

West Chester Office 535 N. Church Street, West Chester, PA 19380 P: 610.436.9000 | F: 610.436.8468 commonwealthheritagegroup.com

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 (<u>VKimball@VHB.com</u>).

Sincerely,

Commonwealth Heritage Group, Inc.

Richard Meyer <u>rmeyer@chg-inc.com</u>

cc: Martin Dudek, Commonwealth

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	<u>GENERAL NOTES: CHESTNUT STREET</u>	<u>general notes: e</u>
А	<u>DESIGN:</u> IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.	<u>DESIGN:</u> IN ACCORDANCE WITH AASH OF PEDESTRIAN BRIDGES FO PSF PEDESTRIAN LOADING, M
	<u>CONCRETE:</u> All CAST IN PLACE CONCRETE SHALL BE 4000 PSI, $1\frac{1}{2}$ ", 565 CEMENT CONCRETE. All PREACST CONCRETE SHALL BE 4000 PSI $\frac{3}{4}$ ", 610 CEMENT CONCRETE.	FOR PEDESTRIAN LOADING O <u>CONCRETE:</u> ALL CAST IN PLACE CONCR CONCRETE.
	<u>REINFORCEMENT:</u> REINFORCING STEEL SHALL BE EPOXY COATED AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60.	GROUT TO BE USED FOR D EXISTING SUBSTRUCTURES S ON THE MASSDOT QUALIFIED REINFORCEMENT:
В	<u>SUBSTRUCTURE DESIGN:</u> PROPOSED BRIDGE SUBSTRUCTURES INCLUDING FOOTINGS AND PEDESTAL WALLS ARE SHOWN AS PRELIMINARY ONLY. FINAL DESIGN WILL BE PERFORMED UPON RECEIPT OF GEOTECH RECOMMENDATIONS.	REINFORCING STEEL SHALL TO THE REQUIREMENTS OF
	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).	ABUTMENTS ARE SHOWN AS PERFORMED UPON RECEIPT STEEL:
С	DEMOLITION AND CONSTRUCTION: ALL EXISTING MATERIALS REMOVED AND NOT REUSED AND ALL WASTE MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR.	TIMBER: DECK PLANKING AND RAILIN ALL NAILS, SCREWS, BOLTS,
	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	WHERE TREATED TIMBER ME STEEL PROVIDE VYCOR DECI GRACE & CO. OR APPROVE
D	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.	EASTERN TOPOGRAPHICS, IN ON FEBRUARY 22, 2013, AI SURVEY PERFORMED BY VH THE HORIZONTAL CONTROL MAINLAND STATE PLANE COO GEODETIC SURVEY (NAD83). TO THE NORTH AMERICA VE DEMOLITION AND CONSTRUC
E	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.	MATERIALS SHALL BECOME TREATED TIMBER AND CONT, OFF SITE AT AN APPROVED ALL UNSUITABLE MATERIALS
	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.	RESIDENT ENGINEER. BACKF FOUNDATIONS. BACKFILL AROUND PROPOSE BORROW FOR BACKFILLING THE CONTRACTOR SHALL TA THE STABILITY AND SAFE PE ELEMENTS DURING DEMOLITI
F		IT IS THE RESPONSIBILITY C SHIELDING DURING DEMOLITI PROTECT WORKERS AND TO ENTERING THE WATERWAY. ANY DAMAGE TO REMAINING BY THE CONTRACTOR'S ACTI THE CONTRACTOR, AT NO A
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S: BRIDGE 130

AASHTO GUIDE SPECIFICATIONS FOR THE DESIGN ES FOR H10 LOADING WITHOUT IMPACT AND 90 ING, WHICHEVER CONTROLS. RAILING DESIGNED ING ONLY.

CONCRETE SHALL BE 4000 PSI, 1¹/₇", 565 CEMENT

OR DRILLING AND GROUTING DOWELS INTO RES SHALL BE A CEMENTITIOUS GROUT LISTED LIFIED CONSTRUCTION MATERIALS LIST.

HALL BE EPOXY COATED AND SHALL CONFORM OF AASHTO M31 GRADE 60.

