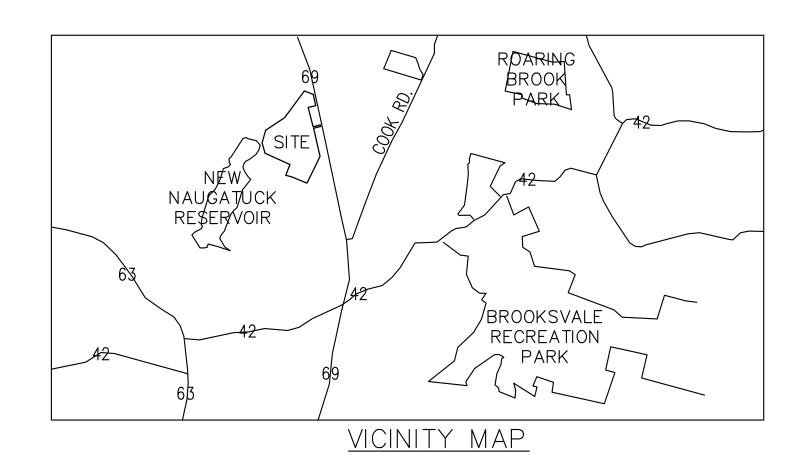


### WIND PROSPECT

## 178 NEW HAVEN ROAD PROSPECT, CONNECTICUT



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



AREA CONSTRUCTION PHASE GRADING PLAN 14 C-302 ACCESS ROAD STA: 9+00 TO 15+00 CONSTRUCTION PHASE GRADING PLAN 15 C-303 TURBINE LOCATION TWO CONSTRUCTION PHASE GRADING PLAN C-304 ACCESS ROAD PLAN AND PROFILE STA: 0+00 TO 4+00 C-305 ACCESS ROAD PLAN AND PROFILE STA: 4+00 TO 9+00 18 C-306 ACCESS ROAD PLAN AND PROFILE STA: 9+00 TO 14+00 19 C-307 ACCESS ROAD PLAN AND PROFILE STA: 14+00 TO 19+52 20 C-308 POST-CONSTRUCTION GRADING PLAN 21 C-309 TURBINE LOCATION ONE AND CRANE ASSEMBLY AREA POST-CONSTRUCTION GRADING PLAN 22 C-310 ACCESS ROAD STA: 9+00 TO 15+00 POST-CONSTRUCTION GRADING PLAN 23 C-311 TURBINE LOCATION TWO POST-CONSTRUCTION GRADING PLAN 24 C-312 UPLAND MEADOW (CREATION AND RESTORATION) PLAN 25 C-313 TURBINE LOCATION ONE UPLAND MEADOW (CREATION AND RESTORATION) PLAN 26 C-314 ACCESS ROAD STA: 9+00 TO 15+00 UPLAND MEADOW (CREATION AND RESTORATION) PLAN

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CONNECTICUT SITING COUNCIL SUBMISSION

BNE Energy Inc.



က	INCORPORATED REQUESTED REVISIONS	03-08-11	MLC
2	INCORPORATED REQUESTED REVISIONS	01-31-11	TLK
-	CONNECTICUT SITING COUNCIL SUBMISSION	11-04-10	TLK
MARK	DESCRIPTION	DATE	APPR.
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SUBMITTED BY: ZAPATA INC.	) BY:	PARCEL NO.: TAX MAP 112, BLOCK 96, LOT 178
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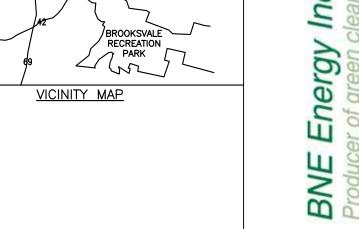
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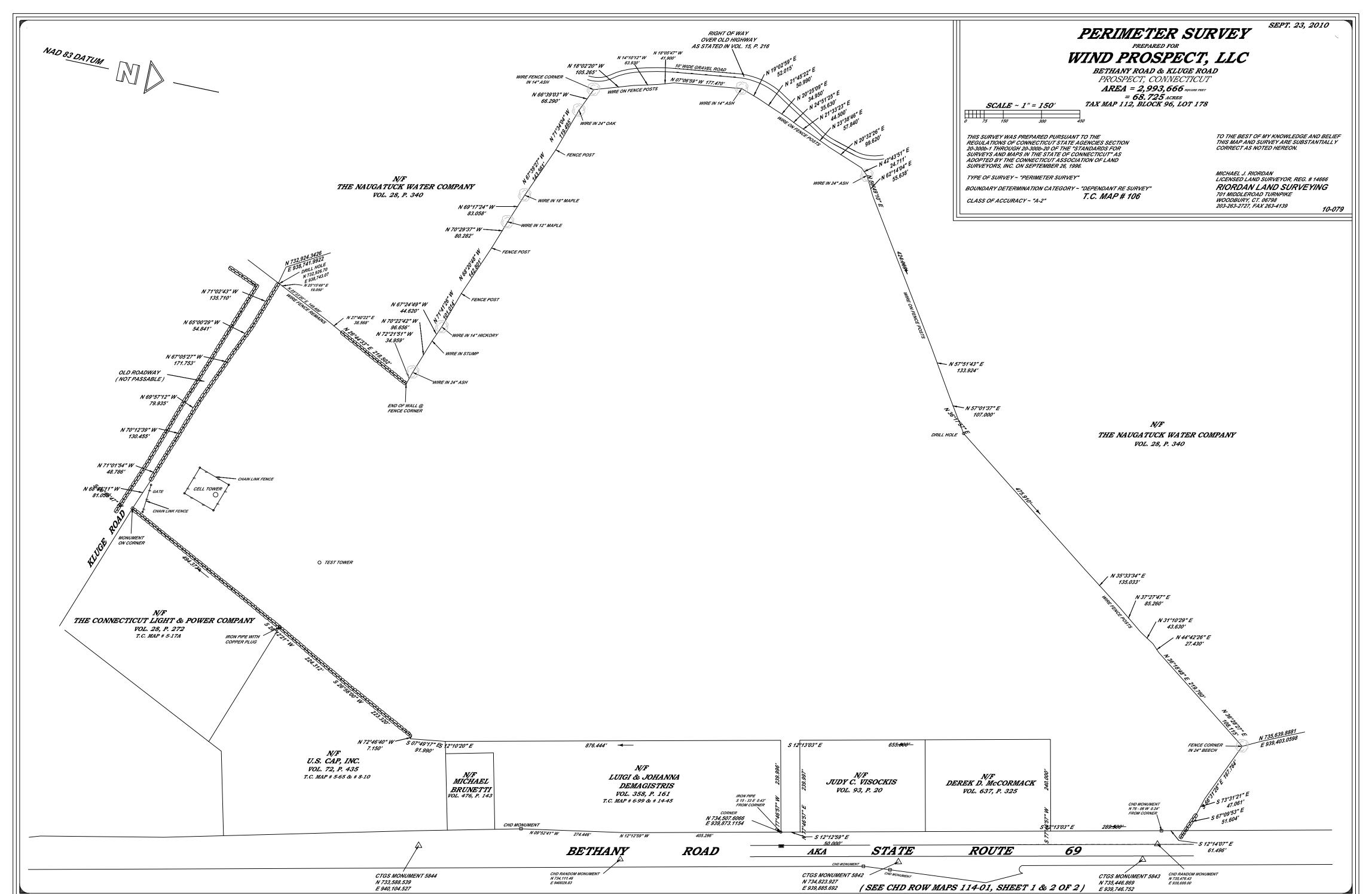


APPR.	DATE	DESCRIPTION	MARK
TLK	11-04-10	CONNECTICUT SITING COUNCIL SUBMISSION	1
TLK	01-31-11	INCORPORATED REQUESTED REVISIONS	2
MLC	03-08-11	INCORPORATED REQUESTED REVISIONS	3

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<b>2 ДРАТТА</b> 18302 FAIRNIEW ROAD #600 PHONE: (704) 358-8240  CHARLOTTE, NC 28210 FAX: (704) 358-8342  ZAPATA@ZAPATAINC.COM WWW.ZAPATAINC.COM
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ECT	ΙΛ	МАР
WIND PROSPECT	CONNECTICUT	ARIITTERS MAP



### LOCATION TWO SHEET C102 `BLADE LAYDOWN AREA (TYP) TURBINE LOCATION (TYP) TOWER LAYDOWN AREA (TYP) - CRANE PAD (TYP) SOIL STOCKPILE AREA ELECTRICAL COLLECTOR YARD FINAL LOCATION TO BE COORDINATED WITH PUBLIC UTILITY COMPANY LOCATION ONE SHEET C101 FACILITY SUPPORT BUILDING (40'X50') WILL INCLUDE EQUIPMENT STORAGE, MAINTENANCE OFFICE AND EDUCATIONAL SPACE.



<u>VICINITY MAP</u>

PROJECT BOUNDARY LINE

EXISTING VEGETATION

----- WETLAND LIMITS

POST CONSTRUCTION VEGETATION LINE

WETLANDS

COMPACTED FILL

GRAV

### 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 FEATURES.
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TREE AREA TO BE CLEARED: 249901 SQ. FT. / 5.74 ACRES AREA TO BE DISTURBED: 426366 SQ. FT. / 9.79 ACRES AREA WITHIN 100' WETLAND OFFSET: 48050 SQ. FT. / 1.10 ACRES

THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION.



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ER: ENERGY		
CEL NO.:	က	INCORPORATED REQUESTED REVISIONS
AP 112, BLOCK 96, LOT 178	2	INCORPORATED REQUESTED REVISIONS
NUMBER:	-	CONNECTICUT SITING COUNCIL SUBMISSIO
	MAKK	DESCRIPTION

	DWN BY: RSW	CKD BY:	OWNER: BNE ENEF
	SUBMITTED BY: ZAPATA INC.	D BY:	PARCEL I
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18051-INTEGRITY: 0.0.4.LITA

1802 FAIRVIEW ROAD #600 PHONE: (704) 358-8240

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

CONNECTICULI AN WITH AERIAL IMAGREY

HEET SITE PL

SHEET IDENTIFICATION C-002

### 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.
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### LOCATION TWO BLADE LAYDOWN AREA (TYP) 2-2000 TURBINE LOCATION (TYP) N: 734277.41 E: 938803.71 ELEV: 640.00 ·TOWER LAYDOWN AREA (TYP) — SOIL STOCKPILE AREA LOCATION ONE SHEET C101

N: 733242.24

E: 939079.11

ELEV: 663.00

FACILITY SUPPORT BUILDING (40'X50') WILL

INCLUDE EQUIPMENT STORAGE, MAINTENANCE -

OFFICE AND EDUCATIONAL SPACE.

ELECTRICAL COLLECTOR YARD

WITH PUBLIC UTILITY COMPANY

CELL

TOWER/

- FINAL LOCATION TO BE COORDINATED

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<u>LEGEND</u>

PROJECT BOUNDARY LINE

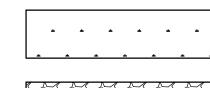
<u>VICINITY MAP</u>

EXISTING VEGETATION

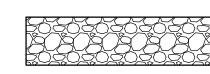
WETLAND LIMITS

POST CONSTRUCTION VEGETATION LINE

COMPACTED FILL



WETLANDS



GRAV

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# INCORPORATED REQUESTED REVISIONS INCORPORATED REQUESTED REVISIONS CONNECTICUT SITING COUNCIL SUBMISSI DESCRIPTION

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FARVIEW ROAD #600 PHONE: (704) 358-8240 CHARLOTTE, NC. 28210 FAX: (704) 358-8342

