



**TOWN OF LITCHFIELD
INLAND WETLANDS COMMISSION
APPLICATION TO CONDUCT ACTIVITY IN REGULATED AREA**

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| Name of Applicant and Mailing Address: Town of Litchfield <hr/> 101 Russel Road <hr/> Litchfield, CT 06759 <hr/> Email Address: ralex@townoflitchfield.org Phone: (860) 567-7575 | Name of Property Owner: Town of Litchfield <hr/> Address or location of proposed activity: Goodwin Hill Road <hr/> Map _____ Block _____ Lot _____ <hr/> Total acreage of property: N/A |
|--|--|

Description of proposed activity and acreage affected:
 This project involves the replacement of an existing culvert in disrepair with a 95"x67" CMPA. The invert of the culverts will be depressed 1-ft below the streambed, backfilled with 1-foot of natural streambed material. 0.025 acres of wetland and watercourses will be affected during construction. 125-feet of roadway will be reconstructed.

Acreage of buffer/upland review area altered: 0.128 Acres

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|---|----------------------|----------------------|------------|
| Effect of project on nearby wetlands and watercourses: | Deposited materials: | Granular Fill: | 5.13 c.y. |
| Total Wetland and Watercourse Impact: 1104s.f. | | Intermediate Riprap: | 10.25 c.y. |
| Watercourse Impact 695s.f. | | Streambed Material: | 10.25 c.y. |

Effect of proposed activity on the vegetation and wildlife and types of vegetation and their percentages of total area:
 The proposed activity does not impact vegetation in the area. The depressed culvert will provide unimpeded passage of aquatic organisms and wildlife.

Measures to prevent erosion and sedimentation:
 Erosion and sedimentation control measures will be installed in accordance with the 2002 Connecticut Guidelines for soil and Erosion Control. The measures will include installation of hay bales, silt fence and turbidity control curtains according to the approved Erosion & Sedimentation Control Plan.

Measures to prevent flooding or surface run-off:
 The new culvert will improve hydraulics of the crossing. The existing culvert over-tops during an approximate 5-yr storm whereas the new culvert will increase the recurrence interval to just under 20-years. The roadway will be signed: "Road May Flood."

Measures to prevent pollution of wetlands:
 During construction, all wetland vegetation will be undisturbed to the maximum extent possible. Materials that could be injurious to the environment will be stored above the 100-yr flood elevation. See plans for erosion and sedimentation control measures during construction.

The applicant understands that this application will be accepted only when complete and that further information may be required by the Commission to aid in its decision. The applicant should also recognize that members of the Commission and the Town Professional staff and other advisors shall have the right of free access to the property under consideration for inspection of all reasonable times and upon reasonable notice. The undersigned warrants the truth of all statements contained herein and all supporting documents according to his or her best knowledge and belief. If the applicant is not the owner of the property involved in this application, written consent from the owner should be obtained.

| | | |
|------------------------|--------------------|----------------|
| | | 4/29/2021 |
| Signature of Applicant | Signature of Owner | Date |
| Date Submitted | Date Received | Public Hearing |
| | | Fee: |
| | | \$ |



Statewide Inland Wetlands & Watercourses Activity Reporting Form

Complete, print, sign, and mail this form in accordance with the instructions on pages 2 and 3.

PART I: To Be Completed By The Municipal Inland Wetlands Agency Only

1. DATE ACTION WAS TAKEN (use drop-down box): Year Month
2. ACTION TAKEN (use drop-down box):
3. WAS A PUBLIC HEARING HELD? (select one only) Yes No
4. NAME OF AGENCY OFFICIAL VERIFYING AND COMPLETING THIS FORM:
 (print): _____ (signature) _____

PART II: To Be Completed By The Municipal Inland Wetlands Agency Or The Applicant

5. TOWN IN WHICH THE ACTION IS OCCURRING: **Litchfield**
 Does this project cross municipal boundaries? (select one only) Yes No
 If Yes, list the other town(s) in which the action is occurring:
6. LOCATION: [USGS Quad Map Name](#) (see hyperlink): **Thomaston**
[Quad Number](#) (see hyperlink): **49**
 Subregional Drainage [Basin Number](#) (see hyperlink): **6909**
7. NAME OF APPLICANT, VIOLATOR OR PETITIONER: **Town of Litchfield**
8. NAME & ADDRESS/LOCATION OF PROJECT SITE: **Goodwin Hill Road over brook**

 Briefly describe the action/project/activity: Temporary Permanent
Replacement of existing culvert
9. ACTIVITY PURPOSE CODE (Use drop-down box): E
10. ACTIVITY TYPE CODE(S) (Use drop-down box) 1 , 2 , 9,
11. WETLAND / WATERCOURSE AREA ALTERED [must be provided in acres or linear feet as indicated]:
 Wetlands: **0.009** acres Open Water Body: **0.0** acres Stream: **45.0** linear feet
12. UPLAND REVIEW AREA ALTERED [must be provided in acres]: **0.128** acres
13. AREA OF WETLANDS AND / OR WATERCOURSES RESTORED, ENHANCED OR CREATED: **0.004** acres
 [must be provided in acres]

PART III: To Be Completed By The DEP

- DATE RECEIVED: _____ DATE RETURNED TO DEP: _____
 FORM COMPLETED: YES NO FORM CORRECTED / COMPLETED: YES NO

April 14, 2020

ATTN: Gary Giroux
Cardinal Engineering Associates
3 Colony Street
Meriden, CT 06451

Re: **Wetlands Delineation Report**
Goodwin Hill Road Over Humaston Brook, Litchfield, CT

Dear Mr. Giroux:

In accordance with your request, Scott D. Stevens, Registered Professional Soil Scientist, and Jennifer L. Beno, Biologist/Wetland Scientist, with Soil Science And Environmental Services, Inc. (SSES) inspected the Goodwin Hill Road over Humaston Brook project area on March 12, 2020. The purpose of the inspection was to identify regulated wetlands and watercourses within the designated project area. The ordinary high water level along Humaston Brook was also identified within the project area during the inspection. The project site is situated in the southeastern portion of Litchfield (Figure 1).

Regulated waters and wetlands present in and near the project area include Humaston Brook and associated CT inland and Federal wetlands. Definitions of waters and wetlands that are regulated by the State of Connecticut and Federal Government are presented in Appendix I. Rivers and streams are regulated by the State of CT as watercourses, according to the Inland Wetlands and Watercourses Act. Rivers and streams are regulated by the Federal Government as "Waters of the U.S." Wetlands are defined differently by the State of CT and the Federal Government. CT Inland Wetlands are defined by soil types that are either poorly drained, very poorly drained, floodplain or alluvial. Federal Wetlands consist of areas that are inundated or saturated by ground or surface water at a frequency and duration sufficient to support, and that under normal conditions do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

A spade and auger were used to dig test holes for soils identification during the investigation. The vegetation communities and any physical indicators of hydrology in the project area were also examined. The CT inland wetland boundaries were delineated with consecutively numbered pink survey tapes. The Federal wetlands were delineated with consecutively numbered blue survey tapes and were determined to differ from the CT inland wetlands within the project area. Sketch maps of the delineated CT inland wetland and Federal wetland boundaries are included as Figures 2 and 3.

CONNECTICUT INLAND WETLANDS & SOIL TYPES

CT inland wetlands were delineated within the project area. See Figure 2.

The wetland soils within the project area include:

3 Ridgebury, Leicester & Whitman soils (Aquepts) – These are poorly drained and very poorly drained, coarse-loamy textured, glacial till soils. The till was derived from schist, gneiss and granite. These soils occur on glaciated plains, hills and ridges. Ridgebury and Whitman soils contain dense basal till (hardpan) in the subsoil within 20 to 30 inches of the soil surface.

4 Leicester fine sandy loam (Aeric Endoaquepts) – This is a deep, poorly drained, friable, coarse-loamy textured, glacial till soil. The till was derived from schist, gneiss and granite. Leicester soils occur on glaciated plains, hills and ridges.

109 Fluvaquents-Udifluvents This soil map unit consists of well drained to very poorly drained, nearly level soils that formed in very recent alluvium deposited by rivers and streams. The soils are occasionally to frequently flooded, which often results in stream scouring, lateral erosion and shifting of soil from place to place. Soil characteristics, such as texture and stoniness, are usually highly variable within short distances.

The non-wetland soils within the project area include:

50 Sutton fine sandy loam (Aquic Dystrudepts) - This is a deep, moderately well drained, friable, coarse-loamy textured, glacial till soil derived from schist, gneiss and granite. Sutton soils occur on glaciated plains, hills and ridges.

73 Charlton-Chatfield complex (Typic Dystrudepts) - These are deep and moderately deep, well drained, friable, coarse-loamy textured, glacial till soils derived from schist, gneiss and granite. Depth to bedrock ranges from 20 inches to over 5 feet. About 50% of the soils in this complex are greater than 5 feet to bedrock. Charlton-Chatfield soils occur on glaciated plains, hills and ridges.

75 Hollis-Chatfield-rock outcrop complex (Typic & Lithic Dystrudepts) - These are shallow to moderately deep to bedrock, well drained to somewhat excessively drained, friable, coarse-loamy textured, glacial till soils derived from schist, gneiss and granite. Depths to bedrock range from 0 to over 5 feet. Roughly 1/3 of the soils in this complex are shallow (10-20 inches) to bedrock, while another 1/3 are moderately deep (20-40 inches) to bedrock. The Hollis-Chatfield-rock outcrop complex occurs on glaciated plains, hills and ridges.

306 Udorthents-Urban land complex This map unit consists of extensive areas where soils have been disturbed from land development along with large areas of impervious surfaces associated with streets, parking lots, buildings and other structures.

