ADDENDUM NO.: 2 DATE OF ADDENDUM: September 6, 2013

CTARNG Vision 2020
Project No. 2 – TASKS A, C, D, E
READINESS CENTER RENOVATIONS &
STONES RANCH MILITARY RESERVATION
NEW LONDON & EAST LYME, CT
BI – Q – 658

Original Bid Due Date / Time: September 17, 2013 1:00 PM

Previous Addendums: Addendum No. 1 – August 27, 2013

TO: **Prospective Bid Proposers:**
This Addendum forms part of the "Contract Documents" and modifies or clarifies the original "Contract Documents" for this Project dated **June 24, 2013**. Prospective Bid Proposers shall acknowledge receipt of the total number the Addenda issued for this Project on the space provided on Section 00 41 00 Bid Proposal Form. Failure to do may subject Bid Proposers to disqualification.

The following clarifications are applicable to drawings and specifications for the project referenced above.

Item 1

On drawing G.100, revise the following under the "Building Information Form" section:
a. Line 1.3: Revise to read, "Complying with International Existing Building Code, Level 2 Alterations".
b. Line 4.0: Revise to read, "New Work Construction Type: IIB, Non-Combustible Unprotected".
c. Lines 7.1.1 and 7.1.2: Revise fire resistance rating to read, "N/A".

Item 2

On drawing A.100, revise configuration of privacy screen at Fitness Center #22 in accordance with ASK.100.01.

Item 3

On drawing A.130, revise shower room bench layout in accordance with ASK.130.01, ASK.130.02, and ASK.130.03.

Item 4

On drawing A.130, revise toilet room accessories and mounting heights in accordance with ASK.130.02 and ASK.130.03.

Item 5

On drawing A.130, provide accessible shower controls with hand shower in accordance with ASK.130.03.

Item 6

On drawing A.130, provide insulating at exposed piping in accordance with ASK.130.04.

Item 7

Revise Specification Section 01 10 00 as follows:

a. DELETE paragraphs E.2.a and E.2.b.

b. Revise paragraph E.2 to read, "The Authority having jurisdiction for this project is the CT Department of Construction Services (CT DCS), Division of Design and Construction."

ADDENDUM NO.: 2 DATE OF ADDENDUM: September 6, 2013

Item 8

On drawing EP.100, new work notes have been revised. Refer to EPSK.100.01.

a. Note #18: Terminate data drops and cabling support back to cable TV service location.

b. Note #20: Terminate data and power drops and cabling support for CCTV cameras back to room TR/IDF #9A.

c. Note #21: Provide data and power cabling for door access control system.

d. Note #27: Door access control system basis of design is Galaxy Control System Model 508i.

e. Note #28: Provide electric door lock.

Item 9

On drawing EP.100, provide electric door lock. Refer to EPSK.100.02

Item 10

On drawing EP.100, notation has been added to data jack and receptacle in Kitchen Room #37A. Refer to EPSK.100.02

Item 11

On drawing EP.100, provide Galaxy Control System Model 508i and receptacle. Refer to EPSK.100.03

Item 12

On drawing EP.100, provide electric door lock. Refer to EPSK.100.04

Item 13

On drawing M.100, three (3) new notes have been added referring to specific details. Refer to sketches MSK.100.01, MSK.100.02, and MSK.100.03.

Item 14

On drawing M.301, notes in all schedules, except for Water Pump Schedule Supplemental Bid Item #3, apply to all equipment within that schedule. For Water Pump Schedule – Supplemental Bid Item #3 refer to MSK.100.04 for revised applicable notes.

Item 15

In Specification Section 23 05 15, paragraph 3.1, revise the following:

a. In the second paragraph of 3.1, replace the word "hyrostatically" with "hydrostatically".

b. Revise the last sentence of the second paragraph of 3.1 to read, "The duration of each test..."

ADDENDUM NO.: 2 DATE OF ADDENDUM: September 6, 2013

Item 16

On drawing P.001, Plumbing Fixture Equipment Schedule, FD and FD-S; add note: "*For trap primer, see detail 3/P-001.*"

Item 17

In Specification Section 23 52 00, delete the following from paragraph 2.4.1 "Electrical Controls" and add it to the end of paragraph 2.4.2 "Water Temperature Controller":

"Each automatically fired hot water boiler shall be protected from over temperature by two temperature-operated controls.

Each individual automatically fired hot water boiler shall have a safety limit control that will cut off the fuel supply to prevent water temperature from exceeding the maximum allowable temperature of 250 degree F at the boiler outlet. This water temperature safety control shall be constructed to prevent a temperature setting above 250 degrees F.

Each individual hot water boiler or each system of commonly connected boilers without intervening valves shall have a control that will cut off the fuel supply when the water temperature reaches and operating limit, which shall be less than the maximum allowable temperature."

Item 18

In Specification Section 13 34 19, delete paragraph 2.4.1 "Aluminum Sheet" and provide the following:

2.4 PANEL MATERIALS

2.4.1 Steel Sheet

Roll-form steel roof panels to the specified profile, with fy = 18 gauge and depth as indicated. Material must be plumb and true, and within the tolerances listed:

a. Galvanized Steel Sheet conforming to ASTM A653/A653M and AISI SG03-3.

b. Aluminum-Zinc Alloy-coated Steel Sheet conforming to ASTM A792/A792M and AISI SG03-3.

c. Individual panels to have continuous length to cover the entire length of any unbroken roof slope with no joints or seams and formed without warping, waviness, or ripples that are not part of the panel profile and free of damage to the finish coating system.

d. Provide panels with thermal expansion and contraction consistent with the type of system specified;
profile to be a 1-1/2 inch high rib at 12 inches o.c. with small stiffening ribs, 38 inch overall width with 36 inch coverage and exposed fasteners.

ADDENDUM NO.: 2 DATE OF ADDENDUM: September 6, 2013

Item 19

On drawing EL.100, relocate the existing "call for aid" box. Refer to ELSK.100.01

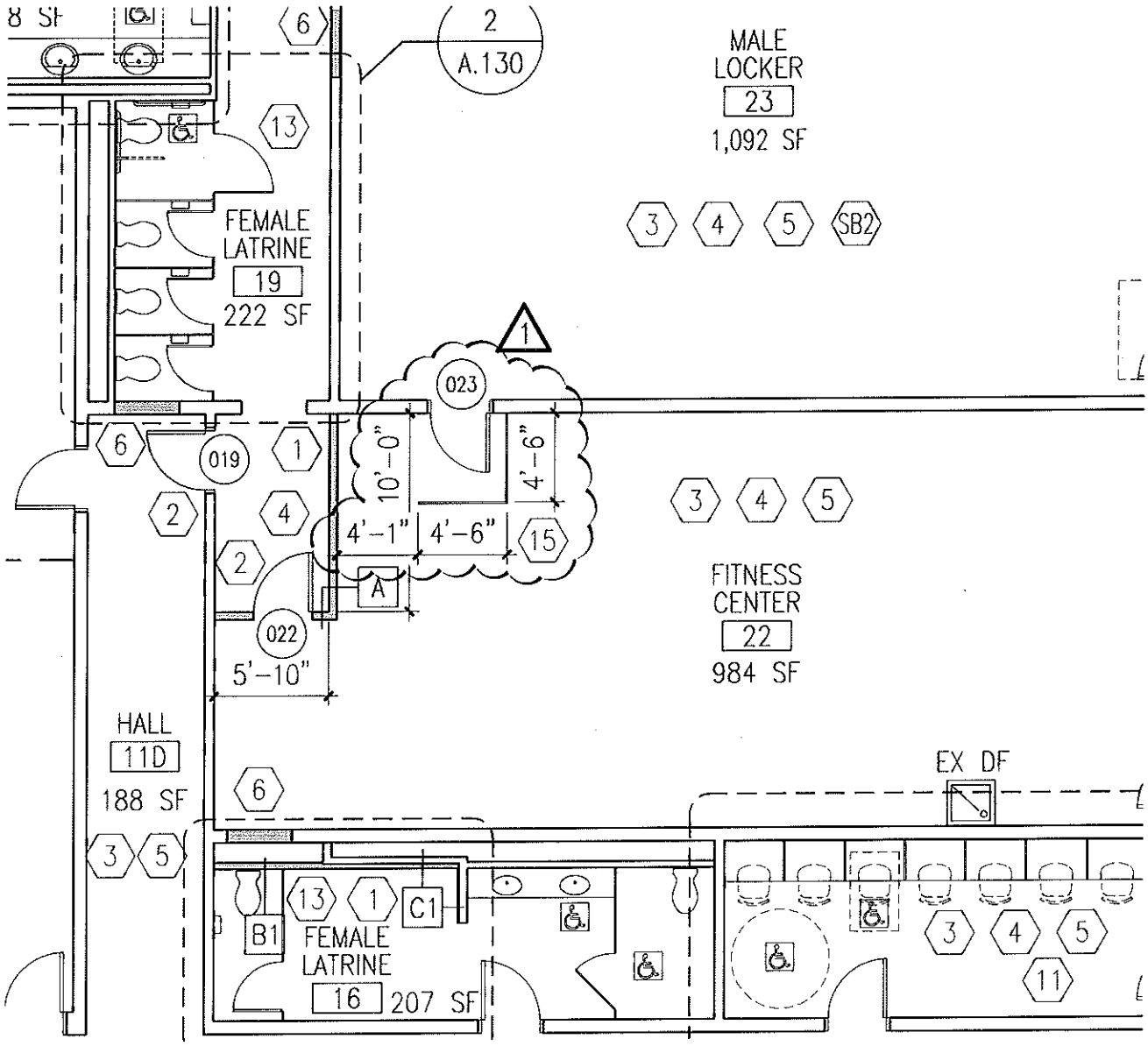
Item 20

Replace Specifications Section 27 10 00 in its entirety with the attached revised specifications section.

All questions must be in writing (not phone or e-mail) and must be forwarded to the consulting Architect/Engineer (Ames & Whitaker Architects; 860-621-0957) with copies sent to the CT DCS Project Manager (Mike Rice; 860-713-7261).

