

KSC ENVIRONMENTAL CHECKLIST

1. PROJECT TITLE: Upgrades to Launch Complex 40, CCAFS		2. PROJECT NO.: 98818	
3. PROJECT LOCATION: <input type="checkbox"/> KSC <input checked="" type="checkbox"/> CCAFS <input type="checkbox"/> PAFB <input type="checkbox"/> OTHER		4. FACILITY NAME/NO.: LC40	
5. REQUESTOR/PROJECT LEAD: Keith Britton ORG/MAIL CODE: TA-B3C		6. PHONE NO.: 321-867-1955	
7. PREPARER OF CHECKLIST: Michael V Le ORG/MAIL CODE: TA-B3A		8. PHONE NO.: 321-867-4435	
9. PROJECT DESCRIPTION: <i>(Provide site plans, maps, etc. as separate attachment(s))</i> Upgrades to Launch Complex 40, CCAFS			
10. a-r. Check the appropriate box (Yes, No, Undetermined) to identify if any component of the proposed project (including, but not limited to: construction, installation, demolition, removal, activation or operation) will involve any of the items listed. Use the attached instructions. Provide more specific information for each item marked Yes or Undetermined in the third column.			
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Undetermined	a. <u>Construction/Modification/Demolition</u> : Constructing, altering, expanding, modifying (other than routine maintenance), or demolishing any building, pavement or structure.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	b. <u>Land Impacts</u> : Land disturbance, soil addition or removal, digging, grading, trenching, alteration or removal of vegetation, equipment/material staging area required, stockpiling and any activity in or near surface water (including ditches and low-lying areas).		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	c. <u>Hazardous Material and Hazardous, Controlled or Universal Waste</u> : Use, storage, generation and/or disposal of any hazardous or toxic material, petroleum products or paint coatings.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	d. <u>Asbestos Containing Material (ACM)</u> : Disturbance of construction material that may contain asbestos (i.e., roofs, walls, ceilings, floor tile, piping insulation, caulk, etc.).		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	e. <u>PCBs</u> : Disturbance or replacement of electrical distribution systems, communication systems, lightning protection, transformers, non-liquid PCB materials or any other items believed to contain PCBs, including paint coatings.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	f. <u>Painting</u> : Initial application or repainting of a facility (interior or exterior), structure or utility.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	g. <u>Paint, Sealant, Caulking Removal</u> : Includes surface preparation such as sandblasting, scraping, water blasting or chemical stripping of existing paint coatings. Specify method.		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	h. <u>Dewatering</u> : Use of conventional wellpoints, hydraulic pumps, or other means to transfer groundwater (including water in utility manholes) for project activities including utility trenching, foundation work, roadbed construction, stormwater treatment pond, and borrow excavation.		
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	i. <u>Stormwater</u> : Construction of new building, pavement, impervious, or semi-impervious surface and/or modification of an existing stormwater system. Give approximate square feet of impervious surface being added.		Sq Ft
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	j. <u>Drinking/FIREX Water</u> : Installation or modification of potable water system. Include diameter of new water piping if known.		inches
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Undetermined	k. <u>Domestic/Industrial Wastewater</u> : Installation or modification of domestic sewer system, including septic tank systems, generation of process wastewater or modification to a system that handles or transports wastewater, including condensate lines, washdown effluent, outfalls, holding ponds and non-point source discharges associated with industrial applications/processes.		Lift station service
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	l. <u>Air Emissions</u> : Installation or alteration of a stack, scrubber, exhaust fan, vent, generator, fume hood, cooling tower, boiler, halon fire suppression system, HVAC system, refrigeration system; or discharge from painting or sandblasting. Describe emission source.		HVAC System
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	m. <u>Open Burning</u> : Burning of any land clearing debris.		
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	n. <u>Tanks</u> : Construction, modification, or repair of aboveground or underground storage tanks (including piping and/or containment). Give commodity stored and capacity.		200 gallons

<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Undetermined	o. <u>Transformers/Generators</u> : Installation, replacement or repair of transformers, generators, or any other oil-filled equipment. Give capacity.	40 gallons
<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Undetermined	p. <u>Exterior Lighting</u> : Installation, refurbishment or modification of exterior lighting.	perform corrosion control on light poles
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	q. <u>Radiation</u> : Generation of ionizing or non-ionizing radiation or use of any radiation source.	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Undetermined	r. <u>Other</u> : Please describe any other aspect of the proposed action that could potentially affect the environment. Use separate sheet if necessary.	

STATEMENT OF WORK FOR THE DESIGN-BUILD

OF

Upgrades to Launch Complex 40, CCAFS

**Project Control Number (PCN):
98818**

Fiscal Year (FY) - 2009

DATE: Sept 14, 2009

Lead Design Engineer (LDE): Michael V. Le

Project Manager: Keith Britton

Construction Manager: TBD

Contracting Officer: Nancy Potts

1. GENERAL

1.1. SCOPE

1.1.1. This Statement of Work (SOW) is to define and detail the basic relationship between the Contractor and NASA for work to be performed under the contract. This SOW shall also include details for the Design-Build construction for the Upgrades to Launch Complex 40, CCAFS.

1.1.2. GENERAL REQUIREMENTS

1.1.2.1. ENGINEERING SERVICES

- A. Provide the design services of state-licensed Architects, Engineers, and Land Surveyors. The design services shall include the preparation of the construction documents that, once approved by the Government, shall govern the construction of, and be the controlling documents for the project described in this SOW. The Architects, Engineers, and Surveyors shall supervise, be responsible for, and stamp and seal all documents prepared in accordance with the rules and regulations of the licensing State. All drawings shall be prepared on the title and border sheets as used by NASA and shall be in the format specified by NASA Architectural Style Guide GP-435.
- B. Provide construction services of a State of Florida-licensed Construction Contractor as well as engineering services during construction by a State of Florida-licensed Architects, Engineering and Land Surveyors. The requirements for engineering services during construction are outlined in the Extended Title I Clause, which is Attachment 1 on this SOW.
- C. The services are to include all design work necessary to complete the new facility as defined by this SOW and attached documents. Provide all services, skills, expertise, labor and materials needed to construct, complete, and provide fully functional facilities, structures or systems or modifications or addition to a facility, structure or system as defined in this contract.

1.2. PROJECT DESCRIPTION.

1.2.1. Provide drawings including specifications for a complete design and construction details package for the refurbishment of the Upgrades to Launch Complex 40, CCAFS.

1.2.2. PROJECT SCOPE.

1.2.2.1. The scope of work are the following tasks and options but not limited to removing/reinstalling and temporary protection of existing power, pits and mechanical system...etc in the building and/or connected to the other buildings that not included in this scope. The scope of this project includes site work, foundations, utilities, and all other work necessary to provide complete and usable facilities.

A. Task 1: Reactivate and refurbish the following equipments:

- a. Backup Generator
 - i. Need a assessment of backup generator.
 - ii. Generator was moved from another location.
 - iii. Contractor will perform the following:
 - 1. Procure and install 200 gal fuel tank.
 - a. Route new fuel system.
 - 2. Generator needs to be converted from 208v to 480v
 - 3. Control panel wiring needs to be completed (also needs to be interfaced with SpaceX computer system)
 - 4. Starting batteries need to be ordered and installed
 - 5. Exhaust pipe and muffler need to be installed (fabricated, welded etc)
 - 6. Generator and engine needs service
 - 7. Install louvers in generator building door (SpaceX has the louvers)
 - 8. Install exhaust fan for air flow through generator room

- b. The Kearny transfer switches:
 - i. The objective is to restore automatic transfer capability between the two 13,200v feeds that supply the Complex 40 Pad. There are two Kearney Vacuum Switches (Vac Sw), CX40IV7 'Titan' Line (Titan Sub Station Feed), and Vac Sw CX40IV6 'W' Line (North Sub Station Feed), that are fitted with three automatic switch operators. One operator on each switch opens/closes the 13.2KV into the switch and the third opens/closes a tie between the switches. Two of these automatic operators are defective and need to be replaced.
 - ii. The operator part # is B5041FL-20 VACOP.
 - iii. The contractor will need to work with InDyne through SpaceX for access to the Vac Sw's.
 - iv. Contractor will perform the following:
 - 1. Procure two (2) B5041FL-20 VACOP Kearney Vacuum Switch Operators
 - 2. Unbolt and remove the two defective operators (control wiring will be disconnected by InDyne at the control panel)
 - 3. Install (bolt on) two (2) new B5041FL-20 VACOP Kearney Vacuum Switch Operators
 - 4. InDyne will reconnect all control wiring and perform all testing

- c. The lift station pump
 - i. Replace the failed lift station pump and motor with a suitable replacement. Currently pump rail cannot be lifted out of lift station to access pump and motor.
 - ii. Contractor will perform the following:
 - 1. Remove pump and motor from lift station
 - 2. Disconnect wiring
 - 3. Replace pump and motor with the below part numbers or equivalent.

4. Pump
 - a. Pacific Pumping Company
 - b. 80 GPM, 25TDH
 - c. Model No. 4AENCD
 5. Motor
 - a. U.S. Motors
 - b. 1 ½ hp, 440 Volts
 - c. 3 Phase, 60 Cycles
 - d. 1800 RPM, 2.3 amps
 - e. Frame 184P, Type EVN
 6. Connect wiring
 7. Install pump into lift station
 8. Verify pump is operating nominally
- d. Perform maintenance on the lower AGE substation and motor control centers
- i. See Attachment B 'Substation Main.pdf' for scope of work

B. Task 2: Corrosion control

- a. Lightning tower corrosion control and perform schedule maintenance
 - i. Perform general corrosion control inspection for tower structural steel. Replace corroded fastener and/or steel components and paint with the approval of the contracting officer.
 - ii. Perform maintenance See Attachment D 'Lightning Tower Maint.pdf' for work. **where is this?**
- b. Perform corrosion control on rail cars
 - i. 4 rail cars need corrosion control location on the pad deck.
 - ii. Existing paint has been sampled on the outside of the building. **See Attachment C 'Environmental Reports' for pain survey results. If lead paint exists, paint over areas. Where is this?**
 - iii. Contractor will perform the following:
 1. Remove corrosion from rail car structure in accessible areas only. (method is up to contractor)
 - a. Underside of structure only has to be scraped where accessible.
 2. Do not work on cylinders
 3. Do not work on rail car trucks
 4. Collect all debris **(SpaceX will dispose of materials)**
 5. Paint structure using Bar-Rust 231 Epoxy Mastic or equivalent.(Note: Top coat not required)
- c. Corrosion control on pad lighting poles
 - i. 16 number of light poles need corrosion control location on the complex.

