THE COMMONWEALTH OF MASSACHUSETTS

ACCESS PERMIT PROJECT - PLAN AND PROFILE OF
MONSIGNOR O'BRIEN HIGHWAY (ROUTE 28)
PHASE 2B
IN THE CITY OF
CAMBRIDGE
MIDDLESEX COUNTY

INDEX

SHEET NO. DESCRIPTION
01 TITLE SHEET & INDEX
02 LEGEND & ABBREVIATIONS
03 KEY PLAN & GENERAL NOTES
04 - 08 EXIST QUALITY LEVEL A & B UTILITY SURVEY
09 - 12 TYPICAL SECTIONS & PAVEMENT NOTES
13 - 17 CONSTRUCTION PLANS
18 - 22 PROFILE
23 - 27 ALIGNMENT & CURB TIE PLANS
28 - 34.1 GRADING PLANS
35 - 40 UTILITY PLANS
41 - 42 DRAINAGE PROFILE
43 - 46 LANDSCAPE PLANS
47 - 52 SIGNAGE & STRIPING PLANS
53 - 55 SIGN SUMMARY
56 - 72 TRAFFIC PLANS
73 - 74 TEMPORARY TRAFFIC CONTROL PLANS - TYPICAL DETAILS & GENERAL NOTES
75 - 78 TEMPORARY TRAFFIC CONTROL PLANS - ADVANCED SIGN PLAN
79 - 83 SUGGESTED CONSTRUCTION STAGING
84 - 88 CONSTRUCTION DETAILS
89 - 106 LIGHTING PLANS
107 - 120 CROSS SECTIONS

LENGTH OF PROJECT = 2,325 FEET = 0.44 MILES

FINAL DESIGN - PHASE 2B
JULY 14, 2021
REVISED NOVEMBER 22, 2021

DESIGN DESIGNATION
MONSIGNOR O'BRIEN HIGHWAY (ROUTE 28)
CAMBRIDGE STREET (FIRST STREET TO O'BRIEN HIGHWAY)

DESIGN SPEED
35 MPH
ADT (2012) 21,179
ADT (2022) 28,135
K 7% 6.8%
D 51.1% (SB) 50.7% (SB)
T (PEAK HOUR) 1.1% 0.6%
T (AVERAGE DAY) 0.9% 0.7%
DHV 1,966 1,904
DDHV 1,004 996
FUNCTIONAL CLASSIFICATION PRINCIPAL ARTERIAL PRINCIPAL ARTERIAL

DESIGN DESIGNATION
O'BRIEN HIGHWAY (THIRD STREET TO WATER STREET)

DESIGN SPEED
35 MPH
ADT (2012) 23,069
ADT (2022) 27,857
K 6% 6.6%
D 53.0% (SB) 50.3% (WB)
T (PEAK HOUR) 0.2% 0.2%
T (AVERAGE DAY) 0.9% 0.3%
DHV 1,966 1,904
DDHV 1,004 996
FUNCTIONAL CLASSIFICATION PRINCIPAL ARTERIAL PRINCIPAL ARTERIAL

GENERAL NOTES


3. The Locations of Existing Underground Utilities are Shown in an Approximate Way Only and Have Not Been Indispensably Verified by the Owner or its Representative. The Contractor Shall Determine the Exact Location of All Existing Utilities Before the Work Commences and Shall be Fully Responsible for Any and All Damages Which May Be Occasioned by the Contractor’s Failure to Exact Location and Preserve Any and All Underground Utilities. The Contractor Shall Contact DigSafe to Request Existing Utility Markout in the Field.

4. Where an Existing Utility is Found to Conflict with the Proposed Work, the Location, Elevation, and Size of the Utility Shall be Accurately Determined Without Delay by Request Existing Utility Markout in the Field.

5. The Contractor Shall Make All Arrangements for the Alteration and Adjustment of Gas, Electric, Telephone and Any Other Private Utilities by the Utility Companies.

6. Trees and Shrubs Within the Limits of Grading Shall be Removed Only Upon Approval of the Engineer.

7. Elevation and Size of the Utility Shall be Accurately Determined Without Delay by Request Existing Utility Markout in the Field. The Term “Proposed” (Prop) Means Work to Be Constructed Using New Materials or, Where Applicable, Re-Using Existing Materials Identified as “Removed and Reuse” (R&R). The Contractor Shall Verify by Test Pit, the Locations of Existing Utilities Which May Be Occasioned by the Contractor’s Failure to Exact Location and Preserve Any and All Underground Utilities. The Contractor Shall Coordinate Construction Operations with the MBTA Bus and GreenLine Operations During Construction.

8. Areas Outside the Limits of Proposed Work Disturbed by the Contractor Operations Shall be Restored by the Contractor to Their Original Condition at No Expense to the Owner.


10. The contractor shall make all arrangements for the alteration and adjustment of gas, electric, telephone and any other private utilities by the utility companies. Trees and shrubs within the limits of grading shall be removed only upon approval of the engineer. Elevation and size of the utility shall be accurately determined without delay by request existing utility markout in the field.

11. Where an existing utility is found to conflict with the proposed work, the location, elevation, and size of the utility shall be accurately determined without delay by request existing utility markout in the field.

12. The term “proposed” (prop) means work to be constructed using new materials or, where applicable, re-using existing materials identified as “removed and reuse” (r&r). the contractor shall verify by test pit, the locations of existing utilities which may be occasioned by the contractor’s failure to exact location and preserve any and all underground utilities. the contractor shall contact digsafe to request existing utility markout in the field.

13. All existing sign within the project limits shall be removed unless noted otherwise on the drawings.

14. All existing granite curb & edging shall be reused in the proposed work; except curbed stones of a different radius than proposed curb.

15. All existing masonry shall be installed with a pitch of 0.01 foot per foot (minimum) unless noted otherwise on the drawings.

16. All existing state and city location lines and private property lines have been established from available information and their exact location are not guaranteed.

17. The minimum mounting height of post mounted signs shall be seven (7) feet unless otherwise shown on the plans.

18. The contractor shall verify by test pit, the locations of existing utilities which may conflict with the proposed drainage structures and field. any such adjustments required will be made as approved by the engineer. only after the contractor verifies elevations for the constructability of the drainage system shall any structures be ordered. the contractor shall use pedestrian guidance systems at work zones.

19. The contractor shall coordinate construction operations with the mbta bus and greenline operations during construction.

20. Any and all underground utilities. the contractor shall contact digsafe to request existing utility markout in the field.

21. Where an existing utility is found to conflict with the proposed work, the location, elevation, and size of the utility shall be accurately determined without delay by request existing utility markout in the field.

22. The term “proposed” (prop) means work to be constructed using new materials or, where applicable, re-using existing materials identified as “removed and reuse” (r&r). the contractor shall verify by test pit, the locations of existing utilities which may be occasioned by the contractor’s failure to exact location and preserve any and all underground utilities. the contractor shall coordinate construction operations with the mbta greenline operations during construction.

23. All existing sign within the project limits shall be removed unless noted otherwise on the drawings.

24. All existing granite curb & edging shall be reused in the proposed work; except curbed stones of a different radius than proposed curb.

25. All existing masonry shall be installed with a pitch of 0.01 foot per foot (minimum) unless noted otherwise on the drawings.

26. All existing state and city location lines and private property lines have been established from available information and their exact location are not guaranteed.

27. The minimum mounting height of post mounted signs shall be seven (7) feet unless otherwise shown on the plans.

28. The contractor shall verify by test pit, the locations of existing utilities which may conflict with the proposed drainage structures and field. any such adjustments required will be made as approved by the engineer. only after the contractor verifies elevations for the constructability of the drainage system shall any structures be ordered. the contractor shall use pedestrian guidance systems at work zones.

29. The contractor shall coordinate construction operations with the mbta bus and greenline operations during construction.

30. Any and all underground utilities. the contractor shall contact digsafe to request existing utility markout in the field.

31. Where an existing utility is found to conflict with the proposed work, the location, elevation, and size of the utility shall be accurately determined without delay by request existing utility markout in the field.

32. The term “proposed” (prop) means work to be constructed using new materials or, where applicable, re-using existing materials identified as “removed and reuse” (r&r). the contractor shall verify by test pit, the locations of existing utilities which may be occasioned by the contractor’s failure to exact location and preserve any and all underground utilities. the contractor shall coordinate construction operations with the mbta greenline operations during construction.

33. All existing sign within the project limits shall be removed unless noted otherwise on the drawings.

34. All existing granite curb & edging shall be reused in the proposed work; except curbed stones of a different radius than proposed curb.

35. All existing masonry shall be installed with a pitch of 0.01 foot per foot (minimum) unless noted otherwise on the drawings.

36. All existing state and city location lines and private property lines have been established from available information and their exact location are not guaranteed.

37. The minimum mounting height of post mounted signs shall be seven (7) feet unless otherwise shown on the plans.

38. The contractor shall verify by test pit, the locations of existing utilities which may conflict with the proposed drainage structures and field. any such adjustments required will be made as approved by the engineer. only after the contractor verifies elevations for the constructability of the drainage system shall any structures be ordered. the contractor shall use pedestrian guidance systems at work zones.

39. The contractor shall coordinate construction operations with the mbta bus and greenline operations during construction.

40. Any and all underground utilities. the contractor shall contact digsafe to request existing utility markout in the field.

41. Where an existing utility is found to conflict with the proposed work, the location, elevation, and size of the utility shall be accurately determined without delay by request existing utility markout in the field.

42. The term “proposed” (prop) means work to be constructed using new materials or, where applicable, re-using existing materials identified as “removed and reuse” (r&r). the contractor shall verify by test pit, the locations of existing utilities which may be occasioned by the contractor’s failure to exact location and preserve any and all underground utilities. the contractor shall coordinate construction operations with the mbta greenline operations during construction.

43. All existing sign within the project limits shall be removed unless noted otherwise on the drawings.

44. All existing granite curb & edging shall be reused in the proposed work; except curbed stones of a different radius than proposed curb.

45. All existing masonry shall be installed with a pitch of 0.01 foot per foot (minimum) unless noted otherwise on the drawings.

46. All existing state and city location lines and private property lines have been established from available information and their exact location are not guaranteed.

47. The minimum mounting height of post mounted signs shall be seven (7) feet unless otherwise shown on the plans.
GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

2. QUALITY LEVEL B SURVEY IS DEFINED AS "QL B." UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD LOCATED AND ACCURATELY REDUCED IN THE DESIGN/CONSTRUCTION DOCUMENTS.

3. QUALITY LEVEL A SURVEY IS DEFINED AS "QL A." UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED IN THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.

5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD GUIDE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.

7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.
GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

2. QUALITY LEVEL B SURVEY IS DEFINED AS "QL B" UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.

3. QUALITY LEVEL A SURVEY IS DEFINED AS "QL A" UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.

5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD CI/ASCE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.

7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.
GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

2. QUALITY LEVEL B SURVEY IS DEFINED AS "QL B." UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.

3. QUALITY LEVEL A SURVEY IS DEFINED AS "QL A." UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.

5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD CHARGE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.

7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.
GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

2. QUALITY LEVEL B SURVEY IS DEFINED AS "QL B". UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.

3. QUALITY LEVEL A SURVEY IS DEFINED AS "QL A". UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.

5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD GUIDE 38-02 "STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

6. BELOW GROUND STRUCTURES, UNLESS dimensioned, ARE SYMBOLIC ONLY.

7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.
GENERAL NOTES:

1. THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY; THEY SHOW EXISTING SUBSURFACE INFORMATION WITH QUALITY LEVEL A & B SURVEY THAT HAS BEEN COMPLETED AT THE TIME OF THE 100% SUBMITTAL.

2. QUALITY LEVEL B SURVEY IS DEFINED AS "QL-B". UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.

3. QUALITY LEVEL A SURVEY IS DEFINED AS "QL-A". UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

4. UTILITY INFORMATION DEFINED AS "QL-C" OR "QL-D" IS BASED ON RECORD INFORMATION.

5. THE UTILITY INFORMATION WAS PREPARED IN CONFORMANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARD GUIDE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.

