Procedure No. W-SP-7

J. A. JONES CONSTRUCTION COMPANY

SPECIAL PROCESS PROCEDURE

FOR

REPAIR AND CURING OF CONCRETE
REPAIR FOR PLACEMENT 499502-108

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
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SPECIAL PROCESS PROCEDURE	PROCEDURE NO. W-SP-7
TITLE: REPAIR AND CURING OF CONCRETE REPAIR FOR PLACEMENT 499S02-10B	REV. NO. 0 & DATE 5/12/76
PROJECT TITLE: WATERFORD SES UNIT NO. 3 CONTRACT NO. W3-NY-4	

1.0 PURPOSE

To outline methods used by J. A. Jones Construction Company and Subcontractors for repair and curing of concrete repair for Placement 499S02-10B.

2.0 SCOPE

This procedure includes the requirements to be used by J. A. Jones Construction Company and their Subcontractors in the concrete repair of Placement 499S02-10B.

3.0 REPAIR SEQUENCE

3.1 The sequence of repair work shall be as follows:

3.1.1 Pressure grouting of holes in area of cracks.

3.1.2 Repair of top surface.

3.1.3 Waterstop embedment.

3.1.4 Filling of holes not in crack area.

3.1.5 Pressure grouting voids and horizontal cored holes in West face.

4.0 REFERENCES

4.1 Ebasco Services, Incorporated Specification LOU-1564.472, Section II, latest revision, "Concrete Placement, Curing and Finishing".

4.2 ACI-503, Guide for use of epoxy compounds with concrete.

4.3 Sika Chemical Company brochure for "Sikadur Epoxy Adhesives".

4.4 J. A. Jones Construction Company Work Procedure, W-WP-5, "Concrete Placing, Curing, Finishing and Repair."

5.0 RESPONSIBILITIES

5.1 Ebasco Services, Incorporated is responsible for supplying all materials, receiving inspection, testing and documentation of such tests as required by Reference 4.1 to support J. A. Jones Construction Company and their Subcontractors in performing their work.

5.2 J. A. Jones Construction Company and their Subcontractors are responsible for forming, placing aggregate, grouting and curing of cement pressure grouted area, the epoxy pressuring grouting for sealing cracks and the surface preparation and topping and finishing of top surface as required by this procedure.

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TOP SURFACE PREPARATION

6.0 PROCEDURE

6.1 J. A. Jones Construction Company Engineering shall map the surface of the entire pour delineating the areas that can be made to meet the required elevation and finish by grinding and the areas that must be chipped out and topped.

6.2 The areas requiring chipping and topping shall be chipped down to a minimum of one and one-half inch (1½") below required elevation.

6.3 After chipping and prior to any topping or grinding of other area, J. A. Jones Construction Company Engineering shall notify Ebasco's Engineering that the area is reddy for testing by the "Windsor Probe" method. Any area containing unsound concrete as determined by this method, shall be chipped out per Paragraph 6.2 above.

6.4 Areas requiring grinding only to produce an acceptable surface shall be ground with suitable grinding machines until acceptable.

6.5 The surface of the chipped out area shall be cleaned, then coated with a neat coat of Sikadur Hi-Mod epoxy mixed and applied per manufacturer's requirements.

J. A. Jones' Quality Verification to verify and document the acceptance of epoxy material as to shelf life, mixing and application.

6.6 After neat coat of epoxy, place 4000PSI Class AA concrete to required elevation and finish as required by approved construction drawings.

6.7 After the required finish has been obtained, cure per requirements of Reference 4.1 and 4.4.

WATERSTOP EMBEDMENT

7.0 PROCEDURE

7.1 Preparation.

7.1.1 Determine area to be repaired. Area shall be determined by estimating workable area that can be worked, based on "pot life" and required cooling time if repair requires more than one inch (1") thickness, Reference 7.3.2.

