

START

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ENGINEERING CHANGE NOTICE

Page 1 of 8

1. ECN ~~XXXXXX~~ **131691**
Proj. ECN **B-714-83**

2. ECN Category (mark one) <input checked="" type="checkbox"/> Supplemental <input type="checkbox"/> Revision <input type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Supersedure <input type="checkbox"/> Discovery <input type="checkbox"/> Cancel/Void	3. Originator's Name, Organization, MSIN, and Telephone No. R.G. HOLLENBECK, KEH, E6-25, 6-1836		4. Date 03-19-91
	5. Project Title/No./Work Order No. SEE BLOCK 12	6. Bldg./Sys./Fac. No. 218-E-16	7. Impact Level 3
	8. Document Number Affected (include rev. and sheet no.) SEE BLOCK 12	9. Related ECN No(s). NONE	10. Related PO No. N/A

11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input type="checkbox"/> No (NA Blks. 11b, UNK 11c, 11d)	11b. Work Package Doc. No. UNKNOWN	11c. Complete Installation Work _____ Cog. Engineer Signature & Date	11d. Complete Restoration (Temp. ECN only) _____ Cog. Engineer Signature & Date
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12. Description of Change

Block 5: B-714, GROUT VAULT PAIR (218-E-16-102 & 103)(218-E-16-104 & 105)/ER8007

Block 8: SPECIFICATION B-714-C2, REV 1 (V-B714C2-003, REV 1)

1) SECTION 01400:
 A) CHANGE the following in subparagraph 1.3.1.4.a.1 to read:
 Section 09885 Protective Coating for Concrete Vault Interior (Except Depth Gauge Paint Material)
 B) ADD the following to subparagraph 1.3.1.4.a.2)
 Section 09885 Protective Coating for Concrete Vault Interior (Depth Gauge Paint Material Only)

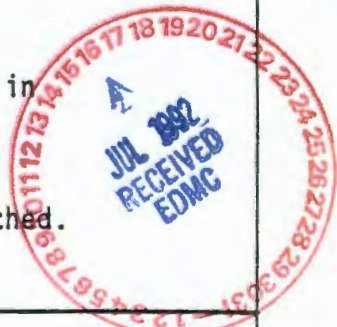
2) SECTION 01720: ADD subparagraph 1.4.6.21 as follows
 1.4.6.21 Surface acceptance: Provide documentation required in Section 09885, Paragraph 3.1.2.

3) SECTION 09885
 DELETE in its entirety and REPLACE with new Section 09885 attached. See pages 3 thru 8 of this ECN.

13a. Justification (mark one) <input type="checkbox"/> Criteria Change <input checked="" type="checkbox"/> Design Improvement <input type="checkbox"/> Environmental <input type="checkbox"/> As-Found <input type="checkbox"/> Facilitate Const. <input type="checkbox"/> Const. Error/Omission <input type="checkbox"/> Design Error/Omission	13b. Justification Details <p>New information received from coating vendor. The modified specification section reflects this new information. CHANGES MEET THE ORIGINAL DESIGN CRITERIA AND DO NOT IMPACT THE INTEGRITY OF THE FACILITY.</p>
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14. Distribution (include name, MSIN, and no. of copies)	RELEASE STAMP
<u>KEH DISTRIBUTION</u> Const Doc Cntl E2-50 Engrg Doc Cntl E6-52 <u>HC DISTRIBUTION</u> Project Files R1-28 S. R. Briggs(PE) R3-27 T. K. Cordray S1-54 STATION 10 A3-87 LUPE GARZA A3-80	OFFICIAL RELEASE BY WHC DATE APR 25 1991 STATION 12
J. K. Epperley S0-05 O. A. Halverson R3-09 J. S. Hill [2] H4-57 K. S. McCullough N1-83 D. B. Powell [4] R4-03 J. E. Vanbeek R3-27 DOE A. G. Lassila A5-18	

