

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 97373
CSAH 37
OVER
HEIR CREEK
DISTRICT 2 - CLEARWATER COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 3512 (CEI 35)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure inspected at Bridge No. 97373, a corrugated aluminum arch culvert, was found to be in good to very good condition. The previously inspected bridge structure had been replaced with the culvert structure. There were no defects of structural significance observed. The channel bottom inspected upstream and downstream of the substructure units is presently stable with no evidence of significant scour.

INSPECTION FINDINGS:

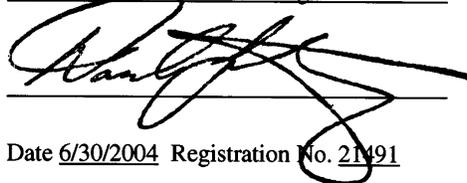
- (A) The corrugated aluminum arch culvert was in good and sound condition with all joints secure and properly fit with no gaps and no surface corrosion observed.
- (B) Two pieces of large riprap were observed on the east side of the culvert floor just downstream of the center of the culvert.
- (C) A 6-inch-diameter piece of timber debris, approximately 15 feet long, was observed on the east side of the culvert floor at the downstream end.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

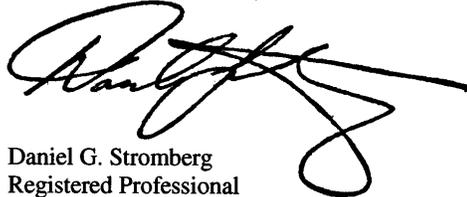
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 97373

Feature Crossed: Heir Creek

Feature Carried: CSAH 37

Location: District 2 - Clearwater County

Bridge Description: The structure consisted of one corrugated aluminum arch culvert.

2. INSPECTION DATA

Professional Engineer Diver: Daniel G. Stromberg
State of Minnesota, P.E., No. 21491

Dive Team: Michelle D. Koerbel, Matthew J. Lengyel

Date: August 28, 2002

Weather Conditions: Rain, " 65° F

Underwater Visibility: " 4.0 Feet

Waterway Velocity: None/Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Barrel and headwalls of corrugated aluminum culvert.

General Shape: The structure consisted of one, 54 feet long by 6.5 feet high by 15.3 feet wide, corrugated aluminum arch culvert.

Maximum Water Depth at Substructure Inspected: Approximately 4.7 feet.

4. WATERLINE DATUM

Water Level Reference: The crown of the culvert at the upstream opening.

Water Surface: The waterline was approximately 2.0 feet below reference.
Water Elevation = 1518.92.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

