

TABLE OF CONTENTS

SECTION	PAGE
PRELIMINARY DESIGN PHASE	
GENERAL	3
ADMINISTRATIVE	3
GEOTECHNICAL ENGINEERING	3
WALKDOWN AND SURVEY	3
PLANS AND DRAWINGS	3
PRELIMINARY ARCHITECTURAL PLANS	3
PRELIMINARY HVAC PLANS	4
PRELIMINARY FIRE PROTECTION PLAN	4
PRELIMINARY PLUMBING PLAN	4
PRELIMINARY ELECTRICAL PLAN	4
PRELIMINARY DIRECT DIGITAL CONTROL SYSTEM	5
PRELIMINARY DESIGN REVIEW	5
FINAL DESIGN PHASE	
SITE/LANDSCAPE	6
SITE PLANS	6
ARCHITECTURAL/STRUCTURAL	7
ARCHITECTURAL PLANS	7
STRUCTURAL PLANS	8
ARCHITECTURAL ROOF PLANS	8
ARCHITECTURAL REFLECTED CEILING PLANS	9
ARCHITECTURAL ENLARGED PLANS	9
ARCHITECTURAL INTERIOR ELEVATIONS	10
ARCHITECTURAL INTERIORS	10
ARCHITECTURAL EXTERIOR ELEVATIONS	10
ARCHITECTURAL SECTIONS AND DETAILS	10
STRUCTURAL SECTIONS AND DETAILS	11
MECHANICAL-HVAC	11
HVAC PLANS	12
HVAC SECTIONS	12
HVAC DETAILS	12
HVAC SCHEDULES	13
MECHANICAL-PLUMBING	13
PLUMBING PLANS	13
PLUMBING DETAILS	14
MECHANICAL- FIRE PROTECTION	14
FIRE PROTECTION	14
DIRECT DIGITAL CONTROL (DDC) SYSTEM	14
DDC PLANS	15
DDC DETAILS	15
ELECTRICAL	15
ELECTRICAL PLANS	15
ELECTRICAL SCHEDULES	17
ELECTRICAL DIAGRAMS	17
SPECIFICATIONS	17
SUPPORT DOCUMENTATION	18
GENERAL	18
SITE	18

ARCHITECTURAL	18
STRUCTURAL	18
HVAC	19
PLUMBING	19
FIRE PROTECTION	19
ELECTRICAL	20
REPORTS	20
ENERGY REPORTS	20
ESTIMATED COST	20
SCHEDULE REPORTS	21
REVIEW	21
REVIEW	21

PRELIMINARY DESIGN PHASE

1.0 GENERAL

1.1 ADMINISTRATIVE

1.1.1 Complete the following

- a) Develop project Scope of Work using Procedure FMEP-P-0210
- b) Define project deliverables
- c) Develop project schedules and budgets

1.2 GEOTECHNICAL ENGINEERING

1.2.1 Determine the need for and perform, if applicable, geotechnical testing of site conditions

- a) Test borings
- b) Test pits
- c) Soil bearing value
- d) Ground corrosion and resistivity tests
- e) Evaluation of subsurface material and conditions
- f) Reports and professional recommendations

2.0 WALKDOWN AND SURVEY

Perform a field survey and site walk down of the as-built condition for all physical and operational conditions and parameters associated with systems and equipment, including but not limited to HVAC, water and steam systems, electrical power systems, and instrumentation and control systems. The Engineering Team will take the information obtained from the walkdown and survey and place into specifications, drawings, and calculations, as required to support the engineering effort.

