WHITE - SKANSKA
A JOINT VENTURE

MassDOT Contract No. 71680
Federal Aid Project Number BR-002S(372)
Fore River Bridge Replacement Q-01-001=W-32-001
Quincy - Weymouth, Massachusetts
Design Build Project

SUBMITTAL No. 440.002-001-1S

Noise Control Plan

White-Skanska has reviewed for compliance with contract documents and for coordination with other trades.

MMcC Date 12/19/12

Contract No.	Paragraph
71680	440.02
Specification Section (Spec-Seq-Rev)	
440.02	

White - Skanska Joint Venture
QUALITY CONTROL - CONSTRUCTION DEPARTMENT

Submittal Prepared By: Epsilon Associates

Submittal Reviewed By: Andrea F. Bake
Construction QC Manager

QC Administrator verification that submittal has been reviewed in accordance with the approved Quality Management Plan

Dec 20/12
QC Administrator: Michael Brown, PE

DRAFT

NOISE CONTROL PLAN

Quincy-Weymouth-Bridge Replacement, Q-01-001=W-32-001,
State Route 3A (Washington Street) Over the Fore River
Contract No. 71680
Quincy and Weymouth, Massachusetts

Construction Period:
December 2012 to April 2013

Prepared for:

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APPENDIX B EXISTING CONDITIONS

The 4-year Fore River Bridge Replacement Project consists of the construction of a permanent replacement bridge over the Weymouth Fore River between Quincy and Weymouth and the removal of the temporary bridge. Residential communities are located in Quincy west and north of the project and in Weymouth east and southeast of the project.

B.1 Baseline Sound Level Environment

An ambient sound level survey was conducted to characterize the existing "baseline" acoustical environment in the vicinity of the project. Current noise sources include: vehicles on Route 3A and local streets, Twin Rivers Technologies (industrial facility), Fore River Generating Station, planes, and rustling vegetation.

B.2 Sound Level Measurement Locations

The selection of the sound monitoring locations was based upon a review of the current land use in the area, with emphasis placed on the nearest residential locations. When possible, monitoring locations were selected to be consistent with the measurement locations identified in the "Noise Technical Report for the Fore River Bridge Replacement Study."[4] The sound level measurement locations are shown in Figure B-1 and are described below. The coordinates for the sound level measurement locations were obtained by Epsilon staff in the field using a Global Positioning System (GPS) instrument with an accuracy of 2-5 meters.

- Location M1 – Side yard at residence at 53 St. Germaine Street, Quincy, MA.
  - Continuous sound level data were collected at this location. This location is representative of the closest residences to the north of the project. This location is consistent with the measurement location identified in the 2010 noise report.
- Location M2 – At residence at 79 Kings Cove Beach Road, Weymouth, MA
  - Continuous sound level data were collected at this location. This location is representative of the residential community east-northeast of the project. This location is nearby the location identified in the 2010 noise report.

[4] Report prepared by AECOM for STV Incorporated and dated September 2010.

- **Location M3 – Adjacent to a commercial establishment at 101 Bridge Street (Route 3A), Weymouth, MA**

  - Continuous sound level data were collected at this location. This location is representative of the closest residences to the east of the project. This location is consistent with the measurement location identified in the 2010 noise report.

- **Location M4 – At residence at 17 Dee Road, Quincy, MA**

  - Continuous sound level data were collected at this location. This location is representative of the closest residences to the west of the project. This location is nearby the location identified in the 2010 noise report.

- **Location M5 – Front yard at residence at 50 Monatiquot Street, Weymouth, MA**

  - Continuous sound level data were collected at this location. This location is representative of the residences to the southeast of the project. This location is consistent with the measurement location identified in the 2010 noise report.

Table B-1 lists the GPS coordinates for the five sound level measurement locations. All coordinates are in NAD 1983 State Plane Massachusetts Mainland FIPS 2001.

