N91571.AR.002084
NIROP ABL ROCKET CENTER
5090.3a

ADDENDUM TO THE FINAL WORK PLAN FOR NON-TIME CRITICAL REMOVAL ACTION AT FORMER WASTE DISPOSAL PITS 1 AND 3 NIROP ROCKET CENTER WV

10/9/2013

AGVIQ/CH2M HILL

October 9, 2013

Mr. Walt Bell
NAVFAC Mid-Atlantic
Environmental Restoration OPHREV4
9742 Maryland Ave.
Building N-26, Room 3300
Norfolk, VA 23511

RE: Contract No. N62470-08-D-1006
Task Order No. WE28
Allegany Ballistics Laboratory – Rocket Center, West Virginia
Addendum to the Final Work Plan - Non-Time Critical Soil Removal Action Former Disposal Pits 1 and 3, Allegany Ballistics Laboratory (ABL), Rocket Center, West Virginia

Dear Mr. Bell:

AGVIQ-CH2M HILL Constructors Inc. Joint Venture III (AGVIQ-CH2M HILL) is pleased to provide one hard copy and one electronic copy of the Addendum to the Final Work Plan - Non-Time Critical Soil Removal Action Former Disposal Pits 1 and 3 (Final RAWP), ABL, Rocket Center, West Virginia. The addendum consists of this letter, our attached responses to NAVFAC comments on the Draft Final Drawings, and the attached 100% Final Design Drawings identifying the planned demolition and reconstruction.

The addendum has been provided to document and clarify that the soil stabilization structure, anticipated to be designed and constructed at Former Disposal Pit 3 (FDP-3) as outlined in Section 2.1.3 of the RAWP, was replaced with an expanded excavation solution that includes the partial demolition and associated reconstruction of Burn Pad D. The basis for this change from the soil stabilization structure discussed in the RAWP was documented in the Technical Memorandum - Conceptual Excavation Scenarios for Soil Removal Action at Former Disposal Pit 3, AGVIQ-CH2M HILL, dated August 21, 2013. As outlined in that technical memorandum, the planned excavation at FDP-3 will be at a 1.5H:1V slope instead of the 1H:1V slope originally proposed and cited in the Final RAWP for this pit.

Upon completion of the field work, AGVIQ-CH2M HILL will prepare as-built drawings, signed and sealed by our project engineer of record for submittal to NAVFAC to document Burn Pad D demolition and reconstruction activities completed.

If you have any questions regarding this submittal, please contact me at (757) 318-9420 x231 or via e-mail at prakowski@tikigaq.com.

Sincerely,

AGVIQ-CH2M HILL Constructors Inc. Joint Venture III

Paul Rakowski, PE
Project Manager

cc: Steve Hirsch/EPA
Cathy Guynn/WVDEP
Monica Marrow/CH2M HILL (1 unbound and un-punched hardcopy plus PDF on CDROM)
Janice Derby/CH2M HILL
Jason Chebetar/AGVIQ Environmental
Randy Underwood/CH2M HILL
Jamie Butler/CH2M HILL
Sandy Brown/CH2M HILL
Steve Glennie/CH2M HILL

Responses to NAVFAC Comments (received on September 30, 2013) on the 100% Draft Final Drawings - Non-Time Critical Soil Removal Action Former Disposal Pits 1 and 3, ABL, Rocket Center, West Virginia

1. COMMENT: The detail and notes on C-004 for the construction joint and sealant placement in the 1/2" joint opening detail a "Sealant", has the joint sealant been specified? If so, are we matching the existing burn pad construction? If so, I know that the area in question should be out of the burn area and there is a burn pan on the pad for containing the XO, however, will the sealant used be susceptible to heat deterioration? I am unsure of the existing condition, but the pad use may be an issue for the joint detailed, nor do we want to trap any residue materials, nor be cleanable. This is a typical construction joint and will probably use industry standard concrete caulk.

RESPONSE: We selected Non-Sag Silicone sealant as specified on Sheet C-002. Non-Sag Silicone sealant is recommended in an Engineering Technical Letter 02-8 by the Department of The Air Force (see attached) for sealing joints in concrete pavements on Air Force airfields. The Non-Sag Silicone sealant is required to meet SS-S-200E Section 4.4.12 for Flame Test Requirements, which states "the sealant shows no sign of ignition, support of combustion, hardening, or loss of flexibility, flow or separation during heat exposure, or upon cooling, or any separation or loss of adhesive strength between sealant and concrete, when exposed to a temperature of 260 C (500 F) for 120 seconds". The portion of the pad that is being replaced is not directly under the burn area but may be subjected to some residual heat. Two products are listed on Sheet C-002 in the specifications that meet this requirement.

2. COMMENT: This is also a construction statement from C-004 and detail #2, that shows the use of steel dowels in the contraction joints and I assume that there will be dowels on two sides, as shown in the plan? I have two concerns, one is that you may want to be careful in the delta of the corner joint in having dowels in two directional planes too close together. This can lead to the concrete under heave pressure cracking or popping in the delta between them. Also, please ensure that prior to and during concrete placement that the dowels are maintained in horizontal placement, as this is a pet peeve of mine and prevents cracking and other slab defects.

RESPONSE: On Sheet C-004, a #5 corner bar was added at each of the three corners adjacent to existing pad to ensure no cracking at the corner. Notes were added on Sheet C-004 requiring first drilled dowels from corner shall be located 12 inches away from the corner point so the dowels are not too close to each other. Lastly, an addition to NOTE 6 of C-004 states that dowels are to be maintained in horizontal positions prior to and during placement.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

SEP 5 2002

FROM: HQ AFCESA/CESC
139 Barnes Drive, Suite 1
Tyndall AFB FL 32403-5319

SUBJECT: **Engineering Technical Letter (ETL) 02-8: Silicone Joint Sealant Specification for Airfield Pavements**

1. Purpose. This ETL provides a specification for silicone joint sealants for sealing joints in concrete pavements on Air Force airfields.

