

APPENDICES

DATCP #4611

Kieler Substation

Town of Paris, Grant County

**WISCONSIN DEPARTMENT OF AGRICULTURE,
TRADE AND CONSUMER PROTECTION**

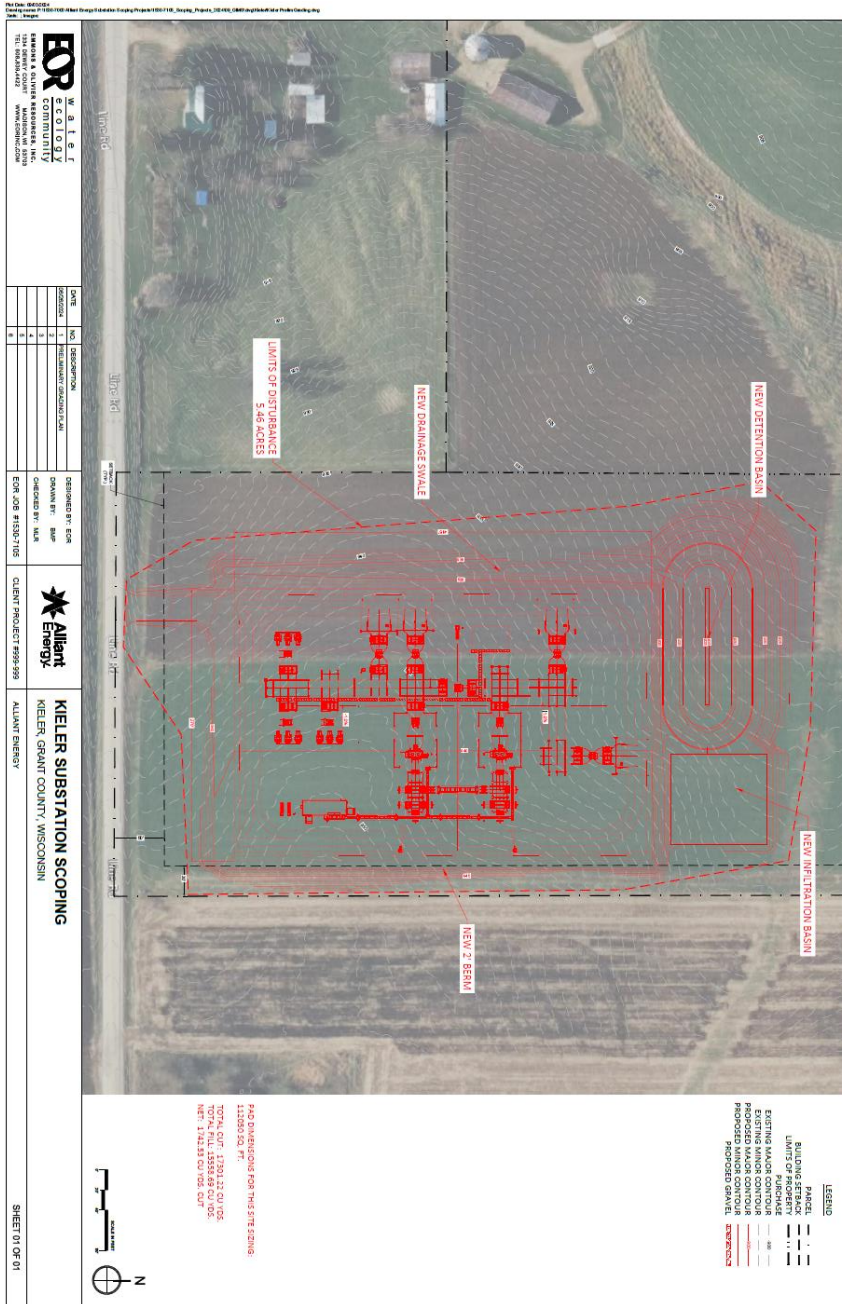
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APPENDIX A: ADDITIONAL FIGURES & TABLES

Figure 1: Emmons & Oliver Resources, Inc. (EOR). 2024. Kieler Substation Scoping. Alliant Energy.



APPENDIX B: APPRAISAL AND COMPENSATION PROCESS

The acquisition of land by entities including but not limited to departments, municipalities, boards, commissions, public officers, and business with eminent domain authority in Wisconsin, is stipulated under [Wis. Stat. §32.06](#). If the entity (referred to as the condemnor) actualizes their powers of eminent domain by exercising condemnation, the condemnor shall first provide an appraisal of the affected property to each landowner prior to the start of land acquisition negotiations. An appraisal is an estimate of fair market value, additional information about the appraisal process and landowners rights can be found in the Wisconsin Department of Administration publication, "[The Rights of Landowners under Wisconsin Eminent Domain Law](#)," also listed in Appendix C.

The condemnor may conduct a market study to determine current area property values of affected property. If the landowner signs an appraisal waiver form, the market study will be the basis for the condemnor's offer of compensation and no individual property appraisal will be conducted. The condemnor may also offer additional compensation to landowners who choose to sign the appraisal waiver form.

Landowners have the right to obtain their own appraisal of their property under Wisconsin's eminent domain law ([Wis. Stat. §32.06](#)) and will be compensated for the cost of this appraisal if the following conditions are met:

- The appraisal must be submitted to the condemnor or its designated real estate contractor within 60 days after the landowner receives the initial appraisal
- The appraisal fee must be reasonable
- The appraisal must be a full, narrative appraisal
- The appraisal must be completed by a qualified appraiser

Through the process of condemnation, a jurisdictional offer made to the landowner in accordance with [Wis. Stat. §32.06\(3\)](#) will include an appraisal of the fair market value for the land acquisition or easement and any anticipated damages to the property. The fair market value means the price that a willing buyer would pay to a willing seller in the market. This will be based on at least one full narrative appraisal for each property the condemnor intends to acquire. The appraisal must be presented to the landowner. The amount of compensation is based on the appraisal(s) and is established during the negotiation process between condemnor and the individual landowners.

The condemnor is required to provide landowners with information about their rights in this process before negotiations begin. [Wis. Stat. § 32.035\(4\)\(d\)](#) additionally stipulates that if the condemnor actualizes their condemnation authority, the condemnor cannot negotiate with a landowner or make a jurisdictional offer until 30 days after the AIS is published.

APPENDIX C: WISCONSIN'S AGRICULTURAL IMPACT STATEMENT STATUTE

The Department of Agricultural, Trade and Consumer Protection (referred to as the Department) is required to prepare an AIS whenever more than five acres of land from at least one farm operation will be acquired for a public project if the agency/company acquiring the land has the authority to use eminent domain for property acquisitions. The Department has the option to prepare an AIS for projects affecting five or fewer acres from each farm if the proposed project would have significant effects on a farm operation. The entity proposing a construction project is required to provide the Department with the necessary details of the project so that the potential impacts and effects of the project on farm operations can be analyzed. DATCP has 60 days to make recommendations and prepare the AIS. DATCP shall publish the AIS upon receipt of the fee required to prepare the AIS. The Department provides the AIS to affected farmland owners, various state and local officials, local media and libraries, and any other individual or group who requests a copy. Thirty days after the date of publication, the project initiator may begin negotiating with the landowner(s) for the property.

[Wisconsin Statute § 32.035](#) is provided below and describes the Wisconsin Agricultural Impact Statement procedure and content.

(1) DEFINITIONS. In this section:

- (a) "Department" means department of agriculture, trade, and consumer protection.
- (b) "Farm operation" means any activity conducted solely or primarily for the production of one or more agricultural commodities resulting from an agricultural use, as defined in s. 91.01 (2), for sale and home use, and customarily producing the commodities in sufficient quantity to be capable of contributing materially to the operator's support.

(2) EXCEPTION. This section shall not apply if an environmental impact statement under s. 1.11 is prepared for the proposed project and if the department submits the information required under this section as part of such statement or if the condemnation is for an easement for the purpose of constructing or operating an electric transmission line, except a high voltage transmission line as defined in s. 196.491(1) (f).

(3) PROCEDURE. The condemnor shall notify the department of any project involving the actual or potential exercise of the powers of eminent domain affecting a farm operation. If the condemnor is the department of natural

resources, the notice required by this subsection shall be given at the time that permission of the senate and assembly committees on natural resources is sought under s. 23.09(2)(d) or 27.01(2)(a). To prepare an agricultural impact statement under this section, the department may require the condemnor to compile and submit information about an affected farm operation. The department shall charge the condemnor a fee approximating the actual costs of preparing the statement. The department may not publish the statement if the fee is not paid.

(4) IMPACT STATEMENT.

(a) *When an impact statement is required; permitted.* The department shall prepare an agricultural impact statement for each project, except a project under Ch. 82 or a project located entirely within the boundaries of a city or village, if the project involves the actual or potential exercise of the powers of eminent domain and if any interest in more than 5 acres from any farm operation may be taken. The department may prepare an agricultural impact statement on a project located entirely within the boundaries of a city or village or involving any interest in 5 or fewer acres of any farm operation if the condemnation would have a significant effect on any farm operation as a whole.

(b) *Contents.* The agricultural impact statement shall include:

1. A list of the acreage and description of all land lost to agricultural production and all other land with reduced productive capacity, whether or not the land is taken.
2. The department's analyses, conclusions, and recommendations concerning the agricultural impact of the project.

(c) *Preparation time; publication.* The department shall prepare the impact statement within 60 days of receiving the information requested from the condemnor under sub. (3). The department shall publish the statement upon receipt of the fee required under sub. (3).

