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October 28, 2008

City of Rochester Hills
1000 Rochester Hills Drive
Rochester Hills, Michigan 48309-3033

Attn: Mr. Paul Shumejko, P.E., Traffic Engineer

Re: 2008 Pedestrian Bridge Inspections

HRC Job No. 20080396

Dear Mr. Shumejko:

We have completed the 2008 pedestrian bridge inspections in accordance with our July 23, 2008 authorized scope of services for the thirteen (13) pedestrian bridges located on Attachment A, and have included for your records one (1) complete set of the 2008 pedestrian bridge inspection documentation which includes the following:

- Completed Pedestrian Bridge Inspection Reports (Attachment A).
- Selected timber piers photographs of concern (Attachment B).
- Maintenance Work Items spreadsheet (Attachment C).
- A compact disk containing photos taken during the inspections.

In summary, the overall condition of the thirteen (13) pedestrian bridges appears to be in fair to good condition. The recommended maintenance work items for each bridge are listed in Attachment C. Also noted in Attachment C is the recommendation that three of these bridges, Bridge No. 5, No. 11, and No. 12, should receive an additional detailed substructure inspection followed by a load rating analysis. These bridge's timber piles, timber bents and timber stub columns have experienced a moderate amount of decay and deterioration as shown in Attachment B.

Thank you again for selecting HRC and we look forward to our continued service to Rochester Hills. If you have any questions or require additional information, please contact the undersigned.

Very truly yours,

HUBBELL, ROTH & CLARK, INC.

Daniel W. Mitchell, P.E.
Associate

RBN/jjb

Attachments A, B, and C; CD of Inspection Photos

pc: HRC; F. Navarre, R. Nacey, File

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Engineering. Environment. Excellence.

PEDESTRIAN BRIDGE INSPECTION REPORT

	A	B	C	D
DATE INSPECTED:	09/09/08			
INSPECTED BY:	JML/RBN			

BRIDGE No.9	ROUTE: 0.34 MILE WEST OF DEQUINDRE ROAD	COUNTY: OAKLAND
LOCATION: AVON ROAD OVER WETLANDS		SECTION: 13
DESCRIPTION: TIMBER BOARDWALK	TOTAL LENGTH: 182'	DECK WIDTH: 9'-9" CL
	STRINGER SPANS: 10'	DESIGN LOAD: LL=60PSF
		FOUNDATION: TIMBER PILES & BENTS

1. REPAIRS MADE: NONE
2. ADDITIONAL INSPECTION EQUIPMENT:
3. CRITICAL INSPECTION FEATURE:
4. PAINT CLASS: YEAR/COLOR:

RATING LEGEND	
9	NEW
7-8	GOOD
5-6	FAIR
4	POOR
3	SERIOUS
2 OR LESS	CRITICAL

	UNIT	RATING				EXPLANATION OF CONDITIONS
		A	B	C	D	
SUPERSTRUCTURE	1. WEARING SURFACE	NA				WEARING SURFACE: NA DECK: TIMBER APPROACH: GRAVEL EXP. JOINT TYPE: NA MIN. OPENING: NA
	2. DECK	9				2.) EXCESSIVE OVERHANGING FOLIAGE NOTED OVER BOARDWALK. SEVERAL DECK HOLD DOWN SCREWS ARE PROJECTING UPWARD. TRIPPING HAZARD POTENTIAL.
	3. EXPANSION JOINTS	NA				5.) A FEW RAILING POST CONNECTION NUTS ARE MISSING. SEVERAL RUB RAIL CONNECTION SCREWS ARE NOT RECESSED AND PROJECT OUT OF THE RAILS. RAILING LATERAL MOVEMENT APPEARS TO BE EXCESSIVE.
	4. OTHER JOINTS	NA				6.) OVERHEAD UTILITY LINES CROSSING OVER BOARDWALK OBSERVED.
	5. RAILINGS	9				12.) SOME EVIDENCE OF WEATHERING AND DRYING OBSERVED.
	6. UTILITIES	NA				15, 16.) PILES ADJACENT TO CREEK ARE NOT CONCRETE ENCASED AND SURROUNDED IN A "SONNA TUBE" FORM THAT IS FILLED WITH BACKFILL AND DEBRIS.
	7. BEARING DEVICES	NA				18.) STEEP GRADE NOTED ALONG THE SOUTH SIDE OF THE BOARDWALK.
	8. DRAINAGE	NA				20.) WEST APPROACH - APPEARS TO DEAD END AND CONSTRUCTION WAS NOT COMPLETED.
	9. STRINGERS	8				22.) LARGE GAP BELOW SOUTH APPROACH RAILING AT THE WEST END NOTED.
	10. FLOOR BEAMS / TIMBER TIES	8				24.) A SECTION OF THE 3' DIA. (+/-) CMP DRAIN, LOCATED ALONG THE SOUTH SIDE OF THE BOARDWALK HAS SEPARATED.
	11. PAINT	NA				
	12. TREATMENT/COATING	8				
	SUBSTRUCTURE	14. ABUTMENTS	8			
15. PIERS / HEADERS / STUB COLUMNS		8				
16. PILES		8				
17. STEEL SHEET PILING		NA				
18. SLOPE PROTECTION		6				
19. ELECTRICAL GROUNDING		NA				
APPROACHES	20. PAVEMENT	9				
	21. SLOPES	NA				
	22. RAILING	8				
HYDRAULICS	23. SUBSTRUCTURE SCOUR	8				
	24. CHANNEL PROTECTION	NA				RECOMMENDATIONS: 2.) RETIGHTEN SEVERAL DECK SCREWS THAT PROJECT UPWARD AND REMOVE OVERHANGING FOLIAGE. 5.) ADD GALVANIZED NUTS TO SEVERAL POSTS CONNECTIONS AND TIGHTEN DOWN RUB RAIL CONNECTION NAILS & SCREWS AS REQ'D. 12.) RESEAL TIMBER DECK AND RAILS.
	25.					18.) REPAIR CMP PIPE SECTION THAT HAS SEPARATED. 20, 22.) FINISH CONSTRUCTION OF WEST APPROACH.
	26.					

