

J.O. NO. 14358
Midland Plant
Units 1 and 2
Independent Assessment
Auxiliary Building Underpinning

Weekly Report No. 28

March 27, 1983 through April 2, 1983

Personnel on Site

Stone & Webster Michigan, Inc.

W. Kilker	3/27 - 4/1
P. Barry	3/28 - 3/30
B. Holsinger	3/28 - 3/29
R. Beaudet	3/28

Parsons, Brinckerhoff Michigan, Inc.

J. Ratner	3/30 - 4/2
M. Abrahams	3/30 - 3/31

Meetings Attended

<u>Date</u>	<u>Represented</u>	<u>Purpose</u>
3/27 through 4/1	Stone & Webster Bechtel Consumers Power Parsons (3/30-4/1)	Daily Meetings
3/30	Stone & Webster Bechtel Consumers Power Mergentime	Daily Field Meeting (West Side)

Activities

Construction -

Pier W12: The Contractor continued to monitor the pier settlement and check the shims for tightness. Based on the minor additional settlement rejackings was not considered necessary.

Pier W9: Curing of the pier surface was maintained throughout the week. The upper and lower leveling plates and telltale plate were installed. Drypack grout was used for the upper plates and a flowable grout for the bottom plate.

Pier W11: Excavation of the pier was advanced nearly 30 ft. to El. 570 ft. A mixture of granular and clay fill was encountered to El. 585 underlain by the stiff natural clay. Minor perched groundwater entered the excavation through a granular zone at El. 586.

The lagging in the vicinity of the perched water level was backpacked with grout. Below that level a relatively fine grained sand was used to backpack the lagging. Minor seepage continued to infiltrate the excavation below the sealed zone.

Pier E12: The load transfer was monitored and a re-jacking of the pier was performed. The specified load was re-introduced by the jacks and the shims were re-driven to a tight fit.

Pier E9: The upper concrete surface curing was maintained. All of the preparations were completed for load transfer including installation of the leveling plates, telltale box and dial gauges, bearing plates and jackstands.

Pier E11: The excavation was completed to El. 580. Granular and clay fill were excavated to El. 586, the interface with the natural stiff gray clay. There was minor seepage into the excavation at a depth of 13 ft. The lagging was backpacked with fine sand.

Quality Control, Documentation and Records:

1. Witnessed QC inspection of Hilti bolt torquing.
2. Assessed the sampling and making of drypack grout samples.
3. Assessed the welding program implementation.

Observations

Construction - The preparatory activities for load transfer on piers E9 and W9 were adequate. The drypack grout was well-mixed and densely packed and curing conditions well maintained. Also, care was taken in properly aligning the leveling and bearing plates.

On pier E12 the Contractor performed a re-jacking to verify the tightness of the shims. The procedure involved applying the specified load to the building through the jacks and then driving the wedges to a tight fit. The Assessment Team feels that in keeping with good underpinning practice the wedges should be driven until 10 to 15 percent of the specified load has been removed from the jacks as indicated by the pressure gauge.

At pier W11 perched groundwater was encountered near the fill-clay interface. Seepage of this water into the excavation was controlled by grouting the lagging spaces to divert the flow to a collection trough. However, as the excavated/lagging progressed a sufficient quantity of water continued to seep between the lagging to erode some of the fine grained sand backpacking material. The Assessment Team feels the use of fine grained sand for backpacking under these conditions is not consistent with good underpinning practice.

Quality Control, Documentation and Records - With reference to the drypack grout samples, the Assessment Team feels that the Contractor and testing agency should verify that the energy input used for making samples is comparable to that used in packing the grout in-place. Comparable energies should be used in order to have test samples representative of the installation.

The Assessment of the welding program will appear in Weekly Report No. 29.

Design Work Packages

The Assessment Team performed an overview of the design work package for the construction and feels the package for piers E/W8 was complete. The Team feels that the retrieval of the bell foot size dimensions from the drawings is difficult and drawing cross-referencing could be improved. In addition, the Team recommended that the as-built pier E/W9 dimensions be checked for impact on the E/W8 pier foot dimensions.

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Non-Conformance Identification Reports

Status of previous issues: (NIR numbers on longer listed have been closed-out.)

