Florida Clean Energy Center

Project Codes and Standards

April 7, 2008

1.0 Purpose

This Section details the criteria for project design, engineering and construction.

1.1 Civil Engineering Codes and Standards

The following Codes and Standards shall apply to the civil engineering and design work performed on the project. Unless noted otherwise, the latest edition and published addenda shall apply to the work.

In the event of any conflicts between codes, or between specifications and codes, the more stringent regulation shall apply.

1. American Association of State Highway and Transportation Officials (AASHTO)
    a. Guide for Design of Pavement Structures
    b. LRFD Bridge Design Specifications
    c. Policy on Geometric Design of Highways and Streets
    d. Standard Specifications for Transportation Materials and Methods of Sampling and Testing
    e. M 294 - “Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm Diameter.”
    f. M 306 - “Standard Specifications for Drainage Structure Related Castings.”
2. American Railway Engineering and Maintenance-of-Way Association (AREMA)
3. American Society for Testing and Materials (ASTM)

a. D 698, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)"

b. D 1557, "Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)"

c. D 3034, "Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings"

d. F 892, "Standard Specification for Polyethylene (PE) Corrugated Pipe With a Smooth Interior and Fittings"

4. Chain Link Fence Manufacturers Institute Product Manual

5. Standard Guide for Metallic-Coated Steel Chain Link Fence & Fabric

6. Code of Federal Regulations

a. Title 28, Part 36 – Department of Justice, Americans with Disabilities Act (ADA), Standards for Accessible Design

b. Title 29 - Labor, Chapter XVII, Occupational Safety and Health Administration (OSHA)

7. State of Florida , Department of Environmental Protection (DEP)

a. Erosion and Sediment Pollution Control Program Manual

8. U.S. Department of Transportation, Federal Highway Administration (FHWA)

a. Manual on Uniform Traffic Control Devices (MUTCD)

b. Hydraulic Engineering Circular 22, Urban Drainage Design Manual (HEC-22)

1.2 Structural Engineering, Pipe Stress/Support Engineering, and Design Work Codes and Standards

The following Codes and Standards will apply to the structural engineering, pipe stress/support engineering, and design work performed on the project. Unless noted otherwise, the edition and published addenda in effect on the date of Contract Award will apply to the work.

In the event of any conflicts between codes, or between specifications and codes, the more stringent regulation will apply.

1. American Concrete Institute (ACI):

    a. ACI 117 - Standard Specification Tolerances for Concrete Construction and Materials.

    b. ACI 207.2R – Effect of Restraint, Volume Change, and Reinforcement on Cracking of Mass Concrete.

    c. ACI 301 – Specification for Structural Concrete for Buildings.

    d. ACI 307 – Standard Practice for the Design and Construction of Reinforced Concrete Chimneys.

    e. ACI 313 Standard Practice for Design and Construction of Concret Silos and Stacking Tubes for Storing Granular Materials.

    f. ACI 318 – Building Code Requirements for Structural Concrete.

    g. ACI 347 – Recommended Practice for Concrete Formwork.

    h. ACI 350 – Code Requirements for Environmental Engineering Concrete Structures.

    i. ACI 351.3R – Foundations for Dynamic Equipment.

    j. ACI 360R – Design of Slab on Grade.

    k. ACI 530 – Building Code Requirements for Masonry Structures.

    l. ACI 530.1 – Specification for Masonry Structures.

2. American Institute of Steel Construction (AISC):

    a. Steel Construction Manual – 13th Edition, 2005.

    b. AISC 303 – Code of Standard Practice for Steel Buildings and Bridges.

    c. AISC 341 – Seismic Provisions for Structural Steel Buildings.

    d. AISC 360 – Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

3. American Iron and Steel Institute (AISI):

    a. SG02-1, “North American Specification for the Design of Cold-Formed Steel Structural Members.”

4. American Petroleum Institute (API):

    a. API STD 650-98 (10th Edition, with Addendum 4, 12/2005) - Welded Steel Tanks for Oil Storage.

5. American Society of Civil Engineers (ASCE):

    a. 7-05 - Minimum Design Loads for Buildings and Other Structures.

    b. The Structural Design of Air and Gas Ducts for Power Stations and Industrial Boiler Applications.

    c. Design of Large Steam Turbine-Generator Foundations. 1987

    d. Design and Construction of Steel Chimney Liners.

    e. 37-02 - Design Loads on Structures During Construction (SEI/ASCE Standard).

6. American Society of Mechanical Engineers (ASME):

    a. A17.1 – Safety Code for Elevators and Escalators.

    b. B31.1 – Power Piping Code.

    c. STS-1 – Steel Stacks.

7. American Society of Safety Engineers (ASSE):

    a. ASSE/ANSI A10.4 - Safety Requirements for Personnel Hoists and Employee Elevators.

8. ASTM International (ASTM):

    a. See appropriate technical specification for specific references of ASTM Standards for materials used.

9. American Water Works Association (AWWA):

    a. C 301 – Prestressed Concrete Pressure Pipe, Steel-Cylinder Type.

    b. M-9 – Concrete Pressure Pipe.

10. American Welding Society (AWS):

    a. D1.1 – Structural Welding Code – Steel.

    b. D1.3 – Structural Welding Code – Sheet Steel.

c. A 5.4 – Specification for Stainless Steel Electrodes for Shielded Metal Arc Welding.

d. A 5.9 – Specification for Bare Stainless Steel Welding Electrodes and Rods.

e. A 5.14 – Specification for Nickel and Nickel-Alloy Bare Welding Electrodes and Rods.

11. Concrete Reinforcing Steel Institute (CRSI):

a. MSP-2 – Manual of Standard Practice.

12. International Code Council, Inc. (ICC):

a. IBC 2006 – International Building Code 2006.

13. Manufacturers Standard Society of the Valve and Fitting Industry (MSS):

a. SP 58 – Pipe Hangers and Supports – Materials, Design, and Manufacture.

b. SP 69 – Pipe Hangers and Supports – Selection and Application.

c. SP 77 – Guidelines for Pipe Support Contractual Relationships.

d. SP 89 – Fabrication and Installation Practices.

e. SP 90 – Guidelines on Terminology.

14. National Association of Architectural Metals Manufacturers (NAAMM):

a. MBG 531– Metal Bar Grating Manual.

b. MBG 532 – Heavy Duty Metal Bar Grating Manual.

15. Precast/Prestressed Concrete Institute (PCI):

a. MNL-116 – Manual for quality Control for Plants and Production of Precast and Prestressed Concrete Products.

16. Research Council on Structural Connections (RCSC):

a. Specification for Structural Joints Using ASTM A 325 or A490 Bolts.

