Project Name: The Lowell Center
South Wing 2-7 & 1st Floor Sleeping Rms
HVAC Renovation and Related Work
Schematic Design Study

DSF Project Number: 10J1H
Tracking Number: 10J1H 04

Building Name: Lowell Center
Date: May 18, 2012
Revision Date: November 16, 2013

Prepared For:

Jon Jenson, DSF Project Manager
Wisconsin Department of Administration
Division of State Facilities
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Prepared By:

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DESTREE architecture & design HEG HEIN Engineering Group

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NOTE: Included drawings are for Schematic Design purposes only; field verification of existing conditions were not performed in this scope of work.

Project Goal

To provide a Schematic Design Study with budget figures for HVAC upgrades and related architectural work for the sleeping rooms and adjacent spaces on 1st floor as well as floors 2-7 of the South wing. Study includes the following:

- Evaluate successes of last HVAC project and potential improvements
- Code Review
- Identify and detail scope for HVAC renovations for existing south wing guestrooms Floors 2-7 implementing an HVAC design similar to the 2009 layout with minor electrical and architectural upgrades including:
    - Add closets on each floor in rooms 01,02,03,04,05 and 09
    - Make needed ADA improvements to the elevator lobbies on each floor
- Provide Schematic Design Narrative for HVAC upgrades at the 1st floor sleeping rooms with minor electrical and finish improvements.
- Provide an Estimate of Probable Cost for Construction

Study Process

The team began the study by investigating how to renovate the existing Fourth floor offices on the North/East Wing of Lowell Center into 15 new Guest Sleeping rooms including FF&E and MEP upgrades and continuation of the new 4-pipe HVAC system to match the 2009 project. During project meetings Agency representatives commented that the entire South Wing Guest rooms (floors 2-7) have an existing 2-pipe HVAC system that does not provide an adequate comfort level for guests in that wing. The Design team was requested to investigate upgrading the HVAC system on the South wing. As the study progressed, the existing sleeping rooms in the south wing became a priority and the focus of needed improvements. At this point, the UW Extension determined to not pursue the 4th floor North-East Improvements to add additional sleeping rooms. The goal was to improve the HVAC 2-pipe system in the existing sleeping rooms. In reviewing these goals, the 1st floor sleeping rooms were identified as the last area with a 2-pipe system. UW-Extension determined the best use of funds were to upgrade all existing sleeping rooms to the 4-Pipe system. So, a Construction estimate was added based on the typical 4-Pipe building system design for the 1st floor sleeping rooms and related adjacent spaces.

Early in the study to minimize disruption to sleeping rooms, construction costs and hazardous material abatement, the design team recommended the new HVAC system on South Wing (floors 2-7) be a VRF system. DSF representatives requested that the entire building be a single HVAC system for ease of maintenance and general knowledge of system. The Design team proceeded with the direction given by DSF and budgeted for a 4-pipe system with the related architectural and abatement work for South wing 2-7 as well as the 1st floor sleeping rooms.

Architectural Summary - South Wing 2-7

Architectural Report:
In collaboration with UW Extension representatives and Lowell Center Representatives, the design team evaluated successes of the 2009 project and areas of improvement.

Successful Elements:

- Use of Quiet Rock and acoustics work well
- Carpet cleans up well, but needs to be a standard color
- Wall covering
- Towel Bars
- Bath Lights
- Toilets

Recommendations to be addressed:

- shoulder seasons (spring/fall) are issue for 2 pipe HVAC system
- humidity control in South wing, 1st floor sleeping rooms and adjacent offices
- need more sturdy wardrobes or closets in the existing sleeping rooms
- Elevator Lobbies on levels 2-7 are not ADA accessible

Code Summary:

Occupancy:	Mixed use (A-3, B, R-1)
Construction Type:	Type III-B (Sprinklered)
Existing Building Size:	7 stories + Basement

Architectural Recommendations for South Wing 2-7, 1st Floor Sleeping rooms and related 1st floor offices:

- HVAC upgrades will require removal of the existing non-code compliant transfer grilles from guest rooms to corridors and patching wall. Discontinued wall covering will need to be replaced.
- Adding soffits and pipe chases will require Wall covering upgrades and minor finish upgrades to the existing sleeping rooms including sills.
- Existing sleeping room carpet to remain
- Create efficiently sized closets for existing south wing floors 2-7, rooms – 01, 02, 03, 04, 05 and 09. These rooms have limited wall space and require areas for desk, dresser, LCD and hanging area. Adding a constructed closet solves these challenges.
- Closet doors to be solid wood with dressing mirrors attached. No flimsy 'mirror' doors like 2009 project.
- ACT – use building standard 2x2 Armstrong Cirrus Humiguard Plus, beveled tegular edge ceiling tile at corridors in existing grid.
- Upgrade elevator Lobbies on 2-7 to be ADA compliant with power door operators and finishes to match 2009 project.

See Appendix for architectural plans and construction budget.

MEP Summary

EXISTING CONDITIONS - Floors 2 thru 7 Floor South Wing and 1st Floor Sleeping Rms

- Existing air handlers provide zone cooling to east and west exposures with only one thermostat per exposure for cooling control. Control is provided by pneumatic controls. 1st floor Sleeping rooms and office area are similar with north and south exposures.
- Building is fully sprinklered
- Perimeter heating is provided by hot water fan coils with 24-volt temperature and fan speed controls at each unit, independent of the forced air cooling controls.
- Corridor duct risers and corridor penetrations are not protected by fire and smoke dampers; will require updated code review with remodeling south wing and 1st floor.
- Individual room control is desired by management.
- Existing exhaust duct risers are in place, but new power roof exhaust fans should be replaced and rebalanced.
- Floor-structure height at corridor is 8'-5"; floor to ceiling height is 7'-4" at corridor for floors south wing 2-7.
- Exterior walls are not insulated masonry construction.
- Windows have been replaced with aluminum frame double-pane glass.

EXISTING CONDITIONS – Floors 5 thru 7 Floor North East Wing (Sleeping Rooms Completed 2009)

- Review thermostats (JCI) at guest rooms for simpler operation of South wing and first floor rooms. Thermostats are networked to BAS(Metasys) control system in building.
- Building is fully sprinklered
- Fan coils are somewhat noisy when operated at medium or high speed. Consider review for South wing.
- Floor-structure height at corridor is 8'-5"; floor to ceiling height is 7'-4" at corridor.
- Shoulder seasons (March-May & September-November) do not have chilled water available consistently for cooling due to the freezing potential at the open cooling towers at the roof.
- Economizer cooling is not available at the guest room fan coils, hence the units lack cooling flexibility during the shoulder seasons. Consider review for South wing work.
- 4-pipe concept requires extensive overhead space in guest rooms.
- Exterior walls are not insulated masonry construction.
- Windows have been replaced with aluminum frame double-pane glass.

Future Work NOT in this Study - Shoulder seasons (March-May & September-November) do not have chilled water available consistently for cooling due to the freezing potential at the open cooling towers on the roof.

MEP Summary

PLUMBING

- Only Condensate drains as required for HVAC system, see attached MEP drawings and related HVAC work.

FIRE PROTECTION

- Existing branches and sprinkler heads on the 2nd thru 7th floor South wing corridors may need to be relocated to allow for HVAC improvements.

