



R G Architects, LLC

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RGA No. 12031
15 February 2013

ADDENDUM NO. 3

CHRISTINA SCHOOL DISTRICT
Kirk Middle School – Toilet Room Renovations
140 Brennen Drive
Newark, DE 19713

R G Architects
3171 S. DuPont Parkway
P.O. Box 650
Odessa, DE 19730
Phone: 302-376-8100 (phone)
Fax: 302-376-9851 (fax)
Email: chris@rgarchitects.net

BIDS DUE:

Tuesday, February 19 at 2:00 p.m.

LOCATION:

**EDEN SUPPORT CENTER
925 Bear-Corbitt Road
Bear, Delaware 19701**

NOTICE TO ALL BIDDERS

1.0 GENERAL NOTES:

- 1.1 Bidders are hereby notified that this Addendum shall be and hereby becomes part of their Contract Documents, and shall be attached to the Project Manual for this project.
- 1.2 The following items are intended to revise and clarify the Drawings and Project Manual, and shall be included by the Bidder in their proposal.
- 1.3 Bidders shall verify that their Sub-bidders are in full receipt of the information contained herein AND in future addendums posted on the State's website.
- 1.4 All addenda will be sent out to the registered plan holders via email (or fax). Contractors are encouraged to keep an eye on their email accounts during the bidding period for such updates and the States website.
- 1.5 All bidders are responsible for checking the State of Delaware website for notifications to changes to the contract documents. R G Architects will ONLY send documents directly to those that attended the pre-bid meeting and registered plan holders. The project is listed at the following website:

<http://www.bids.delaware.gov>
- 1.6 This addendum clarifies and shall supersede items A.9 & A.10 of the Section 4.0 "Questions" in Addendum Number 2.

2.0 Revisions to the SPECIFICATIONS

- 2.1 The following specification sections are being re-issued in their entirety:
- 2.1.1 09 9402 Epoxy Terrazzo
 - 2.1.2 09 9405 Terrazzo Repair

3.0 Revisions to the DRAWINGS

- 3.1 A80-1 – Revised Drawing Legend and clarified areas of New Epoxy Terrazzo vs. Repair and replacement of Cementitious Terrazzo work. See Attached Drawing A80-1.

4.0 Questions

- Q.1 At the second walk thru, we were showed the location of a tunnel within the boiler room; however it was not confirmed if this tunnel went to any toilet rooms. Please verify if there is tunnel access for each toilet room.

A.1 The tunnel only extends to a certain point and does not go below all the toilet rooms. The drawings indicate saw cutting the floor in the areas where access is not available.

- Q.2 Please provide / clarify a specification for the solid surface cap color/brand that should be used for pricing. Preferably a price group/brand would be helpful

A.2 Solid Surface material shall be ½” Corian, color to be selected by architects from manufacturers full range of colors and textures (include all color groups)

- Q.3 Wall types shown on drawings for both Newark High School (A40-1) and Kirk MS show the ceramic tile to be installed 6" above the existing ceiling. This would require the ceiling to be demoed and patched around the perimeter in addition to the ceiling removal / replacement work shown on the drawings. Also after speaking to electrical contractors, they will need some of the existing ceiling to be removed to install new light fixtures.

With this much removal of the existing plaster ceiling, the integrity of the original supports could be compromised. Would it be possible to either: 1) Remove the entire ceiling and replace with new. 2) leave existing ceiling, and install new ceiling 6" - 10" lower. 3) install ceramic tile at the height of the existing ceiling (not 6" above ceiling).

A.3 Install ceramic tile at the height of the existing ceiling with no more than 1/4” caulk joint at underside of finished ceiling.

- Q.4 Dwg A 80-1 states that existing terrazzo floors are to be patched and repaired and refinished, however some of the new epoxy terrazzo floor hatching is shown to be installed in the existing terrazzo floor areas. I assume that the existing terrazzo floors are cementitious terrazzo not epoxy. Is it the intent of the plans to use epoxy terrazzo to patch the existing terrazzo floor areas?

A.4 Existing terrazzo floor patching/repair/refinishing is to be completed using cementitious terrazzo as specified to match adjacent color & aggregate density. See (revised) specification section 09 9405 ‘Terrazzo Repair’. In areas where terrazzo does not currently exist (i.e. at entrance to bathrooms) the system will be epoxy terrazzo per revised 09 9402. See attached specifications and drawing A80-1 for additional clarification.

Q.5 Plumbing contractors have indicated that additional floor demo and patch may be required to install the sinks. The plans do not currently call for any terrazzo repair at sink locations. Please review this and consider providing an allowance for additional concrete demo and patch with terrazzo patching at sinks.

A.5 The previous addendum stipulates an allowance for each bathroom. The Contractor shall determine the amount of unidentified demolition (cutting & patching) as is required to install the new work shown.

Q.6 Please consider providing a moisture barrier membrane overtop of new and existing concrete subfloor at all terrazzo locations because it will allow us to maintain an aggressive schedule and not wait for the concrete floor patch to cure for 30 to 40 days in order to meet the moisture requirements of the terrazzo systems.

A.6 Moisture mitigation membrane shall be installed over existing concrete slab areas designated to receive new epoxy terrazzo flooring.

Q.7 Addendum 1 said that you would notify us to who the fire alarm vendor is. Can you please provide the contractors name.

