MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
STRUCTURES INSPECTION FIELD REPORT
ROUTINE & SPECIAL MEMBER INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
04	7VB	B-07-015=W-04-039

CITY/TOWN	8.-STRUCTURE NO.	11-Kilo. POINT	41-STATUS	90-ROUTINE INSP. DATE
BELMONT=WALTHAM	B07015-7VB-MUN-CUL	000.000	D:OPEN	MAY 2, 2022

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	YR REHAB'D (NON 106)
ST 60 TRAPELO RD		1850	1900	0000

06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER J. Dideo
WATER BEAVER BROOK	Urban Arterial	

43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER T. Leiper
801 : Masonry Slab	Town Agency	Town Agency	

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
1 : Concrete Cast-in-Place	Clear	12°C	P. BURKE

ITEM 58 — DECK — 3

		DEF
1.Wearing surface	4	S-A
2.Deck Condition	3	S-A
3.Stay in Place Forms	N	-
4.Curbs	4	S-P
5.Median	N	-
6.Sidewalks	6	M-P
7.Parapets	N	-
8.Railing	4	M-P
9.Anti Missile Fence	N	-
10.Drainage System	N	-
11.Lighting Standards	N	-
12.Utilities	N	-
13.Deck Joints	N	-
14.	N	-
15.	N	-
16.	N	-

CURB REVEAL (In millimeters)	N	S
	76	127

ITEM 59 — SUPERSTRUCTURE — 3

		DEF
1.Beams	3	S-A
2.Floorbeams	N	-
3.Floor System Bracing	N	-
4.Girders or Beams	N	-
5.Trusses - General	N	-
a. Upper Chords	N	-
b. Lower Chords	N	-
c. Web Members	N	-
d. Lateral Bracing	N	-
e. Sway Bracings	N	-
f. Portals	N	-
g. End Posts	N	-
6.Pin & Hangers	N	-
7.Conn Plt's, Gussets & Angles	N	-
8.Cover Plates	N	-
9.Bearing Devices	N	-
10.Diaphragms/Cross Frames	N	-
11.Rivets & Bolts	N	-
12.Welds	N	-
13.Member Alignment	N	-
14.Paint/Coating	N	-
15.	N	-

Year Painted	N

ITEM 60 — SUBSTRUCTURE — 4

	Dive	Cur		DEF
1. Abutments			4	
a. Pedestals	N	N		-
b. Bridge Seats	N	H		-
c. Backwalls	N	N		-
d. Breastwalls	4	4		S-A
e. Wingwalls	3	3		S-A
f. Slope Paving/Rip-Rap	7	7		-
g. Pointing	N	N		-
h. Footings	6	H		M-P
i. Piles	X	X		-
j. Scour	7	6		M-P
k. Settlement	4	5		-
l.	N	N		-
m.	N	N		-
2. Piers or Bents			N	
a. Pedestals	N	N		-
b. Caps	N	N		-
c. Columns	N	N		-
d. Stems/Webs/Pierwalls	N	N		-
e. Pointing	N	N		-
f. Footing	N	N		-
g. Piles	N	N		-
h. Scour	N	N		-
i. Settlement	N	N		-
j.	N	N		-
k.	N	N		-
3. Pile Bents			N	
a. Pile Caps	N	N		-
b. Piles	N	N		-
c. Diagonal Bracing	N	N		-
d. Horizontal Bracing	N	N		-
e. Fasteners	N	N		-

APPROACHES

		DEF
a. Appr. pavement condition	5	M-P
b. Appr. Roadway Settlement	6	-
c. Appr. Sidewalk Settlement	6	M-P
d.	N	-

OVERHEAD SIGNS (Attached to bridge) (Y/N) N

		DEF
a. Condition of Welds	N	-
b. Condition of Bolts	N	-
c. Condition of Signs	N	-

COLLISION DAMAGE: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD DEFLECTION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

LOAD VIBRATION: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

Any Fracture Critical Member: (Y/N) N

Any Cracks: (Y/N) N

UNDERMINING (Y/N) If YES please explain: N

COLLISION DAMAGE:
None (X) Minor ( ) Moderate ( ) Severe ( )

SCOUR: *Please explain*
None (X) Minor ( ) Moderate ( ) Severe ( )

I-60 (Dive Report): 4 *I-60 (This Report):* 4

93B-U/W (DIVE) Insp 11/29/2021

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

ITEM 61 — CHANNEL & CHANNEL PROTECTION: 5

	Dive	Cur	DEF
1.Channel Scour	7	6	M-P
2.Embankment Erosion	4	7	-
3.Debris	7	7	-
4.Vegetation	7	7	-
5.Utilities	N	N	-
6.Rip-Rap/Slope Protection	3	3	S-A
7.Aggradation	7	7	-
8.Fender System	N	N	-

STREAM FLOW VELOCITY: Tidal ( ) High ( ) Moderate ( ) Low (X) None ( )

ITEM 61 (Dive Report): 5 *ITEM 61 (This Report):* 6

93b-U/W INSP. DATE: 11/29/2021

ITEM 36 — TRAFFIC SAFETY

	36	COND	DEF
A. Bridge Railing	0	4	M-P
B. Transitions	0	6	M-P
C. Approach Guardrail	0	6	M-P
D. Approach Guardrail Ends	0	7	-

WEIGHT POSTING — *Not Applicable* X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/0000 EJDMT Date: 00/00/0000

Signs In Place (Y=Yes,N=No, NR=NotRequired) / Legibility/ Visibility	At bridge E	At bridge W	Other Advance E	Other Advance W

CLEARANCE POSTING — *Not* X

	N ft	N in	S ft	S in	meter
Actual Field Measurement		0		0	
Posted Clearance		0		0	

Signs In Place (Y=Yes,N=No, NR=Not Required) / Legibility/ Visibility	At bridge N	At bridge S	Advance N	Advance S

ACCESSIBILITY (Y/N/P)

	Needed	Used
Lift Bucket	N	N
Ladder	N	N
Boat	N	N
Waders	Y	Y
Inspector 50	N	N
Rigging	N	N
Staging	N	N
Traffic Control	N	N
RR Flagger	N	N
Police	N	N
Other:		
	N	N

TOTAL HOURS 12

PLANS (Y/N): N

(V.C.R.) (Y/N): N

TAPE#:

List of field tests performed: Hands on inspection.

