Control Room when the outside temperature is at minimum winter conditions.

3. Provide Uniform Code-required fire dampers, wall louvers, automatic dampers, and controls for all systems and equipment.

1.6. ELECTRICAL SCOPE OF WORK

1.6.1. General

A. Provide the electrical power and control equipment for the PSD system including but not limited to conduit and wiring, panelboard, UPS & battery system, PSD power and control equipment, lighting, receptacle, fire alarm system.

B. All electrical work shall be designed by a professional engineer licensed in the State of New York and shall be in accordance with NYCT Standard Electrical Drawings and all pertinent codes and regulations.

C. Relocate existing electrical conduits, light fixtures, CCTV, emergency light fixtures in order to accommodate PSD System, PSD systems (including overhead systems), new PSD Control Room, and PSD Storage Room construction.

D. Provide alarm indications (e.g., ground fault indications) to NYCT at various locations such as the RCC, 130 Livingston, and other locations via web-based applications as part of the remote monitoring (see PRDC 16) required by MTA C&D.

E. Provide hardware and licenses to isolate Design-Builder's network from NYCT network, as per MTA IT requirements, such that the requested alarms can be shared between the two systems. Reference PRDC 06 and PRDC 07 for additional information.

1.6.2. 3rd Avenue Station (MRN 118) (Option Work)

A. Replace existing 350A fuses on two (2) ATS 400A Fused Disconnect Switches with new 400A fuses.

~~B.~~ Replace existing 300A main circuit breaker with new 400A breaker and provide new 200A/3P circuit breaker in 208/120V "DB1" to accommodate the new PSD equipment system and ancillary loads.

C. Provide new 208V/120 feeders and electrical panelboards in PSD Control Room.

D. Provide an Isolation Transformer (PSD IsoXfer), voltage limiting device, grounded/hot structure relay, and ungrounded Electrical Power Panel (PSD PP2) for power distribution and equipotential bonding/isolation to PSD equipment.

E. Provide UPS equipment and required battery systems with sufficient backup capacity for life safety systems including emergency lighting, fire alarm system and fire protection systems, communication systems, security systems, train operator stations, train conductor station, PSD aggregators and etc.

1. See PRDC 07 for backup capacity requirements.
2. UPS loads shall be fed through a UPS Output Panel with the necessary circuit breakers and spares.

F. See Preliminary Drawings for Scope of Work Key Notes.

G. Pursuant to the requirements of Section 1.3.10.B, the Design-Builder shall perform the

following Work under the platform edges adjacent to tracks.

1. (UP-1) Removal of inactive conduit
2. (UP-2) Removal of inactive cables
3. (UP-3) Relocate or replace < 2” Conduit/wiring
4. (UP-4) Relocate or replace 2-3” Conduit/wiring
5. (UP-5) Relocate or replace > 3” Conduit/wiring
6. (UP-7) Relocate or replace Loose cables

1.6.3. Sutphin Blvd Station (MRN 279)

A. Provide new 100A/3P circuit breaker in existing 480V “Switchboard-B” to accommodate the new PSD equipment system and ancillary loads.

B. Provide new 75KVA stepdown transformer and associated disconnect switch in Reserve EDR.

C. Provide new 480V feeders to new 75KVA transformer.

D. “Switchboard-B” is located on the Mezzanine level. Flagging is not required to access Reserve EDR and Normal EDR spaces.

E. Provide new 208V/120 feeders and electrical panelboards in PSD Control Room.

F. Provide an Isolation Transformer (PSD IsoXfer), voltage limiting device, grounded/hot structure relay, and ungrounded Electrical Power Panel (PSD PP2) for power distribution and equipotential bonding/isolation to PSD equipment.

G. Provide UPS equipment and required battery systems with sufficient backup capacity to meet the requirements in PRDC 16 and PRDC 07. UPS loads shall be fed through a UPS Output Panel with the necessary circuit breakers and spares.

H. In addition to the new lighting installation in the PSD Control Room and Storage room, provide new lighting for both N/B and S/B platforms. Refer to Standard Drawing STD-EL-2076 and PRDC 06 for general installation requirements.