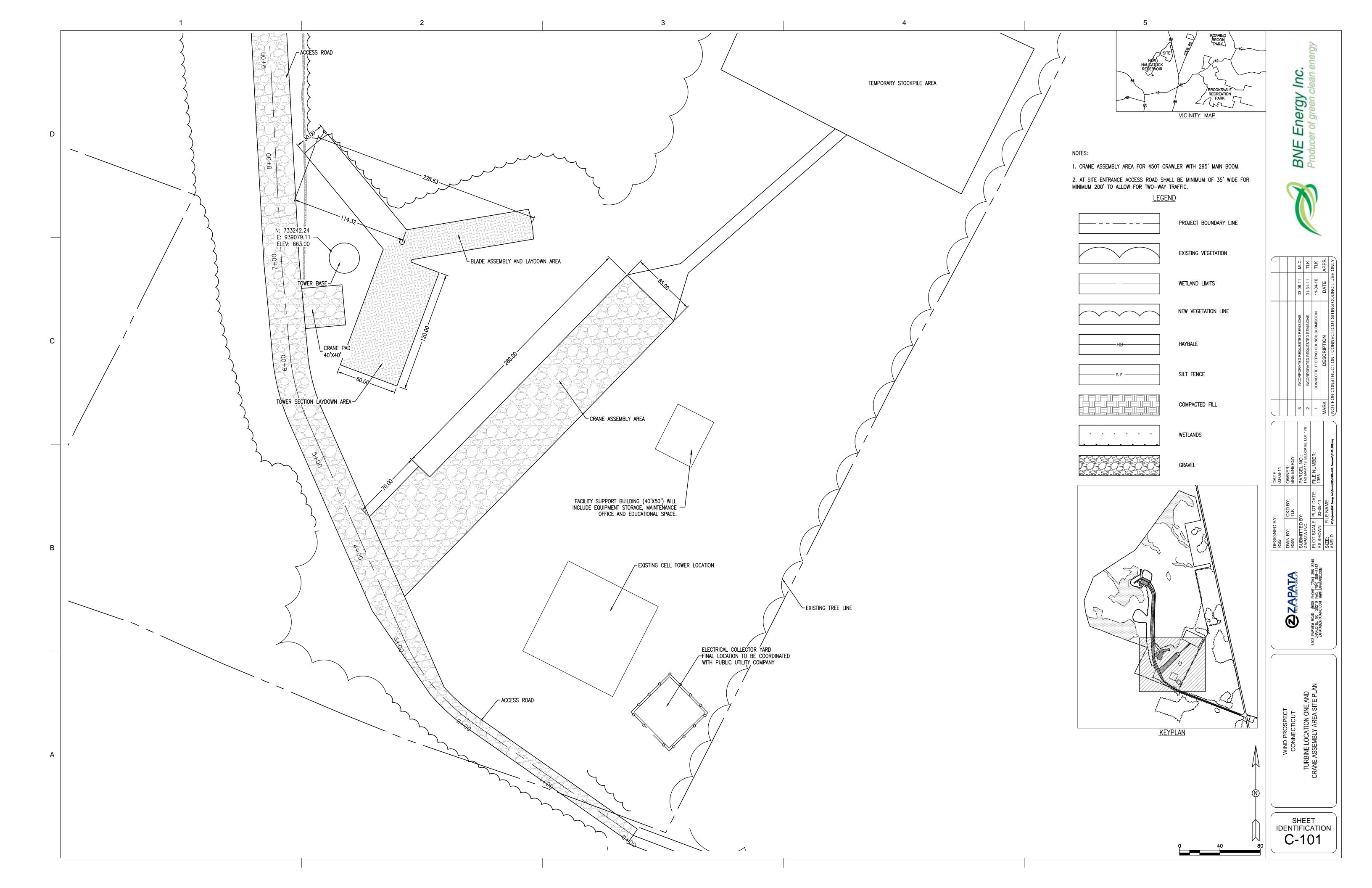
OVERALL SITE PLAN

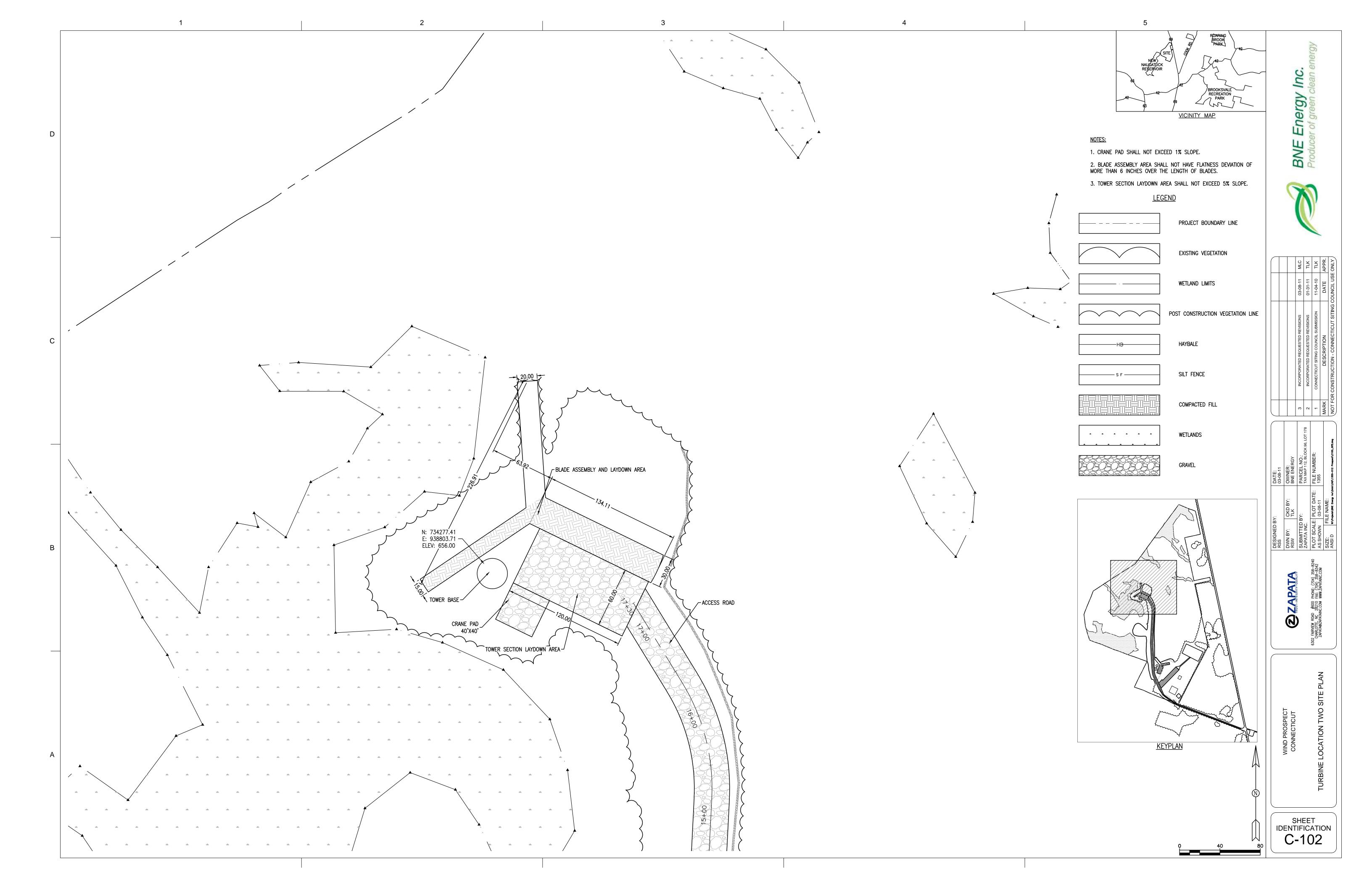
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### **CONSTRUCTION SCHEDULE:**

- 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
- 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.

AND STRUCTURES.

- 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
- 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
- 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, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATION TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

### TREE PROTECTION NOTES:

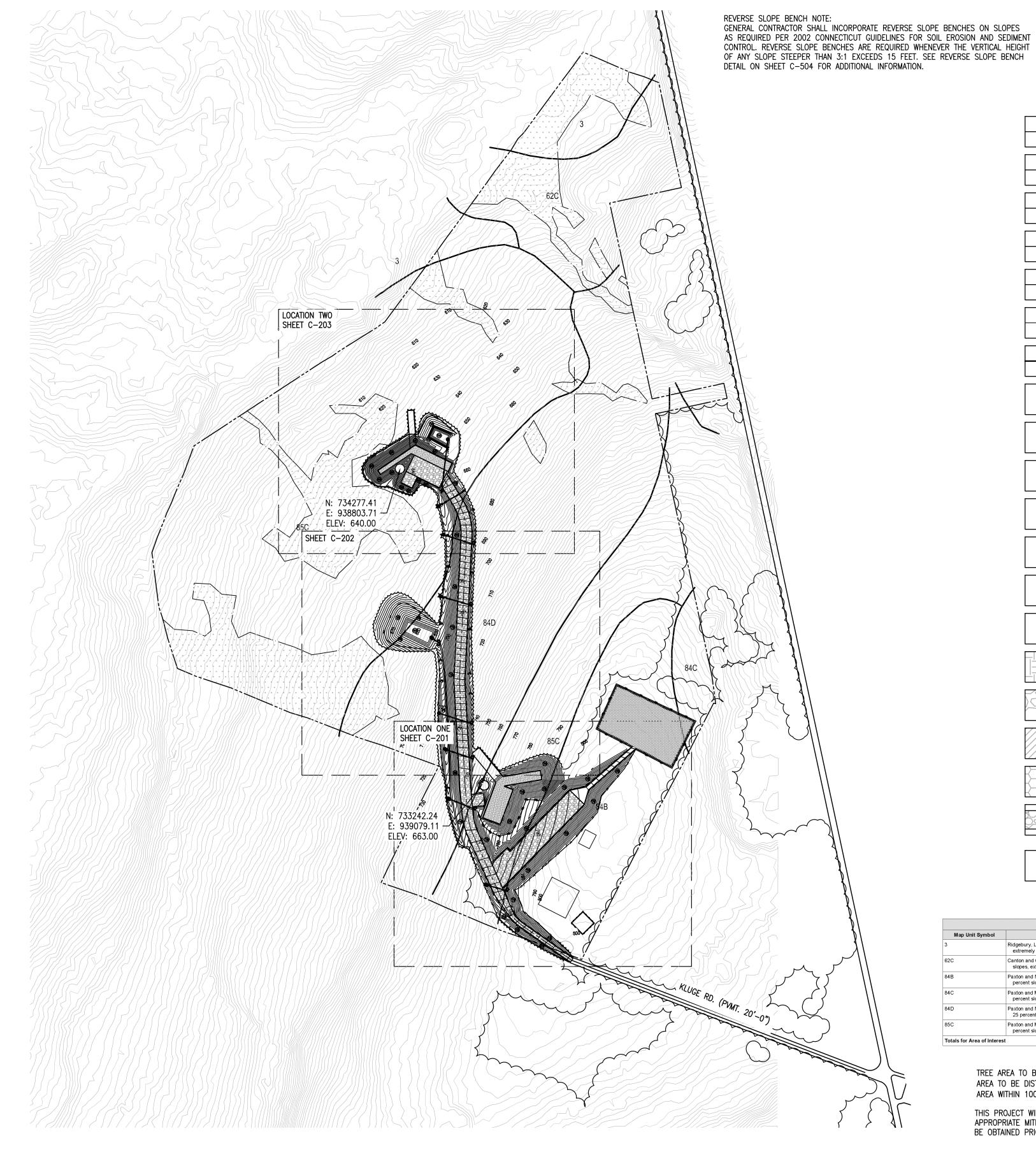
- 1. TREE BARRICADES MUST BE INSTALLED BEFORE ANY DEMOLITION, CLEARING, GRADING, OR CONSTRUCTION, AND NOT REMOVED UNTIL AFTER FINAL INSPECTION BY URBAN FORESTRY STAFF.
- 2. NO SOIL DISTURBANCE OR COMPACTION, CONSTRUCTION MATERIALS, BURIAL PITS, TRENCHING OR OTHER LAND DISTURBING ACTIVITY ALLOWED IN TREE 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 INCHES 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 FEET (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.

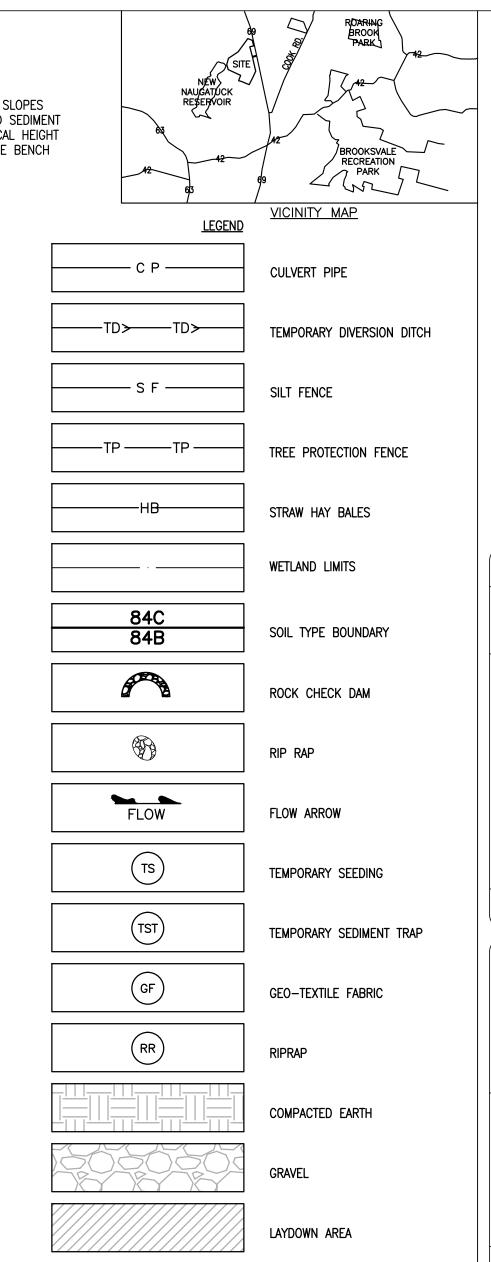
### EROSION CONTROL NOTES:

- 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:

- 1. 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.





	State of Connecticut (CT	600)	
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, extremely stony	3.5	4.4%
62C	Canton and Charlton soils, 3 to 15 percent slopes, extremely stony	4.9	6.1%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	8.9	11.1%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	1.0	1.3%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	19.7	24.6%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	42.0	52.5%
Totals for Area of Intere	st	80.0	100.0%

TREE AREA TO BE CLEARED: 249901 SQ. FT. / 5.74 ACRES AREA TO BE DISTURBED: 426366 SQ. FT. / 9.79 ACRES AREA WITHIN 100' WETLAND OFFSET: 48050 SQ. FT. / 1.10 ACRES

THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION.

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APPR.	DATE	K DESCRIPTION	MARK	
TLK	11-04-10	CONNECTICUT SITING COUNCIL SUBMISSION	-	
TLK	01-31-11	INCORPORATED REQUESTED REVISIONS	2	78
MLC	03-08-11	INCORPORATED REQUESTED REVISIONS	3	

