanical, electrical, and data rooms.

This item shall include any additional items related to Site Construction where a unit cost has not been requested. Additionally, this work shall include site utilities, excavation and backfill to foundation Subgrade for utilities and foundations, and grading within five feet of the building perimeter. The work shall include, but is not limited to, all materials, labor, equipment, and incidentals to construct the facility within the terms and conditions of the plans and specifications. This work also includes, but is not limited to: building excavation; backfill; foundation systems; gravel dry beds; concrete; masonry; veneer brick; structural steel; metal stud framing; pre-engineered; metal trusses; carpentry and wood decking; waterproofing; insulation; roofing; interior and exterior walls; railings; doors; windows; finishes; casework; mechanical systems; electrical systems; fire suppression systems; fire alarm; and data systems. The full extent of this work is defined by the Contract Documents, including the drawings and Project Manual, dated March 25, 2010 as well as any addenda issued during the bidding process. Work shall include, but is not limited to, providing labor, materials, equipment, and incidentals necessary to perform all items of work.

Measurement: Measurement will be based on completion of the work described and accepted by the Contraction Officer Technical Representative (COTR)

Payment: Payment for item will be in accordance with the specifications

Bid Item 2: Armed Forces Reserve Center, Maintenance Building (Zone D)

Unit: Lump Sum (LS)

Description: The item shall consist of any and all material, equipment, and labor for items required by the contract documents to provide a complete and functional Armed Forces Reserve Center building and/or assembly as shown under Base Bid in the drawings and Specifications. The Maintenance Building includes, maintenance work bays, storage, toilets, janitor closets, as well as mechanical, electrical, and data rooms.

This item shall include any additional items related to Site Construction where a unit cost has not been requested. Additionally, this work shall include site utilities, excavation and backfill to foundation Subgrade for utilities and foundations, and grading within five feet of the building perimeter. The work shall include, but is not limited to, all materials, labor, equipment, and incidentals to construct the facility within the terms and conditions of the plans and specifications. This work also includes, but is not limited to: building excavation; backfill; foundation systems; gravel dry beds; concrete; masonry; veneer brick; structural steel; metal stud framing; pre-engineered; metal trusses; carpentry and wood decking; waterproofing; insulation; roofing; interior and exterior walls; railings; doors; windows; finishes; casework; mechanical systems; electrical systems; fire suppression systems; fire alarm; and data systems. The full extent of this work is defined by the Contract Documents, including the drawings and Project Manual, dated March 25, 2010 as well as any addenda issued during the bidding process. Work shall include, but is not limited to, providing labor, materials, equipment, and incidentals necessary to perform all items of work.

Measurement: Measurement will be based on completion of the work described and accepted by the Contraction Officer Technical Representative (COTR)

Payment: Payment for item will be in accordance with the specifications

Bid Item 3: Mobilization/Demobilization

Unit: Lump Sum (LS)

Description: This work shall consist of the performance of construction preparatory operations, including the movement of personnel, equipment, and materials to and from the project site; payment of performance bond, guaranty bond, and other insurance premiums; establishment and removal of the contractor's field office and storage facilities, including fenced enclosure of staging area.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment for item will be in three installments. The first payment of 50 percent of the lump sum price will be made on the first estimate following partial mobilization including the placement or erection of the Contractor's office and storage facilities and the initiation of construction work. The second payment of 25 percent will be made on the next estimate following completion of substantial mobilization. The remaining 25 percent will be paid upon demobilization and satisfactory restoration of the contractor's staging and work area and final completion of the Project.

Bid Item 4: General Administration

Unit: Lump Sum (LS)

Description: This work shall consist of performing the construction administrative duties to include, but not limited to, such activities as scheduling, project management, temporary utilities and facilities, temporary access roads or structures, etc. associated with managing the construction of the Project as stated in Division 1 and throughout the Specifications, providing construction layout, providing temporary utilities for the site until 100% acceptance of the project by the COTR, and coordination of permanent utility installation and tie-in of site grading and access roads, administration and maintenance of all required permits for the project, including permit fees, and City of Fairmont Business and Occupation Taxes. In addition to any State and Federal permits, the City of Fairmont requires a "Grading, Filling, or Clearing" permit.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment will be paid for at the contract lump sum price, based on percentage of contract completion.

Bid Item 5: Project Quality Control

Unit: Lump Sum (LS)

Description: This work shall consist of establishing and maintaining a Quality Control Program throughout the duration of the project.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item

Payment: This item will be paid for at the contract lump sum price, based on percentage of completion.

Bid Item 6: Sitework Mobilization/Demobilization

Unit: Lump Sum (LS)

Description: This work shall consist of the performance of construction preparatory operations associated with the sitework, including the movement of personnel, equipment, and materials to and from the project site; payment of performance bond, guaranty bond, and other insurance premiums; establishment and removal of the contractor's field office and storage facilities, including fenced enclosure of staging area.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment for item will be in three installments. The first payment of 50 percent of the lump sum price will be made on the first estimate following partial mobilization

including the placement or erection of the Contractor's office and storage facilities and the initiation of construction work. The second payment of 25 percent will be made on the next estimate following completion of substantial mobilization. The remaining 25 percent will be paid upon demobilization and satisfactory restoration of the contractor's staging and work area and final completion of the Project.

Bid Item 7: Sitework General Administration

Unit: Lump Sum (LS)

Description: This work shall consist of performing the construction administrative duties associated with managing the construction of the Sitework as stated in Division 1 and throughout the Specifications associated with the Sitework, providing construction layout, providing temporary utilities for the site and coordination of permanent utility installation and tie-in of site grading and access roads, administration and maintenance of all required permits for the project, including permit fees, and City of Fairmont Business and Occupation Taxes. In addition to any State and Federal permits, the City of Fairmont requires a "Grading, Filling, or Clearing" permit.

Measurement: Measurement will be based on completion of the work described, prorated from lump sum amounts according to the Basis of Payment below.

Payment: Payment will be paid for at the contract lump sum price, based on percentage of contract completion.

Bid Item 8: Sitework Project Quality Control

Unit: Lump Sum (LS)

Description: This work shall consist of establishing and maintaining a Quality Control Program throughout the duration of the project.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item

Payment: This item will be paid for at the contract lump sum price, based on percentage of completion.

Bid Item 9: WVDOH Encroachment Permit(s) (Allowance)

Unit: Lump Sum (LS) (Allowance)

Description: This work shall consist of obtaining encroachment permit(s) for the access road tie-in, grading, and stormwater drainage on WVDOH right of ways as shown on the Plans or as required by the WVDOH. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The contractor will not bid on this work, but will be reimbursed the actual permit fee(s). The contractor shall submit an estimate for the permit(s) to the COTR for approval prior to submitting the application(s).

Payment: This item shall be reimbursed by submitting the permit fee(s) receipt(s), based on acceptance of the encroachment(s) by the WVDOH and the COTR.

Bid Item 10: Site Preparation

Unit: Lump Sum (LS)

Description: This work shall consist of the removal of trees and other vegetation, topsoil stripping and stockpiling, removal of existing utilities, installation of temporary utilities, and clearing and grubbing of all areas disturbed by the Contractor. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the contractor in completing this item.

Payment: Payment shall be made at the contract unit price per lump sum.

Bid Item 11: Gas Line Relocation (Allowance)

Unit: Lump Sum (LS) (Allowance)

Description: This work shall consist of relocating the 8" Dominion Hope natural gas distribution line to the locations shown on the Plans or as required by the utilities. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The contractor will not bid on this utility work, but will be reimbursed the actual approved invoice cost. The contractor shall submit an estimate for the relocation work to the COTR for approval prior to execution.

Payment: This item shall be paid for the approved invoice from the utility company, based on acceptance of the relocation by the affected utility and the COTR.

Bid Item 12: Sediment and Erosion Control

Unit: Lump Sum (LS)

Description: This item shall consist of furnishing, installation, maintenance and subsequent removal of necessary storm water structures, best management practices, and other work required to prevent escape of sediment from disturbed areas of project site. Also included is the preparation, submission, and administrative maintenance of any permits required by the West Virginia Department of Environmental Protection (WVDEP) or other agencies. This includes performing all work prescribed in a workmanlike and acceptable manner,

including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the contractor in completing this item.

Payment: Payment for item shall be in three installments. The first payment of 50% of the lump sum price shall be made on the first estimate following issuance of a WV NPDES Construction Stormwater Permit and installation of best management practices required by the approved Stormwater Pollution Prevention Plan. The second payment of 25% shall be made on the next estimate following finish grading and stabilization of all waste and borrow areas. The remaining 25% shall be paid upon termination of the WV NPDES permit by the WVDEP for properly stabilizing the site, demobilization, and final completion of the Project.

Bid Item 13: Sediment Pond

Unit: Each (EA)

Description: This work shall consist of constructing the three ponds as shown in the Plans. The work includes excavation, backfill, inlet and outlet structures, pipes, outlet protection, sediment removal and maintenance. This work also includes converting two ponds (Pond 2 and Pond 3) to permanent retention ponds after completion of earthmoving operations. Pond 1 shall be totally removed after permit release and the area returned to its original condition. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 14: Waste Removal

Unit: Ton (TN)

Description: This work shall include, but is not limited to, disposal of rubbish, trash, scrap, and other materials encountered at the site that require disposal at a sanitary landfill. The work includes sorting, loading, hauling, and disposal. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work completed shall be measured in tons as evidenced by weigh tickets from a legally operating sanitary landfill and certified by the contractor to be correct.

Payment: Payment shall be made at the contract unit price per ton.

Bid Item 15: Unclassified Excavation

Unit: Cubic Yard (CY)

Description: This work shall consist of, but is not limited to, unclassified excavation, loading and hauling of excavated material, placement and compaction, and shall include final grading, shaping and contouring of the excavation and fill areas. The terms for earthwork used in the remainder of this Section imply excavation in native materials. The Contractor, with approval of the COTR, shall adjust the final grades as necessary to create a finished project. The Contractor shall excavate to the lines and grades shown on the Plans. The Contractor shall perform all excavation of every description and of whatever materials encountered to the depths indicated on the Plans. No additional compensation shall be considered for rock excavation. Over-excavation and/or fill not shown on the Plans or specified herein shall be at the Contractor's expense, unless approved by the COTR prior to commencing such work. If unsuitable materials exist below the grades shown on the Plans, this material shall be removed with the prior approval of the COTR and shall be paid per the unit price for "Overexcavation".

Except at locations where excavation of unsuitable material is required, care shall be taken not to excavate below the depths specified. Final shaping and contouring of the areas shall be performed to the satisfaction of the COTR.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The method of measurement for determining the quantity of excavation required for grading work as described above shall be on a cubic yard for excavated material which includes hauling, placing and recompacting material to the surfaces as shown on the Plans. Method of measurement shall be before and after surveyed cross-sections of the excavation area(s) and the average-end-area method for computing volume performed by a Professional Surveyor licensed in West Virginia. Cross sections are subject to the approval of the COTR.

Borrow areas (on- or off-site) shall be regraded and reclaimed, including sediment and erosion control and revegetation, at no additional cost to the COTR. Disposal of surplus and waste materials, if encountered, are incidental to this bid item and shall be performed at no additional cost to the COTR.

Payment: This item will be paid for at the contract unit price per cubic yard.

Bid Item 16: 6" Lean Concrete Mat

Unit: Lump Sum (LS)

Description: This work shall consist of subgrade cleaning, drying, lean concrete application and curing operations for a 6" lean concrete mud mat under all areas of the AFRC and Storage/Maintenance Building as well as any utility trench bottoms consisting of shale bedrock. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price per lump sum.

Bid Item 17: Waterproof Coating

Unit: Lump Sum (LS)

Description: This work shall include, but is not limited to, removal of loose material from subgrade, compressed air cleaning, drying, application and curing operations of in-place subgrade under steps, walks, in utility trenches where required, and under pavements in excavated areas that have exposed shale at the subgrade elevation. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work. If additional satisfactory soil fill is required to achieve subgrade elevations after compaction, it shall be considered incidental to the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price per lump sum.

Bid Item 18: Subgrade Preparation

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, excavation, scarification, ground quicklime addition, mixing and recompaction of the top 18 inches of in-place subgrade under steps, walks, and pavements in excavated areas that do not have exposed shale at the subgrade elevation. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work. Manipulation of the excavated material to achieve optimum moisture content shall be considered incidental to the work. If additional satisfactory soil fill is required to achieve subgrade elevations after compaction, it shall be considered incidental to the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Material prepared beyond approved limits shall not be included in the measured quantity. Subgrade preparation of other areas, such as walkways and lawn areas, is incidental to earthwork and shall not be paid for by this bid item.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 19: Soil Drying

Unit: Ton (TN)

Description: This work shall include, but is not limited to, quicklime application and mixing of stockpiles of existing satisfactory soils with high moisture content. The required demonstration of proposed techniques is incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work completed shall be measured in tons of quicklime used as evidenced by weigh tickets for bulk loads or delivery slips for packaged materials certified by the contractor to be correct.

Payment: Payment shall be made at the contract unit price per ton.

Bid Item 21: Soil Conditioning – 12”

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, scarifying, lime application, mixing, compacting and rolling areas of existing satisfactory soils with high moisture content to a depth of 12” in locations directed by the COTR. The required demonstration of proposed techniques on test pads is incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 20: Soil Conditioning – 18”

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, scarifying, ground quicklime application, mixing, compacting and rolling two lifts of satisfactory soils to a depth of 18” under pavements, steps, or other locations as directed by the COTR. The required demonstration of proposed techniques on test pads is incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 22: Over-Excavation

Unit: Square Yard (SY)

Description: This work shall include, but is not limited to, excavation below subgrade, transportation and disposal of unsuitable materials, placement of geogrid and AASHTO #1 stone, and proof-rolling areas of unsuitable soils in locations directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Items 23–24: Subsurface Drains, 6” and 8”

Unit: Linear Foot (LF)

Description: This work shall consist of installation of subsurface drains of specified size in locations specified on the plans or directed by the COTR. The drains are to be installed in locations that will intercept the maximum amount of seepage. Subsurface drain work includes dewatering, excavation, drainage fabric, stone, pipe, fittings, cleanouts and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of drains in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings as typical pipe section in the pipe being measured.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Item 25: 7” Concrete Paving

Unit: Square Yard (SY)

Description: This work consists of furnishing and complete installation of Portland cement concrete pavement, reinforcing, joints, and sealants at the areas as shown on the plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 26: HMA Wearing Course

Unit: Ton (TN)

Description: This work shall consist of furnishing and installing designated scratch course and wearing course asphalt in accordance with the Plans and Specifications. The completed pavement shall be accepted, with respect to compaction, on a lot-to-lot basis. Each lot shall consist of approximately 2,000 SF of each layer or course by shall be taken at a random location of each of the five sub-lots.

The target percentage of density shall be 96 percent.

The compaction density of the asphalt shall be considered satisfactory so long as the averages of all the five consecutive compaction results equal to or exceed the specified compaction percent of 96% and no individual strength test result falls below the specified compaction by more than 5 percent. If the average of five consecutive compaction results is below the 96 percent, then a payment adjustment shall be made for that tonnage of asphalt representing the area of placement.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed upon automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered.

Payment: Payment shall be made at the contract unit price per ton.

The quantities, determined as provided per the specifications, shall be paid for at the Contract unit prices bid for the items listed, which prices and payments shall be full compensation for furnishing all materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, field laboratory, supplies and incidentals necessary to complete the work.

Adjustment of Price: Bituminous concrete found not in compliance with the tolerance requirements shall be paid for at an adjusted contract price specified

The payment adjustment to tonnage of work places is as follows with percentages rounded to the nearest tenth:

Average Compaction % for a Lot	Percent of Contract Price Paid
96	100
94-95.9	98
92-93.9	93
89-91.9	90
Less than 89	No acceptance

Bid Item 27: HMA Base Course

Unit: Ton (TN)

Description: This work shall consist of furnishing and installing designated base course asphalt in accordance with the Plans and Specifications. Scratch course is incidental to the overlaying wearing course. The completed pavement shall be accepted, with respect to compaction, on a lot-to-lot basis. Each lot shall consist of approximately 2,000 SF of each layer or course by shall be taken at a random location of each of the five sub-lots.

The target percentage of density shall be 96 percent.

The compaction density of the asphalt shall be considered satisfactory so long as the averages of all the five consecutive compaction results equal to or exceed the specified compaction percent of 96% and no individual strength test result falls below the specified compaction by more than 5 percent. If the average of five consecutive compaction results is below the 96 percent, then a payment adjustment shall be made for that tonnage of asphalt representing the area of placement.

This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed upon automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered.

Payment: Payment shall be made at the contract unit price per ton.

The quantities, determined as provided per the specifications, shall be paid for at the Contract unit prices bid for the items listed, which prices and payments shall be full compensation for furnishing all materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, field laboratory, supplies and incidentals necessary to complete the work.

Adjustment of Price: Bituminous concrete found not in compliance with the tolerance requirements shall be paid for at an adjusted contract price specified

The payment adjustment to tonnage of work places is as follows with percentages rounded to the nearest tenth:

Average Compaction % for a Lot	Percent of Contract Price Paid
96	100
94-95.9	98
92-93.9	93
89-91.9	90
Less than 89	No acceptance

Bid Item 28: Free Draining Base

Unit: Ton (TN)

Description: This work consists of furnishing and complete installation of open graded free draining base course for pavements. Aggregate, compaction, binder material, and curing are included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed on an approved standard scale or from digital print-out slips from an automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered. Only work accepted by the COTR shall be included, any work rejected or materials used for other items or purposes shall be deducted.

Payment: Payment shall be made at the contract price per ton.

Bid Item 29: Free Draining Base Trench and Piping

Unit: Linear Foot (LF)

Description: This work shall consist of constructing free draining base trenches and outlet pipes in reasonably close conformity with the lines, grades, dimensions, and locations shown on the Plans or established by the COTR. Excavation, perforated pipe, filter material, outlet pipe, aggregate backfill, and disposing of all surplus material is included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured by the linear foot of free draining base trench installed, complete in place and accepted. The perforated pipe, geotextile, and aggregate backfill is a component of the free draining base trench. Length shall be determined from actual measurements once the free draining base trench is in place. No deductions shall be made for placement of the drop connection required at outlet pipe locations. Outlet pipes required from the free draining base trench to daylight or another drainage structure are incidental to this item.

Payment: The quantities, determined as provided above, shall be paid for at the contract unit price per linear foot.

Bid Item 30: Fabric Separation

Unit: Square Yard (SY)

Description: This work shall consist of furnishing and installing geotextile fabric of designated types in pavement sections as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond design limits shall not be included in the

measured quantity. Fabric used in free draining base trench is not included in this pay item.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 31: Class 1 Stone

Unit: Ton (TN)

Description: This work includes, but is not limited to, furnishing and complete installation of Class 1 aggregate course for pavements and the MEP gravel apron or as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed on an approved standard scale or from digital print-out slips from an automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered. Only work accepted by the COTR shall be included, any work rejected or materials used for other items or purposes shall be deducted.

Payment: Payment shall be made at the contract unit price per ton.

**Bid Items
32 & 115: Pavement Marking**

Unit: Lump Sum (LS)

Description: Pavement markings shall consist of furnishing and installing various types of markings, as shown on the plans and an additional 1,000 sq ft for miscellaneous marking as directed by the COTR. It shall include, but is not limited to, edge lines, center lines, handicapped symbols, parking lines, shoulders, stop lines and pedestrian crossing markings. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of labor, materials and services provided by the contractor in completing this item.

Payment: This item shall be paid for at the contract lump sum price upon satisfactory completion of all pavement markings shown on the plans.

Bid Item 33: Wheel Stops

Unit: Each (EA)

Description: This work includes, but is not limited to, furnishing and complete installation of plastic wheel stops as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per each wheel stop completely installed.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 34: Concrete Curbing

Unit: Linear Foot (LF)

Description: This work shall includes, but is not limited to, the construction of cast-in-place concrete curbing at the locations shown on the Plans, or as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Curbing shall be measured along the front face of the section at the finish grade elevation.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Items

35 & 116: Signage

Unit: Lump Sum (LS)

Description: This item includes, but is not limited to, furnishing and installing miscellaneous signs, stop, parking, informational, etc. as noted on the Plans or as directed by the COTR. Signs, posts, foundations, and necessary hardware are included. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of work described.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 36: Grass Pavers

Unit: Square Yard (SY)

Description: This work shall consist of furnishing and installing polymer paving units for infrequent vehicle access as detailed on the Plans. This item also includes sod, top soil, sand bedding, aggregate and geotextile. This includes performing all work prescribed in a

workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Item 37: Gravel Road

Unit: Linear Foot (LF)

Description: This work shall consist of installation of the gravel access road in locations specified on the plans or as directed by the COTR. Gravel road work includes excavation, geotextile fabric, stone, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of road in place, completed, and accepted by the COTR. It shall be measured in a straight line or radius along the centerline of the road.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Item 38: Screening Berm

Unit: Linear Foot (LF)

Description: This work shall consist of installation of the soil screening berm in locations specified on the plans or as directed by the COTR. Screening berm work includes erosion control mat, seedbed preparation, seeding, mulching and topsoil. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of berm in place, completed, and accepted by the COTR. It shall be measured in a straight line or radius along the centerline of the berm.

Payment: This item shall be paid for at the contract price per linear foot.

Bid Item 39: Sidewalk

Unit: Square Yard (SY)

Description: This work shall consist of furnishing and installing welded wire mesh reinforcing, 4,000 psi air-entrained concrete, Class 1 stone, formwork and incidentals associated with concrete sidewalks and pads as detailed on the Plans. The areas adjacent to the building

shall also include drainage fill and foam insulation. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond approved limits shall not be included in the measured quantity.

Payment: Payment shall be made at the contract unit price per square yard.

Bid Items 40–42: Lawns, Type I and II, Type III Ground Cover for Slopes

Unit: Lump Sum (LS)

Description: This work shall consist of various types of lawns and ground cover as shown on the Drawings and specified in Section 329200, “Turfs and Grasses”. The bid item shall include fine grading and preparing lawn areas, furnishing and applying soil amendments and fertilizers, seeding lawn areas, protection and maintenance of lawn areas. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of work described.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Items 43–45: Force Protection Gate, 24’ Sliding Gate, 16’ Swing Gate

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of various types of gates for chain link fences and site security. The price shall include excavating, trenching, concrete footings, backfilling, grouting posts in place, grounding, bonding, barbed wire, and locks. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per each gate completely installed.

Payment: The accepted quantities of gates shall be paid for at the contract unit price per each complete in place.

Bid Item 46: Security Fencing

Unit: Linear Foot (LF)

Description: This work consists of furnishing and complete installation of chain link fencing and personnel gates. The price will include excavating, trenching, concrete footings, backfilling, grouting posts in place, grounding, bonding, barbed wire, and gate hardware. This includes performing all work prescribed in a workmanlike and acceptable manner,

including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be along the bottom wire of the fence from outside to outside of end posts for each continuous run of fence, excluding lengths occupied by vehicular gates.

Payment: The accepted quantities of fencing materials shall be paid for at the contract unit price per linear foot complete in place.

Bid Item 47: Concrete Stairs

Unit: Lump Sum (LS)

Description: Sets of stairs constructed of cast-in-place concrete to include reinforcing, stone bedding, handrails, surface treatment and any other hardware as shown on the Plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of the work described and acceptance by the COTR.

Payment: Payment shall be made at the contract unit price lump sum.

Bid Item 48: 40' Flagpole

Unit: Each (EA)

Description: This item includes furnishing and installing the 40' aluminum flagpole in front of the facility. The foundation, including excavation, aggregate, concrete and miscellaneous hardware are incidental to this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for each.

Bid Item 49: Retaining Wall

Unit: Linear Foot (LF)

Description: This item of work is a masonry clad concrete block retaining wall. Excavation, backfill, brick facing, capstone, and associated subsurface drainage are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be by the linear foot along the front face of the wall at the finished grade elevation.

Payment: Payment shall be made at the contract unit price for linear foot.

Bid Item 50: Loading Dock Wall

Unit: Linear Foot (LF)

Description: This item of work is a pour in place concrete retaining wall. Excavation, backfill, handrail, concrete finishing, and associated subsurface drainage are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be by the linear foot along the front face of the wall at the finished grade elevation.

Payment: Payment shall be made at the contract unit price for linear foot.

Bid Item 51: Vehicle Wash System

Unit: Lump Sum (LS)

Description: This work shall consist of adding a Vehicle Wash System as shown in the Plans. Excavation, concrete, aggregate base, waterstops, associated drainage structures, piping, conduits, post hydrant, hose reels and hose, and other ancillary equipment within the boundary created by the edge of the concrete pad are incidental to this item of work. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 52: Oil/Water Separator

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of an underground separator designed for gravity separation of free oils (hydrocarbons and other petroleum products) and settleable solids from wastewater. Excavation, backfill, concrete pad, bedding material, manways, piping and fittings to a point beyond the outline of the tank, alarm and control panel, electrical and data wiring, and vent piping are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on completion of the work described according to the Basis of Payment below.

Payment: Payment shall be made at the contract unit price for each.

Bid Item 53: Loading Ramp

Unit: Lump Sum (LS)

Description: This item of work is a cast-in-place reinforced concrete loading ramp with two levels. The aggregate, backfill, dock bumpers, excavation and soil backfill, and any other ancillary equipment required are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There shall be no direct measurement for materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Items 54–56: Bollards 8”, 12”, and Removable

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of bollards. The unit price shall include furnishing and installing metal posts, and associated hardware, concrete footings, excavation, backfill, and compensation for doing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, and incidentals required to complete the work.

Measurement: The quantity of work done shall be measured per each bollard completely installed and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 57: Trash Enclosure

Unit: Lump Sum (LS)

Description: This work shall consist of constructing a pad and walls at the back of the main building as shown in the Plans. Excavation, concrete, aggregate base, walls, associated drainage structures, piping, pipe sleeves, conduits, and other ancillary equipment are incidental to this item of work. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Items**58–65 & 74: Water Line, PVC – 2”, 4”, 6”, 8” and 12” DIP – 2”, 6”, 8” and 12”**

Unit: Linear Foot (LF)**Description:** This work shall consist of furnishing and installing various sizes of water line. These prices shall fully compensate the Contractor for providing pipe, fittings, valves, bedding, excavation, backfill, concrete thrust blocks, concrete encasement, asphalt repair, curb stops, flushing, testing, coordination with the City of Fairmont and agencies having jurisdiction for acceptance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** Measurement shall be based on linear feet of water line in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings and appurtenances associated with the water line.**Payment:** Payment shall be made at the contract unit price per linear foot.**Bid Item 66: PIV**

Unit: Each (EA)**Description:** This work consists of furnishing and complete installation of Post Indicator Valves. The unit price shall include furnishing and installing the valves, fittings, excavation, bedding, backfill, concrete thrust blocks, saw-cutting of pipe, and testing and inspection. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** The quantity of work done shall be measured per unit PIV acceptably installed.**Payment:** Payment shall be made at the contract unit price per each.**Bid Item 67: Fire Hydrant**

Unit: Each (EA)**Description:** This work consists of furnishing and complete installation of exterior fire hydrants. The unit price shall include furnishing and installing a fire hydrant, fittings, excavation, bedding, backfill, concrete thrust blocks, saw-cutting of pipe, and testing and inspection. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** The quantity of work done shall be measured per unit fire hydrant acceptably installed.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 68: Water Vault

Unit: Each (EA)

Description: This work consists of furnishing, placing and installing the precast concrete vault, bedding, backfill, water meter, backflow preventer and associated valves and appurtenances as detailed in the Plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per water meter pit installed and accepted by the COTR and authorities having jurisdiction.

Payment: Payment shall be made at the contract price per each.

Bid Item 69: Manholes, Sanitary Sewer

Unit: Vertical Foot (VF)

Description: This work shall include, but is not limited to, installing pre-cast concrete manholes at the locations specified in the plans. Excavation, bedding, manhole section and grade ring installation, backfill, and testing and inspection are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each manhole in place, completed and accepted by the COTR and authorities having jurisdiction.

Payment: Payment shall be made at the contract unit price per vertical foot.

Bid Item 70: Frame & Cover, Sanitary Sewer

Unit: Each (EA)

Description: This work consists of furnishing, placing and installing the frame and cover for sanitary manholes as detailed in the Plans. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per frame and cover installed and accepted by the COTR.

Payment: Payment shall be made at the contract price per each.

Bid Items 71–72: Sanitary Sewer, PVC – 6” and 8”

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing various sizes of PVC sanitary sewer piping. These prices shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, fittings, cleanouts, casing pipes, pavement repairs, testing and coordination with the Cottageville Public Service District for acceptance. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of sanitary sewer piping in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings, appurtenances, and cleanouts associated with the sanitary sewer piping.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 73: Cleanout, Sanitary Sewer

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of cleanout. The unit price shall include furnishing and installing pipe, fittings, concrete apron, excavation, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per each cleanout completely installed and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Item 75: Street Repair

Unit: Linear Foot (LF)

Description: This work shall consist of traffic control, excavation, aggregate backfill, asphalt, concrete, reinforcing steel, and disposing of all surplus material is included with this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured by the linear foot of pavement repair, complete in place and accepted. Length shall be determined from actual measurements along centerline of the trench.

Payment: The quantities, determined as provided above, shall be paid for at the contract unit price per linear foot.

Bid Item 76: Service Connections

Unit: Each (EA)

Description: This work consists of furnishing and complete installation of water and sewer service connections. The unit price shall include furnishing and installing pipe, fittings, valves, cleanouts, flushing, cleaning, testing, excavation, and backfill. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured per each service connection completely installed and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Items 77–78: Gas Service Lines – 2” and 5”

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing gas lines of varying sizes from the building to point of connection on the Plans. These prices shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, valves, existing utility tie-ins, pavement restoration, and casing pipes. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of gas line in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings and appurtenances associated with the gas line.

Payment: Payment shall be made at the contract unit price per linear foot of line in service.

Bid Items 79–81: Storm Line, PVC – 6”, 8”, and 12”

Unit: Linear Foot (LF)

Description: This work consists of the furnishing and complete installation of PVC pipe for storm drainage outside the building. This price shall fully compensate the Contractor for providing pipe, bedding, excavation, backfill, fill, fittings, and pavement repairs. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Conduit of the different types and sizes, shall be measured by the linear foot in place, the measurement being made along the centerline of each pipe installed. Branch connections, tees, wyes, and elbows shall be measured along their centerlines and these lengths included in the total lengths of the appropriate conduit. Wyes, tees, and other branch connections shall be measured along the centerlines to points of intersection. The portion of pipe extending through to the inside face of headwalls of all types, manholes, inlets, boxes, or other structures shall be included in the measurement.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Items 82–85: Storm Line, HDPE – 12”, 18”, 24”, and 42”

Unit: Linear Foot (LF)**Description:** This work consists of the furnishing and complete installation of high density polyethylene pipe for storm drainage. Pipe, bedding, excavation, backfill, fill, fittings, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** Conduit of the different types and sizes, shall be measured by the linear foot in place, the measurement being made along the centerline of each pipe installed. Branch connections, tees, wyes, and elbows shall be measured along their centerlines and these lengths included in the total lengths of the appropriate conduit. Wyes, tees, and other branch connections shall be measured along the centerlines to points of intersection. The portion of pipe extending through to the inside face of headwalls of all types, manholes, inlets, boxes, or other structures shall be included in the measurement.**Payment:** Payment shall be made at the contract unit price per linear foot.**Bid Item 86: Type 1 Ditch**

Unit: Linear Foot (LF)**Description:** This work shall consist of the construction of open flow ways for surface drainage, using geotextile fabric, riprap and grout. Excavation, shaping and lining and geotextile fabric are incidental.**Measurement:** The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.**Payment:** Payment shall be made by the contract unit price per linear foot.**Bid Item 87: Type 2 Ditch**

Unit: Linear Foot (LF)**Description:** This work shall consist of the construction of open flow ways for surface drainage, using geotextile fabric, and riprap. Excavation, shaping and lining and geotextile fabric are incidental.**Measurement:** The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.**Payment:** Payment shall be made by the contract unit price per linear foot.**Bid Item 88: Type 4 Ditch**

Unit: Linear Foot (LF)

Description: This work shall consist of the construction of open flow ways for surface drainage, using permanent erosion control matting. Excavation, shaping, seeding, and lining are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Item 89: Type 5 Ditch

Unit: Linear Foot (LF)

Description: This work shall consist of the construction of open flow ways for surface drainage, using temporary erosion control matting. Excavation, shaping, seeding, and lining are incidental. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: The quantity of work done shall be measured along the flow line of the ditch, from the first point of design depth to the point where the ditch breaks the plane of the drainage structure it empties into.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Items 90–92: Junction Box, 42” Junction Box, Modified Junction Box

Unit: Each (EA)

Description: This work shall consist of installing pre-cast or cast-in-place concrete junction boxes for storm drainage. Pipe connection, bedding, excavation, backfill, fill, fittings, frames and covers, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each junction box in place completed, and accepted by the COTR.

Payment: Payment shall be made at the contract unit price for each.

Bid Items 93–98: Type “B” and “G” Drop Inlets, Type “B” and “G” Inlet Grate & Frame, Modified Inlets, Modified Grate and Frame

Unit: Each (EA)

Description: This work shall consist of installing pre-cast or cast-in-place concrete inlets for storm drainage. Pipe connection, bedding, excavation, backfill, fill, fittings, and pavement repairs, are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each drain inlet in place completed, and accepted by the COTR.

Payment: Payment shall be made at the contract unit price per each.

Bid Items 99–100: 10” Yard Drains, 12” In-Line Inlets

Unit: Each (EA)

Description: This work shall consist of installing drains and inlets for storm drainage. Inlets, grates, pipe, excavation, bedding, backfill, fill, fittings and pavement repairs are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on each drain inlet in place completed, and accepted by the COTR

Payment: Payment shall be made at the contract unit price for each.

Bid Item 101: Trench Drain & Grate

Unit: Linear Foot (LF)

Description: This work shall consist of installing a vehicular trench drain for storm drainage. Pipe connection, bedding, excavation, backfill, reinforcement, concrete, fittings, frames and grates are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear foot of trench drain installed and accepted by the COTR, measured along the center-line from end of grate to end of grate.

Payment: Payment shall be made by the contract unit price per linear foot.

Bid Item 102: Concrete Headwall

Unit: Each (EA)

Description: This work shall consist of installing cast-in-place concrete headwalls for storm drainage. Excavation, forming, reinforcement, concrete, pipe connection, aggregate bedding, backfill, and concrete finishing are included in this item. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools,

equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be for each headwall completely installed.

Payment: Payment shall be made at the contract unit price for each complete and in place.

Bid Item 103: Electrical Duct Bank Type 1

Unit: Linear Foot (LF)

Description: This work shall consist of trenching and backfill, vaults, conduit, concrete, and pull ropes required for the installation of underground primary. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on transformer pad and linear feet of underground primary constructed in conformance with the plans and specifications.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 104: Electrical Duct Bank Type 2

Unit: Linear Foot (LF)

Description: This work shall consist of trench and backfill, vaults, conduit, concrete, pull ropes, and conductors required for the installation of underground secondary between the transformer and the AFRC building. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of underground secondary constructed in conformance with the plans and specifications.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 105: Electrical Duct Bank Type 3

Unit: Linear Foot (LF)

Description: This work shall consist of trench and backfill, vaults, conduit, concrete, pull ropes, conductors, and control wires required for the installation of underground secondary between the AFRC and the maintenance building. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of underground secondary constructed in conformance with the plans and specifications.

Payment: Payment shall be made at the contract unit price per linear foot.

Bid Item 106: Communications Duct Bank Type 1

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing conduits from the building or the point of origin to the point of connection on the Plans. These prices shall fully compensate the Contractor for providing pipe, fiber, wires, extra pull ropes, vaults, concrete, excavation, backfill, and sleeves. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of duct bank in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings, and appurtenances associated with the duct bank.

Payment: Payment shall be made at the contract unit price per linear foot of line in service.

Bid Item 107: Combined Duct Bank Type 1

Unit: Linear Foot (LF)

Description: This work shall consist of furnishing and installing conduits from the building or the point of origin to the point of connection on the Plans. These prices shall fully compensate the Contractor for providing pipe, fiber, wires, conductors, extra pull ropes, vaults, concrete, excavation, backfill, and sleeves. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be based on linear feet of duct bank in place, completed, and accepted by the COTR. It shall be measured along the centerline and shall include all fittings, and appurtenances associated with the duct bank.

Payment: Payment shall be made at the contract unit price per linear foot of line in service.

Bid Item 108: Transformer Pad

Unit: Lump Sum (LS)

Description: This work shall consist of a cast-in-place concrete pad for the electrical transformer(s). The pad must meet the requirements of Appalachian Power Company for the transformer(s) used. This shall include excavation, concrete, reinforcing, grounding hardware, aggregate base and any other incidentals necessary for a complete and functional pad. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 109: Emergency Generator Pad

Unit: Lump Sum (LS)

Description: This work shall consist of a cast-in-place concrete pad for the emergency generator. The pad must meet the requirements of the generator manufacturer. This shall include excavation, concrete, reinforcing, grounding hardware, aggregate base and any other incidentals necessary for a complete and functional pad. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

Bid Item 110: JICCS Pad

Unit: Lump Sum (LS)

Description: This work shall consist of a cast-in-place concrete pad for use by the Joint Interagency Command and Control System. This shall include excavation, concrete, reinforcing, grounding hardware, aggregate base and any other incidentals necessary for a complete and functional pad. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

ALTERNATE BID ITEMS

Alternate Bid Item #1 – Phase 2 Earthwork

Description: This work shall consist of grading operations on the outer slope of the fill area. This work has been phased to allow cleanup operations on the adjacent property enough time to relocate.

Alternate Bid Item #2 – Military Equipment Parking Expansion

Description: This work shall consist of Hardstand Paving and Security Fence expansion identified in the Plans. The earthwork and drainage structures associated with the parking areas are included in the Base Bid.

Bid Item 111: Fabric, Woven

Unit: Square Yard (SY)**Description:** This work shall consist of furnishing and installing geotextile fabric of designated types in pavement sections as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** Measurement shall be based on square yards of area completed for the work described. Excess material or material placed beyond design limits shall not be included in the measured quantity. Fabric used in free draining base trench is not included in this pay item.**Payment:** Payment shall be made at the contract unit price per square yard.**Bid Item 112: AASHTO #1 Stone**

Unit: Ton (TN)**Description:** This work includes, but is not limited to, furnishing and complete installation of AASHTO #1 stone for pavements as directed by the COTR. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.**Measurement:** The quantities of work done shall be measured in tons as designated. The quantity shall be determined by the Contractor from the total weigh slips for each vehicle load weighed on an approved standard scale or from digital print-out slips from an automatic batching plant, and certified by the Contractor to be correct. Each weigh slip shall indicate the contract item numbers for the material being delivered. Only work accepted by the COTR shall be included, any work rejected or materials used for other items or purposes shall be deducted.**Payment:** Payment shall be made at the contract unit price per ton.**Alternate Bid Item #3 – Field Fencing**

Description: The item shall consist of any and all material, equipment, and labor for items required by the contract documents to provide a woven wire fence along the property line and a gate for the Retention Pond area on the eastern side of WV Route 2.**Bid Item 113: 24' Double Swing Farm Gate**

Unit: Each (EA)**Description:** This work consists of furnishing and complete installation of a 24' Double Swing Farm Gate for vehicular access through the field fence. The price shall include excavating, trenching, concrete footings, backfilling, grouting posts in place, and locks. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be per each gate completely installed.

Payment: The accepted quantities of gates shall be paid for at the contract unit price per each complete in place.

Bid Item 114: Field Fencing

Unit: Linear Foot (LF)

Description: This work consists of furnishing and complete installation of field fencing. The price will include excavating, posts, backfilling, and minor grading for fence fabric installation. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: Measurement shall be along the bottom wire of the fence from outside to outside of end posts for each continuous run of fence, excluding lengths occupied by vehicular gates.

Payment: The accepted quantities of fencing materials shall be paid for at the contract unit price per linear foot complete in place.

Alternate Bid Item #4 – Civic Arena Parking Area

Description: This work shall consist of asphalt paving the parking areas and connecting roads identified in the Plans. The earthwork and drainage structures associated with the parking areas are included in the Base Bid.

Alternate Bid Item #5 – Fencing and Gate Upgrade

Description: This work shall consist of upgrading all fencing, swing gates, sliding gates, and alternate bid items to an eight foot chain-link fabric height. Force Protection Gates are not included.

Bid Item 117: Fencing/Gate Upgrade

Unit: Lump Sum (LS)

Description: This work shall consist of upgrading all fencing, swing gates, sliding gates, and alternate bid items to an eight foot chain-link fabric height. Force Protection Gate is not included. This includes performing all work prescribed in a workmanlike and acceptable manner, including labor, tools, equipment, supplies, material, incidentals, and quality control required to complete the work.

Measurement: There will be no direct measurement of materials, labor, and services provided by the Contractor in completing this item.

Payment: Payment shall be made at the contract unit price for lump sum.

END OF SECTION

WVARNG AFRC FAIRMONT Pre-Bid Sign-in Sheet

OMNI JOB NO. 20823
8-Apr-10

Name	Company Name/Address	Telephone, Fax Number & Email	Gen	Sub
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WVARNG AFRC FAIRMONT Pre-Bid Sign-in Sheet

OMNI JOB NO. 20823
8-Apr-10

Name	Company Name/Address	Telephone, Fax Number & Email	Gen	Sub
Joshua Eckenrode	Lighthouse Electric Co. 1957 Rt. 519 South Canonsburg, PA 15317	Tele 724-873-3500 Fax 724-873-3510 Email Josh.eckenrode@lighthouseelectric.com		Electrical
TYLER DODD	BEAR CONTRACTING 112 STATE ST BRIDGEPORT, WV 26330	Tele 304 842 3002 Fax 304 842 9433 Email tdodd@bear-contracting.com		✓
CHRIS RUSH	Mon Valley Electric Inc 1609 Cambridge St Fairmont, W.V. 26554	Tele 304-366-2340 Fax " " 2342 Email MVE.Chris@Verizon.NET		✓
MIKE EVANS	KANAWHA SPINE CO. 401 JACOBSON DR. POCAHONTO, WV 25159	Tele 304-755-8271 Fax 304-755-8274 Email MIKE.EVANS@KANAWHASPINE.COM		SIREWORK ✓
STAVE SZABO	PRO CONTRACTING, INC P.O. Box 2442 Clarksburg WV 26302	Tele 304 622-2400 Fax 304 622-2410 Email ProCons.SJ@MA-RK.COM		SITE ✓
OTT MEALE	LAURITA, INC. 302 DENT'S RUN RD MORGANTOWN WV 26501	Tele (304) 296-7531 Fax (304) 292-4606 Email OTT@LAURITA.COM		SITE WORK
MARTY WOOD	WR CASTEEL ELECTRIC PO Box 859 323 Hopwood - Cool Springs Road Hopwood, PA 15445	Tele 724.437.3672 Fax 724.437.8619 Email martyw@ARCasteel.com		✓ ELECTRICAL

WARNG AFRC FAIRMONT Pre-Bid Sign-in Sheet

OMNI JOB NO. 20823
8-Apr-10

Name	Company Name/Address	Telephone, Fax Number & Email	Gen	Sub
Chad Bilotta	Anderson Excavating LLC 343 Williams Rd Morgantown WV 26501	Tele 304-983-2296 Fax 304-983-4755 Email cbilotta cbilotta@AndersonExcavatingLLC.com		✓
JAMES ALLEN	J F ALLEN CO PO BOX 2049 Buckhannon WV 26201	Tele 304 472 8890 Fax 304 472 8897 Email JAMES.ALLEN@JFALLENCO.COM		✓
Mike Wimer	Central Supply Co PO Box 968 Clarksburg, WV 26302	Tele 304-592-5577 Fax 304 592-5546 Email M.Wimer@CentralSupplyCo.com		
MICHAEL CONROY	Whiting-Turner 300 E JOPPA RD BALTIMORE, MD 21206	Tele 304-329-3812 Fax 304-329-3918 Email Michael.CONROY@whiting-turner.com	✓	
Tracy Curtis	Green River Group, LLC PO Box 18039, 530 Ashbrooke St. Morgantown, WV 26507	Tele 304-594-3991 Fax 304-594-3992 Email TracyScurtis@yghoe.com		✓
DAVE YANTIS (on behalf of Carey Stawarz)	March-Westin Company 360 Frontier Ave. Morgantown, WV 26505	Tele 304-599-4880 Fax 304-599-7509 Email gregg@marchestin.com	✓	
Rob Seese	Morgantown Excavators, Inc. PO. BOX 526 Morgantown, WV 26507-0520	Tele 304 242 3489 Fax 304 242 6746 Email mei@meiuv.com		✓

WVARNG AFRC FAIRMONT Pre-Bid Sign-in Sheet

OMNI JOB NO. 20823
8-Apr-10

Name	Company Name/Address	Telephone, Fax Number & Email	Gen	Sub
JEFF STONER	MASCARO 1720 METROPOLITAN STREET PITTSBURGH PA 15233	Tele 412-321-4901 Fax 412-321-4941 412-321-4903 Email PMASTROCMASCAROCONSTRUCTION.COM	✓	
DAN DEKLEWA	DEKLEWA CONST. 1273 WASHINGTON PIKE BRIDGEVILLE, PA 15017	Tele 412-257-9000 Fax 412-257-4486 Email DAN@DEKLEWA.COM	✓	
Bud CURRY	RYCON CONSTRUCTION INC. 2525 LIBERTY AVE PGH PA 15122	Tele 412-392-2525 Fax 412-392-2526 Email K CROUGH & RYCON INC .COM	✓	
D.J. Lombardo	Mashuda Corp 21101 Rt. 19 Cranberry Twp Pa 16066	Tele 412-391-3673 Fax 724-452-5272 Email M Hoover @ Mashudacorp .com	✓	
Keith CHAPMAN	CHAPMAN RADIANT INFRARED HEATING 2032 SHADY SPRING, WV 25918	Tele 304-763-5480 Fax 304-763-5481 Email CHAPMANRADIANT@VERIZON.NET		✓
Mike Hubbard	Brunk & Assoc. Inc. 57th Airport Rd. Zionsville, VA 24012	Tele 540-989-5215 Fax 540-989-0803 Email Michaelh@kbranch-a770virgintis.com	✓	
JAMES C. MARKS	MARKS-LANAHAN CONST. 9855 RINAMAN ROAD WEXFORD, PA. 15090	Tele 724-935-8800 Fax 724-935-6510 Email dcurry @ lanahan-const.com	✓	

WVARNG AFRC FAIRMONT Pre-Bid Sign-in Sheet

OMNI JOB NO. 20823
8-Apr-10

Name	Company Name/Address	Telephone, Fax Number & Email	Gen	Sub
Daniel Bell	TEDCO CONSTRUCTION CORP. TEDCO PLACE Carnegie, PA	Tele 412-276-8080 Fax 412-276-6804 Email belark@tedco.com	✓	
Bob Turcic	MASSARO Corp. 120 Delta Dr. Pitts. PA. 15238.	Tele 412-963-2800 Fax 412-963-2880 Email J.WELLS@Massaro Corporation.Com.	✓	
Robert Yanero	Shuck Construction Co. 1549 Tulip Lane FAIRMONT, WV 26554	Tele 304-366-8497 Fax 304-366-9407 Email by@SHUCKCONSTWV.COM		✓
Brian Martin for Ryan Eddy	F.K. Everest, Inc. 1841 Locust Ave. Fairmont, WV 26554	Tele 304-363-8830 Fax 304-363-8946 Email Ryan@fkeverest.com		✓
JAMES E BROWN II	G.A. BROWN & SON, INC 215 MILL ST FAIRMONT WV 26554	Tele 304-363-4500 Fax 304-366-9456 Email JbrownII@gabrown.com	✓	
BRIAN GAUDINAD	FAIRBANKS CONSTRUCTION CO. PO BOX 535 TTS. MORGANTOWN ST. FAIRBANKS, PA 15430	Tele 724-564-7495 Fax 724-564-7488 Email bgaudiano@fairconst.com	✓	
Dave Brown	Omni Associates - Architects, Inc. 1543 Fairmont Ave Fairmont, WV 26554	Tele 304-367-1417 Fax 304-367-1418 Email dbrown@omniassociates.com		

Re: Pre-Bid Meeting Minutes; Fairmont AFRC, Fairmont, WV

The following constitutes a Pre-bid Meeting Agenda for DEFK10017.

Date: 08 April 2010

Time: 1:00 PM

Location: Fairmont, WV

1. ADMINISTRATIVE:

CFMO

- a. The Pre-bid meeting for the subject contract at 1300 hrs, 8 April 2010, in Fairmont, WV.
- b. Mandatory pre-bid attendance - Sign-In
- c. Funding: Federally and State funded, State administrated project. Award of this Project is contingent on availability of Federal Funds.
- d. User: West Virginia Army National Guard
- e. Administrator: Construction & Facilities Management Office, WVARNG

2. INTRODUCTION:

CFMO

a. C&FMO:

1. Address
1703 Coonskin Drive
Charleston, WV 25311
2. LTC David Shafer, CFMO
(304) 561-6539
3. LTC Garrett Cottrell, PE, Chief, Design & Construction
Email: Garrett.b.cottrell@wv.ngb.army.mil
(304) 561-6452
4. Daniel Clevenger, Facility Management Specialist
Email: daniel.clevenger@wv.ngb.army.mil
(304) 561-6446 (o) (304) 561-6458 (fax)
5. Gary Blackhurst, Environmental Program Management Officer
(304) 561-6445(o) (304) 561-6458 (fax)

b. DIVISION OF PURCHASING:

1. Mr. Chuck Bowman
Email: charles.a.bowmanjr@wv.gov
(304) 558-2157 (office)
(304) 558-4115 (fax)

c. DESIGNER OF RECORD:

1. Address:
OMNI Associates
1543 Fairmont Avenue
Fairmont, West Virginia 26544
(304) 367-1417 (office)
(304) 367-1418 (fax)

3. BIDDING ISSUES

CFMO

- a. Questions must be submitted to Purchasing Division, attention Mr. Chuck Bowman via email (charles.a.bowmanjr@wv.gov) no later COB on 9 April 2010.
- b. Direct discussion is **not** authorized with the Designer of Record, the Facilities Engineer, or the Project Manager.
- c. State Prevailing Wage Rate Applies.
- d. Bid Opening is set for 22 April 2010 at 1:30 PM.
- e. Change Orders: The only changes authorized or reviewed by the Owner will be:
 1. Owner directed.
 2. Unforeseen site conditions.
- f. Government assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the Government. Conflicts in drawings, clarifications, and/or lack of clarity shall be the responsibility of the Contractor after Bid Award. The Contractor is responsible to seek clarification prior to bidding if they believe there is a conflict or lack of clarity.
- g. Government assumes no responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this

contract. The solicitation and specification remain unchanged regardless of what is said at the pre-bid conference unless they are changed by formal amendment to the solicitation.

4. FEDERAL RELATIONSHIP **CFMO**

- a. Review General Provision 1, “Relationship of the Federal Government”

5. WORK HOURS/ SITE ACCESS-SECURITY **CFMO**

- a. The Contractor will have access to the site from 0700 to 1800 hrs, Monday to Friday. If work hours must be modified, these will be approved on a case-by-case via the Project Manager and the Designer of Record.
- b. Contractor is required to provide to the Project Manager, a listing of personnel, which will be gaining access to the site at the first pre-construction meeting. (*Section 013100*)
- c. Superintendence: In accordance with Contract documents, the Contractor must maintain full-time, active superintendent on the job. Duties of the superintendent will be identified at the first pre-construction meeting. (*Section 013100*)

6. TEMPORARY FACILITIES/UTILITY USAGE **OMNI/CEI**

- a. Temporary Facilities (*Section 015000*)
- b. Utility Usage

7. UTILITY INTERRUPTIONS **CFMO**

- a. Required to give 72 hour notification to Project Manager. **The City of Fairmont is also required for utility shutoff coordination and approval.**
- b. Notifications must include the following information:
 - 1. Who
 - 2. What
 - 3. When
 - 4. Why
 - 5. Where
- c. Utility Interruptions can last no longer than six (6) hours.
- d. Utility Interruptions must be scheduled after 1800 hours and must end by 0400 hours.

8. CONTRACT DURATION / LIQUIDATED DAMAGES **CFMO**

- a. Liquidated Damages

1. Duration of the contract is 445 days from the NTP.
2. Liquidated Damages is \$1,500 per day plus one time fixed cost of \$1,250 for Staff Judge Advocate Review. Per Article 9.11.1 Supplement General Provisions and GP 54, “Liquidated Damages”.

9. SAFETY

CFMO

- a. All construction activities will be in conjunction with OSHA, Safety and Health Requirements Manual (US Army Corps of Engineers). As noted, the Army safety and health standards mirror OSHA. All construction activities on site will be a hardhat area and marked as such.
- b. Access to the site will be restricted and controlled by the Contractor. A visitor’s sign-in and hardhats to be made available for personnel visiting site.
- c. Temporary fueling operations: Any temporary fueling operation will be maintained in accordance with OSHA and WV Fire Marshall Standards to include secondary containment, fire extinguishers, and spill control.
- d. Cleanup is required daily by each perspective sub and General Contractor: No open dumps of construction materials. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner’s property. Crushed pavement, gravel and clean soil may be given to nearby landowners with written approval from the C&FMO.

10. SUPERVISION OF WORK

CFMO

- a. Designer of Record will have the responsibility for the observation of Contractor’s quality of work. The Designer of Record will provide recommendations for actions regarding progress payments, change orders, and acceptance of work.

11. ASPECTS OF CONTRACT

CFMO

- a. Modification Procedures – Section 012600
- b. Project Coordination (Correspondence) – Section 013100
- c. Cutting and Patching – Section 013150
- d. Meetings – Section 012000
- e. Submittals – Section 013300
- f. CPM Construction Scheduling – Section 013200
- g. Materials and Equipment – Section 016000
- h. Warranties – Section 017400
- i. LEED – Section 018113

12. SUBSTITUTIONS

CFMO

- a. Substitution requests must be submitted within 60 days of Notice to Proceed.
- b. Substitution requests will only be considered when one or more of the following applies:
 - 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the intent of the Contract Documents.
 - 3. The request is timely, fully documented and properly submitted.
 - 4. The specified product or method cannot be provided within the Contract Time. The Architect will not consider the request if the specified product cannot be provided as a result of failure to pursue the Work promptly.
 - 5. The request is related to an "or-equal" clause.
 - 6. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Such additional responsibilities for the Owner may include additional expenses for redesign and evaluation services, increased cost of related construction, and other similar considerations.
 - 7. The specified product cannot receive approval by a governing authority, and the substitution can be approved.
 - 8. The Contractor's submittal and the Architect's review or approval of Shop Drawings, Product Data or Samples that relate to a substitute does not by itself constitute a final approval of the requested substitution, nor does it relieve the Contractor from fulfilling existing Contract Requirements. Final approval will be granted by the Owner and confirmed in the form of a Change Order.
- c. Approval of Material Submittals shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance as stated in (d) below.
- d. If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the submittals, at the time of submission. If the Contracting Officer shall issue an appropriate contract modification, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification NEED not be issued.

13. SUMMARY OF WORK

OMNI/CEI

- a. Project Description (*Section 011000*)

Pre-Bid Notes:

91,000 SF

Shallow Foundations

Steel Structure

Brick & Insulated Core Metal Siding

Roof – White TPO & Standing Seam Metal Roof
 Special Features:
 Blast resistant windows – Laminated Glass & Frames anchored to the structure
 Terrazzo flooring in the Main Lobby and Assembly Hall Entry
 24,000 SF Assembly Hall
 120' Span using curved trusses with 25' spacing
 Multiple Uses
 Office Space
 Classrooms
 Special training areas
 Loading Dock
 Concrete Arms Vaults
 Commercial Kitchen
 Separate Pre-Engineered Building for Maintenance Work Bays and Storage
 Submittals:
 Electronic DWF Format

SCOPE OF CIVIL WORK

1. Review the scope of work for subject project **OMNI/CEI**
 See Attached Civil/Site Scope Notes

2. Purchasing Documents **CFMO**
 - (a) General insurance/bonds from prime contractor. Copies to be provided to CFMO. For the subcontractors, copies of insurance due prior to start of work.
 - (b) Drug Free Compliance Affidavit

3. Environmental Issues/comments **ENVIRONMENTAL**
 - (a) On-site Burning/Waste Disposal
 - (b) Spills of fuels: The Contractor must notify the Owner of any fuel spills as soon as possible.
 - (c) Reporting Procedure

4. Construction Storm Water Permit **ENVIRONMENTAL/CEI**

5. Sediment Erosion Control Measures **ENVIRONMENTAL/CEI**
 - (a) Need copies of inspections made by DEP
 - (b) Silt Fence must be maintained throughout project

12. QUESTIONS AND ANSWERS **CFMO**

Q: Bid Open to be extended? Question period to be extended?

A: **No**

Q: The clause stating sealing of cut areas being sealed if left open for more than 4 hours, does that apply for anytime that an area is in the process of being cut?

A: **No, only applies to excavations reaching subgrade.**

Q: Are there any more specifics for the how B&O Taxes are applied by the City of Fairmont?

A: **Refer any questions of B&O Taxes to the City of Fairmont.**

Q: When will Construction commence?

A: **The NTP will be given with the award of the Purchase Order from the State of WV. Please note the 120 period for holding bids.**

Q: How can Contractors get access to the site?

A: **During bidding keys may be signed out at the Omni office.**

Q: What is the process for Gas Line moving?

A: **Gas line relocation has been coordinated with Dominion Hope - contractor will administer the relocation and will be reimbursed for invoiced cost from Dominion Hope.**

Q: Will plans be available for viewing at the plan rooms?

A: **Yes.**

Q: Who is responsible for determining material is Coal Waste?

A: **Coal Waste is determined by visual observation and testing required to be performed by the contractor in Spec section 312000 "Earth Moving".**

Q: Who pays city B&O taxes?

A: **Contractor and all sub-Contractors doing business in Fairmont.**

13. CLOSING COMMENTS

CFMO

- Meeting notes will be published through state purchasing, along with clarifications to contract documents.
- Any further question will be addressed through an Addendum released after the question period has closed.

- **See Attached WVARNG modifications to AIA Document A201-2007**
- Any further questions between now and bid award must be directed to Chuck Bowman at State Purchasing via email (charles.a.bowmanjr@wv.gov) no later than **COB 09 April 2010**.

**West Virginia Army National Guard
Supplementary Conditions to AIA Document A201 – 2007
General Conditions of the Contract for Construction**

ARTICLE 3 CONTRACTOR

§ 3.18 INDEMNIFICATION

§ 3.18.1 Make the following change to Section 3.18.1:

In the first sentence, insert “Fairmont Coke Works Site Custodial Trust (“Trust”), West Virginia Department of Environmental Protection, as Trustee of the Trust, City of Fairmont, as Real Property Manager/Developer of the Trust, J&S Properties, LLC, “ after “Owner” and before “Architect”

ARTICLE 5 SUBCONTRACTORS

§ 5.3 SUBCONTRACTUAL RELATIONS

Make the following changes to Section 5.3:

At the end of the first sentence after “Owner” delete “and” and insert “,” and after “Architect” insert “, Fairmont Coke Works Site Custodial Trust (“Trust”), West Virginia Department of Environmental Protection, as Trustee of the Trust, City of Fairmont, as Real Property Manager/Developer of the Trust, and J&S Properties, LLC.”

In second sentence after “Owner” delete “and” and insert “,” and after “Architect” insert “Fairmont Coke Works Site Custodial Trust (“Trust”), West Virginia Department of Environmental Protection, as Trustee of the Trust, City of Fairmont, as Real Property Manager/Developer of the Trust, and J&S Properties, LLC

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.4 Make the following changes to Section 11.1.4 (*see State of West Virginia Supplementary Conditions to AIA Document A201-2007 General Conditions of the Contract for Construction*):

In the second sentence after “Owner” insert “, the Fairmont Coke Works Site Custodial Trust (“Trust”), the West Virginia Department of Environmental Protection, as Trustee of the Trust, the City of Fairmont, as Real Property Manager/Developer of the Trust, J&S Properties, LLC”.

Fairmont AFRC Pre-Bid Meeting

Civil/Site Scope Notes

8 April 2010

* Major items of work include:

- * Nearly 500,000 cubic yards of unclassified excavation
- * 30,000 cubic yards of coal waste excavation and disposal
- * About one mile of water line PVC, DIP
- * About one mile of storm drainage pipe (6" to 42" pipe) PVC, HDPE
- * About 45 precast drainage structures
- * About 4,000 feet of subsurface drains
- * About one mile of Free Draining Base Trench under roads and parking
- * Over 3,500 feet of sewer main PVC, DIP
- * Over 1,300 feet of Gas main 3" and 5" PE
- * About 1,700 feet of Underground duct banks for electric & communications
- * 2,300 linear feet of two lane road
- * 12,000 square yards of concrete paving
- * Asphalt parking lot for 160 cars
- * Five Large Vehicular Gates
- * Over 2,000 square yards of concrete walks
- * Freestanding wash rack and loading ramp
- * Dominion Hope 8" steel gas distribution line relocation - Allowance item
- * Sediment and erosion controls - 2 existing pond rehabs and one new pond

* Alternate bid items include:

- * Phase 2 Grading - 120 day delay of work on Cokeworks Site for closeout of cleanup operations
- * Military Equipment Parking Expansion - about 4,500 SY of Gravel Paving
- * Field Fencing and Gates - as needed for site security
- * Civic Arena Parking Area - asphalt paving for additional 280 spaces
- * Fencing and Gate Upgrade - increase height of fence and chain link gates to 8 feet

ITEMS FOR DISCUSSION:

- * Access is from "The Drive" except for trucks and equipment
 - * Trucks and heavy equipment will gain access through the Fairmont Cokeworks Trust Property
 - * "The Drive" will be cleaned twice weekly - Wednesday and Saturday PM
- * Existing site consists of reclaimed Riverview Quarry
- * Some coal waste is present in a disposal pit - it will have lime added and be placed in a separate storage area
- * Coal or other organic material is not acceptable in soil or rock fill
- * Expansive clays and shales are the predominant soil and rock on the site
- * Three methods of dealing with the potential swelling problem
 - * 6" lean concrete mud mat under the buildings - separate bid item
 - * Waterproof coating for exposed shale surfaces under pavements and structures
 - * 18" layer of lime modified soil under pavements where exposed shale is not present
 - * Soil for this 18" layer must come from Test Pit 2 area
- * Site is not undermined but does have a layer of sandy shale above the finish elevation
 - * Some excavation is expected to occur in sandstone
 - * The coal waste disposal pit was excavated by bulldozer
- * 4 contingency bid items to deal with wet or soft soil conditions - not expecting to have to use much of these items
 - * Soil drying - Lime addition to soil stockpile
 - * Soil conditioning - Lime addition to top 12" layer of soil
 - * Subsurface drains - 24" of #57 stone wrapped in geotextile with drain pipe
 - * Over-excavation - Biaxial geogrid and 18" #1 stone
- * Gas line relocation must be complete by 15 September 2010.