6. BELOW GROUND STRUCTURES, UNLESS DIMENSIONED, ARE SYMBOLIC ONLY.

7. DRAINAGE AND SEWER SURVEY WAS NOT INCLUDED IN THE QUALITY LEVEL B SURVEY AND ONLY SHOWN IN QUALITY LEVEL A IF ENCOUNTERED. REFER TO VHB BASE PLAN FOR EXISTING DRAINAGE AND SEWER.
**PAVEMENT NOTES**

**PROPOSED FULL DEPTH MILLING**
- 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5) with PG 40-28 or LATEX MODIFIED EQUIVALENT
  - INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
  - BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE
  - SUBBASE: 6" GRAVEL BORROW, TYPE b
- VARIABLE DEPTH SUPERPAVE INTERMEDIATE COURSE - VARIES (10.0'-16.5')
- WALK (1.5% MAX)
- PROP GRAN CURB (TYP)
- TYPE VA-4; 6" REVEAL AT MEDIAN

**PROPOSED PAVEMENT MILL & OVERLAY - TYPE 1**
- PROPOSED FULL DEPTH PAVEMENT LESS THAN 4.0' IN WIDTH
  - INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
  - BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE
  - SUBBASE: 6" GRAVEL BORROW, TYPE b
- PROPOSED PAVEMENT MILL & OVERLAY - TYPE 2
  - PROPOSED FULL DEPTH PAVEMENT
  - MILLING: MICROMILL 1.75" (TYP)*
  - SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5)
  - INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
  - BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE
  - SUBBASE: 6" GRAVEL BORROW, TYPE b
- VARIOUS DEPTH SUPERPAVE SURFACE COURSE - VARIES (10.0'-16.5')

**GENERAL NOTES:**
1. All 12.5mm SUPERPAVE SURFACE COURSE (SSC-12.5) SHALL BE LATEX MODIFIED.
2. ASPHALT EMULSION FOR TACK COAT SHALL BE APPLIED AT 0.07 GAL/SY TO MILLED SURFACES AND 0.05 GAL/SY TO SMOOTH SURFACES PRIOR TO PAVING.
3. HOT POUR JOINT SEALANT SHALL BE APPLIED TO ALL SURFACE COURSE JOINTS PRIOR TO PAVING.
4. REM EXIST PAVEMENT
5. **LANDSCAPE BUFFER FROM STA 20+00 TO 20+72±**
6. **PERMITTED LOADING AREA**

**EXIST ROW (VARES 10'-15')**
- CONSTRUCTION 1.0' SHLD
- PROP FULL DEPTH MILLING
- PROP GRAN CURB (TYP) TYPE VA-4 6" REVEAL AT MEDIAN
- EXIST CONCRETE SLAB SEE BSI TEST PIT DATA

**LEVELING COURSE**
- 2.25" MIN, 3.5" MAX

**TYPICAL SECTION**
- O'BRIEN HIGHWAY
- MILD CURVE WIDENING, CRAWFORD ST TO STA 18+40±
- STA 17+50± TO STA 20+00±
- STA 20+00± TO STA 22+50±
- 3.0' MIN, 5.0' MAX

**ADD USUAL MILLING FOR LEVELING COURSE**
- ADDITIONAL MILLING FOR LEVELING COURSE
- **EXIST SURFACE**

**ELEVATION INFORMATION**
- **Surface**
- **Intermediate**
- **Base**
- **Subbase**

**MILLING:**
- **Proposed Micromill:**
  - 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5)
  - INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
  - BASE: 6" HIGH EARLY STRENGTH CEMENT CONCRETE
  - SUBBASE: 6" GRAVEL BORROW, TYPE b

**PROPOSED CEMENT CONCRETE - WALK / WHEELCHAIR RAMP / FOUNDATION:**
- PROPOSED BRICK BUFFER
- SURFACE: 1.75" SUPERPAVE SURFACE COURSE - 12.5mm (SSC-12.5)
- INTERMEDIATE: 2.25" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
- FOUNDATION: 6" GRAVEL BORROW, TYPE b

**PROPOSED CEMENT CONCRETE - DRIVEWAY / SIDEWALK:**
- PROPOSED HOT MIX ASPHALT DRIVEWAY / SIDEWALK
  - INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
  - FOUNDATION: 6" GRAVEL BORROW, TYPE b

**PROPOSED HOT MIX ASPHALT - SEPARATED BIKE LANE (SBL) **
- INTERMEDIATE: 2.5" SUPERPAVE INTERMEDIATE COURSE - 19.0mm (SIC-19.0)
- FOUNDATION: 6" GRAVEL BORROW, TYPE b

**ADDITIONAL MILLING FOR LEVELING COURSE**
- 2.25" MIN, 3.5" MAX

**LEVELING COURSE**
- 2.25" MIN, 3.5" MAX

**TYPICAL SECTIONS & PAVEMENT NOTES**
- SHEET 06 OF 12
TYPICAL SECTION
FIRST STREET
STA 101+00± TO STA 102+35±
ANTS

TYPICAL SECTION
GORE STREET
STA 201+00± TO STA 202+00±
ANTS

TYPICAL SECTION
THIRD STREET
STA 301+25± TO STA 301+30±
ANTS

NOTE: SEE SHEET 09 FOR PAVEMENT NOTES

* DEPTH OF MICROMILL IS VARIABLE. THE CONTRACTOR SHALL COMPARE EXISTING PAVEMENT ELEVATIONS AGAINST PROPOSED ELEVATIONS TO CONFIRM DEPTHS.
NOTES:
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18-22 FOR CONST PROFILES.
5. SEE SHEETS 84-92 FOR CONST DETAILS AND SHEETS 94-98 FOR WCR, SBL AND DWY RAMP DETAILS.
6. DEMOLITION OF EXISTING MBTA LECHMERE STATION & FACILITIES BY OTHERS.
NOTES

1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DRY RAMP DETAILS.
NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18 - 22 FOR CONST PROFILES.
5. SEE SHEETS 84 - 92 FOR CONST DETAILS AND SHEETS 94 - 98 FOR WCR, SBL AND DWY RAMP DETAILS.
NOTES
1. SEE UTILITY PLANS FOR DRAINAGE AND WATERMAIN LAYOUT.
2. SEE TRAFFIC PLANS FOR SIGNAL CONDUIT LAYOUT.
3. SEE LIGHTING PLANS FOR LIGHTING CONDUIT LAYOUT.
4. SEE SHEETS 18-22 FOR CONST PROFILES.
5. SEE SHEETS 84-92 FOR CONST DETAILS AND SHEETS 94-98 FOR WCR, SBL AND DWY RAMP DETAILS.
6. DEMOLITION OF EXISTING MBTA LECHMERE STATION & FACILITIES BY OTHERS.
7. CONTRACTOR SHALL COORDINATE WITH THE CITY OF CAMBRIDGE ON A SUITABLE LOCATION IN THE FIELD.
8. CONTRACTOR SHALL COORDINATE WITH USPS THE REMOVAL AND RELOCATION OF THE POSTAL MAILBOX.
NOTES:
1. FOR CONSTRUCTION PLANS SEE SHEET 13 - 17.
2. PROFILE SHOWN FOR INFORMATIONAL PURPOSES ONLY IN AREAS OF MILL AND OVERLAY.
### Curve Table

<table>
<thead>
<tr>
<th>Curve No.</th>
<th>Length</th>
<th>Delta</th>
<th>Radius</th>
<th>TANGENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>40.17'</td>
<td>50.00'</td>
<td>30.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>16</td>
<td>35.00'</td>
<td>60.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>17</td>
<td>40.00'</td>
<td>70.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>18</td>
<td>45.00'</td>
<td>80.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>19</td>
<td>50.00'</td>
<td>90.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>20</td>
<td>55.00'</td>
<td>100.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
</tbody>
</table>

### Curve Table for Driveway, Wheelchair Ramp, and Separated Bike Lane Ramp Details

<table>
<thead>
<tr>
<th>Curve No.</th>
<th>Length</th>
<th>Delta</th>
<th>Radius</th>
<th>TANGENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>50.00'</td>
<td>60.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>22</td>
<td>60.00'</td>
<td>70.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>23</td>
<td>70.00'</td>
<td>80.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
<tr>
<td>24</td>
<td>80.00'</td>
<td>90.00'</td>
<td>20.00%</td>
<td>20.00%</td>
</tr>
</tbody>
</table>

### Alignment & Curb Tie Plans

- **Legend:**
  - Wheelchair Ramp Number
  - Driveway Number
  - Separate Bike Lane Transition Number
  - Curve Number

### Driveway Details

- **PCC +53.72:**
  - R=69.00'
  - L=24.79'

- **PCC +66.71:**
  - R=200.00'
  - L=85.36'

- **PCC +91.87:**
  - R=10008.00'
  - L=259.07'

### Other Details

- **PC +68.48:**
  - MEET EXIST

- **PRC +14.06:**
  - MEET EXIST

### Scale:

- **1" = 20'**
NOTES:
1. SEE SHEETS 23 - 27 FOR COMPLETE CURB TIE, CURB REVEAL AND ALIGNMENT INFORMATION.
2. REFER TO WHEEL CHAIR RAMP AND DRIVEWAY DETAILS FOR ADDITIONAL GRADING & LAYOUT INFORMATION.
3. SPOT ELEVATIONS ARE PROVIDED AT +50' STATIONS UNLESS OTHERWISE NOTED.
4. ALL ELEVATIONS GIVEN ARE AT THE ROADWAY SURFACE OR BACK OF WALK UNLESS OTHERWISE NOTED.
PHASE NOTE: PROPOSED UTILITIES WITHIN THE EXISTING MBTA PROPERTY KNOW AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.
1. All drain manholes are 4' inside diameter unless otherwise noted on structure data tables (Sheet 50).
2. The contractor shall alter the masonry of the top section of all existing drainage and sewer structures as necessary for changes in grade, and reset all water and drainage frames, grates and boxes to the proposed finish surface grade. Required new masonry shall be clay brick.
3. The contractor shall make all arrangements for the alteration and adjustment of gas, electric, telephone and any other private utilities by the utility companies.
4. Contractor to cut & cap and remove abandon water main, where found in conflict with proposed work.
CAMBRIDGE STREET

PROJECT LIMIT
STA 601+70.00

N   2960446.2552
E   770073.5921

N   2960163.7387
E   770458.2572

SECOND STREET

PROJECT LIMIT
STA 101+00.00

PHASE NOTE:
PROPOSED UTILITIES WITHIN THE EXIST MBTA PROPERTY KNOWN AS LECHMERE STATION CANNOT BE CONSTRUCTED UNTIL MBTA COMPLETES THE DEMOLITION (BO) OF LECHMERE STATION.
<table>
<thead>
<tr>
<th>NO.</th>
<th>COORDS (E)</th>
<th>COORDS (N)</th>
<th>MEASURED</th>
<th>BALANCED</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
1. SEE SHEET B9 FOR CATCH BASIN SHALLOW COVER (SC) DETAIL.
2. SEE SHEET B0 FOR SPECIAL C1 DETAIL.
PLANTING NOTES:
1. SEE SHEET 46 FOR PLANT SCHEDULE.
2. WHERE 'RA1' AND 'SC1' ARE INDICATED TO BE PLANTED IN THE SAME AREA, EACH SPECIES SHALL BE PLANTED 18" ON CENTER, IN GROUPS OF 3-5.
3. WHERE 'CS' - PENNSYLVANIA SEDGE, AND 'PA' CHRISTMAS FERN ARE INDICATED TO BE PLANTED IN THE SAME AREA, SPECIES SHALL BE INTERPLANTED. 'CS' SHALL BE PLANTED 8" ON CENTER, IN GROUPS OF 5-10 PLANTS. PA SHALL BE PLANTED 6" ON CENTER IN GROUPS OF 15 PLANTS.

IRRIGATION NOTES:
CONTRACTOR SHALL PROVIDE DESIGN/BUILD IRRIGATION SYSTEM TO SERVICE ZONES INDICATED, INCLUDING WITHIN SIDEWALK/TREESWAYS.

POINT OF CONNECTION SHALL BE AT A STUBBED WATER LINE PREVIOUSLY INSTALLED AT APPROXIMATE STA 20+00 65RT, NEAR THE EASTERN CORNER OF THE MONSIGNOR O'BRIEN HIGHWAY AND GORE STREET INTERSECTION.

CONTRACTOR SHALL PROVIDE ALL EQUIPMENT FOR THE WATER STUB OUT POINT OF CONNECTION, INCLUDING WATER METER, BACKFLOW PREVENTER, WATER ENCLOSED WITH HEAT TRACE, IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS OF THE CITY OF CAMBRIDGE WATER DEPARTMENT.

WITHIN ZONES INDICATED TO BE IRRIGATED, PROVIDE DRIP IRRIGATION FOR ALL SHRUB, PERENNIAL, AND GROUNDCOVER PLANTED AREAS. PROVIDE SUBSURFACE Drip irrigation with Irrigation TUBES AS INDICATED FOR TREESWAY PLANTINGS, AND PROVIDE SPRAY HEAD OR ROTARY HEAD IRRIGATION FOR LAWN AREAS.