End of Addendum

David Busanet, Bidding & Contracts Supervisor
Department of Administrative Services
On Behalf of the Department of Construction Services



PARTIAL NLRC FLOOR PLAN

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	A&W PROJECT NO.
09.06.2013	2	BI-Q-658	2012.15.001

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

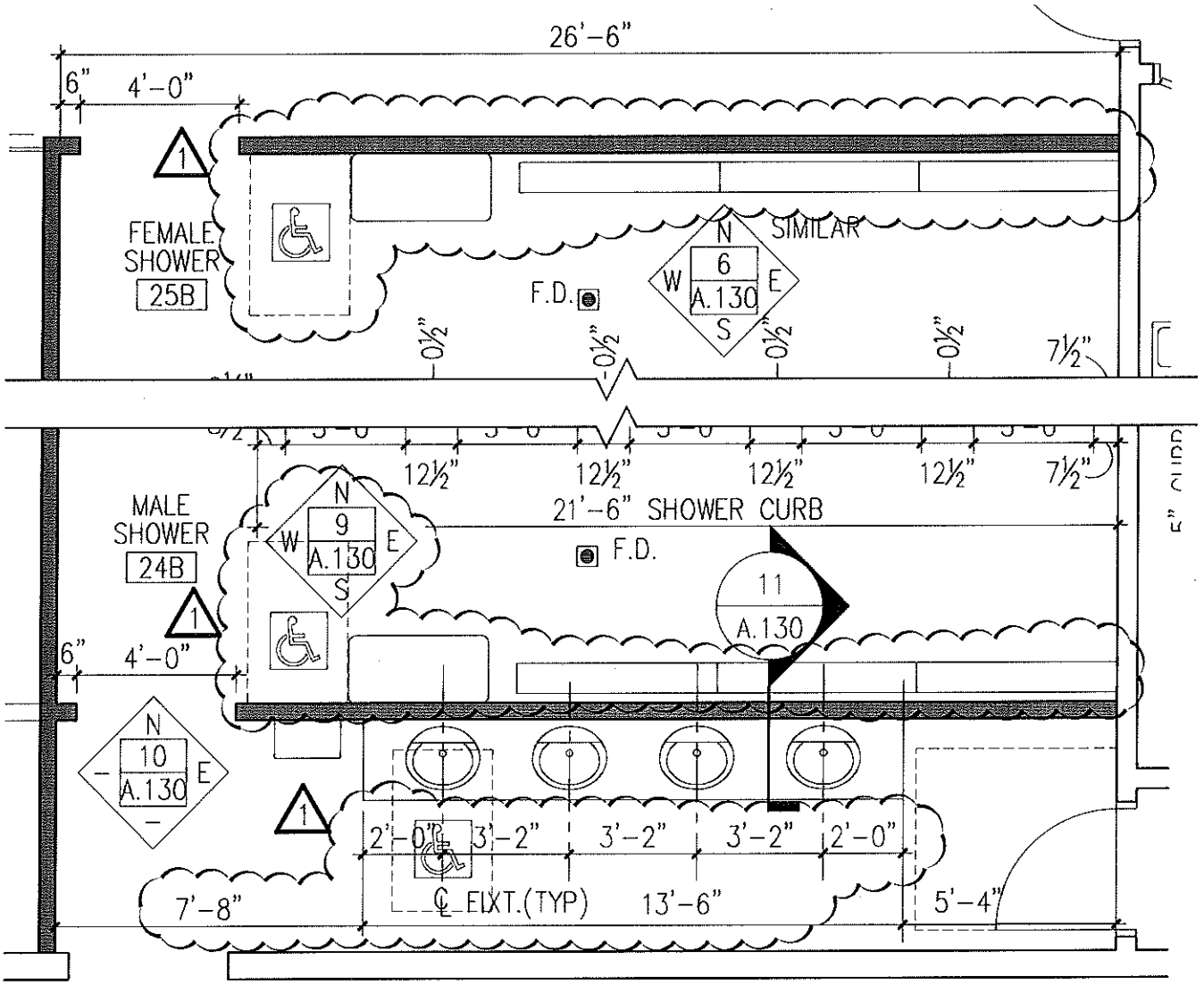
SHEET TITLE
FITNESS CENTER PRIVACY SCREEN
DIMENSION CLARIFICATION

REFERENCE SHEET NO.
A.100

SHEET NO.
ASK.100.01

Plotted: Thursday, August 29, 2013 11:24:33 AM

AMES & WHITAKER Architects
MEMBERS OF THE AMERICAN INSTITUTE OF ARCHITECTS
31 Liberty Street, Suite 208 Southington, Connecticut 06489 (860) 621-8944 Fax (860) 621-0357



8 ENLARGED SHOWER PLAN

0 2' 4' 8'

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	A&W PROJECT NO.
09.06.2013	2	BI-Q-658	2012.15.001

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
NLRC - MALE/FEMALE SHOWER DIMENSION CLARIFICATIONS & BENCH REVISIONS

REFERENCE SHEET NO. A.130

SHEET NO. ASK.130.01

AMES & WHITAKER Architects
MEMBERS OF THE AMERICAN INSTITUTE OF ARCHITECTS
31 Liberty Street, Suite 208 Southington, Connecticut 06489 (860) 621-8944 Fax (860) 621-0957

Plotted: Thursday, August 29, 2013 11:23:29 AM

SCHEDULE OF TOILET ROOM ACCESSORIES

SYMBOL	ITEM	MOUNTING HEIGHT A.F.F.	MFR/MODEL NUMBER/REMARKS
T1	ROBE HOOK/TOWEL PIN 1	46" & 60" TO ℄	BOBRICK B-6707
T2	SOAP DISPENSER	LAVATORY MOUNTED	BOBRICK B-822
T3	PAPER TOWEL DISPENSER	42" TO OPERABLE PART	SAN JAMAR T1300
T4	TOILET TISSUE DISPENSER	22" TO BOTTOM	BOBRICK B-2890
T5	18" X 36" MIRROR 1	40" TO BOTTOM OF REFLECTIVE SURFACE	BOBRICK B-290
T6	8" X 60" LOCKER ROOM BENCH	FLOOR MOUNTED	USE WATER RESISTANT MATL'S & FINISHES
T6A	20" X 42" LOCKER ROOM BENCH	18" TO T.O. SEAT - MOUNT TO WALL	COMPLY WITH ICC/ANSI 117.1, SEC. 903
T7	48" GRAB BAR	34" TO TOP	BOBRICK B-6806.99
T8	24" GRAB BAR	34" TO TOP (HORIZ)/40" TO BOTTOM (VERT)	BOBRICK B-6806.99
T9	36" GRAB BAR 1	34" TO TOP (COORD. W/ T11)	BOBRICK B-6806.99
T10	42" GRAB BAR	36" TO TOP	BOBRICK B-6806.99
T11	SWING-UP GRAB BAR 1	36" TO TOP	BOBRICK B-4998.99

TOILET ACCESSORIES NOTES:

1. TOILET ACCESSORY MANUFACTURERS ACCEPTABLE TO THE OWNER ARE AS FOLLOWS:
   A. AMERICAN SPECIALTIES, INC;
   B. BOBRICK WASHROOM EQUIPMENT INC;
   C. MCKINNEY/PARKER;
   D. SCOTT

2. TOILET ACCESSORIES PROVIDED MUST BE SIMILAR IN OPERATION TO THE MANUFACTURERS/MODEL NUMBERS PROVIDED IN THE TOILET ROOM ACCESSORY SCHEDULE.

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	A&W PROJECT NO.
09.06.2013	2	BI-Q-658	2012.15.001

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
NLRC - REVISED TOILET ROOM ACCESSORY SCHEDULE

REFERENCE SHEET NO. A.130

SHEET NO. ASK.130.02

AMES & WHITAKER Architects
MEMBERS OF THE AMERICAN INSTITUTE OF ARCHITECTS
31 Liberty Street, Suite 208 Southington, Connecticut 06489 (860) 621-8944 Fax (860) 621-0657

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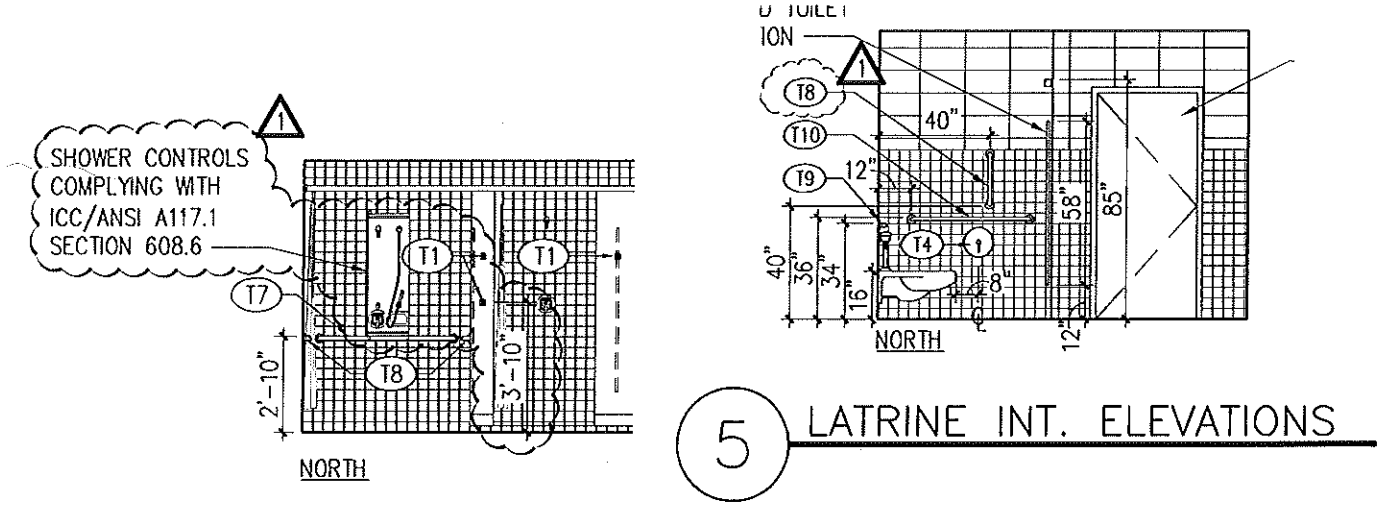
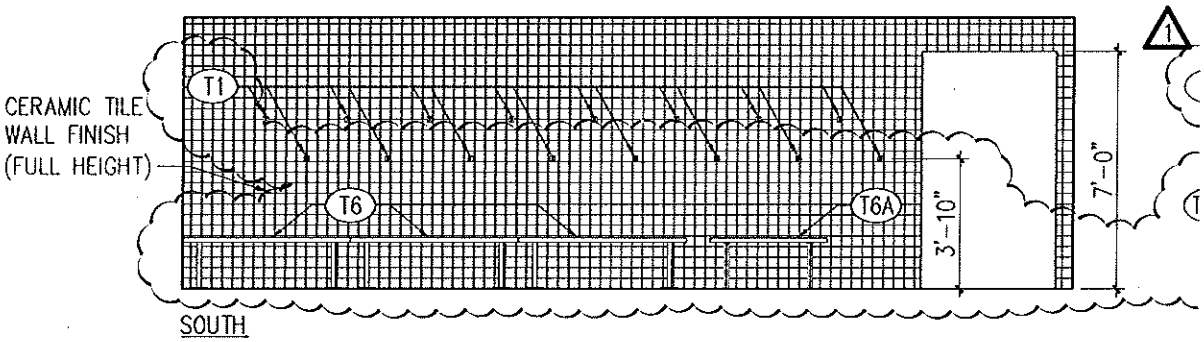
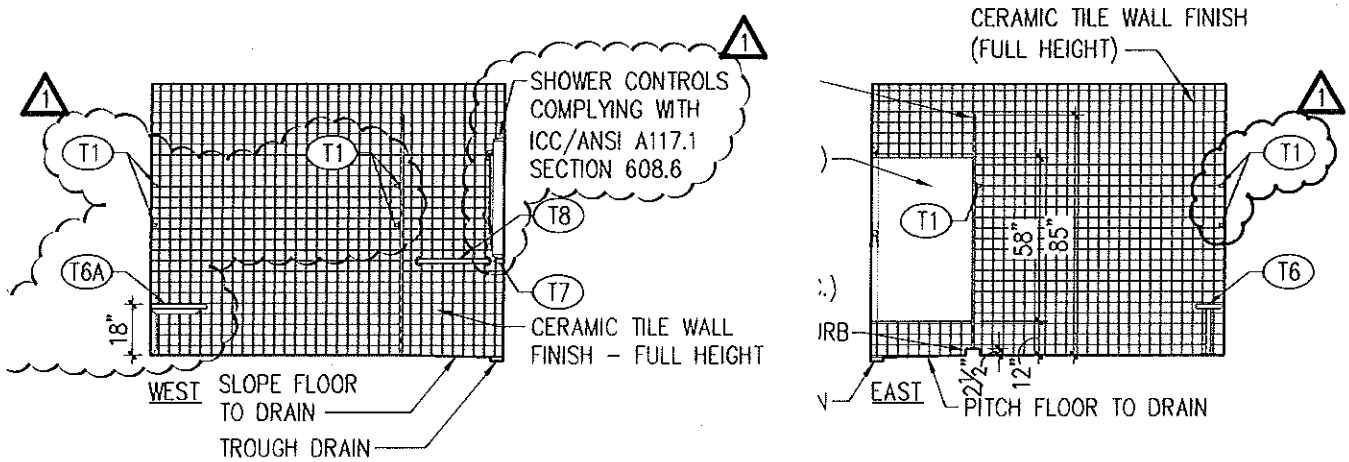


