| Hole State Process and state of the state of th       | SCC Code SCC Item Name  | Unit  | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG | COST -<br>WOR-BOS  | COST -<br>SPG-WOR | COST -<br>PIT-SPG | TOTAL COST -<br>PIT - BOS |  |
|---|---|-------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------|-------------------|-------------------|---------------------------|--|
| Hash shake decomposingImage   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 111 <th< td=""><td></td><td>mi</td><td>\$463,500</td><td>0.0</td><td>17.3</td><td>0.0</td><td>\$0</td><td>\$8,030,050</td><td>\$0</td><td></td><td>Length of track improvements divided in half for i</td></th<>  |   | mi    | \$463,500             | 0.0                   | 17.3                  | 0.0                   | \$0                | \$8,030,050       | \$0               |                           | Length of track improvements divided in half for i |
| Image   |   |       |                       |                       |                       |                       |                    |                   |                   |                           | -  |
| Image is a start of the sta | · · ·   | mi    | \$369 811 200         | 0.0                   | 1.0                   | 0.0                   | \$0                | \$371 212 000     | \$0               |                           | current undergrade bridges (does not include tra   |
| Image: Problem in the set of the set o | •   |       | \$000,011,200         | 0.0                   |                       | 0.0                   | <u> </u>           | ¢011,212,000      | Ç.                |                           |  |
| 1110     Outrow January do 10 <sup>+</sup> Image of the sector  | 10.06 Guideway: Underground cut & cover                                     |       |                       |                       |                       |                       |                    |                   |                   | \$0                       |  |
| No. Bits JudieNo. Base JudieNo. Ba  | · · ·   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| In b. LuchadeIn A. BuchadeIn A.   | · · · · · · · · · · · · · · · · · · ·                                       |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 0.11     The length     The BRUND     0.1     C     0.3     KC     0.4     KC     0.4   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 11.11 rds. kd graph   |   | mi    | \$2 678 000           | 0.0                   | 35.7                  | 0.0                   | \$0                | \$95 479 830      | \$0               |                           | single track                                       |
| Line late interfaceLine late into the set of the se          |   |       | \$2,010,000           | 0.0                   |                       | 0.0                   | Ψ°                 | <i>\\</i>         | <u> </u>          |                           | Assumed realignment of tracks along curvature to   |
| Box<br>5000Strature, Strature, Strature, Large Large Large<br>1000III </td <td></td> <td>, , , , , , , , , , , , , , , , , , ,</td>   |   |       |                       |                       |                       |                       |                    |                   |                   |                           | , , , , , , , , , , , , , , , , , , ,              |
| 201         Acade Jaka, may Jaka,                 | 10.13 Track: Vibration and noise dampening                                  |       |                       |                       |                       |                       |                    |                   |                   | \$0                       | ]  |
| Number of sectors of        |   |       |                       |                       | 1                     |                       |                    |                   |                   |                           |  |
| 0000         Abal adarb         Image   |   | ea    | \$12,360,000          | 0                     | 1                     | 0                     | \$0                | \$12,360,000      | \$0               |                           | Palmer Station                                     |
| Bit of Adverted in support of a function of a fun       |   |       |                       |                       |                       |                       |                    |                   |                   |                           | •  |
| 0.000     bioply and adds, bale, unit funct justors     0 <td></td>   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| ability         Deer discost         Bility  |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| Base         Base         Image         I   | 20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc. | ea    |                       | 0                     | 0                     | 3                     | \$0                | \$0               | \$9,012,500       | \$9,012,500               | \$8.5 M for Blandford, \$250k for Lee              |
| 31.07       60       60       60       60       61       60       61       60  | 20.05 Joint development   |       |                       |                       |                       |                       |                    |                   |                   | \$0                       |  |
| Base         Specify PACLIFES, VADDS, SubOPB, ADUP, BLODS         I   |   |       |                       |                       | ļ                     |                       |                    |                   |                   |                           |  |
| 30.00         Maintension-Judy market storage, more scorating market in large                 |   | ea    |                       |                       |                       |                       | <b>AF</b> 450 000  | 640.000.000       | <u>^</u>          |                           | Pedestrian Bridge for Blandford Bus Station, Inclu |
| Jung Light Matheman / Safety         Image Mat  |   |       |                       | 0.0                   | 35.7                  | 0.0                   | \$5,150,000        | \$13,390,000      | \$0               |                           | 4  |
| Model         Model <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>  |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| bit         bit<         bit<         bit<         bit<   | · · ·   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 4400         5TTP: ORK & SPECIAL CONDITIONS         1         0         0.0         3400         5440.87,71         100         5490.87,71         100         5490.87,71         100         5490.87,71         100         5490.87,71         100         5490.87,71         100         550.86        550.86   |   | ea    | \$13,390,000          | 0                     | 1                     | 0                     | \$0                | \$13,390,000      | \$0               |                           | Proposed Layover Facility - Springfield            |
| 40     6     10 <t< td=""><td>30.05 Yard and Yard Track</td><td>Track</td><td>\$2,575,000</td><td>2</td><td>0</td><td>0</td><td>\$5,150,000</td><td>\$0</td><td>\$0</td><td>\$5,150,000</td><td>Proposed Layover Facility Mod - Boston - Assume</td></t<>   | 30.05 Yard and Yard Track   | Track | \$2,575,000           | 2                     | 0                     | 0                     | \$5,150,000        | \$0               | \$0               | \$5,150,000               | Proposed Layover Facility Mod - Boston - Assume    |
| 44.025050.050   |   |       |                       | 0.0                   | 35.7                  | 0.0                   | \$0                | \$449,655,751     | \$0               |                           |  |
| 40.0       More mand contraining one grand material m                        |   |       | A0 (57 000            |                       |                       |                       | <b>*</b>           | 0000.010.050      | ••                |                           |  |
| 40.0       Environment in Riggion e.g. wellow, buttopic parks       97       814       0       14.7       0       100       1255       100       5265,444       Number of the set   | -   | mi    | \$8,157,600           | 0.0                   | 35.7                  | 0.0                   | \$0                | \$290,846,250     | \$0               |                           | Assume \$1500/ft (Urban)                           |
| 440.0       58b       441       0       476.22       0       500.352.38       10       500.352.38       Atom 24% of belie length of proposed to a statuse accounted by indications and accounted by indications a  | · · · · · · · · · · · · · · · · · · ·                                       | SE    | \$14                  | 0                     | 18 771                | 0                     | \$0                | \$265 464         | \$0               |                           | Wetlands only. Does not include impacts to open    |
| 4000       Newstain       100       100       4000       000       48000          |   |       |                       |                       |                       |                       |                    |                   |                   |                           | Assume 25% of total length of proposed track - as  |
| 40.00         Tempory Facilities and other indirect costs during construction         1   |   |       |                       | -                     |                       |                       |                    |                   |                   |                           |  |
| 6.0.0         SYSTEMS         I <thi< th="">         I         I         <thi< td=""><td>40.07 Automobile, bus, van accessways including roads, parking lots</td><td>SF</td><td>\$2,879</td><td>0</td><td>48,000</td><td>0</td><td>\$0</td><td>\$138,184,800</td><td>\$0</td><td>\$138,184,800</td><td>Overhead roadway bridge, SF of superstructure to</td></thi<></thi<>  | 40.07 Automobile, bus, van accessways including roads, parking lots         | SF    | \$2,879               | 0                     | 48,000                | 0                     | \$0                | \$138,184,800     | \$0               | \$138,184,800             | Overhead roadway bridge, SF of superstructure to   |
| 01       Train control and synahe       I<  | · · ·   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 60.02         Traffic signals and clossing protection, power subject stations         Image: station station power subject stations         Image: station station power subject stations         Sol   |   |       |                       | 0.0                   | 35.7                  | 0.0                   | \$175,100          | \$27,804,909      | \$0               |                           |  |
| 90.3         Tracking jower stabilities         1         Image         Image<  | -   |       |                       |                       |                       |                       |                    |                   |                   |                           | -  |
| 4 Trading poor distribution: calemy and third mail         Im         Im <thim< th="">         Im         <thim< th="">         &lt;</thim<></thim<>   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 60.0 Communications         mi         9772200         0.0         35.7         0.0         90         927.942.290         90         523.72.291         For each rail station           60.0 7         Central Centrol         887.550         2         3         0         \$57.100         \$582.200         \$50         \$534.723         \$50         \$534.723         \$50         \$534.723         \$50         \$534.7355         \$534.2753         \$534.7555   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 50.0°         Central Central         Image: Central Central Central (0+50)         Image: Central Central Central Central (0+50)         Sector (0+50)<  |   | mi    | \$772,500             | 0.0                   | 35.7                  | 0.0                   | \$0                | \$27,542,259      | \$0               | \$27,542,259              |  |
| 10-50.5UB Construction Subtola (19-50)       -  | 50.06 Fare collection system and equipment                                  | ea    | \$87,550              | 2                     | 3                     | 0                     | \$175,100          | \$262,650         | \$0               |                           | 1 for each rail station                            |
| 10-50.0KT Construction Contingency (id. 50) 35%,       35%,       1       1       6       1       6       5       5342,275,389       53,164,376       5347,249,646,85         10-50.0T Construction Contingency (id. 50) 35%,       0       50       57,128,080,27       51,219,731       50       51,219,731 <td></td> <td>CSX dispatches west of Worcester</td>   |   |       |                       |                       |                       |                       |                    |                   |                   |                           | CSX dispatches west of Worcester                   |
| 10-50 TO Construction Total       Image: Construction Total       Imag  |   |       | 05%                   | 0.0                   | 35.7                  | 0.0                   |                    |                   |                   |                           |  |
| 60.00         ROW, LAND, EXISTING IMPROVEMENTS         0.0         35.7         0.0         50         \$12,197,731         50         \$12,197,731         Regardless of usership, square footage w<br>equisitions]           60.01         Purchase or lease of rise lestede         of         \$22.77         0         5,382,935         0         \$0         \$12,197,731         \$00         \$12,197,731         Regardless of ownership, square footage w<br>equisitions]           70.00         VEHICLES (number)         6               Regardless of isal (19,731         \$00         \$12,197,731         Regardless of ownership, square footage w<br>equisitions]           70.00         VEHICLES (number)         6                 Regardless of ownership, square footage w<br>equisitions]                       Regardless of ownership, square footage w<br>equisitions]             S00           S00          S12,197,731         S00         S1,133,000           S1,133,000         S12,197,731 <td< td=""><td><b>0 3 ( )</b></td><td></td><td>35%</td><td></td><td></td><td></td><td></td><td>1. 1</td><td></td><td></td><td></td></td<>  | <b>0 3 ( )</b>  |       | 35%                   |                       |                       |                       |                    | 1. 1              |                   |                           |  |
| 00.11         Purchase or lease of real estate         of         S2.27         0         5,382,935         0         80         \$12,197,731         S0         \$12,197,731         Regardless of ownership, square footage were for stating households and businesses         Regardless of ownership, square footage were for stating households and businesses         900         \$12,197,731         Regardless of ownership, square footage were for stating households and businesses         Regardless of ownership, square footage were for stating households and businesses         S12,197,731         Regardless of ownership, square footage were for stating households and businesses         Regardless of ownership, square footage were for stating households and businesses         S12,197,731         Regardless of ownership, square footage were for stating households and businesses         S12,197,731         Regardless of ownership, square footage were for stating households and businesses         S12,197,731         Regardless of ownership, square footage were for stating households and businesses           70.00         VEHALSE for were for stating households and businesses         6           S20,909,000           70.01         Signa parts         es         \$4,120,000         3          \$1,133,000         \$1,133,000           70.05         Non-revenue vehicles         \$7,416,000         \$2,156,666         \$396,062,678,22         \$3,680,063         \$40,89,89           80.0         PRO  |   |       |                       | 0.0                   | 35.7                  | 0.0                   |                    |                   |                   |                           |  |
| 60.2         Relocation of existing households and businesses         Image: model of existing households and businese         Image: model of existing househol   |   | sf    | \$2.27                |                       |                       |                       |                    |                   |                   |                           | Regardless of ownership, square footage was cal    |
| T0.00         VEHICLES (number)         6         6         520,999,000         \$20,999,000           70.01         Light Rail   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| Yo11       Light Rail       Image       Image       Image       S0         70.02       Heavy Rail       Image       Image       Image       S0         70.03       Commuter Rail (BiLevel Coaches)       ea       \$4,120,000       3       Image       \$12,360,000         70.04       Bus       ea       \$56,6500       2       Image       \$1,33,000       \$1,33,000         70.05       Other (Locondves)       ea       \$56,6500       2       Image       \$1,33,000       \$1,33,000         70.05       Other (Locondves)       ea       \$56,6500       2       Image       \$1,33,000       \$1,33,000         70.05       Non-revnue vehicles       Image       Image       Image       \$1       Image       \$1,33,000         70.07       Spare parts       Image       Image       Image       Image       \$1       Image       \$1         80.00       Project Development       Image       Image       Image       Image       \$1       Image       \$1       Image       \$1       \$1       \$1       Image  | -   |       |                       |                       |                       |                       |                    |                   |                   |                           | 1  |
| Total       Hawy Rail       Image   |   |       |                       | 6                     |                       |                       |                    | \$20,909,000      |                   |                           | 4  |
| 70.03       Commuter Rail (Bi-Level Coaches)       ea       \$4.120.000       3       Image: Commuter Rail (Bi-Level Coaches)       \$12,360,000         70.4       Bus       ea       \$66,600       2       image: Commuter Rail (Bi-Level Coaches)       \$1,133,000       \$1,133,000         70.65       Other (Locomblyes)       ea       \$\$7,416,000       1       image: Commuter Rail (Ri-Level Coaches)       \$7,416,000         70.05       Non-revenue vehicles       image: Commuter Rail (Ri-Level Coaches)       \$7,416,000       \$7,416,000       \$7,416,000         70.05       Spare parts       image: Commuter Rail (Ri-Level Coaches)       \$7,416,000       \$7,416,000       \$0         80.00       PROFESSIONAL SERVICES (applies to Cats. 10-50)       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678.22       \$3,650,063       \$401,869,406         80.01       Project Management for Design and Construction       image: Commuter Rail (Ri-Level Coaches, cites, etc.)       image: Commuter Rail (Ri-Level Coaches, cites, etc.)       \$0       \$0         80.05       Professional Liability and other Non-Construction Insurance       image: Commuter Rail (Ri-Level Coaches, cites, etc.)       \$0       \$0         80.07       Surveys, Testing, Investigation, Inspection       image: Commuter Rail (Ri-Level Coaches, Sint (Ri-Level Coaches, Sint (Ri-Level C  |   |       |                       |                       | +                     |                       |                    |                   |                   |                           | 4  |
| 70.4       Bus       ea       \$566,500       2       1       \$1,133,000         70.6       Other (Locomotives)       ea       \$7,416,000       1       \$7,416,000       \$7,416,000         70.0       Non-revenue vehicles       50         70.07       Spare parts       50       50         80.00       PROFESSIONAL SERVICES (applies to Cats. 10-50)       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678,22       \$3,650,063       \$401,689,406         80.01       Project Development       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678,22       \$3,650,063       \$401,689,406         80.02       Engineering       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678,22       \$3,650,063       \$401,689,406         80.02       Engineering       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678,22       \$3,650,063       \$401,689,406         80.03       Construction Administration & Management       2       2       2       2       2       50         80.04       Construction Administration & Management       2       2       2       2       2       2       2       2  | •   | 69    | \$4 120 000           | 3                     |                       |                       |                    | \$12 360 000      |                   |                           | 1  |
| 70.05       Other (Locomotives)       ea       \$7,416,000       1       Image: Construction System Sy   | · · · · · · · · · · · · · · · · · · ·                                       |       |                       |                       |                       |                       |                    |                   |                   |                           | 1  |
| 70.06       Non-revenue vehicles       1       1       1       50         70.07       Spare parts       0       0       35.7       0.0       \$2,156,666       \$396,062,678.22       \$3,650,063       \$40,059,066         80.00       PROFESSIONAL SERVICES (applies to Cats. 10-50)       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678.22       \$3,650,063       \$40,059,066         80.01       Project Development       0       0       0       0       \$0       \$0         80.02       Engineering       0       0       0       0       \$0       \$0         80.02       Construction Administration & Management       0       0       0       \$0       \$0         80.03       Professional Liability and other Non-Construction Insurance       0       0       0       \$0       \$0         80.05       Professional Liability and other Non-Construction Insurance       0       0       0       \$0         80.06       Legal; Permits; Review Fees by other agencies, etics, etc.       0       0       0       \$0         80.07       Surveys, Testing, Investigation, Inspection       0       0       0       \$0       \$0         80.08       Start up <t< td=""><td></td><td></td><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td>1</td></t<>  |   |       |                       |                       | 1                     |                       |                    |                   |                   |                           | 1  |
| 80.00       PROFESSIONAL SERVICES (applies to Cats. 10-50)       30%       0.0       35.7       0.0       \$2,156,666       \$396,062,678.22       \$3,650,063       \$401,869,406         80.01       Project Development       Image: Construction and Construction       Image: Construction administration & Management       Image: Construction administration & Manag  |   |       |                       |                       |                       |                       |                    |                   |                   |                           | ]  |
| 80.01       Project Development       Image: Construction of the sign and Construction       Image: Construction of the sign and Construction       Image: Construction of the sign and Construction insurance       Image: Construction of the sign and construction of the sign and construction insurance       Image: Construction of the sign and constructin and construction of   |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 80.02EngineeringImage <td></td> <td></td> <td>30%</td> <td>0.0</td> <td>35.7</td> <td>0.0</td> <td>\$2,156,666</td> <td>\$396,062,678.22</td> <td>\$3,650,063</td> <td></td> <td>4</td>   |   |       | 30%                   | 0.0                   | 35.7                  | 0.0                   | \$2,156,666        | \$396,062,678.22  | \$3,650,063       |                           | 4  |
| 80.03Project Management for Design and ConstructionImage of the sector of the se                  |   |       |                       | L                     |                       |                       |                    |                   |                   |                           | 4  |
| 80.04Construction Administration & ManagementImage: Construction InsuranceSolutionSolutionSolutionSolutionSolution80.05Professional Liability and other Non-Construction InsuranceImage: Construction InsuranceImage: Construction InsuranceSolutionSolution80.06Legal; Permits; Review Fees by other agencies, cities, etc.Image: Construction InsuranceImage: Construction InsuranceSolutionSolution80.07Surveys, Testing, Investigation, InspectionImage: Construction InsuranceImage: Construction InsuranceSolutionSolution80.08Start upImage: Construction InsuranceImage: Construction InsuranceSolutionSolutionSolution10-80.SUB Subtotal (10-80)Image: Construction InsuranceImage: Construction InsuranceSolutionSolutionSolution90.00UNALLOCATED CONTINGENCYImage: Construction InsuranceSolutionSolutionSolutionSolution10-90.SUB Subtotal (10-90)Image: Construction InsuranceSolutionSolutionSolutionSolution100.00FINANCE CHARGESImage: Construction InsuranceSolutionSolutionSolution100.00FINANCE CHARGESImage: Construction InsuranceSolutionSolution   |   |       |                       |                       |                       |                       |                    |                   |                   |                           | 1  |
| 80.05       Professional Liability and other Non-Construction Insurance       Image: Construction Insurance   |   |       |                       |                       | +                     |                       |                    |                   |                   |                           | 1  |
| 80.6 Lega; Permits; Review Fees by other agencies, etics, etc.       Image: Control of the control of                        | · · · · · · · · · · · · · · · · · · ·                                       |       |                       |                       | 1                     | 1                     |                    |                   |                   |                           | 1  |
| 80.07         Surveys, Testing, Investigation, Inspection         Image: Constraint of the system         Sold         Surveys, Testing, Investigation, Inspection         Sold  | •   |       |                       |                       |                       |                       |                    |                   |                   |                           | 1  |
| 10-80.SUB Subtotal (10 - 80)       0       0.0       35.7       0.0       \$9,345,551       \$1,749,378,336       \$15,816,938       \$1,774,540,824         90.00 UNALLOCATED CONTINGENCY       10%       0       \$934,555       \$174,937,834       \$1,581,694       \$17,745,0824         10-90.SUB Subtotal (10 - 90)       0       0.0       35.7       0.0       \$10,280,106       \$1,924,316,170       \$17,398,631       \$1,951,994,907         100.00 FINANCE CHARGES       0       0       0       0       0       \$0       \$0   |   |       |                       |                       |                       |                       |                    |                   |                   | \$0                       | ]  |
| 90.00         UNALLOCATED CONTINGENCY         10%         \$1,934,555         \$174,937,834         \$1,581,694         \$177,454,082           10-90.SUB Subtotal (10 - 90)         0.0         35.7         0.0         \$10,280,106         \$1,924,316,170         \$17,398,631         \$1,951,994,907           100.00         FINANCE CHARGES         0         0         0         0         \$0         \$0  |   |       |                       |                       |                       |                       |                    |                   |                   |                           |  |
| 10-90.SUB Subtotal (10 - 90)         0.0         35.7         0.0         \$10,280,106         \$1,924,316,170         \$17,398,631         \$1,951,994,907           100.00 FINANCE CHARGES         0         0         0         0         \$0         \$0  |   |       | 4000                  | 0.0                   | 35.7                  | 0.0                   |                    |                   |                   |                           | 4  |
| 100.00 FINANCE CHARGES \$0  |   |       | 10%                   | 0.0                   | 95.7                  | 0.0                   |                    |                   |                   |                           | 4  |
|   |   |       |                       | 0.0                   | 35./                  | 0.0                   | <b>⊅10,280,106</b> | \$1,924,316,170   | \$17,398,631      |                           |  |
| UUU 350.7 UUU 310.280.106 \$1.924.316.170 \$17.398.631 1 51.551.594.907   | 10-100.TOT Total Project Cost (10 - 100)                                    |       |                       | 0.0                   | 35.7                  | 0.0                   | \$10,280,106       | \$1,924,316,170   | \$17,398,631      | \$1,951,994,907           |  |