PEDESTRIAN BRIDGE INSPECTION REPORT

	A	B	C	D
DATE INSPECTED:	09/11/08			
INSPECTED BY:	JML/RBN			

BRIDGE No.10	ROUTE: 0.20 MILE NORTH OF TIENKEN ROAD	COUNTY: OAKLAND
LOCATION: ROCHESTER ROAD OVER WETLANDS		SECTION: 3
DESCRIPTION: TIMBER BOARDWALK	TOTAL LENGTH: 162'-0"	DECK WIDTH: 7'-11"
	STRINGER SPANS: 8'-0"	DESIGN LOAD:
		FOUNDATION: TIMBER PILES & BENTS

1. REPAIRS MADE: NONE
2. ADDITIONAL INSPECTION EQUIPMENT:
3. CRITICAL INSPECTION FEATURE:
4. PAINT CLASS: YEAR/COLOR:

RATING LEGEND	
9	NEW
7 - 8	GOOD
5 - 6	FAIR
4	POOR
3	SERIOUS
2 OR LESS	CRITICAL

	UNIT	RATING				EXPLANATION OF CONDITIONS
		A	B	C	D	
						WEARING SURFACE: NA DECK: TIMBER APPROACH: BITUMINOUS EXP. JOINT TYPE: NA MIN. OPENING: NA
SUPERSTRUCTURE	1. WEARING SURFACE	NA				
	2. DECK	6				2.) WEATHERING OF TIMBER DECKING AND A SIGNIFICANT AMOUNT OF OVERHANGING FOLIAGE NOTED. TOP SURFACE OF SEVERAL ADJACENT DECK BOARDS ARE UNEVEN. TRIPPING HAZARD POTENTIAL. MAJORITY OF DECK BOARDS HAVE LOCAL SPLITS AND CHECKS.
	3. EXPANSION JOINTS	NA				4.) JOINTS ALONG ENDS OF BOARDWALK - APPROACH PAVEMENT HAS SETTLED SLIGHTLY RESULTING IN A TRIPPING HAZARD POTENTIAL.
	4. OTHER JOINTS	7				5.) LOCAL AREAS OF RUB RAIL DECAY OBSERVED. SEVERAL AREAS OF THE SIDE AND TOP RUB RAILS ARE WARPED AND BOWED. MAJORITY OF THE RUB RAIL CONNECTION BOLTS HAVE SURFACE RUST. NO WASHERS ACCOMPANY CONNECTION BOLTS.
	5. RAILINGS	7				9, 13, 15.) NO SIGNIFICANT DETERIORATION, DECAY, LOS OF SECTION OBSERVED. ABOUT 80% OF DECK UNDERSIDE INSPECTED.
	6. UTILITIES	NA				12.) RAILING AND DECK HAS WEATHERED AND DRIED. MINIMAL TREATMENT COATING REMAINING LIKELY.
	7. BEARING DEVICES	NA				16.) TIMBER PILES IN GOOD CONDITION. ABOUT 75% OF THE PILES INSPECTED.
	8. DRAINAGE	NA				20.) AREAS OF CRACKING, UNRAVELING AND SETTLING OBSERVED. NORTH APPROACH DETERIORATION WORSE THAN SOUTH. SIGNIFICANT OVERHANGING FOLIAGE NOTED ALONG SOUTH APPROACH.
	9. STRINGERS	8				22.) SLOPING TOP RUB RAIL IN SE QUAD IS NOT CONNECTED. SLOPING APPROACH RAIL NOT LIKELY TO COMPLY WITH CURRENT AASHTO CODES.
	10. FLOOR BEAMS / TIMBER TIES	NA				23.) NO EVIDENCE OF SCOUR.
	11. PAINT	NA				
	12. TREATMENT/COATING	5				
	13. SECTION LOSS	8				
SUBSTRUCTURE	14. ABUTMENTS	8				
	15. PIERS / HEADERS / STUB COLUMNS	8				
	16. PILES	8				
	17. STEEL SHEET PILING	NA				
	18. SLOPE PROTECTION	NA				
19. ELECTRICAL GROUNDING	NA					
APPROACHES	20. PAVEMENT	6				
	21. SLOPES	7				
	22. RAILING	6				
HYDRAULICS	23. SUBSTRUCTURE SCOUR	8				
	24. CHANNEL PROTECTION	NA				RECOMMENDATIONS: 2.) REMOVE OVERHANGING FOLIAGE. LOCALLY REPLACE DETERIORATED DECK BOARDS. RESEAL DECK BOARDS. 5.) LOCALLY REPLACE TOP AND SIDE RUB RAILS, TIGHTEN CONNECTIONS AND SEAL RAILING. 20.) REMOVE OVERHANGING FOLIAGE AND REPAIR BITUMINOUS APPROACHES. 22.) REPLACE AND RECONNECT SE QUAD APPROACH RAILING.
	25.					
	26.					