(d) *Waiting period.* The condemnor may not negotiate with an owner or make a jurisdictional offer under this subchapter until 30 days after the impact statement is published.

(5) PUBLICATION. Upon completing the impact statement, the department shall distribute the impact statement to the following:

(a) The governor's office.

- (b) The senate and assembly committees on agriculture and transportation.
- (c) All local and regional units of government that have jurisdiction over the area affected by the project. The department shall request that each unit post the statement at the place normally used for public notice.
- (d) Local and regional news media in the area affected.
- (e) Public libraries in the area affected.
- (f) Any individual, group, club, or committee that has demonstrated an interest and has requested receipt of such information.
- (g) The condemnor.

I. STATUTES GOVERNING EMINENT DOMAIN

The details governing eminent domain as it relates to WisDOT projects are included in Wis. Stat. Ch. 32 (<http://docs.legis.wisconsin.gov/statutes/statutes/32.pdf>).

The Department recommends that farmland owners concerned about eminent domain powers and the acquisition of land should review this statute in its entirety. Landowners may also wish to consult with an attorney who should have expertise in eminent domain proceedings. In addition, any Wisconsin licensed appraiser that landowners employ regarding a project where eminent domain could be used should be knowledgeable in partial takings.

Section 32.09 of the Wisconsin Statutes describes the compensation provided for property acquisition and certain damages:

(6) In the case of a partial taking of property other than an easement, the compensation to be paid by the condemnor shall be the greater of either the fair market value of the property taken as of the date of evaluation or the sum determined by deducting from the fair market value of the whole property immediately before the date of evaluation, the fair market value of the remainder immediately after the date of evaluation, assuming the completion of the public improvement and giving effect, without allowance of offset for general benefits, and without restriction because of enumeration but without duplication, to the following items of loss or damage to the property where shown to exist:

- (a)** Loss of land including improvements and fixtures actually taken.
- (b)** Deprivation or restriction of existing right of access to highway from abutting land, provided that nothing herein shall operate to restrict the power of the state or any of its

subdivisions or any municipality to deprive or restrict such access without compensation under any duly authorized exercise of the police power.

(c) Loss of air rights.

(d) Loss of a legal nonconforming use.

(e) Damages resulting from actual severance of land including damages resulting from severance of improvements or fixtures and proximity damage to improvements remaining on condemnee's land. In determining severance damages under this paragraph, the condemnor may consider damages which may arise during construction of the public improvement, including damages from noise, dirt, temporary interference with vehicular or pedestrian access to the property and limitations on use of the property. The condemnor may also consider costs of extra travel made necessary by the public improvement based on the increased distance after construction of the public improvement necessary to reach any point on the property from any other point on the property.

(f) Damages to property abutting on a highway right of way due to change of grade where accompanied by a taking of land.

(g) Cost of fencing reasonably necessary to separate land taken from remainder of condemnee's land, less the amount allowed for fencing taken under par. (a), but no such damage shall be allowed where the public improvement includes fencing of right of way without cost to abutting lands.

Section 32.19 of the Wisconsin Statutes outlines payments to be made to displaced tenant occupied businesses and farm operations.

(4m) BUSINESS OR FARM REPLACEMENT PAYMENT. (a) Owner-occupied business or farm operation. In addition to amounts otherwise authorized by this subchapter, the condemnor shall make a payment, not to exceed \$50,000, to any owner displaced person who has owned and occupied the business operation, or owned the farm operation, for not less than one year prior to the initiation of negotiations for the acquisition of the real property on which the business or farm operation lies, and who actually purchases a comparable replacement business or farm operation for the acquired property within two years after the date the person vacates the acquired property or receives payment from the condemnor, whichever is later. An owner displaced person who has owned and occupied the business operation, or owned the farm operation, for not less than one year prior to the initiation of negotiations for the acquisition of the real property on which the business or farm operation lies may elect to receive the payment under par. (b) 1. in lieu of the payment under this paragraph, but the amount of payment under par. (b) 1. to such an owner displaced person may not exceed the amount the owner displaced person is eligible to

receive under this paragraph. The additional payment under this paragraph shall include the following amounts:

1. The amount, if any, which when added to the acquisition cost of the property, other than any dwelling on the property, equals the reasonable cost of a comparable replacement business or farm operation for the acquired property, as determined by the condemnor.
2. The amount, if any, which will compensate such owner displaced person for any increased interest and other debt service costs which such person is required to pay for financing the acquisitions of any replacement property, if the property acquired was encumbered by a bona fide mortgage or land contract which was a valid lien on the property for at least one year prior to the initiation of negotiations for its acquisition. The amount under this subdivision shall be determined according to rules promulgated by the department of administration.
3. Reasonable expenses incurred by the displaced person for evidence of title, recording fees and other closing costs incident to the purchase of the replacement property, but not including prepaid expenses.

(b) Tenant-occupied business or farm operation. In addition to amounts otherwise authorized by this subchapter, the condemnor shall make a payment to any tenant displaced person who has owned and occupied the business operation, or owned the farm operation, for not less than one year prior to initiation of negotiations for the acquisition of the real property on which the business or operation lies or, if displacement is not a direct result of acquisition, such other event as determined by the department of commerce, and who actually rents or purchases a comparable replacement business or farm operation within 2 years after the date the person vacates the property. At the option of the tenant displaced person, such payment shall be either:

1. The amount, not to exceed \$30,000, which is necessary to lease or rent a comparable replacement business or farm operation for a period of 4 years. The payment shall be computed by determining the average monthly rent paid for the property from which the person was displaced for the 12 months prior to the initiation of negotiations or, if displacement is not a direct result of acquisition, such other event as determined by the department of administration and the monthly rent of a comparable replacement business or farm operation and multiply the difference by 48; or
2. If the tenant displaced person elects to purchase a comparable replacement business or farm operation, the amount determined under subd. 1 plus expenses under par. (a) 3.

(5) EMINENT DOMAIN. Nothing in this section or ss. 32.25 to 32.27 shall be construed as creating in any condemnation proceedings brought under the power of eminent domain, any element of damages.

Section 32.25 of the Wisconsin Statutes delineates steps to be followed when displacing persons, businesses, and farm operations.

- (1)** Except as provided under sub.(3) and s. 85.09 (4m), no condemnor may proceed with any activity that may involve the displacement of persons, business concerns or farm operations until the condemnor has filed in writing a relocation payment plan and relocation assistance service plan and has had both plans approved in writing by the department of administration.
- (2)** The relocation assistance service plan shall contain evidence that the condemnor has taken reasonable and appropriate steps to:
 - (a) Determine the cost of any relocation payments and services or the methods that are going to be used to determine such costs.
 - (b) Assist owners of displaced business concerns and farm operations in obtaining and becoming established in suitable business locations or replacement farms.
 - (c) Assist displaced owners or renters in the location of comparable dwellings.
 - (d) Supply information concerning programs of federal, state and local governments which offer assistance to displaced persons and business concerns.
 - (e) Assist in minimizing hardships to displaced persons in adjusting to relocation.
 - (f) Secure, to the greatest extent practicable, the coordination of relocation activities with other project activities and other planned or proposed governmental actions in the community or nearby areas which may affect the implementation of the relocation program.
 - (g) Determine the approximate number of persons, farms or businesses that will be displaced and the availability of decent, safe and sanitary replacement housing.
 - (h) Assure that, within a reasonable time prior to displacement, there will be available, to the extent that may reasonably be accomplished, housing meeting the standards established by the department of administration for decent, safe and sanitary dwellings. The housing, so far as practicable, shall be in areas not generally less desirable in regard to public utilities, public and commercial facilities and at rents or prices within the financial means of the families and individuals displaced and equal in number to the number of such displaced families or individuals and reasonably accessible to their places of employment.
 - (i) Assure that a person shall not be required to move from a dwelling unless the person has had a reasonable opportunity to relocate to a comparable dwelling.

(3) (a) Subsection (1) does not apply to any of the following activities engaged in by a condemnor:

1. Obtaining an appraisal of property.
2. Obtaining an option to purchase property, regardless of whether the option specifies the purchase price, if the property is not part of a program or project receiving federal financial assistance.

II. STATUTES GOVERNING ACCESS

Section 86.05 of the Wisconsin Statutes states that access shall be provided to land which abuts a highway:

Entrances to highway restored. Whenever it is necessary, in making any highway improvement to cut or fill or otherwise grade the highway in front of any entrance to abutting premises, a suitable entrance to the premises shall be constructed as a part of the improvements, and if the premises are divided by the highway, then one such entrance shall be constructed on each side of the highway. Thereafter, each entrance shall be maintained by the owner of the premises. During the time the highway is under construction, the state, county, city, village or town shall not be responsible for any damage that may be sustained through the absence of an entrance to any such premises.

Section 84.25 of the Wisconsin Statutes describes access restrictions concerning a controlled-access highway.

(3) CONSTRUCTION; OTHER POWERS OF DEPARTMENT. In order to provide for the public safety, convenience and the general welfare, the department may use an existing highway or provide new and additional facilities for a controlled-access highway and so design the same and its appurtenances, and so regulate, restrict or prohibit access to or departure from it as the department deems necessary or desirable. The department may eliminate intersections at grade of controlled-access highways with existing highways or streets, by grade separation or service road, or by closing off such roads and streets at the right-of-way boundary line of such controlled-access highway and may divide and separate any controlled-access highway into separate roadways or lanes by raised curbing, dividing sections or other physical separations or by signs, markers, stripes or other suitable devices, and may execute any construction necessary in the development of a controlled-access highway including service roads or separation of grade structures.