17. The Society for Protective Coatings (SSPC):

a. SP-1 – Solvent Cleaning.

b. SP-2 – Hand Tool Cleaning.

c. SP-3 – Power Tool Cleaning.

d. SP-5 – Metal Blast Cleaning.

e. SP-6 – Commercial Blast Cleaning.

f. SP-7 – Brush-off Blast Cleaning.

g. SP-10 – Near White Blast Cleaning.

h. SP-11 – Power-Tool Cleaning to Bare Metal.

i. PA-1 – Shop, Field, and Maintenance Painting.

18. Steel Deck Institute (SDI):

a. SDI 30, Design Manual for Composite Decks, Form Decks and Roof Decks.

b. SDI MOC1, Manual of Construction with Steel Deck.

19. U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), 29 CFR

a. Part 1910 - Occupational Safety and Health Standards.

b. Part 1926 – Safety and Health Regulations for Construction.

20. Commonwealth of Pennsylvania, Department of Environmental Protection

a. Air Quality Program, Plan Approval No. 17-00055A and 17-00055B

21. Acoustical Society of America:

a. S 1.13, "Measurement of Sound Pressure Levels in Air"

b. S 1.4, "Specification for Sound Level Meters"

22. Air Conditioning and Refrigeration Institute (ARI)

23. Air Diffusion Council (ADC).

24. Air Movement & Control Association, Inc. (AMCA).

25. American Boiler Manufacturers Association (ABMA).

26. American Gear Manufacturers Association (AGMA).

27. American National Standards Institute (ANSI)

28. American Petroleum Institute (API):

    a. 650, "Welded Steel Tanks for Oil Storage."

29. Air Conditioning and Refrigeration Institute (ARI)

30. American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE)

31. American Society of Mechanical Engineers (ASME):

    a. B1.1, “Unified Inch Screw Threads (UN and UNR Thread Form).”

    b. B1.20.1 “Pipe threads, General Purpose (Inch).”

    c. B16.1, “Gray Iron Pipe flanges and Flanged fittings, Classes 25, 125, and 250.”

    d. B16.5, "Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard."

    e. B16.9, "Factory Made Wrought Steel Buttwelding Fittings."

    f. B16.10, “Face-to-Face and End-to-End Dimensions of Valves.”

    g. B16.11, “Forged Fittings, Socket-Welding and Threaded.”

    h. B16.15, “Cast Bronze Threaded Fittings Classes 125 and 250.”

    i. B16.18, “Cast Copper Alloy Solder Joint Pressure Fittings.”

    j. B16.20, “Metallic Gaskets for Pipe Flanges Ring-Joint, Spiral-Wound, and Jacketed”

    k. B16.21, "Nonmetallic Flat Gasket for Pipe Flanges."

    l. B16.24, “Cast Copper Alloy Pipe Flanges and Flanged Fittings: Class 150, 300, 400, 600, 900, 1500, and 2500.”

    m. B16.25, "Butt welding Ends."

    n. B16.28, "Wrought Steel Buttwelding Short Radius Elbows and Returns."

    o. B16.34, "Valves-Flanged, Threaded, and Welding End."

p. B16.47, “Large Diameter Flanges – NPS 26 through NPS 60.”

q. B18.2.1, “Square and Hex Bolts and Screws (Inch Series).”

r. B18.2.2, “Square and Hex Nuts(Inch Series).”

s. B20.1, "Safety Standards for Conveyors and Related Equipment."

t. B31.1, "Power Piping."

u. B31.3, “Process Piping.”B31.9, “Building Services Piping.

v. ”B36.10, “Welded and Seamless Wrought Steel Pipe.”

w. B36.19, “Stainless Steel Pipe.

x. ”TDP-1, "Recommended Practices for the Prevention of Water Damage to Steam Turbines used for Electric Power Generation.

y. "Performance Test Codes.

32. American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME B&PVC)

a. Section I, "Rules for Construction of Power Boilers."

b. Section II, "Materials.

c. Section V, "Non-destructive Examination."

d. Section VIII, "Pressure Vessels", Divisions 1 and 2.

e. Section IX, "Welding and Brazing Qualifications."

33. American Society for Nondestructive Testing, Inc. (ASNT)

a. SNT-TC-1A, “Recommended Practice No. SNT-TC-1A.”

b. TC-1A, “Recommended Practice, Personnel Qualifications and Certification in Nondestructive Testing.”

c. CP-189, “Standard for Qualification and Certification of Nondestructive Testing Personnel.”

34. American Society of Sanitary Engineers (ASSE)

35. American Society for Testing and Materials (ASTM)

36. American Water Works Association (AWWA)

a. C105/A21.5, Polyethylene Encasement for Ductile-Iron Pipe Systems.

b. C151/A21.51, “Ductile-Iron Pipe, Centrifugally Cast for Water.

c. C153/A21.53, “Ductile Iron Compact Fittings for Water Service.”

d. C200, “Steel Water Pipe-6 Inches and Larger.”

e. C203, "Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot-Applied."

f. C207, Steel Pipe Flanges for Waterworks Service – Sizes 4 inch through 144 inch.

g. C208, Dimensions for Fabricated Steel Water Pipe Fittings.

h. C209, Cold Applied Tape Coatings for the Exterior of Special Sections, Connections, and Fittings for Steel Water Pipelines.

i. C301, Pre-stressed Concrete Pressure Pipe, Steel-Cylinder Type.

j. C504, Rubber - Seated Butterfly Valves.

37. American Welding Society (AWS)

a. D1.1, Structural Welding Code-Steel.

b. D14.6, “Specification for Welding of Rotating Elements of Equipment.

c. QC1, Standard for AWS Certification of Welding Inspectors.

38. Building Codes

a. International Building Code (IBC)

b. International Plumbing Code 2006 (IPC)

39. Cast Iron Soil Pipe Institute (CISPI):

a. 301, "Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Water, and Vent Piping Applications."

40. Construction Management Association of America (CMAA).

41. Conveyor Equipment Manufacturer's Association (CEMA) Standards.

42. Compressed Gas Association (CGA)

43. Cooling Tower Institute (CTI).

44. Crane Manufacturers Association of America (CMAA)

45. Electric Power Research Institute (EPRI).

46. Environmental Protection Agency (EPA).

47. Federal Aviation Administration (FAA)

48. Federal Regulations:

    a. Occupational Safety and Health Administration (OSHA):

        i. 29CFR1910, "Occupational Safety and Health Standards."

        ii. 29CFR1926, "Safety and Health-Regulations for Construction."

    b. Code of Federal Regulations Volume 40, Part 60, "Standard of Performance for New Stationary Sources."