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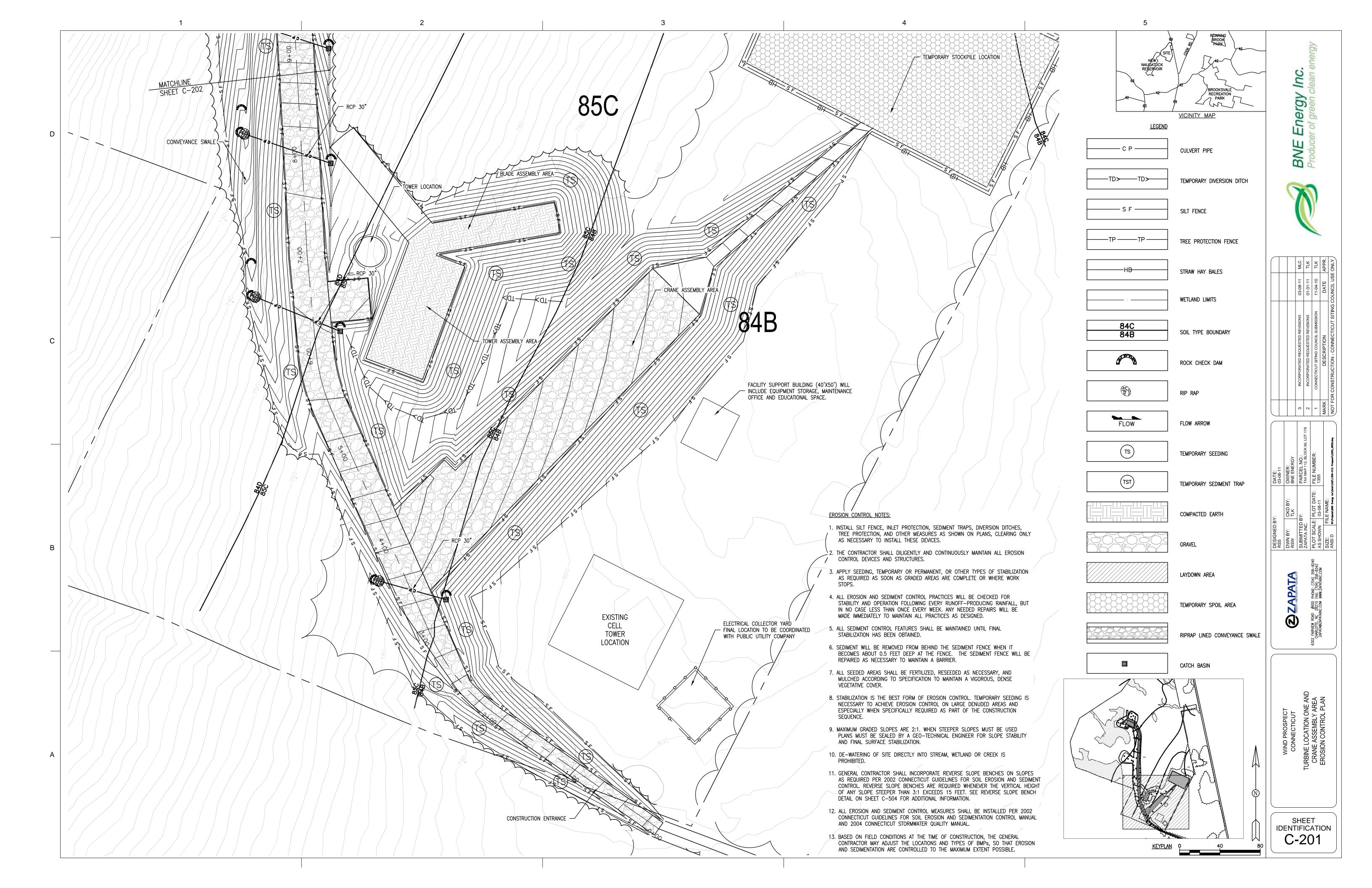
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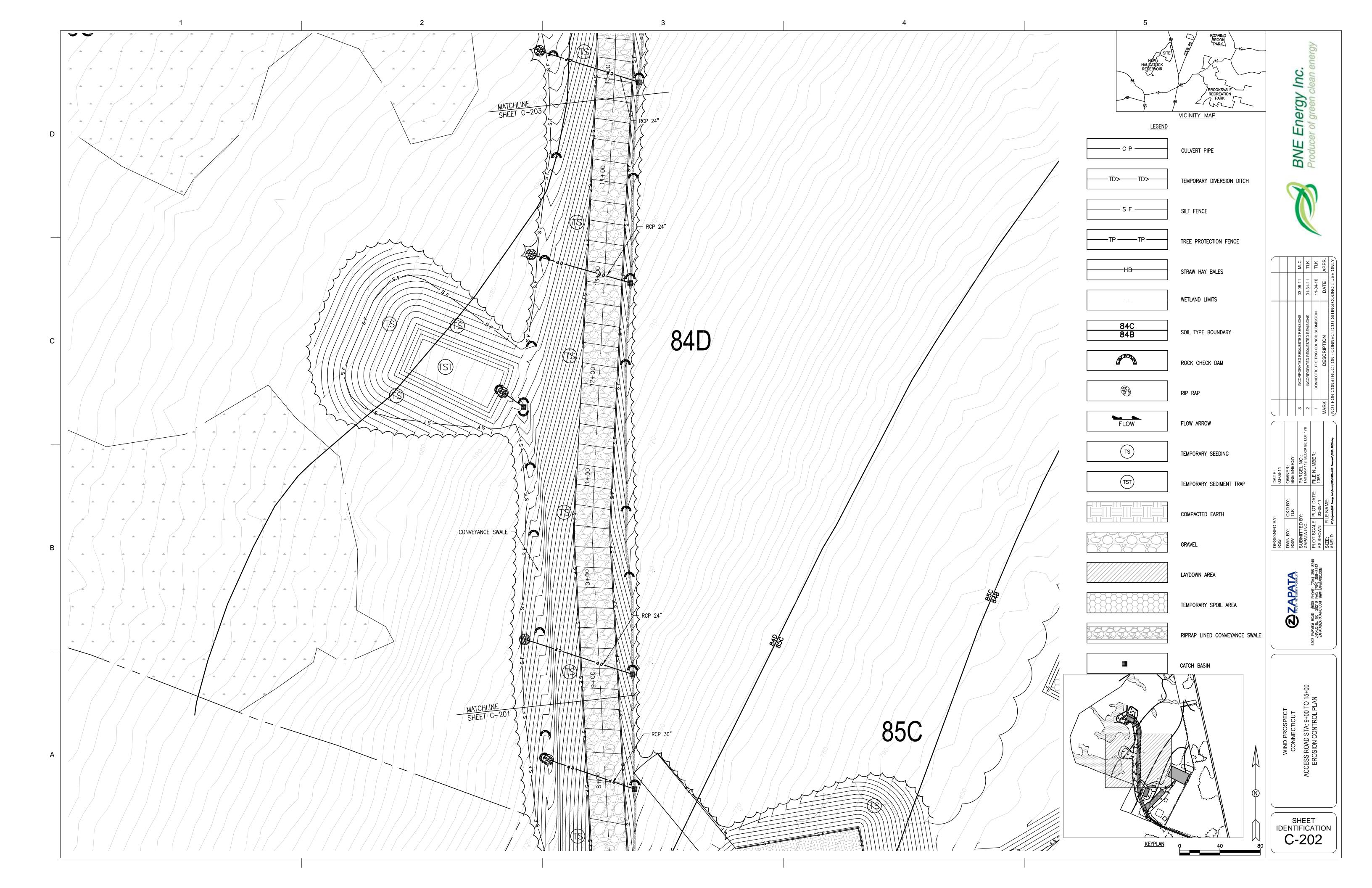
TEMPORARY SPOIL AREA

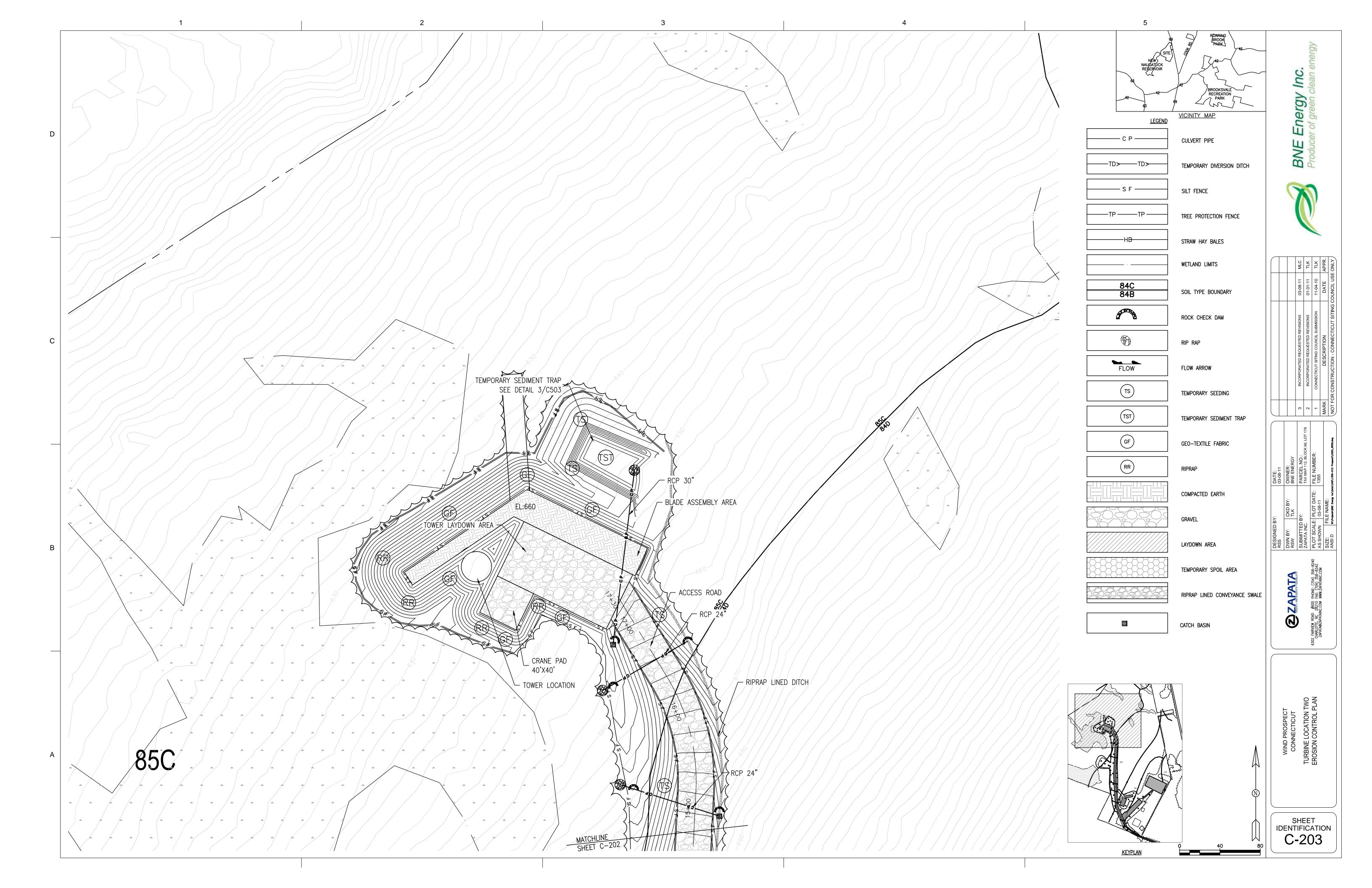
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CONNECTICUT







VICINITY MAP <u>LEGEND</u> CULVERT PIPE DITCH LINE EXISTING TOPO LOCATION TWO NEW TOPO SHEET C-303 WETLAND LIMITS VEGETATION N: 734277.41 E: 938803.71 ELEV: 640.00 POST CONSTRUCTION VEGETATION LINE COMPACTED EARTH SHEET C-302 WETLAND GRAVEL LAYDOWN AREA LOCATION ONE SHEET C-301 THIS PROJECT WILL HAVE NO TEMPORARY DIRECT WETLAND IMPACT. APPROPRIATE MITIGATION PROCEDURES AND REQUIRED PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION. N: 733242.24 E: 939079.11 ELEV: 663.00

**GRADING NOTES:** 

PRIOR TO CONTINUING WORK.

CONSTRUCTION TO ENSURE PROPER DRAINAGE.

UNDERGROUND UTILITIES.

P, OR AS AMENDED.

1. DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER

2. GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING

4. ALL GRADES SHOWN ON PLANS TO BE FIELD-VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCIES EXIST, NOTIFY THE ENGINEER PRIOR

6. GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.

8. ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.

9. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS

10. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO

11. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART

STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.

3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER

5. ALL SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.

7. MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.

NECESSARY TO INSURE SAFETY TO THE PUBLIC.

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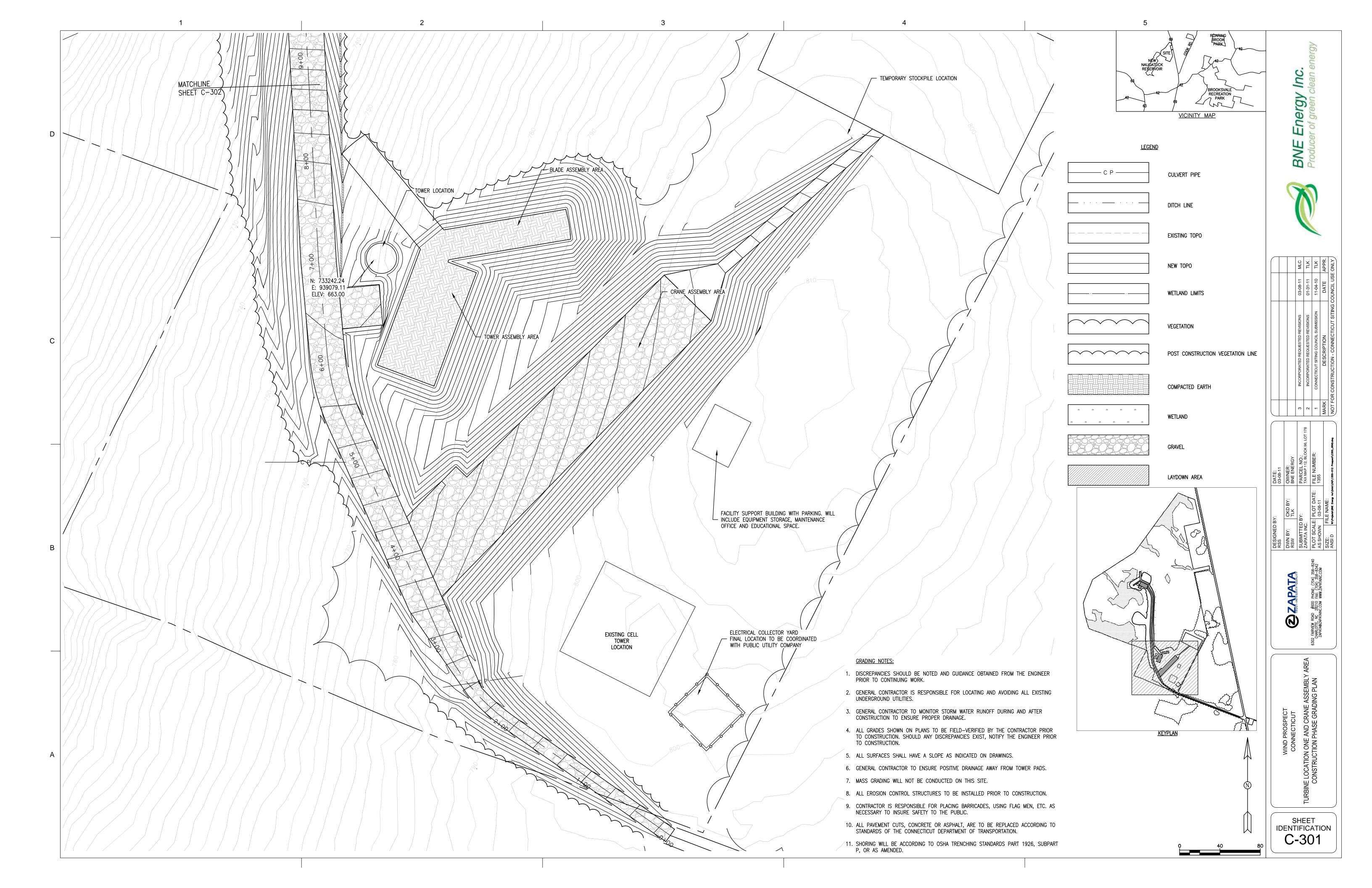


