

MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC

DESIGNED BY:	DATE:
DRAWN BY:	03-14-11
RSW	
TLK	
FILE NUMBER:	
1385	
FILE NAME:	
ANSI D	

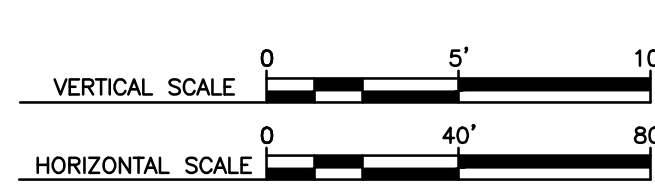
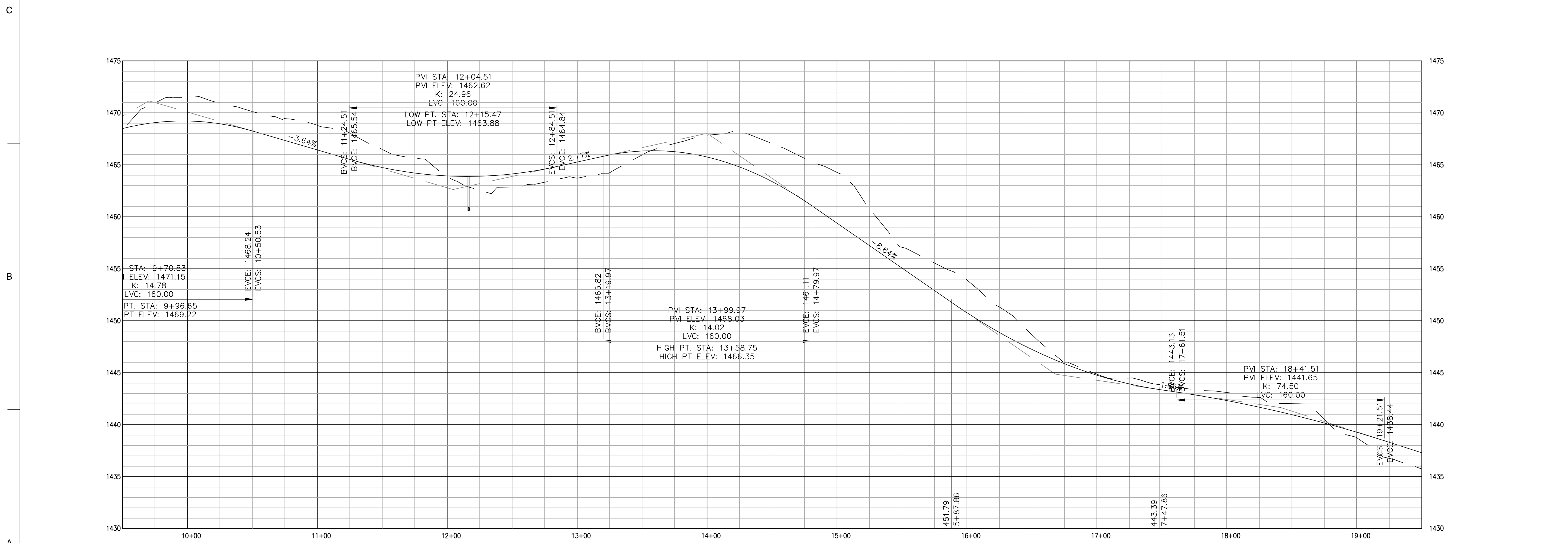
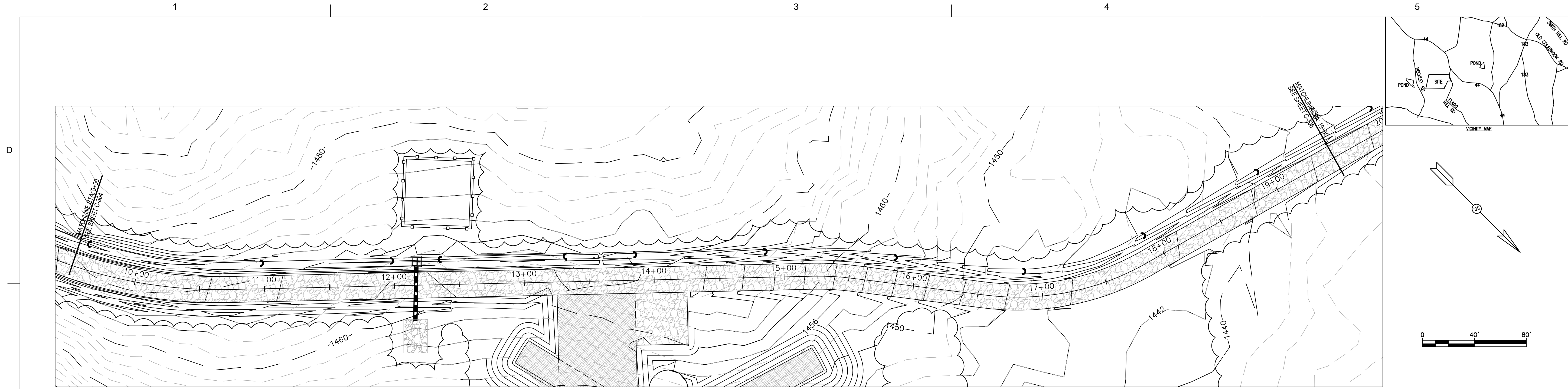
ZAPATA
 6302 LAWRENCE ROAD, SUITE 300, WESTPORT, CT 06880
 WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
 CONNECTICUT
 NEW CRANE ROAD PLAN AND PROFILE
 STA: 0+00 TO 9+50

SHEET
 IDENTIFICATION
C-304



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	M/C
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	T/LK

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

DESIGNED BY:	DATE:
DRAWN BY:	CHECK BY:
RSW	T/LK
SUBMITTED BY:	BNE ENERGY
PLOT SCALE:	AS SHOWN
FILE NUMBER:	1385
FILE NAME:	

ZAPATA
 6302 LAWRENCE ROAD, SUITE 200, WINDY HILL, CT 06095
 WWW.ZAPATAINC.COM

WINDY HILL SOUTH
 CONNECTICUT
 NEW CRANE ROAD PLAN AND PROFILE
 STA. 9+50 TO 19+50

SHEET IDENTIFICATION
C-305

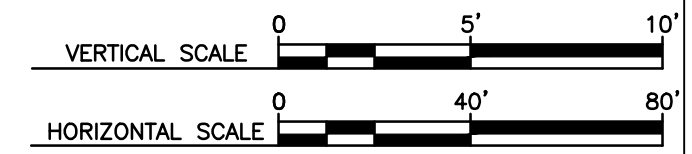
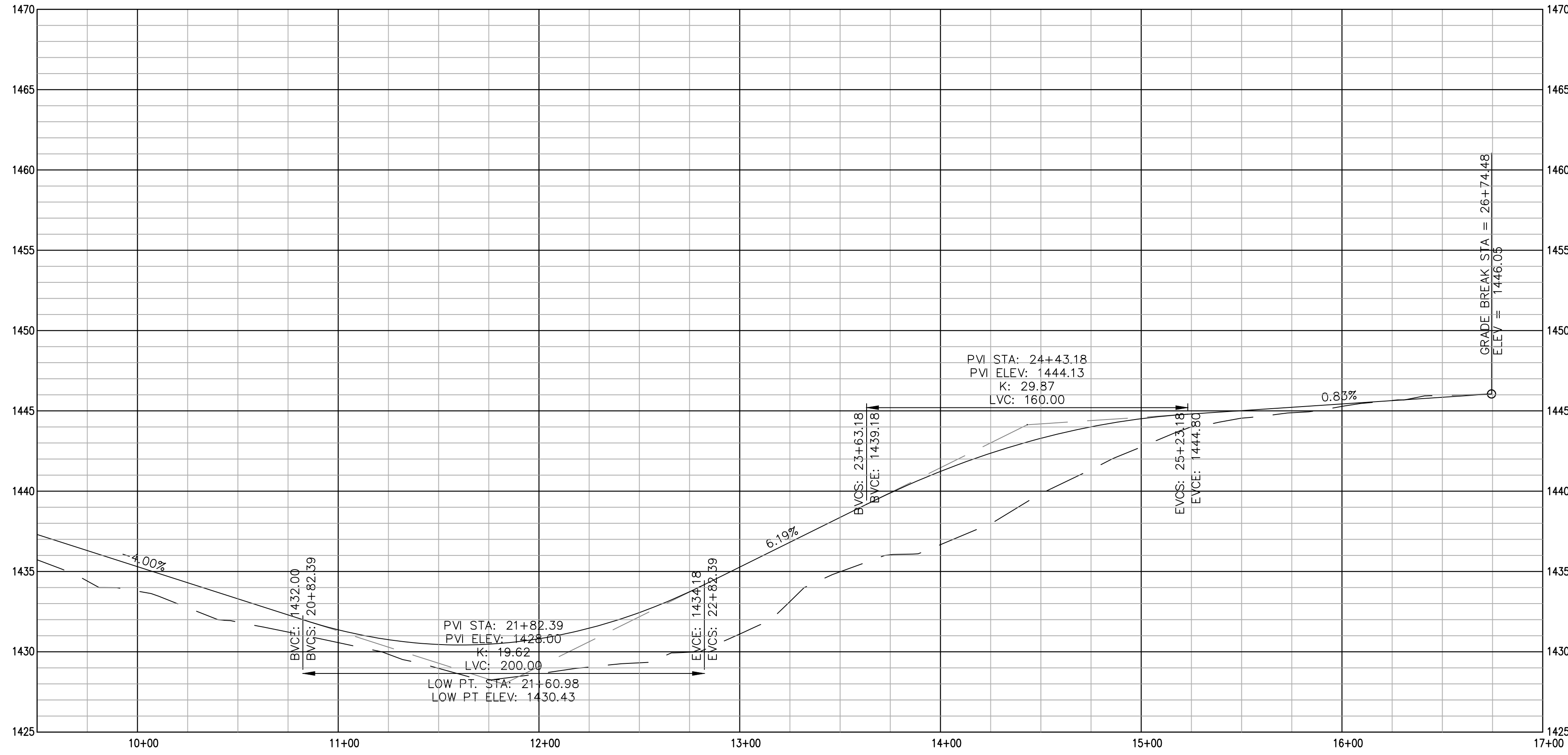
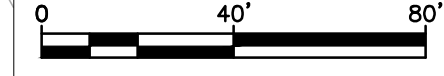
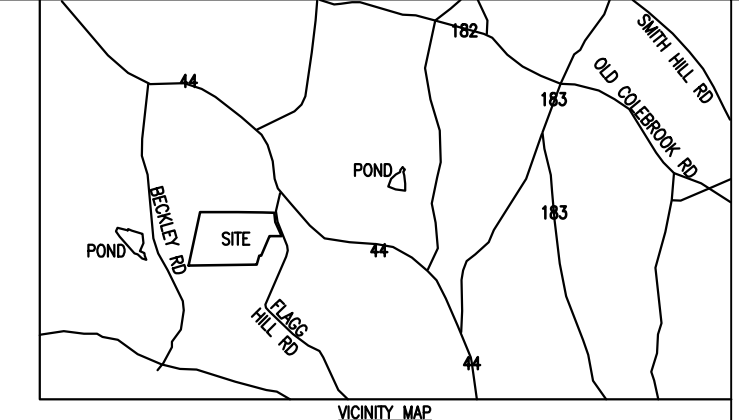
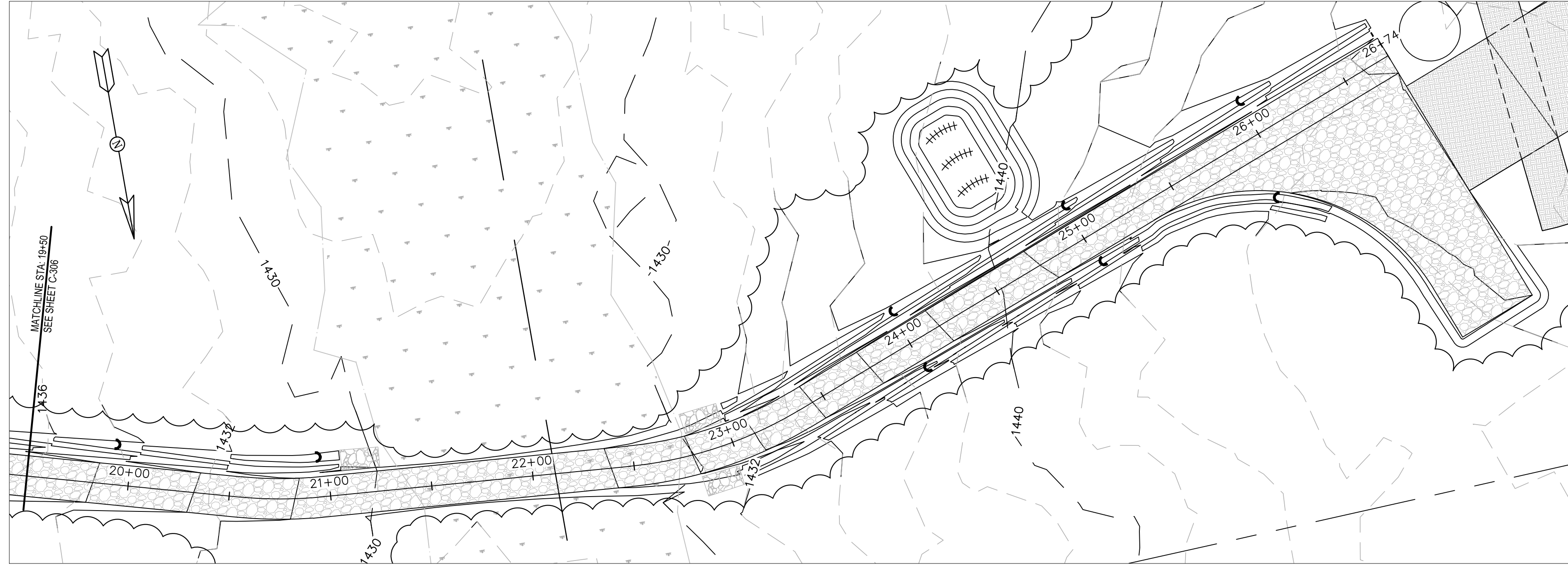


D

C

B

A



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

DESIGNED BY: RWB	DATE: 03-14-11
DRAWN BY: TLK	DESIGNED BY: TLK
SUBMITTED BY: BNE ENERGY	FILE NUMBER: 1385
PLOT SCALE: AS SHOWN	FILE NAME: [unreadable]

