# DELAWARE DEPARTMENT OF TRANSPORTATION

## TRAFFIC SIGNAL ESTIMATE

**Pennsylvania Ave (SR 52) @ Union Street (SR 2) Signal Improvements**

### PENNSYLVANIA AVENUE (SR 52) AT UNION STREET (SR 2)

**PROJECT:** Pennsylvania Ave (SR 52) @ Union Street (SR 2) Signal Improvements

### INTERSECTION # 1: PENNSYLVANIA AVENUE (SR 52) AT UNION STREET (SR 2)

<table>
<thead>
<tr>
<th>LINE</th>
<th>ITEM #</th>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION - PREP PROJECT CONTRACTOR ITEMS</th>
<th>UNIT COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>65</td>
<td>265</td>
<td>LF</td>
<td>Furnish &amp; Install 1-conductor #4 AWG Strand Copper</td>
<td>2.30</td>
<td>609.50</td>
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<tr>
<td>2</td>
<td>96</td>
<td>262</td>
<td>LF</td>
<td>Furnish &amp; Install 2-conductor #14 AWG Aluminum Shielded Cable</td>
<td>2.50</td>
<td>625.00</td>
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<tr>
<td>3</td>
<td>95</td>
<td>261</td>
<td>LF</td>
<td>Furnish &amp; Install 4/0.85 wire UF/Ground</td>
<td>4.55</td>
<td>1149.50</td>
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<tr>
<td>4</td>
<td>105</td>
<td>260</td>
<td>LF</td>
<td>Furnish &amp; Install 14/4 Traffic Control Cable</td>
<td>2.50</td>
<td>650.00</td>
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<tr>
<td>5</td>
<td>110</td>
<td>259</td>
<td>LF</td>
<td>Furnish &amp; Install 14/5 Traffic Control Cable</td>
<td>2.65</td>
<td>676.50</td>
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<tr>
<td>6</td>
<td>115</td>
<td>257</td>
<td>LF</td>
<td>Furnish &amp; Install 14/9 Traffic Control Cable</td>
<td>3.20</td>
<td>798.00</td>
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<td>7</td>
<td>120</td>
<td>256</td>
<td>LF</td>
<td>Furnish &amp; Install 14/6 Traffic Control Cable</td>
<td>4.25</td>
<td>1045.00</td>
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<tr>
<td>8</td>
<td>135</td>
<td>251</td>
<td>LF</td>
<td>Furnish &amp; Install Loop Wire 1-conductor #14 AWG encased in 3/4&quot; flexible tubing in a Loop Sawcut</td>
<td>15.00</td>
<td>3750.00</td>
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<tr>
<td>9</td>
<td>140</td>
<td>250</td>
<td>LF</td>
<td>Furnish &amp; Install 1-1/2 inch Galvanized Rigid Metal Conduit Detector Sleeve with Loop Wire</td>
<td>15.00</td>
<td>3750.00</td>
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<tr>
<td>10</td>
<td>155</td>
<td>249</td>
<td>LF</td>
<td>Triplex Splice</td>
<td>200.00</td>
<td>48,000.00</td>
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<td>11</td>
<td>718</td>
<td>248</td>
<td>LF</td>
<td>Arrow Funnels, Type C</td>
<td>45.00</td>
<td>10,800.00</td>
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<td>12</td>
<td>715</td>
<td>247</td>
<td>LF</td>
<td>Furnish &amp; Maintain Portable Changeable Message Board</td>
<td>145.00</td>
<td>34,525.00</td>
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<tr>
<td>13</td>
<td>720</td>
<td>246</td>
<td>LF</td>
<td>Furnish &amp; Maintain Portable Light Assembly (Fixed Lights)</td>
<td>225.00</td>
<td>54,450.00</td>
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<tr>
<td>14</td>
<td>725</td>
<td>245</td>
<td>LF</td>
<td>Plastic Drums</td>
<td>4.00</td>
<td>960.00</td>
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<td>15</td>
<td>730</td>
<td>244</td>
<td>LF</td>
<td>Traffic Officers</td>
<td>75.00</td>
<td>1,800.00</td>
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<td>16</td>
<td>745</td>
<td>243</td>
<td>LF</td>
<td>Temporary Warning Signs and Plaques</td>
<td>18.00</td>
<td>4320.00</td>
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<td>17</td>
<td>750</td>
<td>242</td>
<td>LF</td>
<td>Flagger, New Castle County, State, Overtime</td>
<td>122.00</td>
<td>29,320.00</td>
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<td>18</td>
<td>765</td>
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<td>LF</td>
<td>Temporary Barriques, Type III</td>
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<td>1,500.00</td>
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<td>19</td>
<td>780</td>
<td>240</td>
<td>LF</td>
<td>Temporary Barriques, Type III</td>
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<td>1,500.00</td>
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<td>20</td>
<td>885</td>
<td>229</td>
<td>LF</td>
<td>Furnish &amp; Install Pedestrian Pole - Black Powder Coated</td>
<td>150.00</td>
<td>34,500.00</td>
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<tr>
<td>21</td>
<td>895</td>
<td>228</td>
<td>LF</td>
<td>Installation of Steel Mast Arm Pole with Single Mast Arm Greater than 70'</td>
<td>4500.00</td>
<td>9,450,000.00</td>
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<td>22</td>
<td>970</td>
<td>241</td>
<td>LF</td>
<td>Furnish &amp; Install 12&quot; LED Signal Head Section Rigid Mount</td>
<td>340.00</td>
<td>7,060.00</td>
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<td>23</td>
<td>985</td>
<td>240</td>
<td>LF</td>
<td>Furnish &amp; Install Signal Head Backplate</td>
<td>325.00</td>
<td>8,425.00</td>
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<tr>
<td>24</td>
<td>1000</td>
<td>239</td>
<td>LF</td>
<td>Furnish &amp; Install 2&quot; LED Countdown Pedestrian Signal</td>
<td>650.00</td>
<td>1,675.00</td>
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<td>25</td>
<td>1025</td>
<td>238</td>
<td>LF</td>
<td>Furnish &amp; Install Pedestrian Pushbutton with Sign</td>
<td>250.00</td>
<td>625.00</td>
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<tr>
<td>26</td>
<td>1135</td>
<td>237</td>
<td>LF</td>
<td>Install Overhead Sign</td>
<td>300.00</td>
<td>600.00</td>
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</tbody>
</table>