Note: The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

2. Application: Portland cement concrete (PCC) airfield pavements not subject to frequent fuel spillage.

2.1. Authority: Unified Facilities Criteria (UFC) 3-260-02, *Pavement Design for Airfields*.

2.2. Coordination: Major command (MAJCOM) pavement engineers.

2.3. Effective Date: Immediately.

2.4. Ultimate Recipients:
- MAJCOM pavement engineers
- Base civil engineers (BCE) and other engineers responsible for airfield design and maintenance
- U.S. Army Corps of Engineers (USACE) and Navy offices responsible for Air Force design and construction

3. Referenced Publications:

3.1. Unified Facilities Criteria (UFC):
- UFC 3-260-02, *Pavement Design for Airfields*

3.2. Unified Facilities Guide Specifications (UFGS):
- UFGS 02760a, *Field Molded Sealants for Sealing Joints in Rigid Pavements*

3.2. Federal Specifications:
- Federal Specification SS-S-200E, *Sealants, Joint, Two-Component, Jet-Blast Resistant, Cold-Applied, for Portland Cement Concrete Pavement*.

3.3. American Society for Testing and Materials (ASTM):

- ASTM D 5249, *Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland Cement Concrete and Asphalt Joints*
- ASTM D 5893, *Standard Specification for Cold-Applied, Single-Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements*

4. Acronyms and Terms:

ASTM	- American Society for Testing and Materials
BCE	- base civil engineer
ETL	- Engineering Technical Letter
FS	- Federal Specification
MAJCOM	- major command
NS	- non-sag
PCC	- Portland cement concrete
SL	- self-leveling
UFC	- Unified Facilities Criteria
UFGS	- Unified Facilities Guide Specifications
USACE	- U.S. Army Corps of Engineers

5. Point of Contact. Recommendations for improvements to this ETL are encouraged and should be furnished to: HQ AFCESA/CESC, 139 Barnes Drive, Suite 1, Tyndall AFB, 32403-5319, Attention: Mr. Jim Greene, DSN: 523-6334, commercial: (850) 283-6334, FAX DSN: 523-6219, email: james.greene@tyndall.af.mil; or J. Kent Newman, U.S. Army Engineer Research and Development Center, CEERD-GM-A, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, telephone: (601) 634-3858, FAX: (601) 634-3020, email: john.k.newman@erdc.usace.army.mil

MICHAEL J. COOK, Colonel, USAF
Director of Technical Support

Atchs
1. Silicone Joint Sealant
2. Distribution List

SILICONE JOINT SEALANT

A1.1. Silicone Sealant Types. Silicone sealants are generally of two types: high-modulus (non-sag [NS]) for vertical and horizontal applications, and low-modulus (self-leveling [SL]) for horizontal applications only. High-modulus sealants must be tooled into the joint to provide proper joint face wetting and ensure good adhesion.

A1.2. Silicone Sealant Application.

A1.2.1. Silicone sealants can be used on PCC pavement, except for areas exposed to frequent (defined as more than one spill daily) fuel spills that are allowed to pool in concrete joints. Silicone sealants will swell in the presence of fuel and some synthetic lubricating fluids such as jet turbine oils. Volatile fluids such as fuels will cause temporary swelling but will not cause adhesion loss after evaporation if fuel contact does not occur on a daily basis.

A1.2.2. NS silicone sealants are recommended for runway applications. The high-modulus NS material is better suited to withstand the forces from aircraft landings and high-pressure waterblasting than SL low-modulus silicone sealants. For high-temperature applications, i.e., where jet blast may impact the joints, fluorosilicone (NS) sealants are recommended as they have been shown to perform better than Federal Specification (FS) SS-S-200 sealants.

A1.3. Specific Requirements. The silicone joint sealant will be non-acid curing, and satisfy the criteria in American Society for Testing and Materials (ASTM) D 5893, *Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements*. Backer rod must meet the requirements outlined in ASTM D 5249, *Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland Cement Concrete and Asphalt Joints*. The sealant must show no sign of ignition, support of combustion, hardening, or loss of flexibility, flow, or separation during heat exposure, or upon cooling, or any separation or loss of adhesive strength between sealant and concrete blocks, when exposed to a temperature of 260 °C (500 °F) for 120 seconds, when tested according to FS SS-S-200E, *Sealants, Joint, Two-Component, Jet-Blast Resistant, Cold-Applied, for Portland Cement Concrete Pavement,* Section 4.4.12. (See paragraph A1.4 of this ETL for a description of the testing procedure). Specimens for flame resistance testing can be used after passing the non-immersed bond test (see ASTM D 5893, Section 8.8.3).

A1.3.1. Joint Preparation. All joints must be prepared according to procedures outlined in the appendix of ASTM D 5893 (see also UFGS 02760a, *Field Molded Sealants for Sealing Joints in Rigid Pavements*).

A1.3.2. Shape Factor. The ratio of the depth of sealant divided by the width of the joint is referred to as the shape factor. For silicone sealants the shape factor will be no less than 0.5 and no greater than 1.0. For example, if the joint is 13 millimeters (0.5 inch) in

width, the depth of silicone sealant should be between 6 millimeters (0.25 inch) and 13 millimeters.

A1.3.3. Sealant Recess. Silicone joint sealant should be recessed at least 6 millimeters below the joint surface, but no deeper than 8 millimeters (0.375 inch). The sealant will not be placed flush with the joint surface.

A1.3.4. Repair and Maintenance Techniques. Small repairs of silicone sealant can be accomplished by hand-applied caulking guns and small tubes of sealant obtained from the manufacturer. Silicone sealants should only be repaired with silicone sealant meeting this ETL specification. A silicone sealant should be repaired with the same type of sealant from the same manufacturer.

