

ENGINEERING INSPECTION & RECOMMENDATION REPORT

FOR

TOWN OF SUFFIELD UNDER 20 FEET SPAN BRIDGES



**PREPARED FOR
TOWN OF SUFFIELD
83 MOUNTAIN ROAD WEST
SUFFIELD, CT 06078**

JANUARY 2026

TABLE OF CONTENTS:

ENGINEERING INSPECTION & RECOMMENDATION REPORT	1
1 EXECUTIVE SUMMARY	5
1.1 INTRODUCTION.....	55
1.2 OVERALL FINDINGS.....	55
1.3 PRIORITY AND RISK OVERVIEW	5
1.4 RECOMMENDED ACTIONS	6
2 BRIDGE 139001 – NORTH STONE ST. OVER STONY BROOK	8
2.1 BRIDGE SUMMARY.....	8.8
2.2 CONDITION ASSESSMENT FINDINGS	6.6
2.3 RECOMMENDATIONS	7
3 BRIDGE 139002 – NORTH STONE ST. OVER UNNAMED BROOK	11
3.1 BRIDGE SUMMARY.....	1.11
3.2 CONDITION ASSESSMENT FINDINGS	1.11
3.3 RECOMMENDATIONS	12
4 BRIDGE 139003 – RUSSEL AVENUE OVER CLAY BROOK	14
4.1 BRIDGE SUMMARY.....	1.14
4.2 CONDITION ASSESSMENT FINDINGS	1.15
4.3 RECOMMENDATIONS	16
5 BRIDGE 139004 – RIVER BOULEVARD OVER DEEP BROOK.....	17
5.1 BRIDGE SUMMARY.....	1.17
5.2 CONDITION ASSESSMENT FINDINGS	1.18
5.3 RECOMMENDATIONS	19
6 BRIDGE 139005 – OVERHILL DRIVE OVER UNNAMED STREAM.....	20
6.1 BRIDGE SUMMARY.....	2.20
6.2 CONDITION ASSESSMENT FINDINGS	2.20
6.3 RECOMMENDATIONS	21
7 BRIDGE 139006 – HICKORY ST. OVER FOURMILE BROOK	23
7.1 BRIDGE SUMMARY.....	2.23
7.2 CONDITION ASSESSMENT FINDINGS	2.23
7.3 RECOMMENDATIONS	25
8 BRIDGE 139007 – HALLADAY AV. EAST OVER FOURMILE BROOK	26
8.1 BRIDGE SUMMARY	2.26

8.2	CONDITION ASSESSMENT FINDINGS	26
8.3	RECOMMENDATIONS	288
9	BRIDGE 139008 – BLOSSOM STREET OVER ONION BROOK	29
9.1	BRIDGE SUMMARY.....	299
9.2	CONDITION ASSESSMENT FINDINGS	299
9.3	RECOMMENDATIONS	311
10	BRIDGE 139009 – COPPER HILL RD. OVER UNNAMED STREAM	32
10.1	BRIDGE SUMMARY.....	322
10.2	CONDITION ASSESSMENT FINDINGS	322
10.3	RECOMMENDATIONS	333
11	BRIDGE 139012 – TAINTOR STREET OVER UNNAMED STREAM	34
11.1	BRIDGE SUMMARY.....	344
11.2	CONDITION ASSESSMENT FINDINGS	355
11.3	RECOMMENDATIONS	356
12	BRIDGE 139014 – HALE STREET OVER UNNAMED STREAM	37
12.1	BRIDGE SUMMARY.....	377
12.2	CONDITION ASSESSMENT FINDINGS	377
12.3	RECOMMENDATIONS	399
13	BRIDGE 139015 – AUSTIN STREET OVER LITTLE BROOK.....	40
13.1	BRIDGE SUMMARY.....	440
13.2	CONDITION ASSESSMENT FINDINGS	440
13.3	RECOMMENDATIONS	441
14	BRIDGE 139016 & 17 – SPRUCE STREET OVER MUDDY BROOK.....	43
14.1	BRIDGE SUMMARY.....	443
14.2	CONDITION ASSESSMENT FINDINGS	443
14.3	RECOMMENDATIONS	444
15	BRIDGE 139018 – SUFFIELD STREET OVER LITTLE BROOK	46
15.1	BRIDGE SUMMARY.....	466
15.2	CONDITION ASSESSMENT FINDINGS	477
15.3	RECOMMENDATIONS	488
16	BRIDGE 139019 – BOSTON NECK ROAD OVER STREAM	49
16.1	BRIDGE SUMMARY.....	499
16.2	CONDITION ASSESSMENT FINDINGS	499

16.3	RECOMMENDATIONS	51
17.	BRIDGE 139020 – HUNTERS CROSSING OVER STREAM	52
17.1	BRIDGE SUMMARY.....	52
17.2	CONDITION ASSESSMENT FINDINGS	52
17.3	RECOMMENDATIONS.....	53
8	BRIDGE 139021 – KENT AVENUE OVER UNNAMED STREAM	54
18.1	BRIDGE SUMMARY.....	54
18.2	CONDITION ASSESSMENT FINDINGS	54
18.3	RECOMMENDATIONS.....	55
9	BRIDGE 139022 – HALE STREET OVER STREAM	57
19.1	BRIDGE SUMMARY.....	57
19.2	CONDITION ASSESSMENT FINDINGS	58
19.3	RECOMMENDATIONS.....	59
0	BRIDGE #139023 – HALE ST. #1. OVER UNNAMED STREAM	60
20.1	BRIDGE SUMMARY.....	60
20.2	CONDITION ASSESSMENT FINDINGS	61
20.3	RECOMMENDATIONS.....	61
2	REPORT LIMITATIONS	61
2	QUALIFICATIONS	621

APPENDICES:

APPENDIX A – PRELIMINARY COST ESTIMATES

APPENDIX B – PHOTOGRAPHS

1. EXECUTIVE SUMMARY

1.1 Introduction

This report has been prepared at the request of the Town of Suffield and presents the findings of Barton & Loguidice, LLC's (B&L) visual assessment of twenty bridges with spans less than 20 feet. These visual assessments were completed by B&L in November 2025. This report presents the findings from the visual assessments and identifies any immediate repairs or long-term maintenance needed. It includes prioritization and recommendations to address these issues, ensuring the structures' safety, functionality, and longevity. Additionally, this report provides cost estimates for the recommended maintenance, repair, or replacement of each structure, supporting the Town of Suffield's planning and resource allocation efforts.

1.2 Overall Findings

The majority of the bridges assessed remain serviceable but exhibit varying degrees of deterioration, typical of aging infrastructure. Common issues observed across the bridge inventory include:

- Concrete spalling and section loss at abutments, wingwalls, and headwalls
- Deterioration of culvert barrels, particularly at the waterline
- Scour and undermining at footings and wingwall toes
- Heavy vegetation and debris obstructing inlet and outlet channels
- Bituminous roadway surface cracking and localized settlement

Several structures exhibit advanced deterioration or structural deficiencies that warrant prompt repair or near-term replacement, while others can be maintained through routine maintenance and targeted repairs.

1.3 Priority and Risk Overview

Based on observed conditions, bridges were categorized into three general planning groups:

- Bridges requiring replacement due to critical deficiencies, severe deterioration, or compromised load-carrying capacity
- Bridges requiring repairs to address concrete deterioration, scour or hydraulic issues to extend service life
- Bridges requiring routine maintenance such as vegetation removal, debris clearing, and minor surface repairs

Structures with deteriorated culvert barrels, active scour, or loss of structural section represent the highest risk to serviceability and public safety if left unaddressed.

1.4 Recommended Actions

B&L recommends the Town consider the following actions:

1. Initiate near-term planning for the replacement of bridges identified as structurally deficient and critically deteriorated.
2. Implement prioritized repair programs for bridges exhibiting moderate deterioration to extend service life and defer replacement costs.
3. Establish a routine maintenance program focused on vegetation management, debris removal, and hydraulic flow improvement to reduce ongoing deterioration.
4. Use the cost estimates provided to support capital budgeting, grant applications, and long-range infrastructure planning.

Table ES-1 – Bridge Inventory Summary and Recommended Actions

Bridge No.	Location	Structure Type	Overall Condition	Recommended Action	Planning Horizon	Estimated Planning Costs
139001	North Stone St. over Stony Brook	Concrete Slab Bridge	Fair	Repair	Long-Term Planning	\$50,000-\$100,000
139002	North Stone St. over Unnamed Brook	Concrete Slab Bridge	Poor	Repair	Near-Term Planning	\$50,000-\$100,000
139003	Russel Ave. over Clay Brook	Concrete Slab Bridge	Poor	Repair	Near-Term Planning	\$50,000-\$100,000
139004	River Blvd. over Deep Brook	Concrete Slab Bridge	Serious	Replace	Near-Term Planning	\$1-1.5 million
139005	Overhill Dr. over Unnamed Stream	Precast Box Culvert	Fair	Repair	Long-Term Planning	\$50,000-\$100,000
139006	Hickory St. over Fourmile Brook	Concrete Slab Bridge	Critical	Replace	Immediate Action	\$1-1.5 million
139007	Halladay Ave. East over Fourmile Brook	Concrete Slab Bridge	Fair	Maintenance	Long-Term Planning	DPW Budget
139008	Blossom St. over Onion Brook	Corrugated Metal Culvert	Poor	Replace	Long-Term Planning	\$1-1.5 million
139009	Copper Hill Rd. over Unnamed Stream	Twin Metal Culverts	Critical	Replace	Immediate Action	\$1-1.5 million
139012	Taintor St. over Unnamed Stream	Concrete Bridge / Box Extension	Fair	Maintenance	Long-Term Planning	DPW Budget
139014	Hale St. over Unnamed Stream	Precast Box Culvert	Fair	Repair	Long-Term Planning	\$50,000 - \$100,000
139015	Austin St. over Little Brook	Twin Metal Culverts	Poor	Replace	Long-Term Planning	\$1-1.5 million
139016	Spruce St. over Muddy Brook	Corrugated Arch Culvert	Fair	Replace	Immediate	\$2-2.5 million
139017	Spruce St. over Muddy Brook	Corrugated Arch Culvert	Poor	Replace	Immediate	

