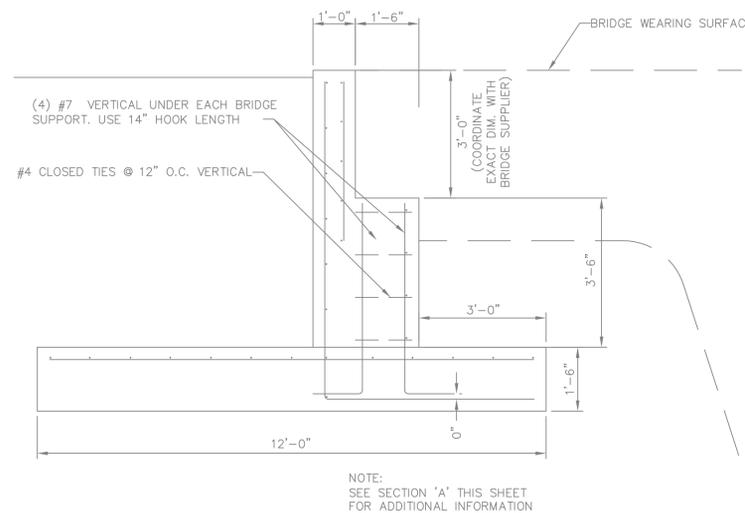
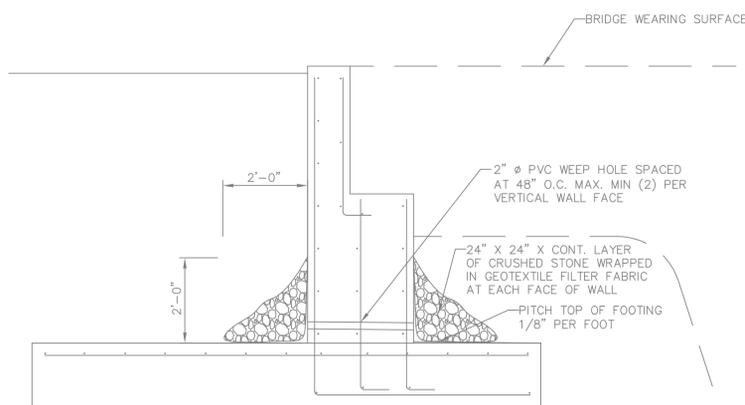


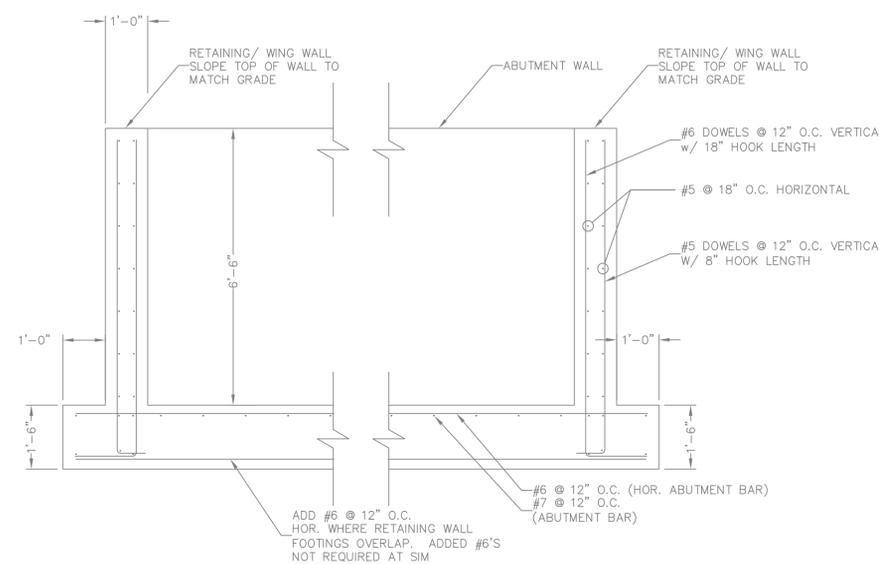
A BRIDGE ABUTMENT – SECTION A
SCALE: 1/2" = 1'-0"



A1 BRIDGE ABUTMENT – SECTION A1
SCALE: 1/2" = 1'-0"



C WEEP HOLES AT ABUTMENT AND WING WALLS – TYPICAL SECTION
SCALE: 1/2" = 1'-0"



B BRIDGE ABUTMENT RETAINING WALL – SECTION D
SCALE: 1/2" = 1'-0"

