

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

## General Notes

The CY 2017 Bridge Cost Report reflects the unit cost (\$ per square foot of bridge area) of all of the bridges let in CY 2017.

Pre-cast concrete box culverts have not been included in this report as they do not generally get reviewed (or approved) by the State Aid Bridge Office. We have produced a separate report for pre-cast concrete box culvert cost information.

The bridge unit costs are derived from the pay items on the 1<sup>st</sup> sheet of each bridge plan and therefore may include Traffic Control, Guardrail, etc.

We exclude one bridge pay item when calculating the cost of each bridge. That pay item is *Remove Existing Bridge* and it occurs prior to bridge construction and is not eligible for state or federal funding.

If a bridge has expensive aesthetic features, it may result in a higher unit cost for the bridge. Bridges with an unusually high (or low) unit cost will be omitted to ensure we are reporting "average" bridge unit costs.

Please note that the purpose of this report is to provide the approximate costs of building the various types of bridges and to track those cost trends over time.

Please report any missing bridges to the State Aid Bridge Office as soon as possible so we can revise the report. Once the report gets loaded to our website it's considered to be final.

As always we appreciate your comments and feel free to call us if you have any questions or comments.

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# **MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report**

## **Saint Louis County Tax Levy**

In April, 2015 Saint Louis County enacted a [0.5 Percent Transit Sales and Use Tax and \\$20 Vehicle Excise Tax](#) to help fund their transportation needs. The county used some of the levy dollars to fully fund some of their bridge replacements.

The county had requested courtesy reviews of these bridges, so we decided to add them to this cost report. The addition of these bridges has given us a broader look at the unit costs for the appropriate bridge types and has also helped us track the bridges that were removed (we keep track of timber-component and fracture critical bridges removed from the system).

We did not add a special summary for the Saint Louis County Tax Levy Bridges in this report. These tax levy funded bridges are included in the normal body of the report and are denoted by the \*LOCAL\* designation.

The CY 2017 let Saint Louis County Tax Levy Bridges accounted for 5% of the total dollar amount of all local bridges let in CY 2017.

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

## Separated per Structure Type

BEAM TYPE= **CONCRETE SLAB SPAN**

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area | Cost      | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|------|-----------|-----------|
| 14557             | SAP          | 014-598-068    | 104.67 | C-SLAB         | 9/5/2017     | 3280 | \$396,884 | \$121.00  |
| 14558             | SAP          | 014-599-102    | 118.73 | C-SLAB         | 2/21/2017    | 3721 | \$409,957 | \$110.17  |
| 34529*            | SP           | 034-605-030    | 32.67  | C-SLAB         | 5/2/2017     | 2013 | \$434,736 | \$215.96  |
| 37555             | SAP          | 037-599-107    | 97.00  | C-SLAB         | 3/20/2017    | 3427 | \$386,747 | \$112.85  |
| 42576*            | SAP          | 042-600-003    | 77.67  | C-SLAB         | 8/30/2017    | 2227 | \$543,564 | \$244.08  |
| 42577*            | SAP          | 042-600-003    | 99.67  | C-SLAB         | 8/30/2017    | 2858 | \$640,719 | \$224.18  |
| 42578*            | SAP          | 042-600-003    | 89.67  | C-SLAB         | 8/30/2017    | 2571 | \$580,922 | \$225.95  |
| 43539             | SAP          | 133-109-008    | 147.73 | C-SLAB         | 12/21/2017   | 6328 | \$846,426 | \$133.76  |
| 67569             | SAP          | 067-598-016    | 83.67  | C-SLAB         | 9/18/2017    | 2957 | \$296,183 | \$100.16  |
| 67570             | SAP          | 067-617-011    | 128.67 | C-SLAB         | 3/31/2017    | 4547 | \$541,874 | \$119.17  |
| 69A40*            | SAP          | 069-599-041    | 67.69  | C-SLAB         | 1/12/2017    | 2121 | \$469,407 | \$221.31  |
| 69A52*            | *LOCAL*      | *LOCAL*        | 57.73  | C-SLAB         | 1/23/2017    | 1809 | \$556,974 | \$307.89  |
|                   |              |                |        |                |              |      |           |           |

|                                |                    |
|--------------------------------|--------------------|
| <b>Total Cost</b>              | <b>\$6,104,391</b> |
| <b>Total Deck Area</b>         | <b>37,859</b>      |
| <b>Average Cost per Sq Ft</b>  | <b>\$118.63</b>    |
| <b>Total Number of Bridges</b> | <b>12</b>          |

\*LOCAL\* DENOTES ST. LOUIS COUNTY BRIDGES FUNDED WITH TAX LEVY DOLLARS.

\* Due to the unusually high or low unit cost for this bridge, it was not included in the computation for average unit cost.

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

## Separated per Structure Type

BEAM TYPE= *PRE-CAST BEAMS*

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area  | Cost        | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|-------|-------------|-----------|
| 03513*            | SAP          | 003-607-022    | 192.17 | PCB            | 9/14/2017    | 9624  | \$2,038,065 | \$211.77  |
| 10551             | SAP          | 010-661-006    | 69.92  | PCB            | 5/25/2017    | 5722  | \$953,178   | \$166.58  |
| 13526             | SAP          | 013-620-026    | 354.17 | PCB            | 11/21/2017   | 15348 | \$1,782,433 | \$116.13  |
| 17535             | SAP          | 017-604-020    | 60.00  | PCB            | 9/18/2017    | 1860  | \$218,311   | \$117.37  |
| 18533*            | SAP          | 018-597-009    | 48.17  | PCB            | 8/30/2017    | 1060  | \$262,054   | \$247.22  |
| 22606             | SAP          | 022-599-100    | 84.00  | PCB            | 8/10/2017    | 2968  | \$461,577   | \$155.52  |
| 23594             | SP           | 023-601-024    | 68.53  | PCB            | 6/26/2017    | 2947  | \$391,106   | \$132.71  |
| 24563             | SAP          | 024-604-014    | 74.92  | PCB            | 3/28/2017    | 2647  | \$362,073   | \$136.79  |
| 25619             | SAP          | 025-599-116    | 111.92 | PCB            | 1/14/2017    | 3283  | \$346,477   | \$105.54  |
| 27C49             | SP           | 163-080-002    | 83.66  | PCB            | 6/15/2017    | 5759  | \$1,087,337 | \$188.81  |
| 28557             | SAP          | 028-619-001    | 87.34  | PCB            | 7/17/2017    | 3200  | \$392,774   | \$122.74  |
| 31574             | SAP          | 031-598-025    | 175.17 | PCB            | 5/2/2017     | 5489  | \$1,050,133 | \$191.32  |
| 31575             | SAP          | 031-598-024    | 90.17  | PCB            | 5/2/2017     | 3186  | \$408,346   | \$128.17  |
| 32576             | SP           | 032-624-035    | 123.00 | PCB            | 3/24/2017    | 4838  | \$521,501   | \$107.79  |
| 43561             | SAP          | 043-599-043    | 160.38 | PCB            | 3/28/2017    | 5667  | \$867,902   | \$153.15  |
| 50593             | SAP          | 050-598-004    | 76.00  | PCB            | 5/4/2017     | 2685  | \$339,565   | \$126.47  |
| 50596             | SAP          | 050-628-009    | 38.75  | PCB            | 5/4/2017     | 1525  | \$241,256   | \$158.20  |
| 64594             | SAP          | 064-608-028    | 79.17  | PCB            | 11/16/2017   | 3088  | \$416,590   | \$134.91  |
| 65571             | SAP          | 065-599-074    | 80.90  | PCB            | 7/20/2017    | 2831  | \$289,589   | \$102.29  |
| 66558             | SAP          | 066-621-005    | 64.92  | PCB            | 2/2/2017     | 2554  | \$352,360   | \$137.96  |
|                   |              |                |        |                |              |       |             |           |

NOTE: PRE-CAST BEAM LIST CONTINUED ON NEXT SHEET.