5 LATRINE INT. ELEVATIONS





9 MALE SHOWER INTERIOR ELEVATIONS (FEMALE SIM.)

4' 2' 0 4' 8' 12'

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	A&W PROJECT NO.
09.06.2013	2	BI-Q-658	2012.15.001

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
NLRC - MALE/FEMALE SHOWER INTERIOR ELEVATION REVISIONS

REFERENCE SHEET NO. A.130

SHEET NO. ASK.130.03

AMES & WHITAKER Architects
MEMBERS OF THE AMERICAN INSTITUTE OF ARCHITECTS
31 Liberty Street, Suite 208 Southington, Connecticut 06489 (860) 621-6344 Fax (860) 621-0957

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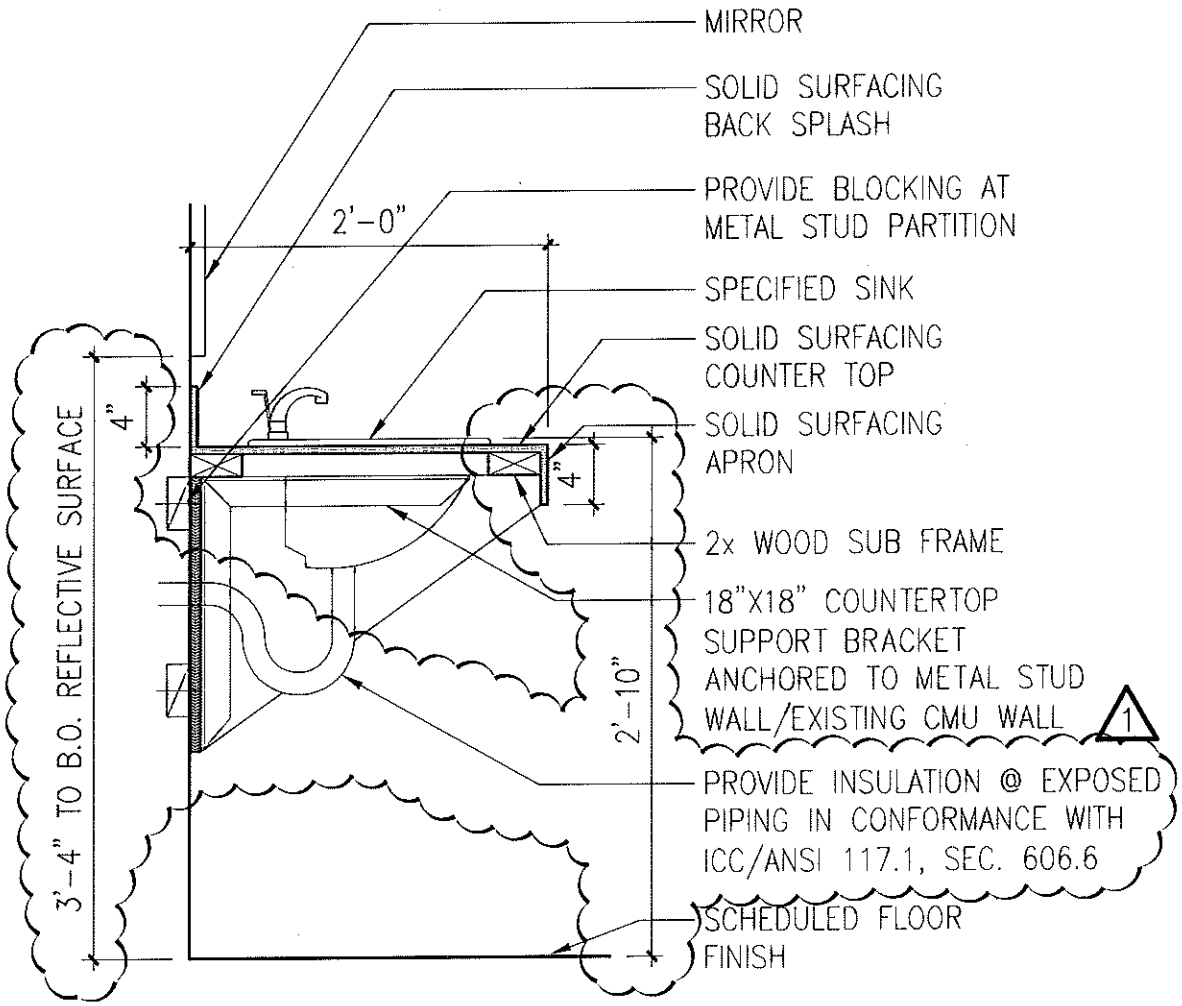

11 TYPICAL LAVATORY COUNTER DETAIL

0 1' 2'

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	A&W PROJECT NO.
09.06.2013	2	BI-Q-658	2012.15.001

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
NLRC - LAVATORY COUNTERTOP
ACCESSIBILITY REVISIONS

REFERENCE SHEET NO. A.130

SHEET NO. ASK.130.04

AMES & WHITAKER Architects
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31 Liberty Street, Suite 208 Southington, Connecticut 06489 (860) 621-8844 Fax (860) 621-0857

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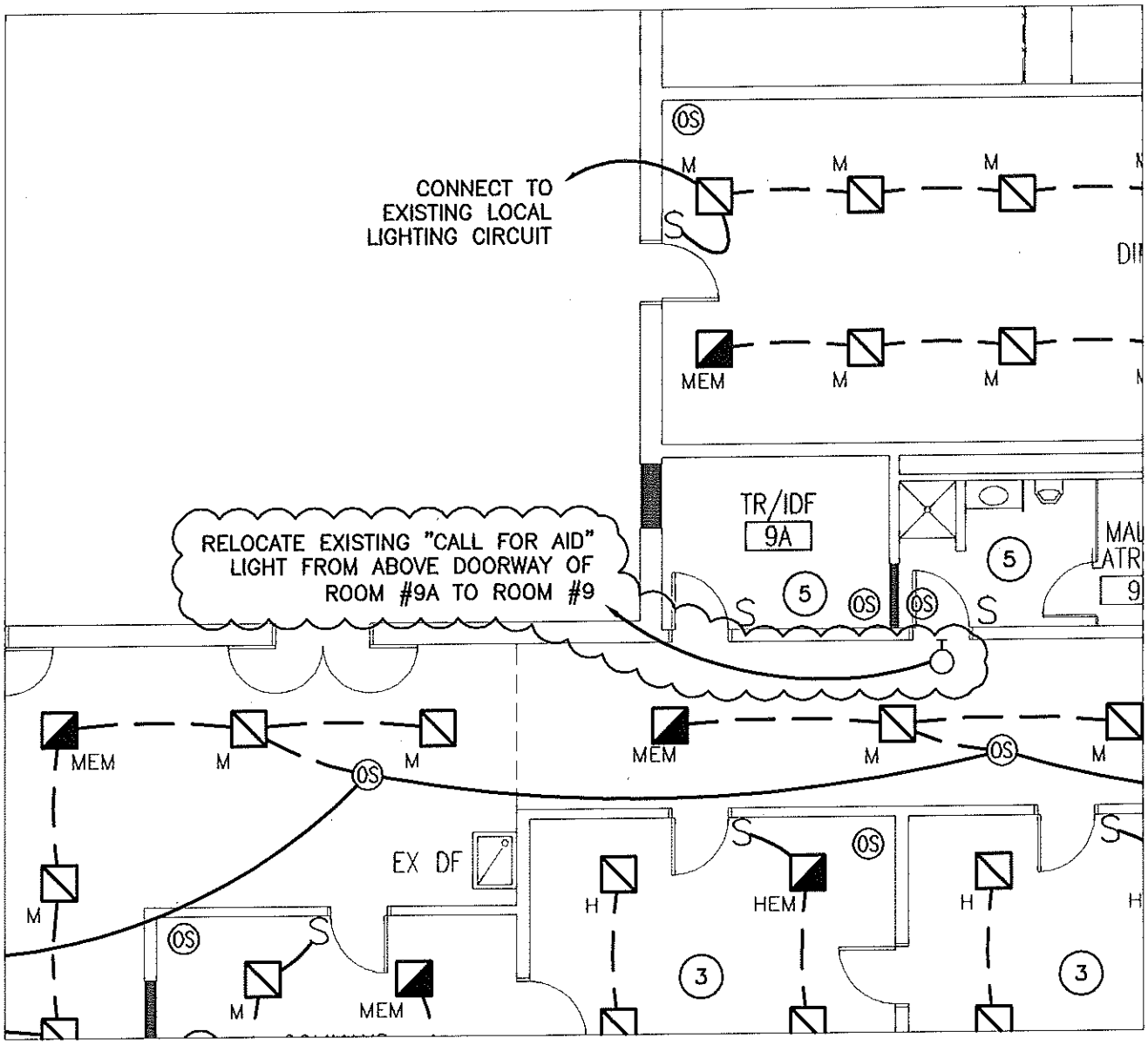

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
CALL-FOR-AID LIGHT RELOCATION

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
EL.100	ELSK.100.01

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16. PROVIDE CAT6 CABLE TO ALL EXISTING TELEPHONE JACKS BACK TO NEW HEAD EQUIPMENT LOCATED IN ROOM "TR/IDF 9A." EXISTING TELEPHONE JACKS ARE LABELED AS "EX". PROVIDE J HOOKS FOR CABLING SUPPORT. PROVIDE NEW TELECOMMUNICATION JACKS TO SUPPORT CAT6 CABLING.