A1.4. Flame Resistance Test.

A1.4.1. Apparatus. The heat source must be a high-temperature laboratory burner rated to supply 2930 watts (10,000 British thermal units per hour). These can be obtained from most laboratory supply companies; for example, the Fisher Scientific Company's AccuFlame™ Natural Gas Burner. For a draft shield, use an open-end cylinder of light-gauge metal with a diameter of 127 millimeters (5 inches) and a height of 305 millimeters (12 inches). A specimen support is fashioned by welding two 150-millimeter (6-inch) rods and two 51-millimeter (2-inch) rods to form a support across the draft cylinder, with a rectangular opening of 51 by 64 millimeters (2 by 2.5 inches). In some cases, a secondary draft shield at the top of the primary shield may be needed to maintain the required temperature at the supports.

A1.4.2. Procedure. A tripod or similar support can be used to place the draft shield on top of the burner. The top of the burner should be flush with the bottom of the draft shield (both should be on the same plane). Place a laboratory thermometer on the top of the draft shield specimen supports in a horizontal position so that the thermometer bulb is in the center. Regulate the burner to achieve a temperature of 260 $\pm$ 11 °C (500 $\pm$ 20 °F) for 120 seconds. Remove the thermometer and place the specimen with the long side of the concrete blocks parallel to the long specimen support rods and centered within the draft shield. The specimen should be oriented so that the top sealant surface that was open to cure is facing downward and is exposed to the heat and flame. Allow the specimen to remain in place for 120 $\pm$ 1 seconds. Observe the specimen for evidence of ignition, flow, hardening, or separation. Remove the burner at the end of the 120-second exposure and allow the specimen to cool to room temperature while remaining on the specimen supports. Examine the specimen again for signs of ignition, support of combustion, hardening, cracking, loss of flexibility, flow, or bond separation at the concrete interface.

DISTRIBUTION LIST

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Dallas TX 75266-0320

Defense Technical Information Center (1)
ATTN: DTIC-FDA
Alexandria VA 22034-6145

SPECIAL INTEREST ORGANIZATIONS

IHS (A.A. DeSimone) (1)
1990 M Street NW, Suite 400
Washington DC 20036

Construction Criteria Database (1)
National Institute of Bldg Sciences
1201 L Street NW, Suite 400
Washington DC 20005

100% (FINAL) DRAWINGS

NON-TIME CRITICAL SOIL REMOVAL ACTION (NTCSRA)
FORMER DISPOSAL PITS 1 AND 3

ALLEGANY BALLISTICS LABORATORY
ROCKET CENTER, WEST VIRGINIA

DRAWING NUMBER	DRAWING TITLE
G-0	COVER SHEET AND INDEX OF DRAWINGS
C-1	SITE PLAN - PROPOSED NTCSRA FOOTPRINT
C-2	STRUCTURAL NOTES
C-3	PAD D DEMOLITION PLAN AND DETAIL
C-4	PAD D RESTORATION- PLAN AND DETAILS

SUBMITTED TO

NAVFAC
Naval Facilities Engineering Command

MID-ATLANTIC
9742 MARYLAND AVENUE
NORFOLK, VA 23511-3095

PREPARED BY

AGVIQ
AGVIQ ENVIRONMENTAL SERVICES
CH2M HILL
JOINT VENTURE

NORTHPARK 400
1000 ABERNATHY ROAD
SUITE 1600
ATLANTA, GA 30328

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

AVE DESIGN E.U. EFD
DRAWN I.K.
REVIEW E.U.
QC
CHIEF ARCH / ENGR.
PROJECT MANAGER J.D.
FIRE PROTECTION -
BRANCH MANAGER -
DESIGN DIRECTOR E.U.

APPROVED DATE
ACTIVITY - SATISFACTORY TO
APPROVED DATE
FOR EFD FOR COMMANDER NAVFAC

I, UNDERSIGNED, C.E. REGISTERED PROFESSIONAL ENGINEER, HEREBY CERTIFY THAT THIS DRAWING IS CORRECT AND IN ACCORDANCE WITH THE DATA GIVEN TO ME. SEAL

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC DIVISION
ROCKET CENTER, WV
ALLEGANY BALLISTICS LABORATORY
MINERAL COUNTY, WEST VIRGINIA
NTCSRA
FORMER DISPOSAL PITS 1 AND 3
COVER SHEET AND INDEX TO DRAWINGS

CODE ID. NO. 80091 SIZE D
SCALE: NOT TO SCALE
EFD NO.
STA. PROJ. NO.
SPEC. NO.
CONSTR. CONTR. NO. N62470-08-D-1006
NAVFAC DRAWING NO.
SHEET OF
G-001

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FILENAME: G-001.dgn
PLOT DATE: 2013\10\03

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NOTES:

1. THE HORIZONTAL DATUM IS BASED ON ALLEGHANY BALLISTICS LABORATORY (ABL) CONTROL.
2. THE COORDINATES SHOWN ARE SCALED TO THE LOCAL ABL WORKING PLANE, TO OBTAIN WEST VIRGINIA STATE PLANE, NORTH ZONE, NAD 83 (91) U.S. FEET, MULTIPLY BY THE COMBINED SCALE AND ELEVATION FACTOR OF 0.999902852.
3. THE VERTICAL DATUM IS NGVD 29, U.S. SURVEY FEET. ELEVATIONS ARE REFERENCED TO ABL CONTROL.
4. THIS SURVEY WAS COLLECTED IN THE FIELD BY PENNONI ASSOCIATES ON APRIL 8, 2013.
5. SEE FIGURE 2-3 OF THE APPROVED WORK PLAN DATED JUNE 2013 FOR THE LOCATIONS OF ROADS, ADDITIONAL CONCRETE PADS AND OTHER MISCELLANEOUS ITEMS INSIDE THE FENCED AREA.
6. ELECTRIC, WATER LINE AND UNKNOWN DATA POINTS WERE DETERMINED DURING GPS SURVEY WORK PERFORMED BY UTILITY SUBCONTRACTOR IN MAY 2013 AND WERE NOT LAND SURVEYED BY PROFESSIONAL LAND SURVEYOR.
7. CONSTRUCTION AREA LAYOUT AND FACILITIES SHALL BE INSTALLED AS SHOWN IN FIGURE 2-3 OF THE APPROVED WORK PLAN DATED JUNE 2013.
8. EROSION AND SEDIMENT CONTROL, UTILITY LOCATION / PROTECTION, AND OTHER WORK NOT SHOWN ON THESE DRAWINGS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED WORK PLAN.

CONCRETE PAD F
CONCRETE PAD E
APPROXIMATE TOP OF EXCAVATION
WATER LINE
ELECTRIC LINE
BOTTOM OF EXCAVATION
IW-08
MW-03
MW-01
MW-05
MW-08
IW-03
WV
IW-06
1-1
IW-04
1-8
1-2
MW-09
UNKNOWN LINE
IW-02
1-3
MW-04
FDP-1
1-4
WC-3
1-7
1-6
IW-05
WATER LINE
1-5
MW-06
MW-07
MW-02
IW-01
ELECTRIC PANELBOX
EXISTING ROAD
PROPOSED FENCE
EXISTING FENCE TO BE REMOVED
ELECTRIC PANELBOX
ELECTRIC LINE
APPROXIMATE TOP OF EXCAVATION
12GE-01
BOTTOM OF EXCAVATION
SITE LIGHT
3-1
WC-2
3-3
3-2
3-4
3-5
CONCRETE PAD D
BURNING PAD APPROXIMATE LOCATION
3-10
WC-1
FDP-3
12CH-01
3-9
3-8
3-6
12GE-02
3-7
ELECTRIC PANEL BOX
EXISTING RETAINING WALL
ELECTRIC PANEL

LEGEND

- =MONITORING WELL
- =INJECTION WELL/BORING LOCATION
- =WATER VALVE
- =ELECTRIC PANEL BOX
- =SITE LIGHT
- WC=WASTE CHARACTERIZATION SAMPLE
- FDP=FORMER DISPOSAL PIT
- =CONTROL TRAVERSE STATION
- = REMOVAL AREA BOUNDARIES AT FDP-1 AND FDP-3
- =REMOVAL AREAS

STA.	NORTHING (NOTE 2)	EASTING (NOTE 2)	PVC ELEVATION	GROUND ELEVATION
MW-01	388703,260	2156188,454	667,03	665,5
MW-02	388669,917	2156192,742	665,75	664,5
MW-03	388702,186	2156181,050	667,18	665,5
MW-04	388681,818	2156136,025	666,46	664,3
MW-05	388710,172	2156163,678	666,85	665,3
MW-06	388674,250	2156157,045	663,83	664,4
MW-07	388669,866	2156174,477	664,03	664,4
MW-08	388711,939	2156155,362	665,00	665,4
MW-09	388698,811	2156209,615	664,95	665,4
IW-01	388678,855	2156186,633	666,86	664,6
IW-02	388687,879	2156147,592	667,03	664,8
IW-03	388712,497	2156203,764	668,20	665,9
IW-04	388689,502	2156159,682	666,73	664,9
IW-05	388685,455	2156171,871	666,47	664,7
IW-06	388697,394	2156169,561	666,88	665,1
IW-07	388690,730	2156198,448	667,04	665,4
IW-08	388719,707	2156175,229	667,21	665,6
12CH-01	388601,882	2156497,517	———	666,4
12GE-01	388615,328	2156469,268	———	665,4
12GE-02	388602,908	2156488,648	———	665,8
WC-1	388605,845	2156476,422	———	665,4
WC-2	388608,384	2156466,416	———	665,0
WC-3	388684,714	2156193,995	———	664,7

REMOVAL AREA BOUNDARIES AT FDP-1 (COORDINATES IN STATE PLANE, FEET)

	NORTHING	EASTING
1-1	388658.03	2155963.09
1-2	388657.24	2155972.97
1-3	388653.32	2155982.18
1-4	388646.06	2155988.67
1-5	388639.76	2155982.33
1-6	388643.21	2155973.23
1-7	388645.67	2155963.76
1-8	388651.49	2155956.68

REMOVAL AREA BOUNDARIES AT FDP-3 (COORDINATES IN STATE PLANE, FEET)

	NORTHING	EASTING
3-1	388576.03	2156254.24
3-2	388574.91	2156264.13
3-3	388572.92	2156272.84
3-4	388570.31	2156283.36
3-5	388565.51	2156287.09
3-6	388560.83	2156282.80
3-7	388561.33	2156272.57
3-8	388563.65	2156262.58
3-9	388565.41	2156252.59
3-10	388572.18	2156245.83

N
0 20 40 60
1"=20'

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

A/E EFD
DESIGN E.U.
DRAWN I.K.
REVIEW E.U.
QC
CHIEF ARCH./ ENGR.
PROJECT MANAGER J.D.
FIRE PROTECTION –
BRANCH MANAGER –
DESIGN DIRECTOR E.U.