139018	Suffield St. over Little Brook	Precast Box Culvert	Fair	Maintenance	Long-Term Planning	DPW Budget
139019	Boston Neck Rd. over Stream	Concrete Slab / Stone	Serious	Replace	Near-Term Planning	\$1-1.5 million
139020	Hunters Crossing over Stream	Precast Box Culvert	Fair	Maintenance	Long-Term Planning	DPW Budget
139021	Kent Ave. over Unnamed Stream	Twin Metal Culverts	Poor	Replace	Long-Term Planning	\$1-1.5 million
139022	Hale St. over Stream	Concrete Slab Bridge	Poor	Repair	Near-Term Planning	\$50,000-\$100,000
139023	Hale St. #1 over Unnamed Stream	Plastic Culvert	Hydraulically Insufficient / Structurally Fair		Long-Term Planning	
	Suffield St. over Unnamed Stream	Precast Box Culvert	Critical	Replace	Immediate	\$1-1.2 million

2. Bridge 139001 – North Stone St. over Stony Brook



2.1 Bridge Summary

Bridge No. 139001 carries North Stone Street over Stony Brook in the Town of Suffield, Connecticut. The original cast-in-place concrete structure is currently in service, carrying two lanes of traffic, and has an overall curb-to-curb width of 18 feet. Metal beam railings are present on both sides of the bridge.

The bridge consists of a single 8-foot clear-span with a cast-in-place reinforced concrete deck, supported by abutments and wingwalls. The condition of the deck top surface is currently unknown due to the overlay of bituminous concrete, which exhibits some longitudinal and transverse cracks and potholes. The underside concrete slab is in fair condition, with a few concrete spalls and rebar exposed near the inlet side of the bridge. Overhead power lines are located along the inlet side of the bridge.

2.2 Condition Assessment Findings

Superstructure Overall Condition: **Fair**

- Top Deck: The condition of the deck's top surface is currently unknown due to the bituminous concrete overlay. The overlay exhibits longitudinal and transverse cracking and isolated potholes. **Fair**

- Bottom Underside: The underside of the concrete slab is in fair condition with isolated areas of concrete spalling with exposed reinforcing steel observed near the inlet side of the bridge. **Fair**

Substructure Overall Condition: **Fair**

- West Abutment: Cast-in-place concrete abutment exhibiting moderate spalling, early-stage disintegration with section loss, and evidence of minor scour. The abutment is in overall sound. **Fair**
- East Abutment: Cast-in-place concrete with footing exhibiting moderate delamination and early-stage disintegration. **Fair**
- Northwest Wingwall: Fair condition with small hairline cracks. The bottom of the wingwall is protected by riprap and is covered in heavy vegetation that obstructs the waterway. Some concrete spall areas on top of the wall. **Fair**
- Northeast Wingwall: Bottom of wingwall is protected by riprap and shows heavy vegetation that obstructs the waterway. **Fair**
- Southwest Wingwall: Small hairline cracks. **Fair**
- Southeast Wingwall: The top of the wall shows concrete deterioration with concrete spalling at the corner end of the wall. **Fair**

Waterways Overall Condition: **Poor**

- Inlet Channel: Approximately 50 feet upstream of the bridge inlet channel is a wide, small pond. This channel area shows significant heavy vegetation before entering the bridge. **Poor**
- Outlet Channel: The existing outlet consists of a roughly 30-foot straight, clean channel that discharges into a wide pool in a private property. **Good**

Roadway Approach Overall Condition: **Fair**

- Approach Roadway: The bituminous concrete roadway approach is in fair condition with some minor cracks. **Fair**

2.3 Recommendations

Several repairs are recommended to extend the service life of the bridge. These repairs are not considered urgent and may be completed as part of planned maintenance activities.

Repair Recommendations:

- Repair concrete spalling at the toes of the abutment footings.
- Repair concrete spalling and deterioration at the toes of the wingwall footings.

- Perform partial-depth concrete repairs to address deteriorated concrete and exposed reinforcing steel on the underside of the deck.
- Repair spalled and deteriorated concrete at the tops of wingwalls and headwalls.
- Remove debris and excessive vegetation from within the bridge channel to improve hydraulic performance.
- Clean, reposition, or remove riprap and loose rocks within the bridge channel, as appropriate, to restore proper channel flow and footing protection.

3. Bridge 139002 – North Stone St. over Unnamed Brook



3.1 Bridge Summary

Bridge No. 139002 carries North Stone Street over Unnamed Brook (Stony Brook) in the Town of Suffield, Connecticut. The original cast-in-place concrete superstructure is supported on concrete abutment and wingwalls. The existing structure accommodates a two-lane roadway with two-way traffic and has an overall curb-to-curb width of 18 feet. Metal beam railings are present on both sides of the bridge. Overhead power lines are located along the outlet side of the bridge.

3.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Top Deck: The condition of the top deck is unknown due to the bituminous concrete overlay. The overlay exhibits minor transverse and longitudinal cracking. **Fair**
- Deck Underside: The underside of the concrete slab is in fair condition with minor, light concrete spalling observed. **Fair**

Substructure Overall Condition: Poor

- West Abutment: Cast-in-place concrete abutment exhibiting minor delamination and cracking at the abutment stem. The footing shows minor concrete spalling and evidence of minor scour. **Fair**

- East Abutment: Cast-in-place concrete abutment with stem wall exhibiting moderate delamination and vertical and horizontal cracks. The footing shows early-stage disintegration, advanced concrete spalls, and evidence of moderate scour. **Fair**
- Northwest Wingwall: Wingwall exhibits moderate scour at the base of the wall next to the abutment footing, concrete spalling, concrete section loss, and a horizontal crack (or construction joint). Additional concrete spalling is present at the corner closest to the abutment and along the top of the wall. Wingwall base is protected by riprap and has moderate vegetation present. **Poor**
- Northeast Wingwall: Wingwalls exhibit concrete spalling at the corner closest to the bridge abutment, and some spalled concrete areas on top of the wingwall. Wingwall base is protected by riprap and shows minor vegetation. **Poor**
- Southwest Wingwall: Wingwall exhibits concrete spalling at the top corner adjacent to the bridge abutment. Wingwall base is protected by modified riprap and shows moderate vegetation. **Fair**
- Southeast Wingwall: Wingwall exhibits concrete deterioration, spalling, and localized concrete section loss at the bottom corner adjacent to the east abutment, as well as spalling at top of the wall. Wingwall base is protected by some riprap and shows minor vegetation. **Poor**
- Headwalls: Both headwalls exhibit concrete spalling and section loss that may compromise the stability of the metal beam railing posts mounted on the headwalls. **Poor**

Waterways Overall Condition: **Poor**

- Inlet Channel: The channel consists of a small, deep pool at the bridge inlet, and exhibits scouring and undermining. The approach channel contains heavy vegetation. **Poor**
- Outlet Channel: The outlet channel consists of small, deep pool area and the channel has dense vegetation. **Poor**

Roadway Approach Overall Condition: **Good**

- Roadway Approach: Roadway approaching areas are in good condition with minor transversal and longitudinal cracks. Overall, the approach roadway is in good condition. **Good**

3.3 Recommendations

Several repairs are recommended to extend the service life of the bridge. These repairs are not considered urgent and may be completed as part of planned maintenance activities.

Repair Recommendations:

- Repair all concrete spill areas at wingwalls and abutments.
- Repair concrete spill areas at headwalls.

- Repair deteriorated concrete at abutment foundations.
- Repair vertical and horizontal cracks at abutment stems.
- Provide scour protection at inlet and outlet areas.
- Clean vegetation on both sides of the bridge.

4. Bridge 139003 – Russel Avenue over Clay Brook



4.1 Bridge Summary

Bridge No. 139003 carries Russel Avenue over Clay Brook in the Town of Suffield, Connecticut. The bridge consists of a single-span, cast-in-place reinforced concrete deck with an approximate clear span of 8 feet, supported by concrete abutments and wingwalls. The roadway has an overall curb-to-curb width of 16 feet.

Metal beam rail is present on both sides of the bridge. Cast-in-place concrete parapets, measuring approximately 10 feet 8 inches long by 34 inches high, and 6 inches thick, are located at both ends of the bridge.

Two drainage systems with type C-L catch basins are located approximately 150 feet east and west of the bridge. The drainage outlets discharge approximately 16 feet east of southwest wingwall and approximately 10 feet northeast from northeast wingwall. In addition, an existing 26-foot-long grass swale discharges to the northwest of the bridge.

Overhead power lines are located along the bridge's outlet side.