17. PROVIDE NEW TELECOMMUNICATION JACKS AS SHOWN. PROVIDE CAT6 CABLE BACK TO HEAD EQUIPMENT LOCATED IN ROOM "TR/IDF 9A." PROVIDE J HOOKS FOR CABLING SUPPORT. PROVIDE 1" CONDUIT DROPS TO JACK FROM AN ACCESSIBLE LOCATION ABOVE THE CEILING.

18. PROVIDE TV CABLE DATA DROPS. PROVIDE J HOOKS FOR CABLING SUPPORT BACK TO EXISTING CABLE TV SERVICE LOCATION. TV CABLING WILL BE PROVIDE BY OTHERS. COORDINATE TV AND ASSOCIATED RECEPTACLE AFF HEIGHTS WITH ARCHITECT.

19. PROVIDE RECEPTACLES AS SHOWN ADJACENT TO NEW TELECOMMUNICATION JACKS. CONNECT TO LOCAL CONVENIENCE OUTLET CIRCUIT WITH A 20A RATED BRANCH CIRCUIT.

20. PROVIDE DATA AND POWER DROPS TO CCTV CAMERA LOCATIONS BACK TO ROOM TR/IDF #9A. (CAMERAS PROVIDED BY OTHERS). PROVIDE J HOOKS FOR CABLING SUPPORT.

21. PROVIDE POWER AND DATA DROPS TO NEW KEY CARD ACCESS AT FRONT DOOR. TERMINATE AT ACCESS CONTROL SYSTEM LOCATION. PROVIDE DATA AND POWER CABLING AS REQUIRED BY MANUFACTURER FOR THE GALAXY CONTROL SYSTEM MODEL 508i. REFER TO NEW WORK NOTE #27 FOR ADDITIONAL INFORMATION. PROVIDE J HOOKS FOR CABLING SUPPORT.

22. PROVIDE FIRE ALARM DEVICES AS SHOWN. CONNECT TO EXISTING FIRE ALARM CONTROL PANEL. REPROGRAM FACP AS REQUIRED.

23. PROVIDE RECEPTACLES AND CONNECT WITH A 20A RATED FEEDER. PROVIDE FEEDER BACK TO LOCAL PANEL AND PROVIDE 20A/1P BREAKER. COORDINATE EXACT LOCATION WITH ARCHITECT AND BUILDING OWNER FOR GYM EQUIPMENT LOCATION.

24. RELOCATE TELECOMM SERVER POWER FEEDS TO THIS LOCATION.

25. RESUSPEND SMOKE DETECTORS.

26. PROVIDE THREE RECEPTACLES EACH ON A DEDICATED CIRCUIT. CONNECT TO PANEL BP-2 WITH A 20A RATED FEEDER AND PROVIDE A 20A/1P BREAKER FOR EACH CIRCUIT. COORDINATE EXACT RECEPTACLE LOCATION WITH NEW TELECOMM SERVER LOCATION.

27. ACCESS CONTROL SYSTEM EQUIPMENT TO BE LOCATED IN TR/IDF ROOM #9A. PROVIDE GALAXY CONTROL SYSTEM MODEL 508i (EIGHT DOOR VERSION). TERMINATE DATA DROPS FROM KEY CARD ACCESS, SEE NEW WORK NOTE #21. INSTALL THE CONTROL SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES. PROVIDE DATA AND POWER CABLING TO THE KEY CARD ACCESS LOCATIONS IN ACCORDANCE TO THE MANUFACTURER'S REQUIREMENTS. PROVIDE A RECEPTACLE LOCATED ADJACENT TO THE GALAXY CONTROL SYSTEM AND CONNECT TO LOCAL CONVENIENCE OUTLET CIRCUIT.

28. PROVIDE JUNCTION BOX ABOVE CEILING FOR ELECTRIC DOOR LOCK. CONNECT TO LOCAL CIRCUIT FROM 120V PANELBOARD WITH A 20A RATED BRANCH CIRCUIT. PROVIDE 120V TO 24V TRANSFORMER. COORDINATE DOOR HARDWARE REQUIREMENTS WITH ARCHITECTURAL DRAWINGS.

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
NEW WORK NOTE REVISIONS

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
EP.100	EPSK.100.01

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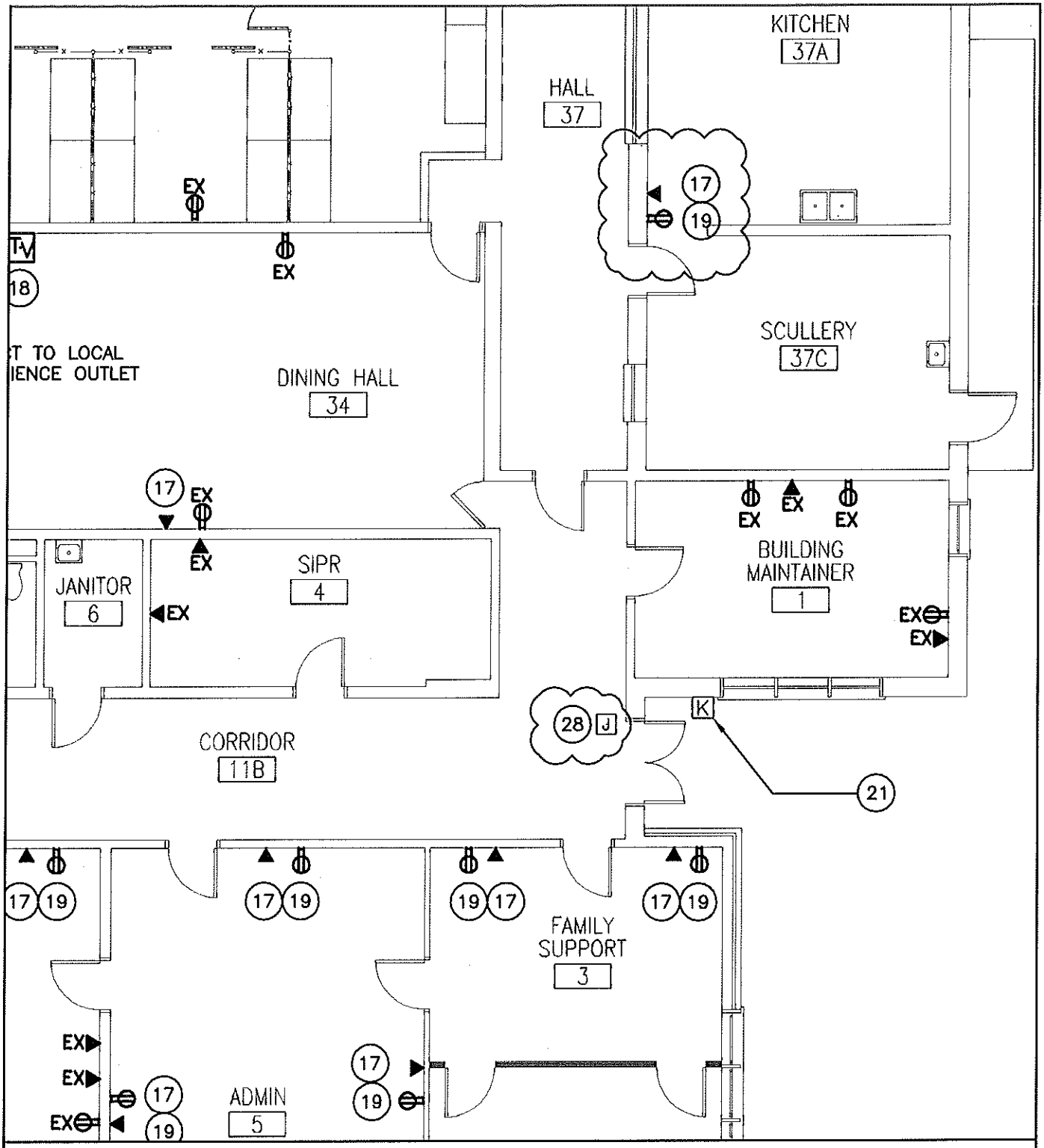

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
ELECTRONIC DOOR POWER &
CLARIFICATION OF KITCHEN DATA

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
EP.100	EPSK.100.02

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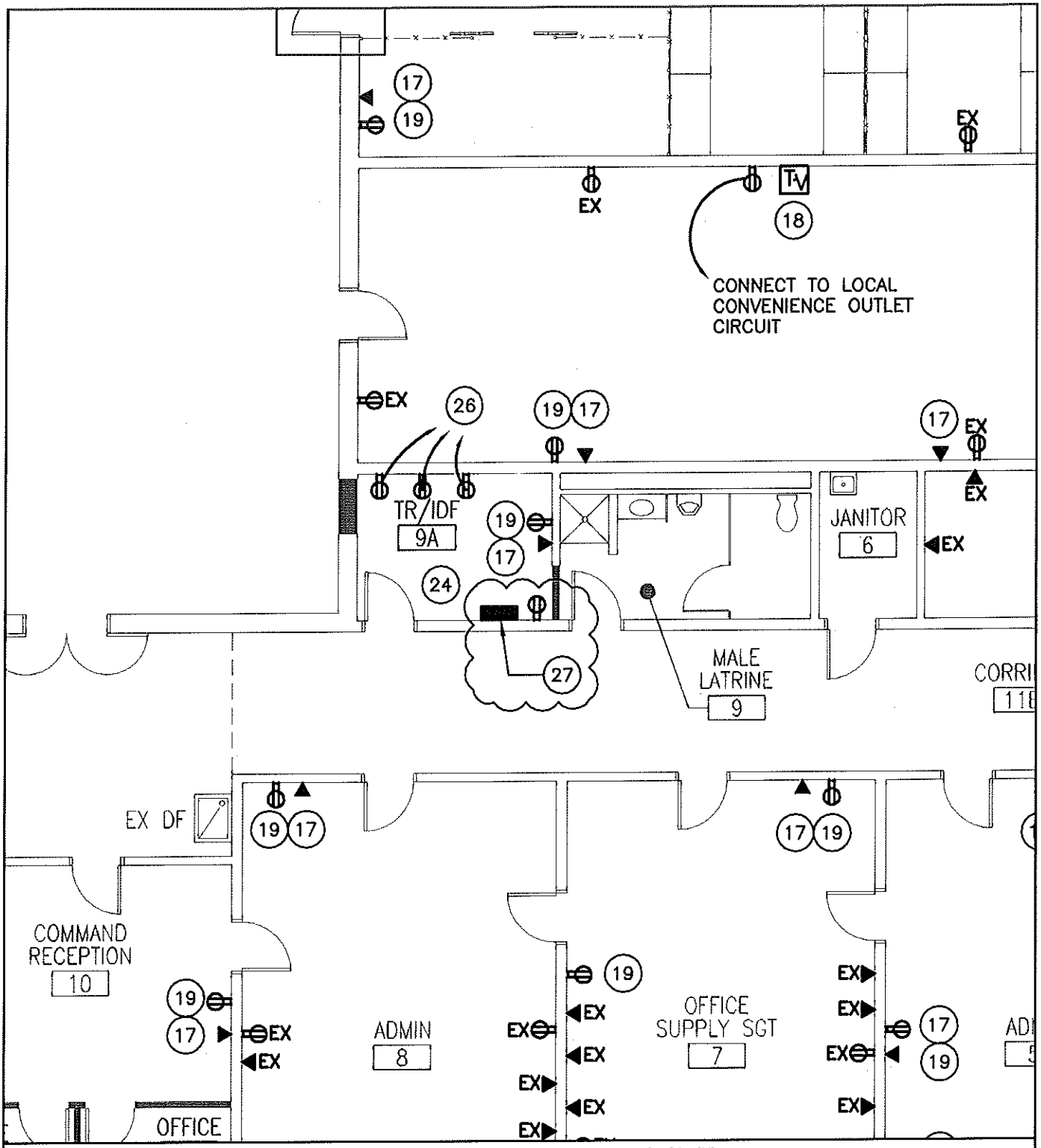

