

J. A. JONES CONSTRUCTION COMPANY

CONSTRUCTION WORK PROCEDURE

FOR

CONCRETE PLACING, CURING, FINISHING AND REPAIRS

WATERFORD SES UNIT NO.3
CONTRACT NO. W3-NY-4

REV.	DATE	ENGINEERING APPROVED BY	DATE	QUALITY ASSURANCE APPROVED BY	DATE	CONSTRUCTION APPROVED BY	DATE
0	11-21-75	al Prince	11/21/75	[Signature]	11/21/75	Leo Terry	11/21/75
1	11-26-75	al Prince	11/26/75	[Signature]	11/26/75	Leo Terry	11/26/75
2	12-18-75	al Prince	12/18/75	[Signature]	12/18/75	Jerry Leonard	12/18/75
3	3-5-76	al Prince	3/8/76	[Signature]	3/8/75	Leo Terry	3-8-76
4	4-30-76	R. Gault	4/30/76	W. E. H.	4/30/76	Leo Terry	4/30/76
5	5-7-76	al Prince	5/7/76	[Signature]	5/7/76	Jerry Leonard	5/7/76

REVIEWED

W/ COMMENTS

W/O COMMENTS

REJECTED

EDASCO QUALITY ASSURANCE

BY:

DATE:

5-8-76

FREEDOM OF INFORMATION
ACT REQUEST

84-455

C/683

8506220195 850222
PDR FOIA
GARDE84-455 PDR

CONSTRUCTION WORK PROCEDURE	PROCEDURE NO. W-WP-7
TITLE: CONCRETE PLACING, CURING, FINISHING AND REPAIRS	REV. NO 5 & DATE: 5/7/76
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1.0 PURPOSE

To outline methods used by J. A. Jones and Subcontractors to place, cure, finish and repair concrete.

2.0 SCOPE

This procedure includes the requirements to be used by J. A. Jones and their Subcontractors to comply with approved construction drawings and specifications.

3.0 DEFINITIONS

3.1 Water

The water used for all aspects of this procedure shall be furnished and certified acceptable by the Engineer. It shall be free from any injurious amounts of acid, alkali, salts, sediment or organic matter and shall not contain more than 1000 ppm of dissolved solids and not more than 100 ppm chloride ion.

3.2 Hot Weather

Hot weather is when the dry bulb temperature is above 85°F and is expected to go higher.

3.3 Cold Weather

Cold weather is when the dry bulb temperature is at or below 40°F and can be expected to fall lower.

3.4 Cold Joint

A cold joint is defined as an area in which previously placed concrete cannot be made monolithic with a successive layer due to loss of plasticity in the original layer, where concrete shall be considered plastic if a vibrator spud, up to 2 inches diameter, suspended vertically, will penetrate to a depth of at least 6 inches in a period of 15 seconds.

4.0 REFERENCES

- 4.1 Ebasco Services, Inc. Specification LOU-1564.472, Section II, latest revision, "Concrete Placement, Curing and Finishing".
- 4.2 J. A. Jones Procedure, W-SITP-7, "Concrete Placing, Curing, Finishing and Repair Inspection".

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5.0 RESPONSIBILITIES

- 5.1 Ebasco Services, Inc. is responsible for furnishing all materials, receiving inspection, testing and documentation of such test as required by Reference 4.1 to support J. A. Jones and their Subcontractors in performing their work.
- 5.2 J. A. Jones and their Subcontractors are responsible for forming, placing, curing, finishing, repairing and inspection of concrete as required by the approved drawings and specifications.