UTILITY AND LANDSCAPE PLANS INDICATE APPROXIMATE SLEEVE LOCATIONS, INCLUDING APPROXIMATE LOCATIONS OF SLEEVES INSTALLED BY SEPARATE PHASE 1 CONTRACT. CONTRACTOR SHALL PROVIDE IRRIGATION SLEEVES TO ALL AREAS TO BE IRRIGATED AND SHALL PROVIDE SPARE SLEEVES AS INDICATED OUTSIDE OF IRRIGATED AREAS TO ALLOW FOR FUTURE IRRIGATION BY OTHERS.

APPROXIMATE LOCATIONS FOR IRRIGATION SLEEVES ARE INDICATED SCHEMATICALLY ON THESE DRAWINGS. NOTE THAT ONLY SELECTED SCHEMATIC SLEEVES HAVE BEEN LABELED. FINAL SLEEVE LOCATIONS, QUANTITY AND SIZE TO BE AS DETERMINED BY DESIGN/BUILD IRRIGATION SUB-CONTRACTOR. LOCATIONS MAY BE ADJUSTED DUE TO ENCOUNTERED SUBSURFACE UTILITIES. CONTRACTOR SHALL PROVIDE ADDITIONAL SLEEVES AS MAY BE REQUIRED BY FINAL IRRIGATION DESIGN UNDER THE DESIGN-BUILD SUBCONTRACT.
NOTE:
SEE SHEET 46 FOR PLANT SCHEDULE.
<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>PI +85.84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>PI +44.86</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>603</td>
<td>PI +32.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>604</td>
<td>PI +55.59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB</td>
<td>Carpinus betulus <code>Fastigiata</code></td>
<td>Pyramidal European Hornbeam</td>
<td>2 1/2 - 3&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>GP</td>
<td>Ginkgo biloba <code>Princeton Sentry</code></td>
<td>Princeton Sentry Ginkgo</td>
<td>3 - 3 1/2&quot; CAL.</td>
<td>Alt name: Princeton Sentry Maidenhair Tree</td>
</tr>
<tr>
<td>GT</td>
<td>Gleditsia triacanthos inermis <code>Skyline</code></td>
<td>Skyline Honeylocust</td>
<td>3 - 3 1/2&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>LB</td>
<td>Liriodendron tulipifera</td>
<td>Tulip Tree</td>
<td>3 - 3 1/2&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>PB</td>
<td>Platanus x acerifolia <code>Bloodgood</code></td>
<td>Bloodgood London Planetree</td>
<td>3 - 3 1/2&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>UT</td>
<td>Ulmus <code>Morton Glossy</code></td>
<td>Triumph Elm</td>
<td>3 - 3 1/2&quot; CAL.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Amelanchier arborea</td>
<td>Downy Serviceberry</td>
<td>1 1/2 - 2&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>CV</td>
<td>Chionanthus virginicus</td>
<td>White Fringetree</td>
<td>1 1/2 - 2&quot; CAL.</td>
<td></td>
</tr>
<tr>
<td>CF</td>
<td>Cornus florida</td>
<td>Eastern Dogwood</td>
<td>1 1/2 - 2&quot; CAL.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR</td>
<td>Aronia arbutifolia</td>
<td>Red Chokeberry</td>
<td>18 - 24&quot; HT.</td>
<td></td>
</tr>
<tr>
<td>IG</td>
<td>Ilex glabra <code>Shamrock</code></td>
<td>Shamrock Inkberry</td>
<td>24 - 30&quot; HT.</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Itea virginica</td>
<td>Sweetspire</td>
<td>24&quot; - 30&quot; HT.</td>
<td>B&amp;B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG</td>
<td>Deschampsia cespitosa <code>Goldtau</code></td>
<td>Gold Dew Tufted Hair Grass</td>
<td>2 GAL.</td>
<td></td>
</tr>
<tr>
<td>MW</td>
<td>Muhlenbergia capillaris <code>White Cloud</code></td>
<td>White Cloud Muhly Grass</td>
<td>2 GAL.</td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>Sporobolus heterolepis</td>
<td>Prairie Dropseed</td>
<td>2 GAL.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Carex pensylvanica</td>
<td>Pennsylvania Sedge</td>
<td>1 GAL.</td>
<td>16&quot; o.c.</td>
<td></td>
</tr>
<tr>
<td>HF</td>
<td>Hemerocallis fulva</td>
<td>Orange Daylily</td>
<td>2 GAL.</td>
<td>24&quot; o.c.</td>
<td></td>
</tr>
<tr>
<td>HCW</td>
<td>Hemerocallis x <code>Catherine Woodbury</code></td>
<td>Catherine Woodbury Daylily</td>
<td>2 GAL.</td>
<td>24&quot; o.c.</td>
<td></td>
</tr>
<tr>
<td>HJS</td>
<td>Hemerocallis x <code>Joan Senior</code></td>
<td>Joan Senior Daylily</td>
<td>2 GAL.</td>
<td>24&quot; o.c.</td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>Polystichum acrostichoides</td>
<td>Christmas Fern</td>
<td>1 GAL.</td>
<td>24&quot; o.c.</td>
<td></td>
</tr>
<tr>
<td>RA1</td>
<td>Rhus aromatica <code>Gro-Low</code></td>
<td>Gro-Low Fragrant Sumac</td>
<td>5 GAL.</td>
<td>36&quot; o.c.</td>
<td>18&quot; o.c.</td>
</tr>
<tr>
<td>SC1</td>
<td>Symphoricarpos x chenaultii <code>Hancock</code></td>
<td>Hancock Coralberry</td>
<td>2 - 3 FT/5 GAL.</td>
<td>36&quot; o.c.</td>
<td>18&quot; o.c.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS</td>
<td>Liatris spicata</td>
<td>Prairie Gayfeather</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG</td>
<td>Deschampsia cespitosa <code>Goldtau</code></td>
<td>Gold Dew Tufted Hair Grass</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MW</td>
<td>Muhlenbergia capillaris <code>White Cloud</code></td>
<td>White Cloud Muhly Grass</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SH</td>
<td>Sporobolus heterolepis</td>
<td>Prairie Dropseed</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Carex pensylvanica</td>
<td>Pennsylvania Sedge</td>
<td>1 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HF</td>
<td>Hemerocallis fulva</td>
<td>Orange Daylily</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCW</td>
<td>Hemerocallis x <code>Catherine Woodbury</code></td>
<td>Catherine Woodbury Daylily</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HJS</td>
<td>Hemerocallis x <code>Joan Senior</code></td>
<td>Joan Senior Daylily</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA2</td>
<td>Polystichum acrostichoides</td>
<td>Christmas Fern</td>
<td>1 GAL.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RA1</td>
<td>Rhus aromatica <code>Gro-Low</code></td>
<td>Gro-Low Fragrant Sumac</td>
<td>5 GAL.</td>
<td></td>
<td>18&quot; o.c.</td>
</tr>
<tr>
<td>SC1</td>
<td>Symphoricarpos x chenaultii <code>Hancock</code></td>
<td>Hancock Coralberry</td>
<td>2 - 3 FT/5 GAL.</td>
<td></td>
<td>18&quot; o.c.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>QC</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>SPACING</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS</td>
<td>Liatris spicata</td>
<td>Prairie Gayfeather</td>
<td>2 GAL.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CONSTRUCTION NOTES

1. SEE SHEET 58 FOR TRAFFIC SIGNAL PLANS.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT BICYCLE LANE ARROWS AND RIDER BICYCLE STOP LANE SYMBOLS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.
4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY APPROVED METHOD.
5. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED, UNLESS OTHERWISE NOTED.
CONSTRUCTION NOTES

1. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT BIKE LANE ARROWS AND RIDER BIKE STOP LANE SYMBOL WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

2. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.

3. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.

4. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.

5. RETAIN ALL EXISTING SIGNS UNLESS OTHERWISE NOTED.
CONSTRUCTION NOTES

1. SEE SHEET 64 FOR TRAFFIC SIGNAL PLANS.

2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER BIKE STOP LANE SYMBOL AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.

4. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4' CLEAR SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.

5. REMOVE EXISTING PAVEMENT MARKINGS DIFFERENT THAN PROPOSED MARKINGS SHOWN. REMOVE BY AN APPROVED METHOD.

6. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED.
CONSTRUCTION NOTES:

1. SEE SHEET 66 FOR TRAFFIC SIGNAL PLAN.

2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC EXCEPT: BIKE LANE ARROWS AND RIDER, BIKE STOP LANE SYMBOL, AND SHARROWS WHICH WILL BE REFLECTORIZED PREFORMED THERMOPLASTIC.

3. ALL PAVEMENT MARKINGS SHALL BE 6" ON MONSIGNOR O'BRIEN HIGHWAY & 4" ELSEWHERE, UNLESS OTHERWISE NOTED.

4. ALL CROSSWALKS WITHIN STATE HIGHWAY LAYOUT SHALL HAVE A 4" "CLEAR" SPACE ON EITHER SIDE, UNLESS OTHERWISE SHOWN ON THE PLAN.

5. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.

6. ALL EXISTING SIGNS WITHIN THE PROJECT LIMITS SHALL BE R&D UNLESS OTHERWISE NOTED.
CONSTRUCTION NOTES

1. All pavement markings shall be reflectorized thermoplastic except: bike lane arrows and rider, bike stop lane symbol, and sharrow markings which will be reflectorized preformed thermoplastic.

2. All pavement markings shall be 6" on Monsignor O'Brien Highway & 4" elsewhere. Unless otherwise noted.

3. Where existing pavement markings are different than proposed markings shown, remove by an approved method.

4. All existing signs within the project limits shall be R&D unless otherwise noted.
### Traffic Sign Summary

<table>
<thead>
<tr>
<th>Identification Number</th>
<th>Size of Sign</th>
<th>Text</th>
<th>Text Dimensions (Inches)</th>
<th>Number of Signs</th>
<th>Color</th>
<th>Post Size and Number Required</th>
<th>Unit Area in Square Feet</th>
<th>Area in Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-1</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 RED/WHITE/BLACK</td>
<td>PS-1</td>
<td>5.18</td>
<td>5.18</td>
</tr>
<tr>
<td>R3-1a</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 RED/WHITE/BLACK</td>
<td>PS-3</td>
<td>6.25</td>
<td>6.25</td>
</tr>
<tr>
<td>R3-2</td>
<td>24&quot; x 24&quot;</td>
<td></td>
<td></td>
<td></td>
<td>6 RED/WHITE/BLACK</td>
<td>PS-6</td>
<td>24.00</td>
<td></td>
</tr>
<tr>
<td>R3-3</td>
<td>24&quot; x 24&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE/BLACK</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R3-5a</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>2 WHITE/BLACK</td>
<td>PS-1</td>
<td>7.50</td>
<td>7.50</td>
</tr>
<tr>
<td>R3-6L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE/BLACK</td>
<td>PS-1</td>
<td>7.50</td>
<td>7.50</td>
</tr>
<tr>
<td>R3-7L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE/BLACK</td>
<td>PS-1</td>
<td>7.50</td>
<td>7.50</td>
</tr>
<tr>
<td>R3-9L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE/BLACK</td>
<td>PS-1</td>
<td>7.50</td>
<td>7.50</td>
</tr>
<tr>
<td>R3-10L+T</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE/BLACK</td>
<td>PS-1</td>
<td>7.50</td>
<td>7.50</td>
</tr>
<tr>
<td>R3-11L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>5 WHITE/BLACK</td>
<td>PS-5</td>
<td>31.25</td>
<td></td>
</tr>
<tr>
<td>R3-12L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 WHITE/BLACK</td>
<td>PS-2</td>
<td>6.25</td>
<td>6.25</td>
</tr>
<tr>
<td>R3-13L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>6 WHITE/BLACK</td>
<td>PS-6</td>
<td>27.50</td>
<td></td>
</tr>
<tr>
<td>R3-14L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 WHITE/BLACK</td>
<td>PS-2</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>R3-15L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>2 WHITE/BLACK</td>
<td>PS-3</td>
<td>8.00</td>
<td>8.00</td>
</tr>
<tr>
<td>R4-7</td>
<td>24&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>7 WHITE/BLACK</td>
<td>PS-1</td>
<td>36.00</td>
<td></td>
</tr>
</tbody>
</table>

