COMMONWEALTH
HERITAGE GROUP

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February 23, 2018
WC-282

Jonathan K. Patton
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

Re: Sudbury-Hudson Transmission Reliability Project
Sudbury, Marlborough, Stow, and Hudson, Massachusetts
MHC #RC.62384; EEA #15703
Proposed Bridge Treatments

Dear Mr. Patton:

Enclosed for your review are five sheets of engineering plans associated with the referenced project. These plans represent 50% Design for four bridge crossings within the project area: Chestnut Street Culvert, Bridge 130 (Fort Meadow Brook), Bridge 128 (Hop Brook), and Bridge 127 (Hop Brook).

- The Chestnut Street Culvert would replace an existing filled embankment, which was created following removal of an earlier Chestnut Street bridge. The structure is proposed as a precast-concrete arch culvert, flanked on either end by precast-concrete wingwalls (Plan 2 of 5).
- Bridge 130 would replace an existing timber-pile trestle on the same alignment. The new structure is proposed as a prefabricated steel truss with timber decking and rub rails. The 12-foot deck width of the existing structure would be retained in the new structure. Existing timber piles would be cut at the mudline (Plan 3 of 5).
- Bridge 128 would retain and reuse the granite-block abutments of the existing plat-girder structure but would replace the existing superstructure with new timber floor beams, decking, and rub rails. The 10-foot deck width of the existing structure would be replaced by a 12-foot deck width (Plan 4 of 5).
- Bridge 127 would partially retain and reuse existing backwalls of the existing plat-girder structure, but would replace the existing superstructure with a prefabricated steel truss, steel floor beams, timber deck, and timber rub rails. The 12-foot deck width of the existing structure would be retained in the new structure. Existing timber piles would be cut at the mudline (Plan 5 of 5).

We trust you will find these plans useful. Should you require additional information, please contact Vivian Kimball (VKimball@VHB.com).

Sincerely,

Commonwealth Heritage Group, Inc.

Richard Meyer
rmeyer@chg-inc.com

cc: Martin Dudek, Commonwealth

GENERAL NOTES: CHESTNUT STREET

DESIGN:
IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 1½", 565 CEMENT CONCRETE.
ALL PREACST CONCRETE SHALL BE 4000 PSI ¾", 610 CEMENT CONCRETE.

REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

SUBSTRUCTURE DESIGN:
PROPOSED BRIDGE SUBSTRUCTURES INCLUDING FOOTINGS AND PEDESTAL WALLS ARE SHOWN AS PRELIMINARY ONLY. FINAL DESIGN WILL BE PERFORMED UPON RECEIPT OF GEOTECH RECOMMENDATIONS.

SURVEY AND EXISTING CONDITIONS:
THE EXISTING CONDITIONS SHOWN ON THIS PLAN WERE DEVELOPED FROM A COMBINED EFFORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY EASTERN TOPOGRAPHICS, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN ON FEBRUARY 22, 2013, AND AUGMENTED BY AN ON-THE-GROUND SURVEY PERFORMED BY VHB DURING 2015 AND 2017.
THE HORIZONTAL CONTROL IS BASED ON THE MASSACHUSETTS MAINLAND STATE PLANE COORDINATE SYSTEM AND THE NATIONAL GEODETIC SURVEY (NAD83). ALL ELEVATION IS US FEET, REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988 (NAVD88).

DEMOLITION AND CONSTRUCTION:
ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY.
ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS.
BURIED EXISTING BRIDGE COMPONENTS MAY BE ENCOUNTERED DURING EXCAVATION AND SHALL BE REMOVED AS UNCLASSIFIED EXCAVATION.
TEMPORARY SHEETING MAY BE REQUIRED AT THE OPTION OF THE CONTRACTOR.
BACKFILL AROUND PROPOSED SUBSTRUCTURE SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION.
IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ADEQUATE SHIELDING DURING DEMOLITION AND CONSTRUCTION TO ADEQUATELY PROTECT WORKERS.
ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.

DATE:
TO BE PLACED ON THE FACE OF BOTH HEADWALLS OF THE CULVERT STRUCTURE, CENTERED BOTH WAYS, WITH 5" NUMERALS BEDDED INTO CONCRETE. THE DATE USED SHALL BE THE LATEST YEAR OF CONTRACT COMPLETION AS OF THE DATE THE CULVERT STRUCTURE IS CONSTRUCTED. BOTH HEADWALLS SHALL FEATURE THE SAME DATE.

GENERAL NOTES: BRIDGE 130

DESIGN:
IN ACCORDANCE WITH AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 1½", 565 CEMENT CONCRETE.
GROUT TO BE USED FOR DRILLING AND GROUTING DOWELS INTO EXISTING SUBSTRUCTURES SHALL BE A CEMENTITIOUS GROUT LISTED ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

SUBSTRUCTURE DESIGN:
PROPOSED BRIDGE SUBSTRUCTURES INCLUDING FOOTINGS AND ABUTMENTS ARE SHOWN AS PRELIMINARY ONLY. FINAL DESIGN WILL BE PERFORMED UPON RECEIPT OF GEOTECH RECOMMENDATIONS.