A.7 Anaconda or Simplex

Q.8 Please clean up bid forms to eliminate alternate #2 and unit prices which appear not to be required.

A.8 It's a place holder, in case we add Alternate #2 at a later time prior to bid. This section and Unit Prices can be left blank if not required for bidding purposes.

Q.9 Ref. specification 09 9405, page 4, paragraph 3.6 "Finishing". Should we assume refinishing the existing terrazzo requires grinding, grouting, polishing and sealing these floors? A typical terrazzo installation is ground using 24 grit stones; ground again with 80 grit and then polished with 120 grit stones. 1500 grit finish is noted for both schools. We believe a 1500 grit finish would be extremely slippery for toilet rooms and will not comply with ADA guidelines.

A.9 See attached revised specification section 09 09405 for clarification.

Q.10 Ref. drawing A40-1, Wall Types WT-1, WT-3 and WT-4. We note the backer board is to extend 6" above the ceiling. Is the wall tile to extend 6" above the ceiling or just above the ceiling line?

A.10 Install ceramic tile to underside of finished ceiling leaving no more than 1/4" caulk joint at underside of finished ceiling.

Q.11 Ref. drawing; A70-1, soffit details 2 & 3. Do these soffits receive paint or a tile finish?

A.11 These soffits are to be primed and painted.

Q.12 Is the tile installer permitted to field cut large tile to make the smaller sizes required shown? i.e. if a 6" tile is required in the pattern, can we cut a 12" tile in half?

A.12 **NO!** All cuts shall be factory made using the "Linear Options" program with the exception of vertical cuts at wall corners, door frames, and tiles abutting ceilings.

12031
Christina School District
Kirk Middle School – Toilet Room Renovations
ADDENDUM # 3

5.0 ATTACHMENT LIST:

- A. Bid Register
- B. A80-1 (Floor Finish Plan & Details)
- C. Specification Section 09 9405 “Terrazzo Repair”, and 09 9402 Epoxy Terrazzo

PLEASE PRINT CLEARLY

Christina School District
Kirk Middle School - Toilet Room Renovations



Christina School District, Eden Support Center
925 Bear-Corbitt Road
Bear, DE 19701

BID DOCUMENTS REGISTER
PLEASE PRINT CLEARLY

\$ 125.00 per set

#01	Name of Company: <u>NASON CONSTRUCTION</u> Physical Address: <u>2000 FOULK RD STE F</u> City, State: <u>WILMINGTON DE 19810</u> Contact: <u>JIM CONNELL</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>JCONNELL@NASONCONSTRUCTION.COM</u> Fax: <u>302 529 2812</u> Phone: <u>302 529 2549</u> Date: _____
#02	Name of Company: <u>CTD CONTRACTORS</u> Physical Address: <u>PO Box 9236</u> City, State: <u>WILM, DE 19809</u> Contact: <u>KEN VANDEGRIFT</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>KVANDEGRIFT.cd@VERIZON.NET</u> Drawings Fax: <u>764-7585</u> Phone: <u>764-8013</u> Date: <u>1/31/13</u>
#03	Name of Company: <u>AMAKOR Inc</u> Physical Address: <u>72 Clinton Street P.O. Box 636</u> City, State: <u>DELAWARE CITY DELAWARE</u> Contact: <u>STEVE SERBU</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>AMAKOR@AOL.COM</u> Fax: <u>302-834-8681</u> Phone: <u>302-834-8664</u> Date: <u>1/31/13</u>
#04	Name of Company: <u>Kent Construction</u> Physical Address: <u>2 BIG OAK RD</u> City, State: <u>SMIRNA DE</u> Contact: <u>Pete Ksenich</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>kyan@kentconstructionco.com</u> Fax: <u>(302) 653-4044</u> Phone: <u>(302) 653-6469</u> Date: <u>1/30/2013</u>

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Kirk Middle School - Toilet Room Renovations



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925 Bear-Corbitt Road
Bear, DE 19701

BID DOCUMENTS REGISTER
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<p>#05</p>	<p>Name of Company: <u>DISABASTINO Construction</u> Physical Address: <u>1 South Cleveland Ave</u> City, State: <u>Wilmington, DE 19805</u> Contact: <u>BLAWP</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>HLAWP@disabastino.com</u> Fax: <u>652-3774</u> Phone: <u>652-3838 W 120 528 JPM</u> Date: <u>1/31/13</u></p>
<p>#06</p>	<p>Name of Company: <u>JOSHI CONSTRUCTION</u> Physical Address: <u>2772 BRACKENVILLE ROAD</u> City, State: <u>HOCKESS H. DE 19707</u> Contact: <u>KIRTI P. JOSHI</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>JOSHI.CONSTRUCTION@COMCAST.NET</u> Fax: <u>302-239-4704</u> Phone: <u>302-239-5090</u> Date: <u>1-31-13</u></p>
<p>#07</p>	<p>Name of Company: <u>VALLINOR CONSTRUCTION</u> Physical Address: <u>219 South EASTON ROAD</u> City, State: <u>Glenold PA</u> Contact: <u>JEANNETTE JENNANT</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>JTENNANT@VALLINOR.COM</u> Fax: <u>267 763 1103</u> Phone: <u>267 763 1102</u> Date: <u>1/31/2013</u></p>
<p>#08</p>	<p>Name of Company: <u>Dedeo Builders</u> Physical Address: <u>100 Naamans RD Suite 3F</u> City, State: <u>Cleamont, DE 19703</u> Contact: <u>Masc Wolfe</u> GC: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO EMAIL: <u>Masc Wolfe@MMac.com</u> Fax: <u>302 322 791 0245</u> Phone: <u>302 791 0243</u> Date: <u>1/31/13</u></p>

