

VOLUME TWO to:

Petition of BNE Energy Inc.

for a Declaratory Ruling for the Location, Construction and Operation

of a 4.8 MW Wind Renewable Generating Project on Flagg Hill Road in Colebrook, Connecticut ("Wind Colebrook South")

December 6, 2010

EXHIBITS

Site Plans	Exhibit F
Storm Water Management Plan	.Exhibit G
Soil Erosion and Sedimentation Control Plan	Exhibit H

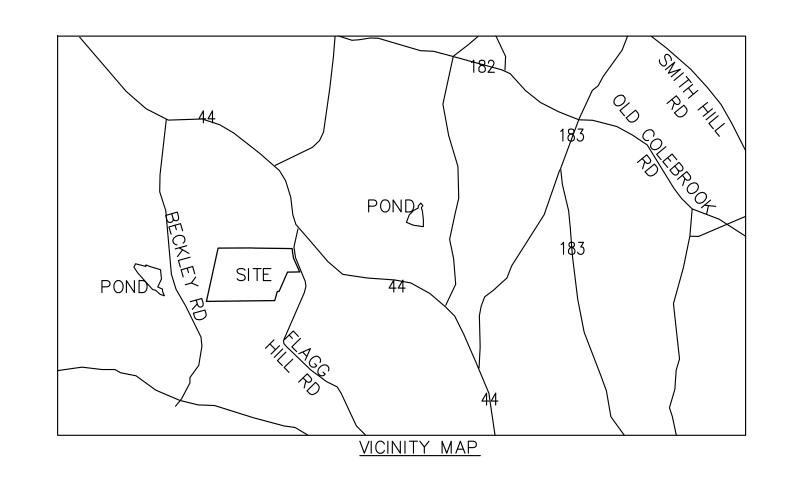
EXHIBIT F

POND SITE POND 183 POND 183 POND 183 VICINITY MAP

WIND COLEBROOK SOUTH

29 FLAGG HILL ROAD COLEBROOK, CONNECTICUT

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BNE ENERGY 29 SOUTH MAIN STREET TOWN CENTER SUITE 200 WEST HARTFORD, CT 06107



CONNECTICUT SITING COUNCIL SUBMISSION

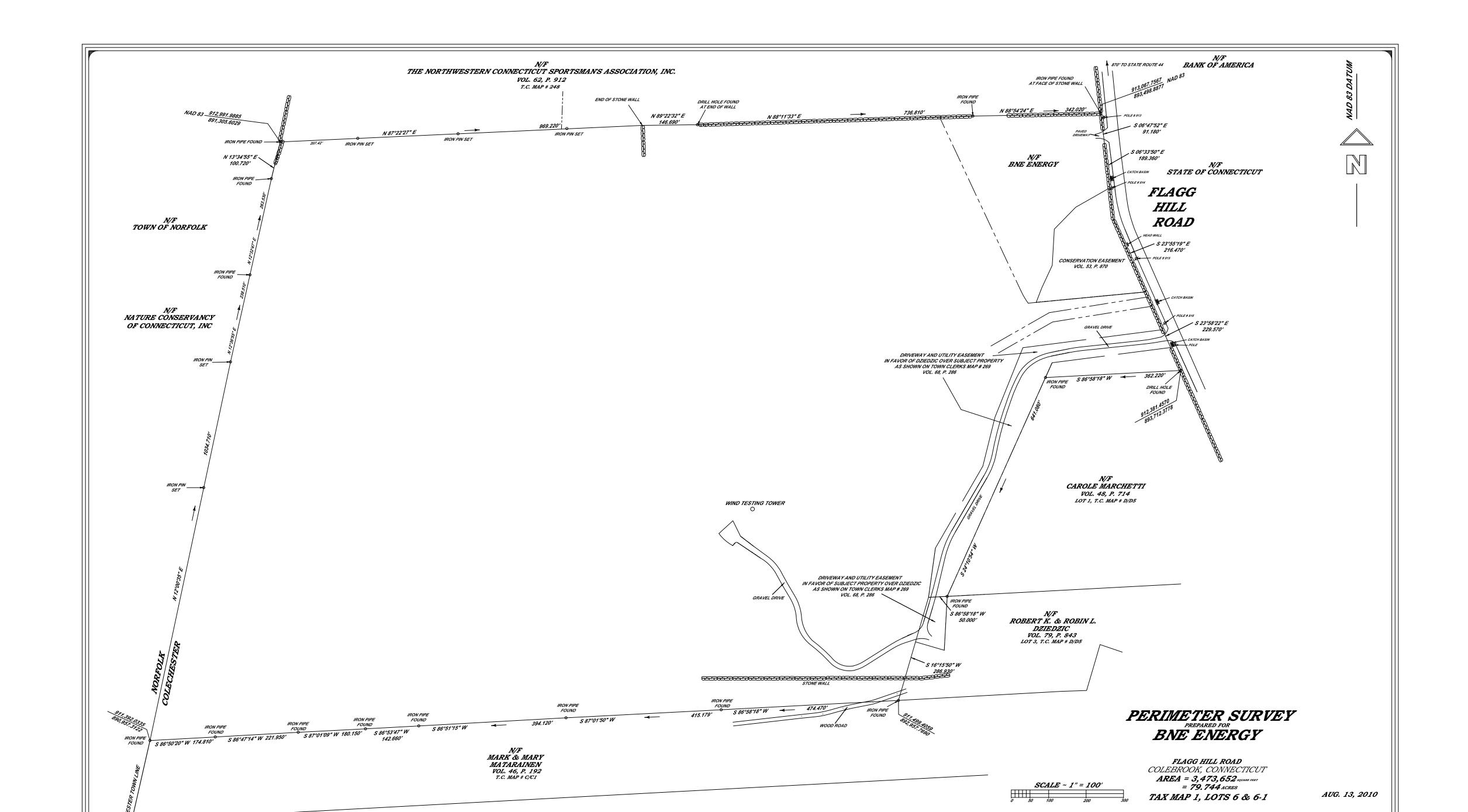




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T.C. MAP # 307

THIS SURVEY WAS PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTION 20-300b-1 THROUGH 20-300b-20 OF THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

BOUNDARY DETERMINATION CATEGORY ~ "DEPENDANT RE SURVEY"

T.C. MAP # 106

TYPE OF SURVEY ~ "PERIMETER SURVEY"

CLASS OF ACCURACY ~ "A-2"

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP AND SURVEY ARE SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. RIORDAN LICENSED LAND SURVEYOR, REG. # 14666

RIORDAN LAND SURVEYING

701 MIDDLEROAD TURNPIKE WOODBURY, CT. 06798 203-263-2727, FAX 263-4139

CONNECTICUT SITING COUNCIL SUBMISSION 11-19-10 TLK
DESCRIPTION DATE APPR.

CE FAIRVIEW ROAD #600 PHONE: (704) 358-8240 CHARLOTTE, NC 28210 FAX: (704) 358-8342 ZAPATA@ZAPATAINC.COM

WIND COLEBROOK SOUTH CONNECTICUT

GENERAL NOTES

- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS, LOCAL REQUIREMENTS AND GOVERNMENT REQUIREMENTS.
- 2. AREAS DISTURBED DURING CONSTRUCTION AND NOT RESTORED WITH IMPERVIOUS SURFACES (BUILDINGS, PAVEMENTS, WALKS, ETC.) SHALL RECEIVE SIX INCHES OF TOPSOIL AND SHALL BE SEEDED, UNLESS OTHERWISE NOTED.
- 3. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
- 4. TRAFFIC SIGNAGE AND PAVEMENT MARKINGS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, UNLESS OTHERWISE INDICATED.
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 - 6. IN THE EVENT THAT SUSPECTED CONTAMINATED SOILS ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
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LAYOUT AND MATERIALS NOTES

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ergy <u>LEGEND</u> DITCH LINE PROJECT BOUNDARY LINE __ _ _ _ _ _ _ _ _ EXISTING VEGETATION WETLAND LIMITS COMPACTED FILL WETLANDS GRAVEL AREA TO BE CLEARED - 493,277 SQ. FT. / 11.32 ACRES AREA WITHIN 100' WETLAND OFFSET - 39,000 SQ. FT. / 0.89 ACRES DIRECT WETLAND IMPACT NOT TO EXCEED 4915 SQ. FT. EXISTING RESIDENTIAL STRUCTURE BLADE LAYDOWN AREA (TYP) -TURBINE LOCATION (TYP) CRANE PAD (TYP) TOWER LAYDOWN AREA (TYP) ELECTRICAL COLLECTOR YARD FINAL LOCATION TO BE COORDINATED -WITH PUBLIC UTILITY COMPANY FUTURE LOCATION OF FACILITY SUPPORT BUILDING (40'X50') WILL INCLUDE EQUIPMENT STORAGÈ, MAINTÉNANCE OFFICE AND EDUCATIONAL SPACE. SHEET **IDENTIFICATION** C-002

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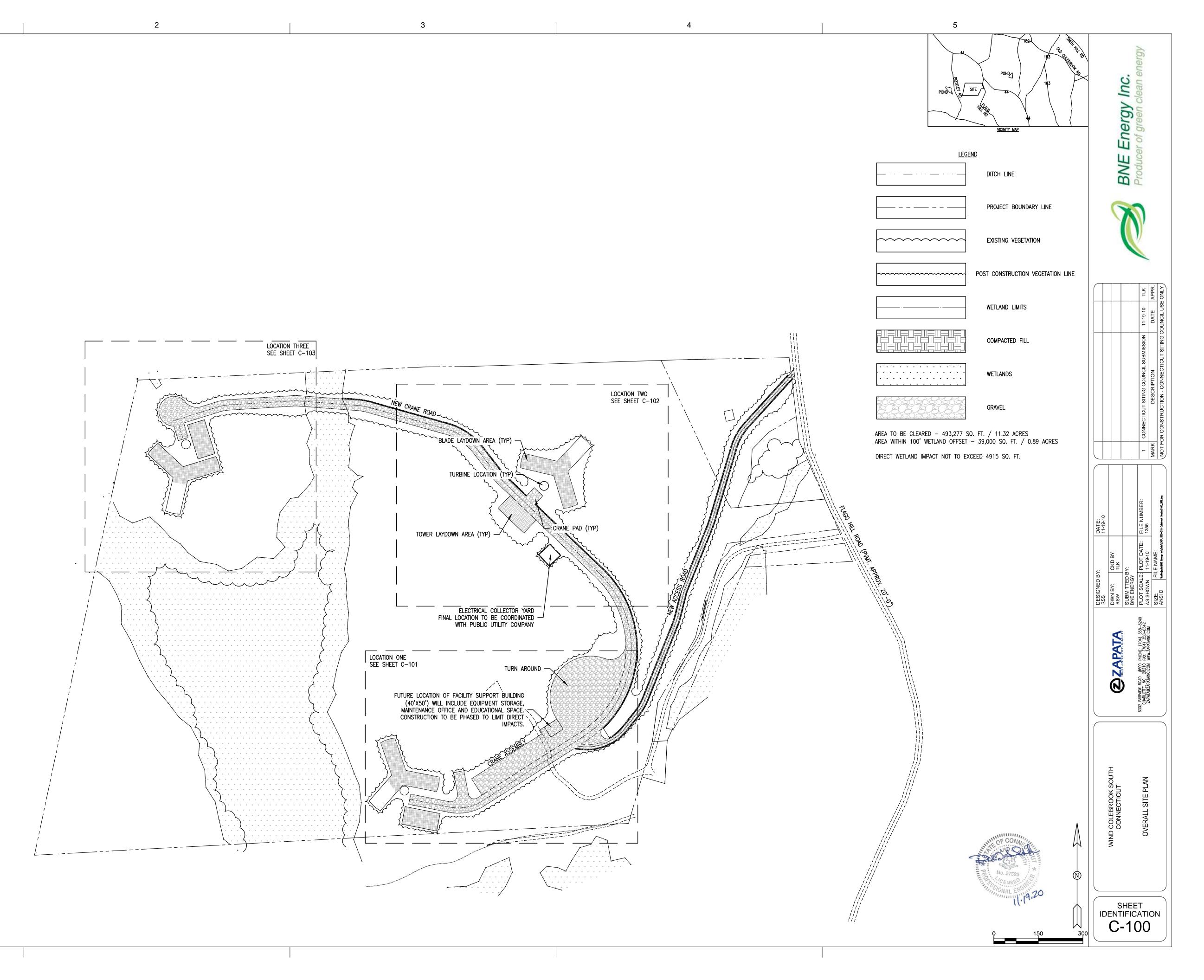


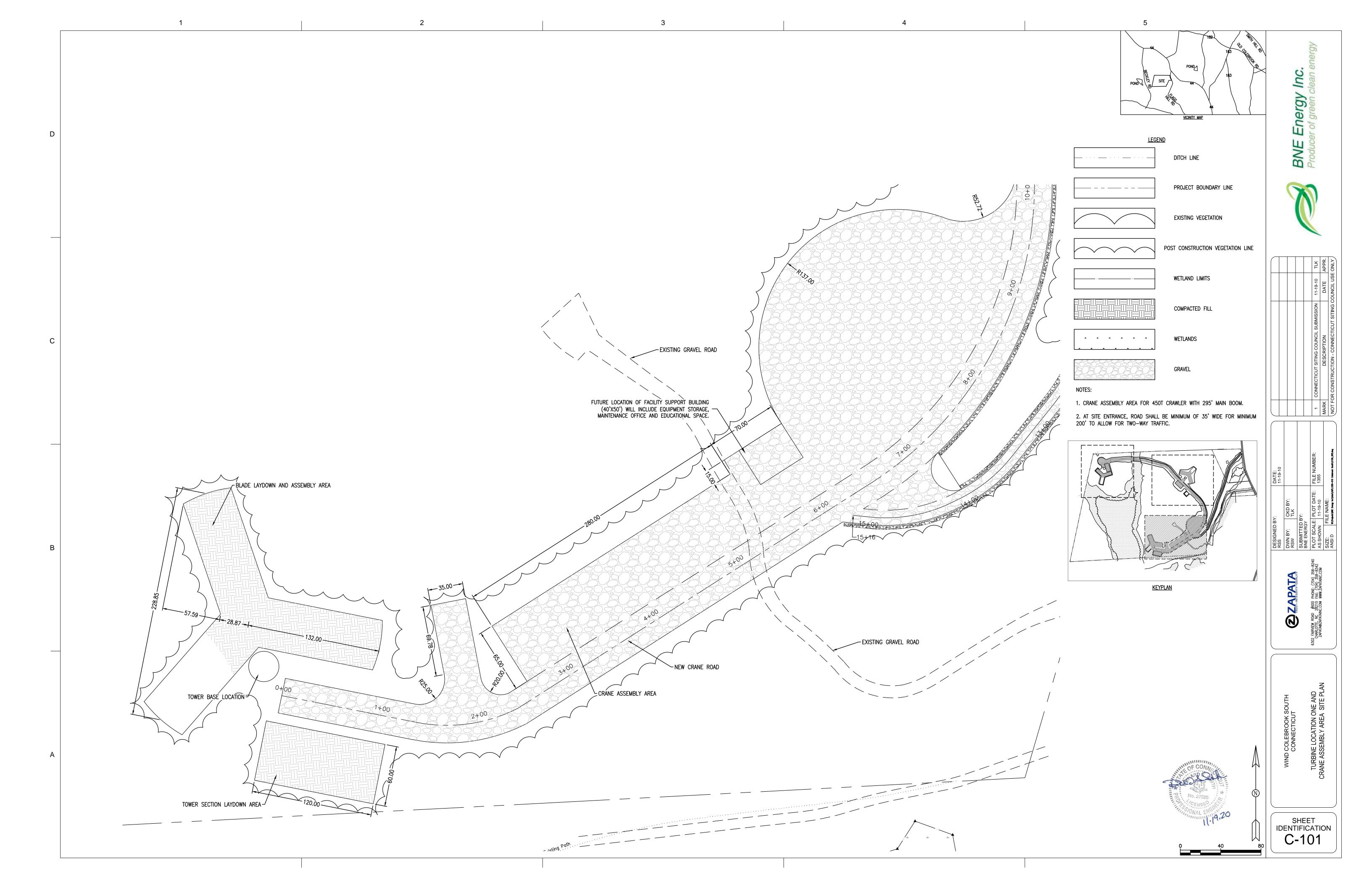
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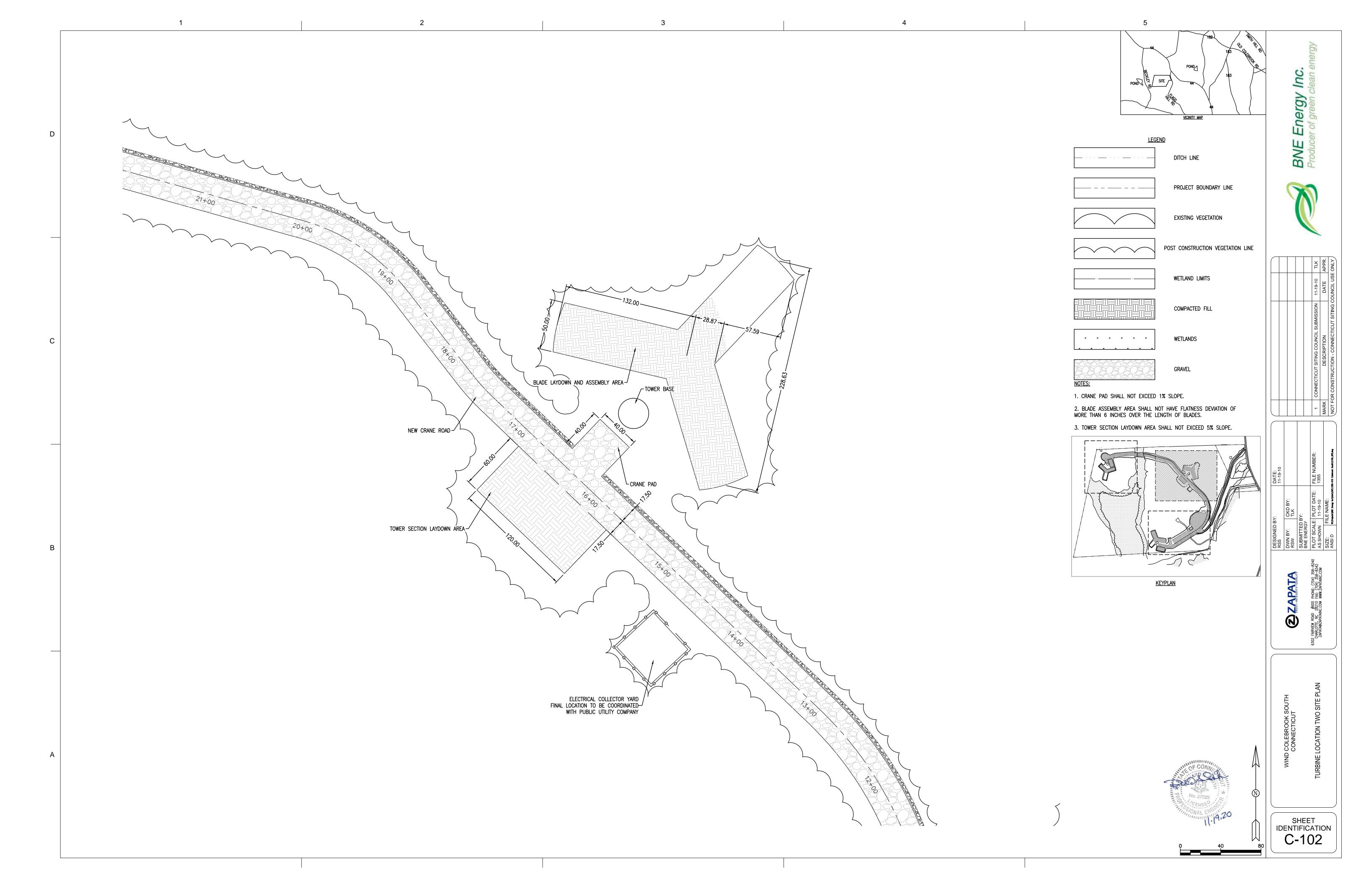
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 - 21. CONTRACTOR SHALL ESTABLISH AND VERIFY POINT OF BEGINNING (P.O.B) AND STAKE SITE AS INDICATED ON CONSTRUCTION DOCUMENTS PRIOR TO COMMENCEMENT OF CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES.
 - 22. ALL DIMENSIONS ARE TO BACK OF CURB, FACE OF BUILDING, OR CENTERLINE UNLESS OTHERWISE NOTED.
 - 23. ALL DETAILS SHALL BE CONSTRUCTED IN STRICT COMPLIANCE WITH SPECIFICATIONS AND CONSTRUCTION DOCUMENTS.

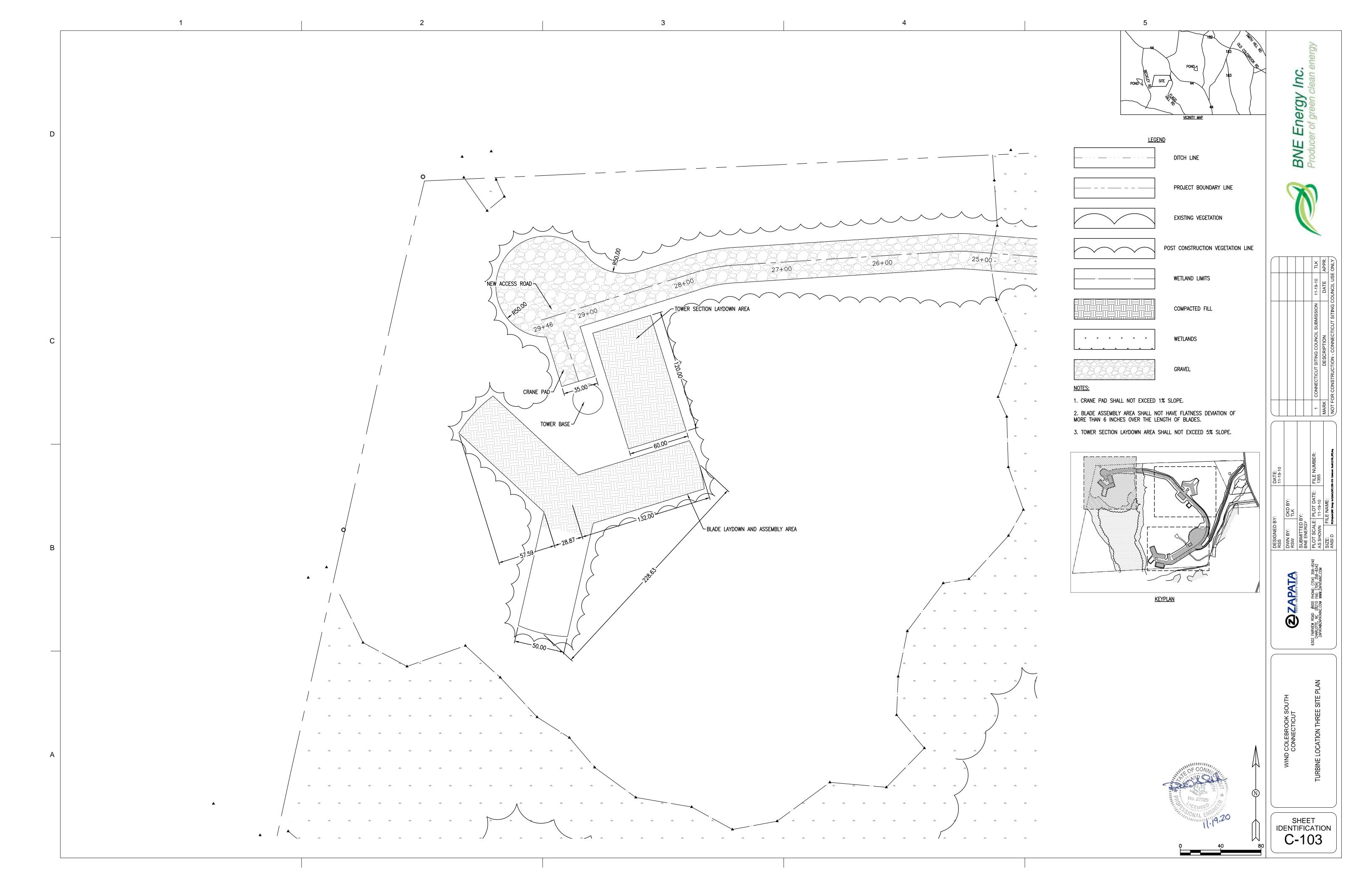
LAYOUT AND MATERIALS NOTES

- 1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY EXISTING PAVEMENT ELEVATIONS AT INTERFACE WITH PROPOSED PAVEMENTS AND EXISTING GROUND ELEVATIONS TO ASSURE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED FACILITIES.
- 2. SYMBOLS AND LEGENDS OF PROJECT FEATURES ARE GRAPHIC REPRESENTATIONS AND ARE NOT NECESSARILY SCALED TO THEIR ACTUAL DIMENSIONS OR LOCATIONS ON THE DRAWINGS. THE CONTRACTOR SHALL REFER TO THE DETAIL SHEET DIMENSIONS, MANUFACTURERS' LITERATURE, SHOP DRAWINGS, AND FIELD MEASUREMENTS OF SUPPLIED PRODUCTS FOR LAYOUT OF THE PROJECT
- 3. CONTRACTOR SHALL NOT RELY SOLELY ON ELECTRONIC VERSIONS OF PLANS, SPECIFICATIONS, AND DATA FILES THAT ARE OBTAINED FROM THE DESIGNERS, BUT SHALL VERIFY LOCATION OF PROJECT FEATURES IN ACCORDANCE WITH THE PAPER COPIES OF THE PLANS AND SPECIFICATIONS THAT ARE SUPPLIED AS PART OF THE CONTRACT DOCUMENTS.









