University of Southern Maine
PORTLAND, MAINE
GMP Documents

ADDENDUM NO. 1
JANUARY 20,2004

To ALL BIDDERS:

This Addendum is organized in three parts plus attachments:

Part I Overview
Part II Revisions/Clarifications
Part III Attachments

PART I: OVERVIEW:

A. This Addendum No. **1** is hereby incorporated into, and amends (by addition, deletion, clarification or alteration) the Bid Documents dated Jan 19 2004 for the University of Southern Maine CEC, Portland, Maine.

B. The bidder shall acknowledge all addenda on the SUBMISSION OF GMP Bidders are to please contact Einhorn Yaffee Prescott, Att: Mr. Bill Smith if any document is missing from the bidder's package. Additional costs for items missed in this addendum shall not be accepted for failing to include said work.

PART 11: REVISIONS/CLARIFICATIONS :

ITEM 1: FINISH HARDWARE SPECIFICATION SECTION 08710

Attached is the finish hardware schedule for this project.

END OF ADDENDUM #1

Section 08710

Finish Hardware

Part 1--General

1.01 RELATED DOCUMENTS

A. The general provisions of the Contract, including General and Supplementary General Conditions, and Division 1 General Requirements, apply to this section.

1.02 SUMMARY

A. Work included: Furnish and install hardware for all doors except as noted on the door schedule and/or drawings, including electrified hardware components required for security doors. The hardware shall include the furnishing of necessary and special screws, regular and special bolts, expansion shields, drop plates, and other devices necessary for the proper application **of** the hardware.

1. Provide hardware supplier with schedule of door and frame supplier(s) to review related work to insure hardware will be properly reinforced and applied in accordance with each manufacturers instructions.

B. Construction keying.

C. Related work in other Sections:
1. Hardware for millwork: Section 06400
2. Door Schedule: Section 08001
3. Steel Door and Frames: Section 08110
5. Access Doors; work requiring lock cylinders: Section 08305
6. Aluminum entrance door hardware, except lock cylinders: Section 08410
7. Hardware for manufactured casework: Section 12300

1.03 REFERENCE STANDARDS

A. Standards

ANSYBHMA A156.1-2000 Butts and Hinges
ANSYBHMA A156.2-1996 Bored and Pre-assembled Locks and Latches
ANSYBHMA **AI** 56.3-2000 Exit Devices
ANSVBHMA A156.4-2000 Door Controls – Closers
ANSYSHMA A156.5-2001 Auxiliary Locks and Associated Products
ANSYSHMA A156.6-2001 Architectural Door Trim
ANSYBHMA A156.7-2003 Template Hinge Dimensions

ANSVBHMA A156.8-2000 Door Controls – Overhead Holders
ANSVBHMA A156.15-2001 Closer/Holder/Release Devices
ANSVBHMA A156.18-2000 Materials and Finishes
ANSVBHMA A156.19-2002 Power Assist and Low Energy Power Operated Doors
ANSVBHMA A115.1-1990 for Standard Steel Door and Steel Frame Preparations for Mortise Locks
ANSI A117.1 – American National Standards Institute – Accessible and Usable Buildings and Facilities.

B. NFPA – National Fire Protection Association:
   1. NFPA 80 – 1999 – Standard for Fire Doors and Fire Windows
   2. NFPA 101 – 2000 – Life Safety Code
   3. NFPA 105 – 1993 – Installation of Smoke-Control Door Assemblies

C. DHI – Door and Hardware Institute:
   1. 1989 - Recommended locations
   2. 1983 - Abbreviations and symbols.
   3. 1996 - Sequence and format for the hardware schedule.
   4. 1989 - Recommended procedure for processing hardware schedules and templates.
   5. 1989 - Keying systems and nomenclature.

D. ADA – The American Disabilities Act – Title III – Public Accommodations.

E. WH – Warnock Hersey, "Certification Listing"

1.04 SUBMITTALS

A. Product Data: Manufacturer's illustrated product literature and specifications for each item of hardware.

B. Hardware Schedule: Submit for review, within 21 days of award of contract, 6 copies of a complete, properly itemized schedule of Builders Finish Hardware to be furnished under this Contract. Clearly refer to each item using manufacturer's code letters and numbers. Use same set numbers used on door schedule on Drawings. Identify lockset functions. List the actual product series numbers.

   1. Schedule for hardware shall be in vertical format.

C. Samples: If requested, submit to the Architect for approval, a complete line of samples as directed. Samples shall be plainly marked giving hardware number used in this specification, the manufacturer's numbers, types and sizes. The Architect will deliver approved samples to the project site to be stored. Samples will remain with the Architect until delivery of all hardware to the project is complete, after which time they will be turned over to the Contractor for incorporation into the work.

D. Key Schedule: After a keying meeting between representatives of the Owner, Architect, and the

Hardware Supplier, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. This schedule can be submitted as a part of the Hardware Schedule or as a separate schedule.

E. Templates: Hardware supplier shall immediately, but not later than thirty (30) days after approval of his Schedule by the Architect, furnish the Contractor with complete template information necessary for the fabrication of doors and frames. No templates shall be furnished prior to the approval of the hardware schedule.

F. Operations and Maintenance Manuals

1. **At** the end of the project the hardware supplier shall submit, as a part of the close out package, a three ring binder containing the following information:
   a. Maintenance instructions for each item of hardware.
   b. Catalog pages of each product.
   c. Name, address, phone and fax numbers of the finish hardware distributor.
   d. Parts list for each major hardware item.
   e. Copy of the approved hardware schedule.
   f. Copy of the approved keying schedule.

1.05 QUALITY ASSURANCE

A. Hardware supplier shall be, or have in his employ, a certified Architectural Hardware Consultant, who is registered in the continuing education program as administered by the Door and Hardware Institute. This Consultant shall review the schedule prior to submittal and affix his or her seal attesting to the completeness and correctness of the schedule and to certify that the work of this section meets or exceeds the requirements of authorities having jurisdiction.

B. U.L. Listing: Whether specifically mentioned or not, equip fire-rated doors with UL approved hardware of corresponding rating and bearing the proper UL listing mark.

C. Responsibility for Sizing Hardware: Hardware supplier shall determine conditions and materials of doors and frames for proper application of hardware. Follow manufacturers' catalogue requirement for the actual size of door closers, brackets and holders. Door sizes are as noted on the Door Schedule and the hardware shall be in strict accordance with requirements of height, width, and thickness.

D. **All** items of hardware are referenced by manufacturer's names and numbers. The manufacturer's names and numbers are used to define the function, design, and quality of the material to be supplied. Substitution of products other than those listed shall be in accordance with Section 0 1620, Product Options & Substitutions.

1.06 PRODUCT DELIVERY, STORAGE **AND** HANDLING

A. Require the Hardware Supplier to deliver hardware to the project site in accordance with the instructions of the Contractor.

B. Contractor shall prepare a locked storage room with adequate shelving, for hardware. The storage room shall be in a dry, secure area, and shall not include storage of other products by other trades.

C. The Contractor shall furnish the Hardware Supplier with receipts for all hardware and accessory items received, and shall send copies of these receipts to the Architect, if requested.

1.07 WARRANTY

A. Hardware supplier shall warrant and guarantee, in writing, that hardware supplied is free of defective material and workmanship. Supplier shall further warrant and guarantee for a period of one year from Owner's Use and Occupancy that the hardware shall function in a satisfactory manner without binding, collapse, or dislodging of its parts, provided the installation is made to the manufacturer's recommendations.

1.08 REGULATORY REQUIREMENTS

A. Conform to all applicable codes. Provide throws, projections, coatings, knurling, opening and closing forces, and other special functions required by all State of Maine and Local Building Codes, and all applicable Access Code requirements, including ADA

B. For fire rated openings provide hardware complying with NFPA 80 and NFPA 101. Provide hardware tested by UL for the type and size of door installed and fire resistance rating required.

1.09 COORDINATION

A. Hardware Supplier shall determine conditions and materials of all doors and frames for proper application of hardware.

1.10 MAINTENANCE MATERIALS AND TOOLS

A. Provide adjusting tools and wrenches for the following operating products:
   1. Locksets (all types)
   2. Door Closers
   3. Exit Devices

PART 2 --PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with requirements, furnish products by the following manufacturers; furnish all hardware of each type from a single manufacturer.

Hinges	McKinney	Scranton, PA
	Hager	St. Louis, MO
	Bommer	Landrum, SC

Continuous Hinges	Pemko	Memphis, TN
	McKinney	Scranton, PA
	Select	Kalamazoo, MI
Locksets (no substitutions)	Schlage	Colorado Springs, CO
Exit Devices (no substitutions)	Von Duprin	Indianapolis, IN
Door Closers (no substitutions)	LCN	Princeton, IL
Concealed Overhead Door Stops	Sargent	New Haven, CT
	Glynn-Johnson	Indianapolis, IN
	ABH	Elk Grove Village, IL
Flush Bolts / Door Coordinators	Ives	Indianapolis, IN
	Door Controls	Dexter, MI
	Rockwood	Rockwood, PA
Door Stops	Quality	Brea, CA
	Ives	Indianapolis, IN
	Rockwood	Rockwood, PA
Magnetic Door Holders	ABH	Elk Grove Village, IL
	Rixson	Charlotte, NC
	LCN	Princeton, IL
Power Supplies (no substitutions)	Von Duprin	Indianapolis, IN
Push / Pulls	Rockwood	Rockwood, PA
	Bums	Erie, PA
	Ives	Indianapolis, IN
Protective Plates	Rockwood	Rockwood, PA
	Bums	Erie, PA
	Ives	Indianapolis, IN
Thresholds/ Door Sweeps/ Rain Drips	NGP	Memphis, TN
	Pemko	Memphis, TN
	Reese	Rosemount, MN

Silencers	Ives	New Haven, CT
	Rockwood	Rockwood, PA
	Hager Companies	St. Louis, MO

B. No other products will be considered for those listed (NO SUBSTITUTION).

2.02 MATERIALS AND QUALITY

A. **All** hardware shall be of the best grade of solid metal entirely free from imperfections in manufacturer and finish.

B. Qualities, weights, and sizes specified in this Section are the minimum that will be accepted. It is the responsibility of the Hardware Supplier to supply the specified size and weight of hardware and the proper function of hardware in each case and to provide UL approved hardware at all fire-rated doors.

C. Provide, as far as possible, locks of one lock manufacturer and hinges of one hinge manufacturer. Modifications to hardware that are necessary to conform to construction shown or specified shall be provided as required for the specified operation and functional features.

D. Follow manufacturers' catalog requirements for the actual size of door closers, brackets and holders.

2.03 HARDWARE FOR LABELED FIRE DOORS.

A. Hardware shall conform to requirements of NFPA 80 for labeled fire doors and to **NFPA** 101 for exit doors, as well as to other requirements specified. Labeling and listing by UL Building Materials Directory, for class of door being used will be accepted as evidence of conformance to these requirements. Install minimum latch throw as specified on label of individual doors. Provide hardware listed by UL except where heavier materials, larger sizes, or better grades are specified herein under paragraph entitled "Hardware Sets". In lieu of **UL** labeling and listing, test reports from a nationally recognized testing agency may be submitted showing that hardware has been tested in accordance with UL test methods and that it conforms to NFPA requirements. Specific hardware requirements of door or frame manufacturers which exceed sizes **or** weights of hardware listed in this Section shall be provided with no additional charge.

2.04 FASTENERS

A. Manufacture hardware to conform to published templates, generally prepared for machine screw installation.

B. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Furnish exposed screws to match the hardware finish, or, if exposed in surfaces of other work, to match the finish of such other work as closely as possible, except as otherwise indicated.

C. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to

the extent no standard manufactured units of the type specified are available with concealed fasteners. Do not use thru-bolts unless specifically approved by the Architect.

D. Use only the fasteners supplied by manufacturers of specific products.

E. All hardware shall have the required screws, bolts and fastenings necessary for proper installation and shall be wrapped in the same package as the hardware item for which it is intended,

2.05 PACKING AND MARKING

A. Clearly label each package to indicate the portion of the work for which it is intended.

2.06 ENVIRONMENTAL CONCERN FOR PACKAGING

A. The hardware shipped to the jobsite is to be packaged in biodegradable packs such as paper or cardboard boxes and wrapping. If non-biodegradable packing such as plastic, plastic bags or large amounts of Styrofoam is utilized, then the Contractor will be responsible for the disposal of the non-biodegradable packing to a licensed or authorized collector for recycling of the non-biodegradable packing.

2.07 FINISH HARDWARE DESCRIPTION

A. Hardware items shall conform to respective specifications and standards and to requirements specified herein.

B. Continuous Geared Hinges: Hinges on exterior and interior doors where scheduled, shall be full-mortise Continuous Geared Hinges. Geared Hinges shall be manufactured of extruded 6063-T6 aluminum alloy temper. Hinges shall consist of three interlocking extrusions in a pinless assembly applied to the full height of the door and frame. All hinges shall be manufactured non-handed. Door leaf and jamb leaf shall be geared together for the entire length of the hinge and joined by a cover channel. All Geared Hinges shall be heavy duty (HD).

1. Manufacturer and Product: Pemko, McKinney or Select as follows:
   a. Pemko CFM SLFHD Series
   b. McKinney MCK-12HD
   C Select SL11HD

C. **Butt** Hinges:

1. Number of hinges per door: Provide two hinges for doors up to and including five feet in height, and an additional hinge for each two-and-one-half feet or fraction thereof, of the height of the door. Dutch doors are to be provided with four hinges.

2. Hinges on interior doors shall be oil-impregnated bearings, steel and sized as follows, unless other wise specified in the hardware sets below:

Door thickness	Door width	Hinge Weight	Hinge
1-314"	40" and under	Regular	4-1/2"
1-314"	Over 40"	Extra heavy	5 x 4-112

Width of hinge shall be determined by trim conditions

3. Bearing hinges shall have flush bearings and button tips.

4. Manufacturer: Hinges shall be McKinney, Hager or Bommer as follows:

McKinney	Hager	Bommer
TA2714	BB1279	BB5000
T4A3786	BB1168	BB5004

D. Pocket pivots: Shall be No. 91105F as manufactured by Ives or No. Ph-4 as manufactured by McKinney.

E. Pivot Set: Shall be No. H117 3/4 x 587 side load arm as manufactured by Rixson.

F. Door Closers:

1. Door closers shall have fully hydraulic, full rack and pinion action. Cylinder body shall be 1-112" in diameter, and double heat treated pinion shall be 11/16" in diameter.

2. Hydraulic fluid shall be of a type requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.

3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and hydraulic back-check.

4. Arms: Solid forged steel main arms (and forged forearms for parallel arm closers).

5. Closer arms (and metal covers when specified) shall have a powder coating finish.

6. Provide drop, mounting plates where required.

7. Do not locate closers on the side of doors facing corridors, passageways or similar type areas. Where it is necessary, due to certain conditions and approval of the Architect, to have closers in corridors, provide such closers with parallel or track type arms.

8. Adjust door closers in accordance with the manufacturer's templates and written instructions. Adjust back-check feature on closers with parallel arms prior to installation.

9. Closers shall conform to applicable code requirements relative to setting closing speeds for closers and maximum pressure for operating interior and exterior doors.

10. Door closers meeting this specification are as follows:

	LCN (no substitutions)
Exterior	4111S-H-CUSH
	2610 – Concealed Power-Assisted Door Operator
Interior	4011 – surface (pull) side mounting
	4111 – surface (push) side mounting
	2610 – Concealed Power-Assisted Door Operator

G. Exit Devices:

1. Shall be Von Duprin. (no substitutions)

Function	Von Duprin
A	99E0
B	99L-F-BE
C	EL99NL-OP
D	CD9927L x LBR
E	CD99L
F	9547L-F-BE x LBR
G	CD9947NL-OP
H	CD9947EO
I	SDEL9947NL-OP
J	SDEL9947EO

I. Power Transfer: Provides a means to transfer power from the frame to the door stile. When the door is closed, the unit is concealed and tamper resistant. Von Duprin EPT-2 – SP28 finish.

J. Power Supplies: Provide power supplies for use with electrified exit devices. Von Duprin PS873-2.

K. Control Box: Shall be LCN ES7902S.

L. Blow Out Control **Box:** Shall be LCN ES7949

M. Push Plate Actuators: Shall be LCN 7910-956.

N. Key Switch: Shall be Locknetics No. 653-14.

O. Latch Protector: Non-handed and incorporate security frame pin to prevent separation of the door and frame. Rockwood 320, Ives LG1, or Don-Jo **PLP-111** – US32D or as listed.

P. Dutch Door Bolt: Shall be Ives 054. or Rockwood 630-4.

Q. Electro-Magnetic Door Holders: Surface mounted wall magnetic units; one of the following:

Manufacturer	Product
ABH	**2100** Series
Rixson	FM-998
LCN	**SEM** 7850

R. Flush Bolts: Self-latching or automatic type at label doors, manual flush bolts at non- label doors. Furnish dust proof strikes at all floor locations.

		Ives	Door Controls	Rockwood
Manual	HM	FB458	780	**555**
	WD	FB458	780	*555*
Self-Latching	HM	FB51P	845	1845
	WD	FB61P	945	1945

S. Automatic Coordinating: Shall be provided at all pairs of label doors equipped with overlapping astragals or where improper closing sequence would interfere with proper operating of the doors. Coordinators shall be Ives COR Series, Door Controls 600 series or Rockwood 1600 series. Furnish filler pieces to close opening between coordinator and the jamb of frame. Provide mounting brackets as required for proper mounting of additional hardware.

T. Lock Sets, Latch Sets: Cylindrical type shall be Schlage heavy-duty **ANSI A156.2,** Series 4000, Grade 1, 2-3/4" backset, interchangeable core cylinder with lever handles. (no substitutions)

1. Manufacturer and products:

Manufacturer	Series	Lever Design
Schlage	D	**ATH**

2. Lock functions as indicated in the hardware schedule shall be as follows:

Function	Schlage
A (Storeroom)	ND80TD **x** knurled O/S lever
B (Storeroom)	ND80TD
C (Classroom))	ND70TD
D (Office)	ND53TD
E (Passage)	ND10S

U. Mortise Deadlocks: **ANSI AI 15.5,** Grade 1

Function	Schlage

A (Classroom)	L463TD
B (Cylinder)	L464TD

V. Push Plates, Door Pulls, Push/Pull Bars Sets:

1. Manufacturers: Rockwood, Bums or Ives.

2. Push Plates: **8"** 16", stile permitting, or **4" x** 16" for narrow stile **x** .50 thickness:

a.	Rockwood	70 Series
b.	Burns	50 Series
C	Ives	8200 Series

3. Door Pulls, Type **A:**

a.	Rockwood	BF111
b.	Burns	BF26C
C.	Ives	8103EZ-0

4. Door Pulls, Type B **x** Mod. to have 7" CTC:

a.	Rockwood	157
b.	Burns	39c
C.	Ives	8190

5. Push / Pull Bar Sets:

a.	Rockwood	15747 **x** T4 fastening
b.	Bums	39C **x** 422 **x** sim. fastening
C.	Ives	9190 **x** sim. fastening484-10"

W. Flush Pulls: Shall be Rockwood BF94C.

X. Kick Plates: .050 inch thick, beveled 4 edges, furnish with oval head counter-sunk. screws for fastening; widths 2 in. less the width of door; as follows:

1. Kick Plates: 8 in. high.

Y. Stops: Furnish at all doors. Wherever an opened door or any item of hardware thereon strikes a wall, at 90 degrees. Provide wall bumpers, unless otherwise indicated in hardware sets.

1. Where wall bumpers cannot be effectively used, a floor stop shall be furnished and installed.

2. Provide roller bumpers for each door where two doors interfere with each other in swinging.

Manufacturer	Wall Bumpers	Floor Stops	Roller Bumpers
Rockwood	409	440,442	456
Ives	WS407CCV	FS436, FS438	RB470 Series
Quality	W302-TB	331,431	

3. Where door stops / holders are listed they shall be heavy duty, wall mounted type as follows:

Manufacturer	Product Number
Rockwood	476
Ives	WS449
Quality	36

4. Where overhead concealed door holders are listed they shall be heavy-duty type as follows:

Manufacturer	Series
Glynn-Johnson	GJ100H
Sargent	690H
ABH	1010

5. Where overhead door stops are listed they shall be the surface mounted type as follows:

Manufacturer	Series
Glynn-Johnson	GJ450
Sargent	1540
ABH	4400

Z. Thresholds, Door Sweeps:

1. Thresholds: Extruded aluminum; furnish at all doors indicated. Set thresholds for exterior / stair doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants".

2. Products:

Item	Pemko	Reese	NGP
Threshold		as detailed	
Brush Seal	45062CP	970C	A626A
Auto. Door Bottom	434ARL	430A	422N (Mortise)
Door Sweep	345AV	353c	101VA
Rain Drip	346C	R201A	16A

AA. Gasketing: #105 "Cush-N-Seal" as manufactured by Door and Hardware Systems, Inc. – 13 Silver Street – Rochester, New York 14611 – Tel. No. 716-235-8543 – Fax No. 716-235-0431.

AB. Astragal: #AST-SURF as manufactured by Door and Hardware Systems, Inc. – 13 Silver Street – Rochester, New York 14611 – Tel. No. 716-235-8543 – Fax No. 716-235-0431.

AC. Silencers: Provide silencers on all metal and wood frames. Silencers shall be Ives SR64 / SR65,

Hager 307D / 308D or Rockwood 608 / 609.

2.08 FINISHES

A. Materials and finish: Materials and finishes shall be:
1. Interior Butts: US26D (BHMA 652)
2. Geared Hinges: US28 (BHMA 628)
3. Pocket Pivots: USP (BHMA 600)
4. Door Closers: Sprayed to match hardware finish
5. Kick Plates, Push Plates, Door Pulls, Push / Pull Bars: US32D (BHMA 630)
6. All other hardware shall be: US26D (BHMA 626), or as scheduled.

2.09 KEYS **AND** KEYING

A. The hardware supplier shall review the specific hardware functions with the Architect and Owner at the time of the keying review, to assure the appropriateness of each of the hardware functions. Failure to make this review does not relieve the hardware supplier from providing the proper functions.