RATING

Rating Report (Y/N): N

Date: 00/00/0000

Inspection data at time of existing rating

I 58: - I 59: - I 60: - Date : 00/00/0000

Recommend for Rating or Rerating (Y/N): N

If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

REASON:

CONDITION RATING GUIDE (For Items 58, 59, 60 and 61)

	CODE	CONDITION	DEFECTS
	N	NOT APPLICABLE	
G	9	EXCELLENT	Excellent condition.
G	8	VERY GOOD	No problem noted.
G	7	GOOD	Some minor problems.
F	6	SATISFACTORY	Structural elements show some minor deterioration.
F	5	FAIR	All primary structural elements are sound but may have minor section loss, cracking, spalling or scour.
P	4	POOR	Advanced section loss, deterioration, spalling or scour.
P	3	SERIOUS	Loss of section, deterioration, spalling or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
C	2	CRITICAL	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
C	1	"IMMINENT" FAILURE	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put it back in light service.
	0	FAILED	Out of service - beyond corrective action.

DEFICIENCY REPORTING GUIDE

DEFICIENCY: A defect in a structure that requires corrective action.

CATEGORIES OF DEFICIENCIES:

M=Minor Deficiency - Deficiencies which are minor in nature, generally do not impact the structural integrity of the bridge and could easily be repaired. Examples include but are not limited to: Spalled concrete, Minor pot holes, Minor corrosion of steel, Minor scouring, Clogged drainage, etc.

S= Severe/Major Deficiency - Deficiencies which are more extensive in nature and need more planning and effort to repair. Examples include but are not limited to: Moderate to major deterioration in concrete, Exposed and corroded rebars, Considerable settlement, Considerable scouring or undermining, Moderate to extensive corrosion to structural steel with measurable loss of section, etc.

C-S= Critical Structural Deficiency - A deficiency in a structural element of a bridge that poses an extreme unsafe condition due to the failure or imminent failure of the element which will affect the structural integrity of the bridge.

C-H= Critical Hazard Deficiency - A deficiency in a component or element of a bridge that poses an extreme hazard or unsafe condition to the public, but does not impair the structural integrity of the bridge. Examples include but are not limited to: Loose concrete hanging down over traffic or pedestrians, A hole in a sidewalk that may cause injuries to pedestrians, Missing section of bridge railing, etc.

URGENCY OF REPAIR:

I = Immediate- [Inspector(s) immediately contact District Bridge Inspection Engineer (DBIE) to report the Deficiency and to receive further instruction from him/her].

A = ASAP- [Action/Repair should be initiated by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) upon receipt of the Inspection Report].

P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
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ROUTINE & SPECIAL MEMBER INSPECTION

2-DIST	B.I.N.	BR. DEPT. NO.
04	7VB	B-07-015=W-04-039

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BELMONT=WALTHAM	B07015-7VB-MUN-CUL	000.000	May 2, 2022	May 2, 2022

07-FACILITY CARRIED	MEMORIAL NAME/LOCAL NAME	27-YR BUILT	106-YR REBUILT	*YR REHAB'D (NON 106)
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06-FEATURES INTERSECTED	26-FUNCTIONAL CLASS	DIST. BRIDGE INSPECTION ENGINEER J. Dideo
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43-STRUCTURE TYPE	22-OWNER	21-MAINTAINER	TEAM LEADER T. Leiper
801 : Masonry Slab	Town Agency	Town Agency	

107-DECK TYPE	WEATHER	TEMP. (air)	TEAM MEMBERS
1 : Concrete Cast-in-Place	Clear	12°C	P. BURKE

WEIGHT POSTING — *Not Applicable* X

	H	3	3S2	Single
Actual Posting	N	N	N	N
Recommended Posting	N	N	N	N

Waived Date: 00/00/0000 EJDMT Date: 00/00/0000

Signs In Place (Y=Yes,N=No, NR=Not Required) / Legibility/ Visibility

At bridge E	At bridge W	Advance E	Advance W

PLANS (Y/N): N

(V.C.R.) (Y/N): N

TAPE#:

RATING

Rating Report (Y/N): N Date: ----

Recommend for Rating or Rerating (Y/N): N

If YES please give priority: HIGH ( ) MEDIUM ( ) LOW ( )

REASON:

Inspection data at time of existing rating

I 58: - I 59: - I 60: - I 62: - Date :00/00/0000

SPECIAL MEMBER(S):

	MEMBER	CRACK (Y/N):	WELD'S CONDITION (0-9)	LOCATION OF CORROSION, SECTION LOSS (%), CRACKS, COLLISION DAMAGE, STRESS CONCENTRATION, ETC..	CONDITION PREVIOUS (0-9)	CONDITION PRESENT (0-9)	INV. RATING OF MEMBER FROM RATING ANALYSIS H-20	3	3S2	Deficiencies
A	Item 58.2 - Deck Condition	N		See remarks in comments section.	3	3	Not Rated			S-A
B	Item 59.1 - Beams	N		See remarks in comments section.	3	3	Not Rated			S-A
C	Item 60.1.d - Breastwalls	N		See remarks in comments section.	4	4	Not Rated			S-A
D										
E										

List of field tests performed:

Hands on inspection.

	I-58	I-59	I-60	I-62
(Overall Previous Condition)	3	3	4	-
(Overall Current Condition)	3	3	4	-

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P = Prioritize- [Shall be prioritized by District Maintenance Engineer or the Responsible Party (if not a State owned bridge) and repairs made when funds and/or manpower is available].

X=UNKNOWN N=NOT APPLICABLE H=HIDDEN/INACCESSIBLE R=REMOVED

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

REMARKS

BRIDGE ORIENTATION

Structure B-07-015=W-04-039 (7VB) carries ST 60 Trapelo Road over Beaver Brook along the border line between the Town of Belmont and the City of Waltham. The approaches are west and east and the elevations are south and north. Beaver Brook flows from north to south.

GENERAL REMARKS

There are multiple superstructure types for this bridge. There are sixteen (16) granite slabs labeled Slab 1 through 16 from south to north. There are eight (8) steel beams labeled Beam 1 through 8 between Slabs 4 and 5, with a utility main at Beam 5. There is a concrete slab with stay-in- place forms between Slabs 12 and 13. North of Slab 16 there is a concrete extension. The original abutments are comprised of dry laid stone at the south side, and the bridge was widened using cast- in-place concrete abutments on the north side. There is a bituminous wearing surface that has been retrofitted with steel roadway plates that span the length of the superstructure. **See Sketches 1 - 3.**

"Caution" signs were placed at both approaches. **See Photos 1 & 2.**

A gas smell was present near the both elevations and within the channel. The Bridge Inspection National Grid Liaison was notified on 5/2/22.