6.0 TRANSPORTATION

- R-1 6.1 Convey all concrete from mixer to place of final deposit in bucket, container or conveyors to assure required consistency and plasticity without segregation or loss of slump beyond limits of specification.
- R-4 6.2 Check time and number of drum rotations after water has been added to the cement and aggregate, as deemed necessary. Concrete must be placed in forms within one (1) hour or 300 rotations of drum whichever one occurs first, unless authorized by the Engineer and then time must not exceed one and one-half ($1\frac{1}{2}$) hours.
- R-1 6.3 Water shall be added only by the Engineer.
- R-1 6.4 Clean all tools and equipment used in placing concrete before and after placement.
- R-2 6.5 At any time it becomes necessary to break down concrete conveying equipment for cleaning or repair during a placing operation, care shall be taken to prevent the concrete contained in the equipment from being dropped in excess of 5'-0" into the placement.
- 6.5.1 Acceptable concrete contained in the conveying equipment may be transported by other acceptable means (skip pans, wheel-barrows, carts, etc.) and deposited in the placement by the approved method, except that concrete must not be dropped in excess of 5'-0" or handled in any other way that would cause segregation. Concrete that has been handled in any detrimental method shall not be placed in the placement.
- 6.5.2 When it is necessary to disassemble conveying equipment over the placement and the concrete would fall in excess of 5'-0", the area shall be covered with plywood or other suitable material to catch the concrete and prevent it from falling into the placement. Concrete that has fallen in excess of 5'-0" or handled in any other detrimental method or that cannot be placed in the allowed time limit shall be removed from the placement area and discarded.

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 7.0 <u>PLACING</u>		
R-1	7.1	Obtain Engineer review of equipment, layout, procedures and methods prior to placing concrete.
	7.2	Discharge concrete from mixer into center of bucket or hopper. This principle of vertical discharge shall be used during all stages of delivery.
	7.3	Deposit concrete as near as practicable to its final location. When direct placement is not possible, use suitable chutes and "elephant trunks" to confine concrete movement. Do not allow concrete to flow in a manner that will cause segregation.
	7.4	Use a central-bottom-dump bucket that provides positive regulation of amount and rate of deposit in all dumping positions.
	7.5	When placing concrete with bucket, spot bucket over exact location, then lower to just clear the concrete already in place, with bucket open. The unconfined height must not be more than five (5) feet unless approved by Engineer. Do not dump bucket while swinging or in any manner that will cause separation or disturb previously placed concrete.
	7.6	In restricted areas, place concrete in forms using barrow, buggies, cars or hand shoveling. Take care not to allow vertical drop of over five (5) feet.
R-1	7.7	Slope on chutes shall not be flatter than 1 to 3 and not steeper than 1 to 2.
R-1	7.8	Aluminum or galvanized steel pipe will not be used to convey concrete.
R-1	7.9	Obtain Engineer inspection of cleanliness prior to placing concrete.
	7.10	Remove all surface water from forms, embeds, resteel, and adjoining concrete. No concrete will be placed on a water covered surface.
	7.11	Place concrete in successive 6 to 20 inch thick horizontal layers. Correct tendency to segregate by shoveling stones into mortar.
	7.12	Bedding planes shall be approximately horizontal, except in dams or other structures where it may be required to incline the beds. Without forms, on a downward slope of about one (1) vertical to ten (10) horizontal in an upstream direction in which case the placement shall proceed in an upslope direction.

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<p>7.13 Compact concrete with mechanical vibrating equipment until the concrete has been consolidated to the maximum density, free of pockets or coarse aggregate, and fits tight against forms and embed material.</p> <p>7.13.1 Use vibrators of the high-frequency type with not less than 6000 revolutions per minute, to properly consolidate the concrete.</p> <p>7.13.2 Insert vibrators approximately every 2 feet in the vertical position. Remove vibrator slowly to avoid creating pockets. Do not use vibrators to transport the concrete.</p> <p>7.13.3 Use vibrators to blend and meld new layer with previously placed layer. Care must be taken to assure adequate vibration.</p> <p>7.13.4 Insure vibrator penetrates the layer being placed and also the layer below while it is still plastic to provide good bond between the two layers and prevent the formation of cold joints.</p> <p>R-5 7.13.4.1 Should the placement of concrete be curtailed for any reason or if the placing gets out of sequence, the minimum thickness requirements for successive horizontal layers in Paragraph 7.11 no longer apply. Keep the entire exposed surface not topped out, covered with fresh horizontal layers of concrete as thick as the supply will allow and keep vibrated.</p> <p>R-5 7.13.4.2 If the possibility of a cold joint exist, test the surface with a blunt end rod. If the rod can be inserted into the concrete only 2 or 3 inches, test the concrete by the method described in Paragraph 3.4 above. By this method, if it is determined that a cold joint exist, stop work immediately in area of cold joint.</p> <p>R-5 7.13.4.3 If after work stoppage in placement, concrete is so green that it can readily be dug out with a hand pick, then no treatment shall be required, provided any laitance is removed, the surface roughened, loose material removed and the surfaces are kept moist; the concrete shall be placed against the surfaces and thoroughly and systematically vibrated over the concrete area adjacent to the older concrete.</p>		