or improvements to half the ROW, minor improvements to ROW to add second track

track)

e to increase allowable speed

ncluded within 20.04

ume 2 tracks on an existing yard

en water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. - assume 10ft height

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area permanently impacted by improvements (i.e., assumes only partial

| SCC Code            | SCC Item Name  | Unit     | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG                 | COST -<br>WOR-BOS                       | COST -<br>SPG-WOR                        | COST -<br>PIT-SPG                            | TOTAL COST -<br>PIT - BOS     |   |
|---------------------|--|----------|-----------------------|-----------------------|-----------------------|---------------------------------------|---|--|--|-------------------------------|---|
|                     | GUIDEWAY & TRACK ELEMENTS (route miles)  | mi       |                       | 0.0                   | 35.7                  | 0.0                                   | \$0                                     | \$474,721,879                            | \$0  | \$474,721,879                 |   |
|                     | Guideway: At-grade exclusive right-of-way  | mi       | \$463,500             | 0.0                   | 17.3                  | 0.0                                   | \$0                                     | \$8,030,050                              | \$0  | \$8,030,050                   | Length of track improvements divided in half for in |
|                     | Guideway: At-grade semi-exclusive (allows cross-traffic)   |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | -   |
|                     | Guideway: At-grade in mixed traffic<br>Guideway: Aerial structure  | mi       | \$369,811,200         | 0.0                   | 1.0                   | 0.0                                   | \$0                                     | \$371,212,000                            | \$0  | \$0<br>\$371,212,000          | current undergrade bridges (does not include trac   |
|                     | Guideway: Built-up fill  |          | \$000,011,200         | 0.0                   |                       | 0.0                                   | Ç.                                      | ¢011,212,000                             |  | \$0                           |   |
| 10.06               | Guideway: Underground cut & cover  |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Guideway: Underground tunnel   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Guideway: Retained cut or fill   |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | -   |
|                     | Track: Direct fixation<br>Track: Embedded  |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | -   |
|                     | Track: Ballasted   | mi       | \$2,678,000           | 0.0                   | 35.7                  | 0.0                                   | \$0                                     | \$95,479,830                             | \$0  | \$95,479,830                  | single track  |
| 10.11a              | Track: Realigned   |          |                       |                       |                       |                                       |   |  |  | \$0                           | Assumed realignment of tracks along curvature to    |
|                     | Track: Special (switches, turnouts)  |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Track: Vibration and noise dampening   |          |                       |                       |                       |                                       | <b>60</b>                               | ¢40.000.000                              | ¢0.040.500                                   | \$0                           | -   |
|                     | STATIONS, STOPS, TERMINALS, INTERMODAL (number)<br>At-grade station, stop, shelter, mall, terminal, platform                       | ea       | \$12,360,000          | 0                     | 1                     | <b>3</b>                              | <b>\$0</b><br>\$0                       | \$12,360,000<br>\$12,360,000             | \$9,012,500<br>\$0                           | \$21,372,500<br>\$12,360,000  | Palmer Station                                      |
|                     | At-grade station, stop, sheller, mail, terminal, platform  | ca       | φ12,300,000           | 0                     | 1                     | 0                                     | ψυ                                      | \$12,300,000                             | ψυ   | \$12,300,000                  |   |
|                     | Aerial station, stop, shelter, mall, terminal, platform  |          |                       |                       |                       |                                       |   |  |  | \$0                           | 1   |
| 20.02a              | Aerial station improvements to an existing station   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Underground station, stop, shelter, mall, terminal, platform   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Other stations, landings, terminals: Intermodal, ferry, trolley, etc.  | ea       |                       | 0                     | 0                     | 3                                     | \$0                                     | \$0                                      | \$9,012,500                                  | \$9,012,500                   | \$8.5 M for Blandford, \$250k for Lee               |
|                     | Joint development  | -        |                       |                       |                       |                                       |   |  |  | \$0<br>¢0                     | -   |
|                     | Automobile parking multi-story structure<br>Elevators, escalators  | ea       |                       | 0                     | 0                     | 1                                     |   |  |  | \$0<br>\$0                    | Pedestrian Bridge for Blandford Bus Station, Inclu  |
|                     | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS   | ca       |                       | 0.0                   | 35.7                  | 0.0                                   | \$5,150,000                             | \$13,390,000                             | \$0  | \$0<br>\$18,540,000           |   |
|                     | Administration Building: Office, sales, storage, revenue counting  |          |                       |                       |                       |                                       | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | ,  |  | \$0                           | 1   |
| 30.02               | Light Maintenance Facility   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Heavy Maintenance Facility   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Storage or Maintenance of Way Building   | ea       | \$13,390,000          | 0                     | 1                     | 0                                     | \$0                                     | \$13,390,000                             | \$0  | \$13,390,000                  | Proposed Layover Facility - Springfield             |
|                     |  | Track    | \$2,575,000           | 2                     | 0                     | 0                                     | \$5,150,000                             | \$0                                      | \$0  | \$5,150,000<br>\$449,655,751  | Proposed Layover Facility Mod - Boston - Assume     |
|                     | SITEWORK & SPECIAL CONDITIONS<br>Demolition, Clearing, Earthwork   |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$0                                     | \$449,655,751                            | \$0  | \$0                           | -   |
|                     | Site Utilities, Utility Relocation   | mi       | \$8,157,600           | 0.0                   | 35.7                  | 0.0                                   | \$0                                     | \$290,846,250                            | \$0  | \$290,846,250                 | Assume \$1500/ft (Urban)                            |
|                     | Haz. mat'l, contam'd soil removal/mitigation, ground water treatments  |          |                       |                       |                       |                                       |   |  | · · · · ·                                    | \$0                           |   |
| 40.04               | Environmental mitigation, e.g. wetlands, historic/archeologic, parks   | SF       | \$14                  | 0                     | 18,771                | 0                                     | \$0                                     | \$265,464                                | \$0  | \$265,464                     | Wetlands only. Does not include impacts to open v   |
|                     | Site structures including retaining walls, sound walls   | SF       | \$43                  | 0                     | 470,625               | 0                                     | \$0                                     | \$20,359,238                             | \$0  | \$20,359,238                  | Assume 25% of total length of proposed track - as   |
|                     | Pedestrian / bike access and accommodation, landscaping  | 05       | ¢0.070                | 0                     | 40.000                | 0                                     | <b>¢</b> 0                              | ¢420,404,000                             | ¢0   | \$0                           |   |
|                     | Automobile, bus, van accessways including roads, parking lots<br>Temporary Facilities and other indirect costs during construction | SF       | \$2,879               | 0                     | 48,000                | 0                                     | \$0                                     | \$138,184,800                            | \$0  | \$138,184,800<br>\$0          | Overhead roadway bridge, SF of superstructure to    |
|                     | SYSTEMS  |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$175,100                               | \$27,804,909                             | \$0  | \$27,980,009                  |   |
|                     | Train control and signals  |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
| 50.02               | Traffic signals and crossing protection  |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Traction power supply: substations   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Traction power distribution: catenary and third rail<br>Communications   |          | ¢770 500              | 0.0                   | 25.7                  | 0.0                                   | <b>¢</b> 0                              | ¢07.540.050                              | ¢0   | \$0                           | -   |
|                     | Fare collection system and equipment   | mi<br>ea | \$772,500<br>\$87,550 | 0.0                   | 35.7<br>3             | 0.0                                   | \$0<br>\$175,100                        | \$27,542,259<br>\$262,650                | \$0<br>\$0                                   | \$27,542,259<br>\$437,750     | 1 for each rail station                             |
|                     | Central Control  | ou       | \$01,000              |                       |                       | , , , , , , , , , , , , , , , , , , , | ¢110,100                                | \$202,000                                |  | \$0                           | CSX dispatches west of Worcester                    |
|                     | Construction Subtotal (10-50)  |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$5,325,100                             | \$977,932,539                            | \$9,012,500                                  | \$992,270,139                 | 9   |
|                     | Construction Contingency (10 - 50) 35%   |          | 35%                   |                       |                       |                                       | \$1,863,785                             | \$342,276,389                            | \$3,154,375                                  | \$347,294,548.58              | 3   |
| 10-50.TOT           | Construction Total   |          |                       |                       |                       |                                       | \$7,188,885                             | \$1,320,208,927                          | \$12,166,875                                 | \$1,339,564,687               | 7   |
|                     | ROW, LAND, EXISTING IMPROVEMENTS   |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$0                                     | \$12,197,731                             | \$0  | \$12,197,731                  |   |
| 60.01               | Purchase or lease of real estate   | sf       | \$2.27                | 0.0                   | 5,382,935             | 0                                     | \$0                                     | \$12,197,731                             | \$0  | \$12,197,731                  | Regardless of ownership, square footage was cald    |
| 60.02               | Relocation of existing households and businesses   |          |                       |                       |                       |                                       |   |  |  |                               | acquisitions)                                       |
|                     | VEHICLES (number)  |          |                       |                       | 29                    |                                       |   | \$142,397,500                            |  | \$142,397,500                 | -   |
|                     | Light Rail   |          |                       |                       | 20                    |                                       |   | <i><i><i>q</i>1<i>q</i>2,007,000</i></i> |  | \$0                           |   |
|                     | Heavy Rail   |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
| 70.03               | Commuter Rail (Bi-Level Coaches)   | ea       | \$5,150,000           |                       | 23                    |                                       |   | \$118,450,000                            |  | \$118,450,000                 |   |
| 70.04               |  | ea       | \$566,500             |                       | 3                     |                                       |   | \$1,699,500                              |  | \$1,699,500                   |   |
|                     | Other (Locomotives)  | ea       | \$7,416,000           |                       | 3                     |                                       |   | \$22,248,000                             |  | \$22,248,000                  | -   |
|                     | Non-revenue vehicles<br>Spare parts  |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | -   |
|                     | PROFESSIONAL SERVICES (applies to Cats. 10-50)   |          | 30%                   | 0.0                   | 35.7                  | 0.0                                   | \$2,156,666                             | \$396,062,678.22                         | \$3,650,063                                  | \$0<br>\$401,869,406          | -   |
|                     | Project Development  |          |                       | 0.0                   |                       | 0.0                                   | +_,,                                    | +++++++++++++++++++++++++++++++++++++++  | <b>,,,,,,,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | \$0                           | 1   |
| 80.02               | Engineering  |          |                       |                       |                       |                                       |   |  |  | \$0                           |   |
|                     | Project Management for Design and Construction   |          |                       |                       |                       |                                       |   |  |  | \$0                           | 4   |
|                     | Construction Administration & Management   |          |                       |                       |                       |                                       |   |  |  | \$0                           | -   |
|                     | Professional Liability and other Non-Construction Insurance  |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | -   |
|                     | Legal; Permits; Review Fees by other agencies, cities, etc.<br>Surveys, Testing, Investigation, Inspection                         |          |                       |                       | -                     |                                       |   |  |  | \$0<br>\$0                    | 1   |
|                     | Start up   |          |                       |                       |                       |                                       |   |  |  | \$0<br>\$0                    | 1   |
|                     | Subtotal (10 - 80)   | 1        |                       | 0.0                   | 35.7                  | 0.0                                   | \$9,345,551                             | \$1,870,866,836                          | \$15,816,938                                 | \$1,896,029,324               | l I   |
|                     | UNALLOCATED CONTINGENCY  |          | 10%                   |                       |                       |                                       | \$934,555                               | \$187,086,684                            | \$1,581,694                                  | \$189,602,932                 |   |
|                     | Subtotal (10 - 90)   |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$10,280,106                            | \$2,057,953,520                          | \$17,398,631                                 | \$2,085,632,257               |   |
| 10-90.SUB           |  |          |                       |                       |                       |                                       |   |  |  |                               |   |
| 10-90.SUB<br>100.00 | FINANCE CHARGES<br>Total Project Cost (10 - 100)   |          |                       | 0.0                   | 35.7                  | 0.0                                   | \$10,280,106                            | \$2,057,953,520                          | \$17,398,631                                 | \$0<br><b>\$2,085,632,257</b> |   |

or improvements to half the ROW, minor improvements to ROW to add second track

rack)

e to increase allowable speed

ncluded within 20.04

ume 2 tracks on an existing yard

ben water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. - assume 10ft height

