ADDENDUM A

Supplementary Terms and Conditions

This Addendum A and the corresponding Exhibit A together comprise the project specific requirements that are supplementary to the requirements of the Fermilab Subcontract General Provisions contained in FL-1 and the Fermilab Construction Subcontract Terms and Conditions contained in FL-3.

Project Information

Project Name: Mu2e Conventional Facilities
FESS/Engineering Project No. 6-10-2
Issue Date: February 17, 2014

Fermilab Project Team

Construction Manager:
Tom Lackowski

Fermilab Construction Coordinator:
Ronald Foutch

Fermilab ES&H Coordinator:
John Cassidy

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Drawings/Specifications

1.0 Site Location

The Project is located on the Fermilab site in Batavia Illinois at the intersection of Kautz Road and Giese Road, in Kane County.

2.0 Scope of Work

The Mu2e Conventional Facilities is a portion of a major congressional line item. The authority to obligate construction funds is expected on or about September 15, 2014. After receipt of this authorization Fermilab plans to enter into a contract agreement for the prosecution of this project followed, by Notice to Proceed, authorizing the start of work activities. At the time of award the Project will be fully funded for the Project's duration.

It is anticipated that the length of time between the receipt of proposals and contract award will be between one hundred and twenty (120) and one hundred and fifty (150) calendar days.

Adjacent to this Project, and schedule to start at approximately the same time, the MC Beamline, Project number 6-10-22, will be constructed. Due to the proximity of the two Projects, similarity of the work trades and the potential for conflicts to arise between the two Projects, Fermilab will select a single subcontractor to prosecute both subcontracts, Mu2e Conventional Facilities, Project #6-10-2 and the MC Beamline Project 6-10-22. The combined price proposed for the two Projects, combined with the other selection factors, will form the Best Value basis for the selection of the successful offeror.

The below grade area entitled "Remote Handling Area", room 015, may be removed from the project's scope. This includes the base slab, exterior walls, top slab and beams, drop hatch and hatch cover. The wall between the Remote handling Area and the Production Solenoid Area, room 014 shall be constructed as reinforced without any wall openings. Additionally the retaining wall north of the building and the surface grades over what is the remote handling and around the PS hatch will be reduced to El: 747.0. The top of the hatch shown on Section B, Drawing C-8 will be lowered to El: 751.0. Cost of deduct option shall include the Mechanical and Electrical equipment in the Remote Handling Room but not the services leading to the room. See description on drawings that further defines the scope of this option. This reduction in scope is defined as "Deduct Option #1". The decision to remove this portion of the work will be made within 45 days after contract award. If Deduct Option #1 is pursued, detailed drawings indicating the full scope of the change will be provided to the subcontractor and a request for cost proposal will be issued for this scope of work and formally enacted by supplement agreement.

The Mu2e Conventional Facilities will construct the Mu2e Detector Hall, an industrial-type structure with a built up roof and metal siding on a braced structural steel frame system, and a cast-in-place reinforced concrete structure under the majority of the building. The building and below grade areas are outfitted to provide the environment to construct, support and operate, the scientific equipment that comprise the experiment. The Subcontractor's scope of work is in no way limited to the general work outline described below. The Subcontractor shall perform all work required to complete the construction work in strict accordance with the drawings and/or specifications. The description and quantities listed below are general in nature and are only intended to describe the range and complexity of this scope of work. They are not to be used as the basis for establishing a cost proposal. Specific quantities and definitions of the scope of work

for bidding purposes shall be based solely on estimates developed by the Offeror from the drawings, specifications, Exhibit A and information obtained from examination of the Project site.

a. Significant figures of merit include:
   i. Six (6) acres of site work;
   ii. 80,000 to 90,000 CY of excavation and backfill;
   iii. Six thousand (6000) CY of structural reinforced concrete;
   iv. One hundred and ten (110) tons of structural steel and miscellaneous metals;
   v. Installation of two 30 ton overhead bridge cranes;
   vi. One (1) Hydraulic elevator;
   vii. Mechanical and electrical services for 28,000 SF of floor area.

b. Environmental Protection, Erosion Control including adherence to the Project-specific Storm Water Pollution Prevention Plan (SWPPP) attached in Appendix D of this document. The SWPPP, along with Notice of Intent (NOI) has been submitted to the IEPA by Fermilab for a Project specific permit issued under the Laboratory's General NPDES Permit No. ILR10, issued from the IEPA to Fermilab for construction site activities. No earthwork will be permitted to commence until the Subcontractor has reviewed, formally accepted and signed the SWPPP. Included in the erosion control scope of work is the installation and maintenance of all control devices, soil stabilization and all other requirements of contract documents. All sub-tier sub-contractors are required to sign and adhere to the provisions of the SWPPP.

c. Protection of Existing Structures, utilities, roads, existing erosion control measures, temporary overhead power lines, survey monuments, and the work of other concurrent subcontracts.

d. Traffic Access and Control with barricades, barriers, signage, flaggers, temporary fencing, including maintenance of continuous two-way traffic on South Booster Road and Giesse Road.

e. Field Survey including temporary monuments, layout lines and grade stakes extended from Fermilab-furnished control points. Subcontractor shall also survey all interfacing structures and utilities, and immediately notify the Fermilab Construction Coordinator (FCC) of any discrepancies.

f. Surface Water and Drainage Control including protection of openings and open ends of interfacing structure to prevent flooding, regrading of existing swales and ditches, diversionary ditches at the base of stockpiles, swales, ditches, berms, culverts, site grading and dewatering systems such as temporary sumps, pumps and hoses.

g. Maintenance of Site Roads, including removal of earthen material, regrading, daily dust control when directed by the FCC. Snow removal along Giesse and South Booster Roads will be accomplished by Fermilab Roads and Grounds after the main site roads and parking lots have been cleared. The Subcontractor should be prepared to clear snow from his work sites and those portions of the roads requiring access during snowfall or immediately after a storm.

h. Establishment of Subcontractor's Area including hardstand, access drives, culverts, designated personnel parking areas and storage areas with approval of the FCC. Site preparation including the clearing and grubbing, stripping and segregation of the top soil, general site grading, and removal of a portion of Kautz Road and the removal of part of the adjacent stockpile area as needed for the excavation for the construction or as shown on the plans and drawings. Work scope includes access road to the site, worker parking areas, equipment and material storage areas and set up of optional office trailer.

i. Off-Site Disposal of all demolition and grubbing debris, unsuitable material, trash and waste material including proper receptacles for the daily collection of trash and waste to be disposed

of off-site shall be subject to inspection and survey by Fermilab personnel for possible contaminants. Material found to be unsuitable for off-site disposal shall be segregated in a stockpile on the Fermilab site as determined by the FCC.

j. Designated Concrete Truck Wash-Out sites, as directed by the Fermilab Construction Coordinator and enforced by the Subcontractor.

k. Temporary Power for the subcontractors use at no cost can be extended from the 200 Amp. / 480V 3-phase fused disconnect on the exterior of the AP-10 transformer. The subcontractor can pick up and use Fermilab power poles, 3-phase electrical conductor, single phase 13.8KV to 480V pole mounted transformers from the Fermilab Railyard. The subcontractor is responsible for terminations, splices and disconnects. Also included is the removal and return to the Railyard of all Fermilab components.

l. Excavation and Trenching for utilities including removal, stockpiling and replacing with granular and soil materials as required.

m. Demolition of items shown on the plans such as power duct bank, asphalt road, sanitary lift stations, cast in place concrete walls and enclosures.

n. Underground Water Distribution System extensions including industrial cold water (ICW), domestic water supply (DWS), chilled water (CW) supply and return, and gravity sanitary sewer, including fittings, flanges, hot-taps, valves, valve boxes, trenching, bedding, thrust blocks, tie-rods, backfill, connections to existing segments of like systems, flushing, disinfection and testing.

o. Underground Power and Communication Distribution System, consisting of reinforced concrete encased PVC conduit, direct- buried rigid steel conduit, precast concrete manholes, collars, frames, covers, pull ropes, trenching, forming and color topping.

p. Excavation for structures including the slope stability design by a licensed Professional Engineer for excavations of depths greater than 20 feet. Backfill of structures with granular and suitable soils to the specified density.

q. Cast-in-Place Reinforced Concrete including spread and strip footings, foundation walls, piers, pilasters, grade beams, retaining walls, slabs on grade, equipment pads and foundations, oil containment structures, aprons and stoops including forming, joints, chamfers, sealants and curing.

r. Penetrations between underground enclosures and service buildings including low conductivity water (LCW) carrier pipes and PVC conduit penetrations. LCW piping is not included in this scope.

s. Hardstand Construction including new crushed stone hardstand areas and access drives including excavation, grading and compaction.

t. Structural Steel framing including columns, crane beams, roof beams, purlins, girts, bracing, brackets, framing around openings and connections.

u. Miscellaneous Metal including embedded steel shapes, pipe handrail, crane rail, rail accessories, pipe sleeves, embedded channel inserts, track plates, ladders, grating, bumper posts and equipment supports.

v. Metal Roof Decking

w. Pre-finished Metal Siding including matching scuppers, downspouts, louvers, corners, fascia, trim, caps, flashing and accessories.

x. Insulation including extended polystyrene for foundation walls, composite rigid foam board for the roof, and safing for miscellaneous joints and openings.

y. Roofing System including 4-ply built-up fiberglass felts, gravel surfacing flashing, coping, cant strips and sealants.

z. Moisture Protection, including caulking and sealants.

aa. Hollow Metal Doors and Frames including hardware.

bb. Insulated Steel Roll-up Doors complete with frame, trim, hardware and operators.

cc. Aluminum Store Fronts including trim, double glazing and doors.

dd. Concrete Masonry Units for interior partitions and exterior wall backup including mortar and reinforcing.

ee. Painting including all masonry walls, interior concrete walls, exposed structural steel, doors and frames, and miscellaneous metals.

ff. Ceramic Tile including wall and floor tile in the toilet rooms.

gg. Acoustical Ceiling System including suspension system and ceiling panels.

hh. Toilet Accessories including grab bars, dispensers, mirrors and shelving.

ii. Bridge Crane Installation, including partial assembly, rail alignment, installation of mainline conductor and load testing.

jj. Hydraulic Elevator complete with cylinder, jacking piston, guide rails, pump assembly, cab, and hoist way doors.

kk. Dedicated Outside Air System for Absorber area with side stream desiccant unit including complete installations, accessories, controls, sensors, ductwork, duct accessories, insulations, equipment/duct supports, balancing, start-up , testing and commissioning.

ll. Computer Air Handler (CRAH) system for the DAQ room, with chilled water coil, and specified accessories, including complete installations, ductwork, controls, sensors, balancing, start-up, testing and commissioning.

mm. Air handlers with chilled water coil and natural gas duct furnaces serving the high bay, solenoid power supply room, lower detector solenoid, and planning room, including complete installation, accessories, controls, sensors, ductwork, duct accessories, insulations, equipment/duct supports, intake louvers, control dampers, pressurization system, relief, balancing, start-up, testing and commissioning.

nn. Split system HVAC for the elevator room, complete ventilation system for the mechanical room, natural gas unit heaters, ceiling fans, electric unit heaters, baseboard, and cabinet unit heater, including controls, balancing, start-up, testing and commissioning.

oo. Make up air unit and corresponding exhaust fans for the ODH –purge systems, including start-up, and testing.

pp. Building Utility and process piping such as natural gas, glycol chilled water, non-glycol chilled water, domestic water and industrial cooling water (ICW), including gas meters, water meters,

softener, gas regulators, glycol makeup system, pumps, expansion tanks, air separators, strainers, valves, and other specified accessories.

qq. Complete commissioning as specified and in accordance with the commissioning plan.