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7.12.4.4 In placements, when the concrete is not green, as described in the preceding paragraph, the surface shall be roughened and cleaned of any laitance and loose material, and coated with Sika-Hi-Mod Epoxy or approved equal and the fresh concrete thoroughly vibrated beside the affected area. In all cases where epoxy is used, the manufacturer's instructions, particularly as regards time limits, shall be followed. In all cases, surfaces shall be kept moist after cleaning until concrete is placed.

7.13.5 Care must be taken to minimize contact between vibrator and reinforcing steel. Do not allow vibrator to contact reinforcing steel extending out of concrete that has reached a stage of initial set, within five (5) feet of the concrete. Do not allow contact with forms of finished surfaces.

7.13.6 Obtain Engineer approval before using any form attached vibrators.

7.13.7 Obtain Engineer approval prior to using any surface vibrators.

7.13.8 All areas of stone pockets and mortar pondage is unacceptable. These areas shall be removed and replaced as directed by the Engineer.

7.14 Install horizontal and vertical construction joints as shown and detailed on the approved construction drawings.

R-1

7.15 Remove wash water in manner to prevent it from running down and staining exposed faces. Should staining occur, it shall be removed.

7.16 In multiple lift placement, allow each placement to set 48 hours or longer if required by Engineer before placing next lift. The interval may be shortened by the Engineer for certain locations.

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8.0 CURING

- R-1
- 8.1 Cure concrete by using water applied continuously to all exposed concrete.
 - 8.2 Assure ample water supply for continuous fine-mist spraying or sprinkling.
 - 8.3 Obtain certification from Engineer for water supplied for curing. Water shall meet requirement in Paragraph 3.1 of this procedure.
 - 8.4 If water curing cannot be used, obtain Engineer approval of alternate method. Other methods are covering with mulch, curing compounds and ponding as outlined in Reference 4.1.
 - 8.5 The concrete shall be kept above 50°F in a moist condition for at least the first seven (7) days after placing, except as follows:
 - 8.5.1 High-early concrete shall be cured for at least the first three (3) days, other period may be used if approved by Engineer.
 - 8.5.2 Concrete containing pozzolon shall be for not less than 14 days.
 - 8.5.3 For curing during "hot" and "cold" weather conditions refer to Reference 4.1.
 - 8.6 All equipment required for curing shall be on hand, checked out and ready for use prior to placing concrete.
 - 8.7 Fresh concrete shall be protected by leaving forms in place as required. Assure against disturbing by shock, vibration and premature stressing until the concrete has attained sufficient strength to sustain the load.
 - 8.8 Instruct each worker in the importance of not disturbing green concrete during its setting period. Worker with duties on freshly placed concrete slabs shall wear wooden "slats" approximately 8 x 18 inches.

9.0 REPAIR

Unsatisfactory concrete shall be cut out and replaced with new concrete as soon as practicable after removal of forms.

- R-3
- 9.1 Provide anchors, keys or dovetail slots by grinding and chipping to hold new material securely in place.
 - 9.2 Method of repair, matching of color, curing and Engineer approval shall be performed per reference 4.1.
 - 9.3 The method of repair for all defective areas in concrete after stripping of forms, shall be detailed step-by-step on Concrete Pour Plan, Appendix C, and accompanied with a sketch, if required, to completely cover the method of repair and curing to meet the specification requirements.