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area permanently impacted by improvements (i.e., assumes only partial

| SCC Code                     | SCC Item Name   | Unit     | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG | COST -<br>WOR-BOS            | COST -<br>SPG-WOR                  | COST -<br>PIT-SPG              | TOTAL COST -<br>PIT - BOS                 |   |
|------------------------------|---|----------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------|------------------------------------|--------------------------------|---|---|
| 10.00                        | GUIDEWAY & TRACK ELEMENTS (route miles)   | mi       |                       | 0.1                   | 35.7                  | 15.5                  | \$27,938,977                 | \$477,389,167                      | \$126,158,360                  | \$631,486,504                             |   |
|                              | Guideway: At-grade exclusive right-of-way   | mi       | \$463,500             | 0.0                   | 17.3                  | 7.6                   | \$0                          | \$8,030,050                        | \$3,542,088                    | \$11,572,138                              | Length of track improvements divided in half for i                |
|                              | Guideway: At-grade semi-exclusive (allows cross-traffic)<br>Guideway: At-grade in mixed traffic                                       |          | -                     |                       |                       |                       |                              |                                    |                                | \$0                                       | -   |
|                              | Guideway: Ar-grade in mixed tranic<br>Guideway: Aerial structure  | mi       | \$369,811,200         | 0.1                   | 1.0                   | 0.2                   | \$24,511,549                 | \$371,212,000                      | \$80,546,000                   | \$0<br>\$476,269,549                      | current undergrade bridges (does not include trad                 |
|                              | Guideway: Built-up fill   |          | \$000,011,200         | 0.1                   |                       | 0.2                   | ¢21,011,010                  | <b>QOI</b> 1,212,000               | <i>\</i>                       | \$0                                       |   |
| 10.06                        | Guideway: Underground cut & cover   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | Guideway: Underground tunnel  |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | _   |
|                              | Guideway: Retained cut or fill  |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | -   |
|                              | Track: Direct fixation<br>Track: Embedded   |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | -   |
|                              | Track: Ballasted  | mi       | \$2,678,000           | 0.0                   | 35.7                  | 15.5                  | \$0                          | \$95,479,830                       | \$41,514,072                   | \$136,993,902                             | single track (includes "other improvements")                      |
| 10.11a                       | Track: Realigned  | mi       | \$130,522             | 26.3                  | 20.4                  | 4.3                   | \$3,427,428                  | \$2,667,288                        | \$556,200                      | \$6,650,916                               | Assumed realignment of tracks along curvature to                  |
|                              | Track: Special (switches, turnouts)   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | _   |
|                              | Track: Vibration and noise dampening  |          |                       | 0                     | 4                     |                       | 03                           | £42.200.000                        | \$12,360,000                   | \$0<br><b>\$24,720,000</b>                | -   |
|                              | STATIONS, STOPS, TERMINALS, INTERMODAL (number)<br>At-grade station, stop, shelter, mall, terminal, platform                          | ea       | \$12,360,000          | 0                     | <b>1</b>              | <b>1</b>              | <b>\$0</b><br>\$0            | \$12,360,000<br>\$12,360,000       | \$12,360,000                   | \$24,720,000                              | Palmer and Chester Stations                                       |
|                              | At-grade station improvements to an existing station  |          | +                     | -                     |                       |                       |                              | ,,                                 |                                | \$0                                       |   |
| 20.02                        | Aerial station, stop, shelter, mall, terminal, platform   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | Aerial station improvements to an existing station  |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | _   |
|                              | Underground station, stop, shelter, mall, terminal, platform<br>Other stations, landings, terminals: Intermodal, ferry, trolley, etc. |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | -   |
|                              | Joint development   |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | -   |
|                              | Automobile parking multi-story structure  |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                |   |
| 20.07                        | Elevators, escalators   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS  |          |                       | 0.1                   | 35.7                  | 15.5                  | \$5,150,000                  | \$13,390,000                       | \$13,390,000                   | \$31,930,000                              |   |
|                              | Administration Building: Office, sales, storage, revenue counting   |          | -                     |                       |                       |                       |                              |                                    |                                | \$0                                       | -   |
|                              | Light Maintenance Facility<br>Heavy Maintenance Facility  |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | -   |
|                              | Storage or Maintenance of Way Building  | ea       | \$13,390,000          | 0                     | 1                     | 1                     | \$0                          | \$13,390,000                       | \$13,390,000                   | \$26,780,000                              | Proposed Layover Facility - Springfield and Pittsfi               |
|                              | Yard and Yard Track   | Track    | \$2,575,000           | 2                     | 0                     | 0                     | \$5,150,000                  | \$0                                | \$0                            | \$5,150,000                               | Proposed Layover Facility Mod - Boston - Assume                   |
|                              | SITEWORK & SPECIAL CONDITIONS   |          |                       | 0.1                   | 35.7                  | 15.5                  | \$0                          | \$449,655,751                      | \$169,868,039                  | \$619,523,790                             |   |
|                              | Demolition, Clearing, Earthwork   |          | ¢0.457.000            |                       | 25.7                  | 15.5                  | ¢0                           | ¢200.040.050                       | \$400 AE0 050                  | \$0                                       | A   |
|                              | Site Utilities, Utility Relocation<br>Haz. mat'l, contam'd soil removal/mitigation, ground water treatments                           | mi       | \$8,157,600           | 0.0                   | 35.7                  | 15.5                  | \$0                          | \$290,846,250                      | \$126,458,250                  | \$417,304,500<br>\$0                      | Assume \$1500/ft (Urban)  |
|                              | Environmental mitigation, e.g. wetlands, historic/archeologic, parks  | SF       | \$14                  | 0                     | 18,771                | 814                   | \$0                          | \$265,464                          | \$11,512                       | \$276,975                                 | Wetlands only. Does not include impacts to open                   |
|                              | Site structures including retaining walls, sound walls  | SF       | \$43                  | 0                     | 470,625               | 204,625               | \$0                          | \$20,359,238                       | \$8,852,078                    | \$29,211,315                              | Assume 25% of total length of proposed track - as                 |
|                              | Pedestrian / bike access and accommodation, landscaping   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | Automobile, bus, van accessways including roads, parking lots   | SF       | \$2,879               | 0                     | 48,000                | 12,000                | \$0                          | \$138,184,800                      | \$34,546,200                   | \$172,731,000                             | Overhead roadway bridge, SF of superstructure to                  |
|                              | Temporary Facilities and other indirect costs during construction SYSTEMS   |          |                       | 0.1                   | 35.7                  | 15.5                  | \$175,100                    | \$63,648,909                       | \$12,150,313                   | \$0<br><b>\$75,974,322</b>                | -   |
|                              | Train control and signals   | ea       | \$1,236,000           | 0.1                   | 23                    | 10.0                  | \$175,100                    | \$28,428,000                       | φ12,100,010                    | \$28,428,000                              | # of CPs  |
|                              | Traffic signals and crossing protection   | ea       | \$247,200             |                       | 30                    |                       |                              | \$7,416,000                        |                                | \$7,416,000                               | # of at-grade crossings   |
|                              | Traction power supply: substations  |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | Traction power distribution: catenary and third rail  |          | <b>\$770 500</b>      |                       | 05.7                  | 45.5                  | <b>^</b>                     | \$27.542.259                       | 011.075.010                    | \$0                                       | -   |
|                              | Communications<br>Fare collection system and equipment  | mi<br>ea | \$772,500<br>\$87,550 | 0.0                   | 35.7<br>3             | 15.5<br>2             | \$0<br>\$175,100             | \$27,542,259<br>\$262,650          | \$11,975,213<br>\$175,100      | \$39,517,472<br>\$612,850                 | 1 for each rail station   |
|                              | Central Control   |          | ¢01,000               | _                     |                       |                       | ¢110,100                     | \$202,000                          | ¢110,100                       | \$0                                       | CSX dispatches west of Worcester                                  |
|                              | Construction Subtotal (10-50)   |          |                       | 0.1                   | 35.7                  | 15.5                  | \$33,264,077                 | \$1,016,443,827                    | \$333,926,712                  | \$1,383,634,616                           | 3   |
| 10-50.CNT                    | Construction Contingency (10 - 50) 35%  |          | 35%                   |                       |                       |                       | \$11,642,427                 | \$355,755,339                      | \$116,874,349                  | \$484,272,116                             | 5   |
|                              | Construction Total  |          |                       |                       |                       |                       | \$44,906,503                 | \$1,372,199,166                    | \$450,801,062                  | \$1,867,906,731                           |   |
|                              | ROW, LAND, EXISTING IMPROVEMENTS  |          | <b>*</b> 0.07         | 0.1                   | 35.7                  | 15.5                  | \$0                          | \$12,197,731                       | \$4,406,856                    | \$16,604,587                              |   |
| 60.01                        | Purchase or lease of real estate  | sf       | \$2.27                | 0                     | 5,382,935             | 1,944,773             | \$0                          | \$12,197,731                       | \$4,406,856                    | \$16,604,587                              | Regardless of ownership, square footage was call<br>acquisitions) |
| 60.02                        | Relocation of existing households and businesses  |          |                       |                       |                       |                       |                              |                                    |                                |   |   |
| 70.00                        | VEHICLES (number)   |          |                       |                       | 28                    |                       |                              | \$131,840,000                      |                                | \$131,840,000                             |   |
|                              | Light Rail  |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | 4   |
|                              | Heavy Rail  |          | ¢4 400 000            |                       | 00                    |                       |                              | ¢04.700.000                        |                                | \$0                                       | 4   |
| 70.03<br>70.04               | Commuter Rail (Single-Level Coaches)<br>Bus   | ea       | \$4,120,000           |                       | 23                    |                       |                              | \$94,760,000                       |                                | \$94,760,000<br>\$0                       | 1   |
|                              | Other (Locomotives)   | ea       | \$7,416,000           |                       | 5                     |                       |                              | \$37,080,000                       |                                | \$0                                       | 1   |
|                              | Non-revenue vehicles  |          |                       |                       | -                     |                       |                              |                                    |                                | \$0                                       | 1   |
|                              | Spare parts   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | PROFESSIONAL SERVICES (applies to Cats. 10-50)  | <u> </u> | 30%                   | 0.1                   | 35.7                  | 15.5                  | \$13,471,951                 | \$411,659,749.86                   | \$135,240,319                  | \$560,372,019                             | 4   |
|                              | Project Development<br>Engineering  |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | 4   |
|                              | Project Management for Design and Construction  | <u> </u> |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | 1   |
|                              | Construction Administration & Management  |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | 1   |
| 80.05                        | Professional Liability and other Non-Construction Insurance   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       |   |
|                              | Legal; Permits; Review Fees by other agencies, cities, etc.   |          |                       |                       |                       |                       |                              |                                    |                                | \$0                                       | 4   |
|                              | Surveys, Testing, Investigation, Inspection<br>Start up   |          |                       |                       |                       |                       |                              |                                    |                                | \$0<br>\$0                                | 4   |
|                              | Subtotal (10 - 80)  | +        |                       | 0.1                   | 35.7                  | 15.5                  | \$58,378,454                 | \$1,927,896,647                    | \$590,448,236                  | \$0<br><b>\$2,576,723,338</b>             |   |
|                              |   |          | 10%                   |                       |                       | 10.0                  | \$5,837,845                  | \$192,789,665                      | \$59,044,824                   | \$257,672,334                             | 1   |
|                              | UNALLOCATED CONTINGENCY   |          |                       |                       |                       |                       |                              |                                    |                                |   |   |
| 90.00                        | UNALLOCATED CONTINGENCY<br>Subtotal (10 - 90)   |          |                       | 0.1                   | 35.7                  | 15.5                  | \$64,216,300                 | \$2,120,686,311                    | \$649,493,060                  | \$2,834,395,671                           |   |
| 90.00<br>10-90.SUB<br>100.00 |   |          |                       | 0.1                   | 35.7<br>35.7          | 15.5<br>15.5          | \$64,216,300<br>\$64,216,300 | \$2,120,686,311<br>\$2,120,686,311 | \$649,493,060<br>\$649,493,060 | \$2,834,395,671<br>\$0<br>\$2,834,395,671 |   |

or improvements to half the ROW, minor improvements to ROW to add second track

rack)

e to increase allowable speed

ttsfield ume 2 tracks on an existing yard

ben water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. - assume 10ft height

