

# NOTES

## 1. GENERAL

- 1.1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- 1.2. NORTH HOLLOW ROAD WILL BE CLOSED TO TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR IS NOT RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW THROUGHOUT CONSTRUCTION. NORTH HOLLOW ROAD WILL BE RE-OPENED AFTER CONSTRUCTION IS COMPLETE. THE CONTRACTOR SHALL POST ROAD CLOSURE AT LEAST 48 HOURS PRIOR TO PROJECT START. CONTRACTOR SHALL POST ROAD CLOSED SIGNS, DETOUR SIGNS AND CONSTRUCTION WARNING SIGNS IN APPROPRIATE LOCATIONS ACCORDING TO VERMONT AGENCY OF TRANSPORTATION STANDARDS.
- 1.3. BEFORE ORDERING MATERIALS, CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS, INCLUDING SUBCONTRACTORS SHOP DRAWINGS AND OTHER RELATED DOCUMENTS TO VERIFY AND COORDINATE DIMENSIONS, LOCATIONS, PLACEMENT, AND APPLICABILITY OF CULVERT COMPONENTS. THE CONTRACTOR SHALL MAKE FIELD CHECKS TO VERIFY THE ACCURACY OF DIMENSIONS, TOPOGRAPHY, AND OTHER EXISTING CONDITIONS. IF THERE IS ANY DISCREPANCY IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AS SOON AS POSSIBLE. THE CONTRACTOR SHALL ALSO PROVIDE ANY AND ALL INFORMATION REQUIRED BY THE FABRICATOR SUCH AS FIELD DIMENSIONS, ELEVATIONS, ETC.
- 1.4. CONTRACTOR SHALL PROTECT EXISTING FACILITIES, STRUCTURES, AND UTILITY LINES FROM ALL DAMAGE, NOTED AND/OR OBSERVABLE SUBSURFACE IMPROVEMENTS SUCH AS UTILITIES, WATER LINES, AND CULVERTS SHALL BE AVOIDED AND REPAIRED AND/OR REPLACED AS NEEDED. REPAIR OF UNFORESEEN SUBSURFACE IMPROVEMENTS WILL BE NEGOTIATED.
- 1.5. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING OF STRUCTURAL AND NON-STRUCTURAL ITEMS DURING CONSTRUCTION. JOB-SITE SAFETY CONDITIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- 1.6. STRUCTURE IS TO BE DESIGNED FOR LRFD HL93 LOADING IN ACCORDANCE WITH AASHTO LRFD SPECIFICATIONS.
- 1.7. ALL BACKFILL ADJACENT TO CULVERT SHALL BE FREE DRAINING GRANULAR STRUCTURAL FILL WITHOUT COBBLES AND/OR BOULDERS. STRUCTURAL BACKFILL SHALL BE IN ACCORDANCE WITH AASHTO M145 SOIL CLASSIFICATION A-1, A-2 OR A-3. STRUCTURAL BACKFILL SHALL BE COMPACTED IN 6-8" LIFTS TO 90% MAX DENSITY PER AASHTO T99.