(4) CONNECTIONS BY OTHER HIGHWAYS. After the establishment of any controlled-access highway, no street or highway or private driveway, shall be opened into or connected with any

controlled-access highway without the previous consent and approval of the department in writing, which shall be given only if the public interest shall be served thereby and shall specify the terms and conditions on which such consent and approval is given.

(5) USE OF HIGHWAY. No person shall have any right of entrance upon or departure from or travel across any controlled-access highway, or to or from abutting lands except at places designated and provided for such purposes, and on such terms and conditions as may be specified from time to time by the department.

(6) ABUTTING OWNERS. After the designation of a controlled-access highway, the owners or occupants of abutting lands shall have no right or easement of access, by reason of the fact that their property abuts on the controlled-access highway or for other reason, except only the controlled right of access and of light, air or view.

(7) SPECIAL CROSSING PERMITS. Whenever property held under one ownership is severed by a controlled-access highway, the department may permit a crossing at a designated location, to be used solely for travel between the severed parcels, and such use shall cease if such parcels pass into separate ownership.

III. STATUTES GOVERNING DRAINAGE

[Section 88.87\(2\) of the Wisconsin Statutes](#) describes regulations concerning rights of drainage:

(a) Whenever any county, town, city, village, railroad company or the department of transportation has heretofore constructed and now maintains or hereafter constructs and maintains any highway or railroad grade in or across any marsh, lowland, natural depression, natural watercourse, natural or man-made channel or drainage course, it shall not impede the general flow of surface water or stream water in any unreasonable manner so as to cause either an unnecessary accumulation of waters flooding or water-soaking uplands or an unreasonable accumulation and discharge of surface water flooding or water-soaking lowlands. All such highways and railroad grades shall be constructed with adequate ditches, culverts, and other facilities as may be feasible, consonant with sound engineering practices, to the end of maintaining as far as practicable the original flow lines of drainage. This paragraph does not apply to highways or railroad grades used to hold and retain water for cranberry or conservation management purposes.

(b) Drainage rights and easements may be purchased or condemned by the public authority or railroad company having control of the highway or railroad grade to aid in the prevention of damage to property owners which might otherwise occur as a result of failure to comply with par. (a).

(c) If a city, village, town, county, or railroad company or the department of transportation constructs and maintains a highway or railroad grade not in accordance with par. (a), any property owner damaged by the highway or railroad grade may, within 3 years after the alleged damage occurred, file a claim with the appropriate governmental agency or railroad company. The claim shall consist of a sworn statement of the alleged faulty construction and a description, sufficient to determine the location of the lands, of the lands alleged to have been damaged by flooding or water-soaking. Within 90 days after the filing of that claim, the governmental agency or railroad company shall either correct the cause of the water damage, acquire rights to use the land for drainage or overflow purposes, or deny the claim. If the agency or company denies the claim or fails to take any action within 90 days after the filing of the claim, the property owner may bring an action in inverse condemnation under ch. 32 or sue for such other relief, other than damages, as may be just and equitable.

WisDOT [specification 205.3.3](#) further describes its policies concerning drainage:

- (1)** During construction, maintain roadway, ditches, and channels in a well-drained condition at all times by keeping the excavation areas and embankments sloped to the approximate section of the ultimate earth grade. Perform blading or leveling operations when placing embankments and during the process of excavation except if the excavation is in ledge rock or areas where leveling is not practical or necessary. If it is necessary in the prosecution of the work to interrupt existing surface drainage, sewers, or under drainage, provide temporary drainage until completing permanent drainage work.
- (2)** If storing salvaged topsoil on the right-of-way during construction operations, stockpile it to preclude interference with or obstruction of surface drainage.
- (3)** Seal subgrade surfaces as specified for subgrade intermediate consolidation and trimming in 207.3.9.
- (4)** Preserve, protect, and maintain all existing tile drains, sewers, and other subsurface drains, or parts thereof that the engineer judges should continue in service without change. Repair, at no expense to the department, all damage to these facilities resulting from negligence or carelessness of the contractor's operations.

APPENDIX D: ADDITIONAL INFORMATION SOURCES

Wisconsin State Statutes

- Wisconsin Statute Chapter 91: [Farmland Preservation](#)
 - Subchapter 91.46(4): [Conditional Uses](#)
- Wisconsin Statute Chapter 32: [Eminent Domain](#)
 - Subchapter 32.035: [Agricultural Impact Statement](#)

Department of Agricultural, Trade and Consumer Protection Website Links

- [DATCP \(datcp.wi.gov\)](#)
- [Farmland Preservation](#)
- [Agricultural Impact Statements](#)
- [Wisconsin Farm Center](#) (Information on services provided to Wisconsin farmers including financial mediation, stray voltage, legal, vocational, and farm transfers)
- [Drainage Districts](#)

Department of Administration (DOOA) Website Links

- [DOA \(doa.wi.gov\)](#)
- [Relocation Assistance](#) (Publications on landowner rights under Wisconsin's eminent domain law)
- [Wisconsin Relocation Rights Residential](#)
- [Wisconsin Relocation Rights for Businesses, Farm and Nonprofit Organizations](#)
- [The Rights of Landowners under Wisconsin Eminent Domain Law](#), Procedures under sec. 32.06 Wis. Stats. (Condemnation procedures in matters other than highways, streets, storm & sanitary sewers, watercourses, alleys, airports and mass transit facilities)

Department of Natural Resources (facility plan) Website Links

- [DNR \(dnr.wi.gov\)](#)
- [Managed Forest Law](#)

U.S. Department of Agriculture (USDA)

- [USDA \(usda.gov\)](#)
- [National Agricultural Statistics Service](#)
- [Web Soil Survey](#)
- [Soil Quality – Urban Technical Note No. 1, Erosion and Sedimentation on Construction Sites](#)

Wisconsin Department of Safety and Professional Services (DPS)

- [DPS \(dps.wi.gov\)](https://dps.wi.gov)
- [Real Estate Appraisers](#) (Look-up for state certification status of different types of real estate appraisers)

State Bar of Wisconsin

- [State Bar of Wisconsin \(www.wisbar.org\)](http://www.wisbar.org)
- For general legal information and assistance in finding a lawyer

**APPENDIX E: WISCONSIN POWER AND LIGHT BEST
MANAGEMENT PRACTICES- SUBSTATION CONSTRUCTION
SPECIFICATIONS**

See Next Page for Attachment



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CONSTRUCTION SPECIFICATION

SITE PREPARATION, SUBSTATION, WPL

WPL SUBSTATION SITE PREPARATION

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ATTACHMENT A – Project Information
ATTACHMENT B – Proposal Summary Form



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CONSTRUCTION SPECIFICATION

SITE PREPARATION, SUBSTATION, WPL

1. SCOPE

- a. This specification defines the requirements for site preparation of an electrical substation as shown on the engineered site plan drawings identified in Attachment A.

2. GENERAL

- a. Alliant Energy Corporation (herein known as the Company) intends to build a new or expand the existing electric substation on the property shown on the drawings. Drilled piers, shallow foundations, and slabs on grade will be used to support the substation structures. The Company desires to have the Contractor prepare this site in a manner that will: accommodate these foundations without future settlement or displacement due to compaction of the fill materials or heaving due to frost; provide an all-weather driveway and yard area allowing year-round access for the construction, operation, and maintenance of the facility; and prevent erosion as well as transport of sediments from the site. If, in the Contractor's opinion, any requirement of this specification is inconsistent with any of the above stated objectives, the Contractor shall point out such inconsistency to the Company for resolution.
- b. The Work consists of clearing and grubbing; stripping topsoil, offsite disposal of excess topsoil and unsuitable subsoil; excavation and embankment of site soils; furnishing and placing of fill; placing stone, topsoil, seed, and mulch; as well as all other associated work as shown on the drawings and prescribed by this specification.
- c. The Contractor shall furnish all supervision, materials, labor, tools, and equipment needed to complete the described Work as outlined by this specification and all documents listed on Attachment A of this specification.

3. DEFINITIONS

- a. The following titles, words, and abbreviations as used herein and on the drawings have the following meanings:
 - 1) **Alliant Energy or Company:** Alliant Energy Corporation, Wisconsin Power and Light Company
 - 2) **Representative:** Party, individual, firm, partnership, or corporation who is hired or retained by the Company to represent Alliant Energy.
 - 3) **Construction Manager:** A representative of the Company who is responsible for the coordination of Work as it is performed in accordance with these specifications.
 - 4) **Project Engineer:** A representative of the Company who is responsible for the design, inspection, and acceptance of Work as it is performed in accordance with these specifications.
 - 5) **Geotechnical Consultant:** A representative of the Company who possesses geotechnical expertise for performing services that include investigating existing subsurface conditions and fill materials; designing earthworks and structure foundations; and monitoring site conditions, earthwork and foundation construction.
 - 6) **Environmental Consultant:** A representative of the Company who possesses environmental expertise for performing services that include investigating existing hydrology; designing erosion controls, stormwater management, and site restoration; and

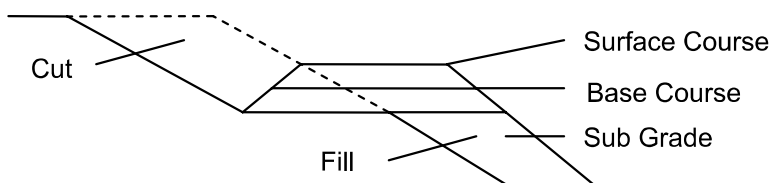


CONSTRUCTION SPECIFICATION

SITE PREPARATION, SUBSTATION, WPL

monitoring site conditions, earthwork, and erosion control and stormwater management construction.