4.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Top Deck: The condition of the deck's top surface is unknown due to the presence of a bituminous concrete overlay. The overlay exhibits minor transverse and longitudinal cracks. **Fair**
- Deck Underside: The underside of the deck exhibits minor isolated spalling and one localized area of more advanced spalling with exposed reinforcing steel. **Fair**

Substructure Overall Condition: Fair / Poor

- West Abutment: Cast-in-place concrete abutment exhibiting moderate to advanced surface scaling with exposed aggregate. No exposed reinforcing steel was observed at the time of inspection; however continued deterioration may result in deeper section loss if left unaddressed. The footing appears to have been previously rehabilitated by constructing an approximately 7-inch-thick concrete toe extension that extends approximately 3.5 feet vertically and runs longitudinally along the full length of the abutment and wingwalls. Steel plates are installed at all four corners between the abutments and wingwalls. The rehabilitated concrete is in good condition; however, one wingwall location was not included in the rehabilitation and shows spalling and scouring of the original bridge footing. **Fair / Poor**
- East Abutment: Same condition as the west abutment. **Fair / Poor**
- Northwest Wingwall: Wingwall exhibits moderate scour and concrete deterioration at the base beyond the rehabilitated concrete limits. Moderate vegetation present. **Poor**
- Northeast Wingwall: Displays light scour at the bottom corner beyond the rehabilitated limits. Light vegetation is present along the wingwall face. There is a 24-inch runoff-discharging pipe near the wingwall. **Fair**
- Southwest Wingwall: Exhibits moderate concrete surface scaling. In addition, it shows moderate scouring at the base near the abutment interface. Moderate vegetation is present. There is a runoff-discharging pipe near the wingwall. **Fair**
- Southeast Wingwall: Exhibits localized concrete deterioration with exposed original footing, section loss, and spalling. These conditions likely prompted the previous foundation rehabilitation. Moderate vegetation is present along the wingwall face. **Poor**

Waterways Overall Condition: Fair / Poor

- Inlet Channel: The inlet channel is straight, narrow, and stony, with ponding averaging approximately 15 feet in width upstream of the bridge. This area shows minor scour and undermining at the southeast and southwest corners of the abutment and wingwall. Channel has light vegetation. **Fair**

- Outlet Channel: The outlet consists of an approximately 15-foot wide low pool area followed by a relatively straight channel. The channel area has heavy vegetation along both banks. **Poor**
- Channel Condition: The channel is free of debris but contains approximately 12 inches of accumulated mud and silt. **Fair**

Roadway Approach Overall Condition: **Good**

- The bituminous concrete overlay on the roadway approaches exhibits minor cracking but is in overall good condition. Two catch basins systems are located on the east and west side of the bridge to collect roadway runoff, with a discharge pipes extending to the northeast and the southwest sides of the bridge. **Good**

4.3 Recommendations

Based on the observed condition of the bridge, B&L recommends the following repairs and maintenance activities to extend the service life of the structure. While these items are not considered immediately critical, timely implementation is recommended to limit further deterioration.

Repair Recommendations:

- Repair all concrete spalls at wingwalls and abutments stem.
- Perform partial-depth concrete repairs to address deteriorated concrete and exposed reinforcing steel on the underside of the deck.
- Repair wingwalls footing not reached by the previously rehabilitated footing.
- Repair vertical and horizontal cracks at abutments stems.
- Protect inlet and outlets areas from scouring.
- Remove vegetation around bridge abutments and its banks.
- Remove vegetation and protect outlet drainage pipe.

5. Bridge 139004 – River Boulevard over Deep Brook



5.1 Bridge Summary

Bridge No. 139004 carries River Boulevard over Deep Brook in the Town of Suffield, Connecticut. The structure is an original cast-in-place reinforced concrete bridge consisting of a single-span deck with an approximate clear span of 10.08 feet, supported by concrete abutments and wingwalls.

The bridge carries two-way traffic and has an overall curb-to-curb width of approximately 20 feet. Concrete parapets are provided on both sides of the bridge, with metal beam railings installed along the roadway edges. Portions of an existing stone wall are integrated into the concrete abutment structures. The deck is overlaid with bituminous concrete. Overhead power lines are located along both sides of the bridge.

According to legacy reports available on the CTDOT website, repairs were performed on this structure in 1998 to address documented scour concerns. At that time, the bridge abutments and wingwalls had experienced significant undermining due to scour, likely associated with an undersized opening and channel alignment issues. Scour repairs were implemented at the southwest wingwall, including the placement of extensive riprap; however, much of this material has since been displaced or washed away. In addition, scour repairs at the north abutment footing have deteriorated and are no longer effective.

5.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Top Deck: The condition of the deck's top surface is unknown due to bituminous concrete overlay that exhibits transverse and longitudinal cracking, including areas of previously repaired cracks. **Fair**
- Deck Underside: The underside of the concrete slab exhibits signs of minor deterioration, including cracking, localized spalling, and areas of exposed reinforcing steel. **Fair / Poor**

Substructure Overall Condition: Serious / Poor

- North Abutment: Cast-in-place concrete abutment with an integrated stone wall section. Moderate spalling and cracking are present at the interface between the concrete and stone wall. The abutment foundation exhibits severe scour, section loss, and delamination, likely due to hydraulic impacts associated with the Deep Brook alignment. **Serious**
- South Abutment: Cast-in-place concrete abutment with an integrated stone wall section. Moderate to severe spalling and cracking are present at the concrete-to-stone interface. Vegetation growth and graffiti were observed at the crack locations. The abutment foundation is in fair condition. **Fair / Poor**
- Northwest Wingwall: Exhibits moderate scour and concrete deterioration. A severe crack extends from the underside of the bridge deck to the wingwall foundation, indicating separation between the wingwall and the abutment. Evidence suggests a previous repair attempt; however, cracking remains active. The wingwall face lacks scour protection and exhibits heavy vegetation. **Serious**
- Northeast Wingwall: Displays scour at the lower outside corner. The wingwall face lacks protection and exhibits moderate vegetation. A vertical crack extends from the top of the wingwall to the foundation at the interface with the abutment. **Poor**
- Southwest Wingwall: This long cast-in-place concrete retaining wall, approximately 48 feet in length, runs parallel to the Deep Brook channel. The wall is generally in fair condition but exhibits misalignment and a severe crack with concrete section loss at the connection to the south abutment. The crack extends from the deck level to the foundation and has an approximate opening of 4 inches wide and 6 inches deep. A previous repair attempt is evident. The exposed foundation is in fair condition. The wall face is partially protected with modified riprap and shows moderate vegetation. **Serious**
- Southeast Wingwall: Generally in fair condition; however, concrete section loss is present at the top corner adjacent to the east abutment. The wingwall face is partially protected with modified riprap and shows moderate vegetation. **Poor**

Waterways Overall Condition: **Poor**

- Inlet Channel: Deep Brook consists of an approximately 5-foot-wide stony channel running along the southwest wingwall/retaining wall before making a 90-degree turn and widening into a ponded area immediately upstream of the bridge, averaging approximately 15 feet in width. Scour depths of approximately 3 feet were observed within the ponded area. The bridge bottom spans a deep natural channel. No bank protection is present along the north bank. **Fair / Poor**
- Outlet Channel: The outlet consists of an approximately 15-foot-wide deep pool followed by a relatively straight downstream channel. Heavy vegetation is present along both banks. **Poor**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The roadway approaches are overlaid with bituminous concrete and exhibit minor cracking and previously repaired cracks. Metal beam railings are present on both sides of the roadway and are in fair condition. **Fair**
- Drainage: There are catch basins located north of the bridge that discharge at the outlet side (Specific location could not be located). **Fair**

5.3 Recommendations

Due to the extent of structural deterioration and ongoing scour concerns, near-term replacement of the bridge is recommended.

6. Bridge 139005 – Overhill Drive over Unnamed Stream



6.1 Bridge Summary

Bridge No. 139005 carries Overhill Drive over an unnamed stream in the Town of Suffield, Connecticut. The structure consists of an 8-foot by 4-foot precast concrete box culvert. The bridge carries a two-lane roadway and has an overall curb-to-curb width of approximately 21 feet.

Wooden railings are provided on both sides of the bridge. The top of the structure is overlaid with bituminous concrete and includes bituminous concrete lip curbing. Catch basins located on both the east and west sides of the bridge collect roadway runoff and discharge at the outlet side of the culvert. Overhead power lines are located along both sides of the bridge.

6.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Top Deck: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits transverse and longitudinal cracking, including areas of previously repaired cracks. **Fair**
- Deck Underside: The underside of the precast concrete box sections exhibits minor deterioration, including localized spalling, cracking, and areas of exposed reinforcing steel. **Fair**

Substructure Overall Condition: **Fair**

- Box Sidewalls: The sidewalls are generally in good condition. However, section joints require repair, and the metal anchor plates connecting the box sections show signs of corrosion and deterioration. **Fair**
- Top Slab: The top slab exhibits localized delamination, likely resulting from water infiltration due to failing gasket sealants at the section joints. **Fair**
- Bottom Slab: The bottom of the box culvert could not be fully observed due to the presence of debris, accumulated sediment, and vegetation growth. **Fair**

Waterways Overall Condition: **Fair**

- Inlet Channel: The inlet channel is straight and grassy, with an average width of approximately 3 to 5 feet. Some debris was observed at the box entrance; however, no evidence of scour was noted at the inlet. **Fair**
- Outlet Channel: The outlet channel is approximately 8 feet wide and heavily vegetated along both banks. Multiple drainage systems discharge into the outlet area. **Fair / Poor**
- Culvert Interior: The interior of the box contains debris, rocks, and vegetation along the bottom. The outlet area includes heavy vegetation and localized riprap protection. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, including areas of previously repaired cracks. **Fair**
- Drainage: Two Type C catch basins are located approximately 35 feet east of the bridge and discharge to a 24-inch plastic pipe at the northeast side of the bridge. On the west side, one Type C and one Type 1 Double C catch basin discharge to a 24-inch pipe at the northwest side of the outlet. **Fair**

6.3 Recommendations

Based on the observed conditions, the following repairs are recommended to extend the service life of the structure. These repairs are not considered immediately critical but should be addressed as part of routine maintenance planning. There are some repair recommendations that should be implemented to extend the bridge's service life, but they are not required to be completed immediately.

Repair Recommendations:

- Repair box section joints by restoring or replacing failed gasket sealants.
- Repair or replace corroded metal anchor plates connecting box sections.
- Remove debris from the inlet area.
- Clean debris and vegetation from the bottom of the box culvert.