STEEL:
ALL STRUCTURAL STEEL OTHER THAN STRUCTURAL TUBING SHALL BE AASHTO M270 GRADE 50 GALVANIZED AND PAINTED. STRUCTURAL TUBING SHALL BE HEAT TREATED ASTM A1085 GRADE A, WITH THE SUPPLEMENTAL REQUIREMENTS S1, GALVANIZED AND PAINTED.
BOLTS THAT FASTEN TO STEEL ONLY SHALL BE AASHTO M1644 (ASTM 325) HIGH STRENGTH BOLTS, GALVANIZED.

TIMBER:
DECK PLANKING AND RAILINGS: IPE, F_b min = 22,000 psi.
ALL NAILS, SCREWS, BOLTS, WASHERS, CONNECTORS, FASTENERS AND HARDWARE FOR WOOD CONNECTIONS SHALL BE STAINLESS STEEL TYPE 304 OR TYPE 316.
WHERE TREATED TIMBER MEMBERS ARE IN DIRECT CONTACT WITH STEEL PROVIDE VYCOR DECK PROTECTOR BARRIER MEMBRANE BY W.R. GRACE & CO. OR APPROVED EQUAL.

SURVEY AND EXISTING CONDITIONS:
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ALL UNSUITABLE MATERIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE RESIDENT ENGINEER. BACKFILL WITH GRAVEL BORROW FOR BRIDGE FOUNDATIONS.
BACKFILL AROUND PROPOSED SUBSTRUCTURE SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
THE CONTRACTOR SHALL TAKE THE PROPER PRECAUTIONS TO ENSURE THE STABILITY AND SAFE PERFORMANCE OF ALL STRUCTURAL ELEMENTS DURING DEMOLITION AND CONSTRUCTION.
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ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.

GENERAL NOTES: BRIDGE 128

DESIGN:
IN ACCORDANCE WITH AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

CONCRETE:
ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 1½", 565 CEMENT CONCRETE.
GROUT TO BE USED FOR DRILLING AND GROUTING DOWELS INTO EXISTING SUBSTRUCTURES SHALL BE A CEMENTITIOUS GROUT LISTED ON THE MASSDOT QUALIFIED CONSTRUCTION MATERIALS LIST.

REINFORCEMENT:
REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.

STEEL:
NEW STEEL PLATES AND SHAPES SHALL BE NEW MATERIAL MEETING THE REQUIREMENTS OF AASHTO M270 GRADE 50, PAINTED.
BOLTS THAT FASTEN TO STEEL ONLY SHALL BE AASHTO M1644 (ASTM 325) HIGH STRENGTH BOLTS, GALVANIZED.

TIMBER:
DECK PLANKING AND RAILINGS: IPE, F_b min = 22,000 psi.
FLOOR BEAMS: SYP NO. 1 OR BETTER, F_b min = 1,050 psi.
SYP TIMBER SHALL BE TREATED WITH ACQ-D WITH 0.60 PCF RETENTION.
ALL NAILS, SCREWS, BOLTS, WASHERS, CONNECTORS, FASTENERS AND HARDWARE FOR WOOD CONNECTIONS SHALL BE STAINLESS STEEL TYPE 304 OR TYPE 316.
WHERE TREATED TIMBER MEMBERS ARE IN DIRECT CONTACT WITH STEEL PROVIDE VYCOR DECK PROTECTOR BARRIER MEMBRANE BY W.R. GRACE & CO. OR APPROVED EQUAL.
BETWEEN THE TIMBER TRANSVERSE FLOOR BEAMS AND THE DECK PLANKING, PROVIDE A LAYER OF GRACE ICE & WATER SHIELD BY W.R. GRACE & CO. OR APPROVED EQUAL.

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BACKFILL AROUND ABUTMENTS SHALL BE GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES.
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GENERAL NOTES: BRIDGE 127

DESIGN:
IN ACCORDANCE WITH AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES FOR H10 LOADING WITHOUT IMPACT AND 90 PSF PEDESTRIAN LOADING, WHICHEVER CONTROLS. RAILING DESIGNED FOR PEDESTRIAN LOADING ONLY.

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NO.	DESCRIPTION	BY	DATE	APPR.