<u>NIR NO.</u>	<u>Description</u>	<u>Date</u>	
		(Opened)	(Closed)
5	Concrete Mix Qualification	2/10/83	
6	Lagging Spacers	3/21/83	

W E Kilmer
Project Engineer

A. S. Sanchez by WER
Project Manager

DAILY INDEPENDENT ASSESSMENT TEAM MEETING

Date: March 28, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	W. Kilker	R. Visser	G. Murray
	R. Weight	B. Holsinger		
	G. Cable	P. Barry		
	M. Blendy	R. Beaudet		
	E. Cvikl			

1. General discussion of concrete placement for pier shafts E/W9 on March 26, 1983. Placement went well. Concrete was kept near the low side of the slump limitations.
2. J. Fisher said load transfer at piers E/W9 could be March 30-
March 31.
3. M. Blendy reported the work package for the drift and pier installation for E/W8 is nearly ready for submittal to SMO.
4. B. Holsinger questioned why on the bell pour at W9, a slump test at the end of the pumpline was not taken after the previous load of concrete was rejected for too high a slump based on an end-of-the-line test. MPQAD will respond.
5. B. Holsinger questioned the adequacy of the testing procedure on the preparation of dry pack grout samples for testing. Are the field conditions being adequately simulated? MPQAD will respond.
6. W. Kilker requested the schedule for work on the SWPS. J. Fisher will provide. J. Fisher said there was a demonstration of the deep probe device today.
6. R. Beaudet presented a brief synopsis of his assessment of the project welding procedure, the implementation and inspection. W. Kilker stated the assessment summary will appear in Weekly Report No. 27.

DAILY INDEPENDENT ASSESSMENT TEAM MEETING

Date: March 29, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Visser	G. Murray
	E. Cvikl	B. Holsinger		
	J. Gaydos	W. Kilker		

1. P. Barry asked if the two NCR's on E/W9 bell concrete placement have been resolved. J. Gaydos said the slump-related NCR was conditionally dispositioned depending upon the cylinder strength test results. The NCR on the vibrator use interruption was dispositioned by FSO.
2. W. Kilker requested to meet the Spencer, White, Prentis, Inc. site management personnel. J. Fisher will arrange.
3. P. Barry inquired if there is a minimum 7 day cure period for the piers or if strength considerations dictate the cure period. J. Fisher will resolve.
4. J. Gaydos reported that only one set of record concrete cylinders is required on a given day of concrete placement volumes of less than 100 cy.
5. R. Visser stated that additional end-of-line concrete slump tests were not performed on pier W9 bell after an initial high slump test because the subsequent mix was kept in the mixer for 45 minutes before placement.
6. With respect to the dry-pack grout sampling and testing procedure, R. Visser said that MPQAD is satisfied with the procedure. B. Holsinger stated it is important to match the ramming energy inputs for the field installation and the laboratory test samples. The field strength should then be better represented by the lab test results.

DAILY INDEPENDENT ASSESSMENT TEAM MEETING

Date: March 30, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	P. Barry	R. Sevo	G. Murray
	E. Cvikl	W. Kilker		D. Puhalla
	J. Gaydos			
	K. Pearson			
			<u>Spencer/White/Prentis</u>	
			H. Armstrong	
			D. Canale	
			J. Cataldo	

1. J. Fisher reported that a review session with Mergentime on grillage beam installation would be next week.
2. J. Fisher inquired if MPQAD felt the 2 NCR's on pier W9 bell concrete placement contained enough information in the description. R. Sevo replied that the NCR description is meant to contain only the cause of the non-conformance not additional information.
3. Three principals from Spencer, White & Prentis were introduced to Assessment Team members present.
4. J. Fisher stated load transfer on piers E/W9 is still planned for April 1, 1983.
5. Discussion of discrepancies noted in quality of dry-pack grout test samples vs. actual field installed dry-pack grout. R. Sevo suggested FSO resolution by tracking through the handling and making of the cubes and compare to field grout placing techniques.
6. P. Barry stated he reviewed the E/W8 drift and pier excavation/installation work package. Suggested: (1) An improvement in the dimensioning designation of the bell foot. Retrieval of this size is difficult and cross-referencing is poor. (2) That piers E/W9 as-built dimensions be evaluated in piers E/W8 review since E/W9 are installed and actual locations are known. J. Fisher will resolve.
7. R. Sevo inquired if two adjacent piers are allowed to bond at the bell bottom or if there is a "separation" requirement. E. Cvikl will advise.