- Repair concrete spalls at the top slab of the boxsections.
- Remove debris and provide protection at the outlet area.
- Remove heavy vegetation around the outlet and drainage discharge pipes.

7. Bridge 139006 – Hickory St. over Fourmile Brook



7.1 Bridge Summary

Bridge No. 139006 carries Hickory Street over Fourmile Brook in the Town of Suffield, Connecticut. The structure consists of a single-span, cast-in-place reinforced concrete deck with an approximate clear span of 10 feet, supported by concrete abutments and wingwalls. The bridge is currently in service and carries two lanes of traffic with an overall curb-to-curb width of approximately 20 feet.

Wooden beam railings are provided on both sides of the bridge. Short cast-in-place concrete parapets, approximately 12 feet long, 10 inches high, and 10 inches thick, are located at both ends of the structure. Two connected Type C-L catch basins are located approximately 35 feet west of the bridge and discharge to a concrete headwall approximately 10 feet west of the northwest wingwall. Overhead power lines are located along the outlet side of the bridge.

7.2 Condition Assessment Findings

Superstructure Overall Condition: Poor

- Deck Top: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits cracking and areas of previous crack repairs. Uneven deck surfaces are present, particularly at the four corners of the bridge, likely due to runoff-related water damage. **Poor**

- Drainage: Runoff water is infiltrating at the bridge corners behind the wingwalls, resulting in deterioration of the wingwall and abutment concrete, including spalling, section loss, and void formation behind the walls. A utility (gas) pipe is present behind the north parapet. **Fair / Poor**
- Deck Underside: The underside of the concrete deck exhibits significant deterioration, including spalling, cracking, and exposed reinforcing steel. **Poor**

Substructure Overall Condition: **Critical**

- West Abutment: The cast-in-place concrete abutment exhibits moderate to severe deterioration at the northwest corner. The end of the abutment adjacent to the northwest wingwall shows near-complete concrete section loss with exposed aggregate. The footing exhibits minor concrete spalling and evidence of minor scour. **Fair**
- East Abutment: Cast-in-place concrete, exhibiting moderate scaling and disintegration, vertical and horizontal cracking, and efflorescence staining. The footing shows advanced concrete spalling and evidence of moderate scour. **Poor**
- Northwest Wingwall: Exhibits severe deterioration, including significant scour, concrete section loss with exposed reinforcing steel, and undermining at the abutment-to-wingwall interface and along the wingwall base. These conditions compromise the structural stability and load-supporting capacity of both the abutment and wingwall. Evidence of an older repair is present, including metal rods installed at the wingwall corner. **Critical**
- Northeast Wingwall: Displays scour at the bottom corner adjacent to the abutment and localized concrete spalling. The wingwall face is partially protected with modified riprap and exhibits moderate vegetation. **Poor**
- Southwest Wingwall: Exhibits similar deterioration to the northwest wingwall, including severe scour, concrete section loss with exposed reinforcing steel, and undermining at the abutment and wingwall interface, compromising structural integrity. **Serious**
- Southeast Wingwall: Exhibits concrete deterioration and section loss at the bottom corner adjacent to the east abutment. A recent repair appears to have been performed at this location, including placement of flowable concrete and asphalt at the deck corner to limit water infiltration behind the wingwall and abutment. **Critical**

Waterways Overall Condition: **Poor**

Inlet Channel:

- Approximately 20 feet upstream of the bridge, the channel widens and deepens, forming a stony ponded area averaging approximately 15 feet in width. **Fair**
- Significant scour and undermining are present at the southeast and southwest abutment and wingwall corners. These conditions appear to be primarily associated with runoff and deck drainage rather than inlet channel hydraulics. **Poor**
- The channel banks are heavily vegetated. **Poor**
- Within the bridge opening, the channel consists of a concrete slab in fair condition with minor debris accumulation at the inlet. **Fair**

Outlet Channel:

- The outlet consists of an approximately 30-foot-wide deep pool followed by a relatively straight channel extending approximately 50 feet downstream before narrowing to approximately 10 feet in width.
- Moderate vegetation along both banks. **Fair**
- A concrete endwall with a 15-inch discharge pipe is located approximately 10 feet from the northwest wingwall. **Good**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, including areas of previous crack repairs. **Fair**
- Drainage: Two catch basins are located on the west side of the bridge and collect roadway runoff, discharging to a 15-inch pipe at the northwest side of the bridge. No drainage structures are present on the east side of the bridge. **Fair**

7.3 Recommendations

Due to the extensive concrete section loss, severe scour, and advanced deterioration of the wingwalls and abutments caused by prolonged water infiltration from both the deck surface and the surrounding waterway, the structural integrity of the bridge has been significantly compromised.

Based on these conditions, B&L recommends immediate replacement of the bridge with a new structure.

8. Bridge 139007 – Halladay Ave. East over Fourmile Brook



8.1 Bridge Summary

Bridge No. 139007 carries Halladay Avenue East over Fourmile Brook in the Town of Suffield, Connecticut. The structure is an original cast-in-place concrete bridge supported by concrete abutments and wingwalls. The bridge is currently in service and carries two lanes of traffic with an overall curb-to-curb width of approximately 20 feet.

Metal beam railings are present on both sides of the bridge. Two connected Type C catch basins are located approximately 15 feet west of the bridge and are connected to a manhole, discharging through a 24-inch pipe to a concrete endwall at the outlet side of the bridge, approximately 3 feet west of the northwest wingwall. An additional drainage pipe discharges to a grass swale at the southeast side of the bridge inlet. A sewer manhole is located within the traveled way near the centerline of Halladay Avenue approximately 10 feet west of the bridge. Overhead power lines run along the outlet side of the bridge.

8.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Deck Top: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits minor cracking and areas of previously repaired cracks and is in fair condition. All four corners of the deck are

protected with bituminous concrete extending onto the wingwalls and covering riprap along the wingwalls down to the channel. **Fair**

- Deck Underside: The underside of the concrete deck slab exhibits minor localized deterioration at the headwall corners. Overall, the underside of the deck is in good condition. **Good**

Substructure Overall Condition: **Good**

- West Abutment: Cast-in-place concrete abutment exhibiting minor delamination. The footing shows light concrete spalling and evidence of minor scour. **Good**
- East Abutment: Cast-in-place concrete abutment exhibiting minor delamination. The footing shows light concrete spalling and evidence of minor scour. **Good**
- Northwest Generally in fair condition with localized spalling at the upper corners adjacent to the headwall. The wingwall is protected by riprap covered with asphalt. **Good**
- Northeast Wingwall: Generally in fair condition with localized spalling at the upper corners adjacent to the headwall. The wingwall is protected by riprap covered with asphalt. **Good**
- Southwest Wingwall: In fair condition and protected by riprap covered with asphalt. **Good**
- Southeast Wingwall: In fair condition and protected by riprap covered with asphalt. **Good**

Waterways Overall Condition: **Fair**

Inlet Channel:

- The channel is approximately 15 feet wide and relatively straight with moderate vegetation along both banks. **Fair**
- Evidence of scour and undermining was observed at the southeast and southwest corners of the abutments and wingwalls. **Fair**

Outlet Channel:

- The existing outlet consists of a channel of approximately 10 to 15 feet wide and is relatively straight. **Fair**
- This outlet area has moderate vegetation along both banks. **Fair**
- A concrete endwall with a 24-inch discharge pipe conveys runoff from the catch basins to the outlet channel. Heavy vegetation and tree growth are present in front of the pipe outlet. **Poor**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, including areas of previous crack repairs. **Fair**
- Drainage: Two connected Type C catch basins are located approximately 15 feet west of the bridge and discharge through a manhole and 24-inch pipe to the outlet endwall near the northwest wingwall. A sewer manhole is located within the roadway approximately 10 feet west of the bridge. **Fair**

8.3 Recommendations

The bridge is in overall good /fair condition. Minor repairs and routine maintenance are recommended to extend the service life of the structure.

Recommended Future Maintenance:

- Remove heavy vegetation from the outlet area.
- Clear vegetation from drainage outlet pipes to maintain proper flow.
- Repair localized concrete spalling at the underside of the deck near the corners.
- Provide additional erosion protection at the inlet and outlet areas, as needed.

9. Bridge 139008 – Blossom Street over Onion Brook



9.1 Bridge Summary

Bridge No. 139008 carries Blossom Street over Onion Brook in the Town of Suffield, Connecticut. The structure consists of an original 72-inch-diameter corrugated metal culvert pipe with an asphalt lining with stone wingwalls. The culvert is currently in service and carries two lanes of traffic with an overall curb-to-curb width of approximately 20 feet.

Several remaining wooden posts from a former railing system are present along both sides of the roadway. A single Type C catch basin is located approximately 15 feet south of the culvert and discharges through a plastic pipe at the outlet on the south side of the structure. Overhead power lines are located along the inlet side of the culvert.

9.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Deck Surface: The condition of the roadway surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits transverse and longitudinal cracking, including areas of previous crack repairs, and is in fair condition. **Fair**
- Culvert Crown: Visible portions of the culvert crown appear to be in fair condition. **Fair**

Substructure Overall Condition: **Poor**

- Pipe Barrel: The 72-inch corrugated metal culvert pipe exhibits deterioration and loss of asphalt lining, particularly near the waterline. Corrosion is present along the invert of the pipe. **Poor**
- Inlet Area: The inlet is protected by stone blocks placed along both sides of the pipe barrel; however, the stone joints are not mortared, allowing water to seep through, particularly near the bottom of the inlet. Evidence suggests that flow is occurring beneath and around the exterior of the pipe. The inlet also serves as the confluence of two channels. **Poor**
- Outlet Area: The outlet is protected by limited riprap and asphalt along both sides of the pipe barrel. Scour is present at the outlet invert, resulting in an exposed pipe approximately 5 inches above the eroded channel bed. The outlet area consists of an approximate 25-foot by 10-foot pool with a depth of about 2 feet. A drainage pipe also discharges into this area. **Poor**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Approximately 20 feet upstream of the culvert inlet, two channels converge, with average widths of approximately 10 feet and 15 feet. **Fair**
- Moderate scour and undermining are present at the bottom of the pipe. Scour appears to be exacerbated by non-mortared stone walls functioning as wingwalls, allowing flow beneath and around the culvert. **Poor**
- Channels bank are in fair condition, but is heavily vegetated at the pipe inlet. **Fair**

Outlet Channel:

- The outlet consists of an approximately 25-foot by 10-foot pool, about 2 feet deep, followed by a relatively straight channel extending approximately 50 feet downstream. **Fair**
- This outlet area has heavy vegetation along both banks. **Fair**.

