“A City with an emerging urban vibrancy guided by a small town sense of community.”
Agenda

• Project
  – Utilities
  – Traffic
  – Streetscape/Gateway
  – Project Summary
• Construction Impacts
• Q&A
Project Overview
Limit of Work 4,000 feet

Exit 8

Central Ave.
Plan of Work

• Infrastructure Improvements
  – Water, Sewer and Drainage Improvements
  – Road Reconstruction
  – Curbing and Sidewalk

• Traffic Improvements
  – Intersection Signalization
  – Traffic Calming
Plan of Work

• Pedestrian/Bike
  – Cross Walks
  – Bike Lanes
  – Bus Stops

• Visual Enhancements
  – Greenscape and Gateway
  – Signs and Amenities

• Future Improvements (Exit 8 and Court Street)
Infrastructure
Road, Sidewalk and Utilities
Utilities

- Sewer – Select areas only
- Water – 50% of mains, 40 new services and Turnpike crossing
- Drain – 4,000 feet and 60 new structures
- Electrical – lighting (29) and traffic signal improvements
- Conduits for future use
Roadway

- Road Section
  - 24” new gravel
  - 5-1/2” new pavement
- Road Width
  - 32’ (typical)
  - Wider at intersections
Major Intersections
Traffic Signals

- Optimize Signal Timings
- Signal Coordination
Pedestrian/Bicycle Improvements

- Count-down Displays
- Crosswalks
- Bike Lane
20 Crosswalks
Side Streets

- Neck downs
  - Elm
  - Atkinson
  - Belknap
  - Cushing
  - Rutland
  - Lexington
Streetscape/Gateway
Streetscape Amenities
Lighting

Project: Dover, NH

**Umb Post Specifications**

- **Height:** 12' 6"
- **Base:** 18" Diameter
- **Material:** (5) 1 Piece, Cast Ductile Iron Per A128-31 Grade: 65-45-12
- **Finish:** Prime PA X, Thin Finish, B- aluminum
- **Access Door:** Located in base secured with tamper proof hex socket scurry machine screws
- **Ground Stud Provisions:** Drill 1/2" inside wall of base opposite access door to accommodate 1/4"-20 ground stud (stud supplied by others)
- **Anchor Bolt:** (4) 1/2" dia. x 3" long 3" hook (fully galvanized with 1 galvanized nut and 1 galvanized washer per bolt)
- **Bolt Projection:** 3"
- **Tenon:** 3 1/2" dia. x 3" high

**GFCI Receptacle With Weather-Proof Cover (Weather-Proof While In Use)**

Section Base Plate Detail For Orientation

---

Ironwood design group, LLC

Spring City Electrical Mfg. Co.

443 S. 2nd St., Dover, PA 17315
Phone: (800) 549-4000, Fax: (800) 549-4077
Email: sales@springcity.com

UNDERWOOD engineers
Landscaping/Gateway

- 29 Ornamental lights including electrical system
- 12 Benches
- 1 Waste/recycling receptacle
- 2 Bike racks
Stormwater Management
Low Impact Design

- Rain Garden at Woodman School

- (6) Bio-retention tree ways along curb line with tree root growth zones
Rain Garden
Woodman School

PLANT SCHEDULE (FOR BIORETENTION AND TREES AREAS)

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>ABBR</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>TENANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>AR</td>
<td>Acer rubrum</td>
<td>Red Maple</td>
<td>4.95</td>
<td>SA5</td>
</tr>
<tr>
<td>2</td>
<td>AS</td>
<td>Robinia pseudoacacia</td>
<td>Black Locust</td>
<td>2-10'</td>
<td>SA5</td>
</tr>
<tr>
<td>GB</td>
<td>OB</td>
<td>Quercus bicolor</td>
<td>Swamp White Oak</td>
<td>2.0'</td>
<td>SA5</td>
</tr>
</tbody>
</table>

SHRUBS

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>ABBR</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>TENANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>AM</td>
<td>Arrhenatherum platyphyllum</td>
<td>Autumn Magic Hydrangea</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>10</td>
<td>IG</td>
<td>Eleagnus × ebbingei 'Black Beauty'</td>
<td>Russian Olive</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>12</td>
<td>II</td>
<td>Ilex glabra 'Compacta'</td>
<td>Compact boxwood</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>12</td>
<td>TE</td>
<td>Ilex verticillata 'Schenk's Gold'</td>
<td>Golden Boxwood</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>12</td>
<td>TV</td>
<td>Tilia americana 'Brilliant'</td>
<td>American Basswood</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>12</td>
<td>AV</td>
<td>Viburnum opulus 'Roseum'</td>
<td>Redtip Viburnum</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
<tr>
<td>12</td>
<td>VE</td>
<td>Viburnum dentatum</td>
<td>Arrowwood</td>
<td>3' HT</td>
<td>SA5</td>
</tr>
</tbody>
</table>