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area permanently impacted by improvements (i.e., assumes only partial

| SCC Code SCC Item Name  | Unit        | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG | COST -<br>WOR-BOS            | COST -<br>SPG-WOR                | COST -<br>PIT-SPG              | TOTAL COST -<br>PIT - BOS     |  |
|---|-------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------|----------------------------------|--------------------------------|-------------------------------|--|
| 10.00 GUIDEWAY & TRACK ELEMENTS (route miles)   | mi          |                       | 0.1                   | 55.3                  | 15.5                  | \$27,938,977                 | \$814,661,692                    | \$129,700,448                  | \$972,301,117                 |  |
| 10.01 Guideway: At-grade exclusive right-of-way   | mi          | \$463,500             | 0.0                   | 52.7                  | 15.3                  | \$0                          | \$24,434,804                     | \$7,084,176                    | \$31,518,980                  | Length of proposed track - assume full guideway  |
| 10.02 Guideway: At-grade semi-exclusive (allows cross-traffic)<br>10.03 Guideway: At-grade in mixed traffic   |             |                       |                       |                       |                       |                              |                                  |                                | \$0<br>\$0                    | -  |
| 10.04 Guideway: Aerial structure  | mi          | \$369,811,200         | 0.1                   | 1.7                   | 0.2                   | \$24,511,549                 | \$642,266,800                    | \$80,546,000                   | \$747,324,349                 | current undergrade bridges (does not include trac  |
| 10.05 Guideway: Built-up fill   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 10.06 Guideway: Underground cut & cover   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 10.07 Guideway: Underground tunnel<br>10.08 Guideway: Retained cut or fill  |             |                       |                       | 0.8                   |                       |                              |                                  |                                | \$0<br>\$0                    | accurate 50 ft of rotained apation approaching apph  |
| 10.08 Guideway: Retained cut of hin<br>10.09 Track: Direct fixation   |             |                       |                       | 0.8                   |                       |                              |                                  |                                | \$0<br>\$0                    | assume 50 ft of retained section appraching each   |
| 10.10 Track: Embedded   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 10.11 Track: Ballasted  | mi          | \$2,678,000           | 0.0                   | 55.3                  | 15.5                  | \$0                          | \$147,960,088                    | \$41,514,072                   | \$189,474,160                 | single track (includes "other improvements")   |
| 10.11a Track: Realigned   | mi          | \$130,522             | 26.3                  | 0.0                   | 4.3                   | \$3,427,428                  | \$0                              | \$556,200                      | \$3,983,628                   | Assumed realignment of tracks along curvature to   |
| 10.12 Track: Special (switches, turnouts)   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           | -  |
| 10.13 Track: Vibration and noise dampening<br>20.00 STATIONS, STOPS, TERMINALS, INTERMODAL (number)   |             |                       | 0                     | 3                     | 1                     | \$0                          | \$15,965,000                     | \$12,360,000                   | \$0<br>\$28,325,000           | -  |
| 20.00 STATIONS, STOPS, TERMINALS, ITTERMODAL (Humber)<br>20.01 At-grade station, stop, shelter, mall, terminal, platform  | ea          | \$12,360,000          | 0                     | <b>J</b>              | 1                     | \$0                          | \$12,360,000                     | \$12,360,000                   | \$24,720,000                  | Palmer and Chester Stations  |
| 20.01a At-grade station improvements to an existing station   | ea          | \$1,545,000           | 0                     | 1                     | 0                     | \$0                          | \$1,545,000                      | \$0                            | \$1,545,000                   | Upgrade to Worcester   |
| 20.02 Aerial station, stop, shelter, mall, terminal, platform   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 20.02a Aerial station improvements to an existing station   | ea          | \$2,060,000           | 0                     | 1                     | 0                     | \$0                          | \$2,060,000                      | \$0                            | \$2,060,000                   | Upgrade to Springfield   |
| 20.03 Underground station, stop, shelter, mall, terminal, platform<br>20.04 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.                 |             |                       |                       |                       |                       |                              |                                  |                                | \$0<br>\$0                    | -  |
| 20.04 Other stations, landings, terminais. Intermodal, terry, trolley, etc.<br>20.05 Joint development  |             |                       |                       |                       |                       |                              |                                  |                                | \$0<br>\$0                    | -  |
| 20.06 Automobile parking multi-story structure  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 20.07 Elevators, escalators   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 30.00 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS  |             |                       | 0.1                   | 55.3                  | 15.5                  | \$5,150,000                  | \$13,390,000                     | \$13,390,000                   | \$31,930,000                  |  |
| 30.01 Administration Building: Office, sales, storage, revenue counting   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 30.02 Light Maintenance Facility  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 30.03 Heavy Maintenance Facility<br>30.04 Storage or Maintenance of Way Building  |             | \$13,390,000          | 0                     | 1                     | 1                     | \$0                          | \$13,390,000                     | \$13,390,000                   | \$0<br>\$26,780,000           | Proposed Layover Facility - Springfield and Pittsfi  |
| 30.05 Yard and Yard Track   | ea<br>Track | \$2,575,000           | 2                     | 0                     | 0                     | \$5,150,000                  | \$13,390,000                     | \$13,390,000                   | \$5,150,000                   | Proposed Layover Facility Mod - Boston - Assume  |
| 40.00 SITEWORK & SPECIAL CONDITIONS   |             | \$2,070,000           | 0.1                   | 55.3                  | 15.5                  | \$0                          | \$891,271,738                    | \$167,760,402                  | \$1,059,032,140               |  |
| 40.01 Demolition, Clearing, Earthwork   | су          | \$49                  |                       | 3,150,000             |                       |                              | \$155,736,000                    |                                | \$155,736,000                 |  |
| 40.02 Site Utilities, Utility Relocation  | mi          | \$8,157,600           | 0.0                   | 55.3                  | 15.5                  | \$0                          | \$450,709,192                    | \$126,458,250                  | \$577,167,442                 | Assume \$1500/ft (Urban)   |
| 40.03 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments   | 05          | 044                   |                       | 000.040               |                       | <b>^</b>                     | <b>AE 110 010</b>                | <b>0</b> 14 540                | \$0                           |  |
| <ul><li>40.04 Environmental mitigation, e.g. wetlands, historic/archeologic, parks</li><li>40.05 Site structures including retaining walls, sound walls</li></ul> | SF<br>SF    | \$14<br>\$33          | 0                     | 363,943<br>729,303    | 814<br>204,625        | \$0<br>\$0                   | \$5,146,843<br>\$24,037,824      | \$11,512<br>\$6,744,440        | \$5,158,354<br>\$30,782,264   | Wetlands only. Does not include impacts to open<br>Assume 25% of total length of proposed track - as |
| 40.06 Pedestrian / bike access and accommodation, landscaping   | 01          | φ00                   | 0                     | 129,303               | 204,025               | ψυ                           | \$24,007,024                     | ψ0,/++,++0                     | \$30,782,204                  | Assume 25% of total length of proposed track - as  |
| 40.07 Automobile, bus, van accessways including roads, parking lots   | SF          | \$2,879               | 0                     | 88,800                | 12,000                | \$0                          | \$255,641,880                    | \$34,546,200                   | \$290,188,080                 | Overhead roadway bridge, SF of superstructure to   |
| 40.08 Temporary Facilities and other indirect costs during construction   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 50.00 SYSTEMS   |             |                       | 0.1                   | 55.3                  | 15.5                  | \$175,100                    | \$79,302,445                     | \$12,150,313                   | \$91,627,858                  |  |
| 50.01 Train control and signals   | ea          | \$1,236,000           |                       | 23                    |                       |                              | \$28,428,000                     |                                | \$28,428,000                  | # of CPs   |
| 50.02 Traffic signals and crossing protection<br>50.03 Traction power supply: substations   | ea          | \$247,200             |                       | 30                    |                       |                              | \$7,416,000                      |                                | \$7,416,000<br>\$0            | # of at-grade crossings  |
| 50.04 Traction power distribution: catenary and third rail  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 50.05 Communications  | mi          | \$772,500             | 0.0                   | 55.3                  | 15.5                  | \$0                          | \$42,680,795                     | \$11,975,213                   | \$54,656,008                  |  |
| 50.06 Fare collection system and equipment  | ea          | \$87,550              | 2                     | 3                     | 2                     | \$175,100                    | \$262,650                        | \$175,100                      | \$612,850                     | 1 for each rail station  |
| 50.07 Central Control   | ea          | \$515,000             |                       | 1                     |                       |                              | \$515,000                        |                                | \$515,000                     | Separate track, new Central Control needed   |
| 10-50.SUB Construction Subtotal (10-50)   |             | 25%                   | 0.1                   | 55.3                  | 15.5                  | \$33,264,077                 | \$1,814,590,875                  | \$335,361,163                  | \$2,183,216,115               |  |
| 10-50.CNT Construction Contingency (10 - 50) 35%<br>10-50.TOT Construction Total  |             | 35%                   | ł                     |                       |                       | \$11,642,427<br>\$44,906,503 | \$635,106,806<br>\$2,449,697,681 | \$117,376,407<br>\$452,737,570 | \$764,125,640                 |  |
| 60.00 ROW, LAND, EXISTING IMPROVEMENTS  |             |                       | 0.1                   | 55.3                  | 15.5                  | \$0                          | \$37,237,679                     | \$4.406.856                    | \$41,644,535                  |  |
| 60.01 Purchase or lease of real estate  | sf          | \$2.27                | 0                     | 13,951,403            | 1,944,773             | \$0                          | \$31,613,879                     | \$4,406,856                    | <i>Ţ,</i>                     | Regardless of ownership, square footage was cal  |
|   |             |                       |                       |                       |                       |                              |                                  |                                | \$36,020,735                  | only partial acquisitions)   |
| 60.02 Relocation of existing households and businesses  | ea          | \$61,800              | 0                     | 91                    | 0                     | \$0                          | \$5,623,800                      | \$0                            | \$5,623,800                   | Count of primary buildings/structures that would I   |
| 70.00 VEHICLES (number)   |             |                       |                       | 33                    |                       |                              | \$155,736,000                    |                                | \$155,736,000                 | -  |
| 70.01 Light Rail<br>70.02 Heavy Rail  |             |                       |                       |                       |                       |                              |                                  |                                | \$0<br>\$0                    | -  |
| 70.03 Commuter Rail (Single-Level Coaches)  | ea          | \$4,120,000           |                       | 27                    |                       |                              | \$111,240,000                    |                                | \$111,240,000                 |  |
| 70.04 Bus   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 70.05 Other (Locomotives)   | ea          | \$7,416,000           |                       | 6                     |                       |                              | \$44,496,000                     |                                | \$44,496,000                  |  |
| 70.06 Non-revenue vehicles  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 70.07 Spare parts<br>80.00 PROFESSIONAL SERVICES (applies to Cats. 10-50)   |             | 30%                   | 0.4                   | FF 0                  | 45.5                  | £40.474.054                  | 6704 000 004                     | \$135,821,271                  | \$0                           | -  |
| 80.01 Project Development   |             | 30 %                  | 0.1                   | 55.3                  | 15.5                  | \$13,471,951                 | \$734,909,304                    | \$135,021,271                  | <b>\$884,202,526</b><br>\$0   | -  |
| 80.02 Engineering   |             |                       | 1                     | 1                     |                       |                              |                                  |                                | \$0                           | 1  |
| 80.03 Project Management for Design and Construction  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           | 1  |
| 80.04 Construction Administration & Management  |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           |  |
| 80.05 Professional Liability and other Non-Construction Insurance   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           | 4  |
| 80.06 Legal; Permits; Review Fees by other agencies, cities, etc.   |             |                       |                       |                       |                       |                              |                                  |                                | \$0                           | 4  |
| 80.07 Surveys, Testing, Investigation, Inspection<br>80.08 Start up   |             |                       |                       |                       |                       |                              |                                  |                                | \$0<br>\$0                    | 1  |
| 10-80.SUB Subtotal (10 - 80)  |             |                       | 0.1                   | 55.3                  | 15.5                  | \$58,378,454                 | \$3,377,580,665                  | \$592,965,697                  | \$4,028,924,816               |  |
| 90.00 UNALLOCATED CONTINGENCY   |             | 10%                   |                       |                       | - 319                 | \$5,837,845                  | \$337,758,066                    | \$59,296,570                   | \$402,892,482                 | 1  |
| 10-90.SUB Subtotal (10 - 90)  |             |                       | 0.1                   | 55.3                  | 15.5                  | \$64,216,300                 | \$3,715,338,731                  | \$652,262,267                  | \$4,431,817,298               |  |
|   |             |                       |                       |                       |                       |                              |                                  |                                | 4.5                           |  |
| 100.00 FINANCE CHARGES<br>10-100.TOT Total Project Cost (10 - 100)  |             |                       | 0.1                   | 55.3                  | 15.5                  | \$64,216,300                 | \$3,715,338,731                  | \$652,262,267                  | \$0<br><b>\$4,431,817,298</b> |  |

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e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area that would be permanently impacted by improvements (i.e., assumes