CONSTRUCTION SCHEDULE:

- 1. INSTALL SILT FENCE, INLET PROTECTION, SEDIMENT TRAPS, DIVERSION DITCHES, TREE PROTECTION, AND OTHER MEASURES AS SHOWN ON PLANS, CLEARING ONLY AS NECESSARY TO INSTALL THESE DEVICES.
- 2. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
- 3. APPLY SEEDING, TEMPORARY OR PERMANENT, OR OTHER TYPES OF STABILIZATION AS REQUIRED AS SOON AS GRADED AREAS ARE COMPLETE OR WHERE WORK STOPS.
- 4. COMPLETE FINE GRADING.
- 5. PREPARE ALL DISTURBED AREAS FOR SEEDING AND GROUND COVER.
- 6. APPLY PERMANENT SEEDING AND GROUND COVER.
- 7. AFTER SITE IS STABILIZED AND APPROVALS RECEIVED, ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AND THOSE DISTURBED AREAS SHALL BE SEEDED.
- 8. COORDINATE WITH EROSION CONTROL INSPECTOR PRIOR TO REMOVAL OF EROSION CONTROL
- 9. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
- 10. APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF—SITE GRADING, PERMISSION MUST BE OBTAINED.

MAINTENANCE PLAN:

- 1. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF—PRODUCING RAINFALL, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
- 2. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
- 3. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FEET DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER
- 4. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
- 5. ALL SEEDED AREAS SHALL BE FERTILIZED, RE—SEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATION TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

TREE PROTECTION NOTES:

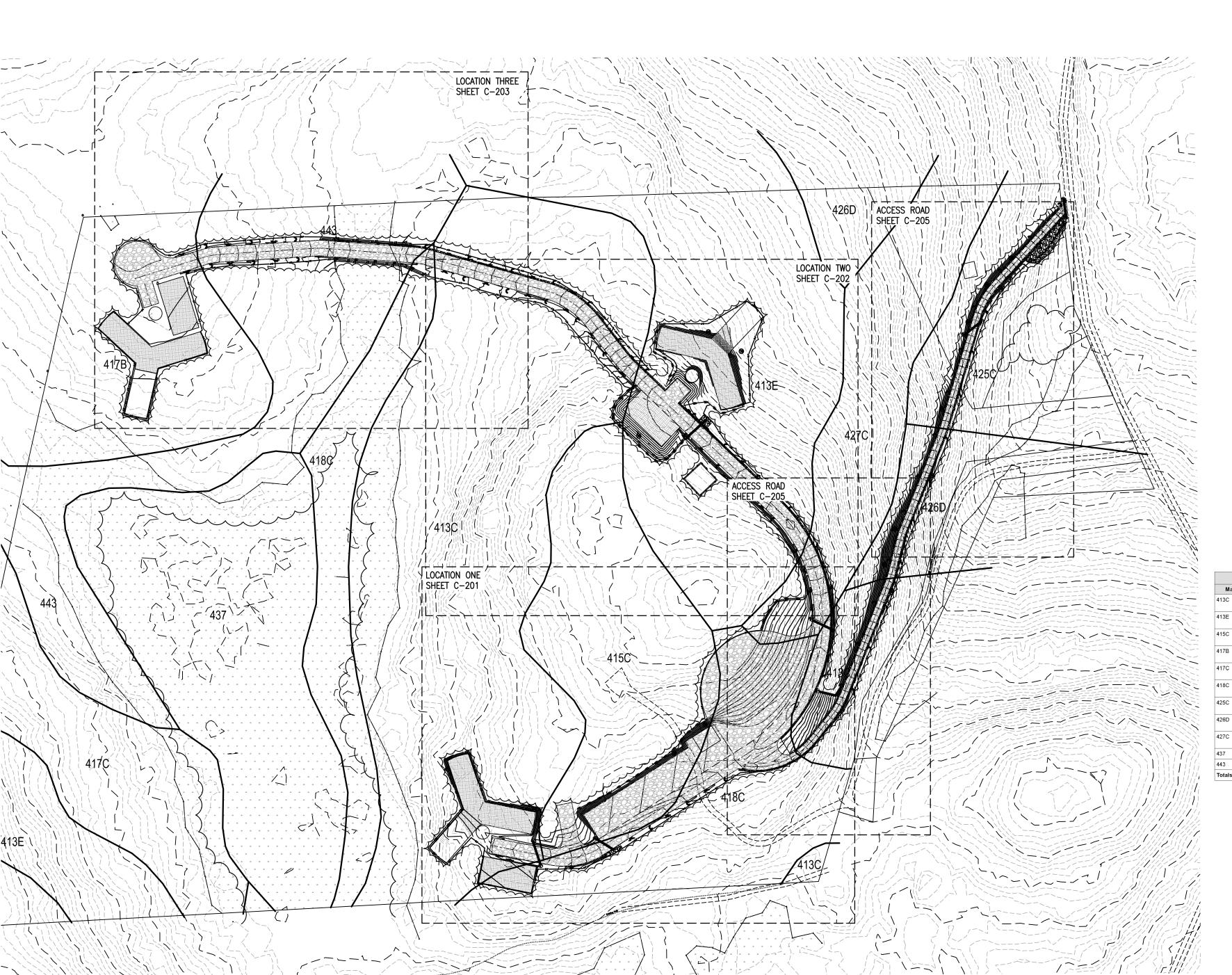
- 1. TREE BARRICADES MUST BE INSTALLED BEFORE ANY DEMOLITION, CLEARING, GRADING, OR CONSTRUCTION, AND NOT REMOVED UNTIL AFTER FINAL INSPECTION BY URBAN FORESTRY STAFF.
- 2. NO SOIL DISTURBANCE OR COMPACTION, CONSTRUCTION MATERIALS, BURIAL PITS, TRENCHING OR OTHER LAND DISTURBING ACTIVITY ALLOWED IN TREE PROTECTION AREAS, EXCEPT AS SHOWN ON APPROVED PLANS
- 3. VIOLATIONS OF TREE PROTECTION REQUIREMENTS ARE SUBJECT TO FINES, AND/OR IMMEDIATE CORRECTIVE ACTION/MITIGATION.
- 4. NO GRUBBING WITHIN TREE PROTECTION ZONE. LEAVE SPOIL AND LEAF LITTER UNDISTURBED. SUPPLEMENT WITH 1"-2" OF MULCH. RE-SEED WITH GRASS ONLY IN DISTURBED/GRADED AREAS.
- 5. BRUSH VINES, AND SMALL TREES (8" DIAMETER, OR AS SMALL AS 2" CALIPER) MAY BE HAND CLEARED ONLY AND CUT FLUSH WITH GROUND SURFACE. EXISTING TREES MAY BE LIMBED UP 6'-0" (LEAVING AT LEAST 2/3 OF THE BRANCHES TO IMPROVE VISIBILITY).
- 6. EXPOSED TREE ROOTS MUST BE CLEANLY CUT WITH A SHARP PRUNING TOOL; BACKFILL AS SOON AS POSSIBLE TO MINIMIZE EXPOSURE TO THE AIR.
- 7. TREE PROTECTION FENCE IS TO BE LOCATED 1 FOOT PER TREE DIAMETER INCH AWAY FROM THE TREE IN THE SETBACK.

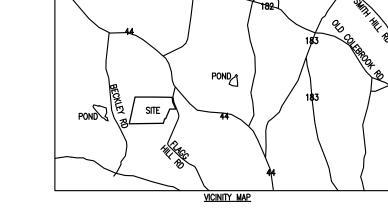
EROSION CONTROL NOTES:

- 1. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDED AREAS AND ESPECIALLY WHEN SPECIFICALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE.
- 2. MAXIMUM GRADED SLOPES ARE 2:1. WHEN STEEPER SLOPES MUST BE USED PLANS MUST BE SEALED BY A GEO—TECHNICAL ENGINEER FOR SLOPE STABILITY AND FINAL SURFACE STABILIZATION.
- 3. DE-WATERING OF SITE DIRECTLY INTO STREAM, WETLAND OR CREEK IS PROHIBITED.

GENERAL CONSTRUCTION NOTES:

- ALL CONTOURS AND SPOT ELEVATIONS REFLECT FINISH GRADES.
- 2. CONTRACTOR SHALL BLEND SMOOTHLY NEW GRADING TO EXISTING GRADE.
- 3. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER OR ENGINEER ANY DISCREPANCIES FOUND BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS AND SHALL WAIT FOR INSTRUCTIONS BEFORE PROCEEDING.
- 4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
- 5. CONTRACTOR SHALL WORK WITH CAUTION DURING EARTHWORK ACTIVITIES NEAR EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE APPROPRIATE AGENCY FOR FIELD LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE STARTING CONSTRUCTION.





SOIL TYPE BOUNDARY

TEMPORARY DIVERSION DITCH

TREE PROTECTION FENCE

WETLAND LIMITS

ROCK CHECK DAM

SILT FENCE

STRAW HAY BALES

CULVERT PIPE/SLOPE DRAIN

FLOW FLOW ARROW

TEMPORARY SEEDING

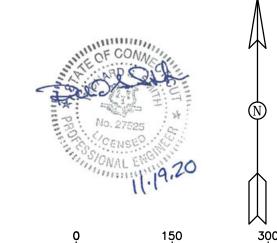
COMPACTED EARTH

GRAVE

Map Unit Legend

	State of Connecticut (CT60	00)	
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
413C	Bice-Millsite complex, 3 to 15 percent slopes, very rocky	20.1	22.0
413E	Bice-Millsite complex, 15 to 45 percent slopes, very rocky	14.5	15.8
415C	Westminster-Millsite-Rock outcrop complex, 3 to 15 percent slopes	6.4	7.0
417B	Bice fine sandy loam, 3 to 8 percent slopes, very stony	8.9	9.7
417C	Bice fine sandy loam, 8 to 15 percent slopes, very stony	5.5	6.0
418C	Schroon fine sandy loam, 2 to 15 percent slopes, very stony	8.3	9.0
425C	Shelburne fine sandy loam, 8 to 15 percent slopes, very stony	2.0	2.2
426D	Shelburne fine sandy loam, 15 to 35 percent slopes, extremely stony	2.6	2.9
427C	Ashfield fine sandy loam, 8 to 15 percent slopes, very stony	4.6	5.0
437	Wonsqueak mucky peat	9.1	9.9
443	Brayton-Loonmeadow complex, extremely stony	9.5	10.4
Totals for Area of Inter	est	91.8	100.0

DIRECT WETLAND IMPACT NOT TO EXCEED 4915 SQ. FT.



BNE Energy



1 CONNECTICUT SITING COUNCIL SUBMISSION 11-19-10 TLK
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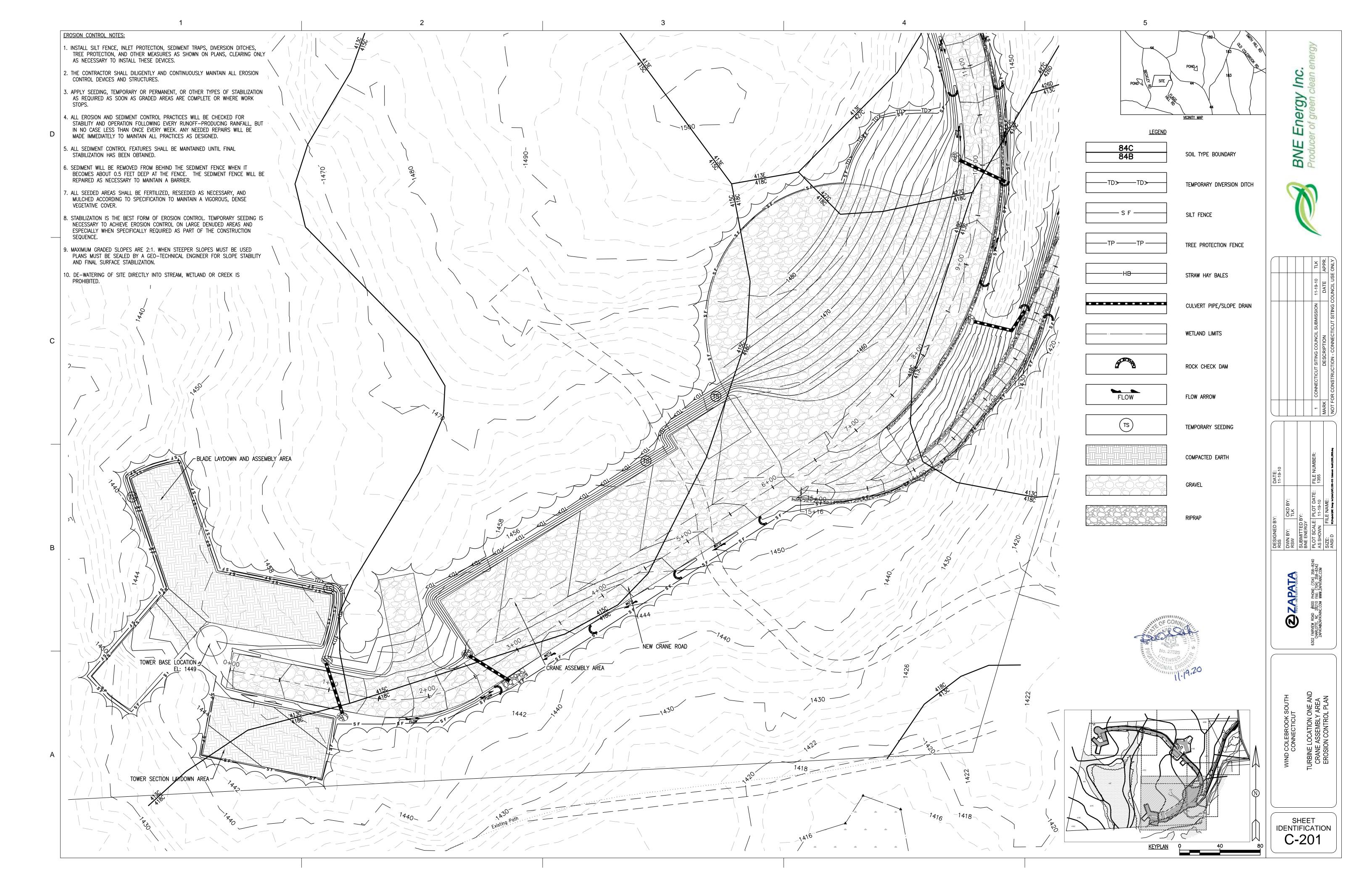
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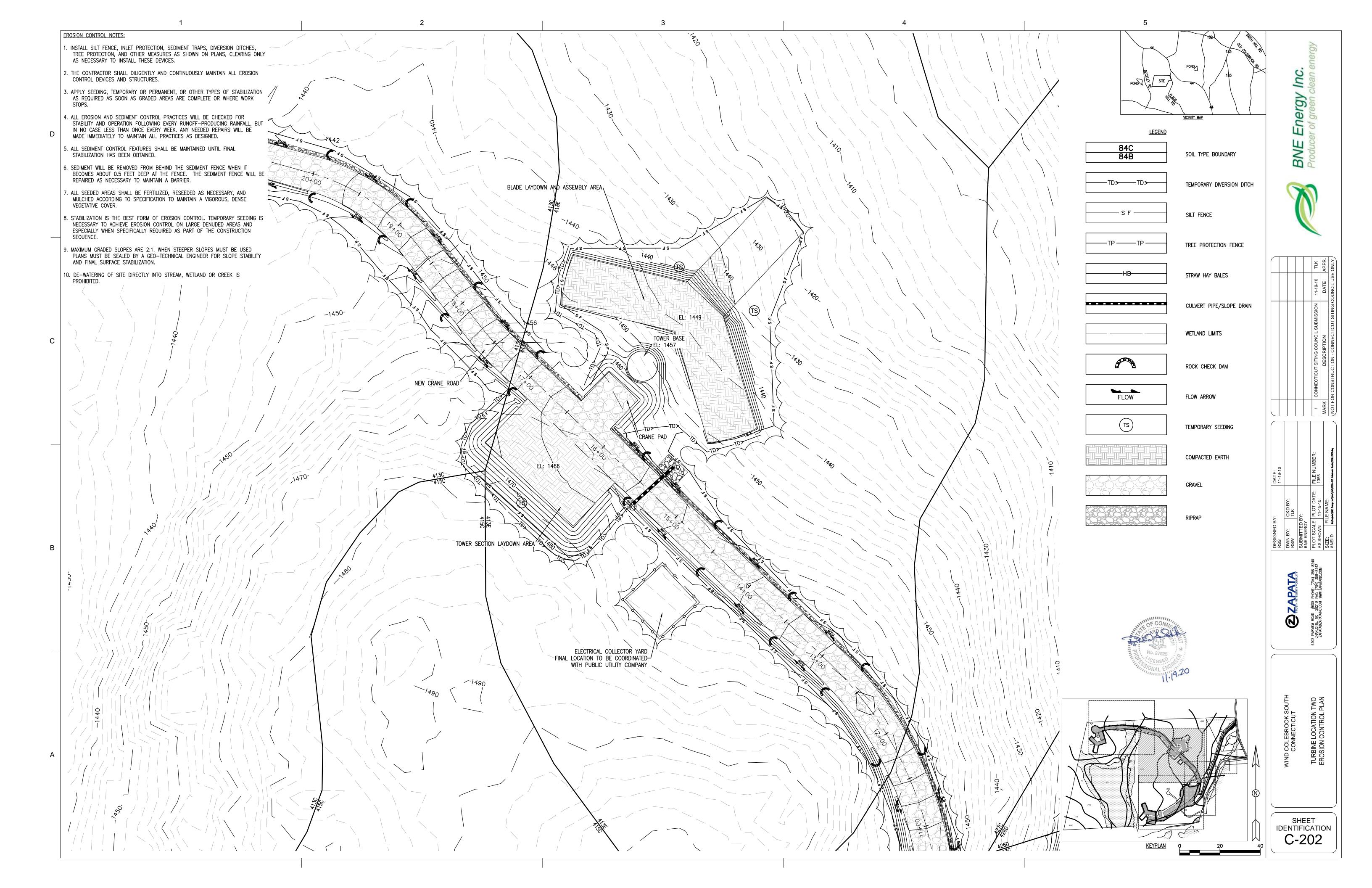
6302 FAIRVIEW ROAD #600 PHONE: (704) 358-8240