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7.1.2 Clean area to be worked as follows:

7.1.2.1 Chip to sound concrete.

7.1.2.2 Surface must be dry.

7.1.2.3 Remove all dust, laitance, grease, and other foreign particles.

7.1.3 Straighten and support waterstop as required.

7.2 Mixing.

7.2.1 Mix Sikadur-Hi-Mod Gel two (2) parts epoxy per manufacturer's recommendations. Amount to be determined by area to be worked.

7.2.2 Measure Colma Quartzite Aggregate and mix one (1) part Sikadur-Hi-Mod Ge epoxy to one (1) part Quartzite Aggregate. Add aggregate slowly to binder while mixing.

7.2.3 Do not attempt to use after "pot life" has expired. By adding aggregate, it will add approximately five (5) minutes to "pot life".

7.3 Application.

7.3.1 Apply prepared epoxy mortar to embed waterstop as required per attached sketch, Appendix A.

7.3.2 Apply mortar not to exceed one inch (1") thickness. If required mortar thickness exceeds one inch (1"), allow preceeding layer to cool before applying second layer. Coolness can be determined when the mortar becomes hard. It should be cool, approximately one (1) hour after mixing.

7.3.3 When more than one (1) layer is required, a neat coat of Sikadur-Hi-Mod epoxy to preceeding layer before applying additional layers of mortar is not required.

7.4 Curing.

7.4.1 None required.

N O T E

DO NOT EXCEED ONE INCH (1") LAYER AS NOTED IN 7.3.2 ABOVE.

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REPAIR OF VERTICAL CORED HOLES WITHOUT CRACKS

8.0 PROCEDURE

8.1 Thoroughly clean holes number 1, 2, 3, 4, 5, 6, 8, 9, , 11, 12, 13, 16, 17, 20, , as located on attached sketch, Appendix B.

8.2 Coat inside surface of hole and surface of area chipped out to expose reinforcing steel with Sikadur-Hi-Mod epoxy. The epoxy to be mixed and applied per manufacturer's recommendations. J. A. Jones' Quality Verification personnel is to verify and document epoxy acceptance as pertains to shelf life, mixing and application.

8.3 In accordance with Reference 4.1 and 4.4, fill holes with 4000 PSI Class AA cement and vibrate as required to consolidate and finish to match required surface texture.

8.4 Cure as required per Reference 4.1 and 4.4.

PRESSURE GROUTING VOIDS AND HORIZONTAL CORED HOLES No. 25 IN WEST FACE

9.0 PROCEDURE

9.1 J. A. Jones to inspect and document both North and South large void has been chipped to sound concrete.

9.2 Form both North and South void per attached sketch, Appendix C, and Paragraph 9.3 below.

9.3 Construct forms in strips to allow packing of aggregate as form progresses over the void. The section of the form which will cover the deepest section of the void shall have a "slip pipe" installed long enough to reach the extreme back of the void. Install the section of form over the deepest section of the void and extend "slip pipe" to reach the extreme back of the void. Pack the void around the "slip pipe" with washed aggregate until the angle of repose causes the aggregate to fall out front of void. Install the bottom section of form with grout nozzle located at extreme bottom of void. Complete packing void with aggregate and installing sections of form until entire void is packed. Top section of form must provide vent at top of void. Apply grout through "slip pipe" until grout is forced out through bottom grout nozzle and top vent. When grout is observed entering hole drilled down from top surface, fill hole with aggregate. When grout is forced out all vent, slowly remove "slip pipe" while under pressure. When "slip pipe" is removed, apply grout through bottom grout nozzle until grout is forced through all vents.

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9.4 Cure by leaving forms in place to keep in moist condition, as required per Reference 4.1 and 4.4.

9.5 Form opening of horizontal cored hole as required and pack with aggregate and pressure grout per Paragraph 9.3 above.

9.6 After curing has been completed on North and South void, remove forms and apply waterproofing over area per J. A. Jones' Work Procedure, W-WP-11, "Waterproofing" except that two (2) layers of waterproofing membrane shall be installed around all edges.