B. Key System: All permanent cylinder cores are to be furnished by the owner, keyed to the existing Schlage system.

1. All cylinders are to be of the interchangeable core type. These cylinders are to be furnished complete with temporary removable construction cores for use by the contractor during the construction period. Furnish three (3) control keys for removal of the construction cores.

2. Furnish ten (10) Construction keys.

PART 3--EXECUTION

3.01. INSPECTION

A. Inspect door openings and doors to determine that each door and door frame has been properly prepared for the required hardware. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.

3.02 PREPARATION

A. All doors and frames, requiring field preparation for finish hardware, shall be carefully mortised, drilled for pilot holes, or tapped for machine screws for all items of finish hardware in accordance with the manufacturers templates and instructions.

3.03 INSTALLATION/ADJUSTMENT/LOCATION

A. Install materials in a workmanlike manner following the manufacturer's recommended instructions.

B. Install Door Closers in accordance with the manufacturer's instructions. Each door closer shall be

carefully installed, on each door, at the degree of opening indicated on the hardware schedule. Arm position shall be as shown on the instruction sheets and required by the finish hardware schedule.

C. The adjustments for door closers shall be the installers responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and the latching speed valves, shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the correct delayed action cycle or hydraulic back check cushioning of the door in the opening cycle. All valves must be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field, from size 2 thru **6.** It shall be the installers responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closer.

D. Installation of all other hardware, including locksets, door stops, plates and other items, shall be carefully coordinated with the hardware schedule and the manufacturer's instruction sheets.

E. Locations for finish hardware shall be in accordance with dimensions listed in the pamphlet "Recommended locations for Builders' Hardware for custom steel doors and frames" published by the Door and Hardware Institute unless noted differently by the Architect.

3.04 FIELD QUALITY CONTROL

A. Upon completion of the installation of the finish hardware, a representative of the finish hardware supplier is to visit the project and to examine the hardware for each door on which he or she has provided hardware and to verify that all hardware is in proper working order. Should items of hardware not operating properly, make a report, in writing, to the Contractor, advising the Contractor of the problem and the measures required to correct the problem.

3.05 PROTECTION

A. Carefully protect exposed surfaces of finish hardware, by use of cloth, adhesive backed paper or other materials, immediately after installation of the hardware item on the door. The finish shall remain protected until completion of the project. Just prior to the inspection at the time of Substantial Completion, remove the protective material.

3.06 CLEANING

A. Clean finish hardware and remove remaining pieces of protective materials and labels.

3.07 HARDWARE SETS

A. Each Hardware Set listed below represents the complete hardware requirements for one opening (single door or pair of doors). Furnish the quantities required for each set for the work.

Set No. EX1

1 – Continuous Hinge
1 – Lockset (Function B - storeroom)
1 – Cylinder Core
1 – Latch Protector
1 – Door Closer – H-CUSH
1 – Kick Plate
1 – Threshold – as detailed
1 – Door Sweep
1 – Rain Drip
1 – Set Weatherstripping (H, J)

Set No. EX2

1 – Continuous Hinge
1 – Exit Device (Function B-exit only)
1 – Door Closer – H-CUSH
1 – Mounting Plate – if required
1 – Kick Plate
1 – Threshold – as detailed
1 – Door Sweep
1 – Rain Drip
1 – Set Weatherstripping (H, J)

Set No. EX3

1 – Continuous Hinge
1 – Lockset (Function A - storeroom x knurled o/s lever)
1 – Cylinder Core
1 – Door Closer –H-CUSH
1 – Kick Plate
1 – Threshold Assembly – as detailed
1 – Door Sweep
1 – Rain Drip
1 – Set Weatherstripping (H, J)
Note: Install cylinder on the stair side of the door.

Set No. EXAL1

1 – Continuous Hinge
1 – Exit Device (Function B-exit only)
1 – Door Closer – H-CUSH
1 – Mounting Plate – if required
1 – Kick Plate

1 – Threshold – as detailed
1 – Door Sweep – manufacturers standard
1 – Set Weatherstripping – manufacturers standard

Set No. EXAL2

1 – Continuous Hinge – prep for EPT
1 – Power Transfer
1 – Exit Device (Function C)
1 – Schlage I/C Cylinder
1 – Cylinder Core
1 – Power Supply
1 – Door Pull – type B
1 – Concealed Power-Assisted Door Operator
1 – Control Box
1 – Blow Out Control Box
2 – Push Plate Actuators
1 – Key Switch
1 – Schlage I/C Cylinder
1 – Cylinder Core
1 – Kick Plate
1 – Threshold – as detailed
1 – Door Sweep – manufacturers standard
1 – Set Weatherstripping – manufacturers standard
Note: The control boxes listed are for use with the door operator at both doors 101A, 101C. The key switch is to provide on / off power to the outside push plate actuator.

Set No. EXAL3

2 – Continuous Hinges – prep for EPT
2 – Power Transfers
1 – Exit Device (Function I)
1 – Exit Device (Function J)
3 – Schlage VC Cylinders
3 – Cylinder Cores
1 – Power Supply
2 – Door Pulls – type B
2 – Concealed Power-Assisted Door Operators
1 – Blow Out Control Box
2 – Kick Plates
1 – Threshold – as detailed
2 – Door Sweeps – manufacturers standard
1 – Set Weatherstripping – manufacturers standard
Note: The blow out control **box** listed is for use with the door operators at doors 101B, 101D.

Set No. EXAL4

2 – Continuous Hinges
1 – Exit Device (Function G)
1 – Exit Device (Function H)
3 – Schlage I/C Cylinders
3 – Cylinder Cores
2 – Door Pulls – type B
2 – Door Closers – H-CUSH
2 – Mounting Plates – if required
2 – Kick Plates
1 – Threshold – as detailed
2 – Door Sweeps – manufacturers standard
1 – Set Weatherstripping – manufacturers standard

Set No. AL1

1 – Continuous Hinge
1 – Set Push / Pull Bars
1 – Door Stop
1 – Concealed Power-Assisted Door Operator
2 – Push Plate Actuators
1 – Kick Plate
Note: Power for the door operator is provided from the control **box** listed at Set No. EXAL2 (door 101A).

Set No. AL2

2 – Continuous Hinges
2 – Sets Push / Pull Bars
2 – Door Stops
2 – Concealed Power-Assisted Door Operators
2 – Kick Plates
Note: Power for the door operators is provide from the blow out control box listed at Set No. EXAL3 (pair doors 101B).

Set No. 1

Butts
1 – Lockset (Function A – storeroom x knurled o/s lever)
1 – Cylinder Core
1 – Door Closer - CUSH
3 – Silencers

Set No. 2

Butts
1 – Lockset (Function **A** – storeroom x knurled o/s lever)
1 – Cylinder Core
1 – Door Stop
1 – Door Closer (Reg. arm)
1 – Kick Plate
3 - Silencers
Note: Par. arm door closer at door 005B.

Set No. 3

Butts
1 – Lockset (Function B – storeroom)
1 – Cylinder Core
1 – Door Stop
1 – Door Closer (Reg. arm)
1 – Kick Plate
3 – Silencers

Set No. **3A**

Butts
1 – Lockset (Function B – storeroom)
1 – Cylinder Core
1 – Door Closer (Par. arm)
3 – Silencers

Set No. **4** .

Butts
1 – Lockset (Function **A** – storeroom x knurled o/s lever)
1 – Cylinder Core
1 – Set Self-Latching Flush Bolts
1 – Dust Proof Strike
1 – Door Coordinator x mounting brackets as required
2 – Door Stops
2 – Door Closers (Par. arm)
2 – Silencers

Set No. **4A**

Butts
1 – Lockset (Function **A** – storeroom x knurled o/s lever)

1 – Cylinder Core
2 – Manual Flush Bolts
1 – Dust Proof Strike
2 – Door Stops
1 – Door Closer (Par. arm)
2 – Kick Plates
2 – Silencers
Note: Door closer is only required on the active leaf.

Set No. 5

Butts
1 – Lockset (Function **B** – storeroom)
1 – Cylinder Core
1 – Door **Stop**
1 – Door Closer (Par. arm)
1 – Kick Plate
1 – Set Gasketing **(H,** J)

Set No. ***6***

Not used

Set No. 7

Not used

Set No. 8

Butts
2 – Exit Devices (Function D)
4 – Schlage I/C Cylinders
4 – Cylinder Cores
2 – Door Stops
2 – Door Closers (Par. arm)
2 – Kick Plates
1 – Astragal
2 – Automatic Door Bottoms
1 – Set Gasketing (H, J)

Set No. 9

Butts
1 – Lockset (Function C – classroom)
1 – Cylinder Core

1 – Door Stop
1 – Automatic Door Bottom
1 – Set Gasketing (H, J)

Set No. 10

Butts
1 – Push Plate
1 – Door Pull – type A
1 – Door Stop
1 – Door Closer (Reg. arm)
1 – Kick Plate – 16" x 2" LWOD
1 – Automatic Door Bottom
1 – Set Gasketing (H, J)

Set No. 11

Butts
1 – Exit Device (Function **E)**
2 – Schlage I/C Cylinders
2 – Cylinder Cores
1 – Door Stop
1 – Door Closer (Par. arm)
1 – Kick Plate – 16" x 2" LWOD
3 – Silencers

Set No. 12

1 – Continuous Hinge
1 – Deadlock (Function **A)**
1 – Cylinder Core
1 – Push Plate
1 – Door Pull – type **A**
1 – Door Stop
1 – Door Closer (Reg. arm)
1 – Kick Plate – 16" x 2" LWOD
3 – Silencers

Set No. 13

Butts
1 – Lockset (Function B – storeroom)
1 – Cylinder Core
1 – Door Stop
3 – Silencers

Set No. 14

Butts
1 – Lockset (Function D – office)
1 – Cylinder Core
1 – Door Stop
1 – Set Gasketing (H, J)

Set No. 15

Butts
1 – Lockset (Function C – classroom)
1 – Cylinder Core
1 – Door Stop
1 – Door Closer (Par. arm)
1 – Kick Plate
3 – Silencers

Set No. 16

Butts
1 – Lockset (Function D – office)
1 – Cylinder Core
1 – Dutch Door Bolt
1 – Door Stop / Hook
4 – Silencers

Set No. 17

Butts
1 – Exit Device (Function B)
1 – Door Stop
1 – Door Closer (Reg. arm)
1 – Kick Plate
1 – Set Gasketing (H, J)

Set No. 18

6 - Pocket Pivots
2 – Exit Devices (Function F)
2 – Door Stops
2 – Electro-Magnetic Door Holders
2 – Door Closers – LCN 4000T

2 – Kick Plates
1 – Astragal
1 – Set Gasketing (H, J)
Note: Contractor is to provide blocking in the wall, behind the door, to allow installation of the door closer body to the wall.

Set No. 19

Butts
1 – Lockset (Function B-storeroom)
1 – Cylinder Core
1 – Door Stop
3 – Silencers

Set No. 20

Butts
2 – Exit Devices (Function D)
4 – Schlage I/C Cylinders
4 – Cylinder Cores
2 – Door Stops
2 – Door Closers (Par. arm)
2 – Kick Plates
2 – Silencers

Set No. 21

Butts
1 – Lockset (Function C – classroom)
1 – Cylinder Core
1 – Door Stop
3 – Silencers

Set No. 22

1 - Pivot Set
1 – Deadlock (Function B)
1 – Cylinder Core
1 – Flush Pull
1 – Overhead Concealed Door Holder
2 - Astragals

Note: Mount one astragal piece at the end of each door.

Set No. 23

Butts
1 – Latchset (Function E)
1 – Door Stop
3 - Silencers

Set No. 24

The following material is required to operate the pneumatically powered low-energy power operators specified for use at doors 101A, 101B, 101C and 101D:

1 – Compressor – LCN 922
Pneumatic Tubing – LCN 7910-925 (length as required)

END OF SECTION

University of Southern Maine
Community Education Center
PORTLAND, MAINE
GMP Documents

ADDENDUM NO. 2
JANUARY 23,2004

TO **ALL BIDDERS:**

This Addendum is organized in three **(3)** parts:

Part I Overview
Part II Revisions/ Clarifications
Part III Attachments

PART I: OVERVIEW:

A. This Addendum No. 2 is hereby incorporated into, and amends (by addition, deletion, clarification or alteration) the Bid Documents dated Jan **19** 2004 for the University of Southern Maine CEC, Portland, Maine.

B. The bidder shall acknowledge all addenda on the SUBMISSION OF GMP Bidders are to please contact Einhorn Yaffee Prescott, Att: Mr. William F. Smith if any document is missing from the bidder's package. Additional costs for items missed in this addendum shall not be accepted for failing to include said work.

ART II: REVISIONS/CLARIFICATIONS:

ITEM 1: CONTROL SYSTEM EQUIPMENT SPECIFICATION SECTION 15975
ITEM 2: GEOTECHNICAL INFORMATION

Part 111: Attachments :

Attachment 1: CONTROL SYSTEM EQUIPMENT SPECIFICATION SECTION 15975

Attachment 2: Haley and Aldrich report on Subsurface and Foundation Investigation Proposed Community Education Facility and Parking Garage dated July 2002

Attachment **3:** Haley and Aldrich Report on Proposed Pedestrian Skyway dated November 2003

Attachment 4: Community Education Center Ledge Probe Results dated January 14,2004

Attachment 5: Sketch no: GEO-001, Probe Results dated January 23,2004

END OF ADDENDUM #2

University of Southern Maine
Community Education Center
PORTLAND, MAINE
GMP Documents

ADDENDUM NO. **3**
JANUARY 28,2004

To ALL BIDDERS:

This Addendum is organized in three (3)parts:

Part I Overview
Part II Revisions/ Clarifications
Part III Attachments

PART I: OVERVIEW:

A. This Addendum No. 3 is hereby incorporated into, and amends (by addition, deletion, clarification or alteration) the Bid Documents dated Jan 19 2004 for the University of Southern Maine CEC, Portland, Maine.

B. The bidder shall acknowledge all addenda on the SUBMISSION OF GMP. Bidders are to please contact Einhorn Yaffee Prescott, Att: Mr. William F. Smith if any document is missing from the bidder's package. Additional costs for items missed in this addendum shall not be accepted for failing to include said work.

PART 11: REVISIONS/CLARIFICATIONS :

ITEM 1: DELETION TO SPECIFICATION SECTION 02200 PARAGRAPH 3.02A.
ITEM **2:** ADD TO SPECIFICATION SECTION 02200, PARAGRAPH 3.02G
ITEM 3: ADD TO SPECIFICATION SECTION 02200, PARAGRAPH 3.02H

Part 111: Attachments :

Attachment **1:**Specification Section 02200
Attachment 2: Civil Drawing C301-Civil Details

END OF ADDENDUM #3

SECTION 02200 - EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. Work included: All excavating, filling, backfilling, and removal of materials. Earthwork for utilities is included in this section.

B. Related Work Specified Elsewhere:

Shoring and Bracing: Section 02150

Slope Protection and Temporary Erosion Control: Section 022 10

1.02 PROTECTION:

A. Paved Surfaces: Do not operate equipment that will cause damage on paved surfaces. Any damage to existing roads or other paved surfaces caused by construction equipment shall be repaired at no additional cost to OWNER.

B. Maintain Excavations with approved barricades, lights, and signs to protect life and property until excavation is filled and graded to a condition acceptable to the ENGINEER.

C. Protect structures, utilities, monitoring wells, property monuments, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations. The CONTRACTOR shall be responsible for actual cost of repair or replacement of any items damaged as a result of construction activities, including any professional services required for inspection of repairs and replacement.

1.03 QUALITY ASSURANCE:

A. Testing and Inspection: OWNER shall be responsible for all testing, unless otherwise noted. The cost for retesting due to failed tests shall be the responsibility of the CONTRACTOR.

The CONTRACTOR shall be responsible for coordinating with ENGINEER to allow for testing to be performed at the frequencies specified. A minimum of 48 hours notice for in-place testing shall be given to allow proper scheduling by ENGINEER.

B. Materials Testing Firm: Company specializing in materials testing with a minimum of five years documented experience. Company to be acceptable by ENGINEER and OWNER. Materials testing firm to be independent of CONTRACTOR. Acceptable testing firms are Summit Environmental, Inc., Haley and Aldrich, and S.W. Cole Engineering, Inc. Other firms will be considered upon receipt of corporate literature.

1.04 JOB CONDITIONS:

A. Site Information: The CONTRACTOR may make his own borings, hand probes, explorations, and observations to determine soil, water levels, and other subsurface conditions at no additional cost to OWNER. Coordinate with OWNER prior to start of additional investigative work.

B. Existing Utilities: Locate existing underground utilities in areas of excavation work. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations. Coordinate with utility companies for actual locations and shut-off services. If utilities are encountered that are not shown or that are shown incorrectly on the Drawings, notify ENGINEER immediately. Repair damaged utilities to satisfaction of ENGINEER and utility.

1.05 REFERENCES:

A. Manual of Accident Prevention in Construction - Associated General Contractors of America, Inc.

B. 29 CFR 1926/1910 - OSHA Safety and Health Standards for Construction Industry

C. Standard Specifications for Highways and Bridges - Maine Department of Transportation, current edition

1.06 SUBMITTALS: Submit results of all aggregate gradation, moisture density, and field compaction testing for all materials to ENGINEER.

PART 2 - MATERIALS

2.01 MATERIALS:

A. General: All materials utilized for this Project shall be obtained from a source that has been licensed or permitted for such use by local and state authorities. The CONTRACTOR shall be required to submit evidence of such if so requested.

1. Suitable materials: Suitable soil materials are defined as those complying with ASTM D2487 soil classification groups GW, SM, SW, and SP.

2. Unsuitable materials: Materials containing excessive amounts of water, blue clay, vegetation, organic matter, debris, pavement, stones or boulders over 6-inches in greatest dimension, frozen material, and material which, in the opinion of the ENGINEER, will not provide a suitable foundation or subgrade.

3. On-Site Material: Any suitable material from on-site excavation.

4. Material for embankments and general site fills may contain pieces of excavated ledge having a greatest dimension of up to 6-inches, unless otherwise approved by ENGINEER.

5. Inspection: The ENGINEER may inspect off-site sources of materials and order tests of these materials to verify compliance with these Specifications.

6. Sieve Analysis: Submit sieve analysis in accordance with ASTM D422 for all materials prior to start of construction.

B. Gravel/Aggregate Base: Hard, durable gravel contained only particles passing the 2-inch sieve. Equal to MDOT 703.06, Type A material. Sieve analysis by weight:

Sieve Size	% Passinp by Weight
2"	100
1/2"	45 - 70
1/4"	30 - 55
No. 40	0 - 20
No. 200	0 – 5

C. Aggregate Subbase: Sand or gravel of hard, durable particles; equal to MDOT 703.06 Type D material. Aggregate subbase shall not contain particles that will not pass the 6-inch sieve. The part that passes the 3-inch sieve shall meet the following gradation requirements:

Sieve Size	% Passing by Weight
1/4"	25 - 70
No. 40	0 - 30
No. 200	0 - 7

D. Subbase Fill: Sand or gravel of hard, durable particles; equal to MDOT 703.06 Type F material. Subbase fill shall not contain particles that will not pass the 6-inch sieve. The part that passes the 3-inch sieve shall meet the following gradation requirements:

Sieve Size	% Passing by Weight
1/4"	60 - 100
No. 40	0 - 50
No. 200	0 - 7

E. 314" Crushed Stone: Durable, clean angular rock fragments obtained by breaking and crushing rock material.

Sieve Size	% Passing by Weight
1"	100
3/4"	90 - 100
3/8"	20 - 55
No. 4	0 - 10
No. 200	0 - 1.5

F. Sand: Sand shall be well-graded coarse sand without excessive fines and free from loam, clay, and organic matter. Beach sand shall not be used. The grading requirements are as follows:

Sieve Size	% Passing by Weight
3/8"	100
No. 4	95 - 100
No. 16	50 - 85
No. 50	10 - 30
No. 100	2 - 10

G. Riprap: In accordance with MDOT 703.26 – Plain and Hand Laid Riprap, or as otherwise noted.

H. Refill Material: Use 3/4" crushed stone for refilling excavation below normal grade, rock excavation or refilling excavations of unsuitable material, unless otherwise directed by ENGINEER.

I. Fabric Protection Layer: As specified in Section 02210.

J. Select Backfill: Use gravel/aggregate base material as directed by ENGINEER.

K. Common Borrow: Earth suitable for embankment and general site fills construction free from frozen material, perishable rubble, peat and other unsuitable material. Moisture content shall be sufficient to provide required compaction and stable embankment, but shall not exceed 4% above optimum.

PART 3 - EXECUTION

3.01 EXCAVATION:

A. General: Remove all materials encountered to the limits shown on the Drawings, or designated in the Specifications.

B. Classifications: The following classifications of excavation will be made which will be paid for on a unit cost basis:

Rock Excavation
Excavation below Normal Grade

C. Rock Excavation includes removal and disposal of materials and obstructions encountered that cannot be excavated with modem, track-mounted, heavy-duty excavating equipment without drilling, blasting, or ripping; includes boulders larger than 2 cubic yards each.

Do not perform rock excavation or excavation of unsuitable materials until material to be excavated has been cross-sectioned and classified by ENGINEER. Pre-drilling and blasting of bedrock through overburden may be allowed. However, if this method is used, the rock excavation quantities will be adjusted downward in proportion to the ground swell from this blasting method.

D. Earth Excavation: Remove and dispose of obstructions visible on ground surface, underground structures, utilities, and items indicated to be demolished and removed, and other materials encountered that are not classified as rock excavation or unauthorized excavation.

E. Excavation in Paved Areas: Cut pavement prior to excavation to provide a clean, uniform edge. Minimize disturbance of remaining pavement. Cut and remove the minimum amount of pavement required *to* do the Work. Use shoring and bracing where sides of excavation will not stand without undermining pavement.

F. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation ***of*** services, other construction, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete formwork and reinforcement is installed. Trim bottoms to required lines and grades to leave solid base *to* receive other Work. When excavating in clay material, use a smooth-edged bucket to avoid disturbance of the bottom of the excavation. Use shoring and bracing where sides of excavation will not support itself.

G. Excavation for Utility Trenches: Excavate to widths shown on the Drawings and depths indicated or required to establish indicated slope and invert elevations.

