

From: [Barnack, James](#)
To: [Kernan, Eamon \(DOT\)](#); [Suedmeyer, Beth](#)
Cc: [Williamson, Rebecca S.](#); [Conboy, Darren](#)
Subject: Sudbury BFRT - Boardwalk Estimate Revision
Date: Friday, May 15, 2020 1:28:27 PM
Attachments: [image001.png](#)
[Sudbury BFRT Sketch Plan Estimate Rev1 05 15 2020.pdf](#)
Importance: High

Hello Eamon and Beth,

As MassDOT and the Town are considering reevaluating the Boardwalk option, we have also taken a closer look at our design for ways to optimize the design. While doing so, we found an error in our estimate spreadsheet. The revised estimate is attached. There was an error in the number of piers used to calculate the excavation and foundation. We estimated this based on a trench for all 3 piers so the number was 3x what it should have been. With the reduction in material, we used the MassDOT WABA quantity prices and that unit prices was also reduced.

I apologize for this error and inconvenience. If you would like to discuss further, please reach out to me via email or my cell phone.

Thank you again,

James T. Barnack, PE (MA, RI) | Jacobs | Project Manager | People & Places Solutions – Built Environment | 617.532.4324 direct | 716.912.4753 cell
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JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No. Rev May 2020

COMPUTED BY: TQ

CHECKED BY:

DATE: Mar-20

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
BRIDGE SECTION

BRIDGE NO.
S-31-018 (C6E)

< ESTIMATE OF QUANTITIES AND COST OF BRIDGE >

| ITEM NO. | QUANTITY | UNITS | ITEM | UNIT PRICE | AMOUNT |
|----------|----------|-------|--------------------------------------|-------------|-------------|
| 140. | 1495 | CY | BRIDGE EXCAVATION | \$45 | \$67,292 |
| 151.1 | 1583 | CY | GRAVEL BORROW FOR BRIDGE FOUNDATION | \$1,583 | \$95,000 |
| 995.02 | 1 | LS | BRIDGE STRUCTURE BRIDGE NO. S-31-018 | \$1,862,998 | \$1,862,998 |

Sub Total: \$2,025,290
25% Contingency: \$506,323
Total: \$2,531,613
Say: **\$2,532,000**

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No. Rev May 2020

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DATE: Mar-20

Item **140.** **BRIDGE EXCAVATION** **CY**

Note: 1' is added to both width and length, and 2' is added to the depth for gravel borrow under foundation.

| | | | |
|------------------|---|------------|----|
| Width | = | 5.0 | ft |
| Length | = | 17.0 | ft |
| Depth | = | 5.0 | ft |
| Volumn | = | 15.7 | cy |
| No. of Pier Line | = | 95.0 | |
| Total Volumn | = | 1495.4 | cy |
| Unit Price | = | \$45.0 | |
| Total Cost | = | \$67,291.7 | |

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No. Rev May 2020

COMPUTED BY: TQ

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DATE: Mar-20

Item **151.1** **GRAVEL BORROW FOR BRIDGE FOUNDATION** **CY**

Note: 2' under bridge foundation per MassDOT BM

| | | | |
|--------------|---|------------|----|
| Plan Area | = | 75.0 | sf |
| Depth | = | 2.0 | ft |
| Volumn | = | 5.6 | cy |
| Volumn | = | 5.6 | cy |
| No. of Pier | = | 285.0 | |
| Total Volumn | = | 1583.3 | cy |
| Unit Price | = | \$60.0 | |
| Total Cost | = | \$95,000.0 | |

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No. Rev May 2020

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| | | | | | |
|------------------------------|---------------------------------|---|--|----|-----------|
| <u>Item</u> | <u>995.02</u> | | <u>BRIDGE STRUCTURE BRIDGE NO. S-31-018</u> | | <u>LS</u> |
| <u>Sub Item</u> | <u>904.4</u> | | <u>4000 PSI, 3/4 INCH, 685 HP CEMENT CONCRETE</u> | | CY |
| Pier | Area of Pier | = | 2.3 | sf | |
| | Ave. height of pier | = | 9 | ft | |
| | Volumn | = | 0.8 | CY | |
| Footing | Area of Footing | = | 9.0 | sf | |
| | Height of Footing | = | 1 | ft | |
| | Volumn | = | 0.3 | CY | |
| Total volum for each support | | = | 1.1 | CY | |
| | No. of Pier | = | 285.0 | | |
| | Total Volumn | = | 308.8 | cy | |
| | Unit Price | = | \$2,500.0 | | |
| | Total Cost | = | \$771,875.0 | | |
| <u>Sub Item</u> | <u>910.1</u> | | <u>STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED</u> | | LB |
| | Assume 175 pound per cubic yard | | | | |
| | Quantity | = | 54031.3 | lb | |
| | Unit Price | = | \$3.0 | | |
| | Total Cost | = | \$162,093.8 | | |
| <u>Sub Item</u> | <u>XXX</u> | | <u>HDPE RAILING</u> | | FT |
| | Length | = | 1500 | ea | |
| | Unit Price | = | \$150.0 | | |
| | Total Cost | = | \$225,000.0 | | |

JACOBS

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FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No. Rev May 2020

COMPUTED BY: TQ

CHECKED BY:

DATE: Mar-20

| <u>Item</u> | <u>995.02</u> | <u>BRIDGE STRUCTURE BRIDGE NO. S-31-018</u> | <u>LS</u> |
|------------------------|---------------|---|-----------|
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 2 x 8</u> | FT |
| Piece Length | = | 14 ft | |
| Total No. of Piece | = | 1241 | |
| Total Length | = | 17379 ft | |
| Unit Price | = | \$15.0 | |
| Total Cost | = | \$260,689.7 | |
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 3 x 8</u> | FT |
| Total Length | = | 13500 ft | |
| Unit Price | = | \$25.0 | |
| Total Cost | = | \$337,500.0 | |
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 3 x 12</u> | FT |
| Total Length | = | 3024 ft | |
| Unit Price | = | \$35.0 | |
| Total Cost | = | \$105,840.0 | |
| <u>Total of 995.02</u> | = | \$1,862,998.4 | |

BFRT Sudbury
Boardwalk Estimate
Original
March 2020

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No.