LANDSCAPE LEGEND

- Deciduous Shade Tree
- Deciduous Flowering Tree
- Shrub Planting
- Groundcover Planting
- Turf Establishment with Rhizomekillers & Lawn in accordance with section Item 646, subsidiary to item 3.2
- Existing Tree
- Trash & Recycling Receptacles
- Matchline
- Bio Retention Treeway

1. CONTRACTOR TO PROVIDE AND INSTALL ALL MATERIALS PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO INSTALL LANDSCAPE MULCH.
3. BENCH 1-6 INSTALLED IN CONCRETE PLANTS, 7'.
4. CONSTRUCTION BENCHES FOR SUBSIDARY TO BID (NOW 3.5') AND DRAWING UNLESS SPECIFIED.
5. DO NOT USE SOD ON SLOPES. ALL PLANT MATERIALS.
6. PERENNIALS & JUTE MATTING.
7. AT EVERY CURB, SAY THE JUTE MATTING.

BENCH TABLE

<table>
<thead>
<tr>
<th>BENCH</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>200</td>
</tr>
<tr>
<td>C</td>
<td>300</td>
</tr>
<tr>
<td>D</td>
<td>400</td>
</tr>
</tbody>
</table>

BIRD HOUSES (B)

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>ABBR</th>
<th>SCIENTIFIC NAME</th>
<th>COMMON NAME</th>
<th>SIZE</th>
<th>TENANCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>HC</td>
<td>Cyanistes sp.</td>
<td>Hummingbird</td>
<td>1' RV</td>
<td>SA5</td>
</tr>
<tr>
<td>10</td>
<td>RV</td>
<td>Passeriformes</td>
<td>Vireo</td>
<td>1' RV</td>
<td>SA5</td>
</tr>
</tbody>
</table>
Urban Horticulture

Purpose (isolated locations):
- Support root growth and extend tree life
- Reduce sidewalk impacts
Tree Selection

• **Hardiness** - ability to withstand NH climate, urban heat and pollution, salt tolerance, pest resistance, and longevity

• **Form** - Appropriate scale, branching height and existing condition such as oh/u

• **Seasonal Interest** – flowering, fall color and maintenance needs
Tree Varieties

- Maples
- Chestnuts
- Cherry
- Dogwood
- Crabapple

- Magnolia
- Sourwood
- Lilac
- Elm
- Zelkova
Trees and Shrubs

- 100+ Deciduous Trees
- ~50 Shrubs
- 1,300 groundcover plants and perennials
- Ornamental grasses
- Minimal Existing Tree Removal
Brick Sidewalks

- Clay Brick
- Oldest sidewalks are clay brick (Boston, Cambridge, Portland, and Newport) – 40 years
- Construction detail is similar as Portsmouth and Cambridge
- Local manufacturer
Advantages of Clay Brick

- Less water absorptive
- Greater compressive strength
- Resists de-icing agents
- Repairs match better because brick can be reused
- Creates transition from new modern roadway design to historic structures along Silver
Disadvantages of Clay Brick

• Additional cost to install
• Additional cost to repair especially if brick needs to be replaced
• Limited use in Dover
The Project
Arch Street
Arch to Exit 8

LANDSCAPE NOTES
1. CONTINUOUS LINE MARKS ALL UNDERGROUND UTILITIES ON THE GROUND PRIOR TO CONSTRUCTION.
2. CONTRACTOR IS TO REVIEW TREE LOCATIONS WITH LANDSCAPE ARCHITECT AND OWNERS REPRESENTATIVES PRIOR TO ORDERING AND INSTALLING TREES.