49. Heat Exchange Institute (HEI).

50. Hoist Manufacturers Association (HMI)

51. Hydraulic Institute Standards (HIS).

52. Manufacturers Standardization Society (MSS):

    a. SP-6, “Standard Finishes for Contact Faces of Pipe flanges and Connecting-End Flanges of Valves and Fittings.”

    b. SP-25, “Standard Marking System for Valves, Fittings, Flanges and Unions.”

    c. SP-42, “Class 150 Corrosion Resistant Gate, Globe, Angle, and Check Valves with Flanges and Butt-weld Ends.”

    d. SP-43, “Wrought Stainless Steel Butt-Welding Fittings.”

    e. SP-44, “Steel Pipeline Flanges”

    f. SP-58, "Pipe Hangers and Supports-Materials, Design, and Manufacture."

g. SP-53, “Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Magnetic Particle Examination Method.”

h. SP-54, “Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Radiographic Examination Method.”

i. SP-55, “Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Visual Method for Evaluation of Surface Irregularities.”

j. SP-61, "Pressure Testing of Steel Valves."

k. SP-67, “Butterfly Valves”

l. SP-68, “High Pressure Butterfly Valves with Offset Design”

m. SP-69, "Pipe Hangers and Supports - Selection and Application."

n. SP-70, “Gray Iron Gate Valves Flanged and Threaded Ends”

o. SP-79, “Socket Welding Reducing Inserts”

p. SP-80, “Bronze Gate, Globe, Angle and Check Valves”

q. SP-83, “Class 3000 Steel Pipe Unions Socket Welding and Threaded”

r. SP-89, “Pipe Hangers and Supports-Fabrication and Installation Practices.”

s. SP-93, “Quality Standard for Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Liquid Penetrant Examination Method.”

t. SP-94, “Quality Standard for Ferritic and Martensitic Steel Castings and Forgings for Valves, Flanges, and Fittings and Other Piping Components-Ultrasonic Examination Method.”

u. SP-95, “Swage(d) Nipples and Bull Plugs”

v. SP-97, “Integrally Reinforced Forged Branch outlet Fittings”

53. Mechanical Power Transmission Association (MPTA).

54. National Association of Corrosion Engineers (NACE)

55. National Board of Fire Underwriters.

56. National Fire Protection Association (NFPA):

a. NFPA 10, "Standard for Portable Fire Extinguishers."

b. NFPA 12, “Standard on Carbon Dioxide Extinguishing Systems.”

c. NFPA 13, "Standard for the Installation of Sprinkler Systems."

d. NFPA 14, "Standard for the Installation of Standpipe and Hose Systems."

e. NFPA 15, "Standard for Water Spray Fixed Systems for Fire Protection."

f. NFPA 20, “Standard for the Installation of Stationary Pumps for Fire Protection.”

g. NFPA 22, “Standard for Water Tanks for Private Fire Protection.”

h. NFPA 24, "Standard for the Installation of Private Fire Service Mains and Their Appurtenances."

i. NFPA 25, “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.”

j. NFPA 30, “Flammable and Combustible Liquids Code.”

k. NFPA 54, “National Fuel Gas Code.”

l. NFPA 55, “Standard for the Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks.”

m. NFPA 68, “Standard on Explosion Protection by Deflagration Venting.”

n. NFPA 70, “National Electrical Code.”

o. NFPA 72, “National Fire Alarm Code.”

p. NFPA. 85, “Boiler and Combustion Systems Hazards Codes.”

q. NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems."

r. NFPA 101, “Life Safety Code.”

s. NFPA 120, "Standard for Fire Protection and Control in Coal Mines."

t. NFPA 204, “Standard for Smoke and Heat Venting.”

u. NFPA 221, “Standard for High Challenge Fire Walls, Fire Walls, and Fire Barrier Walls.”

v. NFPA 291, “Recommended Practice for Fire Flow Testing and Marking of Hydrants.”

w. NFPA 497, “Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Location for Electrical Installations in Chemical Process Areas.”

x. NFPA 780, “Standard for the Installation of Lightning Protection Systems.”

y. NFPA 850, "Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations."

z. NFPA 2001, “Standard for Clean Agent Fire Extinguishing Systems.”

57. Pipe Fabrication Institute (PFI):

a. ES2, “Method of Dimensioning Piping Assemblies.”

b. ES3, "Fabricating Tolerances."

c. ES11, “Permanent Marking on Piping Materials.”

d. ES16, "Access Holes, Bosses, and Plugs for Radiographic Inspection of Pipe Welds."

e. ES20, “Wall Thickness Measurement by Ultrasonic Examination.”

f. ES21, “Internal Machining and Fit-up of GTAW Root Pass for Circumferential Butt Welds.”

g. ES24, “Pipe Bending Methods, Tolerances, Process and Material Requirements.”

58. Rubber Manufacturers Association (RMA).

59. Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

60. The Society for Protective Coatings (SSPC).

a. SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel."

b. SSPC-SP 1 “Solvent Cleaning.”

c. SSPC SP 2 “Hand Tool Cleaning.”

d. SSPC-SP 3, "Power Tool Cleaning."

e. SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning."

f. SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

g. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."

h. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."

i. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."

61. Tubular Exchanger Manufacturer's Association (TEMA).

62. Underwriters Laboratories (UL).

63. National Oceanographic and Atmospheric Administration (NOAA

1.3 General Mechanical Design Criteria

1.4 Applicable WorleyParsons Design Guides

Design Guide No.	Design Guide Title
PPSD-A-DG-021-ME-0001	THERMAL CYCLE OPTIMIZATION
PPSD-A-DG-021-ME-0002	PLANT NET HEAT RATE CALCULATIONS
PPSD-A-DG-022-ME-0001	MANUFACTURER'S RECOMMENDATIONS
PPSD-A-DG-022-ME-0003	PUMP DESIGN MARGINS
PPSD-A-DG-022-ME-0006	PUMP SELECTION (0438-3.10)
PPSD-A-DG-022-ME-0007	DESIGN OF VALVING & CONTROLS FOR FW HEATERS & EXTRACTION STEAM SYSTEM
PPSD-A-DG-022-ME-0015	EXPANSION JOINTS
PPSD-A-DG-022-ME-0016	STEAM TRAPS
PPSD-A-DG-022-ME-0017	SUMPS AND SUMP PUMPS