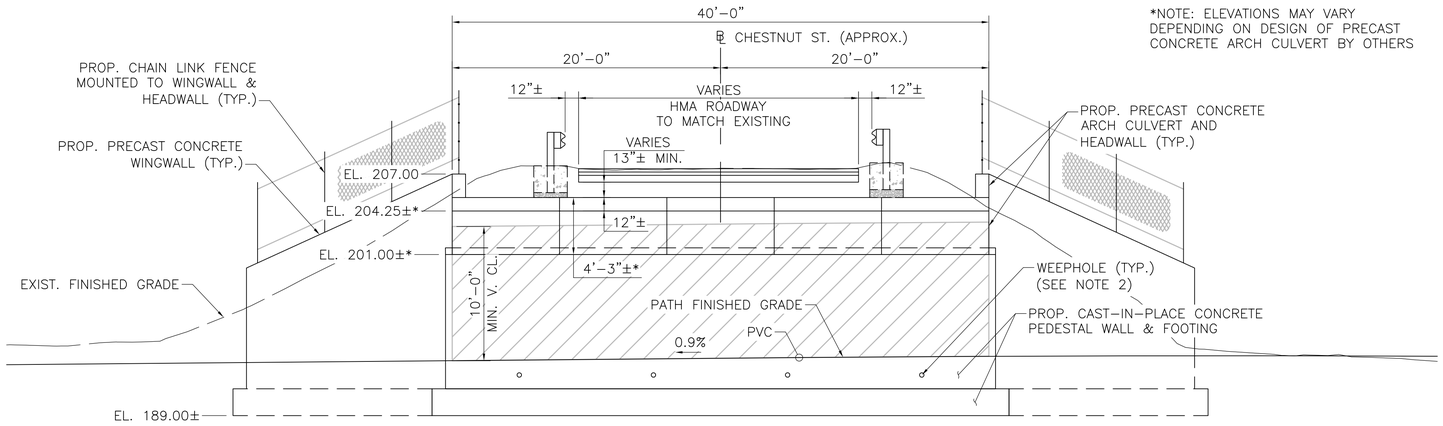
REVISION

Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION LINE RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH, & SUDBURY MASSACHUSETTS
BRIDGE GENERAL NOTES
PLAN 1 OF 5

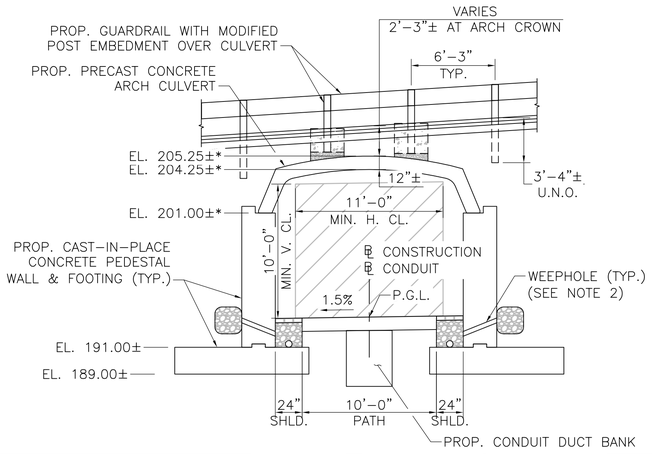
SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
H: 1"=40' V: 1"=4'	2/9/2018	AMS	KGK	KGK	#	#