\* Due to the unusually high or low unit cost for this bridge, it was not included in the computation for average unit cost.

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

## Separated per Structure Type

BEAM TYPE= *PRE-CAST BEAMS*

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area | Cost      | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|------|-----------|-----------|
| 69A27*            | SP           | 069-597-007    | 75.67  | PCB            | 5/11/2017    | 3322 | \$844,151 | \$254.11  |
| 69A42             | *LOCAL*      | *LOCAL*        | 82.75  | PCB            | 1/23/2017    | 2593 | \$504,172 | \$194.44  |
| 69A46             | SAP          | 069-652-017    | 71.38  | PCB            | 2/9/2017     | 2236 | \$405,818 | \$181.49  |
| 69A50*            | SAP          | 069-597-008    | 100.21 | PCB            | 11/9/2017    | 3724 | \$864,629 | \$232.18  |
| 69A54*            | SAP          | 069-641-004    | 58.92  | PCB            | 12/14/2017   | 2097 | \$440,298 | \$209.97  |
| 69A55*            | *LOCAL*      | *LOCAL*        | 50.75  | PCB            | 6/20/2017    | 1819 | \$430,749 | \$236.81  |
| 74560             | SAP          | 074-599-031    | 104.00 | PCB            | 5/4/2017     | 3675 | \$374,987 | \$102.04  |
| 77536             | SAP          | 077-601-021    | 104.17 | PCB            | 7/11/2017    | 3889 | \$463,371 | \$119.15  |
| 87563             | SP           | 087-598-025    | 252.42 | PCB            | 8/3/2017     | 8919 | \$951,385 | \$106.67  |
|                   |              |                |        |                |              |      |           |           |

|                                |                     |
|--------------------------------|---------------------|
| <b>Total Cost</b>              | <b>\$18,062,190</b> |
| <b>Total Deck Area</b>         | <b>118,555</b>      |
| <b>Average Cost per Sq Ft</b>  | <b>\$136.03</b>     |
| <b>Total Number of Bridges</b> | <b>29</b>           |

\*LOCAL\* DENOTES ST. LOUIS COUNTY BRIDGES FUNDED WITH TAX LEVY DOLLARS.

\* Due to the unusually high or low unit cost for this bridge, it was not included in the computation for average unit cost.

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Separated per Structure Type

BEAM TYPE= *STEEL TRUSS*

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area | Cost      | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|------|-----------|-----------|
| R0665             | SP           | 073-090-010    | 200.00 | TRUSS          | 7/21/2017    | 2867 | \$620,014 | \$216.26  |
|                   |              |                |        |                |              |      |           |           |

|                                |                  |
|--------------------------------|------------------|
| <i>Total Cost</i>              | <b>\$620,014</b> |
| <i>Total Deck Area</i>         | <b>2,867</b>     |
| <i>Average Cost per Sq Ft</i>  | <b>\$216.26</b>  |
| <i>Total Number of Bridges</i> | <b>1</b>         |

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Separated per Structure Type

BEAM TYPE= *PEDESTRIAN BOARDWALK*

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area  | Cost        | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|-------|-------------|-----------|
| R0769             | SP           | 107-090-009    | 750.00 | BRDWLK         | 7/20/2017    | 12000 | \$1,079,480 | \$89.96   |
|                   |              |                |        |                |              |       |             |           |

|                                |                    |
|--------------------------------|--------------------|
| <i>Total Cost</i>              | <b>\$1,079,480</b> |
| <i>Total Deck Area</i>         | <b>12,000</b>      |
| <i>Average Cost per Sq Ft</i>  | <b>\$89.96</b>     |
| <i>Total Number of Bridges</i> | <b>1</b>           |

# MnDOT State Aid Bridge Office

## 2017 Calendar Year - - Bridge Cost Report

### Summary of Structure Type Unit Costs As Compared to Previous Fiscal Years

**STATE AID BRIDGES**  
**SUMMARY OF BRIDGE UNIT COST PER BEAM TYPE**

| CALENDAR YEAR | 2017     | 2016     | 2015     | 2014     | 2013     | 2012     | 2011       | 2010     |
|---------------|----------|----------|----------|----------|----------|----------|------------|----------|
| TYPE          |          |          |          |          |          |          |            |          |
| C-ARCH        |          |          |          | \$448.81 | \$485.92 | \$366.96 | \$126.38   | \$434.58 |
| C-SLAB        | \$118.63 | \$136.38 | \$121.49 | \$123.08 | \$110.91 | \$112.60 | \$109.17   | \$92.06  |
| DBL T         |          |          |          |          |          |          |            |          |
| GLULAM        |          |          |          |          |          |          | \$343.48   |          |
| PCB           | \$136.03 | \$135.07 | \$151.93 | \$136.58 | \$130.44 | \$125.39 | \$118.83   | \$97.08  |
| PCBped        |          | \$222.45 |          |          | \$218.74 |          |            |          |
| PT SLAB       |          |          |          |          |          |          |            |          |
| R-FRAME       |          |          |          |          |          |          |            |          |
| STEEL         |          | \$230.18 |          |          |          | \$610.71 | \$1,241.08 |          |
| TRUSS         | \$216.26 | \$263.65 | \$293.89 | \$243.64 | \$322.73 | \$149.83 | \$191.93   | \$168.81 |
| TTS           |          | \$192.11 |          |          |          | \$222.25 |            | \$117.94 |
| INV-T         |          | \$283.79 | \$289.96 |          |          | \$212.70 |            |          |
| BRDWLK        | \$89.96  | \$72.68  | \$53.11  |          |          |          |            |          |

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Separated per Bridge Length < 150'

