AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

BPA NO.	1. CONTRACT ID CODE	PAGE 1 OF PAGES 2

2. AMENDMENT/MODIFICATION NUMBER	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NUMBER	5. PROJECT NUMBER (if applicable)
0008	04-07-2021		618-17-127

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE
Department of Veterans Affairs Program Contracting Activity Central 6150 Oak Tree Blvd, Suite 300 Independence OH 44131	36C776	Department of Veterans Affairs Department of Veterans Affairs 6150 Oak Tree Blvd, Suite 300 Independence OH 44131	00076

8. NAME AND ADDRESS OF CONTRACTOR (Number, street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICITATION NUMBER
To all Offerors/Bidders		36E77620R0050
	X	9B. DATED (SEE ITEM 11) 04-07-2021
		10A. MODIFICATION OF CONTRACT/ORDER NUMBER
		10B. DATED (SEE ITEM 13)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [X] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or electronic communication which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by letter or electronic communication, provided each letter or electronic communication makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified. NA

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
[ ]	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
[ ]	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
[ ]	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
[ ]	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [X] is required to sign this document and return 1 (ONE) copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this amendment is to provide the following:
1. A copy of the Addendum Revision Set 3
2. A copy of the 1K Landscape Plan PDF
3. A copy of the 1K Rec Area Utility Plan
4. A copy of additional answers to the Minneapolis Mental Health Technical Question Spreadsheet.
5. A copy of the updated construction wage rates for the project.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
		Donald A. Marsh III Contracting Officer	PCAC-15L3-1697
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED

See attached document: VA Addendum-Revision Set 3.

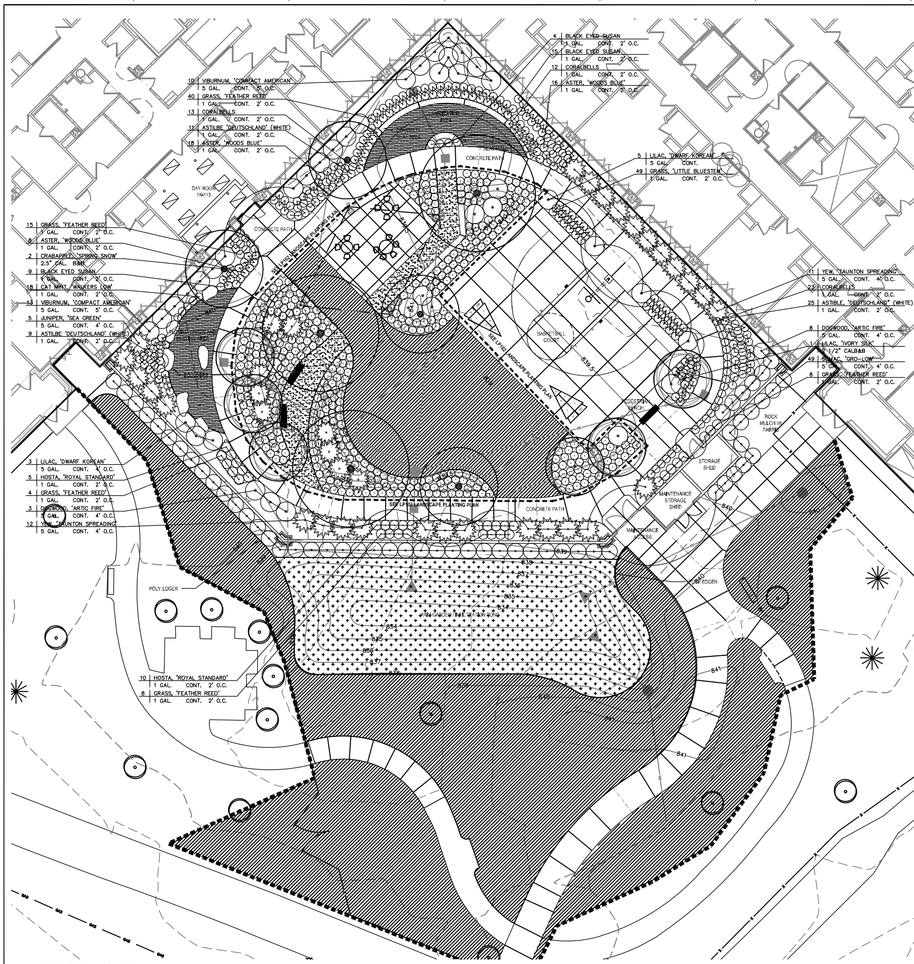
See attached document: 1K Rec Area Utility Plan.

See attached document: 1K Landscape plan.

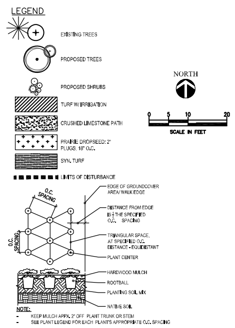
See attached document: Technical Questions Spreadsheet.

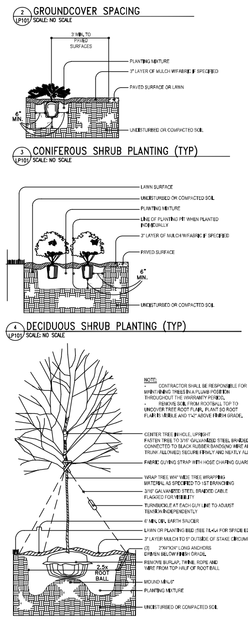
See attached document: Construction Wage Rates - Hennepin County - 1.1.20.