Produce an evenly graded, flat trench bottom at the subgrade elevation required for installation of pipe and bedding material. Place backfill material directly into trench or excavation. Do not stockpile material to be used as backfill along edges of trenches. Load excavated material directly into trucks, unless otherwise permitted by the ENGINEER.

H. Unauthorized Excavation: Removal of materials beyond indicated subgrade elevations or dimensions without specific direction of ENGINEER. Unauthorized excavation, as well as remedial work directed by ENGINEER, including refilling, shall be at CONTRACTOR's expense.

I. Refilling Unauthorized Excavation: For trenches, use 3/4-inch crushed stone. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by ENGINEER.

J. Excavation of Unsuitable Materials: When excavation has reached required subgrade elevations, notify ENGINEER who will make an inspection of conditions. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper as directed by ENGINEER and replace excavated material as specified. Removal of unsuitable material and its replacement as directed by ENGINEER will be paid for as Excavation Below Normal Grade unless material has been made unsuitable **by** CONTRACTOR's operations. In this instance, removal and replacement will be performed at CONTRACTOR's expense.

K. Material Storage: Stockpile and maintain suitable surplus excavated materials for re-use as backfill within the Project limits, as directed by ENGINEER. Place, grade and shape stockpiles for proper drainage. Locate and retain soil materials away from edge of excavations.

3.02 BLASTING

A. General: Obtain approval of OWNER and ENGINEER before blasting. All blasting for utilities shall be paid as Utility Trench Blasting. All blasting related to footings, foundations and other site elements NOT related to utilities shall be paid as Open Blasting ~~or Bulk Rock Excavation~~

B. Pre-blast Survey shall be the responsibility of the CONTRACTOR. Provide pre-blast survey prior to ***any*** blasting or blasting related operations. A written report of the preblast survey will be provided to the University of Maine System (UMS) by the CONTRACTOR and will be available for review by the City of Portland. A copy of the blasting plan will be submitted to the City of Portland and UMS for review and approval prior to the initiation of the site preparation work.

All owners of dwellings or residences located within 500-feet of the blasting location shall be notified, in writing, by the CONTRACTOR a minimum of 30 days prior to the scheduled blasting date about the proposed blasting and how to request a pre-blast survey. Upon request, the CONTRACTOR shall determine the pre-blasting condition of any structure located within this area and prepare a written report. The pre-blast survey shall be limited to the surface conditions of the structures but shall comply in all respects with 30 CFR, Chapter **VII,** Section 816.62.

1. Pre-blast Survey shall include, but not be limited to:

   a. Video tape of each structure within 500-feet of the blasting location to show pre-blast conditions. Highlight existing defects in structures and pavements. Provide some means of establishing scale of existing defects (i.e., include tape measure or folding ruler at defect during video taping).

   b. Video taping shall be done with commercial grade equipment to allow equipment still viewing without distortion of the viewed area.

   c. Still photos and videotapes shall be retained by the pre-blast surveyor and shall be available for viewing by the OWNER and ENGINEER within 24 hours upon request.

2. **A** blasting plan shall be prepared which addresses:

   a. Airblast Limits

   b. Ground Vibrations

   c. Maximum Peak Particle Velocity

3. The blasting plan shall meet criteria established in Chapter *3* (Control of Adverse Effects) in the Blasting Guidance Manual of the United States Department of the Interior Office of Surface Mining Reclamation and Enforcement.

4. Provisions and measures to monitor and assure compliance with the blasting plan.

5. The blasting plan and preblast survey shall conform to all recommendations of the project geotechnical report and supplemental geotechnical evaluations included in these Specifications.

C. Particle Velocities: Maximum allowable peak particle velocity shall be limited to 1.25 inches per second within 300 feet of the blast site. Monitor at location designated by ENGINEER.

D. Documentation: Submit an accurate record of the blasting operation to the ENGINEER. A copy should be retained by the blasting firm for at least **3** years. This record shall consist of the following information as listed in 30 CFR, Chapter **VII,** Section 816.68.

1. Name of the firm conducting the blast.

2. Location, date, and time of the blast.

3. Name, signature, and certification number of the blaster conducting the blast.

4. Identification, direction, and distance, in feet, from the nearest blast hole to the nearest dwelling, public building, school, church, community or institutional building outside the project area.

5. Weather conditions, including those that may cause possible adverse blasting effects.

6. Type of material blasted.
7. Sketches of the blast pattern including number of holes, burden, spacing, decks, and delay pattern.
8. Diameter and depth of holes.
9. Types and total weight of explosives used.
10. Mats or other protections used.
11. Seismographic and airblast records, which shall include: type of instrument, sensitivity, and calibration signal or certification of annual calibration; exact location of instrument and the date, time, and distance from the blast; and the vibration and/or airblast level recorded.

E. All blasting shall be performed in accordance with all pertinent provisions of the "Manual of Accident Prevention in Construction", issued by the Associated General Contractors of America, Inc., of the "Construction Safety Rules and Regulations", as adopted by the State Board of Construction Safety, Augusta, Maine, and the Maine Department of Transportation "Standard Specifications" Section 105.2.6, Use of Explosives. Blasting through the overburden will not be allowed.

F. Drilling Equipment will be equipped with suitable dust control apparatus that must be kept in repair and used during all drilling operations.

G. Open Blasting shall pertain to all blasting required for the placement of foundations, footings, and other project elements not specifically identified in paragraph H, Utility Trench Blasting. Vertical pay limits for all Open Blasting shall be one (1) foot below the base of structural elements to be placed. Horizontal pay limits for all Open Blasting shall be two (2) feet beyond each outside edge of structural elements to be placed. Blasting for placement of underdrain piping and associated appurtenances depicted along building footings will be considered Open Blasting.

H. Utility Trench Blasting shall pertain to all blasting required for the placement of any pipe, utility structure, or associated appurtenances. Utilities associated with the site shall include water distribution and service, sanitary sewer collection and service, storm sewer collection, underground electrical service, telecommunications, data, and geothermal related elements, as indicated on the drawings. All blasting required for the placement of utilities outside the horizontal and vertical pay limits defined by Open Blasting described in paragraph G, shall be paid as Utility Trench Blasting. Pay limits for piping and utility structures shall be as depicted on the contract drawings.

3.03 STABILITY OF EXCAVATIONS:

A. General: Slope sides of excavations to comply with OSHA Regulations and Local Codes. Shore and brace where sloping is not possible due to space restrictions or stability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling.

B. Refer to Section **02** 150 for shoring and bracing requirements.

3.04 DEWATERING:

A. General: Perform all Work in the dry. Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.

Do not allow water to accumulate in excavations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey water removed from excavations and rainwater to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

3.05 BACKFILL AND **FILL:**

A. General: Place suitable soil material in layers to required elevations as shown on the Drawings. Fill, backfill, and compact to produce minimum subsequent settlement of the material and provide adequate support for the surface treatment or structure to be placed on the material. Place material in approximately horizontal layers of beginning at lowest area to be filled. Do not impair drainage.

B. Ground Surface Preparation: Remove vegetation, debris, unsuitable soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Remove material to the full extent of root penetration. Scarify surfaces so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under Paragraph 3.06, Compaction, for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum dry density.

C. Placement: Place backfill and fill materials in layers not more than 9-inches in loose depth for material compacted by heavy compaction equipment, and not more than 6-inches in loose depth for material compacted by hand-operated tampers. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping, or conduit to approximately same elevation in each lift.

Do not allow heavy machinery within 5 feet of structure during backfilling and compacting.

D. Backfill excavations as promptly as work permits, but not until completion of the following:

Acceptance of construction below finish grade including dampproofing, and/or waterproofing.

Inspection, approval and recording locations of underground utilities.

Removal of concrete formwork.

Removal of shoring and bracing, and backfilling of voids with suitable materials.

Removal of trash and debris from excavation.

Permanent or temporary horizontal bracing is in place on horizontally supported walls.

Backfill cast-in-place concrete structures when the concrete has developed adequate strength.

Use care in backfilling to avoid damage or displacement of underground structures and pipe.

E. Backfilling Trenches: See Trench Detail on the Drawings.

Bed pipe in 3/4-inch crushed stone, unless otherwise indicated. Limits of bedding and requirements for remaining trench backfill shown on Drawings.

F. Replacement of Unsuitable Materials:

Below normal grade: See paragraph 3.01J.

Above normal grade: Replace unsuitable material with suitable material from on-site. All excess suitable material must be used before additional material from off-site is used.

3.06 COMPACTION:

A. Methods: Use methods which produce the required degree of compaction throughout the entire depth of material placed without damage to new or existing facilities and which are approved by the ENGINEER. Adjust moisture content of soil as required. Remove and replace material that is too wet to compact to required density. Compact each horizontal layer of fill and slope as Work progresses.

B. Degree of Compaction: Compact **to** the following minimum densities:

FILL AND BACKFILL LOCATION	DENSITY
Under structure foundations and slab on grade	95% of max.
Top 2 feet under pavement	95%
Below top 2 feet under pavement	92%
Structural fills	95%
Pipe Bedding	95%
Adjacent to structure foundation walls, retaining walls, and tank walls	92% - 95%
Trenches through Gravel areas	95%
Trenches through other non-paved areas	90%
Embankments	90%

Maximum density: ASTM D1557.
Field density tests: ASTM D1556 (sand cone) or ASTM D2167 (rubber balloon), or ASTM D2922 (nuclear methods).

C. Testing: Determine actual in-place densities using field tests as directed by the ENGINEER. Tests will be made by an independent laboratory. Costs for initial tests will be paid by

OWNER. Perform additional work to obtain proper compaction if in-place densities do not meet specified densities. Costs of re-testing shall be borne by CONTRACTOR.

D. Minimum Number of Tests: For areas to be paved and building subgrade, a minimum of one (1) test per 2,000 square feet (sf) per lift of material, but in no case less than three *(3)* tests. For trenches, a minimum of one (1) test per 100 lineal feet (lf) per lift of material. Other areas shall be tested at a minimum frequency of one (1) field test per 10,000 sf per lift of material, unless otherwise directed by ENGINEER.

3.07 GRADING:

A. Grading: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finish surface within specified tolerances and compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Grading Outside Structure' Lines: Grade areas adjacent to structure to drain away from structures and to prevent ponding.

C. Finish surfaces free from irregular surface changes and as follows:

Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below required subgrade elevations.

Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2 inch above or below required subgrade elevation.

Fill Under Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2-inch when tested with a 10-foot straightedge.

D. Compaction: After grading, compact subgrade surfaces as required.

3.08 EROSION CONTROL: Provide erosion control measures as specified in Section 02210 and as shown on Drawings.

3.09 MAINTENANCE:

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

C. Settling: Where settling is measurable or observable at excavated areas during warranty period; remove surface, add backfill material, compact, and replace surface. Restore

appearance, quality, and condition of surface to match adjacent work, and eliminate evidence of restoration **work** to greatest extent possible.

3.10 DISPOSAL OF EXCESS MATERIALS: Remove excess excavated material and dispose of it off-site in a lawful manner, unless otherwise directed by ENGINEER.

*** END OF SECTION ***

University of Southern Maine
Community Education Center
PORTLAND, MAINE
GMP Documents

ADDENDUM NO. 4
JANUARY 30,2004

TO ALL BIDDERS:

This Addendum is organized in six (6) parts plus attachments:

Part I Overview
Part II Revisions/Clarifications to the Bidding Requirements
Part III Revisions to Contract Requirements
Part IV General Clarifications
Part V Revisions to the Drawings
Part VI Revisions to the Specifications
Attachments

PART I: OVERVIEW:

A. This Addendum No. **4** is hereby incorporated into, and amends (by addition, deletion, clarification or alteration) the Bid Documents dated Jan **19** 2004 for the University of Southern Maine CEC, Portland, Maine.

B. The bidder shall acknowledge all addenda on the SUBMISSION OF GMP. Bidders are to please contact Einhorn Yaffee Prescott, Att: Mr. William F. Smith if any document is missing from the bidder's package. Additional costs for items missed in this addendum shall not be accepted for failing to include said work.

PART II: REVISIONS/CLARIFICATIONS TO THE BIDDING REQUIREMENTS:

NO CHANGES

PART III: REVISIONS TO CONTRACT REQUIREMENTS:

NO CHANGES

PART IV: GENERAL CLARIFICATIONS:

ITEM 1: STAGE 4 COMMISSIONING

A. See attached Master Equipment and Systems List (6 pages, Dated 1/28/2004) for the USM – Community Education Center.

PART V: REVISIONS TO THE DRAWINGS:

ITEM 1: SHEETS C-A101 THROUGH C-A904

A. Delete all wood finish references to Cherry. Wood species is to be Maple.

ITEM 2: REISSUED SHEETS

A. Replace the following sheets in the GMP set. Revisions are tagged with the number "4".

B. C-LS102

C. C-A101; C-A102; C-A103; C-A104; C-A105

D. C-A201; C-A202; C-A203; C-A204

E. C-A301; C-A303; C-A305; C-A306; C-A307

F. C-A403; C-A404; C-A405; C-A406; C-A407; C-A408; C-A410; C-A414

G. C-A501; C-A502

H. C-A610; C-A612; C-A613; C-A614; C-A617

I. C-A703; C-A704; C-A706

J. C-A802; C-A803; C-A804

K. C-A902; C-A904

L. C-F001; C-F101; C-F102; C-F104

M. C-H001

N. C-H101; C-H102; C-H103; C-H104

O. C-H201; C-H202; C-H203

P. C-H401; C-H402; C-H403; C-H404

Q. C-H501; C-H502; C-H503; C-H504; C-H505

R. C-H601; C-H602

S. C-E002; C-E003

T. C-E102; C-E103

U. C-E201; C-E202; C-E203

V. C-E400

W. C-E500; C-E501

ITEM 3: NEW SHEETS

A. The following list of sheets are new to the GMP set:

B. √C-A415

C. C-A707; C-A708

D. C-A905

ITEM **4:** SHEET C-S001

A. Note H3 (A) applies to the CEC building.

B. Add Note H3 (B) BRIDGE: AASHTO "GUIDE TO PEDESTRIAN BRIDGES WIND LOAD: 35 PSF FULL VERTICAL PROJECTED AREA.

ITEM 5: SHEET C-S102

A. Add bent plate at 2nd floor slab edge per SKS-1 and SKS-2 (attached).

ITEM 6: SHEET C-S103

A. Modify roof framing as shown on SKS-3 (attached).

ITEM **7:** SHEET C-S104

A. Provide top chord joist extensions typical at line CC (2'-6"long), line CAA (2'-7" long) and line 6.4 (3'-10" long.) Provide 2'-6" long WT6x7 outriggers at approx 5' on center typical at line 3 and at comer columns. Provide a continuous angle (L3x3x5/16) around high roof (det 9/C-S401 similar.)

ITEM 8: SHEET C-S401

A. Add detail 11 per SKS-2 (attached).

ITEM 9: SHEET C-A302 – WALL SECTIONS

A. Detail A13: Extend underslab insulation a distance of 4'-0' from the perimeter foundation walls. This is the typical placement for all underslab insulation.

B. Detail A13: Place perimeter foundation insulation along the full height of the interior face of perimeter foundation walls. This is the typical placement for all perimeter foundation wall insulation, including the south wall where the building abuts the existing garage structure.

PART VI: REVISIONS TO THE SPECIFICATIONS:

ITEM 1. SECTION 01320 – COMMISSIONING REOUIREMENTS

A. Insert Section 01320 (attached) in its entirety.

ITEM 2: SECTION 01500 - TEMPOARARY FACILITIES AND CONTROLS.

A. Page 1, Paragraph 1.02-A.-1. – Insert the following at the end of the paragraph:

"2. SECTION 01511 TEMPORARY DEHUMIDIFICATION, HEATING AND COOLING.''

B. Page 4, Paragraph 2.03-B. – Delete paragraph and associated subparagraphs in their entirety and replace with the following:
"B. Temporary Heat and Ventilation: Refer to Section 01511 TEMPORARY DEHUMIDIFICATION, HEATING AND COOLING for requirements."

ITEM 3: SECTION 01511 - TEMPOARARY DEHUMIDIFICATION, HEATING AND COOLING.

A. Insert "Section 01511 TEMPORARY DEHUMIDIFICATION, HEATING **AND** COOLING", attached at end of this Addendum.

ITEM 4. SECTION 06400 – ARCHITECTURAL WOODWORK

A. Delete all references to Cherry and/or American Cherry.

B. Wood species is Maple. Veneers are plain sawn w/o hearts. Slip matched veneers shall not have veneer narrower than 6-inches.

C. Stain all stock (solid **and** veneers) to match.

D. All wood and backers to be FSC Certified.

ITEM 5. SECTION 07812 – INTUMESCENT FIREPROOFING

A. Delete this section in its entirety. References to this coating system to be deleted and paint finishes as specified in 09900 are to be applied.

ITEM 6. SECTION 08520 – ALUMINUM WINDOWS

A. Exterior sunscreen to be Kawneer 1600 Sunshade System (Pre-engineered) or approved equal.

B. Lightshelves (interior) to be Kawneer Inlighten™ (lightshelf) system or approved equal.

ITEM 7. SECTION 09510 – ACOUSTICAL CEILINGS

A. Add Paragraph 09510-2.03-C: Metal ceilings to be USG Paraline™ II unperforated 004 (white) finish. No substitutions will be accepted.

ITEM 8. SECTION 10520 – FIRE EXTINGUISHERS

A. Omit Paragraph 2.03. There will not be any bracket mounted fire extinguishers.

B. All fire extinguishers to be located in cabinets as specified in paragraph 2.04.

C. Contractor to allow for installation of 16 fire extinguishers and cabinets. Final locations to be determined at a later date.

ITEM 9. SECTION 12730 – LECTURE HALL SEATING

A. This section provided for reference. Owner is furnishing and installing the seating under separate contract. The contractor is responsible for field layouts, coordination, and all field electrical connections, etc.

B. The seating furnish and install is N.I.C.

ITEM 10: SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS.

A. Page 6, Paragraph 1.09-E. – Insert the following at the end of the paragraph:

"1.10 WARRANTY

A. General Warranty: The HVAC System Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by equipment manufacturers or the Conditions of the Contract.

B. HVAC System Warranty: The Mechanical Contractor shall submit a written warranty that agrees to repair, replace components for the entire HVAC System, including operation, parts, equipment, and all other

components that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

ITEM 11: SECTION 15055 - ELECTIRCAL REQUIREMENTS FOR HVAC WORK.

A. Page 1, Paragraph 1.01-C.-10. – Delete paragraph and replace with:

"10. Division 15 Section "Rooftop Air Handling Units"."

B. Page 1, Paragraph 1.01-C.-15. - Insert the following at the end of the paragraph: "16. Division 15 Section "Propeller Unit Heaters"."

C. Page 1, Paragraph 1.01-D.-2. – Delete: paragraph and replace with:

"2. Submittal Procedures, Contract Closeout requirements, Integrated Deliverables and Testing Plan, and other General Requirements for the Project: Division 1."

D. Pave 4, Paragraph 1.07-C. – Insert the following at the end of the paragraph:

"1.08 WARRANTY

a. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

b. Special Warranty: The Equipment (motors, starters, disconnect switches, and VFDs) Manufacturers shall submit a written warranty for electrical devices for HVAC work agreeing to repair or replace components within the equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

E. Page 20, Paragraph 3.04-A.-5. – Delete paragraph and replace with:

"5. Measure the current and voltage, for each phase, as applicable under loading. Compare amperage values to nameplate data. Notify the engineer, in wiring, when amperage values exceed nameplate values by greater than 10%."

ITEM 12: SECTION 15060 – HANGERS AND SUPPORTS.

A. Page 1, Paragraph 1.01-B.,-22. - Insert the following at the end of the paragraph: "23. Division 15 Section "Propeller Unit Heaters"."

ITEM 13: SECTION 15071 – HVAC VIBRATION CONTROLS AND SEISMIC RESTRAINTS.

A. Page 1, Paragraph 1.01-B.-20. - Insert the following at the end of the paragraph: "21. Division 15 Section "Propeller Unit Heaters"."

B. Page 1, Paragraph 1.02-A. – Delete paragraph and replace with:

"A. Submit the following in accordance with Division 1 Section "Submittal Procedures"."

C. Page 6, Paragraph 1.11-A. – Insert the following at the end of the paragraph:

"1.12 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The ,Equipment (vibration isolators and seismic restraints) Manufacturers shall submit a written warranty for devices for HVAC work agreeing to repair or replace components within the equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

ITEM 14: SECTION 15075 – MECHANICAL IDENTIFICATION.

A. Page 1, Paragraph 1.01-B.-20. - Insert the following at the end of the paragraph: "21. Division 15 Section "Propeller Unit Heaters"."

ITEM 15: SECTION 15081 – DUCT INSULATION.

A. Page 1, Paragraph 1.01-B.-11. - Insert the following at the end of the paragraph: "12. Division 7 Section "Joint Sealers"."

ITEM 16: SECTION 15082 – EOUIPMENT INSULATION

A. Page 9, Paragraph 3.09 – Delete paragraph and all sub paragraphs in their entirety, and add the following to the end of Paragraph 3.08-A.:

"B. HVAC air separators, storage tanks, expansion tanks, and pump housings.

1. Operating Temperatures 32 to 200°F (0 to 93°C).F

2. Insulating Material: Mineral fiber board.

3. Insulation Thickness: 2".
4. Jacket: Foil and paper.
5. Field-Applied Jacket: PVC.
6. Vapor Barrier Required: Yes.
7. Finish: Subject to Painting. Coordinate with Division 9 and Drawings."

ITEM 17: SECTION 15110 – VALVES.

A. Page 1, Paragraph 1.01-B.-16. - Insert the following at the end of the paragraph: "17. Division 15 Section "Propeller Unit Heaters"."

B. Page 2, Paragraph 1.05-C. – Insert the following at the end of the paragraph:

"1.06 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Valve Manufacturers shall submit a written warranty for their products agreeing to repair or replace components within the valves that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

C. Page 4, Paragraph 2.04-A. – Delete paragraph and associated subparagraphs in their entirety and replace with the following:

"A. Flanged Butterfly Valves: 2 ½" and larger, High Performance, with bubble tight shutoff, MSS SP-67, 200-psi CWP, 150-psimaximum pressure differential, ASTM A 126 full lug, self aligning cast-iron body and bonnet, extended neck, 316 stainless-steel stem, disc, field-replaceable EPDM stem seals, Teflon reinforced seat. Valve shall be suitable for end service use. Keystone Fig. No. AR2, NIBCO Fig. No. 20821, Jenkins Fig. No. 230 BL/BG, Stocham Fig. LG-712 or approved Equal.