- 1.8. ALL FOOTINGS SHALL BEAR ON SOUND LEVEL ROCK, OR ON UNDISTURBED SOIL HAVING A MINIMUM BEARING CAPACITY OF 3,000 PSF, OR ON CONTROLLED ENGINEERED FILL. FOOTINGS SHALL EXTEND TO BEDROCK OR 6' BELOW CHANNEL BOTTOM (IF BEDROCK IS NOT PRESENT). NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS ENCOUNTERED.
- 1.9. WHERE BEDROCK IS NOT PRESENT, SCARIFY AND COMPACT NATIVE BASE MATERIAL TO 95% OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT, ASTM D1557.
- 1.10. THE CONTRACTOR SHALL THOROUGHLY CLEAN THE PREMISES AT COMPLETION OF WORK AND AT TIMES AS DIRECTED BY THE OWNER. LEGALLY DISPOSE OF EXCESS MATERIAL OFF SITE. INSTALL SITE PROTECTION AND ISOLATION FENCES DURING CONSTRUCTION.
- 1.11. DETAILS SHOWN ON ANY DRAWINGS ARE TO BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS, UNLESS OTHERWISE NOTED.
- 1.12. 48 HOURS PRIOR TO BEGINNING CONSTRUCTION THE FOLLOWING PEOPLE SHALL BE NOTIFIED:
  - A. DIG-SAFE
  - B. PROJECT ENGINEER
  - C. TOWN OF ROCHESTER
 IF WORK IS DELAYED FOR A SIGNIFICANT PERIOD, THE SAME PEOPLE SHALL BE CONTACTED AGAIN PRIOR TO RESTART.
- 1.13. INVESTIGATE ABOVE SURFACE SITE CONDITIONS PRIOR TO BEGINNING WORK. DISTURBED AND DAMAGED PROPERTY MUST BE REPLACED AND/OR REPAIRED TO THE SATISFACTION OF THE TOWN, AND ENGINEER.
- 1.14. ALL EXCAVATION AND BACKFILLING SHALL BE COMPLETED AS SOON AS POSSIBLE. OPEN EXCAVATIONS SHALL BE PROPERLY BARRICADED AND WARNED FOR PEDESTRIANS AND VEHICLES.
- 1.15. BASIC CONSTRUCTION STANDARDS FOR STORAGE OF MATERIALS, SAFETY PROTECTION, PROTECTION OF NEIGHBORING PROPERTIES, AND RECLAMATION OF DISTURBED AREAS SHALL BE FOLLOWED. ALL LANDSCAPING MUST BE RETURNED TO THE ORIGINAL CONDITION.
- 1.16. CONTRACTOR SHALL CONSTRUCT APPROPRIATE FENCES AND BARRIERS AROUND ALL CONSTRUCTION SITES, STORAGE SITES, AND EXCAVATIONS TO SAFE GUARD THE PUBLIC.
- 1.17. THE LOCATION OF THE 50 FT WIDE RIGHT OF WAY FOR NORTH HOLLOW ROAD IS ASSUMED TO BE 25 FT ON EACH SIDE OF THE APPARENT EXISTING ROAD CENTERLINE AS PER EXISTING CONDITIONS.
- 1.18. ALL IN-STREAM CHANNEL WORK WILL TAKE PLACE IN A DRY CHANNEL THIS MAY BE ACCOMPLISHED BY USE OF TEMPORARY STREAM BYPASS MEASURES SUCH AS COFFER DAMS AND/OR A BYPASS PIPE.