End of Document



1 LP101 LANDSCAPE PLANTING PLAN
SCALE: 1" = 10'





2 LP101 GROUNDCOVER SPACING
SCALE: NO SCALE

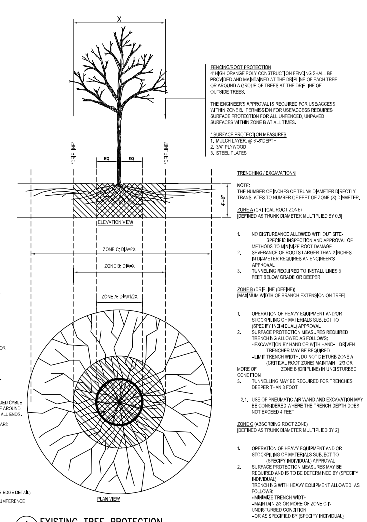
3 LP101 CONIFEROUS SHRUB PLANTING (TYP)
SCALE: NO SCALE

4 LP101 DECIDUOUS SHRUB PLANTING (TYP)
SCALE: NO SCALE

5 LP101 DECIDUOUS TREE PLANTING (TYP)
SCALE: NO SCALE

PLANT SCHEDULE

SHEET LP101				
Qty.	Common & Botanical Names	Size	Cont.	Remarks
ORNAMENTAL TREES				
2	Crabapple, 'Spring Snow'	2.5" cal.	BB	Single, straight leader
	Malus 'Spring Snow'			No branches below 36" ht.
1	Lilac, 'Ivory Silk' (Single Stem)	2.5" cal.	BB	Single, straight leader
	Syringa reticulata 'Ivory Silk'			No branches below 36" ht.
DECIDUOUS SHRUBS				
11	Dogwood, 'Artic Fire'	5 Gal.	Cont.	Min. 5 canes @ 18" ht.
	Cornus stolonifera			
8	Lilac, 'Dwarf Korean'	5 Gal.	Cont.	Min. 5 canes @ 24" ht.
	Syringa meyeii			
51	Sumac, 'Gro-Low'	5 Gal.	Cont.	Min. 5 canes @ 18" ht.
	Rhus aromatica 'Grow-Low'			
23	Viburnum, 'Compact American'	5 Gal.	Cont.	Min. 5 canes @ 24" ht.
	Viburnum trilobum 'Bailey Compact'			
EVERGREEN SHRUBS				
5	Juniper, 'Sea Green'	5 Gal.	Cont.	Min. 5 canes @ 18" ht.
	Juniperus chinensis 'Sea Green'			
22	Yew, 'Taunton Spreading'	5 Gal.	Cont.	Min. 5 canes @ 18" ht.
	Taxus media 'Tauntonii'			
PERENNIALS				
42	Aster, 'Woods Blue'	1 Gal.	Cont.	
	Aster *cordifolious* 'woods blue'			
45	Astilbe 'Deutschland' (White)	1 Gal.	Cont.	
	Astilbe japonica 'Deutschland'			
28	Black Eyed Susan	1 Gal.	Cont.	
	Rudbeckia hirta 'Goldsturm'			
18	Catmint, Walkers Low	1 Gal.	Cont.	
	Nepeta faassenii, 'Walkers Low'			
37	Coralbells	1 Gal.	Cont.	
	Heuchera sp.			
69	Grass, 'Feather Reed'	1 Gal.	Cont.	
	Calamagrostis arundinacea 'Karl Foerster Reed Grass'			
49	Grass, 'Little Bluestem'	1 Gal.	Cont.	
	Andropogon scoparius			
21	Hosta, 'Royal Standard'	1 Gal.	Cont.	
	Hosta 'Royal Standard'			



6 LP101 EXISTING TREE PROTECTION
SCALE: NO SCALE

FULLY SPRINKLERED

100% CONSTRUCTION DOCUMENTS - NOT FOR CONSTRUCTION

CONSULTANTS:

Revisions: | Date

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME: CURT H. CLAEYS
SIGNATURE:
DATE SEPTEMBER 20, 2013 LICENSE #

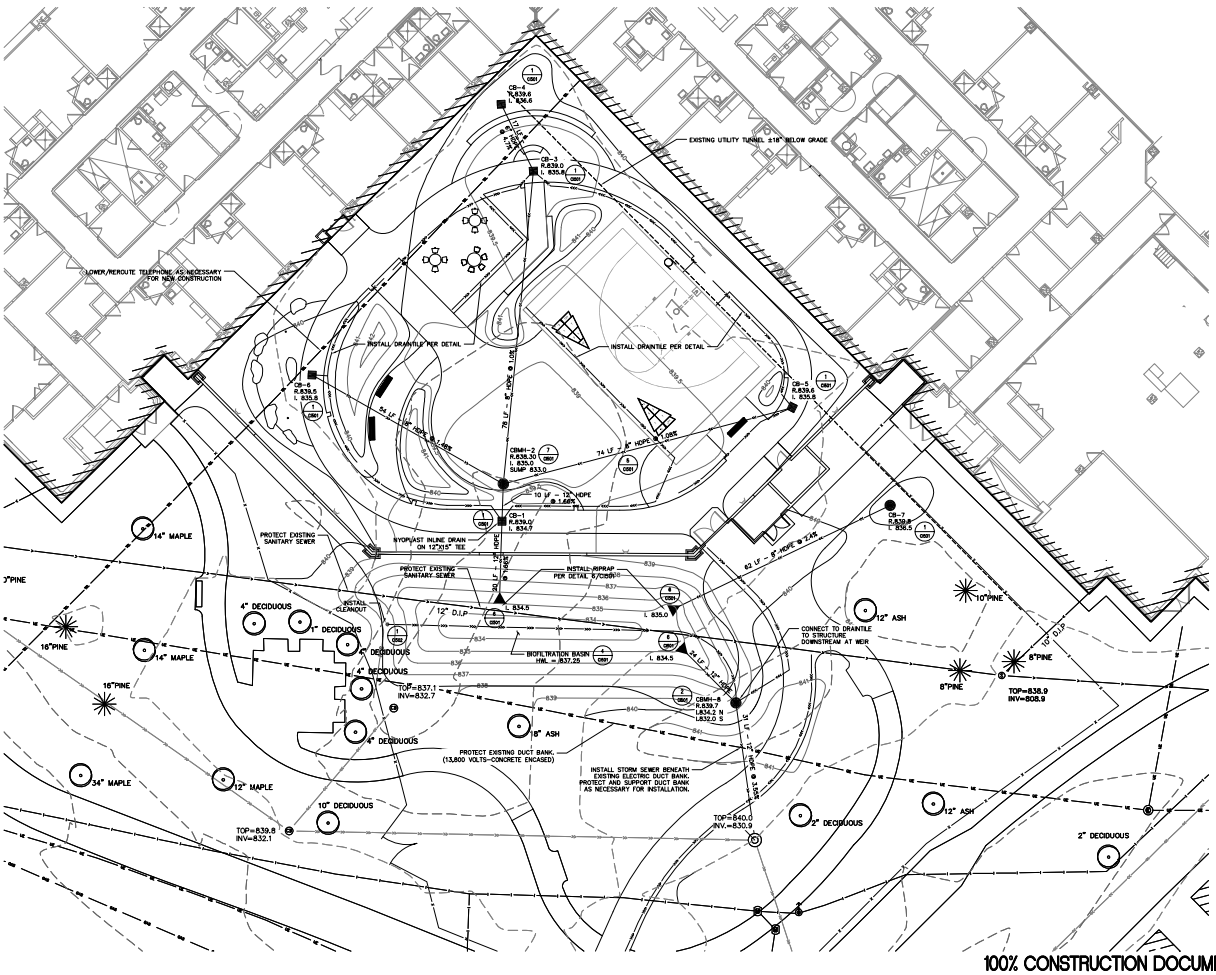
ARCHITECT/ENGINEERS:

ANDERSON ENGINEERING
ENGINEERING • ARCHITECTURE • LAND SURVEYING
ENVIRONMENTAL SERVICES • LANDSCAPE ARCHITECTURE
Anderson Engineering of Minnesota, LLC
13605 1st Avenue North
Suite 100
Plymouth, MN 55441
763-412-4000 (o) 763-412-4090 (f)
www.ae-mn.com

Drawing Title	LANDSCAPE PLANTING PLAN
Project Title	MINNEAPOLIS VA HEALTHCARE SYSTEM WARD 1K OUTDOOR RECREATION AREA
Project Number	618-13-127
Building Number	70
Approved: Project Director	
Location	MINNEAPOLIS, MINNESOTA
Date	SEPTEMBER 20, 2013
Checked	MR
Drawn	JD
Drawing Number	LP101
Dwg.	16 of 46

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



STRUCTURE SCHEDULE

STRUCTURE	CASTING
CB-1	15" NYOPLAST 1599CGPL
CBMH-2	48" PRECAST R-2572 TYPE C
CB-3	15" NYOPLAST 1599CGPL
CB-4	15" NYOPLAST 1599CGPL
CB-5	15" NYOPLAST 1599CGPL
CB-6	15" NYOPLAST 1599CGPL
CB-7	15" NYOPLAST 1599CGPL
CBMH-8	48" PRECAST R-2560-E

NOTE:
1. ALL CASTINGS FOR STRUCTURES 1-6 SHALL HAVE BOLTED LOCKING GRATES.

FULLY SPRINKLERED

100% CONSTRUCTION DOCUMENTS - NOT FOR CONSTRUCTION

Revisions:	Date

CONSULTANTS:

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PRINT NAME:
SIGNATURE:
DATE SEPTEMBER 30, 2013 LICENSE #

ARCHITECT/ENGINEERS:

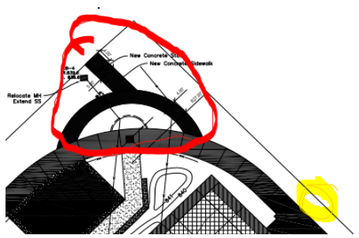
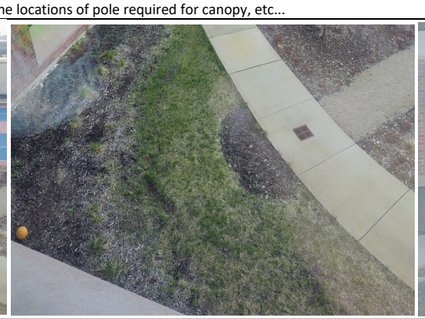
ANDERSON ENGINEERING
ENGINEERING • ARCHITECTURE • LAND SURVEYING
ENVIRONMENTAL SERVICES • LANDSCAPE ARCHITECTURE

Anderson Engineering of Minnesota, LLC
13605 1st Avenue North
Suite 100
Plymouth, MN 55441
763-412-4000 (o) 763-412-4090 (f)
www.ae-mn.com

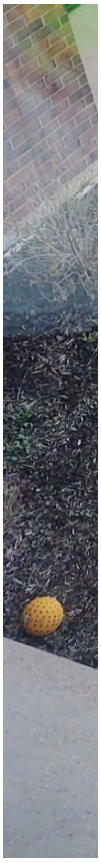
Drawing Title	UTILITY PLAN
Approved Project Director	
Project Title	MINNEAPOLIS VA HEALTHCARE SYSTEM WARD K OUTDOOR RECREATION AREA
Location	MINNEAPOLIS, MINNESOTA
Date	SEPTEMBER 30, 2013
Checked	MR
Drawn	PHAT
Project Number	609-12-107
Building Number	70
Drawing Number	C101
Dwg. 15 of 48	

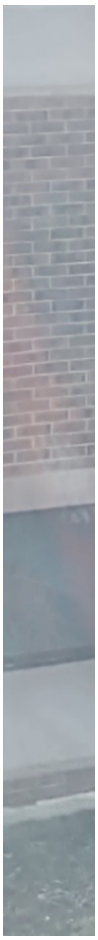
Office of Construction and Facilities Management