- ii. Contractor will perform the following:
 - 1. Remove corrosion from poles. (method is up to contractor)
 - 2. Collect all debris (SpaceX will dispose of materials)
 - 3. Paint poles using Bar-Rust 231 Epoxy Mastic or equivalent.(Note: Top coat not required)

C. Task 3: Minor facility upgrade and refurbish:

- a. Install Bollards around piping
 - i. Above ground piping systems need protection from vehicle traffic at locations around the complex.
 - ii. All bollards to be painted OSHA yellow.
 - 1. GN2 pipe (field)
 - a. Contractor will remove dirt as required for bollard install
 - b. Install per attached plans.
 - c. Bollards to be 4 inch diameter schedule 40 pipe by 6 foot in length.
 - d. Pipe to be buried 2 foot underground. (48" above ground)
 - e. Fill piping and hole with concrete.
 - f. Paint Bollards OSHA yellow.
 - iii. Contractor will perform the following for the following areas:
 - 1. Upper AGE North side. (6) Bollards.
 - a. Install per attachment A.
 - b. Bollards to be plate mounted 4" diameter 42" in height.
- b. Replace door frame and threshold for Falcon Support Building (FSB) 47109 mechanical room
 - i. The objective is to remove and replace the double doors for the mechanical room located on the North side of the FSB.
 - ii. Contractor will perform the following:
 - 1. Demo existing door frame and threshold, haul away debris
 - 2. Prepare opening for new custom door frame
 - 3. Fabricate and install new 18 gauge door frame to match existing hinge location
 - 4. Install new threshold, grout and caulk as necessary
 - 5. Reinstall doors
 - 6. Paint frame to match
- c. Upgrade HVAC controls and condenser unit in FSB 47109
 - i. See Attachment E 'FSB HVAC' for detail scope of work.
- d. Repair fencing around complex perimeter
 - i. Remove and replace badly corroded or damaged fencing, and fence poles that are unserviceable or have fallen down. Located in the Southwest side of complex 40.

- ii. Personnel gates do not close properly.
- iii. South gate needs repair.
- iv. Contractor will perform the following:
 - 1. Fence repair
 - a. Disconnect the existing fence from the damaged poles
 - b. Remove the damaged poles
 - c. Install new poles (15) 3” poles and (1) 6” poles
 - d. Reattach fencing
 - 2. Personnel gate repair
 - a. Replace gate hardware as required.
 - 3. South gate repair
 - a. Adjust gate so that is straight.
 - b. Perform maintenance on the rollers.
 - c. Install new gate openers for east and west side gates.
- e. Refurbish inside and outside of Paint Storage building 47120
 - i. Existing paint has been sampled on the outside of the building. See Attachment C ‘Environmental Reports’ for paint survey results. If lead paint exists, paint over areas. **Where is this?**
 - ii. Building exterior is 40’ x 50 x 23’
 - iii. Building interior consists of 4 Rooms and a bathroom.
 - iv. Contractor will perform the following:
 - 1. Clean ceiling (area will not be painted)
 - 2. Prepare wall surfaces for paint.
 - 3. Prepare doors and frames for paint.
 - 4. Collect all debris (SpaceX will dispose of materials).
 - 5. Primer surfaces as required
 - 6. Paint wall surfaces with paint to match flat latex paint
 - 7. Paint doors and frames with paint to match semi-gloss latex paint
 - 8. Clean and wax all floors
 - 9. Refurbish bathroom as required
 - 10. Remove and replace current air-conditioning wall units. 3 each 1 ton units.
 - 11. Replace 32 Ceiling mount 2 bulb T-8 fixtures and 10 Ceiling grid mounted 2 bulb T-8 fixtures.
 - 12. Replace 2 exit lights with new L.E.D. fixtures and replace 1 defective emergency light while adding an additional one in room 102.
 - 13. Replace three electric heaters. 3 small 5KW fan forced ceiling mounted electric heaters.
- f. Paint outside of AGE building

- i. Existing paint has been sampled on the outside of the building. See Attachment C 'Environmental Reports' for paint survey results. If lead paint exists, paint over areas.
- ii. Contractor will perform the following:
 - 1. Building is 97 foot long x 51 foot wide x 23 foot high.
 - 2. Prepare wall surfaces for paint.
 - 3. Prepare doors and frames for paint.
 - 4. Collect all debris (SpaceX will dispose of materials).
 - 5. Primer surfaces as required .
 - 6. Paint wall surfaces with Cool White flat latex paint
 - 7. Paint doors and frames with Dark blue semi-gloss paint
- g. Repair pot holes in road around complex
 - i. Numerous areas around the complex need asphalt the repaired.
 - ii. Locations will be determined during bidders walkdown
- h. Replace condenser unit for guard Shack
 - i. AC condenser needs replacement.
 - ii. Contractor will perform the following:
 - 1. Procure unit Carrier Model 38TKB030300 or equivalent.
 - 2. Disconnect wiring and tubing to old unit
 - 3. Remove old unit (SpaceX will discard unit)
 - 4. Collect all debris (SpaceX will dispose of materials)
 - 5. Install new unit
 - 6. Connect wiring and piping
 - 7. Add refrigerant as required.
 - 8. Verify unit is operating normally
- i. Install/Repair curbing around complex
 - i. Numerous areas around the complex need the curbing repaired.
 - ii. Areas will be determined during walk down.
 - iii. Curbing will be asphalt, 6" high.
 - iv. Contractor will perform the following:
 - 1. Clean off areas to be curbed.
 - 2. Install curbing
 - 3. Clean up debris
- j. Hydro seed complex
 - i. Hydro seed areas that do not have vegetation currently growing. This is approximately 10 acres located throughout the complex.
 - ii. Seed mix as follows:
 - 1. Materials
 - a. 18-24-9 Fertilizer
 - b. 67% Pensacola 33% Browntop Millet
 - c. 70/30 Fiber mulch with tack agent

- k. Upgrade electrical service for Westside of FSB
 - i. See Attachment F 'FSB Elect Upgrade' for detail scope of work.
- l. Replace guard shack transformer
 - i. The transformer currently has a leak in the oil cooling fins and cannot be repaired.
 - ii. Current transformer is 112.5 kVa, 13.2 v to 208 v, outdoor rated and oil filled.
 - iii. The contractor will need to work with InDyne through SpaceX for transformer power down.
 - iv. Contractor will perform the following:
 - 1. Procure current type or equivalent transformer
 - 2. Disconnect wiring
 - 3. Unbolt and remove the defective transformer
 - 4. Install new transformer
 - 5. Connect wiring
 - 6. Verify transformer is operating nominally
- m. Install new lighting in Upper AGE
 - i. See Attachment G 'AGE Lighting' for detail scope of work.
- n. Paint outside of Falcon Support building
 - i. Existing paint has been sampled on the outside of the building. See Attachment C 'Environmental Reports' for paint survey results. If lead paint exists, paint over areas.
 - ii. Contractor will perform the following:
 - 1. Building is 83' x 165' x 23'
 - 2. Prepare wall surfaces for paint
 - 3. Prepare doors and frames for paint
 - 4. Collect all debris (SpaceX will dispose of materials)
 - 5. Primer surfaces as required
 - 6. Paint wall surfaces with similar color flat latex paint
 - 7. Paint doors and frames with similar color semi-gloss latex paint

D. Option 1: Demolition the existing flame duct

- i. Perform flame trench demolition per attachment XX
- ii. XXXX

E. Option 2: Install conductive flooring in Hangar hypergol area

- i. Hangar hypergol area needs conductive flooring for fueling operations.

- ii. Floor shall be designed in accordance with DoD 4145.26-M, *DoD Contractors Safety Manual for Ammunition and Explosives*.
- iii. Flooring must be compatible with monomethylhydrazine, nitrogen tetroxide and standard industrial cleaners and solvents
- iv. Static Control Properties – Surface Resistance/resistance to ground, megaohms (ANSI/ESD S.7.1/ASTM F-150-89/NFPA 99): 0.025 – 1.0
- v. Use Stonlux ATK by Stonhard (resinous conductive flooring) or equivalent.
- vi. Contractor will perform the following:
 - 1. Demo existing epoxy flooring coating to bare concrete(if required) out 25 foot from Hypergol trench.
 - 2. Area is approximately 75' x 77'.
 - 3. Test flooring per ASTM E 1907 Standard Guide to Methods of Evaluating Moisture Conditions of Concrete Floors to Receive Resilient Floor Coverings.
 - a. Install moisture/pressure barrier per manufactures instructions.
 - 4. Prepare flooring per ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
 - a. Prime area per manufactures instructions.
 - 5. Install flooring per manufactures instructions.
 - 6. Test flooring per DoD 4145.26-M.
 - a. Contractor will provide final test plan for review and as run copy when complete.

1.2.2.2. Site inspections will be required during the course of the design to ensure all existing conditions are addressed and verified.

- A. Inspection(s) as required to as-built the existing installations. The Contractor shall investigate and evaluate the existing structural conditions, water run off, utilities, communications and electrical service.

2. REQUIREMENTS TO BE ADDRESSED IN DESIGN DOCUMENTS

2.1. DIVISION 01 – GENERAL

2.1.1.1. UTILITY LOCATE/EXCAVATION PERMIT

Work with SpaceX to complete any utility locate/excavation permit request forms. Coordinate requirements for the locators: place, date, time, utilities that need to be located, any excavation that may be necessary, access to manholes, etc.

Complete KSC Form KSC 26-312 NS, Utility Locate/Excavation Permit Request, and submit to ISC-4210. Coordinate requirements for the Locators: Place, date, time, utilities that need to be located, any excavation that may be necessary, access to manholes, etc.

2.1.1.2. ACCESSIBILITY.

2.1.1.3. COLOR SELECTION

2.1.2. SPECIAL CONSTRUCTION

2.2. DIVISION 02 – SITE WORK

2.2.1. Excavation, Backfilling and Compacting for Structures and Utilities. Ensure that proper storm water drainage around the facilities is maintained.

2.3. DIVISION 03 – CONCRETE

2.4. DIVISION 05 – METALS

2.5. DIVISION 07- THERMAL AND MOISTURE PROTECTION

2.6. DIVISION 08-DOORS AND WINDOWS

2.7. DIVISION 09-FINISHES

2.8. DIVISION 13-SPECIAL CONSTRUCTION

2.9. DIVISION 15 – MECHANICAL

2.10. ELECTRICAL

2.11. SPECIAL REQUIREMENTS

2.11.1.1.REQUIREMENTS FOR NEW FACILITIES, ADDITIONS, OR MAJOR ELECTRICAL REHABILITATION.

2.11.1.2.EQUIPMENT AND WARRANTY MATRIX. Deliverable. Provide in Data Manual and specification.

- A. Develop a matrix that itemizes all warranties to be transferred to the Government from the contractor. Include warranty coverage period, approximate value or replacement cost, a place for the vendor name, and event at which each warranty item begins.

2.12. ENVIRONMENTAL REQUIREMENTS

2.12.1. RECORD OF ENVIRONMENTAL CONSIDERATION (REC)

A copy of the KSC REC on file for the project is attached to this SOW. Ensure that all environmental requirements levied by the REC are documented in the construction contract documents (A&E generated drawings and specs).

2.12.2. DRAFT PERMIT PACKAGES (IF REQUIRED). Deliverable. Deliver to LDE.

2.12.2.1. Submit draft permit packages (If Required) and the appropriate applications for review at the 90% design level. Provide all the necessary design calculations, exhibits, application forms, and figures in accordance with the requirements of the local jurisdictional and regulatory agencies in a coherent package to the LDE. NASA will provide “boilerplate” application form(s) to the Design-Build Contractor with certain information already provided. Provide all other necessary technical information pertinent to the design. Except for signing and sealing, provide and make distribution to the Environmental Coordinator 6 sets of the permit package for NASA review. Review comments for the permit package will be held concurrent with the 90% design review, and incorporate all approved comments and corrections into a complete permit package. Submit all original documents and 6 copies of the permit package(s) to NASA within 10 days following the receipt of review comments from the LDE, to the Environmental Coordinator for the purpose of obtaining permits, and they shall be signed and sealed by a Florida-registered professional engineer in the appropriate discipline.