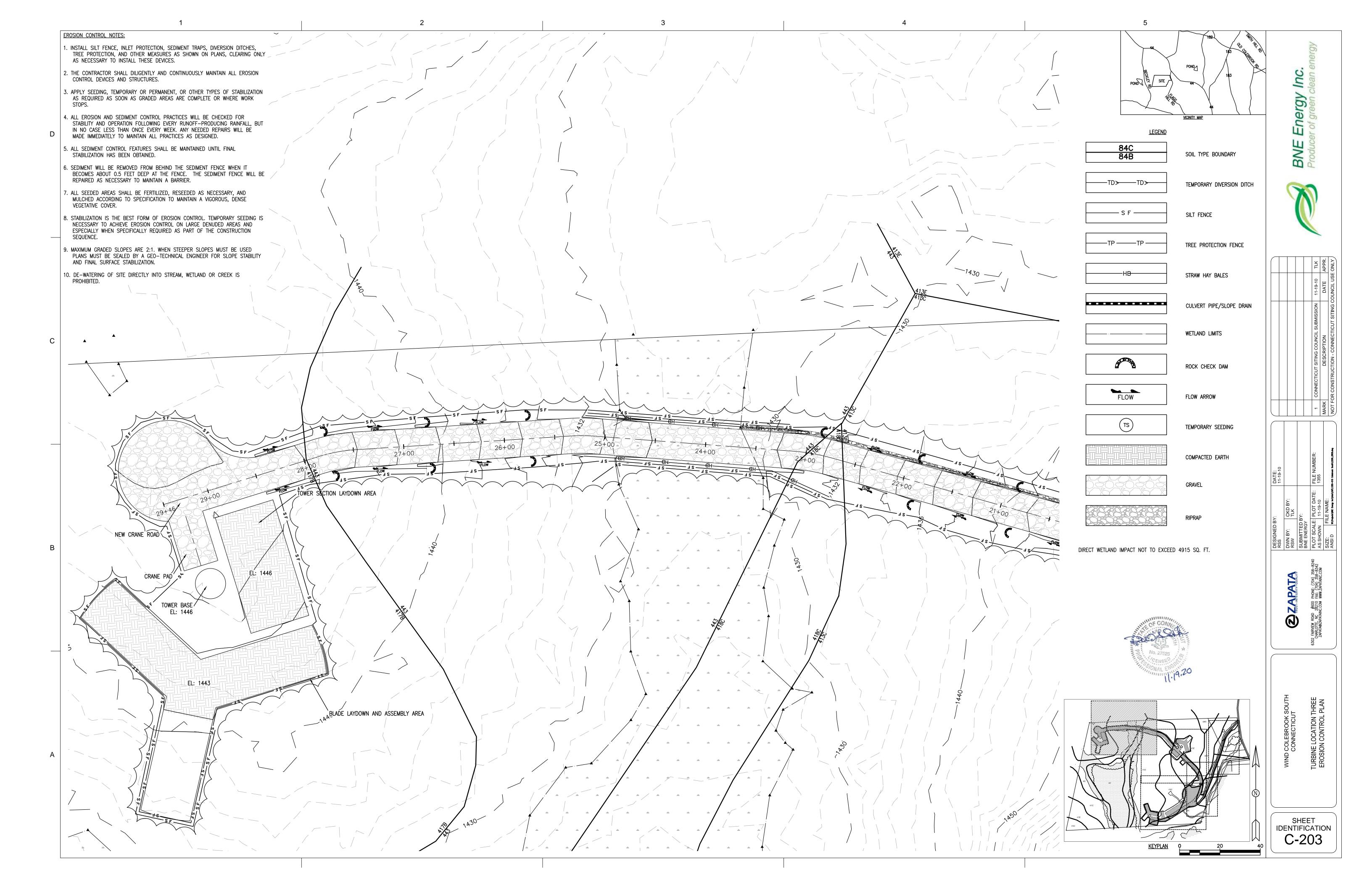
CHARLOTTE, NC 28210 FAX: (704) 358-8342

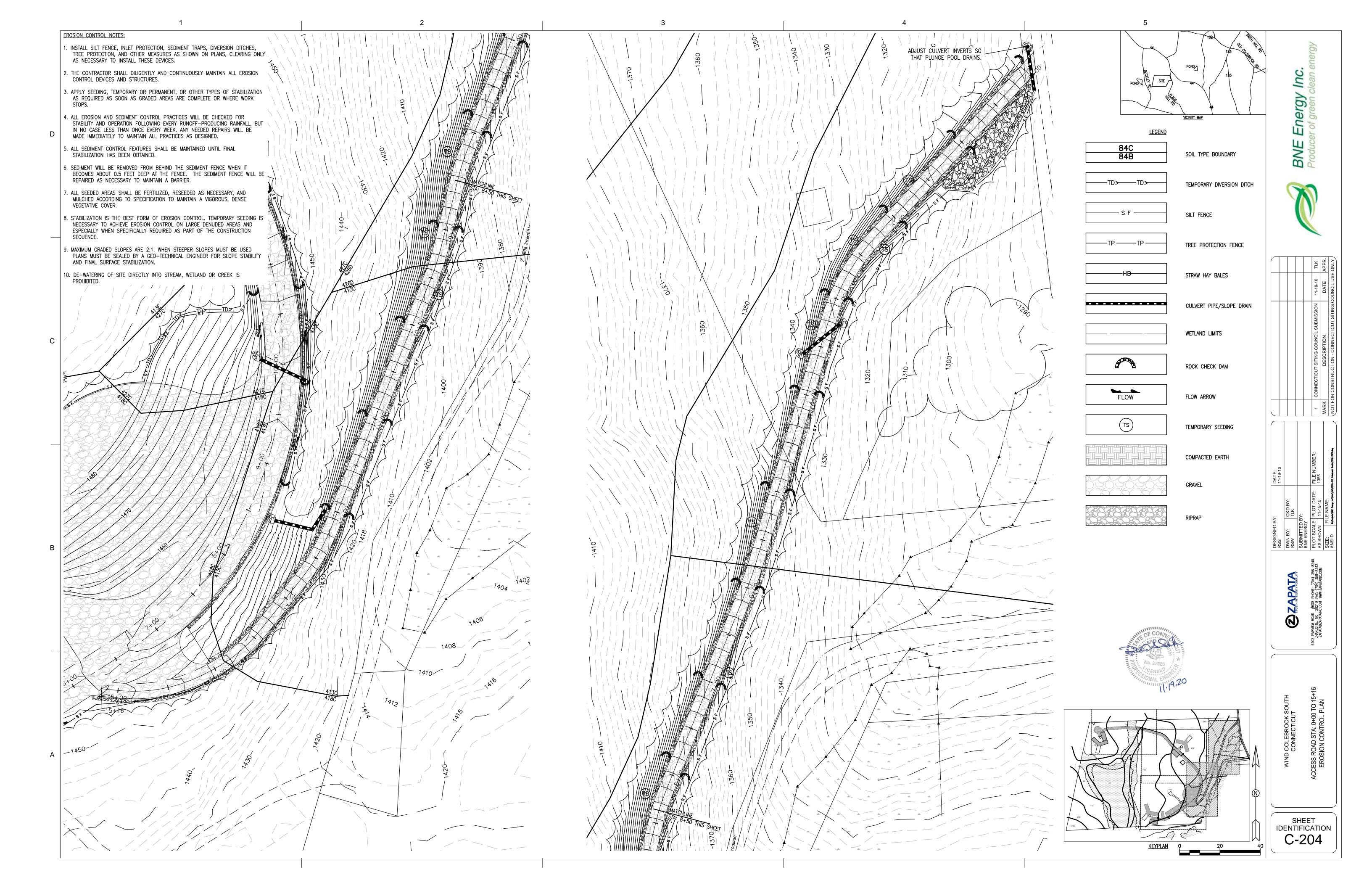
WIND COLEBROOK SOUTH
CONNECTICUT
VERALL EROSION CONTROL PLAN

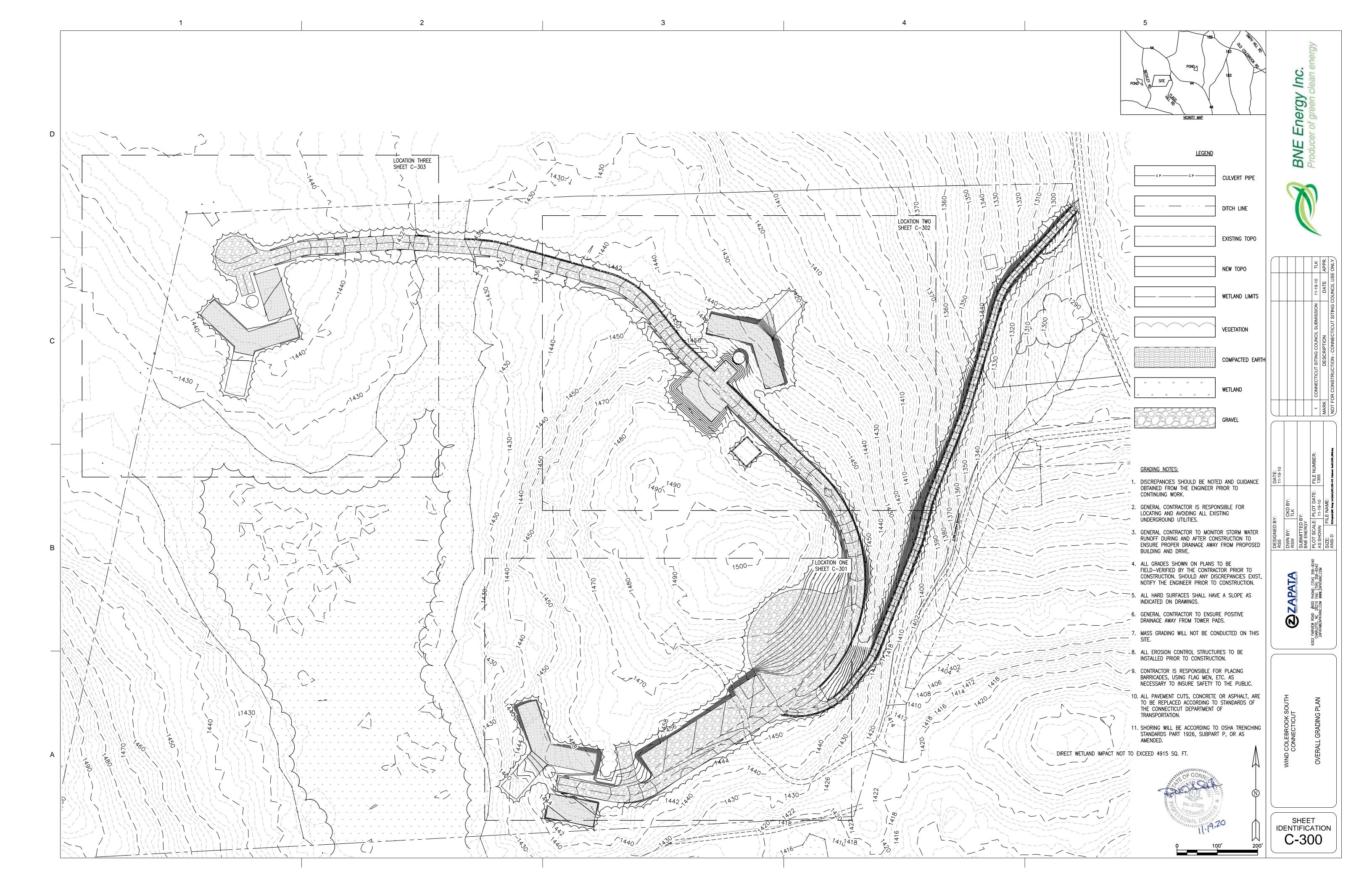
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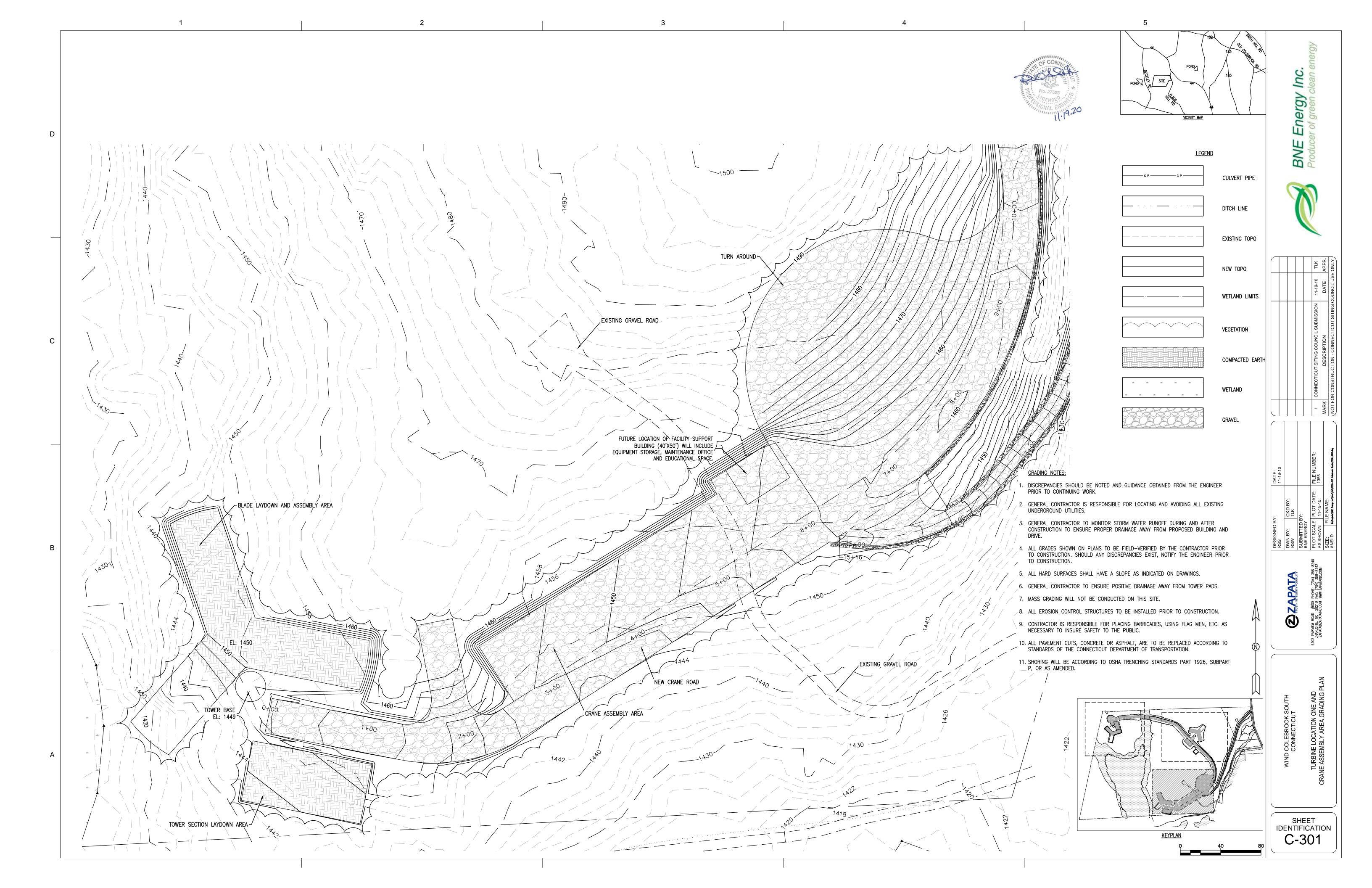