EPOXY PRESSURE GROUTING CORED HOLES FOR REPAIR OF PLACEMENT 499S02-10B

10.0 PROCEDURE

10.1 All equipment required for this procedure shall be collected and checked out. A dry run shall be performed using water for the grout, pumping against a closed valve to assure the equipment is in good working order. Special note shall be made of the pressure gauge and relief valve to assure correct operability.

10.2 The Sikadur-Lo-Mod LV epoxy and bagged pea gravel shall be ordered, received and approved for use.

10.3 Cored holes number 7, 14, 15, 18, 19, 21, 22, 23 and 24 as located on Appendix "B" shall be cleaned of all foreign material and free of all standing water, before any other grouting operation is started.

10.4 An expanding plug as detailed on attached sketch, Appendix "D", shall be fabricated for each hole to be pressure grouted, and coated with wax to prevent adherence of the epoxy. Each plug shall provide a fill port and a vent. The fill port shall be provided with a quick coupling and the vent with a cap or valve for venting. The supply line between the pressure pot and quick coupling shall be provided with a sight glass for observing flow of epoxy.

10.5 The grouting operation shall begin with hole number 24. Assure that all holes are clean and dry, then pack hole number 24 with pea gravel from one of the sealed bags. When the hole has been packed with the pea gravel, install the plug, as provided in 10.4 above.

10.6 Mix the Sikadur-Lo-Mod LV epoxy per manufacturer's recommendations. Mix only the amount that can be used in approximately 15 minutes or as directed be the Sika representative. Place the container of epoxy into one of the paint pressure pots which has been connected to the quick coupling in the plug in hole 24. Apply air pressure as directed by Sika representative

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10.6 (continued)
to pressure pot and observe flow of epoxy in sight glass. When the epoxy runs out, switch grout supply line to other pressure pot and continue grouting operation. Clean first pressure pot grout supply line with Sika Equipment Cleaner 650 while additional epoxy is being mixed. Continue this switching and mixing operation until epoxy is observed passing into one of the adjacent cored holes, then stop the grouting operation in hole number 24. Plug the fill port and close the vent.

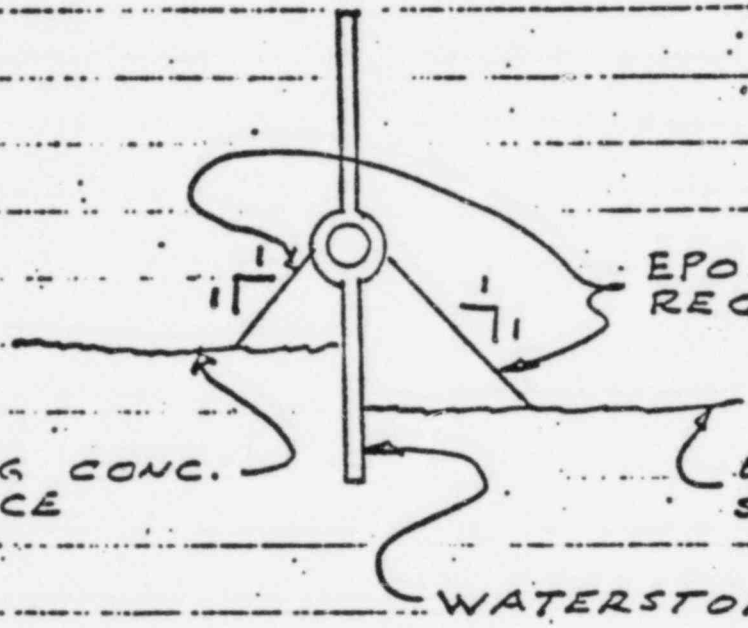
10.7 Fill the hole in which the epoxy was observed flowing into with pea gravel, install the plug and start the grouting operation as described in Paragraph 10.6. Observe the other holes and when epoxy is observed flowing into one of them, stop the grouting operation in the present hole and move to the hole where epoxy was observed. Continue this observation, filling with pea gravel, and grouting operation until all connecting holes have been grouted, assuring that all air has been removed and epoxy is forced out the vent opening.