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ENGINEERING CHANGE NOTICE

15. Design Verification Required

Yes
 No

16. Cost Impact

ENGINEERING

Additional \$ 3780
Savings \$ _____

CONSTRUCTION

Additional \$ 15000
Savings \$ _____

17. Schedule Impact (days)

Improvement NA
Delay _____

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD <input type="checkbox"/> Functional Design Criteria <input type="checkbox"/> Operating Specification <input type="checkbox"/> Criticality Specification <input type="checkbox"/> Conceptual Design Report <input type="checkbox"/> Equipment Spec. <input type="checkbox"/> Const. Spec. <input type="checkbox"/> Procurement Spec. <input type="checkbox"/> Vendor Information <input type="checkbox"/> OM Manual <input type="checkbox"/> FSAR/SAR <input type="checkbox"/> Safety Equipment List <input type="checkbox"/> Radiation Work Permit <input type="checkbox"/> Environmental Impact Statement <input type="checkbox"/> Environmental Report <input type="checkbox"/> Environmental Permit <input type="checkbox"/>	Seismic/Stress Analysis <input type="checkbox"/> Stress/Design Report <input type="checkbox"/> Interface Control Drawing <input type="checkbox"/> Calibration Procedure <input type="checkbox"/> Installation Procedure <input type="checkbox"/> Maintenance Procedure <input type="checkbox"/> Engineering Procedure <input type="checkbox"/> Operating Instruction <input type="checkbox"/> Operating Procedure <input type="checkbox"/> Operational Safety Requirement <input type="checkbox"/> IEPD Drawing <input type="checkbox"/> Cell Arrangement Drawing <input type="checkbox"/> Essential Material Specification <input type="checkbox"/> Fac. Proc. Samp. Schedule <input type="checkbox"/> Inspection Plan <input type="checkbox"/> Inventory Adjustment Request <input type="checkbox"/>	Tank Calibration Manual <input type="checkbox"/> Health Physics Procedure <input type="checkbox"/> Spares Multiple Unit Listing <input type="checkbox"/> Test Procedures/Specification <input type="checkbox"/> Component Index <input type="checkbox"/> ASME Coded Item <input type="checkbox"/> Human Factor Consideration <input type="checkbox"/> Computer Software <input type="checkbox"/> Electric Circuit Schedule <input type="checkbox"/> ICRS Procedure <input type="checkbox"/> Process Control Manual/Plan <input type="checkbox"/> Process Flow Chart <input type="checkbox"/> Purchase Requisition <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/>
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19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
_____	_____	_____
_____	_____	_____
_____	_____	_____

20. Approvals

Signature	Date
<u>OPERATIONS AND ENGINEERING</u>	
Cog./Project Engineer <u>JR Dwyer</u>	<u>4/24/91</u>
Cog./Project Engr. Mgr. <u>JRS / JEV/DE</u>	<u>4/24/91</u>
QA <u>J. K. Carlsberg</u>	<u>4-24-91</u>
Safety _____	_____
Security _____	_____
Proj. Prog./Dept. Mgr. _____	_____
Def. React. Div. _____	_____
Chem. Proc. Div. _____	_____
Def. Wst. Mgmt. Div. _____	_____
Adv. React. Dev. Div. _____	_____
Proj. Dept. _____	_____
Environ. Div. _____	_____
IRM Dept. _____	_____
Facility Rep. (Ops) _____	_____
Other _____	_____

Signature	Date
<u>ARCHITECT-ENGINEER</u>	
PE <u>KC Bengard</u>	<u>4/23/91</u>
QA <u>D. W. ...</u>	<u>4-23-91</u>
Safety <u>D. ...</u>	<u>4-23-91</u>
Design <u>ENVIR: R. ...</u>	<u>4-23-91</u>
Other <u>SPECS: B. ...</u>	<u>4-23-91</u>
<u>PLE: ...</u>	<u>4/23/91</u>
<u>ENVIR: R. ...</u>	<u>4-23-91</u>

DEPARTMENT OF ENERGY

ADDITIONAL

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

SECTION 09885
PROTECTIVE COATING FOR
CONCRETE VAULT INTERIOR

PART 1 - GENERAL

1.1 REFERENCES

1.1.1 Reference Standards and Specifications: The following standards and specifications, including documents referenced therein, form part of this Section to extent designated herein.

1.1.1.1 American Society for Testing and Materials (ASTM)

D 4263-83	Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
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1.1.1.2 National Association of Corrosion Engineers (NACE)

NACE Standard RP0188-90	Standard Practice Discontinuity (Holiday) Testing of Protective Coatings
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1.1.1.3 Painting and Decorating Contractors of America (PDCA)

1984	Architectural Specification Manual
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1.2 SUBMITTALS: Refer to Section 01300 for submittal procedures.

1.2.1 List of Materials: Submit complete list of materials. List shall enumerate percentage of volatile and nonvolatile materials and percentage of component part of each type of material.