PEDESTRIAN BRIDGE INSPECTION REPORT

A
B
C
D

DATE INSPECTED: 10/17/08

INSPECTED BY: JML/RBN

BRIDGE No.11	ROUTE: 600 FEET NORTH OF TIENKEN ROAD	COUNTY: OAKLAND
LOCATION: PAINT CREEK TRAIL OVER PAINT CREEK		SECTION: 3
DESCRIPTION: TRAIL BRIDGE	SPANS: 3 @ 17'-8" = 53'-0"	DECK WIDTH: 7'-10" CL
CONVERTED RR BRIDGE	TYPE: STEEL STRINGER, CONT.	DESIGN LOAD: RR
		FOUNDATION: TIMBER PILES & BENTS

1. REPAIRS MADE: NONE
2. ADDITIONAL INSPECTION EQUIPMENT:
3. CRITICAL INSPECTION FEATURE:
4. PAINT CLASS: YEAR/COLOR:

RATING LEGEND	
9	NEW
7 - 8	GOOD
5 - 6	FAIR
4	POOR
3	SERIOUS
2 OR LESS	CRITICAL

	UNIT	RATING				EXPLANATION OF CONDITIONS
		A	B	C	D	
						WEARING SURFACE: NA DECK: TIMBER APPROACH: GRAVEL EXP. JOINT TYPE: NA MIN. OPENING: NA
SUPERSTRUCTURE	1. WEARING SURFACE	NA				
	2. DECK	6				2. 10.) SOME OVERHANGING FOLIAGE NOTED. ENDS OF THE MAJORITY OF THE TIMBER TIES HAVE DETERIORATED WITH FOLIAGE GROWING WITHIN. DECAY APPEARS TO EXTEND ABOUT 1 TO 2 FEET IN FROM EACH TIMBER TIE END. SOME DECAY OF DECK BOARDS ALSO NOTED. DECK WIDTH IS SIGNIFICANTLY NARROWER THAN APPROACH PAVEMENTS. SOME DEBRIS AND GRAVEL HAS COLLECTED ALONG THE DECK BOARD FASCIAS.
	3. EXPANSION JOINTS	NA				
	4. OTHER JOINTS	NA				
	5. RAILINGS	6				5, 11.) LOOSE RAILING SECTION NOTED IN THE NE QUAD. DECAY ALONG A MAJORITY OF THE TO TOP RUB RAILS OBSERVED. SEVERAL LOOSE NAILED END SCREWED RUB RAIL CONNECTIONS NOTED. LOSS OF PROTECTIVE PAINT NOTED THROUGHOUT, ESPECIALLY ALONG THE TOP RUB RAIL. LOCAL AREAS OF POST ANCHORAGE DECAY ALSO OBSERVED.
	6. UTILITIES	NA				
	7. BEARING DEVICES	NA				9, 13.) SOME MINOR SECTION LOSS OF STEEL STRINGERS NOTED. MAJORITY OF THE STRINGER SURFACE IS RUSTED WITH ONLY LIMITED PAINT REMAINING. SIGNIFICANT DECAY OF OUTBOARD LONGITUDINAL STRINGERS OBSERVED.
	8. DRAINAGE	NA				12.) TIMBER DECK BOARDS & TIES - TREATMENT NO LONGER APPEARS TO BE EFFECTIVE.
	9. STRINGERS	7				14.) LOCAL EROSION AND UNDERMINING OF THE NORTH ABUTMENT IN THE NE QUAD OBSERVED. AREAS OF DECAY ALONG ENDS OF TIMBER ABUTMENTS ALSO NOTED. STEEL RAIL TIE BACKS / SUPPORTS APPEAR TO BE SOUND. SOME DECAY OF TOP ABUTMENT TIMBERS.
	10. FLOOR BEAMS / TIMBER TIES	6				15.) SIGNIFICANT AMOUNT OF STUB COLUMN DECAY OF THE NORTH TIMBER BENT / PIER NEAR WATER SURFACE HAS OCCURRED. ABOUT 50% SECTION LOSS OF TWO STUB COLUMNS AND ABOUT 30% SECTION LOSS OF THE REMAINING STUB COLUMNS NOTED. FURTHER DETAILED TIMBER BENT INSPECTION RECOMMENDED.
	11. PAINT	5				
	12. TREATMENT/COATING	4				16.) SOUTH TIMBER BENT - ABOUT 10% LOSS OF SECTION OF EACH OF THE SIX TIMBER PILES NOTED. PILE CAPS APPEAR TO BE SOUND.
	SUBSTRUCTURE	13. SECTION LOSS	7			
14. ABUTMENTS		6				23.) NO EVIDENCE OF SCOUR OBSERVED AROUND SUBMERGED TIMBER.
15. PIERS / HEADERS / STUB COLUMNS		4				
16. PILES		6				
17. STEEL SHEET PILING		NA				
18. SLOPE PROTECTION		NA				
APPROACHES	19. ELECTRICAL GROUNDING	NA				
	20. PAVEMENT	7				
	21. SLOPES	7				
HYDRAULICS	22. RAILING	6				
	23. SUBSTRUCTURE SCOUR	7				
	24. CHANNEL PROTECTION	NA				RECOMMENDATIONS: 2.) REMOVE DEBRIS AND FOLIAGE AND RESEAL TIMBER DECK BOARDS. DETERMINE DECK WIDTH COMPLIANCE W/ AASHTO STANDARDS. 5.) REPAIR LOOSE RAILING CONNECTIONS AND REPAINT RAILING. LOCALLY REPLACE TOP RUB RAILS. 10.) SEAL ENDS OF TIMBER TIES AND REMOVE FOLIAGE. 15, 16.) PERFORM A DETAILED INSPECTION OF THE TIMBER PILES AND BENTS AND PERFORM A LOAD RATING ANALYSIS BASED ON FINDINGS.
	25.					
	26.					

PEDESTRIAN BRIDGE INSPECTION REPORT

	A	B	C	D
DATE INSPECTED:	10/17/08			
INSPECTED BY:	JML/RBN			

BRIDGE No.12	ROUTE: 900 FEET SOUTH OF DUTTON ROAD	COUNTY: OAKLAND
LOCATION: PAINT CREEK TRAIL OVER PAINT CREEK		SECTION: 3
DESCRIPTION: TRAIL BRIDGE	SPANS: 4 @ 17'-6"(+/-)	DECK WIDTH: 9'-0" CL
CONVERTED RR BRIDGE	TYPE: STEEL STRINGER	DESIGN LOAD: RR
		FOUNDATION: TIMBER PILES & BENTS