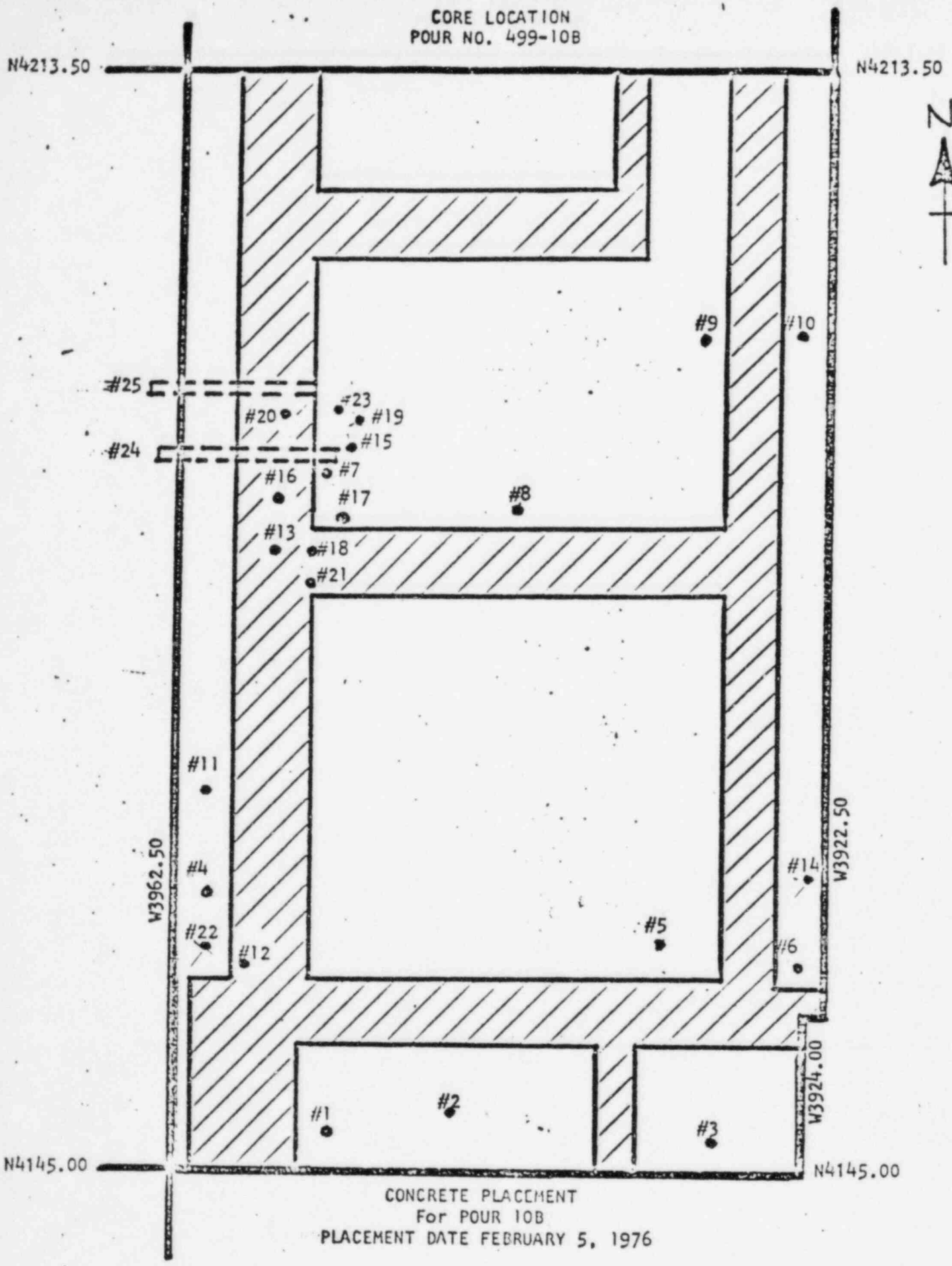
10.8 Holes without connecting cracks shall be grouted by cleaning and filling with pea gravel and grouting as outlined in Paragraph 10.6 above.