Table B-1 GPS Coordinates – Sound Level Measurement Locations

Location	X (m)	Y (m)
Location M1 – 53 St. Germaine St., Quincy, MA	244262.18	888917.06
Location M2 – 79 Kings Cove Beach Rd., Weymouth, MA	244800.04	888505.28
Location M3 – 101 Bridge St., Weymouth, MA	244379.78	888176.58
Location M4 – 17 Dee Rd., Quincy, MA	243587.09	888551.53
Location M5 – 50 Monatiquot St., Weymouth, MA	244328.08	888030.12

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Fore River Bridge Quincy/Weymouth, MA

Epsilon Associates Inc.

Figure B-1

Sound Level Measurement Locations

B.3 Measurement Methodology

Per the requirements in the Addendum No. 7 to Item 440.02, Construction Noise Control, dated June 1, 2012, a sound level measurement program was developed to quantify the existing ambient sound levels around the project. A 24-hour sound level measurement program was conducted at five (5) noise-sensitive locations from 4:00 PM on Tuesday, October 16, 2012 to 4:00 PM on Wednesday, October 17, 2012. Sound levels were measured on private property either at residential or commercial properties. Permission was obtained by JF White to allow for the setup of equipment on each of properties. Meteorological data from the closest National Weather Service (NWS) station in Boston, MA were archived for the duration of the measurement period. Field personnel checked on the integrity of the equipment during the first day and first night of monitoring. During these checks, the field technician made note of the noise sources and the meteorological conditions.

B.4 Measurement Equipment

A combination of Norsonic model 140, Larson Davis model 831, and Larson Davis model 820 integrating sound level meters with environmental protection kits were used during the field program. All instrumentation met the "Type 1 - Precision" requirements set forth in American National Standards Institute (ANSI) S1.4-1983 for acoustical measuring devices as specified in the ANSI S12.18-1994 methodology. The microphones were tripod-mounted or mounted to a chain-link fence at a height of approximately five feet above ground. The meters were connected to the microphone by an extension cable, and the meters were housed in an environmental suitcase. A windscreen was used on all microphones.

The measurement equipment was calibrated in the field before and after the surveys with the manufacturer's acoustical calibrator which meets the standards of IEC 942 Class 1L and ANSI S1.40-1984. All calibrations were within $\pm$ 0.5 dB from the most recent calibration. The meters were calibrated and certified as accurate to standards set by the National Institute of Standards and Technology by an independent laboratory within the past 12 months. All instruments have data logging capability and were programmed to log statistical data every hour for the following parameters: L_1, L_{10}, L_{50}, L_{90}, L_{max}, L_{min}, and L_{eq}.

B.5 Measured Sound Levels

The continuous sound level data for Location M1 are provided in tabular format in Table B-2 and are summarized below. The L_{eq} (equivalent) 1-hour measurements ranged from 50 to 61 dBA.

- Average daytime (7:00 AM – 6:00 PM) L_{eq} sound level was 56 dBA.
- Average evening (6:00 PM – 10:00 PM) L_{eq} sound level was 56 dBA.
- Average nighttime (10:00 PM – 7:00 AM) L_{eq} sound level was 56 dBA.

The continuous sound level data for Location M2 are provided in tabular format in Table B-3 and are summarized below. The L_{eq} (equivalent) 1-hour measurements ranged from 48 to 55 dBA.

- Average daytime (7:00 AM – 6:00 PM) L_{eq} sound level was 51 dBA.
- Average evening (6:00 PM – 10:00 PM) L_{eq} sound level was 53 dBA.
- Average nighttime (10:00 PM – 7:00 AM) L_{eq} sound level was 52 dBA.

The continuous sound level data for Location M3 are provided in tabular format in Table B-4 and are summarized below. The L_{eq} (equivalent) 1-hour measurements ranged from 56 to 71 dBA.