3.0 PLANS AND DRAWINGS

3.1 PRELIMINARY ARCHITECTURAL PLANS

3.1.1 Preliminary building plans and/or diagrammatic layouts

- a) Show options, Flexibility and expandability
- b) Show requestors work flow
 - 1) Human
 - 2) Vehicular
 - 3) Material flow patterns
- c) General space allocations
- d) Special facilities and equipment

3.1.2 Fire evacuation and other life safety requirements

3.1.3 Adjacency

- a) Buildings
- b) Major utilities

3.1.4 Special Architectural requirements

PRELIMINARY DESIGN PHASE

- 3.1.5 Block layouts of mechanical spaces
- 3.1.6 Block layouts of electrical spaces
- 3.1.7 Block layouts of communications spaces
- 3.1.8 Room data sheets

3.2 PRELIMINARY HVAC PLAN

- 3.2.1 Present Conditions
- 3.2.2 Block load calculations to identify utility requirements

- a) Chilled Water
- b) Steam

3.2.3 Design conditions

- a) Outside air temperature and relative humidity
- b) Inside air temperature and relative humidity.
- c) Air changes
- d) Room pressurization flow direction

3.2.4 Analysis of preliminary HVAC systems

- a) Energy source
- b) Energy conservation
- c) Heating and ventilating
- d) Air conditioning

3.2.5 Special HVAC Requirements

3.3 PRELIMINARY FIRE PROTECTION PLAN

- 3.3.1 Present conditions
- 3.3.2 Requirements for fire protection
- 3.3.3 Block layouts for fire protection system

- a) Evacuation plans

3.4 PRELIMINARY PLUMBING PLAN

- 3.4.1 Locate existing connections for all required services.
- 3.4.2 Special plumbing requirements

3.5 PRELIMINARY ELECTRICAL PLAN

- 3.5.1 Locate existing connections and load capacity

PRELIMINARY DESIGN PHASE

- a) Power
- b) Communications
- c) Fire alarm system
- d) Security System

3.5.2 Special electric requirements

3.5.3 Requirements for lighting

3.5.4 Requirements for electrical system

3.5.5 Requirements for communications systems

3.5.6 Determine the need for lightning protection.

3.6 PRELIMINARY DIRECT DIGITAL CONTROL SYSTEM

3.6.1 Locate existing DDC system

a) Determine expandability

3.6.2 Locate existing Scientific Alarm System

a) Determine expandability

FINAL DESIGN PHASE

1.0 SITE/LANDSCAPE

Prior to issuance for Design Review, all Site plans and drawings shall:

- a) Be a minimum of 95% complete
- b) Be coordinated with similar activities in other disciplines
- c) Address all remarks from Preliminary Design Phase

1.1 SITE PLANS

1.1.1 Complete Site Plan

- a) Existing site information
- b) Dimension major site features
- c) Building footprint
 - 1) Grade elevations at each building corner
 - 2) Grade elevations at entrances, and critical areas
 - 3) First floor elevations
 - 4) Overall dimensions
- d) Key design elements
- e) Major landscaping
- f) Utility lines
- g) Complete plan for drainage and grading.
- h) Vehicular access routes
 - 1) Profile and alignment of all new roads
- i) Pedestrian access routes
- j) Parking
 - 1) All striping
 - 2) All unique spaces
 - 3) Dimensions
- k) Walks
 - 1) Dimensions
 - 2) Paving joints
- l) Curbs
 - 1) Dimensions

FINAL DESIGN PHASE

- m) Service areas
 - 1) Dimensions
- n) Complete erosion control and storm water management plan
 - 1) Submit to State Agencies as necessary.
- o) Complete contours
 - 1) Grading at all altered areas.
- p) Construction marshaling information
 - 1) Locate and outline staging area.
 - 2) Locate temporary utility hookup.
 - 3) Locate Field office (Trailer).
- q) Indications of phasing
- r) Limits of work
- s) Indication of future surrounding improvements
- t) Location of Signage
 - 1) Location(s) of construction sign
- u) Security measures