10.9 Hole number 22 shall be grouted, as above, except when grout is observed passing through the connecting crack into the South void on the West side. The pressure shall be relieved and the opening of the crack plugged with Sika Set Plug then the pressure resumed and grouting continued until all air is removed and grout is forced out the vent.

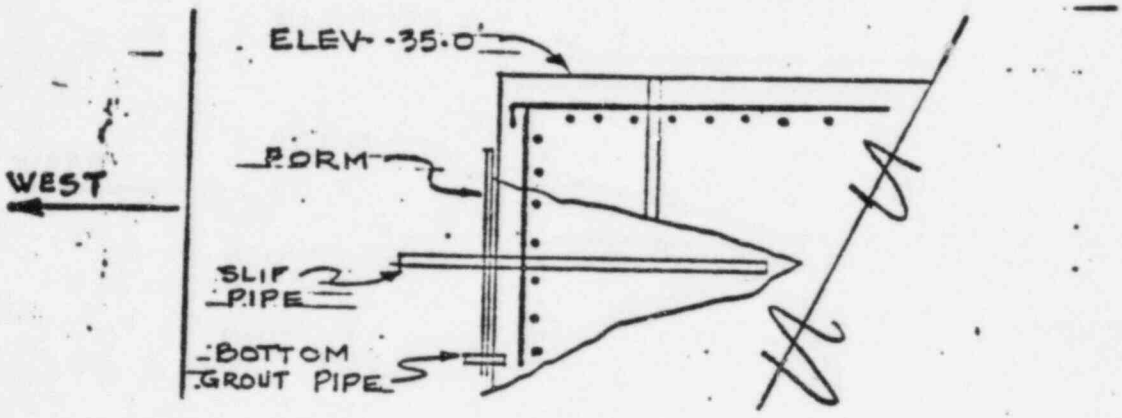
10.10 Remove all plugs and clean plugs and equipment with Sika Equipment Cleaner 650.

10.11 After epoxy has set and at time of filling of holes which did not contain cracks, fill the remainder of the holes using the procedure for filling cored holes without cracks, Paragraph 8.0 above.