**TOTAL TRAFFIC CONTRACTOR ITEMS** → 13,629.00

### TOTAL TRAFFIC SUPPLIES

<table>
<thead>
<tr>
<th>LINE</th>
<th>ITEM #</th>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION - TRAFFIC SUPPLY ITEMS</th>
<th>UNIT COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2180</td>
<td>1</td>
<td>EA</td>
<td>Steel Round Mast Arm Pole, TYPE C/70' - Black Powder Coated</td>
<td>10885.68</td>
<td>10885.68</td>
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<tr>
<td>2</td>
<td>2250</td>
<td>1</td>
<td>EA</td>
<td>90' [27.4m] Steel Round Mast Arm - Black Powder Coated</td>
<td>19848.40</td>
<td>19848.40</td>
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<tr>
<td>3</td>
<td>2431</td>
<td>1</td>
<td>EA</td>
<td>Reusable Sign Brackets (2 per average sign, 3 per larger sign)</td>
<td>115.00</td>
<td>690.00</td>
</tr>
</tbody>
</table>

**TOTAL TRAFFIC SUPPLIES** → 31,294.08

### TOTAL CONTRACT COST (DelDOT Traffic Funding)

| TOTAL CONTRACT COST (DelDOT Traffic Funding) | 180,915.00 |

| WRA Design Fee (GOW Task) | 49,990.00 |

**TOTAL COST** → 230,905.00
Pennsylvania Avenue (SR 52) at Union Street (SR 2) South Leg

"Phase 1" Improvements - Traffic Signal Only
### Division 200 - Earthwork
- **Clearing and Grubbing**
  - Quantity: 1 LS
  - Unit Price: $5,000.00
  - Total Cost: $5,000.00
- **Excavation and Embankment**
  - Quantity: 300 CY
  - Unit Price: $40.00
  - Total Cost: $12,000.00
- **Borrow, Type F**
  - Quantity: 100 CY
  - Unit Price: $5,000.00
  - Total Cost: $5,000.00
- **Removal of Structures and Obstructions**
  - Quantity: 1 LS
  - Unit Price: $5,000.00
  - Total Cost: $5,000.00
- **Removal Of Portland Cement Concrete Pavement, Curb And Sidewalk**
  - Quantity: 540 SY
  - Unit Price: $25.00
  - Total Cost: $13,500.00

### Division 300 - Bases
- **Graded Aggregate Base Course, Type B, Patching**
  - Quantity: 50 CY
  - Unit Price: $100.00
  - Total Cost: $5,000.00

### Division 400 - Bituminous Materials
- **Superpave Type C, PG 64-22 (Carbonate Stone)**
  - Quantity: 581 TON
  - Unit Price: $210.00
  - Total Cost: $122,010.00
- **Superpave Type B, PG 64-22, Patching**
  - Quantity: 39 TON
  - Unit Price: $210.00
  - Total Cost: $8,190.00
- **Superpave Type BCBC, PG64-22, Patching**
  - Quantity: 51 TON
  - Unit Price: $210.00
  - Total Cost: $10,710.00