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, including wheel-path longitudinal cracking near the catch basin area. **Fair**
- Drainage: A catch basin located south of the culvert collects roadway runoff and discharges through a 15-inch pipe to the southeast side of the culvert outlet. **Fair**

9.3 Recommendations

The structure is in overall fair to poor condition. Based on the observed condition of the culvert, replacement is recommended; however, replacement is not considered immediately critical. In the interim, minor maintenance and localized repairs may be implemented to improve hydraulic performance and maintain serviceability.

Recommended Maintenance:

- Clean outlet area from heavy vegetation.
- Clean drainage outlet of heavy vegetation.

10. Bridge 139009 – Copper Hill Rd. Over Unnamed Stream



10.1 Bridge Summary

Bridge No. 139009 carries Copper Hill Road over an unnamed stream in the Town of Suffield, Connecticut. The structure consists of twin 72-inch-diameter corrugated metal culvert pipes and is currently in service carrying two lanes of traffic with an overall curb-to-curb width of approximately 24 feet. No guardrails or bridge railings are present at this location.

The outlet side of the structure is located within the Mountain Brook Wildlife Preserve. Steel plates have been installed on the roadway surface to address structural deficiencies associated with one of the culvert barrels that have compromised the integrity of the deck. Overhead power lines are located along the inlet side of the structure.

10.2 Condition Assessment Findings

Superstructure Overall Condition: **Poor**

- Deck Surface: The condition of the deck surface could not be directly observed due to the presence of a bituminous concrete overlay and steel plates placed to mitigate a structural deficiency in one of the culvert barrels. The use of steel plating indicates compromised support conditions beneath the roadway. **Fair / Poor**

Substructure Overall Condition: **Serious / Critical**

- Pipe Barrel: The twin 72-inch corrugated metal culvert pipes exhibit advanced deterioration, including loss of asphalt lining, particularly at the waterline, and corrosion with section loss along the invert. Debris accumulation near the inlet has formed a partial blockage, acting as a dam and restricting outlet flow to approximately 5 inches, while inlet water depths reach approximately 2 feet within the barrels. These conditions are evident from water staining on both the inlet and outlet barrels.

The south barrel exhibits a critical structural deficiency, with partial separation of the pipe and imminent collapse. Fill material from beneath the roadway is exposed through the failed barrel. **Critical**

- Inlet Area: The concrete headwalls and wingwalls are generally in fair condition but exhibit cracking between the barrels and localized spalling. The condition of the lower portions of the inlet barrels and wingwalls could not be observed due to the depth of the inlet pool. **Fair / Poor**
- Outlet Area: The concrete headwalls and wingwalls are in fair condition with cracking between the barrels and localized spalling at the bottoms of the pipe barrels. **Fair / Poor**

Waterways Overall Condition: **Fair**

- Inlet Channel: A pond associated with the Mountain Brook Wildlife Preserve is located at the inlet of the twin culvert pipes. Debris originating from the pond has accumulated inside the culvert barrels, creating a damming effect and increasing inlet water depths to approximately 24 inches.. **Fair**
- Outlet Channel: The outlet consists of an approximately 25-foot-wide channel with shallow flow depths of approximately 5 inches. Vegetation along both banks is moderate. **Fair**.

Roadway Overall Condition: **Fair**

- Overlay: The roadway surface consists of a bituminous concrete overlay. Steel plates have been recently installed to maintain roadway serviceability due to the deteriorated culvert barrel beneath the deck. **Poor**
- Roadway Approaches: The roadway approaches are in fair condition and exhibit minor transverse and longitudinal cracking. **Fair**

10.3 Recommendations

The bridge exhibits **critical structural deficiencies**, including advanced deterioration and partial failure of one culvert barrel that compromises the structural integrity of the roadway.

Based on these conditions, immediate replacement of the structure is recommended.

11. Bridge 139012 – Taintor Street Over Unnamed Stream



11.1 Bridge Summary

Bridge No. 139012 carries Taintor Street over an unnamed stream in the Town of Suffield, Connecticut. The structure is an original cast-in-place reinforced concrete bridge currently in service and carrying two lanes of traffic. The skewed structure has an overall curb-to-curb width of approximately 18 feet. Metal beam railings are present on both sides of the bridge.

Two connected Type C-L catch basins are located approximately 20 feet north of the bridge and discharge to an outlet on the northeast side of the structure. The original bridge consists of a single-span cast-in-place concrete deck with an approximate clear span of 7 feet at the inlet and approximately 6 feet within the channel, supported by concrete abutments and wingwalls.

It appears that the bridge has been modified from its original configuration. An approximately 8-foot-long precast concrete box section was added at the outlet side of the existing skewed structure to extend the roadway width. The date of this modification is unknown. Overhead power lines are located along the inlet side of the bridge.

11.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Deck Top: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits minor transverse and longitudinal cracking and localized uneven areas, particularly near the two catch basins. **Fair**
- Deck Underside (Original Structure): The underside of the cast-in-place concrete slab is in fair condition, with minor spalling observed along the edges adjacent to the headwalls. **Fair**
- Deck Underside (Added Box Section): The underside of the added precast concrete box section is in good condition. **Good**

Substructure Overall Condition: Fair

- North Abutment: Cast-in-place concrete, exhibiting minor delamination and early-stage concrete aging. The footing shows minor concrete spalls and evidence of minor scour. The box section wall is in good condition. **Fair**
- South Abutment: Cast-in-place concrete abutment exhibiting moderate delamination and early-stage aging. The footing shows minor concrete spalling and evidence of minor scour. The adjacent box section wall is in good condition. **Fair**
- Added Precast Concrete Box: Generally in fair condition, with a localized concrete spall or damaged area observed at the southeast outlet corner. **Fair**
- Northwest wingwall: In fair condition with minor concrete spalling. The wingwall base is protected by riprap and exhibits heavy vegetation. **Fair**
- Northeast Outlet (Box Section): No wingwall is present. The outlet area is in fair condition, with minor scour observed at the bottom of the box section. Adjacent areas are protected by riprap and exhibit moderate vegetation. A drainage pipe discharges at this location. **Fair**
- Southwest Wingwall: In fair condition with minor concrete spalling and minor scour at the base. The wingwall base is protected by riprap and residual asphalt and exhibits minor vegetation. A grass swale discharges at this location. **Fair**
- Southeast Outlet (Box Section): No wingwall is present. The outlet area is in fair condition with debris and sediment accumulation near the wall. Adjacent areas are protected by riprap and exhibit moderate vegetation. **Fair**

Waterways Overall Condition: Fair

Inlet Channel:

- The inlet channel consists of a stony main stream that converges with a grass swale from the southwest side of the bridge. **Fair**
- Channel banks are heavily vegetated, and additional flow enters from a grass swale. **Poor**
- Within the bridge opening, the channel is muddy and silty but free of debris. **Fair**

Outlet Channel:

- The existing outlet consist of a roughly 6 to 10 foot wide channel. This outlet area has heavy vegetation along both banks. **Fair**.
- Roadway drainage discharges at this area through an outlet pipe. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, areas of previous crack repairs, and localized unevenness near and between the two catch basins. **Fair**
- Drainage: Two catch basins are located north of the bridge and collect roadway runoff, discharging through a pipe to the northeast side of the structure. **Fair**

11.3 Recommendations

The bridge is in overall fair condition and would benefit from targeted repairs and routine maintenance to extend its service life.

Maintenance Recommendations:

- Provide scour protection at the inlet and outlet areas.
- Provide additional protection at the north wingwalls.
- Monitor the interface between the cast-in-place structure and the precast box section.
- Clean inlet area of heavy vegetation.
- Monitor transversal cracks between catch basins.

12. Bridge 139014 – Hale Street Over Unnamed Stream



12.1 Bridge Summary

Bridge No. 139014 carries Hale Street over an unnamed stream (Spencer Brook) in the Town of Suffield, Connecticut. The structure consists of a precast concrete box culvert with large concrete blocks acting as wingwalls. It is currently in service carrying two lanes of traffic with a roadway with an overall curb-to-curb width of approximately 27 feet.

Metal beam railings are present on both sides of the bridge. Four connected Type C catch basins, arranged in two separate drainage systems, are located approximately 15 feet east and west of the bridge. These systems discharge through two pipes embedded within the box culvert wall: a 15-inch reinforced concrete pipe on the west side and a 15-inch plastic pipe on the east side. Overhead power lines run along the outlet side of the bridge.

