PRELIMINARY APPLICATION
FOR THE LOCAL BRIDGE PROGRAM
FISCAL YEAR 2005

Federal

Bridge No. 04999

Mariomi Road
over Silvermine River
New Canaan, Connecticut

May, 2004

Prepared for:
State of Connecticut, Department of Transportation
Office of Consultant Design
2800 Berlin Turnpike
Newington, Connecticut 06131

Prepared by:
B L Companies
355 Research Parkway
Meriden, Connecticut 06450
Phone: (203) 630-1406 Fax (203) 630-2615

CONNECTICUT DEPARTMENT OF TRANSPORTATION

James F. Byrnes, Jr., Commissioner

PRELIMINARY APPLICATION FOR THE LOCAL BRIDGE PROGRAM

Preliminary application is hereby made by the Town/City/Borough of New Canaan for possible inclusion in the Local Bridge Program for **Fiscal Year 2005** for the following structure:

Bridge Location: Mariomi Road over Silvermine River

Bridge Number: 04999 Length of Span: 49 feet

Sufficiency Rating: 56.49 Priority Rating: 55.68

Evaluation & Rating Performed by: X State Forces _____ Others

If Others, Name of Professional Engineer: _____

Connecticut Professional Engineers License Number: _____

Engineering Firm: _____

Engineer's Address: _____

Description of Existing Condition of Structure: *(attach description)*

Description of Project Scope: A *(note repair code; attach narrative/preliminary plans & specifications).*

Name of Municipal Official to Contact: Michael P. Pastore, PE

Mailing Address: 77 Main Street, New Canaan, CT 06840

Telephone: (203)594-3054 FAX: (203)594-3129

E-mail: Michael.Pastore@ci.new-canaan.ct.us

Preliminary Cost Figures:

Preliminary Engineering Fees (Include Breakdown of Fees) *(Not to Exceed 15% of Construction Costs)*	$ 98,700
Rights-of-Way Cost (If applicable)	$ N/A
Municipally Owned Utility Relocation Cost	$ N/A
Estimated Construction Costs (Include Detailed Estimate)	$ 658,000
Construction Engineering (Inspection, Materials Testing) *(Not to Exceed 15% of Construction Cost)*	$ 98,700
Contingencies *(10% of Construction Costs Only)*	$ 65,800
Total Estimated Project Cost	$ 921,200

Financial Aid Data:

Federal Reimbursement: *(Limited to qualifying bridges – See Appendix1)*
Total Estimated Project Cost multiplied by 80%:

Project Reimbursement Request $ 736,960

State Local Bridge Project Grant: *(Cannot be combined with Federal reimbursement)*

Allowable Grant Percentage _____% of Total Cost.

Project Grant Request $ _____

State Local Bridge Project Loan: *(Maximum 50% of total project cost)*

Project Loan Request $ _____

Schedule: (Anticipated Dates)

Public Hearing Conducted:	Fall 2005
Design Completion:	Fall 2006
Property Acquisition Completion:	N/A
Utilities Coordination Completion:	Fall 2006
Construction Advertising:	Fall 2006
Supplemental Application Submission:	Spring 2007
Start of Construction:	Spring 2007
Completion of Construction:	Fall 2007

I hereby certify that the above is accurate and true, to the best of my knowledge and belief.

Signature: _____
(Chief Elected Official, Town Manager, or other Officer Duly Authorized)

Date: May 12, 2004

Return completed applications to:

Mr. Stanley C. Juber
Administrator of the Local Bridge Program
Connecticut Department of Transportation
2800 Berlin Turnpike, P.O. Box 317546
Newington, Connecticut 06131-7546

EXISTING BRIDGE DESCRIPTION

Bridge No. 04999 is a two span structure, which carries Mariomi Road over the Silvermine River in the town of New Canaan, and is located approximately 300 feet east of the intersection with Valley Road. The bridge carries one lane of traffic in both a general eastbound and westbound direction. The structure has an overall span length of 49', and a bridge width that measures 28'-7" both curb-to-curb and out-to-out. It was constructed in 1958 and consists of a corrugated galvanized steel deck filled with bituminous concrete on multi-steel stringers continuous across the center pier. The substructure components consist of reinforced concrete abutments, wingwalls and a center pier all founded on spread footings.