- 7) **Contractor:** Party, individual, firm, partnership, or corporation who is awarded the contract by the company for performing services as specified in these documents. The Contractor shall perform the Work and accept the responsibilities described in all sections of this contract unless otherwise specified.
- 8) **Work:** Any and all site preparation activities performed during the course of the project. The Work may include (but is not limited to) removing and disposing of topsoil and subsoil, furnishing and placing of fill and crushed stone, replacing topsoil, and placing seed as shown on drawings and prescribed by this specification.
- 9) **Drawings:** The engineered site plan and below grade drawings that are issued from the Company to the Contractor, detailing the Work to be performed.
- 10) **Soil/Aggregate Layers:**



4. CODES, STANDARDS, AND SPECIFICATIONS

- a. All Work performed under this specification shall meet the requirements of the latest revision of the following standards unless stated otherwise in this specification. Applicable standards shall be the latest revision and supplements to the following:
 - 1) American Society for Testing and Materials (ASTM) D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
 - 2) ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 3) ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - 4) Associated General Contractors of America, Inc. "Manual of Accident Prevention in Construction"
 - 5) Wisconsin Department of Natural Resources (WI DNR) Construction Site Erosion and Sediment Control Standards
 - 6) Wisconsin Department of Transportation (WisDOT) Standard Specifications for Highway and Structure Construction
 - 7) Occupational Safety and Health Administration (OSHA)



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CONSTRUCTION SPECIFICATION

SITE PREPARATION, SUBSTATION, WPL

- 8) American Association of State Highway and Transportation Officials (AASHTO) M 36 M, Standard Specification for Corrugated Steel Pipe, Metallic Coated, for Sewers and Drains.

5. LAWS TO BE OBSERVED

- a. At all times, Contractor shall observe and comply with all applicable federal and state laws and administrative rules, codes, local laws, ordinances, and regulations that affect the conduct of the Work, as well as applicable orders or decrees of bodies or tribunals having jurisdiction or authority over the Work. The Company will consider no plea of misunderstanding or ignorance thereof. The Contractor shall indemnify and save harmless the Company and all of its officers, agents, and employees against any claim or liability arising from or based on the violation of any applicable law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees, subcontractors, or agents.
- b. At all times, the Contractor shall comply with all applicable federal, state, and local health official rules and regulations governing safety, health, and sanitation. Contractor shall provide all necessary safeguards, safety devices, and protective equipment.

6. SCHEDULE OF WORK

- a. The Work, with the exception of removal of temporary erosion control practices, shall be scheduled with the Construction Manager within the earliest possible start date and latest possible end date as identified in Attachment A. The removal of temporary erosion control practices shall be completed after cover establishment or permanent stabilization, no less than sixty days from completion of seeding and mulching activities.

7. LOCATION OF WORK

- a. The Work shall be completed at the substation site location as identified in Attachment A.

8. APPLICABLE DOCUMENTS

- a. The drawings, land rights documents, and other related documents specific to the Work are listed in Attachment A.

9. PERMITS AND EASEMENTS

- a. The Company will provide the land rights, easements, and building permit(s), including any environmental permits, as listed in Attachment A. The Contractor shall obtain, at his or her cost, any licenses or permits for moving material and equipment. The Contractor shall comply with the requirements stated in all applicable permits and easements. If, in the opinion of the Contractor, the requirements of any permit or easement conflicts with the terms of the Contract, the Contractor shall so inform the Company and the Company's instructions shall be followed in a manner consistent with the law.

10. COORDINATION OF WORK

- a. The Contractor shall coordinate all work with other contractors and utilities performing such work concurrently and consecutively.



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- b. The Contractor shall coordinate with all other contractors retained by the Company in association with this project.
- c. If the Contractor subcontracts any of the Work, the Company must approve the subcontractor and the Contractor shall keep one of their own employees as a supervisor to oversee all subcontracted work at the project site.

11. INSPECTION

- a. The Contractor shall perform the Work subject to inspection by the Company. The Company, or a designated Representative thereof, shall interpret the contract, specifications, and drawings.

12. SUPERVISION

- a. Each operation shall at all times be overseen by a responsible supervisor provided by the Contractor. Such supervisor shall be identified to the Company.
- b. In the event that the Contractor finds it necessary to change supervisors, the Contractor shall notify the Company in advance and the new supervisor shall be identified.
- c. The Company shall assign a Project Engineer at the beginning of the project that will be in charge of all engineering on the project as well as assist in overseeing site work. All questions, concerns, and comments that arise shall be directed to the Project Engineer.

13. PUBLIC RELATIONS

- a. The Contractor shall strive to carry out all work in a manner that promotes good public relations for the Company. The Work shall be performed without damage to adjacent real estate or improvements, and the Contractor shall not proceed with any operation on adjacent property without first contacting both the Company and the property owner. When necessary, the Contractor shall work with the affected parties to limit property damage when accessing the Work site from adjacent property and performing the Work. If any difficulty with the adjacent property owner or the tenant is encountered, the Contractor shall notify the Company immediately.

14. PUBLIC SAFETY

- a. The Contractor shall take all precautions necessary to protect people and property from damage or injury by acts of the Contractor in the performance of all work under this specification. Flags, signals, lights, barricades, and watch person shall be provided where required for public safety.
- b. The Contractor shall limit the tracking of materials onto roadways. The Contractor shall keep the adjacent roadways clear of materials per existing highway regulations.
- c. No fires shall be permitted. The Contractor shall keep all drainage ditches open, as well as immediately filling and tamping pole holes after removing guard poles. The use of shoring during excavation is the Contractor's responsibility for the protection of its workers.

15. CLAIMS OF DAMAGE

- a. The Contractor shall, at his or her expense, settle property and crop damage claims from adjacent property owners which are caused by the Contractor's acts of commission or omission resulting from this Work.



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- b. The Contractor shall obtain and deliver to the Company a signed release form from each of the affected property owners after the claims of damage have been met to the satisfaction of the property owner and at the expense of the Contractor.

16. UTILITY NOTIFICATION

- a. The Contractor shall be responsible for any damages done to existing pipelines, telephone cables, or other buried utilities. Before excavating, the Contractor shall notify all potentially affected utilities and request that buried facilities be identified and located.

17. SITE CONDITIONS

a. **Work Site Inspections**

- 1) The Contractor shall carefully examine the Work site to determine the existing conditions. No plea of ignorance of conditions (due to failure to make the necessary examination) will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill the requirements of the specification and drawings. Furthermore, the Contractor's plea of ignorance is not acceptable as basis for any claims whatsoever for additional compensation.

b. **Sanitary Facilities**

- 1) The Contractor shall furnish necessary temporary sanitary facilities at a mutually agreed upon location.

c. **Burning Permit**

- 1) Burning of materials for disposal purposes on the site will not be permitted.

d. **Litter**

- 1) Good housekeeping shall be a must on the project site. Bottles, papers, bits of wire and hardware shall be cleaned up promptly or kept in containers for eventual pickup.
- 2) All waste and unused building materials including garbage, debris, cleaning wastes, wastewater, toxic materials, or hazardous materials, shall be properly disposed of and not allowed to be carried off site.

e. **Fences**

- 1) Special caution will be required for all fences cut or broken. All parts in disrepair shall be repaired promptly or gated to maintain their intended purpose.
- 2) Temporary fencing may be used to enclose exposed project areas outside of permanent fencing or when permanent fencing is not yet installed.

f. **Archaeological and Historical Concerns**

- 1) If any historical or archaeological sites are discovered, the Contractor must stop work immediately and contact the Company. Notification shall be given to proper agencies.



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g. Cleanup

- 1) The Contractor shall clean up the project site after completion of the Work. All surplus materials and equipment shall be removed from the work site.

18. EROSION CONTROL

- a. All construction activities must be performed in a manner that will satisfy the requirements of existing laws. No equipment will be allowed to cross rivers or streambeds. The Contractor shall conform to the "Best Practices Guidelines" of current State Regulations. The Contractor's Work must conform to the requirements of the EPA's National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activity.
- b. Prior to the start of construction, the Contractor shall provide and install tracking pad, silt fences, or other measures as shown on the drawings. The Contractor shall take precautions during construction to insure that erosion and sedimentation control measures are maintained. Silt fences shall be cleaned or additional fences added if necessary. The Contractor shall be responsible for the removal of silt fences and other temporary measures after surfacing is completed and seeding has taken root and erosion is no longer a concern. The Company shall notify the Contractor when the silt fences and other features can be removed.
- c. Any soil stockpiled that remains for more than 30 days shall be covered or treated with stabilization practices such as temporary or permanent seeding and mulching.
- d. All off-site sediment deposits occurring as a result of construction work or storm events shall be cleaned up by the end of each day. Flushing shall not be allowed.
- e. For any disturbed area that remains inactive for greater than 21 working days, or where grading work extends beyond the permanent seeding deadlines, the site must be treated with temporary stabilizations measures such as soil treatment, temporary seeding, and/or mulching.
- f. All disturbed areas shall be treated with stabilization measures as specified within three (3) working days of final grading.
- g. Any soil erosion that occurs after final grading or after the application of stabilization measures must be repaired and the stabilization work redone by the Contractor.
- h. When disturbed areas have been stabilized by permanent vegetation, or by other means, temporary best management practices such as silt fences, ditch checks, and sediment traps shall be removed and these areas stabilized.
- i. All temporary best management practices shall be maintained until the site is stabilized.
- j. Wind erosion shall be kept to a minimum during construction. Watering, mulching, or a tracking agent may need to be utilized to protect nearby residents and water resources.
- k. If any temporary grading practices such as directional tracking, tilling, or temporary ditch sump are employed for erosion control, they shall follow WDNR Standard 1067 – Temporary Grading Practices for Erosion Control.
- l. Maintenance to restore any discovered damage shall be completed within 72 hours of discovery, or as soon as field conditions allow access.