### Traffic Sign Summary (Continued)

<table>
<thead>
<tr>
<th>Identification Number</th>
<th>Size of Sign</th>
<th>Text</th>
<th>Text Dimensions (Inches)</th>
<th>Number of Signs</th>
<th>Color</th>
<th>Post Size and Number Required</th>
<th>Unit Area in Square Feet</th>
<th>Area in Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>R5-1</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>3 WHITE/BLACK</td>
<td>PS-4</td>
<td>10.50</td>
<td></td>
</tr>
<tr>
<td>R5-2</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>6 BLACK/WHITE</td>
<td>PS-6</td>
<td>24.00</td>
<td></td>
</tr>
<tr>
<td>R5-3</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-4</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-5a</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-6L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-7L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-8L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-9L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-10L+T</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 BLACK/WHITE</td>
<td>PS-1</td>
<td>4.00</td>
<td>4.00</td>
</tr>
<tr>
<td>R5-11L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>5 WHITE/BLACK</td>
<td>PS-5</td>
<td>31.25</td>
<td></td>
</tr>
<tr>
<td>R5-12L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 WHITE/BLACK</td>
<td>PS-2</td>
<td>6.25</td>
<td>6.25</td>
</tr>
<tr>
<td>R5-13L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>6 WHITE/BLACK</td>
<td>PS-6</td>
<td>27.50</td>
<td></td>
</tr>
<tr>
<td>R5-14L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>1 WHITE/BLACK</td>
<td>PS-2</td>
<td>10.00</td>
<td>10.00</td>
</tr>
<tr>
<td>R5-15L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>2 WHITE/BLACK</td>
<td>PS-3</td>
<td>8.00</td>
<td>8.00</td>
</tr>
<tr>
<td>R5-16L</td>
<td>36&quot; x 36&quot;</td>
<td></td>
<td></td>
<td></td>
<td>7 WHITE/BLACK</td>
<td>PS-1</td>
<td>36.00</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
2. Sign shall be fabricated with type II extruded aluminum panels for MassDOT standards.
3. Legend to be provided by MassDOT based on exact nature of regulation. Contractor to coordinate with MassDOT in regards to these signs.
### Traffic Sign Summary (Continued)

#### Example Numbers

<table>
<thead>
<tr>
<th>Example Number</th>
<th>Size of Sign</th>
<th>Text</th>
<th>Text Dimensions (Inches)</th>
<th>Number of Signs Required</th>
<th>Color</th>
<th>Post Size and Number Required</th>
<th>Unit Area (S.F.)</th>
<th>Unit Area in Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>R9-23</td>
<td>12” x 18”</td>
<td>AS PER MASSDOT STANDARD</td>
<td>2 WHITE BLACK BLACK</td>
<td>PS-1 1 MTD WITHERS</td>
<td>1.50</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R9-23a</td>
<td>12” x 18”</td>
<td></td>
<td>1 WHITE BLACK BLACK</td>
<td>PS-1 1 MTD WITHERS</td>
<td>1.50</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R9-23b</td>
<td>12” x 18”</td>
<td></td>
<td>1 WHITE BLACK BLACK</td>
<td>1 MTD WITHERS</td>
<td>1.50</td>
<td>1.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-34x12</td>
<td>9” x 15”</td>
<td>AS PER MASSDOT STANDARD</td>
<td>21 WHITE BLACK ORANGE</td>
<td>21 MTD ON TS POLE/TS POLE</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-34x12</td>
<td>9” x 15”</td>
<td></td>
<td>15 WHITE BLACK ORANGE</td>
<td>15 MTD ON TS POLE/TS POLE</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-10b</td>
<td>12” x 18”</td>
<td>AS PER FHWA/INTERIM APPROVAL (86-90), AS AMENDED</td>
<td>5 WHITE BLACK ORANGE</td>
<td>5 MTD ON TS POLE/TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-10b</td>
<td>18” x 24”</td>
<td></td>
<td>1 WHITE BLACK ORANGE</td>
<td>5 MTD ON TS POLE/TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-11b</td>
<td>24” x 24”</td>
<td>SEE FHWA/&quot;STANDARD HIGHWAY SIGNS, 2004 EDITION&quot;, AS AMENDED</td>
<td>1 WHITE BLACK ORANGE</td>
<td>1 MTD ON TS POLE/TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-11b</td>
<td>36” x 36”</td>
<td></td>
<td>9 WHITE BLACK ORANGE</td>
<td>1 MTD ON TS POLE/TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-R10-12a</td>
<td>30” x 36”</td>
<td>AS PER MASSDOT STANDARD</td>
<td>3 WHITE BLACK ORANGE</td>
<td>3 MTD ON TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-R10-12a</td>
<td>30” x 36”</td>
<td></td>
<td>3 WHITE BLACK ORANGE</td>
<td>3 MTD ON TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-15M100</td>
<td>30” x 36”</td>
<td>SEE FHWA/&quot;STANDARD HIGHWAY SIGNS, 2004 EDITION&quot;, AS AMENDED</td>
<td>3 WHITE BLACK ORANGE</td>
<td>3 MTD ON TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R10-15M100</td>
<td>30” x 36”</td>
<td></td>
<td>3 WHITE BLACK ORANGE</td>
<td>3 MTD ON TS MAST ARM</td>
<td>INCLUDED UNDER ITEMS 810.3 &amp; 810.3-6, 810.5, 810.6, 810.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- High intensity reflective sheeting shall be used for all signs. See FHWA/"STANDARD HIGHWAY SIGNS, 2004 EDITION", for text dimensions, as amended; the 1990 Drawings for Signs and Supports; and the MassDOT Standard Signs, as amended.
### TRAFFIC SIGN SUMMARY (CONTINUED)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>WIDTH</th>
<th>HEIGHT</th>
<th>TEXT</th>
<th>LTRD HEIGHT</th>
<th>VERTICAL SPACING</th>
<th>LETTERS</th>
<th>LETTERS</th>
<th>NUMBER OF LETTERS</th>
<th>BACKGROUND LEGEND</th>
<th>COLOR</th>
<th>POST SEE AND NUMBER REQUIRED</th>
<th>UNIT AREA (S.F.)</th>
<th>AREA IN SQUARE FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-D3-1a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-1b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-2a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-2b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-3a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-3b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-4a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-4b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-5a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-5b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-6a</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-6b</td>
<td>18'</td>
<td></td>
<td></td>
<td>60&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-7a</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-7b</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-8a</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-8b</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-9a</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D3-9b</td>
<td>12'</td>
<td></td>
<td></td>
<td>48&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TRAFFIC SIGN SUMMARY (CONTINUED)

<table>
<thead>
<tr>
<th>ITEM NUMBER</th>
<th>WIDTH</th>
<th>HEIGHT</th>
<th>TEXT</th>
<th>LTRD HEIGHT</th>
<th>VERTICAL SPACING</th>
<th>LETTERS</th>
<th>LETTERS</th>
<th>NUMBER OF LETTERS</th>
<th>BACKGROUND LEGEND</th>
<th>COLOR</th>
<th>POST SEE AND NUMBER REQUIRED</th>
<th>UNIT AREA (S.F.)</th>
<th>AREA IN SQUARE FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-D1-7a</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-7b</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-8a</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-8b</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-9a</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-9b</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-10a</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA-D1-10b</td>
<td></td>
<td>88&quot;</td>
<td></td>
<td>66&quot;W/6&quot;C</td>
<td>4.5&quot;</td>
<td>4.5&quot;</td>
<td>3A</td>
<td>GREEN</td>
<td>WHITE</td>
<td></td>
<td>3 MTD ON TS MAST ARM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### NOTES:
1. HIGH INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA “STANDARD HIGHWAY SIGNS, 2004 EDITION” FOR TEXT DIMENSIONS, AS AMENDED; THE 1990 DRAWINGS FOR SIGNS AND SUPPORTS; AND THE MASSDOT STANDARD SIGNS, AS AMENDED.
2. SIGNS SHALL BE FABRICATED WITH TYPE B EXTRUDED ALUMINUM PANELS PER MASSDOT STANDARDS.
CONSTRUCTION NOTES
1. SEE SHEET 57 FOR TRAFFIC SIGNAL DATA.
2. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT, UNLESS OTHERWISE NOTED.
EXISTING PREFERENTIAL PHASE SEQUENCE

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. In response to a pre-emption signal received at an intersection by emergency vehicles, the controller shall hold or advance green for a minimum of ten (10) seconds or until pre-emption signal ceases. The controller shall then time pre-emption phase clearances necessary.

2. Pre-emption signal receiver cards manufactured by Applied Information are required at each controller. These cards receive signals transmitted via optical emitters mounted in emergency vehicles and received by optical detector D1 (or D2, D3).


4. Pre-emption strobe shall be illuminated whenever any emergency vehicle pre-emption phase is on.

5. Minimum 10 second normal vehicle clearance shall be provided on phases that are to be terminated by pre-emption demand.

6. Emergency vehicle pre-emption shall override all other pre-empted phases.

7. Field monitoring unit necessary to complete the installation and provide an operating traffic control signal.

LIST OF MAJOR ITEMS REQUIRED

O'BRIEN HIGHWAY AT THIRD STREET"
CONSTRUCTION NOTES

1. SEE SHEET 51 FOR TRAFFIC SIGNAL DATA.
2. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
3. ALL TS POST/POLE, WITH PEDESTRIAN PUSH BUTTON, SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING AREA PER 521 CMR AND AS SHOWN IN THE CONSTRUCTION DETAILS.
SIGNAL HEAD DATA

- All signal heads shall be equipped with LED modules.
- All backplates shall contain a 3" wide yellow reflective border.
- All signal heads shall be equipped with 5" non-louvered backplates.
- All signal heads shall be rigidly mounted.

K,L,M,P,Q,R

- All 12" lens

A,B,E,F

- All 8" lens

C,G

- (2)

D,H,S,T

- (1)

W/Countdown Timer

PREFERENTIAL PHASE SEQUENCE

SEQUENCE & TIMING NOTES:

1. Sequence and timing notes shall be programmed in the controller.
2. The contractor shall be responsible for setting proposed
   sequence and timings for all phases.
3. All signal heads shall be rigidly mounted.

1. Emergency vehicle pre-emption signals shall be optically transmitted by optical emitters mounted in emergency vehicles and received by optical detectors located at each intersection.
2. Emergency vehicle pre-emption signals shall be programmed in the controller and the interface card will be programmed to provide the appropriate clearances for the associated phase(s) as shown in the sequence and timing chart and service subsequent emergency vehicle pre-emption phases as necessary.
3. Emergency vehicle pre-emption signals shall override coordination.
4. Pre-emption timing for emergency vehicles shall be determined by the traffic engineer.

EMERGENCY/VEHICLE PRE-EMPTION STROBE

- The emergency vehicle pre-emption strobe shall be illuminated whenever any emergency vehicle enters the pre-emption phase.
- The emergency vehicle pre-emption strobe shall be illuminated whenever any emergency vehicle pre-emption is activated.
- The emergency vehicle pre-emption strobe shall be illuminated whenever any emergency vehicle pre-emption is activated.

DETECTION ZONES

- All non-standard zone detectors shall be coordinated by the controller.

VIDEO DETECTION DATA

- The video detection system shall be installed and operational.

LIST OF MAJOR ITEMS REQUIRED

- All signal heads shall be rigidly mounted.
- All signal heads shall be equipped with LED modules.
- All backplates shall contain a 3" wide yellow reflective border.
- All signal displays shall be equipped with LED modules.

NOTES:

- All signal heads shall be rigidly mounted.
- All signal heads shall be equipped with LED modules.
- All backplates shall contain a 3" wide yellow reflective border.
- All signal displays shall be equipped with LED modules.
CONSTRUCTION NOTES

1. SEE SHEET FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET FOR SIGNAGE AND STRIPING PLANS.
3. REMOVE ALL EXISTING EQUIPMENT AND ABANDON ALL TS CONSULT CURRENT STUDY.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND LOCATED 3"± ABOVE FINISHED GRADE.
5. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED 3"± ABOVE FINISHED GRADE.
7. ALL PROP TS POLE W/PED SIGNAL HEAD, W/APS PUSH BUTTON, W/R10-3e(L) SHALL BE POSITIONED SO AS TO PROVIDE A 10" MAX CLEAR REACH ZONE FROM LEVEL LANDING TO THE TOP OF THE MAST ARM.

CAMBRIDGE O'BRIEN HIGHWAY TRAFFIC PLANS SHEET NO. 120 LOCATION 3, 4 & 6

Plotted on 13-Jul-2021 12:09 PM

11554-TSIG.DWG
2. ALL SIGNAL DISPLAYS SHALL BE EQUIPPED W/LED MODULES.

3. ALL SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.

4. ALL SIGNAL HEADS SHALL BE RIGID MOUNTED.

5. EMERGENCY VEHICLE PRE-EMPTION OPERATION

   EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS MOUNTED IN EMERGENCY VEHICLES AND RECEIVED BY OPTICAL DETECTORS AT OR NEAR CITY STREETS, THE CONTROLLER SHALL HOLD OR CEASE THE SIGNAL INDICATION FOR THE ASSOCIATED PHASE(S) AS SHOWN IN THE SEQUENCE AND TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES AS REQUIRED.

6. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE PROGRAMMED IN THE CONTROLLER.