1.2.2 Certified Material Test Reports (CMTR): Submit materials test reports, certified by manufacturer of protective coating, which identify components and show chemical analysis and physical properties for each lot number used.

1.2.3 Samples: Submit standard container of coating material from each lot to be used on Project, for independent testing and comparison with CMTRs. Include date of manufacture and shelf life.

1.2.4 Certificates of Experience: Submit "Certificate of Experience" from substrate preparer and applicator in accordance with Paragraphs 1.3.1 and 1.3.2. Include list showing names, addresses and telephone numbers for complete projects.

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1.3 QUALITY ASSURANCE

1.3.1 Qualification of Substrate Preparer: Provide evidence of previous successful concrete substrate preparation for coating applications.

1.3.2 Qualification of Applicator: Provide evidence of previous successful sprayed-on-asphalt coating applications. Provide qualifications of key personnel including superintendent and foreman.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Deliver materials to site in manufacturer's unopened containers with labels intact. Do not open containers or remove labels until after inspection and acceptance by KEH.

1.4.2 Store materials in accordance with manufacturer's recommendations and in well ventilated area not exposed to excessive heat, sparks, flame or direct rays of sun.

1.5 PROJECT CONDITIONS

1.5.1 Environment for Coating

1.5.1.1 Minimum ambient and surface temperatures: 40°F.

1.5.1.2 Maximum surface temperature: 90°F.

1.5.1.3 Apply coatings only when temperatures are within the required range and ambient temperature is 5 F above dewpoint.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 Coating materials are products of Protective Coatings Department of Lion Oil Company, El Dorado, Arkansas. No substitutes allowed.

2.1.1.1 Primer: Nokorode 705M thinned at ratio of 1 to 1 with naphtha or mineral spirits.

2.1.1.2 Finish Coating: Nokorode 705M.

2.1.2 Furnish material identified in PDCA Architectural Specification Manual, Chapter 5 for system scheduled in Paragraph 3.6.2.

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PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Examine surfaces scheduled to receive coating for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into acceptable condition through preparatory work included in Article 3.2.

3.1.2 Report in writing to KEH conditions that may potentially affect proper application of coatings. Do not commence coating application until defects have been corrected and conditions are made suitable to manufacturer and applicator. Provide written documentation signed by manufacturer and applicator stating that surfaces to receive coatings have been examined and found to be acceptable for application.

3.2 PREPARATION

3.2.1 General

3.2.1.1 Allow concrete to cure 21 days minimum and concrete repairs 7 days minimum before preparing surface.

3.2.1.2 Before application, sweep and dust surfaces to receive coating.

3.2.2 Pre-Priming

3.2.2.1 Prepare floors with light sandblast to remove all laitance, oil, stains, dust and other foreign material.

3.2.2.2 Prepare walls by removing surface until dry, clean, contaminant-free, sound, open pore, exposed-aggregate concrete is obtained by using 1 of the following methods. Remove spalled concrete.

- a. Scabbling machine: Hammer type.
- b. Steel shot, for horizontal surfaces only: Wheelabrator-Frye Blastrac type. Ensure no shot remains.
- c. Sandblasting.
- d. Very high pressure water/sandblasting: Use clean, fresh water and dry blasting silica, maximum particle passing 16 mesh screen, at pressure sufficient to achieve specified surface.
- e. Ultra high pressure waterblasting: Use clean fresh water at highest pressure necessary to achieve specified surface.

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3.2.2.3 Remove dust and debris from concrete pores with clean, dry, oil-free compressed air or adequately powered, heavy duty industrial vacuum.

3.2.2.4 Before applying primer, test concrete for presence of moisture in accordance with ASTM D 4263. Perform 1 test on upper 10 feet of each inside wall and 1 test on floor. Do not apply coating until tests indicate absence of moisture. Surfaces that have been subjected to standing water after testing shall be retested.

3.2.3 Post Priming

3.2.3.1 Feather abrasions, chips, skips and holidays occurring in prime coat by sanding and recoat.

3.2.3.2 Protect coating from moisture until dry to touch.

3.2.4 Protection: Provide and install dropcloth shields and other protective devices required to protect surfaces adjacent to areas being coated. Keep spatter, smears, droppings and over-run of coating materials to minimum and remove as coating work progresses.