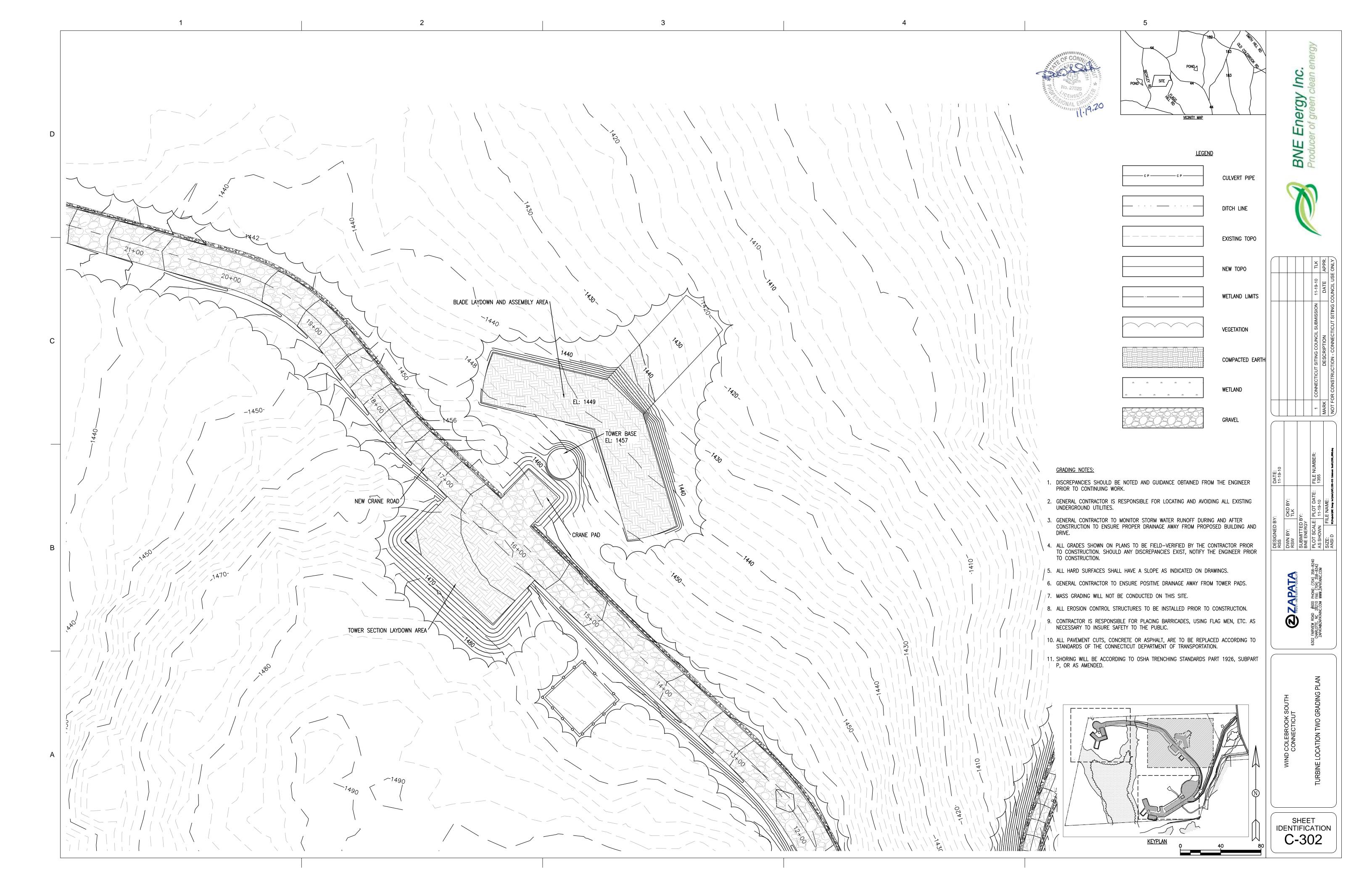


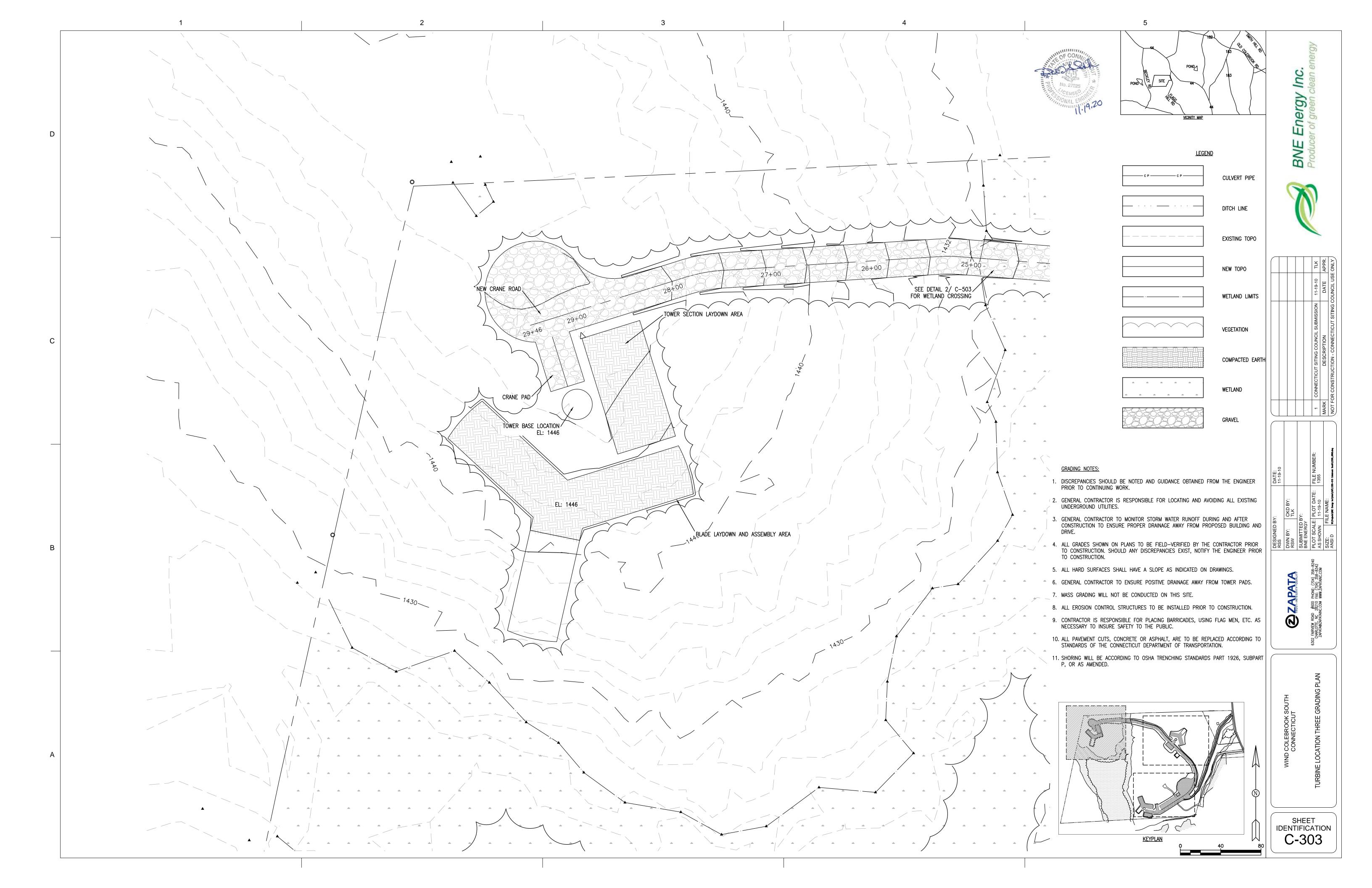


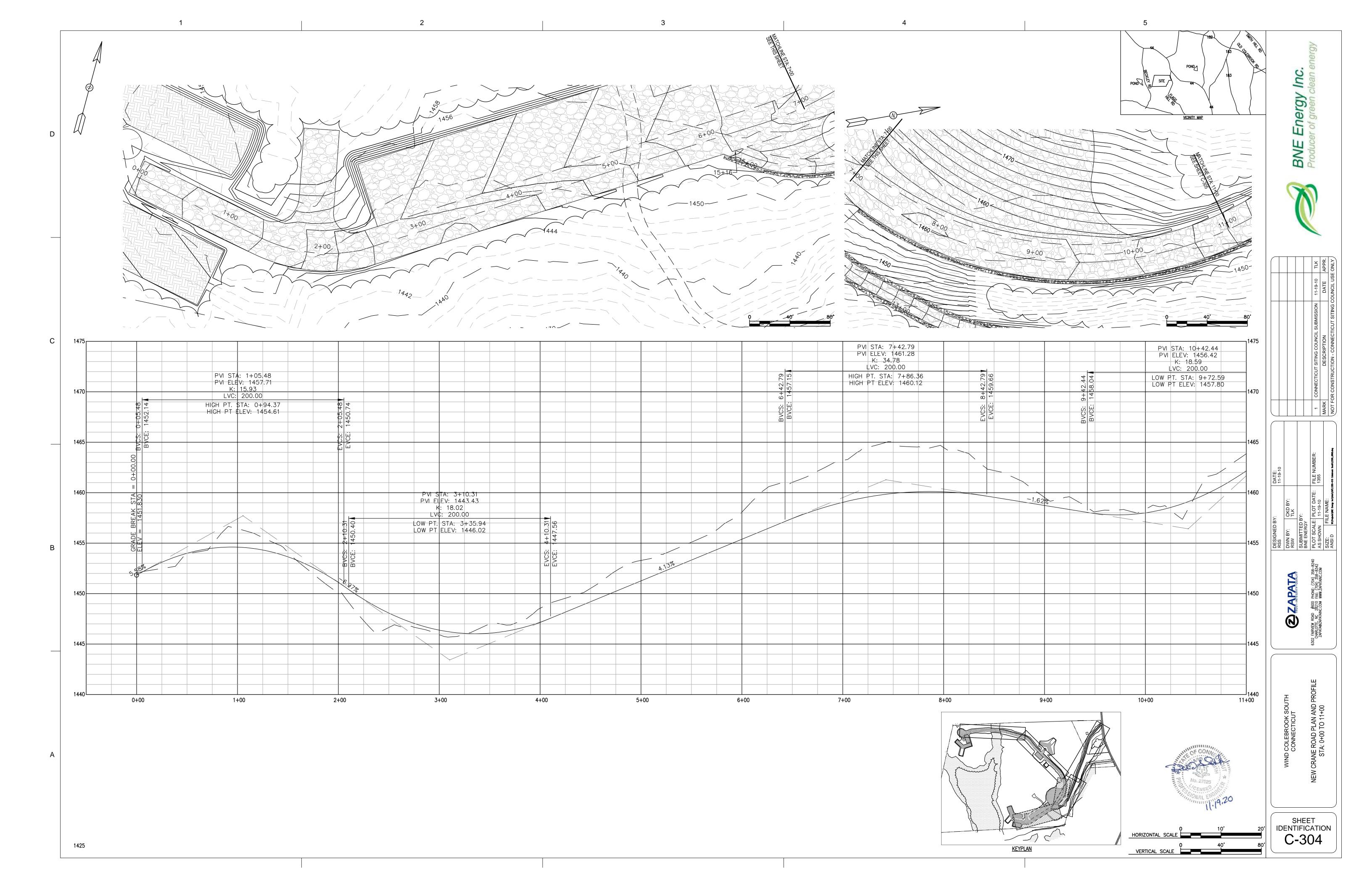


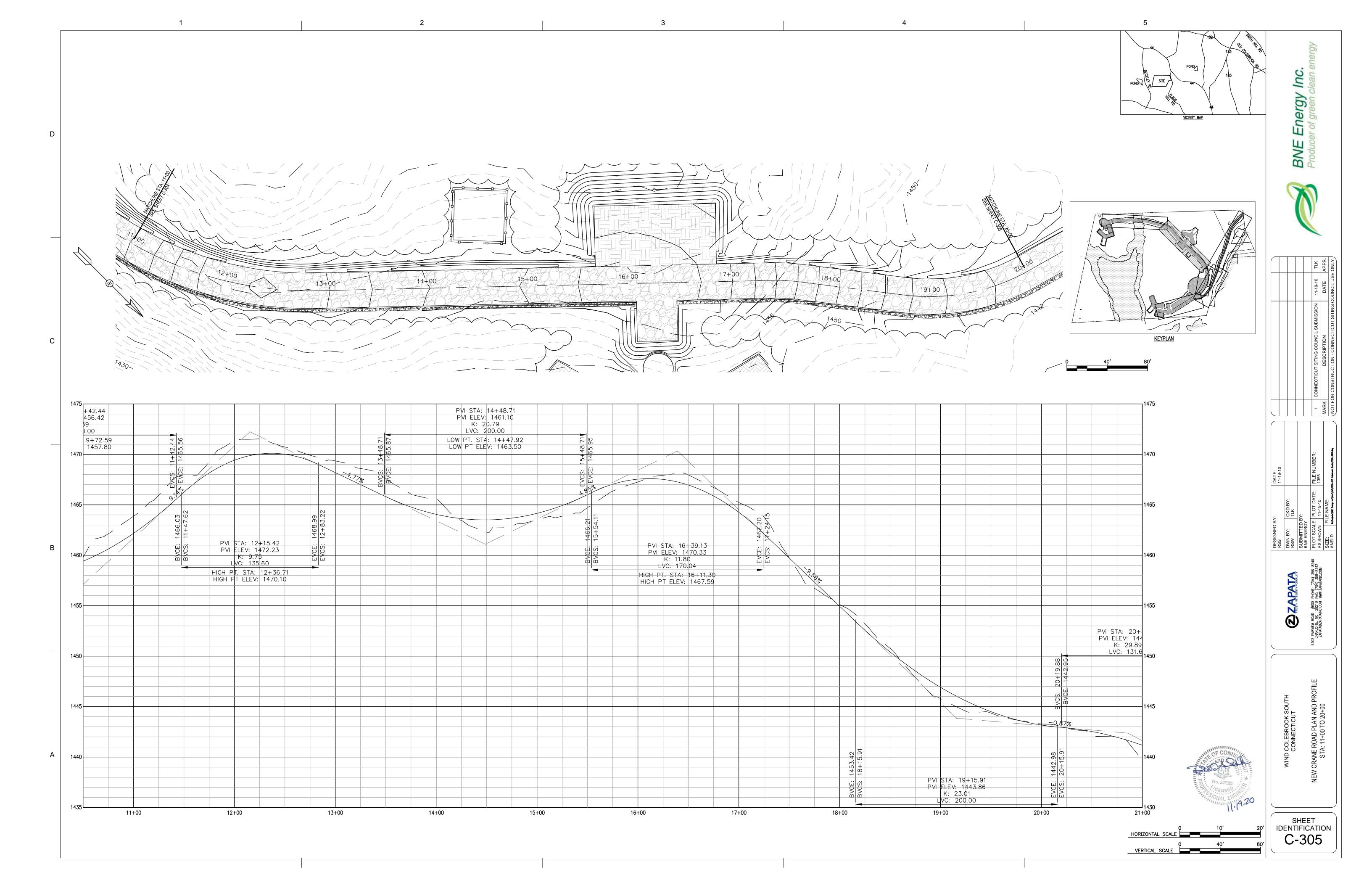


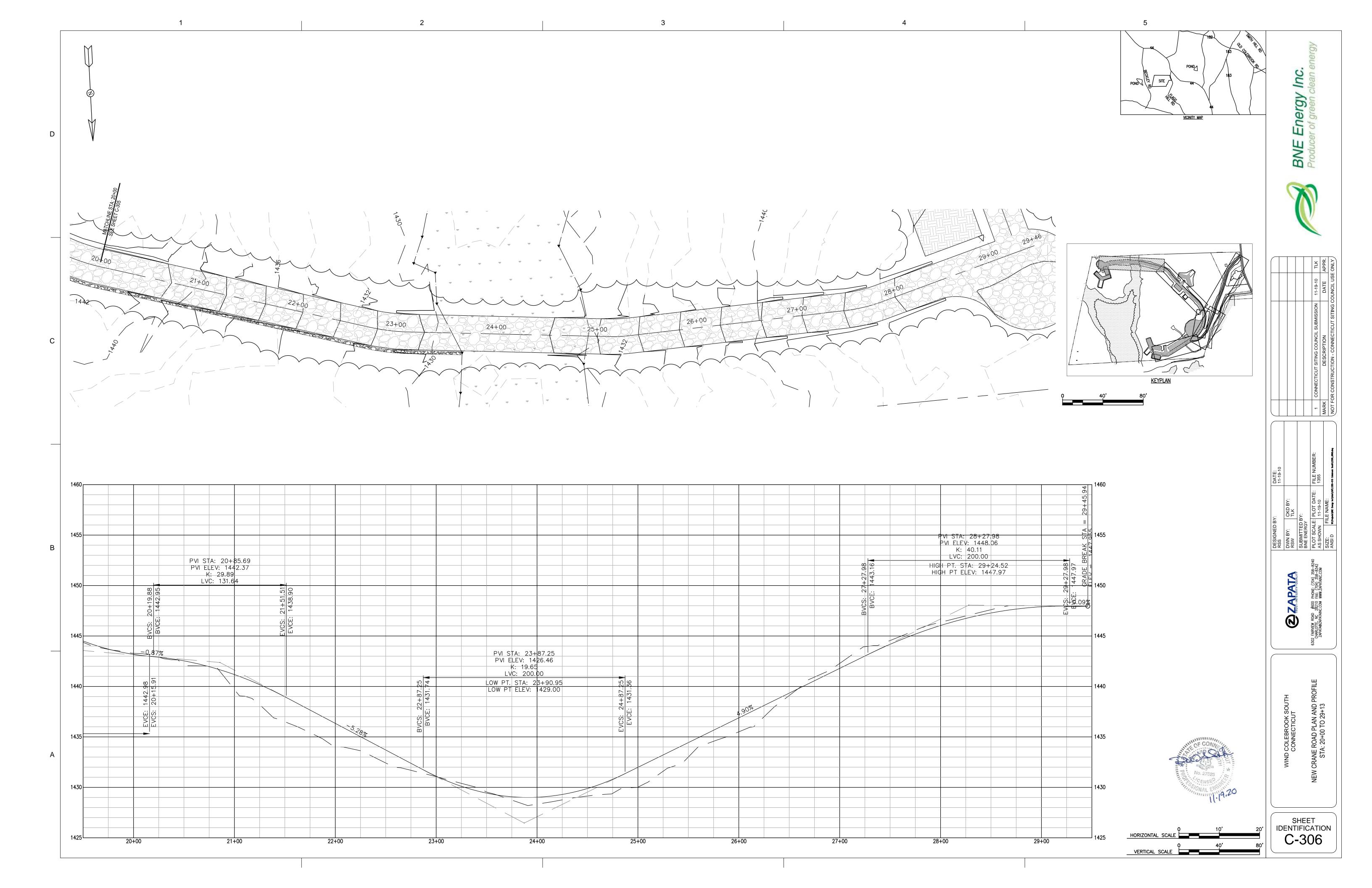


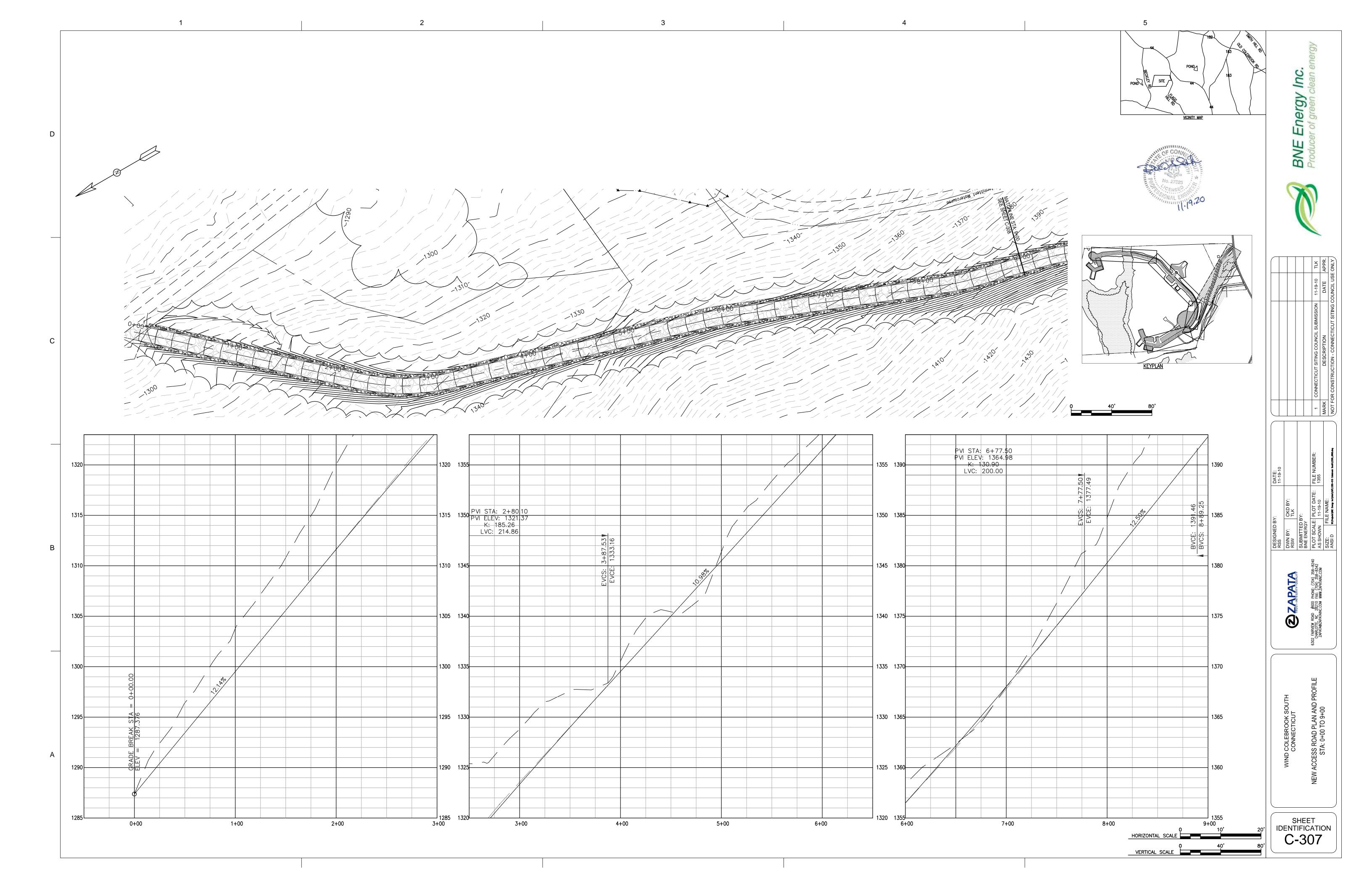


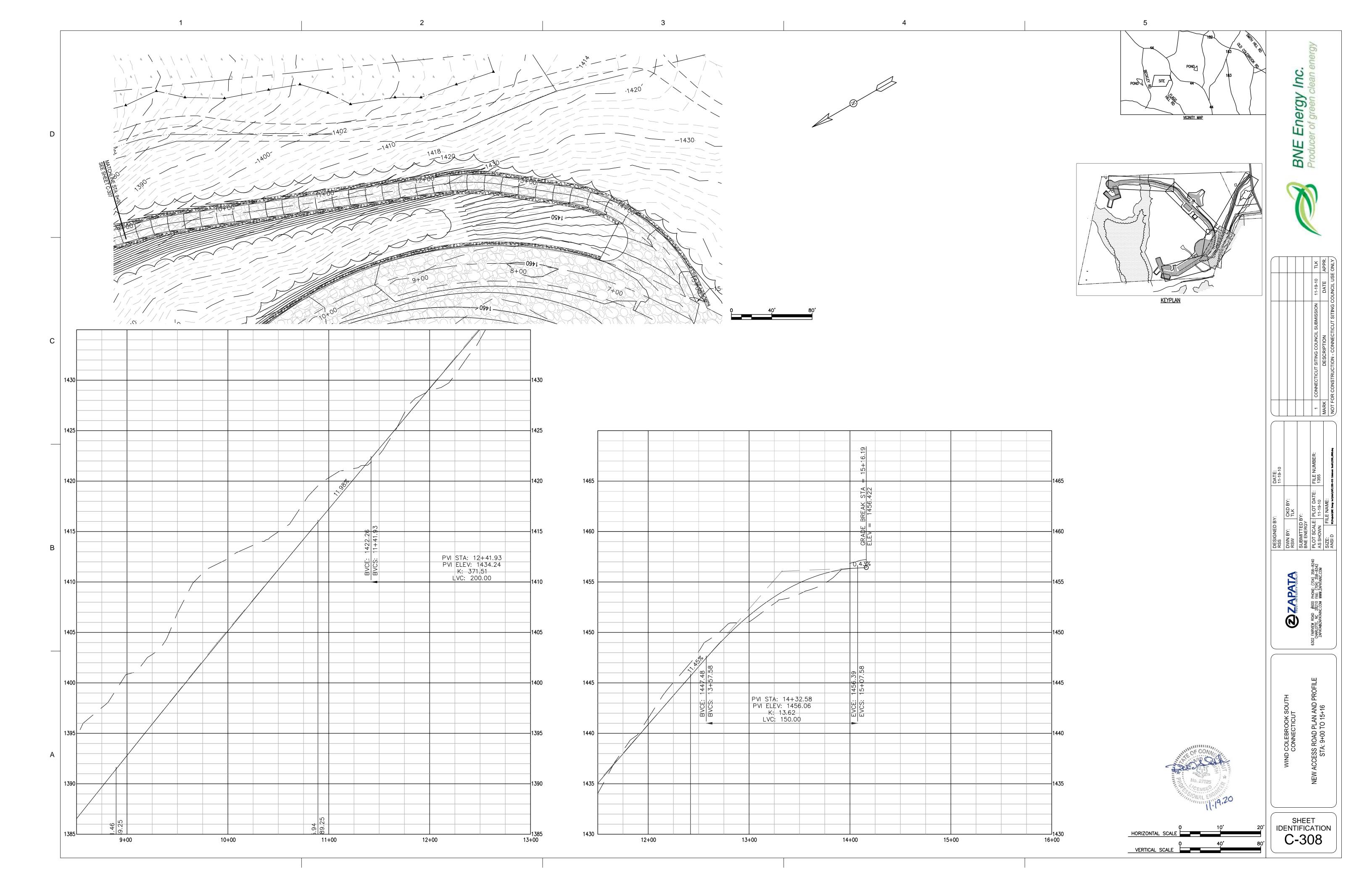


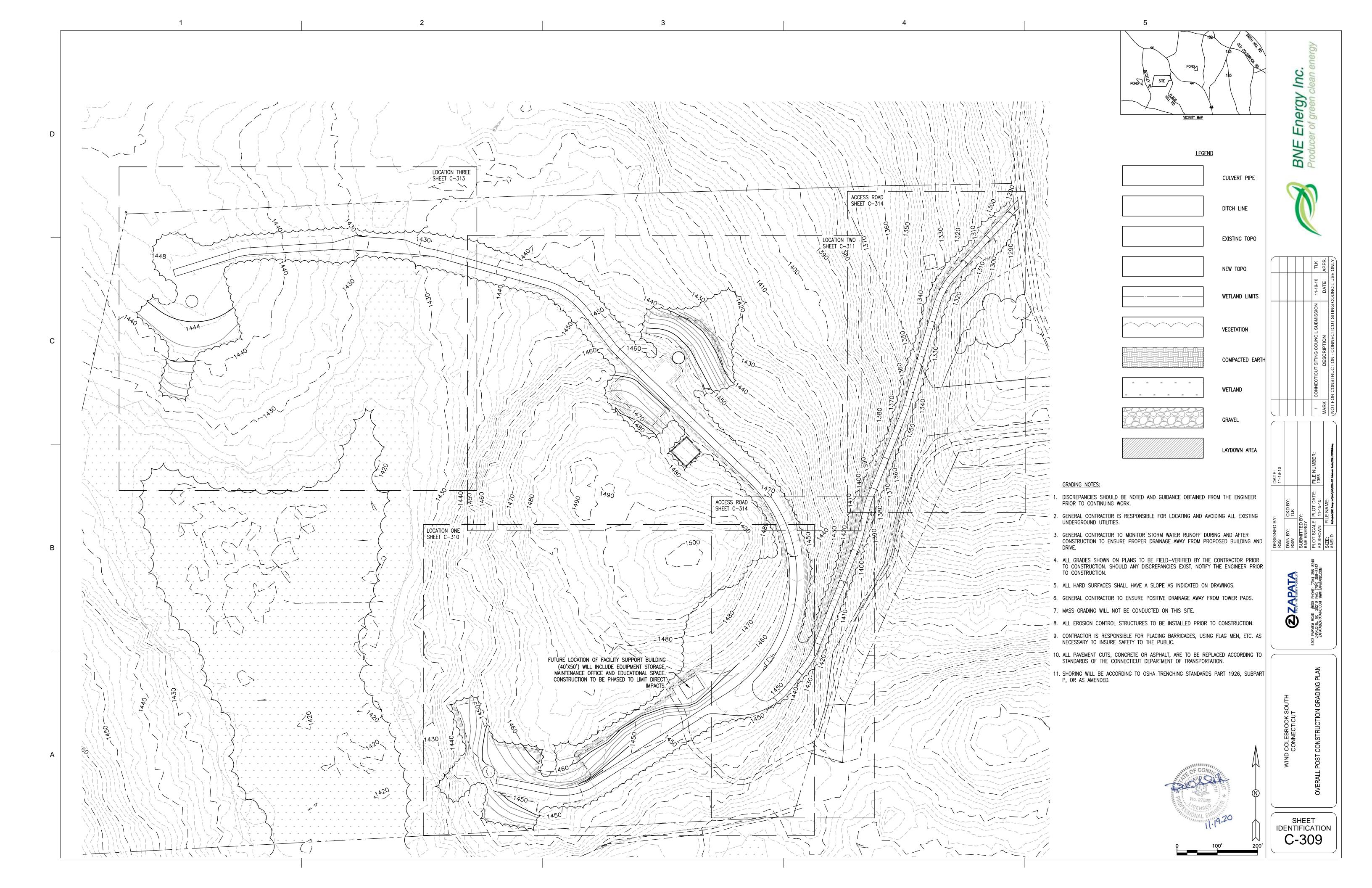


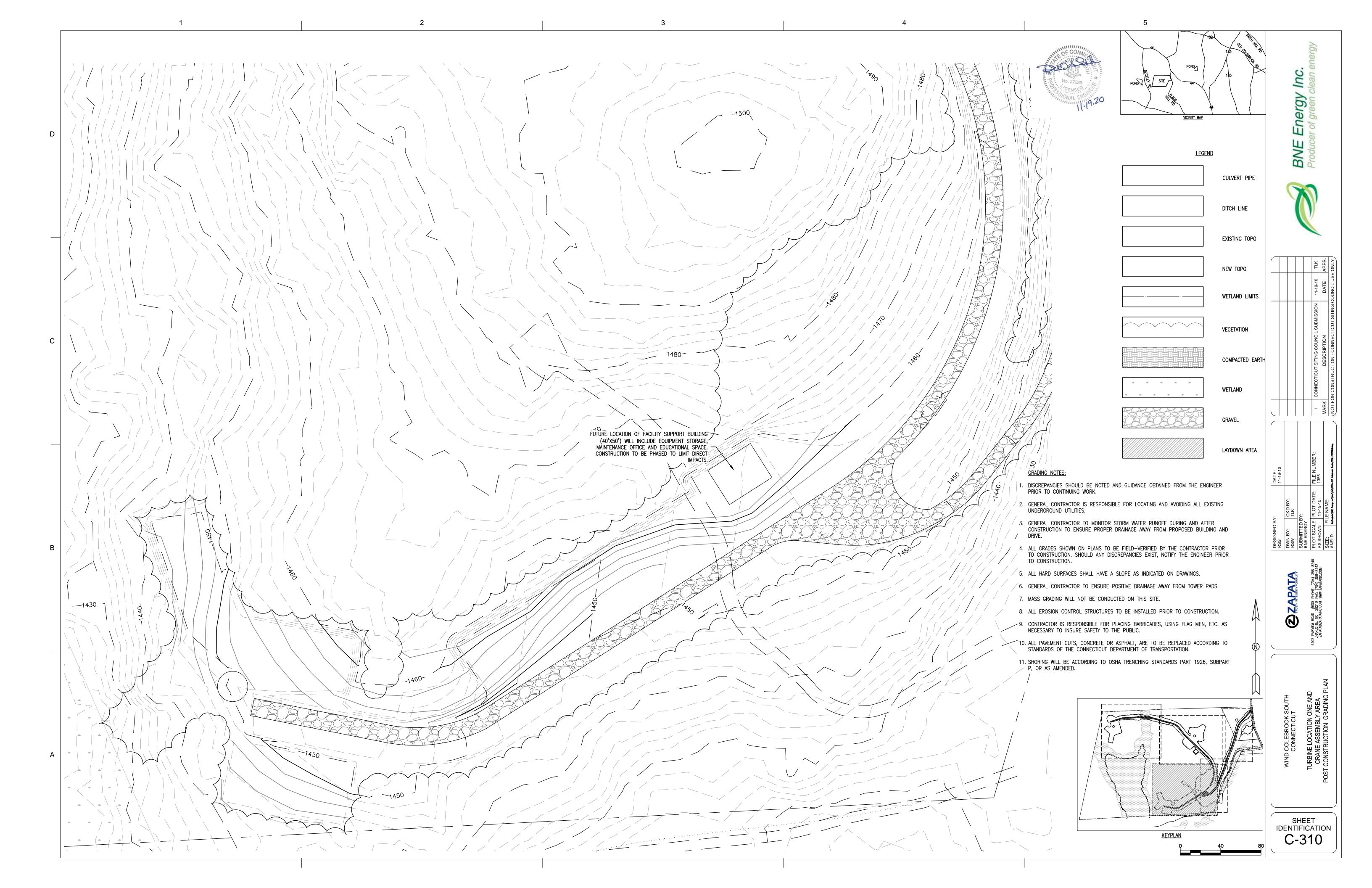


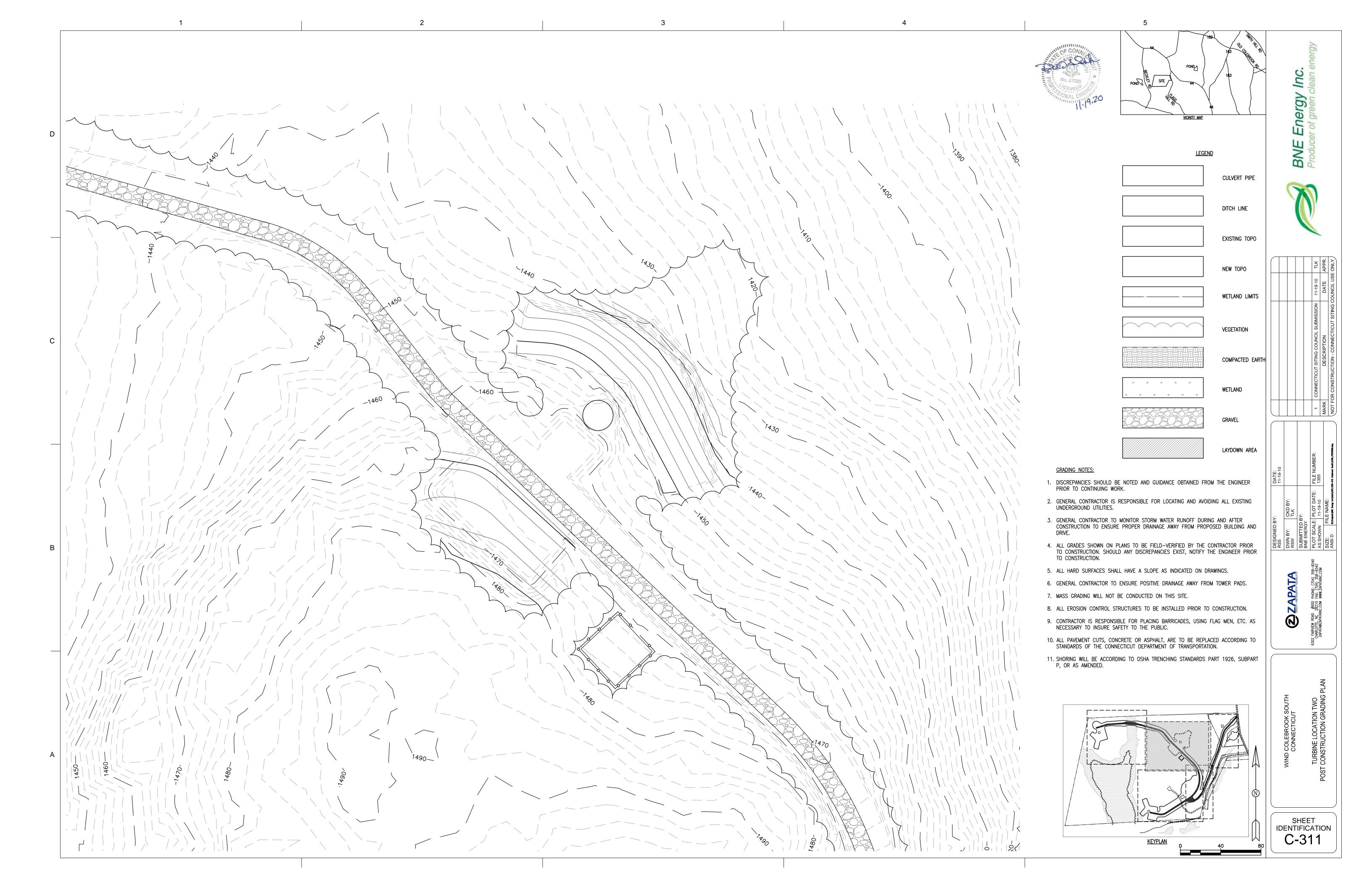


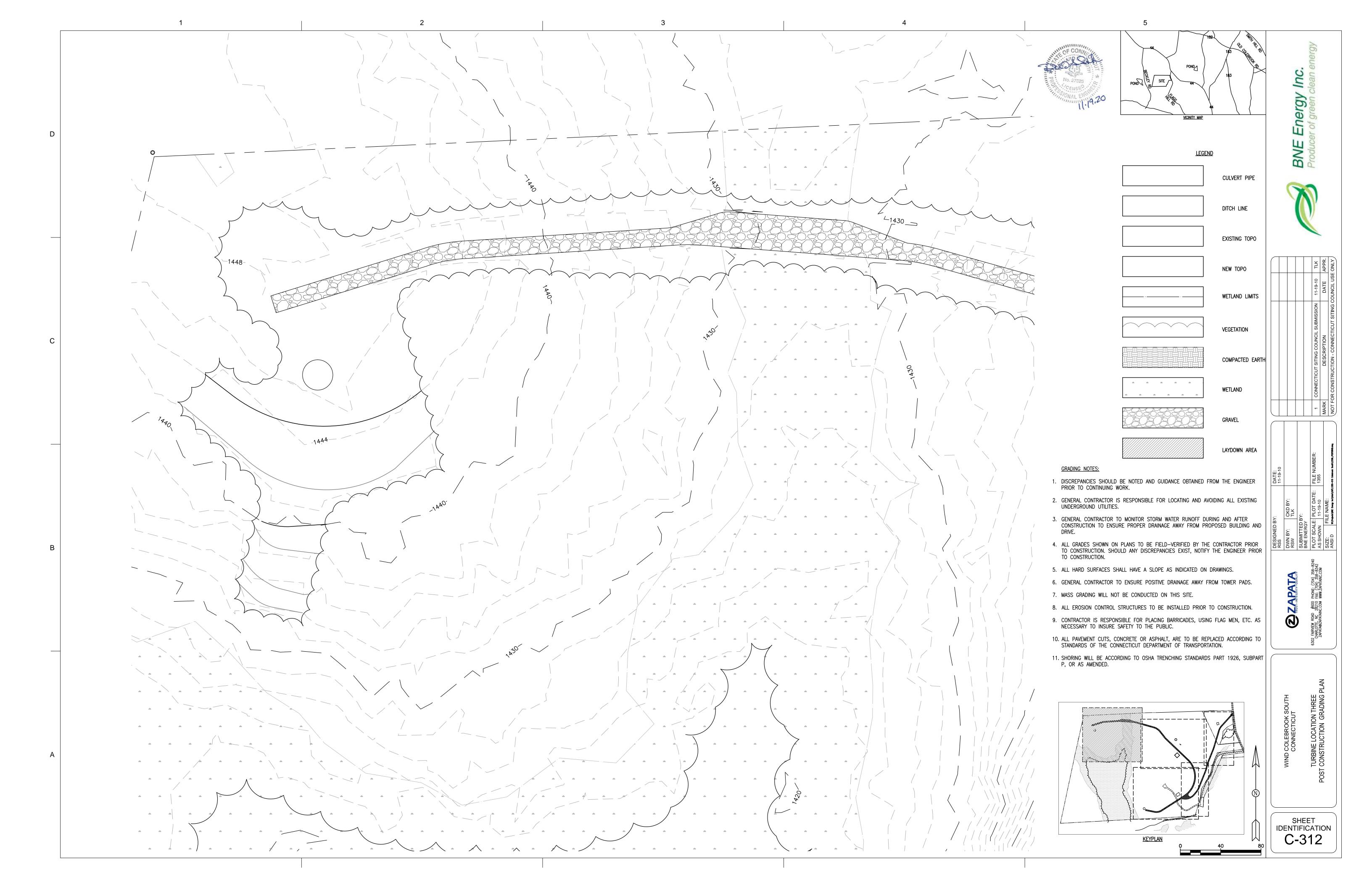


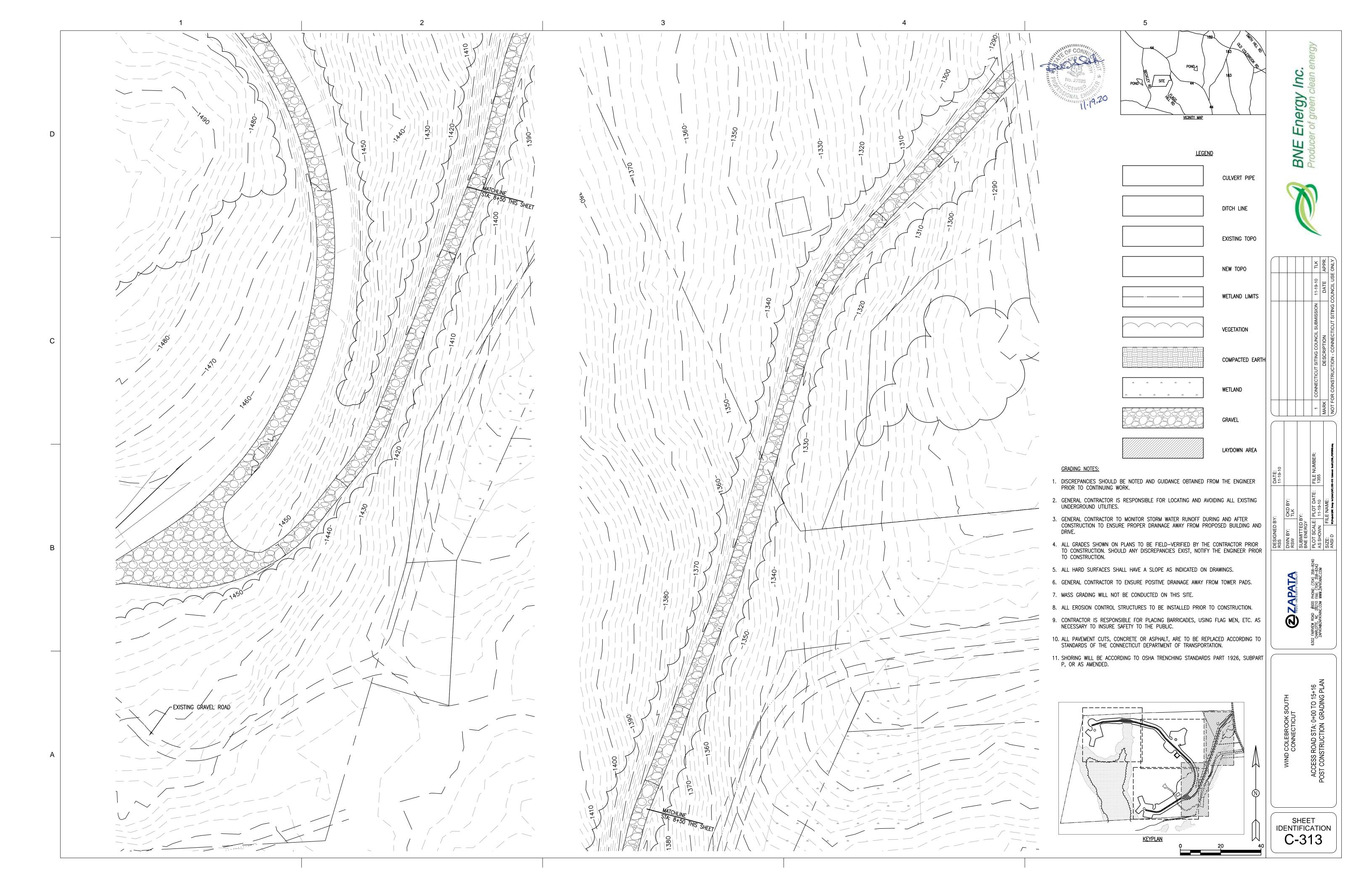


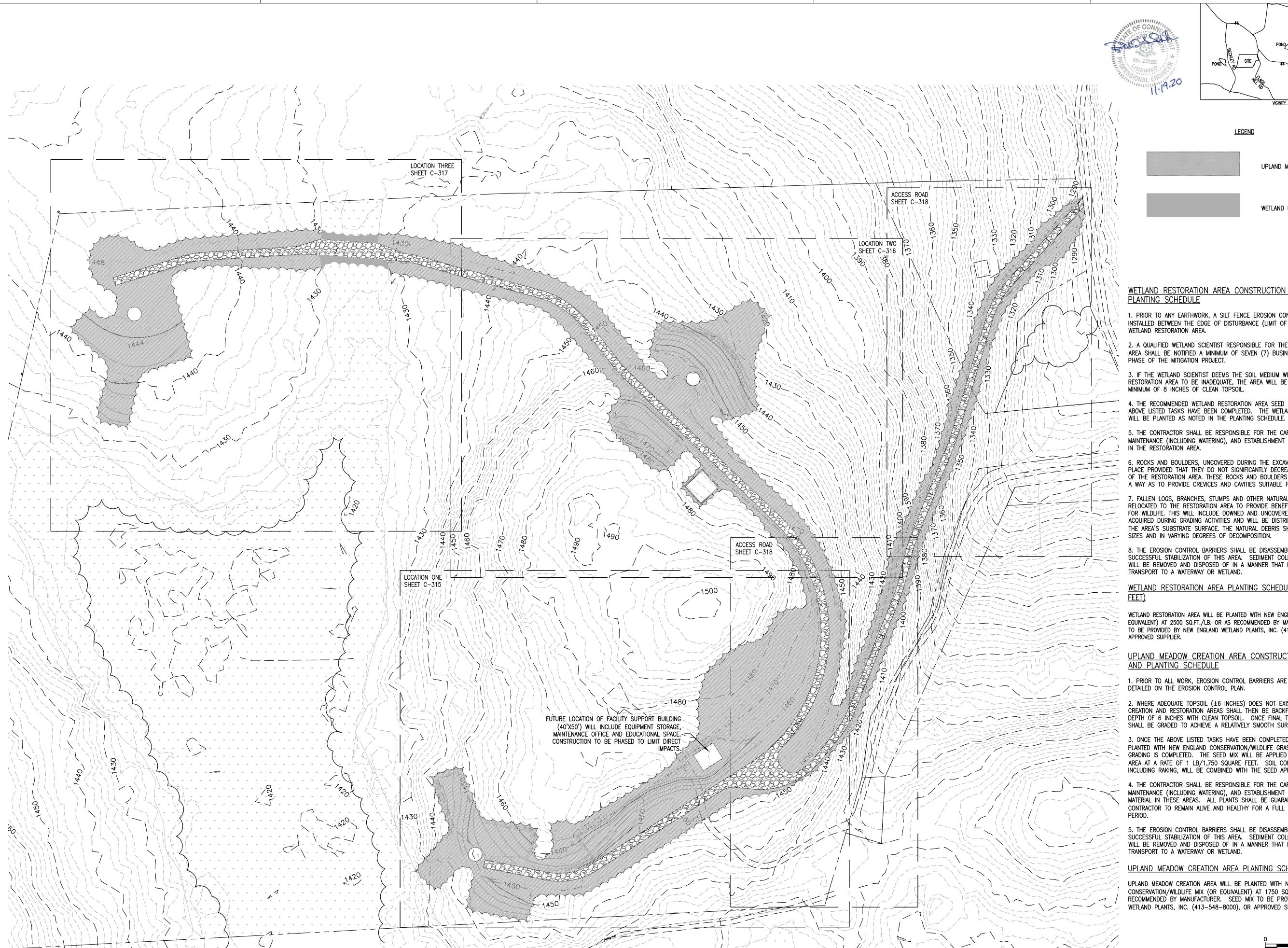












UPLAND MEADOW CREATION AREA

WETLAND RESTORATION AREA

WETLAND RESTORATION AREA CONSTRUCTION SEQUENCE AND

1. PRIOR TO ANY EARTHWORK, A SILT FENCE EROSION CONTROL BARRIER WILL BE INSTALLED BETWEEN THE EDGE OF DISTURBANCE (LIMIT OF CLEARING) AND THE

2. A QUALIFIED WETLAND SCIENTIST RESPONSIBLE FOR THE WETLAND RESTORATION AREA SHALL BE NOTIFIED A MINIMUM OF SEVEN (7) BUSINESS DAYS PRIOR TO ANY

3. IF THE WETLAND SCIENTIST DEEMS THE SOIL MEDIUM WITHIN THE WETLAND RESTORATION AREA TO BE INADEQUATE, THE AREA WILL BE BACKFILLED WITH A MINIMUM OF 8 INCHES OF CLEAN TOPSOIL.

4. THE RECOMMENDED WETLAND RESTORATION AREA SEED MIX APPLIED ONCE THE ABOVE LISTED TASKS HAVE BEEN COMPLETED. THE WETLAND RESTORATION AREA

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CAREFUL INSTALLATION, MAINTENANCE (INCLUDING WATERING), AND ESTABLISHMENT OF THE PLANT MATERIAL

6. ROCKS AND BOULDERS, UNCOVERED DURING THE EXCAVATION, MAY BE LEFT IN PLACE PROVIDED THAT THEY DO NOT SIGNIFICANTLY DECREASE THE PLANTABLE AREA OF THE RESTORATION AREA. THESE ROCKS AND BOULDERS WILL BE PLACED IN SUCH A WAY AS TO PROVIDE CREVICES AND CAVITIES SUITABLE FOR USE BY WILDLIFE.

RELOCATED TO THE RESTORATION AREA TO PROVIDE BENEFICIAL HABITAT FEATURES FOR WILDLIFE, THIS WILL INCLUDE DOWNED AND UNCOVERED MATERIAL THAT IS ACQUIRED DURING GRADING ACTIVITIES AND WILL BE DISTRIBUTED TO COVER 2% OF THE AREA'S SUBSTRATE SURFACE. THE NATURAL DEBRIS SHOULD BE OF VARYING SIZES AND IN VARYING DEGREES OF DECOMPOSITION.

8. THE EROSION CONTROL BARRIERS SHALL BE DISASSEMBLED PROMPTLY FOLLOWING SUCCESSFUL STABILIZATION OF THIS AREA. SEDIMENT COLLECTED BY THESE DEVICES WILL BE REMOVED AND DISPOSED OF IN A MANNER THAT PREVENTS EROSION AND TRANSPORT TO A WATERWAY OR WETLAND.

WETLAND RESTORATION AREA PLANTING SCHEDULE (±1000 SQUARE

WETLAND RESTORATION AREA WILL BE PLANTED WITH NEW ENGLAND WETMIX (OR EQUIVALENT) AT 2500 SQ.FT./LB. OR AS RECOMMENDED BY MANUFACTURER. SEED MIX TO BE PROVIDED BY NEW ENGLAND WETLAND PLANTS, INC. (413-548-8000), OR

UPLAND MEADOW CREATION AREA CONSTRUCTION SEQUENCE

1. PRIOR TO ALL WORK, EROSION CONTROL BARRIERS ARE TO BE INSTALLED AS DETAILED ON THE EROSION CONTROL PLAN.

