

Federal

**PRELIMINARY APPLICATION
FOR THE LOCAL BRIDGE PROGRAM
FISCAL YEAR 2005**

Bridge No. 05574

**Jelliff Mill Road
over Noroton 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: Jelliff Mill Road over Noroton River

Bridge Number: 05574 Length of Span: 42 feet

Sufficiency Rating: 57.27 Priority Rating: 55.20

Evaluation & Rating Performed by: 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) <i>(Not to Exceed 15% of Construction Costs)</i>	\$ <u>67,650</u>
Rights-of-Way Cost (If applicable)	\$ <u>N/A</u>
Municipally Owned Utility Relocation Cost	\$ <u>N/A</u>
Estimated Construction Costs (Include Detailed Estimate)	\$ <u>451,000</u>
Construction Engineering (Inspection, Materials Testing) <i>(Not to Exceed 15% of Construction Cost)</i>	\$ <u>67,650</u>
Contingencies <i>(10% of Construction Costs Only)</i>	\$ <u>45,100</u>
Total Estimated Project Cost	\$ <u>631,400</u>

Financial Aid Data:

Federal Reimbursement: *(Limited to qualifying bridges – See Appendix 1)*

Total Estimated Project Cost multiplied by 80%:

Project Reimbursement Request \$ 505,120

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:	<u>Fall 2005</u>
Design Completion:	<u>Fall 2006</u>
Property Acquisition Completion:	<u>N/A</u>
Utilities Coordination Completion:	<u>Fall 2006</u>
Construction Advertising:	<u>Fall 2006</u>
Supplemental Application Submission:	<u>Spring 2007</u>
Start of Construction:	<u>Spring 2007</u>
Completion of Construction:	<u>Fall 2007</u>

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. 05574 is a two span structure, comprised of twin 20' x 6'-7" steel plate arches supported on reinforced concrete stub footing at both abutments and the center pier. The structure carries one lane of traffic in both the eastbound and westbound directions on Jelliff Mill Road over the Noroton River in the town of New Canaan, and is located approximately ¼ mile west of the intersection with State Route 106. The structure has an overall span length of 42', and a bridge width that measures 28'-8" and 32' curb-to-curb and out-to-out, respectively.

The 1998 average daily traffic (ADT) at site was estimated at 1300 vehicles.

SUPERSTRUCTURE CONDITION

Supported by the 08/08/2002 Connecticut Department of Transportation's Bridge Inspection Report, a subsequent field inspection concurs with the Item 59 Rating of (5=Fair condition). The bituminous overlay exhibits random longitudinal and transverse cracks. The bridge railing consists of two longitudinal pipe rails with similar vertical posts, and the stone rail base appears to be in poor condition with areas of mortar loss and a missing post. The steel plate arches exhibit perforations with section loss along the base areas, and a separation from the stone arch due to the loss of mortar in these areas.

SUBSTRUCTURE AND SCOUR CONDITION

The Connecticut Department of Transportation's Bridge Inspection Report dated, 08/08/2002, assigns an Item 60 Rating of (4=Poor Condition) and an Item 113 Rating of (3=Scour Critical). The concrete and pier and abutment stubs exhibit areas of cracking with efflorescence and areas of sever scale. Additionally, the nose of the pier stub is exhibiting extensive mortar loss and separation from the steel arches at the base. The pier and abutment stubs have scour holes present throughout the structure, most prevalent at the pier nose. There is no sign of undermining; however, the exact depths of the footings are unknown and a Comparative Scour Analysis performed by Clough, Harbour & Associates, LLP, dated October 2001 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. 05574, the following rehabilitation measures are recommended:

- Full bridge replacement consisting of a 44-foot long reinforced concrete deck composite with galvanized steel beam superstructure supported by reinforced concrete abutments and wingwalls founded on rock.
- The proposed bridge cross-section will closely match the existing bridge width.
- Construction should be performed in two stages, maintaining one lane of alternating one-way traffic at all times.

The recommended replacement is necessary for the following reasons:

- The deteriorated condition of the existing steel plate arches.
- The deteriorated condition of the existing concrete substructure components.

