

JOB 35-1195

COMANCHE PEAK STEAM ELECTRIC STATION

Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 6

Notice applicable to Construction Procedure No. 35-1195- CCP-40 Rev. 5

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Please replace the following pages with the attached:

ATTACHMENT 5; Special Coating Procedure C-1 Rev. 1

Pages 1 through 5

Reviewed by:

Mark Wells 10/14/83
Originator Date

N/A Teresa Hamata 10/14/83
Brown & Root Quality Assurance Date

Approved by:

[Signature] 10/14/83
TUGCO Quality Assurance Date

OC. [Signature] 10/14/83
Construction Project Manager Date

October 14, 1983
Effective Date



JOB 35-1195

COMANCHE PEAK STEAM ELECTRIC STATION

Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 5

Notice applicable to Construction Procedure No. 35-1195- CCP-40 Rev. 5.

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Please replace the following page(s) with the attached:

Page 7 of 13

Reviewed by:

Mark Wells 8/19/83
Originator Date

N/A 8/17/83
Brown & Root Quality Assurance Date

Approved by:

[Signature] 8/20/83
TUGCO Quality Assurance Date

[Signature] 8-20-83
Construction Project Manager Date

August 30, 1983
Effective Date

JOB 35-1195

COMANCHE PEAK STEAM ELECTRIC STATION

Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 4

Notice applicable to Construction Procedure No. 35-1195- CCP-40 Rev. 5

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Please replace the following page(s) with the attached:

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Reviewed by:

Mark Wells 8/16/83
Originator Date

U/A Tugco 8/16/83
Brown & Root Quality Assurance Date

Approved by:

[Signature] 8/16/83
TUGCO Quality Assurance Date
FOR TUGCO

[Signature] 8-16-83
Construction Project Manager Date

August 17, 1983
Effective Date



JOB 35-1195
Comanche Peak Steam Electric Station

Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 3

This notice applies to Construction Procedure No. 35-1195- CCP-40 Revision 5.

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Replace the following pages with the attached:

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Page 4 of 13
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Add pages:

Page 13a of 13
ATTACHMENT 4
Page 1 of 2
Page 2 of 2
ATTACHMENT 5
Page 1 of 5
Page 2 of 5
Page 3 of 5
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Page 5 of 5

Reviewed by:

Mark Wells 3/29/93
Originator Date

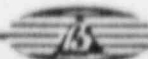
W. E. Pappas 3-29-83
Brown & Root Quality Assurance Date

Approved by:

Reviewed by: C. T. Pappas 6/24/83
TUGCO Quality Assurance Date

D. C. Zuckerman 6-24-83
Construction Project Manager Date

June 24, 1983
Effective Date



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Comanche Peak Steam Electric Station

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Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 2

This notice applies to Construction Procedure No. 35-1195- CCP-40 Revision 5.

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Replace the following pages with the attached:

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Reviewed by:

Mark Wells 2-17-83
Originator Date

N/A Robert M. Expend 2-17-83
Brown & Root Quality Assurance Date

Reviewed by:

M. C. T. R... 2/28/83
TUGCO Quality Assurance Date

Approved by:

F. C. 2... 3-3-83
Construction Project Manager Date

March 4, 1983
Effective Date



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Comanche Peak Steam Electric Station

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Construction Procedure
DOCUMENT CHANGE NOTICE NUMBER 1

This notice applies to Construction Procedure No. 35-1195-CCP-40 Revision 5.

This change will be incorporated in the next revision of the procedure.

Change the procedure as follows:

Replace the following pages with the attached:

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Reason for change: Additional requirements.

Reviewed by:

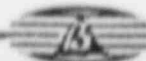
Mark Wells 1-5-83 Mark Wells 1-5-83
Originator Date Brown & Root Quality Assurance Date

Reviewed by:

C.T. King 1-10-83
TUGCO Quality Assurance Date

Approved by:

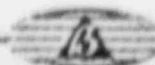
D. T. King 1-11-83 1/11/83
Construction Project Manager Date Effective Date