1. Operator: Lever operators with lock.
2. Stem Extension: For valves installed in insulated piping.
3. Memory Stops: For throttling, metering or balancing service.

B. Grooved End Butterfly Valves 2 ½" to 6", 300 psi maximum pressure rating, with copper tubing sized grooved ends. Cast bronze body to CDA-836 (85-5-5-5). Elastomer encapsulated ductile iron disc, ASTM A-536, Grade 65-35-12, with integrally cast stem. Bubble tight, dead end or bi-directional service. With memory stop for throttling, metering or balancing service. Lever operator with locks and stem extensions for valves installed in insulated piping. Basis of design Victaulic CTS Copper Grooved Piping System."

D. Page 7, Paragraph 3.04-A. – Insert the following at the end of the paragraph:

"B. All components (couplings, fittings, valves, gaskets, bolts and nuts) shall be of the products of a single manufachirer. Grooving tools shall be of the same manufacturer as the grooved components."

ITEM 18: SECTION 15122 – METERS AND GAGES.

A. Page 1, Paragraph 1.01-B.-20. - At the end of the paragraph add the following:

"21. Division 15 Section "Propeller Unit Heaters"."

B. Page 2, Paragraph 1.03-B. – Insert the following at the end of the paragraph:

"1.04 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components within the valves that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 3- years from the date of delivery."

C. Page **4,** Paragraph 2.01-A.-9.-c. – Insert the following at the end of the paragraph:

"d. Ebtron."

D. Page 9, Paragraph 2.15 – Delete paragraph and all associated subparagraphs in their entirety.

E. Page 9, Paragraph 2.16-A. – Delete paragraph in its entirety and replace with the following:

"A. Description: Inline stainless steel type flow meters with gallon per minute (GPM) readings."

F. Page 10, Paragraph 2.17 – Delete paragraph and all associated subparagraphs and replace with the following:

"2.17 AIR FLOW MEASURING STATIONS

A. Duct Mounted Air Flow Measuring Station Probes

1. Tube Construction: 6061 aluminum alloy.
2. Sensor Assembly: Two hermetically sealed "bead –in – glass" thermistors in a glass filled polypropylene housing.
3. Mounting Brackets: 304 stainless steel.
4. Standard Probe Lengths: 8 inches to 120 inches.
5. Cabling: Plenum rated; 5/8 inch circular with DIN connections. Length as required for installation.
6. Number of Air Velocity Calibration Points: 16.
7. Number of Temperature Calibration Points: 3.
8. Maximum Number of Sensor per Sensor Probe: 4.
9. Sensor Distribution Equal area or Modified Log-Tchebyceff.
10. Airflow Sensor Accuracy (±of reading): 2%
11. Calibration Range: 0 – 5000 FPM.
12. Temperature Sensor Accuracy: 0.15°F
13. Sensor Temperature Range: For velocities less than 1500 FPM: -20°F to 160°F. For velocities greater than 1500 FPM: 30°F to 160°F.
14. Humidity Range: 0 to 99% R.H. (non-condensing).

B. Fan Inlet Mounted Air Flow Measuring Station Probes

1. Tube Construction: 304 stainless steel sensor assembly housing with 304 cadmium plated rods.
2. Sensor Assembly: Two hermetically sealed "bead –in – glass" thermistors in a glass filled polypropylene housing.
3. Standard Probe Lengths: 11 inches to 64 inches.
4. Cabling: Plenum rated; 5/8 inch circular with DIN connections. Length as required for installation.
5. Number of Air Velocity Calibration Points: 16.
6. Number of Temperature Calibration Points: 3.
7. Maximum Number of Sensor per Sensor Probe: 3.
8. Number of Sensors per Fan Inlet: 2.
9. Sensor Distribution Equal area or Modified Log-Tchebyceff.
10. Airflow Sensor Accuracy (±of reading): 2%

11. Calibration Range: 0 – 10000 FPM.

12. Temperature Sensor Accuracy: 0.15°F.

13. Sensor Temperature Range: For velocities less than 1500 FPM: -20°F to 160°F. For velocities greater than 1500 FPM: 30°F to 160°F.

14. Humidity Range: 0 to 99% R.H. (non-condensing).

C. Transmitter for Air Flow Measuring Station Probes

1. Sensor Independent Electronics: Yes.

2. A/D Converter: 12 bit.

3. Power requirement: 24 Volt VAC @ 8VA max (fused and protected on transmitter, isolation not required.).

4. Enclosure: NEMA 1 for indoor applications and NEMA 4 for outdoor application.

5. Output Signal Adjustments: Field adjustable digital airflow output gain.

6. Analog Output Protection: Fused and protected, isolated outputs.

7. Analog Output Signals: Field selectable, linear analog output signals of 4-20 mA and 0-10 VDC for airflow and temperature.

8. Airflow Analog Output Scaling 0 to 10000 FPM, field adjustable.

9. Temperature Analog Output Scaling: Range from -20°F to 160°F, field selectable.

10. Transmitter Temperature Range: -20°F to 160°F.

11. Analog Output Resolution for Full Scale Output: 0.025%

G. Page 12, Paragraph 3.07-F. – Insert the following at the end of the paragraph:

"3.08 TRAINING

A. Engage a factory – authorized service representative to train the Owner's maintenance personnel to adjust, operate and maintain meter and gages.

B. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Closeout Procedures".

C. Schedule at least 8 hours of training with the Owner, through the Architect, with at least seven days' advanced noticed.

ITEM 19: 15181 – HYDRONIC PIPING.

A. Page 1, Paragraph 1.01-C.-21. - Insert the following at the end of the paragraph:

"22. Division 15 Section "Propeller Unit Heaters".

23. Division 15 Section HVAC Water Treatment"."

B. Page 2, Paragraph 1.03-F. – Insert the following at the end of the paragraph:

"G. All grooved components (couplings, valves, gaskets, bolts and nuts) shall be of the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components."

C. Pave 3, Paragraph 1.05-G. -

"1.06 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Hydronic Specialty (Tank, Heat Exchanger, Separator, Strainer, and Valve) Manufacturers shall submit a written warranty for their products agreeing to repair or replace components within the their equipment that fail in material or workmanship within the specified warranty period.

0. Warranty Period: **1**- year from the date of Substantial Completion."

D. Page 5, Paragraph 2.01-A.-6. – Delete paragraph and associated subparagraphs in their entirety and replace with the following:

"6. Sediment Centrifuge Separators:

a. Rusco, Inc."

E. Page 5, Paragraph 2.03-H. – Insert the following at the end of the paragraph:

"I. Grooved Copper Piping System:

1. General: Copper tubing systems from 2½" NPS through 8" NPS (DN 75 –DN 200) shall be installed using mechanical piping couplings of a bolted type, with a pressure-responsive gasket along the grooved end copper or bronze fittings as available.

2. Copper Tube: ASTM B-88, Type L roll grooved only, in accordance with manufacturer's current listed standards.

3. Mechanical Couplings: 2½" NPS through 8" NPS (DN 75 –DN 200) for copper tubing consisting of ductile iron cast housings. Complete with a synthetic rubber, pressure-responsive gasket, with plated nuts and bolts to secure the unit together. Couplings shall be manufactured to connect copper tubing sized tube and fittings. Flaring of tube and fitting ends to IPS dimensions shall not be allowed.

a. Copper Housings: Ductile iron conforming to ASTM A-536, Grade 65-45-12, coated with copper colored alkyd

enamel. Housing cast with offsetting, angle – pattern bolt pads to provide rigidity.

b. Coupling Gasket: Synthetic rubber confirming to the grooved copper tube size outside diameter and coupling housing of elastomers having properties as designated in ASTM D-2000. Gasket material shall be selected based upon associated system's intended service.

4. Flange Adapters for Copper Tubing: 2 ½" NPS to 6" NPS (DN 75 – DN 150) for copper consisting of ASTM A-536, Grade 65-45-12, ductile iron housing coated with copper colored alkyd enamel. Flange adapters shall be manufactured for engaging directly into copper tubing sized roll grooved copper tube and fittings and bolting directly to ANSI Class 125 cast iron and Class 150 steel flanged components.

5. Fittings: Fittings shall be manufactured to copper tubing sizes, with grooves designed to accept grooved end couplings of the same manufacturer. Fittings shall be wrought copper, conforming to ASTM B-75 alloy C12200 or ASTM B-152 copper alloy CDA 836 (85-5-5-5) per ANSI B16.18."

F. Page 8, Paragraph 2.07-B. – Delete paragraph in its entirety and replace with the following:

"B. Automatic Air Vents: Designed to vent automatically with float principle; bronze body and nonferrous internal parts; 150 – psig (1035-kPa) working pressure; 240°F (116°C) operating temperature; with NPS ¼" (DN 8) discharge connection and ½" NPS (DN 15) inlet connection."

G. Page 8, Paragraph 2.07-C. – Delete paragraph in its entirety.

H. Page 10, Paragraph 3.01-D. – Insert the following at the end of the paragraph:

"E. Geo Thermal Water Piping within the building, NPS 2 ½" (DN 65) and larger: Type L drawn-tempered copper tubing with groove coupling or flanged joints."

I. Page 10, Paragraph 3.02-B – Delete paragraph in its entirety and replace with the following:

"B. Install calibrated balancing valves in the return water lines of each terminal equipment connection, as indicated on drawings and elsewhere to facilitate system balancing. Calibrated balancing valves shall be used for balancing purposes only. **A** separate isolation service valve shall be provided for isolation and shutoff requirements."

J. Page 11, Paragraph 3.03-E. – Delete paragraph in its entirety and replace with the following:

"E. Reduce pipe sizes using eccentric reducer fittings installed to facilitate the draining of the system."

K. Page 11, Paragraph 3.03-H. – Delete paragraph in its entirety and replace with the following:

"H. Install all flanges or mechanical couplings for grooved piping on valves and equipment having 2 ½" NPS (DN 65) and larger connections."

L. Page 11, Paragraph 3.03-1. – Delete paragraph in its entirety and replace with the following:

"I. Do not leave piping open ended during construction. Provide temporary caps to protect flanges, threads, unions, grooves and internal surfaces of pipes."

M. Page 11, Paragraph 3.03-J. – Delete paragraph in its entirety and replace with the following:

"J. Install strainers on the supply side of each pump, pressure reducing valve, solenoid valve, pressure regulating valves, control valves and elsewhere as indicated on drawings. Install ¾" nipple and ball valve in the blowdown connection for strainers 2" and larger or as shown on drawings."

N. Page 11, Paragraph 3.03-N. – Inset the following at the end of the paragraph:

"M. Pipe ends shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove for proper gasket sealing.

N. The gasket style and elastomeric material (grade) shall be verified as suitable for intended service as specified."

O. Page 12, Paragraph 3.04-D.-3. – Delete paragraph in its entirety and replace with the following:

"3. NPS 1½" (DN40): Maximum span, 7 feet (2.1m); minimum rod size, 3/8 inch (10 mm)."

P. Page 12, Paragraph 3.04-D.-6 – Inset the following at the end of the paragraph:

"7. NPS 4" (DN100): Maximum span, 11 feet (3.4 m); minimum rod size, 3/8 inch (10 mm).

8. NPS 6" (DN150): Maximum span, 12 feet (3.7 m); minimum rod size, 3/8 inch (10 mm)."

Q. Page 13, Paragraph 3.04-E. – Delete paragraph and associated subparagraphs their entirety.

R. Page 13, Paragraph 3.05-B. – Delete paragraph in its entirety and replace with the following:

"B. All grooved components (couplings, valves, gaskets, bolts and nuts) shall be of the products of a single manufacturer. Grooving tools shall be of the same manufacturer as the grooved components."

N. Page 14, Paragraph 3.07-D. – Inset the following at the end of the paragraph:

"E. Refer to drawings for all piping terminal equipment connections."

ITEM 20: 15182 – GEO THERMAL STANDING COLUMN WELLS.

A. Page 4, Paragraph 1.04-F.- Delete the paragraph in its entirety.

B. Page 5, Paragraph 1.05-C.- Delete paragraph in its entirety and replace with the following:

"C. The Well Contractor shall, if required, assist the Construction Manager in the preparation of request for temporary DEP/EPA permit to allow discharge of drilling water to the existing storm drains. Discharge to sewer or sanitary systems shall not be allowed., The General Contractor shall be responsible for the disposal of drilling water and drill tailings."

C. Page ***6,*** Paragraph 1.07-A.-1. –Delete paragraph in its entirety and replace with the following:

"**1.** Shall be made only after the first well is drilled and a mean static level is determined for all wells. Well pumps shall not be installed until after submittal is approved by the Engineer. Refer to Division 15, Section "Hydronic Pumps" for Coordination. Each standing column well shall be tested to determine a minimum drawdown static at 15 GPM."

D. Page **14,** WSHP Report – Insert the following at the end of the report form:

"END OF SECTION 15182"

ITEM 21: 15184 – ELECTRIC HEAT TRACE.

A. Page 1, Paragraph 1.01-B.-5. - Delete the paragraph in its entirety and replace with the following:

"5. Division 15 Section "Pipe Insulation"."

B. Page 2, Paragraph 1.04 – Insert the following at the end of the paragraph:

"1.05 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of substantial completion."

C. Page 3, Paragraph 3.01-C. – Delete the paragraph in its entirety and replace with the following:

"C. Apply piping markers to the outside of the thermal insulation's outer jacket indicating "CAUTION – ELECTRICALLY HEAT TRACED" as specified in Division 15 Section "Mechanical Identification"."

ITEM 22: 15185 – HYDRONIC PUMPS.

A. Page 2, Paragraph 1.05-D. – Insert the following at the end of the paragraph:

"1.06 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition **to,** and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

B. Page 5, Paragraph 3.03-D. – Delete paragraph and replace with the following:

"D. After alignment is correct, tighten bolts evenly, as recommended by manufacturer's written instructions. Do not over torque bolts."

C. Page 6, Paragraph 3.06-A.-2. – Delete paragraph and replace with the following:

"2. Review data in maintenance manuals, refer to Division 1 Section : Closeout Procedures"."

D. Page 6, Paragraph 3.06-A.-3. – Delete paragraph and replace with the following:

"3. Schedule at least 8 hours of training with the Owner's maintenance staff, through the Architect, with at least seven days' advanced notice."

ITEM 23: SECTION 15189 – HVAC WATER TREATMENT.

A. Page 1, Paragraph 1.01-B.-21. - Insert the following at the end of the paragraph:
"22. Division 15 Section "Propeller Unit Heaters"."

B. Page 4, Paragraph 1.07-A.-1. – Insert the following at the end of the paragraph:

"1.08 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

ITEM 24: 15732 – ROOFTOP AIR CONDITIONERS.

A. All Pages – Replace "ROOFTOP AIR CONDITIONERS" with "ROOFTOP AIR HANDLING UNITS" in all headers and footers.

B. Page 2, Paragraph 1.03-C. – Insert the following at the end of the paragraph:

"**1.** Design Calculations: Calculate requirements for selecting vibration isolators, seismic restraints and for designing vibration isolation bases.

2. Detail mounting and securing to roof dunnage. Indicate point weight locations and other loading requirements.

3. Wiring Diagrams: Power, signal and control wiring."

B. Page 2, Paragraph 1.03-D.-1. – Delete paragraph in its entirety.

C. Page 2, Paragraph 1.03-D.-2. – Delete paragraph in its entirety.

D. Page 2, Paragraph 1.03-D.-3. – Delete paragraph in its entirety.

E. Page 4, Paragraph 1.08 – Delete paragraph and all associated subparagraphs in their entirety and replace with the following:

"1.08 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Start Up or 18 months from date of delivery, whichever occurs first.

2. The warranty shall not include parts associated with routine maintenance such as belts, air filters, etc..."

F. Page 6, Paragraph 2.-03-C.-6.-b. – Delete paragraph and replace with the following:

"b. Insulation shall be 3.0 pounds per cubic foot in density."

G. Page 8, Paragraph 2.07-D. – Insert the following at the end of the paragraph:

"E. The control programming for the VFD shall have native BacNet Protocols."

H. Page 13, Paragraph 2.13-A.-4. – Insert the following at the end of the paragraph:

"2.14 CONTROLS

B. The controls for the rooftop air handling units shall be supplied by the Controls Contractor under the automatic temperature controls Division 15, Section " Control System Equipment and installed by the rooftop air handling manufacturer. The Control Contractor shall, in addition to sending the controls to the rooftop air handling manufacturer, provide technical data sheets for all components to be installed, including dimension data, mounting hardware, and method, as well as application specific wiring and piping diagrams as depicted on drawings."

I. Page 15, Paragraph 3.05-A. – Delete paragraph and all associated subparagraphs in their entirety and replace with the following:

"A. Engage a factory – authorized service representative to train the Owner's maintenance personnel to adjust, operate and maintain fans.

1. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment and schedules.
2. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Closeout Procedures".
3. Schedule at least sixteen hours of training with the Owner, through the Architect, with a t least seven days' advanced notice."

ITEM 25: 15745 – GEOTHERMAL HEAT PUMPS.

A. Page 5, Paragraph 2.02-B. – Delete paragraph and replace with:

"B. General: Factory built unit able to operate with an entering source water temperature range from 20°F to 110°F (-6.6" to 43.3°C) as standard. All equipment shall be rated in accordance with ARI/ISO/ASHRAE. The unit shall have an ETL Safety Listing Label. All units shall be factory run tested. The factory testing reposts shall be shipped with each unit stating performance in both heating and cooling modes. Factory reports shall be included within the operation and maintenance manuals as

Specified in Division 1, Section "Closeout Procedures". Units tested without water are not acceptable."

ITEM 26: SECTION 15761 – DUCT MOUNTED AIR COILS.

A. Page 1, Paragraph 1.02-D. - Delete the paragraph in its entirety and replace with the following:

"D. Coordination Drawings: Show Duct Mounted Air Coils with all associated appurtenances and all clearances required for operation, maintenance, and service as part of the coordination drawing process. Refer to Division 15 Section "Basic Mechanical Material and Methods" for all additional requirements."

B. Page 2, Paragraph 1.03-A.-1. – Insert the following at the end of the paragraph:

"1.04 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their coils agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

ITEM 27: SECTION 15764 – RADIATORS.

A. Page 1, Paragraph 1.02-D. - Delete the paragraph in its entirety **and** replace with the following:

"D. Samples for Initial Selection: Manufacturer's custom color charts showing the full range of colors available for the units with factory-applied finished."

B. Page 1, Paragraph 1.02-E. – Delete the paragraph in its entirety and replace with the following:

"E. Maintenance Data: For radiators and radiant panels to be included in the operation and maintenance manuals specified in Division 1, Section "Closeout Procedures"."

C. Page 1, Paragraph 1.02-F.- Delete the paragraph in its entirety and replace with the following:

"F. Coordination Drawings: Show radiation, indicating element lengths, locations, enclosure lengths, enclosure fittings, location of valving and trim, location of access door for enclosures; and show radiant panels, indicating lengths, location of valving and trim as part of the coordination drawing process. Refer to Division 15 Section "Basic Mechanical Materials and Methods for all additional requirements."

"1.03 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: **1-** year from the date of Substantial Completion."

D. Page 2, Paragraph 2.01-A.-1.-b. - Delete the paragraph in its entirety and replace with the following:

"b. Runtal Radiators."

E. Page 2, Paragraph 2.01-A.-1.-d. - Delete the paragraph in its entirety and replace with the following:

"d. The Sterling Heating Equipment Company."

F. Pave **4,** Paragraph 3.03-A. – Insert the following at the end of the paragraph:

"B. Clean and straighten fins for fin tube radiators.
C. Apply manufacturer's touch up paint to finished surface that have been damaged during construction in accordance with the manufacture's written instructions."

ITEM 28: SECTION **15766 –** CABINET UNIT HEATERS.

A. Page **1,** Paragraph 1.01-B.-12. - Insert the following at the end of the paragraph:

"13. Division **15** Section "Propeller Unit Heaters"."

B. Page 1, Paragraph 1.02-E. – Delete the paragraph in its entirety and replace with the following:

"E. Coordination Drawings: Show Cabinet Unit Heater, associated appurtenances and all required clearances for operation, maintenance, and service as part of the coordination drawing process. Refer to

Division 15 Section "Basic Mechanical Materials and Methods" for all additional requirements."

C. Page 3, Paragraph 1.05-F. – Insert the following at the end of the paragraph:

"1.06 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Condinons of the Contract.

B. Special Warranty: The Manufacturers shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: **1-** year from the date of Substantial Completion."

D. Page 5, Paragraph **2.08-A.** - Delete the paragraph in its entirety and replace with the following:

"A. Control Devices: Unit-mounted fan-speed switch, wall mounted thermostat and control valve provided by the Controls Contractor."

E. Page 6, Paragraph 3.05-C. - Insert the following at the end of the paragraph:

"D. Clean and straighten fins for heating coils.
E. Apply manufacturer's touch up paint to finished surface that have been damaged during construction in accordance with the manufacture's Written instructions."

F. Page ***6,*** Paragraph 3.06-A.-1. – Delete the paragraph in its entirety and replace with the following:

"1. Review data in the operation and maintenance manuals. Refer to Division 1 Section "Closeout Procedures"."

G. Page 6, Paragraph 3.06-A.-2. – Delete the paragraph in its entirety and replace with the following:

"2. Schedule at least four hours of training with the Owner, through the Architect, with a t least seven days' advanced notice.''

ITEM 29: SECTION 15767 - PROPELLER UNIT HEATERS.

A. Insert "Section 15767 – Propeller Unit Heaters", attached at the end of this Addendum.

ITEM 30: SECTION 15815 - METAL DUCTS.

A. Page 1, Paragraph 1.01-B.-16. - Insert the following at the end of the paragraph:

"17. Division 15 Section "Cabinet Unit Heaters"."

B. Page 3, Paragraph 1.04-B. – Delete the paragraph in its entirety and replace with the following:

"E. Lined ductwork shall have all open ends sealed during delivery and storage periods."