4/11/2010

Fairmont AFRC Prebid Notes.xls

- * Contractor must obtain CSW permit prior to beginning work
- * Contractor must obtain a WVDOH encroachment permit prior to beginning Phase 2 Grading Alternate Bid - Allowance
- * Contractor must obtain a City of Fairmont grading/filling permit prior to beginning work - form is in project manual
- * Contractor must pay City of Fairmont B&O taxes - form is in project manual

ADDENDUM ITEMS

- * Loading Ramp Relocation
- * Adding many bid items - service connections for water line, concrete steps, waterproof coating, 6" concrete mud mat, and changing some pipe sizes and bid item descriptions
- * Deleting MEP Gravel Apron Bid Item - picked up in unit rates for geotextile and Class 1 Stone

LIST OF PROPOSED SUBCONTRACTORS AND EQUIPMENT/MATERIAL SUPPLIERS

List below each major branch of work and major equipment/material supplier category for this proposal and the subcontractor or supplier proposed for that portion of work. Provide also the Contractor License Number for each subcontractor as required by the "West Virginia Contractor Licensing Act". If the branch of work is to be completed solely by an equipment/material supplier, indicate by notation below in the contractor license number column. The bidder may be requested to change an unsatisfactory subcontractor or equipment/material supplier. The contractor is responsible for selecting or changing subcontractor or equipment/material supplier. The Owner or Architect/Engineer may indicate their concerns regarding any entity listed about which they have reason to believe that, due to past experience, poor performance may be expected.

It is the responsibility of any contractor soliciting bids or quotes from subcontractors to verify the eligibility of all subcontractors and equipment/material suppliers being proposed to perform the work. The Contractor has full responsibility for satisfactory execution of all work in accordance with the Contract Documents. Any change of proposed subcontractors or equipment/material suppliers shall be at no cost to the Owner, as the Contractor has full responsibility for execution of the work.

I, _____ representing _____
 (Signature of Responsible Company) (Company Name)
 on this date _____ submit the following list of subcontractors and major
 material suppliers for your review and comment. This is the final and complete list of companies
 who will be performing work or supplying materials for _____
 (Project Name)

I agree that once the subcontractors and material suppliers listed are approved for use by the Owner, no other subcontractors, or substitute for any subcontractors listed below, will be used in the performance of the contract without written approval of the Owner.

Branch of Work/ Material Category	Complete Name and Address Subcontractor/Supplier	Contractor License Number
1. _____	_____ _____	_____
2. _____	_____ _____	_____
3. _____	_____ _____	_____
4. _____	_____ _____	_____

5.	_____	_____	_____

6.	_____	_____	_____

7.	_____	_____	_____

8.	_____	_____	_____

9.	_____	_____	_____

10.	_____	_____	_____

11.	_____	_____	_____

12.	_____	_____	_____

13.	_____	_____	_____

14.	_____	_____	_____

List Of Proposed Subcontractor
And Material Suppliers

Geotechnical Engineering Report

Proposed Fairmont Armed Forces Reserve Center
Fairmont, Marion County, West Virginia

April 5, 2010

Terracon Project No. N2095099

Prepared for:

Capitol Engineering, Inc.
Charleston, West Virginia

Prepared by:

H. C. Nutting
A Terracon Company
Charleston, West Virginia

Offices Nationwide
Employee-Owned

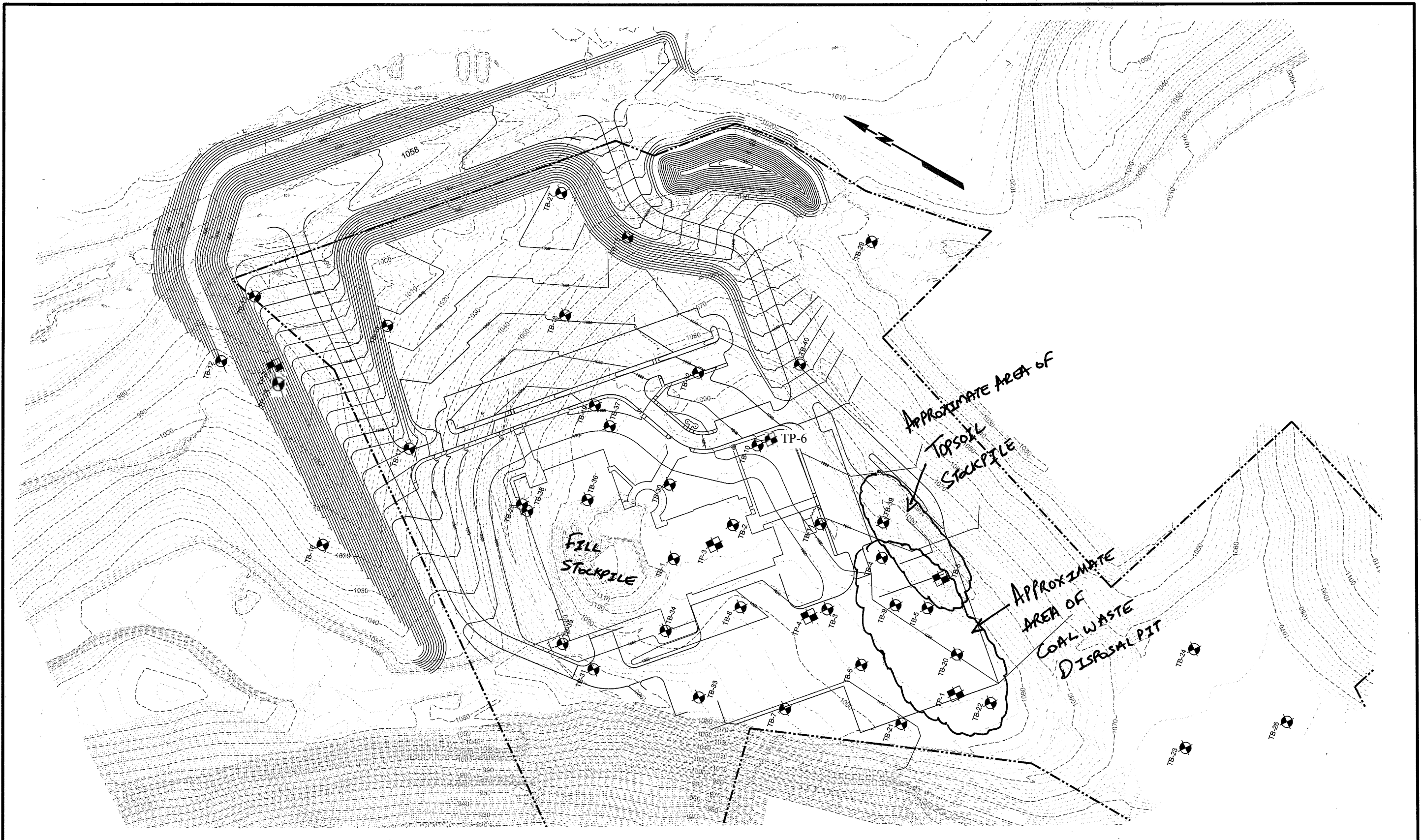
Established in 1965
terracon.com



Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

APPENDIX A

FIELD EXPLORATION



-  Approximate Boring Location
-  Approximate Test Pit Location

Project Mgr:	YSR
Drawn By:	CJF
Checked By:	YSR
Approved By:	KME

Project No.	N2095099
Scale:	NTS
File No.	N2095099
Date:	2/3/2010

Terracon
 Consulting Engineers and Scientists
 Charleston, West Virginia

Boring and Test Pit Location Diagram
 Fairmont Armed Forces Reserve Center
 Marion County, West Virginia
 Capitol Engineering, Inc.

FIG. No.
 1

LOG OF BORING NO. TB-1

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1098 ft

FILL, silty sand with gravel, brown, fine to coarse grained sand, sandstone gravel

12.5 ▼ 1085.5

SHALE, severely weathered, gray, very soft to soft, fissile

25.2 1073

SHALE, severely weathered, gray, soft, fissile, completely fractured

32 1066

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1	SS	1	SS	18	8	9			
2	SS	2	SS	18	7	8			
3	SS	3	SS	18	5	8			
4	SS	4	SS	18	9	8			
5	SS	5	SS	18	15	7			
6	SS	6	SS	6	50/6"				
7	SS	7	SS	6	50/6"				
8	SS	8	SS	2	50/2"				
1	DB	1	DB	12	RQD				
2	DB	2	DB	60	0% RQD				
3	DB	3	DB	60	16% RQD				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▼ N/E	WD	▼ 12.0 AB
WL	▼	WD	▼
WL	Backfilled		



BORING STARTED	12-7-09
BORING COMPLETED	12-7-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-1

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SANDSTONE, moderately severely to moderately weathered, gray to brown, moderately hard to hard, fine grained, thick bedded, joint spacing 0.1 to 0.6 feet Unconfined compressive strength at 32.8' = 636 tsf</p> <p>BORING COMPLETED</p>	<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; width: 10px; height: 100px; margin-right: 5px;"></div> <div style="text-align: center; flex-grow: 1;"> <div style="border-top: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div> </div> </div>				26%				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 12.0 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		12-7-09	
BORING COMPLETED		12-7-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-2

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1098 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	12	10			
	CL	2	SS	18	6	11			
5		3	SS	18	9	12			
		4	SS	18	45				
10		5	SS	14	50/2"				
		6	SS	5	50/5"				
20		7	SS	6	50/6"				
25		1	DB	34	RQD 16%				
30		2	DB	60	RQD 10%				

FILL, sandy lean clay, trace gravel and coal, brown and gray

LEAN CLAY, gray medium stiff to stiff, (completely weathered shale structure)

SHALE, completely to severely weathered, gray, very soft to soft, fissile

SHALE, severely to moderately severely weathered, gray to brown, very soft, highly fractured
Unconfined compressive strength at 26.8' = 15 tsf

SHALE, severely to moderately severely weathered, gray to brown, very soft, highly fractured
Unconfined compressive strength at 26.8' = 15 tsf

SHALE, severely to moderately severely weathered, gray to brown, very soft, highly fractured
Unconfined compressive strength at 26.8' = 15 tsf

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-2

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	SANDSTONE , moderately severely to moderately weathered, brown to gray, soft, fine grained, thick bedded, joint spacing 0.6 to 1.6 feet	35 106.3								
	BORING COMPLETED									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.0 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-2A

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION
Approx. Surface Elev.: 990.0 ft

GRAPHIC LOG	5	LEAN CLAY , trace organics (roots), brown, soft to stiff	985
	7.5	SANDY LEAN CLAY , brown, stiff	982.5
	10	CLAYEY SAND WITH GRAVEL , brown, loose, fine to coarse grained sand, subangular gravel	980
		SPT REFUSAL AT 10.0 FEET POSSIBLE BEDROCK	

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SAMPLES		TESTS	
					SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	CL	1	SS	13	1	28		
	CL	2	SS	18	11	32		
5	CL	3	SS	18	9	19		
	SC	4	SS	16	9	20		
10		5	SS	0	50/0"			

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	∇ 10.0	WD	∇ N/E AB
WL	∇		∇
WL	Backfilled		



BORING STARTED	1-8-10
BORING COMPLETED	1-8-10
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-3

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1093.5 ft

SAMPLES TESTS

3	▼ 1090.5	FILL , sandy lean clay with gravel , gray
5	1088.5	LEAN CLAY , gray, very stiff, (completely weathered shale structure)
20.3	1073	SHALE , severely weathered, gray, very soft to soft, fissile
24.2	1069.5	SHALE , moderately severely weathered, gray, soft, fissile, highly fractured
31	1062.5	SANDSTONE , moderately weathered, brown, medium hard to moderately, fine grained, thick bedded, joint spacing 0.2 to 3.0 feet, iron stained Unconfined compressive strength at 26.1' = 397 tsf
		SHALE , moderately weathered, gray, soft, fissile, completely weathered

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
		1	SS	18	3	16			
	CL	2	SS	18	23	10			
5		3	SS	14	50/2"				
		4	SS	14	50/2"				
10		5	SS	9	50/3"				
		6	SS	6	50/6"				
20		7	SS	3	50/3"				
		1	DB	60	RQD 0%				
25		2	DB	60	RQD 78%				
30		3	DB	52	RQD 19%				

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▼ N/E	WD	▼ 2.5 AB
WL	▼	▼	
WL	Backfilled		




BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-3

CLIENT **Capitol Engineering, Inc.**

SITE **Fairmont, West Virginia** PROJECT **Fairmont Armed Forces Reserve Center**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SHALE, moderately weathered, gray, soft, fissile, completely weathered</p>	35								
	<p>BORING COMPLETED</p>	1058.5								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 2.5 AB
WL	▽	▽	▽
WL	Backfilled		



BORING STARTED		12-8-09	
BORING COMPLETED		12-8-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-4

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1100 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	10	8			
5		2	SS	18	8	32			
7.5		3	SS	18	21	4			
		4	SS	18	8	15			
10		5	SS	18	4	20			
15		6	SS	18	4	38			
20		7	SS	18	7	17			
24		8	SS	1	50/5"				
		1	DB	50	RQD 14%				
30.2		2	DB	60	RQD 38%				

FILL, clayey gravel with sand, brown, sandstone and shale gravel, fine to coarse grained sand 1097.5

FILL, clayey sand with gravel, trace coal, black, fine to coarse grained sand, shale gravel 1095

FILL, silty gravel with sand, brown, sandstone gravel, fine to coarse grained sand 1092.5

FILL, sandy lean clay with gravel, trace coal, black

24 1076

SHALE, severely to moderately severely weathered, gray, very soft to soft, fissile, highly fractured, iron stained 1070

SANDSTONE, moderately weathered, gray, soft, fine grained, medium bedded with shale layers, moderately fractured

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	N/E	WD	23.5 AB
WL		WD	
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-9-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-4

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SANDSTONE, moderately weathered, gray, soft, fine grained, medium bedded with shale layers, moderately fractured Unconfined compressive strength at 34.0' = 208 tsf</p>	<div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; width: 10px; height: 100px; margin-right: 5px;"></div> <div style="margin-right: 5px;">35</div> </div>								
36	<p>BORING COMPLETED</p>	1064								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 23.5 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-9-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-5

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1097 ft

FILL, sandy lean clay with gravel, trace coal, brown to dark gray

SHALE, moderately severely weathered, gray, very soft to soft, fissile with sandstone layers, completely fractured

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1		1	SS	18	6	18			
2		2	SS	18	6	16			
3		3	SS	18	4	18			
4		4	SS	18	2	18			
5		5	SS	18	5	25			
6		6	SS	18	2	21			
7		7	SS	18	5	22			
8		8	SS	18	5	20			
30		1	DB	12	RQD				
		2	DB	60	0% RQD				

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 22.0 AB
WL	▽	WD	▽
WL	Backfilled		




BORING STARTED	12-9-09
BORING COMPLETED	12-9-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

LOG OF BORING NO. TB-5

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf
	<p>SHALE, moderately severely weathered, gray, very soft to soft, fissile with sandstone layers, completely fractured</p>	35				16%			
	BORING COMPLETED								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 22.0 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		12-9-09	
BORING COMPLETED		12-9-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-6

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1093 ft

FILL, clayey gravel with coal, gray and black, shale and coal gravel
1091

SHALE, completely to severely weathered, gray, very soft to soft, fissile

▼

SANDSTONE, moderately weathered, brown, soft to medium hard, fine grained, medium bedded with shale layers, joint spacing 0.3 to 0.5 feet
1068

SANDSTONE, very slightly weathered, gray, moderately hard, fine grained, thick bedded, joint spacing over 6 feet
1064

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1	SS	1	SS	18	9	12			
2	SS	2	SS	11	50/5"				
3	SS	3	SS	18	60				
4	SS	4	SS	12	50/6"				
5	SS	5	SS	5	50/5"				
6	SS	6	SS	6	50/6"				
7	SS	7	SS	5	50/5"				
8	SS	8	SS	2	50/2"				
1	DB	1	DB	8	RQD				
2	DB	2	DB	55	50% RQD				
3	DB	3	DB	48	100% RQD				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 8.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-9-09
BORING COMPLETED	12-9-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-6

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	Unconfined compressive strength at 29.2' = 482 tsf SANDSTONE , very slightly weathered, gray, moderately hard, fine grained, thick bedded, joint spacing over 6 feet BORING COMPLETED	35 1058								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	N/E	WD	8.0 AB
WL			
WL	Backfilled		



BORING STARTED	12-9-09
BORING COMPLETED	12-9-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-7

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1087 ft

SAMPLES TESTS

GRAPHIC LOG		
2.5	▼ 1084.5	FILL , clayey sand with gravel, brown, fine to coarse grained sand, shale gravel
5	1082	FILL , lean clay with gravel, trace coal, gray
20	1067	SHALE , completely to severely weathered, gray, very soft to soft, fissile
24	1063	SHALE , severely to moderately severely weathered, gray, very soft to soft, fissile
25	1062	
		SANDSTONE , moderately severely weathered, brown to gray, soft, fine grained
		BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
1		1	SS	18	5	14		
2		2	SS	18	6	18		
3		3	SS	18	59			
4		4	SS	8	50/2"			
5		5	SS	6	50/6"			
6		6	SS	3	50/3"			
1		1	DB	56	RQD 0%			

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 2.5 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		12-10-09	
BORING COMPLETED		12-10-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-8

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1089 ft

FILL, lean clay with gravel, brown to gray
2 1087

SHALE, completely to severely weathered, gray, very soft to soft, fissile

24 1065

SANDSTONE, moderately weathered, brown, medium hard to moderately, fine grained, thick bedded, joint spacing 0.5 to 1.2 feet
Unconfined compressive strength at 25.5' = 530 tsf
- steeply inclined fracture from 26.7 to 27.1 feet
30 1059

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1	SS	1	SS	18	5	13			
2	SS	2	SS	18	68				
3	SS	3	SS	12	50/5"				
4	SS	4	SS	6	50/6"				
5	SS	5	SS	5	50/5"				
6	SS	6	SS	0	50/0"				
7	SS	7	SS	2	50/2"				
12	DB	1	DB	12	RQD				
14	DB	2	DB	44	40% RQD 50%				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 28.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-10-09
BORING COMPLETED	12-10-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-9

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1097.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	4	18			
5		2	SS	18	5	15			
8		3	SS	18	3	20			
10		4	SS	18	4	9			
15	CL	5	SS	18	26	7			
20		6	SS	9	50/3"				
25		7	SS	5	50/5"				
30		1	DB	60	RQD 50%				
32.5		2	DB	54	RQD 30%				

FILL, sandy lean clay with gravel, brown

FILL, clayey gravel with sand, trace coal, black, shale gravel, fine to coarse grained sand

FILL, sandy lean clay with gravel, trace coal, dark gray and black

LEAN CLAY, gray, medium stiff to hard, (completely weathered shale structure)

SHALE, severely weathered, gray, very soft to soft, fissile

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 2.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-10-09		
BORING COMPLETED	12-10-09		
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099


REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-9

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
			NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
	34 35									
<p>SANDSTONE, slightly weathered, gray, hard, fine grained, medium bedded Unconfined compressive strength at 32.8' = 1063.5 648 tsf</p> <p>SHALE, severely weathered, gray, soft, fissile</p> <p>BORING COMPLETED</p>										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	N/E	WD	2.0 AB
WL			
WL	Backfilled		



BORING STARTED	12-10-09
BORING COMPLETED	12-10-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-10

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1098 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	6	21			
5	CL	2	SS	18	24	10			
	CL	3	SS	18	42	12			
	CL	4	SS	18	56	11			
10		5	SS	17	50/5"				
15		6	SS	18	20				
20		7	SS	5	50/5"				
25		1	DB	57	RQD 52%				
30		2	DB	60	RQD 42%				

FILL, lean clay, trace coal and organics (roots), gray

SANDY LEAN CLAY, brown and gray mottled, hard, iron stained, (completely weathered shale structure)

SANDY SHALE, completely weathered, gray, very soft

SANDSTONE, completely weathered, brown to gray, very soft, fine grained

SHALE, severely to moderately severely weathered, gray, very soft to soft, fissile

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-11-09		
BORING COMPLETED	12-11-09		
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099


REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-10

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SHALE, severely to moderately severely weathered, gray, very soft to soft, fissile</p>	<div style="display: flex; align-items: center;"> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> <div style="width: 100px; border-left: 1px solid black; border-right: 1px solid black; margin: 0 5px;"></div> </div>								
35	1063	35								
	BORING COMPLETED									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.0 AB
WL	▽	▽	▽
WL	Backfilled		



BORING STARTED		12-11-09	
BORING COMPLETED		12-11-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-11

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1100.5 ft

FILL, sandy lean clay with gravel, trace organics (roots), gray
2.5 1098

LEAN CLAY, brown, hard to very stiff, iron stained, (completely weathered claystone structure)
7.5 1093

SHALE, completely to severely weathered, brown, to gray, very soft to soft, fissile
25 1075.5

SHALE, severely to moderately severely weathered, gray, very soft, fissile with sandstone layers, highly fractured
- iron stained from 27.6 to 28.4 feet

Unconfined compressive strength at 30.2' = 8 tsf

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
		1	SS	12	6	21			
	CL	2	SS	18	38	12			
5	CL	3	SS	18	16	21			
		4	SS	17	50/5"				
10		5	SS	9	50/3"				
		6	SS	11	50/5"				
20		7	SS	3	50/3"				
25		1	DB	15	RQD 0%				
		2	DB	60	RQD 18%				
30		3	DB	48	RQD				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer


WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 2.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-11-09
BORING COMPLETED	12-11-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-11

CLIENT Capitol Engineering, Inc.		PROJECT Fairmont Armed Forces Reserve Center								
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center								
GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SHALE, severely to moderately severely weathered, gray, very soft, fissile with sandstone layers, highly fractured</p>	35.5					10%			
	BORING COMPLETED	1065	35							

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	N/E	WD	2.0 AB
WL			
WL	Backfilled		



BORING STARTED		12-11-09	
BORING COMPLETED		12-11-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-12

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 993 ft

LEAN CLAY, trace organics (roots), brown to gray, soft to stiff

5 988

SILTY SAND, brown, medium dense, fine grained sand

15 978

SHALE, completely weathered, red and gray, very soft

18.5 974.5

AUGER & SPT REFUSAL ON LIMESTONE AT 18.5 FEET

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
	CL	1	SS	12	3	28			
	CL	2	SS	18	10	20			
5	SM	3	SS	18	15	16			
	SM	4	SS	18	10	16			
10	SM	5	SS	18	11	15			
15		6	SS	18	43				
		7	SS	0	50/0"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-17-09
BORING COMPLETED	12-17-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-13

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 987.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
	CL	1	SS	13	7	22			
	CL	2	SS	18	12	18			
5	CL	3	SS	18	9	18			
	CL	4	SS	18	10	19			
10	CL	5	SS	18	12	14			
15	CL	6	SS	18	20	16			
20	CL	7	SS	18	5	24			
25		8	SS	18	17				

LEAN CLAY, brown to gray, stiff

LEAN CLAY WITH GRAVEL, brown, very stiff

LEAN CLAY WITH SAND, gray, medium stiff

SHALE, completely weathered, gray, very soft, (saturated)

BORING COMPLETED

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	∇ 25.0	WD	∇ 22 AB
WL	∇		∇
WL	Backfilled		



BORING STARTED	12-17-09
BORING COMPLETED	12-17-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

LOG OF BORING NO. TB-14

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1008.5 ft

SANDY LEAN CLAY WITH GRAVEL, trace organics (roots), grayish brown, medium stiff
2.5 1006

CLAYEY SAND, trace gravel, brown, medium dense, fine grained sand
5 1001

LEAN CLAY WITH SAND, brown, very stiff
7.5 1001

CLAYEY SAND, brown, medium dense, fine grained sand
10 998.5

SHALE, completely to severely weathered, gray, very soft to soft, fissile with limestone layers
15 993.5

BORING COMPLETED
20.5 988

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5	CL	1	SS	12	4	15			
5	SC	2	SS	18	16	12			
5	SC	3	SS	18	25	12			
7.5	CL	4	SS	18	16	20			
10	SC	5	SS	18	23	13			
15		6	SS	18	21				
20		7	SS	2	50/2"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	∇ N/E	WD	∇ N/E AB
WL	∇		∇
WL	Backfilled		



BORING STARTED	12-17-09
BORING COMPLETED	12-17-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-15

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1046 ft

SANDY LEAN CLAY WITH GRAVEL, trace organics (roots), brown, medium stiff to stiff

LEAN CLAY, light brown to reddish brown, stiff to very stiff

SHALE, completely weathered, light brown to dark gray, very soft

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
5	CL	1	SS	13	4	25			
	CL	2	SS	18	8	22			
5	CL	3	SS	18	11	15			
	CL	4	SS	18	20	18			
10	CL	5	SS	18	22	19			
15		6	SS	18	47				
20		7	SS	18	25				
25		8	SS	18	26				

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-16-09
BORING COMPLETED	12-16-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

LOG OF BORING NO. TB-16

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1017.5 ft

SAMPLES TESTS

SANDY LEAN CLAY, trace organics (roots), brown, stiff

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
2.5	CL	1	SS	18	7	20		
5	CL	2	SS	18	16	15		
	CL	3	SS	18	17	12		
	CL	4	SS	18	14	14		
10	CL	5	SS	18	13	18		
15	CL	6	SS	18	9	22		
20		7	SS	9	50/3"			

SANDY LEAN CLAY, trace gravel, brown, very stiff

LEAN CLAY, brown, stiff

SHALE, severely weathered, gray, very soft, fissile

BORING COMPLETED

CL 1 SS 18 7 20

CL 2 SS 18 16 15

CL 3 SS 18 17 12

CL 4 SS 18 14 14

CL 5 SS 18 13 18

CL 6 SS 18 9 22

7 SS 9 50/3"

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 19.5	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-16-09
BORING COMPLETED	12-16-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-17

CLIENT Capitol Engineering, Inc.										
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center								
GRAPHIC LOG	Boring Location: As Shown on Boring Location Diagram	SAMPLES			TESTS					
	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 1028 ft									
5	SANDY LEAN CLAY , trace gravel, light brown, medium stiff to very stiff	5	CL	1	SS	18	6	18		
5			CL	2	SS	18	17	20		
5		5		3	SS	18	48			
	SHALE , completely to severely weathered, light brown, very soft to soft, fissile			4	SS	18	47			
		10		5	SS	18	25			
		15		6	SS	12	50/6"			
		20		7	SS	6	50/6"			
	1023									
	20.5	20								
	BORING COMPLETED									
	1007.5									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E
			AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-16-09
BORING COMPLETED	12-16-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-18

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1051 ft

FILL, sandy lean clay with gravel, trace coal, brown and black
2.5 1048.5

LEAN CLAY, gray to brown, stiff to hard
7.5 1043.5

SHALE, completely weathered, brown, very soft, fissile
16.5 1034.5

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
		1	SS	18	5	22			
	CL	2	SS	18	11	24			
5	CL	3	SS	18	19	18			
		4	SS	18	49	16			
10		5	SS	18	41				
		6	SS	18	44				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-15-09
BORING COMPLETED	12-15-09
RIG Track	FOREMAN JW
LOGGED CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-19

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1093.5 ft

SAMPLES TESTS

FILL, sandy lean clay with gravel, brown to gray

1086

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
		1	SS	18	2	19		
		2	SS	18	8	14		
5		3	SS	18	13	16		
		4	SS	18	24	12		
10		5	SS	18	50	11		
		6	SS	18	41	9		
15		7	SS	18	31	21		
		8	SS	17	50/5"			
20		9	SS	9	50/3"			
25								
30								

SHALE, completely weathered, brown, very soft, fissile

1068.5

SHALE, completely to severely weathered, brown to gray, very soft to soft, fissile

1068.5

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-15-09
BORING COMPLETED	12-15-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-19

CLIENT Capitol Engineering, Inc.											
SITE Fairmont, West Virginia					PROJECT Fairmont Armed Forces Reserve Center						
GRAPHIC LOG	DESCRIPTION				DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS	
							NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %
36	<p>SHALE, completely to severely weathered, brown to gray, very soft to soft, fissile</p>				35						
1057.5	<p>BORING COMPLETED</p>					10	SS	3	50/3"		

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft				
WL	▽ N/E	WD	▽ N/E	AB
WL	▽		▽	
WL	Backfilled			



BORING STARTED		12-15-09	
BORING COMPLETED		12-15-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-20

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1096.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	8				
5		2	SS	18	13				
		3	SS	18	5				
		4	SS	12	3				
10		5	SS	18	3				
15		6	SS	18	3				
20		7	SS	18	4				
25		8	SS	14	50/2"				
		1	DB	56	RQD 76%				
30									

FILL, sandy lean clay with gravel, brown

FILL, clayey sand with gravel, trace coal, dark gray and black, fine to coarse grained sand, shale gravel

FILL, sandy lean clay with gravel, trace coal, dark gray and black

SANDSTONE, slightly weathered, gray, medium hard to moderately hard, fine grained, thick bedded, joint spacing from 1.8 to 2.6 feet, iron stained joints
Unconfined compressive strength at 25.3' = 422 tsf
- clay filled joint at 30.0 feet

BORING COMPLETED

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 6.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-11-09		
BORING COMPLETED	12-11-09		
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

LOG OF BORING NO. TB-21

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1091.5 ft

SHALE, completely to severely weathered, gray, very soft to soft, fissile

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
		1	SS	18	24				
		2	SS	18	76				
5		3	SS	15	50/3"				
		4	SS	9	50/4"				
10		5	SS	8	50/2"				
		6	SS	5	50/5"				
15									
20		7	SS	11	50/5"				
25		8	SS	1	50/1"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	∇ N/E	WD	∇ N/E AB
WL	∇		∇
WL	Backfilled		



BORING STARTED	12-10-09
BORING COMPLETED	12-10-09
RIG	ATV FOREMAN FD
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-22

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1094 ft

0.2	TOPSOIL	1094
FILL, sandy lean clay with gravel, trace coal, brown to dark gray		
25	▼	1069
SANDSTONE , slightly weathered, brown to gray, soft to medium hard, fine grained, thick bedded Unconfined compressive strength at 25.9' = 146 tsf		
30	BORING COMPLETED	
		1064

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1		1	SS	18	10	13			
2		2	SS	18	10	16			
5		3	SS	18	9	15			
10		4	SS	18	4	17			
15		5	SS	18	5	20			
20		6	SS	18	3	17			
25		7	SS	18	4	11			
25		1	DB	30	RQD 68%				
30		2	DB	30	RQD 100%				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 8.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-10-09
BORING COMPLETED	12-10-09
RIG	ATV FOREMAN FD
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-23

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1068 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
0.4		1	SS	18	20	9			
		2	SS	18	12	9			
5		3	SS	11	50/5"	8			
		4	SS	15	23	10			
10		5	SS	18	57	5			
		6	SS	18	21	8			
20		7	SS	18	43				
		8	SS	17	50/5"				
30		1	DB	63	RQD 34%				

0.4	TOPSOIL	1067.5
	FILL , silty sand with gravel, brown, fine grained sand, sandstone gravel	
	- boulder at 5.5 feet	
10		1058
	FILL , silty gravel with sand, brown, sandstone gravel, fine to coarse grained sand	
	- trace black shale fragments at 15.0 feet	
20		1048
	SHALE , completely weathered, brown, very soft, fissile	
26.4		1041.5
	SHALE , moderately severely to moderately weathered, brown to gray, very soft to soft, fissile	
31.5		1036.5
	BORING COMPLETED	

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 7.0 AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	ATV FOREMAN FD
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-24

CLIENT
Capitol Engineering, Inc.

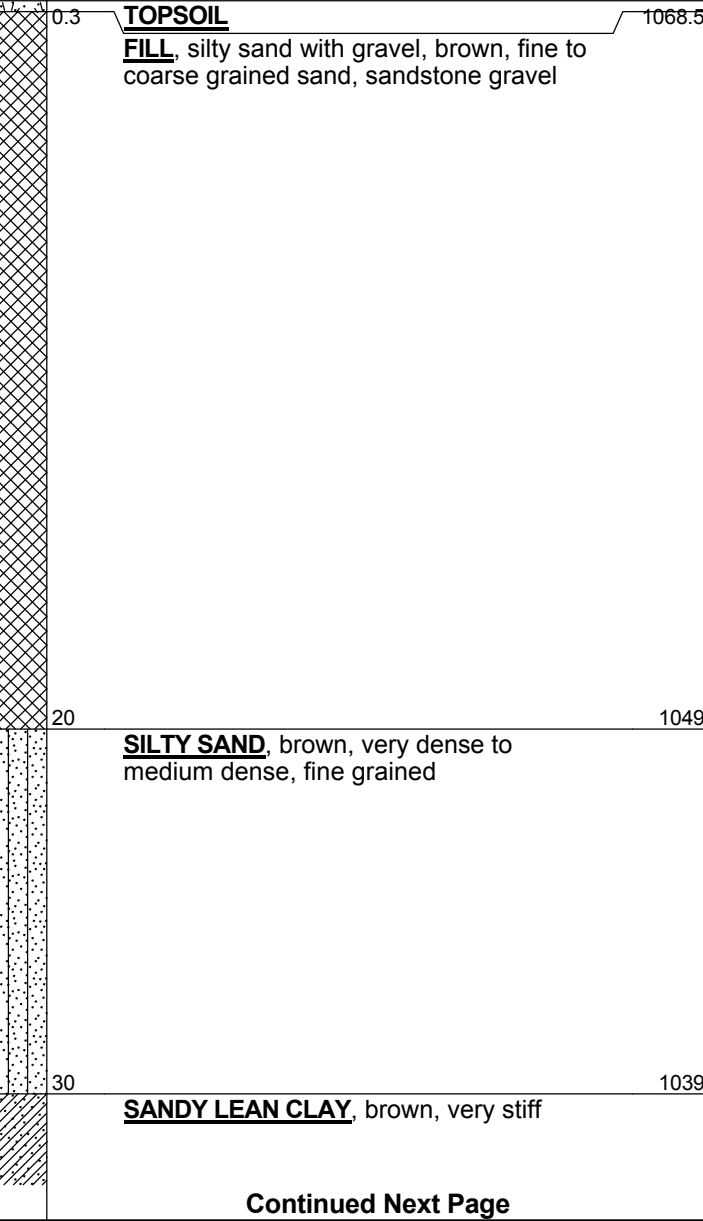
SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1069 ft



Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 35.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-9-09		
BORING COMPLETED	12-9-09		
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-24

CLIENT Capitol Engineering, Inc.		PROJECT Fairmont Armed Forces Reserve Center									
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center									
GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
	SANDY LEAN CLAY , brown, very stiff - possible soft zone or void ▼ 36 1033	35		10	SS	18	1	37			
	LIMESTONE , moderately to slightly weathered, gray, moderately hard to hard, thick bedded, joint spacing 0.5 to 1.0 feet - vertical fracture from 37.3 to 38.2 feet - clay filled joint from 38.4 to 38.6 feet 41.5 1027.5			1	DB	47	RQD 16%				
	BORING COMPLETED										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▼ N/E	WD	▼ 35.0 AB
WL	▼	▼	
WL	Backfilled		



BORING STARTED		12-9-09	
BORING COMPLETED		12-9-09	
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-25

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1065.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
0.4		1	SS	18	8	8			
		2	SS	18	8	15			
5		3	SS	18	20	10			
7.5		4	SS	18	10	18			
10		5	SS	18	9	17			
15		6	SS	18	11	14			
20		7	SS	18	8	12			
25		8	SS	12	9	8			
30		9	SS	18	10	16			

0.4	TOPSOIL	1065.5
	FILL , silty gravel with sand, brown and gray, shale and sandstone gravel, fine to coarse grained sand	
5		1060.5
	FILL , silty sand with gravel, brown, fine to coarse grained sand, sandstone gravel	
7.5		1058
	FILL , sandy lean clay with gravel, brown	
10		1055.5
	FILL , lean clay with gravel and coal fragments, dark gray and black	
20		1045.5
	FILL , silty sand with gravel, brown, fine to medium grained sand, sandstone gravel	
25		1040.5
	FILL , silty gravel with sand, brown, sandstone gravel, fine grained sand	
30		1035.5
	FILL , silty sand with gravel, trace organics, (wood fragments), brown and gray, fine grained sand, sandstone gravel	

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 33.0 AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-9-09
RIG	ATV FOREMAN FD
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-25

CLIENT **Capitol Engineering, Inc.**

SITE **Fairmont, West Virginia** PROJECT **Fairmont Armed Forces Reserve Center**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf
33	▼ 1032.5								
34.5	LIMESTONE , moderately weathered, gray, hard, medium bedded	1031		1	DB	44	RQD 0%		
40.5	SHALE , severely to moderately severely weathered, gray, very soft to medium hard, fissile	1025		2	DB	8	RQD 0%		
BORING COMPLETED									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 33.0 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		12-8-09	
BORING COMPLETED		12-9-09	
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-26

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

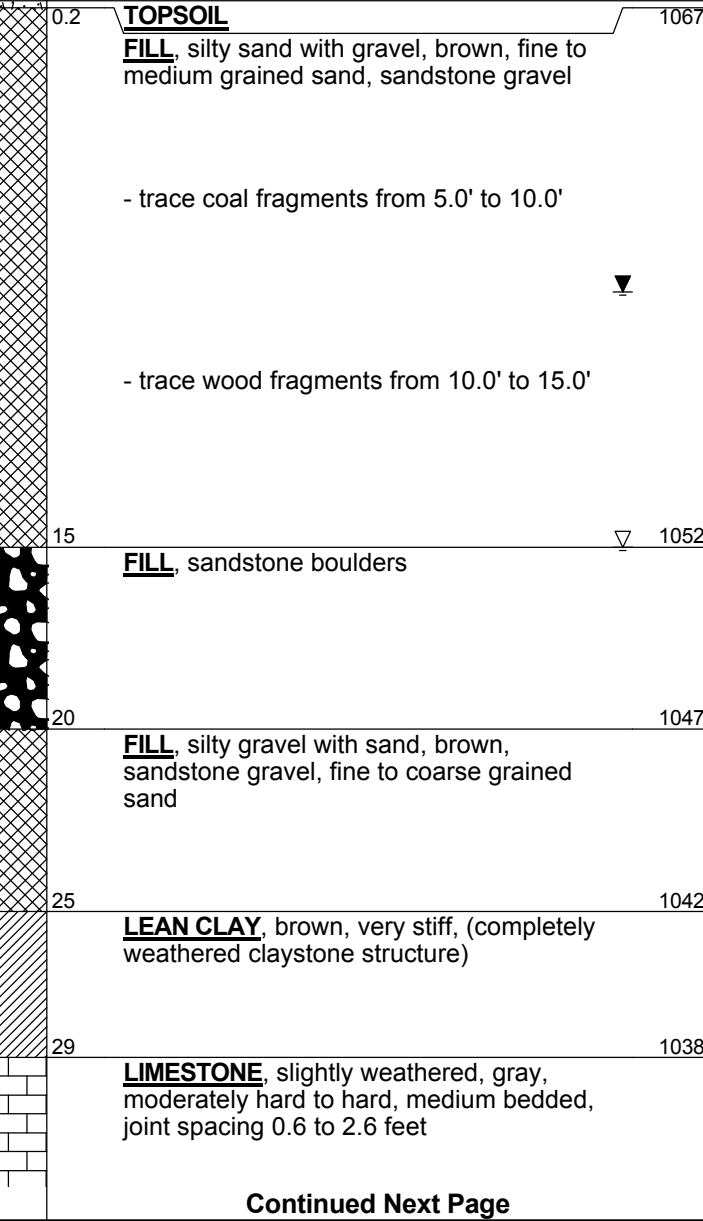
PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1067 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
0.2		1	SS	14	12	8			
		2	SS	18	6	17			
5		3	SS	18	18	19			
		4	SS	18	9	25			
10		5	SS	18	28	11			
15		6	SS	2	50/2"	6			
20		7	SS	4	23	5			
25	CL	8	SS	18	25	22			
29		1	DB	44	RQD 52%				



Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 15.0	WD	▽ 8.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-9-09		
BORING COMPLETED	12-9-09		
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-26

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
34	- clay filled joint from 32.1 to 33.2 feet	1033								
	BORING COMPLETED									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	15.0	WD	8.0 AB
WL		WD	
WL	Backfilled		



BORING STARTED		12-9-09	
BORING COMPLETED		12-9-09	
RIG	ATV	FOREMAN	FD
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-27

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1027.5 ft

SAMPLES TESTS

5	<u>LEAN CLAY</u> , trace sand, gravel and organics (roots), gray to brown, medium stiff to stiff	1022.5
5	<u>LEAN CLAY</u> , brown, stiff to very stiff	
15	<u>SHALE</u> , completely weathered, gray and brown, very soft	1012.5
20.5	BORING COMPLETED	1007

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	TESTS	
								UNCONFINED STRENGTH, psf	
	CL	1	SS	12	4	15			
	CL	2	SS	18	8	19			
5	CL	3	SS	18	17	17			
	CL	4	SS	18	11	23			
10	CL	5	SS	18	14	38			
15		6	SS	18	32				
20		7	SS	3	50/3"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 15.5	WD	▽ 19.5 AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-16-09
BORING COMPLETED	12-16-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-28

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1080 ft

SANDY LEAN CLAY, brown, medium stiff
2.5 1077.5

LEAN CLAY, brown and gray mottled, very stiff
8 1072

SHALE, severely weathered, brown, very soft to soft, fissile
20.5 1059.5

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5	CL	1	SS	12	5	13			
5	CL	2	SS	18	15	17			
	CL	3	SS	18	24	16			
10	CL	4	SS	12	50/6"	6			
		5	SS	10	50/5"				
15		6	SS	18	50/6"				
20		7	SS	3	50/3"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-15-09
BORING COMPLETED	12-15-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-29

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1029 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
		1	SS	18	14	7			
		2	SS	12	11	14			
5	CL	3	SS	18	19	17			
	CL	4	SS	18	13	16			
10	CL	5	SS	18	19	29			
	CL	6	SS	18	11	24			
20	CL	7	SS	18	26	16			
		8	SS	18	34				
30		9	SS	18	54				

FILL, silty sand with gravel, trace organics (roots), brown, fine to coarse grained sand, sandstone gravel

SANDY LEAN CLAY, brown, very stiff

LEAN CLAY, brown to gray, very stiff to stiff

LEAN CLAY, gray and red mottled, hard

CLAYSTONE, completely weathered, gray and red, very soft

BORING COMPLETED

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 26.5	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-16-09
BORING COMPLETED	12-16-09
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-30

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1096.5 ft

FILL, sandstone cobbles and boulders

▼

8 1088.5

SHALE, completely to severely weathered, gray, very soft to soft, fissile

25 1071.5

SHALE, severely to moderately severely weathered, gray to brown, soft to medium hard, fissile

32.2 1064.5

Continued Next Page

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1	SS	1	SS	18	43	4			
2	SS	2	SS	18	48	4			
5	SS	3	SS	12	47	4			
8	SS	4	SS	18	54	9			
10	SS	5	SS	14	50/2"				
15	SS	6	SS	9	50/3"				
20	SS	7	SS	6	50/6"				
25	DB	1	DB	60	RQD 78%				
30	DB	2	DB	58	RQD 46%				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 4.5 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	12-14-09
BORING COMPLETED	12-15-09
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-30

CLIENT **Capitol Engineering, Inc.**

SITE **Fairmont, West Virginia** PROJECT **Fairmont Armed Forces Reserve Center**

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	<p>SANDSTONE, moderately weathered, brown, medium hard to moderately hard, fine grained, thick bedded, joint spacing from 0.8 to 1.5 feet</p> <p>BORING COMPLETED</p>	<p>35</p>								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 4.5 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		12-14-09	
BORING COMPLETED		12-15-09	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-31

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

GRAPHIC LOG		DESCRIPTION	
		Approx. Surface Elev.: 1079.5 ft	
0.4	1079	TOPSOIL	
		FILL , silty sand, brown, fine grained	
2.5	1077	LEAN CLAY , gray, very stiff, (completely weathered shale structure)	
5	1074.5	SHALE , severely weathered, gray, very soft, fissile	
6.5	1073	BORING COMPLETED	

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1		1	SS	7	4	13			
2	CL	2	SS	18	15	12			
3		3	SS	18	50/6"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	N/E	WD	N/E
	▽		▽
	N/E		N/E
			AB
WL			
			▽
WL			
			Backfilled



BORING STARTED	12-11-09
BORING COMPLETED	12-11-09
RIG	ATV
LOGGED	CJF
FOREMAN	FD
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-32

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1088.5 ft

LEAN CLAY, trace sand, brown and gray mottled, medium stiff to hard, (completely weathered claystone structure)

SHALE, completely weathered, brown, very soft, fissile, iron stained

SHALE, completely to severely weathered, gray, soft, fissile

BORING COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1	CL	1	SS	18	5	19			
2	CL	2	SS	18	19	13			
3	CL	3	SS	18	28	12			
4	CL	4	SS	18	33	16			
5		5	SS	17	50/5"				
6		6	SS	18	38				
7		7	SS	18	50/6"				
8		8	SS	5	50/5"				

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-14-09
BORING COMPLETED	12-14-09
RIG Track	FOREMAN JW
LOGGED CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF BORING NO. TB-33

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1082.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	6	14			
5		2	SS	10	50/4"				
7.5		3	SS	3	50/3"				
10		4	SS	8	50/2"				
15		5	SS	6	50/6"				
21		6	SS	0	50/1"				
		1	DB	10	RQD				
		2	DB	60	50% RQD				
					35%				
26		3	DB	60	RQD 55%				
BORING COMPLETED									

FILL, clayey sand with gravel, brown, shale fragments

SANDY SHALE, very severely weathered, gray, very soft, fissile

SANDSTONE, very severely weathered, gray, very soft, fine grained

SHALE, very severely weathered, gray, very soft, fissile

SANDSTONE, very severely weathered, gray, very soft, fine grained

SANDY SHALE, severely to moderately weathered, gray, soft to medium hard, fissile with sandstone interbeds

- sandstone interbed from 15.6 to 15.9 and 16.7 to 17.0 feet

SANDSTONE, moderately weathered, gray, soft, fine grained, thinly bedded with shale laminations

BORING COMPLETED

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 2.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	1-13-10
BORING COMPLETED	1-13-10
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-34

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1092.0 ft

SAMPLES TESTS

GRAPHIC LOG	3	<p>FILL, sandy lean clay with gravel, gray ▼</p>	1089
	10.5	<p>SANDSTONE, very severely to severely weathered, gray, soft, fine grained</p>	
	30	<p>SHALE, moderately severely weathered, gray, very soft, fissile</p>	1081.5
	30.6		1062
	31.2		1061.5
			1061

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
0		1	SS	9	22	6			
5		2	SS	11	50/5"				
5		3	SS	1	50/2"				
10		4	SS	0	50/0"				
10		5	SS	0	50/0"				
10		1	DB	68	RQD 44%				
15		2	DB	60	RQD 68%				
20		3	DB	60	RQD 47%				
25		4	DB	56	RQD 0%				
30		5	DB	60	RQD 16%				

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▼ N/E	WD	▼ 1.0 AB
WL	▼		▼
WL	Backfilled		



BORING STARTED		1-13-10	
BORING COMPLETED		1-13-10	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-34

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
32.8	<p>SANDY SHALE, moderately severely to moderately weathered, gray and brown, soft to medium hard, fissile with sandstone interbeds, iron stained</p> <p>SANDSTONE, moderately severely, brown to gray, soft, fine grained</p> <p>SANDY SHALE, moderately severely to moderately weathered, gray and brown, soft to medium hard, fissile with sandstone interbeds, iron stained</p> <p>SANDSTONE, moderately severely, brown to gray, soft, fine grained</p> <p>SANDY SHALE, moderately severely to moderately weathered, gray and brown, soft to medium hard, fissile with sandstone interbeds, iron stained</p> <p>SANDSTONE, moderately severely, brown to gray, soft, fine grained</p> <p>BORING COMPLETED</p>	1059								
33		1059								
34.2		1058								
35.5		1056.5	35							

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 1.0 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		1-13-10	
BORING COMPLETED		1-13-10	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-35

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1082.0 ft

SAMPLES TESTS

GRAPHIC LOG		
2.5	1079.5	FILL , silty gravel with sand, trace organics (roots), brown, subangular gravel, fine to coarse grained sand
5	1077	FILL , lean clay, gray
8	1074	FILL , silty sand with gravel, brown, fine to coarse grained sand, subangular gravel
20	1062	SHALE , completely to severely weathered, brown to gray, very soft, fissile, iron stained
26.4	1055.5	SANDSTONE , moderately severely weathered, gray, soft, fine grained, medium bedded, highly fractured
27.5	1054.5	SANDY SHALE , moderately severely weathered, gray to brown, very soft to soft, fissile with sandstone interbeds
27.9	1054	
30.7	1051.5	SANDSTONE , moderately severely weathered, gray, soft, fine grained
30.9	1051	
31.2	1051	
31.4	1050.5	

DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
1	SS	1	SS	10	7	13		
2	SS	2	SS	11	16	11		
3	SS	3	SS	18	17	11		
4	SS	4	SS	18	21	14		
5	SS	5	SS	13	50/1"			
6	SS	6	SS	5	50/5"			
7	SS	7	SS	2	50/3"			
1	DB	1	DB	33	RQD 0%			
2	DB	2	DB	60	RQD 43%			
3	DB	3	DB	60	RQD 65%			

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.5 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	1-12-10
BORING COMPLETED	1-13-10
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-35

CLIENT Capitol Engineering, Inc.										
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center								
GRAPHIC LOG		DESCRIPTION		DEPTH, ft.		SAMPLES			TESTS	
						USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.
.....	32.4	SANDY SHALE , moderately severely weathered, gray to brown, very soft to soft, fissile with sandstone interbeds		1049.5						
.....	34		1048							
	35.5	SANDSTONE , moderately severely weathered, gray, soft, fine grained		1046.5	35					
		SANDY SHALE , moderately severely weathered, gray to brown, very soft to soft, fissile with sandstone interbeds								
		SANDSTONE , moderately severely weathered, gray, soft, fine grained								
		SANDY SHALE , moderately severely weathered, gray to brown, very soft to soft, fissile with sandstone interbeds								
		SANDSTONE , moderately severely weathered, gray, soft, fine grained								
		SHALE , moderately severely weathered, brown, soft, fissile								
		BORING COMPLETED								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ 3.5 AB
WL	▽	▽	
WL	Backfilled		



BORING STARTED		1-12-10	
BORING COMPLETED		1-13-10	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-36

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1092.5 ft

SAMPLES TESTS

FILL, silty gravel with sand, trace clay, brown, subangular to angular gravel, fine to coarse grained sand, cobbles present

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
1	SS	1	SS	18	16	6		
2	SS	2	SS	18	6	9		
5	SS	3	SS	8	1	12		
10	SS	4	SS	18	80			
10	SS	5	SS	12	50/6"			
15	SS	6	SS	9	50/4"			
20	SS	7	SS	9	50/4"			
25	SS	8	SS	2	50/4"			
30	SS	9	SS	0	50/0"			
	DB	1	DB	4	RQD			
	DB	2	DB	60	0%			

SHALE, completely to severely weathered, gray to brown, very soft to soft, fissile

Continued Next Page

7.5	1085
30	1062.5

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 6.0	WD	▽ 7.0
		AB	
WL	▽	▽	
WL	Backfilled		



BORING STARTED	1-12-10		
BORING COMPLETED	1-12-10		
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-36

CLIENT Capitol Engineering, Inc.		PROJECT Fairmont Armed Forces Reserve Center								
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center								
GRAPHIC LOG		DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS		
					NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf
35.5	1057	<p>SANDSTONE, moderately weathered, brown to gray, soft to medium hard, fine grained, medium bedded, joint spacing 0.3 to 1.0 feet, iron stained</p> <p>BORING COMPLETED</p>	35				RQD 32%			

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft				BORING STARTED 1-12-10			
WL	▽ 6.0	WD	▽ 7.0	AB	BORING COMPLETED 1-12-10		
WL	▽	▽			RIG	Track	FOREMAN JW
WL		Backfilled			LOGGED	CJF	JOB # N2095099



REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-37

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1094.0 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5		1	SS	18	27	5			
	CL	2	SS	18	38	13			
5	CL	3	SS	18	24	14			
7.5	CL	4	SS	18	57	9			
10	CL	5	SS	18	43	9			
15	CL	6	SS	18	76	8			
20	CH	7	SS	18	13	21			
25		8	SS	8	50/3"				
30		9	SS	18	49				

FILL, silty gravel with sand, brown, angular to subangular gravel, fine to coarse grained sand

LEAN CLAY, gray, hard to very stiff, iron stained, (completely weathered shale structure)

LEAN CLAY, gray, hard, (completely weathered shale structure)

SANDY LEAN CLAY, brown, hard, (completely weathered shale structure)

LEAN CLAY, brown, hard, (completely weathered shale structure)

FAT CLAY, gray, very stiff, (completely weathered shale structure)

SANDY SHALE, very severely weathered, gray, very soft, fissile

Continued Next Page

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 30.0	WD	▽ 3.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED	1-11-10		
BORING COMPLETED	1-11-10		
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-37

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	SAMPLES			TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf
35	SANDY SHALE , very severely weathered, gray, very soft, fissile	1059							
35.7	SANDY SHALE , very severely to severely weathered, gray, very soft to soft, fissile	1058.5		10	SS	3	50/3"		
36.8	SANDSTONE , moderately severely weathered, gray, soft, fine grained	1057		1	DB	48	RQD 23%		
40	SANDY SHALE , severely weathered, gray, soft, fissile	1054							
BORING COMPLETED									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 30.0	WD	▽ 3.0
		AB	
WL	▽		▽
WL	Backfilled		



BORING STARTED		1-11-10	
BORING COMPLETED		1-11-10	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

LOG OF BORING NO. TB-38

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1082.0 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
3.5		1	SS	18	6	13			
5		2	SS	18	9	19			
	CL	3	SS	18	26	17		9000*	
	CL	4	SS	18	34	15		9000*	
10		5	SS	18	63			9000*	
15		6	SS	18	48				
20		7	SS	12	50/6"				
25		8	SS	0	50/0"				
		1	DB	60	RQD 0%				
30									

FILL, clayey sand, trace gravel, brown, fine to coarse grained sand

3.5 ▽ 1078.5

LEAN CLAY, trace sand, brown and gray mottled, hard, iron stained, (completely weathered shale structure)

10 1072

SHALE, completely to very severely weathered, brown, very soft, fissile

25 1057

SANDSTONE, moderately severely to severely weathered, brown, medium hard to soft, fine grained, medium bedded, joint spacing 0.2 to 0.3 feet
- completely fractured and very soft zone from 27.5 to 30.0 feet

30 1052

BORING COMPLETED

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer
*Calibrated Hand Penetrometer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 5.0	WD	▽ 3.0 AB
WL	▽	WD	▽
WL	Backfilled		



BORING STARTED		1-12-10	
BORING COMPLETED		1-12-10	
RIG	Track	FOREMAN	JW
LOGGED	CJF	JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-39

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1091.0 ft

15		FILL , sandy lean clay, trace gravel and organics (roots and plants), brown to dark brown	1076
20		SILTY SAND , trace gravel, brown, medium dense, fine grained sand, iron stained	1071
25		LEAN CLAY , gray, medium stiff	1066
26.5		SHALE , completely weathered, gray, very soft, fissile	1064.5

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
1		1	SS	12	4	19			
2		2	SS	11	6	31			
3		3	SS	18	8	19			
4		4	SS	18	5	34			
5		5	SS	18	4	30			
6	SM	6	SS	12	28	13			
7	CL	7	SS	18	6	16			
8		8	SS	17	50/5"				

BORING COMPLETED

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual. **CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 23.0	WD	▽ N/E
AB			
WL	▽		▽
WL	Backfilled		



BORING STARTED	1-14-10
BORING COMPLETED	1-14-10
RIG	Track
LOGGED	CJF
FOREMAN	JW
JOB #	N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF BORING NO. TB-40

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1072.5 ft

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
	CL	1	SS	16	14	17			
	CL	2	SS	18	13	17			
5	CL	3	SS	18	23	17			
	CL	4	SS	18	25	15			
10		5	SS	18	40				
		6	SS	18	74				
20		7	SS	16	50/4"				

LEAN CLAY, trace sand, brown, very stiff

LEAN CLAY, brown to gray, very stiff,
(completely weathered shale structure)

SHALE, completely weathered, gray to reddish brown, very soft, fissile

BORING COMPLETED

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

**CME 140H SPT automatic hammer

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WD	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	1-13-10
BORING COMPLETED	1-13-10
RIG	Track FOREMAN JW
LOGGED	CJF JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 2/3/10

LOG OF TEST PIT NO. TP-1

CLIENT Capitol Engineering, Inc.										
SITE Fairmont, West Virginia		PROJECT Fairmont Armed Forces Reserve Center								
GRAPHIC LOG	Boring Location: As Shown on Boring Location Diagram		SAMPLES				TESTS			
	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 1095 ft									
1	<p>FILL, sandy lean clay with gravel, trace cobbles and organics (roots), brown</p> <p>FILL, sandy lean clay with gravel (coal waste material), trace coal, cobbles and organics (wood fragments), dark gray</p> <p>LOI = 15.5%</p>	1094		1	GRAB					LL = 34% PI = 14%
10	TEST PIT COMPLETED	1085								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft						
WL	▽	N/E	WS	▽	N/E	AB
WL	▽			▽		
WL			Backfilled			



BORING STARTED		12-7-09
BORING COMPLETED		12-7-09
RIG		FOREMAN
LOGGED	CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF TEST PIT NO. TP-2

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 981.5 ft

SAMPLES TESTS

0.5 **TOPSOIL** 981

CLAYEY SAND WITH GRAVEL, brown, fine to coarse grained sand, shale gravel
LOI = 7.4%

7 974.5

8 **SHALE**, severely weathered, brown, soft to medium hard 973.5

TEST PIT COMPLETED

DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
5	SC	1	GRAB					LL = 36% PI = 15%

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ 7.0	WS	▽ 7.0 AB
WL	▽		▽
WL	Backfilled		



BORING STARTED		12-7-09
BORING COMPLETED		12-7-09
RIG	FOREMAN	
LOGGED	CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF TEST PIT NO. TP-3

CLIENT **Capitol Engineering, Inc.**

SITE **Fairmont, West Virginia** PROJECT **Fairmont Armed Forces Reserve Center**

GRAPHIC LOG	Boring Location: As Shown on Boring Location Diagram	DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS		
				NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	DESCRIPTION									
	Approx. Surface Elev.: 1097 ft									
X	FILL , clayey sand (broken down shale fragments), brown	5		1	GRAB					LL = 36% PI = 16%
	LOI = 4.9%	10								
	TEST PIT COMPLETED	1087								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft						
WL	▽	N/E	WS	▽	N/E	AB
WL	▽		▽			
WL						Backfilled



BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	FOREMAN
LOGGED CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF TEST PIT NO. TP-4

CLIENT
Capitol Engineering, Inc.

SITE
Fairmont, West Virginia

PROJECT
Fairmont Armed Forces Reserve Center

Boring Location: As Shown on Boring Location Diagram

DESCRIPTION

Approx. Surface Elev.: 1092 ft

FILL, clayey sand (broken down shale fragments), brown
2.5 1089.5

SHALE, severely weathered, gray, very soft, laminated
5 1087

TEST PIT COMPLETED

DEPTH, ft.	USCS SYMBOL	SAMPLES				TESTS			
		NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf	
2.5									
5		1	GRAB						LL = 33% PI = 15%
5									

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft			
WL	▽ N/E	WS	▽ N/E AB
WL	▽		▽
WL	Backfilled		



BORING STARTED	12-8-09
BORING COMPLETED	12-8-09
RIG	FOREMAN
LOGGED CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

LOG OF TEST PIT NO. TP-5

CLIENT Capitol Engineering, Inc.		PROJECT Fairmont Armed Forces Reserve Center								
SITE Fairmont, West Virginia		Boring Location: As Shown on Boring Location Diagram								
GRAPHIC LOG	DESCRIPTION	DEPTH, ft.	USCS SYMBOL	NUMBER	TYPE	RECOVERY, in.	SPT - N** BLOWS / ft.	WATER CONTENT, %	DRY UNIT WT pcf	UNCONFINED STRENGTH, psf
	Approx. Surface Elev.: 1097.5 ft									
4	FILL , lean clay with organics, dark brown	1093.5								
5	TOPSOIL			1	GRAB					
	Organic Content = 8.2%									
11	TEST PIT COMPLETED	1086.5								

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

WATER LEVEL OBSERVATIONS, ft				
WL	▽ N/E	WS	▽ N/E	AB
WL	▽		▽	
WL	Backfilled			



BORING STARTED		12-8-09
BORING COMPLETED		12-8-09
RIG	FOREMAN	
LOGGED	CJF	JOB # N2095099

REVISED BORING LOGS: FAIRMONT ARMED FORCES RESERVE CENTER.GPJ TERRACON.GDT 12/31/09

Field Exploration Description

The boring locations were selected and staked in the field by Capitol Engineering personnel. The approximate boring locations are indicated on the attached Boring Location Diagram. The ground surface elevations indicated on the boring logs were provided by Capitol Engineering and are rounded to the nearest ½ foot. The locations and elevations of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

The borings were drilled with track-mounted and ATV-mounted rotary drill rigs using continuous flight hollow-stem augers to advance the boreholes. Samples of the soil encountered in the borings were obtained using the split barrel sampling procedures.

In the split-barrel sampling procedure, the number of blows required to advance a standard 2-inch O.D. split-barrel sampler the last 12 inches of the typical total 18-inch penetration by means of a 140-pound C.M.E. auto-hammer with a free fall of 30 inches, is the standard penetration resistance value (SPT-N). This value is used to estimate the in-situ relative density of cohesionless soils and consistency of cohesive soils.

A CME automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the SPT-N value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

Some of the borings were extended into the bedrock with a NQ2-size double tube-swivel core barrel. Percent recovery and rock quality designation (RQD) were calculated for the core samples and are noted at their depths of occurrence on the boring logs. RQD is the percent of total length cored consisting only of rock pieces at least 4 inches or more in length and is a measure of the integrity of the rock mass in-situ. Rock quality, in terms of RQD, can generally be designated as excellent (90%-100%), good (75%-90%), fair (50%-75%), poor (25%-50%) and very poor (<25%). The recovered samples were sent to the laboratory for testing and classification.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings or bentonite grout prior to the drill crew leaving the site.

