**DESIGN A/E NOTE - GUIDE SPECIFICATION CONVENTIONS**

**Color-highlighted text**

**Yellow: Editor’s Notes. Comments inserted into the text are addressed to the A/E, not the Contractor. Editor’s Notes are formatted as hidden text. Editor’s Notes are not identified with an update. Do not print Editor’s Notes in issue for distribution to Bidders/Contractors.**

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**Red: Text updated in 1st quarter. April – June.**

**Strikethrough text and highlighting (not text) in previously issued quarters are deleted. Only 1st quarter highlighted updated text is indicated.**

**Turquoise: Text updated in 2nd quarter. July – September.**

**1st quarter updated text remains highlighted.**

**Pink: Text updated in 3rd quarter. October – December.**

**1st and 2nd quarter updated text remain highlighted.**

**Bright Green: Text updated in 4th quarter. January – March.**

**1st, 2nd and 3rd quarter updated text remains highlighted.**

**Text Editing**

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 **Click Replace tab, Replace All, OK, Close. Save.**

**Delete all highlighting of text from issue to be distributed to Bidders/Contractors.**

**Tip: To delete highlighting, locate cursor at beginning of Section and block all text in Section, press Shift + Control + End, click No Highlight icon on Formatting toolbar. Save.**

**IMPORTANT: Retain month and year under section title on first page indicating updated Guide Specification Section issue used.**

**Note: This** page **will not print when Hidden text is unchecked as indicated in Editor’s Notes Tip.**

IF THE HIDDEN GUIDE SPECIFICATION CONVENTIONS DO NOT APPEAR PRECEEDING THIS

NOTE, TURN THEM ON AS FOLLOWS.

**FOR MICROSOFT WORD 2000 and 2003**, CLICK ON SHOW/HIDE ICON IN MENU BAR OR CHOOSE

TOOLS IN MENU BAR. THEN CLICK OPTIONS, VIEW TAB, UNDER FORMATTING MARKS, CHECK

HIDDEN TEXT.

**FOR MICROSOFT WORD 2007,** CLICK ON MICROSOFT OFFICE ICON LOCATED IN UPPER LEFT

CORNER OF MENU BAR. CLICK ON WORD OPTIONS AT BOTTOM OF DROP DOWN. THEN CLICK

ON DISPLAY. CHECK THE HIDDEN TEXT BOX.

**FOR MICROSOFT OFFICE 2010,** CLICK ON FILE BUTTON LOCATED IN UPPER LEFT CORNER OF

MENU BAR. IN THE DROP DOWN, CLICK ON OPTIONS, AND A WORD OPTIONS BOX WILL

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THE GUIDE SPECIFICATION CONVENTIONS SHOULD NOW BE VISIBLE IN THE DOCUMENT.

(Delete this note before printing.)

SECTION 03 35 40

INTERIOR CONCRETE SLAB REPAIRS AND JOINT FILLER REPLACEMENT

(DeCA June 2022 Design Criteria)

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Identification, repair, and joint filling of concrete floors.

Cost worksheet for repair and joint filling of concrete floors.

* + - * 1. Related Sections:

Division 03 Section Polished Concrete Finishing

* + - 1. SUBMITTALS
				1. Product data

All products and primary equipment used for repair of existing concrete slab defects.

* + - * 1. Joint Filler Installer Qualification Certification:

Submit letter of certification, identifying specific individuals that are currently certified installers of the specified materials and are familiar with proper procedures and installation methods as required by the specified product manufacturers.

* + - * 1. Submittal List:

 Reference Submittal Item Quantity Action

1.2B Product Data X R

1.2C Installer Certification X R

 X Submit quantity specified in Division 01 Section Administrative Requirements.

 R Review each submittal, mark to indicate action taken, and return.