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
DOOR ACCESS CONTROL SYSTEM LOCATION

REFERENCE SHEET NO.
EP.100

SHEET NO.
EPSK.100.03

DIVERSIFIED TECHNOLOGY CONSULTANTS
2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

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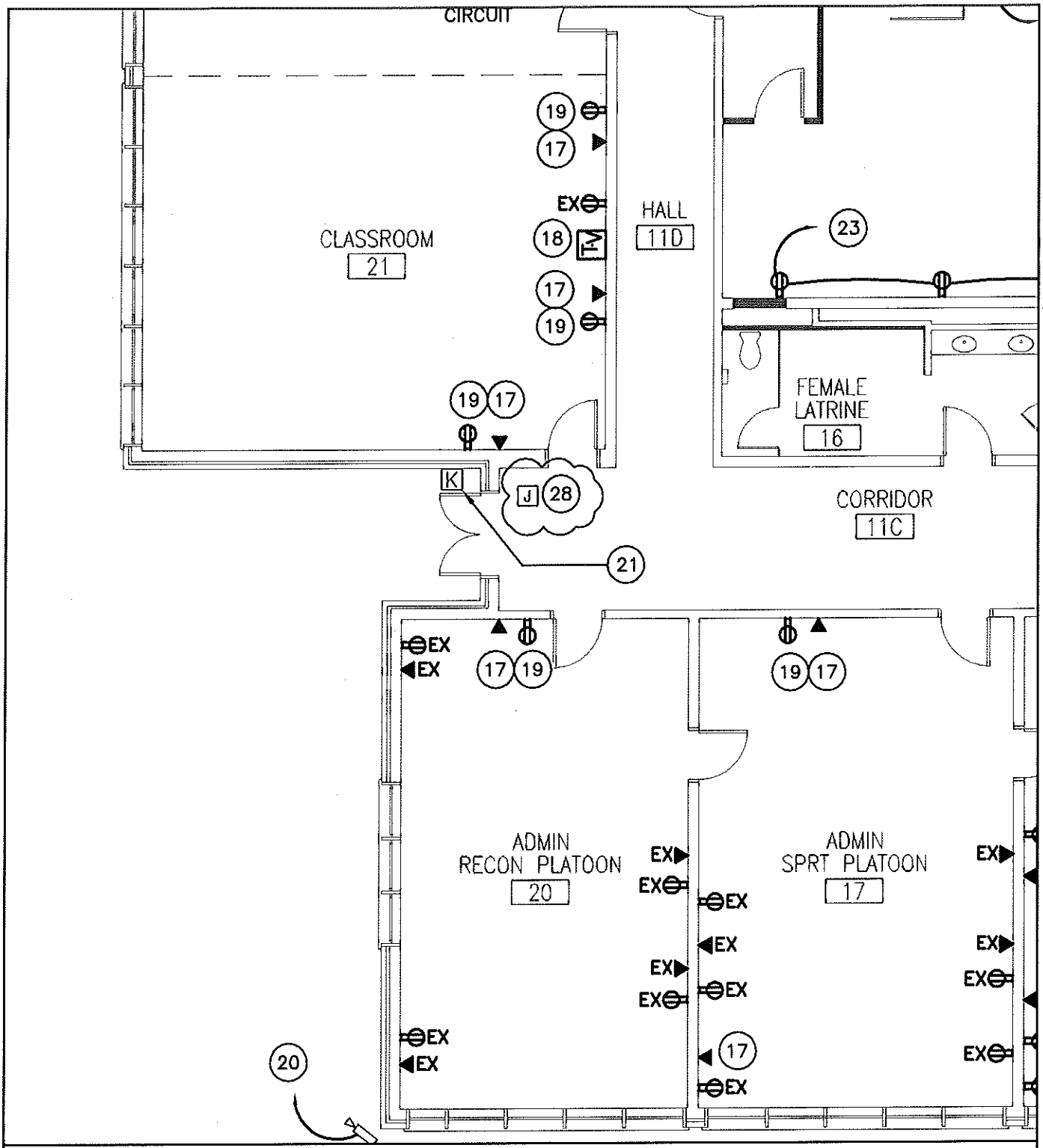

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
ELECTRIC DOOR POWER

DIVERSIFIED TECHNOLOGY CONSULTANTS

2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
EP.100	EPSK.100.04

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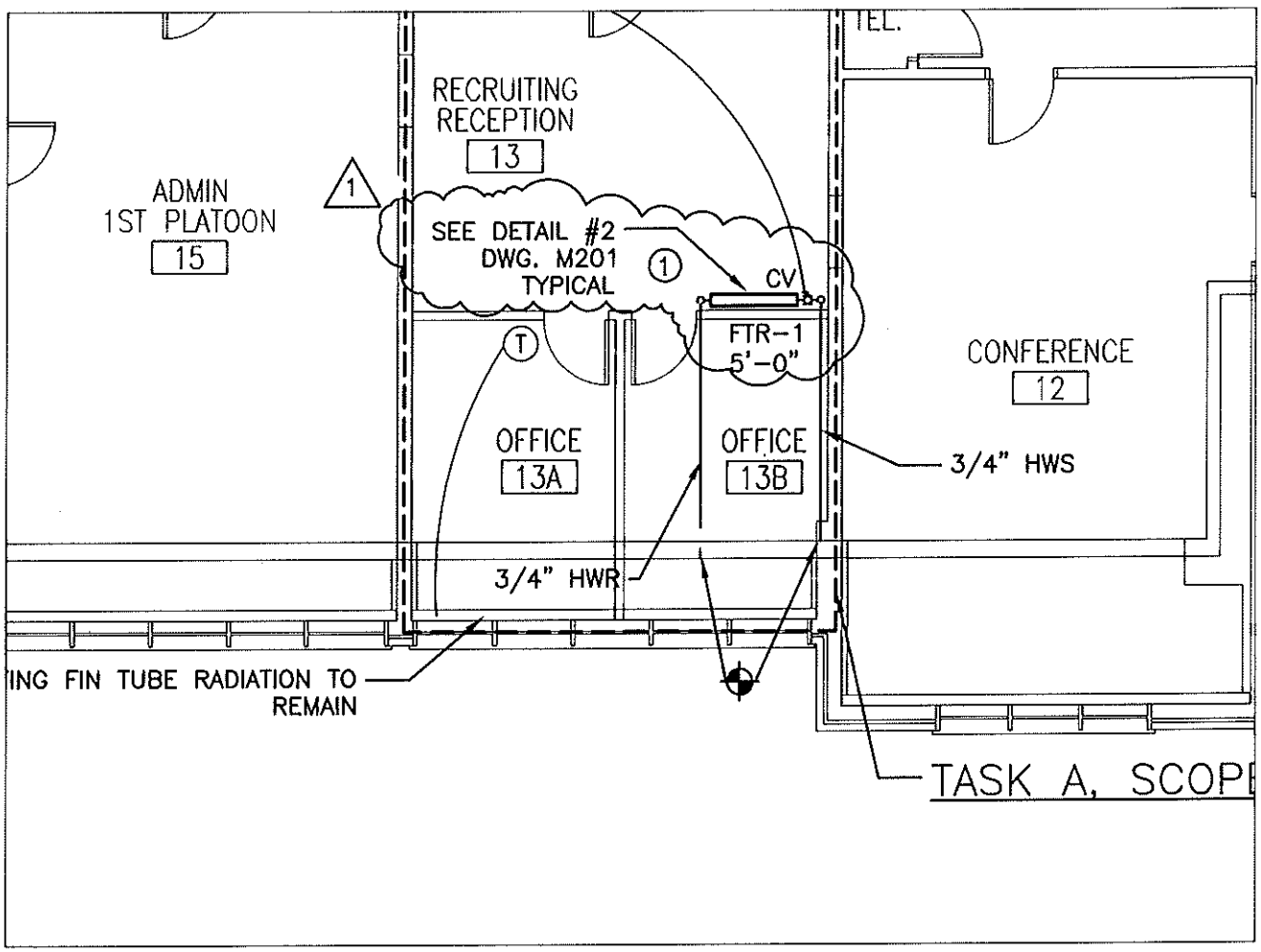

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09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

