STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	472-84071	2005	W2.1	

DATE	BY

DESIGN SPECIFICATIONS:

AASHTO Standard Specifications for Highway Bridges, 2002 Edition.

AREMA Manual for Railway Engineering, 2002.

CONSTRUCTION SPECIFICATIONS

Kansas Department of Transportation, Standard Specifications for State Road and Bridge Construction, 1990, English Version, and Special Provisions.

Applicable sections of the 2002 AREMA Manual for Railway Engineering including Chapter 8, "Concrete Structures and Foundations" and Chapter 9, "Seismic Design for Railway Structures". The AREMA Manual for Railway Engineering can be obtained from the following address:

American Railway Engineering and Maintenance-of-Way Association (AREMA)
8201 Corporate Drive, Suite 1125
Landover, MD 20785-2230
Telephone (301) 459-3200

DESIGN LOADING:

Earth & Other Loads — - - As specified by AASHTO and AREMA.
- - All precast parapets, cast-in-place moment slabs, and cast-in-place concrete bin caps shall be designed for a uniform load of 200 pounds per linear foot applied laterally at the top of the parapet.

Track Loading Surcharge — - - Cooper E80. Model as 8'-6" wide, 1.882 ksf strip load for each track. For wall design, calculated lateral loads imposed by the track surcharge shall be per AREMA Chapter 8, Part 20, Section 20.3.2.2, applied along a vertical plane extending through the front face of the wall at half the wall height. See Cross Sections for limits and locations of tracks.
- - Track surcharges shall be applied simultaneously at all track locations shown in the Cross Sections, and at Future Track 3. Track surcharge loads due to simultaneous loading on two or more tracks shall be applied per AREMA Chapter 8, Part 2, Section 2.2.3c(6).

DESIGN GUIDELINES:

The minimum design life for permanent walls shall be 75 years.
The minimum safety factor against reinforcement pullout shall be 1.75 (per AREMA).
The minimum safety factor for sliding shall be 1.5.
The minimum safety factor for overturning shall be 2.0.
The minimum safety factor for bearing capacity shall be 3.0.*
The minimum safety factor for global stability shall be 1.5.**
The site coefficient, S, for seismic design has been determined based on subsurface exploration to be 1.0.

*Ultimate bearing capacity shall be calculated by the Contractor in accordance with AASHTO Article 4.4.7.1, which includes corrections for eccentric and inclined loads and inclined bases. Design parameters for areas of ground improvement shall be the responsibility of the Contractor. Applied bearing pressure shall be calculated by the Contractor and shall include track loading surcharge.

**Global Stability shall be verified by the Engineer upon receipt of the wall design.

SUBSURFACE INFORMATION:

Subsurface information used in design and estimating purposes is shown on the Subsurface Information drawing. Boring logs and laboratory test data are available from the Engineer upon request.

WALL AND EMBANKMENT SETTLEMENT MONITORING AND PERFORMANCE CRITERIA:

1. The Contractor shall monitor settlement of the wall and embankment as required in the special provisions to verify the performance criteria has been met. This verification program shall be included in the lump sum price bid for "Ground Improvement".
2. The Contractor shall anticipate a minimum monitoring and waiting period of 30 days after full wall height and backfill placement to within approximately 6 inches of final grade is attained. The total monitoring and waiting period and approval to place hot mix asphalt roadbed shall be determined by the Engineer subject to the settlement monitoring results. Should any of the criteria not be met, the Engineer may require the monitoring period be extended at no additional cost until satisfactory results are obtained. Additionally, revised ground improvement designs may be required to ensure that subsequent areas of wall and embankment meet the criteria.
3. The maximum allowable total settlement shall be 2 inches as measured at the bottom face of permanent and temporary walls. Time period for monitoring is from start of wall construction to a minimum of 30 days after the full wall height and backfill placement to within approximately 6 inches of final grade is attained.
4. The maximum allowable settlement shall be 0.5 inches for the monitoring time period starting when full wall height and backfill placement to within approximately 6 inches of final grade is attained and ending 30 days after that date.
5. The rate of settlement for the final 15 days of the 30-day monitoring period shall be less than one-half the rate of settlement for the initial 15 days of the 30-day monitoring period.
6. The maximum differential settlement measured along the wall and between opposite walls shall not exceed 1/500 for the full monitoring period.