A field log of each boring was prepared by the drill crew. These logs included visual classifications of the materials encountered during drilling as well as the driller's interpretation of the subsurface conditions between samples. Final boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

Geotechnical Engineering Report

Fairmont Armed Forces Reserve Center ■ Fairmont, West Virginia

April 5, 2010 ■ Terracon Project No. N2095099



Test pits were performed at five locations to collect bulk samples for laboratory testing. Test pits TP-1 through TP-5 were excavated with a backhoe provided by Capitol Engineering in the presence of Terracon engineers. Test pit TP-6 was excavated in the presence of Capitol Engineering personnel. The test pits were completed to depths ranging from about 5 to 11 feet.

APPENDIX B
LABORATORY TESTING

Geotechnical Engineering Report

Fairmont Armed Forces Reserve Center ■ Fairmont, West Virginia

April 5, 2010 ■ Terracon Project No. N2095099



Laboratory Testing

Natural moisture content tests were performed on samples in the laboratory. In addition grain size distribution tests (sieve analyses and hydrometer testing), Atterberg Limits, liquid and plastic limit tests, modified proctors, standard proctors, California bearing ratio tests (CBR), slake durability tests, loss on ignitions tests, swell tests, acid base accounting tests and sulfur fractionation tests were also performed on selected samples to better quantify their engineering characteristics. In addition agricultural tests were performed on the collected topsoil sample from the topsoil stockpile. Unconfined compression tests were performed on rock core samples to determine the unconfined compressive strength of the rock. The unconfined compressive strength was used for determining the hardness of the bedrock and for geotechnical analysis. Portions of the recovered samples were placed in jars, and the samples will be retained for at least 1 month if additional testing is requested. Results of the laboratory tests are shown on the boring logs, adjacent to the soil profiles, at their corresponding sample depths.

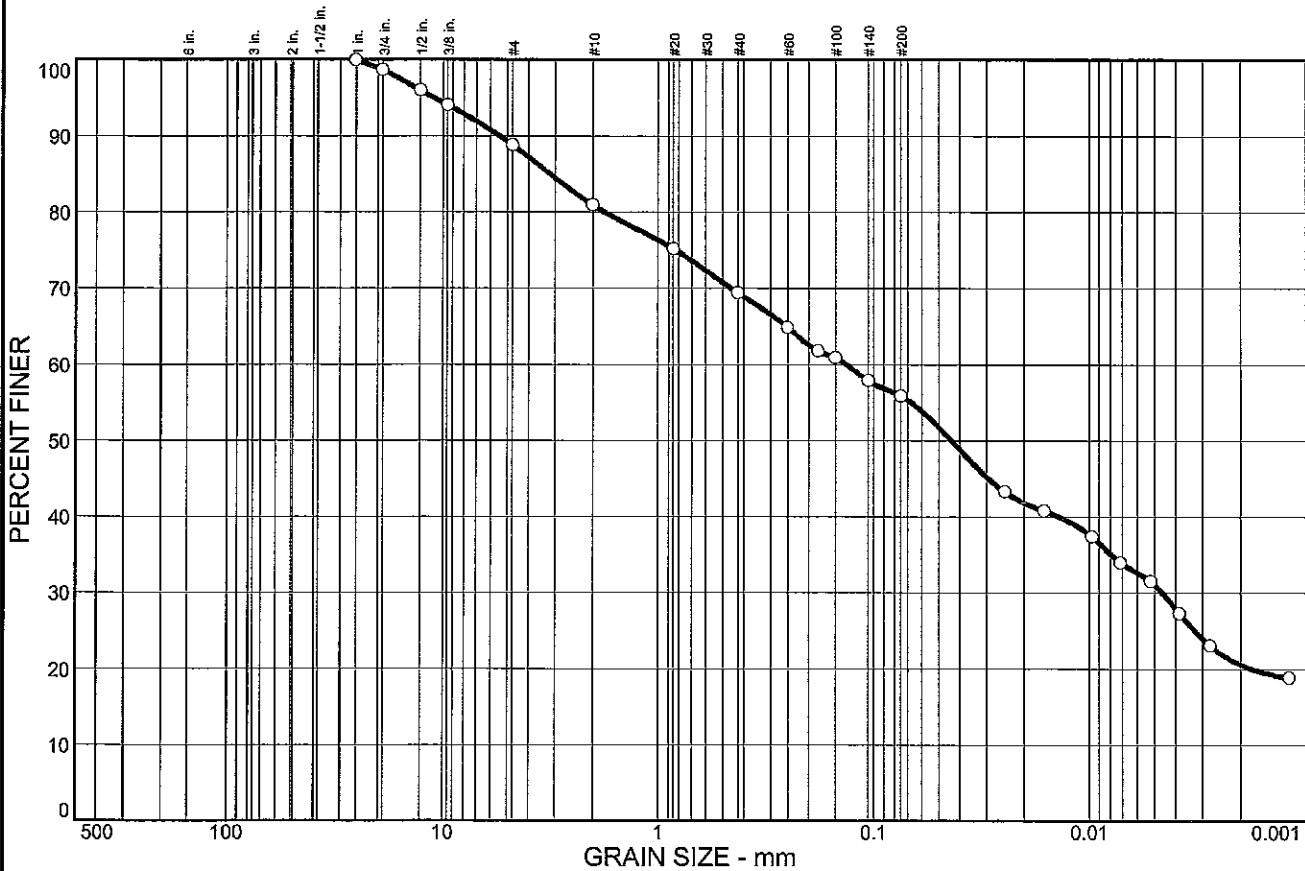
As a part of the laboratory testing program, the soil samples were classified in the laboratory based on visual observation, texture, plasticity, and the limited laboratory testing described above. The soil descriptions presented on the boring logs for native soils are in accordance with our enclosed General Notes and Unified Soil Classification System (USCS). The estimated group symbol for the USCS is also shown on the boring logs, and a brief description of the Unified System is included in this report.



**TABLE I: LOSS ON IGNITION
ASTM D-2974**

Test Pit / Boring	Sample No.	Depth (feet)	Loss on Ignition (%)	Remarks
TP-1	Bag	1-10	15.5	
TP-2	Bag	1-8	7.4	
TP-2	Bag	1-8	5.7	Retest
TP-3	Bag	2-8	6.3	Retest
TP-3	Bag	2-8	4.9	
TP-5	Bag	4-11	8.2	
Stockpile	Bag	0.5-3	3.5	Retest
Stockpile	Bag	0.5-3	8.7	
TB-1	1	0-1.5	2.4	
	2	2.5-4	5.0	
	3	5-6.5	1.7	
	4	7.5-9	1.6	
TB-2	2	2.5-4	1.7	
	3	5-6.5	8.2	
TB-10	2	2.5-4	2.1	
	3	5-6.5	2.1	
	4	7.5-9	2.0	
TB-12	3	5-6.5	2.7	
TB-13	1	0-1.5	2.1	
	2	2.5-4	1.9	
	3	5-6.5	3.2	
	4	7.5-9	2.6	
	5	10-11.5	2.1	
TB-14	2	2.5-4	2.0	
	3	5-6.5	2.0	
	4	7.5-9	2.6	
TB-15	2	2.5-4	4.6	
	3	5-6.5	4.5	
	4	7.5-9	5.3	
TB-18	1	0-1.5	24.5	
	2	2.5-4	4.2	
	3	5-6.5	3.8	
TB-27	2	2.5-4	3.8	
	3	5-6.5	3.4	
	4	7.5-9	4.8	

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	1.3	9.9	7.9	11.5	13.5	24.8	31.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	98.7		
1/2 in.	96.0		
3/8 in.	94.1		
#4	88.8		
#10	80.9		
#20	75.2		
#40	69.4		
#60	64.9		
#80	61.8		
#100	60.9		
#140	57.9		
#200	55.9		

Soil Description

Sandy lean clay (coal waste material)

Atterberg Limits

PL= 20 LL= 34 PI= 14

Coefficients

D₈₅= 3.17 D₆₀= 0.133 D₅₀= 0.0436
D₃₀= 0.0046 D₁₅= D₁₀=
C_u= C_c=

Classification

USCS= CL AASHTO= A-6(5)

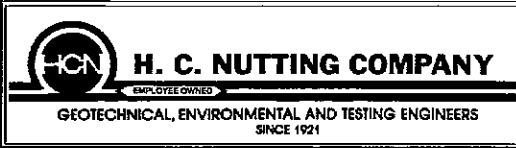
Remarks

* (no specification provided)

Sample No.: BAG SAMPLE
Location:

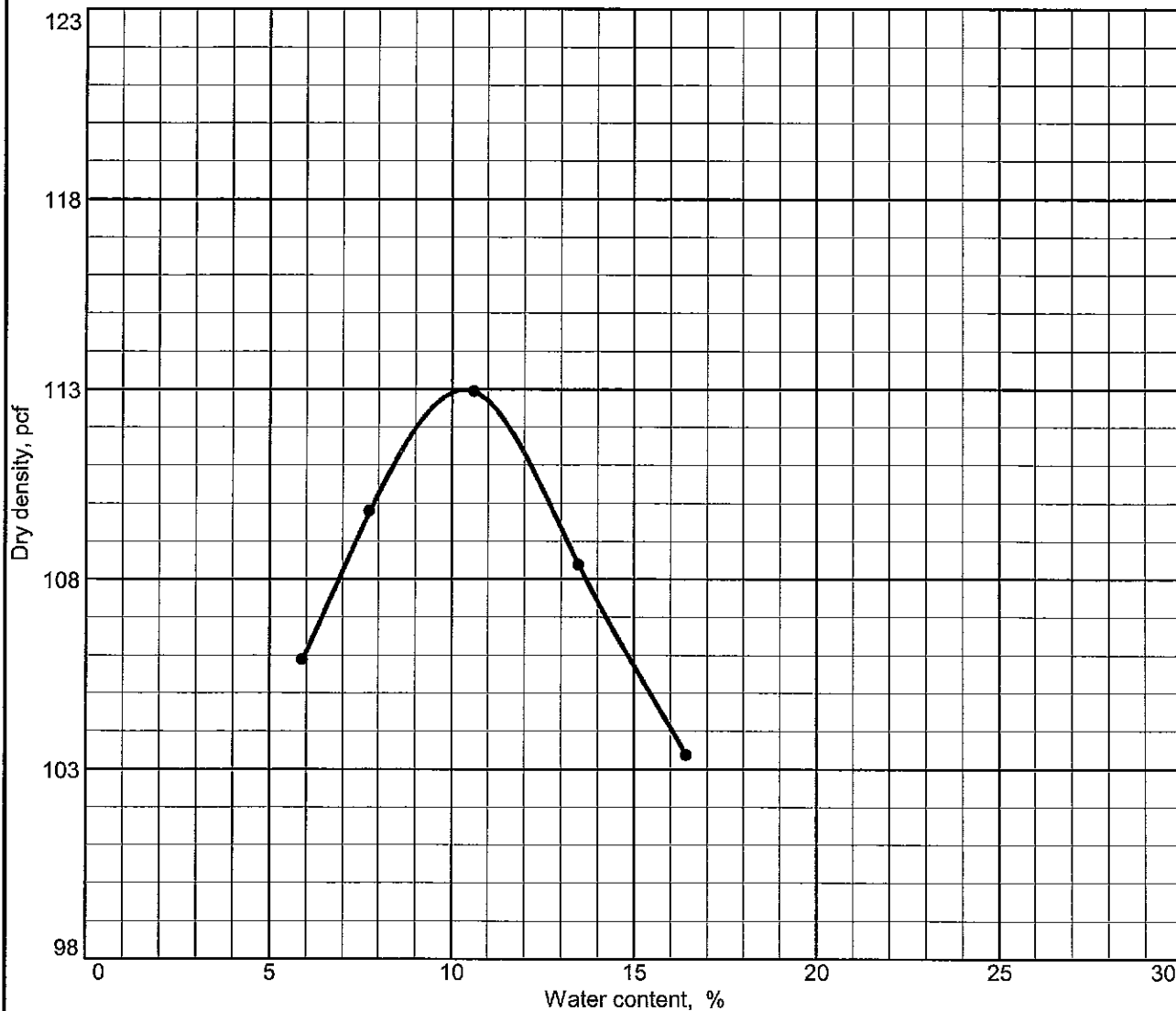
Source of Sample: Test Pit #1

Date: 12-22-09
Elev./Depth: 1'-10'



Client: Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Project No: N2095099

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified
 Oversize correction applied to each point

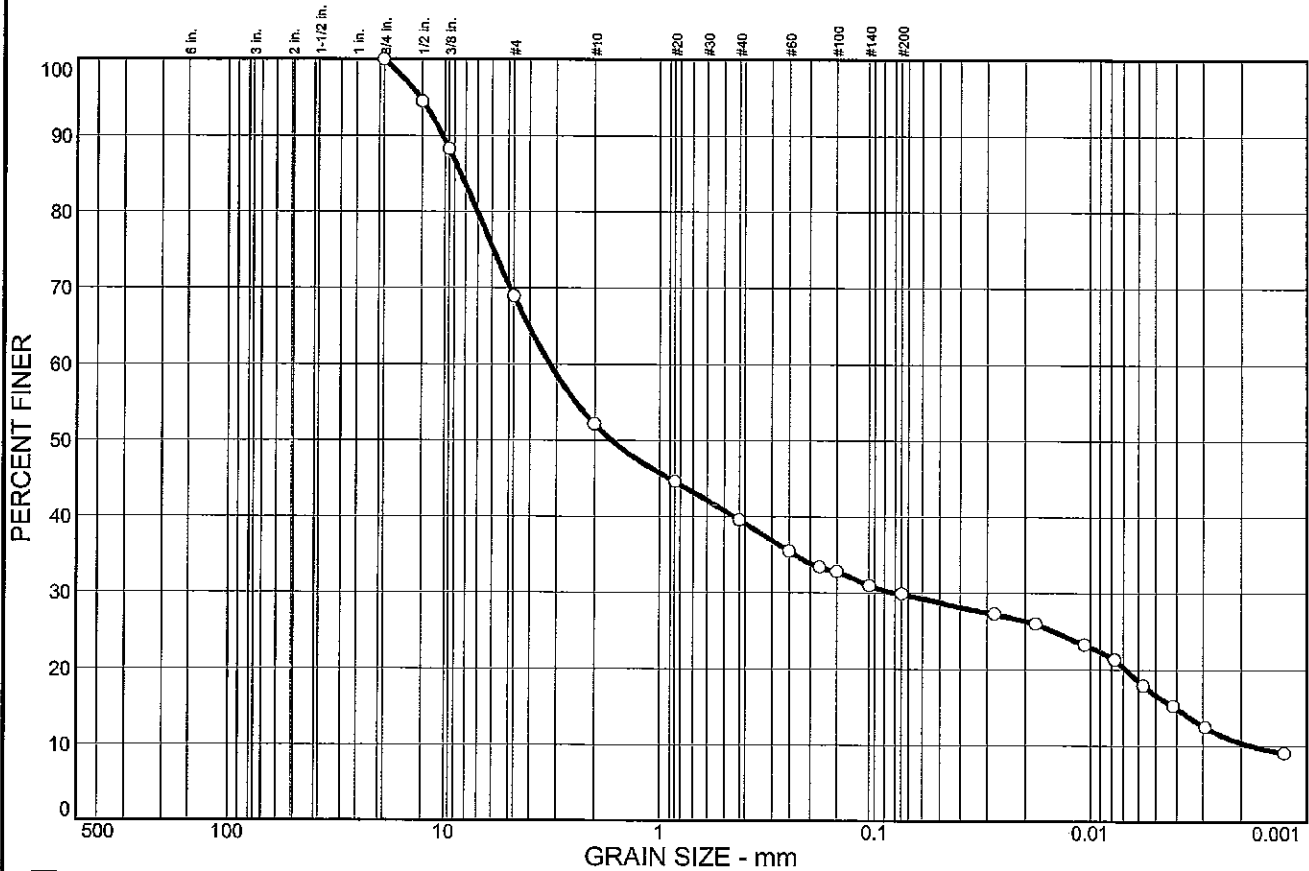
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
1'-10'	CL	A-6(5)			34	14	1.3	55.9

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 113.0 pcf	112.5 pcf	Sandy lean clay (coal waste material)
Optimum moisture = 10.3 %	10.5 %	

Project No. N2095099 Client: Capitol Engineering, Inc. Project: Fairmont Armed Forces Reserve Center ● Source: Test Pit #1 Sample No.: BAG Elev./Depth: 1'-10'	Remarks:
--	-----------------

COMPACTED TEST REPORT <h2 style="margin: 0;">H. C. NUTTING COMPANY</h2>
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Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	31.1	16.8	12.5	9.7	13.2	16.7

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
1/2 in.	94.5		
3/8 in.	88.2		
#4	68.9		
#10	52.1		
#20	44.6		
#40	39.6		
#60	35.5		
#80	33.4		
#100	32.8		
#140	31.0		
#200	29.9		

Soil Description

Clayey sand with gravel

Atterberg Limits

PL= 21 LL= 36 PI= 15

Coefficients

D₈₅= 8.43 D₆₀= 3.23 D₅₀= 1.67
D₃₀= 0.0781 D₁₅= 0.0040 D₁₀= 0.0018
C_u= 1839.73 C_c= 1.07

Classification

USCS= SC AASHTO= A-2-6(1)

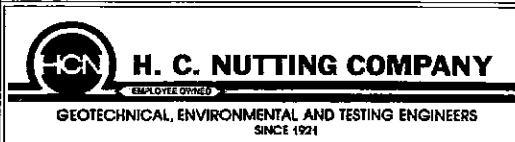
Remarks

* (no specification provided)

Sample No.: BAG SAMPLE
Location:

Source of Sample: Test Pit #2

Date: 12-22-09
Elev./Depth: 1-8'



Client: Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Project No.: N2095099

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified
 Oversize correction applied to each point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
1-8'	SC	A-2-6(1)			36	15	0.0	29.9

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 121.9 pcf	121.9 pcf	Clayey sand with gravel
Optimum moisture = 10.7 %	10.7 %	

Project No. N2095099 Client: Capitol Engineering, Inc. Project: Fairmont Armed Forces Reserve Center Source: Test Pit #2 Sample No.: BAG Elev./Depth: 1-8'	Remarks:
--	-----------------------------

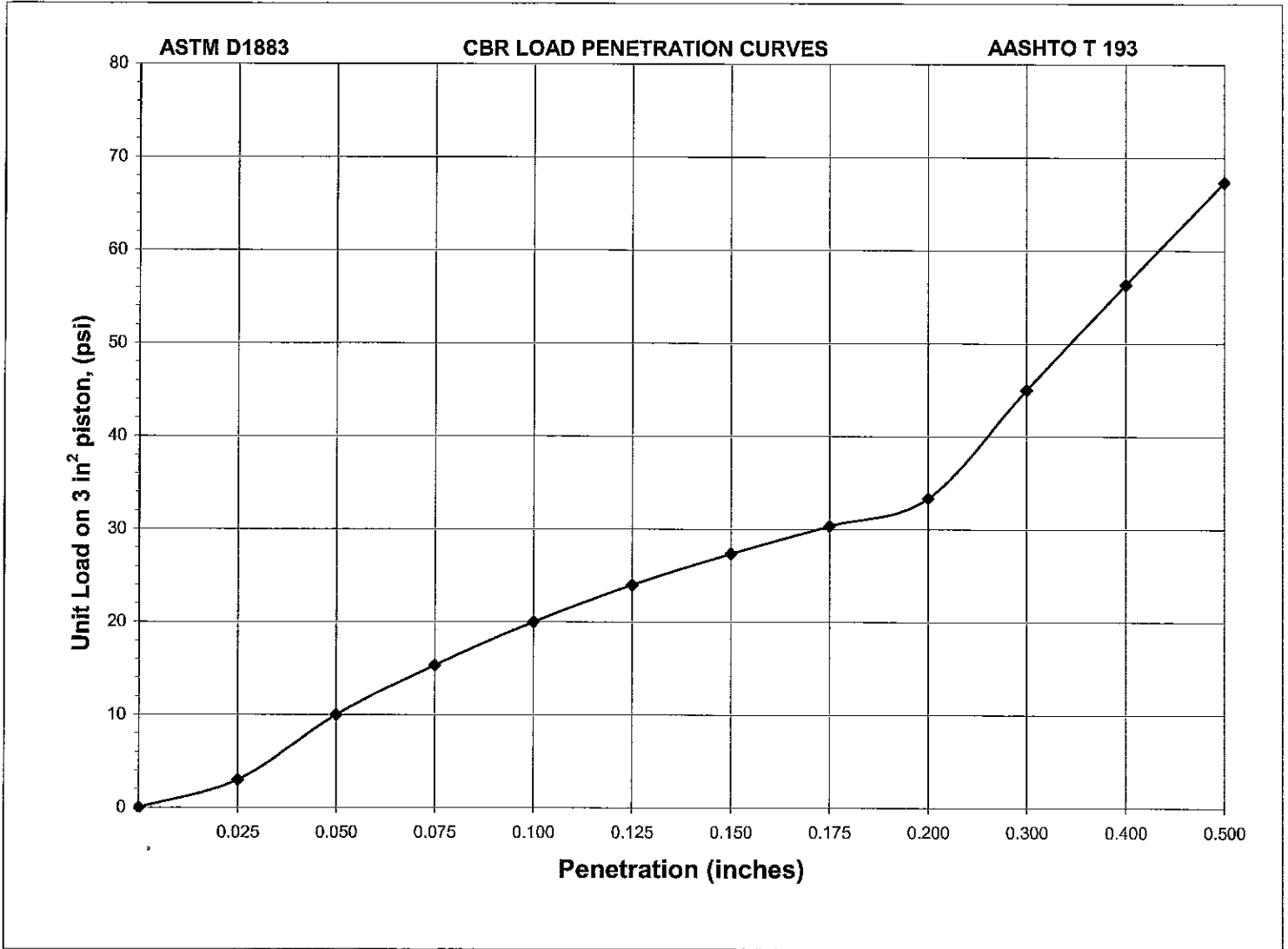
COMPACTION TEST REPORT

H. C. NUTTING COMPANY



A Terracon COMPANY

HCN Division Office
 912 Morris Street
 Charleston, WV 25301
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 F: 304.342.4711
 www.hcnutting.com
 www.terracon.com



Date: 12/17/2009
 Client: Capitol Engineering, Inc.
 Project #: N2095099
 Boring: TP-2
 Sample: BAG SAMPLE
 Depth: 1' - 8'

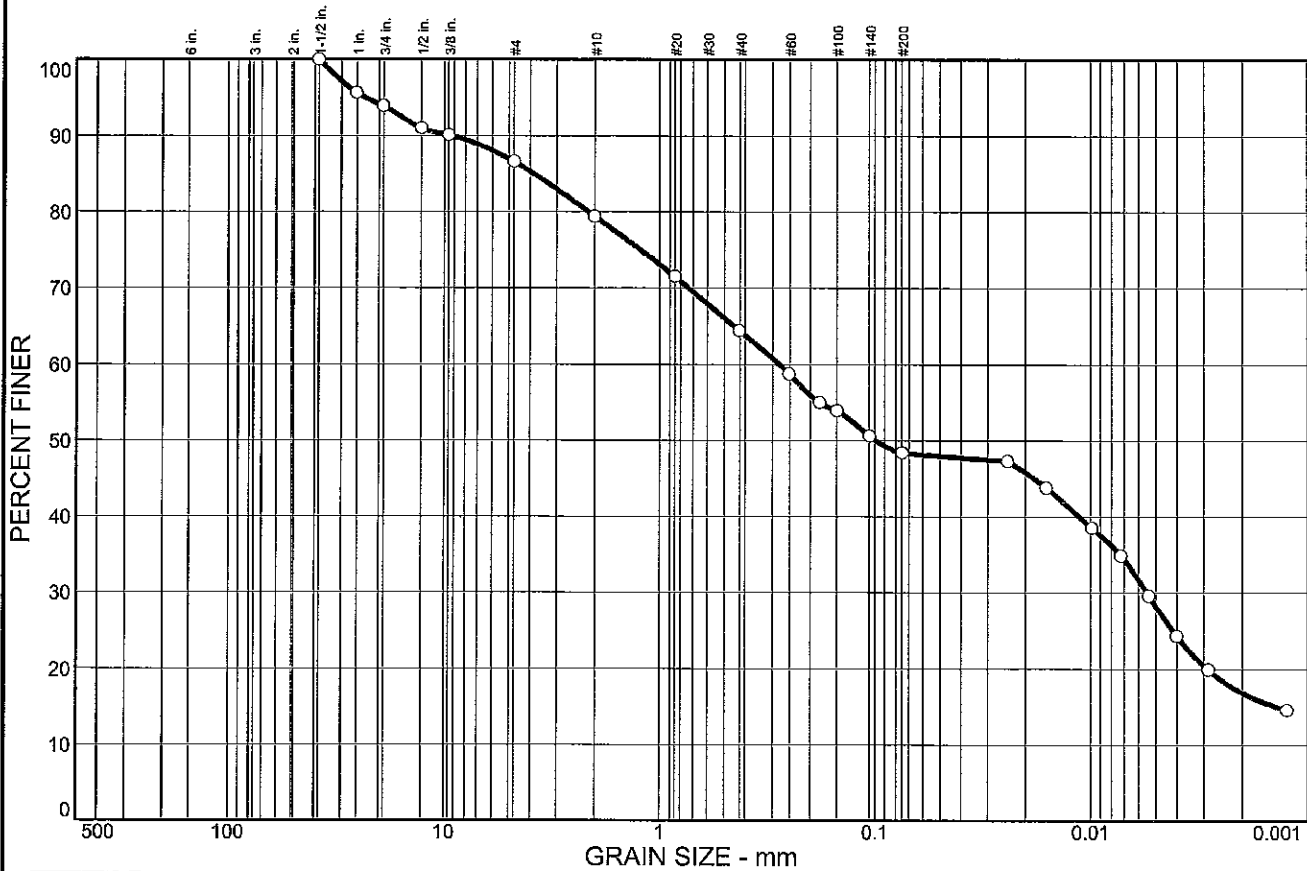
Project: Fairmont Armed Forces Resereve Center
 Material Description: Clayey sand with gravel
 USCS Classification: SC
 AASHTO Classification: A-2-6(1)

Sample Trial #	Blows	Before Soaking			After Soaking		%Swell	CBR @ 0.1 inches	CBR @ 0.2 inches	
		Wet Unit Weight (pcf)	(kN/m ³)	% Moisture	Dry Unit Weight (pcf)	(kN/m ³)				% Moisture Top 1"
2	45	129.3	20.3	9.7	117.6	18.5	22.0	6.96	2.0	2.2

Surcharge Weight (lbs) 20.0

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	6.1	7.3	7.2	15.0	16.0	20.2	28.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
1 in.	95.6		
3/4 in.	93.9		
1/2 in.	91.0		
3/8 in.	90.1		
#4	86.6		
#10	79.4		
#20	71.5		
#40	64.4		
#60	58.7		
#80	55.0		
#100	53.9		
#140	50.6		
#200	48.4		

Soil Description

Clayey sand (broken down shale fragments)

Atterberg Limits

PL= 20 LL= 36 PI= 16

Coefficients

D₈₅= 3.83 D₆₀= 0.279 D₅₀= 0.0990
D₃₀= 0.0055 D₁₅= 0.0014 D₁₀=
C_u= C_c=

Classification

USCS= SC AASHTO= A-6(4)

Remarks

* (no specification provided)

Sample No.: BAG SAMPLE Source of Sample: Test Pit #3 Date: 12-22-09
Location: Elev./Depth: 2'-8"

H. C. NUTTING COMPANY <small>EMPLOYEE OWNED</small> GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921	Client: Capitol Engineering, Inc. Project: Fairmont Armed Forces Reserve Center Project No: N2095099
--	--

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified
 Oversize correction applied to each point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	SC	A-6(4)			36	16	6.1	48.4

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 130.4 pcf	128.6 pcf	Clayey sand (broken down shale fragments)
Optimum moisture = 8.4 %	8.9 %	

Project No. N2095099 Client: Capitol Engineering, Inc. Project: Fairmont Armed Forces Reserve Center Source: Test Pit #3 Sample No.: BAG Elev./Depth: 2'-8'	Remarks:
---	-----------------------------

COMPACTION TEST REPORT

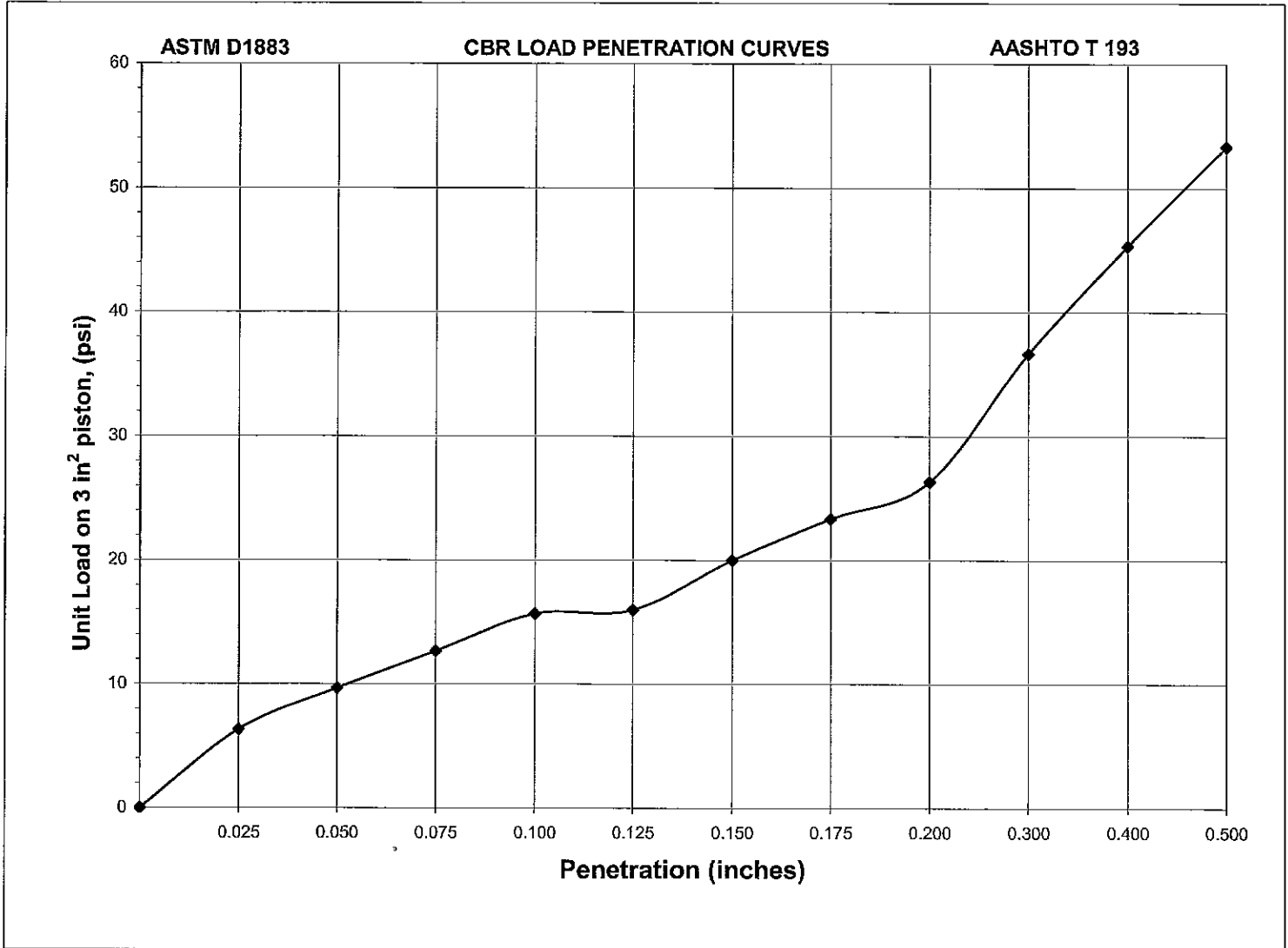
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 F: 304.342.4711
 www.hcnutting.com
 www.terracon.com



Date: 12/17/2009
 Client: Capitol Engineering, Inc.
 Project #: N2095099
 Boring: TP-3
 Sample: BAG SAMPLE
 Depth: 2' - 8'

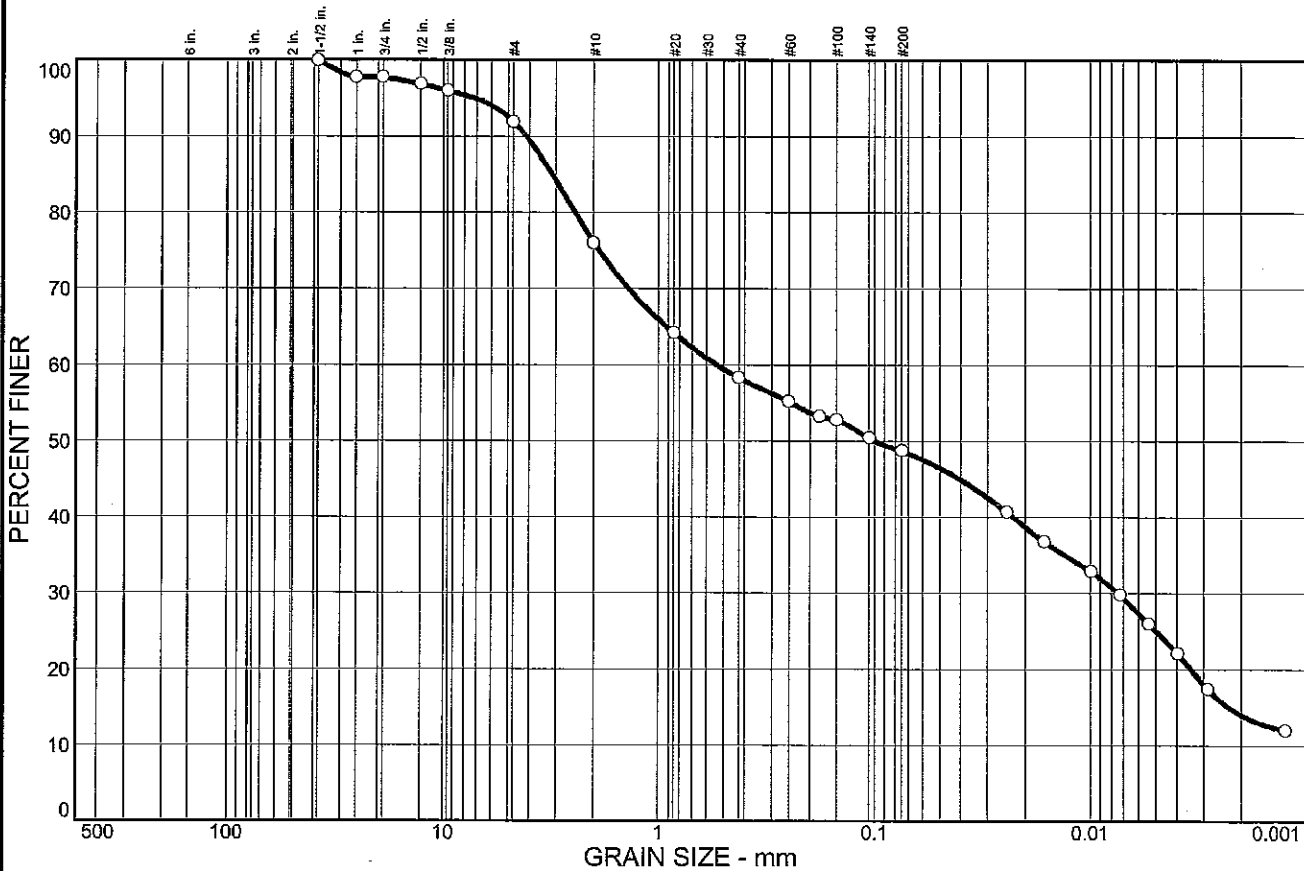
Project: Fairmont Armed Forces Reserve Center
 Material Description: Clayey Sand (broken down shale)
 USCS Classification: SC
 AASHTO Classification: A-6(4)

Sample Trial #	Blows	Before Soaking			After Soaking % Moisture Top 1"	%Swell	CBR @ 0.1 inches	CBR @ 0.2 inches
		Wet Unit Weight (pcf) (kN/m ³)	% Moisture	Dry Unit Weight (pcf) (kN/m ³)				
2	50	135.3 21.2	7.6	125.0 19.6	20.4	7.52	1.6	1.8

Surcharge Weight (lbs) 20.0

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

Particle Size Distribution Report



% COBBLES	% GRAVEL		% SAND			% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	2.2	5.9	15.9	17.7	9.6	23.6	25.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
1 in.	97.8		
3/4 in.	97.8		
1/2 in.	96.9		
3/8 in.	96.0		
#4	91.9		
#10	76.0		
#20	64.2		
#40	58.3		
#60	55.2		
#80	53.3		
#100	52.8		
#140	50.4		
#200	48.7		

Soil Description

Clayey sand (broken down shale fragments)

Atterberg Limits

PL= 18 LL= 33 PI= 15

Coefficients

D₈₅= 3.14 D₆₀= 0.539 D₅₀= 0.0994
D₃₀= 0.0074 D₁₅= 0.0023 D₁₀=
C_u=

Classification

USCS= SC AASHTO= A-6(4)

Remarks

* (no specification provided)

Sample No.: BAG SAMPLE
Location:

Source of Sample: Test Pit #4

Date: 12-22-09
Elev./Depth: 2.5'-5'



Client: Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Project No.: N2095099

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified
 Oversize correction applied to each point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
2.5'-5'	SC				33	15		48.7

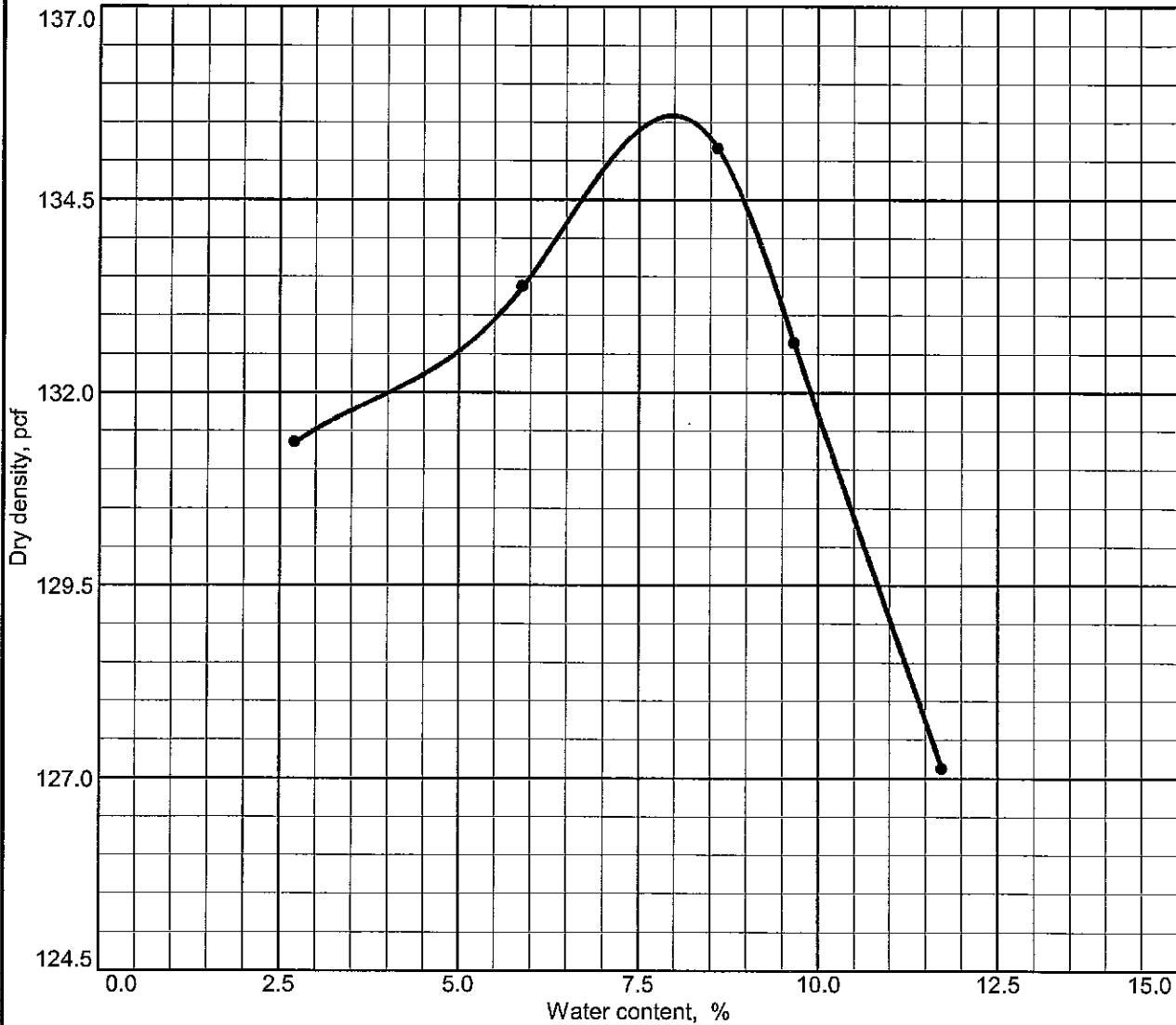
ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 132.2 pcf	132.2 pcf	Clayey sand (broken down shale fragments)
Optimum moisture = 7.6 %	7.6 %	

Project No. N2095099 Client: Capitol Engineering, Inc. Project: Fairmont Armed Forces Reserve Center Source: Test Pit #4 Sample No.: BAG Elev./Depth: 2.5'-5'	Remarks:
---	-----------------------------

COMPACTION TEST REPORT

H. C. NUTTING COMPANY

COMPACTION TEST REPORT



Test specification: ASTM D 1557-02 Method C Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
0'-25'								

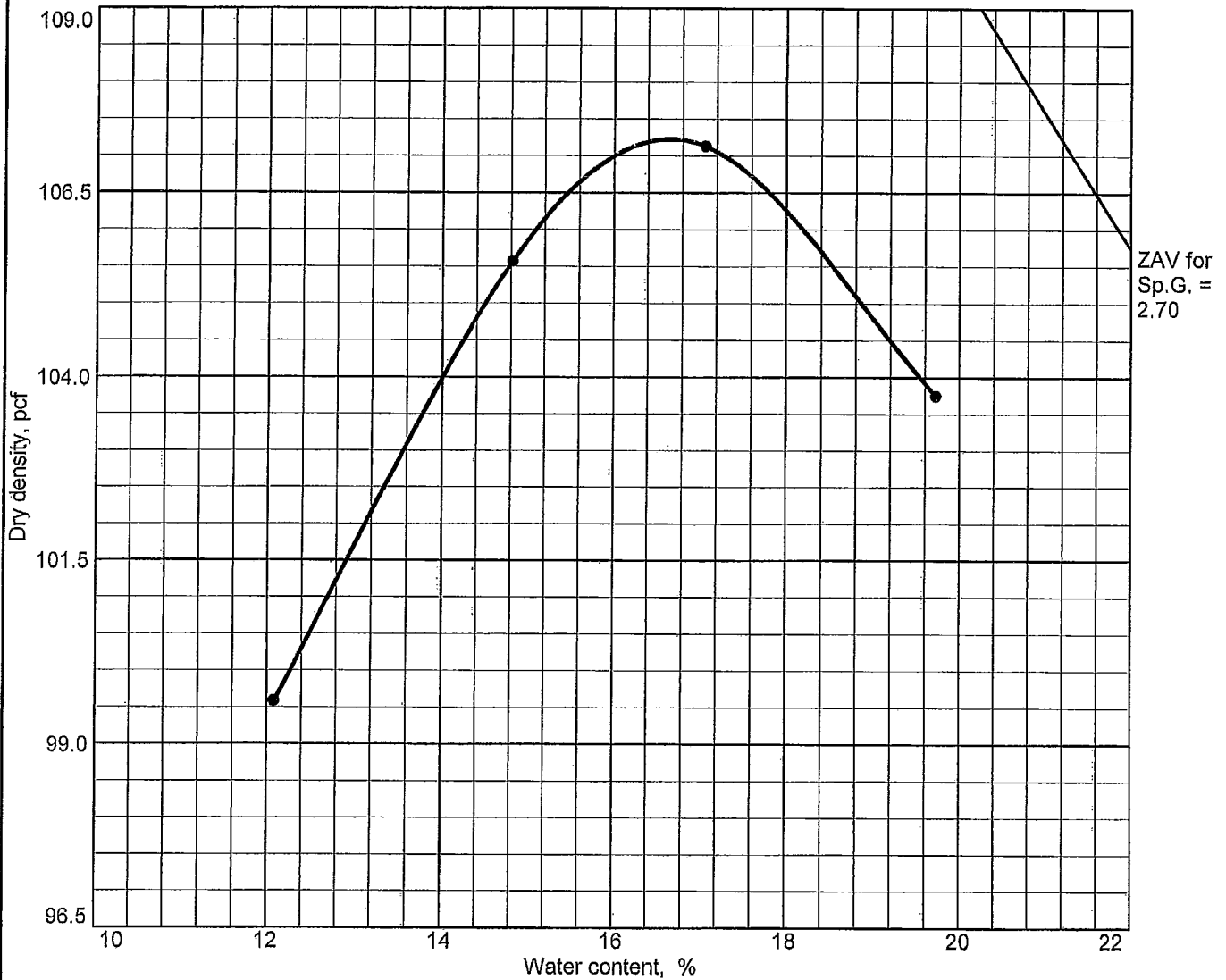
TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 135.6 pcf Optimum moisture = 8.0 %	Gray Shale

Project No. N2095099 **Client:** Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Source: TB-21 **Sample No.:** BAG **Elev./Depth:** 0'-25'

Remarks:

COMPACTION TEST REPORT
H. C. NUTTING COMPANY

COMPACTION TEST REPORT



Test specification: ASTM D 698-91 Procedure B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						

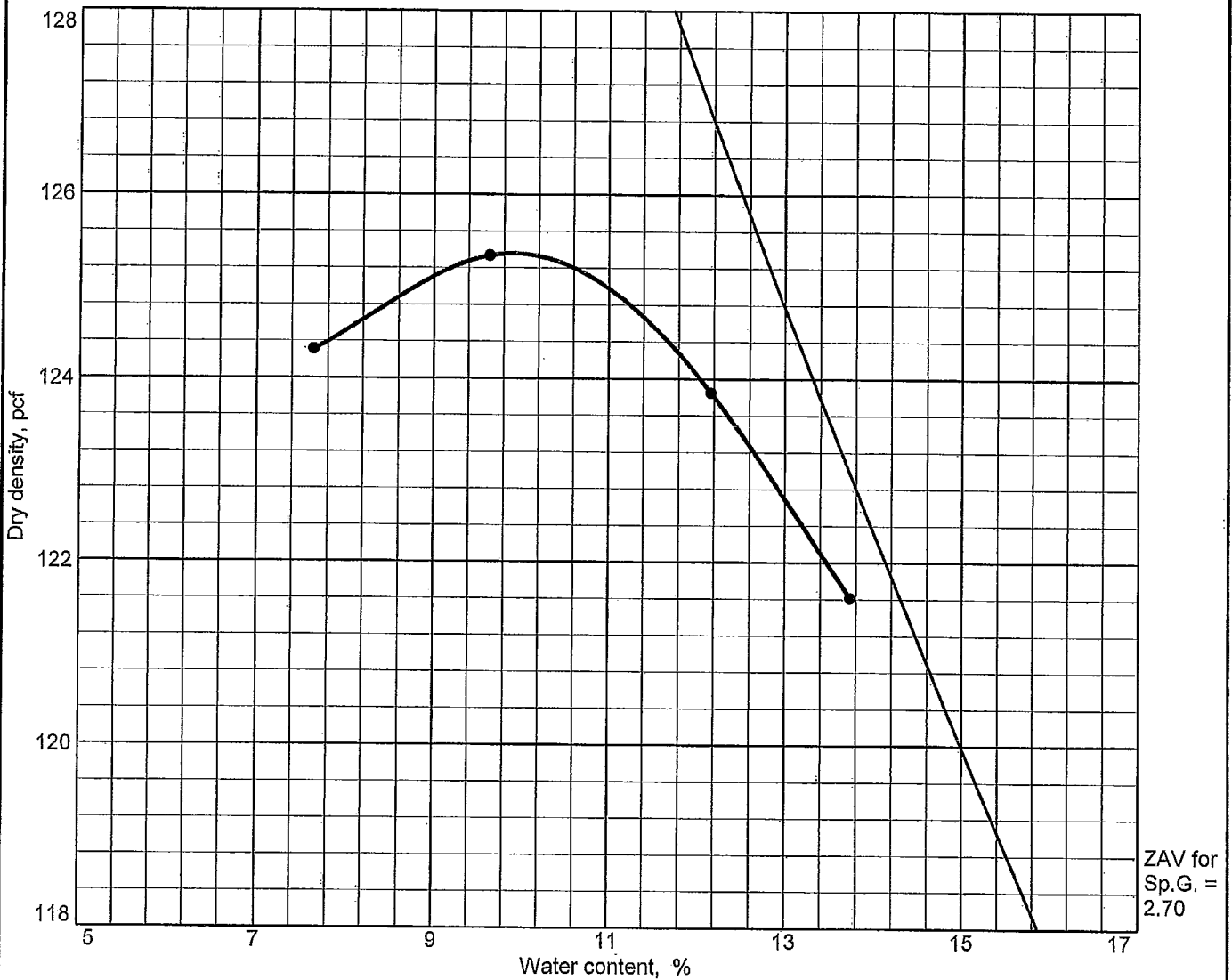
TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 107.2 pcf Optimum moisture = 16.7%	Brown Lean Clay

Project No. N2095099 **Client:** CAPITOL ENGINEERING INC.
Project: PROP. FAIRMONT ARMED FORCES RESERVE CENTER
 FAIRMONT, WV
Source: 294 **Sample No.:** Soil

Remarks:
 Date typed 1-29-10
 Tested by GS

COMPACTION TEST REPORT
H. C. NUTTING COMPANY

COMPACTION TEST REPORT

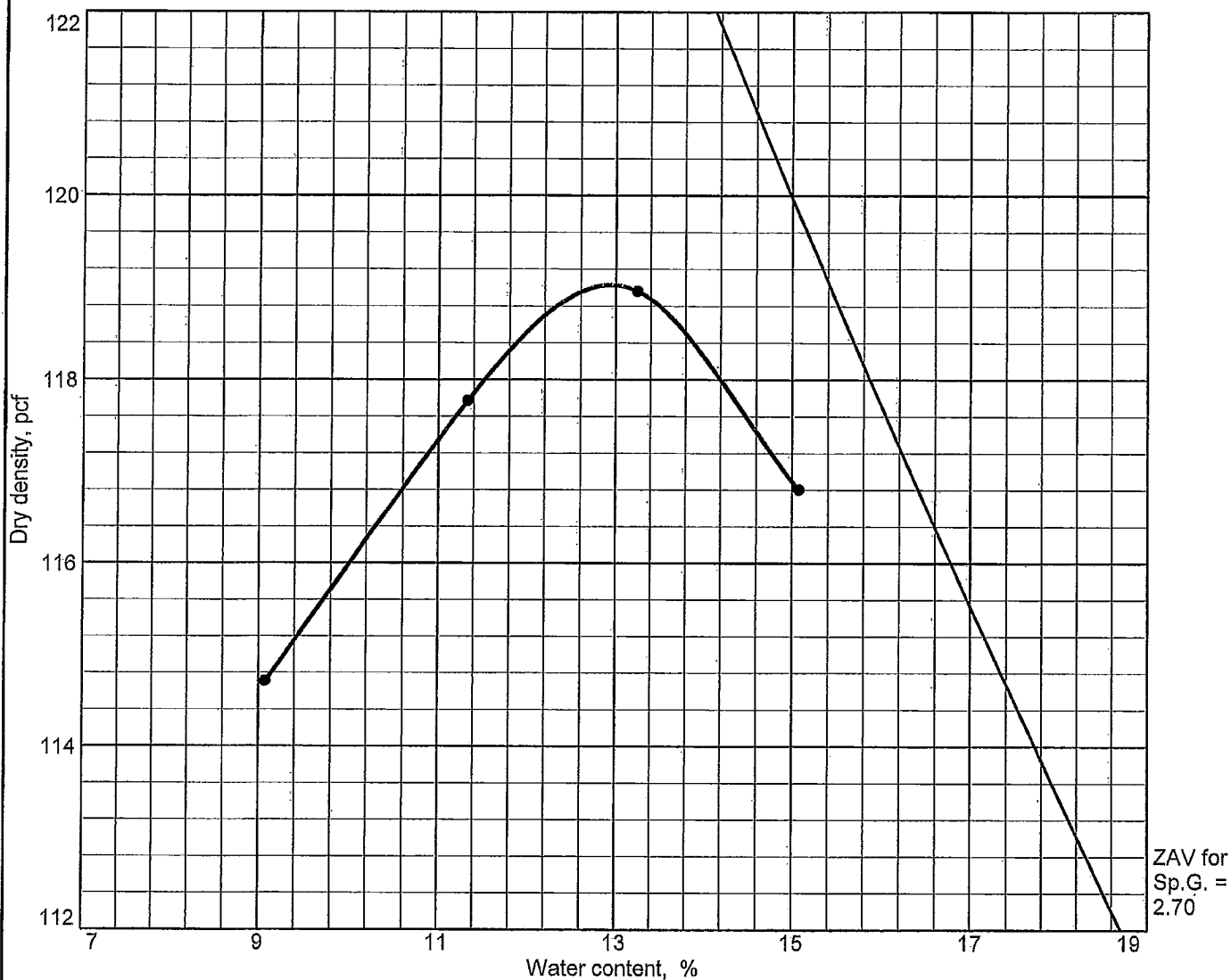


Test specification: ASTM D 698-91 Procedure B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 125.4 pcf Optimum moisture = 9.9 %	SHALE
Project No. N2095099 Client: CAPITOL ENGINEERING INC. Project: PROP. FAIRMONT ARMED FORCES RESERVE CENTER FAIRMONT, WV ● Source: B-33,35,36&37 Sample No.: BAG	Remarks: DATE TYPED 1-20-10 TESTED BY GS
COMPACTION TEST REPORT <h2 style="margin: 0;">H. C. NUTTING COMPANY</h2>	

COMPACTION TEST REPORT



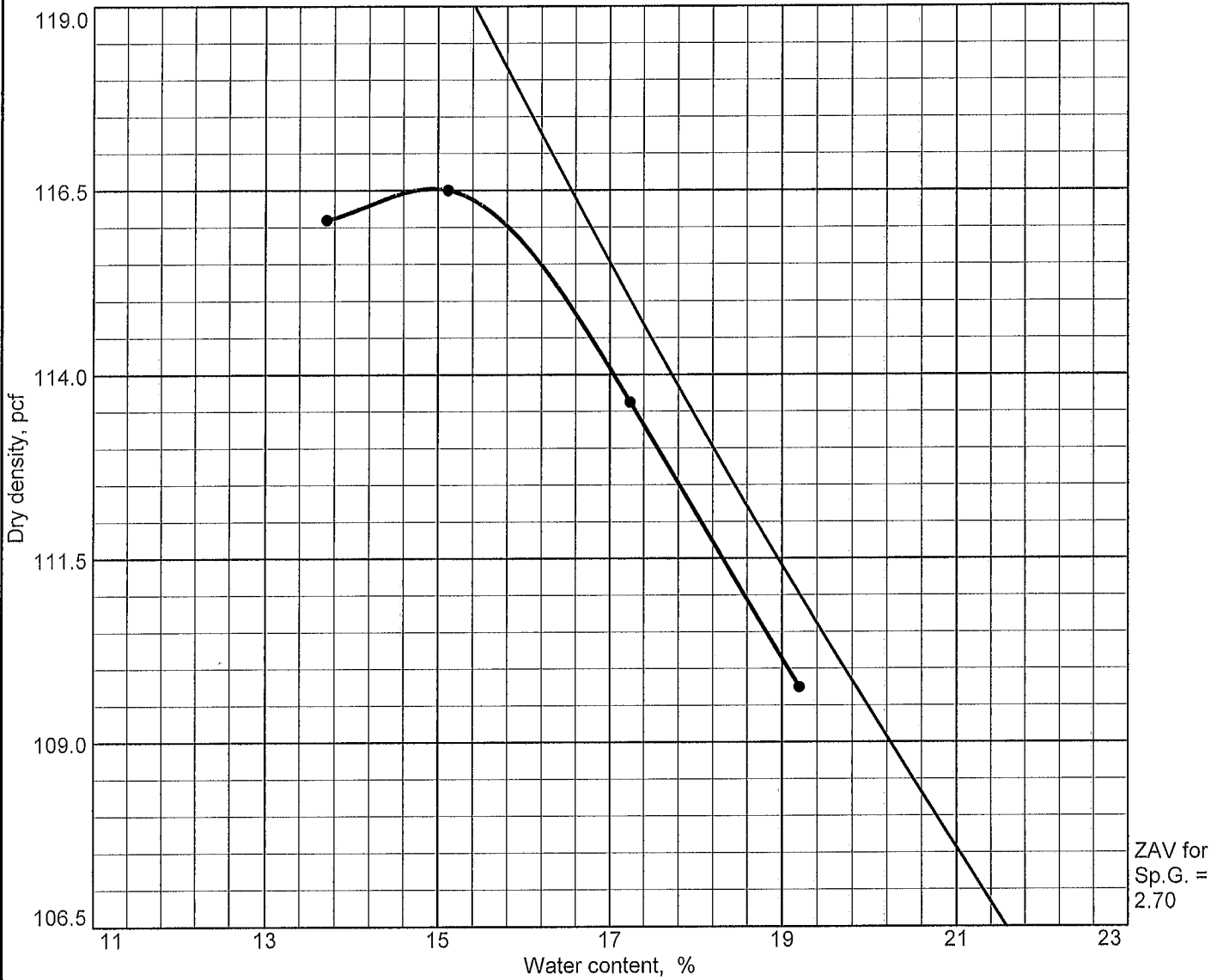
Test specification: ASTM D 698-91 Procedure B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 119.0 pcf Optimum moisture = 12.9%	Shale with 4% lime

Project No. N2095099 Client: CAPITOL ENGINEERING INC. Project: PROP. FAIRMONT ARMED FORCES RESERVE CENTER FAIRMONT, WV ● Source: 319	Remarks: Date typed 1-29-10 Tested by GS
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COMPACTION TEST REPORT



Test specification: ASTM D 1557-91 Procedure B Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 116.5 pcf Optimum moisture = 14.9 %	LIGHT BROWN LEAN CLAY WITH 4% OLD LIME
Project No. N2095099 Client: CAPITOL ENGINEERING INC. Project: PROP. FAIRMONT ARMED FORCES RESERVE CENTER FAIRMONT, WV ● Source: TP-6 Sample No.: Bulk	Remarks: DATE TYPED 3-16-10 TESTED BY GS



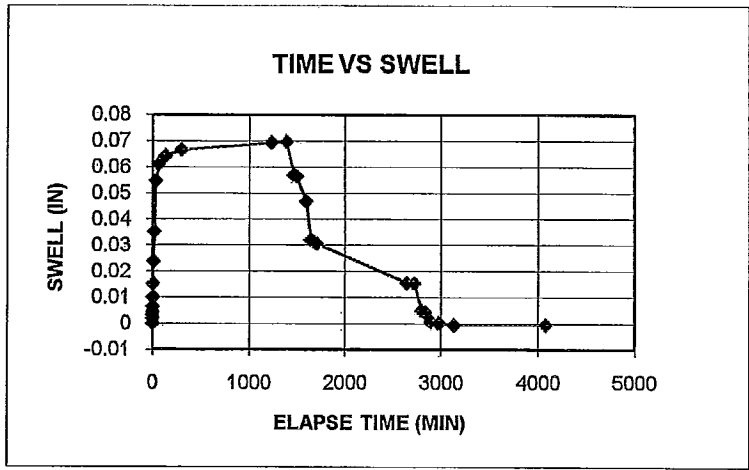
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HCN Division Office
611 Lunken Park Drive
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Phone 513.321.5816
Fax 513.321.0294
www.hcnutting.com
www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil/ no lime
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.8 INITIAL MOISTURE (%): 10.7
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 24.1
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1593 minutes.



Counter Swell - 3.5tsf



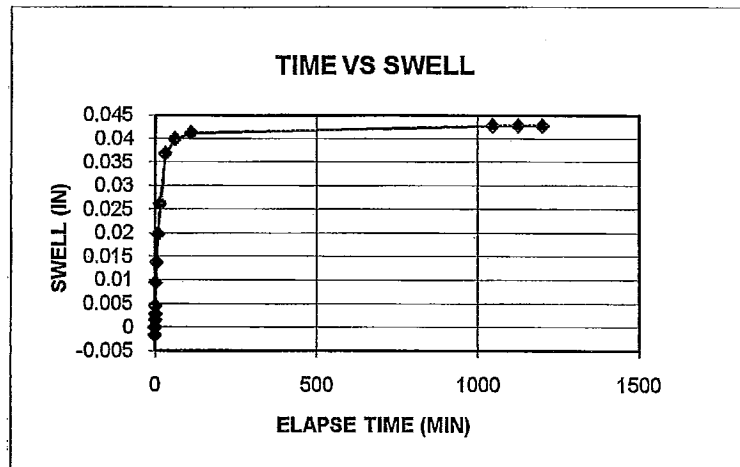
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www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil w/2% lime
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.75 INITIAL MOISTURE (%): 10.8
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21.8
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1200 minutes, showing an increase in swell from 0 to 0.0427 inches.



Positive - Swell



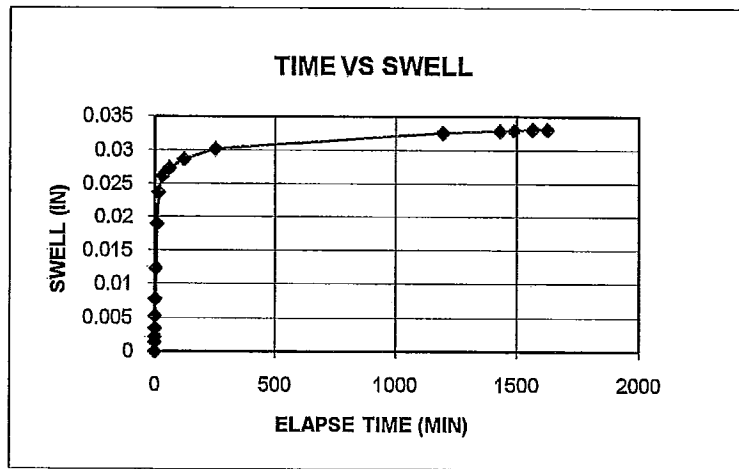
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www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil w/4% lime
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.75 INITIAL MOISTURE (%): 10.7
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21.9
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1625 minutes, showing an increase in swell from 0 to 0.0331 inches.