rr. Building flush out in accordance with the indoor air quality plan.

ss. Plumbing including complete installation, testing, start-up, fixtures, sump pumps, under drains, water meters, softeners, insulations, and other specified accessories

tt. Fire Suppression System including wet sprinklers, pre-action valve for dry pipe sprinklers, riser assembly, and portable fire extinguishers.

uu. Fire Detection and Alarm System including addressable control panel, line type heat detection panel, smoke detection and heat detection, and voice alarm system capable to interface with Fermilab's site-wide emergency warning system. Includes connection of MC Beamline fire detection and alarm system to the Mu2e addressable control panel.

vv. Primary Power Systems including installation of Fermilab-furnished 1500 kVA and 750 kVA, 13.8 kV-480/277V, 3-phase oil-filled transformers, 13.8 kV , 600A 4-way air switches and one 13.8 kV, 600A fused 3-pole switch, Fermilab supplied 15 KV cable, terminations and testing of 13.8 kV power connections from buried in duct power line to conventional power transformer at each service building.

ww. Secondary Power Distribution including installation of Fermilab-furnished 2000A switchboard and, furnishing and installing 1200A switchboards, panelboards, transformers, 480V wiring, conduit and testing. Work also includes disconnection of temporary 480V service to beam enclosures.

xx. Power Distribution including single, duplex and quadruplex receptacles, disconnect switches, welding outlets, connections to mechanical equipment, pull boxes, and surface mounted, embedded and underground conduit, and wiring. Work includes specific location of electrical equipment and conduit within building to reserve space for future technical components and cooling water systems.

yy. Grounding Systems including driven copper ground rods, solid copper wall or slab penetrations, bare copper ground cable, copper bar grounds and connections. Work includes grounding system for substation and equipment, and the connection to the existing underground enclosure grounding system at each service building.

zz. Lighting Systems including incandescent and fluorescent fixtures for normal and emergency circuits, emergency lights with battery packs or UPS, exit fixtures, exterior fixtures, lamps, panelboards, conduit and wiring.

aaa. Cable Trays including ladder-type cable trays, supports, and accessories.

bbb. Electrical Testing of all systems.

ccc. Clean-Up, hauling away of all excess stockpiles, final grading and dressing of hardstands and access roads, removal of subcontractor's hardstand(s) and erosion control devices, landscape seeding, completion of punch list items and submission of as-built drawings and O&M manuals.

3.0 Items Affecting Work Planning

a. The "MC Beamline Enclosure", Project number 6-10-22, is located adjacent to the Mu2e Conventional Facilities Project and constructs a cast-in-place concrete enclosure that extends from the Delivery Ring to both the MC-1 building and to the Mu2e Detector Building. The two Projects are scheduled to start within days of each other. Because of the proximity and potential for interferences between these separate and distinct Projects Fermilab has decided that a single Subcontractor will be awarded both subcontracts. The Subcontractor shall coordinate work between the two subcontracts to mitigate any construction activity or weather related impact affecting the other Project. There will be a common SWPPP for the two Subcontracts.

b. The MC Beamline Enclosure Project will be completed and Fermilab will take occupancy of the enclosure several months prior to the completion of the Mu2e Conventional Facility Project. When the MC Beamline Enclosure is complete systems will have been energized with temporary power. Specifically stated or not the Subcontractor shall remove the temporary power connections and energize with the permanent power sourced from the Mu2e facility.

c. The Industrial Cool Water (ICW), Domestic Water (DWS) and the high pressure Natural Gas (Gas) piping that is rerouted around the building and excavation requires minimal service interruption that does not exceed one (1) day in duration for each utility.

d. Maintaining the concrete grades and alignment is critical to the installation and operations of the scientific equipment. Fermilab will secure the services of an independent surveyor to perform quality assurance on the alignment of the concrete base slab and walls. The Subcontractor shall allow access to the work area for these survey activities. Coordination of the survey quality assurance activities will be through the FCC. In general, critical areas below grade will be checked after the Subcontractor has established the layout lines and for some items, will be checked again after forms are erected, and again after form removal. The FCC will inform the Subcontractor of any non-conformance with the specifications which is to be corrected prior to additional concrete placement.

e. Setting of track plates and placing of the concrete topping slab shall not occur until the building is weather tight and temperatures can be maintained between 55 and 75 degrees Fahrenheit.

f. The Fermilab supplied Absorber steel will not be available until mid-January 2015.

g. All workers shall be required to take the Fermilab Orientation Training and the Fermilab General Employee Radiation Training (GERT) prior to working in the field. Each of these training classes are approximately ½ hour and will be arranged through the Fermilab Construction Coordinator.

h. Workers that will handle any radioactive materials shall take and pass the Fermilab Radiological Worker Classroom and Practical Factors Training. This training is approximately 8 hours in combined duration and will be arranged through the Fermilab Construction Coordinator.

3.2

1. Erosion Control Structures:
   a. Subcontractor shall have all required erosion control devices required by the SESCP or SWPPP and as shown on the drawings, in place prior to commencing any work for which they are required.
   b. As the work evolves, additional interim control structures may be required in order to protect waterways and/or comply with permit terms and conditions.
   c. Costs for installation and maintenance of these structures shall be considered incidental to the Project and included in the original proposal.
   d. The Subcontractor shall install all such structures within 24 hours of notification by Fermilab.
2. Maintenance of Erosion Control Structures:
   a. Subcontractor shall be required to perform inspections of all control structures as specified in the drawings and to maintain all control devices until final stabilization of all disturbed areas.
3. Temporary and Permanent Seeding and Stabilization
   a. The Subcontractor shall be required to follow seeding dates and requirements as specified and in accordance to the Illinois Urban Manual.
   b. The Subcontractor shall be responsible for providing appropriately vegetated surfaces as outlined in the Exhibit B or specified on the drawings
   c. The Subcontractor shall be responsible for establishing sufficient final vegetation required for stabilization as accepted by Fermilab before the erosion control structures may be removed. Any permanent seeding operations completed at the end of the growing season shall be carried out per dormant seeding requirements (Illinois Urban Manual Standard 880C)
   d. Subcontractor shall be required to maintain seeded areas into the following growing season until vegetation growth reaches 80% coverage.
   e. The Subcontractor shall not remove erosion control structures until final acceptance of vegetation by Fermilab. If the conditions do not allow for the removal at the time of final acceptance, the Subcontractor shall remove the erosion control structures at no additional cost at a later date determined by Fermilab.

3.5 Identification Badging & Subcontractor Employee Orientation

Subcontractor and sub-tier Subcontractor's employees will be required to have Fermilab's ID badges.

3.6 Materials Furnished by Fermilab

The following list of materials and equipment will be provided by Fermilab for installation by the Subcontractor:

   a. Overhead bridge cranes: Two 30 ton overhead bridge cranes will be delivered from a vendor to be off-loaded, erected, made operational, and tested by the Subcontractor. The cranes will be installed on common rails and energized by a common mainline conductor. Total approximate weight of each crane is 49,000#.

i. Each crane will be delivered in five (5) major components (end trucks (2), girders (2 one with foot walk), built up trolley/hoist assembly (1)) plus the necessary hardware and equipment for complete cranes.
    1. The main line conductors and their support brackets will be furnished with the crane.
ii. Technical Support from crane vendor for two (2) days on each crane plus one day during load test at no cost to the subcontractor.
iii. The steel and concrete test weights required for load testing the crane totaling 37.5 tons are located at the Railyard Storage Area. The Subcontractor shall be required to pick up and return the test weights and provide for loading and off loading at the Railyard Storage Area. Fabric slings with the required length and capacity for lifting the test weights shall be provided by the subcontractor. The Subcontractor shall also provide all other required rigging including softeners.

b. Temporary Power Equipment: Subcontractor may elect to install and remove temporary power form the AP-10 transformer using Fermilab supplied equipment as listed:
    1. 480/277, 3-phase, 200 amp fused disconnect. (The subcontract may replace the existing fused disconnect and replace with a larger fused disconnect up to 600 Amps. for their convenience, This disconnect may be removed at the end of the project and holes sealed on transformer)
    2. Up to 12 Wood Poles for overhead electrical lines, 50 foot class 2.
    3. All other materials and equipment shall be provided by the Subcontractor.

c. One (1)pad-mounted 1,500 kVA, 13.8 kV-480/277V, 3-phase Oil-filled transformers weighing approximately 15,000 pounds. The Subcontractor will be required to load and haul the transformers from the Fermilab Railyard.

d. One (1) pad-mounted 750 kVA, 13.8 kV-480/277V, 3-phase oil-filled transformers weighing approximately 8,000 pounds. The Subcontractor will be required to load and haul the transformers from the Fermilab Railyard.

e. One (1) 2,000A, 480V switchboards measuring approximately 48" wide by 24" deep by 92" high and weighing approximately between 800 and 1,500 pounds. The Subcontractor shall be required to remove, load and haul switchboard from the storage location at the D0 service building.

f. One (1) motor driven 15KV, 600Amp pad mounted, metal enclosed switch with fuses approximately 36” x 62” x 95” tall, weighing approximately 2000 pounds. This switch shall be pick-up and transported from Fermilab Railyard.

g. Two (2) 15 KV 600A, 4-way air switches as manufactured by S&C Electric, each weighing approximately 1800 pounds to be pick-up and transported from the railyard by the Subcontractor.

h. 750 MCM, 15kV, EPR, insulated triplexed aluminum cable. Cable is supplied on reels as follows:
   i. 1681 feet (+2%, -0%); Reels: approx. 108" x 60" x 56"
   ii. Cable will be located at the Fermilab rail yard. Cable is to be loaded, transported and unloaded by Subcontractor. Unused cable is to be returned to railyard by Subcontractor.
   iii. See the Subcontract drawings for the quantities of Fermilab furnished transformers, cable and 15kV air switches.

h. Fermilab will supply the steel, support beams and air cooling manifold for the Proton Absorber. (See Drawing SC-38)
   iv. Steel plates; 10 plates 60" wide x 60" high x 8" thick weighing between 8500 and 9500 pounds. The plates may be Radioactive Material Class 1 (Exposure Rate < 1 mR/hr).
   v. Each steel plate will be prepared by Fermilab. There will be two plates welded to the sides with holes for threaded rod used during assembly, and two (2) drilled and taped holes on top of the plates for the McMaster –Carr hoist ring with 1"-8 thread and 2 3/16" embedment, 10,000 pound capacity. Fermilab will provide (loan) hoist rings for the subcontractors use.
   vi. Steel manifold assembly, 14" in diameter, for connection, using a flanged connector, to subcontractor's supplied steel duct piping to be embedded in concrete base under absorber steel.
   vii. Fermilab alignment will verify the line and grade layout for the blocks prior to stacking. The bottom plates shall be set to within .25 inches of the specified grade. The subcontractor is to shim and grout solid to achieve this tolerance.
   viii. The steel plates shall be ready for pick-up within 170 calendar days of Notice to Proceed.
   ix. The steel plates shall be pick-up and transported to the project by the Subcontractor from a location within four (4) miles on the Fermilab site. Fermilab will assist in loading the steel blocks via the buildings using the labs overhead crane and lifting slings. The subcontractor shall provide any cribbing and lifting slings required.

3.7 Buy American Act

Fermilab maintains a preference for domestic construction material. In accordance with Section 25 of FL-3, Fermilab Construction Subcontract Terms and Conditions, the following construction material or components are exempt from the Buy American Act:

There are no anticipated exemptions for this Project.

3.8 Services Furnished by Fermilab

The following services will be provided by Fermilab:

3.8.e – Electrical Power

Fermilab will provide electrical power at no charge to the Subcontractor.

3.8.f – Drinking Water

Fermilab will not provide drinking water for this Project and shall be provided by the Subcontractor.

