SECTION 00800

SUPPLEMENTARY CONDITIONS

A. Substantial Completion:

1. Substantial Completion is the stage in the progress of the Work when the Work or a designated portion thereof is sufficiently complete, as determined by MPO in accordance with the Contract Documents, so as to be able to be occupied or utilized for its intended use.

B. BNL-Supplied Items:

1. BNL will supply certain pre-purchased items for installation by the Contractor. Provide support systems to receive the equipment at the project site, and mechanical and electrical connections.

2. BNL will arrange and pay for delivery to the project site in accordance with the Contractor's Construction Schedule, and inspect deliveries with the Contractor for damage.

3. If items are damaged, defective or missing, BNL will arrange for replacement. BNL will arrange for manufacturer's field services, and delivery of warranties and bonds to the Contractor.

4. The Contractor shall designate delivery dates in the Contractor's Construction Schedule and shall receive, unload and handle items at the site. The Contractor is responsible for protecting items from damage, including damage from exposure to the elements, and for repair or replacement of items damaged as a result of his operations.

5. Shop Drawings and Manufacturer’s Data will be available at MPO.

6. Check all items in presence of MPO Construction Services Representative to insure they are complete with all parts and appurtenances, and free from damage. Move items from point of delivery on the project site and completely install and connect. Handle all items with care.

C. Safety Requirements:

1. All Contractor and Subcontractor employees are required to attend BNL's Contractor/Vendor Orientation Training (see Section 00700.N, General Conditions).

2. All Contractor and Subcontractor employees who work on or near energized parts as defined in NFPA 70E shall complete the Electrical Safety 1 Training Course. The course is available on the Web at http://training.bnl.gov/course/elecsaf1, and is valid for one (1) year. In addition to completing this course, each organization’s Electrical Work Supervisor must discuss the “Standard for Electrical Safety in the Workplace” (NFPA 70E) requirements and specific hazard(s) and risk information with their staff. This job briefing should discuss specific electrical work procedures and protective equipment requirements required to accomplish the work of this Contract. This job level discussion can be informal; however, a record of this briefing shall be

documented. All Contractor and Subcontractor employees that “Work On or Near” electrical circuits shall have taken and passed a CPR training program that has been approved by BNL.

3. MPO will arrange and ESH&Q Division will provide additional safety instructions, as required. All personnel shall conform to special requirements for wearing TLD's, personal protective equipment, protective clothing, respirators, and other safety measures as required. TLD's, only, will be provided by BNL at no charge, unless otherwise specified.

D. Industrial Hygiene Monitoring:

1. All work on this Project with regard to, and of, the conditions listed must be done within the occupational exposure limits for Industrial Hygiene hazards set in OSHA 29CFR1926, 29CFR1910, and ACGIH *Threshold Limit Values*®. Compliance with the OSHA Permissible Exposure Limits and American Conference of Governmental Industrial Hygienists (ACGIH) *Threshold Limit Values*® shall be determined by representative personnel exposure monitoring and dosimetry conducted by the Contractor and his Industrial Hygienist. Monitoring shall be continuously performed during the total duration of the hazardous condition. The details of the project’s exposure monitoring equipment, methods, and monitoring strategy shall be included in the Contractor’s Environmental, Health and Safety Plan. Conditions that require industrial hygiene monitoring include, but are not limited to:

   a. Asbestos
   b. Beryllium
   c. Working with Chemicals, Adhesives, or Lead
   d. Release of Silica (grinding, drilling, core boring, jackhammering of concrete, masonry, mortar, etc.)
   e. Confined Spaces
   f. Heat Stress
   g. Carcinogens
   h. Noise and Hearing Conditions
   i. RF/Microwave/Non-Ionizing Radiation
   j. Static Magnetic Fields

2. The Contractor is required to provide qualified monitoring and hazard assessment personnel (per DOE G440.1-3 *Occupational Exposure Assessment*) to conduct all Industrial Hygiene monitoring.

3. The Contractor is required to conduct monitoring with calibrated equipment using NIOSH or OSHA approved methods, and to have analysis conducted by an American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing certified laboratory or by National Institute of

Standards and Technology (NIST) traceable calibrated direct reading instrumentation. All instrumentation used for surveys shall have been calibrated in compliance with the manufacturer's specification prior to use in the field.