 I Submittal is for information or record purposes only. No action will be taken*.*

* + - 1. QUALITY ASSURANCE
				1. Government reserves the right to engage the services of a Consultant to review, observe, and inspect the work in progress.
			2. ENVIRONMENTAL REQUIREMENTS
				1. Limit and control damage from excessive dust caused by demolition, preparation, and installation of all Work.
				2. Limit and control damage from moisture.
				3. Newly-poured concrete floor slab shall cure a minimum of 21 calendar days prior to joint filler installation.
				4. Concrete repair area shall be closed to traffic during preparation and repair for a time as recommended by manufacturer.
			3. DELIVERY, STORAGE AND HANDLING
				1. Deliver materials in original containers, with seals unbroken, bearing manufacturer labels indicating brand name and directions for storage. Dispense special concrete finish material from factory numbered and sealed containers. Maintain record of container numbers.
1. PRODUCTS
	* + 1. MANUFACTURERS
				1. Basis‑of‑Design Products: To establish the significant qualities related to type, function, dimension, in‑service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other manufacturers, a specific manufacturer's products and system are named and accompanied by the words "basis of design," including make or model number or other designation. Subject to compliance with requirements, provide either the named products or equal products.
			2. MATERIALS
				1. Polyurea Joint Filler

Rapid setting, two-component polyurea polymer liquid of 100% solids content, shore hardness 60 - 65, compatible with construction materials in contact.

Products:

SL/60 by VersaFlex Incorporated

RS 65 Polyurea by Metzger/McGuire

HT-PE65 Polyurea by Hi-Tech Systems

Color: To match polished concrete flooring. Approved color shall be selected and reviewed during mock-up sampling by Contracting Officer or Concrete Consultant.

* + - * 1. Joint Filler Stain Preventing Film

Products:

SPF by Metzger/McGuire

Approved equal.

* + - * 1. Low Viscosity Crack and Spall Repair

Products:

Quick Mender XO by VersaFlex

Rapid Refloor by Metzger/McGuire

~~HT Spall~~ TX3 by Hi-Tech Systems

Color: To match polished concrete flooring. Approved color shall be selected and reviewed during mock-up sampling by Contracting Officer or Concrete Consultant.

* + - * 1. Wide Area Surface Repairs

Products:

Ultratop PC by Mapei Cements

~~TRU PC by CTS Cement~~

K 521 by Ardex

No Substitutions.

Color: To match polished concrete flooring. Approved color shall be selected and reviewed during mock-up sampling by Contracting Officer or Concrete Consultant.

* + - * 1. Grout Coat Surface Enhancement Repair Including Pin Hole and Surface Pitting

Products:

~~RSG by Diamatic Inc.~~

~~Pit Grout~~ SRG by Metzger/McGuire

TX3 by Hi-Tech Systems

~~GM 3000 by Husqvarna Construction Products~~

~~VersaGrout by VersaFlex~~

Color: To match polished concrete flooring. Approved color shall be selected and reviewed during mock-up sampling by Contracting Officer or Concrete Consultant.

* + - 1. EQUIPMENT
				1. Dust Extraction System for Grinding/Sawing

HEPA filtration vacuum, designed for use with all hand tools when grinding or sawing concrete (minimum 125 CFM air flow).

Provide one of the following:

~~26D by HTC~~

T18000 by Husqvarna

S2400 by Pullman-Ermator

Bull 1250 ~~50~~ by SASE Company

Approved equal.

* + - * 1. Joint Filler Removal and Preparation

Provide one of the following:

The Mongoose by Engrave-a-Crete

Humpback Cutter Complete by Joe Due

Dust Buggy by U.S. Saws

Approved equal.

* + - * 1. Surface Grinder: Handheld 4” – 7” electric surface grinder with dustless shroud/housing.

Provide one of the following:

Dust Avenger by Joe Due

SawTec Grinder Vac by U.S. Saws

Approved equal.

1. EXECUTION
	* + 1. EXAMINATION
				1. After removal of any finish flooring, an evaluation of the existing concrete slab shall be conducted, identifying all defects. Scope of repairs shall be identified by Contractor and confirmed by the Contracting Officer or his Consultant.
				2. Compare actual amount of specified repair against estimated amount of specified repair noted in Worksheet (at end of this specification).

Repairs, within estimated scope of repairs (shown on Worksheet), shall proceed.

Repairs exceeding the estimated scope of repairs (shown on Worksheet) and that exceed Base Bid cost, must be approved by the Contracting Officer prior to executing any work per Section 01 26 00 Contract Modification Procedures.

* + - 1. PREPARATION
				1. Protect surface of slab immediately adjacent to defect under repair.
			2. JOINT MILLING AND CAP FILLER REPLACEMENT
1. If existing joint filler is sound and resting on top of saw cut shelf, mill top 1/2" of material, and fill with specified Polyurea joint filler – see diagram above.