3.8.g – Toilet Facilities

Fermilab will not provide toilet facilities for this Project and shall be provided by the Subcontractor.

3.12 Parking and Staging Area

Subcontractor shall provide for parking, trailers and staging areas for this project to the west of Giesse Road and north of the future beam line, as shown on the drawings.

3.14 Off-Site Disposal

a. No regulated waste is anticipated for this Project
b. Subcontractor shall submit recycling data from vendor.

4.1 Subcontractor's Safety Representative Responsibilities

a. For this Project the Superintendent can serve as the Subcontractor's Safety Representative for the day to day ES&H oversight.
b. The Subcontractor shall provide an individual, who is an employee of the Subcontractor but independent to the Project's field management, to provide supplementary qualified safety representation.
   i) This individual is to participate in the preparatory phase meetings, assist in the safety aspects of planning the work activities and the development of hazard analyses.
   ii) Make site observations during the initial phases of work and perform bi-monthly site walk-though, providing a written report of issues and recommendation to his field superintendent and the FCC.
   iii) The subcontractor's ES&H representative is to assist in any investigations or corrective action planning as needed.

5.3 Construction Schedule

This Project includes the following milestones

1. Milestone 0 – 0 Calendar Days - Notice to Proceed - This milestone marks the point where construction work may begin.

2. Milestone 1 –80 Calendar Days after NTP – ICW, DWS and Gas utilities rerouted around excavation. The relocation of existing site utilities are complete, testing and placed into service. All restraints for completing the excavation are mitigated and excavation is on-going.

3. Milestone 2 –98 Calendar Days after NTP – Building Excavation complete. Excavation and mud slab complete and ready for the structural base mat concrete at the lower level, El 720'-6".

4. Milestone 3 – 165 Calendar Days after NTP – Base slab concrete complete. The structural base mat concrete placement at El: 720'-6" and El: 728'-6" is substantially complete. Placement of lower lift walls are in progress.

5. Milestone 4 –200 Calendar Days after NTP – Lower walls complete. Concrete walls and counterforts placement is complete for the lower lift from either the El: 720'-6" or El: 728'-6" slabs. Upper wall lifts are proceeding.

6. Milestone 5 –258 Calendar Days after NTP – Structural concrete complete to grade / structure backfilled to grade. Partial Beneficial Occupancy of enclosure at the El: 726'-6" elevation including that portion of stair # 4 from the El:726'-6" level to grade including doors, emergency wall pack and battery operated exit signs installed and functioning. Fermilab will occupy the MC Beamline Enclosure (6-10-22) structure and begin to install components. This beneficial occupancy is required for exiting from the enclosure, therefore a 42" clear aisle width shall be maintained at all times to allow access to stair #4 and the exit discharge. The exit discharge to grade and the area outside of the exit on grade shall remain clear. Work is still proceeding in the area, neither the enclosures, enclosure finishes or systems are part of this Beneficial Occupancy.

7. Milestone 6 –305 Calendar Days after NTP – Structural Steel erected and detailed. Structural steel including columns, beams, girts, framed openings, bracing, crane girder, crane rail and stops installed. Metal roof deck installed.

8. Milestone 7 –385 Calendar Days after NTP – Building weather tight. The building's exterior walls are enclosed with siding, roofing is installed, and doors windows and skylights are installed. Some openings for mechanical equipment may have temporary closures installed.

9. Milestone 8 –444 Calendar Days after NTP – Electrical Power systems energized. The 13.8 KV equipment and cable installed, tested and operating. Power loop to MC-1 is complete and operational. Secondary 480 V complete to distribution panels. Power distribution and lighting is substantially complete. Power to crane disconnects complete.

10. Milestone 9 - 458 Calendar Days after NTP – 30 ton overhead cranes installed and load tested.

11. Milestone 10 –479 Calendar Days after NTP – Substantially complete / Beneficial Occupancy Issued for entire structure. All work is substantially completed, tested and operational; ready for the development of punch list. All required testing of piping, mechanical and electrical systems are complete, conform to the specifications and operational. Testing report have been submitted. Subcontractor has identified and mitigated deficiencies, ready for Fermilab to developed punch list. Life safety provisions install, tested and operational.

12. Milestone 11–501 Calendar Days after NTP – Project Complete / Final Acceptance Issued. This milestone marks the completion of the Project including punch list items, clean-up and acceptance of as-built drawings, operations manuals and submittals. Subcontractor can invoice for retention.

In addition to the schedule requirements in the Exhibit A Section 5.3 "Construction Schedule" the Subcontractor shall provide the following:

a. A cost loaded construction schedule shall be submitted in both hard copy and electronic formats in a file directly readable into Primavera P6 Professional R.8.2.
    i. The schedule shall be organized using the 16 CSI divisions as the top level of the WBS. Costs are to be applied to the activities and rolled up to the WBS level.
    ii. Changes to the baseline schedule shall only be made as a result of a supplemental agreement.
    iii. Fermilab will report monthly on the subcontractor's progress comparing the earned value to planned value based the Subcontractor's baseline schedule. Submitted with the baseline schedule, and modified after supplemental agreements, provide in tabular form the planned earned value to the last workday of each month.
    iv. The schedule shall include the contract milestones. The NTP MS-0 and Project Complete MS-11 milestones shall be the only two project constraints. Milestones 1 through 10 shall be driven by the logical relationships between activities.
    v. Activity durations should be elaborated so that the activity duration is restricted to between five (5) and twenty (20) working days.
    vi. The schedule shall include activities for the initial submittal for all major work elements.
    vii. An updated submittal of the construction schedule in both print and electronic formats shall be submitted after each supplemental agreement has been issued and signed. This submittal is required at least five (5) work days prior to an update for progress payment. This revised schedule becomes the baseline schedule.
    viii. Progress payment request shall include, in print format, activity actual start and finish dates and activity percent complete.

b. The Subcontractor shall submit with all progress payment requests a Schedule Performance Index (SPI), computed by dividing the Budged Cost of work planned by the actual cost of work performed.
    i. A recovery schedule is required within ten (10) work days of a progress payment when the SPI is less than .95 at the CSI division WBS level.
    ii. A written explanation is required within ten (10) work days of a progress payment when the SPI is less than .95 at the CSI division WBS level that explains the causes for the schedule variance.

c. In addition to the requirements in Exhibit A Section 5.4 (Weekly Progress Meetings) the subcontractor shall provide a two week look ahead schedule indicating the following:

i. Scheduled work activities to be started, in progress or completed in the succeeding two weeks.
ii. Status of material submittals.
iii. Status of RFI's.
iv. Activities requiring the services or materials provided by Fermilab including permits, survey quality assurance checks, delivery or pick-up of Fermilab supplied materials.

5.7 Submittals

Submittals are defined as shop drawings, material samples, operations and maintenance manuals for all materials and assemblies used on the Project which are normally required in the construction industry. Also included in the submittals are those documents required by this Exhibit A or any Exhibit B, Technical Specification. Not included as a submittal are any documents required by Fermilab Procurement. The following information and requirements pertain to submittals for this Project:

1. Shop drawings shall conform to the requirements of Section 5.5 through 5.8 of FL-3, **Fermilab Construction Subcontract Terms and Conditions;**
2. Submittals shall include a cover sheet that includes (at a minimum) the following information:
   a. Subcontractor name, address, contact information;
   b. Subcontract purchase order number;
   c. FESS/E Project name and number;
   d. Specification and/or drawing number that defines the product;
   e. Confirmation that the submittal complies with 5.5 of FL-3, Fermilab Construction Subcontract Terms and Conditions.
3. The Subcontractor shall submit one (1) one electronic copy of submittals;
4. The Subcontractor shall supply two (2) printed copies and one (1) electronic copy of all operation and maintenance manuals for equipment furnished by the Subcontractor or his Sub-tier contractor prior to final acceptance of the Project by Fermilab.
5. Electronic submittals shall be in the "portable document format" (PDF) as developed by Adobe, Incorporated;
6. Fermilab will review submittals and return one (1) electronic copy of all submittals within 15 (fifteen) working days with one (1) of the following actions:
   a. "No exception Taken" response on the Subcontractor's shop drawings submittal and "**NET**" as shown on the Material Submittal for Review form indicates the Subcontractor may proceed with procurement, fabrication, manufacture and installation of the material and/or product.
   b. "Revise & Resubmit – Fabrication May Proceed" on the Subcontractor's shop drawing submittal and "**R/R**" as shown on the Material Submittal for Review form indicates the Subcontractor may proceed with procurement, fabrication, and manufacture of the material and/or product assuming the noted items on the submittal are incorporated into the final design and/or product. The Subcontractor will revise the shop drawings and resubmit them to Fermilab for approval, but will not be able to erect and/or install any material until he has received either the "No Exception Taken (NET)" or the "Make Corrections and Proceed (MCP)" action by Fermilab.
   c. "Make Corrections & Proceed" response on the Subcontractor's shop drawing submittal and "**MCP**" as shown on the "Material Submittal for Review" form indicates the Subcontractor may proceed with procurement, fabrication, manufacture and installation of the material and/or product assuming the noted items on the submittal are incorporated into the final design and/or product.
   d. With the "Rejected" response on the Subcontractor's shop drawing submittal and "**R**" as shown on the Material Submittal for Review form, the reasons for the disapproval will be stated on the shop drawing submittal. The Subcontractor will revise the shop drawing submittal to conform to the drawings and specifications and resubmit them to Fermilab for approval. No procurement,

fabrication, manufacture or installation shall be performed by the Subcontractor until one of the above actions listed under Section 6(a), 6(b), or 6(c).

e. "For Information Only" response on the Subcontractor's shop drawing submittal and "**FIO**" on the Material Submittal for Review form acknowledges receipt of such items as test results, professional engineering calculations, welding certificates and inspection reports.

5.11 Project Bulletin Board

The Subcontractor shall provide a Project Bulletin Board that complies with Section 32 of FL-3, Fermilab Construction Subcontract Terms and Conditions.

5.13 Quality Requirements

Project Quality Control Plan

The Subcontractor shall submit a Project Quality Control (PQC) Plan with the proposal which identifies personnel, procedures, control, instructions, test, records, and forms to be used specific to this Project at Fermilab. The PQC Plan shall include, as a minimum, the following information to cover all construction operations, both onsite and offsite, including work by sub-tier contractors, fabricators, suppliers, and purchasing agents:

1. The name, qualifications, duties, responsibilities, and authorities of each person assigned a Quality Control function, including the identity of the Project Quality Control Manager.
2. As a minimum, the Project Quality Control Manager shall be responsible for the following:
   a. Interface with Fermilab Construction Coordinator on all quality matters;
   b. Maintain all quality related records;
   c. Review, submittal and tracking of submittals;
   d. Coordinate and participate in all preparatory, initial and follow-up meetings;
   e. Attend weekly construction meetings;
   f. Assure all required testing is performed;
   g. Develop and maintain deficiency list;
   h. Prepare and submit daily quality control reports;
   i. Participate in beneficial occupancy, punchlist and final inspections;
3. The Subcontractor shall provide as part of the Quality Control organization, specialized personnel to assist the Quality Control Manager for the discipline(s) specified below. These individuals may be employees of the Subcontractor or Sub-tier contractor; will be responsible to the Quality Control Manager; must be physically present at the construction site during work on their areas of responsibility; must have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned Quality Control duties.
4. Control, verification, and acceptance testing procedures for each specific test required by the Subcontractor;
5. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
6. A list of the definable features of work. A definable feature of work is a task that is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment.
7. The PQC Plan shall incorporate any changes in scope of work, due to directed field changes or supplemental agreements, as these changes occur.
8. Fermilab reserves the right to require the Subcontractor to make changes in his PQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified (see Section 34.3 of FL-3, Fermilab Construction Subcontract Terms and Conditions).