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19. LINES AND GRADES

- a. The Company shall provide on-site benchmarks and base lines as shown on the drawings.
- b. Contractor shall establish additional benchmarks and control points as necessary to complete the Work. The Contractor is encouraged to check benchmarks and control points periodically for movement. The Contractor will maintain all benchmarks and other reference points and replace them as directed by the Company if they are disturbed or destroyed.
- c. The Contractor shall lay out all lines and grades from existing base lines and benchmarks on the property and shall be fully responsible for the correctness of such lines and grades, as well as for the proper execution of the Work to such grades and lines. Lines and grades shall be laid out thru the use of specialized survey equipment. Specialized survey equipment includes total station and/or GPS w/RTK. Automatic level (builder's auto level) and tape measure are not acceptable for survey equipment.
- d. The Company shall perform an as-built survey of the Work prior to placement of fertilizer, seed, and mulch. The Contractor shall correct any deficiencies of lines and grades that are out of tolerance at its own expense.
- e. CAD files of the grading plans will be made available to the Contractor, if requested, to aid in proper execution of the Work to such lines and grades.
- f. All benchmarks shall be tied, unless otherwise specified, to horizontal coordinate system NAD83 Wisconsin State Plane, South Zone (feet) and vertical datum NAVD88 (feet), so that these points can be duplicated by any party at any given time.
- g. Contractor shall be aware that the grades and elevations shown on the drawings are FINISH GRADE, indicating top of surface course and top of finished topsoil. Wherever Contractor is responsible for subgrade only Work, Contractor shall ensure that finish grade will be attained when final layers of the finish materials at the thicknesses prescribed by the drawings or this specification are placed by others.
- h. Maximum allowable vertical tolerances for subgrade and finished grade, unless otherwise specified, shall be:
 - 1) For all structures and culvert inverts: +/- 0.05 feet.
 - 2) For general earthwork: +/- 0.10 feet.
 - 3) For substation pad and driveway top of subbase and top of crushed stone courses: +/- 0.10 feet.
- i. Maximum allowable horizontal tolerances, unless otherwise specified, shall be +/- 0.10 feet.
- j. If at any time adherence to this tolerance is unachievable, the Contractor shall notify the Company as soon as possible. The Company will work with the Contractor to produce an engineered compromise that follows all codes and laws and does not violate the original intention of the design.

20. CLEARING AND GRUBBING

- a. Clearing and grubbing shall conform to WisDOT Standard Specification Section 201.



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- b. Clear and grub all areas within the clearing and grubbing limits.
- c. Preserve vegetation within the clearing limits as the plans show or the engineer directs. Cut off and dispose of all other trees, brush, shrubs, or other vegetation occurring within the clearing limits. Within the grubbing limits, remove debris not suitable for the substation foundation, stumps and associated roots, logs, timber, brush, and matted roots to the following minimum depths:
 - 1) In cut areas, one foot below final subgrade.
 - 2) In embankment areas, one foot below the existing grade.
- d. Ownership of salvaged timber shall be decided by Company.
- e. The Contractor shall remove and dispose of all stumps off-site.

21. SILT FENCE

- a. All Silt Fence shall conform to WDNR Conservation Practice Standard 1056.
- b. Silt fences shall be placed according to the drawings. Erect the silt fence before starting Work that might cause sedimentation or siltation at the site or the proposed silt fence.
- c. Geotextile fabric shall consist of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Non-woven fabric may be needle punched, heat bonded, resin bonded, or combinations thereof. All fabric shall meet the following requirements:

Table 1. Silt Fence Geotextile Fabric Specifications

Test Requirement	Method	Value
Minimum grab tensile strength in the machine direction	(ASTM D 4632)	120 lbs
Minimum grab tensile strength in the cross machine direction	(ASTM D 4632)	100lbs
Maximum apparent opening size (equivalent standard sieve)	(ASTM D 4751)	No. 30 (600 um)
Minimum permittivity	(ASTM D 4491)	0.05 sec ⁻¹
Minimum ultraviolet stability (percent of strength retained after 500 hours of exposure)	(ASTM D 4355)	70%

- d. Wood posts shall be a minimum 1-1/8" by 1-1/8" and made of a hard wood such as oak or hickory.
- e. The silt fence fabric shall be stapled, using at least 0.5 inch staples, to the upslope side of the posts in at least 3 places.
- f. The posts shall be a minimum of 3 feet long for 24 inch silt fence and a minimum of 4 feet long for 36 inch silt fence fabric.
- g. Installed silt fences shall be a minimum of 14 inches and a maximum of 28 inches high from the installed ground elevation.
- h. A minimum of 20 inches of the post shall extend into the ground after installation.



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- i. The maximum spacing of posts for non-woven silt fence shall be 3 feet and for woven fabric 8 feet.
- j. Silt fence shall have a support cord.
- k. Silt fence shall be anchored by spreading at least 8 inches of fabric in a four (4) inch wide and six (6) inch deep trench or 6 inch deep V-trench on the upslope side of the fence. The material shall be folded to fit in the trench and then backfilled and compacted with excavated soil.
- l. Silt fence shall be removed once the disturbed area is permanently stabilized and no longer susceptible to erosion.
- m. Silt fence shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period. Sediment gathered by silt fences shall be properly disposed of once the deposits reach one-half the height of the fence. Damaged or decomposed fences, undercuttings, or flow channels around the end of barrier shall be repaired or corrected.

22. STONE TRACKING PAD

- a. Stone tracking pads shall conform to WDNR Conservation Practice Standard 1057.
- b. Stone tracking pads shall be located at all traffic egress points and shall be installed prior to any traffic leaving the site.
- c. The tracking pad shall be the full width of the egress point and, at a minimum, 50 feet long.
- d. Aggregate for the tracking pad shall be placed in a layer at least twelve (12) inches thick. On sites where saturated conditions are expected, or with a high water table, stone tracking pads shall be underlain with a WisDOT Type R geotextile fabric to prevent migration of underlying soil into the stone.
- e. The aggregate for tracking pads shall be three (3) to six (6) inch clear crushed stone. All material shall be retained in a three (3) inch sieve.
- f. Surface water shall be prevented from passing through the tracking pad. Flows shall be diverted away from the tracking pads or conveyed under them through utilization of practices such as culverts, water bars, or approved equivalents.
- g. Any sediment tracked on to a public or private road shall be removed by street cleaning, not flushing, before the end of each working day.
- h. The tracking pad performance shall be maintained by scraping or top dressing with additional aggregate.

23. DITCH CHECKS

- a. Ditch checks shall conform to WDNR Conservation Practice Standard 1062 with the exception that the aggregate for stone ditch checks shall be 3 to 6 inch clear crushed stone. All material shall be retained on a 3 inch sieve.
- b. Ditch checks shall be constructed in the location and manner that is detailed on the drawings.
- c. Temporary ditch checks not detailed on the drawings shall be constructed out of stone or a double row of straw bales.



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- d. The minimum height of ditch check shall be ten (10) inches. The ditch check shall not exceed a maximum height of 16 inches for biodegradable materials and 36 inches for stone, unless specifically called for on the drawings.
- e. Ditch checks shall be installed with the center six (6) inches lower than the edges in order to form a weir, thus allowing stormwater to flow over the top of the structure rather than along the edges of the ditch check.
- f. Stone ditch checks shall have a minimum top width of two (2) feet, measured in the direction flow, with maximum slopes of 2:1 (2 horizontal to 1 vertical) on the upslope side and 2:1 on the downslope side.
- g. A channel erosion mat or other non-erodible materials shall be placed at the base of the ditch check and extended a minimum of six (6) feet in order to prevent scour and washing out the toe of the ditch check. See Section XX (Erosion Control Mat) for placement directions of this erosion mat in this location.
- h. Stone ditch checks may be underlain by a non-woven geotextile fabric to ease installation and removal. If the geotextile fabric is extended, it can serve the purpose of Section 24.g.
- i. At a minimum, install one ditch check for every two feet of drop in the channel, thus discouraging concentrated flow, and reducing channel velocity.
- j. Ditch checks shall be placed such that the resultant ponding will not cause inconvenience or damage to adjacent areas.
- k. Ditch checks, when temporary, shall be removed once the final grading and channel permanent stabilization is established.
- l. Ditch checks shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.

24. SOIL STABILIZER

- a. Soil stabilizer shall conform to WisDOT Standard Specification 628 Soil Stabilizer Type B.
- b. Polyacrylamide shall be utilized when the timely establishment of temporary vegetation may not be feasible or where vegetative cover is absent or inadequate.
- c. Apply soil stabilizer with conventional hydraulic seeding equipment or by dry spreading. Apply the material at the manufacturer's recommended rate.