ITEM 58 - DECK

Item 58.1 - Wearing surface

Temporary steel plates make up the wearing surface over the structure.
See Item 58.2 Deck Conditions for plate deficiencies.

Item 58.2 - Deck Condition

The roadway plates are designated as P1 through P6 from south to north. **See Sketch 1.**

There are isolated fully broken tack welds between roadway plates. The plates with broken tack welds typically deflect under live load.

There is typically minor scrapes and gouges on the leading edge of the roadway plates.

There are isolated transverse hairline cracks in the approaches adjacent to the plates.

There was a previously noted spall in the pavement at the northeast corner of P4 which has been repaired. **See Photo 3.**

There is a depressed bituminous patch with radial up to 1/8" cracks at the northeast corner of P5. **See Photo 3.**

Item 58.4 - Curbs

There are typical chips in the granite for both the south and north curbs.

The north granite curb has settled several inches and has a 3" reveal.

The south granite curb has an 5" reveal.

Item 58.6 - Sidewalks

The south sidewalk has slight heaving at the east end along the stone masonry wall.

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REMARKS

In the south sidewalk near the stone wall there was a 1' diameter hole in the asphalt that has since been repaired. **See Photo 4.**

In the south sidewalk there is random cracking throughout.

There is settlement in front of the western side of the masonry stone wall and evidence of ponding. **See Photo 5.**

Item 58.8 - Railing
There is a masonry stone wall at the south end of structure and Type "ss" highway guardrail at the north end.

In the masonry stone wall, there is cracked mortar and missing pointing between the stones as well as missing stones. **See Photos 4 & 5.**

There is a section of wall along the sidewalk that has water intrusion in several locations causing the back of the wall to bulge up to 3" to the south and various voids to appear between the wall and sidewalk. **See Photos 5 & 6.**

At the north rail, there is impact damage. **See Photo 7.**

APPROACHES

Approaches a - Appr. pavement condition
Both approaches have heavy transverse, longitudinal, and map cracks throughout and patching. **See Photo 8.**

At the east approach, the southeast catch basin has a sinkhole on the eastern side of it; 22" D x 18" L x 21" D. **See Photo 9. The DBIE was notified and both Belmont and Waltham were subsequently notified.**

Approaches b - Appr. Roadway Settlement
There is minor settlement along the curbs.

Approaches c - Appr. Sidewalk Settlement
There is uneven pavement within the southeast approach sidewalk; +/- 2". **See Photo 3.**

ITEM 59 - SUPERSTRUCTURE

Item 59.1 - Beams
Granite Slabs:
There are isolated longitudinal and diagonal hairline cracks, some with efflorescence near the abutments. There are several up to full width transverse hairline cracks, some with efflorescence near mid-span. **See Sketch 2.**

The southwest corner of Slab 1 is unsupported for 6".

Slab 4 there is a diagonal hairline crack at the east end. **See Photo 10.**

Granite slab 6: Transverse split with previous water leakage noted near midspan.

Slab 7 near mid-span has an up to 2" wide x full depth transverse crack, with a 20" long x 13" wide x 2" deep spall at the south edge. **See Photo 11.**

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REMARKS

Slab 6 and 7 are monitored with crack gauges. The crack gauges indicated little to no movement since installation. The crack gauge at Slab 7 read 0.05 mm from zero. **See Photos 11 - 13.**

Steel I-Beams:
There is timber shielding between the steel I-beams preventing inspection of the web and top flanges. The beams typically exhibit minor rotation about the longitudinal axis, resulting in the bottom flanges no longer being level. **See Photo 14.**

There is typically heavy rust and laminated rust throughout the beams. The top and bottom flanges of isolated beams near the abutments and at mid-span have up to 100% section loss x full width. **See Sketch 3.**

Reinforced Concrete Slab:
The reinforced concrete slab which acts as part of the superstructure below the westbound roadway is missing 50% of the stay in place forms on the north side of the slab.

There are two spalls with exposed rebar along the south edge measuring up to 2'-6" long x 9" high x 6" wide. There is a 24" long x 16" wide delamination at the northwest corner. **See Sketch 2.**

ITEM 60 - SUBSTRUCTURE

Item 60.1 - Abutments
Item 60.1.d - Breastwalls
There are typically voids up to 2'-0" deep throughout the abutments. There are missing and cracked stones throughout both breastwalls and below the drainage pipes. Isolated areas have been repaired and filled with concrete and sandbags. Conditions and locations are as follows:

West Abutment:
At the south face, there is a 2'-0" long x 18" high x 14" deep void with shifted stones. **See Photo 15.**

Below Slab 3, there is a 3'-4" long x 20" high x 2'-0" deep void with shifted stones.

Below Slab 5 at the waterline, there are two (2) up to 2'-0" in diameter x up to 2'-0" deep voids.

Below Slab 9 at the top of the abutment, there is a 18" long x 3" high x 14" deep void.

Below the concrete slab between Slabs 12 & 13, there is a full height hairline crack up to 2'-0" high in the masonry stone.

Below the concrete roof section between Slabs 12 & 13 and adjacent to the masonry wall repair (newer concrete wall section), there is a drainage opening, 2' deep, with a RCP discharging water behind the rest of the breastwall due to an open channel floor. See Photo 16.

Below Slab 13, there is a 12" long x 2'-0" high x 2'-10" deep spall in the cast in place concrete.

East Abutment:
Below Slab 1, there are full height cracks in multiple stones up to 10" long x up to 1/4" wide and a 1-1/2" long x 5" high x 3" deep spall. **See Photo 17.**

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REMARKS

Below Slab 1 & 2 below the water line, there is 2'-0" long x 16" deep scour.

Below Slab 4 at the waterline, there is a 2'-5" long x 20" high x 3'-3" deep void.

Between Slab 5 and the top of the breastwall, there is a 20" wide x 3" high x 2'-0" deep void.

Below Slab 5 at the waterline, there is a 2'-6" long x 2'-3" high x 3'-2" deep void. **See Photo 18.**

Item 60.1.e - Wingwalls
The southeast retaining wall has a full height crack measuring up to 6" wide x up to 2' deep. **See Photo 19.**

The southwest wall has collapsed. **See Photo 20.**

The northwest wingwall shows signs of abrasion and vegetation at the waterline.

For underwater inspection details, see the dive report dated 11.29.21.

Item 60.1.h - Footings
For underwater inspection details, see the dive report dated 11.29.21.