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Kirk Middle School - Toilet Room Renovations



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925 Bear-Corbitt Road
Bear, DE 19701

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<p>#09</p>	<p>Name of Company: <u>BRISTOL INDUSTRIAL COLP</u> Physical Address: <u>301 E SILVER FOX RD</u> City, State: <u>NEWARK DE 19702</u></p> <p>Contact: <u>FELICIA ENOVA</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> EMAIL: <u>ACRISTOL@AOL.COM</u> Fax: <u>302 292 1402</u> Phone: <u>302 292 1401</u> Date: <u>1/31/13</u></p>
<p>#10</p>	<p>Name of Company: <u>W & W Contractors Inc.</u> Physical Address: <u>1713 S. 56th St.</u> City, State: <u>Philadelphia, PA</u></p> <p>Contact: <u>Alex Walker</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> EMAIL: <u>wwwalker@wwcontractor.com</u> Fax: <u>215-724-2082</u> Phone: <u>215-724-0270</u> Date: <u>1/31/13</u></p>
<p>#11</p>	<p>Name of Company: <u>MCGRAW-HILL DODGE REPORTS</u> Physical Address: <u>3315 CENTRAL AVE</u> City, State: <u>HOT SPRINGS, AR 71913-6138</u></p> <p>Contact: <u>PAT POLANOWSKI</u> GC: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> EMAIL: <u>DODGE-DOCUMENT-MA@McGraw-Hill.com</u> Fax: <u>484-369-5945</u> Phone: <u>717-993-6268</u> Date: <u>2/4/13</u></p>
<p>#12</p>	<p>Name of Company: <u>DCA PLAN ROOM</u> Physical Address: <u>527 STANTON CHRISTIANA RD</u> City, State: <u>NEWARK, DE 19713</u></p> <p>Contact: _____ GC: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> EMAIL: <u>PHANDUN@e-dca.org</u> Fax: <u>302-994-8185</u> Phone: <u>302-994-7442</u> Date: <u>2/4/13</u></p>

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Kirk Middle School - Toilet Room Renovations



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<p>#13</p>	<p>Name of Company: <u>ABC DELAWARE</u></p> <p>Physical Address: <u>31 BLEVINS DRIVE, SUITE B</u> City, State: <u>NEWCASTLE DE 19720</u></p> <p>Contact: _____ GC: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/></p> <p>EMAIL: <u>ECAPODANNO@ABCDELAWARE.COM</u></p> <p>Fax <u>302-323-1122</u></p> <p>Phone: <u>302-328-1111</u> Date: <u>2/4/13</u></p>
<p>#14</p>	<p>Name of Company: <u>COMMONWEALTH CONSF. CO.</u></p> <p>Physical Address: <u>2317 PENNSYLVANIA AVE</u> City, State: <u>WILMINGTON DE 19806</u></p> <p>Contact: <u>Bill Booth</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>EMAIL: <u>bbooth@175COMMONWEALTH.COM</u></p> <p>Fax <u>654-2604</u></p> <p>Phone: <u>654-6611</u> Date: <u>2-4-13</u></p>
<p>#15</p>	<p>Name of Company: <u>VENTRESCA BROS INC</u></p> <p>Physical Address: <u>2300 N. DUPONT HWY</u> City, State: <u>NEW CASTLE, DE 19720</u></p> <p>Contact: <u>TONY VENTRESCA</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>EMAIL: <u>TVENTRESCA@VENTRESCABROSINC.COM</u></p> <p>Fax <u>302-658-2360</u></p> <p>Phone: <u>302-658-6436</u> Date: <u>2/5/13</u></p>
<p>#16</p>	<p>Name of Company: <u>BOB SMITH CONTRACTORS</u></p> <p>Physical Address: <u>781 E. EVERGREEN ST - SUITE 1</u> City, State: <u>WEST GROVE PA 19390</u></p> <p>Contact: <u>LACY CLEVENSTINE</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p> <p>EMAIL: <u>BIDS@BOBSMITHCONTRACTORS.COM</u></p> <p>Fax <u>610-345-1318</u></p> <p>Phone: <u>610-345-1314</u> Date: <u>2/6/13</u></p>