1. REPAIRS MADE: NONE
2. ADDITIONAL INSPECTION EQUIPMENT:
3. CRITICAL INSPECTION FEATURE:
4. PAINT CLASS: YEAR/COLOR:

RATING LEGEND	
9	NEW
7 - 8	GOOD
5 - 6	FAIR
4	POOR
3	SERIOUS
2 OR LESS	CRITICAL

	UNIT	RATING				EXPLANATION OF CONDITIONS
		A	B	C	D	
						WEARING SURFACE: NA DECK: TIMBER APPROACH: GRAVEL EXP. JOINT TYPE: NA MIN. OPENING: NA
SUPERSTRUCTURE	1. WEARING SURFACE	NA				
	2. DECK	5				2.) SIGNIFICANT AMOUNT OF FOLIAGE NOTED WITHIN AND ALONG THE DECK LONGITUDINAL FASCIA BOARDS. MANY AREAS OF EXTENSIVE DECAY NOTED WITHIN EACH DECK LONGITUDINAL FASCIA BOARDS. ALSO SEVERAL LOCAL AREAS OF DETERIORATION OF THE DECK BOARDS OBSERVED.
	3. EXPANSION JOINTS	NA				5.) EAST RAILING IS ABOUT 1' OUT OF PLUMB. SEVERAL OF THE TOP AND SIDE RUB RAILS ARE LOOSE AND THE PAINT COATING HAS LOCALLY FAILED. TOP RUB RAIL CONNECTIONS ARE GENERALLY LOOSE.
	4. OTHER JOINTS	NA				9, 13.) SOME MINOR DETERIORATION AND LOSS OF SECTION NOTED WITHIN THE SIX STEEL STRINGERS AND STEEL DIAPHRAGMS. JAMMED CUT LOGS NOTED BETWEEN STRINGERS NOTED.
	5. RAILINGS	7				10.) MODERATE AMOUNT OF DETERIORATION NOTED AT A MAJORITY OF THE ENDS OF THE TIMBER TIES. FOLIAGE GROWING THROUGHOUT AND WITHIN THESE TIES. LENGTH OF DETERIORATION AVERAGES AROUND 12 - 18 INCHES.
	6. UTILITIES	NA				11.) MOST OF THE RAILING PAINT ALONG THE TOP RUB RAIL HAS FAILED.
	7. BEARING DEVICES	NA				12.) TIMBER COATING ON THE DECK BOARDS NO LONGER APPEARS TO BE EFFECTIVE.
	8. DRAINAGE	NA				14.) NORTH ABUTMENT BELOW DECK IS NOT VISIBLE. SOME EROSION AND BACKFILL SEEPAGE THRU THE NE WINGWALL OBSERVED. HORIZONTAL VOID / GAP NOTED ALONG THE NE WINGWALL NEAR GRADE. SOUTH ABUTMENT - SEVERAL TIMBER WALL PLANKS HAVE DETERIORATED, ESPECIALLY IN THE SW QUAD. ABOUT 70% STUB COLUMN SECTION REMAINS AT THE SOUTH ABUTMENT.
	9. STRINGERS	7				15.) 2ND & 3RD BENT FROM THE NORTH - SEVERAL AREAS OF SIGNIFICANT STUB COLUMN DETERIORATION DECAY NOTED, ESPECIALLY NEAR THE WATER SURFACE. ALSO, SOUTH ABUTMENT STUB COLUMN DECAY OBSERVED. FURTHER DETAILED INSPECTION OF STUB COLUMN AND BENTS RECOMMENDED.
	10. FLOOR BEAMS / TIMBER TIES	6				16.) PILES BELOW WATER SURFACE APPEARS TO BE IN GOOD CONDITION.
	11. PAINT	5				20.) LOCAL AREAS OF SETTLEMENT AT BRIDGE DECK ENDS OBSERVED.
	12. TREATMENT/COATING	4				22.) APPROACH RAILING APPEARS TO BE TOO LOW.
	13. SECTION LOSS	7				23.) NO EVIDENCE OF SCOUR AT TIMBER PILES.
SUBSTRUCTURE	14. ABUTMENTS	6				
	15. PIERS / HEADERS / STUB COLUMNS	5				
	16. PILES	7				
	17. STEEL SHEET PILING	NA				
	18. SLOPE PROTECTION	NA				
	19. ELECTRICAL GROUNDING	NA				
APPROACHES	20. PAVEMENT	7				
	21. SLOPES	NA				
	22. RAILING	6				
HYDRAULICS	23. SUBSTRUCTURE SCOUR	7				
	24. CHANNEL PROTECTION	NA				RECOMMENDATIONS: 2, 10.) REPLACE TIMBER DECK BOARDS AND FASCIA BOARDS AS REQUIRED. RESEAL DECK. REPLACE DECAYED TIMBER TIES AS REQUIRED. 5.) LOCALLY REPLACE TOP RUB RAIL AND RETIGHTEN CONNECTIONS. 15, 16.) PERFORM A DETAILED INSPECTION OF THE TIMBER PILES AND BENTS AND PERFORM A LOAD RATING ANALYSIS BASED ON FINDINGS.
	25.					
	26.					