BSTRUCTURES INCLUDING FOOTINGS AND IN AS PRELIMINARY ONLY. FINAL DESIGN WILL BE CEIPT OF GEOTECH RECOMMENDATIONS.

. OTHER THAN STRUCTURAL TUBING SHALL BE 50 GALVANIZED AND PAINTED. STRUCTURAL AT TREATED ASTM A1085 GRADE A, WITH THE REMENTS S1, GALVANIZED AND PAINTED. O STEEL ONLY SHALL BE AASHTO M1644 (ASTM BOLTS, GALVANIZED.

RAILINGS: IPE, F_{b} min = 22,000 psi. BOLTS, WASHERS, CONNECTORS, FASTENERS AND CONNECTIONS SHALL BE STAINLESS STEEL TYPE

R MEMBERS ARE IN DIRECT CONTACT WITH DECK PROTECTOR BARRIER MEMBRANE BY W.R. ROVED EQUAL.

CONDITIONS:

ONS SHOWN ON THIS PLAN WERE DEVELOPED FORT OF AERIAL PHOTOGRAMMETRIC MAPPING BY S, INC., BASED ON AERIAL PHOTOGRAPHS TAKEN 3, AND AUGMENTED BY AN ON-THE-GROUND BY VHB DURING 2015 AND 2017. FROL IS BASED ON THE MASSACHUSETTS COORDINATE SYSTEM AND THE NATIONAL D83). ALL ELEVATION IS US FEET, REFERENCED CA VERTICAL DATUM OF 1988 (NAVD88).

TRUCTION:

_S REMOVED AND NOT REUSED AND ALL WASTE OME THE PROPERTY OF THE CONTRACTOR. CONTAMINATED WASTE SHALL BE DISPOSED OF OVED FACILITY.

RIALS SHALL BE REMOVED WITHIN THE LIMITS OF THE STRUCTURE, AS DIRECTED BY THE BACKFILL WITH GRAVEL BORROW FOR BRIDGE

POSED SUBSTRUCTURE SHALL BE GRAVEL LING STRUCTURES AND PIPES. L TAKE THE PROPER PRECAUTIONS TO ENSURE

FE PERFORMANCE OF ALL STRUCTURAL MOLITION AND CONSTRUCTION.

ITY OF THE CONTRACTOR TO PROVIDE ADEQUATE MOLITION AND CONSTRUCTION TO ADEQUATELY D TO PREVENT DEBRIS AND MATERIALS FROM

INING EXISTING COMPONENTS THAT IS CAUSED ACTIVITY SHALL BE REPAIRED OR REPLACED BY 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.

<u>CONCRETE:</u>

ALL CAST IN PLACE CONCRETE SHALL BE 4000 PSI, 1¹/₂", 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_{h} 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.

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. TREATED TIMBER AND CONTAMINATED WASTE SHALL BE DISPOSED OF OFF SITE AT AN APPROVED FACILITY. BACKFILL AROUND ABUTMENTS 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 AND TO PREVENT DEBRIS AND MATERIALS FROM ENTERING THE WATERWAY.