Saw cut the joint to a minimum depth of 1/2” with a dry-cut, vacuum-equipped saw using a slightly oversized blade. The blade width should be sufficient to encapsulate the widest spall along a given contraction joint segment to produce a sharp corner on each side of the joint with a minimum of two passes through the joint. Remove filler material, debris, and laitance.

Fill with polyurea joint filler material from the bottom up, taking care not to entrap large air bubbles per manufacturer’s recommendation. Slightly overfill and shave flush to the surface after the grinding process has been completed.

Ensure that after grinding, the joint is cut smooth and flush with the finish floor surface, without concave or intermittent, darkened profile.

* + - 1. FULL DEPTH JOINT FILLER REPLACEMENT
				1. If existing joint filler is loose, easily removed, or able to be forced downward with a hand tool, remove all filler material from joint and fill with specified Polyurea joint filler – see diagram above.

Saw cut joint full depth with a dry-cut, vacuum-equipped saw using a slightly oversized blade. The blade width should be sufficient to encapsulate the widest spall along a given contraction joint segment to produce a sharp corner on each side of the joint with a minimum of two passes through the joint. Remove filler material, debris, and laitance.

Fill with polyurea joint filler material from the bottom up, taking care not to entrap large air bubbles per manufacturer’s recommendation. Slightly overfill and shave flush to the surface prior to grinding process.

Ensure that after grinding, the joint is cut smooth and flush with the finish floor surface, without concave or intermittent, darkened profile.

* + - 1. NARROW SPALLED JOINT REPAIR OR JOINT WITH METAL KEYWAY (LESS THAN 3/4”)

 

* + - * 1. For joints that are spalled, are constructed with metal keys, or have radius tooled edges not exceeding 3/4” in width at slab surface – see diagram above.

Saw cut the joint edge to a minimum depth of 3/4” with a dry-cut, vacuum-equipped saw allowing removal of the widest spall (or top of radius) along a given joint segment to produce a sharp corner on each side of the joint with a minimum of two passes through joint.

Clean joint of loose concrete, metal key fragments, joint filler, laitance, dirt, debris, backer rod, etc.

Joints must be free of visible moisture prior to filling.

Ensure filler penetrates the irregular aggregate interlock portion of the sawn contraction joint as shown below, re-establishing the aggregate interlock that may have been lost due to shrinkage, curling, and lack of reinforcement.

Fill joint cavity with specified Polyurea joint filler per manufacturer’s instructions, taking care not to entrap large air bubbles. Overfill joint slightly and shave flush to slab surface after the grinding process has been completed.

* + - 1. WIDE SPALLED JOINT REPAIR (GREATER THAN 3/4”)

 

* + - * 1. For joints that are spalled, contain metal key or self-leveling floor material that exceeds 3/4” in width at slab surface – see diagram above.

Saw cut the joint edge to a minimum depth of 1/2”with a dry-cut, vacuum-equipped shaver/leveler allowing removal of the widest spall or non-linear keyway along a given joint segment to produce a sharp corner on each side of the joint with a minimum of two passes through joint. Maintain consistent width of repair to within 1/2 inch in 10 feet.

Overfill repair cavity with overlay material per manufacturer’s instructions and grind flush to slab surface.

After repair has cured, and prior to any traffic on patched surface, saw cut slab joint(s) 3/4” in depth following original slab joint locations and fill full depth with Polyurea joint filler per manufacturer’s instructions.

* + - 1. CRACK REPAIR

 

* + - * 1. Crack width less than 1/32” without surface spalling – see diagram above.

Do not repair.

Grout coat may be used to fill thin hairline deficiencies.

* + - * 1. Cracks from 1/32” to 1/4” in width.

Clean crack cavity.

Remove loose concrete, dirt and debris from crack with a wire brush or hand grinder with twisted wire wheel attachment, 1/2” minimum depth, ensuring crack sidewall is clean.

Remove loose segments, including islands formed by crack, with sharp tool.

Use methods that will not widen existing crack.

Vacuum crack to remove all dirt, debris and other laitance.

Mask slab surface along crack as necessary to minimize overfill.