SORTED BY BRIDGE LENGTH

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area | Cost        | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|------|-------------|-----------|
| 7239              | SAP          | 007-605-015    | 19.17  | REHAB          | 11/1/2017    | 738  | \$112,995   | \$153.11  |
| 7240              | SAP          | 007-605-015    | 31.17  | REHAB          | 11/1/2017    | 1200 | \$150,779   | \$125.65  |
| 34529             | SP           | 034-605-030    | 32.67  | C-SLAB         | 5/2/2017     | 2013 | \$434,736   | \$215.96  |
| 07526             | SAP          | 007-605-015    | 33.00  | REHAB          | 11/1/2017    | 1611 | \$161,215   | \$100.07  |
| 50596             | SAP          | 050-628-009    | 38.75  | PCB            | 5/4/2017     | 1525 | \$241,256   | \$158.20  |
| 18533             | SAP          | 018-597-009    | 48.17  | PCB            | 8/30/2017    | 1060 | \$262,054   | \$247.22  |
| 69A55             | *LOCAL*      | *LOCAL*        | 50.75  | PCB            | 6/20/2017    | 1819 | \$430,749   | \$236.81  |
| 69A52             | *LOCAL*      | *LOCAL*        | 57.73  | C-SLAB         | 1/23/2017    | 1809 | \$556,974   | \$307.89  |
| 69A54             | SAP          | 069-641-004    | 58.92  | PCB            | 12/14/2017   | 2097 | \$440,298   | \$209.97  |
| 17535             | SAP          | 017-604-020    | 60.00  | PCB            | 9/18/2017    | 1860 | \$218,311   | \$117.37  |
| 66558             | SAP          | 066-621-005    | 64.92  | PCB            | 2/2/2017     | 2554 | \$352,360   | \$137.96  |
| 69A40             | SAP          | 069-599-041    | 67.69  | C-SLAB         | 1/12/2017    | 2121 | \$469,407   | \$221.31  |
| 23594             | SP           | 023-601-024    | 68.53  | PCB            | 6/26/2017    | 2947 | \$391,106   | \$132.71  |
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| 24563             | SAP          | 024-604-014    | 74.92  | PCB            | 3/28/2017    | 2647 | \$362,073   | \$136.79  |
| 69A27             | SP           | 069-597-007    | 75.67  | PCB            | 5/11/2017    | 3322 | \$844,151   | \$254.11  |
| 50593             | SAP          | 050-598-004    | 76.00  | PCB            | 5/4/2017     | 2685 | \$339,565   | \$126.47  |
| 42576             | SAP          | 042-600-003    | 77.67  | C-SLAB         | 8/30/2017    | 2227 | \$543,564   | \$244.08  |
| 64594             | SAP          | 064-608-028    | 79.17  | PCB            | 11/16/2017   | 3088 | \$416,590   | \$134.91  |
| 65571             | SAP          | 065-599-074    | 80.90  | PCB            | 7/20/2017    | 2831 | \$289,589   | \$102.29  |
| 69A42             | *LOCAL*      | *LOCAL*        | 82.75  | PCB            | 1/23/2017    | 2593 | \$504,172   | \$194.44  |
| 27C49             | SP           | 163-080-002    | 83.66  | PCB            | 6/15/2017    | 5759 | \$1,087,337 | \$188.81  |
| 67569             | SAP          | 067-598-016    | 83.67  | C-SLAB         | 9/18/2017    | 2957 | \$296,183   | \$100.16  |
| 22606             | SAP          | 022-599-100    | 84.00  | PCB            | 8/10/2017    | 2968 | \$461,577   | \$155.52  |

\*LOCAL\* DENOTES ST. LOUIS COUNTY BRIDGES FUNDED WITH TAX LEVY DOLLARS.

NOTE: LIST OF BRIDGES LESS THAN 150' LENGTH CONTINUED ON NEXT SHEET.

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Separated per Bridge Length < 150' (Cont'd)

SORTED BY BRIDGE LENGTH

| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area | Cost        | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|------|-------------|-----------|
| 55548             | SAP          | 055-622-052    | 85.00  | REHAB          | 8/15/2017    | 4023 | \$372,264   | \$92.53   |
| 28557             | SAP          | 028-619-001    | 87.34  | PCB            | 7/17/2017    | 3200 | \$392,774   | \$122.74  |
| 42578             | SAP          | 042-600-003    | 89.67  | C-SLAB         | 8/30/2017    | 2571 | \$580,922   | \$225.95  |
| 31575             | SAP          | 031-598-024    | 90.17  | PCB            | 5/2/2017     | 3186 | \$408,346   | \$128.17  |
| 37555             | SAP          | 037-599-107    | 97.00  | C-SLAB         | 3/20/2017    | 3427 | \$386,747   | \$112.85  |
| 27C51             | SAP          | 027-635-035    | 97.67  | REHAB          | 3/28/2017    | 5779 | \$1,837,803 | \$318.01  |
| 42577             | SAP          | 042-600-003    | 99.67  | C-SLAB         | 8/30/2017    | 2858 | \$640,719   | \$224.18  |
| 69A50             | SAP          | 069-597-008    | 100.21 | PCB            | 11/9/2017    | 3724 | \$864,629   | \$232.18  |
| 74560             | SAP          | 074-599-031    | 104.00 | PCB            | 5/4/2017     | 3675 | \$374,987   | \$102.04  |
| 77536             | SAP          | 077-601-021    | 104.17 | PCB            | 7/11/2017    | 3889 | \$463,371   | \$119.15  |
| 14557             | SAP          | 014-598-068    | 104.67 | C-SLAB         | 9/5/2017     | 3280 | \$396,884   | \$121.00  |
| 25619             | SAP          | 025-599-116    | 111.92 | PCB            | 1/14/2017    | 3283 | \$346,477   | \$105.54  |
| 14558             | SAP          | 014-599-102    | 118.73 | C-SLAB         | 2/21/2017    | 3721 | \$409,957   | \$110.17  |
| 32576             | SP           | 032-624-035    | 123.00 | PCB            | 3/24/2017    | 4838 | \$521,501   | \$107.79  |
| 67570             | SAP          | 067-617-011    | 128.67 | C-SLAB         | 3/31/2017    | 4547 | \$541,874   | \$119.17  |
| 43539             | SAP          | 133-109-008    | 147.73 | C-SLAB         | 12/21/2017   | 6328 | \$846,426   | \$133.76  |
|                   |              |                |        |                |              |      |             |           |

\*LOCAL\* DENOTES ST. LOUIS COUNTY BRIDGES FUNDED WITH TAX LEVY DOLLARS.

|                                       |                     |
|---------------------------------------|---------------------|
| <b>Total Cost</b>                     | <b>\$20,111,717</b> |
| <b>Total Deck Area</b>                | <b>124,718</b>      |
| <b>Average Cost per Sq Ft</b>         | <b>\$161.26</b>     |
| <b>Total No. of Bridges &lt; 150'</b> | <b>41</b>           |

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Separated per Bridge Length > 150'

