

**AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT**

1. CONTRACT ID CODE \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_ PAGES

2. AMENDMENT/MODIFICATION NO. \_\_\_\_\_ 3. EFFECTIVE DATE \_\_\_\_\_ 4. REQUISITION/PURCHASE REQ. NO. \_\_\_\_\_ 5. PROJECT NO. *(If applicable)* \_\_\_\_\_

6. ISSUED BY \_\_\_\_\_ CODE \_\_\_\_\_ 7. ADMINISTERED BY *(If other than Item 6)* \_\_\_\_\_ CODE \_\_\_\_\_

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)* \_\_\_\_\_ (X) 9A. AMENDMENT OF SOLICITATION NO. \_\_\_\_\_  
 9B. DATED *(SEE ITEM 11)* \_\_\_\_\_  
 10A. MODIFICATION OF CONTRACT/ORDER NO. \_\_\_\_\_  
 10B. DATED *(SEE ITEM 11)* \_\_\_\_\_  
 CODE \_\_\_\_\_ FACILITY CODE \_\_\_\_\_

**11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS**

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers  is extended,  is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:  
 (a) By completing items 8 and 15, and returning \_\_\_\_\_ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)* \_\_\_\_\_

**13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.**

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: <i>(Specify authority)</i> THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES <i>(such as changes in paying office, appropriation date, etc.)</i> SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER <i>(Specify type of modification and authority)</i>

**E. IMPORTANT:** Contractor  is not,  is required to sign this document and return \_\_\_\_\_ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER <i>(Type or print)</i>		16A. NAME AND TITLE OF CONTRACTING OFFICER <i>(Type or print)</i>	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

Item 14. Continued.

**CHANGES TO THE SPECIFICATIONS**

1. Replacement Sections - Replace the following section with the accompanying new section of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0003 TO SOLICITATION NO. DACA63-00-B-0025:"

<u>Section No.</u>	<u>Title</u>
16115	INFLOOR FLUSH RACEWAY SYSTEM (CELLULAR STEEL FLOOR)

**CHANGES TO THE DRAWINGS**

2. Replacement Drawings.- Replace the drawings listed below with the attached new drawings(s) of the same number, bearing the notation "AM #0003":

A05\_3.cal Seq 52 A1.3 Floor plan-area 3  
E20\_3.cal Seq 194 E2.10 Power Plan first floor area 4  
E29\_3.cal Seq 203 E9.1 Electrical panel schedules

END OF AMENDMENT

## SECTION 16115

~~UNDER~~ AM003 INFLOOR FLUSH RACEWAY SYSTEM (CELLULAR STEEL FLOOR)

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

## CODE OF FEDERAL REGULATIONS (CFR)

47 CFR 68 Connection of Terminal Equipment to the Telephone Network

## NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA WD 1 (1983; R 1989) General Requirements for Wiring Devices

NEMA WD 6 (1988) Wiring Devices - Dimensional Requirements

## NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1999; Errata 96-4) National Electrical Code

## UNDERWRITERS LABORATORIES (UL)

UL 209 (1995) Cellular Metal Floor Raceways and Fittings

UL 498 (1996; Rev thru Nov 1997) Attachment Plugs and Receptacles

UL 870 (1995) Wireways, Auxiliary Gutters, and Associated Fittings

UL 1863 (1995) Communication Circuit Accessories

## 1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Components; GA. Raceway Cells; GA. Header Ducts; GA. Trench Ducts; GA. Service Outlet Fittings; GA.

Data published by the manufacturer of each item on the above list sufficient to permit verification of the accuracy and completeness of information shown, that the item proposed is of the correct size, properly rated or applied, or is otherwise suitable for the application and fully conforms to the requirements of these specifications. Approval will be based on published literature of the manufacturer or a certification of compliance issued by the manufacturer as evidence of compliance with these provisions.

#### SD-04 Drawings

~~Under~~Infloor Raceway System; GA.

