



2024 BRIDGE AND CULVERT INSPECTION PROGRAM

REHABILITATION/REPLACEMENT NEEDS

June 2024



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ELLIS
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TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM

REHABILITATION/REPLACEMENT NEEDS

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Bridge Management Database USB



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June 4, 2024

Town of Pelham
Pelham Municipal Building
20 Pelham Town Square
Fonthill, ON
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Attention: Mr. Nicholas Palomba, Engineering Technologist

Reference: 2024 Bridge and Culvert Inspection Program, Rehabilitation/Replacement Needs. ELLIS Job No.: 1194

We are pleased to submit one copy of the 2024 Pelham Bridge and Culvert Inspection Program, Rehabilitation/Replacement Needs ring binder, which contains inspection reports for 23 of the Town of Pelham's bridges and culverts.

A universal serial bus (USB) has been included, which contains all files relating to the Town's Bridge and Culvert structures, including the corresponding Bridge Management Database (*Town of Pelham Bridge Inspections 2024.mdb*), a Microsoft Streets and Trips map file (*Inspections Map 2024.est*) containing the location of all the Town's structures, PDF files of each individual bridge and culvert assessment report, as well as all original inspection photographs.

The Town of Pelham will require the use of Microsoft Access 2007 to use the database and Microsoft Streets and Trips 2005 to view the location map file.

All of the 2024 inspections were completed by Robert Ellis and Emma Stephenson of ELLIS Engineering Inc. Duane VanGeest, P.Eng., and Arih Struger-Kalkman, P.Eng., reviewed the reports, including recommendations and cost estimates based on the deficiencies at each structure.

Classification:

All structures have been classified as either "Bridge" or "Culvert" type structures. The Bridge and Culvert classifications are according to the criteria contained in the Municipal Bridge and Culvert Appraisal Manuals. The definition is as follows:

"In general, bridges transfer all live loads through a superstructure to a substructure and foundations, and culverts transfer all live loads through fill. Box or open type structures with a span of 3m and greater, and have less than 600mm of cover shall be appraised as a bridge, and those with more than 600mm of cover shall be appraised as a culvert".

Corrugated Steel Pipe (CSP), High Density Polyethylene Pipe (HDPE), and Soil Steel Multi Plate (SSMP) type structures are always classified as culverts, regardless of fill.

The technical classification of each structure as either a “Bridge” or a “Culvert” has been indicated within the Bridge Management Database. Each structure has a unique ID number. Also, bridge and culvert structures have been classified as either “Municipal” or “Structure”. Bridges or culverts with a span less than 3.0m are classified as “Municipal” structures and do not require inspection every two years as required by Ontario Regulations 104/97. Structures with a span of 3.0m or greater are classified as “Structure” and must be inspected once every two years, by Ontario law.

The biennial inspection interval for ‘Structures’ may be increased to four years, according to the criteria contained in the Ontario Structure Inspection Manual (OSIM), if the following criterion is met:

“For culverts with 3m to 6m spans and retaining walls, the inspection interval can be increased to four years if the culvert of retaining wall is in good condition and the engineer believes that the culvert or retaining wall condition will not change significantly before the next inspection.”

Priority Ranking and Bridge Condition Index (BCI):

Each structure has been given a priority ranking. The priority ranking summary spreadsheets of the Rehabilitation/Replacement Needs have been prioritized according to the following categories:

- NOW,
- 1 – 5 Years,
- 6 – 10 Years, and
- Adequate.

In addition to the priority rankings, the structures are classified with a General Overall Condition rating and a corresponding Bridge Condition Index (BCI) value. The categories summarized in Table 1, below, were used to classify the structures.

Table 1: Structure Condition Classification and Corresponding BCI Values

| Condition | BCI Range | Description |
|-----------|-----------|--|
| Very Good | 80 – 100 | Overall, the components of the structure are in very good condition. Generally, the structure has been constructed within the last 10 years and does not require any work within the next 10 years. |
| Good | 70 – 79 | Overall, the components of the structure are in good condition. Generally, the structure is adequate or requires only minor maintenance within the next 10 years. |
| Fair | 60 – 69 | Overall, the components of the structure are in fair condition. Generally, the structure requires major rehabilitation or replacement within the next 10 years, or requires Condition Survey (C/S), Load Capacity Evaluation (LCE) or Rehabilitation/Replacement Analysis (RRA). |
| Poor | 0 – 59 | Overall, the components of the structure are in poor condition. Generally, the structure requires replacement within the next 5 years. |

Structure Type:

Each of the structures inspected has been classified by structure type. Structure types include Corrugated Steel Pipe (CSP), High Density Polyethylene Pipe (HDPE), Rigid Frame Box (RB), Rigid Frame (RF), and Soil Steel Multi Plate (SSMP).

Figure 1, below, shows the structure classification by number of structures under each type and as a percentage of the total structures inspected.

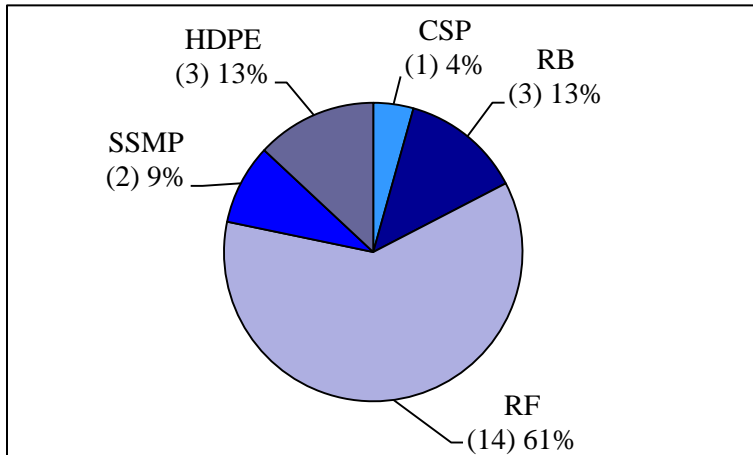


Figure 1: Structures Classified by Structure Type

Bridge Management Database:

There are a total of 24 records in the 2024 database for 23 structures as there is one structure with two records for rehabilitation/replacement needs in different time frames (e.g. one 'NOW' record and one '1-5 Years' record).

All structure inspection information has been entered into a Bridge Management Database. Through the database, inspection reports and photographs can be sorted and viewed electronically and any additional hard copies can be printed directly from the database.

All Rehabilitation/Replacement Needs reports contained in the ring binder are sorted numerically by Structure ID Number. The various printed spreadsheets list the structures by structure number, within their respective categories, (NOW, 1-5 Years, 6-10 Years, and Adequate).

Changes and Updates to the Database:

No structures were added, removed, renamed, or reclassified since the 2022 Structure Inspections.

Next Inspection:

In the 2024 assessment, all 23 of the Town's structures were inspected. The next inspection for all 23 structures is 2026. A summary of the inspection dates and the next inspection dates is included in the Structure Summary List.

Estimated Costs for Repair:

The estimated rehabilitation and replacement construction costs, presented herein, have been calculated based on preliminary engineering assumptions. The accuracy of the cost estimates are in an approximated range of plus or minus 20%. A breakdown of estimated costs for individual structure rehabilitation needs is provided with no allowance for contingencies.

In some cases, the installation of steel-beam guide rails has been included as a recommended rehabilitation. Generally road works have not been recommended unless directly related to the rehabilitation of the structure.

Roadside Safety Barriers:

We identified six of the Town's structures that have recommendations related to Roadside Safety Barriers. We recommend that the Town review the structures listed in Table 2, below, along with the Geometric Design Guide for Canadian Roads and the Town of Pelham's Roadside Safety Policy to determine if upgrades, repairs, and/or new roadside safety barriers are required.

Table 2: List of Structures to Review for Roadside Safety Barriers

| ID Number | Structure Name | Priority Rating | Recommendation | Cost |
|--------------------|------------------|-----------------|--|------------------|
| 04 | Kilman Road | NOW | Install hazard marker. | \$500 |
| 05 | Luffman Drive | NOW | Install steel beam guiderail. | \$69,000 |
| 09 | Roland Road | NOW | Replace damaged section of guiderail. | \$17,250 |
| 11 | Centre Street | 6-10 Years | Replace steel beam guiderail. | \$80,500 |
| 18 | Maple Street | NOW | Install steel beam guiderail and widen approaches. | \$150,000 |
| 21 | Effingham Street | NOW | Replace missing guiderail post. | \$1,500 |
| Total Cost: | | | | \$318,750 |

Note: Cost includes estimates for engineering where applicable.

Summary of Structure Conditions:

Figure 2, below, shows the number and percentage of the structures in each General Overall Condition category.

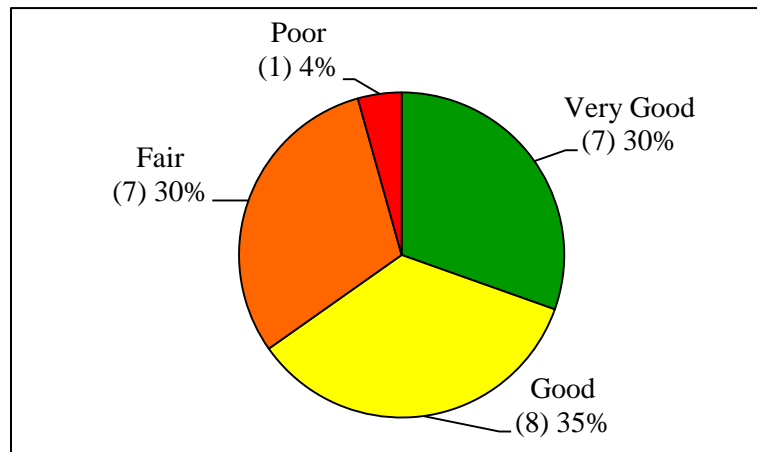


Figure 2: Structures Classified by General Overall Condition

The structure general overall conditions are summarized in Table 3 and Figure 3, below.

Table 3: Summary of General Overall Condition

| | | General Overall Condition | | | | |
|-----------------|------------|---------------------------|---------|---------|--------|-----------|
| | | Very Good | Good | Fair | Poor | Total |
| Priority Rating | Adequate | 3 (13%) | 2 (9%) | 3 (13%) | 0 (0%) | 8 (35%) |
| | 6–10 Years | 0 (0%) | 1 (4%) | 0 (0%) | 0 (0%) | 1 (4%) |
| | 1–5 Years | 1 (4%) | 0 (0%) | 2 (9%) | 0 (0%) | 3 (13%) |
| | NOW | 3 (13%) | 5 (22%) | 2 (9%) | 1 (4%) | 11 (48%) |
| Total | | 7 (30%) | 8 (35%) | 7 (30%) | 1 (4%) | 23 (100%) |

Notes: Costs include estimates for engineering.

Percentages (%) are rounded to the nearest percent.

There are a total of 24 records in the database for 23 structures. There is one structure that has two records for different time frames (e.g. NOW and 1-5 Years). Only the record with the most significant recommendations (e.g. RSL in 1-5 Years) is included in Table 3.

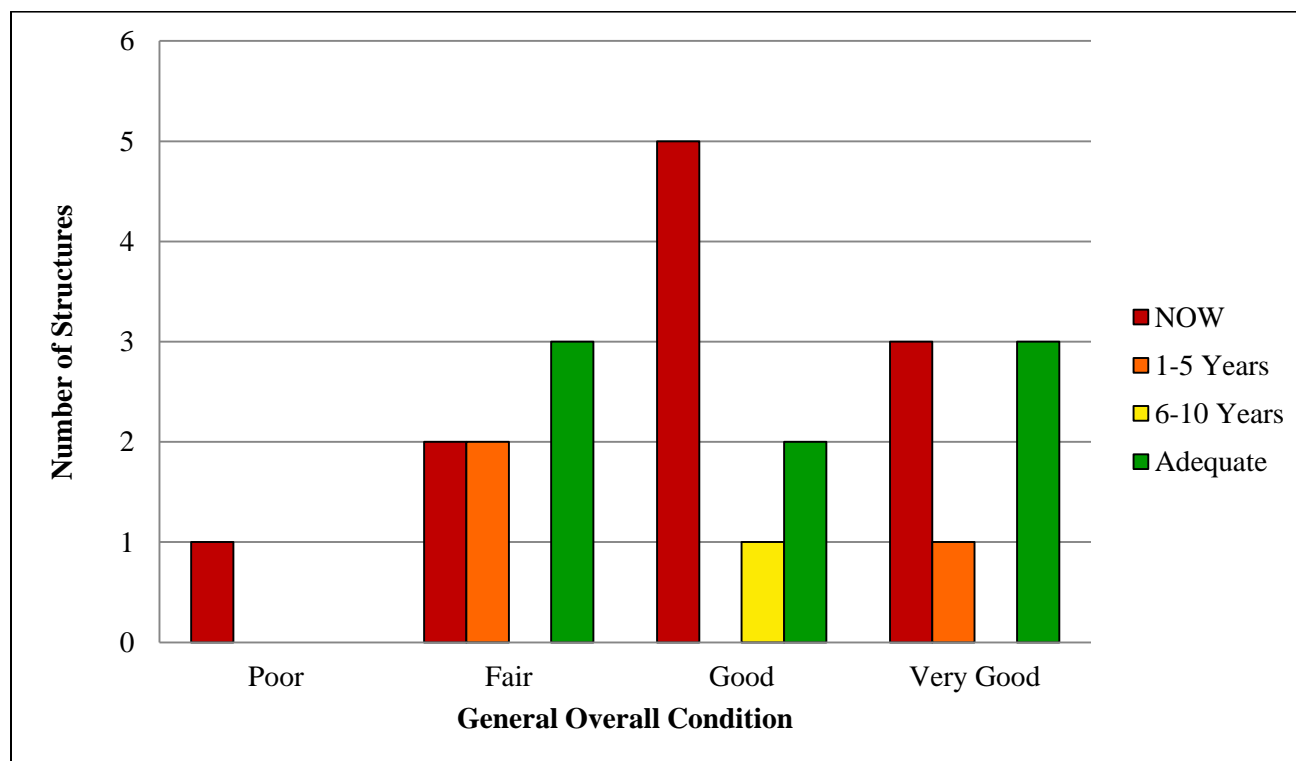


Figure 3: Number of Structures for Each General Overall Condition Category by Priority Rating

Table 4 and Figure 4, on the following page, summarizes the relationship between the Priority Ratings of the structures inspected in 2024 relative to the estimated cost range for the Rehabilitation/Replacement Needs.