2.12.3. ENVIRONMENTAL PERMIT PACKAGES (IF REQUIRED). Deliverable. Deliver to LDE.

2.12.3.1. Environmental Permit Packages (If Required). Perform the analyses and prepare the exhibits required to permit the design project. Should additional permits be necessary in the course of the design, notify the LDE of the requirement immediately with an explanation of why the additional permits are required.

3. SERVICES

3.1. INVESTIGATIONS AND STUDIES

3.1.1. DEMONSTRATE COMPLIANCE WITH FEDERAL REGULATIONS, EXECUTIVE ORDERS, AND STANDARDS VIA DESIGN CERTIFICATIONS AND CALCULATIONS.

3.1.1.1. ENVIRONMENTAL SUSTAINABILITY

A. HAZARDOUS MATERIALS REPORTS. Deliverable –. Provide in Data Manual.

- i. Asbestos - Investigate the site with coordination with the KSC Safety, Occupational Health, & Environmental Division to determine if any existing facility or system to be modified contains asbestos. If asbestos is suspected, **provide sample analysis to quantify the abatement action**. If test samples are positive, include all necessary asbestos removal requirements in the drawings and specifications and in accordance with the Specifications-kept-Intact (SpecsIntact) Section for Asbestos Abatement. Complete the investigation prior to the first design review. Clearly indicate quantities, locations, and disposal of all asbestos materials to be abated. Complete the Asbestos Data Call Template form and submit it to the LDE.
- ii. Polychlorinated Biphenyls (PCB's) - Notify the LDE when electrical equipment, heat transfer systems, and hydraulic systems involving PCB's will be removed. Define and develop disposal requirements in the design with the NASA Environmental Office. PCB in paints/coatings – Where recycling of painted/coated materials are feasible, test for PCB's in accordance with the KSC

Environmental Office's "*Policy for Determination, Management, and Disposal of Potential Polychlorinated Biphenyls (PCB) Bulk Product Waste.*" Provide contract requirements in accordance with this policy.

- iii. Heavy Metals - Investigate in conjunction with the Contracting Officer's Technical Representative (COTR) and the representatives from KSC's Environmental Health Office the site to determine if any existing facilities or systems to be modified contain any of the following elements: arsenic, barium, cadmium, chromium, lead, mercury, selenium, or silver. If any of the above materials are suspected, perform sample analyses and provide test results. If test samples indicate metals in amounts above threshold limits, include in the construction specification all necessary removal requirements in accordance with OSHA guidelines. Complete the investigation prior to the first design review. Show locations of hazardous materials on the drawings.

B. TRADE STUDIES AND USE OF SUSTAINABLE RESOURCES. Deliverable. Provide in Data Manual.

- i. Document the selection process for selecting the particular renewable and recycled materials specified in the design.
- ii. Determine if products specified are in compliance with the Buy American Act. If not, provide an exceptions list. In general, the product must be assembled in the United States, and more than half of the value of the materials must be of American source. The value is determined at the first level back from assembly.

3.1.2. VERIFY ALL EXISTING FACILITY AND UTILITY INTERFACES AND CAPABILITIES

3.1.2.1. Obtain master plan drawings of the area involved from the Engineering Documentation Center (EDC) at (321)867-3265 and conduct on-site investigations as necessary to perform the design work. Verify the existing ground elevations, and when it is required by design, perform topographic surveys and geotechnical surveys.

3.2. DESIGN REVIEWS AND MEETINGS

3.2.1. DESIGN-BUILD CONSTRUCTION OVERLAPPING. Construction may begin before the entire design process is finished. Design documents, and construction schedules for individual project systems/components must be approved by the LDE before construction on those systems/components may begin.

3.2.2. DESIGN REVIEW PARTICIPATION. Participate in design reviews at KSC. See Table 1 for submittals and design reviews schedule. Deliver all design review packages to the LDE for distribution. For each design review, provide a cover letter along with a distribution list announcing the meeting. The distribution list will be provided by the LDE. These documents will be updated as the project progresses.

3.2.3. DESIGN REVIEW FORMAT. The Design-Build Contractor shall chair the design review (table-top review). Review all review comments and disposition as "Accepted," all comments

that the Design-Build Contractor determines as within scope and that requires no further discussion. Present for discussion all comments, “Accepted” and otherwise, during these open reviews. Record the dispositions and follow up by incorporating the agreed disposition actions into the design drawings and specifications.

3.2.3.1. Present and make clear to review participants, all issues that affect design and that have interdisciplinary effects (e.g. layout of mechanical elements may affect structural or architectural features). Clearly resolve such issues with the LDE - DO NOT PERCEIVE SILENCE ON AN ISSUE AS “ACCEPTANCE.” The following disposition codes shall be recorded on each review comment:

- A. “ACCEPTED” - the comment is within scope and will be incorporated as stated.
- B. “ACCEPT INTENT” - the comment will be incorporated in an appropriate manner that satisfies the comment’s intent.
- C. “REJECTED” - the comment will not be incorporated.
- D. “STUDY” - the validity or the impact of the comment cannot be assessed during the review. Additional information or action will be pursued before providing a definitive disposition.
- E. “WITHDRAWN” - the comment is withdrawn by the originator or the originator’s representative.

3.2.3.2. DISPOSITIONS. Deliverable.

- A. Provide dispositions of Review Comments on Engineering Review Comment (ERC) Form and minutes of design review meeting. Capture in minutes all actions that may be required to bring the design to its next level. Identify the responsible parties for the action(s) and note any agreed dates for return responses. Provide a copy of the Attendees List for record.

4. DESIGN PRODUCTS

4.1. CONSTRUCTION PACKAGE

4.1.1.1. Provide one design package (drawings and all required specifications) to be used by the Design-Build Contractor for construction of one or more portions of the project. Drawings and specifications shall comply with the requirements below. Sketches are allowed only when driven by a short schedule; however, the sketches shall be followed up by drawings that meet the requirements under, “DRAWINGS.”

4.1.2. DRAWINGS

4.1.2.1. Take positive measures to insure that all disciplines of the design -- architectural, structural, civil, mechanical, and/or electrical -- are coordinated so that no conflicts will result. Drawings in the various disciplines shall be drawn to the same scale with the same match line

and located in the same position, where practical. Draw in perfect registration: the foundation plan and electrical plan.

- 4.1.2.2. Format in AutoCAD™, MicroStation™, or DXF format in accordance with GP 435, Volume II. Provide topographical survey data in electronic format to the Lead Design Engineer for distribution for reviews. If data is included in the electronic file set for the drawings, submit a complete set of files on CD-ROM media at each design review. Submit on KSC "F" size sheets using black ink on paper media or vellum. Graphite lead is prohibited. Drawings shall be readable when reduced to half-size. Adhere to the following requirements:
- 4.1.2.3. The drawings of different disciplines shall be coordinated to ensure a functional system.
- 4.1.2.4. Double dimensioning shall be avoided. All sheets shall include a graphic scale for each scale used on that sheet.
- 4.1.2.5. Drawings shall show the type of fabrication required, i.e., machined, welded, cast, bolted, etc.
- 4.1.2.6. Work-point locations shall be vertically and horizontally tied to basic points of reference for proper fabrication and erection.
- 4.1.2.7. Provide Geographical Information System (GIS) data – Provide GIS data compatible with GIS system at KSC. Information shall include but not be limited to:
 - A. Location of all lines, conduits, valves, fittings, fire hydrants, meters, terminal points using at least two ties to permanent points (manholes, power poles, curbs, or storm water inlets), or Global Positioning System (GPS) coordinates with accuracy to 3 feet. An acceptable station and offset system may be used for service lines and fittings only.
 - B. Location of lines from property easement lines or edges of pavement at intervals of 300 feet.
 - C. Easement information.
 - D. Certification by the surveyor or engineer accepting responsibility for accuracy of information supplied on the record drawing.
 - E. File format shall be AutoCAD™ (version 14 or higher), MicroStation™ DGN format, DXF format, or ESRI™ GIS Shape file format shall be provided. (AutoCAD™ levels shall contain like items so as to permit an easy conversion to GIS layers). Provide all surveyor's data including electronic data files in one of the GIS-compatible formats listed above.
 - F. Horizontal accuracy: All surveys/drawings shall be referenced to Florida State Plane Coordinate System, East Zone, North American Datum 1983/1990 adjustment based on Second Order Class II horizontal control monument.
 - G. Vertical: All surveys shall be referenced to North American Vertical Datum (NAVD) 1988. The survey shall include a description of the reference benchmarks from which the NAVD has been determined.

4.1.3. SPECIFICATIONS

- 4.1.3.1. Prepare all specifications using the Specsintact (SI) software system and its associated texts. Precedence of use shall be as follows: the KSC Local Mastertext, the NASA Mastertext, the Unified Facilities Guide Specifications (UFGS) and other SI formatted texts.
- 4.1.3.2. SI Mastertext shall be considered generic examples only and they shall be edited and appropriately coordinated for local conditions. Use KSC masters where applicable including fire alarm systems. Editing notes in the texts shall not be considered design direction and the A-E shall remain fully responsible for the technical content of the resulting project specifications. Ensure that the specifications and the contract drawings do not have conflicting requirements. When specifying a product by “brand name, model number, or equal,” the product’s salient “or equal” features must be identified. Provide a market search to ensure such “or equal” products are available from at least two manufacturers. The level of design completeness of the specifications shall correspond directly with the level of the design reviews.
- 4.1.3.3. The SI system is available through subscription from the National Institute of Building Sciences (NIBS) on the Construction Criteria Base (CCB), a Compact-Disk-Read-Only-Memory (CD-ROM) based system. A subscription fee is required. Additional software and hardware required by the SI system are a CD-ROM reader and its associated programs. These items may be purchased through either NIBS or independently. Information about purchasing the CCB/SI package may be obtained by calling NIBS at (202) 289-7800 (NIBS/CCB, 1090 Vermont Avenue NW, Suite 700, Washington, D.C., 20005). Alternatively, the SI software and mastertext are available for download at the Specsintact website:
<http://si.ksc.nasa.gov/specsintact/index.asp>.
- 4.1.3.4. Start project specifications under the most current software revision and all subsequent submittals for a project from the same revision number.
- 4.1.3.5. In order to make changes to the SI Master apparent, the following submittal procedure shall be followed (all redlines are to be legible):

First Review	Edit each section showing all changes made to the master text. Underline new text and show text to be deleted as text stricken through with a single line. (Use show revision feature of SI program)
Intermediate Review	Revise each section following the previous review meeting. Redline the reused sections to show all changes made since the previous review. Execute all SI reconciliation and verification functions and correct any problems reported prior to submittal. For the intermediate review following the first review, submit one copy of the project diskettes backed up using the SI software.

