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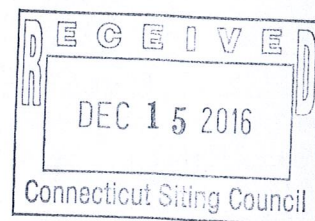
ORIGINAL

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December 14, 2016

VIA ELECTRONIC MAIL AND HAND DELIVERY

Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: PETITION NO. 1184 - Beacon Falls Energy Park, LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed construction, operation, and maintenance of a 63.3 Megawatt AC fuel cell facility located on Lopus Road, Beacon Falls, Connecticut.

Dear Ms. Bachman:

Beacon Falls Energy Park LLC ("BFEP") hereby submits an original and 20 copies of its responses to interrogatories related to its Development and Management (D&M) Plan in connection with the above-referenced Docket. BFEP also consents to the Council's request for an extension of time to render its decision on the approval of the D&M Plan until February 7, 2017.

I hereby certify that copies of this letter have been provided to all parties and intervenors to this Petition as of this date. Should you have any questions concerning the foregoing, please contact me at your convenience.

Sincerely,

A handwritten signature in black ink that reads "Lee D. Hoffman". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Lee D. Hoffman

cc: Parties and Intervenors

ACTIVE/76437.2/KSHEATHELM/6252998v1

Petition 1184
Beacon Falls Energy Park (BFEP)
Development and Management Plan Interrogatories

1. Is BFEP requesting partial approval of the D&M Plan, specific only to the Lopus Road fuel cell installation component of the Project? If not, provide site plans and details for the natural gas, water and 115-kV transmission line components of the Project.

RESPONSE: BFEP is requesting partial approval of the D&M plan specific to the Lopus Road Fuel Cell installation and approval of the water infrastructure. Water will be obtained from an existing Aquarion water main east of the railroad tracks. The project has obtained approval in concept from Metro-North Railroad for directional drilling underneath the tracks for the purpose of installing the two water lines, one for industrial water use and one for fire water use. Please see the attached Water Supply Plan drawing. Approvals for the gas and 115-kV transmission line components of the Project will be submitted as separate efforts.

2. Please indicate whether a copy of the D&M Plan was provided to the Town of Beacon Falls for comment.

RESPONSE: Yes. A copy of the D&M Plan was sent to the Town of Beacon Falls on October 7, 2016.

3. The General Arrangement Site Plan indicates one access point into the fuel cell compound. How will BFEP access the stormwater detention and infiltration basins for periodic maintenance if there is no defined access to the basins or an access gate on the south or west ends of the fuel cell compound?

RESPONSE: A 16 foot wide double access gate has been added to the plan, proposed for the south end of the facility to facilitate maintenance of the basins. In addition, there is a legacy access road that will be utilized as an alternate means of access for maintenance of the basins. See drawings GU-2 and GU-3.

4. Are there provisions for the maintenance and replacement of landscaping beyond one year?

RESPONSE: The project landscape specifications as noted on Sheet LA-1 provide for a 1 year guarantee and replacement for landscape materials. This is a construction industry standard.

5. On page 7 of the D&M Plan narrative, it states temporary vegetative cover will be established on all unprotected areas that produce sediment where the estimated period of bare soil is less than 12 months. This statement should be modified to state "where the estimated period of bare soil is less than 30 days".

RESPONSE: The D&M Plan narrative has been modified. The text on revised Sheet SD-1 of the plans has also been modified accordingly.

6. On page 7 of the D&M Plan narrative, it states erosion control blankets would be installed on critical slopes. Please define critical slopes. Modify Sheet SE and SD-1 to include locations of critical slopes and related erosion control blanket specifications. Can 100 percent natural fiber erosion blankets be used in these areas?

RESPONSE: The critical slopes are denoted on Plan SE where the Erosion Control Blanket (ECB) is specified. For this project, the critical slope is defined as the 2:1 fill embankment east of the access driveway. An organic biodegradable ECB has been specified on the plans (North American Green Rollmax S150BN or approved equal). Revised Sheets SE and SD-1 depict this modification. ECB has also been added to a portion of slope on the north side of Lopus Road.

7. Please identify proposed 2:1 slopes on the site plans. Can 3:1 slopes be used in these areas?

RESPONSE: Proposed 2:1 slopes are limited to the area east of the access driveway, the area north of Lopus Road where sight distance grading is proposed, a small area in the SW corner of the facility pad, and on two sides of the proposed stormwater basin at the southwest bottom of the access driveway. These areas of specified 2:1 slopes are depicted on the revised SE plan. All other site grading is proposed at 3:1 or flatter. In the above areas, 2:1 grading is proposed due to available space constraints and/or blending to existing grades. Stability of 2:1 graded slopes in these areas is not a concern due to the sandy unsaturated soils.

8. Referring to Sheet SD-1, a table is given showing frequency of erosion and sediment control inspections. Please explain why erosion and sediment control measures are not checked after each rain event.

RESPONSE: The standard set forth for inspection of sediment and erosion control measures in the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control is 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. This is what is specified for the project.

9. Can coir rolls or silt socks be used as erosion and sediment control measures at the south end of the construction area to provide additional protection to the adjacent pond?

RESPONSE: A silt sock has been added to the revised SE and SD-1 sheets.

10. Sheet SD-1 shows detail for a “diversion berm and swale”. In what areas would this feature be used?

RESPONSE: The diversion berm/swale (DB) is depicted on Sheet SE, on the eastern side of the site to control site construction phase runoff away from the railroad right of way.

11. Sheet SD-1 shows detail for a “riprap lined drainage swale”. In what areas would this feature be used? When would the grade of the swale side slopes be determined and under what factors? Would the swale be able to support vegetation? Would erosion control blankets on the outer surface be required for swale slopes greater than 3:1?

RESPONSE: The details on Sheet SD-1 for Temporary Sediment Trap and Sediment Trap Riprap Overflow Spillway are intended for use in the temporary sediment traps depicted on Sheet SE. The Riprap Lined Drainage Swale detail on Sheet SD-2 is to be utilized in the locations depicted on Sheets GU-1, GU-2, and GU-3 and functions to convey runoff into or out of the stormwater and water treatment wastewater infiltration basins. The slopes of the

major rip rap swale on the west of the access road are approximately 5:1 per the grading drawing GU-1. These swales could potentially support vegetation.

12. Referring to Sheet EX-1, was a reverse bench slope considered in the re-graded area to reduce potential stormwater erosion on the new embankment?

RESPONSE: A reverse bench slope is not proposed east of the proposed access driveway due to space constraints. Stormwater erosion is not anticipated as the fill embankment will receive no upland runoff, will be unsaturated, will be constructed of the on-site sand and gravel soils, and properly constructed in compacted lifts in accordance with the embankment construction and compaction requirements of Connecticut DOT Form 817. The above factors ensure the slope stability and therefore stable and not requiring of a bench in the opinion of the project's Professional Engineer.

13. Was the Town of Beacon Falls consulted regarding traffic improvements to Lopus Road prior to final design?

RESPONSE: The Lopus Road drawing LR-1 was developed in response to comments received from the Town of Beacon Falls. The plan of improvements will be submitted to the town during final design.

14. Would BFEP install additional HEFC units in lieu of DFC3000 units if they are available at the time of construction?

RESPONSE: Yes, the use of additional HEFCs in lieu of DFC 3000s would be considered.

15. The D&M Plan shows a new layout for the HEFC units. Does the new layout require less space and/or utilize common equipment?

RESPONSE: The footprint of a single HEFC plant has decreased by approximately 11% due to design evolution, however additional required maintenance access areas between plants causes the area for the five HEFC plants to increase by approximately 10%. The HEFC plants utilize common equipment to the extent possible.

16. Is exterior lighting proposed for the facility? If so, submit an exterior lighting plan, including identification of lights operated continuously and as necessary.

RESPONSE: Exterior lighting is proposed for the facility for security and safety. Please see drawing E-133 for the location and types of fixtures. All exterior lights will be controlled to be on at night. All fixtures will be Dark Sky compliant.

17. Revise Sheet C-501 to include the fence mesh size.

RESPONSE: Please note that in the upper right of Sheet C-501, under General Notes, 2" x 2" Chain Link Mesh is specified.

18. What are the dimensions of the Ormat heat recovery unit? Does use of the heat recovery unit negate the possibility of utilizing waste heat as a low-grade heating source for potential nearby customers, as discussed during the November 5, 2015 evidentiary hearing for this Project?

RESPONSE: The dimensions (footprint) of the Ormat are shown on drawing C-301. The dimensions of the Ormat primary components are 79' x 129' or approximately 10,200 square feet. There is also some ancillary equipment which includes an oil tank, a pump house and an enclosure housing electrical equipment. The combined footprint of this equipment is approximately 680 square feet.

19. Page 14 of the D&M Plan narrative refers to sound wall details on Drawing MDS-21. Please submit the drawing.

RESPONSE: Drawing MDS-21 is attached.

20. Was a noise analysis conducted without the sound wall, utilizing only the low noise feature of the fuel cell units? If so, what was the result?

RESPONSE: Noise modeling for the proposed Project was an iterative process. Initial noise modeling was conducted using standard (unattenuated) fuel cell units and modeled noise levels were found to exceed the Connecticut noise standard at residential locations. Additional noise modeling was conducted using the low noise fuel cell design and while lower noise levels were calculated, exceedances of the Connecticut standard were found, resulting in the need for the sound barrier wall.

21. How was the location and height of the wood sound barrier determined?

RESPONSE: The location and height of the sound barrier wall was determined through an iterative noise modeling process. Various wall configurations and heights were evaluated in order to determine an optimum design (also please see response to interrogatory 22). The proposed sound barrier wall location has been revised since the January 2016 noise report to follow the existing clear path on the property that will avoid removal of existing trees. The revised sound wall location resulted in slightly lower sound levels.

22. Would the existing embankment on the west side of the site serve to reduce noise to acceptable levels without the need for a sound barrier? If not, would installing the sound barrier at the base of or at the midpoint of the embankment effectively reduce noise from the facility?

RESPONSE: The existing topographic features, including the existing embankment, were included in the noise modeling to determine the effects on Project noise levels. Existing topography would not be effective enough to reduce noise levels without the sound barrier wall. Several locations were evaluated for the sound barrier wall, including at the base of the embankment closer to the fuel cell units. Sound barrier walls at the bottom of the embankment were found to not be as effective in reducing Project sound.

23. In the initial Noise Assessment (August 2015), the noise contour map (Figure 3) shows the 51 dBA sound contour extending along the sound barrier. In the subsequent assessment (January 2016) the 51 dBA sound contour varies noticeably on each side of the barrier. What is the reason for the change in the mapped contour? Why doesn't the map depict a definitive linear contour along the sound barrier?

RESPONSE: The noise model grid spacing can be adjusted to refine the location of the contours. Figure 3 provided in the January 2016 noise report utilized a less refined grid. The noise model has been re-run with the slightly revised sound wall location and with a finer grid spacing, and is presented again as Figure 3 in the November 2016 noise report.

The 51 dBA contour does extend into a small area to the west of the proposed sound barrier wall. However, the 51 dBA standard applies at the residential property lines on the west side of Gruber Road, not on the west side of the sound wall. Also, as noted in the November 2016 noise report, the modeled contours are for 10 feet above grade to account for second story bedrooms. Lower Project sound levels would occur at the more typical 5 feet above grade height that is normally used in noise assessments.

24. Section 5.3 of the Noise Assessment refers to a "Table 6" which was not provided in the report. Please provide.

RESPONSE: The reference to Table 6 was a typographical error. Section 5.3 should have referred to Table 5, not Table 6.

25. The initial Noise Assessment (August 2015) included analysis of 16 DFC3000 units and 5 HEFC units whereas the subsequent Noise Assessment (January 2016) included an analysis of 15 DFC3000 units, 5 HEFC units and the Ormat heat recovery unit. How did the noise model change with the new Project layout?

RESPONSE: Removing the one DFC3000 unit and replacing it with one low noise Ormat heat recovery unit resulted in virtually no change (one dBA or less) in the modeled offsite noise levels.

26. Is there a low-noise feature on the Ormat heat recovery unit?

RESPONSE: Yes. The low noise option for the Ormat heat recovery unit was included in the noise assessment.

27. Table 3 and Table 5 of the Noise Assessment have different existing minimum measured nighttime levels for Gruber Road. Please clarify. What value was used in the projected noise model?

RESPONSE: Table 3 in the January 2016 and November 2016 noise reports presents a summary of the short-term measured ambient sound levels for all three locations. The minimum measured levels from this table were included in the analysis presented in Table 5 of both reports for the Lopus Road and Railroad Avenue locations. A lower (more conservative) minimum ambient level was measured at the Gruber Road location (39 dBA) during the 24-hour continuous program (please see Table 2 of both reports). This lower ambient level was included in the Table 5 analysis of both reports.

28. The Noise Assessment discusses rain as a factor that is discounted in the noise model. Please explain. Does the sound of rain become the dominant noise at a receptor or does rain amplify noise emissions from a nearby source?

RESPONSE: Rain results in increased ambient noise levels from the sound of rain falling on vegetation and the ground. The existing ambient sound level data during periods when rain occurred were not included in characterizing the existing ambient sound levels in order to remain more conservative. Rain can also increase ambient sound from traffic noise due to wet pavement. Excluding the ambient data during and after rain therefore results in lower, more conservative ambient conditions. Please note that the ambient data are not included directly into the noise model. The noise model is used to calculate noise levels that will be generated by the Project. The Project noise levels are then compared to the ambient levels (Table 5 in

the January 2016 and the November 2016 noise reports) to determine potential increases in noise.

29. Does the orientation of a fuel cell unit influence the emitted noise profile? If so, does the design of the Project use an orientation that reduces noise to the greatest extent possible at the residential boundary?

RESPONSE: Re-orientation of the fuel cell units would not appreciably affect offsite noise levels. However, the current orientation does result in slightly lower noise levels along Gruber Road than other orientations.

30. The D&M Plan narrative discusses the increase of Route 8 traffic noise as a result of the sound barrier but this information is lacking in the January 2016 Noise Assessment. Please revise the assessment to include a discussion with appropriate modeling to demonstrate conformance to Council Decision and Order Item 1e.

RESPONSE: Please see Section 5.5, pages 5-6 and 5-7 of the November 2016 noise report for a discussion of the modeling analysis conducted to assess potential reflection of Route 8 traffic noise off of the proposed sound barrier.

DEVELOPMENT AND MANAGEMENT (D&M) PLAN

for

Beacon Falls Energy Park

October, 2016

Revised December 2016

Prepared by

TRC

TRC Project No. 232127.0000

TRC

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Table of Contents

Section	Page
CROSS REFERENCE TABLE	iii
1.0 INTRODUCTION	1
1.1 Project Description	1
1.2 Plan Organization	2
2.0 REGULATORY APPROVALS AND CONSULTATIONS	3
2.1 Regulatory Approvals and Requirements	3
2.2 Consultations	3
3.0 CONSTRUCTION INFORMATION	5
3.1 Project Facilities and Land Requirements	5
3.2 Construction Management and Contact Information	5
3.3 Construction Work Hours.....	5
3.4 Site Preparation.....	5
3.5 Blasting Procedures	6
3.6 Erosion and Sediment Controls	6
3.7 Clearing and Landscaping	7
4.0 NOTICES AND REPORTS	9
4.1 Staging and Material Laydown Areas	9
4.2 Notices to the Council	9
4.3 Notice of Beginning.....	10
4.4 Notices of Changes	10
4.5 Notice of Completion	10
4.6 Notice to Municipalities	11
4.7 Notice to Landowners.....	11
4.8 Monthly Reports	11
4.9 Final Report	11
5.0 ADDITIONAL ELEMENTS PER COUNCIL ORDER	13
5.1 Reduction in Paved Surfaces	13
5.2 Access Drive on Lopus Road	13
5.3 Sound Mitigation Barrier.....	14
5.4 Excavation and Characterization of Soils in Former Disposal Area	14
5.5 Eastern Hognose Snake Protection Program	16
5.6 Field Habitat Assessment Report.....	18
5.7 Construction Work Hours.....	19
5.8 Air Permitting	19
5.9 Infrastructure Decommissioning Plan	20
6.0 PROJECT SCHEDULE	21

FIGURES

- 1 Key Map

APPENDICES

- Appendix A CSC January 7, 2016 Decision and Order, Petition No. 1184
- Appendix B Drawings
- Appendix C June 18, 2015 SHPO Response Letter
- Appendix D July 23, 2015 Inland Wetland and Watercourse Impact Assessment
- Appendix E Contractor Contact Information
- Appendix F ~~January~~ November 2016 Noise Assessment Report
- Appendix G NDDDB Final Determination No.: 201609163 with the Field Habitat Assessment Report
- Appendix H Analysis of Best Available Control Technology (DEEP-NSR-APP-214a)
- Appendix I Infrastructure Decommissioning Plan
- Appendix J Project Schedule

Citation	Description	Plan Cross Reference
Sec. 16-50j-60. Requirements for a Development and Management Plan (D&M Plan)		
(a)	Purpose. The Council may require the preparation of full or partial Development and Management Plans (D&M Plans) for proposed energy facilities, modifications to existing facilities, or where the preparation of such a plan would help significantly in balancing the need for adequate and reliable utility services at the lowest reasonable cost to consumers with the need to protect the environment and ecology of the state.	Section 2.1
(b)	When required. A partial or full D&M Plan shall be prepared in accordance with this regulation and shall include the information described in Sections 16-50j-61 to 16-50j-62, inclusive, of the Regulations of Connecticut State Agencies, for any proposed energy facility for which the Council issues a certificate of environmental compatibility and public need, except where the Council provides otherwise at the time it issues the certificate. Relevant information in the Council's record may be referenced.	Section 2.1
(c)	Procedure for preparation. The D&M Plan shall be prepared by the certificate holder or the owner or operator of the proposed facility or modification to an existing facility. The preparer may consult with the staff of the Council to prepare the D&M Plan.	---
(d)	Timing of plan. The D&M Plan shall be submitted to the Council in one or more sections, and the Council shall approve, modify, or disapprove each section of the plan not later than 60 days after receipt of it. If the Council does not act to approve, modify or disapprove the plan or a section thereof within 60 days after receipt of it, the plan shall be deemed approved. Except as otherwise authorized by the Council, no clearing or construction shall begin prior to approval of applicable sections of the D&M Plan by the Council	Section 4.0
Sec. 16-50j-61. Elements of a D&M Plan		
(a)	Key map. The D&M Plan shall include a key map for the site, including the entire electric transmission line or fuel transmission line, as applicable, that is a reproduction at scale of 1 inch = 2,000 feet of the most recent USGS topographic maps for its location and route.	Figure 1 Key Map, 09/2016 (1 page)
(b)	Plan drawings. The D&M Plan shall consist of maps at a scale of 1 inch = 100 feet or larger (called "plan drawings") and supporting documents, which shall contain the following information:	Appendix B Property/Topographic Survey, April 16, 2015 (3 sheets)
	(1) The edges of the proposed site and of any existing site contiguous to or crossing it, the portions of those sites owned by the company in fee and the identity of the property owners of record of the portions of those sites not owned by the company in fee;	
	(2) Public roads and public lands crossing or adjoining the site;	
	(3) The approximate location along the site of each 50-foot contour line shown on the key map;	

	<p>(4) The probable location, type, and height of the proposed facility, energy components and associated equipment supporting the facility operation, including, but not limited to, each new transmission structure, position of guys, generalized description of foundations, trench grading plans, depth and width of trenches, trench back-filling plans, and the location of any utility or other structures to remain on the site or to be removed;</p>	<p>Appendix B</p> <p>C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)</p> <p>C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)</p> <p>C-303 Grading GA, April 22, 2015 (1 sheet)</p> <p>C-501 Fencing Details, April 22, 2015 (1 sheet)</p> <p>S-100, Structural Notes, April 6, 2015 (1 sheet)</p> <p>E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)</p>
	<p>(5) The probable points of access to the site, and the route and likely nature of the access ways, including alternatives or options to the probable points of access and access ways;</p> <p>(6) The edges of existing and proposed clearing areas, the type of proposed clearing along each part of the site, and the location and species identification of vegetation that would remain for aesthetic and wildlife value;</p>	<p>Appendix B</p> <p>General Arrangement and Clearing Plan, July 29, 2016 (1 sheet)</p> <p>Drawing LR-1, December 22, 2015 (1 sheet)</p> <p>Drawing CL, August 16, 2016 (1 sheet)</p> <p>Drawings LA-1 to LA-3, June 10, 2015 (3 sheets)</p>
	<p>(7) Sensitive areas and conditions within and adjoining the site, including, but not limited to:</p> <p>(A) Wetland and watercourse areas regulated under Chapter 440 of the Connecticut General Statutes, and any locations where construction may create drainage problems;</p>	<p>Section 3.1</p> <p>Section 3.7</p> <p>Appendix D</p> <p>Appendix G</p>
	<p>(B) Areas of high erosion potential;</p>	<p>Appendix B</p> <p>Drawing SE, June 10, 2015 <u>October 7, 2015</u></p>

		2016 (1 sheet)
	(C) Any known critical habitats or areas identified as having rare, endangered, threatened or special concern plant or animal species listed by federal and state governmental agencies;	Section 3.1 Appendix G
	(D) The location of any known underground utilities or resources including, but not limited to, electric lines, fuel lines, drainage systems and natural or artificial, public or private water resources, to be crossed;	Section 3.1 Appendix B Drawing EX 1, July 14, 2015 (1 sheet) Drawings GU-1 to GU-3, October 7, 2016 (3 sheets)
	(E) Residences or businesses within or adjoining the site that may be disrupted during the construction process; and	Appendix B Property Abutters Map, June 10, 2015 (1 sheet)
	(F) Significant environmental, historic and ecological features, including, but not limited to, significantly large or old trees, buildings, monuments, stone walls or features of local interest.	Section 2.2 Appendix C Appendix G
(c)	Supplemental information.	
	(1) Plans, if any, to salvage marketable timber, restore habitat and to maintain snag trees within or adjoining the site;	Section 3.7
	(2) All construction and rehabilitation procedures with reasonable mitigation measures that shall be taken to protect the areas and conditions identified in section 16-50j-61(b)(7) of the Regulations of Connecticut State Agencies, including, but not limited to:	See below
	(A) Construction techniques at wetland and watercourse crossings;	Not applicable Section 3.1
	(B) Sedimentation and erosion control and rehabilitation procedures, consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as updated and amended, for areas of high erosion potential;	Section 3.6 Appendix B Drawing SE, June 10, 2015 October 7, 2016 (1 sheet) Drawings SD-1 to SD-3, June 10, 2015 October 7, 2016 (3 sheets)

	(C) Precautions and all reasonable mitigation measures to be taken in areas within or adjoining the site to minimize any adverse impacts of such actions or modifications on endangered, threatened or special concern plant or animal species listed by federal and state governmental agencies and critical habitats that are in compliance with federal and state recommended standards and guidelines, as amended;	Section 5.5 Section 5.6 Appendix G
	(D) Plans for modification and rehabilitation of surface, drainage, and other hydrologic features;	Appendix B Drawing C-303, April 22, 2015 (1 sheet)
	(E) Plans for watercourse bank restoration in accordance with the provisions of Chapter 440 of the Connecticut General Statutes; and	Not Applicable
	(F) Plans for the protection of historical and archaeological resources with review and comment from a state historic preservation officer of the Department of Economic and Community Development, or its successor agency.	Section 2.2 Appendix C
	(3) Plans for the method and type of vegetative clearing and maintenance to be used within or adjacent to the site;	Section 3.7 Appendix B Drawing CL, August 16, 2016 (1 sheet)
	(4) The location of public recreation areas or activities known to exist or being proposed in or adjacent to the site, together with copies of any agreements between the company and public agencies authorizing public recreation use of the site to the extent of the company's property rights thereto;	Not Applicable
	(5) Plans for the ultimate disposal of excess excavated material, stump removal, and periodic maintenance of the site;	Section 3.4
	(6) Locations of areas where blasting is anticipated;	Section 3.5
	(7) Rehabilitation plans, including, but not limited to, reseeding and topsoil restoration;	Section 3.6
	(8) Contact information for the personnel of the contractor assigned to the project; and	Section 3.2 Appendix E
	9) Such site-specific information as the Council may require.	Section 4.0
(d)	Notice. A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, or at the same time any changes to the D&M Plan, or any section thereof, is submitted to the Council.	Section 4.4 Section 4.7

(e)	Changes to plan. The Council may order changes to a D&M Plan, including, but not limited to, vegetative screening, paint color, or fence design at any time during or after preparation of the plan.	Section 4.4
Sec. 16-50j-62. Reporting requirements		
(a)	Site Testing and Staging areas. The certificate holder, or facility owner or operator, shall provide the Council with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M Plan, the Council may approve such use on terms as it deems appropriate.	Section 4.1
(b)	Notice (1) The certificate holder, or facility owner or operator, shall provide the Council, in writing, with a minimum of two weeks advance notice of the beginning of: (A) clearing and access work in each successive portion of the site and (B) facility construction in that same portion.	Section 4.2
	(2) The certificate holder, or facility owner or operator, shall provide the Council with advance written notice whenever a significant change of the approved D&M Plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the Council immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D& M plan shall include, but are not limited to, the following: (A) the location of a wetland or watercourse crossing; (B) the location of an access way or a structure in a regulated wetland or watercourse area; (C) the construction or placement of any temporary structures or equipment; (D) a change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures; and (E) utilization of additional mitigation measures, or elimination of mitigation measures. The Council, or its designee, shall promptly review the changes and shall approve, modify, or disapprove the changes in accordance with subsection (d) of section 16-50j-60 of the Regulations of Connecticut State Agencies.	Section 4.2 Section 4.4
	(3) The certificate holder, or facility owner or operator, shall provide the Council with a monthly construction progress report, or a construction progress report at time intervals determined by the Council or its designee, indicating changes and deviations from the approved D&M Plan. The Council may approve changes and deviations, request corrections or require mitigation measures.	Section 4.8
	(4) The certificate holder, or facility owner or operator, shall provide the Council with written notice of completion of construction and site rehabilitation.	Section 4.9

(c)	<p>Final report. The certificate holder, or facility owner or operator, shall provide the Council with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. This final report shall identify:</p> <p>(1) all agreements with abutters or other property owners regarding special maintenance precautions;</p> <p>(2) significant changes of the D&M Plan that were required because of the property rights of underlying and adjoining owners or for other reasons;</p> <p>(3) the location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands;</p> <p>(4) the location of areas where special planting and reseeding have been done; and</p> <p>(5) the actual construction cost of the facility, including, but not limited to, the following costs:</p> <p>(A) clearing and access;</p> <p>(B) construction of the facility and associated equipment;</p> <p>(C) rehabilitation; and</p> <p>(D) property acquisition for the site or access to the site.</p>	Section 4.9
(d)	<p>Protective Order. The certificate holder, or facility owner or operator, may file a motion for a protective order pertaining to commercial or financial information related to the site or access to the site.</p>	--
<p align="center">Connecticut Siting Council Decision and Order January 7, 2016</p>		
(1)	<p>The petitioner shall prepare a development and Management (D&M) Plan for the project in compliance with sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Beacon Falls for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:</p> <p>a) a final plan(s) of site development to include specifications for the fuel cell facility including infrastructure, electrical equipment, equipment compound, access and maintenance roads, utility connections, sound mitigation, stormwater control, wastewater infiltration basins, facility fencing with less than two inch mesh, and landscaping;</p>	<p align="center">Appendix B</p> <p>C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)</p> <p>C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)</p> <p>C-303 Grading GA, April 22, 2015 (1 sheet)</p> <p>C-501 Fencing Details, April 22, 2015 (1 sheet)</p> <p>S-100, Structural Notes, April 6, 2015 (1 sheet)</p> <p>E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)</p>

	b) construction plans for site clearing, grading, sound mitigation, landscaping, water drainage, stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;	Section 3.6
	c) Reduction in the amount of paved surfaces within the fuel cell compound, if feasible;	Section 5.1
	d) Provisions for improving safety at the access drive entrance on Lopus Road	Section 5.2 Appendix B
	e) An analysis of the proper placement of the sound mitigation barrier to reduce noise from the fuel cell facility and to reduce the potential for highway sound reflection to the Gruber Road neighborhood;	Section 5.3
	f) Provisions for the excavation and characterization of soils within the former disposal area on the property, as identified in the Phase 1 Environmental Site Assessment report dated August 5, 2015;	Section 5.4 Appendix B Disposal Area Exploration Plan, September 7, 2016 (1 sheet)
	g) Provisions for a Eastern Hognose Snake Protection Program that includes Department of Energy and Environmental Protection recommended construction practices;	Section 5.5
	h) Submission of correspondence from the Department of Energy and Environmental Protection, if applicable, regarding final comment on the Field Habitat Assessment Report dated August 5, 2015;	Section 5.6
	i) Construction work hours;	Section 5.7
	j) Submission of relevant portions of the Title V and New Source Review air permit applications that include a detailed analysis of alternative technologies, operational methods and/or fuels that can be employed at the facility to reduce greenhouse gas emissions to the greatest practical extent; and	Section 5.8
	k) A facility and associated infrastructure decommissioning plan.	Section 5.9

1.0 INTRODUCTION

Beacon Falls Energy Park, LLC (BFEP) has prepared this Development and Management (D&M) plan in support of construction of a nominal 63.3 megawatt (MW) fuel cell energy facility pursuant to the requirements of section 16-50j-60 of the Regulations of Connecticut State Agencies (RCSA).

1.1 Project Description

BFEP has proposed to construct the Beacon Falls Energy Park, a nominal 63.3 MW baseload fuel cell project in the Town of Beacon Falls, Connecticut. The site is located in an Industrial Park District ("IPD") of Beacon Falls and conforms to lot size and dimensional requirements, as well as to all setbacks, height and coverage requirements. The site is located in close proximity to the growth areas along Route 8 in Beacon Falls and is compatible with existing industrial land uses in the area and consistent with the Plan of Conservation and Development for Beacon Falls and the Conservation and Development Policies Plan for Connecticut.

The Project will occupy approximately 8 acres of an approximately 25 acre site currently owned by O&G Industries, Inc. and located between Connecticut Route 8 and the Naugatuck River (see Figure 1). More specifically, the Property is located adjacent to the western side of the Metro-North Rail line and along the southern side of Lopus Road. The site, a former sand and gravel mining area, consists of predominantly flat terrain, with significant sloping topography along its western and northern boundaries formed by the sand and gravel operations. The topography of the Property will give the Project a low visibility and profile. The Project site is located in a natural "bowl" approximately 50 feet below Gruber Road. Trees and vegetation will provide visual and sound buffers.