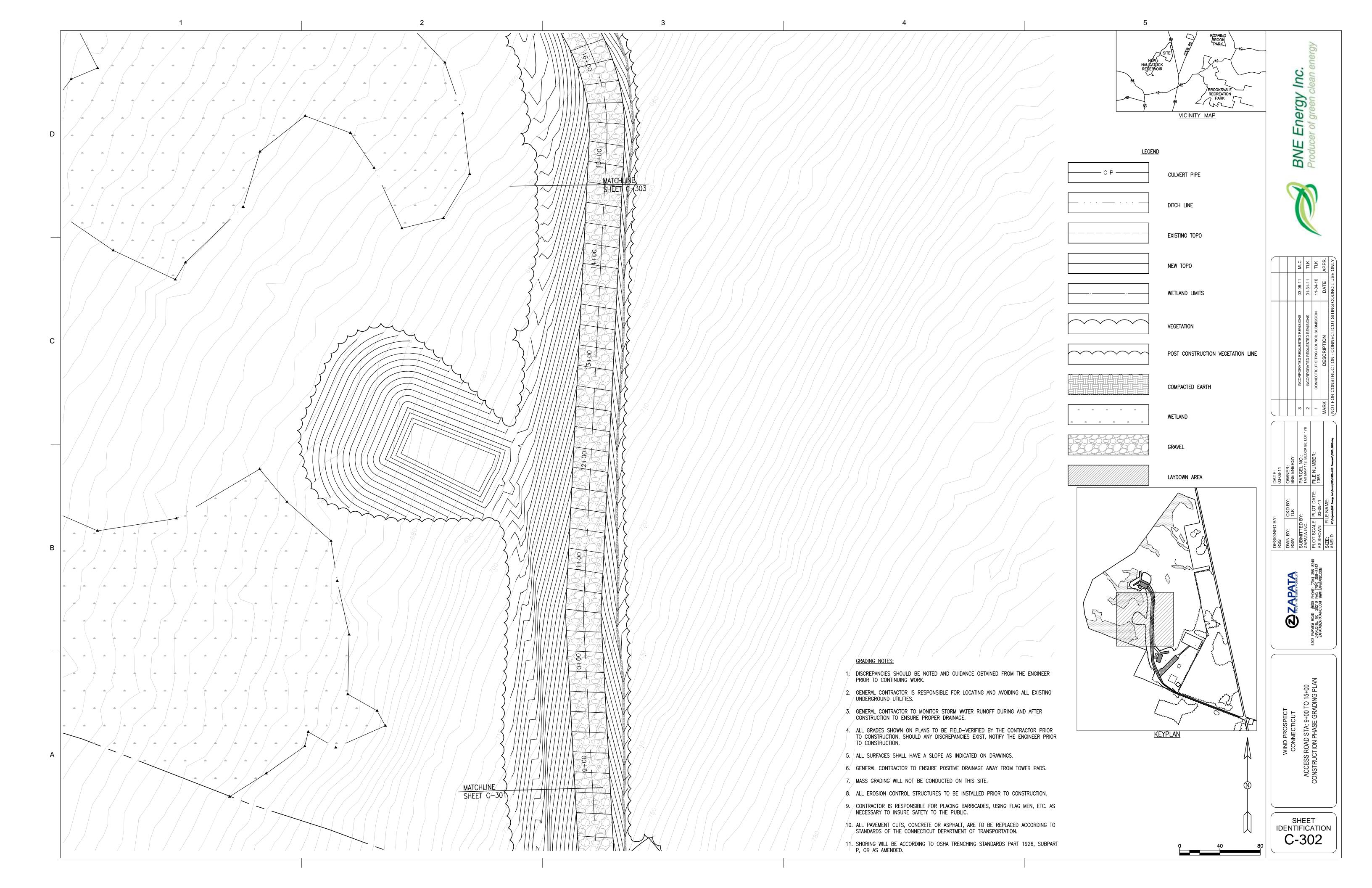
	8	INCORPORATED REQUESTED REVISIONS	03-08-11	MLC
, LOT 178	2	INCORPORATED REQUESTED REVISIONS	01-31-11	TLK
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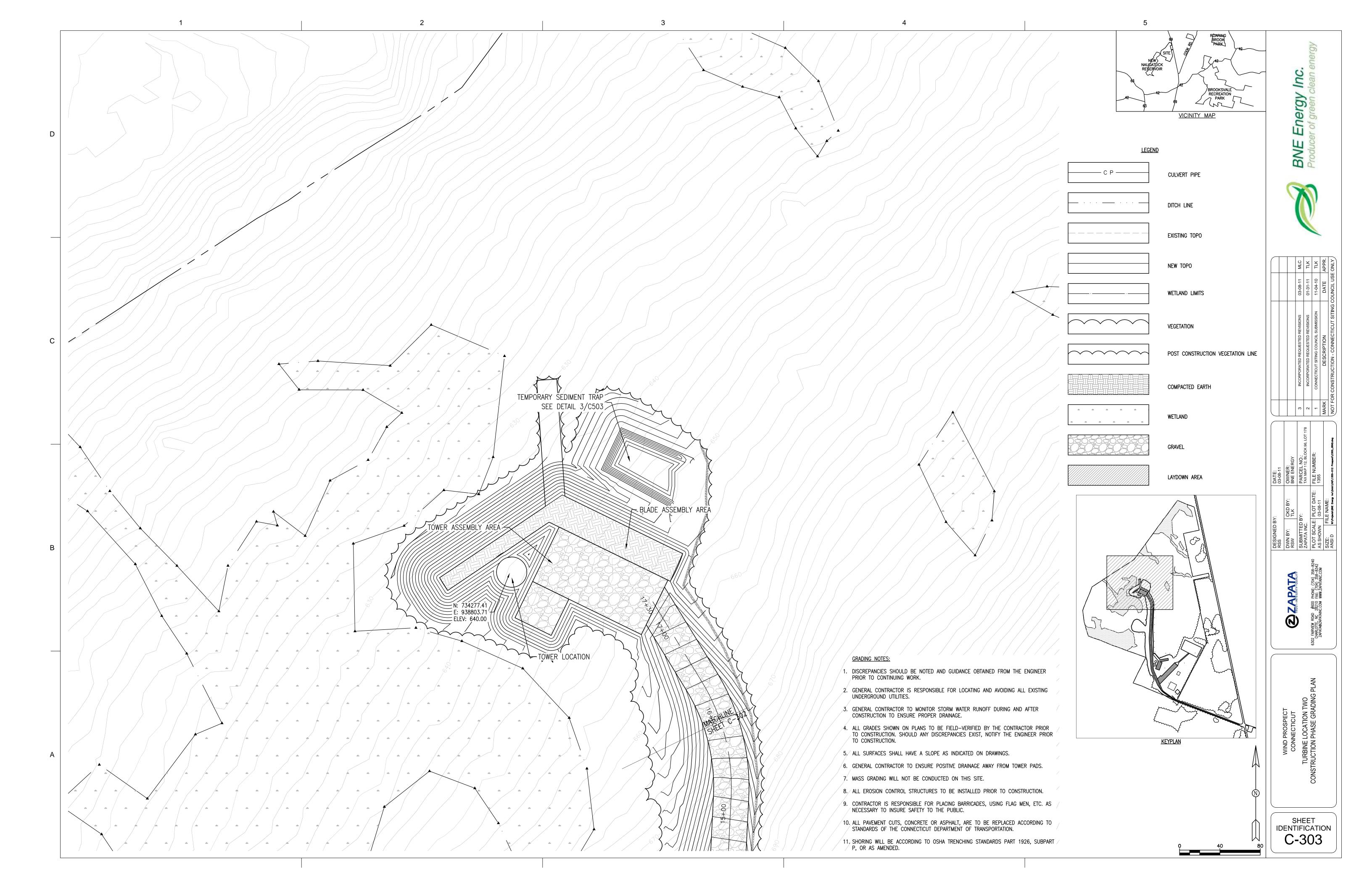
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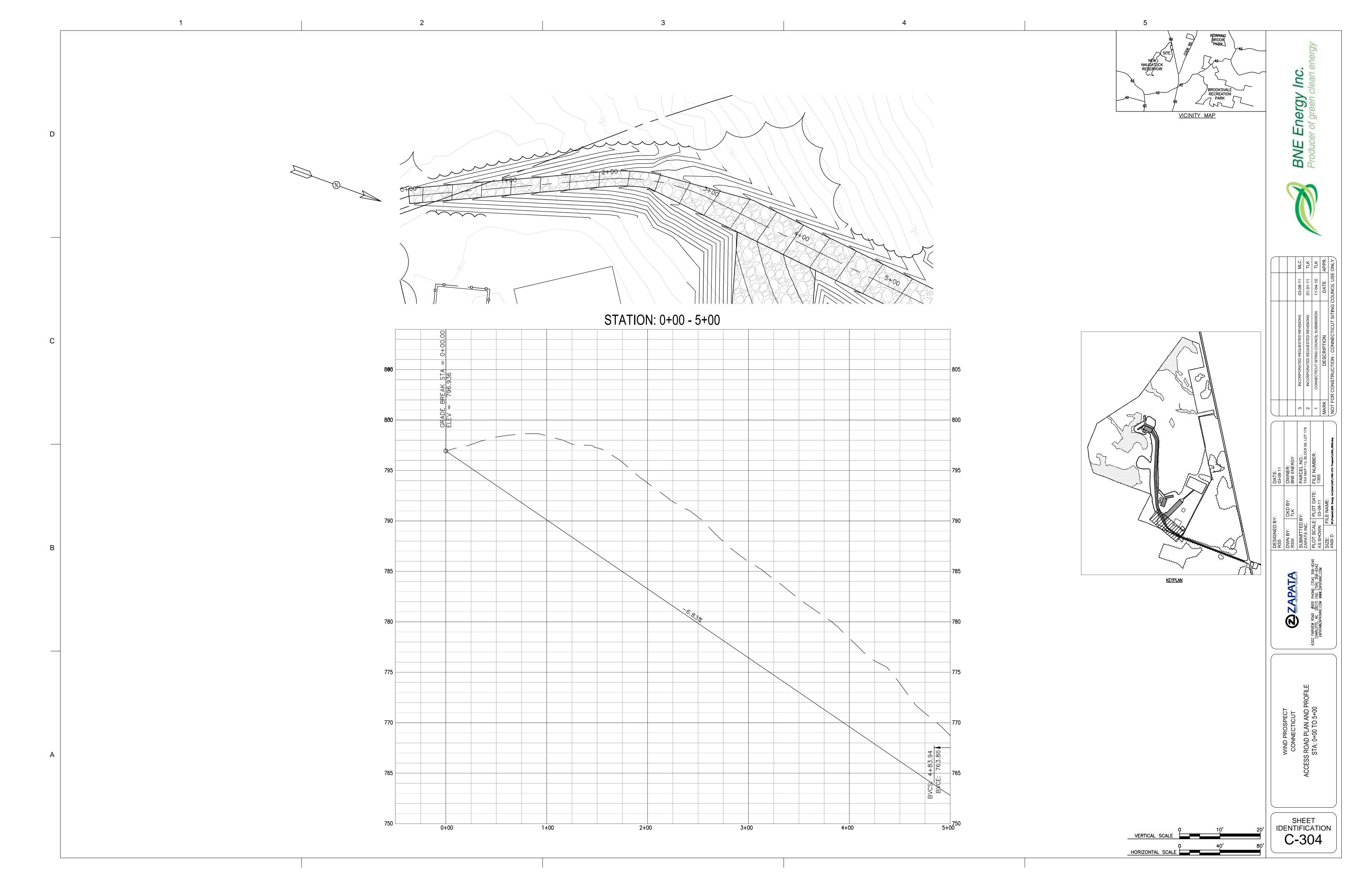
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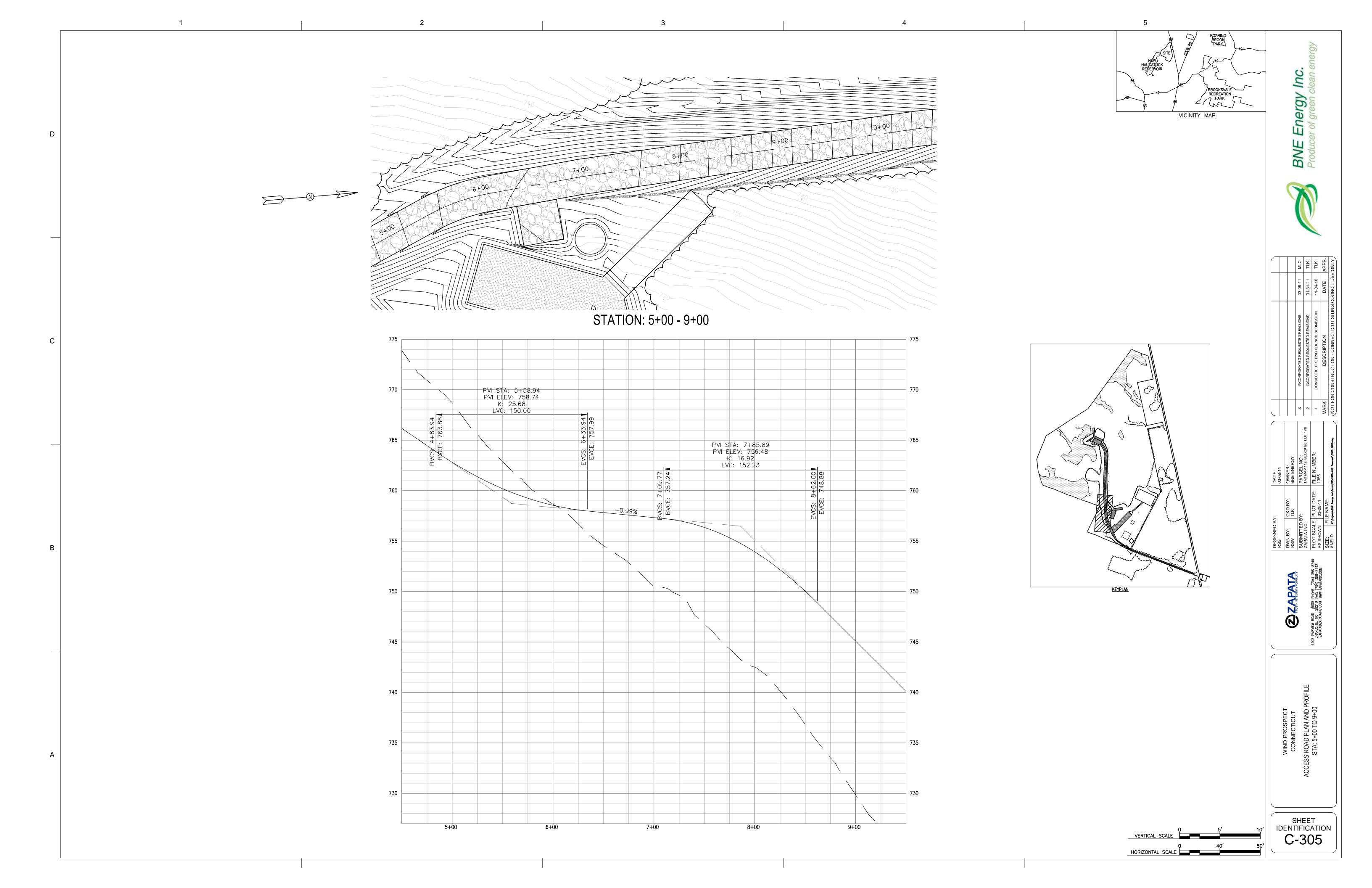
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GRADING PLAN

