

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

1.0 General	
1.1 Introduction	1
1.2 Work to be Performed	1
1.3 Work Covered by Subcontract Documents	2
1.4 Work Performed By Others	6
1.5 Contract Method.....	13
1.6 Coordination with Work by Others	14
1.7 Specific Coordination	15
1.8 Contract Period of Performance Requirements	15
1.9 Subcontractor's Use of the Project Site	16
1.10 Owner's Use of the Project Site	16
1.11 Other Matters	17
2.0 Products (Not Used)	18
3.0 Execution	18
3.1 Material Storage Instructions	18
List of Attachments	19

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

SUMMARY OF WORK

1.0 GENERAL

1.1 INTRODUCTION: This section establishes the scope of construction work to be performed under the Target Building General Construction Subcontract. There are two parts to this Subcontract:

- A. Part I – Conventional Facilities (CF): Building, equipment, instrumentation and materials associated with the construction of the Conventional Facility (WBS 1.8.3.07).
- B. Part II – Target System (TS) Equipment Installation - Building, equipment, instrumentation and materials associated with the construction of:
 - 1. Lower Monolith Assembly and Installation (WBS 1.6.4, 1.6.5).
 - 2. Helium Refrigeration System (included in WBS 1.6.2).
 - 3. Target Building and Ring Injection Dump Utilities (WBS 1.6.6)

A detailed description of the scope of construction for each element above is provided herein. Elements of Part I apply to Part II where appropriate.

THE PURPOSE OF THIS SOLICITATION IS TO:

- A. Provide for the installation of the Target Building Conventional Facility and the Target System Equipment Installation pursuant to the drawings and specifications contained herein. The limits of this subcontract are as follows:

The horizontal limits of this subcontract include all work, except as noted elsewhere, associated with completion of the facility above elevation 96' – 11" as shown on drawing S1.01.30 Revision L and drawing A1.A1.30 Revision C. This represents the top of the instrument floor. Target utility systems installation is included in the ring injection dump. Helium refrigeration components are to be installed in the compressor building. Internal work below the instrument floor as shown on drawing A1.B1.30, and as noted in 1.3.B. is included. The outer starter ring of the target monolith is excluded.

1.2 WORK TO BE PERFORMED

- A. The work to be performed under this subcontract shall consist of furnishing all plant, tools equipment, materials, supplies and manufacturing articles, and furnishing all labor, field engineering, surveying, transportation, and services including fuel, power, water, and essential communications, or other operations required for general construction and interior build out of Target Building General Construction Subcontract, which consists of Conventional Facilities and Target System Equipment Installation, all as identified herein, in accordance with details and dimensions shown on the drawings, specifications, and as outlined within the limits shown. The work shall be complete; and all work, materials, and services not expressly indicated or called for in the subcontract documents, which may be necessary for the complete and proper construction of the work, in good faith shall be provided by the Subcontractor, as though they had been originally indicated, at no increase in cost.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- B. Wherever the terms "Contract Documents" and "Subcontract Documents" are used herein, they shall be the same.

1.3 WORK COVERED BY SUBCONTRACT DOCUMENTS: The scope of work includes but is not limited to:

- A. Target Building Conventional Facilities – Part I: Following is a description of the limits and scope of work for the Target Building Conventional Facilities. This detailed summary of work is to be used in conjunction with this subcontract. Any portion of the design shown in the design drawings that is not within the work limits described herein is not issued as part of this subcontract and should be treated as information only. Questions regarding the limits of work should be directed to the Construction Manager (CM). The work under Part I includes, but is not limited to the following:

1. All utilities, services, process piping and drains, embedded in concrete or within the building, to 5 feet outside the building limits. This includes any excavation and backfill associated with the work external to the Target and associated structures, except as noted on the drawings.
2. Grounding
 - a. Provide the grounding system shown above levels B1, 1, and 2
 - b. Perimeter ground rods and perimeter ground loop well is in this subcontract.
 - c. 6 feet of conductor coiled in place for connections to systems in this subcontract have been provided by others, with above marker / monument, for the required extension to be carried out in this subcontract.
 - d. This Subcontractor is to complete all grounding intended from extensions provided by the previous substructure subcontractor.
3. All sleeves or penetrations embedded in concrete.
4. Construction joints as noted on the drawings, or approved by the C.M.
5. All bolts and anchors other than structural steel and four drain tanks previously installed.
6. Embeds and liners, and typical embed and liner details. For the hot cell slab at elevation 96' 11" ±, only liner embeds are excluded from this subcontract. The liner will be furnished and installed with this subcontract. The stainless liner in the wall above the mercury storage tank is not a part of this contract. Special documentation requirements will be required for all "certified materials" as indicated in Specification Sections 15128 and section 15895, and also as indicated on various schedules in the plans and specifications throughout this subcontract.
7. All electrical, mechanical, architectural, and instrumentation work in the B1 level (below the instrument floor level).
8. Building 2TU is included in this subcontract. Related to foundation work for this structure, this subcontractor shall remove unsuitable soil under the base mat to acceptable material, approved by the CM (approximately 6 inches) and bring to grade with structural soil backfill or gravel. Foundation piles for this structure are not a part of this subcontract.
9. Building 11TU is included in this subcontract.
10. Concrete paving, sidewalks, and equipment pads within the boundary shown on drawing A1.A1.30.
11. Foundation drain behind Compressor Building, and trench drain at east side of Target Building.
12. Sub grade bedding and preparation under retaining walls, Compressor Building, equipment pads, concrete paving, sidewalks, Building 2TU and Building 11TU.
13. Building 11TU foundation including piles.
14. External Compressor Building # 8760 is a part of this subcontract.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

15. This subcontract is responsible for providing protection of all stainless steel liner plate, including floors, walls, and ceilings. Protection is to be in the form of ½ inch plywood or other methods approved by the CM.
16. This subcontractor will install the hepa filter frames and first time system-cleaning filter covered in specifications 15885 and 15886. Operations personnel will furnish and install the permanent use filters.
17. Installation of Target Systems Equipment and Materials as definitized elsewhere in this subcontract.
18. 15KV cable from RTBT unit substation to the Target unit substations TA-SS1 and TA-SS4, and from the TVA Switch House, 15KV breaker # 2014, Feeder 9.
19. The 400 – inch diameter Bulk Shielding Liner Vessel will be epoxy coated under this subcontract. Following completion of adjacent concrete work, all remaining surfaces shall be sand blasted and epoxy coated to match the interior coating. Interior weld surfaces shall be power wire brushed and epoxy coated. In addition, application of the vertical studs at the top of the vessel are a part of this subcontract.