The Project consists of the following:

- 5 FuelCell Energy, Inc. high efficiency fuel cell (HEFC) fuel cell plants, each rated at approximately 3.7 MW
- 15 FuelCell Energy, Inc. DFC3000 fuel cell plants, each rated at approximately 2.8 MW
- 1 ORMAT Energy Converter System, rated at approximately 4.6 MW, and consisting of Organic Rankine Cycle (ORC) preheater and vaporizer heat recovery units, a vapor turbine, a generator, and a condenser.
- Switchyard facilities.
- A metering facility

Each of the 20 fuel cell plants will contain two (DFC3000) or three (HEFC) fuel cell modules, each consisting of four "stacks" of fuel cells, and will be equipped with an air heater with a maximum heat input of 11.2 million British thermal units per hour (MMBtu/hr). The air heater will only operate when the fuel cells are idle, or when a fuel cell module is not operating at a

sufficient power level to maintain its required minimum temperature. Note that all MMBtu values are expressed as the higher heating value (HHV), unless otherwise indicated. For natural gas, the lower heating value (LHV) is 90% of the HHV. It is expected that the fuel cells will operate continuously. The Project will use natural gas exclusively as fuel.

Fuel cells require natural gas and treated water to generate electricity. Access to natural gas and water, is accordingly, critical to a fuel cell project. The Project site is located in close proximity to both natural gas and water pipeline infrastructure. The interconnection to the grid is located on Cold Springs Road, in Beacon Falls.

1.2 Plan Organization

The preface of this report provides a reference table that lists the regulatory requirements and the requirements of the Connecticut Siting Council's (CSC) Decision and Order approving this project. The preface contains a table with a cross reference to the section of the plan where a particular requirement is discussed.

Section 1.0 presents an overall project description along with this summary of the report structure. Section 2.0 lists regulatory approvals, requirements, and consultations. Where specific consultations (e.g., NDDDB, wetlands, etc.) are relevant to later sections of the document, they are described in the most relevant portion of this D&M Plan. Section 3.0 describes the development/construction of the project and Section 4.0 describes the notices and reports to be prepared in support of the project. Section 5.0 describes actions to be taken to address specific CSC Decision and Order requirements and Section 6.0 provides a project schedule.

2.0 REGULATORY APPROVALS AND CONSULTATIONS

2.1 Regulatory Approvals and Requirements

This D&M Plan has been prepared in compliance with the requirements specified at RCSA Sections 16-50j-60 through 16-50j-62 (Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements). In addition this D&M Plan also address the specific conditions; and (ii) reflects adherence to the conditions (1a to 1k) of the CSC's Decision and Order of January 7, 2016. A copy of the January 7, 2016 CSC Decision and Order is provided as Appendix A.

2.2 Consultations

The Project has received regulatory approvals or clearances from State and Federal agencies including:

- Connecticut Department of Energy and Environmental Protection ("CTDEEP")
- CTDEEP Natural Diversity Database ("NDDB")
- State Historic Preservation Office ("SHPO")
- Connecticut State Archeologist
- Mashantucket Pequot – Tribal Historic Preservation Officer
- The Mohegan Tribe – Tribal Historic Preservation Officer

BFEP has consulted with municipal officials in the Town of Beacon Falls throughout the project development process, including during the preparation of this D&M Plan. BFEP is in the process of coordinating with the Connecticut Department of Transportation (DOT), Metro North Rail Road, and AT&T for project construction activities that may impact their specific interests at the project site. Project construction in locations requiring specific permits will not start until these permit approvals are received. BFEP will comply with the requirements and conditions in the siting and permitting approvals summarized below. BFEP will report to the CSC as required and as discussed in Section 4.0 below

Category	Permit	Permit Trigger	Review Agency	Comments
Air	Permit to Construct and Operate	Prior to Commencing Construction	CTDEEP Air Management	Filed January 27, 2016. Expected October 2016
Building	Building Permit	Construction of Fuel Cell Units	Beacon Falls Building Department	Target Date November 2016

DOT/Metro North RR	Temporary Right of Entry	Any activity proposed within Metro North Railroad operated facilities/CT DOT ROW	Metro North/DOT	Request sent 12JUN2015. Stamped drawings sent 10NOV2015. Insurance and Force Acct. to be established prior to MNR review.
Category	Permit	Permit Trigger	Review Agency	Comments
DOT/Metro North RR	License Agreement	Permanent utilities located within RR ROW	DOT	Needed for Water Supply Connection
FERC – Interconnect Agreement	Electric Generator Wholesale Status	Generation of Electricity for Distribution	FERC	Expected December 2016
Local	Inland Wetlands and Watercourses	Information only - no local permit (see Site Approval)	Beacon Falls Inland Wetlands and Watercourse Commission	
	Planning and Zoning	Information only - no local permit (see Site Approval)	Beacon Falls Planning and Zoning Commission	
Site Approval	Declaratory Ruling and Petition	Generation of Electricity for Distribution	Connecticut Siting Council (CSC)	Approved January 07, 2016
Stormwater	General Permit for Stormwater Construction Activities	Site disturbance of greater than five acres	CTDEEP	Filed August 30, 2016
	General Permit for Stormwater Associated with Industrial Activities	Permit not required based on SIC code	CTDEEP	
Wastewater	General Permit for Water Treatment Wastewater	Discharge of wastewater into groundwater via infiltration basins	CTDEEP	Target date for submittal - June 2017
Hazardous Waste	RCRA Subtitle C Site Identification Form	Generation of Hazardous Waste (Desulfurization)	CTDEEP	Operational Permit

In response to a May 12, 2015 request for comments on the presence of historic properties to SHPO, the following response was provided by letter dated June 18, 2015.

“There are no archaeological sites or properties listed on the National Registers of Historic Places recorded within or in the immediate vicinity of the project area. The project parcel is comprised primarily of Udorthents-Pit complex soils. During the past 40 years, the site was mined for sand and gravel. Although this office considers the area

to be archeologically sensitive, the proposed project facility is within existing disturbed footprints,. Based on the informationb provided to our office, it is SHPO's opinion that no historic properties will be affected by this undertaking as described."

A copy of the SHPO letter is provided in Appendix C.

3.0 CONSTRUCTION INFORMATION

3.1 Project Facilities and Land Requirements

The Project site will take up approximately 8 acres of the 25.02 acre Property. The topography of the Property will give the Project a low visibility and profile. The Project site is located in a natural "bowl" approximately 50 feet below Gruber Road. Trees and vegetation will provide visual and sound buffers. Because the geology of the site is one of deep sand and gravel, there will be no net change in the discharge of storm water from the site from existing conditions.

Fuel cells require natural gas and treated water to generate electricity. Access to natural gas and water, is accordingly, critical to a fuel cell project. The Project site is located in close proximity to critical infrastructure such as natural gas and water pipelines. The interconnection to the grid is located on Cold Springs Road, in Beacon Falls.

Consistent with the July 23, 2015 Inland Wetland and Watercourse Impact Assessment, wetlands on the project site were delineated on April 20, 2015. No wetland crossings are proposed for the project. A copy of the July 23, 2015 Inland Wetland and Watercourse Impact Assessment report is provided as Appendix D.

The only known utility present on the project site is an AT&T fiber line which is located at the northern tip of the site. The location and orientation of the line is shown on the Proposed Driveway Plan (Drawing EX-1) provided with the drawings in Appendix B.

Detailed design associated with items such as piping, wiring, instrumentation, underground utilities, etc., will not be completed until a notice-to-proceed (NTP) for construction has been issued, as is customary with projects of this type and scope.

3.2 Construction Management and Contact Information

Contact information for the contractor personnel assigned to the project is provided as Appendix E.

3.3 Construction Work Hours

Construction work hours shall be Monday through Friday from 7 AM to 5 PM. During Start-Up and Commissioning, there may be minor activities on nights and weekends until Start-Up is complete.

3.4 Site Preparation

Ground surfaces within the construction areas will be cleared of all vegetation prior to construction. Residual material in the form of stumpage may be generated and will be removed

for proper off-site disposal. By design, the site development and grading will balance cut and fill areas such that excess materials are not anticipated to be imported or removed from the project site. Periodic maintenance will include the periodic removal of accumulated sediment from the stormwater and process water infiltration ponds.

3.5 Blasting Procedures

No blasting will be performed as part of the project.

3.6 Erosion and Sediment Controls

A Sediment and Erosion (S&E) Control Plan has been developed to mitigate the short-term impacts of the project during construction. The S&E Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, and vegetative cover selection and mulching, and erosion checks. Details have been provided for all erosion control measures with corresponding labels on the S&E control site plan. The S&E controls provided are in accordance with the Connecticut Department of Environmental Protection's *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*.

The construction areas will be surrounded by a geotextile sediment filter fence that will be fortified with staked hay bales upgradient of the wetland areas. A stone construction entrance has been provided at the site entrance from Lopus Road. Erosion control blankets (organic and biodegradable) will be proposed on critical slopes as shown on the Sediment and Erosion Control Plan to protect the newly created slopes until permanent vegetation can be established. During construction, inlet protection will be provided at the proposed drainage inlet structures to trap sediment. Temporary diversion berms and swales will be provided to direct the stormwater runoff from the site to the temporary sediment traps. The swales will include stone check dams to slow potential erosive velocities. The S&E controls are to be modified with the changing grades on site to ensure the protection of the surrounding areas throughout the construction process.

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Information on the temporary and permanent vegetative cover is provided on the drawings provided in Appendix B. BFEP shall establish temporary vegetative cover on all unprotected area that produce sediment, areas where final grading has been completed and areas where the estimated period of bare soil exposure is less than ~~12 months~~30 days. Vegetative cover will be established in areas that will not be permanently seeded by September 1st. Permanent vegetative cover will be established as various sections of the project are completed in order to stabilize these areas, reduce impacts from sediment and runoff and to enhance the aesthetic nature of the site.

Point source discharges of construction stormwater are not anticipated due to the high permeability of the existing sand and gravel materials at the project site. Therefore, the design goal of the stormwater management plan is to take advantage of the sandy soils present on site and naturally infiltrate stormwater runoff as occurs under existing conditions using four proposed detention/infiltration basins. These basins are designated as Stormwater Basins TST #1 through #4 on the Sedimentation and Erosion Control Plan in Appendix B

BFEP completed a Registration on August 30, 2016 under the CTDEEP Stormwater Construction General Permit to manage any impacts of stormwater runoff that may discharge to waters of the state of Connecticut.

3.7 Clearing and Landscaping

A brief summary of the upland vegetated area of the property where the fuel cells will be placed is provided below followed by a brief description of the development of the project on the site.

As described from the July 30, 2015 Environmental Assessment Report, the site has varying vegetation community zones including mixed hardwood forest, railroad right of way vegetation zone, xeric scrub shrub zone, and xeric herbaceous zone. The area identified as the open pond/water zone is outside the limits of the project development.

The hardwood forest zone consists of a mix of hardwood trees and shrubs. These forested areas appear to be at least 50 to 60 years of age based on the tree sizes observed within these areas. Typical vegetation consisted of white oak, red oak (*Quercus rubra*), black oak (*Quercus velutina*), sugar maple (*Acer saccharum*), Eastern hophornbeam (*Ostrya virginiana*), shagbark hickory (*Carya ovata*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), lowbush blueberry (*Vaccinium angustifolium*), witchhazel (*Hamamelis virginiana*), winged euonymus (*Euonymus alatus*), Japanese barberry (*Berberis thunbergii*); and various sedges, grasses, and mosses.

The railroad vegetation zone is located along the eastern portion of the property and consists of a narrow swath ranging between 20 to 30 feet in width. Here the plants consist of eastern red cedar, red oak, black oak, big toothed aspen, quaking aspen, autumn olive, multiflora rose, and wormwood.

The xeric scrub shrub zone is the largest vegetation community on site. This vegetation zone consists of shrubby vegetation that ranges in height from 6 to 12 feet. Some herbaceous vegetation is capable of surviving in areas where sunlight can penetrate to the ground. The dominant vegetation in this community included grey birch, black cherry, quaking aspen, sassafras, eastern red cedar, autumn olive, and multiflora rose.

The xeric meadow zone is found along the central portion of the site and is dominated by open barren sandy areas and densely vegetated herbaceous zones. Some shrubs are intermixed amongst the herbaceous vegetation, but are in limited density and height. Plants observed within this zone included sweetfern, little blue stem, wormwood, evening primrose, common mullen, round headed bush clover, and a variety of other grasses.

The limits of the project and the project clearing limits are shown on the General Arrangement and-Clearing Plan provided in Appendix B. Development of the energy park on this parcel is not likely to significantly impact the natural resources as efforts will be employed to control influence of nearby water resources and to reduce the overall amount of disturbance of the site during construction. Direct impacts to vegetation and wildlife are expected to be minimal given past activities and the open nature of the site. A majority of the existing scrub shrub habitats found around the periphery of the site will remain for use by the brown thrasher, a species of special concern in Connecticut. Additional shrub and tree plantings are proposed along the southern and eastern limits of the site. The project will implement several important protection plans and management measures to help protect state-listed special concern species.

To address the elements of a D&M Plan as found in RCSA section 16-50j-61(c)(1), BFEP has no plans to salvage marketable timber as no such timber is present at the project site. The only relatively large trees being removed are at the site access road where it intersects Lopus Road. The bulk of the area being developed is either exposed sand from dirt bike tracks, grass, small pine or cedars, or invasive autumn olives.

4.0 NOTICES AND REPORTS

BFEP shall provide this D&M Plan to the CSC for review and approval. It is anticipated that the CSC will review and/or comment on the Plan prior to its approval. Except as otherwise authorized by CSC, no clearing or construction shall begin prior to approval of applicable sections of the D&M Plan by the CSC.

4.1 Staging and Material Laydown Areas

BFEP will provide the CSC with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M Plan, the CSC may approve such use on terms as it deems appropriate.

4.2 Notices to the Council

The following summary of notices to the CSCS have been extracted from RCSA 16-50j-62 as well as the CSC's January 7, 2016 Decision and Order. The notices have been listed in sequential order from those anticipated to be issued first to last:

- a) Within 45 days after completion of all construction, the CSC shall be notified in writing that construction has been completed.
- b) Any request for extension of the time period referred to in Condition 3 of the January 7, 2016 Decision and Order shall be filed with the CSC not later than 60 days prior to the expiration date of said time period and shall be served on all parties and intervenors, as listed in the service list, and the Town of Beacon Falls. Any such request for extension shall state the reason(s) for which an extension is being sought.
- c) Consistent with the requirements of RCSA Section 16-50j-62 the certificate holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation.
- d) The Petitioner, or its successor, shall provide the CSC with not less than 30 days written notice when the facility will cease operations.
- e) If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/ transferred to another corporation or other entity, the CSC shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.
- f) In addition to the above notices BFEP shall provide site-specific information as the CSC may require.

4.3 Notice of Beginning

BFEP will provide the CSC, a minimum of two weeks advance written notice of the beginning of;

- a. Clearing and access work in each successive portion of the site, and
- b. Facility construction in that same portion.

4.4 Notices of Changes

BFEP will provide the CSC with advance written notice whenever a significant change of the approved D&M Plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the Council immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D&M Plan shall include, but are not limited to, the following:

- a. The location of a wetland or watercourse crossing;
- b. The location of an access way or a structure in a regulated wetland or watercourse area;
- c. The construction or placement of any temporary structures or equipment;
- d. A change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures; and
- e. Utilization of additional mitigation measures, or elimination of mitigation measures.

In addition to the above changes, BFEP will amend this D&M Plan to address CSC-ordered changes including, but not limited to, vegetative screening, paint color, or fence design at any time during or after preparation of the plan.

4.5 Notice of Completion

The certificate holder, or facility owner or operator, shall provide the CSC with written notice of completion of construction and site rehabilitation. In addition, a final report shall be prepared as indicated in Section 4.9 below and provided to the CSC not later than 180 days after completion of all site construction and site rehabilitation.

4.6 Notice to Municipalities

Any request for extension of the time period referred to in Condition 3 of the January 7, 2016 Decision and Order shall be filed with the CSC not later than 60 days prior to the expiration date of said time period and shall be served on all parties and intervenors, as listed in the service list, and the Town of Beacon Falls. Any such request for extension shall state the reason(s) for which an extension is being sought.

4.7 Notice to Landowners

A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, or at the same time any changes to the D&M Plan, or any section thereof, is submitted to the CSC.

4.8 Monthly Reports

BFEP will provide the CSC with a quarterly construction progress report, or a construction progress report of a different time interval determined by the CSC, indicating changes and deviations from the approved D&M Plan.

4.9 Final Report

Consistent with the requirements of RCSA section 16-50j-62 the certificate holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. This final report shall identify:

- 1) All agreements with abutters or other property owners regarding special maintenance precautions;
- 2) Significant changes of the D&M Plan that were required because of the property rights of underlying and adjoining owners or for other reasons;
- 3) The location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands;
- 4) The location of areas where special planting and reseeding have been done; and
- 5) The actual construction cost of the facility, including, but not limited to, the following costs:
 - a. Clearing and access;
 - b. Construction of the facility and associated equipment;
 - c. Rehabilitation; and
 - d. Property acquisition for the site or access to the site.

5.0 ADDITIONAL ELEMENTS PER COUNCIL ORDER

5.1 Reduction in Paved Surfaces

Condition 1(c) of the CSC Decision and Order of January 7, 2016 requires the following:

“Reduction in the amount of paved surfaces within the fuel cell compound, if feasible;”

The project includes pavement for access roadways and in areas around fuel cells. Pavement is necessary for a perimeter roadway for fire truck and emergency equipment access to the facility. Additionally, pavement is required to support the periodic use of heavy equipment as part of routine maintenance procedures including periodic fuel cell restacking. As such, the project requires most surfaces inside the fence to be paved. However, reduction in the amount of paved surfaces may be accomplished during final design in select portions of the project such as on the backside of the water storage tank. Reduction in paved surfaces will be evaluated during the detailed design phase of the project.

5.2 Access Drive on Lopus Road

Condition 1(d) of the CSC Decision and Order of January 7, 2016 requires the following:

“Provisions for improving safety at the access drive entrance on Lopus Road”

The site will be accessed by a proposed driveway to be located at Lopus Road as indicated on Drawing LR-1 (December 22, 2015) provided in Appendix B. A traffic evaluation was conducted in late 2015 where motorist visibility was reviewed upon egress from the site. With some regrading of the land on the northwest side of Lopus Road opposite the site, the Intersection Sight Distances (ISDs) looking left and right for motorists exiting the site will be 280 feet and 300 feet respectively. These distances meet Connecticut Department of Transportation (ConnDOT) guidelines for non-heavy trucks and the posted speed limit. This approach will maximize the ISD's given the grading of the site and the curvature of Lopus Road, both of which limit the driveway access. It is noted that motorists on Lopus Road approaching from the north will be approaching on an uphill segment and motorists approaching from the west will be approaching from a stop-sign controlled approach at the intersection of Gruber Road. Stopping sight distances for vehicles travelling on Lopus Road in this area will be available based on the guidelines for speeds greater than the posted speed limit. As indicated in the drawing provided in Appendix B, new advisory signage is proposed: chevron curvature warning signs, downhill grade warning and a “Trucks Entering From Right – 300 Feet” ahead warning sign. Additionally, a new metal beam guiderail is proposed along the Lopus Road curve.

Construction of the energy plant is anticipated to take place for approximately three years. During this time construction related traffic can be readily accommodated on the surrounding roadways. Following construction of the energy plant, there will be very few employee trips to operate and maintain the facility on a day-to-day basis.

5.3 Sound Mitigation Barrier

Condition 1(e) of the CSC Decision and Order of January 7, 2016 requires the following:

"An analysis of the proper placement of the sound mitigation barrier to reduce noise from the fuel cell facility and to reduce the potential for highway sound reflection to the Gruber Road neighborhood;"

TRC Environmental Corporation ("TRC") conducted a technical noise assessment of the BFEP Project. The noise assessment consisted of two parts: an ambient noise monitoring program in the vicinity of the Project in order to characterize the existing noise environment; and a detailed noise modeling study/impact evaluation of the proposed Project. As shown on the MMI and PCI general arrangement drawings, the precise location of the timber sound wall is dictated by the location of existing trees. Drawing MDS-21, Miscellaneous Details, provides information on the construction of the sound barrier. While the precise orientation and height of the sound wall will be determined during final design, TRC evaluated the barrier as a reflective surface (as if it were sheet steel). The barrier reflection would increase Route 8 traffic noise levels along Gruber Road by less than one decibel, which is insignificant/imperceptible. A copy of the most recent (January/November 2016) Noise Assessment Report is provided as Appendix F.

5.4 Excavation and Characterization of Soils in Former Disposal Area

Condition 1(f) of the CSC Decision and Order of January 7, 2016 requires the following:

"Provisions for the excavation and characterization of soils within the former disposal area on the property, as identified in the Phase 1 Environmental Site Assessment report dated August 5, 2015;"

The August 5, 2015 Phase I Environmental Site Assessment (ESA) completed by Catalyst Environmental Consulting of Simsbury Connecticut indicated the presence of an on-site disposal area. Two photographs (#6 and #7) provided in the August 5, 2015 Phase I ESA shown a discarded flattened drum and scrap metal and location of a depression in the northeastern corner of the property. This area is described as follows:

Section 2.1 Site Description

"A shallow depression was noted at the site's northeastern most portion; it appears to straddle the northeast property line. The northern side of the depression appeared to have a stone foundation-like wall approximately 3 ft. high (Photograph 6). An empty, rusted drum and scrap metal were observed protruding from the ground in the vicinity of the depression (Photograph 7)."

Additional information on this area along with a recommendation for action from the Phase I ESA is provided below.

Section 6.1 On-Site Sources

"Current Presence of On-site Disposal: Sand and gravel pits are often used as improper or unauthorized disposal areas; only one such area was observed at the site. The small area straddles the northeast property line, and includes a discarded, empty rusted 55-gallon drum and scrap metal in the vicinity of a small topographical depression at the site's northeastern corner."

Section 8.0 Conclusions/Recommendations

"Excavation of the disposal area at the northeast corner of the site should be conducted to determine the extent and degree. If visual and/or olfactory evidence of contamination is encountered, soil samples should be collected and analyzed."

A drawing that illustrates the depression is provided in Appendix B. As noted, this area is approximately 50 feet by 20 to 30 feet in size. The following actions are recommended to assess the nature of the scrap metal observed in this area.

1. Conduct a program of test pitting to determine the extent of metal debris and presence/absence of impacted soil within and at the edges of the depressed area. Test pits shall be completed vertically to determine the depth of scrap metal and/or fill material to a maximum depth limited by test pitting equipment. However, existing information indicates scrap metal disposal may be surficial in nature; if this is observed during test pitting activities the vertical limits of test pitting shall be five to six feet below ground surface. Test pits shall also be completed horizontally to define the limits of any fill/waste materials present in the depressed area. It is anticipated that a one day program of test pitting would be required.
2. A qualified geologist or scientist shall document the soil characteristics on test pit logs at each location. Documentation will include; soil type, visual staining or odor, and presence and nature of non-native fill. In addition soil and/or fill within each test pit shall be screened for the presence of volatile organic compounds (VOCs) using a flame/photo ionization detector.

3. Test pits logs will be completed at each location and one soil sample shall be collected from each test pit location where evidence of contamination (e.g., discoloration, odor, elevated field instrumentation readings) is encountered. Based on the undermined nature of the scrap metal and/or fill within the depressed area a program of analysis for extractable petroleum hydrocarbons (ETPH) and polychlorinated biphenyls (PCBs) shall be completed for each impacted soil sample. Any test pits that indicate elevated PID/FID readings will be subject to additional analysis for VOCs. These additional samples will be collected using EPA 5035 methodologies and analyzed by EPA Method 8260. Analytical results shall be compared to relevant Connecticut Remediation Standard (RSR) criteria with recommendations for excavation and off-site disposal of solid waste/scrap metal and excavation and off-site management of any soil that exceeds relevant RSR criteria.

5.5 Eastern Hognose Snake Protection Program

Condition 1(g) of the CSC Decision and Order of January 7, 2016 requires the following:

“Provisions for a Eastern Hognose Snake Protection Program that includes Department of Energy and Environmental Protection recommended construction practices;”

A December 2014 Natural Diversity Database (NDDDB) review identified the site as having the potential for the listed special concern species, the eastern hognose snake to be present. As part of the Environmental Assessment report, completed on July 30, 2015, a reptile survey was conducted by ecologists in July 2015. In response to the Environmental Assessment, the CSC received a letter from the CTDEEP dated November 4, 2015 regarding the Beacon Falls Energy Park project (Petition No. 1184). One of the comments pertained to NDDDB listed species and asked whether additional field surveys had been conducted on site to determine the habitat and/or presence of several flora and fauna species. Per the CTDEEP comment letter, the following language has been added to the Beacon Falls Snake Management Plan, and is reflected in the summary below.

“Any hognose snake found must be moved or allowed to move to a safe area off the project site. As a protected species, it cannot be killed. Though not poisonous or dangerous, the snake should be handled only by a trained biologist.”

The survey indicated that no eastern hognose snakes were found during multi-day field surveys. In fact, no snakes of any kind were observed on site. Although no eastern hognose snakes were found, the generation site does have habitat that can support the eastern hognose snake. The following management plan has been developed to help protect these species during construction of the energy park. Silt fence will be installed as shown on the plans to form a barrier along the potential habitat. These silt fences will help limit the potential for snakes to enter the project site.

However, if said species are observed within the project area, the contractor is responsible for following the snake management plan as follows:

- Conduct a sweep of the project area by a qualified wildlife biologist prior to installation of silt fence.
- Install silt fencing around the work area prior to the start of any construction.
- Conduct a second sweep of the project area by a qualified wildlife biologist prior to construction.
- The contractor will be informed of the potential presence of eastern hognose snakes within the project site and will be furnished with a description of the snake for proper identification purposes. This will be accomplished by inclusion of the necessary information in the contract documents, including notations on the plans and a Notice to Contractor and/or special provisions as appropriate.
- Carefully remove any eastern hognose snake discovered inside the project area and relocate unharmed to an area immediately outside of the silt fence and in the same direction it was slithering. Any hognose snake found must be moved or allowed to move to a safe area off the project site. As a protected species, it cannot be killed. Though not poisonous or dangerous, the snake should be handled only by a trained biologist
- Restrict machinery and heavy vehicles from being parked or operated in hognose snake habitat. Confine parking for construction equipment within the limits bound by silt fence.
- Work conducted during the early morning and evening hours should occur with special care not to harm basking or foraging individuals.
- Silt fence should be removed once construction is complete and soils have been stabilized to avoid restricting wildlife movement.

In response to the NDDB Final Determination No.: 201609163, the CTDEEP concurs with the above referenced recommendation regarding the hognose snakes. More specifically an August 8, 2016 letter from CTDEEP (See Appendix G) indicates the following:

"I concur with your recommendation regarding the hognose snake. Thank you for including the protection strategies and best management protocols that will be in place to protect the hognose snake from project impacts. If these protection strategies are followed then the proposed activities will unlikely have an adverse impact on this species. This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by August 4, 2018."

A copy of the NDDB request package and Field Habitat Assessment Report and resumes of biologists whom preformed the necessary surveys for this project are provided as Appendix G.

5.6 Field Habitat Assessment Report

Condition 1(h) of the CSC Decision and Order of January 7, 2016 requires the following:

“Submission of correspondence from the Department of Energy and Environmental Protection, if applicable, regarding final comment on the Field Habitat Assessment Report dated August 5, 2015;”

A copy of the August 5, 2015 Field Habitat Assessment Report is provided within the NDDB application request in Appendix G. In response to the NDDB and attached Field Habitat Assessment Report the CTDEEP provided the following comments by letter dated August 4, 2016.

“I have re-reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Construction of a 63.3 MW Fuel Cell Energy Facility at Beacon falls Energy Park on Lopus Road in Beacon Falls, Connecticut. Our NDDB Preliminary Assessment # 201503256 had identified several state-listed species that were known to occur in this area of Beacon Falls. Thank you for including the Field Habitat Assessment Report for the site and resumes of biologists whom preformed the necessary surveys for this project. The field habitat survey targeted Virginia waterleaf, Hooker’s orchid, downy wood mint, brown thrasher and eastern hognose snake. The report indicated that although one brown thrasher was observed on site there was no evidence of nesting and no nest site was discovered. No further mitigation is needed for this species with respect to the project. Although none of the state-listed plants were found on site the report noted that a snake management plan should be implemented during the construction portion of this project. I concur with your recommendation regarding the hognose snake. Thank you for including the protection strategies and best management protocols that will be in place to protect the hognose snake from project impacts. If these protection strategies are followed then the proposed activities will unlikely have an adverse impact on this species. This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by August 4, 2018.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection’s Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to

identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available."

5.7 Construction Work Hours

Condition 1(i) of the CSC Decision and Order of January 7, 2016 requires the following:

"Construction work hours"

As indicated in Section 3.3 above, construction work hours shall be Monday through Friday from 7 AM to 5 PM. During Start-Up and Commissioning there may be minor activities on nights and weekends until Start-Up is complete.

5.8 Air Permitting

Condition 1(j) of the CSC Decision and Order of January 7, 2016 requires the following:

"Submission of relevant portions of the Title V and New Source Review air permit applications that include a detailed analysis of alternative technologies, operational methods and/or fuels that can be employed at the facility to reduce greenhouse gas emissions to the greatest practical extent;"

A New Source Review (NSR) permit application was submitted to CTDEEP on January 27, 2016 following the required public notice in the Waterbury Republican-American newspaper on January 23, 2016. A Title V permit application will be prepared and submitted to CTDEEP in the near future to address greenhouse gas (GHG) emissions.

A portion of the NSR permit application included a Best Available Control Technology (BACT) analysis which was provided as Attachment G to the NSR application and which is provided as Appendix H to this D&M Plan for reference. The following summarizes the identified control technologies and options that were evaluated for the project.

BACT Option	Comments/Rationale
Thermally efficient equipment	Thermal efficiency is inherent to the process
Clean Fuels	The fuel cells will use natural gas, which has the lowest carbon content of any fuel
Good practices	Fuel cells will be operated in accordance with manufacturer's specifications and best practices.

As of the date of the publication (September 2016), a draft NSR permit (Permit No. 006-0009) is currently under preparation by the CTDEEP. It is anticipated CTDEEP will make an internal

tentative determination in the near future. The 30-day public comment period commences on the date the Department's tentative determination to issue the permit is published by the CTDEEP in a newspaper in general circulation in the Beacon Falls area.

5.9 Infrastructure Decommissioning Plan

Condition 1(k) of the CSC Decision and Order of January 7, 2016 requires the following:

“A facility and associated infrastructure decommissioning plan.”

A facility and infrastructure decommissioning plan is currently under development and, upon completion, will be provided as Appendix I to this document.

6.0 PROJECT SCHEDULE

Major elements of the project schedule are summarized in the table below. A more detailed schedule is provided as Appendix J.