ZAPATA
6302 FARMVIEW ROAD
4000 PHOENIX, IDAHO 83646
ZAPATAZAPATA.COM WWW.ZAPATAZAPATA.COM

WIND COLEBROOK SOUTH
CONNECTICUT
NEW CRANE ROAD PLAN AND PROFILE
STA: 19+50 TO 26+74

SHEET
IDENTIFICATION
C-306



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

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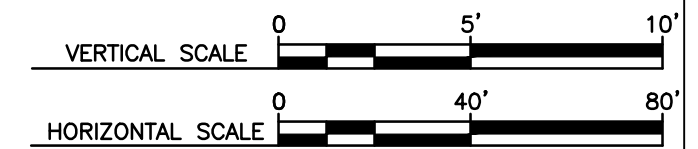
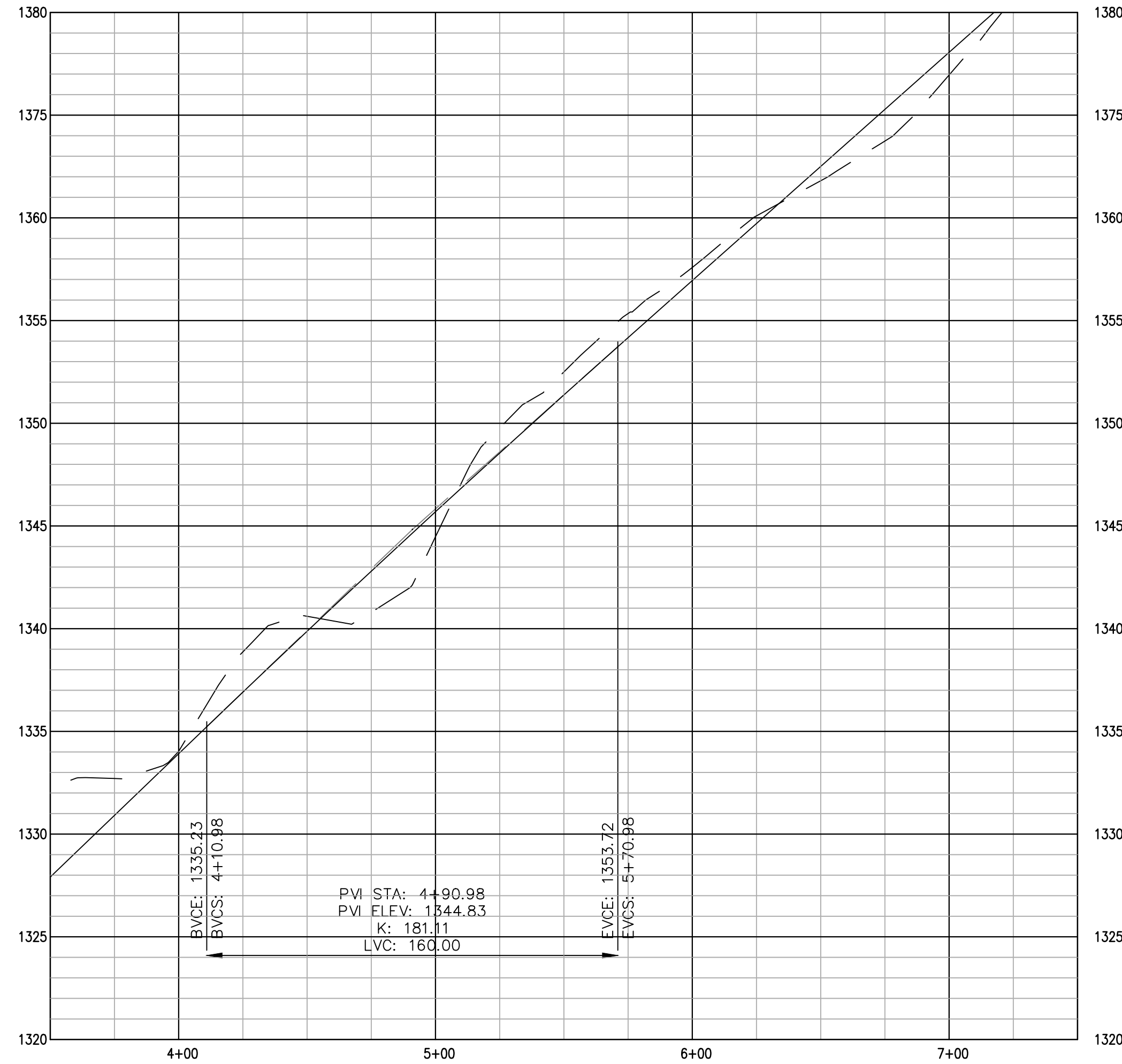
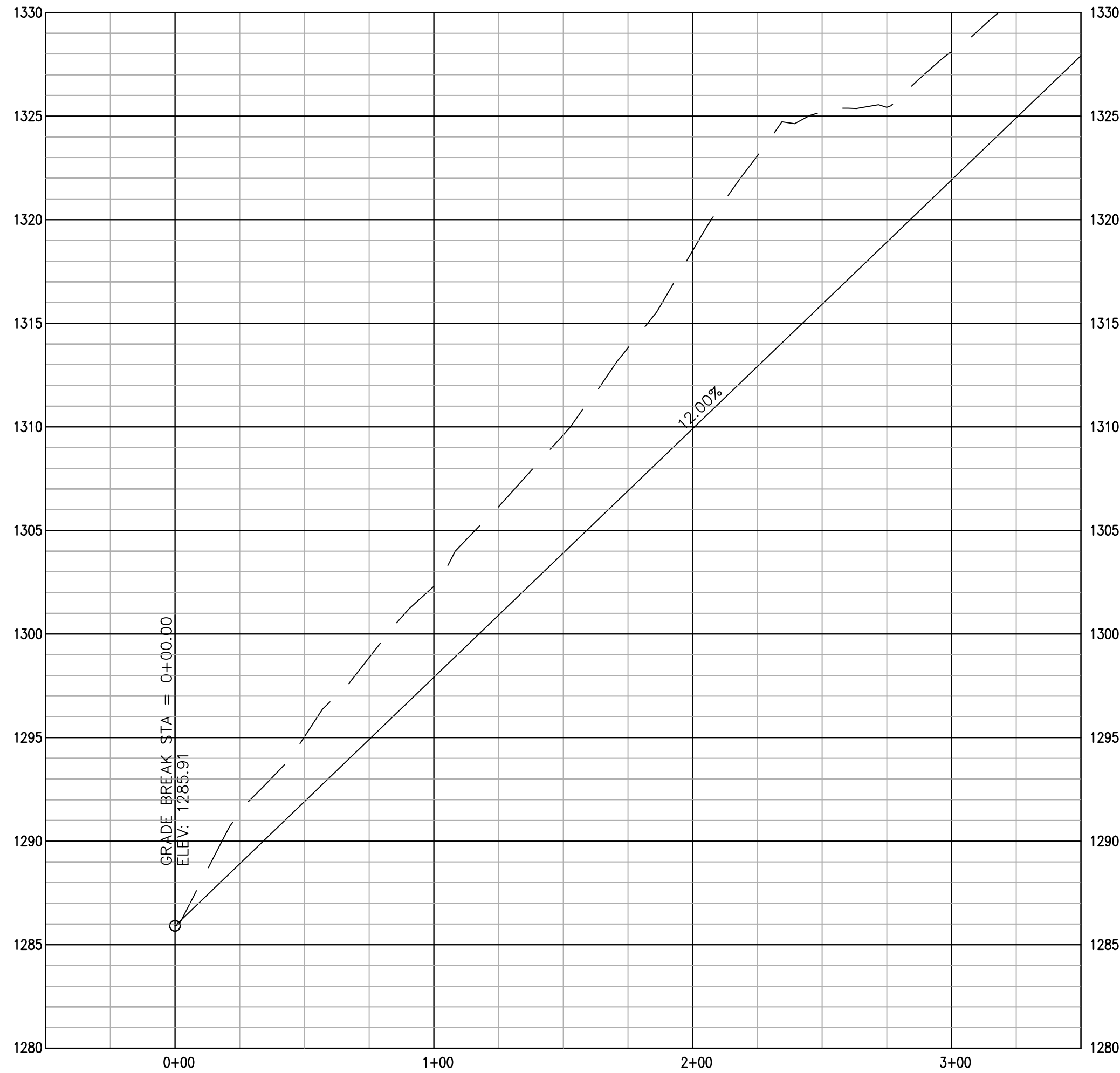
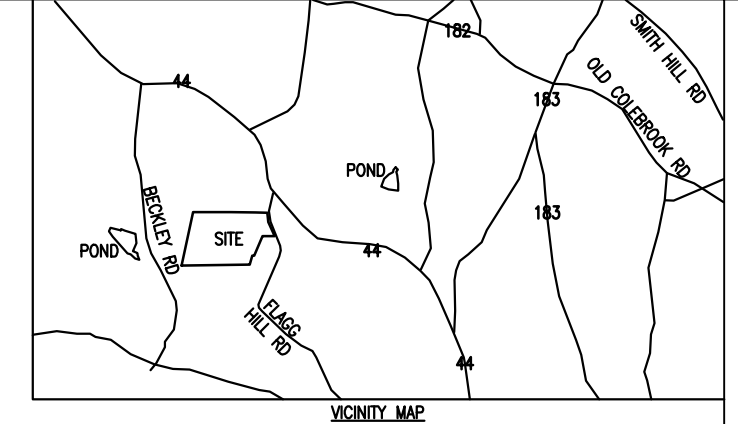
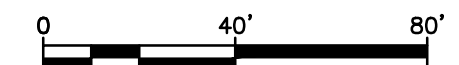
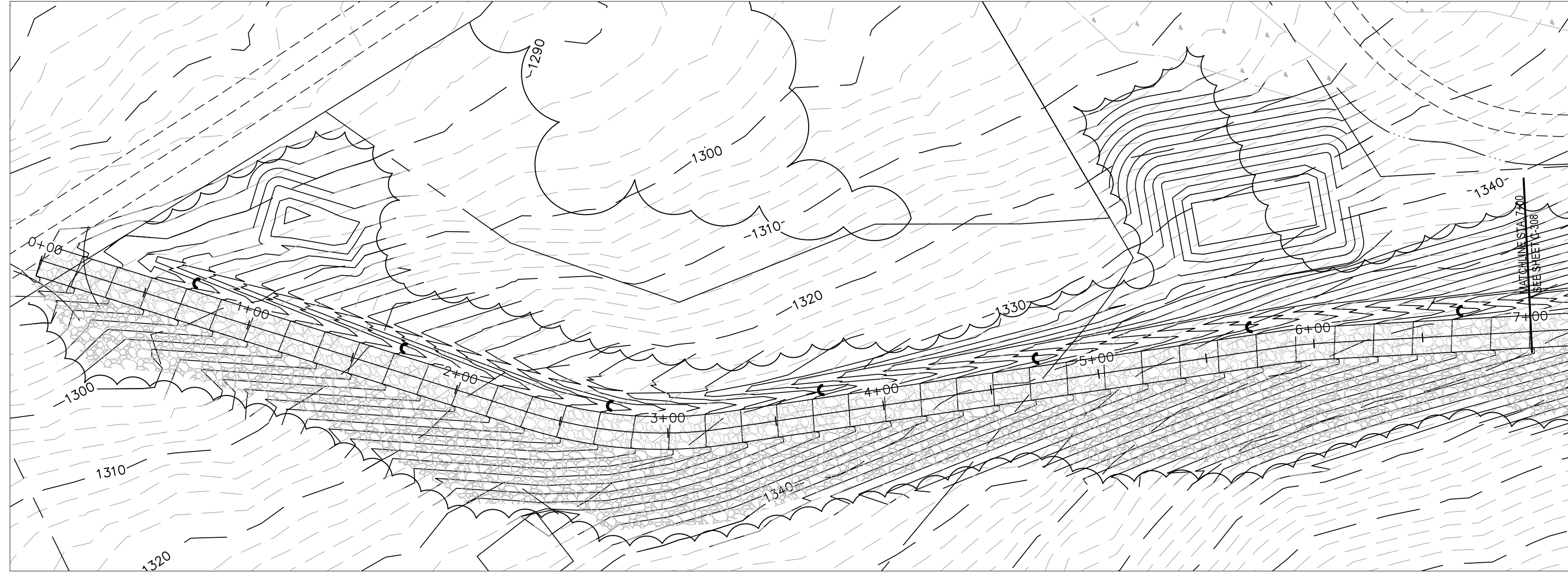
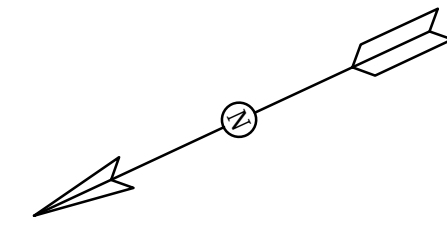
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MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

DESIGNED BY:	DATE:
DRAWN BY:	03-14-11
RSW	
TLK	
TLK	
FILE NUMBER:	
1385	
FILE NAME:	

ZAPATA
 6502 LAWREN ROAD, SUITE 200, WESTPORT, CT 06880
 PHONE: (203) 356-8540
 FAX: (203) 356-8542
 WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
 CONNECTICUT
 ACCESS ROAD PLAN AND PROFILE
 STA: 0+00 TO 7+00

SHEET
 IDENTIFICATION
C-307

BNE Energy Inc.
 Producer of green clean energy

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

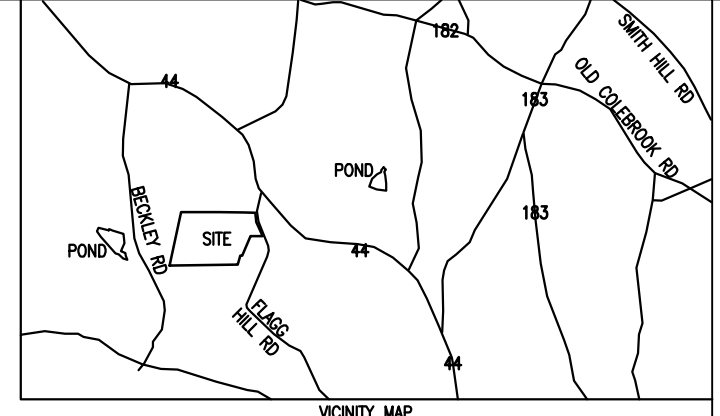
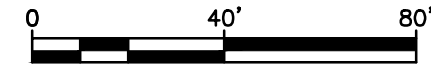
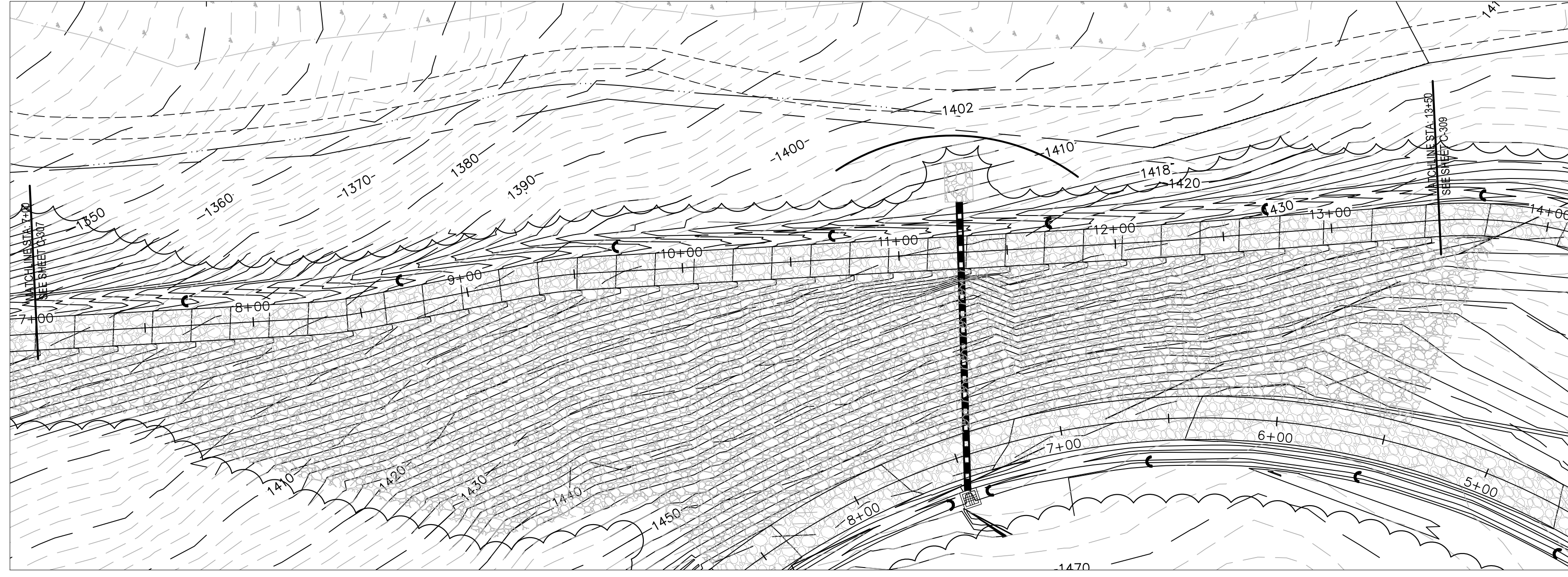
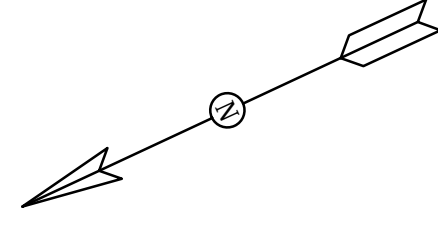
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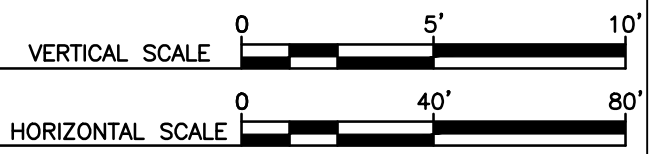
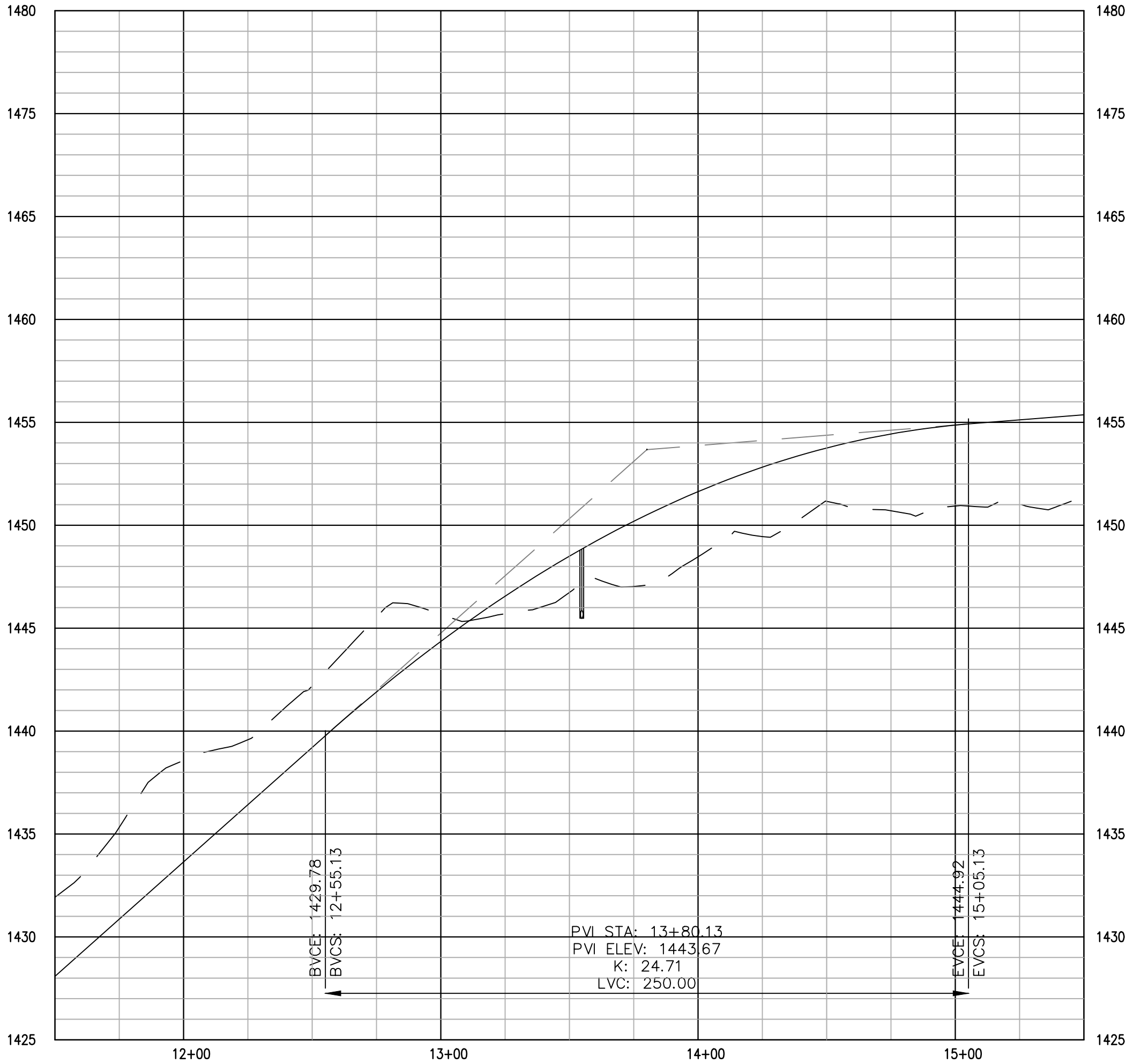
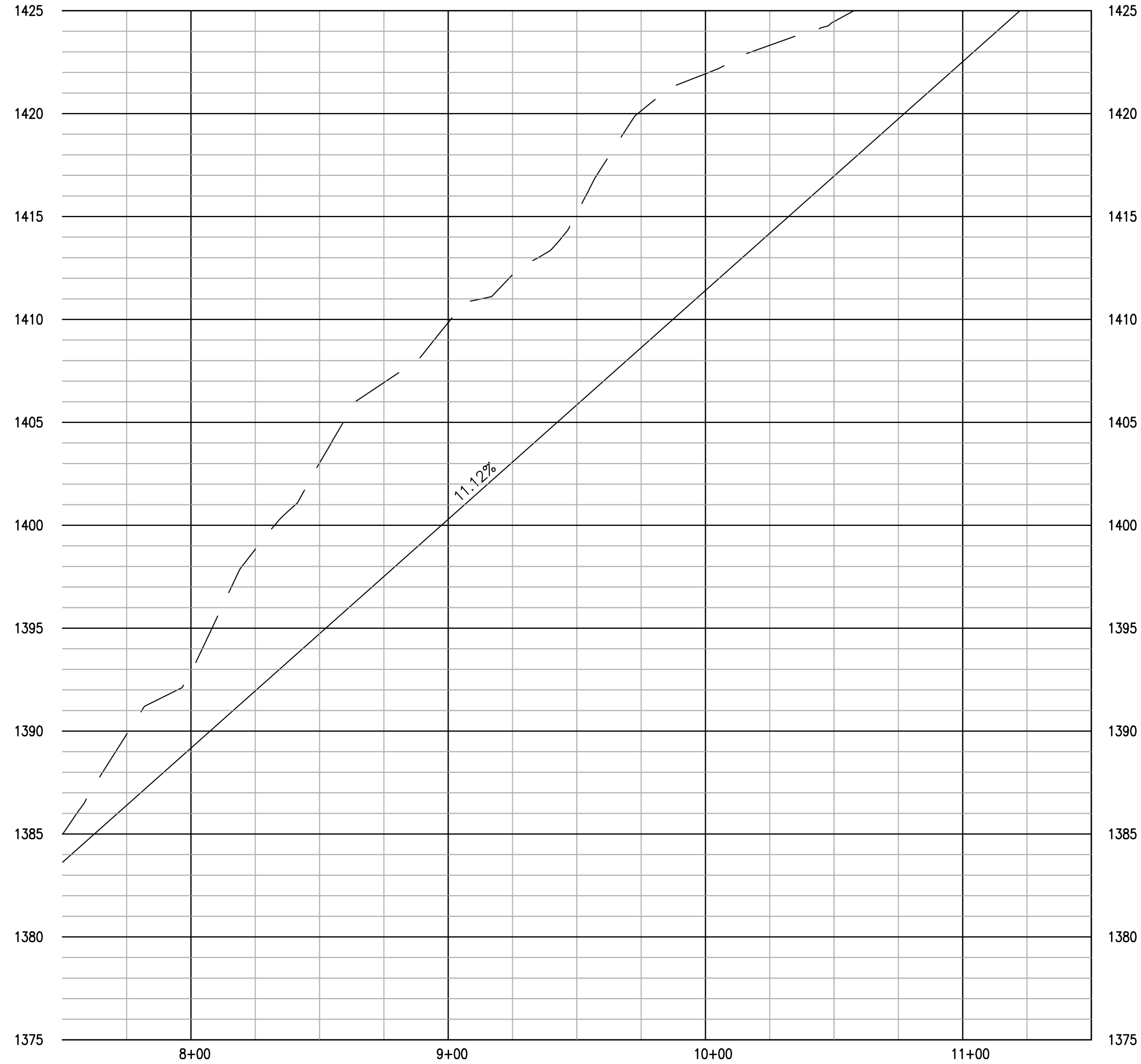