12.2 Condition Assessment Findings

Superstructure Overall Condition: **Fair**

- Deck Top: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits minor cracking. **Fair**
- Deck Underside: The underside of the culvert is in fair condition but the joints between units are failing. Some areas are missing joint material and others have spalling grout. **Fair**

Substructure Overall Condition: **Fair**

- Interior Box Sections: The precast box culvert sections are generally in fair condition; however, joint sealants have failed at most section joints. At the west side, the third section from the outlet includes a drilled opening to accommodate a drainage outlet pipe from the west side of the bridge. The drilled opening exposes reinforcing steel, which is deteriorating due to environmental exposure. A similar outlet pipe discharges into the box culvert on the east side. At this location, the joint sealant has failed, allowing water to discharge through the section joint below the pipe. Localized concrete spalling is present at both pipe outlet locations as a result of drilling. **Fair**
- End Box Sections: The two precast end box sections, measuring approximately 2 feet in height at the top and 4 feet at the bottom, are in good condition. **Good**
- Box Culvert Invert: The culvert invert is in fair condition, with localized areas of silt and mud accumulation within the box. **Fair**
- North Wingwalls: The north wingwalls consist of stacked concrete blocks measuring approximately 2 feet by 3 feet by 6 feet, arranged in four visible courses. The upper blocks are in fair condition with minor spalling at the top corners. The bottom block of the northwest wingwall exhibits delamination with approximately 40 percent section loss, along with vegetation growth between the blocks and the box culvert end section. The northeast wingwall exhibits similar deterioration at the bottom and mid-height block levels. **Fair**
- South Wingwalls: The south wingwalls are also constructed of stacked concrete blocks measuring approximately 2 feet by 3 feet by 6 feet in four visible courses. The upper blocks are in fair condition with minor spalling at the top corners. The lower blocks exhibit delamination and section loss, particularly at the southeast lower corner of the wingwall. **Fair**

Waterways Overall Condition: **Fair**

- Inlet Channel: The inlet channel is approximately 10 feet wide and sinuous, with light vegetation along both banks. Significant silt accumulation is present upstream of the bridge inlet.
- Outlet Channel: The outlet channel exhibits heavy vegetation and debris along both banks. Vegetation and small trees are growing between the wingwalls and the box culvert end section.

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bridge roadway is surfaced with a bituminous concrete overlay exhibiting transverse and longitudinal cracking, particularly in the vicinity of the catch basins. **Fair**

- Drainage: Two drainage systems with Type C catch basins are located to the west and east of the bridge and discharge roadway runoff into the culvert through drilled openings in the box section walls via 15-inch pipes.

12.3 Recommendations

The bridge is in overall fair condition and would benefit from targeted repairs and routine maintenance to extend its service life.

Repair Recommendations:

- Repair joints between precast box units.
- Repair the spalled concrete around the drainage pipe cutouts within the culvert.
- Clear vegetation from in and around boxes
- Repair areas of concrete block wingwalls that show significant deterioration.

13. Bridge 139015 – Austin Street Over Little Brook



13.1 Bridge Summary

Bridge No. 139015 carries Austin Street over Little Brook in the Town of Suffield, Connecticut. The structure consists of twin 72-inch-diameter asphalt-lined corrugated metal culvert pipes (CMP) and is currently in service carrying two lanes of traffic. The roadway has an overall curb-to-curb width of approximately 22 feet. There are stone wingwalls that surround the CMPs.

Three-cable guide rail systems, some of which are damaged, are present along both sides of the roadway. Overhead power lines run along the inlet (south) side of the bridge. The visible upper portions of the culvert barrels exhibit moderate corrosion and impact-related damage.

13.2 Condition Assessment Findings

Superstructure Overall Condition: **Fair**

- Roadway Surface: The condition of the roadway surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits transverse, longitudinal, alligator, and edge cracking, as well as localized unevenness, particularly near the culvert locations. **Fair**
- Visible Culvert: The exposed upper portions of the 72-inch culvert barrels exhibit moderate corrosion and evidence of impact damage. **Fair**

Substructure Overall Condition: **Poor**

- Pipe Barrels: The twin 72-inch corrugated metal culvert pipes exhibit deterioration and loss of asphalt lining, particularly at and above the waterline. The overall alignment of both pipes appears fair; however, insufficient fill material between the barrels is visible at both the inlet and outlet ends. **Fair / Poor**
- Inlet Area: Heavy vegetation is present near the inlet, restricting flow and limiting equal distribution of water into the east barrel. Both barrels exhibit heavy corrosion and section loss at the invert on the inlet side. Scour protection is limited, with only sparse riprap present along the sides and between the barrels. **Poor**
- Outlet Area: The outlet area contains heavy debris and dense vegetation, with inadequate riprap protection. Corrosion and section loss are present at the invert of both barrels. **Poor**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Heavy vegetation restricts the channel, limiting effective conveyance of flow into both barrels. **Poor**
- Two channels converge approximately 20 feet upstream of the inlet. **Fair**
- A debris dam approximately 50 feet upstream has created a ponded condition in the main channel. **Fair**

Outlet Channel:

- The outlet channel contains heavy vegetation and debris. **Fair.**
- A small pond has formed at the outlet before transitioning into a downstream channel. The pond and channel has heavy vegetation along both banks. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The roadway approaches exhibit transverse, longitudinal, alligator, and edge cracking. **Fair**

13.3 Recommendations

The culvert barrels are in fair to poor condition due primarily to deterioration and section loss at the pipe inverts. Based on the observed conditions, replacement of the culvert is recommended; however, replacement is not considered immediately critical. Interim repairs and routine maintenance may be implemented to maintain serviceability and improve hydraulic performance.

Maintenance Recommendations:

- Clean inlet area from debris to allow water flowing freely to both barrels.
- Clean outlet area from debris and heavy vegetation.
- Repair three cable rails near bridge inlet and outlet.

14. Bridge 139016 & 17 – Spruce Street Over Muddy Brook



14.1 Bridge Summary

Bridge Nos. 139016 and 139017 carry Spruce Street over Muddy Brook in the Town of Suffield, Connecticut. The structures consist of twin corrugated metal arch culvert pipes with asphalt lining, each measuring approximately 12 feet by 7 feet, with a maximum span of approximately 13 feet 10 inches and a 30-degree skew. The structures are currently in service carrying two lanes of traffic with an overall curb-to-curb roadway width of approximately 30 feet.

Metal beam guide rails are present on both sides of the roadway. Overhead power lines are located along the north (inlet) side of the bridge.

14.2 Condition Assessment Findings

Superstructure Overall Condition: **Fair**

- Roadway Surface: The condition of the deck surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits minor transverse and longitudinal cracking, including areas of previous repairs. Localized potholes were observed near the center of the roadway. **Fair**
- Visible Culvert: The top visible portions of the barrels appear to be in fair condition. **Fair**

Substructure Overall Condition: **Fair / Poor**

- Pipe Barrels: The twin corrugated metal arch culvert pipes exhibit deterioration and localized loss of asphalt lining, particularly at the waterline along the invert. Corrosion extends continuously along the waterline of both barrels. Overall alignment of both pipes appears fair. Due to approach channel alignment, Bridge 139017 conveys less flow than Bridge 139016. **Fair**
- Inlet Area: Heavy vegetation and debris are present at the inlet of Bridge 139017. Channel alignment favors flow toward Bridge 139016, resulting in debris accumulation and vegetation growth at Bridge 139017. Both barrels exhibit moderate corrosion and section loss at the inlet invert. Localized scour was observed at the inlet of Bridge 139016. Riprap protection is present along the sides, between the barrels, and at the inlet face. **Fair**
- Outlet Area: The outlet of Bridge 139016 is generally clear of debris. In contrast, the outlet of Bridge 139017 contains debris and vegetation, including a tree growing directly in front of the barrel. A smaller outlet channel from Bridge 139017 merges with the main channel downstream. **Fair/ Poor**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Heavy vegetation and debris at bridge 139017 inlet area restricts flow and prevent equal distribution between the barrels. **Poor**
- The inlet channel alignment favors bridge 139016, which remains relatively clear of debris or vegetation. **Fair**

Outlet Channel:

- Moderate vegetation and debris are present downstream of Bridge 139017 due to reduced flow, forming a small channel that merges with the outlet channel from Bridge 139016 approximately 25 feet downstream. **Fair.**
- The outlet channel is a wide, rocky channel free of debris or vegetation. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse and longitudinal cracking, with some areas of previous crack repairs. **Fair**

14.3 Recommendations

The culvert barrels for Bridges 139016 and 139017 are in poor condition overall. The culvert barrels are in poor condition due primarily to deterioration and section loss at the pipe inverts.

Based on these conditions, immediate replacement of the structure is recommended.

Maintenance Recommendations:

- Add Protection at outlet and inlet barrels against scour.
- Remove debris and vegetation at the inlet to improve flow distribution between the barrels.
- Remove debris and vegetation at the outlet to improve hydraulic performance.

15. Bridge 139018 – Suffield Street Over Little Brook



15.1 Bridge Summary

Bridge No. 139018 carries Suffield Street over Little Brook in the Town of Suffield, Connecticut. The structure consists of precast concrete box sections measuring approximately 14 feet by 6 feet, with cast-in-place reinforced concrete wingwalls at both the inlet and outlet. The bridge is currently in service and carries two lanes of two-way traffic with an overall curb-to-curb roadway width of approximately 29 feet. Metal beam railings are present on both sides of the bridge.

The inlet area includes two long cast-in-place concrete wingwalls that direct flow into the box culvert. The southeast wingwall extends to meet the foundation of an existing stone railroad pier and includes a drainage outlet discharging into the inlet channel. The southwest wingwall is a tall cast-in-place concrete wall associated with the adjacent railroad structure and also functions as a wingwall for the box culvert.

Two connected Type C-L catch basins are located approximately 30 feet east of the bridge inlet and discharge through an opening in the concrete wingwall into the inlet channel. An additional drainage system discharges at the northwest wingwall at the outlet. Overhead power lines are located along the inlet side of the bridge.