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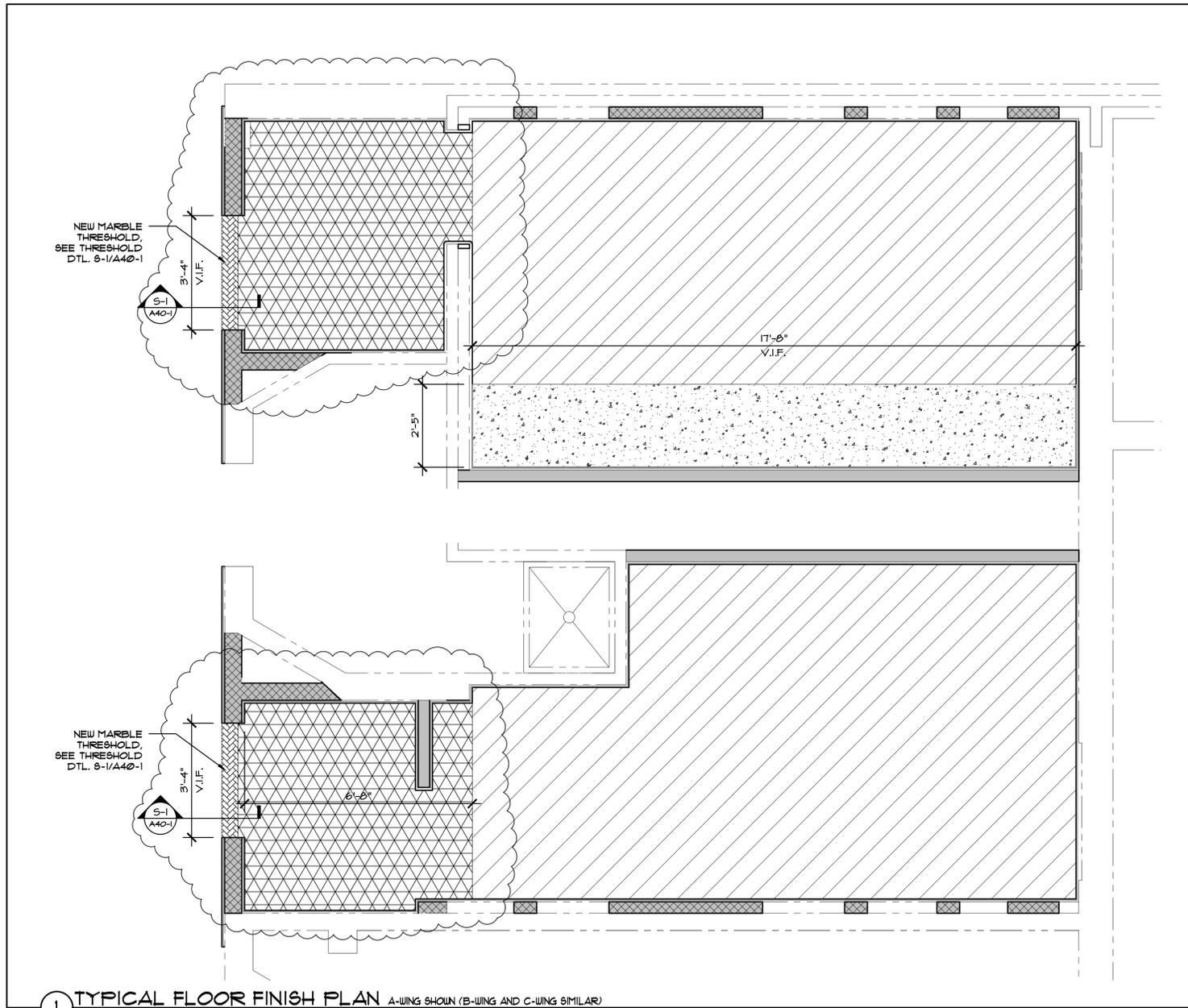
Christina School District
Kirk Middle School - Toilet Room Renovations



Christina School District, Eden Support Center
925 Bear-Corbitt Road
Bear, DE 19701

BID DOCUMENTS REGISTER
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<p>#17</p>	<p>Name of Company: <u>RICHARD Y JOHNSON & SON INC</u> Physical Address: <u>18404 JOHNSON RD, P.O. BOX 105</u> City, State: <u>LINCOLN, DE 19960</u></p> <p>Contact: <u>DEAN JOHNSON</u> GC: YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> EMAIL: <u>DJOHNSON@RYSON.COM</u> Fax: <u>302-422-4696</u> Phone: <u>302-422-3732</u> Date: <u>2/7/13</u></p>
<p>#18</p>	<p>Name of Company: _____ Physical Address: _____ City, State: _____</p> <p>Contact: _____ GC: YES <input type="checkbox"/> NO <input type="checkbox"/> EMAIL: _____ Fax: _____ Phone: _____ Date: _____</p>
<p>#19</p>	<p>Name of Company: _____ Physical Address: _____ City, State: _____</p> <p>Contact: _____ GC: YES <input type="checkbox"/> NO <input type="checkbox"/> EMAIL: _____ Fax: _____ Phone: _____ Date: _____</p>
<p>#20</p>	<p>Name of Company: _____ Physical Address: _____ City, State: _____</p> <p>Contact: _____ GC: YES <input type="checkbox"/> NO <input type="checkbox"/> EMAIL: _____ Fax: _____ Phone: _____ Date: _____</p>



1 TYPICAL FLOOR FINISH PLAN A-WING SHOWN (B-WING AND C-WING SIMILAR)
SCALE: 1/2" = 1'-0"

DRAWING LEGEND

- EXISTING TERRAZZO FLOOR TO BE PATCHED & REFINISHED AS SHOWN & AS REQUIRED PER SELECTIVE DEMOLITION SHOWN ON MECH/PLUMB. DRAWINGS WITH CERAMITICUS CUSHION TERRAZZO, SEE SPECIFICATION SECTION 09 9405 'TERRAZZO REPAIR'
- NEW CEMENTATION SAND CUSHION TERRAZZO FLOOR TO BE SET FLUSH WITH ADJACENT TERRAZZO FLOOR SURFACE. NEW TERRAZZO FLOOR TO MATCH ADJACENT TERRAZZO COLOR & AGGREGATE DENSITY.
- NEW EPOXY TERRAZZO FLOOR TO BE SET FLUSH WITH ADJACENT TERRAZZO FLOOR SURFACE. INSTALL MOISTURE MITIGATION MEMBRANE OVER EXISTING CONCRETE SLAB. NEW TERRAZZO FLOOR TO MATCH ADJACENT TERRAZZO COLOR & AGGREGATE DENSITY.