2. WHERE ADEQUATE TOPSOIL (±6 INCHES) DOES NOT EXIST, THE UPLAND MEADOW CREATION AND RESTORATION AREAS SHALL THEN BE BACKFILLED TO A MINIMUM DEPTH OF 6 INCHES WITH CLEAN TOPSOIL. ONCE FINAL TOPSOIL IS IN PLACE, IT SHALL BE GRADED TO ACHIEVE A RELATIVELY SMOOTH SURFACE.

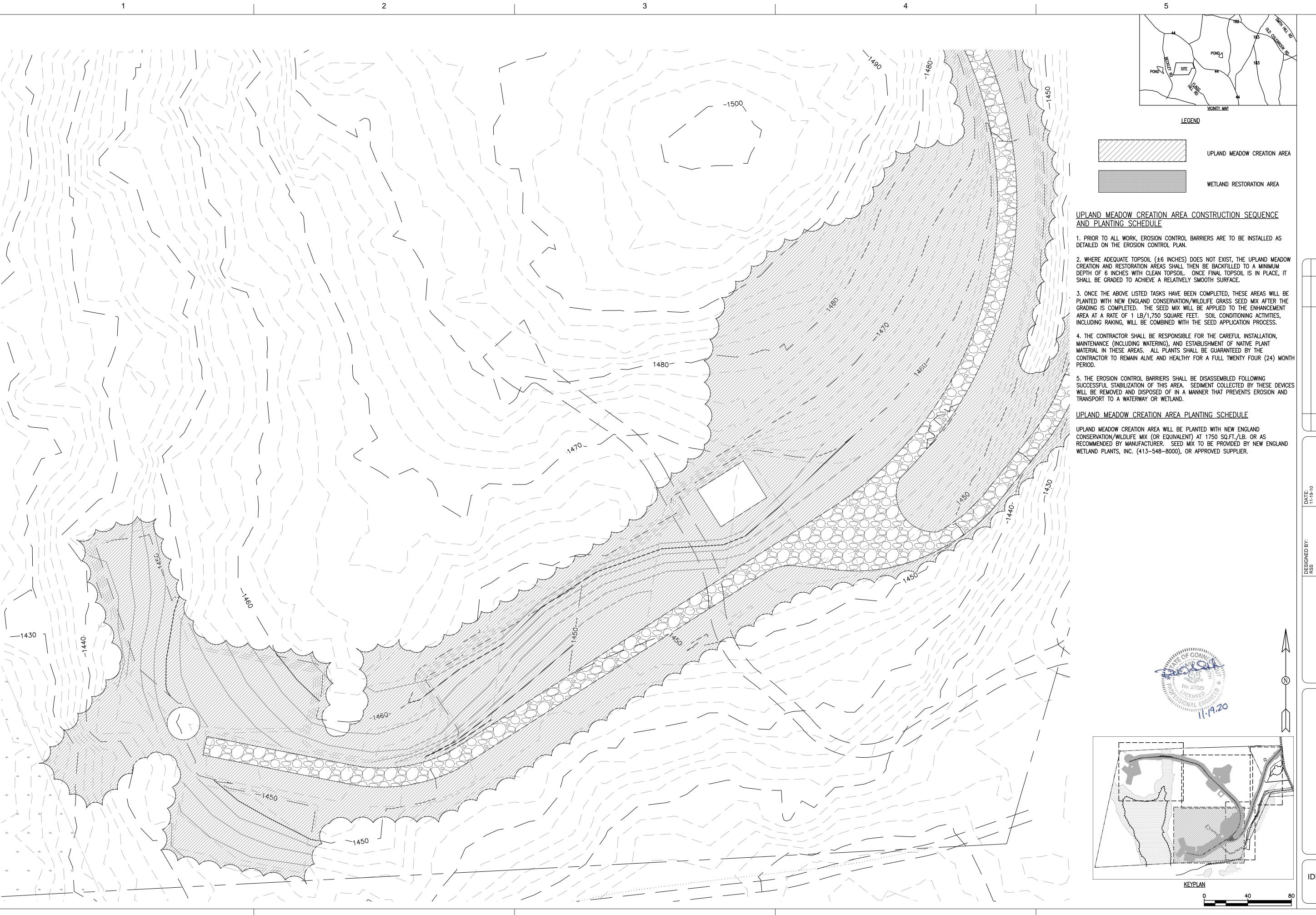
3. ONCE THE ABOVE LISTED TASKS HAVE BEEN COMPLETED, THESE AREAS WILL BE PLANTED WITH NEW ENGLAND CONSERVATION/WILDLIFE GRASS SEED MIX AFTER THE GRADING IS COMPLETED. THE SEED MIX WILL BE APPLIED TO THE ENHANCEMENT AREA AT A RATE OF 1 LB/1,750 SQUARE FEET. SOIL CONDITIONING ACTIVITIES, INCLUDING RAKING, WILL BE COMBINED WITH THE SEED APPLICATION PROCESS.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CAREFUL INSTALLATION, MAINTENANCE (INCLUDING WATERING), AND ESTABLISHMENT OF NATIVE PLANT MATERIAL IN THESE AREAS. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR TO REMAIN ALIVE AND HEALTHY FOR A FULL TWENTY FOUR (24) MONTH

5. THE EROSION CONTROL BARRIERS SHALL BE DISASSEMBLED FOLLOWING SUCCESSFUL STABILIZATION OF THIS AREA. SEDIMENT COLLECTED BY THESE DEVICES WILL BE REMOVED AND DISPOSED OF IN A MANNER THAT PREVENTS EROSION AND TRANSPORT TO A WATERWAY OR WETLAND.

UPLAND MEADOW CREATION AREA PLANTING SCHEDULE

UPLAND MEADOW CREATION AREA WILL BE PLANTED WITH NEW ENGLAND CONSERVATION/WILDLIFE MIX (OR EQUIVALENT) AT 1750 SQ.FT./LB. OR AS RECOMMENDED BY MANUFACTURER. SEED MIX TO BE PROVIDED BY NEW ENGLAND WETLAND PLANTS, INC. (413-548-8000), OR APPROVED SUPPLIER.



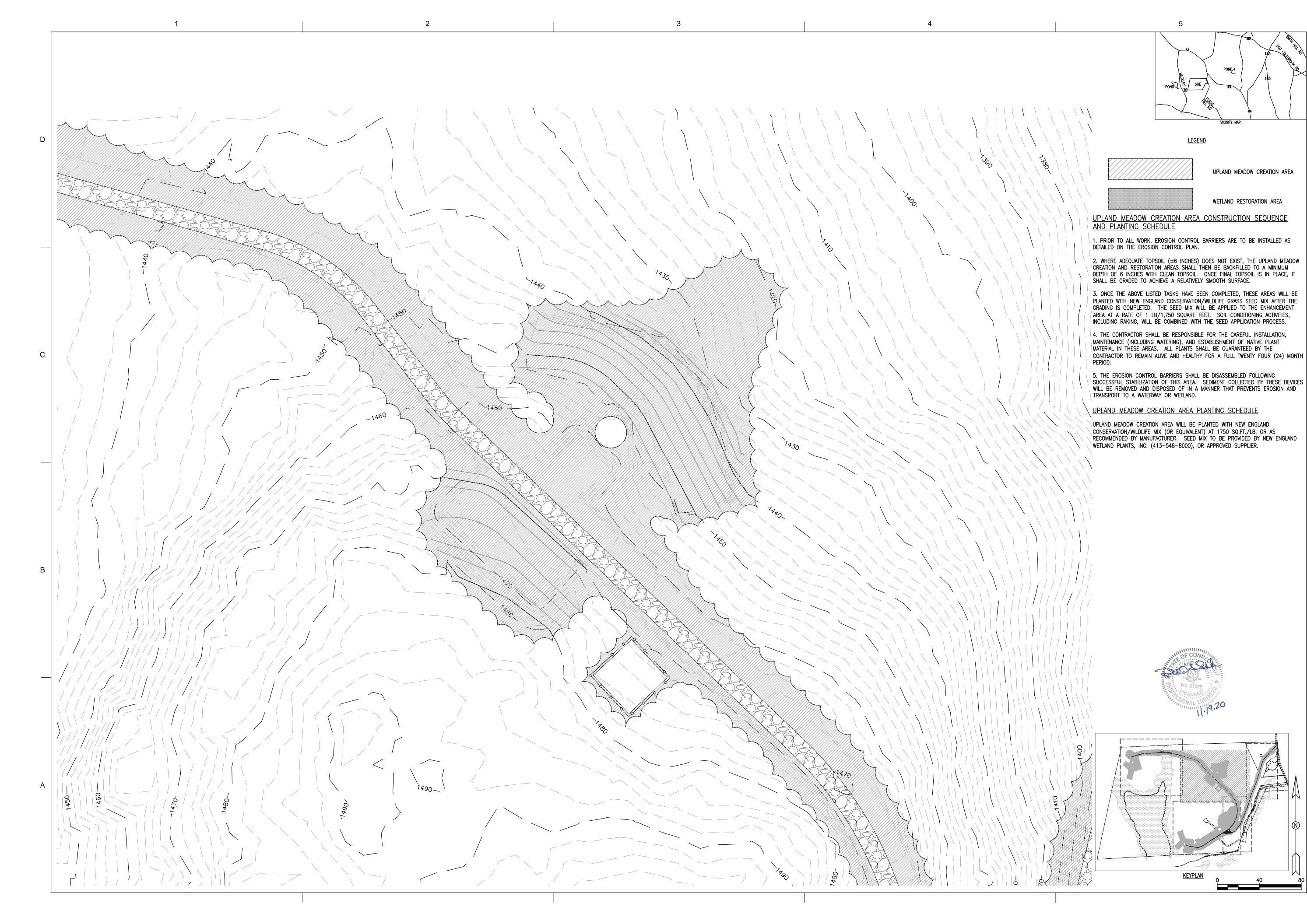
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2. FAIRVIEW ROAD #600 PHONE: (704) 358-8240

WIND COLEBROOK SOUTH
CONNECTICUT
TURBINE LOCATION ONE AND
CRANE ASSEMBLY AREA
MEADOW (CREATION AND RESTORATION)



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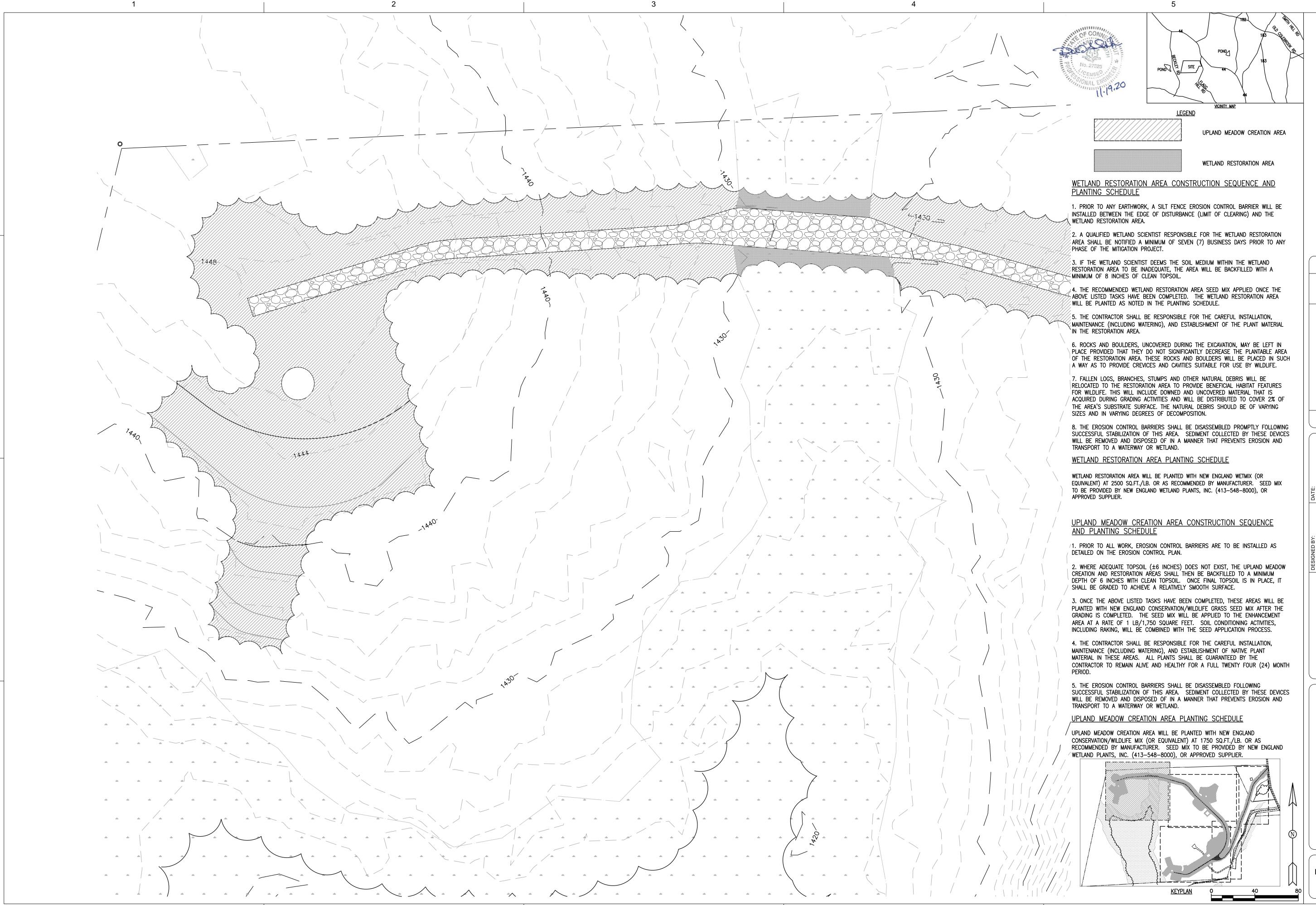
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ARLOTTE, NC., 28210 FAX: (704) 358-8342

WIND COLEBROOK SOUTH
CONNECTICUT
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AND WETLAND RESTORATION PLAN



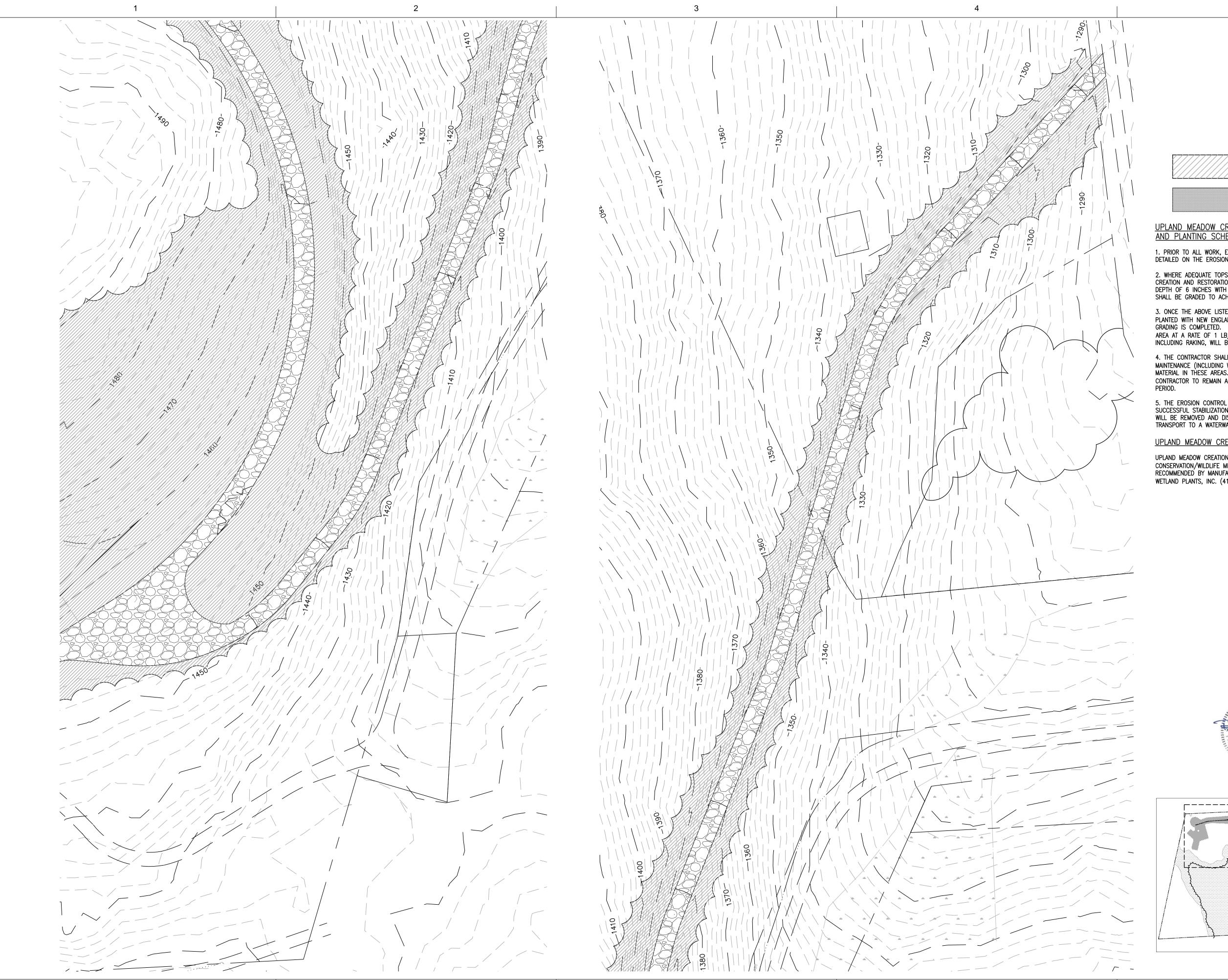
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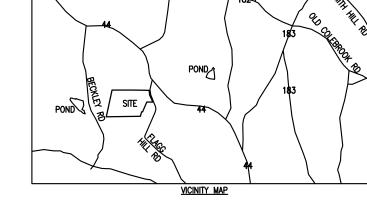


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APATA@ZAPATAINC.COM WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
CONNECTICUT
TURBINE LOCATION THREE
MEADOW (CREATION AND RESTORATION)







UPLAND MEADOW CREATION AREA



WETLAND RESTORATION AREA

UPLAND MEADOW CREATION AREA CONSTRUCTION SEQUENCE AND PLANTING SCHEDULE

1. PRIOR TO ALL WORK, EROSION CONTROL BARRIERS ARE TO BE INSTALLED AS DETAILED ON THE EROSION CONTROL PLAN.

2. WHERE ADEQUATE TOPSOIL (±6 INCHES) DOES NOT EXIST, THE UPLAND MEADOW CREATION AND RESTORATION AREAS SHALL THEN BE BACKFILLED TO A MINIMUM DEPTH OF 6 INCHES WITH CLEAN TOPSOIL. ONCE FINAL TOPSOIL IS IN PLACE, IT SHALL BE GRADED TO ACHIEVE A RELATIVELY SMOOTH SURFACE.