Positive - Swell



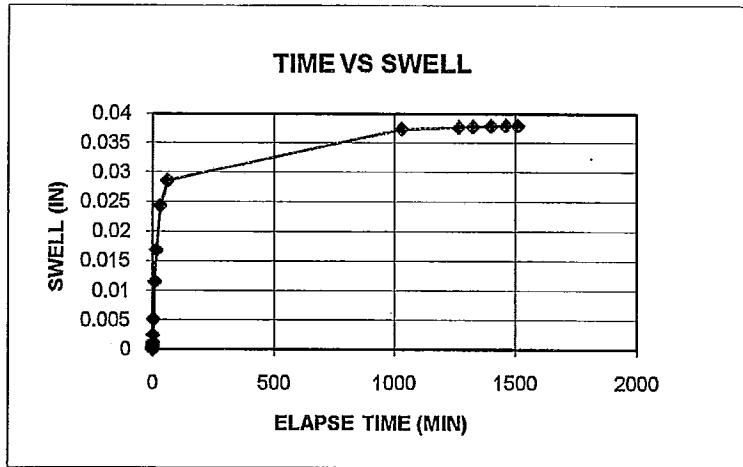
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www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil w/6% lime
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.75 INITIAL MOISTURE (%): 10.6
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 18.8
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1510 minutes, showing an increase in swell from 0 to 0.038 inches and % swell from 0.0 to 5.1.



Positive - Swell



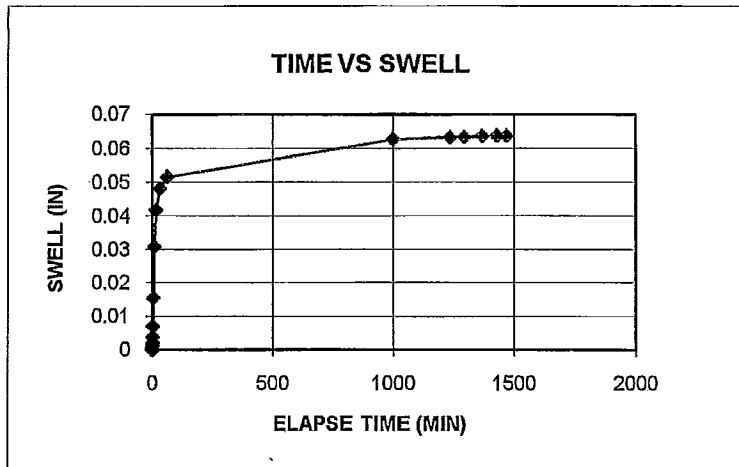
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil w/8% lime
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.735 INITIAL MOISTURE (%): 10.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1468 minutes, showing an increase in swell from 0 to 0.0637 inches and percentage from 0.0 to 8.7.



Positive - Swell



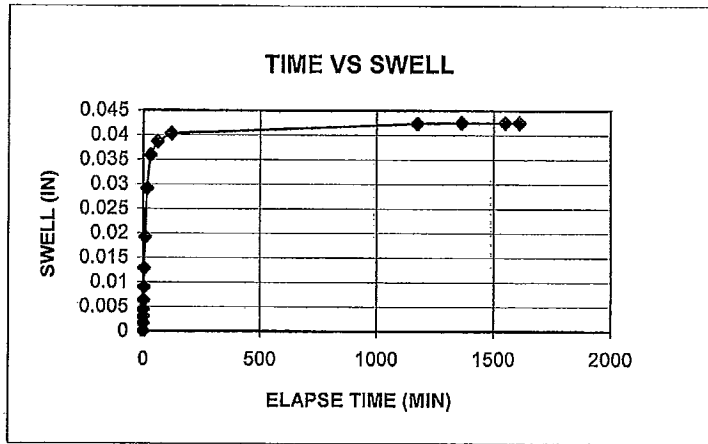
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/18/2010
HOLE NO.: Soil w/2% kiln dust
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.735 INITIAL MOISTURE (%): 11
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 18.6
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1610 minutes, showing an increase in swell from 0 to 0.0425 inches.



Positive - Swell



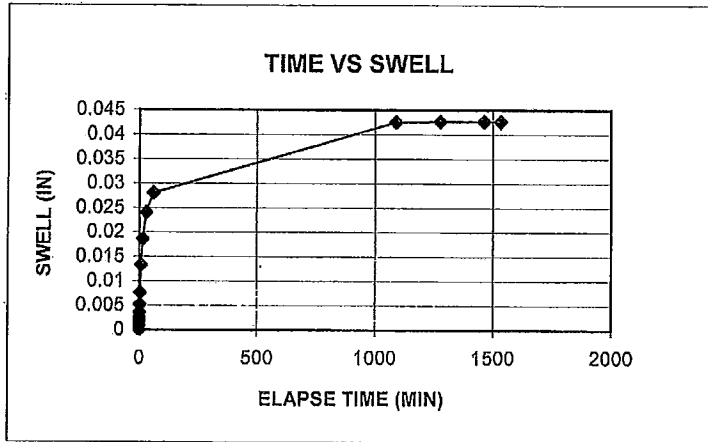
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www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/20/2010
HOLE NO.: Soil w/4% kiln dust
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.732 INITIAL MOISTURE (%): 10.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 20.6
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), and % OF SWELL. Data points range from 0 to 1533 minutes, showing an increase in swell from 0 to 0.0426 inches.



Positive - Swell



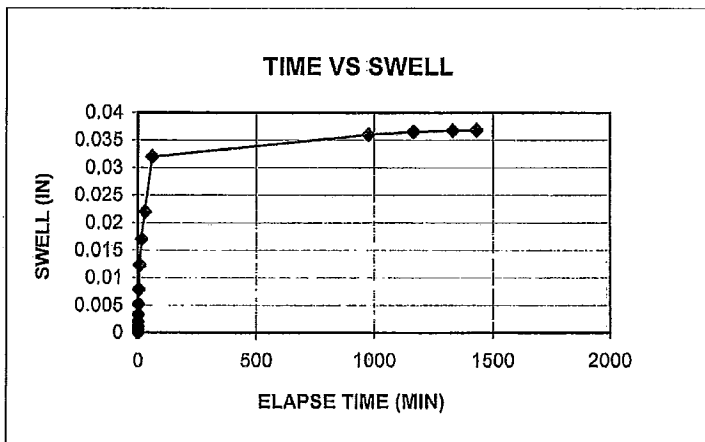
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 1/20/2010
HOLE NO.: Soil w/6% kilndust
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.735 INITIAL MOISTURE (%): 10.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21.1
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1430 minutes, showing an increase in swell from 0 to 0.0368 inches and percentage from 0.0 to 5.0.



Positive - Swell



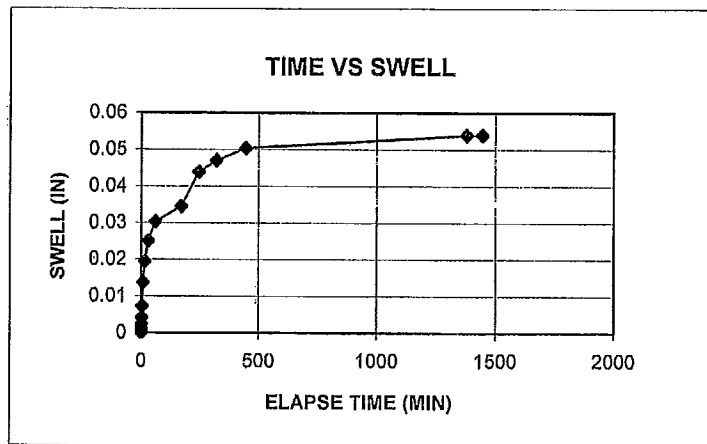
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CLIENT: Capitol Engineering
PROJECT: Fairmont Armed Forces
HOLE NO.: Soil w/8% Kiln Dust
W.O.: N2095099
DEPTH: 2-10'
DATE: 1/18/2010
SAMPLE HEIGHT (IN) 0.741
INITIAL MOISTURE (%): 11.0
SAMPLE DIAMETER (IN) 2.5
FINAL MOISTURE (%): 21.3
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), and % OF SWELL. It lists data points from 0 to 1445 minutes, showing an increase in swell from 0 to 7.3%.



Positive - Swell



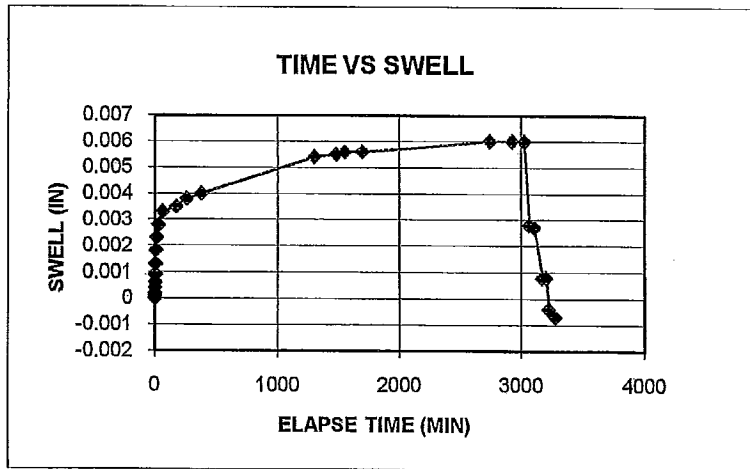
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 2/2/2010
HOLE NO.: Soil @ +3% OM w/3% lime @98% STD Proctor
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.736 INITIAL MOISTURE (%): 19.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 22
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 3275 minutes.



Positive - Swell
Counter Swell - 0.75 tsf



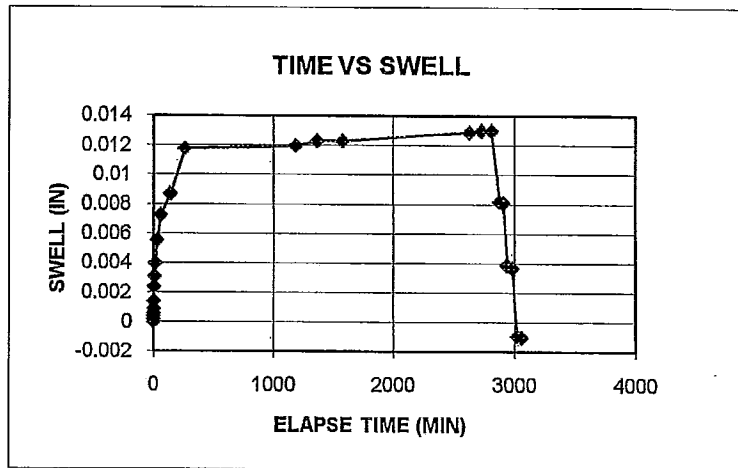
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www.terracon.com

CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 2/4/2010
HOLE NO.: Soil @ +3% OM w/5% lime @98% STD Proctor
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.736 INITIAL MOISTURE (%): 19.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21.6
NORMAL PRESSURE (TSF) 0.05
Lab No.: 294

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 3055 minutes.



Positive - Swell
Counter Swell - 1.0 tsf



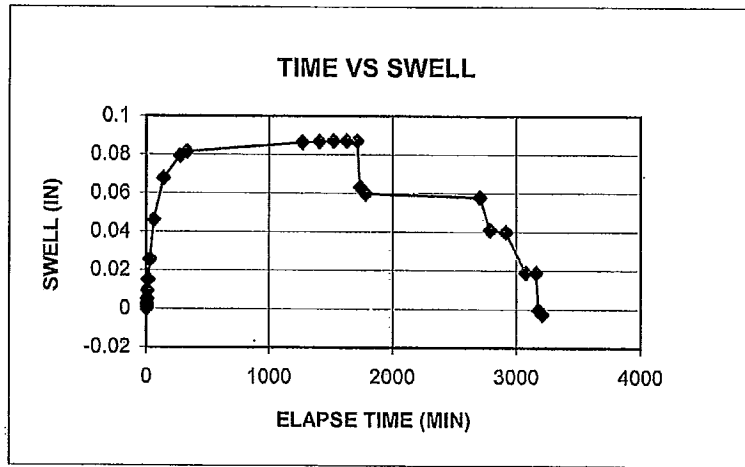
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/25/2010
HOLE NO.: Shale (no kiln dust 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.74 INITIAL MOISTURE (%): 10.2
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 16.2
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1630 minutes.



Positive - Swell
Counter - Swell 2.0 tsf



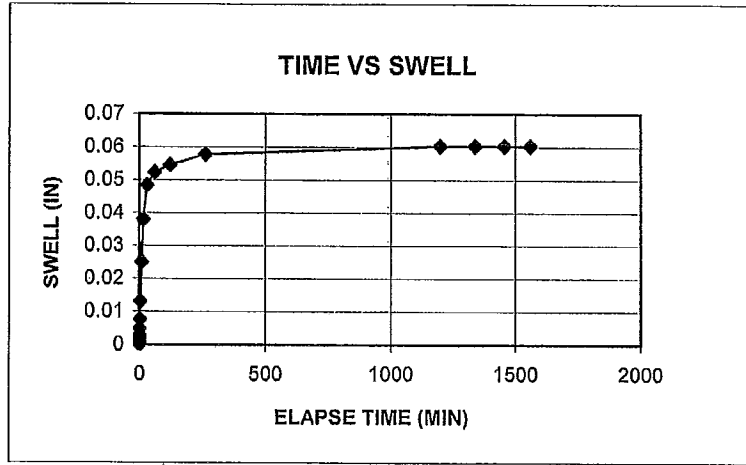
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www.terracon.com

CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/22/2010
HOLE NO.: Shale (w/2% Kiln Dust 98% Std Proctor)
W.O.:
SAMPLE HEIGHT (IN) 0.737 INITIAL MOISTURE (%): 10.2
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 17.8
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1560 minutes, showing an increase in swell from 0 to 0.0603 inches and percentage from 0.0 to 8.2.



Positive - Swell



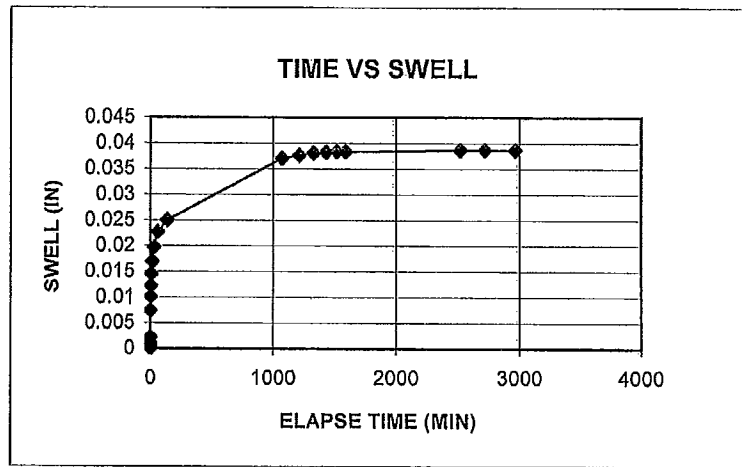
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/25/2010
HOLE NO.: Shale (w/4% Kiln Dust 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.744 INITIAL MOISTURE (%): 10.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 18.1
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1590 minutes.



Positive - Swell



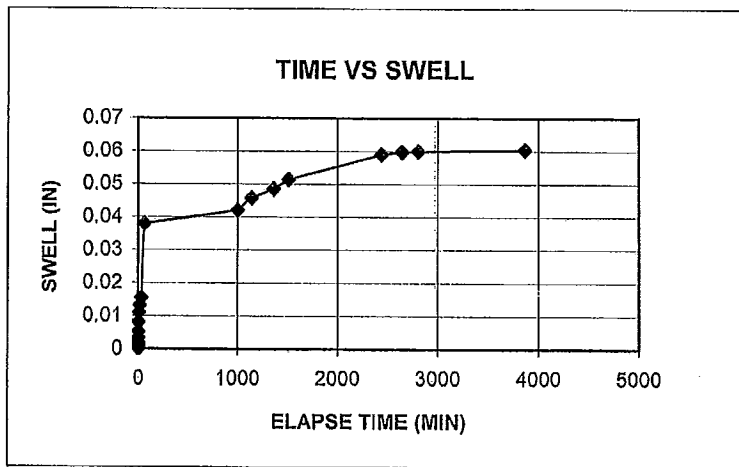
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www.terracon.com

CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/26/2010
HOLE NO.: Shale (w/6% Kiln Dust 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.735 INITIAL MOISTURE (%): 9.9
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 20.1
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 2805 minutes.



Positive - Swell



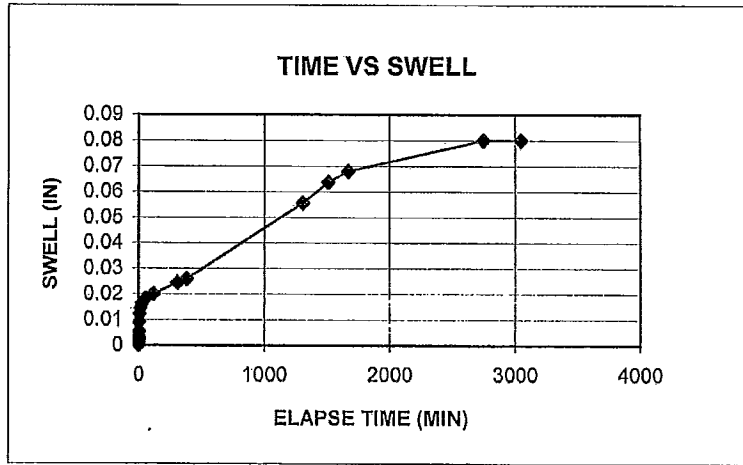
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/26/2010
HOLE NO.: Shale (w/8% Kiln Dust 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.743 INITIAL MOISTURE (%): 10.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 22.0
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 2745 minutes and 0.0 to 10.8% swell.



Positive - Swell



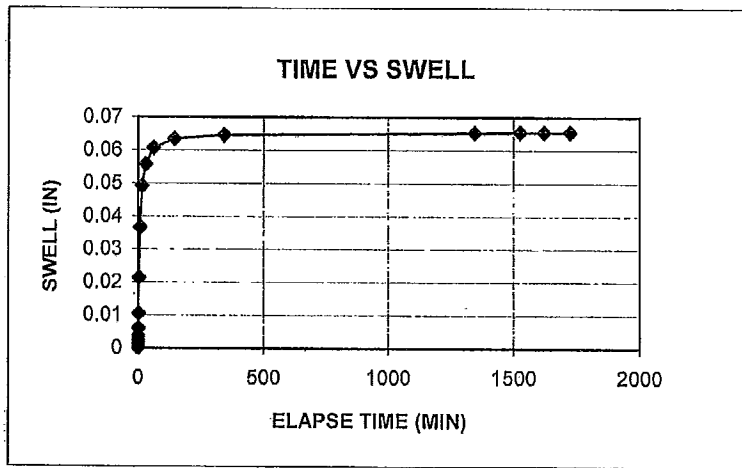
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CLIENT:	Capitol Engineering	DEPTH:	
PROJECT:	Fairmont Armed Forces	DATE:	1/29/2010
HOLE NO.:	Shale (w/4% Lime 98% Std Proctor)		
W.O.:	N2095099		
SAMPLE HEIGHT (IN)	0.736	INITIAL MOISTURE (%):	9.9
SAMPLE DIAMETER (IN)	2.5	FINAL MOISTURE (%):	18.9
NORMAL PRESSURE (TSF)	0.05		
Lab No.:	319		

ELAPSE TIME (MIN)	SWELL (IN)	% OF SWELL
0	0	0.0
0.1	0.001	0.1
0.25	0.0021	0.3
0.5	0.0036	0.5
1	0.006	0.8
2	0.0105	1.4
4	0.0213	2.9
8	0.0366	5.0
15	0.0491	6.7
30	0.0557	7.6
60	0.0606	8.2
145	0.0634	8.6
345	0.0646	8.8
1345	0.0653	8.9
1525	0.0655	8.9
1620	0.0655	8.9
1725	0.0655	8.9



Positive - Swell



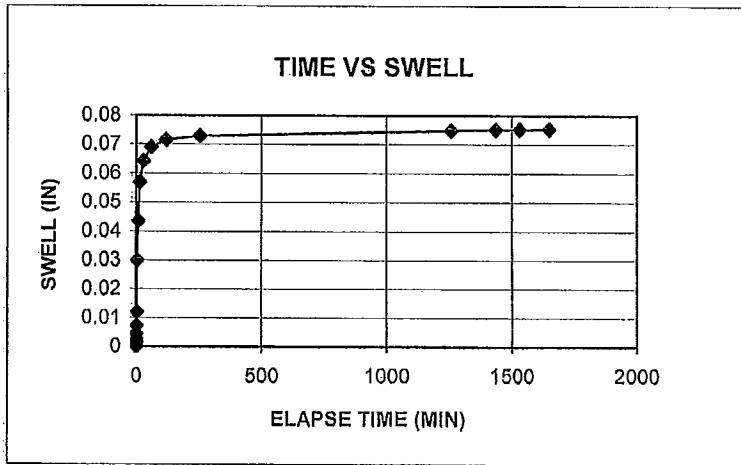
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 1/29/2010
HOLE NO.: Shale (w/5% Lime 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.739 INITIAL MOISTURE (%): 10.1
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 18.5
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1650 minutes, showing an increase in swell from 0.0 to 0.0753 inches.



Positive - Swell



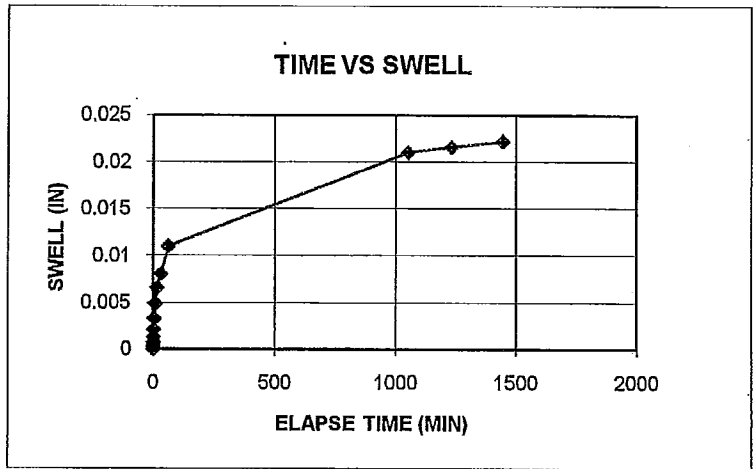
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 2/2/2010
HOLE NO.: Shale @ +3% OM w/4% Lime 98% Std Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.74 INITIAL MOISTURE (%): 13.5
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%):
NORMAL PRESSURE (TSF) 0.05
Lab No.: 319

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1445 minutes.



Positive - Swell



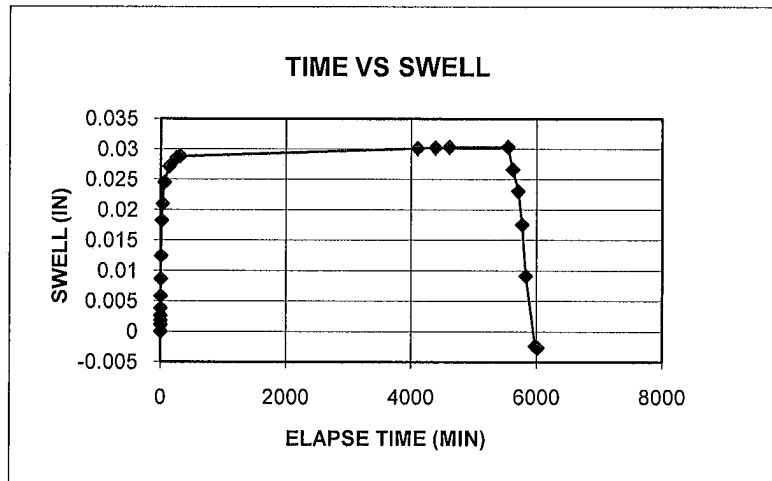
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CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 2/24/2010
HOLE NO.: TP-6 @ +3% to 4% over OM w/3% Lime @ 95% Mod Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.732 INITIAL MOISTURE (%): 20.2
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 22.5
NORMAL PRESSURE (TSF) 0.05
Lab No.: 1104

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Contains 20 rows of data points.



Positive - Swell
Counter Swell - 4.0 tsf



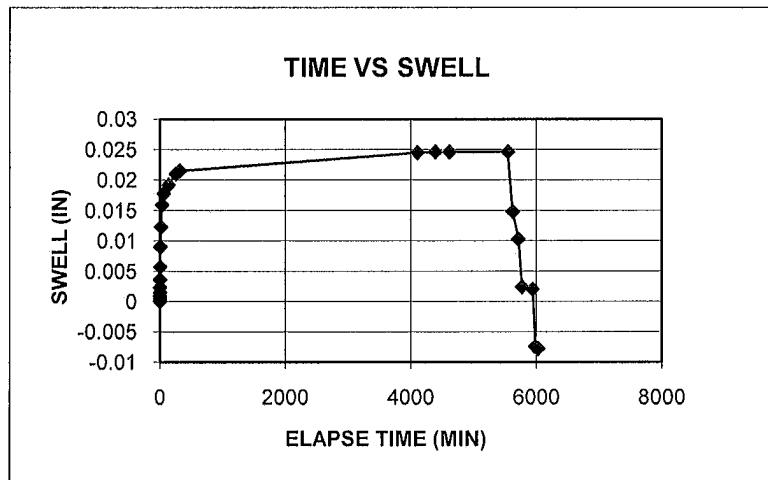
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www.terracon.com

CLIENT: Capitol Engineering DEPTH:
PROJECT: Fairmont Armed Forces DATE: 2/22/2010
HOLE NO.: TP-6 : @ +3% to 4% over OM w/4% Lime @ 95% Mod Proctor)
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.736 INITIAL MOISTURE (%): 20.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 24.4
NORMAL PRESSURE (TSF) 0.05
Lab No.: 1104

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 6035 minutes.



Positive - Swell
Counter Swell - 2.0 tsf



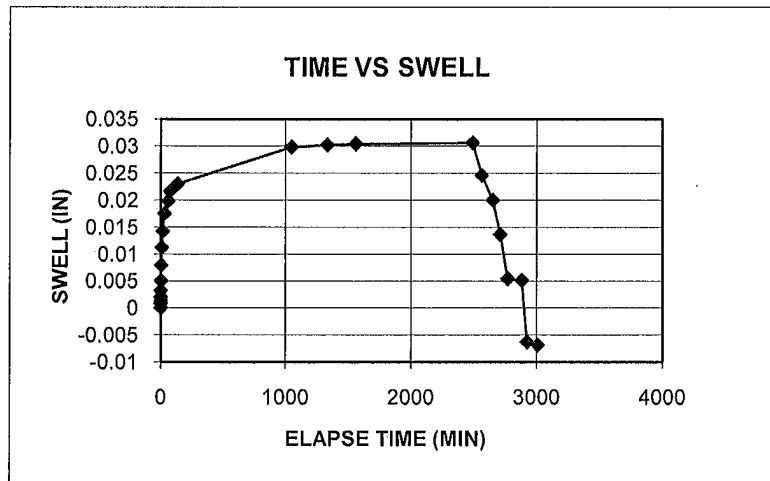
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www.terracon.com

CLIENT:	Capitol Engineering	DEPTH:	
PROJECT:	Fairmont Armed Forces	DATE:	2/22/2010
HOLE NO.:	TP-6 @ +3% to 4% over OM w/5% Lime @ 95% Mod Proctor)		
W.O.:	N2095099		
SAMPLE HEIGHT (IN)	0.74	INITIAL MOISTURE (%):	19.9
SAMPLE DIAMETER (IN)	2.5	FINAL MOISTURE (%):	23
NORMAL PRESSURE (TSF)	0.05		
Lab No.:	1104		

ELAPSE TIME (MIN)	SWELL (IN)	% OF SWELL
0	0	0.0
0.1	0.0008	0.1
0.25	0.0013	0.2
0.5	0.002	0.3
1	0.0032	0.4
2	0.005	0.7
4	0.0079	1.1
8	0.0112	1.5
15	0.0142	1.9
30	0.0175	2.4
60	0.0198	2.7
75	0.0216	2.9
135	0.023	3.1
1050	0.0298	4.0
1335	0.0302	4.1
1560	0.0304	4.1
2490	0.0306	4.1
2565	0.0246	3.3
2655	0.02	2.7
2715	0.0136	1.8
2775	0.0054	0.7
2885	0.0051	0.7
2925	-0.0063	-0.9
3010	-0.0069	-0.9



Positive - Swell
Counter Swell - 4.0 tsf



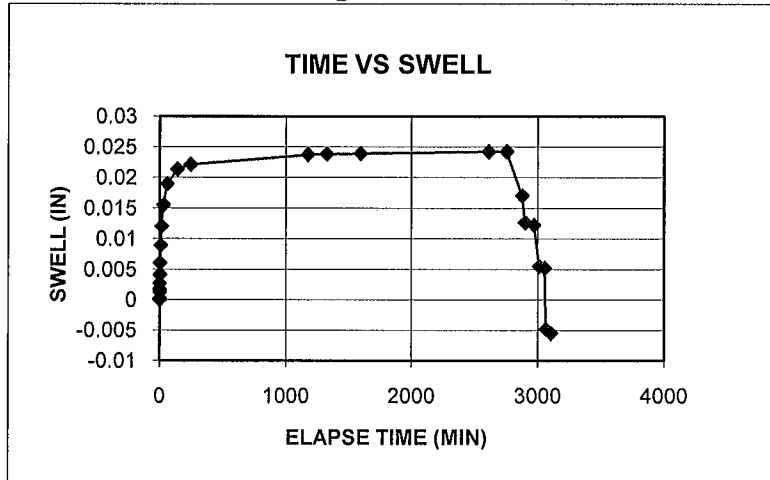
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A **Terracon** COMPANY

HCN Division Office
 611 Lunken Park Drive
 Cincinnati, Ohio 45226
 Phone 513.321.5816
 Fax 513.321.0294
 www.hcnutting.com
 www.terracon.com

CLIENT:	Capitol Engineering	DEPTH:	2-10'
PROJECT:	Fairmont Armed Forces	DATE:	3/12/2010
HOLE NO.:	TP-6	Sample No.:	
W.O.:	N2095099		
SAMPLE HEIGHT (IN)	0.73	INITIAL MOISTURE (%):	21.4
SAMPLE DIAMETER (IN)	2.5	FINAL MOISTURE (%):	22.7
NORMAL PRESSURE (TSF)	0.05		
Lab No.:	1449		
Description:	LT BR LEAN CLAY W/4% OLD LIME @ 98% STD COMP, +3% over OM		

ELAPSE TIME (MIN)	SWELL (IN)	% OF SWELL
0	0	0.0
0.1	0.0002	0.0
0.25	0.0012	0.2
0.5	0.0017	0.2
1	0.0027	0.4
2	0.0041	0.6
4	0.006	0.8
8	0.0089	1.2
15	0.012	1.6
30	0.0155	2.1
60	0.0189	2.6
140	0.0213	2.9
245	0.0221	3.0
1175	0.0237	3.3
1325	0.0238	3.3
1595	0.0239	3.3
2610	0.0242	3.3
2755	0.0242	3.3
2875	0.017	2.3
2900	0.0126	1.7
2970	0.0122	1.7
3010	0.0055	0.8
3055	0.0052	0.7
3065	-0.0048	-0.7
3105	-0.0055	-0.8



Positive - Swell
 Counter Swell - 2.0 tsf



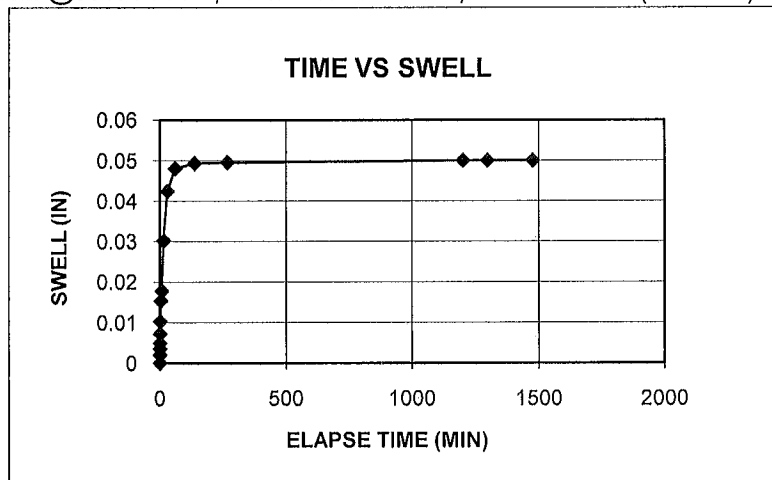
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CLIENT:	Capitol Engineering	DEPTH:	2-10'
PROJECT:	Fairmont Armed Forces	DATE:	3/3/2010
HOLE NO.:	TP-6		
W.O.:	N2095099		
SAMPLE HEIGHT (IN)	0.734	INITIAL MOISTURE (%):	19.1
SAMPLE DIAMETER (IN)	2.5	FINAL MOISTURE (%):	22.9
NORMAL PRESSURE (TSF)	0.05		
Lab No.:	1329		
Description:	SOIL SWELL @95% PMOD, +3 to +4% over OM, w/3% Cement(Portland)		

ELAPSE TIME (MIN)	SWELL (IN)	% OF SWELL
0	0	0.0
0.1	0.002	0.3
0.25	0.0035	0.5
0.5	0.0049	0.7
1	0.0072	1.0
2	0.0102	1.4
4	0.0153	2.1
8	0.0178	2.4
15	0.0302	4.1
30	0.0424	5.8
60	0.048	6.5
137	0.0493	6.7
267	0.0495	6.7
1202	0.05	6.8
1297	0.05	6.8
1477	0.05	6.8



Positive - Swell



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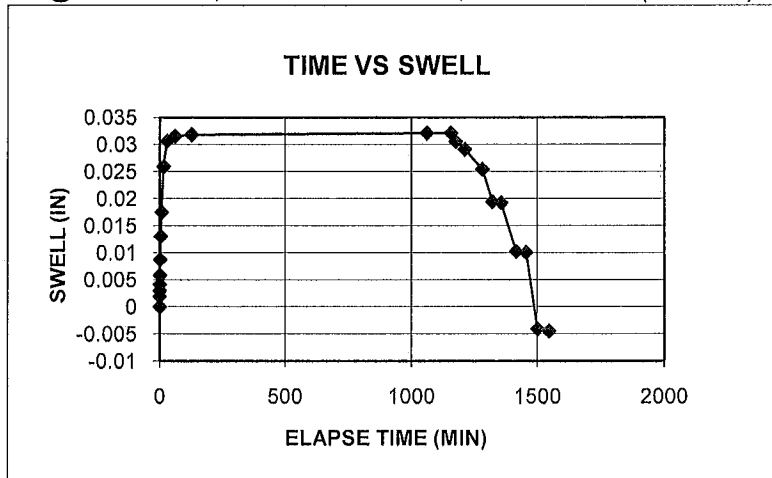
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 3/3/2010
HOLE NO.: TP-6
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.749 INITIAL MOISTURE (%): 19.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 22.0
NORMAL PRESSURE (TSF) 0.05

Lab No.: 1330

Description: SOIL SWELL @95% PMOD, +3 to +4% over OM, w/4% Cement(Portland)

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1547 minutes.



Positive - Swell
Counter Swell - 4 tsf



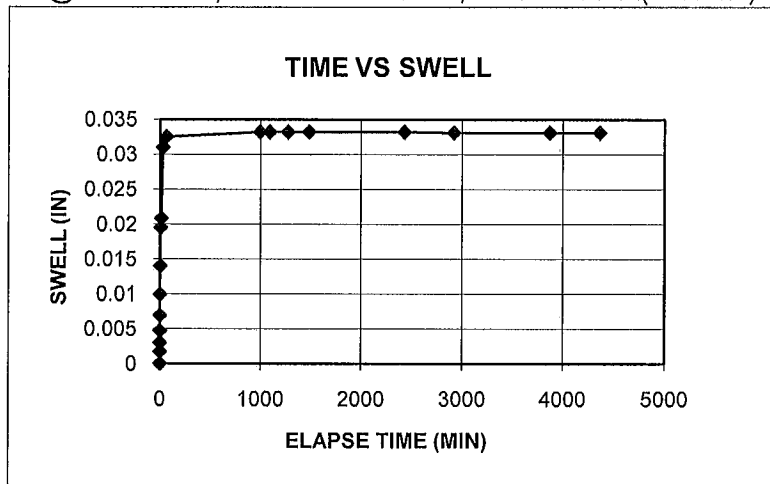
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 3/8/2010
HOLE NO.: TP-6
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.739 INITIAL MOISTURE (%): 20.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 23.4
NORMAL PRESSURE (TSF) 0.05
Lab No.: 1331
Description: SOIL SWELL @95% PMOD, +3 to +4% over OM, w/5% Cement(Portland)

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 4370 minutes, showing an increase in swell from 0 to 0.0331 inches and percentage from 0.0 to 4.5.



Positive - Swell



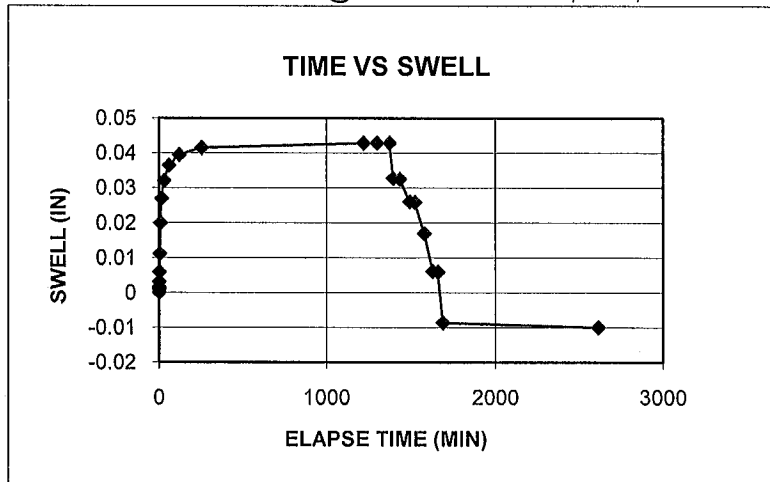
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 3/29/2010
HOLE NO.: TP-6 Sample No.:
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.739 INITIAL MOISTURE (%): 15.3
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 23.9
NORMAL PRESSURE (TSF) 0.05
Lab No.: 1449
Description: LT BR LEAN CLAY W/4% OLD LIME @ 95% MOD COMP, OM, W/2 DAY MEL

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 2615 minutes.



Positive - Swell
Counter Swell - 4.0 tsf



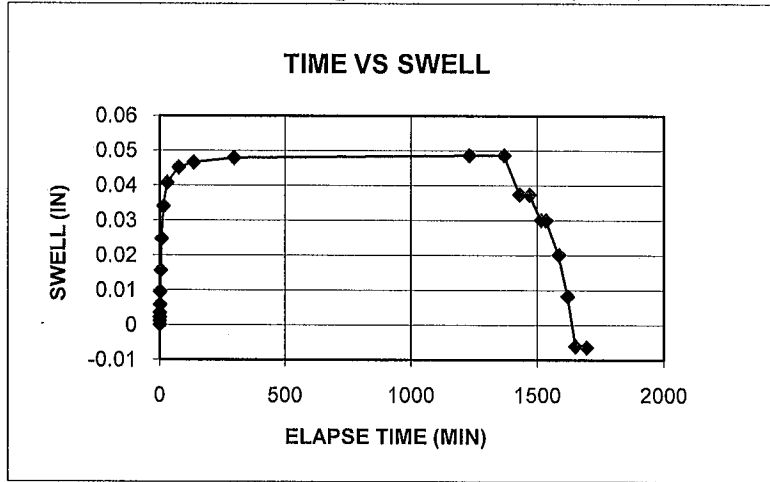
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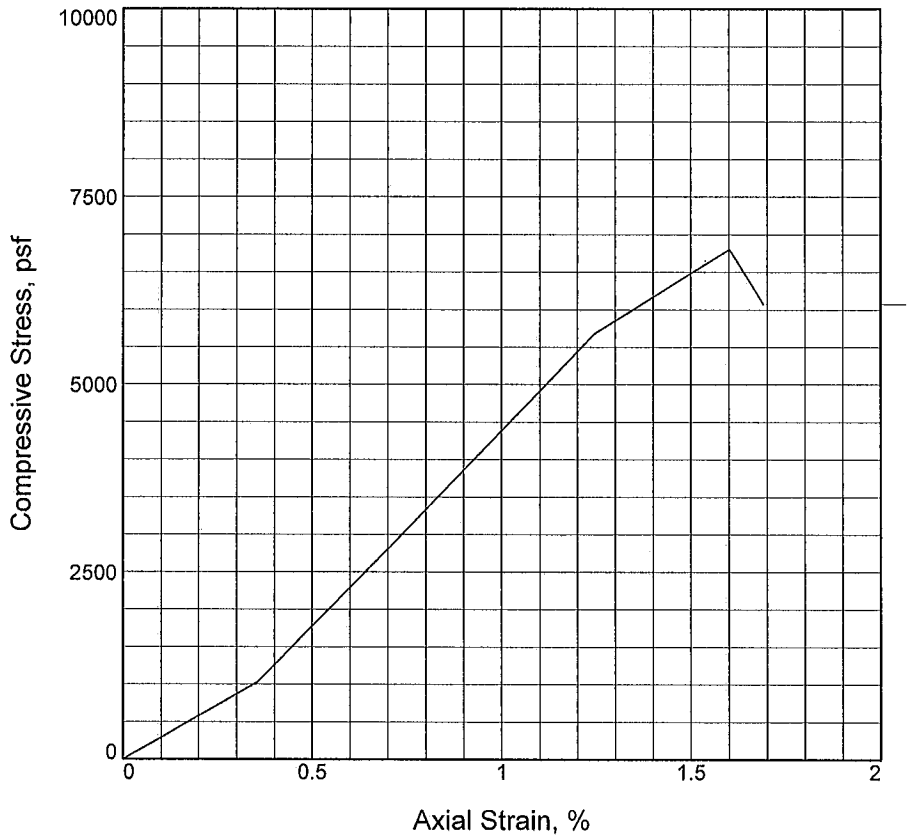
CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 3/29/2010
HOLE NO.: TP-6 Sample No.:
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.727 INITIAL MOISTURE (%): 15.0
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 23.3
NORMAL PRESSURE (TSF) 0.05
Lab No.: 1449
Description: LT BR LEAN CLAY W/4% OLD LIME @ 95% MOD COMP, OM, W/5 DAY MEL

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 1695 minutes.



Positive - Swell
Counter Swell - 4.0 tsf

UNCONFINED COMPRESSION TEST



Sample No.	1			
Unconfined strength, psf	6802.4			
Undrained shear strength, psf	3401.2			
Failure strain,	1.6			
Strain rate, in./min.	0.056			
Water content, %	14.9			
Wet density, pcf	125.6			
Dry density, pcf	109.3			
Saturation, %	74.2			
Void ratio	0.5427			
Specimen diameter, in.	2.840			
Specimen height, in.	5.620			
Height/diameter ratio	1.98			

Description: LIGHT BROWN LEAN CLAY W/4% OLD LIME W/5 DAY MELLOWING TIME

LL = **PL =** **PI =** **Assumed GS= 2.70** **Type: Remold @ 95% PMOD, OM**

Project No.: N2095099

Date: 3-29-10

Remarks:
Lab No.1449

Client: CAPITOL ENGINEERING INC.

Project: PROP. FAIRMONT ARMED FORCES RESERVE CENTER
FAIRMONT, WV

Source of Sample: TP-6

UNCONFINED COMPRESSION TEST

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Figure _____

Tested By: SV **Checked By:** GS



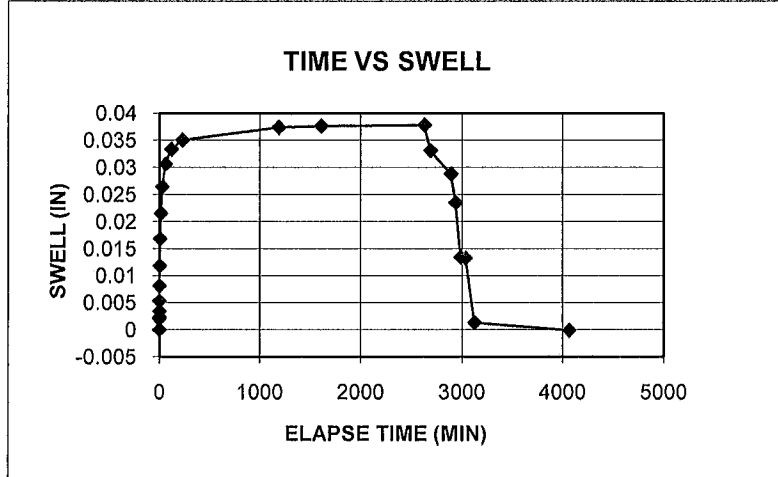
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www.terracon.com

CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 4/1/2010
HOLE NO.: TP-6 Sample No.:
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.74 INITIAL MOISTURE (%): 18.1
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 21.9
NORMAL PRESSURE (TSF) 0.05
Lab No.: 2154A
Description: LT BR LEAN CLAY W/4% OLD LIME @ 95% MOD COMP, +3% over OM, W/5

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points range from 0 to 4065 minutes.



Positive - Swell
Counter Swell - 4 tsf



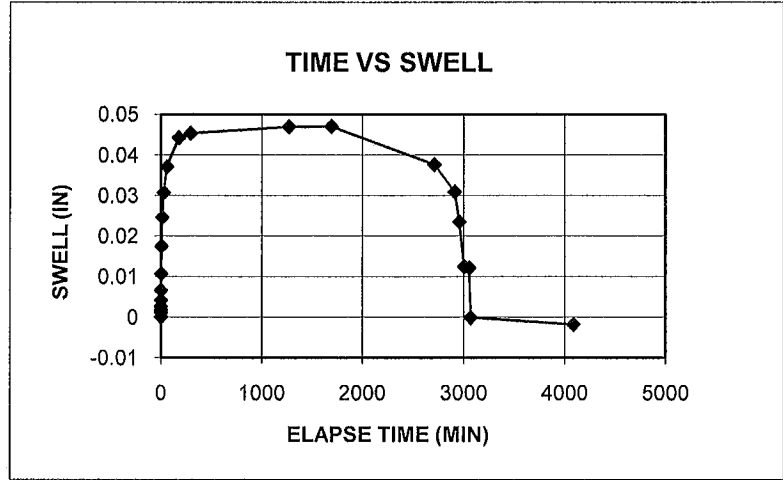
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CLIENT: Capitol Engineering DEPTH: 2-10'
PROJECT: Fairmont Armed Forces DATE: 4/1/2010
HOLE NO.: TP-6 Sample No.:
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.74 INITIAL MOISTURE (%): 18.1
SAMPLE DIAMETER (IN) 2.5 FINAL MOISTURE (%): 22.9
NORMAL PRESSURE (TSF) 0.05
Lab No.: 2155
Description: LT BR LEAN CLAY W/4% NEW LIME @ 95% MOD COMP, +3% over OM, W/5

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), and a third column with values ranging from 0.0 to -0.0018.



Positive - Swell
Counter Swell - 4 tsf



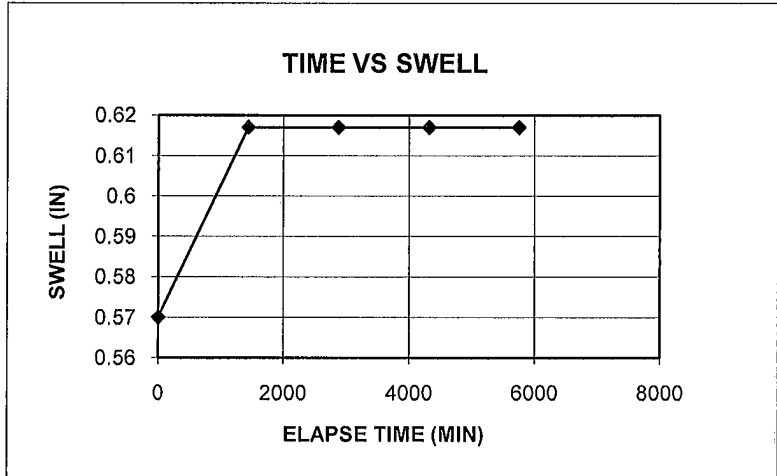
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CLIENT: Capitol Engineering DEPTH: 15.5'
PROJECT: Fairmont Armed Forces DATE: 3/3/2010
HOLE NO.: TB-33 Sample No.: 1
W.O.: N2095099
SAMPLE HEIGHT (IN) 1.22 INITIAL MOISTURE (%): 6.3
SAMPLE DIAMETER (IN) 1.91 FINAL MOISTURE (%): 8.3
NORMAL PRESSURE (TSF)
Lab No.: 1324
Description: Gr Soft Shale

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points: (0, 0.57, 0.0), (1440, 0.617, 3.9), (2880, 0.617, 3.9), (4320, 0.617, 3.9), (5760, 0.617, 3.9)



Positive - Swell



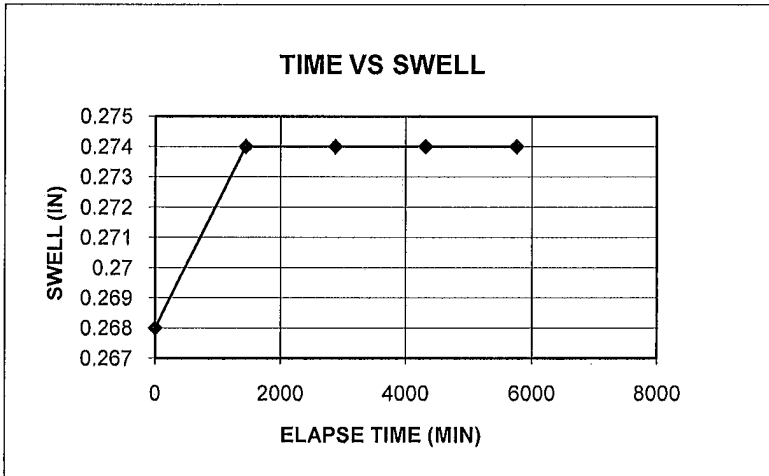
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CLIENT: Capitol Engineering DEPTH: 21.4'
PROJECT: Fairmont Armed Forces DATE: 3/3/2010
HOLE NO.: TB-33 Sample No.: 2
W.O.: N2095099
SAMPLE HEIGHT (IN) 0.92 INITIAL MOISTURE (%): 4.6
SAMPLE DIAMETER (IN) 1.97 FINAL MOISTURE (%): 5.6
NORMAL PRESSURE (TSF)
Lab No.: ...1325
Description: Or Sandstone

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points: (0, 0.268, 0.0), (1440, 0.274, 0.7), (2880, 0.274, 0.7), (4320, 0.274, 0.7), (5760, 0.274, 0.7)



Positive - Swell



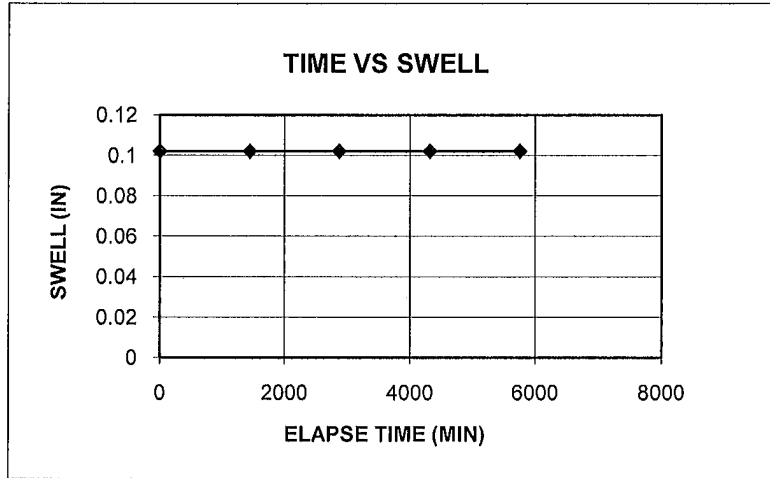
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CLIENT:	Capitol Engineering	DEPTH:	23.0'
PROJECT:	Fairmont Armed Forces	DATE:	3/3/2010
HOLE NO.:	TB-33	Sample No.:	3
W.O.:	N2095099		
SAMPLE HEIGHT (IN)	0.987	INITIAL MOISTURE (%):	1.9
SAMPLE DIAMETER (IN)	1.96	FINAL MOISTURE (%):	2.6
NORMAL PRESSURE (TSF)			
Lab No.:	1326		
Description:	Gr Sandstone		

ELAPSE		
TIME (MIN)	SWELL (IN)	% OF SWELL
0	0.102	0.0
1440	0.102	0.0
2880	0.102	
4320	0.102	
5760	0.102	



Positive - Swell



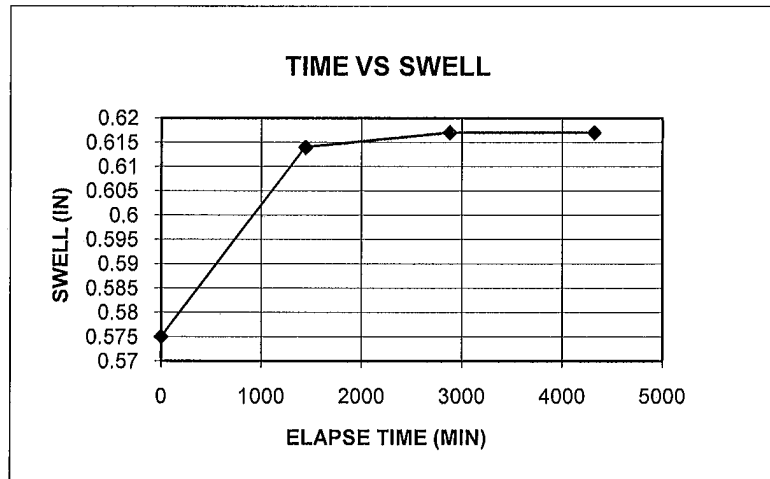
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CLIENT: Capitol Engineering DEPTH: 25.5'
PROJECT: Fairmont Armed Forces DATE: 3/3/2010
HOLE NO.: TB-34 Sample No.: 1
W.O.: N2095099
SAMPLE HEIGHT (IN) 1.35 INITIAL MOISTURE (%): 6.2
SAMPLE DIAMETER (IN) 1.93 FINAL MOISTURE (%): 8.5
NORMAL PRESSURE (TSF)
Lab No.: 1327
Description: Gr Shale

Table with 3 columns: ELAPSE TIME (MIN), SWELL (IN), % OF SWELL. Data points: (0, 0.575, 0.0), (1440, 0.614, 2.9), (2880, 0.617), (4320, 0.617)



Positive - Swell



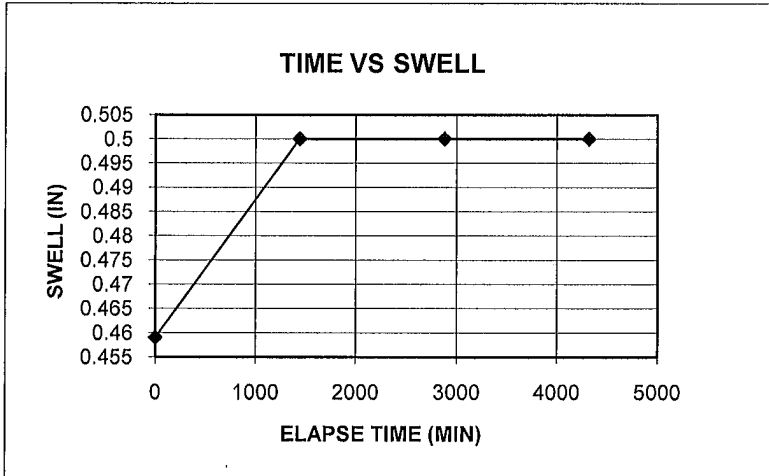
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CLIENT: Capitol Engineering DEPTH: 32.2'
PROJECT: Fairmont Armed Forces DATE: 3/3/2010
HOLE NO.: TB-34 Sample No.: 2
W.O.: N2095099
SAMPLE HEIGHT (IN) 1.215 INITIAL MOISTURE (%): 5.5
SAMPLE DIAMETER (IN) 1.89 FINAL MOISTURE (%): 8.6
NORMAL PRESSURE (TSF)
Lab No.: 1328
Description: Gr Shale

Table with 3 columns: TIME (MIN), SWELL (IN), % OF SWELL. Data points: (0, 0.459, 0.0), (1440, 0.500, 3.4), (2880, 0.500), (4320, 0.500)



Positive - Swell



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SLAKE DURABILITY TEST SUMMARY

Client: Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Location: Fairmont, West Virginia

Date: 12/16/2009
Project No. N2095099

Table with 4 columns: Boring No., Depth (ft), Tare Weight, Moist weight (Sample+Tare), Dry weight (Sample+Tare), Natural Moisture Content (%), After Cycle No. 1 (Temperature and Dry Weight), After Cycle No. 2 (Temperature and Dry Weight), SLAKE DURABILITY INDEX, and Fragments Retained - Type. Data is provided for three borings: TB-1, TB-2, and TB-3.





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SLAKE DURABILITY TEST SUMMARY

Client: Capitol Engineering, Inc.
Project: Fairmont Armed Forces Reserve Center
Location: Fairmont, West Virginia

Date: 12/16/2009
Project No. N2095099

Table with columns for Boring No., Depth (ft), Tare Weight, Moist weight (Sample+Tare), Dry weight (Sample+Tare), Natural Moisture Content (%), and temperature data for After Cycle No. 1 and 2. Includes SLAKE DURABILITY INDEX and Fragments Retained - Type.





Analysis Report

December 30, 2009

HC NUTTING
912 MORRIS STREET
CHARLESTON WV 25312

Page 1 of 1

ATTN: YOGESH REGE

Client Sample ID:	TB-1 (DB-1)	Depth:	25.2' - 25.8'
Date Sampled:	Dec 15, 2009	Sample ID By:	HC NUTTING
Date Received:	Dec 16, 2009	Sample Taken At:	FAIRMONT ARMED FORCES RESEF
Product Description:		Sample Taken By:	HC NUTTING
		Sample Wt.:	412.3 G

SGS Minerals Sample ID: 405-0924011-001

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	0.74	
Sulfur %	ASTM D4239 Method B	0.31	0.31
Sulfur, Pyritic %	ASTM D2492	0.29	0.29
Sulfur, Sulfate %	ASTM D2492	<0.01	<0.01
Sulfur, Organic (by diff) %	ASTM D2492	0.02	0.02



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December 30, 2009

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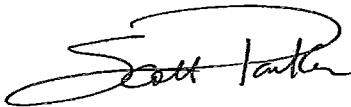
Page 1 of 1

ATTN: YOGESH REGE

Client Sample ID:	TB-4 (SS-7)	Depth:	20.0'-21.5'
Date Sampled:	Dec 15, 2009	Sample ID By:	HC NUTTING
Date Received:	Dec 16, 2009	Sample Taken At:	FAIRMONT ARMED FORCES RESEF
Product Description:		Sample Taken By:	HC NUTTING
		Sample Wt.:	499.5 G

SGS Minerals Sample ID: 405-0924011-003

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	16.18	
Sulfur %	ASTM D4239 Method B	0.22	0.26
Sulfur, Pyritic %	ASTM D2492	0.12	0.14
Sulfur, Sulfate %	ASTM D2492	<0.01	<0.01
Sulfur, Organic (by diff) %	ASTM D2492	0.10	0.12



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Analysis Report

December 30, 2009

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ATTN: YOGESH REGE

Client Sample ID: TB-9 (DB-1) Depth: 25.0' - 25.6'
Date Sampled: Dec 15, 2009 Sample ID By: HC NUTTING
Date Received: Dec 16, 2009 Sample Taken At: FAIRMONT ARMED FORCES RESEF
Product Description: Sample Taken By: HC NUTTING
Sample Wt.: 501.5 G

SGS Minerals Sample ID: 405-0924011-002

Table with 4 columns: Property, Method, As Received, Dry. Rows include Moisture, Total %, Sulfur %, Sulfur, Pyritic %, Sulfur, Sulfate %, and Sulfur, Organic (by diff) %.

Handwritten signature of Scott Parker and printed name SCOTT_PARKER

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December 30, 2009

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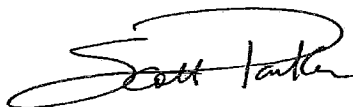
Page 1 of 1

ATTN: YOGESH REGE

Client Sample ID:	TB-20	Depth:	0` - 25`
Date Sampled:	Dec 14, 2009	Sample ID By:	HC NUTTING
Date Received:	Dec 14, 2009	Sample Taken At:	FAIRMONT ARMED FORCES RESEF
Product Description:		Sample Taken By:	HC NUTTING
		Sample Wt.:	2408.21 G

SGS Minerals Sample ID: 405-0923965-001

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	2.32	
Sulfur %	ASTM D4239 Method B	0.62	0.63
Sulfur, Pyritic %	ASTM D2492	0.44	0.45
Sulfur, Sulfate %	ASTM D2492	0.15	0.15
Sulfur, Organic (by diff) %	ASTM D2492	0.03	0.03



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Analysis Report

December 30, 2009

HC NUTTING
912 MORRIS STREET
CHARLESTON WV 25312

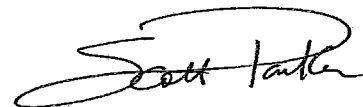
Page 1 of 1

ATTN: YOGESH REGE

Client Sample ID:	TB-21	Depth:	0' - 25'
Date Sampled:	Dec 14, 2009	Sample ID By:	HC NUTTING
Date Received:	Dec 14, 2009	Sample Taken At:	FAIRMONT ARMED FORCES RESEF
Product Description:		Sample Taken By:	HC NUTTING
		Sample Wt.:	1758.35 G

SGS Minerals Sample ID: 405-0923965-002

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	1.18	
Sulfur %	ASTM D4239 Method B	0.11	0.11
Sulfur, Pyritic %	ASTM D2492	0.10	0.10
Sulfur, Sulfate %	ASTM D2492	<0.01	<0.01
Sulfur, Organic (by diff) %	ASTM D2492	<0.01	<0.01



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Analysis Report

December 30, 2009

HC NUTTING
912 MORRIS STREET
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Page 1 of 1

ATTN: YOGESH REGE

Client Sample ID: TB-22 Depth: 0' - 25'
Date Sampled: Dec 14, 2009 Sample ID By: HC NUTTING
Date Received: Dec 14, 2009 Sample Taken At: FAIRMONT ARMED FORCES RESEF
Product Description: Sample Taken By: HC NUTTING
Sample Wt.: 2249.02 G

SGS Minerals Sample ID: 405-0923965-003

Table with 4 columns: Property, Method, As Received, Dry. Rows include Moisture, Total %, Sulfur %, Sulfur, Pyritic %, Sulfur, Sulfate %, and Sulfur, Organic (by diff) %.