SORTED BY BRIDGE LENGTH

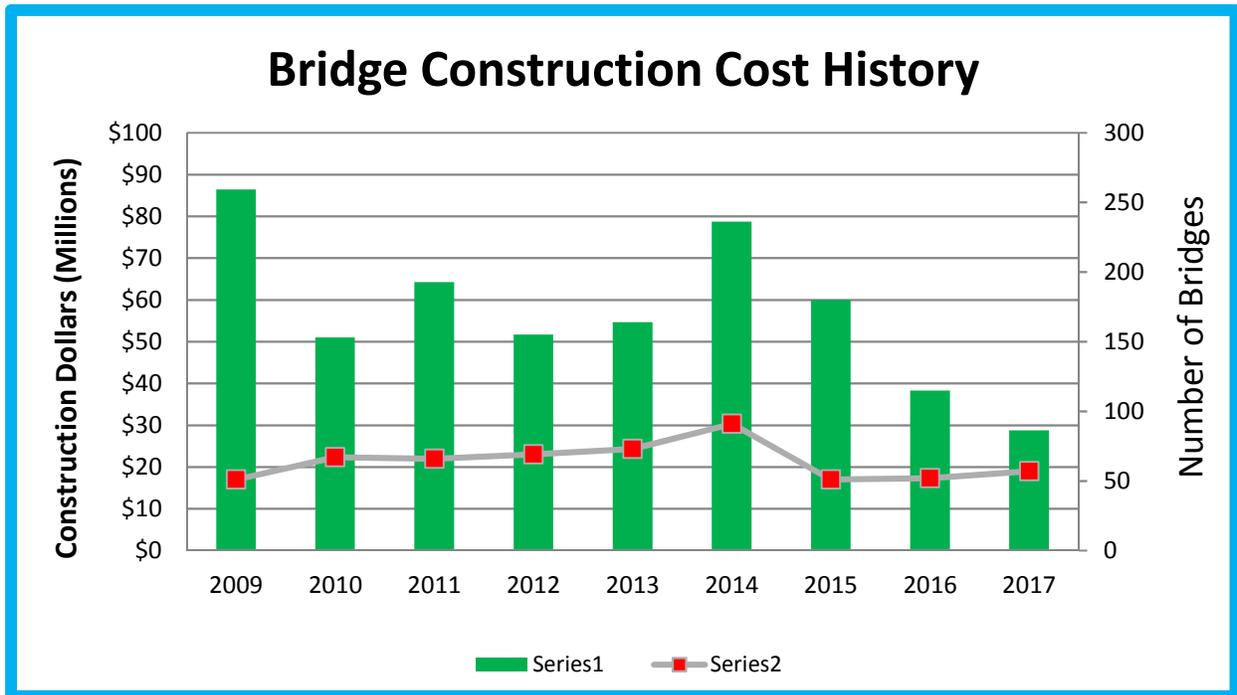
| New Bridge Number | Project Type | Project Number | Length | Beam Type Code | Letting Date | Area  | Cost        | Unit Cost |
|-------------------|--------------|----------------|--------|----------------|--------------|-------|-------------|-----------|
| 43561             | SAP          | 043-599-043    | 160.38 | PCB            | 3/28/2017    | 5667  | \$867,902   | \$153.15  |
| 31574             | SAP          | 031-598-025    | 175.17 | PCB            | 5/2/2017     | 5489  | \$1,050,133 | \$191.32  |
| 03513             | SAP          | 003-607-022    | 192.17 | PCB            | 9/14/2017    | 9624  | \$2,038,065 | \$211.77  |
| R0665             | SP           | 073-090-010    | 200.00 | TRUSS          | 7/21/2017    | 2867  | \$620,014   | \$216.26  |
| 10507             | SAP          | 010-623-008    | 213.17 | REHAB          | 4/6/2017     | 9396  | \$216,021   | \$22.99   |
| 87563             | SP           | 087-598-025    | 252.42 | PCB            | 8/3/2017     | 8919  | \$951,385   | \$106.67  |
| 13526             | SAP          | 013-620-026    | 354.17 | PCB            | 11/21/2017   | 15348 | \$1,782,433 | \$116.13  |
| R0769             | SP           | 107-090-009    | 750.00 | BRDWLK         | 7/20/2017    | 12000 | \$1,079,480 | \$89.96   |
|                   |              |                |        |                |              |       |             |           |

|                                       |                    |
|---------------------------------------|--------------------|
| <b>Total Cost</b>                     | <b>\$8,605,435</b> |
| <b>Total Deck Area</b>                | <b>69,310</b>      |
| <b>Average Cost per Sq Ft</b>         | <b>\$124.16</b>    |
| <b>Total No. of Bridges &gt; 150'</b> | <b>8</b>           |

# MnDOT State Aid Bridge Office 2017 Calendar Year - - Bridge Cost Report

Totals for All Bridges Let in CY 2017

|  |                     |
|--|---------------------|
| <b>Total Cost for all Bridges</b>      | <b>\$28,717,152</b> |
| <b>Total Deck Area for all Bridges</b> | <b>194,028</b>      |
| <b>Average Cost per Sq Ft</b>          | <b>\$148.01</b>     |
| <b>Total Number of Bridges</b>         | <b>49</b>           |



# MnDOT State Aid Bridge Office 2017 Calendar Year - - Box Culvert Report

## General Notes

The CY 2017 Box Culvert Report reflects the basic cost data for the majority of the pre-cast box culverts let in CY 2017. This report is not meant to cover every box culvert let, but to show the 'average' culvert projects (which is most of them). We omitted pedestrian underpass culverts and culverts with pre-cast or cast in place headwalls. We reported the standard sizes as well as 'special' projects which include multiple sized barrels and 20' wide special designs.

The purpose of this report is to summarize basic cost data for box culverts (barrel cost per linear foot and end section cost per each) as well as the project cost. The Project Cost for each project reflects the entire bridge replacement cost (from bedding under the culvert all the way to the road surfacing). It does not separate out the participating or non-participating portions, it contains both portions.

The report also tracks the box culvert volume totals and volume cost. This method is useful because it relates to the waterway area of the structure. The volume cost is the total cost of the barrels and end sections divided by the total volume.

Once a culvert size is determined, then the appropriate project cost example could be used by a local agency to compare to a bridge structure cost at a proposed project site. This could be done by estimating a bridge length (and width) and then applying the appropriate unit cost for the desired structure type (PCB, C-SLAB, STEEL, etc.).

While bridge sites can vary widely, many box culverts are done on the township road system and most of these bridge sites have low traffic volumes. This means that many of these sites have similar roadway widths and clear zones, so the main differences are usually skew angle and fill height over the culvert.

As always we appreciate your comments and feel free to call us if you have any questions or comments.

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**MnDOT State Aid Bridge Office**  
**2017 Calendar Year - - Precast Concrete Box Culvert Cost Report**

Totals for 8' Wide Box Culverts Let in CY 2017

| 8w x 4h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                  |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                        | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 19J71                                | SAP 019-686-016 | 3/28/2017    | 114'                  | 2            | 33°        | 2'         | \$535            | \$7,300               | \$4,980,566  | 7296                     | \$20.72                 |

|   |                |                         |
|---|----------------|-------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$535</b>   |                         |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$7,300</b> |                         |
| <b>Average Total Barrel Volume (CF)</b>   | <b>7,296</b>   | <b>8w x 4h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$20.72</b> |                         |

| 8w x 5h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                  |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                        | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 50K52                                | SAP 050-599-143 | 5/4/2017     | 36'                   | 2            | 0°         | 2'         | \$539            | \$6,178               | \$109,336    | 2880                     | \$22.06                 |

|   |                |                         |
|---|----------------|-------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$539</b>   |                         |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$6,178</b> |                         |
| <b>Average Total Barrel Volume (CF)</b>   | <b>2,880</b>   | <b>8w x 5h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$22.06</b> |                         |

| 8w x 6h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                  |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                        | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 27J68                                | SAP 128-412-009 | 6/29/2017    | 240'                  | 2            | 49°        | 11'        | \$598            | \$10,000              | \$1,664,200  | 23040                    | \$14.19                 |

|   |                 |                         |
|---|-----------------|-------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$598</b>    |                         |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$10,000</b> |                         |
| <b>Average Total Barrel Volume (CF)</b>   | <b>23,040</b>   | <b>8w x 6h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$14.19</b>  |                         |