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NOTE:

- SEE SPEC. SECTION 09 9800 FOR 'SPECIAL PROTECTIVE TREATMENT' TO BE APPLIED TO ALL WALLS, FLOORS, & PARTITIONS WHEN WORK IS COMPLETE.
- SEE SPEC. SECTION 09 9405 FOR RESTORATION & REPAIR OF ALL EXISTING TERRAZZO FLOORS IN ALL BATHROOMS.

ISSUED FOR:
ISSUED FOR BIDDING 18 JANUARY 2013

PROJECT INFO:

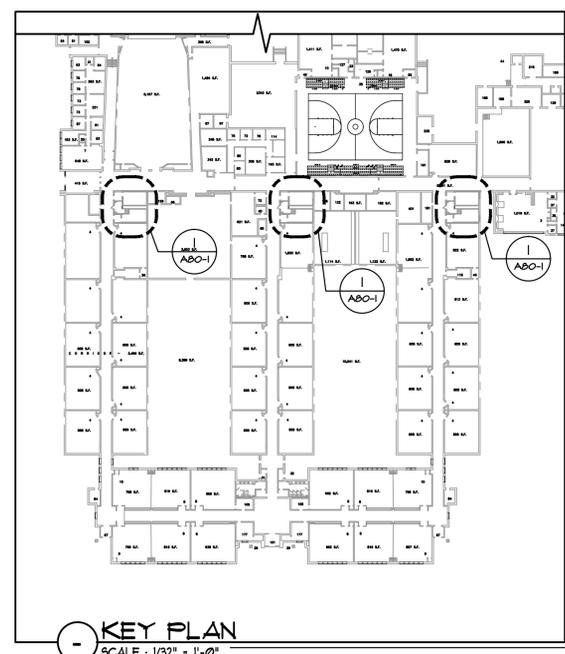
GEORGE V. KIRK
MIDDLE SCHOOL
TOILET ROOM
RENOVATIONS
CHRISTINA SCHOOL DISTRICT
140 BRENNEN DRIVE
NEWARK, DELAWARE, 19713

SHEET INFO:

PROJECT NO: 12031
DRAWN BY: CMB/MJS
CHECKED BY: GDR
SCALE: AS SHOWN
DATE: 18 JANUARY 2013

TITLE & NO.:

FLOOR FINISH
PLAN & DTL'S



KEY PLAN
SCALE: 1/32" = 1'-0"

A80-1

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Thin-set epoxy terrazzo at locations noted on drawings.
- B. Related Sections include the following:
 - 1. Division 7 Section "Joint Sealants" for sealants installed with terrazzo.
 - 2. Division 3 Section "Concrete"

1.3 SUBMITTALS

- A. Product Data: For each type of terrazzo and accessory indicated.
- B. Shop Drawings: Include terrazzo fabrication and installation requirements. Include plans, elevations, sections, component details, and attachments to other Work. Show layout of the following:
 - 1. Divider and control- and expansion-joint strips.
 - 2. Base and border strips.
 - 3. Abrasive strips.
 - 4. Stair treads, risers, and landings.
 - 5. Precast terrazzo jointing and edge configurations.
 - 6. Terrazzo patterns.
- C. Samples for Verification: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare samples of same thickness and from same material to be used for the Work in size indicated below:
 - 1. Epoxy Terrazzo: 6-inch- (150-mm-) square samples.
 - 2. Precast Epoxy Terrazzo: 6-inch- (150-mm-) square samples.
 - 3. Accessories: 6-inch- (150-mm-) long samples of each exposed strip item required.
- D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- E. Qualification Data: For Installer.
- F. Material Test Reports: For epoxy terrazzo.

- G. Material Certificates: For epoxy terrazzo, in lieu of material test reports, when permitted by Architect, signed by manufacturers.
- H. Maintenance Data: For epoxy terrazzo to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer (applicator) who is acceptable to epoxy terrazzo manufacturer to install manufacturer's products.
 - 1. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
 - 2. Engage an installer who is a contractor member of NTMA.
- B. Source Limitations: Obtain primary terrazzo materials through one source from a single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.
- C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of aggregate from one source with resources to provide materials of consistent quality in appearance and physical properties.
- D. NTMA Standard: Comply with NTMA Guide Specification and written recommendations for terrazzo type indicated unless more stringent requirements are specified.
- E. Mockups: Install mockups to verify selections made under sample Submittals and to demonstrate aesthetic effects and qualities of materials and execution.
 - 1. For epoxy terrazzo, install mockups of at least 100 sq. ft. (9 sq. m) of typical flooring and base condition for each color and pattern in locations directed by Architect.
 - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to terrazzo including, but not limited to, the following:
 - 1. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review special terrazzo designs and patterns.
 - 4. Review dust-control procedures.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.

