# **MSE WALL SHOP DRAWING REVIEW CHECKLIST**

**INSTRUCTIONS**

This checklist should be completed by the Shop Drawing Reviewer, typically the Engineer of Record (EOR), and Geotechnical Engineer of Record (Geotechnical EOR) as noted.

The Shop Drawing Reviewer should complete the Project Information, Shop Drawing Reviewer Information, and noted review items, then, forward the completed checklist, shop drawings, and calculations to the Geotechnical EOR for review. A copy of the completed checklist should be sent to INDOT Geotechnical Services Division by the shop drawing reviewer for all State projects at least two business days prior to releasing the shop drawings for construction for a final Quality Assurance check.

Note: The Geotechnical EOR review can be done in parallel with the Shop Drawing Reviewer review, and both need to be completed within the 2 weeks allowed per 105.02. Comments between the shop drawing reviewer and geotechnical EOR reviewer should be resolved before submitting to INDOT geotechnical services division.

A link to frequently used abbreviations and acronyms is provided [here](#_ABBREVIATIONS_/_ACRONYMS).

The following tables should be filled out by party listed in parenthesis.

**PROJECT INFORMATION (EOR)**

|  |  |
| --- | --- |
| Contract No. |  |
| Des. No. (associated with MSE wall details) |  |
| Route |  |
| Project Engineer/Supervisor (PE/S) |  |
| MSE Wall Vendor |  |
| MSE Wall Designer (Engineer who stamped the shop drawing details and calculations) |  |
| Is this a re-submittal? If yes, attach previous checklist |  |

**SHOP DRAWING REVIEWER INFORMATION (EOR)**

|  |  |
| --- | --- |
| Engineer of Record |  |
| Shop Drawing Reviewer if not the EOR. |  |
| Date Received |  |
| Date Forwarded to Geotechnical EOR for review |  |
| Due Date for comments back to EOR |  |

**GEOTECHNICAL REVIEWER INFORMATION (GEOTECHNICAL EOR)**

|  |  |
| --- | --- |
| Geotechnical EOR (PE in charge if geotechnical investigation) |  |
| Geotechnical Reviewer if not the Geotechnical EOR. |  |
| Date Received |  |
| Date Returned to EOR |  |
| Is a resubmittal required? |  |

**NOTES FOR CHECKLIST**

1. The following information/material should be referenced while completing the checklist:
   1. Project documents (final plan set, *Standard* *Specifications*, Standard Drawings, special provisions, project geotechnical report)
   2. FHWA/NHI manual ("Mechanically Stabilized Earth Walls and Reinforced Soil Slopes," Publications. FHWA NHI-10-024 Vol I and NHI-10-025 Vol II, December 2009; Authors: Ryan R. Berg, Barry R. Christopher and Naresh C. Samtani)
   3. Applicable version of INDOT *Standard Specifications* as noted on the construction plans title sheet.
   4. Applicable version of AASHTO *LRFD Bridge Design Specifications*, including interims referenced on the plans.
2. Each question must have a "Yes", "No" or "N/A" box checked. Add any pertinent project specific questions to the checklist under “Place comments here. If NO or N/A is checked comments are required,” as necessary. Additional sheets may be used if more space is required.
3. The documents listed under the "Reference" column in the checklist are not intended to be a complete list of documents. Rather, the most common documents are listed where guidance/information related to the question in the checklist may be found. More stringent criteria may exist in other project documents (e.g., special provisions, etc.) that may be relevant to a given question. In such an event, the governing document should be noted in the "Comments/Action Required" column of the checklist.
4. After completing the checklist, the EOR should include any attachment that identifies specific questions that the MSE wall vendor or contractor? has to address, if necessary to the [List of Attachments](#_LIST_OF_ATTACHMENTS).