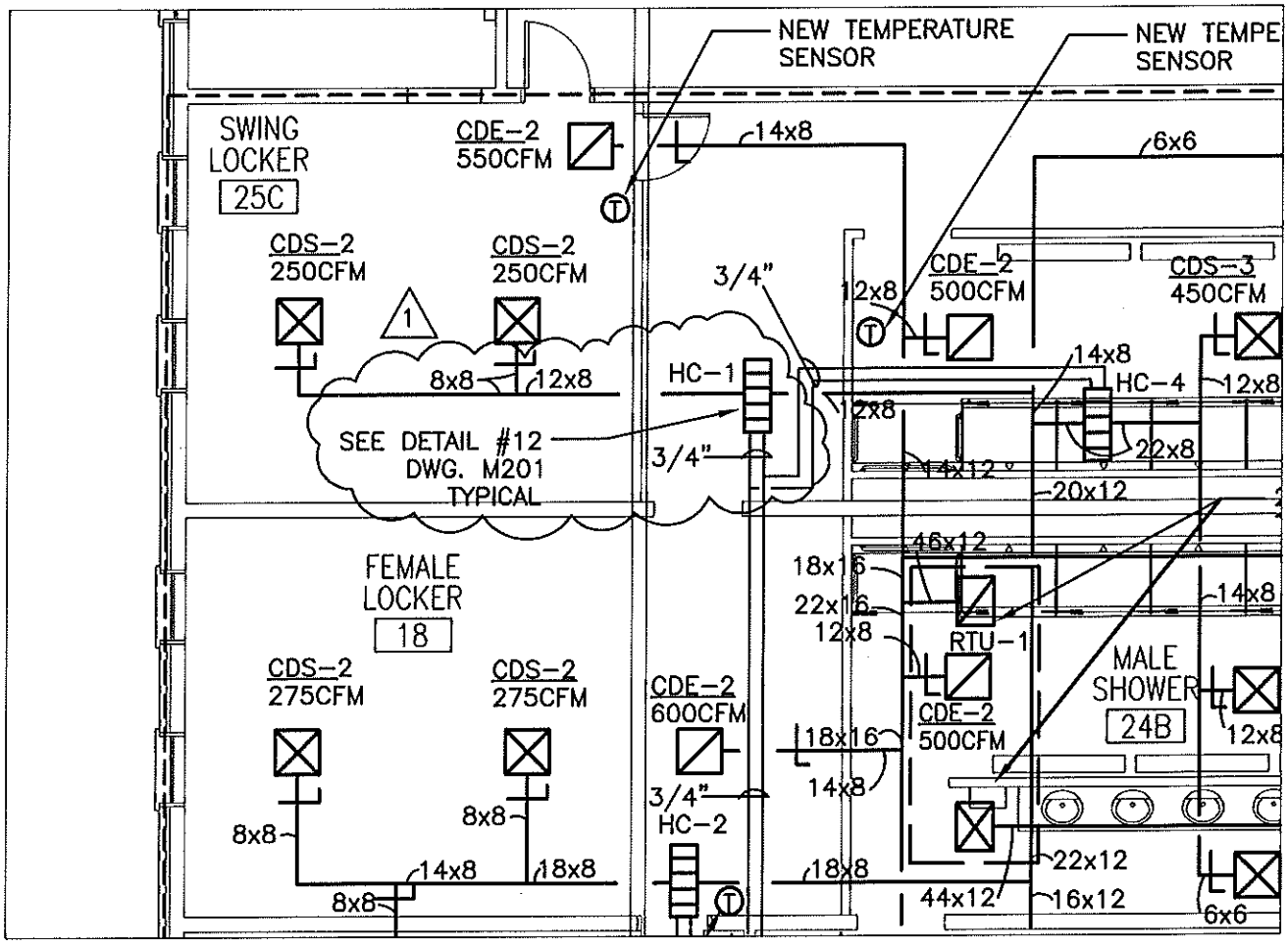
SHEET TITLE
REFERENCES CLARIFICATION

DIVERSIFIED TECHNOLOGY CONSULTANTS

2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
M.100	MSK.100.01

Plotted: Thursday, August 29, 2013 3:03:23 PM



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09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
REFERENCES CLARIFICATION

DIVERSIFIED TECHNOLOGY CONSULTANTS

2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
M.100	MSK.100.02

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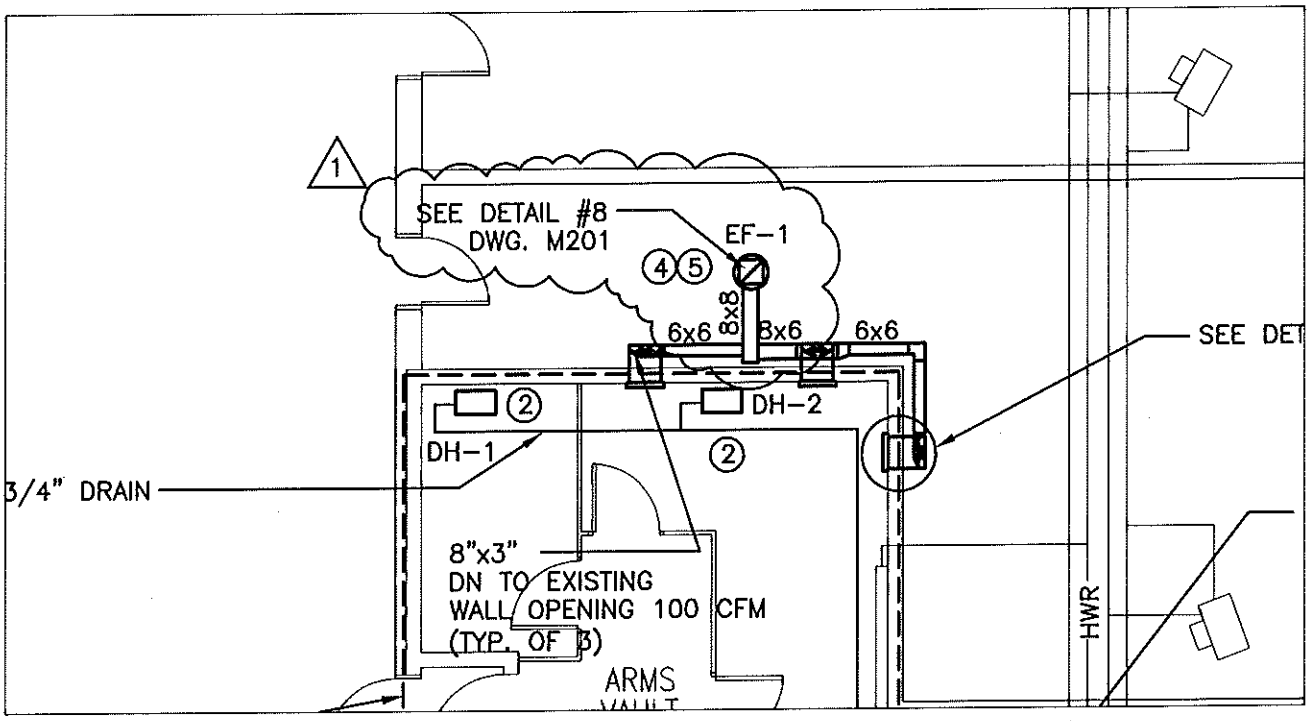

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
REFERENCES CLARIFICATION

DIVERSIFIED TECHNOLOGY CONSULTANTS

2321 WHITNEY AVENUE
HAMDEN CENTER II
HAMDEN CT 06518
PH 203 239 4200
FAX 203 234 7376

REFERENCE SHEET NO.	SHEET NO.
M.100	MSK.100.03

Plotted: Thursday, August 29, 2013 3:05:33 PM

WATER PUMPS SCHEDULE – SUPPLEMENTAL BID ITEM #3

ATION	MANUFACTURER	SERVICE	MODEL	TYPE	GPM	HEAD FT.	RPM	MOTOR		REMARKS
								ELECTRICAL	HP	
ER ROOM	BELL & GOSSETT	PRIMARY HEATING LOOP	SER. 1510 MODEL 2 AC	BASE MOUNT	140	40	1750	208/3/60	2.0	NOTES 2, 3, 4
ER ROOM	BELL & GOSSETT	SECONDARY HEATING LOOP	SER. 1510 MODEL 2 BC	BASE MOUNT	160	80	1750	208/3/60	5.0	NOTES 1, 3, 4

1 PUMPS P-3, P-4 PROVIDE BACNET COMPLIANT VFD DRIVE.
NTROLLERS SHALL BE INSTALLED IN BOILER ROOM
ERLOCK PUMPS P-1, P-2 WITH RELATED BOILERS
OVIDE PUMPS WITH INERTIA BASE
OVIDE PUMPS WITH SUCTION DIFFUSERS, FLEX CONNECTORS, TRIPLE
TY VALVES

DATE	ADDENDUM NO.	CT DCS PROJECT NO.	DTC PROJECT NO.
09.06.2013	2	BI-Q-658	20121120

PROJECT TITLE
CTARNG VISION 2020 PROJECT NO. 2
TASKS A, C, D, E - READINESS CENTER & SRMR

SHEET TITLE
REFERNCES CLARIFICATION

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M.301	MSK.301.01

Plotted: Thursday, August 29, 2013 3:00:05 PM

SECTION 27 10 00

BUILDING TELECOMMUNICATIONS CABLING SYSTEM
08/11

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 within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D709	(2001; R 2007) Laminated Thermosetting Materials

ELECTRONIC COMPONENTS ASSOCIATION (ECA)

ECA EIA/ECA 310	(2005) Cabinets, Racks, Panels, and Associated Equipment

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE 100	(2000; Archived) The Authoritative Dictionary of IEEE Standards Terms

INSULATED CABLE ENGINEERS ASSOCIATION (ICEA)

ICEA S-83-596	(2011) Indoor Optical Fiber Cables
ICEA S-90-661	(2008) Category 3, 5, & 5e Individually Unshielded Twisted Pair Indoor Cables for Use in General Purpose and LAN Communications Wiring Systems Technical Requirements

NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA)

NECA/BICSI 568	(2006) Standard for Installing Building Telecommunications Cabling

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI/NEMA WC 66	(2001; Errata 2003) Performance Standard for Category 6 and Category 7 100 Ohm Shielded and Unshielded Twisted Pairs

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2011; Errata 2 2012) National Electrical Code

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA)

TIA J-STD-607	(2002a) Commercial Building Grounding (Earthing) and Bonding Requirements for

	Telecommunications
TIA-1152	(2009) Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling
TIA-568-C.0	(2009; Add 1 2010) Generic Telecommunications Cabling for Customer Premises
TIA-568-C.1	(2009; Add 2 2011; Add 1 2012) Commercial Building Telecommunications Cabling Standard
TIA-568-C.2	(2009; Errata 2010) Balanced Twisted-Pair Telecommunications Cabling and Components Standards
TIA-568-C.3	(2008; Corrections 2008) Optical Fiber Cabling Components Standard
TIA-569	(2012c) Commercial Building Standard for Telecommunications Pathways and Spaces
TIA-570	(2012c) Residential Telecommunications Infrastructure Standard
TIA/EIA-606	(2002a; Errata 2007; R 2007; Adm 1 2008) Administration Standard for the Telecommunications Infrastructure
U.S. FEDERAL COMMUNICATIONS COMMISSION (FCC)	
FCC Part 68	Connection of Terminal Equipment to the Telephone Network (47 CFR 68)
UNDERWRITERS LABORATORIES (UL)	
UL 1286	(2008; Reprint Sep 2011) Office Furnishings
UL 1863	(2004; Reprint Aug 2008) Communication Circuit Accessories
UL 444	(2008; Reprint Apr 2010) Communications Cables
UL 467	(2007) Grounding and Bonding Equipment
UL 50	(2007; Reprint Apr 2012) Enclosures for Electrical Equipment, Non-environmental Considerations
UL 514C	(1996; Reprint Novy 2011) Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL 723	(2008; Reprint Sep 2010) Test for Surface Burning Characteristics of Building Materials

UL 969 (1995; Reprint Nov 2008) Standard for Marking and Labeling Systems

1.2 RELATED REQUIREMENTS

Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM and Section 33 82 00 TELECOMMUNICATIONS, OUTSIDE PLANT (OSP), apply to this section with additions and modifications specified herein.

1.3 DEFINITIONS

Unless otherwise specified or indicated, electrical and electronics terms used in this specification shall be as defined in TIA-568-C.1, TIA-568-C.2, TIA-568-C.3, TIA-569, TIA/EIA-606 and IEEE 100 and herein.

1.3.1 Campus Distributor (CD)

A distributor from which the campus backbone cabling emanates. (International expression for main cross-connect (MC).)

1.3.2 Building Distributor (BD)

A distributor in which the building backbone cables terminate and at which connections to the campus backbone cables may be made. (International expression for intermediate cross-connect (IC).)

1.3.3 Floor Distributor (FD)

A distributor used to connect horizontal cable and cabling subsystems or equipment. (International expression for horizontal cross-connect (HC).)

1.3.4 Telecommunications Room (TR)

An enclosed space for housing telecommunications equipment, cable, terminations, and cross-connects. The room is the recognized cross-connect between the backbone cable and the horizontal cabling.