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MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

DESIGNED BY:	DATE:
DRAWN BY:	03-14-11
RSW	
TLK	
DESIGNED BY:	FILE NUMBER:
BNE ENERGY	1385
AS SHOWN	03-14-11
FILE NAME:	
ANSI D	

ZAPATA
 6302 LAWREN ROAD, SUITE 200, WESTPORT, CT 06880
 TEL: 860.426.1000 FAX: 860.426.1001
 WWW.ZAPATAINC.COM

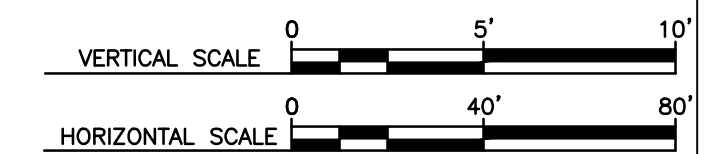
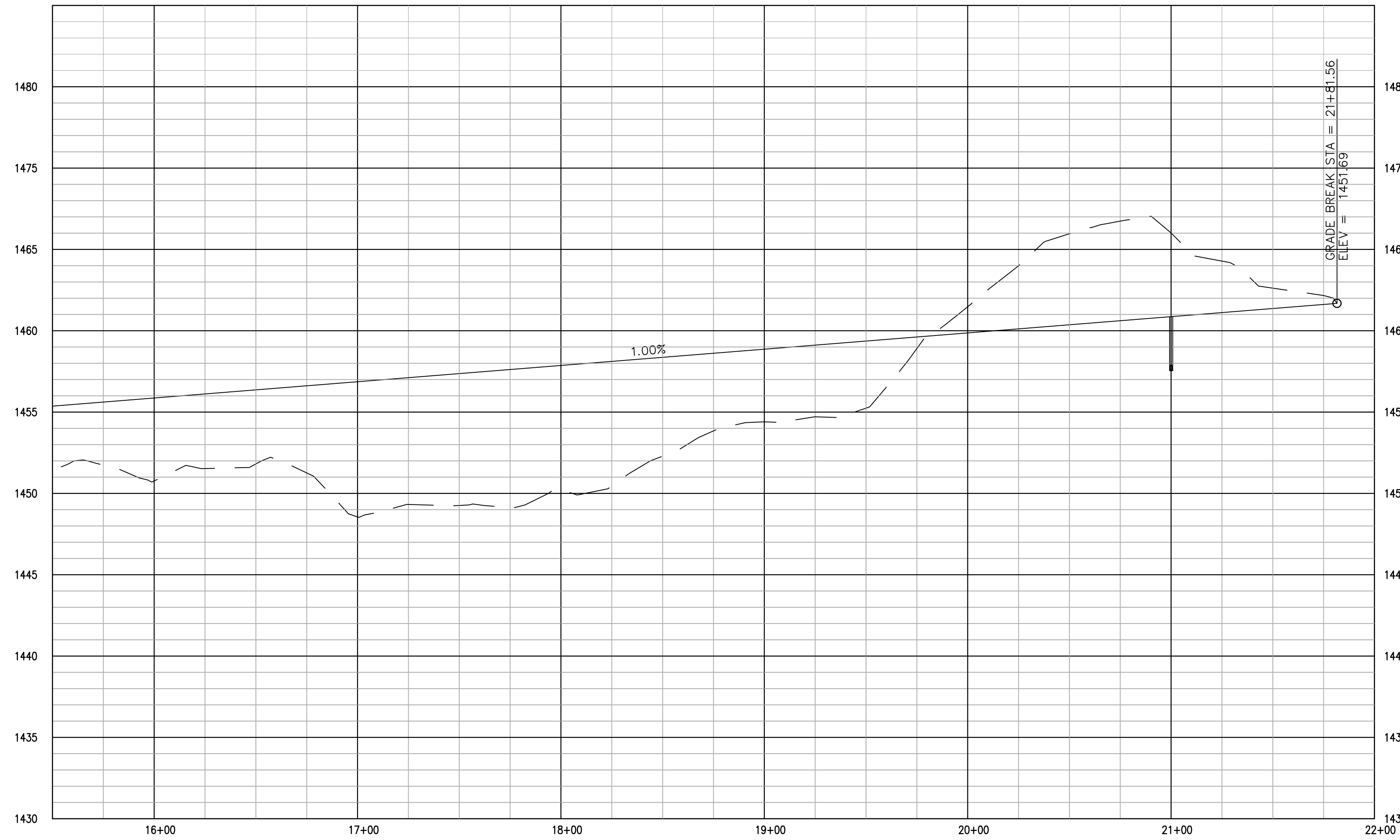
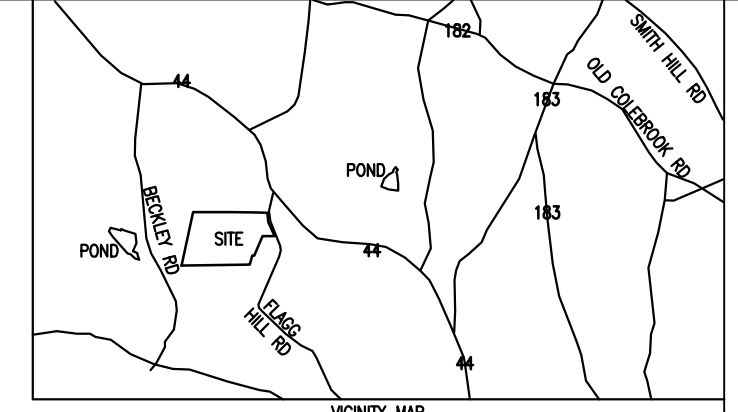
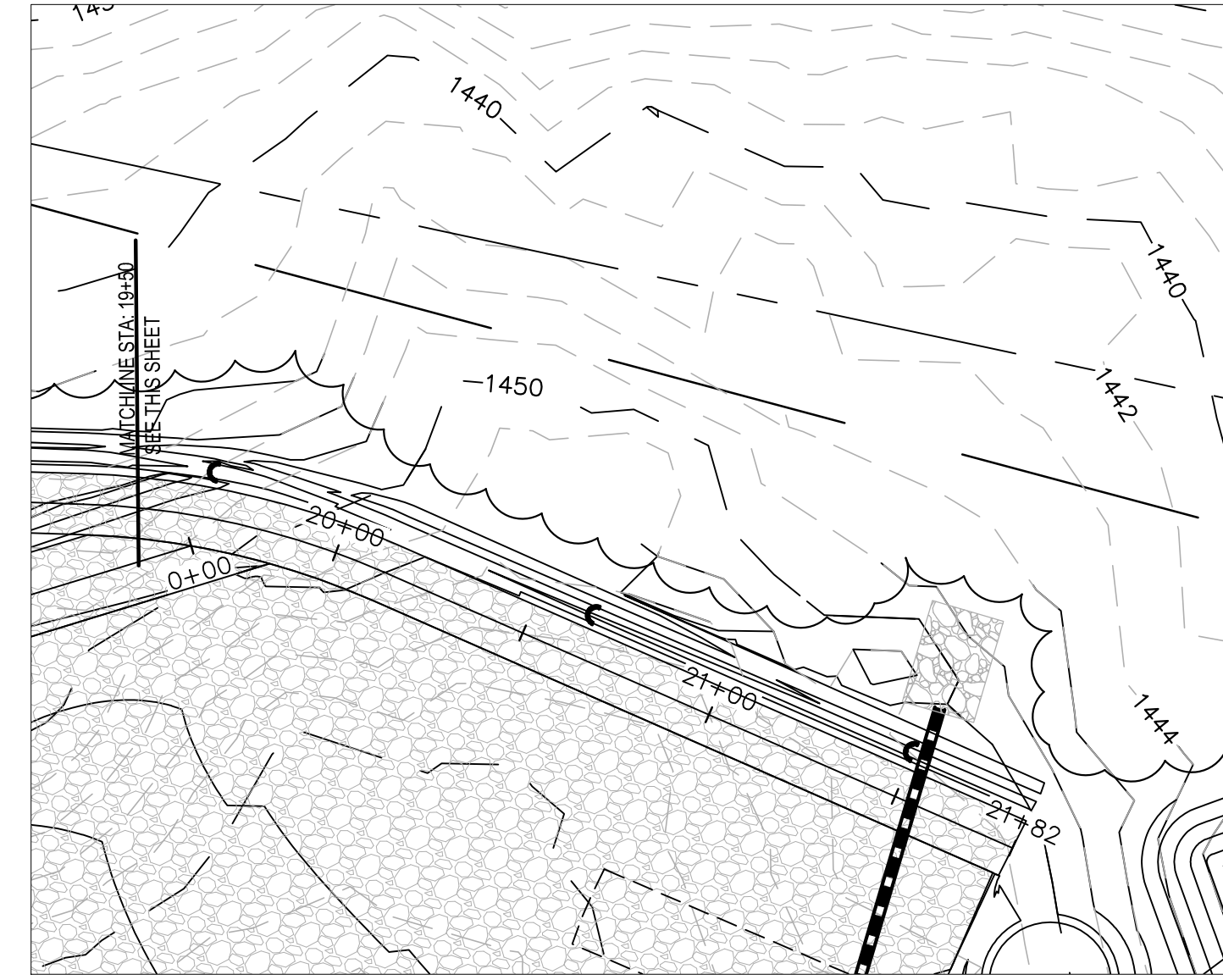
WIND COLEBROOK SOUTH
 CONNECTICUT
 ACCESS ROAD PLAN AND PROFILE
 STA. 7+00 TO 15+50

SHEET
 IDENTIFICATION
C-308

BNE Energy Inc.
 Producer of green clean energy



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TJK

DESIGNED BY:	DATE:
DRAWN BY:	03-14-11
RSW	
CHKD BY:	TJK
TJK	
SUBMITTED BY:	FILE NUMBER:
BNE ENERGY	1385
PLOT SCALE:	03-14-11
AS SHOWN	
SIZE:	FILE NAME:
ANSI D	



