

**METRIC/INCH-POUND**

**KSC-E-166B**

**June 2, 1994**

Supersedes

**KSC-E-166A**

March 18, 1974

**INSTALLATION AND ASSEMBLY, ELECTRICAL  
GROUND SUPPORT EQUIPMENT (GSE),  
SPECIFICATION FOR**

**ENGINEERING DEVELOPMENT DIRECTORATE**

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National Aeronautics and  
Space Administration

**John F. Kennedy Space Center**



**TRANSMITTAL SHEET**

TO:

Distribution

DATE

June 2, 1994

**MATERIAL TRANSMITTED**

KSC-E-166, Revision B, Installation and Assembly, Electrical Ground Support Equipment (GSE), Specification for

This revision supersedes all previous editions of this document.

**FILING INSTRUCTIONS**

Destroy KSC-E-166A, Installation and Assembly, Electrical Ground Support Equipment (GSE), Specification for, dated March 18, 1974, and replace with the attached KSC-E-166B, dated June 2, 1994.

**KSC-E-166B**  
**June 2, 1994**  
Supersedes  
KSC-E-166A  
March 18, 1974

**INSTALLATION AND ASSEMBLY, ELECTRICAL  
GROUND SUPPORT EQUIPMENT (GSE),  
SPECIFICATION FOR**

Approved:



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Walter T. Murphy  
Director of Engineering Development

**JOHN F. KENNEDY SPACE CENTER, NASA**

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Military

MIL-STD-171                      Finishing of Metal and Wood Surfaces

John F. Kennedy Space Center (KSC), NASA

KSC-STD-E-0012                  Bonding and Grounding

KSC-STD-E-0015                  Marking of Ground Support Equipment

2.1.3 Drawings.

John F. Kennedy Space Center (KSC), NASA

79K06110                          Procedure for MI Cable Termination

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the Contracting Officer.)

2.2 Other Publications.

American National Standards Institute (ANSI)

ANSI C80.1                          Rigid Steel Conduit, Zinc Coated

ANSI C80.3                          Electrical Metallic Tubing, Zinc Coated

(Application for copies should be addressed to the American National Standards Institute, Inc., 11 West 42nd St., New York, New York 10036.)

National Fire Protection Association (NFPA)

NFPA 70                              National Electrical Code (NEC)

(Application for copies should be addressed to National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9109, Quincy, MA 02269-9101.)

Occupational Safety and Health Administration (OSHA)

29 CFR 1910

Occupational Safety and Health Standards

(Application for copies should be addressed to U.S. Department of Labor, Occupational Safety and Health Administration, 1375 Peachtree St. N.E., Atlanta, GA 30367.)

**3. REQUIREMENTS**

**3.1 Conformance.** - The installation shall conform to the applicable mandatory rules (those characterized by the word "shall") of the NFPA 70, except where the specifications or drawings specifically exceed the requirements of NFPA 70; in addition, all requirements of 29 CFR 1910 shall be mandatory for all installation and equipment covered by these specifications.

**3.2 Materials and Equipment.** - The installation and assembly drawings and specifications include manufacturers' catalog numbers to establish grade and quality; design details are based on the material specified. Material of other manufacturers shall not be substituted unless such items are approved by the Contracting Officer. All materials shall be handled carefully in order to prevent damage to surfaces and protective finishes. Materials shall not be stored unprotected in the environment nor allowed to come in contact with corrosive atmospheres. Materials shall not be walked on, nor shall casters or wheeled vehicles be moved over their surfaces. Materials shall not be stored in such a manner nor placed on any surface that could mar the surface or protective finish. All materials shall be free from any defects and imperfections. There shall be no cuts, marks, abrasions, or cracks in surface. Where any defects and imperfections exist, the material shall be repaired or replaced at the direction of the contracting officer.

**3.3 Drawings.** - The drawings indicate the extent and general arrangement of the conduit, equipment, and distribution systems. Where dimensions are not indicated on the drawings, the location or measurements shall be determined on the job by the contractor.

**3.4 Storage.** - An area for storage of material and equipment will be provided by the Government. It shall be the responsibility of the contractor to transport, handle, and place all material and equipment, as directed. The contractor shall take necessary steps to protect equipment from damage during delivery and storage.

**3.5 Equipment Identification.** - All equipment shall be marked with a NASA nameplate or tag in accordance with KSC-STD-E-0015. Unless otherwise shown

on the drawings, components of equipment shall be identified with the short-sign mark directly adjacent to (preferably above) the component in the most conspicuous place.