| SCC Code   | SCC Item Name  | Unit  | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG | COST -<br>WOR-BOS           | COST -<br>SPG-WOR                  | COST -<br>PIT-SPG           | TOTAL COST -<br>PIT - BOS   |   |
|--|--|-------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------|------------------------------------|-----------------------------|-----------------------------|---|
| 10.00  | GUIDEWAY & TRACK ELEMENTS (route miles)  | mi    | (\$2020)              | 0.1                   | 52.1                  | 0.0                   | \$27,938,977                | \$1,284,276,192                    | \$0                         | \$1,312,215,168             |   |
|  | Guideway: At-grade exclusive right-of-way  | mi    | \$463,500             | 0.0                   | 49.1                  | 0.0                   | \$0                         | \$22,737,555                       | \$0                         | \$22,737,555                | Length of proposed track - assume full guideway   |
|  | Guideway: At-grade semi-exclusive (allows cross-traffic)   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Guideway: At-grade in mixed traffic  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Guideway: Aerial structure   | mi    | \$369,811,200         | 0.1                   | 3.0                   | 0.0                   | \$24,511,549                | \$1,122,040,800                    | \$0                         | \$1,146,552,349             | current undergrade bridges (does not include tra  |
|  | Guideway: Built-up fill<br>Guideway: Underground cut & cover   |       |                       |                       |                       |                       |                             |                                    |                             | \$0<br>\$0                  | -   |
|  | Guideway: Underground tunnel   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Guideway: Retained cut or fill   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Track: Direct fixation   | -     |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
| 10.10  | Track: Embedded  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
| 10.11  | Track: Ballasted   | mi    | \$2,678,000           | 0.0                   | 52.1                  | 0.0                   | \$0                         | \$139,497,837                      | \$0                         | \$139,497,837               | single track (includes "other improvements")  |
|  | Track: Realigned   | mi    | \$130,522             | 26.3                  | 0.0                   | 0.0                   | \$3,427,428                 | \$0                                | \$0                         | \$3,427,428                 | Assumed realignment of tracks along curvature t   |
|  | Track: Special (switches, turnouts)  | -     |                       |                       |                       |                       |                             |                                    |                             | \$0                         | -   |
|  | Track: Vibration and noise dampening   |       |                       |                       |                       |                       | <u>^</u>                    | ¢0.005.000                         | ¢0.040.500                  | \$0                         | -   |
|  | STATIONS, STOPS, TERMINALS, INTERMODAL (number)<br>At-grade station, stop, shelter, mall, terminal, platform                   |       |                       | 0                     | 2                     | 3                     | \$0                         | \$3,605,000                        | \$9,012,500                 | <b>\$12,617,500</b><br>\$0  | -   |
|  | At-grade station improvements to an existing station   | ea    | \$1,545,000           | 0                     | 1                     | 0                     | \$0                         | \$1,545,000                        | \$0                         | \$1,545,000                 | Upgrade to Worcester  |
|  | Aerial station, stop, shelter, mall, terminal, platform  |       | + .,,                 | -                     |                       | -                     |                             | + .,,                              |                             | \$0                         |   |
|  | Aerial station improvements to an existing station   | ea    | \$2,060,000           | 0                     | 1                     | 0                     | \$0                         | \$2,060,000                        | \$0                         | \$2,060,000                 | Upgrade to Springfield  |
| 20.03  | Underground station, stop, shelter, mall, terminal, platform   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         | ]   |
| 20.04  | Other stations, landings, terminals: Intermodal, ferry, trolley, etc.  | ea    |                       | 0                     | 0                     | 3                     | \$0                         | \$0                                | \$9,012,500                 | \$9,012,500                 | \$8.5 M for Blandford, \$250k for Lee   |
|  | Joint development  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Automobile parking multi-story structure   | -     |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Elevators, escalators  |       |                       | 0.4                   | 50.4                  | 1                     | <b>*</b> 5 450 000          | ¢40.000.000                        | ¢0                          | \$0                         | Pedestrian Bridge for Blandford Bus Station, Inc.   |
|  | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS<br>Administration Building: Office, sales, storage, revenue counting            |       |                       | 0.1                   | 52.1                  | 0.0                   | \$5,150,000                 | \$13,390,000                       | \$0                         | \$18,540,000<br>\$0         | -   |
|  | Light Maintenance Facility   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Heavy Maintenance Facility   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
| 30.04  | Storage or Maintenance of Way Building   | ea    | \$13,390,000          | 0                     | 1                     | 0                     | \$0                         | \$13,390,000                       | \$0                         | \$13,390,000                | Proposed Layover Facility - Springfield   |
| 30.05  | Yard and Yard Track  | Track | \$2,575,000           | 2                     | 0                     | 0                     | \$5,150,000                 | \$0                                | \$0                         | \$5,150,000                 | Proposed Layover Facility Mod - Boston - Assum  |
| 40.00  | SITEWORK & SPECIAL CONDITIONS  |       |                       | 0.1                   | 52.1                  | 0.0                   | \$0                         | \$1,140,416,345                    | \$0                         | \$1,140,416,345             |   |
|  | Demolition, Clearing, Earthwork  | су    | \$49                  |                       | 8,700,000             | I                     |                             | \$430,128,000                      |                             | \$430,128,000               |   |
|  | Site Utilities, Utility Relocation   | mi    | \$8,157,600           | 0.0                   | 52.1                  | 0.0                   | \$0                         | \$424,931,871                      | \$0                         | \$424,931,871               | Assume \$1500/ft (Urban)  |
|  | Haz. mat'l, contam'd soil removal/mitigation, ground water treatments  | SF    | \$14                  | 0                     | 400.000               | 0                     | \$0                         | \$7,051,561                        | \$0                         | \$0<br>\$7.051.561          | Watlanda anky Daga natingluda impacts to open   |
|  | Environmental mitigation, e.g. wetlands, historic/archeologic, parks<br>Site structures including retaining walls, sound walls | SF    | \$14                  | 0                     | 498,629<br>687,592    | 0                     | \$0<br>\$0                  | \$22,663,033                       | \$0                         | \$7,051,561<br>\$22,663,033 | Wetlands only. Does not include impacts to open<br>Assume 25% of total length of proposed track - a |
|  | Pedestrian / bike access and accommodation, landscaping  | 01    | φυυ                   | 0                     | 007,392               | 0                     | ψυ                          | ψ22,003,033                        | ψυ                          | \$22,003,033                | Assume 25% of total length of proposed track - a  |
|  | Automobile, bus, van accessways including roads, parking lots  | SF    | \$2,879               | 0                     | 88,800                | 0                     | \$0                         | \$255,641,880                      | \$0                         | \$255,641,880               | Overhead roadway bridge, SF of superstructure t   |
|  | Temporary Facilities and other indirect costs during construction  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
| 50.00  | SYSTEMS  |       |                       | 0.1                   | 52.1                  | 0.0                   | \$175,100                   | \$78,257,061                       | \$0                         | \$78,432,161                |   |
|  | Train control and signals  | ea    | \$1,236,000           |                       | 28                    |                       |                             | \$34,608,000                       |                             | \$34,608,000                | # of CPs  |
|  | Traffic signals and crossing protection  | ea    | \$247,200             |                       | 11                    | 1                     |                             | \$2,719,200                        | 1                           | \$2,719,200                 | # of at-grade crossings   |
|  | Traction power supply: substations   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         | -   |
|  | Traction power distribution: catenary and third rail<br>Communications   | mi    | \$772,500             | 0.0                   | 52.1                  | 0.0                   | \$0                         | \$40,239,761                       | \$0                         | \$0<br>\$40,239,761         |   |
|  | Fare collection system and equipment   | ea    | \$772,500             | 2                     | 2                     | 0.0                   | \$175,100                   | \$175,100                          | \$0                         | \$350,200                   | 1 for each rail station   |
|  | Central Control  | ea    | \$515,000             | 2                     | 1                     | v                     | \$110,100                   | \$515,000                          | ψŬ                          | \$515,000                   | Separate track, new Central Control needed  |
|  | Construction Subtotal (10-50)  |       |                       | 0.1                   | 52.1                  | 0.0                   | \$33,264,077                | \$2,519,944,598                    | \$9,012,500                 | \$2,562,221,174             |   |
|  | Construction Contingency (10 - 50) 35%   |       | 35%                   |                       |                       |                       | \$11,642,427                | \$881,980,609                      | \$3,154,375                 | \$896,777,411               |   |
| 10-50.TOT  | Construction Total   |       |                       |                       |                       |                       | \$44,906,503                | \$3,401,925,207                    | \$12,166,875                | \$3,458,998,585             |   |
|  | ROW, LAND, EXISTING IMPROVEMENTS   |       |                       | 0.1                   | 52.1                  | 0.0                   | \$0                         | \$37,538,150                       | \$0                         | \$37,538,150                |   |
| 60.01  | Purchase or lease of real estate   | sf    | \$2.27                | 0                     | 13,756,730            | 0                     | \$0                         | \$31,172,750                       | \$0                         |                             | Regardless of ownership, square footage was ca  |
|  |  |       | <b>A</b> A4 AAA       |                       | 100                   |                       |                             | A0.005.000                         |                             | \$31,172,750                | only partial acquisitions)  |
|  | Relocation of existing households and businesses<br>VEHICLES (number)  | ea    | \$61,800              | 0                     | 103<br>21             | 0                     | \$0                         | \$6,365,400<br><b>\$82,194,000</b> | \$0                         | \$6,365,400<br>\$82,194,000 | Count of primary buildings/structures that would  |
|  | Light Rail   |       |                       |                       | 21                    |                       |                             | \$02,194,000                       |                             | \$82,194,000                | -   |
|  | Heavy Rail   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Commuter Rail (Single-Level Coaches)   | ea    | \$4,120,000           | 1                     | 14                    |                       |                             | \$57,680,000                       |                             | \$57,680,000                | 1   |
| 70.04  | Bus  | ea    | \$566,500             |                       | 4                     |                       |                             | \$2,266,000                        |                             | \$2,266,000                 |   |
| 70.05  | Other (Locomotives)  | ea    | \$7,416,000           |                       | 3                     |                       |                             | \$22,248,000                       |                             | \$22,248,000                |   |
| 70.06  | Non-revenue vehicles   |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | Spare parts  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         |   |
|  | PROFESSIONAL SERVICES (applies to Cats. 10-50)   | -     | 30%                   | 0.1                   | 52.1                  | 0.0                   | \$13,471,951                | \$1,020,577,562                    | \$3,650,063                 | \$1,037,699,576             | -   |
|  | Project Development  |       |                       |                       |                       |                       |                             |                                    |                             | \$0<br>\$0                  | 4   |
|  | Engineering<br>Project Management for Design and Construction  |       |                       |                       | +                     |                       |                             |                                    |                             | \$0<br>\$0                  | 1   |
|  | Construction Administration & Management   |       |                       | 1                     |                       |                       |                             |                                    |                             | \$0<br>\$0                  | 1   |
|  | Professional Liability and other Non-Construction Insurance  |       |                       | 1                     | 1                     |                       |                             |                                    |                             | \$0                         | 1   |
|  | Legal; Permits; Review Fees by other agencies, cities, etc.  |       |                       |                       |                       |                       |                             |                                    |                             | \$0                         | 1   |
|  | Surveys, Testing, Investigation, Inspection  |       |                       |                       |                       | <u> </u>              |                             |                                    |                             | \$0                         | ]   |
|  | Start up   |       |                       |                       | L                     |                       |                             |                                    |                             | \$0                         |   |
| 80.08  |  |       |                       | 0.1                   | 52.1                  | 0.0                   | \$58,378,454                | \$4,542,234,919                    | \$15,816,938                | \$4,616,430,311             | 1   |
| 80.08<br>10-80.SUB                                 | Subtotal (10 - 80)   |       |                       |                       |                       |                       |                             |                                    |                             |                             |   |
| 80.08<br>10-80.SUB<br>90.00                        | UNALLOCATED CONTINGENCY  |       | 10%                   | 6 I                   |                       |                       | \$5,837,845                 | \$454,223,492                      | \$1,581,694                 | \$461,643,031               | -   |
| 80.08<br>10-80.SUB<br>90.00<br>10-90.SUB           | UNALLOCATED CONTINGENCY<br>Subtotal (10 - 90)  |       | 10%                   | 0.1                   | 52.1                  | 0.0                   | \$5,837,845<br>\$64,216,300 | \$454,223,492<br>\$4,996,458,411   | \$1,581,694<br>\$17,398,631 | \$5,078,073,342             |   |
| 80.08<br>10-80.SUB<br>90.00<br>10-90.SUB<br>100.00 | UNALLOCATED CONTINGENCY  |       | 10%                   | 0.1                   | 52.1                  | 0.0                   |                             |                                    |                             |                             |   |

ay efforts

rack)

e to increase allowable speed

ncluded within 20.04

ume 2 tracks on an existing yard

ben water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. - assume 10ft height

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area that would be permanently impacted by improvements (i.e., assumes

| SCC Code                                  | SCC Item Name  | Unit  | Unit Cost<br>(\$2020) | QUANTITY -<br>WOR-BOS | QUANTITY -<br>SPG-WOR | QUANTITY -<br>PIT-SPG | COST -<br>WOR-BOS                  | COST -<br>SPG-WOR                  | COST -<br>PIT-SPG                     | TOTAL COST -<br>PIT - BOS           |   |
|---|--|-------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|---|
| 10.00                                     | GUIDEWAY & TRACK ELEMENTS (route miles)  | mi    | (\$2020)              | 35.0                  | 46.2                  | 52.1                  | \$2,938,250,260                    | \$2,856,998,101                    | \$2,979,022,513                       | \$8,774,270,875                     |   |
|   | Guideway: At-grade exclusive right-of-way  | mi    | \$463,500             | 27.6                  | 39.2                  | 44.9                  | \$12,813,141                       | \$18,158,139                       | \$20,802,898                          | \$51,774,179                        | Length of proposed track - assume full guideway effe  |
| 10.02                                     | Guideway: At-grade semi-exclusive (allows cross-traffic)   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Guideway: At-grade in mixed traffic  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Guideway: Aerial structure   | mi    | \$369,811,200         | 7.4                   | 7.0                   | 7.2                   | \$2,737,723,520                    | \$2,591,480,000                    | \$2,679,030,000                       | \$8,008,233,520                     | current aerial structure (16,500) + potential aerial str  |
|   | Guideway: Built-up fill<br>Guideway: Underground cut & cover   | -     |                       |                       |                       |                       |                                    |                                    |                                       | \$0<br>\$0                          | -   |
|   | Guideway: Underground tunnel   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 | -   |
|   | Guideway: Retained cut or fill   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Track: Direct fixation   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 10.10                                     | Track: Embedded  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 10.11                                     | Track: Ballasted   | mi    | \$2,678,000           | 70.1                  | 92.4                  | 104.3                 | \$187,713,598                      | \$247,359,962                      | \$279,189,615                         | \$714,263,176                       | single track for the entire alignment (does not includ  |
|   | Track: Realigned   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 | Assumed realignment of tracks along curvature to in   |
|   | Track: Special (switches, turnouts)  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Track: Vibration and noise dampening   |       |                       | 1                     | 3                     | 3                     | \$1,854,000                        | \$16,274,000                       | \$51,294,000                          | \$0<br>\$69,422,000                 | 4   |
|   | STATIONS, STOPS, TERMINALS, INTERMODAL (number)<br>At-grade station, stop, shelter, mall, terminal, platform               | ea    | \$24,720,000          | 0                     | <b>3</b>              | 2                     | \$1,054,000                        | \$12,360,000                       | \$49,440,000                          | \$61,800,000                        | \$12 M for Palmer, \$24 M each for Blandford and Lee  |
|   | At-grade station improvements to an existing station   | ea    | \$1,854,000           | 1                     | 1                     | 1                     | \$1,854,000                        | \$1,854,000                        | \$1,854,000                           | \$5,562,000                         | Upgrades to Back Bay, Worcester, and Pittsfield   |
|   | Aerial station, stop, shelter, mall, terminal, platform  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 20.02a                                    | Aerial station improvements to an existing station   | ea    | \$2,060,000           | 0                     | 1                     | 0                     | \$0                                | \$2,060,000                        | \$0                                   | \$2,060,000                         | Upgrade to Springfield  |
|   | Underground station, stop, shelter, mall, terminal, platform   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Other stations, landings, terminals: Intermodal, ferry, trolley, etc.  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Joint development  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Automobile parking multi-story structure   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0<br>\$0                          | 4   |
|   | Elevators, escalators SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS   |       |                       | 35.0                  | 46.2                  | 52.1                  | \$5,150,000                        | \$13,390,000                       | \$13,390,000                          | \$0<br>\$31,930,000                 | -   |
|   | Administration Building: Office, sales, storage, revenue counting  |       |                       | 55.0                  | 40.2                  | 94.1                  | \$5,150,000                        | \$13,330,000                       | \$13,330,000                          | \$0                                 |   |
|   | Light Maintenance Facility   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 30.03                                     | Heavy Maintenance Facility   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 30.04                                     | Storage or Maintenance of Way Building   | ea    | \$13,390,000          | 0                     | 1                     | 1                     | \$0                                | \$13,390,000                       | \$13,390,000                          | \$26,780,000                        | Proposed Layover Facility - Springfield and Pittsfield  |
|   | Yard and Yard Track  | Track | \$2,575,000           | 2                     | 0                     | 0                     | \$5,150,000                        | \$0                                | \$0                                   | \$5,150,000                         | Proposed Layover Facility Mod - Boston - Assume 2   |
|   | SITEWORK & SPECIAL CONDITIONS  |       | <b>A</b> 10           | 35.0                  | 46.2                  | 52.1                  | \$393,531,254                      | \$2,731,081,651                    | \$480,166,986                         | \$3,604,779,891                     |   |
| 40.01                                     | Demolition, Clearing, Earthwork  | су    | \$49                  |                       | 46,600,000            |                       |                                    | \$2,303,904,000                    |                                       | \$2,303,904,000                     | Calculated by Civil 3D corridor model. Approx. 7M cy<br>segments 1, 2, 3 respectively. 16M cy total fill. |
| 40.02                                     | Site Utilities, Utility Relocation   | mi    | \$8,157,600           | 35.0                  | 46.2                  | 52.1                  | \$285,902,250                      | \$376,748,250                      | \$425,227,260                         | \$1,087,877,760                     | Assume \$1500/ft (Urban)  |
|   | Haz. mat'l, contam'd soil removal/mitigation, ground water treatments  |       | ψ0,107,000            | 00.0                  | 40.2                  | 52.1                  | ψ203,302,230                       | φ370,7 <del>4</del> 0,200          | φ <del>4</del> 20,221,200             | \$1,087,877,700                     |   |
|   | Environmental mitigation, e.g. wetlands, historic/archeologic, parks   | SF    | \$14                  | 669,642               | 190,866               | 1,304,100             | \$9,470,004                        | \$2,699,201                        | \$18,442,458                          | \$30,611,664                        | Wetlands only. Does not include impacts to open wa  |
| 40.05                                     | Site structures including retaining walls, sound walls   | SF    | \$33                  | 462,625               | 609,625               | 688,070               | \$15,248,120                       | \$20,093,240                       | \$22,678,787                          | \$58,020,147                        | Assume 25% of total length of proposed track - assu   |
|   | Pedestrian / bike access and accommodation, landscaping  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Automobile, bus, van accessways including roads, parking lots  | SF    | \$2,879               | 28,800                | 9,600                 | 4,800                 | \$82,910,880                       | \$27,636,960                       | \$13,818,480                          | \$124,366,320                       | Overhead roadway bridge, SF of superstructure to in   |
|   | Temporary Facilities and other indirect costs during construction  |       |                       | 05.0                  | 40.0                  | F0.4                  |                                    | A100 500 050                       | A400 470 700                          | \$0                                 | -   |
|   | SYSTEMS<br>Train control and signals   | ea    | \$1,236,000           | 35.0                  | 46.2<br>15            | 52.1                  | \$110,384,415                      | \$168,596,956<br>\$18,540,000      | \$166,479,780                         | \$445,461,150<br>\$18,540,000       | # of CPs  |
|   | Traffic signals and crossing protection  | ea    | \$247,200             |                       | 4                     |                       |                                    | \$988,800                          |                                       | \$18,540,000                        | # of at-grade crossings   |
|   | Traction power supply: substations   | ea    | \$412,000             | 6                     | 8                     | 9                     | \$2,543,918                        | \$3,445,948                        | \$3,854,021                           | \$9,843,887                         | assume 6 mile spacing for the length of electrified tr  |
| 50.04                                     | Traction power distribution: catenary and third rail   | mi    | \$2,175,360           | 37.0                  | 50.2                  | 56.1                  | \$80,591,320                       | \$109,167,640                      | \$122,095,376                         | \$311,854,336                       | catenary for double track - assume length of track co   |
| 50.05                                     | Communications   | mi    | \$772,500             | 35.0                  | 46.2                  | 52.1                  | \$27,074,077                       | \$35,676,918                       | \$40,267,733                          | \$103,018,727                       | ]   |
|   | Fare collection system and equipment   | ea    | \$87,550              | 2                     | 3                     | 3                     | \$175,100                          | \$262,650                          | \$262,650                             | \$700,400                           | 1 for each rail station   |
|   | Central Control  | ea    | \$515,000             |                       | 1                     |                       |                                    | \$515,000                          | · · · · · · · · · · · · · · · · · · · | \$515,000                           | All new track requires Central Control  |
|   | Construction Subtotal (10-50)  |       | 259/                  | 35.0                  | 46.2                  | 52.1                  | \$3,449,169,929                    | \$5,786,340,709                    | \$3,690,353,279                       | \$12,925,863,916                    |   |
|   | Construction Contingency (10 - 50) 35%<br>Construction Total   |       | 35%                   |                       |                       |                       | \$1,207,209,475<br>\$4,656,379,404 | \$2,025,219,248<br>\$7,811,559,957 | \$1,291,623,648<br>\$4,981,976,926    | \$4,524,052,371<br>\$17,449,916,286 | 4   |
|   | ROW, LAND, EXISTING IMPROVEMENTS   |       |                       | 35.0                  | 46.2                  | 52.1                  | \$24,366,013                       | \$38,438,882                       | \$38,597,538                          | \$101,402,434                       |   |
|   | Purchase or lease of real estate   | sf    | \$1.55                | 14,290,883            | 20,759,535            | 22,342,225            | \$22,079,413                       | \$32,073,482                       | \$34,518,738                          | <i>Ş101,402,434</i>                 | Regardless of ownership, square footage was calcul  |
|   |  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$88,671,634                        | only partial acquisitions)  |
| 60.02                                     | Relocation of existing households and businesses   | ea    | \$61,800              | 37                    | 103                   | 66                    | \$2,286,600                        | \$6,365,400                        | \$4,078,800                           | \$12,730,800                        | Count of primary buildings/structures that would be   |
|   | VEHICLES (number)  |       |                       |                       | 8                     |                       |                                    | \$370,800,000                      |                                       | \$370,800,000                       |   |
|   | Light Rail   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Heavy Rail   |       | <b>*</b> 40.050.000   |                       |                       |                       |                                    | \$070 000 000                      |                                       | \$0                                 | 4   |
| 70.03                                     | Commuter Rail (Electric Trainsets)   | ea    | \$46,350,000          |                       | 8                     |                       |                                    | \$370,800,000                      |                                       | \$370,800,000<br>\$0                |   |
| 70.04                                     |  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0<br>\$0                          | -   |
|   | Non-revenue vehicles   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Spare parts  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
| 80.00                                     | PROFESSIONAL SERVICES (applies to Cats. 10-50)   |       | 30%                   | 35.0                  | 46.2                  | 52.1                  | \$1,396,913,821                    | \$2,343,467,987                    | \$1,494,593,078                       | \$5,234,974,886                     | ]   |
|   | Project Development  |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 |   |
|   | Engineering  |       |                       |                       | <u> </u>              |                       |                                    |                                    |                                       | \$0                                 | 4   |
|   | Project Management for Design and Construction   |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0                                 | 4   |
|   | Construction Administration & Management<br>Professional Liability and other Nen Construction Insurance                    |       |                       |                       | +                     |                       |                                    |                                    |                                       | \$0<br>\$0                          | 4   |
|   | Professional Liability and other Non-Construction Insurance<br>Legal; Permits; Review Fees by other agencies, cities, etc. |       |                       |                       |                       |                       |                                    |                                    |                                       | \$0<br>\$0                          | 1   |
|   | Surveys, Testing, Investigation, Inspection  |       |                       |                       | 1                     |                       |                                    |                                    |                                       | \$0<br>\$0                          | 1   |
|   | Start up   |       |                       |                       | ł                     |                       |                                    |                                    |                                       | \$0                                 | 1   |
| 00.00                                     | Subtotal (10 - 80)   |       |                       | 35.0                  | 46.2                  | 52.1                  | \$6,077,659,238                    | \$10,564,266,826                   | \$6,515,167,542                       | \$23,157,093,606                    |   |
|   |  |       |                       |                       |                       |                       | \$607,765,924                      | \$1,056,426,683                    | \$651,516,754                         | \$2,315,709,361                     |   |
| 10-80.SUB<br>90.00                        | UNALLOCATED CONTINGENCY  |       | 10%                   |                       |                       |                       |                                    |                                    |                                       |                                     |   |
| 10-80.SUB<br>90.00<br>10-90.SUB           | UNALLOCATED CONTINGENCY<br>Subtotal (10 - 90)  |       | 10%                   | 35.0                  | 46.2                  | 52.1                  | \$6,685,425,162                    | \$11,620,693,508                   | \$7,166,684,296                       | \$25,472,802,967                    |   |
| 10-80.SUB<br>90.00<br>10-90.SUB<br>100.00 | UNALLOCATED CONTINGENCY  |       | 10%                   | 35.0<br>35.0          | 46.2<br>46.2          | 52.1<br>52.1          |                                    |                                    | \$7,166,684,296                       |                                     | -   |