1.1.2 Planting and Landscape plan

- a) Location of all trees, shrubs, and lawns
- b) Planting list

1.1.3 Utility plot plan

- a) Existing utilities and their connections.
 - 1) Sewer
 - 2) Contaminated waste
 - 3) Chilled water
 - 4) Condenser water
 - 5) Steam
 - 6) Condensate
 - 7) Domestic water
 - 8) Gas
 - 9) Compressed air
 - 10) Electric
 - 11) Communications
 - 12) Other

2.0 ARCHITECTURAL/STRUCTURAL

- a) Prior to issuance for Design Review, Architectural/Structural plans and drawings shall:
 - 1) Be a minimum of 95% complete
 - 2) Be coordinate with similar activities in other disciplines
 - 3) Address all remarks from Preliminary Design Phase
- b) Entire project site on one sheet for reference
- c) Reference and coordination symbols
 - 1) Enlarged plan bubbles
 - 2) Section indications
 - 3) Exterior elevation keys
 - 4) Interior elevation keys
 - 5) Wall type indications

FINAL DESIGN PHASE

- d) All dimensions
 - 1) Overall
 - 2) Column grid
 - 3) Locating dimensions
 - a) Partitions
 - b) Openings
 - c) Equipment

2.1 ARCHITECTURAL PLANS

2.1.1 Demolition plan

2.1.2 Floor plans of each level

- a) All room names
- b) Room numbers
- c) Accurate door size, and swings
- d) Safety and protective elements
 - 1) Fire extinguishers
 - 2) Fire hoses
 - 3) Lead linings
 - 4) Radio frequency shielding
- e) Fixed equipment
- f) Portable equipment
- g) Plumbing fixtures placed and identified
 - 1) Sinks
 - 2) Showers
 - 3) Tubs
 - 4) Toilets
 - 5) Toilet stalls
 - 6) Eyewash
 - 7) Safety showers
 - 8) Any item requiring plumbing.
- h) Construction dimension

2.2 STRUCTURAL PLANS

2.2.1 Structural floor plans for each level and roof

- a) Final column reference lines
- b) Structural system dimensions
- c) Size bearing walls
- d) Major bracing locations
 - 1) Bracing type
 - 2) Dimensions
- e) Indication of typical bay
- f) Sizing of major components
- g) Column sizes
- h) All framing members sized
 - 1) Girders
 - 2) Beams

FINAL DESIGN PHASE

- 3) Joists
 - 4) Open web joists
 - 5) Concrete joists
 - 6) Waffle slab
 - 7) Space frames
 - 8) Lintels
 - 9) Type, extent, and direction of framing
 - 10) Reference structural items to schedule
- i) Slabs

2.2.2 Structural foundation plans

- a) Size of caissons
- b) Size of footings
- c) Size of foundation walls

- d) Size of grade beams

2.2.3 Structural notes

2.2.4 Column schedules

2.2.5 Correlation with architectural and mechanical features

2.2.6 Critical coordination clearances

2.3 ARCHITECTURAL ROOF PLAN

2.3.1 Materials

2.3.2 Elevations

2.3.3 Slopes

2.3.4 Drains

2.3.5 Other penetrations

2.4 ARCHITECTURAL REFLECTED CEILING PLANS

2.4.1 Suspended ceiling grids

2.4.2 Lighting fixtures

2.4.3 Diffusers

2.4.4 Registers

2.4.5 Sprinkler heads

2.4.6 Ceiling-mounted equipment

FINAL DESIGN PHASE

- 2.4.7 Exit signs
- 2.4.8 Ceiling modifications for oversized equipment
- 2.4.9 Wall-mounted items
- 2.4.10 Shelving and special features
- 2.4.11 Bulk heads
- 2.4.12 Beams and other limiting factors
- 2.4.13 Ceiling Elevations