Reference designations of consoles or racks shall be permanently die-and-ink stenciled using 13-millimeter (mm) (0.5-inch) characters, in accordance with KSC-STD-E-0015, in a conspicuous place on the back of the equipment, unless identification is otherwise provided for in the design documentation.

**3.6 Cable and Wire Identification.** - Wires, cables, and cords of all types (except weatherproof and paper-insulated) shall have a continuous distinctive marking in accordance with KSC-STD-E-0015 so that they may be readily identified. Insulated conductors [4.12 mm in diameter [No. 6 American Wire Gage (AWG)]] or larger size wire, except conductors of weatherproof and mineral-insulated (MI) cable, shall have an outer identification. All conductors of MI cable shall be identified by distinctive marking at the terminals during the process of installation.

**3.7 Workmanship.** - Work shall be carefully laid out in advance. Where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary for the proper installation of equipment, the work shall be carefully performed. Any damage to buildings, piping, or equipment shall be repaired and refinished by skilled mechanics of the trades involved, at no extra cost to the Government. Materials and equipment shall be installed in accordance with the approved recommendations of the manufacturer, as specified by this document, or as shown on the contract drawings. The installation shall be accomplished by workmen skilled in their own particular crafts, and all work shall be conducted and finalized in a manner consistent with accepted industry practices.

**3.8 Positioning of Equipment.** - Equipment shall be installed plumb, level, true-to-line, and securely anchored for proper operation. Equipment shall be positioned in such a manner as to prevent marring, scratching, gouging or any other damage or deformation to existing equipment or structures. Proper carriages or slings shall be employed for hoisting or rolling heavy equipment to prevent undue stress in any section of the equipment. Equipment shall be moved in a sure, safe manner. Extra care shall be taken while moving consoles containing instruments or other electronic components to ensure a minimum of shock or vibration. Consoles shall also be protected from moisture or excessive heat to the level specified by the Contracting Officer and in accordance with MIL-P-116.

**3.9 Accessories.** - Any accessories and component parts shall be installed as necessary, whether or not such items are indicated on the drawings or specifically mentioned in the specifications, in order to provide a complete system.

**3.10 Wire and Cable.** - Wire and cable shall be handled carefully in order to prevent damage to conductors, insulation, and connectors. Wire and multi-conductor cables shall not be stored in the open, allowed to come in contact with water, nor be subject to a moist environment. They shall not be walked on, nor shall casters be pulled over them. They shall not be allowed to lie on the floor except when they are being worked with, nor shall they be pulled over sharp objects. Wires and cables shall not be allowed to hang over edges unprotected or unsupported except while work is being done on them. They shall be free from all defects and imperfections, and there shall be no cuts, marks, abrasions, or cracks in their jackets. Where any defects or imperfections exist or occur, the wire or cable shall be rejected and replaced. Multiconductor cable-end cuts shall be sealed with an approved cable sealant.

Moisture shall be driven from MI cable by heating until the applicable isolation readings are obtained. All cable cuts shall be sealed immediately to prevent moisture absorption. Installation shall be in accordance with the manufacturer's recommendations and terminations shall be in accordance with 79K06110.

### **3.11 Installation.**

**3.11.1 Rigid Steel Conduit.** - Installation of rigid steel conduit shall be in accordance with NFPA 70 Article 346 and Specification ANSI C80.1, and as shown on the drawings. Fittings for rigid steel conduit shall be threaded. Gaskets shall be solid for fittings of nominal size DN 40 (1.5 inches) and less. [NOTE: Nominal sizes in metric are designated as diameter nominal (DN) followed by the nominal millimeter size. For example, DN 40 is the designation for pipe that is a nominal 40 millimeters in diameter. The inch-pounds size follows in parentheses.] All conduit fittings with blank covers shall have gaskets except in clean, dry areas or at the lowest point of a conduit run where drainage is required. Fittings shall be installed with covers having captive screws and shall be accessible after the work is completed. Each run of conduit between outlet and outlet, between fitting and fitting, and between outlet and fitting shall contain the equivalent of not more than three 90-degree bends. All 90-degree bends in conduit larger than DN 25 (1 inch) shall be made with factory-made elbows. Elbows in conduit larger than DN 65 (2.5 inches) shall be long radius elbows. Field-made bends and offsets shall be made with an approved hickey or conduit-bending machine in a manner such that the conduit will not be damaged and the internal diameter will not be effectively reduced. Changes in directions of runs shall be made with symmetrical bends or cast metal fittings. Conduit shall be securely fastened to all sheet metal outlet, junction, and pull boxes with galvanized locknuts and bushings. A sufficient number of threads shall project through to permit the bushings to be drawn tight against the end of the conduit, after which the locknut shall be pulled up sufficiently tight to draw the bushing into firm electrical contact with the box. Conduits shall be fastened to all sheet metal boxes and cabinets with two locknuts