The 1998 average daily traffic (ADT) at site was estimated at 1815 vehicles.

SUPERSTRUCTURE CONDITION

Supported by the 08/07/2002 Connecticut Department of Transportation' s Bridge Inspection Report, a subsequent field inspection concurs with the Item 59 Rating of (4=Poor condition). The bituminous overlay exhibits a full length, longitudinal crack across the bridge at the approximate roadway centerline and full width transverse cracks at the abutment backwalls. The bridge railing consists of an open three-rail system in good condition with areas of light laminar rust. The steel beams exhibit areas of heavy rust and locations with medium to heavy section loss. The bearings also exhibit areas of heavy laminar rust and section loss.

SUBSTRUCTURE AND SCOUR CONDITION

The Connecticut Department of Transportation's Bridge Inspection Report dated, 08/07/2002, assigns an Item 60 Rating of (5=Fair Condition) and an Item 113 Rating of (3=Scour Critical). The abutments and wingwalls exhibit hairline cracking with light efflorescence and some scaling at the water line. The pier cap has areas of severe scale and deteriorated concrete due to water leakage, while the pier stem exhibits vertical and hairline cracks throughout with pop-outs exposing rusted rebar. The most extreme area of deterioration of the pier is at the north end where the concrete has deteriorated to the point that there is a loss of bearing area. The pier and abutments have scour holes present throughout the structure, most prevalent at the pier nose. There are no signs of undermining; however, the exact depths of the footings are unknown and a Scour Evaluation Report performed by Greiner in June 1996 indicates that the footings would undermine during a 10-year storm event.

PROPOSED PROJECT SCOPE

Based upon field inspection and evaluation of ConnDOT's Bridge Inspection Report for Bridge No. 04999, the following rehabilitation measures are recommended:

- Full bridge replacement consisting of a 66-foot reinforced concrete deck composite with galvanized steel beam superstructure on pile supported reinforced concrete abutments and wingwalls.

- The proposed bridge cross-section will closely match the existing bridge width.

- Construction will be performed utilizing a temporary detour over local roads.

The recommended replacement is necessary for the following reasons:

- The deteriorated condition of the existing superstructure.
- The deteriorated condition of the existing concrete substructure components.
- The scour critical rating and hydraulic inadequacy of the existing bridge.

Bridge Nur **04999**

Inspected By: J. CHAVEZ & K. WEIR

Sufficiency Rating 71.62
Previous Inspection Date 3/20/2000

BS&E Received [4] Data Entry By: lmw
Copies Made [Y] Data Entry Date: 2-18-03

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BRIDGE SAFETY & EVALUATION

STRUCTURE EVALUATION

SHEET 1 OF 2 FORM BRI-19 REV 10/00

SHEET 3 OF 21 (INSP. REPORT)

90) Inspection Date	Inspection Team	91) F	ency	Class
080702	404	24		01

Indepth Insp	Deck Survey	Access	Flagman
6/25/1996		0	0

CRITICAL FEATURE INSPECTIONS

	Type	Frequency	Team	Date
Fracture:				
Uwater:				
Special:				

RED FLAG

IDENTIFICATION

Bridge Name
Town Name NEW CANAAN Town Code 50580

5) Inventory Route:
A) Record Type 1
B) Signing Prefix 5 City Street
C) Level of Service 0 None of the bel
D) Route Number 00000
E) Directional Suffix 0 NA

6) Feature Intersected SILVERMINE RIVER

7) Facility Carried: MARIOMI ROAD

9) Location 300' EAST OF VALLEY ROAD

11) Milepoint 0.05 Miles
16) Latitude 41 deg 10 min 24.00 sec
17) Longitude 73 deg 28 min 42.00 sec