FEDERAL WETLANDS

Federal wetlands were delineated within the project area. The Federal wetland boundaries differ from the CT inland wetland boundaries. See Figure 3. The delineated Federal wetlands exist to the north of Goodwin Hill Road and are dominated by a deciduous wooded swamp. One data transect with two Federal wetland data plots was established (Data Plots 11-W and 11-U). No Federal Wetland Delineation Data Forms were requested at this time.



Federal Data Plots 11-W and 11-U (3/12/2020).



Figure No. 3 – Sketch of Federal Wetland Boundaries (approximate)
(aerial photo from CT ECO website)

ORDINARY HIGH WATER MARK IDENTIFICATION

The lateral limits of U.S. Army Corps jurisdiction for non-tidal rivers, streams and water bodies extends to the ordinary high water mark (OHW), in the absence of adjacent wetlands. The Corps defines the term “ordinary high water mark” as the following: “means the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.” 33 CFR 328.3(e). The Corps recommends that whenever possible the investigator should consider the former indicators along with a number of others, that include: wracking; vegetation matted down, bent or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; beds and banks; water staining; and change in plant community.

The above-listed indicators were utilized during the March 12, 2020 investigation to determine the ordinary high water (OHW) along Humaston Brook within the project area based on existing conditions observed during the inspection. Blue survey tapes were tied onto plant material at several locations within the project area in order to identify the OHW elevation. The knot of the tied survey tape marks the estimated OHW elevation. A sketch showing the approximate locations of the OHW survey tapes is included in Figure 4.

Respectfully submitted,

SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC.



Scott D. Stevens
Registered Professional Soil Scientist



Jennifer L. Beno
Biologist/Wetland Scientist

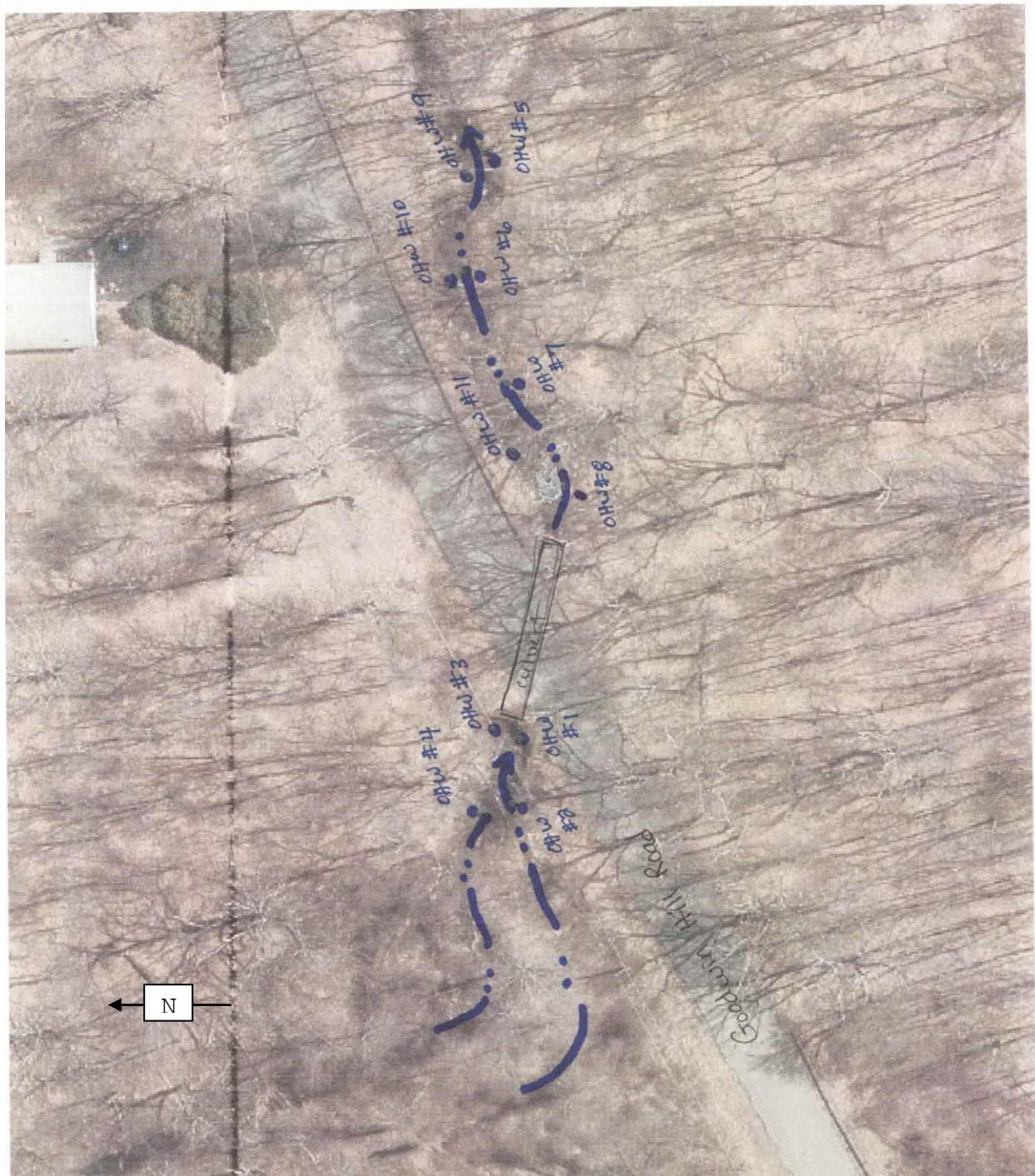


Figure No. 4 – Sketch of Ordinary High Water Flag Locations (approximate)
(aerial photo from CT ECO website)

APPENDIX I

REGULATED WATERS AND WETLANDS BY THE STATE OF CT AND FEDERAL GOVERNMENT

I. State of Connecticut

Wetlands and watercourses are regulated in the State of Connecticut by the Connecticut General Statutes, Chapter 440, section 22a-28 to 22a-45. These Statutes are divided into the Inland Wetlands and Watercourses Act (sections 22a-36 to 22a-45) and the Tidal Wetlands Act (sections 22a-28 to 22a-35). Definitions of the resources are provided in the statutes.

Inland Wetlands, "means land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consist of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture" section 22a-38(15).

Watercourses "means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to sections 22a-28 to 22a-35, inclusive. Intermittent watercourses shall be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation" section 22a-38(16).

Tidal Wetlands are defined as "those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some but not necessarily all, of the following:" (includes plant list) section 22a-29(2).

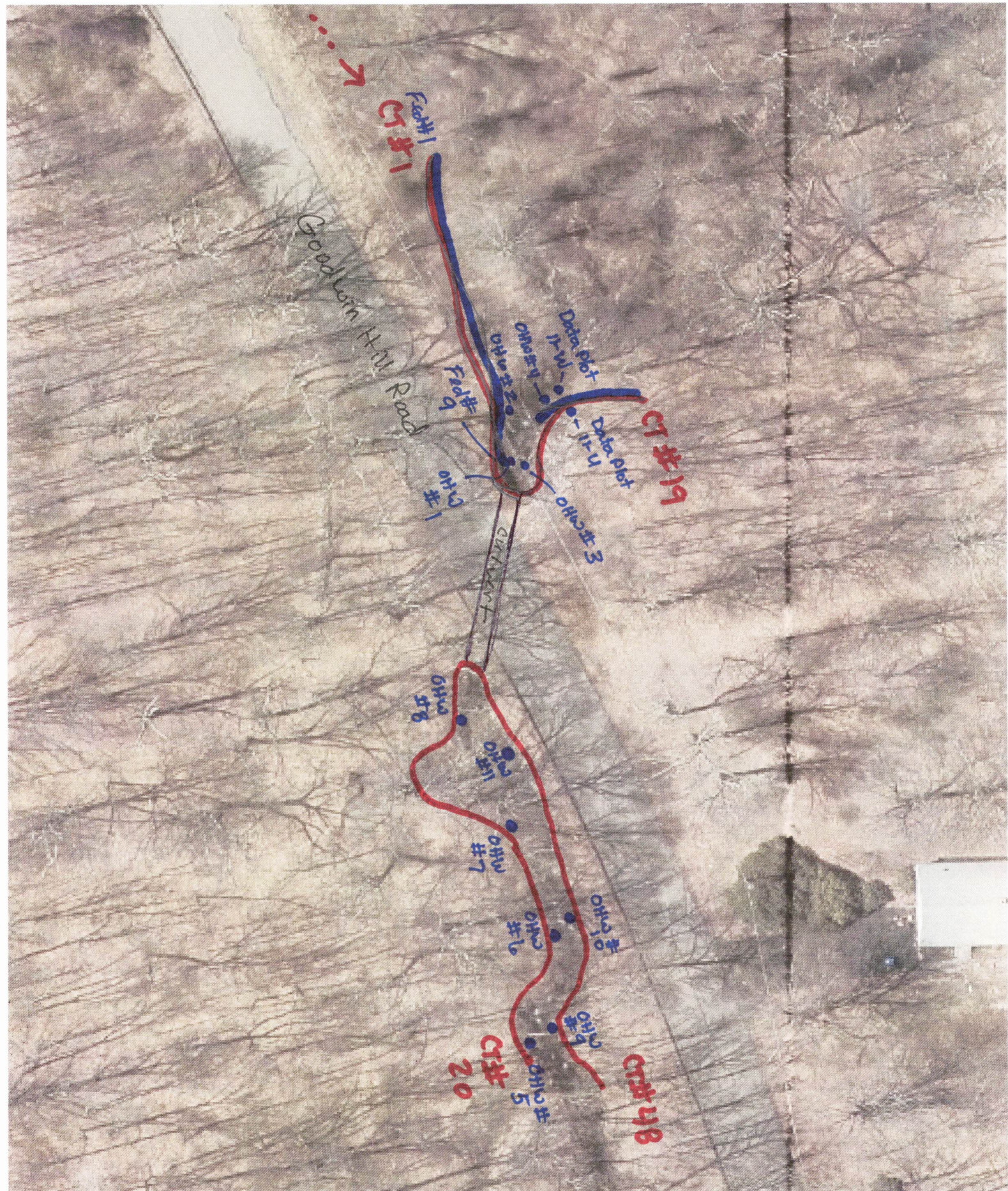
II. Federal Government

The Federal Government regulates waters and wetlands in accordance with the Code of Federal Regulations, Title 33, Parts 320 through 330 (33 CFR parts 320 to 330). Regulated areas include navigable waters; interstate waters; tributaries to navigable and interstate waters, including adjacent wetlands; and certain other waters and wetlands of the U.S. The United States Army Corps of Engineers has been authorized to regulate these waters and wetlands by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. Definitions of wetlands and watercourses that are regulated by the Corps are found in Parts 328 and 329 of the Code.