Choose material color that closely matches the adjacent floor.

Install low viscosity crack and spall repair material in accordance with manufacturer’s instructions.

Repeat until voids are filled and material crowns slab surface.

Do not flood area around crack.

Watch for bubble formation and out gassing.

Do not allow material to gel before adding additional material.

Shave or grind material flush to surface as stipulated by manufacturer.

* + - 1. SURFACE SPALLING REPAIR

 

* + - * 1. For slab surface that is chipped and spalled, where the deficiency is 1/2" in length or width up to 3” in length or width, by 1/2" in depth – see diagram above.

Route edge of spall to provide 1/8” deep square edge or 30° edge (consult manufacturer’s data sheet for specific surface preparation instructions).

Use small hand grinder with maximum 5” diameter dry diamond blade and vacuum system attachment.

Do not overcut slots into existing slab surface.

Clean and prep spalled cavity.

Wire brush spalled surface to remove all dirt and laitance.

Mask slab at perimeter of spall with tape.

Install Low Viscosity Crack and Spall Repair material.

Polish over repair area with diamond disks to blend surface.

Feather filler material into the adjacent concrete floor surface.

NOTE: For inconsistent, varying spalled joints that comply with the measurements in this section, a form material may be needed to temporarily form and support the vertical face of spalled joint edge. Ensure that the repair material will not adhere to the form and the rigid repair material does not fuse the joint together.

* + - 1. Surface embed Repair including Cleanouts, Electrical Outlets and Walker Duct Access Holes
				1. For cleanouts, in-floor electric outlets and Walker Duct access plates, over-core around perimeter of existing embed by 1/2" in width and depth, then install Low Viscosity Crack and Spall Repair Material.

* + - 1. BOLT HOLE, CONDUIT REPAIR
				1. For slab surfaces containing surface or sub-surface bolts, bolt-hole voids, conduit or subsurface conduit.

Recess steel bolt or conduit a minimum of 1/2” below finish floor by either punching or cutting.

Check with General Contractor prior to cutting into active electrical or communication conduit.

For spall fractured edges less than 30 degrees, square edge to a minimum 1/8” depth with either a drill bit, chisel, or edge grinder.

Clean cavity of all debris and laitance with drill activated brass wire wheel. Vacuum hole to remove all dirt, debris, and other laitance.

Dispense Low Viscosity Crack and Spall Repair at moderate pace using steady pressure. Dispense material into void, refilling as necessary to produce slight crown.

Grind material flush to slab surface per manufacturer’s instructions.

* + - 1. LARGE SURFACE REPAIR, UNDERLAYMENT REMOVAL AND REPLACEMENT
				1. For slab surfaces containing wide-area irregular rough surfaces greater than 3” in width and length such as irregular course aggregate surfaces or surfaces with existing tile or carpet underlayment’s > 1/4" in thickness or surface paste delaminations.

Define edge perimeter with diamond masonry wheel or shaver/leveler to produce sharp edge, at least 3/8” deep.

For delaminations test to determine the extent of the delaminated area. From the current edge extend repair 6” in all directions. Define a square or rectangular repair area and create an edge perimeter. Do not overcut into surrounding surface.

Roughen base surface using shaver/leveler to ICRI CSP 3 – 5 and vacuum clean.

Wire brush to remove any small loose material and vacuum again.

Mix and install overlay material in accordance with manufacturer’s instructions.

Place repair material in floor surface defect, float level or leave slightly proud of existing floor.

Grind, densify and polish to match adjacent concrete.

Re-establish original concrete slab joints by sawing completely through patch and re-filling with Polyurea joint filler prior to exposure to traffic.

* + - 1. Grout Coat Surface Enhancement including SMALL SURFACE PITTING, PINHOLE REPAIR

 

* + - * 1. For surfaces consisting of micro-deficiencies, pin holes, hairline cracks and other surface clutter that impedes the achievement of the specified overall gloss values

Clean pitted sections with 90-degree angle grinder equipped with wire wheel to remove all dirt/laitance. Wheel should be run over defect in multiple directions to ensure proper cleaning.

Vacuum prepared pitted sections.

Install and disperse Grout Coat Surface Enhancement Repair product in accordance with manufacturer’s directions.

