PRELIMINARY DESIGN CHECKLIST – NOISE WALL (CONNECT)

Date: 1-1-2024

County:_____ **Design No.:**_____ **Check By:**_____ **Date:**_____

Project Location:_____ **Consultant:**_____

GENERAL

___ Abbreviations – Use as needed. Reference [BDM 13.1.4]

___ Design Guidance – [DB DM 11-D2, BDM 3.12, C3.12]

___ Location:
Township/Range (e.g. "T-86/87N", "R-2/3W")
Section (e.g. "35/36")
Township Name
County
City of _____ (if needed)
Asset ID No.
Latitude/Longitude (6 decimal) at midpoint of wall (e.g. "12.345678/-12.345678")

___ Title Block –

- ○ Size (Ex. Length x Variable Height)
- ○ "Design No.", "Design Sheet. No. x of x", "Asset ID No."
- ○ Sheet Title (Ex. Situation Plan, Situation Plan-Site, or Situation Plan-Misc.)

___ Project (Phase) number in the border for all sheets. For routes and paren numbers that are not three digits, include the leading zero(s) before the route and paren numbers (e.g. BRF-063-3(046)--38-62).

___ Survey Control Point – Use coordinates/description per plan set

___ Traffic Data as shown in Road Plans – see CADD cell

___ General Utility Symbols and Utilities Note Cell. Place a label on the plan view to identify areas that may be of potential conflict.

___ Scale bar

___ North arrow

___ Noise wall type was coordinated between the BSB, LEB, the aesthetic coordinator, and the District.

___ Noise wall geometry (horizontal alignment, top and bottom of wall, and proposed grading surface were provided by Road Design. The proposed geometry meets the project wall type and structural design needs.

___ Noise wall impacts resulting from high fills or nearby retaining walls were considered (if applicable)

___ The horizontal alignment is adequate with respect to Vehicle Collision Force guidelines (BDM 3.12, C3.12 and AASHTO LRFD 9th Edition Section 15.8.4).

___ A Horizontal Alignment Table is provided.

___ A Top and Bottom Wall Profile Table is provided.

___ Adequate handling of surface water drainage is provided.

___ The noise wall does not conflict with UAC or proposed utilities. Coordination with the District Utility Coordinator or Foundations Field Engineer may be required.

- ○ Depending on the confidence level of survey, a request to have a utility depth and location potholed may be prudent.
- ○ A minimum 2 feet of vertical clearance is generally acceptable (may vary on a case-by-case basis or by request of utility owner).
- ○ A minimum 5 feet of horizontal clearance to centerline drilled shaft is generally acceptable (may vary on a case-by-case basis or by request of utility owner).
- ○ Horizontal clearance to an existing or proposed utility longitudinal to a proposed noise wall should be 15 feet or as otherwise coordinated with the District and Design team. Utility type, depth, construction impacts, utility related features, and potential for future utility maintenance shall be considered.

___ Wall top profile steps up or down should be 2-foot increments, except at the end wall where 4' increments are acceptable.

___ Grading was reviewed to identify any locations having a split ground profile.

- ○ It is preferred to avoid split ground profiles. If they are needed, a 2 foot or less differential does not require special wall design.
- ○ Split profiles with differential greater than 2 feet require a note on the TSL to identify the location(s) and need for special structural retainment design.

___ When a noise wall is proposed to be constructed with a precast column/panel system, the following is typically applicable:

- ○ The baseline horizontal alignment should be defined along the center of the wall, rather than along a front or back face. This approach is helpful in defining drilled shaft center spacing and deflection locations. It will also be easier to avoid issues due to panel width uncertainty during preliminary design.
- ○ The site meets the conditions where Vehicle Collision Force design do not need to be considered. The concrete column/panel system is not conductive to collision force design.
- ○ Whole degree baseline deflections are acceptable but should be limited to the column locations. Deflections may require a special column design (to be determined in final design).
- ○ Precast "H"-shaped concrete columns shall typically be set on 16-foot center to center spacing along the baseline.
- ○ One "H"-shaped column will be embedded within a drilled shaft. In unique cases the column will be bolted to the top of a footing or utility bridge beam.