PROJECT NAME : Renovate MH Ward 1L, 1H and 1K

Description	Response
Can you clarify if there is to be an alternate in our bid? On page MH-601, Note 1 it calls out a deduct alternate. We could not locate anything in the specifications and the Price/Cost Schedule only has a line item for base bid.	CLIN 0001, Item I (Base Bid) contains all of the work for the project. All price and cost should be included in this line item. No bid alternate will be included for this procurement.
We are just looking for some clarification on hardware group HW-12C. Specifically the note that indicates C1-61 and C1-64 are to be on a remote release and a relay for interlock. Do those items fall under Division 28?	These doors are to have the ability to be unlocked by nurses at the nurse station for entrance to the sallyport one set of doors at a time. Guest would push an intercom button which will allow nurses at the desk to verify purpose of visit and then open the door
Per Tech Services at Tarkett the spec'd LVT-1 is part of the Event Collection which is made in China. The Contour Collection is made is the USA. Please advise	Change LVT-1 to Mannington, Harbour Pine (Arrow 7990), Style: Wood, Collection: Amtico Signature, Size: 7.25 x 48
Please advise where Alum 2 on drawing sheet 1338-A702 Detail 1 is used.	This frame type not used
Drawing Sheet 1338-A103-P2 is missing wall information on the top left side of the sheet. Please provide a better quality drawing sheet	Walls within the gray area are not in scope. See finish plans and MEP for scope of work to be included.
Please provide details and specification of the drilled piers called out in amendment 6.	Spec 13 31 23 indicates all structural calculations to be completed by engineer specializing in TFS. Drilled pier backfil by structural engineer.
What is the basis of design for tensile fabric canopy?	See specification 13 31 23
Please provide specifics of the existing landscaping and modifications to it.	See ammendment 6 details
Is that circular sidewalk in light grey shown on the sketch a new sidewalk or existing?	 Areas of new work circled in red, area in yellow needs temporary sidewalk installed at Phase 1 and removed after Phase 2. All other areas existing
Provide us as-built of existing utilities in the exercising yard.	
Please provide multiple photos of the existing exercising yard to understand the existing conditions showing existing landscaping, existing catch basin, irrigation system, the existing surface at the locations of pole required for canopy, etc...	  

PROJECT NAME : Renovate MH Ward 1L, 1H and 1K	
Description	**Response**





VA Project: Renovate MH Ward 1L, 1H, and 1K

VA Project #: 618-17-127

VA Addendum Items: Revision Set 3

Date: April 6, 2021

Technical Question Tracking Sheet

Revise prior response as follows:

Question 36:
Delete: "See Question 3 and 7."
Replace with: "See Question 34 and 38"

Question 46:
Delete: "See responses to question 16, 19 and clarifications in Addendum 2 on sheets AD101-P1, and A101-P1"
Replace with: "See responses to question 47, 50 and clarifications in Addendum 2 on sheets AD101-P1, and A101-P1"

Question 49:
Delete: "Refer to response to question 48, 87, and 90. See Addendum 2"
Replace with: "Refer to response to question 79, 118, and 121. See Addendum2"

Question 50:
Delete: "See question 109. See Phase 1 amendment for additional Phase 1 operations."
Replace with: "See question 140. See Addendum 2 for additional Phase 1 revisions."

Question 69:
Delete: "Refer to response to item 90."
Replace with: "Refer to response to item 121."

Question 73:
Delete: "See response for item 89."
Replace with: "See response for item 120."

Question 78:
Delete: "See item 87."
Replace with: "See item 118."

Question 91:
Delete: "As per the prior addendum, specification section 084113 applies only to Frame type 1. Finish and Installer information is as specified within this section. Also, note response to item #59 for matching finish."
Replace with: "As per the prior addendum, specification section 084113 applies only to Frame type 1. Finish and Installer information is as specified within this section. Also, note response to item #90 for matching finish."

Question 110:
Delete: "Please note question 6."
Replace with: "Please note question 37"

Question 115:
Delete: "See response to question 48."
Replace with: "There is no Area C, but locations for corner guards are addressed in the response to question 79." Refer to specifications for Corner Guard height.

Question 120:
Delete: "See Question 83."
Replace with: "See Question 114."

Question 134:
Delete: "Please note question 6"
Replace with: "Please note question 37"

Question 140:
Delete: "AF101.P1 identifies location of beds to be relocated from 1K as 'Single' or 'Double' rooms. See question 116 for additional Phase 1 operations."
Replace with: "AF101.P1 identifies location of beds to be relocated from 1K as 'Single' or 'Double' rooms. See question 46 for additional Phase 1 operations."

Question 141:
Delete: "Yes. Beds are Norix Attenda. Detail with manufacturer. See question 116 for additional Phase 1 operations."
Replace with: "Yes. Beds are Norix Attenda. Detail with manufacturer. See question 46 for additional Phase 1 operations.`"

DRAWING REVISIONS

SHEET A102: Delete O.H. Coiling Door 1L-136 from Floor Plan. Delete O.H. Coiling door 1L-135 from Floor Plan.