Implementation

The Subcontractor shall ensure that the construction, including work by sub-tier contractors and suppliers, complies with the requirements of the Subcontract. At least three (3) phases of control shall be conducted by the Quality Control Manager for each definable feature of work as follows:

1. Preparatory Phase: This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:
   a. The Fermilab Construction Coordinator shall be notified at least 24 hours in advance of beginning the preparatory control phase;
   b. This phase shall include a meeting conducted by the Quality Control Manager and attended by the superintendent, other Quality Control personnel (as applicable), and the foreman responsible for the definable feature;
   c. The Subcontractor shall document any discussions during this phase;
   d. The Subcontractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet Subcontract specifications;
   e. A review of the Subcontract documents applicable to this feature of work, including appropriate clauses in FL-3, Fermilab Construction Subcontract Terms and Conditions; e.g., sections 2 and 9;
   f. Review of provisions that have been made to provide required control inspection and testing;
   g. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the Subcontract;
   h. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored;
   i. A review of the appropriate activity hazard analysis to assure safety requirements is identified;
   j. Discussion of procedures for controlling quality of the work including repetitive deficiencies;
   k. Verification of construction tolerances and workmanship standards for that feature of work;

2. Initial Phase: This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:
   a. The Fermilab Construction Coordinator shall be notified at least 24 hours in advance of beginning the initial phase.
   b. The Subcontractor shall document any discussion during this phase.
   c. The work completed in this phase sets the standard for future work and should be identified for future reference.
   d. A check of work to ensure that it is in full compliance with Subcontract requirements. Review minutes of the preparatory meeting.
   e. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards.
   f. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity hazard analysis with each employee, particularly new workers.

3. Follow-up Phase: Daily checks shall be performed by the Quality Control Manager to assure quality control activities, including quality control testing, are providing continued compliance with Subcontract requirements, until completion of the particular feature of work. The Subcontractor shall document these checks in the Daily Quality Control Report.

Testing

The Subcontractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to Subcontract requirements. The following describes the minimum requirements:

1. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken;

2. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given;
3. An information copy of tests performed by an offsite or commercial test facility shall be provided in the form of submittal;
4. The Daily Quality Report recording testing results shall be resubmitted.

Documentation

The following describes the requirements for the quality control documentation required for this Project:

1. The Subcontractor shall maintain current records providing factual evidence that required Quality Control activities and/or tests have been performed;
2. The quality control records shall be submitted weekly to the Fermilab Construction Coordinator on a weekly basis;
3. The quality control records shall include the work of sub-tier contractors and suppliers.

6.3 Environment Safety and Health Plan

The Environment Safety and Health Plan shall be submitted with the proposal.

6.10 Job Site ES&H Meetings

Monthly ES&H meetings shall be conducted by the Subcontractor's Field Superintendent at the job site. The purpose of these meetings is to assist in highlighting and reinforcing the Subcontractor's ES&H Plan. It is expected that these meetings will typically last one (1) hour.

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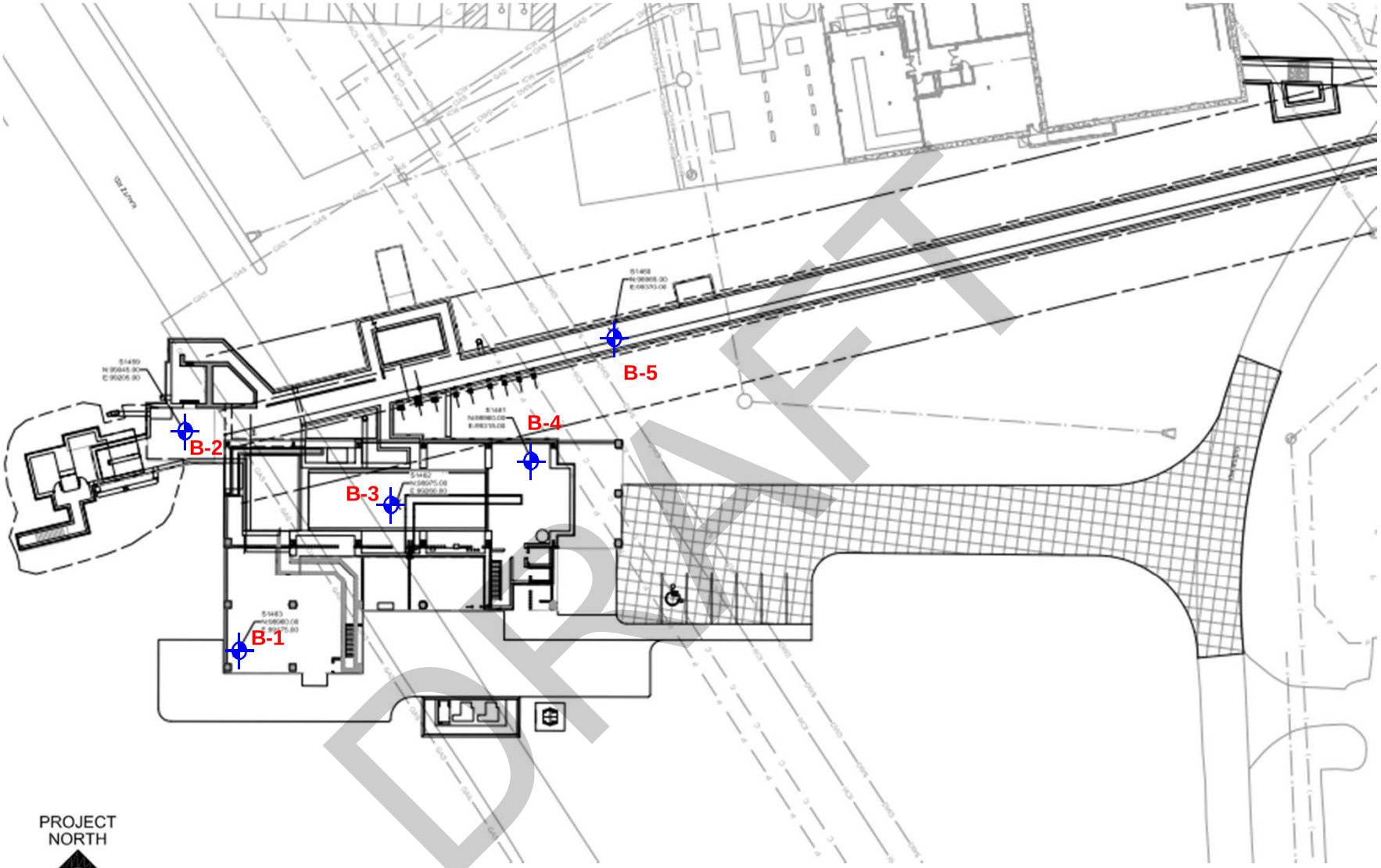
Appendix C; Soil Boring Logs

Field Exploration Description

The borings were drilled at the approximate locations indicated on the attached Boring Location Diagram (Exhibit A-2). A Fermilab representative marked the boring locations in the field prior to our subsurface exploration. The surface elevations indicated on the logs were estimated from the topographic plan provided by the client. The locations and elevations of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

The borings were drilled with a track-mounted, rotary drill rig using hollow stem augers to advance the boreholes. Soil samples were obtained using split-barrel sampling procedures, in which a standard 2-inch (outside diameter) split-barrel sampling spoon is driven into the ground with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. These values, also referred to as SPT N-values, are provided on the boring logs at the depths of occurrence. The samples were sealed and transported to the laboratory for testing and classification.

The drill crew prepared a field log of each boring. These logs included visual classifications of the materials encountered during drilling and the driller's interpretation of the subsurface conditions between samples. The boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.



PROJECT NORTH

W E S

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: AF	Project No. 11135045
Drawn by: AF	Scale: N.T.S.
Checked by: KCB	File Name: 11135045 BLD
Approved by: KCB	Date: May 2013

Terracon
Consulting Engineers & Scientists
135 Ambassador Drive Naperville, Illinois 60540
P [630] 717 4263 F [630] 357 9489

BORING LOCATION DIAGRAM

FERMILAB MU2E BUILDING
BATAVIA, ILLINOIS

Exhibit

A-2

BORING LOG NO. 1

PROJECT: Fermilab Mu2e Building

CLIENT: Middough, Inc.
Oak Brook, IL

SITE: Fermi National Accelerator Lab
Batavia, IL

LOCATION See Exhibit A-2

Approximate Surface Elev: 755 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	RECOVERY (In.)	FIELD TEST RESULTS	HP (psf)	WATER CONTENT (%)
0.5	754.5+/-	**TOPSOIL**, approximately 6"				
		FILL - LEAN CLAY, trace sand and gravel, olive-brown and dark brown	10	5-5-5 N=10		23
			16	4-5-7 N=12		33
			12	9-9-10 N=19		29
8.0	747+/-					
		LEAN CLAY, trace sand and gravel, olive gray, stiff	16	5-5-6 N=11	2000	26
14.0	741+/-					
		SANDY LEAN CLAY (CL), trace gravel, yellowish-brown, very stiff	18	6-8-8 N=16		19
18.0	737+/-					
		SILTY SAND (SM), gray and yellowish-brown, medium dense	17	6-7-9 N=16		18
24.0	731+/-					
		LEAN CLAY (CL), trace gravel, gray, stiff to very stiff	17	5-6-7 N=13	5000	14
			17	10-12-14 N=26	5000	16
			16	11-11-12 N=23	6000	14
40.0	715+/-		14	10-11-11 N=22	6000	17
		Boring Terminated at 40 Feet				

DEPTH (Ft.): 5, 10, 15, 20, 25, 30, 35, 40

WATER LEVEL OBSERVATIONS: ▽ 14 ft, While Drilling; ▽ 14 ft, After Boring

SAMPLE TYPE: ☒

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14 ft, While Drilling*

▽ *14 ft, After Boring*

Terracon
135 Ambassador Drive
Naperville, Illinois

Boring Started: 5/1/2013 | Boring Completed: 5/1/2013

Drill Rig: D-90 | Driller: JA

Project No.: 11135045 | Exhibit: A-3

BORING LOG NO. 2

PROJECT: Fermilab Mu2e Building

CLIENT: Middough, Inc.
Oak Brook, IL

SITE: Fermi National Accelerator Lab
Batavia, IL

LOCATION See Exhibit A-2

Approximate Surface Elev: 745 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.5	744.5+/-	**TOPSOIL**, approximately 6"
		FILL - LEAN CLAY, trace sand and gravel, dark brown to olive-brown
6.0	739+/-	**LEAN CLAY (CL)**, trace sand and gravel, stiff to very stiff
9.0	736+/-	**SILT (ML)**, yellowish-brown, medium dense
14.0	731+/-	**LEAN CLAY (CL)**, trace sand and gravel, gray, stiff to hard
40.0	705+/-	***Boring Terminated at 40 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HP (psf)	WATER CONTENT (%)
		8	7-7-7 N=14		27
5		10	4-4-5 N=9		29
		16	6-6-8 N=14	7000	26
10		14	7-8-8 N=16	8000	18
		16	6-6-7 N=13	5000	15
15					
20		14	12-12-15 N=27	6000	16
		5	50/5" N=50/5"	6000	15
25					
30		12	12-16-18 N=34	+9000	15
		8	16-18-22 N=40	+9000	8
35					
40		10	10-10-19 N=29	+9000	14