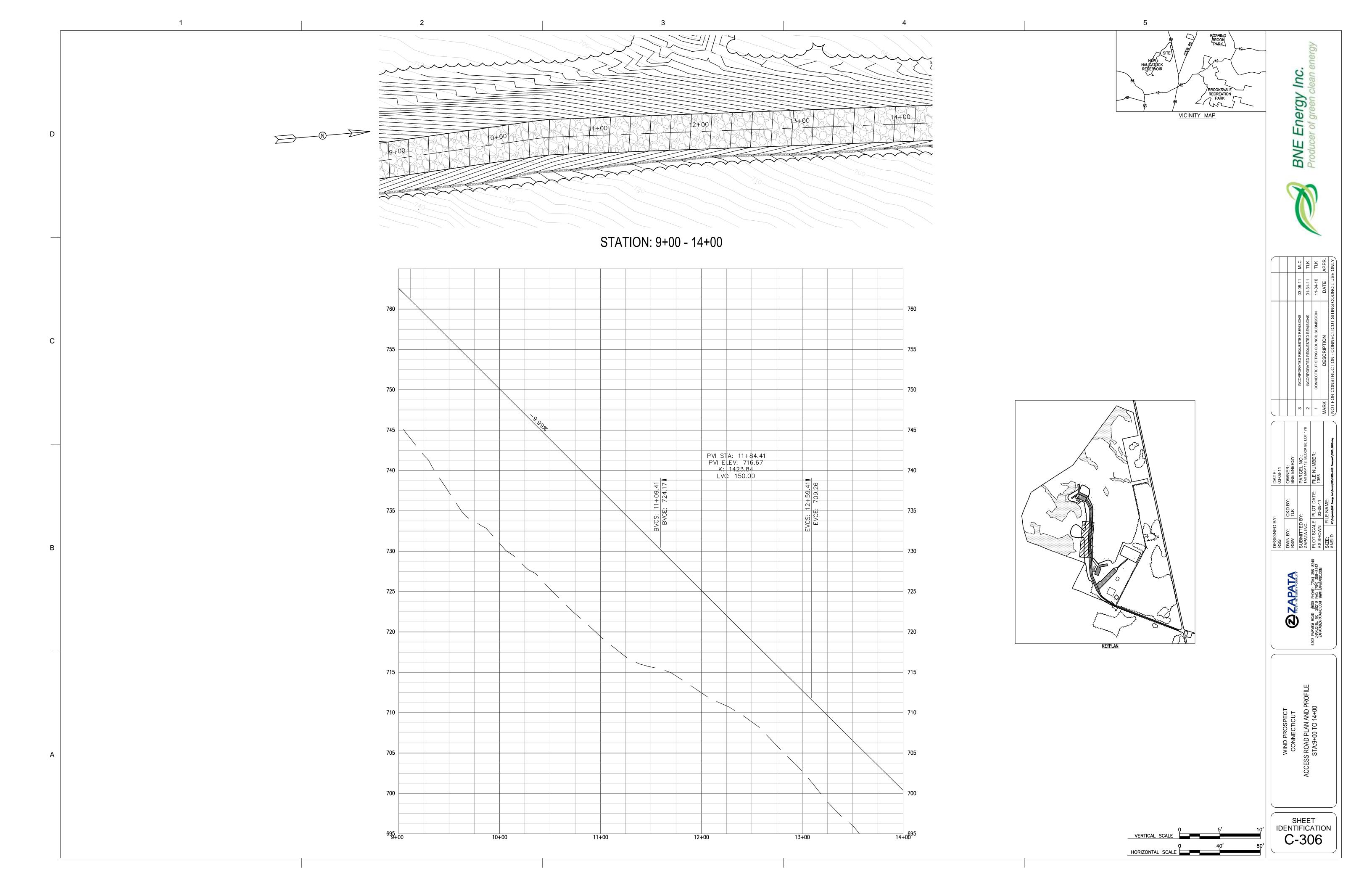


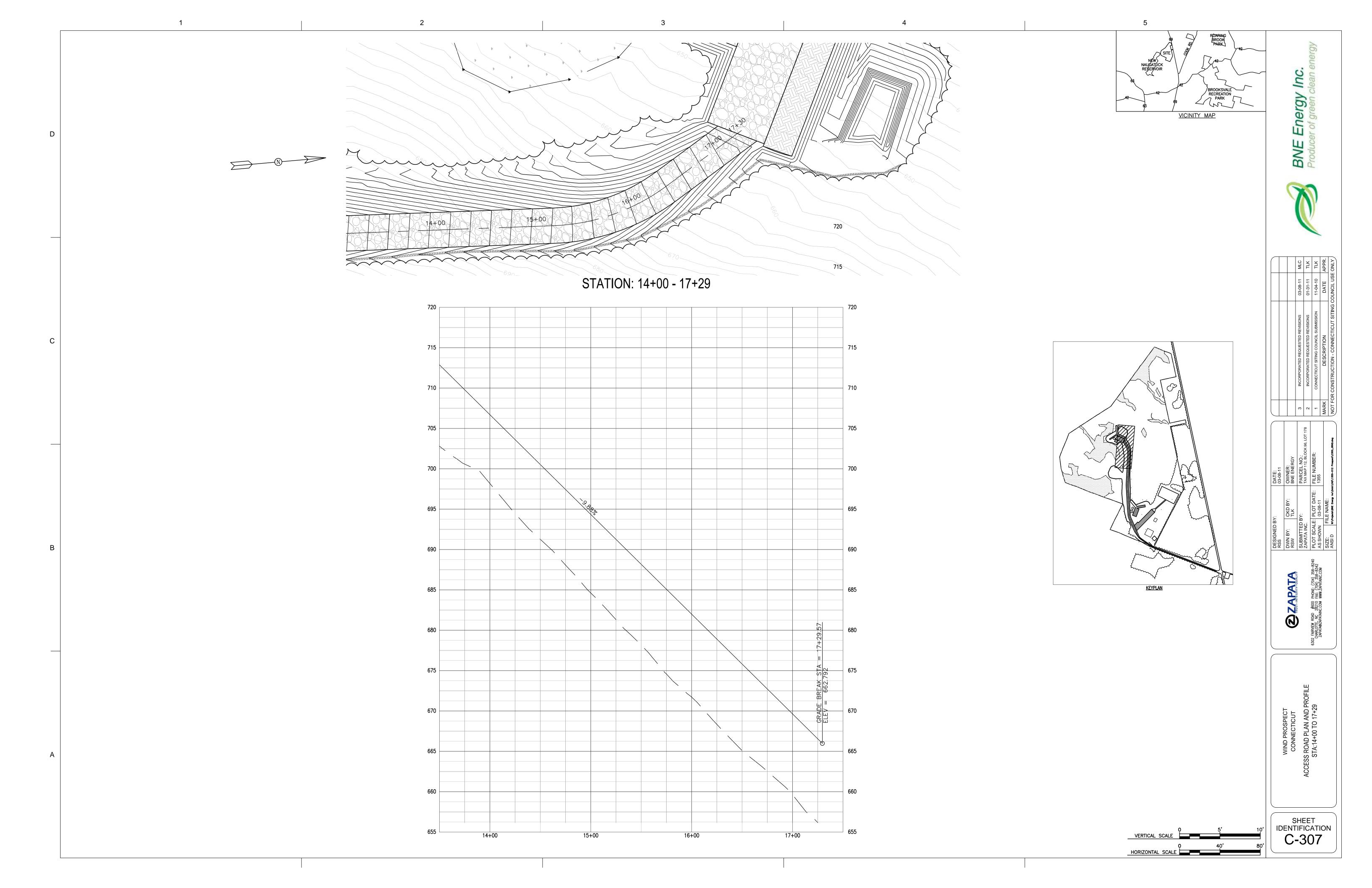












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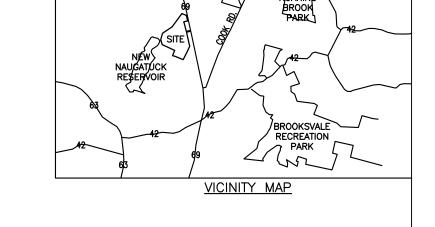
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3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER

5. ALL SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.



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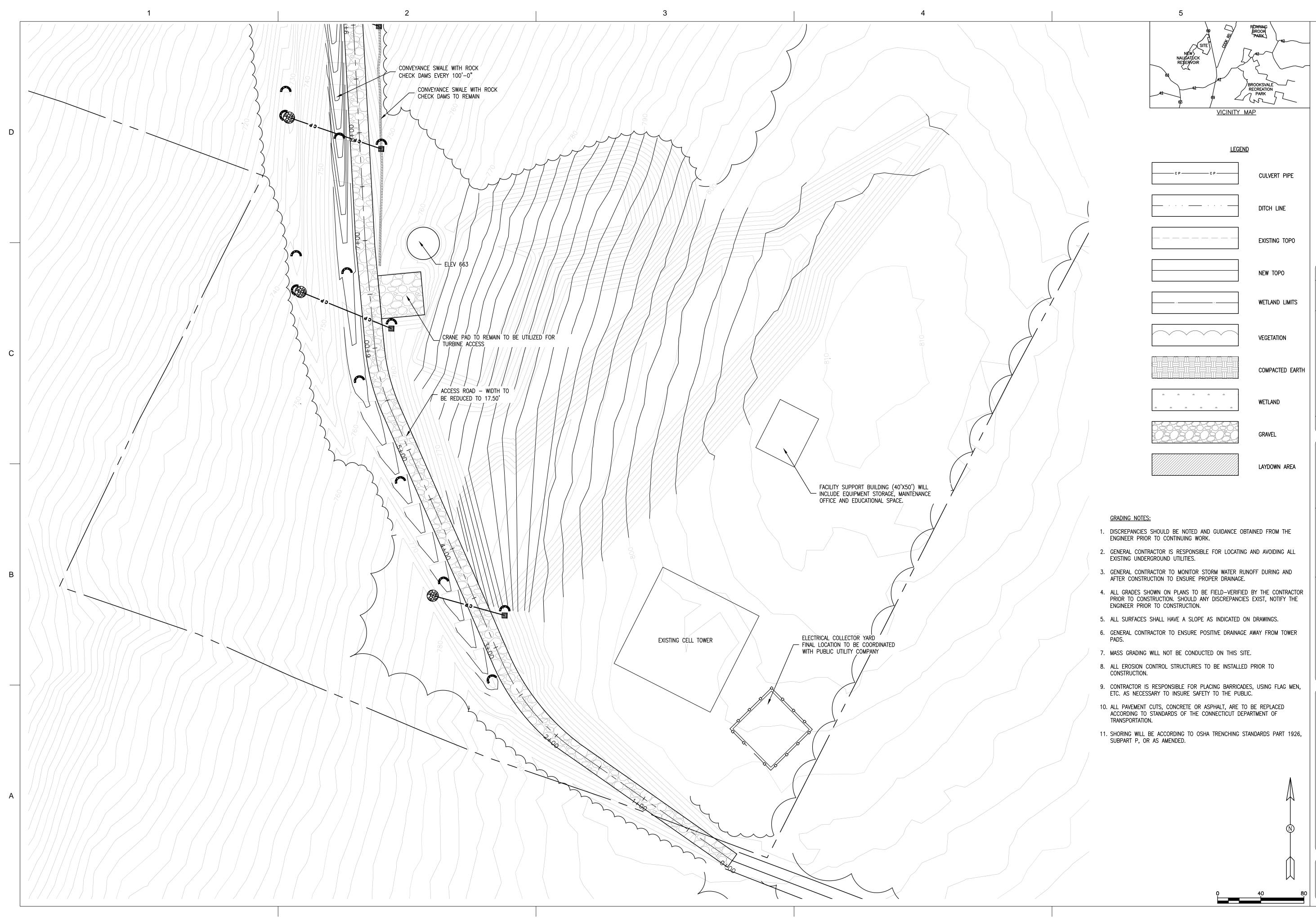
WETLAND

GRAVEL

LAYDOWN AREA

6302 FAIRVIEW ROAD #600 PHONE: (704) 358-8240 CHARVIEW ROAD #800 PHONE: (704) 358-8242 ADATABOTIE: (704) 358-8342 ADATABOTIE: (704) MANA ADATABOTIC: (704) MANA

CONNECTICUT



BNE Energy Inc. Producer of green clean ene



ED REQUESTED REVISIONS 03-08-11 MLC
ED REQUESTED REVISIONS 01-31-11 TLK
SITING COUNCIL SUBMISSION 11-04-10 TLK
ESCRIPTION DATE APPR.

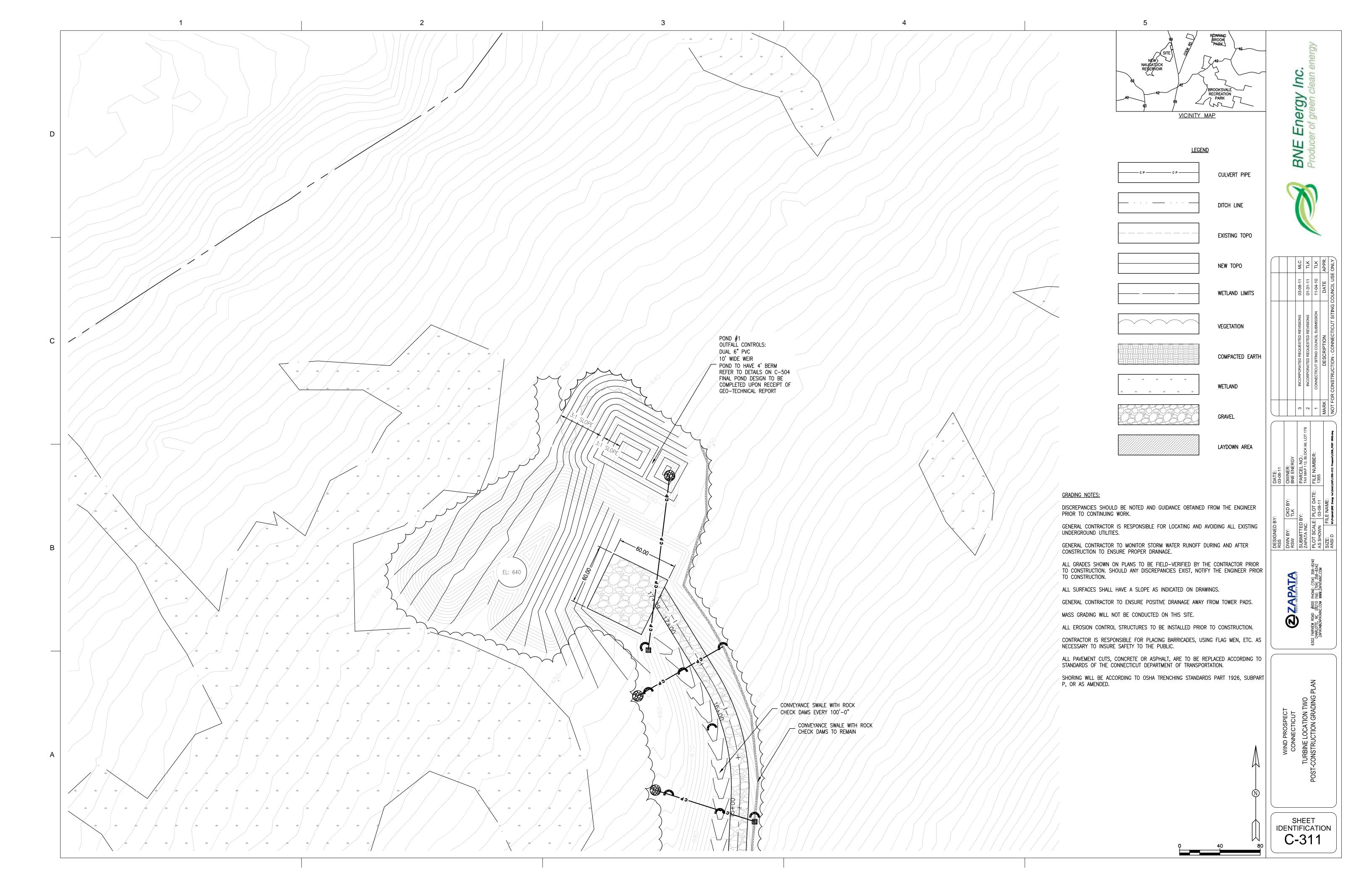
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WIND PROSPECT
CONNECTICUT
E LOCATION ONE AND CRANE ASSEMBLY AREA
POST-CONSTRUCTION GRADING PLAN