*NOTE: ELEVATIONS MAY VARY DEPENDING ON DESIGN OF PRECAST CONCRETE ARCH CULVERT BY OTHERS

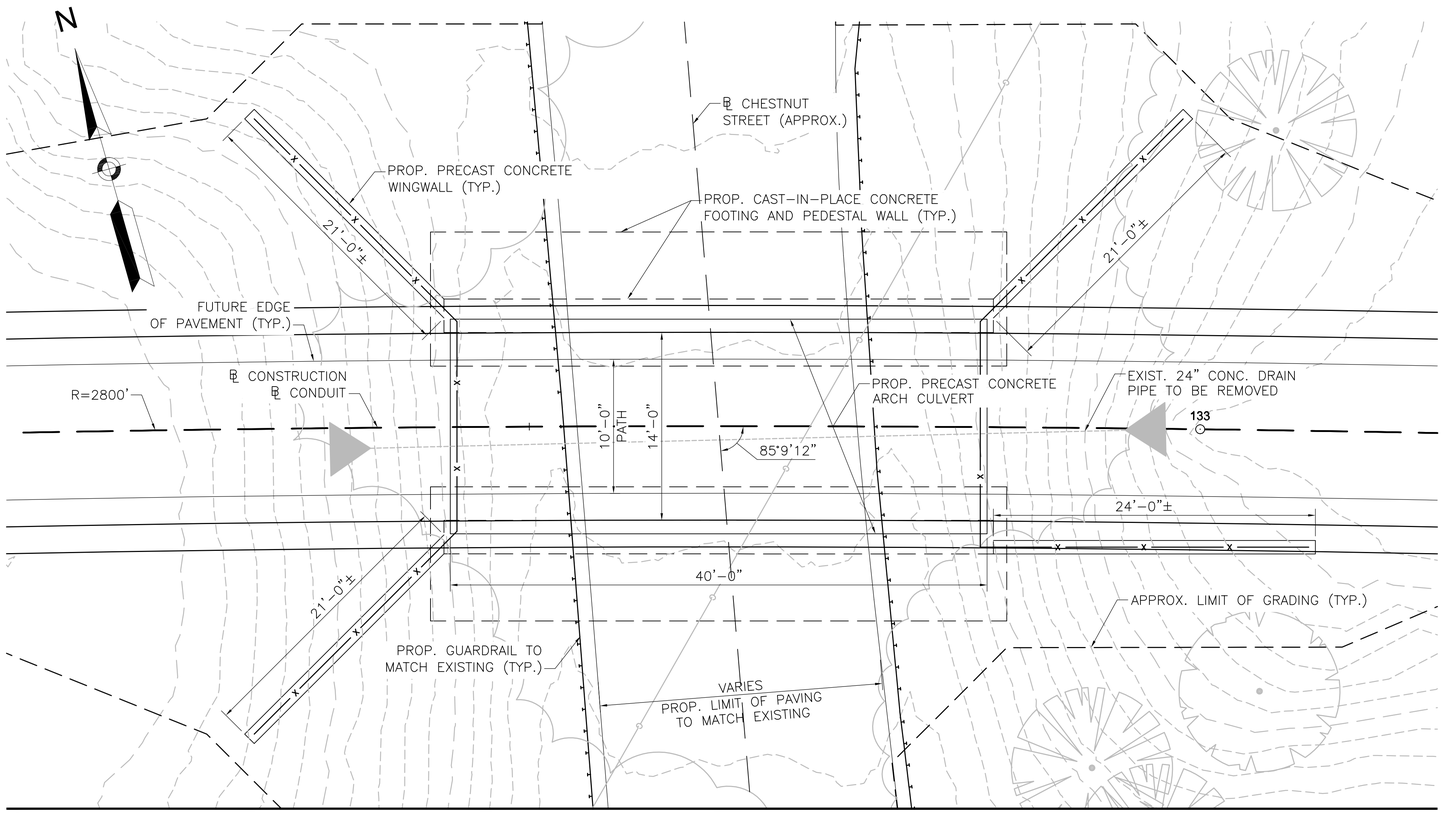
CULVERT LONGITUDINAL SECTION

SCALE: $\frac{3}{16}$"=1'-0"



CULVERT CROSS SECTION (LOOKING UP STATION)

SCALE: $\frac{3}{16}$"=1'-0"



CULVERT PLAN

SCALE: $\frac{3}{16}$"=1'-0"

NOTES:

1. FOR GENERAL BRIDGE NOTES, SEE SHEET 1 OF 5.
2. WEEP HOLES SHALL BE 4" PVC SLEEVE DRAIN THROUGH WALL WITH 1 C.Y. CRUSHED STONE WRAPPED IN FILTER FABRIC ON EACH END.

vhb
Vanasse Hangen Brustlin, Inc.
101 Walnut St., PO Box 9151
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617.924.1770 FAX 617.924.2286

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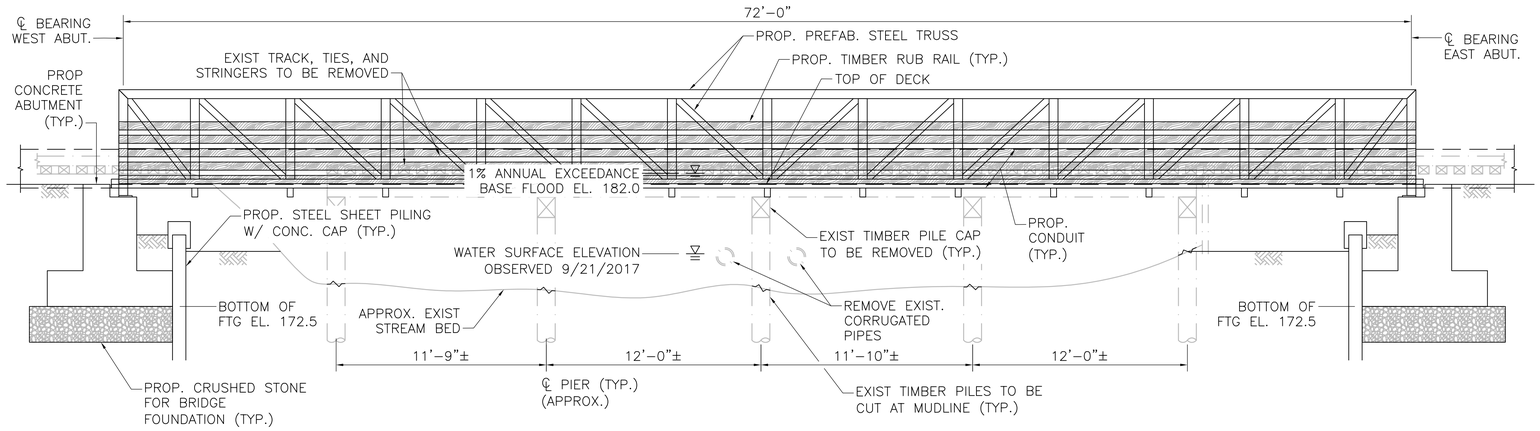
	REVISION			

EVERSOURCE

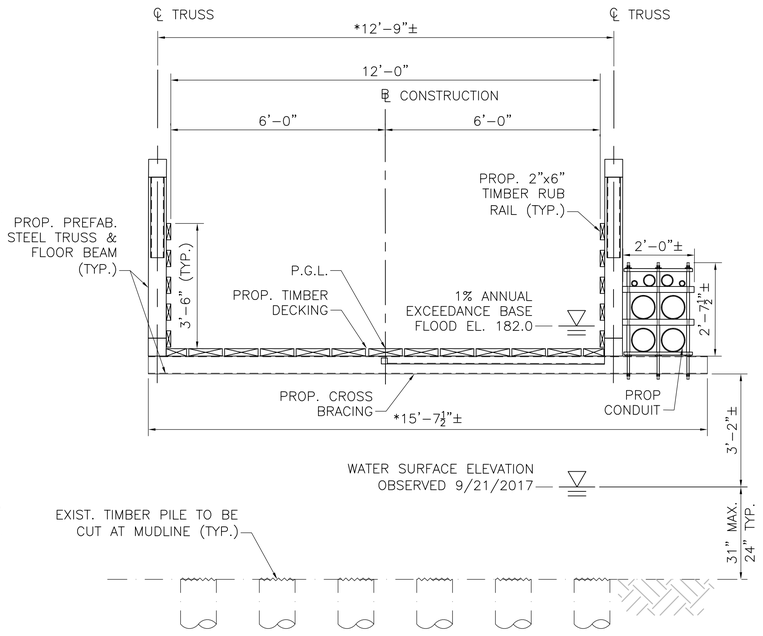
SUDBURY–HUDSON TRANSMISSION LINE RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE NO. H–25–011 (CHESTNUT STREET BRIDGE)
PLAN 2 OF 5