2.5 ARCHITECTURAL ENLARGED PLANS

- 2.5.1 Special spaces
- 2.5.2 Stairs

2.6 ARCHITECTURAL INTERIOR ELEVATIONS

- 2.6.1 Coordination utility cross-section

- a) Corridors
- b) Mechanical rooms
- c) Utility placements

- 2.6.2 Utility discipline zones

- a) Coordination with existing structural
- b) Coordination with new structural

2.7 ARCHITECTURAL INTERIORS

Interior space allocation and utilization plan

- a) Establish the final scope relative to interior construction
 - 1) Special interior design features
 - 2) Furnishings
 - 3) Equipment selections
 - 4) Materials
 - 5) Finishes
 - 6) Colors
- b) Equipment Schedules
 - 1) Dimensions
 - 2) NIH number
 - 3) Quantity
 - 4) Remarks
 - a) Floor mount
 - b) Other
 - 5) Current location

FINAL DESIGN PHASE

- 6) Proposed location
- 7) Utilities required
- 8) Power requirements
- 9) Scientific alarm
 - a) Alarm set-points
- 10) Emergency generator

2.8 ARCHITECTURAL EXTERIOR ELEVATIONS

Building exterior elevations

- a) Indicate all surface materials for all areas
- b) Openings (doors and windows)
- c) Roof pitches

2.9 ARCHITECTURAL SECTIONS AND DETAILS

2.9.1 Building sections

- a) Set floor to floor dimensions
- b) Establish floor elevations
- c) Set interstitial space details dimensions

2.9.2 Construction

- a) Typical wall sections
 - 1) At window
 - 2) At solid wall
 - 3) At parapets and roofs
 - 4) At finished grades and footings
- b) Roof, wall and floor penetrations

2.9.3 Construction sections

- a) Typical stairways
- b) Typical elevator shaft and machine room
- c) Utility coordination cross sections

2.10 STRUCTURAL SECTIONS AND DETAILS

Details

- a) Reinforcing.
 - 1) Size
 - 2) Spacing
 - 3) Elevation of reinforcing
 - 4) Type
 - 5) Depths
- b) Foundation details
 - 1) Dimensioned foundation details
- c) Typical framing details
- d) Sub-drainage

FINAL DESIGN PHASE

- e) Water proofing
- f) Damp-proofing
- g) Large openings
- i) Nonstandard beam to column framing
- j) Concrete stairs
- k) Exterior wall construction
- l) Anchors and ties
- m) Elevator shaft details
- n) Vibration isolation details
- o) Large mechanical equipment and anchorage
- p) Typical framing details
- q) Standard structural steel connections
- r) Sump pump systems
- s) Reference to appropriate schedules

3.0 MECHANICAL - HVAC

Prior to issuance for Design Review, all HVAC plans and drawings shall:

- a) Be a minimum of 95% complete
- b) Be coordinated with similar activities in other disciplines
- c) Address all remarks from Preliminary Design Phase.

3.1 HVAC PLANS

3.1.1 Complete design

3.1.2 Mechanical plan drawings

- a) Legend
- b) Plan showing Ducts
- c) Indicate size of all ductwork
 - 1) Main and branch lines
- d) Indicate insulation/moisture prevention
- e) Fire dampers
- f) Smoke dampers
- g) Balancing dampers
- h) Location of all equipment
- i) Indicate smoke detectors
 - 1) Within ducts
 - 2) In air-handling units
- j) Special or complex ductwork
- k) Required space for equipment
- l) Required chases and clearances
- m) Acoustical and vibration control

3.1.3 Wind analysis and laboratory exhaust plume

3.1.4 Walk-in coolers, freezers, cold rooms

- a) Refrigeration systems
- b) Schematic piping

FINAL DESIGN PHASE

- c) Wiring diagrams
- d) Automatic controls

3.2 HVAC SECTIONS

- a) Drawing sections
- b) Through equipment rooms
- c) Typical ductwork

3.3 HVAC DETAILS

- 3.3.1 Details of unique conditions
- 3.3.2 Details of system connections
- 3.3.3 Details of system configurations

- 3.3.4 Exhaust stack detail
- 3.3.5 Humidifier detail
- 3.3.6 Coil piping detail
- 3.3.7 Air handling unit elevation detail