15.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Deck Surface: The condition of the roadway surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits longitudinal, transverse, and alligator cracking. **Fair**
- Geometry & Alignment: The bridge is located along a curved roadway transition beneath a railroad bridge. At the inlet, two long wingwalls effectively direct flow into the culvert opening. **Good**
- Deck Underside: The underside of the precast box sections is in good condition; however, several joint gaskets between sections are missing or displaced. **Fair**

Substructure Overall Condition: Fair

- Box Sections: The precast box sections are in fair condition, with localized joint sealant failures between sections. The culvert invert is in fair condition with limited riprap protection along the bottom. **Fair**
- Northeast Wingwall: Cast-in-place concrete wingwall in good condition. The wingwall base is protected by limited riprap and exhibits moderate to heavy vegetation. **Good/Fair**
- Northwest Wingwall (Outlet): Cast-in-place concrete wingwall with an 18-inch drainage pipe discharging from a flared inlet system along Suffield Street. The wingwall base is protected by modified riprap and shows moderate vegetation. **Fair**
- Southwest Wingwall: Tall cast-in-place concrete wingwall associated with the adjacent railroad structure. Piles left in place in front of the wall restrict the inlet channel width. Moderate vegetation is present. **Fair**
- Southeast Wingwall: Long cast-in-place concrete wall along the inlet channel. An 18-inch drainage pipe from Suffield Street discharges at this location. The wall connects to the foundation of an existing railroad pier. **Fair**

Waterways Overall Condition: Fair

Inlet Channel:

- The inlet channel is winding and is guided toward the culvert opening by the long southeast wingwall and railroad pier geometry. **Fair**
- The channel narrows downstream of the railroad pier due to piles left in place supporting the railroad wingwall. Channel depth is approximately 2.5 feet prior to entering the culvert. **Fair**
- Within the culvert, the channel is silty with limited riprap protection along the invert. **Fair**

Outlet Channel:

- The outlet channel is winding with heavy vegetation at the outlet and its banks. **Fair.**
- Roadway drainage discharge through an outlet pipe. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse, longitudinal, and wheel-path cracking. **Fair**
- Drainage: Catch basins located south of the bridge collect roadway runoff and discharge through a pipe at the southeast wingwall. **Fair**

15.3 Recommendations

The bridge is in overall fair condition and would benefit from targeted repairs and routine maintenance to extend its service life.

Maintenance Recommendations:

- Provide protection at outlet and inlet against scour.
- Provide protection at both north wingwalls.
- Reinstall or replace missing joint gaskets between box culvert sections.
- Clean heavy vegetation at outlet channel and drainage outlet.

16. Bridge 139019 – Boston Neck Road over Stream



16.1 Bridge Summary

Bridge No. 139019 carries Boston Neck Road over an unnamed stream that discharges into Stony Brook in the Town of Suffield, Connecticut. The structure consists of a single-span cast-in-place reinforced concrete deck with an approximate clear span of 6 feet, supported by concrete abutments. Cast-in-place concrete wingwalls are present on the west side of the bridge, while stone masonry wingwalls are present on the east side. The original construction date of the bridge is unknown, and previous inspection reports were not available for review.

The bridge is currently in service and carries two lanes of traffic with an overall curb-to-curb roadway width of approximately 26 feet. Metal beam railings are present on both sides of the bridge. Short cast-in-place concrete parapets, approximately 7.5 feet long, 2 feet high, and 12 inches thick, are located on the west side of the bridge only. Overhead power lines are located along the outlet side of the structure.

16.2 Condition Assessment Findings

Superstructure Overall Condition: **Fair / Poor**

- Deck Top: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits transverse, longitudinal, and minor alligator cracking, along with localized unevenness, particularly at the two west-side corners of the bridge. **Fair**

- Deck Underside: The underside of the concrete deck slab exhibits advanced deterioration, including widespread spalling, cracking, and exposed reinforcing steel. **Poor**

Substructure Overall Condition: **Poor/Serious**

- North Abutment: Cast-in-place concrete abutment exhibiting hairline cracking and localized delamination. Severe undermining is present along the length of the abutment stem and footing, with voids approaching approximately 12 inches in depth in some areas. **Poor**
- South Abutment: Cast-in-place concrete abutment exhibiting similar conditions to the north abutment, including hairline cracking, delamination, and severe undermining along the entire length of the wall. **Poor**
- Southwest Wingwall: Exhibits severe deterioration, including significant scour and undermining, concrete section loss with exposed reinforcing steel, and widespread concrete deterioration along the full length of the wingwall. The top cap shows advanced deterioration and loss of material. A large section at the far end of the wingwall has completely separated and was observed approximately 15 feet downstream in the inlet channel. Concrete blocks have been placed as temporary protection. Large trees growing directly behind the wingwall are further compromising its structural integrity. **Poor/Serious**
- Northwest Wingwall: Exhibits conditions similar to the southwest wingwall, including severe scour, loss of stone and mortar, and undermining that compromises both the wingwall and the adjacent abutment. **Poor/Serious**
- Northeast and Southeast Wingwalls: Constructed of stone masonry with mortar, these wingwalls exhibit scour and undermining at the base, missing mortar at the interface with the abutments, and general deterioration. The lower portions are protected by stepped stone blocks forming a waterfall transition to Stony Brook. **Poor**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Approximately 20 feet upstream of the bridge inlet, the winding channel is wide, shallow, and stony before it gets into the bridge. **Fair**
- Inlet channel banks have moderate vegetation in the banks. **Fair**
- Inlet has moderate scour upstream of the bridge's concrete slab. **Fair**
- The bridge bottom channel is a cast-in-place concrete slab in poor condition with delamination and spall areas along the entire length of the bridge. **Poor**

Outlet Channel:

- The outlet consists of a stepped stone waterfall discharging into Stony Brook. **Fair**

Roadway Overall Condition: Fair

- Roadway Approaches: The bituminous concrete roadway approaches exhibit transverse, longitudinal, and wheel-path cracking. **Fair**

16.3 Recommendations

The bridge is in overall poor condition, with significant structural deterioration, severe scour, and undermining of critical substructure elements.

Full replacement of the bridge is recommended in the near-term to address these deficiencies and ensure continued safe operation.

17. Bridge 139020 – Hunters Crossing over Stream



17.1 Bridge Summary

Bridge No. 139020 carries Hunters Crossing over an unnamed stream in the Town of Suffield, Connecticut. The structure consists of a precast concrete box culvert measuring approximately 6 feet by 2.5 feet and is currently in service carrying two lanes of traffic. The roadway has an overall curb-to-curb width of approximately 28 feet.

The bridge does not have railings on either side. Cast-in-place concrete wingwalls are present on the south side of the structure. At the time of inspection, the channel beneath the bridge was dry, with no active flow observed. No overhead power lines are present at this location.

17.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Deck Surface: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay, grass berms, and a sidewalk located on the south side of the bridge. The sidewalk is in good condition. **Good**
- Deck Underside: The underside of the precast box sections looks in fair condition. **Fair**

Substructure Overall Condition: **Fair**

- North Side of Bridge: Cast-in-place concrete wingwalls are present and generally in good condition; however, separation is observed at the interface between the wingwalls and the box section façade. Heavy vegetation is present in this area. No water flow was observed. **Fair**
- South Side of Bridge: No wingwalls are present. The outlet area contains heavy vegetation, rocks, and debris. No flowing water was observed, and conditions suggest the channel has been dry for an extended period. **Fair**
- Culvert Interior: The interior of the box culvert contains debris, silt, and limited riprap. Joint sealants at the section joints are failing; however, the overall structure remains in fair condition. **Fair**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Heavy vegetation and debris at the dry inlet area. **Fair**

Outlet Channel:

- Heavy vegetation, debris, unsettled rocks, and vegetation growing at the outlet dry channel. **Fair**

Roadway Overall Condition: **Good**

- Roadway Approaches: The bituminous concrete roadway approaches are in good condition. A drainage system discharges roadway runoff to the outlet area of the bridge. **Good**

17.3 Recommendations

The bridge is in overall fair condition. Targeted repairs and routine maintenance are recommended to extend the service life of the structure.

Maintenance Recommendations:

- Repair cast in place wingwalls and address separation at the box culvert interface.
- Clean inlet and outlet area from debris and heavy vegetation.
- Repair or replace failed gasket sealant between box section joints.
- Remove debris and sediment from inside box culvert channel.

18. Bridge 139021 – Kent Avenue Over Unnamed Stream



18.1 Bridge Summary

Bridge No. 139021 carries Kent Avenue over an unnamed stream in the Town of Suffield, Connecticut. The structure consists of twin 54-inch-diameter asphalt-lined corrugated metal culvert pipes and is currently in service carrying two lanes of traffic. The roadway has an overall curb-to-curb width of approximately 26 feet.

Outdated metal beam guide rails and several wooden posts, some of which are damaged, are present along both sides of the roadway. Overhead power lines are located along both the inlet (north) and outlet sides of the bridge. The exposed upper portions of the culvert barrels exhibit visible corrosion and impact damage.

18.2 Condition Assessment Findings

Superstructure Overall Condition: Fair

- Roadway Surface: The condition of the deck's top surface is currently unknown due to overlay of bituminous concrete. **Fair**
- Visible Culvert: The top visible portions of the 54-inch barrels show some light corrosion and impact damages. **Fair**

Substructure Overall Condition: **Fair / Poor**

- Pipe Barrels: The twin 54-inch asphalt-lined corrugated metal culvert pipes exhibit deterioration and loss of asphalt lining, particularly at and above the waterline. Overall alignment of both pipes appears fair; however, insufficient fill material is visible between the barrels at both the inlet and outlet. A plastic drainage pipe discharges into the northeast barrel. **Fair**
- Inlet Area: Both barrels exhibit heavy corrosion and section loss at the invert on the inlet side. Scour protection is limited, with only sparse riprap present along the sides and between the barrels. Debris accumulation is also present. **Fair/Poor**
- Outlet Area: A tree is growing adjacent to one of the culvert barrels. The outlet area otherwise contains minor vegetation. Scour at the pipe outlets has created a drop of approximately 3 inches from the barrel invert to the downstream channel. Riprap protection is limited, and both barrels exhibit corrosion and section loss at the invert. **Fair/Poor**

Waterways Overall Condition: **Fair**

Inlet Channel:

- Moderate vegetation with limited riprap along the channel banks. **Fair**

Outlet Channel:

- The outlet channel contains minor vegetation and debris. A small pond has formed due to debris accumulation before transitioning to a downstream channel. **Fair**
- The channel banks are generally clean with limited riprap and silt deposition. **Fair**

Roadway Overall Condition: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches are in fair condition and exhibit transverse and longitudinal cracking. Localized unevenness is present in the wheel paths near the outlet area. **Fair**
- Drainage and Utilities: A roadway drainage system with catch basins is located east of the bridge. Sanitary manholes are present within the traveled way before and after the bridge. Electrical equipment and a transformer are located adjacent to a utility pole near the inlet side of the bridge. **Fair**

18.3 Recommendations

Based on the observed conditions, replacement of the culvert is recommended; however, replacement is not considered immediately critical. Interim repairs and routine maintenance may be implemented to maintain serviceability and extend short-term performance.