WATER LEVEL OBSERVATIONS

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

14 ft, While Drilling

14 ft, After Boring

Terracon
135 Ambassador Drive
Naperville, Illinois

Boring Started: 5/1/2013 | Boring Completed: 5/1/2013

Drill Rig: D-90 | Driller: JA

Project No.: 11135045 | Exhibit: A-4

BORING LOG NO. 3

PROJECT: Fermilab Mu2e Building

CLIENT: Middough, Inc.
Oak Brook, IL

SITE: Fermi National Accelerator Lab
Batavia, IL

LOCATION See Exhibit A-2

Approximate Surface Elev: 745 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description
0.5	744.5+/-	**TOPSOIL**, approximately 6"
		FILL - LEAN CLAY, trace sand and gravel, olive-brown and gray
6.0	739+/-	
		SANDY LEAN CLAY (CL), trace gravel, olive gray, stiff
9.0	736+/-	
		SAND (SP), trace gravel, olive gray, loose
14.0	731+/-	
		SILT (ML), trace sand and gravel, olive gray, medium dense
18.0	727+/-	
		LEAN CLAY (CL), trace gravel and silt, gray, very stiff to hard
29.0	716+/-	
		GRAVELLY LEAN CLAY (CL), gray, hard
39.0	706+/-	
40.0	705+/-	**LEAN CLAY (CL)**, trace gravel, gray, hard
		Boring Terminated at 40 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HP (psf)	WATER CONTENT (%)
			10	5-4-6 N=10		24
			10	4-5-5 N=10		22
5			14	5-4-5 N=9		24
	▽					
	▽		18	4-4-4 N=8		14
10						
			12	9-9-10 N=19		15
15						
			16	7-9-11 N=20	9000	16
20						
			17	7-10-12 N=22	9000	13
25						
			10	20-25-28 N=53	+9000	14
30						
			0	23-25-30 N=55		
35						
			17	14-12-13 N=25	+9000	19
40						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *9 ft, While Drilling*

▽ *10 ft, After Boring*

Terracon
135 Ambassador Drive
Naperville, Illinois

Boring Started: 5/2/2013 | Boring Completed: 5/2/2013

Drill Rig: D-90 | Driller: JA

Project No.: 11135045 | Exhibit: A-5

BORING LOG NO. 4

PROJECT: Fermilab Mu2e Building

CLIENT: Middough, Inc.
Oak Brook, IL

SITE: Fermi National Accelerator Lab
Batavia, IL

LOCATION See Exhibit A-2

Approximate Surface Elev: 745 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	Description	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HP (psf)	WATER CONTENT (%)
0.4	744.5+/-	**TOPSOIL**, approximately 4"							
		FILL - SANDY LEAN CLAY, trace gravel and organics, dark brown			X	12	5-6-6 N=12		21
					X	16	9-8-10 N=18		14
6.0	739+/-		5		X	14	7-10-10 N=20		22
		FILL - LEAN CLAY, trace sand and gravel, olive-brown and dark gray							
9.0	736+/-				X	16	6-6-7 N=13		19
		SILT (ML), gray, medium dense	10						
14.0	731+/-			▽	X	16	12-12-12 N=24	6000	16
		LEAN CLAY (CL), trace sand and gravel, gray, very stiff	15						
			20		X	16	12-12-13 N=25	7000	16
					X	17	9-9-10 N=19	6000	17
			25						
					X	16	12-10-10 N=20	8000	15
			30						
					X	18	9-9-10 N=19	8000	15
			35						
40.0	705+/-				X	17	10-9-10 N=19	8000	13
		Boring Terminated at 40 Feet	40						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *14 ft, While Drilling*

None, After Boring

Terracon
135 Ambassador Drive
Naperville, Illinois

Boring Started: 5/2/2013 | Boring Completed: 5/2/2013

Drill Rig: D-90 | Driller: JA

Project No.: 11135045 | Exhibit: A-6

BORING LOG NO. 5

PROJECT: Fermilab Mu2e Building

CLIENT: Middough, Inc.
Oak Brook, IL

SITE: Fermi National Accelerator Lab
Batavia, IL

LOCATION See Exhibit A-2

Approximate Surface Elev: 750 (Ft.) +/-

DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HP (psf)	WATER CONTENT (%)
FILL - LEAN CLAY, trace sand and gravel, olive-brown and gray								
					8	2-2-2 N=4		26
					5	2-3-3 N=6		25
6.0	744+/-	5			14	2-4-7 N=11	2000	21
SILTY CLAY (CL-ML), trace gravel, olive gray, stiff								
9.0	741+/-		▽		10	8-10-10 N=20		18
SAND (SP), trace gravel, yellowish-brown, medium dense		10						
14.0	736+/-				17	6-6-8 N=14	5000	17
LEAN CLAY (CL), trace gravel, gray, stiff to very stiff		15						
					0	10-5-5 N=10		
		20						
					16	9-10-10 N=20	8000	17
29.0	721+/-	25						
GRAVELLY LEAN CLAY (CL), gray, hard					5	28-23-20 N=43	+9000	9
		30						
					0	30-34-40 N=74		
38.7	711.5+/-	35						
Boring Terminated at 38.65 Feet					0	50/2" N=50/2"		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic SPT Hammer

Advancement Method:
Hollow Stem

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-1 for description of field procedures

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *9 ft, While Drilling*

None, After Boring

Terracon
135 Ambassador Drive
Naperville, Illinois

Boring Started: 5/2/2013 | Boring Completed: 5/2/2013

Drill Rig: D-90 | Driller: JA

Project No.: 11135045 | Exhibit: A-7

APPENDIX B

LABORATORY TESTING

Laboratory Testing

The soil samples obtained from the borings were tested in the laboratory to measure their natural water contents. A pocket penetrometer was used to help estimate the approximate unconfined compressive strength of selected cohesive samples. The test results are provided on the boring logs in Appendix A.

The soil samples were classified in the laboratory based on visual observation, texture, plasticity, and the limited laboratory testing described above. The soil descriptions presented on the boring logs for native soils are in accordance with the enclosed General Notes (Exhibit C-1) and Unified Soil Classification System (USCS). The estimated USCS group symbols for native soils are shown on the boring logs, and a brief description of the USCS (Exhibit C-2) is included in this report.

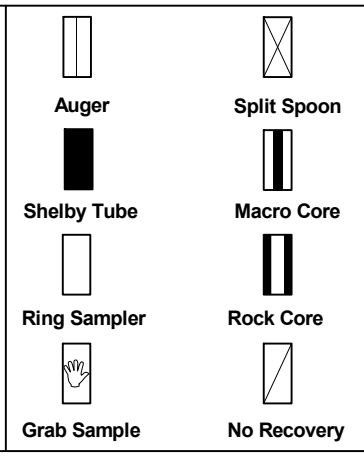
APPENDIX C

SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, psf**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3
Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4
Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9
Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18
Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42
			Hard	> 8,000	> 30	> 42

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

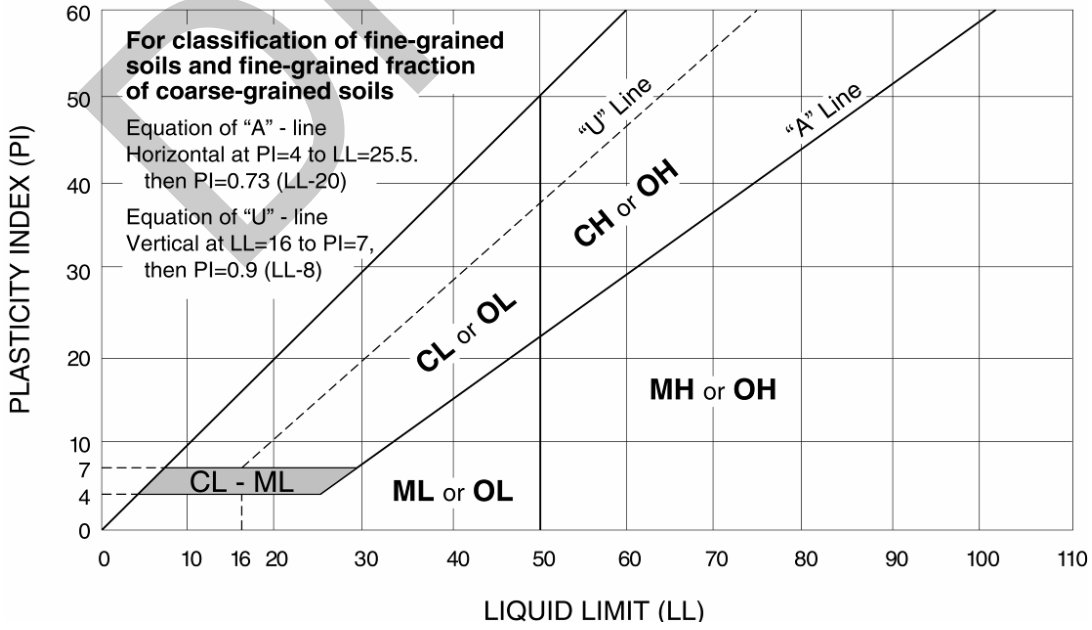
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Appendix D; Soil and water Pollution Protection Plan (SWPPP)

NPDES PERMIT NO. ILR 10
STORM WATER POLLUTION PREVENTION PLAN
FOR THE
MUON CAMPUS PROJECT

I. PROJECT OVERVIEW

1.0 SITE DESCRIPTION

The Muon Campus project has been divided into two (2) phases. Phase 1 of the project will construct a new general purpose, 13,500 square foot building. Phase 2 of the project will construct roughly 33,000 square feet of above and below ground building space and an underground beamline enclosure.

Utilities for the buildings will be tapped from nearby feeders and piping in existing utility corridors, including; electrical, communications, natural gas, industrial cooling water, sanitary sewer, domestic water and chilled water. The proposed site has been examined and is not in any wetlands, defined floodplain, or other protected area. Soil erosion and sedimentation control measures will be implemented per the design specifications and drawings.

Site specific construction activities to the Phase 2 work involving the construction of the Mu2e Conventional Facilities and Underground MC Beamline Enclosure are as follows:

1.1 Construction Sequence

Muon Campus soil disturbing activities began in January 2013 and are planned to be completed by September 2017. Mu2e Conventional Facilities and MC Beamline Enclosure construction is planned to begin July 7, 2014 and completed by December 22, 2015

Clearing, Grubbing, Installation of Soil Erosion and Sedimentation Control measures.

July 7, 2014 to August 22, 2014

Stripping Topsoil and Excavation for Building Foundations, MC Beamline Enclosure, Site Prep and Utility Installations.

July 7, 2014 to November 14, 2014

MC Beamline Enclosure Structural Concrete Complete to Grade.

August 15, 2014 to January 20, 2015

Installation of Building/Beamline Foundations and Walls, Structural Concrete Complete to Grade and Building/Beamline Structures Backfilled to Grade.

October 1, 2014 to April 23, 2015

MC Beamline Enclosure Berm Construction and Stabilization.

April 1, 2015 to June 30, 2015

Project Complete, Final Acceptance MC Beamline Enclosure

June 15, 2015 to June 30, 2015

Above Grade Building Construction and Final Site Grading and Stabilization, Building Complete to Beneficial Occupancy

April 24, 2015 to November 30, 2015

Project Complete, Final Acceptance Mu2e Conventional Facilities

February 1, 2016 to February 22, 2016

1.2 Site Area

Soil disturbing activities for the Muon Campus project is estimated to be 10.1 acres. Phase 2 construction is estimated at 6.3 acres of the 10.1 acre site.

1.3 Runoff Estimates

The entire Fermilab site is 6,800 acres. The nominal increase in impervious area created with this project will not result in any increased runoff from the site.

The receiving water for this project is Indian Creek.

1.4 Site Maps

Refer to Sheet SESCP-1 for Erosion Control Plans and SESCP-2 for Erosion Control Details. (These sheets are part of this document)

2.0 STORM WATER CONTROLS

Stabilization and Structural practices to be incorporated will be in accordance to the Illinois Urban Manual and as shown in the attached Erosion Control Plans and Details.