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING/PROGRAMMING/INSTALLATION.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING/PROGRAMMING/INSTALLATION.
1. SEE SHEETS 65 FOR TRAFFIC SIGNAL DATA FOR O'BRIEN HIGHWAY AT LAND BOULEVARD/CHARLESTOWN AVENUE.
2. SEE SHEETS 50 FOR SIGNAGE AND STRIPING PLAN.
3. RETAIN ALL EXISTING TS EQUIPMENT AND ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. TRAFFIC SIGNAL FOUNDATIONS TO BE LOCATED BY STATION AND OFFSET.
6. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FlUSH WITH FINISH GRADE.
7. TS VIDEO DETECTION CAMERAS MTD ON EXIST TS POLE.

SCALe: 1" = 20'
NOTES:
1. ALL PROPOSED SIGNAL HEADS SHALL BE RIGID MOUNTED.
2. PRE-EMPTION SIGNAL HEAD "S" SHALL BE EQUIPPED WITH 5" L.E.D. MODULES. ALL OTHER PROPOSED SIGNAL HEADS SHALL BE EQUIPPED WITH 3" L.E.D. MODULES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
3. ALL PROPOSED SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
4. ALL PROPOSED SIGNAL HEADS SHALL BE RIGID MOUNTED.

EXISTING/PROPOSED SIGNAL HEAD DATA

1. PRE-EMPTION SIGNAL HEAD "S" SHALL BE EQUIPPED WITH 5" L.E.D. MODULES. ALL OTHER PROPOSED SIGNAL HEADS SHALL BE EQUIPPED WITH 3" L.E.D. MODULES. ALL BACKPLATES SHALL CONTAIN A 3" WIDE YELLOW REFLECTIVE BORDER.
2. ALL PROPOSED SIGNAL HEADS SHALL BE EQUIPPED TUNNEL VISORS.
3. ALL PROPOSED SIGNAL HEADS SHALL BE RIGID MOUNTED.

PRE-EMPTION PHASING & PRIORITY

1. PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS TO EMERGENCY VEHICLES. OPTICAL DETECTORS LOCATED AT EACH INTERSECTION SHALL MONITOR THE RECEIPT OF THE SIGNALS TO DETERMINE THE PRESENCE OF AN EMERGENCY VEHICLE.
2. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
3. A PRE-EMPTION SIGNAL MAY BE TRIGGERED BY THE PRESENCE OF AN EMERGENCY VEHICLE. THE PRESENCE OF THE VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
4. THE EMERGENCY VEHICLE PRE-EMPTION SYSTEM MAY BE USED TO BLOCK THE PATH OF AN EMERGENCY VEHICLE. THE SYSTEM WILL USE OPTICAL EMITTERS TO TRANSMIT SIGNALS TO EMERGENCY VEHICLES, WHICH WILL BE RECEIVED BY OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF THE VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
5. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS TO EMERGENCY VEHICLES. OPTICAL DETECTORS LOCATED AT EACH INTERSECTION SHALL MONITOR THE RECEIPT OF THE SIGNALS TO DETERMINE THE PRESENCE OF AN EMERGENCY VEHICLE.

EMERGENCY VEHICLE PRE-EMPTION OPERATION

1. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
2. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
3. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
4. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.
5. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.

SEQUENCE & TIMING NOTES:

1. SEQUENCE & TIMING CHART AND SERVICE SUBSEQUENT EMERGENCY VEHICLE PRE-EMPTION PHASES.
2. EMERGENCY VEHICLE PRE-EMPTION OPERATIONS SHALL OVERRIDE COORDINATION.
3. MINIMUM GREEN AND NORMAL VEHICLE CLEARANCE SHALL BE PROVIDED ON PHASES THAT ARE TO BE TERMINATED BY PRE-EMPTION DEMAND.
4. EMERGENCY VEHICLE PRE-EMPTION SIGNALS SHALL BE OPTICALLY TRANSMITTED BY OPTICAL EMITTERS TO EMERGENCY VEHICLES. OPTICAL DETECTORS LOCATED AT EACH INTERSECTION SHALL MONITOR THE RECEIPT OF THE SIGNALS TO DETERMINE THE PRESENCE OF AN EMERGENCY VEHICLE.
5. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.

EXISTING/PROPOSED PREFERENTIAL PHASE SEQUENCE

1. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
2. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
3. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
4. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.
5. PRE-EMPTION SIGNALS SHALL BE TRANSMITTED TO EMERGENCY VEHICLES VIA OPTICAL EMITTERS, WHICH ARE CONNECTED TO OPTICAL DETECTORS AT EACH INTERSECTION. THE PRESENCE OF AN EMERGENCY VEHICLE WILL BE DETERMINED BY THE OPTICAL DETECTORS, WHICH WILL TRIGGER THE PRE-EMPTION SIGNALS TO BE TRANSMITTED.

EXISTING/PROPOSED IDENTIFIED TRAFFIC OPERATIONS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES AS NEEDED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES AS NEEDED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES AS NEEDED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES AS NEEDED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING PROPOSED DETECTION ZONES AS SHOWN ON THE PLANS, AND ADJUSTING/READJUSTING DETECTION ZONES AS NEEDED.
CONSTRUCTION NOTES

1. SEE SHEET 67 FOR TRAFFIC SIGNAL DATA.
2. SEE SHEET 51 FOR SIGNAGE AND STRIPING PLAN.
3. REMOVE ALL EXISTING TS EQUIPMENT AND ABANDON ALL TS CONDUIT UNLESS OTHERWISE NOTED.
4. PULL BOXES SHALL BE ADJACENT TO CURB UNLESS OTHERWISE NOTED AND SHALL NOT BE LOCATED IN WHEELCHAIR RAMPS.
5. THE TOP OF ALL MAST ARM FOUNDATIONS IN SIDEWALK AREAS SHALL BE LOCATED FLUSH WITH FINISH GRADE.
6. ALL TS POSTS WITH PEDESTRIAN PUSH BUTTONS SHALL BE LOCATED IN CLEAR OF OBSTRUCTIONS AND LEVEL LANDINGS ARE PAIRED 0 CMI AND AS SHOWN IN THE CONSTRUCTION DETAILS.
ASSIGNMENT

1. NOTES:

2. SIGNAL HEAD DATA

All signal displays shall be equipped with L.E.D. modules.

All signal heads shall be equipped with tunnel visors.

All signal heads shall be equipped with 5"± louvered backplates.

All signal heads shall be rigid mounted.

3. DETECTION

Video detection data

Detection zones shall count volume and occupancy.

Detection zones in the presence of the engineer.

Detection zones as shown on the plan, and adjusting/reading delay and extension timings shall be programmed in the controller only.

The contractor shall be responsible for setting proposed detection zones as shown on the plan, and adjusting/reading delay and extension timings as shown on the plan.

4. VIDEO DETECTION DATA

Detection zones shall be programmed in the controller only.

The contractor shall be responsible for setting proposed detection zones as shown on the plan, and adjusting/reading delay and extension timings as shown on the plan.

5. LIST OF MAJOR ITEMS REQUIRED

Cambridge/O'Brien Highway

Traffic Plans

Sheet 17 of 32

Location: 6

Pre-emption phasing & priority

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.

Pre-emption signals shall be serviced on a priority basis with emergency vehicle pre-emption requests accepted according to priority and as necessary.

Emergency vehicle pre-emption shall override coordination.

Emergency vehicle pre-emption shall be indicated on the display panels.

Emergency vehicle pre-emption shall be serviced on a priority basis.
SEQUENCE AND TIMING FOR FULLY ACTUATED CONTROL (COORDINATED)

**SEQUENCE & TIMING NOTES:**

1. *IF THE ASSIGNED RIGHT OF WAY FOR ANY TRAFFIC MOVEMENT IS TO REMAIN IN EFFECT DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATIONS FOR THAT TRAFFIC MOVEMENT WILL NOT CHANGE DURING THE CLEARANCE INTERVAL.*

2. *THE RIGHT-OF-WAY MAY BE ASSIGNED TO ANY PHASE OR ANY COMBINATION OF NON-CONFLICTING PHASES.*

3. *IF CALLS EXIST ON ALL PHASES, THE ASSIGNMENT OF RIGHT OF WAY SHALL BE IN ACCORDANCE WITH THE PREFERENTIAL PHASE SEQUENCE.*

4. *IF THE ASSIGNED RIGHT-OF-WAY FOR ANY TRAFFIC MOVEMENT IS TO CHANGE DURING THE NEXT CALLED PHASE, THE SIGNAL INDICATION FOR THAT MOVEMENT WILL DISPLAY THE APPROPRIATE CLEARANCE INTERVAL.*

**EXISTING PREFERENTIAL PHASE SEQUENCE:**

*UPON PEDESTRIAN PUSH BUTTON ACTUATION*

**EXISTING SIGNAL HEAD DATA**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>PAY ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODIFY EXIST TS CONTROLLER (SIEMENS M60) TO PROPOSED TIMINGS</td>
<td>816.07</td>
<td>1</td>
</tr>
</tbody>
</table>

**LIST OF MAJOR ITEMS REQUIRED**

- **DESCRIPTION:**
  - MODIFY SHEET TO CONTROL LED UNDERWAY MARK TO PROPOSED TIMINGS
  - ONE EACH DRIVER

**EQUIPMENT TO COMPLETE THE INSTALLATION AND PROVIDE AN OPERATING PLUS NECESSARY DUCT, CABLE, LABOR, MISCELLANEOUS MATERIAL AND LISTS OF MAJOR ITEMS REQUIRED**

**COORDINATION SCHEDULE**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DAILY & WEEKLY COORDINATION PROGRAM

<table>
<thead>
<tr>
<th>DAY</th>
<th>MO-TH</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN 1</td>
<td>0630-1000</td>
<td>0630-1000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PLAN 2</td>
<td>1100-1500</td>
<td>1100-1500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PLAN 3</td>
<td>1500-1900</td>
<td>1500-1900</td>
<td>1500-1900</td>
<td>1500-1900</td>
</tr>
<tr>
<td>PLAN 4</td>
<td>0630-1000</td>
<td>0630-1000</td>
<td>0630-1000</td>
<td>0630-1000</td>
</tr>
</tbody>
</table>

LEGEND
- COORDINATED PHASE GREEN TIME
- NON-COORDINATED VEHICLE PHASE GREEN TIME
- CLEARANCE TIME (YELLOW + RED)
- EXCLUSIVE PEDESTRIAN PHASE
- PHASE MOVEMENT
- INTERSECTION INTERSECTION COORDINATION BAND

CONTROLLER COORDINATION SETUP

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0530-1000</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1100-1500</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1500-1900</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>0630-1000</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

COORDINATION DATA GENERAL NOTES

1. All times in seconds.
2. Split times equal green plus clearances.
3. 1/2 split times with pedestrian phase actuated.
4. Coordinated phase shall be "call not actuated" during coordination.
5. Controller shall drop out of coordination to service pedestrian phase.

COORDINATION DATA LOCATED 2 O'BRIEN HIGHWAY AT FIRST STREET

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLAN 1</td>
<td>1015 1023 1023 1015</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN 2</td>
<td>1024 1023 1023 1024</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN 3</td>
<td>1024 1023 1023 1024</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLAN 4</td>
<td>1024 1023 1023 1024</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

REFERENCES

1. 0530-1000
2. 1100-1500
3. 1500-1900
4. 0630-1000

CAMBRIDGE O'BRIEN HIGHWAY COORDINATION DATA SHEET 7 OF 120

Plotted on 13-Jul-2021 11554-TSD.DWG
**GENERAL NOTES**

1. **All construction signing, temporary traffic control devices, and roadside elements shall conform with the 2009 Manual on Uniform Traffic Control Devices as amended. The latest edition of the MUTCD is the sole effective source of control.** roadway design guide. As-built study on geometric design of highways and streets, and national cooperative highway research program (nchrp) report 350 or the ashto manual for assessing safety hardwired (msah).