**CHECKLIST RESPONSIBILITES BY SECTION (WITH LINKS)**

|  |  |
| --- | --- |
| SECTION | PARTY RESPONSIBLE |
| [I. GENERAL INFORMATION](#_I._GENERAL_INFORMATION) | EOR |
| [II. LEVELING PAD](#_II._LEVELING_PAD) | EOR |
| [III. SPECIAL WALL DETAILS](#_III._SPECIAL_WALL) | EOR |
| [IV. DRAINAGE](#_IV._DRAINAGE_(EOR)) | EOR |
| [V. SOIL REINFORCEMENT](#_V._SOIL_REINFORCEMENT) | GEOTECHNICAL EOR |
| [VI. SOIL PROPERTIES](#_VI._SOIL_PROPERTIES) | GEOTECHNICAL EOR |
| [VII. OTHER MATERIALS](#_VII._OTHER_MATERIALS) | GEOTECHNICAL EOR |
| [VIII. EXTERNAL STABILITY](#_VIII._EXTERNAL_STABILITY) | GEOTECHNICAL EOR |
| [IX. INTERNAL STABILITY](#_IX._INTERNAL_STABILITY) | GEOTECHNICAL EOR |
| [X. GLOBAL/COMPOUND STABILITY](#_X._GLOBAL/COMPOUD_STABILITY) | GEOTECHNICAL EOR |