UTILITIES:

The information shown in these plans concerning type and location of underground or above ground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of utilities as may be necessary to avoid damage thereto. See General Notes 20 thru 35 on Sheet G1.1.

GENERAL NOTES:

Architectural finish of the front face of concrete units and parapets shall consist of Medium Sandblast. Form liner details shall be submitted to the Engineer for review with the wall shop drawings. The concrete finish on one sample concrete unit and one parapet shall be reviewed and approved by the Engineer prior to casting other concrete units and parapets.

Minimum wall embedment (to top of leveling pad) shall be 2'-6" below the finished ground line.

Prior to retaining wall construction, ground improvement of the foundation soils below the walls and embankment shall be completed. Ground improvement is estimated to be necessary along most of the wall and embankment length in order for the wall and track design guidelines and performance criteria to be met. The Contractor will be responsible for design and installing the necessary ground improvement to meet the requirements of the plans and specifications.

The subgrade level at the bottom of the wall and embankment shall be proofrolled prior to backfill of wall locations. Unstable areas discovered during proofrolling shall be compacted to a suitable state or undercut and replaced with compacted granular fill as directed by the Engineer. In areas where ground improvement elements have been installed, proofrolling will be as required in the ground improvement design and the need to undercut and replace subgrade materials will be determined by the Engineer and the ground improvement designer.

Temporary shoring may be required to complete the construction and safely protect personnel and adjacent track and structures. Temporary shoring shall be the Contractor's responsibility to design, install, maintain, and remove. See Special Provisions.

Stability of temporary construction slopes shall be the responsibility of the Contractor. The minimum safety factor for temporary slope stability shall be 1.2.

The bid price per square foot for "Retaining Wall (Doublewal)", "Retaining Wall (Evergreen)", or "Retaining Wall (T-Wall)" shall include all costs for materials; design and shop drawing preparation; excavation and temporary shoring to construct wall; preparing the wall foundation including proofrolling; concrete leveling pads (footings); furnishing and fabricating all materials for the walls, including concrete units; joint materials; filter cloths; erecting units to the lines and grades shown on the plans; furnishing and placing all granular backfill material within the limits of 0.8 times the wall height as shown on the plans (regardless of the final constructed width of the walls); and for all labor, equipment, tools, and incidentals necessary to complete the work.

The bid price per square foot will not include embankment outside the limits of 0.8 times the wall height as shown on the plans, removal and replacement of unstable soils, ground improvement, precast parapet, cast-in-place moment slab, cast-in-place concrete bin cap, drainage system, or temporary MSE walls which will be included in other bid items.

The bid price per linear foot for "Precast Parapet (Type II)" includes moment slab or concrete bin cap and Type B Expansion Joint Filler at parapet joints.

Payment for "Retaining Wall (Doublewal)", "Retaining Wall (Evergreen)", or "Retaining Wall (T-Wall)" will be based on the Nominal Wall Areas listed in the table "SUMMARY OF QUANTITIES - CONCRETE BIN WALL & T-WALL ALTERNATIVES" on Sheet W2.2. The Nominal Wall Areas are calculated based on the vertical height from the top of the concrete leveling pad (as shown on Wall Elevation drawings) to 5'-9" below top of parapet.

COMPACTED GRANULAR FILL:

Compacted granular fill shall be used for all embankment, wall unit fill, and backfill. It shall meet the minimum soil parameters, gradation and other properties shown on the plans and in the specifications. See General Note 36 on Sheet G1.1. If the selected wall type requires more stringent design properties, these shall be stated in the wall design submittals. The Contractor is responsible for furnishing and placing compacted granular fill that meets the design and performance requirements of the project.

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This sheet designed by:

HNTB
ARCHITECTS ENGINEERS PLANNERS

NO.	DATE	REVISIONS	BY	APP'D
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CITY OF WICHITA

WICHITA CENTRAL CORRIDOR

CONCRETE BIN WALL & T-WALL ALTERNATIVES
GENERAL NOTES

SHEET NO.	OF	SCALE		APP'D			
DESIGNED		DETAILED	BPF	QUANTITIES		TRACED	EWH
DESIGN CK.		DETAIL CK.	CAP	QUAN.CK.		TRACE CK.	BPF