WINDY COLEBROOK SOUTH
CONNECTICUT
ACCESS ROAD PLAN AND PROFILE
STA. 15+50 TO 21+81

SHEET
IDENTIFICATION
C-309

BNE Energy Inc.
Producer of green clean energy



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

D
C
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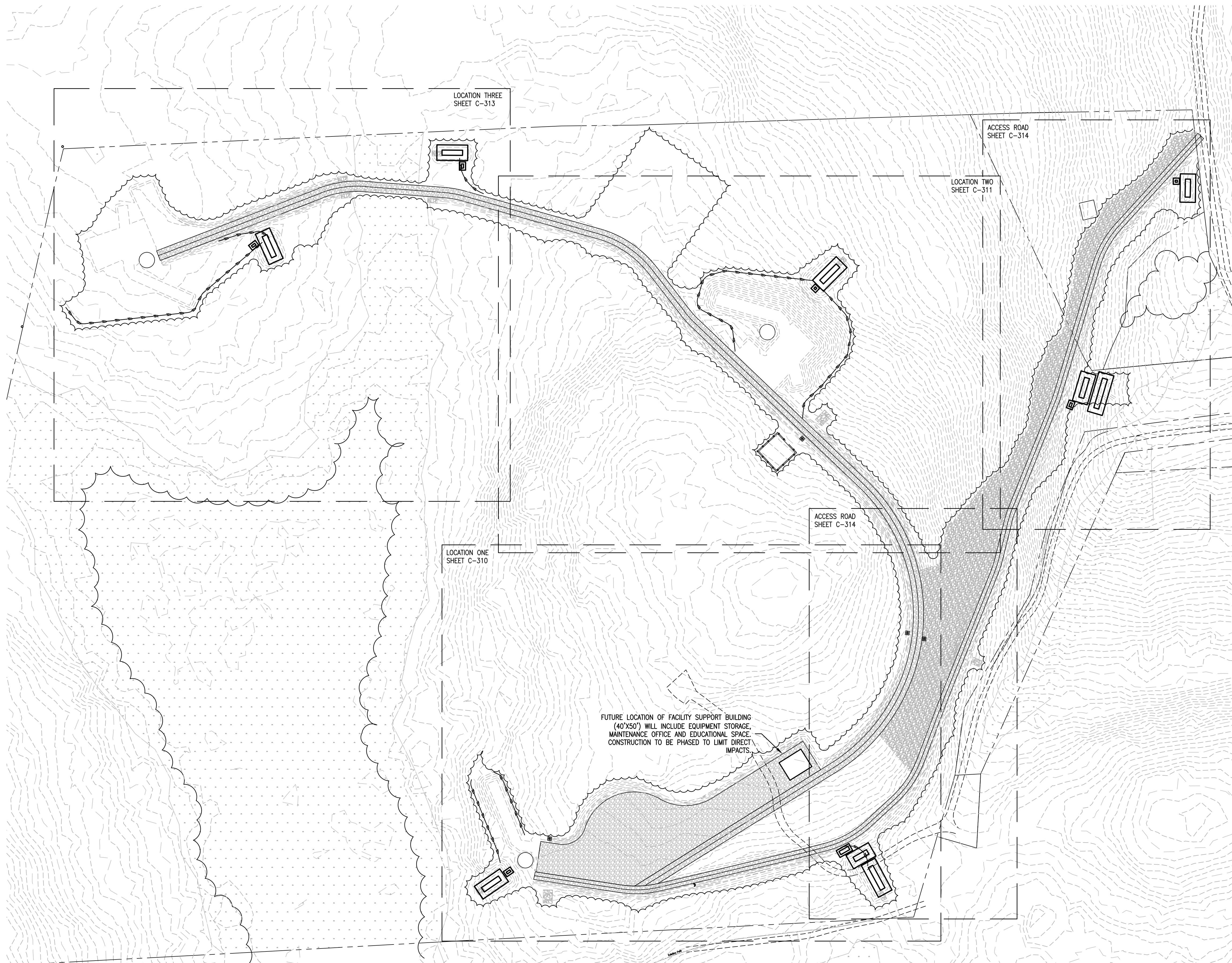
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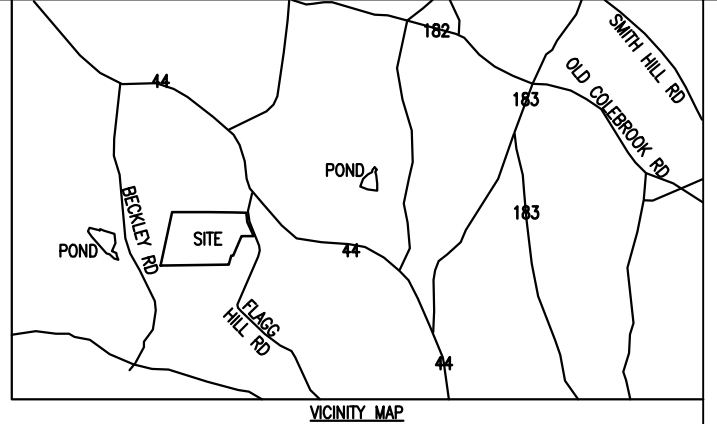
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FUTURE LOCATION OF FACILITY SUPPORT BUILDING (40'x50') WILL INCLUDE EQUIPMENT STORAGE, MAINTENANCE OFFICE AND EDUCATIONAL SPACE. CONSTRUCTION TO BE PHASED TO LIMIT DIRECT IMPACTS.



LEGEND

- CULVERT PIPE
- DITCH LINE
- EXISTING TOPO
- NEW TOPO
- WETLAND LIMITS
- VEGETATION
- COMPACTED EARTH
- WETLAND
- GRAVEL
- LAYDOWN AREA
- CULVERT PIPE/SLOPE DRAIN

GRADING NOTES:

1. DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
2. GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER CONSTRUCTION TO ENSURE PROPER DRAINAGE AWAY FROM PROPOSED BUILDING AND DRIVE.
4. ALL GRADES SHOWN ON PLANS TO BE FIELD-VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCIES EXIST, NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION.
5. ALL HARD SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.
6. GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.
7. MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.
8. ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
10. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.
11. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART P, OR AS AMENDED.

MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC

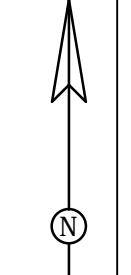
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CHK'D BY:	FILE NUMBER:
TLC	1385
SUBMITTED BY:	FILE NAME:
BNE ENERGY	03-14-11
DESIGNED BY:	ANSI D
RSW	

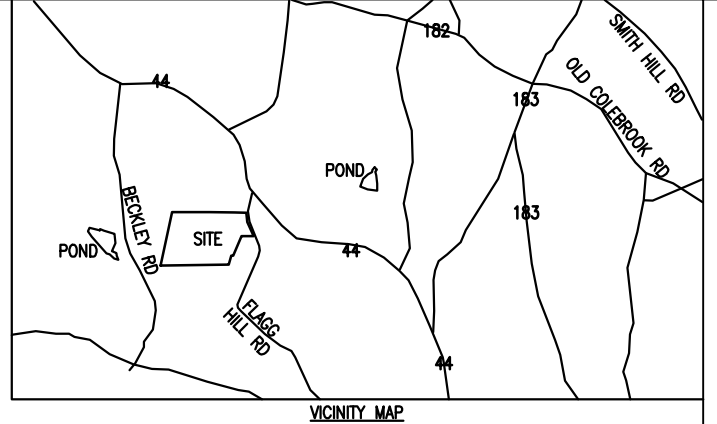
ZAPATA
 6302 LAWRENCE ROAD, SUITE 200, WESTPORT, CT 06880
 PHONE: (203) 358-8940
 FAX: (203) 358-8977
 WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
 CONNECTICUT
 OVERALL POST CONSTRUCTION GRADING PLAN

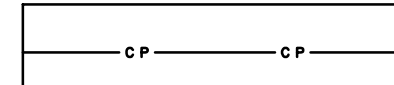
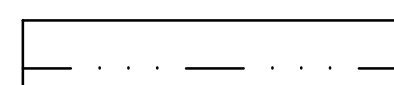
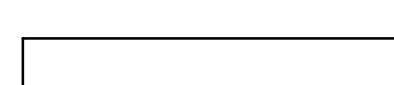
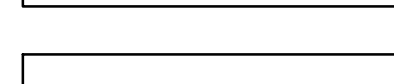
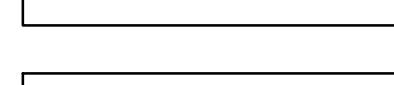
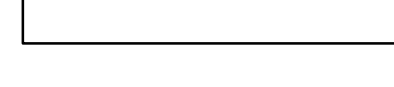



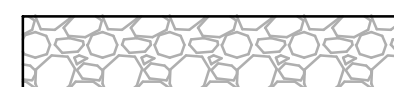

SHEET
 IDENTIFICATION
C-310

BNE Energy Inc.
 Producer of green clean energy





LEGEND

-  CULVERT PIPE
-  DITCH LINE
-  EXISTING TOPO
-  NEW TOPO
-  WETLAND LIMITS
-  VEGETATION
-  COMPACTED EARTH
-  WETLAND
-  GRAVEL
-  LAYDOWN AREA
-  CULVERT PIPE/SLOPE DRAIN

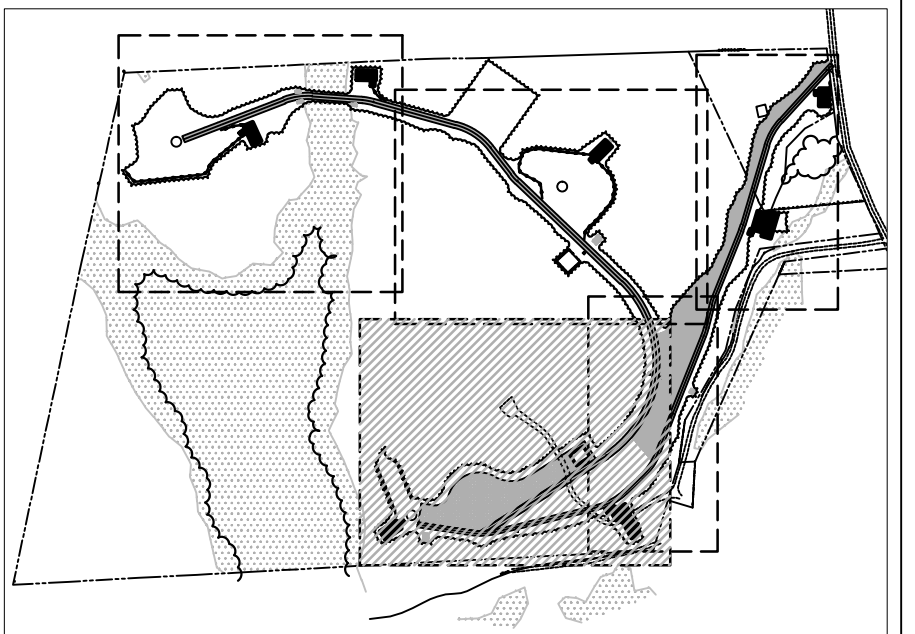
MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	NLC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC

DESIGNED BY:	DATE:
RSW	03-14-11
CHK BY:	
TLC	
DESIGNED BY:	
BNE ENERGY	
FILE NUMBER:	
1385	
ANSI D	

ZAPATA
 6302 LAWRENCE ROAD, SUITE 200, WESTPORT, CT 06880
 PHONE: (703) 356-8240
 FAX: (703) 356-8241
 WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
 CONNECTICUT
 TURBINE LOCATION ONE AND
 CRANE ASSEMBLY AREA
 POST CONSTRUCTION GRADING PLAN

SHEET
 IDENTIFICATION
C-311



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY



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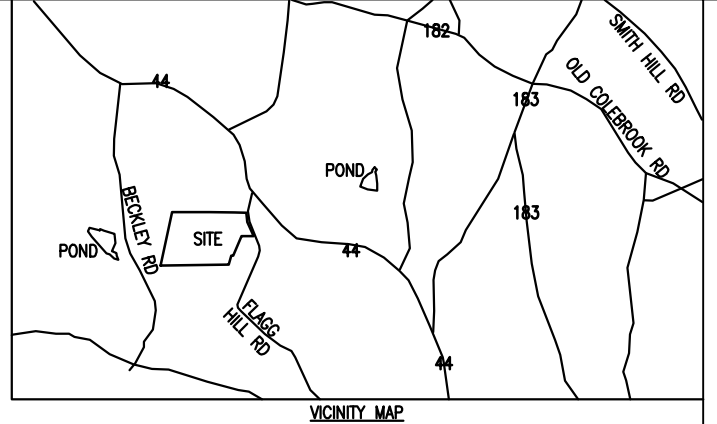
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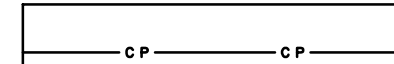
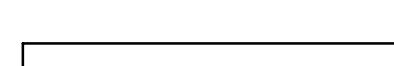
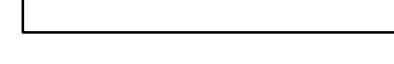

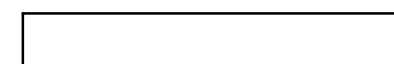
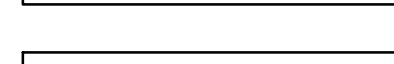
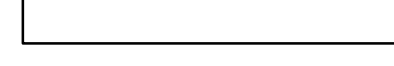


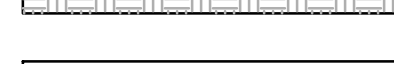

A



BP4 INCLUDES FB4
SEE SHEET C-503 FOR
BIO-RETENTION POND SIZES

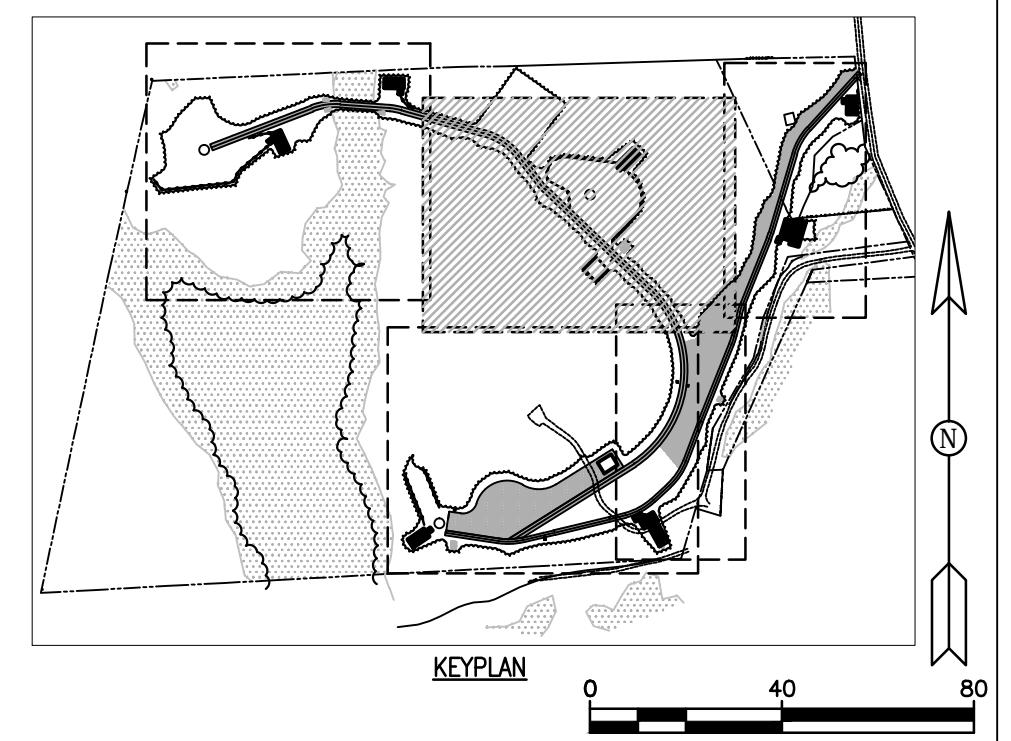


LEGEND

-  CULVERT PIPE
-  DITCH LINE
-  EXISTING TOPO
-  NEW TOPO
-  WETLAND LIMITS
-  VEGETATION
-  COMPACTED EARTH
-  WETLAND
-  GRAVEL
-  LAYDOWN AREA
-  CULVERT PIPE/SLOPE DRAIN

GRADING NOTES:

1. DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
2. GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
3. GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER CONSTRUCTION TO ENSURE PROPER DRAINAGE AWAY FROM PROPOSED BUILDING AND DRIVE.
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5. ALL HARD SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.
6. GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.
7. MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.
8. ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
10. ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.
11. SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART P, OR AS AMENDED.