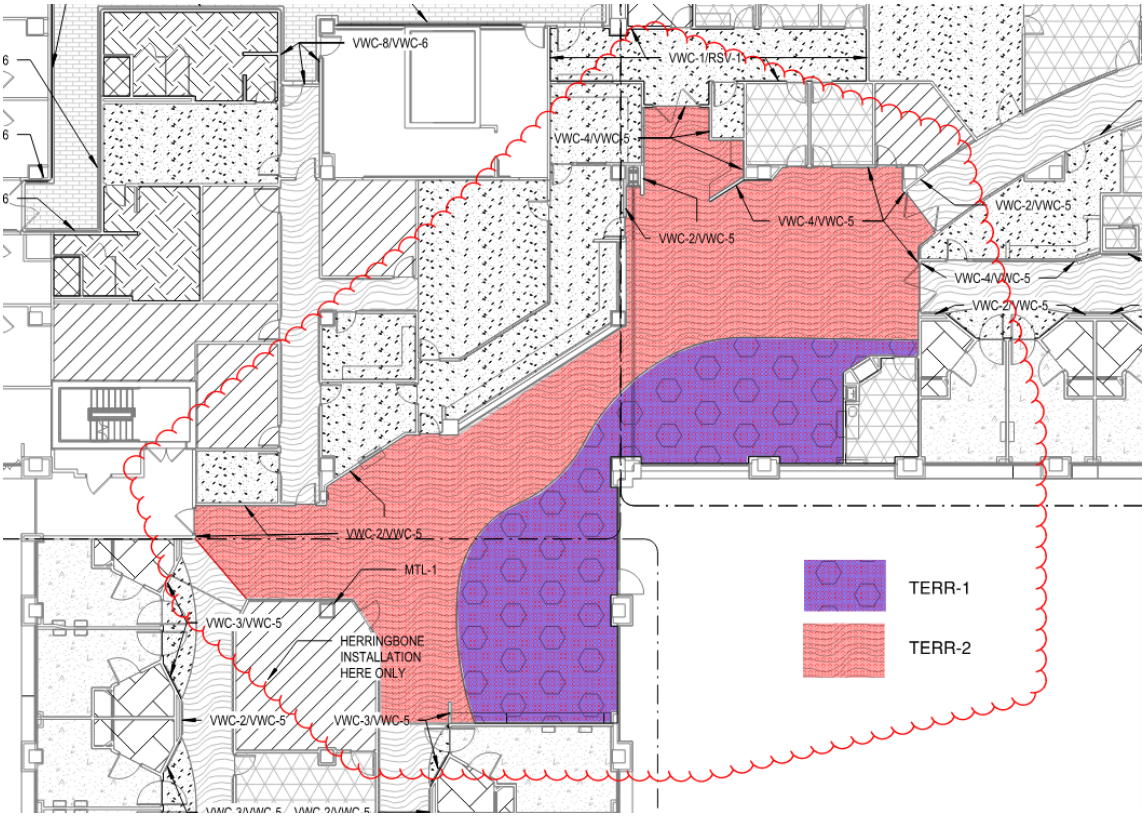
SHEET A701: Delete O.H. Coiling Door 1L-136 from Door Schedule. Delete O.H. Coiling door 1L-135 from Door Schedule.

SHEET AF-001: Color Schedule, Add:

a. **TERR-1,** Terrazzo Flooring, color TBD.
b. **TERR-2**, Terrazzo Flooring, color TBD.

SHEET AF-001: Architectural Finish Plan, Change:

a. **WSF-3** to **TERR-1** per drawing below (Color TBD).
b. **LVT -2** to **TERR-2** per drawing below (Color TBD).



SHEET AF-002: Room Finish Schedule – Phase 2,

a. Change Floor finish of 1K-130 DINING to "TERR-1 (Color TBD)"
b. Change Floor finish of C1-62 CORRIDOR to "TERR-2 (Color TBD)."

SPECIFICATIONS: ADD Section(s):

09 67 23.50 Resinous Terrazzo Flooring (RES-5)

ATTACHMENTS:
Specification Section: 09 67 23.50 Resinous Terrazzo Flooring (RES-5)

SECTION 09 67 23.50
RESINOUS TERRAZZO FLOORING (RES-5)

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies resinous terrazzo flooring systems with integral cove base.

B. Resinous (Epoxy or urethane Terrazzo) Flooring Systems:

1. Thin set: Epoxy or Urethane Matrix Terrazzo.
2. Thin set: Polyacrylate Matrix Terrazzo.

1.2 RELATED WORK

A. Concrete and Moisture Vapor Barrier: Section 03 30 00, CAST-IN-PLACE CONCRETE.

B. Substrate Preparation for Floor Finishes: Section 09 05 16.

C. Sealants installed with Terrazzo: Section 07 92 00, JOINT SEALANTS.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:

1. Description of each product to be provided.
2. Application and installation instructions.
3. Maintenance Instructions: Submit manufacturer’s written instructions for recommended maintenance practices.

C. Qualification Data: For Installer.

D. Sustainable Submittal:

1. Product data for products having recycled content, submit documentation indicating percentages by weight of postconsumer and pre-consumer recycled content.
   a. Include statements indicating costs for each product having recycled content.
2. Product data for field applied adhesives include printed statement of VOC content indicating compliance with environmental requirements.

E. Samples:

1. Each color and texture specified in Section 09 06 00, SCHEDULE FOR FINISHES.

2. Samples for verification: For each (color and texture) resinous flooring system required, 6 inches (152 mm) square, applied to a rigid backing by installer for this project.
3. Sample showing construction from substrate to finish surface in thickness specified and color and texture of finished surfaces. Finished flooring must match the approved samples in color and texture.
4. Accessories: (6 inches) 152 mm long sample of exposed strip item.

F. Shop Drawings: Include plans, sections, component details, and attachment to other trades. Indicate layout of the following:
1. Patterns.
2. Edge configurations.
3. Divider strips.
4. Control-joint strips.
5. Accessory strips.
6. Abrasive strips.

G. Certifications and Approvals:
1. Manufacturer's certification of material and substrata compliance with specification.
2. Manufacturer's approval of installers.
3. Contractor's certificate of compliance with Quality Assurance requirements.

H. Warranty: As specified in this section.

1.4 QUALITY ASSURANCE

A. Manufacture Certificate: Manufacture shall certify that a particular resinous flooring system has been in use for a minimum of five years.

B. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this project for a minimum period of 5 years, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
2. Contractor shall have completed at least 10 projects of similar size and complexity. Include list of at least 5 projects. List must

include owner (purchaser); address of installation, contact information at installation project site; and date of installation.

3. Installer's Personnel: Employ persons trained for application of specified product

C. Source Limitations:

1. Obtain primary resinous flooring materials including primers, resins, hardening agents, grouting coats and finish or sealing coats from a single manufacturer.
2. Provide secondary materials, including marble chips aggregate, strips, patching and fill material, joint sealant, and repair material of type and from source recommended by manufacturer of primary materials.
3. Obtain marble chips aggregate color, grade, type, and variety of granular materials from one source with resources to provide materials of consistent quality in appearance and physical properties.
4. Material furnished shall meet NTMA Specifications.

D. NTMA Standards: Comply with NTMA's "Terrazzo Specification and Design Guide" and written recommendations for terrazzo type indicated unless more stringent requirements are specified.

E. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and establish quality standards for materials and execution.

1. Apply full-thickness mockups on 48 inch (1200 mm) square floor area selected by VA COR.
   a. Include 48 inch (1200 mm) length of integral cove base.
2. Approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.
3. Sign off from VA COR on texture must be complete before installation of flooring system.