I. See Preliminary Drawings for scope of Work key notes.

J. Pursuant to the requirements of Paragraph 1.3.10.B, the Design-Builder shall address, at minimum the following existing elements under the platform edge adjacent to tracks as indicated below. These elements shall be addressed as unit price items.

1. (UP-1) Removal of inactive conduit
2. (UP-2) Removal of inactive cables
3. (UP-7) Relocate or replace loose cables
4. (UP-3) Relocate or replace < 2” Conduit/wiring
5. (UP-4) Relocate or replace 2-3” Conduit/wiring
6. (UP-5) Relocate or replace > 3” Conduit/wiring

1.6.4. Times Square Station (MRN 467)

A. Provide new 200A/3P enclosed circuit breaker tapped from existing 208V Distribution board “DBNR” to accommodate the new PSD equipment system and ancillary loads.

B. “DBNR” is located on the Intermediate level in Reserve EDR. Flagging is not required to access the electrical room.

C. Provide new 208V/120 feeders and electrical panelboards in PSD Control Room.

D. Provide an Isolation Transformer (PSD IsoXfer), voltage limiting device, grounded/hot structure relay, and ungrounded Electrical Power Panel (PSD PP2) for power distribution and equipotential bonding/isolation to PSD equipment. Design-Builder to confirm and coordinate equipment sizing with PSD manufacturer.

E. Provide UPS equipment and required battery systems with sufficient backup capacity to meet the requirements in PRDC 16 and PRDC 07. UPS loads shall be fed through a UPS Output Panel with the necessary circuit breakers and spares.

F. See Preliminary Drawings for scope of Work key notes.

G. Pursuant to the requirements of Paragraph 1.3.10.B, the Design-Builder shall address, at minimum the following existing elements under the platform edge adjacent to tracks as indicated below. These elements shall be addressed as unit price items.

1. (UP-1) Removal of inactive conduit
2. (UP-2) Removal of inactive cables
3. (UP-3) Relocate or replace < 2” Conduit/wiring
4. (UP-4) Relocate or replace 2”-3” Conduit/wiring
5. (UP-5) Relocate or replace > 3” Conduit/wiring
6. (UP-9) Relocate or replace drainage pipe (vertical; 20 locations)

1.6.5. Training/Test Facility – East 180th Street Station (MNR 426)

A. In existing Electrical Distribution Room (EDR) provide new 200A fused service disconnect switch opposite the existing distribution panelboard “DB-1” via 2-1/2” conduit to accommodate the new PSD equipment system and ancillary loads.

1. Install 4-#4/0 copper conductors from DB-1 to new 200 A fused service disconnect.
2. Tap the 1200 A bus on the line side of the existing DB-1 service switch and terminate all wires in the new 200A service disconnect switch.
3. Install new grounding electrode conductor to 3 new 200A disconnect switch based on NEC Article 250.66.
4. Install conduit and wire from the new 200A service disconnect to the new PSD Control Room.

B. “DB-1” is located on the next Platform west of the Training platform in the Normal EDR. Flagging is not required to access the electrical room.

C. Provide new 208V/120 feeders and electrical panelboards in PSD Control Room.

D. Provide an Isolation Transformer (PSD IsoXfer), voltage limiting device, grounded/hot structure relay and ungrounded Electrical Power Panel (PSD PP2) for power distribution and equipotential bonding/isolation to PSD equipment.

E. To accommodate the new PSD and related loads, provide new feeders and electrical panelboards in PSD Control Room from Normal EDR.

F. Provide UPS equipment and required battery systems with sufficient backup capacity to meet the requirements in PRDC 16 and PRDC 07. UPS loads shall be fed through a UPS Output Panel with the necessary circuit breakers and spares.

G. In addition to the new lighting installation in the PSD Control room and Storage room, provide new partial lighting on the non-revenue platform (Y2). The new lighting shall be installed between Station markers. Refer to Standard Drawing STD-EL-2076 and PRDC 06 for general installation requirements.

