Hazardous Material Storage Building

Omaha Public Power District

3519

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Field Report

To: Keith Kirchner, Pat Poepsel, Rick Niedergeses		
From: Cameron Collingsworth	Project:	OPPD FCS 2011 Flood Inundation Structure Assessment OPPD Plant, Ft. Calhoun, NE
CC: Project File, David Rohan	HDR Project No:	164565, Dept. 134
Date: November, 15th 2011	Field Report No:	FR-#092

Team Members:

Cameron Collingsworth (HDR) CJC
Brian Hindley (HDR)
Steve Olson (HDR)

Field Activity Objective:

Our field activity objective is to observe the Hazardous Material Storage Building or (Hasmat Shed) and its surroundings for evidence of damage relating to the flood event.

Activities Conducted:

The team visually inspected the interior and exterior perimeter of the building for signs of distress and documented areas of concern with photographs.

Data Obtained:

Each HDR team member noted their observations as the building was inspected. Key areas of concern were specifically documented and photographed. Discipline specific checklists were completed from the field observations to ensure all key items were investigated. Team members discussed their observations during and after the inspection to ensure a consensus was formed on all findings at the time of the inspection.

Observations:

At the time of our field observations water had receded to elevations around 993ft, which are within normal levels. During the flood event, the building was subjected to floodwaters. . The building resides inside the King Tut barriers and therefore was not subjected to unrestricted flood water flows during the flood. This would have minimized any dynamic effects or surface erosion concerns. The interior of the building showed signs of water inundation by the presence of water marks on the walls at approximately 3 ft above finished floor elevation..

Gravel base was observed outside the building on the north, west and south sides. Hand probes penetrations were to a depth of 1 inch or less, suggesting very dense soil conditions. Concrete pavement was adjacent to the east side.

A small area adjacent to the buildings south side had been dug out at about the buildings mid-span. The dug out area appeared to be man made and not related to the flood. Probe penetration was obstructed at about 1 foot below grade (possible top of footing).

No signs of distress were seen in or around the building at this time.

OPPD – FORT CALHOUN STATION
2011 FLOOD ASSESSMENT - CIVIL CONDITION SURVEY

Structure Number:		Structure Name:	Hazmat Storage
Date:	11/15/11	Inspected By:	Hugh O'Grady
Weather:	Sunny, light wind, mid 50's		
Current Flood Elev. Relative To FFE:			River El 993' MSL

Activity 1 – Site (Use for General Site and All Systems)		
	Condition	Comment
1. No obstructions, vegetation, debris, or sediment accumulation.		Good condition grades albeit flat around building with downspouts at corners
2. No active erosion, scouring, soil subsidence, sink holes or bank caving that might endanger the system or structure's stability.		Ok. Water level marks approximately 3' depth.
3. No evidence of soil transport.		Washout of small rock granular surfacing. Wash out area at south side. Zero slope away from building all around.
4. Are there undercutting banks, eroding embankments, signs of turbulence or shoaling?		
5. No slides, sloughs, tension cracking, slope depressions, or bulges are present.		
6. No horizontal deviation observed that might endanger its stability.		
7. No sign of tilting, sliding, or settlement that would endanger the integrity of the structure.		
8. No riprap displacement or stone degradation that could pose an immediate threat to the integrity of channel bank.		
9. Riprap intact		
10. No slope stability problems (ex. deep seated sliding) identified that must be repaired to reestablish the integrity of embankment.		
11. The embankments and access roads are well established and drain properly without any ponded water.		
12. There are no scattered, shallow ruts, pot holes, or other depressions that are related to settlement.		
13. No evidence or history of seepage,		

Prepared by: Hugh M. O'Grady (Signature)
11/17/11 (Date)