1.3.5 Entrance Facility (EF) (Telecommunications)

An entrance to the building for both private and public network service cables (including wireless) including the entrance point at the building wall and continuing to the equipment room.

1.3.6 Equipment Room (ER) (Telecommunications)

An environmentally controlled centralized space for telecommunications equipment that serves the occupants of a building. Equipment housed therein is considered distinct from a telecommunications room because of the nature of its complexity.

1.3.7 Open Cable

Cabling that is not run in a raceway as defined by NFPA 70. This refers to cabling that is "open" to the space in which the cable has been installed and is therefore exposed to the environmental conditions associated with that space.

1.3.8 Open Office

A floor space division provided by furniture, moveable partitions, or other means instead of by building walls.

1.3.9 Pathway

A physical infrastructure utilized for the placement and routing of telecommunications cable.

1.4 SYSTEM DESCRIPTION

The building telecommunications cabling and pathway system shall include permanently installed backbone and horizontal cabling, horizontal and backbone pathways, service entrance facilities, work area pathways, telecommunications outlet assemblies, conduit, raceway, and hardware for splicing, terminating, and interconnecting cabling necessary to transport telephone and data (including LAN) between equipment items in a building. The horizontal system shall be wired in a star topology from the telecommunications work area to the floor distributor or campus distributor at the center or hub of the star. The backbone cabling and pathway system includes intrabuilding and interbuilding interconnecting cabling, pathway, and terminal hardware. The intrabuilding backbone provides connectivity from the floor distributors to the building distributors or to the campus distributor and from the building distributors to the campus distributor as required. The backbone system shall be wired in a star topology with the campus distributor at the center or hub of the star. The interbuilding backbone system provides connectivity between the campus distributors and is specified in Section 33 82 00 TELECOMMUNICATIONS OUTSIDE PLANT (OSP). Provide telecommunications pathway systems referenced herein as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. The telecommunications contractor must coordinate with the NMCI/COSC/NGEN contractor concerning access to and configuration of telecommunications spaces. The telecommunications contractor may be required to coordinate work effort within the telecommunications spaces with the NMCI/COSC/NGEN contractor.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Telecommunications drawings; G

Telecommunications Space Drawings; G

In addition to Section 01 33 00 SUBMITTAL PROCEDURES, provide shop drawings in accordance with paragraph SHOP DRAWINGS.

SD-03 Product Data

Telecommunications cabling (backbone and horizontal); G

Patch panels;G,

Telecommunications outlet/connector assemblies; G

Equipment support frame; G

Connector blocks; G

Spare Parts; G

Submittals shall include the manufacturer's name, trade name, place of manufacture, and catalog model or number. Include performance and characteristic curves. Submittals shall also include applicable federal, military, industry, and technical society publication references. Should manufacturer's data require supplemental information for clarification, the supplemental information shall be submitted as specified in paragraph REGULATORY REQUIREMENTS and as required in Section 01 33 00 SUBMITTAL PROCEDURES.

SD-06 Test Reports

Telecommunications cabling testing; G

SD-07 Certificates

Telecommunications Contractor Qualifications; G

Key Personnel Qualifications; G

Manufacturer Qualifications; G

Test plan; G

SD-09 Manufacturer's Field Reports

Factory reel tests; G

SD-10 Operation and Maintenance Data

Telecommunications cabling and pathway system Data Package 5; G

SD-11 Closeout Submittals

Record Documentation; G

1.6 QUALITY ASSURANCE

1.6.1 Shop Drawings

In exception to Section 01 33 00 SUBMITTAL PROCEDURES, submitted plan drawings shall be a minimum of 11 by 17 inches in size using a minimum scale of 1/8 inch per foot, except as specified otherwise. Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance, and replacement of operating equipment devices. Submittals shall include the nameplate data,

size, and capacity. Submittals shall also include applicable federal, military, industry, and technical society publication references.

1.6.2 Telecommunications Qualifications

Work under this section shall be performed by and the equipment shall be provided by the approved telecommunications contractor and key personnel. Qualifications shall be provided for: the telecommunications system contractor, the telecommunications system installer, and the supervisor (if different from the installer). A minimum of 30 days prior to installation, submit documentation of the experience of the telecommunications contractor and of the key personnel.

1.6.2.1 Telecommunications Contractor

The telecommunications contractor shall be a firm which is regularly and professionally engaged in the business of the applications, installation, and testing of the specified telecommunications systems and equipment. The telecommunications contractor shall demonstrate experience in providing successful telecommunications systems within the past 3 years of similar scope and size. Submit documentation for a minimum of three and a maximum of five successful telecommunication system installations for the telecommunications contractor.

1.6.2.2 Key Personnel

Provide key personnel who are regularly and professionally engaged in the business of the application, installation and testing of the specified telecommunications systems and equipment. There may be one key person or more key persons proposed for this solicitation depending upon how many of the key roles each has successfully provided. Each of the key personnel shall demonstrate experience in providing successful telecommunications systems within the past 3 years.

Supervisors and installers assigned to the installation of this system or any of its components shall be Building Industry Consulting Services International (BICSI) Registered Cabling Installers, Technician Level. Submit documentation of current BICSI certification for each of the key personnel.

In lieu of BICSI certification, supervisors and installers assigned to the installation of this system or any of its components shall have a minimum of 3 years experience in the installation of the specified copper and fiber optic cable and components. They shall have factory or factory approved certification from each equipment manufacturer indicating that they are qualified to install and test the provided products. Submit documentation for a minimum of three and a maximum of five successful telecommunication system installations for each of the key personnel. Documentation for each key person shall include at least two successful system installations provided that are equivalent in system size and in construction complexity to the telecommunications system proposed for this solicitation. Include specific experience in installing and testing telecommunications systems and provide the names and locations of at least two project installations successfully completed using optical fiber and copper telecommunications cabling systems. All of the existing telecommunications system installations offered by the key persons as successful experience shall have been in successful full-time service for at least 18 months prior to the issuance date for this solicitation. Provide the name and role of the key person, the title, location, and completed installation date of the referenced project, the referenced

project owner point of contact information including name, organization, title, and telephone number, and generally, the referenced project description including system size and construction complexity.

Indicate that all key persons are currently employed by the telecommunications contractor, or have a commitment to the telecommunications contractor to work on this project. All key persons shall be employed by the telecommunications contractor at the date of issuance of this solicitation, or if not, have a commitment to the telecommunications contractor to work on this project by the date that the bid was due to the Contracting Officer.

Note that only the key personnel approved by the Contracting Officer in the successful proposal shall do work on this solicitation's telecommunications system. Key personnel shall function in the same roles in this contract, as they functioned in the offered successful experience. Any substitutions for the telecommunications contractor's key personnel requires approval from The Contracting Officer.

1.6.2.3 Minimum Manufacturer Qualifications

Cabling, equipment and hardware manufacturers shall have a minimum of 3 years experience in the manufacturing, assembly, and factory testing of components which comply with TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3.

1.6.3 Test Plan

Provide a complete and detailed test plan for the telecommunications cabling system including a complete list of test equipment for the components and accessories for each cable type specified, 60 days prior to the proposed test date. Include procedures for certification, validation, and testing.

1.6.4 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

1.6.5 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the item need not be the products of the same manufacturer unless stated in this section.

1.6.5.1 Alternative Qualifications

Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

1.6.5.2 Material and Equipment Manufacturing Date

Products manufactured more than 1 year prior to date of delivery to site shall not be used, unless specified otherwise.

1.7 DELIVERY AND STORAGE

Provide protection from weather, moisture, extreme heat and cold, dirt, dust, and other contaminants for telecommunications cabling and equipment placed in storage.

1.8 ENVIRONMENTAL REQUIREMENTS

Connecting hardware shall be rated for operation under ambient conditions of32 to 140 degrees F and in the range of 0 to 95 percent relative humidity, noncondensing.

1.9 WARRANTY

The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

1.10 MAINTENANCE

1.10.1 Operation and Maintenance Manuals

Commercial off the shelf manuals shall be furnished for operation, installation, configuration, and maintenance of products provided as a part of the telecommunications cabling and pathway system, Data Package 5. Submit operations and maintenance data in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA and as specified herein not later than 2 months prior to the date of beneficial occupancy. In addition to requirements of Data Package 5, include the requirements of paragraphs TELECOMMUNICATIONS DRAWINGS, TELECOMMUNICATIONS SPACE DRAWINGS, and RECORD DOCUMENTATION. Ensure that these drawings and documents depict the as-built configuration.

1.10.2 Spare Parts

In addition to the requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA, provide a complete list of parts and supplies, with current unit prices and source of supply, and a list of spare parts recommended for stocking.

PART 2 PRODUCTS

2.1 COMPONENTS

Components shall be UL or third party certified. Where equipment or materials are specified to conform to industry and technical society

reference standards of the organizations, submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the Contracting Officer. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard. Provide a complete system of telecommunications cabling and pathway components using star topology. Provide support structures and pathways, complete with outlets, cables, connecting hardware and telecommunications cabinets/racks. Cabling and interconnecting hardware and components for telecommunications systems shall be UL listed or third party independent testing laboratory certified, and shall comply with NFPA 70 and conform to the requirements specified herein.

2.2 TELECOMMUNICATIONS PATHWAY

Provide telecommunications pathways in accordance with TIA-569 and as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide system furniture pathways in accordance with UL 1286.

2.3 TELECOMMUNICATIONS CABLING

Cabling shall be UL listed for the application and shall comply with TIA-568-C.0, TIA-568-C.1, TIA-568-C.2, TIA-568-C.3 and NFPA 70. Provide a labeling system for cabling as required by TIA/EIA-606 and UL 969. Ship cable on reels or in boxes bearing manufacture date for for unshielded twisted pair (UTP) in accordance with ICEA S-90-661 and optical fiber cables in accordance with ICEA S-83-596 for all cable used on this project. Cabling manufactured more than 12 months prior to date of installation shall not be used.

2.3.1 Backbone Cabling

2.3.1.1 Backbone Copper

Copper backbone cable shall be solid conductor, 24 AWG, 100 ohm, 100 -pair, Category 3, UTP, in accordance with ICEA S-90-661, TIA-568-C.1, TIA-568-C.2 and UL 444, formed into 25 pair binder groups covered with a gray thermoplastic jacket[and overall metallic shield]. Cable shall be imprinted with manufacturers name or identifier, flammability rating, gauge of conductor, transmission performance rating (category designation) at regular length marking intervals in accordance with ICEA S-90-661 . Provide plenum (CMP), riser (CMR), or general purpose (CM or CMG)communications rated cabling in accordance with NFPA 70. Substitution of a higher rated cable shall be permitted in accordance with NFPA 70.