Final Submittals	Provide a completed, revised project specification along with a copy of the project diskettes backed up using the SI software. Execute all SI reports and reconciliations. Verifications shall be executed and corrected. A hard copy of all the SI reconciliation and verification reports shall be submitted separately to the LDE or, if a Data Manual is required, include them as part of the Data Manual. (Do not include as part of the project specification).
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- 4.1.3.6. Edit the project specifications using the SI system. Save, print, and back up project specifications using the SI system.
- 4.1.3.7. Review and edit submittal requirements to a minimum quantity required for quality assurance and operations and maintenance requirements determined during the design process. Retain in the contract specifications only those submittals considered critical to assure quality and compliance to the contract. Remove for submittals any industry standard items that are appropriately marked or certified as meeting contract specifications and that can be easily inspected in the field.
- 4.1.3.8. **MANDATORY INSPECTION POINTS.** Provide specifications that explicitly direct the contractor to show MIPs in the construction schedule so that arrangements can be made in advance for inspection. Explicitly state that all submittals that require government approval be dispositioned as such prior to inspection. Additionally state that any impacts resulting from the contractor’s inability to meet these requirements will be borne at no additional cost to the Government.
 - A. Coordinate with the construction manager to provide Mandatory Inspection Points (MIPs) within the contract with appropriate monitoring and scheduling for MIPs. Examples of MIPs include critical tests that require witnessing by Government representatives; electrical or plumbing routing and connections prior to covering by wall installations; and duct inspections prior to ceiling installation.
- 4.1.3.9. All submittals requiring approval shall be edited to include the symbol, “G” within the submittal tags (e.g. _{Test Report} will become _{Test}(space)_G) to enable the system to manipulate and process the tagged text.
- 4.1.3.10. Develop sections not included in the SI system but necessary for the job in the SI format. Obtain section numbers for new sections by contacting the KSC SI office at (321) 867-8630.
- 4.1.3.11. **KSC-Specific Requirements.** Delete from the completed specifications, all parts and subparts that are not applicable to KSC or that are in conflict with KSC procurement. Coordinate all sections used in the contract specifications with the NASA and KSC procurement clauses to preclude conflicts with each other.

4.2. SPECIAL REQUIREMENTS FOR CONTRACTOR DURING CONSTRUCTION

- 4.2.1. DIMENSIONAL AND GIS DATA VERIFICATION. Provide contract notations or flag notes identifying systems or components that will require the construction contractor to verify by a registered surveyor or engineer all new and/or modifications, changes, and additions to aboveground and underground structures and utilities.
- 4.2.2. Provide contract documents requiring the contractor to submit the following:
- 4.2.2.1. Shop Drawings, SD-02. Include in the appropriate Specifications the SD-02 requirements for schematics, logic diagrams, interface diagrams, wiring diagrams, and assembly details as required in order for the government to verify that the contractor's proposed equipment meets the contract specifications.
- 4.2.2.2. Standard O&M manuals.
- 4.3. DESIGN-BUILD SUBMITTALS
- 4.3.1. DESIGN DRAWINGS. The originals and two copies of the drawings (black line). Submit electronic file drawings developed on a Computer Aided Design/Computer Aided Engineering (CAD/CAE) system on compact disc. File format shall be DGN, DXF, or Intergraph-compatible. All file symbol libraries and reference files necessary to load and use each file shall be merged into each file so that each file is a stand alone file. If the files are compressed the uncompression program, include a README.TXT file explaining how to uncompress the files. Label the CD packing box with the Project title, PCN number, 79K drawing number, drawing sheet numbers, and corresponding file names. Provide GIS-compatible electronic data files used to develop the contract drawings.
- 4.3.1.1. A completed *Document Release Authorization (DRA) KSC Form 21-68*. Complete in accordance with *DE-P720*, and include all attendees of the design review meetings in the distribution list.
- 4.3.2. AS-BUILT DRAWINGS.
- 4.3.2.1. Incorporate the record construction drawings into "as-built" drawings after the completion of the construction contract work. The as-built drawings will be based upon contract changes, corrections, EOs, field adaptations, and redlined drawings that may be prepared by the contractor.
- 4.3.2.2. Submit electronic media in the form of Compact Disc(s) (CDs). File format shall be DGN, DXF, ESRI™ GIS Shape file, or Intergraph-compatible. Provide all file symbol libraries and reference files necessary to load and use each file so that each file is an operable, stand-alone file. If the files are compressed provide the uncompression program along with a README.TXT file explaining how to uncompress the files. Label the CD packaging box shall be with the Project title, PCN number, 79K drawing number, drawing sheet numbers, and corresponding file names. Provide one set of as-built drawings of dark line on white background prints for review and approval. The prints may be either full size or half size. Send to the Lead Engineer, within 30 days of final construction completion. After review and approval by the Lead Engineer, submit one final set of full size as-built originals and two copies of the compact diskette.

5. CONSTRUCTION REQUIREMENTS

- 5.1. The Design-Build Contractor shall only begin construction on approved portions of the projects after submitted design packages have been approved by the CO. The Contractor may request to phase the work so that some portions of the work starts before all work is defined and submitted. Construction will occur in accordance with approved design drawings and specifications.

6. REFERENCES

- 6.1. The following documents of the issues in effect on the date of issuance of the Statement of Work contain the mandatory guidelines that govern all design and construction performed for NASA at KSC. They may be obtained at the KSC Library on the first floor of the Headquarters Building on the Space Center and many are available on the Internet. Notify the LDE of revisions to documents or alternate standards during the design that will affect the design or the construction costs so that a proper evaluation of the changes may be accomplished.

6.2. GOVERNMENT PUBLICATIONS

<u>29CFR Part 1910</u>	<u><i>Code of Federal Regulations, Occupational Safety and Health Standards</i></u>
<u>40CFR Part 355</u>	<u><i>Code of Federal Regulations, Emergency Planning and Notification</i></u>
<u>DE-P520</u>	<u><i>Engineering Documentation Center</i></u>
<u>GP-435, Volume II</u>	<u><i>Engineering Drafting Practices Manual</i></u>
<u>KNPR 8830.1</u>	<u><i>Facilities and Real Property Management Procedural Requirements</i></u>
<u>KHB 1610.1</u>	<u><i>KSC Security Handbook</i></u>
<u>KSC-DE-512-SM</u>	<u><i>Facility, system, and equipment general design requirements</i></u>
<u>KSC-DF-107</u>	<u><i>DE Technical Documentation Style Guide</i></u>
<u>NASA-STD-5008</u>	<u><i>Protective Coating of Stainless Steel, Carbon Steel, and Aluminum on Launch Structures, Facilities, and Ground Support Equipment</i></u>
<u>KSC-STD-E-0002</u>	<u><i>Hazardproofing of Electrically Energized Equipment, Standard for</i></u>
<u>NASA-STD-5008</u>	<u><i>Protective Coating of Stainless Steel, Carbon Steel, and Aluminum on Launch Structures, Facilities, and Ground Support Equipment</i></u>

<u>KSC-STD-E-0011</u>	<u>Electrical Power Receptacles and Plugs, Standard for</u>
<u>KSC-STD-E-0012</u>	<u>Facility Grounding and Lightning Protection, Standard for</u>
<u>KSC-STD-F-0004</u>	<u>Fire Protection Design, Standard for</u>
<u>KSC-STD-Z-0004</u>	<u>Structural Steel Buildings and Other Structures, Design of, Standard for</u>
<u>KSC-SPEC-G-0002</u>	<u>Compiling Construction Cost Estimates</u>
<u>NPR 8715.3</u>	<u>NASA Safety Manual</u>
<u>NPD 8820.2</u>	<u>Design and Construction of Facilities</u>
<u>NPR 8820.2</u>	<u>Facility Project Implementation Handbook</u>
<u>NPR 8831.2</u>	<u>Facilities Maintenance Management</u>
<u>UFAS</u>	<u>Uniform Federal Accessibility Standards for Federal Facilities</u>

6.3. INDUSTRIAL/PROFESSIONAL ASSOCIATIONS

AISC 325-05	American Institute of Steel Construction Steel Construction Manual, <u>Thirteenth Edition</u>
<u>ASSE 1264.1</u>	American Society of Safety Engineers, <u>Safety requirements for workplace floor and wall openings, stairs and railing systems.</u>
ASCE/SEI 7-05	American Society of Civil Engineers, <u>Minimum design loads for buildings and other structures.</u>
<u>ASHRAE</u>	American Society of Heating, Refrigerating, and Air Conditioning Engineers, <u>HVAC Systems and Equipment; HVAC Application; Refrigeration; Fundamentals</u>
ASTM	American Society for Testing and Materials
AWS	American Welding Society
FBC	Florida Building Commission, <u>Florida Building Code</u>
<u>NFPA</u>	National Fire Protection Association, <u>National Fire Codes (Volumes 1 through 16)</u>

REFERENCE DRAWINGS

XXKXXXXX LC40 Lightning protection system

ATTATCHMENTS:

- A. Attachment A Bollards.pdf
- B. Attachment B Substation Maint.pdf
- C. Attachment C Environmental Reports.pdf
- D. Attachment D Lightning Tower Maint.pdf
- E. Attachment E FSB HVAC.pdf
- F. Attachment F FSB Elect Upgrade.pdf
- G. Attachment G AGE Lighting.pdf

Table 1 - DESIGN – BUILD REVIEW SUBMITTAL SCHEDULE MILESTONES¹

	Calendar Days After Contract Date	Drawings ² (Copies)	Specs ³ (Copies)	Data Manual (Copies)	Construction Bar Chart (Copies)	Cost Estimate (Copies)
45 % Submittal	10	8	3	NA	1	1
90 % Submittal	20	8	3	NA	1	1
100 % Submittal	30	8	3	1	1	1
Construction start	30					
Construction Mid Point	190	NA	NA	NA	1	1
Construction Finished	360					
As-Built Document Check Print	390	4	2	-1-	--	--
Final Submittals	410	See Part Titled, "FINAL SUBMITTALS"				

¹ NOTE - Design Reviews will be scheduled 5-10 calendar days following the scheduled submittal date.

Attachment 1 – Extended Title I Clause

1.0 SCOPE

- 1.1 This portion of the Statement of Work describes the services that are required of the Architect on record during the construction phase of the Upgrades to Launch Complex 40, CCAFS. This clause is written in imperative form and this imperative language is directed to the Design-Build Contractor, unless specifically noted otherwise.

2.0 SERVICES REQUIRED

- 2.1 The Architect on record shall perform inspections, reviews and consultations during the construction phases of this facility as a surrogate to the government.
- 2.2 Provide all the engineering services as described herein to support the construction activities associated with this project.

2.3 ENGINEERING EXPERTISE

- 2.3.1 Certify construction contract submittals for compliance with drawings, specifications and contract requirements and provide recommendations for response and disposition of any Requests for Information and Deviation/Waivers requiring government attention. Provide the engineering expertise and design for corrective actions. Analyze test results and procedures.

2.3.1.1 INTERPRETATION OF CONTRACT DRAWINGS AND SPECIFICATIONS. Investigate and provide consultation to interpret the intent of the plans and specifications in any and all instances where a question or issue arises in this regard. When necessary to clearly define or clarify any drawing, detail, or specification requirements, the A&E shall provide the appropriate documentation, engineering, sketches, and calculations.

2.3.1.2 TECHNICAL REVIEW. Perform a technical review of all shop drawings and vendor data to certify that the proposed methods and materials conform to the requirements of the construction drawings and specifications. Errors, misinterpretations, deficiencies, etc. identified by the technical review shall be indicated on the submitted data in a clear and concise manner that can be readily interpreted and corrected. Based on the technical review, the A&E shall recommend approval, disapproval, or approval subject to comments of the Contracting Officer or his designated representative, or require resubmitting as necessary. Close coordination with each respective NASA system engineer shall be effected.

2.4 DOCUMENTATION

- 2.4.1 Provide documentation production and administration in support of the review and disposition of submittals and other records during the construction period.

Provide record copies to the Government of all submittals, shop drawings, Requests for Information (RFIs) and Deviation/Waiver (D/W) requests upon disposition.

2.4.1.1 SUBMITTALS REQUIRED IN SPECIFICATIONS. Review and recommend dispositions of submittals required in the specifications.