- Average daytime (7:00 AM – 6:00 PM) L_{eq} sound level was 68 dBA.
- Average evening (6:00 PM – 10:00 PM) L_{eq} sound level was 67 dBA.
- Average nighttime (10:00 PM – 7:00 AM) L_{eq} sound level was 62 dBA.

The continuous sound level data for Location M4 are provided in tabular format in Table B-5 and are summarized below. The L_{eq} (equivalent) 1-hour measurements ranged from 45 to 58 dBA.

- Average daytime (7:00 AM – 6:00 PM) L_{eq} sound level was 55 dBA.
- Average evening (6:00 PM – 10:00 PM) L_{eq} sound level was 53 dBA.
- Average nighttime (10:00 PM – 7:00 AM) L_{eq} sound level was 49 dBA.

The continuous sound level data for Location M5 are provided in tabular format in Table B-6 and are summarized below. The L_{eq} (equivalent) 1-hour measurements ranged from 51 to 57 dBA.

- Average daytime (7:00 AM – 6:00 PM) L_{eq} sound level was 54 dBA.
- Average evening (6:00 PM – 10:00 PM) L_{eq} sound level was 53 dBA.
- Average nighttime (10:00 PM – 7:00 AM) L_{eq} sound level was 52 dBA.

Table B-2
Measured Background Sound Levels
Location M1 -- 53 St. Germaine Street, Quincy, MA

Hour	Day	Date	Time	Leq	Lmax	L(90)
			(start)	(dBA)	(dBA)	(dBA)
1	Tuesday	16Oct 12	16:00	50.0	62.0	47.8
2	Tuesday	16Oct 12	17:00	55.1	74.2	48.4
3	Tuesday	16Oct 12	18:00	55.9	63.1	54.9
4	Tuesday	16Oct 12	19:00	55.8	69.0	54.8
5	Tuesday	16Oct 12	20:00	55.4	56.8	54.8
6	Tuesday	16Oct 12	21:00	55.6	62.5	54.9
7	Tuesday	16Oct 12	22:00	56.4	67.6	54.9
8	Tuesday	16Oct 12	23:00	55.9	66.5	54.7
9	Wednesday	17Oct 12	0:00	55.3	57.2	54.5
10	Wednesday	17Oct 12	1:00	55.3	57.4	54.4
11	Wednesday	17Oct 12	2:00	55.4	59.8	54.6
12	Wednesday	17Oct 12	3:00	55.6	57.5	54.9
13	Wednesday	17Oct 12	4:00	55.7	59.1	54.9
14	Wednesday	17Oct 12	5:00	55.9	59.2	55.1
15	Wednesday	17Oct 12	6:00	56.4	62.5	55.4
16	Wednesday	17Oct 12	7:00	56.7	69.9	55.7
17	Wednesday	17Oct 12	8:00	56.3	64.9	55.1
18	Wednesday	17Oct 12	9:00	55.1	61.2	53.9
19	Wednesday	17Oct 12	10:00	54.7	64.3	53.6
20	Wednesday	17Oct 12	11:00	55.2	61.9	53.9
21	Wednesday	17Oct 12	12:00	55.5	70.4	53.9
22	Wednesday	17Oct 12	13:00	55.2	65.3	53.8
23	Wednesday	17Oct 12	14:00	61.2	71.1	54.3
24	Wednesday	17Oct 12	15:00	56.5	70.1	53.7

Table B-3
Measured Background Sound Levels
Location M2 -- 79 Kings Cove Beach Road, Weymouth, MA