98) Border Bridge:
A) State Code
B) Percent Responsibility %
C) Border Town Name

99) Border Bridge Structure No

STRUCTURE TYPE AND MATERIAL

43) Structure Type, Main:
A) Material 4 Steel continuous
B) Design Type 2 Stringer/Multi-beam o

44) Structure Type, Approach:
A) Material 0 Other
B) Design Type 0 Other

45) Number of Spans, Main Unit 2
46) Number of Approach Spans 0
107) Deck Structure Type 6 Corrugated Steel

108) Wearing Surface/Protective System:
A) Type of Wearing Surface 6 Bituminous
B) Type of Membrane 0 None
C) Type of Deck Protection 0 None

AGE AND SERVICE

27) Year Built 1958
106) Year Reconstructed 0000
42) Type of Service:
A) On 5 Highway-pedestrian
B) Under 5 WATERWAY
28) Number of Lanes:
A) On 2
B) Under 0
29) Average Daily Traffic 1815
Half ADT?: No
109) Percent Truck 7 %
30) Year of ADT 1998
19) Bypass, Detour Length 2 miles

GEOMETRIC DATA

48) Length of Max Span	21 ft		
49) Structure Length	49 ft		
50) Curb or Sidewalk Widths: A) Left	0.0 ft	B) Right	0.0 ft
51) Brg Rdwy width,curb-curb	28.6 ft		
52) Deck Width, Out-Out	28.6 ft		
32) Approach Roadway Width	20 ft		
33) Bridge Median	0 No Median		
Deck Area	1372 sqft		
34) Skew Angle	20 deg		
35) Structure Flared	0		
10)Inv. Rte. Min. Vert Clearance	99 ft 99 in		
47) Log Inv. Rte. Total Horiz Clr.:	28.0 ft		
47) RLog Inv. Rte. Total Horiz. Clr.:	ft		
53) Min Vert Clearance Over Bridge	99 ft 99 in		
54) Min Vert Under Clearance	N Ref 0 ft 0 in	Ref	
55) Min Lat Under Clearance on Right	N Ref 99.9 ft	Ref	
56) Min Lat Under Clearance on Left	0.0 ft		

BRIDGE COMMENTS

STRUCTURE EVALUATION

SHEET 2 OF 2 FORM BRI-19 REV 10/00

SHEET 4 OF 21 (INSP. REPORT)

Bridge Number	04999
Town Name	NEW CANAAN
Facility Carried	MARIOMI ROAD
Feature Crossed	SILVERMINE RIVER
NBIS Length	Yes 49

Inspected By: J. CHAVEZ & K. WEIR

CLASSIFICATION

112) NBIS Bridge Length	Yes	
104) Highway System	0	Off System
26) Functional Class	9	Rural Local
100) Defense Highway	0	Not Defense Highway
101) Parallel Structure	N	No parallel structure exists
102) Direction of Traffic	2	2-way traffic
103) Temporary Structure		
110) Designated National Network	0	Not on national network
20) Toll	3	On Free Road
21) Maintain	3	Town or Township Highway Agency
22) Owner	3	Town or Township Highway Agency
Report Class	L	LOCAL
37) Historical Significance	5	Bridge is not eligible for National Register

WATERWAY

DrainageBasinCode	7302	
38) Navigation Control	0	No navigation control on waterway
39) Navigation Vert Clr.	0	40) Navigation Horiz Clr. 0
116) Vert-Lift Brg Nav Min		
111) Pier Abutment Protection		

PROPOSED IMPROVEMENTS

75A) Type of Work Proposed		
75B) Work Done By		
76) Length of Struct. Improvement		ft
94) Bridge Improvement Cost	$	
95) Roadway Improvement Cost	$	
96) Total Project Cost	$	
97) Year of Improvement Cost Est.		
114) Future ADT		115) Year Future ADT
List No.	Project No.	Advertised