ID	Description	Early Start	Early Finish
200	Start Permitting	February 15, 2015	
054	Detailed Design	November 1, 2016	April 28, 2017
202	Start Construction	November 1, 2016	
210	Electrical Interconnection		March 2, 2018
060 to 063	Fuel Cell Delivery Phase I to Phase IV	December 1, 2017	May 6, 2019
212	Substantial Completion		September 23, 2019
214	Commissioning (FCM Obligation)		April 1, 2020
204	In-Service Date (FCM Obligation)	April 1, 2020	
206	Initial Sync	March 5, 2018	
208	Commercial Operation (FCM Obligation)	May 1, 2020	

Figures

Appendix A

CSC January 7, 2016 Decision and Order
Petition No. 1184

Appendix B

Plan Drawings

Property/Topographic Survey, April 16, 2015 (3 sheets)
C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)
C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)
C-303 Grading GA, April 22, 2015 (1 sheet)
C-501 Fencing Details, April 22, 2015 (1 sheet)
S-100, Structural Notes, April 6, 2015 (1 sheet)
E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)
General Arrangement and Clearing Plan, July 29, 2016 (1 sheet)
Drawing LR-1, December 22, 2015 (1 sheet)
Drawing CL, August 16, 2016 (1 sheet)
Drawings LA-1 to LA-3, June 10, 2015 (3 sheets)
Drawing SE, ~~June 10, 2015~~ October 7, 2016 (1 sheet)
Drawing EX 1, July 14, 2015 (1 sheet)
Property Abutters Map, June 10, 2015 (1 sheet)
Drawings SD-1 to SD-3, ~~June 10, 2015~~ October 7, 2016 (3 sheets)
Disposal Area Exploration Plan, September 7, 2016 (1 sheet)
Water Supply Plan, June 15, 2015 (1 sheet)
E-133 Electrical Site Lighting and Security Camera Plan, July 9, 2015 (1 sheet)
Drawings GU-1 to GU-3, October 7, 2016 (3 sheets)
Drawing MDS-21, January 31, 2010 (1 sheet)

Appendix C

June 18, 2015 SHPO Response Letter

Appendix D

July 23, 2015 Inland Wetland and
Watercourse Impact Assessment

Appendix E

Contractor Contact Information

Appendix F

| ~~January~~November 2016 Noise Assessment Report

Appendix G

NDDB Final Determination No.: 201609163 with the
Field Habitat Assessment Report

Appendix H

Analysis of Best Available Control Technology
(DEEP-NSR-APP-214a)

Appendix I

Infrastructure Decommissioning Plan (to be provided upon completion)

Appendix J

Project Schedule

DEVELOPMENT AND MANAGEMENT (D&M) PLAN

for

Beacon Falls Energy Park

**October, 2016
Revised December 2016**

Prepared by

TRC

TRC Project No. 232127.0000

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Table of Contents

Section	Page
CROSS REFERENCE TABLE	iii
1.0 INTRODUCTION	1
1.1 Project Description	1
1.2 Plan Organization	2
2.0 REGULATORY APPROVALS AND CONSULTATIONS	3
2.1 Regulatory Approvals and Requirements	3
2.2 Consultations	3
3.0 CONSTRUCTION INFORMATION	5
3.1 Project Facilities and Land Requirements	5
3.2 Construction Management and Contact Information	5
3.3 Construction Work Hours.....	5
3.4 Site Preparation.....	5
3.5 Blasting Procedures	6
3.6 Erosion and Sediment Controls	6
3.7 Clearing and Landscaping	7
4.0 NOTICES AND REPORTS	9
4.1 Staging and Material Laydown Areas	9
4.2 Notices to the Council	9
4.3 Notice of Beginning.....	10
4.4 Notices of Changes	10
4.5 Notice of Completion	10
4.6 Notice to Municipalities	11
4.7 Notice to Landowners.....	11
4.8 Monthly Reports	11
4.9 Final Report	11
5.0 ADDITIONAL ELEMENTS PER COUNCIL ORDER	13
5.1 Reduction in Paved Surfaces	13
5.2 Access Drive on Lopus Road	13
5.3 Sound Mitigation Barrier	14
5.4 Excavation and Characterization of Soils in Former Disposal Area	14
5.5 Eastern Hognose Snake Protection Program	16
5.6 Field Habitat Assessment Report.....	18
5.7 Construction Work Hours.....	19
5.8 Air Permitting	19
5.9 Infrastructure Decommissioning Plan	20
6.0 PROJECT SCHEDULE	21

FIGURES

1 Key Map

APPENDICES

Appendix A CSC January 7, 2016 Decision and Order, Petition No. 1184
Appendix B Drawings
Appendix C June 18, 2015 SHPO Response Letter
Appendix D July 23, 2015 Inland Wetland and Watercourse Impact Assessment
Appendix E Contractor Contact Information
Appendix F November 2016 Noise Assessment Report
Appendix G NDDDB Final Determination No.: 201609163 with the Field Habitat
Assessment Report
Appendix H Analysis of Best Available Control Technology (DEEP-NSR-APP-214a)
Appendix I Infrastructure Decommissioning Plan
Appendix J Project Schedule

Citation	Description	Plan Cross Reference
Sec. 16-50j-60. Requirements for a Development and Management Plan (D&M Plan)		
(a)	Purpose. The Council may require the preparation of full or partial Development and Management Plans (D&M Plans) for proposed energy facilities, modifications to existing facilities, or where the preparation of such a plan would help significantly in balancing the need for adequate and reliable utility services at the lowest reasonable cost to consumers with the need to protect the environment and ecology of the state.	Section 2.1
(b)	When required. A partial or full D&M Plan shall be prepared in accordance with this regulation and shall include the information described in Sections 16-50j-61 to 16-50j-62, inclusive, of the Regulations of Connecticut State Agencies, for any proposed energy facility for which the Council issues a certificate of environmental compatibility and public need, except where the Council provides otherwise at the time it issues the certificate. Relevant information in the Council's record may be referenced.	Section 2.1
(c)	Procedure for preparation. The D&M Plan shall be prepared by the certificate holder or the owner or operator of the proposed facility or modification to an existing facility. The preparer may consult with the staff of the Council to prepare the D&M Plan.	---
(d)	Timing of plan. The D&M Plan shall be submitted to the Council in one or more sections, and the Council shall approve, modify, or disapprove each section of the plan not later than 60 days after receipt of it. If the Council does not act to approve, modify or disapprove the plan or a section thereof within 60 days after receipt of it, the plan shall be deemed approved. Except as otherwise authorized by the Council, no clearing or construction shall begin prior to approval of applicable sections of the D&M Plan by the Council	Section 4.0
Sec. 16-50j-61. Elements of a D&M Plan		
(a)	Key map. The D&M Plan shall include a key map for the site, including the entire electric transmission line or fuel transmission line, as applicable, that is a reproduction at scale of 1 inch = 2,000 feet of the most recent USGS topographic maps for its location and route.	Figure 1 Key Map, 09/2016 (1 page)
(b)	Plan drawings. The D&M Plan shall consist of maps at a scale of 1 inch = 100 feet or larger (called "plan drawings") and supporting documents, which shall contain the following information:	Appendix B Property/Topographic Survey, April 16, 2015 (3 sheets)
	(1) The edges of the proposed site and of any existing site contiguous to or crossing it, the portions of those sites owned by the company in fee and the identity of the property owners of record of the portions of those sites not owned by the company in fee;	
	(2) Public roads and public lands crossing or adjoining the site;	
	(3) The approximate location along the site of each 50-foot contour line shown on the key map;	

	(4) The probable location, type, and height of the proposed facility, energy components and associated equipment supporting the facility operation, including, but not limited to, each new transmission structure, position of guys, generalized description of foundations, trench grading plans, depth and width of trenches, trench back-filling plans, and the location of any utility or other structures to remain on the site or to be removed;	<p>Appendix B</p> <p>C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)</p> <p>C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)</p> <p>C-303 Grading GA, April 22, 2015 (1 sheet)</p> <p>C-501 Fencing Details, April 22, 2015 (1 sheet)</p> <p>S-100, Structural Notes, April 6, 2015 (1 sheet)</p> <p>E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)</p>
	(5) The probable points of access to the site, and the route and likely nature of the access ways, including alternatives or options to the probable points of access and access ways;	<p>Appendix B</p>
	(6) The edges of existing and proposed clearing areas, the type of proposed clearing along each part of the site, and the location and species identification of vegetation that would remain for aesthetic and wildlife value;	<p>General Arrangement and Clearing Plan, July 29, 2016 (1 sheet)</p> <p>Drawing LR-1, December 22, 2015 (1 sheet)</p> <p>Drawing CL, August 16, 2016 (1 sheet)</p> <p>Drawings LA-1 to LA-3, June 10, 2015 (3 sheets)</p>
	(7) Sensitive areas and conditions within and adjoining the site, including, but not limited to:	<p>Section 3.1</p> <p>Section 3.7</p> <p>Appendix D</p> <p>Appendix G</p>
	(A) Wetland and watercourse areas regulated under Chapter 440 of the Connecticut General Statutes, and any locations where construction may create drainage problems;	
	(B) Areas of high erosion potential;	<p>Appendix B</p> <p>Drawing SE, October 7, 2016 (1 sheet)</p>
	(C) Any known critical habitats or areas identified as having rare, endangered, threatened or special concern	<p>Section 3.1</p>

	plant or animal species listed by federal and state governmental agencies;	Appendix G
	(D) The location of any known underground utilities or resources including, but not limited to, electric lines, fuel lines, drainage systems and natural or artificial, public or private water resources, to be crossed;	Section 3.1 Appendix B Drawing EX 1, July 14, 2015 (1 sheet) Drawings GU-1 to GU-3, October 7, 2016 (3 sheets)
	(E) Residences or businesses within or adjoining the site that may be disrupted during the construction process; and	Appendix B Property Abutters Map, June 10, 2015 (1 sheet)
	(F) Significant environmental, historic and ecological features, including, but not limited to, significantly large or old trees, buildings, monuments, stone walls or features of local interest.	Section 2.2 Appendix C Appendix G
(c)	Supplemental information.	
	(1) Plans, if any, to salvage marketable timber, restore habitat and to maintain snag trees within or adjoining the site;	Section 3.7
	(2) All construction and rehabilitation procedures with reasonable mitigation measures that shall be taken to protect the areas and conditions identified in section 16-50j-61(b)(7) of the Regulations of Connecticut State Agencies, including, but not limited to:	See below
	(A) Construction techniques at wetland and watercourse crossings;	Not applicable Section 3.1
	(B) Sedimentation and erosion control and rehabilitation procedures, consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as updated and amended, for areas of high erosion potential;	Section 3.6 Appendix B Drawing SE, October 7, 2016 (1 sheet) Drawings SD-1 to SD-3, October 7, 2016 (3 sheets)
	(C) Precautions and all reasonable mitigation measures to be taken in areas within or adjoining the site to minimize any adverse impacts of such actions or modifications on endangered, threatened or special concern plant or animal species listed by federal and state governmental agencies and critical habitats	Section 5.5 Section 5.6

	that are in compliance with federal and state recommended standards and guidelines, as amended;	Appendix G
	(D) Plans for modification and rehabilitation of surface, drainage, and other hydrologic features;	Appendix B Drawing C-303, April 22, 2015 (1 sheet)
	(E) Plans for watercourse bank restoration in accordance with the provisions of Chapter 440 of the Connecticut General Statutes; and	Not Applicable
	(F) Plans for the protection of historical and archaeological resources with review and comment from a state historic preservation officer of the Department of Economic and Community Development, or its successor agency.	Section 2.2 Appendix C
	(3) Plans for the method and type of vegetative clearing and maintenance to be used within or adjacent to the site;	Section 3.7 Appendix B Drawing CL, August 16, 2016 (1 sheet)
	(4) The location of public recreation areas or activities known to exist or being proposed in or adjacent to the site, together with copies of any agreements between the company and public agencies authorizing public recreation use of the site to the extent of the company's property rights thereto;	Not Applicable
	(5) Plans for the ultimate disposal of excess excavated material, stump removal, and periodic maintenance of the site;	Section 3.4
	(6) Locations of areas where blasting is anticipated;	Section 3.5
	(7) Rehabilitation plans, including, but not limited to, reseeding and topsoil restoration;	Section 3.6
	(8) Contact information for the personnel of the contractor assigned to the project; and	Section 3.2 Appendix E
	9) Such site-specific information as the Council may require.	Section 4.0
(d)	Notice. A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, or at the same time any changes to the D&M Plan, or any section thereof, is submitted to the Council.	Section 4.4 Section 4.7
(e)	Changes to plan. The Council may order changes to a D&M Plan, including, but not limited to, vegetative screening, paint color, or fence design at any time during or after preparation of the plan.	Section 4.4

Sec. 16-50j-62. Reporting requirements		
(a)	Site Testing and Staging areas. The certificate holder, or facility owner or operator, shall provide the Council with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M Plan, the Council may approve such use on terms as it deems appropriate.	Section 4.1
(b)	Notice (1) The certificate holder, or facility owner or operator, shall provide the Council, in writing, with a minimum of two weeks advance notice of the beginning of: (A) clearing and access work in each successive portion of the site and (B) facility construction in that same portion.	Section 4.2
	(2) The certificate holder, or facility owner or operator, shall provide the Council with advance written notice whenever a significant change of the approved D&M Plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the Council immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D& M plan shall include, but are not limited to, the following: (A) the location of a wetland or watercourse crossing; (B) the location of an access way or a structure in a regulated wetland or watercourse area; (C) the construction or placement of any temporary structures or equipment; (D) a change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures; and (E) utilization of additional mitigation measures, or elimination of mitigation measures. The Council, or its designee, shall promptly review the changes and shall approve, modify, or disapprove the changes in accordance with subsection (d) of section 16-50j-60 of the Regulations of Connecticut State Agencies.	Section 4.2 Section 4.4
	(3) The certificate holder, or facility owner or operator, shall provide the Council with a monthly construction progress report, or a construction progress report at time intervals determined by the Council or its designee, indicating changes and deviations from the approved D&M Plan. The Council may approve changes and deviations, request corrections or require mitigation measures.	Section 4.8
	(4) The certificate holder, or facility owner or operator, shall provide the Council with written notice of completion of construction and site rehabilitation.	Section 4.9
(c)	Final report. The certificate holder, or facility owner or operator, shall provide the Council with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation This final report shall identify:	Section 4.9

	<p>(1) all agreements with abutters or other property owners regarding special maintenance precautions;</p> <p>(2) significant changes of the D&M Plan that were required because of the property rights of underlying and adjoining owners or for other reasons;</p> <p>(3) the location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands;</p> <p>(4) the location of areas where special planting and reseeding have been done; and</p> <p>(5) the actual construction cost of the facility, including, but not limited to, the following costs:</p> <p style="padding-left: 40px;">(A) clearing and access;</p> <p style="padding-left: 40px;">(B) construction of the facility and associated equipment;</p> <p style="padding-left: 40px;">(C) rehabilitation; and</p> <p style="padding-left: 40px;">(D) property acquisition for the site or access to the site.</p>	
(d)	<p>Protective Order.</p> <p>The certificate holder, or facility owner or operator, may file a motion for a protective order pertaining to commercial or financial information related to the site or access to the site.</p>	--
Connecticut Siting Council Decision and Order January 7, 2016		
(1)	<p>The petitioner shall prepare a development and Management (D&M) Plan for the project in compliance with sections 16-50j-60 through 16-50j-62 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Beacon Falls for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:</p>	Appendix B
	<p>a) a final plan(s) of site development to include specifications for the fuel cell facility including infrastructure, electrical equipment, equipment compound, access and maintenance roads, utility connections, sound mitigation, stormwater control, wastewater infiltration basins, facility fencing with less than two inch mesh, and landscaping;</p>	<p>C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)</p> <p>C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)</p> <p>C-303 Grading GA, April 22, 2015 (1 sheet)</p> <p>C-501 Fencing Details, April 22, 2015 (1 sheet)</p> <p>S-100, Structural Notes, April 6, 2015 (1 sheet)</p> <p>E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)</p>
	<p>b) construction plans for site clearing, grading, sound mitigation, landscaping, water drainage, stormwater control, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended;</p>	Section 3.6

	c) Reduction in the amount of paved surfaces within the fuel cell compound, if feasible;	Section 5.1
	d) Provisions for improving safety at the access drive entrance on Lopus Road	Section 5.2 Appendix B
	e) An analysis of the proper placement of the sound mitigation barrier to reduce noise from the fuel cell facility and to reduce the potential for highway sound reflection to the Gruber Road neighborhood;	Section 5.3
	f) Provisions for the excavation and characterization of soils within the former disposal area on the property, as identified in the Phase 1 Environmental Site Assessment report dated August 5, 2015;	Section 5.4 Appendix B Disposal Area Exploration Plan, September 7, 2016 (1 sheet)
	g) Provisions for a Eastern Hognose Snake Protection Program that includes Department of Energy and Environmental Protection recommended construction practices;	Section 5.5
	h) Submission of correspondence from the Department of Energy and Environmental Protection, if applicable, regarding final comment on the Field Habitat Assessment Report dated August 5, 2015;	Section 5.6
	i) Construction work hours;	Section 5.7
	j) Submission of relevant portions of the Title V and New Source Review air permit applications that include a detailed analysis of alternative technologies, operational methods and/or fuels that can be employed at the facility to reduce greenhouse gas emissions to the greatest practical extent; and	Section 5.8
	k) A facility and associated infrastructure decommissioning plan.	Section 5.9

1.0 INTRODUCTION

Beacon Falls Energy Park, LLC (BFEP) has prepared this Development and Management (D&M) plan in support of construction of a nominal 63.3 megawatt (MW) fuel cell energy facility pursuant to the requirements of section 16-50j-60 of the Regulations of Connecticut State Agencies (RCSA).

1.1 Project Description

BFEP has proposed to construct the Beacon Falls Energy Park, a nominal 63.3 MW baseload fuel cell project in the Town of Beacon Falls, Connecticut. The site is located in an Industrial Park District (“IPD”) of Beacon Falls and conforms to lot size and dimensional requirements, as well as to all setbacks, height and coverage requirements. The site is located in close proximity to the growth areas along Route 8 in Beacon Falls and is compatible with existing industrial land uses in the area and consistent with the Plan of Conservation and Development for Beacon Falls and the Conservation and Development Policies Plan for Connecticut.

The Project will occupy approximately 8 acres of an approximately 25 acre site currently owned by O&G Industries, Inc. and located between Connecticut Route 8 and the Naugatuck River (see Figure 1). More specifically, the Property is located adjacent to the western side of the Metro-North Rail line and along the southern side of Lopus Road. The site, a former sand and gravel mining area, consists of predominantly flat terrain, with significant sloping topography along its western and northern boundaries formed by the sand and gravel operations. The topography of the Property will give the Project a low visibility and profile. The Project site is located in a natural “bowl” approximately 50 feet below Gruber Road. Trees and vegetation will provide visual and sound buffers.

The Project consists of the following:

- 5 FuelCell Energy, Inc. high efficiency fuel cell (HEFC) fuel cell plants, each rated at approximately 3.7 MW
- 15 FuelCell Energy, Inc. DFC3000 fuel cell plants, each rated at approximately 2.8 MW
- 1 ORMAT Energy Converter System, rated at approximately 4.6 MW, and consisting of Organic Rankine Cycle (ORC) preheater and vaporizer heat recovery units, a vapor turbine, a generator, and a condenser.
- Switchyard facilities.
- A metering facility

Each of the 20 fuel cell plants will contain two (DFC3000) or three (HEFC) fuel cell modules, each consisting of four “stacks” of fuel cells, and will be equipped with an air heater with a maximum heat input of 11.2 million British thermal units per hour (MMBtu/hr). The air heater will only operate when the fuel cells are idle, or when a fuel cell module is not operating at a

sufficient power level to maintain its required minimum temperature. Note that all MMBtu values are expressed as the higher heating value (HHV), unless otherwise indicated. For natural gas, the lower heating value (LHV) is 90% of the HHV. It is expected that the fuel cells will operate continuously. The Project will use natural gas exclusively as fuel.

Fuel cells require natural gas and treated water to generate electricity. Access to natural gas and water, is accordingly, critical to a fuel cell project. The Project site is located in close proximity to both natural gas and water pipeline infrastructure. The interconnection to the grid is located on Cold Springs Road, in Beacon Falls.

1.2 Plan Organization

The preface of this report provides a reference table that lists the regulatory requirements and the requirements of the Connecticut Siting Council's (CSC) Decision and Order approving this project. The preface contains a table with a cross reference to the section of the plan where a particular requirement is discussed.

Section 1.0 presents an overall project description along with this summary of the report structure. Section 2.0 lists regulatory approvals, requirements, and consultations. Where specific consultations (e.g., NDDB, wetlands, etc.) are relevant to later sections of the document, they are described in the most relevant portion of this D&M Plan. Section 3.0 describes the development/construction of the project and Section 4.0 describes the notices and reports to be prepared in support of the project. Section 5.0 describes actions to be taken to address specific CSC Decision and Order requirements and Section 6.0 provides a project schedule.

2.0 REGULATORY APPROVALS AND CONSULTATIONS

2.1 Regulatory Approvals and Requirements

This D&M Plan has been prepared in compliance with the requirements specified at RCSA Sections 16-50j-60 through 16-50j-62 (Requirements for a D&M Plan, Elements of a D&M Plan, Reporting Requirements). In addition this D&M Plan also address the specific conditions; and (ii) reflects adherence to the conditions (1a to 1k) of the CSC's Decision and Order of January 7, 2016. A copy of the January 7, 2016 CSC Decision and Order is provided as Appendix A.

2.2 Consultations

The Project has received regulatory approvals or clearances from State and Federal agencies including:

- Connecticut Department of Energy and Environmental Protection ("CTDEEP")
- CTDEEP Natural Diversity Database ("NDDB")
- State Historic Preservation Office ("SHPO")
- Connecticut State Archeologist
- Mashantucket Pequot – Tribal Historic Preservation Officer
- The Mohegan Tribe – Tribal Historic Preservation Officer

BFEP has consulted with municipal officials in the Town of Beacon Falls throughout the project development process, including during the preparation of this D&M Plan. BFEP is in the process of coordinating with the Connecticut Department of Transportation (DOT), Metro North Rail Road, and AT&T for project construction activities that may impact their specific interests at the project site. Project construction in locations requiring specific permits will not start until these permit approvals are received. BFEP will comply with the requirements and conditions in the siting and permitting approvals summarized below. BFEP will report to the CSC as required and as discussed in Section 4.0 below

Category	Permit	Permit Trigger	Review Agency	Comments
Air	Permit to Construct and Operate	Prior to Commencing Construction	CTDEEP Air Management	Filed January 27, 2016. Expected October 2016
Building	Building Permit	Construction of Fuel Cell Units	Beacon Falls Building Department	Target Date November 2016

DOT/Metro North RR	Temporary Right of Entry	Any activity proposed within Metro North Railroad operated facilities/CT DOT ROW	Metro North/DOT	Request sent 12JUN2015. Stamped drawings sent 10NOV2015. Insurance and Force Acct. to be established prior to MNR review.
Category	Permit	Permit Trigger	Review Agency	Comments
DOT/Metro North RR	License Agreement	Permanent utilities located within RR ROW	DOT	Needed for Water Supply Connection
FERC – Interconnect Agreement	Electric Generator Wholesale Status	Generation of Electricity for Distribution	FERC	Expected December 2016
Local	Inland Wetlands and Watercourses	Information only - no local permit (see Site Approval)	Beacon Falls Inland Wetlands and Watercourse Commission	
	Planning and Zoning	Information only - no local permit (see Site Approval)	Beacon Falls Planning and Zoning Commission	
Site Approval	Declaratory Ruling and Petition	Generation of Electricity for Distribution	Connecticut Siting Council (CSC)	Approved January 07, 2016
Stormwater	General Permit for Stormwater Construction Activities	Site disturbance of greater than five acres	CTDEEP	Filed August 30, 2016
	General Permit for Stormwater Associated with Industrial Activities	Permit not required based on SIC code	CTDEEP	
Wastewater	General Permit for Water Treatment Wastewater	Discharge of wastewater into groundwater via infiltration basins	CTDEEP	Target date for submittal - June 2017
Hazardous Waste	RCRA Subtitle C Site Identification Form	Generation of Hazardous Waste (Desulfurization)	CTDEEP	Operational Permit

In response to a May 12, 2015 request for comments on the presence of historic properties to SHPO, the following response was provided by letter dated June 18, 2015.

“There are no archeological sites or properties listed on the National Registers of Historic Places recorded within or in the immediate vicinity of the project area. The project parcel is comprised primarily of Udorthents-Pit complex soils. During the past 40 years, the site was mined for sand and gravel. Although this office considers the area

to be archeologically sensitive, the proposed project facility is within existing disturbed footprints,. Based on the informationb provided to our office, it is SHPO's opinion that no historic properties will be affected by this undertaking as described."

A copy of the SHPO letter is provided in Appendix C.

3.0 CONSTRUCTION INFORMATION

3.1 Project Facilities and Land Requirements

The Project site will take up approximately 8 acres of the 25.02 acre Property. The topography of the Property will give the Project a low visibility and profile. The Project site is located in a natural “bowl” approximately 50 feet below Gruber Road. Trees and vegetation will provide visual and sound buffers. Because the geology of the site is one of deep sand and gravel, there will be no net change in the discharge of storm water from the site from existing conditions.

Fuel cells require natural gas and treated water to generate electricity. Access to natural gas and water, is accordingly, critical to a fuel cell project. The Project site is located in close proximity to critical infrastructure such as natural gas and water pipelines. The interconnection to the grid is located on Cold Springs Road, in Beacon Falls.

Consistent with the July 23, 2015 Inland Wetland and Watercourse Impact Assessment, wetlands on the project site were delineated on April 20, 2015. No wetland crossings are proposed for the project. A copy of the July 23, 2015 Inland Wetland and Watercourse Impact Assessment report is provided as Appendix D.

The only known utility present on the project site is an AT&T fiber line which is located at the northern tip of the site. The location and orientation of the line is shown on the Proposed Driveway Plan (Drawing EX-1) provided with the drawings in Appendix B.

Detailed design associated with items such as piping, wiring, instrumentation, underground utilities, etc., will not be completed until a notice-to-proceed (NTP) for construction has been issued, as is customary with projects of this type and scope.

3.2 Construction Management and Contact Information

Contact information for the contractor personnel assigned to the project is provided as Appendix E.

3.3 Construction Work Hours

Construction work hours shall be Monday through Friday from 7 AM to 5 PM. During Start-Up and Commissioning, there may be minor activities on nights and weekends until Start-Up is complete.

3.4 Site Preparation

Ground surfaces within the construction areas will be cleared of all vegetation prior to construction. Residual material in the form of stumpage may be generated and will be removed

for proper off-site disposal. By design, the site development and grading will balance cut and fill areas such that excess materials are not anticipated to be imported or removed from the project site. Periodic maintenance will include the periodic removal of accumulated sediment from the stormwater and process water infiltration ponds.

3.5 Blasting Procedures

No blasting will be performed as part of the project.

3.6 Erosion and Sediment Controls

A Sediment and Erosion (S&E) Control Plan has been developed to mitigate the short-term impacts of the project during construction. The S&E Control Plan includes descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, and vegetative cover selection and mulching, and erosion checks. Details have been provided for all erosion control measures with corresponding labels on the S&E control site plan. The S&E controls provided are in accordance with the Connecticut Department of Environmental Protection's 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*.

The construction areas will be surrounded by a geotextile sediment filter fence that will be fortified with staked hay bales upgradient of the wetland areas. A stone construction entrance has been provided at the site entrance from Lopus Road. Erosion control blankets (organic and biodegradable) will be proposed on critical slopes as shown on the Sediment and Erosion Control Plan to protect the newly created slopes until permanent vegetation can be established. During construction, inlet protection will be provided at the proposed drainage inlet structures to trap sediment. Temporary diversion berms and swales will be provided to direct the stormwater runoff from the site to the temporary sediment traps. The swales will include stone check dams to slow potential erosive velocities. The S&E controls are to be modified with the changing grades on site to ensure the protection of the surrounding areas throughout the construction process.

Information on the temporary and permanent vegetative cover is provided on the drawings provided in Appendix B. BFEP shall establish temporary vegetative cover on all unprotected area that produce sediment, areas where final grading has been completed and areas where the estimated period of bare soil exposure is less than 30 days. Vegetative cover will be established in areas that will not be permanently seeded by September 1st. Permanent vegetative cover will be established as various sections of the project are completed in order to stabilize these areas, reduce impacts from sediment and runoff and to enhance the aesthetic nature of the site.

Point source discharges of construction stormwater are not anticipated due to the high permeability of the existing sand and gravel materials at the project site. Therefore, the design goal of the stormwater management plan is to take advantage of the sandy soils present on site and naturally infiltrate stormwater runoff as occurs under existing conditions using four proposed detention/infiltration basins. These basins are designated as Stormwater Basins TST #1 through #4 on the Sedimentation and Erosion Control Plan in Appendix B

BFEP completed a Registration on August 30, 2016 under the CTDEEP Stormwater Construction General Permit to manage any impacts of stormwater runoff that may discharge to waters of the state of Connecticut.

3.7 Clearing and Landscaping

A brief summary of the upland vegetated area of the property where the fuel cells will be placed is provided below followed by a brief description of the development of the project on the site.

As described from the July 30, 2015 Environmental Assessment Report, the site has varying vegetation community zones including mixed hardwood forest, railroad right of way vegetation zone, xeric scrub shrub zone, and xeric herbaceous zone. The area identified as the open pond/water zone is outside the limits of the project development.

The hardwood forest zone consists of a mix of hardwood trees and shrubs. These forested areas appear to be at least 50 to 60 years of age based on the tree sizes observed within these areas. Typical vegetation consisted of white oak, red oak (*Quercus rubra*), black oak (*Quercus velutina*), sugar maple (*Acer saccharum*), Eastern hophornbeam (*Ostrya virginiana*), shagbark hickory (*Carya ovata*), American beech (*Fagus grandifolia*), black cherry (*Prunus serotina*), lowbush blueberry (*Vaccinium angustifolium*), witchhazel (*Hamamelis virginiana*), winged euonymus (*Euonymus alatus*), Japanese barberry (*Berberis thunbergii*); and various sedges, grasses, and mosses.

The railroad vegetation zone is located along the eastern portion of the property and consists of a narrow swath ranging between 20 to 30 feet in width. Here the plants consist of eastern red cedar, red oak, black oak, big toothed aspen, quaking aspen, autumn olive, multiflora rose, and wormwood.

The xeric scrub shrub zone is the largest vegetation community on site. This vegetation zone consists of shrubby vegetation that ranges in height from 6 to 12 feet. Some herbaceous vegetation is capable of surviving in areas where sunlight can penetrate to the ground. The dominant vegetation in this community included grey birch, black cherry, quaking aspen, sassafras, eastern red cedar, autumn olive, and multiflora rose.

The xeric meadow zone is found along the central portion of the site and is dominated by open barren sandy areas and densely vegetated herbaceous zones. Some shrubs are intermixed amongst the herbaceous vegetation, but are in limited density and height. Plants observed within this zone included sweetfern, little blue stem, wormwood, evening primrose, common mullen, round headed bush clover, and a variety of other grasses.

The limits of the project and the project clearing limits are shown on the General Arrangement and Clearing Plan provided in Appendix B. Development of the energy park on this parcel is not likely to significantly impact the natural resources as efforts will be employed to control influence of nearby water resources and to reduce the overall amount of disturbance of the site during construction. Direct impacts to vegetation and wildlife are expected to be minimal given past activities and the open nature of the site. A majority of the existing scrub shrub habitats found around the periphery of the site will remain for use by the brown thrasher, a species of special concern in Connecticut. Additional shrub and tree plantings are proposed along the southern and eastern limits of the site. The project will implement several important protection plans and management measures to help protect state-listed special concern species.