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	NLC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC

DESIGNED BY:	DATE:
DRAWN BY:	03-14-11
REVISION:	
CHK BY:	
TLC:	
FILE NUMBER:	
1385	
FILE NAME:	
ANSI D	

ZAPATA
 6302 LAWREN ROAD, SUITE 200A, 06457
 ZAPATA@ZAPATAINC.COM WWW.ZAPATAINC.COM

WIND COLEBROOK SOUTH
CONNECTICUT
TURBINE LOCATION TWO
POST CONSTRUCTION GRADING PLAN

SHEET
IDENTIFICATION
C-312



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

D
C
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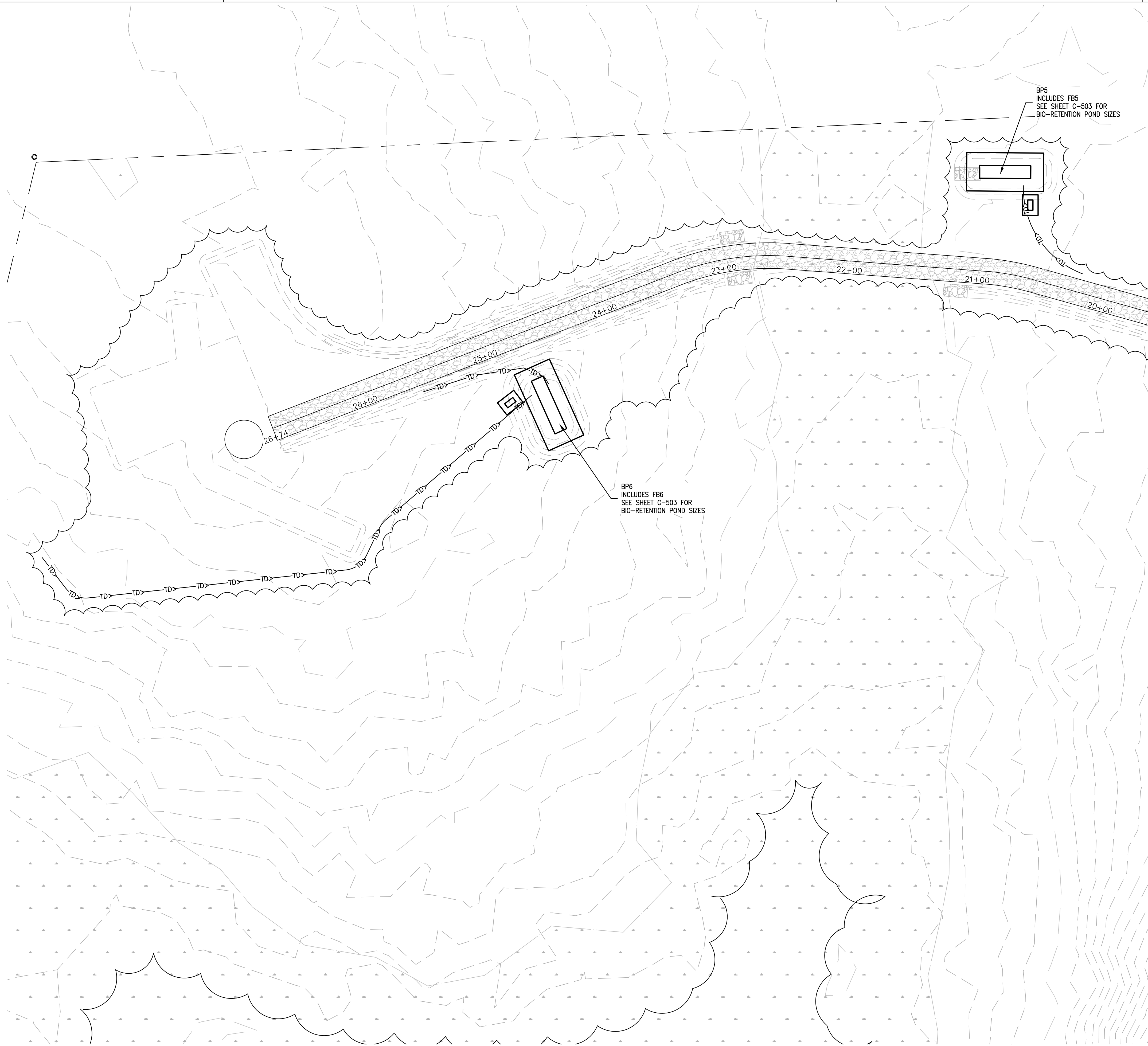
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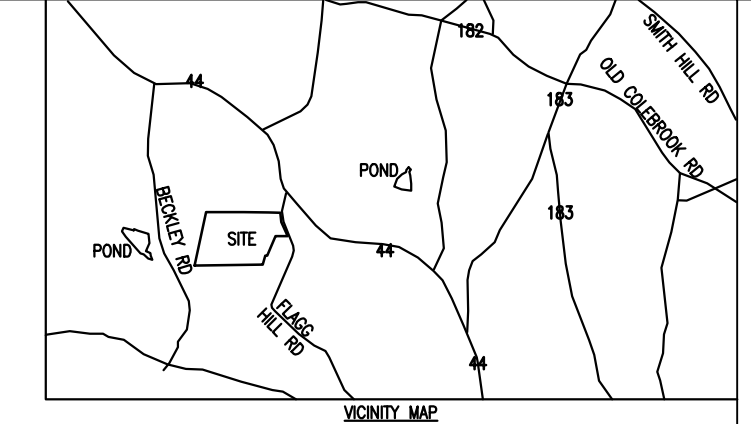
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5



BP5
INCLUDES FB5
SEE SHEET C-503 FOR
BIO-RETENTION POND SIZES

BP6
INCLUDES FB6
SEE SHEET C-503 FOR
BIO-RETENTION POND SIZES

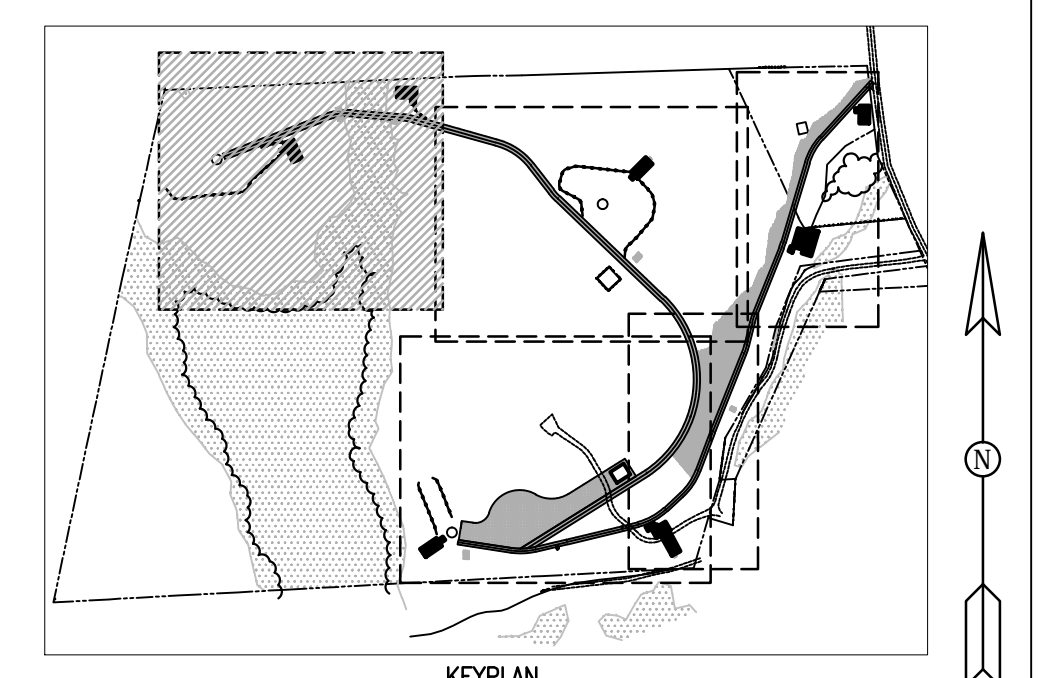


LEGEND

	CULVERT PIPE
	DITCH LINE
	EXISTING TOPO
	NEW TOPO
	WETLAND LIMITS
	VEGETATION
	COMPACTED EARTH
	WETLAND
	GRAVEL
	LAYDOWN AREA
	CULVERT PIPE/SLOPE DRAIN

GRADING NOTES:

- DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
- GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
- GENERAL CONTRACTOR TO MONITOR STORM WATER RUNOFF DURING AND AFTER CONSTRUCTION TO ENSURE PROPER DRAINAGE AWAY FROM PROPOSED BUILDING AND DRIVE.
- ALL GRADES SHOWN ON PLANS TO BE FIELD-VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. SHOULD ANY DISCREPANCIES EXIST, NOTIFY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALL HARD SURFACES SHALL HAVE A SLOPE AS INDICATED ON DRAWINGS.
- GENERAL CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM TOWER PADS.
- MASS GRADING WILL NOT BE CONDUCTED ON THIS SITE.
- ALL EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR PLACING BARRICADES, USING FLAG MEN, ETC. AS NECESSARY TO INSURE SAFETY TO THE PUBLIC.
- ALL PAVEMENT CUTS, CONCRETE OR ASPHALT, ARE TO BE REPLACED ACCORDING TO STANDARDS OF THE CONNECTICUT DEPARTMENT OF TRANSPORTATION.
- SHORING WILL BE ACCORDING TO OSHA TRENCHING STANDARDS PART 1926, SUBPART P, OR AS AMENDED.



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC

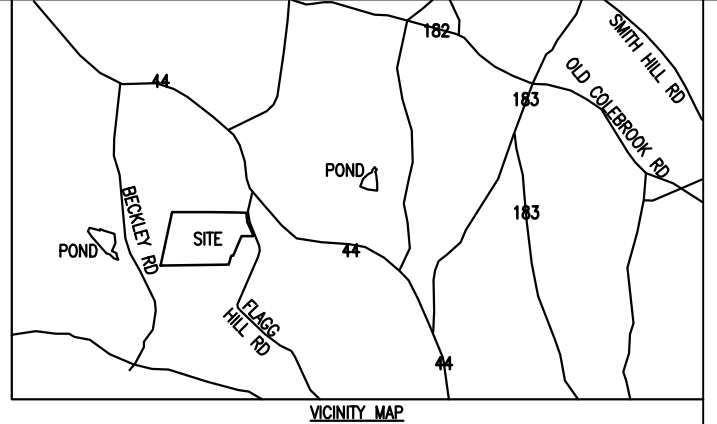
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WIND COLEBROOK SOUTH
 CONNECTICUT
 TURBINE LOCATION THREE
 POST CONSTRUCTION GRADING PLAN

SHEET
 IDENTIFICATION
C-313

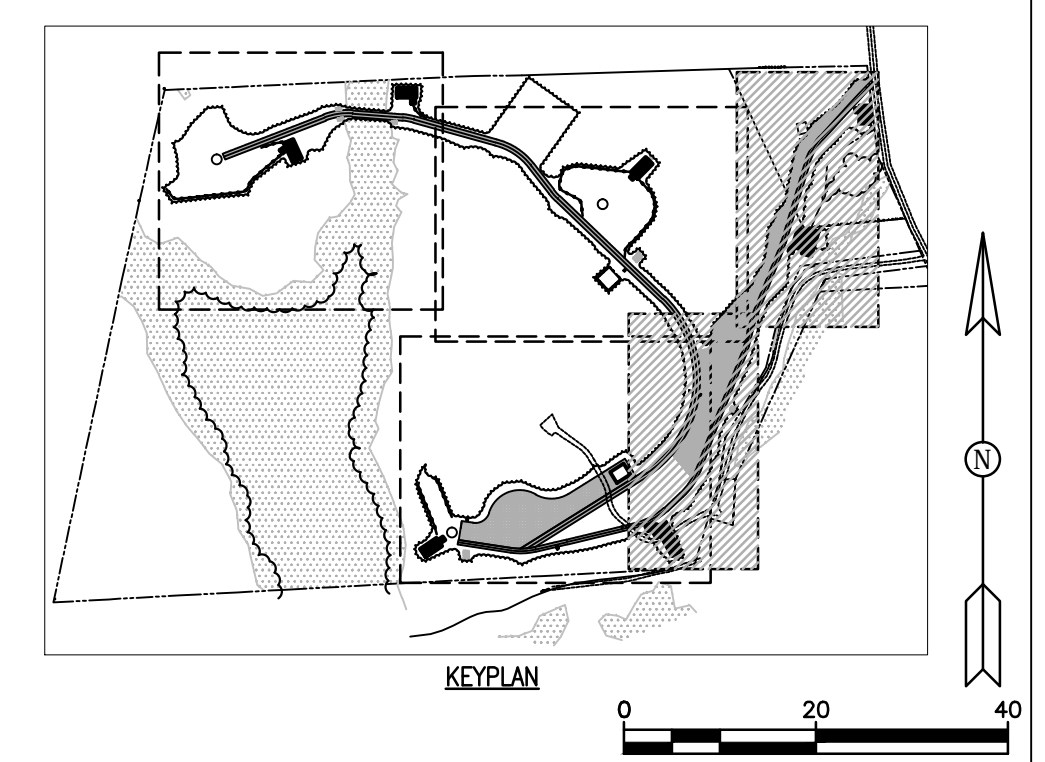




LEGEND

	CULVERT PIPE
	DITCH LINE
	EXISTING TOPO
	NEW TOPO
	WETLAND LIMITS
	VEGETATION
	COMPACTED EARTH
	WETLAND
	GRAVEL
	LAYDOWN AREA
	CULVERT PIPE/SLOPE DRAIN

- GRADING NOTES:**
- DISCREPANCIES SHOULD BE NOTED AND GUIDANCE OBTAINED FROM THE ENGINEER PRIOR TO CONTINUING WORK.
 - GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING AND AVOIDING ALL EXISTING UNDERGROUND UTILITIES.
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MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TJK

DESIGNED BY:	DATE:
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RSW	
CHKD BY:	TJK
TLK	
SUBMITTED BY:	FILE NUMBER:
BNE ENERGY	1385
PLOT SCALE:	FILE NAME:
AS SHOWN	03-14-11
SIZE:	ANSI D

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WINDY HILL SOUTH
 CONNECTICUT
 ACCESS ROAD STA. 0+00 TO 15+16
 POST CONSTRUCTION GRADING PLAN

SHEET
 IDENTIFICATION
C-314



NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

7-Diversions

Permanent Diversion (PD)
Definition
A channel constructed across a slope with a supporting embankment on the down side...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

Design Criteria
Design the permanent diversion according to generally accepted engineering standards...

PERMANENT DIVERSION SWALES
Scale: NTS

10-Energy Dissipators

Definition
A structure designed to dissipate the energy of flowing water...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

STONE CHECK DAM
Scale: NTS

11-Sediment Impoundments, Barriers and Filters

May Bale Barrier (MBB)
Definition
A structure designed to trap sediment and debris...

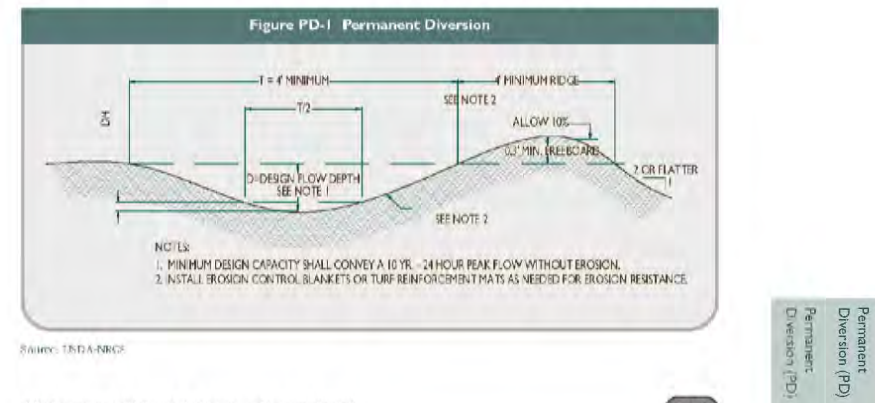
Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

HAY BALE BARRIER
Scale: NTS

Channel Design

Channel Design
The channel design should be based on the design flow and the channel characteristics...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...



PERMANENT DIVERSION SWALES
Scale: NTS

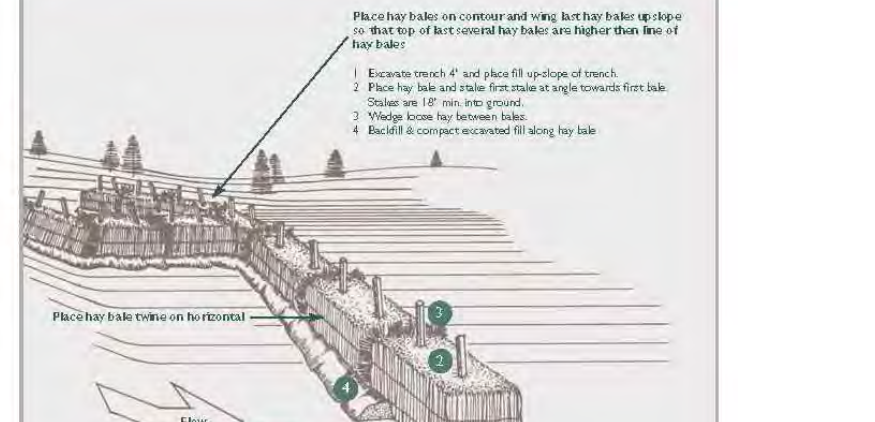
10-Energy Dissipators

Definition
A structure designed to dissipate the energy of flowing water...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

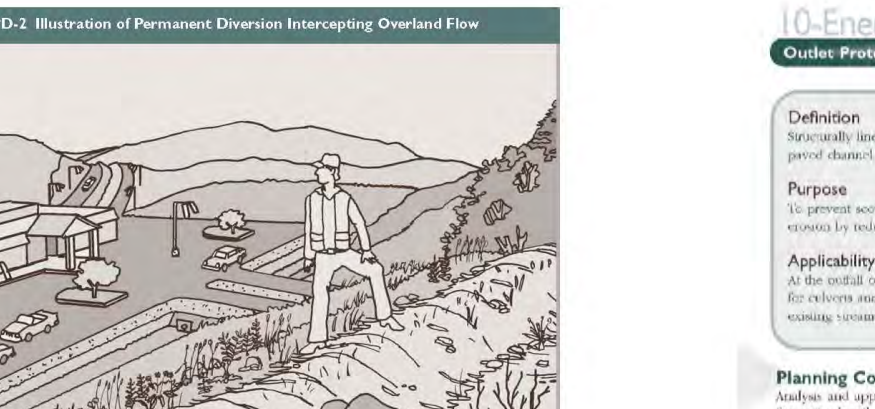
STONE CHECK DAM
Scale: NTS

11-Sediment Impoundments, Barriers and Filters



Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

HAY BALE BARRIER
Scale: NTS

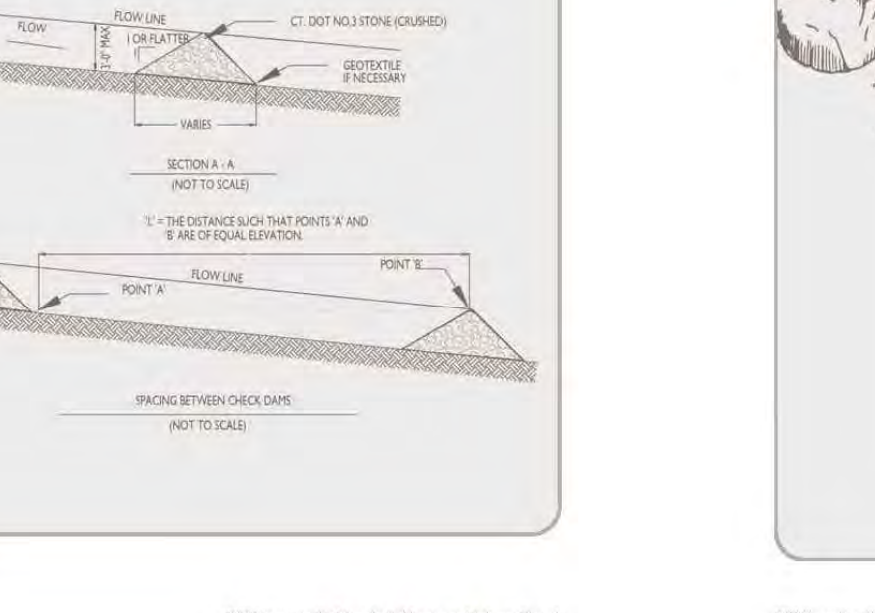


Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

OUTLET PROTECTION
Scale: NTS

7-Diversions

Permanent Diversion (PD)
Definition
A channel constructed across a slope with a supporting embankment on the down side...



