NEW YORK STATE DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL REQUIREMENTS[i]

Introduction

The New York State Department of Transportation (NYSDOT) maintains an Approved List of fill type retaining wall systems. The submittal requirements for seeking approval of a wall system are listed in Appendix 9A of Chapter 9 – Soils, Walls, and Foundations of the NYSDOT Highway Design Manual, available at https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/chapter9. The appendix provides very detailed information on the on the submittal requirements. The listing of submittal items from Appendix 9A are provided on the following pages. Refer to the full appendix in the NYSDOT Highway Design Manual for instructions and submittal notes.

The NYSDOT submittal process does not note use of an IDEA report. Furthermore, the instructions state that a submittal should be organized in three separate sections. Information should be provided following the given numbering system, for each of the three separate parts. Each page of the submittal should bear the name of the system. All items should be marked with the same date of preparation to avoid problems with subsequent revisions or re-submittals. Therefore, information contained within an IDEA report that is on the NYSDOT list of requested items, can be pulled from the IDEA report into, and as a supplement to, a NYSDOT specific submittal.

The Chapter 9, Appendix A with a revision date of 09/15/13 was used to prepare this report. NYSDOT should contact the IDEA webmaster and update this Supplemental Requirements report when their policies, etc. change. This report is readily updateable, and a revision number and date should be noted.

IDEA Protocols and Format

The NYSDOT Instructions for Preparation of the Application Package for Product Evaluation of Proprietary Retaining Wall Systems of Submittal Requirements (one list that covers multiple wall types) is reproduced on the following pages. Items that are addressed in an IDEA protocol that can be used (supplement) in a NYSDOT-specific submittal are noted within this list. References to the current IDEA protocols are noted in brackets. The protocol number (see Table 1) followed by protocol section are listed within the brackets.

Table 1. IDEA Wall System Evaluation Protocols

PROTOCOL	TYPE	FACING	SOIL REINFORCEMENT
C1	MSE	Concrete modular block	Extensible
C2	MSE	Concrete modular block	Inextensible
C3	MSE	Precast concrete panel	Extensible
C4	MSE	Precast concrete panel	Inextensible
C5	MSE	Steel mat	Extensible
C6	MSE	Steel mat	Inextensible
C7	Gravity	Precast modular block	n/a

Preparation of the Application Package for Product Evaluation of Proprietary Retaining Wall Systems[1]

Proprietary retaining wall Suppliers/Manufactures are required to provide the following information with their formal request for product evaluation. Each page of this supplemental material should bear the name of the system. All items should be marked with the same date of preparation to avoid problems with subsequent revisions or re-submittals.

The application package should be in three separate parts. A detailed list of the recommended content for each part is listed below. Note that use of the metric system is preferred and, for some information, required.

A. SELECTION INFORMATION PACKAGE (Section 1)

1. Provide the trade name(s) under which the product is being marketed.
2. Provide the name, address, and telephone number of the company and/or manufacturer(s), of the product and, if different, the plant location(s).
3. If different from above, provide the name, address, and telephone number of the representative or Supplier/Manufacturer, and/or the designer.
4. Describe the system. **[IDEA Report – C1 through C7: Introduction of Report]**
    a. List the advantages and best application(s) of the system.
    b. List any cautions that apply to use of the system.
    c. Brochures or reproducible illustrations are encouraged.
    d. Describe, and preferably illustrate, aesthetic treatment options.
5. List the limitations on the use of the system. This should be a thorough listing. Consider such parameters as:
    a. Wall height.
    b. Allowable settlement.
    c. Soil chemistry.
    d. Backfill type and compaction.
    e. Surcharge.
    f. Minimum wall radius.
    g. Expected design life.
    h. Warranty period.
    i. Maintenance requirements.
    j. Necessary impact protection.
6. Provide cost information. Where possible, actual case history data should be provided in sufficient detail to permit estimating the cost on dissimilar projects.

[1] From: Appendix 9A, NYSDOT Highway Design Manual, Chapter 9 – Soils, Walls, and Foundations.

7. List the design activities that are required when the system is used. Describe these in the sequence by which design would normally proceed. This information should be sufficient for designers and/or others to quickly determine the level of design effort needed. Consider such factors as:
    a. Subsurface investigation.
    b. Excavation stability analysis.
    c. Foundation design.
    d. Stability analysis.
    e. Tieback design, if applicable.
    f. Drainage and backfill design.
    g. Face design, etc.

    Be specific about what design work will have to be done independently and what design work should follow the design charts, procedures and guidance provided with the system documentation. If design services are available through the Supplier/Manufacturer, so state. Note throughout that the design must be by a professional engineer licensed to practice in New York State.