Design Guide No.	Design Guide Title
PPSD-A-DG-022-ME-0018	STRAINERS
PPSD-A-DG-255-ME-0001	AQUEOUS AMMONIA STORAGE/USE AREAS
PPSD-A-DG-271-ME-0001	AUXILIARY BOILERS AND RELATED SYSTEMS
PPSD-A-DG-411-ME-0001	WATER INDUCTION PROTECTION
PPSD-A-DG-411-ME-0002	TURBINE SIZING CRITERIA
PPSD-A-DG-431-ME-0001	TURBINE LUBE OIL PURIFICATION
PPSD-A-DG-441-ME-0001	MAIN STEAM PIPING DESIGN PRESSURE AND TEMPERATURE
PPSD-A-DG-442-ME-0001	REHEAT PIPING DESIGN PRESSURE AND TEMPERATURE
PPSD-A-DG-445-ME-0001	EXTRACTION STEAM PIPING
PPSD-A-DG-452-ME-0001	CONDENSER AIR REMOVAL APPARATUS
PPSD-A-DG-461-ME-0002	CONDENSER/COOLING TOWER OPTIMIZATION
PPSD-A-DG-461-ME-0003	COOLING TOWERS, SPRAY PONDS, AND COOLING PONDS
PPSD-A-DG-461-ME-0004	CIRCULATING WATER SYSTEM DESIGN CONSIDERATIONS
PPSD-A-DG-461-ME-0005	CIRCULATING WATER PUMPS
PPSD-A-DG-461-ME-0006	INTAKE SCREENS, SCREEN WASH, RACK RAKES
PPSD-A-DG-463-ME-0001	COOLING TOWER AND CIRCULATING WATER CHEMICAL TREATMENT
PPSD-A-DG-464-ME-0001	SIZING AND LOCATING BOTH CLOSED AND OPEN HEAD TANKS
PPSD-A-DG-471-ME-0001	CONDENSATE SYSTEM DESIGN PRESSURE AND TEMPERATURE
PPSD-A-DG-471-ME-0002	CONDENSATE PUMP HEAD AND CAPACITY CALCULATIONS
PPSD-A-DG-471-ME-0003	CONDENSATE SYSTEM DESIGN CONSIDERATION

Design Guide No.	Design Guide Title
PPSD-A-DG-481-ME-0001	FEEDWATER PUMP PERFORMANCE CHARACTERISTICS
PPSD-A-DG-481-ME-0002	FEEDWATER SYSTEM DESIGN CONSIDERATION
PPSD-A-DG-481-ME-0003	REVERSE ROTATION OF FEEDWATER PUMPS
PPSD-A-DG-481-ME-0004	FEEDWATER SYSTEM DESIGN PRESSURES
PPSD-A-DG-481-ME-0005	FW AND FW BOOSTER PUMP HEAD AND CAPACITY CALCULATIONS
PPSD-A-DG-511-ME-0001	WATER
PPSD-A-DG-512-ME-0001	CYCLE MAKEUP WATER PRETREATMENT
PPSD-A-DG-513-ME-0001	CYCLE MAKEUP DEMINERALIZER (SAME AS 0438-1.2)
PPSD-A-DG-513-ME-0002	CONDENSATE DEMINERALIZER (SAME AS 0438-1.4)
PPSD-A-DG-515-ME-0002	CONDENSATE DEMINERALIZATION
PPSD-A-DG-516-ME-0001	CYCLE CHEMICAL FEED
PPSD-A-DG-519-ME-0001	CONVENTIONAL PLANT SAMPLING AND ANALYSIS
PPSD-A-DG-526-ME-0001	INDUSTRIAL WASTE TREATMENT
PPSD-A-DG-526-ME-0002	AIR AGITATION
PPSD-A-DG-543-ME-0001	AIR COMPRESSORS (GENERAL USE)
PPSD-A-DG-543-ME-0002	STATION AIR COMPRESSOR SIZING
PPSD-A-DG-544-ME-0001	INSTRUMENT AIR COMPRESSOR SIZE (CAPACITY)
PPSD-A-DG-544-ME-0002	INSTRUMENT AIR DRYER
PPSD-A-DG-562-ME-0001	FUEL OIL STORAGE
PPSD-A-DG-562-ME-0002	FUEL OIL PUMPING
PPSD-A-DG-562-ME-0003	FUEL OIL METERING

Design Guide No.	Design Guide Title
PPSD-A-DG-562-ME-0004	FUEL OIL PIPING
PPSD-A-DG-572-ME-0002	FIRE PROTECTION - COOLING TOWER
PPSD-A-DG-572-ME-0003	SWITCHYARD AREAS
PPSD-A-DG-572-ME-0004	TURBINE BUILDINGS
PPSD-A-DG-572-ME-0005	AUXILIARY BOILER AND DIESEL BUILDINGS
PPSD-A-DG-572-ME-0006	CONTROL COMPLEX AND ELECTRICAL EQUIPMENT AREAS
PPSD-A-DG-572-ME-0007	SERVICE, WAREHOUSE AND SUPPORT BUILDINGS
PPSD-A-DG-572-ME-0009	FIRE PROTECTION WATER SUPPLY AND DISTRIBUTION SYSTEM
PPSD-A-DG-573-ME-0001	CRITERIA (MECHANICAL BUILDING SYSTEMS)
PPSD-A-DG-573-ME-0002	ROOF DRAIN SYSTEM
PPSD-A-DG-573-ME-0003	AUXILIARY BOILER ROOM COOLING SYSTEM
PPSD-A-DG-573-ME-0004	STORAGE BATTERY ROOM VENTILATION
PPSD-A-DG-573-ME-0005	BOILER HOUSE AND HEATER BAY OPEN AREA COOLING SYSTEM
PPSD-A-DG-573-ME-0006	TURBINE BUILDING OPEN AREA COOLING SYSTEM
PPSD-A-DG-573-ME-0007	WATER TREATING BUILDING VENTILATING SYSTEM
PPSD-A-DG-573-ME-0008	ELEVATOR SHAFT RELIEF AND MACHINE ROOM COOLING SYSTEMS
PPSD-A-DG-581-ME-0001	PIPING SPECIFICATIONS FOR WATER TREATMENT SYSTEMS
PPSD-A-DG-581-ME-0002	GASKETS
PPSD-A-DG-581-ME-0003	BOLTING
PPSD-A-DG-581-ME-0004	FLANGES
PPSD-A-DG-581-ME-0006	BLAST CLEANING

Design Guide No.	Design Guide Title
PPSD-A-DG-581-ME-0007	STEAM PIPING BLOWOUT (STEAM BLOWOUT)
PPSD-A-DG-581-ME-0008	PIPING SYSTEMS WALL THICKNESS
PPSD-A-DG-581-ME-0009	PIPING SYSTEM LINE SIZING
PPSD-A-DG-581-ME-0010	STEAM TURBINE BYPASS
PPSD-A-DG-581-ME-0011	VENTS AND DRAINS PIPING
PPSD-A-DG-581-ME-0012	PIPING SYSTEMS DESIGN CODES AND OTHER CONSIDERATIONS
PPSD-A-DG-581-ME-0013	PIPING SYSTEMS MATERIAL SELECTION
PPSD-A-DG-582-ME-0001	SAFETY VALVE ESCAPE (SAFETY VALVE VENT STACK)
PPSD-A-DG-582-ME-0002	PRESSURE RELIEF VALVES
PPSD-A-DG-582-ME-0003	VALVE TYPES, SELECTION & SIZING
PPSD-A-DG-582-ME-0004	BYPASS VALVES - USE AND SIZING
PPSD-F-DG-022-ME-0002	FORCED AND INDUCED DRAFT FANS
PPSD-F-DG-022-ME-0004	FLASH TANKS AND RELATED SYSTEMS
PPSD-F-DG-022-ME-0005	COMBUSTION AIR AND FLUE GAS CALCULATION
PPSD-F-DG-022-ME-0009	BOILER AIR AND GAS SYSTEMS
PPSD-F-DG-022-ME-0010	DRAFT LOSS CALCULATIONS
PPSD-F-DG-022-ME-0011	AIR AND FLUE GAS DUCT EXPANSION JOINTS
PPSD-F-DG-211-ME-0001	ECONOMIZER SELECTION CRITERIA
PPSD-F-DG-211-ME-0002	BOILER SIZING CRITERIA