To address the elements of a D&M Plan as found in RCSA section 16-50j-61(c)(1), BFEP has no plans to salvage marketable timber as no such timber is present at the project site. The only relatively large trees being removed are at the site access road where it intersects Lopus Road. The bulk of the area being developed is either exposed sand from dirt bike tracks, grass, small pine or cedars, or invasive autumn olives.

4.0 NOTICES AND REPORTS

BFEP shall provide this D&M Plan to the CSC for review and approval. It is anticipated that the CSC will review and/or comment on the Plan prior to its approval. Except as otherwise authorized by CSC, no clearing or construction shall begin prior to approval of applicable sections of the D&M Plan by the CSC.

4.1 Staging and Material Laydown Areas

BFEP will provide the CSC with written notice of the location and size of all areas to be accessed or used for site testing or staging areas. If such an area is to be used prior to approval of the D&M Plan, the CSC may approve such use on terms as it deems appropriate.

4.2 Notices to the Council

The following summary of notices to the CSCS have been extracted from RCSA 16-50j-62 as well as the CSC's January 7, 2016 Decision and Order. The notices have been listed in sequential order from those anticipated to be issued first to last.

- a) Within 45 days after completion of all construction, the CSC shall be notified in writing that construction has been completed.
- b) Any request for extension of the time period referred to in Condition 3 of the January 7, 2016 Decision and Order shall be filed with the CSC not later than 60 days prior to the expiration date of said time period and shall be served on all parties and intervenors, as listed in the service list, and the Town of Beacon Falls. Any such request for extension shall state the reason(s) for which an extension is being sought.
- c) Consistent with the requirements of RCSA Section 16-50j-62 the certificate holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation.
- d) The Petitioner, or its successor, shall provide the CSC with not less than 30 days written notice when the facility will cease operations.
- e) If the facility owner/operator is a wholly owned subsidiary of a corporation or other entity and is sold/ transferred to another corporation or other entity, the CSC shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the facility within 30 days of the sale and/or transfer.
- f) In addition to the above notices BFEP shall provide site-specific information as the CSC may require.

4.3 Notice of Beginning

BFEP will provide the CSC, a minimum of two weeks advance written notice of the beginning of;

- a. Clearing and access work in each successive portion of the site, and
- b. Facility construction in that same portion.

4.4 Notices of Changes

BFEP will provide the CSC with advance written notice whenever a significant change of the approved D&M Plan is necessary. If advance written notice is impractical, verbal notice shall be provided to the Council immediately and shall be followed by written notice not later than 48 hours after the verbal notice. Significant changes to the approved D&M Plan shall include, but are not limited to, the following:

- a. The location of a wetland or watercourse crossing;
- b. The location of an access way or a structure in a regulated wetland or watercourse area;
- c. The construction or placement of any temporary structures or equipment;
- d. A change in structure type or location including, but not limited to, towers, guy wires, associated equipment or other facility structures; and
- e. Utilization of additional mitigation measures, or elimination of mitigation measures.

In addition to the above changes, BFEP will amend this D&M Plan to address CSC-ordered changes including, but not limited to, vegetative screening, paint color, or fence design at any time during or after preparation of the plan.

4.5 Notice of Completion

The certificate holder, or facility owner or operator, shall provide the CSC with written notice of completion of construction and site rehabilitation. In addition, a final report shall be prepared as indicated in Section 4.9 below and provided to the CSC not later than 180 days after completion of all site construction and site rehabilitation.

4.6 Notice to Municipalities

Any request for extension of the time period referred to in Condition 3 of the January 7, 2016 Decision and Order shall be filed with the CSC not later than 60 days prior to the expiration date of said time period and shall be served on all parties and intervenors, as listed in the service list, and the Town of Beacon Falls. Any such request for extension shall state the reason(s) for which an extension is being sought.

4.7 Notice to Landowners

A copy, or notice of the filing, of the D&M Plan, or a copy, or notice of the filing of any changes to the D&M Plan, or any section thereof, shall be provided to the service list and the property owner of record, if applicable, at the same time the plan, or any section thereof, or at the same time any changes to the D&M Plan, or any section thereof, is submitted to the CSC.

4.8 Monthly Reports

BFEP will provide the CSC with a quarterly construction progress report, or a construction progress report of a different time interval determined by the CSC, indicating changes and deviations from the approved D&M Plan.

4.9 Final Report

Consistent with the requirements of RCSA section 16-50j-62 the certificate holder, or facility owner or operator, shall provide the CSC with a final report for the facility not later than 180 days after completion of all site construction and site rehabilitation. This final report shall identify:

- 1) All agreements with abutters or other property owners regarding special maintenance precautions;
- 2) Significant changes of the D&M Plan that were required because of the property rights of underlying and adjoining owners or for other reasons;
- 3) The location of construction materials which have been left in place including, but not limited to, culverts, erosion control structures along watercourses and steep slopes, and corduroy roads in regulated wetlands;
- 4) The location of areas where special planting and reseeding have been done; and
- 5) The actual construction cost of the facility, including, but not limited to, the following costs:
 - a. Clearing and access;
 - b. Construction of the facility and associated equipment;
 - c. Rehabilitation; and
 - d. Property acquisition for the site or access to the site.

5.0 ADDITIONAL ELEMENTS PER COUNCIL ORDER

5.1 Reduction in Paved Surfaces

Condition 1(c) of the CSC Decision and Order of January 7, 2016 requires the following:

“Reduction in the amount of paved surfaces within the fuel cell compound, if feasible;”

The project includes pavement for access roadways and in areas around fuel cells. Pavement is necessary for a perimeter roadway for fire truck and emergency equipment access to the facility. Additionally, pavement is required to support the periodic use of heavy equipment as part of routine maintenance procedures including periodic fuel cell restacking. As such, the project requires most surfaces inside the fence to be paved. However, reduction in the amount of paved surfaces may be accomplished during final design in select portions of the project such as on the backside of the water storage tank. Reduction in paved surfaces will be evaluated during the detailed design phase of the project.

5.2 Access Drive on Lopus Road

Condition 1(d) of the CSC Decision and Order of January 7, 2016 requires the following:

“Provisions for improving safety at the access drive entrance on Lopus Road”

The site will be accessed by a proposed driveway to be located at Lopus Road as indicated on Drawing LR-1 (December 22, 2015) provided in Appendix B. A traffic evaluation was conducted in late 2015 where motorist visibility was reviewed upon egress from the site. With some regrading of the land on the northwest side of Lopus Road opposite the site, the Intersection Sight Distances (ISDs) looking left and right for motorists exiting the site will be 280 feet and 300 feet respectively. These distances meet Connecticut Department of Transportation (ConnDOT) guidelines for non-heavy trucks and the posted speed limit. This approach will maximize the ISD's given the grading of the site and the curvature of Lopus Road, both of which limit the driveway access. It is noted that motorists on Lopus Road approaching from the north will be approaching on an uphill segment and motorists approaching from the west will be approaching from a stop-sign controlled approach at the intersection of Gruber Road. Stopping sight distances for vehicles travelling on Lopus Road in this area will be available based on the guidelines for speeds greater than the posted speed limit. As indicated in the drawing provided in Appendix B, new advisory signage is proposed: chevron curvature warning signs, downhill grade warning and a “Trucks Entering From Right – 300 Feet” ahead warning sign. Additionally, a new metal beam guiderail is proposed along the Lopus Road curve.

Construction of the energy plant is anticipated to take place for approximately three years. During this time construction related traffic can be readily accommodated on the surrounding roadways. Following construction of the energy plant, there will be very few employee trips to operate and maintain the facility on a day-to-day basis.

5.3 Sound Mitigation Barrier

Condition 1(e) of the CSC Decision and Order of January 7, 2016 requires the following:

“An analysis of the proper placement of the sound mitigation barrier to reduce noise from the fuel cell facility and to reduce the potential for highway sound reflection to the Gruber Road neighborhood;”

TRC Environmental Corporation (“TRC”) conducted a technical noise assessment of the BFEP Project. The noise assessment consisted of two parts: an ambient noise monitoring program in the vicinity of the Project in order to characterize the existing noise environment; and a detailed noise modeling study/impact evaluation of the proposed Project. As shown on the MMI and PCI general arrangement drawings, the precise location of the timber sound wall is dictated by the location of existing trees. Drawing MDS-21, Miscellaneous Details, provides information on the construction of the sound barrier. While the precise orientation and height of the sound wall will be determined during final design, TRC evaluated the barrier as a reflective surface (as if it were sheet steel). The barrier reflection would increase Route 8 traffic noise levels along Gruber Road by less than one decibel, which is insignificant/imperceptible. A copy of the most recent (November 2016) Noise Assessment Report is provided as Appendix F.

5.4 Excavation and Characterization of Soils in Former Disposal Area

Condition 1(f) of the CSC Decision and Order of January 7, 2016 requires the following:

“Provisions for the excavation and characterization of soils within the former disposal area on the property, as identified in the Phase 1 Environmental Site Assessment report dated August 5, 2015;”

The August 5, 2015 Phase I Environmental Site Assessment (ESA) completed by Catalyst Environmental Consulting of Simsbury Connecticut indicated the presence of an on-site disposal area. Two photographs (#6 and #7) provided in the August 5, 2015 Phase I ESA shown a discarded flattened drum and scrap metal and location of a depression in the northeastern corner of the property. This area is described as follows:

Section 2.1 Site Description

"A shallow depression was noted at the site's northeastern most portion; it appears to straddle the northeast property line. The northern side of the depression appeared to have a stone foundation-like wall approximately 3 ft. high (Photograph 6). An empty, rusted drum and scrap metal were observed protruding from the ground in the vicinity of the depression (Photograph 7)."

Additional information on this area along with a recommendation for action from the Phase I ESA is provided below.

Section 6.1 On-Site Sources

"Current Presence of On-site Disposal: Sand and gravel pits are often used as improper or unauthorized disposal areas; only one such area was observed at the site. The small area straddles the northeast property line, and includes a discarded, empty rusted 55-gallon drum and scrap metal in the vicinity of a small topographical depression at the site's northeastern corner."

Section 8.0 Conclusions/Recommendations

"Excavation of the disposal area at the northeast corner of the site should be conducted to determine the extent and degree. If visual and/or olfactory evidence of contamination is encountered, soil samples should be collected and analyzed."

A drawing that illustrates the depression is provided in Appendix B. As noted, this area is approximately 50 feet by 20 to 30 feet in size. The following actions are recommended to assess the nature of the scrap metal observed in this area.

1. Conduct a program of test pitting to determine the extent of metal debris and presence/absence of impacted soil within and at the edges of the depressed area. Test pits shall be completed vertically to determine the depth of scrap metal and/or fill material to a maximum depth limited by test pitting equipment. However, existing information indicates scrap metal disposal may be surficial in nature; if this is observed during test pitting activities the vertical limits of test pitting shall be five to six feet below ground surface. Test pits shall also be completed horizontally to define the limits of any fill/waste materials present in the depressed area. It is anticipated that a one day program of test pitting would be required.
2. A qualified geologist or scientist shall document the soil characteristics on test pit logs at each location. Documentation will include; soil type, visual staining or odor, and presence and nature of non-native fill. In addition soil and/or fill within each test pit shall be screened for the presence of volatile organic compounds (VOCs) using a flame/photo ionization detector.

3. Test pits logs will be completed at each location and one soil sample shall be collected from each test pit location where evidence of contamination (e.g., discoloration, odor, elevated field instrumentation readings) is encountered. Based on the undermined nature of the scrap metal and/or fill within the depressed area a program of analysis for extractable petroleum hydrocarbons (ETPH) and polychlorinated biphenyls (PCBs) shall be completed for each impacted soil sample. Any test pits that indicate elevated PID/FID readings will be subject to additional analysis for VOCs. These additional samples will be collected using EPA 5035 methodologies and analyzed by EPA Method 8260. Analytical results shall be compared to relevant Connecticut Remediation Standard (RSR) criteria with recommendations for excavation and off-site disposal of solid waste/scrap metal and excavation and off-site management of any soil that exceeds relevant RSR criteria.

5.5 Eastern Hognose Snake Protection Program

Condition 1(g) of the CSC Decision and Order of January 7, 2016 requires the following:

“Provisions for a Eastern Hognose Snake Protection Program that includes Department of Energy and Environmental Protection recommended construction practices;”

A December 2014 Natural Diversity Database (NDDDB) review identified the site as having the potential for the listed special concern species, the eastern hognose snake to be present. As part of the Environmental Assessment report, completed on July 30, 2015, a reptile survey was conducted by ecologists in July 2015. In response to the Environmental Assessment, the CSC received a letter from the CTDEEP dated November 4, 2015 regarding the Beacon Falls Energy Park project (Petition No. 1184). One of the comments pertained to NDDDB listed species and asked whether additional field surveys had been conducted on site to determine the habitat and/or presence of several flora and fauna species. Per the CTDEEP comment letter, the following language has been added to the Beacon Falls Snake Management Plan, and is reflected in the summary below.

“Any hognose snake found must be moved or allowed to move to a safe area off the project site. As a protected species, it cannot be killed. Though not poisonous or dangerous, the snake should be handled only by a trained biologist.”

The survey indicated that no eastern hognose snakes were found during multi-day field surveys. In fact, no snakes of any kind were observed on site. Although no eastern hognose snakes were found, the generation site does have habitat that can support the eastern hognose snake. The following management plan has been developed to help protect these species during construction of the energy park. Silt fence will be installed as shown on the plans to form a barrier along the potential habitat. These silt fences will help limit the potential for snakes to enter the project site.

However, if said species are observed within the project area, the contractor is responsible for following the snake management plan as follows:

- Conduct a sweep of the project area by a qualified wildlife biologist prior to installation of silt fence.
- Install silt fencing around the work area prior to the start of any construction.
- Conduct a second sweep of the project area by a qualified wildlife biologist prior to construction.
- The contractor will be informed of the potential presence of eastern hognose snakes within the project site and will be furnished with a description of the snake for proper identification purposes. This will be accomplished by inclusion of the necessary information in the contract documents, including notations on the plans and a Notice to Contractor and/or special provisions as appropriate.
- Carefully remove any eastern hognose snake discovered inside the project area and relocate unharmed to an area immediately outside of the silt fence and in the same direction it was slithering. Any hognose snake found must be moved or allowed to move to a safe area off the project site. As a protected species, it cannot be killed. Though not poisonous or dangerous, the snake should be handled only by a trained biologist
- Restrict machinery and heavy vehicles from being parked or operated in hognose snake habitat. Confine parking for construction equipment within the limits bound by silt fence.
- Work conducted during the early morning and evening hours should occur with special care not to harm basking or foraging individuals.
- Silt fence should be removed once construction is complete and soils have been stabilized to avoid restricting wildlife movement.

In response to the NDDB Final Determination No.: 201609163, the CTDEEP concurs with the above referenced recommendation regarding the hognose snakes. More specifically an August 8, 2016 letter from CTDEEP (See Appendix G) indicates the following:

"I concur with your recommendation regarding the hognose snake. Thank you for including the protection strategies and best management protocols that will be in place to protect the hognose snake from project impacts. If these protection strategies are followed then the proposed activities will unlikely have an adverse impact on this species. This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by August 4, 2018."

A copy of the NDDB request package and Field Habitat Assessment Report and resumes of biologists whom preformed the necessary surveys for this project are provided as Appendix G.

5.6 Field Habitat Assessment Report

Condition 1(h) of the CSC Decision and Order of January 7, 2016 requires the following:

“Submission of correspondence from the Department of Energy and Environmental Protection, if applicable, regarding final comment on the Field Habitat Assessment Report dated August 5, 2015;”

A copy of the August 5, 2015 Field Habitat Assessment Report is provided within the NDDB application request in Appendix G. In response to the NDDB and attached Field Habitat Assessment Report the CTDEEP provided the following comments by letter dated August 4, 2016.

“I have re-reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Construction of a 63.3 MW Fuel Cell Energy Facility at Beacon falls Energy Park on Lopus Road in Beacon Falls, Connecticut. Our NDDB Preliminary Assessment # 201503256 had identified several state-listed species that were known to occur in this area of Beacon Falls. Thank you for including the Field Habitat Assessment Report for the site and resumes of biologists whom preformed the necessary surveys for this project. The field habitat survey targeted Virginia waterleaf, Hooker’s orchid, downy wood mint, brown thrasher and eastern hognose snake. The report indicated that although one brown thrasher was observed on site there was no evidence of nesting and no nest site was discovered. No further mitigation is needed for this species with respect to the project. Although none of the state-listed plants were found on site the report noted that a snake management plan should be implemented during the construction portion of this project. I concur with your recommendation regarding the hognose snake. Thank you for including the protection strategies and best management protocols that will be in place to protect the hognose snake from project impacts. If these protection strategies are followed then the proposed activities will unlikely have an adverse impact on this species. This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by August 4, 2018.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection’s Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to

identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.”

5.7 Construction Work Hours

Condition 1(i) of the CSC Decision and Order of January 7, 2016 requires the following:

“Construction work hours”

As indicated in Section 3.3 above, construction work hours shall be Monday through Friday from 7 AM to 5 PM. During Start-Up and Commissioning there may be minor activities on nights and weekends until Start-Up is complete.

5.8 Air Permitting

Condition 1(j) of the CSC Decision and Order of January 7, 2016 requires the following:

“Submission of relevant portions of the Title V and New Source Review air permit applications that include a detailed analysis of alternative technologies, operational methods and/or fuels that can be employed at the facility to reduce greenhouse gas emissions to the greatest practical extent;”

A New Source Review (NSR) permit application was submitted to CTDEEP on January 27, 2016 following the required public notice in the Waterbury Republican-American newspaper on January 23, 2016. A Title V permit application will be prepared and submitted to CTDEEP in the near future to address greenhouse gas (GHG) emissions.

A portion of the NSR permit application included a Best Available Control Technology (BACT) analysis which was provided as Attachment G to the NSR application and which is provided as Appendix H to this D&M Plan for reference. The following summarizes the identified control technologies and options that were evaluated for the project.

BACT Option	Comments/Rationale
Thermally efficient equipment	Thermal efficiency is inherent to the process
Clean Fuels	The fuel cells will use natural gas, which has the lowest carbon content of any fuel
Good practices	Fuel cells will be operated in accordance with manufacturer’s specifications and best practices.

As of the date of the publication (September 2016), a draft NSR permit (Permit No. 006-0009) is currently under preparation by the CTDEEP. It is anticipated CTDEEP will make an internal

tentative determination in the near future. The 30-day public comment period commences on the date the Department's tentative determination to issue the permit is published by the CTDEEP in a newspaper in general circulation in the Beacon Falls area.

5.9 Infrastructure Decommissioning Plan

Condition 1(k) of the CSC Decision and Order of January 7, 2016 requires the following:

“A facility and associated infrastructure decommissioning plan.”

A facility and infrastructure decommissioning plan is currently under development and, upon completion, will be provided as Appendix I to this document.

6.0 **PROJECT SCHEDULE**

Major elements of the project schedule are summarized in the table below. A more detailed schedule is provided as Appendix J.

ID	Description	Early Start	Early Finish
200	Start Permitting	February 15, 2015	
054	Detailed Design	November 1, 2016	April 28, 2017
202	Start Construction	November 1, 2016	
210	Electrical Interconnection		March 2, 2018
060 to 063	Fuel Cell Delivery Phase I to Phase IV	December 1, 2017	May 6, 2019
212	Substantial Completion		September 23, 2019
214	Commissioning (FCM Obligation)		April 1, 2020
204	In-Service Date (FCM Obligation)	April 1, 2020	
206	Initial Sync	March 5, 2018	
208	Commercial Operation (FCM Obligation)	May 1, 2020	

Figures

Appendix A

CSC January 7, 2016 Decision and Order
Petition No. 1184

Appendix B

Plan Drawings

Property/Topographic Survey, April 16, 2015 (3 sheets)
C-300 Overall Site Plan – General Arrangement, August 5, 2016 (1 sheet)
C-301 Enlarged Site Plan, April 22, 2015 (1 sheet)
C-303 Grading GA, April 22, 2015 (1 sheet)
C-501 Fencing Details, April 22, 2015 (1 sheet)
S-100, Structural Notes, April 6, 2015 (1 sheet)
E-112 Switchyard General Arrangement, May 22, 2015, (1 sheet)
General Arrangement and Clearing Plan, July 29, 2016 (1 sheet)
Drawing LR-1, December 22, 2015 (1 sheet)
Drawing CL, August 16, 2016 (1 sheet)
Drawings LA-1 to LA-3, June 10, 2015 (3 sheets)
Drawing SE, October 7, 2016 (1 sheet)
Drawing EX 1, July 14, 2015 (1 sheet)
Property Abutters Map, June 10, 2015 (1 sheet)
Drawings SD-1 to SD-3, October 7, 2016 (3 sheets)
Disposal Area Exploration Plan, September 7, 2016 (1 sheet)
Water Supply Plan, June 15, 2015 (1 sheet)
E-133 Electrical Site Lighting and Security Camera Plan, July 9, 2015 (1 sheet)
Drawings GU-1 to GU-3, October 7, 2016 (3 sheets)
Drawing MDS-21, January 31, 2010 (1 sheet)

Appendix C

June 18, 2015 SHPO Response Letter

Appendix D

July 23, 2015 Inland Wetland and
Watercourse Impact Assessment

Appendix E

Contractor Contact Information

Appendix F

November 2016 Noise Assessment Report

Appendix G

NDDB Final Determination No.: 201609163 with the
Field Habitat Assessment Report

Appendix H

Analysis of Best Available Control Technology
(DEEP-NSR-APP-214a)

Appendix I

Infrastructure Decommissioning Plan (to be provided upon completion)

Appendix J

Project Schedule



Beacon Falls Energy Park Noise Assessment Report

Prepared for
Beacon Falls Energy, LLC

Prepared by
TRC Environmental Corporation
41 Spring Street
New Providence, NJ 07974

January 2016
Revised November 2016

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 Introduction.....	1-1
2.0 General Information on Noise	2-1
3.0 Applicable Standards/Guidelines.....	3-1
3.1 State of Connecticut	3-1
3.2 Town of Beacon Falls	3-2
3.3 Ability to Perceive Changes in Noise and Noise Impact Potential	3-2
4.0 Existing Conditions.....	4-1
4.1 Ambient Monitoring.....	4-1
4.1.1 Continuous Noise Monitoring.....	4-3
4.1.2 Ambient Short-Term Measurements.....	4-6
5.0 Noise Modeling.....	5-1
5.1 Methodology	5-1
5.2 Noise Modeling Results and Compliance with Noise Standards.....	5-3
5.3 Projected Increase Over Existing Ambient Levels	5-5
5.4 Discrete Tone Noises	5-6
5.5 Route 8 Traffic Noise Reflection	5-6
6.0 References.....	6-1

LIST OF TABLES

<u>Table No.</u>	<u>Page</u>
Table 1: Prominent Discrete Tone Determination	3-2
Table 2: Summary of Hourly Background Measured Noise Levels (dBA).....	4-4
Table 3: Measured Ambient Noise Level Data (dBA).....	4-6
Table 4: Noise Modeling Results (dBA).....	5-3
Table 5 Noise Modeling Results Compared to Existing Ambient Noise Levels (dBA).....	5-5

LIST OF FIGURES

<u>Figure No.</u>	<u>Page</u>
Figure 1: Site Area Map and Noise Monitoring Locations.....	4-2
Figure 2: Continuous Ambient Noise Monitoring	4-5
Figure 3: Noise Contour Map	5-4

1.0 INTRODUCTION

TRC Environmental Corporation (“TRC”) conducted a technical noise assessment of the proposed Beacon Falls Energy Park (the “Project”) that would be located at a former sand and gravel mine owned by O&G Industries. The Project will include 15 DFC3000 Fuel Cell Energy modules, 5 HEFC Fuel Cell Energy modules and one Ormat heat recovery system. The total Project output potential is approximately 63 MW. The property is bordered by residential uses to the west, north and northeast. Commercial and industrial land uses are located to the east and south of the site.

The noise assessment consisted of two parts: an ambient noise monitoring program in the vicinity of the Project in order to characterize the existing noise environment; and a detailed noise modeling study/impact evaluation of the proposed Project. The background ambient noise monitoring program was conducted on July 21-22, 2015. Modeled Project noise levels were compared against the State of Connecticut Noise Standard and the Town of Beacon Falls Noise Ordinance to determine compliance, and further evaluated against the existing minimum ambient noise levels. The results of the noise assessment are summarized in this report.

2.0 GENERAL INFORMATION ON NOISE

Noise is defined as unwanted sound. Excessive noise can cause annoyance and adverse health effects. Annoyance can include sleep disturbance and speech interference. It can also distract attention and make activities more difficult to perform (EPA, 1978).

The range of pressures that cause the vibrations that create noise is large. Noise is therefore measured on a logarithmic scale, expressed in decibels (dB). The frequency of a sound is the “pitch”. The unit for frequency is hertz (Hz), or cycles per second. Most sounds are composed of a composite of frequencies. The human ear can usually distinguish frequencies from 20 Hz (low frequency) to about 20,000 Hz (high frequency), although people are most sensitive to frequencies between 500 and 4000 Hz. The individual frequency bands can be combined into one overall dB level.

Noise is typically measured on the A-weighted scale (dBA). The A-weighting scale has been shown to provide a good correlation with the human response to sound and is the most widely used descriptor for community noise assessments (Harris, 1991). The faintest sound that can be heard by a healthy ear is about 0 dBA, while an uncomfortably loud sound is about 120 dBA. In order to provide a frame of reference, some common sound levels are listed below.

- | | |
|------------------------------------|---------------|
| • Pile Driver at 100 feet | 90 to 100 dBA |
| • Chainsaw at 30 feet | 90 dBA |
| • Truck at 100 feet | 85 dBA |
| • Noisy Urban Environment | 75 dBA |
| • Lawn Mower at 100 feet | 65 dBA |
| • Average Speech | 60 dBA |
| • Average Office | 50 dBA |
| • Rural Residential During the Day | 40 dBA |
| • Quiet Suburban nighttime | 35 dBA |
| • Soft Whisper at 15 feet | 30 dBA |

Common terms used in this noise analysis are defined below.

L_{eq} — The equivalent noise level over a specified period of time (i.e., 1-hour). It is a single value of sound that includes all of the varying sound energy in a given duration.

Statistical Sound Levels — The A-weighted sound level exceeded a certain percentage of the time. The *L₉₀* is the sound level exceeded 90 percent of the time and is often considered the background or residual noise level. The *L₁₀* is the sound level exceeded 10 percent of the time and is a measurement of intrusive sounds, such as aircraft overflight.

3.0 APPLICABLE STANDARDS/GUIDELINES

3.1 State of Connecticut

The State of Connecticut has a detailed noise standard which is applicable to the proposed Project (Section 22a-69 of the Connecticut Department of Energy & Environmental Protection portion of the Regulations of Connecticut State Agencies). The standard limits noise from a source, as measured at certain Noise Zones when emitted from other Noise Zones. These Zones include the following:

- Class A - Generally residential, hotels, hospitals and other sensitive areas.
- Class B - Commercial areas
- Class C - Industrial uses

It should be emphasized that the noise standards are expressed as noise attributable to a specific source at a receptor and that the total noise measured at a given location (i.e., source plus background) may be greater than that which is attributable to a specific source. The proposed facility is an industrial use in an industrially zoned area (Class C). The nearest noise sensitive areas are the residential uses on Gruber Road (Class A). As such, the applicable portion of the noise standard is a source located in a Class C area, and the measured noise level from that source at a Class A area. Summarized below are the noise limits for this scenario.

Class C source emitting to a Class A receiver

<u>Daytime</u>	<u>Nighttime</u>
61 dBA	51 dBA

Nighttime is defined in the standard as the hours between 10 p.m. to 7 a.m. A second limit is applicable to the nearest industrial property line, which is the State of Connecticut Department of Transportation Metro North Railroad line to the east of the proposed site. Facility noise at this location would be limited to 70 dBA at any hour of the day.

The allowable level is reduced by 5 dBA if the proposed source emits prominent discrete tones. Prominent discrete tones are defined in 22a-69 as acoustic energy which produces a one-third octave band sound pressure level greater than that of either adjacent one-third octave band and which exceeds the arithmetic average of the two adjacent one-third octave bands by the following amounts shown in Table 1.

<p align="center">Table 1 Prominent Discrete Tone Determination</p>			
One-Third Octave Band Center Frequency (Hz)	dB	One-Third Octave Band Center Frequency (Hz)	dB
100	16	1250	4
125	14	1600	4
160	12	2000	3
200	11	2500	3
250	9	3150	3
315	8	4000	3
400	7	5000	4
500	6	6300	4
630	6	8000	5
800	5	10000	6
1000	4		

For areas where the existing background noise levels (not including noise from the regulated source) already exceed the allowable limits, the regulated source would not be deemed to be causing excessive noise if the noise emitted by the regulated source is not greater than 5 dBA above background levels, with an absolute upper limit of 80 dBA.

3.2 Town of Beacon Falls

The Town of Beacon Falls has a noise ordinance called the Ordinance Regarding Noise. The ordinance contains the same numerical sound level limits applicable to the Project as the State of Connecticut noise standard. The ordinance also limits construction activities to the hours of 7 am to 8 pm weekdays and Saturdays. No construction activity is permitted on Sundays and legal holidays.

3.3 Ability to Perceive Changes in Noise and Noise Impact Potential

The ability of the average person to perceive increases in noise has been documented. In general, an increase of 3 dBA or less is considered to be barely perceptible, while an increase of 5 dBA is considered to be noticeable. A 10 dBA increase is perceived as a doubling of the sound.

The potential for noise impacts is also dependent on whether the increase occurs over an existing low level of sound or over an existing high level of sound. For example, the sound level in a library or a very quiet office is typically 30 dBA to 35 dBA. If that sound level were increased to 40 dBA to 45 dBA, it would be perceived as a doubling of the sound, but it would not be loud. On the other hand, the sound level 50 feet from a major freeway is typically 75 dBA to 80 dBA. Increasing that level by 10 dBA would also be perceived as a doubling of the sound, but would be more noticeable and would be much more of an impact because the sound level would be very high. This is further supported by noise impact criteria utilized by the Federal Transit Administration in their guidance document "Transit Noise and Vibration Impact Assessment" (FTA, 2006). Their guidance shows that no noise impact is expected when existing noise levels are low (less than 43 dBA), and increases of up to 10 dBA occur due to a new project.

4.0 EXISTING CONDITIONS

The land uses immediately bordering the site consist of a combination of residential, industrial, and commercial uses. The nearest residences are located to the west on Gruber Road, approximately 500 feet from the center of the proposed Project. Additional residential uses are located to the north on Lopus Road and to the northeast on Railroad Avenue. Commercial and industrial uses are located to the east and south.