Waters of the United States as defined in Part 328 means, " (1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S. under the definition; (5) tributaries of waters identified in 1 thru 4; (6) territorial seas; and (7) wetlands adjacent to waters that were identified in 1 thru 6. Waters of the United States do not include prior converted cropland" (33 CFR Part 328.3 (a)).

Wetlands are a subset of waters of the United States and are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33CFR Part 328.3(b)). The 1987 U.S. Corps of Engineers Delineation Manual and the Draft Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (dated July 2008) provide information and procedures for conducting Federal Wetland delineation. The methodology established by the Federal Government uses a three parameter approach utilizing hydrologic indicators, hydrophytic vegetation and hydric soils for identifying Federal Wetlands.

Navigable waters of the United States as defined in Part 329 mean "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33CFR Part 329.2).



3/12/2020 sketch map - pink CT# 1-19; 20-48 / blue Fed# 1-9; 10-12 / 1 data transect
 blue OHW @ 11 locations
 Data Plot 11-W +
 Data Plot 11-U

GENERAL NOTES

- ALL CONSTRUCTION METHODS AND MATERIALS SHALL CONFORM TO THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 818 (2020), SUPPLEMENTAL SPECIFICATIONS DATED 7/2020 AND SPECIAL PROVISIONS.
- THE PROJECT SITE SHALL CONSIST OF THE AREA WITHIN THE MUNICIPALLY-OWNED RIGHT OF WAY BETWEEN THE DESIGNATED BEGINNING AND END STATIONS FOR THE PROJECT AS SHOWN ON THE PLANS. ALL WORK SHALL BE PERFORMED WITHIN THE RIGHT OF WAY AND SHALL BE LIMITED TO THE PROPERTY AS DEPICTED ON THE PLANS. THE CONTRACTOR SHALL LIMIT HIS CONSTRUCTION ACTIVITIES TO THE AREA WITHIN THE PROJECT SITE.
- EROSION AND SEDIMENT CONTROL MEASURES WILL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN OF BURLINGTON REGULATIONS. THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 818, WITH LATEST REVISIONS, 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, DEP BULLETIN 34, UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS.
- ALL DIMENSIONS ARE FEET UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL WALK THE PROJECT PRIOR TO CONSTRUCTION WITH A REPRESENTATIVE FROM THE TOWN AND THE ENGINEER. TREES TO BE REMOVED SHALL BE MARKED IN THE FIELD, NO TREES 3" IN DIAMETER OR GREATER SHALL BE CUT DOWN FROM APRIL 15 TO AUGUST 31. EXTREME CARE SHALL BE EXERCISED TO PROTECT ALL TREES NOT DESIGNATED FOR REMOVAL. NO TREES SHALL BE REMOVED UNTIL AUTHORIZATION IS GIVEN BY THE TOWN. COST IS INCLUDED IN THE ITEM "CLEARING AND GRUBBING".
- ANY PHYSICAL FEATURES DISTURBED BY THE CONTRACTOR SHALL BE REPLACED OR RECONSTRUCTED AS DIRECTED BY THE ENGINEER TO A CONDITION EQUAL TO OR BETTER THAN PRIOR TO CONSTRUCTION AT THE CONTRACTORS EXPENSE.
- ALL DIMENSIONS AND ELEVATIONS MUST BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF MANUFACTURING AND CONSTRUCTION, AND NECESSARY ADJUSTMENTS MADE AS ORDERED BY THE ENGINEER.
- WORKING HOURS SHALL BE LIMITED TO THE HOURS BETWEEN 7:00 A.M. AND 5:00 P.M. MONDAY THRU FRIDAY. NO WORK WILL BE PERFORMED ON WEEKENDS, HOLIDAYS OR SPECIAL DAYS AS DIRECTED BY THE ENGINEER. THE ONLY EXCEPTIONS TO THESE LIMITATIONS WILL BE AS DIRECTED BY THE ENGINEER TO CORRECT OR HANDLE EMERGENCY CONDITIONS, OR IF APPROVED BY THE ENGINEER IN WRITING.
- THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE FOR APPROVAL PRIOR TO COMMENCING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE ACCESS TO ALL PROPERTIES AT ALL TIMES DURING CONSTRUCTION. COORDINATE ACCESS WITH PAVING OPERATIONS SO THAT JOINTS ARE MINIMIZED (SEE MAINTENANCE AND PROTECTION OF TRAFFIC SPECIFICATIONS). NO TRANSVERSE JOINTS SHALL BE ALLOWED DURING THE PAVING OF THE WEARING COURSE.
- ALL DISTURBED AREAS THAT WILL NOT BE PAVED SHALL RECEIVE 4" OF TOPSOIL AND TURF ESTABLISHMENT UNLESS OTHERWISE NOTED.
- ALL REQUIRED UTILITY RELOCATIONS SHALL BE PERFORMED BY THE RESPECTIVE UTILITY COMPANIES PRIOR TO ANY WORK AND COORDINATE HIS WORK WITH THE UTILITY COMPANY WORK. THE CONTRACTOR SHALL COORDINATE WITH THE RESPECTIVE UTILITY COMPANY FOR THE UTILITY COMPANY TO HOLD ANY POLES THAT NEED TO BE SUPPORTED DURING THE CONTRACTOR'S TRENCHING OPERATIONS. THE COST TO COORDINATE THIS WORK WITH THE UTILITY COMPANIES SHALL BE INCIDENTAL TO THE PROJECT UNLESS A SPECIFIC PAY ITEM IS INCLUDED.
- IF THE CONTRACTOR WILL BE REQUIRED TO WORK IN PROXIMITY OF AND BENEATH OVERHEAD OVERHEAD LINES ARE NOT ANTICIPATED TO BE ENERGIZED DURING THE PRECISE LOCATION OF THIS WORK. THE CONTRACTOR SHALL SPECIFICALLY COMPLY WITH THE REQUIREMENTS DETAILED IN OSHA REGULATIONS (STANDARDS 29 CFR) CRANES AND DERRICKS - 1926.550 AS WELL AS OTHER APPLICABLE OSHA STANDARDS. THE CONTRACTOR SHALL MAINTAIN A SAFE DISTANCE FROM ALL UTILITY POLES DURING CONSTRUCTION ACTIVITIES.

15. THE CONTRACTOR SHALL MAINTAIN ALL ROAD NAME SIGNS AS INDICATED ON THE PLANS AND SHALL MAINTAIN ALL TRAFFIC CONTROL SIGNS AS NEEDED DURING CONSTRUCTION AND AS DIRECTED BY THE ENGINEER. COST IS INCLUDED IN THE ITEM "MAINTENANCE AND PROTECTION OF TRAFFIC".

16. PLANIMETRIC AND TOPOGRAPHIC FEATURES ARE BASED ON FIELD SURVEY PERFORMED BY CARDINAL ENGINEERING ASSOCIATES, IN MARCH 2020. SURVEY BASELINE CONFORMS TO CLASS A-2 HORIZONTAL ACCURACY. STREETLINE AND PROPERTY LINE INFORMATION (IF SHOWN) ARE APPROXIMATE AND BASED ON LIMITED FIELD SURVEY. ALL ELEVATIONS ARE BASED ON NAVD 88. UNLESS OTHERWISE NOTED, ALL ELEVATIONS ARE IN FEET. CONNECTICUT STATE PLANE COORDINATE SYSTEM (NAD 83). VERTICAL ACCURACY IS CLASS 1-2.

17. THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE UTILITY COMPANIES TO RESET ALL UTILITY BOXES TO FINISHED GRADE. THERE WILL BE NO SEPARATE PAYMENT TO COORDINATE THIS WORK OR CLAIM FOR TIME EXTENSION.

18. THE CONTRACTOR SHALL RESET ALL WATER AND GAS CURB STOPS BOXES AND WATER AND GAS GATE VALVE BOXES TO FINISHED GRADE. THERE SHALL BE NO SEPARATE MEASUREMENT OR PAYMENT FOR THIS WORK AS IT IS INCIDENTAL TO CONSTRUCTION.