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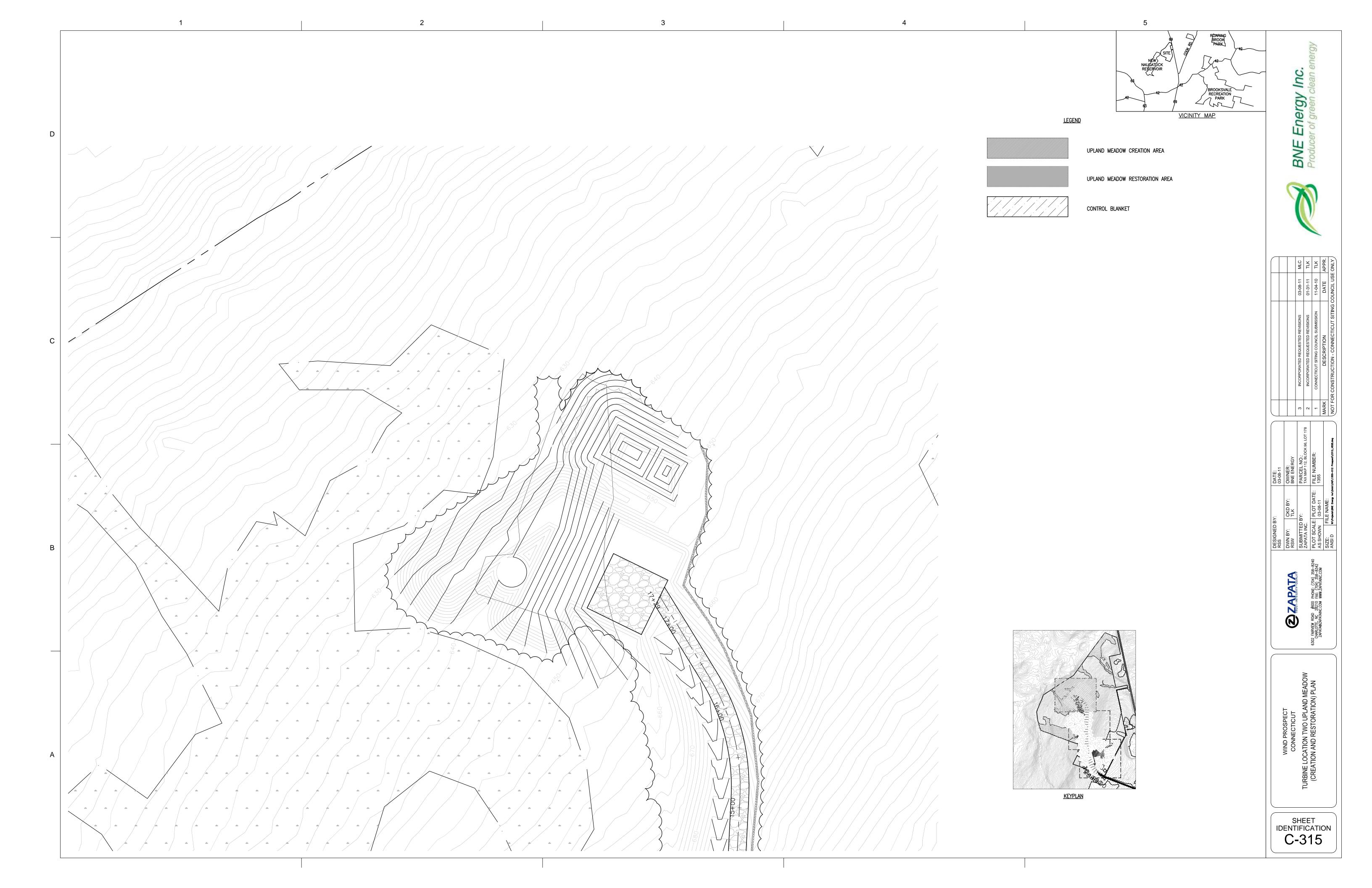


Energy Inc.









### PLANNED SEDIMENTATION AND CONTROL PRACTICES

ACCESS ROAD AND OTHER RELATED SUPPORT STRUCTURES.

<u>SEDIMENT FENCE (GSF):</u> 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 FLOWS, THUS REDUCING EROSION OF THE DRAINAGE WAY.

MAINTENANCE: 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.

<u>MAINTENANCE</u>: 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. TEMPORARY SEDIMENT CONTROL BLANKET SHOULD BE INSTALLED ON FILL SLOPES ADJACENT TO THE BLADE LAY DOWN AREA AT TURBINE LOCATION TWO AFTER THE SLOPES HAVE BEEN

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

### ACCESS ROAD

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.

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

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.

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.

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 INSTALLING WATER SURFACE CONTROLS.

11. UPON SUBSTANTIAL COMPLETION TOWERS, COMPLETE THE BALANCE OF SITE WORK AND STABILIZATION OF ALL OTHER DISTURBED AREAS.

12. AFTER SITE IS STABILIZED REMOVE TEMPORARY EROSION AND SEDIMENT

STANDARD EROSION AND SEDIMENT CONTROL NOTES

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 MATERIAL DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.

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 DULY AUTHORIZED OFFICIALS.

9. SURFACE DRAINAGE FLOWS OVER UN-STABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO LOWER THE WATER DOWN THE SLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT 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 STABILIZED WITH SOD OR SEED WITH AN APPROVED EROSION CONTROL MATTING. 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

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.

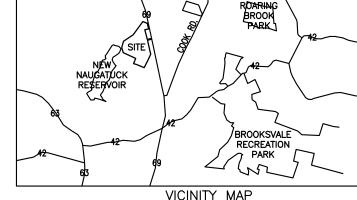
SITE INFORMATION:

TOTAL PROPERTY AREA: 67.50 ACRES TOTAL AREA OF PROJECT SITE: 18.70 ACRES TREE AREA TO BE CLEARED 249,901 SQ. FT. / 5.74 ACRES AREA TO BE DISTURBED: 426,366 SQ. FT. / 9.79 ACRES AREA WITHIN 100' WETLAND OFFSET: 48,050 SQ. FT. / 1.10 ACRES

CONSTRUCTION PHASE: TOTAL CUT: 58,684 CUBIC YARDS TOTAL FILL: 48,410 CUBIC YARDS NET CUT: 10,274 CUBIC YARD

POST CONSTRUCTION PHASE: TOTAL CUT: 12562 CUBIC YARDS TOTAL FILL: 52978 CUBIC YARDS NET FILL: 40416 CUBIC YARDS

OFF-SITE WASTE / BORROW AREA LOCATION: NOT APPLICABLE



### THIRD PARTY INSPECTIONS

1. A THIRD PARTY ENVIRONMENTAL INSPECTOR SHALL INSPECT THE INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES AND THE CONNECTICUT WATER COMPANY SHALL BE CONTACTED A MINIMUM OF 48 HOURS PRIOR TO THE START OF EROSION AND SEDIMENTATION CONTROLS INSTALLATION. A PRE-CONSTRUCTION MEETING SHALL BE HELD WITH THE THIRD PARTY ENVIRONMENTAL INSPECTOR, CONNECTICUT WATER COMPANY AND GENERAL CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.

2. A THIRD PARTY ENVIRONMENTAL INSPECTOR WILL MONITOR EROSION AND SEDIMENTATION CONTROLS THROUGHOUT THE CONSTRUCTION PERIOD TO ENSURE THAT CONTROLS ARE PROPERLY MAINTAINED AND ANY RECOMMENDATIONS TO REMEDIATE FAILING CONTROLS OR REMOVE ACCUMULATED SEDIMENT ARE IMPLEMENTED BY THE CONTRACTOR IN A TIMELY FASHION.

3. A THIRD PARTY ENVIRONMENTAL INSPECTOR SHALL MONITOR EROSION AND SEDIMENTATION CONTROLS ON A WEEKLY BASIS OR WITHIN 24 HOURS OF A RAINFALL EVENT OF 0.5 INCHES OR GREATER.

4. EROSION AND SEDIMENTATION CONTROL MONITORING REPORTS WILL BE PREPARED BY THE THIRD PARTY ENVIRONMENTAL INSPECTOR ON A BI-WEEKLY BASIS AND SUBMITTED TO THE CONNECTICUT SITING COUNCIL AND CONNECTICUT WATER COMPANY. IF SIGNIFICANT FAILURE OF EROSION AND SEDIMENTATION CONTROLS RESULT IN IMPACT TO WETLAND RESOURCES ON THE SUBJECT PROPERTY, THE CONNECTICUT SITING COUNCIL WILL BE NOTIFIED WITHIN 24 HOURS AND CONNECTICUT WATER COMPANY SHALL BE NOTIFIED IMMEDIATELY OF SUCH AN EVENT AND RECOMMENDED REMEDIATION MEASURES WILL BE IDENTIFIED.

5. THE CONNECTICUT WATER COMPANY SHALL BE CONTACTED A MINIMUM OF 48 HOURS PRIOR TO THE START OF INSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES AND WILL HAVE ACCESS TO THE SITE AT ALL TIMES FOR

### SPILL PREVENTION PLAN

THE PROPOSED PROJECT IS LOCATED IN THE NEW NAUGATUCK RESERVOIR PUBLIC DRINKING WATER SUPPLY WATERSHED. AS A RESULT, THE CONTRACTOR SHALL TAKE CERTAIN PRECAUTIONS NECESSARY TO CONTAIN AND PROPERLY CLEAN UP ANY INADVERTENT FUEL OR PETROLEUM (I.E., OIL, HYDRAULIC FLUID, ETC.) SPILLS. A SPILL CONTAINMENT KIT CONSISTING OF A SUFFICIENT SUPPLY OF ABSORBENT PADS AND ABSORBENT MATERIAL SHALL BE MAINTAINED ON SITE THROUGHOUT THE DURATION OF THE PROJECT. IN ADDITION, A WASTE DRUM SHALL BE KEPT ON SITE TO CONTAIN ANY USED ABSORBENT PADS/MATERIAL FOR PROPER DISPOSAL OFF SITE. REFUELING AND MAINTENANCE OF VEHICLES OR MACHINERY SHALL TAKE PLACE IN A DESIGNATED AREA WITHIN THE CRANE ASSEMBLY AREA. FUEL AND OTHER HAZARDOUS MATERIALS SHALL BE STORED WITHIN A DESIGNATED AREA WITHIN THE CRANE ASSEMBLY AREA AND UTILIZE APPROPRIATE SECONDARY CONTAINMENT.

THE FOLLOWING PROCEDURES SHALL BE ADHERED TO BY THE CONTRACTOR IN CASE OF A PETROLEUM RELEASE.

### <u>INITIAL RESPONSE</u>

- STOP OPERATIONS AND SHUT OFF EQUIPMENT.
- REMOVE ANY SOURCES OF SPARK OR FLAME.
- CONTAIN THE SOURCE OF THE SPILL. • DETERMINE THE APPROXIMATE VOLUME OF THE SPILL.
- IDENTIFY THE LOCATION OF NATURAL FLOW PATHS TO PREVENT THE RELEASE OF THE SPILL TO SENSITIVE NEARBY WATERWAYS OR
- ENSURE THAT FELLOW WORKERS ARE NOTIFIED OF THE SPILL.

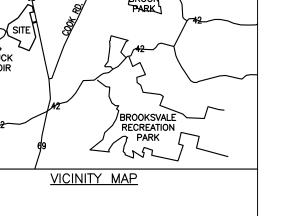
### CLEAN UP & CONTAINMENT

- OBTAIN SPILL RESPONSE MATERIALS FROM THE ON-SITE SPILL RESPONSE KIT.
- LIMIT THE SPREAD OF THE SPILL BY PLACING ABSORBENT MATERIALS AROUND THE PERIMETER OF THE SPILL.
- CONTACT THE CONNECTICUT WATER COMPANY IMMEDIATELY AT (800) 428-3985 OR (860) 669-8630 ALONG WITH OTHER APPROPRIATE LOCAL, STATE AND/OR FEDERAL AGENCIES, AS NECESSARY.
- CONTACT A DISPOSAL COMPANY TO PROPERLY DISPOSE OF CONTAMINATED MATERIALS.

### FOLLOW-UP

COMPLETE AN INCIDENT REPORT.

 SUBMIT A COMPLETED INCIDENT REPORT TO THE CONNECTICUT WATER COMPANY.



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SHEET **IDENTIFICATION** C-500

SEDIMENT AND EROSION CONTROL SHALL BE STRICTLY ENFORCED.

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

TREE PROTECTION

4-Short Term Non-living Soil Protection
Temporary Erosion Control Blanket (ECB)

Definition able / photodegradable natural or polymer fibers structurally or chemically bound together to form

Purpose To provide temporary surface protection to new seeded and/or disturbed soils to absorb raindrop impact and to reduce sheet and rill erosion and to enhance the establishment of vegetation. Applicability

· Where wind and traffic generated air flow ma May be used as a substitute for Temporary Soil Protection. May be used as a substitute for Mulch for

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 wil 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 project. With the abundance of erosion control blan-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 crosion and sedimentation plan designer prior to and during installation to verify a product's

turer'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 O contain no contaminants that pollute the air or

**Specifications** 

Temporary erosion control blankets shall be composed of fibers and/or filaments that:

> years but without substantial degradation over the period of intended usage (five months maximum); together to form a continuous matrix of even thickness and distribution that resist raindnot stilash

and when used with seedings allows vegetation to are of sufficient structural strength to withstand stretching or movement by wind or water when installed in accordance with the manufacturer's

is dependent upon strict adherence to the manufacunprotected human skin or which interferes with seed germination;

waters of the State when properly applied; and

5-4-10 **GEO-TEXTILE MAT**  2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Scale: NTS

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

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

Applicability • For drainage areas less than or equal to 36 acres. Where the intended use is less than one year. not established and/or permanent drainage controls have not been completed.

5:1 use Temporary Lined Channel, Vegetated Waterway or Permanent

Planning Considerations 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 Drain** measure, or consider revising the sequence of construction to eliminate the need for a temporary line chute. For drainage areas less than 5 acres the Temporary Pipe Slope Drain measure may be used as an alternative to a temporary lined chute. If the drainage

area exceeds 36 acres then either split the drainage area or use alternate measures such as Permanent Lined

Design Criteria

Sizing Limitations Design criteria 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 B 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 outlet sections are constant (See Figure TC-1). These are determined by the selection of a bottom width. The bot drainage area involved. tom width of the chute is dependent upon the size of the

Use Figure TC-1 to determine the sizing require-Temporary lined chutes should be planned and installed along with, or as part of, other erosion control practices and proposed bottom width. For dimensions, grades, and construction details of concrete chutes see Figure TC-2.