4.1 Ambient Monitoring

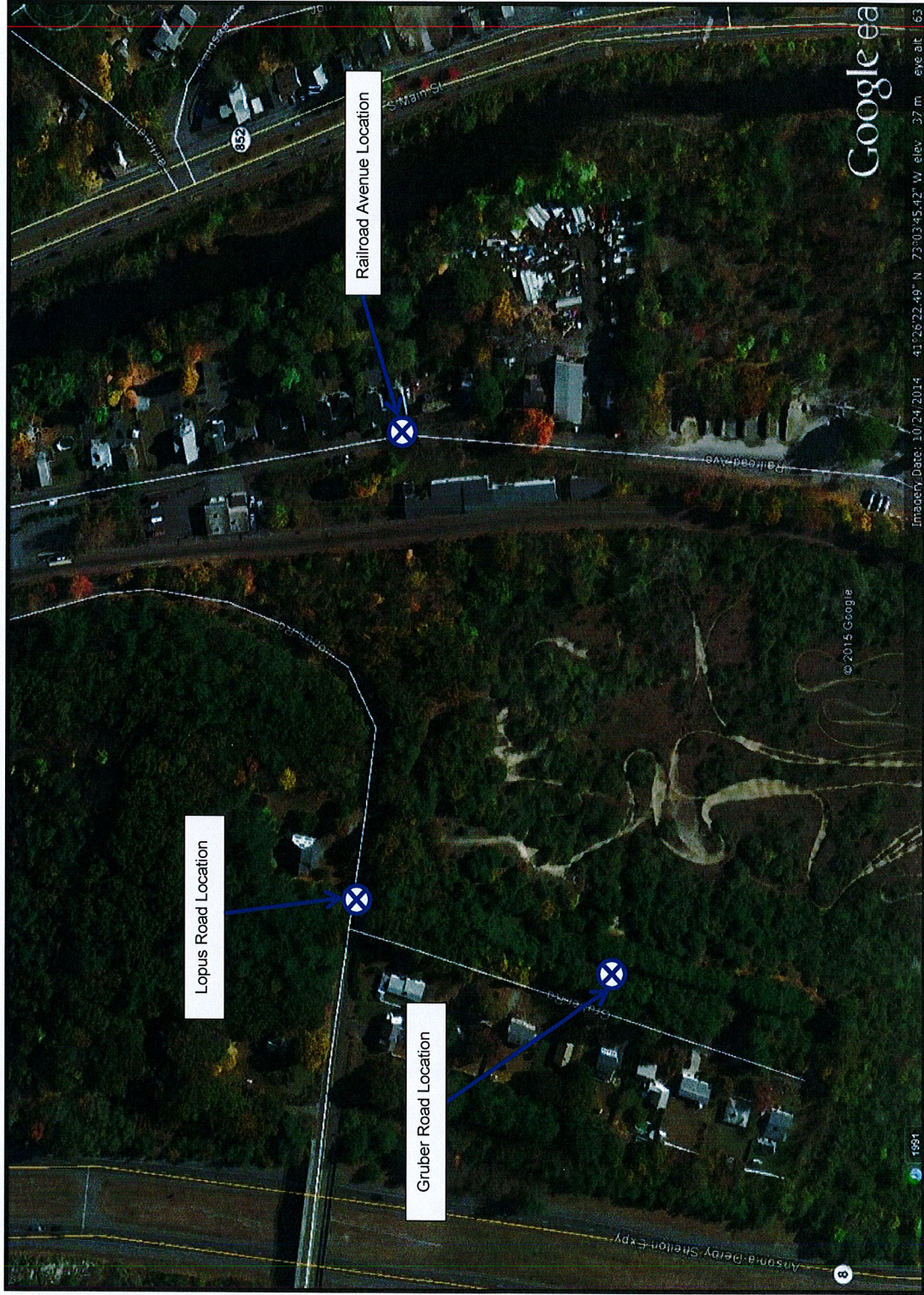
TRC conducted an ambient noise monitoring program for the proposed Project on July 21-22, 2015 at three residential areas bordering the site. The noise monitoring program was conducted in order to establish existing conditions in the area. A figure depicting the site area and the selected noise monitoring locations is provided as Figure 1.

Meteorological conditions during the noise measurement program included temperatures that ranged from 88 degrees F during the day to 62 degrees F at night. Winds were generally from the south and southwest, ranging from calm to about 3 miles per hour (mph). Somewhat stronger winds, ranging from 5 to 10 mph occurred during the daytime hours of July 22, 2015. A brief period of rain showers occurred at approximately 7 pm on July 21, 2015, lasting approximately 45 minutes. Roads were completely dry by 9:30 that evening.

The existing noise environment during daytime hours at the Gruber Road and Lopus Road locations is dominated by traffic noise from Route 8. Noise from passing cars and trucks on Lopus Road was also noted at the Lopus Road location. At the Railroad Avenue location, noise from passing cars and trucks was the dominant noise source, as well as traffic noise from Route 8. Other sounds that were noted during the day, to a much lesser degree, were natural sounds such as birds and rustling leaves.

At night, Route 8 traffic noise was the predominant source of noise at all locations. Additional sounds noted at night included a passing train, faint residential air conditioners, and some rustling leaves. Little to no insect noise was noted during either the daytime or nighttime hours.

Figure 1: Site Area Map and Noise Monitoring Locations



4.1.1 *Continuous Noise Monitoring*

A RION NL-31 integrating sound level meter was utilized for continuous monitoring at the Gruber Road location. The meter meets the requirements for ANSI S1.4-1983 Type 1 or better sound level meters. The meter microphone was fitted with a windscreen in order to reduce wind generated noise, and mounted on a small pole in the wooded area approximately 50 feet east of Gruber Road as shown on Figure 1. The meter was programmed to measure and store data in 1-minute increments during the period. The data summary from this monitoring program is presented graphically in Figure 2. The data set was further tabulated into hourly averages and is presented in Table 2.

The State of Connecticut noise standard considers the L_{90} sound level as the background sound level. A review of the plots in Figure 2 reveals that existing L_{90} noise levels at the Gruber Road location ranged from about 35 dBA at night, up to about 50 dBA during the day. L_{eq} levels, which include all of the sounds present, were higher, ranging from about 35 dBA to 55 dBA. Measured noise levels at night are more variable than during the day, due to periodic brief lulls in the ambient sound that occurs as Route 8 traffic noise varies depending on traffic volumes. Some brief periods of lower sound levels did occur as reflected in the one minute averages presented in Figure 2. The spike in sound levels from approximately 7 pm to 7:30 pm is due to the aforementioned rain showers that occurred.

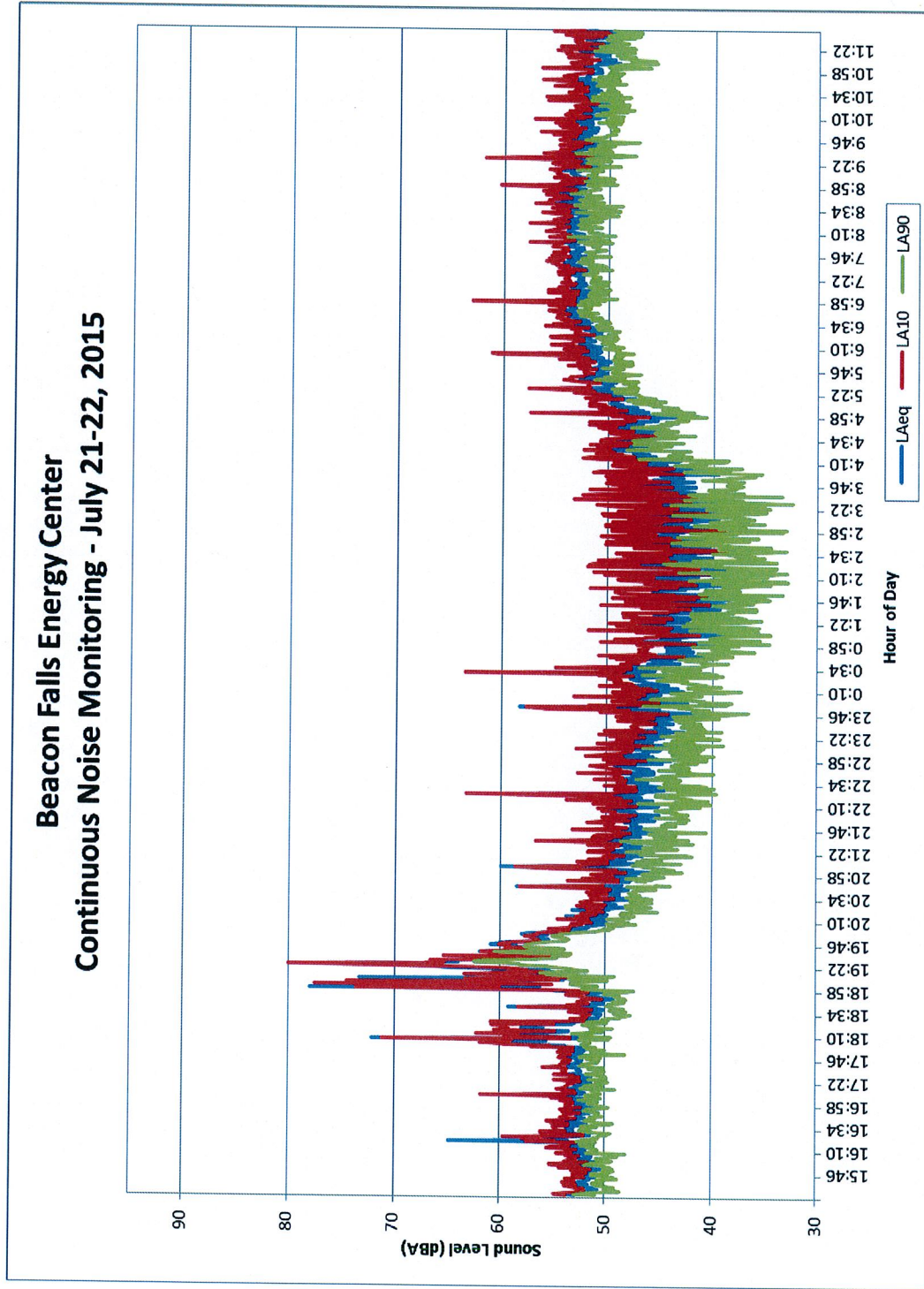
The tabulated hourly data (Table 2) reveals hourly L_{eq} noise levels ranging from about 44 dBA at night, up to about 54 dBA during the day. The higher L_{eq} levels that occurred at hours 2000 and 2100 were due to the rain showers, and are not typical sound levels for the area.

Table 2
Summary of Hourly Background Measured Noise Levels (dBA)

Date	Hour Ending	L _{eq}	L ₉₀	L ₁₀
July 21, 2015	16	52.2	50.6	53.4
	17	53.7	51.0	54.4
	18	52.8	51.0	54.2
	19	61.9 ⁽¹⁾	50.2 ⁽¹⁾	60.1 ⁽¹⁾
	20	64.6 ⁽¹⁾	56.0 ⁽¹⁾	66.5 ⁽¹⁾
	21	50.6	47.4	51.9
	22	49.1	45.0	50.9
	23	48.2	43.4	50.8
July 22, 2015	24	47.1	42.2	49.2
	1	47.1	41.9	50.3
	2	43.7	38.9	47.0
	3	43.8	39.0	47.3
	4	44.4	39.1	48.1
	5	47.1	44.2	49.4
	6	50.4	47.9	52.3
	7	52.9	50.8	54.9
	8	53.0	51.3	54.4
	9	53.5	51.6	55.0
	10	52.8	50.8	54.4
	11	51.9	49.8	53.6
	Maximum	53.7	51.6	55.0
	Minimum	43.7	38.9	47.0

(1) Rain showers occurred. These data are not utilized in the analysis because ambient levels are higher than would otherwise occur.

Figure 2: Continuous Ambient Noise Monitoring



4.1.2 Ambient Short-Term Measurements

Short-term monitoring (15 minutes in duration at each location) was conducted during the day and twice late at night during the monitoring program. This short-term monitoring was conducted with a RION NL-52 precision integrating sound level meter and octave band analyzer. The NL-52 meets ANSI S1.4-1983 requirements for precision Type 1 sound level meters. The microphone was fitted with a windscreen to reduce any wind generated noise and mounted at a height of approximately five feet above the ground. The instrument was configured to measure and store the L_{eq} , L_{90} , L_{10} , L_{max} and L_{min} one-third octave band levels. The meter was calibrated at the beginning and at the end of the measurement period with a Bruel & Kjaer model 4231 calibrator. Both the meter and calibrator had been certified traceable to NIST standards by a calibration laboratory within one year of the testing program.

A summary of the overall A-weighted L_{90} , L_{eq} and L_{10} data measured during the ambient program is presented in Table 3 below. The short-term data at the Gruber Road location correlates well with the minimum hourly sound levels from the continuous meter at the same location (Table 2)

Table 3 Measured Ambient Noise Level Data (dBA)						
Location	Daytime			Nighttime		
	L_{eq}	L_{10}	L_{90}	L_{eq}	L_{10}	L_{90}
Gruber Road	56.0	57.4	53.9	47.5	50.3	41.9
				46.5	49.8	40.2
Lopus Road	57.1	54.1	47.5	44.4	48.0	36.1
				44.2	48.0	35.3
Railroad Avenue	64.2	61.6	45.4	59.9	55.8	42.1
				37.9	41.1	35.7

The data presented in Tables 2 and 3 reveal that low ambient (L_{90}) noise levels currently exist during the late night hours, ranging from 35 dBA to 40 dBA at all locations. The measured L_{eq} levels, which include all sounds present, were higher, ranging from 38 dBA to 60 dBA. Higher ambient levels occurred during the day due to increased vehicular traffic on Route 8 and local roads, and other increased activity.

5.0 NOISE MODELING

5.1 Methodology

Computer noise modeling was conducted utilizing the CadnaA noise model (DataKustik, 2014). This very powerful 3-dimensional model maps the noise contours of the overall Project in accordance with a variety of standards, primarily VDI 2714 Outdoor Sound Propagation and ISO 9613 (ISO, 1996). The software is designed to take into account spreading losses, ground and atmospheric effects, shielding from terrain, barriers and buildings, and reflections from surfaces. These model capabilities are especially important in an area such as the Project site, as the effects of the local terrain can be accounted for. Site specific GIS topographic data, including the existing embankment west of Gruber Road, were obtained and incorporated into the model.

The Project consists of 20 fuel cells, which includes 15 DFC3000 fuel cells and 5 HEFC fuel cells. The HEFC fuel cells have slightly more components than the DFC3000 fuel cells. Each fuel cell has several noise generating components that include the following:

- DFC3000 or HEFC Module
- Fresh Air Blower
- Discharge Piping
- Air Heater
- Chiller
- Transformer

A single Ormat heat recovery system will also be included in the Project. The Ormat contains the following noise generating components:

- Air Cooled Condenser
- Turbine
- Generator
- Piping
- Feed Pumps

In addition, the Project will contain a switchyard with a main step-up transformer.

Sound level data for each fuel cell component and the Ormat were obtained directly from Fuel Cell Energy. Noise emission data for the main step up transformer were developed using standard NEMA sound ratings for the proposed transformer MVA rating (40/53/66 MVA).

The modeling considered hemispherical spreading and atmospheric absorption for this analysis. Standard conditions of 50° F and 70 percent relative humidity were assumed. The ground was set to partially absorptive. The existing tree cover near Gruber Road (but not for the entire area) was also included in the analysis..

Modeling receptors were chosen at specific residential locations near the Project site. As a further conservative measure, the model grid was set to calculate at a height of 10 feet above grade to account for the few two story residences in the area. An initial noise model was prepared, utilizing the standard design and noise emissions data for the fuel cells. The results of this model indicated that Project related sound levels would exceed the State of Connecticut and Town of Beacon Falls noise standard limits for nighttime hours at some residential locations.

The Project therefore opted for Fuel Cell Energy's low noise option design. This design includes enclosures for some fuel cell components, and a silencer on the fresh air blower. The model was revised to include the low noise data sources. In addition to selecting the low noise option, the Project also opted to install a sound barrier wall east of Gruber Road to further reduce sound levels in the Gruber Road neighborhood. Several potential locations and configurations for the sound barrier were explored, including at the base of the existing embankment. The optimum location for effectively reducing Project sound levels was chosen along the unwooded path approximately 50 to 100 feet east of Gruber Road. This location, which is slightly revised from the January 2016 wall location, would avoid tree removal for the wall. The sound barrier wall would be 12 feet high and extend approximately 900 feet from north to south. An approximate 200 foot portion of the wall where the existing terrain dips substantially would maintain a level height relative to the rest of the sound wall (i.e., the bottom of the wall would be extended down to the ground in this area).

5.2 Noise Modeling Results and Compliance with Noise Standards

The noise modeling results for each residential location, with the low noise design option and the proposed sound barrier wall included, are presented in Table 4. A noise contour map, depicting the modeled noise levels in the area surrounding the Project, is provided as Figure 3.

Table 4 Noise Modeling Results (dBA)		
Location	Modeled Project Sound Level	State of Connecticut and Town of Beacon Falls Nighttime Noise Standard
Gruber Road	45 to 46 ⁽¹⁾	51
Lopus Road	42	51
Railroad Avenue	43 to 44 ⁽¹⁾	51
(1) Modeled levels reflect the results at multiple residences on Gruber Road and Railroad Avenue		

Figure 3: Noise Contour Map



The data in Table 4 reveal that Project sound levels will be below 51 dBA at all residential locations. The Project is therefore projected to be in compliance with the State of Connecticut noise standard and the Town of Beacon Falls noise ordinance limits for nighttime hours.

5.3 Projected Increase Over Existing Ambient Levels

Table 5 provides the modeled sound levels for the Project with the low noise option and the proposed sound barrier wall, the existing minimum late night ambient (L₉₀) sound levels, and the subsequent increase in noise anticipated to occur with Project operation.

Table 5 Noise Modeling Results Compared to Existing Ambient Noise Levels (dBA)				
Location	Modeled Project Noise Level	Existing Minimum Measured Nighttime L₉₀ Level	Total Future Noise Level	Increase Over Existing Minimum Nighttime Level
Gruber Road	45 to 46	39 ⁽¹⁾	46 to 47	7 to 8
Lopus Road	42	35	43	8
Railroad Avenue	43 to 44	36	44 to 45	8 to 9
(1) Lowest measured ambient sound level from either the short-term measurements (Table 3) or the 24 hour continuous monitoring (Table 2).				

The existing ambient L₉₀ data presented in Table 5 above reflect the lowest sound level measured at each location. The L₉₀ is the sound level in the absence of extraneous sources (it is the lull in sound levels that is heard when intermittent traffic and other intermittent sources are not present). Because minimum ambient L₉₀ noise levels are so low at night, the data presented in Table 5 reveal that during the quietest hours, noise levels at the most proximate residential locations will increase by between 7 dBA and 9 dBA, even though the modeled Project related sound levels are below the nighttime noise level limits in the standards. As noted previously, a 10 dBA increase is perceived as a doubling of the sound level. As was also noted, however, a doubling of a low ambient level is less significant than a doubling of a high ambient level.

As noted above, the projected increases are for the quietest hours of the night. During other hours of the night and especially during the day, ambient levels are much higher (45 dBA or

more as shown in Table 3). During daytime hours, Project noise levels will be at or below ambient levels, with little to no increases to these higher ambient levels.

It is not practical and likely not possible to make the Project sources completely inaudible at all locations under all ambient conditions. The goal of a project such as this should be to minimize the potential for noise impacts to the extent practical.

5.4 Discrete Tone Noises

It was not possible to model the potential for prominent discrete tone noise, since this would require 1/3 octave band data, which were not available. Further, the CadnaA model is not designed to model 1/3 octave band data. Observations conducted at another fuel cell site with the standard design did not reveal the presence of any audible tonal sounds. It is expected that the Project low noise design features will act to further reduce the possibility of tonal sounds.

5.5 Route 8 Traffic Noise Reflection

The addition of the proposed 900 foot long sound barrier wall east of Gruber Street was further evaluated for the potential reflection of sound from Route 8 vehicular traffic, and any increases in noise that reflections could result in. The previously discussed noise model developed for the Project was modified to remove the Project sources and structures, but retain all of the topographic features. Two line sources were built into the model along the Route 8 northbound and southbound directions to simulate traffic noise emanating from the highway. The exact sound level generated by traffic noise was not critical as the goal was to assess the potential change in sound levels that would occur with the sound wall in place.

An initial model was run without the sound wall in place to obtain dBA levels at the same locations used in Project noise modeling. The proposed 12 foot tall sound wall was then built into the model and the model was re-run. To remain conservative, the wall was constructed as if it would have a highly reflective surface (e.g., such as sheet steel) when in fact, the wall material will be partially absorptive.

Modeling results reveal that a reflective sound wall would result in virtually no change in sound levels due to reflection of sound from Route 8 traffic off of the wall along Gruber Road. The maximum modeled increase was only 0.1 dBA. In fact, the sound wall would act to slightly reduce Route 8 traffic noise at locations on Railroad Avenue.

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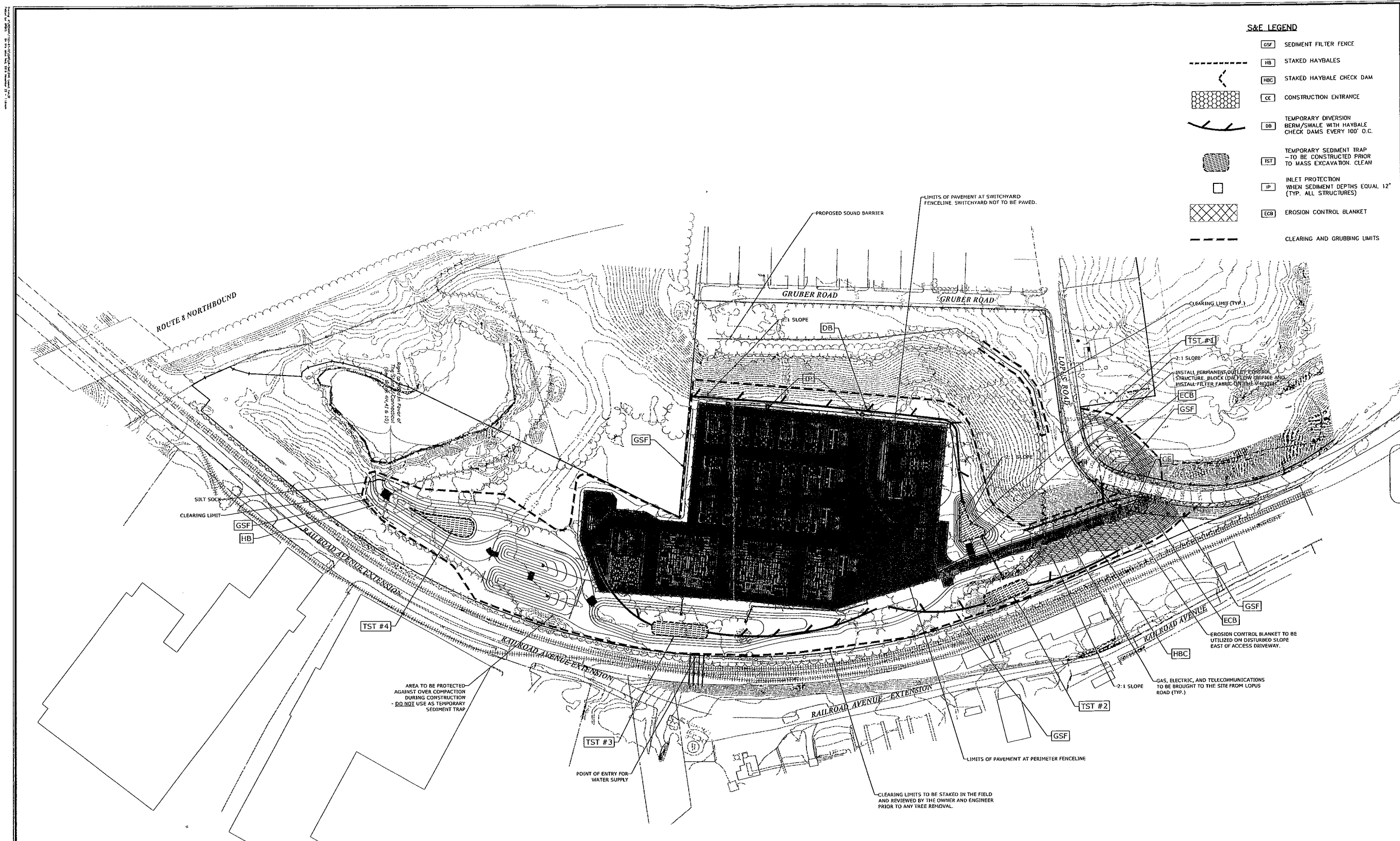
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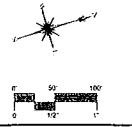
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S&F LEGEND

- GSF SEDIMENT FILTER FENCE
- HB STAKED HAYBALES
- HBC STAKED HAYBALE CHECK DAM
- CC CONSTRUCTION ENTRANCE
- DB TEMPORARY DIVERSION BERM/SWALE WITH HAYBALE CHECK DAMS EVERY 100' O.C.
- TST TEMPORARY SEDIMENT TRAP - TO BE CONSTRUCTED PRIOR TO MASS EXCAVATION. CLEAN
- IP INLET PROTECTION WHEN SEDIMENT DEPTHS EQUAL 12" (TYP. ALL STRUCTURES)
- ECB EROSION CONTROL BLANKET
- CLEARING AND GRUBBING LIMITS



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DESCRIPTION	DATE	BY
REVISIONS	10/27/2015	AGE
REVISIONS	11/18/2016	AGE
REVISIONS	11/23/2016	AGE

SEDIMENT AND EROSION CONTROL PLAN
BEACON FALLS ENERGY PARK

LOPUS ROAD
BEACON FALLS, CONNECTICUT

SRD	DJL	DJK
DESIGNED	DRAWN	CHECKED

1"=100'

DATE: OCTOBER 7, 2016

PROJECT NO: 1103-87

SE

SOIL EROSION AND SEDIMENT CONTROL NARRATIVE

SEDIMENT AND EROSION CONTROL MEASURES AS DEPICTED ON THESE PLANS AND DESCRIBED WITHIN THE SEDIMENT AND EROSION CONTROL NARRATIVE SHALL BE IMPLEMENTED AND MAINTAINED UNTIL PERMANENT COVER AND STABILIZATION IS ESTABLISHED. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL CONFORM TO THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, CONNECTICUT - 2002, TOWN OF BEACON FALLS, AND IN ALL CASES BEST MANAGEMENT PRACTICES SHALL PREVAIL.

- PURPOSE AND DESCRIPTION OF PROJECT
A) CONSTRUCTION OF FUEL CELLS AND ASSOCIATED SIREWORK.
B) ESTIMATED AREA OF DISTURBANCE: ±14.0 ACRES
- IDENTIFICATION OF EROSION AND SEDIMENT CONTROL CONCERNS
A) CUTS AND FILLS ASSOCIATED WITH ROADWAY AND FLAT PAD CONSTRUCTION.
B) PROTECTION OF ON-SITE AND OFF-SITE WETLANDS AND STORM DRAINAGE.
C) PROTECTION OF SOILS IN BASIN AREAS TO BE USED FOR INFILTRATION.

TEMPORARY SEDIMENT TRAP SIZING SUMMARY				
TRAP NO.	ACRES	VOLUME STORAGE REQUIRED	DEPTH STORAGE REQUIRED	LENGTH X WIDTH
#1	4.8	645 CY	2.5 FT	100 FT X 25 FT
#2	4.8	645 CY	2.5 FT	100 FT X 25 FT
#3	5.0	670 CY	2.5 FT	125 FT X 25 FT
#4	4.8	645 CY	2.5 FT	100 FT X 25 FT

*134 CY STORAGE VOLUME REQUIRED PER ACRE CONTRIBUTING AREA TO TST
*VOLUME OF STORAGE DISPLAYED EQUAL TO WET STORAGE VOLUME.

SEDIMENT & EROSION CONTROL SPECIFICATIONS

GENERAL:

THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND/OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION, AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT.

IN GENERAL, ALL CONSTRUCTION ACTIVITIES SHALL PROCEED IN SUCH A MANNER SO AS NOT TO POLLUTE ANY WETLANDS, WATERCOURSE, WATERBODY, AND CONDUIT CARRYING WATER, ETC. THE CONTRACTOR SHALL LIMIT, INsofar AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES, AND WATERBODIES, AND TO PREVENT, INsofar AS POSSIBLE, EROSION ON THE SITE.

LAND GRADING

GENERAL:

1. THE RESHAPING OF THE GROUND SURFACE BY EXCAVATION AND FILLING OR A COMBINATION OF BOTH, TO OBTAIN PLANNED GRADES, SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING CRITERIA:

- a. THE CUT FACE OF EARTH EXCAVATION SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).
- b. THE PERMANENT EXPOSED FACE OF FILLS SHALL NOT BE STEEPER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).
- c. THE CUT FACE OF ROCK EXCAVATION SHALL NOT BE STEEPER THAN ONE HORIZONTAL TO FOUR VERTICAL (1:4).
- d. PROVISION SHALL BE MADE TO CONDUIT SURFACE WATER SAFELY TO STORM DRAINS TO PREVENT SURFACE RUNOFF FROM DAMAGING CUT FACES AND FILL SLOPES.
- e. EXCAVATIONS SHOULD NOT BE MADE SO CLOSE TO PROPERTY LINES AS TO ENDANGER ADJOINING PROPERTY WITHOUT PROTECTING SUCH PROPERTY FROM EROSION, SLIDING, SETTLING, OR CRACKING.
- f. NO FILL SHALL BE PLACED WHERE IT WILL SLIDE OR WASH UPON THE PREMISES OF ANOTHER OWNER OR UPON ADJACENT WETLANDS, WATERCOURSES, OR WATERBODIES.
- g. PRIOR TO ANY REGRADING, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PLACED AT THE ENTRANCE TO THE WORK AREA IN ORDER TO REDUCE MUD AND OTHER SEDIMENTS FROM LEAVING THE SITE.

TOPSOILING

GENERAL:

1. TOPSOIL SHALL BE SPREAD OVER ALL EXPOSED AREAS IN ORDER TO PROVIDE A SOIL MEDIUM HAVING FAVORABLE CHARACTERISTICS FOR THE ESTABLISHMENT, GROWTH, AND MAINTENANCE OF VEGETATION.
2. UPON ATTAINING FINAL SUBGRADES, SCARIFY SURFACE TO PROVIDE A GOOD BOND WITH TOPSOIL.
3. REMOVE ALL LARGE STONES, TREE LIMBS, ROOTS AND CONSTRUCTION DEBRIS.
4. APPLY SOIL AMENDMENTS AS FOLLOWS:
LIME: ACCORDING TO SOIL TEST OR AT THE RATE OF 2 TONS PER ACRE.
ROCK DUST: ACCORDING TO SOIL TEST OR AT THE RATE OF 2 TONS PER ACRE.
5. MATERIAL:
1. TOPSOIL SHOULD HAVE PHYSICAL, CHEMICAL, AND BIOLOGICAL CHARACTERISTICS FAVORABLE TO THE GROWTH OF PLANTS.
2. TOPSOIL SHOULD HAVE A SANDY OR LOAMY TEXTURE.
3. TOPSOIL SHOULD BE RELATIVELY FREE OF SUBSOIL MATERIAL AND MUST BE FREE OF LARGE STONES, LUMPS OF SOIL, ROOTS, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS. IT SHOULD BE FREE OF ROOTS OR RHIZOMES SUCH AS THISTLE, NUTGRASS, AND QUACKGRASS.
4. AN ORGANIC MATTER CONTENT OF SIX PERCENT (6%) IS REQUIRED. AVOID LIGHT COLORED SUBSOIL MATERIAL.
5. SOLUBLE SALT CONTENT OF LESS THAN 400 PPM IS REQUIRED.
6. THE TOPSOIL SHALL BE WARRANTED BY SELLER TO BE FREE OF DETECTABLE RESIDUES OF CHEMICAL PESTICIDES, HERBICIDES, PETROLEUM PRODUCTS, OR OTHER UNSUITABLE TOXINS.