H. See Preliminary Drawings for scope of Work key notes.

1.7. COMMUNICATIONS SCOPE OF WORK

1.7.1. General

A. All systems provided under the this Contract shall be compatible with and capable of integration into existing MTA/NYCT systems.

B. Provide CCTV coverage of platform screen doors to provide confirmation of door failure and entrapment.

C. Provide access control for end of platform gates as well as for any other location pursuant to the requirements of PRDC 07.

1. Access control system for end of platform security and other MTA controlled spaces shall be an expansion of MTA existing access control system and compliant with MTA standard end of platform protection.

D. Provide monitors with indication panel at all conductor and motorman locations.

1. Monitor/indicator panel shall bring up CCTV for location where issue is occurring.

E. All communication systems, internal to the station, shall be connected to the existing secured operational network and communicated to the MTA IT network.

F. Provide all network infrastructure for IP-based devices such as:

1. Entrapment sensors
2. CCTV
3. Access control
4. Platform Screen Door Alarm monitoring panel
5. Environmental Remote Monitoring System (RMS)

G. The End-of-Platform systems (door hardware, access control, and communication connections) being provided for the operation and maintenance of the platform screen doors will be the responsibility of the Design-Builder; however, all systems provided shall meet NYCT standards for both hardware and networking technology. This will facilitate

the transition from Design-Builder operation to NYCT operation and maintenance in the future.

1. The access control system shall be furnished by the Design-Builder and fully integrated into the existing NYCT Access Control head end.

H. The PSD Control Room door shall be prepared to receive access control hardware. All necessary raceways and specialized hardware shall be provided for the future connection to NYCT's Access Control System.

I. Provide alarm indications to NYCT at various locations such as the RCC, 130 Livingston, and other locations as required by the contract and/or the Project CEO.

1. Provide a browser application that can be accessed on an existing computer at these locations for alarm monitoring and reporting.

J. Provide the necessary hardware and licenses to isolate Design-Builder's network from NYCT network, as per MTA IT requirements, such that the requested alarms can be shared between the two systems.

K. Identify and protect (or re-route) the existing communications infrastructure that will be impacted by the Work, such as communications cables under the platform. All communications systems that are in service at the stations shall remain in service before, during, and after Work is done.

L. Identify and protect (or re-route) the existing radio antenna cable infrastructure impacted by thie Work. All radio systems that are in service at the stations shall remain in service before, during, and after Work is done.

M. No metal equipment, conduits, wireway or other metallic items shall be installed within offset distance of 12 inches minimum from any radiating antenna cables or antennas.

N. The radio operation for RTO, NYPD, EMS, FDNY shall be continuously maintained and fully operational during the Work. Radio service disruptions shall be preceded by approved bulletin(s) and coordination with the MTA.

O. Radio Frequency coverage heat maps shall be generated before and after the construction activities, and the post-construction results must be equal or better than the pre-construction results.

1. The Project CEO and NYPD must provide their acceptance of the post-construction Radio Frequency coverage heat maps.

2. No Radio Frequency coverage degradation is acceptable. If present Radio Frequency coverage is degraded, the Design-Builder shall improve the Radio Frequency coverage.

P. Design-Builder will provide all EMS equipment required to manage the IP devices (switches, routers, UPS's, netdog's etc.). Upgrade current systems with hardware, software, and licensing, if required.

1. Provide Fire Alarm System control panel in PSD Control Room and connect to: Central Alarm Monitoring System (CAMS) and available existing station Fire Alarm System (FACP). See below for existing FACP locations and PRDC 07 for additional information:

i. At 3rd Avenue Station (Option Work), existing FACP F-6118 (Simplex 4100U) is in Comm. Room.

ii. At Sutphin Blvd Station, existing FACP F-7001 (Simplex 4100U) is in Elevator (411) Machine Room EMR-7001 on the lower-level platform.

iii. At Times Square/42nd Street, existing FACP F-0461 (Edwards EST-2) is in Fire Alarm Closet at 41st Street & 7th Ave. Mezzanine Area B.

iv. At East 180th St Training/Test Facility, existing FACP (Simplex 4100U) is in Unpaid Mezzanine M103.