Reviewed by: _____

OPPD – FORT CALHOUN STATION
2011 FLOOD ASSESSMENT - CIVIL CONDITION SURVEY

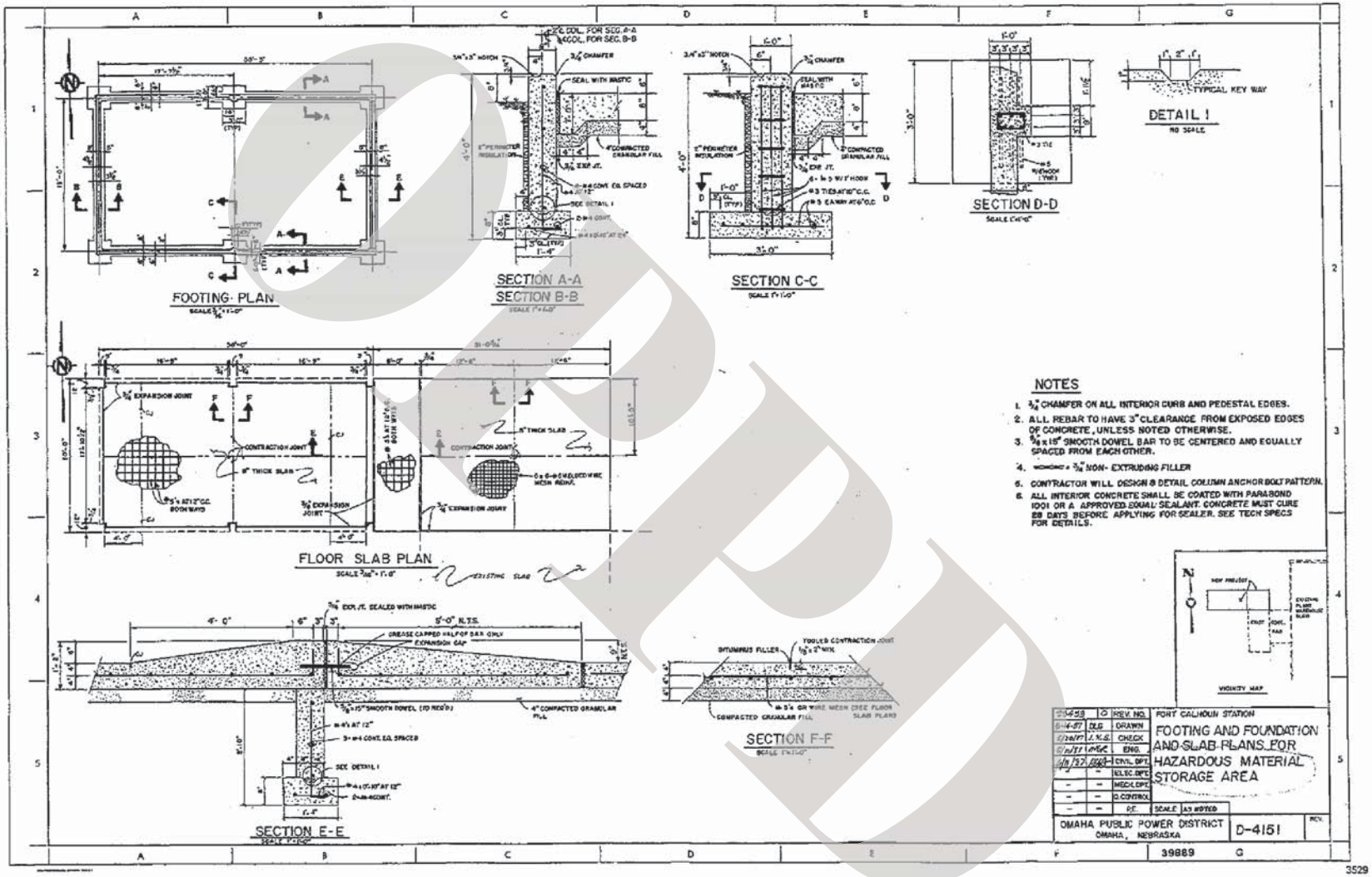
saturated areas, or boils.		
Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable.		

Activity 2 – Fencing		
	Condition	Comment
1. No obstructions, vegetation, debris, or sediment accumulation.		
2. No active erosion, scouring, soil subsidence, sink holes or bank caving that might endanger the system or structure's stability.		
3. Fencing is in good condition and provides protection against unauthorized access.		
4. Structure in good condition.		
5. Gates in good condition and functional.		
Key: A = Acceptable. M = Minimally Acceptable; Maintenance is required. U = Unacceptable. N/A = Not Applicable.		

Prepared by: _____ (Signature)
_____ (Date)

Reviewed by: _____

TIMMONS
METAL BUILDING SPECIALISTS
14646 GROVER ST
OMAHA, NEBRASKA
68144
HAZARDOUS WASTE STORAGE
BUILDING PLANS AND ELEVATIONS
PROJECT FORT CALHOUN STATION
NAME OMAHA Public Power District
ADDRESS FORT CALHOUN, NEBR.
FOUNDATION & ANCHOR BOLT PLAN
FLOOR SLAB PLAN
SECTION A-A
SECTION B-B
Security-Related and/or Personal Information Redacted

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OPPD – FORT CALHOUN STATION
2011 FLOOD ASSESSMENT - STRUCTURAL CONDITION SURVEY

Structure Number:		Structure Name:	Hasmat Shed

USER NOTES / INSTRUCTIONS

1. The purpose of this condition survey is to document observable signs of distress in the structural systems of the Fort Calhoun Nuclear Power Plant due to the 2011 flood event.

2. This inspection is not a condition survey of the entire facility but an opinion of structural damage due to the flood event only. Therefore, documented items of structural distress shall be limited to those attributed to the flood event.