PEDESTRIAN BRIDGE INSPECTION REPORT

A
B
C
D

DATE INSPECTED: 10/17/08

INSPECTED BY: JML/RBN

BRIDGE No.13	ROUTE: 160 FEET SOUTH OF DUTTON ROAD	COUNTY: OAKLAND
LOCATION: PAINT CREEK TRAIL OVER PAINT CREEK		SECTION: 3
DESCRIPTION: TRAIL BRIDGE	SPANS: SINGLE @ 51'-2"	BUILT: 1927
CONVERTED RR BRIDGE	TYPE: PLATE GIRDERS	FOUNDATION: CONC ABUT
DECK WIDTH: 11'-0" CL	DESIGN LOAD: RR	

1. REPAIRS MADE: NONE

2. ADDITIONAL INSPECTION EQUIPMENT:

3. CRITICAL INSPECTION FEATURE:

4. PAINT CLASS: YEAR/COLOR:

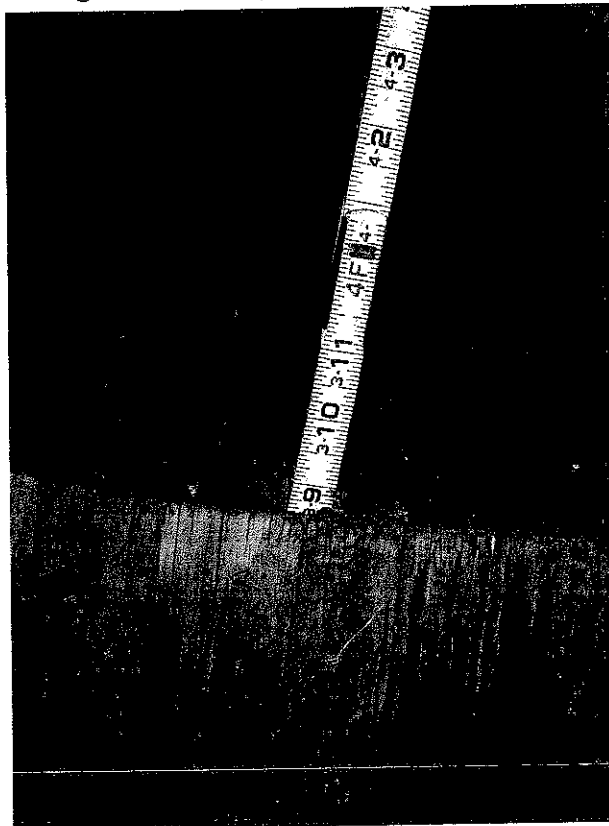
RATING LEGEND	
9	NEW
7 - 8	GOOD
5 - 6	FAIR
4	POOR
3	SERIOUS
2 OR LESS	CRITICAL

	UNIT	RATING				EXPLANATION OF CONDITIONS
		A	B	C	D	
SUPERSTRUCTURE	1. WEARING SURFACE	7				WEARING SURFACE: GRAVEL DECK: STEEL APPROACH: GRAVEL EXP. JOINT TYPE: UNKNOWN MIN. OPENING: NOT VISIBLE
	2. DECK	7				1.) GRAVEL WEARING SURFACE IN LIEU OF STONE BALLAST. 2.) STEEL DECK PLATING THAT IS RIVETED TO FLOOR BEAMS APPEAR TO BE IN GOOD CONDITION. SOME PAINT REMAINS ALONG UNDERSIDE BUT A MAJORITY OF SURFACE AREA IS RUSTED. 5.) SOME LOCAL AREAS OF MINOR DECAY OBSERVED. POST CONNECTIONS TO DECK APPEAR TO BE SOUND. 7.) SIGNIFICANT AMOUNT OF RUST OBSERVED ON ALL BEARINGS. SLIDE BEARINGS APPEAR TO BE "FROZEN" LONGITUDINALLY IN BEARING SLOTS. MODERATE AMOUNT OF BACKFILL AND DEBRIS HAS COLLECTED AROUND THE NW BEARING. 8.) THE DECK DRAINAGE PIPES, AS OBSERVED FROM BELOW THE DECK, APPEAR TO BE WORKING AND DRAINING THE BALLAST BATH TUB. 9, 10, 13.) RIVETED BUILT UP PLATE GIRDERS, FLOOR BEAMS AND PLATE CONNECTIONS APPEAR TO BE SOUND. NO RUST HOLES, CRACKS OR SIGNIFICANT DETERIORATION NOTED. MINIMAL TO NO SECTION LOSS OBSERVED. 