## 2. PRECAST CONCRETE

- 2.1. THE THREE-SIDED PRECAST CONCRETE STRUCTURE AND ALL APPURTENANCES SHALL BE THE PRODUCT OF A MANUFACTURER WHO HAS DEMONSTRATED THE ABILITY TO PRODUCE PRECAST PRODUCTS AND HAS BEEN IN BUSINESS FOR AT LEAST THE LAST THREE YEARS. THE MANUFACTURING PLANT AND METHODS SHALL CONFORM TO THE LATEST STANDARDS OF THE PRECAST CONCRETE INSTITUTE. THE DESIGN OF THE PRECAST MEMBERS SHALL BE BY A REGISTERED ENGINEER EXPERIENCED IN THE DESIGN OF PRECAST, PRESTRESSED CONCRETE DESIGN. PRECAST CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH ON 4,000 PSI AT 28 DAYS OR HIGHER STRENGTH AS DEEMED NECESSARY BY DESIGN. ALL STEEL CONNECTION MATERIAL SHALL BE HOT-DIPPED GALVANIZED.

## 3. CAST-IN-PLACE CONCRETE:

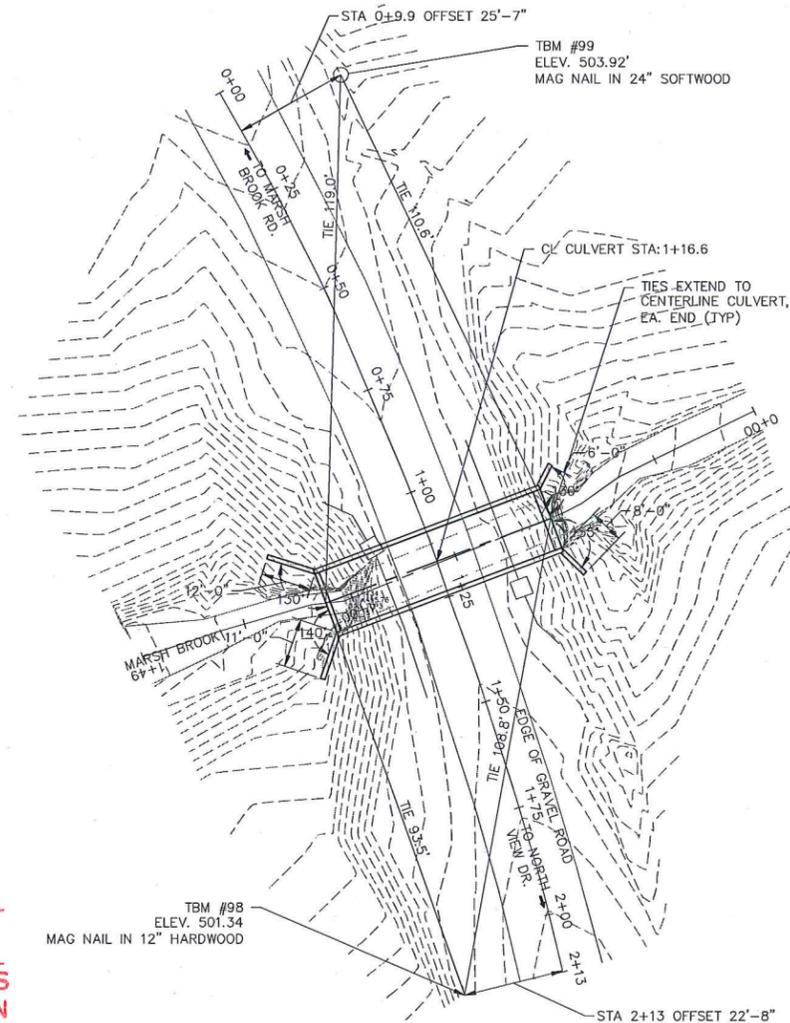
- 3.1. ALL CONCRETE AND REINFORCING WORK SHALL BE IN STRICT ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-05)".
- 3.2. ALL CONCRETE SHALL BE HIGH PERFORMANCE CLASS A WITH A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS. SUBMIT CONCRETE MIX DESIGN FOLLOWING PROCEDURES OUTLINED IN THE FLOW CHART IN CHAPTER 5 OF ACI 318 FOR REVIEW OF ENGINEER. CONTRACTOR SHALL TAKE 4 TEST CYLINDERS OF CONCRETE FOR EACH 50 CUBIC YARDS OF CONCRETE OR FOR EACH DAYS POUR IF LESS THAN 50 C.Y. TESTING WILL BE AT OWNER'S EXPENSE.
- 3.3. MAX WATER TO CEMENT RATIO SHALL BE 0.44. AIR CONTENT SHALL BE 6% ± 1.5%. MAXIMUM SLUMP SHALL BE 5".
- 3.4. CONCRETE SHALL BE PROTECTED FROM FREEZING. CONTRACTOR SHALL FOLLOW THE "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING (ACI 306, LATEST EDITION). NO FOOTING SHALL BE PLACED UNDER WATER OR ON FROZEN GROUND.
- 3.5. THE CONCRETE CONTRACTOR SHALL INSTALL (OR GIVE OTHER TRADES AMPLE OPPORTUNITY TO INSTALL) ALL ANCHOR BOLTS, ANCHORS, PLATES, SLOTS, PIPE SLEEVES, ETC., AS REQUIRED BY OTHER TRADES. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE SETTING SCREEDS AND FORMS. FORM RELEASE OIL SHALL BE AN APPROVED NON-TOXIC