C. Page 8, Paragraph 2.08-E.3. – Insert the following at the end of the paragraph:

"2.09 DOUBLE WALL DUCT AND FITTING FABRICATION

A. Manufacturers:

1. Linlab, Inc.

2. McGill AirFlow Corporation.

3. SEMCO Incorporated.

B. Ducts: Fabricate insulated double wall ducts with an outer shell an inner duct. Dimensions indicated on drawings are for inner dimensions.

1. Outer Shell: Base metal thickness on outer-shell dimensions. Fabricate outer-shell lengths 2 inches (50mm) longer than the inner duct and insulation and in metal thickness specified for the single-wall duct.

2. Insulation: 1inch (25mm) thick fibrous glass, unless otherwise indicated. Terminate insulation were double –wall duct connects to single – wall duct or uninsulated components, and reduce outer shell diameter to inner duct dimensions.

a. Thermal Conductivity (k-Value): 0.26 at 75°F mean temperature.

3. Solid Inner Ducts: Use the metal thickness and seam construction in accordance the required pressure classification indicated on the drawings and the latest edition of SMACNA "HVAC Duct Construction Standards – Metal and Flexible

4. Maintain concentricity of inner duct to out shell by mechanical means. To prevent dislocation of insulation by mechanical means.

C. Fittings: Fabricate insulated double fittings with an outer'shell and inner duct.

1. Solid Inner ducts: Use the following sheet metal thicknesses:

a. Ducts 3 to 34 inches in Equivalent Diameter: 0.028 inches.

b. Ducts 35 to 58 inches in Equivalent Diameter: 0.034 inches.

c. Duct 60 to 88 inches in Equivalent Diameter: 0.040 inches.

ITEM 31: SECTION 15820 - DUCT ACCESSORIES.

A. Page 1, Paragraph 1.01-B.-8. - Delete paragraph and replace with the following:

"8. Division 15 Section "Hangers and Supports""

B. Page 3, Paragraph 1.05-C. – Insert the following at the end of the paragraph:

"1.06 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers (for fire dampers, smoke dampers, control dampers , motorized outside air control dampers, and duct silencers) shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion."

ITEM 32: SECTION 15838 - FANS.

D. Page 2, Paragraph 1.03-A. - Delete paragraph and replace with the following:

"A. General: Submit the each item in this article according to the Conditions of the Contract and Division 1 Section "Submittal Procedures"."

E. Page 3, Paragraph 1.08-A. – Delete paragraph and replace with the following:

"A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with other warranties made by the Conditions of the Contract.

B. Special Warranty: The Manufacturers (for fire dampers, smoke dampers, control dampers , motorized outside air control dampers, and duct silencers) shall submit a written warranty for their products agreeing to repair or replace components or equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Purchase."

ITEM 33: SECTION 15975 - CONTROL SYSTEM EQUIMENT.

A. Page 2, Paragraph 1.02-D-2. - Delete paragraph and all associated subparagraphs in their entirety.

B. Page 2, Paragraph 1.02-D.- 3. – Delete paragraph and all associated subparagraphs in their entirety.

C. Page 3, Paragraph 1.02-D.-4. – Delete paragraph and all associated subparagraphs in their entirety.

D. Page 3, Paragraph 1.02-E.-3. – Delete paragraph and all associated subparagraphs in their entirety **and** replace with the following:

"3. Division 15 Section "Electrical Requirements for HVAC Work"

a. VFD's."

E. Page3, Paragraph 1.02-E.-4.-b. – Delete paragraph in its entirety.

F. Page 3, Paragraph 1.02-E.-5. – Delete paragraph and all associated subparagraphs in their entirety **and** replace with the following:

"5. Division 15 Section "Propeller Unit Heaters"

a. Fan Speed Control."

G. Page 3, Paragraph 1.02-E.-6.-b. – Insert the following at the end of the paragraph:

"6. Division 15 Section "Duct Accessories"

a. Automatic Control Dampers.

F. Products provided under this section but installed by others

1. Electric Meters for HVAC Systems.
2. Control Valves
3. Air Terminal Controls
4. Rooftop Air Handling Unit Controls.

H. Page 8, Paragraph 2.02-A.-3. – Delete paragraph in its entirety and replace with the following:

"3. Andover Controls Company

4. Alterton Controls."

I. Page 13, Paragraph 2.05-D.-2. – Delete paragraph in its entirety and replace with the following:

"2. System Graphics. The operator workstation software shall be a graphical user interface (GUI). The interface displays, nomenclature and symbols shall not be part of this contract and the University of Southern Maine shall contract this part of the graphic systems under a separate contract.

J. Page 13, Paragraph 2.04-D.-3. – Delete paragraph in its entirety.

K. Page 13, Paragraph 2.04-D.-4. – Delete paragraph in its entirety.

ITEM 34: SECTION 15995 - COMMISSIONING OF HVAC SYSTEMS.

Delete this Section in its entirety.

ITEM 35. SECTION 16510 – INTERIOR LIGHTING

A. Replace pages 9 through 11 with the attached pages. Revisions are noted with vertical lines in the right margin.

ATTACHMENTS:

STAGE 4 CONTROL
6 PAGES, 8-1/2 X 11.

SECTION 01320 – COMMISSIONING REQUIREMENTS:
14 PAGES, 8-1/2 X 11.

SECTION 01511 – TEMPORARY DEHUMIDIFICATION, HEATING AND COOLING:
12 PAGES, 8-1/2 X 11.

SECTION 15767 – PROPELLER UNIT HEATERS:
4 PAGES, 8-1/2 X 11.

SECTION 16510 – INTERIOR LIGHTING:
PAGES 9, 10 AND 11, 8-1/2 X 11.

REISSUED SHEETS:
A. 71 Sheets; 30 x 42.

1. C-LS102

2. C-A101; C-A102; C-A103; C-A104; C-A105
3. C-A201; C-A202; C-A203; C-A204
4. C-A301; C-A303; C-A305; C-A306; C-A307
5. C-A403; C-A404; C-A405; C-A406; C-A407; C-A408; C-A410; C-A414
6. C-A501; C-A502
7. C-A610; C-A612; C-A613; C-A614; C-A617
8. C-A703; C-A704; C-A706
9. C-A802; C-A803; C-A804
10. C-A902; C-A904
11. C-F001; C-F101; C-F102; C-F104
12. C-H001
13. C-H101; C-H102; C-H103; C-H104
14. C-H201; C-H202; C-H203
15. C-H401; C-H402; C-H403; C-H404
16. C-H501; C-H502; C-H503; C-H504; C-H505
17. C-H601; C-H602
18. C-E002; C-E003
19. C-E102; C-E103
20. C-E201; C-E202; C-E203
21. C-E400
22. C-E500; C-E501.

NEW SHEETS:

A. 4 Sheets; 30x42.

1. C-A415
2. C-A707; C-A708
3. C-A905

SKETCHES:

3 Sheets; 8-1/2 x 11, Dated 1-30-04: SKS-1; SKS-2; SKS-3.

END OF ADDENDUM #4

SMRT
ARCHITECTURE
ENGINEERING
PLANNING

Master Equipment and Systems List

Stage 4 Commissioning

Project: USM - Community Education Center
SMRT Project #: 03155-00
Field Commissioning Agent: Ted Hollidge, PE

ISSUED FOR GMP

The following is intended to serve as a tracking mechanism for the status of the work. The work is as defined by the Contract Documents. Not all work defined by the Contract Documents is necessarily covered herein.

Air Handling Systems

No.	Identifier	Description / Service	Location	Pre-Functional Test / Start-up	Controls Checkout / TAB	Functional Testing	O & M Manuals	Owner Training	Issue Key[1]
				Verifications					
A-01	AHU-1	Office and Lobby (includes Heat Recovery)	Roof						
A-02	AHU-2	Lecture Hall (includes Heat Recovery)	Roof						
A-03		Displacement Ventillation Syetem	Lecture Hall						
A-04	VAV 1-1	Break out Room 110	Open Office 111						
A-05	VAV 1-2	North end of Open Office 111	Open Office 111						
A-06	VAV 1-3	South end of Open Office 111	Director FOB 111A						
A-07	VAV 1-4	Reception & Rooms 111K & 111J	Open Office 111						
A-08	VAV 1-5	Lobby 102	Open Office 111						
A-09	VAV 1-6	Lobby 102	Open Office 111						
A-10	VAV 1-7	Womens 106 & Mens 107	Lobby 102						
A-11	VAV 1-8	Lobby 102	Open Office 111						
A-12	VAV 1-9	Lobby 102	Open Office 111						
A-13	VAV 1-10	Break out Room 109	Break out Room 109						
A-14	VAV 1-11	Director FOB 111A	Director FOB 111A						

[1] Outstanding Issues and Comments are listed and described at the end of this document.

Air Handling Systems

No.	Identifier	Description / Service	Location	Pre-Functional Test / Start-up	Controls Checkout / TAB	Functional Testing	O & M Manuals	Owner Training	Issues
				Verifications					
A-15	VAV 1-12	FOB Client Meeting 111B	FOB Client Mtg 111B						
A-16	VAV 1-13	111C, D, F, G	Office Suite 111						
A-17	VAV 1-14	Conference Room 111E	Office Suite 111						
A-18	VAV 1-15	111H, Office Suite 111	Office Suite 111						
A-19	VAV 2-1	Break out Lounge 202	Womens Room 106						
A-20	VAV 2-2	Gallery 221	Gallery 221						
A-21	VAV 2-3	Break out Lounge 202	Gallery 221						
A-22	VAV 2-4	Break out Lounge 202	Break out Room 212						
A-23	VAV 2-5	Break out Room 212	Break out Room 213						
A-24	VAV 2-6	Break out Room 213	Break out Room 213						
A-25	VAV 2-7	Break out Room 214	Break out Room 214						
A-26	VAV 2-8	Corr. 201, Comp. Classroom 218	Corridor 201						
A-27	VAV 2-9	Break out Room 215	Break out Room 215						
A-28	VAV 2-10	Break out Room 216	Corr. 220, Conf. Rm 217						
A-29	VAV 2-11	Break out Room 216	Break out Room 216						
A-30	VAV B-1	Basement Storage 001	Basement Storage 001						
A-31	VAV B-2	Basement Storage 001	Basement Storage 001						
A-32	VAV B-3	Elec. Room 003 & Tel/Data Room 004	Basement Storage 001						
A-33	FPTU 2-1	Womens 208 & Mens 209	Mens 209						
A-34	SEF-1	Smoke Exhaust Fan	Roof						
A-35	SD	Smoke Exhaust Plenum Dampers	Basement						
A-36		Ductwork Systems	throughout						

Geothermal Systems

No.	Identifier	Description / Service	Location	Verifications					Issues
				Pre-Functional Test / Start-up	Controls Checkout / TAB	Functional Testing		Owner Training	
G-1	P GW-1	Ground Water Pump	Site / Well						
G-2	P GW-2	Ground Water Pump	Site / Well						
G-3	P GW-3	Ground Water Pump	Site / Well						
G-4	P GW-4	Ground Water Pump	Site / Well						
G-5	P GW-5	Ground Water Pump	Site / Well						
G-6	GTHP-1	Geothermal (Water Source) Heat Pump	Basement						
G-7	GTHP-2	Geothermal (Water Source) Heat Pump	Basement						
G-8	GTHP-3	Geothermal (Water Source) Heat Pump	Basement						
G-9	GTHP-4	Geothermal (Water Source) Heat Pump	Basement						
G-10	GTHP-5	Geothermal (Water Source) Heat Pump	Basement						
G-11	P HW-1	Primary Heating Water Pump	Basement						
G-12	P HW-2	Primary Heating Water Pump	Basement						
G-13	P HW-3	Primary Heating Water Pump	Basement						
G-14	P HW-4	Secondary Heating Water Pump	Basement						
G-15	P HW-5	Secondary Heating Water Pump	Basement						
G-16	P CH-1	Primary Chilled Water Pump	Basement						
G-17	P CH-2	Primary Chilled Water Pump	Basement						
G-18	P CH-3	Primary Chilled Water Pump	Basement						
G-19	P CH-4	Secondary Chilled Water Pump	Basement						
G-20	P CH-5	Secondary Chilled Water Pump	Basement						
G-21	ST-1	Heating Water Storage Tank	Basement						
G-22	ST-2	Chilled Water Storage Tank	Basement						
G-23	AT-1	Geothermal Water Air Separator	Basement						

Geothermal Systems

No.	Identifier	Description / Service	Location	Verifications					Issues
				Pre-Functional Test / Start-up	Controls Checkout / TAB	Functional Testing	O & M Manuals	Owner Training	
G-24	AT-2	Heating Water Air Separator	Basement						
G-25	AT-3	Chilled Water Air Spearator	Basement						
G-26	ET-1	Geothermal Water Expansion Tank	Basement						
G-27	ET-2	Heating Water Expansion Tank	Basement						
G-28	ET-3	Chilled Water Expansion Tank	Basement						
G-29	GTWS/R	Geothermal Water Piping System	throughout						
G-30	HWS&R	Heating Water Piping System	throughout						
G-31	CWS&R	Chilled Water Piping System	throughout						
G-32		AHU Coil Freeze Protection Pumps	Second Floor						

Gray Water System

No.	Identifier	Description / Service	Location	Pre-Functional Test / Start-up	Controls Checkout / TAB	Functional Testing	O & M Manuals	Owner Training	Issues
				Verifications					
R-1		Storm Water Cisterns	Site						
R-2		Duplex Cistern Pumps & Level Controls	Cistern						
R-3		Storm Water and Vent Piping Connections	Site / Cistern						
R-4		Gray Water Piping at Source Equipment	Site / Cistern / Basement						
R-5		Bladder Tank	Basement						
R-6		Filtration System	Basement						
Controls									
C-1		Auxiliary Control Devices	throughout						
C-2		Wiring & Raceways	throughout						
C-3		Control Panels	throughout						
C-4		Operator Hardware							
C-5		Software							
C-6		Electrical Sub-Metering							
C-7		Public Video Display							
Electrical									
E-1	ATS #2	Smoke Exhaust Transfer Switch	Parking Garage						

Outstanding Issues & Comments

Issue No.	Item No.	Description	Responsible Party	Status
001				

CTION 01320 - ONING IENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section specifies project commissioning requirements. Commissioning efforts are intended to serve as the link between design intent and the final delivered building product. Commissioning efforts are also intended to meet project LEED requirements.

B. Systems being commissioned include the following;
1. Two air handling units, the displacement ventilation system associated with one of the units, and 30 VAV boxes associated with the other unit.
2. Desiccant heat recovery system for the air handling units.
3. Building Automation System.
4. Geothermal System.
5. Storm Water reclaim / gray water system.
6. Emergency generator transfer switches.
7. Atrium smoke control system.

C. Refer to the attached Stage 4 Master List for a comprehensive breakdown of these systems.

1.02 RELATED REQUIREMENTS

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to;
1. Section 01010, "Summary of Work."
2. Section 01290, "Payment Procedures."
3. Section 01310, "Project Management and Coordination."
4. Section 01330, "Submittal Procedures."
5. Section 01352, "Leed Requirements.''
6. Section 01400, "Quality Requirements."
7. Section 01770, "Closeout Procedures."
8. Section 02665, "Water System Distribution" for site gray water piping systems.
9. Section 02710, "Sewers and Drains" for site storm water piping systems associated with the gray water system.
10. Division 15 Sections for mechanical systems and equipment being commissioned.
11. Division 16 Sections for electrical systems, equipment, and connections to mechanical and gray water systems being commissioned.

1.03 COMMISSIONING TEAM

A. General: The Commissioning Team shall consist of the following parties.
1. Owner, (USM): University of Southern Maine.

2. Architect / Engineer, (AE): Einhorn Yaffee Prescott Architecture & Engineering, PC.
3. Commissioning Authority, (CA): SMRT, Inc.
   a. The CA Contract is a separately held USM Contract.
4. Construction Manager, (CM).
5. Mechanical Sub-Contractor, (MS).
   a. If the Mechanical Sub-Contract is divided between HVAC and Plumbing trades, than the MS requirement; described herein apply to both Contractors.
6. Controls Vendor, (CV).
7. Electrical Sub-Contractor,(ES).
8. Testing, Adjusting and Balancing Contractor, (TAB).
   a. The TAB Contract is a separately held USM Contract.

1.04 QUALITY ASSURANCE

A. Commissioning efforts shall comply with the US Green Building Council LEED Energy and Atmosphere Prerequisite 1 and Credit 3 – Additional Commissioning.

B. Commissioning efforts will adhere to the Building Commissioning Association, (BCA) Essential Attributes and Valuable Elements.

1.05 SCHEDULE OF VALUES

A. General: Payment for Commissioning related activities shall be as per the requirements of Section 01290, "Payment Procedures."

B. Schedule of Values: The following minimum amounts shall be carried in the Section 01290 Schedule of Values, for Commissioning activities.
   1. General: The following values are not intended to reflect the actual costs of the work to the construction team. The CM and associated trades shall bear the responsibility of capturing Commissioning related project scope in their respective bids. However: the following are minimum acceptable values to be carried in the Schedule of Values.
   2. Stage 3 Activities: $10,000.
   3. Stage 4 Activities: $10,000.
   4. Stage 5 Activities: $10,000.

1.06 ROLES, RESPONSIBILITIES AND LINES OF COMMUNICATION

A. General: The following roles and responsibilities are assigned to each member of the Commissioning Team. Refer to Part 3 for additional requirements.

B. Owner, (USM):
   1. USM holds the prime contracts for services that include; design, construction, commissioning and TAB.

2. The base construction project TAB contract will not cover Stage 5 work. As such, USM will secure additional TAB services as required to support Stage 5 Retro-Commissioning efforts.
3. It will be the responsibility of USM to route correspondence generated by the CA to the various parties and visa versa.
4. USM holds the responsibility of authorizing / not authorizing the AE and CM to make document and construction modifications based on CA correspondence.

C. Architect / Engineer, (AE):
1. The AE will be responsible for tracking and compiling LEED documentation. The CA will provide the commissioning portions of this documentation to USM in support of this effort.
2. The AE will respond to CA generated Stage 2 Design Review comments. The AE will keep a record log of these Design Reviews and will periodically issue this log to USM such that the status of these reviews can be tracked.
3. The AE will provide a Basis of Design narrative integral to the Construction Document set for systems being commissioned, per LEED requirements.
4. The AE will conduct a review of the TAB report against design requirements.
5. The AE will direct all commissioning and TAB related correspondence to USM.
6. The AE shall courtesy copy the CA on commissioning and TAB related correspondence.

D. Commissioning Authority, (CA):
1. The CA shall be an independent advocate for the Owner and shall have the lead responsibility for the commissioning process.
2. The CA is contracted directly to USM and will direct all correspondence to USM.
3. The CA will courtesy copy correspondence to the AE and CM as applicable.
4. The CA will lead commissioning related meetings and will keep minutes of these meetings.
5. The CA will administer the USM held TAB Contract, including a redundant review of the TAB report against design requirements. The CA will courtesy copy the TAB on related correspondence.
6. The CA will generate the LEED documentation associated with commissioning efforts and provide this information to USM.

E. Construction Manager, (CM):
1. The CM shall include the cost of commissioning efforts in their contract price.
2. The CM will provide timely responses to CA generated Stage 3 Construction Oversight. The CM will keep a record log of these Construction Oversights and will periodically issue this log to USM such that the status of these reviews can be tracked.
3. The CM will provide timely responses to Stage 4 Verification and Closeout issues.
4. The CM will expedite actions required by Stage 5 Retro-Commissioning efforts.
5. The CM will make project shop drawings, RFI's, addenda, bulletins, drawing revisions and similar documentation available to the CA at the field construction office. The CM will provide hard copies of select documents as well, (if extended off-site review becomes necessary).
6. In support of CA Stage 4 Verification and Closeout efforts, the CM will create and maintain an Integrated Deliverables and Testing, (IDAT) Plan. This plan will include proposed dates for project close-out activities. This schedule will also give advanced

notice to USM and the CA such that they may witness these actions, (see Stage I Commissioning Specification below for clarification).

7. The CM will expedite actions required by Stage 5 Retro-Commissioning efforts.
8. The CM will direct all commissioning related correspondence to USM.
9. The CM will courtesy copy the CA on commissioning related correspondence.

F. Mechanical Sub-Contractor, (MS):

1. The MS shall include the cost of commissioning efforts in their contract price.
2. The MS will direct all commissioning related correspondence to the CM.
3. The MS will coordinate efforts with USM's TAB contractor. .
4. The **MS** will insure that the O&M and training requirements of this project are included in each equipment purchase order or service sub-contract. The MS is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
5. The MS will provide timely responses to Stage 3 Construction Oversight comments.
6. The MS will provide timely responses to Stage **4** Verification and Closeout issues.
7. The **MS** will expedite actions required **by** Stage 5 Retro-Commissioning efforts.

G. Controls Vendor, (CV):

1. The CV shall include the cost of commissioning efforts in their contract price.
2. The CV will be a sub-contract to the MS. **As** such, the CV will direct all commissioning related correspondence to the MS.
3. The CV will coordinate efforts with the MS, ES, CA and TAB.
4. The CV will develop a written step-by-step Controls Check-out Plan which describes the process they intend to follow in checking out the facility control system. The CV will present a draft of this plan to the Commissioning Team for review and comment prior to formal issuance.
5. The CV will insure that the O&M and training requirements of this project are included in each equipment purchase order or service sub-contract. The CV is responsible for compiling and presenting this data in a form consistent with the requirements of this project.
6. The CV will verify performance and adherence to sequences of operation for equipment and systems being commissioned in the presence of, and participating with the **CA.**
7. The CV will provide timely responses to Stage 3 Construction Oversight comments.
8. The CV will provide timely responses to Stage **4** Verification and Closeout issues.
9. The CV will expedite actions required by Stage **5** Retro-Commissioning efforts.

H. Electrical Sub-Contractor, (ES):

1. The ES shall include the cost of commissioning efforts in their contract price.
2. The ES will direct all commissioning related correspondence to the CM.
3. The ES will insure that the O&M and training requirements of this project are included in each equipment purchase order or service sub-contract. The ES is responsible for compiling and presenting this data in a form consistent with the requirements of this project
4. The ES will provide timely responses to Stage *3* Construction Oversight comments.
5. The **ES** will provide timely responses to Stage 4 Verification and Closeout issues.
6. The ES will expedite actions required by Stage 5 Retro-Commissioning efforts.