where required by NFPA 70, where insulating bushings are used, where bushings cannot be brought into firm contact with the box, and where shown on the drawings. Bushings shall be installed on all conduit ends and shall be of the insulating type where required by the NFPA 70. Conduit joints shall be made with tapered threads and set firmly. Each length of conduit cut in the field shall be reamed before installation. Where conduit is threaded in the field, each threaded end shall consist of at least five full threads. Corrosion-inhibiting conductive compound shall be used on the conduit threads. Conduit stubbed up through concrete floors for connections to free-standing equipment (except for motor-control centers, cubicles, etc.) shall be provided with a flush coupling if the floor slab is of sufficient thickness; if not, a floor box shall be provided and set flush with the finished floor. Conduits installed for future use shall be terminated with a coupling and plug set flush with the floor unless otherwise indicated. Joints in conduit installed in concrete shall be painted with acid-resisting, tar-base paint after the joint has been made to ensure a watertight seal. Care shall be taken to prevent the lodgment of plaster, dirt, or trash in conduit, boxes, fittings, or equipment during installation. Clogged conduit shall be entirely freed of obstruction or shall be replaced. Conduit crossing expansion fittings, or other suitable means shall be provided with suitable expansion fittings, or other suitable means shall be provided to compensate for the building expansion and contraction. A zinc-coated steel pull wire not less than 1.6 mm in diameter (14 AWG) shall be installed in all empty conduit longer than 6.0 m (20 feet). Conduit shall be concealed within finished walls, ceilings, and floors where possible and shall be kept 0.15 m (6 inches) away from parallel runs of flues, steam or hot-water pipes, and other mechanical piping. Conduit shall not be installed under the firepit of boilers and furnaces. Sleeves shall be provided through bond beams of masonry-block walls for threading conduit through hollow spaces.

Exposed conduit shall have runs installed parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings. In rooms or areas not provided with a ceiling or wall finish, conduit and outlets shall be so installed that a room finish may be applied in the future without disturbing the conduit or resetting the boxes. When exposed conduit requires clamping to flat surfaces, clamps shall consist of galvanized malleable-iron pipe straps for conduit up to and including DN 40 (1.5 inches nominal). Straps for conduits larger than DN 40 shall be two-hole, extra-heavy steel. Steel bolts of an appropriate size to fill holes of the straps shall be used. Beam clamps are acceptable. Clamp backs shall be used to allow space between conduit and supporting surface in wet or corrosive areas. Wooden plugs inserted in concrete or masonry are not acceptable as a base for conduit fastenings, nor shall conduit or pipe straps be welded to steel structures. Conduit shall be secured by pipe straps or shall be supported by wall brackets, strap hangers, or ceiling trapezes, fastened by wood screws on wood, toggle bolts on hollow masonry units, expansion bolts on concrete or brick, and machine screws or welded threaded studs on steel work. Nail-type nylon anchors

or threaded studs, driven in by powder charge and provided with lockwashers and nuts, are acceptable in lieu of expansion bolts or machine or wood screws. Conduit shall be supported and secured at intervals of not more than 2.4 m (8 feet) in horizontal runs and 6.0 m (20 feet) in vertical runs; within 0.45 m (1.5 feet) of each outlet box, junction box, cabinet, enclosure, or fittings; and within 0.3 m (1 foot) of each change of direction. Supports shall be steel bar, angle, or channel of a size to provide a firm, rigid support. Rod hangers may be used when laterally braced. Structural steel shall not be drilled for clamping banks of conduit. The bottom flanges of I-beams or channels shall not be drilled. Prefabricated channel sections may be used on approval. Supports shall not form closed pockets that could hold liquid spills. Piping or insulated equipment shall not be used to anchor supports.