3. ONCE THE ABOVE LISTED TASKS HAVE BEEN COMPLETED, THESE AREAS WILL BE PLANTED WITH NEW ENGLAND CONSERVATION/WILDLIFE GRASS SEED MIX AFTER THE GRADING IS COMPLETED. THE SEED MIX WILL BE APPLIED TO THE ENHANCEMENT AREA AT A RATE OF 1 LB/1,750 SQUARE FEET. SOIL CONDITIONING ACTIVITIES, INCLUDING RAKING, WILL BE COMBINED WITH THE SEED APPLICATION PROCESS.

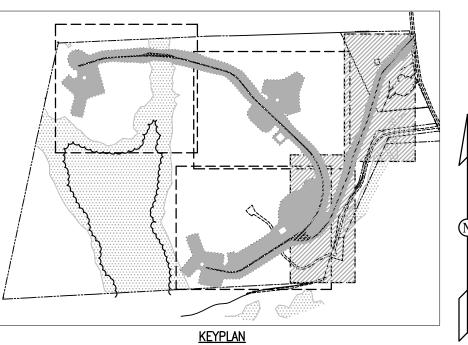
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CAREFUL INSTALLATION, MAINTENANCE (INCLUDING WATERING), AND ESTABLISHMENT OF NATIVE PLANT MATERIAL IN THESE AREAS. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR TO REMAIN ALIVE AND HEALTHY FOR A FULL TWENTY FOUR (24) MONTH

5. THE EROSION CONTROL BARRIERS SHALL BE DISASSEMBLED FOLLOWING SUCCESSFUL STABILIZATION OF THIS AREA. SEDIMENT COLLECTED BY THESE DEVICES WILL BE REMOVED AND DISPOSED OF IN A MANNER THAT PREVENTS EROSION AND TRANSPORT TO A WATERWAY OR WETLAND.

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SHEET **IDENTIFICATION** C-500

PROJECT DESCRIPTION THIS PROJECT WILL CONSIST OF THE CONSTRUCTION OF THREE WIND TURBINES, ACCESS ROAD AND OTHER RELATED SUPPORT STRUCTURES.

<u>SITE DESCRIPTION</u>

THE PROPERTY IS LOCATED AT 29 FLAGG HILL ROAD AND CONSISTS OF APPROXIMATELY 79.74 ACRES AND IS UNDEVELOPED WITH THE EXCEPTION OF THE METEOROLOGICAL TOWER, WHICH IS APPROXIMATELY 197 FEET IN HEIGHT. THE PROPERTY IS LOCATED ALONG THE NORFOLK TOWN LINE AND APPROXIMATELY 600 FEET FROM THE WINSTED/ WINCHESTER RESIDENTIAL DEVELOPMENT. THE PROPERTY IS LOCATED IN THE R-2 RESIDENTIAL ZONE. THE COLEBROOK ZONING REGULATIONS DO NOT ADDRESS WIND TURBINE INSTALLATIONS. THE PROPERTY IS ABUTTED BY THE UNDEVELOPED LAND OWNED BY THE NATURE CONSERVANCY TO THE WEST, LAND OWNED BY THE GUN CLUB TO THE NORTH AND RESIDENTIAL PROPERTIES TO THE EAST AND SOUTH. THE SITE IS CURRENTLY ACCESSED VIA FLAGG HILL ROAD. THIS ACCESS POINT WILL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PORCESS.

PLANNED SEDIMENTATION AND CONTROL PRACTICES SEDIMENT FENCE (GSF): WILL RETAIN SEDIMENT FROM SMALL DISTURBED AREAS. SEDIMENT FENCE WILL BE PLACED ALONG SLOPES AS SHOWN ON CONSTRUCTION DETAILS. THE CONTRACTOR WILL USE HIS BEST JUDGMENT TO INSTALL ADDITIONAL SEDIMENT FENCE AS NECESSARY TO PREVENT LOSS OF SEDIMENT. REFER TO SECTION 5-11 OF 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT

MAINTENANCE: INSPECT THE SILT FENCE AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. WHEN USED FOR DEWATERING OPERATIONS, INSPECT FREQUENTLY BEFORE, DURING AND AFTER PUMPING OPERATIONS. REMOVE THE SEDIMENT DEPOSITS, OR IF ROOM ALLOWS, INSTALL A SECOND SILT FENCE UP SLOPE FROM THE EXISTING FENCE WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE EXISTING FENCE. REPLACE OR REPAIR WITHIN 24 HOURS OF AN OBSERVED FAILURE. REFER TO CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL FIGURE GF-5 FOR TROUBLESHOOTING FAILURES. MAINTAIN SILT FENCE UNTIL THE CONTRIBUTING AREA IS STABILIZED.

HAY BALE BARRIER (HB): WILL RETAIN SEDIMENT FROM SMALL DISTURBED AREAS. HAY BALES WILL BE PLACED ALONG SLOPES AS SHOWN ON CONSTRUCTION DETAILS. THE CONTRACTOR WILL USE HIS BEST JUDGMENT TO INSTALL ADDITIONAL HAY BALES AS NECESSARY TO PREVENT LOSS OF SEDIMENT. REFER TO SECTION 5-11 OF 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

MAINTENANCE: INSPECT THE HAY BALE BARRIER AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. WHEN USED FOR DEWATERING OPERATIONS, INSPECT FREQUENTLY BEFORE, DURING AND AFTER PUMPING OPERATIONS. REMOVE THE SEDIMENT DEPOSITS, OR IF ROOM ALLOWS, INSTALL A SECONDARY BARRIER UP SLOPE FROM THE EXISTING BARRIER WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. REPLACE OR REPAIR WITHIN 24 HOURS OF AN OBSERVED FAILURE. REFER TO CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL FIGURE HB-5 FOR TROUBLESHOOTING FAILURES. MAINTAIN HAY BALE BARRIER UNTIL THE CONTRIBUTING AREA IS STABILIZED.

STONE CHECK DAM (SCD): WILL BE USED TO REDUCE VELOCITY OF CONCENTRATED LOWS, THUS REDUCING EROSION OF THE DRAINAGE WAY.

<u>MAINTENANCE:</u> INSPECT THE STONE CHECK DAM AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. REMOVE THE SEDIMENT DEPOSITS WHEN DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE CHECK DAM REPLACE OR REPAIR WITHIN 24 HOURS OF AN OBSERVED FAILURE. MAINTAIN UNTIL THE CONTRIBUTING AREA IS STABILIZED.

TEMPORARY PIPE SLOPE DRAIN (TSD): WILL BE USED TO CARRY WATER OVER EXCESSIVE CHANGES IN GRADE. TSD'S WILL CONVEY CONCENTRATED STORM WATER RUNOFF FLOWS WITHOUT CAUSING EROSION PROBLEMS EITHER ON OR AT THE TOE OF THE SLOPE.

MAINTENANCE: INSPECT THE TEMPORARY PIPE SLOPE DRAIN AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. REPAIR DAMAGE AS NECESSARY. AVOID THE PLACEMENT OF ANY MATERIAL ON THE TOP OF THE PIPE AND PREVENT VEHICULAR TRAFFIC FROM CROSSING THE SLOPE DRAIN.

TEMPORARY DIVERSION (TD): WILL BE USED TO DIVERT SEDIMENT LADEN RUNOFF FROM A DISTURBED AREA TO A SEDIMENT TRAPPING FACILITY.

MAINTENANCE: WHEN THE TEMPORARY DIVERSION IS LOCATED WITHIN CLOSE PROXIMITY TO ON GOING CONSTRUCTION ACTIVITIES, INSPECT THE DIVERSION AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGE CAUSED BY CONSTRUCTION EQUIPMENT. OTHERWISE, INSPECT THE TEMPORARY DIVERSION AND ASSOCIATED MEASURES AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. REPAIR WITHIN 24 HOURS OF AN OBSERVED FAILURE.

TEMPORARY FILL BERM (TFB): WILL BE USED TO DIVERT RUNOFF FROM UNPROTECTED FILL SLOPES DURING CONSTRUCTION TO A STABILIZED OUTLET OR SEDIMENT TRAPPING FACILITY.

MAINTENANCE: INSPECT THE TEMPORARY FILL BERM AND ASSOCIATED CONTROLS AT THE END OF EACH WORK DAY TO ENSURE THE CRITERIA FOR INSTALLING THE MEASURES HAVE BEEN MET. DETERMINE IF REPAIR OR MODIFICATION IS NEEDED. THIS MEASURE IS TEMPORARY AND UNDER MOST SITUATIONS WILL BE COVERED THE NEXT WORK DAY. MAINTENANCE REQUIREMENTS SHOULD BE MINIMAL. THE CONTRACTOR SHOULD AVOID PLACING OTHER MATERIAL OVER THE BERM AND CONSTRUCTION

TRAFFIC SHOULD NOT BE ALLOWED TO CROSS.

TEMPORARY SEDIMENT TRAP (TST): WILL BE USED TO DETAIN SEDIMENT LADEN RUNOFF FROM SMALL DISTURBED AREAS LONG ENOUGH TO ALLOW THE MAJORITY OF SEDIMENT TO SETTLE OUT.

MAINTENANCE: INSPECT THE TEMPORARY SEDIMENT TRAP AND ASSOCIATED CONTROLS AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. CHECK THE OUTLET TO VERIFY THAT IT IS STRUCTURALLY SOUND AND HAS NOT BEEN DAMAGED BY EROSION OR CONSTRUCTION EQUIPMENT. THE HEIGHT OF THE STONE OUTLET SHOULD BE MAINTAINED AT LEAST 1 FOOT BELOW THE CREST OF THE EMBANKMENT. WHEN SEDIMENT HAS ACCUMULATED MORE THAN ONE QUARTER OF THE MINIMUM WET STORAGE VOLUME, DEWATER AND REMOVE SEDIMENT AS NECESSARY TO RESTORE THE TRAP TO ITS ORIGINAL DIMENSIONS.

CONSTRUCTION ENTRANCE (CE): WILL BE USED TO REDUCE TRACKING OF SEDIMENT OFF SITE TO PAVED AREAS.

MAINTENANCE: MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING AND WASHING OF SEDIMENT ONTO PAVED SURFACES. PROVIDE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS REQUIRED. IMMEDIATELY REMOVE ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PAVED SURFACES.

TREE PROTECTION (TP): WILL BE USED TO ENSURE THE SURVIVAL OF EXISTING DESIRABLE TREES FOR THEIR EFFECTIVENESS IN SOIL EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION.

MAINTENANCE: INSPECT TREE PROTECTION ZONES WEEKLY DURING SITE CONSTRUCTION FOR DAMAGE TO THE TREE CROWN, TRUNK AND ROOT SYSTEM. WHEN TREES HAVE BEEN DAMAGED OR THE PROTECTION ZONE HAS BEEN COMPROMISED, CONSULT AN ARBORIST LICENSED IN CT TO DETERMINE HOW DAMAGE SHOULD BE

TEMPORARY EROSION CONTROL BLANKETS (ECB): WILL BE USED TO PROVIDE TEMPORARY SURFACE PROTECTION TO DISTURBED SOILS TO ABSORB RAINDROP IMPACT AND TO REDUCE SHEET AND RILL EROSION.

MAINTENANCE: INSPECT TEMPORARY EROSION CONTROL BLANKETS AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE MAINTENANCE NEEDS. REPAIR ANY DISLODGED OR FAILED BLANKETS IMMEDIATELY.

CONSTRUCTION SEQUENCE

1. FLAG THE LIMITS OF CONSTRUCTION, ROADWAY BASE-LINE, AND TREE PROTECTION

2. CONDUCT PRECONSTRUCTION MEETING.

3. CONDUCT TREE CUTTING MEETING. 4. INSTALL THE CONSTRUCTION ENTRANCE.

DEVICES IN ACCORDANCE WITH THE E&S PLAN.

5. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS AND TREE PROTECTION

6. CUT TREES WITHIN THE DEFINED CLEARING LIMITS AND REMOVE CUT WOOD. CHIP BRUSH AND SLASH, STOCKPILE CHIPS FOR FUTURE USE OR REMOVE OFF SITE

7. CONSTRUCT SEDIMENT TRAPS.

8. EXCAVATE ALL STUMPS LOCATED IN THE STRUCTURAL AREA AND REMOVE TO A DISPOSAL SITE OR STOCKPILE AREA TO BE CHIPPED. STUMPS IN NON-STRUCTURAL AREAS MAY BE GROUND IN PLACE OR CUT FLUSH WITH THE GROUND LEVEL AND LEFT IN PLACE IN ACCORDANCE WITH THE PLANS.

9. STRIP ALL TOPSOIL WITHIN THE ROADWAY BASE-LINE AND SLOPE LIMITS. STOCKPILE ALL TOPSOIL IN AN APPROVED AREA AND SECURE WITH EROSION AND SEDIMENT CONTROLS.

10. CUT OR FILL THE PROPOSED ROADWAY TO ESTABLISH THE SUB-GRADE.

11. PLACE, GRADE AND COMPACT THE AGGREGATE IN THE ROADWAY BASE.

12. APPLY STABILIZATION MEASURES TO REMAINING DISTURBED AREAS IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLAN.

EQUIPMENT LAY-DOWN AREAS

1. FLAG THE LIMITS OF CONSTRUCTION NECESSARY TO FACILITATE THE PRECONSTRUCTION MEETING.

2. HOLD PRECONSTRUCTION MEETING.

3. FLAG REMAINDER OF THE LIMITS OF CONSTRUCTION AND TREE PROTECTION

4. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS AND TREE PROTECTION DEVICES IN ACCORDANCE WITH THE E&S PLAN.

5. CUT TREES WITHIN THE DEFINED CLEARING LIMITS AND REMOVE CUT WOOD. CHIP

BRUSH AND LASH, STOCKPILE CHIPS FOR FUTURE USE OR REMOVE OFF SITE.

6. CONSTRUCT SEDIMENT TRAPS.

7. STRIP AND STOCKPILE ALL TOPSOIL THAT IS WITHIN THE FOOTPRINT OF THE CONSTRUCTION SITE AND REFERENCE STOCKPILE MANAGEMENT FOR EROSION AND SEDIMENT CONTROLS. EITHER REMOVE TREE STUMPS TO AN APPROVED DISPOSAL SITE OR CHIP IN PLACE AS INDICATED ON THE PLANS.

10. PRIOR TO INSTALLING SURFACE WATER CONTROLS SUCH AS TEMPORARY DIVERSIONS AND STONE DIKES. INSPECT EXISTING CONDITIONS TO ENSURE DISCHARGE LOCATIONS ARE STABLE. IF NOT STABLE, REVIEW DISCHARGE CONDITIONS WITH THE DESIGN ENGINEER AND IMPLEMENT ADDITIONAL STABILIZATION MEASURES PRIOR TO

11. UPON SUBSTANTIAL COMPLETION TOWERS, COMPLETE THE BALANCE OF SITE

12. AFTER SITE IS STABILIZED REMOVE TEMPORARY EROSION AND SEDIMENT

1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND LOCAL AGENCIES AS REQUIRED PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITY. UNLESS SPECIFICALLY WAIVED BY THE AGENCY A PRECONSTRUCTION CONFERENCE IS REQUIRED.

2. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLANS AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE AGENCY INSPECTOR AT THE BEGINNING OF ANY OTHER LAND DISTURBING ACTIVITY. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE IN THE FIELD WITH APPROVAL OF ENGINEER AND/OR INSPECTOR. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREA IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR APPROVAL. THE CONTRACTOR MUST OBTAIN PRIOR AGENCY APPROVAL FOR CHANGES TO THE SEDIMENT CONTROL PLAN AND / OR SEQUENCE OF CONSTRUCTION.

3. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL

4. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATION CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS THEY ARE REMOVED. ALL SEDIMENT BASINS, TRAP EMBANKMENTS AND SLOPES. PERIMETER DIKES. SWALES. AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH APPROVED STABILIZATION MEASURES AS SOON AS POSSIBLE BUT NO LATER THAN 7 DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE MINIMIZED. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.

5. THE CONTRACTOR SHALL APPLY SOD OR SEED AND ANCHORED STRAW MULCH OR OTHER STABILIZATION MEASURES TO ALL DISTURBED AREAS AND STOCKPILES WITHIN 14 CALENDAR DAYS AFTER STRIPPING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED

6. PRIOR TO REMOVAL OF THE SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN PERFORMED TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE BUT NO LATER THAN 14 DAYS AFTER ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISH GRADE DURING THE MONTHS OF NOVEMBER TO FEBRUARY AND PERMANENT STABILIZATION IS IMPRACTICAL, TEMPORARY SEEDING AND ANCHORED MULCH SHALL BE APPLIED TO DISTURBED

7. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.

8. THE SITES APPROVAL LETTER, APPROVED EROSION CONTROL PLANS, DAILY LOG BOOKS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY

CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE THE TOP OF A CUT OR FILL SLOPE UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING COMPLETED TO PROMOTE SHEET FLOW. PROTECTIVE MEASURES MUST BE EMPLOYED IN AREAS WHERE CONCENTRATE FLOW IS LIKELY TO OCCUR.

10. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED FLOW SHALL BE

RIP-RAP, OR BY OTHER APPROVED STABILIZATION MEASURES. TEMPORARY SEDIMENT CONTROL DEVICES MAY BE REMOVED UPON APPROVAL OF INSPECTOR, WITHIN 30 DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTING DRAINAGE AREAS. STORM WATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO PERMANENT CONFIGURATION DURING

11. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT GREATER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP TO 2:1 WILL BE PERMITTED IN NON-MAINTENANCE AREAS PROVIDED THAT THOSE ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH A LOW MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENTS GREATER THAT 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE

12. FOR FINISHED GRADING THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN 24 HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALES MAY TAKE UP TO 48 HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.

13. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION THAT EXISTS OR IS UNDER CONSTRUCTION. NO STRUCTURES SHALL BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.

14. THE SEDIMENT AND EROSION CONTROL INSPECTOR HAS THE OPTION OF REQUIRING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES IF DEEMED

15. ALL TRAP DEPTHS DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS MUST HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS MUST HAVE STABLE INFLOW POINTS.

16. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL AND EROSION CONTROL. REFER TO APPROPRIATE SPECIFICATIONS FOR TEMPORARY SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.

17. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OF BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE BOTTOM TO THE CREST OF THE OUTLET.

18. SEDIMENT REMOVED FROM THE TRAPS SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND, OR TREE SAVE AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FORM THE SITE, A SUMP PIT MAY BE UTILIZED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT. ALL WATER REMOVED FROM EXCAVATED AREAS SHALL BE PASSED THROUGH AN APPROVED DEWATERING PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE FROM THE SITE.

19. WHERE DEEMED NECESSARY BY THE ENGINEER OR INSPECTOR, SEDIMENT TRAPS AND BASINS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS.

20. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.

21. SITES WHERE INFILTRATION DEVICES ARE USED FOR THE CONTROL OF STORM WATER, EXTREME CARE MUST BE TAKEN TO PREVENT RUNOFF FROM UN-STABILIZED AREAS FROM ENTERING THE STRUCTURE DURING CONSTRUCTION. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST 2 FEET HIGHER THAN THE FINISHED GRADE BOTTOM ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE, ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF THE INFILTRATION DEVICE.

<u>SITE INFORMATION:</u>

TOTAL AREA: 79.74 ACRES TOTAL AREA OF PROJECT SITE: 79.74 ACRES AREA TO BE CLEARED: 493277 SQ FT / 11.32 ACRES

CONSTRUCTION PHASE: TOTAL CUT: 35255 CUBIC YARDS TOTAL FILL: 10781 CUBIC YARDS

POST CONSTRUCTION PHASE: TOTAL CUT: 7811 CUBIC YARDS TOTAL FILL: 3459 CUBIC YARDS

OFF-SITE WASTE / BORROW AREA LOCATION: NOT APPLICABLE

SEDIMENT AND EROSION CONTROL SHALL BE STRICTLY ENFORCED.

THIS TIME PERIOD AS WELL.

8. MAKE ALL CUTS AND FILLS REQUIRED, ESTABLISH THE SUB GRADE FOR THE EQUIPMENT LAY DOWN AREAS AS REQUIRED. ALLOW A REASONABLE AMOUNT OF AREA AROUND THE FOOTPRINT OF THE BUILDING FOR THE CONSTRUCTION ACTIVITIES.

9. BEGIN CONSTRUCTION OF THE TOWER.

INSTALLING WATER SURFACE CONTROLS.

WORK AND STABILIZATION OF ALL OTHER DISTURBED AREAS.

CONTROLS.

STANDARD EROSION AND SEDIMENT CONTROL NOTES

MATERIAL DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.

DULY AUTHORIZED OFFICIALS.

9. SURFACE DRAINAGE FLOWS OVER UN-STABILIZED CUT AND FILL SLOPES SHALL BE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO LOWER THE WATER DOWN THE SLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT

STABILIZED WITH SOD OR SEED WITH AN APPROVED EROSION CONTROL MATTING,



Scale: NTS

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

TREE PROTECTION

Definition A temporary channel constructed with a non-erosive material, such as concrete. bituminous concrete, riprap, sacked concrete, gabions, half round pipes, revetcent erosion control mats with cement grout or similar materials used to carry

To temporanly convey concentrated storm water runoff down a slope without causing erosion problems on or below the slope.

. For drainage areas less than or equal to 36 acres.

not established and/or permanent drainage controls have not been completed. 1 use Temporary Lined Channel, Vegetated Waterway or Permanent Lined Waterway where appropriate.

Planning Considerations remporary lined chutes should be planned and installed along with, or as part of, other erosion control practices in an overall surface water control plan. If the chute is anticipated to be needed for more than 1 year use Permanent Lined Waterway measure, Permanent Slope crete chutes see Figure TC-2.