I. Testing, Adjusting and Balancing Contractor, (TAB):
   1. The TAB is contracted directly to USM and will direct all correspondence to USM. The TAB will also courtesy copy the CA on all correspondence as the CA will be administering USM's TAB contract.
   2. The TAB will coordinate efforts with the MS, CV and CA, as directed by the CA.
   3. Upon completion of the TAB work, the TAB will demonstrate performance of equipment and systems to USM and the CA.
   4. The TAB will repeat any measurement contained in the TAB report, where required by USM or the CA for verification purposes.
   5. The TAB will provide timely responses to Stage 4 Verification and Closeout issues.

1.07 INTEGRATED TESTING AND DELIVERABLES (IDAT) PLAN

A. General: The IDAT plan and associated schedule is the master document that describes the results of the monitoring, documentation and scheduling process for ensuring that all building systems perform interactively according to the design intent and the owner's operational needs. The process of IDAT during the construction of this project is intended to achieve the following specific objectives, according to the Contract Documents:
   1. Ensure that applicable equipment and systems are installed as specified and receive adequate Pre-functional and Functional operational checkout by installing contractors.
   2. Verify and document proper performance of equipment and systems.
   3. Ensure that O&M documentation left on site is complete.
   4. Ensure that the Owner's operating personnel are adequately trained.

B. It is the responsibility of the CM to facilitate and execute the IDAT process. The various requirements for the equipment and systems being commissioned are located in their respective Specification Sections.
   1. Administrative processes and services will be directed, coordinated and provided by the CM.
   2. Submittals, testing and training will be coordinated and verified by the CM. USM, AE and CA will back check and verify these as well.
   3. The CM shall ensure that Subs perform their responsibilities and shall integrate IDAT into the construction processes and schedules.

C. Refer to Part **3** Article, "Execution of the **IDAT** Process."

1.08 OPERATING AND MAINTENANCE DATA

A. General: The following submittals shall be made for systems and equipment being commissioned, as defined by the Stage 4 Master List.

B. Checklists: Submittals shall include'pre-functional checklists and functional testing checklists. These lists shall be used in subsequent Stage 4 close-out activities. Where ever possible, checklists shall be as provided by the original equipment manufacturers.
   1. Submit drafts of these checklists at the time of initial product data submittal.

2. Schedule close-out activities via the IDAT process. Fill out these checklists as part of close-out activities. The CA shall verify these activities.
3. Completed checklists shall be made part of the O&M Manuals.

C. Re-Commissioning Data: Submittals shall include original manufacturer's preventative maintenance data.
1. Submit this data at the time of initial product data submittal.
2. Include this data in a separately bound volume, as part of the O&M Manuals. The CA will use this as a basis for Stage 5 Retro-Commissioningefforts.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COMMISSIONING APPROACH

A. General: The CA will employ a staged approach to the Commissioning process;
1. Stage 1 – Programming.
2. Stage 2 – Design Review.
3. Stage 3 – Construction Oversight.
4. Stage 4 – Verification and Closeout.
5. Stage 5 – Retro-Commissioning.

B. At the time of bidding, Stage 1 and 2 efforts are essentially complete. If design related issues come to light at any point after the completion of Construction Documents the CA will issue Stage 2 Design Review memorandums to USM for consideration by the AE.

3.02 EXECUTION OF THE IDAT PROCESS

A. General: The following sequential priorities shall be followed:
1. Equipment shall not be "temporarily" started (for heating or cooling), until pre-start checklist items and all manufacturers' pre-start procedures are completed and moisture, dust and other environmental and building integrity issues have been addressed.
2. Functional testing shall not begin until pre-functional and start-up and is completed, for a given system (this does not preclude a phased approach).
3. The controls system and equipment it controls shall not be functionally tested until all points have been calibrated and pre-functional testing completed.
4. TAB shall not be performed until the controls system has been fully tested functionally and approved.
5. TAB shall not be performed until the envelope is completely enclosed and ceiling complete, unless the returns are ducted.

B. IDAT Scoping Meeting, (Part of the Stage 3 Kick-off Meeting):
1. As part of the Stage 3 Kick-off Meeting, the CM shall conduct an initial IDAT scope definition and informational session.

2. The agenda of the session shall include; review of document flow, how much and when submittal data will be received, approved, etc. Other highlights shall include:
   a. The overall IDAT process.
   b. Process questions are addressed.
   c. Lines of reporting and communications are reviewed.
   d. The work products list is discussed.
   e. General list of each party's responsibilities, (i.e. who is responsible to develop the startup plan for each piece of equipment).
   f. The proposed IDAT schedule.
3. The goal of the meeting is to increase understanding by all parties of the IDAT process and their respective responsibilities. The meeting should provide the CM additional information needed to finalize the IDAT Plan, including the IDAT schedule.

C. IDAT Plan:
1. The CM shall finalize the draft IDAT using the information gathered from the scoping session. An initial IDAT schedule shall also be developed. The plan's content and status updates shall be fine-tuned as construction progresses. In particular, the CM shall work with the Subs to develop a detailed schedule for project closeout requirements for each piece of equipment and system in advance of the Stage 4 Kick-off Meeting. The CM will present a draft of these detailed schedules to the Commissioning Team at the Stage 4 Kick-off Meeting.
2. IDAT Plan Contents: At a minimum, the IDAT Plan shall consist of the following:
   a. Identification of each piece of equipment. This list shall be consistent with the list contained in the CA Stage 4 Master List.
   b. Identification of the parties responsible for developing and implementing close-out plans for each system and piece of equipment.
   c. Schedules which identify project closeout milestones for each system and piece of equipment, (start and end dates identified):
      1) Pre-Functional Checklists, Testing and Start-up.
      2) Controls Checkout and TAB.
      3) Functional Testing.
      4) O&M Manuals.
      5) Owner Training.

D. Submittals:
1. The CM shall coordinate IDAT documentation requirements with Subs and responsible parties for their respective equipment and systems. This data request shall coincide with the normal AE submittal process. At minimum and in support of the IDAT process, submittal data shall include the following:
   a. Installation, pre-functional and start-up procedures and checklists.
   b. Performance data and control drawings.
   c. Functional testing procedures and checklists.
   d. O&M Data, including preventative maintenance data for inclusion in the CA's Stage 5 Re-Commissioning Maintenance Manual.
2. The CM shall review and approve submissions relative to IDAT issues expressed in the contract documents, not for general contract compliance, (which is the AE's responsibility) unless specifically directed by USM to do so.

E. Stage **4** IDAT Requirements:

1. Pre-Functional Checklists, Testing and Start-up:
   a. Pre-functional checklists are important to ensure that the equipment and systems are hooked up and operational and that functional performance testing may proceed without unnecessary delays.
   b. Each piece of equipment shall receive full pre-functional checkout by the Contractors, (no sampling strategies are to be used). In general, the pre-functional testing for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.
   c. Pre functional checklists are primarily static inspections and procedures to prepare the equipment or system for initial operation, (e.g., oil levels OK, fan belt tension, labels affixed, gages in place, sensor calibration, etc.). However, some pre-functional checklist items entail simple testing of the function of a component, a piece of equipment or system, (such as measuring the voltage imbalance on a three phase pump motor of a chiller system). The word "pre-functional" refers to "before" functional testing.
   d. Pre-Functional checklist shall be as per the respective Specification Sections for systems and equipment being commissioned.
   e. Pre-Functional checklist and documentation shall be made part of O&M Manuals per the requirements of Section 01770, "Closeout Procedures."
2. Controls Checkout Plan and TAB:
   a. The CV shall develop and submit a written step-by-step draft Controls Checkout Plan for review by **USM,** the CM, AE and CA. The plan shall describe the process they intend to follow in checking out the control system and the forms on which they will document the process. The CV shall submit this to the Commissioning Team in advance of the Stage 4 Kick-off Meeting. The CV shall also present this draft plan and shall meet with USM's TAB as part of the meeting, (prior to the start of TAB) to review the TAB plan to determine the capabilities of the control system for use in TAB.
   b. Upon receipt of input at and subsequent to the meeting, the CV shall issue a final Controls Checkout Plan.
   c. The CV will provide the TAB with any necessary unique instruments for setting terminal unit boxes and instruct TAB in their use (handheld control system interface for use around the building during TAB, etc.). The CV shall also provide a technician qualified **to** operate the controls to assist the TAB in performing TAB.
   d. All CM-required controls pre-functional checklists, calibrations, start-up and selected functional tests of the system shall be completed and approved prior to TAB.
3. Development of Functional Testing Procedures:
   a. Overview: Functional testing is the dynamic testing of systems, (rather than just components) under full operation, (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure set point). Systems shall be tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems shall be run through all of the control system's sequences of operation and components shall be verified to be responding as the sequences state. The CM shall ensure that the functional test procedures are in sequential written form,

coordinate, oversee and document the actual testing, (which is usually performed by the installing contractor or vendor).

b. Scope of Testing: Testing requirements are defined in each respective equipment and system Specification Section.

4. Execution of Functional Testing Procedures:

a. Overview and Process: The CM shall schedule functional testing. The CM shall oversee, witness and document the functional testing of all equipment and systems according to the requirements of the respective Specification Sections. The Subs responsible for the work shall execute the tests.

1) For any given system and prior to performing functional testing, the CM shall wait until the pre-functional checklist has been submitted with the necessary signatures, confirming that the system is ready for functional testing.

2) The control system shall be tested before it is used to verify performance of other components or systems.

3) The CM shall coordinate with the CA and USM to have TAB work completed and debugged before functional testing of air-related or water-related equipment or systems.

4) Testing shall proceed from components to subsystems to systems and finally to interlocks and connections between systems.

b. Controls Requirement: The final test of the commissioned systems cannot include I/O LOOP tuning or manual overrides as part of the final acceptance functional testing. It is the intent to have the entire system or systems run in the intended operational manner with complete software control as applicable.

c. Deficiencies and Retesting: The CM shall document test results on appropriate procedure or test forms. Corrections of minor deficiencies shall be permitted to be made during the tests.

1) Deficiencies or non-conformance issues shall be noted and reported to USM and the AE via USM Form C-6, IDAT Corrective Action Report.

2) Parties responsible shall correct deficiencies, notify the CM and return Form C-6 certifying correction.

3) The CM shall schedule retesting as necessary once deficiencies have been corrected.

4) For areas in dispute, final authority resides with USM and the AE.

d. Participation and Witnessing: The CM shall notify the Commissioning Team as to dates and times proposed for systems testing. The CM shall provide reminders to USM, the AE and CA a minimum of one week prior to each scheduled test. The Owner's facilities operating staff are encouraged to attend and participate in the testing process.

5. O&M Manuals: The CM shall verify that IDAT related documentation is made part of the project O&M Manuals, as per the requirements of Section 01770, "Closeout Procedures."

6. As-Built Drawings: The CM shall verify that as-built drawings have been provided and are in compliance with the project requirements.

7. Owner Training: The CM shall oversee and verify that project required USM training has taken place to the satisfaction of USM.

8. Summary Report: The CM shall provide a draft IDAT Summary Report for review by USM, the AE and CA. The report shall include a list of outstanding issues. Where

applicable, issues shall be accompanied by an IDAT Corrective Action Report form. In any case, each identified issue shall include a proposed plan of action and a schedule for completing the work.

a. The report shall be provided concurrent with the request for certification of Substantial Completion.
b. Upon completion of the work, the CM shall issue a final IDAT Summary Report.

3.03 CONSTRUCTION PHASE

A. Stage *3* – Construction Oversight;

1. Preparation for Construction Phase Kick-Off: The CA will review Stage 1 and 2 efforts and status with USM and the AE. The CA will solicit team member concerns and goals for Stage **3** & 4 efforts.
2. Stage *3* Kick-Off Meeting:
   a. The CA will conduct a meeting with the entire Commissioning Team, (except for the TAB – who is not expected to be on-board at this time). The focus of the meeting will be to present the commissioning process and goals to the Commissioning Team.
   b. The CA and USM will present IDAT Plan requirements to the Team, emphasizing the CM's roles and responsibilities.
   c. The CA and USM will present Controls Checkout Plan requirements.
   d. The CA will review the Stage 4 Master List and its function. The CA will identify the progression from Stage 3 to Stage 4 and touch base on the project requirements for Stage *5* efforts.
3. Periodic Construction Oversight: The CA will make field visits and will issue Stage **3** Construction oversight reports during the course of construction. The purpose of these visits will be to track Contractor compliance with the AE Basis of Design, the Construction Documents, and good industry practices.
4. Submittal Review: The CA will review submittals for the commissioned systems concurrent with site visits. For the most part, submittal reviews will be conducted at the construction trailer. Submittal reviews will be conducted to verify adherence with the Construction Documents.

B. Stage 4 – Verification and Closeout

1. Close-out Plans:
   a. The CM will generate and maintain a comprehensive IDAT Plan. This plan will reflect the project close out requirements for the systems being commissioned.
   b. The CV will generate and maintain a comprehensive Controls Check-out Plan.
   c. A draft of these plans will be made available for review by the Commissioning Team prior to the Stage 4 kick-off meeting.
2. Stage 4 Kick-Off Meeting:
   a. The CA will conduct a meeting with USM, the CM, MS, ES, CV and TAB. Lines of communication, goals, and the role of the CA will be reviewed.
   b. The CM will present the IDAT Plan. Roles and responsibilities of the IDAT process will again be emphasized, including IDAT Corrective Action Reports.
   c. The CV will present the Controls Check-out Plan.

d. The Stage 4 Master List will again be reviewed. Requirements for Stage **5** efforts will be discussed.

3. Pre-Functional, Start-up and Functional Testing Verification:
   a. The CA will make more frequent field visits during the final stages of construction. Stage **3** Construction Oversight reports will be issued on a weekly basis. The CA will witness pre-functional testing, start-up and functional testing of the commissioned systems.
   b. The CM will schedule and monitor the status of these efforts via the IDAT Plan.
   c. The CA will verify these efforts.

4. Controls Check-out / Testing and Balancing:
   a. The CV will perform services in accord with the Controls Check-out Plan.
   b. The CM will schedule and monitor the status of this effort via the IDAT Plan.
   c. The TAB will perform testing and balancing services and submit results to USM, (for review by the AE and CA).
   d. The CA will verify CV and TAB efforts.

5. Review of O&M Manuals, (and As-Built Drawings):
   a. The CM will compile the O&M Manuals with input from the various sub-contractors. The O&M's will reflect the requirements of the construction documents.
   b. The AE will review the O&M's for compliance with the construction documents.
   c. The CA will also the review O&M's with emphasis on Stage 5 Re-Commissioning Management Manual requirements.
   d. The CM will schedule and monitor the status of this effort via the IDAT Plan.
   e. The CA will verify O&M efforts.

6. Verification of Owner Training:
   a. The CM will coordinate the scheduling and delivering of Owner training with the various sub-contractors.
   b. The CM, MS, ES and CV will conduct training with manufacturer's representatives as required by the contract documents.
   c. The CM will schedule and monitor the status of these efforts via the IDAT Plan.
   d. The CA will verify training efforts.

7. Verify and Track Close-Out Status:
   a. **As** stated above, the CM will continually track the status of the various project close-out requirements via the IDAT Plan.
   b. The CA will continually verify these efforts and track this verification via the Stage 4 Master List **.** The CM and CA will periodically distribute these documents to USM as status reporting mechanisms.

8. Compile Draft Close-out Reports:
   a. The CM will issue a draft IDAT Summary Report to USM, summarizing the status of project close-out activities. Outstanding issues will be clearly identified, including identification of responsible parties.
   b. The CA will subsequently issue a draft Commissioning Report to USM. The report will include the Stage **4** Master List verifications.

9. Final Close-out Reports:
   a. Upon completion of outstanding items, the CM shall issue a final IDAT Summary Report. The report shall state that the outstanding issues have been addressed, and shall include completed IDAT Corrective Action Reports.

b. Upon subsequent notification by USM that outstanding issues have been addressed, the CA will visit the project site, verify these elements, and issue a final Commissioning Report to USM.

10. LEED Documentation: The CA will compile and transmit the commissioning related pieces of project LEED documentation to USM. Documentation will cover Prerequisite 1 and the Additional Commissioning Credit.

3.04 RETRO-COMMISSIONING PHASE

A. Stage 5 – Retro-Commissioning:

1. Write Re-Commissioning Management Manual: The CA will oversee the compilation of a Stage 5 Re-Commissioning Management Manual, (preventative maintenance manual). The contents of this manual will be as per LEED V2.1 Credit 3, Table 1. The CA will augment re-commissioning volumes of the O&M Manuals provided by the CM to meet USM and LEED requirements.
2. Retro-Commissioning:
   a. The CA will conduct a post-occupancy review of the commissioned systems off-season, while the project one year warrantee is still in effect. This service is as requested by USM and as required to satisfy LEED Additional Commissioning Credit requirements.
   b. USM shall make trend logs available for systems and equipment being retro-commissioned.
   c. The CA will review system and equipment operation, as well as functionally test items not extensively exercised previously due to seasonal reasons. The CA will issue a letter report identifying issues that require attention, including responsible parties.
   d. The CM, MS and CV shall participate in this effort as necessary to insure proper performance of systems and equipment. USM will contract directly with a Stage 5 TAB as necessary to support this effort.
   e. The CM shall issue and complete IDAT Corrective Action Reports as required.
   f. Upon subsequent notification by USM that outstanding issues have been addressed, the CA will visit the project site, verify these elements, and issue a final letter report to USM.

3.05 REFERENCE DOCUMENTS

A. General: The following documents are attached to the end of this Section:

1. IDAT Corrective Action Report: This sample template shall be used by the CM in identifying and documenting corrective actions.
2. Stage 4 Master List: This document offers a comprehensive breakdown of the components which make up the systems being commissioned.

END OF SECTION

University of Southern Maine
Integrated Deliverables and Testing Plan
Corrective Action Report

Project: Community Education Center ID: _____ Date: _____

Equipment: _____ Equipment ID: _____

Identified from: ___Test, ___Review, ___Discussion___, ☐ Site visit ___

The above equipment has been observed, tested or the performance report reviewed and was found to not comply with the contract documents.

Deficiencies or Issues and Effects:

_____
_____
_____
_____
_____

Corrective Action: ☐ Required ☐ Recommended.

_____
_____
_____
_____

For testing to proceed in a timely manner, it is imperative that the required corrective action be completed by: _____
Date or Event

_____ _____
IDTP CM Agent Date **PM** /Owner's Representative Date

Forwarded to the following parties on _____ for corrective action:
Date

Attachments: Yes ___ No ___ Comment:
_____

Distribution

The following checked individuals will receive these documents for action, review and/or approval as appropriate:

Party	For review & comment only	For review & action	For record only
USM, John Rasmussen	___	___	___
USM, Dana Gray	___	___	___
AE	___	___	___
CA	___	___	___
	___	___	___

Fill **in** the following section and return entire form to **USM** PM agent when corrected.

€ 1€ of r

The above deficiencies have been corrected with the following actions:

Signature Firm **Date**

SECTION 01511 - TEMPORARY DEHUMIDIFICATION, HEATING AND COOLING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: System(s) for conditioning interior spaces during construction and provides ventilation in accordance with SMACNA's "IAQ Guidelines for Occupied Building Under Construction."

B. The conditions for a two-week building flush-out with 100% outside air after construction ends and prior to occupancy.

1.02 DEFINITIONS

A. Temporary Climate Control System: Defined to include heating, cooling and desiccant dehumidification equipment and associated power cable, gas lines and temporary ducting.

1.03 SUBMITTALS

A. General: Submit the following in accordance with Division 1, Section "Submittal Procedures."

B. Product Data for Temporary HVAC System to include:

1. Climate Control Equipment.
2. Temperature and humidity controls.
3. Duct, duct accessories, pipe, and piping accessories materials and construction.

C. Shop Drawings: Design layouts and descriptive data showing:

1. Equipment layout and duct and/or pipe routing.
2. Staging and Sequencing layouts.
3. Enclosure and barricade construction.

D. Submit reports as described in Part 2 of this section.

1.04 QUALITY ASSURANCE

A. Comply with provisions of Section 01450.

B. Follow regulatory agency requirements for required temporary facilities not specified herein.

C. Design Standards: Follow Division 1 Section "Product Requirements." Requirements for temporary facilities are minimum standards. Provide additional facilities as required for proper execution of Work and to meet responsibilities for protection of persons and property.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in **NFPA** 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
2. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Code for Mechanical Refrigeration."
3. Desiccant wheels: Bacteriostatic and non-toxic, manufactured under ISO 9001 certification. glass fibers which form support matrix shall be made from uniform continuous strands larger than five microns in diameter which are non-respirable and are not considered a possible health risk by International Agency for Research on Cancer (IARC). wheel shall be tested according to ASTM **E84-90** (Standard Test Method for Surface Burning of Building Materials) and shall achieve a flame spread index of 0 and a smoke developed index of 10.
4. Dry bulb temperature and relative humidity shall be continuously monitored on each floor, using an electronic monitoring device (EMD). This device must be capable of recording readings at 15 minute intervals and data downloadable to a PC. A printout of data from each EMD shall be delivered to Architect as requested and at project completion.
5. **A** sling psychrometer shall be used to measure dry bulb and wet bulb in space on each floor. These readings shall be taken and recorded at beginning and end of each shift and delivered to Architect as requested and at project completion.
6. All work shall be in accordance with ASHRAE 62-2001 "Ventilation for Acceptable Indoor Air Quality," the State of Maine Building Code, and all Authorities having jurisdiction.

1.05 SEQUENCING AND SCHEDULING

A. Refer to this section's Parts 2 and 3 for scheduling requirements for temporary HVAC systems and building flush-out requirements.

B. Coordinate layout and installation of temporary climate control equipment with finish trades.

C. Utility Service:

1. Follow rules and regulations of utility service companies or authorities having jurisdiction.
2. Arrange with utility service companies for temporary services.

D. All contractors shall coordinate with the Construction Manager their schedules regarding when heavy construction or other process in which odors, debris, dust and other airborne contaminates are generated. All required procedures to prevent the spread of the airborne contaminates to the remainder of the building.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide products for temporary construction using equivalent type as required for permanent construction, except for products that are manufactured for that specific temporary intent and approved by Architect.