- B. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- C. Close spaces to traffic during epoxy terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.
- D. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.
 - 1. Provide dustproof partitions and temporary enclosures to limit dust migration and to isolate areas from noise.

PART 2 - PRODUCTS

2.1 EPOXY TERRAZZO

- A. Products: Subject to compliance with requirements, provide one of the following:
 - 1. ChemRex, Inc./SKW-MBT; Novalite.
 - 2. Crossfield Products Corp., Dex-O-Tex Division; Cheminert Terrazzo.
 - 3. General Polymers Corporation; Terrazzo 1100.
 - 4. Key Resin Company; Key Epoxy Terrazzo.
 - 5. Master Terrazzo Technologies, LLC; Morricite.
 - 6. Polymerica Incorporated; MasterPiece ETS.
 - 7. Quadrant Chemical Corporation; Quadset Epoxy Terrazzo.
- B. Thickness: 1/4 inch (6.4 mm).
- C. Color & Pattern: Provide the following colors and pattern:
 - 1. Pattern to match existing.
 - 2. Refer to finish drawings and finish schedule for the extent of pattern.
- D. Materials:
 - 1. Flexible Reinforcing Membrane: Manufacturer's resinous membrane for substrate crack preparation and reflective crack reduction.
 - a. Reinforcement: Fiberglass scrim.
 - 2. Primer: Product of manufacturer recommended for substrate and use indicated. Primer shall be of 100% solids; No solvent containing primers are allowed.
 - a. Provide moisture mitigation primer as recommended by epoxy manufacture.
 - 3. Epoxy Resin: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
 - a. Physical Properties without Aggregates:
 - 1) Hardness: 65 to 85 per ASTM D 2240, Shore D.
 - 2) Minimum Tensile Strength: 3000 psi (20.68 MPa) per ASTM D 638 for a 2-inch (50.8-mm) specimen made using a "C" die per ASTM D 412.

- 3) Minimum Compressive Strength: 10,000 psi (68.95 MPa) per ASTM D 695, Specimen B cylinder.
 - 4) Chemical Resistance: No deleterious effects by contaminants listed below after 7-day immersion at room temperature per ASTM D 1308.
 - a) Distilled water.
 - b) Mineral water.
 - c) Isopropanol.
 - d) Ethanol.
 - e) 0.025 percent detergent solution.
 - f) 1.0 percent soap solution.
 - g) 10 percent sodium hydroxide.
 - h) 10 percent hydrochloric acid.
 - i) 30 percent sulfuric acid.
 - j) 5 percent acetic acid.
 - b. Physical Properties with Aggregates: For resin blended with Georgia White marble, ground, grouted, and cured per requirements in NTMA's "Guide Specification for Epoxy Terrazzo," comply with the following:
 - 1) Bond strength: ACI 403 – 528 psi, Complete failure in concrete.
 - 2) Impact resistance: MIL-D-3134 Para. 3.15 – No cracking or loosening, indentation .005 in.
 - 3) Indentation resistance: MIL-D-3134 Para. 3.16 – No indentation.
 - 4) Critical radiant flux: NFPA 253/FTMS 372/ ASTM E-648 – Greater than 1.07 Watts/Cm³, class I interior finish.
 - 5) Flammability: ASTM D-635 – Self extinguishing, extent of burning 0.25 inches.
 - 6) Co-efficient of linear expansion: ASTM D-696 – 14x10⁻⁶ in./in./°F.
 - 7) Resistance to elevated temperature: MIL-D-3134 Para 3.6 – No flow, no slip.
 - 8) Abrasion resistance: ASTM D-4060 – 0.70 gm. Loss.
 4. Marble Chips: Complying with NTMA gradation standards for mix indicated and containing no deleterious or foreign matter.
 - a. Hardness: Ha-10 minimum per ASTM C 241.
 - b. 24-Hour Absorption Rate: Less than 0.75 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
 5. Divider-Strip Adhesive: Epoxy-resin adhesive recommended by adhesive manufacturer for this use and acceptable to terrazzo manufacturer.
 6. Finishing Grout: Resin based; 100% solids. No solvent containing cement or latex grouts is allowed.
 7. Seal Coat: Slip resistant, thin-coat terrazzo sealer of or approved by terrazzo manufacturer.
- E. Mix: Comply with NTMA's "Guide Specification for Epoxy Terrazzo" and manufacturer's written instructions for component proportions and mixing.
1. Color and Pattern: Match Architect's samples

2.2 DIVIDER AND ACCESSORY STRIPS

- A. Thin-Set Divider Strips: Angle or T type, 1/4-inch (6.4 mm) deep.
 - 1. Material: 16 gauge White zinc alloy.
 - 2. Top Width: 1/4 inch (6.4 mm).
- B. Control-Joint Strips: Separate, double L-type angles, positioned back to back, that match material, thickness, and color of divider strips and in depth required for topping thickness indicated.
- C. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:
 - 1. Edge beads for exposed edges of terrazzo.