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10.0 FINISHING FORMED SURFACES

- 10.1 No finishing is required for formed surfaces against which backfill or concrete is to be placed, except repair of defective areas and filling of holes left by form ties and rods.
- 10.2 Surfaces below grade which will receive waterproofing shall be free of irregularities which would interfere with proper application of the waterproofing material.
- 10.3 Surfaces which will be exposed when structure is in service will receive no special finish. Repair damaged or defective concrete, remove fins $\frac{1}{4}$ " in height, and abrupt irregularities, fill holes left by form ties and rods.

11.0 FINISHING UNFORMED SURFACES

- 11.1 Surfaces exposed to the weather which the approved construction drawings do not specify a horizontal surface or slope required shall be as follows:
 - 11.1.1 Tops of narrow surfaces, such as stair treads, walls, curbs and parapets shall be sloped approximately $\frac{3}{8}$ " per foot of width.
 - 11.1.2 Broad surfaces, such as walks, roads, parking areas and platforms shall be sloped approximately $\frac{1}{4}$ " per foot of width.

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11.2 Screed and level all surfaces to be covered by backfill or concrete, sub-floors to be covered with concrete topping, terrazzo or quarry tile and similar surfaces. Surface irregularities shall not exceed $\frac{1}{4}$ " higher or lower from the specified surfaces.

11.3 Surfaces that will not be covered by backfill, concrete or tile topping shall be consolidated, screeded and floated. Perform floating by hand or machine. Assure surface is free from screed marks or other imperfection and that surface is uniform in texture. Tool joints and edges as shown on the approved construction drawings.

11.4 Surfaces subjected to moderate or high velocities or water shall be screed to correct shape required by approved construction drawings, then floated with wood floats to secure a firm, uniform texture without raising excess fine material to the surface. When surface has hardened sufficiently, it shall be brought to a uniform smoothness by using a steel trowel. Steel trowel with a firm pressure to flatten the sandy texture and leave a dense, uniform surface free from trowel marks.

11.5 All concrete shall be protected against damage until final acceptance by the Engineer.

R-1 11.6 Use special care in the finishing of floor areas of offices, shops, assembly rooms and other areas where appearance is important. Special floor finishes shall be in accordance with Reference 4.1.

12.0 FORMS

All forms shall be built true to slopes, lines and dimensions. They shall be properly tied and braced to maintain correct position and shape until removed.

R-1 12.1 Form design and materials shall be subject to the Engineer's review.

12.2 Form oils shall be approved by the Engineer and applied per Reference 4.1.

12.3 Chamfers and fillets shall be installed per the approved construction drawing and Reference 4.1.

12.4 Forms shall remain in place for time specified in Reference 4.1.

13.0 ADVERSE WEATHER CONDITIONS

All concrete placed in hot or cold adverse weather conditions shall be placed in accordance with Paragraph 8 of Reference 4.1.

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14.0 DOCUMENTATION

All Engineer approvals shall be obtained and become a part of the final document record package and be turned over to the Engineer after each pour is completed.