| SCC | Item | Descri | ption |
|-----|------|--------|-------|
|-----|------|--------|-------|

ay efforts

rial structure (97,838)

include "other improvements" section near South Station) x2 e to increase allowable speed

d Lee Stations

ttsfield ume 2 tracks on an existing yard

. 7M cy, 8M cy, 15M cy of total cut by segment of which 5%, 10%, 30% assumed rock cut in

en water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. - assume 10ft height

e to include substructure elements (Abutment, foundations, piers, and wing walls)

fied track ack construction, plus 10 miles to electrify the remaining distance to South Station

calculated based on area that would be permanently impacted by improvements (i.e., assumes

| SCC Code | SCC Item Name   | Unit     | Unit Cost     | QUANTITY -     | QUANTITY -      | QUANTITY -      | COST -                    | COST -                          | COST -                       | TOTAL COST -                    |   |
|----------|---|----------|---------------|----------------|-----------------|-----------------|---------------------------|---------------------------------|------------------------------|---------------------------------|---|
| 10.00    | GUIDEWAY & TRACK ELEMENTS (route miles)   | mi       | (\$2020)      | WOR-BOS<br>0.1 | SPG-WOR<br>35.7 | PIT-SPG<br>15.5 | WOR-BOS<br>\$27,938,977   | SPG-WOR<br>\$485,419,217        | PIT-SPG<br>\$129.700.448     | PIT - BOS<br>\$643,058,642      |   |
|          | Guideway: At-grade exclusive right-of-way   | mi       | \$463,500     | 0.0            | 34.6            | 15.3            | \$0                       | \$16,060,099                    | \$7,084,176                  | \$23,144,276                    | Length of proposed track - assume full guideway       |
| 10.02    | Guideway: At-grade semi-exclusive (allows cross-traffic)  |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
|          | Guideway: At-grade in mixed traffic   |          | <b>****</b>   |                | 1.0             |                 | 404 544 540               |                                 | A00 5 40 000                 | \$0                             |   |
|          | Guideway: Aerial structure<br>Guideway: Built-up fill   | mi       | \$369,811,200 | 0.1            | 1.0             | 0.2             | \$24,511,549              | \$371,212,000                   | \$80,546,000                 | \$476,269,549<br>\$0            | current undergrade bridges (does not include tra      |
|          | Guideway: Underground cut & cover   |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
| 10.07    | Guideway: Underground tunnel  |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
|          | Guideway: Retained cut or fill  |          |               |                |                 |                 |                           |                                 |                              | \$0                             | -   |
|          | Track: Direct fixation<br>Track: Embedded   |          |               |                |                 |                 |                           |                                 |                              | \$0<br>\$0                      | -   |
|          | Track: Ballasted  | mi       | \$2,678,000   | 0.0            | 35.7            | 15.5            | \$0                       | \$95,479,830                    | \$41,514,072                 | \$136,993,902                   | single track (includes "other improvements")          |
| 10.11a   | Track: Realigned  | mi       | \$130,522     | 26.3           | 20.4            | 4.3             | \$3,427,428               | \$2,667,288                     | \$556,200                    | \$6,650,916                     | Assumed realignment of tracks along curvature         |
|          | Track: Special (switches, turnouts)   |          |               |                |                 |                 |                           |                                 |                              | \$0                             | -   |
|          | Track: Vibration and noise dampening<br>STATIONS, STOPS, TERMINALS, INTERMODAL (number)   |          |               | 0              | 1               | 1               | \$0                       | \$12,360,000                    | \$12,360,000                 | \$0<br><b>\$24,720,000</b>      | -   |
|          | At-grade station, stop, shelter, mall, terminal, platform   | ea       | \$12,360,000  | 0              | 1               | 1               | \$0                       | \$12,360,000                    | \$12,360,000                 | \$24,720,000                    | Palmer and Chester Stations                           |
| 20.01a   | At-grade station improvements to an existing station  | ea       |               | 0              | 0               | 0               | \$0                       | \$0                             | \$0                          | \$0                             |   |
|          | Aerial station, stop, shelter, mall, terminal, platform   | ea       |               | 0              | 0               | 0               | \$0                       | \$0                             | \$0                          | \$0                             | -   |
|          | Aerial station improvements to an existing station<br>Underground station, stop, shelter, mall, terminal, platform                            | ea       |               | 0              | 0               | 0               | \$0                       | \$0                             | \$0                          | \$0<br>\$0                      | -   |
|          | Other stations, landings, terminals: Intermodal, ferry, trolley, etc.   | ea       |               | 0              | 0               | 0               | \$0                       | \$0                             | \$0                          | \$0<br>\$0                      | -   |
|          | Joint development   |          |               |                |                 | -               |                           |                                 |                              | \$0                             | 1   |
| 20.06    | Automobile parking multi-story structure  |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
|          |   |          |               | 0.4            | 05.7            | 45.5            | ¢E 450 000                | £40.000.000                     | 640.000.000                  | \$0                             | -   |
|          | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS<br>Administration Building: Office, sales, storage, revenue counting                           |          |               | 0.1            | 35.7            | 15.5            | \$5,150,000               | \$13,390,000                    | \$13,390,000                 | \$31,930,000<br>\$0             | 1   |
|          | Light Maintenance Facility  |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
| 30.03    | Heavy Maintenance Facility  |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
|          | Storage or Maintenance of Way Building  | ea       | \$13,390,000  | 0              | 1               | 1               | \$0                       | \$13,390,000                    | \$13,390,000                 | \$26,780,000                    | Proposed Layover Facility - Springfield and Pittst    |
|          | Yard and Yard Track   | Track    | \$2,575,000   | 2              | 0<br>35.7       | 0<br>15.5       | \$5,150,000<br><b>\$0</b> | \$0<br>\$333,603,694            | \$0<br><b>\$116,095,859</b>  | \$5,150,000<br>\$449,699,553    | Proposed Layover Facility Mod - Boston - Assum        |
|          | SITEWORK & SPECIAL CONDITIONS<br>Demolition, Clearing, Earthwork  |          |               | 0.1            | 30.7            | 15.5            | φU                        | \$333,603,694                   | \$110,095,059                | \$449,699,555<br>\$0            | -   |
|          | Site Utilities, Utility Relocation  | mi       |               | 0.0            | 35.7            | 15.5            |                           |                                 |                              | \$0                             | Assume \$1500/ft (Urban) and \$400/ft (Rural)         |
|          | Utility Relocation: Existing RR ROW, Rural  | mi       | \$2,175,360   | 0.0            | 19.4            | 9.0             | \$0                       | \$42,200,748                    | \$19,553,520                 | \$61,754,268                    |   |
|          | Utility Relocation: Existing RR ROW, Urban  | mi       | \$8,157,600   | 0.0            | 16.3            | 6.5             | \$0                       | \$132,593,445                   | \$53,132,550                 | \$185,725,995                   | -   |
|          | Haz. mat'l, contam'd soil removal/mitigation, ground water treatments<br>Environmental mitigation, e.g. wetlands, historic/archeologic, parks | SF       | \$14          | 0              | 18,771          | 814             | \$0                       | \$265,464                       | \$11,512                     | \$0<br>\$276,975                | Wetlands only. Does not include impacts to open       |
|          | Site structures including retaining walls, sound walls  | SF       | \$43          | 0              | 470,625         | 204,625         | \$0                       | \$20,359,237.50                 | \$8,852,078                  | \$29,211,315                    | \$43/SF cost for WOR to SPR only, \$33/SF used for \$ |
|          | Pedestrian / bike access and accommodation, landscaping   |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
|          | Automobile, bus, van accessways including roads, parking lots   | SF       | \$2,879       | 0              | 48,000          | 12,000          | \$0                       | \$138,184,800                   | \$34,546,200                 | \$172,731,000                   | Overhead roadway bridge, SF of superstructure         |
|          | Temporary Facilities and other indirect costs during construction SYSTEMS   |          |               | 0.1            | 35.7            | 15.5            | \$175,100                 | \$63,648,909                    | \$12,150,313                 | \$0<br><b>\$75,974,322</b>      | -   |
|          | Train control and signals   | ea       | \$1,236,000   | 0.1            | 23              | 10.0            | \$175,100                 | \$28,428,000                    | φ12,130,313                  | \$28,428,000                    | # of CPs  |
| 50.02    | Traffic signals and crossing protection   | ea       | \$247,200     |                | 30              |                 |                           | \$7,416,000                     |                              | \$7,416,000                     | # of at-grade crossings                               |
|          | Traction power supply: substations  |          |               |                |                 |                 |                           |                                 |                              | \$0                             | -   |
|          | Traction power distribution: catenary and third rail<br>Communications  | mi       | \$772,500     | 0.0            | 35.7            | 15.5            | \$0                       | \$27,542,259                    | \$11,975,213                 | \$0<br>\$39,517,472             | -   |
|          | Fare collection system and equipment  | ea       | \$87,550      | 2              | 3               | 2               | \$175,100                 | \$262,650                       | \$175,100                    | \$612,850                       | 1 for each rail station                               |
|          | Central Control   |          |               |                |                 |                 |                           |                                 |                              | \$0                             | CSX dispatches west of Worcester                      |
|          | Construction Subtotal (10-50)   |          |               | 0.1            | 35.7            | 15.5            | \$33,264,077              | \$908,421,820                   | \$283,696,621                | \$1,225,382,517                 | 7   |
|          | Construction Contingency (10 - 50) 35%  |          | 35%           |                |                 |                 | \$11,642,427              | \$317,947,637                   | \$99,293,817                 | \$428,883,881                   |   |
|          | Construction Total ROW, LAND, EXISTING IMPROVEMENTS   |          |               | 0.1            | 35.7            | 15.5            | \$44,906,503<br>\$0       | \$1,226,369,456<br>\$12,197,731 | \$382,990,438<br>\$4,406,856 | \$1,654,266,398<br>\$16,604,587 | 5   |
|          | Purchase or lease of real estate  | sf       | \$2.27        | 0.1            | 5,382,935       | 1,944,773       | \$0<br>\$0                | \$12,197,731                    | \$4,406,856                  | \$16,604,587                    | Regardless of ownership, square footage was ca        |
|          |   |          |               | ļ              |                 |                 |                           |                                 |                              |                                 | only partial acquisitions)                            |
|          | Relocation of existing households and businesses VEHICLES (number)  |          |               |                | 28              |                 |                           | \$131,840,000                   |                              | \$0<br><b>\$131,840,000</b>     | 4   |
|          | Light Rail  |          |               |                | 20              |                 |                           | φ131,040,000                    |                              | \$131,840,000<br>\$0            | 1   |
|          | Heavy Rail  |          |               |                |                 |                 |                           |                                 |                              | \$0                             | 1   |
|          | Commuter Rail (Bi-Level Coaches)  | ea       | \$4,120,000   |                | 23              |                 |                           | \$94,760,000                    |                              | \$94,760,000                    | 4   |
| 70.04    |   |          | \$7.446.000   |                | E               |                 |                           | \$27,000,000                    |                              | \$0<br>\$37,080,000             | 4   |
|          | Other (Locomotives)<br>Non-revenue vehicles   | ea       | \$7,416,000   | ļ              | 5               |                 |                           | \$37,080,000                    |                              | \$37,080,000<br>\$0             | 1   |
|          | Spare parts   | <u> </u> |               |                |                 |                 |                           |                                 |                              | \$0                             | 1   |
|          | PROFESSIONAL SERVICES (applies to Cats. 10-50)  |          | 30%           | 0.1            | 35.7            | 15.5            | \$13,471,951              | \$367,910,837                   | \$114,897,131                | \$496,279,919                   |   |
|          | Project Development   |          |               |                |                 |                 |                           |                                 |                              | \$0<br>¢0                       | 4   |
|          | Engineering<br>Project Management for Design and Construction   |          |               |                |                 |                 |                           |                                 |                              | \$0<br>\$0                      | 1   |
|          | Construction Administration & Management  |          |               | -              | 1               |                 |                           |                                 |                              | \$0                             | 1   |
| 80.05    | Professional Liability and other Non-Construction Insurance   |          |               |                |                 |                 |                           |                                 |                              | \$0                             | 1   |
|          | Legal; Permits; Review Fees by other agencies, cities, etc.   |          |               |                |                 |                 |                           |                                 |                              | \$0                             | 4   |
|          | Surveys, Testing, Investigation, Inspection<br>Start up   |          |               |                |                 |                 |                           |                                 |                              | \$0<br>\$0                      | 4   |
|          | Subtotal (10 - 80)  | 1        |               | 0.1            | 35.7            | 15.5            | \$58,378,454              | \$1,738,318,024                 | \$502,294,425                | \$0<br>\$2,298,990,903          |   |
|          | UNALLOCATED CONTINGENCY   |          | 5%            |                |                 |                 | \$2,918,923               | \$86,915,901                    | \$25,114,721                 | \$114,949,545                   | 1   |
|          | Subtotal (10 - 90)  |          |               | 0.1            | 35.7            | 15.5            | \$61,297,377              | \$1,825,233,925                 | \$527,409,146                | \$2,413,940,449                 |   |
|          |   |          |               |                |                 |                 |                           |                                 |                              | \$0                             |   |
| 100.00   | FINANCE CHARGES<br>Total Project Cost (10 - 100)  |          |               | 0.1            | 35.7            | 15.5            | \$61,297,377              | \$1,825,233,925                 | \$527,409,146                | \$0<br>\$2,413,940,449          |   |