Design Guide No.	Design Guide Title
PPSD-F-DG-211-ME-0003	BOILER HEAT TRANSFER ELEMENT SPACING CRITERIA
PPSD-F-DG-211-ME-0004	BOILER GAS VELOCITY DESIGN CRITERIA
PPSD-F-DG-211-ME-0005	BOILER TUBE METAL SELECTION CRITERIA
PPSD-F-DG-212-ME-0001	CHIMNEY FLUE SIZING CRITERIA
PPSD-F-DG-234-ME-0001	AIR PREHEATING SYSTEMS
PPSD-F-DG-243-ME-0001	AIR PREHEATING SYSTEMS
PPSD-F-DG-251-ME-0003	FABRIC FILTERS
PPSD-F-DG-262-ME-0001	BOTTOM ASH HANDLING
PPSD-F-DG-263-ME-0001	FLY ASH HANDLING
PPSD-F-DG-444-ME-0001	HOT REHEAT CROSSOVER CONNECTION
PPSD-F-DG-525-ME-0001	SERVICE WATER PIPING
PPSD-F-DG-563-ME-0001	COAL SILOS AND BUNKERS
PPSD-F-DG-563-ME-0002	COAL CONVEYORS
PPSD-F-DG-563-ME-0003	COAL UNLOADING
PPSD-F-DG-563-ME-0004	COAL SAMPLING AND WEIGHING
PPSD-F-DG-563-ME-0005	COAL DUST CONTROL
PPSD-F-DG-563-ME-0006	STACKING AND RECLAIMING
PPSD-F-DG-572-ME-0001	OUTDOOR COAL HANDLING AREAS
PPSD-F-DG-572-ME-0008	MAIN BOILER AREA

1.5 General Mechanical Design Codes and Standards

The latest edition and published addenda of the following publications are applicable to the extent indicated by the specific reference. All equipment furnished and work performed under this Section shall comply with the approved standards, specifications, and regulations, codes, and tests of the following:

1. State of Florida, Department of Environmental Protection Air Plans

2. American Society of Mechanical Engineers (ASME) Performance Test Codes (PTC):

    a. 4.1, "Fired Steam Generators"

    b. 4.3, "Air Heaters"

    c. 6, "Steam Turbines"

    d. ANSI/ASME PTC 6 REPORT-1985 Guidance For Evaluation Of Measurement Uncertainty In Performance Tests Of Steam Turbines

    e. ANSI/ASME PTC 11-1984 (R2003) Fans

    f. 12.1, "Closed Feedwater Heaters"

    g. 12.2, "Steam Surface Condensers"

    h. 12.3, "Deaerators"

    i. 23, "Atmospheric Water Cooling Equipment"

    j. 19.2, "Pressure Measurement Instruments and Apparatus"

    k. 19.3, "Temperature Measurement Instruments and Apparatus"

    l. 19.5, "Application, Part II of Fluid Meters: Interim Supplement on Instruments and Apparatus"

3. American Society of Mechanical Engineers (ASME):

    a. TDP-1, “Recommended Practices for the Prevention of Water Damage to Steam Turbines Used for Electric Power Generation”

    b. B16.5, "Pipe Flanges and Flanged Fittings"

    c. B16.9, “Factory-Made Wrought Steel Buttwelding Fittings”

    d. B16.10, “Face-to-Face and End-to-End Dimensions of Valves”

e. B16.34, “Valves - Flanged and Butt welding End”

f. B31.1, "Power Piping."

g. B40.100-2005 Pressure Gauges and Gauge Attachments

h. MFC-3M, “Measurement of Fluid Flow In Pipes Using Orifice, Nozzle, and Venturi”

4. American National Standards Institute (ANSI):

a. ANSI/ABMA-13:1987(R1999) Rolling Bearing Vibration and Noise (Methods of Measuring)

b. ANSI/ASME B16.10-2000 Face-to-Face and End-to-End Dimensions of Valves

c. ANSI/ASME B16.34-1996 Addenda to ASME B16.34-1996 VALVES - FLANGED, THREADED, AND WELDING END

d. ANSI/ASME B16.36-1996 Orifice Flanges

e. ANSI/ASME B40.200-2001 Thermometers, Direct Reading and Remote Reading

f. ANSI/ASME PTC 19.11-1997 Steam and Water Sampling, Conditioning and Analysis in the Power Cycle

g. ANSI/ASME PTC 19.1-2005 Measurement Uncertainty

h. ANSI/ASME PTC 19.22-1986 (R1998) Instruments and Apparatus - Digital Systems Techniques

i. ANSI/ASME PTC 25-2001 Pressure Relief Devices

j. ANSI/ASME PTC 29-2005 Speed-Governing Systems for Hydraulic Turbine-Generator Units

k. ANSI/ASME PTC 36-1985 (R1998) Industrial Sound, Measurement of

l. ANSI/ASME PTC 40-1991 Flue Gas Desulfurization Units

5. Cooling Tower Institute (CTI):

a. ATC-105, “Acceptance Test Code for Water-Cooling Towers.”