Item 60.1.j - Scour
For underwater inspection details, see the dive report dated 11.29.21.

Item 60.1.k - Settlement
For underwater inspection details, see the dive report dated 11.29.21.

ITEM 61 - CHANNEL AND CHANNEL PROTECTION

Item 61.1 - Channel Scour
For underwater inspection details, see the dive report dated 11.29.21.

Item 61.2 - Embankment Erosion
For underwater inspection details, see the dive report dated 11.29.21.

Item 61.6 - Rip-Rap/Slope Protection
At the northeast slope, there is a failed sandbag slope protection repair. **See Photo 21.**

TRAFFIC SAFETY

Item 36a - Bridge Railing
There is a masonry stone wall at the south end of the structure.

There is Type "SS" highway guardrail at the north end of the structure that acts as the bridge railing.

See Item 58.8 Railing for detailed deficiencies.

Item 36b - Transitions
The northeast and northwest transitions both have Type "SS" highway guardrail in place.

The northeast and northwest transitions both have minor scrapes and dents.

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REMARKS

The southeast transition is a continuation of the masonry stone wall.

The southwest transition does not exist.

Item 36c - Approach Guardrail

The northeast and northwest approach guardrail both have Type "SS" highway guardrail in place.

The northeast approach guardrail has 100% section loss to the top of one section. **See Photo 22.**

The northeast approach guardrail has a jersey barrier cemented into the ground in front a washout ravine. See Photo 22.

The southeast approach guardrail is a continuation of the masonry stone wall.

The southwest approach guardrail does not exist.

Item 36d - Approach Guardrail Ends

The northeast terminal for the Type "SS" guardrail is a boxing glove end.

The jersey barrier in front of the northeast approach guardrail has blunt ends facing traffic on either side. **See Photo 22.**

The northwest rail is continuous

The southeast terminal is a continuation of the masonry stone wall.

The southwest terminal is a blunt end opening to the masonry stone wall at the end of the bridge rail.

Sketch / Photo Log

Sketch 1 : Roadway Plate Conditions
Sketch 2 : Superstructure Conditions
Sketch 3 : Steel Beam Conditions
Photo 1 : "Caution" sign in-place at the west approach.
Photo 2 : "Caution" sign in-place at the east approach.
Photo 3 : Steel Plate 4 and 5 at the northeast corner repaired potholes and a 2'-0" W x 7" L patch with radial cracking.
Photo 4 : Repaired hole in south sidewalk. Missing stones and mortar in south railing.
Photo 5 : South masonry stone wall: Cracked mortar and missing pointing between the stones leading to water intrusion.
South Sidewalk: Depression along masonry wall.
Photo 6 : Bulging of western half of masonry wall along area of water intrusion.
Photo 7 : North bridge rail: Impact damage.
Photo 8 : East approach: Heavy transverse, longitudinal, and map cracks throughout and patching.
Photo 9 : East approach: Sinkhole next to catch basin.
Photo 10 : Granite slab 4: Diagonal hairline cracking at the east end.
Photo 11 : Granite slab 7: Transverse split up to 2" wide near midspan.
Photo 12 : Granite slab 6: The crack gauge shows minor movement (< 1 mm in both directions).
Photo 13 : Granite slab 7: The crack gauge shows minor movement (< 1 mm).
Photo 14 : Steel beam 8: Severe section loss at the bottom flange up to 2.5' long x up to 2" wide.
Photo 15 : West breastwall: Large voids and missing stones at the south end.
Photo 16 : West breastwall: Drainage opening adjacent to wall repair.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
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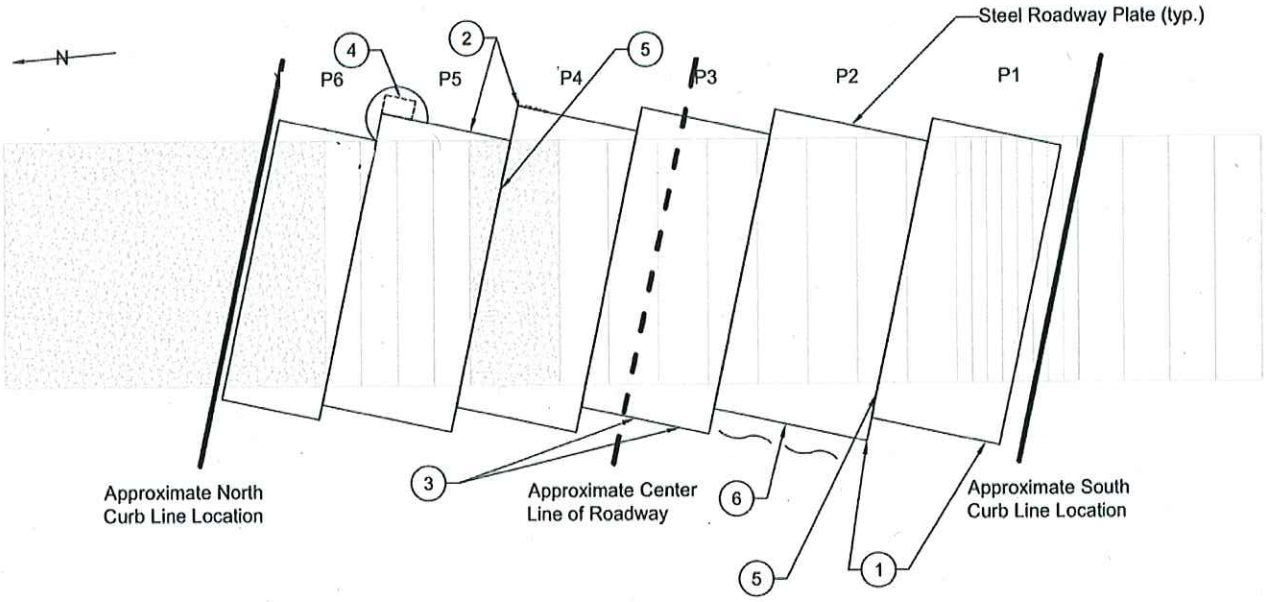
REMARKS

Photo 17 : East breastwall: There are multiple stones with vertical cracks at the south end below beam 1.
Photo 18 : East breastwall: Void in first course of stone above waterline under slab 5.
Photo 19 : Southeast wingwall: Full height crack measuring up to 6" wide x up to 2' deep.
Photo 20 : Southwest wingwall: Collapsed.
Photo 21 : Northeast slope: Failed slope protection repair.
Photo 22 : Northeast approach guardrail: 100% section loss and new barrier due to washout behind rail.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