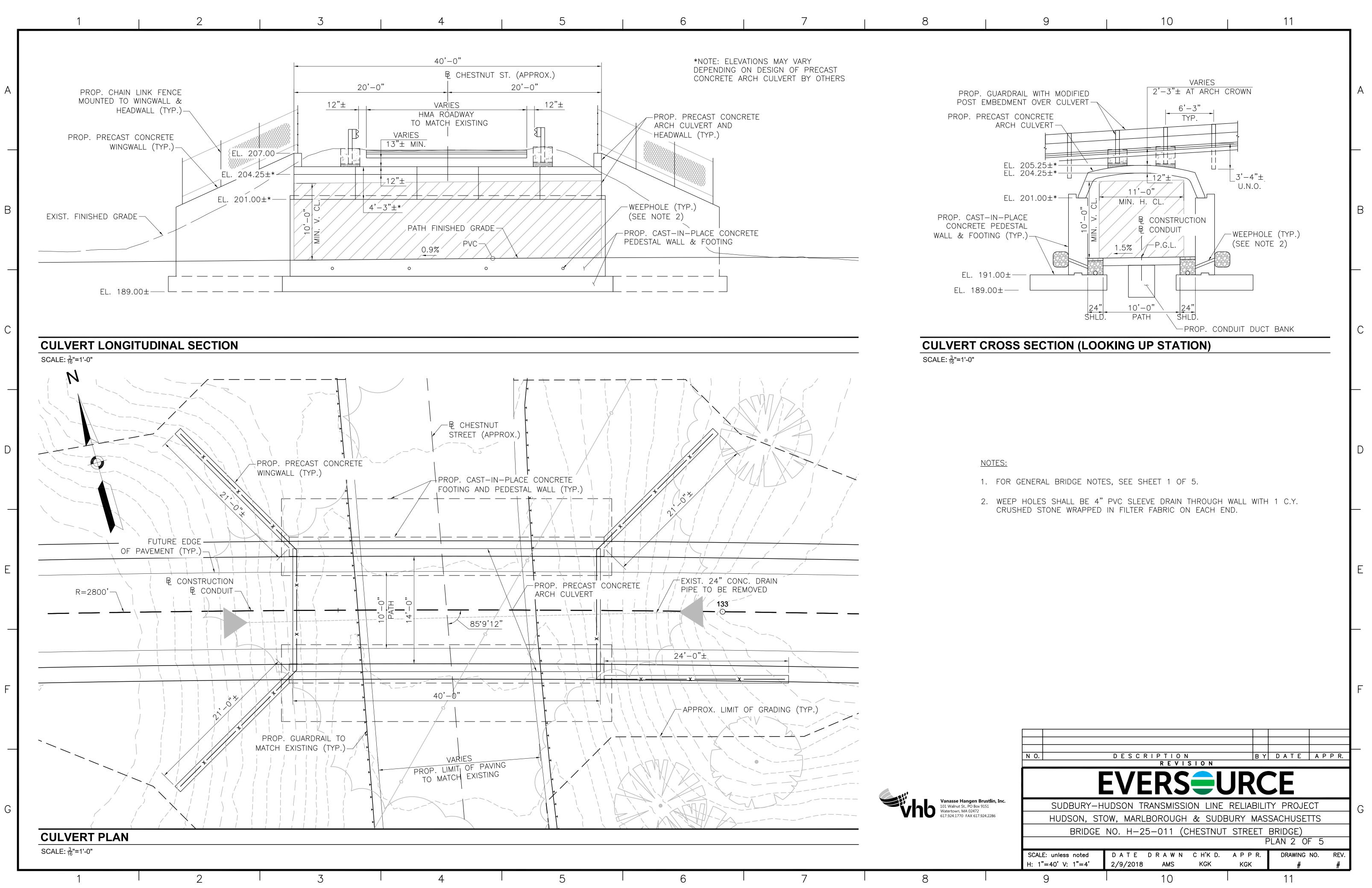
ANY DAMAGE TO REMAINING EXISTING COMPONENTS THAT IS CAUSED BY THE CONTRACTOR'S ACTIVITY SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL EXPENSE.