STRUCTURAL NOTES:

STRUCTURAL DESIGN CRITERIA

- THE STRUCTURAL DESIGN IS BASED ON THE MASSACHUSETTS STATE BUILDING CODE, 780 CMR, EIGHTH EDITION.
- LIVE LOADS:

BRIDGE DECK (UNIFORM)	100 PSF
BRIDGE DECK (2 WHEEL VEHICULAR)	1,200 POUNDS
BRIDGE DECK (4 WHEEL VEHICULAR)	6,000 POUNDS
- DEAD LOADS:

WEIGHT OF MATERIALS	
MISC AND COLLATERAL	20 PSF
- SNOW LOADS:

BASIC GROUND SNOW, P _g	55 PSF
FLAT ROOF SNOW, P _f	46.2 PSF
C _e	1
C _t	1.2

 DRIFT AS APPLICABLE PER CODE
- WIND LOAD:

BASIC WIND SPEED	100 MPH
I _w	1.0
BUILDING CATEGORY	II
EXPOSURE	B
- SEISMIC LOAD:

SEISMIC IMPORTANCE FACTOR	1
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 MAPPED SPECTRAL RESPONSE ACCELERATIONS:

S _s	0.31
S ₁	0.074

 SITE CLASS: B
 SPECTRAL RESPONSE COEFFICIENTS:

S _{DS}	0.166
S _{D1}	0.041

FOUNDATIONS

- PER NOBIS ENGINEERING, INC. GEOTECHNICAL REPORT DATED 5 AUGUST, 2013 THE RECOMMENDED ALLOWABLE BEARING CAPACITY IS 3,000 PSF. THE REPORT SUGGESTS DECOMPOSED BEDROCK WAS ENCOUNTERED AT ROUGHLY 6 TO 9 FEET BELOW EXISTING GRADE. IN ADDITION, FILL MATERIALS WERE ENCOUNTERED FROM EXISTING GRADE TO APPROXIMATELY 6 TO 8 FEET BELOW EXISTING GRADE. BASED ON OUR UNDERSTANDING OF THE GEOTECHNICAL REPORT THE FILL MATERIAL SHOULD BE REMOVED AND REPLACED WITH CRUSHED STONE OR STRUCTURAL FILL. PREPARE FILL AND MATERIAL LEFT IN PLACE PER THE GEOTECHNICAL REPORT.
- DO NOT PLACE FOOTINGS ON FROZEN GROUND OR IN WATER.
- PLACE FOOTINGS ON UNDISTURBED MATERIAL. COMPACT MATERIALS AS REQUIRED PER THE GEOTECHNICAL REPORT.
- CONTRACTOR IS RESPONSIBLE FOR PROPERLY BRACING THE WORK DURING BACKFILLING OPERATIONS.

STRUCTURAL NOTES (CONT'D):

REINFORCED CONCRETE

- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS. PROPOSED MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW. AS A MINIMUM THE CONCRETE MIXES SHALL BE AS FOLLOWS:

FOOTINGS:	
MAXIMUM W/C RATIO	0.45
AIR ENTRAINMENT	N/A
CEMENT	TYPE II
f _c	4,000 PSI
MAXIMUM AGGREGATE	3/4"
RETAINING WALLS:	
MAXIMUM W/C RATIO	0.45
AIR ENTRAINMENT	5% MAX
CEMENT	TYPE II
f _c	4,000 PSI
MAXIMUM AGGREGATE	3/4"

- ALL REINFORCING BARS TO BE ASTM A615.
- CONTRACTOR TO PROTECT CONCRETE FROM DAMAGE DUE TO FREEZING OR HIGH TEMPERATURES.
- CONCRETE COVER SHALL BE PER LATEST ACI REQUIREMENTS.
- LAP BARS PER LATEST ACI REQUIREMENTS.
- DO NOT EXPOSE CONCRETE TO ANY CALCIUM CHLORIDES PRIOR OR DURING CONSTRUCTION.
- IF VAPOR BARRIER IS PLACED, PLACE DIRECTLY BELOW THE SLAB ON GRADE.
- COVER FOR REINFORCING BARS TO BE PER THE LATEST ACI REQUIREMENTS.
- SUBMIT CONCRETE BREAK TEST REPORTS TO THE ENGINEER FOR REVIEW. THREE TEST CYLINDERS SHALL BE TAKEN PER SAMPLING. SAMPLES SHALL OCCUR AS FOLLOWS:
 NOT LESS THAN (1) SET OF CYLINDERS PER DAY
 NOT LESS THAN (1) SET OF CYLINDERS PER EACH 150 CUBIC YARDS OF CONCRETE
 NOT LESS THAN (1) SET OF CYLINDERS PER 5000 SQUARE FEET OF SURFACE AREA OF SLAB OR WALL
 RESULTS SHALL BE SUBMITTED FOR BREAKS OCCURRING AT 7, 28, AND 52 DAYS.