Bridge Nur. **05574**

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BRIDGE SAFETY & EVALUATION

Inspected By: J. CHAVEZ & K. WEIR

Sufficiency Rating 73.41
Previous Inspection Date 3/14/2000

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

BS&E Received Data Entry By: Wangjiu
Copies Made Data Entry Date: 12/14/00

SHEET 3 OF 17 (INSP. REPORT)

90) Inspection Date 080802 Inspection Team 404 91) F 24 anc y Class 01
 Indepth Insp 5/5/1994 Deck Survey 0 Access 0 Flagman 0

CRITICAL FEATURE INSPECTIONS

Type	Frequency	Team	Date
Fracture:			
Uwater:			
Special:			

RED FLAG

IDENTIFICATION

Bridge Name NEW CANAAN Town Code 50580

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

6) Feature intersected NOROTON RIVER

7) Facility Carried: JELLIFF MILL ROAD

9) Location 1/4 MI WEST OF ROUTE 106

27) Year Built 1950 106) Year Reconstructed 0000

42) Type of Service: 1 Highway 0 B) Under 5 WATERWAY

28) Number of Lanes: 2
 A) On 0 B) Under 0

29) Average Daily Traffic 1300 Half ADT?: No

109) Percent Truck 7 %
 30) Year of ADT 1998

19) Bypass, Detour Length 3 miles

GEOMETRIC DATA

48) Length of Max Span 20 ft
 49) Structure Length 42 ft

50) Curb or Sidewalk Widths:
 A) Left 0 ft
 B) Right 0.0 ft

51) Brg Rdwy width, curb-curb 28.7 ft
 52) Deck Width, Out-Out 32.0 ft

32) Approach Roadway Width 32 ft
 33) Bridge Median 0 No Median

Deck Area 1344 sqft
 34) Skew Angle 44 deg
 35) Structure Flared 0

10) Inv. Rte. Min. Vert Clearance 99 ft
 47) Log Inv. Rte. Total Horiz. Clr.: 28.7 ft
 47) RLog Inv. Rte. Total Horiz. Clr.: 99 ft

53) Min Vert Clearance Over Bridge 99 ft
 54) Min Vert Under Clearance 0 ft
 55) Min Lat Under Clearance on Right Ref
 56) Min Lat Under Clearance on Left Ref

43) Structure Type, Main:
 A) Material 3 Steel
 B) Design Type 11 Arch - Deck

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 N Not Applicable

108) Wearing Surface/Protective System:
 A) Type of Wearing Surface N Not Applicable
 B) Type of Membrane N Not Applicable
 C) Type of Deck Protection N Not Applicable

STRUCTURE TYPE AND MATERIAL

98) Border Bridge: A) State Code 0 B) Percent Responsibility 0 %
 C) Border Town Name

99) Border Bridge Structure No

BRIDGE COMMENTS

posting signs in place during 9/10/2001 field check (jck)

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	4 Historical significance not determinable

WATERWAY	
DrainageBasinCode	7403
38) Navigation Control	0 No navigation control on waterway
39) Navigation Vert Clr.	0
116) Vert-Lift Brg Nav Min	
111) Pier Abutment Protection	
40) Navigation Horiz Clr.	0

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.
	Advised

POSTED SIGNS & UTILITIES	
Other Posted Signs 1	
Other Posted Signs 2	
Actual P.L. Single Unit Truck	18 tons
Rec. P.L. Single Unit Truck	18 tons
Actual P.L. Semi-Trailer Truck	33 tons
Rec. P.L. Semi-Trailer Truck	33 tons
Rec. P.L. All Vehicles	tons
Posted Vert Clearance On Bridge	0 ft 0 in
Posted Vert Under Clearance	0 ft 0 in
Posted Speed Limit	25 mph
Utility	
Actual P.L. 4Axle Truck	tons
Rec. P.L. 4Axle Truck	tons
Actual P.L. 3S2 Truck	tons
Rec. P.L. 3S2 Truck	tons
Actual P.L. All Vehicles	tons

STRUCTURE EVALUATION

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

SHEET 4 OF 17 (INSP. REPORT)

Bridge Number	05574	NBIS Length	
Town Name	NEW CANAAN	Yes	42
Facility Carried	JELLIFF MILL ROAD		
Feature Crossed	NOROTON RIVER		

Inspected By: J. CHAVEZ & H. WEIR

LOAD RATING AND POSTING	
31) Design Load	0
63) Operating Rating Type	1
64) Operating Rating	33.0
65) Inventory Rating Type	1
66) Inventory Rating	26.0
Evaluation Code	L
Year of Evaluation	2000
70) Bridge Posting	3
41) Structure Status	P
Posted for load	