25. TOPSOIL

- a. All topsoil and salvaged topsoil shall conform to WisDOT Standard Specification Section 625.
- b. Topsoil may be salvaged on-site or furnished by contractor.
- c. Topsoil shall be classified as a loam, sandy loam, silt loam, silty clay loam, or clay loam, per the USDA Classification System.
- d. Topsoil shall be humus-bearing.
- e. Topsoil shall have a pH between 6.0 and 8.0.



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- f. Topsoil shall be free of rocks, twigs, foreign material, and clod that cannot be broken down. Topsoil gradation shall have 100 percent passing a one inch sieve and at least 90 percent passing the No. 10 (2.00 mm) sieve.
- g. The removed topsoil shall be used on side slopes of the site and where designated on the drawings. Topsoil shall not be used for structural fill. If excess on-site topsoil is available, topsoil may be used as general fill, if approved by the Geotechnical Consultant.
- h. When topsoil with deleterious or hazardous material is found, the Contractor shall notify the Company and the Company shall provide proper disposal procedures.
- i. Salvaged topsoil shall be utilized to minimize the use of Contractor furnished topsoil. Excess topsoil shall be stored on site, stored at an alternate site, or ownership conveyed to the Contractor and removed from the property as identified in Attachment A.
- j. **Salvaging of Topsoil**
 - 1) Remove brush, rock, litter and other materials that will interfere with subsequent vegetation establishment. Mow the salvage area to a height of approximately 6 inches.
 - 2) Strip off the humus-bearing soil. Take care to minimize removing the underlying sterile soil. Stockpile topsoil in the designated area as shown on the drawings. A polyacrylamide-based soil stabilizer shall be used to stabilize the slopes of the stockpile and soil side slopes.
- k. **Placing of Topsoil**
 - 1) All areas designated to receive topsoil shall be undercut or underfilled to a degree that if covered to the required depth with topsoil, the finished work conforms to the required lines, grades, slopes and cross sections the plans and drawings show.
 - 2) After preparing and finishing the areas designated for topsoil to the required lines, grades, slopes and cross sections, place and spread the topsoil to a uniform depth as the plans and drawings show or required in the contract. If no depth is shown, place and spread the topsoil to a minimum depth of 4 inches or as Engineer designates.
 - 3) Break down all clods and lumps using the appropriate equipment to provide a uniformly textured soil. Dress the entire surface to present a uniform appearance. Rolling will not be required.

26. EXCAVATION

- a. **Definitions**
 - 1) Excavation: Removal of material encountered above subgrade elevations and to lines, elevations, and dimensions indicated on the drawings.
 - 2) Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by the Company. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 3) Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Company. Unauthorized excavation, as



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well as remedial work directed by the Company, shall be without additional compensation.

- 4) Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- b. Excavation shall be performed to meet the lines and grades as outlined on the drawings. All areas designated to receive topsoil shall be undercut or underfilled to a degree that if covered to the required depth with topsoil, the finished work conforms to the required lines, grades, slopes and cross sections the plans and drawings show.
 - c. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. If excavated materials intended for re-use as fill or backfill include unsatisfactory soil materials and rock, such unsatisfactory materials shall be removed and replaced with satisfactory soil materials.
 - d. Subgrade materials shall be free of deleterious, hazardous, organic, waste, or frozen material. When soil with deleterious or hazardous material is found, the Contractor shall notify the Company and the Company shall provide proper disposal procedures.
 - e. Monitoring and testing of lines, grades, and compaction may be performed during Construction by the Company or a qualified Representative. If deficiencies are identified, the Contractor shall correct them at its own expense.
 - f. Excavation, filling, subgrade, and grade preparation shall be performed in a manner and sequence that will provide drainage at all times as well as proper control of erosion. Grading shall be performed such that there is a smooth transition between adjacent existing grades and new grades. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working platform. Springs or water seepage encountered during grading and subsequent foundation construction must be called to the Company's attention immediately for possible construction procedure revision or inclusion of an underdrain system.
 - g. Wherever, in the opinion of the Company, an unstable condition is being created by cutting, the Work shall not proceed into that area until an appropriate geotechnical exploration and analysis has been performed and the grading plan revised.
 - 1) When directed by the Company, over-excavate soft spots, areas containing unsatisfactory soils, and areas of excessive pumping or rutting and replace unsuitable soils with compacted fill.
 - 2) Authorized additional excavation and replacement material will be paid for according to the Contract provisions for unit prices.
 - h. Protect and maintain erosion and sedimentation control measures in place per approved erosion control plan, storm water management plan, and the Wisconsin Department of Natural Resources Technical Standards, as applicable, as well as following any applicable local ordinances.
 - i. Excavation shall stop when air temperatures are below 20°F or ground surface conditions are frozen, unless specifically approved by the Geotechnical Consultant, in which case the Geotechnical Consultant shall be on-site at all times when fill is being placed.



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27. PREPARATION OF FOUNDATION

- a. After stripping the vegetation, organic, or other unsuitable materials, preparation of subgrades shall consist of:
 - 1) proof rolling to detect wet, yielding soils or other unstable materials that must be undercut,
 - 2) scarifying the top six (6) to eight (8) inches,
 - 3) moisture conditioning and re-compaction of the subgrade soils as needed to meet applicable compaction specifications. For subgrade soils beneath areas that would be designated for structural fill, the subgrade shall meet the structural fill compaction criterion. For all other areas, the subgrade shall meet the general fill compaction specification.
 - 4) All subgrade preparation shall be observed by or have test results submitted to the Geotechnical Consultant.

28. EMBANKMENT

- a. **Definitions**
 - 1) Fill: Satisfactory soil materials used to raise existing grades to lines, elevations, and dimensions indicated on the drawings, also referred to as embankment.
 - 2) Borrowed Fill: Satisfactory soil imported from off-site for use as fill or backfill.
 - 3) Structural Fill: All fill placed below the substation pad, driveway, foundations, structures, or culverts.
 - 4) General Fill: All fill not designated as structural fill.
 - 5) Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- b. The Company must approve all fill material prior to placement.
- c. Suitable on-site material may be used as fill.
- d. Fill activities shall be performed to meet the lines and grades as outlined on the drawings. All areas designated to receive topsoil shall be undercut or underfilled to a degree that if covered to the required depth with topsoil, the finished work conforms to the required lines, grades, slopes and cross sections the plans and drawings show.
- e. Structural and general fill materials shall be free of deleterious, hazardous, organic, waste, or frozen matter; shall contain no chemicals that may result in the material being classified as "contaminated" or "impacted".
- f. The top twelve (12) inches of fill must have a maximum three-inch-particle diameter and all underlying structural fill a maximum six-inch-diameter.
- g. Monitoring and testing of lines, grades, and compaction may be performed during Construction by the Company or a qualified Representative. If deficiencies are identified, the Contractor shall correct them at its own expense.



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- h. Excavation, filling, subgrade, and grade preparation shall be performed in a manner and sequence that will provide drainage at all times as well as proper control of erosion. Grading shall be performed such that there is a smooth transition between adjacent existing grades and new grades. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working platform. Springs or water seepage encountered during grading and subsequent foundation construction must be called to the Company's attention immediately for possible construction procedure revision or inclusion of an underdrain system.
- i. General fill adjacent to structural fill should typically be placed in unison to provide lateral support.
- j. Wherever, in the opinion of the Company, an unstable condition is being created either by cutting or filling, the Work shall not proceed into that area until an appropriate geotechnical exploration and analysis has been performed and the grading plan revised.
 - 1) When directed by the Company, over-excavate soft spots, areas containing unsatisfactory soils, and areas of excessive pumping or rutting and replace unsuitable soils with compacted fill.
 - 2) Authorized additional excavation and replacement material will be paid for according to the Contract provisions for unit prices.
- k. Place and compact backfill in structure excavations promptly, but not before completion of all construction, testing, surveying, form removal, cleanup, and other miscellaneous construction items. Place backfill on excavation subgrades that are free of mud, snow, and ice.
- l. Protect and maintain erosion and sedimentation control measures in place per approved erosion control plan, storm water management plan, and the Wisconsin Department of Natural Resources Technical Standards, as applicable, as well as following any applicable local ordinances.
- m. Embankment activities shall stop when air temperatures are below 20°F or ground surface conditions are frozen, unless specifically approved by the Geotechnical Consultant, in which case the Geotechnical Consultant shall be on-site at all times when fill is being placed.
- n. **Structural Fill**
 - 1) All fill material must be tested and approved under the direction of an experienced soils engineer prior to placement. Acceptable fill materials shall be classified as GW, GP, SW, SP, GC, SC or CL or combination of these groups per the Unified Soil Classification System (ASTM D2487), unless approved by the Geotechnical Consultant. If the fill is to provide non-frost-susceptible characteristics, it must be classified as a clean GW, GP, SW, or SP or combination of these groups. Unacceptable structural fill materials are classified as GM, SM, ML, OL, CH, MH, OH, PT or combination of these groups per USCS.
 - 2) Structural fill shall be low-expansive with a maximum Liquid Limit and Plasticity Index (ASTM D-4318) of 30 percent and 15 percent, respectively, unless specifically tested and found to have low expansive properties and approved by an experienced geotechnical engineer.
 - 3) The fill shall be placed in layers generally no thicker than 8 inches before compaction. Compact each layer of material with specialized compaction equipment, to not less than the specified dry density before placing the succeeding layer. Specialized compaction



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equipment includes tamping rollers, pneumatic-tire rollers, and vibratory rollers. Bulldozers or similarly tracked vehicles are not acceptable for compaction.