DATE
APPROVED
ACTIVITY - SATISFACTORY TO
DATE
APPROVED
FOR EFD FOR COMMANDER NAVFAC

SEAL

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC DIVISION
ALLEGANY BALLISTICS LABORATORY
ROCKET CENTER, WV
ALLEGANY BALLISTICS LABORATORY
MINERAL COUNTY, WEST VIRGINIA

NTCSRA
FORMER DISPOSAL PITS 1 AND 3
SITE PLAN - PROPOSED NTCSRA FOOTPRINT

CODE ID. NO. 80091 SIZE D
SCALE: 1" = 20'-0"
EFD NO.
STA. PROJ. NO.
SPEC. NO.
CONSTR. CONTR. NO. N62470-08-D-1006
NAVFAC DRAWING NO.
SHEET OF
C-001

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

AGVIQ CH2M HILL

FILENAME: C-001.dgn
PLOT DATE: 2013\10\04

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PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Concrete construction shall conform to requirements of ACI 117 and ACI 301.

B. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician – Grade 1. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician – Grade II.

PART 2 PRODUCTS

2.1 CONCRETE

A. Portland Cement: ASTM C150, Type II

B. Aggregates: ASTM C33. Furnish from one source.

C. Admixtures: Unless otherwise permitted, furnish from one manufacturer.

1. Air-Entraining Admixture: ASTM C260.
2. Water-Reducing Admixture: ASTM C494, Type A or Type D.
   a. Manufacturers and Products:
      1) BASF Admixtures Inc., Shakopee, MN; Pozzolith Series or PolyHeed Series.
      2) Euclid Chemical Co., Cleveland, OH; Eucon Series.
      3) W. R. Grace & Co., Cambridge, MA; Daracem Series or Mira Series.
3. Retarding Admixture: ASTM C 494/C 494M, Type B.
4. Accelerating Admixture: ASTM C 494/C 494M, Type C.
5. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F or Type G.
   a. Manufacturers and Products:
      1) BASF Admixtures Inc., Shakopee, MN; Glenium Series, PS 1460, or Rheobuild 1000.
      2) Euclid Chemical Co., Cleveland, OH; Eucon Series or Plastol Series.
      3) W. R. Grace & Co., Cambridge, MA; ADVA Series, Daracem Series, or EXP 950.
6. Shrinkage Reducing Admixture:
   a. Manufacturers and Products:
      1) BASF Admixtures Inc., Shakopee, MN; Tetraguard AS20.
      2) Euclid Chemical Co., Cleveland, OH; Eucon SRA Series.
      3) W. R. Grace & Co., Cambridge, MA; Eclipse Series.

D. Water: Use potable water.

2.2 MIX DESIGN:

A. Minimum Allowable 28-day Compressive Field Strength: 4,000 psi.

B. Water-Cement Ratio: 0.40 Maximum.

C. Coarse Aggregate Size: 1 inch and smaller.

D. Cement Content: 540 pounds per cubic yard.

E. Air Content: 3% minimum, 6% maximum.

2.3 REINFORCING STEEL

A. Deformed Bars: ASTM A615, Grade 60

2.4 CONCRETE MIXING

A. In accordance with ACI 301.

2.5 ANCILLARY MATERIALS

A. Curing Compound: Masterkure by BASF or Super Diamond Clear VOX by Euclid.

B. Curing Membranes:
   1. White polyethylene sheeting.
   2. Waterproof paper.
   3. Cotton or jute mats.

C. Evaporation Retardant: Confirm as manufactured by Master Builders Company.

D. Concrete Repair Material:
   1. Manufacturers and Products:
      a. BASF Building Systems Inc., Shakopee, MN; EMACO S-Series products.
      b. Sika Chemical Corp., Lyndhurst, NJ; SikaTop-Series.
      c. Or equal.

2.6 STEEL EXPANSION JOINT DOWELS

A. Dowels: ASTM A36/A36M round smooth steel bars with fusion bonded coating as shown on Drawings.

2.7 ACCESSORIES

A. Joint Sealant:
   1. One part, NS (non-sag) silicone sealants conforming to ASTM D 5893, type NS.
   2. Meets SS-S-200E Section 4.4.12 for Flame Test Requirements.
   3. Manufacturers and Product:
      a. Dow Corning Corporation, Dow Corning 888 Silicone Joint Sealant.
      b. Pecora Corporation, Pecora 301NS.
      c. Or equal.

B. Backer Rod:
   1. Select backer rod according to recommendation by joint sealant manufacturer for the joint sealant selected.
   2. Backer material conforming to ASTM D5249.
   3. Cylindrical sealant backing conforming to ASTM C1330.

PART 3 EXECUTION

3.1 PLACING CONCRETE

A. Placement into Formwork:
   1. Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or steel above, and in layers not over 1.5 feet deep, except for slabs which shall be placed full depth. Place and consolidate successive layers prior to inital set of first layer to prevent cold joints.
   2. Do not use aluminum conveying devices.
   3. Trowel and round off top exposed edges of walls with 1/4-inch radius steel edging tool.
   4. Cure concrete continuously wet for a minimum period of 7 days.

B. Retempering: Not permitted for concrete where cement has partially hydrated.

C. Hot Weather:
   a. Do not place concrete if the ambient temperature is above 90 degrees.

D. Cold Weather Placement:
   1. Unless otherwise permitted, shall be in accordance with requirements of ACI 306.1 and as follows:
      a. Cold weather requirements shall apply when ambient temperature is below 40 degrees F or approaching 40 degrees F and falling.
      b. Do not place concrete over frozen earth or against surfaces with frost or ice present. Do not place concrete in contact with surfaces less than 35 degrees F.
      c. Provide supplemental external heat as needed when other means of thermal protection are unable to maintain minimum surface temperature of concrete as specified in ACI 306.1.
      d. Protect concrete from freezing until end of curing period and until concrete has attained a compressive strength of 3,500 psi or design compressive strength if less than 3,500 psi.
   2. External Heating Units: Do not exhaust heater flue gases directly into enclosed area as it causes concrete carbonation as a result of concentrated carbon dioxide.