CONDITION		APPRAISALS	
	Rating	By	
58) Deck	N	N J.C.	67) Structure Evaluation
59) Superstructure	5	5 J.C.	68) Deck Geometry
60) Substructure	5	5 J.C.	69) Under Clear Vert & Horiz
61) Channel & Chan. Protection	6	7 J.C.	71) Waterway Adequacy
62) Culverts	N	N J.C.	72) Approach Rdwy Alignment
			113) Scour Critical

Items 58 Thru 72 Checked By: ROD 11/4/02

36) Traffic Safety Features:	
A) Bridge Railings	0
B) Transitions	0
C) Approach Guardrail	0
D) Approach Guardrail End	0

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

INSPECTION COMMENTS	
Proposed Next Indepth Insp Year	2004
Senior Supervisor	jantzenrd sarshon/aa

REVIEWED BY Donald J. ... Date 11/4/02

1 01 11

✓
✓

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

Bridge 05574

JELLIFF MILL ROAD

over

NOROTON RIVER

in

NEW CANAAN

Inspected on 8/8/2002

Inspected by Team 4

Structure No.	05574	Town	NEW CANAAN
Inspection Date	8/8/2002	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 <input type="checkbox"/>	0

Bound Report Pages

Title Cover Sheet		1 ✓
Table of Contents		1 ✓
Executive Summary		0
Field Notes		3 ✓
Calculations:	Load Rating Evaluation	0
	Quantities & Cost Estimate	0
Photo Sheets		6 ✓
Photo Images		12 ✓

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 #: 05574

INSPECTION DATE: 8/8/2002

INSPECTION TYPE: Routine **PREVIOUS INSPECTION DATE:** 3/14/2000 **SNOOPER REQUIRED:** No
INSPECTION PERFORMED BY: Team 4 **SNOOPER USED:** No

TOWN: NEW CANAAN **FEATURE CARRIED:** JELLIFF MILL ROAD **YEAR BUILT:** 1950
LOCATION: 1/4 MI WEST OF ROUTE 106 **FEATURE INTERSECTED:** NOROTON RIVER **YEAR REBUILT:** 0
MAIN MATERIAL: Steel **MAIN DESIGN:** Arch - Deck

INSPECTION VISITS: **INSPECTORS:**
Inspection Date: 8/8/2002 **Start Time:** 11:30 AM **Inspector:** J. Chavez **Task:** Inspection
Temperature: 88 ° F **End Time:** 12:40 PM **Inspector:** K. Weir **Task:** Inspection

58. DECK **OVERALL RATING** P

RATING

OVERLAY	7	Overlay-bituminous Shows longitudinal, transverse and diagonal cracks open 1/2 in+.
DECK STR. CONDITION	N	
CURBS	N	
MEDIAN	N	
SIDEWALKS	N	
PARAPET	7	Parapet-stone rail base Shows some mortar voids on both faces.
RAILING	5	Pipe rail- Shows missing post at northwest corner of structure (see photo), also small repair plate welded to pipe rail at southwest corner.
PAIN	N	
FENCE	N	
DRAINS	N	
LIGHTING STANDARD	N	
UTILITIES TYPE/SIZE	N	
CONSTRUCTION JOINTS	N	
EXPANSION JOINTS	N	

*205
11/4/02*

4

59. SUPERSTRUCTURE Metal plate arch & stone arch. **OVERALL RATING** 5

RATING

BEARING DEVICES	N	
STRINGERS	5	Metal plate arch & stone arch- Shows rust perf holes and heavy laminate rust along base of plate arch with isolated hollow sounding at base area at random locations on both barrels. Both barrels have mortar loss around metal plate arch between top of plate and stone arch with isolated mortar voids at both ends and shows slight flattening of barrel # 1 at west side at inlet and barrel # 2 on west side at inlet.(see sketch)
GIRDERS	N	
FLOOR BEAMS	N	
TRUSSES-GENERAL	N	