2.1 Erosion and Sediment Controls

Perimeter controls will initially be installed around the MC Beamline Enclosure portion of the construction project and extended to include the Mu2e Conventional Facility construction afterwards. Mu2e Conventional Facility perimeter controls will be installed as clearing and grubbing operations are completed.

Structural practices:

2.2 Stabilization Practices

Temporary and permanent seeding within the construction areas will be employed. Stabilization of disturbed areas will be initiated within 1 working day of temporary or permanent cessation of earth disturbing activities and completed as soon as possible but within 14 days from the initiation of stabilizing work activities in the area. Permanently seeded areas will be protected with the use of straw mulching, vegetative buffer filter strips, and erosion control blankets on side slopes.

Dates when major grading activities occur, or when major activities temporarily cease or portions of permanent stabilization commence shall be recorded in the weekly inspection log sheets.

Where initiation of stabilization measures are precluded by snow cover, stabilization measures shall be initiated as soon as practical.

2.3 Structural Practices

Confinement of sediment within the construction site area will be controlled by silt fencing, drainage swales, ditch checks, storm drain inlet protection and stabilized construction entrances.
A sediment basin will be constructed to handle site area dewatering needs for both the Mu2e Conventional Facilities foundation excavation and MC Beamline Enclosure construction.

All existing storm drainage conveyances will be maintained during construction and restored to original conditions, if needed, at the end of construction.

The overall storm water management plan throughout the duration of the project will be to minimize passage of pollutants into the drainage way leading to Indian Creek. No process water wastes will be discharged into Indian Creek.

The functioning drainage characteristics during the sequence of construction will be of equal or improved quality when compared to the original site conditions.

2.4 Pollution Prevention

Building Materials, construction debris, landscape materials and fertilizers shall be kept protected from precipitation and storm water flows by protective storage and covering and proper disposal of materials in construction site dumpsters.

Spill Prevention is covered in Fermi National Accelerator Laboratory's SPCC Plan and FESHM Chapter 8030 Chemical Releases, Spill Prevention and Response

2.5 Other Controls

No solid materials shall be discharged to waters of the State.

All phases of construction will have designated Concrete Truck Washout areas to protect any discharges from entering drainage ways.

2.6 Best Management Practices for Post Construction

Post Construction management practices to include weekly monitoring of installed control devices, erosion blankets, straw wattles/ ditch checks, ditches/swales, rip-rap and general seeded areas to ensure continued control of disturbed areas until satisfactory stabilization has been attained. Any issues with current control devices will be addressed and repaired as soon as reasonably possible.

2.5 Approved State or Local Plans

The management practices and controls as defined in this plan shall be in accordance to Illinois Urban Manual, latest edition. No other local documents or plans apply to work activities on this project.

3.0 MAINTENANCE

All erosion and sediment control measures shall be maintained in functional condition through completion of the project by the *Subcontractor and as follows:*

1. Maintain site areas
2. Maintain silt fencing and vegetative boundaries
3. Maintain sediment basins
4. Install and maintain temporary/permanent seeding
5. Maintenance of stockpile areas
6. Maintain concrete truck washout areas and disposal of material

Typical Maintenance Procedures shall be as follows:

1. Removal and disposal of accumulated sediments to ensure functionality
2. Replacement and or repair of devices damaged from storms or construction activities
3. Dust control procedures on site roads and construction areas will be maintained through periodic watering as required and removal of loose material on all paved areas at the end of each work day.

4.0 INSPECTIONS

Site inspections will be conducted by qualified Fermi personnel and *Subcontractor personnel* in accordance to the permit requirements and at a minimum of at least once every seven calendar days or within 24 hours of any rainfall or equivalent snow event of a ½ inch or greater.

The Subcontractor shall call the automated Fermi Site Weather Station at (630) 840-2172 for continuous 24 hour precipitation totals in determining inspection response to rainfall and snow events.

The Subcontractor shall also maintain a field log of inspection reports and submit a copy of the log to the Fermi Construction Coordinator at the end of each week through completion of the project. Weekly inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence once construction activities restart or within 24 hours of any rainfall or equivalent snow event of a ½ inch or greater.

5.0 NON-STORM WATER DISCHARGES

Water and concrete generated in the designated Concrete Truck Washout areas will be removed from the site and disposed of as unsuitable material once stabilized.

II. ADDITIONAL REQUIREMENTS FOR STORM WATER DISCHARGE FROM INDUSTRIAL ACTIVITIES OTHER THAN CONSTRUCTION

No other activities expected

III. CONTRACTOR AND SUBCONTRACTOR RESPONSIBILITIES

The overall contractor is Fermi Research Alliance LLC (FRA). For the overall scope of the project, the Subcontractor that will be responsible for the erosion and sediment control measures for each particular job will be identified in this Plan. An authorized representative from the subcontracting firms will sign this document certifying compliance with the General Permit conditions.

IV. SEDIMENTATION AND EROSION CONTROL PLANS follow the certification page and specifications are located in technical specification, Division 2, section 02370 entitled “Erosion Control”.

OWNER CERTIFICATION
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Department of Energy
Batavia Area Office
DOE Fermi Group Manager
P.O. Box 2000
Batavia, IL 60510
(630) 840-3281

_____
Michael J. Weis

_____
Date

CONTRACTOR CERTIFICATION
"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification."

Fermi Research Alliance LLC
Wilson and Kirk Rds.
P.O. Box 500
MS 105
Batavia, IL 60510
(630) 840-3211

_____
Nigel Lockyer
Fermilab Director

_____
Date

SUBCONTRACTOR CERTIFICATION
"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification."

Firm:

_____ _____
Owner/Representative

_____

_____ _____
Date

Phone_____

SUBCONTRACTOR CERTIFICATION

"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification."

Firm:

_____ _____
Owner/Representative

_____

_____ _____
Date

Phone_____

SUBCONTRACTOR CERTIFICATION
"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification."

Firm:

_____ _____
Owner/Representative

_____

_____ _____
Date

Phone_____

SUBCONTRACTOR CERTIFICATION
"I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification."

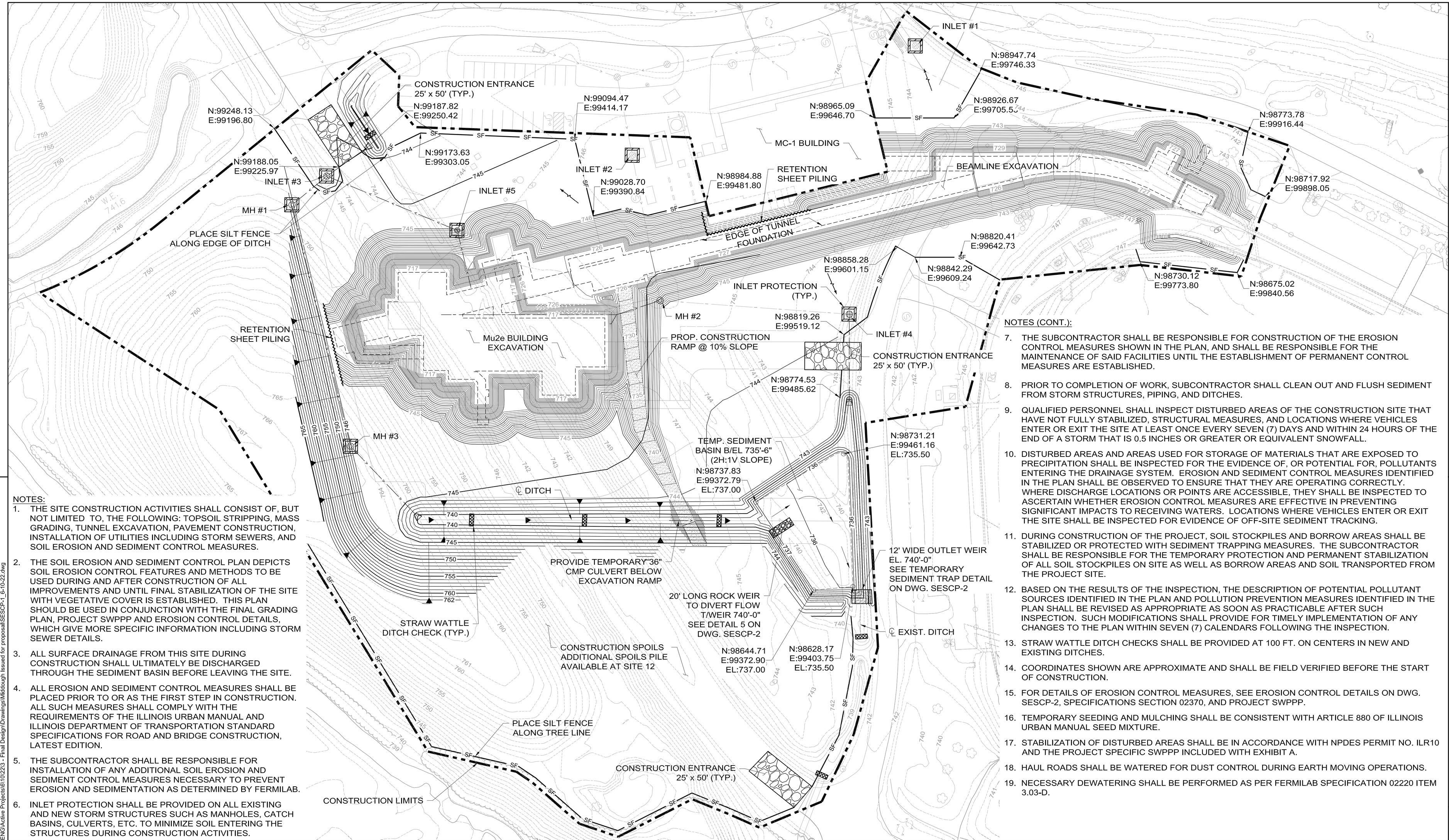
Firm:

_____ _____
Owner/Representative

_____

_____ _____
Date

Phone_____



NOTES:

1. THE SITE CONSTRUCTION ACTIVITIES SHALL CONSIST OF, BUT NOT LIMITED TO, THE FOLLOWING: TOPSOIL STRIPPING, MASS GRADING, TUNNEL EXCAVATION, PAVEMENT CONSTRUCTION, INSTALLATION OF UTILITIES INCLUDING STORM SEWERS, AND SOIL EROSION AND SEDIMENT CONTROL MEASURES.
2. THE SOIL EROSION AND SEDIMENT CONTROL PLAN DEPICTS SOIL EROSION CONTROL FEATURES AND METHODS TO BE USED DURING AND AFTER CONSTRUCTION OF ALL IMPROVEMENTS AND UNTIL FINAL STABILIZATION OF THE SITE WITH VEGETATIVE COVER IS ESTABLISHED. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE FINAL GRADING PLAN, PROJECT SWPPP AND EROSION CONTROL DETAILS, WHICH GIVE MORE SPECIFIC INFORMATION INCLUDING STORM SEWER DETAILS.
3. ALL SURFACE DRAINAGE FROM THIS SITE DURING CONSTRUCTION SHALL ULTIMATELY BE DISCHARGED THROUGH THE SEDIMENT BASIN BEFORE LEAVING THE SITE.
4. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. ALL SUCH MEASURES SHALL COMPLY WITH THE REQUIREMENTS OF THE ILLINOIS URBAN MANUAL AND ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
5. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY FERMILAB.
6. INLET PROTECTION SHALL BE PROVIDED ON ALL EXISTING AND NEW STORM STRUCTURES SUCH AS MANHOLES, CATCH BASINS, CULVERTS, ETC. TO MINIMIZE SOIL ENTERING THE STRUCTURES DURING CONSTRUCTION ACTIVITIES.