COMPUTED BY: TQ

CHECKED BY:

DATE: Mar-20

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
BRIDGE SECTION

BRIDGE NO.
S-31-018 (C6E)

< ESTIMATE OF QUANTITIES AND COST OF BRIDGE >

| ITEM NO. | QUANTITY | UNITS | ITEM | AMOUNT |
|----------|----------|-------|--------------------------------------|-------------|
| 140. | 5100 | CY | BRIDGE EXCAVATION | \$438,600 |
| 151.1 | 1800 | CY | GRAVEL BORROW FOR BRIDGE FOUNDATION | \$171,000 |
| 995.02 | 1 | LS | BRIDGE STRUCTURE BRIDGE NO. S-31-018 | \$2,156,045 |

Sub Total: \$2,765,645
25% Contingency: \$691,411
Total: \$3,457,056
Say: **\$3,458,050**

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No.

COMPUTED BY: TQ

CHECKED BY: MT

DATE: Mar-20

Item

140.

BRIDGE EXCAVATION

CY

Note: 1' is added to both width and length, and 2' is added to the depth for gravel borrow under foundation.

| | | | |
|--------------|---|-------------|----|
| Width | = | 5.0 | ft |
| Length | = | 17.0 | ft |
| Depth | = | 5.0 | ft |
| Volumn | = | 15.7 | cy |
| No. of Pier | = | 324.0 | |
| Total Volumn | = | 5100.0 | cy |
| Unit Price | = | \$86.0 | |
| Total Cost | = | \$438,600.0 | |

JACOBS

PROJECT: MassDOT Sudbury BFRT

FILE NO. E2X81800

SUBJECT: Boardwalk Bridge Quantity

SHEET No.

COMPUTED BY: TQ

CHECKED BY: MT

DATE: Mar-20

Item **151.1** **GRAVEL BORROW FOR BRIDGE FOUNDATION** **CY**

Note: 2' under bridge foundation per MassDOT BM

| | | | |
|--------------|---|-------------|----|
| Plan Area | = | 75.0 | sf |
| Depth | = | 2.0 | ft |
| Volumn | = | 5.6 | cy |
| Volumn | = | 5.6 | cy |
| No. of Pier | = | 324.0 | |
| Total Volumn | = | 1800.0 | cy |
| Unit Price | = | \$95.0 | |
| Total Cost | = | \$171,000.0 | |

JACOBS

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FILE NO. E2X81800

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SHEET No.

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DATE: Mar-20

| | | | | | |
|------------------------------|---------------------------------|---|--|----|-----------|
| <u>Item</u> | <u>995.02</u> | | <u>BRIDGE STRUCTURE BRIDGE NO. S-31-018</u> | | <u>LS</u> |
| <u>Sub Item</u> | <u>904.4</u> | | <u>4000 PSI, 3/4 INCH, 685 HP CEMENT CONCRETE</u> | | CY |
| Pier | Area of Pier | = | 2.3 | sf | |
| | Ave. height of pier | = | 9 | ft | |
| | Volumn | = | 0.8 | CY | |
| Footing | Area of Footing | = | 9.0 | sf | |
| | Height of Footing | = | 1 | ft | |
| | Volumn | = | 0.3 | CY | |
| Total volum for each support | | = | 1.1 | CY | |
| | No. of Pier | = | 324.0 | | |
| | Total Volumn | = | 351.0 | cy | |
| | Unit Price | = | \$2,500.0 | | |
| | Total Cost | = | \$877,500.0 | | |
| <u>Sub Item</u> | <u>910.1</u> | | <u>STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED</u> | | LB |
| | Assume 175 pound per cubic yard | | | | |
| | Quantity | = | 61425.0 | lb | |
| | Unit Price | = | \$3.0 | | |
| | Total Cost | = | \$184,275.0 | | |
| <u>Sub Item</u> | <u>XXX</u> | | <u>HDPE RAILING</u> | | FT |
| | Length | = | 1500 | ea | |
| | Unit Price | = | \$150.0 | | |
| | Total Cost | = | \$225,000.0 | | |

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| <u>Item</u> | <u>995.02</u> | <u>BRIDGE STRUCTURE BRIDGE NO. S-31-018</u> | <u>LS</u> |
|------------------------|---------------|---|-----------|
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 2 x 8</u> | FT |
| Piece Length | = | 14 ft | |
| Total No. of Piece | = | 1241 | |
| Total Length | = | 17379 ft | |
| Unit Price | = | \$15.0 | |
| Total Cost | = | \$260,689.7 | |
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 3 x 8</u> | FT |
| Total Length | = | 13500 ft | |
| Unit Price | = | \$35.0 | |
| Total Cost | = | \$472,500.0 | |
| <u>Sub Item</u> | <u>XXX</u> | <u>HDPE DECKING 3 x 12</u> | FT |
| Total Length | = | 3024 ft | |
| Unit Price | = | \$45.0 | |
| Total Cost | = | \$136,080.0 | |
| <u>Total of 995.02</u> | = | \$2,156,044.7 | |