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
H: 1"=40' V: 1"=4'	2/9/2018	AMS	KGK	KGK	#	#



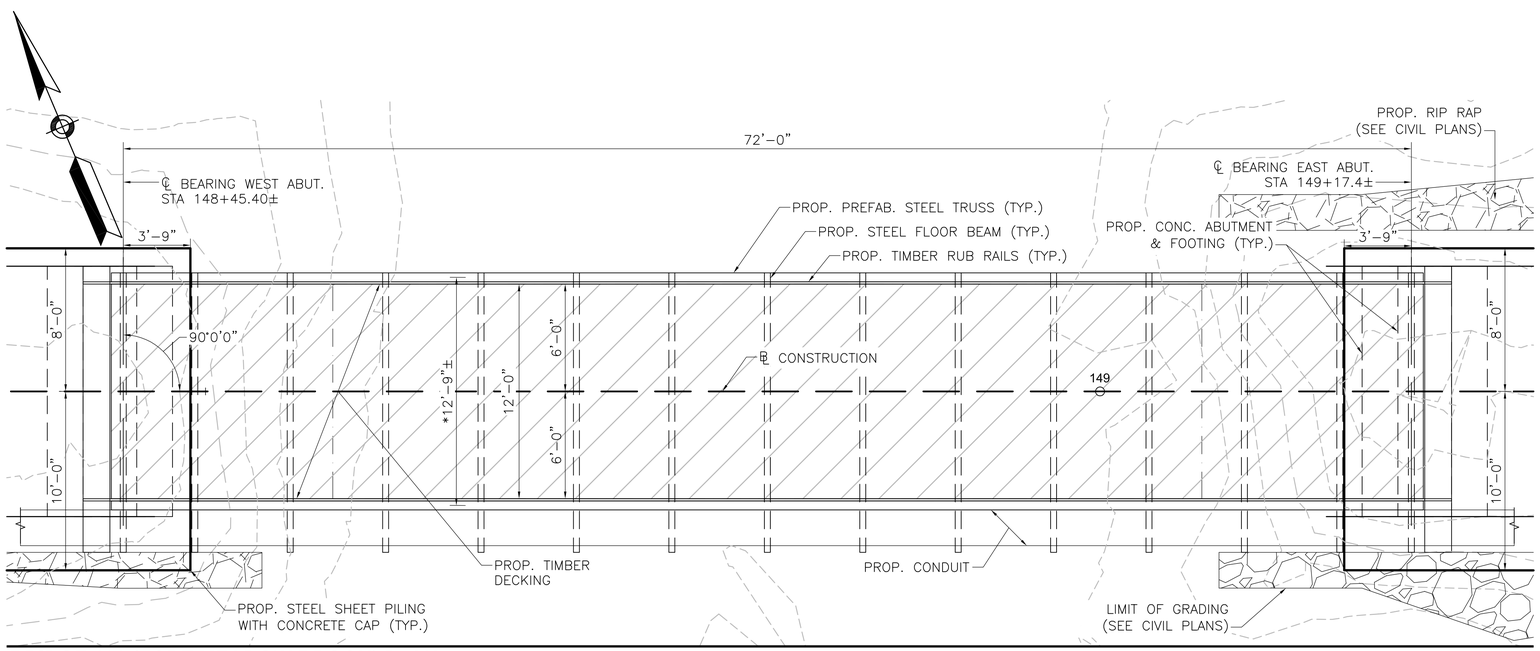
BRIDGE 130 (FORT MEADOW BROOK) LONGITUDINAL SECTION

SCALE: $\frac{1}{4}$"=1'-0"



BRIDGE 130 (FORT MEADOW BROOK) TRANSVERSE SECTION

SCALE: $\frac{1}{2}$"=1'-0"



BRIDGE 130 (FORT MEADOW BROOK) PLAN

SCALE: $\frac{1}{4}$"=1'-0"

NOTES:

1. FOR GENERAL BRIDGE NOTES, SEE SHEET 1 OF 5.
2. * DENOTES DIMENSIONS MAY VARY DEPENDING ON MANUFACTURER'S DESIGN (BY OTHERS)

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION LINE RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE H–25–XXX (BRIDGE 130, FORT MEADOW BROOK)
PLAN 3 OF 5