11.) 99% OF PAINT COATING HAS FAILED. SURFACE RUST NOTED THROUGHOUT. 14.) NORTH AND SOUTH ABUTMENTS - EXCESSIVE SPALLING, SCALING, DETERIORATION AND EFFLORESCENCE NOTED. STANDING / PONDING WATER OBSERVED ALONG TOP OF THE SOUTH ABUTMENT BETWEEN BEARINGS. GENERAL APPEARANCE OF CONCRETE DETERIORATION APPEARS TO BE FREEZE THAW RELATED. EXTENSIVE DETERIORATION ALSO NOTED AT THE SE & NE WINGWALLS AND ABUTMENT BACKWALLS. SOME DETERIORATION ALSO NOTED AT THE NORTH WINGWALLS. 17.) COFFERDAM STEEL SHEET PILING NOTED ALONG THE ABUTMENT AND BELOW WATER SURFACE. 22.) APPROACH RAILING APPEAR TO BE TOO LOW. 23.) NO EVIDENCE OD SCOUR. ALONG THE SOUTH ABUTMENT AND SE WINGWALL IS A 5'(+/-) DEEP EROSION AREA ALONG THE FACE OF CONCRETE TO THE COFFERDAM SHEETING IN THE STREAM.
	3. EXPANSION JOINTS	7				
	4. OTHER JOINTS	NA				
	5. RAILINGS	8				
	6. UTILITIES	NA				
	7. BEARING DEVICES	4				
	8. DRAINAGE	7				
	9. STRINGERS	7				
	10. FLOOR BEAMS / TIMBER TIES	7				
	11. PAINT	0				
	12. TREATMENT/COATING	NA				
	13. SECTION LOSS	7				
SUBSTRUCTURE	14. ABUTMENTS	4				
	15. PIERS / HEADERS / STUB COLUMNS	NA				
	16. PILES	NA				
	17. STEEL SHEET PILING	7				
	18. SLOPE PROTECTION	7				
APPROACHES	19. ELECTRICAL GROUNDING	0				
	20. PAVEMENT	8				
	21. SLOPES	8				
HYDRAULICS	22. RAILING	5				
	23. SUBSTRUCTURE SCOUR	7				
	24. CHANNEL PROTECTION	NA				
	25.					
	26.					