Table 4: Summary of Priority Rating and Cost

| Priority Rating | Total | % of Total | 2024 Estimated Cost | Number of Structures in the Cost Range | | |
|-----------------|-----------|-------------|---------------------|--|----------------------|-------------|
| | | | | \$0 - \$49,999 | \$50,000 - \$499,999 | \$500,000 + |
| Adequate | 8 | 33% | \$0 | - | - | - |
| 6-10 Years | 1 | 4% | \$80,500 | 0 | 1 | 0 |
| 1-5 Years | 3 | 13% | \$230,000 | 1 | 2 | 0 |
| NOW | 12 | 50% | \$1,510,500 | 9 | 2 | 1 |
| Total | 24 | 100% | \$1,821,000 | 10 | 5 | 1 |

Notes: Costs include estimates for engineering.

Percentages (%) are rounded to the nearest percent.

There are a total of 24 records in the database for 23 structures. All records are included in Table 4.

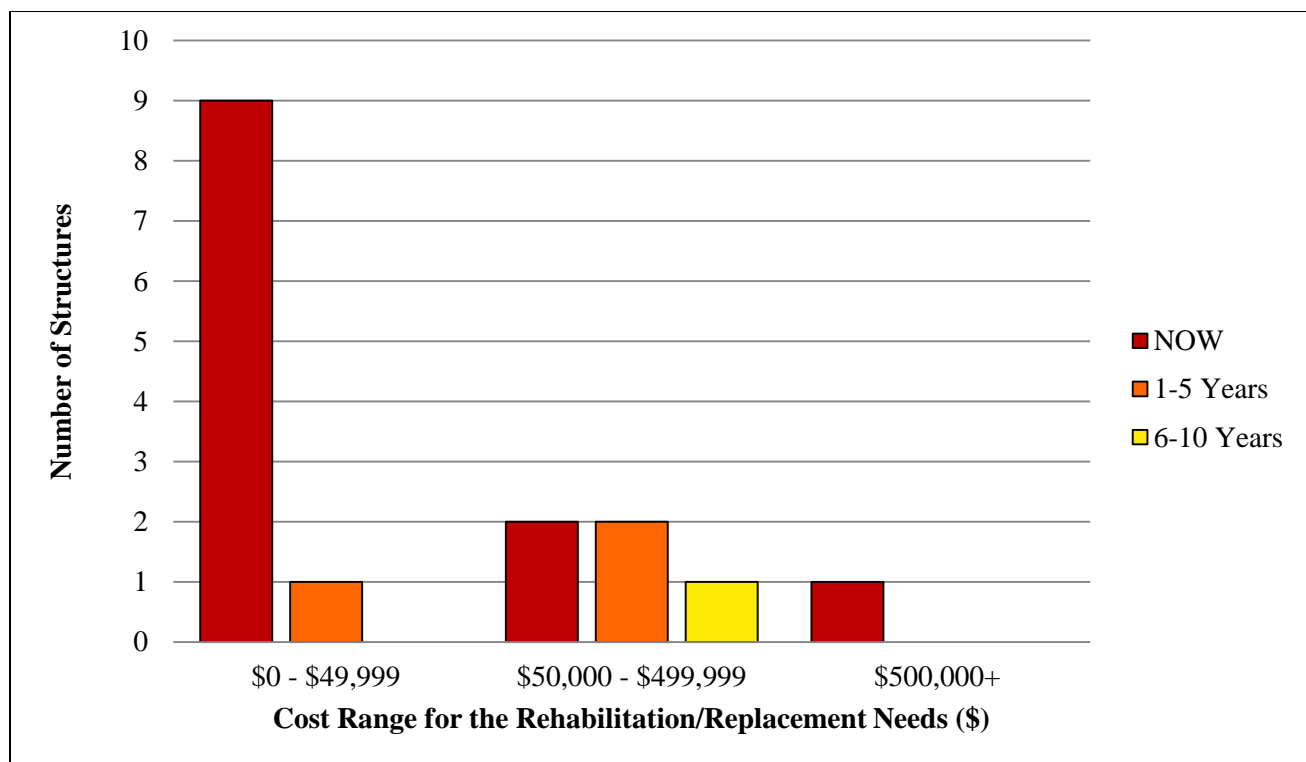


Figure 4: Number of Structures in the Rehabilitation/Replacement Cost Range by Priority Rating

Table 5, on the following page, summarizes the change in cost from the 2022 assessment to the 2024 assessment for structures in each Priority Rating.

Table 5: Summary of the Change in Cost from 2022 Assessment to the 2024 Assessment

| Priority Rating | 2022 Total Cost | 2024 Total Cost | Summary of Major Changes and Comments |
|-----------------|--------------------|--------------------|---|
| Adequate | \$0 | \$0 | No Change. |
| 6-10 Years | \$139,000 | \$80,500 | + General increases in construction costs. - Structure ID No. 02 moved to 1-5 Years. |
| 1-5 Years | \$1,058,000 | \$230,000 | + General increases in construction costs. + Structure ID No. 02 moved from 6-10 Years. + New recommendation for Structure ID No. 21. - Structure ID No. 013 moved to NOW. |
| NOW | \$1,511,000 | \$1,510,500 | + General increases in construction costs. + Structure ID No. 13 moved from 1-5 Years. - Structure ID No. 12 replaced. |
| Total | \$2,708,000 | \$1,821,000 | Approximate 33% decrease. |

Note: Costs include estimates for engineering.

- Indicates reduction in cost from 2022.

+ Indicates increase in cost from 2022.

The overall costs decreased by approximately 33% from 2022 to 2024 due to the replacement of the Cream Street Culvert (Structure ID No. 12).

BCI Comparison from 2022 Assessment to 2024 Assessment:

Table 6, below, summarizes the change in BCI from the 2022 assessment to the 2024 assessment weighted by the deck area of the Town's bridge and culvert inventory.

Table 6: BCI Comparison from 2022 Assessment to the 2024 Assessment

| Year of Assessment | No. of Structures | Total Deck Area (m ²) | BCI Weighted by Deck Area | General Overall Condition |
|--------------------|-------------------|-----------------------------------|---------------------------|---------------------------|
| 2022 | 23 | 2,228 | 74.7 | Good |
| 2024 | 23 | 2,263 | 78.4 | Good |

Overall, the BCI weighted by deck area for the Town's inventory increased from 74.7 in 2022 to 78.4 in 2024. This increase is due to the replacement of the Cream Street Culvert (ID No. 12) in 2023.

Closing:

We thank you for giving us the opportunity to provide our services for this very interesting project. Should you have any questions concerning the report, please contact the undersigned.

Yours truly,
ELLIS Engineering Inc.



Arih Struger-Kalkman, M.Eng., P. Eng.
Project Manager



Emma Stephenson
Project Inspector

cc: Jason Marr, Director of Public Work
Derek Young, Manager of Engineering

TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM

REHABILITATION/REPLACEMENT NEEDS

RECOMMENDED WORK & STRUCTURE TYPE CODES

RECOMMENDED WORK TYPE CODES:

| | |
|------------|--|
| DCS | - DECK CONDITION SURVEY |
| RSP | - REHABILITATE SUPERSTRUCTURE |
| RSB | - REHABILITATE SUBSTRUCTURE |
| RIR | - RAILING IMPROVEMENT / REPLACEMENT |
| PWP | - PATCH WATERPROOF AND PAVE |
| WSR | - WEARING SURFACE REHABILITATION |
| C/S | - CONDITION SURVEY |
| RSL | - REPLACE SAME LOCATION |
| OWP | - OVERLAY WATERPROOF AND PAVE |
| TJR | - TRANSVERSE EXPANSION JOINT REPLACEMENT |
| CSS | - COAT STRUCTURAL STEEL |
| LCE | - LOAD CAPACITY EVALUATION |
| PDR | - PARTIAL DECK REPLACEMENT |
| RRA | - REHABILITATION/REPLACEMENT ANALYSIS |
| CDR | - COMPLETE DECK REPLACEMENT |
| SPI | - SCOUR PROTECTION IMPROVEMENT |
| MIS | - MISCELLANEOUS – OTHER WORK |



STRUCTURE TYPE CODES:

| | |
|-------------|----------------------------------|
| RF | - RIGID FRAME |
| RB | - RIGID FRAME BOX |
| CSP | - CORRUGATED STEEL PIPE |
| HDPE | - HIGH DENSITY POLYETHYLENE PIPE |
| SSMP | - SOIL STEEL MULTI PLATE |

TOWN OF PELHAM

**2024 BRIDGE AND CULVERT INSPECTION PROGRAM
REHABILITATION/REPLACEMENT NEEDS**

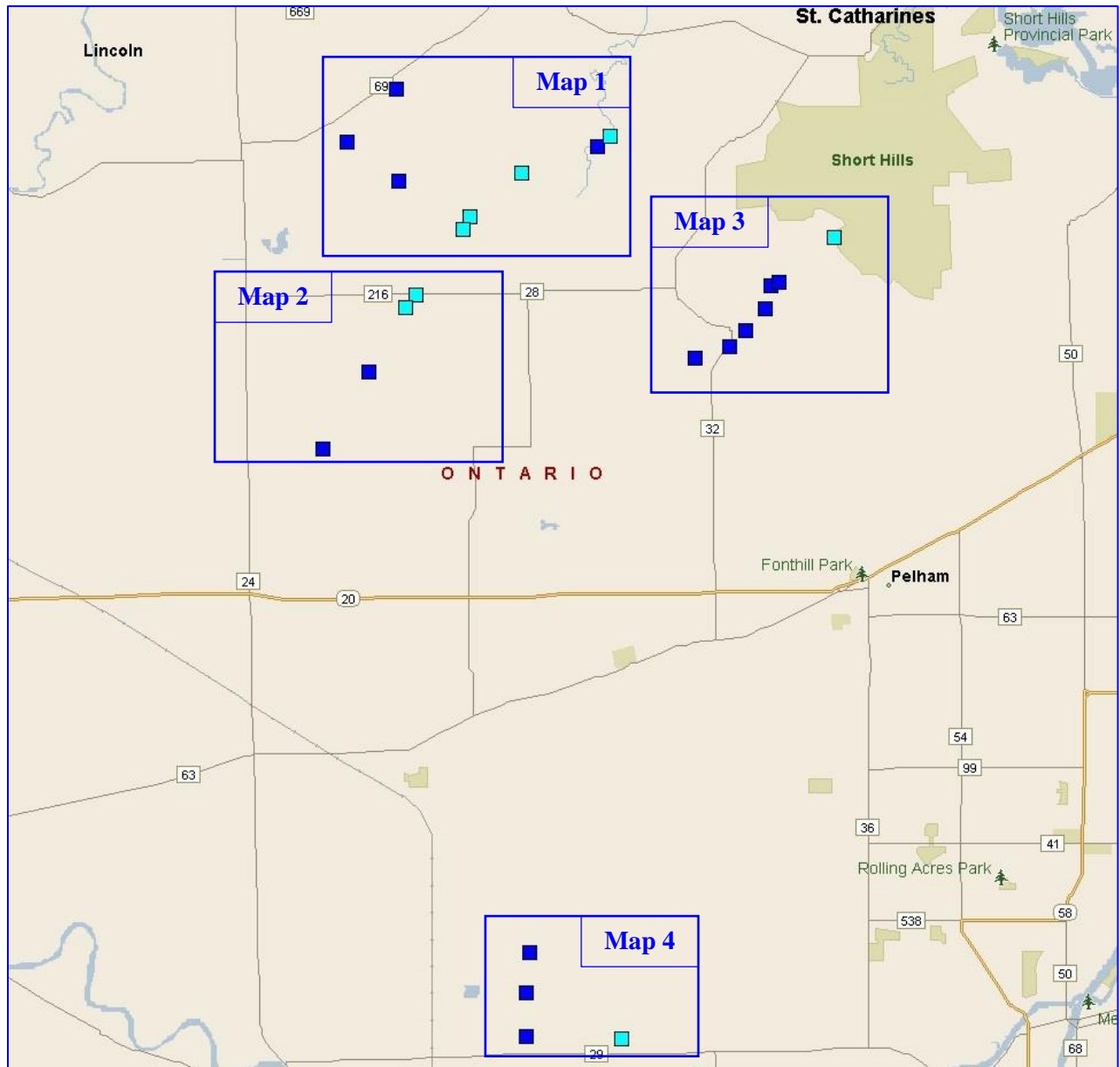
MAP LEGEND

| | | |
|---|-------------------|---|
|  | Dark Blue Square | Bridge inspected in 2024, next inspection in 2026. |
|  | Light Blue Square | Culvert inspected in 2024, next inspection in 2026. |

TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

LOCATION PLAN



2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

The map displays the Pelham area with various roads and 19 numbered locations marked with blue squares. The locations are as follows:

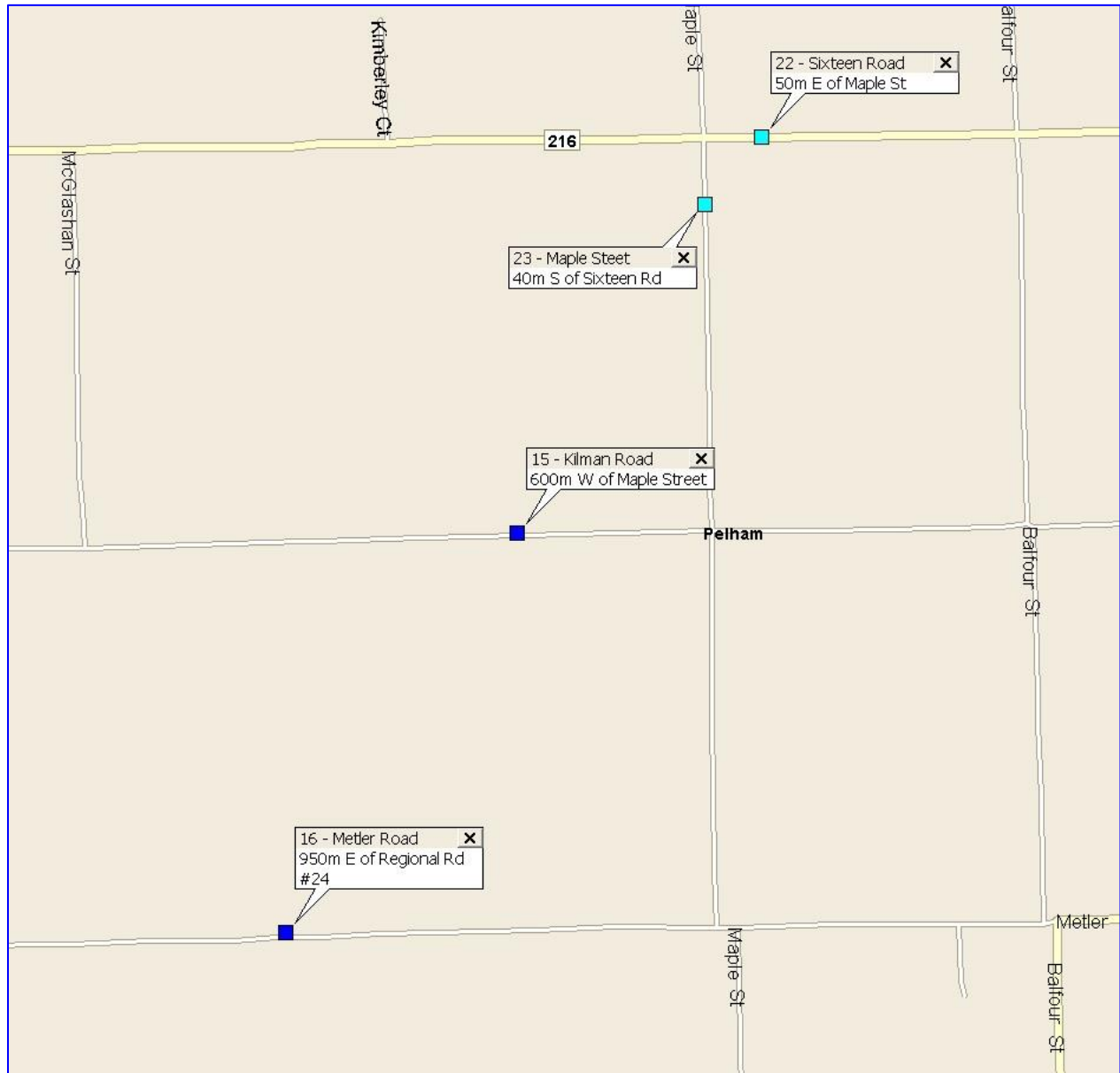
- 19 - Maple Street, 100m S of Regional Rd #69
- 20 - Sawmill Road, 170m E of Beamer Street
- 18 - Maple Street, 500m N of Roland Rd
- 14 - Balfour Street, 100m S of Roland Rd
- 13 - Roland Road, 50m E of Balfour St
- 12 - Cream Street, 400m S of Sawmill Rd
- 11 - Centre Street, 100m S of Sawmill Rd
- 10 - Sawmill Road, 90m E of Centre St.

Other roads shown include Beamer St, Maple St, Moyer St, Centre St, Roland Rd, and Sawmill Rd. The map also shows the Lincoln and Pelham regions.

TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

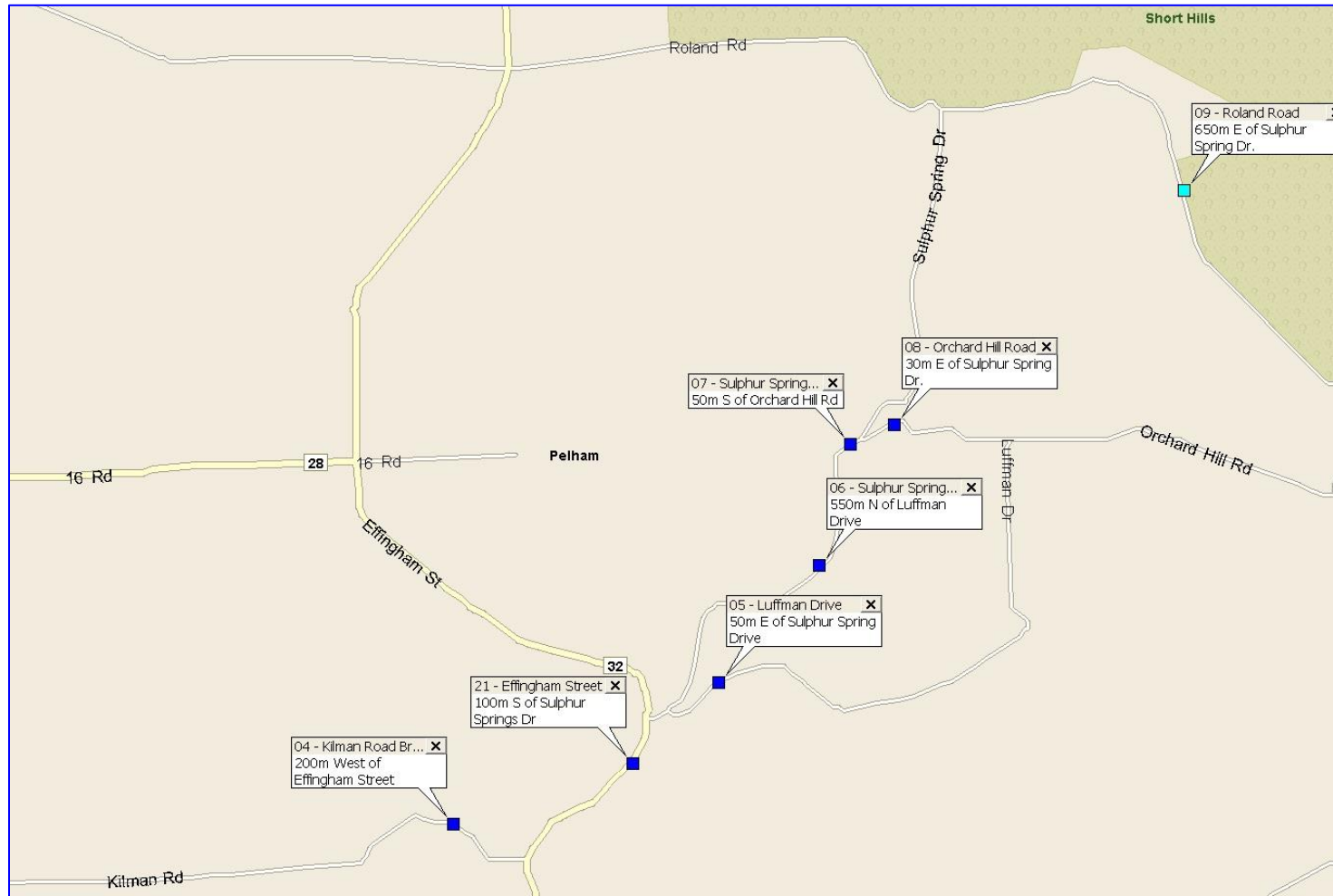
LOCATION PLAN – Map 2



TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

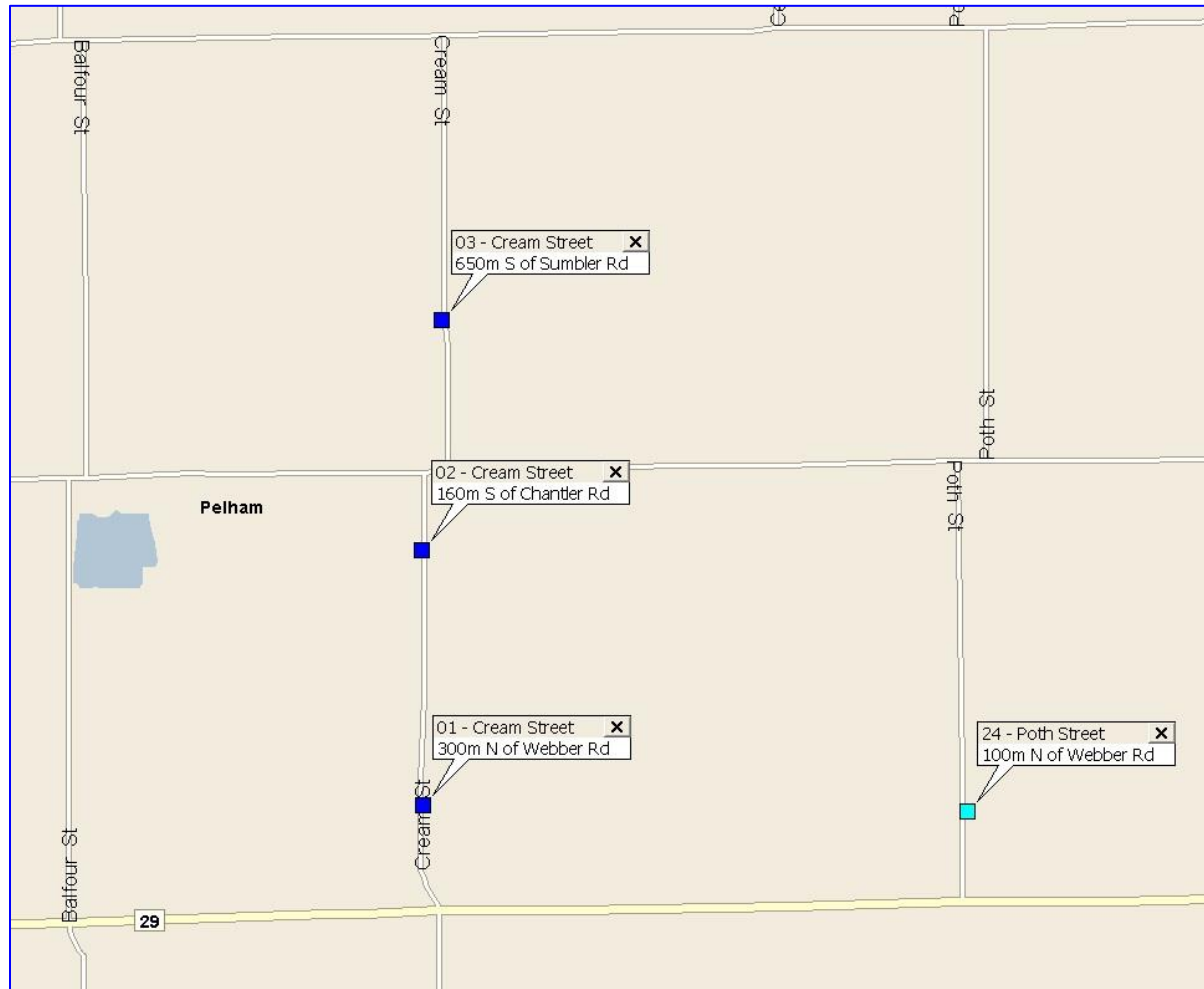
LOCATION PLAN – Map 3



TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

LOCATION PLAN – Map 4



TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM REHABILITATION/REPLACEMENT NEEDS