Detail drawings consisting of accurate and complete drawings as required to demonstrate compliance with the applicable provisions of the contract. Drawings shall show the proposed layout of the duct system, including steel raceway cells and associated duct equipment. Drawings shall show connections to equipment cabinets, panelboards, and related components. Drawings shall be accurately scaled or dimensioned to indicate the proposed layout of the duct system, construction features of the facility or building, and equipment to be installed when the installation would impact the layout or usage of the duct system. The layout shall ensure the clearances required for the proper operation, maintenance, and use of the system and facility equipment. Details shall indicate the proposed method of anchorage, leveling, mating and other details of the system components including appurtenances. The exact location of blank ducts, duct markers, inserts, junction boxes, cover plates, service fittings, conduits, panelboards, and related components shall be shown. Each separate item proposed shall be identified by the corresponding item number on the list of equipment and material. Distinction shall be made between active, blank, future, or spare features of the system.

As-Built Drawings; FIO.

As-built drawings showing features of the complete raceway system installed per the approved initial drawings and submitted within 30 calendar days following the completed installation. Any deviations from previously approved drawing shall be indicated on the transmittal form or attachment thereto.

#### SD-06 Instructions

~~Under~~Infloor Raceway System; GA.

Instructions showing the assembly and installation of ducts and duct components shall be approved prior to beginning any installation work.

#### SD-07 Schedules

Equipment and Materials; FIO.

A complete itemized listing of individual items of equipment and material proposed for incorporation into the work. Each itemization shall include an item number, the quantity of items required or proposed, the name of the manufacturer of each item, the catalog number or similar ordering information, and the nomenclature shown on published literature of the manufacturer.

#### SD-19 Operation and Maintenance Manuals

Underfloor Raceway System; FIO.

Six copies of instruction manuals, concurrently with the installation drawings, including specific instructions for locating and installing inserts of the preset and afterset types. Manuals shall include a list of recommended spare parts, a list of tools provided, and any other data or drawings required for the maintenance and future use of the duct system. Manuals shall be in suitable binders and properly marked with pertinent contract information, containing dividers and indexes. Revised manuals, or updated inserts, adjusted to show as-built conditions shall be furnished within 30 days after installation is complete.

### 1.3 STANDARD PRODUCTS

Materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been incorporated into ~~under~~in floor duct systems for at least 2 years prior to the bid opening.

### 1.4 DELIVERY, STORAGE, AND HANDLING

Materials delivered prior to use shall be stored off the ground within a completely enclosed structure or shall be completely enclosed within a weatherproof covering. Material shall not be unpacked until needed for installation unless specific arrangements have been approved in advance. At the time of final inspection of the building, material required to be delivered to the Contracting Officer shall be properly packaged, marked, and stored as directed.

### 1.5 TOOLS

One complete set of new tools for installing afterset inserts shall be provided. One electric or magnetic devices shall be provided for locating present inserts. One set of tools for removing junction box and trench duct covers shall be furnished.

### 1.6 SYSTEM DESCRIPTION

A complete ~~under~~in floor flush raceway system including interface components shall be provided under this section. Service fittings shall be furnished with receptacles, jacks, or connectors unless otherwise noted. Wiring or cable, if required, will be furnished and installed under other sections of the specifications. Under this section, the wire or cable shall be connected to devices or terminal blocks at the service fittings or shall be

extended into the fitting for future connection by others if so indicated on the plans. Power wiring shall be provided in accordance with Section 16415 ELECTRICAL WORK, INTERIOR . Communications wiring shall be provided in accordance with Section 16710 PREMISES DISTRIBUTION SYSTEM .

## PART 2 PRODUCTS

### 2.1 COMPONENTS

#### 2.1.1 System Requirements

A complete ~~under~~in floor raceway system shall be furnished. The system shall include raceway cells in the cellular steel flooring trench duct, junction boxes, fitting elbows, reducers, panel risers, cabinet connectors, cell entry pull boxes, expansion joints, outlets, conduits, connections, and necessary fittings to form a complete installation. Ducts shall be equipped with access holes or access units, adapters, boxes, bushings, caps or cap assemblies, connectors, couplings, cover plates, dividers, elbows, end plates, expansion devices, fittings, gaskets, grommets, inserts, leveling devices, notched void enclosures that accurately mate with the cellular steel flooring, markers, offsets, plugs, rings, risers, screws, strap supports, tees, tongs, , and components specified or otherwise required to complete the installation. Equipment and materials shall be products of a single manufacturer to the extent practicable.