F. Pre-Installation Conference:

1. Convene a meeting not less than thirty days prior to starting work.
2. Attendance:
   a. Contractor
   b. VA COR
   c. Manufacturer and Installer's Representative
3. Review the following:

a. Environmental requirements
   1) Air and surface temperature
   2) Relative humidity
   3) Ventilation
   4) Dust and contaminates
b. Protection of surfaces not scheduled to be coated
c. Inspect and discus condition of substrate and other preparatory work performed
d. Review and verify availability of material; installer's personnel, equipment needed
e. Design and patterns and edge conditions.
f. Performance of the coating with chemicals anticipated in the area receiving the resinous (epoxy terrazzo) flooring system
g. Application and repair
h. Field quality control
i. Cleaning
j. Protection of coating systems
k. One-year inspection and maintenance
l. Coordination with other work

G. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for surface preparation and application of coating systems.

H. Contractor Job Site Log: Contractor shall document daily; the work accomplished environmental conditions and any other condition event significant to the long term performance of the terrazzo installation. The Contractor shall maintain these records for one year after Substantial Completion.

1.5 MATERIAL PACKAGING DELIVERY AND STORAGE

A. Deliver materials to the site in original sealed packages or containers, clearly marked with the manufacturer's name or brand, type and color, production run number and date of manufacture.

B. Protect materials from damage and contamination in storage or delivery, including moisture, heat, cold, direct sunlight, etc.

C. Maintain temperature of storage area between 60 and 80 degrees F (15 and 26 degrees C).

D. Keep containers sealed until ready for use.

E. Do not use materials beyond manufacturer's shelf life limits.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring applications.

1. Maintain material and substrate temperature between 65 and 85 degrees F (18 and 30 degrees C) during resinous flooring application and for not less than 24 hours after application.
2. Concrete substrate shall be properly cured per referenced section 03 30 00, CAST-IN-PLACE CONCRETE. Standard cure time a minimum of 30 days. A vapor barrier must be present for concrete subfloors on or below grade.
   a. Resinous flooring applications where moisture testing resulting in readings exceeding limits as defined in this specification under part 3, section 3.4, paragraph B, shall employ an multiple component 15 mil thick system designed to suppress excess moisture in concrete.
   b. Application at a minimum thickness of 15 mils, over properly prepared concrete substrate as defined in section 3.4.
   c. Moisture suppression system must meet the design standards as follows:
3.

Property	Test	Value
Tensile Strength	ASTM D638	4,400 psi
Volatile Organic Compound Limits (V.O.C.)	EPA & LEED	25 grams per liter
Permeance	ASTM E96 @ 16mils/ 0.4mm on concrete	0.1 perms
Tensile Modulus	ASTM D638	$1.9X10^5$psi
Percent Elongation	ASTM D638	12%
Cure Rate	Per manufactures Data	4 hours Tack free with 24hr recoat window
Bond Strength	ASTM D7234	100% bond to concrete failure

B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.

C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.

1.7 WARRANTY

A. Work subject to the terms of the Article "Warranty of Construction" FAR clause 52.246-21.

B. Warranty: Manufacture shall furnish a single, written warranty covering the full assembly (including substrata) for both material and workmanship for a extended period of (3) full years from date of installation, or provide a joint and several warranty signed on a single document by manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (3) full years from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

1.8 APPLICABLE PUBLICATIONS

A. The publication listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. ASTM Standard C722-04 (2012), "Standard Specification for Chemical-Resistant Monolithic Floor Surfacings," ASTM International, West Conshohocken, PA, 2006, DOI: 10.1520/C0722-04R12, www.astm.org.

1. Specification covers the requirements for aggregate-filled, resin-based, monolithic surfacings for use over concrete.

C. ASTM International(ASTM):

C109/C109M-20b.....Compressive Strength of Hydraulic Cement Mortars

C307-18.....Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacings

C413-18.....Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes

C531-18.....Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars,

Grouts, Monolithic Surfacings, and Polymer Concretes

C579-18.....Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes

C580-18.....Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes

D638-14.....Tensile Properties of Plastics

D790-17.....Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

D130802(2013).....Effect of Household Chemicals on Clear and Pigmented Organic Finishes

D2240-15e1.....Rubber Property—Durometer Hardness

D4060-19.....Abrasion Resistance of Organic Coatings by the Taber Abraser

D4259-18.....Abrading Concrete to alter the surface profile of the concrete and to remove foreign materials and weak surface laitance

D7234-19.....Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers

E96/E96M-16.....Water Vapor Transmission of Materials

F1679-04e1.....Variable Incidence Tribometer for determining the slip resistance

F1869-16a.....Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

F2170-19a.....Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION FOR RESINOUS (EPOXY TERRAZZO) FLOORING

A. System Descriptions:

1. Monolithic, multi-layer, trowel applied multi-component epoxy or urethane composition terrazzo and integral cove base. UV stable and breathable where required.

B. Systems shall meet or exceed all applicable NTMA and TTMAC standards.

C. System Components: Verify specific requirements as systems vary by manufacturer. Verify compatibility with substrate. Use manufacturer's standard components, compatible with each other and as follows:
   1. Bond Coat (Primer): Verify inclusion of primer in manufacturer's system. Some systems are self-priming.
      a. Resin: Epoxy.
      b. Formulation Description: 100 percent solids.
      c. Binder: Formulated to meet physical properties of MIL-D-3134F.
      d. Application Method: Apply by spray, brush, or roller.
         1) Thickness of coats: Verify thickness as systems vary by manufacturer; approximate range from 5 to 6 mils (0.13 to 0.15 mm) to 150 to 250 square feet per gallon (52.76 to 87.93 square meters per liter).
   2. Body Coat:
      a. Resin: Epoxy or Urethane.
      b. Formulation Description: 100 percent solids.
      c. Application Method: Varies by manufacturer; hand or power troweled.
         1) Trowel application:
            a) Thickness of coat: Verify thickness as systems vary by manufacturer; approximate range from 3/16 inch or 1/4 inch or 3/8 inch (4.76 to either 6.35 mm or 9.5 mm).
            b) Number of coats: One.
      d. Aggregates: Verify amount per thickness as systems vary by manufacturer:
         1) Marble (#1 size maximum), glass, or granite chips or, colored resilient aggregates, acrylic, or other approved materials.
   3. Grout Coat:
      a. Resin: Epoxy.
      b. Formulation Description: 100 percent solids.
      c. Application Method: Varies by manufacturer. Apply by red rubber squeegee or spring-steel trowel.
         1) Apply to rough ground mortar coat to completely fill all voids.
         2) Thickness of coat: Verify thickness as systems vary by manufacturer; approximate range from a minimum of 8 to 10 mils (0.2 to 0.25 mm) to a maximum of 400 to 500 square feet per gallon (140.65 to 175.81 square meters per liter).