# **CHECKLIST**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| I. GENERAL INFORMATION (EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Is the wall vendor on the INDOT list of approved MSE Retaining Wall Manufacturers? | APL |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Is the wall design life specified as 75 years? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Does the wall envelope encompass the wall envelope shown on the plans? |  | | | |
| 1. Is the final coping or top of the wall elevation at or above that shown on control line 1? | Spec 731.02/Construction Plans |  |  |  |
| 1. Is the final top of the leveling pad elevation at or below that shown on control line 3? |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Are the following shown and acceptable? |  | | | |
| 1. A final profile along the front face of the wall | Spec 731.04 |  |  |  |
| 1. A plan layout of the front face of the wall showing all alignment points with stations and offsets |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. Are the following shown and acceptable? |  | | | |
| 1. A plan view of the wall with offsets from the construction centerline at all changes in horizontal alignment | Spec 731.04 |  |  |  |
| 1. Plan and elevation views showing ground reinforcement where piling, utility, or other structures are near the wall |  |  |  |
| 1. Details for diverting ground reinforcement around obstructions such as piles, catch basins, or utilities |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Are the following shown and acceptable? |  | | | |
| 1. An elevation view along the front face of the wall | Spec 731.04 |  |  |  |
| 1. Elevation (at least every 50ft) at the top of the wall at all horizontal and vertical break points |  |  |  |
| 1. All leveling pad steps |  |  |  |
| 1. Type of wall unit designation |  |  |  |
| 1. Length of ground reinforcement |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 7. Are general notes required for constructing the wall included? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| II. LEVELING PAD (EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Are the leveling pad dimensions shown (width and thickness)? Generally, dimensions are 1 ft wide and 6 in. thick. | N/A |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Does the leveling pad profile satisfy the minimum depth of embedment criteria? | Spec 731.03/Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Are leveling pad steps in 2.5-ft increments? | Spec 731.02 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| III. SPECIAL WALL DETAILS (EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Are panel details, including panel dimensions, all panel reinforcement, and location of ground reinforcement connection devices embedded in panel shown and acceptable? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Are details for constructing wall around drainage facilities, including outletting of internal drainage from MSE volume shown and acceptable? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Are details of architectural treatment shown and acceptable? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Are details for the connections between the concrete panel and the ground reinforcement shown?as per INDOT Specs?  (Connections shall not be more than 30 in. apart vertically.) | Spec 731.04, 731.09 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. Are any of the following present? |  | | | |
| 1. Special facing element if interfacing with other wall systems | Construction Plans |  |  |  |
| 1. Slip joint(s) (e.g., at wing walls, differential settlement concerns, etc.) |  |  |  |
| 1. Detailing at wall end(s) |  |  |  |
| 1. Reinforcement connection to appurtenances (e.g., box inlets and large obstructions) |  |  |  |
| 1. Acute angles |  |  |  |
| 1. Non-standard coping |  |  |  |
| 1. #8 coarse aggregate up to Q100 elevation, where applicable |  |  |  |
| 1. Correctly reflected location of utilities in the area of the wall |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Are structural frames (“yokes”) provided to navigate the bar mat soil reinforcements around vertical obstruction within the MSE backfill? (examples of vertical obstructions include piles, shafts, inlet structures, etc.) | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 7. If instrumentation specific to the MSE wall is required per contract unique special provision, then is it provided? | USP/PGR |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 8. Is a 4 ft horizontal bench in front of the wall provided for slopes steeper than 4.0H:1.0V? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 9. Does the embedment and bench material match the structural backfill material used behind embedded panels of the wall? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 10. Is the granular material used for embedment and bench encased in accordance with 203.09? | Spec 203.09, 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 11. Is the embedment and bench day-lighted and riprapped? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 12. Do facing units meet the project aesthetic criteria? | Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| IV. DRAINAGE (EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Are all vertical and horizontal joints covered with geotextile fabric on the backside of the wall facing units? | Spec 731.10 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Has drainage along the backcut been included? | Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Is the water from subsurface drainage adequately led out of the wall system?  Daylighted (preferred) or otherwise collected. | Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| V. SOIL REINFORCEMENT (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Do the calculations include a determination of the phi angle for reinforced materials and retained materials? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Do the calculations include a determination of the soil reinforcement strength? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Is the soil reinforcement specified to have the correct type and thickness of the corrosion protection as per the project specifications? | Spec 731.03(c) |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Is the splay of strip reinforcements limited to no more than 15 degrees? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. If strip reinforcements are splayed, has the tensile resistance of the splayed reinforcing been reduced by the cosine of the splay angle? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Is the vertical bend in metallic soil reinforcements within the maximum limit of 15 degrees? | Shop Drawings |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 7. Are overlapping reinforcements separated vertically by at least 3 in. of soil? | Shop Drawings |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 8. Is the correct value of Reinforcement Pullout Resistance Factor (F\*) specified? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| VI. SOIL PROPERTIES (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Has the **reinforced fill** been specified by the  vendor and is it in conformance with the project  requirements? |  | | | |
| 1. Type | Spec 731.03, 731.04, PGR |  |  |  |
| 1. Unit Weight |  |  |  |
| 1. Friction Angle |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Has the **retained fill** been specified by the  vendor and is it in conformance with the project  requirements? |  | | | |
| 1. Type | Spec 731.03, 731.04, PGR |  |  |  |
| 1. Unit Weight |  |  |  |
| 1. Friction Angle |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Has the **foundation soil** been specified by the  vendor and is it in conformance with the project  requirements? |  | | | |
| 1. Type | Spec 731.04, PGR |  |  |  |
| 1. Unit Weight |  |  |  |
| 1. Friction Angle or Cohesion |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Has the **soil compaction procedures and**  **restrictions for reinforced fill and foundation**  **preparation** been specified by the vendor and is it in conformance with the project requirements? | Spec 731.07, 731.11, PGR |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| VII. OTHER MATERIALS (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Have the following items been specified by the  vendor and are they in conformance with the project requirements? |  | | | |
| 1. geotextile filter joint cover material | Spec 910.10 |  |  |  |
| 1. corrosion protection systems for soil reinforcement | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Is the initial wall batter during construction specified? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Are the structure backfill (reinforced zone) dimensions shown? | Spec 731.04 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| VIII. EXTERNAL STABILITY (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Have all assumed soil parameters (cohesion, angle of internal friction, soil unit weight, and sliding friction coefficient) for retained, reinforced and foundation soils been listed? | PGR |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Are soil parameters consistent with those recommended in the geotechnical report/project specification? | PGR/USP |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Have the maximum factored bearing pressures been listed along the length of the wall? | Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Have all the loads been incorporated into the wall analysis and design? (e.g., traffic loads, seismic loads, foundations, sloping surcharge, broken-back surcharges, etc.) | PGR, Spec 731.03,  Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. Have all the critical sections along all walls been analyzed? (e.g., highest wall sections, sections where slopes above and below the walls are steepest, etc.) | Construction Plans,  PGR |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Are the static and seismic analyses adequate  (as per performance requirements) for the following failure modes? |  | | | |
| 1. sliding | Spec 731.03,  LRFD |  |  |  |
| 1. eccentricity |  |  |  |
| 1. bearing |  | | |
| 1. general bearing capacity |  |  |  |
| 1. local bearing capacity/lateral squeeze |  |  |  |
| 1. Is the factored bearing resistance greater than the maximum factored bearing pressure at all locations along the wall? |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 7. Has total settlement analysis been performed? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 8. Has differential settlement analysis been performed? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 9. Have slip joints been provided to accommodate anticipated differential settlements? | PGR, Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 10. Is an undercut/ground improvement needed due to soft or poor soils? | PGR, Spec 731.12, Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 11. If the answer to 10. (above) is yes, is the depth of the treatment and the replacement material specified? | PGR, Spec 731.12, Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 12. Are pile sleeves used? | Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 13. Will waiting period(s) and stage construction be needed if the factored design wall pressure exceeds the maximum factored bearing resistance and allowable settlement? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| IX. INTERNAL STABILITY (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Have calculations for internal stability of the wall been performed? | PGR, Spec 731.03 |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Has the static and seismic internal stability evaluation been performed? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Have all the critical sections along all walls been analyzed? (e.g., highest wall sections, sections where slopes above and below the walls are steepest, etc.) | PGR, Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Is pullout resistance adequate at each level of the reinforcement? | PGR, Spec 731.03, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. Is the correct value of factored tensile resistance of steel used? (Resistance factors are 0.75 for strips and 0.65 for bar mats) | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Are corrosion loss rates in conformance with project criteria? | PGR, Spec 731.03(c), LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 7. Has the cross-sectional area for the soil reinforcement been corrected for corrosion losses over the design life of the structure? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 8. Is resistance against tensile failure adequate at each level of reinforcement? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 9. Are the connections designed for maximum tension in soil reinforcements? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 10. Is the correct value for the scale correction factor, α, been used? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 11. Is the correct overall reinforcement surface area geometry factor, C, used? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 12. Have the correct stress ratio (Kr/Ka) and lateral pressure coefficient (Ka) been used for computing internal loads? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 13. Has the correct internal failure surface been used for static and seismic cases? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 14. Has the vertical stress been computed as per the requirements? | LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 15. Have all the external loads been incorporated into the wall analysis and design (e.g., traffic impact loads, seismic loads, sloping surcharge, broken-back surcharges, etc.)? | LRFD, Spec 731.03(a) |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 16. Have all the internal loads been incorporated into the wall analysis and design (e.g., lateral loads from piles at abutments or overhead mast structures)? | PGR, Spec 731.03,  Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 17. Has the internal stability evaluation accounted for complex geometries such as tiered structures, acute corners, back-to-back walls, and obstructions? | PGR, LRFD, Construction Plans |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| X. GLOBAL/COMPOUD STABILITY (GEOTECHNICAL EOR) | | | | |
| QUESTION | REFERENCE | YES | NO | N/A |
| 1. Has the Geotechnical EOR checked global stability? | PGR, Spec 731.03, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 2. Has the Vendor checked compound stability? | PGR, Spec 731.03, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 3. Has the slope present on top of and at the toe of the MSE wall been considered in the design of compound stability? | Spec 731.03, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 4. Is the safety factor against global stability failure adequate? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 5. Is the safety factor against compound stability failure adequate? | PGR, LRFD |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |
| 6. Are the geotechnical parameters for global and compound stability analyses appropriate and consistent with those used for other failure modes? | PGR |  |  |  |
| Place comments here. If NO or N/A is checked comments are required. | | | | |