2. **All temporary pedestrian pathways shall comply fully with all requirements of the mtdc and all applicable massachusetts dot regulation access board (swan) and american with disabilities act requirements.**

3. **Work hours shall be set at 7:00 am to 6:00 pm unless otherwise noted or adjusted by the engineer.**

4. **All drums shall be set at 30' on center (s.c.) unless otherwise noted or adjusted by the engineer.**

5. **All drums shall be appropriately placed and mixed as necessary to maintain safe and reasonable access. work may require additional sign drums and other traffic control devices.**

6. **The contractor shall notify each abuttter at least 24 hours in advance of the start of any work that will require the temporary closure of access.**

7. **For drop-offs 6' or less within the clear zone, condition may be mitigated with w8-9 (chw shoulder) sign or temporary channelization devices.**

8. **The contractor shall stage work such that a drop-off of no more than 4' exists at the end of each work day within the clear zone at any time.**

9. **7' minimum lane widths shall be maintained unless otherwise noted.**

10. **Traffic control devices and signs shall be covered or removed during non-working hours when not in use.**

11. **Signs installed on portable stands require 12 inch minimum mounting height from the roadway surface to the bottom of the sign.**

12. **Signs installed on portable stands placed among channelization devices require a 36 inch minimum mounting height from the roadway surface to the bottom of the sign.**

13. **Signs mounted on posts require a minimum 36 inch mounting height from the roadway or sidewalk surface to the bottom of the sign.**

14. **All signs shall be mounted on their own nchrp 350 and/or msh crash tested sign supports and installed in accordance with the mtdc.**

15. **Temporary markings shall be water-borne paint. temporary markings shall be used as directed by the engineer.**

16. **Where existing markings conflict with temporary markings, remove by approved method.**

17. **Reflected cones shall be a minimum of 36 inches in height.**

18. **Cones may be used in lieu of drums outside of taper areas.**

19. **If signs shall be installed in advance for areas where utility castings have been raised in advance of paving operations or as requested by the engineer.**

20. **W8-15 signs shall be installed in advance (1/2 min) of pavement milling areas or as requested by the engineer.**

21. **There is no designated bicycle lane on obrien highway within the project limits. bicycles are expected to share the roadway with general vehicular traffic. bicycle lane along cambridge street may be closed as necessary. refer to typical bicycle lane closure details on sheet 7f for additional information.**

22. **For operational lane closure / shift details signs shall be placed on all inside streets within the distances shown.**

23. **Contractor shall secure the work area to prevent unauthorized access at all times.**

24. **The first 10 drums on tapers shall be reflected cones with sequential flashing warning lights.**

25. **illumination required for nighttime work approved by the engineer shall be in accordance with massdot standards.**

26. **Contractor shall coordinate with massdot and mtdc regarding msha buses and green line operations during construction.**

27. **W8-11 or W8-11a signs shown on advance sign schematic may be used in lieu of those signs shown on typical details on the temporary traffic control plan if minimum sign spacing is met.**

28. **The contractor shall orient barricades (type i, type 2, or type 3) such that the stripes on barricades shall be sloping downward at an angle of 45 degrees in the direction road users are to pass in accordance with section 8f.6b.03 of the mtdc.**

29. **The contractor shall restore all obscured or damaged functional crosswalk pavement markings at the end of each shift.**

30. **Prior to implementing a pedestrian detour the contractor shall walk the detour route to verify it for availability. ada compliance and that appropriate pedestrian signage has been installed.**

**BUFFER SPACING**

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>DISTANCE (FEET)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>80</td>
</tr>
<tr>
<td>25</td>
<td>115</td>
</tr>
<tr>
<td>35</td>
<td>155</td>
</tr>
<tr>
<td>0.6</td>
<td>200</td>
</tr>
<tr>
<td>0.65</td>
<td>250</td>
</tr>
<tr>
<td>0.7</td>
<td>300</td>
</tr>
<tr>
<td>0.8</td>
<td>350</td>
</tr>
<tr>
<td>0.85</td>
<td>400</td>
</tr>
<tr>
<td>0.9</td>
<td>450</td>
</tr>
</tbody>
</table>

**LANE TAPER LENGTH FORMULAS**

\[
L = \frac{Taper Length in Feet}{1V:4H (Min) - 1V:6H (Desired)}
\]

**ADVANCE SIGN SPACING**

<table>
<thead>
<tr>
<th>DISTANCE BETWEEN SIGNS (FEET)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>350</td>
<td>350</td>
<td>350</td>
<td></td>
</tr>
</tbody>
</table>

**TYPICAL ROADWAY DROP-OFF PROTECTION**

<table>
<thead>
<tr>
<th>DISTANCE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
OPERATIONAL SIGNING
LANE CLOSURES SHOWN ARE FOR TEMPORARY CONSTRUCTION. ALL DRUMS AND SIGNS ARE SHOWN AS THEY SHOULD APPEAR DURING THE WORKING DAY, OR WHILE OPERATING IN THE WORK ZONE. REFER TO GENERAL NOTES FOR FURTHER DETAILS.

TYPICAL TWO-WAY STREET LANE SHIFT

TYPICAL TWO-WAY STREET LANE CLOSURE ALTERNATING TRAFFIC

ONE LANE CLOSURE - LEFT

ONE LANE CLOSURE - RIGHT

TYPICAL TWO LANE CLOSURE - RIGHT

NOTES:
1. SEE TAPER LENGTH FORMULA ON TTCP GENERAL NOTES & LEGEND SHEET.
2. SEE BUFFER SPACING CHART ON TTCP GENERAL NOTES & LEGEND SHEET.
3. REFER TO ADVANCE SIGN SPACING TABLE ON TTCP GENERAL NOTES & LEGEND SHEET.
NOTES:
1. See taper length formula on TTCP General Notes & Legend Sheet.
2. See buffer spacing chart on TTCP General Notes & Legend Sheet.
3. Refer to advance sign spacing table on TTCP General Notes & Legend Sheet.
4. Contractor to maintain ADA compliant accessible pedestrian accommodation through the work area at all times. If pedestrian accommodation cannot be provided, close exist sidewalk or crosswalk and detour pedestrians to the other side. Refer to pedestrian bypass details on sheet 76 for additional information.

TYPICAL WORK ON NEAR SIDE OF AN INTERSECTION
NOTE: NTS

TYPICAL WORK ON FAR SIDE OF AN INTERSECTION
NOTE: NTS

SCALE: NTS
NOTES:
1. ADDITIONAL ADVANCE WARNING SIGNS MAY BE NECESSARY AS DETERMINED BY THE ENGINEER.
2. CONTROLS FOR PEDESTRIAN TRAFFIC ONLY ARE SHOWN. VEHICULAR TRAFFIC SHALL BE MAINTAINED AS SHOWN ELSEWHERE.
3. STREET LIGHTING SHOULD BE CONSIDERED WHEN LOCATING CONTROL DEVICES.
4. INDICATES DIRECTION OF PEDESTRIAN TRAVEL.
5. IF THE WORK ZONE DOES NOT PERMIT PEDESTRIANS TO TRAVEL ADJACENT TO IT AS SHOWN IN PEDESTRIAN BYPASS TYPE I, THE APPROPRIATE SIGNS SHALL BE INSTALLED TO CROSS PEDESTRIANS TO THE OPPOSITE SIDE OF THE STREET AT EXISTING OR TEMPORARY CROSSWALKS AS SHOWN IN PEDESTRIAN BYPASS TYPE II (TYP I) AND AS DIRECTED BY THE ENGINEER.
6. PROPOSED TEMPORARY CROSSWALKS SHALL BE 12" WIDE SURFACE APPLIED TAPE OR REFLECTORIZED PAINT AS DIRECTED BY THE ENGINEER.
7. ALL TEMPORARY PEDESTRIAN PATHWAYS SHALL COMPLY FULLY WITH ALL REQUIREMENTS OF THE MUTCD AND ALL APPLICABLE MAAB AND ADAAG REQUIREMENTS AND INCLUDE THE USE OF A COMPLIANT TEMPORARY PEDESTRIAN MANAGEMENT GUIDANCE SYSTEM AT ALL TIMES.
8. CONTRACTOR SHALL MAINTAIN ASIDE OF A PEDESTRIAN ACCESS AS POSSIBLE AT ALL TIMES. EXCEPT WHERE NECESSARY THE CONTRACTOR MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS. A 5' x 5' PASSING AREA SHALL BE PROVIDED IN LANES NOT EXCEEDING 200 FEET.
9. TEMPORARY PEDESTRIAN BARRIERS AND CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MAASBD, MAAB, AND ADAAG REQUIREMENTS.
10. TEMPORARY PORTABLE PEDESTRIAN BARRIERS AND CURB RAMPS MAY TEMPORARILY REDUCE PEDESTRIAN PATHWAYS TO 4 FEET IN WIDTH (EXCLUDING CURB) FOR NO MORE THAN 200 LINEAR FEET AT A TIME IN ACCORDANCE WITH ALL STANDARDS.

1. Curb ramps shall be of minimum net width with a firm, stable and non-slip surface. They shall be installed when the curb ramp on landing platforms has a vertical drop of 6" or greater or has a side area slope steeper than 1:3 (33%). Protective edging with 6" minimum height shall be provided on all temporary curb ramp landing platforms. Protective edging on landing platforms shall have a vertical drop of 6" or more.
2. Protective edging with 6" minimum height and contrasting colors shall be installed on all curb ramp landings where the ramp array changes direction (turns).
3. The ramp array and landing area surface shall be of a solid continuous contrasting color abutting up to the existing sidewalk.
4. Curb ramps and landings should have a 1:50 (2%) max cross-slope.
5. Clear space of 48" min. shall be provided above and below the curb ramp.
6. Water flow in the gutter system shall have minimal restriction.
7. Lateral joints or gaps between surfaces shall be less than 0.5" width.
8. Protective edging with a minimum height of 2" min. and contrasting color shall be installed at the curb ramp and landing platforms. Protective edging with a 2" minimum height shall be installed at the curb ramp and landing platforms if it is to serve as the only surface that does not conflict with vehicular traffic. If a ramp is used to serve multiple purposes, then a pad shall not be installed on the ramp.
9. Protective edging with a minimum height of 2" min. and contrasting color shall be installed at the curb ramp and landing platforms if it is to serve as the only surface that does not conflict with vehicular traffic. If a ramp is used to serve multiple purposes, then a pad shall not be installed on the ramp.
10. Protective edging with a minimum height of 2" min. and contrasting color shall be installed at the curb ramp and landing platforms if it is to serve as the only surface that does not conflict with vehicular traffic. If a ramp is used to serve multiple purposes, then a pad shall not be installed on the ramp.

CAMBRIDGE
O'BRIEN HIGHWAY
TEMPORARY TRAFFIC CONTROL PLANS
TYPICAL DETAILS
sheet N of 12
NOTES:
1. SIGNS TO BE INSTALLED AT PROJECT LIMITS AS SHOWN.
2. ALL ADVANCE SIGNS TO BE IN PLACE FOR THE DURATION OF THE PROJECT.
3. ADVANCE WARNING SIGN PLACEMENT TO BE ADJUSTED AS NECESSARY.
4. SEE GENERAL NOTE 27 ON TTCP GENERAL NOTES & LEGEND SHEET.
### TEMPORARY TRAFFIC CONTROL SIGN SUMMARY

<table>
<thead>
<tr>
<th>IDENTITY/ CAT-</th>
<th>SIZE OF SIGN</th>
<th>TEXT</th>
<th>TEXT DIMENSIONS (INCHES)</th>
<th>COLOR</th>
<th>LETTER</th>
<th>LEGEND</th>
<th>BORDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>4H-R2-10a</td>
<td>48&quot; x 30&quot;</td>
<td>AS PER MASSDOT STANDARD</td>
<td>FLUOR. DECENT ORANGE</td>
<td>BLACK</td>
<td>BLACK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4H-R2-10b</td>
<td>48&quot; x 30&quot;</td>
<td>AS PER MASSDOT STANDARD</td>
<td>FLUOR. DECENT ORANGE</td>
<td>BLACK</td>
<td>BLACK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4H-R2-10c</td>
<td>48&quot; x 30&quot;</td>
<td>AS PER MASSDOT STANDARD</td>
<td>FLUOR. DECENT ORANGE</td>
<td>BLACK</td>
<td>BLACK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4H-11</td>
<td>36&quot; x 30&quot;</td>
<td>SEE FHWA &quot;STANDARD HIGHWAY SIGNS, 2004 EDITION&quot; AS AMENDED</td>
<td>WHITE</td>
<td>BLACK</td>
<td>BLACK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TEMPORARY TRAFFIC CONTROL SIGN SUMMARY (CONTINUED)

<table>
<thead>
<tr>
<th>IDENTITY/ CAT-</th>
<th>SIZE OF SIGN</th>
<th>TEXT</th>
<th>TEXT DIMENSIONS (INCHES)</th>
<th>COLOR</th>
<th>LETTER</th>
<th>LEGEND</th>
<th>BORDER</th>
</tr>
</thead>
<tbody>
<tr>
<td>4H-1D</td>
<td>12&quot; x 18&quot;</td>
<td>WHITE</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
</tr>
<tr>
<td>4H-1L</td>
<td>12&quot; x 18&quot;</td>
<td>WHITE</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
</tr>
<tr>
<td>4H-1R</td>
<td>12&quot; x 18&quot;</td>
<td>WHITE</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
<td>RED</td>
</tr>
<tr>
<td>4H-9</td>
<td>24&quot; x 12&quot;</td>
<td>WHITE</td>
<td>BLACK</td>
<td>BLACK</td>
<td>BLACK</td>
<td>BLACK</td>
<td>BLACK</td>
</tr>
</tbody>
</table>

### NOTICES:

1. THIS INTENSITY REFLECTIVE SHEETING SHALL BE USED FOR ALL SIGNS. SEE FHWA "STANDARD HIGHWAY SIGNS, 2004 EDITION" FOR TEXT DIMENSIONS AS AMENDED. THE VTM MASSHIGHWAY DEPARTMENT CONSTRUCTION AND TRAFFIC STANDARDS DETAILS AS AMENDED. FOR SIGNS AND SUPPORTS; THE MASSHIGHWAY DEPARTMENT SIGN LISTINGS 2004 EDITION AS AMENDED AND THE 2017 MASSHIGHWAY DEPARTMENT TRAFFIC SUPPORTS; AS AMENDED.
2. ALL SIGNS SHOWN GRAPHICALLY FOR INFORMATION ONLY. SIGN VENDOR SHALL FABRICATE ALL SIGNS IN ACCORDANCE WITH THE APPLICABLE STANDARDS.
1. Non-conflating portions of this step may be combined with Stages 1A & 1B.
2. Excess/abandoned existing medians on O’Brien Highway and temporarily/patchy these areas to allow for removal of existing infrastructure to support construction operations.
3. As portions of median are removed, delineate original median footprint with reflective drums.
4. This work will be done using typical setups on a daily basis. Contractor shall restore all lanes for travel at the end of each work shift and peak periods.
5. Pedestrian access shall be maintained at all times.