**MnDOT State Aid Bridge Office**  
**2017 Calendar Year - - Precast Concrete Box Culvert Cost Report**

Totals for 10' Wide (Cont'd) Box Culverts Let in CY 2017

| 10w x 7h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 25J89                                 | SAP 025-601-036 | 8/29/2017    | 158'                  | 2            | 19°        | 16'        | \$657            | \$9,043               | \$2,706,985  | 22120                    | \$11.02                 |
| 50K51                                 | SAP 050-616-033 | 5/4/2017     | 98'                   | 3            | 30°        | 2'         | \$830            | \$18,000              | \$495,227    | 20580                    | \$17.10                 |
| 53J90                                 | SAP 053-613-017 | 9/7/2017     | 82'                   | 2            | 0°         | 9'         | \$786            | \$9,232               | \$238,554    | 11480                    | \$14.45                 |
| 60L39                                 | SAP 060-599-273 | 7/28/2017    | 54'                   | 1            | 0°         | 5'         | \$695            | \$8,925               | \$74,680     | 3780                     | \$14.65                 |
| 65J74                                 | SAP 065-604-020 | 4/7/2017     | 90'                   | 1            | 0°         | 5'         | \$633            | \$8,400               | \$2,230,492  | 6300                     | \$11.71                 |

**Average Barrel Cost (\$/LF)** **\$720**  
**Average End Section Cost (\$/EA)** **\$10,720**  
**Average Total Barrel Volume (CF)** **12,852**  
**Average Barrel Volume Cost (\$/CF)** **\$13.79**

10w x 7h Averages

| 10w x 8h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 53J83                                 | SAP 053-615-018 | 9/7/2017     | 54'                   | 2            | 0°         | 3'         | \$750            | \$10,000              | \$191,481    | 8640                     | \$14.00                 |
| 54J28                                 | SAP 054-598-041 | 8/29/2017    | 62'                   | 1            | 0°         | 5'         | \$649            | \$7,200               | \$115,083    | 4960                     | \$11.02                 |
| 72J60                                 | SAP 072-606-055 | 7/13/2017    | 84'                   | 1            | 30°        | 3'         | \$784            | \$13,665              | \$175,970    | 6720                     | \$13.87                 |
| 74J23                                 | SAP 074-599-032 | 5/11/2017    | 40'                   | 2            | 0°         | 3'         | \$750            | \$10,000              | \$158,368    | 6400                     | \$15.63                 |
| 84J72                                 | SAP 084-599-140 | 12/21/2017   | 50'                   | 2            | 0°         | 3'         | \$930            | \$11,500              | \$159,973    | 8000                     | \$17.38                 |

**Average Barrel Cost (\$/LF)** **\$773**  
**Average End Section Cost (\$/EA)** **\$10,473**  
**Average Total Barrel Volume (CF)** **6,944**  
**Average Barrel Volume Cost (\$/CF)** **\$14.38**

10w x 8h Averages

| 10w x 9h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 35J56                                 | SAP 035-598-009 | 9/12/2017    | 54'                   | 1            | 0°         | 4'         | \$672            | \$14,000              | \$116,996    | 4860                     | \$13.23                 |

**Average Barrel Cost (\$/LF)** **\$672**  
**Average End Section Cost (\$/EA)** **\$14,000**  
**Average Total Barrel Volume (CF)** **4,860**  
**Average Barrel Volume Cost (\$/CF)** **\$13.23**

10w x 9h Averages

| 10w x 10h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 08J23                                  | SAP 008-608-039 | 8/30/2017    | 72'                   | 2            | 0°         | 2'         | \$905            | \$12,850              | \$307,801    | 14400                    | \$12.62                 |

**Average Barrel Cost (\$/LF)** **\$905**  
**Average End Section Cost (\$/EA)** **\$12,850**  
**Average Total Barrel Volume (CF)** **14,400**  
**Average Barrel Volume Cost (\$/CF)** **\$12.62**

10w x 10h Averages

**MnDOT State Aid Bridge Office**  
**2017 Calendar Year - - Precast Concrete Box Culvert Cost Report**

Totals for 12' Wide Box Culverts Let in CY 2017

| 12w x 5h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 09J38                                 | SAP 009-605-009 | 4/24/2017    | 78'                   | 1            | 27°        | 3'         | \$725            | \$14,000              | \$137,045    | 4680                     | \$18.07                 |
| 35J52                                 | SAP 035-613-010 | 9/12/2017    | 40'                   | 1            | 0°         | 2'         | \$679            | \$7,500               | \$78,104     | 2400                     | \$17.57                 |
| 50K55                                 | SAP 050-599-144 | 5/4/2017     | 40'                   | 1            | 15°        | 2'         | \$715            | \$8,023               | \$85,740     | 2400                     | \$18.60                 |
| 84K04                                 | SAP 084-603-018 | 9/7/2017     | 62'                   | 1            | 30°        | 4'         | \$900            | \$6,000               | \$236,450    | 3720                     | \$18.23                 |
| 84K05                                 | SAP 084-603-018 | 9/7/2017     | 66'                   | 1            | 0°         | 3'         | \$900            | \$6,000               | \$236,450    | 3960                     | \$18.03                 |

|   |                |                          |
|---|----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$784</b>   |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$8,305</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>3,432</b>   | <b>12w x 5h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$18.10</b> |                          |

| 12w x 6h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 25J90                                 | SAP 025-601-036 | 8/29/2017    | 120'                  | 1            | 0°         | 12'        | \$712            | \$7,788               | \$2,706,985  | 8640                     | \$11.69                 |
| 59K09                                 | SP 059-616-032  | 5/23/2017    | 53'                   | 1            | 0°         | 2'         | \$815            | \$7,800               | \$2,787,263  | 3816                     | \$15.41                 |

|   |                |                          |
|---|----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$764</b>   |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$7,794</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>6,228</b>   | <b>12w x 6h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$13.55</b> |                          |

| 12w x 7h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 43J18                                 | SAP 043-624-001 | 9/7/2017     | 60'                   | 1            | 8°         | 2'         | \$1,019          | \$9,338               | \$136,533    | 5040                     | \$15.84                 |

|   |                |                          |
|---|----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,019</b> |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$9,338</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>5,040</b>   | <b>12w x 7h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$15.84</b> |                          |

| 12w x 8h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 09J36                                 | SAP 009-599-027 | 3/13/2017    | 78'                   | 1            | 0°         | 9'         | \$950            | \$18,000              | \$241,738    | 7488                     | \$14.70                 |
| 65J71                                 | SAP 065-599-071 | 5/5/2017     | 44'                   | 1            | 15°        | 2'         | \$650            | \$12,500              | \$83,985     | 4224                     | \$12.69                 |
| 69K53                                 | SAP 069-699-001 | 3/16/2017    | 54'                   | 1            | 0°         | 2'         | \$888            | \$12,800              | \$258,431    | 5184                     | \$14.19                 |

|   |                 |                          |
|---|-----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$829</b>    |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$14,433</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>5,632</b>    | <b>12w x 8h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$13.86</b>  |                          |

**MnDOT State Aid Bridge Office**  
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Totals for 12' Wide (Cont'd) Box Culverts Let in CY 2017

| 12w x 9h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 08J19                                 | SAP 008-599-052 | 8/30/2017    | 44'                   | 2            | 0°         | 3'         | \$1,035          | \$10,500              | \$193,646    | 9504                     | \$14.00                 |
| 50K53                                 | SAP 050-599-142 | 5/4/2017     | 36'                   | 2            | 0°         | 2'         | \$696            | \$12,766              | \$166,402    | 7776                     | \$13.01                 |
| 84K02                                 | SAP 084-598-045 | 9/7/2017     | 36'                   | 2            | 0°         | 2'         | \$1,000          | \$11,500              | \$141,135    | 7776                     | \$15.17                 |