2.3.2 NOT USED

2.3.2.1 Horizontal Copper

Provide horizontal copper cable, UTP, 100 ohm in accordance with TIA-568-C.2, UL 444, ANSI/NEMA WC 66, ICEA S-90-661 . Provide four each individually twisted pair, minimum size 24 AWG conductors, Category 6, with a blue thermoplastic jacket. Cable shall be imprinted with manufacturers name or identifier, flammability rating, gauge of conductor, transmission performance rating (category designation) and length marking at regular intervals in accordance with ICEA S-90-661. Provide plenum

(CMP), riser (CMR), or general purpose (CM or CMG) communications rated cabling in accordance with NFPA 70. Substitution of a higher rated cable shall be permitted in accordance with NFPA 70. Cables installed in conduit within and under slabs shall be UL listed and labeled for wet locations in accordance with NFPA 70. [Provide residential Category 6 cabling in accordance with TIA-570.

2.3.3 Work Area Cabling

2.3.3.1 Work Area Copper

Provide work area copper cable in accordance with TIA-568-C.2, with a blue, thermoplastic jacket.

2.4 TELECOMMUNICATIONS SPACES

Provide connecting hardware and termination equipment in the telecommunications entrance facility and telecommunication equipment rooms to facilitate installation as shown on design drawings for terminating and cross-connecting permanent cabling. Provide telecommunications interconnecting hardware color coding in accordance with TIA/EIA-606.

2.4.1 Backboards

Provide void-free, interior gradeA-C plywood 3/4 inch thick[4 by 8 feet] [as indicated]. Backboards shall be fire rated by manufacturing process. Fire stamp shall be clearly visible. Paint applied over fire retardant backboard shall be UL 723 fire retardant paint. Provide label including paint manufacturer, date painted, UL listing and name of Installer. When painted, paint label and fire stamp shall be clearly visible. . Backboards shall be provided on a minimum of two adjacentwalls in the telecommunication spaces.

2.4.2 Equipment Support Frame

Provide in accordance with ECA EIA/ECA 310 and UL 50.

2.4.3 Cable Guides

Provide cable guides specifically manufactured for the purpose of routing cables, wires and patch cords horizontally and vertically on 19 inches equipment racks cabinets and elecommunications backboards. Cable guides of ring or bracket type devices mounted on rack cabinet panels backboard for horizontal cable management and individually mounted for vertical cable management. Mount cable guides with screws, and nuts and lockwashers.

2.4.4 Patch Panels

Provide ports for the number of horizontal and backbone cables terminated on the panel plus 25 percent spare. Provide pre-connectorized copper patch cords for patch panels. Provide patch cords, as complete assemblies, with matching connectors as specified. Patch cords shall meet minimum performance requirements specified in TIA-568-C.1, TIA-568-C.2 for cables, cable length and hardware specified.

2.5 TELECOMMUNICATIONS OUTLET/CONNECTOR ASSEMBLIES

2.5.1 Outlet/Connector Copper

Outlet/connectors shall comply with FCC Part 68, TIA-568-C.1, and TIA-568-C.2. UTP outlet/connectors shall be UL 1863 listed, non-keyed, 8-pin modular, constructed of high impact rated thermoplastic housing and shall be third party verified Outlet/connectors provided for UTP cabling shall meet or exceed the requirements for the cable provided. Outlet/connectors shall be terminated using a Type 110 IDC PC board connector, color-coded for both T568A and T568B wiring. Each outlet/connector shall be wired T568A or T568B. UTP outlet/connectors shall comply with TIA-568-C.2 for 200 mating cycles.

2.5.2 Cover Plates

Telecommunications cover plates shall comply with UL 514C, and TIA-568-C.1, flush design constructed of high impact thermoplastic material. Provide labeling in accordance with the paragraph LABELING in this section. Color selection by Architect.

2.6 TERMINAL CABINETS

Construct of zinc-coated sheet steel, 36 by 24 by 6 inches deep. Trim shall be fitted with hinged door and locking latch. Doors shall be maximum size openings to box interiors. Boxes shall be provided with 5/8 inch backboard with two-coat varnish finish. Match trim, hardware, doors, and finishes with panelboards. Provide label and identification systems for telecommunications wiring and components consistent with TIA/EIA-606.

]2.7 GROUNDING AND BONDING PRODUCTS

Provide in accordance with UL 467, TIA J-STD-607, and NFPA 70. Components shall be identified as required by TIA/EIA-606. Provide ground rods, bonding conductors, and grounding busbars as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

2.8 FIRESTOPPING MATERIAL

Provide as specified in Section 07 84 00 FIRESTOPPING.

2.9 MANUFACTURER'S NAMEPLATE

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.10 FIELD FABRICATED NAMEPLATES

ASTM D709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inches thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inches high normal block style.

2.11 TESTS, INSPECTIONS, AND VERIFICATIONS

2.11.1 Factory Reel Tests

Provide documentation of the testing and verification actions taken by manufacturer to confirm compliance with TIA-568-C.1, TIA-568-C.2, TIA-568-C.3.

PART 3 EXECUTION

3.1 INSTALLATION

Install telecommunications cabling and pathway systems, including the horizontal and backbone cable, pathway systems, telecommunications outlet/connector assemblies, and associated hardware in accordance with NECA/BICSI 568, TIA-568-C.1, TIA-568-C.2, TIA-569, NFPA 70, and UL standards as applicable. Provide cabling in a star topology network. Pathways and outlet boxes shall be installed as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Install telecommunications cabling with copper media in accordance with the following criteria to avoid potential electromagnetic interference between power and telecommunications equipment. The interference ceiling shall not exceed 3.0 volts per meter measured over the usable bandwidth of the telecommunications cabling. Cabling shall be run with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.

3.1.1 Cabling

Install telecommunications cabling system as detailed in TIA-568-C.1. Screw terminals shall not be used except where specifically indicated on plans. Use an approved insulation displacement connection (IDC) tool kit for copper cable terminations. Do not exceed manufacturers' cable pull tensions for copper and optical fiber cables. Provide a device to monitor cable pull tensions. Do not exceed 25 pounds pull tension for four pair copper cables. Do not chafe or damage outer jacket materials. Use only lubricants approved by cable manufacturer. Do not over cinch cables, or crush cables with staples. For UTP cable, bend radii shall not be less than four times the cable diameter. Cables shall be terminated; no cable shall contain unterminated elements. Cables shall not be spliced. Label cabling in accordance with paragraph LABELING in this section.

3.1.1.1 Open Cable

Use only where specifically indicated on plans for use in cable trays, or below raised floors. Install in accordance with TIA-568-C.1, TIA-568-C.2. Do not exceed cable pull tensions recommended by the manufacturer. Copper cable not in a wireway or pathway shall be suspended a minimum of 8 inches above ceilings by cable supports no greater than 60 inches apart. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items. Placement of cable parallel to power conductors shall be avoided, if possible; a minimum separation of 12 inches shall be maintained when such placement cannot be avoided.

Plenum cable shall be used where open cables are routed through plenum areas. Cable routed exposed under raised floors shall be plenum rated. Plenum cables shall comply with flammability plenum requirements of NFPA 70. Install cabling after the flooring system has been installed in raised floor areas. Cable 6 feet long shall be neatly coiled not less than 12

inches in diameter below each feed point in raised floor areas.

3.1.1.2 Backbone Cable

a. Copper Backbone Cable. Install intrabuilding backbone copper cable, in indicated pathways, between the campus distributor, located in the telecommunications entrance facility or room, the building distributors and the floor distributors located in telecommunications rooms and telecommunications equipment rooms as indicated on drawings.

3.1.1.3 Horizontal Cabling

Install horizontal cabling as indicated on drawings Do not untwist Category 6 UTP cables more than one half inch from the point of termination to maintain cable geometry. Provide slack cable in the form of a figure eight (not a service loop) on each end of the cable, 10 feet in the telecommunications room, and 12 inches in the work area outlet..

3.1.2 Pathway Installations

Provide in accordance with TIA-569 and NFPA 70. Provide building pathway as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

3.1.3 Service Entrance Conduit, Overhead

Provide service entrance overhead as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEMS.

3.1.4 Service Entrance Conduit, Underground

Provide service entrance underground as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

3.1.5 Cable Tray Installation

Install cable tray as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Only CMP and OFNP type cable shall be installed in a plenum.

3.1.6 Work Area Outlets

3.1.6.1 Terminations

Terminate UTP cable in accordance with TIA-568-C.1, TIA-568-C.2 and wiring configuration as specified.

3.1.6.2 Cover Plates

As a minimum, each outlet/connector shall be labeled as to its function and a unique number to identify cable link in accordance with the paragraph LABELING in this section.

3.1.6.3 Cables

Unshielded twisted pair and fiber optic cables shall have a minimum of 12 inches of slack cable loosely coiled into the telecommunications outlet boxes. Minimum manufacturer's bend radius for each type of cable shall not be exceeded.

3.1.6.4 Pull Cords

Pull cords shall be installed in conduit serving telecommunications outlets that do not have cable installed.

3.1.6.5 Multi-User Telecommunications Outlet Assembly (MUTOA)

Run horizontal cable in the ceiling or underneath the floor and terminate each cable on a MUTOA in each individual zone. MUTOAs shall not be located in ceiling spaces, or any obstructed area. MUTOAs shall not be installed in furniture unless that unit of furniture is permanently secured to the building structure. MUTOAs shall be located in an open work area so that each furniture cluster is served by at least one MUTOA. The MUTOA shall be limited to serving a maximum of twelve work areas. Maximum work area cable length requirements shall also be taken into account. MUTOAs must be labeled to include the maximum length of work area cables. MUTOA labeling is in addition to the labeling described in TIA/EIA-606, or other applicable cabling administration standards. Work area cables extending from the MUTOA to the work area device must also be uniquely identified and labeled.

3.1.7 Electrical Penetrations

Seal openings around electrical penetrations through fire resistance-rated wall, partitions, floors, or ceilings as specified in Section 07 84 00 FIRESTOPPING.

3.1.8 Grounding and Bonding

Provide in accordance with TIA J-STD-607, NFPA 70 and as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

3.2 LABELING

3.2.1 Labels

Provide labeling in accordance with TIA/EIA-606. Handwritten labeling is unacceptable. Stenciled lettering for voice and data circuits shall be provided using thermal ink transfer process.

3.2.2 Cable

Cables shall be labeled using color labels on both ends with identifiers in accordance with TIA/EIA-606.

3.2.3 Termination Hardware

Workstation outlets and patch panel connections shall be labeled using color coded labels with identifiers in accordance with TIA/EIA-606.

3.3 FIELD APPLIED PAINTING

Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Painting shall be as specified in Section 09 90 00 PAINTS AND COATINGS.

3.3.1 Painting Backboards

If backboards are required to be painted, then the manufactured fire

retardant backboard must be painted with fire retardant paint, so as not to increase flame spread and smoke density and must be appropriately labeled. Label and fire rating stamp must be unpainted.

3.4 FIELD FABRICATED NAMEPLATE MOUNTING

Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of two sheet-metal screws or two rivets.

3.5 TESTING

3.5.1 Telecommunications Cabling Testing

Perform telecommunications cabling inspection, verification, and performance tests in accordance with TIA-568-C.1. Test equipment shall conform to TIA-1152. Perform optical fiber field inspection tests via attenuation measurements on factory reels and provide results along with manufacturer certification for factory reel tests. Remove failed cable reels from project site upon attenuation test failure.

-- End of Section --