APPLICATION:

1. AVOID SPREADING WHEN TOPSOIL IS WET OR FROZEN.
2. SPREAD TOPSOIL UNIFORMLY TO A DEPTH OF AT LEAST FOUR INCHES (4"), OR TO THE DEPTH SHOWN ON THE LANDSCAPING PLANS.

TEMPORARY VEGETATIVE COVER

1. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED ON ALL UNPROTECTED AREAS THAT PRODUCE SEDIMENT, AREAS WHERE FINAL GRADING HAS BEEN COMPLETED, AND AREAS WHERE THE ESTIMATED PERIOD OF BARE SOIL EXPOSURE IS LESS THAN 30 DAYS. TEMPORARY VEGETATIVE COVER SHALL BE APPLIED IF AREAS WILL NOT BE PERMANENTLY SEED BY SEPTEMBER 1.

GENERAL:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.
2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.
3. APPLY SOIL AMENDMENTS AS FOLLOWS:
LIME: ACCORDING TO SOIL TEST OR AT THE RATE OF 1 TON PER ACRE.
ROCK DUST: ACCORDING TO SOIL TEST OR AT THE RATE OF 1 TON PER ACRE
4. APPLY FINISHED COMPOST (SEE SPECIFICATION) AT A RATE OF 1 TON PER ACRE (46 LBS PER 1000 S.F.)
5. UNLESS HYDROSEEDING, WORK IN LINE TO A DEPTH OF 4 INCHES WITH A DISK OR ANY SUITABLE EQUIPMENT. DO NOT WORK FINISHED COMPOST INTO THE SOIL - APPLY IT EVENLY TO SURFACE AS A SEED BED.
6. TILLAGE SHOULD ACHIEVE A REASONABLY UNIFORM LOOSE SEEDBED. WORK ON CONTOUR IF SITE IS SLOPING.

SITE PREPARATION:

1. SELECT APPROPRIATE SPECIES FOR THE SITUATION. NOTE RATES AND SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING).
2. APPLY SEED UNIFORMLY ACCORDING TO THE RATE INDICATED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.
3. UNLESS HYDROSEEDING, COVER RYEGRASS SEEDS WITH NOT MORE THAN 1/4 INCH OF SOIL USING SUITABLE EQUIPMENT.
4. MULCH IMMEDIATELY AFTER SEEDING IF REQUIRED. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW.) APPLY STRAW OR AND ANCHOR TO SLOPES GREATER THAN 3% OR WHERE NEEDED.

PERMANENT VEGETATIVE COVER

GENERAL:

1. PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED AS VARIOUS SECTIONS OF THE PROJECT ARE COMPLETED IN ORDER TO STABILIZE THE SOIL, REDUCE DOWNSTREAM DAMAGE FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE AESTHETIC NATURE OF THE SITE. IT WILL BE APPLIED TO ALL CONSTRUCTION AREAS SUBJECT TO EROSION WHERE FINAL GRADING HAS BEEN COMPLETED AND A PERMANENT COVER IS NEEDED.

SITE PREPARATION:

1. INSTALL REQUIRED SURFACE WATER CONTROL MEASURES.
2. REMOVE LOOSE ROCK, STONE, AND CONSTRUCTION DEBRIS FROM AREA.
3. PERFORM ALL PLANTING OPERATIONS PARALLEL TO THE CONTOURS OF THE SLOPE.
4. APPLY TOPSOIL AS INDICATED ELSEWHERE HEREIN.
5. APPLY SOIL AMENDMENTS AS FOLLOWS:
LIME: ACCORDING TO SOIL TEST OR AT THE RATE OF 1 TON PER ACRE.
ROCK DUST: ACCORDING TO SOIL TEST OR AT THE RATE OF 1 TON PER ACRE

APPLY FINISHED COMPOST (SEE SPECIFICATIONS) AT A RATE OF 1 TON PER ACRE (46 LBS PER 1000 S.F.)

UNLESS HYDROSEEDING, WORK IN LINE TO A DEPTH OF 4 INCHES WITH A DISK OR ANY SUITABLE EQUIPMENT. DO NOT WORK FINISHED COMPOST INTO THE SOIL - APPLY IT EVENLY TO SOIL SURFACE AS A SEEDBED.

SITE PREPARATION:

1. SELECT APPROPRIATE SPECIES FOR THE SITUATION. NOTE RATES AND SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING).
2. APPLY SEED UNIFORMLY ACCORDING TO THE RATE INDICATED BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.
3. UNLESS HYDROSEEDING, COVER RYEGRASS SEEDS WITH NOT MORE THAN 1/4 INCH OF SOIL USING SUITABLE EQUIPMENT.
4. MULCH IMMEDIATELY AFTER SEEDING IF REQUIRED. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW.) APPLY STRAW OR AND ANCHOR TO SLOPES GREATER THAN 3% OR WHERE NEEDED.

VEGETATIVE COVER SELECTION & MULCHING

TEMPORARY VEGETATIVE COVER:

PERENNIAL RYEGRASS 5 LBS./1,000 SQ. FT. (LOLIUM PERENNE)
DUTCH WHITE CLOVER (TRIFOLIUM REPENS)
1/4 LBS PER 1000 SF. OR 6LBS/AC.

* PERMANENT VEGETATIVE COVER:
DUTCH WHITE CLOVER 30%
BARON KENTUCKY BLUEGRASS 30%
JANESTOWN II CHEWINGS FESCUE 30%
PALMER PERENNIAL RYEGRASS 20%

NEW ENGLAND EROSION CONTROL/ASSOCIATION MIX FOR MOIST SITES AT 1/8 LB PER 1000 S.F. FOR 5 LBS/AC.
NEW ENGLAND SHOWY WILD FLOW MIX AT 1/16 LB PER 1000 S.F. OR 2 LBS/AC.

* LOFTS - "TRIPLEX GENERAL" MIX OR APPROVED EQUAL. RECOMMENDED RATE/TIME SEEDING.
SPRING SEEDING: 4/1 to 5/31
FALL SEEDING: 8/16 to 10/15

TEMPORARY MULCHING:

STRAY 70-90 LBS./1,000 SQ. FT. (TEMPORARY VEGETATIVE AREAS)
WOOD FIBER IN HYDROMULCH SLURRY 25-50 LBS./1,000 SQ. FT.

ESTABLISHMENT:

1. SMOOTH AND FIRM SEEDBED WITH CULTIPACKER OR OTHER SIMILAR EQUIPMENT PRIOR TO SEEDING (EXCEPT WHEN HYDROSEEDING).
2. SELECT ADAPTED SEED MIXTURE FOR THE SPECIFIC SITUATION. NOTE RATES AND THE SEEDING DATES (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).
3. APPLY SEED UNIFORMLY ACCORDING TO RATE INDICATED, BY BROADCASTING, DRILLING, OR HYDRAULIC APPLICATION.
4. COVER GRASS AND LEGUME SEED WITH NOT MORE THAN 1/4 INCH OF SOIL WITH SUITABLE EQUIPMENT (EXCEPT WHEN HYDROSEEDING).
5. MULCH IMMEDIATELY AFTER SEEDING, IF REQUIRED, ACCORDING TO TEMPORARY MULCHING SPECIFICATIONS. (SEE VEGETATIVE COVER SELECTION & MULCHING SPECIFICATION BELOW).
6. USE PROPER INOCULANT ON ALL LEGUME SEEDINGS. USE FOUR (4) TIMES NORMAL RATES WHEN HYDROSEEDING.
7. USE SOD WHERE THERE IS A HEAVY CONCENTRATION OF WATER AND IN CRITICAL AREAS WHERE IT IS IMPORTANT TO GET A QUICK VEGETATIVE COVER TO PREVENT EROSION.

MAINTENANCE:

1. TEST FOR SOIL ACIDITY EVERY THREE (3) YEARS AND LIME AS REQUIRED.
2. ACCORDING TO SOIL TESTS, APPLY FINISHED COMPOST (SEE SPECIFICATION) AT A RATE OF 0.5 TON PER ACRE (23 LBS PER 1000 S.F.) ANNUALLY.

FINISHED COMPOST SPECIFICATION

FINISHED COMPOST SHALL BE FULLY DECOMPOSED ORGANIC MATERIAL DERIVED FROM FOOD, AGRICULTURAL RESIDUES, ANIMAL MANURES, AND OTHER ORGANIC MATERIALS. IT WAS A HUMUS NATURE CAPABLE OF SUSTAINING GROWTH OF VEGETATION, WITH NO MATERIAL TOXIC TO PLANT GROWTH.

THE COLOR RESEMBLES DARK TOPSOIL AND THE STRUCTURE IS LIGHT AND CRUMBLY. IT IS AIR TEMPERATURE AND DOES NOT RELEASE STEAM WHEN DISTURBED. THE COLOR IS AGREEABLE, LIKE FRESH BARTY FOREST SOIL, WITH NO OFFENSIVE ODORS SUCH AS ETHANOL, VINEGAR, AMMONIA OR SULFUR.

FINISHED COMPOST SHALL HAVE THE FOLLOWING PROPERTIES:

- THE MOISTURE CONTENT IS BETWEEN 30%-50%
- NO WEED SEEDS OR PATHOGENS ARE PRESENT.
- pH IS BETWEEN 5.5-7.5
- CARBON TO NITROGEN RATIO OF 25-30:1
- ORGANIC MATTER >75%
- PARTICLE SIZE: VARIED, 0.01 - 0.25 INCHES, NO RECOGNIZABLE STARTING MATERIALS PRESENT
- SOLUBLE SALTS - <3.0 MMHOS (dS)
- BULK DENSITY - <1000 LBS/CY
- FOREIGN MATTER - <0.1% BY WEIGHT

EROSION CHECKS

GENERAL:

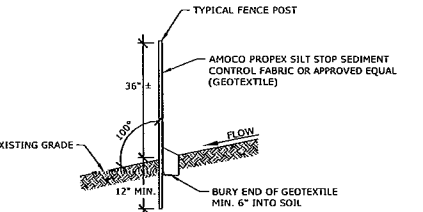
1. TEMPORARY PERVIOUS BARRIERS USING BALES OF HAY OR STRAW, HELD IN PLACE WITH STAKES DRIVEN THROUGH THE BALES AND INTO THE GROUND OR GEOTEXTILE FABRIC FASTENED TO A FENCE POST AND BURIED INTO THE GROUND, SHALL BE INSTALLED AND MAINTAINED AS REQUIRED TO CHECK EROSION AND REDUCE SEDIMENTATION.

CONSTRUCTION:

1. BALES SHOULD BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED INTO THE SOIL A MINIMUM OF FOUR (4") INCHES.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY WOOD STAKES OR REINFORCEMENT BARS DRIVEN THROUGH THE BALES AND INTO THE GROUND. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD THE PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. GEOTEXTILE FABRIC SHALL BE SECURELY ANCHORED AT THE TOP OF A THREE FOOT (3') HIGH FENCE AND BURIED A MINIMUM OF FOUR INCHES (4") TO THE SOIL. SEAMS BETWEEN SECTIONS OF FILTER FABRIC SHALL OVERLAP A MINIMUM OF TWO FEET (2').

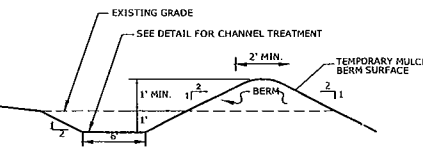
INSTALLATION AND MAINTENANCE:

1. BALED HAY EROSION BARRIERS SHALL BE INSTALLED AT ALL STORM SEWER INLETS.
2. BALED HAY EROSION BARRIERS AND GEOTEXTILE FENCE SHALL BE INSTALLED AT THE LOCATION INDICATED ON THE PLAN AND IN ADDITIONAL AREAS AS MAY BE DETERMINED APPROPRIATE DURING CONSTRUCTION.
3. ALL EROSION CHECKS SHALL BE MAINTAINED UNTIL ADJACENT AREAS ARE STABILIZED.
4. INSPECTION SHALL BE FREQUENT (AT MINIMUM MONTHLY AND BEFORE AND AFTER HEAVY RAIN) AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.



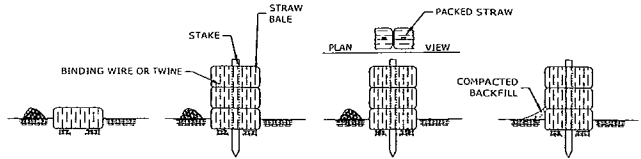
SEDIMENT FILTER FENCE

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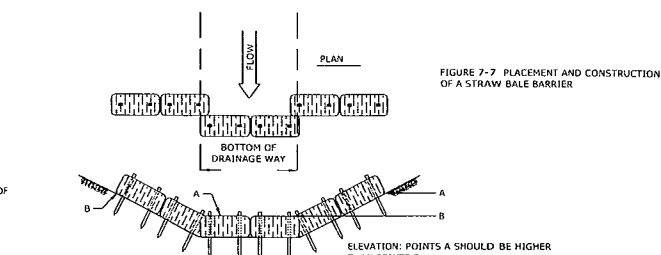


DIVERSION BERM AND SWALE

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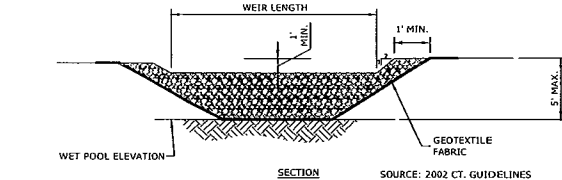


- 1.) EXCAVATE A TRENCH 4" DEEP AND 2" LARGER THAN THE LENGTH AND WIDTH OF THE STRAW BALE.
- 2.) PLACE AND STAKE STRAW BALES, TWO STAKES PER BALE.
- 3.) WEDGE LOOSE STRAW BETWEEN BALES TO CREATE A CONTINUOUS BARRIER.
- 4.) BACKFILL AND COMPACT THE EXCAVATED SOIL AS SHOWN ON THE UPHILL SIDE OF THE BARRIER TO PREVENT PIPING.



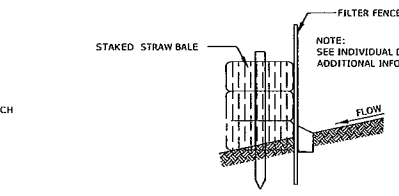
PLACEMENT & CONSTRUCTION OF A STRAW BALE BARRIER

N.T.S.



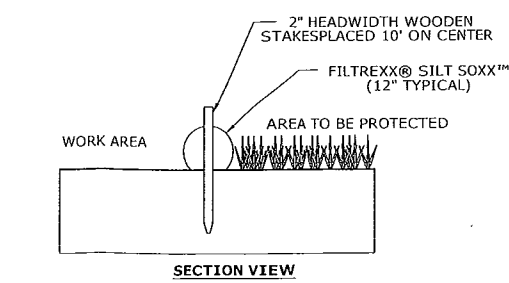
SEDIMENT TRAP RIPRAP OVERFLOW SPILLWAY

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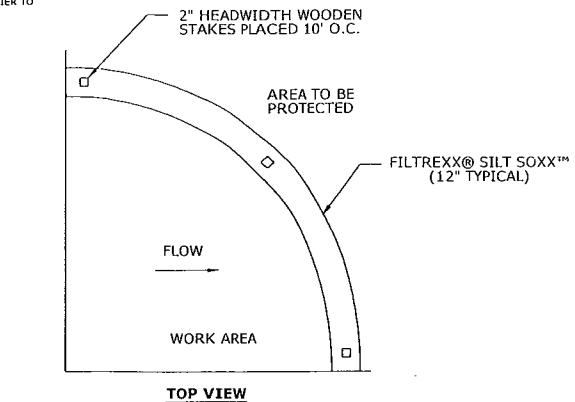


SEDIMENT FILTER FENCE WITH HAYBALES

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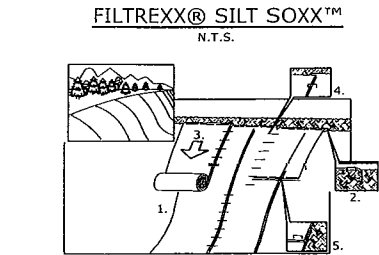
SECTION VIEW



TOP VIEW

NOTES:

1. ALL MATERIAL TO MEET FILTRIXX® SPECIFICATIONS.
2. SILT SOXX™ FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
3. SILT SOCK TO BE 12" FILTER SILT SOXX OR APPROVED EQUAL SILT SOCK.



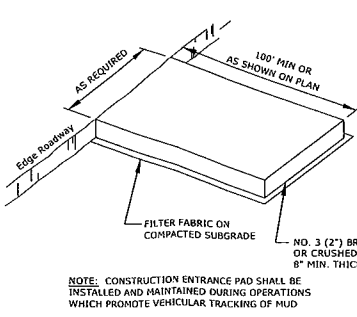
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING SCC225, DO NOT SEED PREPARED AREA. SCC225 MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAP AREA, APPROXIMATELY 12" APART.
6. EROSION CONTROL BLANKET TO BE NORTH AMERICAN GREEN ROLLMAN S1508N OR APPROVED EQUAL.

REFER TO GENERAL STAPLE PATTERN GUIDE IN NORTH AMERICAN GREEN CATALOG FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

APPLICATION OF EROSION CONTROL BLANKET ON SLOPES

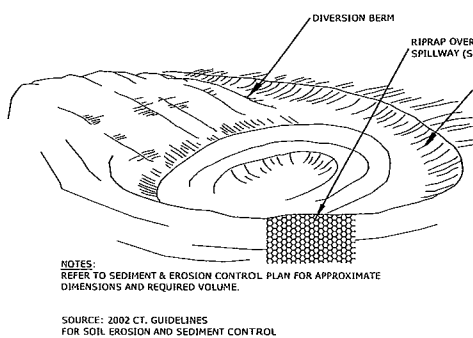
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EROSION CONTROL MAINTENANCE INTERVALS				
EROSION CONTROL MEASURE	CONTROL OBJECTIVE	INSPECTION/MAINTENANCE	FAILURE INDICATORS	REMOVAL
TEMPORARY SEDIMENT TRAP (TST)	- DETAIN SEDIMENT-LOADED RUNOFF FROM SMALL DISTURBED AREAS ENOUGH TO ALLOW A MAJORITY OF THE SEDIMENT TO SETTLE OUT.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. STONE OUTLET SHOULD BE AT LEAST 1 FOOT BELOW CREST OF EMBANKMENT. SEDIMENT MUST BE REMOVED WHEN ACCUMULATION REACHES 1/2 OF THE REQUIRED VOLUME STORAGE.	- TURBID WATER - EXCESSIVE SEDIMENT ACCUMULATION OVERTOPPING EVIDENCE	TST MAY BE REMOVED ONCE THE CONTRIBUTING DRAINAGE AREA IS PERMANENTLY STABILIZED.
TEMPORARY SEDIMENT BASIN (DETENTION BASIN) (SR/PST)	- INTERCEPT/RETAIN SEDIMENT DURING CONSTRUCTION. - PREVENT TRANSPORT AND DEPOSITION OF SEDIMENT OFF CONSTRUCTION SITE.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO 1/2 OF THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR Dewatering OPERATIONS.	- TURBID WATER - EXCESSIVE SEDIMENT ACCUMULATION OVERTOPPING EVIDENCE - EROSION OF EMBANKMENTS	TEMPORARY SEDIMENT BASINS THAT ARE NOT TO FUNCTION AS PERMANENT DETENTION BASINS MAY BE REMOVED ONCE THE CONTRIBUTING DRAINAGE AREA IS PERMANENTLY STABILIZED.
SILT FENCE (SF) (RELATED: IP, STK)	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO 1/2 OF THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR Dewatering OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	SILT FENCE MAY BE REMOVED AFTER UPHILL AND SENSITIVE AREAS HAVE BEEN PERMANENTLY STABILIZED.
HAY BALES (HB)	- INTERCEPT, AND REDIRECT/DETAIN SMALL AMOUNTS OF SEDIMENT FROM SMALL DISTURBED AREAS. - DECREASE VELOCITY OF SHEET FLOW. - PROTECT SENSITIVE SLOPES OR SOILS FROM EXCESSIVE WATER FLOW.	INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. ACCUMULATED SEDIMENT MUST BE REMOVED ONCE ITS DEPTH IS EQUAL TO 1/2 OF THE TRENCH HEIGHT. INSPECT FREQUENTLY DURING PUMPING OPERATIONS IF USED FOR Dewatering OPERATIONS.	- PHYSICAL DAMAGE OR DECOMPOSITION - EVIDENCE OF OVERTOPPED OR UNDERCUT FENCE - EVIDENCE OF SIGNIFICANT FLOWS EVADING CAPTURE - REPETITIVE FAILURE	HAY BALES MAY BE REMOVED AFTER UPHILL AREAS HAVE BEEN PERMANENTLY STABILIZED.
TEMPORARY DIVERSION BERM/SWALE (TDS) OR TEMPORARY SWALE (TSW) OR WATER BAR (WB)	- MINIMIZE VELOCITY AND CONCENTRATION OF SHEET FLOW ACROSS CONSTRUCTION SITE TO A SEDIMENT TRAPPING FACILITY. - DIVERT WATER ORIGINATING FROM UNDISTURBED AREA AWAY FROM CONSTRUCTION.	WHEN LOCATED WITHIN CLOSE PROXIMITY TO ONGOING CONSTRUCTION ACTIVITIES, INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. OTHERWISE INSPECT AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL OF 0.5 INCHES OR MORE. REPAIR THE TEMPORARY MEASURE AND ANY OTHER ASSOCIATED MEASURES WITHIN 24 HOURS.	- PHYSICAL DAMAGE - EXCESSIVE SCOURING/EROSION - REPETITIVE FAILURE	TEMPORARY DIVERSIONS MAY BE REMOVED ONCE CONSTRUCTION HAS CEASED AND THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
CONSTRUCTION ENTRANCE (CE)	- REDUCE THE TRACKING OF SEDIMENT OFF-SITE ONTO PAVED SURFACES.	INSPECT AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC REINFORCEMENT OF SILT FENCE, OR ADDITION OF HAY BALES MAY BE NECESSARY.	- SEDIMENT IN ROADWAY ADJACENT TO SITE	CONSTRUCTION ENTRANCE MAY BE REMOVED ONCE THE SITE HAS BEEN PERMANENTLY STABILIZED, AND ALL OTHER SECTIONS OF ROADWAY HAVE BEEN PERMANENTLY STAPLED.
STOCKPILE PROTECTION (STK)	- RETAIN SOIL STOCKPILE IN LOCATIONS SPECIFIED, AND REDUCE WATER TRANSPORT.	INSPECT SILT FENCE AT THE END OF EACH WORK DAY AND IMMEDIATELY REPAIR DAMAGES. PERIODIC REINFORCEMENT OF SILT FENCE, OR ADDITION OF HAY BALES MAY BE NECESSARY.	- EVIDENCE OF STOCK PILE DIMINISHING DUE TO RAIN RUNOFF - FAILURE OF SILT FENCE	STOCKPILE PROTECTION MAY BE REMOVED ONCE THE STOCKPILE IS USED OR REMOVED.



CONSTRUCTION ENTRANCE PAD

N.T.S.



TEMPORARY SEDIMENT TRAP

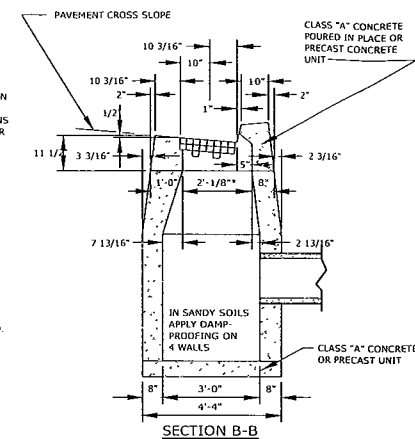
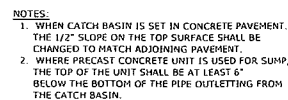
N.T.S.

SEDIMENT AND EROSION CONTROLS DETAILS AND SPECIFICATIONS

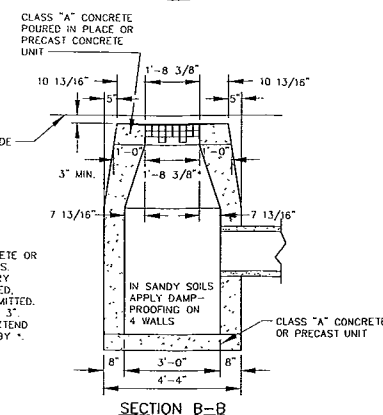
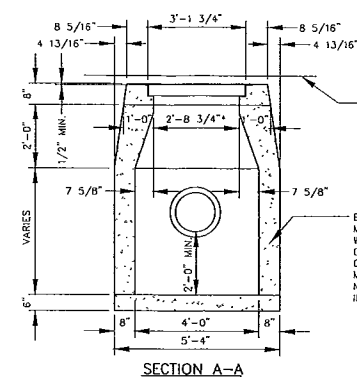
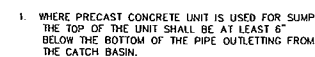
BEACON FALLS ENERGY PARK

LOPUS ROAD
BEACON FALLS, CONNECTICUT

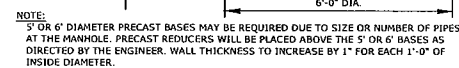
DJK DESIGNED	DJL DRAWN	SRD CHECKED
N.T.S.		
SCALE		
DATE OCTOBER 7, 2016		
PROJECT NO. 1103-87		
SD-1		
SHEET NAME		



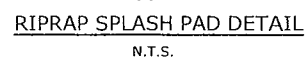
TYPE "C" CATCH BASIN
N.T.S.



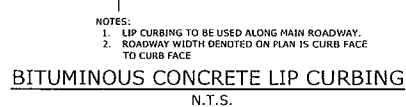
TYPE "C-L" CATCH BASIN
N.T.S.



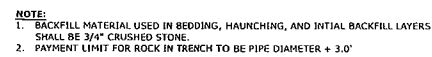
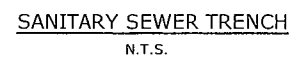
PRECAST CONCRETE STORM DRAINAGE MANHOLE
N.T.S.



OUTLET PROTECTION ID	Type	Sp(R)	Rp(R)	La(R)	W(L)	W2(L)	D(L)
FES 101	Modified Type B	.83	.83	10.0	2.5	6.5	12
FES 102	Modified Type B	.83	.83	10.0	2.5	6.5	12
FES 201	Modified Type B	1.5	1.5	10.0	4.5	9.0	12
FES 301	Modified Type B	2.0	2.0	21.0	6.0	15.0	12
FES 401	Modified Type B	1.5	1.5	12.0	4.5	10.0	12
FES 501	Modified Type B	1.5	1.5	15.0	4.5	11.0	12
FES 601	Modified Type B	1.25	1.25	10	2.5	6.5	12



BITUMINOUS CONCRETE LIP CURBING
N.T.S.



STORM DRAINAGE TRENCH DETAIL
N.T.S.



BITUMINOUS CONCRETE
N.T.S.

[illegible]

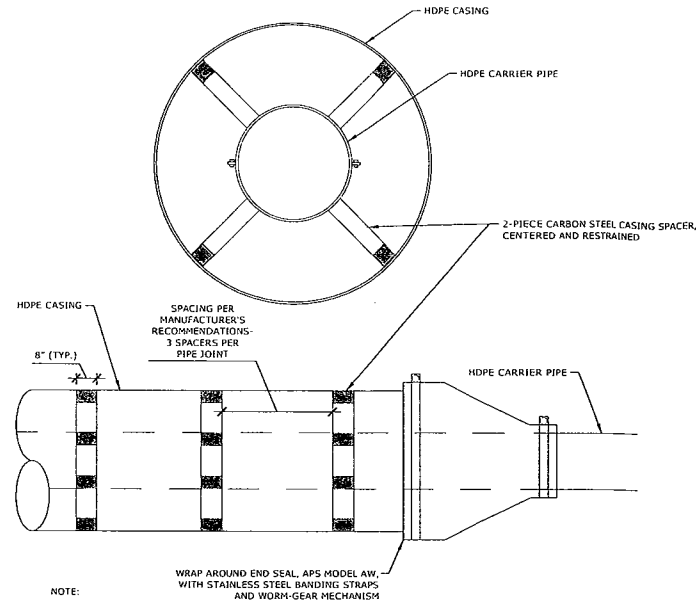
SITE DETAILS

BEACON FALLS ENERGY PARK

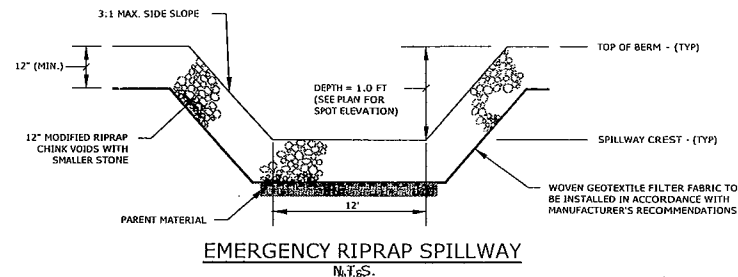
LOPUS ROAD
BEACON FALLS, CONNECTICUT

DJK	DJL	SR
DESIGNED	DRAWN	CHECKED
N.T.S.		
SCALE		
OCTOBER 7, 2016		
DATE		
1103-87		
PROJECT NO		

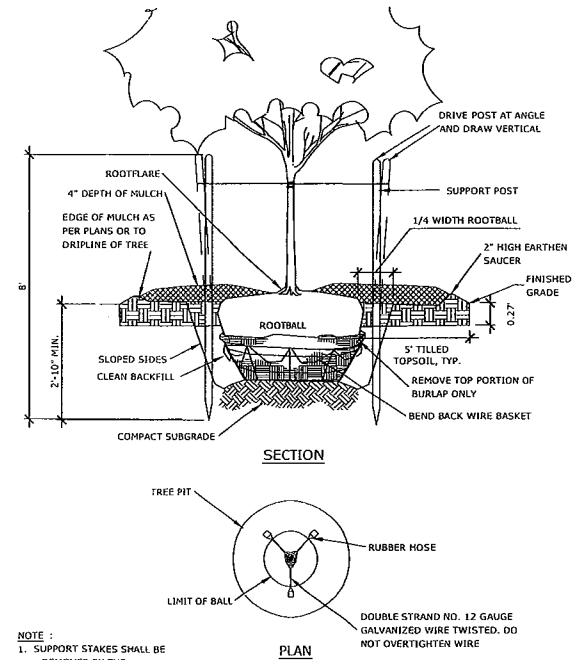
SD-2



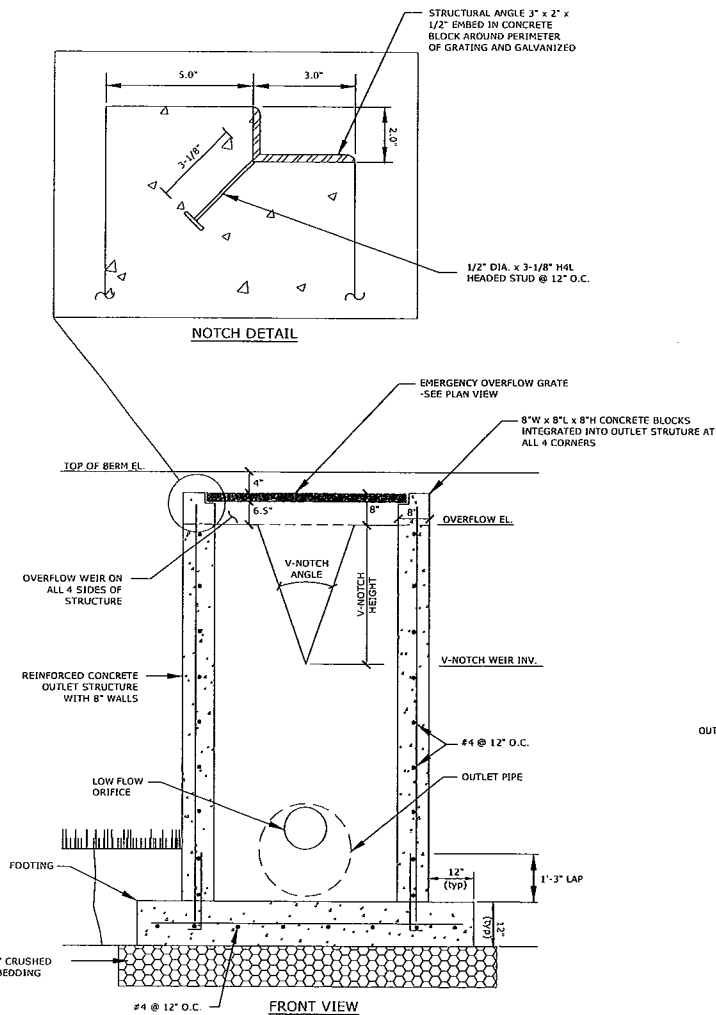
PIPE CASING
N.T.S.