#### 2.1.2 Coordination - General Requirement

Layout and Contractor selections shall be fully coordinated with the architectural, structural, mechanical, and electrical work throughout all phases of this project including field modifications. The cellular steel flooring will be provided under Section 05300 STEEL DECKING. The underfloor raceway system shall be coordinated with the cellular steel flooring provisions to ensure proper depth, alignment and anchorage of ducts and appurtenances. Thickness and finishes of components furnished under this section shall be consistent with that specified for the cellular floor and shall be not less than the minimum required by UL 209. The locations of raceway components shown on plans are intended to be approximate unless dimensions have been included; routings of feeders and interconnections are schematic. The overall configuration, relative proportions, and general locations of devices should be maintained. Detailed drawings of the Contractor's proposed system shall be prepared as required under paragraph SUBMITTALS and shall include notes, dimensions, details or other means to show that interfacing with, or accommodation to, other work has been accomplished. Errors or conflicts encountered in the course of the project shall be brought promptly to the Contracting Officer's attention for resolution. When the products of more than one manufacturer will be utilized, the Contractor shall coordinate with the manufacturers to ensure that the different products are compatible, that supplemental components are included if necessary, and that the products are installed per the manufacturer's prescribed procedures.

#### 2.1.3 Architectural Considerations

Exposed portions of the system, such as junction box covers or trench duct

covers shall have finish treatments or lay-in materials compatible with the architectural features of the surrounding surfaces. Accessories necessary to accommodate specific finished floor configurations shall be selected and installed in accordance with the recommendations and instructions of the manufacturer. Modifications of standard products, if required, shall be performed by or approved by the manufacturer.

## 2.2 RACEWAY CELLS

Raceway cells and fittings in the cellular steel floor shall conform to UL 209. Cellular steel raceways shall be equipped with inserts and service fittings.

## 2.3 HEADER DUCTS

Header ducts shall be provided as raceways for the feeder portion of wiring for the different services specified. Each header duct shall have a minimum cross sectional area of 4839 square millimeters (7-1/2 square inches) and shall be provided with junction or pull boxes as access units to the ducts for the convenient pulling of wiring and to interface with other header ducts or other types of raceways. The depth of header duct assemblies including access units, shall be coordinated with the depth of the concrete flooring and any architectural finish scheduled for the area to provide a flush installation. Access units shall be supplied with adapters, inner adjusting rings, and cover plates as required to suit the installation and facilitate the future use of the raceway system. Access units shall have no openings in the bottom except when required to interface with other raceways. The access units shall have a minimum opening of 2903 square millimeters (4-1/2 square inches). The inner adjusting rings and cover plates shall be removable after the installation is completed. Cover plates shall be adjustable before and after concrete is placed.

## 2.4 TRENCH DUCTS

### 2.4.1 Trim Strips

Trim strip material shall be plastic or metal with an exposed trim edge of not less than 3.2 mm (1/8 inch) and shall be securely attached along the entire length of the trench ducts on each side. The trim strips shall be covered at the factory to prevent damage to the exposed surface prior to and during installation.

### 2.4.2 Welding Clips

Welding clips shall be provided on both outside surfaces of trench duct railings, and shall be spaced for welding to the cellular steel floor at not more than 914.4 mm (36 inch) intervals. Each welding clip shall be sized to permit a fillet type weld at least 25 mm in length.

### 2.4.3 Dividers

Dividers or partitions shall be provided in the trench ducts to sectionalize the trench into separate compartments or raceways to

accommodate wiring for the services specified. Dividers or support posts shall also be provided to support cover plates at not more than 381 mm (15 inch) intervals. Top of dividers shall have a bearing surface at least 12.7 mm (1/2 inch) in width. Dividers shall have a vertical adjustment feature to permit leveling during installation, as required for proper support of cover plates.

#### 2.4.4 Cover Plates

Cover plates shall be not less than 6.2 mm (1/4 inch) thick flat steel with a maximum weight of 27.2 kg (60 pounds) each and a maximum dimension not exceeding 914.4 mm (36 inches). Plates shall have factory drilled and finished screw holes. Abutting edges of cover plates shall be gasketed. Gaskets shall also be provided between the bottom edges of cover plates and the supporting rail surfaces on each side of trench ducts, and at other locations as required to exclude dust, dirt, and foreign objects from entering the raceway system interior. Cover plate system shall accommodate the architectural floor finish material scheduled. Tools or other items shall be provided to facilitate the removal, replacement, and anchorage of component parts of the cover plate system.