4. Copies of all equipment calibration, field sampling sheets, laboratory analysis reports, and hazard assessment evaluation reports are to be provided to MPO, in accordance with the Shop Drawings, Manufacturers Data, and Samples Section of these Specifications.

E. Welding Inspections:

1. Radiographic examination of welds shall not be performed by the Contractor.

2. BNL reserves the right to perform radiographic (x-ray) welding inspections on any welds performed by the Contractor under this contract that appear, after visual inspection, not to comply with the Specifications.

F. Wildfire Danger:

1. This work will be performed in a wildland area of BNL, where brush fires are a real concern. The Contractor shall ensure that the conduct of operations minimizes the potential of the occurrence of wildland fires.

2. Preventing the parking of vehicles on grassy areas with engines running, and control of disposal of smoking materials, is the responsibility of the Contractor's Safety Representative.

3. Ensure gasoline-engine-driven portable generators and air compressors are equipped with spark arresters and that personnel are aware of fire break names if calls to the Fire Department [Ext. 2222 or (631) 344-2222] become necessary.

G. Schedule of Values:

1. Contractor shall submit no later than 2 weeks after contract signing the following Schedule of Values breakdown. Separate the Construction Safety costs from the cost figure for General and Special Conditions, and list separately:

a. General Conditions

b. Payment and Performance Bonds

c. Occupational Medicine Program

d. Construction Safety

e. Mobilization

f. LEED Requirements

g. Utilities – Switch Yard:

1) Earthwork and Site Preparation

2) Concrete Equipment Pads

3) Transformer and Switchgear

4) Manholes

5) Firewall

6) Fencing

7) Grounding

8) 15kV Ductbank and Cable

9) 480V Ductbank and Cable

h. Site Work – General:

1) Outdoor Lighting

2) Asphalt

i. Underground Piping:

1) Excavation and Site Preparation

2) Condenser Water Piping

3) Backfill and Compaction

j. Building 600:

1) Excavation and Site Preparation and Erosion Control

2) Shoring

3) Concrete Footings and Foundation

4) Building Backfill and Compaction

5) Paving

6) Concrete Slabs and Decks

7) Concrete Walls

8) Metal Deck

9) Structural Frame

10) Roof

11) Exterior Walls

12) Domestic Water Piping

13) Sprinkler System

14) Floor Drains and Piping

15) Sanitary Piping

16) Storm Water Piping

17) Compressed Air Piping

18) Instrumentation and Control System

19) Chillers 5 and 6 Delivery

20) Chillers 5 and 6 Installation

21) Chilled Water Secondary Pumps

22) Condenser Water Pumps

23) Chiller Installation

24) Refrigeration Gas Detection System

25) HVAC Equipment

26) Ductwork

27) HVAC Controls and EMCS

28) Electrical Power Equipment

29) Electrical Conduit Installation

30) Electrical Wire and Cable

31) Electrical Devices

32) Building Grounding

33) Lighting

34) Locker Room Fixtures

35) Chilled Water Piping

36) Condenser Water Piping

37) Steam and Condensate Piping

38) Steam Reducing Station

39) Telephone and Data Systems

40) Paging System

41) Fire Alarm System

42) Painting

43) Piping Insulation

44) Duct Insulation

45) Interior Architectural

k. Building 600A (Pumphouse):

1) Excavation and Site Preparation

2) Concrete Footings and Slab

3) Backfill and Compaction

4) Structural Frame

5) Pre-Engineered Building

6) Sanitary Piping

7) Compressed Air Piping

8) Chilled Water Piping

9) HVAC Equipment

10) Chilled Water Primary Pumps

11) Bypass Control Valve

12) Primary Pump Control Valves

13) Electrical Equipment

14) Electrical Conduit Installation

15) Electrical Wire and Cable

16) Lighting

17) Instrumentation and Control

l. Cooling Tower System:

1) Excavation and Site Preparation

2) Concrete Basin

3) Cooling Tower Equipment

4) Cooling Tower Installation

5) Piping and Control Valves

6) Electric Conduit and Wiring

7) Heat Trace System

8) Instrumentation and Controls

9) Ductbank and Manholes

10) Temporary Basin Cover

m. Sonoxide Water Treatment System

n. Control System Commissioning

o. As-Built Drawings

p. O&M Manuals

q. Alternate No. 1

r. Alternate No. 2

s. Alternate No. 3

H. LEED Submittals:

1. Refer to Section 01352L – LEED Requirements, for type, required submittals, credits, options and other specifics required of the Contractor for this project.