POSTED SIGNS & UTILITIES

Other Posted Signs 1					
Other Posted Signs 2					
Actual P.L. Single Unit Truck	tons		Actual P.L. 4Axle Truck	tons	
Rec. P.L. Single Unit Truck	tons		Rec. P.L. 4Axle Truck	tons	
Actual P.L. Semi-TrailerTruck	tons		Actual P.L. 3S2 Truck	tons	
Rec. P.L. Semi-TrailerTruck	tons		Rec. P.L. 3S2 Truck	tons	
Rec. P.L. All Vehicles	tons		Actual P.L. All Vehicles	tons	
Posted Vert Clearance On Bridge	0 ft 0 in			ft	In
Posted Vert UnderClearance	0 ft 0 in			ft	In
Posted Speed Limit	25 mph				mph
Utility					

LOAD RATING AND POSTING

31) Design Load	4	Evaluation Code	R
63) Operating Rating Type	5	Year of Evaluation	1994
64) Operating Rating	49.0	70) Bridge Posting	5
65) Inventory Rating Type	5	41) Structure Status	A
66) Inventory Rating	36.0	Open, no restriction	

CONDITION

		Rating	By
58) Deck	7	7	J.C
59) Superstructure	5	5	J.C
60) Substructure	5	5	J.C
61) Channel & Chan. Protection	7	6	J.C
62) Culverts	N	N	J.C

RDS 1/22/03 4

APPRAISALS

		Rating	By
67) Structure Evaluation	5		
68) Deck Geometry	5	5	J.C
69) Under Clear Vert & Horiz	N	N	J.C
71) Waterway Adequacy	7	7	J.C
72) Approach Rdwy Alignment	8	8	J.C
113) Scour Critical	3	3	J.C

Items 58 Thru 72 Checked By: RDS 1/22/03

36) Traffic Safety Features:

A) Bridge Railings	0	0
B) Transitions	0	0
C) Approach Guardrail	0	0
D) Approach Guardrail End	0	0

OTHER FEATURES

Fence Required	No			Barrel Ladder	No	
Fence Present	No			Stand Pipes	No	
Fence Height	0.0 ft		ft	Cat Walks	No	
Fence Type	0			Movable Inspection System	No	
Fence Material	0			Loose Concrete Checked?	No	Y
Fence Top Type	0					

INSPECTION COMMENTS

Proposed Next Indepth Insp Year	2006
Senior	jantzenrd
Supervisor	sarshoryaa

2006

REVIEWED BY Ronald D Jantzen Jr. Date 1/22/03

Connecticut Department of Transportation
Bridge Safety & Evaluation
Bridge Inspection Report Cover Sheet
Form BRI-1

Bridge 04999

MARIOMI ROAD

over

SILVERMINE RIVER

in

NEW CANAAN

Inspected on 8/7/2002

Inspected by Team 4

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAYS

INSPECTION REPORT TRANSMITTAL FORM
Form BRI-27, Rev. 6/00

Structure No.	04999	Town	NEW CANAAN
Inspection Date	8/7/2002	Inspectors	Team 4

TABLE OF CONTENTS

Loose Forms (not bound in report)

		Number of Sheets Enclosed
Maintenance Memo		0
Flagging Memos		0
PONTIS Element Data Collection Form		0
Plan Sheets	Already on file ☐	0

Bound Report Pages

Title Cover Sheet		1 ✓
Table of Contents		1 ✓
Executive Summary		0
Field Notes		4 ✓
Calculations:	Load Rating Evaluation	0
	Quantities & Cost Estimate	0
Photo Sheets		9 ✓
Photo Images		18 ✓

Forms

BRI-18, Bridge Inspection Form	4 ✓
BRI-19, Highway Bridge Inventory Form	2 ✓

Comments:

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

BRIDGE #: 04999 **INSPECTION DATE:** 8/7/2002

INSPECTION TYPE: Routine **PREVIOUS INSPECTION DATE:** 3/20/2000 **SNOOPER REQUIRED:** No
INSPECTION PERFORMED BY: Team 4 **SNOOPER USED:** No