2. Provide fiber optic connection between Platform Screen Door Control Room and the NYCT Communication room at each station. Connection shall be made utilizing a 36 strand fiber.
3. Provide rugged switches at the Platform Screen Door Control Room and the NYCT Data Cabinet.
4. Provide Platform Screen Door Access nodes throughout the station to serve all necessary IP connections.
5. Provide a spare conduit connection, with a drag line, between each Platform Screen Door Access Node and the nearest NYCT Access Node.
6. Platform Screen Door Access Nodes shall comply with all of the same requirements as the NYCT standard Access Nodes.
   i. Provide an environmental remote monitoring system (RMS) for each Platform Screen Door Control Room.
   ii. RMS shall be capable of reporting to both the PSD Maintainer's maintenance facility and NYCT MOW. Coordinate with NYCT.
7. RMS shall, in addition to monitoring the room, monitor all conditions of the cabinet housing all required communication equipment.
8. Provide NVR for recording all Platform Screen door and end of platform CCTV as per PRDC 07.
9. Provide cameras at each end of platform gate for each track to view both entry and exit through the gates.
10. Provide card reader and all necessary access control components for each end of platform gate at each track.
11. Provide access control panel and connect to existing NYCT network.
12. Provide field equipment (15) tablets similar in performance and quality to the Samsung Galaxy Tab A series of tablets, with 512GB microSD. Load all Operational and Maintenance (O&M) manuals and drawings on the tablets.

1.7.2. 3rd Avenue Station (MRN 118) (Option Work)

A. No station specific requirements are noted at 3rd Avenue Station. All Communications work described in Section 1.7.1. General above shall apply to 3rd Avenue Station.

1.7.3. Sutphin Blvd Station

A. Relocate existing 1-5/8” radiating antenna cable on westbound track from platform side to track side wall, mounted at the train car window level.

   1. Provide a new 6dB uni-directional coupler at stationing 57+00 with main line output (-1) port connected to existing radiating cable on westbound track.

B. Provide a new 1-5/8” radiating antenna cable on eastbound track on track side wall, mounted at the train car window level, from stationing 57+00 to end of platform (approximately stationing 64+00) and terminate with a 50 ohm terminator.

   1. Connect the new directional coupler’s coupled (-7) port to the new 1-5/8” radiating antenna cable.

C. The Design-Builder shall remove or relocate the existing approximately 1 inch radiating antenna cable along track D2 to coordinate with new CCTV cameras, entrapment sensors, and down stand with light box along the ceiling above the platform edge of track D2:

   1. (UP-17) Remove existing radiating antenna cable (track D2)
   2. (UP-18) Relocate/replace radiating antenna cable (track D2)

D. After relocating/replacing the radiating antenna cable above track D2, the Design-Builder shall test to determine if coverage is adequate; refer to PRDC 07 Section 7.6.1.Q for testing requirements. The results of said test shall be submitted to the Project CEO. If the test results reflect inadequate coverage, the Project CEO may request a second radiating antenna cable above track D1 as follows: The Design-Builder shall provide a new approximately 1 inch diameter radiating antenna cable along track D1 to coordinate with new CCTV cameras, entrapment sensors, and down stand with light box along the ceiling above the platform edge of track D1:

   1. (UP-19) Provide new radiating antenna cable (track D1)

E. The Design-Builder shall relocate the 4 inch by 4 inch non-conductive trough housing a radiating radio cable to coordinate with new CCTV cameras, entrapment sensors, and down stand with light box along the ceiling above the platform edge of track D2:

   1. (UP-6) Remove existing 4 inch by 4 inch non-conductive trough housing a radiating antenna cable (track D2)
   2. (UP-20) Relocate/replace 4 inch by 4 inch non-conductive trough housing a radiating antenna cable (track D2)

1.7.4. Times Square Station (MRN 467)

A. There is an existing end-of-platform security system installed at this station. Design-Builder shall place and install the Platform Screen Doors, end-of-platform gates, and all other devices with this system.