BENCH TABLE
FOR SHEETS L1-L6

BENCH A
BENCH B
BENCH C
BENCH D
SEE NOTE 3 ON SHEET LS

LANDSCAPE LEGEND
Deciduous Shade Tree
Deciduous Flowering Tree
Shrub Planting
Groundcover Planting
Turf Establishment w/ultrachem tickifiers
Existing Tree
Trash & Recycling Receptacles
Mulch Area
Bio Retention Treeway

STA 7 + 80 TO STA 10 + 20
SCALE 1:200

STA 10 + 20 TO STA 14 + 70
SCALE 1:200
School Entrance
Future Considerations
Future Improvements - Court Street
Future Improvements - Court Street
Construction Impacts
CITY OF DOVER
DOVER, NEW HAMPSHIRE
FOR CONSTRUCTION
SILVER STREET RECONSTRUCTION
PREPARED BY
UNDERWOOD ENGINEERS
PORTSMOUTH, NEW HAMPSHIRE
APRIL 2014

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SHEET TITLE</th>
<th>DWG NO.</th>
<th>SHS NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVER SHEET</td>
<td>C-1</td>
<td>1</td>
</tr>
<tr>
<td>GENERAL NOTES</td>
<td>G-1</td>
<td>1</td>
</tr>
<tr>
<td>INDEX LEGEND &amp; SHEET SHEET</td>
<td>I-1</td>
<td>1</td>
</tr>
<tr>
<td>SUMMARY OF QUANTITIES</td>
<td>S-1</td>
<td>1</td>
</tr>
<tr>
<td>EXISTING STRUCTURE TABLES</td>
<td>XST-1</td>
<td>1</td>
</tr>
<tr>
<td>DRAINAGE IMPROVEMENTS EXT &amp; RIDGECUT - SPAULDING TURNOFF</td>
<td>D-1</td>
<td>1</td>
</tr>
<tr>
<td>UTILITIES PLAN &amp; PROFILE</td>
<td>U-1</td>
<td>1</td>
</tr>
<tr>
<td>SILVER STREET RAIL CROSSING PLAN</td>
<td>S-1</td>
<td>1</td>
</tr>
<tr>
<td>TYPICAL CROSS SECTION</td>
<td>TC-1</td>
<td>1</td>
</tr>
<tr>
<td>ROADWAY PLAN &amp; PROFILE</td>
<td>R-1</td>
<td>1</td>
</tr>
<tr>
<td>LANDSCAPING PLAN</td>
<td>L-1</td>
<td>1</td>
</tr>
<tr>
<td>STANDARD DETAILS</td>
<td>S-1</td>
<td>1</td>
</tr>
<tr>
<td>CROSS SECTIONS</td>
<td>C-1</td>
<td>1</td>
</tr>
<tr>
<td>PAVEMENT MARKINGS</td>
<td>P-1</td>
<td>1</td>
</tr>
<tr>
<td>GROUNDS DETAILLY</td>
<td>G-1</td>
<td>1</td>
</tr>
<tr>
<td>LIGHTING &amp; ELECTRICAL DETAILS</td>
<td>L-1</td>
<td>1</td>
</tr>
<tr>
<td>TRAFFIC SIGN PLANS</td>
<td>T-1</td>
<td>1</td>
</tr>
<tr>
<td>ADD ALTERNATIVES NO. 1 A &amp; B (ON SHEET PA)</td>
<td>A-1</td>
<td>1</td>
</tr>
<tr>
<td>SILVER STREET NOTES SHEET &amp; REPLACEMENT</td>
<td>S-1</td>
<td>1</td>
</tr>
<tr>
<td>ADDITIONAL NOTES LEGEND &amp; SHEET</td>
<td>I-1</td>
<td>1</td>
</tr>
<tr>
<td>PLAN A &amp; PROFILE PAVEMENT 1 TO 5 TO 6</td>
<td>P-1</td>
<td>1</td>
</tr>
<tr>
<td>PLAN B &amp; ALTERNATIVE PAVEMENT 1 TO 5 TO 6</td>
<td>P-1</td>
<td>1</td>
</tr>
<tr>
<td>PLAN B-ALTERNATIVE-1 WEST EXIT ROAD</td>
<td>P-1</td>
<td>1</td>
</tr>
<tr>
<td>DETAILS 1</td>
<td>D-1</td>
<td>1</td>
</tr>
<tr>
<td>CROSSING CONTROL NOTES &amp; DETAILS</td>
<td>C-1</td>
<td>1</td>
</tr>
</tbody>
</table>

LOCATION PLAN

VICINITY MAP

PROJECT LOCATION

UE #1725

UNDERWOOD engineers
Project Schedule

• Contract Award – Mid July, 2014
• Public Meeting – July 16, 2014
• Substantial Completion – 270 Days
• Final Completion – 330 Days
• Winter Shut-down Period
• Construction Phasing and Sequencing
Traffic/Access Impacts

- Project will be disruptive/inconvenient
- Alternating or one way traffic
- Anticipation of detours
- Flagger and Police details
- Maintain access
  - Emergency Vehicles
  - Property Owners
- Maintain safe pedestrian corridor
Questions and Answers