I. Special Service Interruptions:

1. Refer to General Conditions, Clause 00700.W, Service and System Interruptions.

2. Service interruptions may occur only when permitted during scheduled shutdowns.

3. Scheduled shutdowns for Chilled Water must occur between November and April.

4. Notify MPO four (4) weeks in advance of all proposed service interruption unless otherwise specified or directed.

5. All materials, prefabricated where directed, and labor must be on Site before a shutdown will be permitted.

6. Increase labor force, use overtime or both, as directed, to insure completion of work in specified time. Include all overtime costs required to complete installation.

7. Work requiring a power shutdown, must be completely installed, tested, and ready for use in a period not to exceed time specified by MPO.

J. Surveys and Stakeout:

1. MPO will establish base lines and bench marks at the site of the work from which the Contractor shall complete the layout of the work to be performed under the Contract. From the basic data established by MPO, the Contractor shall establish reference control points and complete the layout of the work.

2. In addition, MPO will mark and/or stake out all known underground utility locations. Locations are approximate. Contractor shall be responsible to maintain the markings and/or the stakeouts for as long as they are required. Any excavating near these locations shall be by hand to locate utilities exactly.

3. The Contractor shall be responsible for all measurements that may be required for execution of the work to the exact position and elevation as prescribed in the specifications, shown on the drawings, or as the same may be modified at the direction of MPO to meet changed conditions or as result of modification to the Contract.

4. Further, the Contractor shall be responsible for the establishment of points, wall and partition lines required by the Subcontractors in laying out their work.

5. The Contractor shall furnish such stakes and other required equipment, tools and materials, and all labor as may be required in laying out any part of the work from the base lines and bench marks established by MPO.

6. If, for any reason, bench marks and/or utility location markings, monuments are disturbed, it shall be the responsibility of the Contractor to re-establish them, without cost to BNL, as directed by MPO. MPO may require that construction work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking completed work or the work in progress.

7. MPO will back charge the Contractor for any re-establishment of stakeouts performed by BNL that were disturbed by the Contractor.

K. Construction Safety:

1. The Contractor is solely responsible for Construction Safety for the duration of this Contract. Contractor shall prepare and submit a Construction Safety Plan within two (2) weeks of the

Contract signing and before the commencement of any work on site. A Safety Plan Outline with an Occupational Medicine Program example is available from MPO and copies will be handed out at the Pre-Bid meeting. This plan will be reviewed and approved by BNL and shall include the following:

a. Specific assignment of an individual, employed by the Contractor and named in the Plan, as well as one (1) alternate, as Safety Representative, who will be responsible for job site construction safety. The Safety Representative and alternate must demonstrate, with verification of completion of the "30-Hour OSHA Compliance for the Construction Industry" construction safety course, and familiarity with 29 CFR 1926, the ability to supervise the type of work for which they will be responsible. Sources for training can be obtained from MPO. The Safety Representative or alternate shall be on the Project Site whenever construction activities are being performed.

b. A letter or certificate of compliance indicating that the Contractor is aware of, and has reviewed, and will comply with the safety regulations of OSHA Standards (29 CFR 1926/1910), ES&H Standards in the BNL Standards-Based Management System, and the Standard for Electrical Safety in the Workplace (NFPA 70E).

c. A descriptive outline of the Contractor's safety program indicating:

    1) Provisions for emergency aid.

    2) Excavation safety including specific identification of "Competent Person" (per OSHA), including his/her qualifications. Competent Person must have had formal training, have knowledge of existing standards, and have authority to take actions deemed necessary.

    3) A comprehensive occupational medicine program, under the direction and control of an occupational medicine physician, that provides these services in full compliance with all provisions of Section 8 ("Occupational Medicine") of Appendix A of the Federal Regulations 10 CFR 851 ("the Rule"), including the following provisions:

        a) plans and implements the occupational services,

        b) is, or is under the direction of, a physician licensed in the state of New York,

        c) is staffed by health care professionals with valid New York State licenses in their respective professions,

        d) determines the content of the worker health evaluations in accordance with current sound and acceptable medical practices and all pertinent statutory and regulatory requirements.