TOWN: NEW CANAAN **FEATURE CARRIED:** MARIOMI ROAD **YEAR BUILT:** 1958
LOCATION: 300' EAST OF VALLEY ROAD **FEATURE INTERSECTED** SILVERMINE RIVER **YEAR REBUILT:** 0
MAIN MATERIAL: Steel continuous **MAIN DESIGN:** Stringer/Multi-beam or Girde

INSPECTION VISITS:
Inspection Date: 8/7/2002 **Start Time:** 11:00 AM
Temperature: 70 °F **End Time:** 1:45 PM

INSPECTORS:
Inspector: J. Chavez **Task:** Inspection
Inspector: K. Weir **Task:** Inspection

58. DECK

OVERALL RATING 7

	RATING	
OVERLAY	6	Overlay-bituminous Shows a full length longitudinal crack along center line of deck with transverse cracks.
DECK STR. CONDITION	7	Underside- Metal bridge plank with bituminous directly on top of corrugated metal structural with light rust near top flanges and corrosion at random bays.
CURBS	N	
MEDIAN	N	
SIDEWALKS	N	
PARAPET	N	
RAILING	7	Railing- Shows light to medium rust spotting.
PAINT	N	
FENCE	N	
DRAINS	N	
LIGHTING STANDARD	N	
UTILITIES TYPE/SIZE	N	
CONSTRUCTION JOINTS	N	
EXPANSION JOINTS	7	Shows full width transverse cracks at both deck ends.

59. SUPERSTRUCTURE

OVERALL RATING 5 → 4 ROT 1/22/03

	RATING	
BEARING DEVICES	5	Bearings- Bearings over a-1 and a-2 show heavy laminated rust and bearings over pier show light to medium rust.
STRINGERS	5 → 4	Stringers- Shows random stringers with top and bottom flanges and lower portion of web with medium to heavy rust and with section loss.- Worst condition at span # 1 beam # 12 show top and bottom flanges have section loss full length of beam also on bottom of web and end of stringer at web over bearing on a-1.-Random stringers ends show medium to heavy rust and mid-span shows pitting on top and bottom flange and web. Span # 2 shows section loss to stringers # 6 & # 7on top and bottom flanges and bottom of web.(see sketches)
GIRDERS	N	

ROT 1/22/03 Sp 1, Bm 12 w/ 4 1/2 loss @ mid span
Sp 2, Bm 6 w/ mid span & 1/3 Point 20% loss @ 25%
Sp 2, Bm 7 w/ 7/8 loss @ 1/3 Point

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

BRIDGE #: 04999 **INSPECTION DATE:** 8/7/2002

59. SUPERSTRUCTURE **OVERALL RATING** 5

FLOOR BEAMS	N	
TRUSSES-GENERAL	N	
TRUSSES-PORTALS	N	
TRUSSES-BRACING	N	
PAINT	3	
RUST	5	See stringers.
MACHINERY MOV SPAN	N	
RIVETS & BOLTS	5	Shows section loss to random anchor bolts on a-1 and a-2 and also random nuts have rose budding and anchor nut missing on bearing #12 on pier south side.
WELDS & CRACKS	8	
TIMBER DECAY	N	
CONCRETE CRACKING	N	
COLLISION DAMAGE	N	
MEMBER ALIGNMENT	8	
DEFLECT. UNDER LOAD	N	
VIBR. UNDER LOAD	N	
STAND PIPES	N	
BARREL LADDERS	N	

ARE BARREL LADDERS OSHA COMPLIANT? [ ]