**Average Barrel Cost (\$/LF)** **\$910**  
**Average End Section Cost (\$/EA)** **\$11,589**  
**Average Total Barrel Volume (CF)** **8,352**  
**Average Barrel Volume Cost (\$/CF)** **\$14.06**

**12w x 9h Averages**

| 12w x 10h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 34J43                                  | SAP 034-598-004 | 9/5/2017     | 60'                   | 2            | 30°        | 3'         | \$974            | \$16,790              | \$235,720    | 14400                    | \$12.78                 |
| 45J48                                  | SAP 045-599-155 | 8/15/2017    | 42'                   | 2            | 0°         | 2'         | \$800            | \$15,000              | \$154,295    | 10080                    | \$12.62                 |
| 59K07                                  | SP 059-616-032  | 5/23/2017    | 53'                   | 2            | 0°         | 2'         | \$940            | \$13,700              | \$2,787,263  | 12720                    | \$12.14                 |
| 65J75                                  | SAP 065-599-073 | 5/5/2017     | 56'                   | 2            | 5°         | 4'         | \$1,000          | \$14,000              | \$244,896    | 13440                    | \$12.50                 |

**Average Barrel Cost (\$/LF)** **\$929**  
**Average End Section Cost (\$/EA)** **\$14,873**  
**Average Total Barrel Volume (CF)** **12,660**  
**Average Barrel Volume Cost (\$/CF)** **\$12.51**

**12w x 10h Averages**

| 12w x 11h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 64J54                                  | SAP 064-599-107 | 7/27/2017    | 60'                   | 2            | 0°         | 7'         | \$900            | \$15,000              | \$227,665    | 15840                    | \$10.61                 |

**Average Barrel Cost (\$/LF)** **\$900**  
**Average End Section Cost (\$/EA)** **\$15,000**  
**Average Total Barrel Volume (CF)** **15,840**  
**Average Barrel Volume Cost (\$/CF)** **\$10.61**

**12w x 11h Averages**

| 12w x 12h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 72J69                                  | SP 072-625-015  | 3/16/2017    | 84'                   | 2            | 30°        | 5'         | \$945            | \$25,000              | \$370,691    | 24192                    | \$10.70                 |
| 81J19                                  | SAP 081-609-019 | 5/31/2017    | 58'                   | 1            | 0°         | 2'         | \$1,550          | \$25,000              | \$176,134    | 8352                     | \$16.75                 |

**Average Barrel Cost (\$/LF)** **\$1,248**  
**Average End Section Cost (\$/EA)** **\$25,000**  
**Average Total Barrel Volume (CF)** **16,272**  
**Average Barrel Volume Cost (\$/CF)** **\$13.72**

**12w x 12h Averages**



**MnDOT State Aid Bridge Office**  
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Totals for 14' Wide (Cont'd) Box Culverts Let in CY 2017

| 14w x 9h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 25J88                                 | SAP 025-601-036 | 8/29/2017    | 132'                  | 3            | 0°         | 12'        | \$981            | \$11,413              | \$2,706,985  | 49896                    | \$9.16                  |

**Average Barrel Cost (\$/LF)** **\$981**  
**Average End Section Cost (\$/EA)** **\$11,413**  
**Average Total Barrel Volume (CF)** **49,896**  
**Average Barrel Volume Cost (\$/CF)** **\$9.16**

14w x 9h Averages

| 14w x 10h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 22J45                                  | SAP 022-604-014 | 4/27/2017    | 70'                   | 2            | 0°         | 3'         | \$1,175          | \$20,000              | \$296,531    | 19600                    | \$12.47                 |
| 25J92                                  | SAP 025-599-122 | 8/1/2017     | 40'                   | 2            | 45°        | 2'         | \$1,030          | \$27,300              | \$279,218    | 11200                    | \$17.11                 |
| 56J26                                  | SAP 056-599-062 | 7/26/2017    | 50'                   | 2            | 30°        | 3'         | \$1,170          | \$24,000              | \$287,628    | 14000                    | \$15.21                 |
| 81J18                                  | SAP 081-626-005 | 5/31/2017    | 60'                   | 1            | 0°         | 4'         | \$1,545          | \$30,000              | \$167,668    | 8400                     | \$18.18                 |
| 87J60                                  | SAP 087-599-136 | 6/21/2017    | 34'                   | 2            | 0°         | 2'         | \$1,050          | \$13,000              | \$142,968    | 9520                     | \$12.96                 |

**Average Barrel Cost (\$/LF)** **\$1,194**  
**Average End Section Cost (\$/EA)** **\$22,860**  
**Average Total Barrel Volume (CF)** **12,544**  
**Average Barrel Volume Cost (\$/CF)** **\$15.19**

14w x 10h Averages

| 14w x 11h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 51J49                                  | SAP 051-634-013 | 8/15/2017    | 55'                   | 2            | 0°         | 2'         | \$1,100          | \$18,000              | \$249,110    | 16940                    | \$11.39                 |
| 84J73                                  | SAP 084-599-141 | 12/21/2017   | 40'                   | 2            | 0°         | <2'        | \$1,500          | \$18,500              | \$220,031    | 12320                    | \$15.75                 |

**Average Barrel Cost (\$/LF)** **\$1,300**  
**Average End Section Cost (\$/EA)** **\$18,250**  
**Average Total Barrel Volume (CF)** **14,630**  
**Average Barrel Volume Cost (\$/CF)** **\$13.57**

14w x 11h Averages

| 14w x 12h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 12J52                                  | SAP 012-599-088 | 4/18/2017    | 44'                   | 3            | 19°        | 3'         | \$1,300          | \$18,000              | \$431,282    | 22176                    | \$12.61                 |
| 12J54                                  | SAP 012-599-090 | 4/18/2017    | 42'                   | 2            | 26°        | 3'         | \$1,400          | \$24,000              | \$339,086    | 14112                    | \$15.14                 |

**Average Barrel Cost (\$/LF)** **\$1,350**  
**Average End Section Cost (\$/EA)** **\$21,000**  
**Average Total Barrel Volume (CF)** **18,144**  
**Average Barrel Volume Cost (\$/CF)** **\$13.87**

14w x 12h Averages

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Totals for 16' Wide Box Culverts Let in CY 2017

| 16w x 4h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 43J24                                 | SAP 043-598-015 | 11/28/2017   | 50'                   | 1            | 6°         | <2'        | \$712            | \$5,040               | \$116,570    | 3200                     | \$14.28                 |
| 55K15                                 | SAP 055-605-015 | 5/9/2017     | 84'                   | 2            | 0°         | 2'         | \$975            | \$6,500               | \$6,713,400  | 10752                    | \$17.65                 |
| 67K40                                 | SAP 067-618-009 | 5/12/2017    | 52'                   | 1            | 0°         | 2'         | \$1,200          | \$9,000               | \$101,473    | 3328                     | \$24.16                 |

|   |                |                          |
|---|----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$962</b>   |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$6,847</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>5,760</b>   | <b>16w x 4h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$18.70</b> |                          |

| 16w x 5h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 58J39                                 | SAP 058-613-019 | 4/17/2017    | 54'                   | 1            | 0°         | 2'         | \$1,200          | \$15,000              | \$374,890    | 4320                     | \$21.94                 |
| 59K04                                 | SAP 059-613-020 | 8/8/2017     | 52'                   | 1            | 15°        | 2'         | \$1,125          | \$13,500              | \$122,640    | 4160                     | \$20.55                 |

|   |                 |                          |
|---|-----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,163</b>  |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$14,250</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>4,240</b>    | <b>16w x 5h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$21.25</b>  |                          |

| 16w x 6h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 69K52                                 | SAP 069-699-002 | 3/16/2017    | 54'                   | 1            | 15°        | 2'         | \$1,090          | \$15,600              | \$214,137    | 5184                     | \$17.37                 |

|   |                 |                          |
|---|-----------------|--------------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,090</b>  |                          |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$15,600</b> |                          |
| <b>Average Total Barrel Volume (CF)</b>   | <b>5,184</b>    | <b>16w x 6h Averages</b> |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$17.37</b>  |                          |