4) A program for training employees in the recognitions and avoidance of unsafe conditions and in the safety regulations applicable to this project. The construction contractor shall conduct informal "tool box" safety and health training sessions at least weekly for all employees on the worksite. Depending on the size and nature of the project, this may be accomplished in single or multiple sessions and may address different topics for different work crews. Outlines of all "tool box" training sessions shall be prepared by the construction contractor and annotated with the date, time, and names of all employees in attendance.

5) A program certifying that all service, maintenance, and/or construction of electrical equipment is performed in strict compliance with NFPA 70E. All Contractors and service providers must be trained in NFPA 70E and wear the appropriate PPE. See General Conditions, Clause O for Contractor training requirements.

6) A program certifying that all temporary staging, platforms, scaffolding, planking, bracing, scaffold towers and walkway work is to be designed, erected, used and maintained, and dismantled in accordance with OSHA 29 CFR 1926, BNL SBMS and Modernization Project Office ES&H-802. The Contractor's Competent Person shall have been formally OSHA-trained in scaffolds standards and safety and shall assure that all personnel engaged in the erection and/or dismantling of scaffolding have been OSHA-trained in the proper scaffold procedures and precautions. The Contractor's Competent Person shall also assure, through Tool Box training at the Site, that all personnel working on or from the scaffolds have been trained in the proper procedures and precautions while using the scaffolding.

7) A program to provide for the frequent and regular inspection and reporting of job site conditions relating to safety. An inventory of all chemicals used to perform the work, with their material safety data sheets, shall be maintained at the job site.

8) A program certifying the safe operating condition and assuring the proper maintenance of earth moving equipment, cranes, vehicles and other such equipment, including an environmental protection spill prevention plan. A Rigging Plan shall be submitted in accordance with the conditions noted in the Supplementary Conditions clause, "SHOP DRAWINGS, MANUFACTURERS DATA, AND SAMPLES", above, whenever this equipment is to be used on Site.

9) A program certifying the safe operating condition and assuring the proper maintenance of permanent and/or temporary light, power and electrical equipment, including protective devices (GFCI) for portable electric tools.

10) Provisions through meetings, established contacts or other means, for the mutual exchange of information with contractor and subcontractor personnel on:

- Changes in scope of work
- Recognized hazards
- Identified inspection deficiencies
- Future phases of work
- Potential problem areas
- Coordination of crafts

11) Upon approval of the Safety Plan, the Contractor shall make any revisions noted and resubmit five (5) copies of the Plan to MPO for distribution.

2. All workers shall be able to comprehend the scope of work and safety instructions required to perform the job. All workers employed by the Contractor and the Sub-Contractor shall acknowledge, in writing, that they have read and understood the Project Safety Plan. If workers cannot read or speak English or are hearing impaired, an interpreter shall be provided by the contractor to ensure that the scope of work, information regarding hazards associated with the work-site, and safety requirements are relayed to them in a manner in which they can understand. The interpreter shall sign that he has explained the plan, and shall be at the work-site whenever these workers are on the job. The approved Safety Plan shall be available at the job site to all Contractor and Sub-Contractor employees.

3. When Confined Space Entry is required, the Contractor shall have a written Confined Space Entry Program which complies with OSHA and BNL standards.

   a. The program will require the Competent Person (as defined by OSHA) to:

      1) Establish procedures and practices for safe entry and to determine if a permit is required.

      2) Have air monitors to check concentration of oxygen, explosive/flammable gases and the specific contaminants of concern (e.g. hydrogen sulfide in sewer utility holes).

      3) Test and monitor conditions to identify and evaluate hazards.

      4) Prevent unauthorized entry.

      5) Station an attendant outside permit spaces during entry.

      6) Post procedures to summon rescuers and prevent unauthorized personnel from attempting rescue.

      7) Develop a system for preparing, issuing, using, and canceling entry permits.

b. Permits are required to include an identification of the confined space, its hazards, a list of authorized entrants, the purpose of their entry, and the date and duration of their permits; the current attendants and entry supervisor; and both the results of tests performed and any measures necessary to isolate the permit space and eliminate or control the hazards. The permit must also describe the acceptable entry conditions, emergency equipment and the means to summon rescue and emergency services.

c. Authorized entrants into confined spaces must be trained to be aware of any hazards they may face and be able to recognize signs and symptoms of exposure. They must also be familiar with any emergency equipment in the confined space.

4. The Contractor shall be required to include the applicable safety requirements in all contracts with all tiers of subcontractors.

5. Prior to the start of construction, a pre-construction meeting shall be scheduled with the Contractor to review specific safety requirements of the project.