- 14.1 All work relating to each pour shall be completed, checked and approved prior to placement of concrete. The J. A. Jones "Concrete Pre-Placement Checklist Record", Appendix A, shall be completed for each pour. The J. A. Jones "Concrete Pre-Placement Checklist Record" shall be prepared by the Area Superintendent giving the pour number, concrete mix, building location and scheduled pour date. As each item of work is completed, the Field Superintendent shall sign off by the work activity including the date, time and drawing including the revision the work was performed by. The Jones Field Engineer shall check each work item and sign off by the work activity including the date, time, drawing and revision used to make the check. If errors are found, the Jones Field Engineer shall not sign off until they have been corrected and checked. The Jones Quality Verification Inspector shall verify that the work has been completed and checked. He then shall sign off including the date, time drawing and revision used for the verification. All applicable blocks shall be completed. All other blocks shall be marked N/A. When all work, checking and verification has been completed, the Area Superintendent and the Area Quality Verification Supervisor shall sign off and date in the space provided.
- 14.2 When the pour has been completed, the actual pour date shall be placed in space provided and the J. A. Jones "Concrete Pre-Placement Checklist Record" shall become a part of the final document record package.
- 14.3 After the Area Superintendent and Quality Verification Supervisor has signed off the J. A. Jones "Concrete Pre-Placement Checklist Record" verifying that Jones is ready to place concrete, the J. A. Jones Quality Verification Supervisor shall be authorized to sign off the Ebasco "Concrete Pre-Placement Checklist Record", Form QCIP-6-1, Appendix B, in contractor column indicating J. A. Jones is ready to place concrete.
- 14.4 After all required signatures have been secured and the pour is approved for concrete placement, J. A. Jones shall be provided a copy of the Ebasco "Concrete Pre-Placement Checklist Record" and it shall become a part of the final document record package which will be turned over to the Engineer after the placement.

R-1

BUILDING _____
 SCH. POUR DATE _____
 ACTUAL POUR DATE _____

J. A. JONES CONSTRUCTION COMPANY
 WATERFORD UNIT NO. 3

CONCRETE PRE-PLACEMENT CHECKLIST RECORD

W-WP-7 Appendix A

POUR NO. _____
 ELEV. _____
 REQ'D MIX _____

	COMPLETED AND INSPECTED												REMARKS
	J. A. JONES SUPERVISION				J. A. JONES ENGINEER				QUALITY VERIFICATION				
	Name	Date	Time	Per Dwg & Rev.	Name	Date	Time	Per Dwg & Rev.	Name	Date	Time	Per Dwg & Rev.	
1. CONCRETE													
a. Sandblast													
b. Greencut													
c. Treatment													
2. FORMS													
a. Dimension													
b. Line & Grade													
c. Clean													
d. Tight													
e. Braced													
f. Coating													
g. Chamfer Strips													
h. Key Ways													
i. Block Outs													
j. Walers & Strongbacks													
k. Waterstop													
l. Release Agent													
3. REINFORCING													
a. Bar Quantities													
b. Spacing													
c. Elevation													
d. Cadweld Mapping													
4. EMBEDS													
a. Quantity													
b. Line & Grade													
c. Elevation													
d. Identification													
5. GENERAL													
a. Cleanliness													
b. Instrumentation													
c. Weather Protection													

APPROVED AREA SUPERINTENDENT _____ DATE _____ APPROVED Q. V. SUPERVISOR _____ DATE _____

WATERFORD SES - UNIT 3

CONCRETE PRE-PLACEMENT CHECKLIST RECORD

Location: _____

Elevation: _____ to _____ Pour No. _____

Detailed Description: _____

ITEM	CONTRACTOR		INSPECTOR	
	DATE		Date	
Sandblast/Greencut/Foundation Treatment				
Forms (Line and Grade)				
Blockouts, Keys, Waterstop, etc.				
Reinforcing Steel				
Anchor Bolts, Embedded Steel				
Electrical				
Mechanical				
Final Clean-up				

Special Instructions: _____

Approved for Placing _____ Time _____ Date _____
 Q. C. Representative

J. A. JONES CONSTRUCTION COMPANY
WATERFORD UNIT 3
CONCRETE POUR PLAN

APPENDIX C

Location _____ Elev. _____ To _____ Pour No. _____			
Pour Date _____ Est. Cubic Yards _____			
North ↑			
Placing Equipment _____			
Standby _____			
Vibrators _____			
Standby _____			
Hoppers, Tremies _____			
Screeds, Screed Rods _____			
Finishing Tools, Bullfloats, Trowel Mach., etc. _____			
Curing Equipment, Sand, Hoses, Sprinklers _____			
Manpower _____			
Applicable Dwg	Rev.	Applicable Dwg	Rev.

Field Engineer _____
Area Supt. _____
Quality Assurance _____