3.2 EVAPORATION RETARDANT APPLICATION

A. Spray onto surface of fresh flatwork concrete immediately after screeding to react with surface moisture.

B. Reapply as needed to ensure a continuous moist surface until final finishing is completed.

3.3 CONCRETE SLAB FINISHES

A. Top of concrete slab shall have a broomed finish to match existing slab. Slope top of slab to match existing.

3.4 FIELD QUALITY CONTROL

A. Concrete Strength Test:
   1. Unless otherwise specified, one specimen at age of 7 days for information, and two 6-inch diameter or when permitted three 4-inch diameter test specimens at age of 28 days for acceptance.
   2. Provide a minimum of one spare test specimen per sample.

3.5 PROTECTION OF INSTALLED WORK

A. After curing as specified, and after applying final floor finish, cover slabs with plywood or particle board or plastic sheeting or other material to keep floor clean and protect it from material and damage as a result of other construction work.

B. Repair areas damaged by construction, using specified repair materials and approved repair methods.

REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

AAE DESIGN L.F.D. | DRAWN I.K. | REVIEW L.F. | QC ____ | CHIEF ARCH / ENGR. ____ | PROJECT MANAGER J.D. | FIRE PROTECTION ____ - ____ | BRANCH MANAGER ____ - ____ | DESIGN DIRECTOR E.U.

DATE ____ APPROVED

ACTIVITY – SATISFACTORY TO ____ DATE ____

APPROVED

FOR EFD FOR COMMANDER NAVFAC

SEAL

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC DIVISION
ALLEGANY BALLISTICS LABORATORY
ROCKET CENTER, WV
ALLEGANY BALLISTICS LABORATORY
MINERAL COUNTY, WEST VIRGINIA

NTCSRA
FORMER DISPOSAL PITS 1 AND 3

STRUCTURAL NOTES

CODE ID. NO. 80091 | SIZE D

SCALE: 1" = N.T.S

EFD NO.

STA. PROJ. NO.

SPEC. NO.

CONSTR. CONTR. NO. N62470-08-D-1006

NAVFAC DRAWING NO.

SHEET ____ OF ____

C-002

AGVIQ CH2M HILL

VERIFY SCALE
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0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FILENAME: C-002.dgn
PLOT DATE: 2013\10\04

D C B A

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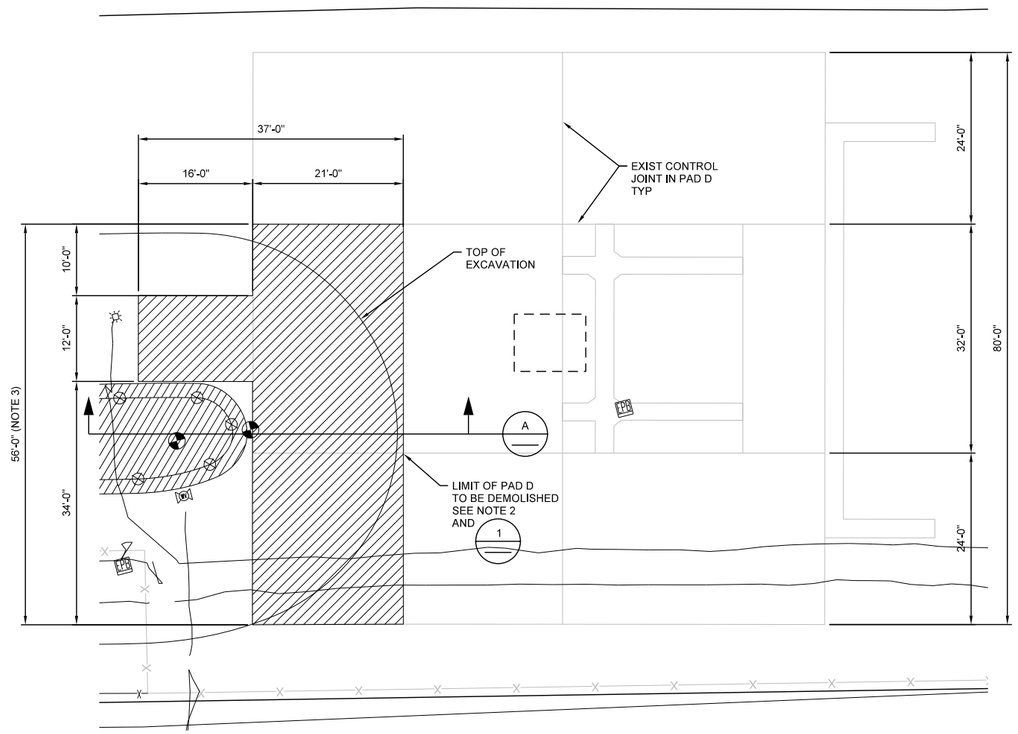


DEMOLITION PLAN AT PAD D

1"=10'-0"

NOTES:

1.0 FLOWABLE FILL (CLSM)

1.1 Mix Design
- A. Select and proportion ingredients to obtain compressive strength between 200 and 500 psi at 28 days in accordance with ASTM C4832.

1.2 Materials:
- A. Cement: ASTM C150, Type I or Type II.
- B. Aggregate: ASTM C33, Size 7.
- C. Fly Ash (if used): ASTM C618, Class C.
- D. Water: Clean, potable containing less than 500 ppm of chlorides.