- A 4’ diameter drilled shaft may be shown for preliminary situation plan purposes. However, the diameter should not be labeled, as it will be determined in final design.
- To eliminate a utility crossing conflict with a drilled shaft, a “utility bridge” solution may be needed to skip or shift a drilled shaft. The column would be bolted to the bridge beam for this solution, in lieu of changing the column spacing and panel sizes. Utility bridge details are available upon request.
- Precast concrete full panels (4’ height) and half panels (2’ height) are designed to slide-in between the adjacent “H” shaped precast concrete columns. A 6-inch panel width can typically be shown for preliminary design purposes.
- One concrete half panel is allowed between adjacent columns when needed to accommodate the preferred 2’ step increments. The preliminary design shall show the half panel in the bottom position. However, the half panel may be moved to a different position in final design.

General Notes

General Notes shown on the TS&L are to be incorporated into the General Notes of the final plan set. The final designer shall delete these notes from the final TS&L. Example note:

___ All columns shall be set plumb.

Design Notes

Design Notes shown on the TS&L are intended to inform the final designer of design decisions and other requirements. The final designer shall delete these notes from the final TS&L. Example notes:

___ Drilled shaft depth to be determined in final design.

___ Contact the Iowa DOT BSB aesthetic coordinator regarding aesthetic treatments.

Plan Notes

Plan Notes should remain on the final TS&L. Example notes:

___ Granular backfill between noise wall and barrier rail.

___ Pothole elevation at the top of utility =??

PLAN VIEW

___ Label “Situation Plan”

___ Ground elevations, contours, and topography. Label contour elevations.

___ Existing utilities (fence-lines, tiles); label - fiber optic/gas line/etc.

___ Existing structures (bridge, culverts); label - type/size/station and design number

___ Label the noise wall baseline and roadway centerlines

___ Label stationing on at least two “tic” marks in the plan view

___ Dimension the proposed length (begin to end of wall)

___ Label baseline deflections

___ Proposed roadway station and offset from road centerline or baseline, at begin and end noise wall stations.

___ Wall baseline station at begin and end wall, and at all deflection locations.

___ Tangent lengths begin to end of wall and between deflections are labeled and are divisible by column spacing.

___ Dimension minimum horizontal clearance from traveled way or top face of barrier rail along roadway. Verify that the project clear zone is achieved, or appropriate setback from barrier, as applicable.

___ Proposed Pipes and/or St-S/Intake drainage systems shown.

___ Check that all text and dimensioning is legible and not placed on top of other text or features

___ Typical cross section provided. (usually on Road Design sheets is sufficient)

LONGITUDINAL SECTION

___ The Longitudinal Section shall be along the noise wall baseline. It shall not be based on a projection perpendicular to the roadway from the Plan view (therefore, the true length will be shown).

___ Show all drainage structures and utilities that cross the wall.

___ Existing ground line and proposed grade line (left and right if differing) shown and labeled

___ Top of wall elevations, step locations

___ Bottom of wall elevations, step locations

___ The desired 1’ bottom panel embedment below proposed grading (6 inches minimum) is provided.

___ Minimum wall height is 8 feet. Desirable ending wall height is 8 feet.

___ Any vertical scale exaggeration is labeled (ex. 1H:2V).

CADD Checklist

Refer to: CONNECT Applications

___ Verify Iowa Regional Coordinate System is correct for this project site.

___ Correct CONNECT ProjectWise folder structure is being used.

___ Correct seed files are being used.

___ Correct MicroStation File naming conventions are being followed.

___ Correct MicroStation Model naming conventions are being followed.

___ The correct levels, element templates, and features are being used (this will ensure the correct font style is being applied).

___ Combine multi-sheet designs into one file named TSL_CC_DDDD.pdf