# **LIST OF ATTACHMENTS BY EOR AND GEOTECHNICAL EOR FOR TRANSMITTAL TO THE CONTRACTOR**

|  |  |  |
| --- | --- | --- |
| **No.** | **Attachment** | **Comments/Action Required** |
| 1 | Shop Drawings with Markups |  |
| 2 | Calculations with Markups |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |

At a minimum, the EOR should include an attachment that identifies the specific issues that need to be addressed by the Vendor.

# **ABBREVIATIONS / ACRONYMS**

|  |  |
| --- | --- |
| APL | Approved Products List (Retaining Wall Systems APL <https://www.in.gov/indot/div/mt/appmat/pubs/apl33.pdf> ). |
| Construction Plans | Final plan set for the project as advertised, with all associated revisions. |
| EOR | Engineer of Record. Professional Engineer who stamped the construction plans |
| FHWA | Federal Highway Administration |
| Geotechnical EOR | Geotechnical engineer (in charge of the geotechnical investigation) |
| IDM | *Indiana Design Manual*  <https://www.in.gov/indot/design_manual/design_manual_2013.htm>  including INDOT Design Memorandum No. 17-03 available at https://www.in.gov/indot/files/17-03MSEwalls.pdf |
| LRFD | AASHTO *LRFD Bridge Design Specifications, including interims referenced on the plans.* |
| MSEW3.0 | Version 3.0 of proprietary software, MSEW, by ADAMA Engineering (visit www.geoprograms.com) |
| PE/S | Construction Project Engineer/Project Supervisor |
| PGR | Project Geotechnical Report |
| Shop Drawings | MSE wall shop drawings and design calculations provided by MSE wall Vendor |
| Spec | INDOT *Standard Specifications* and any applicable special provisions (refer to contract documents for applicable spec year) |
| Vendor | MSE wall Vendor from the INDOT approved list submitting the working drawings |
| USP | Project specific unique special provision |

Diagram

Description automatically generated