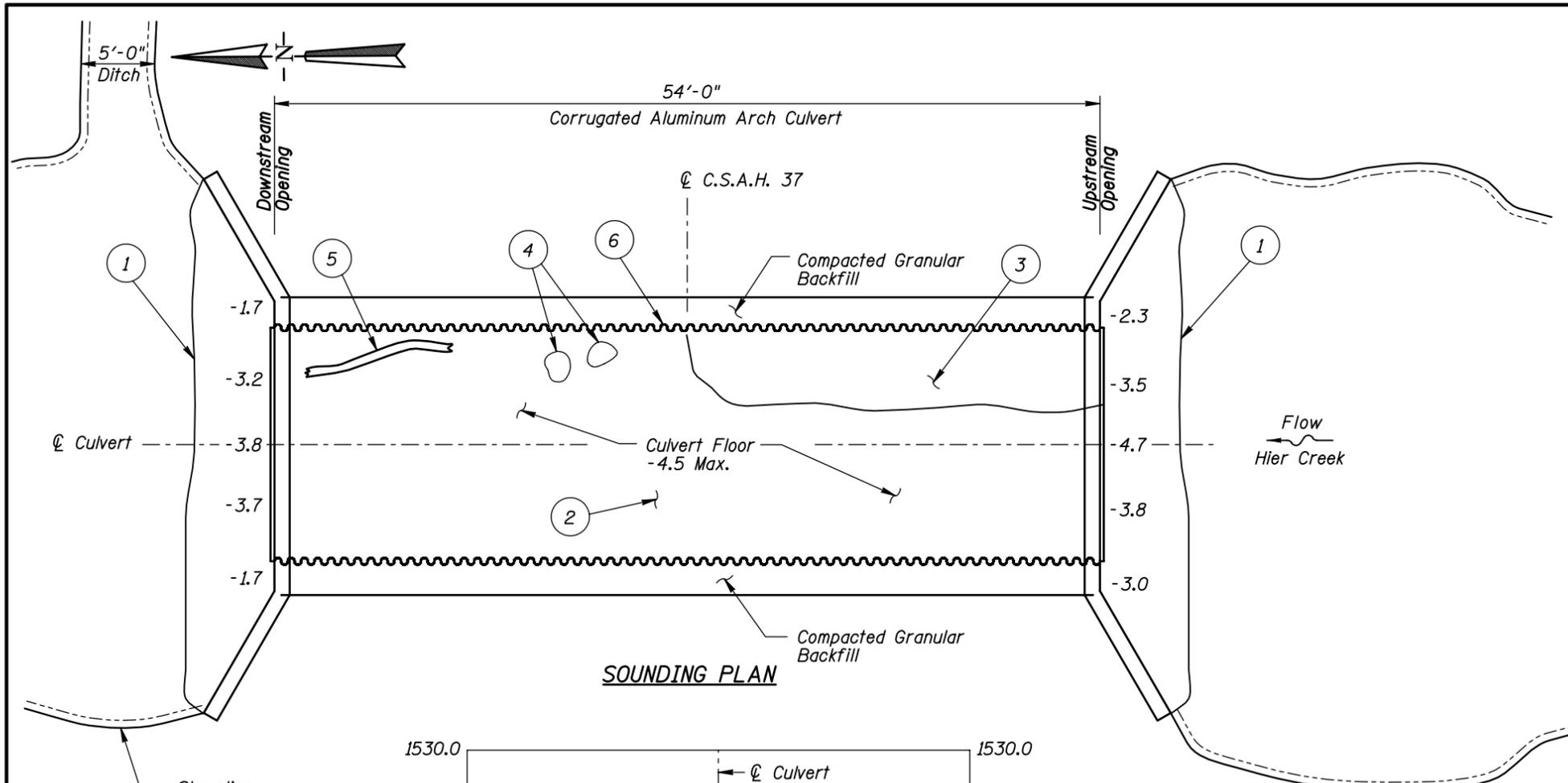
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/8/02

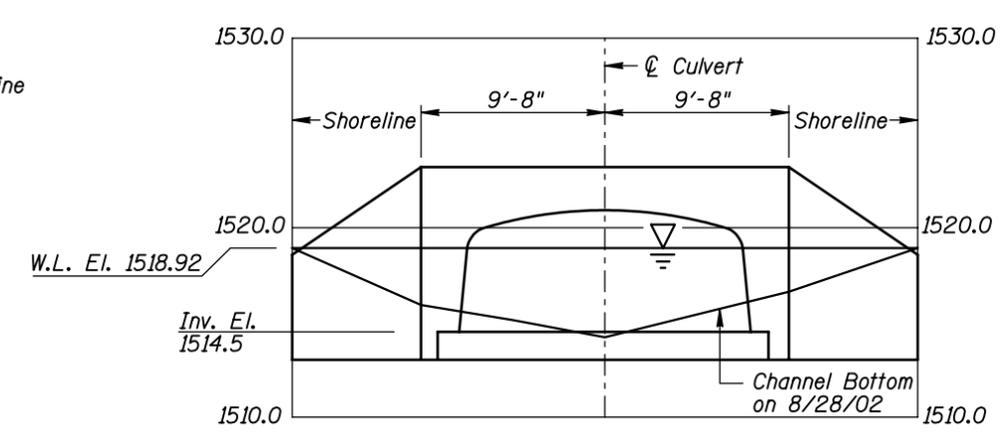
Item 113: Scour Critical Bridges: Code E/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