- 4) The in-situ dry density of the structural compacted fill shall not be less than 95 percent of the maximum dry density as determined by Standard Proctor (ASTM D698) with the exception of the top twelve (12) inches of pavement subgrade which shall have a minimum in-situ dry density of 100 percent of maximum dry density, or five (5) percent higher than underlying fill materials. The moisture content of cohesive soil shall not vary by more than -1 to +3 percent and granular soil ± 3 percent of the optimum when placed and compacted or re-compacted, unless specifically recommended and approved by a qualified geotechnical engineer and the Company. Cohesive soils with moderate to high expansive potentials ($PI > 15$) however, should be placed, compacted, and maintained prior to construction at a moisture content of 3 ± 1 percent above optimum moisture content to limit future heave.

o. **General Fill**

- 1) If excess on-site topsoil is available, topsoil may be used as general fill, if approved by the Geotechnical Consultant.
- 2) General fill materials shall be free of deleterious, hazardous, organic, waste, or frozen material.
- 3) Unacceptable general fill materials are classified as PT, OH, or OL or a combination of these groups per Unified Soil Classification System (ASTM D2487).
- 4) The embankment material shall be placed in layers generally no thicker than 8 inches before compaction. Compact each layer until the compaction equipment achieves no further significant consolidation. Provide the required compaction for each layer prior to placing subsequent layers.
- 5) Use specialized compaction equipment supplemented by routing, hauling, and leveling equipment over each layer. The Company may waive the requirement for specialized compaction equipment if, in the Company's opinion, the hauling and leveling equipment will achieve satisfactory compaction. Specialized compaction equipment includes tamping rollers, pneumatic-tire rollers, and vibratory rollers.
- 6) Do not compact material if the moisture content causes excessive rutting by the hauling equipment or excessive displacement or distortion under the compaction equipment. If these conditions exist, allow the materials to dry before compacting. Drying may be accelerated by aerating with blade graders, harrows, discs, or other equipment to manipulate the material. If the material does not contain sufficient moisture to compact properly, add water in quantities the Company deems necessary to aid and/or achieve effective compaction.

29. TESTING

- a. The Company must approve all fill material prior to placement, preferably before construction begins. The Contractor shall submit a 50 pound representation sample of the proposed borrow fill material to the Company at least one week prior to the start of any filling operations.



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- b. Field density tests for determining the percentage of relative compaction of the fill in place may be performed by the Company in accordance with appropriate ASTM procedures. The Company or a qualified Representative will determine the need and frequency for testing depending on materials used and conditions at the site.
- c. If tests indicate that required compaction is not being achieved, the Contractor shall cease filling until optimum moisture is obtained, adequate compaction equipment is utilized, or other corrective measures are taken to insure adequate compaction.
- d. The Company will pay for all preliminary testing and field testing, unless re-tests or additional tests for materials not meeting the specified criterion are required. Contractor shall pay for such re-tests, or tests of materials not represented by the original samples.

30. GEOTEXTILE FOR SEPARATION

- a. Geotextile fabric shall conform to WisDOT Standard Specification Section 645 Type SAS (Subgrade Aggregate Separation).
- b. This specification section only governs geotextile fabric to be used as a separator and filter to prevent mixing of subgrades and select fill materials. This portion of the specification does not address reinforcement applications which require an engineered, project specific design.
- c. As outlined in this specification, installation of a geotextile fabric may be necessary to providing a suitable base for placing fill.
- d. The Contractor shall furnish and place any design-required geotextile for use as a separator and filter to prevent mixing of subgrades and select fill materials. The geotextile shall allow passage of water while retaining in-situ soil without clogging.
- e. Fibers used in the manufacture of the geotextile, as well as the threads used in joining geotextiles by sewing, shall consist of long chain synthetic polymers, composed of at least 85 percent by weight polyolefins, polyesters, or polyamides. Both the geotextile and threads shall be resistant to chemical attack, mildew, and rot. These materials shall conform to the following physical requirements.

Table 2. Subgrade Aggregate Separation Geotextile Fabric Specifications

Test Requirement	Method	Value
Minimum grab tensile strength	ASTM D 4632	170 lbs
Minimum puncture strength	ASTM D 4833	70 lbs
Maximum apparent opening size	ASTM D 4751	No. 70 (212 um)
Minimum permittivity	ASTM D 4491	0.35 s ⁻¹

f. Construction Methods/Requirement

- 1) Geotextiles Packaging and Storing – Geotextile rolls shall be wrapped for protection against moisture and extended ultraviolet exposure prior to placement. Each roll shall be labeled for field identification. If stored outdoors, rolls shall be elevated and protected with a waterproof cover.



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- 2) Geotextile Exposure Following Placement – Exposure of geotextiles to the elements between lay down and cover shall be as short as possible, but not more than three (3) days to minimize damage potential.
- 3) The geotextile shall be installed on the prepared subsoil prior to placement of the supplied fill material.
- 4) Geotextile installation shall proceed in the direction of construction. The minimum initial cover shall be no less than six (6) compacted inches and no more than nine (9) compacted inches.
- 5) The fabric shall be rolled out and manually pulled taut to remove wrinkles.
- 6) Joints, Seams, and Overlays – Where seams are required, overlapping shall join them. The fold or overlap of cut pieces shall be in the direction of construction with each overlap pinned, stapled, or weighted with cover material. All seams shall be subject to approval of the Company or qualified Representative.
- 7) The initial cover material shall be placed over the fabric by back dumping with trucks and leveling with a crawler dozer. The contractor shall not use equipment that causes ruts deeper than three (3) inches. Fill all ruts with additional material.
- 8) The Contractor shall patch all rips and tears in the geotextile as approved by the Company or qualified Representative. Repairs shall be performed by placing a new layer of fabric extending beyond the defect in all directions to a minimum of the overlap required for parallel rolls. Alternatively, the defective section shall be replaced, but only at the discretion of the Company or qualified Representative.
- 9) The geotextile shall be measured by the number of square yards computed from the plans, which excludes seam overlaps.

31. CRUSHED STONE

a. Definitions

- 1) Clear Crushed Stone: A nominal sized coarse aggregate. Most of the particles are between the specified maximum size and a minimum size, which is one-half of the maximum. For example, a 3/4 inch clear aggregate will have 100% smaller than 1 inch, 90-100% smaller than 3/4 inch, and 0-10% smaller than 3/8 inch.

b. Unless otherwise specified, placement and compaction shall meet the following standard specification.

c. The driveway and substation site compacted subgrade shall be covered with a base course and a surface course, each course being a layer of compacted, crushed stone as detailed in the sections below.

d. Base Course – Driveway and Substation

- 1) The Contractor shall cover the area within the proposed fence and to a point three (3) feet beyond the fence with base material consisting of compacted crushed stone per the gradations below. The base course thickness shall be in accordance with the drawings. The depth of this course shall never be less than six (6) compacted inches.



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- 2) Crushed stone gradation shall be a two (2) inch minus roadstone. This stone has 100% by weight passing a two (2) inch sieve and is well graded through the remainder of the sieve ranges.
- 3) Crushed stone shall meet the material requirements as defined in WisDOT Standard Specification, Section 305. Size 1-1/4 inch shall be considered acceptable.
- 4) Do not exceed a compacted thickness of 6 inches per layer. Compact each layer of material using pneumatic or vibratory rollers.
- 5) The Contractor shall cover the area of the proposed driveway with base course material consisting of compacted crushed stone per the above gradations. The base course thickness shall be in accordance with the drawings. In no case shall the depth of this layer be less than six (6) compacted inches.

e. **Surface Course – Driveway**

- 1) The surface course of the driveway shall be crushed aggregate meeting WisDOT Standard Specification for 3/4 inch dense graded crushed stone per the gradations listed below in Table 1. The surface course thickness shall be in accordance with the plans. In no case shall the depth of this layer be less than six (6) compacted inches.
- 2) For Wisconsin projects, crushed stone shall conform to WisDOT Standard Specification, Section 305, 3/4 inch.

**Table 1. Driveway Surface Course Gradation Requirements
(Percent Passing by Weight)**

Sieve Size	WISDOT 3/4 inch
1 inch	100
3/4 inch	95-100
1/2 inch	
3/8 inch	50-90
No. 4	35-70
No. 8	
No. 10	15-55
No. 40	10-35
No. 200	5-15

- 3) Do not exceed a compacted thickness of 6 inches per layer. Compact each layer of material using pneumatic or vibratory rollers.

f. **Surface Course - Substation**

- 1) The surface course of the substation site shall be 3/4 inch clear, crushed rock per the gradation listed below in Table 2. The surface course thickness shall be in accordance with the drawings. In no case shall the depth of this layer be less than six (6) compacted inches.



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**Table 2. Substation Surface Course Gradation Requirements
(Percent Passing by Weight)**

Sieve Size	3/4 inch Clear
1 inch	100
3/4 inch	90-100
3/8 inch	0-10

- 2) Do not exceed a compacted thickness of 6 inches per layer. Compact each layer of material using pneumatic or vibratory rollers.