RECOMMENDATIONS: 14.) MONITOR ABUTMENT CONCRETE DETERIORATION AT A REDUCED INSPECTION FREQUENCY. 22.) REPLACE APPROACH GUARDRAIL TO CURRENT AASHTO STANDARDS. 23.) ADD HEAVY RIPRAP ALONG SOUTH ABUTMENT BETWEEN FACE OF CONCRETE AND STEEL COFFERDAM.



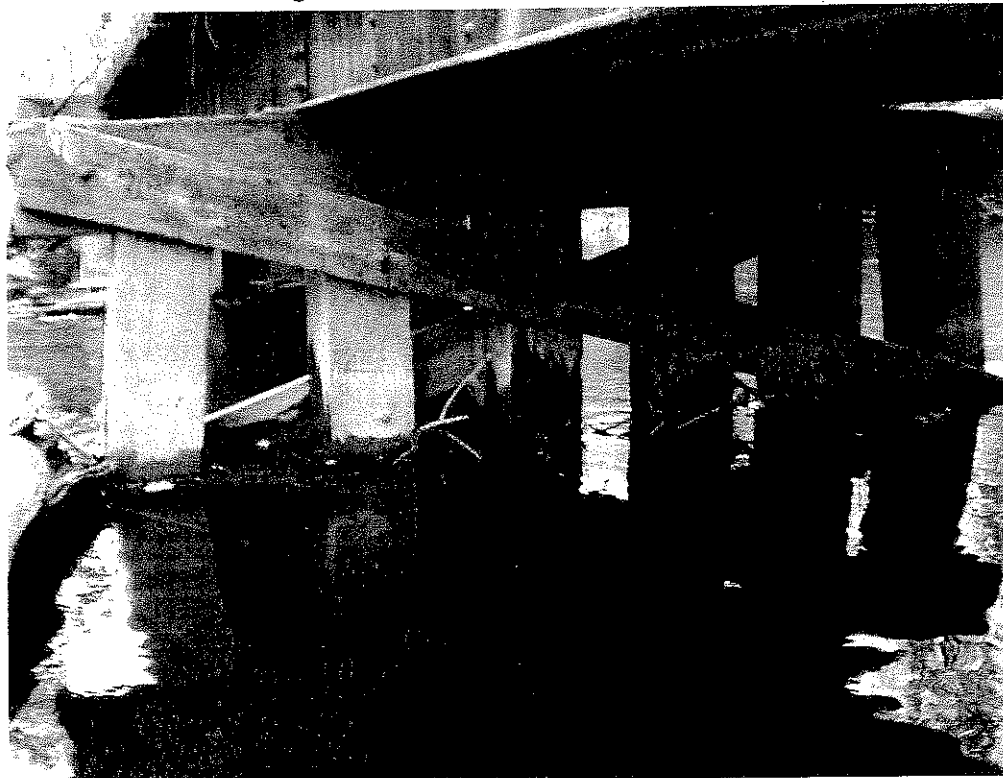
Bridge No. 5: Decayed Timber Piles Near Grade