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| TITLE: PROTECTIVE COATING OF CONCRETE SURFACES ccn#1 ccn#2 #3 #4 #5 #6 | | ORIGINATOR: <u>Mark Wells</u> <u>8/11/82</u> DATE REVIEWED BY: <u>NR Barth. Exe</u> <u>8-12-82</u> DATE <u>TRGCS QA</u> <u>8/13/82</u> DATE APPROVED BY: <u>DO Z...</u> <u>8-17-82</u> CONSTRUCTION PROJECT MANAGER DATE | | | |
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| 1.0 | <u>INTRODUCTION</u> | | | | |
| 1.1 | PURPOSE | | | | |
| 1.1.1 | The purpose of this procedure is to establish the methods by which the surfacer and finish coats are to be applied to concrete surfaces in accordance with specification, drawing, and manufacturer's requirements. | | | | |
| 1.2 | SCOPE | | | | |
| 1.2.1 | The scope of this procedure covers the surface preparation and coating of cementitious surfaces inside the reactor building and radiation area as delineated by Reference 1. | | | | |
| 1.3 | GENERAL DISCUSSION | | | | |
| 1.3.1 | All coating materials addressed by this procedure shall be as manufactured by Imperial Professional Coating of New Orleans, Louisiana. The coating system will consist of a surfacer coat of NUTEC #11S, touch-up with NUTEC #11S or NUTEC #11, and a finish coat of NUTEC #1201. In order to prevent finish coat damage, the finish coat will normally be applied as close as possible to turn-over of the area to the owner or as required due to the setting of equipment or other items which would make an area inaccessible. Any permanent equipment located in the area to be coated will be adequately protected from contamination caused by surface preparation or coating application. | | | | |
| 2.0 | <u>DEFINITIONS OF TERMS, ABBREVIATIONS AND SYMBOLS</u> | | | | |
| 2.1 | TERMS | | | | |
| 2.1.1 | Substrate - The uncoated surface to which a coating is applied. | | | | |
| 2.1.2 | Pinhole - A minor discontinuity in the coating film which exposes the primer. | | | | |
| 2.2 | ABBREVIATIONS | | | | |
| 2.2.1 | (NONE) | | | | |
| 2.3 | SYMBOLS | | | | |
| 2.3.1 | (NONE) | | | | |



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3.0 SPECIAL ITEMS AND OPERATIONS

3.1 QUALIFICATION OF PERSONNEL

3.1.1 Coating Application Personnel shall be qualified per previous experience and/or demonstrated ability. In addition, each applicator shall have been certified by the Paint Dept. Superintendent or his representative per technical data and demonstrated ability. Application procedures shall be in compliance with this procedure. This shall be verified by completing a form similar to Attachment 1 which will be executed by the B&R Paint Superintendent or his representative. A coating manufacturer's representative will be available for technical supervision upon initial painting effort.

3.2 SAFETY REQUIREMENTS

3.2.1 All appropriate health, safety, and fire protection requirements pertaining to surface preparation and coating application shall be followed. It shall be the responsibility of the Safety Department representative who will be present to randomly monitor safety during coating application.

3.3 INSTRUMENTS AND THEIR USE

3.3.1 The Painting Foreman and General Foreman shall have access to and be familiar with the use of thermometers, wet film gauges, and psychrometers for measuring relative humidity. Viscosity measuring devices will not be used. Wet film gauges will be randomly used during coating application; readings will be limited to the minimum necessary to control coating thickness.

3.4 DOCUMENTATION

3.4.1 Records shall be maintained on Attachment 1 and 4 listed in Section 5.1. After completion, each form shall be forwarded to The Brown & Root Document Control Center for filing and distribution to the various parties as listed on the distribution list.



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| 3.5 | RECEIVING, STORAGE AND DISPENSING OF COATING MATERIALS | | | |
| 3.5.1 | Receiving and Storage | | | |
| 3.5.1.1 | <p>Upon receipt of a shipment of coating materials, the B&R QC Representative accepting shipment shall be responsible for completing all necessary receiving inspection documentation. General receiving procedures shall be in accordance with Brown & Root Construction Procedure CP-CPM 8.1. It shall then be segregated from "Non-Q" materials and stored in the Paint Storage Building where temperatures will be maintained between 40°F and 100°F. Rises in air temperature up to 120°F is acceptable for as long as fourteen days. (Accumulative). Infrequent dips (for periods not to exceed 24 hours) in air temperature in storage areas as low as 33°F is acceptable; however, prior to application the coatings shall be brought back into the 50° - 90° range. Temporary storage may be required at the Receiving Warehouse due to receiving or other problems.</p> | | | |
| 3.5.2 | Dispensing | | | |
| 3.5.2.1 | <p>When coating materials are needed in the field, it shall be transferred from the controlled area to a designated temporary storage area or area of intended use in the field. Due to limited shelf-life of coating materials, this shall be done on a "first-in" "first out" basis. After materials have been partially used from an individual container, the said container cannot be resealed and returned to "Q" storage area for later use. Containers opened and partially distributed from the "Q" paint storage area may be resealed and the remaining contents used for "Q" painting. Except for thinners, the contents from partially used containers shall not be reused after a period of 7 days has elapsed from date of initial opening.</p> | | | |
| 3.6 | Special Coating Procedure | | | |
| 3.6.1 | <p>When items require special coating not covered under the content of this procedure, Attachment 4 shall be completed by the Protective Coatings engineer and transmitted to painting superintendent for construction. Special coatings procedures issued via Attachment 4 shall be attached to this procedure after completion.</p> | | | |
| 3.6.2 | <p>Special Coating Procedures added by Attachment 4 shall receive a unique identification number issued in sequence beginning with C-1. The scope of the procedure shall describe the working limits of the special procedure with pertinent storage and coating requirements listed under the requirements section. The approvals section shall have the signatures of the Project Civil Engineer, TUGCo QA Manager if safety related, Originator, and the Construction Project Manager. Each procedure shall exhibit the revision number and issue date.</p> | | | |