Drain measure, or consider revising the sequence of chute. For drainage areas less than 5 acres the Temporary Pipe Slope Drain measure may be used as are a exceeds 36 acres then either split the drainage area or use alternate measures such as Permanent lined Waterway measure.

The drainage area of use alternate measures such as Permanent lined outlet protection to prevent erosion, to withstand the louding imposed by site conditions, and to meet durability requirements for the proposed maintenance program. Provide for adequate filter blankets, geotextile, or both, for these types of channel linings.

Design Criteria

Slope Limitations Slope Limitations
Temporary lined chutes shall be designed for placement on undisturbed or well compacted slopes that are not

(b) Bituminous concrete linings shall be designed for placement on undisturbed or well compacted slopes that are not steeper than 1:1.5 and not less than 5:1.

Sizing Limitations Design oritena are divided into two groups depending on the size of the drainage area. Group A is limited to a maximum area of 18 acres, and Group E may be used for drainage areas between 14 and 36 acres. Within each group the height of the lining at the entrance, depth of the chute down the slope, and length of the inlet and

oulet sections are constant (See Figure TC-1). These are determined by the selection of a bottom width. The bottom width of the chute is dependent upon the size of the Gabions smasure. Gabions measure. drainage area involved.

2002 Connecticut Guidelines for Soil Erosion and Sediment Control LINED CHUTE STABILIZATION Scale: NTS

A temporary channel with a berm of tamped or compacted soil placed in such a manne Purposes

such as a temporary sediment trap, sediment basin or vegetative filter. . To direct water originating from undisturbed areas away from areas where construction . To fragment disturbed areas thereby reducing the velocity and concentration of runoff.

 Where the drainage area at the point of discharge is 5 acres or less. For drainage areas greater than 5 scress user Permanent Diversion measure.

• Where the intended use is 1 year or less. For uses greater than 1 year use Permanent. Diversion measure.

Planning Considerations

Planning Considerations

A temporary diversion is used to divert sheet flow to a stabilized outlet or a sediment-trapping facility. It is also used during the establishment of permanent vegetative cover on aloping disaurbed areas. When used at the top of a slope, the structure protects exposed slopes by directing ronoff away from the disturbed areas. When used at the base of a disturbed slope, the structure protects adapted and a disturbed slope, the structure protects adapted and a disturbed slope, the structure protects adapted and a disturbed slope and a slope of used at the base of a disturbed slope, the structure protects adjacent and downstream areas by diverting sediment-laden runoff to a sediment trapping facility.

Temporary diversions must be installed as a first step in the land-disturbing activity and must be functional prior to disturbing the land they are intended to protect.

Design Criteria

No engineered design is required for a temporary diversion if the contributing drainage area is 1 acre or less. If the contributing drainage area exceeds 1 acre and is 5 acres or less, design the temporary diversion to the Permanent Diversion measure standards using

sion exceed 2%, stabilization of the channel is necessary the 2-year frequency storm as the design storm. to prevent erosion of the temporary diversion itself (e.g., temporary seeding, temporary erosion control blankets, ripcap, etc.). The channel and berm must have a positive

due to high-velocity flows behind the berm. The crosssection of the channel should be of a parabolic or
trapezoidal shape to prevent a high velocity flows which
could arise in the bottom of a "V" shaped datch.

This practice is economical because it uses materials
which the contraction of the channel to the

This plactuce is economical because it uses materials available on the site and can usually be constructed with equipment needed for site grading. The useful life of the practice can be extended by stabilizing the berm with vegetation. Temporary diversions are durable, interspensive, and require little maintenance when constructed properly. When used in conjunction with a Temporary Sediment Trans, remporary diversions become a looical vegetation. Sediment Trap, temporary diversions become a logical choice for a control measure when the control limits for Grade and Stabilization

riproj, cic.). The channel and norm muschave a positive grade to assure drainage, but if the gradent is too great, precautions must be taken to prevent channel erosion

Specifications

For engineered temporary diversions, construct the tem-porary diversion in accordance with the design standards

Use Figure TC-1 to determine the sizing require

The lining shall consist of riprap, bituminous concrete or

(a) Riprap shall be designed in accordance with the

with a minimum thickness of 2 inches and in accor-

dance with accepted engineering practices for

(c) Portland Cement Concrete shall be 2500 PSI min-imum with 2.5 inches minimum thickness.

(d) Sacked concrete shall be designed for both struc-

for these types of channel linings.

structural adequacy.

toral and hydraulic stability

silt fences or hay bale barriers have been exceeded.
The flow line behind the berm shall have a positive

5-7-9

5-7-10

2002 Connecticut Guidelines for Soil Erosion and Sediment Control TEMPORARY DIVERSION DITCH Scale: NTS

Establishment of temporary stand of grass and/or legiones by seeding and mulching soils that will be exposed To temporarily stabilize the soil and reduce damage from wind and/or water erosion and sedimentation until manent stabilization is accomplished.

 Within the first 7 days of suspending work on a grading operation that exposes erodible soils where such suspension is expected to last for 1 to 12 months. Such areas include soil stockpiles, borrow pits, road banks and Not for use on areas that are to be left dormant for more than 1 year. Use permanent vegetative measures in those situations.

Select grass species appropriate for the season and site conditions from Figure TS-2. Seed with a temporary seed mixture within 7 days after

Specifications

the suspension of grading work in disturbed areas where the suspension of grading work in disturbed areas where the suspension of work is expected to be more than 30 days but less than 1 year. Seeding outside the optimum seeding dates given in Figure TS-2 may result in either inadequate germination or low plant survival rates, reducing erosion control effectiveness. Site Preparation Install needed crosson control measures such as diver-

sions, grade stabilization structures, sediment basins and grassed waterways in accordance with the approved Grade according to plans and allow for the use of appropriate equipment for seedbed preparation, seed-ing, mulch application, and mulch anchoring. All grading should be done in accordance with the Land Grading Seedbed Preparation
Loosen the soil to a depth of 3-4 inches with a slightly roughened surface. If the area has been recently loos-

ened or disturbed, no further roughening is required. Soil preparation can be accomplished by tracking with a bull-dozer, discing, harrowing, raking or dragging with a section of chain link fence. Avoid excessive compaction of the surface by equipment traveling back and forth

2002 Connecticut Guidelines for Soil Erosion and Sediment Control SOIL COVER Scale: NTS

	Group A			Group B	
Size	Bottom Width b (ft)	Maximum Drainage Area (acres)	Size	Bottom Width b (ft)	Maximum Drainage Area (acres)
A-2	2	5	D-4	4	14
A-4	4	8	B-6	6	20
A-6	6	11	B-6	В	25
Δ-8	8	14	B-10	10	31
A-10	10	18	B-12	12	36
Dep	ht at entrance (H) = oth of Chute (d) = 8 inlet & outlet section	inches	Dep	ght at entrance (h) = th of Chute (d) = 10 nlet & outlet section	inches

(f) Erosion control blankets and turf reinforce- Installation Requirements ment mats, when used, shall be designed in accordance with manufacture's recommendations. (a) The top of the earth lining at the entrance to the

chute shall not be lower at any point than the top of the lining at the entrance of the chots CH* as shown in Figure TC-2). (b) The lining of the side slopes at the chute entrance. shall extend the distance H above the lining invert as shown in Figure TC-2.

4. Stabilize all areas disturbed by construction immediately after work is completed.

(c) The entrance floor at the upper end of the chute shall have a minimum slope toward the outlet of 0.25 inch per foot.

Maintenance Inspect the temporar 0.25 inch per foot.

(d) Design the cutoff wall at the entrance so that it is continuous with the lining.

(e) Design the cutoff wall at the entrance so that it is continuous with the lining.

The minimum requirements for outlet protection are shown in **Figure TC-2**. Verify adequacy of outlet stabilization using **Outlet Protection** measure. Design the cutoff wall at end of the discharge arrows to day a life. cutoff wall at end of the discharge aprons so that it is

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grade. Channel grades flatter than 2% require no stabilization. Channels with grades steeper than 2% require
stabilization in accordance with stabilization specifications found in the Permanent Diversion measure.

Temporary diversions shall be stabilized according to the
Temporary diversions shall be stabilized according to the
Temporary diversions activities, inspect the
temporary diversion at the end of each work day and
immediately repair damages caused by construction
the control of the temporary diversion. duration of their intended use (see Short Term Non-living Soil Protection Functional Group).

Regardless of design, release the diverted runoff to a sta-ble outlet or channel. Where diverted runoff is expected to be carrying a sediment load, the runoff shall be released to a sediment impoundments (see Sediment Impoundments and Barners Punctional Group).

start 0.5 inch of rain falls within a 24-hour period to determine maintenance needs.

Repair the temporary diversion and any associated measures within 24 hours period to determine maintenance needs.

Repair the temporary diversion and any associated measures within 24 hour period to determine maintenance needs.

Repair the temporary diversion and any associated measures within 24 hour period to determine maintenance needs.

Repair the temporary diversion and any associated measures within 24 hour period to determine maintenance needs.

Repair the temporary diversion has occurred when the diversion had been damaged by either construction equipment, erosion or sitution such that it no longer meets the con-

Construction
Install crossion controls at the outlet where sediment laden runoff is expected.

Construct the temporary diversion (see Figure TD-1)
After grading the berm, tamp or compact it to prevent follows. Apply stabilization measures (may include tempoor permanent seed and mulch) immediately

5-5-21

and any associated measures weekly or immediately after 0.5 inch of rain falls within a 24-hour period to

Install the chute on undisturbed soil, if possible, or if not possible, on well compacted fill.

2. Begin construction of the chute at its lower end.

Construct the cutoff walls at the entrance and at the end of the discharge aprons so that they are contin-

tations and installation requirements. Correct deficiencies

and reasonably smooth.

uous with the lining.

rary diversion.

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over the surface. If the slope is tracked, the cleat marks shall be perpendicular to the anticipated direction of the flow of surface water (see Surface Roughening measure)

soil test recommendations (such as those offered by the University of Connecticut Soil Testing Laboratory or other reliable source). Soil sample mailers are available from the local Cooperative Extension System office. Appendix Econtains a listing of the Cooperative Extension System If soil testing is not feasible on small or variable sites, or where timing is critical, fertilizer may be applied at the rate of 300 pounds per acre or 7.5 pounds per 1,000 square feet of 10-10-10 or equivalent. Additionally lime may be applied using rates given in Figure TS-1

Apply ground limestone and fertilizer according to

Clay clay loam and high 3 135 organic soil Loamy sand, sand 1 45

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

CUTOFF WALL 6" WIDE X 1.5" DEEP -A -PLAN VEW

PLACE 4" THICK LAYER OF PREE SECTION A-A
DRAINING PILTER BLANKET UNDER PAVEMENT (HOTTO SCALE)

CHUTE SIZE IS DESIGNATED WITH A LETTER AND A NUMBER, SUCH AS A-6, WHICH HEARS SIZE GROUP A WITH A 6 FT. BOTTOM WIDTH (b). FOR STRUCTURE DIMENSIONS, SEE TABLE

UNDISTURBED SOIL OR -

Source: USDA-NRCS

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

8-Subsurface Drain

tone filled trench installed beneath the ground to intercept and convey ground water (see Figure SD-1). . To prevent sloping soils from becoming excessively wet causing sloughing.

To reduce frost heaving of fine grained soils. To prevent hydrostatic pressures from developing behind retaining walls, foundations or floor slabs and to To relieve artesian pressures. To lower water tables in vegetated waterways and diversions in order to maintain stable vegetative conditions To drain storm water detention areas or structures.

Used in areas having a high water table where benefits of lowering or controlling groundwater or surface runoff are desired. Where soil permeability is sufficient to permit installation of an effective and economically feasible system. Not intended for use within septic system setbacks, in areas of ground water pollution, or to drain inland we lands or tidal wetlands without prior authorization.

Planning Considerations or interceptor drains (sometimes called curtain drains) or

let. They can be installed in a paramet parents herringbone pattern, or a random pattern (see Figure Copocity Interceptors are used to remove water as it seeps down a slope, to prevent the soil from becoming saturated and subject to slippage. They are installed across a slope and are provided with a stable outlet.

Size of Drain structures they support can occur in some cases.

SUB-SURFACE DRAIN

5-8-2

or interceptor drains (sometimes called curtain drains) or a combination of both. Relief drains are used either to lower the water table in order to keep structures (e.g. basements) day or to improve the growth of vegetation. They are generally installed along a slope, draining in the direction of the slope and are provided with a stable outlet. They can be installed in a parallel pattern, a betringlying entities, or a random paraller (see Figure 1).

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Subsurface drains are generally installed within a slope to lower the water table (see Figure SD- 2).

Subsurface drainage systems are either relief drains

A lowering of the groundwater table through the installation of a subsurface drain may have legal implications in that it may dewater adjacent wetlands as well as affect the property rights of adjacent owners. Damage may also occur at or near the point of discharge. Also, consolidation of soils and seutlement of the soils and the structures they support can occur in some cases. The design drawings and installation shall comply with applicable federal, state and local laws and regulations. The landowner or developer is responsible for Equation SD-1).

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4-Short Term Non-living Soil Protection

Definition able / photodegradable natural or polymer fibe tructurally or chemically bound together to form continuous matrix. To provide temporary surface protection to newly mpact and to reduce sheet and rill erosion and to hance the esublishment of vegetation. Applicability Cn disturbed soils where slopes are 2:1 or flatter.
 Where wind and traffic generated air flow may dislodge standard, unarmored mulches. day be used as a substitute for Temporary Soil Protection.

May be used as a substitute for Mulch for

Characteristics

5-3-4

Planning Considerations When considering the use of ECB keep in mind the blanket's capability to conform to ground surface irregularities. If the blanket is not capable of develop ing a continuous contact with the soil then it must be

applied to a fine graded surface. Some blankets will appied to a line graded ourtace. Some blankets will soften and when wetted reconform to the ground. Also, when the ground is frozen, proper anchoring can be difficult, if not impossible.

Care must be taken to choose the type of blanket which is most appropriate for the specific need of the aro mechanically, structurally or chomically bound. project. With the abundance of erosion control blar kets available, it is impossible to cover all of the advantages, disadvantages and specifications of all manufactured blankets. There is no substitute for a thorough understanding of the manufacturer's instrucvisit by the erosion and sedimentation plan designer prior to and during installation to verify a product's

tions and recommendations in conjunction with a site appropriateness.

The success of temporary erosion control blankets is dependent upon strict adherence to the manufacturer's installation recommendations. As such, a final inspection should be planned to ensure that the lap joints are secure, all edges are properly anchored and all staking/stapling patterns follow the manufacturer's recommendations.

5-4-10

Specifications

Materials Temporary erosion control blankets shall be com-posed of fibers and/or filaments that:

together to form a continuous matrix of even thici ness and distribution that resist raindrop splash and when used with seedings allows vegetation to penetrate the bianket;

stretching or movement by wind or water when installed in accordance with the manufacturer's recommendations; () are free of any substance toxic to plant growth and

unprotected human skin or which interferes with seed germination; waters of the State when properly applied, and

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Scale: NTS

GEO-TEXTILE MAT

A flexible or rigid pipe used to conduct water from the top of a slope to the toe of the slope. To convey concentrated stormwater runoff flows down the face of a slope without causing erosion problems either on or at the toe of the slope. On cut or fill slopes where the soil or existing vegetative cover will not withstand concentrated runoff flows.
 For use less than 6 months. Where the contributing drainage area is 5 acres or less.

Planning Considerations Temporary pipe slope drains should be planned and installed along with, or as part of, other conservation practices in an overall surface water disposal system. This measure should be used only for the temporary enveyance of water and consideration should be given to the final stabilization of the area during the initia planning stages. Temporary pipe slope drains are commonly used in conjunction with temporary diversions (see Diversion Punctional Group) which direct water to the drain.

Design Criteria
The maximum allowable dramage area per dram is 5 Material used in the temporary pipe slope drain shall be heavy duty flexible (see Figure TSD-2) or ngid conduit (see Figure TSD-3) designed for the purpose with hold down grommets or rigid pipe supplied with anchors. Additionally, use only one size pipe for any sin-

The bottom of the pipe slope drain shall be flush with the toe of the diversion berm (see Figure TSD-3). The pipe slope drains shall be sized according 3. Anchor the pipe slope drain securely. Space anchors to Figure TSD-1 and shall be provided with watertight be in accordance with temporary diversion measures found in the Diversion Functional Group, where appli-

Water directed into the temporary slope drain shall 4. Securely fasten the sections of pipe together with the centerline of the inlet shall be equal to the diameter of the pipe (D) plus 12 inches. Where the berm height is greater than 18 inches at the inlet, it shall be sloped 3:1

Maintenance
Inspect the temporary pipe slope drain at least once a week and within 24 hours of the end of a storm with a

vent erosion and piping failure at the inlet.

greater than 1 acre, hay bale check dams and geotextile silt fences are not appropriate.

. Install a temporary pipe slope drain on a cut or a sta-

2. Stabilize the area from the top of the berm, around

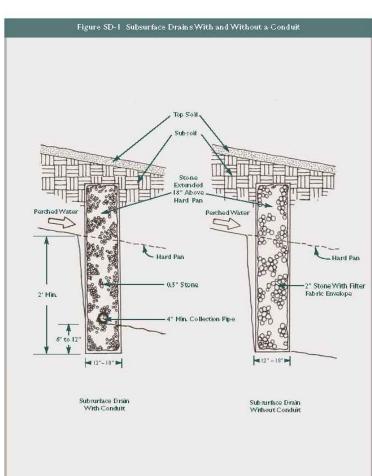
and under the entrance section of the drain to pre-

Installation Requirements

or flatter.

The area immediately below the outlet of the pipe along dark along dark shall be protected from crosive discharges with appropriate energy dissipators. For drainage areas

2002 Connecticut Guidelines for Soil Erosion and Sediment Control TEMPORARY PIPE SLOPE DRAIN Scale: NTS



 provide either 80%-55% soil coverage when used as a substitute for Mulch for Seed or 100% initial soil coverage en used as a substitute for Temporary Soil Protection measure.

Materials shall be selected as appropriate for the specific site conditions in accordance with manufacturer's recommendations. Use of any particular temporary erosion control blanket should be supported by manufacturer's test data that onfirms the blanket meets these material specifications and, will provide the short term erosion control capabilities nec-

POND

essary for the specific project. Site Preparation and Installation

pling patterns follow manufacturer's

(see Figure ECB-1)
Prepare the surface, remove protruding objects and install temporary erosion control blankets in accordance with
the manufacturer's recommendations. Ensure that the orientation and anchoring of the blanket is appropriate for The blanket can be laid over areas where sprigged grass seedlings have been inserted into the soil. Where landscape plantings are planned, lay the blanket first and then plant through the blanket in accordance with Landscape Planting measure.

Inspect the installation to insure that all lap joints are secure, all edges are properly anchored and all staking or sta-

recommendations. Figure ECB-1 Example of Temporary Erosion Centrol Blanket Installation Maintenance storm with a rainfall amount of 0.5 Inch or greater for failures, Blanket failure has occurred when (1) soils and/or seed have washed away from beneath the blanket and the soll surface can be expected to continue to erode at an accelerated rate, and/or (2) the blanket has become dislodged from the soil surface or is torn. If washouts or breakouts occur, re-install the blanket after regrading and re-seeding, ensuring that blanket installation still meets design specifications. When repetitive failures occur at the same location, review conditions and limitations for use and determine if diversions, stone check dams or

other measures are needed to reduce failure rate. Repair any dislodged or failed blankets immediately.

When used as a substitute for

Mulch for Seed, continue to Inspect as required by the seeding measure. When used as a substitute for Temporary Soil Protection,

continue to inspect until it is replaced by other erosion control measures or until work resumes.

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

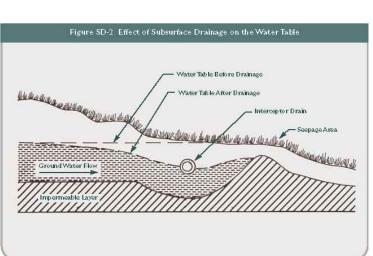
RIPRAP APRONPLAN CONSTRUCTION SPECIFICATIONS The pipe slope drain shall have a slope of 3% or steeper.
 Top of the earth dike over the inlet pipe and all dikes carrying water to the pipe shall be at:

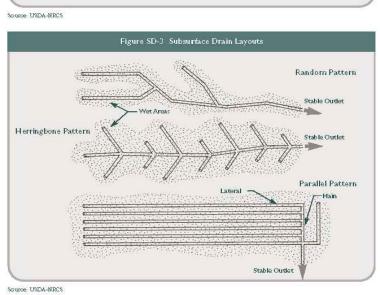
Soil around and under the slope pipe shall be hand tempered in 4-inch lifts.
 The pipe shall be plastic or corrugated metal pipe with watertight 12-inch wide connecting.

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(5-8-4)

5-8-3





2002 Connecticut Guidelines for Soil Erosion and Sediment Control



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COLEBROOK (CONNECTICU

To prevent scour at storm drain, culvert or drainageway outlets and to minimize the potential for downstream erosion by reducing the velocity of concentrated storm water flows.

for culverts and conduits, etc. discharging into natural or constructed channels, which in turn discharge into

Planning Considerations

Analysis and appropriate treatment shall be done along the entire length of the flow path from the end of the designs for stilling basins may be found in the following

 Hydraulte Detten of Energy Distipators for Culverst and Channels, Hydraulte Engineering Circular No. 14, US. Department of Transporation, Federal Highway Administration, December 1975. O Hydraulte Design of Stilling Bastus and Energy <u>Distipators</u>, Engineering Monograph No. 25, U.S. Department of the Interior, Bureau of Reclamation.

Briergy Dissiputor Design Criteria, Agricultural Sarolea Research Publication ARS-76, 1989. (All of the above are available from the U.S. Government

O Plunge Pool Design at Submerged Pipe Spillway Quilets, American Society of Agricultural Engineers, Volume 37(4):1167-1173, 1994

Design Criteria

Purpose

Determination of Needs The need for conduit outlet protection shall be deter mined by comparing the allowable velocity which the soil will withstand to the exit velocity of the flow from of the water in the conduit shall be calculated using the apron to the receiving channel.

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greater of the conduit design storm or the 25 year fre quency storm. When the exit velocity of the water in the conduit exceeds the allowable velocity for the soil, outlet protection is required. Outlet protection is also required if cantilevered) causing the water to drop at the outlet end

Design Himitations: No bends or curves at the inter-section of the conduit and the apron protection will be permitted.

There shall be no vertical drop from the end of the

sufficient distance from the toe of the slope to allow access

Swales: Not recommended, See Geotextile Silt Fence or Stone Check Dam measures.

Catch Basins in Swales on Slopes: Not recommended

Culvert Inlets: Not recommended. See Geotextile Silt

Sediment Trap and/or Stone Check Dam measures.

drains): Encircle catchbasin (see Figure HB-3).

5-10-6

Sand and sandy loam

Clay, fine gravel, graded loam to gravel

Silt Loam

Riprap Aprons

11- Sediment Impoundments, Barriers and Filters

A temporary sediment barrier consisting of a row of entrenched and anchored bales of

To intercept and detain small amounts of sediment from small disturbed areas.

. Below small disturbed areas where the drainage area (disturbed and undisturbed) is

· Where sedimentation will reduce the capacity of storm drainage systems or adverse

measures (see Geotextile Silt Fence and Stone Check Dams Special Cases).

drainage area (disturbed and undisturbed) is less than lacre in size.

affect adjacent areas, watercourses and other sensitive areas.

Where protection and effectiveness is required for less than 3 months.

. To redirect small volumes of water away from erodible soils. Pumping Settling Basin measure, Type I and Type II).

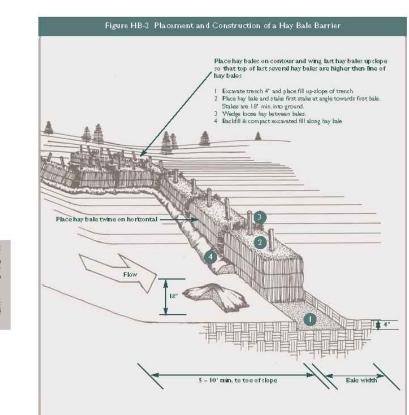
Sandy day loam

Design Drainage Length equirements Area of Use no engineered 1 2 acres <6 months 25-yr frequency any drainage size >1 year storm

tural failure and adverse tailwater effects.

tural failure of the check dam and adverse tailwater effects. Specifications

5-10-11 Errata Corrections 1/08 STONE CHECK DAM



Planning Considerations Barriers and Filters Function Group.

· Not intended for use in streams.

. To decrease the velocity of sheet flows.

Specifications Hay Bales, shall be made of hay or straw with 40 pounds minimum weight and 120 pounds maximum weight held together by twine or wire.

Stakes for Anchoring Hay Bales: shall be a minimum of 36 inches long and made of either hardwood with dimensions of at least 1.5 inches square or steel posts with a minimum weight of 0.5 pound per linear foot.

Placement on the Landscape ontributing drainage area is no greater than 1 acre Maximum slope length is as shown in Figure HB-1.

When the contour can not be followed, stagger the bale

Trench excavation: Excavate a trench as wide as the bales and at least 4 inches deep. Each end of the shown in Figure IIB-1 to break the velocity of water flowing behind the bales. The barrier should be located with

2002 Connecticut Guidelines for Soil Erosion and Sediment Control HALE BALE BARRIER

Scale: NTS

6-Drainage Ways and Watercourses

A temporary bridge, or culvert(s), across a watercourse for use by

• To provide a means for construction traffic to cross streams without . To keep sediment generated by construction traffic out of the stream.