Steam condensate piping

3.4 HVAC SCHEDULES

Equipment schedules

- a) Air conditioning
- b) Ventilation units
- c) Refrigeration elements
- d) Cooling towers
- e) Fans
- f) Pumps
- g) Heat recovery system
- h) Humidification
- i) De humidification
- j) Reheat system
- k) Exhaust blowers
- l) VAV terminal
- m) Terminal units
- n) Air balance and Room pressurization
- o) Other

4.0 MECHANICAL - PLUMBING

Prior to issuance for Design Review, all Plumbing plans and drawings shall:

- a) Be a minimum of 95% complete

FINAL DESIGN PHASE

- b) Be coordinated with similar activities in other disciplines
- c) Address all remarks from Preliminary Design Phase.

4.1 PLUMBING PLANS

4.1.1 Plumbing system plan drawings

- a) Create legends
- b) Show location and size of equipment
 - 1) Pumps
 - 2) Tanks
 - 3) Other
- c) Locate piping
- d) Indicate size of pipes
- e) Plumbing Fixtures
- g) Indicate insulation/moisture prevention
- i) Indicate piping system
 - 1) Steam
 - 2) Water
 - 3) Special water (De-ionized)
 - 4) Sewer
 - 5) Specialty gases (systems or tanks)
 - 6) Chilled water
 - 7) Condenser water
 - 8) Hot water
 - 9) Waste
 - 10) Vent
 - 11) Process air (oil free)
 - 12) Compressed air
 - 13) Vacuum outlets
 - 14) Other

4.1.2 Riser diagrams

4.2 PLUMBING DETAILS

4.2.1 Detailing

- a) Unique conditions
- b) Vibration isolation engineering

4.2.2 One line flow and control diagrams

- a) Chilled water
- b) Condenser water
- c) Hot water
- d) Steam piping (including low quantities)
- e) Air conditioning steam.
- f) Specialty systems

4.2.3 Schedules

5.0 MECHANICAL – FIRE PROTECTION

FINAL DESIGN PHASE

Prior to issuance for Design Review, all Fire Protection plans and drawings shall:

- a) Be a minimum of 95% complete
- b) Be coordinated with similar activities in other disciplines
- c) Address all remarks from Preliminary Design Phase.

5.1 FIRE PROTECTION

5.1.1 Plan drawings

- a) Create legends
- b) Indicate existing systems
- c) Show location and size of equipment
- d) Locate piping
- e) Indicate size of pipes
- f) Equipment layouts

5.1.2 Ceiling plan drawings

- a) Sprinkler locations

6.0 DIRECT DIGITAL CONTROL (DDC) SYSTEM

Prior to issuance for Design Review, all DDC plans and drawings shall:

- a) Be a minimum of 95% complete
- b) Be coordinated with similar activities in other disciplines
- c) Address all remarks from Preliminary Design Phase.

6.1 DDC PLANS

Plan drawings

- a) HVAC control
 - 1) New and/or existing systems
 - 2) Complete plans and equipment layouts
 - 3) Required space for equipment
- b) Scientific Alarming
 - 1) New and/or existing systems
 - 2) Complete plans and equipment layouts
 - 3) Required space for equipment
 - 4) Cardkey alarming

6.2 DDC DETAILS

6.2.1 Complete control diagrams with legend

- a) Air Conditioning systems
- b) Exhaust systems
- c) Refrigeration systems

FINAL DESIGN PHASE

d) Heating systems

6.2.2 DDC Specifications shall include a complete Sequence of Operations for the HVAC systems

6.2.3 Complete Scientific Alarm system diagrams

- a) Device identification (NIH number)
- b) Cold-box panic alarms
- c) Hi and Low alarm set-points

6.2.4 Utility alarming

- a) Hi, med and low pressure steam
- b) Air compressors and vacuum system
- c) Etc.