   1. Each end of platform for each track is secured using 2 cameras, 2 laser intrusion detection systems, 2 card readers and 2 intercoms.
   2. Each end of the station has one enclosure providing connectivity for this system.
   3. Any components which impact the installation of the PSD, or any components which

functionality are impacted by the platform screen door installation, shall be relocated and integrated.

4. If modification of this system is required due to conflict with any PSD systems, the Design-Builder shall coordinate the modification with the Project CEO.

1.7.5. PSD Training/Test Facility – East 180th Street (MRN 426)

A. No station specific requirements are noted at East 180th Street Station. All Communications work described in Section 1.7.1. General above shall apply to East 180th Street Station.

1.8. INSTRUMENTATION AND CONTROLS SCOPE OF WORK

1.8.1. General

A. The Design-Builder shall provide all required Control Panels as needed to achieve required control and Human Machine Interface for:

1. PSD System
2. CCTV
3. Access control
4. Alarm monitoring panel

B. Option Work: All items noted in paragraph A above shall be provided and installed at 3rd Avenue Station.

1.9. TRACK SCOPE OF WORK

1.9.1. Track and Switch Scope of Work

A. NYCT MOW Track Engineering has provided the signed drawings (the “Track Contract Drawings”) and Prescriptive Specifications for all track Work.

B. The Design-Builder shall perform the track and third rail installation Work for the Project in accordance with NYC Transit MW-1 Standards, the Prescriptive Specifications, and the Track Drawings.

C. The track Work shall include:

1. At Times Square Station, Track C1/CC1:

i. Install tie blocks and resilient plates. Refer to Track Contract Drawings.

a. Remove existing track, including rails, plates, and tie blocks, and install new track with new engineered composite or fiber-reinforced foamed urethane synthetic tie blocks, bonded resilient plates, and continuously-welded 100-8 rails.

b. Existing contact rail shall be removed, protected against damage, and reinstalled with new protection boards, steel protection board brackets, centering cups, thermoplastic insulators, anchors, and all other appurtenances.

2. At Times Square Station, Track C2/CC2:
    i. Install tie blocks and resilient plates. Refer to Track Contract Drawings.
        a. Remove existing track, including rails, plates, and tie blocks, and install new track with new engineered composite or synthetic tie blocks, bonded resilient plates, and continuously-welded 100-8 rails.
        b. Existing contact rail shall be removed, protected against damage, and reinstalled with new protection boards, steel protection board brackets, centering cups, thermoplastic insulators, anchors, and all other appurtenances.
3. At 3rd Avenue Station- Option Work, Track Q1:
    i. Install tie blocks and resilient plates. Refer to Track Contract Drawings.
    ii. Remove existing track, including rails, plates, and tie blocks, and install new track with new engineered composite or fiber-reinforced foamed urethane synthetic tie blocks and bonded resilient plates. Existing rails may be reinstalled.
    iii. Existing contact rail shall be removed, protected against damage, and reinstalled with new protection boards, steel protection board brackets, centering cups, thermoplastic insulators, anchors, and all other appurtenances.

1.10. TRACTION POWER SCOPE OF WORK

1.10.1. General

A. The Design-Builder shall perform the contact rail installation work in accordance with NYC Transit MW-1 Standards, the Prescriptive Specifications, and Signed Drawings.

B. At Times Square Station, Flushing Line, IRT Division, and 3rd Avenue Station, Canarsie Line, BMT Division, (Option Work) existing contact rail shall be removed, protected against damage, and reinstalled with new protection boards, fiberglass post brackets, centering cups, nano-coated porcelain insulators (or approved equal), anchors, and all other ancillary appurtenances within the limits of trackwork for a complete installation.

C. The Design-Builder shall remove existing appurtenances of the DC positive network and the DC negative return network from contact rails and running rails respectively, during replacement of rails.

D. The Design-Builder shall be responsible for protecting existing appurtenances of the DC positive network and the DC negative return network during replacement of rails.

E. Re-connect all existing connections of the DC positive network and the DC negative return network after complete replacement of work.