Bridge No. 5: Hollow Timber Piles



Bridge No. 11: Decayed Timber Stub Columns



Bridge No. 12: Decayed Timber Stub Columns

2008 Pedestrian Bridge Inspections,
City of Rochester Hills

Recommended Maintenance Work Items

Bridge No.	Location	Bridge Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
			Monitor Bridge Elements	Detailed Inspection Required	Recommend Load Rating Analysis be Performed	Remove Overhanging Foliage	Locally Replace Decayed & Warped:	Reseal:	Re Tighten & Re Connect:	Re Seat Projecting Nails & Screws from:	Repair Cracks & Repair Bit / Conc Surfaces	Install Electrical Grounding System at:	Install or Replace Approach Railing	Locally Repair Approach Pavements:	Remove Sediment & Debris from:	Locally Repaint:	Install Slope & Scour Protection at:	Waterproof:	Locally Repair or Replace Abutments / Piers
1	Butler Rd over Wetlands, 0.65 Mile West of Adams Rd.	Timber Boardwalk	West 80' of board walk for settlement				deck, railings & approaches	deck boards, top rails, rub rails	deck & railing	loose top & side rub rails and posts	deck & railing		install	settled areas	deck				
2	Butler Rd over Wetlands, 0.38 Mile West of Adams Rd.	Timber Boardwalk					deck, railings & approaches	deck boards, top rails, rub rails	deck & railing	loose top & side rub rails and posts	deck & railing		install	settled areas & erosion at west end	deck				
3	Adams Rd over Clinton River, 0.39 Mile North of Hamlin Rd	Prefabricated Timber Truss	east fascia lower chord splice connection, near north abutment								hot pour seal along exp. Jts	north abutment			north end of deck, abutment/end of deck Jts, bearings	truss connector plates & bolts, nuts, washers	north abutment		
4	Hamlin Rd. over Clinton River, 0.29 Mile West of Crooks Rd	Converted vehicular bridge, box beams, bit wearing surface	underside longitudinal box beam cracks				North Deck Fascia				delaminated areas, reflective cracks & brush block voids		locally replace timber posts & add in SW quad		deck, especially NE Quad			box beams ends & pile cap joint	
5	Clinton River Trail over Clinton River, 0.43 Mile West of Livernois Rd	Converted RR bridge, timber deck, piles & bents		timber piles & bents	yes		deck, railings & approaches		deck & railing					west approach at end of deck		approach & deck railing			(see note 2)
6	Avon Rd over Clinton River, 150ft East of Livernois Rd	Glulam Beams & Timber Deck Panels						top & side rub rails	deck, beams, diaphragms & railing				replace	settled areas	bearings				locally replace timber abutments ties
7	Clinton River Trail over Clinton River, 0.25 Mile North of Avon Rd	Prefabricated Steel Steadfast Bridge, "Keystone"									seal concrete abutment surfaces	one - north or south abutments	remove & reinstall to proper orientation		bearings	approach & deck railing			
8	Clinton River Trail over Clinton River, 1.07 Mile North of Bloomer Rd	Converted RR bridge, plate girders, timber deck & ties	abutment deterioration					all timber deck boards & railings			leaking backfill abutment joints			settled areas			Abutments & Wingwalls		
9	Avon Rd over Wetlands, 0.34 Mile West of Dequindre Rd	Timber Boardwalk					deck, railings & approaches		deck & railing	loose top & side rub rails and posts, add missing post nuts	deck & railing			complete west approach construction			repair CMP separated pipe section along south fascia		
10	Rochester Rd over Wetlands, 0.20 Mile North of Tienken Rd	Timber Boardwalk					deck, railings & approaches	deck boards, top rails, rub rails	deck & railing	loose top & side rub rails and posts			Replace at SE quadrant	settled areas					
11	Paint Creek Trail over the Paint Creek, 600ft North of Tienken Rd	Converted RR bridge, steel stringers, timber deck	narrow deck width, verify w/ AASHTO Codes	timber piles & bents	yes		deck, railings & approaches	top rub rails	deck & railing, timber ties	loose top & side rub rails and posts	deck & railing	deck			deck	approach & deck railing			(see note 2)
12	Paint Creek Trail over the Paint Creek, 900ft South of Dutton Rd	Converted RR bridge, steel stringers, timber deck		timber piles & bents	yes			deck boards, fascia boards, timber ties, top & side rub rails	deck	loose top & side rub rails and posts									(see note 2)
13	Paint Creek Trail over the Paint Creek, 160ft South of Dutton Rd	Converted RR bridge, plate girders, timber deck & ties	abutment deterioration										replace approach				along south abutment & SE wingwall		

Notes:
1. The above information is detailed on the "Pedestrian Bridge Inspection Report" for each bridge.
2. Repairs may be required, pending results of the detailed inspection and load rating analysis.