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en water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. or SPR to PIT

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area that would be permanently impacted by improvements (i.e., assumes

| SCC Code | SCC Item Name   | Unit     | Unit Cost                   | QUANTITY -     | QUANTITY -         | QUANTITY -        | COST -                    | COST -                       | COST -                                | TOTAL COST -                        |   |
|----------|---|----------|-----------------------------|----------------|--------------------|-------------------|---------------------------|------------------------------|---------------------------------------|-------------------------------------|---|
|          | GUIDEWAY & TRACK ELEMENTS (route miles)   | mi       | (\$2020)                    | WOR-BOS<br>0.1 | SPG-WOR<br>55.3    | PIT-SPG<br>15.5   | WOR-BOS<br>\$27,938,977   | SPG-WOR<br>\$814,661,692     | PIT-SPG<br>\$129,700,448              | PIT - BOS<br>\$972,301,117          |   |
|          | Guideway: At-grade exclusive right-of-way   | mi       | \$463,500                   | 0.0            | 52.7               | 15.3              | \$0                       | \$24,434,804                 | \$7,084,176                           | \$31,518,980                        | Length of proposed track - assume full guideway                       |
|          | 2 Guideway: At-grade semi-exclusive (allows cross-traffic)  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Guideway: At-grade in mixed traffic<br>Guideway: Aerial structure   | mi       | \$369,811,200               | 0.1            | 1.7                | 0.2               | \$24,511,549              | \$642,266,800                | \$80,546,000                          | \$0<br>\$747,324,349                | ourrent undergrade bridges (dess not include tra                      |
|          | Guideway: Aerial structure<br>Guideway: Built-up fill   | mi       | \$309,611,200               | 0.1            | 1.7                | 0.2               | φ24,511,549               | \$042,200,800                | \$80,540,000                          | \$147,324,349                       | current undergrade bridges (does not include trad                     |
|          | Guideway: Underground cut & cover   |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Guideway: Underground tunnel  |          |                             |                | 0.8                |                   |                           |                              |                                       | \$0<br>\$0                          | 50 ft of action departies and be                                      |
|          | Guideway: Retained cut or fill<br>Track: Direct fixation  |          |                             |                | 0.0                |                   |                           |                              |                                       | \$0<br>\$0                          | assume 50 ft of retained section appraching each                      |
|          | Track: Embedded   |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Track: Ballasted  | mi       | \$2,678,000                 | 0.0            | 55.3               | 15.5              | \$0                       | \$147,960,088                | \$41,514,072                          | \$189,474,160                       | single track (includes "other improvements")                          |
|          | i Track: Realigned<br>Track: Special (switches, turnouts)   | mi       | \$130,522                   | 26.3           | 0.0                | 4.3               | \$3,427,428               | \$0                          | \$556,200                             | \$3,983,628<br>\$0                  | Assumed realignment of tracks along curvature t                       |
|          | Track: Vibration and noise dampening  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | STATIONS, STOPS, TERMINALS, INTERMODAL (number)   |          |                             | 0              | 3                  | 1                 | \$0                       | \$15,965,000                 | \$12,360,000                          | \$28,325,000                        |   |
|          | At-grade station, stop, shelter, mall, terminal, platform<br>At-grade station improvements to an existing station                             | ea<br>ea | \$12,360,000<br>\$1,545,000 | 0              | 1                  | 1<br>0            | \$0<br>\$0                | \$12,360,000<br>\$1,545,000  | \$12,360,000<br>\$0                   | \$24,720,000<br>\$1,545,000         | Palmer and Chester Stations<br>Upgrade to Worcester                   |
|          | Aerial station, stop, shelter, mall, terminal, platform   | ea       | φ1,0 <del>1</del> 0,000     | 0              | 0                  | 0                 | \$0                       | \$0                          | \$0                                   | \$1,343,000                         | opgrade to worcester  |
|          | Aerial station improvements to an existing station  | ea       | \$2,060,000                 | 0              | 1                  | 0                 | \$0                       | \$2,060,000                  | \$0                                   | \$2,060,000                         | Upgrade to Springfield  |
|          | Underground station, stop, shelter, mall, terminal, platform  |          |                             | 0              | 0                  | 0                 | \$0                       | \$0                          | \$0                                   | \$0<br>\$0                          | -   |
|          | Other stations, landings, terminals: Intermodal, ferry, trolley, etc.<br>Joint development  | ea       |                             | 0              | 0                  | 0                 | ΦŪ                        | ΦŪ                           | φU                                    | \$0<br>\$0                          |   |
|          | Automobile parking multi-story structure  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          |   |          |                             |                |                    | 4.00.00           |                           |                              |                                       | \$0                                 | 4   |
|          | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS<br>Administration Building: Office, sales, storage, revenue counting                           |          |                             | 0.1            | 55.3               | 15.5              | \$5,150,000               | \$13,390,000                 | \$13,390,000                          | <b>\$31,930,000</b><br>\$0          | -   |
|          | Light Maintenance Facility  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 | -   |
| 30.03    | Heavy Maintenance Facility  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Storage or Maintenance of Way Building  | ea       | \$13,390,000                | 0              | 1                  | 1                 | \$0                       | \$13,390,000                 | \$13,390,000                          | \$26,780,000                        | Proposed Layover Facility - Springfield and Pittsf                    |
|          | Yard and Yard Track SITEWORK & SPECIAL CONDITIONS   | Track    | \$2,575,000                 | 2              | 0<br>55.3          | 0<br>15.5         | \$5,150,000<br><b>\$0</b> | \$0<br><b>\$741,891,172</b>  | \$0<br>\$116,095,859                  | \$5,150,000<br>\$857,987,031        | Proposed Layover Facility Mod - Boston - Assum                        |
|          | Demolition, Clearing, Earthwork   | су       | \$49                        | 0.1            | 3,150,000          | 10.0              | φU                        | \$155,736,000                | \$110,030,009                         | \$155,736,000                       |   |
| 40.02    | Site Utilities, Utility Relocation  | mi       |                             | 0.0            | 55.3               | 15.5              |                           |                              |                                       | \$0                                 | Assume \$1500/ft (Urban) and \$400/ft (Rural)                         |
|          | Utility Relocation: Existing RR ROW, Rural  | mi       | \$2,175,360                 | 0.0            | 25.0               | 9.0               | \$0                       | \$54,320,206                 | \$19,553,520                          | \$73,873,726                        |   |
|          | <ul> <li>Utility Relocation: Existing RR ROW, Urban</li> <li>Haz. mat'l, contam'd soil removal/mitigation, ground water treatments</li> </ul> | mi       | \$8,157,600                 | 0.0            | 30.3               | 6.5               | \$0                       | \$247,008,420                | \$53,132,550                          | \$300,140,970<br>\$0                |   |
|          | Environmental mitigation, e.g. wetlands, historic/archeologic, parks  | SF       | \$14                        | 0              | 363,943            | 814               | \$0                       | \$5,146,843                  | \$11,512                              | \$5,158,354                         | Wetlands only. Does not include impacts to open                       |
|          | Site structures including retaining walls, sound walls  | SF       | \$33                        | 0              | 729,303            | 204,625           | \$0                       | \$24,037,824                 | \$8,852,078                           | \$32,889,901                        | \$33/SF cost for WOR to SPR only, \$43/SF used for S                  |
|          | Pedestrian / bike access and accommodation, landscaping<br>Automobile, bus, van accessways including roads, parking lots                      | SF       | \$2,879                     | 0              | 88,800             | 12,000            | \$0                       | \$255,641,880                | \$34,546,200                          | \$0<br>\$290,188,080                | Overhead roadway bridge, SF of superstructure t                       |
|          | Temporary Facilities and other indirect costs during construction   | 01       | φ <u>2</u> ,073             |                | 00,000             | 12,000            | ψυ                        | φ200,041,000                 | ψ0 <del>1</del> ,0 <del>1</del> 0,200 | \$250,188,080                       | overneau roadway bridge, or or superstructure t                       |
| 50.00    | SYSTEMS   |          |                             | 0.1            | 55.3               | 15.5              | \$175,100                 | \$79,302,445                 | \$12,150,313                          | \$91,627,858                        |   |
|          | Train control and signals   | ea       | \$1,236,000                 |                | 23                 |                   |                           | \$28,428,000                 |                                       | \$28,428,000                        | # of CPs  |
|          | Traffic signals and crossing protection<br>Traction power supply: substations   | ea       | \$247,200                   |                | 30                 |                   |                           | \$7,416,000                  |                                       | \$7,416,000<br>\$0                  | # of at-grade crossings   |
|          | Traction power distribution: catenary and third rail  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Communications  | mi       | \$772,500                   | 0.0            | 55.3               | 15.5              | \$0                       | \$42,680,795                 | \$11,975,213                          | \$54,656,008                        |   |
|          | Fare collection system and equipment<br>Central Control   | ea<br>ea | \$87,550<br>\$515,000       | 2              | 3                  | 2                 | \$175,100                 | \$262,650<br>\$515,000       | \$175,100                             | \$612,850<br>\$515,000              | 1 for each rail station<br>Separate track, new Central Control needed |
|          | Construction Subtotal (10-50)   | ea       | \$313,000                   | 0.1            | 55.3               | 15.5              | \$33,264,077              | \$1,665,210,309              | \$283,696,621                         | \$1,982,171,006                     | Separate track, new Central Control needed                            |
|          | Construction Contingency (10 - 50) 35%  |          | 35%                         |                |                    |                   | \$11,642,427              | \$582,823,608                | \$99,293,817                          | \$693,759,852                       | 2   |
|          | Construction Total  |          |                             |                |                    |                   | \$44,906,503              | \$2,248,033,917              | \$382,990,438                         | \$2,675,930,858                     | 3   |
|          | ROW, LAND, EXISTING IMPROVEMENTS<br>Purchase or lease of real estate  | sf       | \$2.27                      | 0.1            | 55.3<br>13,951,380 | 15.5<br>1,944,773 | <b>\$0</b><br>\$0         | \$37,237,626<br>\$31,613,826 | \$4,406,856<br>\$4,406,856            | <b>\$41,644,482</b><br>\$36,020,682 | Regardless of ownership, square footage was ca                        |
|          |   |          | *=-=-                       | -              | ,                  | .,,               |                           |                              |                                       | \$50,020,002                        | only partial acquisitions)  |
|          | Relocation of existing households and businesses  | ea       | \$61,800                    | 0              | 91                 | 0                 | \$0                       | \$5,623,800                  | \$0                                   | \$5,623,800                         | Count of primary buildings/structures that would                      |
|          | VEHICLES (number)<br>Light Rail   |          |                             |                | 33                 |                   |                           | \$155,736,000                |                                       | <b>\$155,736,000</b><br>\$0         | -   |
|          | Heavy Rail  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Commuter Rail (Bi-Level Coaches)  | ea       | \$4,120,000                 |                | 27                 |                   |                           | \$111,240,000                |                                       | \$111,240,000                       |   |
| 70.04    |   |          | A7.440.000                  |                | 2                  |                   |                           | <b>*</b> 4 4 4 0 0 0 0 0     |                                       | \$0                                 |   |
|          | Other (Locomotives)<br>Non-revenue vehicles   | ea       | \$7,416,000                 |                | 6                  |                   |                           | \$44,496,000                 |                                       | \$44,496,000<br>\$0                 |   |
|          | Spare parts   |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 | 1   |
|          | PROFESSIONAL SERVICES (applies to Cats. 10-50)  |          | 30%                         | 0.1            | 55.3               | 15.5              | \$13,471,951              | \$674,410,175                | \$114,897,131                         | \$802,779,257                       | 4   |
|          | Project Development<br>Engineering  |          |                             |                |                    |                   |                           |                              |                                       | \$0<br>\$0                          | 4   |
|          | Project Management for Design and Construction  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 | 1   |
| 80.04    | Construction Administration & Management  |          |                             |                |                    |                   |                           |                              |                                       | \$0                                 |   |
|          | Professional Liability and other Non-Construction Insurance   |          |                             |                |                    |                   |                           |                              |                                       | \$0<br>\$0                          | 4   |
|          | Legal; Permits; Review Fees by other agencies, cities, etc.<br>Surveys, Testing, Investigation, Inspection                                    |          |                             |                |                    |                   |                           |                              |                                       | \$0<br>\$0                          | 1   |
|          | Start up  |          |                             |                | 1                  | 1                 |                           |                              |                                       | \$0                                 |   |
|          | Subtotal (10 - 80)  |          |                             | 0.1            | 55.3               | 15.5              | \$58,378,454              | \$3,115,417,718              | \$502,294,425                         | \$3,676,090,597                     |   |
|          |   |          | 5%                          | 0.4            | 55.3               | 15.5              | \$2,918,923               | \$155,770,886                | \$25,114,721<br>\$527,409,146         | \$183,804,530                       | 4   |
|          | Subtotal (10 - 90)<br>FINANCE CHARGES   |          |                             | 0.1            | 00.3               | 10.0              | \$61,297,377              | \$3,271,188,604              | \$527,409,146                         | <b>\$3,859,895,127</b><br>\$0       |   |
|          | Total Project Cost (10 - 100)   |          |                             | 0.1            | 55.3               | 15.5              | \$61,297,377              | \$3,271,188,604              | \$527,409,146                         | \$3,859,895,127                     |   |
|          |   |          |                             |                |                    |                   |                           |                              |                                       |                                     |   |