F. If any existing appurtenances of the DC positive network and the DC negative return network are damaged by the Design-Builder, the Design-Builder shall be solely responsible for replacement cost of the damaged appurtenances.

1. The damaged appurtenances shall be designed by the Design-Builder, accepted by MTA C&D, and replaced at no additional cost to MTA C&D.

G. At Times Square Station, Flushing Line, IRT Division, remove existing negative equalizer and install new negative equalizer with 4-500Kcmil Cables in 4-2” rigid galvanized steel conduit encased in reinforced concrete under tracks.

H. Provide and install 500kcmil cable and conduit and all required supports for single point negative bond between the PSD frame and the associated negative return rail.

I. Provide a stray current monitor to monitor the condition of the PSD ground insulation that will alarm and report to the Rail Control Center.

1.11. SIGNALS SCOPE OF WORK

1.11.1. General

A. A Signal Specialist and Signal Engineer are required for this Contract when any Work needs to be performed on Signal equipment and signal interlocking equipment as required by PRDC 11.

B. Identify all Signal equipment and Cables that are affected by the Work as required by PRDC 11.

C. Maintain and protect all Signal equipment and Cables within the area of Work.

D. All Signal equipment and Cables within the area of Work shall be relocated.

E. The PSD must not impede any access to existing Signal equipment and Cables.

F. The PSD must not impede any Signal equipment maintenance activities at any time.

G. Existing Signal Drawings must be updated if any Signal equipment is relocated.

H. See PRDC 11 for more information.

I. Option Work: Shall include the above activities for Work at 3rd Avenue Station.

1.12. ENVIRONMENTAL SCOPE OF WORK

1.12.1. General

A. The environmental scope of Work includes, but is not limited to, dust control, waste management, lead disturbance, and asbestos abatement. See PRDC 12 for the comprehensive scope of work.

B. The Design-Builder shall conduct an environmental pre-construction survey and testing as described in PRDC 12 for the entire area of the station impacted by the Work of this Contract. This includes but is not limited to:

1. The existing platform and platform finishes and any walls or columns impacted by the platform work.
2. The existing ceiling above the platform including areas where new conduit or raceways will be installed as part of this contract.
3. Other existing areas impacted by the installation of the PSD system on the platform or under the platform edge, PSD Control Room, and the PAS Storage Room.
4. Any conduit of raceway paths required to bring power or communications service

to the PSD Control Room or to connect the PSD Control Room to the PSD system or any of its subsystems or to third party entities.

5. Any areas affected by track replacement.

C. The Design-Builder shall develop and implement an Environmental Management Plan (EMP) to ensure a comprehensive integration of environmental requirements into all design and construction activities as described in PRDC 12.

D. Items to be addressed in the EMP include, but are not limited to:

1. Mold Control
2. Noise & Vibration
3. Noise Monitoring
4. Equipment Noise and Attenuation
5. Construction Methods and Operations
6. General Vibration Requirements
7. Chemical Commodity Review
8. Dust Control
9. Waste Handling and Removal
10. Spill Prevention and Response
11. Mercury Containing Lamp and Equipment Removal
12. Removal/Disturbance & Disposal of Lead Containing Materials
13. PCB Containing Fluorescent Light Fixture Ballast Removal
14. Vector Control
15. Asbestos Removal
16. Compliance with Limits for Volatile Organic Compounds

E. Upon completion of the environmental survey and an approved EMP, the Design-Builder shall abate the materials as prescribed in the EMP. Copies of notifications made to the USEPA, NYS-DOL and other applicable agencies (including all amendments) and copies of completed waste manifest forms for asbestos transported off site shall be provided as noted in PRDC 12 and its Appendices.

F. Option Work: Shall include the above activities for Work at 3rd Avenue Station.

1.12.2. Environmental Requirements

A. The Design-Builder shall follow PRDC 12 for environmental requirements:

1. Environmental Review

i. MTA C&D has performed state environmental review and prepared the documentation for the Contract pursuant to applicable rules and regulations. The applicable SEQRA Environmental Decision Document is in PRDC 12.

ii. The Design-Builder shall follow all requirements for SEQRA re-evaluation in PRDC 12.