STRUCTURE SUMMARY LIST

Page 1 of 1

| ID Number | Structure Name | Next Inspection | Location | Location Map No. |
|------------------|-----------------------|------------------------|-------------------------------------|-------------------------|
| 01 | Cream Street | 2026 | 300m north of Webber Road | 4 |
| 02 | Cream Street | 2026 | 160m south of Chantler Road | 4 |
| 03 | Cream Street | 2026 | 650m south of Sumbler Road | 4 |
| 04 | Kilman Road | 2026 | 200m west of Effingham Street | 3 |
| 05 | Luffman Drive | 2026 | 50m east of Sulphur Spring Drive | 3 |
| 06 | Sulphur Spring Drive | 2026 | 550m north of Luffman Drive | 3 |
| 07 | Sulphur Spring Drive | 2026 | 50m south of Orchard Hill Road | 3 |
| 08 | Orchard Hill Road | 2026 | 30m east of Sulphur Spring Drive | 3 |
| 09 | Roland Road | 2026 | 650m east of Sulphur Spring Drive | 3 |
| 10 | Sawmill Road | 2026 | 90m east of Centre Street | 1 |
| 11 | Centre Street | 2026 | 100m south of Sawmill Road | 1 |
| 12 | Cream Street | 2026 | 400m south of Sawmill Road | 1 |
| 13 | Roland Road | 2026 | 50m east of Balfour Street | 1 |
| 14 | Balfour Street | 2026 | 100m south of Roland Road | 1 |
| 15 | Kilman Road | 2026 | 600m west of Maple Street | 2 |
| 16 | Metler Road | 2026 | 950m east of Regional Road No. 24 | 2 |
| 18 | Maple Street | 2026 | 500m north of Roland Road | 1 |
| 19 | Maple Street | 2026 | 100m south of Regional Road No. 69 | 1 |
| 20 | Sawmill Road | 2026 | 170m east of Beamer Street | 1 |
| 21 | Effingham Street | 2026 | 100m south of Sulphur Springs Drive | 3 |
| 22 | Sixteen Road | 2026 | 50m east of Maple Street | 2 |
| 23 | Maple Street | 2026 | 40m south of Sixteen Road | 2 |
| 24 | Poth Street | 2026 | 100m north of Webber Road | 4 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Priority Ranking Summary: **MASTER**

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|----------------------------------|---------------|---------------------------|--------------|-------------|------------------|----------------|-----------------|------|----------------|----------------|
| Location | | | | | | | | | | |
| 01 | Cream Street | Fair | 68 | 67 | c.1960 | RF | 1 | 6.2 | 103 | \$0.00 |
| 300m north of Webber Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| | | | | | | | | | | |
| 02 | Cream Street | Fair | 68 | 66 | 1963 | RF | 1 | 4.26 | 78 | \$115,000.00 |
| 160m south of Chantler Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| RSP | | | PWP | | | | | | SPI | |
| | | | | | | | | | | |
| 03 | Cream Street | Fair | 70 | 69 | 1968 | RF | 1 | 3.0 | 64 | \$0.00 |
| 650m south of Sumbler Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| | | | | | | | | | | |
| 04 | Kilman Road | Good | 77 | 76 | c.1960 | RF | 1 | 4.3 | 61 | \$5,500.00 |
| 200m west of Effingham Street | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| RIR | | | | | | | | | SPI | |
| | | | | | | | | | | |
| 05 | Luffman Drive | Fair | 70 | 68 | c.1940 | RF | 1 | 4.9 | 30 | \$103,500.00 |
| 50m east of Sulphur Spring Drive | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| RIR | | | | | | | | | SPI | |
| | | | | | | | | | | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|------------------------------|--|---------------------------|--------------|-------------|------------------|----------------|-----------------|----------|----------------|----------------|
| Location | | | | | | | | | | |
| 06 | Sulphur Spring Drive 550m north of Luffman Drive | Fair | 69 | 68 | c.1960 | RF | 1 | 5.3 | 53 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 07 | Sulphur Spring Drive 50m south of Orchard Hill Road | Good | 72 | 70 | c.1960 | RF | 1 | 6.1 | 61 | \$34,500.00 |
| Recommendation | | | | | | | | | SPI | |
| 08 | Orchard Hill Road 30m east of Sulphur Spring Drive | Good | 71 | 70 | c.1960 | RF | 1 | 5.5 | 52 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 09 | Roland Road 650m east of Sulphur Spring Drive | Good | 72 | 71 | c.1960 | RF | 1 | 6.5 | 99 | \$40,000.00 |
| Recommendation | | RIR | | | | | | | SPI | |
| 10 | Sawmill Road 90m east of Centre Street | Very Good | 88 | 86 | 2016 | RF | 1 | 11 | 171 | \$23,000.00 |
| Recommendation | | | | | | | | | SPI | |
| 11 | Centre Street 100m south of Sawmill Road | Good | 72 | 71 | c.1975 | RB | 2 | 4.3, 4.3 | 83 | \$80,500.00 |
| Recommendation | | RIR | | | | | | | | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|-----------------------------------|----------------|---------------------------|--------------|-------------|------------------|-----------------------------------|-----------------|---------------|----------------|----------------|
| Location | | | | | | | | | | |
| 12 | Cream Street | Very Good | 45 | 98 | 2023 | HDPE | 3 | 3.3, 3.3, 3.3 | 238 | \$0.00 |
| 400m south of Sawmill Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| 13 | Roland Road | Poor | 55 | 52 | c.1970 | SSMP | 2 | 3.5, 3.5 | 123 | \$1,092,500.00 |
| 50m east of Balfour Street | | | | | | | | | | |
| Recommendation | | RSL | | | | | | | | |
| 14 | Balfour Street | Very Good | 97 | 96 | 2022 | HDPE | 2 | 3.05, 3.05 | 116 | \$1,000.00 |
| 100m south of Roland Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| MIS: Remove debris | | | | | | | | | | |
| 15 | Kilman Road | Good | 73 | 72 | 1971 | RF | 1 | 6.1 | 100 | \$23,000.00 |
| 600m west of Maple Street | | | | | | | | | | |
| Recommendation | | | | | | | | | SPI | |
| 16 | Metler Road | Good | 73 | 72 | 1968 | RF | 1 | 6.1 | 100 | \$23,000.00 |
| 950m east of Regional Road No. 24 | | | | | | | | | | |
| Recommendation | | | | | | | | | SPI | |
| 18 | Maple Street | Fair | 70 | 69 | 1964 | RF | 1 | 9.14 | 93 | \$180,000.00 |
| 500m north of Roland Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| | | RIR | | | | | | | SPI | |
| MIS: Widen approaches | | | | | | | | | | |
| | | | | | | Seal parapet wall and curb joints | | | | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|------------------------------|--|---------------------------|--------------|-------------|------------------|----------------|-----------------|------------|----------------|----------------|
| Location | | | | | | | | | | |
| 19 | Maple Street 100m south of Regional Road No. 69 | Good | 80 | 79 | 2009 | RB | 1 | 6 | 85 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 20 | Sawmill Road 170m east of Beamer Street | Very Good | 83 | 81 | 2009 | RB | 1 | 6 | 71 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 21 | Effingham Street (Record 1 of 2, NOW) 100m south of Sulphur Springs Drive | Fair | 68 | 66 | c.1950 | RF | 1 | 5.7 | 68 | \$1,500.00 |
| Recommendation | | RIR | | | | | | | | |
| 21 | Effingham Street (Record 2 of 2, 1-5 Years) 100m south of Sulphur Springs Drive | Fair | 68 | 66 | c.1950 | RF | 1 | 5.7 | 68 | \$92,000.00 |
| Recommendation | | RSP | | | | | | | | |
| 22 | Sixteen Road 50m east of Maple Street | Very Good | 95 | 93 | 2021 | HDPE | 2 | 3.05, 3.05 | 122 | \$5,000.00 |
| Recommendation | | | | | | | | | SPI | |
| 23 | Maple Street 40m south of Sixteen Road | Very Good | 88 | 86 | 2018 | SSMP | 2 | 3.8, 3.8 | 152 | \$0.00 |
| Recommendation | | | | | | | | | | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|----------------------------------|-------------|---------------------------|--------------|-------------|------------------|----------------|-----------------|---------|----------------|----------------|
| Location | | | | | | | | | | |
| 24 | Poth Street | Very Good | 88 | 86 | 2019 | CSP | 3 | 3, 3, 3 | 140 | \$1,000.00 |
| 100m north of Webber Road | | | | | | | | | | |
| Recommendation | | | | | | | | | | |
| MIS: Place fill around SBGR post | | | | | | | | | | |

Total: \$1,821,000.00

Town of Pelham
2024 Bridge and Culvert Inspection Database

Priority Ranking Summary: **NOW**

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|-----------------------------------|----------------------|---------------------------|--------------|-------------|------------------|----------------|-----------------|------------------------|----------------|----------------|
| Location | | | | | | | | | | |
| 04 | Kilman Road | Good | 77 | 76 | c.1960 | RF | 1 | 4.3 | 61 | \$5,500.00 |
| 200m west of Effingham Street | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Medium | |
| RIR | | | | | | | | | SPI | |
| 05 | Luffman Drive | Fair | 70 | 68 | c.1940 | RF | 1 | 4.9 | 30 | \$103,500.00 |
| 50m east of Sulphur Spring Drive | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Medium | |
| RIR | | | | | | | | | SPI | |
| 07 | Sulphur Spring Drive | Good | 72 | 70 | c.1960 | RF | 1 | 6.1 | 61 | \$34,500.00 |
| 50m south of Orchard Hill Road | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | High | |
| | | | | | | | | | SPI | |
| 09 | Roland Road | Good | 72 | 71 | c.1960 | RF | 1 | 6.5 | 99 | \$40,000.00 |
| 650m east of Sulphur Spring Drive | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Medium | |
| RIR | | | | | | | | | SPI | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|-----------------------------------|----------------|-----------------------------------|--------------|-------------|------------------|----------------|-----------------|------------------------|----------------|----------------|
| Location | | | | | | | | | | |
| 13 | Roland Road | Poor | 55 | 52 | c.1970 | SSMP | 2 | 3.5, 3.5 | 123 | \$1,092,500.00 |
| 50m east of Balfour Street | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Medium | |
| | | RSL | | | | | | | | |
| 14 | Balfour Street | Very Good | 97 | 96 | 2022 | HDPE | 2 | 3.05, 3.05 | 116 | \$1,000.00 |
| 100m south of Roland Road | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Low | |
| MIS: Remove debris | | | | | | | | | | |
| 15 | Kilman Road | Good | 73 | 72 | 1971 | RF | 1 | 6.1 | 100 | \$23,000.00 |
| 600m west of Maple Street | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Low SPI | |
| 16 | Metler Road | Good | 73 | 72 | 1968 | RF | 1 | 6.1 | 100 | \$23,000.00 |
| 950m east of Regional Road No. 24 | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Low SPI | |
| 18 | Maple Street | Fair | 70 | 69 | 1964 | RF | 1 | 9.14 | 93 | \$180,000.00 |
| 500m north of Roland Road | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | Medium SPI | |
| | | RIR | | | | | | | | |
| MIS: Widen approaches | | Seal parapet wall and curb joints | | | | | | | | |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|----------------------------------|--|---------------------------|--------------|-------------|------------------|----------------|-----------------|------------------------|----------------|----------------|
| Location | | | | | | | | | | |
| 21 | Effingham Street (Record 1 of 2, NOW) 100m south of Sulphur Springs Drive | Fair | 68 | 66 | c.1950 | RF | 1 | 5.7 | 68 | \$1,500.00 |
| Recommendation | | | | | | | | Implementation Ranking | | |
| RIR | | | | | | | | Low | | |
| 22 | Sixteen Road 50m east of Maple Street | Very Good | 95 | 93 | 2021 | HDPE | 2 | 3.05, 3.05 | 122 | \$5,000.00 |
| Recommendation | | | | | | | | Implementation Ranking | | |
| | | | | | | | | Medium SPI | | |
| 24 | Poth Street 100m north of Webber Road | Very Good | 88 | 86 | 2019 | CSP | 3 | 3, 3, 3 | 140 | \$1,000.00 |
| Recommendation | | | | | | | | Implementation Ranking | | |
| MIS: Place fill around SBGR post | | | | | | | | Low | | |
| | | | | | | | | | Total: | \$1,510,500.00 |

Town of Pelham
2024 Bridge and Culvert Inspection Database

Priority Ranking Summary: 1-5 Years

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|-------------------------------------|---|---------------------------|--------------|-------------|------------------|----------------|-----------------|------------------------|----------------|----------------|
| Location | | | | | | | | | | |
| 02 | Cream Street | Fair | 68 | 66 | 1963 | RF | 1 | 4.26 | 78 | \$115,000.00 |
| 160m south of Chantler Road | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | | Medium |
| RSP | | | | PWP | | | | | | SPI |
| 10 | Sawmill Road | Very Good | 88 | 86 | 2016 | RF | 1 | 11 | 171 | \$23,000.00 |
| 90m east of Centre Street | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | | Low |
| | | | | | | | | | | SPI |
| 21 | Effingham Street (Record 2 of 2, 1-5 Years) | Fair | 68 | 66 | c.1950 | RF | 1 | 5.7 | 68 | \$92,000.00 |
| 100m south of Sulphur Springs Drive | | | | | | | | | | |
| Recommendation | | | | | | | | Implementation Ranking | | Low |
| RSP | | | | | | | | | | |
| | | | | | | | | | Total: | \$230,000.00 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Priority Ranking Summary: 6-10 Years

| ID Number and Structure Name | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|------------------------------|---------------------------|--------------|-------------|------------------|----------------|-----------------|----------|----------------|----------------|
| Location | | | | | | | | | |
| 11 Centre Street | Good | 72 | 71 | c.1975 | RB | 2 | 4.3, 4.3 | 83 | \$80,500.00 |
| 100m south of Sawmill Road | | | | | | | | | |
| Recommendation | | | | | | | | | |
| | RIR | | | | | | | | |

Total:

\$80,500.00

Town of Pelham

2024 Bridge and Culvert Inspection Database

Priority Ranking Summary: **Adequate**

| ID Number and Structure Name Location | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|--|--|---------------------------------|-----------------|----------------|---------------------|-------------------|--------------------|------------------|-------------------|----------------|
| 01 | Cream Street 300m north of Webber Road Recommendation | Fair | 68 | 67 | c.1960 | RF | 1 | 6.2 | 103 | \$0.00 |
| 03 | Cream Street 650m south of Sumbler Road Recommendation | Fair | 70 | 69 | 1968 | RF | 1 | 3.0 | 64 | \$0.00 |
| 06 | Sulphur Spring Drive 550m north of Luffman Drive Recommendation | Fair | 69 | 68 | c.1960 | RF | 1 | 5.3 | 53 | \$0.00 |
| 08 | Orchard Hill Road 30m east of Sulphur Spring Drive Recommendation | Good | 71 | 70 | c.1960 | RF | 1 | 5.5 | 52 | \$0.00 |
| 12 | Cream Street 400m south of Sawmill Road Recommendation | Very Good | 45 | 98 | 2023 | HDPE | 3 | 3.3, 3.3, 3.3 | 238 | \$0.00 |

| ID Number and Structure Name | | General Overall Condition | Previous BCI | Current BCI | Year Constructed | Structure Type | Number of Spans | Span | Deck Area (m2) | Estimated Cost |
|------------------------------|--|---------------------------|--------------|-------------|------------------|----------------|-----------------|----------|----------------|----------------|
| 19 | Maple Street 100m south of Regional Road No. 69 | Good | 80 | 79 | 2009 | RB | 1 | 6 | 85 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 20 | Sawmill Road 170m east of Beamer Street | Very Good | 83 | 81 | 2009 | RB | 1 | 6 | 71 | \$0.00 |
| Recommendation | | | | | | | | | | |
| 23 | Maple Street 40m south of Sixteen Road | Very Good | 88 | 86 | 2018 | SSMP | 2 | 3.8, 3.8 | 152 | \$0.00 |
| Recommendation | | | | | | | | | | |
| Total: | | | | | | | | | | \$0.00 |

TOWN OF PELHAM

2024 BRIDGE AND CULVERT INSPECTION PROGRAM

REHABILITATION/REPLACEMENT NEEDS

INDEX PAGE FOR INSPECTION REPORTS

| ID Number | Page Range | ID Number | Page Range |
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Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Cream Street | ID Number | 01 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 300m north of Webber Road | Span Lengths (m) | 6.2 |
| Structure Type | RF | Deck Area (m2) | 103 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is generally in good condition. There is a medium transverse crack north of the structure and light settlement along the edges of the approaches. The exposed ends of the bridge deck top are in fair to good condition with light scaling. The bridge deck soffit is generally in good condition. The abutment sidewalls are generally in good condition. Two narrow cracks on the north sidewall are evident midway through the structure. There is evidence of moisture migrating through the wall at the interface between the bridge deck soffit and abutment sidewalls. There is light scour at the waterline. The fascias are in fair to good condition. There is narrow to medium horizontal cracking with efflorescent staining in the east fascia (most notably at the southeast corner) that extends to the outside face. There is a small spall in the west fascia. There are wide (1-4mm) horizontal cracks in the exposed portions of the exterior faces of the sidewalls at all four corners of the structure. Utility conduits are attached to the structure at both ends. There is a slight sag in the soffit, however it may have been constructed this way. The footings are covered with rip rap. There is light erosion at all four corners of the structure.

Recommendation

None.

| | | | | | |
|----------------------------------|--------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | Adequate | Current BCI | 67 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 68 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Cream Street **ID Number** 01

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0324-0378

Measurements Span = 6.2m
Height = 1.97m
Length = 16.5m
Fill = 0.1m

Additional Notes Rehabilitation/Maintenance Work:
2015: Rip Rap placed along footings

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Cream Street
01



Photograph No. 1: 0324: Roadway looking north.



Photograph No. 2: 0350: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
01



Photograph No. 3: 0355: Interior of structure looking east.



Photograph No. 4: 0374: Cracking and efflorescent staining at southeast corner.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Cream Street | ID Number | 02 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 160m south of Chantler Road | Span Lengths (m) | 4.26 |
| Structure Type | RF | Deck Area (m2) | 78 |
| Yr Constructed | 1963 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is generally in good condition. There is a narrow to medium transverse crack south of the structure. There is light settlement narrow longitudinal cracking along the edges of the roadway. The exposed portions of the bridge deck top are in fair to good condition with light to medium scaling. The bridge deck soffit is generally in good condition. There is a large delamination with spalling, cracking, light rust staining, and light efflorescent staining located approximately 2 meters west of center. The delamination in the soffit extends across the soffit (approximately 1.5m2 poor). The abutment sidewalls are generally in fair to good condition with evidence of leakage at the interface between the soffit and abutment sidewalls. There is a wide vertical crack on the north side wall extending from the delamination down towards the footing. There is also isolated areas of narrow vertical cracking and efflorescent staining throughout the abutment sidewalls. There is light scaling at the waterline along the south abutment sidewall. The fascias are generally in good condition. There are wide (1-4mm) horizontal cracks through the exposed portions of the exterior faces of the sidewalls at all four corners of the structure. It was noted in a previous inspection that there is a utility across the creek bed on the east side of structure. There is a utility conduit attached to the west side of the structure. The footings are covered with rip rap. There is medium erosion at all four corners.

Recommendation

We recommend rehabilitating the structure in 1-5 Years. Rehabilitation work would include: Full depth concrete patch repair of the bridge deck and patch, waterproof, and pave the bridge deck and placing rip rap erosion protection at all four corners of the structure.

| | | | | | |
|----------------------------------|--------------|-------------------------------|-----------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | 1-5 Years | Current BCI | 66 |
| Estimated Total Cost | \$115,000.00 | Implementation Ranking | Medium | Previous BCI | 68 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|-----------------------|--------------|------------------|----|
| Structure Name | Cream Street | ID Number | 02 |
|-----------------------|--------------|------------------|----|

Recommended Rehabilitation

RSP - Rehabilitate Superstructure

PWP - Patch Waterproof and Pave

SPI - Scour Protection Improvement

Engineering Cost

| | |
|-----------------------------|--------------------|
| Engineering - RSB, PWP, SPI | \$15,000.00 |
| | \$0.00 |
| Sub Total | \$15,000.00 |

Construction Cost

| | |
|-----------------------------------|---------------------|
| Rehabilitate substructure - RSP | \$45,000.00 |
| Patch, waterproof, and pave - PWP | \$35,000.00 |
| Riprap erosion protection - SPI | \$20,000.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$100,000.00 |
| Total | \$115,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0274-0323

Measurements Span = 4.26m
Height = 1.83m
Length = 18.3m

Additional Notes Rehabilitation/Maintenance Work:
2015: Rip Rap placed along footings.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
02



Photograph No. 1: 0276: Roadway looking north.



Photograph No. 2: 0292: East elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
02



Photograph No. 3: 0296: Interior of structure looking west.



Photograph No. 4: 0307: Area of delamination and spalling 2m west of center.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Cream Street | ID Number | 03 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 650m south of Sumbler Road | Span Lengths (m) | 3.0 |
| Structure Type | RF | Deck Area (m2) | 64 |
| Yr Constructed | 1968 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway over the structure is in fair condition with light settlement and map cracking along the shoulders. There are narrow to medium transverse cracks at the extents of the structure. The exposed portions of the bridge deck top are in fair to good condition with light to medium scaling. The bridge deck soffit is generally in good condition. There is an area of delamination in the soffit located at approximately center span at mid length of the culvert (0.75m2 poor). There is a medium crack at this location extending into the abutment sidewall and footings. There are isolated narrow transverse cracks in the soffit with rust staining and efflorescent staining. The abutment sidewalls are generally in good condition with light to medium scaling along the waterline. There is evidence of light leakage through the south abutment sidewall near the west end. There is a conduit on the east end of the structure.

Recommendation

None.

| | | | | | |
|----------------------------------|--------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | Adequate | Current BCI | 69 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 70 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Cream Street **ID Number** 03

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0223-0273

Measurements Span = 3.5m
Height = 1.6m
Length = 18.3m
Fill = 0.1m

Additional Notes Skew is approximately 45 degrees. 3.0m span is measured perpendicular to the walls.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
03



Photograph No. 1: 0225: Roadway looking south.



Photograph No. 2: 0271: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
03



Photograph No. 3: 0268: Interior of structure looking east.



Photograph No. 4: 0259: Delamination at midspan.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Kilman Road | ID Number | 04 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 200m west of Effingham Street | Span Lengths (m) | 4.3 |
| Structure Type | RF | Deck Area (m2) | 61 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | 2013 | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt over the structure is in good condition. There is an area of settlement, cracking, and asphalt patching on the east approach. The steel beam guiderail is generally in good condition with light vehicular damage at the south end over the structure. There are leaving end terminals at all four corners. There are delineators at the southeast, southwest, and northwest corners. There is no hazard marker at the northeast corner. In 2013, the structure was widened to the north and south, and a new deck slab was poured over top of the existing deck slab, making the existing deteriorated deck slab redundant. The centre portion of the new deck slab could not be inspected as it was poured on top of the existing deteriorated deck slab. There is exposed rebar on the soffit of the existing deteriorated deck slab. The north and south ends of the soffit are in good condition. The culvert side walls are in fair to good condition. The west footing is exposed approximately 100mm at the southwest corner for a length of 4m. The east footing is exposed approximately 100mm. There is medium erosion at the southwest corner.

Recommendation

We recommend placing rip rap at the southwest corner NOW. We recommend installing a hazard marker at the northeast corner NOW.

| | | | | | |
|----------------------------------|------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Good | Priority Rating | NOW | Current BCI | 76 |
| Estimated Total Cost | \$5,500.00 | Implementation Ranking | Medium | Previous BCI | 77 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Kilman Road **ID Number** 04

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

SPI - Scour Protection Improvement

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

Riprap erosion protection - SPI \$5,000.00

Install hazard marker - RIR \$500.00

\$0.00

\$0.00

\$0.00

Sub Total \$5,500.00

Total **\$5,500.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0182-0255

Measurements Span = 4.3m
Length = 14.2m
Height = 1.8m

Additional Notes Rehabilitation/Maintenance Work:
2013: Rehabilitation work consisted of reconstructing the north end, reconstructing and widening the south end, and constructing a new deck overtop the center portion of the existing deck. The existing deck is visible and is in poor condition. However, the load is carried by the new deck.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Kilman Road
04



Photograph No. 1: 0188: Roadway looking east.



Photograph No. 2: 0214: South elevation and erosion at southwest corner.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Kilman Road
04



Photograph No. 3: 0255: North elevation.



Photograph No. 4: 0249: Interior of structure looking south.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Luffman Drive | ID Number | 05 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 50m east of Sulphur Spring Drive | Span Lengths (m) | 4.9 |
| Structure Type | RF | Deck Area (m2) | 30 |
| Yr Constructed | c.1940 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The roadway surface is in poor condition with extensive potholes, rutting, settlement, and asphalt patching. There is a buildup of sediment along the edges of the roadway preventing water runoff. There is water ponding along the north edge of the roadway. The steel beam guiderail on the north side is generally in fair condition with areas of light vehicular damage and minor outward rotation. There are hazard markers at the southwest, northwest and northeast corners. There is no hazard marker at the southeast corner. The bridge deck soffit is generally in good condition with isolated areas of narrow to wide cracking along the interface between the deck soffit and abutment sidewalls. The cracking extends into the southeast wingwall. The abutment sidewalls are generally in good condition with evidence of leakage at the interface between the soffit and abutment sidewalls. The fascias are in fair to good condition with efflorescent staining at the centre and east corner of the north fascia. The tops of the footings are exposed approximately 300mm with light scour evident. There is medium erosion at the southwest, southeast, and northeast corners at the ends of the wingwalls. There is severe erosion at the northwest corner. There are two conduits across the south fascia. There is a gas main on the north fascia.

Recommendation

We recommend placing rip-rap erosion protection along the footings and the northwest corner NOW. We also recommend installing steel beam guiderail over the south side of the structure and roadway approaches. However, due to the narrow roadway over the structure, the installation of SBGR on both sides of the structure may inhibit larger vehicles from passing over the structure.

| | | | | | |
|----------------------------------|--------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | NOW | Current BCI | 68 |
| Estimated Total Cost | \$103,500.00 | Implementation Ranking | Medium | Previous BCI | 70 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Luffman Drive **ID Number** 05

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

SPI - Scour Protection Improvement

Engineering Cost

Engineering - RIR,SPI \$13,500.00

\$0.00

Sub Total \$13,500.00

Construction Cost

Install steel beam guiderail - RIR \$60,000.00

Riprap erosion protection - SPI \$30,000.00

\$0.00

\$0.00

\$0.00

Sub Total \$90,000.00

Total **\$103,500.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0340-0434

Measurements Span = 4.9m
Height = 1.8m
Length = 6.1m
Fill = 0.2m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Luffman Drive
05



Photograph No. 1: 0434: Roadway looking west.



Photograph No. 2: 0428: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Luffman Drive
05



Photograph No. 3: 0416: Interior of structure looking south.



Photograph No. 4: 0405: Erosion at northwest corner.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Sulphur Spring Drive | ID Number | 06 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 550m north of Luffman Drive | Span Lengths (m) | 5.3 |
| Structure Type | RF | Deck Area (m2) | 53 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | 2017 | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is in fair condition with deterioration along the edges of the roadway. The steel beam guiderail is in good condition. There are timber posts over the structure in good condition. There are extruders at the northeast, southeast, and southwest corners. There is a driveway rounding at the northwest corner. The bridge deck soffit is generally in fair to good condition. There are two light spalls with exposed corroded reinforcing steel in the soffit near the west end. There is a severe delamination near the center (approximately 1.5m2 poor) and a light delamination toward the west side at centre span. There are isolated areas of medium to severe concrete segregation throughout the soffit. The abutment sidewalls are in fair to good condition. There is medium to severe segregation and scour near the waterline. The retaining wall at the southeast corner is generally in good condition. The concrete wingwalls are generally in good condition. There is an area of light erosion at the northwest wingwall. The concrete fascias are generally in good condition. There is a significant buildup of silt along the west abutment.