Handwritten signature of Scott Parker and printed name SCOTT_PARKER

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Analysis Report

December 28, 2009

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Page 1 of 1

ATTN: CLAYTON FERGUSON

Client Sample ID:	TEST PIT # 1 1-10 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Dec 9, 2009	Sample Taken At:	HC NUTTING
Date Received:	Dec 9, 2009	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1088.80 G

SGS Minerals Sample ID: 405-0923894-001

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	12.94	
Sulfur %	ASTM D4239 Method B	0.66	0.76
Sulfur, Pyritic %	ASTM D2492	0.45	0.52
Sulfur, Sulfate %	ASTM D2492	0.12	0.14
Sulfur, Organic (by diff) %	ASTM D2492	0.09	0.10



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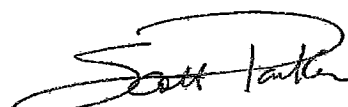
Page 1 of 1

* pyritic sulfur *
Corrected

Client Sample ID:	TEST PIT # 2 1-8 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Dec 9, 2009	Sample Taken At:	HC NUTTING
Date Received:	Dec 9, 2009	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1010.35 G

SGS Minerals Sample ID: 405-0923894-002

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	18.67	
Sulfur %	ASTM D4239 Method B	0.07	0.09
Sulfur, Pyritic %	ASTM D2492	0.05	0.06
Sulfur, Sulfate %	ASTM D2492	0.02	0.03
Sulfur, Organic (by diff) %	ASTM D2492	<0.01	<0.01



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Page 1 of 1

pyritic sulfur
corrected

Client Sample ID:	TEST PIT # 3 2-8 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Dec 9, 2009	Sample Taken At:	HC NUTTING
Date Received:	Dec 9, 2009	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1044.56 G

SGS Minerals Sample ID: 405-0923894-003

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	12.03	
Sulfur %	ASTM D4239 Method B	0.10	0.11
Sulfur, Pyritic %	ASTM D2492	0.09	0.10
Sulfur, Sulfate %	ASTM D2492	0.02	0.02
Sulfur, Organic (by diff) %	ASTM D2492	<0.01	<0.01

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Analysis Report

December 28, 2009

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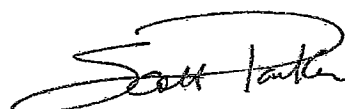
Page 1 of 1

ATTN: CLAYTON FERGUSON

Client Sample ID:	TEST PIT # 4 2.5-5.0 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Dec 9, 2009	Sample Taken At:	HC NUTTING
Date Received:	Dec 9, 2009	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1089.20 G

SGS Minerals Sample ID: 405-0923894-004

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	7.57	
Sulfur %	ASTM D4239 Method B	0.17	0.18
Sulfur, Pyritic %	ASTM D2492	0.15	0.16
Sulfur, Sulfate %	ASTM D2492	0.02	0.02
Sulfur, Organic (by diff) %	ASTM D2492	<0.01	<0.01



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* pyritic
Sulfur *
Corrected

Client Sample ID:	TEST PIT # 5 4.0-11 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Dec 9, 2009	Sample Taken At:	HC NUTTING
Date Received:	Dec 9, 2009	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1131.75 G

SGS Minerals Sample ID: 405-0923894-005

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	16.81	
Sulfur %	ASTM D4239 Method B	0.03	0.04
Sulfur, Pyritic %	ASTM D2492	0.02	0.02
Sulfur, Sulfate %	ASTM D2492	<0.01	<0.01
Sulfur, Organic (by diff) %	ASTM D2492	0.01	0.02

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HC NUTTING
 912 Morris Street
 Charleston, WV 25312

TONS CaCO3 EQUIV. PER 1000 TONS MATERIAL												
LAB NUMBER	SAMPLE ID	DEPTH	PASTE pH	1 GRAM DRY WEIGHT	TOTAL SULFUR	PYRITIC SULFUR	SULFATE	NEUTRALIZATION POTENTIAL			T.S. ABP.	
								AP	AMOUNT FROM SULFUR	AMOUNT PRESENT (TITR.)		AMOUNT NEEDED
924011-001	TB-1 (DB-1)	25.2'-25.8'	8.3	0.9937	0.31			9.62	43.7		34.1	NONE
924011-002	TB-9 (DB-1)	25.0'-25.6'	8.2	8.2	0.34			10.55	35.2		24.6	SLIGHT
924011-003	TB-4 (SS-7)	20.0'-21.5'	4.1	4.1	0.26			8.16	9.6		1.49	SLIGHT

Respectfully submitted,
 SGS NORTH AMERICA INC.

Scott Taylor
 Charleston Laboratory

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HC NUTTING
 912 Morris Street
 Charleston, WV 25312

TONS CaCO3 EQUIV. PER 1000 TONS MATERIAL													
		NEUTRALIZATION POTENTIAL				T.S ABP.							
LAB NUMBER	SAMPLE ID	DEPTH	PASTE pH	1 GRAM DRY WEIGHT	TOTAL SULFUR	PYRITIC SULFUR	SULFATE SULFUR	AMOUNT FROM SULFUR	AMOUNT PRESENT (TITR.	AMOUNT NEEDED	AMOUNT EXCESS	TSD mg.l	FIZZ TEST
924067-001	FILL MATERIAL/STOCK- PILE	0.5' - 3.0'	8.2	0.9908	0.02			0.69	12.6		11.87		SLIGHT

Respectfully submitted,
 SGS NORTH AMERICA INC.

Scott Taylor
 Charleston Laboratory

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GENERAL CONDITIONS OF SERVICE ON REVERSE



HC NUTTING
 912 Morris Street
 Charleston, WV 25312

12/24/2009

LAB NUMBER	SAMPLE ID	DEPTH	PASTE pH	1 GRAM DRY WEIGHT	TOTAL SULFUR	PYRITIC SULFUR	SULFATE SULFUR	TONS CaCO3 EQUIV. PER 1000 TONS MATERIAL			FIZZ TEST
								AMOUNT FROM SULFUR	AMOUNT PRESENT (TITR.)	AMOUNT NEEDED	
NEUTRALIZATION POTENTIAL								T.S. ABP.			
AP								AMOUNT EXCESS	AMOUNT	TSD mg./l	
923965-001	TB-20	0' - 25'	4.3	0.973	0.63	0.45	14.1	1.3	12.8		SLIGHT
923965-0052	TB-21	0' - 25'	6.2	0.9881	0.11		3.56	29	25.46		NONE
923965-003	TB-22	0' - 25'	3.8	0.9721	0.76	0.53	16.52	-2.6	19.1		SLIGHT

Respectfully submitted,
 SGS NORTH AMERICA INC.

Charleston Laboratory

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Analysis Report

January 13, 2010

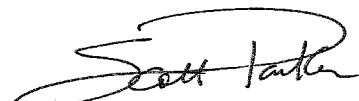
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912 MORRIS STREET
CHARLESTON WV 25312

Page 1 of 1

Client Sample ID:	KILO DUST 1	Sample ID By:	HC NUTTING
Date Sampled:	Jan 7, 2010	Sample Taken At:	
Date Received:	Jan 7, 2010	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	1298.96 G

SGS Minerals Sample ID: 405-1024301-001

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Moisture, Total %	ASTM D3302/D2961	0.10	
Sulfur %	ASTM D4239 Method B	1.31	1.31
Sulfur, Pyritic %	ASTM D2492	0.07	0.07
Sulfur, Sulfate %	ASTM D2492	0.79	0.79
Sulfur, Organic (by diff) %	ASTM D2492	0.45	0.45



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Analysis Report

March 05, 2010

HC NUTTING
912 MORRIS STREET
CHARLESTON WV 25312

Page 1 of 1

Client Sample ID:	TP-6 2-10 FEET	Sample ID By:	HC NUTTING
Date Sampled:	Feb 25, 2010	Sample Taken At:	
Date Received:	Feb 25, 2010	Sample Taken By:	HC NUTTING
Product Description:		Sample Wt.:	338.97 G

SGS Minerals Sample ID: 405-1025294-001

	<u>Method</u>	<u>As Received</u>	<u>Dry</u>
Sulfur %	ASTM D4239 Method B	0.09	0.09
Sulfur, Pyritic %	ASTM D2492	0.03	0.03
Sulfur, Sulfate %	ASTM D2492	<0.01	0.01
Sulfur, Organic (by diff) %	ASTM D2492	0.05	0.05

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UNDERSTANDING YOUR SOIL TEST REPORT

SOIL TEST RESULTS

SOIL pH: A measure of active acidity or alkalinity in a soil/water slurry. pH 7.0 is neutral, pH <7.0 is acidic and pH >7.0 is alkaline. Most turf and ornamentals prefer a pH of 6.5-7.5. Certain acid-loving plants prefer a pH <6.0.

BUFFER pH: A measure of the soil's ability to acidify a buffered solution. Used to determine the resistance to change in pH (acidic buffer capacity), when the soil pH is below 6.3. The buffer pH (not soil pH) is used to determine the lime requirement in most soils.

PHOSPHORUS (P): A measure of the available phosphorus (Bray 1) expressed in pounds per acre.

POTASSIUM (K): A measure of the available (exchangeable) potassium expressed in pounds per acre.

CALCIUM (Ca) and MAGNESIUM (Mg): A measure of the available (exchangeable) calcium and magnesium. Optimum soil test levels may vary depending on the cation exchange capacity and percent base saturation.

CATION EXCHANGE CAPACITY (CEC): A calculated value used to determine the relative nutrient holding capacity of the soil for the cations K⁺, Ca⁺⁺, Mg⁺⁺, H⁺ (hydrogen) & Na⁺ (sodium), if a sodium test is requested. CEC values are expressed as milliequivalents per 100 grams (meq/100) of soil. Exchangeable cations determined using neutral (pH 7.0) 1M ammonium acetate.

Typical CEC Ranges	Soil Texture	Relative Nutrient Holding Capacity CEC
0-12	Coarse (sandy)	Very Low < 5
8-25	Medium (loamy)	Low < 10
20-40+	Fine (clayey)*	Medium 10-22
30-50+	Organic	High > 22

* Certain types of clay soils have lower CEC ranging from 3 to 12.

PERCENT BASE SATURATION: Calculated values showing the percentage of the CEC occupied by each tested cation. Most turfgrasses and ornamentals perform best when the cations are in balance in the ranges shown below:

POTASSIUM	- K	2-7%
CALCIUM	- Ca	65-65%
MAGNESIUM	- Mg	10-20%
HYDROGEN	- H	0-5%* (when present)
SODIUM	- Na	0-5% (when tested)

* Higher hydrogen saturations (5-25%) may be acceptable for certain acid-loving plants. Calculated base saturations and CEC may be lower than normal when hydrogen saturation exceeds 20%.

ANALYTICAL RESULTS

MICRO & SECONDARY NUTRIENTS: Available micro and secondary nutrients can be interpreted according to the table below. Response to available micro and secondary nutrients may differ according to turf or ornamental plant type.

RELATIVE VALUE	IRON (Fe)	MANGANESE (Mn)	ZINC (Zn)	COPPER (Cu)	BORON (B)	SULFUR (S)
LOW	<15	<10	<2	<0.5	<0.5	<20
MEDIUM	15-120	10-50	2-5	0.5-5.0	0.5-3.0	20-80
HIGH	>120	>50	>5	>5.0	>3.0	>80

ORGANIC MATTER (OM3): An estimate of the organic matter content of the soil reported as percent by weight. Organic matter is determined by combustion at 440°C using United States Golf Assoc. methods.

SOLUBLE SALTS (SS): A measure of the salt concentration in the soil from both fertilizer and non-fertilizer sources.

Potential for Plant Injury	Soluble Salts (mhos X 10 ⁻¹)
VERY LOW	< 25
LOW	26-100
MEDIUM (Sensitive plants may be injured)	101-200
HIGH	201-300
VERY HIGH (Most plants injured)	> 300

DISPLAY OF AVERAGE RESULTS: Line 11 on the report shows the average value for the tested nutrient. The average value for each nutrient is displayed graphically in the center section of the report. This provides an easy to interpret guide to the nutrient status of the soil.

NOTES:

- Optimum levels of plant nutrients vary with plant type, its use and fertility management level. These factors along with soil test information are used to make specific fertilizer recommendations.
- To convert pounds of nutrient per acre to parts per million divide reported values by 2.
- To convert soluble salt values to millimhos (mmhos) divide reported values by 100.
- Results followed by a "+" are outside the normal test range. Actual values are higher than shown and can be determined upon request.

LIME AND FERTILIZER RECOMMENDATION COMMENTS

CAUTION! To avoid plant injury consult a professional in the turf and ornamentals industry or your County Cooperative Extension Service before using recommended fertilizers or lime.

ALL RECOMMENDATIONS represent a typical amount for the plant type, its use and fertility management level as determined by the sample information provided and the soil test results. Actual fertility management may vary with different cultural practices, i.e. rate and timing of application, nutrient source, application method, etc.

LIME RECOMMENDATIONS are given in pounds per 1,000 sq. ft. (LBS/M) or tons per acre (TON/A) of ground limestone (TNP>90%). Recommendations are for the amount needed to correct acid soil conditions for the specific plant types. Do not over apply lime to established turf areas. Incorporate recommended amounts into the root zone at establishment.

LIME TYPE: When calcium and magnesium tests are performed, the lime type recommended will be indicated as high calcium (Ca) or high magnesium/dolomitic lime (Mg).

NITROGEN RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of actual nitrogen (N). **APP. FREQ:** Recommendations for application frequency given on a per season (S) basis should be split into multiple applications. Recommendations may also be given on a per month (M) of growing season or month of establishment basis. When **NEW/STB.** is selected as the fertility management level, nutrient recommendations are for incorporation into the soil at the time of planting (preferred) or for surface application during the first three months or more of establishment.*

PHOSPHATE RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of P₂O₅. Recommendations are given as the annual requirement for maintenance, if soil test values are medium to high; the corrective amount, if soil test values are low; or the amount to be used during the establishment phase.

POTASSIUM RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of K₂O. Recommendations are given as the annual requirement for maintenance, if soil test values are medium to high; the corrective amount, if soil test values are low; or the amount to be used during the establishment phase.

OTHER NUTRIENT RECOMMENDATIONS are given in lbs. per 1,000 sq. ft. or lbs. per acre of elemental magnesium (Mg), iron (Fe), manganese (Mn), or zinc (Zn). Recommendations are given as the corrective amount for maintenance or the amount to be used during the establishment phase. Do not over apply micronutrients.

APPENDIX C
SUPPORTING DOCUMENTS

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS: Split Spoon – 1- ³ / ₈ " I.D., 2" O.D., unless otherwise noted	HS: Hollow Stem Auger
ST: Thin-Walled Tube - 2" O.D., unless otherwise noted	PA: Power Auger
RS: Ring Sampler - 2.42" I.D., 3" O.D., unless otherwise noted	HA: Hand Auger
DB: Diamond Bit Coring - 4", N, B	RB: Rock Bit
BS: Bulk Sample or Auger Sample	WB: Wash Boring or Mud Rotary

The number of blows required to advance a standard 2-inch O.D. split-spoon sampler (SS) the last 12 inches of the total 18-inch penetration with a 140-pound hammer falling 30 inches is considered the "Standard Penetration" or "N-value".

WATER LEVEL MEASUREMENT SYMBOLS:

WL: Water Level	WS: While Sampling	N/E: Not Encountered
WCI: Wet Cave in	WD: While Drilling	
DCI: Dry Cave in	BCR: Before Casing Removal	
AB: After Boring	ACR: After Casing Removal	

Water levels indicated on the boring logs are the levels measured in the borings at the times indicated. Groundwater levels at other times and other locations across the site could vary. In pervious soils, the indicated levels may reflect the location of groundwater. In low permeability soils, the accurate determination of groundwater levels may not be possible with only short-term observations.

DESCRIPTIVE SOIL CLASSIFICATION: Soil classification is based on the Unified Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

CONSISTENCY OF FINE-GRAINED SOILS

<u>Unconfined Compressive Strength, Qu, psf</u>	<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Consistency</u>
< 500	<2	Very Soft
500 – 1,000	2-3	Soft
1,001 – 2,000	4-6	Medium Stiff
2,001 – 4,000	7-12	Stiff
4,001 – 8,000	13-26	Very Stiff
8,000+	26+	Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS

<u>Standard Penetration or N-value (SS) Blows/Ft.</u>	<u>Ring Sampler (RS) Blows/Ft.</u>	<u>Relative Density</u>
0 – 3	0-6	Very Loose
4 – 9	7-18	Loose
10 – 29	19-58	Medium Dense
30 – 49	59-98	Dense
50+	99+	Very Dense

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other Constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 – 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75 mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 Sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other Constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 – 12
Modifiers	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1-10
Medium	11-30
High	30+

GENERAL NOTES

Description of Rock Properties

WEATHERING

Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" not discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)

Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding and Foliation Spacing in Rock^a

Spacing	Joints	Bedding/Foliation
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

Rock Quality Designator (RQD) ^b		Joint Openness Descriptors	
RQD, as a percentage	Diagnostic description	Openness	Descriptor
Exceeding 90	Excellent	No Visible Separation	Tight
90 – 75	Good	Less than 1/32 in.	Slightly Open
75 – 50	Fair	1/32 to 1/8 in.	Moderately Open
50 – 25	Poor	1/8 to 3/8 in.	Open
Less than 25	Very poor	3/8 in. to 0.1 ft.	Moderately Wide
		Greater than 0.1 ft.	Wide

- a. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.
b. RQD (given as a percentage) = length of core in pieces 4 in. and longer/length of run.

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976.
U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A				Soil Classification		
				Group Symbol	Group Name ^B	
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	$Cu \geq 4$ and $1 \leq Cc \leq 3$ ^E	GW	Well-graded gravel ^F	
			$Cu < 4$ and/or $1 > Cc > 3$ ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F,G,H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F,G,H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	$Cu \geq 6$ and $1 \leq Cc \leq 3$ ^E	SW	Well-graded sand ^I	
			$Cu < 6$ and/or $1 > Cc > 3$ ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}	
			Fines Classify as CL or CH	SC	Clayey sand ^{G,H,I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above "A" line ^J	CL	Lean clay ^{K,L,M}	
			$PI < 4$ or plots below "A" line ^J	ML	Silt ^{K,L,M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid limit - not dried			Organic silt ^{K,L,M,O}
		Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above "A" line	CH	Fat clay ^{K,L,M}
				PI plots below "A" line	MH	Elastic Silt ^{K,L,M}
	Organic:		Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid limit - not dried			Organic silt ^{K,L,M,Q}
	Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat

^A Based on the material passing the 3-in. (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$E \quad Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

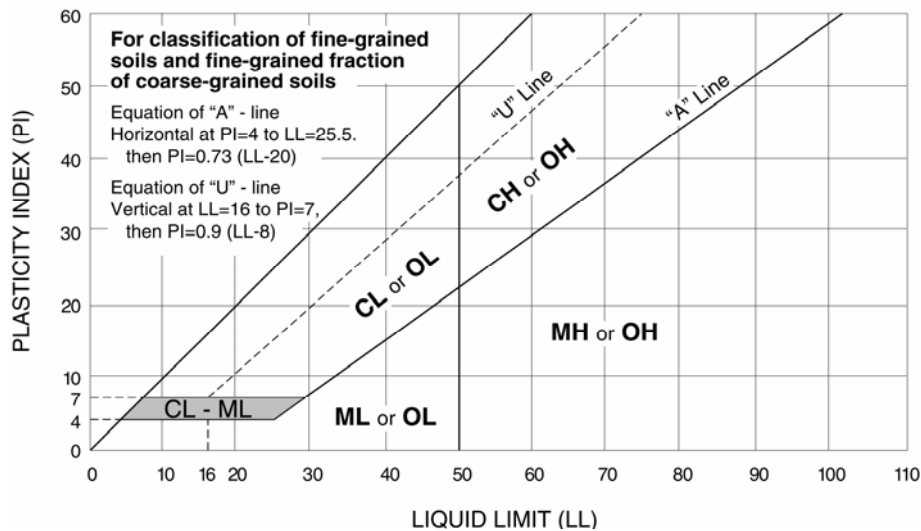
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

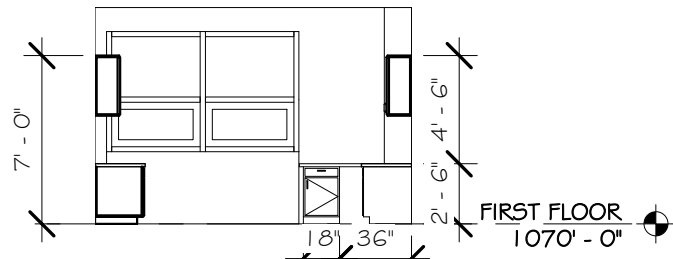
^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



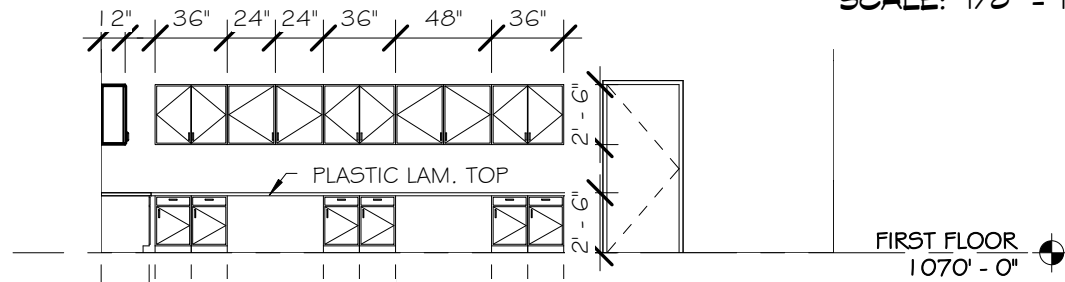


C107D NORTH WALL 6

SCALE: 1/8" = 1'-0"

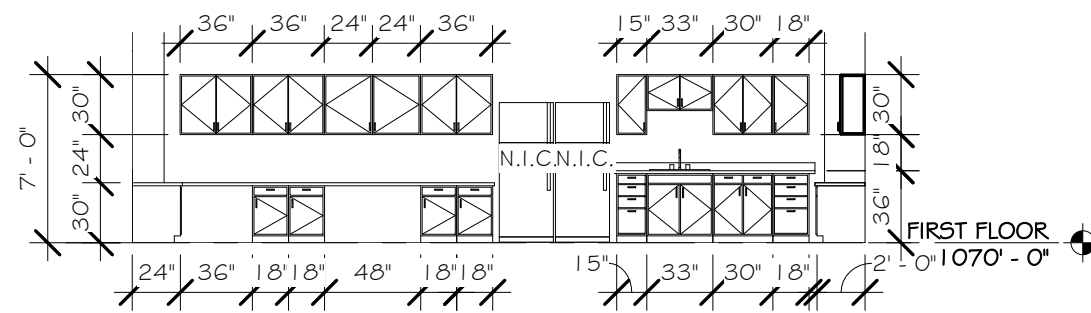
NOTES:

1. PLASTIC LAMINATE COUNTER TOPS (TYP)
2. PLASTIC LAMINATE CABINETS (TYP)
3. LAMINATE COLORS TO BE SELECTED BY THE OWNER AND ARCHITECT DURING SUBMITTAL PROCESS



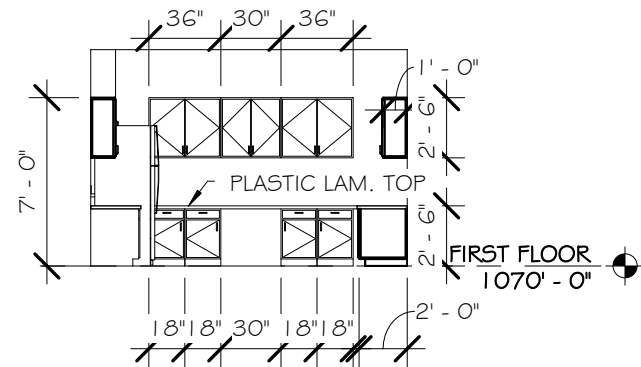
C107D WEST WALL 4

SCALE: 1/8" = 1'-0"



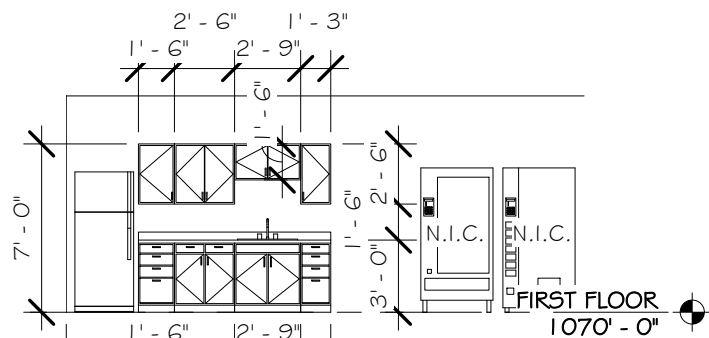
C107D EAST WALL 5

SCALE: 1/8" = 1'-0"



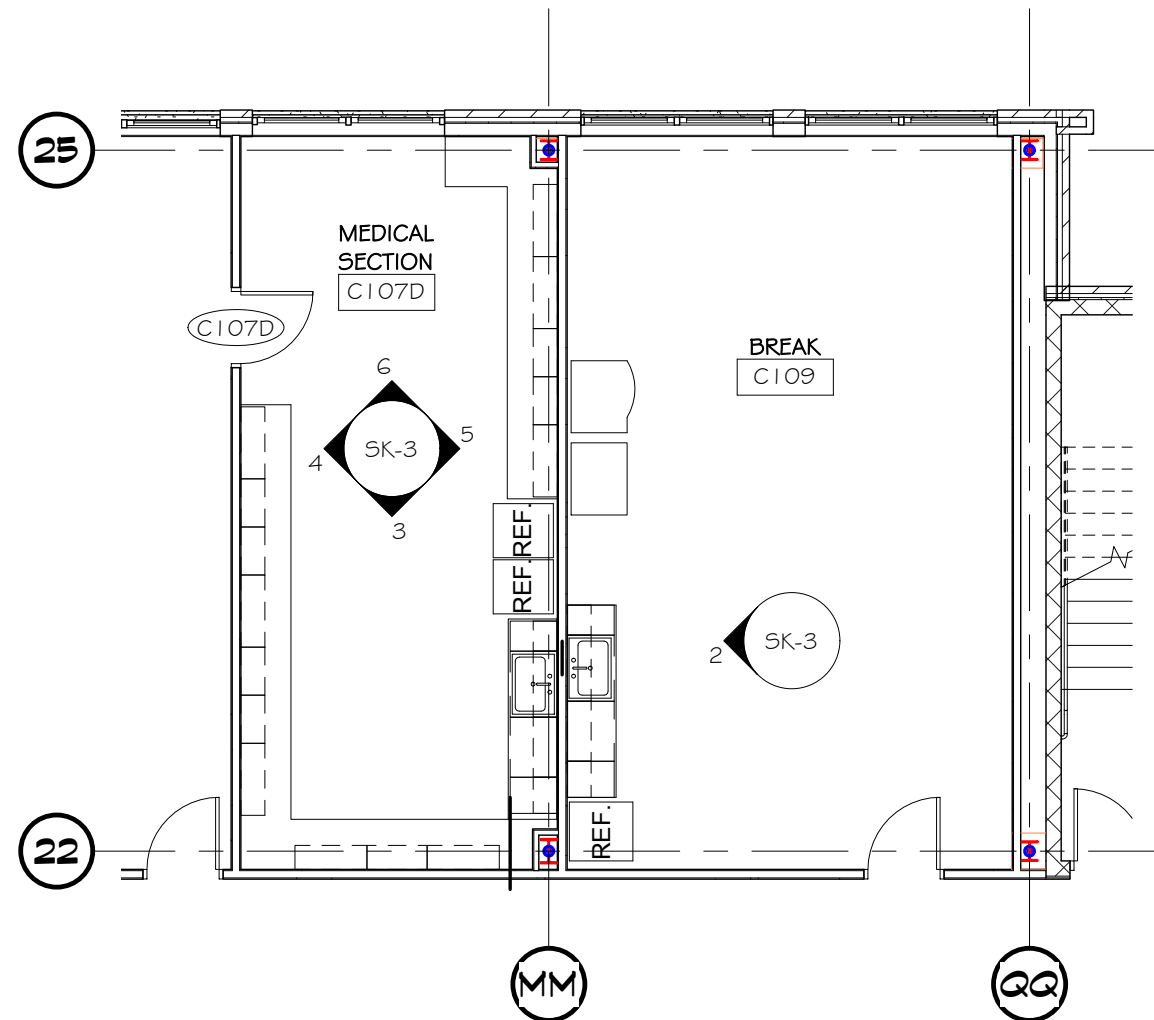
C107D SOUTH WALL 3

SCALE: 1/8" = 1'-0"



C109 WEST WALL 2

SCALE: 1/8" = 1'-0"



MEDICAL SECTION C107D

SCALE: 1/8" = 1'-0"

WVARNG FAIRMONT AFRC

MEDICAL SECTION C107D

ISSUE DATE: 04/13/10

ARCHITECT PROJECT NO. 20823

ARCHITECT CAD NO. 20823

SK-3

SHEET NO.

SK-3

OAA

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

PRODUCER INSURANCE AGENCY'S NAME AND ADDRESS	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
INSURED CONTRACTOR'S NAME AND ADDRESS	
	INSURERS AFFORDING COVERAGE
	INSURER A: INSURER'S NAME
	INSURER B: INSURER'S NAME
	INSURER C: INSURER'S NAME
	INSURER D:
	INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR NO/PL LTR. INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS
A	GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input checked="" type="checkbox"/> OCCUR				EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC				
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
	GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
B	EXCESS / UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$ \$ \$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below			Y/N <input type="checkbox"/>	<input checked="" type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000
	OTHER				

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS
Employers liability includes coverage for W. Va. Code §23-4-2 (Mandolidis). Owner, Architect and Architect's Consultants are to be named as additional insureds. (Insert project's name and address)

CERTIFICATE HOLDER STATE AGENCY'S NAME AND ADDRESS	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <u>30</u> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
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ACORD™ CERTIFICATE OF PROPERTY INSURANCE DATE

PRODUCER INSURANCE AGENCY'S NAME AND ADDRESS	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. COMPANIES AFFORDING COVERAGE COMPANY A INSURER'S NAME COMPANY B COMPANY C COMPANY D
INSURED CONTRACTOR'S NAME AND ADDRESS	

COVERAGES
 THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	COVERED PROPERTY	LIMITS
	<input type="checkbox"/> PROPERTY CAUSES OF LOSS <input type="checkbox"/> BASIC <input type="checkbox"/> BROAD <input type="checkbox"/> SPECIAL <input type="checkbox"/> EARTHQUAKE <input type="checkbox"/> FLOOD				<input type="checkbox"/> BUILDING <input type="checkbox"/> PERSONAL PROPERTY <input type="checkbox"/> BUSINESS INCOME <input type="checkbox"/> EXTRA EXPENSE <input type="checkbox"/> BLANKET BUILDING <input type="checkbox"/> BLANKET PERS PROP <input type="checkbox"/> BLANKET BLDG & PP	\$ \$ \$ \$ \$ \$ \$
	<input checked="" type="checkbox"/> INLAND MARINE TYPE OF POLICY A Inst/Builder's Risk CAUSES OF LOSS <input type="checkbox"/> NAMED PERILS <input type="checkbox"/> OTHER	(if applicable)			<input checked="" type="checkbox"/> BUILDING <input checked="" type="checkbox"/> TRANSIT <input checked="" type="checkbox"/> OFF-SITE STORAGE	CONTRACT AMT. \$ 20% \$ 20% \$ \$
	<input type="checkbox"/> CRIME TYPE OF POLICY					\$ \$ \$
	<input type="checkbox"/> BOILER & MACHINERY					\$
	<input type="checkbox"/> OTHER					\$

LOCATION OF PREMISES/DESCRIPTION OF PROPERTY

 PROJECT NAME AND ADDRESS

SPECIAL CONDITIONS/OTHER COVERAGES

 Owner is to be named as additional insured.

CERTIFICATE HOLDER STATE AGENCY'S NAME AND ADDRESS	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
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IMPORTANT

If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

This Certificate of Insurance does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

GENERAL PROVISIONS

1. "Relationship of the Federal Government - (MAR 1992) - This contract is funded in part by the Federal Government. The Federal Government is not a party to this contract. As a condition to receiving and expending Federal funds, there are certain rights of Federal inspection, Federal approval of contract changes and modifications, and Federal approval of settlements or dispute actions that the federal Government will exercise prior to authorization of actions that the Federal Government will exercise prior to authorization of Federal funds. Therefore, no inspection or acceptance, change, modification, settlement, dispute claim payment, or dispute action will be considered binding until the required Federal approval is obtained. The Chief, National Guard Bureau, or his designated representative, is the approval authority. This paragraph does not abrogate any rights conferred on the Federal Government by law or other clause required due to the use of Federal funding."

2. "Specifications and Drawings - (MAR 1992) - The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of differences between drawings and specifications, the specifications shall govern. In any case of difference in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer who shall promptly make a determination in writing. Any adjustment by the Contractor without this determination shall be at his own risk and expense. The Contracting Officer shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided."

3. Changes And Extras (MAR 1992) - The Contracting Officer may at any time, in writing, and without notice to the sureties, order extras or make changes in the drawings and/or specifications of this contract, providing such extras or changes are within the general scope thereof. If any such extra or change causes an increase or decrease in the amount due under this contract, or in the time required for its performance, an equitable adjustment shall be made, and the contract shall be modified in writing. Federal funding support for any change or extra is subject to prior approval by the Chief, National Guard Bureau, or his duly authorized representative. Any claim of the Contractor for adjustment under this Clause must be asserted in writing within 30 days after the date of receipt by the Contractor of the notification of extra or change: Provided, however, that the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause entitled DISPUTES. Nothing provided in this Clause, however, shall excuse the Contractor from proceeding with the prosecution of the work as changed. Except as otherwise herein provided, no charge for any extra work or material will be allowed.

4. Changes and Changed Conditions - (MAR 1992) - The Contractor shall promptly, and before such conditions are disturbed, notify the Contracting Officer in writing of:

a. subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or

b. unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this contract. The Contracting Officer shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase in the cost of (or the time required for), performance of this contract, an equitable adjustment shall be made, and the contract modified in writing. Federal funding support to any change or extra is subject to prior approval by the Chief, National Guard Bureau, or his duly authorized representative. Any claim of the Contractor for adjustment hereunder shall not be allowed unless he has given notice as above required: Provided, that the Contracting Officer may, if he determines the facts so justify, consider and adjust any such claim asserted before the date of final settlement of the contract. If the parties fail to agree upon the adjustment to be made, the dispute shall be determined as provided in Clause entitled DISPUTES.

GENERAL PROVISIONS

5. Termination For Convenience Of The Government (Fixed-Price) - (APR 1984)-

a. The Government may terminate performance of work under this contract in whole or, from time to time, in part if the Contracting Officer determines that a termination is in the Government's interest. The Contracting Officer shall terminate by delivering to the Contractor a Notice of Termination specifying the extent of termination and the effective date.

b. After receipt of a Notice of Termination, and except as directed by the Contracting Officer, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due under this clause:

- (1) Stop work as specified in the notice.
- (2) Place no further subcontracts or orders (referred to as subcontracts in this clause) for materials, services, or facilities, except as necessary to complete the continued portion of the contract.
- (3) Terminate all subcontracts to the extent they relate to the work terminated.
- (4) Assign to the Government, as directed by the Contracting Officer, all right, title, and interest of the Contractor under the subcontracts terminated, in which case the Government shall have the right to settle or to pay any termination settlement proposal arising out of those terminations.
- (5) With approval or ratification to the extent required by the Contracting Officer, settle all outstanding liabilities and termination settlement proposals arising from the termination of subcontracts; the approval or ratification will be final for purposes of this clause.
- (6) As directed by the Contracting Officer, transfer title and deliver to the Government (i) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced or acquired for the work terminated, and (ii) the completed or partially completed plans, drawings, information, and other property that, if the contract had been completed, would be required to be furnished to the Government.
- (7) Complete performance of the work not terminated.
- (8) Take any action that may be necessary, or that the Contracting Officer may direct, for the protection and preservation of the property related to this contract that is in the possession of the Contractor and in which the Government has or may acquire an interest.
- (9) Use its best efforts to sell, as directed or authorized by the Contracting Officer, any property of the types referred to in subparagraph (6) above; provided, however, that
 - (i) the Contractor is not required to extend credit to any purchaser, and
 - (ii) may acquire the property under the conditions prescribed by, and at prices approved by, the Contracting Officer. The proceeds of any transfer or disposition will be applied to reduce any payments to be made by the Government under this contract, credited to the price or cost of the work, or paid in any other manner directed the Contracting Officer.

c. After expiration of the plant clearance period as defined in Subpart 45.6 of the Federal Acquisition Regulation, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of termination inventory not previously disposed of, excluding items authorized for disposition by the Contracting Officer. The Contractor may request the Government to remove those items or enter into an agreement for their storage. Within 15 days, the Government will accept title to those items and remove

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them or enter into a storage agreement. The Contracting Officer may verify the list upon removal of the items, or if stored, within 45 days from submission of the list, and shall correct the list, as necessary, before final settlement.

d. After termination, the Contractor shall submit a final termination settlement proposal to the Contracting Officer in the form and with the certification prescribed by the Contracting Officer. The Contractor shall submit the proposal promptly, but no later than 1 year from the effective date of termination, unless extended in writing by the Contracting Officer upon written request of the Contractor within this 1-year period. However, if the Contracting Officer determines that the facts justify it, a termination settlement proposal may be received and acted on after 1 year or any extension. If the Contractor fails to submit the proposal within the time allowed, the Contracting Officer may determine, on the basis of information available, the amount, if any, due the Contractor because of the termination and shall pay the amount determined.

e. Subject to paragraph (d) above, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount to be paid because of the termination. The amount may include a reasonable allowance for profit on work done. However, the agreed amount whether under this paragraph (e) or paragraph (f) below, exclusive of costs shown in subparagraph (f)(3) below, may not exceed the total contract price as reduced by:

- (1) the amount of payments previously made, and,
- (2) the contract price of work not terminated.

The contract shall be amended, and the Contractor paid the agreed amount. Paragraph (f) below shall not limit, restrict, or affect the amount that may be agreed upon to be paid under this paragraph.

f. If the Contractor and Contracting Officer fail to agree on the whole amount to be paid the Contractor because of the termination of work, the Contracting Officer shall pay the Contractor the amounts determined as follows, but without duplication of any amounts agreed upon under paragraph (e) above:

(1) For contract work performed before the effective date of termination, the total (without duplication of any items) of -

- (i) The cost of this work;
- (ii) The cost of settling and paying termination settlement proposals under terminated subcontracts that are properly chargeable to the terminated portion of the contract if not included in subdivision (i) above; and
- (iii) A sum, as profit on (i) above, determined by the Contracting Officer under 49.202 of the Federal Acquisition Regulation, in effect on the date of this contract, to be fair and reasonable; however, if it appears that the Contractor would have sustained a loss on the entire contract had it been completed, the Contracting Officer shall allow no profit under this subdivision (iii) and shall reduce the settlement to reflect the indicated rate of loss.

(2) The reasonable costs of settlement of the work terminated, including -

- (i) Accounting, legal, clerical, and other expenses reasonably necessary for the preparation of termination settlement proposals and supporting data;
- (ii) The termination and settlement of subcontracts (excluding the amounts of such settlements); and

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(iii) Storage, transportation, and other costs incurred reasonably necessary for the preservation, protection, or disposition of the termination inventory.

g. Except for normal spoilage, and except to the extent that the Government expressly assumed the risk of loss, the Contracting Officer shall exclude from the amounts payable to the Contractor under paragraph (f) above, the fair value, as determined by the Contracting Officer, of property that is destroyed, lost, stolen, or damaged so as to become undeliverable to the Government or to a buyer.

h. The cost principles and procedures of Part 31 of the Federal Acquisition Regulation, in effect on the date of this contract, shall govern all costs claimed, agreed to, or determined under this clause.

i. The Contractor shall have the right of appeal, under the Disputes clause, from any determination made by the Contracting Officer under paragraph (d), (f), or (k), except that if the Contractor failed to submit the termination settlement proposal within the time provided in paragraph (d) or (k), and failed to request a time extension, there is no right of appeal. If the Contracting Officer has made a determination of the amount due under paragraph (d), (f), or (k), the Government shall pay the Contractor:

(1) the amount determined by the Contracting Officer if there is no right of appeal or if no timely appeal has been taken, or

(2) the amount finally determined on an appeal.

j. In arriving at the amount due the Contractor under this clause, there shall be deducted -

(1) All unliquidated advance or other payments to the Contractor under the terminated portion of this contract;

(2) Any claim which the Government has against the Contractor under this contract; and

(3) The agreed price for, or the proceeds of sale of, materials, supplies, or other things acquired by the Contractor or sold under the provisions of this clause and not recovered by or credited to the Government.

k. If the termination is partial, the Contractor may file a proposal with the Contracting Officer for an equitable adjustment of the price(s) of the continued portion of the contract. The Contracting Officer shall make any equitable adjustment agreed upon. Any proposal by the Contractor for an equitable adjustment under this clause shall be requested within 90 days from the effective date of termination unless extended in writing by the Contracting Officer.

(1) The Government may, under the terms and conditions it prescribes, make partial payments and payments against costs incurred by the Contractor for the terminated portion of the contract, if the Contracting Officer believes the total of these payments will not exceed the amount to which the Contractor will be entitled.

(2) If the total payments exceed the amount finally determined to be due, the Contractor shall repay the excess to the government upon demand, together with interest computed at the rate established by the Secretary of the Treasury under 50 USC. App. 1215(b)(2). Interest shall be computed for the period from the date the excess payment is received by the Contractor to the date the excess is repaid. Interest shall not be charged on any excess payment due to a reduction in the Contractor's termination settlement proposal because of retention or other disposition of termination inventory until 10 days after the date of the retention or disposition, or a later date determined by the Contracting Officer because of the circumstances.

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m. Unless otherwise provided in this contract or by statute, the Contractor shall maintain all records and documents relating to the terminated portion of this contract for 3 years after final settlement. This includes all books and other evidence bearing on the Contractor's costs and expenses under this contract. The Contractor shall make these records and documents available to the Government, at the Contractor's office, at all reasonable times, without any direct charge. If approved by the Contracting Officer, photographs, microphotographs, or other authentic reproductions may be maintained instead of original records and documents.

6. Suspension of Work.

a. The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as he may determine to be appropriate for the convenience of the Government.

b. If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted by an act of the Contracting Officer in the administration of this contract, or by his failure to act within the time specified in this contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that:

(1) performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor, or

(2) for which an equitable adjustment is provided for or excluded under any other provision of this contract.

c. No claim under this clause shall be allowed:

(1) for any costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and

(2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay, or interruption, but not later than the date of final payment under the contract.

7. Termination for Default - Damages or Delay-Time Extensions.

a. If the Contractor refuses or fails to prosecute the work, or any separate part thereof, with such diligence as will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within such time, the State may, by written notice to the Contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the State may take over the work and prosecute the same to completion, by contract or otherwise, and the Contractor and his sureties shall be liable to the State for any excess cost occasioned the State thereby, and for liquidated damages for delay, as fixed in the specifications or accompanying papers, until such reasonable time as may be required for the final completion of the work; or, if liquidated damages are not so fixed, any actual damages occasioned by such delay. If the Contractor's right to proceed is so terminated, the State may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefor.

b. If the State does not terminate the right of the Contractor to proceed, as provided in subparagraph "a" hereof, the Contractor shall continue the work, in which event he and his sureties shall be liable to the

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State, in the amount set forth in the specifications or accompanying papers, for the fixed agreed liquidated damages for each calendar day of delay until the work is completed or accepted; or if liquidated damages are not so fixed, any actual damages occasioned by such delay.

c. The right of the Contractor to proceed shall not be terminated, as provided in subparagraph "a", hereof, nor the Contractor charged with liquidated or actual damages, as provided in subparagraph "b", because of any delays in the completion of the work due to causes beyond his control which could not reasonably have been anticipated and were without his fault or negligence, including, not restricted to, acts of God, acts of the public enemy, acts of the Federal Government or of the State (either in its sovereign or contractual capacity), acts of another Contractor in the performance of a contract with the State, guarantee restrictions, strikes, freight embargoes, or unusually severe weather; or, delays of Subcontractors or suppliers due to such unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such Subcontractors or suppliers at any tier: provided, that the Contractor shall, within 10 days after the beginning of any delay, unless the Contracting Officer shall grant a further period of time prior to the date of final settlement of the contract, notify the Contracting Officer in writing of the cause of delay. The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing and work when in his judgment the findings of fact justify such an extension, and his findings of fact thereon shall be final and conclusive on the parties hereto, subject only to appeal as provided in the DISPUTES clause hereof.

8. Disputes. - Except as otherwise specifically provided in this contract, and except as otherwise specifically provided by the State procedure for arbitration or other State procedure established by State law, any disputes concerning a question of facts arising under this contract which is not disposed of by mutual agreement shall be decided by the Court of Claims of West Virginia. Any sum or sums allowed to the Contractor under the provisions of this Article or under the State Arbitration proceedings or under State procedure shall be paid subject to approval by the Chief, National Guard Bureau, for the Government's share of the cost of the Articles or work herein disputes as deemed to be within the contemplation of this contract.

9. Payments to Contractors - (MAR 1992) -

a. Unless otherwise provided in the specifications, partial payments will be made as the work progresses at the end of each calendar month, or as soon thereafter as practicable, or at more frequent intervals as determined by the Contracting Officer, on estimates made and approved by the Contracting Officer. In preparing estimates the material delivered on the site and preparatory work done may be taken into consideration.

b. In making such partial payments, if satisfactory progress has not been made, there may be retained a maximum of 10 percent on the estimated amount until satisfactory progress is achieved. And provided further, that on completion and acceptance of each separate building, public work, or other division of the contract, on which the price is stated separately in the contract, payment may be made in full, including the retained percentage thereon, less authorized deductions. The retainage on partial payments of Federal funds shall be determined by the USPFO of the State in conformance with the Federal Acquisition Regulations (FAR).

c. All material and work covered by partial payment made shall thereupon become the sole property of the State, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work, nor as a waiver of the right of the State to require the fulfillment of all of the terms of the contract.

d. Upon completion and acceptance of all work required hereunder, and after the Contractor shall have furnished the State with a release of all claims against the State arising under and by virtue of this contract, other than such claims, if any, as may be specifically excepted by the Contractor from the

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operation of the release, in stated amounts to be set forth therein, the amount due the Contractor under this contract will be paid upon the presentation of a properly executed and duly certified voucher therefor. If the Contractor's claim to amounts payable under the contract has been assigned under the Assignment of Claims Act of 1940, as amended (41 USC 15), a release may also be required of the assignee at the option of the Contracting Officer or USPFO of the State.

10. Materials and Workmanship (MAR 1992) - Unless otherwise specifically provided for in the specifications, all equipment, materials, and articles incorporated in the work covered by this contract are to be new and of the most suitable grade of their respective kinds for the purpose intended, and all workmanship shall be first class. Where equipment, materials, or articles are referred to in the specifications as "equal to" any particular standard, the Contracting Officer shall decide the question of equality. The Contractor shall furnish to the Contracting Officer for his approval the name of the manufacturer of machinery, mechanical, and other equipment which he contemplates incorporating in the work, together with their performance capacities and other pertinent information. When required by the specifications, or when called for by the Contracting Officer, the Contractor shall furnish to the Contracting Officer for approval full information concerning the materials or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when so directed. Machinery, equipment, materials, and articles installed or used without such approval shall be at the risk of subsequent rejection. The Contracting Officer may in writing require the Contractor to remove from the work site such employee as the Contracting Officer deems incompetent, careless, insubordinate, or otherwise objectionable, or whose continued employment on the work site is deemed by the Contracting Officer to be contrary to the public interest.

11. Inspection (MAR 1992)

a. Except as otherwise provided in subparagraph (d) hereof, all materials and workmanship (if not otherwise designated by the specifications) shall be subject to inspection, examination, and testing by representatives of the Contracting Officer at any and all times during manufacture and/or construction (and at any and all places where such manufacture and/or construction are carried on). The State shall have the right to reject defective materials and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be satisfactorily replaced with proper materials without charge therefor, and the Contractor shall promptly segregate and remove the rejected materials from the premises. If the Contractor fails to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, the State may, by contract or otherwise, replace such materials and/or correct such workmanship and charge the cost thereof to the Contractor; or the State may terminate the right of the Contractor to proceed as provided in this contract, the Contractor and surety being liable for any damage to the same extent as provided in said clause for terminations thereunder.

b. The Contractor shall furnish promptly, without additional charge, all reasonable facilities, labor, or materials necessary for the safe and convenient inspections and tests that may be required by the Contracting Officer or by the USPFO of the State. All inspections and tests by the State shall be performed in such manner as not unnecessarily to delay the work. Special, full size, and performance tests shall be as described in the specifications. The Contractor shall be charged with any additional cost of inspection when materials and workmanship is not ready at the time inspection is requested by the Contractor.

c. Should it be considered necessary or advisable by the State, or by the representatives of the Chief, National Guard Bureau, at any time before final acceptance of the entire work to make an examination of work already completed, by removing or tearing out same, the Contractor shall on request promptly furnish all necessary facilities, labor and material. If such work is found to be defective or non-conforming in any material respect due to the fault of the Contractor or his Subcontractors, he shall defray all the expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, an equitable adjustment shall be made in the contract price to compensate the Contractor for the additional services involved in such examination and reconstruction; and, if completion of the work has been delayed thereby, he shall, in addition, be granted a suitable extension of time. Federal

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funding support of the cost for examination and replacement of satisfactorily completed work that requires removal or that is damaged due to inspection requirements is subject to prior approval by the Chief, National Guard Bureau, or his duly authorized representative.

d. Inspection of material and finished articles to be incorporated in the work at the site shall be made at the place of production, manufacture, or shipment, whenever the quantity justifies it, unless otherwise stated in the specifications; and such inspection and acceptance shall be in writing, and unless otherwise stated in the specifications, shall be final, except as regards latent defects, departures from specific requirements of the contract and the specifications and drawings made a part thereof, damage or loss in transit, fraud, or such gross mistakes as amount to fraud. Subject to the requirement contained in the preceding sentence, the inspection of material and workmanship for final acceptance as a whole or in part, shall be made at the site. Nothing contained in this paragraph (d) shall in any way restrict the State's rights under any warranty or guarantee.

12. Superintendence by Contractor (MAR 1992) - The Contractor shall give his personal superintendency to the work or have a competent foreman or superintendent, satisfactory to the Contracting Officer, on the work site at all times during progress, with authority to act for him.

13. Permits and Responsibility for Work (MAR 1992) - The Contractor shall, without additional expense to the State, obtain all licenses and permits required for the prosecution of the work and pay all charges related to the connection of utility services to existing systems. He shall be responsible for all damages to persons or property that occur as a result of his fault or negligence in connection with the prosecution of the work. He shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. He shall also be responsible for all materials delivered and work performed until completion and final acceptance, except for any completed unit thereof which therefore may have been finally accepted.

14. Other Contracts (MAR 1992) - The State may undertake or award other contracts for additional work, and the Contractor shall fully cooperate with such other Contractors and State employees and carefully fit his own work to such additional work as may be directed by the Contracting Officer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor or by state employees.

15. Additional Bond Security (MAR 1992) - If any surety upon any bond furnished in connection with this contract becomes unacceptable to the State, or if any such surety shall fail to furnish reports as to his financial condition from time to time as requested by the State, the Contractor shall promptly furnish such additional security as may be required from time to time to protect the interests of the State or of persons supplying labor or materials in the prosecution of the work contemplated by the contract.

16. Covenant Against Contingent Fees (MAR 1992) - The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the State shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

17. Officials Not To Benefit (MAR 1992) - No member of or delegate to Congress, or resident commissioner or State official or employee shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

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18. Convict Labor (MAR 1992) - In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment, as provided by Public Law 89-176, September 10, 1965 (18 USC 4082 (c) (2)) and Executive Order 11755, December 29, 1973.

19. Nondiscrimination In Employment (MAR 1992) - In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of sex, race, creed, color, or national origin; and further agrees to insert the foregoing provision in all subcontracts hereunder except subcontracts for standard commercial supplies or for raw materials.

20. Gratuities (MAR 1992) -

a. The State may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found, after notice and hearing, by the Secretary or Governor or the duly authorized representative of either, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the State with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performance, of such contract. Provided, that the existence of the facts upon which the Secretary or Governor or the duly authorized representative of either makes such findings shall be in issue and may be reviewed in any competent court.

b. In the event this contract is terminated as provided in paragraph (a) hereof, the State shall be entitled:

(1) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the contract by the Contractor, and

(2) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or Governor or the duly authorized representative of either) which shall be not less than 3 nor more than 10 times the cost incurred by the Contractor in providing any such gratuities to any such officer or employee.

c. The rights and remedies of the State provided in this Clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

21. Contract Work Hours and Safety Standards Act - Overtime Compensation (MAR 1986) -

a. Overtime requirements. No Contractor or Subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics (see Federal Acquisition Regulation (FAR) 22.300) shall require or permit any such laborers or mechanics in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

b. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in paragraph (a) of this clause, the Contractor and any Subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and Subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of the provisions set forth in paragraph (a) of this clause in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in paragraph (a) of this clause.

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c. Withholding for unpaid wages and liquidated damages. The Contracting Officer shall upon his or her own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or Subcontractor under any such contract or any other Federal contract with the same Prime Contractor or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act which is held by the same Prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in paragraph (b) of this clause.

d. Payrolls and basic records.

(1) The Contractor or Subcontractor shall maintain payrolls and basic payroll records during the course of contract work and shall preserve them for a period of 3 years from the completion of the contract for all laborers and mechanics working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

(2) The records to be maintained under paragraph (d)(1) of this clause shall be made available by the Contractor or Subcontractor for inspection, copying, or transcription by authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or Subcontractor shall permit such representatives to interview employees during working hours on the job.

e. Subcontracts. The Contractor or Subcontractor shall insert in any subcontracts the provisions set forth in paragraphs (a) through (e) of this clause and also a clause requiring the Subcontractors to include these provisions in any lower tier subcontracts. The Prime Contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with the provisions set forth in paragraphs (a) through (e) of this clause.

22. Apprentices and Trainees (FEB 1988) -

a. Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the US. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or Subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice

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prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to any individually registered in a program which has received prior approval, evidenced by formal certification by the US Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

23. Payrolls and Basic Records (FEB 1988) -

a. Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of 3 years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contribution, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof), daily and weekly number of hours worked, deductions made, and actual wages paid. The Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(1) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (a) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, US. Government Printing Office, Washington, DC 20402. The Prime Contractor is responsible for the submission of copies of payrolls by all Subcontractors.

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(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or Subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify -

(i) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of this clause and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR Part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (b)(2) of this clause.

(4) The falsification of any of the certifications in this clause may subject the Contractor or Subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

b. The Contractor or Subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by the Contracting Officer or authorized representatives of the Contracting Officer or the Department of Labor. The Contractor or Subcontractor shall permit the Contracting Officer or representatives of the Contracting Officer or the Department of Labor to interview employees during working hours on the job. If the Contractor or Subcontractor fails to submit required records or to make them available, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

24. Withholding of Funds (FEB 1988) - The Contracting Officer shall, upon his or her own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same Prime Contractor, or any other Federally assisted contract subject to prevailing wage requirements, which is held by the same Prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any Subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Contracting Officer may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

25. Subcontracts (Labor Standards) (FEB 1988) -

a. The Contractor or Subcontractor shall insert in any subcontracts the clauses entitled Contract Work Hours and Safety Standards Act - Overtime Compensation, Apprentices and Trainees. Payrolls and Basic Records, Compliance with Copeland Act Requirements, Withholding of Funds, Subcontracts (Labor Standards), Contract Termination - Debarment, Disputes Concerning Labor Standards, and Certification of Eligibility, and such other clauses as the Contracting Officer may, by appropriate instructions, require, and

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also a clause requiring Subcontractors to include these clauses in any lower tier subcontracts. The Prime Contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with all the contract clauses cited in this paragraph.

(1) Within 14 days after award of the contract, the Contractor shall deliver to the Contracting Officer a completed Statement and Acknowledgment Form (SF 1413) for each Subcontractor, including the Subcontractor's signed and dated acknowledgment that the clauses set forth in paragraph (a) of this clause have been included in the subcontract.

(2) Within 14 days after the award of any subsequently awarded subcontract the Contractor shall deliver to the Contracting Officer an updated completed SF 1413 for such additional subcontract.

26. Disputes Concerning Labor Standards (FEB 1988) - The United States Department of Labor has set forth in 29 CFR Parts 5, 6, and 7 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its Subcontractors) and the contracting agency, the US. Department of Labor, or the employees or their representatives.

27. Copeland ("Anti-Kickback") Act - Nonrebate Of Wages. - The Regulations of the Secretary of Labor applicable to Contractors and Subcontractors (29 CFR Part 3), made pursuant to the Copeland Act, as amended (40 USC. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 USC 874) are made a part of this contract by reference. The Contractor will comply with these regulations and any amendments or modifications thereof and the prime Contractor will be responsible for the submission of affidavits required of Subcontractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances and exemptions.

28. Contract Termination - Debarment (FEB 1988) - A breach of the contract clauses entitled Contract Work Hours and Safety Standards Act - Overtime Compensation, Apprentices and Trainees, Payrolls and Basic Records, Compliance with Copeland Act Requirements, Subcontractors (Labor Standards), or Certification of Eligibility may be grounds for termination of the contract, and for debarment as a Contractor and Subcontractor as provided in 29 CFR 5.12.

29. Certification of Eligibility (FEB 1988) -

a. By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the US Criminal Code, 18 USC 1001.

30. Equal Opportunity (APR 1984) -

a. If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt Federal contracts and/or subcontracts that have an aggregate value in excess of \$10,000, the Contractor shall comply with subparagraphs (b)(1) through (11) below. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.

b. During performing this contract, the Contractor agrees as follows:

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- (1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin.
- (2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to:
 - (i) employment,
 - (ii) upgrading,
 - (iii) demotion,
 - (iv) transfer,
 - (v) recruitment or recruitment advertising,
 - (vi) layoff or termination,
 - (vii) rates of pay or other forms of compensation, and
 - (viii) selection for training, including apprenticeship.
- (3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.
- (4) The Contractor shall, in all solicitations or advertisement for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
- (5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
- (6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.
- (7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. Standard Form 100 (EE)-1, or any successor form, is the prescribed form to be filed within 30 days following the award, unless filed within 12 months preceding the date of award.
- (8) The Contractor shall permit access to its books, records, and accounts by the contracting agency or the Office of Federal Contract Compliance Programs (OFCCP) for the purposes of investigation to ascertain the Contractor's compliance with the applicable rules, regulations, and orders.
- (9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

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(10) The Contractor shall include the terms and conditions of subparagraph (b)(1) through (11) of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each Subcontractor or vendor.

(11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

c. Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

31. Certification of Non segregated Facilities (APR 1984) -

a. "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

b. By the submission of this offer, the offeror certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The offeror agrees that a breach of this certification is a violation of the Equal Opportunity clause in the contract.

c. The offeror further agrees that (except where it has obtained identical certifications from proposed Subcontractors for specific time periods) it will -

(1) Obtain identical certifications from proposed Subcontractors before the award of subcontracts under which the Subcontractor will be subject to the Equal Opportunity clause;

(2) Retain the certifications in the files; and

(3) Forward the following notice to the proposed Subcontractors (except if the proposed Subcontractors have submitted identical Certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NON SEGREGATED FACILITIES.

A Certification of Non segregated Facilities must be submitted before the award of a subcontract under which the Subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 USC 1001.

32. Affirmative Action Compliance Requirements for Construction (APR 1984) -

a. Definitions.

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"Covered area," as used in this clause, means the geographical area described in the solicitation for this contract.

"Director," as used in this clause, means Director, Office of Federal Contract Compliance Programs (OFCCP), United States Department of Labor, or any person to whom the Director delegates authority.

"Employer's identification number," as used in this clause, means the Federal Social Security number used on the employer's quarterly Federal tax return, US. Treasury Department Form 941.

"Minority," as used in this clause, means -

(1) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

(2) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);

(3) Black (all persons having origins in any of the black African racial groups not of Hispanic origin); and

(4) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).

b. If the Contractor, or a Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, each such subcontract in excess of \$10,000 shall include this clause and the Notice containing the goals for minority and female participation stated in the solicitation for this contract.

c. If the Contractor is participating in a Hometown Plan (41 CFR 60-4) approved by the US Department of Labor in a covered area, either individually or through an association, its affirmative action obligations on all work in the plan area (including goals) shall comply with the plan for those trades that have unions participating in the plan. Contractors must be able to demonstrate participation in, and compliance with, the provisions of the plan. Each Contractor or Subcontractor participating in an approved plan is also required to comply with its obligations under the Equal Opportunity clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good-faith performance by other Contractors or Subcontractors toward a goal in an approved plan does not excuse any Contractor's or Subcontractor's failure to make good-faith efforts to achieve the plan's goals.

d. The Contractor shall implement the affirmative action procedures in subparagraphs (g)(1) through (16) of this clause. The goals stated in the solicitation for this contract are expressed as percentages of the total hours of employment and training of minority and female utilization that the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where that work is actually performed. The Contractor is expected to make substantially uniform progress toward its goals in each craft.

e. Neither the terms and conditions of any collective bargaining agreement, nor the failure by a union with which the Contractor has a collective bargaining agreement, to refer minorities or women shall excuse the Contractor's obligations under this clause, Executive Order 11246, as amended, or the regulations thereunder.

f. In order for the non working training hours of apprentices and trainees to be counted in meeting the goals, apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their

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training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the US Department of Labor.

g. The Contractor shall take affirmative action to ensure equal employment opportunity. The evaluation of the Contractor's compliance with this clause shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully and implement affirmative action steps at least as extensive as the following:

(1) Ensure a working environment free of harassment, intimidation, and coercion at all sites and in all facilities where the Contractor's employees are assigned to work. The Contractor, if possible, will assign two or more women to each construction project. The Contractor shall ensure that foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at these sites of facilities.

(2) Establish and maintain a current list of sources for minority and female recruitment. Provide written notification to minority and female recruitment sources and community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

(3) Establish and maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant, referrals of minorities or females from unions, recruitment sources, or community organizations, and the action taken with respect to each individual. If an individual was sent to the union hiring hall for referral and not referred back to the Contractor by the union or, if referred back, not employed by the Contractor, this shall be documented in the file, along with whatever additional actions the Contractor may have taken.

(4) Immediately notify the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred back to the Contractor a minority or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

(5) Develop on-the-job training opportunities and/or participate in training programs for the area that expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under subparagraph (g)(2) above.