1"
1"
EPOXY GROUT AS REQ'D
EXISTING CONC. SURFACE
EXISTING CONC. SURFACE
WATERSTOP

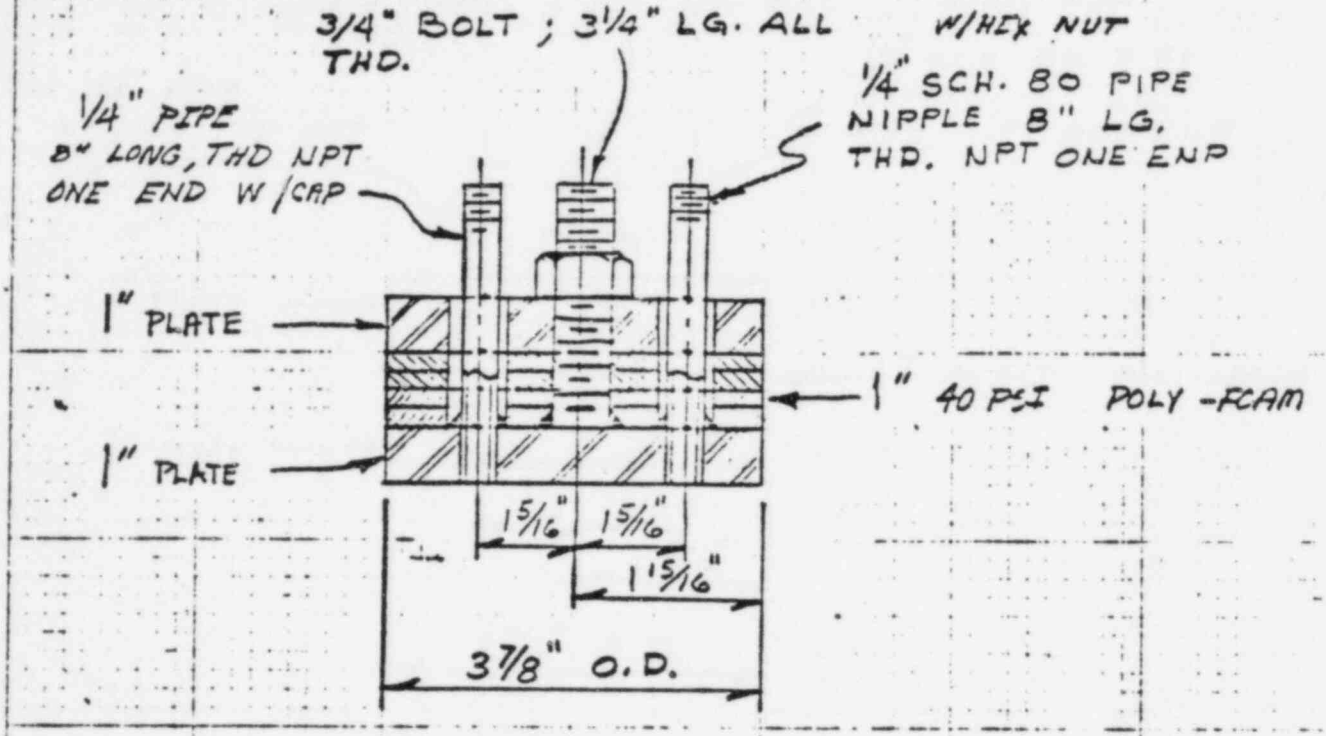


CONCRETE PLACEMENT
For POUR 10B
PLACEMENT DATE FEBRUARY 5, 1976

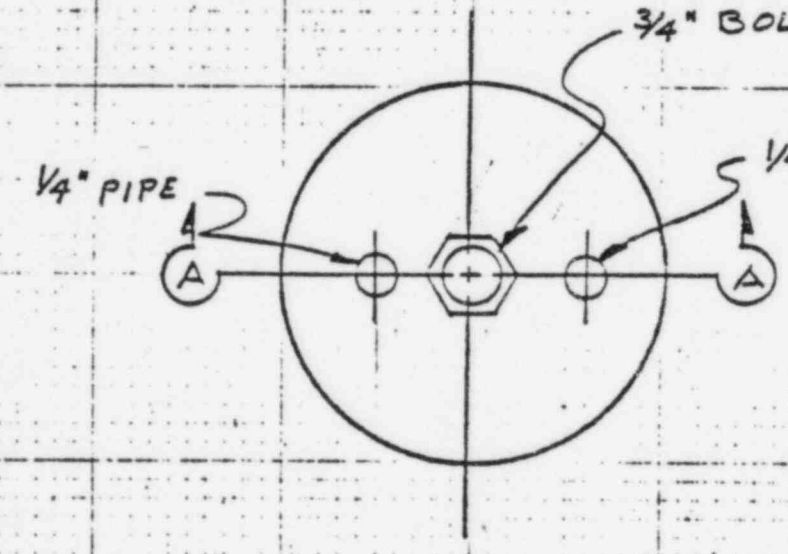

ELEV -35.0'
FORM
WEST
SLIP PIPE
BOTTOM GROUT PIPE

BY ..... DATE ..... SUBJECT ..... SHEET NO. ..... OF .....

CHKD. BY ..... DATE ..... JOB NO. .....



SECTION A-A



PLAN

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APPENDIX D