### Division 600 - Structures
- **Reinforced Concrete Pipe, 24", Class IV**
  - Quantity: 150 LF
  - Unit Price: $150.00
  - Total Cost: $22,500.00
- **Drainage Inlet, 72"x24"**
  - Quantity: 3 EA
  - Unit Price: $5,000.00
  - Total Cost: $15,000.00
- **Adjusting and Repairing Existing Drainage Inlet**
  - Quantity: 5 EA
  - Unit Price: $5,000.00
  - Total Cost: $7,500.00
- **Convert Existing Catch Basin to Manhole**
  - Quantity: 1 EA
  - Unit Price: $2,000.00
  - Total Cost: $2,000.00
- **Modular Block Retaining Walls**
  - Quantity: 200 SF
  - Unit Price: $160.00
  - Total Cost: $32,000.00

### Division 700 - Miscellaneous Construction
- **P.C.C. Curb 1-6**
  - Quantity: 850 LF
  - Unit Price: $32.00
  - Total Cost: $27,200.00
- **P.C.C. Sidewalk, 4"**
  - Quantity: 2,530 SF
  - Unit Price: $10.00
  - Total Cost: $25,300.00
- **P.C.C. Sidewalk, 6"**
  - Quantity: 2,885 SF
  - Unit Price: $14.00
  - Total Cost: $39,970.00
- **Pedestrian Connection**
  - Quantity: 1,518 SF
  - Unit Price: $35.00
  - Total Cost: $53,130.00
- **Pavement Milling, Bituminous Concrete Pavement**
  - Quantity: 1000 SY-IN
  - Unit Price: $3.00
  - Total Cost: $30,000.00
- **Saw Cutting, Bituminous Concrete**
  - Quantity: 1100 LF
  - Unit Price: $4.00
  - Total Cost: $4,400.00
- **Saw Cutting, Concrete, Full Depth**
  - Quantity: 140 LF
  - Unit Price: $8.00
  - Total Cost: $1,120.00
- **Initial Expense/De-Mobilization**
  - Quantity: 1 LS
  - Unit Price: $60,000.00
  - Total Cost: $60,000.00
- **Utility Construction Engineering**
  - Quantity: 40 HR
  - Unit Price: $175.00
  - Total Cost: $7,000.00
- **Adjust Existing Utilities**
  - Quantity: 1 EA
  - Unit Price: $25,000.00
  - Total Cost: $25,000.00

### Division 800 - Traffic
- **Maintenance of Traffic**
  - Quantity: 1 LS
  - Unit Price: $160,000.00
  - Total Cost: $160,000.00
- **Relocate Existing Light Standard**
  - Quantity: 4 EA
  - Unit Price: $4,000.00
  - Total Cost: $16,000.00
- **Embedded sidewalk lighting**
  - Quantity: 1 LS
  - Unit Price: $30,000.00
  - Total Cost: $30,000.00
- **Signing and Marking**
  - Quantity: 1 LS
  - Unit Price: $15,000.00
  - Total Cost: $15,000.00

### Division 900 - Erosion, Sediment, and Stormwater Measures
- **Topsoil, 6" Depth**
  - Quantity: 140 SY
  - Unit Price: $10.00
  - Total Cost: $1,400.00
- **Permanent Grass Seeding, Subdivision**
  - Quantity: 140 SY
  - Unit Price: $2.00
  - Total Cost: $280.00
- **Plantings**
  - Quantity: 1 LS
  - Unit Price: $10,000.00
  - Total Cost: $10,000.00

**SUB-TOTAL (CONSTRUCTION)**: $788,030.00

**Construction contingency (30%)**: $236,000.00

**TOTAL**: $1,174,030.00
Penn Ave/Union Street Phase 2 ADA Improvements - Quantity Calcs
See 32160-00/CADD/Highway/Working/wk_Alt 1 quantites_Phase 2_KOC.dgn

Drainage Assumptions:
- 150 LF of 24” RCP
- 300 SF patching area
- (3) 72”x48” drainage inlets (add new inlet to improve ex. drainage issue)
- 21,100.1 for removal of 2 existing inlets
- 200’ of saw cutting hot mix
- Adjust/Repair 3 existing inlets
- Adjust/Repair 5 existing manholes

Drainage Assumptions:
- 150 LF of 24” RCP
- 300 SF patching area
- (3) 72”x48” drainage inlets (add new inlet to improve ex. drainage issue)
- 21,100.1 for removal of 2 existing inlets
- 200’ of saw cutting hot mix
- Adjust/Repair 3 existing inlets
- Adjust/Repair 5 existing manholes
Concept Design
Alternative 1: Union Street & Pennsylvania Avenue Medians

LEGEND:
- Existing sidewalk
- Reconstructed / new sidewalk
- Proposed landscaping
- Proposed striping (green linework or outline)