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Totals for 16' Wide (Cont'd) Box Culverts Let in CY 2017

| 16w x 7h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|---------------------------------------|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                   |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                         | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 25J87                                 | SAP 025-599-118 | 8/1/2017     | 86'                   | 1            | 35°        | 7'         | \$1,070          | \$18,500              | \$255,397    | 9632                     | \$13.39                 |
| 53K00                                 | SAP 053-599-191 | 9/7/2017     | 36'                   | 1            | 0°         | 2'         | \$1,150          | \$12,500              | \$121,497    | 4032                     | \$16.47                 |

|   |                 |                   |
|---|-----------------|-------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,110</b>  |                   |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$15,500</b> |                   |
| <b>Average Total Barrel Volume (CF)</b>   | <b>6,832</b>    | 16w x 7h Averages |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$14.93</b>  |                   |

| 16w x 12h Precast Concrete Box Culvert |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number                          | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 36J19                                  | SAP 036-608-022 | 4/24/2017    | 88'                   | 2            | 0°         | 8'         | \$1,489          | \$22,436              | \$599,999    | 33792                    | \$10.41                 |

|   |                 |                    |
|---|-----------------|--------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,489</b>  |                    |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$22,436</b> |                    |
| <b>Average Total Barrel Volume (CF)</b>   | <b>33,792</b>   | 16w x 12h Averages |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$10.41</b>  |                    |

**MnDOT State Aid Bridge Office**  
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Totals for 20' Wide (Special Design) Box Culverts Let in CY 2017

| 20w x 7h Precast Concrete Box Culvert (Special Design) |                 |              |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info                                    |                 |              | Culvert Info          |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 55K12  | SAP 055-598-058 | 9/12/2017    | 80'                   | 1            | 0°         | 2'         | \$1,900          | \$17,000              | \$560,178    | 11200                    | \$16.61                 |

|   |                 |                   |
|---|-----------------|-------------------|
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$1,900</b>  |                   |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$17,000</b> |                   |
| <b>Average Total Barrel Volume (CF)</b>   | <b>11,200</b>   | 20w x 7h Averages |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$16.61</b>  |                   |

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Totals for Multi-Sized Box Culverts Let in CY 2017

| Multi-Sized Precast Concrete Box Culvert - 12w x 6h & 12w x 7h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 42J43  | SAP 042-599-151 | 7/25/2017    | 12w x 6h            | 42'                   | 1            | 15°        | 2'         | \$800            | \$9,500               |              | 3024                     |                         |
|  |                 |              | 12w x 7h            | 42'                   | 1            | 15°        | 2'         | \$825            | \$10,500              |              | 3528                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$570,285    |                          | 6552                    |
| 69K47  | SAP 069-599-042 | 3/16/2017    | 12w x 6h            | 40'                   | 1            | 20°        | 2'         | \$850            | \$11,360              |              | 2880                     |                         |
|  |                 |              | 12w x 7h            | 40'                   | 1            | 20°        | 2'         | \$884            | \$12,650              |              | 3360                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$389,364    |                          | 6240                    |

| Multi-Sized Precast Concrete Box Culvert - 12w x 7h & 12w x 8h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 28J50  | SAP 028-599-090 | 5/15/2017    | 12w x 7h            | 46'                   | 1            | 30°        | 3'         | \$800            | \$12,750              |              | 3864                     |                         |
|  |                 |              | 12w x 8h            | 46'                   | 1            | 30°        | 3'         | \$825            | \$14,250              |              | 4416                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$230,127    |                          | 8280                    |
| 42J39  | SAP 042-599-148 | 7/25/2017    | 12w x 7h            | 36'                   | 1            | 0°         | 2'         | \$851            | \$9,000               |              | 3024                     |                         |
|  |                 |              | 12w x 8h            | 36'                   | 1            | 0°         | 2'         | \$875            | \$10,500              |              | 3456                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$121,464    |                          | 6480                    |

| Multi-Sized Precast Concrete Box Culvert - 12w x 8h & 12w x 9h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 21J19  | SAP 021-599-019 | 8/14/2017    | 12w x 8h            | 54'                   | 2            | 0°         | <2'        | \$1,050          | \$11,500              |              | 10368                    |                         |
|  |                 |              | 12w x 9h            | 54'                   | 1            | 0°         | <2'        | \$1,100          | \$13,000              |              | 5832                     |                         |
|  |                 |              | Total No. of Lines: |                       | 3            |            |            |                  | Totals:               | \$404,827    |                          | 16200                   |
| 49J85  | SAP 049-612-009 | 7/27/2017    | 12w x 8h            | 57'                   | 2            | 0°         | 2'         | \$825            | \$12,000              |              | 10944                    |                         |
|  |                 |              | 12w x 9h            | 57'                   | 1            | 0°         | 2'         | \$900            | \$14,000              |              | 6156                     |                         |
|  |                 |              | Total No. of Lines: |                       | 3            |            |            |                  | Totals:               | \$398,223    |                          | 17100                   |

| Multi-Sized Precast Concrete Box Culvert - 12w x 9h & 12w x 10h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|---|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info   |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number   | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 42J40   | SAP 042-599-149 | 7/25/2017    | 12w x 9h            | 40'                   | 1            | 0°         | 2'         | \$891            | \$12,000              |              | 4320                     |                         |
|   |                 |              | 12w x 10h           | 40'                   | 1            | 0°         | 2'         | \$981            | \$13,500              |              | 4800                     |                         |
|   |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$147,032    |                          | 9120                    |

| Multi-Sized Precast Concrete Box Culvert - 14w x 5h & 14w x 6h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 59J95  | SAP 059-597-002 | 8/8/2017     | 14w x 5h            | 41'                   | 1            | 0°         | 2'         | \$835            | \$7,800               |              | 2870                     |                         |
|  |                 |              | 14w x 6h            | 41'                   | 1            | 0°         | 2'         | \$860            | \$8,900               |              | 3444                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$125,585    |                          | 6314                    |

| Multi-Sized Precast Concrete Box Culvert - 14w x 6h & 14w x 7h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 55K07  | SAP 055-599-098 | 3/14/2017    | 14w x 6h            | 84'                   | 1            | 15°        | 3'         | \$855            | \$11,230              |              | 7056                     |                         |
|  |                 |              | 14w x 7h            | 84'                   | 1            | 15°        | 3'         | \$888            | \$17,300              |              | 8232                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            |            |            |                  | Totals:               | \$307,476    |                          | 15288                   |