3.3. APPLICATION

3.3.1 Mix components as recommended by manufacturer.

3.3.2 Do not apply materials when excessive wind, blowing dust, or rain is imminent.

3.3.3 Minimum temperature of coating material: 60°F

3.3.4 Maximum temperature of coating material: 90°F

3.3.5 Apply coating materials in accordance with Article 3.6 of this section, manufacturer's recommendations and the following.

3.3.5.1 Use equipment recommended by manufacturer.

3.3.5.2 Apply isopropyl alcohol to areas listed below with rags or rollers in accordance with manufacturers recommendations. Alcohol application is required only if material is dry to touch.

a. Edges of coated surfaces before continuing application on adjacent areas.

b. Coated surfaces before applying additional coats.

3.3.5.3 Apply an additional coating on upper 4 feet of vertical surfaces.

3.3.5.4 Allow finish coat to cure dry to touch before repairing.

3.3.5.5 Protect coated surfaces from dust and other foreign materials while curing.

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3.3.5.6 Protect coating from moisture until dry to touch.

3.3.6 Apply depth gage marking paint in accordance with manufacturers directions, PDCA Architectural Specification Manual, and this Section. Apply at locations shown on the drawings.

3.3.7 Repairs:

3.3.7.1 Lightly scratch area with wire brush or apply isopropyl alcohol in accordance with manufacturers recommendations.

3.3.7.2 Apply additional coat over damaged or defective area.

3.3.8 Perform hydrotest specified in Section 03301 after completion of electrical holiday testing in paragraph 3.4.1.2.

3.4 FIELD QUALITY CONTROL

3.4.1 Testing

3.4.1.1 Test for wet film thickness as required to meet specified depth and where directed by KEH.

3.4.1.2 After coating and any repairs have cured for 72 hours test entire surface for pinholes using an electrical holiday detector. Perform test in accordance with NACE Standard RP0188 using voltage setting in table 1 unless otherwise recommended by coating manufacturer. Repair holidays in accordance with paragraph 3.3.7 or as additionally directed by KEH.

3.4.1.3 Retest bottom 10 feet of walls and entire floor coating with holiday detector after acceptable completion of hydrotest.

3.4.1.4 During application of coating, spray test coupon using same equipment and methods as for vault. KEH will provide paper for coupons. Apply coating to steel plates provided by KEH for bond strength tests. Spray and deliver 1 coupon and 2 sets of coated steel plates to KEH for each day application is in progress.

3.4.2 Inspection: KEH will witness application and perform tests to ascertain that coating materials have been applied in accordance with this Section.

3.5 CLEANING

3.5.1 Furnish and maintain at site, closed metal containers for disposal of waste materials. Place materials spotted or soaked with coating, oil or solvents in containers. Remove contents of containers from site daily.

3.5.2 Spray equipment shall be thoroughly cleaned after each use and shall contain no oils, thinners or other residue after such cleaning.

3.5.3 Remove empty cans from site at end of each shift.

3.5.4 At completion of coating work, remove materials, containers, rags, cloths, brushes, and other equipment from site. Clean up spills.

3.6 COATING SCHEDULE

		<u>Approximate Rate</u>	<u>Min Wet Film Thickness</u>	<u>Min Dry Film Thickness</u>
3.6.1	Concrete			
	a. Vertical surfaces			
	Prime: Nokorode 705M, thinned	0.5-0.75 gal/ 100 ft ²	Uniform Cover	
	Second: Nokorode 705M	2.0 gal/ 100 ft ²	30 mils	26 mils
	Finish: Nokorode 705M	2.0 gal/ 100 ft ²	30 mils	26 mils
	Additional: Nokorode 705M (top 4 feet)	2.0 gal/ 100 ft ²	30 mils	26 mils
	b. Horizontal surfaces			
	Prime: Nokorode 705M, thinned	0.5-0.75 gal/ 100 ft ²	Uniform Cover	
	Finish: Nokorode 705M	4.0 gal/ 100 ft ²	60 mils	52 mils
	c. Option for vertical surfaces			
	Prime: Nokorode 705M, thinned	0.5-0.75 gal/ 100 ft ²	Uniform Cover	
	Finish: Nokorode 705M	4.0 gal/ 100 ft ²	60 mils	52 mils
	Additional: Nokorode 705M (top 4 feet)	2.0 gal/ 100 ft ²	30 mils	26 mils

3.6.2 Depth Gage Markings: Ext 9-A as specified in PDCA Architectural Specification Manual, Premium Grade, Gloss white.

END OF SECTION

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