EMERGENCY RIPRAP SPILLWAY
N.T.S.

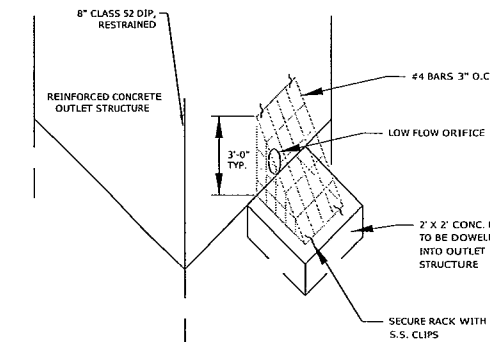
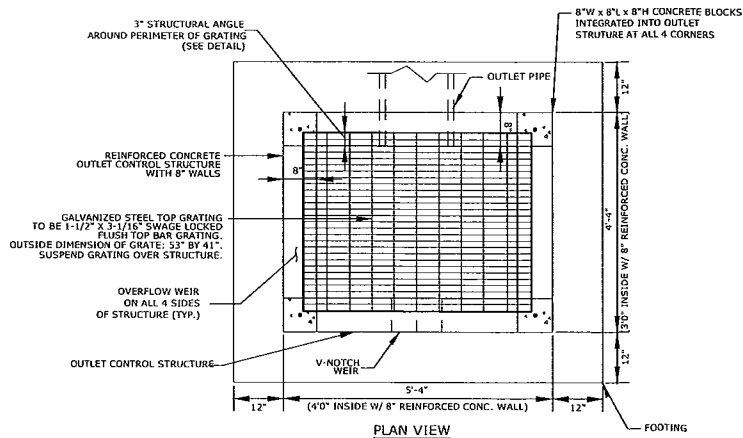


TREE DETAIL
N.T.S.



TOP OF BERM ELEVATION	140.0
OVERFLOW ELEVATION	139.0
100-YR STORM ELEVATION	138.85
V-NOTCH WEIR HEIGHT	3.0'
V-NOTCH WEIR ANGLE	40°
V-NOTCH WEIR INVERT	136.0
LOW FLOW ORIFICE DIAMETER	8"
LOW FLOW ORIFICE INVERT	132.0
BASIN BOTTOM ELEVATION	132.0
OUTLET PIPE DIAMETER	24"
OUTLET PIPE INVERT	131.0

DETENTION BASIN OUTLET CONTROL STRUCTURE
N.T.S.



OUTLET CONTROL STRUCTURE TRASH GATE
N.T.S.

MILONE & MACBROOM[®]
99 Ruddy Drive
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733
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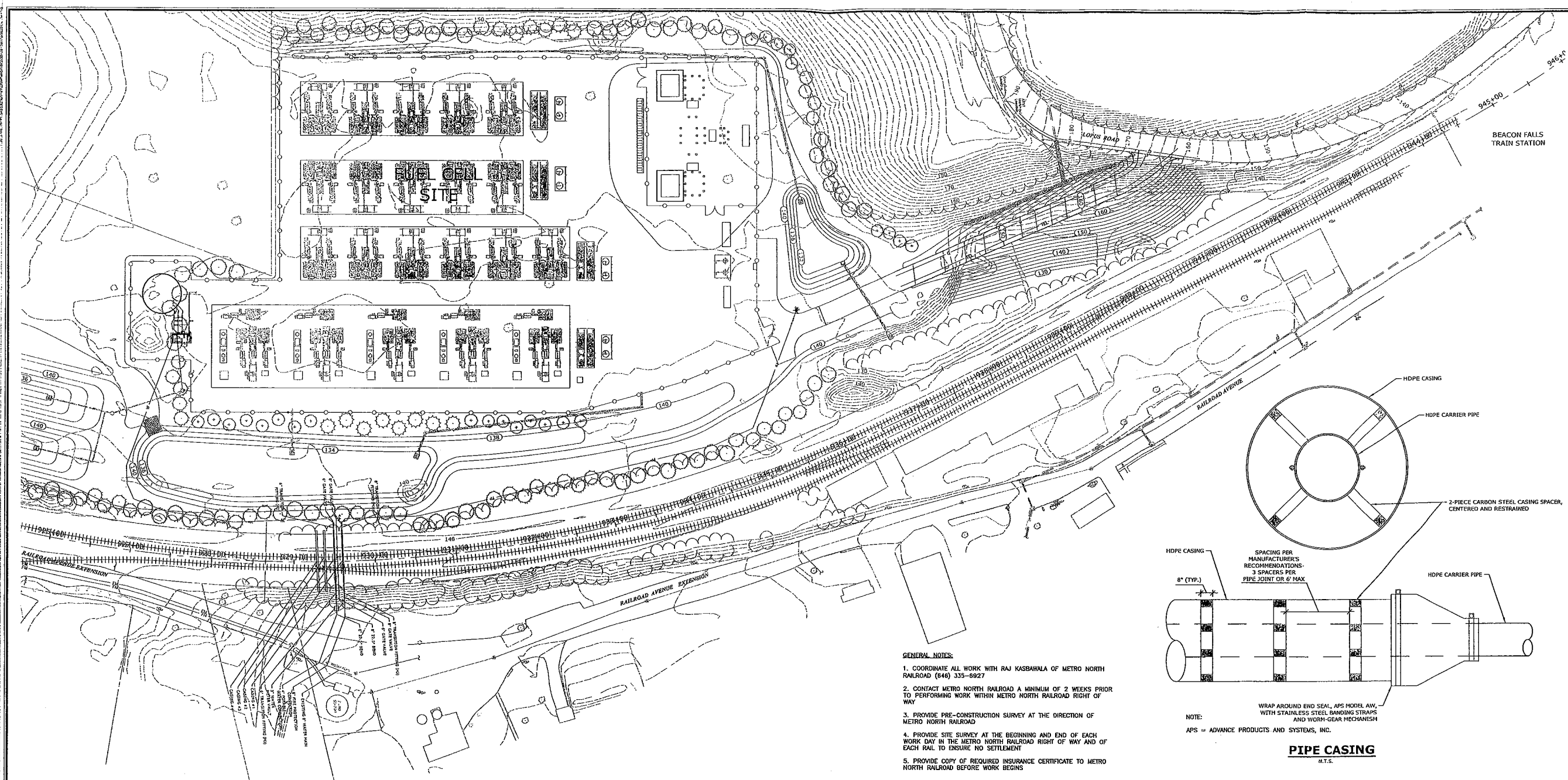
DESCRIPTION	DATE	BY
REVISIONS	10/27/2015	ADS
REVISIONS	11/16/2015	ACS

SITE DETAILS
BEACON FALLS ENERGY PARK
LOPUS ROAD
BEACON FALLS, CONNECTICUT

DJK	DJL	SRD
DESIGNED	DRAWN	CHECKED
N.T.S.		
OCTOBER 7, 2016		
PROJECT NO. 1103-87		

SD-3

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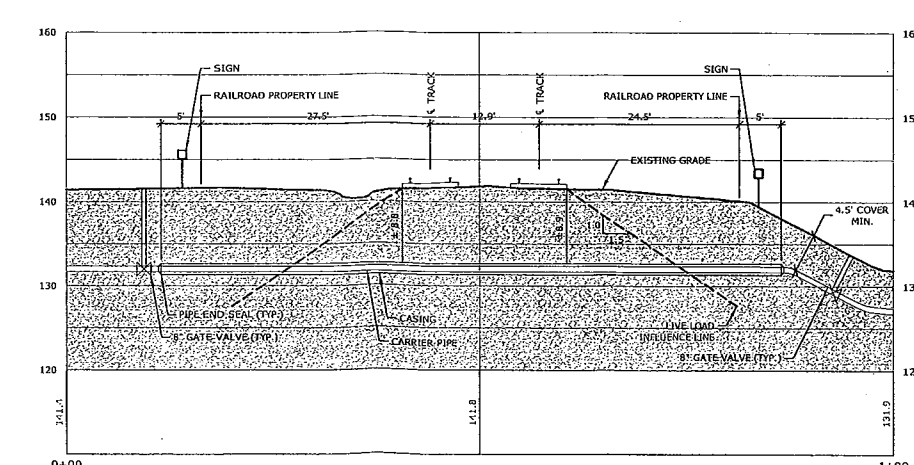


NOTE:
BOUNDARY AND TOPOGRAPHIC SURVEY BASED ON SURVEY
CONDUCTED BY MILONE & MACBROOM, INC.
APRIL, 2015.

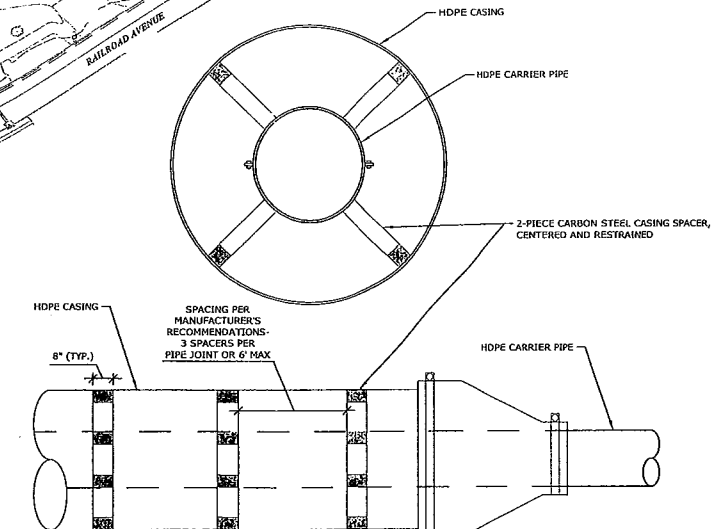
Casing 1		Casing 2		Casing 3		Casing 4	
Carrier Pipe	Potable Water	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Contents to be Handled	Potable Water	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Normal Operating Pressure	90 psi	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Nominal Size of Pipe	8-inch	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Outside Diameter	8.625-inch	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Inside Diameter	6.594-inch	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Wall Thickness	0.784-inch	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Weight Per Foot	8 lbs	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Material	HDPE	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Process of Manufacture	NA	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Specification	PE3408	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Grade or Class	DR 11	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Test Pressure	NA	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Type of Joint	Butt fusion	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Type of Coating	NA	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Details of Cathodic Protection	None	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Details of Seal or Protection at Ends of Casing	NA	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Method of Installation	HDD	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Character of Subsurface Material at the Crossing Location		Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Approximate Elevation of Ground/Water Level		Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill
Source of Information of Subsurface Conditions (Boring, Test Pits or Other)	Test pits	Carrier Pipe	Potable Water	Carrier Pipe	Future Sewer	Carrier Pipe	Spill

PIPE CROSSING DATA SHEET

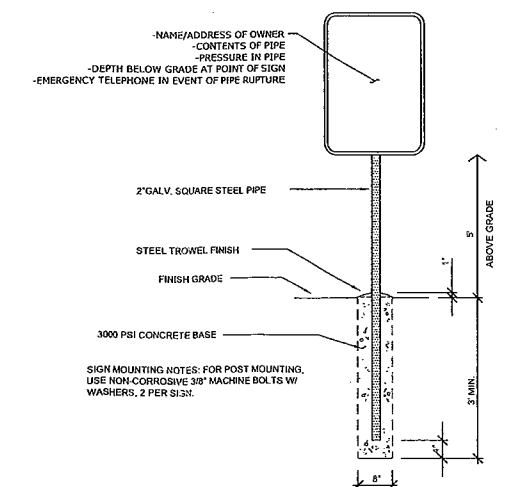
- GENERAL NOTES:
- COORDINATE ALL WORK WITH RAJ KASBAWALA OF METRO NORTH RAILROAD (846) 335-6927
 - CONTACT METRO NORTH RAILROAD A MINIMUM OF 2 WEEKS PRIOR TO PERFORMING WORK WITHIN METRO NORTH RAILROAD RIGHT OF WAY
 - PROVIDE PRE-CONSTRUCTION SURVEY AT THE DIRECTION OF METRO NORTH RAILROAD
 - PROVIDE SITE SURVEY AT THE BEGINNING AND END OF EACH WORK DAY IN THE METRO NORTH RAILROAD RIGHT OF WAY AND OF EACH RAIL TO ENSURE NO SETTLEMENT
 - PROVIDE COPY OF REQUIRED INSURANCE CERTIFICATE TO METRO NORTH RAILROAD BEFORE WORK BEGINS



SECTION A-A
V: 1"=10'
H: 1"=10'



PIPE CASING
N.T.S.



SIGN DETAIL
N.T.S.

MILONE & MACBROOM
99 Realty Drive
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-5733
www.miloneandmacbroom.com

DATE	BY
8/1/2015	ES

DESCRIPTION	DATE	BY
WATER RING		

WATER SUPPLY PLAN

BEACON FALLS ENERGY PARK

LOPUS ROAD & GRUBER ROAD

BEACON FALLS, CONNECTICUT

TAK	DJL	TAK
DESIGNED	DRAWN	CHECKED

SCALE: 1"=60'

DATE: JUNE 15, 2015

PROJECT NO.: 1103-87

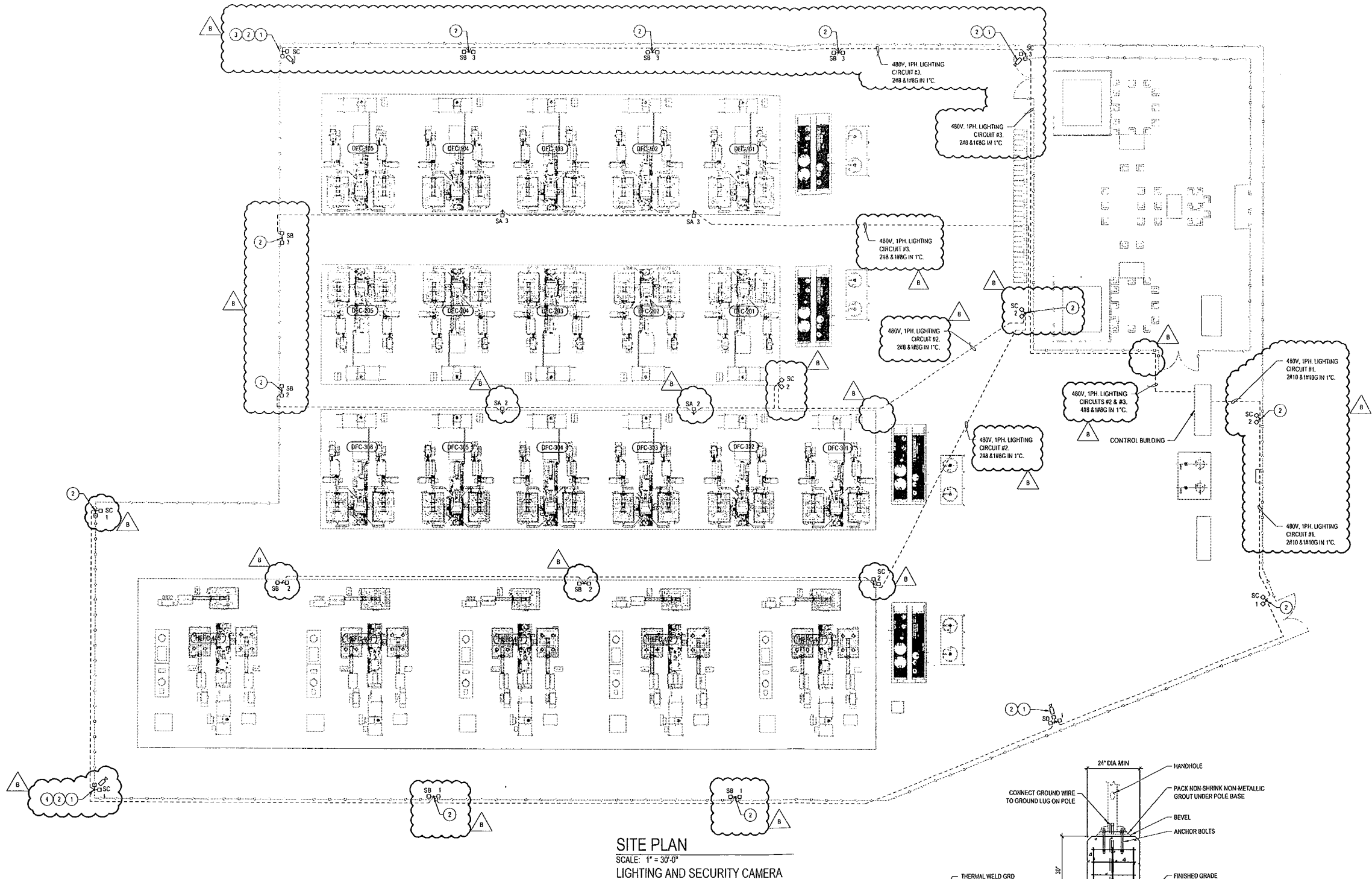
1 OF 1

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GENERAL NOTES:
1. REFERENCE SHEET E-001 FOR ELECTRICAL NOTES AND SYMBOL LEGENDS.

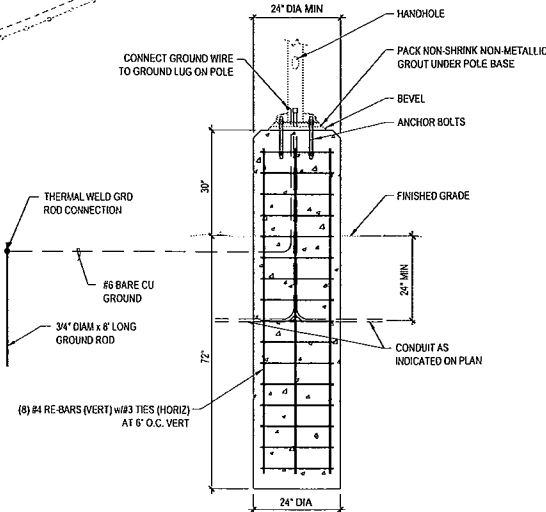
KEY NOTES:

1. MOUNT SECURITY SYSTEM CAMERA ON LIGHT POLE AT 18'-0" AFF. REFER TO DRAWING E-301 FOR EQUIPMENT BILL OF MATERIAL.
2. PROVIDE HOUSE-SIDE SHIELD ON ALL PERIMETER FIXTURES.
3. MOUNT OUTDOOR CAMERA ENCLOSURE CCP-50 AT BASE OF LIGHT POLE.
4. MOUNT OUTDOOR CAMERA ENCLOSURE CCP-60 AT BASE OF LIGHT POLE.



SITE PLAN
SCALE: 1" = 30'-0"
LIGHTING AND SECURITY CAMERA

LIGHT EQUIPMENT SCHEDULE							
TYPE	DESCRIPTION	MOUNTING	LAMPS	VOLTS	INPUT WATTS	MODEL	BALLAST
SA	(1) POLE MOUNTED LED LIGHT FIXTURE WITH DIE CAST ALUMINUM HOUSING SEALED AGAINST MOISTURE AND CONTAMINANTS, 3000K LED, TYPE T3M OPTICS, PROVIDE COAT FINISH. MOUNT ON 25'-0" POLE.	POLE	LED	480V	227W	FIXTURE: LITHONIA #DSX2LED-100C-700-30K-T3M-480-RPA-008X0- POLE: LITHONIA RTA-25-7E-0M19-VD-DOB MOUNTING: TENON SLIPFITTER #DM18AS	LED DRIVER
SB	(2) POLE MOUNTED LED LIGHT FIXTURES (MOUNTED AT 180° ANGLE) WITH DIE CAST ALUMINUM HOUSING SEALED AGAINST MOISTURE AND CONTAMINANTS, 3000K LED, TYPE T3M OPTICS. PROVIDE COAT FINISH. MOUNT ON 25'-0" POLE.	POLE	LED	480V	227W PER FIXTURE	FIXTURE: LITHONIA #DSX2LED-100C-700-30K-T3M-480-RPA-008X0- POLE: LITHONIA RTA-25-7E-0M19-VD-DOB MOUNTING: TENON SLIPFITTER #DM18AS	LED DRIVER
SC	(2) POLE MOUNTED LED LIGHT FIXTURES (MOUNTED AT 90° ANGLE) WITH DIE CAST ALUMINUM HOUSING SEALED AGAINST MOISTURE AND CONTAMINANTS, 3000K LED, TYPE T3M OPTICS. PROVIDE COAT FINISH. MOUNT ON 25'-0" POLE.	POLE	LED	480V	227W PER FIXTURE	FIXTURE: LITHONIA #DSX2LED-100C-700-30K-T3M-480-RPA-008X0- POLE: LITHONIA RTA-25-7E-0M19-VD-DOB MOUNTING: TENON SLIPFITTER #DM18AS	LED DRIVER
SD	(3) POLE MOUNTED LED LIGHT FIXTURES WITH DIE CAST ALUMINUM HOUSING SEALED AGAINST MOISTURE AND CONTAMINANTS, 3000K LED, TYPE T3M OPTICS. PROVIDE COAT FINISH. MOUNT ON 25'-0" POLE.	POLE	LED	480V	227W PER FIXTURE	FIXTURE: LITHONIA #DSX2LED-100C-700-30K-T3M-480-RPA-008X0- POLE: LITHONIA RTA-25-7E-0M19-VD-DOB MOUNTING: TENON SLIPFITTER #DM18AS	LED DRIVER



NOTES:
1. REFER TO FOUNDATION DRAWINGS FOR CONCRETE SPECIFICATIONS.

1. DETAIL
SCALE: NONE
LIGHT POLE BASE

ISSUE	DATE	DESCRIPTION	APP BY
B	07/09/15	CHANGED EQUIPMENT LOCATIONS AND NOTES	PCIS
A	06/10/15	ISSUED FOR BID	PCIS

PCSK SKANSKA

401 N.W. 1st Street
Torrington, CT 06790

BEACON FALLS ENERGY PARK
O & G INDUSTRIES, INC.
112 WALL STREET
TORRINGTON, CT 06790

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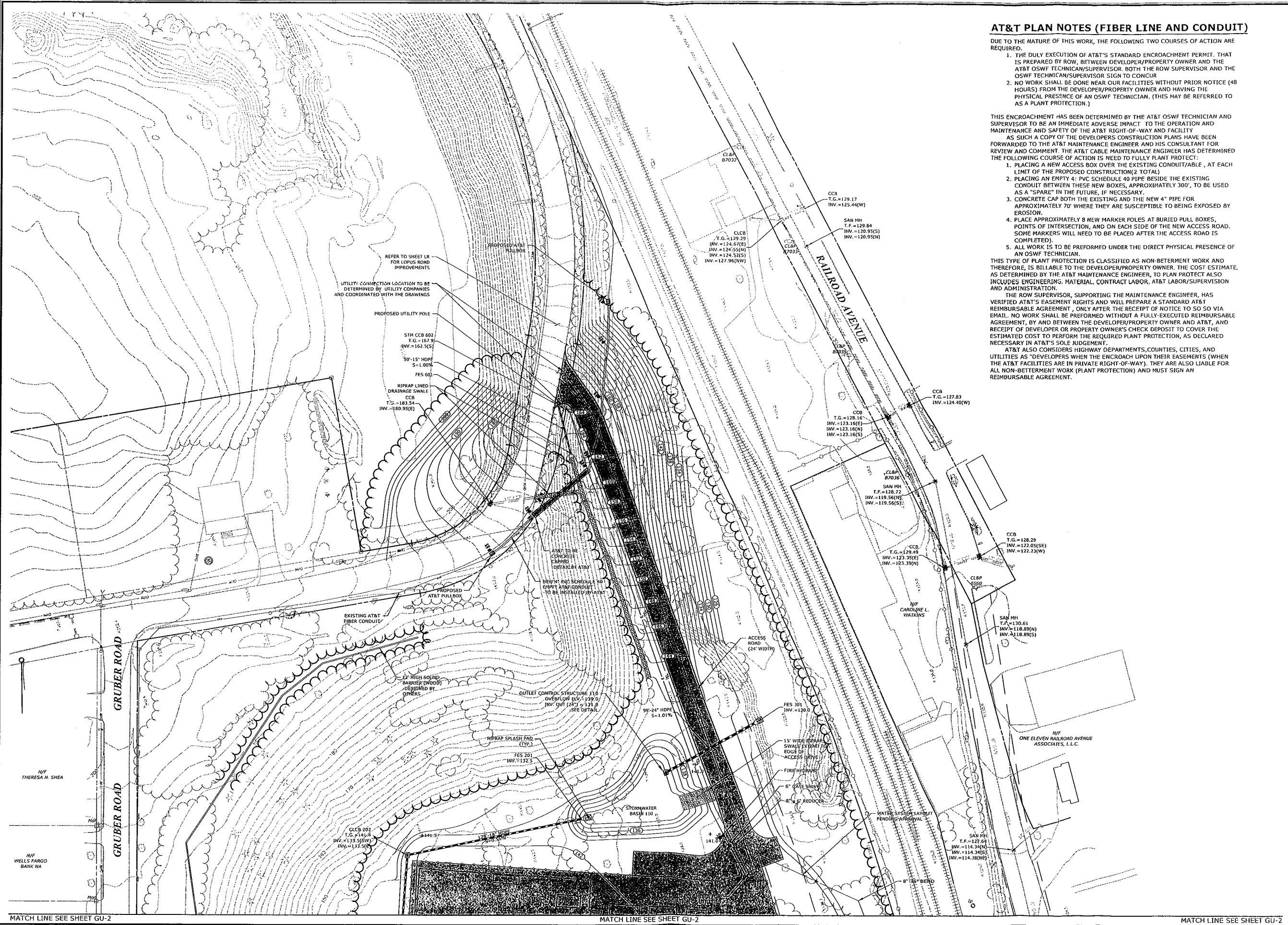
CREATED BY	SLC	DATE	06/09/15
CHECKED BY	SCN	PRINTED DATE	07/09/15

PROJECT NUMBER 20150106.00.00

ELECTRICAL
SITE LIGHTING AND
SECURITY CAMERA PLAN

E-133
SHEET NUMBER 07/09/15

ISSUE
B



MATCH LINE SEE SHEET GU-2

MATCH LINE SEE SHEET GU-2

MATCH LINE SEE SHEET GU-2

AT&T PLAN NOTES (FIBER LINE AND CONDUIT)

DUE TO THE NATURE OF THIS WORK, THE FOLLOWING TWO COURSES OF ACTION ARE REQUIRED:

1. THE DULY EXECUTION OF AT&T'S STANDARD ENCROACHMENT PERMIT. THAT IS PREPARED BY ROW, BETWEEN DEVELOPER/PROPERTY OWNER AND THE AT&T OSWF TECHNICIAN/SUPERVISOR. BOTH THE ROW SUPERVISOR AND THE OSWF TECHNICIAN/SUPERVISOR SIGN TO CONCUR.
2. NO WORK SHALL BE DONE NEAR OUR FACILITIES WITHOUT PRIOR NOTICE (48 HOURS) FROM THE DEVELOPER/PROPERTY OWNER AND HAVING THE PHYSICAL PRESENCE OF AN OSWF TECHNICIAN. (THIS MAY BE REFERRED TO AS A PLANT PROTECTION.)

THIS ENCROACHMENT HAS BEEN DETERMINED BY THE AT&T OSWF TECHNICIAN AND SUPERVISOR TO BE AN IMMEDIATE ADVERSE IMPACT TO THE OPERATION AND MAINTENANCE AND SAFETY OF THE AT&T RIGHT-OF-WAY AND FACILITY.

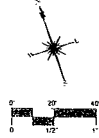
AS SUCH A COPY OF THE DEVELOPER'S CONSTRUCTION PLANS HAVE BEEN FORWARDED TO THE AT&T MAINTENANCE ENGINEER AND HIS CONSULTANT FOR REVIEW AND COMMENT. THE AT&T CABLE MAINTENANCE ENGINEER HAS DETERMINED THE FOLLOWING COURSE OF ACTION IS NEED TO FULLY PLANT PROTECT:

1. PLACING A NEW ACCESS BOX OVER THE EXISTING CONDUIT/ABLE, AT EACH LIMIT OF THE PROPOSED CONSTRUCTION(2 TOTAL).
2. PLACING AN EMPTY 4" PVC SCHEDULE 40 PIPE BESIDE THE EXISTING CONDUIT BETWEEN THESE NEW BOXES, APPROXIMATELY 300', TO BE USED AS A "SPARE" IN THE FUTURE, IF NECESSARY.
3. CONCRETE CAP BOTH THE EXISTING AND THE NEW 4" PIPE FOR APPROXIMATELY 70' WHERE THEY ARE SUSCEPTIBLE TO BEING EXPOSED BY EROSION.
4. PLACE APPROXIMATELY 8 NEW MARKER POLES AT BURIED PULL BOXES, POINTS OF INTERSECTION, AND ON EACH SIDE OF THE NEW ACCESS ROAD. SOME MARKERS WILL NEED TO BE PLACED AFTER THE ACCESS ROAD IS COMPLETED).
5. ALL WORK IS TO BE PERFORMED UNDER THE DIRECT PHYSICAL PRESENCE OF AN OSWF TECHNICIAN.