Maintenance Recommendations:

- Clean inlet area from debris and vegetation to allow water to flow freely to both barrels.
- Clean outlet area to improve stream hydraulics.
- Remove tree next to outlet barrel.

19. Bridge 139022 – Hale Street over Stream



19.1 Bridge Summary

Bridge No. 139022 carries Hale Street over an unnamed stream in the Town of Suffield, Connecticut. The structure is an original cast-in-place reinforced concrete bridge with concrete abutments and wingwalls. The structure is currently in service and carrying two lanes of traffic. The roadway has an overall traveled-way width of approximately 16 feet.

Metal beam railings are present on both sides of the bridge. Short cast-in-place concrete parapets, approximately 10 feet long, 2 feet 8 inches high, and 9 inches thick, are located at both ends of the structure. A single Type C-L catch basin is located near the driveway at 955 Hale Street and discharges to the outlet side of the bridge.

The bridge consists of a single-span cast-in-place concrete deck with an approximate clear span of 8 feet, supported by concrete abutments and wingwalls. Overhead power lines are located along the outlet side of the bridge.

19.2 Condition Assessment Findings

Superstructure: Fair/Poor

- Top Deck: The condition of the deck top surface could not be directly observed due to the presence of a bituminous concrete overlay. The overlay exhibits transverse and longitudinal cracking, along with localized uneven areas, particularly at the four corners of the bridge. **Poor**
- Bottom Deck: The underside of the concrete deck slab is in fair condition, with minor spalling observed. An 8-inch-diameter utility pipe runs along the back of the south parapet. **Fair**

Substructure: Poor

- West Abutment: Cast-in-place concrete, is exhibiting minor spalling areas and minor cracks. The footing shows severe concrete spalls and evidence of scour. **Poor**
- East Abutment: Cast-in-place concrete is in fair condition and exhibits minor cracks. The footing shows minor evidence of moderate scour. **Fair**
- Northeast Wingwall: The wingwall base is unprotected and exhibits moderate vegetation growth. **Fair**
- Northwest Wingwall: Exhibits scour at the base adjacent to the abutment and localized concrete spalling. The wingwall base is unprotected and shows heavy vegetation. **Poor**
- Southwest Wingwall: Exhibits significant deterioration similar to the northwest wingwall, including severe scour, concrete section loss, and undermining at the interface with the west abutment. These conditions compromise the structural integrity of both the abutment and wingwall. The wingwall face is unprotected and heavily vegetated. **Poor**
- Southeast Wingwall: Exhibits concrete deterioration and section loss at the bottom corner adjacent to the east abutment. The wingwall base is unprotected and shows moderate vegetation. **Poor**

Waterways: Fair

- Inlet Channel: Approximately 20 feet upstream of the bridge inlet, the channel is a straight wide deep, stony bottom, and with ponding averaging approximately 15 feet in width. The channel banks are heavily vegetated. Inside the bridge, the channel is a soft mud and rocky bottom of approximately 18 inch deep, with shallow flowing water approximately 4 inch deep. **Fair**
- Outlet Channel: The outlet consists of a small pool approximately 10 feet wide, transitioning into an approximately 10-foot-wide straight downstream channel. Heavy vegetation is present along both banks. **Fair**

Roadway Approach: Fair

- Roadway Approaches: The current bituminous concrete roadway approach is in fair condition with transversal and longitudinal cracks.

19.3 Recommendations

Several repairs are recommended to address existing deficiencies and extend the service life of the bridge. These repairs should be implemented in a timely manner to prevent further deterioration.

Repair Recommendations:

- Repair concrete spalling at both abutment foundations.
- Repair concrete spalling at wingwalls corners adjacent to abutments.
- Clean up and remove any debris and vegetation along wingwalls.
- Remove debris inside the bridge channel.
- Relocate existing rocks at the outlet side of the bridge.
- Provide erosion protection at the bridge outlet.
- Clean up heavy vegetation at inlet and outlet areas.
- Seal transversal and longitudinal cracks on top deck overlay.

20. Bridge #139023 – Hale St. #1. over Unnamed Stream



20.1 Bridge Summary

Bridge No. 139023 carries Hale Street over an unnamed stream in the Town of Suffield, Connecticut. The structure consists of twin 36-inch-diameter corrugated ADS plastic culvert pipes and is currently in service carrying two lanes of traffic. The roadway has an overall curb-to-curb width of approximately 19.5 feet. No bridge railings are present. Overhead power lines are located along the north (outlet) side of the roadway.

The exposed upper portions of the culvert barrels appear to be in good condition. A previous inspection dated June 27, 2017, identified the structure as consisting of 36-inch reinforced concrete pipes (RCP); however, based on the current pipe material and condition, it appears that the culverts were rehabilitated or replaced since that inspection.

Drainage structures are present on both sides of the roadway and discharge through plastic pipes to the outlet embankments. Overhead power lines are located along the outlet side of the bridge.

20.2 Condition Assessment Findings

Superstructure: **Good**

- Visible Pipe: The condition of the culvert crown could not be directly observed due to the presence of a bituminous concrete overlay. The visible portions of the pipe barrels are in good condition. **Good**

Substructure: **Fair**

- Pipe Barrels: The existing twin 36-inch corrugated plastic culvert pipes are in good condition. Both pipes have good alignment conditions. **Good**
- Inlet Area: Heavy vegetation and minor debris are present at the inlet entrance. **Fair**
- Outlet Area: Heavy vegetation and minor debris are present at the outlet. **Fair**

Waterways: **Fair**

- Inlet Channel: The inlet channel is winding with heavy vegetation and limited riprap protection along the banks. **Fair**
- Outlet Channel: The outlet channel and banks exhibit heavy vegetation with limited protection. **Fair**

Roadway Approach: **Fair**

- Roadway Approaches: The bituminous concrete roadway approaches are in fair condition and exhibit transverse and longitudinal cracking especially between opposite catch basins and around them. **Fair**
- Drainage: A drainage system with catch basins is present at the northeast, northwest, and southeast sides of the bridge. Runoff discharges through 12-inch plastic pipes to the northeast and northwest embankments. **Fair**

20.3 Recommendations

Minor repairs and routine maintenance are recommended to extend the service life of the bridge.

There is a history of roadway overtopping in this area, indicating that the existing structures are hydraulically undersized. A new structure should be designed to convey the required flows, or the roadway elevation may need to be raised. Additional engineering analysis will be required.

Maintenance Recommendations:

- Improve protection at inlet and outlet.
- Remove heavy vegetation and debris in front of the inlet and outlet to maintain a free flow.

21. Suffield St. over unnamed stream



21.1 Bridge Summary

The headwalls at the Suffield Street culvert appear to be rotating away from the roadway. The reinforced concrete pipe (RCP) beneath Suffield Street shows separation between pipe sections, with backfill material visible between the joints. We believe this is occurring because the RCP is connected to the headwalls—so as the headwalls shift, the end pipe sections move with them, worsening the separation between the interior sections.

This is likely the cause of the “hole” in the roadway, as material above the RCP is falling through the gaps.

Additionally, the downstream channel should be cleared of vegetation to improve stream hydraulics.

Superstructure: **Poor**

Substructure: **Serious**

Waterways: **Fair/Poor**

Roadway Approach: **Serious**

21.2 Recommendations

Based on the observed conditions, replacement of the culvert is recommended.

22. REPORT LIMITATIONS

The content of this report represents Barton and Loguidice, LLC's best professional judgment within the limited scope of our engagement. The conclusions are based on readily observable conditions that existed at the time of our site visit. This visual survey is an inventory of deficiencies, damage, distress, and deterioration. Measuring the bridges was also limited, and no destructive or non-destructive testing or monitoring was performed on the bridges. No calculations of the structural capacity, load rating, or other numerical analysis was performed. No scour calculations were done. This limited observation and inventory of deficiencies is not intended to fully satisfy the requirements of the Conn DOT Bridge Inspection Program. This Report offers no warranty, certification, or guarantee of the future performance of the bridge.

23. QUALIFICATIONS

Barton and Loguidice, LLC. is licensed to provide engineering services in the state of Connecticut. Our corporate professional license number is JPC.0000196 and is valid through 4/30/2024. The staff involved on this project and a brief description of their qualifications are:

Kim Fletcher, M.S. Eng., P.E. Structural Engineer with a Master's of Science degree in Engineering; has been involved in many short span bridge design and evaluation projects.

Gustavo Chávez, M.S. Eng. P.E. Civil Engineer with a Bachelor's degree in Engineering; has been involved in many short span bridge design and evaluation projects.

Prepared by:

Gustavo Chavez, M. Eng. P.E.
Project Engineer
PE # 23751

Kim Fletcher, M.S., P.E.
Managing Engineer
CT PE # 30384