Construction activities include fine grading under structures, formwork, installation of rebar and embeds; including all associated elements listed above, placing and finishing of concrete, form stripping and cleanup and all electrical, mechanical, and instrumentation elements included on the drawings, and in the specifications.

- B. Target System (TS) Equipment Installation – Part II – Introduction: The Target Systems Division (XFD) is responsible for the design and fabrication of the technical components that convert the high-energy proton beam into useful low energy neutrons, for the neutron scattering instruments. These components include a flowing mercury target which converts the protons to neutrons, cryogenic and water moderators which slow the neutrons to low energy, iron shielding approximately 17-ft thick in radius surrounding the target for personnel and environmental protection, water and other utility systems for heat removal, and remote handling equipment to maintain activated components.

The work must be completed in accordance with the installation procedures, specifications, and drawings provided in this subcontract. The Subcontractor shall perform examinations, inspections and tests as specified in the construction subcontract specifications, and provide documentation to the CM in a timely manner. The Subcontractor shall submit an examination and testing requirements summary for review and approval by the CM. The successful passing of all tests, examinations and inspections is required before the installations are considered completed and ready for turnover.

The installation activities in the target building include approximately 10,000,000 lbs of iron shielding and components within a 400-inch diameter liner in the monolith structure, a mercury loop in the hot cell with associated remote handling equipment, a cryogenic helium refrigerator and hydrogen loop for the moderators, and four water cooling loops located principally in the basement. The installation tasks have been organized into a number of “packages” based on the type of work and the location in the vicinity of the target building. Three of these packages are included in this subcontract and are described below. See attachment 1 for expected equipment delivery dates. Note that the CM has assigned package numbers for reference only. The work under Part II includes, but is not limited to the following:

1. Scope of Work - Package 1 – Lower Monolith Assembly and Installation (WBS 1.6.4, 1.6.5):

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- a. This package consists of assembly and installation tasks for the lower portion of the Monolith structure. These include the lower shielding components, the inner support cylinder, the lower outer support cylinder and the shielding components beneath the core vessel. Drawing 106040100M8E8700A011, Target Systems Core Vessel Installation Phase I, outlines the installation tasks for Package 1. Grout as required to fill the gaps between shield blocks according to the grout specifications is included in this subcontract. Video animation provided includes additional phases of the work.
2. Scope of Work - Package 5A - Helium Refrigeration System (included in WBS 1.6.2):

This package outlines installation of the Helium Refrigeration System that consists of the Cold Box, Compressor, Oil Removal System, Motor Control Center, Helium Piping, Helium Buffer Tank, Heat Exchanger Module, and Power & Control Panel. The Subcontractor installs cabling but does not terminate connections. The Subcontractor shall provide the construction consumable materials, utility piping, and the labor to install the components listed above. The CM will furnish the helium piping for this installation.

The helium refrigerator components will be installed in the Target Building and the Compressor Building. A detailed installation plan is provided in Attachment 3. See also video animation. It lists the physical characteristics of the equipment, electrical routing requirements, field piping requirements, and photos of representative refrigerator equipment. Also included is a suggested list of installation tools and supplies needed by the Subcontractor, but not provided. *(A Microsoft-Excel spreadsheet version of Attachment 2 is provided in the CD-ROM of this RFP. It includes text notes in many of the cells that provide detailed information from the manufacturer; these notes cannot be accessed in Attachment 2.)*

The Subcontractor shall weld and inspect the helium piping according to ASME Section IX-Welding and ASME Section V-NDE. There are no other special assembly/installation tests that are to be performed by the Subcontractor. The refrigerator equipment manufacturer will perform equipment/instrument functionality tests after the installations are complete. The successful passing of these tests is required before the installations are considered completed and ready for turnover.

The following test requirements shall be met prior to turnover: radiography shall be randomly performed on 10% of all welds; all warm helium piping and pressure retaining subcomponents shall be leak tested using the standard bubble method in accordance with ASME B&PVC, Section V. All results shall be documented and submitted to the CM prior to acceptance.

3. Scope of Work - Package 6 - Target Building and Ring Injection Dump Utilities (WBS 1.6.6):
- a. The Target Building and Ring Injection Beam Dump Utilities work to be performed by the Subcontractor consists of the installation of cooling water piping, helium/nitrogen distribution, portions of the primary confinement exhaust and hot off-gas systems, vacuum systems, and instruments that must be installed directly in the piping systems, i.e. thermo - wells, flow meters, etc. Most of the equipment will be installed in the Target Building with the remainder installed in the Ring Injection Building. See video animation.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- b. Special construction considerations are as follows:
- 1) Installation and testing of stainless steel (floor and wall) liner plates shall be completed prior to installing the Utility equipment on lined surfaces.
 - 2) Ensuring that the radioactive cooling water and water collection systems are fully drainable is a critical aspect of the design and installation. Installation will require accurate sloping and/or alignment of tank nozzles and pipe spools that penetrate concrete. Construction sequencing and fixturing methods that facilitate accurate alignment shall be employed. Where floors are sloped, tanks shall be shimmed level. Anchor bolt locations for CM-furnished equipment will depend upon vendor information to be provided by the CM.
 - 3) Cleanliness during construction and installation is of critical importance. Many of the equipment components are fabricated with narrow openings that may be obstructed by small particulates. This subcontractor is responsible for storage of all CMFE either on or off the site as it is delivered. Generally accepted construction practices and care must be taken during all phases of installation to ensure that the installation process does not compromise the equipment functionality. Storage requirements for this work are as follows:

CM-Furnished Equipment – Storage Requirements

Equipment Item	Storage Requirements
Tanks	C
Rupture Disks	B
Bellows Seal Cooling Water Valves	B
Heat Exchangers	B
Cooling Water Systems – Shielded Ion Exchange Columns	B
Cooling Water Systems – Shielded Filter Housings	B
Cooling Water Pumps	B
Glove box	B
Helium Panels	B
Pressure Safety/Relief Valves	B
Electric Heater (ETHR-2040)	B
Sampler Panels	B
Vacuum Pumps and Ejector & Charcoal Drum	B
Condensers	B

- A – Indoor, heat and humidity controlled
 B – Indoor
 C – Indoor or outdoor, weather protected/under cover, above ground on wood skids
 D – Outdoor

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- 4) As a part of this construction package, the Subcontractor will be provided with isometric sketches for all welded pipes 1.5-inches and greater. The Subcontractor shall verify the field dimensions shown on the provided sketches and submit to the CM, dimensioned, as-built sketches for all welded pipe. For welded pipe smaller than 1.5-inches, the Subcontractor shall be responsible for developing and submitting dimensioned as-built isometric sketches from the CM-provided pipe routing and equipment fabrication drawings. All as-built dimensioned sketches shall be used as weld maps and be submitted to the CM with the final inspection, examination and testing reports for each piping segment prior to acceptance of the piping systems.

1.4 WORK PERFORMED BY OTHERS

- A. Portions of the work shown on the subcontract drawings will be installed by others and are outlined below:
 1. Any substructure concrete – all concrete shown below elevation 96' – 11”.
 2. Supply of Reinforcing Steel.
 3. Supply of Anchor Bolts for Structural Steel.
 4. Structural Steel (furnish and erect).
 5. General backfill and final grading. General backfill is included in the Substructure Subcontract, and the final grading will be included in the Land Improvement Subcontract.
 6. Asphalt paving is a part of the Land Improvements Subcontract.
 7. Foundation drain around Target Building basement.
 8. Yard underground utilities.
 9. The ground connections from the below grade conductors to the ground plates shown on level 1 trenches are not in this subcontract.
 10. Piles for building 2TU.
 11. Ring injection dump drain tank.
 12. The 3 inch thick Bulk Base Plate will be furnished and installed by others.
 13. The 400-inch diameter Bulk Shielding Liner Vessel will be furnished and installed by others.
 14. Four Cooling Loop Drain Tanks will be furnished and installed by others prior to commencement of this subcontract.

- B. Construction Manager Furnished Equipment (CM-FE) and Supplies: To facilitate the construction process, various equipment and supplies have been identified for purchase by the CM. The equipment or supplies when received on the project-site, will be assigned to the subcontractor who will be responsible for the unloading, storage, in-storage maintenance, installation and testing (when specified). Items designated, as CM-FE shall be paid for by the CM through their contract with the supplier or manufacturer. The subcontractor should not include in their bid material cost for any CM-FE items. The subcontractor should include in their bid all costs associated with the unloading, storage, in-storage maintenance, installation and testing (when specified) of CM-FE items.
 1. Reinforcing steel as called for in specification 03300 shall be provided by the CM through a contract with Callaway Building Products. The subcontractor shall consider the following:
 - a. The subcontractor shall provide requirements for reinforcement delivery dates that support its overall construction schedule to the CM within seven calendar days of award.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- b. The subcontractor shall coordinate reinforcement steel delivery dates directly with the reinforcing steel supplier (Callaway Building Products) and furnish a copy to the CM of all schedule requirements.
 - c. The CM will provide the subcontractor with approved reinforcing steel shop drawings.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, and installation of reinforcement steel. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
2. A Structural Steel Fabrication and Erection subcontract (F5-2681-00-S00-1004) has been issued as a Unit Price Contract by Knight/Jacobs to Qualico Steel Company, Inc., P.O. Box 149 – 7797 East State Hwy 52 Webb, AL 36376 (phone 334-793-1290-, POC is Mike Downs). The CM, through this subcontract, as called for in specifications 05120, 05310, 05500, 05511, 05521, and 05530 shall provide and erect Structural Steel. The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for anchor bolt delivery dates that support its overall construction schedule to the CM within seven calendar days of award.
 - b. The subcontractor shall coordinate anchor bolt delivery dates directly with the structural steel supplier (details to be provided later).
 - c. The CM will provide the subcontractor with approved anchor bolt and structural steel shop drawings for its information and coordination.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, and installation of anchor bolts. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
 - e. Structural Steel as it is called for in “Division 5 – Metals” of the contract specifications will be provided, unloaded and installed by the CM through a subcontract with Qualico Steel Company, Inc., Webb, AL. The CM will coordinate preparation and approval of all shop drawings, delivery of steel to the project site, and perform quality assurance oversight on the erection activities.
 - f. The anticipated construction schedule for steel erection on the FELK can be seen in attachment 2 of this section.
 - g. Qualico Steel Company will furnish and install structural steel and miscellaneous steel to include stairs and handrail, steel roof deck, steel floor deck and grating. All other miscellaneous steel will be under this subcontract.
3. Air Handling Units as called for in specification 15501 and shown on the plans will be awarded to the Air Handling Unit Supplier (the contract has yet to be awarded). The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for air handling unit's delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the air handling units supplier and copy furnish the CM with all schedule requirements.
 - c. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, in-storage maintenance, installation, and testing as required per specification of air handling units. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
4. Unit Substations as called for in specification 16370EQ shall be provided by the CM through a contract with Roden Electric, Knoxville, TN. The subcontractor shall consider the following:

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- a. The subcontractor shall provide requirements for unit substations delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the unit substation supplier and copy furnishes the CM with all schedule requirements.
 - c. The CM will provide the subcontractor with approved unit substation shop drawings and the supplier/manufacturer's in-storage maintenance requirements and installation instructions. The subcontractor shall install the concrete pads, including grounding grids all secondary conduit and wiring into the buildings, the primary conduit to five feet outside the substation pad. Installation, termination and testing of the 13.8 KVA cables into the unit substations.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, in-storage maintenance, installation, and testing as required per specification of unit substations. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
5. Motor Control Centers
- A supply and delivery purchase agreement for motor control centers as called for in specification 16483 and shown on the plans has been issued as a Fixed Price Purchase Agreement by Knight/Jacobs to Customer Service Electric Supply, Inc., 1612 N 6th Ave., Knoxville, TN 37917 (phone 865-524-7555 and POC is Mike Edwards). The Motor Control Center Supplier will be required to design the system, submit shop drawings for approval, fabricate the equipment, and ship the same to the project site. The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for motor control centers delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the MCC supplier and copy furnishes the CM with all schedule requirements.
 - c. The CM will provide the subcontractor with approved motor control center shop drawings, the supplier/manufacturer's in-storage maintenance requirements and installation instructions.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage (if required), in-storage maintenance and installation of motor control centers. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
 - e. The subcontractor shall be responsible for installation and testing as required per specification in accordance with specification section 16481.
6. 15 kV Metal Enclosed Switchgear
- A supply and delivery purchase agreement for 15 Kv metal enclosed switchgear as called for in specification 16352EQ and shown on the plans has been issued as a Fixed Price Purchase Agreement by Knight/Jacobs to Customer Service Electric Supply, Inc., 1612 N 6th Ave., Knoxville, TN 37917 (phone 865-524-7555 and POC is Mike Edwards). The Motor Control Center Supplier will be required to design the system, submit shop drawings for approval, fabricate the equipment, and ship the same to the project site. The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for unit 15 kV Metal Enclosed Switchgear delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the 15 kV Metal Enclosed Switchgear supplier and copy furnish the CM with all schedule requirements.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- c. The CM will provide the subcontractor with approved 15 kV Metal Enclosed Switchgear shop drawings and the supplier/manufacturer's in-storage maintenance requirements and installation instructions. The subcontractor shall install the concrete pads, including grounding grids as shown on applicable design drawings, all secondary control and power conduits into the buildings, and the primary conduit to five feet outside the substation pad. Installation, termination and testing of the 13.8 KVA cables into the 15 kV Metal Enclosed.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, in-storage maintenance, installation, and testing as required per specification of 15 kV Metal Enclosed Switchgear. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
7. Demineralized Water Skids
- A supply and delivery purchase agreement for demineralized water skids as called for in specification 15104 and shown on the plans has been issued as a Fixed Price Purchase Agreement by Knight/Jacobs to Industrial Piping, Inc., 800 Culp Road, Pineville, NC 28134 (phone 704-588-1100 and POC is Michael Roberts). The Demineralized Water Skid Supplier will be required to design the system, submit shop drawings for approval, fabricate the equipment skids, and ship the same to the project site. The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for Demineralized Water Skids delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the Demineralized Water Skids supplier and copy furnishes the CM with all schedule requirements.
 - c. The CM will provide the subcontractor with approved Demineralized Water Skids shop drawings, the supplier/manufacturer's in-storage maintenance requirements and installation instructions.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, in-storage maintenance and installation of Demineralized Water Skids. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
 - e. The subcontractor shall be required to set, shim and level, grout, install piping (tower water and DI cooling water loops) and connect electrical power to the skids as required per specification 15104.
 - f. Controls will be supplied and installed by others.
8. Target Building Cranes & Hoists as called for in specification 14630, shall be provided by the CM through a contract with the crane Supplier (the contract has yet to be awarded). The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for Crane & Hoists delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the Crane & Hoist supplier and copy furnishes the CM with all schedule requirements.
 - c. The CM will provide the subcontractor with approved Crane & Hoists shop drawings, the supplier/manufacturer's in-storage maintenance requirements and installation instructions.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage, in-storage maintenance and installation of Crane & Hoists. A manufacturers representative will provide installation oversight during installation of this equipment. The CM will provide the manufacturers representative. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- e. The subcontractor shall be responsible for installation and testing as required per specification in accordance with specification section 14630.
 - f. Use of any of this equipment by the Subcontractor during the construction phase will require prior CM approval and re-certification, at the expense of the Subcontractor, prior to operational turnover.
9. Uninterruptible Power Supplies (UPS) as called for in specification 16264, shall be provided by the CM through a contract with the UPS supplier (the contract has yet to be awarded). The subcontractor shall consider the following:
- a. The subcontractor shall provide requirements for UPS delivery dates that support its overall construction schedule to the CM within thirty calendar days of award.
 - b. The subcontractor shall coordinate delivery dates directly with the UPS supplier and copy furnishes the CM with all schedule requirements.
 - c. The CM will provide the subcontractor with approved UPS shop drawings, the supplier/manufacturer's in-storage maintenance requirements and installation instructions.
 - d. The subcontractor shall be responsible for receiving, quantity verification, unloading, storage (if required), in-storage maintenance and installation of UPS. The subcontractor shall provide the CM with copies of the delivery tickets/bills of lading signed by a representative of the subcontractor the same day as deliveries.
 - e. The subcontractor shall be responsible for installation and testing as required per specification in accordance with specification section 16264.
 - f. Start-up support and commissioning is part of UPS vendor contract.
10. RTBT Tunnel Shield Blocks. Shall be CM furnished and installed by this subcontract. For 310 of the blocks, it will be the subcontractor's responsibility to load the blocks from their present location in the "X- 10" complex, bring them to the site (approximately 10 miles) and unload them for installation. The balance of the blocks will be delivered to the site and unloaded by the CM, just in time for installation. Expected delivery is to be August 2002. Rad Worker I training will be required for those individuals handling and installing this material. The training will be provided on the site at no cost to the subcontractor, and will be approximately one hour in duration. Materials will need to be marked and separated in a roped off area pending installation.
11. Manitowoc 4600 Ringer Crane. The CM will provide, at no cost to the Subcontractor, an operated and maintained Manitowoc 4600 ringer crane to be used under this contract and dedicated to the erection of the Monolith components. In addition, it is expected to be used for setting the "Cold Box" from the Moderator System (Installation Package 5A) in the upper Target Building. It is expected that the ringer will be available beginning in February 2003 or possibly sooner and will remain on the project as long as there is a demonstrated beneficial need. Positioning of the crane is expected to be at the northeast end of the building near the Central Lab and Office Building and Target Building access road, or another suitable position mutually agreed upon by this Subcontractor.
- The crane is an S-4 with a 60-foot Series 3 ring. It will be furnished with a 300 foot boom. The standard load chart is applicable. It will be the responsibility of this subcontract to determine operating requirements and coordinate periodic maintenance requirements of the crane to facilitate the erection process. Other erection equipment shall be furnished by this subcontract as is necessary to complete all erection requirements.
12. Anchor bolts and metal templates for the Target Cart Liner (external). Shall be furnished by the CM for installation under this subcontract. The CM will issue Task Order Releases to initiate fabrication and delivery sequences required to support the subcontract schedule. The Subcontractor shall provide requirements for delivery dates that support its overall construction schedule to the CM within seven calendar days of award.
13. Other CM Supplied Equipment: Following is a list of other CM supplied equipment:
- a. 15885 - Hepa filters
 - b. 15886 - Hepa Filter Frames