> The lining shall consist of riprap, bituminous concrete or outlet protection to prevent erosion, to withstand the loading 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.

> (a) Riprap shall be designed in accordance with the Riprap measure. (b) Bituminous concrete linings shall be designed with a minimum thickness of 2 inches and in accordance with accepted engineering practices for

(d) Sacked concrete shall be designed for both struc-(e) Gabions shall be designed in accordance with the

cutoff wall at end of the discharge aprons so that it is continuous with the lining.

Establishment of temporary stand of grass and/or legumes by seeding and mulching soils that will be exposed for a period greater than 1 month but less than 12 months.

To temporarily stabilize the soil and reduce damage from wind and/or water erosion and sedimentation until

Applicability • 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

Specifications

Seedbed Preparation

Scale: NTS

Seed Selection

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). Apply ground limestone and fertilizer according to soil test recommendations (such as those offered by the University of Connecticut Soil Testing Laboratory or other Select grass species appropriate for the season and site conditions from Figure TS-2. reliable source). Soil sample mailers are available from

Soil Texture Tons / Acre Lbs / 1000 ft of Lime of Lime

Loamy sand, sand I 45

Scale: NTS

Timing Considerations the local Cooperative Extension System office. Appendix E contains a listing of the Cooperative Extension System Seed with a temporary seed mixture within 7 days after the suspension of grading work in disturbed areas where offices.

If soil testing is not feasible on small or variable 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. 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.

Install needed erosion control measures such as diver sions, grade stabilization structures, sediment basins and grassed waterways in accordance with the approved plan.

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** 

Loosen the soil to a depth of 3-4 inches with a slightly roughened surface. If the area has been recently los-ened or disturbed, no further roughening is required. Soil preparation can be accomplished by tracking with a bulldozer, discing, harrowing, raking or dragging with a of the surface by equipment traveling back and forth

Seeding
Apply seed uniformly by hand, cyclone seeder, drill, cultipacker type seeder or hydroseeder at a minimum rate for the selected seed identified in Figure TS-2. Increase

SOIL COVER

O provide either 80%-95% soil coverage when used as a substitute for **Mulch for Seed** or 100% initial soil coverage when 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 confirms the blanket meets these material specifications and will provide the short term erosion control capabilities necessary for the specific project.

Site Preparation and Installation (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 site.

The blanket can be laid over areas where sprigged grass seedlings have been inserted into the soil. Where Landscape Planting measure.

Inspect the installation to insure that all lap joints are secure, all edges are properly anchored and all staking or stapling patterns follow manufacturer's recommendations.

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 inch or greater for failures. Blanket failure has occurred when (1) soils and/or seed have washed away from beneath the blanket and the soil 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.

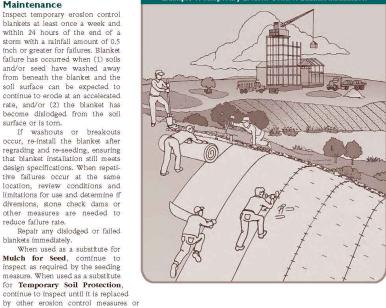
If washouts or breakouts occur, re-install the blanket after regrading and re-seeding, ensuring that blanket installation still meets

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 When used as a substitute for

inspect as required by the seeding

measure. When used as a substitute

until work resumes.



2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Depth of Chute (d) = 8 inches Depth of Chute (d) = 10 inches ength of inlet & outlet section (L) = 6 fe riteria for extending the maximum allowable drainage area listed above:

tood mulch cover (equivalent to landscape mulch or temporary soil protection) is maintained over a minimum of 75% of things area throughout the life of the structure, then the drainage areas listed above may be increased by 25%, providing the sest drainage area limit is not exceeded.

Installation Requirements

ately after work is completed.

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

Compact or place the lining so that it is free of voids and reasonably smooth.

3. Construct the cutoff walls at the entrance and at the end of the discharge aprons so that they are contin-uous with the lining.

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

(f) Erosion control blankets and turf reinforcement mats, when used, shall be designed in accordance with manufacture's recomme

Inlet Design (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 chute (\*H" 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

4. Stabilize all areas disturbed by construction immedi-

shown in Figure TC-2.

(c) The entrance floor at the upper end of the chute shall have a minimum slope toward the outlet of **M**aintenance 0.25 inch per foot. Inspect the temporary lined chute at least once a week (d) Design the cutoff wall at the entrance so that it is continuous with the lining.

and within 24 hours of the end of a storm with a rainfall Outlet Design

The minimum requirements for outlet protection are shown in Figure TC-2. Verify adequacy of outlet stabilized to the placement of any material on the chute. Prevent construction traffic across the chute and lization using Outlet Protection measure. Design the

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Winter Rye Secale cereale Avena sativa

Source: USDA-NRCS

Seed at twice the indicated depth for sandy soils.

See Permanent Seeding Figure PS-3 for seeding mixture requirements.

Listed species may be used in combinations to obtain a broader time spectrum. If used in combinations, reduce each species planting rate by 20% of that listed.

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

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RECREATION PARK

<u>VICINITY MAP</u>

CONTR

SHEET **IDENTIFICATION** C-501

6" WIDE X 1.5' DEEP — CUTOFF WALL (NOT TO SCALE) UNDISTURBED SOIL OR —— COMPACTED FILL PLACE 4" THICK LAYER OF FREE SECTION A-A
DRAINING FILTER BLANKET UNDER PAVEMENT (NOTTO SCALE) Chute Size is designated with a letter and a number, such as a-6, which means size group a with a 6 ft. bottom width (b). For structure dimensions, see table

6" WIDE X 1.5' DEEP CUTOFF WALL

UNDISTURBED SOIL OR COMPACTED FILL

MODIFIED RIPRAF CT DOTM, 1202

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Scale: NTS

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

LINED CHUTE STABILIZATION

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

trapezoidal shape to prevent a high velocity flows which could arise in the bottom of a "V" shaped ditch. This practice is economical because it uses materials The minimum height from the bottom of the channel to the available on the site and can usually be constructed with top of the berm shall be at least 18 inches and the berm equipment needed for site grading. The useful life of the practice can be extended by stabilizing the berm with constructed of compacted material. vegetation. Temporary diversions are durable, inexpensive, and require little maintenance when constructed properly. When used in conjunction with a **Temporary Sediment Trap**, temporary diversions become a logical choice for a control measure when the control limits for Grade and Stabilization silt fences or hay bale barriers have been exceeded.

**Specifications** 

2002 Connecticut Guidelines for Soil Erosion and Sediment Control TEMPORARY DIVERSIONS

Temporary diversions are often used as a perimeter

and is 5 acres or less, design the temporary diversion to

temporary seeding, temporary crosion control blankets

riprap, etc.). The channel and berm must have a positive

5-Stabilization Structures

• Where the contributing drainage area is 5 acres or less.

(see Diversion Functional Group) which direct water to Source: USDA-NRCS

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 to the final stabilization of the area during the initial planning stages. Temporary pipe slope drains are commonly used in conjunction with temporary diversions

The maximum allowable drainage area per drain is 5

Material used in the temporary pipe slope drain

shall be heavy duty flexible (see Figure TSD-2) or rigid 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-gle installation.

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 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-cable. However, at a minimum, the height of the berm at

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

Diversion measure.

Planning Considerations

either on or at the toe of the slope.

For use less than 6 months.

Planning Considerations

Applicability

Design Criteria

A flexible or rigid pipe used to conduct water from the top of a slope to the toe of the slope.

To convey water over excessive grade changes.
To convey concentrated stormwater runoff flows down the face of a slope without causing erosion problems

• On cut or fill slopes where the soil or existing vegetative cover will not withstand concentrated runoff flows.

fittings.

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 week and within 24 hours of the end of a storm with a r flatter.

The area immediately below the outlet of the pipe arinfall amount of 0.5 inch or greater to determine maintenance needs. Repair damage as necessary. Avoid the slope drain shall be protected from erosive discharges with appropriate energy dissipators. For drainage areas event vehicular traffic from crossing the slope drain.

TEMPORARY PIPE DRAIN STABILIZATION

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

To divert sediment-laden runoff from a disturbed area to a sediment-trapping facility

. 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 acres use Permanent Diversion measure.

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

A temporary diversion is used to divert sheet flow to a stabilized outlet or a sediment-trapping facility. It is also tabilized outlet or a sediment-trapping facility. It is also

stabilized outlet or a sediment-trapping facility. It is also cover on sloping distincted areas. When used at the top of a slope, the structure protects exposed slopes by directing runoff away from the disturbed areas. When 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 instabled as a first.

Design Criteria

No engineered design is required for a temporary diversion of the control of

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

If the contributing drainage area exceeds 1 acre

Where channel grades within the temporary diversion exceed 2%, stabilization of the channel is necessary to prevent erosion of the temporary diversion itself (e.g.,

sprap, etc.). The channel and berm must have a positive grade to assure drainage, but if the gradient is too great, precautions must be taken to prevent channel erosion due to high-velocity flows behind the berm. The cross-section of the channel should be of a parabolic or diversions, comply with the following specifications.

such as a temporary sediment trap, sediment basin or vegetative filter.

Figure TSD-1 Size of Slope Drain

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-ble fill slope during or immediately after construction

2. Stabilize the area from the top of the berm, around and under the entrance section of the drain to prevent erosion and piping failure at the inlet.

Anchor the pipe slope drain securely. Space anchors a maximum of 10 feet on center.

Installation Requirements

of diversion berms.

Definition An underground water conveyance system consisting of a perforated conduit, such as pipe, tubing, tile or a

stone filled trench installed beneath the ground to intercept and convey ground water (see Figure SD-1). Purpose To prevent sloping soils from becoming excessively wet causing sloughing. To improve the bearing capacity of soils.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 wetlands or tidal wetlands without prior authorization. Planning Considerations

to lower the water table (see Figure SD- 2).

Subsurface drainage systems are either relief drains 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) dry or to improve the growth of vegetation. They are generally installed along a slope, draining in the 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 herringbone pattern, or a random pattern (see Figure SD-3).

may be required than that provided below.

Capacity Interceptors are used to remove water as it seeps 
The required capacity for interceptor drains shall be

Subsurface drains are generally installed within a slope

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 slope and are provided with a stable outlet.

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 settlement 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

obtaining required permits. Drains shall comply with septic system setback and setbacks established for known ground water pollution.

The design and installation of subsurface drains shall be based on detailed surveys and investigations. Where fail-

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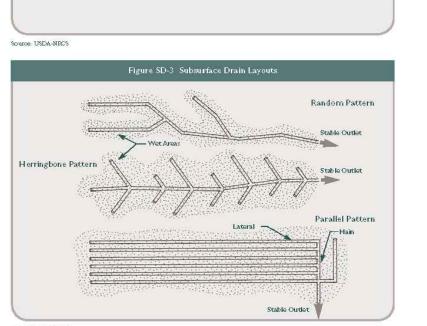
5-7-10

2º Min.

Scale: NTS

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── Water Table Before Drainage Water Table After Drainag



ROARING BROOK PARK RECREATION PARK <u>VICINITY MAP</u>

Energy BNE



ZAPATA TRUST-INTEGRITY-OUALITY

DATE: 03-08-7 OWNE BNE EI PARCI TAX MA FILE N 1355

CONTR

SHEET **IDENTIFICATION** C-502

5-8-2 SUBSURFACE DRAIN

Scale: NTS

5-8-4

■12" - 18" **>** 

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Subsurface Drain Without Conduit

Source: USDA-NRCS

<u>VICINITY MAP</u>

ZAPATA TRUST-INTEGRITY-OUALITY

DE CONTR

SHEET **IDENTIFICATION** C-503

Structurally lined aprons or other acceptable energy dissipating devices placed between the outlets of pipes or paved channel sections and a stable downstream channel

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.

At the outfall of all storm drain outlets, road culverts, paved channel outlets, new channels constructed as outlets for culverts and conduits, etc. discharging into natural or constructed channels, which in turn discharge into xisting streams or drainage systems.

Planning Considerations Analysis and appropriate treatment shall be done along the entire length of the flow path from the end of the conduit, channel or structure to the point of entry into an existing stream or publicly maintained drainage system.

O Hydraulic Design of Energy Dissipators for Culverts
and Channels Hydraulic Engineering Circular No.
14, U.S. Department of Transportation, Federal Highway Administration. December 1975.

O Hydraulic Design of Stilling Basins and Energy <u>Dissibators</u>, Engineering Monograph No. 25, U.S. Department of the Interior, Bureau of Reclamation O Scour at Cantilevered Pipe Outlets – Plunge Pool

<u>Energy Dissipator Design Criteria</u>, Agricultural Service Research Publication ARS-76, 1989.

(All of the above are available from the U.S. Government Printing Office.) O Plunge Pool Design at Submerged Pipe Spillway Outlets, American Society of Agricultural Engineers, Volume 37(4):1167-1173, 1994.

Design Criteria

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 the conduit. The allowable velocity for water over the

existing stream or publicly maintained drainage system. Where flow is excessive for the economical use of an apron, excavated stilling basins may be used. Acceptable designs for stilling basins may be found in the following



Design Limitations: No bends or curves at the inter-section of the conduit and the apron protection will be the conduit. The allowable velocity for water over the soil shall be that given in **Figure OP-1**. The exit velocity of the water in the conduit shall be calculated using the apron to the receiving channel. There shall be no vertical drop from the end of the

2002 Connecticut Guidelines for Soil Erosion and Sediment Control **OUTLET PROTECTION** 

Scale: NTS

5-10-6

A 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. Applicability

· For temporary drainageways which, because of their short length of service, will not receive a non-erodible · For permanent drainageways which, for some reason, will not receive a permanent non-erodible lining for an extended period of time. For temporary or permanent drainageways which need protection during the establishment of vegetative linings. 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.

Design Criteria

Planning Considerations

A stone check dam is considered to be temporary if it is 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). required (see Figure SCD-1).

When planning the location of the stone check dam(s) consider the tailwater effects, duration of pond ing, 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 dards and specifications required for implementation and the stone check dam(s) to be removed. Give consideration to mowing requirements and aesthetics. For stone check dams to be located in a vernal, intermittent or perdesign the stone check dam to safely pass the peak flow

no engineered design >2 acres >6 months, <1 ye 25-yr frequency any drainage size > 1 year storm

5-10-11 Errata Corrections 1/08

or 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.

manent watercourse, check with regulatory authorities expected from a 2-year frequency storm without struc-

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 disintegration on exposure to water or weathering, be chemically stable, and shall be suitable in all other respects for the purpose intended.

design the stone check dam to safely pass the peak flow expected from a 25-year frequency storm without structural failure of the check dam and adverse tailwater effects.