32. FERTILIZER

- a. All fertilizing shall conform to WisDOT Standard Specification Section 629.
- b. Fertilizer shall conform to the material and construction requirements of Type A. Type A Fertilizer shall conform to the following minimum requirements: Nitrogen, not less than 16 percent; Phosphoric Acid, not less than 6 percent; Potash, not less than 6 percent. The total of nitrogen, phosphoric acid, and potash shall equal at least 32 percent. Total nitrogen shall equal at least the sum of the phosphoric acid and soluble potash.
- c. Apply fertilizer containing 32 percent total of nitrogen, phosphoric acid, and potash at 7 pounds per 1000 square feet of area. For Type A fertilizer that contains a different percentage of components, determine the new application rate by multiplying the specified rate by a dimensionless conversion factor determined as follows:

$$\text{Conversion Factor} = 32 / \text{New Percentage of Components.}$$

33. SEEDING

- a. All seeding shall conform to WISDOT Standard Specification Section 630 and WDNR Standard 1059, Seeding for Construction Site Erosion Control.
- b. Seed shall be commercial grades of types specified and shall meet all requirements of the State seed laws.
- c. Seed mixtures that contain potentially invasive species or species that may be harmful to native plant communities shall not be used.
- d. The area to be seeded shall be smooth with all washes and gullies filled to conform to the desired cross section. Areas to be seeded shall first be thoroughly disked to a depth of not less than four (4) inches.
- e. **Permanent Seeding**
 - 1) Permanent seeding applies to areas where perennial vegetative cover is needed.
 - 2) Seed shall be sown between March 15 and September 15 at times of the year when temperature and moisture conditions are suitable for seeding, or between November 1 and snow cover as dormant seeding.
 - 3) Seed mixture shall be No. 10 where average loam, heavy clay, or moist soils predominate. Seed mixture shall be No. 20 where light, dry, well-drained, sandy, or gravelly soils predominate as well as for all high cut and fill slopes exceeding six (6) to



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eight (8) feet. Seed mixture shall be No. 40 in urban areas or where a lawn type turf is preferred.

- 4) Sow seed mixture No. 10 at a rate of 1.5 pounds per 1000 square feet. Sow seed mixture No. 20 at a rate of 3 pounds per 1000 square feet. Sow seed mixture No. 40 at a rate of 2 pounds per 1000 square feet.
- 5) Perform seeding in conjunction with mulching as specified in Section 34 Mulching or Section 35 Erosion Control Mat.
- 6) Seeded areas shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period. Repair and reseed areas that have erosion damage as necessary. Maintenance shall be completed as soon as possible with consideration to site conditions.
- 7) Inspect during the growing season until vegetation is densely established. If dormant seeding, inspections shall continue into the next growing season. Reseed areas that have erosion damage or fail to germinate as necessary.

f. Temporary Seeding

- 1) Temporary seeding applies to disturbed areas that will not be brought to final grade or on which land-disturbing activities will not be performed for a period greater than 21 days and requires vegetative cover for less than one year.
- 2) For temporary seeding, use a mixture that is, by weight, 60 percent temporary species and 40 percent permanent species. For the temporary component, use annual oats for the spring and summer plantings, use winter wheat or agricultural rye for fall plantings started after September 1. For the permanent component, use seed mixtures conforming to seed mixture No. 10 or No. 20 as determined by the predominate soils defined in Section 26.e.3.
- 3) Sow temporary seeding at a rate of three (3) pounds per 1000 square feet.

g. Nurse Crop

- 1) When a nurse crop is required for spring seeding before June 15, use annual oats. For fall seeding after October 15, use winter wheat or annual ryegrass.
- 2) Sow nurse crop seeding at a rate of 0.8 pounds per 1000 square feet in conjunction with permanent seeding.

34. MULCHING

- a. All mulching shall conform to WisDOT Standard Specification Section 627 and WDNR Standard 1058.
- b. All seeded areas shall be mulched within 24 hours after completion of seeding.
- c. Mulching material shall consist of straw or hay in an air-dry condition. Mulch shall be applied at a uniform rate of 1.5 to 2 tons per acre (68 to 92 lbs per 1000 sq. ft). This application results in a layer 0.5 to 1.5 inches thick.
- d. Anchoring of mulch shall be based on the type of mulch applied, site conditions, and accomplished by either crimping or use of a tackifier.



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- e. In areas where lawn type turf will be established, the use of tackifiers is the preferred anchoring method as crimping will tend to leave an uneven surface.
- f. Areas in which mulching, seeding, fertilizing, or all three are disturbed due to rain or wind before the area has been accepted for maintenance by the Inspector shall be re-seeded and re-mulched at the contract unit price, if so ordered by the Company.
- g. Mulch shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period. Mulch that is displaced shall be reapplied and properly anchored. Maintenance shall be completed as soon as possible with consideration to site conditions.

35. EROSION CONTROL MAT

a. Definitions

- 1) **ECRM:** Erosion Control Revegetative Mats. ECRM's are designed to be placed on top of soil.
 - 2) **TRM:** Turf Reinforcement Mats. Designed to be filled with soil when installed. TRM's shall be continuously bonded at the filament intersections
- b. All Erosion Control Mats shall conform to WDNR Conservation Practice Standards 1052 and 1053.
 - c. Only Wisconsin Department of Transportation Erosion Control Product Acceptability List (PAL) approved mats will be accepted for use in this standard.
 - d. Slope and slope length shall be taken into consideration when choosing an appropriate erosion control device. This information can be found in the Slope Erosion Control Matrix located in the PAL.
 - e. To differentiate applications, erosion control mats are organized into three classes of mats, which are further broken down into various types.
 - 1) **Class I:** A short-term duration (minimum of 6 months), light duty, organic mat with photodegradable plastic or biodegradable netting.
 - i. Type A – A netting product for use on slopes 2.5:1 or flatter. Not to be used in channels.
 - ii. Type B – Double netted product for use on slopes 2:1 or flatter, and in channels where the calculated shear stress is 1.5 lbs/ft² or less.
 - 2) **Class I Urban:** A short-term duration (minimum of 6 months), light duty, organic erosion control mat for areas where mowing may be accomplished within two weeks after installation.
 - i. Type A – A product for use on slopes 4:1 or flatter. Not to be used in channels.
 - ii. Type B – A product for use on slopes 2.5:1 or flatter. Not to be used in channels.
 - 3) **Class II:** A long-term duration (three years or greater), organic erosion control revegetative mat.
 - i. Type A – Jute fiber only for use on slopes 2:1 or flatter for sod reinforcement.



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- ii. Type B – Made with non-organic, photodegradable or biodegradable netting, a product for use on slopes 2:1 or greater, and in channels when the calculated shear stress is 2.0 lbs/ft² or less.
- iii. Type C – A woven mat of 100% organic fibers for environmentally and biologically sensitive areas where plastic netting is inappropriate. For use on slopes 2:1 or flatter, in channels when the calculated shear stress is 2.0 lbs/ft² or less.
- 4) Class III: A permanent 100% synthetic ECRM or TRM. Either a soil stabilizer Type A or Class I, Type A or B erosion mat must be placed over the soil filled TRM.
 - i. Type A – An ECRM for use on slopes 2:1 or flatter, and in channels when the calculated shear stress is 2.0 lbs/ft² or less.
 - ii. Type B – A TRM for use on slopes 2:1 or flatter, and in channels when the calculated shear stress is 2.0 lbs/ft² or less.
 - iii. Type C – A TRM for use on slopes 2:1 or flatter, and in channels when the calculated shear stress is 3.5 lbs/ft² or less.
 - iv. Type D – A TRM for use on slopes 1:1 or flatter, and in channels when the calculated shear stress is 5.0 lbs/ft² or less.
- f. ECRM shall be installed after all topsoiling, fertilizing, and seeding is complete.
- g. Erosion control mats shall extend for whichever is greater: upslope one-foot minimum vertically from the ditch bottom or 6 inches higher than the design flow depth.
- h. The mat shall be in firm and continuous contact with the soil. It shall be anchored, overlapped, staked and entrenched per the manufacturer's recommendations.
- i. TRM shall be installed in conjunction with the topsoiling operation and shall be followed by ECRM installation.
- j. At time of installation, document the manufacturer and mat type by saving material labels and manufacturer's installation instructions. Retain this documentation until the site is stabilized.
- k. Erosion mat shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.
- l. If there are signs of rilling under the mat, install more staples or more frequent anchoring trenches. If rilling becomes severe enough to prevent establishment of vegetation, remove the section of mat where the damage has occurred. Fill the eroded area with topsoil, compact, reseed, and replace the section of mat, trenching and overlapping ends per manufacturer's recommendations. Additional staking is recommended near where rilling was filled.

36. CULVERT AND DRAINAGE TILE

- a. Culvert and drainage tile shall be furnished and installed by the Contractor if specified by the Company. These shall be installed as shown on the drawings and in accordance with appropriate State or County highway specifications.
- b. Corrugated steel culvert and pipe arch shall conform to AASHTO M 36M as well as the dimensions shown on the drawings.



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37. INFILTRATION BASINS

- a. Infiltration basins shall be constructed to the grades, elevations, and specifications provided by the Company.
- b. Sod shall not be used in infiltration areas.
- c. All infiltration areas shall be fenced off to prevent heavy equipment access during development.
- d. If subgrade soils beneath infiltration basins are dense or compact, subgrade shall be loosened, such as by raking or ripping, prior to backfilling the basin area with engineered sand and topsoil materials.
- e. Construction of infiltration basins shall be suspended during periods of rainfall or snowmelt and shall remain suspended if ponded water is present or if residual soil moisture contributes significantly to the potential for soil smearing, clumping, or other forms of compaction.
- f. The basins shall be brought on line when the area draining to the basin has been fully developed and stabilized from erosion.
- g. Sediment must not be allowed to accumulate in the infiltration device bottoms during and following construction as it may reduce the infiltration capacity of the devices. Silt fences or other appropriate erosion control devices should be installed in accordance with local, state, and federal requirements at the perimeter of the infiltration device areas to control sediment from erosion during construction.

(END)



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