6.2.5 Fireman's shutdown switch for HVAC equipment.

7.0 ELECTRICAL

a) Prior to issuance for Design Review, all Electrical plans and drawings shall:

- 1) Be a minimum of 95% complete
- 2) Be coordinated with similar activities in other disciplines
- 3) Address all remarks from Preliminary Design Phase

b) Complete design.

7.1 ELECTRICAL PLANS

7.1.1 Plan drawings indicating location of

- a) Transformer vaults
- b) Overhead and underground
 - 1) Power lines
 - 2) Utility and communication lines
- c) Pad-mount transformer location
- d) Auxiliary power system connection
- e) Engine generator sets
- f) Unit substations
- g) Other major equipment

7.1.2 Floor plans

- a) Room numbers
- b) Room titles
- c) Area functions
- d) Lighting fixtures
- e) Outlets for power
- f) Layouts for special systems
- g) Panel-board locations

FINAL DESIGN PHASE

7.1.3 Scaled ceiling plans for each space

- a) Location of lighting fixtures
- b) Type of lighting fixtures
- c) Light fixture schedules

7.1.4 Identify special features

- a) Telephone connections
- b) Data connections
- c) LAN locations
- d) Under-floor raceways
- e) Occupancy sensors
- f) Power outlets
- g) Exit lights
- h) Fire alarm/Life safety systems
- i) Signal system devices
- j) Cardkey Security system
 - 1) In and out card readers
 - 2) Door alarms
 - 3) Door strikes
 - 4) Raceway layout

7.1.5 Finalized layouts of components where space is critical

7.1.6 Laboratory planning module

7.1.7 Electrical site plan details

- a) Service entrance locations
- b) Initial distribution diagram for power
- c) Communications Systems
- d) Signal systems

7.1.8 Details for site electrical work and special systems

7.1.9 Plot plan with primary feeder location showing access to the project

7.2 ELECTRICAL SCHEDULES

Panel-board schedule

- a) Power circuits
- b) Lighting circuits

7.3 ELECTRICAL DIAGRAMS

7.3.1 One-line diagrams of electrical system

- a) High-voltage circuitry or transformation required
- b) Emergency power
- c) Fire alarm
- d) Layout of major components in all electrical equipment rooms

FINAL DESIGN PHASE

- e) Complete sizing of major components
- f) Emergency/UPS.
- g) High-voltage systems
- h) Primary transformers
- i) Emergency generator

7.3.2 Riser diagrams for

- a) Electrical distribution
- b) Auxiliary power distribution
- c) Fire alarm
- d) Card-key Security
- e) All low-voltage systems

8.0 SPECIFICATIONS

Specifications

- a) Complete table of contents
- b) Complete project “marked up” specifications sections

9.0 SUPPORT DOCUMENTATION

9.1 GENERAL

9.1.1 All reports and other documentation will

- a) Be a minimum of 95% complete
- b) Be coordinated with similar activities in each discipline
- c) Address all remarks from the Preliminary Design Phase

9.1.2 Catalog of Significant materials, for each section shall include:

- a) Equipment
- b) Material List
- c) Cut sheets

9.1.3 All primary code criteria developed, addressed and documented.

9.2 SITE

Site construction document design report

- a) Establishment of final scope
 - 1) Relationships
 - 2) Form
 - 3) Size
 - 4) Appearance
- b) Analysis/description of Complete design solutions
- c) Coordination with USAG
 - 1) Verify location, sizing and timing of all the required interfaces
 - 2) Provide schedule confirmation of any utility work
- d) Site safety plan
- e) Storm-water management report

FINAL DESIGN PHASE

- f) Erosion/sediment control report
- g) Review planting plan against master plan
- h) Concept plan for drainage and grading
- i) Demolition requirements