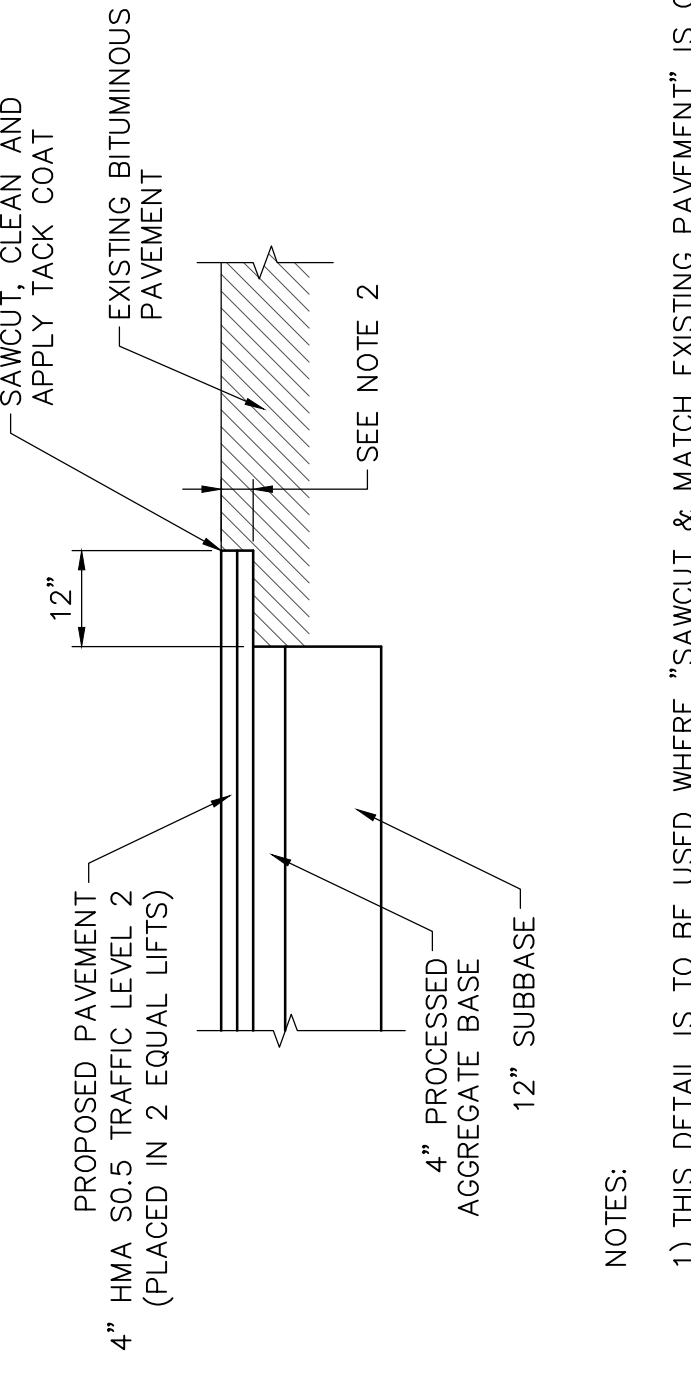
19. ALL UNCONFINED INSTREAM WORK SHALL BE PERFORMED BETWEEN JUNE 1 AND SEPTEMBER 30.

LIST OF ABBREVIATIONS

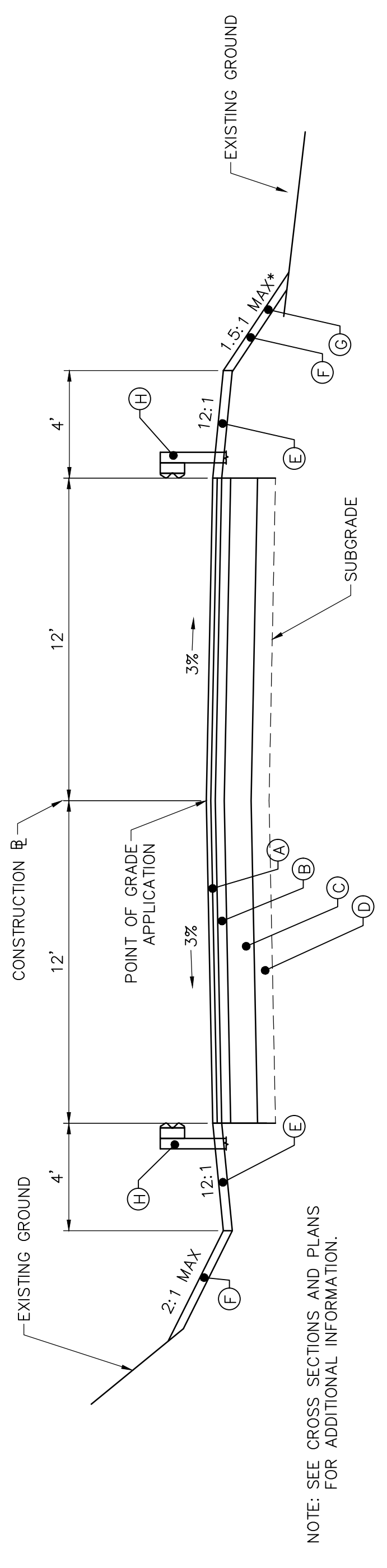
| | | | |
|----------|------------------------------------|--------|--------------------------------------|
| AGGR | AGGREGATE | NOM | NOMINAL NUMBER |
| AH | AHEAD | NO | PERFORATED |
| A | ALGEBRAIC DIFFERENCE IN GRADES | POB | POINT OF BEGINNING |
| APPROX | APPROXIMATE | POC | POINT OF COMPOUND CURVATURE |
| ASPH | ASPHALT | POE | POINT OF ENDING |
| BK | BACK | POI | POINT OF INTERSECTION |
| B | BENCHMARK | PRC | POINT OF REVERSE CURVE |
| BM | BENCHMARK | PT | POINT OF TANGENCY |
| BIT | BITUMINOUS | PVC | POINT OF VERTICAL CURVATURE |
| BCLC | BITUMINOUS CONCRETE LIP CURBING | PVCC | POINT OF VERTICAL COMPOUND CURVATURE |
| BGR | CABLE GUIDERAIL | PVRC | POINT OF VERTICAL INTERSECTION |
| CI/CIP | CAST IRON PIPE | PVT | POINT OF VERTICAL TANGENCY |
| CB | CATCH BASIN | POC | POINT ON CURVATURE |
| C | CENTERLINE | POT | POINT ON TANGENT |
| CC | CONCRETE CURBING | PVC | POLYVINYL CHLORIDE PIPE |
| CL | CLASS | P | PROPERTY LINE |
| CONC | CONCRETE | R | RADIUS |
| CP | CONTROL POINT | RR | RAILROAD |
| COR | CORNER | K | RALE OF VERTICAL CURVATURE |
| CMP | CORRUGATED METAL PIPE | REINF | REINFORCED |
| CPPE | CORRUGATED POLYETHYLENE FLARED END | RCCE | REINFORCED CONCRETE CULVERT END |
| CPP | CUBIC YARD | RCP | REINFORCED CONCRETE PIPE |
| CY | CUBIC YARD | RECD | REQUIRED |
| DIA | DIAMETER | RT | RIGHT |
| DBL | DOUBLE | RSC | RIGHT OF WAY |
| DRIVE | DRIVEWAY | RSD | ROAD |
| DI/DIP | DUCTILE IRON PIPE | RD | ROAD |
| EA | EACH | RSN | SANITARY |
| EP | EDGE OF PAVEMENT | SS | SANITARY SEWER |
| EL/ELEV | ELEVATION | SED | SEDIMENTATION |
| EX/EXIST | EXISTING | SCB | SEDIMENT CONTROL BALES |
| FG | FINISHED GRADE | SCS | SEDIMENT CONTROL SYSTEM |
| FP | FLAGPOLE | SHLD | SHOULDER |
| FE | FLARED END | SF | SQUARE FOOT |
| FL | FLOW LINE | SY | SQUARE YARD |
| FT | FOOT | STD | STANDARD |
| FND | FOUND | STA | STATION |
| FOUND | FOUNDATION | ST | STOPPING SIGHT DISTANCE |
| G | GAS | STREET | STREET |
| GV | GAS VALVE | \$ | STREET LINE |
| GSC/GC | GRANITE STONE CURBING | TBD | TO BE DETERMINED |
| HP | HIGH POINT | TF | TOP OF FRAME |
| HORIZ | HORIZONTAL | TYP | TYPICAL |
| HRS | HOURS | UD | UNDERDRAIN |
| HYD | HYDRANT | VERT | VERTICAL |
| INV | INVERT | VC | VERTICAL CURVE |
| IE | INVERT ELEVATION | VF | VERTICAL FEET |
| IP | IRON PIN | VCP | VERIFIED CLAY PIPE |
| LT | LEFT | W | WATER |
| L | LENGTH | WW | WATER VALVE |
| LVC | LENGTH OF VERTICAL CURVE | | |
| LTP | LIGHT POLE | | |
| LF | LINEAR FEET | | |
| LP | LOW POINT | | |
| LS | LUMP SUM | | |
| MB | MAILBOX | | |
| MH | MANHOLE | | |
| MAX | MAXIMUM | | |
| MBR | METAL BEAM RAIL | | |
| MCE | METAL CULVERT END | | |
| MIN | MINIMUM | | |
| MON | MONUMENT | | |
| NTS | NOT TO SCALE | | |