4. Seal Coat/Top Coat:
   a. Resin: Single- or multi-component Urethane.
   b. Formulation Description: 100% solids. It shall have a pH factor between 7 and 10 and shall be a penetrating type specially prepared for use on terrazzo. It shall not discolor or amber the terrazzo and shall produce a slip resistant surface. Flash point of sealer shall be a minimum of 80 degrees F (26 degrees C) when tested in accordance with ASTM D56.
   c. Application Method: Varies by manufacturer. Apply using notched squeegee and backroll or using a lambs wool applicator.
      1) Apply to fine ground mortar coat to completely fill all voids.
      2) Thickness of coat: Verify thickness as systems vary by manufacturer; approximate range from a minimum of 4 to 5 mils (0.1 to 0.13 mm) to a maximum of 500 to 750 square feet per gallon (175.81 to 263.74 square meters per liter).
      3) Number of coats: One.
   d. Aggregates: Verify inclusion of slip-retardant aggregates in seal coat/top coat.
   e. Textured Top Coat: Slip Resistant in accordance with UL 410.

D. System Characteristics:
   1. Color and Pattern: As selected by VA COR from manufacturer's standard colors.
   2. Integral cove base: 1 inch (25.4 mm) radius epoxy mortar cove keyed into concrete substrate. Verify cove base installation with manufacturer’s system.
   3. Overall System Thickness: Verify thickness as systems vary by manufacturer; approximate range from a minimum of 3/16 inch (4.76 mm) to a maximum of either 1/4 inch or 3/8 inch (6.35 mm or 9.5 mm).
   4. Finish: Standard anti-slip resistant to meet or exceed 0.06 dry; 0.08 wet.

E. Physical Properties:
   1. Conform to ASTM C722, Type A, Epoxy resin, and quartz aggregate.
   2. Resilient Urethane Terrazzo products physical properties
   3. Other physical properties of seamless troweled (quartz epoxy) resinous flooring system in addition to C722 when tested to be as follows:

Test	Property	Value
ASTM C109	Compressive Strength	4000 PSI

Test	Property	Value
ASTM C307	Tensile Strength	800 PSI
ASTM D2240	Hardness Shore D	85/65
ASTM C413	Water Absorption	< 0.5%
ASTM C531	Thermal Coefficient of Linear Expansion	4.7 x 10 -8
ASTM C579	Compressive Strength	6000 PSI
ASTM C580	Flexural	2000 to 4500 psi
ASTM D638	Tensile Strength	3000 psi
ASTM D790	Flexural Modulus	500000 psi
ASTM D2240 Shore D	Surface Hardness	80-90
ASTM D4060, CS-17	Abrasive Resistance	0<0.1 gm max weight loss
ASTM F1679	Co-efficient of Friction	Dry - 0.81 Wet - 0.56
Bond Strength	ASTM D7234	100% bond to concrete failure

F. Chemical Resistance in accordance ASTM D1308 - 02(2007) "Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes". ASTM International, West Conshohocken, PA, 2006, DOI: 10.1520/D1308-02R07, www.astm.org. No effect to the following exposures:

1. Acetic acid (5%)
2. Ammonium hydroxide (10%)
3. Citric Acid (50%)
4. Fatty Acid
5. Motor Oil, 20W
6. Hydrochloric acid (20%)
7. Sodium Chloride
8. Sodium Hypochlorite (10%)
9. Sodium Hydroxide (30%)
10. Sulfuric acid (25%)
11. Urine, Feces
12. Hydrogen peroxide (10%)

2.2 SUPPLEMENTAL MATERIALS

A. Waterproofing Membrane: Type recommended or produced by manufacturer of resinous (epoxy terrazzo) flooring for type of service and conditions.

B. Crack Isolation Membrane: Type recommended or produced by manufacturer of resinous floor coating.

C. Anti-Microbial Additive: Incorporate anti-microbial chemical additive to prevent growth of most bacteria, algae, fungi, mold, mildew, yeast, etc.

D. Strips:

1. Dividing strips "L" shaped as manufactured for use with resinous (Epoxy Terrazzo) flooring system.

   a. White alloy zinc, 14 (1.897mm) gauge.
   b. Plastic dividing strip may be used upon recommendation of material manufacturer only.

2. Control Joint double "L" shaped strips as manufactured for use with resinous (Epoxy Terrazzo) flooring system. Position strips back to back.

   a. White alloy zinc, 14 (1.897mm) gauge.
   b. Plastic dividing strips may be used upon recommendation of material manufacturer only.

E. Patching and Fill Material: Resinous product of or approved by resinous (Terrazzo) flooring manufacturer for application indicated.

F. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service or joint conditioned indicated.

2.3 BASE CAP STRIP

A. Aluminum, Extruded:

B. Shape for 3/16 inch (4.76 mm) depth of base material, "J" configuration.

C. Finish:

1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.
2. Aluminum: NAAMM Amp 501:
   a. Clear anodic coating, AA-C22A41 chemically etched medium matte, with Architectural Class 1, 0.018 mm (0.7 mils) or thicker.