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- c. Hot Cell Related Mechanical Sub-assemblies (identified by drawing)
- d. Bottom Loading System – J1.28.36, J3.60.30, J3.61.30, J3.62.31-34
- e. Hot Cell Input Enclosure – J3.23.30
- f. In-Cell Shield Door – J3.51.30, J3.52.30
- g. LLLW Collection Vessels – J3.63.31
- h. LLLW Shielded Filters – J3.63.32
- i. Mercury Absorbers – J3.32.31
- j. Penetrations – J3.39.30, J3.43.30, J3.44.32-33, J3.45.30-39, J3.47.30-32, J3.49.32-33
- k. Tritium and Xenon Removal Glove Box System – J1.27.31, J3.55.30
- l. Hot Cell Coolers – J3.21.30
- m. Hot Cell Light Fixtures – Section 16490
- n. Shield Doors – J3.10.30, J3.26.30

- C. Directed Procurements: To facilitate the construction process, various equipment and supplies have been identified for standardization through purchase agreements with single manufacturers or suppliers for each type of equipment or supplies. The subcontractor will be responsible ordering, receipt, acceptance, payment, storage, in-storage maintenance (as required), installation, field testing (when applicable) of these items as part of the subcontract requirements. The subcontractor is required to utilize the Directed Procurement suppliers and manufacturers as described here in. Use of other suppliers or manufacturers for the directed procurement items described here in will require prior written approval of the AE/CM Procurement Manager.

The subcontractor is hereby directed to Section C – Pricing Schedules for pricing information related to the directed procurement items in this subcontract.

1. Supply and Delivery of concrete to the Project site. A concrete supply and delivery purchase agreement (F5-2681-00-S00-1005) has been issued as a Unit Price Purchase Agreement by Knight/Jacobs to APAC-Tennessee, Inc., 226 Gill Street, Alcoa, TN, 37701 (phone 865-983-3100, POC is Dale Buchanan). The subcontractor shall use this vendor (subcontractor) and shall consider the following:
 - a. Refer to Section C attachment 1 for pricing information. The subcontractor is to base its proposal on the prices dictated by their schedule and as outlined in the pricing schedule. The subcontractor is responsible for all aspects of the supply, delivery and installation of concrete material for foundations included in this subcontract.
 - b. No water will be added to trucks after leaving the batch plant unless approved by the CM. Installation subcontractor shall sign and date ticket and, if approved by CM, indicate the amount of water added on site.
 - c. Subcontractor should note that overtime for concrete supplier is defined to be all 24 hours of Saturday, Sunday and all legal holidays and after 4:30 p.m. EST, and before 7:30 a.m. EST, Monday through Friday.
 - 1) All concrete truck drivers must adhere to the site safety and security policy for visitors and vendors.
 - 2) A one-hour free unloading time is included in all deliveries. Delays longer than this one-hour period shall be the responsibility of the subcontractor and compensated at the suppliers' unit rate.
2. Supply and Delivery of Mechanical Commodities
A supply and delivery purchase agreement (F5-2681-01-S01-1056) for piping commodities as called for in the specifications listed in Section C Attachment 4 of this SOW has been award to Piping Supply Company, 3008 N. Hickory St, Chattanooga, TN 37406 (phone 423-698-8996, POC Tony Towns). The subcontractor shall be responsible for installation and testing of all piping commodities in accordance with the technical specifications and drawings.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- a. Refer to the attached CD ROM for pricing information. The subcontractor is to base its proposal on the prices dictated by their schedule and as outlined in the pricing schedule. The subcontractor is responsible for all aspects of the supply, delivery and installation of the electrical material included in this subcontract.
 - b. All delivery truck drivers must adhere to the site safety and security policy for visitors and vendors
3. **Supply and Delivery of Variable Frequency Drives**
A supply and delivery purchase agreement for variable frequency drives as called for in specification 16484 and shown on the plans has been issued as a Unit Price Purchase Agreement by Knight/Jacobs to Cornerstone Automations, LLC, 4300 North Access Rd., Suite A, Chattanooga, TN 37415 (phone 423 – 870 – 3400 and POC is Gary Rodriquez). The Subcontractor shall be responsible for installation and testing in accordance with specification section 16484 and shall consider the following:
- a. Refer to schedule C attachment 4 for pricing information. The Subcontractor is to base its proposal on the prices dictated by their schedule and as outlined in the pricing schedule. The subcontractor is responsible for all aspects of the supply, delivery and installation of the electrical material included in this subcontract.
 - b. All delivery truck drivers must adhere to the site safety and security policy for visitors and vendors.
4. **Supply and Deliver of Electrical Commodities**
A supply and delivery purchase agreement for electrical commodities as called for in the specifications has been awarded to three suppliers. See Section C attachment 2. F5-2681-01-S-1-1067A has been issued as a Unit Price Purchase Agreement for Raceways with associated conduit, PVC, EMT, dividers, wire way by Knight/Jacobs to Edwards Supply Company, 315 Oak Ridge Turnpike, P.O. Box 4758, Oak Ridge, TN 37830 (phone 865-483-1766, POC is Jack Dyer). F5-2681-01-S-1-1067B has been issued as a Unit Price Purchase Agreement for Lighting, wire, cable, and fiber optics by Knight/Jacobs to Stokes Electric Co. 1701 McCalla Avenue, Knoxville, TN 37915 (phone 865-525-0351, ext 123 POC is Mike Lakin or Ron White. F5-2681-01-S01-1067C has been issued as a Unit Price Purchase Agreement for Distribution Panel/Panel boards/Circuit Breakers/Transformers by Knight/Jacobs to Jones & Lee Supply Co. 1501 Linden Ave, Knoxville, TN 37917 (phone 865-524-5566, POC is Will Armstrong or Gary Sellers). The subcontractor shall use this vendor (subcontractor) and shall consider the following:
- a. Refer to the attached CD ROMs for pricing information. The subcontractor is to base its proposal on the prices dictated by their schedule and as outlined in the pricing schedule. The subcontractor is responsible for all aspects of the supply, delivery and installation of the electrical material included in this subcontract.
 - b. All delivery truck drivers must adhere to the site safety and security policy for visitors and vendors.
5. **Supply and Deliver of Generator Sets/ATS**
A supply and delivery purchase agreement (F5-2681-01-S01-1053) for Generator Sets/ATS commodities has been issued as a Unit Price Purchase Agreement by Knight/Jacobs to Stowers Engines and Power Products, 6301 Old Rutledge Pike, Knoxville, TN 37914 (phone 865-595-1034, POC is Travis Smith). The subcontractor shall use this vendor (subcontractor) and shall consider the following:
- a. Refer to Schedule C attachment 5 for pricing information. The subcontractor is to base its proposal on the prices dictated by their schedule and as outlined in the pricing schedule. The subcontractor is responsible for all aspects of the supply, delivery and installation of the electrical material included in this subcontract.
 - b. All delivery truck drivers must adhere to the site safety and security policy for visitors and vendors.
6. **Design, Supply, Delivery and Installation of Fire Alarm Systems**