9.3 ARCHITECTURAL

9.3.1 Architectural report

- a) Upgrade basis of design

9.3.2 Area analysis

9.4 STRUCTURAL

9.4.1 Basis for design report

- a) Coordination with piping systems that require support
- b) Laboratory vibration analysis
- c) Final structural design criteria
- d) Comparative cost analysis of at least two structural systems

9.4.2 Critical coordination clearances

9.4.3 Structural report

- a) Final structural system
- b) Design codes
- c) Identification of design stresses
- d) Allowable foundation bearing capacity
- e) Compaction requirements
- f) Completed computations
- g) Boring logs
- h) Girder diagrams
 - 1) Live loads
 - 2) Uniform loads
 - 3) Concentrated loads
 - 4) Reactions
 - 5) Girder material
 - 6) Stresses

9.4.4 Special condition

- a) Shoring/underpinning of adjacent structures

9.4.5 Schedules

- a) Slabs
- b) Beams
- c) Columns

9.5 HVAC

FINAL DESIGN PHASE

Design report

- a) Sizing calculations for ducts and piping
- b) HVAC load calculations
- c) Calculations for fan pressures and pump heads
 - 1) Fan and Pump curves
- d) Calculations for required sound attenuation of major fans.

9.6 PLUMBING

9.6.1 Design report

- a) Equipment selections based on manufacturer's catalog data
- b) Sizing calculations
 - 1) Piping mains and principal branches
 - 2) Condensate tank
 - 3) Feed-water heater capacities
 - 4) Feed-water storage capacity
 - 5) Other
- c) Capacity, discharge pressure, and Net Positive Suction Pressure (NPSH)
 - 1) Condensate transfer pumps
 - 2) Pressure reducing valves
 - 3) Safety valves
 - 4) Oil tanks and pumps
 - 5) Gas systems
 - 6) Blow-down systems
 - 7) Other

9.6.2 Coordination with structural for support of piping

9.7 FIRE PROTECTION

Fire Protection Design Report

- a) Sizes and capacities of major components

9.8 ELECTRICAL

9.8.1 Electrical design report

- a) Electrical analysis
- b) Lighting calculations
- c) Load calculations
- d) Short circuit calculation
- e) Voltage drop calculations

9.8.2 Establishment of the final scope

9.8.3 Overall building connected load requirements

9.8.4 Agreement from USAG on design development drawings

FINAL DESIGN PHASE

10.0 **REPORTS**

10.1 **ENERGY REPORTS**

Review energy study

10.2 **ESTIMATED COST**

Revised Cost analysis

- a) Itemized breakdown
 - 1) Mechanical

 - 2) Electrical
 - 3) Architectural
 - 4) Structural
 - 5) Equipment
 - 6) Fire protection
 - 7) DDC system
 - 8) Other
- b) Revised cost based on general square foot cost
- c) Equipment
 - 1) Use of owner-furnished material/equipment
 - 2) Special manufacturing requirements
 - 3) Delivery requirements
 - 4) Storage requirements
 - 5) Manufacturer's plans and details for installation

10.3 **SCHEDULE REPORTS**

10.3.1 Revise Project schedule diagram with phases of development

- a) Update long lead items
 - 1) Delivery dates and status

10.3.2 Revise Construction schedule in bar chart form

- a) Bar chart
 - 1) Long lead items delivery times
 - 2) Scheduling
 - 3) Phasing
 - 4) Optimum construction efficiency

10.3.3 Occupancy schedule

11.0 **REVIEW**

11.1 **REVIEW**

11.1.1 Submit all drawings, plans, documents, etc. for review

- a) Copy of submittal letter to MDE for Erosion Control and/or Storm Water Management plans.

FINAL DESIGN PHASE

- 11.1.2 Attend review meetings as necessary to answer questions.
- 11.1.3 Respond in writing to all comments from Preliminary Design Phase
 - a) Return copies of Preliminary Design Phase comments, plans, mark-ups, etc.
- 11.1.4 Provide phasing and commissioning requirements.