2.4.1.2 SHOP DRAWINGS. Provide, at the A&E's home office, sufficient qualified personnel in each technical discipline to provide a detailed review of all shop drawings and related documentation. This review shall determine compliance with the intent of the plans and specifications and shall result in a recommendation to the Government a disposition of each shop drawing submittal.

2.4.1.2.1 Resubmittal. Review and recommend disposition of shop drawings and vendor data resubmittals as required. A disapproval of the resubmittal will, depending upon the situation, necessitate a conference to provide direction and to expedite the final resolution of the resubmittal.

2.4.1.2.2 REQUESTS FOR INFORMATION (RFIs). Support the timely resolution of RFIs that relate to the interpretation of design drawings and specifications.

2.4.1.3 DEVIATION/WAIVERS (D/Ws). Provide the engineering expertise to evaluate and to recommend disposition of D/Ws that may be acceptable, but alternative, methods, techniques, or products that will meet the design requirements. All D/Ws recommended for approval require Government concurrence.

2.4.1.4 CALCULATIONS. Perform and submit engineering calculations to the Technical Representative in support of any design changes, corrections, and clarifications.

2.4.1.5 SUBMITTAL RECORDS. Develop and maintain a system for the receipt, disposition, and return of shop drawings and all documentation. Upon completion of this contract, all documentation — including magnetic media, if used, and hardcopy — shall be turned over to the Technical Representative. The A&E shall maintain a log of shop drawings and vendor data that is both required by the contract drawings and specifications as well as already those submitted for review. This log shall contain, as a minimum, the following information:

2.4.1.5.1 An up-to-date listing of all required shop drawings, indicating those shop drawings already submitted and those still required.

2.4.1.5.2 Transmittal number.

2.4.1.5.3 Contract due date for Government response.

2.4.1.5.4 Construction specification section number.

2.4.1.5.5 Name of the NASA system engineer.

2.4.1.5.6 A brief description of the material contained in the submittal.

2.4.1.5.7 Action taken.

2.4.1.6 AS-BUILT DRAWINGS. Incorporate the record construction drawings into “as-built” drawings after the completion of the construction contract work. The as-built drawings will be based upon contract changes, corrections, EOs, field adaptations, and redlined drawings that may be prepared by the contractor.

2.4.1.7 AS-BUILT DRAWING REVISION. Revise drawings in accordance with GP 435, Volume II, revision B, section XI. Transfer signatures and dates on the original approved drawing sheets into the same boxes on the final drawing. Transferred signature shall be the first initial and the full last name. Delineate all changes to the original drawing with clouds, denoted with a revision triangle and number, and summarized in the title block revision box. Mark all design contract drawings as the next revision letter and denote in the revision box as “AS BUILT CONSTRUCTION DRAWINGS”. Mark any drawings which do not have changes as the next revision letter and denote in the revision box as “AS BUILT CONSTRUCTION DRAWINGS, NO CHANGES”. Indicate all revised sheets and new sheets on the cover sheet revision block and drawing index sheet.

2.4.1.8 AS-BUILT DRAWING SUBMITTALS. Submit electronic media in the form of Compact Disc(s) (CDs). File format shall be DGN, DXF, ESRI™ GIS Shape file, or Intergraph-compatible. Provide all file symbol libraries and reference files necessary to load and use each file so that each file is an operable, stand-alone file. If the files are compressed provide the uncompression program along with a README.TXT file explaining how to uncompress the files. Label the CD packaging box shall be with the Project title, PCN number, 79K drawing number, drawing sheet numbers, and corresponding file names. Provide one set of as-built drawings of dark line on white background prints for review and approval. The prints may be either full size or half size. Send to the Lead Engineer, within 30 days of final construction completion. After review and approval by the Lead Engineer, submit one final set of full size as-built originals and two copies of the compact diskette.

2.5 CERTIFICATE(S) OF COMPLETION.

- 2.5.1 Following the completion of the construction phase, certify that the environmental aspects of the project have been completed in accordance with the approved permits by submitting Certificate(s) of Completion and associated clearance requests to place permitted systems into operation, signed and sealed by a professional engineer in the appropriate discipline. Clearance requests shall be accompanied by applicable record drawings and operation & maintenance manuals, and copies shall be provided to designated NASA and government-contractor system engineers.

Hall, Patrice (KSC-IHA-4100)[IHA]

From: Britton, Keith J. (KSC-TAB3C)
Sent: Wednesday, September 09, 2009 12:05 PM
To: Hall, Patrice (KSC-IHA-4100)[IHA]
Cc: Le, Michael V. (KSC-TAB3A)
Subject: RE: PCN 98818 Recovery Act LC40 Environment check list

The Generator work has been removed as a requirement for this project.
Not sure if you still need the info, maybe SpaceX could provide it.

From: Hall, Patrice (KSC-IHA-4100)[IHA]
Sent: Wednesday, September 09, 2009 11:23 AM
To: Britton, Keith J. (KSC-TAB3C)
Cc: Vanaman, Christine A. (KSC-IHA-4100)[IHA]; Shaffer, John P. (KSC-TAB1C)
Subject: FW: PCN 98818 Recovery Act LC40 Environment check list

Keith,

Part of Task 1 is to convert the backup generator from 208v to 480v. The SOW states the generator was moved from another location.

Do you know where the generator came from and how long it has been in its current location? In order to provide a response in the Record of Environmental Consideration (REC) we need to know if it is already included on the KSC or CCAFS Title V air permit. Any information you could provide on the generator would be appreciated.

Thanks,

Patrice

Patrice Hall

Environmental Engineer
Innovative Health Applications
Mail Code: IHA-200
Kennedy Space Center, FL 32899
Phone: 867-8430
Fax: 867-3409
laura.p.hall@nasa.gov

From: Shaffer, John P. (KSC-TAB1C)
Sent: Wednesday, September 09, 2009 9:59 AM
To: Britton, Keith J. (KSC-TAB3C)
Cc: Hall, Patrice (KSC-IHA-4100)[IHA]; Herpich, Kristina (KSC-IHA-4100)[IHA]; Matthews, John P. (KSC-TAB1B)
Subject: FW: PCN 98818 Recovery Act LC40 Environment check list

Keith

I have spoken with our Compliance folks and the Air Force and we all agree that since this is a NASA funded project, then it should be treated like any other CoF project and the Contractor (Not SpaceX) should be responsible for handling all wastes generated by this project under the existing NASA KSC procedure outlined in KNPR 8500.1

So, this SOW should be written like any other Coff project. I have highlighted the areas in the SOW that need to be edited to remove reference to SpaceX handling "debris" from the Contractor.

John Shaffer
Lead, Environmental Planning
NASA
Mailcode: TA-BI-C
Kennedy Space Center, FL
321-867-8448

From: Britton, Keith J. (KSC-TAB3C)
Sent: Wednesday, September 02, 2009 12:28 PM
To: Shaffer, John P. (KSC-TAB1C)
Subject: RE: PCN 98818 Recovery Act LC40 Environment check list

<< File: PCN 98818 Design&Build SOW .doc >>

Draft SOW, details still being developed but the basic requirements are identified.

From: Shaffer, John P. (KSC-TAB1C)
Sent: Wednesday, September 02, 2009 11:27 AM
To: Le, Michael V. (KSC-TAB3A)
Cc: Britton, Keith J. (KSC-TAB3C)
Subject: RE: PCN 98818 Recovery Act LC40 Environment check list

I will need a SOW to determine what the potential impacts and liability are for NASA.
Could we meet sometime early next week with a SOW in hand to discuss this?

John Shaffer
Lead, Environmental Planning
NASA
Mailcode: TA-BI-C
Kennedy Space Center, FL
321-867-8448

From: Le, Michael V. (KSC-TAB3A)
Sent: Wednesday, September 02, 2009 10:40 AM
To: Shaffer, John P. (KSC-TAB1C)
Cc: Britton, Keith J. (KSC-TAB3C)
Subject: PCN 98818 Recovery Act LC40 Environment check list

<< File: Environment CK list.ifm >>

Hall, Patrice (KSC-IHA-4100)[IHA]

From: Hawkins, Dale Civ USAF AFSPC 45 CES/CEAO [Dale.Hawkins@patrick.af.mil]
Sent: Thursday, January 28, 2010 9:03 AM
To: Hall, Patrice (KSC-IHA-4100)[IHA]; Britton, Keith J. (KSC-TAB3C)
Cc: Herpich, Kristina (KSC-IHA-4100)[IHA]
Subject: RE: KSC Environmental Checklist #7761- Recovery Act Upgrades to LC40

I believe this may be the same as the previous item Kris sent me about upgrades to LC 40, fac 12150. Our comments on that project were:

All modifications to the water system that are downstream of the space launch complex backflow preventor and/or demarcation line are the sole responsibility of SpaceX for regulatory coordination, permitting, and construction. Modifications to dedicated fire systems do not require regulatory permitting as long as the fire system is properly isolated from the potable water supply. Modifications to portions of the potable water system components owned by the Air Force will need to be reviewed for permitting requirements and must be coordinated through 45 CES/CEAN prior to construction. Any outages to the potable water system resulting from construction of the fire system require notification by the Air Force to FDEP prior to, during and after occurrence of the outage. Appropriate notices and bacteriological sampling of newly installed water mains in accordance with F.A.C. 62-555 may be required, depending on configuration changes. Please coordinate all modifications to Air Force owned potable water system components with the IOMS water and wastewater shop.

Very respectfully,

Dale Hawkins
Environmental Planner
Asset Optimization
Cape Canaveral Air Force Station

(321) 853-0960
DSN 467-0960
cell (321) 394-1212

-----Original Message-----

From: Hall Laura P.
Sent: Thursday, January 28, 2010 8:58 AM
To: Britton Keith J.
Cc: Le Michael V.; Ruffe Lisa Marie.S; Herpich Kristina; Hawkins, Dale Civ USAF AFSPC 45 CES/CEAO; Vanaman Christine A.; Callister, Kathleen E. (HQ-LD020)
Subject: KSC Environmental Checklist #7761- Recovery Act Upgrades to LC40

See the attached checklist PDF file
The REC has been updated to include additional tasks.

Avoid Verbal Orders

TO: TA-B3C/Keith Britton

DATE: 9/9/2009

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

CHECKLIST #: 7614

1. PROJECT INFORMATION

Project Title: Upgrades to Launch Complex 40, CCAFS

Project Lead: Keith Britton, TA-B3C, 867-1955

Directorate Project No.: 98818

EPB Reviewer: LPH

Facility No.: LC40

2. NEPA DETERMINATIONS

- a. **Categorical Exclusion per 14 CFR Part 1216.305(d)**
- b. **Environmental Assessment (EA) Required per KNPR 8500.1**
- c. **Environmental Impact Statement (EIS) Required per KNPR 8500.1**
- d. **Project on CCAFS:**

3. ENVIRONMENTAL REQUIREMENTS

- a. **Non-Permit Requirements** **YES** **NO**
- b. **Permit Requirements** **YES** **NO**

The NASA Environmental Management Branch (TA-B1C) has assigned Lisa Ruffe, IHA-200, 867-6694 as the Environmental Point Of Contact (EPOC) for this project. Please add Ms. Ruffe's name to any lists or notifications of meetings related to this project. All questions relating to environmental issues should be forwarded to the EPOC section within the NASA Environmental Management Branch.

AF FORM 813: This project is located on CCAFS property. Coordination with the 45th CES/CEVP is required. AF Form 813 must be completed for project review by the Air Force. Contact Dale Hawkins (853-0960, 45 CES/CEAO) if clarification is required.