60. SUBSTRUCTURE **OVERALL RATING** 5

	RATING	
ABUTMENTS-STEM	7	Abutment- Shows horizontal hair line crack on a-2 between bearing # 8 & # 9. A-1 and a-2 shows medium scaling at water LINE. A-1 pads # 2,3,4,5,6,7,8,9 have vertical cracks open 1/16 inch and cracks extended across the top to that anchor bolts.
ABUTMENTS-BACKWALL	7	Backwall - Shows vertical hairline cracks with efflorescence between beams # 8 & # 9 on a-2.
ABUTMENTS-FOOTINGS	N	Not visible..
ABUT.-SETTLEMENT	8	
ABUTMENTS-WINGWALLS	6	Wingwalls- Shows northeast wing has a vertical crack with efflorescence and a spall at joint.
PIERS/BENTS-CAPS	4	Pier-cap Shows north end of pier under stringer # 1 with severe scaling and ponky concrete at pad # 1and cap(see photo # 13 & # 14) with hairline map cracks and horizontal cracks and efflorescence.
PIERS/BENTS-PILE BENT	N	
PIERS/BENTS-COLUMN	4	Pier stem- Pad # 1 has severe scaling on north end of pier and is affecting bearing area.(see photo #13 & #14.) Stem shows medium scaling at waterline at pier and a small spall with shallow rusted re-bar near bearing # 9 and at east side of pier at north end shows horizontal and map hairline cracks with

RDS 11/22/03 5

RDS 11/22/03 5 #1 Undermining of Bearing is Slight at this time,

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

BRIDGE #: 04999 **INSPECTION DATE:** 8/7/2002

60. SUBSTRUCTURE — OVERALL RATING 5

efflorescence.

PIERS/BENTS-FOOTINGS	N	Not visible.
PIERS/BENTS-SETTLEMent	8	
EROSION-SCOUR	8	
CONCRETE CRACK-SPALL	5	See abutment & pier.
STEEL CORROSION	N	
PAINT	N	
TIMBER DECAY	N	
COLLISION DAMAGE	N	
DEBRIS	8	

61. CHANNEL PROTECTION — OVERALL RATING 6

	RATING	
CHANNEL SCOUR	6	Channel-scour Shows scour at inlet nose of pier 3 ft x 7 ft x 10 in.deep.
EMBANKMENT EROSION	6	Embankments- Shows erosion down stream 25 ft from structure at southwest corner.
DEBRIS	6	Debris at nose of pier.
VEGETATION	8	
CHANNEL CHANGE	8	
FENDER SYSTEM	N	
SPUR DIKES & JETTIES	N	
RIP RAP	N	

62. CULVERTS & RETAINING WALL — OVERALL RATING N

APPROACH CONDITION — OVERALL RATING 6

	RATING	
APPROACH SLAB	N	
RELIEF JOINTS	N	
APPROACH GUIDE RAIL	6	Approach guide rail- Shows northeast corner with loose wire rope with tipped and missing post.-Single wood post at northwest and southwest corners.
APPROACH PAVEMENT	6	Shows transverse cracks with bituminous patch areas and longitudinal cracks at both ends.
APPROACH EMBANKMENT	8	

TRAFFIC SAFETY FEATURES:

BRIDGE RAILINGS	0	
TRANSITIONS	0	
APPROACH GUARDRAILS	0	
APPR. GUARDRAIL ENDS	0	

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

BRIDGE #: 04999 **INSPECTION DATE:** 8/7/2002

LOAD POSTING

SINGLE UNIT (TONS)		
HS (TONS)		
4 AXLE (TONS)		
3S2 (TONS)		
ADVANCE WARNING Y/N	N	
LEGIBILITY	N	
VISIBILITY/LOCATION	N	

MISC.

MIN VERT. UNDERCLR.	0' 0"	
POSTED CLR. UNDER BRIDGE	0' 0"	
POSTED CLR. ON BRIDGE	0' 0"	
ADVANCE WARNING (Y/N)	No	
SPEED LIMIT (IF ANY)	25 MPH	
CHARACTER OF TRAFFIC		Light-mixed.

ADDITIONAL NOTES

ADDITIONAL COMMENTS:

Inspectors' Signatures:

1) John Cluny **Date:** 8/19/02

2) _____ **Date:** __/__/__

3) _____ **Date:** __/__/__

4) _____ **Date:** __/__/__

P.E. Signature: _____ **Date:** __/__/__

P.E.#: _____

Reviewed by: Donald D Jantzen J **CDOT** **Date:** 01/22/03