SUGGESTED CONSTRUCTION STAGING:

STAGE 1A - O’BRIEN HIGHWAY - CENTER MEDIAN REMOVAL [Sheet 3E]

1. Non-conflating portions of this step may be combined with Stages 1A & 1B.
2. Excess/abandoned existing medians on O’Brien Highway and temporarily/patchy these areas to allow for removal of existing infrastructure to support construction operations.
3. As portions of median are removed, delineate original median footprint with reflective drums.
4. This work will be done using typical setups on a daily basis. Contractor shall restore all lanes for travel at the end of each work shift and peak periods.
5. Pedestrian access shall be maintained at all times.

STAGE 1B - O’BRIEN HIGHWAY - MEDIAN REMOVAL [Sheet 3E]

1. Non-conflating portions of this step may be combined with Stages 1A & 1B.
2. Retract reflective drums on O’Brien Highway from Stage 1A.
3. Construct drainage system, wireless signal system conduit and foundations; street light system alterations; and other public undersurface/utility alterations on adjustments.
4. Construct permanent roadway pavement patching in microlane/layer areas.
5. This work will be done using typical setups on a daily basis. Contractor shall restore all lanes for travel at the end of each work shift.
6. Pedestrian access shall be maintained at all times.

STAGE 2C - O’BRIEN HIGHWAY - NORTH FIRST STREET [between O’BRIEN HIGHWAY and CAMBRIDGE STREET] [Sheet 3E]

1. Re-contract reflective drums on O’Brien Highway from Stage 1A.
2. Coordinate with adjacent contractor for green lane line construction as needed.
3. Construct drainage system, wireless signal system conduit and foundations; street light system alterations; and other public undersurface/utility alterations on adjustments.
4. Construct street tree work, plantings and landscape restoration.
5. Construct full depth pavement for Southside of O’Brien Highway (between Core Street and Cambridge Street) to Intermediate Course.
6. Excess sidewalk adjacent to Core Street and Cambridge Street shall be closed temporarily. Pedestrians shall be detoured to existing sidewalk as shown hydraulically on the plan sheet (12E) with temporary traffic signal in sidewalk median during construction. Contractor shall install water main in temporary sidewalk median as shown.
7. Maintain bicycle lane and pedestrian access along Cambridge Street at all times during non-working hours unless otherwise approved by the engineer.

STAGE 4 - FULL-DEPTH CONSTRUCTION OF EAST SIDE OF O’BRIEN HIGHWAY - SOUTH OF EAST STREET [Sheet 3E]

1. Retract reflective drums on O’Brien Highway from Stage 1A.
2. Retract full-time work zones from Stage 3C.
3. Coordinate with adjacent contractor for green lane line construction as needed.
4. Construct full depth/intermediate course.
5. Construct full depth pavement to intermediate course.
6. Construct existing sidewalk and berm on the North side of O’Brien Highway between Cambridge Street and Third Street.
7. Construct sidewalk and berm on the North side of O’Brien Highway between Cambridge Street and Third Street.

GENERAL NOTES:

The contractor shall develop all necessary temporary traffic control drainages and traffic signage needed to complete this work. All documents shall be submitted in sufficient detail such that all permits, approvals, and necessary work shall be conducted in accordance with the regulations and standards provided. The regulations and standards shall be found in the Rules and Regulations of the Massachusetts Department of Transportation.

Information contained and depicted in the suggested construction staging plans may be used as a guide for the contractor to prepare and design the temporary traffic control drainages and traffic signage. These plans shall be prepared and issued by a professional engineer licensed to practice by the Commonwealth of Massachusetts. The suggested construction staging plans are intended to provide a general guidance for the development of such temporary traffic control drainages and traffic signage. The plans shall be consistent with all current and applicable requirements of the Manual of Uniform Traffic Control Devices. The contractor shall consult with the Massachusetts Department of Transportation for the design of such temporary traffic control drainages and traffic signage. The plans shall be consistent with the Rules and Regulations of the Massachusetts Department of Transportation. As requested by the engineer, the Massachusetts Department of Transportation, the American with Disabilities Act Accessibility Guidelines and the ADA Standards for Accessible Design and the Rules and Regulations of the Massachusetts Architectural Access Board.

As a minimum, the information and data of detail shown in the suggested construction staging plans shall include all temporary traffic control devices, pavement markings, road signs, signal elements necessary to maintain public access in accordance with the Massachusetts Department of Transportation. All proposed construction staging drainages shall include all temporary traffic control devices, pavement markings, road signs, signal elements necessary to maintain public access in accordance with the Massachusetts Department of Transportation.

The suggested construction staging plans shall be used by the contractor to develop the construction contractor's construction staging drainages. The contractor's construction contractor's construction staging drainages shall include all temporary traffic control devices, pavement markings, road signs, signal elements necessary to maintain public access in accordance with the Massachusetts Department of Transportation. The suggested construction staging plans shall be used by the contractor to develop the construction contractor's construction staging drainages. The contractor's construction contractor's construction staging drainages shall include all temporary traffic control devices, pavement markings, road signs, signal elements necessary to maintain public access in accordance with the Massachusetts Department of Transportation.
NOTES:
1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL EQUIPMENT AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
2. CLOSE EXISTING BICYCLE LANE ON CAMBRIDGE STREET BETWEEN FIRST STREET AND O'BRIEN HIGHWAY. BIKES TO SHARE THE ROAD.
NOTES:
1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL EQUIPMENT AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
2. CLOSE EXIST BICYCLE LANE ON CAMBRIDGE STREET BETWEEN FIRST STREET AND O'BRIEN HIGHWAY BIKES TO SHARE THE ROAD.

CONSTRUCTED UNDER PHASE 1

LEGEND
- EXISTING SIGNAL SYSTEM
- TEMPORARY SIGNAL SYSTEM
- WORK ZONE FOR STAGED CONSTRUCTION
- NON-TRAFFIC AREA

SUGGESTED CONSTRUCTION STAGES
STAGE 5A - FULL TIME WORK ZONE
STAGE 5B
STAGE 6

SCALE: 1" = 80'

11554-STAGE.DWG
13-Jul-2021
12:12 PM
Plotted on CAMBRIDGE O'BRIEN HIGHWAY
SUGGESTED CONSTRUCTION STAGING SHEET 83 OF 120

SCALE: 1" = 40'

NOTES:
1. INSTALL TEMPORARY TRAFFIC CONTROL SIGNAL EQUIPMENT AS NEEDED USING END STATE EQUIPMENT AS POSSIBLE.
2. CLOSE EXIST BICYCLE LANE ON CAMBRIDGE STREET BETWEEN FIRST STREET AND O'BRIEN HIGHWAY BIKES TO SHARE THE ROAD.

CONSTRUCTED UNDER PHASE 1
NOTES:
1. ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A MASSDOT REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.
3. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.
4. THIS CROSSWALK DETAIL SHALL BE USED AT THE FOLLOWING LOCATION:
4.a. O'BRIEN HWY AT WATER ST
4.b. O'BRIEN HWY AT GORE ST
4.c. O'BRIEN HWY AT N. FIRST ST
4.d. O'BRIEN HWY AT EAST ST/CAMBRIDGE ST
4.e. O'BRIEN HWY AT LEIGHTON ST
4.f. O'BRIEN HWY AT LAND BLVD

NOTES:
1. ALL 12" REFLECTORIZED THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO - 6" LINES) WILL BE ACCEPTED.
2. LAYOUT OF CROSSWALKS SHALL BE APPROVED BY A CAMBRIDGE DPW REPRESENTATIVE PRIOR TO APPLICATION OF THERMOPLASTIC.
3. ALL CROSSWALKS INSTALLED SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSACHUSETTS HIGHWAY DEPARTMENT "STANDARD SPECIFICATION FOR HIGHWAY AND BRIDGES" DATED 1988, SECTION 860 FOR REFLECTORIZED LINE (THERMO-PLASTIC) & MATERIAL M7.01.20, LATEST REVISIONS.
4. THIS CROSSWALK DETAIL SHALL BE USED AT THE FOLLOWING LOCATION:
5.a. CAMBRIDGE ST AT N. FIRST ST

BICYCLE SIGNAL HEAD W/R10-10b SIGN - MAST ARM MOUNTED

BICYCLE SIGNAL HEAD W/R10-10b SIGN - POST MOUNTED

BICYCLE SIGNAL HEAD W/R10-10b SIGN

BICYCLE SIGNAL HEAD W/R10-10b SIGN, 12"x18"

BICYCLE SIGNAL HEAD W/R10-10b SIGN, 12"x18"
INLET PROTECTION - SILT SACK
IN CATCH BASIN

NOTES:
1. INSTALL SILT SACK IN EXISTING CATCH BASINS, BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURAL, MACHINERY & BRIDGE COURSE PAYING. SILT SACK MUST BE戰 OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
2. GRATE TO BE PLACED OVER SILT SACK.
3. SILT SACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED.

FLOW SECTION VIEW

FLOW PLAN VIEW

PEDESTRIAN PUSH BUTTON CLEAR ZONE

NOTE:
A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.

a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE AT AND CENTERED ON THE CLEAR GROUND SPACE.
b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

ROADWAY
PAVEMENT
CURB
FINISH PAVED SURFACE (I.E. SIDEWALK)
EDGE OF CLEAR ZONE

PROP TS FOUNDATION
PROP TS BASE
PROP TS POST/POLE
PROP PEDESTRIAN PUSH BUTTON 42" MAX ABOVE FINISH PAVED SURFACE
2" REVEAL
PARALLEL APPROACH (SIDE REACH)
FORWARD APPROACH (FORWARD REACH)

NOTE:
ALL CASTINGS SHALL BE MANUFACTURED FROM GRAY IRON CONFORMING TO ASTM A48 CLASS 35B AND/OR AASHTO M105 CLASS 35B.

TRENCH DAM

NOTE:
1. NOTCH TRENCH DAM A MINIMUM 2'-0" BEYOND UNDISTURBED MATERIAL ON SIDES AND BOTTOM OF TRENCH.

2. TRENCH DAMS SHALL BE INSTALLED AS INDICATED ON THE CONTRACT DRAWINGS OR AS DIRECTED BY THE ENGINEER.

3. IF PIPE MATERIAL IS DUCTILE IRON USE A NON FLY ASH BASED CONTROL DENSITY FILL

4. TRENCH DAMS SHALL BE PLACED AT THE BEGINNING AND END LIMITS OF ALL TRENCHES EXCAVATED DURING A WORK DAY AND SHALL BE INTERMITTENTLY SPACED AT 100' MAXIMUM WITHIN THESE LIMITS.

TRENCH DAMS SHALL BE PLACED NEAR THE PROPERTY LINE, WITHIN STATE OR CITY LAYOUT, FOR ALL SERVICE CONNECTIONS.

NOTE:
THE TOP OF THE TRENCH DAM SHALL EXTEND A MINIMUM OF 5'-0" ABOVE THE GROUND WATER LEVEL, OR DETERMINED BY THE NEAREST BORING OR BY THE ENGINEER, BUT SHALL NOT EXCEED A DEPTH OF 1'-0" BELOW FINISHED GRADE.