NOTES (CONT.):

7. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION OF THE EROSION CONTROL MEASURES SHOWN IN THE PLAN, AND SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF SAID FACILITIES UNTIL THE ESTABLISHMENT OF PERMANENT CONTROL MEASURES ARE ESTABLISHED.
8. PRIOR TO COMPLETION OF WORK, SUBCONTRACTOR SHALL CLEAN OUT AND FLUSH SEDIMENT FROM STORM STRUCTURES, PIPING, AND DITCHES.
9. QUALIFIED PERSONNEL SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT FULLY STABILIZED, STRUCTURAL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE EVERY SEVEN (7) DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER OR EQUIVALENT SNOWFALL.
10. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR THE EVIDENCE OF, OR POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING.
11. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL TRANSPORTED FROM THE PROJECT SITE.
12. BASED ON THE RESULTS OF THE INSPECTION, THE DESCRIPTION OF POTENTIAL POLLUTANT SOURCES IDENTIFIED IN THE PLAN AND POLLUTION PREVENTION MEASURES IDENTIFIED IN THE PLAN SHALL BE REVISED AS APPROPRIATE AS SOON AS PRACTICABLE AFTER SUCH INSPECTION. SUCH MODIFICATIONS SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE PLAN WITHIN SEVEN (7) CALENDARS FOLLOWING THE INSPECTION.
13. STRAW WATTLE DITCH CHECKS SHALL BE PROVIDED AT 100 FT. ON CENTERS IN NEW AND EXISTING DITCHES.
14. COORDINATES SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE THE START OF CONSTRUCTION.
15. FOR DETAILS OF EROSION CONTROL MEASURES, SEE EROSION CONTROL DETAILS ON DWG. SESCP-2, SPECIFICATIONS SECTION 02370, AND PROJECT SWPPP.
16. TEMPORARY SEEDING AND MULCHING SHALL BE CONSISTENT WITH ARTICLE 880 OF ILLINOIS URBAN MANUAL SEED MIXTURE.
17. STABILIZATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE WITH NPDES PERMIT NO. ILR10 AND THE PROJECT SPECIFIC SWPPP INCLUDED WITH EXHIBIT A.
18. HAUL ROADS SHALL BE WATERED FOR DUST CONTROL DURING EARTH MOVING OPERATIONS.
19. NECESSARY DEWATERING SHALL BE PERFORMED AS PER FERMILAB SPECIFICATION 02220 ITEM 3.03-D.

REV.	DATE	DESCRIPTIONS
		REVISIONS

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FNA1301 & FNA1303
Oak Brook Pointe | 700 Commerce Drive, Suite 200 | Oak Brook, IL 60523
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	NAME	DATE
DESIGNED	A. JASINSKI	03/03/14
DRAWN	K. CUSSEN	03/03/14
CHECKED	A. VASONIS	03/03/14
APPROVED	M. SHRADER	03/03/14
SUBMITTED		

PROJECT NORTH
TRUE NORTH
W E S

SCALE:
1" = 40'-0"
40 0 40 80
SCALE FEET

FERMI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

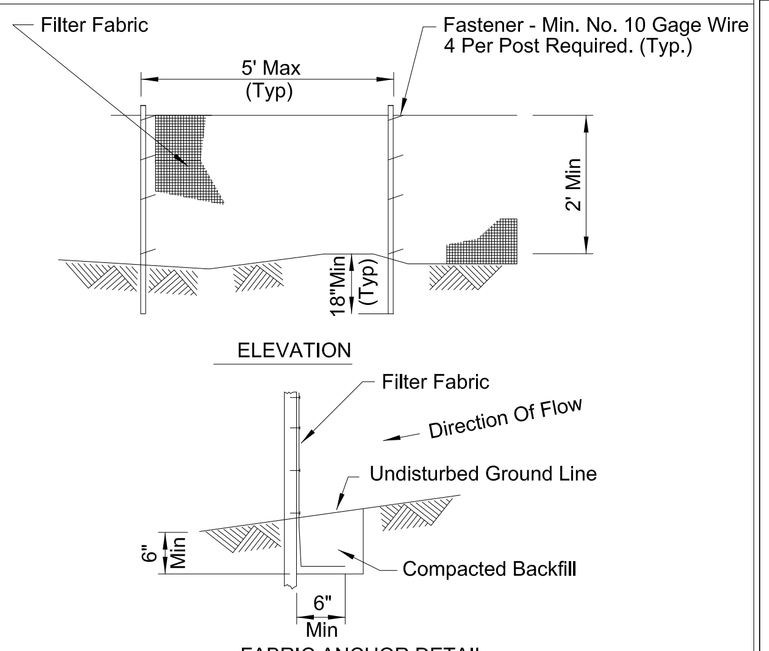
F.I.M.S. No.

Mu2e CONVENTIONAL FACILITIES
&
MC BEAMLINE ENCLOSURE
SOIL EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO. 6-10-2 / 6-10-22 **SESCP-1** REV.

03 MAR 2014

SILT FENCE PLAN

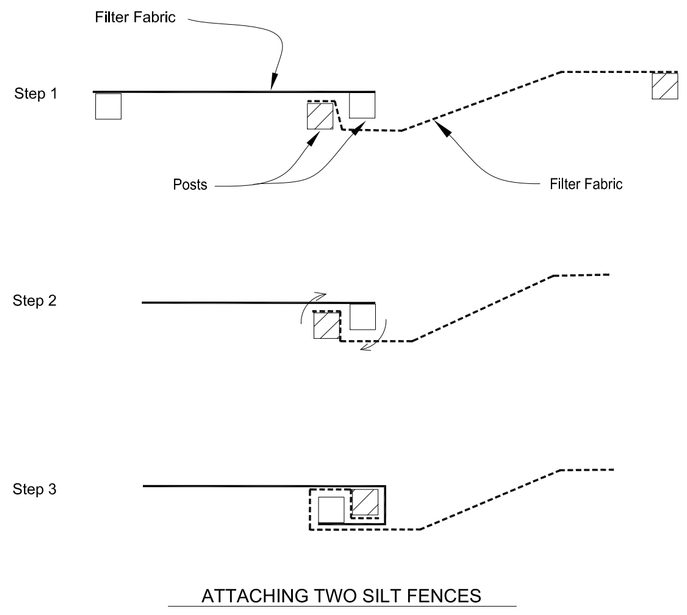


NOTE: AN APPROVED SILT FENCE IS GEOFAB, ENVIROFENCE.

NOTES:
1. Temporary sediment fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class with equivalent opening size of at least 30 for nonwoven and 50 for woven.
3. Fence posts shall be standard wood post with a minimum dimensions of 1.125 in x 1.125 in x 42 in.

REFERENCE		NRCS	STANDARD DWG. NO.
Project		Natural Resources Conservation Service	IL-620
Designed	Date		SHEET 1 OF 2
Checked	Date		DATE 11-20-01
Approved	Date		

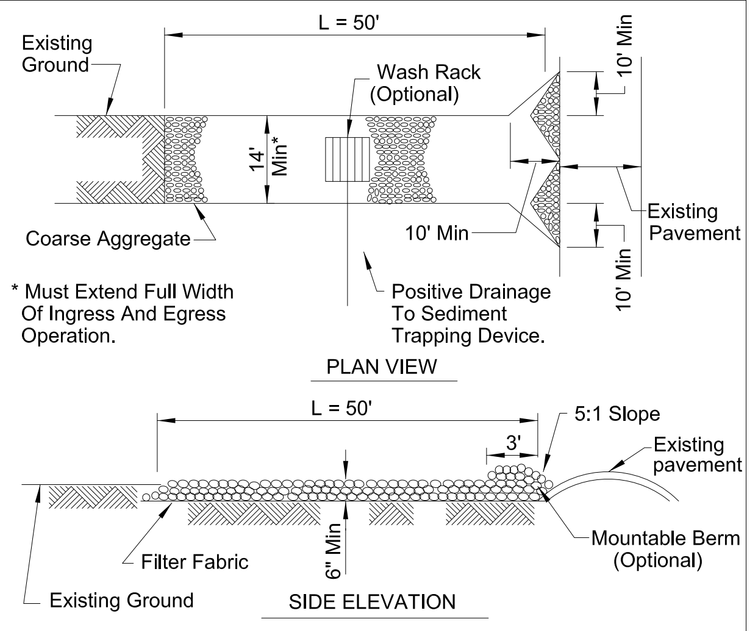
SILT FENCE



NOTES:
1. Place the end post of the second fence inside the end post of the first fence.
2. Rotate both posts at least 180 degrees in a clockwise direction to create a tight seal with the fabric material.
3. Drive both posts a minimum of 18 inches into the ground and bury the flap.

REFERENCE		NRCS	STANDARD DWG. NO.
Project		Natural Resources Conservation Service	IL-620(W)
Designed	Date		SHEET 2 OF 2
Checked	Date		DATE 1-29-99
Approved	Date		

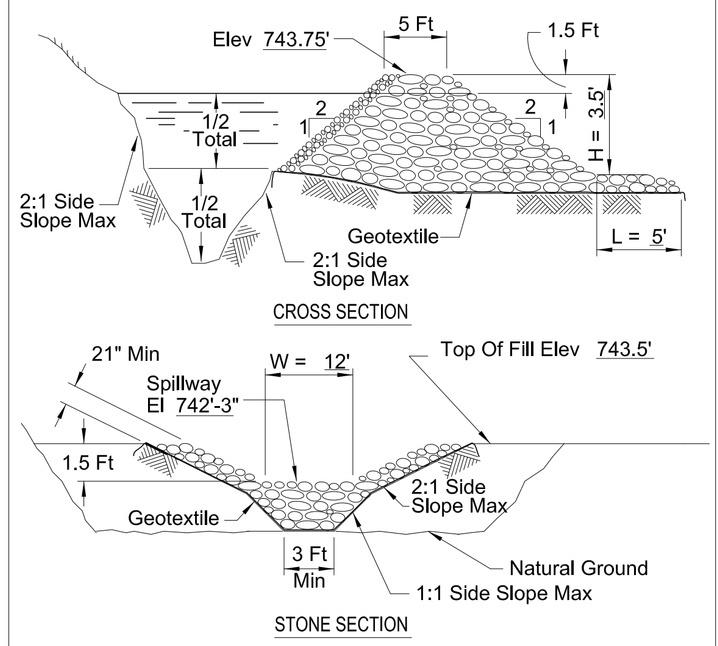
STABILIZED CONSTRUCTION ENTRANCE PLAN



NOTES:
1. Filter fabric shall meet the requirements of material specification 592 GEOTEXTILE, Table I or 2, Class I , II or IV and shall be placed over the cleared area prior to the placing of rock.
2. Rock or reclaimed concrete shall meet one of the following IDOT coarse aggregate gradation, CA-1, CA-2, CA-3 or CA-4 and be placed according to construction specification 25 ROCKFILL using placement Method 1 and Class III compaction.
3. Any drainage facilities required because of washing shall be constructed according to manufacturers specifications.
4. If wash racks are used they shall be installed according to the manufacturer's specifications.