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

- a. The design, supply, delivery, and installation of the fire alarm system will be awarded to a "site-wide" Fire Alarm System Subcontractor (the subcontract has yet to be awarded and will be incorporated as a subcontract modification) on a unit priced basis in accordance with specifications 16300, 16730, 16375 and as shown on the plans. The Fire Alarm System Subcontractor will be a lower tier subcontractor to this subcontractor. The general subcontractor shall be responsible for the coordination, controlling, and proper installation of the Fire Alarm System. As this "site-wide" Fire Alarm System subcontract has not yet been awarded, the inclusion of this requirement will be established and priced via a subcontract modification.
7. Design, Supply, Delivery and Installation of Conventional Facilities Instrumentation and Controls
 - a. The design, supply, delivery, and installation of the conventional facilities instrumentation and controls will be awarded to a "site-wide" Conventional Facilities Instrumentation and Controls Subcontractor (the subcontract has yet to be awarded and will be incorporated as a subcontract modification) on a unit priced basis in accordance with specifications 17050 and 17200 and as shown on the plans. The Conventional Facilities Instrumentation and Controls Subcontractor will be a lower tier subcontractor to this subcontractor. The general subcontractor shall be responsible for the coordination, controlling, and proper installation of the Conventional Facilities Instrumentation and Controls. As this "site-wide" Conventional Facilities Instrumentation and Controls subcontract has not yet been awarded, the inclusion of this requirement will be established and priced via a subcontract modification.
 - b. The Conventional Facilities Control System consists of:
 - 1) PCs and EPICS software to support an appropriate Human Machine Interface (HMI).
 - 2) PLC hardware and Control Logic software.
 - 3) IOC hardware and EPICS software.
 - 4) All cabling to CF Controls equipment racks and workstations (including cabling to sensors and control elements, network communication boms, interface points to fire alarm; PPS; chiller controls; and other systems, and network drops to the Conventional Facilities Control Center (CFCC).
 - 5) Sensors and field elements not provided as an integral part of CF mechanical and power equipment or other systems
8. Design, Supply and Delivery of Public Address Equipment
 - a. The design, supply and delivery of the public address equipment will be awarded to a "site-wide" Public Address Equipment Supplier (the supply subcontract has yet to be awarded and the material portion will be incorporated into this subcontract as a subcontract modification) on a unit priced basis in accordance with specification 16726 and as shown on the plans. This subcontractor shall be responsible for the unloading, coordination, controlling, and proper installation of the Public Address Equipment.
9. Final grading and final seeding to be under separate solicitation. (Seeding in accordance with erosion control will be in this contract)
10. Asphalt paving not part of this scope, work to be performed under separate contract.

1.5 CONTRACT METHOD

The Work hereunder will be constructed under a Lump Sum Firm Fixed Price Subcontract.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

1.6 COORDINATION WITH WORK BY OTHERS

- A. Interference With Work On Utilities: The Subcontractor shall cooperate fully with all utility forces or forces of other public or private agencies engaged in the installation, altering, or otherwise rearranging of any facilities which interfere with the progress of the Work, and shall schedule the Work so as to minimize interference with said installation, altering, or other rearranging of facilities.
- B. Partnering: It is the CM's desire that a partnering philosophy be embraced in executing and administering all subcontracts of the SNS Project. Either the CM or the Subcontractor may request a formal partnering session be held if either the CM or Subcontractor believes that a partnering session is necessary to improve communications or to facilitate resolution of a difficult problem. It is expected that representation from all levels of the CM and Subcontractor management would be involved (including offsite senior management when necessary) and would participate in the session. Participation will be totally voluntary, and any costs will be shared equally with no change in subcontract price.
- C. Concurrent Work by Others: The Subcontractor's attention is directed to the fact that work will be conducted at or adjacent to the site by other subcontractors and by the Owner and CM's separate contractors during the performance of the work of this subcontract. The Subcontractor shall conduct its operations so as to cause a minimum of interference with the work of others. Work by others includes, but is not limited to, the following:
1. Front End Building / Linac general construction
 2. Site utilities including water, power, and natural gas.
 3. Erection of Structural Steel. – The Target Building Structural Steel will be furnished and erected by Qualico Steel. The work will be a coordinated effort between the Steel Erector Subcontractor, the Substructure Concrete Subcontractor, and the Target General Subcontractor. The Target General Subcontractor shall be expected to organize his work activities to avoid overhead work by the erector in the same areas. The expected sequence of work for the Steel Erector is as follows:

Sequence of Work for Structural Steel		Begin	Complete
a)	Monolith Support Columns	August 15, 2002	August 22, 2002
b)	High Bay Steel Columns, between E and G.5 lines	August 22, 2002	September 4, 2002
c)	South Side, First Tier	September 4, 2002	September 24, 2002
d)	North Side, First Tier	September 25, 2002	October 8, 2002
e)	South side, Roof Framing	October 9, 2002	October 24, 2002
f)	North Side, Roof Framing	October 25, 2002	November 11, 2002
g)	High Bay upper columns and roof	November 12, 2002	December 2, 2002
h)	Beam lines 2 and 11 structural framing	December 3, 2002	January 22, 2003

4. General construction of various activities throughout the site.
5. Owner start-up activities within the Target Structure – as Target Building Milestones are met operations personnel will begin mobilizing to assume ownership of technical components and complete operational installation. Elements such as the monolith, hot

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

cell equipment, moderator systems, Target and ring injection dump utilities, remote handling systems, Target instruments and controls, and mock up test stand, while installed by this subcontract, will have an interface with operational personnel.

6. RTBT Tunnel connection – This activity connects to the RTBT entrance included in this subcontract on the west end of the building, and will require special coordination with the adjoining work.
7. Erection and positioning of 4600 Manitowoc Ringer.

1.7 SPECIFIC COORDINATION

- A. The Subcontractor shall coordinate the work of this Subcontract with the work of other Subcontractors on the project site. Coordination activities include, but are not limited to, the scheduling of work at interface locations to permit adjacent or connecting work by other Subcontractors, providing necessary shop drawing information to other contractors, and working with other contractors to conduct functional testing of systems and start-up of the facility. Specific coordination requirements with other contractors include, but are not limited to, the following:
 1. Ordering, delivery and purchase of concrete material from the supplier.
 2. Yard piping and underground Utility Subcontractor.
 3. Requisitioning of reinforcing steel from rebar supplier for deliveries to support concrete placement.
 4. Requisitioning of anchor bolts and templates from the steel supplier to support concrete placement.
 5. The subcontractor will be required to hold a section of the high bay roof out to allow for erection of the Target Monolith also under the responsibility of this subcontract. A temporary weather cover will be required to be in place at all times other than during the periods of erection through the opening. The cover shall be engineered and submitted for review and approval.
 6. It is expected that the hot cell window shown on drawing S4.10.31 at 9line will remain blocked out to allow for equipment installation until approximately September of 2004.
- B. The Subcontractor shall designate a site Project Manager and also a General Superintendent, and supporting personnel for the duration of the project. The Project Manager and General Superintendent shall have the Target General Construction subcontract as their sole responsibility, with no other SNS or outside project assignments to detract from focus and attention on this work.

1.8 CONTRACT PERIOD OF PERFORMANCE REQUIREMENTS

- A. Subcontractor shall complete all work in a period of 764 calendar days after Notice to Proceed. It is anticipated that Notice to Proceed will be issued within 14 days of award of contract.
- B. Mobilization at the work-site is dependant upon submittal of key contract documents, which will be identified at the pre-construction meeting, and is the successful bidder's responsibility.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

C. Milestone Matrix

Milestone Completion Schedule Requirements		
1)	Complete RTBT Tunnel walls and shielding (Excluding Cover)	November 13, 2002
2)	Complete Monolith Shell	December 1, 2002
3)	Complete Hot Cell concrete and liner (excluding pre-cast cover)	March 16, 2003
4)	Complete "1.6.6 Ring Injection Dump Utilities."	June 30, 2003
5)	Complete target Monolith installation up to lower shielding (Pkg. 1)	July 1, 2003
6)	Beneficial occupancy of Beam line 2	September 1, 2003
7)	Beneficial occupancy of Beam line 11	March 1, 2004
8)	Energize Substations and Switchgear	April 1, 2004
9)	Complete all piping systems	May 1, 2004
10)	Complete "1.6.6 Target Building Utilities."	August 1, 2004

- D. In consideration of the milestone dates provided above the bidder shall include in its proposal a reasonably detailed schedule incorporating the milestones, the equipment "need dates"(if different from the expected delivery dates), and showing the man loading required to accomplish the work. (For bidding purposes use the Notice To Proceed as 23 July 2002.)

1.9 SUBCONTRACTOR'S USE OF THE PROJECT SITE

- A. The Subcontractor shall confine all operations (including storage of materials) on the project site to areas authorized or approved by the CM.
- B. The Subcontractor shall, under regulations prescribed by the CM, use only established roadways, or use temporary roadways constructed by the Subcontractor when and as authorized by the CM. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicles or prescribed by a federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Subcontractor shall protect them from damage. The Subcontractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads. The subcontractor is responsible for cleaning his debris or soil from the roadway.

1.10 OWNER'S USE OF THE PROJECT SITE

The Owner may utilize all or part of the existing site during the entire period of construction. As such, the Subcontractor shall cooperate and coordinate with the Owner and the CM to facilitate the Owner's operations and to minimize interference with the Subcontractor's operations at the same time. In any event, the Owner shall be allowed access to the project site during the period of construction. In addition, it is expected that there will be composite start-up and turnover crews.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