Hour	Day	Date	Time	Leq	Lmax	L(90)
			(start)	(dBA)	(dBA)	(dBA)
1	Tuesday	16Oct 12	16:00	52.8	64.1	50.7
2	Tuesday	16Oct 12	17:00	55.2	73.0	51.3
3	Tuesday	16Oct 12	18:00	53.6	65.0	51.8
4	Tuesday	16Oct 12	19:00	53.5	69.0	51.2
5	Tuesday	16Oct 12	20:00	52.3	60.5	50.9
6	Tuesday	16Oct 12	21:00	51.9	61.7	50.3
7	Tuesday	16Oct 12	22:00	53.8	69.1	50.6
8	Tuesday	16Oct 12	23:00	53.5	65.9	50.5
9	Wednesday	17Oct 12	0:00	52.5	64.9	49.2
10	Wednesday	17Oct 12	1:00	51.9	59.3	49.1
11	Wednesday	17Oct 12	2:00	52.1	60.3	49.2
12	Wednesday	17Oct 12	3:00	50.7	56.6	48.7
13	Wednesday	17Oct 12	4:00	50.6	55.9	48.2
14	Wednesday	17Oct 12	5:00	51.9	60.9	50.0
15	Wednesday	17Oct 12	6:00	53.2	61.1	51.3
16	Wednesday	17Oct 12	7:00	54.4	73.2	51.9
17	Wednesday	17Oct 12	8:00	52.3	64.2	49.8
18	Wednesday	17Oct 12	9:00	50.2	60.1	48.2
19	Wednesday	17Oct 12	10:00	49.6	67.2	46.9
20	Wednesday	17Oct 12	11:00	48.4	63.5	45.6
21	Wednesday	17Oct 12	12:00	49.8	70.6	45.3
22	Wednesday	17Oct 12	13:00	50.5	69.3	47.0
23	Wednesday	17Oct 12	14:00	49.7	64.7	46.9
24	Wednesday	17Oct 12	15:00	49.3	63.7	45.9

Table B-4
Measured Background Sound Levels
Location M3 -- 101 Bridge Street, Weymouth, MA

Hour	Day	Date	Time	Leq	Lmax	L(90)
			(start)	(dBA)	(dBA)	(dBA)
1	Tuesday	16Oct 12	16:00	67.8	83.5	62.3
2	Tuesday	16Oct 12	17:00	68.3	84.7	63.5
3	Tuesday	16Oct 12	18:00	67.7	80.4	63.1
4	Tuesday	16Oct 12	19:00	67.6	77.1	59.8
5	Tuesday	16Oct 12	20:00	65.9	75.3	57.2
6	Tuesday	16Oct 12	21:00	65.2	74.1	56.0
7	Tuesday	16Oct 12	22:00	64.0	80.9	53.9
8	Tuesday	16Oct 12	23:00	62.6	74.3	50.5
9	Wednesday	17Oct 12	0:00	60.5	73.4	49.3
10	Wednesday	17Oct 12	1:00	57.5	74.1	48.3
11	Wednesday	17Oct 12	2:00	56.1	74.1	47.4
12	Wednesday	17Oct 12	3:00	57.2	74.2	47.7
13	Wednesday	17Oct 12	4:00	60.9	74.2	49.0
14	Wednesday	17Oct 12	5:00	66.6	76.5	54.7
15	Wednesday	17Oct 12	6:00	69.6	78.7	63.2
16	Wednesday	17Oct 12	7:00	70.6	81.2	65.7
17	Wednesday	17Oct 12	8:00	70.4	86.3	65.0
18	Wednesday	17Oct 12	9:00	69.0	86.7	62.4
19	Wednesday	17Oct 12	10:00	68.2	82.1	61.1
20	Wednesday	17Oct 12	11:00	67.4	81.9	57.9
21	Wednesday	17Oct 12	12:00	67.6	78.8	60.8
22	Wednesday	17Oct 12	13:00	67.2	84.2	60.0
23	Wednesday	17Oct 12	14:00	67.7	81.4	61.1
24	Wednesday	17Oct 12	15:00	68.2	81.4	63.2

Table B-5
Measured Background Sound Levels
Location M4 -- 17 Dee Road, Quincy, MA