2002 Connecticut Guidelines for Soil Erosion and Sediment Control STONE CHECK DAM

Scale: NTS

Source: USDA-NRCS

Wet storage volume may be approximated as follows:

Dry storage volume may be approximated as follows:

I I - Sediment Impoundments, Barriers and Filters

Definition A temporary ponding area with a stone outlet formed b excavation and/or constructing an earthen embankment.

To detain sediment-laden runoff from small disturbed areas long enough to allow a majority of the sediment

Applicability Below disturbed areas where the contributing drainage area is 5 acres or less. For drainage areas greater than acres use Temporary Sediment Basin measure. • Where the intended use is 2 years or less. For uses

diversions that meet the above limitations for use.

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within a drainage way and the dry storage created by the construction of a pervious stone dike across the drainage way. Sometimes the trap is formed, at least in part, by the disposal of the trapped sediment. construction of an embankment. Such an embankment constitutes a dam and is therefore limited to a height of no greater than 5 feet and requires care in its construc

Trap Capacity
The temporary sediment trap shall have an initial storage volume of 134 cubic yards per acre of drainage area, half
E&S plans should identify the size of the contribute

volume of 134 cubic yards per acre of drainage area, half
of which shall be in the form of wet storage to provide ing drainage area, wet and dry storage requirements as well as the volume of sediment accumulation that will trigger trap cleaning. Sediment is required to be removed will provide extended settling time during less frequent, from the trap when the sediment accumulation exceeds larger storm events. Figure TST-1 contains the formulas

half of the wet storage volume of the trap. The plans should also guarantee that access is provided for sediment removal and detail how excavated sediment will be measured from the low point of the excavated area to disposed (such as by use in fill areas on-site or removal the base of the stone outlet structure (see Figure TST-2) to an approved off-site location).

Variations in temporary sediment trap design may be considered, but plan reviewers should ensure the let (overflow mechanism). minimum storage requirements and structural requirements noted below are maintained.

Try to provide a storage area which has a minimum 2:1 length to width ratio (measured from point of maximum length to width ratio (measured from point of maximum runoff introduction to outlet)

Planning Considerations
Sequence the construction of temporary sediment traps, along with other perimeter erosion and sediment controls so that they are constructed and made functional before land disnurbance in the contributing drainage area takes place.

Location
Locate temporary sediment trap so that they can be installed prior to conducting any grading activities in the contributing watershed. Do not locate traps in close proximity to existing or proposed building foundations if there is any concern regarding seepage of water from the

The maximum height of a temporary sediment trap embankment is limited to 5 feet as measured vertically that erosion and water pollution are minimized.

from the crest of the embankment to the down slope All cut and fill slopes shall be 2:1 or flatter except for the excavated wet storage area where slopes shall not exceed 1.5:1. The maximum depth of excavation within theights (Ho) for various embankment heights (H) are the wet storage area should not exceed 3 feet to facilitate shown in Figure TST-2. Side slopes of the embankment

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Figure SCD-2 Stone Check Dam Installation in Drainageways

I. KEY STONE INTO THE DITCH BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM FLANKING THE CHECK DAM.

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

L' = THE DISTANCE SUCH THAT POINTS 'A' AND 'B' ARE OF EQUAL ELEVATION.

SPACING BETWEEN CHECK DAMS

(NOT TO SCALE)

Figure TST-1 Formula for Figuring Temporary Sediment Trap Storage Requirements

 $Vw = 0.85 \times A_w \times D_w$ 

,  $V_W$  = the wet storage volume in cubic feet  $A_{BB}$  = the surface area of the flooded area at the base of the stone outlet in square feet  $D_{BB}$  - the maximum depth in feet, measured from the low point in the trap to the base of the stone outlet.

 $V_{\vec{d}}$  = the dry storage volume  $A_{\vec{W}}$  = the surface area of the flooded area at the base of the stone outlet in square feet.  $A_{\vec{d}}$  = the surface area of the flooded area at the top of the stone outlet (over flow mechanism), in

square feet  $D_{\vec{d}}$  = the depth in feet, measured from the base of the stone outlet to the top of the stone outlet

Note: Conversion between cubic feet and cubic yards is: cubic feet x 0.037 - cubic yards.

Inlet / Outlet Configuration

The outlet shall be located at the most distant hydraulic point from the inlet. In cases where a long narrow site runs perpendicular to the direction of flow, baffles

Materials

Modified Riprap: shall meet the requirements of DOT Standard Specifications Section M.12.02. consisting of stone dikes or other structurally sufficient DOT #3 Stone: shall meet the requirements of DOT barriers should be added along the long axis of the trap to increase travel distance through the trap (see Figure TST-3).

Standard Specifications Section M.01.01 for #3 Aggregate.

Construction

Plan the outlet in such a manner that the minimum wet storage and dry storage volumes are created (see Trap Capacity section above) and 1 foot of free board between the top of the outlet and the crest of the embedding. the top of the outlet and the crest of the embankment is established. The outlet consists of a pervious stone dike with a core of modified riprap and faced on the upstream and faced on the upstream that is free from excessive organics, debris, large rocks side with DOT #3 stone. Temporary sediment traps must outlet onto stabilized (preferably undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system Figure TST4 shows an example of an outlet for a temporary sediment trap.

Stabilize the earthen embankment using any of the following measures: Temporary Seeding, Permanent Seeding, or Stone Slope Protection immediately after

installation.

Carry out construction operations in such a manner

5-10-14 2002 Connecticut Guidelines for Soil Erosion and Sediment Control TOP WIDTH VS. HEIGHT H = HEIGHT OF EMBANKMENT W = TOP WIDTH OF EMBANKMENT

and de de de de

The second second

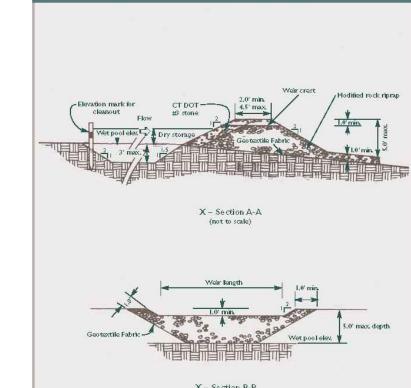
Figure SCD-3 Stone Check Dam Above Catch Basin in Drainageway on Slope

Source: USDA NRCS Maintenance

Inspect the temporary sediment trap at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater. Check the outlet to ensure that it is structurally sound and has not been damaged by erosion or consuluction equipment. The height of the temporary sediment trap may be removed after the temporary sediment trap at least once a week and within 24 hours of the end of a storm with a rainfall amount of 0.5 inch or greater. Check the outlet to ensure that it is will not crode and cause sediment trap to its original dimensions. Dispose of the sediment removed from the basin in a suitable area and in such a manner that it will not crode and cause sedimentation problems. crosion or construction equipment. The height of the stone outlet should maintained at least 1 foot below the crest of the embankment. Also check for sediment accumulation and filtrative professional mulation and filtration performance.

When sediments have accumulated to one half the after removal. minimum required volume of the wet storage, dewater the trap as needed, remove sediments and restore the

temporary sediment trap is to be graded and stabilized



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TEMPORARY SEDIMENT TRAP

5-11-25

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5-11-27

X - Section B-B

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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.
To decrease the velocity of sheet flows.
To redirect small volumes of water away from erodible soils.

To settle and assist in filtering waters discharged from pumping operations (see Pumping Settling Basin measure, Type I and Type II).

 Below small disturbed areas where the drainage area (disturbed and undisturbed) is less than 1 acre in size. Above disturbed slopes to direct surface water away from erodible areas where the drainage area (disturbed and undisturbed) is less than lacre in size.

• Where protection and effectiveness is required for less than 3 months. Where sedimentation will reduce the capacity of storm drainage systems or adversely
affect adjacent areas, watercourses and other sensitive areas. Not for use in drainageways, except in special cases where it is applied with other measures (see Geotextile Silt Fence and Stone Check Dams Special Cases). Not intended for use in streams.

Planning Considerations

Specifications

sufficient distance from the toe of the slope to allow access See Planning Considerations for Sediment Impoundments, Barriers and Filters Function Group.

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.

Placement on the Landscape Contributing drainage area is no greater than 1 acre.

Maximum slope length is as shown in Figure HB-1.

Toe of Slope: Locate 5 10 feet down gradient from the toe of slope (see Figure HB-2) generally on the contour. When the contour can not be followed, stagger the bale installation and install perpendicular wings spaced as shown in Figure HB-1 to break the velocity of water flowing behind the bales. The barrier should be winged upslope so that the bottom of the last bale is higher than the top of the lowest hay bale in the barrier. Toe of Slope: Locate 5 10 feet down gradient from the toe ing behind the bales. The barrier should be located with bale in the barrier.

by equipment for removal of accumulated sediments Swales: Not recommended. See Geotextile Silt Fence or Stone Check Dam measures. Catch Basins in Swales on Slopes: Not recommended.

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

Culvert Inlets: Not recommended. See Geotextile Silt Fence measure.

Culvert Outlets: Not recommended. Use Temporary Sediment Trap and/or Stone Check Dam measures Culvert Oudets: Not recommended. Use Temporary Sediment Trap and/or Stone Check Dam measures.

Catch Basins in Depressions or Low Spots (yard

Pumping Settling Basin: See Pumping Settling Installation (see Figure HB-2)

2002 Connecticut Guidelines for Soil Erosion and Sediment Control

HAYBALE BARRIER

### 11- Sediment Impoundments, Barriers and Filters

A temporary sediment barrier consisting of a geotextile fabric pulled taut and attached to supporting posts and entrenched.

Purpose To intercept and retain sediment from disturbed areas.
To decrease the velocity of sheet flows and low volume concentrated flows.

Applicability Below small disturbed areas where the contributing drainage area (disturbed and undisturbed) is less than 1 acre in size. • At storm water drainage inlets and catch basins where sedimentation will reduce the capacity of storm drainage systems or adversely affect adjacent areas, water-· Not for use in areas where rock, frozen ground or other hard surface prevents

proper installation of the barrier (see Special Case Combinations in **Stone** Check Dam measure). Prohibited from use in drainageways whose flow is supported by ground water discharge.

Planning Considerations

See Planning Considerations for Sediment Impoundments, Barriers and Filters Functional Group. When used at a culvert outlet, plan to install the geotextile silt fence before the start of construction and complete the installation 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 be limited to situations where inlet controls are not possible. be limited to situations where inlet controls are not possible or to act as a backup to inlet controls.

Specifications

Geotextile fabric: shall be a pervious sheet of polypropylene, nylon, polyester, ethylene or similar filaments and shall be certified by the manufacturer or supplier as conforming to the requirements that the bottom of both and of swales such that the bottom of swales such that the bottom of both and of swales swales such that the bottom of swales swale ments and shall be certified by the manufacturer or supplier as conforming to the requirements shown in Figure G8F-1. The geotextile shall be non-rotting, acid and alkali resistant and have sufficient strength and per metability for the purpose intended, including handling and backfilling operations. Filaments in the geotextile shall be resistant to absorption. The filament network must be dimensionally stable and resistant to de-lamination. The geotextile shall be free of any chemical treatment or coating that will reduce its permeability. The geotextile shall also be free of any chemical treatment or coating that will reduce its permeability. The geotextile shall also be free of any chemical treatment or coating that will reduce its permeability. The

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GEOTEXTILE SILT FENCE

For toe of slope (Figure GSF-3): Locate 5-10 feet down gradient from the toe of slope, generally on the contour with maintenance and sediment removal requirements 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

swale such that the bottom of both ends of the fence are

geotextile shall also be free of any flaws or defects which will alter its physical properties. Torn or punctured geotextiles shall not be used.

Culvert Inlets: Locate in a "U" shape approximately 6 feet from the culvert in the direction of the incoming flow.

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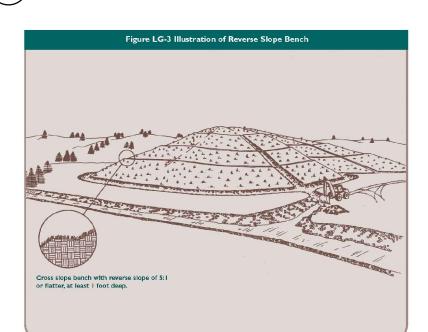
Detail of Fence Joint (Top View)

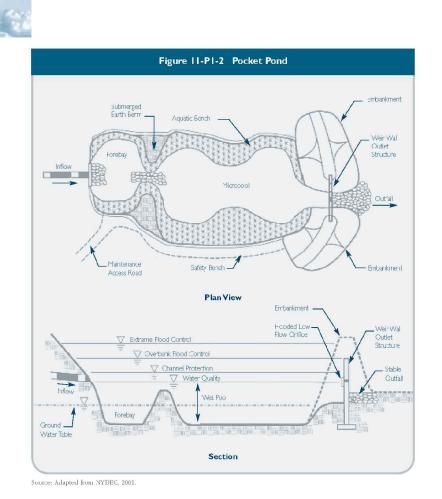
Position posts to overlap as shown above, making cer-tain that fabric folds around each post one full turn

O 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

Direction of flow collecting behind fence

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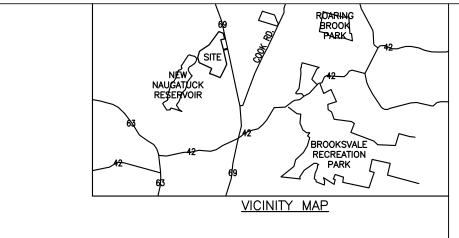


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POCKET POND

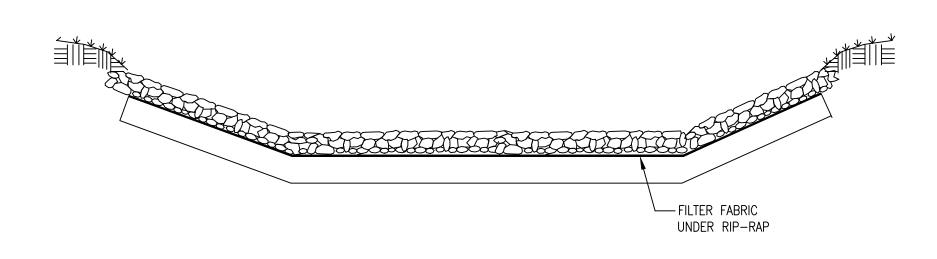
Scale: NTS

1% SLOPE 1% SLOPE 2:1 CUT/FILL 2:1 CUT/FILL <sub>I⊾</sub>SLOPE SLOPE \_SUBBASE \_GEOTEXTILE 24" COMPACTED **└**CONVEYANCE -CONVEYANCE #57 STONE SWALE SWALE CRANE ROAD CROSS SECTION Scale: 1:10



NATURAL GRADE — LAYER OF FILTER FABRIC

TYPICAL CULVERT PIPE INLET/OUTLET Scale: NTS



Scale: NTS

TYPICAL CONVEYANCE SWALE

DATE 03-08-OWNE BNE E PARC TAX MA

Energy

BNE

SHEET **IDENTIFICATION** C-504

REVERSE SLOPE BENCH

Scale: NTS