STANDARD CONVENTIONS

| EXISTING | PROPOSED |
|---|---|
| APPROXIMATE LIMIT OF CUT SLOPE | APPROXIMATE LIMIT OF CUT SLOPE |
| APPROXIMATE LIMIT OF FILL SLOPE | APPROXIMATE LIMIT OF FILL SLOPE |
| APPROXIMATE PROPERTY LINE | APPROXIMATE PROPERTY LINE |
| APPROXIMATE STREET LINE | APPROXIMATE STREET LINE |
| BASELINE STATION | BASELINE STATION |
| BITUMINOUS CONCRETE DRIVEWAY | BITUMINOUS CONCRETE DRIVEWAY |
| BORING NUMBER B10 (SEE BORING LOG SHEET) | BORING NUMBER B10 (SEE BORING LOG SHEET) |
| CATCH BASIN | CATCH BASIN |
| CONTROL POINT | CONTROL POINT |
| CONCRETE DRIVEWAY/ CONCRETE DRIVEWAY RAMP | CONCRETE DRIVEWAY/ CONCRETE DRIVEWAY RAMP |
| CULVERT END | CULVERT END |
| DRAINAGE DITCH | DRAINAGE DITCH |
| DRAINAGE PIPE | DRAINAGE PIPE |
| EASEMENT LINE (PERMANENT) | EASEMENT LINE (PERMANENT) |
| EASEMENT LINE (TEMPORARY) | EASEMENT LINE (TEMPORARY) |
| ELECTRIC LINE (OVERHEAD OR UNDERGROUND) | ELECTRIC LINE (OVERHEAD OR UNDERGROUND) |
| GAS LINE | GAS LINE |
| GAS TEST PIT | GAS TEST PIT |
| GAS VALVE or WATER VALVE | GAS VALVE or WATER VALVE |
| HIGH VOLTAGE OVERHEAD LINE | HIGH VOLTAGE OVERHEAD LINE |
| HOUSE/ STRUCTURE | HOUSE/ STRUCTURE |
| HYDRANT | HYDRANT |
| INLAND WETLAND LIMITS | INLAND WETLAND LIMITS |
| MAILBOX | MAILBOX |
| MANHOLE (STORM) | MANHOLE (STORM) |
| MANHOLE (SANITARY) | MANHOLE (SANITARY) |
| MONUMENT | MONUMENT |
| NORTH ARROW | NORTH ARROW |
| ORDINARY HIGH WATER | ORDINARY HIGH WATER |
| RIPRAP APRON | RIPRAP APRON |
| SANITARY SERVICE CONNECTION | SANITARY SERVICE CONNECTION |
| SANITARY SEWER | SANITARY SEWER |
| SEDIMENTATION CONTROL SYSTEM | SEDIMENTATION CONTROL SYSTEM |
| SIGN | SIGN |
| SPOT ELEVATION | SPOT ELEVATION |
| STONE WALL | STONE WALL |
| TELEPHONE LINE (OVERHEAD OR UNDERGROUND) | TELEPHONE LINE (OVERHEAD OR UNDERGROUND) |
| TEST HOLE NUMBER 5 (SEE CONTRACT DOCUMENTS) | TEST HOLE NUMBER 5 (SEE CONTRACT DOCUMENTS) |
| TREE | TREE |
| TREE LINE | TREE LINE |
| UNDERDRAIN | UNDERDRAIN |
| "U" SHAPED STONE DIKE | "U" SHAPED STONE DIKE |
| UTILITY POLE | UTILITY POLE |
| WATER COURSE | WATER COURSE |
| WATER LINE | WATER LINE |
| WATER TEST PIT | WATER TEST PIT |



- NOTES:
- 1) THIS DETAIL IS TO BE USED WHERE "SAWCUT & MATCH EXISTING PAVEMENT" IS CALLED FOR ON THE PLANS.
 - 2) OVERLAP BOTH BITUMINOUS CONCRETE COURSES OVER EXISTING SUBBASE.
 - 3) MINIMUM THICKNESS TO BE SAME AS PROPOSED BITUMINOUS OR MATCH THICKNESS OF EXISTING PAVEMENT, WHICHEVER IS GREATER.
 - 4) PAVEMENT MATCH TREATMENT WILL BE INCIDENTAL TO THE WORK.



- LEGEND:
- (A) 4" - HMA 50.5 TRAFFIC LEVEL 2 (PLACED IN 2 EQUAL LIFTS)
 - (B) 4" - PROCESSED AGGREGATE
 - (C) 4" - TOPSOIL AND TURF ESTABLISHMENT
 - (D) ADDITIONAL SUBBASE AS NEEDED
 - (E) 4" - PROCESSED AGGREGATE
 - (F) 4" - TOPSOIL AND TURF ESTABLISHMENT
 - (G) 12" - INTERMEDIATE RIPRAP (*WHERE SLOPES ARE STEEPER THAN 2:1)
 - (H) METAL BEAM GUIDERAIL (WHERE SHOWN ON THE PLANS)

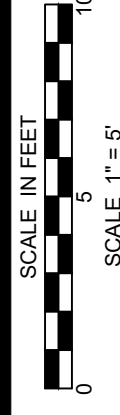
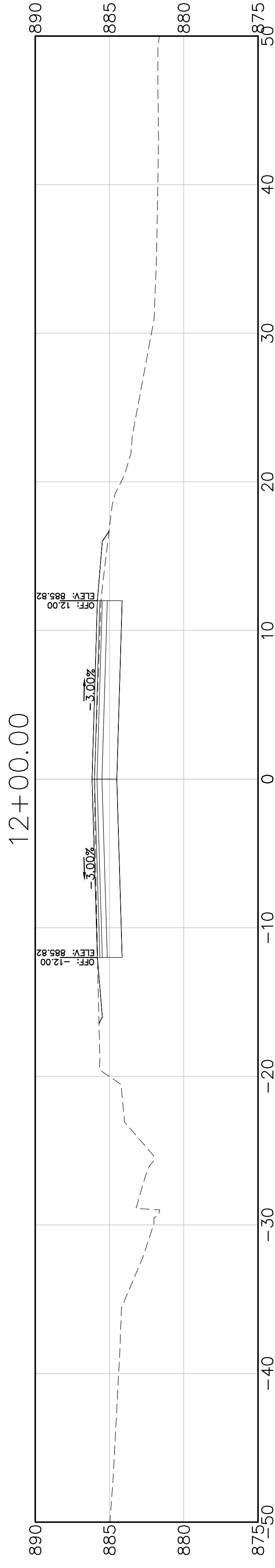
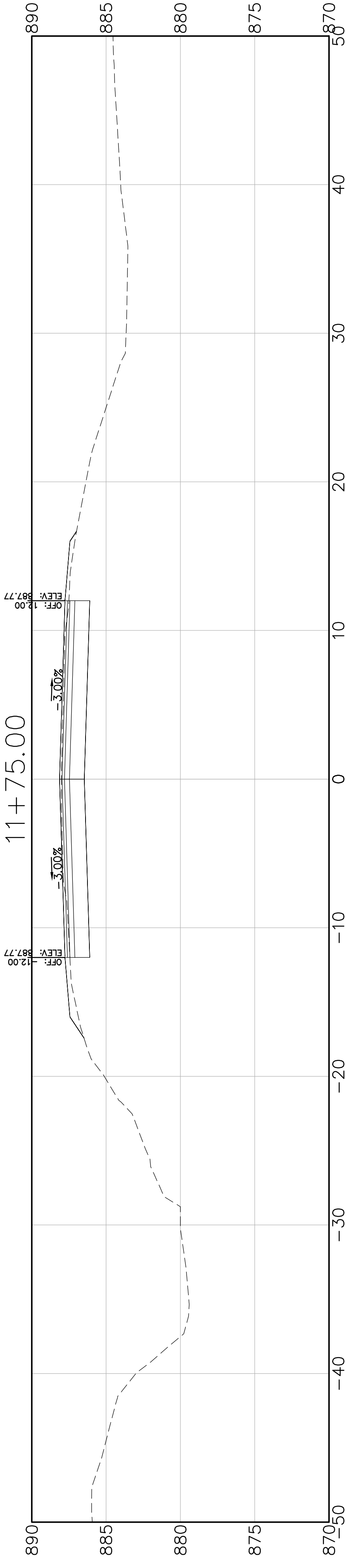
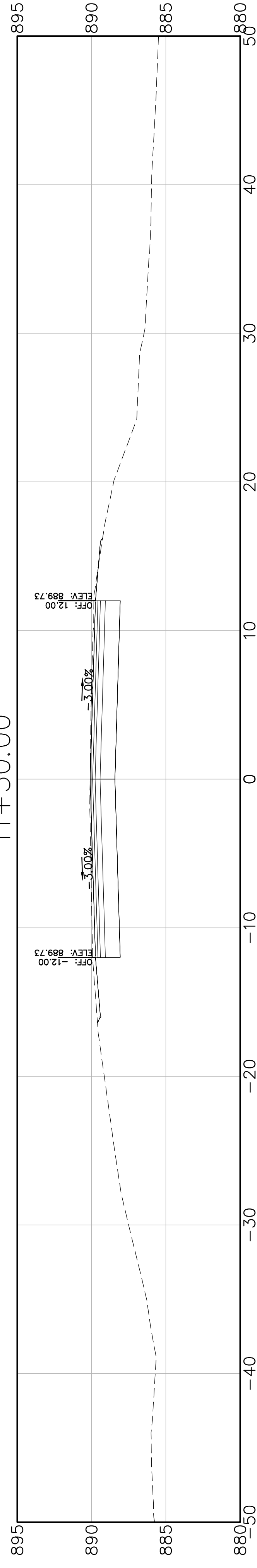
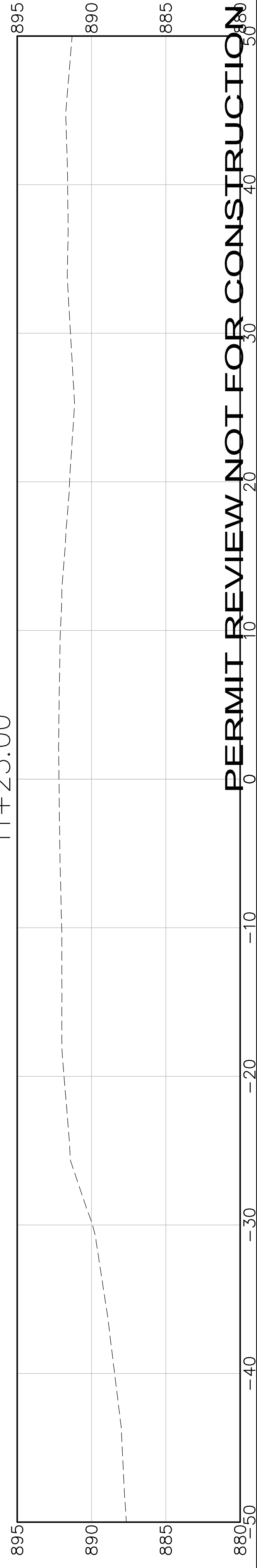
PERMIT REVIEW NOT FOR CONSTRUCTION