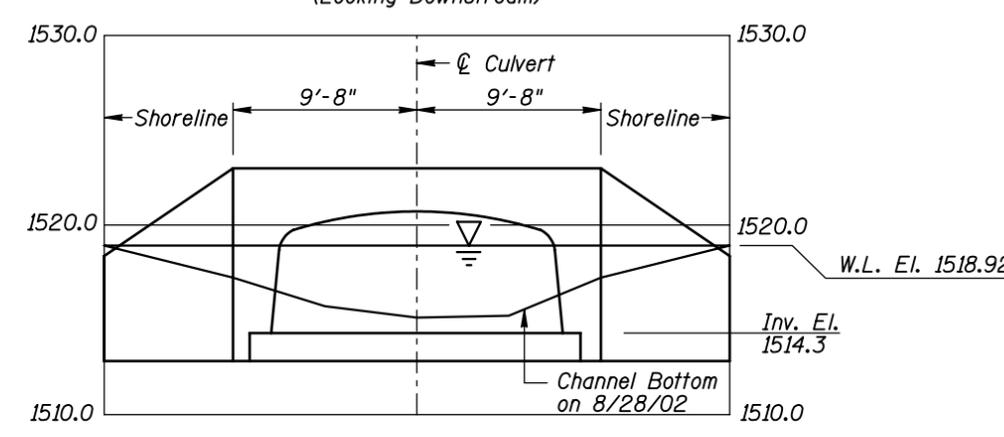
Yes No



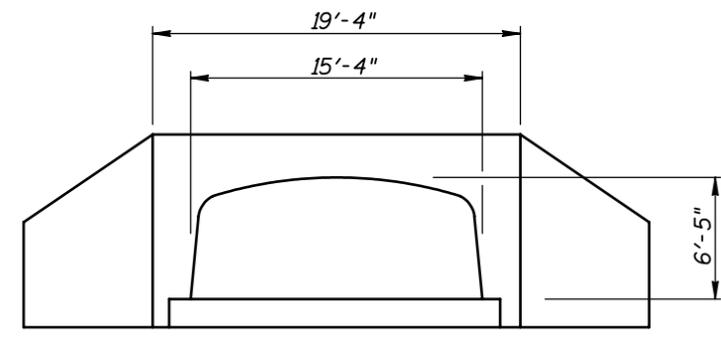
SOUNDING PLAN



UPSTREAM OPENING PROFILE
(Looking Downstream)



DOWNSTREAM OPENING PROFILE
(Looking Upstream)



TYPICAL END VIEW OF CULVERT

GENERAL NOTES:

1. The barrel and headwalls of the corrugated aluminum arch culvert were inspected underwater.
2. At the time of inspection on August 28, 2002, the waterline was located approximately 2.0 feet below the top of the culvert at the upstream opening. This corresponds to a waterline elevation of 1518.92 at the upstream opening based on design plans dated 1994.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the culvert at 1/4 point intervals at the upstream and downstream ends.

INSPECTION NOTES:

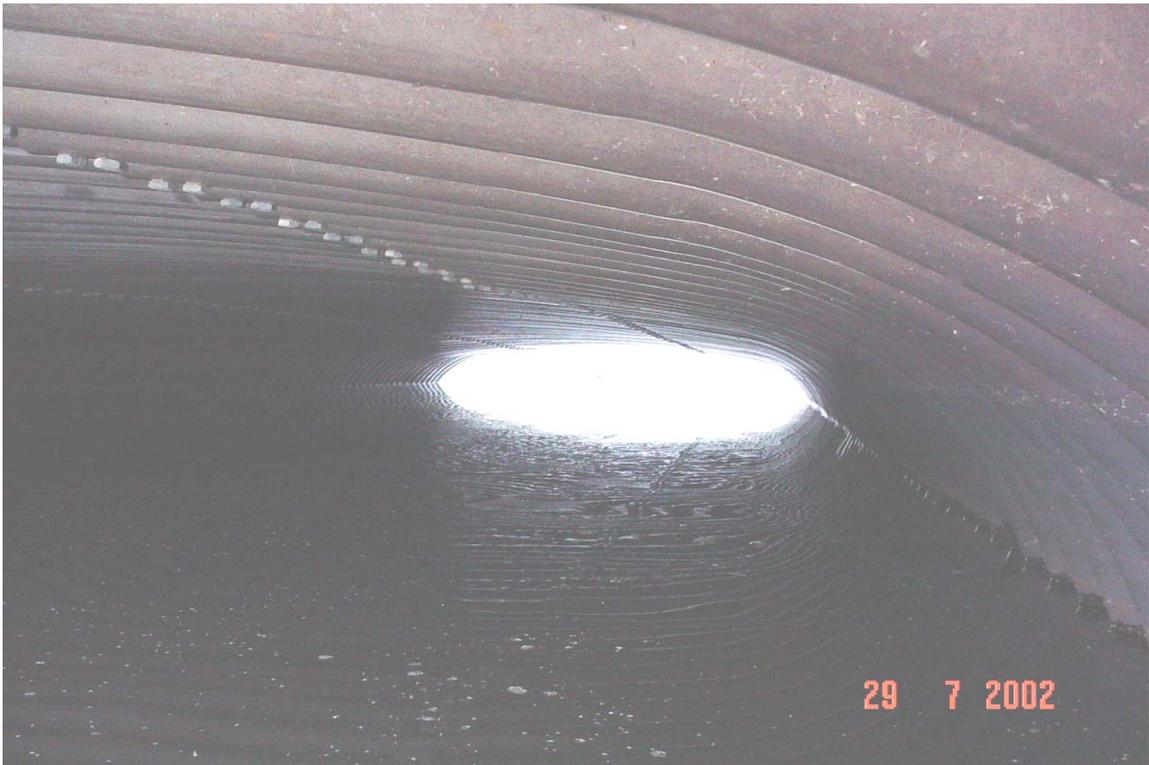
1. The channel bottom consisted of riprap covered with silty sand with 6 inches of probe rod penetration.
2. Culvert floor was typically covered with a 2 inch layer of silty, sandy gravel.
3. Area of culvert floor covered with a 6-inch layer of silty, sandy gravel located on the east side of the culvert floor from the upstream opening to the mid point of the culvert.
4. Two pieces of riprap, 1 to 2 foot in diameter, located on the east side of the culvert floor between the mid point of the culvert and downstream 1/4 point.
5. A 6 inch diameter, 15 foot long log on the culvert floor at the downstream end.
6. The corrugated aluminum arch culvert was in good, sound condition with all joints secure and properly fitted with no gaps and no surface corrosion observed.

Legend
-3.8 Sounding Depth from Waterline (8/28/02)

MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION		
STRUCTURE NO. 97373 OVER HIER CREEK DISTRICT 2, CLEARWATER COUNTY		
INSPECTION AND SOUNDING PLAN UPSTREAM AND DOWNSTREAM OPENING PROFILES		
Drawn By: PRH	COLLINS ENGINEERS, INC. 300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Date: AUG. 2002
Checked By: MDK		Scale: 1"=10'
Code: 35120035		Figure No.: 1