Applicability drainage areas exceeding one square mile use generally accepted engineering standards (e.g. NRCS Field Office Technical Guide -Hydraulic Engineering, DOT Drainage Manual) which more accu rately define the actual hydrotogic and hydraulic parameters which will affect the functioning of the structure.

Planning Considerations

continually tracking sediment and other pollutants into the stream. However, these structures are also undesirable in that they represent a channel constriction which can cause flow backups or washouts during periods of high flow. For this reason, the temporary nature of stream crossings is stressed. They should be in place for the shortest practical period of time and be removed as soon as their function is completed.

The storne, along with the temporary culvers, can be salvaged and reused.

Multiple smaller culverts may be used in place of a single larger culvert if the hydraulic capacity is equivalent or greater. However, remember that smaller multiple culverts are more susceptible to being obstructed with debrie during flooding events. They can increase the insk of blockage resulting in overgrooning and erosion of the

equipment. Additionally, the design plans and installa-

too shall comply with applicable federal, state and local laws and regulations.

A temporary bridge crossing is a structure made of wood, metal, or other materials which provides access vert(s) and associated rock full. disturbance to the stream bed and banks when com- Minimum Design Flows

migration when compared to the other temporary access Temporary stream crossings are necessary to prevent construction vehicles from damaging stream banks and continually tracking sediment and other pollutants into

The specifications contained in this measure pertain primarily to flow expacity and resistance to washout of the structure from a sefecy and utility standpoint, the designer must also be sure that the crossing is capable of costs between multiple small culvert and one large culvert.

Water bars are required for the crossing and other erosion and sediment controls may be needed.

For temporary culvert crossings that will remain in across a stream or waterway. A temporary culvert cross-ing is a structure consisting of stone and a section(s) of place for 90 days or less, in lieu of a formal hydraulic circular pipe, pipe arches, or oval pipes of reinforced concrete, corrugated metal, or structural plate, which is used to convey flowing water through the crossings.

Hindges are preferred over culvert installations.

The minimum culvert size is 18 inches.

pared to the other types of crossings. They can also be quickly removed and reused. In addition, temporary bridges pose the least chance for interference with fish coullined in Appendix J. "Risk Assessment Adapted"

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temporary stone dam placed across a drainageway.

 To reduce the velocity of concentrated storm water flows, thereby reducing erosion of the drainageway. · To temporarily pond storm water runoff to allow sediments to settle out.

 For temporary drainageways which, because of their short length of service, will not receive a non-erodible lining but still need protection to reduce erosion. · For permanent drainageways which, for some reason, will not receive a permanent non-erodible lining for an This measure is not a substitute for a Temporary Sediment Trap or a Temporary Sediment Basin, however, stone check dams may be used in conjunction with those measures.

Planning Considerations

A stone check dam is considered to be temporary if it is A stone check dam is considered to be temporary if it is

No engineered design is required for a stone check dam

used less than 1 year. It is considered to be permanent if

if the contributing drainage area is 2 acres or less and its it is used more than 1 year. Its length of use and the size

of the watershed determine if an engineered design is required (see Figure SCD-1).

When planning the location of the stone check

If the contributing drainage area is greater than 2 acres or its intended use is longer than 6 months, design the stone check dam according to generally accepted dam(s) consider the tailwater effects, duration of ponding, stone size, the contributing watershed and, if placed in a watercourse, the effects on fish habitat and fish passage. Also assess if the final use of the area will require the stone check dam(s) to be removed. Give consideration to moving requirements and aesthetics. For stone check dam to be located in a versal intermitten or need to be considered from the properties of a stone check dam to safely pass the peak flow. check dams to be located in a vernal, intermittent or permanent watercourse, check with regulatory authorities expected from a 2-year frequency storm without struc-

For engineered stone check dams, construct the stor, check dam in accordance with the design standards and specifications. For all non-engineered stone check dams, comply with the following specifications.

Stone: Shall meet the requirements of DOT Standard Specifications Section M.01.01, #3 aggregate. The stone shall be sound, tough, durable, angular, not subject to chemically stable, and shall be suitable in all other

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11- Sediment Impoundments, Barriers and Filters

Source: USDA-NRCS

5-10-13

Figure SCD-2 Stone Check Dam Installation in Drainageways

2. THE MINIMUM DESIGN CAPACITY SHALL CONVEY A 2 YEAR - 24 HOUR PEAK FLOW.

VARIES -

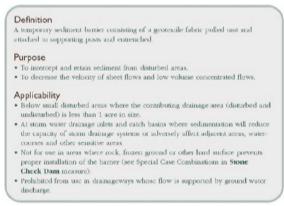
SECTION A - A (NOT TO SCALE)

FLOW LINE

SPACING BETWEEN CHECK DAMS

(NOT TO SCALE)

GEOTEXTILE IF NECESSARY



See Planning Considerations for Sediment Impound-ments, Barriers and Filters Punctional Group. When used at a culvert outlet, plan to install the geotextile silt fence before the start of construction and complete the instal-lation of the required outlet protection before the culvert is made functional. It is preferable to control sediment at the inlets rather than at the outlet. Use at outlets should slope length is as shown in Figure GSF-2. able or to act as a backup to inlet controls.

Supporting posts: shall be st least 42 inches long made of either 1.5 inch square hardwood stakes or steel posts minimum strength of 0.5 pound per linear foot. Placement on the Landscape

For toe of slope (Figure GSF-3): Locate 5-10 feet down in mind. When the contour can not be followed install the fence such that perpendicular wings are created to break the velocity of water flowing along the fence. See

and backfilling operations. Filaments in the geotexule shall be resistant to absorption. The filament network must be dimensionally stable and resistant to de lamina

will alter its physical properties. Torn or punctured geo-tersiles shall not be used.

Culvert Inlets: Locate in a "U" shape approximately 6 feet.



Installation Requirements

Check weather forecasts to insure a storm is not predicte during the time of construction. Delay construction until after the threat of rainfall has passed. Temporary Bridge Crossing (see Figure TSC-1).

 Place abutments parallel to and tied into stable
 3. Install the culvert on the natural steam bed. Place all decising members perpendicular to the stringers, butted tightly, and securely fastened to the stringers. Butt. decising materials tightly to prevent

any soil material tracked onto the bridge from falling into the waterway below.

6. Anchor bridges securely at only one end using steel

obstruction to the flow.

to withstand the anticipated loading of the construction
Culvert Slope: The slope of the culvert shall match the Culvert Backfills Culvert backfill requires the use of such that it can adequately distribute loads, retain fines and provide separation between the backfill and the native soil. See Construction Entrance measure for The temporary stream crossing shall be at right angles to the stream. Where approach conditions dictate, the centre of the stream of the strea terline of the stream crossing may be aligned so that it is and may be increased if anticipated loads require no greater than 15% from a line drawn perpendicular to designed fill depths to be greater. For culvert(a) on a temporary stream crossing expected to be used in excess of 14 days, the backfill shall be protected from erosion with riprap designed in accordance with the

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

ment of floating materials and debris. Additionally, the abutment shall be parallel to and tied into stable banks. Design the bridge to span the entire channel. If the

Provide specifications for decking materials, bridge

stringers and a bridge anchor of sufficient strength to

feet in length. If the crossing approach grades require extensive fills then consider using a bridge rather than a culven for the crossing structure.

From CT DOT <u>Drainage Manual</u>." Using the form "Design Frequency Risk Analysis" determine all factors in the Impact Rating Table as described except "Property approach shall be limited to a maximum height of 2 feet

exceeded. This includes an evaluation of potential flood minimum thickness of 6 inches of well graded, free

damage upstream or adjacent to the channel and damage downstream to properties and water resources that might receive sediment should the stream crossing fail. The property damage value shall be chosen as follows:

Temporary Bridge Crossing Criteria

5 points cropland, parking lots, recreational areas, or above top of bank elevation to prevent the entrap-

When the assigned risk falls between two design fre-

The structure shall be designed to pass the design atom
Temporary Culvert Crossing Criteria

quency delineations choose the higher of the two design frequencies. For example, a design risk of 30% for 18 months falls between the 3-year and 5-year. Therefore,

without erosion. If the structure must remain in place over 3 years, it must be designed as a permanent measure in accordance with accepted engineering standards and practices. The installation of the temporary stream

the crossing by causing a rise in the water surface eleva-

such as sewage treatment systems and water supply areas (public and private well heads bank to top of bank), then a footing, pier or bridge sup-

nd reservoirs), utility structures either port within the waterway may be included in the design

above or below ground, trout management areas, streams stocked by DEP, ponds located immediately downstream before the confluence with other watercourses, wet-

approved materials.

above the existing grade.

Temporary Culvert Crossing (see Figure TSC-2)

5-11-35

2. When a georextile is to be used, place it on the 1. Keep clearing and excavation of the stream bed and culvert and bedding material

> Extend the culvert(s) a minimum of one foot beyond the upstream and downstream too of the backfill placed around the culvert. 5. Cover the culvert(s) with a minimum of 21 inches of

 If required, secure run planking by fastening to the length of the span. Provide one run plank for each track of the equipment wheels. Run planks are sometimes needed to properly distribute loads. 5. If required, install curbs or fenders along the outer

waters float the bridge. Acceptable anchors are large trees, large boulders, or driven steel anchors. Anchoring shall be sufficient to prevent the bridge from floating downstream and possibly causing an

9. For manufactured bridges follow manufacturer's rec-

backfill. If multiple culverts are used, separate them by at least 12 inches of compacted fill. Maintenance

inspect and perform any repair work at the end of each day that the temporary stream crossing and approaches are exposed to vehicular traffic. When the crossing is not used for a week or more, inspect at least once a week and within 24 hours after any rainfall greater than 0.5 Anchor bridges securely at only one end using steel cable or chain. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large engineering review is required to determine the cause of the failures and adjustments made to the structure or erosion and sediment controls as needed to prevent future

failures.

When the temporary stream crossing is no longer 7. Install stone for bridge approaches, construct water bars at the beginning of each approach and associ-ated controls (see Water Bar Measure).
Install stone for bridge approaches, construct water materials and geotestiles keeping in-stream work to a minimum. Upon removal of the structure, immediately shape the stream to its original cross-section, protect the 8. For bridges that are to remain in place more than 30 days apply measures that protect disturbed soils from erosion. The choice of measure used is in part dependent upon the length of time the crossing will be used.

minimum. Upon removal of the structure, immediately shape the stream to its original cross-section, protect the banks from crossion, and remove of all construction materials and apply soil protection measures to unstable soils. 2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Figure SCD-3: Stone Check Dam Above Catch Basin in Drainageway on Slope

Specifications

Geotextile fabric: shall be a pervious sheet of Figure GSF-2 for spacing requirements. polypropylene, nylon, polyester, ethylene or similar filaand backfilling operations. Filaments in the geotextile textiles shall not be used.

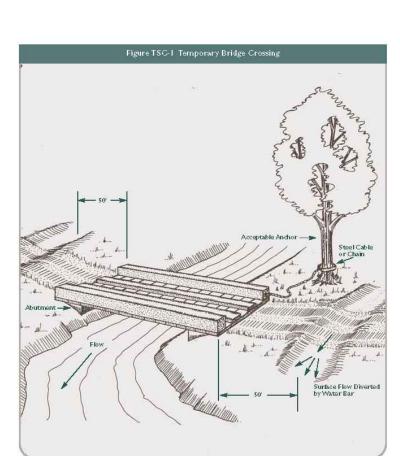
with projections for fastening the geotextile possessing a

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

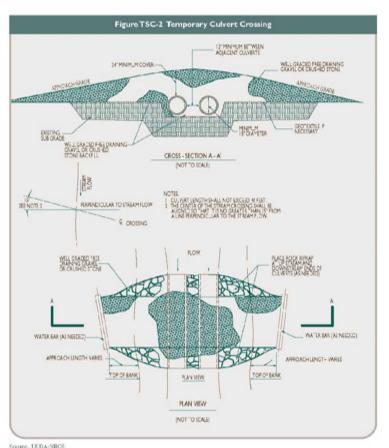
polypropytene, nylon, polyester, ethylene or similar fila-ments and shall be certified by the manufacturer or supplier as conforming to the requirements shown in Figure GSF-1. The geotexule shall be non-rotting, acid Catch Basins in Swale on Slopes: Locate 2 "U" shape across swale as above: one immediately up slope from

iton. The geotexule shall be free of any chemical treatment or coating that will reduce its permeability. The geotexule shall also be free of any flaws or defects which Guivert inless Locate in a "U" shape approximately 6 fee

2002 Connecticut Guidelines for Soil Erosion and Sediment Control



Source: Adapted from Virginia Brosion and Sediment Control Handbook, 1992.

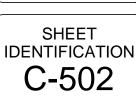


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POND ergy

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COLEBROOK



WETLAND CROSSING

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

The crossing shall be designed for single lane traffic only, with a minimum width of 12 feet and a maximum of 20 feet. Por culvert crossings the length of the culvert(s) shall include the width needed for single lane the native soil. Provide specifications for the geotextile

areas that can be damaged should the crossing capacity be

undeveloped land, forest land

lands greater than 5 acres in size.

crossing shall not impact structures in close proximity to

choose the 5-year design frequency.

tion for the chosen design storm.

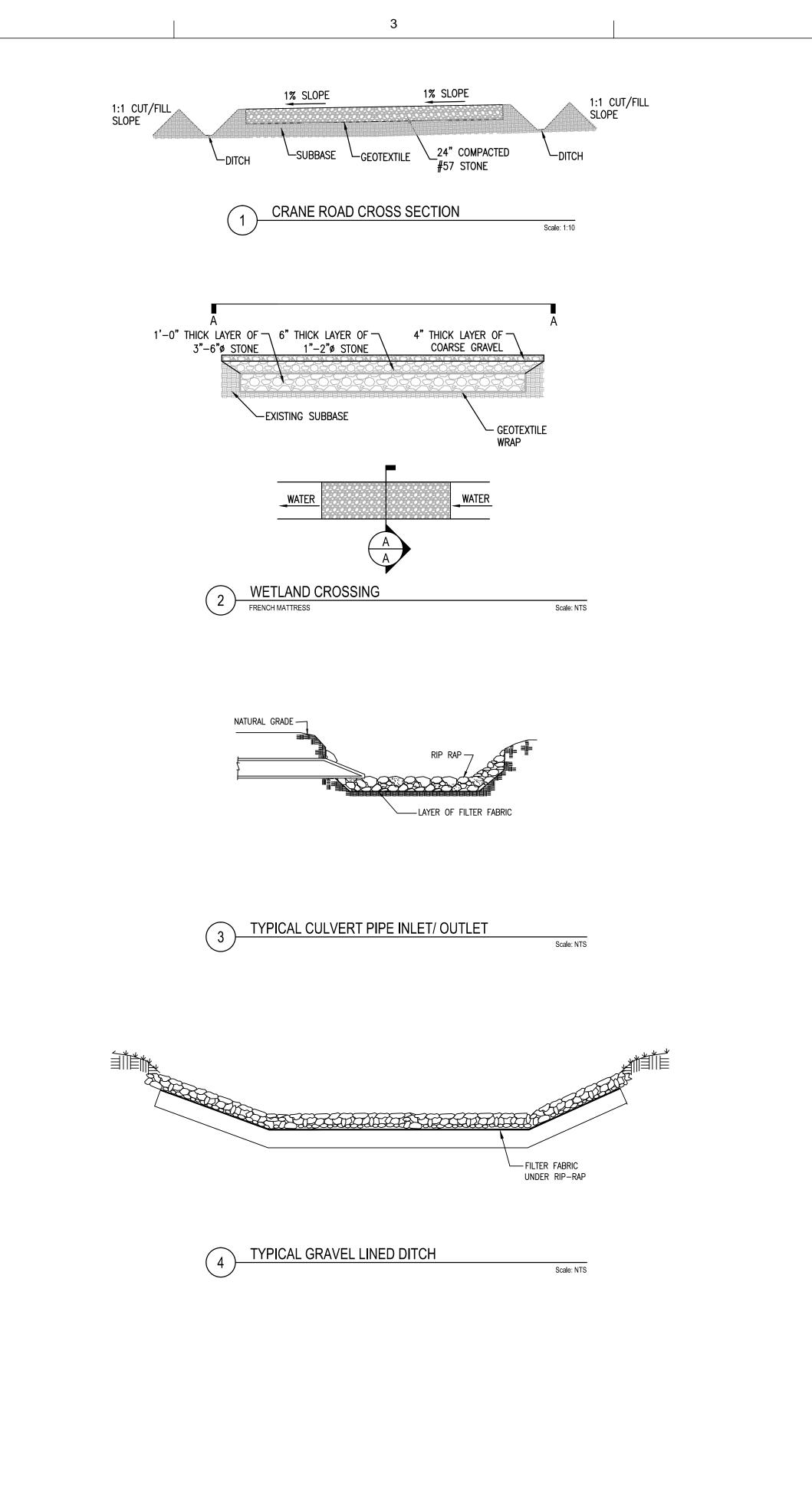
centerline of both roadway approaches shall coin- Riprap measure.

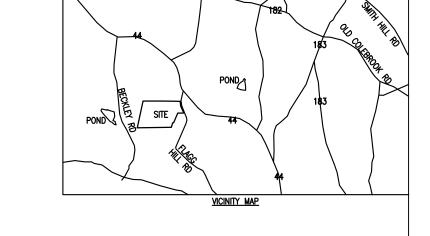
cide with the centerline of the crossing with sufficient

Position posts to overlap as shown above, making cer-tain that fabric folds around each post one full turn

Drive posts tightly together and secure tops of posts by tying off with cord or wire to prevent flow-through of built-up sediment at joint.

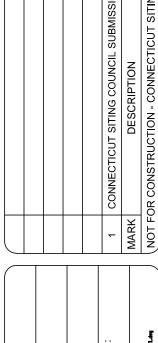




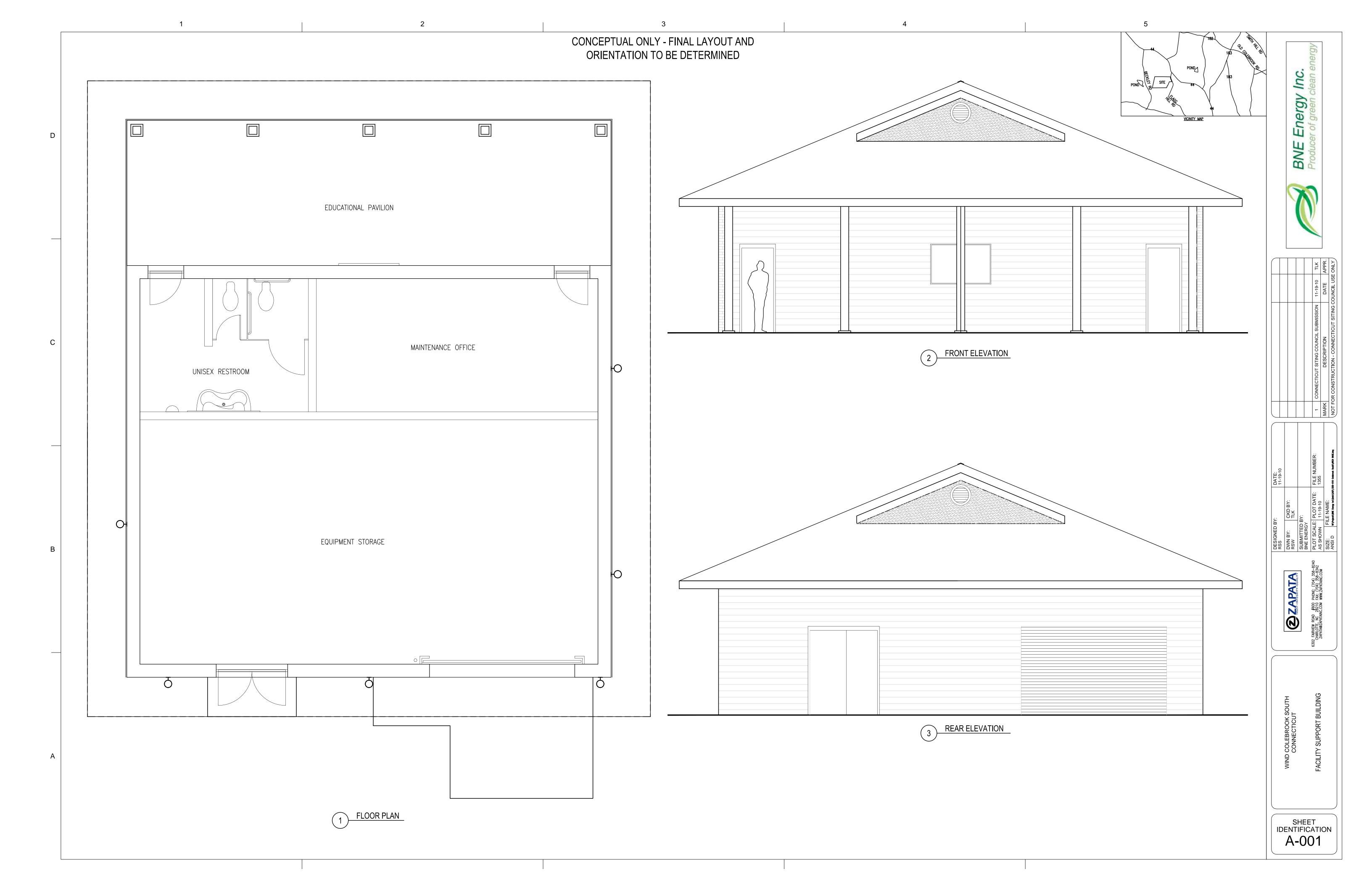


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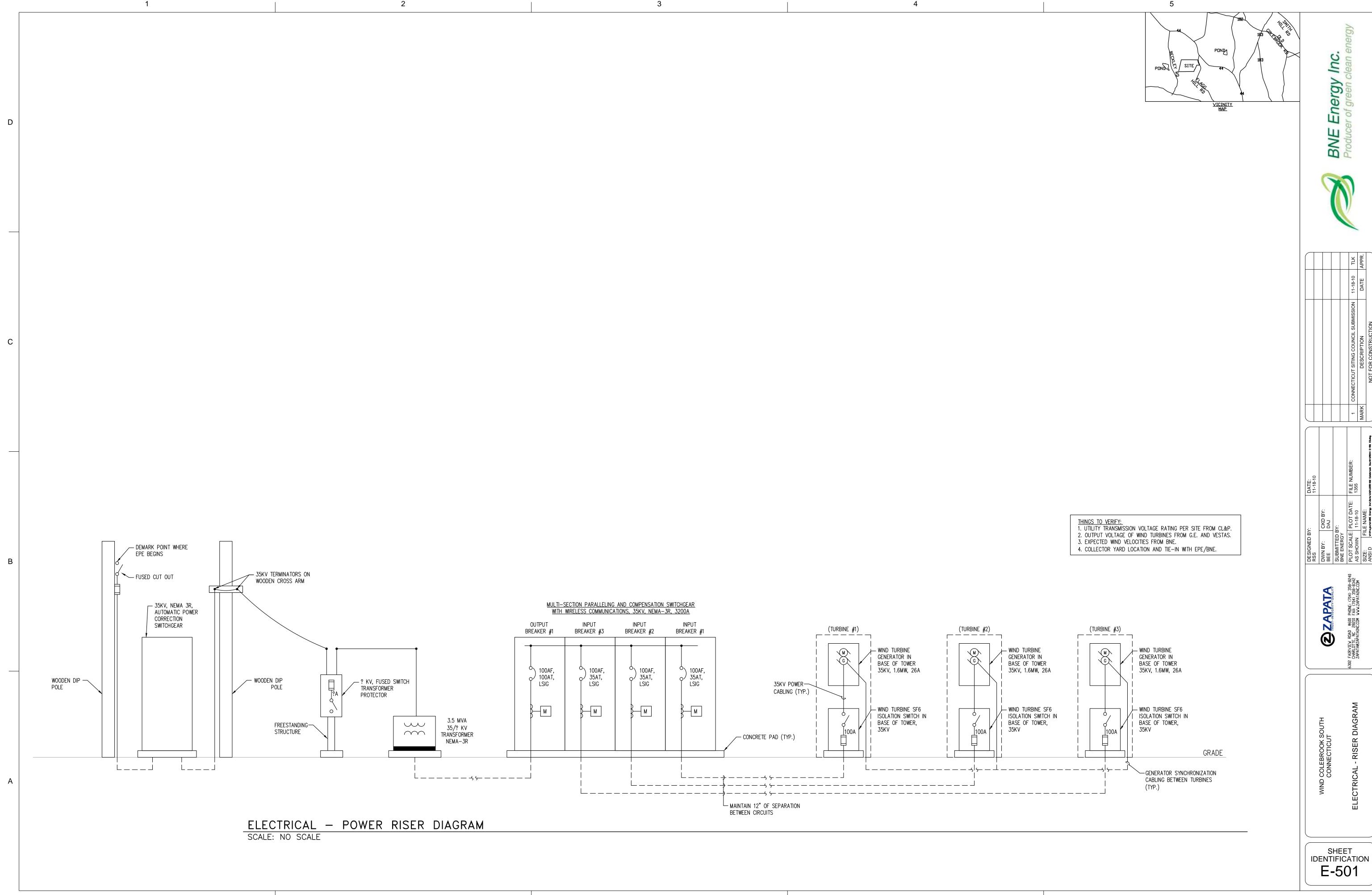




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	SUBMITTED BY: BNE ENERGY) BY: Y	
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