SKETCHES



Roadway - Plan

Legend:

- Spall (typ.)
- Delamination (typ.)
- Patch
- Hairline Crack (U.O.N)
- Hairline Crack with Efflorescence (U.O.N)

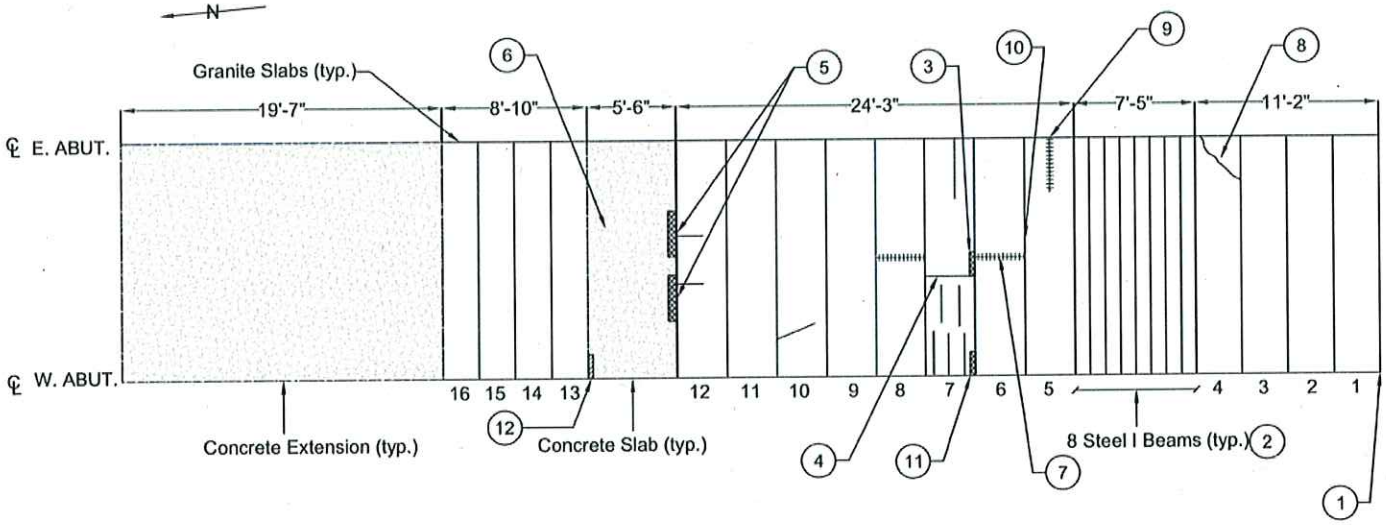
Condition:

1. Southwest corner deflects under live load
2. Northeast corner deflects under live load
3. Minor spalls adjacent to roadway plate
4. 2'-0" W x 7" L depressed bituminous patch with radial cracks $\frac{1}{8}$" W
5. Full length broken tack weld (typ. 5" L)
6. Minor scrapes and gouges (typ.)

Sketch 1: Roadway Plate Conditions

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

SKETCHES



Reflected Underside

Legend:

- Spall (typ.)
- Delamination (typ.)
- Hairline Crack (U.O.N)
- Hairline Crack with Efflorescence (U.O.N)

Condition:

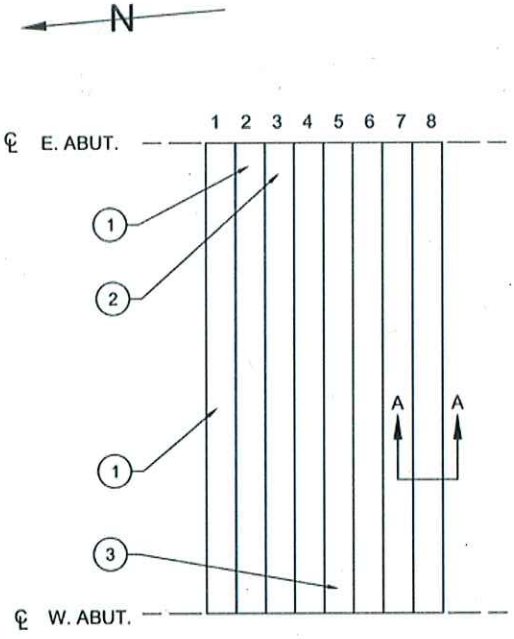
1. Granite Slab end unsupported at the SW corner for 6"
2. See Sketch 3: Steel Beam Conditions
3. Granite Slab with a 20" L x 13" W x 2" D spall
4. Granite slab with up to 2" W x full depth crack. Crack gauge reads 0.05mm
5. Two (2) up to 30" L x 6" W x up to 9" D edge spall with exposed rebar
6. 50% of stay in place forms are missing
7. Full width hairline crack with efflorescnce. Note: Crack gauge reads 0.00mm
8. 6'-0" L hairline crack
9. 2'-6" L hairline crack with minor efflorescence
10. Loose pointing between the beams
11. 2'-0" L x 5" W x 2" D spall
12. 2'-0" L x 16" W delamination

Sketch 2: Superstructure Conditions

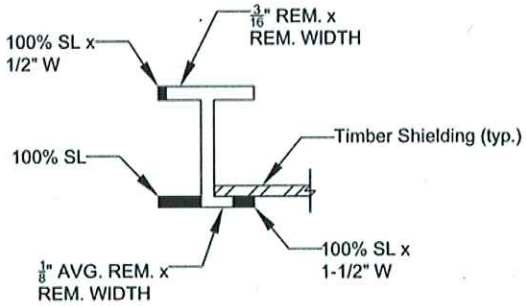
CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

SKETCHES

NOTE:
Interior web and top flange inaccessible due to timber shielding.
Beams bottom flanges are typically rotated.



Steel Beam - Reflected Underside
(N.T.S)



Section A-A
Beam 8

Conditions:

1. Bottom Flange: 100% section loss x 1" W at the south leg, $\frac{3}{16}$" average remaining x remaining width
2. Bottom Flange: 100% section loss x $\frac{1}{2}$" W at legs, $\frac{1}{8}$" average remaining x remaining width
3. Bottom Flange: North Flange 2" W cut out at the west end above the drainage pipe. South Flange 100% section loss x $\frac{1}{2}$" W

Sketch 3: Steel Beam Conditions

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 1: "Caution" sign in-place at the west approach.

Photo 2: "Caution" sign in-place at the east approach.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 3: Steel Plate 4 and 5 at the northeast corner repaired potholes and a 2'-0" W x 7" L patch with radial cracking.