Hour	Day	Date	Time	Leq	Lmax	L(90)
			(start)	(dBA)	(dBA)	(dBA)
1	Tuesday	16Oct 12	16:00	58.4	75.8	52.3
2	Tuesday	16Oct 12	17:00	56.1	73.7	51.4
3	Tuesday	16Oct 12	18:00	54.7	75.4	50.5
4	Tuesday	16Oct 12	19:00	53.4	71.6	48.6
5	Tuesday	16Oct 12	20:00	52.0	71.2	46.7
6	Tuesday	16Oct 12	21:00	50.8	65.0	46.5
7	Tuesday	16Oct 12	22:00	51.3	67.7	45.2
8	Tuesday	16Oct 12	23:00	51.4	74.8	44.3
9	Wednesday	17Oct 12	0:00	47.3	62.6	43.1
10	Wednesday	17Oct 12	1:00	44.6	62.7	42.0
11	Wednesday	17Oct 12	2:00	44.8	59.1	41.2
12	Wednesday	17Oct 12	3:00	45.3	61.0	41.3
13	Wednesday	17Oct 12	4:00	47.8	62.8	39.7
14	Wednesday	17Oct 12	5:00	53.0	67.4	46.0
15	Wednesday	17Oct 12	6:00	56.3	68.1	52.0
16	Wednesday	17Oct 12	7:00	56.5	67.8	53.3
17	Wednesday	17Oct 12	8:00	56.5	76.9	52.0
18	Wednesday	17Oct 12	9:00	55.5	76.1	49.7
19	Wednesday	17Oct 12	10:00	55.1	73.1	49.9
20	Wednesday	17Oct 12	11:00	54.2	70.2	47.7
21	Wednesday	17Oct 12	12:00	53.1	67.6	47.9
22	Wednesday	17Oct 12	13:00	54.6	70.7	48.5
23	Wednesday	17Oct 12	14:00	54.2	70.7	48.9
24	Wednesday	17Oct 12	15:00	54.7	71.2	49.7

Table B-6
Measured Background Sound Levels
Location M5 -- 50 Monatiquot Street, Weymouth, MA

Hour	Day	Date	Time	Leq	Lmax	L(90)
			(start)	(dBA)	(dBA)	(dBA)
1	Tuesday	16Oct 12	16:00	57.2	81.4	53.6
2	Tuesday	16Oct 12	17:00	55.9	69.5	53.6
3	Tuesday	16Oct 12	18:00	54.2	69.3	52.0
4	Tuesday	16Oct 12	19:00	53.7	68.5	51.3
5	Tuesday	16Oct 12	20:00	52.2	66.0	50.5
6	Tuesday	16Oct 12	21:00	52.0	70.4	50.0
7	Tuesday	16Oct 12	22:00	53.5	68.5	49.0
8	Tuesday	16Oct 12	23:00	52.4	68.8	48.6
9	Wednesday	17Oct 12	0:00	51.9	58.8	49.8
10	Wednesday	17Oct 12	1:00	51.6	65.4	50.1
11	Wednesday	17Oct 12	2:00	51.4	65.4	50.0
12	Wednesday	17Oct 12	3:00	51.2	55.7	50.2
13	Wednesday	17Oct 12	4:00	51.4	63.7	50.2
14	Wednesday	17Oct 12	5:00	51.8	57.6	50.1
15	Wednesday	17Oct 12	6:00	53.9	70.7	51.3
16	Wednesday	17Oct 12	7:00	55.6	74.0	52.5
17	Wednesday	17Oct 12	8:00	54.4	67.3	52.5
18	Wednesday	17Oct 12	9:00	54.7	71.9	51.9
19	Wednesday	17Oct 12	10:00	53.3	67.1	51.0
20	Wednesday	17Oct 12	11:00	55.2	78.8	49.9
21	Wednesday	17Oct 12	12:00	52.4	68.6	49.3
22	Wednesday	17Oct 12	13:00	52.8	69.3	49.8
23	Wednesday	17Oct 12	14:00	53.2	68.4	50.0
24	Wednesday	17Oct 12	15:00	53.6	67.7	50.2