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calculated based on area that would be permanently impacted by improvements (i.e., assumes

|  | SCC Item Name  | Unit     | Unit Cost                   | QUANTITY -     | QUANTITY -      | QUANTITY -      | COST -                                       | COST -                           | COST -                        | TOTAL COST -   |   |
|--|--|----------|-----------------------------|----------------|-----------------|-----------------|--|----------------------------------|-------------------------------|--|---|
| 10.00  | GUIDEWAY & TRACK ELEMENTS (route miles)  | mi       | (\$2020)                    | WOR-BOS<br>0.1 | SPG-WOR<br>52.8 | PIT-SPG<br>15.5 | WOR-BOS<br>\$27,938,977                      | SPG-WOR<br>\$1.201.106.608       | PIT-SPG<br>\$129,700,448      | PIT - BOS<br>\$1,358,746,033   |   |
|  | 1 Guideway: At-grade exclusive right-of-way  | mi       | \$463,500                   | 0.0            | 50.0            | 15.3            | \$0  | \$23,161,481                     | \$7,084,176                   | \$30,245,657   | Length of proposed track - assume full guideway   |
| 10.0   | 2 Guideway: At-grade semi-exclusive (allows cross-traffic)   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 3 Guideway: At-grade in mixed traffic  |          | <b>*</b> ****               |                |                 |                 | A04 544 540                                  | A                                | A00 5 40 000                  | \$0  |   |
|  | 4 Guideway: Aerial structure<br>5 Guideway: Built-up fill  | mi       | \$369,811,200               | 0.1            | 2.8             | 0.2             | \$24,511,549                                 | \$1,036,592,000                  | \$80,546,000                  | \$1,141,649,549<br>\$0   | current undergrade bridges (does not include tra  |
|  | 6 Guideway: Underground cut & cover  |          |                             |                |                 |                 |  |                                  |                               | \$0  | -   |
| 10.07  | 7 Guideway: Underground tunnel   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 3 Guideway: Retained cut or fill   |          |                             |                |                 |                 |  |                                  |                               | \$0  | assume 50 ft of retained section appraching each  |
|  | 9 Track: Direct fixation   |          |                             |                |                 |                 |  |                                  |                               | \$0  | -   |
|  | 0 Track: Embedded<br>1 Track: Ballasted  | mi       | \$2,678,000                 | 0.0            | 52.8            | 15.5            | \$0  | \$141,328,407                    | \$41,514,072                  | \$0<br>\$182,842,479   | single track (includes "other improvements")  |
|  | a Track: Realigned   | mi       | \$130,522                   | 26.3           | 0.2             | 4.3             | \$3,427,428                                  | \$24,720                         | \$556,200                     | \$4,008,348  | Assumed realignment of tracks along curvature t   |
|  | 2 Track: Special (switches, turnouts)  |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 3 Track: Vibration and noise dampening   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | STATIONS, STOPS, TERMINALS, INTERMODAL (number)  |          | <b>*</b> 40,000,000         | 0              | 3               | 1               | \$0  | \$15,965,000                     | \$12,360,000                  | \$28,325,000   |   |
|  | <ol> <li>At-grade station, stop, shelter, mall, terminal, platform</li> <li>At-grade station improvements to an existing station</li> </ol>  | ea<br>ea | \$12,360,000<br>\$1,545,000 | 0              | 1               | 1               | \$0<br>\$0                                   | \$12,360,000<br>\$1,545,000      | \$12,360,000<br>\$0           | \$24,720,000<br>\$1,545,000  | Palmer and Chester Stations<br>Upgrade to Worcester   |
|  | 2 Aerial station, stop, shelter, mall, terminal, platform  | ea       | φ1,3 <del>4</del> 3,000     | 0              | 0               | 0               | \$0  | \$1,545,000                      | \$0                           | \$1,545,000  | opgrade to worcester  |
|  | a Aerial station improvements to an existing station   | ea       | \$2,060,000                 | 0              | 1               | 0               | \$0  | \$2,060,000                      | \$0                           | \$2,060,000  | Upgrade to Springfield  |
| 20.03  | 3 Underground station, stop, shelter, mall, terminal, platform   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 4 Other stations, landings, terminals: Intermodal, ferry, trolley, etc.  | ea       |                             | 0              | 0               | 0               | \$0  | \$0                              | \$0                           | \$0  | _   |
|  | 5 Joint development  |          |                             |                |                 |                 | -  |                                  |                               | \$0  | -   |
|  | Automobile parking multi-story structure     Elevators, escalators   | -        |                             |                |                 |                 |  |                                  |                               | \$0<br>\$0   | -   |
|  | SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS   |          |                             | 0.1            | 52.8            | 15.5            | \$5,150,000                                  | \$13,390,000                     | \$13,390,000                  | \$31,930,000   | -   |
|  | Administration Building: Office, sales, storage, revenue counting  |          |                             |                | 0210            |                 | <b>,</b> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | <b>*</b> ,,                      | ¥10,000,000                   | \$0  |   |
| 30.02  | 2 Light Maintenance Facility   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 3 Heavy Maintenance Facility   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 4 Storage or Maintenance of Way Building   | ea       | \$13,390,000                | 0              | 1               | 1               | \$0  | \$13,390,000                     | \$13,390,000                  | \$26,780,000   | Proposed Layover Facility - Springfield and Pittsf  |
|  | 5 Yard and Yard Track 5 SITEWORK & SPECIAL CONDITIONS  | Track    | \$2,575,000                 | 0.1            | 0<br>52.8       | 0<br>15.5       | \$5,150,000<br><b>\$0</b>                    | \$0<br><b>\$773,339,326</b>      | \$0<br><b>\$116,095,859</b>   | \$5,150,000<br>\$889,435,186   | Proposed Layover Facility Mod - Boston - Assum  |
|  | 1 Demolition, Clearing, Earthwork  | су       | \$49                        | 0.1            | 3,927,373       | 15.5            | φU   | \$194,169,339                    | \$110,095,659                 | \$194,169,339  | -   |
|  | 2 Site Utilities, Utility Relocation   | mi       |                             | 0.0            | 52.4            | 15.5            |  |                                  |                               | \$0  | Assume \$1500/ft (Urban) and \$400/ft (Rural)   |
| 40.02  | a Utility Relocation: Existing RR ROW, Rural   | mi       | \$2,175,360                 | 0.0            | 22.1            | 9.0             | \$0  | \$48,109,240                     | \$19,553,520                  | \$67,662,760   |   |
|  | b Utility Relocation: Existing RR ROW, Urban   | mi       | \$8,157,600                 | 0.0            | 30.3            | 6.5             | \$0  | \$247,008,420                    | \$53,132,550                  | \$300,140,970  | _   |
|  | 3 Haz. mat'l, contam'd soil removal/mitigation, ground water treatments  | sf       | \$14                        |                | 385,381         | 814             | 0.0  | \$5,450,017                      | ¢11 510                       | \$0<br>¢5 461 520  | Watlanda anly. Dasa not include imposts to open   |
|  | <ul> <li>Environmental mitigation, e.g. wetlands, historic/archeologic, parks</li> <li>Site structures including retaining walls, sound walls</li> </ul>   | SF       | \$14                        | 0              | 696,615         | 204,625         | \$0<br>\$0                                   | \$22,960,430                     | \$11,512<br>\$8,852,078       | \$5,461,529<br>\$31,812,508  | Wetlands only. Does not include impacts to open<br>\$33/SF cost for WOR to SPR only, \$43/SF used for S |
|  | 6 Pedestrian / bike access and accommodation, landscaping  | 0.       | çõõ                         | , ,            | 000,010         | 201,020         | ¢0   | Q22,000,100                      | \$0,002,010                   | \$0  |   |
|  | 7 Automobile, bus, van accessways including roads, parking lots  | SF       | \$2,879                     |                | 88,800          | 12,000          | \$0  | \$255,641,880                    | \$34,546,200                  | \$290,188,080  | Overhead roadway bridge, SF of superstructure t   |
|  | 8 Temporary Facilities and other indirect costs during construction  |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | ) SYSTEMS  |          | <b>*</b> ( 000 000          | 0.1            | 52.8            | 15.5            | \$175,100                                    | \$76,647,860                     | \$12,150,313                  | \$88,973,273   |   |
|  | 1 Train control and signals<br>2 Traffic signals and crossing protection   | ea<br>ea | \$1,236,000<br>\$247,200    |                | 23<br>27        |                 |  | \$28,428,000<br>\$6,674,400      |                               | \$28,428,000<br>\$6,674,400  | # of CPs<br># of at-grade crossings   |
|  | 3 Traction power supply: substations   | Ca       | φ247,200                    |                | 21              |                 |  | <i>\\</i> 0,074,400              |                               | \$0,074,400  | # of at-grade crossings   |
|  | 4 Traction power distribution: catenary and third rail   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
| 50.05  | 5 Communications   | mi       | \$772,500                   | 0.0            | 52.8            | 15.5            | \$0  | \$40,767,810                     | \$11,975,213                  | \$52,743,023   |   |
|  | 3 Fare collection system and equipment   | ea       | \$87,550                    | 2              | 3               | 2               | \$175,100                                    | \$262,650                        | \$175,100                     | \$612,850  | 1 for each rail station   |
|  | 7 Central Control  | ea       | \$515,000                   | 0.4            | 1               | 45.5            | ¢00.004.077                                  | \$515,000                        | topo coc co4                  | \$515,000  | Separate track, new Central Control needed  |
|  | B Construction Subtotal (10-50)<br>T Construction Contingency (10 - 50) 35%  |          | 35%                         | 0.1            | 52.8            | 15.5            | \$33,264,077<br>\$11,642,427                 | \$2,080,448,794<br>\$728,157,078 | \$283,696,621<br>\$99,293,817 | \$2,397,409,491<br>\$839,093,322   |   |
|  | T Construction Total   |          | 3376                        |                |                 |                 | \$44,906,503                                 | \$2,808,605,872                  | \$382,990,438                 | \$3,236,502,813  |   |
|  | ROW, LAND, EXISTING IMPROVEMENTS   |          |                             | 0.1            | 52.8            | 15.5            | \$0  | \$37,459,865                     | \$4,406,856                   | \$41,866,721   |   |
|  | 1 Purchase or lease of real estate   | sf       | \$2.27                      | 0              | 13,858,546      | 1,944,773       | \$0  | \$31,403,465                     | \$4,406,856                   | \$35,810,321   | Regardless of ownership, square footage was ca  |
| 60.03  | 2 Relocation of existing households and businesses   | ea       | \$61,800                    | 0              | 98              | 0               | \$0  | \$6,056,400                      | \$0                           | \$6,056,400  | only partial acquisitions)<br>Count of primary buildings/structures that would                          |
|  | VEHICLES (number)  | ca       | ψ01,000                     | 0              | 33              | 0               | ψυ   | \$155,736,000                    | ψU                            | \$155,736,000  | Count of primary buildings/structures that would  |
|  | 1 Light Rail   |          |                             |                |                 |                 |  | <b>*</b> ****                    |                               | \$0  |   |
| 70.02  | 2 Heavy Rail   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
|  | 3 Commuter Rail (Bi-Level Coaches)   |          | \$4,120,000                 |                | 27              |                 |  | \$111,240,000                    |                               | \$111,240,000  | _   |
|  | 4 Bus  |          |                             |                |                 |                 |  | <b>*</b> 4 4 4 0 0 0 0 0         |                               | \$0  |   |
|  | 5 Other (Locomotives)<br>5 Non-revenue vehicles  |          | \$7,416,000                 |                | 6               | [               | -  | \$44,496,000                     |                               | \$44,496,000<br>\$0  | -   |
|  | 7 Spare parts  |          |                             |                |                 |                 |  |                                  |                               | \$0  | -   |
|  | PROFESSIONAL SERVICES (applies to Cats. 10-50)   |          | 30%                         | 0.1            | 52.8            | 15.5            | \$13,471,951                                 | \$842,581,762                    | \$114,897,131                 | \$970,950,844  |   |
|  | 1 Project Development  |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
| 80.01  |  | 1        |                             |                |                 |                 |  |                                  |                               | \$0  | -   |
| 80.01<br>80.02   | 2 Engineering  |          |                             | ļ              |                 |                 |  |                                  |                               | \$0<br>\$0   | 4   |
| 80.01<br>80.02<br>80.03  | 3 Project Management for Design and Construction   |          |                             |                |                 | 1               |  |                                  |                               |  |   |
| 80.01<br>80.02<br>80.03<br>80.04   | 3 Project Management for Design and Construction<br>4 Construction Administration & Management   |          |                             |                |                 |                 |  |                                  |                               | \$0  |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.04  | 3 Project Management for Design and Construction   |          |                             |                |                 |                 |  |                                  |                               | \$0<br>\$0   |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.05   | <ul> <li>Project Management for Design and Construction</li> <li>Construction Administration &amp; Management</li> <li>Professional Liability and other Non-Construction Insurance</li> </ul>  |          |                             |                |                 |                 |  |                                  |                               |  |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.06<br>80.07<br>80.06   | <ul> <li>Project Management for Design and Construction</li> <li>Construction Administration &amp; Management</li> <li>Professional Liability and other Non-Construction Insurance</li> <li>Legal; Permits; Review Fees by other agencies, cities, etc.</li> <li>Surveys, Testing, Investigation, Inspection</li> <li>Start up</li> </ul>  |          |                             |                |                 |                 |  |                                  |                               | \$0<br>\$0<br>\$0  |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.06<br>80.07<br>80.08<br><b>10-80.SU</b>  | <ul> <li>3 Project Management for Design and Construction</li> <li>4 Construction Administration &amp; Management</li> <li>5 Professional Liability and other Non-Construction Insurance</li> <li>6 Legal; Permits; Review Fees by other agencies, cities, etc.</li> <li>7 Surveys, Testing, Investigation, Inspection</li> <li>3 Start up</li> <li>B Subtotal (10 - 80)</li> </ul>  |          |                             | 0.0            | 0.0             | 0.0             | \$58,378,454                                 | \$3,844,383,499                  | \$502,294,425                 | \$0<br>\$0<br>\$0<br><b>\$4,405,056,378</b>                              |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.06<br>80.07<br>80.06<br><b>10-80.SUI</b><br><b>90.00</b>                               | <ul> <li>Project Management for Design and Construction</li> <li>Construction Administration &amp; Management</li> <li>Professional Liability and other Non-Construction Insurance</li> <li>Legal; Permits; Review Fees by other agencies, cities, etc.</li> <li>Surveys, Testing, Investigation, Inspection</li> <li>Start up</li> <li>B Subtotal (10 - 80)</li> <li>UNALLOCATED CONTINGENCY</li> </ul>                               |          | 5%                          |                |                 |                 | \$2,918,923                                  | \$192,219,175                    | \$25,114,721                  | \$0<br>\$0<br>\$0<br><b>\$4,405,056,378</b><br><b>\$220,252,819</b>      |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.06<br>80.06<br>80.07<br>80.06<br><b>10-80.SUI</b><br>90.00<br><b>10-90.SUI</b>         | <ul> <li>Project Management for Design and Construction</li> <li>Construction Administration &amp; Management</li> <li>Professional Liability and other Non-Construction Insurance</li> <li>Legal; Permits; Review Fees by other agencies, cities, etc.</li> <li>Surveys, Testing, Investigation, Inspection</li> <li>Start up</li> <li>B Subtotal (10 - 80)</li> <li>UNALLOCATED CONTINGENCY</li> <li>B Subtotal (10 - 90)</li> </ul> |          | 5%                          | 0.0            | 0.0             | 0.0             |  |                                  |                               | \$0<br>\$0<br>\$0<br>\$4,405,056,378<br>\$220,252,819<br>\$4,625,309,197 |   |
| 80.01<br>80.02<br>80.03<br>80.04<br>80.05<br>80.06<br>80.06<br>80.06<br><b>10-80.SUI</b><br>90.00<br><b>10-90.SUI</b><br><b>100.00</b> | <ul> <li>Project Management for Design and Construction</li> <li>Construction Administration &amp; Management</li> <li>Professional Liability and other Non-Construction Insurance</li> <li>Legal; Permits; Review Fees by other agencies, cities, etc.</li> <li>Surveys, Testing, Investigation, Inspection</li> <li>Start up</li> <li>B Subtotal (10 - 80)</li> <li>UNALLOCATED CONTINGENCY</li> </ul>                               |          | 5%                          |                |                 |                 | \$2,918,923                                  | \$192,219,175                    | \$25,114,721                  | \$0<br>\$0<br>\$0<br><b>\$4,405,056,378</b><br><b>\$220,252,819</b>      |   |

ay efforts

rack)

ach end of the undergrade structures

e to increase allowable speed

ttsfield ume 2 tracks on an existing yard

en water, Article 97 Lands, flood hazard areas, NHESP habitat, or ACEC areas. or SPR to PIT

e to include substructure elements (Abutment, foundations, piers, and wing walls)

calculated based on area that would be permanently impacted by improvements (i.e., assumes uld be permanently impacted by improvements