Photo 4: Repaired hole in south sidewalk. Missing stones and mortar in south railing.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 5: South masonry stone wall: Cracked mortar and missing pointing between the stones leading to water intrusion.
South Sidewalk: Depression along masonry wall.

Photo 6: Bulging of western half of masonry wall along area of water intrusion.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 7: North bridge rail: Impact damage.

Photo 8: East approach: Heavy transverse, longitudinal, and map cracks throughout and patching.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 9: East approach: Sinkhole next to catch basin.

Photo 10: Granite slab 4: Diagonal hairline cracking at the east end.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 11: Granite slab 7: Transverse split up to 2" wide near midspan.

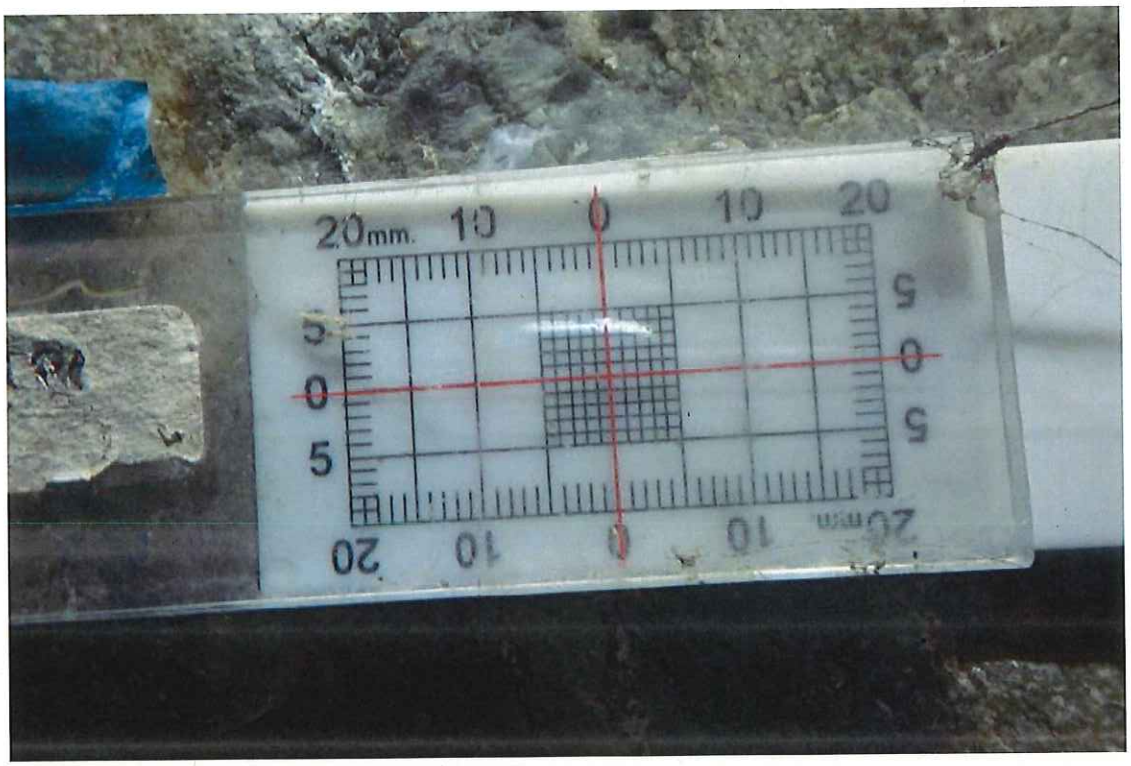


Photo 12: Granite slab 6: The crack gauge shows minor movement (< 1 mm in both directions).

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

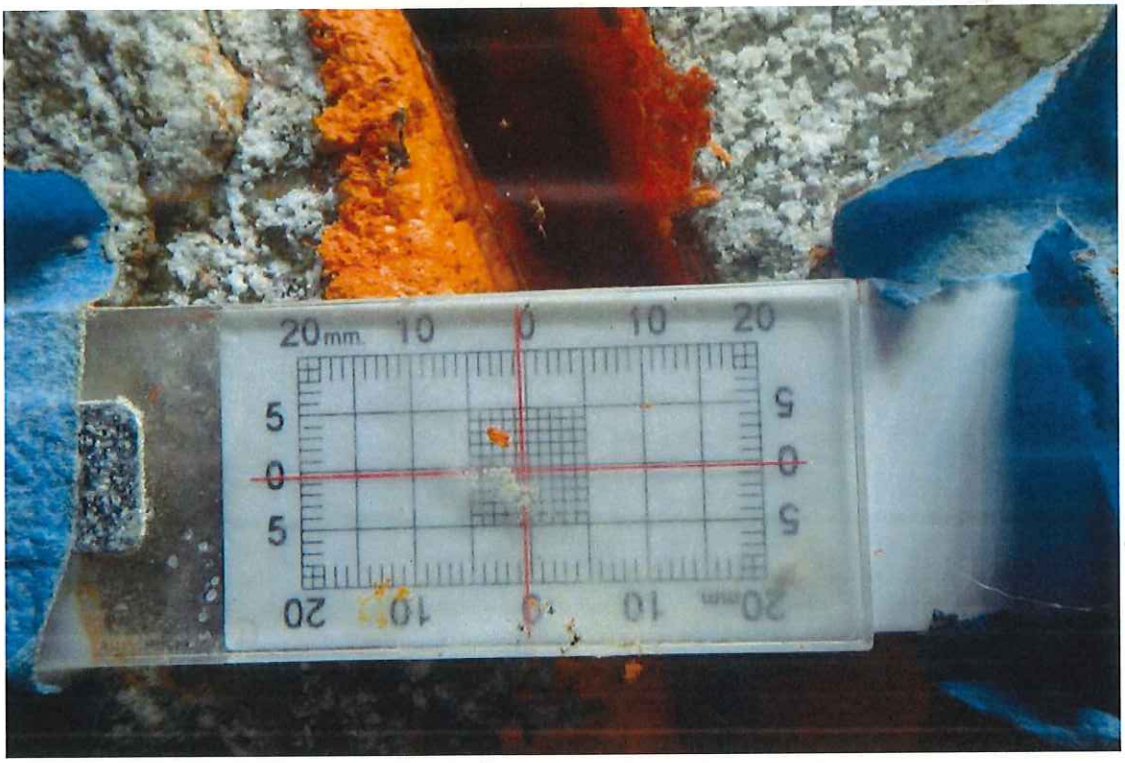


Photo 13: Granite slab 7: The crack gauge shows minor movement (< 1 mm).