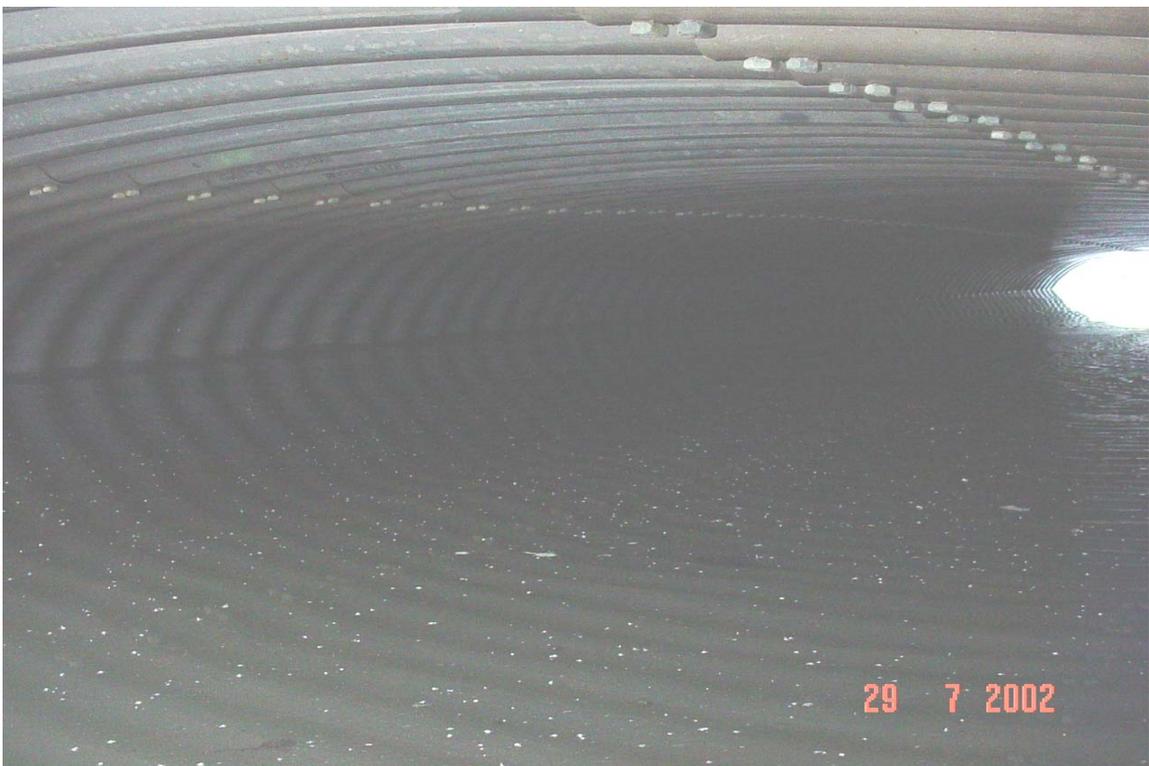
Photograph 1. Overall View of Structure, Looking Northeast.



Photograph 2. View of Interior Top of Culvert, Looking South.



Photograph 3. View of the West Side of the Culvert, Looking Southwest.



Photograph 4. View of the East Side of the Culvert, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc.

DATE: August 28, 2002

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E.

BRIDGE NO: 97373

WEATHER: Rain, " 65° F

WATERWAY CROSSED: Heir Creek

DIVING OPERATION:

SCUBA

SURFACE SUPPLIED AIR

OTHER

PERSONNEL: Michelle D. Koerbel, Matthew J. Lengyel

EQUIPMENT: SCUBA, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera

TIME IN WATER: 9:20 A.M.

TIME OUT OF WATER: 9:45 A.M.

WATERWAY DATA: VELOCITY None/Negligible

VISIBILITY " 4.0 Feet

DEPTH 4.7 feet at the south headwall

ELEMENTS INSPECTED: Corrugated aluminum arch culvert

REMARKS: Overall, the corrugated aluminum arch culvert was in very good condition with no defects noted. On the floor of the culvert, there were two pieces of 1- to 2-foot-diameter riprap at the center of the east side of the culvert and a 6-inch-diameter piece of timber debris, approximately 15 feet long, along the northeast half of the culvert.

FURTHER ACTION NEEDED: _____ YES NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 97373
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E. 21491
WATERWAY CROSSED Heir Creek

INSPECTION DATE August 28, 2002
NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE					CHANNEL					GENERAL						
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Culvert	4.7'	N	8	N	9	N	8	8	N	N	7	7	N	8	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the corrugated aluminum arch culvert was in very good condition with no defects noted. On the floor of the culvert, there were two pieces of 1- to 2-foot-diameter riprap at the center of the east side of the culvert and a 6-inch-diameter piece of timber debris, approximately 15 feet long, along the northeast half of the culvert.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO. USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.