(6) Disseminate the Contractor's equal employment policy by:

(i) Providing notice of the policy to unions and to training, recruitment, and outreach programs, and requesting their cooperation in assisting the Contractor in meeting its contract obligations;

(ii) Including the policy in any policy manual and in collective bargaining agreements;

(iii) Publicizing the policy in the company newspaper, annual report, etc.;

(iv) Reviewing the policy with all management personnel and with all minority and female employees at least once a year; and

(v) Posting the policy on bulletin boards accessible to employees at each location where construction work is performed.

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- (7) Review, at least annually, the Contractor's equal employment policy and affirmative action obligations with all employees having responsibility for hiring, assignment, layoff, termination, or other employment decisions. Conduct review of this policy with all onsite supervisory personnel before initiating construction work at the job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- (8) Disseminate the Contractor's equal employment policy externally by including it in any advertising in the news media, specifically including minority and female news media. Provide written notification to, and discuss this policy with, other Contractors and Subcontractors with which the Contractor does or anticipates doing business.
- (9) Direct recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than 1 month before the date for acceptance of applications for apprenticeship or training by any recruitment sources, send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.
- (10) Encourage present minority and female employees to recruit minority persons and women. Where reasonable, provide after-school, summer, and vacation employment to minority and female youth both on the site and in other areas of the Contractor's workforce.
- (11) Validate all tests and other selection requirements where required under 41 CFR 60-3.
- (12) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities. Encourage these employees to seek or to prepare for, through appropriate training, etc., opportunities for promotion.
- (13) Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment-related activities to ensure that the Contractor's obligations under this contract are being carried out.
- (14) Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- (15) Maintain a record of solicitations for subcontracts for minority and female construction Contractors and suppliers, including circulation of solicitations to minority and female Contractor associations and other business associations.
- (16) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's equal employment policy and affirmative action obligations.
- h. The Contractor is encouraged to participate in voluntary associations that may assist in fulfilling one or more of the affirmative action obligations contained in subparagraphs (g)(1) through (16). The efforts of a Contractor association, joint Contractor-union, Contractor-community, or similar group of which the Contractor is a member and participant may be asserted as fulfilling one or more of its obligations under subparagraphs (g)(1) through (16), provided the Contractor -
- (1) Activity participates in the group;
 - (2) Makes every effort to ensure that the group has a positive impact on the employment of minorities and women in the industry;

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(3) Ensures that concrete benefits of the program are reflected in the Contractor's minority and female workforce participation;

(4) Makes a good-faith effort to meet its individual goals and timetables, and;

(5) Can provide access to documentation that demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

i. A single goal for minorities and a separate single goal for women shall be established. The Contractor is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non minority. Consequently, the Contractor may be in violation of Executive Order 11246, as amended, if a particular group is employed in a substantially disparate manner.

j. The Contractor shall not use goals or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

k. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts under Executive Order 11246, as amended.

l. The Contractor shall carry out such sanctions and penalties for violation of this clause and of the Equal Opportunity clause, including suspension, termination, and cancellation of existing subcontracts, as may be imposed or ordered under Executive Order 11246, as amended, and its implementing regulations, by the OFCCP. Any failure to carry out these sanctions and penalties as ordered shall be a violation of this clause and Executive Order 11246, as amended.

m. The Contractor is fulfilling its obligations under this clause shall implement affirmative action procedures at least as extensive as those prescribed in paragraph (g) above, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of Executive Order 11246, as amended, the implementing regulations, or this clause, the Director shall take action as prescribed in 41 CFR 60-4.8.

n. The Contractor shall designate a responsible official to -

(1) Monitor all employment-related activity to ensure that the Contractor's equal employment policy is being carried out;

(2) Submit reports as may be required by the Government; and

(3) Keep records that shall at least include for each employee the name, address, telephone number, construction trade, union affiliation (if any), employee identification number, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, separate records are not required to be maintained.

o. Nothing contained herein shall be construed as a limitation upon the application of other laws that establish different standards of compliance or upon the requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

33. Clean Air and Water (APR 1984) -

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a. "Air Act," as used in this clause, means the Clean Air Act (42 USC 7401, et seq.). "Clean air standards," as used in this clause, means -

(1) Any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, work practices, or other requirements contained in, issued under, or otherwise adopted under the Air Act or Executive Order 11738;

(2) An applicable implementation plan as described in section 110(d) of the Air Act (42 USC 7410(d));

(3) An approved implementation procedure or plan under section 111(c) or section 111(d) of the Air Act (42 USC 7411(c) or (d)); or

(4) An approved implementation procedure under section 112(d) of the Air Act (42 USC 7412(d)).

b. "Clean water standards," as used in this clause, means any enforceable limitation, control, condition, prohibition, standard, or other requirement promulgated under the Water Act or contained in a permit issued to a discharger by the EPA or by a State under an approved program, as authorized by section 402 of the Water Act (33 USC 1342), or by local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 USC 1317).

c. "Compliance," as used in this clause, means compliance with -

(1) Clean air or water standards; or

(2) A schedule or plan ordered or approved by a court of competent jurisdiction, the EPA, or an air or water pollution control agency under the requirements of the Air Act or Water Act and related regulations.

d. "Facility," as used in this clause, means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a Contractor or Subcontractor, used in the performance of a contract or subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the EPA determines that independent facilities are collocated in one geographical area.

e. "Water Act," as used in this clause, means Clean Water Act (33 USC 1251, et seq.).

f. The Contractor agrees -

(1) To comply with the requirements of section 114 of the Clean Air Act (42 USC 7414) and section 308 of the Clean Water Act (33 USC 1318) relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, and all regulations and guidelines issued to implement those acts before the award of this contract;

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the EPA List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of the facility from the listing;

(3) To use best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed; and

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(4) To insert the substance of this clause into any nonexempt subcontract, including this subparagraph (b)(4).

34. Subcontractor Cost or Pricing Data - Price Adjustments (DEC 1982) - (The following clause is applicable if this contract is in excess of \$500,000).

a. Paragraphs (b) and (c) of this clause shall become operative only with respect to any modification made pursuant to one or more provisions of this contract which involves aggregate increases and/or decreases in costs plus applicable profits expected to exceed \$500,000. The requirements of this Clause shall be limited to such modifications.

b. The Contract shall require Subcontractors hereunder to submit cost or pricing data under the following circumstances:

(i) prior to the award any subcontract the amount of which is expected to exceed \$500,000 when entered into:

(ii) prior to the pricing of any subcontract modification which involves aggregate increases and/or decreases in costs plus applicable profit expected to exceed \$500,000; except where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

c. The Contractor shall require Subcontractors to certify that to the best of their knowledge and belief the cost and pricing data submitted under (b) above is accurate, complete, and current as of the date of agreement or the negotiated price of the subcontract or subcontract change or modification.

d. The Contractor shall insert the substance of this clause including this paragraph (d) in each subcontract which exceeds \$500,000.

35. Buy American Act (MAR 1992) -

a. Agreement. In accordance with the Buy American Act (41 USC 10a-10d), the Contractor agrees that only domestic construction material will be used (by the Contractor, Subcontractors, material-men, and suppliers) in the performance material listed in the "Non domestic Construction Materials" Clause if any, of this contract.

b. Domestic construction material. "Construction material" means any article, material, or supply brought to the construction site for incorporation in the building or work. An unmanufactured construction material is a "domestic construction material" if it has been mined or produced in the United States. A manufactured construction material is a "domestic construction material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. "Component" means any article, material, or supply directly incorporated in a construction material.

c. Domestic component. A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the government to be not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.

36. Domestic Aluminum Glass or Steel Products - West Virginia Code 5-19-1 et seq. requires public agencies contracting for construction, reconstruction, alteration, repair, improvement or maintenance of public works costing an amount more than \$50,000 to accept only aluminum, glass or steel products produced in the United States. Foreign made aluminum, glass or steel products may be accepted only if

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domestic products are twenty per cent higher than the bid price for foreign made aluminum, glass or steel products. If the domestic aluminum, glass or steel products to be supplied are produced in a "substantial labor surplus area" as determined by the United States Department of Labor, foreign made products may be supplied only if the domestic products are thirty per cent higher than the foreign made aluminum, glass or steel.

37. Subject To Federal-State Agreement (MAR 1992) - The contract is subject to all terms and conditions in:

Agreement No. _____

dated _____ between the United States of America, and the State of West Virginia attached hereto and made a part thereof.

38. State Energy Conservation Plan - This contract shall recognize mandatory standards and policies relating to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Energy Policy and Conversation Act (PL 94-163).

39. Definitions (MAR 1992) - As used throughout this contract, the following terms shall have the meaning set forth below:

a. The term "Contracting Officer" means the person executing this contract on behalf of the State and any other officer or civilian employee who is properly designated Contracting Officer; and the term includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of his authority.

b. Unless otherwise indicated, the work "Government" in the clauses or provisions shall mean State Government.

c. The term "State" means the State, Commonwealth, or Territory, which is the party to this contract.

d. The term "Governor" means the Governor of the State or his duly appointed representative (other than the Contracting Officer).

e. The term "USPFO" means the United States Property and Fiscal Officer assigned to the State.

40. Site Investigation (MAR 1992) - The Contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting the work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledge that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the State, as well as from information presented by the Drawings and Specifications made a part of this contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The State assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the State.

41. Protection of Existing Vegetation, Structures, Utilities, and Improvements (MAR 1992) -

a. The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with

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the construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment, or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by the Contracting Officer.

b. The Contractor will protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to him, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this contract or the failure to exercise reasonable care in the performance of the work. If the Contractor fails or refuses to repair any such damage promptly, the Contracting Officer may have the necessary work performed and charge the cost thereof to the Contractor.

42. Operations and Storage Areas (MAR 1992) -

a. All operations of the Contractor (including storage of materials) upon State premises shall be confined to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the State, its officers and agents, free and harmless from liability of any nature occasioned by his operations.

b. Temporary building (storage sheds, shops, offices, etc.) may be erected by the Contractor only with the approval of the Contracting Officer, and shall be built with labor and materials furnished by the Contractor without expense to the State. Such temporary buildings and utilities shall remain the property of the Contractor and shall be removed by him at his expense upon the completion of the work. With the written consent of the Contracting Officer, such buildings and utilities may be abandoned and need not be removed.

c. The Contractor shall, under regulations prescribed by the contracting officer, use only established roadways as may be authorized by the Contracting Officer. Where materials are transported in the prosecution of the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by the Federal, State or local law or regulation. When it is necessary to cross curbing or sidewalks, protection against damage shall be provided by the Contractor and any damaged roads, curbing, or sidewalks shall be repaired by, or at the expense of, the Contractor.

43. Modification Proposals Price Breakdown (MAR 1992) - The Contractor, in connection with any proposal he makes for a contract modification, shall furnish a price breakdown, itemized as required by the Contracting Officer. Unless otherwise directed, the breakdown shall be in sufficient detail to permit an analysis of all material, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added or changed. Any amount claimed for subcontracts shall be supported by a similar price breakdown. In addition, if the proposal includes a time extension, a justification therefor shall also be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Contracting Officer.

44. Audit - Sealed Bidding (APR 1985) -

a. Cost of pricing data. If the Contractor has submitted cost or pricing data in connection with the pricing of any modification to this contract, unless the pricing was based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation, the Contracting Officer or a representative who is an employee of the Government shall have the right to examine and audit all books, records, documents, and other data of the Contractor (including computations and projections) related to negotiating, pricing or performing the modification, in order to evaluate the accurate, completeness, and currency of the cost or pricing data. In the case of pricing any modification, the Comptroller General of the United States or a representative who is an employee of the Government shall have the same rights.

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b. Availability. The Contractor shall make available at its office at all reasonable times the materials described in paragraph (a) above, for examination, audit, or reproduction, until 3 years after final payment under this contract, or for any other period specified in Subpart 4.7 of the Federal Acquisition Regulation (FAR), Subpart 4.7, Contractor Records Retention, in effect on the date of this contract, is incorporated by reference in its entirety and made a part of this contract.

(1) If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement.

(2) Records pertaining to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to the performance of this contract shall be made available until disposition of such appeals, litigation, or claims.

c. The Contractor shall insert a clause containing all the provisions of this clause, including this paragraph (c), in all subcontracts over \$10,000 under this contract, altering the clause only as necessary to identify properly the contracting parties and the contracting office under the Government prime contract.

45. Cleaning Up (MAR 1992) - The Contractor shall at all times keep the construction area, including storage areas used by him, free from accumulations of waste material or rubbish and prior to completion of the work remove any rubbish from the premises and all tools, scaffolding, equipment and materials not the property of the State. Upon completion of the construction the Contractor shall leave the work and premises in a clean, neat and workmanlike condition satisfactory to the Contracting Officer.

46. Inspectors (MAR 1992) - The work will be conducted under general direction of the Contracting Officer and is subject to inspection by his appointed inspectors to insure strict compliance with the terms of the contract. No inspector is authorized to change any provision of the specifications without written authorization of the Contracting Officer, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the contract.

47. Contract Drawings and Specifications (MAR 1992) -

a. Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work but they shall be performed as if fully and correctly set forth and described in the drawings and specifications.

b. The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Contracting Officer of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

48. Authorization and Consent (APR 1984) -

a. The Government authorizes and consents to all use and manufacture, in performing this contract or any subcontract at any tier, of any invention described in and covered by a United States patent:

(1) embodied in the structure or composition of any article the delivery of which is accepted by the Government under this contract or

(2) used in machinery, tools, or methods whose use necessarily results from compliance by the Contractor or a Subcontractor with

GENERAL PROVISIONS

(i) specifications or written provisions forming a part of this contract or

(ii) specific written instructions given by the Contracting Officer directing the manner of performance. The entire liability to the Government for infringement of a patent of the United States shall be determined solely by the provisions of the indemnity clause, if any, included in this contract or any subcontract hereunder (including any lower-tier subcontract), and the Government assumes liability for all other infringement to the extent of the authorization and consent herein above granted.

b. The Contractor agrees to include, and require inclusion of this clause, suitably modified to identify the parties, in all subcontracts at any tier for supplies or services (including construction, architect-engineer services, and materials, supplies, models, samples, and design or testing services expected to exceed \$25,000); however, omission of this clause from any subcontract, under or over \$25,000, does not affect this authorization and consent.

49. Notice and Assistance Regarding Patent and Copyright Infringement (APR 1984) -

a. The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

b. In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

c. The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the dollar amount set forth in 13,000 of the Federal Acquisition Regulation (FAR).

50. Patent Indemnity (APR 1984) -

a. The Contractor shall indemnify the government and its officers, agents, and employees against liability, including costs, for infringement of any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 USC 181) arising out of the manufacture or delivery of supplies, the performance of services, or the construction, alteration, modification, or repair of real property (hereinafter referred to as "construction work") under this contract, or out of the use or disposal by or for the account of the Government of such supplies or construction work.

b. This indemnity shall not apply unless the Contractor shall have been informed as soon as practicable by the Government of the suit or action alleging such infringement and shall have been given such opportunity as is afforded by applicable laws, rules, or regulations to participate in its defense. Further, this indemnity shall not apply to:

(1) an infringement resulting from compliance with specific written instructions of the Contracting Officer directing a change in the supplies to be delivered or in the materials or equipment to be used, or directing a manner of performance of the contract not normally used by the Contractor,

GENERAL PROVISIONS

(2) an infringement resulting from addition to or change in supplies or components furnished or construction work performed that was made subsequent to delivery or performance, or

(3) a claimed infringement that is unreasonably settled without the consent of the Contractor, unless required by final decree of a court of competent jurisdiction.

51. Patent Indemnity - Construction Contracts (APR 1984) - Except as otherwise provided, the Contractor agrees to indemnify the Government and its officers, agents, and employees against liability, including costs and expenses, for infringement upon any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 USC 181) arising out of performing this contract or out of the use or disposal by or for the account of the Government of supplies furnished or work performed under this contract

52. Maintenance of Records by the Contractor a Period of Three Years - The Contractor shall maintain all required records for three years after the State makes final payments and all other pending matters are closed.

53. Rights In Shop Drawings (MAR 1992) -

a. Shop drawings for construction mean drawings, submitted to the State by the construction Contractor, Subcontractor or any lower tier Subcontractor pursuant to a construction contract, showing in detail:

(i) the proposed fabrication and assembly of structural elements and,

(ii) the installation (i.e., from, fit, and attachment details) of materials or equipment. The State may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

b. This clause, including this paragraph (b), shall be included in all subcontracts hereunder at any tier.

54. Liquidated Damages - In case of failure on the part of the Contractor to complete the work within the time fixed on the contract or any extensions thereof, the Contractor shall pay to the State as liquidated damages, pursuant to the clause of this contract entitled "Termination for Default - Damages or Delay - Time Extensions," the sum of:

\$ 1,500.00 for each day of delay, plus a one time fixed cost of

\$ 1,250.00 for Staff Judge Advocate Review and contract modification.

55. Approval (MAR 1992) - This contract and any subsequent terminations, modifications, or change orders (including those resulting from disputes and settlements of disputes) shall be subject to the written approval of the Chief, National Guard Bureau, or his duly authorized representative, and shall not be binding until so approved.

56. Alterations - The following alterations have been made in the provisions of the contract: None

GENERAL PROVISIONS

Signatures

IN WITNESS WHEREOF, the parties hereto have executed this contract as of this _____ day
of _____ 19_____.

State of _____

By _____
(State Contracting Officer)

(Name Typed)

WITNESS:

(Contractor)

By _____

***NOTE: If the Contractor is a corporation, witnesses
are not required, but the annexed certificate must be
completed. Type or print names under all signatures.***

(Name Typed)

(Title)

(Address)

(Address)

GENERAL PROVISIONS

Certificate of Corporate Authority

I, _____ certify that I am the _____
of the corporation named as Contractor herein; that _____
who signed this contract on behalf of the Contractor, was then the _____
of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of
it's governing body, and is within the scope of it's corporate powers.

(Signature)

(Corporate Seal)

NOTE A: The Contractor, if a corporation, should cause the above certificate to be executed under it's corporate seal, provided that the same officer shall not execute both the contract and the certificate.

NOTE B: In the event that the Contractor is not a corporation, this certificate may be omitted from the contract.

INFORMATION AND INSTRUCTIONS TO BIDDERS

SECTION 001000

(Revised 13 April 2010)

SECTION 001000 – INFORMATION AND INSTRUCTIONS TO BIDDERS

1. Pre-Bid Conference

A pre-bid conference will be held at the time stipulated in the “Request for Quotations” at the location stipulated in the “Request for Quotations”. Attendance at pre-bid conference is mandatory for prime bidders only. One copy of any addendum will be provided to those in attendance at the pre-bid only.

2. Receipt and Opening of Bids

Bids shall be properly executed and submitted according to instructions in the Request for Quotations.

The OWNER may consider informal any bid not prepared and submitted in accordance with these provisions and may waive any informalities in or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. No bidder may withdraw a bid within one hundred and twenty (120) days after the actual opening of bids. Any bid received after the time and date specified will not be considered.

3. Bidder’s Representations

By submitting a Bid, The Bidder represents that:

- A. The Bidder and all subcontractors the Bidder intends to use have carefully and thoroughly reviewed the Bidding Documents and have found them complete and free from ambiguities and sufficient for the purpose intended.
- B. The Bidder has visited the site, become familiar with local conditions under which the Work is to be performed.
- C. The Bid is based upon the materials, equipment and systems required by the Bidding Documents without exception.
- D. The Bidder and all workers, employees and subcontractors the Bidder intends to use are skilled and experienced in the type of construction represented by the Bidding Documents.
- E. The Bid is based solely upon the Bidding Documents, including properly issued written addenda, and not upon any other written representation.
- F. Neither the Bidder nor any of the Bidder’s employees, agents, intended suppliers or subcontractors have relied upon any verbal representations from the Owner, or the Owner’s employees or agents including Engineers, engineers or consultants, in assembling the Bid figure.

If any Bidder is in doubt as to the true meaning of any part of the Bidding Documents, the Bidder may submit to the Purchasing Division a written request for an interpretation thereof. The Bidder will be responsible for its prompt and actual delivery. An interpretation of Bidder’s Request will be made only by addenda. Questions regarding the bid process may be submitted to the State Purchasing Division at any time.

4. Preparation of Bid

Each bid shall be submitted on the prescribed form and in accordance with the Director of West Virginia Purchasing Division’s requirements. All blank spaces for bid prices should be filled in in both words and figures.

INFORMATION AND INSTRUCTIONS TO BIDDERS

SECTION 001000

(Revised 13 April 2010)

Each bid shall be submitted to the Director of Purchasing, Department of Administration, in accordance with purchasing regulations.

5. Method of Bidding

The OWNER invites the bids as stipulated in the bidding documents and as prescribed in the bid forms. No alternate proposals except those stated on the bid forms will be accepted. Conditional bids will not be accepted.

Bidders must comply with all bidding requirements and conditions set forth in the Project Manual and the Request For Quotations. In the case of any conflict, the Purchasing Division regulations as expressed in the Request For Quotations shall supersede the Project Manual. All bidders and bidder's subcontractors shall be licensed in compliance with WV State Code. All bidders shall include their license number on the Bid Form.

6. Bid Security

Each Bid shall be accompanied by a bid bond payable to the Owner for five percent (5%) of the total Bid issued by an A.M. Best, A- or better rated surety company listed on the most current Federal Register, Circular 570, and authorized to do business in the state of the proposed project. Sample Bid Bond forms are included in Bidding Forms section.

7. Examination of Contract Documents and Site

Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. The bidder is required to examine carefully the Contract Documents and the site of the work contemplated. The submission of a bid shall be considered prima facie evidence that the bidder has made such examination and has judged for and satisfied himself as to the character, quality, and quantity of work to be performed and material required to be furnished under the Contract. No partial or otherwise incomplete sets of bidding documents will be distributed.

8. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications, or other pre-bid documents will be made to any bidder orally. Every request for such interpretations should be submitted as a Word File emailed to Charles A. Bowman in the WV Purchasing Division Charles.A.BowmanJr@wv.gov per the language of and by the date shown in the Request For Quotations. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be distributed only to bidders attending the mandatory pre-bid meeting. One copy only will be distributed to each bidder. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

9. Security for Faithful Performance

The Bidder to whom any contract is awarded, must pay for, execute and deliver to the Purchasing Division, prior to award of contract, a corporate surety Performance and Labor and Material Payment Bond on the forms for which a sample is provided, to be executed by an A.M. Best A- or better rated surety company listed on the most current Federal Register, Circular 570, and which is authorized to do

INFORMATION AND INSTRUCTIONS TO BIDDERS

SECTION 001000

(Revised 13 April 2010)

business in the resident state of the Project, in the sum of one hundred percent (100%) of the amount of the contract, insuring the full and faithful performance of the work and payment in full for all materials, machinery, equipment and labor, and covering all the guarantees called for in the specifications and all other obligations arising thereunder. (See sample of Performance Bond-Labor and Material Payment Bond at conclusion of Information For Bidders). Bond forms must be submitted to the Purchasing Division within seven (7) calendar days of the bid opening.

10. Power of Attorney

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

11. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

Sales and Use Tax: This project is not exempt from state sales and use taxes.

12. Substitutions

Requests for approval of substitutions must be received by the Purchasing Division, by the date specified in the Request For Quotations for the submission of technical questions. To ensure clarity of the requests, faxed requests should not be submitted; vendors should submit said requests in writing by mail, hand deliver or email Charles.A.BowmanJr@wv.gov.

Submission shall be made by prime Bidders; no consideration will be given to items submitted directly by manufacturers, suppliers, distributors or subcontractors. Substitutions of materials, products or equipment for those items specified will be considered only when submitted with a completed "Request for Substitution (Prior to Bid)" form. Substitution requests must be accompanied by manufacturer's original product data information. Reproduced copies of manufacturer's product data will not be permitted and will be rejected. Burden of proof of merit of requested substitution is upon submitter; modifications of provisions of the Request for Substitution Form shall be stated on Contractor's letterhead and attached with request form and other attachments.

Approved requests will be set forth in Addenda issued in accordance with these Instructions to Bidders. All items allowed by Addenda are subject to full provisions of original Bidding Documents, including all modifications thereto and shall be warranted as substitutions conforming with the Bidding Documents.

13. List of Proposed Subcontractor and equipment/Material Suppliers

The successful vendor should submit a listing of all subcontractors and all major equipment/material suppliers, along with the contractor's license number for each subcontractor, to the Purchasing Division within ten (10) working days of the award of the Contract. This information is to be provided on the "List of Proposed Subcontractors, Equipment/Material Suppliers." Only one subcontractor or equipment/material supplier may be listed for each work area. The successful vendor should establish the reliability and responsibility of all proposed subcontractors and equipment/material suppliers being proposed to perform the work, and verify availability of proposed subcontractors. The successful vendor may be requested within thirty (30) calendar days after award of the contract to furnish to the Purchasing

INFORMATION AND INSTRUCTIONS TO BIDDERS

SECTION 001000

(Revised 13 April 2010)

Division a more detailed and complete list of the materials and equipment, together with the product manufacturer's name and catalog number and catalog cut or illustration thereof.

14. Insurance Coverage

The successful Contractor shall present evidence to the OWNER of adequate coverage of Public Liability and Property Damage Insurance to protect the OWNER from any claim of damage which might arise from any accident or carelessness during the life of this contract.

Insurance coverage types and minimum coverage amounts are indicated on sample Certificate of Insurance bound herein.

15. West Virginia Workers' Compensation

All employees engaged in the work of this contract shall be covered by State Compensation Insurance.

16. Wage Rates

In preparation of Bids, contractors are reminded that all projects for the State Of West Virginia are subject to requirements found in the "West Virginia Jobs Act," Chapter 21, Article 1C of the West Virginia Code and all Department of Labor regulations.

Each Bidder shall be responsible for obtaining a current and correct schedule of the prevailing wage rates, as determined by the WV Department of Labor for the resident county of the Project. Bidders may obtain current wage rates at www.wvsos.com, or contact the office of the WV Secretary of State (304) 558-6000.

Bidders are reminded that subject to the provisions of Chapter 21-5A of the West Virginia Code, a legible statement of all fair minimum wage rates to be paid the various classes of workers employed, shall be posted in a prominent place at the project site by each Contractor and subcontractor.

17. Vendor's Number

Prior to any contract being awarded, vendors must properly register and pay the appropriate registration fee to the Purchasing Division. Application for such certificate and vendor's number may be obtained from the Vendor Registration Office whose telephone number is (304) 558-2311.

END OF DOCUMENT

Attachment: Request for Substitution (Prior to Bid)

INFORMATION AND INSTRUCTIONS TO BIDDERS

SECTION 001000

(Revised 13 April 2010)

REQUEST FOR SUBSTITUTION (PRIOR TO BID)

This form must be submitted by a prime Bidder. Submissions by sub-bidders, suppliers or product representatives will not be accepted.

Instructions:

1. *Include product description, manufacturer's specifications, drawings, photographs, performance and test data adequate for evaluation of the request.*
2. *Include description of changes, if any, to Contract Documents required for the proper installation of proposed substitution.*
3. *When more than one model or system is shown on data submitted, identify specific product, including model or system and all applicable accessories to be proposed as a substitute.*
4. *Company with requirements of Document 001000 – Instructions to Bidders.*

To: THE OMNI ASSOCIATES-ARCHITECTS, INC.
 1543 Fairmont Ave, Suite 201
 Fairmont, WV 26554

Date: _____

Section: _____

Article: _____

Specified Product/Manufacturer _____

Proposed Substitute: _____

The undersigned certifies that the following statements, unless modified on attachments, are correct:

1. The function, appearance, quality and warranty of the proposed substitution are equivalent or superior to the specified product or system.
2. The proposed substitution does not affect dimensions shown on Drawings.
3. The proposed substitution shall not change the building design, engineering design or detailing.
4. The proposed substitution shall have no adverse effect on other trades, the construction schedule or specified warranty requirements.
5. Maintenance and service parts shall be locally available for the proposed substitution.

Submitted by:

Engineer/Engineer's Review Comments:

Signature/Title: _____

____ Accepted _____ Accepted as Noted

Prime Bidder: _____

____ Not Accepted _____ Received too Late

Address: _____

____ Not a Substitutable Item

Signature: _____

Telephone: _____

Review Date: _____

Attachments

SECTION 011000 - SUMMARY

WHERE THE FOLLOWING REQUIREMENTS DIFFER FROM REQUIREMENTS ESTABLISHED BY A SPECIFIC TASK ORDER, THE TASK ORDER REQUIREMENTS SHALL GOVERN.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Federal Acquisition Regulations and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

Scope

1. Work covered by the Contract Documents.
2. Type of Contract
3. Work under other contracts.
4. Government-furnished products.
5. Use of premises.
6. Government's occupancy requirements.
7. Work restrictions.
8. Correlation of Drawings, Specifications and Contracts
9. Specification formats and conventions.
10. Reporting of Error and Discrepancies
11. Standards of Manufacturer
12. Meaning of Approved, Directed, Etc.
13. Misplaced Materials
14. Material Testing by National Laboratories
15. Keys
16. Construction Scheduling, Work Progress and Preparation of Progress Schedules and Reports
17. Safety Assurance
18. Quality Control/Tests
19. Requests for Information (RFI)
20. Dust Barriers
21. Site Restoration
22. Layout and Grades
23. Refuse and Salvage Materials
24. Temporary Field Offices
25. Utility Interruptions
26. Compressed Air
27. Weather Protection and Temporary Heating
28. Work by Government
29. Regulations

30. Environmental Impact
31. Environmental Protection
32. Identification of Vehicles and Personnel
33. Demonstrations, Commissioning, and Testing
34. Spare Materials/Parts
35. Fire Protection
36. Severe Weather Warning Requirements
37. Sediment and Erosion Control
38. AT/FP Requirements
39. Warranty.
40. Extended Manufacturer Warranties.

B. Related Sections include the following:

1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Government's facilities.
2. Solicitation and Contract requirements furnished by Government, including applicable Federal Acquisition Regulations.

1.3 SCOPE

- A. The Contractor will be held responsible for all requirements described in the contract documents and task order documents and all work including that of his Sub-contractor, if any, shall be done in accordance with the contract documents and/or task order documents. Failure to familiarize himself with their requirements will not relieve the Contractor of his responsibility to comply.
- B. The organization of the specifications into divisions, sections, and articles, and the arrangement of the drawings shall not control the Contractor in dividing the work among Sub-contractors or in establishing the extent of the work to be performed by any trade.
- C. Time is stated in calendar days in this document unless specifically stated otherwise.
- D. City of Fairmont Requirements
 1. Excavating Permit: Contractor is required to secure a permit from the City of Fairmont before proceeding with any on-site excavating or digging. See attached form.
 2. Business and Occupation Tax Return: Contractor is required to pay all Business and Occupation taxes to the City of Fairmont. See attached form.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification:

1. Fairmont Armed Forces Reserve Center, Marion County, West Virginia.

B. Government:

1. Government's Representative: To be provided at Post Award.

- C. Architect: To be provided as applicable at Preconstruction meeting.
- D. The Work consists of all construction as shown and specified.
 - 1. Include all site demolition, preparation/grading, and construction of the new facilities as designated on the drawings with the applicable task orders. Options, which may be awarded as options with individual task order Site bid items or as individual task orders, are as indicated on the drawings and in Section 012300 Alternates.
- E. Sustainable/"Green" Requirements: The building(s) on the site and the site work adjacent to the building(s) are designed and shall be constructed as sustainable entities. The requirements for sustainable/"green" construction are contained throughout the Contract Documents and in particular are specified in the following specification sections:

Section 018113- Sustainable Design Requirements – LEED-NC v3 Certification

1.5 TYPE OF CONTRACT

- 1. Single Prime Construction Contract.

1.6 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Activities in the vicinity of this project may be kept in full or partial operation during construction. The Contractor shall coordinate with the Contracting Officer and schedule construction activities. Coordinate the Work of this Contract with work performed under separate contracts. Reference Contract Clause FAR 52.236-8 "Other Contracts."

1.7 GOVERNMENT-FURNISHED PRODUCTS

- A. Government will furnish products indicated on the construction documents. The Work includes providing support systems to receive Government's equipment and making structural, plumbing, mechanical, and electrical connections.
 - 1. Government will arrange for and deliver Shop Drawings, Product Data, and Samples to Contractor for Government-furnished, Contractor-installed products.
 - 2. Government will arrange and pay for delivery of Government-furnished items according to Contractor's Construction Schedule.
 - 3. After delivery, Government will inspect delivered items for damage.
 - 4. If Government-furnished items are damaged, defective, or missing, Government will arrange for replacement.
 - 5. Government will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.
 - 6. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Contracting Officer's Technical Representative noting discrepancies or anticipated problems in use of product.

SUMMARY
SECTION 011000

7. Where equipment is Government-furnished and Government-installed, Government will coordinate with Contractor any required backing, or utilities connections for the Government-furnished equipment.

1.8 USE OF PREMISES

- A. General: Contractor shall have access to the Site for construction operations, including full use of Project site, during construction period. Contractor's use of premises is limited only by Government's right to perform work or to retain other contractors on portions of Project.
 1. General: Contractor shall have limited use of the Site for construction operations as indicated on Drawings by the Contract limits. Limits: Confine constructions operations to project limits as indicated on the Drawings.
 2. Government Occupancy: Allow for Government occupancy of Project site.
 3. Entry to Site/Access to Site:
 - a. During construction, the Contractor shall permit Site personnel access to the facilities within the work area. The Contractor shall provide protection to persons and property throughout the progress of the work.
 - b. In the event of a declared National Emergency the Contracting Officer may be required to stop work on this contract for security reasons. Contractor shall ensure the Contracting Officer has a current "Off Duty" contact name and telephone number at all times to facilitate notification.
 - c. The Contractor shall be responsible for compliance with all regulations and orders of the Commanding Officer of the Military Installation, respecting identification of employees, movements on installation, parking, truck entry, and all other military regulations, which may affect the work. Special requirements will be identified in the statement of work for an individual task order.
 4. Driveways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Government, Government's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- B. Site Regulations: The Contractor shall conform to all Site Regulations and directives pertaining to security, safety, traffic, fire, and personnel clearances, insofar as they pertain to the Contractor's activities on project site. The Contractor shall be responsible for providing and placing all barricades, lighting, and safety devices during any of his activities.
- C. Crane Usage: All construction work in this project shall be accomplished with extreme care with regard to the operation of aircraft. Close cooperation and coordination between the Airfield Operations Officer, the Contractor, the Contracting Officer and the COR is mandatory. Approved Equipment shall be parked in an area designated by the Contracting Officer or Contracting Officer Representative.
- D. Security Requirements

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1. The Contractor shall make themselves aware of applicable security requirement and comply with said requirement while working on the Site. These requirements will be made available from the Site Security Officer through the Contracting Officer/COR.
 2. Reserved
 3. Temporary Work Area and Temporary Fencing
 - a. The contractor shall provide enclosure of the entire construction site with a temporary security fence in accordance with the requirements of Section 01500. Access to this area shall be the contractor's (and escorts) responsibility and shall be referred the contractor's free zone. This area shall be secured at all times and under the control of the contractor's approved escort (See Security Escorts).
- E. Protection of Property: Any damage or theft caused directly or indirectly to Government or private property on the Site by the Contractor's operations shall be repaired or replaced by the Contractor to the satisfaction of the Contracting Officer or the COR at no additional cost to the Government.
- F. Storage: The Contractor shall store or place materials and equipment only in areas specifically approved by the Contracting Officer or the COR.
- G. Work Operations:
1. The work to be performed under this contract is on an active Site. The Contractor shall coordinate work operations with the COR prior to starting work under this contract. The Contractor shall have a superintendent who speaks, reads, writes and understands the English language to act for the Contractor and to be available on the job site throughout each workday.
- H. Daily Report to Inspector
1. When work commences, a signed daily report shall be submitted to the Contracting Officer and COR by 10:00 A.M. on the working day following the day the work was performed. The daily report format shall be at the discretion of the Contractor.
- I. Inspection of Site
1. The Contractor shall be responsible for the complete coordination and proper relation of the work of all trades. Reference Contract Clauses FAR 52.236-3, "Site Investigation and Conditions Affecting the Work" and FAR 52.236-8, "Other Contracts".
 2. No allowances or extra construction on behalf of any Contractor will be permitted subsequently by reason of error or oversight on the part of the sub-contractor, or on account of interferences by the activities of the owner or others. Reference Contract Clause FAR 52.236-3, "Site Investigation and Conditions Affecting the Work".
 3. All dimensions shown on the drawings are Sited on "as-built" record drawings and, to the extent possible, accurately represent existing conditions; however, there may be some variance between existing conditions and contract drawings. The Contractor is responsible for verifying all dimensions and for reporting to the Contracting Officer any discrepancies that may affect performance of the work represented by contract drawings and specifications. Reference Contract Clause DFARS 252.236-7001 "Contract Drawings, Maps, and Specifications".
- J. Truck Hauling on Site: The Contractor shall be responsible for covering open-bodied vehicles transporting sand, gravel, fill materials, dirt, construction debris, rubble, or other material which

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may become airborne and create air pollution on Site. Alternate means, approved by the COR, may be employed to achieve the same results as would coverings.

- K. Availability and Use of Utility Services: Water and electricity will be furnished to the Contractor by the Government from the Government's existing system outlets and supplies to perform the work under this contract at no cost to the Contractor. The location (s) of the temporary connection points will be designated by the COR prior to permitting connections. Electric energy shall not be used for resistance heating except within the Contractor's office trailer. The Contractor will not be permitted to use Government telephone service.
- L. Occupied Building: The Contractor will be working in and around existing occupied buildings. The existing building must remain functional during construction operations. The Contractor shall confine work operations and personnel to the specified areas of construction unless otherwise authorized by the COR. The Contractor shall not be permitted to use the building's toilet facilities; therefore, it is the Contractor's responsibility to provide portable toilets in designated work areas.

1.9 GOVERNMENT'S OCCUPANCY REQUIREMENTS

- A. Government Occupancy of Completed Areas of Construction: Government reserves the right to occupy and to place and install equipment in completed areas of building, before completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Before partial Government occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Government will operate and maintain mechanical and electrical systems serving occupied portions of building.
 - 2. On occupancy, Government will assume responsibility for maintenance and custodial service for occupied portions of building.

1.10 WORK RESTRICTIONS

- A. On-Site Work Hours: Normal Site work hours for the Contractor will be between the hours of 6:00 AM through 6:00 PM for the Fairmont Armed Forces Reserve Center excluding Saturdays, Sundays, and Federal Holidays.
- B. Schedule of Work: In the event of any emergency, intense operational demands, adverse wind conditions, and other such unforeseen difficulties, the discontinuance of the Contractor's operations at the specified times will be mandatory for safety of Contractor, military personnel and Government property. A schedule of work shall be submitted to the Contracting Officer, for transmittal to the Maintenance Officer: describing the work to be accomplished; the location of the work; dates and hours during which the work will be accomplished. The schedule of work shall be kept current and the Contracting Officer shall be notified of any changes prior to beginning each day's work.
- C. Work Outside of Regular Hours: If the Contractor desires to work during periods other than above, he must notify the Contracting Officer or Contracting Officer's Representative (COR)

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three (3) working days in advance of his intention to work during other periods to allow assignment of additional inspection forces and for notification of fire, security and safety. When the Contracting Officer determines that they are reasonably available, he may authorize the Contractor to perform work during periods other than normal duty hours/days. However, if inspectors are required to perform in excess of their normal duty hours/days solely for the benefit of the Contractor, the actual cost of the inspection, at overtime rates, will be charged to the Contractor and will be deducted from the final payment of the Contract amount. (Note: If applicable, at time of award this paragraph will be modified to the negotiated schedule for this project).

1. The following Federal legal Holidays are observed by this Site:

New Year's Day	1 January
Martin Luther's King's Birthday	Third Monday of January
President's Day	Third Monday of February
Memorial Day	Last Monday of May
Independence Day	4 July
Labor Day	First Monday in September
Columbus Day	Second Monday in October
Veteran's Day	11 November
Thanksgiving Day	Fourth Thursday in November
Christmas Day	25 December

2. NOTE: Any of the above holidays falling on a Saturday will be observed the preceding Friday, holidays falling on a Sunday will be observed on the following Monday.
3. Prior to commencing work on the job initially, resumption of work on the job initially, resumption of work after prolonged interruption (7 calendar days or more) commencement of any warranty work, and upon completion of warranty work, the Contractor must notify the Contracting Officer (or his/her Contracting Officer Representative). When relocating to new sites, returning to sites for follow-up work on a phased work plan, notification to the Contracting Officer's Representative is sufficient. Notification should be by personal contact; however, advance notification may be by telephone, or in writing, and should be accomplished sufficiently in advance to allow scheduling of inspection forces. The above precautions are to ensure construction inspection and recording of work proceedings.
4. The organization of the specifications into divisions, sections, and articles, and the arrangement of the drawings shall not control the Contractor in dividing the work amount Subcontractor or in establishing the extent of the work to be performed by any trade.

D. Phasing of Excavation for Tanks and Utilities

1. Excavation shall not begin until materials and equipment for that specific portion of the job are on site. Backfilling of the excavation shall be accomplished immediately after installation of the utility and immediately after installation and testing of tank and piping.

E. Excavating Permit

1. Contractor is required to secure an excavating permit from the City of Fairmont before proceeding with any on-site excavating or digging.

F. Blocking Site Streets

1. At least two (2) hours prior to the blocking of any street, or as designated by the task order documents, the Contractor shall advise the COR, appropriate Fire Department and Security

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Police of his intentions, identifying the location and the estimated time of closure. No more than two streets shall be closed at any time, and the two shall be no closer than five blocks from each other. However, there shall be no closures of any street without at least eight (8) days of prior notification to both the COR, appropriate Fire Department, Security Officer and the Contracting Officer.

G. Archeological, Paleontological and Endangered Species Finds

1. Any archeological finds (evidence of human occupation) or paleontological finds (evidence of prehistoric plant or animal life) are to be reported to the Contracting Office immediately and continue work in other areas without interruption. Protect native endangered flora and fauna and notify Contracting Officer of any construction activities that might threaten endangered species or their habitats.

H. Damages and Repairs

1. All damages by the Contractor's operations shall be repaired, or replaced, at the Contractor's expense, as directed by the Contracting Officer. Any Government property damaged as a result of the work, materials, or operations of the Contractor shall be restored at no additional expense to the Government.
2. All existing sidewalks, curbs, and pavement, disturbed, broken or removed or otherwise damaged by the Contractor during performance of the work under this contract shall be replaced by the Contractor at this own expense. Replaced sidewalks, curbs, and pavements shall be smooth shall blend into the existing work, and shall not present depressions or humps.
3. Reference Contract Clause FAR 52.236-9 "Protection of Existing Vegetation, Structures, Equipment, Utilities and Improvements."

1.11 CORRELATION OF DRAWINGS, SPECIFICATIONS AND CONTRACTS

- A. The specifications, Contract and the accompanying Drawings are intended to describe and provide for a complete, new and usable facility. They are intended to be cooperative and what is called for by one shall be as binding as if called for by all. The Contractor will understand that the work herein described shall be complete in every detail, notwithstanding every item necessarily involved is not particularly mentioned, and the Contractor shall be held to provide all labor and material for the entire completion of the work intended to be described and shall not avail himself of any manifestly unintentional error or omission, should any exist. Should any error or inconsistency appear in the Drawings or Specifications, the Contractor, before proceeding with the work, shall make mention of same to the Contracting Officer for proper adjustment, and in no case shall he proceed with the work in uncertainty. Reference Contract Clause DFARS 252.236-7001, "Contract Drawings, Maps and Specifications."

1.12 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 48 division format and CSI/CSC's "MasterFormat" 2004 numbering system.
 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are

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not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

1.13 REPORT OF ERROR AND DISCREPANCIES

- A. The Contractor shall be responsible for any and all discrepancies in work due to failure to obtain dimensions and investigate conditions at the building before fabrication and installation.
- B. The Contractor shall bear all costs in replacing all materials and labor due to not observing the above paragraph and such replaced materials shall meet the approval of the Contracting Officer.
- C. The Contractor shall promptly notify the Contracting Officer in writing of any discrepancies.
- D. Reference Contract Clauses FAR 52.236-21, "Specifications and Drawings for Construction," FAR 52.246-12 "Inspection of Construction," and DFARS 252.236-7001, "Contract Drawings, Maps and Specifications."
- E. Any proposed changes to the specifications by the Contractor must be submitted in writing to the Contracting Officer for approval prior to implementation.

1.14 STANDARDS OF MANUFACTURE

- A. All recognized regulatory/code standards shall be the latest published edition prior to the date of release for bid/proposal of the contract documents.
- B. For purpose of establishing the standard of construction and the requirements to be met in the work of all divisions, the drawings and these specifications are based on the use of products hereinafter specified, adapted to the installations as required to meet the condition.

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- C. Where brand names are shown, these names are intended to describe a quality of product, and in no way are intended to limit products of equal quality. Therefore, products of other manufacturers may be employed for this work provided they are equivalent materials and construction and equally adaptable to the conditions as approved by the Contracting Officer. Reference Contract Clause FAR 52.236-5, "Materials and Workmanship."

1.15 MEANING OF APPROVED, DIRECTED, ETC.

- A. "Approved", "Directed", "Required", "Applicable", or words of like or similar effect, when used in the specifications shall be interpreted to mean "Approved By", "Directed By", etc., the Contracting Officer unless otherwise specifically stipulated.

1.16 MISPLACED MATERIALS

- A. Any material that is deposited elsewhere than areas designated as approved by the Contracting Officer shall be re-handled and deposited where directed. No payment will be made for re-handling such material. The Contracting Officer will notify Contractor of any noncompliance with the foregoing provisions.

1.17 MATERIAL TESTING BY NATIONAL LABORATORIES

- A. Electrical materials and equipment shall be new and bear the UL label or be listed in UL Electrical Construction Materials Directory or Electrical Appliance and Utilization Equipment Directory, wherever standards have been established by the agency.
- B. The Contractor shall submit proof that the material or equipment, which he proposes to furnish under this specification, conforms to the standards of Underwriters' Laboratories. The label of Underwriters Laboratories (UL) shall be accepted as conforming to this requirement.
- C. In lieu of the label, the Contractor may submit a written certification from any recognized testing agency, adequately equipped and competent to perform such services, that the material or equipment has been tested and conforms to the standards, including the methods of testing used.

1.18 KEYS

- A. The Contractor shall be responsible for any Government-owned keys that have been issued to him for access to facilities or areas pertinent to this contract.
- B. Upon completion of the work in an area, or upon request of the Contracting Officer, the key or keys relevant to the area shall be returned immediately. Keys shall be returned prior to final task order payments.
- C. Should the Contractor Lose a Key: The Contractor shall notify the Contracting Officer, immediately and in writing, but not later than one (1) working day after he is aware of the loss. Should the key not be found before final acceptance, the final contract payment shall be reduced

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by the replacement cost for each key not returned and, if required by the Contracting Officer, any re-keying costs and cost of any other damages suffered by the Government.

1.19 CONSTRUCTION SCHEDULING, WORK PROGRESS AND PREPARATION OF PROGRESS SCHEDULES AND REPORTS

- A. The instructions for preparation and submittal of the Contractor-prepared Network Analysis System or Construction Progress Charts and Status Reports will be discussed at the Task Order preconstruction meeting.
- B. Prior to specific work elements of a project, the contractor shall confer with the COR and agree on a sequence of procedures and means of access to premise and buildings; space for storage of materials and equipment; delivery of materials and use of approaches, use of corridors, stairways and similar means of passage.
- C. For task order with performance period of 60 calendar days or more, or at the direction of the Contracting Officer, and in accordance with FAR Clause "Schedules for Construction Contracts" (April 1984), the contractor shall, within five days after work commence on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of practicable schedule shown the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of work. The work shall be scheduled so that, upon the start of construction, work progresses in a continuous and diligent manner. A schedule that does not reflect steady and reasonable progress throughout the construction period will be rejected. In accordance with FAR 52.236.515; "Schedules for Construction Contracts" (April 1984), weekly progress reports, in a format acceptable to the Contracting Officer shall be provided to the COR covering the period from notice to proceed through final inspection.
- D. The Contractor is to provide a project plan in any approved CPM format to define work tasks and track progress for task orders in excess of \$1,000,000.00, and/or when otherwise directed by the Contracting Officer at any dollar value. At least five days prior to work initiation, the contractor is to provide the Contracting Officer hardcopy Gantt charts and a formatted diskette copy, or e-mail file copy, of the plan (CPM) usable with Microsoft Windows that is to include definition of rescues. Additionally, the (CPM) is to have a cost per task field for each task – this is commonly called line item cost. No work is to start until there is written approval from the Contracting Officer that the plan is approved.
- E. For task order with a performance period of less than 60 calendar days, no progress schedule or contractor progress reports will be required unless directed by the Contracting Officer. A weekly progress report in a format acceptable to the Contracting Officer shall be provided to the COR until final inspection.
- F. The Contractor shall prepare a work progress schedule required for completion of each of the various divisions of work, unless the exception in paragraph e above applies. Updated CPM plans shall be available to the Government at a Contractor hosted website shall be provided by the contractor on a (to be indicated per project) basis, unless otherwise directed by the Contracting Officer, showing work progress, at the beginning of the workweek. If there are

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possible deviations from the original plan, those are to be noted and approved by the Contracting Officer before work changes are implemented. The schedule shall be submitted to the Contracting Officer, in the number of copies as directed prior to start of construction. Reference Contract Clause FAR 52.236-15, "Schedules for Construction Contracts".

1.20 SAFETY ASSURANCE

- A. Compliance with Regulations. All work including the handling of hazardous materials or the disturbance or dismantling of structures containing hazardous materials shall comply with the applicable requirements of 29 CFR 1910/1926. Work involving the disturbance or dismantling of asbestos or asbestos-containing materials; the demolition of structures containing asbestos; and/or disposal and removal of asbestos, shall also comply with the requirement of 40 CFR, Part 61, Subpart A. All work shall comply with applicable state and municipal safety and health requirements. Where there is a conflict between applicable regulations, the most stringent shall apply.
- B. Contractor Responsibility. The Contractor shall assume full responsibility and liability for compliance with all applicable regulations pertaining to the health and safety of personnel during the execution of work. The Government shall not be held liable for any action on the part of the Contractor, his employees or Sub-contractor, which result in illness, injury or death.
- C. Crawl spaces and attics are to be treated as confined space entry. Contractor must follow 29CFR 1910.146 and use Air Force Form 1024 when making an entry. NOTE: A confined space does not include areas above suspended acoustical tile ceiling.
- D. Where an employee can fall more than 6 feet, a fall protection system must be used; 29 CFR 1926.500 stipulates where this occurs and the different types of fall arrest systems.
- E. When the Contractor is working in buildings that are occupied by Government personnel, the Contractor must provide Material Safety Data Sheets (MSDS) of all construction-related materials and equipment to the Contracting Officer before they begin the work.
- F. All references to protection of the site and adjacent buildings when trenching, shall include protection of all employees also.
- G. Inspections, Tests and Reports. The required inspections, tests and reports made by the Contractor, Sub-contractor, specially trained technicians, equipment manufacturers and other as required, shall be at the Contractor's expense.
- H. Materials and Equipment. Special facilities, devices, equipment, clothing and similar items used by the Contractor in the execution of work shall comply with applicable regulations.
- I. Traffic Control Devices. The Contractor shall comply with the recommendations contained in Part 6 of the U. S. Department of Transportation, Federal Highway Administrations "Manual on Uniform Traffic Control Devices", 2003 edition with Revision 1, available at <http://mutcd.fhwa.dot.gov/>, to ensure proper warnings to motorists and adequate traffic control. The Contractor shall provide all warning lights, barricades and other traffic control devices and signs.

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- J. Barricades. Barricades are required in accordance with the quoted safety regulations. "Each job site will be clearly identified by signs, and protected by barriers suitably marked by reflective materials, and illumination for easy sighting after dark". This provision is required IAW AFOSH Standard 127-66, Chapter 4, para 4-1,f(1).

1.21 QUALITY CONTROL/ TESTS

- A. Where work is specified to be in conformity with Standard Specifications of the American Society for Testing Materials (ASTM), or with Federal specifications or with specifications of well known recognized technical and trade organizations, but no tests are specifically stipulated in connection herewith, the Contractor shall furnish and pay for any tests or certifications required by the Contracting Officer to show that the proposed materials meet with the applicable requirements.
- B. The Contractor shall submit a written certification from any recognized testing agency, adequately equipped and competent to perform such services, that the material or equipment has been tested and conforms to the standards, including the methods of testing used.
- C. Wherever testing or analysis of material is required, such testing unless otherwise noted will be made at the Contractor's expense.
- D. Subsequent testing of those materials that fail to meet specifications will be accomplished by the Contractor at no cost to the Government.
- E. Contractor Quality Control (CQC) Program: (Also See 01451) The Contractor shall provide and maintain an effective quality control program in accordance with the contract. Within thirty (30) days of the award of the basic contract award, the Contractor shall provide three (3) copies of the entire CQC (in the event specific task orders require additional changes, the contractor is required to submit a supplement plan) plan (to the Contracting Officer This document, as a minimum, shall include name and address of the independent testing agency and the responsible principal with the firm; a summary of QC tests required by the specification and to be provided by the testing agency; and typical daily reports forms to be used for this project. The plan shall also indicate organizational procedures to immediately notify the Contracting Officer or his/her representative of test results in noncompliance with the specification and recommendations on correction. The testing agency must be an independent company and not owned or partially owned by the Contractor or any relation or employee of the Contractor.
- F. Samples used for testing shall be selected as specified for the various tests elsewhere in the specifications but in every case the method of selecting samples and the location for selection shall be as approved by the Contracting Officer.
- G. Tests shall be made in accordance with the specified testing procedures and/or methods and otherwise as required to provide compliance with all contract requirements. Tests shall be made by independent, commercial testing laboratories approved in writing by the Contracting Officer.
- H. Results of all tests shall be recorded on certified test reports of the commercial testing laboratories. Reports shall include a statement that the materials tested do or do not meet the requirements of the Contract specifications. Six copies of all reports shall be forwarded directly

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to the Contracting Officer for approval within five (5) days of the actual performance of the test. The testing agency shall immediately notify (verbally) the Contracting Officer of any tests that indicate failure to meet the contract requirements.

- I. Any item; for which test reports show failure to meet all Contract requirements shall be retested as often as required to show full compliance with Contract requirements, at the Contractor's expense.

1.22 REQUESTS FOR INFORMATION (RFI)

- A. Contractor's Request for Information per section 01261 – Requests for Information shall address technical questions only and shall be submitted to the Contracting Officer in an approved RFI format.
- B. The Contractor shall allow a minimum of three (3) calendar days from the date the Government receives the RFI to receive a response.

1.23 DUST BARRIERS

- A. Dust shall be minimized at all times. Dust tight barriers shall be constructed within the work area, closing off areas which are occupied and used by the Government.

1.24 SITE CLEAN UP/ CLEANLINESS

- A. The Contractor shall maintain the construction site in as clean and orderly condition as possible. All refuse and/or salvage material shall be gathered and disposed of periodically to maintain the site in this condition. All roadways, taxiways and ramp areas within the work area, or used by the Contractor, shall be swept and vacuumed daily to assure safe operation of aircraft. The cleaning operation shall be accomplished with self-propelled sweepers equipped with pick-up devices. The method of cleaning and equipment employed shall be subject to the approval of the Contracting Officer. Reference Contract Clause FAR 52.235-12, "Cleaning Up".
- B. The contractor shall protect Government property and furnishings that may be in, or adjacent to, the work area with appropriate clean drop clothes, barricades, dust-stops, or other provisions as determined by, or approved, by the Contracting Officer prior to starting work. The Contractor shall remove debris, tools, and equipment when work is completed in that particular area.
- C. During and after periods of rain, this construction site may have a very high water table and/or areas of standing surface water. Dewatering techniques are a Contractor's option; however, the Contracting Officer shall approve the method prior to start of work.
- D. Following completion of the work, the Contractor shall clean the entire area from any debris and/or excess of misplaced material due to his operation and obtain Contracting Officer's approval of this finished work. (Reference Contract Clause FAR 52.246-12, entitled "Inspection of Construction" and FAR 52.236-12, "Cleaning Up".)

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- E. Prior to acceptance of the facility and at such times as directed by the Contracting Officer, the Contractor shall thoroughly clean all exposed surfaces of the building where work under this contract was completed.
- F. All protective coatings, except lacquers, shall be removed from finish surfaces and the finish surfaces shall be washed and cleaned. Contractor shall be held responsible for all damaged materials, and at completion, shall replace, at his own expense, all such damaged materials.

1.25 SITE RESTORATION

- A. Rough grading of utility cuts shall be accomplished immediately after backfilling excavated trenches. Final grading, including the placing of topsoil, if required, shall be accomplished as soon as possible. Required landscaping, sodding, or seeding shall be accomplished at the earliest possible time after backfilling as stipulated in the Technical Provisions of the contract.

1.26 LAYOUT AND GRADES

- A. All lines and grade work not presently established at the site shall be laid out by the Contractor in accordance with the drawings and specifications. The Contractor shall maintain all established boundaries and benchmarks and replace as directed any which are destroyed or disturbed. Reference Contract Clause FAR 52.236-17, "Layout of Work".
- B. The Contractor shall engage a Professional Engineer or Registered Land Surveyor, licensed to practice in the State of West Virginia to properly establish all locations, grades, elevations, dimensions, joints, etc., necessary to the proper location of all items of work included in this Contract. All such items shall be established in relation to the benchmark and control points noted on the drawings.

1.27 REFUSE AND SALVAGE MATERIALS

- A. All refuse, debris, and construction waste shall be legally disposed of off Site at the Contractor's expense. (Reference FAR 52.236-12 "Cleaning Up."). Accumulations of refuse on the site will not be permitted.
- B. All salvage property removed and not reinstalled under this contract shall be returned to the Government at a place on Site designated by the Contracting Officer, or properly disposed of when directed by the Government.
- C. Non-Hazardous Solid Waste should be diverted to recycling, through appropriate means available to the Contractor, if such diversion is less than or equal to the equivalent cost of land filling or incineration.
- D. The Contractor shall maintain adequate property control records for all materials or equipment specified to be salvaged. These records may be in accordance with the Contractor's system of property control, if approved by the property administrator. The Contractor shall be responsible for the adequate storage and protection of all salvaged materials and equipment, and shall

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replace, at no cost to the Government, all salvage materials and equipment which are broken or damaged during salvage operations as the result of its negligence, or while in its care. Point of contact concerning Government salvaged items will be identified under the individual task order.

- E. Also see section 017419 – Construction Waste Management.

1.28 TEMPORARY FIELD OFFICES

- A. As soon as practicable after award of the initial Task Order, and until final completion of the work on all task orders, Contractor shall provide, maintain and later remove a suitable temporary office(s) for his own use. All field offices shall be painted on the exterior, maintained in good repair, provided with adequate heating, lighting and maintained in a clean and sanitary condition at all times. Reference Contract Clause FAR 52.236-10, “Operations and Storage Areas”.
- B. The Contractor shall provide temporary office space for exclusive use of the Government inspectors, to include Contracted inspectors. This office shall include, as a minimum, as desk, a suitable chair, and access to a phone line at no additional cost to the Government.
- C. See also Section 015000.

1.29 UTILITY INTERRUPTIONS

- A. All utility shutdowns require the prior approval of the Contracting Officer. Request for utility shutdown shall be made in writing at least four (4) weeks prior to the expected date of implementation or as indicated in Task order documents. As soon as actual shutdown date is known, the Contractor shall notify the Contracting Officer in writing requesting approval at least eight (8) work days prior to requested shutdown.
- B. The Contractor’s progress schedule shall include preliminary listing of all proposed shutdown dates. Every effort shall be made to make all shutdowns as brief as possible, and as limited in extent as possible.
- C. Contractor will provide an emergency plan, with Contractors to accomplish the repairs in the event of utility and/or communications emergencies. This should be included in the Master CQC Plan

1.30 COMPRESSED AIR

- A. Contractor shall provide all compressed air used for work under this contract including temporary lines and connections. Remove all temporary lines, etc., at the completion of the work.

1.31 WEATHER PROTECTION AND TEMPORARY HEATING

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- A. The Contractor shall provide and maintain weather protection as may be required to properly protect all parts of the structure from damage during construction.
- B. The Contractor shall be responsible for repairs and maintenance to the heating system or units during the period during progress of building construction and shall deliver same to the Government, at termination of such use, in perfect condition, cleaning out all air ducts and replacing all filters. Any temporary heating shall be at the expense of the Contractor. Method of temporary heating shall be approved by the COR.

1.32 WORK BY GOVERNMENT

- A. The Government reserves the right to undertake performance by Government forces, for the same type or similar work as contracted herein, as the Government deems necessary or desirable, and to do so will not breach or otherwise violate this contract.

1.33 REGULATIONS

- A. The contractor shall comply with all applicable Federal, State, Local, DOD, National Guard Bureau, Army and Air Force regulations pertaining to safety, traffic control and fire prevention.
- B. The Contractor, his employees, and his Sub-contractor are subject to, and shall abide by and comply with, all relevant statutes, ordinances, laws and regulations of the United States (including Executive Orders of the President) and any State (or other public authority now or hereafter in force). The Contractor agrees to observe and comply with all applicable state and federal requirements regarding social security, workman's compensation, unemployment insurance and any other matters concerning employment applicable to the performance of this contract or rules, regulations, directions and order not inconsistent herewith as may from time to time be issued by the Government. The unilateral act of any Governmental body against any employee of the Contractor for the violation of a state or federal law or regulation shall not excuse the Contractor from full compliance with the terms and conditions of this contract
- C. Defense Procurement and Acquisition Policy website, <http://www.acq.osd.mil/dpap/>, has links for several other sites with available publications, forms and project data information. These may also be acquired from the Government Printing Office website, http://www.access.gpo.gov/su_docs.

1.35 ENVIRONMENTAL PROTECTION

- A. The Contractor shall provide and maintain environmental protection during the life of the contract as defined herein. Environmental protection shall be provided to correct conditions that might endanger the environment during normal construction operations.
 - 1. Definition of Contaminants:
 - a. Solid Waste: Discarded solid materials resulting from construction activities.
 - b. Rubbish: A variety of combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones.
 - c. Debris: Combustible and noncombustible wastes such as ashes and waste materials resulting from demolition and construction work.