Recommendation

None.

| | | | | | |
|----------------------------------|--------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | Adequate | Current BCI | 68 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 69 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Sulphur Spring Drive **ID Number** 06

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0435-0510

Measurements Span = 5.3m
Height = 1.2m
Length = 9.9m

Additional Notes Rehabilitation/Maintenance Work:
2017: SBGR installed over structure.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Sulphur Spring Drive
06



Photograph No. 1: 0464: Roadway looking east.



Photograph No. 2: 0506: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Sulphur Spring Drive
06



Photograph No. 3: 0510: Underside of structure looking north.



Photograph No. 4: 0493: Area of delamination in the soffit at centre span.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Sulphur Spring Drive | ID Number | 07 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 50m south of Orchard Hill Road | Span Lengths (m) | 6.1 |
| Structure Type | RF | Deck Area (m2) | 61 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway over the structure is in fair to poor condition with areas of settlement and potholes. The steel beam guide rails over the structure are generally in good condition. There is vehicular damage to the steel beam guiderail at the northwest corner of the structure. The bridge deck soffit is generally in good condition. There is a narrow crack in the soffit, extending the width of the culvert at the approximate midpoint of the structure. There is an area of concrete segregation in the soffit at the south end centre span. The concrete abutments are generally in good condition. The tops of the footings are exposed 150mm and exhibit light scour. There is evidence of leakage from the fascia to the soffit at the ends of the structure. The northeast corner at the wingwall and abutment side wall has been damaged by a boulder approximately 0.5m in diameter. There is severe erosion of the roadway side slopes behind the wingwalls at the northwest, northeast and southeast corners. The erosion at the northwest and southeast corners is beginning to undermine the roadway. The undersides of the wingwalls at the northwest, northeast, and southeast corners are exposed, most notably at the northwest and southeast corners.

Recommendation

We recommend placing rip rap erosion protection at the northwest, northeast, and southeast corners NOW.

| | | | | | |
|----------------------------------|-------------|-------------------------------|------|---------------------|----|
| General Overall Condition | Good | Priority Rating | NOW | Current BCI | 70 |
| Estimated Total Cost | \$34,500.00 | Implementation Ranking | High | Previous BCI | 72 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Sulphur Spring Drive **ID Number** 07

Recommended Rehabilitation

SPI - Scour Protection Improvement

Engineering Cost

| | |
|-------------------|-------------------|
| Engineering - SPI | \$4,500.00 |
| | \$0.00 |
| Sub Total | \$4,500.00 |

Construction Cost

| | |
|---------------------------------|--------------------|
| Riprap erosion protection - SPI | \$30,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$30,000.00 |
| Total | \$34,500.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0511-0573

Measurements Span = 6.1m
Height = 2.0m
Length = 10.0m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Sulphur Spring Drive
07



Photograph No. 1: 0519: Roadway looking east.



Photograph No. 2: 0535: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Sulphur Spring Drive
07



Photograph No. 3: 0554: Underside of structure looking north.



Photograph No. 4: 0571: Erosion at northwest wingwall.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Orchard Hill Road | ID Number | 08 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 30m east of Sulphur Spring Drive | Span Lengths (m) | 5.5 |
| Structure Type | RF | Deck Area (m2) | 52 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | 2017 | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The roadway is gravel and in fair condition with potholes and vegetation growth along the edges of road. The roadway is closed immediately east of the structure, and has limited use. Vegetation growth is encroaching on both sides of the roadway on approaches. The steel beam guiderail is in good condition. The bridge deck soffit is generally in good condition with a narrow crack with efflorescent staining and evidence of leakage at isolated locations. The abutment sidewalls are generally in good condition with narrow to medium horizontal cracking with efflorescent staining and leakage in the east abutment sidewall and areas of light to medium concrete segregation. There is erosion at the northwest and northeast corners of the structure however the slopes seem to have stabilized. There is a utility along the south fascia. Another utility conduit drops vertically down the southeast wingwall and crosses the creek bed from east to west.

Recommendation

None.

| | | | | | |
|----------------------------------|--------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Good | Priority Rating | Adequate | Current BCI | 70 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 71 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Orchard Hill Road **ID Number** 08

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0574-0615

Measurements Span = 5.5m
Height = 2.3m
Length = 9.45m
Fill = 200mm

Additional Notes Rehabilitation/Maintenance Work:
2017: SBGR installed over structure.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Orchard Hill Road
08



Photograph No. 1: 0578: Roadway looking east.



Photograph No. 2: 0611: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Orchard Hill Road
08



Photograph No. 3: 0592: North elevation.



Photograph No. 4: 0615: Interior of structure looking north.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-----------------------------------|--------------------------|
| Structure Name | Roland Road | ID Number | 09 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 650m east of Sulphur Spring Drive | Span Lengths (m) | 6.5 |
| Structure Type | RF | Deck Area (m2) | 99 |
| Yr Constructed | c.1960 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Dec-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is generally in fair to good condition with areas of disintegration along the centerline and patched and unpatched potholes at the north approach. The steel beam guiderails are generally in fair to good condition, with severe vehicular damage on the east guiderail. There is a hazard marker at the southeast corner. There are delineators at all four corners. There is severe erosion on the southeast and northeast corners. The bridge deck soffit is generally in good condition with areas of water runoff and staining at the east and west ends. The concrete abutment sidewalls are in good condition. There is a narrow to medium vertical crack in the south abutment sidewall at midspan. The fascias are in good condition. The gabion baskets at the northwest and southwest corners of the structure are generally in good condition. There is a concrete retaining wall at the southwest corner in fair to good condition.

Recommendation

We recommend placing riprap erosion protection at the northeast and southeast corners NOW. We also recommend replacing the damaged portion of guiderail at the east side NOW.

| | | | | | |
|----------------------------------|-------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Good | Priority Rating | NOW | Current BCI | 71 |
| Estimated Total Cost | \$40,000.00 | Implementation Ranking | Medium | Previous BCI | 72 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Roland Road **ID Number** 09

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

SPI - Scour Protection Improvement

Engineering Cost

Engineering - RIR, SPI \$5,000.00

\$0.00

Sub Total \$5,000.00

Construction Cost

Replace damaged section of guiderail - RIR \$15,000.00

Riprap erosion protection - SPI \$20,000.00

\$0.00

\$0.00

\$0.00

Sub Total \$35,000.00

Total **\$40,000.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0616-0693

Measurements Span = 6.5m
Height = 2.1m
Length = 15.24m
Fill: 0.7m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Roland Road
09



Photograph No. 1: 0620: Roadway looking north.



Photograph No. 2: 0650: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Roland Road
09



Photograph No. 3: 0667: Interior of structure looking east.



Photograph No. 4: 0690: Area of erosion at northeast corner.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|--|-------------------------------|-------------------------------------|
| Structure Name | Sawmill Road | ID Number | 10 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 90m east of Centre Street | Span Lengths (m) | 11 |
| Structure Type | RF | Deck Area (m2) | 171 |
| Yr Constructed | 2016 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input checked="" type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway is generally in good condition with isolated narrow transverse cracks at the west end. There is steel beam guide rail over the structure on both sides, in good condition. There are extruder end treatments installed at all four corners of the structure in good condition. There is a delineator missing at the southeast corner. There is one area of light erosion in each of the granular side slopes, extending past the guide rail at approximately center span. The cast-in-place reinforced concrete abutment sidewalls, soffit, headwalls, and wingwalls are in good condition. There is medium erosion at all four corners of the structure.

Recommendation

We recommend placing rip-rap at all four corners of the structure in 1-5 Years.

| | | | | | |
|----------------------------------|-------------|-------------------------------|-----------|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | 1-5 Years | Current BCI | 86 |
| Estimated Total Cost | \$23,000.00 | Implementation Ranking | Low | Previous BCI | 88 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Sawmill Road **ID Number** 10

Recommended Rehabilitation

SPI - Scour Protection Improvement

Engineering Cost

| | |
|-------------------|-------------------|
| Engineering - SPI | \$3,000.00 |
| | \$0.00 |
| Sub Total | \$3,000.00 |

Construction Cost

| | |
|---------------------------------|--------------------|
| Riprap erosion protection - SPI | \$20,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$20,000.00 |
| Total | \$23,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0066-0121, DJI_0058-DJI_0092

Measurements Span = 11m
Height = 3m
Length = 16m
Fill = 1m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Sawmill Road
10



Photograph No. 1: 0071: Roadway looking west.



Photograph No. 2: DJI_0059: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

Sawmill Road
10



Photograph No. 3: DJI_0075: North elevation.



Photograph No. 4: DJI_0088: Underside of structure looking southeast.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Centre Street | ID Number | 11 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 2 |
| Location | 100m south of Sawmill Road | Span Lengths (m) | 4.3, 4.3 |
| Structure Type | RB | Deck Area (m2) | 83 |
| Yr Constructed | c.1975 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is generally in fair condition with settlement, cracking, and medium disintegration along the edges of the roadway. There is a medium longitudinal crack in the center of the roadway. The steel beam guide rails over the structure are in fair condition with vehicular damage on the east side at the structure. There is a leaving end terminal at the southwest corner. The other three corners are turned down and buried. The timber posts exhibit light to medium wood rot throughout and isolated areas of severe wood rot. The two-span rigid frame structure is in good condition with light concrete cracking, efflorescent staining, and light concrete disintegration at the four corners at the wingwalls. There are narrow vertical cracks in the center of the abutment sidewalls. There is light leakage from the fascias onto the bridge deck soffit. There are isolated areas of light segregation in the soffit and abutment sidewall of the south cell at the west end of the structure. There is an isolated small spall at the location of the segregation in the south cell in the soffit with exposed corroded reinforcing steel.

Recommendation

We recommend replacing the steel beam guiderail in 6-10 Years.

| | | | | | |
|----------------------------------|-------------|-------------------------------|------------|---------------------|----|
| General Overall Condition | Good | Priority Rating | 6-10 Years | Current BCI | 71 |
| Estimated Total Cost | \$80,500.00 | Implementation Ranking | | Previous BCI | 72 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|-----------------------|---------------|------------------|----|
| Structure Name | Centre Street | ID Number | 11 |
|-----------------------|---------------|------------------|----|

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

Engineering Cost

| | |
|-------------------|--------------------|
| Engineering - RIR | \$10,500.00 |
| | \$0.00 |
| Sub Total | \$10,500.00 |

Construction Cost

| | |
|------------------------------------|--------------------|
| Install steel beam guiderail - RIR | \$70,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$70,000.00 |
| Total | \$80,500.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 122-0222

Measurements Span = 4.3m, 4.3m
Height = 3.0m
Length = 9.65m

Additional Notes None.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Centre Street
11



Photograph No. 1: 0134: Roadway looking south.



Photograph No. 2: 0176: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

Centre Street
11



Photograph No. 3: 0190: Underside of south cell looking east.



Photograph No. 4: 0142: Damaged guiderail over east side of the structure.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|--|-------------------------------|-------------------------------------|
| Structure Name | Cream Street | ID Number | 12 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure | Previous ID Number | Unknown |
| | <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Number of Spans | 3 |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Span Lengths (m) | 3.3, 3.3, 3.3 |
| Location | 400m south of Sawmill Road | Deck Area (m2) | 238 |
| Structure Type | HDPE | Load Posting | No Posting |
| Yr Constructed | 2023 | Current AADT | |
| Yr Rehabilitated | N/A | Date AADT | |
| Inspection Date | 10-Apr-24 | Board Order/ Agreement | <input type="checkbox"/> |
| Previous Inspection | 04-Nov-22 | Drone Inspection | <input checked="" type="checkbox"/> |
| Next Inspection | 2026 | | |

Effects of Deterioration

The asphalt paved roadway over the structure is in very good condition. The steel beam guiderail over the structure is in very good condition. There are Soft Stop end treatments at all four corners of the structure in very good condition. The triple HDPE pipes are in very good condition. The concrete cut off walls are in very good condition. There is rip rap erosion protection at the east and west side slopes in good condition.

Recommendation

None.

| | | | | | |
|----------------------------------|-----------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | Adequate | Current BCI | 98 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 45 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Cream Street **ID Number** 12

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0001-0065, DJI_0020-DJI_0057

Measurements Span = 3.3, 3.3, 3.3
Length = 24m
Fill = 0.8m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Cream Street
12



Photograph No. 1: 0005: Roadway looking north.



Photograph No. 2: DJI_0021: East elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Cream Street
12



Photograph No. 3: DJI_0022: West elevation.



Photograph No. 4: DJI_0044: Interior of north cell, looking west.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-----------------------------------|-------------------------------------|
| Structure Name | Roland Road | ID Number | 13 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 2 |
| Location | 50m east of Balfour Street | Span Lengths (m) | 3.5, 3.5 |
| Structure Type | SSMP | Deck Area (m2) | 123 |
| Yr Constructed | c.1970 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input checked="" type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is in very good condition. There are no hazard markers or barrier at this location. The twin corrugated steel pipes are in poor condition with severe corrosion and perforations below the waterline. There is a severe deformation at the south end of the east cell where the west side of the steel multi-plate is deformed inward. There are deformations in the crowns of both cells, possibly due to minimal fill over the structure. Light erosion is evident with holes forming between the mortared rip rap on the slope protection at the north and south sides of the roadway. There is medium erosion with a large void forming below the mortared rip rap on the slope protection at the south side of the roadway.