DAILY INDEPENDENT ASSESSMENT TEAM MEETING

Date: March 31, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	W. Kilker	R. Sevo	G. Murray
	E. Cvikl			
	J. Gaydos			
	K. Hevner			
	G. Cable			
	J. Northrup			
		<u>Parsons</u>		
		J. Ratner		
		M. Abrahams		

1. J. Ratner introduced M. Abrahams, welding engineer from Parsons, on-site for the day to evaluate welding quality.
2. NIR #5 cannot be closed until Project Engineering responds to MPQAD open issues. E. Cvikl is resolving. W. Kilker said the Team would then review the responses and if satisfactory close-out the NIR.
3. J. Fisher said the April 1 E/W9 load transfer date is tentative. No additional underpinning work will be performed this week-end.
4. K. Hevner reported on the 2 team observations raised during the overview of the work package for piers E/W8 (see Daily Meeting Notes of March 30).
(1) The concern was well-taken but the drawing complied with Project Engineering standards. W. Kilker responded that the Team felt the initial observation raised was nevertheless valid and would be reported as such. (2) J. Darby of Resident Engineering has taken action on pier E8 since pier E9 bell bottom as built extends approximately 2 inches into the pier E8 "foot-print". Pier W9 bottom as built is within a fraction of an inch plan location and is therefore of no concern.
5. J. Ratner raise a concern over the use of the fine sand to backpack in the wet area of pier W11. J. Fisher said coarser backpack material could be employed if the running sand is a problem.
6. J. Ratner questioned if the excavation from piers 8 toward the containment will proceed before the schedule for grillage beam delivery is finalized. J. Fisher replied that the opening of those areas will be tied into the grillage delivery dates.

DAILY INDEPENDENT ASSESSMENT TEAM MEETING

Date: April 1, 1983

Attendees:	<u>Bechtel</u>	<u>Stone/Webster</u>	<u>MPQAD</u>	<u>CPCo</u>
	J. Fisher	W. Kilker	R. Sevo	G. Murray
	E. Cvikl			
	J. Gaydos			
		<u>Parsons</u>		
		J. Ratner		

1. G. Murray advised that the guideline on the definition of construction aids is under discussion between MPQAD and SMO. Resolution will depend on the outcome of this discussion.
2. E. Cvikl reported that Project Engineering has responded to the NCR on concrete mix design. R. Sevo and W. Kilker said their observations will be made on April 4.
3. J. Gaydos said the 10-day strength on the cylinder made from the "high slump" concrete in pier W9 bell was 5000 psi.
4. R. Sevo and G. Murray stated that with regard to Assessment Team NIRs, the response will be generated directly by Consumers or through a Quality Action Request or by an NCR which require disposition.
5. J. Fisher advised load transfer to piers E/W9 is scheduled for April 4.
6. J. Gaydos said the field had prepared some dry-pack grout samples to compare to record samples prepared by the testing agency. Concern is that test samples have not been as well compacted or cured as the in-place grout.
7. J. Fisher concurred with J. Ratner's concern over the use of a fine-medium grained sand as backpacking material in locations where seepage may wash-out the material. J. Fisher will resolve.
8. W. Kilker inquired of CPCo if the work package for E/W8 has been finalized. G. Murray stated that SMO is waiting until Mergentime issues a schedule on the shop drawing completion.
9. J. Ratner asked if there is a commitment to produce as-built drawings of the underpinning installation and when the effort will commence. J. Fisher will respond.



STONE & WEBSTER MICHIGAN, INC.

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United States Nuclear Regulatory Commission
Midland Site Resident Inspection Office
Route 7
Midland, MI 48640

April 7, 1983

J.O. No. 14358
Ref. MPF 28

Attention Mr. R. Cook

RE: DOCKET NO. 50-329/330
MIDLAND PLANT - UNITS 1 and 2
INDEPENDENT ASSESSMENT OF AUXILIARY BUILDING UNDERPINNING
REPORT NO. 28

A copy of the Independent Assessment of the Auxiliary Building Underpinning Weekly Report No. 28 for the period March 27, 1983 through April 2, 1983, is enclosed with this letter. Included as attachments, are the minutes of the daily meetings held during the week between members of the Assessment Team and Site Engineering, Construction, and Quality Assurance personnel.

If you have any questions with respect to this report, please contact me at (617) 589-2067.

Very truly yours,

A. Stanley Lucks
A. Stanley Lucks ^{SLW}
Project Manager

Enclosures

ASL/ka