B. Where materials for use in this Section are not specified or detailed, propose products in writing and obtain approval from Architect before commencing work.

C. Size temporary air systems to supply a minimum of one complete air change every 120 minutes.

D. Temporary units shall have a minimum pre-filter system with a Minimum Efficiency Reporting Valve (MERV) of ***6*** and a minimum final filter system with a minimum MERV of 13.

2.02 TEMPORARY COOLING UNITS

A. Size temporary cooling equipment to maintain temperatures below 80 degrees F.

B. Equipment: Provide minimum air quantities as specified this Section.

C. Cooling equipment may be used to control humidity under following conditions:

1. Equipment is capable of maintaining humidity in the range specified here or elsewhere in specification.
2. Reheat coils are utilized to lower relative humidity in air stream.

2.03 TEMPORARY HEATING UNITS

A. Heaters: Electric, indirect fired combustion, or steam coil auxiliary heaters. **No** direct-fired space heaters or propane, salamander type, heaters permitted.

B. Heater Controls: Automatically turn heater off if airflow is interrupted or internal temperature of heater exceeds its design temperature or that of supply duct,

2.04 TEMPORARY DEHUMIDIFICATION EQUIPMENT

A. Use dehumidification equipment to control environment in space 24 hours a day while joint compounds, paints, fireproofing and wall paper are being installed and until materials in space reach moisture levels as recommended by manufacturer(s). This equipment may also be necessary to maintain specified conditions until building is commissioned.

B. Desiccant dehumidifiers shall be of solid desiccant design having a single rotary desiccant wheel capable of fully automatic continuous operation.

C. Do not recirculate air through dehumidification equipment unless positive pressure is maintained.

2.05 TEMPORARY DUCTWORK AND AIR DISTRIBUTION

A. Supply Ductwork: Canvas spiral duct. If supply ductwork is placed outside building, securely attach or anchor to withstand damage from winds.

B. Interior Distribution Ductwork: Polyethylene tubing (Layflat) of appropriate diameter to inflate fully without flutter.

C. Distribute conditioned air through 2-3 inch holes cut in Layflat ducting.

1. Distribute air evenly throughout area being served.
2. Suspend temporary system from existing ceiling structure as recommended by system manufacturer.
3. Coordinate with Architect for mounting locations within building.

PART 3 - EXECUTION

3.01 GENERAL

A. Modify and extend temporary facilities as required by Work progress.

B. Provide weather protection and environmental controls as required to prevent damage to Work, and to other property.

C. Clean and repair damage caused by installation or use of temporary climate control equipment. Where disposal of spoil and waste products, whether or not they are contaminated, is required, make legal dispositions off site following governing authorities' requirement.

D. For areas that require plaster and gypsum wallboard: Provide temporary climate controls, maintain a dry bulb temperature between 55 F and relative humidity of 50% or less **48** hours prior to installation, taping, and plastering and after installation. Refer to Division ***9*** for all additional requirements. **If** Manufacturer's recommendation vary from the specification, the more stringent method and requirements shall be implemented.

E. For Flooring:

1. If moisture levels in concrete slabs are too high, temporary climate control will be used to removed excess moisture to levels acceptable to flooring manufacturer.
2. Moisture testing shall be performed at least 60 days in advance of flooring installation to allow sufficient drying time if levels are found to be excessive.
3. Temporary climate control will be used to control humidity during hardwood floor installation. Temporary climate control will be used to stabilize moisture content in hardwood prior to installation if moisture levels are above those recommended on the Wood Flooring Moisture Map, provided by the USDA Forrest Products Laboratory or manufacturer, whichever is more stringent.

F. For areas that require finished carpentry and architectural woodwork, including hardwood floor installation: Temporary climate control will be used to stabilize moisture content in hardwoods prior to installation if moisture levels are above those recommended on the Wood Flooring Moisture Map, provided by the USDA Forrest Products Laboratory, or manufacturer, whichever is more stringent.

G. For Painting and Coating:

1. Temporary climate control will be used to control condensation and maintain proper conditions for surface preparation, application and curing as per manufacturer's recommendations.
2. When dry abrasive blasting carbon steel surfaces, dew point temperature in space must be maintained at least 17 degrees lower than temperature of surface being prepared.
3. During paint and coating application, dew point temperature in space must be maintained at least 10 degrees lower than temperature of surface being painted.
4. Maintain air and surface temperatures within parameters set forth in manufacturer's printed application instructions.
5. Refer to Division 9 for all additional requirements. If Manufacturer's instructions differ from this section, the more stringent method and requirements shall be implemented.

H. Waste materials that release odor or dust shall be covered and sealed.

I. Containers of wet products shall be kept closed as often as possible.

J. In lieu of open kettles for roofing enclose tankers shall be used.

3.02 TEMPORARY EQUIPMENT CONFIGURATION

A. Size and configure temporary climate control to maintain occupied space temperatures between 40 and 80 degrees F during hours unless conditions that are more stringent are required in other sections. Relative humidity shall be maintained at or below 60% unless conditions that are more stringent are required by other Sections.

B. Utilize temporary ducting to distribute conditioned air to affected areas of the building. Do not use permanent ductwork to distribute temporary conditioned air.

C. Keep doors closed and cover openings to maintain a reasonably airtight envelop around space to minimize infiltration and avoid pockets of high humidity.

3.03 REMOVAL OF TEMPORARY EQUIPMENT

A. Maintain temporary climate control equipment in service until Substantial Completion and successful commissioning of permanent HVAC systems.

B. Completely remove temporary climate control equipment from site at completion.

3.04 MAINTENANCE

A. Maintain in proper operating condition until use is no longer required or as otherwise approved.

3.05 HVAC PROTECTION:

A. General: All permanent HVAC equipment and materials shall be protected from dust and all contaminates, including odor, during construction.

B. Return and Transfer Air Systems: During construction the return air system shall be shut down and isolated temporarily to areas in which demolition or other processes that produce air borne contaminates such as, but not limited to, welding, sanding, use of torches, use of powder activated fasteners, etc. **…** All return air system openings in areas in which airborne contaminates are used shall be sealed with plastic.

C. Supply Air System: when the system in an area is off for a long period of time, the openings (diffusers, registers, and grilles) shall be covered and sealed with plastic.

D. Diffusers, Registers, Grilles, and Louvers: During construction diffusers, registers, grilles, and louvers for permanent air systems shall be covered and sealed with plastic to prevent construction debris and odors from infiltrating the new duct systems.

E. Filters: Filters for temporary HVAC systems shall be closely monitored to ensure that they are not clogged, overloaded, and are functioning properly. Filter shall be changed prior to the filter manufacturer's written information pertaining to the maximum allowable air pressure drops. In areas in which processes that produce large amounts of construction dust, odor, or other airborne contaminates, additional filtration shall be implemented. This additional filtration shall include the use of activate charcoal, potassium permanganate, or other types of filters that reduce odor or upgrading filtration efficiencies to protect the remainder of the Building from the contaminates.

F. Duct Cleaning: Temporary ductwork shall be periodically inspected to ensure that it is clean and does not spread airborne contaminates. Dirty ductwork shall either be replaced or cleaned. Cleaning of ductwork shall be as specified in Division 15, Section "Metal Ducts."

G. Local Exhaust: Airborne pollution sources can be directly exhausted to the outside through dedicated temporary exhaust system. Depending on the nature of the materials and the location of the exhaust, special filtration for the exhaust shall be considered.

H. Air Cleaning: Where exhaust is not feasible, local recirculation of air through a portable air cleaner shall be used. The type of air cleaner and filter shall be suitable for the material being controlled (e.g. charcoal or potassium permanganate for odors or a moderate to high efficiency for dust).

I. Air Pressurization: In areas in which odors and other airborne contaminates are anticipated during construction, a negative pressure relationship shall be maintained to adjoining spaces. A negative pressure relationship shall be defined as the air from adjoining spaces shall infiltrate into the areas in which odors or airborne contaminates are

being generated. This negative pressure relationship shall be maintained by increasing thee amount of exhaust air to the area in which odor or other airborne contaminates so that it is 110% greater than the supply airflow rate to that area. In areas where materials are stored and are susceptible to dust, dirt, construction debris, odors, and all airborne contaminates, a positive pressure relationship shall be maintained to adjoining spaces. A positive pressure relationship shall be defined as the air from adjoining spaces shall exfiltrate out of the areas in which materials that can be damaged by odors and airborne contaminates from adjoining spaces. This positive pressure relationship shall be maintained by increasing the amount of supply air to the area in which materials that can be damaged by odors and airborne contaminates so it is 110% greater than the exhaust airflow rate to that area. Conversely, an area in which stored material produce odors or airborne contaminates shall be maintained at a negative pressure relationship as defined above. Do not store materials that produce odors or airborne contaminates with materials that are susceptible to odors or airborne contaminates.

3.06 HOUSEKEEPING

A. General: As dust and debris accumulate on a project, it will become airborne and disturbed by nearby activity. This also applies to spills or excess application of solvents that produce odors. All procedures shall minimize these occurrences.

B. Site Cleaning: During construction, the site shall be cleaned, at a minimum, at the end of the day or when all area is under heavy construction and there is a large amount of odors and contaminates produced, the following procedures shall be employed:

1. Suppress dust with wetting agents or sweeping compounds.
2. Remove spills or excess applications of solvent-containing products as soon as possible.
3. Remove accumulated water. Keep areas as dry as possible.
4. Vacuum areas that have HEPA filters and prevent the aerolization of settled dust.
5. Protect porous materials such as insulation and masonry from exposure to moisture.
6. Increase the frequency of cleaning as required to maintain good indoor air quality.
7. Water permeably and porous materials that are exposed to excessive moisture shall be replaced.

3.07 REPORTS:

A. GENERAL: All reports shall be submitted for approval in accordance with Division 1.

B. Prior to the start of work in an area, a Planning Checklist (see the end of this section) shall be filled out and submitted for review to the Construction Manager. The methods as described within the approved Planning Checklist shall be adhered to without exception. If a modification is required, the Planning Checklist shall be amended. The construction manager shall keep a record of the Planning Checklist and submit them to the Owner and Architect for their records.

C. On a daily basis (minimum) the Clerk of the Work for the project will inspect all spaces of the project in which work is proceeding. The Clerk of the Work shall fill out Inspection

Checklist (included at the end of this specification section). The Inspection Checklists shall be submitted to the Owner, Architect, and Engineer for their review and comments.

END OF SECTION

nn

Project/Phase/Area _____

Date(s) _____

1.0 Potential Emissions	Source	Class
1.1 Materials disturbed		
1.2 New products		
1.3 Equipment operation		
1.4 System disruption		
1.5 Waster materials		

2.0 Pathway	Affected Areas	Worst-case
2.1 HVAC recirculation		
2.2 Direct exposure		
2.3 Negative pressure		
2.4 Tracking		

3.0 Controls	Options	Comments
3.1 HVAC Protection		
3.2 Product substitution		
3.3 Equipment Modification		
3.4 Local exhaust		
3.5 Air cleaning		
3.6 Covering/sealing		
3.7 Negative pressure		

(Inspection Checklist, cont'd.)

3.8 Barriers

3.9 Source relocation

3.10 Dust suppression

3.11 Upgraded cleaning

3.12 Buffer zones

3.13 Off-hours

3.14 Move hypersenstitives

Inspection Checklist

Project _____

Status _____

Date _____

Inspector _____

Contractor(s) _____

Date and time _____

1.0	Active Work Areas	Location	Odor?	Dust?
1.1	Materials disturbed			
1.2	New products			
1.3	Equipment operation			
1.4	System disruption			
1.5	Waste materials			

2.0	Potentially Affected Areas	Location?	Odor?	Dust?
2.1	HVAC recirculatino			
2.2	Direct exposure			
2.3	Negative pressure			
2.4	Tracking			

3.0	Controls	Description	Status
3.1	HVAC protaction		
3.2	Source control		
3.3	Pathway interruption		
3.4	Housekeeping		
3.5	Scheduling		

(Inspection Checklist, cont'd.)

4.0 Occupant complaints/observations

5.0 Occupant complaints/observations

SECTION 15767 - PROPELLER UNIT HEATERS

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the following:

1. Propeller type, hydronic, unit heaters.

B. Related sections include the following:

1. Division 15 Section "Basic Mechanical Materials and Methods."
2. Division 15 Section "Electrical Requirements for HVAC Work."
3. Division 15 Section "Mechanical Identification."
4. Division 15 Section "Hangers and Supports."
5. Division 15 Section "Hydronic Piping."
6. Division 15 Section "Valves."
7. Division 15 Section "Meters and Gages."
8. Division 15 Section "HVAC Vibration Controls and Seismic Restraints."
9. Division 15 Section "Control System Equipment."

1.02 SUBMITTALS

A. General: Submit the following in accordance with Division 1, Section "Submittal Procedures."

B. Product Data: Include specialties and accessories for each unit type and configuration.

C. Shop Drawings: Submit the following for each unit type and configuration:

1. Plans, elevations, sections, and details.
2. Details of anchorages and attachments to structure and to supported equipment.
3. Power, signal, and control wiring diagrams. Differentiate between manufacturer-installed and field-installed wiring.
4. Equipment schedules to include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories.

D. Field Test Reports: Written reports of tests specified in Part 3 of this Section.

E. Maintenance Data: For propeller unit heaters to include in operation and maintenance manuals specified in Division 1. Include the following:

1. Maintenance schedules and repair parts lists for motors, coils, integral controls, and filters.

F. Coordination Drawings: Show unit heaters and all associated appurtenances, and clearances for operation, maintenance, and service as part of the coordination drawing

process. Refer to Division 15, Section "Basic Mechanical Materials and Methods" for all additional requirements.

1.03 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.04 WARRANTY

A. General Warranty: The Special Warranty specified in this Article shall not deprive the Owner of other rights to Owner may have under other provisions of the Conditions of the Contract and shall be in addition to, and run concurrently with, other warranties made by the Conditions of the Contract.

B. Special Warranty: The Unit Heater Manufacturer shall submit a written warranty for their equipment agreeing to repair or replace components within the equipment that fail in material or workmanship within the specified warranty period.

1. Warranty Period: 1-year from the date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carrier Corp.
2. Dunham-Bush, Inc.
3. international Environmental Corp.
4. York International, Inc.
5. Trane Company (The); North American Commercial Group.
6. The Sterling Heating Equipment Company.

2.02 UNIT HEATERS

A. Description: An assembly including casing, coil, fan, and motor horizontal discharge configuration with horizontal, adjustable louvers in blow-through configuration.

2.03 MATERIALS

A. Casing: Galvanized steel, with removable panels.

B. Cabinet Finish: Bonderize, phosphatize, and flow-coat with baked-on primer and manufacturer's standard custom paint applied to factory-assembled and -tested propeller unit heater before shipping.

2.04 COILS

A. Hot-Water Coil: Copper tube, 0.031-inch (0.78-mm) wall thickness, with mechanically bonded aluminum fins spaced no closer than 0.1 inch (2.5 mm) and rated for a minimum working pressure of 200 psig (1380 kPa) and a maximum entering water temperature of 325 deg F (163 deg C), with manual air vent. Test for leaks to 375 psig (2690 kPa) underwater.

2.05 FAN

A. Propeller with aluminum blades directly connected to motor.

2.06 FAN MOTORS

A. Motors, 1/2 hp and Smaller: Shaded-pole Permanent-split capacitor, multispeed motor with integral thermal-overload protection.

B. Motors, 3/4 hp and Larger: Totally enclosed with permanently lubricated ball bearings.

2.07 ACCESSORIES

A. Horizontal Configuration: Louver fin diffuser discharge.

2.08 CONTROLS

A. Control Devices: Integral fan-speed switch and thermostat.

2.09 SOURCE QUALITY CONTROL

A. Test propeller unit heater coils according to ASHRAE 33.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive propeller.unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Examine roughing-in for piping and electrical connections to verify actual locations before propeller unit heater installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install propeller unit heaters level and plumb.

B. Install propeller unit heaters to comply with NFPA 90A.

C. Suspend propeller unit heaters from structure as specified in Division 15 Sections "Hangers and Supports" and "HVAC Vibration Controls and Seismic Restraints."

3.03 CONNECTIONS

A. Piping installation requirements are specified in other Division 15 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Unless otherwise indicated, install shutoff valve and union or flange on each connection.

C. Install piping adjacent to machine to allow service and maintenance.

D. Ground equipment.

E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 4866.

3.04 FIELD QUALITY CONTROL

A. Testing: Perform the following field quality-control testing and report results in writing:

1. After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Test and adjust controls and safeties.

B. Repair or replace malfunctioning units. Retest as specified above after repairs or replacements are made.

3.05 CLEANING

A. After installing units, inspect unit cabinet for damage to finish. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

B. After installing units, clean propeller and unit heaters internally according to manufacturer's written instructions.

END OF SECTION 15767H

2.04 LAMP HOLDERS

A. Incandescent: Body: porcelain; Screw Shell: nickel-plated brass, prelubricated with silicone compound.

B. Fluorescent: Body: white urea plastic; Contacts: silver-plated phosphor bronze.

305 FINISHES

A. Painted Surfaces: Synthetic enamel, with acrylic, alkyd, epoxy, polyester, or polyurethane base, light stabilized, baked on at 350° Fahrenheit minimum, catalytically or photochemically polymerized after application.

B. White finishes: minimum of 85 percent reflectance.

C. Ceiling opening frames shall either be manufactured of non-ferrous metal, or be suitably rustproofed after fabrication.

D. Selection: Unless otherwise noted, finishes shall be as selected by the Architect.

E. Undercoat: Except for stainless steel give ferrous metal surfaces a five stage phosphate treatment or other acceptable base bonding treatment before final painting and after fabrication.

F. Unpainted non-reflecting surfaces shall be satin finished and coated with a baked-on clear lacquer to preserve the surface. Where aluminum surfaces are treated with an anodic process, the clear lacquer coating may be omitted.

G. Unpainted Aluminum Surfaces: Finish interior aluminum trims with an anodized coating of not **less** than 7 mg. per square inch, of a color and surface finish as selected by the Architect. Finish exterior aluminum and aluminum trims with an anodized coating of not less than 35 mg. per square inch, of a color and surface finish as selected by the Architect.

H. Porcelain Enamel Surfaces: Apply porcelain finishes smoothly. Finish shall be not less than 7.5 mils thick of non-yellowing, white, vitreous porcelain enamel with a reflectance of not less than 85%.

2.06 LAMPS

A. Manufacturer: Lamps shall be manufactured by General Electric or Osram/Sylvania. Unless otherwise noted, all lamps of a given fixture designation and lamp type shall be supplied by the same manufacturer.

B. If a specific manufacturer is noted in the schedule, only that manufacturer shall be acceptable.

C. Provide lamps for all lighting fixtures (furnished as part of the electric work). Lamps shall carry a three-year warranty.

D. Incandescent and tungsten halogen lamps shall not be operated, other than for initial testing, prior to final inspection.

2.07 FLUORESCENT LIGHTING FIXTURES

A. General Construction and Materials: Housing end plates, socket bridges, reflectors, wiring channels and ballast covers shall be die formed of not less than #20 gauge (0.0359 inch thick) cold rolled steel unless specified otherwise.

B. Lampholders shall be heavy white with definite locking-in feature and silver-plated contacts for proper lamp operation and life. Outdoor lampholders shall be neoprene gasketed and compression type. Sockets with open-circuit voltage over 300 volts: safety type and designed to open supply circuit on lamp removal.

C. Mount lamps on rapid-start circuits within one inch of grounded metal, minimum one inch wide, as long as lamp.

D. Construct fixtures so that ballast may be serviced or replaced without removal of fixture housing.

2.08 FLUORESCENT BALLASTS

A. Electronic: Where called for in the Lighting Fixture Schedule, provide electronic ballasts for fluorescent light fixtures. Contractor is responsible for coordination of ballast compatibility with specified lamps. Electronic ballasts shall be acceptable and listed by Underwriters' Laboratories Inc., and Class "P" thermally protected. Ballasts shall have total harmonic distortion less than 10%. Ballasts shall have a minimum starting temperature of 10 degrees Celsius. Ballasts shall be free of Polychlorinated biphenyls (PCB's). Ballasts shall be designed for frequency of operation greater than 25KHz nominal, and shall operate at the nominal voltages indicated on label, 120 volt and/or 277 volt as required. Ballasts shall be Osram Sylvania Quictronic PRO start PSX or GE Ultramax H.

1. It shall be possible to operate ballasts for different length lamps on a single circuit.

2. It shall be possible to operate multiple lamp ballasts on a single circuit with no perceptible difference in lamp light output.

3. Fixture and ballast combination shall be inaudible in a 27 db room ambient.

4. Ballast shall comply with all applicable state and federal efficiency standards.

5. Ballasts shall comply with FCC and NEMA limits governing electromagnetic and radio frequency interference and shall not interfere with operation of other normal electrical equipment.

6. Ballasts shall meet all applicable ANSI and IEEE standards regarding harmonic distortion and surge protection.

7. Ballasts shall not be affected by lamp failure and shall yield normal lamp life.

8. Ballasts shall operate at an input frequency of 60 HZ and an input voltage of 108 to 132 (120V models) or 249 to 305 (277V models).

9. Ballasts that operate as a parallel circuit shall allow remaining lamp(s) to maintain full output if companion lamp(s) fail.

10. Ballast manufacturers shall have been producing electronic ballasts in the U.S. for more than 10 years with a low failure rate.

11. Ballast shall carry five-year warranty, including labor allowance.

C. Electronic Dimming: Where called for in the Lighting Fixture Schedule, provide electronic dimming ballasts for fluorescent light fixtures. Contractor is responsible for coordination of ballast compatibility with specified lamps and dimmers. Electronic dimming ballasts shall be acceptable and listed by Underwriters' Laboratories Inc., and Class "P" thermally protected. Ballasts shall have a power factor greater than 0.95, ballast factor equal to 0.93, total harmonic distortion less than 10%, and lamp current crest factor less than or equal to 1.6. Ballasts shall have a minimum starting temperature of 10? Celsius. The electronic dimming ballast shall be designed and tested to withstand, without impairment to performance, voltage surges of 6000 volts and 200 amperes per ANSI/IEEE Standard C62.41-1980.
Ballasts must comply with FCC Part 18 regulations and shall not interfere with other properly installed electrical equipment. Ballasts shall be free of Polychlorinated biphenyls (PCB's). Ballasts shall be designed for frequency of operation greater than 25KHz nominal, and shall operate at the nominal voltages indicated on label, 120 volt and/or 277 volt as required.