Connecticut Department of Transportation
Bridge Inspection Report BRI-18

BRIDGE #: **05574**

INSPECTION DATE: **8/8/2002**

59. SUPERSTRUCTURE	Metal plate arch & stone arch.	OVERALL RATING 5
TRUSSES-PORTALS	N	
TRUSSES-BRACING	N	
PAINT	N	
RUST	N	
MACHINERY MOV SPAN	N	
RIVETS & BOLTS	7	
WELDS & CRACKS	N	
TIMBER DECAY	N	
CONCRETE CRACKING	7	
COLLISION DAMAGE	N	
MEMBER ALIGNMENT	N	
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	5	Concrete stub abutments- A-1 shows vertical cracks with efflorescence, light scaling and heavy rust stains. A-2 shows severe scaling and vertical cracks with efflorescence.
ABUTMENTS-BACKWALL	N	
ABUTMENTS-FOOTINGS	N	Not visible.
ABUT.-SETTLEMENT	8	
ABUTMENTS-WINGWALLS	6	wingwalls-masonry Shows all wings have some separation at mortar joints. Southeast and southwest wings shows light scale and spalls on stub walls.
PIERS/BENTS-CAPS	N	
PIERS/BENTS-PILE BENT	N	
PIERS/BENTS-COLUMN	N	
PIERS/BENTS-FOOTINGS	5	Concrete pier stub- Shows severe scaling at nose of pier and along <i>east + west faces</i> wall #2 & 3 and vertical cracks with efflorescence.
PIERS/BENTS-SETTLEMENT	N	<i>Note - Scale undermining Anchor channel of arch - see photo.</i>
EROSION-SCOUR	N	
CONCRETE CRACK-SPALL	5	See abutments & pier.
STEEL CORROSION	N	
PAINT	N	

RUST 10/4/02

4

RUST 11/4/02

RUST 11/4/02

4 RUST 11/4/02

Connecticut Department of Transportation Bridge Inspection Report BRI-18

BRIDGE #: **05574**

INSPECTION DATE: **8/8/2002**

60. SUBSTRUCTURE		OVERALL RATING	5
TIMBER DECAY	N		
COLLISION DAMAGE	N		
DEBRIS	N		

Handwritten: 11/14/02

61. CHANNEL PROTECTION		OVERALL RATING	7
<small>RATING</small>			
CHANNEL SCOUR	7		
EMBANKMENT EROSION	7		
DEBRIS	7		
VEGETATION	7		
CHANNEL CHANGE	8	Spilway up stream 40 ft+.	
FENDER SYSTEM	N		
SPUR DIKES & JETTIES	N		
RIP RAP	N		

62. CULVERTS & RETAINING WALL		OVERALL RATING	N
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APPROACH CONDITION		OVERALL RATING	7
<small>RATING</small>			
APPROACH SLAB	N		
RELIEF JOINTS	N		
APPROACH GUIDE RAIL	7	Approach guide rail- M.B.R at southwest corner approach with light spot rust.	
APPROACH PAVEMENT	7	Shows transverse and longitudinal cracks at both ends.	
APPROACH EMBANKMENT	7	Shows run-off erosion behind southeast wing.	
TRAFFIC SAFETY FEATURES:			
BRIDGE RAILINGS	0		
TRANSITIONS	0		
APPROACH GUARDRAILS	0		
APPR. GUARDRAIL ENDS	0		

LOAD POSTING			
SINGLE UNIT (TONS)	18		
HS (TONS)	33		
4 AXLE (TONS)			
3S2 (TONS)			
ADVANCE WARNING Y/N	N		

Connecticut Department of Transportation Bridge Inspection Report BRI-18

BRIDGE #: **05574**

INSPECTION DATE: **8/8/2002**

LEGIBILITY N

VISIBILITY/LOCATION N

MISC.

MIN VERT. UNDERCLR. ' "

POSTED CLR. UNDER BRIDGE ' "

POSTED CLR. ON BRIDGE ' "

ADVANCE WARNING (Y/N)

SPEED LIMIT (IF ANY) MPH

CHARACTER OF TRAFFIC

ADDITIONAL NOTES

ADDITIONAL COMMENTS:

Inspectors' Signatures:

1) *John Clary* Date: 08/08/02

2) *H. Jantzen For K. Weir* Date: 11/09/02

3) _____ Date: __/__/__

4) _____ Date: __/__/__

P.E. Signature: _____

Date: __/__/__

P.E.#: _____

Reviewed by:

Ronald Jantzen CDOT

Date: 11/09/02