Photo 14: Steel beam 8: Severe section loss at the bottom flange up to 2.5' long x up to 2" wide.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 15: West breastwall: Large voids and missing stones at the south end.

Photo 16: West breastwall: Drainage opening adjacent to wall repair.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 17: East breastwall: There are multiple stones with vertical cracks at the south end below beam 1.

Photo 18: East breastwall: Void in first course of stone above waterline under slab 5.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 19: Southeast wingwall: Full height crack measuring up to 6" wide x up to 2' deep.

Photo 20: Southwest wingwall: Collapsed.

CITY/TOWN	B.I.N.	BR. DEPT. NO.	8.-STRUCTURE NO.	INSPECTION DATE
BELMONT=WALTHAM	7VB	B-07-015=W-04-039	B07015-7VB-MUN-CUL	MAY 2, 2022

PHOTOS

Photo 21: Northeast slope: Failed slope protection repair.

Photo 22: Northeast approach guardrail: 100% section loss and new barrier due to washout behind rail.

Report Date: April 28, 2022

State Information

BDEPT#= B07015=W04039 Agency Br.No.

Town= Belmont=Waltham L.O.

B.I.N= 7VB AASHTO= 002.0

RANK= 0 H.I.= 90.6 % FHWA Select List= N (6/21/17)

Identification

(8) Structure Number	B070157VBMUNCUL
(5) Inventory Route	200000000
(2) State Highway Department District	04
(3) County Code 017 (4) Place code	05070
(6) Features Intersected	**WATER BEAVER BROOK**
(7) Facility Carried	**ST 60 TRAPELO RD**
(9) Location	
(11) Kilometerpoint	0000.000
(12) Base Highway Network	N
(13) LRS Inventory Route & Subroute	000000000000
(16) Latitude	42 DEG 23 MIN 25.94 SEC
(17) Longitude	71 DEG 11 MIN 48.22 SEC
(98) Border Bridge State Code	Share %
(99) Border Bridge Structure No. #	

Structure Type and Material

(43) Structure Type Main: Masonry Code 801

Slab Jointless bridge type: Not applicable

(44) Structure Type Appr:

Other Code 000

(45) Number of spans in main unit	001
(46) Number of approach spans	0000
(107) Deck Structure Type - Concrete Cast-in-Place	Code 1
(108) Wearing Surface / Protective System:	
A) Type of wearing surface - Bituminous	Code 6
B) Type of membrane - Unknown	Code 8
C) Type of deck protection - None	Code 0

Age and Service

(27) Year Built	1850
(106) Year Reconstructed	1900
(42) Type of Service: On - Highway-Ped	
Under - Waterway	Code 55
(28) Lanes: On Structure 04 Under structure	00
(29) Average Daily Traffic	033000
(30) Year of ADT 2018 (109) Truck ADT	08 %
(19) Bypass, detour length	005 KM

Geometric Data

(48) Length of maximum span	0002.0 M
(49) Structure Length	00002.9 M
(50) Curb or sidewalk: Left 02.7 M	Right 00.0 M
(51) Bridge Roadway Width Curb to Curb	013.3 M
(52) Deck Width Out to Out	023.7 M
(32) Approach Roadway Width (w/shoulders)	013.3 M
(33) Bridge Median - No median	Code 0
(34) Skew 00 DEG (35) Structure Flared	N
(10) Inventory Route MIN Vert Clear	99.99 M
(47) Inventory Route Total Horiz Clear	13.3 M
(53) Min Vert Clear Over Bridge Rdwy	99.99 M
(54) Min Vert Underclear ref N	00.00 M
(55) Min Lat Underclear RT ref N	00.0 M
(56) Min Lat Underclear LT	00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway	Code 0
(111) Pier Protection	Code
(39) Navigation Vertical Clearance	000.0 M
(116) Vert-lift Bridge Nav Min Vert Clear	M
(40) Navigation Horizontal Clearance	0000.0 M

Classification

	Code
(112) NBIS Bridge Length	N
(104) Highway System	N
(26) Functional Class - Urban Arterial	14
(100) Defense Highway	1
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	Y
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance undetermined	

Condition

	Code
(58) Deck	3
(59) Superstructure	3
(60) Substructure	4
(61) Channel & Channel Protection	6
(62) Culverts	N

Load Rating and Posting

	Code
(31) Design Load - Unknown	0
(63) Operating Rating Method - Allowable Stress (AS)	2
(64) Operating Rating	00.0
(65) Inventory Rating Method - Allowable Stress (AS)	2
(66) Inventory Rating	00.0
(70) Bridge Posting	0
(41) Structure - Open, temporary structu	D E

Appraisal

	Code
(67) Structural Evaluation	2
(68) Deck Geometry	2
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	7
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0 0 0 0
(113) Scour Critical Bridges	6

Inspections

(90) Inspection Date 05/21/20 (91) Frequency 24 MO

(92) Critical Feature Inspection: 5/2/22 (93) CFI DATE

(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	Y	12	MO B)	11/29/21
(C) Other Special Inspection	Y	06	MO C)	11/24/21 5/2/22
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	01/13/17
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 00/00/00	H20	Type 3	Type 3S2	Type HS
Operating	0.0	0.0	0.0	0.0
Inventory	0.0	0.0	0.0	0.0

Field Posting

Status Posting Date 00/00/00

	2 Axle	3 Axle	5 Axle	Single
Actual				
Recommended				

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Stairs On/Adjacent 0 Stair Owner(s)

Accessibility (Needed/Used)

N / N Liftbucket	N / N Rigging	N / N Other
N / N Ladder	N / N Staging	
N / N Boat	N / N Traffic Control	
Y / Y Wader	N / N RR Flagperson	Inspection Hours: 024
N / N Inspector 50	N / N Police	12

Report Date: May 11, 2022

State Information

BDEPT#= B07015=W04039 Agency Br.No.

Town= Belmont=Waltham L.O.