Recommendation

We recommend replacing the structure NOW. We understand this structure is scheduled for replacement in 2025.

| | | | | | |
|----------------------------------|----------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Poor | Priority Rating | NOW | Current BCI | 52 |
| Estimated Total Cost | \$1,092,500.00 | Implementation Ranking | Medium | Previous BCI | 55 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Roland Road **ID Number** 13

Recommended Rehabilitation

RSL - Replace Same Location

Engineering Cost

| | |
|-------------------|---------------------|
| Engineering - RSL | \$142,500.00 |
| | \$0.00 |
| Sub Total | \$142,500.00 |

Construction Cost

| | |
|-------------------------|-----------------------|
| Replace structure - RSL | \$950,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$950,000.00 |
| Total | \$1,092,500.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0768-0822, DJI_0136-DJI_0150

Measurements Span = 3.5m, 3.5m
Height = 2.4m
Length = 17.6m
Fill = 0.6m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Roland Road
13



Photograph No. 1: 0769: Roadway looking west.



Photograph No. 2: DJI_0136: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Roland Road
13



Photograph No. 3: 0811: Interior of west cell looking south.



Photograph No. 4: 0797: Severe corrosion along the waterline (typical).

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|--|-------------------------------|-------------------------------------|
| Structure Name | Balfour Street | ID Number | 14 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure | Previous ID Number | Unknown |
| | <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Number of Spans | 2 |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Span Lengths (m) | 3.05, 3.05 |
| Location | 100m south of Roland Road | Deck Area (m2) | 116 |
| Structure Type | HDPE | Load Posting | No Posting |
| Yr Constructed | 2022 | Current AADT | |
| Yr Rehabilitated | Unknown | Date AADT | |
| Inspection Date | 10-Apr-24 | Board Order/ Agreement | <input type="checkbox"/> |
| Previous Inspection | 04-Nov-22 | Drone Inspection | <input checked="" type="checkbox"/> |
| Next Inspection | 2026 | | |

Effects of Deterioration

The asphalt paved roadway over the structure is in good condition. There is steel beam guiderail over the structure with Soft Stop end treatments in good condition. There are hazard markers at all four corners. The twin HDPE pipes are in very good condition. The stainless steel anchors and bolts are in very good condition. The reinforced concrete apron walls are in very good condition. There is riprap slope protection at the north and south side slopes. There is a buildup of debris at the west end of the structure.

Recommendation

We recommend removing the buildup of debris at the west end of the structure NOW.

| | | | | | |
|----------------------------------|------------|-------------------------------|-----|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | NOW | Current BCI | 96 |
| Estimated Total Cost | \$1,000.00 | Implementation Ranking | Low | Previous BCI | 97 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Balfour Street **ID Number** 14

Recommended Rehabilitation

MIS - Miscellaneous - Other Work

Remove debris

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

Remove debris - MIS \$1,000.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$1,000.00

Total **\$1,000.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0732-0767, DJI_0110-DJI_0135

Measurements Span = 3.05m, 3.05m
Height = 3.05m
Length = 19m
Fill = 0.6m

Additional Notes Rehabilitation/Maintenance Work:
Structure was replaced in 2022.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Balfour Street
14



Photograph No. 1: 0737: Roadway looking south.



Photograph No. 2: DJI_0110: East elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Balfour Street
14



Photograph No. 3: DJI_0113: West elevation.



Photograph No. 4: DJI_0127: Interior of north cell, looking west.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|-------------------------------------|
| Structure Name | Kilman Road | ID Number | 15 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 600m west of Maple Street | Span Lengths (m) | 6.1 |
| Structure Type | RF | Deck Area (m2) | 100 |
| Yr Constructed | 1971 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input checked="" type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is in fair to poor condition with disintegration along the edges of the roadway. There are small, patched and unpatched potholes along the edges of the roadway. There are no roadside markers or barriers at this location. The exposed ends of the structure are generally in good condition with light scaling. The bridge deck soffit is generally in good condition. The abutment sidewalls are generally in good condition with light scour along the waterline. There is medium to severe erosion at all four corners of the structure. There is a utility attached to the north side

Recommendation

We recommend placing rip rap erosion protection at all four corners of the structure NOW.

| | | | | | |
|----------------------------------|-------------|-------------------------------|-----|---------------------|----|
| General Overall Condition | Good | Priority Rating | NOW | Current BCI | 72 |
| Estimated Total Cost | \$23,000.00 | Implementation Ranking | Low | Previous BCI | 73 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Kilman Road **ID Number** 15

Recommended Rehabilitation

SPI - Scour Protection Improvement

Engineering Cost

| | |
|-------------------|-------------------|
| Engineering - SPI | \$3,000.00 |
| | \$0.00 |
| Sub Total | \$3,000.00 |

Construction Cost

| | |
|---------------------------------|--------------------|
| Riprap erosion protection - SPI | \$20,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$20,000.00 |
| Total | \$23,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0543-0563, DJI_0093-DJI_0109

Measurements Span = 6.1m
Height = 2.55m
Length = 16.5m
Fill = 0.1m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Kilman Road
15



Photograph No. 1: 0543: Roadway looking west.



Photograph No. 2: DJI_0094: South elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Kilman Road
15



Photograph No. 3: DJI_0101: North elevation.



Photograph No. 4: DJI_0108: Interior of structure looking south.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Metler Road | ID Number | 16 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 950m east of Regional Road No. 24 | Span Lengths (m) | 6.1 |
| Structure Type | RF | Deck Area (m2) | 100 |
| Yr Constructed | 1968 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is in fair to poor condition with medium settlement, rutting, map cracking, and asphalt padding either side of the structure, especially at the south side. There are no roadside markers or barriers at this location. The exposed ends of the structure are generally in good condition with light scaling. The bridge deck soffit is in good condition. There is evidence of narrow cracking in the soffit at the north end, at approximately mid span. The abutment sidewalls are in good condition with light scour along the waterline. The footings are exposed at isolated locations, up to 100mm. There is light erosion of the side slopes adjacent to the structure at the south end. There is medium to severe erosion at all four corners of the structure.

Recommendation

We recommend placing Rip Rap erosion protection on the side slopes at all four corners NOW.

| | | | | | |
|----------------------------------|-------------|-------------------------------|-----|---------------------|----|
| General Overall Condition | Good | Priority Rating | NOW | Current BCI | 72 |
| Estimated Total Cost | \$23,000.00 | Implementation Ranking | Low | Previous BCI | 73 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Metler Road ID Number 16

Recommended Rehabilitation

SPI - Scour Protection Improvement

Engineering Cost

| | |
|-------------------|-------------------|
| Engineering - SPI | \$3,000.00 |
| | \$0.00 |
| Sub Total | \$3,000.00 |

Construction Cost

| | |
|---------------------------------|--------------------|
| Riprap erosion protection - SPI | \$20,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$20,000.00 |
| Total | \$23,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0492-0542

Measurements Span = 6.1m
Height = 2.50m
Length = 16.5m
Fill = 0.2m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Metler Road
16



Photograph No. 1: 0494: Roadway looking west.



Photograph No. 2: 0515: North elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Metler Road
16



Photograph No. 3: 0525: Interior of structure looking north.



Photograph No. 4: 0523: Erosion at northwest corner.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|-------------------------------------|
| Structure Name | Maple Street | ID Number | 18 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 500m north of Roland Road | Span Lengths (m) | 9.14 |
| Structure Type | RF | Deck Area (m2) | 93 |
| Yr Constructed | 1964 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input checked="" type="checkbox"/> |

Effects of Deterioration

The surface treated roadway is in good condition. There are no steel beam guide rails on the approaches. The ends of the parapet walls are a hazard to vehicular traffic. There are hazard markers at all four ends of the parapet walls. The concrete parapet walls are generally in fair to good condition. There are areas of light spalling on the inside face of the east parapet wall with exposed corroded reinforcing steel. The steel railings on top of the parapet walls are generally in good condition, however the coating system is beginning to fail. The bridge deck soffit is in good condition. The abutment sidewalls are generally in good condition with light to medium scaling along the waterline. There are joints through the parapet walls at the northeast, northwest, southeast and southwest corners which continue through the curbs. There is leakage through these joints onto the bridge fascias and deck soffit. There is some light spalling on both east and west bridge fascias and leakage through the parapet wall joints. There is exposed rebar on both the east and west fascias and rust stains at the base of the north wall. The deck drains extend only approximately 150mm below the bridge deck. The deck drains are in poor condition with severe corrosion and section loss. The gabion baskets at all four corners are in poor condition with severe loss of material. There is a buildup of vegetation around all four gabion baskets. There is a bell conduit on the west side of the structure. The creek edges both upstream and downstream of the bridge are eroding. There is medium erosion at the southwest corner, and light erosion at the northwest, northeast, and southeast corners.

Recommendation

We recommend installing steel beam guide rail connected to the ends of the parapet walls at all four corners of the structure NOW. The roadway side slopes may need to be widened to accommodate the guiderail. We recommend sealing the joints through the parapet walls and curbs NOW. We also recommend placing rip rap erosion protection at all four corners of the structure NOW.

| | | | | | |
|----------------------------------|--------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | NOW | Current BCI | 69 |
| Estimated Total Cost | \$180,000.00 | Implementation Ranking | Medium | Previous BCI | 70 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|-----------------------|--------------|------------------|----|
| Structure Name | Maple Street | ID Number | 18 |
|-----------------------|--------------|------------------|----|

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

SPI - Scour Protection Improvement

MIS - Miscellaneous - Other Work

Widen approaches

Seal parapet wall and curb joints

Engineering Cost

| | |
|-----------------------------|--------------------|
| Engineering - RIR, SPI, MIS | \$30,000.00 |
| | \$0.00 |
| Sub Total | \$30,000.00 |

Construction Cost

| | |
|------------------------------------|---------------------|
| Install steel beam guiderail - RIR | \$75,000.00 |
| Riprap erosion protection - SPI | \$20,000.00 |
| Widen approaches - MIS | \$50,000.00 |
| Seal joints - MIS | \$5,000.00 |
| | \$0.00 |
| Sub Total | \$150,000.00 |
| Total | \$180,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0122-0171, DJI_0004-DJI_0040

Measurements Span = 9.14m
Height = 3.4m
Length = 10.1m

Additional Notes None.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Maple Street
18



Photograph No. 1: 0123: Roadway looking north.



Photograph No. 2: DJI_0005: East elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Maple Street
18



Photograph No. 3: DJI_0017: Underside of structure looking northwest.



Photograph No. 4: DJI_0009: Leakage in west fascia looking northeast.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Maple Street | ID Number | 19 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 100m south of Regional Road No. 69 | Span Lengths (m) | 6 |
| Structure Type | RB | Deck Area (m2) | 85 |
| Yr Constructed | 2009 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt roadway has been repaved since the previous inspection and is in very good condition. The steel beam guiderail over the structure is in generally in good condition. There is an eccentric loader end treatment at the northwest corner and leaving terminal-end sections at the northeast, southeast, and southwest corners. Some of the timber posts and offset blocks exhibit light to medium weathering. The precast concrete box structure is generally in good condition. There is light alkali-aggregate reaction (AAR) in the east and west fascias. There is a large spall and delamination on the soffit of the precast concrete end unit on the east side, approximately 0.75 m2 in area. There is light surface corrosion in the exposed reinforcing steel at the spall location.

Recommendation

None.

| | | | | | |
|----------------------------------|--------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Good | Priority Rating | Adequate | Current BCI | 79 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 80 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Maple Street **ID Number** 19

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0001-0054

Measurements Span = 6.0m
Height = 2.43m
Length = 14.1m

Additional Notes Structure has top dimensions of 14.1m long and 6.72m wide.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Maple Street
19



Photograph No. 1: 0002: Roadway looking north.



Photograph No. 2: 0042: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Maple Street
19



Photograph No. 3: 0029: Interior of structure looking west.



Photograph No. 4: 0034: Spall in precast unit at east end.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|-------------------------------------|
| Structure Name | Sawmill Road | ID Number | 20 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 170m east of Beamer Street | Span Lengths (m) | 6 |
| Structure Type | RB | Deck Area (m2) | 71 |
| Yr Constructed | 2009 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input checked="" type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway is in fair condition with cracking, rutting, and settlement. There is steel beam guide rail over both sides of the structure in good condition. There are extruders at the northeast and southwest corners. There are leaving-end terminal sections at the northwest and southeast corners. The precast concrete box units are in good condition. The cast-in-place concrete wingwalls and headwalls are in good condition. There are areas of light leakage and efflorescent staining on the vertical faces of the northwest, northeast, and southwest corners between the fascia and the first precast box unit. There are two small spalls along the east interior wall. Some granular fill is spilling over the tops of the wingwalls at all four corners. There is light erosion at the northeast corner.

Recommendation

None.

| | | | | | |
|----------------------------------|-----------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | Adequate | Current BCI | 81 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 83 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Sawmill Road **ID Number** 20

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0055-0121, DJI_0001-DJI_0003

Measurements
Span = 6.0m
Height = 2.43m
Length = 10.6m

Additional Notes Rehabilitation/Maintenance Work:
2017: The extruder on the southwest corner of the structure was replaced.

Structure has top dimensions of 10.6m long and 6.72m wide.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Sawmill Road
20



Photograph No. 1: 0058: Roadway looking east.



Photograph No. 2: DJI_0001: North elevation.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Sawmill Road
20



Photograph No. 3: 0109: Interior of structure looking north.