THIS TYPE OF PLANT PROTECTION IS CLASSIFIED AS NON-BETTERMENT WORK AND THEREFORE, IS BILLABLE TO THE DEVELOPER/PROPERTY OWNER. THE COST ESTIMATE, AS DETERMINED BY THE AT&T MAINTENANCE ENGINEER, TO PLAN PROTECT ALSO INCLUDES ENGINEERING, MATERIAL, CONTRACT LABOR, AT&T LABOR/SUPERVISION AND ADMINISTRATION.

THE ROW SUPERVISOR, SUPPORTING THE MAINTENANCE ENGINEER, HAS VERIFIED AT&T'S EASEMENT RIGHTS AND WILL PREPARE A STANDARD AT&T REIMBURSABLE AGREEMENT, ONLY AFTER THE RECEIPT OF NOTICE TO DO SO VIA EMAIL. NO WORK SHALL BE PERFORMED WITHOUT A FULLY-EXECUTED REIMBURSABLE AGREEMENT, BY AND BETWEEN THE DEVELOPER/PROPERTY OWNER AND AT&T, AND RECEIPT OF DEVELOPER OR PROPERTY OWNER'S CHECK DEPOSIT TO COVER THE ESTIMATED COST TO PERFORM THE REQUIRED PLANT PROTECTION, AS DECLARED NECESSARY IN AT&T'S SOLE JUDGEMENT.

AT&T ALSO CONSIDERS HIGHWAY DEPARTMENTS, COUNTIES, CITIES, AND UTILITIES AS "DEVELOPERS WHEN THE ENCROACH UPON THEIR EASEMENTS (WHEN THE AT&T FACILITIES ARE IN PRIVATE RIGHT-OF-WAY). THEY ARE ALSO LIABLE FOR ALL NON-BETTERMENT WORK (PLANT PROTECTION) AND MUST SIGN AN REIMBURSABLE AGREEMENT.



MILONE & MACBROOM
99 Rally Drive
Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733
www.miloneandmacbroom.com

DESCRIPTION	DATE	BY
REVISIONS	10/27/2016	ADJ
REVISIONS	11/16/2016	ADJ
REVISIONS	11/23/2016	ADJ

SITE PLAN - GRADING AND UTILITIES

BEACON FALLS ENERGY PARK

LOPUS ROAD

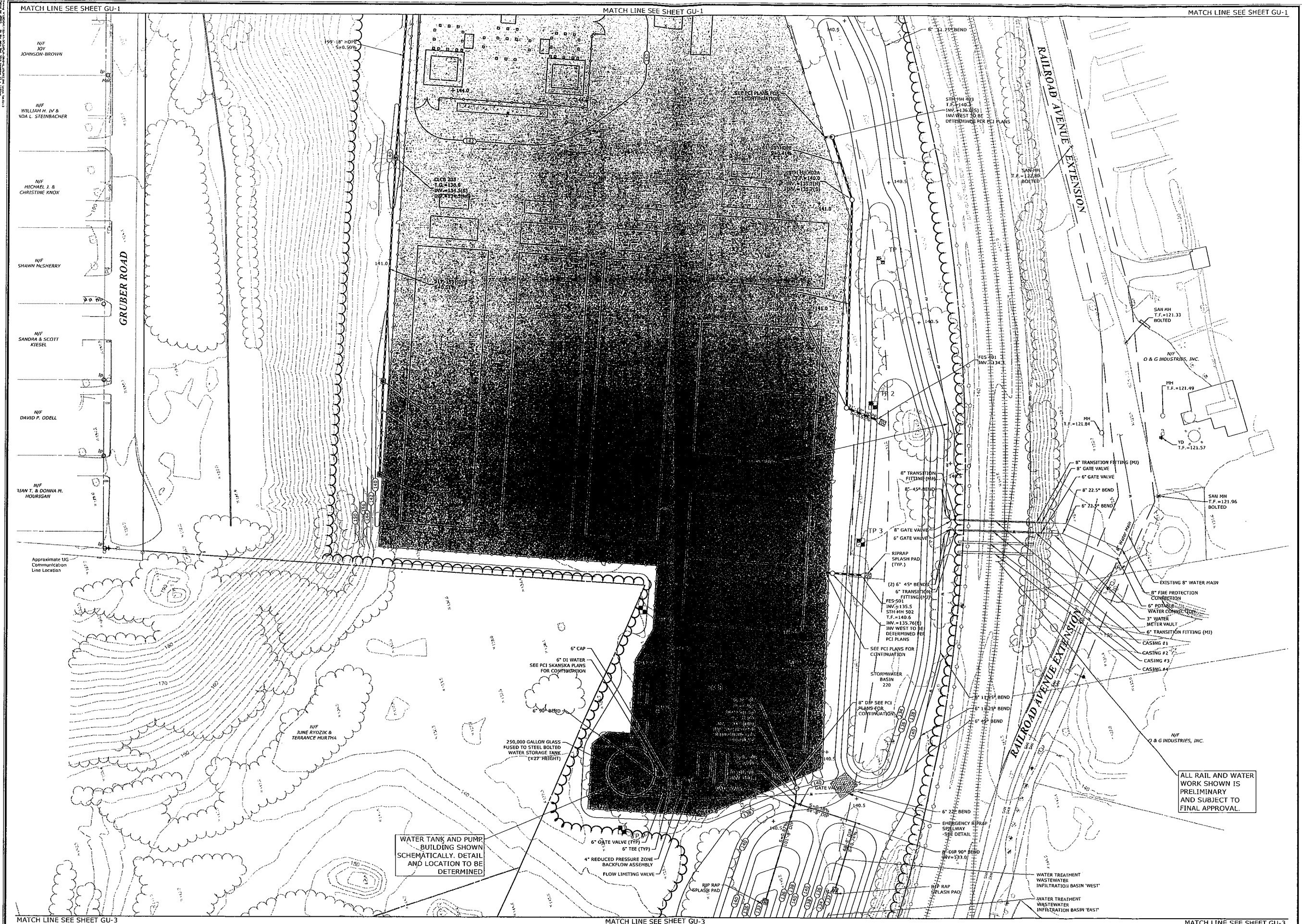
BEACON FALLS, CONNECTICUT

DJK	DJL	SRD
DESIGNED	DRAWN	CHECKED
1"=40'		
OCTOBER 7, 2016		
DATE		
1103-87		
PROJECT NO		

GU-1

SHEET NAME

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MATCH LINE SEE SHEET GU-1

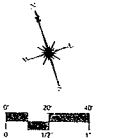
MATCH LINE SEE SHEET GU-1

MATCH LINE SEE SHEET GU-1

MATCH LINE SEE SHEET GU-3

MATCH LINE SEE SHEET GU-3

MATCH LINE SEE SHEET GU-3



MILONE & MacBROOM
99 Academy Drive
Cheshire, CT 06034
(203) 271-1773 Fax (203) 271-9733
www.miloneandmacbroom.com

DESCRIPTION	DATE	BY
REVISIONS	10/27/2016	ADS
REVISIONS	11/18/2016	ADS

SITE PLAN - GRADING AND UTILITIES

BEACON FALLS ENERGY PARK

LOPUS ROAD
BEACON FALLS, CONNECTICUT

DJK	DJL	SRD
DESIGNED	DRAWN	CHECKED

SCALE: 1"=40'

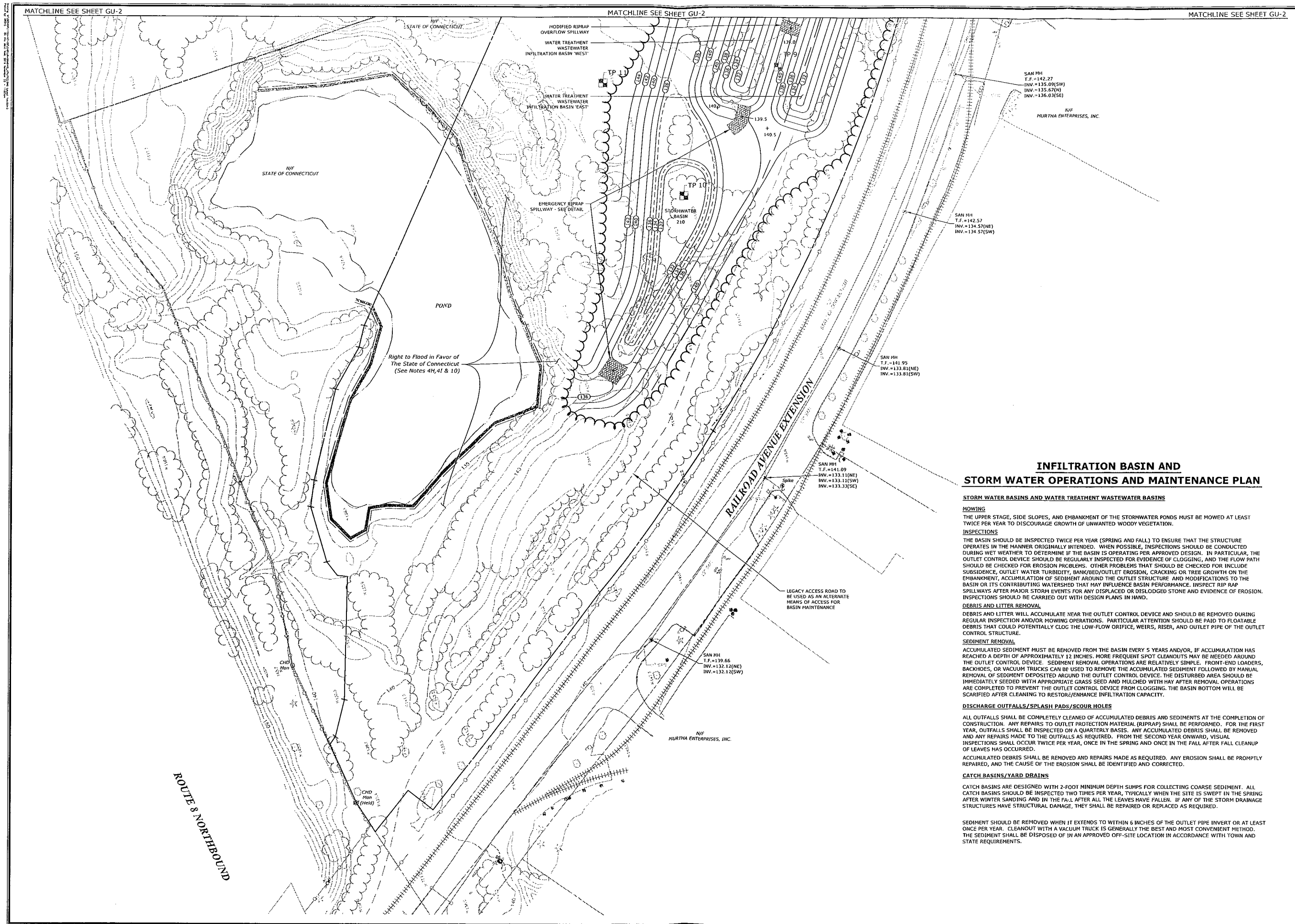
DATE: OCTOBER 7, 2016

PROJECT NO: 1103-87

GU-2

SHEET NAME

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**INFILTRATION BASIN AND
STORM WATER OPERATIONS AND MAINTENANCE PLAN**

STORM WATER BASINS AND WATER TREATMENT WASTEWATER BASINS

MOWING
THE UPPER STAGE, SIDE SLOPES, AND EMBANKMENT OF THE STORMWATER PONDS MUST BE MOWED AT LEAST TWICE PER YEAR TO DISCOURAGE GROWTH OF UNWANTED WOODY VEGETATION.

INSPECTIONS
THE BASIN SHOULD BE INSPECTED TWICE PER YEAR (SPRING AND FALL) TO ENSURE THAT THE STRUCTURE OPERATES IN THE MANNER ORIGINALLY INTENDED. WHEN POSSIBLE, INSPECTIONS SHOULD BE CONDUCTED DURING WET WEATHER TO DETERMINE IF THE BASIN IS OPERATING PER APPROVED DESIGN. IN PARTICULAR, THE OUTLET CONTROL DEVICE SHOULD BE REGULARLY INSPECTED FOR EVIDENCE OF CLOGGING, AND THE FLOW PATH SHOULD BE CHECKED FOR EROSION PROBLEMS. OTHER PROBLEMS THAT SHOULD BE CHECKED FOR INCLUDE SUBSIDENCE, OUTLET WATER TURBIDITY, BANK/BED/OUTLET EROSION, CRACKING OR TREE GROWTH ON THE EMBANKMENT, ACCUMULATION OF SEDIMENT AROUND THE OUTLET STRUCTURE AND MODIFICATIONS TO THE BASIN OR ITS CONTRIBUTING WATERSHED THAT MAY INFLUENCE BASIN PERFORMANCE. INSPECT RIP RAP SPILLWAYS AFTER MAJOR STORM EVENTS FOR ANY DISPLACED OR DISLODGED STONE AND EVIDENCE OF EROSION. INSPECTIONS SHOULD BE CARRIED OUT WITH DESIGN PLANS IN HAND.

DEBRIS AND LITTER REMOVAL
DEBRIS AND LITTER WILL ACCUMULATE NEAR THE OUTLET CONTROL DEVICE AND SHOULD BE REMOVED DURING REGULAR INSPECTION AND/OR MOWING OPERATIONS. PARTICULAR ATTENTION SHOULD BE PAID TO FLOATABLE DEBRIS THAT COULD POTENTIALLY CLOG THE LOW-FLOW ORIFICE, WEIRS, RISER, AND OUTLET PIPE OF THE OUTLET CONTROL STRUCTURE.

SEDIMENT REMOVAL
ACCUMULATED SEDIMENT MUST BE REMOVED FROM THE BASIN EVERY 5 YEARS AND/OR, IF ACCUMULATION HAS REACHED A DEPTH OF APPROXIMATELY 12 INCHES, MORE FREQUENT SPOT CLEANOUTS MAY BE NEEDED AROUND THE OUTLET CONTROL DEVICE. SEDIMENT REMOVAL OPERATIONS ARE RELATIVELY SIMPLE. FRONT-END LOADERS, BACKHOES, OR VACUUM TRUCKS CAN BE USED TO REMOVE THE ACCUMULATED SEDIMENT FOLLOWED BY MANUAL REMOVAL OF SEDIMENT DEPOSITED AROUND THE OUTLET CONTROL DEVICE. THE DISTURBED AREA SHOULD BE IMMEDIATELY SEEDED WITH APPROPRIATE GRASS SEED AND MULCHED WITH HAY AFTER REMOVAL OPERATIONS ARE COMPLETED TO PREVENT THE OUTLET CONTROL DEVICE FROM CLOGGING. THE BASIN BOTTOM WILL BE SCARIFIED AFTER CLEANING TO RESTORE/ENHANCE INFILTRATION CAPACITY.

DISCHARGE OUTFALLS/SPLASH PADS/SCOUR HOLES
ALL OUTFALLS SHALL BE COMPLETELY CLEANED OF ACCUMULATED DEBRIS AND SEDIMENTS AT THE COMPLETION OF CONSTRUCTION. ANY REPAIRS TO OUTLET PROTECTION MATERIAL (RIPRAP) SHALL BE PERFORMED. FOR THE FIRST YEAR, OUTFALLS SHALL BE INSPECTED ON A QUARTERLY BASIS. ANY ACCUMULATED DEBRIS SHALL BE REMOVED AND ANY REPAIRS MADE TO THE OUTFALLS AS REQUIRED. FROM THE SECOND YEAR ONWARD, VISUAL INSPECTIONS SHALL OCCUR TWICE PER YEAR, ONCE IN THE SPRING AND ONCE IN THE FALL AFTER FALL CLEANUP OF LEAVES HAS OCCURRED. ACCUMULATED DEBRIS SHALL BE REMOVED AND REPAIRS MADE AS REQUIRED. ANY EROSION SHALL BE PROMPTLY REPAIRED, AND THE CAUSE OF THE EROSION SHALL BE IDENTIFIED AND CORRECTED.

CATCH BASINS/YARD DRAINS
CATCH BASINS ARE DESIGNED WITH 2-FOOT MINIMUM DEPTH SUMPS FOR COLLECTING COARSE SEDIMENT. ALL CATCH BASINS SHOULD BE INSPECTED TWO TIMES PER YEAR, TYPICALLY WHEN THE SITE IS SWEEPED IN THE SPRING AFTER WINTER SANDING AND IN THE FALL AFTER ALL THE LEAVES HAVE FALLEN. IF ANY OF THE STORM DRAINAGE STRUCTURES HAVE STRUCTURAL DAMAGE, THEY SHALL BE REPAIRED OR REPLACED AS REQUIRED.

SEDIMENT SHOULD BE REMOVED WHEN IT EXTENDS TO WITHIN 6 INCHES OF THE OUTLET PIPE INVERT OR AT LEAST ONCE PER YEAR. CLEANOUT WITH A VACUUM TRUCK IS GENERALLY THE BEST AND MOST CONVENIENT METHOD. THE SEDIMENT SHALL BE DISPOSED OF IN AN APPROVED OFF-SITE LOCATION IN ACCORDANCE WITH TOWN AND STATE REQUIREMENTS.

MILONE & MACBROOM
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Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733
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DESCRIPTION	DATE	BY
REVISIONS	11/23/2015	ADS

SITE PLAN - GRADING AND UTILITIES

BEACON FALLS ENERGY PARK

LOPUS ROAD

BEACON FALLS, CONNECTICUT

DJK	DJL	SRD
DESIGNED	DRAWN	CHECKED

SCALE 1"=40'

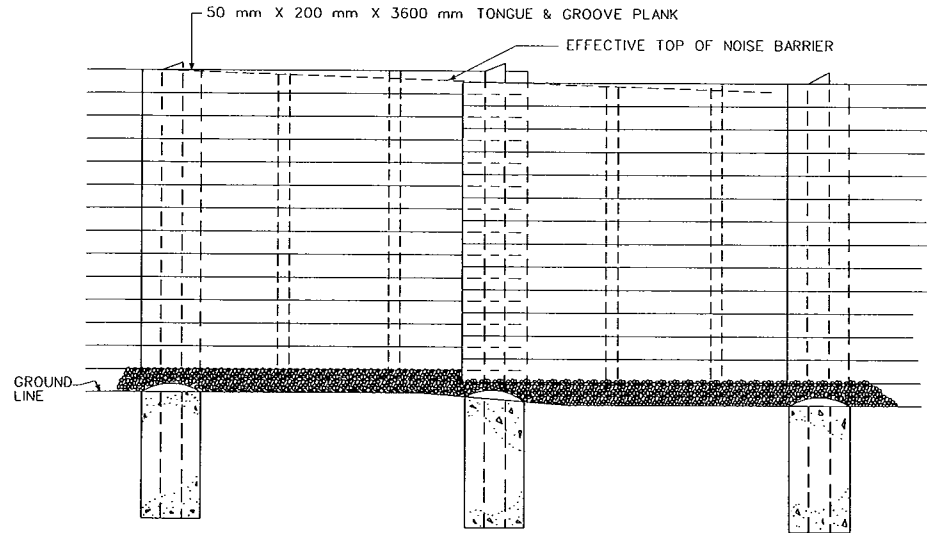
DATE OCTOBER 7, 2016

PROJECT NO 1103-87

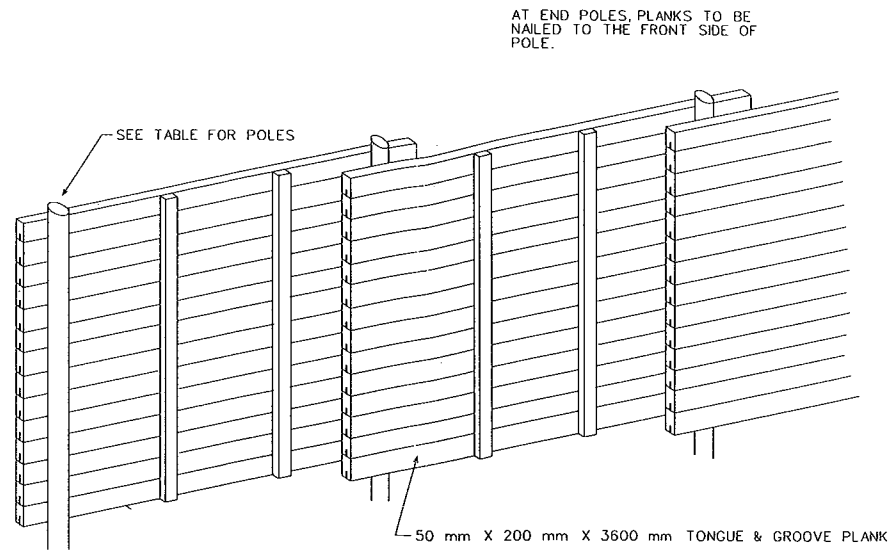
GU-3

SHEET NAME

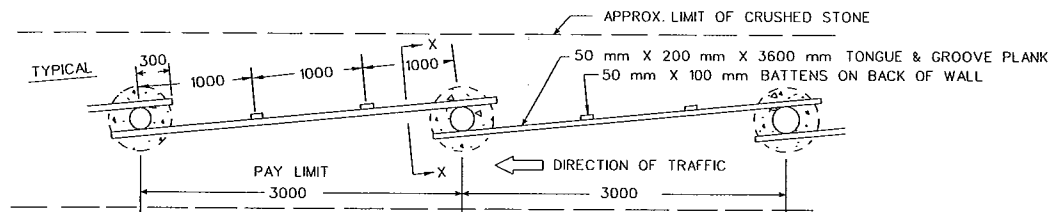
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ELEVATION



ISOMETRIC VIEW - SIDE AWAY FROM HIGHWAY



PLAN VIEW

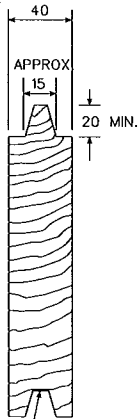


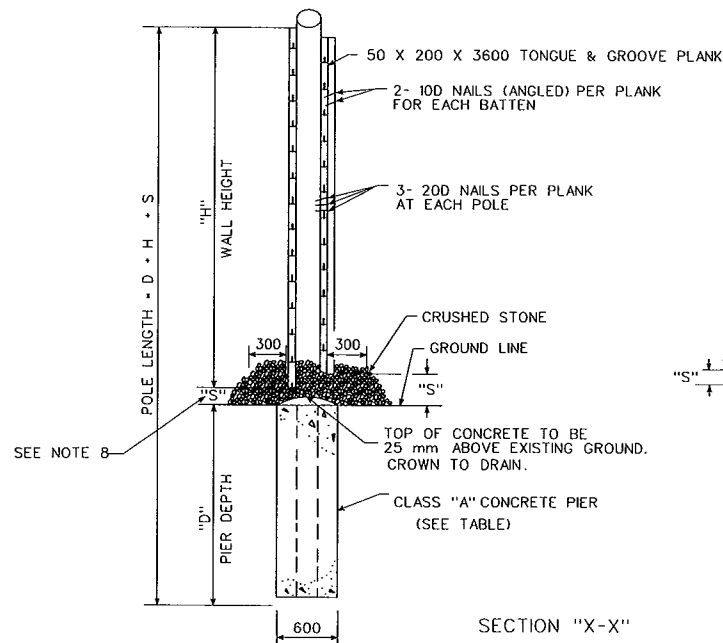
TABLE - PIER DEPTH-"D"-mm (GRANULAR SOIL ONLY)

WALL HGT "H" mm	POLE DIA. AT TOP OF PIER mm	MIN ALLOWABLE DIA AT TOP OF POLE mm	PIER DEPTH "D"		
			CASE * 1 mm	CASE * 2 mm	CASE * 3 mm
1800	175	140	1200	1800	1800
2400	200	150	1500	1800	2100
3000	225	165	1500	2100	2400
3600	250	180	1800	2400	2700
4200	275	190	2100	2700	3000
4800	300	205	2100	3000	3000
5400	325	215	2400	3000	3300
6000	350	230	2400	3300	3600
6600	375	240	2700	3600	3600

CASE *1 FLAT SURFACE WITH WATER TABLE BELOW BOTTOM OF HOLE.
CASE *2 FLAT SURFACE WITH WATER TABLE ABOVE BOTTOM OF HOLE.
CASE *3 A SIDE SLOPE OF 1:2 WITH WATER TABLE BELOW BOTTOM OF HOLE.

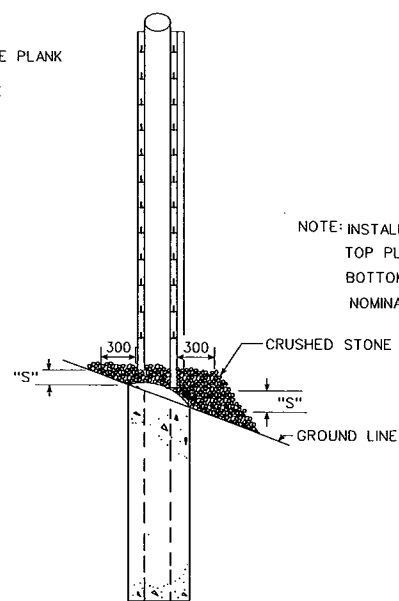
TEST CERTIFICATION REQUIRED - REF. ARTICLE 1.06.07	
CERTIFIED TEST REPORT	MATERIAL CERTIFICATE
LUMBER & POLES	
TREATMENT	

A CERTIFICATE OF COMPLIANCE IS ALSO REQUIRED ON THE ABOVE ITEMS.

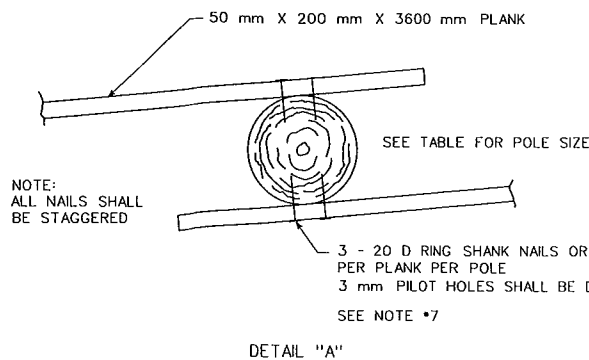


SECTION "X-X"

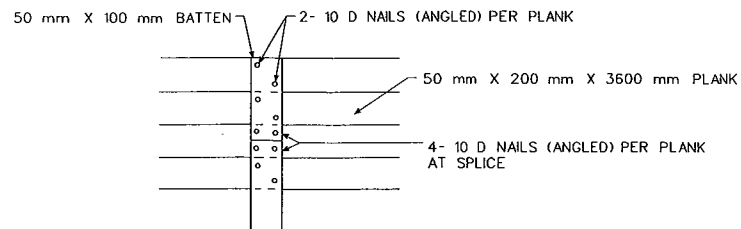
INSTALLED ON LEVEL GROUND



INSTALLED ON SLOPE



DETAIL "A"



DETAIL "B"

ALL DIMENSIONS ARE IN MILLIMETERS (mm) EXCEPT AS NOTED.

TIMBER NOISE BARRIER WALL
TYPE 1

- CONCRETE SHALL BE CLASS "A" IN CONFORMANCE WITH SECTION 6.01.
- LUMBER & POLES
ALL LUMBER SHALL BE NO.1KD OR BETTER SOUTHERN YELLOW PINE OR DOUGLAS FIR-LARCH, SURFACED FOUR SIDES. ALL LUMBER AND POLES SHALL BE COMMERCIALY INSPECTED BY AN INDEPENDENT COMPANY. ALL CCA TREATED LUMBER AND POLES SHALL BE KILN DRIED TO 15% MOISTURE CONTENT AFTER TREATMENT. POLES TO BE SOUTHERN YELLOW PINE OR DOUGLAS FIR CONFORMING TO AWPB CP-88.
- TREATING SPECIFICATIONS
TWO TYPES OF TREATMENT ARE ACCEPTABLE:
A: CCA IN ACCORDANCE WITH AWPB P-5
B: PENTACHLOROPHENOL IN ACCORDANCE WITH AWPB P-9, TYPE B (L.P.G.)
ALL MATERIAL SHALL HAVE A MINIMUM TREATMENT AS FOLLOWS:
PENTACHLOROPHENOL 8 kg/m³
CCA 6 kg/m³
CCA (POLES) 10 kg/m³
TREATMENT TO CONFORM TO AWPB C-2 FOR PLANK, PANELS, BATTENS AND AWPB C-4 FOR POLES.
ALL MATERIAL SHALL BE PROTECTED FROM WEATHER UNTIL INSTALLED.
- THE PLANK ENDS SHALL BE IN A VERTICAL STRAIGHT LINE AND ALL PLANKS SHALL FIT TIGHTLY AT THE TIME OF INSTALLATION. ANY PLANK WHICH DOES NOT FIT TIGHTLY SHALL BE REJECTED.
- FIELD CUTS AND HOLES SHALL BE TREATED IN ACCORDANCE WITH AWPB M4.
- STAIN - PENETRATING EXTERIOR OIL BASE SEMI-TRANSPARENT STAIN COMPATIBLE WITH THE PRESERVATIVE TREATMENT. (COLOR SHALL BE GREEN UNLESS OTHERWISE NOTED ON THE PLAN)
- ALL METAL SHALL BE STAINLESS STEEL TYPE 304 OR 316. 20D NAILS SHALL BE A MINIMUM DIAMETER OF 4.8 mm AND SHALL BE A MINIMUM OF 100 mm LONG. 10D NAILS SHALL HAVE A MINIMUM DIAMETER OF 3.7 mm AND SHALL BE A MINIMUM OF 70 mm LONG. ALL NAILS SHALL BE RINGSHANKED. LAG BOLTS SHALL BE 6.4 mm DIAMETER X 100 mm LONG.
- THE CRUSHED STONE SHALL CONFORM TO ARTICLE M.01.01, PLACED TO A MIN. DEPTH OF 50 mm ABOVE THE BOTTOM OF THE PANEL PLANKS. "S" SHALL BE A MINIMUM OF 50 mm.

CONSULTANT FILE NAME: C:\CTDOT\PROJECTS\92-531\CTDOT\Highway\Drawings\92-531\92-531-MISCELLANEOUS.DWG

REV.	DATE	DESCRIPTION	SHEET NO.

NOT TO SCALE

DESIGNER:
DRAFTER:
CHECKED BY: S. WEXELL
DATE CHECKED: 2/7/2010



STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

ENGINEER: H. W. LOCHNER, INC.
APPROVED BY: D. ISABELLE

DATE: 2/7/2010

PROJECT TITLE:
RECONSTRUCTION OF
I-95 / I-91 / RT-34 INTERCHANGE
CONTRACT E
CADD: 0920531.mds
PLOTTED: 1/30/2010

TOWN:
NEW HAVEN
DRAWING TITLE:
MISCELLANEOUS DETAILS

PROJECT NO.: 92-531
DRAWING NO.: MDS-21
SHEET NO.: 01.07.021