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4.0 PROCEDURE

4.1 PREPARATION OF SUBSTRATES AND COATING MATERIALS

4.1.1 Preparation of Surfacers

4.1.1.1 Normal surface preparation shall consist of water blasting with 4,000 P.S.I. to 10,000 P.S.I. Additionally, surface preparation may be accomplished by the use of approximately 2,500 P.S.I. water blasting with sand injection, acid etching with an Imperial recommended solution, or straight sand blasting. Any heavy oil or grease deposits shall be removed by steam cleaning, trisodium phosphate washing with a mixture of 3-6 pounds T.S.P. per gallon of water, or use of an Imperial recommended detergent.

Following surface preparation, the surface shall be free of construction dust, laitance, and loose deposits. If cleaning does not remove oil and grease, the contaminated concrete surface will be chipped away and patched before coating. All T.S.P. cleaned areas will be flushed with clean water. Holes or voids in the concrete surface that exceed 1/2" in depth shall be repaired with dry-pack or epoxy grout. Detrimental surface irregularities such as projections, fins, or ridges shall be reduced by bush-hammering, power grinding, or stoning. Wood particles of "fuzz" remaining after water blasting is acceptable. Recommended surface preparation shall include power tools which are capable of removing laitance and curing membranes from concrete surfaces.

4.1.1.2 Markings on concrete - Before application of 11S, 11 or 1201, all markings (ink, pencil, chalk, or felt tip markers) on wall and floors shall be solvent wiped in accordance with SSPC-SP-1 using DL-6A or commercially available MEK or Xylol. Marking paint (surveyor marks) shall be removed by solvent wiping, water blasting, sandblasting, or power tool cleaning. Discolored coatings due to aging or stains shall be abraded and solvent wiped to remove the discoloration. Residual marking or discoloration remaining in pores below the plane of the surface is acceptable.

4.1.1.3 Repair of embedded foreign objects - Embedded foreign objects such as nails, rebar chairs, bolts, wood, or plastic shall be repaired per the following guidelines before application of NUTEC 11S surfacer.

1. Objects protruding from the surface shall be ground or cut smooth until the object is flush with the concrete surface prior to application of 11S.
2. If the object is loosely adhered in the concrete, it shall be removed (in case of wood splinters or wood "fuzz" an attempt shall be made to remove by high pressure water blasting). Refer to section 4.1.1.1.

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4. Metal objects larger than four square inches shall be coated with an inorganic zinc primer in accordance with CCP-30.

5. Objects which are recessed to a depth greater than 1/2" shall be repaired using a "dry pack" or epoxy grout.

4.1.1.4 Surface appearance - Surface smoothness or "glossy" appearance in concrete will not be detrimental to the performance of NUTEC 11S providing the surface is free of water, oil, grease, laitance, efflorescence, deleterious curing membranes, or other contaminants as outlined in this procedure. If NUTEC 10 curing membrane is present with thickness sufficient to give a glossy appearance, the surface shall be abraded to "roughen" the NUTEC 10 prior to application of 11S surfacer.

4.2 PREPARATION OF COATING MATERIALS

4.2.1 Surface Coat

4.2.1.1 The surfacer, NUTEC #11S, is packaged, in a three component kit consisting of a base, curing agent, and filler. The base and curing agent shall be thoroughly mixed first. If necessary, box the mixture to assure that all the base and cure has been used. The filler shall then be slowly added under constant agitation and mixed until a smooth blend is achieved. The patching material, NUTEC #11, is prepared the same way. Partial mixes for NUTEC #11S shall be in accordance with Attachment 2.

4.2.2 Finish Coat

4.2.2.1 The finish coat, NUTEC #1201, is a two component epoxy topcoat consisting of a base and cure. These shall be thoroughly mixed under constant agitation until a homogenous blend is achieved. Partial mixes of NUTEC #1201 shall be in accordance with Attachment 3. Minimum induction times shall be as follows:

TEMPERATURE °F

50-59
60-69
70-79
80-90
91-100

INDUCTION TIMES

45 min.
30 min.
20 min.
10 min.
NONE



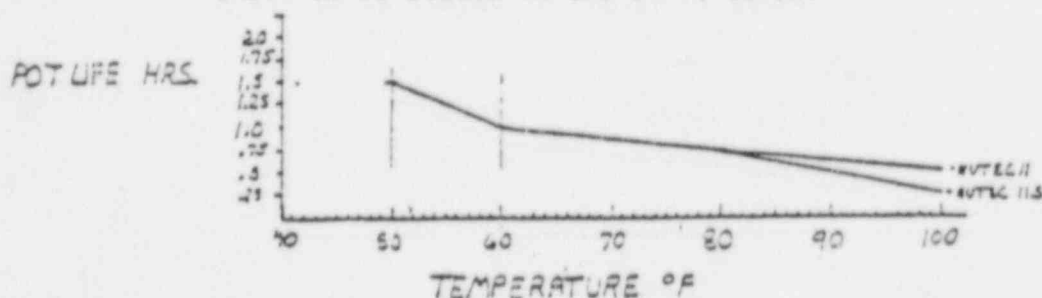
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4.3 APPLICATION OF SURFACER & FINISH COATING