#### 2.5 INSERTS

Inserts shall be corrosion protected metal and shall be unaffected by the concrete in which they are installed. The connection between the insert and the raceway shall be capable of withstanding a straight pull of 889.6 N (200 pounds) for one minute. The diameter of the opening in the raceway shall be coordinated with the insert. Inserts shall have a 50 mm (2 inch) standard pipe thread to receive fittings at the floor level. Afterset inserts shall be provided to coordinate with the concrete and the service outlet fittings.

#### 2.6 SERVICE OUTLET FITTINGS

Flush-mounted service fittings shall be corrosion resistant metal polycarbonate and have hinged covers. All service outlet fittings shall be products of a single manufacturer and shall be the manufacturer's standard item. The Contractor shall ensure that the size and orientation of an installed fitting will not interfere with the installation or use of a second outlet fitting located opposite on an adjacent raceway. Outlet fittings shall have ample wiring space to accommodate the quantity of conductors installed at each outlet.

##### 2.6.1 Telephone Outlet Fittings

Outlet fittings for telephone service shall be of a type approved by the Contracting Officer and shall be provided in 1 or more of the following configurations: bushed opening, assembly.

##### 2.6.1.1 Bushed-Type Fittings

Fittings shall be of the same design as receptacle service fittings, but with a single 25.4 mm (1 inch) inside diameter bushed opening faced so that conductors will exit the bushing in a horizontal plane. Capacity must be

adequate for 3 10-wire connector blocks or 1 Amphenol type cable-to-cable connector.

#### 2.6.1.2 Cable Connector-Type Fittings

Unless otherwise indicated, fitting shall be furnished in 2 sizes, 1 size shall be sufficient to accommodate two 25-pair cable-to-cable connectors and a second size shall be sufficient to accommodate four 25-pair cable-to-cable connectors. Faceplates shall have rubber grommets sized to fit 15.9 mm (5/8 inch) maximum cable diameter.

#### 2.6.2 Communication Circuit Accessories

Communication circuit accessories shall conform to UL 1863.

#### 2.6.3 Power Receptacle Service Fittings

Receptacle service fittings shall have receptacles with configuration and construction in accordance with UL 498 and NEMA WD 1 as applicable. Receptacle dimensions shall conform to NEMA WD 6.

#### 2.6.4 Special Power Outlet Fittings

Special outlet fittings shall have receptacles conforming to UL 498 with ratings as shown.

### 2.7 WIRE TROUGHS

Wire troughs shall meet construction requirements of UL 870 and comply with NFPA 70.

## PART 3 EXECUTION

### 3.1 GENERAL

Quantity, sizes, and arrangement of raceway system shall be as shown on the plans. Revisions implemented during construction shall be incorporated into the as-built installation drawings.

### 3.2 CELLULAR STEEL FLOOR CELLS

#### 3.2.1 Services

Designated cells of the cellular steel floor shall be prepared for use as raceways for the accommodation of the receptacle, telephone, and signal service.

#### 3.2.2 Installation

Steel floor cells designated for use in the raceway system shall be free of dirt and foreign material. Cells shall be aligned longitudinally so that no sharp edges which might damage insulation will protrude into the raceway interior. Where the cellular floor is not continuous over the supporting beams, the slots shall be permanently covered with cover plates. Screws

shall not penetrate into the interior of cells. Where the cellular floor is not provided with slots, the abutting joints over the supporting beams shall be covered with tape as recommended by the cellular floor manufacturer. Where cells used as raceways are cut for any purpose other than for installation or raceway fittings and outlets, cut cells shall be completely closed and sealed and jack headers shall be installed to form continuous, unobstructed wiring raceways for activated cell groups.

### 3.3 HEADER DUCT

#### 3.3.1 Services

Each header duct provided for the specific services specified shall connect and give access to the corresponding raceway cells.

#### 3.3.2 Installation

Header ducts shall be attached to the cellular floor by tack welding or by straps installed at least every 1.5 m along the length of the duct. If straps are used, fastening shall be by tack welding or short sheet metal screws. Straps shall be fastened in voids between cells on the cellular floor where possible. Screws shall not penetrate into the interior of any cells to be used as wire raceways. Couplings, including expansion couplings required, shall be furnished to complete installation of the duct system in the field. Couplings shall be secured to the duct by grounding screws.

### 3.4 TRENCH DUCT

#### 3.4.1 Services

Each trench duct compartment provided for the services specified shall connect and give access to corresponding raceway cells, trench duct compartments, and raceways between the trench ducts and equipment, equipment cabinets, or panelboards.