CONTROL DENSITY FILL AROUND PIPE TO 2' BEYOND MATERIAL ON SIDES AND BOTTOM OF TRENCH

SEE TRENCH DETAIL FOR SEWER AND DRAIN PIPES AND FOR MATERIALS AND DEPTHS.
PARKING METER POST INSTALLATION - CITY OF CAMBRIDGE STANDARD

SCALE: N.T.S.

BRICK BUFFER PATTERN

1/2" TOLERANCE FOR CONSTRUCTION

BRICK BUFFER

SCALE: 1/16" = 1'-0"

CURB

BRICK SHINER COURSE

BRICK RUNNING BOND FIELD

SIDEWALK

BRICK PAVERS

BUTT JOINTS & MAX. SKEW WITH SAND/FILLER

1/2" GRAY SETTING BED

PROP CURB

ROADWAY

COMPACTED SUBGRADE

10% COMPACTED DENSE GRADE

STONE DUST SETTING BED

CONCRETE FOOTING

(18" MINIMUM AT TOP)

BRICKS SHALL MATCH REST OF SIDEWALK

SECTION - PARKING METER POST, BRICK SIDEWALK

LOWER PORTION OF PIPE TO BE FILLED WITH CONCRETE TO WITHIN 1" OF WEEP HOLE

1/2" STANDARD BOLT AND NUT

4" LONG 6" FROM BOTTOM END

1/2" STANDARD BOLT AND NUT

4" LONG 6" FROM BOTTOM END

SIDEWALK GRADE

SIDEWALK GRADE

STONE DUST

SETTING BED

CONCRETE FOOTING

(18" MINIMUM AT TOP)

BRICKS SHALL MATCH REST OF SIDEWALK

SECTION - PARKING METER POST, CONCRETE SIDEWALK

LOWER PORTION OF PIPE TO BE FILLED WITH CONCRETE TO WITHIN 1" OF WEEP HOLE

1" SAND SETTING BED

PROP CURB

ROADWAY

MIN. 4" COMPACTED DENSE GRADE

AGGREGATE GRAVEL BASE COURSE

COMPACTED SUBGRADE

* 0.5% TOLERANCE FOR CONSTRUCTION

CAMBRIDGE O'BRIEN HIGHWAY CONSTRUCTION DETAILS SHEET 91 OF 120
**NOTES**

1. **TREE PLANTING** (FOR TREES UNDER 4" CALIPER)
   - **PLANT SPACING**
     - **PLANT SPACING ("A")**
       - **ROW SPACING ("B")**
         - 6 IN. O.C.
         - 5 IN. O.C.
         - 8 IN. O.C.
         - 7 IN. O.C.
         - 10 IN. O.C.
         - 8 1/2 IN. O.C.
         - 12 IN. O.C.
         - 10 1/2 IN. O.C.
         - 18 IN. O.C.
         - 16 IN. O.C.
     - **"B"**
     - **"A"**
     - **60°**

2. **SHRUB BED PLANTING**
   - **NOTES**
     - 1. **SHRUB BED PLANTING**
       - 1. **HOLE**
         - SLOPE TO FORM SAUCER
         - TOP OF GRATE + 1 INch ABOVE FINISH GRADE
       - **HOLE PLANTING SOIL**
         - CONTINUOUS IN BED
         - **FINISH GRADE**
       - **2" MULCH**
         - DO NOT COVER STEMS OR TRUNK
       - **TRUNK FLARE**
         - COMPLETELY EXPOSED, SET 2" ABOVE ESTABLISHED FINISH GRADE
       - **2" X 2" X 8' HARDWOOD STAKE**
         - (2 STAKES PER TREE)
         - PLACE WITHIN 6" OF ROOTBALL
       - **PAINT TOP 6" OF STAKES OR REFLECTIVE RED TAPE**
         - NYLON TREE TIE WEBBING (LOSELY TIED)

3. **PERENNIAL AND ORNAMENTAL GRASS PLANTING**
   - **NOTES**
     - 1. **PERENNIAL AND ORNAMENTAL GRASS PLANTING**
       - **UNDISTURBED OR COMPACTED SUBGRADE**
       - **PLANTING SOIL**
         - CONTINUOUS IN BED
       - **FINISH GRADE**
       - **2" MULCH**
         - DO NOT PLACE MULCH WITHIN 3" OF TRUNK

4. **TREE GRATE AT EXISTING TREES**
   - **TREE GRATE FASTENING TO CURB ENLARGEMENT**
   - **SCALE: N.T.S.**
   - **TREE PIT**
   - **HARDWOOD STAKES**
   - **ROOTBALL**
   - **TREE TIE**
   - **PLANT BACKFILL MIXTURE.**
   - **SIT ROOTBALL ON EXISTING UNDISTURBED SOIL OR ON COMPACTED SUBGRADE.**
   - **UNTIE AND CUT AWAY BURLAP FROM 1 3 OF ROOTBALL (MIN.); IF SYNTHETIC WRAP IS USED, REMOVE COMPLETELY**
   - **PLANT BACKFILL MIXTURE.**
   - **SLOPE TO FORM 3" HIGH SAUCER**
   - **3" MULCH CIRCLE**
   - **DO NOT COVER STEMS OR TRUNK**
   - **TRUNK FLARE**
     - COMPLETELY EXPOSED, SET 2" ABOVE ESTABLISHED FINISH GRADE
   - **2" X 2" X 8' HARDWOOD STAKE**
     - (2 STAKES PER TREE)
     - PLACE WITHIN 6" OF ROOTBALL
   - **PAINT TOP 6" OF STAKES OR REFLECTIVE RED TAPE**
     - NYLON TREE TIE WEBBING (LOSELY TIED)

5. **SHRUB - CENTER GRATE ON EXISTING TREE.**
   - **EXAND OPENING TO DIMENSION REQUIRED TO ACCOMMODATE EXISTING TREES, MINIMUM INCHES GREATER DIAMETER.**
   - **3" MIN DEPTH WASHED CRUSHED STONE**
     - INSTALL TOP OF STONE FLUSH WITH GRATE OPENINGS
   - **FINISHED GRADE PAVEMENT.**
     - SEE PLANS FOR MATERIALS AND BASE CONDITION.
NORTH FIRST STREET TREEWAY - SECTION A-A

RECLAIMED GRANITE STONE WITH CUT EDGES TO CREATE TREE PIT
STONE SETTS - TYPE B
CONCRETE BASE
STABILIZED STONEDUST SURFACE (DECOMPOSED GRANITE PAVING)
EXPOSED ROOT FLARE, SET TREE WITH ROOT FLARE 2" ABOVE FINISHED GRADE
GEOTEXTILE (TYP.)
GEOGRID FABRIC, PROVIDE OPENINGS AT ROOTBALL
CUT EDGE (TYP.)
SNAPPED EDGE (TYP.)

NORTH FIRST STREET TREEWAY - SECTION B-B

CRUSHED STONE
SAND DRAINAGE LAYER. SLOPE TO DRAIN.
COMPACTED OR UNDISTURBED SUBGRADE
EXPOSED ROOT FLARE, SET TREE WITH ROOT FLARE 2" ABOVE FINISHED GRADE
STABILIZED STONEDUST SURFACE (DECOMPOSED GRANITE PAVING)
GEOTEXTILE (TYP.)
GEOGRID FABRIC, PROVIDE OPENINGS AT ROOTBALL
STREET CURB
CURB
ROADWAY PAVEMENT
CONCRETE PAVEMENT
LANDSCAPE TRENCH DRAIN
SAND-BASED STRUCTURAL PLANTING MEDIUM
LANDSCAPE TRENCH DRAIN
SAND-BASED STRUCTURAL PLANTING MEDIUM
PROVIDE 30' LONG EXTENT OF ROOT BARRIER FOR TREES WITHIN 15' OF CATCH BASINS. REVIEW WITH LANDSCAPE ARCHITECT IN FIELD.

NORTH FIRST STREET TREEWAY - PLAN VIEW

PAVING LAYOUT NOTES:
1. Pavers are 4" wide x 16" long x 3/4" deep. Joints shall be 3/8" wide or less.
2. Paving limits are established by the number of paver rows and number of full pavers shown on the plan dimensions. Numerical dimensions are given for convenience but the number of rows and full pavers prevail in the layout of the pavement, benches, and plant bed.
3. Begin pavement layout (P.O.B.) at the short ends of the paving field as shown on the plan.
4. Use a full paver at every corner of the pavement as shown on the plan.
5. When starting the paving at the P.O.B., use 16", 12", and 8" lengths and arrange them randomly so that no paver joints align.
6. For the paving field pattern:
a. Use full pavers to make the paving field except as noted below.
b. Use pavers so that joints in adjacent rows do not align.
c. If aligned joints cannot be avoided, Contractor may use pavers that range between 12" to 8" long. However, use of shorter pavers shall be limited and, where used, should be widely distributed so as not to detract from the overall pattern of the 4" materials.
7. Where pavers abut utility covers, hand cut pavers to fit tightly around cover with 3/8" joint.

NORTH FIRST STREET TREEWAY PLANTING NOTES:
1. Construction of North First Street Treeways shall match installed conditions of trees in treeways along North First Street within the Cambridge Commons project.

CONSTRUCTION DETAILS SHEET 93 OF 120
DRIVEWAYS THROUGH SIDEWALK - WITH 2' CURB CORNERS

<table>
<thead>
<tr>
<th>NO.</th>
<th>LOCATION</th>
<th>RAMP WIDTH</th>
<th>RAMP LENGTH</th>
<th>LEFT SIDE</th>
<th>RIGHT SIDE</th>
<th>OPENING ELEVATION</th>
<th>TOP OF RAMP ELEVATION</th>
<th>BACK OF DRIVEWAY ELEVATION</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DRIVEWAYS THROUGH SIDEWALK - WITH 2' CURB CORNERS**

**LEGEND**
- LIMITS OF HMA
- LIMITS OF CEM CONC

**NOTES:**
- Transition is curved, see plans for additional information.
- **TOLERANCE FOR CONSTRUCTION ±0.5%**
- Negative | roadway gutter slope denotes a low side transition.

**SCALE:** N.T.S.

**ROADWAY GUTTER TRANS**

**LEFT SIDE**

**TRANSITION**

**VARIES (SEE ALIGNMENT PLANS)**

**RIGHT SIDE**

**TRANSITION**

**VARIES (SEE ALIGNMENT PLANS)**

**SCALE:** N.T.S.

**OBLIQUE VIEW**
2" PVC - EXTEND EXISTING CIRCUIT FROM HANDHOLE TO "F" POLE.

2" PVC - MATCH EXISTING WIRE SIZE AND CONNECT TO EXISTING CIRCUIT.

NEW LIGHTING CONTROL CABINET

EXISTING LIGHTING CONTROL CABINET

PC +64.89

PI +57.19

PI +55.59

PI +32.80

PI +44.86

PI +84.85

PRC +84.85

PC +78.78

PCC +10.13

PT +17.98

605

606

607

608

20 SCALE: 1" = 20'

CAMBRIDGE O’BRIEN HIGHWAY
LIGHTING PLANS
SHEET 100 OF 120
**PRE-CAST CONCRETE HANDHOLE**

See detail on this drawing.

**SEE DETAIL OF THIS DRAWING.**

**GROUND ROD**

A east side walkway

**R=18" (TYP)**

**CADWELD TO COPPER CLAD GROUND ROD**

3/4" x 10'

**2" PVC WITH END BELL**

Ground wire attached at ground lug at handhole

Handhole at ground lug at ground wire attached

**2" RIGID GALVANIZED STEEL CONDUIT**

90 deg. sweep and conduit coupling

Four sides 1" chamfer

**FINISHED GROUND**

Cast aluminum shoe

Refer to MHD Drawing SD3.010 for typical pole base foundation details

**ACCESS HANDBLE**

Provide 6" layer of 3/4" crushed stone "M2.01.4" under each handhole

Typical handhole and pole foundation

Not to scale

Typical handhole and pole arrangement

Not to scale

Provide 6" layer of 3/4" crushed stone "M2.01.4" under each handhole

Concrete pole base see detail on this drawing

Access of remainder

End cut (TYP)

3" PVC (TYP)

East side walkway

**ACCESS HANDBLE**

Front edge of curb
NOTES:
1. SEE SHEET 97-98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.
NOTES:

1. SEE SHEET 97-98 FOR ADDITIONAL DRIVEWAY INFORMATION.
NOTES:
1. SEE SHEET 97-98 FOR ADDITIONAL DRIVEWAY INFORMATION.
2. BACK OF SLOPE CONDITIONS ARE TO BE DETERMINED IN AREAS OF THE EXISTING LECHMERE STATION WHICH IS TO BE DEMOLISHED BY OTHERS.