Ensure a thin, uniform layer of repair material covers the pitted areas. Refill any low spots as needed.

Grind or polish flush with metal or resin-bond diamonds, ensuring repair material is flush with slab surface.

Repeat repairs in areas as required if repair material pulls out of defects.

Apply required applications and polish smooth to meet specified overall gloss values.

* + - 1. PROTECTION
				1. Protect surfaces of finished floor.
				2. Prohibit traffic until floor repairs have received final approval by Owner.

**WORKSHEET**

 AE to fill in first two blank columns
INTERIOR CONCRETE SLAB ENHANCEMENT, REPAIR, AND JOINT FILLER REPLACEMENT

*(To Be Turned in with Sub-Contractor’s Bid behind Form 4450-024, Page 2)*

|  |
| --- |
| ENTER TOTAL AREA TO BE POLISHED: \_\_\_\_\_\_\_\_\_\_\_\_\_ SQUARE FEET |
| **ITEM** | **AREA FROM ABOVE** | **MULTIPLIER** | **TOTAL FROM MULTIPLIER** | **UNIT RATE INCLUDED IN BID** | **TOTAL COST INCLUDED IN BID** |
| *….. SAMPLE CALCULATION ….. NOT PART OF BID …..* |
| *Joint Filler Removal & Replacement* | *36,000* | *0.14* | *5014 LF* | *$2.75 / LF* | *$13,788.50* |
|  *….. DO NOT INCLUDE SAMPLE CALCULATION COST IN BID …..* |
| 1. Joint Filler Removal & Replacement | [ \_\_\_\_\_\_\_ ] | 0.14 | [ \_\_\_\_\_\_\_ ] LF | $\_\_\_\_\_\_\_ / LF | $\_\_\_\_\_\_\_\_\_\_ |
| 2. Spalled joint repair or joint with metal keyway (less than 3/4”) | \_\_\_\_\_\_\_\_ | 0.08 | \_\_\_\_\_\_\_\_ LF | $\_\_\_\_\_\_\_ / LF | $\_\_\_\_\_\_\_\_\_\_ |
| 3. Spalled joint repair, joint with metal keyway or self-leveling compound removal (greater than 3/4”) |  |  |  | $\_\_\_\_\_\_\_ / LF |  |
| 4. Crack repair | \_\_\_\_\_\_\_\_ | 0.03 | \_\_\_\_\_\_\_\_ LF | $\_\_\_\_\_\_\_ / LF | $\_\_\_\_\_\_\_\_\_\_ |
| 5a. Surface defect repair, including pop-outs, spalls, & gouges 3/4 – 1-1/2” DIA | \_\_\_\_\_\_\_\_ | 0.025 | \_\_\_\_ UNITS | $\_\_\_\_\_\_\_ / EA | $\_\_\_\_\_\_\_\_\_\_ |
| 5b. Surface defect repair, including pop-outs, spalls, & gouges 1-1/2 – 3” DIA | \_\_\_\_\_\_\_\_ | 0.025 | \_\_\_\_ UNITS | $\_\_\_\_\_\_\_ / EA | $\_\_\_\_\_\_\_\_\_\_ |
| 6. Surface embed repair, including cleanouts, in-floor electrical outlets & Walker Duct access holes. | \_\_\_\_\_\_\_\_ | 0.001 | \_\_\_\_ UNITS | $\_\_\_\_\_\_\_ / EA | $\_\_\_\_\_\_\_\_\_\_ |
| 7. Large surface repair, existing underlayment removal & replacement with 1/4" Polished Overlay. |  |  |  | $\_\_\_\_\_\_\_ / SF |  |
| 8. Grout coat surface enhancement, including micro-pin holes, pitting & other shallow surface deficiencies | \_\_\_\_\_\_\_\_ | 0.10 | \_\_\_\_\_\_\_ SF | $\_\_\_\_\_\_\_ / SF | $\_\_\_\_\_\_\_\_\_\_ |
| 9. Full Grind and Polish portions of the project not currently included. |  |  |  | $\_\_\_\_\_\_\_ / SF |  |

Note: Quantities in worksheet above are based on assumptions made during design. Contractor is responsible to field verify all quantities of repair required. Notify Contracting Officer immediately if actual quantities vary from those in the worksheet above.

END OF SECTION