3.a.1. **HAZARDOUS/NON-HAZARDOUS WASTE:** All hazardous waste and non-hazardous wastes generated on KSC must be managed, controlled and disposed of per the KSC Waste Management requirements outlined in KNPR 8500.1. A Process Waste Questionnaire (PWQ), KSC Form 26-551 along with any supporting documentation (MSDS, product formulation, lab analyses) must be submitted to the IHA Waste Management Office for each waste stream generated. That office will then generate a Technical Response Package (TRP) which will give direction on proper handling, storage, and disposal of the waste stream. Please contact IHA Waste Management Services at 867-8640 if assistance is required.

3.a.2. **HAZARDOUS AND CONTROLLED WASTE (ASBESTOS CONTAINING MATERIAL):** This is a regulated substance that can no longer be used in construction materials. Asbestos was incorporated into many building products and most commonly found in floor tiles, roofing materials, caulking compounds, and insulation media. If asbestos will be disturbed, regulations from 62-257 F.A.C. must be followed and notification to the NASA Environmental Assurance Branch (Christine Vanaman, IHA-200, 867-3586) is required for any regulated asbestos removal in order that annual reporting requirements are fulfilled. If less than 260 linear feet, or less than 160 square feet of regulated asbestos containing material (RACM) is to be removed, there are no fee or reporting requirements to the FDEP, unless there is demolition of any load-supporting structural member. If the removal trips these thresholds, or is greater than 1 cubic meter, or 35 cubic feet, regulations require notification to FDEP. The "Notice of Asbestos Renovation or Demolition" (DEP Form Number 62-257.900(1)) can be found on the FDEP website under "Asbestos Notification" at: <http://www.dep.state.fl.us/air/forms.htm>. The Permitting and Compliance Group within TA-B1B Environmental Assurance Branch must be copied on all reports submitted to FDEP. For asbestos disposal, IHA Waste Management can supply directions on proper handling, storage, and disposal of the waste stream though the Process Waste Questionnaire/Technical Response Package (PWQ/TRP) process. Please contact IHA Waste Management Services at 867-8642 for assistance.

3.a.3. **HAZARDOUS AND CONTROLLED WASTE (PAINT):** This project will involve the application of paint coatings. All practical precautions must be taken to eliminate the possibility of a release of material or waste into the environment (primers/paints) from the paint surface preparation and painting operation. Paint chips, rust, debris, blast media,

Avoid Verbal Orders

TO: TA-B3C/Keith Britton

DATE: 9/9/2009

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

CHECKLIST #: 7614

wastewater, etc. generated during preparation of surfaces will be contained and disposed of according to waste management guidelines given above in Item 3.a.1. Please contact IHA Waste Management Services at 867-8640 for assistance.

3.a.4. **PAINT DISTURBANCE/REMOVAL:** This project will involve disturbance/removal of paint coatings. Unless known to be non-hazardous, the coatings must be sampled and analyzed for the 8 RCRA hazardous metals (Ag, As, Ba, Cd, Cr, Hg, Pb, and Se). Analysis should be performed by an AIHA certified laboratory. The requirements established in OSHA standards 29 CFR 1926.62 & 29 CFR 1926.1127 for lead and cadmium respectively must be complied with if lead and/or cadmium are present. If the coatings contain heavy metals, it is recommended that the control zone and personal protective equipment requirements established in the lead standard be complied with to prevent exposure to workers and adjacent unprotected areas. The sampling analysis will dictate the level of PPE required and the handling/disposal requirements. If you have questions about PPE requirements call John Sherwood, IHA-022, at 867-1210. Paint chips, rust, debris, blast media, etc. generated during preparation of surfaces will be contained and disposed of according to waste management guidelines given above in Item 3.a.1.

Recycling of painted materials: Painted non oil-filled electrical equipment and other painted materials may go to the KSC Reutilization, Recycling, and Marketing Facility (RRMF) or taken off KSC for salvage by a contractor if PCBs are <50 ppm. Oil-filled and grease or oil-contacted equipment with PCB concentrations <50 ppm in the oil and in the paint on the equipment may go to the contractor or the RRMF for reuse. There is no requirement for TCLP analysis on items to be reused.

Disposal of painted materials:

Painted construction and demolition waste items will be accepted at the KSC Class III Landfill without PCB or TCLP analysis. The landfill will accept PCB bulk product waste (PCBs >50 ppm). See Item 3.a.5 for PCB bulk product waste storage requirements. Oil-filled and grease or oil-contacted equipment is not allowed at the landfill. For additional information contact John Matthews, TA-B1B, at 867-2943.

3.a.5. **HAZARDOUS AND CONTROLLED WASTE (POLYCHLORINATED BIPHENYLS):** Oil-filled equipment with oil containing PCBs >50 ppm must be managed through the PWQ/TRP process. If PCB concentration of paint on the equipment is <50 ppm, and PCBs in the oil are <50 ppm, the equipment and oil may go to the contractor or RRMF for reuse. Oil-filled and grease or oil-contacted equipment is not accepted at the KSC landfill. Non oil-filled equipment with >50 ppm PCBs on the painted surfaces may go to the KSC landfill for disposal. PCBs have been regularly detected in various building materials (such as paints, coatings, caulk, mastic, window glazing, etc.) across KSC and CCAFS. Construction and demolition debris that has not been tested for PCBs or has been found to contain PCBs >50 ppm will be accepted at the KSC landfill but must be managed according to PCB bulk product waste storage regulations until disposal in the landfill. This includes covering the materials and storing them on an impermeable surface for protection against precipitation and prevention of soil contamination. In addition to window caulking, paint coatings, and electrical equipment, transformer concrete pads and other surrounding materials may contain PCB contamination. To determine if surrounding media and/or surfaces to be disturbed/disposed of have been contaminated by past actions with oils containing PCBs, contact IHA Waste Management. They will determine the applicable regulatory requirements and guidance for the proper management of the waste PCB materials. Please follow the PWQ/TRP process for waste disposal. All concrete associated with oil-containing electrical equipment must be disposed through IHA Waste Management as regulated PCB waste. Contact IHA Waste Management Services at 867-8642 for assistance.

3.a.6. **THREATENED AND ENDANGERED SPECIES:** A Biological Survey and/or relocation activities (if required) must be performed prior to commencement of this project. The fence replacement portion of this project has the potential to impact the protected gopher tortoise. Measures must be taken to minimize impacts to tortoises and their habitat. Lighting and communication structures have consistently been used by nesting birds such as ospreys on KSC. Due to ospreys being protected under the Migratory Bird Treaty Act, and under Florida Administrative Code, their nesting habits on man-made structures has sometimes created impacts. Because of the ospreys' protection under Federal and State laws, disturbance of these nests while occupied with eggs and fledglings is illegal. Light poles and lightning towers must be surveyed for nesting birds prior to any corrosion control activity. Please contact Becky Bolt (867-7330) 14 days prior to beginning work in order to schedule biological surveys for tortoise burrows and nesting birds.

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CHECKLIST #: 7614

3.a.7. **CONCRETE WASHOUT:** Water used to rinse out concrete trucks and other equipment used for concrete work must not be allowed to discharge to surface waters. Concrete washout water shall be diverted to a settling pond where suspended material will settle out and the water can percolate into the ground. Concrete residue shall then be removed and disposed of at the KSC Landfill. Call Doug Durham (TA-B1B, 867-8429) with any questions on this requirement.

3.a.8. **RECYCLING:** The contractor must make every practical effort to reclaim and segregate materials that have the ability to be recycled. All reclaimed concrete (see Item 3.a.9) must be segregated from other wastes and transported to the KSC Landfill (L7-0071) on Schwartz Road. All reclaimed scrap metal, not being recycled by contractor outside of KSC, must be transported to the Reutilization, Recycling and Marketing Facility (RRMF) with a KSC Form 7-49. Please turn these items and the KSC Form 7-49 into RRMF personnel to ensure the proper disposition of the materials prior to leaving the recycling area. For any other information regarding what materials can be recycled or other general information regarding recycling policies at KSC, please contact the Environmental Management Branch (Alice Smith, 867-8454 or Maggie Forbes, 867-3305).

3.a.9. **CONCRETE RECYCLING/DISPOSAL:** Clean, unstained, unpainted concrete is accepted at the Diverted Aggregate Reclamation and Collection Yard (DARCY) without any sampling and analysis. Painted concrete must have PCB and Total Metals analyses (limited to Pb, Cd, Cr) performed to determine whether it will be accepted at the DARCY for reuse. The results of the analysis must show metal concentrations below the residential cleanup level (Pb = 400 ppm, Cd = 82 ppm, Cr = 210 ppm) and PCB levels below 0.5ppm. If no testing is done or if PCB and/or Total Metals concentrations are above residential cleanup levels, coated concrete goes to the landfill as construction/demolition debris. When feasible, painted concrete should be segregated from unpainted concrete for placement in the DARCY. No oil-stained concrete will be accepted at the DARCY. Due to the potential for PCB contamination, all removed concrete associated with oil-containing electrical equipment must be disposed through the KSC Waste Management Office as regulated PCB waste.

3.a.10. **GREEN PURCHASING/AFFIRMATIVE PROCUREMENT (AP):** Federal agencies and their contractors are required to purchase energy and water efficient products, products made from recycled or recovered materials, biobased products, and other environmentally preferable products whenever possible. Detailed information on EPA approved products is available at <http://www.epa.gov/cpg>. A Request for Waiver Form (KSC 28-825 NS) must be submitted for the purchase of items that are on the Comprehensive Procurement Guidelines (CPG) list but were replaced with non AP approved items. Also, a list of bio-based preferred products is available at <http://www.biopreferred.gov/DesignationItemList.aspx>. Contact Alice Smith (867-8454) with any questions on this requirement.

3.a.11. **TRANSFORMERS:** The Kennedy Space Center Spill Prevention, Control, and Countermeasure Plan (SPCC Plan) documents the procedures for the prevention, response, control, and reporting of spills of oil at KSC, Florida. If a new transformer using a volume of oil equal to or greater than 55 gallons is to be installed, it is subject to SPCC rules. For additional clarification of the SPCC rules and requirements, contact Tim Tyndall at 867-3659.

3.a.12. **REFRIGERANT (HVAC Unit):** Freon (Ozone Depleting Substance (ODS)) is a reportable substance under the Toxics Release Inventory (TRI) reporting requirements. If the new HVAC unit is replacing an existing unit, precautions must be taken to prevent any accidental release of refrigerant during the disassembly of existing system and draining of lines. Any releases should be reported to the NASA Environmental Assurance Branch (Hien Nguyen, 867-8455). Refrigerant must be recovered by a certified/trained competent person and unit labeled empty prior to delivery to the Reutilization, Recycling and Marketing Facility (RRMF) if the air conditioning unit is no longer usable. Usable equipment does not need to be drained but must be accompanied by certification that it is not leaking. A completed KSC Form 7-49 must be provided to the RRMF when the equipment is turned in.

3.a.13. **EXTERIOR LIGHTING:** The installation/modification of any exterior lighting system must be in compliance with requirements of the KSC Exterior Lighting Guidelines. When possible, the use of low pressure sodium lights must be implemented. Safety and hazardous operations can receive a waiver that allows for non low pressure sodium lighting. These requirements can be found on the EPB Web page at:
<http://environmental.ksc.nasa.gov/projects/documents/ExteriorLightingGuidelines.pdf>.