STONE CHECK DAM
Scale: NTS

11-Sediment Impoundments, Barriers and Filters

Geosynthetic Site Fencing (GSF)
Definition
A geosynthetic material covering a general site, placed over and anchored to existing points and structures...

Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

SILT FENCE
Scale: NTS

10-Energy Dissipators
Outlet Protection (OP)
Definition
Structurally load capable energy absorbing devices placed between the outlet of pipes or conduits...

Table with 2 columns: Soil texture, Allowable Velocity (ft/sec). Rows include Wet sand, Silt, Clay, etc.

OUTLET PROTECTION
Scale: NTS

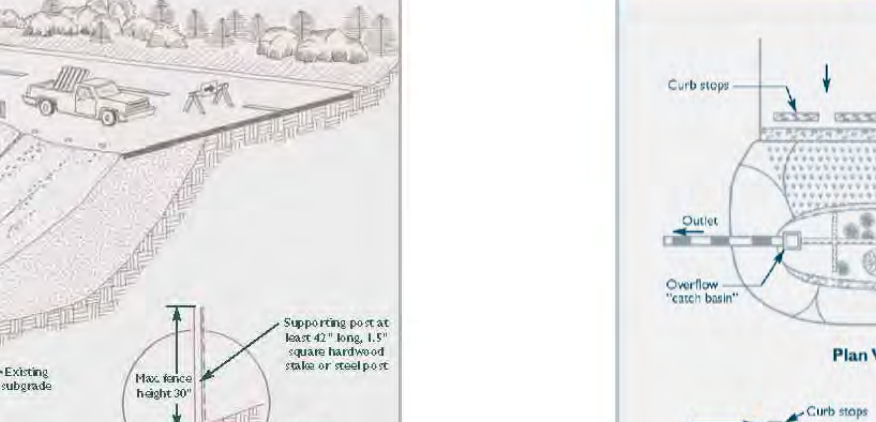
6-Drainage Ways and Watercourses

Temporary Stream Crossing (TSC)
Definition
A structure designed to provide a means for crossing a stream during construction...



STONE CHECK DAM
Scale: NTS

11-Sediment Impoundments, Barriers and Filters



Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

SILT FENCE
Scale: NTS



Design Criteria
Design the outlet protection devices to be installed at the outlet of pipes or conduits...

OUTLET PROTECTION
Scale: NTS

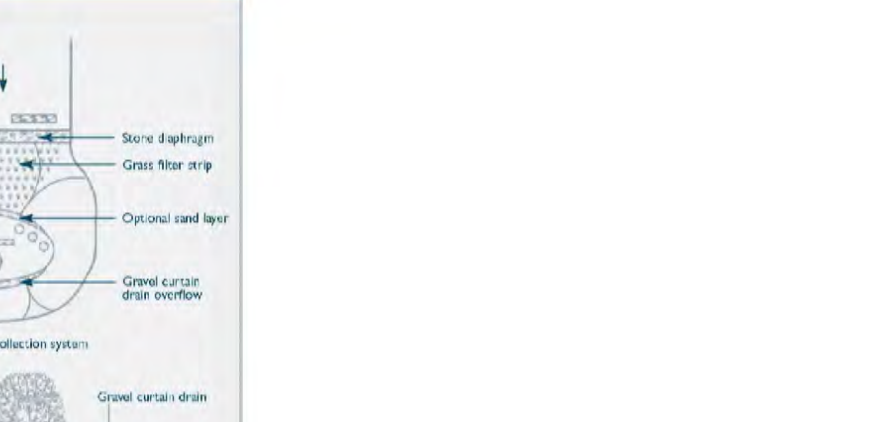
6-Drainage Ways and Watercourses

Definition
A structure designed to provide a means for crossing a stream during construction...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

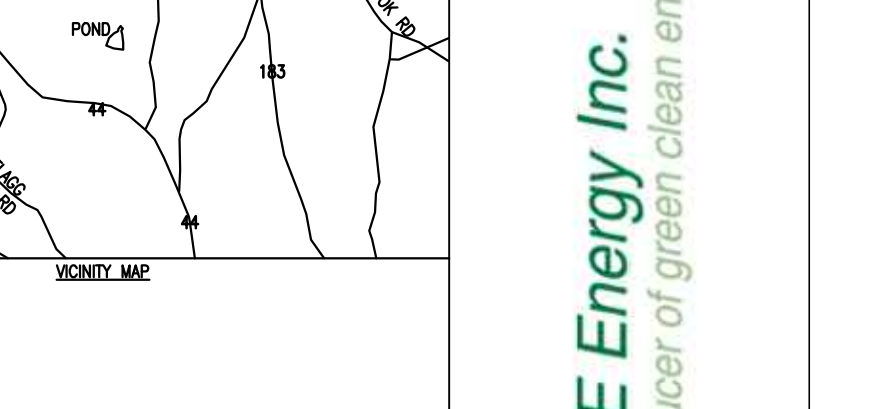
STONE CHECK DAM
Scale: NTS

11-Sediment Impoundments, Barriers and Filters



Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

BIORETENTION POND
Scale: NTS



Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

BIORETENTION POND
Scale: NTS

6-Drainage Ways and Watercourses

Definition
A structure designed to provide a means for crossing a stream during construction...

Planning Considerations
Diversion structures are subject to erosion, sedimentation, and other factors...

STONE CHECK DAM
Scale: NTS

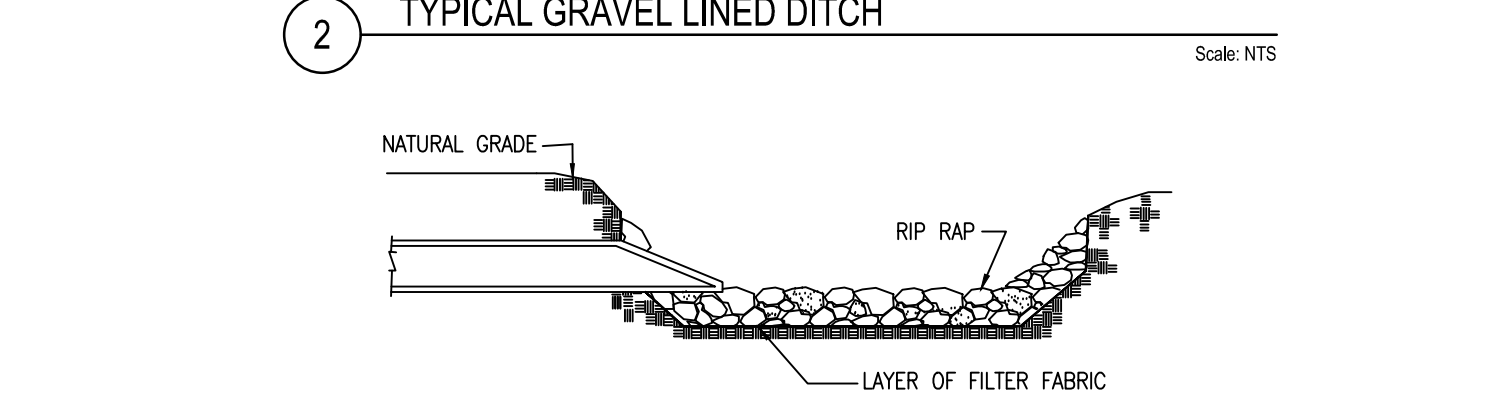
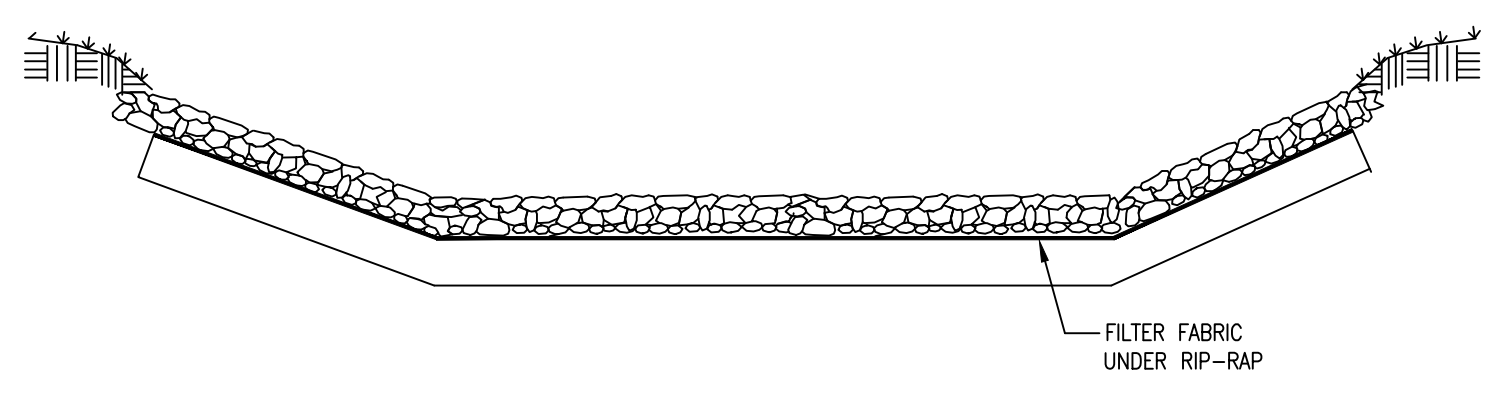
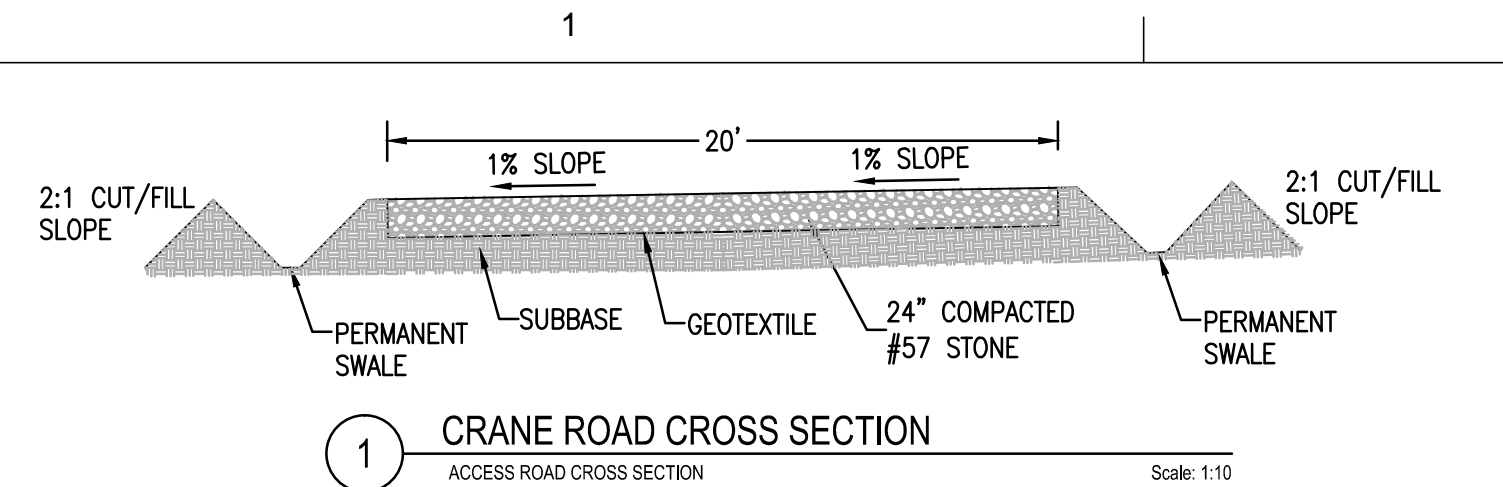
11-Sediment Impoundments, Barriers and Filters



Planning Considerations
Silt fences, sediment barriers, and filters are used to control sediment...

BIORETENTION POND
Scale: NTS

Project information including BNE Energy Inc. logo, project name, dates, and contact information.



Technical Bulletin
French Mattress
Version 2/2014

FRENCH MATTRESS—A structure under a road consisting of coarse rock wrapped in fabric through which water can freely pass. A French mattress is basically a French drain that is used similar to a culvert to allow water passage through the roadbed.



PURPOSES: The primary function of a French mattress is to provide load support and to establish, maintain, or equalize the subsurface water on both sides of the road. The use of French mattresses in road maintenance is a relatively new concept. Please contact the Center for Dirt & Gravel Road Studies with any questions or concerns.

HOW THEY WORK: Support strength is provided by large rocks in the lower portions and by spreading the weight load with layers of progressively smaller rock near the top. Water moves into the French mattress from any direction through the protective geotextile fabric, which functions to prevent migration of fine material. The water collects in the voids provided by the larger rock and moves by gravity either into the soil or subsurface drainage, if provided, or acts as a gentle seep on the downhill end of the structure.

- BENEFITS OF A FRENCH MATTRESS:**
- Corrects road support problems in areas where the road base has been weakened by water saturation caused when the road acts as a dam to natural water flow.
 - Allows for natural equalization of subsurface water on both sides of a road.
 - Requires little, if any, maintenance compared to cross-drainage culverts.
 - Eliminates the need for additional cross pipes in some instances.
 - Allows a gentle, non-erosive water discharge rather than concentrated flow.
 - Provides an indefinite service life if not compromised by heavy flows of sediment.

- WHERE TO USE A FRENCH MATTRESS:**
- Areas where concentrated water flow through a pipe may be undesirable, impractical, or regulated.
 - Low-lying areas near streams or wetlands where installing cross drains would be difficult.
 - Areas where a road is acting as an impoundment or dam to the natural water flow by isolating subsurface water on one side of the road from the other.
 - Areas where placement of a pipe at the depth necessary to provide structural cover would lower the natural water table of the area and require long term maintenance.

The publisher of this publication gratefully acknowledges the financial support of the Pennsylvania State University Center for Dirt & Gravel Road Studies. For additional information, please contact: Center for Dirt & Gravel Road Studies, Penn State University, 207 Pennsylvania State University, PA 16802. Call the phone number 814-863-7272, Fax 814-863-7272, Email: center@cdgrs.psu.edu. Approved August 2014. www.cdgrs.psu.edu

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- IMPORTANT CONSIDERATIONS**
- **Materials:** The core material for the mattress should be large clean stone, typically referred to as R4. A general rule is that the depth of the mattress needs to be at least three times the diameter of the largest stone used. Smaller stone, such as #3's, should be placed on top of the large stone. Progressively smaller stone should be placed on top to prevent tearing of the fabric. The structure should be wrapped in heavy-duty, non-woven separation fabric.
 - **Dimensions:** The length of the mattress must, at a minimum, equal the width of the road, but can extend out of the road area to equalize drainage. Mattress width and stone size depend on the amount of water that needs to pass through. In wetland settings, the mattress should be as wide as possible to allow slow lateral flow and avoid concentrating the cullet drainage. Mattress depth depends on stone size, depth available, and desired drainage patterns.
 - **Equipment:** Most mattresses can be installed easily with a backhoe and a back-to-back loader.