REPLACEMENT OF GOODWIN HILL ROAD CULVERT
OVER UNNAMED TRIBUTARY OF TURNER BROOK
LITCHFIELD, CONNECTICUT
CROSS SECTIONS

CARDINAL
ENGINEERING ASSOCIATES
180 RESEARCH PARKWAY | LITCHFIELD, CT 06450 | 203-238-1969
457 BANTAM RD | LITCHFIELD, CT 06759 | 860-577-9106

DATE: April 2021
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY: JAC
APPROVED BY: JAC

| NO. | REVISION | DATE | BY |
|-----|----------|------|----|
| | | | |
| | | | |
| | | | |
| | | | |



REPLACEMENT OF GOODWIN HILL ROAD CULVERT
OVER UNNAMED TRIBUTARY OF TURNER BROOK
LITCHFIELD, CONNECTICUT
CROSS SECTIONS

XSC-02

5

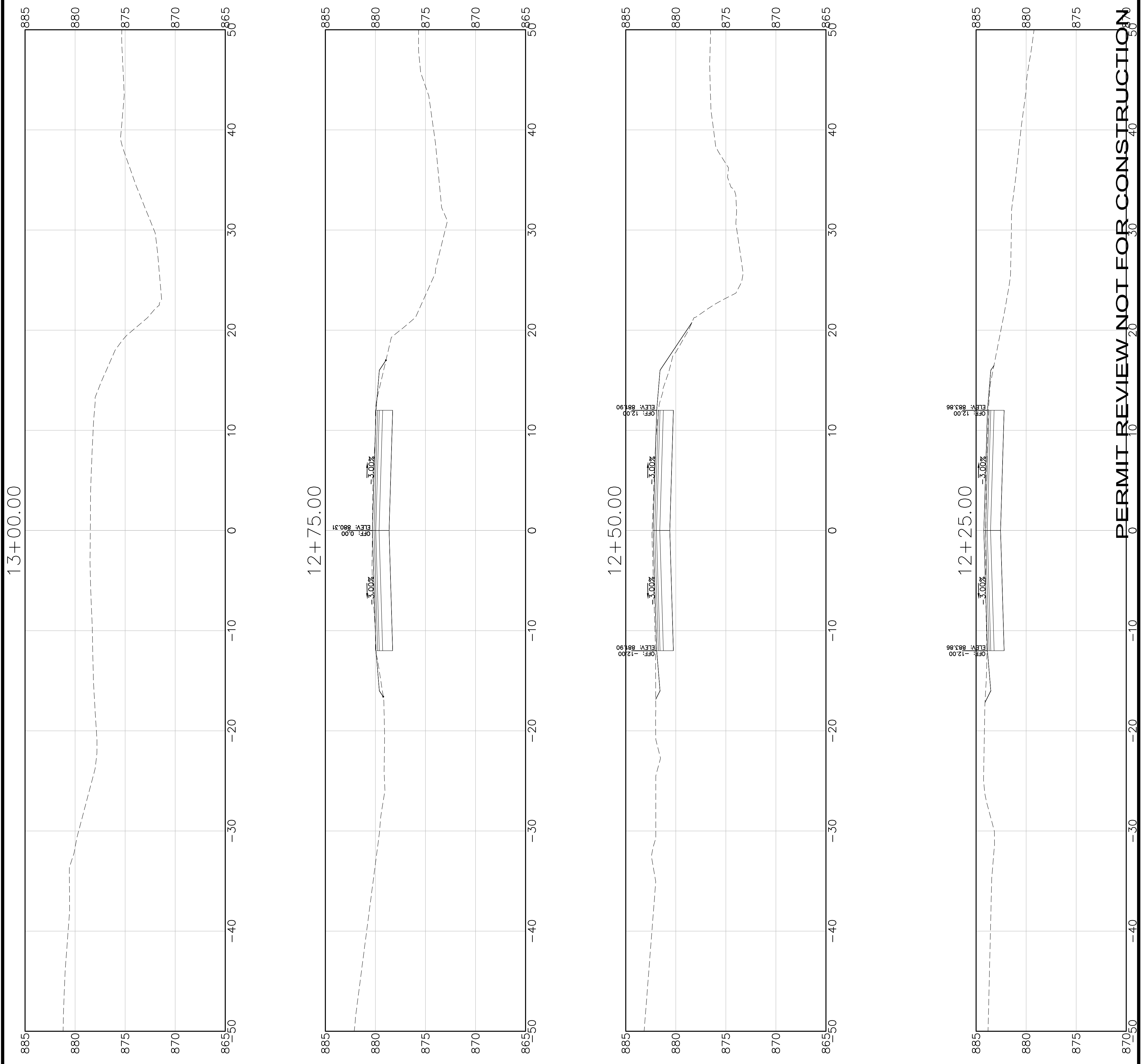
CARDINAL
ENGINEERING ASSOCIATES
180 RESEARCH PARKWAY | LITCHFIELD, CT 06450 | 203-238-1969
457 BANTAM RD | LITCHFIELD, CT 06759 | 860-577-9106

DATE: April 2021
SCALE: AS NOTED
DESIGNED BY:
DRAWN BY:
CHECKED BY: JAC
APPROVED BY: JAC

NO.:

REVISION

| NO. | DATE | BY |
|-----|------|----|
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PERMIT REVIEW NOT FOR CONSTRUCTION

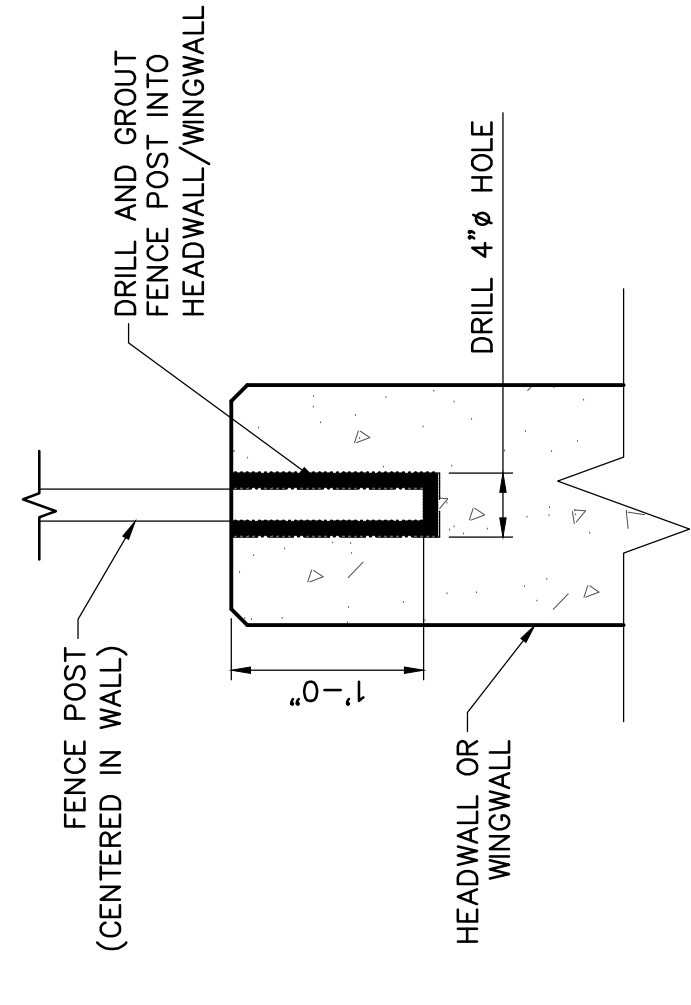
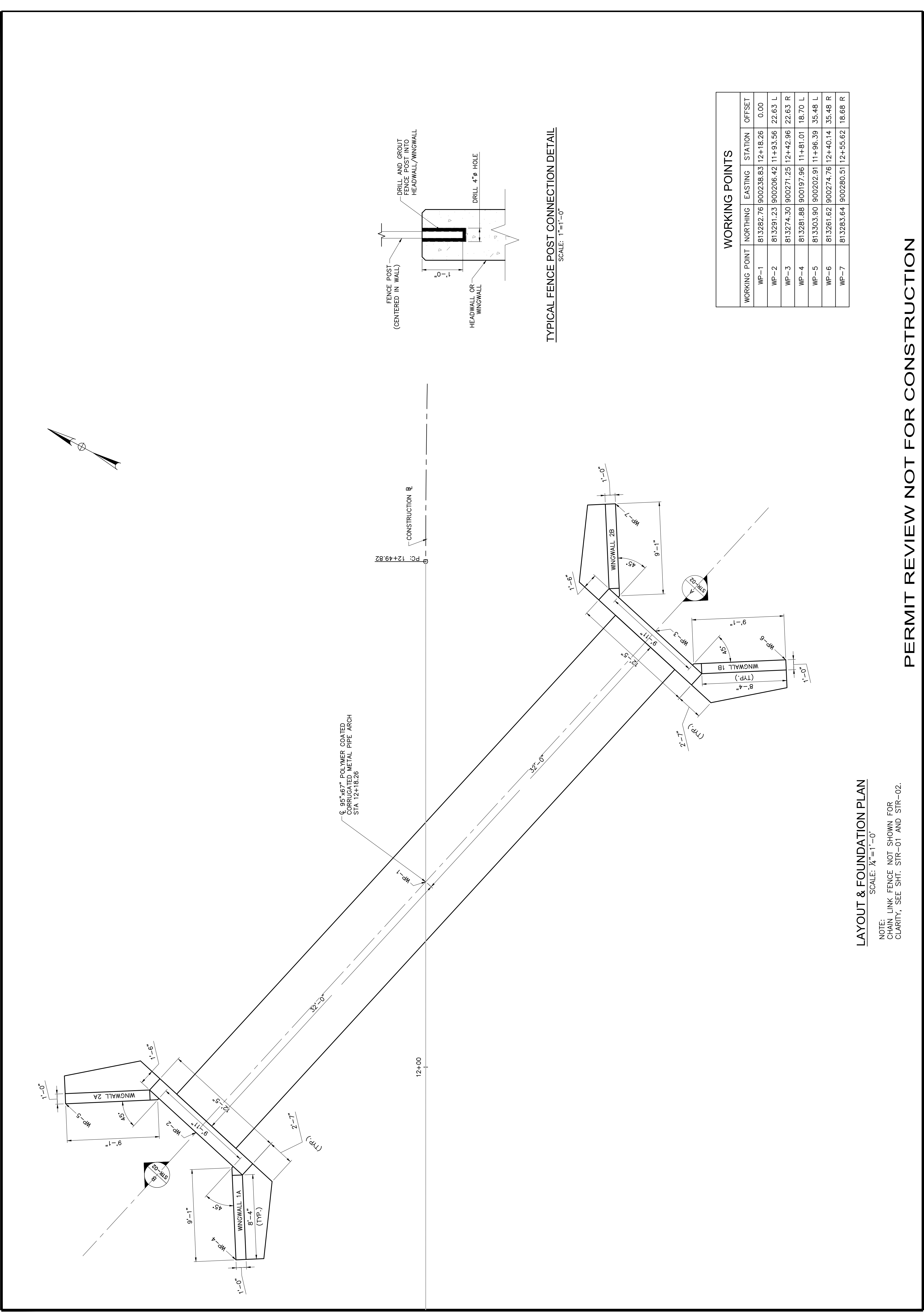
| NO. | REVISION | DATE | BY |
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DATE: April 2021
 SCALE: AS NOTED
 DESIGNED BY:
 DRAWN BY:
 CHECKED BY: JAC
 APPROVED BY: JAC