6. Lock-Out/Tag-Out is the required method of control when performing service, maintenance, or construction around any machinery where personnel could be injured by startup of the equipment or release of stored energy. A Lock-Out/Tag-Out program shall be included in the Construction Safety Plan that complies with OSHA and is tailored to BNL's LOTO program. Sources of energy shall be, but not limited to, mechanical (kinetic/potential), electrical, electromagnetic, chemical, thermal, hydraulic, and pneumatic. Contractor shall provide his own locks (types specified by BNL), lockout devices, and red tags for Lock-Out/Tag-Out of energy sources(s). A logbook shall also be maintained and kept in a designated area assigned by BNL.

a. It is BNL Policy that working on or near energized electrical circuits will only be allowed when all methods available to perform the work in a de-energized state have been evaluated and determined to be infeasible. Working on or near energized conductors is subject to the restrictions and provisions of the Standard for Electrical Safety in the Workplace (NFPA 70E), and BNL Procedure MPO-ESH-102 Electrical Safety.

b. In order to comply with this Policy, the Contractor shall ensure that all employees who may be required to "Work On or Near" electrical circuits within the BNL AC Distribution System and all associated equipment shall be authorized employees. An authorized employee is deemed as an individual who has been qualified in the skills and knowledge related to the service, maintenance, construction and/or operation of electrical equipment and installations, and has received safety training on the hazards involved, including the wearing of the appropriate personal protective equipment (PPE).

c. BNL shall have the ability to request the Contractor to provide the appropriate documentation, which will clearly indicate the qualifications and training of any and/or all employees performing such work.

d. Contractor will arrange for the issuance of a "Working On or Near" Permit as required by the above stated Policy and MPO-ESH-102 Electrical Safety. The Contractor shall give BNL a minimum of 48 hours notice of any requirement to "Work On or Near" to allow time for the BNL permitting process. Working on or near operations that only involve testing, diagnostic work, and/or service tasks on equipment for voltages less than 600 Volts AC to ground may be covered by a testing, troubleshooting, and voltage monitoring energized work permit, which may cover the entire project period. Operations involving "Working On or Near" for voltages greater than 50 Volts AC to ground may require a specific "Working On or Near" Permit for each work situation required. Work will proceed when the "Working On or Near" Permit is completed and all parties performing the work have been informed of the hazards involved and what PPE is to be worn. An authorized Supervisor from the Contractor who is performing the work and a BNL designated Manager must sign the permit before any work can be performed.

7. Concrete and/or Masonry Penetrations are of specific safety concern at BNL. It is BNL policy that the Contractor ensure safe penetration into or through any existing concrete or masonry surface.

   a. BNL Standards-Based Management System, ES&H Standards and Facilities & Operations Policies and Procedures shall be followed, including the completion of appropriate Penetration Permits and the provision and use of utility locating/detecting equipment.

   b. In order to comply with these guides, the Contractor shall provide trained "Authorized Employees" and shall submit, for MPO review and approval, the name and type of the utility locating/detecting equipment to be used, as well as the specific names of the trained personnel who will perform the locating task with this equipment and who will execute the penetration work.

   c. Non-aggressive penetrations cannot be executed without first using utility locating/detecting equipment and obtaining approval by MPO.

   d. Aggressive penetrations cannot be executed without first using utility locating/detecting equipment followed by the completion and approval of a MPO Aggressive Penetration Permit.

8. No work at the Site will be permitted to proceed and no payment requisitions will be authorized until the Construction Safety Plan is submitted and approved. Contractor shall proceed, however, with ordering of equipment and materials upon Contract signing, as specified in Section 01300.

9. BNL will not tolerate non-adherence to safety requirements under this Contract. These requirements shall include, but not be limited to, all applicable OSHA Safety requirements, the BNL Standards-Based Management System; ES&H Standards, all applicable codes and regulations, and the approved Safety Plan. Failure to comply will result in BNL's direction to stop work in accordance with Article 27 of Attachment A. Non-compliance could also mean the barring of the violating individuals from the BNL Site. Repeated safety violations may also result in a permanent Work Stoppage under Article 30.

10. A draft Work Permit is included at the end of this Section. Contractor shall address all issues and concerns noted on this Work Permit within the Construction Safety Plan.

END OF SECTION

Revision History	
Date	**Rev. No.**
F	0
02-19-09	0