4.3.1 'Surfacer Coat

4.3.1.1 Coating material shall be applied using a bottom feed conventional pressure pot-mastic gun arrangement. To facilitate application on areas such as floors and for repair work, trowel, squeegee or float application without the use of the mastic arrangement may be used. Under normal conditions, the concrete surface shall be allowed to cure a minimum of 28 days prior to application of protective coatings. However, if the coatings are to be applied to pour backs, grouting, or patching to which NUTEC 10 has been applied as a curing compound, coating may be performed after a minimum of 6 days has elapsed from NUTEC 10 application time. Abandoned hilti bolt holes, tie holes, and spalled concrete as defined in CEI-20 and patched per CCP-12 and grout under base plates which have 3 square feet or less of exposed grouted surface to be coated, may be coated after 48 hours cure. Material shall be applied until the concrete surface is completely covered, with extra material being added to large holes or depressions. A single blade rubber squeegee is then used to smooth out the material. Care shall be taken to eliminate as many pinholes as possible by use of a back and forth motion. Application parameters shall be as follows:

1. Minimum and maximum values of surface and ambient temperatures shall be between 50°F and 100°F. Infrequent dips in temperature to 40°F is permissible during application and/or cure; however, the elapsed time the temperature is below 50°F shall be added to the cure time. Application of the coating shall not begin unless the surface temperature is 5°F above the dew point. Pot life shall be as stated in the chart below.



2. Humidity may vary as high as 100%; however, free standing water shall be removed. Coating application over a damp surface is permissible. Under no condition shall NUTEC 11S be applied to a surface containing free standing water. Free standing water may be identified by:

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- a. Reduced viscosity of 11S during application, and excessive sagging from bug holes.
 - b. Wet rings around bug holes.
 - c. Failure of 11S to adhere to the substrate during the squeegeeing or trowelling process.
 - d. Visible signs of surface water.
 - e. Running hand over the surface resulting in moisture on the hand.
 - f. Product instability resulting in white streaks.
3. Thickness of surface for level 1 service may vary between 10 and 35 mils, depending on the surface roughness. For areas other than level 1, the recommended dry film thicknesses for surfacer is 10-60 mils.

4. Tack free times shall be as follows:

| <u>TEMPERATURE °F</u> | <u>#11</u> | <u>#11S</u> |
|-----------------------|------------|-------------|
| 50-59 | 6 hrs. | 8 hrs. |
| 60-79 | 4 hrs. | 6 hrs. |
| 80-99 | 2 hrs. | 4 hrs. |
| 100 | 1 hr. | 2 hrs. |

5. Curing time shall be as follows:

| <u>TEMPERATURE °F</u> | <u>CURING TIME BEFORE TOPCOATING WITH 1201</u> |
|-----------------------|--|
| 50-59 | 72 hrs. |
| 60-69 | 48 hrs. |
| 70-79 | 24 hrs. |
| 80-89 | 18 hrs. |
| 90-100 | 12 hrs. |



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TEMPERATURE °F

FULL CURE 11, 11S

| | |
|--------|---------|
| 50-59 | 10 days |
| 60-69 | 8 days |
| 70-79 | 7 days |
| 80-89 | 6 days |
| 90-100 | 5 days |

No appreciable cure takes place below 50°F, therefore, maintain area coated above 50°F. Infrequent dips in temperature to 40°F is permissible; however, duration below 50°F shall be added to cure time.

6. NUTEC 11S may be recoated with #11 or #11S as soon as the initial coat has dried such that the paint shall not adhere to the thumb when downward pressure is exerted on the paint film while turning a 90° angle. (this does not refer to a two pass application method). Dry time will vary with film thickness. At thicknesses greater than 35 mils, a minimum of 24 hours shall be allowed prior to applying a full coat of NUTEC 11.
7. NUTEC 11S may be touched up with #11S or #11 as soon as it has set to touch. #11S and #11 may be subjected to personnel foot traffic after 24 hours cure and lay down of material after full cure.
8. Thinning of #11S is not normally required; however, at lower temperatures, it is permissible to thin up to 5% by volume with Imperial's DL-54 thinner.