3. Each observed structure shall include a review of existing inspection reports to verify if the observed item was reported prior to the flood event. If possible, review previous inspection reports prior to the on-site structure inspection.

4. Each surveyed structure shall include a review of the available existing structural drawings. If possible, review existing drawings prior to the on-site structure inspection.

5. Structures to be surveyed for flood damage were selected and prioritized by OPPD and include, but are not limited to buildings, process structures, equipment foundations, tank foundations and electrical towers.

6. Where items of distress are found, note the specific location, room number (if possible), nature of the distressed element, loads presently applied and/or load rating of that element, and estimated effect of the flood forces. Use the additional sheet as necessary to document the item. Document each area of distress with photos.

7. Possible damage from flood forces on the structure may be caused by, but are not limited to the following:
    a. Foundation uplift due to buoyancy forces.
    b. Undermining of foundations due to flood dynamic (velocity) forces.
    c. Scouring of foundations due to flood dynamic (velocity) forces.
    d. Compressibility / consolidation of existing soils due to changes in moisture content.
    e. Expansive clay materials that undergo volume changes due to the changes in moisture content.
    f. Settlements due to the loss of soil shear strength.
    g. Cracking in walls due to additional lateral pressures from higher floodwater elevations.

OPPD – FORT CALHOUN STATION
2011 FLOOD ASSESSMENT - STRUCTURAL CONDITION SURVEY

Structure Number:		Structure Name:	Hasmat Shed

Date:	11/15/2011	Inspected By:	Cameron Collingsworth
Weather:	60 degrees partly cloudy/windy		
Current Flood Elev. Relative To FFE:			Around 992 ft

Activity 1 – Description of Structure	
Drawing Ref:	OPPD File #'s : 39889, 45788
Sketch Map – Orientation:	N/A
Foundation:	The foundation system consists of six 3 ft by 3 ft by 8 in thick column spread footings, four of which reside at the four corners of the shed and the remaining two at the midpoint of the north and south walls. At each footing a 1 ft deep by 9 in wide pilaster extends to 6 in above finished floor elevations. Each spread footing is connected by a 1 ft 4 in wide by 8 in thick continuous footing which supports a perimeter stem wall which extends 8 in above grade and is integrated into the pilasters at each of the six column locations. The 8 in thick slab-on-grade, encompassed by the perimeter stem wall, floats on 4 in of compacted granular fill. The slab is thickened to 12 in at its perimeter. A ¾ in expansion joint separates the perimeter of the slab from the interior of the stem wall.
Superstructure:	The above grade structure is a pre-engineered building by Timmons Building Service, Inc. The building is supported by three primary girts running north to south at each building end and the building midpoint. Lateral support for the building is provided by the three primary girts in the north to south direction. The east to west direction is presumed to be supported by cross bracing of some sort as is typical practice in these structures although drawings do not go to this level of detail. The roof is a gable style roof with a 0.5:12 roof pitch clad with a typical clip-style metal building roofing system. The building is clad with cold formed metal sheathing.
Photographs:	

Activity 2 – Previously Documented Condition of Structure		
Item No.		
1	Title:	N/A
	Date:	N/A
	Author or Source:	N/A
	Summary of Condition:	No previous condition reports were available for the Hasmat Shed.

Activity 3 – Present Condition of Structure

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2011 FLOOD ASSESSMENT - STRUCTURAL CONDITION SURVEY

Structure Number:		Structure Name:	Hasmat Shed

General Description:		Hasmat shed was constructed per plans as referenced above. Structure did not show any signs of distress related or non related to the flood event. Inundation during the flood was apparent from water marks seen on the interior walls of the building.
Overall Alignment		
	Settlement:	None
	Deflection:	None
	Expansion:	None
	Contraction:	None
	Other:	None

Activity 4 – Portions Showing Distress			
Item No.			
1	General Description:		N/A
	Distress Item Previously Reported (Y/N) – Report Number?		N/A
	Photograph:		None
	Nature of Loading & Detrimental Elements:		
	Exposure		
		Freeze / Thaw:	
		Chemical Attack:	
		Abrasion, erosion, cavitation, impact:	
		Salts or Chloride Solution:	
		Other:	
	Loading		
		Dead:	
		Live:	
		Impact:	
		Dynamic / Vibration:	
		Flood:	

OPPD – FORT CALHOUN STATION
2011 FLOOD ASSESSMENT - STRUCTURAL CONDITION SURVEY

Structure Number:		Structure Name:	Hasmat Shed

		Other:	
		Soils (Foundation Conditions)	
		Flood Inundation (Y/N)?	
		Fndn. Uplift (Y/N)?	
		Undermining (Y/N)?	
		Scouring (Y/N)?	
		Compressibility / Consolidation:	
		Expansive:	
		Settlement:	
		Other:	

Activity 5 – Additional Information	
Item No.	
1	General Description: N/A