Vanasse Hangen Brustlin, Inc.
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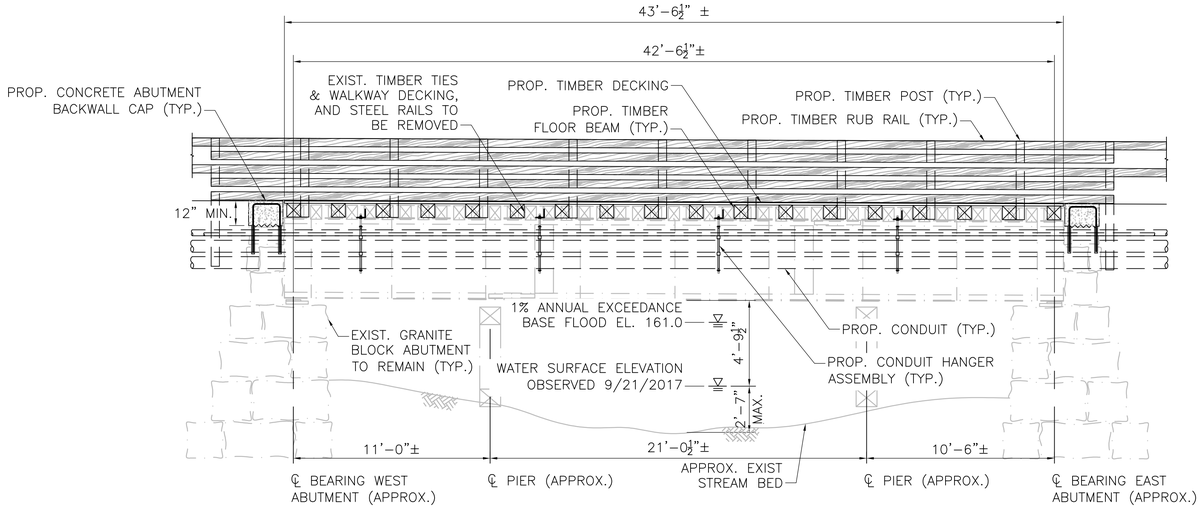
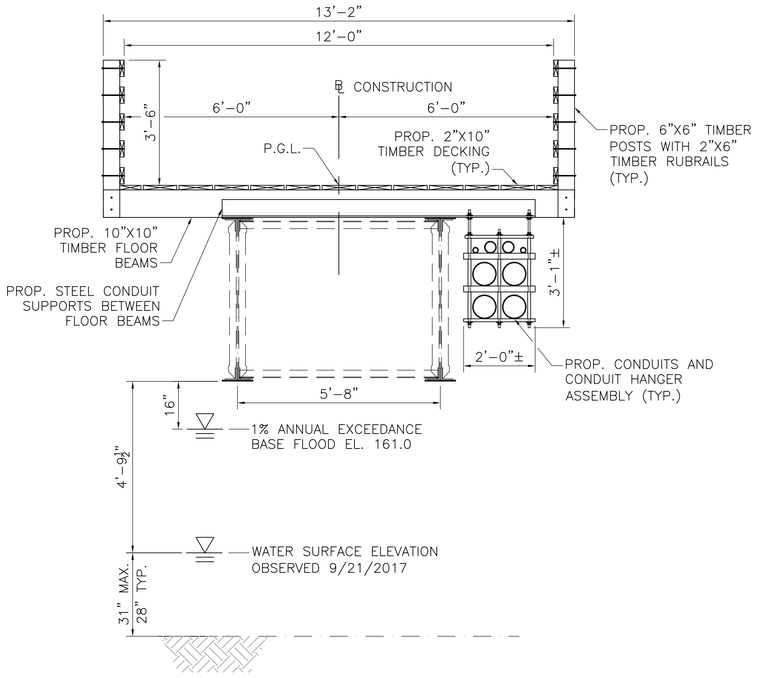
SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
H: 1"=40' V: 1"=4'	2/9/2018	MTK	KGK	KGK	#	#



BRIDGE 128 (HOP BROOK) LONGITUDINAL SECTION

SCALE: ¼"=1'-0"

