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Civil Design Criteria
(PROJECT STANDARDS AND SPECIFICATIONS)

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1.0 Scope

This Specification describes the minimum requirements for the design of civil site work for a Project and covers all work related to the preparation of the site such as grading, roads and railroads, sewer work and related facilities, and all work related to finishing the site.

2.0 References

Applicable parts of the following specifications, industry codes and standards, and government regulations shall be considered an integral part of this Design Criteria. The edition in effect on the date of offer award shall be used, except as otherwise noted. Short titles will be used herein where appropriate.

2.1 Specifications

2.2 Industry Codes and Standards

- American Association of State Highway and Transportation Officials (AASHTO)
  - AASHTO-GDPS-4-86/93 - *Guide to Design of Pavement Structures* (plus supplement)
- American Concrete Paving Association (ACPA)
  - EB109P - *Thickness Design for Concrete Highway and Street Pavements*
- American Railway Engineering Association (AREA)
  - *AREA Manual for Railway Engineering*
- American Society of Testing and Materials (ASTM)
  - ASTM A184 - *Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement*
  - ASTM A185 - *Standard Specification for Steel Welded Wire Reinforcement, Plain for Concrete*
  - ASTM A615 - *Deformed and Plain Billet-Steel Bars for Concrete Reinforcement*
- American Welding Society (AWS)
  - AWS D1.4 - *Structural Welding Code - Reinforcing Steel*
- The Asphalt Institute
  - Manual Series No. 1 - *Thickness Design - Asphalt Pavements for Highways and Streets*

- National Fire Protection Association (NFPA)
  – NFPA 30 - *Flammable and Combustible Liquids Code*
- Portland Cement Association (PCA)
  – PCA IS009 - *Guide Specification for Construction of Roller-Compacted Pavements*
  – PCA IS233 - *Structural Design of Roller-Compacted Concrete for Industrial Pavements*

2.3 Government Regulations

- Americans with Disabilities Act (ADA)
  – EEOC-BK-19 - *Americans with Disabilities Act Handbook*
- U.S. Environmental Protection Agency (EPA)
  – EPA 40 CFR - *U.S. Environmental Protection Agency Regulations*
- U.S. Department of the Army, U.S. Army Corps of Engineers
  – EM-1110-3-132 - *Engineering and Design - Rigid Pavements for Roads, Streets, Walks, and Open Storage Areas*
- Joint Departments of the Army and Air Force
  – TM 5-822-5/AMF 88-7 Chapter 1 - *Pavement Design for Roads, Streets, Walks, and Open Storage Area*s

3.0 Definitions

Any and all documents, including design drawings, that have been transmitted or otherwise communicated, either by incorporation or reference, and made part of the legal offer agreement for civil/structural work

DOT: The department of transportation or the equivalent government organization for the state, province, or country in which the project site is located

Non-contact cooling water: Cooling water that does not have direct contact with process fluids or materials. Cooling water may be re-circulated or used only once and conveyed through gravity drainage systems.

owner: The party who owns the facility where the site work will be installed

process sewers: Any waste collection/drainage system carrying materials (exclusive of sanitary waste) requiring treatment before discharge

RCRA: Resource Conservation and Recovery Act

4.0 Requirements

4.1 Environmental Protection

4.1.1 Groundwater Protection

4.1.1.1 Storage facilities and process infrastructure (e.g., process loading/unloading, petroleum storage, and hazardous material storage) shall be designed to protect against groundwater contamination. Examples of protection methods include drip pans, paving, and concrete containment.

4.1.1.2 New tanks below grade shall meet the underground storage tank regulations in *EPA 40 CFR*, *Part 280 UST*.

4.1.1.3 RCRA Storage

1. Tank farm areas for RCRA hazardous materials storage shall be floored and diked with materials that are impervious to the stored material for spill containment.
2. Diked areas shall be designed to contain the sum of the following:
   a. 100% of the largest RCRA tank volume
   b. Runoff from a 25-year, 24-hour rainfall
   c. 6 inches (150 mm) of freeboard
3. RCRA hazardous materials storage tanks shall be installed in accordance with the requirements of *EPA 40 CFR*, *Parts 264* and *265*.

4.1.2 Surface Water Protection

4.1.2.1 Sewers that carry water that is not normally subject to contamination (non-contact cooling water or storm water) and that have the potential to receive spills shall be designed to include monitoring and diversion capabilities.

4.1.2.2 Building floor and roof drains and other areas not subject to process spills shall connect to the clean storm water drainage system.

4.1.3 Public Safety

Facilities for the storage, handling, and use of flammable and combustible liquids shall be in accordance with *NFPA 30*.