6. Institute of Electrical and Electronics Engineers (IEEE):

a. 1046-1991 Application Guide for Distributed Digital Control and Monitoring for Power Plants

b. 10861-1994 ISO/IEC 10861:1994: Information TechnologyHigh-performance synchronous 32-bit bus: MULTIBUS II

c. 1143-1994 IEEE Guide on Shielding Practice for Low Voltage Cables

d. 1050, “Guide for Instrumentation and Control Equipment Grounding in Generating Stations”

e. 1100, “Recommended Practice for Powering and Grounding Electronic Equipment – IEEE Emerald Book”

f. C37.1, “Standard Definition, Specification, and Analysis of Systems Used for Supervisory Control, Data Acquisition, and Automatic Control”

g. C 37.90.1, "IEEE Standard for Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus"

h. 91A/91, "Standard Graphic Symbols for Logic Functions."

i. 802.3, “Standard for Information technology Telecommunications and information exchange between systems Local and metropolitan area networks Specific requirements Part 3”

j. 11802-5-1997 ISO/IEC 11802-5 ANSI/IEEE Std 802.1H, 1997 Edition, Information technology, Telecommunications and information exchange between systems, Local and metropolitan area networks, Technical reports and guidelines, Part 5: Media Access Control (MAC) Bridging of Ethernet V2.0 in Local Area Networks

k. 122-1991 IEEE Recommended Practice for Functional and Performance Characteristics of Control Systems for Steam Turbine-Generator Units

l. ANSI INCITS 139-1987 (R2002) Information Systems - Fiber Distributed Data Interface (FDDI) - Token Ring Media Access Control (MAC) (formerly ANSI X3.139-1987 (R1997))

m. ANSI INCITS 148-1988 (R1999) Information Systems - Fiber Distributed Data Interface (FDDI) - Token Ring Physical Layer Protocol (PHY) (formerly ANSI X3.148-1988 (R1999))

n. ANSI INCITS 166-1989 (R2005) Fiber Distributed Data Interface (FDDI) Physical Layer Medium Dependent (PMD) (formerly ANSI X3.166-1989 (R2000))

o. ANSI INCITS 186-1992 (R2002) Information Systems - Fiber-Distributed Data Interface (FDDI) - Hybrid Ring Control (HRC) (formerly ANSI X3.186-1992 (R1997))

p. ANSI INCITS 310-1998 (R2003) Representation of Time for Information Interchange

7. The Instrumentation, Systems, and Automation Society (ISA):

a. 5.1, “Instrumentation Symbols and Identification”

b. 5.2, "Binary Logic Diagrams for Process Operations"

c. 20, “Specification Forms for Process Measurement and Control Instruments, Primary Elements, and Control Valves”

d. 51.1, “Process Instrumentation Terminology.”

e. 75.01, “Control Valve Sizing Equations”

f. 75.02, “Control Valve Capacity Procedure”

g. MC 96.1, “Temperature Measurement Thermocouples”

h. RP 3.2, "Flange Mounted Sharp Edge Orifice Plates for Flow Measurements."

8. National Fire Protection Association (NFPA):

a. 70, “National Electrical Code.”

b. 85, "Boiler and Combustion Systems Hazards.”

9. National Electrical Manufacturers Association (NEMA).

a. ICS 1, “Industrial Controls and Systems General Requirements”

b. ICS 2, “Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts”

c. ICS 3, “Industrial Control and Systems, Medium Voltage Controllers Rated 2001 to 7200 Volts”

d. ICS 4, “Terminal Blocks”

e. ICS 6, “Enclosures for Industrial Control Systems”

f. MG 1, “Motors and Generators.”

g. NEMA 250 “Enclosures for Electrical Equipment (1000 Volts Maximum)”

10. The Measurement, Control, and Automation Association (MCAA)

a. Functional Diagramming of Instrument and Control Systems

b. Bimetallic Thermometers

c. Resistance Thermometers

d. Filled System Thermometers

e. Liquid -in- Glass Industrial Thermometers

f. Bushing and Wells for Temperature Sensing Equipment

11. Underwriters Laboratories, Inc.

a. 508, “Safety Standards for Industrial Control Equipment.”

12. American Bearing Manufacturers Association, Inc. (ABMA):

a. 9, “Load Rating and Fatigue Life for Ball Bearings”

b. 11, “Load Rating and Fatigue Life for Roller Bearings”

13. American Petroleum Institute (API)

a. 670, “Machinery Protection Systems”

14. American National Standards Institute (ANSI)

a. C57.12.10, “Transformers - 230 kV and Below 833/958 Through 8333/10 417 kVA, Single-Phase, and 750/862 Through 60 000/ 80 000/100 000 kVA, Three-Phase Without Load Tap Changing; and 3750/ 4687 through 60 000/ 80 000/100 000 kVA with Load Tap Changing - Safety Requirements”

b. C57.12.55, “Transformers - Dry-Type Used in Unit Installations, Including Unit Substations Conformance Standard”

c. C80.1, “American National Standard For Electrical Rigid Steel Conduit (ERSC), Zinc Coated”

d. C80.3, “American National Standard For Steel Electrical Metallic Tubing (EMT), Zinc Coated”

e. C80.6, “American National Standard For Electrical Intermediate Metal Conduit, Zinc Coated (EIMC)”

f. C93.1, “American National Standard Requirements for Power-Line Carrier Coupling Capacitors and Coupling Capacitor Voltage Transformers (CCVT)”

15. American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE):

a. C37.16, “Low-Voltage Power Circuit Breakers and AC Power Circuit Protectors – Preferred Ratings, Related Requirements, and Application Recommendations”

b. C37.18, “Enclosed Field Discharge Current Breakers for Rotating Electric Machinery”

c. C37.121, “Switchgear Unit Substations Requirements”

d. C57.94, “Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers”

e. C57.100, “Test Procedure For Thermal Evaluation of Liquid-Immersed Distribution & Power Transformers”

f. C57.105, “Guide For Application Of Transformer Connections On Three-Phase Distribution Systems”

g. C57.106, “Guide For Acceptance And Maintenance Of Insulating Oil In Equipment”

h. C57.120, “Loss Evaluation Guide for Power Transformers and Reactors”

i. C57.123, “Guide for Transformer Loss Measurement”

j. C57.136, “Guide for Sound Level Abatement & Determination for Liquid- Immersed Power Transformers and Shunt Reactors Rated over 500 kVA”

k. 32, “Standard Requirements, Terminology, and Test Procedures for Neutral Grounding Devices.”

l. 81, “Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System”

m. 1538, “Guide for Determination of Maximum Winding Temperature Rise in Liquid-Filled Transformers”

16. American National Standards Institute/ National Electric Manufacturers Association (ANSI/NEMA):

a. FB 1, “Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies”

17. American Society of Civil Engineers (ASCE):

a. 7-05, “Minimum Design Loads for Buildings and Other Structures”

b. 74, “Guidelines for Electrical Transmission Line Structural Loading”

18. ASME International

a. B4.1, “Preferred Limits and Fits for Cylindrical Parts”

19. American Society for Testing and Materials (ASTM):

a. A90/A90M – Weight of Coating on Zinc-Coated (Galvanized) Iron or Steel Articles

b. A653/A653M – General Requirements for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

c. B 3, “Standard Specification for Soft or Annealed Copper Wire”

d. B 8, “Standard Specification for Concentric-Lay Stranded Copper Conductors, Hard, Medium Hard, or Soft”

e. B 33, “Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes”

f. B209 - Aluminum and Aluminum Alloy Sheet and Plate

g. D 635, “Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position”

h. E 84, “Test Method for Surface Burning Characteristics of Building Materials”