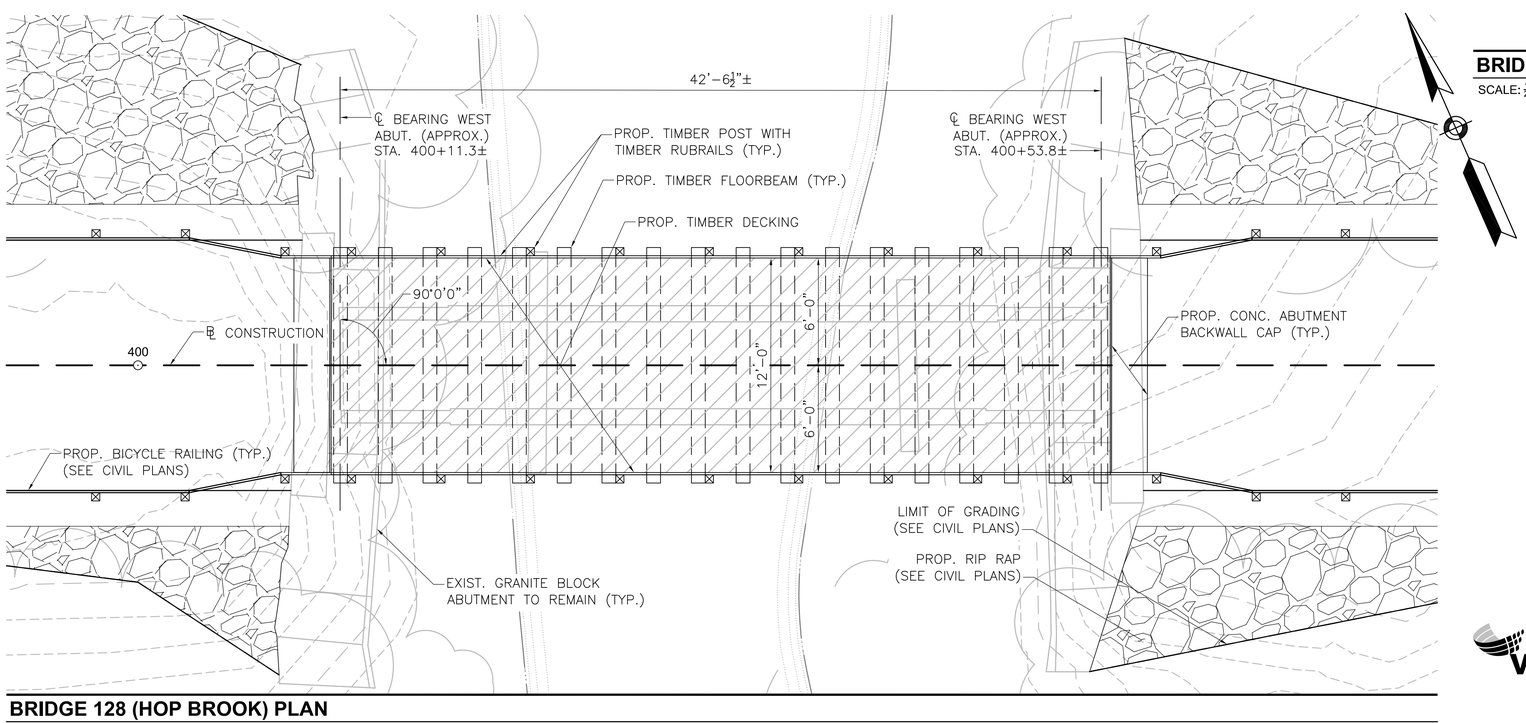


BRIDGE 128 (HOP BROOK) TRANSVERSE SECTION

SCALE: ½"=1'-0"

NOTES:

1. FOR GENERAL BRIDGE NOTES, SEE SHEET 1 OF 5.



BRIDGE 128 (HOP BROOK) PLAN

SCALE: ¼"=1'-0"

NO.	DESCRIPTION	BY	DATE	APPR.
	REVISION			

EVERSOURCE

SUDBURY–HUDSON TRANSMISSION LINE RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE S–31–XXX (BRIDGE 128, HOP BROOK)
PLAN 4 OF 5

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
H: 1"=40' V: 1"=4'	2/9/2018	AMS	KGK	KGK	#	#

vhb Vanasse Hangen Brustlin, Inc.
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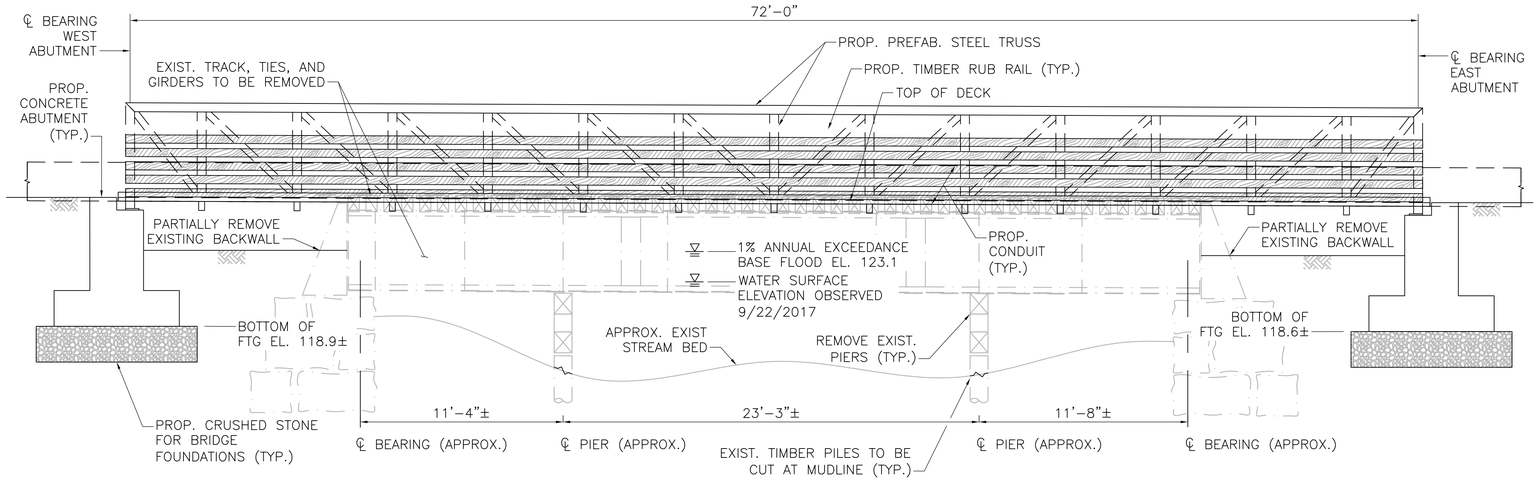
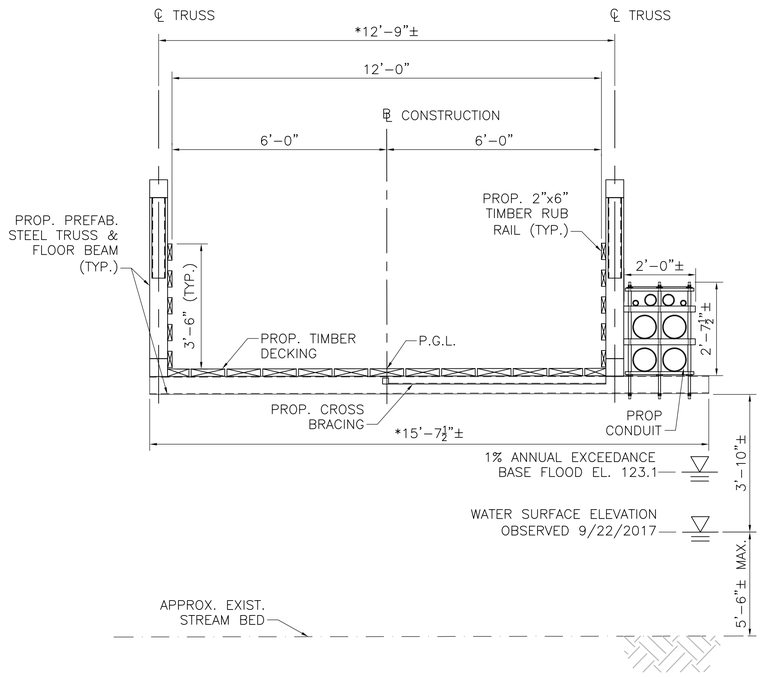