1.11 OTHER MATTERS

- A. With regard to Subcontractor Quality Control, the Subcontractor shall retain the services of an independent testing laboratory for all normal and usual tests for compaction, materials, concrete, welding inspection and testing, etc. The Owner and CM do not intend to provide such services for this Work. Inasmuch as K.S. Ware is contracted to provide CM third party review services throughout the entire SNS site, they may not be considered as a provider for the required subcontract services. In addition, Barge Waggoner Sumner and Cannon provides third party survey control for the project, and they may not be considered for subcontract services.
- B. Washout of concrete trucks will be performed onsite at predetermined locations approved by Construction Management. Excess Concrete will not be discharged onsite, but remain in trucks and returned to the concrete batch plant.
- C. Primary access to the site of the work shall be via Bethel Valley Access Road. The access is a controlled access with a manned guard portal. Project issued badges are used for personnel. Material and equipment shipped to the site must have a bill of lading or other shipping documents which have the construction site address included to allow passage.
- D. Stockpile location for excavation spoils will be in the immediate area of the Work. Any excavated material to be wasted will be disposed of within the current cleared boundaries of the project site as approved by the CM. All other wastes shall be disposed of in accordance with the approved Knight Jacobs Waste Management plan.
- E. The CM has developed and included in this subcontract a Construction Site Storm Water Control and Pollution Control Plan. The Construction Site Storm Water Control and Pollution Control Plan is provided via CD and becomes part of the solicitation and subcontract award. While this plan does not specifically refer to this subcontract, the subcontractor shall implement the requirements of this plan as if the subcontract was specifically referred to by the plan. This plan describes and ensures implementation of practices which will be used to reduce pollutants in storm water discharges associated with construction activity for the SNS Project. The Subcontractor shall develop and submit for the CM's review with its Safety and Health Program a subcontract specific Site Storm Water Control and Pollution Prevention Plan. The subcontractor's plan shall consist of a written plan and drawings that describes specifically:
 - 1. The subcontractors understanding of and commitment to the CM's Construction Site Storm Water Control and Pollution Control Plan.
 - 2. How the subcontractor intends to implement, provide, and inspect erosion control measures that will insure that storm water discharges from its construction area will be controlled and contained within its construction area or discharged to areas designated by the CM.
 - 3. Drawings that detail what erosion control measures the subcontractor intends to install and maintain for the subcontract period of performance.
 - 4. The subcontractors Site Storm Water Control and Pollution Plan and supporting drawings shall be prepared and sealed by a Professional Engineer registered in the State of Tennessee.
 - 5. Construction details of the subcontractor's erosion control measures shall be based on details included on the drawings accompanying the CM's Construction Site Storm Water Control and Pollution Control Plan.
 - 6. The erosion control measures indicated on the drawings accompanying the CM's Construction Site Storm Water Control and Pollution Control Plan have been installed "By

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

Others.” The subcontractor is responsible for repair and maintenance of these existing erosion control measures if they are impacted by storm water discharges from the subcontractor’s construction area.

F. Bar Code Labels:

All freestanding equipment or subassemblies of equipment that will be installed at the SNS project shall be identified by a bar code label located so as to be prominently displayed when installed. Where the label cannot be adhered to the item, it shall be on a tag secured adequately to survive shipping. A copy of the label should also appear on the outside of the packaging or containers used for shipment. The label shall contain the bar code as tabulated in the bar code table section (details to be provided following award of subcontract), both as text and encoded as a code 39 bar code.

In addition to the bar code, the supplier shall furnish data for each bar coded item in an Excel spreadsheet format. The file shall include, as applicable:

The bar code number

Name of the equipment or item from the bar code table

Purchase order, contract, or blanket ordering agreement number under which it is furnished.

Supplier’s name, and manufacturer if different

Manufacturer’s model number

Manufacturer’s serial number

Date of manufacture

The seller shall attach the Excel spreadsheet to an e-mail to the SNS data base manager (address equipmentdata@sns.gov) and copy to the CM, at no later than the day of shipment of the affected items. A template for the spreadsheet may be found on the SNS web page (see <http://www.sns.gov/pro/>)

- G. Schedule: The CPM Schedule will represent the total contract value, the Contract Value assigned to activities shall reflect an accurate installed or completed value. Refer to the General Conditions of this subcontract for detail requirements. The contract value of certain scopes of work will be evaluated throughout the contract performance; the schedule of values for these portions of Work will be coded for reporting, as directed by the CM. The activities and contract value of the following Work is to be identified in the Schedule separately:

The table in Attachment 2 is a listing of Proposed Equipment Availability Dates for work in this contact, for planning the various installation work packages.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 The following apply to this subcontract: Storage and handling of the various components to be installed shall be accomplished as noted below unless stated otherwise. Components may be stored indoors or outdoors, weather protected/under cover, above ground on wood skids.

Section E
Solicitation No.: F5-2681-02-RFP02-1044
Target Building General Construction

1. Physically inspect materials of construction on receipt, and as appropriate during storage and at assembly, to ensure that all surfaces are free from foreign materials such as water, oil, soil, and weld splatter.
2. Maintain identification on all materials, packages and skids to ensure trace ability.
3. Maintain the cleanliness of all components. Handle stainless steel components in accordance with ASTM A-380, "Standard Practice for Cleaning and Descaling Stainless Steel Parts, Equipment, and Systems."
4. Ensure all openings in items (e.g., pipe, tubing, valves, tanks, pumps, etc.) are capped or sealed at all times except when work is being performed on the item. Use original or new polyethylene, nylon, TF-fluorocarbon plastic or stainless steel caps, plugs or seals to protect openings in stainless steel items.
5. Segregate specification section 15130, 15455 and 15456 materials from other materials in storage.
6. Store and handle stainless steel components in a manner that prevents contact with carbon steel, iron oxide, lead, zinc (galvanized), cadmium, copper, mercury, halogenated materials or materials containing water soluble halides and sulfates.
7. For stainless steel components, protect handling equipment (e.g., slings, hooks, lift truck forks and working surfaces) with clean wood, cloth or plastic buffers to prevent contact with iron surfaces. Use nylon slings where practical.
8. For stainless steel components, segregate hand tools, brushes, and other tools and supplies required for fabrication, and mark/color code to distinguish them from similar items used in the fabrication of carbon steel equipment.
9. On stainless steel components, use only stainless steel wire brushes that have not been previously used on other materials.
10. For use on stainless steel components, grinding wheels and sanding materials used shall not contain iron; iron oxide, zinc or other materials noted above and shall not have been used on other metals.
11. On stainless steel components, use only marking pens, cleaners, solvents, and cutting coolants that contain less than 250 ppm of water-soluble halide and sulfate as certified by the manufacturer.

Attachments:

Attachment 1, Equipment Delivery Schedule
Attachment 2, Frig. Installation Spec. Package

Video Animations:

Helium Refrigeration Installation
Monolith Assembly
Hot Cell Utilities