REFERENCE		NRCS	STANDARD DWG. NO.
Project		Natural Resources Conservation Service	IL-630
Designed	Date		SHEET 1 OF 2
Checked	Date		DATE 8-18-94
Approved	Date		

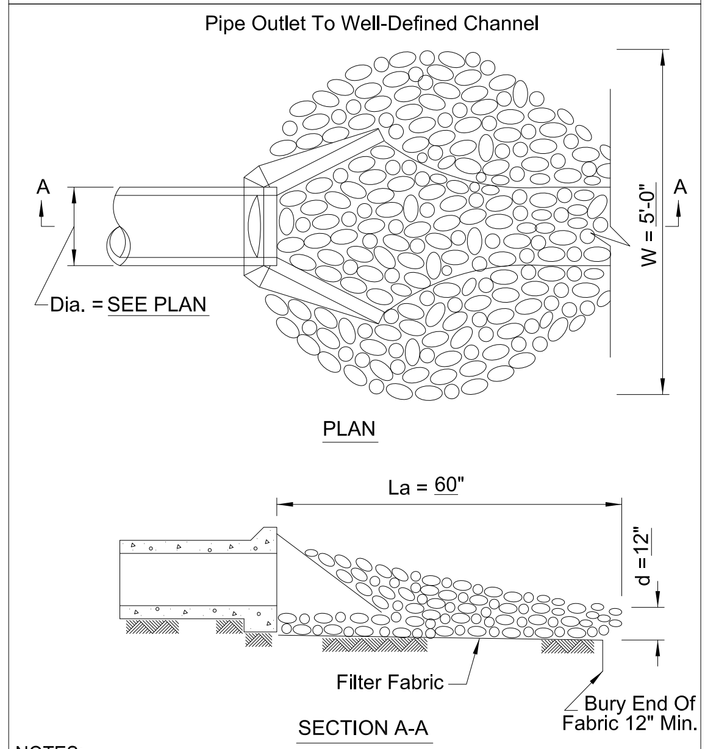
TEMPORARY SEDIMENT TRAP



NOTES:
1. If the sediment pool is formed or enlarged the side slope will be 2:1 or flatter.
2. The fill shall be constructed using IDOT RR-4 stone size. A 1'layer of IDOT CA-2 should be placed on the inside face to reduce the flow rate. The rock will be placed according to construction specification 25 ROCKFILL.
3. Placement will be by Method 1 and compaction will be class III.
4. The geotextile shall meet the requirements in material specification 592 GEOTEXTILE table 1 or 2, class I , II or IV.

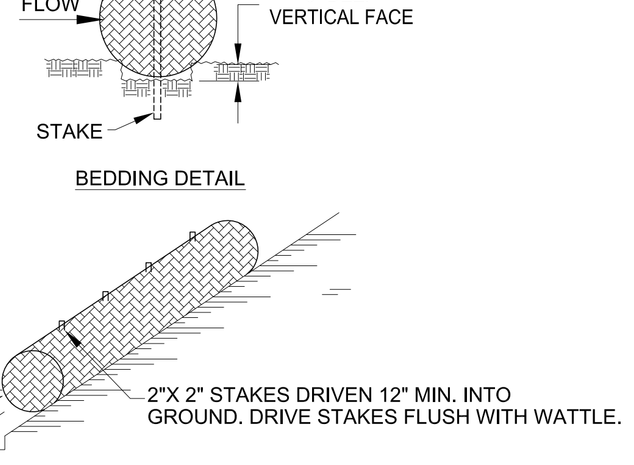
REFERENCE		NRCS	STANDARD DWG. NO.
Project		Natural Resources Conservation Service	IL-660
Designed	Date		SHEET 1 OF 1
Checked	Date		DATE 11-20-01
Approved	Date		

PIPE OUTLET PROTECTION



NOTES:
1. The filter fabric shall be as specified in Section 1080.03 of IDOT Standard Specifications.
2. Riprap shall be supplied to the quality and gradation requirements of Section 1005.01 of IDOT Standard Specifications.
3. The riprap shall be installed per Section 281.04 of IDOT Standard Specifications.

REFERENCE		NRCS	STANDARD DWG. NO.
Project		Natural Resources Conservation Service	IL-611
Designed	Date		SHEET 1 OF 1
Checked	Date		DATE 8-18-94
Approved	Date		REV: 9-21-09 CPD



NOTES:
1. STRAW WATTLES SHALL BE A MINIMUM OF 9" IN DIAMETER. WATTLES SHALL CONSIST OF 100% CLEAN, CERTIFIED WEED FREE STRAW FIBER MATRIX CONFINED BY A SYNTHETIC NET.
2. REMOVE DEBRIS, ROCKS AND CLODS AND GRADE TO CREATE A SMOOTH FLAT SURFACE TO INSTALL WATTLE ON. EXCAVATE A TRENCH APPROXIMATELY 3 INCHES DEEP TO SET WATTLE IN. BACKFILL AND COMPACT SOIL AROUND WATTLE. STAKES SHALL NOT STICK OUT MORE THAN 4" ABOVE THE TOP OF THE WATTLE.
3. OVERLAP WATTLES 6" AT JOINTS BETWEEN WATTLE LOGS.
4. INSPECT ON A ROUTINE BASIS. MAKE REPAIRS IMMEDIATELY. SEDIMENT SHALL BE
5. REMOVED WHEN IT REACHES 3" HIGH ON THE WATTLE. IF WATTLE NETTING HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN OR VEHICLE DAMAGE, IT SHALL BE REPLACED.

STRAW WATTLES

SCALE: NTS

1

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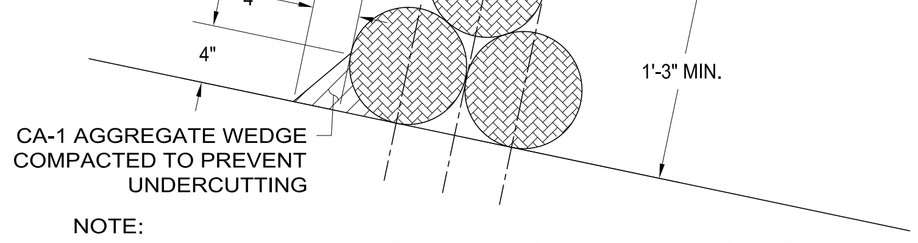

NOTE:
DITCH CHECK DAMS SHALL BE PLACED SUCH THAT THE TOP OF THE DOWNSTREAM CHECK DAM IS AT THE SAME ELEVATION AS THE TOE OF THE ADJACENT UPSTREAM CHECK DAM.

DITCH CHECK

SCALE: NTS

2

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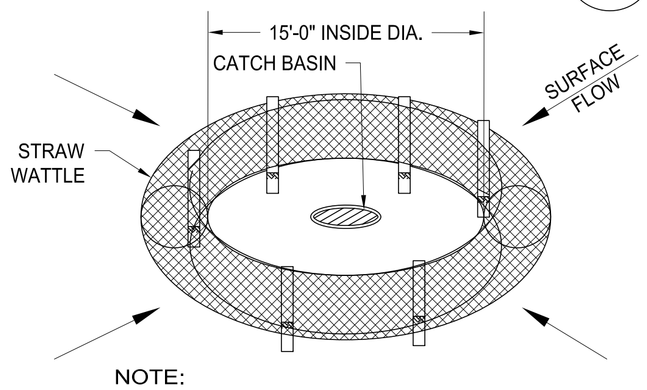

NOTE:
FOLLOW STRAW WATTLE DETAIL TO PROPERLY INSTALL STRAW WATTLE AROUND CATCH BASINS.

INLET PROTECTION

SCALE: NTS

3

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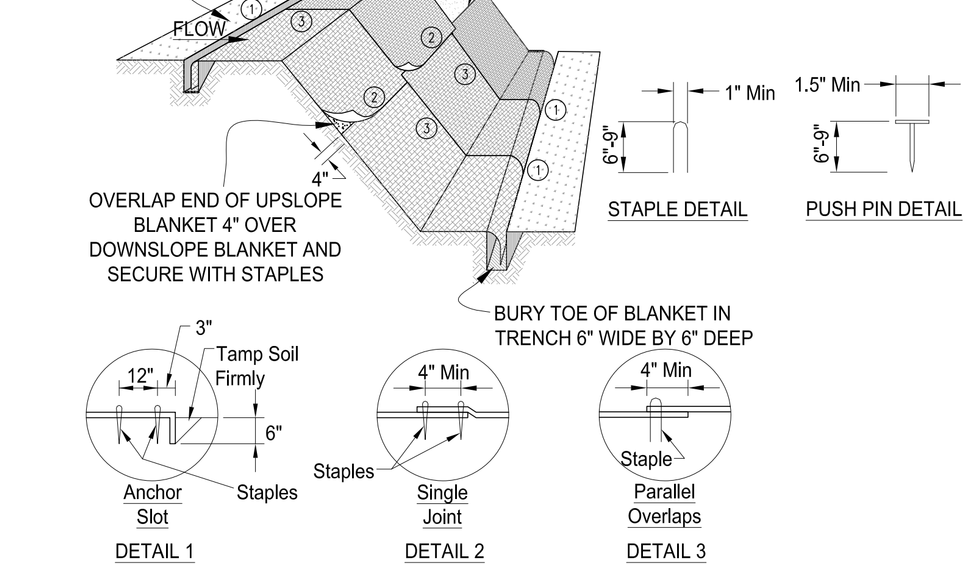

NOTES:
1. STAPLES SHALL BE PLACED IN A DIAMOND PATTERN AT 2 PER S.Y. FOR STITCHED BLANKETS. NON-STITCHED SHALL USE 4 STAPLES PER S.Y. OF MATERIAL. THIS EQUATES TO 200 STAPLES WITH STITCHED BLANKET AND 400 STAPLES WITH NON-STITCHED BLANKET PER 100 S.Y. OF MATERIAL.
2. STAPLE OR PUSH PIN LENGTHS SHALL BE SELECTED BASED ON SOIL TYPE AND CONDITIONS. (MINIMUM STAPLE LENGTH IS 6")
3. EROSION CONTROL MATERIAL SHALL BE PLACED IN CONTACT WITH THE SOIL OVER A PREPARED SEEDBED.
4. ALL ANCHOR SLOTS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

EROSION CONTROL BLANKET

SCALE: NTS

4

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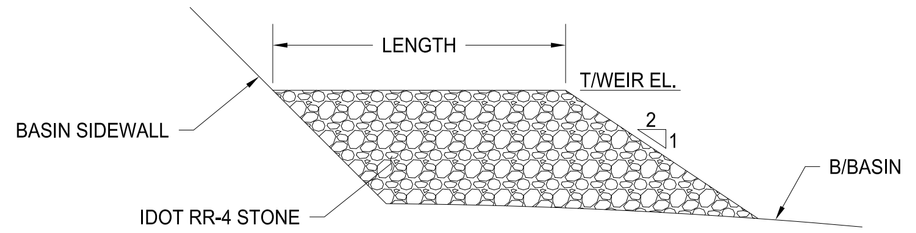

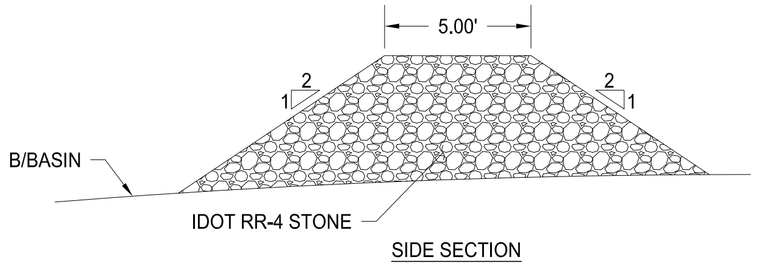

ROCK WEIR

SCALE: N.T.S.

5

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REV.	DATE	DESCRIPTIONS
		REVISIONS

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PROJECT NORTH

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F.I.M.S. No.

Mu2e CONVENTIONAL FACILITIES & MC BEAMLINE ENCLOSURE EROSION CONTROL DETAILS

DRAWING NO. 6-10-2 / 6-10-22 SESCP-2 REV.

03 MAR 2014

Mar 17, 2014 - 10:55am \\blue1\fess\FESS_ENG\Active Projects\6102\2\3 - Final Design\Drawings\Middough Issued for proposal\SESCP-2_6-10-22.dwg