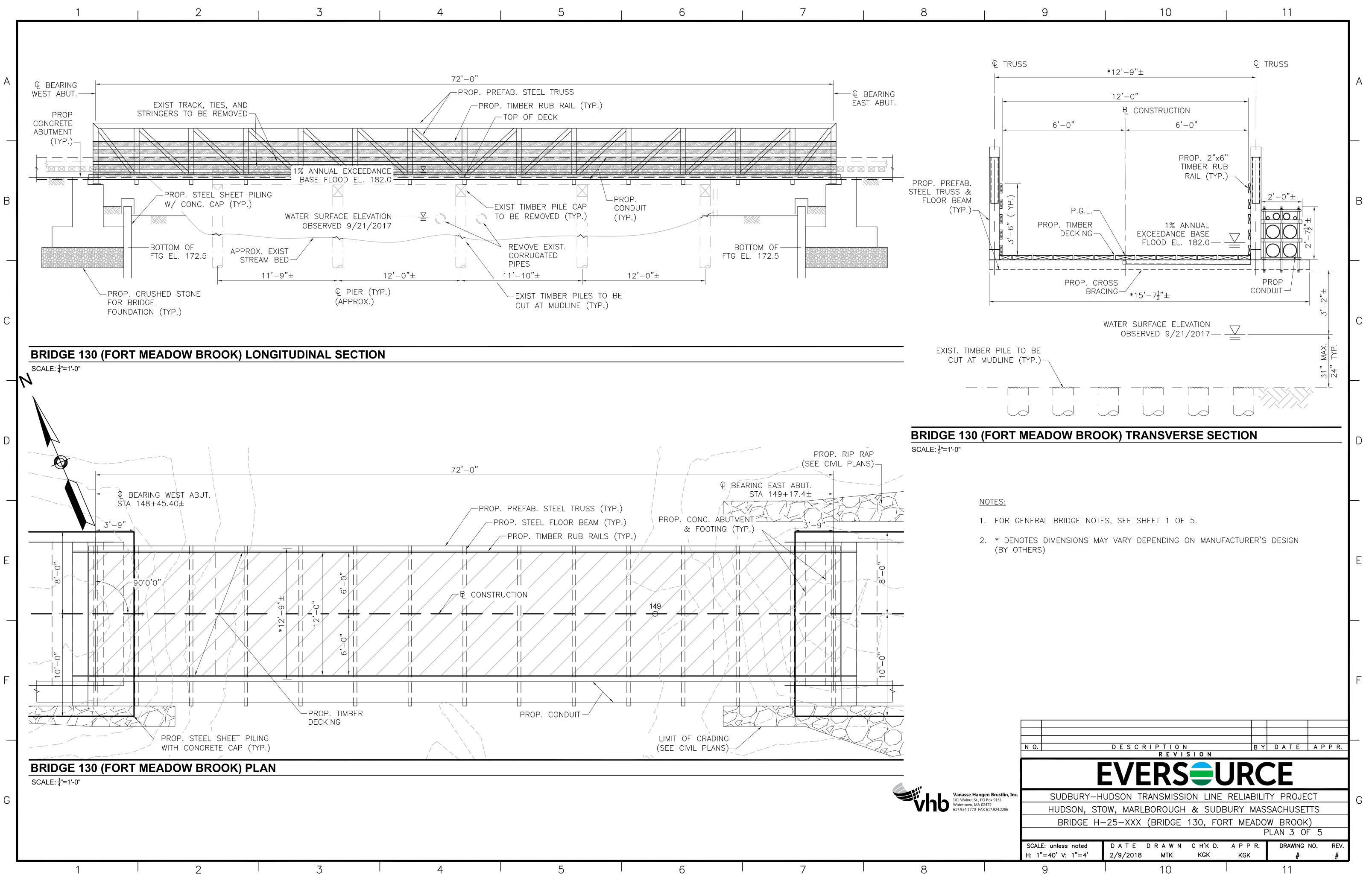


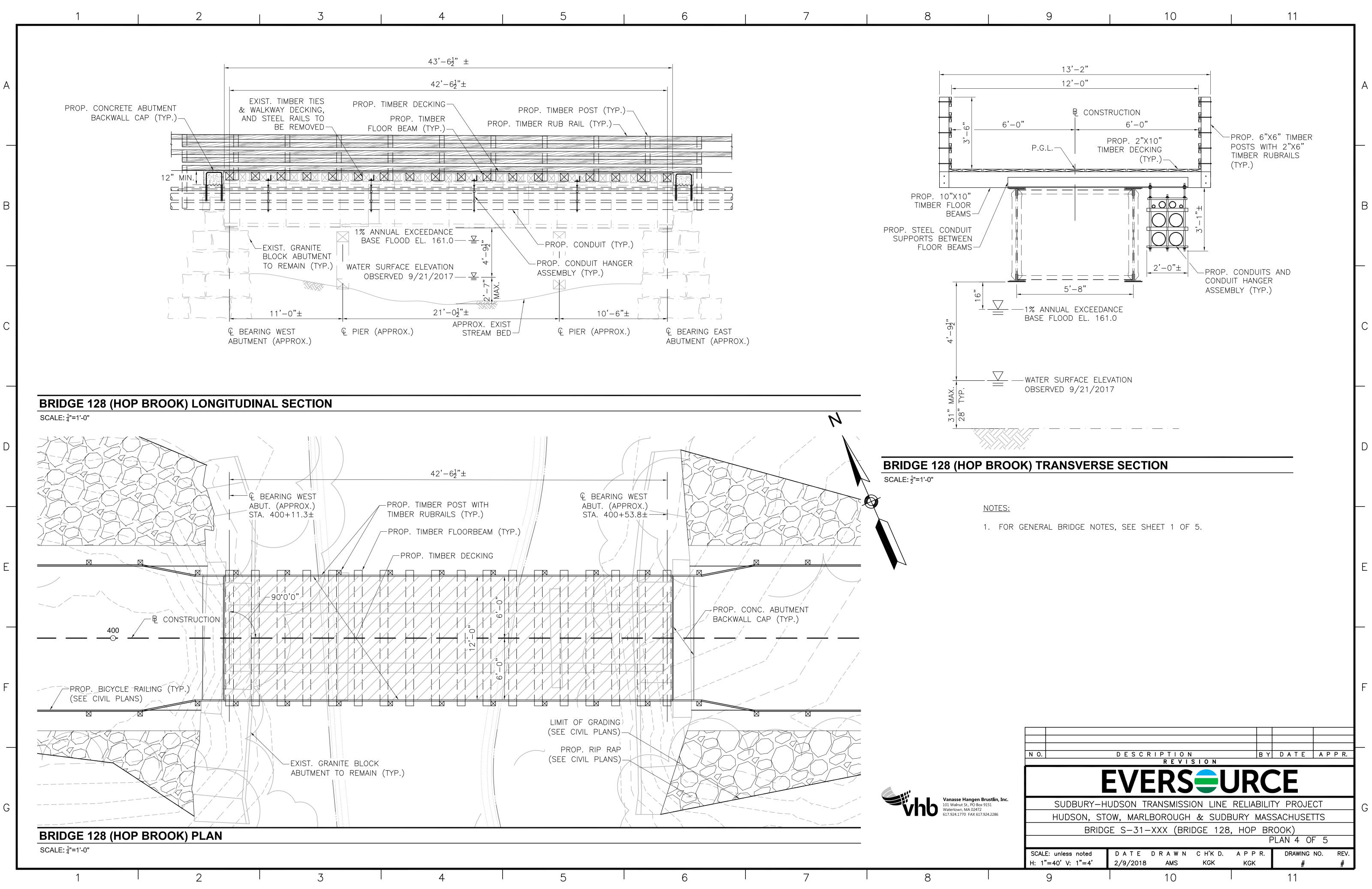
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	STEEL SHALL	BE EPOXY COATED AASHTO M31 GRADI		CONFORM	
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ALL NAILS, SC HARDWARE FOR 304 OR TYPE WHERE TREATE	REWS, BOLTS R WOOD CONI 316. D TIMBER ME E VYCOR DEC	GS: IPE, F _b min = , WASHERS, CONNEG NECTIONS SHALL BE MBERS ARE IN DIRI K PROTECTOR BARR D EQUAL.	CTORS, FÀST STAINLESS ECT CONTAC	ENERS AND STEEL TYPE T WITH	
FROM A COMB EASTERN TOPO ON FEBRUARY SURVEY PERFO THE HORIZONT MAINLAND STAT GEODETIC SUR	CONDITIONS S INED EFFORT GRAPHICS, IN 22, 2013, A PRMED BY VH AL CONTROL E PLANE COO VEY (NAD83).	DITIONS: SHOWN ON THIS PL OF AERIAL PHOTOG C., BASED ON AERI ND AUGMENTED BY B DURING 2015 AN IS BASED ON THE ORDINATE SYSTEM A ALL ELEVATION IS RTICAL DATUM OF	RAMMETRIC AL PHOTOGF AN ON-THE D 2017. MASSACHUSI ND THE NA ⁻ US FEET, R	MAPPING BY RAPHS TAKEN GROUND ETTS FIONAL EFERENCED	
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BRIDGE GENERAL NUTES					
PLAN 1 OF 5					
SCALE: unless noted H: 1"=40' V: 1"=4'	DATE DRAWN 2/9/2018 AMS	C H'K D. KGK	APPR. KGK	DRAWING NO. #	REV #
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