CARDINAL
 ENGINEERING ASSOCIATES
 190 RESEARCH PARKWAY
 LITCHFIELD, CT 06759
 860-597-9106

REPLACEMENT OF GOODWIN HILL ROAD CULVERT
 OVER UNNAMED TRIBUTARY OF TURNER BROOK
 LITCHFIELD, CONNECTICUT
 CULVERT LAYOUT PLAN

STR-03
 8



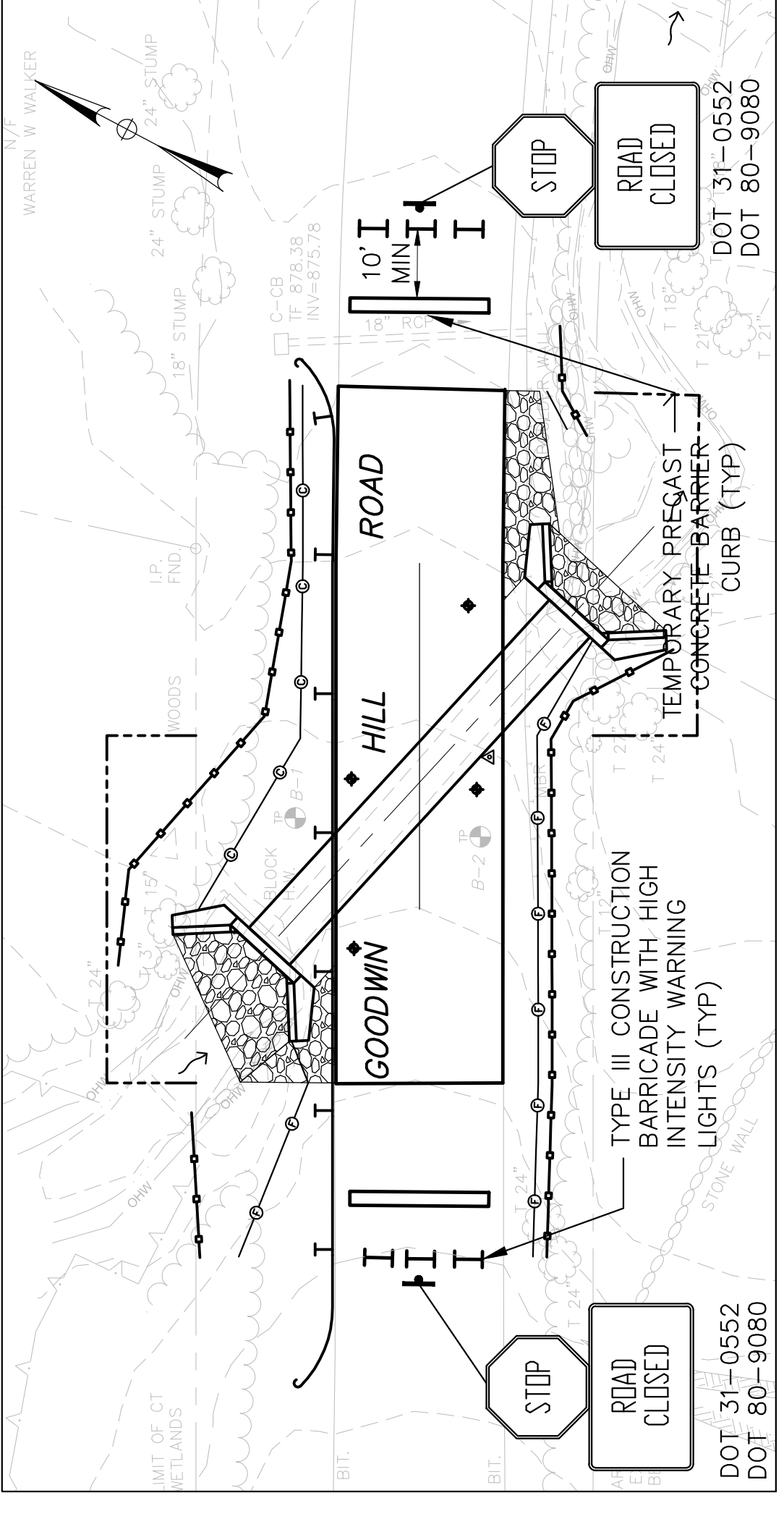
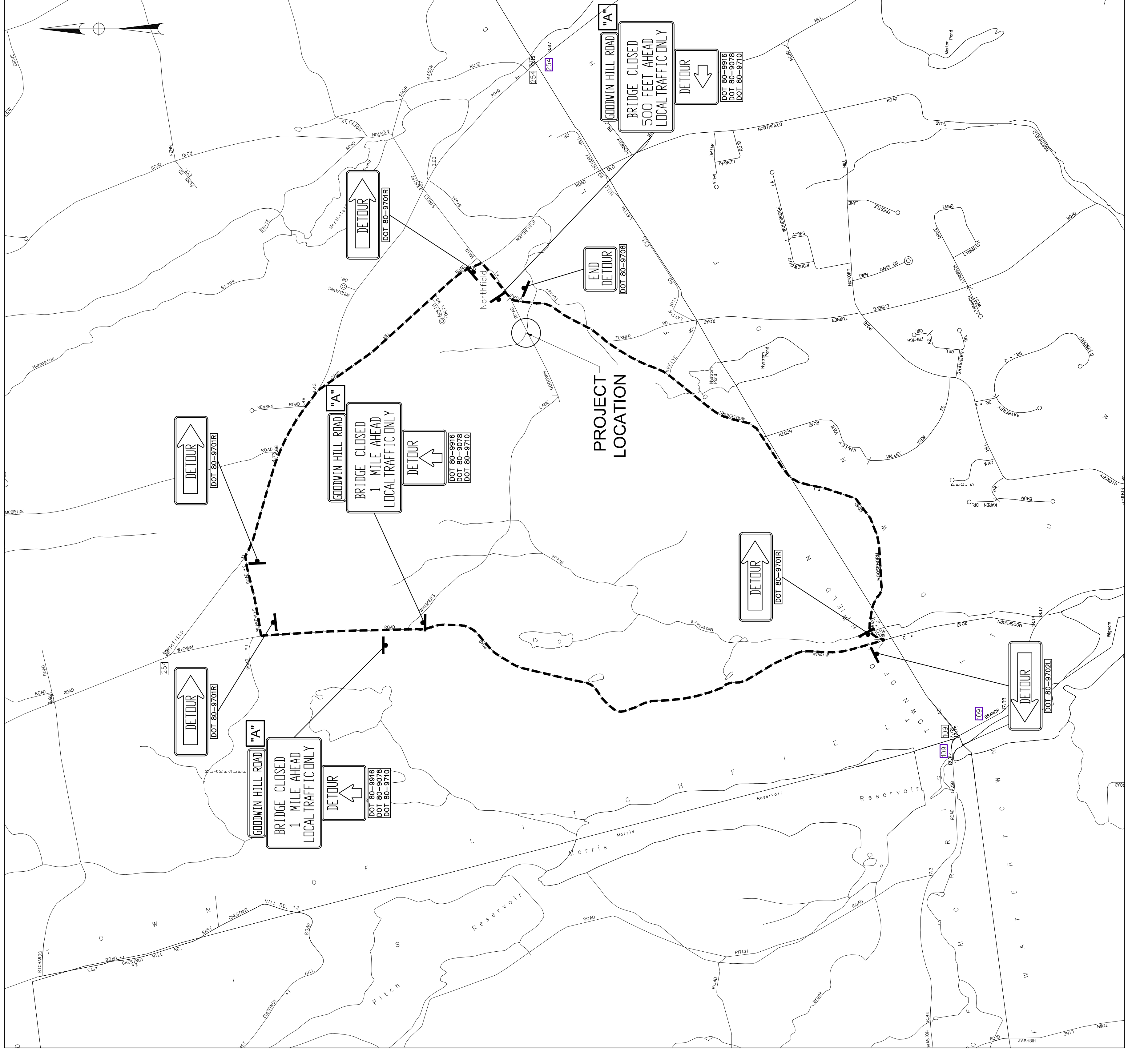
WORKING POINTS