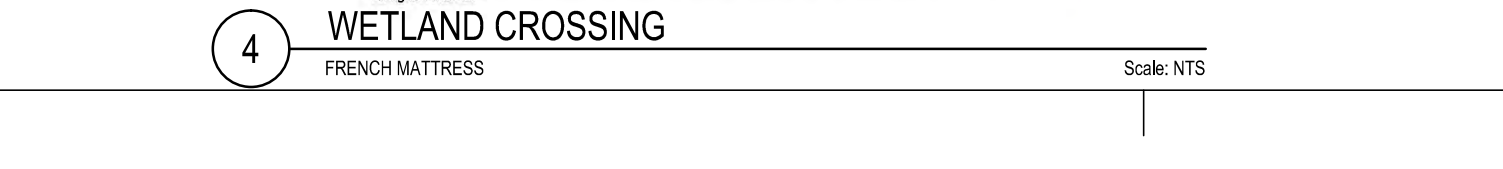
- CONSTRUCTION:** Refer to numbered pictures on right.
1. Excavate the section of the road where the mattress will be located to desired depth. Lay heavy-duty separation fabric in the bottom of the area after excavation and leveling. Use bedding material if necessary to protect fabric. Leave enough fabric on the ends to wrap around and overlap with top fabric later.
 2. Place large stone, typically R4, on top of the fabric and spread out into a uniform bed.
 3. Place a layer of smaller stone such as #3's on top of the R4. Be careful not to intermix the two stone sizes. The empty space between the large stones, and therefore flow capacity, will be reduced if the small stone is intermixed. Spread increasingly smaller stone on top to create layer that will not puncture fabric.
 4. Wrap ends of lower fabric up on top of structure. Place a piece of fabric on the top if existing fabric does not completely cover mattress. All fabric joints should overlap by at least 18".
 5. Place bedding material and fill over the mattress if necessary. Place driving surface aggregate (DSA) over the structure according to normal program specifications and procedures.

- TYPICAL REQUIREMENTS:** While these figures will vary with the size of structure and individual site conditions, here is what was required for the 20' x 12' x 1.5' mattress illustrated on the right.
- 3 hours of work with a Case 500 Backhoe
 - 20 tons of clean R4 rock (large rock)
 - 8 tons of clean #3 rock (small rock on top)
 - 85 Square yards of heavy-duty geotextile (fabric)
 - Sufficient fill and driving surface aggregate over fabric (minimum of 8 inches recommended after compaction)

*R4 and #3 size rock refer to PA Department of Transportation Section 602 Specifications. #3 rock size from 7.5 to 1.5". #3 rock size from 7.5 to 1.5".

This publication is available in alternative formats upon request. The Pennsylvania State University is committed to providing all persons with equal access to its programs and services. If you are unable to access this document, please contact the Center for Dirt & Gravel Road Studies at 814-863-7272. For more information, please visit our website at www.cdgrs.psu.edu. Approved August 2014. www.cdgrs.psu.edu

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8-Subsurface Drain
Sub-surface Drain (SD)

Definition
An underground water conveyance system consisting of a perforated pipe, such as pipe, along with or a water table located outside the ground surface, and having gravel cover (see Figure SD-1).

Purposes

- To prevent slope soil loss, increasing emergency wet crossing drainage.
- To improve the bearing capacity of soils.
- To reduce frost heave of fine-grained soils.
- To prevent hydrostatic pressure from developing behind retaining walls, foundations or floor slabs used to reduce moisture and freezing of concrete.
- To relieve excess porewater.
- To lower water tables in regional waterways and ditches in order to maintain stable vegetative conditions.
- To allow stone water conveyance areas or structures.

Applicability

- Used as a means for 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 without proper system installation or some of ground water pollution, or to discharge wet lands or tidal wetlands without prior authorization.

Planning Considerations
Subsurface drains are generally installed within a slope to lower the water table (see Figure SD-2). Subsurface drainage systems are either relief drains or collection drains (sometimes called catch drains or a combination of both). Relief drains are used either to lower the water table in order to keep structures from becoming dry or to prevent the growth of vegetation. They are generally installed along a slope, drainage or the bottom of the slope and are provided with suitable outlets. They can be installed as a graded pattern, a neighborhood pattern, or a random pattern (see Figure SD-3).

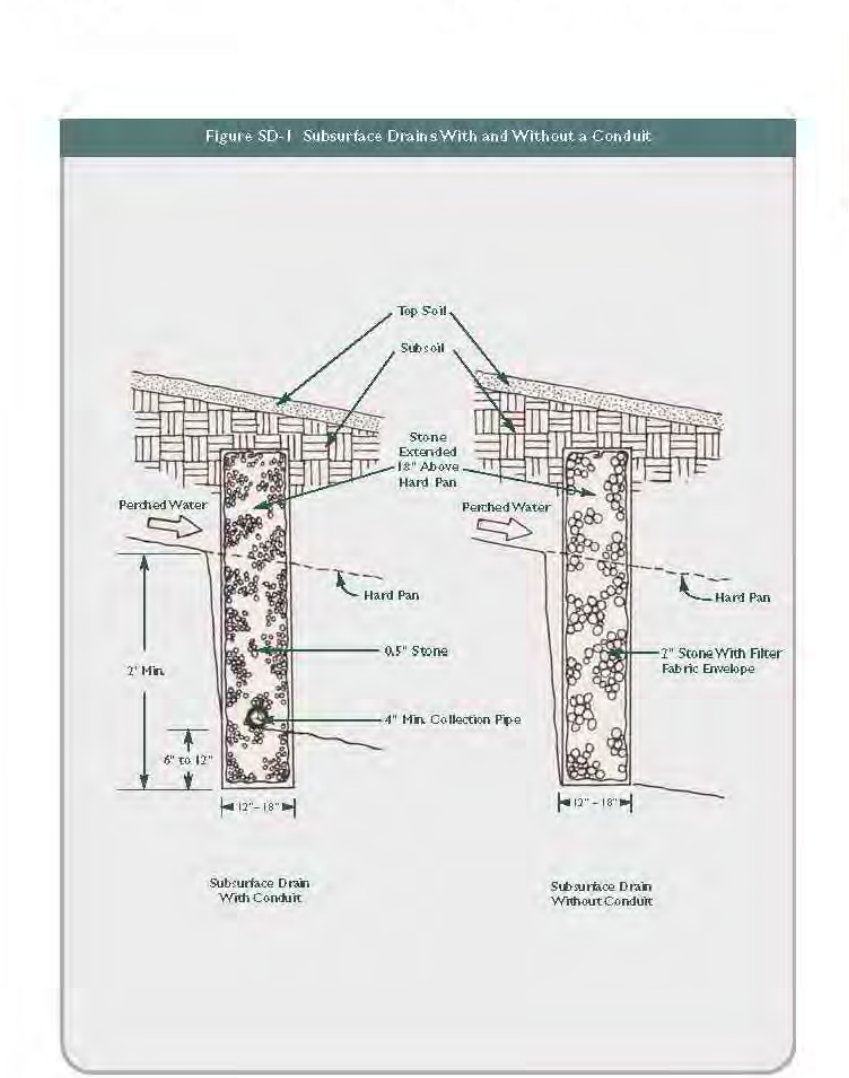
Design Criteria
The design and installation of subsurface drains shall be based on detailed survey and investigation. Where soil conditions are not known, or where there is a possibility of soil erosion or other more drastic engineering design, they can be installed as a graded pattern, a neighborhood pattern, or a random pattern (see Figure SD-3).

Capacity
The required capacity for subsurface drains shall be determined by Figure SD-4.

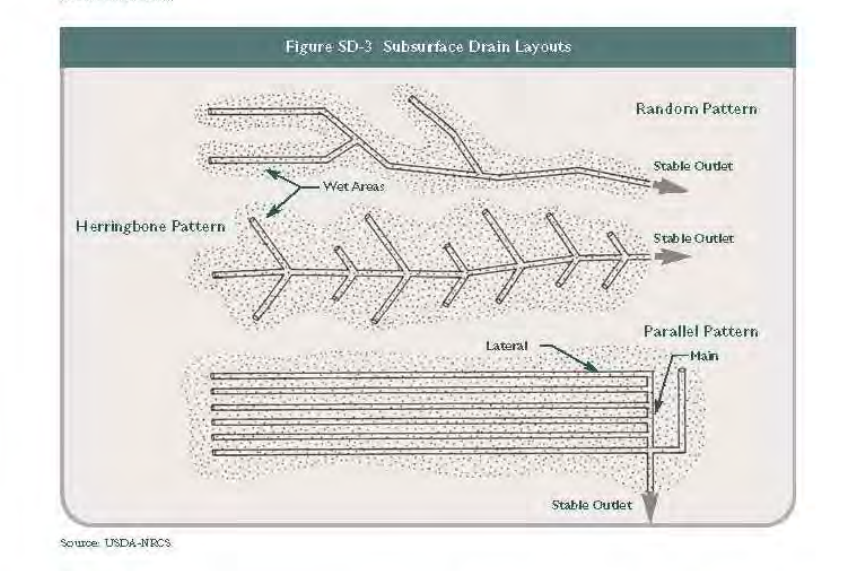
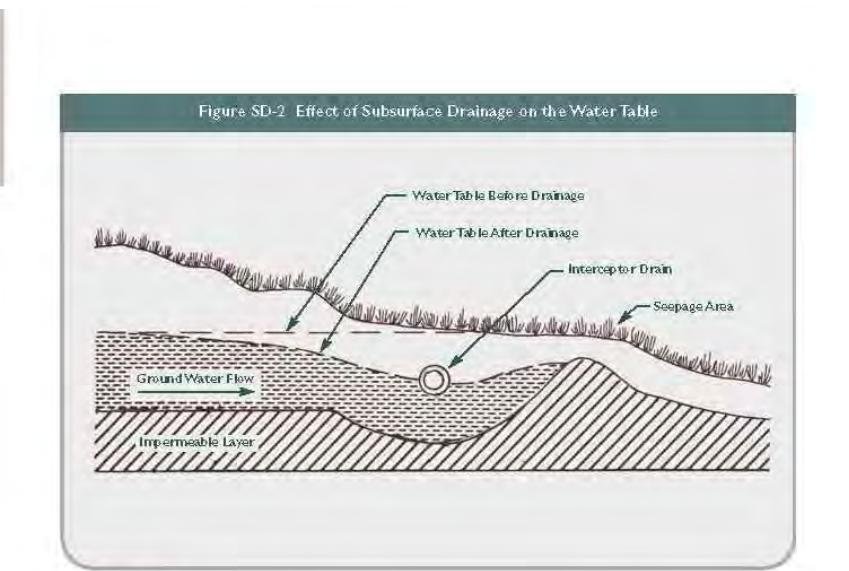
Size of Drains
If a pipe is used in the drain installation, the maximum size shall be 4" diameter. If a non-flexible pipe is used without a conduit, the maximum size of the pipe is limited to that of the pipe diameter. Drainage may also occur in or over the pipe of discharge. Also, consideration of soil and moisture of the soil and the structure they support can occur in some cases.

Installation
The design drainage and installation shall comply with applicable federal, state and local laws and regulations. The installation or design is in compliance with the following required points. Drains shall comply with applicable federal, state and local laws and regulations. Drains shall be installed with a suitable outlet to a water body or a water body.

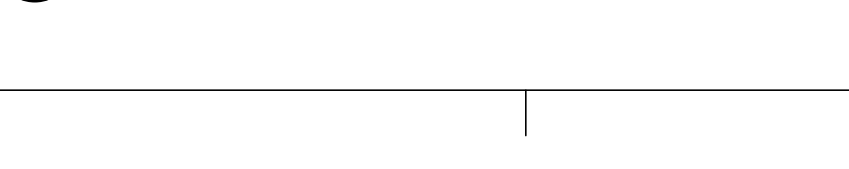
300 Connecticut Guidelines for Soil Erosion and Sediment Control



300 Connecticut Guidelines for Soil Erosion and Sediment Control

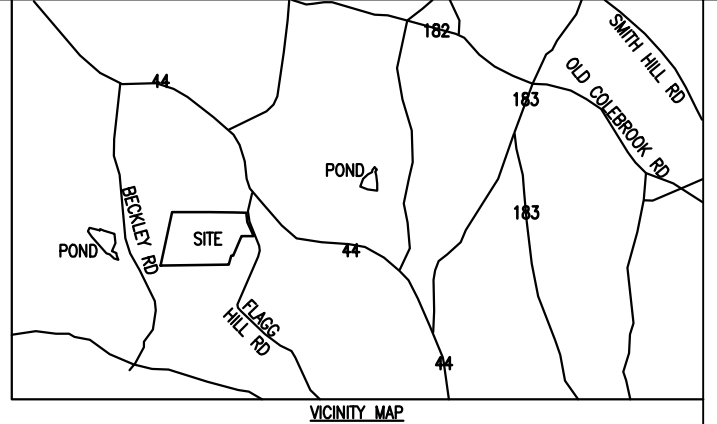


300 Connecticut Guidelines for Soil Erosion and Sediment Control



POST-CONSTRUCTION BIORETENTION PONDS					
POND TYPE	POND NUMBER	"BOTTOM SIZE (FT)"	"DEPTH (FT)"	"TOP SIZE (FT)"	SIDE SLOPES
ATTENUATION POND	AP2	10 x 50	5.0000	30 x 70	2:1
ATTENUATION POND	AP2C	10 x 60	5.0000	30 x 80	2:1
BIORETENTION POND	BP1	10 x 35	5.0000	30 x 55	2:1
BIORETENTION POND	BP2	10 x 30	5.0000	30 x 50	2:1
BIORETENTION POND	BP2C	10 x 40	5.0000	30 x 60	2:1
BIORETENTION POND	BP3	10 x 40	5.0000	30 x 60	2:1
BIORETENTION POND	BP4	10 x 45	5.0000	30 x 65	2:1
BIORETENTION POND	BP5	10 x 40	5.0000	30 x 60	2:1
BIORETENTION POND	BP6	10 x 45	5.0000	30 x 65	2:1
FOREBAY POND	FB1	4 x 4	2.0000	12 x 12	2:1
FOREBAY POND	FB2	7 x 20	2.0000	15 x 28	2:1
FOREBAY POND	FB2C	4 x 8	2.0000	12 x 16	2:1
FOREBAY POND	FB3	4 x 8	2.0000	12 x 16	2:1
FOREBAY POND	FB4	4 x 4	2.0000	12 x 12	2:1
FOREBAY POND	FB5	4 x 8	2.0000	12 x 16	2:1
FOREBAY POND	FB6	4 x 8	2.0000	12 x 16	2:1

- NOTES:**
1. FINAL GRADING DETAILS FOR THE BIO-RETENTION PONDS WILL BE PROVIDED IN THE DEVELOPMENT AND MANAGEMENT PHASE OF THE PROJECT AND AFTER TOPOGRAPHIC SURVEY AND GEO-TECHNICAL INFORMATION IS AVAILABLE.
 2. SIZES OF POST CONSTRUCTION BIO-RETENTION PONDS ARE SHOWN ABOVE.
 3. FINAL DESIGN FOR THE CRANE ROAD AND ACCESS ROAD CROSS SECTIONS WILL BE COMPLETED DURING THE DEVELOPMENT AND MANAGEMENT PHASE OF THE PROJECT AND AFTER TOPOGRAPHIC SURVEY AND GEO-TECHNICAL INFORMATION IS AVAILABLE.
 4. THE FRENCH MATTRESS FINAL DESIGN WILL BE COMPLETED DURING THE DEVELOPMENT AND MANAGEMENT PHASE OF THE PROJECT AND AFTER TOPOGRAPHIC SURVEY AND GEO-TECHNICAL INFORMATION IS AVAILABLE.



MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLC
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MJC

DESIGNED BY:	DATE:
RSW	03-14-11

CHKD BY:	FILE NUMBER:
TLC	1385

SUBMITTED BY:	FILE NAME:
BNE ENERGY	APPR.