**3.11.2 Electrical Metallic Tubing (EMT).** - EMT shall be installed in accordance with NFPA 70 Article 348 and ANSI C80.3. Couplings and connectors shall be hexnut, expansion-gland type, and zinc- or cadmium-plated. Crimp, spring, or setscrew fittings are not acceptable. Where EMT enters outlet boxes, cabinets, or other enclosures, connectors shall be the insulated-throat type with a locknut. EMT shall be securely fastened to the supporting surfaces with corrosion-resistant metal clamps or fasteners, utilizing screws, toggle bolts, or expansion shields where appropriate. Maximum spacing of conduit supports shall be 2.4 m (8 feet). EMT shall be cut square with a hacksaw or three-wheel pipe cutter and thoroughly reamed to remove all burrs or rough surfaces. Field-made bends and offsets shall be avoided wherever possible but where necessary shall be made with an approved hickey or conduit-bending machine. Changes in direction of runs shall be made with symmetrical bends or approved metal fittings. Crushed or deformed EMT shall not be installed. Trapped conduit runs shall be avoided wherever possible. Care shall be taken to prevent the lodgment of plaster, dirt, or trash in the conduit, boxes, fittings, and equipment during the course of construction. Clogged conduit shall be entirely freed of obstructions or shall be replaced. Exposed conduit shall be run parallel or perpendicular to walls and the intersections of vertical planes; corners shall be turned with approved metal fittings or field bends arranged so multiple runs will be parallel.

**3.11.3 Flexible Conduit.** - Flexible metallic conduit shall be used for all electrical connections to vibrating equipment. Sections of flexible metallic conduit shall be not more than 1.8 m (6 feet) long and shall be installed only in exposed or accessible locations, in accordance with NFPA 70 Article 350. Flexible metallic conduit installed in outdoor, wet, or damp locations shall have an outer liquid tight, nonmetallic, sunlight-resistant jacket. Installation shall be in accordance with NFPA 70 Article 351 except that a green-insulated ground wire shall be run between connectors in all sizes of liquidtight flexible conduit.

**3.12 Grounding.** - Grounding of equipment shall be in accordance with the requirements of KSC-STD-E-0012 and NFPA Article 250. All exposed non-current-carry metallic parts of electrical equipment and conduit systems shall be grounded. All grounding surfaces on such items as motor and equipment frames, cable trays, starters and contactors, junction boxes, consoles, racks, and conduit shall be thoroughly cleaned to the conductive finish before applying the ground clamp or lug. The grounding surface of terminal lugs shall be free of dirt, grease, or any other foreign matter that would create a high-resistance contact. The grounding surface shall be metallic and low resistance, with no paint oxides or insulating finish. Ground lugs that are pitted or deformed shall not be used. Where existing ground pads are found to be rough or pitted, the contractor shall finish such pads to a smooth, flat surface. Before assembly and tightening, ground clamps and pads, including contact surfaces, shall be thoroughly covered (MIL-S-8660) to exclude air and moisture.

A sheet metal strap-type ground clamp for use on the grounding conductor of a wiring system, made of such material and so installed that the clamp is unlikely to stretch during or after installation, is inadequate unless it is attached to a rigid metallic base connected to an equipment ground or another suitable electrode. Ground clamps and fittings shall be protected from mechanical injury by being placed where they are unlikely to be damaged or by being enclosed in inspection-removable metal, wood, or equivalent protective coverings, unless approved for use without protection.

The acceptable methods of making connections between bonding jumpers and structures of various metals are indicated in table 1. The metals are listed in order of decreasing activity in salt water; the higher metal in the series will be the one attacked in case of galvanic action between any two. In general, the greater the separation between any two of the metals, the more pronounced the corrosive activity will be. Where either Type I or Type II screw is indicated as acceptable, the Type II is preferred from a corrosion standpoint and shall be used in corrosive environments.

All grounding connections shall be exothermic fusion welded, except where bolted connections are indicated on the drawings. Soldered ground connections are not permitted. All connectors shall be specifically designed for grounding, with adequate protection against corrosion and, where connection is made to dissimilar metals, shall protect the joined members as well as the connector against the electrolysis. All ground connections below grade shall be painted with a heavy coat of bitumastic paint and shall be inspected and approved by the Contracting Officer before backfill.