1.3 Placement
- A. Prepare and tamp subgrade for the placement of the flowable fill.
- B. Place full depth under the pad and additional 2 foot buffer around the pad.
- C. Option 1: Temporary Formwork
  1. Use well braced temporary formwork at the edge of the 2 foot pad buffer to support the flowable fill placement.
  2. Temporary formwork is removed after flowable fill has sufficient strength gain to be free standing.
  3. Backfill around the pit and flowable fill in accordance with general construction practices.
- D. Option 2: 1.5H:1V Slope
  1. Complete a 1.5H:1V, or flatter, slope starting outside the 2 foot pad buffer and sloping away from the pad.
  2. Place fowable fill to the limits shown. (1)

2.0 GENERAL FILL

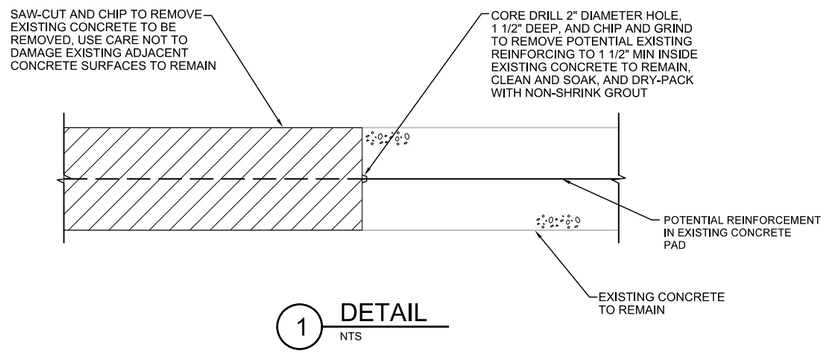
2.1 Materials and placement as specified in approved work plan.

NOTES:

1. FIELD VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS.
2. REMOVE PAD D BY SAW CUTTING WITHIN LIMIT AS SHOWN. IF CUTTING THROUGH POTENTIAL REINFORCEMENT OR STEEL DOWELS, REPAIR PER (1)
3. REMOVE PAD D TO EXISTING CONTROL JOINT. REMOVE EXSITING JOINT MATERIAL.

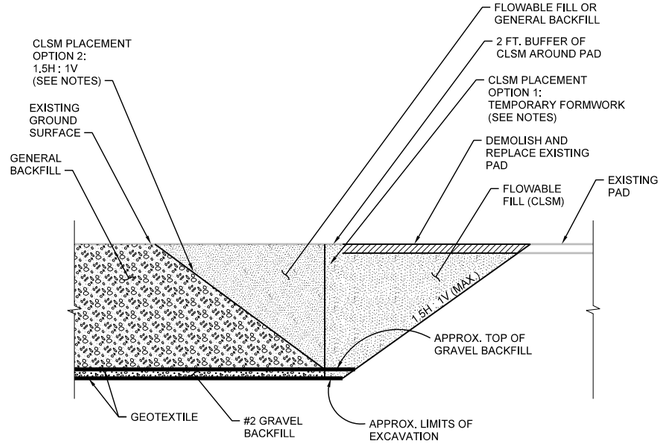
LEGEND

=DEMOLITION AREA



1 DETAIL

NTS



SECTION A-A

NTS

0 10 20 30

1"=10'

N

REVISIONS					
SYM.	DESCRIPTION	DATE	APPROVED		
1	NOTE CLARIFICATION	07/13	E.U.		

A/E	DESIGN	EFD M.D.
	DRAWN	I.K.
	REVIEW	E.F.
	QC	
	CHIEF ARCH./ ENGR.	
	PROJECT MANAGER	J.D.
	FIRE PROTECTION	-
	BRANCH MANAGER	-
	DESIGN DIRECTOR	E.U.

APPROVED DATE

ACTIVITY - SATISFACTORY TO

APPROVED DATE

FOR EFD FOR COMMANDER NAVFAC

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
MID-ATLANTIC DIVISION
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ROCKET CENTER, WV
ALLEGANY BALLISTICS LABORATORY
MINERAL COUNTY, WEST VIRGINIA

NTCSRA
FORMER DISPOSAL PITS 1 AND 3
PAD D DEMOLITION PLAN AND DETAIL

AGVIQ CH2M HILL

CODE ID. NO. 80091	SIZE D
SCALE: AS NOTED	
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	
N62470-08-D-1006	
NAVFAC DRAWING NO.	
SHEET ___ OF ___	
C-003	

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

FILENAME: C-003.dgn
PLOT DATE: 2013\10\07

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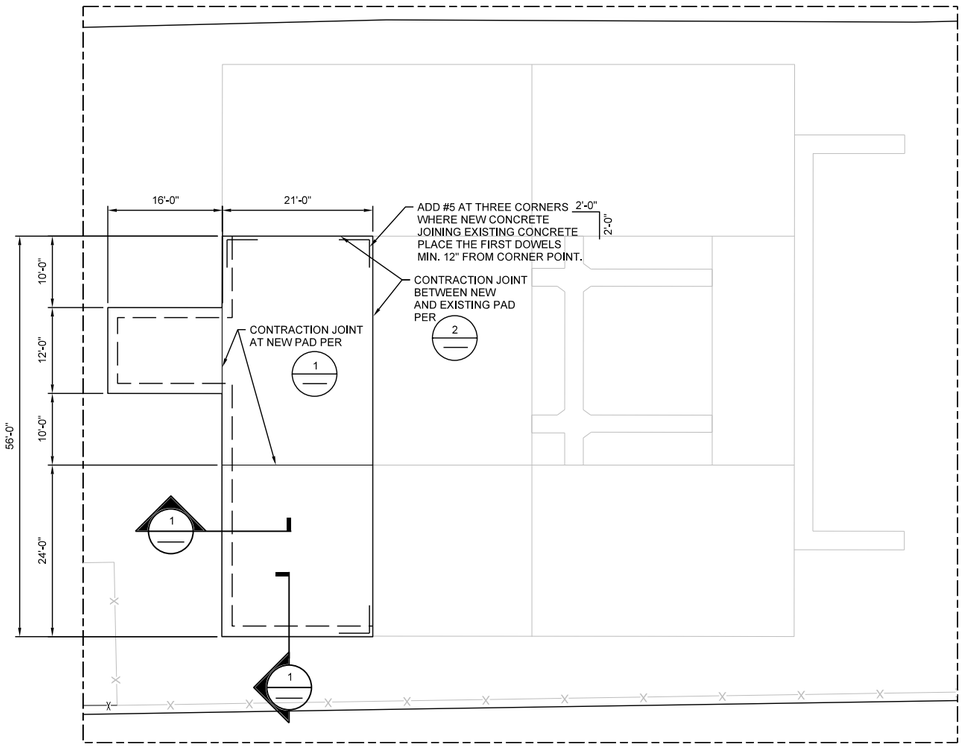
D C B A