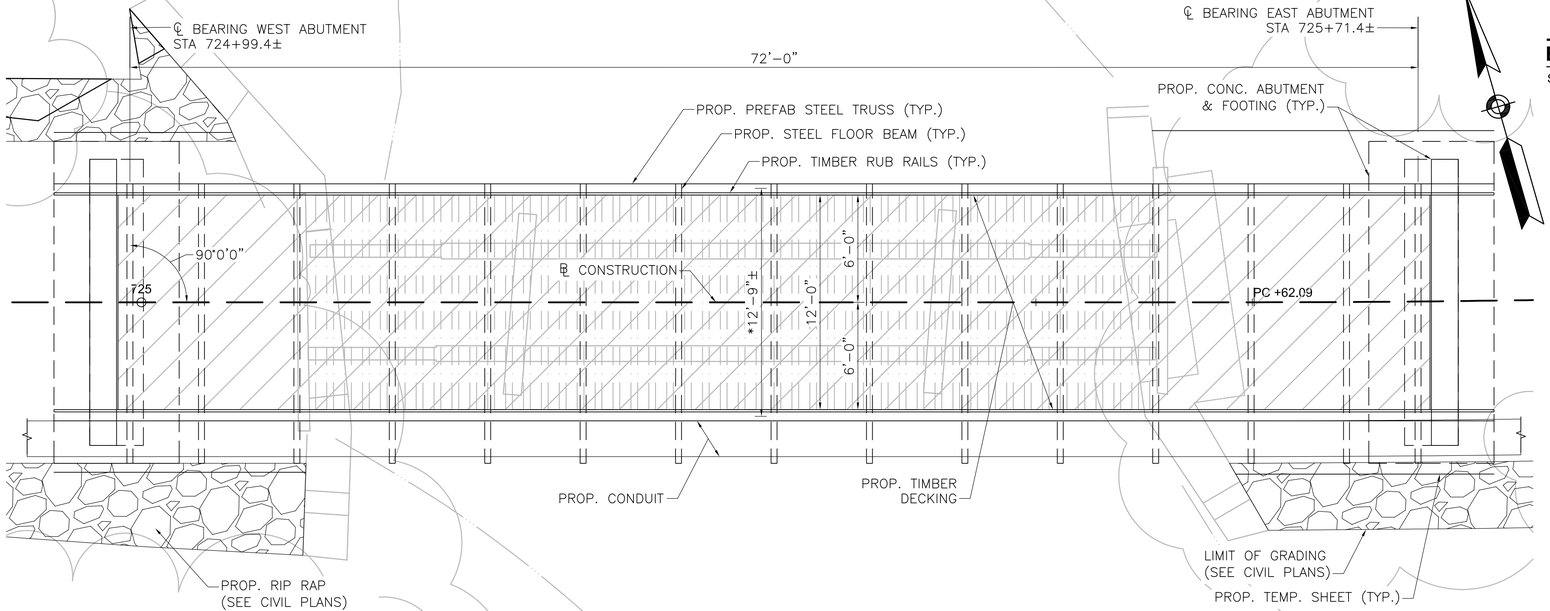
BRIDGE 127 (HOP BROOK) LONGITUDINAL SECTION

SCALE: $\frac{1}{4}$"=1'-0"



BRIDGE 127 (HOP BROOK) TRANSVERSE SECTION

SCALE: $\frac{1}{2}$"=1'-0"



BRIDGE 127 (HOP BROOK) PLAN

SCALE: $\frac{1}{4}$"=1'-0"

NOTES:

1. FOR GENERAL BRIDGE NOTES, SEE SHEET 1 OF 5.
2. * DENOTES DIMENSIONS MAY VARY DEPENDING ON MANUFACTURER'S DESIGN (BY OTHERS)

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SUDBURY–HUDSON TRANSMISSION LINE RELIABILITY PROJECT
HUDSON, STOW, MARLBOROUGH & SUDBURY MASSACHUSETTS
BRIDGE S–31–XXX (BRIDGE 127, HOP BROOK)
PLAN 5 OF 5

SCALE: unless noted	DATE	DRAWN	CH'K D.	APPR.	DRAWING NO.	REV.
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