20. Federal Aviation Administration (FAA)

a. 70/7460-1K, “Advisory Circular Obstruction Marking and Lighting”

21. International Code Council (ICC):

a. “International Building Code 2006”

22. Institute of Electrical and Electronic Engineers Inc. (IEEE):

a. C2, “National Electrical Safety Code 2007” (NESC)

b. C37.010, “Application Guide for AC High-Voltage Circuit Breakers Rated on a Symmetrical Current Basis”

c. C37.013, “Standard for AC High-Voltage Generator Circuit Breakers Rated on a Symmetrical Current Basis”

d. C37.2, “Electrical Power System Device Function Numbers and Contact Designations”

e. C37.20.2, “Metal-Clad Switchgear”

f. C37.21, “Control Switchboards”

g. C37.23, “Standard for Metal-Enclosed Bus”

h. C37.30, “Standard Requirements for High-Voltage Switches”

i. C37.90, “Standard for Relays and Relay Systems Associated with Electric Power Apparatus”

j. C37.90.1, “Standard Surge Withstand Capability (SWC) Tests for Relays and Relay Systems Associated with Electric Power Apparatus Protective Relays and Relay Systems”

k. C37.91, “Guide for Protective Relay Applications to Power Transformers”

l. C37.96, “Guide for AC Motor Protection”

m. C37.101, “Guide for Generator Ground Protection”

n. C37.102, “Guide for AC Generator Protection”

o. C37.110, “Guide for the Application of Current Transformers Used for Protective Relaying Purposes”

p. C50.13 , “Standard for Cylindrical Rotor 50 Hz and 60 Hz Synchronous Generators Rated 10 MVA and Above”

q. C57.12.00, “Standard General Requirements for Liquid-Immersed Distribution, Power, and Regulating Transformers”

r. C57.12.01, “Standard General Requirement for Dry-Type Distribution and Power Transformers Including Those with Solid Cast and/or Resin-Encapsulated Windings”

s. C57.12.59, “Dry-Type Transformer Through-Fault Current Duration”

t. C57.12.70, “Terminal Marking and Connection for Distribution and Power Transformers”

u. C57.12.80, “Terminology for Power and Distribution Transformers”

v. C57.12.90, “Standard Test Code for Liquid-Immersed Distribution, Power and Regulating Transformers”

w. C57.12.91, “Standard Test Code for Dry-Type Distribution and Power Transformers”

x. C57.13, “Requirements for Instrument Transformers”

y. C57.13.1, “Guide for Field Testing of Relaying Current Transformers”

z. C57.13.2, “Standard Conformance Test Procedure for Instrument Transformers”

aa. C57.13.3, “Guide for the Grounding of Instrument Transformer Secondary Circuits and Cases”

bb. C57.13.6, “Standard for High-Accuracy Instrument Transformers”

cc. C57.19.00, “General Requirements and Test Procedures for Outdoor Power Apparatus Bushings”

dd. C57.19.01, “Performance Characteristics and Dimensions for Outdoor Power Apparatus Bushings”

ee. C57.19.100, “Guide for Application of Power Apparatus Bushings”

ff. C57.91 “Guide for Loading Mineral-Oil-Immersed Transformers”

gg. C57.93, “Guide for Installation of Liquid-Immersed Power Transformers”

hh. C57.96, “Guide for Loading Dry-Type Distribution and Power Transformers”

ii. C57.98, “Guide for Transformer Impulse Test”

jj. C57.109, “Guide for Liquid-Immersed Transformer Through-Fault-Current Duration”

kk. C57.110, “Recommended Practice for Establishing Transformer Capability When Supplying Nonsinusoidal Load Currents”

ll. C57.113, “Guide for Partial Discharge Measurements in Liquid-Filled Power Transformers and Shunt Reactors”

mm. C57.116, “Guide for Transformers Directly Connected to Generators”

nn. C62.11, “Metal-Oxide Surge Arrestors for AC Power Circuits”

oo. C62.21, “Guide for the Application of Surge Voltage Protective Equipment on AC Rotating Machinery 1000 V and Greater”

pp. C62.22, “Guide for the Application of Metal-Oxide Surge Arresters for Alternating-Current Systems”

qq. C62.22.1, “Guide for the Connection of Surge Arresters to Protect Insulated, Shielded Electric Power Cable Systems”

rr. C62.23, “Application Guide for Surge Protection of Electric Generating Plants”

ss. 1, “Standard General Principles for Temperature Limits in the Rating of Electric Equipment and for Evaluation of Electrical Insulation”

tt. C62.43, “Guide for the Application of Surge Protectors Used in Low-Voltage (Equal to or Less Than 1000 Vrms or 1200 Vdc) Data, Communications, and Signaling Circuits”

uu. 4, “Standard Techniques for High Voltage Testing”

vv. 43, “Recommended Practice for Testing Insulation Resistance of Rotating Machinery”

ww. 48, “Standard Test Procedures and Requirements for High voltage Alternating Current Cable Termination 2.5 kV through 765 kV”

xx. 80, “Guide for Safety in AC Substation Grounding”

yy. 81.2 “Guide for Measurement of Impedance and Safety Characteristics of Large, Extended or Interconnected Grounding Systems”

zz. 100, “Standard Dictionary of Electrical and Electronics Terms”

aaa. 112, “Test Procedure for Poly-phase Induction Motors and Generators.”

bbb. 115, “Test Procedures For Synchronous Machines”

ccc. 122, “Recommended Practice for Functional and Performance Characteristics of Control Systems Requirements, Terminology and Test Procedure for Steam-Turbine Generator Units”

ddd. 141, “Recommended Practice for Electric Power Distribution for Industrial Plants-IEEE Red Book”

eee. 142, “Recommended Practice for Grounding of Industrial and Commercial Power Systems - IEEE Green Book”

fff. 242, “Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems - IEEE Buff Book”

ggg. 367, “Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault”

hhh. 399, “Recommended Practice for Industrial and Commercial Power Systems Analysis-IEEE Brown Book”

iii. 421.1 “Standard Definitions for Excitation Systems for Synchronous Machines”

jjj. 434, “Guide for Functional Evaluation of Insulation Systems for AC Electric Machines Rated 2300 Volts and above”

kkk. 450, “Recommended Practice for Maintenance, Testing and Replacement of Vented Lead-Acid Batteries for Stationary Applications”

lll. 484, “Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications”

mmm. 485, “Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications”

nnn. 502, “Guide for Protection, Interlocking and Control of Fossil-Fueled Unit Connected Steam Stations”

ooo. 515, “Testing, Design, Installation, and Maintenance of Electrical Resistance Heat Tracing for Industrial Applications”

ppp. 519, “Recommended Practices for Harmonic Control in Electrical Power Systems”