4.3.1.2 Imperial coatings may be applied in the following sequential order: #11S/1201/11S/1201 or 11S/1201/11/1201. Millage requirements per coat are as follows:

Service Level 1

| | |
|------------|------------|
| NUTEC 11S | 10-35 Mils |
| NUTEC 11 | 3-20 Mils |
| NUTEC 1201 | 3-16 Mils |

Areas other than Service Level 1

| | |
|------------|------------|
| NUTEC 11S | 10-60 Mils |
| NUTEC 11 | 3-20 Mils |
| NUTEC 1201 | 3-16 Mils |

4.3.1.3 Repair and recoating of NUTEC 11S - Remove all loose coating and concrete by sanding or wire brushing and feather edge adjacent to the coating. The area shall then be blown off with compressed air, washed with water or DL-54 thinner (Non-Q) and coated with NUTEC 11S or NUTEC 11 until the desired film thickness is achieved.



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| 4.3.1.4 | <p>Repair of Pinholes, blowholes, or overworked areas - Remove any contaminants by compressed air or compressed solvent. Apply NUTEK 11 to the defective area and work into the area. NUTEK #11S surfacer may be applied by spraying mist of Imperial DL-54 thinner on the surface. After its application, by using a brush or roller, solvent can be worked over the surface to remove the film, thus eliminating the defects due to the 11S.</p> | | | | |
| 4.3.1.5 | <p>Mudcracking - Area shall be repaired by means of grinding, sanding, or wire brush. The area will then be ground down with compressed air and then wiped with DL-54 thinner.</p> | | | | |
| 4.3.1.6 | <p>Repair of Sags and Runs - Inside containment, runs or sags shall be abraded down to adjoining thickness. Outside containment, if coating is sound, sags and runs will not be repaired.</p> | | | | |
| 4.3.1.7 | <p>Repair of Embedded Foreign Particles - Embedded foreign particles shall be removed by abrading. In pinholes and discontinuities exist, then area shall be repaired in accordance with Section 4.3.1.4.</p> | | | | |
| 4.3.1.8 | <p>Treatment of Rust Stains - Remove residue, though not necessarily the stain, with bristle brush and water or Imperial Thinner #DL-54.</p> | | | | |
| 4.3.1.9 | <p>Treatment of Interfaces with Other Coatings - Interfaces with projecting coated items shall be constructed by abutting the 11S up to the projecting item. Interfaces with flush mounted coated items shall be constructed by feathering the 11S into the coated item.</p> | | | | |
| 4.3.1.10 | <p>Repair of Scorched Areas - If the concrete is not damaged, scorched areas shall be repaired by abrading the surface until the discolored area is removed. Visual inspection of the area shall be conducted to assure the area is acceptable. The area should then be coated with 11 or 11S as appropriate.</p> | | | | |
| 4.3.1.11 | <p>Coating of Expansion Joints - Expansion joints will not be coated. Coatings will be feathered back at the edges.</p> | | | | |
| 4.3.1.12 | <p>Repair of Scratches and Similar Damage - Any scratches or damaged areas shall be abraded by hand or mechanical methods until loosely adherent particles are removed. If the damaged area extends to concrete and is $\frac{1}{4}$" or less in diameter additional surfacer need not be applied. If the damage extending to concrete substrate is greater than $\frac{1}{4}$" in diameter but 2 sq. inches or less in area, the area may be repaired with 11 or 11S for surfacer prior to topcoating. Damages involving areas larger than that stated above shall be repaired with normal coating system.</p> | | | | |

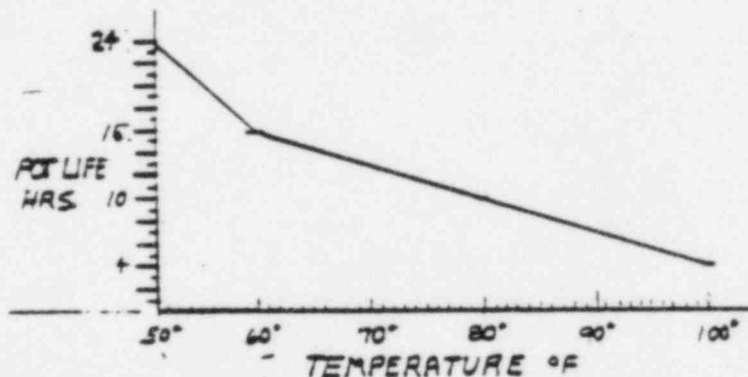


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4.3.2 Finish

4.3.2.1 Finish coat shall be applied by brush, roller, conventional or airless spray methods. If brush or roller application is used, care must be taken to ensure a smooth uniform finish surface. The material shall be allowed to become "tack free" before any other construction operations proceed which could create contamination by dust or other foreign matter. Pinhole criteria shall be in accordance with NACE T-6F-3, condition "B". Any runs or sags having a detrimental effect on the coating system shall be removed and repaired. The following application parameters shall govern:

1. The permissible range of surface and ambient temperature shall be between 50°F and 100°F. Infrequent dips in temperature to 40°F is permissible during application and/or cure; however, the elapsed time the temperature is below 50°F shall be deducted from the cure time. Application shall not begin unless the surface temperature is at least 5°F above the dew point. If increased workability is desired, Reactic #1201 may be thinned up to 30% by volume with Imperial DL-6A thinner. It is normally advisable to use more thinner at lower temperatures and when using conventional spray equipment.