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- d. Chemical Waste: Petroleum products, bituminous materials, salts, acids, alkalies, herbicides, organic chemicals, and inorganic wastes.
 - e. Sanitary Wastes:
 - 1) Sewage – Waste which is considered as domestic sanitary sewage.
 - 2) Garbage – Refuse and scraps resulting from preparation of food.
 - f. Rubble - Fill materials generated from non-reinforced concrete, masonry, asphalt construction, and natural earth resulting from excavations.
2. Upon completion and acceptance of the construction, the Contractor shall obliterate signs of temporary construction facilities such as work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction.
3. Control and Disposal of Solid, Chemical, and Sanitary Wastes. Wastes shall be placed in closed metal containers which are emptied on a regular schedule. Handling and disposal shall be conducted in a manner to prevent contamination of the site and other areas.
- a. Disposal of Rubbish and Debris: The Contractor shall transport wastes off Government property and dispose in a manner that complies with Federal, State, and Local requirements. The Contractor shall provide the COR with a copy of the State and/or Local permit, or license, which reflects such agency's disposal authorization. The permit, or license, and the location of the disposal area, shall be provided to the COR prior to transporting materials of Government property. Any Hazardous Waste PCB's or PCB contaminated material shipped from Site must be examined by the 316th CES before shipment and a representative of the 316th CES must sign the manifest.
 - b. Garbage: Garbage shall be disposed of off Site by the Contractor. Garbage shall be kept in sealed metal containers until disposal is effected. The preparation, cooking, or disposal of food on the project site is strictly prohibited.
 - c. Sewage, Odor, and Pest Control: Chemical toilets or comparably effective units shall be utilized. Wastes shall be periodically collected and removed from the Site. Measures shall be taken to control pests and to mask, or eliminate, undesirable odors.
 - d. Chemical Waste: Chemical wastes shall be stored in corrosion resistant containers and shall be disposed of at least monthly, unless directed otherwise. Disposal of chemical wastes shall be in accordance with Federal, State, and Local requirements. Fuelling and lubricating of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants and burned oils to be discarded shall be disposed in accordance with approved procedures meeting Federal, State, and Local regulations. The COR shall be notified of oil and hazardous material spills which may be large enough to violate Federal, State, and Local regulations.
 - e. Rubble and Land clearing Waste: Rubble and land clearing waste shall be disposed of as herein before specified for "Disposal of Rubbish and Debris", paragraph 18c.(1).
4. Dust Control: Dust shall be minimized at all times, including non-work hours, weekends, and Federal legal holidays. Soils at the site and other areas disturbed by the Contractor's operations shall be sprinkled or treated with dust suppressors as necessary to control dust. Dry powder brooming will not be permitted. Vacuuming, wet mopping, wet sweeping, or wet power brooming shall be practiced instead. Air blowing will be permitted only for cleaning off non-particulate debris as form reinforcing bars. Sandblasting will not be permitted unless the dust there from is confined. Only wet cutting of concrete blocks, concrete, and asphalt will be permitted. Unnecessary shaking of bags will not be permitted where concrete mortar and plaster milling is done.

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5. Noise: The maximum use of “low-noise-emission products”, as certified by the Environmental Protection Agency, shall be made when available. Blasting or explosives will not be permitted.

1.36 IDENTIFICATION OF VEHICLES AND PERSONNEL:

- A. Vehicles: Highway vehicles owned or leased by Contractors shall be furnished with identifying markings reflecting minimally, the Contractor's name, home city and local phone number. Personal Vehicles must be registered with the Installation. (if applicable).
- B. Personnel: Contractor's workmen shall have legal identification (picture ID) on them at all times while working on the Government project.

1.37 DEMONSTRATIONS, COMMISSIONING, AND TESTING

- A. Demonstrations, commissioning, and testing requirements, if required by the contract, will be identified in the applicable divisions and parts of the specifications. The Contractor is responsible for reviewing the contract specifications to ensure all required demonstrations, commissioning, and tests are performed.
- B. Demonstrations, commissioning, and testing requirements must be completed within 14 calendar days from the date of Beneficial Occupancy, pre-final inspection, or Final Acceptance.
- C. Prior to all demonstrations, commissioning, and testing requirements being performed, the Contractor shall coordinate scheduling with the Government Inspector.
- D. After completion of all demonstrations, commissioning, and testing, the Contractor shall complete the column entitled “Date Contractor Conducted” on the attached spreadsheet (Atch No. 8) and submit the completed spreadsheet to the Contracting Officer within 7 calendar days.
- E. The Demonstrations, commissioning, and testing spreadsheet is considered part of the contract closeout documents. Final payment will not be made to the Contractor until the Contracting Officer has received and accepted the completed spreadsheet.
- F. See also Section 01 79 00 – Demonstration and Training

1.38 SPARE MATERIALS/ PARTS

- A. Spare materials/ parts, if required by the contract, will be identified in the applicable divisions and parts of the specifications. The Contractor is responsible for reviewing the contract specifications to ensure all required spare materials/ parts have been turned over to the Government.
- B. All required spare materials/ parts must be turned over to the Government within 14 calendar days from the date of Beneficial Occupancy, pre-final inspection, or Final Acceptance. If paragraph “a” above is applicable, the Contractor shall also complete the columns entitled “Date

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Contractor Delivered” and “Quantity Delivered” on the attached spreadsheet (Atch No. 9) and submit the completed spreadsheet to the Contracting Officer within 7 calendar days after submission of all required spare materials/ parts.

- C. The spare materials/ parts spreadsheet is considered part of the contract closeout documents. Final payment will not be made to the Contractor until the Contracting Officer has received and accepted the completed spreadsheet.

1.39 FIRE PROTECTION. Welding, Cutting, Brazing, and Burning Operations:

- A. Welding Operations. All welding and burning operations shall be accomplished in strict compliance with the requirements outline in AFOSH Standard 91-5; the National Fire Projection Association Standard 51B; Site Regulation 92-1; the Department of the Army Corps of Engineers General Safety Requirements Manual EM 385-1; and OSHA 29 CFR 1910.252. Prior to starting any welding, brazing, or burning operations, the Contractor shall ensure that the person performing the work obtains a permit to do so. This permit, USAF Welding, Cutting and Brazing (AF Form 592), is the only acceptable authorization for performing this type of work. The request for this permit can be accomplished by contacting the Camp Dawson Fire Department at (301) 981-4985. A Fire Department representative will respond to the work site, evaluate the conditions and issue the appropriate permit as required. Normally, this is accomplished within one (1) hour after receiving the request from the person requesting the permit. A copy of each permit shall be retained at the work site until the work has been completed. The Contractor shall provide, as a minimum, two (2) portable fire extinguishers acceptable to the Site Fire Department at each location where operations of this type are to be conducted. Extinguishers shall meet the requirements outline in AFOSH Standard 91-56 and by the Site Fire Department. General Contractors are required to brief all personnel on fire safety requirements, including all sub-contractors.
- B. Fire Fighting Equipment. In areas of buildings no otherwise authorized by Government installed equipment, the Contractor shall furnish and maintain emergency fire fighting equipment such as water barrels, buckets, shovels, and garden hoses of type and capacities satisfactory to the Site Fire Department and the Contracting Officer. The Contractor shall be required to make a thorough inspection of each building in which work has been performed at the close of the operations each workday. This inspection shall ensure that all necessary safeguards relative to potential fire hazards are in effect and working. The Contractor shall familiarize themselves and their personnel on the location of all telephones needed for fire reporting, the applicable procedures and all Site Fire Regulations.
- C. Housekeeping. The Contractor shall at all times maintain good housekeeping practices to reduce the risk of the fire damage and/or personal injury. All scrap materials; rubbish and refuse shall be removed daily from in and around the building and shall not be permitted to be strewn on adjacent property.
- D. Storage of Flammables. A suitable secure storage space shall be provided by the Contractor outside the immediate building area for the storing of flammables/combustibles of any type. No storage will be permitted inside of the building. The storage space shall be properly identified in accordance with applicable Federal National and Local Regulations as outlined by the Site Fire

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Department. Flammable or combustible liquids being used inside the building will be kept to a minimum and removed from the building during unused periods.

- E. Fire Extinguishers. Two (2) operational fire extinguishers shall be required at each area or location where hazardous operations are being performed. These include, but are not limited to, welding, cutting, brazing, burning, soldering or melting. Operations that produce flying or dripping slag, metal or embers shall have sufficient non-combustible materials on site to protect against fire damage or personal injury due to the operation. This may include fire resistant blankets as required by the Site Fire Department. When supplemental temporary heating devices are used, a fire watch will be present to cover all periods when such devices are in operations.
- F. Extinguisher Requirements. Both portable fire extinguishers shall meet or exceed a rating of 4A-40BC, as listed by Underwriters Laboratory Factory Manual or any National Acceptable Testing Laboratory. Extinguishers not meeting this requirement are not acceptable.
- G. Fire Alarms. For work operations which require any Site fire detection, alarm, or suppression system to be disabled, the Contractor shall request, in writing, a minimum of two (2) days in advance and prior to taking the system out of operation so that the Contracting Officer may notify the Site Fire Department of the requirement. The Contractor shall also verify that the Fire Department and the COR has, in fact, been notified prior to taking systems out of service.

1.40 SEVERE WEATHER WARNING REQUIREMENTS

- A. When notified by the COR that a severe weather warning has been issued for the areas in which the construction is being performed, the Contractor shall immediately take action to tie down, or otherwise secure structures, materials, and equipment on the job site that could become missiles as a result of strong surface winds, thunderstorms, or other weather-related conditions. The requirements are applicable twenty-four (24) hours a day, seven (7) days a week.

1.41 SEDIMENT AND EROSION CONTROL

- A. Burnoff: Burnoff of the ground cover is not permitted.
- B. Borrow Pit Areas: Manage and control borrow areas to prevent sediment from entering nearby streams or lakes. Restore areas, including those outside the borrow pit, disturbed by borrow and haul operations. Restoration includes grading, replacement of topsoil, and establishment of a permanent vegetative cover. Uniformly grade side slopes of borrow pit to note more than a slope of 1 part vertical to 2 parts horizontal. Uniformly grade the bottom of the borrow pits to provide a flat bottom and drain by outfall ditches or other suitable means. Stockpile topsoil removed during the borrow pit operation and use as part of restoring the borrow area.
- C. Protection of Erodible Soils: Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

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- D. Temporary Protection of Erodible Soils: Use the following methods to prevent erosion and control sedimentation:
1. Mechanical Retardation and Control of Runoff: Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms to retard and divert runoff to protected drainage courses, provision of site fences and protection of storm water inlets as necessary.
 2. Sediment Basins: Trap sediment in temporary sediment basins. Select a basin size to accommodate the runoff of a local 10-year storm. Pump dry and remove the accumulated sediment after each storm. Use a paved weir or vertical overflow pipe for overflow. Remove collected sediment from the site. Institute effluent quality monitoring programs.
 3. Borrow: Permitted only in areas where suitable environmental controls are not possible.
 4. Vegetation and Mulch: Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydro seeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.
 - a. Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish and/or reestablish a suitable stand of grass. The seeding operation shall be as specified in Section 329300, "Plants."
- E. Also see Section 015710 – Erosion and Sedimentation Control

1.42 AT/ FP REQUIREMENTS

- A. The project is required to be compliant with all AT/FP requirements. Comply with Uniform Facility Criteria (UFC) 4-010-01 dated 08 October 2003 (Updated 22 January 2007): DoD Minimum Antiterrorism Standards for Buildings:

1.43 WARRANTY (Also see 017400)

- A. In addition to the specific guarantees required by the specifications for certain portions of the work to be performed under this Contract, the Contractor shall furnish a written warranty for all of the work to be performed under this Contract, against defects in materials or workmanship for a period of one (1) year from the date of final acceptance of the completed work by the Government.
- C. All work including workmanship, material, and equipment (other than Government furnished equipment) shall be warranted for the full period of standard manufacturer's warranty, but in no case shall be warranted for a period of less than one (1) year upon notice from the Contracting Officer of any failure during this warranty period, the part or parts shall be replaced promptly with new parts by and at the expense of the Contractor.
- D. Upon completion, the Contractor shall provide the Contracting Officer with five (5) bound sets containing maintenance, repair and operating instructions and parts lists for each piece of installed equipment.

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- E. Reference Contract Clause FAR 52.246-12, "Inspection of Construction" and FAR 52.246-21, "Warranty of Construction."

1.44 EXTENDED MANUFACTURER WARRANTIES

- A. An extended manufacturer warranty provides coverage beyond the standard one (1) year manufacturer's warranty.
- B. Requirements for extended warranties will be so stated in the contract specifications. The Contractor is responsible for reviewing the specifications to identify all these requirements, and to ensure all extended warranty documents are submitted for both approval and acceptance.
- C. An extended warranty document included as part of a material submittal for review and approval will not be considered as the final extended warranty document required by the contract.
- D. All required final extended warranty documents must each contain, in addition to specific warranty data, the following information:
 - 1. Warranty Certificate/ Claim Number.
 - 2. Manufacturer's name, address, and telephone number.
 - 3. Project title and contract number.
- E. The Contractor shall submit all required final extended warranty documents, for review and acceptance, to the Contracting Officer (or as otherwise directed) in a binder format, as part of the contract closeout documents. In addition, the Contractor must complete columns F, G, and H of the attached Extended Manufacturer Warranty Spreadsheet and submit with the warranty documents.
- F. All extended warranties commence on the date of beneficial occupancy or final acceptance, whichever comes first.
- G. The final extended warranties are considered part of the contract closeout documents. Final payment will not be made to the Contractor until the Contracting Officer has received and accepted the completed spreadsheet and all required final extended warranty documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings, Contract Provisions, Special Provisions, Supplementary Provisions apply to this Section.

1.2 SUBMITTALS

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including but not limited to:

1. Contractor's Construction Schedule.
2. Monthly Schedule Report.
3. Weekly Progress Report.
4. Monthly Deficiency Report.
5. Test Reports.
6. Shop Drawings.
7. Product Data.
8. Samples.

- B. Administrative Submittals: Refer to other Division 1 Sections and other sections of the Contract Documents or requirements for administrative submittals. Such submittals include, but are not limited to:

1. Licenses and Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

- C. Inspection and testing submittals are included in Section 014000 "Contractor Quality Control Program.

1.3 SUBMITTAL PROCEDURES

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- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
1. Contractor is to prepare and submit a detailed schedule, submittal log, and schedule of values prior to commencement of work.
 - a. Submittal log is to be submitted before any submittals are issued.
 2. Contractor is to submit updated schedule, commissioning log update, and updated schedule of values with every "Monthly Application for Payment", otherwise application shall be returned.
 3. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities.
 4. Where architectural or technical considerations requiring close coordination of a number of products, the Contractor shall coordinate a concurrent submittal of all such products.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- B. Contractor's Responsibilities: The Contractor is responsible for the scheduling and submission of all submittals. All submittals shall be submitted to the Architect.
1. All Submittals must bear the approval stamp of the Contractor noting that the submittals have been checked and approved having been found in compliance with Contract requirements. It shall be the Contractor's responsibility to carefully, thoroughly, and fully review product data and shop drawings to ensure conformance with the contract requirements which shall include dimensions, clearances, compatibility, and coordination with product data and shop drawings submitted for other work.
 2. Shop drawings and samples shall be marked to show the Contract name and number, the Architect, Contractor, and applicable Subcontractor, Manufacturer or Supplier. Submittals shall completely identify the specification section, Contract Drawings, and the locations at which materials or equipment are to be installed.
 3. Where printed materials describe more than one product or model, clearly identify which is submitted for approval.
 4. If the Contractor has not checked the product data or shop drawings, carefully, even though stamped as checked and approved, the submittals shall be returned to the Contractor for proper checking before further processing or review by the Architect regardless of any urgency claimed by the Contractor. In such a situation, the Contractor will be responsible for any resulting delays to the scheduled Contract completion. Furthermore, the Administrative Contracting Officer may hold the Contractor responsible for increased Owner costs resulting from the Contractor's failure to comply with the requirements set forth herein.

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5. The contractor will verify that each submittal is complete and includes all applicable requirements of each specification section. Where noted in the specifications include product literature, shop drawings, calculations, warranties, MSDS sheets and other information required to make a full submittal. Partial submittals will be returned to the contractor without review and noted as incomplete.
 6. Incomplete or rejected submittals: Submittals requiring 3 or more reviews prior to approval will be assessed a \$600.00 Charge for the 3rd review and each subsequent review. The \$600 charge will be payable directly to the Architect/Engineer.
 7. The contractor will not use the submittal process for substitutions to the contract. Follow specification 016350 for substitutions.
- C. Submittal procedures:
1. Submit electronic submittals via email as DWF electronic files to Omni Associates-Architects.
 - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
 2. Use form included in the specifications for transmittals on all submittals. The Contractor will send a copy of the transmittal form simultaneously to the WVARNG in Charleston, WV.
 3. Omni Associates will log in all submittals and be responsible for coordinating the reviews performed by various sub consultants. Omni Associates will return electronic copies of the reviewed submittal to the Contractor and copy to the Owner. The Contractor is responsible for distributing approved prints of shop drawings to its subcontractors and materials suppliers.
- D. The Contractor shall bear all costs incurred for such reproduction and distribution. Prints of all reviewed shop drawings may be made from copies which carry the appropriate review stamps.
- E. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., FAFRC-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., FAFRC-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
- F. The Contractor must schedule submittals to allow 25 working days, from the date received by the Architect, for the review of each submittal. No extension of Contract time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the work to permit the time specified for review and processing. The 25 working day review period will not commence until the Architect has received a full and complete submittal. Processing of incomplete or unacceptable submissions by the Architect shall not reduce the Architect's 25 working day review period.
- G. Review Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. "NO EXCEPTIONS NOTED": Proceed with work covered by submittal provided it complies with requirements of Contract Documents; final acceptance will depend upon that compliance.
 2. "IMPLEMENT EXCEPTIONS NOTED": Proceed with work covered by submittal provided it complies with notations or corrections on submittal and requirements of Contract Documents; final acceptance will depend on that compliance.
 3. "REVISED AND RESUBMIT": Do not proceed with work covered by submittal, including purchasing, fabrication, delivery, or other activity. Revise and/or prepare a new submittal in accordance with notations, and resubmit without delay. Repeat this procedure, if necessary, to obtain a different action mark. Do not use submittals marked "Revise and Resubmit" at Project site, or elsewhere where work is in progress.
 4. "REJECTED-RESUBMIT": Do not proceed with work covered by submittal, including purchasing, fabrication, delivery, or other activity. Item is not as specified. Prepare a new submittal in accordance with specifications, and resubmit without delay. Repeat this procedure, if necessary, to obtain a different action mark. Do not use submittals marked "Rejected-Resubmit" at Project site, or elsewhere where work is in progress.
 5. "SUBMIT SPECIFIED ITEM": Do not proceed with work covered by submittal. The submittal is incomplete. Resubmit and include items and/or accessories as specified. Do not use submittals marked "Submit Specified Item" at Project site, or elsewhere where work is in progress.
- H. Provide a space approximately 4 inches by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings or other action taken.
- I. Include the following information on the submittal label.
1. Contract name and number.

2. Date
 3. Name of Architect.
 4. Name of Contractor.
 5. Name and address of subcontractor, if applicable.
 6. Name and address of supplier, if applicable.
 7. Name of manufacturer, if applicable.
 8. Number and title of appropriate Specification Section.
- J. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using an AF 3000 transmittal form. Submittals received from sources other than the Contractor will be returned without action.
1. On the transmittal record relevant information and requests for data, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- K. Contract Construction Schedule: Refer to Section 013200, "Construction Analysis - Schedules and Reports," for information on required submittals.
- L. Resubmission: Resubmittal procedure shall follow the same procedures as the initial submittal.
- 1.4 WEEKLY PROGRESS REPORTS
- A. Prepare a Weekly progress report, recording information concerning events at the site for each work day; and submit duplicate copies to the Architect by noon on the Monday following the week of actual work.
 - B. This report shall be coordinated with the requirements of Specification Section 014000 "Contractor Quality Control Program", Part 3, paragraph 3.1 "Record Keeping".
- 1.5 SHOP DRAWINGS
- A. Submit prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate any deviations from the Contract Documents. Reproductions of Contract Documents or standard information will not be acceptable.

- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Shop drawings and product data shall show in detail, materials, dimensions, thickness, assembly, attachments, relation to adjoining work, and all other pertinent data and information. In checking shop drawings and product data, verify all dimensions and field conditions and check and coordinate the shop drawings and product data of any section or trade with the requirements of other sections or trades as related thereto, as required for proper and complete installation of the Work.
- C. The submission of shop drawings shall include:
 - 1. Submit Shop Drawings in the following format:
 - a. DWF electronic file.
 - 2. The prints shall bear the Contractor's approval stamp on each sheet.
- D. Coordination drawings are shop drawings that detail the relationship and integration of different construction elements that require careful coordination during fabrication or installation. Preparation of coordination drawings is specified in Section 013100, "Project Coordination".

1.6 PRODUCT DATA

- A. Compile Product Data into a single submittal for each element of construction or system. Product Data includes, among other information, printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is inadequate, submit as "Shop Drawings.
- B. The submission of product data literature shall be in DWF electronic format.
 - 1. Mark to show applicable choices and options. Where Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.

1.7 SAMPLES

- A. The Contractor shall submit sample(s) to the Architect as required in the specifications or as may be requested by the Architect. All costs associated with sample submittals shall be borne by the Contractor.

- B. Submit samples to Omni Associates.
1. Transmit Samples that contain multiple, related components together in one submittal package.
 2. Selections such as interior and exterior finishes must be submitted so as to allow the Architect time to coordinate all of the finishes as a complete finish package.
- C. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
- a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
- D. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
- a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Submission of sample(s) by the Contractor shall be scheduled to allow 25 working days after the date received for the Architect's evaluation.
1. Samples requiring coordination of colors with different products shall be given 60 days from submission of the last sample of the group for selection of colors and to allow for approval of the Owner.
- F. Every sample submittal shall have a typed label showing:
1. Contract title and number.
 2. Contractor's name.
 3. Architect's name.

4. Description of item represented.
 5. Manufacture's data sheets and drawings, and other information as applicable.
 6. Applicable Specification Section and Contract drawing number(s).
- G. Approval of samples will not preclude the rejection of the completed work. If completed work deviates from the sample submitted or does not otherwise comply with other Contract requirements. Samples shall show anticipated range of color and/or texture. The architect may require additional submissions if the range is not satisfactory.
- H. Preliminary sample submittals: Where samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit full set of choices for the material or product.
- I. Preliminary sample submittals will be reviewed and returned with Architect's mark indicating selection and other action required.
- J. Maintain sets of approved Samples at the Project site, for the purpose of comparison throughout the course of construction.
- K. Field Samples required by individual Specification Sections are mock-ups erected on site to illustrate finishes, coatings, or textures and to establish the standard by which the contract Work will be judged. Mock-ups shall be provided in the sizes prescribed in the Contract or as may be required by the Architect at no additional cost to the Owner.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 013300

SUBMITTAL FORM FOLLOWS

SECTION 018113 – SUSTAINABLE DESIGN REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED Silver certification based on LEED-NC, Version 3.
 - 1. Other LEED prerequisites and credits needed to obtain LEED certification depend on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
 - 2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Architect's design and other aspects of Project that are not part of the Work of the Contract.
 - 3. A copy of the LEED Project checklist is attached at the end of this Section for information only.
- B. Related Sections:
 - 1. Divisions 1 through 33 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.3 DEFINITIONS

- A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
- B. LEED: Leadership in Energy & Environmental Design.
- C. Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- D. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

- E. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from Project site. Manufacturing refers to the final assembly of components into the building product that is installed at Project site.
- F. Regionally Extracted and Manufactured Materials: Regionally manufactured materials made from raw materials that are extracted, harvested, or recovered within a radius of 500 miles from Project site.
- G. Recycled Content: The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.
 - 1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
 - 2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.
- H. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.4 SUBMITTALS

- A. General: Submit additional LEED submittals required by other Specification Sections.
- B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.
- C. Project Materials Cost Data: Provide statement indicating total cost for materials used for Project. Costs exclude labor, overhead, and profit. Include breakout of costs for the following categories of items:
 - 1. Furniture.
 - 2. Plumbing.
 - 3. Mechanical.
 - 4. Electrical.
 - 5. Specialty items such as elevators and equipment.
 - 6. Wood-based construction materials.
- D. LEED Action Plans: Provide preliminary submittals within 14 days of date established for the Notice to Proceed indicating how the following requirements will be met:
 - 1. Credit MR 2.1 and Credit MR 2.2: Waste management plan complying with Division 1 Section "Construction Waste Management."

SUSTAINABLE DESIGN REQUIREMENTS
SECTION 018113

2. Credit MR 3: List of proposed salvaged and refurbished materials. Identify each material that will be salvaged or refurbished, including its source, cost, and replacement cost if the item was to be purchased new.
 3. Credit MR 3.1: List of proposed salvaged and refurbished materials. Identify each material that will be salvaged or refurbished, including its source, cost, and replacement cost if the item was to be purchased new.
 4. Credit MR 4.1: List of proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
 5. Credit MR 5.1 and Credit MR 5.2: List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.
 6. Credit MR 5.1 and Credit MR 5.2: List of proposed regionally manufactured materials and regionally extracted and manufactured materials.
 - a. Identify each regionally manufactured material, including its source and cost.
 - b. Identify each regionally extracted and manufactured material, including its source and cost.
 7. Credit MR 7: List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.
 8. Credit EQ 3.1: Construction indoor-air-quality management plan.
- E. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:
1. Credit MR 2.1 and Credit MR 2.2: Waste reduction progress reports complying with Division 1 Section "Construction Waste Management."
 2. Credit MR 4.1: Recycled content.
 3. Credit MR 5.1 and Credit MR 5.2: Regional materials.
 4. Credit MR 5.1 and Credit MR 5.2: Regionally manufactured materials and regionally extracted and manufactured materials.
 5. Credit MR 7: Certified wood products.
- F. LEED Documentation Submittals:
1. Credit EA 5: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over a period of time of not less than one year of post construction occupancy.
 2. Credit MR 2.1 and Credit MR 2.2: Comply with Division 1 Section "Construction Waste Management."
 3. Credit MR 3: Receipts for salvaged and refurbished materials used for Project, indicating sources and costs for salvaged and refurbished materials.
 4. Credit MR 4.1: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
 5. Credit MR 5.1 and Credit MR 5.2: Product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
 6. Credit MR 5.1 and Credit MR 5.2: Product data indicating location of material manufacturer for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material and for each regionally extracted and manufactured material.

- a. Include statement indicating distance from manufacturer to Project for each regionally manufactured material.
- b. Include statement indicating location of and distance from Project to point of extraction, harvest, or recovery for each raw material used in regionally extracted and manufactured materials.
7. Credit MR 7: Product data and chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each certified wood product.
8. Credit EQ 3.1:
 - a. Construction indoor-air-quality management plan.
 - b. Product data for temporary filtration media.
 - c. Product data for filtration media used during occupancy.
 - d. Construction Documentation: Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.
9. Credit EQ 4.1: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
10. Credit EQ 4.2: Product data for paints and coatings used inside the weatherproofing system indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
11. Credit EQ 4.4: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

1.5 QUALITY ASSURANCE

- A. LEED Coordinator: Engage an experienced LEED coordinator to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

- A. Credit MR 4.1: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10 percent of cost of materials used for Project.
 1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
 2. Cost of pre-consumer recycled content of an item shall be determined by dividing weight of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.

2.2 REGIONAL MATERIALS

- A. Credit MR 5.1 and Credit MR 5.2: Provide a minimum of 20 percent of building materials (by cost) that are regional materials.

- B. Credit MR 5.1: Provide a minimum of 20 percent of materials (by cost) that are regionally manufactured materials.
- C. Credit MR 5.2: Provide a minimum of 10 percent of materials (by cost) that are regionally extracted and manufactured materials.

2.3 CERTIFIED WOOD

- A. Credit MR 7: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
 - 1. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:
 - a. Rough carpentry.
 - b. Miscellaneous carpentry.
 - c. Heavy timber construction.
 - d. Wood decking.
 - e. Metal-plate-connected wood trusses.
 - f. Structural glued-laminated timber.
 - g. Finish carpentry.
 - h. Architectural woodwork.
 - i. Wood paneling.
 - j. Wood veneer wall covering.
 - k. Wood flooring.
 - l. Wood lockers.
 - m. Wood cabinets.
 - n. Furniture.

2.4 LOW-EMITTING MATERIALS

- A. Credit EQ 4.1: For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D:
 - 1. Wood Glues: 30 g/L.
 - 2. Metal to Metal Adhesives: 30 g/L.
 - 3. Adhesives for Porous Materials (Except Wood): 50 g/L.
 - 4. Subfloor Adhesives: 50 g/L.
 - 5. Plastic Foam Adhesives: 50 g/L.
 - 6. Carpet Adhesives: 50 g/L.
 - 7. Carpet Pad Adhesives: 50 g/L.
 - 8. VCT and Asphalt Tile Adhesives: 50 g/L.
 - 9. Cove Base Adhesives: 50 g/L.
 - 10. Gypsum Board and Panel Adhesives: 50 g/L.
 - 11. Rubber Floor Adhesives: 60 g/L.
 - 12. Ceramic Tile Adhesives: 65 g/L.
 - 13. Multipurpose Construction Adhesives: 70 g/L.
 - 14. Fiberglass Adhesives: 80 g/L.
 - 15. Contact Adhesive: 80 g/L.
 - 16. Structural Glazing Adhesives: 100 g/L.
 - 17. Wood Flooring Adhesive: 100 g/L.

18. Structural Wood Member Adhesive: 140 g/L.
 19. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
 20. Top and Trim Adhesive: 250 g/L.
 21. Plastic Cement Welding Compounds: 250 g/L.
 22. ABS Welding Compounds: 325 g/L.
 23. CPVC Welding Compounds: 490 g/L.
 24. PVC Welding Compounds: 510 g/L.
 25. Adhesive Primer for Plastic: 550 g/L.
 26. Plastic Cement Welding Compounds: 350 g/L.
 27. ABS Welding Compounds: 400 g/L.
 28. CPVC Welding Compounds: 490 g/L.
 29. PVC Welding Compounds: 510 g/L.
 30. Adhesive Primer for Plastic: 650 g/L.
 31. Sheet Applied Rubber Lining Adhesive: 850 g/L.
 32. Aerosol Adhesive, General Purpose Mist Spray: 65 percent by weight.
 33. Aerosol Adhesive, General Purpose Web Spray: 55 percent by weight.
 34. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
 35. Other Adhesives: 250 g/L.
 36. Architectural Sealants: 250 g/L.
 37. Nonmembrane Roof Sealants: 300 g/L.
 38. Single-Ply Roof Membrane Sealants: 450 g/L.
 39. Other Sealants: 420 g/L.
 40. Sealant Primers for Nonporous Substrates: 250 g/L.
 41. Sealant Primers for Porous Substrates: 775 g/L.
 42. Modified Bituminous Sealant Primers: 500 g/L.
 43. Other Sealant Primers: 750 g/L.
- B. Credit EQ 4.2: For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D and the following chemical restrictions:
1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
 2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
 3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
 5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 6. Floor Coatings: VOC not more than 100 g/L.
 7. Shellacs, Clear: VOC not more than 730 g/L.
 8. Shellacs, Pigmented: VOC not more than 550 g/L.
 9. Stains: VOC not more than 250 g/L.
 10. Flat Interior Topcoat Paints: VOC not more than 50 g/L.
 11. Nonflat Interior Topcoat Paints: VOC not more than 150 g/L.
 12. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 13. Clear Wood Finishes, Varnishes and Sanding Sealers: VOC not more than 350 g/L.
 14. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
 15. Floor Coatings: VOC not more than 100 g/L.
 16. Shellacs, Clear: VOC not more than 730 g/L.
 17. Shellacs, Pigmented: VOC not more than 550 g/L.

18. Stains: VOC not more than 250 g/L.
19. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
20. Dry-Fog Coatings: VOC not more than 400 g/L.
21. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.
22. Pretreatment Wash Primers: VOC not more than 420 g/L.
23. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
24. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.
 - o. Hexavalent chromium.
 - p. Isophorone.
 - q. Lead.
 - r. Mercury.
 - s. Methyl ethyl ketone.
 - t. Methyl isobutyl ketone.
 - u. Methylene chloride.
 - v. Naphthalene.
 - w. Toluene (methylbenzene).
 - x. 1,1,1-trichloroethane.
 - y. Vinyl chloride.

- C. Credit EQ 4.4: Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.

PART 3 - EXECUTION

3.1 REFRIGERANT AND CLEAN-AGENT FIRE-EXTINGUISHING-AGENT REMOVAL

- A. Prerequisite EA Prerequisite 3: Remove CFC-based refrigerants from existing HVAC&R equipment indicated to remain and replace with refrigerants that are not CFC based. Replace or adjust existing equipment to accommodate new refrigerant as described in Division 15 Sections.
- B. Credit EA 4: Remove clean-agent fire-extinguishing agents that contain HCFCs or halons and replace with agent that does not contain HCFCs or halons. See Division 13 Section "Clean-Agent Extinguishing Systems" for additional requirements.

3.2 CONSTRUCTION WASTE MANAGEMENT

- A. Credit MR 2.1 and Credit MR 2.2: Comply with Division 1 Section "Construction Waste Management."

3.3 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

- A. Credit EQ 3.1: Comply with SMACNA's "SMACNA IAQ Guideline for Occupied Buildings under Construction."
 - 1. If Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 1 Section "Temporary Facilities and Controls," install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.
 - 2. Replace all air filters immediately prior to occupancy.

END OF SECTION 018113

SECTION 052100

STEEL JOIST FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Open web steel joists and shear stud connectors, with bridging, attached seats and anchors.
- B. Loose bearing members, such as plates or angles, and anchor bolts for site placement.
- C. Supplementary framing for floor and roof openings greater than 18 inches.

1.02 RELATED REQUIREMENTS

- A. Section 051200 - Structural Steel Framing: Superstructure framing.
- B. Section 053100 - Steel Decking: Support framing for openings less than 18 inches in decking.

1.03 REFERENCE STANDARDS

- A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- B. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- C. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength; 2007b.
- D. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2009.
- E. ASTM E 94 - Standard Guide for Radiographic Examination; 2004.
- F. ASTM E 164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2008.
- G. ASTM E 165 - Standard Test Method for Liquid Penetrant Examination; 2002.
- H. ASTM E 709 - Standard Guide for Magnetic Particle Testing; 2008.
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2008.
- J. SJI (SPEC) - Catalog of Standard Specifications and Load Tables for Steel Joists and Joist Girders; Steel Joist Institute; 2005.
- K. SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Joist Girders; Steel Joist Institute; 2006.
- L. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
- M. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).
- N. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, and attachments.

1.05 QUALITY ASSURANCE

- A. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in West Virginia.

- B. Perform Work, including that for headers and other supplementary framing, in accordance with SJI Standard Specifications Load Tables and SJI Technical Digest No.9.
 - 1. Maintain one copy of each document on site.
- C. Manufacturer Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience.
- D. Erector Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Transport, handle, store, and protect products to SJI requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Joists:
 - 1. Canam Group Inc: www.canam-steeljoist.ws
 - 2. CMC Joist: www.cmcjoist.com.
 - 3. Nucor-Vulcraft Group: www.vulcraft.com.
 - 4. New Millenium.

2.02 MATERIALS

- A. Open Web Joists: Types as indicated on drawings:
 - 1. Provide bottom chord extensions as indicated.
 - 2. End bearing of 2-1/2 inches on steel supports.
 - 3. End bearing of 4 inches on masonry supports.
 - 4. Finish: Shop primed.
- B. Anchor Bolts, Nuts and Washers: ASTM A 307, hot-dip galvanized per ASTM A 153/A 153M, Class C.
- C. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars.
- D. Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A 36/A 36M.
- E. Welding Materials: AWS D1.1; type required for materials being welded.
- F. Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

- A. Frame special sized openings in joist web framing as detailed.

2.04 FINISH

- A. Shop prime joists as specified.
 - 1. Do not prime surfaces that will be fireproofed.
- B. Prepare surfaces to be finished in accordance with SSPC-SP 2.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 ERECTION

- A. Erect joists with correct bearing on supports.
- B. Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb,

and in true alignment.

- C. Coordinate the placement of anchors for securing loose bearing members furnished as part of the work of this section.
- D. After joist alignment and installation of framing, field weld joist seats to steel bearing surfaces.
- E. Position and field weld joist chord extensions and wall attachments.
- F. Install supplementary framing for floor and roof openings greater than 18 inches.
- G. Do not permit erection of decking until joists are braced bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
- H. Do not field cut or alter structural members without approval of joist manufacturer.
- I. After erection, prime welds, damaged shop primer, damaged galvanizing, and surfaces not shop primed, except surfaces specified not to be primed.

3.03 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000.
- B. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- C. Welded Connections: Visually inspect all field-welded connections and test at least 25 percent of welds using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E 94.
 - 2. Ultrasonic testing performed in accordance with ASTM E 164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E 165.
 - 4. Magnetic particle inspection performed in accordance with ASTM E 709.

END OF SECTION

- B. Perform Work, including that for headers and other supplementary framing, in accordance with SJI Standard Specifications Load Tables and SJI Technical Digest No.9.
 - 1. Maintain one copy of each document on site.
- C. Manufacturer Qualifications: Company specializing in performing the work of this section with minimum 10 years documented experience.
- D. Erector Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

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 - 4. Finish: Shop primed.
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- C. Shear Stud Connectors: Made from ASTM A 108 Grade 1015 bars.
- D. Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A 36/A 36M.
- E. Welding Materials: AWS D1.1; type required for materials being welded.
- F. Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, complying with VOC limitations of authorities having jurisdiction.

2.03 FABRICATION

- A. Frame special sized openings in joist web framing as detailed.

2.04 FINISH

- A. Shop prime joists as specified.
 - 1. Do not prime surfaces that will be fireproofed.
- B. Prepare surfaces to be finished in accordance with SSPC-SP 2.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 ERECTION

- A. Erect joists with correct bearing on supports.
- B. Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb,

and in true alignment.

- C. Coordinate the placement of anchors for securing loose bearing members furnished as part of the work of this section.
- D. After joist alignment and installation of framing, field weld joist seats to steel bearing surfaces.
- E. Position and field weld joist chord extensions and wall attachments.
- F. Install supplementary framing for floor and roof openings greater than 18 inches.
- G. Do not permit erection of decking until joists are braced bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
- H. Do not field cut or alter structural members without approval of joist manufacturer.
- I. After erection, prime welds, damaged shop primer, damaged galvanizing, and surfaces not shop primed, except surfaces specified not to be primed.

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- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 014000.
- B. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- C. Welded Connections: Visually inspect all field-welded connections and test at least 25 percent of welds using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E 94.
 - 2. Ultrasonic testing performed in accordance with ASTM E 164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E 165.
 - 4. Magnetic particle inspection performed in accordance with ASTM E 709.

END OF SECTION

SECTION 053100

STEEL DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof deck.
- B. Composite floor deck.
- C. Supplementary framing for openings up to and including 18 inches.
- D. Bearing plates and angles.

1.02 DESCRIPTION OF WORK:

- A. Extent of composite steel floor deck and edge of slab steel closure plates are indicated on drawings, including basic layout and type of deck units required.

1.03 RELATED REQUIREMENTS

- A. Section 032000 - Concrete Reinforcing.
- B. Section 033000 - Cast-in-Place Concrete: Concrete topping over metal deck.
- C. Section 051200 - Structural Steel Framing: Support framing for openings larger than 18 inches.
- D. Section 05120 - Structural Steel: Steel angle concrete stops at deck edges.
- E. Section 052100 - Steel Joist Framing: Support framing for openings larger than 18 inches.

1.04 REFERENCE STANDARDS

- A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- B. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- C. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2008.
- E. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2007.
- F. SDI (DM) - Publication No.31, Design Manual for Composite Decks, Form Decks, Roof Decks; Steel Deck Institute; 2007.
- G. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); The Society for Protective Coatings; 2002 (Ed. 2004).
- H. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).

1.05 PERFORMANCE REQUIREMENTS

- A. Select and design metal deck in accordance with SDI Design Manual.
- B. Calculate to structural working stress design.

1.06 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittals procedures.
- B. Product Data: Submit manufacturer's specifications and installation instructions for each type of

decking and accessory specified. Include manufacturer's certification of product compliance with SDI standards as may be necessary to show compliance with these specifications.

- C. Steel Deck Shop Drawings: Submit detailed drawings showing layout and types of deck panels, attachment details, closures, edge strips, supplementary framing, sump pans, cant strips, cut openings, special jointing or other accessories.
 - 1. Indicate welds by standard AWS symbols and show size, length, and type each weld.
 - 2. Welding or fastener pattern details shall be appropriate for the manufacturer's particular product to deliver required uplift loading or diaphragm shear capacity indicated on the drawings or herein.
 - 3. Attachment or anchoring details are subject to review by the Structural Engineer based on the properties and capacities of each manufacturer's product.
- D. Reproducible copies of contract documents shall not be used as shop drawings. Shop drawings shall be reviewed by Contractor prior to submission. Drawings shall bear Contractor's approval stamp AND Project Manager's signature accepting responsibility for coordination of dimensions shown in the contract documents. Drawings not bearing Contractor's stamp may be rejected at the discretion of the Architect or Structural Engineer.
- E. Review and return of shop drawings shall be based on a MINIMUM of fifteen (15) working days in the Structural Engineer's office from receipt of submission to return to the next party for their action. Shop drawings should be submitted incrementally as appropriate packages are prepared to equalize the workload for review of the drawings.
- F. Submission of a large volume of shop drawings at one time may result in review times which will exceed those noted above. Definition of a "large volume" of shop drawings is subject to interpretation.
- G. Contractor shall provide in his schedule for the above noted time and for appropriate additional time for delivery (shipping) of drawings. No claims may be made on the part of the Contractor for delay of the project due to shop drawing reviews which occur within the above stated time limits or for reviews which take greater time than noted above due to submission of a large volume of shop drawings at one time.
- H. Shop drawings rejected due to non-compliance with the structural documents shall be resubmitted with the same time requirements for review as noted above. No claims may be made on the part of the Contractor for delay of the project due to shop drawings rejected due to non-compliance with the structural documents. Such delays, if they occur, shall be attributable entirely to the Contractor's Fabricator. Shop drawings submitted for more than two reviews due to fabricator's non-compliance shall result in time for additional engineering services being charged to the Contractor.
- I. Changes and Deviations: After submittal review, neither products nor construction requirements indicated on the shop drawings may be changed or deviated from. Changes following shop drawing review may be requested by the Contractor in writing, separate from shop drawings and shall clearly delineate requested change. Contractor shall not proceed with any requested changes until notified by Architect/Structural Engineer, in writing, of acceptability.
- J. Engineer's Review: Structural Engineer's review of shop drawings will be for general considerations only.
- K. Compliance with requirements for materials, fabrication, and erection is Contractor's responsibility: include details noted above and other pertinent data.
- L. Insurance Certification: Assist Owner in preparation and/or submittal of roof installation acceptance certification necessary in connection with fire and extended coverage insurance.

1.07 QUALITY ASSURANCE

- A. Design deck layout, spans, fastening, and joints under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in West Virginia. Provide

sealed shop drawings and calculations with the Shop Drawings submittal. Bid shall include cost of C.D.E. (Contractor's Design Engineer) fees.

- B. Codes and Standards:
1. Comply with all applicable provisions of state and local building and safety codes and all other codes referenced therein, other federal (051-IA) safety requirements, and other codes and standards referenced in this specification, except where more stringent requirements are indicated or specified herein.
 - a. AISI "Specification for Design of Cold-Formed Steel Structural Members"
 - b. AWS DI .3-90 "Structural Welding Code - Sheet Steel"
 - c. SDI "Design Manual for Floor Decks and Roof Decks"
 - d. SDI "Design Manual for Composite Decks, Form Decks and Roof Decks".
- C. Any material or operation specified by reference to published specification of a manufacturer shall comply with requirements of standards listed herein. In case of a conflict between referenced specifications and project specifications, project specifications shall govern.
- D. If requested, furnish affidavit from manufacturer or fabricator certifying that materials or products delivered to job meet requirements specified. However, such certification shall not relieve Contractor from responsibility of complying with any added requirements specified herein.
- E. Qualifications for Welding Work: Contractor shall retain testing laboratory to provide qualification of welding processes and welding operators in accordance with AWS "Standard Qualification Procedure" comply with American Welding Society (AWS) DI .3, "Structural Welding Code - Sheet Steel". Contractor shall submit for Structural Engineer's review copies of AWS certifications for each welder assigned to the job. Where re-certification of welders is required, BOTH cost and retesting will be Contractor's responsibility.
1. Provide certification, either 'a' or 'b' below that welders employed in work have as follows:
 - a. Satisfactorily passed AWS qualification tests for the types of welds they will be performing based on most current AWS standards and procedures and have been continuously employed by the same Contractor since becoming certified. Or,
 - b. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests for the types of welds they will be performing within previous twelve (12) months.
 2. Contractor Note: Welding qualifications for Steel Decking (sheet steel) are not the same as for structural steel welding. Requirements of AWS DI.3 ARE MANDATORY. Failure to comply will result in rejection of all welding performed by unqualified welders or welding which is not explicitly identified as performed by qualified welders. Welded decking in place is subject to inspection and testing by ITL. Expense of removing and replacing portions of decking for testing purposes will be borne by Owner if welds are found to be satisfactory. Remove work found to be defective and replace with new acceptable work Cost of such removal and replacement shall be borne by the Contractor.

1.08 INSPECTION AND TESTING:

- A. Contractor will employ, at his expense, a qualified independent testing laboratory (ITL) to inspect steel decking attachment and to perform tests and prepare test reports. Reports shall be furnished directly to the Architect and Structural Engineer with copies forwarded to the Contractor.
1. ITL shall conduct and interpret tests to verify that metal decking is attached to structural frame in accordance with manufacturer's recommendations, contract documents, and approved shop drawings. Specifically, include verification that structural supporting members - structural steel(Section 05100)-have not been "burned through" or otherwise damaged by the attaching operations. Refer to Section 05300 "Steel Decking" specifications for installation requirement. Submit a written report of deck and supporting member inspection, for Structural Engineers review and approval, prior to Contractor's covering of decking surface. Report shall state whether steel decking attachment complies with requirements herein and specifically state any deviations there from and any damage

to the supporting members attributable to steel decking attachment operations or procedures.

2. Contractor(s) shall provide access for ITL to places where steel decking work is being performed so required inspection and testing can be accomplished. Contractor/Fabricator shall correct deficiencies in steel decking attachment which inspections/laboratory test reports have indicated to be not in compliance with requirements. ITL shall perform additional tests to reconfirm any non-compliance of original work as may be necessary to show compliance. Such tests, including additional architectural/engineering services made necessary by such non-conformance, will be paid by Contractor.
- B. Underwriters' Label: Provide steel floor deck units listed in UL's "Fire Resistance Directory", with each deck unit bearing UL label and marking for specific system detailed.
 - C. Factory Mutual Listing: Provide steel roof deck units evaluated by Factory Mutual System and listed in Factory.
 - D. Mutual Approval Guide for "Class I" fire rated construction. Attachment of steel roof decking shall comply with
 - E. Factory Mutual System "Class 1-90" for wind uplift loading.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Cut plastic wrap to encourage ventilation.
- B. Delivery, Storage, and Handling: Protect all components during delivery, unloading and storage. Store off the ground with one end elevated for drainage. Protect from water damage by exposure or condensation.
- C. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Deck:
 1. United Steel Deck, Inc: www.njb-united.com.
 2. Nucor-Vulcraft Group: www.vulcraft.com.
 3. Wheeling Corrugating Co: www.wheelingcorrugating.com.
 4. Substitutions: See Section 016000 - Product Requirements.

2.02 STEEL DECK

- A. All Deck Types: Select and design metal deck in accordance with SDI Design Manual.
 1. Calculate to structural working stress design.
 2. Maximum Vertical Deflection of Floor Deck: 1/360 of span.
 3. Maximum Vertical Deflection of Roof Deck: 1/240.
- B. Roof Deck: Non-composite type, fluted steel sheet:
 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), with G60/Z180 galvanized coating.
 - a. Grade as required to meet performance criteria.
 2. Minimum Metal Thickness, Excluding Finish: 21 gage.
 3. Nominal Height: 1-1/2 inch.
 4. Profile: Fluted; SDI NR.
 5. Formed Sheet Width: 24 inch.
 6. End Joints: Lapped, mechanically fastened.
- C. Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:
 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS) Grade 33/230, with G60/Z180 galvanized coating.
 2. Span Design: Double.

3. Minimum Metal Thickness, Excluding Finish: 22 gage.
4. Nominal Height: 1-1/2 inches.
5. Profile: Fluted; SDI NR.
6. Formed Sheet Width: 24 inch.
7. Side Joints: Lock seam.

2.03 FABRICATION

- A. The deck manufacturer shall be responsible for selecting, for his product, the required deck thickness to safely support and meet all SDI performance criteria for the superimposed design loads and for all spans indicated on the drawings. However, in no case shall the delivered thickness of the uncoated steel sheet be less than 95% of that indicated on the drawings.
- B. Section properties of the deck units are to be calculated in conformance with the AISI publication, "Specification for Design of Cold-Formed Steel Structural Members". Steel deck shall be designed in accordance with the "Steel Deck Institute Design Manual for Composite Decks, Form Decks and Roof Decks".
- C. Spans shall not exceed the maximum clear spans as specified by SDI criteria. Fabricate deck units in lengths to span three (3) or more supports with flush, telescoped or nested 2" laps at ends and interlocking or nested side laps, unless otherwise indicated.
- D. Where concrete slabs are placed on steel decking, the General Contractor shall be responsible for including in his bid the additional concrete volume required to accommodate the deflection of the steel decking under the wet weight of the concrete.
- E. Composite Steel Floor Deck Units: Fabricate deck units with integral embossing/raised pattern to furnish mechanical bond with concrete slabs. Fabricate deck units of steel thickness, depth and width as shown with fluted section having interlocking side laps. The average rib width to deck depth shall not be less than 2.0. All metal deck shall be designed for unshored conditions, unless indicated otherwise on the drawings. Simple span conditions are not permitted unless span is shored at mid-span. If any spans are found to require shoring, the shoring shall be provided by the Contractor
- F. Composite floor deck shall be designed to support the concrete dead load plus 20 psf construction live load without exceeding a flexural stress of 20,000 psi without shoring. Maximum deck deflection due to concrete dead load shall not exceed 0.005 times the span or 1/2", whichever is greater. Supplier may be required to show by calculation that the deck can carry the specified construction loads within the limitations specified. Any additional concrete topping slabs shall not be placed until the composite slab has reached 75% of the specified design strength.
- G. Metal Closure Strips (Pour Stops): Fabricate metal closure strips, for cell raceways/openings between decking and other construction, of not less than .045" (18 gage) sheet steel. Fabricate metal steel cover plates for end-abutting composite deck units of not less than same thickness as decking Form to match contour of deck units and approximately 6" wide. Form to provide tight-fitting closures at open ends of cells or flutes and sides of decking.
- H. Closures shall be designed to support the wet weight of the concrete slab without exceeding either a vertical or a lateral deflection of 1/2".
- I. Roof Sump Pans: Fabricate from single piece of 0.071" (minimum 14 gage), galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3" wide. Recess pans not less than 1-1/2" below roof deck surface unless indicated otherwise or required by roof deck configuration. Holes for drains shall be cut in the field by others.
- J. Hanger Slots or Clips: Provide UL approved punched hanger slots between cells or flutes of lower element where steel deck units are to receive hangers for support of ceiling construction,

flexible air ducts, diffusers or lighting fixtures:

1. Hanger clips designed to clip over male side lap joints of floor deck units may be used instead of hanger slots.
2. Locate slots or clips at not more than 14" o.c. in both directions, not over 9" from walls at ends, and not more than 12" from walls at sides, unless otherwise shown.
3. Provide manufacturer's standard hanger attachment devices.
4. Loads hanging from steel deck units shall not exceed 100 pounds unless explicitly detailed on the structural drawings.
5. Do not hang pipes or main air duct trunk lines from steel deck units.

2.04 ACCESSORY MATERIALS

- A. Bearing Plates and Angles: ASTM A 36/A 36M steel, unfinished.
- B. Welding Materials: AWS D1.1.
- C. Fasteners: Galvanized hardened steel, self tapping.
- D. Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, complying with VOC limitations of authorities having jurisdiction.
- E. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- F. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.

2.05 FABRICATED DECK ACCESSORIES

- A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gage thick sheet steel; of profile and size as indicated; finished same as deck.
- B. Roof Sump Pans: 14 gage sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.
- C. Floor Drain Pans: 14 gage sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches below floor deck surface, bearing flange 3 inches wide, sealed watertight.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level. Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein:
 1. Place units on supporting steel framework and adjust to final position with ends accurately aligned and bearing a minimum of 1 1/2" (2" minimum for steel form deck units) onto supporting members before being permanently fastened. Do not stretch or contract side lap interlocks.
 2. Place units in straight alignment for entire length of run of cells and with close alignment between cells at ends of abutting units.
 3. Place units flat and square, secure to adjacent framing without warp or excessive deflection.
 4. Do not place units on concrete supporting structure until concrete has cured and is dry.
 5. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
 6. Do not use floor deck units for storage or working platforms until permanently secured.
 7. Comply with AWS requirements/procedures for manual shielded steel arc welding. appearance, and/or quality of welds, and methods used in correcting welding work. Use

welding washers for all deck thinner than 22 gauge.

- B. Composite Steel Decking: Attach composite deck units as follows:
1. Fasten units to supporting steel members by not less than 3/4" diameter welds or elongated welds of equal strength, spaced not more than 12" o.c. with a minimum of two (2) welds per unit at each support, unless indicated otherwise on the drawings. Comply with AWS requirements/procedures for manual shielded steel arc welding, appearance, and/or quality of welds, and methods used in correcting welding work. Where composite beam shear connectors (headed studs) are being used each stud may substitute for one weld.
 2. Tack weld or use self-tapping No. 8 or larger machine screws at 4'-0" o.c. for fastening end closures.
- C. Metal Closure Strips (Pour Stops): Unless indicated otherwise on the drawings or where taped joints are required, provide metal closures at all slab edges, columns, walls, other openings, where decking stops or changes direction, and in voids between decking and other construction. Provide minimum 2" bearing over steel supports. Weld into position to provide a complete decking installation. Weld closures at edge supports with welds V long at maximum 12" p.c. unless indicated otherwise on drawings.
- D. Cutting and Fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking as shown.
- E. On concrete and masonry surfaces provide minimum 4 inch bearing.
- F. On steel supports provide minimum 1-1/2 inch bearing.
- G. **OPENINGS AND CONCRETE SLAB REINFORCEMENT:**
1. General: Provide additional metal reinforcement, concrete slab reinforcing steel and closure pieces as required for strength, continuity of decking, slabs, and support of other work shown. Where greater amounts of reinforcement than indicated on the drawings or herein are required for a particular manufacturer's product to accommodate the superimposed loads on the slab, the cost of such reinforcement and its placement shall be borne by the supplier.
 2. Minimum Slab Reinforcement: Whether indicated on the drawings or not, all concrete slabs placed on steel decking shall be reinforced for temperature and shrinkage with welded wire mat (flat sheet - not rolled welded wire fabric) providing a minimum area of reinforcing steel of .00075 times the area of concrete above the top of the steel deck but in no case shall less than 6x6- W1.4xW1.4 WWM be used. Provide minimum 3/4" concrete cover for all temperature and shrinkage reinforcement using continuous high chairs manufactured specifically for steel decking (CRSI type CHCM). Locate chairs over all beams and girders and at a maximum spacing of 4'-0" o.c. for deck spans between structural steel members.
 3. Composite Deck Slab Reinforcement: Provide minimum 3/4" clear support above bottom of steel deck flutes using CRSI type BC chairs for all bottom reinforcement indicated on the drawings a maximum spacing of 4'-0" o.c. Provide minimum 3/4" concrete cover for all top reinforcement indicated on the drawings in addition to minimum temperature and shrinkage reinforcement. Use continuous high chairs manufactured for use with steel decking (CRSI type CHCM) at a maximum spacing of 4'-0" oc.
 4. Reinforcement at Slab Openings: At openings greater than 9" in any dimension and not indicated on the drawings nor framed with structural steel supports, provide:
 - a. Perpendicular to deck flutes along each side of opening one (1) #5 x 4'-0" ± opening dimension. Bear on top surface of deck flutes.
 - b. Parallel to deck flutes along each of opening two (2) #5 x 1'-0" deck span between supports in which opening occurs. Locate bar in bottom of flutes adjacent each side of opening and center bar in deck span. Provide a minimum of 3/4" clear support above bottom of steel deck flutes using CRSI type BC chairs
 - c. Provide blockout for concrete slab opening and DO NOT cut steel deck at opening until after concrete slab has reached 75% of specified design strength.

5. Touch-Up Painting: After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on top and bottom surfaces of decking units and supporting steel members. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with manufacturer's instructions. Touch up painted surfaces, with the same paint used in the shop, as recommended by the deck manufacturer. In areas where shop painted surfaces are exposed to view, apply touch up painted colored to blend with shop paint.
- H. Clinch lock seam side laps.
- I. Weld deck in accordance with AWS D1.3.
- J. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.
- K. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.
- L. Position floor drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.
- M. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

END OF SECTION

SECTION 054000

COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formed steel stud exterior wall and interior wall framing.
- B. Formed steel joist and purlin framing and bridging.

1.02 RELATED REQUIREMENTS

- A. Section 053100 - Steel Decking.

1.03 REFERENCE STANDARDS

- A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
- B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- C. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; 2007.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2008.
- E. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2007.
- F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with work of other sections that is to be installed in or adjacent to the metal framing system, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
- C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
- D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
 - 1. Indicate stud and wall opening header layout.
 - 2. Describe method for securing studs to tracks and for bolted framing connections.
 - 3. Provide design engineer's stamp on shop drawings.
- E. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design framing system under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in West Virginia.
- B. Manufacturer Qualifications: Company specializing in manufacturing the types of products

specified in this section, and with minimum three years of documented experience.

- C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.
- D. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect installation and submit test reports during erection according to requirements specified by the stud supplier and designer.

1.07 MOCK-UP

- A. Provide mock-up of exterior framed wall, including components specified elsewhere, such as insulation, sheathing, window frame, door frame, exterior wall finish, and interior wall finish.
- B. Location: As directed by the Architect.
- C. Mock-up may remain as part of the Work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framing, Connectors, and Accessories:
 - 1. Dietrich Metal Framing: www.dietrichindustries.com.
 - 2. MarinoWare: www.marinoware.com.
 - 3. The Steel Network, Inc: www.SteelNetwork.com.
 - 4. Substitutions: See Section 016000 - Product Requirements.

2.02 FRAMING SYSTEM

- A. Provide primary and secondary framing members, bridging, bracing, plates, gussets, clips, fittings, reinforcement, and fastenings as required to provide a complete framing system.
- B. Design Criteria: Provide completed framing system having the following characteristics:
 - 1. Design: Calculate structural characteristics of cold-formed steel framing members according to AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
 - 2. Structural Performance: Design, engineer, fabricate, and erect to withstand specified design loads for project conditions within required limits.
 - 3. Design Loads: As indicated on the drawings.
 - 4. Live load deflection meeting the following, unless otherwise indicated:
 - a. Roofs: Maximum vertical deflection under live load of 1/240 of span.
 - b. Exterior Walls behind masonry walls: Maximum horizontal deflection under wind load of 1/360 of span.
 - c. Exterior Walls: Maximum horizontal deflection under wind load of 1/240 of span.
 - d. Design non-axial loadbearing framing to accommodate not less than 1/2 in vertical deflection.
 - 5. Able to tolerate movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.
 - 6. Able to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
- C. Shop fabricate framing system to the greatest extent possible.
- D. Deliver to site in largest practical sections.

2.03 FRAMING MATERIALS

- A. Studs, Headers, and Track: ASTM C 955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
 - 1. Gage and depth: Bid shall use 18 gage minimum stud gage. Thicker gages and/or

spacings closer than 16" shall be accommodated in a change order. Thinner gages shall result in a credit to the Owner.

2. Galvanized in accordance with ASTM A 653/A 653M G90/Z275 coating.
- B. Joists and Purlins: Fabricated from ASTM A 653/A 653M steel sheet, with G90/Z275 hot dipped galvanized coating.
1. Base Metal: Structural Steel (SS), Grade 50/340, Class 1.
- C. Window Headers and Jambs: ASTM C 955; studs formed to box headers, channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height. Limit horizontal deflection to L/240 at areas except where the exterior is masonry. Use L/360 for masonry backup.
- D. Framing Connectors: Factory-made formed steel sheet, ASTM A 653/A 653M SS Grade 50, with G60/Z180 hot dipped galvanized coating and factory punched holes.
1. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold Formed Steel Structural Members; minimum 16 gage, 0.06 inch thickness.
 2. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, screws and anti-friction bushings, while maintaining structural performance of framing. Provide movement connections at all attachments to floor decks, beams, and roof decks
 - a. Where continuous studs bypass elevated floor slab, connect stud to slab in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 - b. Where top of stud wall terminates below structural floor or roof, connect studs to structure in manner allowing vertical and horizontal movement of slab without affecting studs; allow for minimum movement of 1/2 inch.
 - c. Provide top track preassembled with connection devices spaced to fit stud spacing indicated on drawings; minimum track length of 12 feet.
 - d. Acceptable Products: VertiClip(r) or DriftClip(tm) manufactured by The Steel Network Inc.
 3. Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify field measurements and adjust installation as required.

3.02 INSTALLATION OF STUDS

- A. Install components in accordance with manufacturers' instructions and ASTM C 1007 requirements.
- B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.
- C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using clip and tie method.
- D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.
- E. Install intermediate studs above and below openings to align with wall stud spacing.
- F. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

- G. Attach cross studs to studs for attachment of fixtures anchored to walls.
- H. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.
- I. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 INSTALLATION OF JOISTS AND PURLINS

- A. Install framing components in accordance with manufacturer's instructions.
- B. Make provisions for erection stresses. Provide temporary alignment and bracing.

END OF SECTION

SECTION 096519 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Vinyl composition floor tile.
- 2. Resilient athletic flooring.

B. Related Sections:

- 1. Division 09 Section "Resilient Base and Accessories" for resilient base, reducer strips, and other accessories installed with resilient floor coverings.

1.3 LEED SUBMITTALS

- A. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Initial Selection: For each type of floor tile indicated.
- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Schedule: For floor tile. Use same designations indicated on Drawings.
- B. Qualification Data: For qualified Installer.
- C. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation indicated.
- B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups for floor tile including resilient base and accessories.
 - a. Size: Minimum 100 sq. ft. (9.3 sq. m) for each type, color, and pattern in locations directed by Architect.
- C. Source Limitations: Obtain each type, color, and pattern of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.
- D. Comply with manufacturer's requirements for substrate moisture levels and moisture control.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store floor tiles on flat surfaces.

1.8 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer.
- B. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

1.9 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Allow for selection of accent colors amounting to approximately 10% of the product to be selected by the Architect. The accent colors will be of the same product with the difference being the color selection.

2.2 VINYL COMPOSITION FLOOR TILE (VCT-1)

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Armstrong World Industries, Inc.; "Excelon".
 - 2. Tarkett, Inc.; "Expressions"
- B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch (3.2 mm).
- E. Size: 12 by 12 inches (305 by 305 mm).
- F. Colors and Patterns: As selected by Architect from full range of industry colors. Allow for approx. 10% accent tiles.