2156193.995, 388684.714

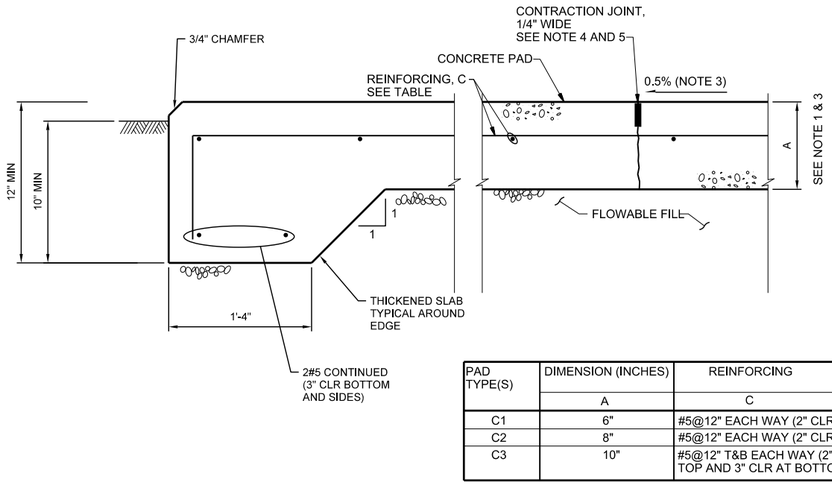


RESTORATION PLAN AT PAD D

1"=10'-0"

NOTES:

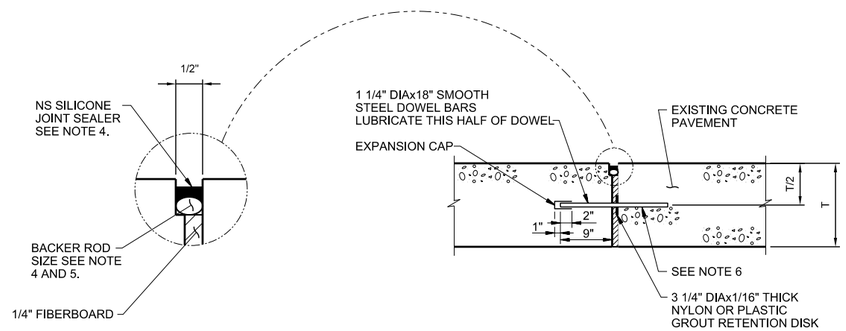
1. THICKNESS OF RESTORED CONCRETE PAD SHALL BE MINIMUM 6" AND MATCH THAT OF THE EXISTING PAD.
2. PROVIDE REINFORCEMENT AS SHOWN IN TABLE.
3. DIRECTION OF SLOPE AT TOP OF CONCRETE TO MATCH EXISTING.
4. CONTRACTION JOINT SHALL BE MADE, CLEANED WITH COMPRESSED AIR, AND FILLED WITH SEALANT AS SPECIFIED. JOINT SIZE, BACKING ROD DIAMETER SEALANT DEPTH AND RECESS DEPTH SHALL FOLLOW THE GUIDELINES BY THE SEALANT MANUFACTURER.
5. CONCRETE CONTRACTION JOINT SPACING: AS SHOWN ON PLAN.
6. GANG-DRILL HOLES FOR DOWELS AT 12" CENTERS. CLEAN HOLES WITH COMPRESSED AIR AND PLACE NON-SHRINK GROUT AT BACK OF HOLE BEFORE DOWEL INSERTION. DOWELS SHALL BE SECURED IN PLACE AND MAINTAINED IN HORIZONTAL PLACEMENT PRIOR TO AND DURING CONCRETE PLACEMENT.



PAD TYPE(S)	DIMENSION (INCHES)	REINFORCING	
	A	C	LAP LENGTH (IN)
C1	6"	#5@12" EACH WAY (2" CLR AT TOP)	2'-0"
C2	8"	#5@12" EACH WAY (2" CLR AT TOP)	2'-0"
C3	10"	#5@12" T&B EACH WAY (2" CLR AT TOP AND 3" CLR AT BOTTOM)	1'-8"

1 DETAIL

NTS



2 DETAIL

NTS

0 10 20 30

1"=10'

N

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.

0 1"

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REVISIONS

SYM.	DESCRIPTION	DATE	APPROVED

A/E EFD
DESIGN M.D.
DRAWN I.K.
REVIEW E.F.
QC
CHIEF ARCH./ ENGR.
PROJECT MANAGER J.D.
FIRE PROTECTION -
BRANCH MANAGER -
DESIGN DIRECTOR E.U.

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NTCSRA
FORMER DISPOSAL PITS 1 AND 3
PAD D RESTORATION PLAN AND DETAILS

AGVIQ CH2M HILL

CODE ID. NO. 80091	SIZE D
SCALE:	AS NOTED
EFD NO.	
STA. PROJ. NO.	
SPEC. NO.	
CONSTR. CONTR. NO.	N62470-08-D-1006
NAVFAC DRAWING NO.	
SHEET	OF

C-004

FILENAME: C-004.dgn
PLOT DATE: 2013\10\04

2156193,995, 388684,714