Table 1. Metal Connections

Metal Structure (Outer Finish Metal)	Connection for Aluminum Jumper		Connection for Tinned Copper Jumper	
Magnesium and Mg-base alloy	Direct or Mg washer	Type I* screw	Al or Mg washer	Type I screw
Zinc, cadmium, aluminum, and Al alloys	Direct	Type I screw	Al washer	Type I screw
Steel (except stainless steel)	Cadmium-plated washer	Type I screw	Direct	Type I screw
Tin, lead, and Pb-Sn Solders	Cadmium-plated washer	Type I screw	Direct	Type I or II** screw
Copper and Cu-base alloys	Tinned or cadmium-plated washer	Type I or II screw	Direct	Type I or II screw
Nickel and Ni-base alloys	Tinned or cadmium-plated washer	Type I or II screw	Direct	Type I or II screw
Stainless steel	Tinned or cadmium-plated washer	Type I or II screw	Direct	Type I or II screw
Silver, gold, and other noble metals	Tinned or cadmium-plated washer	Type I or II screw	Direct	Type I or II screw

\* Type I - zinc or cadmium plated

\*\*Type II - stainless steel

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Grounding taps shall be as short as possible and shall be run in conduit where mechanical protection may be necessary. Where existing ground taps are not of sufficient length for proper installation, they shall be extended with conductors of the same size and type. Such extensions to existing ground taps shall be made by exothermic fusion welding only.

Conduit entering or leaving junction boxes shall be properly grounded by means of ground clamps or ground bushings. Where conduit enters or leaves an enclosure through a concentric knockout, the conduit shall be bonded across the knockout.

Pressure-type lugs, clamps, and split-bolt connectors shall be sufficiently tight to meet resistance requirements. The controlling points for measuring resistance shall be in the limits of the cleaned area to be bonded, on the jumper terminal within 6.4 mm (0.25 inch) of the exterior or at that point called for on the drawings. The resistance between the jumper terminal and the object or structure to which it is attached shall not exceed 2 milliohms or as specified by the Contracting Officer.

**3.13 Touchup and Cleanup.** - General touchup or repainting of damaged items such as panels, consoles, junction boxes, and other such items shall be restored to the original finish and color (see FED-STD-595 and MIL-STD-171). Temporary identification decals and tags shall be removed. Exterior surfaces of consoles and racks shall be cleaned; interiors of consoles, racks, junction boxes, distributor boxes, and other such items shall be vacuumed. Oil and grease shall be removed with nonmetallic sponges soaked with solvent meeting the requirements of P-D-680. Cleanup shall be accomplished prior to the final inspection.

#### **4. QUALITY ASSURANCE PROVISIONS**

The supplier shall be responsible for the performance of all inspection and test requirements specified in the design or contract specification and as specified herein. Except as otherwise specified, the supplier may utilize its own or any other inspection and test facilities and services acceptable to NASA. Inspection and test records shall be kept complete and, upon request, shall be made available to the Contracting Officer. (See Appendix A for sample inspection sheet forms.) The Contracting Officer reserves the right to perform any or all of the inspections and tests set forth in the specification to assure that the end item conforms to the prescribed requirements.

#### **5. PREPARATION FOR DELIVERY**

There are no applicable requirements.

## 6. NOTES

6.1 Intended Use. - This specification is intended for use by contractors in the installation and assembly of electrical ground support equipment.

6.2 Definitions. - For the purpose of this specification, the following definition shall apply:

Short signs: Used to designate a component without giving complete reference designation; i.e., resistor R1 within enclosure 5601 would be "R1" instead of "5601 R1."

6.3 Notice. - The Government drawings, specifications, and/or data are prepared for the official use by, or on the behalf of, the United States Government. The Government neither warrants these Government drawings, specifications, or other data, nor assumes any responsibility or obligation, for their use for purposes other than the Government project for which they were prepared and/or provided by the Government, or an activity directly related thereto. The fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded, by implication or otherwise, as licensing in any manner the holder or any other person or corporation, nor conveying the right or permission, to manufacture, use, or sell any patented invention that may relate thereto.

Custodian:

NASA - John F. Kennedy Space Center

Preparing Activity:

John F. Kennedy Space Center  
Electronic Systems Division  
Engineering Development Directorate

APPENDIX A

Sample Inspection Check List

Dwg/Code	Item of Work	Check Point			
		Approved	Rejected	Signature	
	<b>GROUNDING</b>				
	(a) CHECK CONNECTIONS FOR TIGHTNESS AND CORRECT FITTINGS				
	(b) CHECK GROUND SURFACES FOR COMPOUND COATING				
	(c) CHECK EQUIPMENT, ETC., FOR GROUND CONNECTIONS				
	(d) CHECK ISOLATED CONDUIT FOR GROUNDING				
	<b>MOTOR STARTER</b>				
	(a) CONTROL TRANSFORMER - SIZE, VOLTAGE				
	(b) COIL VOLTAGE				
	(c) THERMAL OVERLOAD RELAYS - HEATER SIZE				
	(d) LOCATION				
	(e) INSTALLATION				
	(f) CONDUIT TERMINATIONS				
	(g) CABLE TERMINATIONS				
	(h) TAP PERCENT SETTING				
	(i) GROUNDING				
	(j) OPERATION				
	(k) CONTACTS CLEAN				
		Checked by Contractor	Date	NASA Approved	Date