1. Approved Dimming Ballasts:
   (1) Lutron "Hi-lume" FDB series dimming ballasts

2. Dimming shall be smooth and continuous without flicker with ranges as follows:
   (1) 120 volt svstems
      430 ma lamps: Full to 1 percent light
      265 ma lamps: Full to 1 percent light
   (2) 273 volt systems
      430 ma lamps: Full to 1 percent light
      265 ma lamps: Full to 1 percent light

3. It shall be possible to operate ballasts for different length lamps on a single circuit, and the different length lamps shall track evenly with no perceptible difference in lamp light output.

4. It shall be possible to operate one and two lamp ballasts on a single circuit with no perceptible difference in lamp light output.

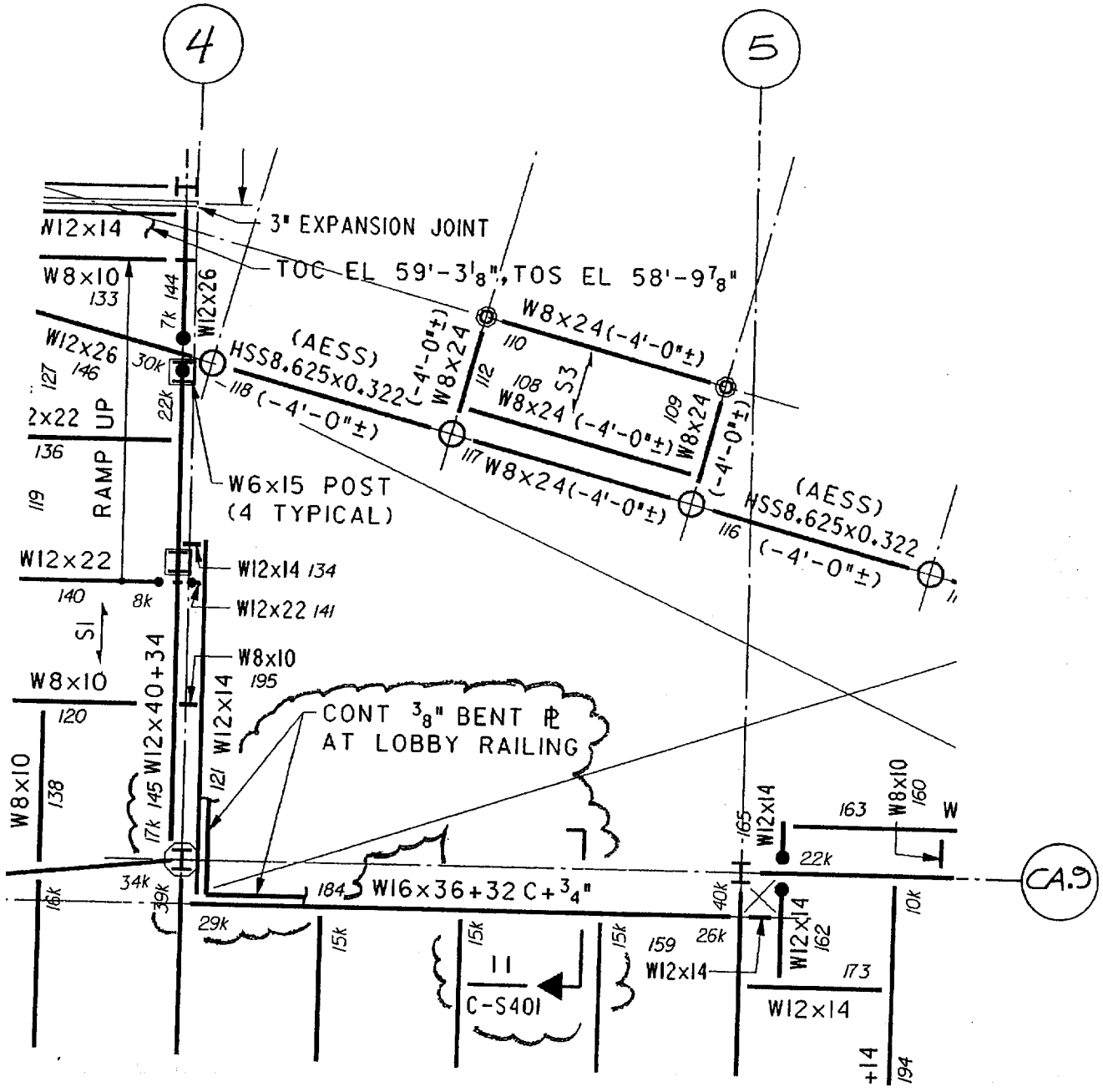
5. Fixture and ballast combination shall be inaudible in a 27 db room ambient.

LeMessurier Consultants
Structural Engineers

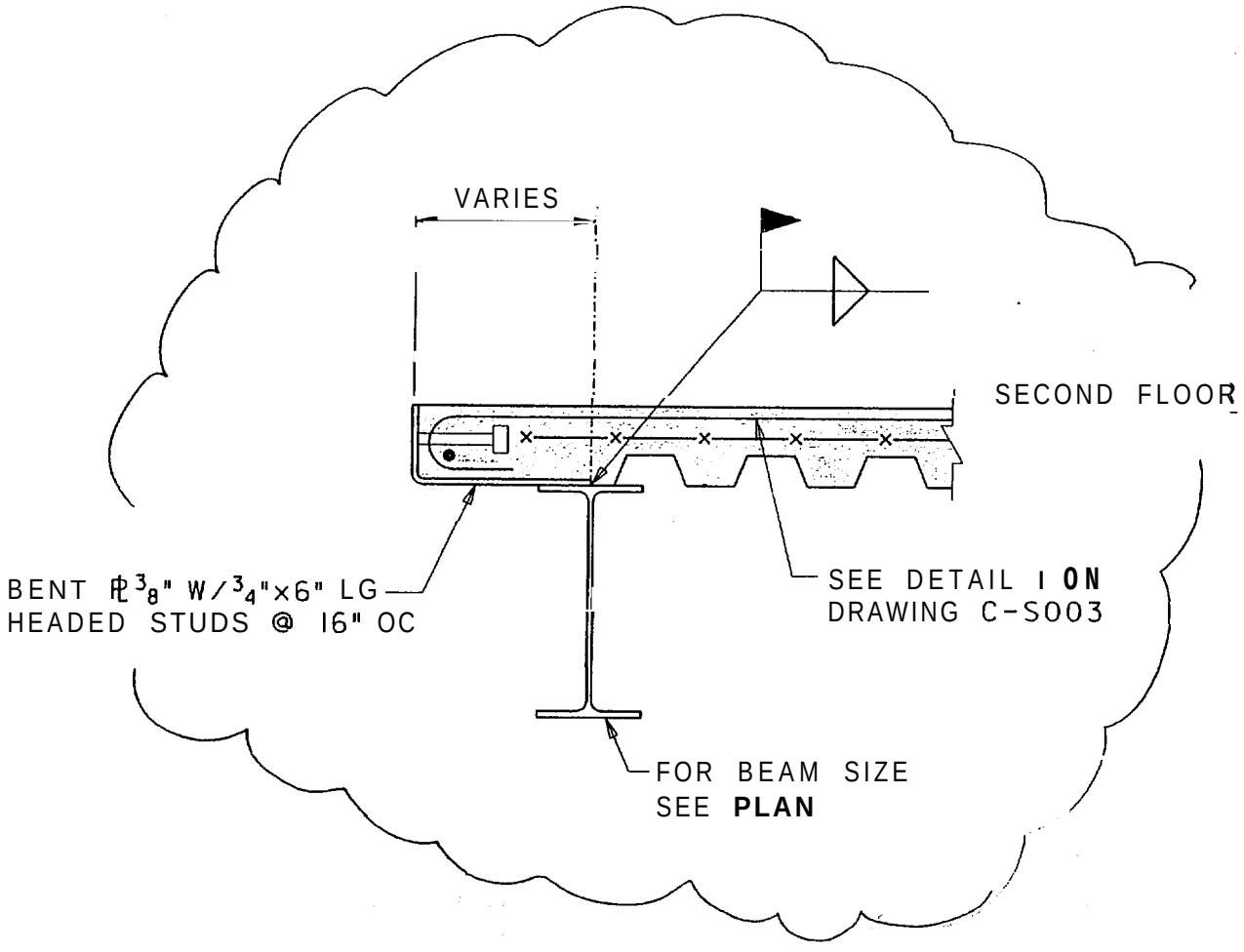
By	Date	File No	Sheet No
SKH	1-30-04	22125	SKS-1

Subject: USM-CEC SECOND FLOOR FRAMING PART PLAN

SCALE: 1/8"=1'-0" C-5102



LeMessurier Consultants Structural Engineers	By SKH	Date 1-30-04	File No. 22125	Sheet No SKS-2
	Subject USM-CEC	BENT PL DET @ LOBBY RAILING 1"=1'-0"		11/ C-5401

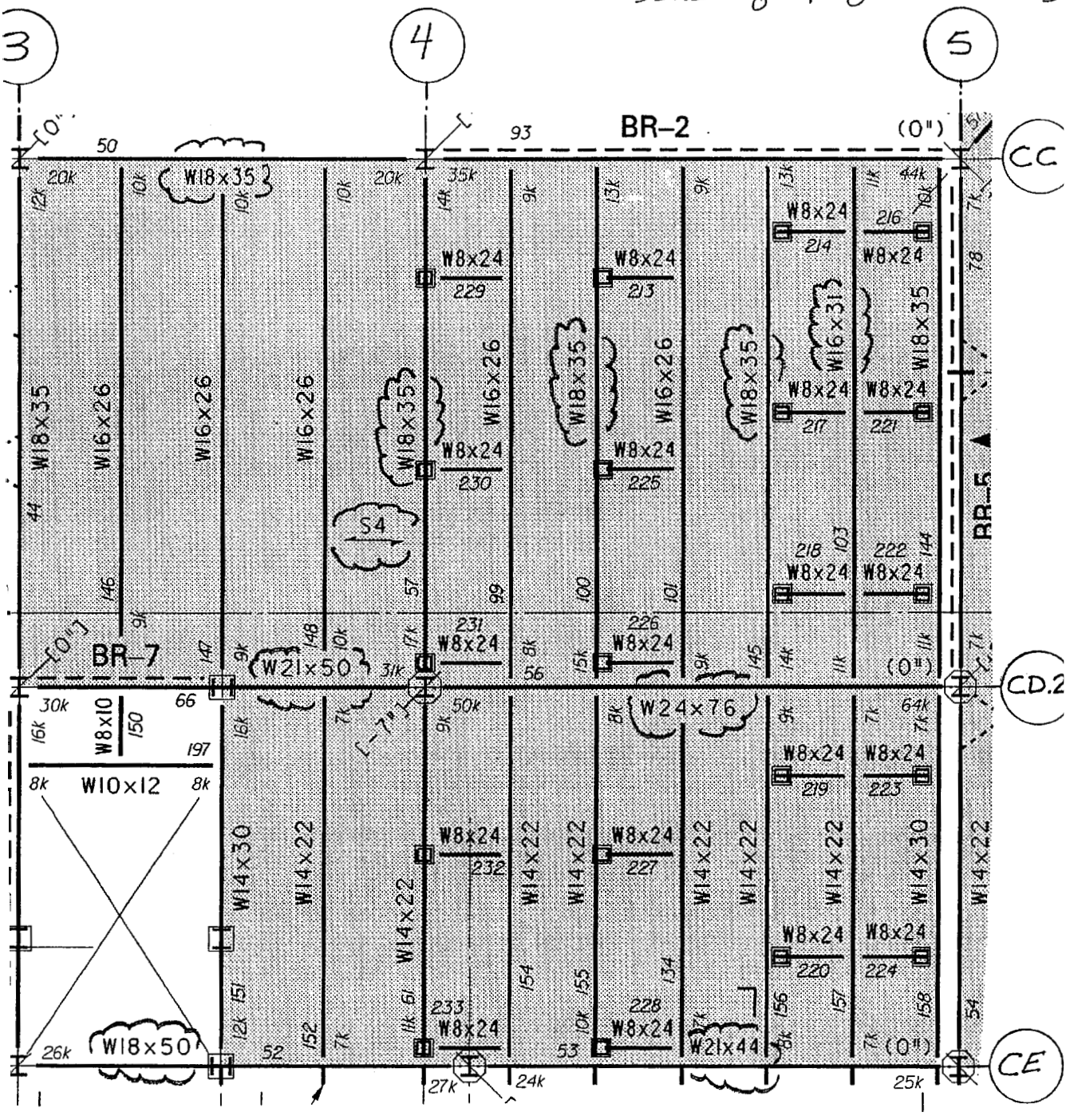


LeMessurier Consultants
Structural Engineers

By	Date	File No	Sheet No
SKH	1-30-04	22125	SKS-3

Subject: USMI-CEC ROOF FRAMING PART PLAN

SCALE: 1/8" = 1'-0" C-S103



NOTES (ROOF LEVEL):

1. S3 INDICATES ROOF CONSTRUCTION SHALL BE 1 1/2" DEEP, 20 GA, **ROOF** DECK, TYPICAL UNLESS NOTED OTHERWISE.
2. S4 INDICATES AREA WHERE SLAB CONSTRUCTION SHALL BE 2" LIGHTWEIGHT CONCRETE ON 1 1/2" DEEP, 20 GA, COMPOSITE STEEL DECK. TOTAL THICKNESS = 3 1/2". REINF SLAB WITH WWF 6x6-W2.9xW2.9.

Amendment to Program of Special Tests and Inspections

Project: University of Southern Maine- Portland Campus
Joel and Linda Abromson Community Education Center

List of Agents

SER
LeMessurier Consultants
675 Massachusetts Avenue
Cambridge, MA 02139
617-868-1200
Attn: Andy Lewis

AR
Einhorn Yaffee and Prescott Architecture and Engineering P.C.
24 Scholl St.
Boston, MA 02108
617-305-9800
Attn: Mike Collard

OIAF
R.W. Gillespie & Assoc., Inc.
86 Industrial Park Rd. Ste 4
Saco, ME 04072
207-286-8008
Attn: Rob Gillespie

OIAP
R.W. Gillespie

GE
Haley and Aldrich, Inc.
500 Southborough Drive
South Portland, ME 04106
207-772-5439
Attn: Jim Weaver

FQP
Maguire and Jones, Inc.
Structural Steel
1156 Broadway
South Portland, ME 04106
207-799-8555
Attn: Jeff Spiller

CQP
Granger Northern, Inc.
84 Middle St.
Portland, ME 04101
207-774-3500
Attn: Ron Milley

University of Southern Maine
Community **Education Center**
PORTLAND, MAINE
GMP Documents

ADDENDUM NO. ***6***
FEBRUARY 13,2004

TO ALL BIDDERS:

This Addendum is organized in six (6) parts plus attachments:

Part I Overview
Part II Revisions/Clarifications to the Bidding Requirements
Part III Revisions to Contract Requirements
Part IV General Clarifications
Part V Revisions to the Drawings
Part VI Revisions to the Specifications
Attachments

PART I: OVERVIEW:

A. This Addendum No. 6 is hereby incorporated into, and amends (by addition, deletion, clarification or alteration} the Bid Documents dated Jan 19 2004 for the University of Southern Maine CEC, Portland, Maine.

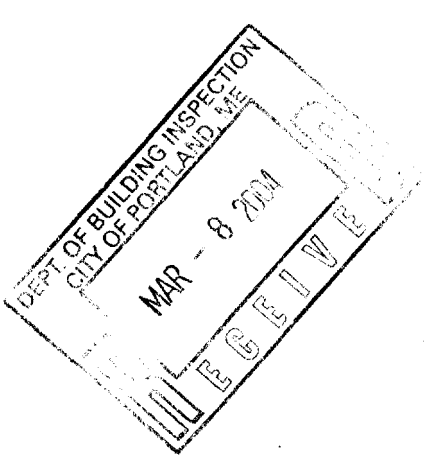
B. The bidder shall acknowledge all addenda on the SUBMISSION OF GMP. Bidders are to please contact Einhorn Yaffee Prescott, Att: Mr. William F. Smith if any document is missing from the bidder's package. Additional costs for items missed in this addendum shall not be accepted for failing to include said work.

PART II: REVISIONS/CLARIFICATIONS TO THE BIDDING REQUIREMENTS:

NO CHANGES

PART III: REVISIONS TO CONTRACT REQUIREMENTS:

NO CHANGES



PART IV: GENERAL CLARIFICATIONS:

NO CHANGES

PART V: REVISIONS TO THE DRAWINGS:

ITEM 1: SHEET C-AV21

A. Computer classrooms 218 and 219 shall have one projection screen per room, in lieu of one shared projection screen as indicated in the January 19,2004 GMP documents. Projection screens in these rooms shall be as identified in Specification Section 11132, Paragraph 2.01-M-1

PART VI: REVISIONS TO THE SPECIFICATIONS:

ITEM 1: SECTION 11132 – PROJECTION SCREENS

A. Insert Section 11132 (attached) in its entirety

ATTACHMENTS:

SECTION 11132 - PROJECTION SCREENS:
4 PAGES, 8-1/2 X 11.

END OF ADDENDUM #6

SECTION 11132 – PROJECTION SCREENS

PART 1 GENERAL

1.02 SECTION INCLUDES

A. Projection Screens

1.03 RELATED SECTIONS

A. Section 09500 Ceilings

B. Section 16050 Basic Electrical Materials and Methods

C. Section 16200 Electrical Power

1.04 REFERENCES

A. Examine contract documeiits that affect work in this section. Coordinate other work as necessary to form a complete installation

B. AV drawings issued separately by Owner

C Manufacturer's specifications, cut sheets, installation and owner's manuals

1.05 SUBMITTALS

A. See Section 0 1300 – Administrative Requirements for submittal procedures.

B. Shop Drawings: Submit large-scale shop drawings showing screen mounting methods and ceiling tile detail. Submit shop drawings for low voltage and high voltage wiring. Clearly indicate dimensions, space requirements, connections, materials, quantities and other pertinent data.

C. Product Data: Submit manufacturer's printed product data, specifications, standard details, installation instructions, use limitations and recommendations for the projection screens and all products used Provide certifications that products and assemblies comply with requirements

D. Sample: Submit a sample of screen case finishes for approval

1.06 QUALITY ASSURANCE

A. Source: Provide projection screens from a single manufacturer tor the entire project

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for fire retardant requirements.

B. Conform to applicable code for electrical requirements

C. Conform to applicable code for seisinic requirements.

1.08 DELIVERY, STORAGE AND PROTECTION

A. Insure that all products and assemblies are properly packaged and protected during shipping, handling and storage to prevent damage.

B. Store materials indoors under cover on raised platforms, fully protected from dirt and moisture.

1.09 PROJECT CONDITIONS

A. Sequence installation to ensure coordination with other trades

B. Coordinate work with ceiling work, electrical rough in and installation of associated and adjacent components.

PART 2 PRODUCTS

2.01 ELECTRICALLY OPERATED FRONT PROJECTION SCREENS

A. The front projection screens shall be sized as indicated on the drawings or as noted below

B. They shall be supplied with black edges and a black bottom batten.

C. The screens shall include a "tab-guy" system to maintain material flatness and control edge curl.

D. The screen material shall be made of a washable, seamless Poly-vinyl material that is fire and fungus resistant. The screen material shall not be seamed at any point of the screen. Screen material shall be matte white. with a gain of 1.3.

E. The classroom screens shall have a trap door system that will be colored white. The auditorium screen shall not have a trap door system

F. The screen shall allow access to all mechanical parts from the underside of the housing. Housing construction shall be all aluminum with fire retardant treatment.

G. The in tube motor shall have a 24 volt control circuit

H. Provide a low voltage wall switch to raise and lower the screen. The control switch shall be located as shown on the drawings

I. Install a low voltage interface for an audio-visual remote control system to be provided under separate contract. Install all Class 1 & 2 wiring under this contract without extra charge

J. Paint screen trap doors and all visible hardware custom color as directed by the Architect

K. All visible hardware shall be of a uniform color and finish. Obtain, and strictly adhere to manufacturer recommendations concerning painting the screen.

L. Inspect screen surface upon installation for dents and other defects. Obtain replacement or repair as required to provide for zero defects in the screen surface

M. Screens from the following manufacturers shall be considered acceptable:

1. For classrooms, breakout rooms and computer classrooms:

Stewart Filmscreen Model SEL120VUM13W with model LVC low voltage control with wall switch

2. For smaller conference rooms and classrooms (Classroom 212 and Conference Room 217):

Stewart Filmscreen Model SEL100VUM13W with model LVC low voltage control with wall switch

3. For Lecture Hall:

Stewart Filmscreen B240VUM 13W-24-6-13 with model LVC low voltage control with wall switch

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine wall, ceilings and conditions under which this work is to be performed.

B. Notify Contractor in writing of conditions detrimental to proper completion of the work. Beginning work means Installer accepts substrates and conditions.

3.02 INSTALLATION

A. Manufacturer's Instructions: Strictly comply with manufacturer's instructions and recommendations, except where requirements that are more restrictive are specified in this Section. Comply with all referenced standards

B. Wire Class 1 wiring in accordance with manufacturer's instructions and per code.

C. Install low voltage interface.

D. Install low voltage switches as shown on electrical drawings and as directed by Architect

E. Coordinate with AV Contractor for low voltage interface into AV control system.

F. Fit ceiling around screen as shown on drawings and as directed by Architect.

G. Adjust screen limit switches for full retraction, and lower limit stops

H. Clean screen housing of fingerprints, grease or other marks, touch-up paint as required.

I. Paint visible screen case surfaces as directed by the Architect.

J. Provide all other work for a complete and unified installation.

3.03 ADJUSTING, TOUCH-UP AND REPAIR

A. After installation of hardware, make adjustments and corrections to leave operating parts in perfect operating condition.

B. Touch-up damaged shop coatings and repair minor damage to eliminate all evidence of repair.

C. Remove and replace work that cannot be satisfactorily repaired

END OF SECTION