D. Optional zinc strips can be used in some applications. Shape for 2mm, in "J" or "L" Configurations

PART 3 – EXECUTION

3.1 INSPECTION

A. Examine the areas and conditions where resinous (epoxy terrazzo) flooring system with integral base is to be installed with the VA COR.

B. Moisture Vapor Emission Testing: Perform moisture vapor transmission testing in accordance with ASTM F1869 to determine the MVER of the substrate prior to commencement of the work.

1. MVT threshold for resinous (terrazzo) flooring shall not exceed 3 pounds/1000 square feet in a 24 hour period.
2. When MVT emission exceeds this limit, apply manufacturer’s recommended vapor control primer or other corrective measures as recommended by manufacturer prior to application of flooring or membrane systems.
3. Perform additional substrata preparation as recommended by resinous flooring manufacturer’s technical representative to obtain satisfactory results of moisture vapor transmission testing prior to commencement of the work.
4. Provide a written report showing test placement and results.

3.2 PROJECT CONDITIONS

A. Maintain temperature of rooms (air and surface) where work occurs, between 70 and 90 degrees F (21 and 32 degrees C) for at least 48 hours, before, during, and 24 hours after installation. Maintain temperature at least 70 degrees F (21 degrees C) thereafter.

B. Maintain relative humidity less than 85 percent.

C. Do not install materials until building is permanently enclosed and wet construction is complete, dry, and cured.

D. Maintain proper ventilation of the area during application and curing time period.

1. Comply with infection control measures of the VA Medical Center.

3.3 INSTALLATION REQUIREMENTS

A. The manufacturer's instructions for application and installation shall be reviewed with the VA COR for the resinous (terrazzo) flooring system with integral cove base.

B. Substrata shall be approved by manufacture technical representative.

3.4 PREPARATION

A. General: Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry, and neutral Ph substrate for resinous flooring application.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
   1. Mechanically prepare substrates as follows:
      a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
      b. Comply with ASTM D4259 requirements, unless manufacturer's written instructions are more stringent.
   2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.

   3. Verify that concrete substrates are dry.
      a. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
      b. Perform maximum moisture-vapor-emission test, ASTM F 1869. Proceed with application only after substrates has obtained satisfactory results. If needed perform additional moisture tests until substrates pass testing.
   4. Verify that concrete substrates have neutral Ph and that resinous flooring will adhere to them. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for flooring manufacturer recommended joint fill material, and concrete crack treatment.
F. Prepare wall to receive integral base:
   1. Verify wall material is acceptable for resinous flooring application, if not, install material (e.g. cement board) to receive base.

2. Fill voids in wall surface to receive base, install undercoats (e.g. water proofing membrane, and/or crack isolation membrane) as recommended by resinous flooring manufacturer.
3. Grind, cut or sand protrusions to receive base application.

3.5 APPLICATION

A. General: Apply each component of resinous (epoxy terrazzo) flooring system with integral base according to manufacturer's directions to produce a uniform monolithic flooring surface of thickness indicated.
   1. Verify that the substrate (dryness, pH level, etc.) is acceptable by the manufacturer's technical representative.
   2. Use manufacturer recommended cleaning products.

B. Prepare substrata for resinous (terrazzo) flooring system:
   1. Apply waterproof membrane as recommended by resinous flooring manufacturer at all vertical junctures and the entire flooring substrata. Embed fabric reinforcement into waterproof membrane liquid. Overlap all seams a minimum of 2 inches (51 mm).
   2. Apply crack isolation membrane as recommended by resinous flooring manufacturer.
   3. Apply substrata smoothing/patching underlayment as recommended by resinous flooring manufacturer.

C. Resinous (epoxy terrazzo) flooring system: Per manufacturer's written instructions. Based on the porosity of the substrata additional coats may be required:
   1. Primer (Bond) Coat.
   2. Strips: Set divider and control strips as indicated on plans. Strips shall be set in a full bed of epoxy adhesive and allowed to cure before proceeding with the work.
   3. Body Coat: Apply body coat (including aggregate) evenly over the primer (bond) coat to the desired thickness.
   4. Power grind to expose aggregate.
   5. Grout Coat.
   6. Progressively fine grind and polish floor. Cleanse terrazzo with potable water and rinse. Remove excess rinse water and apply grout using identical Portland cement, color pigments as used in topping, ensuring to fill all voids. Cure Grout as recommended by manufacturer.
      a. Grout may be left on terrazzo until all heavy and messy work in project is completed.

b. Fine grind until all grout is removed from surface.

c. Upon completion, terrazzo flooring shall display a minimum of 70% of marble chips aggregate.

7. Cleaning: Wash all surfaces with a neutral cleaner. Rinse with clean water and allow surface to dry

8. Seal Coat (Top Coat). Apply sealing coats of type recommended by manufacturer to produce finish matching approved samples.

9. Cove base: Apply cove base mix to wall surfaces at locations shown to form cove base to form 4-inch (101 mm) cove base height. Follow manufacturer's instructions and details including taping, mixing, priming, troweling, grinding, polishing, and top-coating of cove base.

a. When wall surface is not concrete, concrete masonry unit, install cement board and/or exterior grade plywood at locations shown to form cove base.

3.6 TOLERANCE

A. From line of plane: Maximum 1/8 inch (3.18 mm) in total distance of flooring and base.

B. From radius of cove: Maximum of 1/8 inch (3.18 mm) plus or 1/16-inch (1.59 mm) minus.

3.7 CURING, PROTECTION AND CLEANING

A. Cure resinous terrazzo flooring in compliance with manufacturer's directions (during the application process), taking care to prevent contamination during stages of application and prior to completion of curing process.

B. Close area of application for a minimum of 24 hours.

C. Protect resinous (epoxy terrazzo) flooring materials from damage and wear during construction operation.

1. Cover flooring with wax paper or Kraft paper.

2. Cover paper with 1/4 inch (6.35 mm) thick hardboard, plywood, or particle board where area is in foot or vehicle traffic pattern, rolling or fixed scaffolding and overhead work occurs.

D. Remove temporary covering and clean resinous (Epoxy Terrazzo) flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous (Epoxy Terrazzo) flooring manufacturer.

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