2.3 MISCELLANEOUS ACCESSORIES

- A. Patching and Fill Material: Resinous product of or approved by terrazzo manufacturer and recommended by manufacturer for application indicated.
- B. Abrasive Strips: Silicon carbide or aluminum oxide in epoxy-resin binder set in channel, 1/2 inch (12.7 mm) wide by depth required by terrazzo thickness and matching divider-strip material.
- C. Joint Sealants: Recommended by terrazzo and sealant manufacturers and complying with requirements in Division 7 Section "Joint Sealants."
- D. Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by cleaner manufacturer for use on terrazzo type indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions, including levelness tolerances, have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances that might impair epoxy terrazzo bond, including oil, grease, and curing compounds.
- B. Provide clean, dry, and neutral substrate for terrazzo application. Determine dryness characteristics by performing moisture tests recommended by terrazzo manufacturer.
 - 1. Concrete: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with epoxy terrazzo.

- 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. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.
2. Concrete Masonry Units: Fill voids and chipped areas with mortar mix to produce smooth, plumb surface.
- C. Protect other work from dust generated by grinding operations. Control dust to prevent air pollution and comply with environmental protection regulations.
1. Erect and maintain temporary enclosures and other suitable methods to limit dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY TERRAZZO INSTALLATION

- A. General:
1. Comply with NTMA's written recommendations for terrazzo and accessory installation.
 2. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Guide Specification for Epoxy Terrazzo."
 3. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
 4. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- B. Flexible Reinforcing Membrane:
1. Prepare and prefill substrate cracks with membrane material.
 2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
 3. Reinforce membrane with fiberglass scrim.
 4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.
- C. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.
1. All new epoxy terrazzo over existing or new on grade concrete slabs shall receive moisture mitigation primer.
- D. Divider and Accessory Strips: Install in locations indicated in adhesive setting bed without voids below strips.
1. Control-Joint Strips: Install back to back directly above substrate control joints.
 - a. Install with 1/4-inch (6.4-mm) gap between strips and install sealant in gap.
- E. Abrasive Strips: Install with surface of abrasive strip positioned 1/32 inch (0.8 mm) higher than terrazzo surface.

- F. Fine Grinding: Grind with 120 or finer grit stones until all grout is removed from surface. Repeat rough grinding, grout coat, and fine grinding if large voids exist after initial fine grinding. Produce surface with a minimum of 70 percent aggregate exposure.
- G. Remove and replace terrazzo areas that evidence lack of bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.
- H. Construction Tolerances: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet (6.4 mm in 3 m).

3.4 CLEANING AND PROTECTING

- A. Remove grinding dust from installation and adjacent areas.
- B. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow to dry thoroughly.
- C. Seal surfaces according to NTMA's written recommendations. Apply sealer as recommended by terrazzo manufacturer and according to sealer manufacturer's written instructions.
- D. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 09402

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: modification and repair of existing Cementitious Terrazzo.
 - 1. Section Includes: modification and repair of existing Cementitious Terrazzo.
 - 2. Coordinate interface with epoxy terrazzo.
 - 3. Grind, Grout polish, and seal existing terrazzo floors.
- B. Related Sections include the following:
 - 1. Division 3 Section "Concrete"
 - 2. Division 9 Section "Epoxy Terrazzo Flooring"
- C. Refer to Section 01230 – ALTERNATES for listing of Bid alternates that may affect the work described herein

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for accessory items and materials.
- B. Shop Drawings: Show layout of divider strips, control joint strips and base and border strips.
 - 1. Show large scale details of precast terrazzo jointing and edge conditions, and showing elevation and plan layouts. Include anchorage and other special features.
- C. Samples:
 - 1. Submit 6" square samples of each pattern and color of precast terrazzo.
 - 2. Submit minimum 6" long samples of each type accessory item.

1.4 QUALITY ASSURANCE

- A. NTMA Standards: Comply with specified provisions and recommendations of National Terrazzo and Mosaic Association, Inc. (NTMA) for the type of installation required except where specified otherwise.
- B. Installer: Experienced in the type of Work required for a minimum of five (5) years.
- C. Appearance Criteria: Match existing

- D. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to terrazzo including, but not limited to, the following:
 - 2. Inspect and discuss condition of substrate and other preparatory work performed by other trades.
 - a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - b. Review special terrazzo designs and patterns.
 - c. Review dust-control procedures.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Maintain temperature above 50 deg F (10 deg C) for 48 hours before and during terrazzo installation.
- B. Weather Limitations: Proceed with rustic terrazzo installation only when forecasted weather conditions permit work to be performed according to NTMA's written recommendations and temperatures remain above 45 deg F (7.2 deg C).
- C. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.
- D. Control and collect dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.
 - 1. Provide dustproof partitions and temporary enclosures to limit dust migration and to isolate areas from noise.

2 PRODUCTS

2.1 TERRAZZO MATERIALS

- A. Portland Cement: ASTM C 150, Type I, except as modified to comply with NTMA requirements for compressive strength. Obtain cement from a single source for each required color.
 - 1. Provide non-staining white cement for terrazzo matrix, tinted as required.
 - 2. Provide standard gray cement for underbed.
- B. Sand: ASTM C 33.
- C. Water: Clean, free of oil, soluble salts or other deleterious substances.
- D. Aggregate: Natural, sound, crushed marble chips without excessive flats or flakes, complying with NTMA requirements.