2. Thickness of 1201 topcoat for Service Level 1 and Service Level II areas shall be as specified in Section 4.3.1.2.
3. Coating materials shall be applied as a heavy, wet coat in even, parallel passes, overlapping each pass approximately 50%.



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4. Recoating time of NUTEC #1201 is 24 hours.

5. Tack free time is as follows:

| TEMPERATURE °F | TACK FREE TIME |
|----------------|----------------|
| 50 | 8 hrs. |
| 60 | 4 hrs. |
| 80 | 2 hrs. |
| 100 | 1 hr. |

6. Full cure time is as follows:

| TEMPERATURE °F | FULL CURE TIME |
|----------------|----------------|
| 50-59 | 11 days |
| 60-79 | 8 days |
| 80-99 | 7 days |
| 100 | 5 days |

#1201 may be subjected to personnel foot traffic after 24 hours at or above surface temperature of 80°F. At temperature durations below 50°F little or no curing will take place, therefore, after coating, maintain temperature above 50°F.

- 4.3.2.2 Repair of Runs and Sags - Runs or sags showing evidence of cracking must be removed. Runs or sags inside Service Level I areas which exhibit no other coating defects, shall be abraded to the thickness of adjoining coating. Runs or sags outside Service Level I areas which exhibit no other coating defect need not be removed.
- 4.3.2.3 Repair of Embedded Foreign Particles - Embedded foreign particles shall be removed by abrading. The area shall then be given a light overcoat of #1201. Any loose particles shall be removed by brushing, vacuum, or compressed air.
- 4.3.2.4 Repair of Pinholes and Discontinuities - Any loose particles shall be removed by brushing, vacuum or compressed air. The pinholes and discontinuities shall then be repaired by use of a brush or squeegee. Pinholes and small discontinuities may be repaired at time of final inspection without a later reinspection of the repair. If the repaired coating will be subjected to a high moisture environment after placement into service, the placement into service shall not be made until full cure of the repair.
- 4.3.2.5 Repair of Scratches and Damaged Areas - Any scratches or damages areas shall be abraded by hand or power tool cleaning or spot blasting until loosely adherent particles are removed. If the damaged area extends to concrete substrate and is $\frac{1}{4}$ " or less in diameter, the damaged area may be coated with NUTEC #1201. If the damaged area extending to concrete substrate is greater than $\frac{1}{4}$ " in diameter by 2 sq. inches or less in an area, the area may be repaired with NUTEC #11 with a topcoat of



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| NUTEC #1201. Damaged areas to concrete substrate larger than the above values shall be repaired with the normal coating system. | | | | |
| 4.3.2.6 | Treatment of Rust Stains - If the topcoat surface is contaminated with rust stains, the area shall be cleaned by use of bristle brush and water or solvent wiping with Thinner DL-6A. Any remaining stains not acceptable from a cosmetic viewpoint will be covered by a light overcoat of NUTEC #1201. | | | |
| 4.4 | FINAL ACCEPTANCE TESTING | | | |
| 4.4.1 | Full cure of the coating system shall be maintained prior to testing and/or inspection for other than visual inspection. Final acceptance inspection may be performed, when visual inspection only is required, after topcoat has cured per paragraph 4.3.2.1(4). | | | |
| | After final inspection, and resolution of all discrepancies are completed, the QC Inspector shall document the final acceptance by completing and signing the Final Acceptance Record and will transmit a copy of this record to the B&R Paint Superintendent as soon as possible after final acceptance is made. | | | |
| 4.5 | HOLD POINTS | | | |
| 4.5.1 | On-site receipt of coating material. | | | |
| 4.5.2 | Substrates before preparation if blasting or bush hammering is to be utilized and following all methods of preparation. | | | |
| 4.5.3 | Mixing and preparation of coating material for application. | | | |
| 4.5.4 | Film characteristics after drying and curing. | | | |
| 4.5.5 | Control of ambient conditions and surface temperatures during all phases of the coating work. | | | |
| 5.0 | <u>SUPPORTING INFORMATION</u> | | | |
| 5.1 | ATTACHMENTS | | | |
| | <ol style="list-style-type: none"> 1. Painter Qualification Record 2. Table for Partial Mixes of NUTEC 11S 3. Table for Partial Mixes of NUTEC #1201 4. Special Coating Procedure 5. Special Coating Procedure C-1 | | | |



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5.2

REFERENCES

1. Gibbs & Hill Specification 2323-AS-31, "Protective Coating"
Latest Revision
2. Steel Structures Paint Council, Vol.2, Second Edition
3. Imperial Data Sheet NUTEC #11S and NUTEC #1201, Dated 7/77
4. NACE Publication T-6F-3