| WORKING POINT | NORTHING | EASTING | STATION | OFFSET |
|---------------|-----------|-----------|----------|---------|
| WP-1 | 813282.76 | 900238.83 | 12+18.26 | 0.00 |
| WP-2 | 813291.23 | 900206.42 | 11+93.56 | 22.63 L |
| WP-3 | 813274.50 | 900271.25 | 12+42.96 | 22.63 R |
| WP-4 | 813281.88 | 900197.96 | 11+81.01 | 18.70 L |
| WP-5 | 813303.90 | 900202.91 | 11+96.39 | 35.48 L |
| WP-6 | 813261.62 | 900274.76 | 12+40.14 | 35.48 R |
| WP-7 | 813283.64 | 900280.51 | 12+55.62 | 18.68 R |

LAYOUT & FOUNDATION PLAN
 SCALE: 1/4"=1'-0"

NOTE:
 CHAIN LINK FENCE NOT SHOWN FOR
 CLARITY, SEE SHIT. STR-01 AND STR-02.

PERMIT REVIEW NOT FOR CONSTRUCTION



GENERAL NOTES:

1. ALL TRAFFIC CONTROL DEVICES AND SIGNS SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION. ADJUST ALL SIGN LOCATIONS IN THE FIELD AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL REMOVE OR COVER EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN, AS DIRECTED BY THE ENGINEER.
3. UPON COMPLETION OF THE PROJECT, ALL EXISTING SIGNS AND PAVEMENT MARKINGS WHICH ARE REMOVED IN ADVANCE OF STAGE CONSTRUCTION SHALL BE RE-ESTABLISHED AS DIRECTED BY THE ENGINEER.
4. TEMPORARY SIGNS AND OTHER TEMPORARY TRAFFIC PROTECTIVE DEVICES SHALL REMAIN IN PLACE AS SHOWN THROUGHOUT THE FULL DURATION OF EACH STAGE OF CONSTRUCTION. TRAFFICMEN SHALL BE REQUIRED WHEN DEVICES SHOWN ARE INSTALLED, RELOCATED, OR REMOVED.
5. ALL SIGNS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION, LATEST REVISION.
6. TEMPORARY PRECAST CONCRETE BARRIER CURB SHALL BE IN PLACE WHENEVER WORK HAS BEGUN AND THE CONTRACTOR IS NOT ACTIVELY WORKING AT THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR SAFETY OF THE WORK SITE. SEE SPECIFICATIONS.

LEGEND

- DETOUR ROUTE
- CONSTRUCTION SIGN
- BARRICADE WARNING LIGHT - HIGH INTENSITY

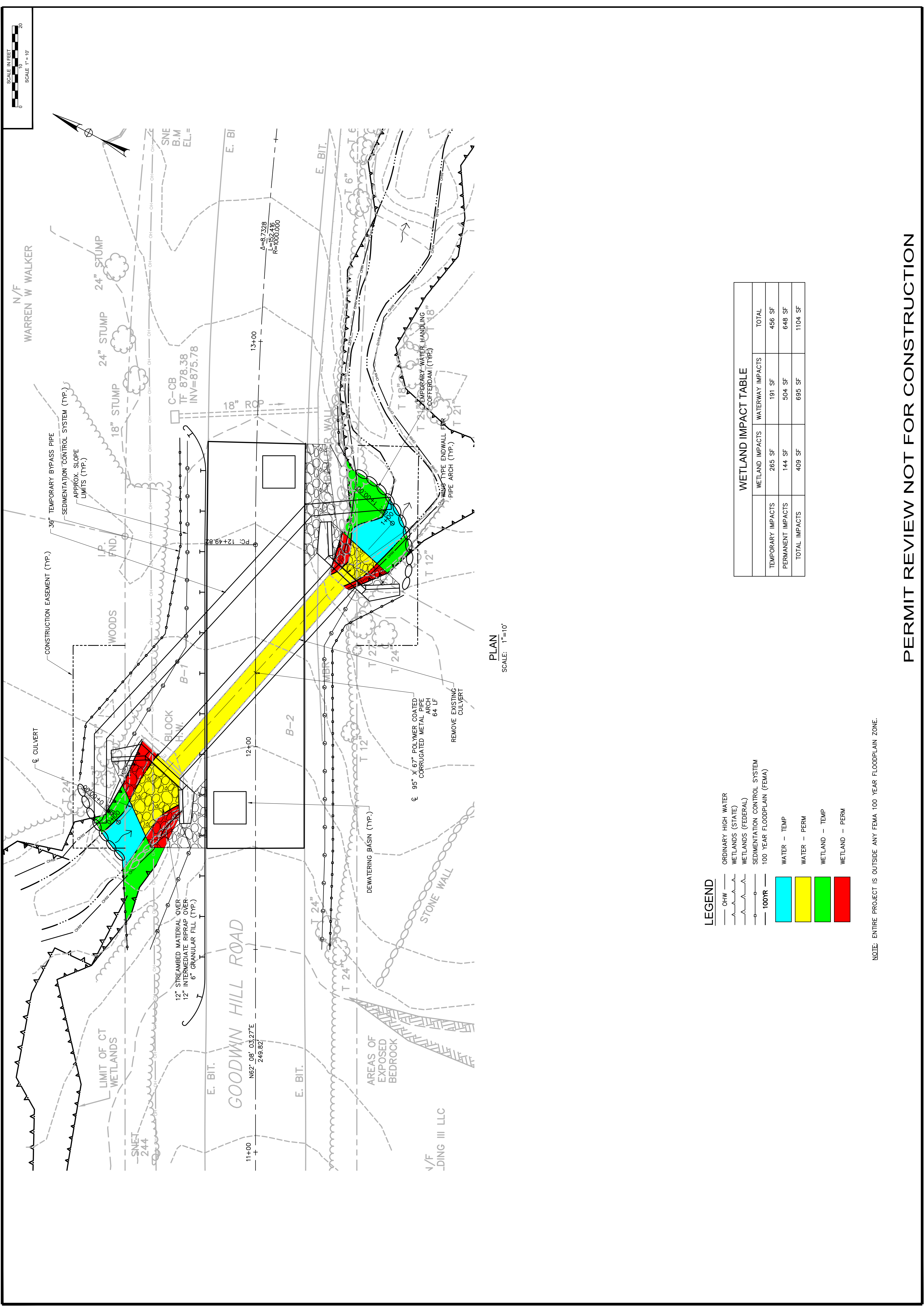
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| NO. | REVISION | DATE | BY |
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DATE: APRIL 2021
 SCALE: AS NOTED
 DESIGNED BY:
 DRAWN BY:
 CHECKED BY: JAC
 APPROVED BY: JAC

CARDINAL
 ENGINEERING ASSOCIATES
 180 RESEARCH PARKWAY
 LITCHFIELD, CT 06759
 860-597-9106

REPLACEMENT OF GOODWIN HILL ROAD CULVERT
 OVER UNNAMED TRIBUTARY OF TURNER BROOK
 LITCHFIELD, CONNECTICUT
 WETLANDS/WATERCOURSE IMPACT PLAN

WET-01
 13



PLAN
 SCALE: 1"=10'

LEGEND

| | |
|--------------------------------|------------------------------|
| — OHW | ORDINARY HIGH WATER |
| — WETLANDS (STATE) | WETLANDS (STATE) |
| — WETLANDS (FEDERAL) | WETLANDS (FEDERAL) |
| — SEDIMENTATION CONTROL SYSTEM | SEDIMENTATION CONTROL SYSTEM |
| — 100YR | 100 YEAR FLOODPLAIN (FEMA) |
| ■ | WATER - TEMP |
| ■ | WATER - PERM |
| ■ | WETLAND - TEMP |
| ■ | WETLAND - PERM |

WETLAND IMPACT TABLE

| TEMPORARY IMPACTS | WETLAND IMPACTS | WATERWAY IMPACTS | TOTAL |
|-------------------|-----------------|------------------|---------|
| 265 SF | 191 SF | 456 SF | 456 SF |
| 144 SF | 504 SF | 648 SF | 648 SF |
| 409 SF | 695 SF | 1104 SF | 1104 SF |

NOTE: ENTIRE PROJECT IS OUTSIDE ANY FEMA 100 YEAR FLOODPLAIN ZONE.

PERMIT REVIEW NOT FOR CONSTRUCTION