- E. Matrix Pigments: Pure mineral or synthetic pigments, resistant to alkalies and non-fading. Mix pigments with matrix to provide required colors.
- F. Underbed Reinforcement: Galvanized welded wire fabric, 2" x 2" -WO.3 x WO.3 (16 ASW gage or 0.0625" diam.); comply with ASTM A 185 and ASTM A 82 except for minimum wire size.
- G. Isolation Membrane: Polyethylene film, complying with ASTM D 2103, not less than 4.0 mils thick.

2.2 TERRAZZO ACCESSORIES

- A. Divider Strips: Depth and style required for terrazzo type and thickness.
 - 1. Angle or "T" - type for adhesive bonding to substrate except where set into underbed.
 - 2. Unless otherwise indicated, use divider strips with 1/4" wide top, white zinc alloy.
- B. Accessory Strips: Match width, material and color of divider strips, unless otherwise indicated. Provide following types of accessory strips as required for complete installation. Base bead and cove base dividers.
- C. Control Strips: Double or split units, 1/8" wide, of same material and color as divider strips with 1/8" wide full-depth elastomeric sealant filler, laminated between strips.
- D. Divider Strip Adhesive: Trowelable mixture of fine sand and bonding agent, specially compounded by manufacturer for this use.
- E. Curing Compound: Liquid membrane-forming compound, complying with ASTM C 309, Type I.
- F. Cleaner: Liquid, neutral chemical cleaner, with Ph factor between 7 and 10, of formulation recommended by sealer manufacturer for type of terrazzo used, and complying with NTMA requirements.
- G. Interior Floor Sealer: Not required for Caesar Rodney School District.

2.3 TERRAZZO PROPORTIONS

- A. Underbed: 1 part Portland cement to 4 ½ parts sand and sufficient water to provide workability at as low a slump as possible.
- B. Topping: one 94-pound bag of Portland cement to 200 pounds marble chips and approximately 5 gallons of water. Color pigment to be added as necessary to Match existing terrazzo not to exceed 2 pounds per bag of cement. Add sufficient water to provide workability at as low a slump as possible.

3 EXECUTION

3.1 INSPECTION

- A. Installer must examine the areas and conditions under which the terrazzo work is done to be installed, including checking slab for cracks, and notify the Contractor in writing of conditions

detrimental to the proper and timely completion of the Work. Start of Work will evidence acceptance.

3.2 PREPARATION

- A. Clean and prepare substrate to comply with NTMA Specifications for type of terrazzo application indicated. Clean substrate of loose chips and foreign matter. Grind concrete substrate to provide surfaces within tolerances required by NTMA for type of terrazzo application.

3.3 REMOVAL

- A. Strip existing sealers from all contiguous areas
- B. Remove existing damaged terrazzo and as required to accommodate new work. Carefully remove to nearest divider strip so as to minimize damage to existing work to remain. Prepare substrate for new terrazzo installation.

3.4 BASIC INSTALLATION

- A. For cementitious terrazzo, comply with NTMA recommendations for proportioning mixes, installation of strips, and for placing, curing, grinding, grouting and finishing.
- B. Match existing terrazzo bedding as required
- C. Install divider and accessory strips in adhesive setting bed, in accordance with manufacturer's instructions, without voids below strips. Provide mechanical anchorage as required for adequate attachment of strips to substrate.
- D. Provide control joints where indicated by installing angle-typed divider strips back-to-back with filler between strips, flush with finish floor.

3.5 CEMENTITIOUS TERRAZZO

- A. Sand Cushion Terrazzo: Comply with NTMA "Guide Specification" for Sand Cushion Terrazzo".
- B. Bonded Terrazzo: Comply with NTMA "Guide Specification for Bonded Terrazzo". Prepare sub-slab surfaces to insure positive bonding with underbed. Thoroughly clean areas of foreign matter immediately before placing bond coat. Place underbed while bond coat is still plastic.
- C. Surfacing: Grout cured terrazzo topping in accordance with NTMA Specifications. Delay grinding and finishing until heavy trade work is completed and construction traffic through the area is restricted. Finish by fine grinding with abrasive grit of size specified by NTMA, or as otherwise required matching Architect's sample.

3.6 FINISHING

- A. Rough Grinding: After curing the terrazzo should be ground with 24 grit stones or comparable diamond pates. After initial grinding follow with 80 grit stone.

- B. Grouting: After rough grinding the floor shall be cleaned and thoroughly rinsed. Remove excess rinse water and grout floor and all voids completely using Portland cement color and pigments identical to those used in topping.
- C. CURING: After grout has attained initial; set cure for minimum 72 hours.
- D. Fine Grinding: Grind with 120 or finer grit stones until all grout is removed from surface. Repeat rough grinding, grout coat, and fine grinding if large voids exist after initial fine grinding. Produce surface with a minimum of 70 percent aggregate exposure or match existing adjacent surfaces.
- E. Existing terrazzo shall be ground, re-grouted & polished same as new terrazzo.

3.7 CLEANING, SEALING, AND PROTECTION

- A. Remove grinding dust from installation and adjacent areas.
- B. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow to dry thoroughly.
- C. Seal surfaces according to NTMA's written recommendations. Apply sealer as recommended by terrazzo manufacturer and according to sealer manufacturer's written instructions.
- D. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure terrazzo is without damage or deterioration at time of Substantial Completion

END OF SECTION 09405