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ATTACHMENT 1

Painter Qualification Record

GENERAL DATA

Date _____ Report Number _____

TECHNICAL DATA

Name of Painter _____

Summary of Field Experience _____

Experience with Following Product Types _____

Application Test for Specified Substrate _____

Additional Qualifications (School) _____

Signature _____

Applicator's Field Supervisor

Distribution: Painting Supt.
QC Department
TUGCO QA Vault (Original)



| | | | | |
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ATTACHMENT 3

TABLE FOR PARTIAL MIXES OF NUTEC #1201

| | | Base | | Cure | | Maximum Permissible Thinner | |
|------|------|------|------|------|------|-----------------------------------|------|
| Gal. | Qts. | lbs. | oz. | lbs. | oz. | qts. | oz. |
| 0 | 1 | 2 | 96 | 0 | 6.4 | 0 | 9.6 |
| 0 | 2 | 5 | 3.2 | 0 | 12.8 | 0 | 19.2 |
| 0 | 3 | 5 | 14.4 | 1 | 3.2 | 0 | 23.3 |
| 1 | 0 | 10 | 8 | 1 | 8 | 1 | 6.4 |
| 1 | 1 | 13 | 1.6 | 1 | 14.4 | 1 | 16 |
| 1 | 2 | 15 | 11.2 | 2 | 4.8 | 1 | 25.6 |
| 1 | 3 | 18 | 4.8 | 2 | 11.2 | 2 | 3.2 |
| 2 | 0 | 20 | 14.4 | 3 | 1.6 | 2 | 12.3 |
| 2 | 1 | 23 | 3 | 3 | 0 | 2 | 22.4 |
| 2 | 2 | 26 | 3.2 | 3 | 14.4 | 3 | 0 |
| 2 | 3 | 23 | 12.8 | 4 | 3.2 | 3 | 9.6 |
| 3 | 0 | 31 | 6.4 | 4 | 9.6 | 3 | 19.2 |
| 3 | 1 | 34 | 0 | 5 | 0 | 3 | 28.8 |
| 3 | 2 | 36 | 9.6 | 5 | 6.4 | 4 | 6.4 |
| 3 | 3 | 39 | 3.2 | 5 | 12.8 | 4 | 16 |
| 4 | 0 | 41 | 12.3 | 6 | 3.2 | 4 | 25.6 |
| 4 | 1 | 44 | 8 | 5 | 8 | 5 | 3.2 |
| 4 | 2 | 47 | 0 | 6 | 14.4 | 5 | 12.8 |
| 4 | 3 | 49 | 11.2 | 7 | 14.0 | 5 | 22.4 |
| 5 | 0 | 52 | 4.8 | 7 | 11.2 | 6 | 0 |



| | | | | |
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"Q" Coating _____

ATTACHMENT 4

Sheet _____ of _____

"Non-Q" Coating _____

Procedure # _____

Rev. _____ Date _____

SPECIAL COATING PROCEDURE NO. _____

SCOPE _____

REQUIREMENTS:

REFERENCE DOCUMENTS

APPROVALS

ORIGINATOR _____

PROJECT C.E. _____

TUGCO QA _____

CONST. P.M. _____

REV. _____ DATE _____



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ATTACHMENT 4 (Continued)

Procedure # _____

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REQUIREMENTS (Continued)



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"Q" Coating X

ATTACHMENT 5

Sheet 1 of
 Procedure # C-1
 Rev. 1 Date

"Non-Q" Coating

SPECIAL COATING PROCEDURE NO. C-1

SCOPE Application of NUTEC #10 concrete curing and sealing compound.

REQUIREMENTS:

Refer to attached guidelines for application of NUTEC #10 and product data sheet.

REFERENCE DOCUMENTS

APPROVALS

ORIGINATOR Mark Wells
 PROJECT C.E. [Signature]
 TUGCO QA [Signature] 10/14/83
 CONST. P.M. [Signature] 10/14/83
 REV. 1 DATE 10-14-83

| | | | | |
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ATTACHMENT 5

GUIDELINES FOR THE APPLICATION OF NUTEC #10 TO CONCRETE SUBSTRATES

1.0 SCOPE

1.1 Application on NUTEC 10 concrete curing and sealing compound.

2.0 SURFACE PREPARATION

2.1 "Green" Concrete

2.1.1 "Green" concrete walls shall be cleaned by using compressed air to remove loose concrete and laitance.

2.1.2 "Green" Concrete floors shall be lightly wirebrushed, followed by compressed air, to remove loose concrete and laitance.

2.1.3 Any forming material transferred to the concrete shall be removed by wirebrushing.

3.0 APPLICATION PROCEDURE

3.1 GENERAL CONDITIONS

3.1.1 NUTEC #10 containers shall be stored at temperatures between 40°F and 110°F and shall not be exposed to direct sunlight for a prolonged period of time. Temperatures may fall below or rise above normal storage temperatures to 0°F or 120°F. Respectively for an accumulative period of 14 days during shelf life of the product.