B.I.N= 7VB AASHTO= 002.0

RANK= 0 H.I.= 90.6 % FHWA Select List= N (6/21/17)

Identification

(8) Structure Number B070157VBMUNCUL

(5) Inventory Route 200000000

(2) State Highway Department District 04

(3) County Code 017 (4) Place code 05070

(6) Features Intersected **WATER BEAVER BROOK**

(7) Facility Carried **ST 60 TRAPELO RD**

(9) Location

(11) Kilometerpoint 0000.000

(12) Base Highway Network N

(13) LRS Inventory Route & Subroute 000000000000

(16) Latitude 42 DEG 23 MIN 25.94 SEC

(17) Longitude 71 DEG 11 MIN 48.22 SEC

(98) Border Bridge State Code Share %

(99) Border Bridge Structure No. #

Structure Type and Material

(43) Structure Type Main: Masonry Code 801

Slab Jointless bridge type: Not applicable

(44) Structure Type Appr:

Other Code 000

(45) Number of spans in main unit 001

(46) Number of approach spans 0000

(107) Deck Structure Type - Concrete Cast-in-Place Code 1

(108) Wearing Surface / Protective System:

A) Type of wearing surface - Bituminous Code 6

B) Type of membrane - Unknown Code 8

C) Type of deck protection - None Code 0

Age and Service

(27) Year Built 1850

(106) Year Reconstructed 1900

(42) Type of Service: On - Highway-Ped

Under - Waterway Code 55

(28) Lanes: On Structure 04 Under structure 00

(29) Average Daily Traffic 033000

(30) Year of ADT 2018 (109) Truck ADT 08 %

(19) Bypass, detour length 005 KM

Geometric Data

(48) Length of maximum span 0002.0 M

(49) Structure Length 00002.9 M

(50) Curb or sidewalk: Left 02.7 M Right 00.0 M

(51) Bridge Roadway Width Curb to Curb 013.3 M

(52) Deck Width Out to Out 023.7 M

(32) Approach Roadway Width (w/shoulders) 013.3 M

(33) Bridge Median - No median Code 0

(34) Skew 00 DEG (35) Structure Flared N

(10) Inventory Route MIN Vert Clear 99.99 M

(47) Inventory Route Total Horiz Clear 13.3 M

(53) Min Vert Clear Over Bridge Rdwy 99.99 M

(54) Min Vert Underclear ref N 00.00 M

(55) Min Lat Underclear RT ref N 00.0 M

(56) Min Lat Underclear LT 00.0 M

Navigation Data

(38) Navigation Control - No navigation control on waterway Code 0

(111) Pier Protection Code

(39) Navigation Vertical Clearance 000.0 M

(116) Vert-lift Bridge Nav Min Vert Clear M

(40) Navigation Horizontal Clearance 0000.0 M

Classification

	Code
(112) NBIS Bridge Length	N
(104) Highway System	N
(26) Functional Class - Urban Arterial	14
(100) Defense Highway	1
(101) Parallel Structure	N
(102) Direction of Traffic - 2-way traffic	2
(103) Temporary Structure	Y
(105) Federal Lands Highways	0
(110) Designated National Network	N
(20) Toll - On free road	3
(21) Maintain - Town Agency	03
(22) Owner - Town Agency	03
(37) Historical Significance undetermined	

Condition

	Code
(58) Deck	3
(59) Superstructure	3
(60) Substructure	4
(61) Channel & Channel Protection	6
(62) Culverts	N

Load Rating and Posting

	Code
(31) Design Load - Unknown	0
(63) Operating Rating Method - Allowable Stress (AS)	2
(64) Operating Rating	00.0
(65) Inventory Rating Method - Allowable Stress (AS)	2
(66) Inventory Rating	00.0
(70) Bridge Posting	0
(41) Structure - Open with shoring	D

Appraisal

	Code
(67) Structural Evaluation	2
(68) Deck Geometry	2
(69) Underclearances, vert. and horiz.	N
(71) Waterway adequacy	7
(72) Approach Roadway Alignment	7
(36) Traffic Safety Features	0 0 0 0
(113) Scour Critical Bridges	6

Inspections

(90) Inspection Date 05/02/22 (91) Frequency 24 MO

(92) Critical Feature Inspection: (93) CFI DATE

(A) Fracture Critical Detail	N	00	MO A)	00/00/00
(B) Underwater Inspection	Y	12	MO B)	11/29/21
(C) Other Special Inspection	Y	06	MO C)	05/02/22
(*) Other Inspection ()	N	00	MO *)	00/00/00
(*) Closed Bridge	N	00	MO *)	00/00/00
(*) UW Special Inspection	N	00	MO *)	01/13/17
(*) Damage Inspection			MO *)	00/00/00

Rating Loads

Report Date 00/00/00	H20	Type 3	Type 3S2	Type HS
Operating	0.0	0.0	0.0	0.0
Inventory	0.0	0.0	0.0	0.0

Field Posting

Status Posting Date 00/00/00

	2 Axle	3 Axle	5 Axle	Single
Actual				
Recommended				

Missing Signs N

Misc.

Bridge Name

N Anti-missile fence N Acrow Panel N Jointless Bridge

Freeze/Thaw N : Not Applicable

Stairs On/Adjacent 0 Stair Owner(s)

Accessibility (Needed/Used)

N / N Liftbucket	N / N Rigging	N / N Other
N / N Ladder	N / N Staging	
N / N Boat	N / N Traffic Control	
Y / Y Wader	N / N RR Flagperson	Inspection Hours: 012
N / N Inspector 50	N / N Police	

10 YEAR RATING EVALUATION FORM

To be Filled out by DBIE:

This Evaluation Date: 11/07/2022

District : 04 City/Town : Belmont Br. No. : B-07-015 BIN: 7VB

Structure No: B07015-7VB-MUN-CUL I-22 (Owner): 03 : Town Agency

I-7 (Facility Carried): ST 60 TRAPELO RD

I-43 (Structure Type): 801 : Masonry Slab

I-6 (features Intersected): WATER BEAVER BROOK I-27 (YR Built): 1850 I-106 (YR Rebuilt): 1900

Condition Rating from the latest Inspection Report

Inspection Date:	I-58	I-59	I-60	I-62
5/2/22	3	3	4	N

Prior Rating Information

RATING DATES	I-58	I-59	I-60	I-62	Inventory Rating Values				Operating Rating Values			
					H-20	Type 3	3S2	HS20	H-20	Type 3	3S2	HS20
00/00/00					0	0	0	0	0	0	0	0

This 10 Yr. Evaluation recommends this structure to be:

☐ Rated, With the following priority:

☐ High ☐ Medium ☐ Low

Reason:

☑ No Rating Needed:

Reason: Steel plates have been added over cracked granite clappers. Both Towns are working jointly to replace Structure.

DBIE: Joseph Dideo Date of Submission to ABIE to insert into Boston History File

Joseph Dideo 11/8/22