STRUCTURAL STEEL

- ALL WIDE FLANGE SECTIONS SHALL BE FABRICATED FROM ASTM A992 STRUCTURAL STEEL; ALL CHANNELS, ANGLES, AND PLATES SHALL BE FABRICATED FROM ASTM A36 STRUCTURAL STEEL; ALL HSS SECTIONS SHALL BE FABRICATED FROM ASTM A500 GRADE B STRUCTURAL STEEL WITH A MINIMUM YIELD STRESS OF 46 KSI; ALL PIPE SECTIONS SHALL BE FABRICATED FROM ASTM A53, GRADE B STRUCTURAL STEEL WITH A MINIMUM YIELD STRESS OF 35 KSI.
- ALL CONNECTIONS SHALL BE PER THE LATEST EDITION OF THE AISC STEEL CONSTRUCTION MANUAL.
- ALL BOLTS SHALL BE MIN 3/4 INCH DIAMETER ASTM A325 TYPE N.
- ALL WELDS SHALL BE WITH E70XX ELECTRODES; WELDING SHALL CONFORM TO THE LATEST AWS D1.1.
- BELOW ALL BASE PLATES PROVIDE 1/4 INCH LEVELING PLATE AND 3/4" NON SHRINK GROUT, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- ALL ANCHOR RODS SHALL CONFORM TO ASTM F1554. USE 3/4 INCH DIAMETER RODS WITH NINE INCHES OF EMBEDMENT AND 4 INCHES OF PROJECTION, UNLESS OTHERWISE NOTED (UON) ON THE DRAWINGS.
- TEMPORARY BRACING, SHORING, ETC, IS THE RESPONSIBILITY OF THE CONTRACTOR.
- IF CLASHES OCCUR BETWEEN STRUCTURAL STEEL AND OTHER TRADES, CONTACT THE ARCHITECT TO RESOLVE THE CLASHES. FIELD CUTTING OF MEMBERS WILL NOT BE PERMITTED.

WOOD

- AS A MINIMUM WOOD DECK MEMBERS SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE No.2. THE MINIMUM ACCEPTABLE SIZE OF DECK MEMBER SHALL BE 2x6.
- THE PREFABRICATED BRIDGE SUPPLIER IS RESPONSIBLE FOR PROVIDING DECK TO BRIDGE STRUCTURE CONNECTION DETAILS. THE DETAILS MUST BE SHOWN ON THE PREFABRICATED BRIDGE SHOP DRAWINGS.
- ALL OTHER WOOD MEMBERS AND WOOD MEMBER CONNECTIONS ASSOCIATED WITH THE PREFABRICATED BRIDGE ARE THE RESPONSIBILITY OF THE PREFABRICATED BRIDGE SUPPLIER AND SHALL BE SHOWN ON THE PREFABRICATED BRIDGE SHOP DRAWINGS.

NOTE: WORK ON THIS SHEET UNDER SEPARATE CONTRACT

FILE NAME: C:\Greater Lowell Engineering Associates\GL 130301 - Concord River\2013-12-01_Walkway\Structural\S-501-02.dwg LAYOUT NAME: S-502 PLOTTED: Wednesday, April 30, 2014 - 12:36pm USER: Mario

VERIFY SCALE IF PLAN SHEET IS REDUCED	1" = 1'-0"
DRAW BY:	
DES BY:	
CHK BY:	
APP BY:	
REVISIONS	
2	REVISE CONTRACT STATIONING
1	MINOR REVISIONS
	DESCRIPTION
DRN	CHK
DATE (M/D/Y)	4/28/2014
	2/6/2014

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505 MIDDLESEX TPK #14, BILLERICA, MA 01821
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LOWELL, MASSACHUSETTS
LOWELL - CONCORD RIVER GREENWAY
PHASE 3A - CENTENNIAL APARTMENTS TO ROGERS ST.

DETAILS - SHEET 2 OF 2
(OTHER CONTRACT)

DRAWING NUMBER
S-502

SHEET 10 OF 10