3.1.2 The amount of time required for curing increases with decreasing temperature. An accelerator may be added at temperatures below 60°F to facilitate the drying and curing processes. The accelerator is available in premeasured portions and shall be added as a third component to the base-cure mixture. Accelerator shall be utilized in accordance with manufacturing instructions.

Cure times for NUTEC #10 is as follows:

ST - 50°F-69°F - 72 hours

70°F-89°F - 24 hours

90°F and above - 18 hours

| | | | | |
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- 3.1.3 All equipment used shall be kept in good condition and shall be comparable to the equipment listed in Section 3.2.
- 3.1.4 All equipment shall be cleaned properly before and after each use with the recommended solvent (Imperial's DL-6A universal Solvent).
- 3.1.5 NUTEC #10 Primer/Sealer shall not be applied under inclement weather conditions and not at surface temperatures below 50°F.
- 3.1.6 Concrete to be coated shall be shaded. Epoxy coatings have a tendency to blister when exposed to direct sunlight.
- 3.2 APPLICATION EQUIPMENT
 - 3.2.1 Airless
 - 3.2.1.1 Use standard industrial spray equipment such as Graco, Binks, or DeVilbiss using 30:1 pump ratio with 65-85 psi inbound pressure and a .016 to .019 fluid tip.
 - 3.2.2 Conventional
 - 3.2.2.1 Pressure pot equipment with a water trap.
 - 3.2.2.2 Separate atomizing air and fluid pressure regulator.
 - 3.2.2.3 Air supply: Compressor capable of supplying a continuous volume of air at 60 to 80 psi to the nozzle of each gun.

| | | | | |
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- 3.2.2.4 Recommended air hose - 5/16" or 3/8" I.D.
- 3.2.2.5 Recommended material hose - 3/8" or 1/2" I.D.
- 3.2.2.6 Industrial spray gun such as Binks #18 with 66 PB air cap, 66 fluid tip and 66 needle size or DeVilbiss MBC 60D.
- 3.2.3 Brush
- 3.2.3.1 A clean, high quality brush may be used to coat small areas or concrete inaccessible for spraying.
- 3.2.4 Roller
- 3.2.4.1 A short to medium knap roller shall be used.
- 3.3 APPLICATION
- 3.3.1 Flush equipment with Imperial's #DL-6A Universal Solvent or imperials #DL-56 (Cellosolve) Solvent prior to use.
- 3.3.2 Mixing instructions - slowly mix by power agitation or by hand the entire volume of the cure component with the entire volume of the base. If an accelerator is used, add thepremeasured portion to the base-cure mix and mix slowly. Avoid rapid agitation which may result in air entrapment. Do not vary proportions.
- 3.3.3 Thin the NUTEC #10 mix with 10-40% #DL-56 solvent (Cellosolve). Thinning minimizes air entrapment, eliminates film irregularities, enhances penetration, and prolongs the pot life of the material.
- 3.3.4 As a guide, if using conventional spray, regulate the air pressure: 60-80 psi to gun; 10-20 psi to pot.

NOTE: Required pressures may vary with temperature of hose length.

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- 3.3.5 As a guide, during spray application, apply material as a heavy, wet coat, in even, parallel passes overlapping each pass by 50%
- 3.3.6 Apply NUTEC #10 at a spreading rate of approximately 350-400 sq. ft./gal. Avoid excessive build up which will cause a "glazing" affect after drying.
- 3.3.7 NUTEC #10 has a pot life of approximately 1 hour (at 75°F). No material shall be applied which has exceeded its pot life. If this has occurred, there is an increase in the viscosity of the material, a noticeable heat of exotherm and applied material will "crawl" and refuse to penetrate the concrete. All material thus applied shall be removed from the concrete with solvent and a clean cloth. All equipment shall be cleaned immediately and any remaining NUTEC #10 (expired) shall be discarded. Caution: Storage of NUTEC #10 containers at high temperatures or in direct sunlight will greatly reduce its pot life.

NOTE: Pot life stated above for unthinned coating is the recommended time and should be used as a guideline for coating usage time, however, actual pot life may be longer. For unthinned coating or coating thinned less than 50%, the actual pot life is determined by applicability of the coating.

- 3.3.8 During application all areas found to contain sags, surface irregularities, or excessive buildup of NUTEC #10 shall be removed with solvent and a clean cloth and fresh NUTEC #10 applied.
- 3.3.9 Flush Spray equipment periodically with Imperial's DL6A Solvent or DL-56 to avoid build up of material in the hoses.
- 3.3.10 Clean up all equipment immediately following application with Imperial's #DL-56 cellosolve solvent or Imperial's #DL-5A Universal Solvent.

NOTE:

1. Do not apply NUTEC #10 curing compound to surfaces which visible surface moisture or standing water is present.
2. Refer to manufacturers product data sheet for general information.
3. Material may be applied at temperatures above 80°F. When applications are made at temperatures above 80°F care must be taken to insure pot life not exceeded.