2.3 RUBBER FLOOR TILE (Static Dissipative) (RFT-1):

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 - 2. Johnsonite.
 - 3. Nora Rubber Flooring, Freudenberg Building Systems, Inc.
 - 4. Roppe Corporation, USA.
- B. Tile Standard: ASTM F 1344, Class I-B, homogeneous rubber tile, through mottled.
- C. Hardness: Not less than 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.
- D. Wearing Surface: Textured.
- E. Thickness: 0.125 inch (3.2 mm).
- F. Size: 12 by 12 inches (305 by 305 mm).
- G. Colors and Patterns: As selected by Architect from full range of industry colors.

H. Static Generation: Less than 20 volts at 70°F, 20% RH.

2.4 RUBBER FLOOR TILE (**RFT-2**):

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
1. Burke Mercer Flooring Products, Division of Burke Industries Inc.
 2. Johnsonite.
 3. Nora Rubber Flooring, Freudenberg Building Systems, Inc.
 4. Roppe Corporation, USA.
- B. Tile Standard: ASTM F 1344, Class I-B, homogeneous rubber tile, through mottled.
- C. Hardness: Not less than 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.
- D. Wearing Surface: Textured.
- E. Thickness: **0.125 inch (3.2 mm)**.
- F. Size: **12 by 12 inches (305 by 305 mm)**.
- G. Colors and Patterns: As selected by Architect from full range of industry colors.

2.5 ATHLETIC RUBBER FLOOR TILE (**AF**):

- A. Product: Product listed is for the purpose of establishing minimum requirements. Subject to compliance with requirements other products may be incorporated into the Work, but are not limited to, the following:
1. "Titan" by Tuflex Rubber Flooring
4521 West Crest Avenue
Tampa, FL 33614
(800) 543-0390
- B. Color and Pattern: As selected by Architect from manufacturer's full range of colors and patterns produced for tile complying with requirements indicated.
- C. Class: Class I-B (homogenous rubber tile, through mottled.)
- D. Wearing Surface: Textured.
- E. Thickness: **3/8 inch (9.5 mm)**.
- F. Size: **27 by 27 inches (304.8 by 304.8 mm)**.

2.6 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 - 1. Use adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. VCT and Asphalt Tile Adhesives: Not more than 50 g/L.
 - b. Rubber Floor Adhesives: Not more than 60 g/L.
- C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 4. Moisture Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.

- D. Do not install floor tiles until they are same temperature as space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles square with room axis.
- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain direction alternating in adjacent tiles (basket-weave pattern).
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to edge of door stop where floor material changes.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.

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2. Sweep and vacuum surfaces thoroughly.
 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
1. Apply two coats.
 2. Coordinate selection of floor polish with Owner's maintenance service.
- E. Cover floor tile until Substantial Completion.

END OF SECTION 096519

SECTION 221113 – FACILITY WATER DISTRIBUTION PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes water-distribution piping and specialties outside the building for the following:
 - 1. Combined water service and fire-service mains.

1.3 DEFINITIONS

- A. Combined Water Service and Fire-Service Main: Exterior water piping for both domestic-water and fire-suppression piping.
- B. The following are industry abbreviations for plastic materials:
 - 1. PA: Polyamide (nylon) plastic.
 - 2. PE: Polyethylene plastic.
 - 3. PEX: Crosslinked polyethylene plastic.
 - 4. PP: Polypropylene plastic.
 - 5. PVC: Polyvinyl chloride plastic.
 - 6. RTRF: Reinforced thermosetting resin (fiberglass) fittings.
 - 7. RTRP: Reinforced thermosetting resin (fiberglass) pipe.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Piping specialties.
 - 2. Valves and accessories.
 - 3. Protective enclosures.
 - 4. Tracer wire.
 - 5. Casing pipe.
- B. Coordination Drawings: For piping and specialties including relation to other services in same area. Show piping and specialty sizes and valves, meter and specialty locations, and elevations.
- C. Field Quality-Control Test Reports: From Contractor.

D. Operation and Maintenance Data: For specialties to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Closeout Procedures," include the following:

1. Valves.
2. Protective enclosures.

1.5 QUALITY ASSURANCE

A. Product Options: Contract Drawings indicate size, profiles, and dimensional requirements of piping and specialties and are based on the specific system indicated.

B. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.
3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

C. Piping materials shall bear label, stamp, or other markings of specified testing agency.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with ASTM F 645 for selection, design, and installation of thermoplastic water piping.

F. Comply with FM's "Approval Guide" or UL's "Fire Protection Equipment Directory" for fire-service-main products.

G. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

H. NSF Compliance:

1. Comply with NSF 14 for plastic potable-water-service piping. Include marking "NSF-pw" on piping.
2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.
2. Protect valves against damage to threaded ends and flange faces.
3. Set valves in best position for handling. Set valves closed to prevent rattling.

- B. During Storage: Use precautions for valves, including fire hydrants, according to the following:
 - 1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.
 - 2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.
- C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
- D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.
- F. Protect flanges, fittings, and specialties from moisture and dirt.
- G. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.

1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by WVARNG or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify COTR not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without COTR's written permission.

1.8 COORDINATION

- A. Coordinate connection to water main with the COTR (after water main is installed).

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
 - 1. Products: Subject to compliance with requirements, provide one of the products specified.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPING MATERIALS

- A. Refer to Part 3 “Piping Applications” Article for applications of pipe, tube, fitting, and joining materials.

2.3 DUCTILE-IRON PIPE AND FITTINGS

- A. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.
 - 1. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- B. Push-on-Joint, Ductile-Iron Pipe: AWWA C151, with push-on-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.
 - 1. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Gaskets: AWWA C111, rubber.
- C. Ductile-Iron Flexible Expansion Joints: Compound, ductile-iron fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include two gasketed ball-joint sections and one or more gasketed sleeve sections. Assemble components for offset and expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.
- D. Ductile-Iron Deflection Fittings: Compound, ductile-iron coupling fitting with sleeve and flexing sections for up to 20-degree deflection, gaskets, and restrained-joint ends complying with AWWA C110 or AWWA C153. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.
- E. Ductile-Iron Expansion Joints: Three-piece, ductile-iron assembly consisting of telescoping sleeve with gaskets and restrained-type, ductile-iron, bell-and-spigot end sections complying with AWWA C110 or AWWA C153. Select and assemble components for expansion indicated. Include AWWA C111, ductile-iron glands, rubber gaskets, and steel bolts.

2.4 PVC PIPE AND FITTINGS

- A. PVC, Schedule 80 Pipe: ASTM D 1785.
 - 1. PVC, Schedule 80 Socket Fittings: ASTM D 2467.
 - 2. PVC, Schedule 80 Threaded Fittings: ASTM D 2464.
- B. PVC, AWWA Pipe: AWWA C900, Class 200, with bell end with gasket and spigot end.
 - 1. Comply with UL 1285 for fire-service mains if indicated.
 - 2. PVC Fabricated Fittings: AWWA C900, Class 200, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.

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3. PVC Molded Fittings: AWWA C907, Class 150, with bell-and-spigot or double-bell ends. Include elastomeric gasket in each bell.
 4. Push-on-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Gaskets: AWWA C111, rubber.
 5. Mechanical-Joint, Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
 - a. Glands, Gaskets, and Bolts: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
- C. PVC, SDR 21 Pipe: ASTM D2241 with bell end with gasket and spigot end.

2.5 JOINING MATERIALS

- A. Refer to Division 33 Section 330500 "Common Work Results for Utilities" for commonly used joining materials.
- B. Transition Couplings:
 1. Underground Piping, NPS 1-1/2 and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 2. Underground Piping, NPS 2 and Larger: AWWA C219, metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
 3. Aboveground Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.
- C. Brazing Filler Metals: AWS A5.8, BcuP Series.
- D. Soldering Flux: ASTM B 813, water-flushable type.
- E. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.
- F. Plastic Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.6 PIPING SPECIALTIES

- A. Flexible Connectors:
 1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.
 2. Ferrous Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1, threaded steel pipe nipples or ASME B16.5, steel pipe flanges welded to hose.

- B. Dielectric Fittings: Combination of copper alloy and ferrous; threaded, solder, or plain end types; and matching piping system materials.
 - 1. Dielectric Unions: Factory-fabricated union assembly, designed for 250-psig minimum working pressure at 180 deg F. Include insulating material that isolates dissimilar metals and ends with inside threads according to ASME B1.20.1.
 - 2. Dielectric Flanges: Factory-fabricated companion-flange assembly, for 150- or 300-psig minimum working pressure to suit system pressures.
 - 3. Dielectric-Flange Insulation Kits: Field-assembled companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
 - a. Provide separate companion flanges and steel bolts and nuts for 150- or 300-psig minimum working pressure to suit system pressures.
 - 4. Dielectric Couplings: Galvanized-steel couplings with inert and noncorrosive thermoplastic lining, with threaded ends and 300-psig minimum working pressure at 225 deg F.
 - 5. Dielectric Nipples: Electroplated steel nipples with inert and noncorrosive thermoplastic lining, with combination of plain, threaded, or grooved end types and 300-psig minimum working pressure at 225 deg F.

2.7 CORROSION-PROTECTION ENCASEMENT FOR PIPING

- A. Encasement for Underground Metal Piping: ASTM A 674 or AWWA C105, PE film, 0.008-inch minimum thickness, tube or sheet.

2.8 GATE VALVES

- A. AWWA, Gate Valves:

- 1. Manufacturers:
 - a. American AVK Co.; Valves & Fittings Div.
 - b. American Cast Iron Pipe Co.; American Flow Control Div.
 - c. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - d. Crane Co.; Crane Valve Group; Stockham Div.
 - e. East Jordan Iron Works, Inc.
 - f. Grinnell Corporation; Mueller Co.; Water Products Div.
 - g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - h. McWane, Inc.; Kennedy Valve Div.
 - i. McWane, Inc.; Tyler Pipe; Utilities Div.
 - j. NIBCO INC.
 - k. United States Pipe and Foundry Company.
- 2. Nonrising-Stem, Resilient-Seated Gate Valves: AWWA C509 or C515, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.

- a. Minimum Working Pressure: 200 psig.
 - b. End Connections: Mechanical joint.
 - c. Interior Coating: Complying with AWWA C550.
3. OS&Y, Rising-Stem, Resilient-Seated Gate Valves: AWWA C509 or C515, cast-iron or ductile-iron body and bonnet, outside screw and yoke; with bronze or gray- or ductile-iron gate, resilient seats, and bronze stem.
 - a. Minimum Working Pressure: 200 psig.
 - b. End Connections: Flanged.
- B. UL/FM, Cast-Iron Gate Valves:
1. Manufacturers:
 - a. American Cast Iron Pipe Co.; American Flow Control Div.
 - b. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.
 - c. Central Sprinkler Company.
 - d. Crane Co.; Crane Valve Group; Stockham Div.
 - e. Grinnell Corporation.
 - f. Grinnell Corporation; Mueller Co.; Water Products Div.
 - g. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - h. McWane, Inc.; Kennedy Valve Div.
 - i. McWane, Inc.; M & H Valve Company Div.
 - j. NIBCO INC.
 - k. United States Pipe and Foundry Company.
 2. UL/FM, Nonrising-Stem Gate Valves: UL 262, FM-approved iron body and bonnet with flange for indicator post, bronze seating material, and inside screw.
 - a. Minimum Working Pressure: 175 psig.
 - b. End Connections: Flanged.
 3. OS&Y, Rising-Stem Gate Valves: UL 262, FM-approved iron body and bonnet, bronze seating material, and outside screw and yoke.
 - a. Minimum Working Pressure: 175 psig.
 - b. End Connections: Flanged.
 - c. Working Pressure: 175 psig.
 - d. End Connections: Threaded.
- 2.9 GATE VALVE ACCESSORIES AND SPECIALTIES
- A. Tapping-Sleeve Assemblies: Comply with MSS SP-60. Include sleeve and valve compatible with drilling machine.
1. Manufacturers:
 - a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.

- b. East Jordan Iron Works, Inc.
 - c. Grinnell Corporation; Mueller Co.; Water Products Div.
 - d. International Piping Services Company.
 - e. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).
 - f. McWane, Inc.; Kennedy Valve Div.
 - g. McWane, Inc.; M & H Valve Company Div.
 - h. United States Pipe and Foundry Company.
- 2. Tapping Sleeve: Cast- or ductile-iron or stainless steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.
 - 3. Valve: AWWA, cast-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange.
- B. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch-diameter barrel.
 - 1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.
 - C. Indicator Posts: UL 789, FM-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.
- 2.10 ALARM DEVICES
- A. General: Types matching piping and equipment connections.
 - B. Valve Supervisory Switches: UL 753; electrical; single-pole, double throw, with normally closed contacts. Include design that signals controlled valve is in other than fully open position.
- 2.11 CASING PIPE
- A. Casing: Steel pipe complying with ASTM A 53/A 53M, Schedule 40, black steel, Type E or S, Grade B, with corrosion-protective coating covering.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

- A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

- B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.
- C. Do not use flanges, unions, or keyed couplings for underground piping.
- D. Flanges, unions, keyed couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
- E. Underground Combined Water-Service and Fire-Service-Main Piping: Use the following:
 - 1. NPS 6 to NPS 12: Ductile Iron Pipe, AWWA C151 listed for fire-protection service.
- F. Casing Pipe shall be used for road and sewer crossings.

3.3 VALVE APPLICATIONS

- A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation. Tamper switches are required for all valves on fire service mains.
- B. Contract Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:
 - 1. Underground Valves, NPS 3 and Larger: AWWA, cast-iron, nonrising-stem, resilient – seated gate valves with valve box.
 - 2. Underground Valves, NPS 4 and Larger, for Indicator Posts: UL/FM, cast-iron, nonrising-stem gate valves with indicator post.

3.4 JOINT CONSTRUCTION

- A. See Division 33 Section 330500 “Common Work Results for Utilities” for basic piping joint construction.
- B. Make pipe joints according to the following:
 - 1. Ductile-Iron Piping, Gasketed Joints for Water-Service Piping: AWWA C600 and AWWA M41.
 - 2. Ductile-Iron Piping, Gasketed Joints for Fire-Service-Main Piping: UL 194.
 - 3. Ductile-Iron Piping, Grooved Joints: Cut-groove pipe. Assemble joints with keyed couplings, gaskets, lubricant, and bolts according to coupling manufacturer’s written instructions.
 - 4. Copper Tubing Soldered Joints: ASTM B 828. Use flushable flux and lead-free solder.
 - 5. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer’s written instructions.
 - 6. PE Piping Insert-Fitting Joints: Use plastic insert fittings and fasteners according to fitting manufacturer’s written instructions.

7. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure. Refer to Division 33 Section "Common Work Results for Utilities" for joining piping of dissimilar metals.

3.5 PIPING SYSTEMS – COMMON REQUIREMENTS

- A. See Division 33 Section "Common Work Results for Utilities" for piping-system common requirements.

3.6 PIPING INSTALLATION

- A. Make connections larger than NPS 2 with tapping machine according to the following:
 1. Install tapping sleeve and tapping valve according to MSS SP-60.
- B. Bury piping with depth of cover over top at least 40 inches, with top at least 12 inches below level of maximum frost penetration, and according to the following:
 1. Under Driveways: With at least 36 inches cover over top.
 2. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.
- C. Install piping by tunneling, jacking, or combination of both, under streets and other obstructions that cannot be disturbed.
- D. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.
 1. Terminate water-service piping at 5' from building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.
- E. Sleeves: Provide steel pipe sleeves in the sizes and locations indicated. Use adequate bracing to support pipe the full length in the sleeve.
- F. Mechanical sleeve seals are specified in Division 15 Section "Basic Mechanical Materials and Methods."
- G. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.
- H. Anchor service-entry piping to building wall.
- I. Install water-supply piping with shutoff valve in water supply to each hydrant. Use curb valve and service box.

3.7 ANCHORAGE INSTALLATION

- A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:
 - 1. Fire-Service-Main Piping: According to NFPA 24.
- B. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.8 VALVE INSTALLATION

- A. AWWA Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.
- B. UL/FM Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post.

3.9 CONNECTIONS

- A. Piping installation requirements are specified in other Division 22 Sections. Contract Drawings indicate general arrangement of piping and specialties.
- B. See Division 33 Section "Common Work Results for Utilities" for piping connections to valves and equipment.
- C. Connect water-distribution piping to utility water main. Use service clamp and corporation valve.
- D. Connect water-distribution piping to fire hydrants.
- E. Connect water-distribution piping to interior domestic-water and fire-suppression piping.
- F. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."
- G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.10 FIELD QUALITY CONTROL

- A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours.
 - 1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints.

Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

- C. Perform Tamper Switch testing as required by NFPA 1 and West Virginia State Fire Code.
- D. Prepare reports of testing activities.
- E. Coordinate for inspection, testing and acceptance of the completed line by the City of Fairmont. Any cost incurred for inspection, testing and acceptance shall be paid by the Contractor.

3.11 IDENTIFICATION

- A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Division 31 Section "Earth Moving" for underground warning tapes.
- B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel. See Division 33 Section "Common Work Results for Utilities" for identifying devices.

3.12 CLEANING AND ACCEPTANCE

- A. Clean and disinfect water-distribution piping as follows:
 - 1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
 - 2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:
 - a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.
 - c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- B. Prepare reports of purging and disinfecting activities.
- C. Coordinate for inspection, testing, and acceptance of the completed line by the City of Fairmont upon completion of installation. Any costs incurred for inspection, testing, and acceptance shall be paid by the Contractor.

END OF SECTION 221113

SECTION 221324 - SPECIALTY EQUIPMENT – OIL/WATER SEPARATOR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Oil/Water Separator without Leak Detection
- B. Related Sections include the following:
 - 1. Division 33 Section "Common Work Results for Utilities".

1.3 DEFINITIONS

- A. Oil/Water Separator without Leak Detection:
 - 1. Separator shall be standard prefabricated inclined parallel flat/corrugated plate, gravity displacement type unit.
 - 2. Separator shall be cylindrical with capacities, dimensions, construction, and thickness in strict accordance with Underwriters Laboratories Subject 58, Single Wall construction using flat-flanged heads. Separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.
 - 3. The separator shall be a pre-packaged, pre-engineered, ready to install unit consisting of:
 - 4. An influent connection, as indicated, flanged. An internal influent nozzle at the inlet end of the separator. Nozzle discharge to be located at the furthest diagonal point from the effluent discharge opening.
 - 5. A velocity head diffusion baffle at the inlet to:
 - a. reduce horizontal velocity and flow turbulence.
 - b. distribute the flow equally over the separator's cross-sectional area.
 - c. direct the flow in a serpentine path in order to enhance hydraulic characteristics and fully utilize all separator volume.
 - d. completely isolate all inlet turbulence from the separation chamber.
 - 6. A sediment chamber to disperse flow and collect oily solids and sediments.

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7. A sludge baffle to retain settleable solids and sediment and prevent them from entering the separation chamber.
8. An Oil/Water Separation Chamber containing a removable Corella™ inclined parallel flat/corrugated plate coalescer. The coalescer shall have individual removable plates, sloped towards the sediment chamber. Each coalescing plate shall be flat on the top and corrugated on the bottom. The flat top plate shall resist clogging and clotting with solids. The corrugations of each of the plate bottoms shall be shaped and positioned to enhance collisions between the rising oil droplets and coalescence between them thereby improving separator efficiency. The coalescer shall:
 - a. Effect separation of oil and solids from all strata of the wastewater stream.
 - b. Shorten the vertical distance that an oil globule or solid particle has to raise or sink, respectively, for effective removal. The minimum plate gap to be $\frac{3}{4}$.
 - c. Enhance coalescence and agglomeration by causing the smaller globules and particles (those possessing smaller rising/settling rates) to coalesce and collect on the plates thereby forming larger globules and particles that separate rapidly in water.
 - d. Direct the flow paths of the separated oil to the surface of the separator and separated solids to the bottom of the separator.
 - e. Allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids.
9. The Oil/Water Separation Chamber shall also contain a sectionalized removable "Petro-Screen™" polypropylene impingement coalescer designed to intercept oil globules of less than 20 microns in diameter. Heavy, one-piece impingement coalescers are not permissible.
10. An internal effluent downcomer at the outlet end of the separator, to allow for discharge from the bottom of the separation chamber only.
11. An effluent connection, as indicated, flanged.
12. Fittings for vent, interface/level sensor, and waste oil pump-out, sampling, and gauge.
13. Separators to be supplied with large rectangular access-way complete with square extension, cover(s) as needed to meet finish grades, gasket, and corrosion resistant bolts and wing nuts. Non-skid, corrosion resistant lockable cover(s), fabricated for single person opening, shall be accessible at or above grade level. In order to comply with OSHA regulations and so as not to require Confined Space Entry Procedures, access way is to be designed to allow for maintenance and cleaning from grade level. Access way shall be placed over the Sediment Chamber and Oil/Water Separation to facilitate access into the Sediment Chamber for solids removal and into the Oil/Water Separation Chamber for oil removal and parallel corrugated plate and "Corella™" coalescer removal.
14. Lifting lugs at balancing points for handling and installation.
15. Identification plates: Plates to be affixed in prominent location and be durable and legible throughout equipment life.

16. HIGHGUARD® Corrosion Protection System consisting of:
 - a. Isolation Spool Pieces
 - b. Dielectric Isolation Gaskets and Bushings
 - c. External surfaces commercial grit blast, coated 75 mils DFT Self-Reinforcing Polyurethane.
 - d. 30-year Limited Warranty

B. Accessories

1. Separator shall be supplied with an audible and visual alarm system that indicates hi oil level (visual only) and hi hi oil level (audible and visual) of oil storage in the oil/water separator will be provided. A silence control shall be provided for the audible alarms. Level sensor(s) to be intrinsically safe. Level sensor floats to be made of stainless steel. The control panel shall be NEMA 4. Power to the control panel is to be 120 volt, 1 phase.
2. Separator shall be supplied with Polyester Hold-down straps.
3. Internal surfaces commercial grit blast and coated with 10 mils DFT heavy duty Polyurethane.
4. Provide access way and lid to enclose the oil level sensor riser and oil pump out riser.
5. Provide galvanized vent risers tied to a central location from the following:
 - a. EZ Access Access.
 - b. Inlet Isolation Spool.
 - c. Outlet Isolation Spool.
 - d. Oil Level Sensor Riser.

1.4 APPLICATION

- A. Oil/Water Separator without Leak Detection: The separator shall be designed for gravity separation of sand, grit, settleable solids, or semisolids, and free oils (hydrocarbons and other petroleum products) along with some settleable solids from wastewater. Separator shall be installed belowground with top access 4" above grade level. The source of the influent to the separator shall be gravity flow from storm water runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

1.5 PERFORMANCE REQUIREMENTS

A. Oil/Water Separator:

1. Influent Characteristics: Provide Oil/Water Separator designed for intermittent and variable flows of water, oil, or any combination of non-emulsified oil-water mixtures ranging from zero to 500 GPM. Operating temperatures of the influent oil in water mixture shall range from 40 degrees F. to 140 degrees F. The specific gravity of the oils

at operating temperatures shall range from 0.68 to 0.94. The specific gravity of the fresh water at operating temperatures shall range from 1.00 to 1.03.

2. Effluent Characteristics: The free oil and grease concentration in the effluent from the Separator shall not exceed 10 mg/l (10 PPM). To achieve this goal, it will be necessary to remove all free oil droplets equal to and greater than 20 microns.

1.6 QUALITY ASSURANCE

A. Submittals

- a. Shop Drawings: Shop drawings for oil water separators shall show principal dimensions and location of all fittings.
- b. Instructions: Provide three complete sets of installation, operation, and maintenance instructions with separator.
- c. Quality Control: Quality control, inspection procedures, and reports shall be considered part of the submittal package.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Oil/Water Separator without Leak Detection:

- a. Highland Tank and Manufacturing

- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Highland Tank Model HTC-5000 UL-SU2215 Belowground Single Wall Parallel Flat/Corrugated Plate Gravity Displacement Oil/Water Separator with EZ Access Covers. A separator of smaller volume is not permissible.

- C. Basis-of-Design Product:

1. Oil/Water Separator without Leak Detection:

- a. The separator shall be listed to Underwriter's Laboratories UL-SU2215. Construction and performance of the oil/water separators must be in accordance with UL-SU2215. Provide certification documentation detailing criteria under which the system was tested. UL-SU2215 label shall be prominently displayed on manway covers.
- b. Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, "Monographs on Refinery Environmental Control - Management of Water Discharges; Design and Operation of Oil/Water

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Separators.” Separator shall be designed in accordance with Stokes Law and the American Petroleum Institute Publication 421, “Monographs on Refinery Environmental Control – Management of Water Discharges; Design and Operation of Oil/Water Separators.” Effective surface area calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document specified effluent quality based on complete removal of the specified oil globule. A separator with lower effective surface areas is not permissible.

- c. Separator capacities, dimensions, construction, and thickness shall be in strict accordance with Underwriters Laboratories, Subject UL-58 Standard for Safety, Steel Underground Tanks for Flammable and Combustible Liquids, September 30, 1997, Single Wall construction.
- d. Separator Corrosion Control System shall be in strict accordance with Underwriters Laboratories Inc. Subject UL-1746 Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks and HIGHGUARD® External Corrosion Protection Specifications.
- e. Oil/water separator shall comply with National Fire Protection Association NFPA 30 Flammable and Combustible Liquids Code, 2003 Edition.
- f. Separator vessel volume shall allow for a hydraulic retention time of ten (10) minutes to ensure laminar flow conditions which result in hydraulic uniformity and high effluent quality. Volume reduction will adversely affect separator performance by increasing horizontal velocity and turbulence, therefore a separator of smaller volume is not permissible.
- g. Separator shall be the standard patented product of a steel tank manufacturer regularly engaged in the production of such equipment. Manufacturer shall have at least 15 years experience in manufacturing similar units for identical applications. No subcontracting of tank fabrication shall be permitted.
- h. Separator shall be fabricated, inspected, and tested for leakage before shipment from the factory by manufacturer as a completely assembled vessel ready for installation.
- i. Separator shall be cylindrical, horizontal, atmospheric-type steel vessel intended for the separation and storage of flammable and combustible liquids. The separator shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separator’s dimensions and thickness shall be in strict compliance with Roark’s Formulas for Stress and Strain as presented in UL 58, September 30, 1997. Calculations, signed and stamped by a Registered Professional Engineer shall be submitted to document structural strength under specified overbearing or external pressure. A separator with a reduced shell thickness is not permissible.
- j. Separator shall have an oil storage capacity equal to about 43% of the total vessel volume and an emergency oil spill capacity equal to 80% of the total vessel volume.

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- k. To prevent extensive shutdown and maintenance, the separator's coalescer design must allow solids to fall unhindered by turbulence, and oil droplets to rise without risk of re-emulsifying due to collisions with interfering solids. The use of plastic perforated tubes, spherical balls, or irregular shaped media will increase the facility's maintenance costs and shall not be permitted.
- l. Separator shall consist of inlet and outlet connections, non-clogging flow distributor and energy dissipater device, stationary under flow baffle, presettling chamber for solids, sludge baffle, oil coalescing chamber with removable parallel flat/corrugated plate coalescer, with removable plates, and sectionalized removable polypropylene impingement coalescers to optimize separation of free oil from water, effluent downcomer positioned to prevent discharge of free oil that has been separated from the water, access ways for coalescers and each chamber, fittings for vent, oil pump-out, sampling, gauging, and lifting lugs.

D. Warranty

- a. The manufacturer shall warrant its products to be free from defects in material and workmanship for a period of one year from the date of shipment. The warranty shall be limited to repair or replacement of the defective part(s).
- b. Tank shall have a 30-year warranty for corrosion and structural defects.

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Remove and replace applications where test results indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train COTR's maintenance personnel to adjust, operate, and maintain the Oil/Water Separator. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 221324

SECTION 231123 – EXTERIOR FACILITY NATURAL-GAS PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Contract Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following for natural gas distribution outside the building:
 - 1. Piping.
 - 2. Valves.

1.3 DEFINITIONS

- A. Gas Main: Utility's natural gas piping.
- B. Gas Distribution: Piping from gas main to individual service-meter assemblies.
- C. PE: Polyethylene plastic.

1.4 PERFORMANCE REQUIREMENTS

- A. Minimum Working-Pressure Ratings:
 - 1. Piping and Valves: 100 psig minimum, unless otherwise indicated.
 - 2. Service Regulators: 100 psig minimum, unless otherwise indicated.
 - 3. Service Meters: 65 psig minimum, unless otherwise indicated.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. PE pipe and fittings.
 - 2. Valves.
 - 3. Casing pipe.
 - 4. Tracer wire.
- B. Shop Drawings: For natural gas service piping and service meter assembly. Include plans, elevations, sections, details, and attachments to other work.
- C. Welding certificates.

- D. Field quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX.
- B. Comply with requirements of utility supplying natural gas and with authorities having jurisdiction for natural gas systems.
- C. Comply with NFPA 54 for materials, installation, testing, inspection, and purging.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handling Flammable Liquids: Remove and legally dispose of liquids from drips in existing gas piping. Handle liquids to avoid spillage and ignition. Notify gas supplier. Do not leave flammable liquids on premises overnight.
- B. Store PE pipes and valves protected from direct sunlight.

1.8 PROJECT CONDITIONS

- A. Perform site survey, research public utility records, and verify existing utility locations. Contact utility-locating service for area where Project is located.
- B. Interruption of Existing Natural Gas Service: Do not interrupt natural gas service to facilities occupied by COTR or others unless permitted under the following conditions and then only after arranging to provide purging and startup of gas supply according to requirements indicated:
 - 1. Notify COTR no fewer than two days in advance of proposed interruption of natural gas service.
 - 2. Do not proceed with interruption of natural gas service without COTR's written permission.

1.9 COORDINATION

- A. Coordinate connection to gas main with utility.
- B. Coordinate natural gas distribution with other utility Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 PIPES AND FITTINGS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, fitting, and joining materials.

B. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B; Schedule 40, black.

1. Malleable-Iron Fittings: ASME B16.3, Class 150, standard pattern, with threads complying with ASME B1.20.1.
2. Steel Fittings: ASME B16.9, wrought-steel butt-welding type; and ASME B16.11, forged steel.
3. Steel Flanges and Flanged Fittings: ASME B16.5.
4. Unions: ASME B16.39, Class 150, black malleable iron; female pattern; brass-to-iron seat; ground joint.

C. PE Pipe: ASTM D 2513, SDR 11.

1. PE Fittings: ASTM D 2683, socket type or ASTM D 3261, butt type with dimensions matching ASTM D 2513, SDR 11, PE pipe.

D. Transition Fittings: Manufactured pipe fitting with one PE pipe end for heat-fusion connection to PE pipe and with one ASTM A 53/A 53M, Schedule 40, steel pipe end for threaded connection to steel pipe.

E. Casing: Steel pipe complying with ASTM A 53/A 53M, Schedule 40, black steel, Type E or S, Grade B, with corrosion-protective coating covering. Vent casing aboveground.

2.3 JOINING MATERIALS

A. Components, Tapes, Gaskets, and Bolts and Nuts: Suitable for natural gas and as recommended by piping manufacturer.

2.4 SHUTOFF VALVES

A. Shutoff Valves, General: Manual operation, suitable for natural gas service, and with 100-psig minimum working-pressure rating.

B. Threaded Valves, NPS 1 and Smaller: Include listing by agency acceptable to authorities having jurisdiction.

C. Nonlubricated, Tapered Plug Valves: Brass or cast-iron body, with brass tapered plug; lever operation; and complying with ASME B16.33, MSS SP-78, UL 842. Include lever.

1. Available Manufacturers:
 - a. Essex Brass.
 - b. Lyall, R. W. & Company, Inc.
 - c. McDonald, A. Y. Mfg. Co.
 - d. Mueller Company.

- D. Ball Valves: Bronze body, with chrome-plated brass ball; lever handle; and complying with ASME B16.33, MSS SP-110, UL 842.
 1. Available Manufacturers:
 - a. Conbraco Industries, Inc.
 - b. Hammond Valve.
 - c. Maxitrol Company.
 - d. Milwaukee Valve Company.
 - e. NIBCO.
 - f. Stockham.
 - g. Watts Industries, Inc.

- E. Nonlubricated Plug Valves: Cast-iron body, with resilient-coated eccentric plug; lever operation; and complying with ASME B16.38, MSS SP-108, UL 842.
 1. Available Manufacturers:
 - a. Milliken Valve Co., Inc.
 - b. Olson Technologies, Inc.; Homestead Valve Div.
 - c. Pratt, Henry Co.
 - d. SPX Corporation; DeZURIK Unit.

- F. PE Valves: Made for gas distribution, with nut or flat head for key operation; and complying with ASME B16.40, UL 842.
 1. Available Manufacturers:
 - a. Kerotest Manufacturing Corp.
 - b. Lyall, R. W. & Company, Inc.
 - c. Nordstrom Valves, Inc.
 - d. Perfection Corporation; Gas Products Div.

- G. Valve Boxes: Cast-iron, two-section box. Include top section with cover with "GAS" lettering, bottom section with base to fit over valve and barrel 5 inches in diameter, and adjustable cast-iron extension of length required for depth of bury. Include tee-handle, steel operating wrench with socket end fitting valve nut or flat head and with stem of length required to operate valve.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.2 PREPARATION

- A. Close equipment shutoff valves before turning off gas to premises or piping section.
- B. Inspect natural gas piping according to fuel gas code to determine that natural gas utilization devices are turned off in piping section affected.
- C. Comply with fuel gas code requirements for prevention of accidental ignition.

3.3 PIPING APPLICATIONS

- A. Flanges, unions, and transition and special fittings with pressure ratings same as or higher than system pressure rating may be used, unless otherwise indicated.
- B. Aboveground Piping:
 - 1. NPS 2 and Smaller: Steel pipe, butt-welding-type fittings, and welded joints. Joints for connection to threaded service regulators, service meters, and valves may be threaded.
 - 2. NPS 2 and Smaller: Steel pipe, malleable-iron fittings, and threaded joints.
 - 3. NPS 2-1/2 and Larger: Steel pipe, butt-welding-type fittings, and welded joints. Joints for connection to service regulators, service meters, and valves with flanged connections may be flanged. Joints for connection to service regulators, service meters, and valves with threaded connections NPS 2-1/2 to NPS 4 may be threaded.
- C. Underground Piping: PE pipe, PE fittings, and heat-fusion joints.
- D. Protective Conduit for Underground Piping: Steel pipe and threaded- or welding-type fittings.
- E. Underground-to-Aboveground Piping Connections: Service-line riser.
- F. PE-to-Steel Piping Connections: Transition fitting.

3.4 VALVE APPLICATIONS

- A. Contract Drawings indicate types of shutoff valves to be used. If specific types are not indicated, the following requirements apply:
 - 1. Connections to Existing Gas Piping: Use valve and fitting assemblies made for tapping gas mains.
 - 2. Underground: Use PE valves.
 - 3. Aboveground, NPS 2 and Smaller: Nonlubricated tapered plug valves.
 - 4. Aboveground, NPS 2-1/2 and Larger: Nonlubricated plug valves.

3.5 PIPING INSTALLATION

- A. Install underground, natural gas distribution piping buried at least 36 inches below finished grade.
- B. Install underground, PE, natural gas distribution piping according to ASTM D 2774.

- C. Install underground, PE, natural gas distribution piping at entrance to and under part of building in steel piping protective conduit that is vented to outside.
- D. Install underground, PE, natural gas distribution piping under pavements in steel piping protective conduit that is vented to outside.

3.6 VALVE INSTALLATION

- A. Install PE shutoff valves on branch connections to existing underground, natural gas distribution piping. Install valves with valve boxes.
- B. Install metal shutoff valves on aboveground, natural gas distribution piping.

3.7 JOINT CONSTRUCTION

- A. Refer to Division 33 Section "Common Work Results for Utilities" for basic piping joint construction.

3.8 CONNECTIONS

- A. Contract Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect gas distribution piping to natural gas source and extend to service-meter assemblies and points indicated. Connect to building's natural gas piping if it is installed; otherwise, terminate piping with caps, plugs, or flanges, as required for piping material.
- C. Do not use natural gas distribution piping as grounding electrode.

3.9 PAINTING

- A. Damage and Touchup: Repair marred and damaged factory-applied finishes with materials and by procedures to match original factory finish.

3.10 FIELD QUALITY CONTROL

- A. Test, inspect, and purge natural gas distribution according to requirements of fuel gas code and utility.
- B. Repair leaks and defective valves and specialties and retest system until no leaks exist.
- C. Report results in writing.
- D. Verify correct pressure settings for service regulators.

3.11 ACCEPTANCE

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- A. Coordinate for inspection, testing, and acceptance of the completed line by the applicable utility upon completion of installation. Any costs incurred for inspection, testing, and acceptance shall be paid by the Contractor.

END OF SECTION 231123

SECTION 312000 – EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Preparing subgrades for slabs-on-grade walks pavements and turf and grasses.
2. Excavating and backfilling for buildings and structures.
3. Drainage course for concrete slabs-on-grade.
4. Free draining base trench and outlet piping.
5. Subbase course for concrete walks and pavements.
6. Subbase course and base course for asphalt paving.
7. Subsurface drainage backfill for walls and trenches.
8. Excavating and backfilling trenches for utilities and pits for buried utility structures.
9. Excavating and backfilling trenches within building lines.
10. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.

B. Related Sections:

1. Division 01 Section "Photographic Documentation" for recording preexcavation and earth moving progress.
2. Division 01 Section "Temporary Facilities" for temporary controls, utilities, and support facilities; also for temporary site fencing if not in another Section.
3. Division 31 Section "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
4. Division 32 Section "Turfs and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.

1.3 UNIT PRICES

- A. Work of this Section is affected by unit prices for earth moving specified in Division 01 Section "Unit Prices."

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Layer placed between the geotextile fabric and the surface treatment for the Hardstand pavement.
- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Durable Rock: Limestone or sandstone having a maximum weighted loss of 30 percent when subjected to five cycles of the sodium sulfate soundness test (WVDOH MP 703.00.22) or passing the slake durability test (Modified ASTM D4644).
- G. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the COTR with recommendations from Architect/Engineer. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by COTR. Unauthorized excavation, as well as remedial work directed by COTR, shall be without additional compensation.
- H. Fill: Soil materials used to raise existing grades.
- I. Mud Mat: Lean concrete of at least 6" thickness with a minimum compressive strength of 1,200 psi used to seal the bottom of excavations.
- J. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch-wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom; measured according to SAE J-1179.
 2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp flywheel power and developing a minimum of 47,992-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.

- K. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- L. Subbase Course: Aggregate layer placed between the subgrade and free draining base course for hot-mix asphalt pavement and cement concrete pavement. Also the layer between subgrade and cement concrete for sidewalks and equipment pads.
- M. Free draining base course: Course placed between the subgrade course and first course of hot-mix asphalt paving.
- N. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- O. Surface Treatment: Top layer of aggregate in the Hardstand pavement.
- P. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.
- Q. Waterproof Coating: Liquid membrane for use as a below-grade water barrier.

1.5 SUBMITTALS

- A. Settlement Monitoring Program:
 - 1. Monitoring Plan description and testing locations/methods.
 - 2. Settlement Monitoring Data within 96 hours of survey.
 - 3. Settlement Monitoring Report and Request for Authorization to Proceed.
- B. Product Data: For each type of the following manufactured products required:
 - 1. Geotextiles.
 - 2. Mud mat material, including design mixture.
 - 3. Geof foam.
 - 4. Warning tapes.
 - 5. Lime types.
 - 6. Waterproof Coating.
- C. Samples for Verification: For the following products, in sizes indicated below:
 - 1. Geotextile: 12 by 12 inches.
 - 2. Warning Tape: 12 inches long; of each color.
- D. Qualification Data: For qualified testing agency.
- E. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D 2487.
 - 2. Laboratory compaction curve according to ASTM D 1557.

3. Sulfur Fractionation according to ASTM D2492-84 and EPA 600/2-78-054, Section 3.2.6 (Modified).
 4. Loss on Ignition according to ASTM D 7348.
 5. Slake Durability according to ASTM D 4644.
 6. Swell according to ASTM D 4546.
- F. Blasting plan approved by authorities having jurisdiction.
- G. Seismic survey report from seismic survey agency.
- H. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.
- I. Minutes from Pre-Excavation Conference.

1.6 QUALITY ASSURANCE

- A. Blasting: Comply with applicable requirements in NFPA 495, "Explosive Materials Code," and prepare a blasting plan reporting the following:
1. Types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 2. Seismographic monitoring during blasting operations.
- B. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:
1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.
 2. Seismographic monitoring during blasting operations.
- C. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
- D. Preexcavation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by the COTR.
- C. Utility Locator Service: Notify "Miss Utility" for area where Project is located before beginning earth moving operations.
- D. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Division 31 Section "Site Clearing," are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, GC, SW, SP, SM, SC, CL, and CL-ML according to ASTM D 2487, free of rock or gravel larger than 4 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter and with Atterberg Limits meeting the criteria below.
 - 1. Liquid Limit: Less than 45.
 - 2. Plasticity Index: Less than 23.
- C. Unsatisfactory Soils: Satisfactory soils not maintained between -2 and +3 percent of optimum moisture content at time of compaction. Granular material may be between -3 and +3 percent of optimum moisture content.
- D. Unsuitable Soils: Soil Classification Groups OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups, and any soil containing greater than .20% pyritic sulfur.
- E. Coal Waste: Mixture of coal, coal fines, soil, and other carbonaceous or organic materials, with a darker than normal soil appearance or the presence of pyrites. Any excavated material with greater than 3% organics that visually appears to contain coal remnants or any material that contains greater than .20% pyritic sulfur.
- F. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Base: Naturally or artificially graded mixture of crushed stone meeting the requirement of AASHTO No. 1.
- H. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

- I. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- J. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.
- K. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.
- L. Open Graded Free Draining Base: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57.
- M. Surface Treatment: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone; meeting the requirement of Class 1 Stone from the WVDOH Standard Specifications.
- N. Sand: ASTM C 33; fine aggregate.
- O. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.
- P. Agricultural Lime: ASTM C 602, Class T, agricultural limestone containing a minimum 90 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 sieve and a minimum 75 percent passing a No. 60 sieve.
- Q. Quick Lime: ASTM C 5, containing a minimum of 95% calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 sieve and a minimum 75 percent passing a No. 60 sieve.
- R. Waterproof Coating: Cold applied, rubberized, highly flexible, liquid waterproofing membrane that is not adversely affected by freezing, such as Eco-Flex All Season Formula from Aquaseal USA, Inc., Niagara Falls, New York.
- S. Lean Concrete: Low permeability mixture of Portland Cement, fine aggregate, fly ash, and water with a minimum compressive strength of 1,200 psi designed to prevent moisture intrusion into the underlying strata.

2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 - 1. Survivability: Class 2; AASHTO M 288.
 - 2. Grab Tensile Strength: 157 lbf; ASTM D 4632.
 - 3. Sewn Seam Strength: 142 lbf; ASTM D 4632.
 - 4. Tear Strength: 56 lbf; ASTM D 4533.
 - 5. Puncture Strength: 56 lbf; ASTM D 4833.

6. Apparent Opening Size: No. 80 sieve, maximum; ASTM D 4751.
 7. Permittivity: 0.5 per second, minimum; ASTM D 4491.
 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
1. Survivability: Class 2; AASHTO M 288.
 2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
 3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
 4. Tear Strength: 90 lbf; ASTM D 4533.
 5. Puncture Strength: 90 lbf; ASTM D 4833.
 6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
 7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
 8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
- C. Woven (Heavy Duty) Geotextile Fabric: Woven geotextile, specifically manufactured for use as an engineered geotextile; made from polyester; and with the following minimum properties determined according to ASTM D 4355 and referenced standard test methods:
1. Grab Tensile Strength: 600/500; ASTM D 4632.
 2. Grab Elongation: 15%; ASTM D 4632.
 3. Mullen Burst: 1,350 psi; ASTM D 3786.
 4. Puncture Resistance: 140 lb; ASTM D 4833.
 5. Water Flow Rate: 10 gal/min/ft².
 6. Apparent Opening Size: No. 50; ASTM D 4751.
 7. UV Resistance: 80% @ 500 hrs; ASTM D 4355.
 8. Trapezoidal Tear: 250 lb; ASTM D 4533.
- D. Biaxial Geogrid: Geogrid, biaxial, specifically manufactured for use as an engineered geotextile; made from polyester or polypropylene; and with the following minimum properties determined according to ASTM D 4355 and referenced standard test methods:
1. Tensile Strength @ 2% Strain: 1,000 lb/ft in both directions.
 2. Tensile Strength @ 5% Strain: 2,000 lb/ft in both directions.
- ### 2.3 ACCESSORIES
- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

- A. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.
 - 1. Perform blasting without damaging adjacent structures, property, or site improvements.
 - 2. Perform blasting without weakening the bearing capacity of rock subgrade and with the least-practicable disturbance to rock to remain.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Excavations shall not be left exposed more than 4 hours upon reaching subgrade elevation or within 12” thereof”. If backfill is delayed more than 4 hours, the excavation must be sealed with a lean concrete mud mat (for structures) or a waterproof coating (for pavements and trenches).

3.5 EXCAVATION, COAL WASTE

- A. Coal waste shall be segregated from other soil and rock materials and placed in the storage area designated on the plans or as directed by the COTR. Agricultural Lime shall be mixed with the coal waste either during excavation or fill placement at a rate of 30 tons per 1,000 cubic yards. Agricultural Lime shall be applied after the surface has been disked or tilled to a depth of one-half the lift thickness. Agricultural Lime shall be spread evenly using mechanical equipment specifically built for that purpose. After lime application, mix thoroughly into the top layer of previously loosened material.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - 1. Clearance: 12 inches each side of pipe or conduit.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.8 APPROVAL OF SUBGRADE

- A. Notify COTR when excavations have reached required subgrade.
 1. If COTR determines that unsatisfactory soil is present, prepare subgrade in accordance with Section 3.9 "Moisture Control" as directed.
 2. If COTR determines that unsuitable soil is present, continue excavation as directed and replace with geogrid and AASHTO #1 stone in accordance with "Over-excavation".
- B. Proof roll subgrade with heavy pneumatic-tired equipment (a tandem-axle dump truck of at least 20 tons) to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by COTR.
- D. Over-excavation will be used to "bridge" soft areas of unsuitable soils. The soft area and an additional 48" around it will be excavated 18" below subgrade and the material hauled to the waste area for disposal. A biaxial geogrid will be installed per the manufacturers guidelines and backfilled with 18" of AASHTO No. 1 stone. The stone will then be rolled to lock it in place. Any damage to the geogrid during installation will be removed and replaced at the contractor's expense.

3.9 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 3 percent of optimum moisture content for granular material and -2 to +3 percent for other suitable soil and shale materials.
 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight. If approved by the COTR, soil drying or soil conditioning may be used for subgrade preparation.
 3. Soil Drying

- a. Description. This work shall consist of drying stockpiled fill with an admixture of ground quick lime.
- b. Materials. Ground quick lime shall meet the requirements of ASTM C 5. Weight of the lime used shall depend on the wetness of the subgrade soil. Contractor may perform testing at his expense to determine lime application rates required to achieve optimum moisture content in the stockpiled soil.
- c. General. Soil drying shall be performed when the air temperature is 5° C (40° F) or above and the material to be treated is not frozen. No work shall be done during wet or unsuitable weather.
- d. Spreading. The lime shall be spread uniformly.
- e. Dry lime shall be spread in such a manner to minimize dusting. The dry lime shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing lime becomes objectionable to traffic or adjacent property owners.
- f. Mixing. The spreading of the lime shall be followed immediately by a mixing operation consisting of the use of a spring tooth or disc harrow. Mixing shall be continued until the lime has been thoroughly incorporated into the mix, all soil clods have been reduced to a maximum size of 50 mm (2 inches), and the mixture is a uniform color.

4. Soil Conditioning

- a. Description. This work shall consist of constructing a 12” or 18” thick lime stabilized subgrade consisting of an admixture of ground quicklime with the subgrade soil constructed, mixed, shaped, compacted, fine graded, and finished.
- b. Materials. Weight of the lime used shall be 3 to 4 percent of the dry weight of the subgrade soil as directed by the Engineer based on soil types encountered.
- c. General. Lime stabilization work shall be performed when the air temperature is 5° C (40° F) or above and the material to be treated is not frozen. No work shall be done during wet or unsuitable weather.
- d. Spreading. The lime shall be spread uniformly on the subgrade by using distributors or equipment approved by the Engineer.
- e. Dry lime shall be spread in such a manner to minimize dusting. The dry lime shall not be applied when wind conditions, in the opinion of the Engineer, are such that blowing lime becomes objectionable to traffic or adjacent property owners.
- f. Lime slurry shall be prepared and distributed using equipment or procedures capable of keeping the slurried lime in suspension and spreading the slurry uniformly over the area to be stabilized.
- g. Mixing. The spreading of the lime shall be followed immediately by a mixing operation consisting of the use of a spring tooth or disc harrow followed by an approved power driven rotary type mixer. During this mixing operation, water shall be added if necessary to bring the mixed material to 3% above optimum. Mixing shall be continued until the lime has been thoroughly incorporated into the mix, all soil clods have been reduced to a maximum size of 50 mm (2 inches), and the mixture is a uniform color.
- h. Following the initial mixing, the material shall be lightly compacted with a steel-wheeled or pneumatic-tired roller to seal it against rain or excessive drying. The partially mixed material shall cure for a period of not less than 4 hours nor more than 2 days prior to final mixing. If conditions during construction are such that more than 7 days elapse between initial mixing and final compaction, an additional ½ percent of lime shall be added during the final mixing. The added lime shall be

furnished at the Contractor's expense unless the delay beyond the 2-day limit is caused by conditions beyond the control of the Contractor.

- i. The final mixing shall be done with approved power driven rotary type equipment until the soil has become completely pulverized with all clods reduced to a maximum size of 25 mm (1 inch) and at least 60 percent of the clods reduced to such a size that they will pass the 4.75 mm (No. 4) sieve. Mixing shall be continued until the lime has been uniformly distributed throughout the pulverized soil.
- j. Compaction. The mixture shall again be brought to 2% to 4% above optimum moisture content during the final mixing and the mixture shall then be shaped and compacted. The maximum laboratory dry density of the lime-soil stabilized subgrade shall not be less than 1440 kg/m³ (90 pounds per cubic foot). All lime-soil stabilized subgrade shall be compacted to 95 percent of the laboratory maximum dry density (ASTM D1557). Final rolling shall be performed using a steel-wheeled roller.
- k. The compacted lime-soil stabilized subgrade shall cure for a period of at least 5 days prior to placement of any overlying fill. The surface shall be lightly sprinkled during hot, dry weather through the curing period to prevent excessive moisture loss, as directed by the Engineer. During the curing period, heavy equipment shall be kept off the treated subgrade.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for Record Documents.
 3. Testing and inspecting underground utilities.
 4. Removing concrete formwork.
 5. Removing trash and debris.
 6. Removing temporary shoring and bracing, and sheeting.
 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. If excavation extended into bedrock, the bottom must be excavated an additional 6" and sealed with a 6" minimum concrete mud mat.

- B. Place backfill on subgrades free of mud, frost, snow, or ice.
- C. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- D. Trenches under or within 10 feet of structures, pavements, or building slabs: Seal sidewalls with waterproof coating. Backfill trenches excavated under footings and within 18 inches of bottom of footings with lean concrete. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
- E. Trenches under Roadways: Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Division 03 Section "Cast-in-Place Concrete."
- F. Backfill voids with satisfactory soil while removing shoring and bracing.
- G. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 DURABLE ROCK FILL

- A. Rock occurring in the excavation that meets the criteria for durable rock may be used to form drainage systems, the outer edges of embankments, or as a lining for drainage channels. In the case of drainage channels, the dimensions of the rock may be as large as the thickness of the lining will permit.
- B. Durable rock shall be placed in separate areas from soil materials and at least 30 feet outside of proposed footings or buildings. Durable rock fill will not be placed within 36" of pavement subgrades or finish grade at any location. Durable rock fill shall be placed in lifts not to exceed 24 inches and with a maximum particle size of 12 inches. The lift thickness shall be as thin as the excavated material will permit. Rock fills should be compacted using a minimum of six passes per lift of a 15-ton static weight vibratory roller. There should be at least a 30% overlap between compactor passes. Each lift shall be proof rolled upon completion (tandem axle dump of at least 20 tons).
- C. When used on the outer slopes of embankments, the large rocks shall be placed at the outer face and the smaller rocks and spalls near the center. The rock shall not be dumped in place but shall be distributed and placed the full width of the lift being formed by blading or dozing in a manner to assure proper placement in the final position in the embankment. The larger rock shall be well distributed and the voids, pockets, and bridging reduced to ensure minimum

deformation and still permit drainage where required. Material that is too wet to be properly compacted shall not be used to fill the voids of previously placed rock. Satisfactory material that meets moisture requirements may be blended with rock and shall be placed in the embankment in lift thickness as prescribed.

- D. To the extent that it is available and needed, sufficient suitable material shall be reserved from the unclassified excavation for use in filling voids in the top of the rock fill. Where rock is placed on an embankment of other material, the top of the other material shall be sloped from the center to the sides at a rate of approximately 4%.

3.14 SOIL FILL

- A. Plow, scarify, and bench sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Fill type: Onsite soils from TB-2A area with organic content of less than 3 percent. Acceptable location for placement: Top 18 inches in pavement areas or finish grade.
 - 2. Fill type: Onsite soils with organic content of less than 3 percent. Acceptable location for placement: Up to 18 inches below pavement subgrades or finish grade.
 - 3. Fill type: Onsite soils with organic content of greater than 3 percent but less than 5 percent. Acceptable location for placement: Five feet below pavement subgrades or finish grade.
 - 4. Fill type: Shale. Acceptable location for placement: Up to eighteen inches below pavement subgrades or finish grade.
 - 5. Fill type: Rock Fill (durable sandstone and limestone). Acceptable location for placement: Up to 3 feet below pavement subgrades or finish grade.
 - 6. Only lean concrete shall be used as fill under buildings and other structures.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.15 COAL WASTE FILL

- A. Coal waste shall be placed in maximum 12 inch loose lifts and compacted to 85% of the maximum dry unit weight according to ASTM D1557. Agricultural Lime shall be mixed with the coal waste at a rate of 30 tons per 1,000 cubic yards (unless applied during excavation). Agricultural Lime shall be applied after the surface has been disked or tilled to a depth of one-half the lift thickness. Agricultural Lime shall be spread evenly using mechanical equipment specifically built for that purpose. After lime application, mix thoroughly into the top layer of previously loosened material.

3.16 STOCKPILES

- A. Soil Stockpiles: Soil stockpiles shall be placed in 12" maximum loose lifts and each lift shall be tracked in with a D-7 or larger bulldozer to ensure material is of uniform density and is stable. Soil stockpile materials shall be free from any rocks 6" or larger in any dimension.

- B. General Material Stockpiles: General material stockpiles shall be placed in 24" maximum loose lifts and each lift shall be tracked in with a D-7 or larger bulldozer to ensure material is stable. General material shall be free of any rocks 12" or larger in any dimension.

3.17 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
 - 1. All areas, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

3.18 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. All Areas: Plus or minus 1 inch.

3.19 SUBSURFACE DRAINAGE

- A. Subdrainage Pipe: Specified in Division 33 Section "Storm Utility Drainage Piping."
- B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.

- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.
 - 2. Place and compact impervious fill over drainage backfill in 6-inch- thick compacted layers to final subgrade.

3.20 FREE DRAINING BASE COURSE

- A. Installation shall follow requirements of WVDOH Standard Specifications Section 311.
- B. Composition of Optional Stabilizing Mixtures:
 - 1. If the asphalt stabilized alternative is used, the asphalt cement shall be confined to 2.0%, plus or minus 0.5% by weight of the mix if Blast Furnace Slag is used the asphalt cement may be increased.
 - 2. If the Portland cement stabilized alternative is chosen, the cement shall be Type 1 and shall have a cement content of 150 ± 5 pounds per cubic yard.
- C. Weather and Seasonal Limitations:
 - 1. Weather and seasonal limitations shall be in accordance with Section 321216 (for asphalt applications) or Section 321313 (for Portland cement applications).
- D. Preparation and Batching of Materials:
 - 1. Preparation of materials for asphalt applications shall conform to the requirements of 401.7 of the Specifications except that the asphalt cement shall be heated within a temperature range of 250° - 275° F and temperature of the mix shall be within the range of 200° - 250° F.
 - 2. Preparation of materials for Portland cement applications shall conform to the requirements of WVDOH Standard Specification Section 501.7.
- E. Mixing and Transporting Requirements:
 - 1. The materials used in asphalt mixes shall be mixed in an asphalt concrete mixing plant that has been inspected and approved by the Division. Transportation of such mixes shall be in accordance with 401.10 of the WVDOH Standard Specifications.
 - 2. The materials used in Portland cement mixes may be mixed at a central mix plant, in a transit mix truck or a pugmill type mixer. Regardless of which type of equipment is used, the mixing time shall be a minimum of two minutes once all component materials are batched.
- F. Placing, Spreading, and/or Compacting:
 - 1. Placement of the stabilized material shall be by acceptable spreading equipment to the appropriate line, grade and thickness. Acceptable equipment includes asphalt pavers for

asphalt stabilized bases and spread boxes, self propelled spreaders or conventional concrete placing equipment for Portland cement stabilized bases.

2. A four to ten ton steel wheel tandem roller shall be used to compact the asphalt stabilized free draining base material. The number of roller passes shall be two or three unless otherwise directed. In the case of the asphalt stabilized aggregate, the mat temperature, at the time of initial rolling, shall be between 150° and 175° F unless otherwise directed. In the case of the asphalt stabilized aggregate, the purpose of the rolling is to compact the base sufficiently to support the weight of the equipment that will place the next layer or pavement. The compacted base is to be porous so that water will drain through it. The base is not to be compacted to the point that it is not free draining or that the aggregate is crushed.

G. Curing:

1. Portland cement stabilized bases, immediately following spreading, shall be cured with the use of white polyethylene sheeting.

H. Tolerance:

1. Base tolerance shall meet the requirements of Section 321216 for asphalt stabilized bases and Section 321313 for Portland cement stabilized bases.

I. Maintenance:

1. The Contractor shall maintain the base course porous and free from being contaminated or clogged by deleterious material, transported and deposited by construction equipment, traffic, etc., until the next layer of the pavement is placed. The Contractor shall also maintain the final surface of the base course true to specified line, grade and cross section until such time that the pavement is placed.

3.21 FREE DRAINING BASE TRENCH

- A. Trenching: The free draining base trench shall be excavated to the width and depth as detailed on the plans. Trench walls shall be as nearly vertical as practicable.
- B. Bedding and Placing Perforated Pipe: After excavating the trench, geotextile fabric shall be placed in the trench in reasonable conformance with the shape of the trench. The fabric shall be smooth and free of tension, stress, folds, wrinkles, or creases. The fabric shall be installed so that any splice joints have a minimum overlap of at least 1 foot any direction. Enough fabric will be placed in order to properly tie to the mainline placement of fabric.
 1. A 2 inch bedding layer of crushed stone or gravel conforming to free draining base course aggregate shall be placed in the bottom of the trench for its full width and length.
 2. The pipe shall then be placed in the trench. The pipe sections shall be joined with couplings or bands as recommended by the manufacturer.
 3. After pipe installation, the remainder of the trench will be backfilled with crushed stone or gravel conforming to free draining base course aggregate.

3.22 OUTLET PIPE

- A. Connection to Perforated Pipe: At locations designated on the plans or as directed by the Engineer, rigid outlet pipe will be connected to the perforated pipe. A drop connection utilizing a tee or wye or other means as satisfactory to the Engineer will be used for this connection. This operation may be performed concurrently with the placement of the perforated pipe or separately.
- B. Trenching: The outlet pipe trench shall be excavated to the depth of the flow line of the outlet pipe. Minimum slope of the outlet pipe is to be 3%. Width of the trench will be that width which will allow proper room for pipe placement and backfilling operations.
- C. Placing and Backfilling Pipe: The outlet pipe shall be placed in the trench with all ends firmly joined by couplings or bands as recommended by the manufacturer. The outlet pipe shall be backfilled with satisfactory soil in accordance with Section 3.12, "Utility Trench Backfill".
- D. Pipe End Treatment: The outlet end of all outlet pipes not tied to drainage structures shall be equipped with a slopewall and animal screen. Outlet pipes shall be tied to inlets or culverts by the use of pipe saddles, grouting cementing, or other means satisfactory to the Engineer.

3.23 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. Subgrade shall be prepared one of the following two ways:
 - 1. Soil Fill Subgrade: Shall be stabilized with lime according to Soil Conditioning section of this specification and paid according to the "Subgrade Preparation" bid item.
 - 2. Exposed Shale Subgrade: Subgrade shall be cleaned of loose materials, dried and a waterproof coating applied. Place subbase course directly on cured waterproof coating without damaging the coating in any way.
- C. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.24 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 - 1. Install lean concrete mud mat on prepared subgrade according to manufacturer's written instructions. Refill any cracks after curing with additional lean concrete
 - 2. Place drainage course 6 inches or less in compacted thickness in a single layer.
 - 3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.25 FIELD QUALITY CONTROL

- A. Special Inspections: Contractor will engage a qualified independent special inspector to perform the following special inspections:
 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 2. Determine that fill material and maximum lift thickness comply with requirements.
 3. Determine what is suitable soil, coal waste, durable rock, unsuitable soil, pyritic material and coal fines by visual inspection and to order tests as required to ensure compliance with the specifications regarding the use and/or disposal of the different materials.
 4. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Settlement Monitoring Program: A minimum of six (6) iron pins, and three (3) buried plates shall be used to monitor the fill areas. The types and locations of the monitoring points shall be detailed in the Settlement Monitoring Plan. The Settlement Monitoring Plan must be approved by the COTR prior to placing any fill. Upon completion of fill placement, the iron pins and plates shall be surveyed on a weekly basis by a Professional Surveyor, to an accuracy of +/- .01', and the results provided to the COTR within 96 hours. The contractor shall maintain a log of all survey results. The fill shall be accepted when all monitoring points show less than 1/10" settlement per week for two (2) consecutive weeks. But in no case shall the fill be accepted in less than 90 days after placement. Prior to starting construction in this area, the Contractor must request approval of the fill in writing and receive a written authorization from the COTR to proceed.
- D. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 1. Fill Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 4000 sq. ft. or less, but in no case fewer than three tests.
 2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length, but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

- G. Areas of Soil Conditioning: At least one test for every 100 square yards of area treated will be performed to verify bearing capacity is at least five tons per square foot, and one test of an in-place conditioned soil for every 1,000 square yards installed will be tested for swelling.
- H. Durable Rock: Slake durability test (ASTM D 4644) for each type of rock and one per 5,000 cubic yards of excavated rock.
- I. Lean Concrete: Compressive strength tests in accordance with Section 033000, "Cast-in-Place Concrete".

3.26 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by the COTR; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.27 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove waste materials, including unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by the COTR.
 - 1. Remove waste materials, including trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000