8. List the typical construction equipment requirements, highlighting any special equipment needs. Indicate typical durations and progress rates. Describe any likely impacts on the construction effort. Describe the type and rate of any testing that should be done during construction. **[IDEA Report – C1 through C7: 3.1.2]**

B. IMPLEMENTATION INFORMATION (Section 2)

1. Outline the design process. Provide and explain the use of any charts or equations that should be used. Provide references to any recognized design standards/guides that are utilized. Provide recommended values or procedures for design processes not directly covered in the guidance referenced in Part A, step 7. Include representative sample design problems (at least two) with hand solutions for typical conditions. Show solutions for sloped backfill and for level surcharged backfill, at a minimum. **[IDEA Report – C1 through C7: 2.1, 2.2]**

2. Provide all appropriate details or standard drawings required for fabrication and proper use of the system. Standard drawings used for fabrication of precast concrete units shall be prepared as follows: **[IDEA Report – C1: 1.1.5, 1.1.11, 1.2.5, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C2: 1.1.5, 1.1.11, 1.2.4, 1.2.5, 1.2.7, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C3: 1.1.4, 1.1.8, 1.2.5, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C4: 1.1.4, 1.1.8, 1.2.7, 1.2.8, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C5: 1.1.4, 1.1.9, 1.2.5, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C6: 1.1.4, 1.1.9, 1.2.7, 1.2.8, 1.3.4, 1.3.5, 1.3.6, 2.1.3; C7: 1.1.4, 1.1.7, 1.2.4, 1.2.5, 1.2.6]**

    a. The size of the drawing shall be 22 inches by 34 inches with an image area of 20 inches by 31.5 inches. Top, bottom, and right-edge margins will be 0.6 inches; left margin 2 inches.

    b. Each drawing shall have a title block in the lower right hand corner, a minimum of 2.5 inches by 5 inches in size, with the following information:

i. Company name and location.
ii. Title of drawing.
iii. Unique drawing number for each drawing.
iv. Date drawing was prepared.
v. Name or initials of the person preparing drawing.

c. The drawings shall contain with the following information:
i. The minimum 28-day compressive strength of the concrete.
ii. The yield strength or grade of reinforcement.
iii. The minimum concrete cover over the reinforcing steel.
iv. Type and capacity of lifting devices.
v. Complete and accurate views and sections of each precast unit with all dimensions and details necessary for fabrication.
vi. Complete and accurate reinforcing details showing type, size spacing and location of all reinforcing steel.
vii. A reinforcing steel table showing bar mark numbers, size, center-to-center spacing, length, details for all bends and quantity per unit.
viii. Type and location of all lifting devices.

3. Provide information on all materials used to fabricate and install the wall system. Include the following:
    a. Material type and grade, referenced to applicable national standards. **[IDEA Report – C1 through C6: 1.2.2, 1.2.3]**
    b. Detailed drawings for all component parts showing dimensions with working tolerances. **[IDEA Report – C1 through C3: 1.1.5; C4 through C7: 1.1.4; C1 through C6: 1.3.4; C7: 1.2.4]**
    c. Strength and durability test information. **[IDEA Report – C1; 1.1.10, 1.2.6; C2: 1.1.10, 1.2.8; C3: 1.2.6; C4: 1.2.6, 1.2.13, 1.2.15; C5: 1.1.8, 1.2.6; C6: 1.1.8, 1.2.6, 1.2.13, 1.2.15; C7: 1.1.6]**
    d. Material properties, tested for quality control purposes, with acceptance limits. **[IDEA Report – C1 through C6: 4.1.1, 4.1.2, 4.1.3; C7: 4.1.1, 4.1.3]**
4. Provide all required specifications, preferably in general conformance with the Department's format for Standard Specifications. Where possible, any specifications referenced should be those of the Department. **[IDEA Report – C1 through C7: Introduction Appendix]**

5. Provide the Field Construction Manual for the system. (If the system is approved, the Supplier/Manufacturer will be expected to provide two copies of this manual for any project on which the system is used.) The equipment and testing requirements discussed above (in item 8 of the previous Section 1) shall be included in or appended to the Manual. **[IDEA Report – C1 through C7: 3.1.2]**

6. Provide a maintenance manual or list of maintenance considerations, if appropriate.

C. EVALUATION INFORMATION (Section 3)

1. Describe the development history of the system. When was it conceptualized? Patented? Was it previously known by other names? When was the first prototype developed?
2. If anything has been written or published to describe the theoretical basis of the system, this should be provided.
3. Provide any relevant information on testing of the system and the test results and interpretation.
4. Explain the derivation of charts and any unique equations that are provided for the design process.
5. Detail case histories and current follow-up of up to five previous projects. Photographs are considered helpful. When possible, contact information for user references should be provided.
6. Explain the rationale for any special details or procedures that are specified in the above section on implementation information.
7. Provide samples, if appropriate. The Materials Bureau reserves the right to require the Supplier/Manufacturer to supply samples of specific components for testing when deemed necessary during the course of the evaluation.

[i] Report Ver 1, June 2021.