qqq. 576, “Recommended Practice for Installation, Termination, and Testing of Insulated Power Cable as Used in Industrial and Commercial Applications”

rrr. 665, “Guide for Generator Station Grounding”

sss. 666, “Design Guide for Electric Power Service Systems for Generating Stations”

ttt. 946, “Recommended Practice for the Design of DC Auxiliary Power Systems for Generating Stations”

uuu. 1015, “Recommended Practice for Applying Low-Voltage Circuit Breakers Used in Industrial and Commercial Power Systems-IEEE Blue Book”

vvv. 1050, “Guide for Instrumentation and Control Equipment Grounding in Generating Stations”

www. 1100, “Recommended Practice for Powering and Grounding Electronic Equipment-IEEE Emerald Book”

xxx. 1143, “Guide on Shielding Practice for Low Voltage Cables”

yyy. 1184, “Guide for the Selection and Sizing of Batteries for Uninterruptible Power Systems”

zzz. 1185, “Guide for Installation Methods for Generating Station Cables”

aaaa. 1187, “Recommended Practice for Installation Design and Installation of Valve-Regulated Lead-Acid Storage Batteries for Stationary Applications”

bbbb. 1188, “Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications”

cccc. 1202, “Standard for Flame Testing of Cables for Use in Cable Tray in Industrial and Commercial Occupancies”

dddd. 1313.1, “ Standard for Insulation Coordination – Definitions, Principles and Rules”

eeee. 1313.2, “Guide for the Application of Insulation Coordination”

ffff. 1375, “Guide for the Protection of Stationary Battery Systems”

gggg. 1428, “Guide for Installation Methods for Fiber-Optic Cables in Electric Power Generating Stations and in Industrial Facilities”

hhhh. 1491, “Guide for Selection and Use of Battery Monitoring Equipment in Stationary Applications”

iiii. 1590, “Recommended Practice for the Electrical Protection of Optical Fiber Communication Facilities Serving, or Connected to, Electrical Supply Locations”

23. Lightning Protection Institute (LPI):

a. 175, “Lightning Protection Installation Standard.”

b. 176, “Lightning Protection System Material and Components Standard.”

c. 177, “Inspection Guide for LPI Certified Systems.”

24. National Electric Contractors Association (NECA):

a. NEIS 101, “Standard for Installing Steel Conduits (Rigid, IMC, EMT)”

25. National Electric Manufacturers Association (NEMA):

a. AB 1, “Molded-Case Circuit Breakers, Molded Case Switches, and Circuit-Breaker Enclosures”

b. C50.41, “Polyphase Induction Motors for Power Generating Stations”

c. CC 1, “Electric Power Connection for Substations”

d. ICS 1, “Industrial Controls and Systems General Requirements”

e. ICS 1.1, “Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control”

f. ICS 2, “Starters, Contactors & Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC Industrial Control and Systems Controllers, Contactors, and Overload Relays Rated 600 Volts”

g. ICS 4, “Terminal Blocks”

h. ICS 6, “Enclosures for Industrial Control and Systems”

i. ICS 7, “Industrial Control and Systems: Adjustable-Speed Drives.”

j. ICS 10 P1, “Industrial Control and Systems Part 1: Electromechanical AC Transfer Switch Equipment”

k. ICS 10 P2, “Industrial Control and Systems Part 2: Static AC Transfer Equipment”

l. GR 1, “Grounding Rod Electrodes and Grounding Rod Electrode Couplings”

m. LA 1, “Surge Arresters”

n. MG 1, “Motors and Generators”

o. MG 2, “Safety Standard and Guide for Selection, Installation, and Use of Electric Motors and Generators”

p. OS1, “Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports”

q. PB 1, “Panelboards”

r. PB 2, “Deadfront Distribution Switchboards”

s. PE 1, “Uninterruptible Power Systems”

t. PE 5, “Utility Type Battery Chargers”

u. SG 4, “Alternating Current High voltage Circuit Breakers”

v. ST 1, “Specialty Transformers (Except General Purpose Type)”

w. ST 20, “Dry Type Transformers for General Applications, for General Application, Transformers”

x. TC 2, “Polyvinyl Chloride (PVC) Conduit”

y. TC 3, "PVC Fittings for Use with Rigid PVC Conduit and Tubing"

z. TR 1, “Transformers, Regulators and Reactors”

aa. WC 26/EEMAC 201, “Binational Wire and Cable Packaging Standard”

bb. WC 57, “Standard for Control, Thermocouple Extension, and Instrumentation Cables”Control Cables”

cc. WC 70, “Nonshielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy”

dd. WC 74, “5-46 kV Shielded Power Cable for Use in the Transmission & Distribution of Electric Energy-ICEA S-93-639”

ee. WD 1, “General Requirements for Wiring Devices”

ff. 250, “Enclosures for Electrical Equipment (1000 Volts Maximum)”

26. InterNational Electrical Testing Association Inc. (NETA):

    a. Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems

27. National Fire Protection Association (NFPA):

    a. 20, “Standard for the Installation of Stationary Pumps for Fire Protection”

    b. 70, “National Electrical Code 2008”

    c. ”72, “National Fire Alarm Code”

    d. 101, “Life Safety Code For Safety to Life From Fire in Buildings and Structures”

    e. 497, “Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas Classification of Flammable Liquids, Gases, or Vapors”

    f. 499, “Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas Classification of Combustible Dusts”

    g. 780, “Standard for the Installation of Lightning Protection Systems Lightning Protection Code”

    h. 850, "Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations."

28. Underwriters Laboratories (UL):

    a. 13, “Power Limited Circuit Cables”

    b. 44, “Thermoset-Insulated Wires and Cables”

    c. 50, “Standard for Safety Enclosures for Electrical Equipment”

    d. 67, “Standard for Safety Panelboards”

    e. 94, “Test for Flammability for Plastic Materials for Parts in Devices and Appliances and Devices”

    f. 96, “Standard for Safety Lightning Protection Components”

g. 96A, “Standard for Safety Installation Requirements for Lightning Protection Systems”

h. 347, “High voltage Industrial Control Equipment”

i. 489, “Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures”

j. 508, “Safety Standards for Industrial Control Equipment.”

k. 674, “Standard for Safety Electric Motors and Generators for Use in Division 1 Hazardous (Classified)) Locations”

l. 746B – “Polymeric Materials – Long Term Property Evaluations”

m. 924, “Safety Standard for Emergency Lighting and Power Equipment.”

n. 1277,“Electrical Power and Control Tray Cables with Optional Optical-Fiber Members”

29. WorleyParsons:

a. RHPP-1-SP-031001, “Specification for Outdoor Dead Tank Circuit Breakers”

b. RHPP-1-SP-032001, “Specification for Outdoor High Voltage Disconnect Switches”

c. RHPP-1-SP-034001, “Specification for High Voltage Instrument Transformers”