3.a.14. **ASPHALT WASTE:** All asphalt waste should be segregated from all other wastes generated, and transported to

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TO: TA-B3C/Keith Britton

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the KSC landfill on Schwartz road. This material can be recycled in the form of roadway stabilization within the landfill if not contaminated by other waste streams.

3.b.1. EXCAVATION PERMIT: A KSC Excavation Permit will be required for any digging proposed by this project. Please contact the Utility Locate/Excavation Permit Request Customer Helpline at 867-2406 for an underground utility scan and dig permit.

3.b.2. WATER RESOURCES PERMITTING (Domestic Wastewater): The proposed lift station pump and motor replacement will not require a permit for the alteration or installation of utilities to transport potable domestic wastewater. However, any work done will not jeopardize the health and safety of personnel due to effects of the construction/modification of the KSC potable water or wastewater system. Backflow preventers will be installed as required per KSC-STD-Z-0013 and standard engineering practice. The organization responsible for the work will ensure that best engineering practices, codes, specifications and standards are followed. Pressure and leak tests as well as disinfection are also required. Contact Doug Durham (867-8429) for permit requirement determination and if further assistance is needed.

This Record of Environmental Consideration (REC) does not relinquish the project lead from obtaining and complying with any other internal NASA permits or directives necessary to ensure all organizations potentially impacted by this project are notified and concur with the proposed project.

Due to potential changes in regulations, permit requirements and environmental conditions, statements in this REC are valid for 6 months and subject to review after this period. It is the responsibility of the project lead to notify the Environmental Management Branch (TA-B1C) if the scope of the project has changed since the original checklist was submitted.

Cc: K. Britton/TA-B3C
M. V. Le/TA-B3A
L. Ruffe/IHA-200
K. Herpich/IHA-200
J. Shaffer/TA-B1C
D. Hawkins/45 CES/CEAO

- 4 Upon evaluation of the subject project, the above determinations have been made and identified. Contact the Environmental Program Office (TA-B1C) at 867-8448 for re-evaluation should there be any modifications to the scope of work.**



9/10/2009 10:51:45 AM

Lynne Phillips

Date

Avoid Verbal Orders

TO: TA-B3C/Keith Britton

DATE: 9/17/2009

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

CHECKLIST #: 7633

1. PROJECT INFORMATION

Project Title: Recovery Act Upgrades to Launch Complex 40, CCAFS-KSC Launch Infrastructure Updates

Project Lead: Keith Britton, TA-B3C, 867-1955

Directorate Project No.: 98818 (REV A)

EPB Reviewer: LPH

Facility No.: LC40

2. NEPA DETERMINATIONS

- a. **Categorical Exclusion per 14 CFR Part 1216.305(d)**
- b. **Environmental Assessment (EA) Required per KNPR 8500.1**
- c. **Environmental Impact Statement (EIS) Required per KNPR 8500.1**
- d. **Project on CCAFS:**

3. ENVIRONMENTAL REQUIREMENTS

- a. **Non-Permit Requirements** **YES** **NO**
- b. **Permit Requirements** **YES** **NO**

*****ORIGINAL REC ISSUED 9/9/2009*****

*****REC UPDATED 9/17/2009 to include reference in project title to "KSC Launch Infrastructure Updates" funded by the Recovery Act*****

The NASA Environmental Management Branch (TA-B1C) has assigned Lisa Ruffe, IHA-200, 867-6694 as the Environmental Point Of Contact (EPOC) for this project. Please add Ms. Ruffe's name to any lists or notifications of meetings related to this project. All questions relating to environmental issues should be forwarded to the EPOC section within the NASA Environmental Management Branch.

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TO: TA-B3C/Keith Britton

DATE: 9/17/2009

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

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DATE: 9/17/2009

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be surveyed for nesting birds prior to any corrosion control activity.

Please contact Becky Bolt (867-7330) 14 days prior to beginning work in order to schedule biological surveys for tortoise burrows and nesting birds.

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Avoid Verbal Orders

TO: TA-B3C/Keith Britton

DATE: 9/17/2009

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

CHECKLIST #: 7633

These requirements can be found on the EPB Web page at:

<http://environmental.ksc.nasa.gov/projects/documents/ExteriorLightingGuidelines.pdf>.

3.a.14. ASPHALT WASTE: All asphalt waste should be segregated from all other wastes generated, and transported to the KSC landfill on Schwartz road. This material can be recycled in the form of roadway stabilization within the landfill if not contaminated by other waste streams.

3.b.1. EXCAVATION PERMIT: A KSC Excavation Permit will be required for any digging proposed by this project. Please contact the Utility Locate/Excavation Permit Request Customer Helpline at 867-2406 for an underground utility scan and dig permit.

3.b.2. WATER RESOURCES PERMITTING (Domestic Wastewater): The proposed lift station pump and motor replacement will not require a permit for the alteration or installation of utilities to transport potable domestic wastewater. However, any work done will not jeopardize the health and safety of personnel due to effects of the construction/modification of the KSC potable water or wastewater system. Backflow preventers will be installed as required per KSC-STD-Z-0013 and standard engineering practice. The organization responsible for the work will ensure that best engineering practices, codes, specifications and standards are followed. Pressure and leak tests as well as disinfection are also required. Contact Doug Durham (867-8429) for permit requirement determination and if further assistance is needed.

No other environmental issues were identified based upon the information provided in the KSC Environmental Checklist. This Record of Environmental Consideration (REC) does not relinquish the project lead from obtaining and complying with any other internal NASA permits or directives necessary to ensure all organizations potentially impacted by this project are notified and concur with the proposed project.

Due to potential changes in regulations, permit requirements and environmental conditions, statements in this REC are valid for 6 months and subject to review after this period. It is the responsibility of the project lead to notify the Environmental Management Branch (TA-B1C) if the scope of the project has changed since the original checklist was submitted.

Cc: K. Britton/TA-B3C
M. V. Le/TA-B3A
L. Ruffe/IHA-200
K. Herpich/IHA-200
J. Shaffer/TA-B1C
D. Hawkins/45 CES/CEAO
C. Vanaman/IHA-200
K. Callister/HQ-LD020

4 Upon evaluation of the subject project, the above determinations have been made and identified. Contact the Environmental Program Office (TA-B1C) at 867-8448 for re-evaluation should there be any modifications to the scope of work.



9/17/2009 11:06:52 AM

John Shaffer

Date

Avoid Verbal Orders

TO: TA-B3C/Keith Britton

DATE: 1/26/2010

FROM: TA-B1C/NEPA Compliance

SUBJECT KSC Record of Environmental Consideration (REC)

CHECKLIST #: 7761

1. PROJECT INFORMATION

Project Title: Recovery Act Upgrades to Launch Complex 40, CCAFS-KSC Launch Infrastructure Updates

Project Lead: Keith Britton, TA-B3C, 867-1955

Directorate Project No.: 98818 (REV B)

EPB Reviewer: LPH

Facility No.: LC40

2. NEPA DETERMINATIONS

- a. **Categorical Exclusion per 14 CFR Part 1216.305(d)**
- b. **Environmental Assessment (EA) Required per KNPR 8500.1**
- c. **Environmental Impact Statement (EIS) Required per KNPR 8500.1**
- d. **Project on CCAFS:**

3. ENVIRONMENTAL REQUIREMENTS

- a. **Non-Permit Requirements** **YES** **NO**
- b. **Permit Requirements** **YES** **NO**

*****ORIGINAL REC ISSUED 9/9/2009*****

*****REC UPDATED 9/17/2009 to include reference in project title to "KSC Launch Infrastructure Updates" funded by the Recovery Act*****

*****REC UPDATED 1/26/2010 for additional tasks on SOW, water and stormwater permitting requirements, note on asbestos disposal, and least tern requirements added*****

The NASA Environmental Management Branch (TA-B1C) has assigned Lisa Ruffe, IHA-200, 867-6694 as the Environmental Point Of Contact (EPOC) for this project. Please add Ms. Ruffe's name to any lists or notifications of meetings related to this project. All questions relating to environmental issues should be forwarded to the EPOC section within the NASA Environmental Management Branch.

AF FORM 813: This project is located on CCAFS property. Coordination with the 45th CES/CEVP is required. AF Form 813 must be completed for project review by the Air Force. Contact Dale Hawkins (853-0960, 45 CES/CEAO) if clarification is required.

3.a.1. **HAZARDOUS/NON-HAZARDOUS WASTE (including lamps/ballasts):** All hazardous waste and non-hazardous wastes generated on KSC must be managed, controlled and disposed of per the KSC Waste Management requirements outlined in KNPR 8500.1. A Process Waste Questionnaire (PWQ), KSC Form 26-551 along with any supporting documentation (MSDS, product formulation, lab analyses) must be submitted to the IHA Waste Management Office for each waste stream generated. That office will then generate a Technical Response Package (TRP) which will give direction on proper handling, storage, and disposal of the waste stream. Please contact IHA Waste Management Services at 867-8640 if assistance is required.

3.a.2. **HAZARDOUS AND CONTROLLED WASTE (ASBESTOS CONTAINING MATERIAL):** This is a regulated substance that can no longer be used in construction materials. Asbestos was incorporated into many building products and most commonly found in floor tiles, roofing materials, caulking compounds, and insulation media. If asbestos will be disturbed, regulations from 62-257 F.A.C. must be followed and notification to the NASA Environmental Assurance Branch (Christine Vanaman, IHA-200, 867-3586) is required for any regulated asbestos removal in order that annual reporting requirements are fulfilled. If less than 260 linear feet, or less than 160 square feet of regulated asbestos containing material (RACM) is to be removed, there are no fee or reporting requirements to the FDEP, unless there is demolition of any load-supporting structural member. If the removal trips these thresholds, or is greater than 1 cubic meter, or 35 cubic feet, regulations require notification to FDEP. The "Notice of Asbestos Renovation or Demolition" (DEP Form Number 62-257.900(1)) can be found on the FDEP website under "Asbestos Notification" at: <http://www.dep.state.fl.us/air/forms.htm>. The Permitting and Compliance Group within TA-B1B Environmental Assurance Branch must be copied on all reports submitted to FDEP. For asbestos disposal, IHA Waste Management can supply directions on proper handling, storage, and disposal of the waste stream through the Process Waste

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Questionnaire/Technical Response Package (PWQ/TRP) process. Please contact IHA Waste Management Services at 867-8642 for assistance.

NOTE: Friable asbestos/RACM is not authorized for disposal at the KSC Landfill.

3.a.3. HAZARDOUS AND CONTROLLED WASTE (PAINT): This project will involve the application of paint coatings. All practical precautions must be taken to eliminate the possibility of a release of material or waste into the environment (primers/paints) from the paint surface preparation and painting operation. Paint chips, rust, debris, blast media, wastewater, etc. generated during preparation of surfaces will be contained and disposed of according to waste management guidelines given above in Item 3.a.1. Please contact IHA Waste Management Services at 867-8640 for assistance.

3.a.4. PAINT DISTURBANCE/REMOVAL: This project may involve disturbance/removal of paint coatings. Unless known to be non-hazardous, the coatings must be sampled and analyzed for the 8 RCRA hazardous metals (Ag, As, Ba, Cd, Cr, Hg, Pb, and Se) and PCBs. Analysis should be performed by an AIHA certified laboratory. The requirements established in OSHA standards 29 CFR 1910.1200, and 29 CFR 1926.62 & 29 CFR 1926.1127 for lead and cadmium respectively, must be complied with if PCBs, and lead or cadmium are present. If the coatings contain heavy metals or PCBs, it is recommended that the control zone and personal protective equipment requirements established in the lead standard be complied with to prevent exposure to workers and adjacent unprotected areas. The sampling analysis will dictate the level of PPE required and the handling/disposal requirements. If you have questions about PPE requirements call John Sherwood, IHA-022, at 867-1210. Paint chips, rust, debris, blast media, etc. generated during preparation of metal surfaces and/or deconstruction will be contained and disposed of according to waste management guidelines given above in item 3.a.1.