## LIQUID.

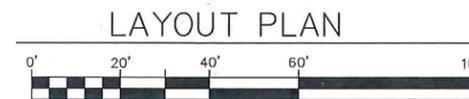
- 3.6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".
- 3.7. CURING: HORIZONTAL SURFACES SHALL BE KEPT CONTINUOUSLY MOIST OVER ENTIRE SURFACE FOR SEVEN DAYS WHEN WATER CURING IS USED. VERTICAL SURFACES SHALL RECEIVE 2 COATS (ONE AT TIME OF STRIPPING AND ANOTHER 3 DAYS LATER) OF AN APPROVED NON-TOXIC LIQUID CURING COMPOUND.
- 3.8. ALL WALLS SHALL BE ADEQUATELY BRACED TO WITHSTAND BACKFILLING AND CONSTRUCTION LOAD PRESSURES. WALLS MUST BE AT LEAST SEVEN DAYS OLD BEFORE BACKFILLING.
- 3.9. DURING PLACEMENT OF CONCRETE, USE TREMIE OR OTHER MEANS TO LIMIT FREE-FALL OF CONCRETE TO 5 FEET.
- 3.10. CONCRETE SHALL BE CONSOLIDATED BY VIBRATION, SPADING, OR RODDING SO THE CONCRETE IS THOROUGHLY WORKED AROUND THE REINFORCEMENT, EMBEDDED ITEMS, AND INTO CORNERS OF FORMS, ELIMINATING ALL AIR OR STONE POCKETS WHICH MAY CAUSE HONEYCOMBING. (CARE SHALL BE TAKEN NOT TO OVER VIBRATE AND CAUSE SEGREGATION).
- 3.11. NO CHASES, RECESSES, OPENINGS OR SLEEVES SHALL BE INSTALLED IN CONCRETE WITHOUT APPROVAL OF THE ENGINEER.

## 4. REINFORCING STEEL:

- 4.1. REINFORCING STEEL SHALL BE NEW BILLET STEEL, ASTM A615, Fy=60 KSI. SUBMIT SHOP DRAWINGS FOR REVIEW BY ENGINEER.
- 4.2. THE MINIMUM CLEAR DISTANCE FROM REINFORCING STEEL TO ADJACENT SURFACE SHALL BE 3 INCHES IN ALL LOCATIONS.
- 4.3. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE (CRSI)".
- 4.4. LAP ALL BARS 40 BAR DIAMETERS MINIMUM UNLESS OTHERWISE NOTED.
- 4.5. REINFORCEMENT SHALL BE SECURELY TIED IN ITS PROPER PLACE BEFORE AND DURING CONCRETE PLACEMENT OPERATIONS USING APPROVED TIES, CHAIRS, AND SPACERS AS REQUIRED. NO BARS SHALL BE CUT OR OMITTED IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER. USE PLASTIC TIPPED ACCESSORIES IN CONCRETE EXPOSED TO WEATHER, WATER, OR VIEW.
- 4.6. WHERE CONTINUOUS BARS ARE CALLED FOR, INDICATED OR OTHERWISE REQUIRED THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS, DOWELED INTO INTERSECTION WALLS AND LAPPED AT NECESSARY SPLICES WITH SPLICES STAGGERED WHEREVER POSSIBLE.
- 4.7. DOWELS SHALL BE INSTALLED IN LEDGE AS SHOWN ON THE PLANS. HOLES SHALL BE DRILLED TO THE DEPTH SHOWN ON THE PLANS AND SHALL BE AT LEAST 1 INCH GREATER IN DIAMETER OF THE DOWEL. DOWELS SHALL BE GROUTED WITH NON-SHRINK TYPE IV MORTAR (SEE VAOT STD SPECS FOR CONST. SECTION 707.03) OR OTHER APPROVED MATERIAL.



**APPROVAL**  
**WATERSHED MANAGEMENT DIVISION**  
 DATE 03/17/2015  
 BY [Signature]  
**THIS APPROVAL IS SUBJECT TO THE TERMS AND CONDITIONS OF STREAM ALTERATION PERMIT # SA-6-05-2015 ISSUED HEREWITH**



**T.R. FELLOWS**  
 NH  
 ENGINEERING  
 VT  
 CIVIL & STRUCTURAL  
 100 SOUTH HOLLOW ROAD  
 P.O. BOX 42  
 WASHINGTON, VT 05676  
 TEL: 802-248-7000  
 FAX: 802-248-7001  
 www.trfellow.com

NO. DATE REVISION

NO.	DATE	REVISION
1		

NORTH HOLLOW ROAD (TH 2)  
 CULVERT REPLACEMENT  
 MARSH BROOK, ROCHESTER, VERMONT  
 OWNER/CONTACT: TOWN OF ROCHESTER  
 67 SCHOOL ST.  
 ROCHESTER, VT 05767  
 802-767-3631

**PROFILES AND DETAILS**

DRAWN BY:  
 J. KROHN  
 CHECKED BY:  
 K. McCUSKER  
 PROJECT: 1337  
 DATE: 9/15/2014  
 SHEET:

3  
 of 4