#### 3.4.2 Installation

Positive and accurate coupling devices shall be provided to ensure the proper alignment and leveling of duct sections before welding them in place. Alignment and leveling of trench duct sections, exclusive of dividers, and welding shall be accomplished before the concrete floor is placed. Welding clips shall be welded to the steel floor with welds not less than 25 mm in length.

##### 3.4.2.1 Dividers

Dividers shall be adjusted to the correct position to provide bearing support for the cover and to keep the cover level. Divider adjustments shall be made after the concrete has hardened. Dividers shall be adjusted, and tack welded into place, at intervals not exceeding 900 mm with welds not less than 15 mm long.

##### 3.4.2.2 Access

Access holes between the different compartments of the trench ducts and the tops of the cellular floor cells shall be provided as indicated or required. Holes for power and special services shall be not less than 75 mm in any dimension. Holes for telephone service shall have not less than 10968, 7742, or 4516 square millimeters of open area. Where size is not indicated, minimum opening for telephone shall be the 7742 square millimeter size. The 10968 square millimeters (17 square inches) and 7742 square millimeters (12 square inches) holes shall be oval shaped, the 4516 square millimeter hole may be round. Holes shall be furnished with plastic, metal, or rubber grommets of the size and shape necessary to completely cover exposed sharp metal edges.

### 3.5 JUNCTION BOX INSTALLATIONS

Top of each junction box shall be adjusted and leveled to the proper height in accordance with manufacturer's instructions, to ensure a flush installation with the concrete floor and to accommodate the floor finish schedule. Access from the header ducts to floor cell raceways shall be through holes or openings in the base of junction boxes to openings in header ducts and openings in the top of cell raceways. Access openings shall be not less than 75 mm in any dimension, and shall be furnished with plastic, metal, or rubber grommets of the proper size and shape to completely cover exposed sharp metal edges.

### 3.6 DUCT MARKERS

#### 3.6.1 Installation

Corrosion resistant marker screws shall be installed at selected underfloor raceway cell locations and on systems not having preset inserts. When resilient flooring is placed, markers shall be extended through the flooring with grommets screws. Duct marker screws shall be kept free of cement by coating with grease or covering with tape prior to placing of the concrete floor fill.

#### 3.6.2 Location

Marker screws shall be installed using a minimum of 2 markers per system per 18.6 square meters (200 square feet) and not less than 2 markers per system in each room. Markers are not required where junction boxes indicate cell locations. Markers shall not be placed within 300 mm of module boundary line.

### 3.7 INSERTS

Afterset inserts shall be installed to provide a continuous metallic passage from the cell to the opening in the finished floor or floor covering and shall provide a smooth wire-pulling surface without any sharp or rough metal edges. Afterset inserts shall be provided in the underfloor raceway system at locations indicated or as directed.

### 3.8 SERVICE OUTLET FITTINGS

### 3.8.1 Quantity and Location

Service fittings of the type indicated shall be installed at the locations shown on the plans.

### 3.8.2 Cutting of Floors

Necessary cutting of floor for the installation of service fittings shall be made as recommended by duct system manufacturer. Floor construction or finish damaged by installation of fittings shall be patched or replaced as directed.

### 3.9 WIRE TROUGHS

Wire troughs shall be provided where indicated for connections between panelboards and underfloor duct.

### 3.10 BOUNDARIES

#### 3.10.1 Modules

Header and trench ducts shall not be located within 300 mm of structural concrete framing members or window mullion lines, except at concentration points near electric or telephone closets.

#### 3.10.2 Walls

Stub ends of underfloor raceway system perpendicular to walls shall be extended as close as practicable to wall line.

#### 3.10.3 Expansion Joints

Expansion devices shall be installed wherever header duct or trench duct crosses building expansion joints. A bonding strap shall be included to ensure ground continuity.

### 3.11 INSPECTION

Upon completion of the assembly of the underfloor raceway system, and before cells and ducts are covered, inspection in the presence of the Contracting Officer shall show cells, ducts, boxes and other related equipment to be in place. Components shall be replaced with new parts if damaged, blemished, or otherwise marred prior to or during placing concrete. Entire system must be free of obstructions and moisture after placing concrete. Ducts shall be thoroughly swabbed out before floor finish is applied and wiring is installed.

-- End of Section --