Recycling of painted materials: Painted non oil-filled electrical equipment and other painted materials may go to the KSC Reutilization, Recycling, and Marketing Facility (RRMF) or taken off KSC for salvage by a contractor if PCBs are <50 ppm. Oil-filled and grease or oil-contacted equipment with PCB concentrations <50 ppm in the oil and in the paint on the equipment may go to the contractor or the RRMF for reuse. There is no requirement for TCLP analysis on items to be reused.

Disposal of painted materials:

Painted construction and demolition waste items will be accepted at the KSC Class III Landfill without PCB or TCLP analysis. Construction and demolition debris that has not been tested for PCBs or has been found to contain PCBs >50 ppm will be accepted at the KSC landfill but must be managed according to PCB bulk product waste storage regulations until disposal in the landfill. This includes covering the materials and storing them on an impermeable surface for protection against precipitation and prevention of soil contamination.

3.a.5. HAZARDOUS AND CONTROLLED WASTE (POLYCHLORINATED BIPHENYLS): Oil-filled equipment with oil containing PCBs >50 ppm must be managed through the PWQ/TRP process. If PCB concentration of paint on the equipment is <50 ppm, and PCBs in the oil are <50 ppm, the equipment and oil may go to the contractor or RRMF for reuse. Oil-filled and grease or oil-contacted equipment is not accepted at the KSC landfill. Non oil-filled equipment with >50 ppm PCBs on the painted surfaces may go to the KSC landfill for disposal. PCBs have been regularly detected in various building materials (such as paints, coatings, caulk, mastic, window glazing, etc.) across KSC and CCAFS. Construction and demolition debris that has not been tested for PCBs or has been found to contain PCBs >50 ppm will be accepted at the KSC landfill but must be managed according to PCB bulk product waste storage regulations until disposal in the landfill. This includes covering the materials and storing them on an impermeable surface for protection against precipitation and prevention of soil contamination. In addition to window caulking, paint coatings, and electrical equipment, transformer concrete pads and other surrounding materials may contain PCB contamination. To determine if surrounding media and/or surfaces to be disturbed/disposed of have been contaminated by past actions with oils containing PCBs, contact IHA Waste Management. They will determine the applicable regulatory requirements and guidance for the proper management of the waste PCB materials. Please follow the PWQ/TRP process for waste disposal. All concrete associated with oil-containing electrical equipment must be disposed through IHA Waste Management as regulated PCB waste. Contact IHA Waste Management Services at 867-8642 for assistance.

3.a.6. THREATENED AND ENDANGERED SPECIES: A Biological Survey and/or relocation activities (if required) must be performed prior to commencement of this project. The fence replacement portion of this project has the potential to

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impact the protected gopher tortoise. Measures must be taken to minimize impacts to tortoises and their habitat. Lighting and communication structures have consistently been used by nesting birds such as ospreys on KSC. Due to ospreys being protected under the Migratory Bird Treaty Act, and under Florida Administrative Code, their nesting habits on man-made structures has sometimes created impacts. Because of the ospreys' protection under Federal and State laws, disturbance of these nests while occupied with eggs and fledglings is illegal. Light poles and lightning towers must be surveyed for nesting birds prior to any corrosion control activity.

The threatened Least Terns and Black Skimmers (Species of Special Concern) have been known to nest on rooftops throughout KSC and CCAFS. Nesting season occurs from Late April through Mid August. If any work requiring roof access is scheduled to occur during nesting season, a biological survey of the roof must be performed. Least Terns do not construct typical nests but use the existing contours of the roof structures or any place the stone covering has been disturbed, making the identification of eggs very difficult. After the survey and no eggs are identified or fledglings present, the project can proceed.

Please contact Becky Bolt (867-7330) 14 days prior to beginning work in order to schedule biological surveys for tortoise burrows and nesting birds.

3.a.7. CONCRETE WASHOUT: Water used to rinse out concrete trucks and other equipment used for concrete work must not be allowed to discharge to surface waters. Concrete washout water shall be diverted to a settling pond where suspended material will settle out and the water can percolate into the ground. Concrete residue shall then be removed and disposed of at the KSC Landfill. Call Doug Durham (TA-B1B, 867-8429) with any questions on this requirement.

3.a.8. RECYCLING: The contractor must make every practical effort to reclaim and segregate materials that have the ability to be recycled. All reclaimed concrete (see Item 3.a.9) must be segregated from other wastes and transported to the KSC Landfill (L7-0071) on Schwartz Road. All reclaimed scrap metal, not being recycled by contractor outside of KSC, must be transported to the Reutilization, Recycling and Marketing Facility (RRMF) with a KSC Form 7-49. Please turn these items and the KSC Form 7-49 into RRMF personnel to ensure the proper disposition of the materials prior to leaving the recycling area. For any other information regarding what materials can be recycled or other general information regarding recycling policies at KSC, please contact the Environmental Management Branch (Alice Smith, 867-8454 or Maggie Forbes, 867-3305).

3.a.9. CONCRETE RECYCLING/DISPOSAL: Clean, unstained, unpainted concrete is accepted at the Diverted Aggregate Reclamation and Collection Yard (DARCY) without any sampling and analysis. Painted concrete must have PCB and Total Metals analyses (limited to Pb, Cd, Cr) performed to determine whether it will be accepted at the DARCY for reuse. The results of the analysis must show metal concentrations below the residential cleanup level (Pb = 400 ppm, Cd = 82 ppm, Cr = 210 ppm) and PCB levels below 0.5ppm. If no testing is done or if PCB and/or Total Metals concentrations are above residential cleanup levels, coated concrete goes to the landfill as construction/demolition debris. When feasible, painted concrete should be segregated from unpainted concrete for placement in the DARCY. No oil-stained concrete will be accepted at the DARCY. Due to the potential for PCB contamination, all removed concrete associated with oil-containing electrical equipment must be disposed through the KSC Waste Management Office as regulated PCB waste.

3.a.10. GREEN PURCHASING/AFFIRMATIVE PROCUREMENT (AP): Federal agencies and their contractors are required to purchase energy and water efficient products, products made from recycled or recovered materials, biobased products, and other environmentally preferable products whenever possible. Detailed information on EPA approved products is available at <http://www.epa.gov/cpg>. A Request for Waiver Form (KSC 28-825 NS) must be submitted for the purchase of items that are on the Comprehensive Procurement Guidelines (CPG) list but were replaced with non AP approved items. Also, a list of bio-based preferred products is available at <http://www.biopreferred.gov/DesignationItemList.aspx>. Contact Alice Smith (867-8454) with any questions on this requirement.

3.a.11. TRANSFORMERS: The Kennedy Space Center Spill Prevention, Control, and Countermeasure Plan (SPCC Plan) documents the procedures for the prevention, response, control, and reporting of spills of oil at KSC, Florida. If a new transformer using a volume of oil equal to or greater than 55 gallons is to be installed, it is subject to SPCC rules. For additional clarification of the SPCC rules and requirements, contact Tim Tyndall at 867-3659.

3.a.12. REFRIGERANT (HVAC Unit): Freon (Ozone Depleting Substance (ODS)) is a reportable substance under the

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Toxics Release Inventory (TRI) reporting requirements. Precautions must be taken to prevent any accidental release of refrigerant during the disassembly of existing air conditioning system and draining of lines. Any releases should be reported to the NASA Environmental Assurance Branch (Hien Nguyen, 867-8455). Refrigerant must be recovered by a certified/trained competent person and unit labeled empty prior to delivery to the Reutilization, Recycling and Marketing Facility (RRMF) if the air conditioning unit is no longer usable. Usable equipment does not need to be drained but must be accompanied by certification that it is not leaking. A completed KSC Form 7-49 must be provided to the RRMF when the equipment is turned in.

3.a.13. EXTERIOR LIGHTING: The installation/modification of any exterior lighting system must be in compliance with requirements of the KSC Exterior Lighting Guidelines. When possible, the use of low pressure sodium lights must be implemented. Safety and hazardous operations can receive a waiver that allows for non low pressure sodium lighting. These requirements can be found on the EPB Web page at:
<http://environmental.ksc.nasa.gov/projects/documents/ExteriorLightingGuidelines.pdf>.

3.a.14. ASPHALT WASTE: All asphalt waste should be segregated from all other wastes generated, and transported to the KSC landfill on Schwartz road. This material can be recycled in the form of roadway stabilization within the landfill if not contaminated by other waste streams.

3.b.1. EXCAVATION PERMIT: A KSC/CCAFS Excavation Permit will be required for any digging proposed by this project. Please contact the Utility Locate/Excavation Permit Request Customer Helpline at 867-2406 or go to website at <https://installationsupport.ksc.nasa.gov/sgs/apps/epr/default.cfm?> for an underground utility scan and dig permit.

3.b.2. WATER RESOURCES PERMITTING (Domestic Wastewater): The proposed lift station pump and motor replacement will not require a permit for the alteration or installation of utilities to transport potable domestic wastewater. However, any work done will not jeopardize the health and safety of personnel due to effects of the construction/modification of the KSC potable water or wastewater system. Backflow preventers will be installed as required per KSC-STD-Z-0013 and standard engineering practice. The organization responsible for the work will ensure that best engineering practices, codes, specifications and standards are followed. Pressure and leak tests as well as disinfection are also required. Contact Doug Durham (867-8429) for permit requirement determination and if further assistance is needed.

3.b.3. WATER RESOURCES PERMITTING (Potable Water/Fire Deluge System/Wastewater): Installation of the proposed fire deluge system may require a permit for the alteration or installation of utilities to transport potable water. There may also be requirements for wastewater. Contact Dale Hawkins (853-0960, 45 CES/CEAO) concerning issues related to water/wastewater permitting at this facility.

3.b.4. ENVIRONMENTAL RESOURCE PERMIT (STORMWATER): If impervious surface, including new structures are to be added, Dale Hawkins (853-0960, 45 CES/CEAO) should be contacted to determine if modifications to any existing stormwater management system will be necessary.

No other environmental issues were identified based upon the information provided in the KSC Environmental Checklist. This Record of Environmental Consideration (REC) does not relinquish the project lead from obtaining and complying with any other internal NASA permits or directives necessary to ensure all organizations potentially impacted by this project are notified and concur with the proposed project.

Due to potential changes in regulations, permit requirements and environmental conditions, statements in this REC are valid for 6 months and subject to review after this period. It is the responsibility of the project lead to notify the Environmental Management Branch (TA-B1C) if the scope of the project has changed since the original checklist was submitted.

Cc: K. Britton/TA-B3C
M. V. Le/TA-B3A
L. Ruffe/IHA-200
K. Herpich/IHA-200
J. Shaffer/TA-B1C

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D. Hawkins/45 CES/CEAO

C. Vanaman/IHA-200

K. Callister/HQ-LD020

- 4 Upon evaluation of the subject project, the above determinations have been made and identified. Contact the Environmental Program Office (TA-B1C) at 867-8448 for re-evaluation should there be any modifications to the scope of work.



John Shaffer

1/28/2010 8:46:00 AM

Date