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Totals for Multi-Sized (Cont'd) Box Culverts Let in CY 2017

| Multi-Sized Precast Concrete Box Culvert - 14w x 8h & 14w x 9h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 28J52  | SAP 028-599-091 | 5/1/2017     | 14w x 8h            | 40'                   | 1            | 0°         | 3'         | \$1,300          | \$10,000              |              | 4480                     |                         |
|  |                 |              | 14w x 9h            | 40'                   | 1            | 0°         | 3'         | \$1,300          | \$10,000              |              | 5040                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            | Totals:    |            | \$194,929        | 9520                  | \$15.13      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 14w x 9h & 14w x 10h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|---|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info   |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number   | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 41J50   | SAP 041-601-030 | 8/15/2017    | 14w x 9h            | 62'                   | 2            | 45°        | 2'         | \$1,050          | \$24,000              |              | 15624                    |                         |
|   |                 |              | 14w x 10h           | 62'                   | 1            | 45°        | 2'         | \$1,100          | \$27,000              |              | 8680                     |                         |
|   |                 |              | Total No. of Lines: |                       | 3            | Totals:    |            | \$430,206        | 24304                 | \$14.34      |                          |                         |
| 75J15   | SP 075-598-008  | 5/10/2017    | 14w x 9h            | 56'                   | 2            | 4°         | 2'         | \$1,080          | \$13,000              |              | 14112                    |                         |
|   |                 |              | 14w x 10h           | 56'                   | 2            | 4°         | 2'         | \$1,125          | \$15,000              |              | 15680                    |                         |
|   |                 |              | Total No. of Lines: |                       | 4            | Totals:    |            | \$449,984        | 29792                 | \$12.05      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 14w x 9h & 14w x 11h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|---|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info   |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number   | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 41J67   | SAP 041-607-044 | 8/15/2017    | 14w x 9h            | 56'                   | 2            | 30°        | 2'         | \$950            | \$20,200              |              | 14112                    |                         |
|   |                 |              | 14w x 11h           | 56'                   | 2            | 30°        | 2'         | \$1,100          | \$23,200              |              | 17248                    |                         |
|   |                 |              | Total No. of Lines: |                       | 4            | Totals:    |            | \$1,464,798      | 31360                 | \$12.86      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 14w x 12h & 16w x 12h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 12J53  | SAP 012-599-089 | 4/18/2017    | 14w x 12h           | 60'                   | 1            | 21°        | 3'         | \$1,500          | \$18,000              |              | 10080                    |                         |
|  |                 |              | 16w x 12h           | 60'                   | 2            | 21°        | 3'         | \$1,100          | \$19,000              |              | 23040                    |                         |
|  |                 |              | Total No. of Lines: |                       | 3            | Totals:    |            | \$537,816        | 33120                 | \$10.08      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 16w x 5h & 16w x 7h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 59J83  | SAP 059-599-091 | 8/8/2017     | 16w x 5h            | 41'                   | 1            | 0°         | 2'         | \$1,025          | \$9,000               |              | 3280                     |                         |
|  |                 |              | 16w x 7h            | 41'                   | 1            | 0°         | 2'         | \$1,065          | \$11,500              |              | 4592                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            | Totals:    |            | \$156,013        | 7872                  | \$16.09      |                          |                         |

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Totals for Multi-Sized (Cont'd) Box Culverts Let in CY 2017

| Multi-Sized Precast Concrete Box Culvert - 16w x 7h & 16w x 8h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 42J35  | SAP 042-599-145 | 7/25/2017    | 16w x 7h            | 42'                   | 1            | 15°        | 2'         | \$1,020          | \$15,000              |              | 4704                     |                         |
|  |                 |              | 16w x 8h            | 42'                   | 1            | 15°        | 2'         | \$1,060          | \$16,000              |              | 5376                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            | Totals:    |            | \$172,567        | 10080                 | \$14.82      |                          |                         |
| 59K06  | SP 059-616-032  | 5/23/2017    | 16w x 7h            | 53'                   | 1            | 0°         | 2'         | \$1,000          | \$11,600              |              | 5936                     |                         |
|  |                 |              | 16w x 8h            | 53'                   | 1            | 0°         | 2'         | \$1,100          | \$13,070              |              | 6784                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            | Totals:    |            | \$2,787,263      | 12720                 | \$12.63      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 16w x 7h & 16w x 9h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 51J54  | SAP 051-634-014 | 8/15/2017    | 16w x 7h            | 54'                   | 1            | 0°         | 2'         | \$1,100          | \$13,000              |              | 6048                     |                         |
|  |                 |              | 16w x 9h            | 54'                   | 1            | 0°         | 2'         | \$1,125          | \$14,000              |              | 7776                     |                         |
|  |                 |              | Total No. of Lines: |                       | 2            | Totals:    |            | \$222,765        | 13824                 | \$12.60      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 16w x 10h & 16w x 11h |                |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 54J31  | SP 054-598-040 | 5/22/2017    | 16w x 10h           | 44'                   | 2            | 30°        | 2'         | \$1,010          | \$23,127              |              | 14080                    |                         |
|  |                |              | 16w x 11h           | 44'                   | 1            | 30°        | 2'         | \$1,050          | \$24,075              |              | 7744                     |                         |
|  |                |              | Total No. of Lines: |                       | 3            | Totals:    |            | \$490,273        | 21824                 | \$12.63      |                          |                         |

| Multi-Sized Precast Concrete Box Culvert - 16w x 11h & 16w x 12h |                 |              |                     |                       |              |            |            |                  |                       |              |                          |                         |
|--|-----------------|--------------|---------------------|-----------------------|--------------|------------|------------|------------------|-----------------------|--------------|--------------------------|-------------------------|
| Bridge/Project Info  |                 |              | Culvert Info        |                       |              |            |            | Cost Info        |                       |              | Waterway Info            |                         |
| Bridge Number  | Project Number  | Letting Date | Barrel Size         | Length of Barrel (EA) | No. of Lines | Skew Angle | Fill Depth | Barrel Cost (LF) | End Section Cost (EA) | Project Cost | Total Barrel Volume (CF) | Volume Cost (\$ per CF) |
| 41J49  | SAP 041-601-029 | 8/15/2017    | 16w x 11h           | 54'                   | 2            | 0°         | 2'         | \$1,200          | \$18,000              |              | 19008                    |                         |
|  |                 |              | 16w x 12h           | 54'                   | 2            | 0°         | 2'         | \$1,250          | \$20,000              |              | 20736                    |                         |
|  |                 |              | Total No. of Lines: |                       | 4            | Totals:    |            | \$510,569        | 39744                 | \$10.48      |                          |                         |

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Totals/Averages for ALL SIZES Box Culverts Let in CY 2017

|   |                 |                    |
|---|-----------------|--------------------|
| <b>Total Number of Culvert Projects</b>   | <b>99</b>       |                    |
| <b>Average Barrel Length (LF)</b>         | <b>58'</b>      |                    |
| <b>Average Barrel Cost (\$/LF)</b>        | <b>\$945</b>    |                    |
| <b>Average End Section Cost (\$/EA)</b>   | <b>\$13,030</b> | All Sizes Combined |
| <b>Average Total Barrel Volume (CF)</b>   | <b>10,125</b>   |                    |
| <b>Average Barrel Volume Cost (\$/CF)</b> | <b>\$15.96</b>  |                    |