APPENDIX A

Sample Inspection Check List

Dwg/Code	Item of Work	Check Point			
		Approved	Rejected	Signature	
DXXXXXXX	POWER SUPPLY (PURCHASED ITEM)				
	(a) SHEET METAL DETAILS				
	(b) SHEET METAL ASSEMBLY				
	(c) PANEL FINISH AND SILKSCREEN				
	(d) ELECTRICAL COMPONENTS INSTALLATION				
	(e) WIRE ROUTING AND INSTALLATION				
	(f) WIRE TERMINATIONS				
	(g) ELECTRICAL RINGOUT				
	(h) ACCEPTANCE CHECKOUT PROCEDURE				
	(i) FINISH				
D75XXX-XX	HARNESS ASSEMBLY (37XXXX) 35 FT.				
	(a) CORRECT LENGTH				
	(b) CORRECT TERMINATORS - CONNECTOR, LUG, SHIELDING				
	(c) CONNECTOR PIN AND SOCKETS- FREE OF DEFECTS AND IMPERFECTIONS				
	(d) IDENTIFICATION				
	(e) INSTALLATION				
	(f) TERMINATIONS - EQUIPMENT				
	(g) TESTING-ISOLATING (CABLES DISCONNECTED FROM COMPONENTS)				
	(h) CABLE FREE OF DEFECTS AND IMPERFECTIONS				
		Checked by Contractor	Date	NASA Approved	Date

APPENDIX A

Sample Inspection Check List

Dwg/Code	Item of Work	Check Point		
		Approved	Rejected	Signature
JXXXXXXXX	PANEL DISTRIBUTOR			
	(a) SHEET METAL DETAILS			
	(b) SHEET METAL ASSEMBLY			
	(c) TERMINAL BOARD ASSEMBLY			
	(d) ELECTRICAL COMPONENTS INSTALLATION			
	(e) WIRE ROUTING AND INSTALLATION			
	(f) WIRE TERMINATIONS			
	(g) ELECTRICAL RINGOUT			
	(h) ACCEPTANCE CHECKOUT PROCEDURE			
D75XXX-X	CABLE ASSEMBLY (55XXXX) 10 FT.			
	(a) CABLE FREE OF DEFECTS AND IMPERFECTIONS			
	(b) CABLE LENGTH			
	(c) CORRECT CONNECTOR AND CONNECTORS			
	(d) CONNECTOR - SOLDERING			
	(e) POTTING AND MOLDING OF CONNECTOR AND CONNECTORS			
	(f) CABLE IDENTIFICATION MARKERS			
	(g) INSULATION RESISTANCE TEST			
	(h) CONTINUITY CHECK			
	Checked by Contractor	Date	NASA Approved	Date

APPENDIX A

Sample Inspection Check List

Dwg/Code	Item of Work	Check Point			
		Approved	Rejected	Signature	
JXXXXXXX	JUNCTION BOX 59XXX				
	(a) LOCATION				
	(b) INSTALLATION				
	(c) CONDUIT TERMINATION				
	(d) CABLE INSTALLATION				
	(e) JUNCTION BOX FINISH				
	CONDUIT SYSTEM (BASEMENT)				
	(a) CONDUIT FREE OF DEFECTS AND DEFORMATION				
	(b) CUTTING CONDUIT - SQUARE ENDS				
	(c) REAM CUT END TO DEBURR AND REMOVE SHARP EDGES				
	(d) COAT JOINT WITH RED OR WHITE LEAD				
	(e) THREADS PULLED UP TIGHT				
	(f) EXCESS LEAD REMOVED AFTER CONDUIT SCREWED TOGETHER				
	(g) SUPPORT, TIGHT AND AT SPECIFIED DISTANCES				
	(h) CONDUIT TERMINATION WITH DOUBLE LOCKNUT AND INSULATED BUSHING (IF REQUIRED)				
	(i) SMOOTH WELL FORMED ENDS				
		Checked by Contractor	Date	NASA Approved	Date