Photograph No. 4: 0113: Leakage and efflorescent staining at southwest corner.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Effingham Street (Record 1 of 2, NOW) | ID Number | 21 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 100m south of Sulphur Springs Drive | Span Lengths (m) | 5.7 |
| Structure Type | RF | Deck Area (m2) | 68 |
| Yr Constructed | c.1950 | Load Posting | No Posting |
| Yr Rehabilitated | 2004 | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway over the structure is generally in good condition. There is a longitudinal crack down the center of the roadway and along the northbound lane. There is light settlement at all four corners of the structure. The steel beam guiderail is generally in good condition. There is an eccentric loader end treatment at the northwest corner. There is a leaving end terminal at the southeast corner. The northeast and southwest corners are turned down and buried. There is a steel beam guide rail post missing on the southwest approach. Several of the offset blocks have rotated over both sides of the structure. The structure appears to have been extended to the west at some time in the past. The bridge deck soffit is in fair condition. There is a severe delamination and spall, approximately 2.5m2 area poor, with wide cracking at the centre of the structure that extends into the abutment sidewalls. The spall has been patched at some time in the past but is continuing to spall. There are areas of delamination across the soffit at the west end at the joint of the original portion and the extension, approximately 0.5m2 in area poor. Gabion baskets have been installed at the northwest and southwest corners. The gabion baskets are in fair condition. A gabion basket at the southwest corner is damaged and missing stones.

There is a second record for this structure with a recommendation of 1-5 Years.

Recommendation

We recommend that the missing steel beam guiderail post be replaced on the southwest approach NOW.

| | | | | | |
|----------------------------------|------------|-------------------------------|-----|---------------------|----|
| General Overall Condition | Fair | Priority Rating | NOW | Current BCI | 66 |
| Estimated Total Cost | \$1,500.00 | Implementation Ranking | Low | Previous BCI | 68 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|-----------------------|---------------------------------------|------------------|----|
| Structure Name | Effingham Street (Record 1 of 2, NOW) | ID Number | 21 |
|-----------------------|---------------------------------------|------------------|----|

Recommended Rehabilitation

RIR - Railing Improvement/Replacement

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

Replace post - RIR \$1,500.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$1,500.00

Total **\$1,500.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0256-0339

Measurements Span = 5.7m
 Height = 1.3m
 Length = 12.0m

Additional Notes Rehabilitation/Maintenance Work:
 2004: It appears that the west headwall of the structure was replaced in 2004 and the extension soffit patch repaired.

This structure was downloaded from the Region Municipality of Niagara circa 2006.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Effingham Street (Record 1 of 2, NOW)

21



Photograph No. 1: 0274: Roadway looking north.



Photograph No. 2: 0298: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Effingham Street (Record 1 of 2, NOW)

21



Photograph No. 3: 0331: Interior of structure looking southwest.



Photograph No. 4: 0286: Missing guiderail post at southwest corner.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Effingham Street (Record 2 of 2, 1-5 Years) | ID Number | 21 |
| Classification | <input checked="" type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 1 |
| Location | 100m south of Sulphur Springs Drive | Span Lengths (m) | 5.7 |
| Structure Type | RF | Deck Area (m2) | 68 |
| Yr Constructed | c.1950 | Load Posting | No Posting |
| Yr Rehabilitated | 2004 | Current AADT | |
| Inspection Date | 18-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway over the structure is generally in good condition. There is a longitudinal crack down the center of the roadway and along the northbound lane. There is light settlement at all four corners of the structure. The steel beam guiderail is generally in good condition. There is an eccentric loader end treatment at the northwest corner. There is a leaving end terminal at the southeast corner. The northeast and southwest corners are turned down and buried. There is a steel beam guide rail post missing on the south west approach. Several of the offset blocks have rotated over both sides of the structure. The structure appears to have been extended to the west at some time in the past. The bridge deck soffit is in fair condition. There is a severe delamination and spall, approximately 2.5m2 area poor, with wide cracking at the centre of the structure that extends into the abutment sidewalls. The spall has been patched at some time in the past but is continuing to spall. There are areas of delamination across the soffit at the west end at the joint of the original portion and the extension, approximately 0.5m2 in area poor. Gabion baskets have been installed at the northwest and southwest corners. The gabion baskets are in fair condition. A gabion basket at the southwest corner is damaged and missing stones.

There is a second record for this structure with a recommendation of NOW.

Recommendation

We recommend completing a full depth patch repair in 1-5 Years.

| | | | | | |
|----------------------------------|-------------|-------------------------------|-----------|---------------------|----|
| General Overall Condition | Fair | Priority Rating | 1-5 Years | Current BCI | 66 |
| Estimated Total Cost | \$92,000.00 | Implementation Ranking | Low | Previous BCI | 68 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|-----------------------|---|------------------|----|
| Structure Name | Effingham Street (Record 2 of 2, 1-5 Years) | ID Number | 21 |
|-----------------------|---|------------------|----|

Recommended Rehabilitation

RSP - Rehabilitate Superstructure

Engineering Cost

| | |
|-------------------|--------------------|
| Engineering - RSP | \$12,000.00 |
| | \$0.00 |
| Sub Total | \$12,000.00 |

Construction Cost

| | |
|--------------------|--------------------|
| Patch repair - RSP | \$80,000.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| | \$0.00 |
| Sub Total | \$80,000.00 |
| Total | \$92,000.00 |

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0256-0339

Measurements Span = 5.7m
Height = 1.3m
Length = 12.0m

Additional Notes Rehabilitation/Maintenance Work:
2004: It appears that the west headwall of the structure was replaced in 2004 and the extension soffit patch repaired.

This structure was downloaded from the Region Municipality of Niagara circa 2006.

Access Requirements None.

Town of Pelham

2024 Bridge and Culvert Inspection Database

Effingham Street (Record 2 of 2, 1-5 Years)

21



Photograph No. 1: 0274: Roadway looking north.



Photograph No. 2: 0298: West elevation.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Effingham Street (Record 2 of 2, 1-5 Years)

21



Photograph No. 3: 0331: Interior of structure looking southwest.



Photograph No. 4: 0326: Area of spalling and delamination at centre span, looking south.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Sixteen Road | ID Number | 22 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 2 |
| Location | 50m east of Maple Street | Span Lengths (m) | 3.05, 3.05 |
| Structure Type | HDPE | Deck Area (m2) | 122 |
| Yr Constructed | 2021 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 04-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway over the structure is in good condition. There is steel beam guiderail over the structure with Soft Stop end treatments in good condition. There are hazard markers at all four corners. There is an area of washout of the granular side slope and shoulder at the southeast corner. The twin HDPE pipes are in very good condition. The stainless steel anchors and bolts are in very good condition. The reinforced concrete apron walls are in very good condition. There is a small spall at the southwest corner. There is riprap slope protection at the north and south side slopes.

Recommendation

We recommend placing rip rap erosion protection at the southeast corner NOW.

| | | | | | |
|----------------------------------|------------|-------------------------------|--------|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | NOW | Current BCI | 93 |
| Estimated Total Cost | \$5,000.00 | Implementation Ranking | Medium | Previous BCI | 95 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Sixteen Road **ID Number** 22

Recommended Rehabilitation

SPI - Scour Protection Improvement

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

Riprap erosion protection - SPI \$5,000.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$5,000.00

Total **\$5,000.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0633-0731, 0172-0181

Measurements Span = 3.05m, 3.05m
Height = 3.05m
Length = 20m
Fill = 0.8m

Additional Notes None.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Sixteen Road
22



Photograph No. 1: 0658: Roadway looking west.



Photograph No. 2: 0715: North elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Sixteen Road
22



Photograph No. 3: 0728: Interior of east cell looking south.



Photograph No. 4: 0677: Area of granular washout at southeast corner.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|--|-------------------------------|--------------------------|
| Structure Name | Maple Street | ID Number | 23 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure | Previous ID Number | Unknown |
| | <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Number of Spans | 2 |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Span Lengths (m) | 3.8, 3.8 |
| Location | 40m south of Sixteen Road | Deck Area (m2) | 152 |
| Structure Type | SSMP | Load Posting | No Posting |
| Yr Constructed | 2018 | Current AADT | |
| Yr Rehabilitated | Unknown | Date AADT | |
| Inspection Date | 10-Apr-24 | Board Order/ Agreement | <input type="checkbox"/> |
| Previous Inspection | 02-Dec-22 | Drone Inspection | <input type="checkbox"/> |
| Next Inspection | 2026 | | |

Effects of Deterioration

The asphalt paved roadway over the structure is generally in good condition with light settlement along the edges of the roadway. There are no steel beam guiderails or hazard markers at the structure location. The twin multi plate structure is in very good condition. There is evidence of light leakage and efflorescent staining at the bolted connections. There is minor deformations at the east ends of the units. There are gabion baskets wingwalls/retaining walls, approximately 14m in length on both the east and west ends of the structure. The gabion baskets are generally in good condition with areas of light bulging. There is a hole in the top of the northwest gabion basket with loss of stone.

Recommendation

None.

| | | | | | |
|----------------------------------|-----------|-------------------------------|----------|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | Adequate | Current BCI | 86 |
| Estimated Total Cost | \$0.00 | Implementation Ranking | | Previous BCI | 88 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Maple Street **ID Number** 23

Recommended Rehabilitation

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

\$0.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$0.00

Total **\$0.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0564-0632

Measurements Span = 3.8m, 3.8m
Height = 2.23m
Length = 20.0m
Fill = 0.6m

Additional Notes None.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Maple Street
23



Photograph No. 1: 0564: Roadway looking south.



Photograph No. 2: 0579: West elevation.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Maple Street
23



Photograph No. 3: 0585: Interior of north cell looking west.



Photograph No. 4: 0611: Gabion basket at northwest corner with loss of stone.

Town of Pelham

2024 Bridge and Culvert Inspection Database

| | | | |
|----------------------------|---|-------------------------------|--------------------------|
| Structure Name | Poth Street | ID Number | 24 |
| Classification | <input type="checkbox"/> Bridge <input checked="" type="checkbox"/> Structure <input checked="" type="checkbox"/> Culvert <input type="checkbox"/> Municipal | Previous ID Number | Unknown |
| Type of Location | <input checked="" type="checkbox"/> Roadway <input type="checkbox"/> Driveway <input type="checkbox"/> Other | Number of Spans | 3 |
| Location | 100m north of Webber Road | Span Lengths (m) | 3, 3, 3 |
| Structure Type | CSP | Deck Area (m2) | 140 |
| Yr Constructed | 2019 | Load Posting | No Posting |
| Yr Rehabilitated | Unknown | Current AADT | |
| Inspection Date | 10-Apr-24 | Date AADT | |
| Previous Inspection | 02-Nov-22 | Board Order/ Agreement | <input type="checkbox"/> |
| Next Inspection | 2026 | Drone Inspection | <input type="checkbox"/> |

Effects of Deterioration

The asphalt paved roadway over the structure is in good condition. The steel beam guiderail over the east and west ends are in good condition. There is an extruder end treatment at the southeast corner. There is a driveway rounding at the northwest corner, and a leaving-end termination at the northeast and southwest corners. There are hazard markers at the southeast, northwest, and northeast corners. There is an area of localized medium erosion at the last timber post at the northwest driveway rounding. The polymer coated corrugated steel pipes are in very good condition. There are two joints in each pipe. The joints are composed of steel plates with a different size of corrugation than the surrounding pipe. The east connection in the middle cell appears to be damaged with a gap of approximately 25mm. There is loss of granular and geotextile filter cloth is visible at this location. There are steel bin retaining walls acting as cut-off walls at both ends of the structure. There is a 75mm gap between the pipe and the steel cut-off wall at the southeast corner. There is rip-rap erosion protection on the side slopes. There is a 300mm HDPE drain that outlets onto the rip-rap side slope at the northwest corner of the structure.

Recommendation

We recommend placing granular material at the northwest driveway rounding NOW.

| | | | | | |
|----------------------------------|------------|-------------------------------|-----|---------------------|----|
| General Overall Condition | Very Good | Priority Rating | NOW | Current BCI | 86 |
| Estimated Total Cost | \$1,000.00 | Implementation Ranking | Low | Previous BCI | 88 |

Town of Pelham

2024 Bridge and Culvert Inspection Database

Structure Name Poth Street **ID Number** 24

Recommended Rehabilitation

MIS - Miscellaneous - Other Work

Place fill around SBGR post

Engineering Cost

\$0.00

\$0.00

Sub Total \$0.00

Construction Cost

Fill around SBGR post - MIS \$1,000.00

\$0.00

\$0.00

\$0.00

\$0.00

Sub Total \$1,000.00

Total **\$1,000.00**

Inspected By Robert Ellis and Emma Stephenson of Ellis Engineering Inc.

Photos 0379-0491

Measurements Span = 3m, 3m, 3m
Height = 2.8m
Length = 15.6m
Fill = 1.0m

Additional Notes None.

Access Requirements None.

Town of Pelham
2024 Bridge and Culvert Inspection Database

Poth Street
24



Photograph No. 1: 0380: Roadway looking north.



Photograph No. 2: 0429: East elevation.

June 3, 2024

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Version 2.2

Town of Pelham
2024 Bridge and Culvert Inspection Database

Poth Street
24



Photograph No. 3: 0446: Interior of centre pipe looking west.



Photograph No. 4: 0402: Sinkhole at driveway rounding at northwest corner.

June 3, 2024

Bridge Management Database: Developed by ELLIS Engineering Inc.

Version 2.2