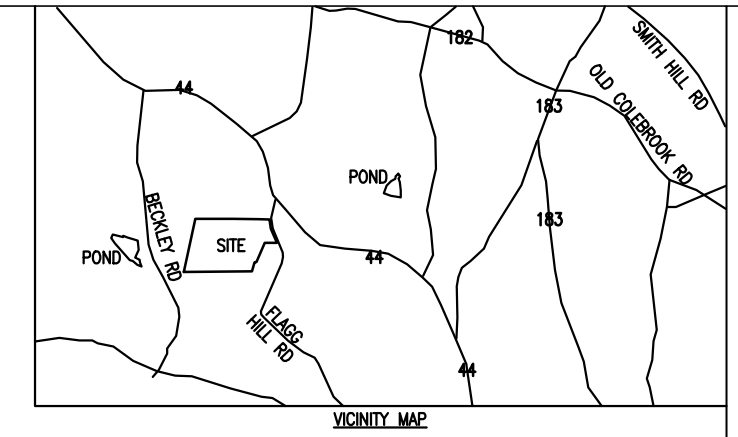
PLOT SCALE:	AS SHOWN
1" = 100'	1" = 100'

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LANSING, MI 48306-3640
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WIND COLEBROOK SOUTH CONNECTICUT
GENERAL DETAILS

SHEET IDENTIFICATION
C-503

CONCEPTUAL ONLY - FINAL LAYOUT AND ORIENTATION TO BE DETERMINED

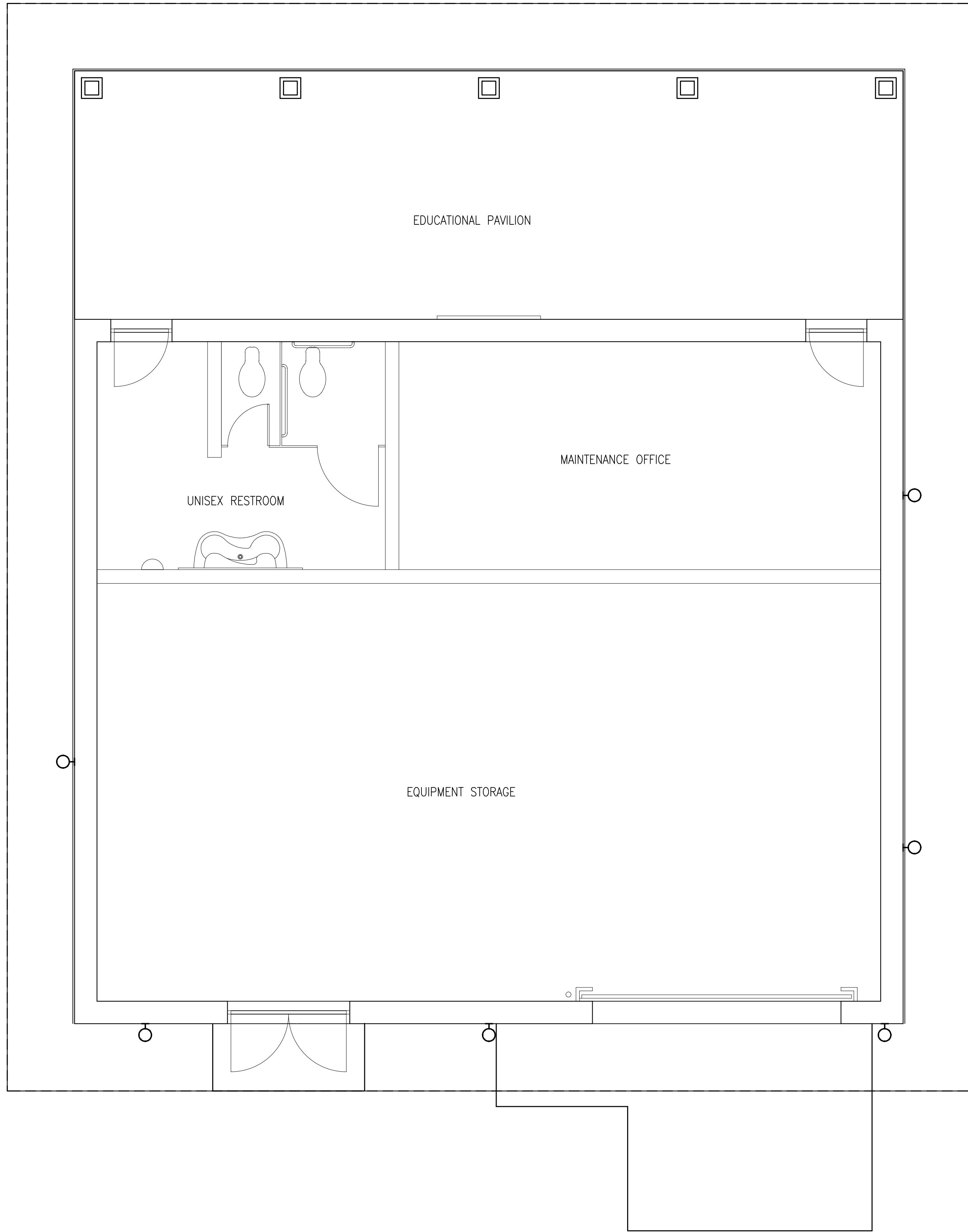


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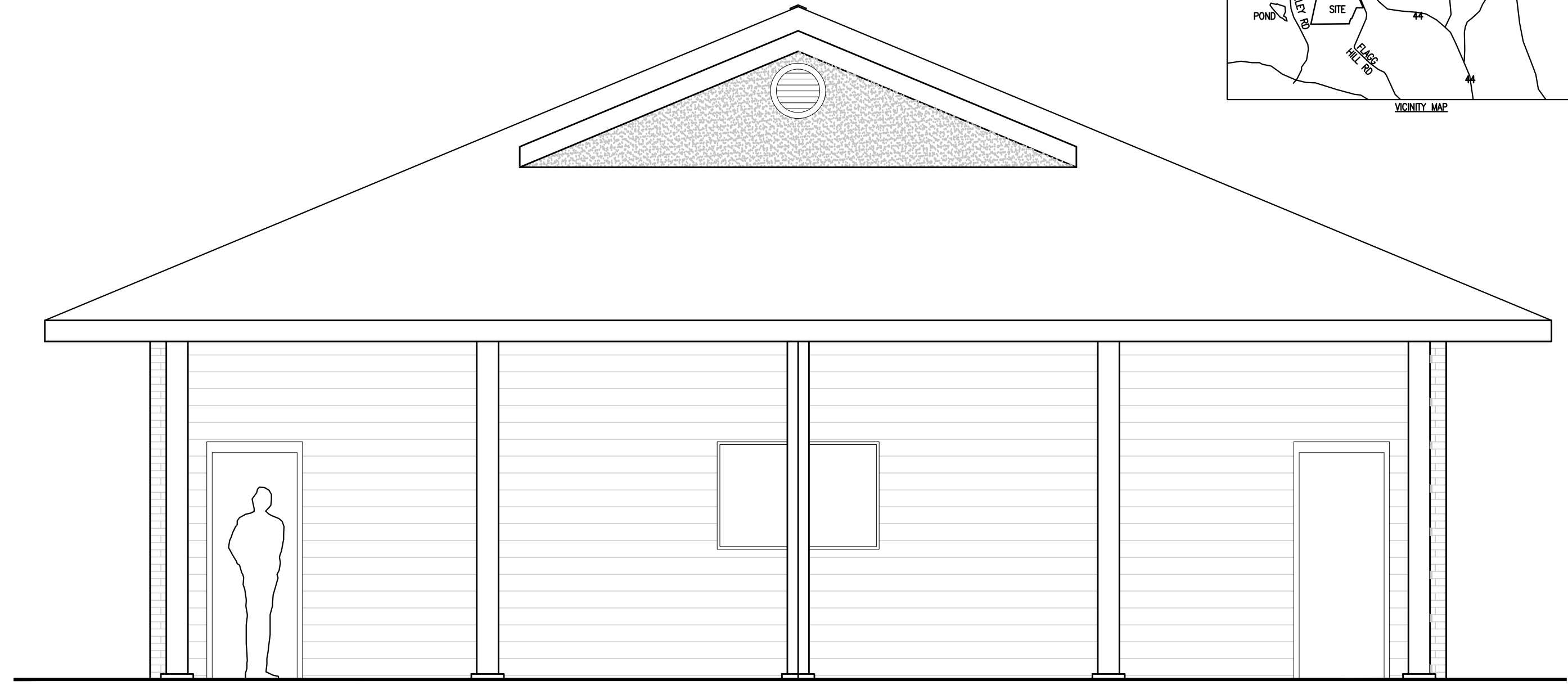
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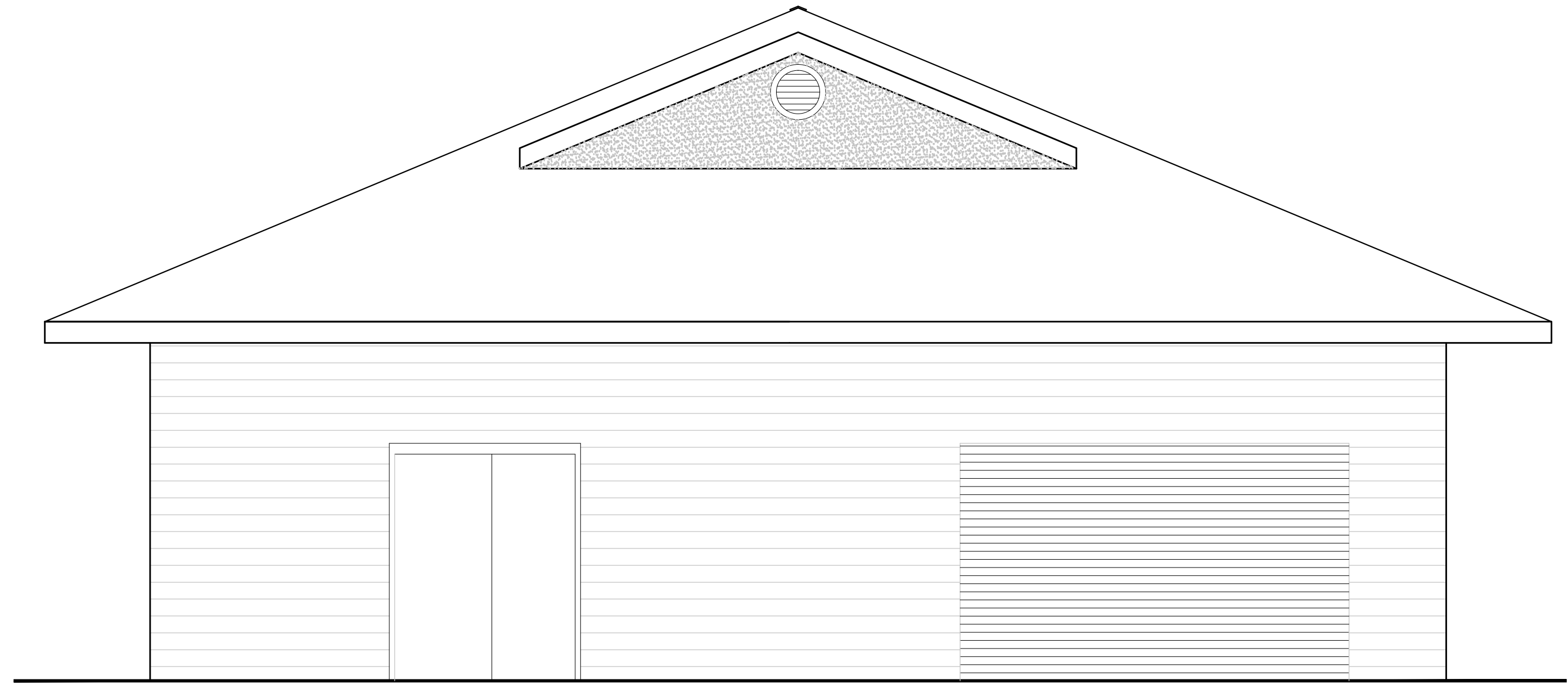
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1 FLOOR PLAN



2 FRONT ELEVATION



3 REAR ELEVATION



MARK	DESCRIPTION	DATE	APPR.
2	INCORPORATED REQUESTED REVISIONS	03-14-11	MLC
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

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RSB	03-14-11
BSW	
TLK	
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BNE ENERGY	1385
PLOT SCALE AS SHOWN	FILE DATE:
03-14-11	03-14-11
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WIND COLERBROOK SOUTH
 CONNECTICUT
 FACILITY SUPPORT BUILDING

SHEET IDENTIFICATION
A-001

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

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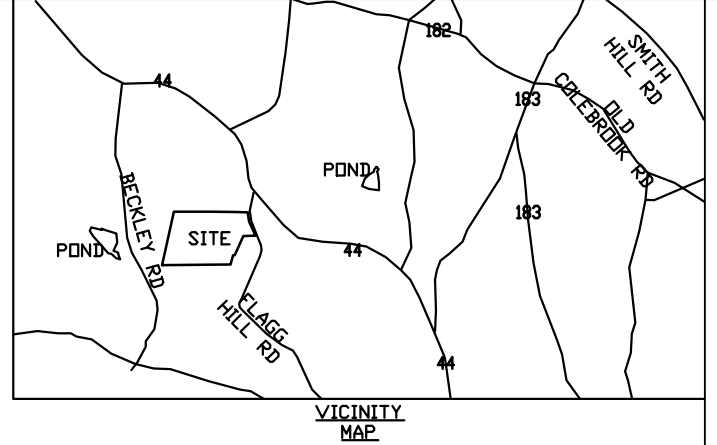


~6 MILES TO CL&P
AT INTERSECTION
OF RT 83/44

POWER LINETYPE LEGEND

— UE — UE LINETYPE = UNDERGROUND ELECTRICAL AS DESIGNED BY AME.

— OE — OE LINETYPE = OVERHEAD ELECTRICAL AS DESIGNED BY EPE.



MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-18-10	TLK
	NOT FOR CONSTRUCTION		

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11-18-10	
PREPARED BY:	CHECKED BY:
DAJ	DAJ
SUBMITTED BY:	FILE NUMBER:
BNE ENERGY	1385
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AS SHOWN	11-18-10
FILE NAME:	ANSI D

3030 FARMVIEW ROAD, #300 P.O. BOX 10740, 07940-0840
 201.982.2200 FAX 201.982.2201
 WWW.ZAPATA.COM

WIND COLEBROOK SOUTH
CONNECTICUT

ELECTRICAL - SITE PLAN

SHEET IDENTIFICATION
E-101

1

2

3

4

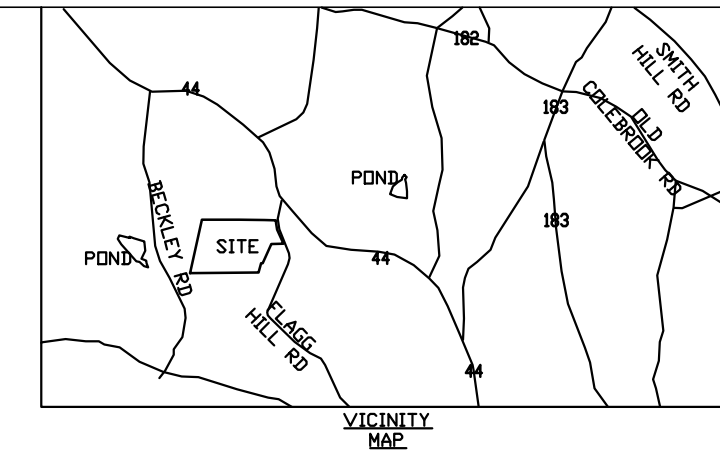
5

D

C

B

A



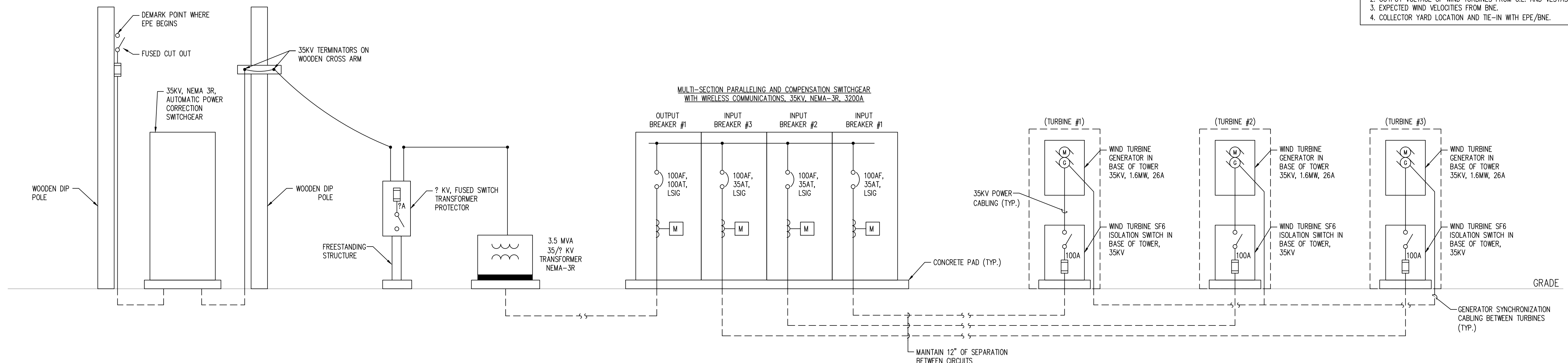
BNE Energy Inc.
 Producer of green clean energy



MARK	DESCRIPTION	DATE	TLC	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-18-10		

DESIGNED BY:	DATE:	11-18-10
ISSUED BY:	CHK BY:	DAJ
REV BY:	DAJ	
SUBMITTED BY:	BNE ENERGY	
PLOT SCALE:	AS SHOWN	
FILE NUMBER:	11-18-10	1385
FILE NAME:	[unclear]	
ANSI D	[unclear]	

- THINGS TO VERIFY:**
- UTILITY TRANSMISSION VOLTAGE RATING PER SITE FROM CL&P.
 - OUTPUT VOLTAGE OF WIND TURBINES FROM G.E. AND VESTAS.
 - EXPECTED WIND VELOCITIES FROM BNE.
 - COLLECTOR YARD LOCATION AND TIE-IN WITH EPE/BNE.



ELECTRICAL – POWER RISER DIAGRAM
 SCALE: NO SCALE



WIND COLEBROOK SOUTH CONNECTICUT
 ELECTRICAL - RISER DIAGRAM

SHEET IDENTIFICATION
E-501