HVAC

- No ventilation is currently provided on North-East wing corridors on floors 5th thru 7th, which leads to some stagnation of corridor air. The IMC code prevents the use of make-up air serving the guest rooms from also serving the corridors. Review and address for South wing corridors.
- Future HVAC work should provide some air movement and conditioning of the existing corridors.
- Ventilation to each room will be ducted supply from 100% make-up air unit (similar to 2009 project, but improved).
- The IMC code only requires 35 CFM exhaust continuously or 75 CFM per plumbing fixture in guest room bathrooms. Currently, North-East wing ventilation on floors 5th thru 7th provides 80 CFM supply and exhaust continuously. We would recommend adding an exhaust fan rated at 100 CFM for intermittent operation and 35 CFM continuous exhaust and supply to each South wing guest room. The exhaust fan will provide better steam and odor purging with guest control from a timer switch.
- Control of the existing fan coils is too complicated at this time with five buttons on the bottom of the thermostat, leading to confusion and loss of temperature control at the 2009 NE guest rooms. The existing thermostats are network communicating thermostats and use BACnet protocol as part of the building DDC network. For this proposed retrofit, these controls should include a controller at the fan coil with a remote sensor with simply temperature raise/lower and fan controls, in addition to room and outside air temperature readout.
- Existing floors 2nd thru 7th floor South wing currently are served by two air handlers with forced air heating and cooling and perimeter hot water fan coils with integral controls. The rooms lack individual controls for cooling.

ELECTRICAL SCOPE

- Extend, remount and expand the existing fire alarm system devices as required with remodeling.
- Electrical/Controls related to HVAC upgrade

MEP Summary for 2-7 South Wing

HVAC OPTIONS:
The four HVAC Options considered for the 2-7 remodeling project are described below with a summary table at the end comparing initial costs, expected maintenance costs, operating costs and the 25 year life cycle costs:

OPTION A: Fan Coil 4-Pipe with Central Chiller and Boiler.

DESCRIPTION:
This option will provide 4-pipe fan coil units at the outside walls of each guest room with heating and cooling coils connected to the central chilled and hot water system. New hot water and chilled water piping will be routed over the perimeter similar to the earlier phase work. Hot water convectors will be added at non-guest room spaces with exterior exposures. The fan coil units will be provided with an interior condensate collection system to existing condensate risers. Fan coil unit control valves and fan will be controlled by a non-programmable wall thermostat with network capabilities.

ADVANTAGES:
1. Compatible with existing central chiller and boiler systems.
2. Low maintenance costs.
3. Low operating costs.
4. Low life cycle costs.
5. Simple to operate.

DISADVANTAGES:
1. Extensive perimeter soffit required for piping loop.
2. Subject to central heating and cooling system shutdown - lack of redundancy.
3. Subject to loss of cooling during late fall, winter and early spring periods.
4. Option adds new cooling load to existing fully loaded chiller system.

OPTION B: PTAC(Packaged Thru-wall Air Conditioning with Electric Heat).

DESCRIPTION:
This option will provide install PTAC units at the outside walls of each guest room for self-contained heating and cooling independent of the central system. The existing outside wall be cut and patched for the air-cooled condenser openings(16"x42"). Hot water convectors will be added at non-guest room spaces with exterior exposures. The PTAC units will be provided with an interior condensate collection system to existing condensate risers. PTAC units will be controlled by a non-programmable wall thermostat with network capabilities.

ADVANTAGES:
1. Independent heating and cooling autonomous from the central system equipment, year around.
2. Moderate maintenance costs.
3. Simple to operate.

DISADVANTAGES:
1. Extensive cutting and patching at outside wall for PTAC opening - aesthetic concerns.
2. High operating costs - electric heat.
3. High initial and life cycle costs.
4. Diversified maintenance at guest rooms.

OPTION C: PTAC(Packaged Thru-wall Air Conditioning with Central Hot Water Heat).

DESCRIPTION:
This option will provide install PTAC units at the outside walls of each guest room for self-contained cooling independent of the central system with hot water heating piped from the central boiler system. The existing outside wall be cut and patched for the air-cooled condenser openings(16"x42"). New hot water piping will be routed over the perimeter similar to the earlier phase work. Hot water convectors will be added at non-guest room spaces with exterior exposures. The PTAC units will be provided with an interior condensate collection system to existing condensate risers. PTAC units will be controlled by a non-programmable wall thermostat with network capabilities.

ADVANTAGES:
1. Independent heating and cooling autonomous from the central system equipment, year around.
2. Low operating costs by replacing electric heat with hot water heat provided by the central boiler.
3. Simple to operate.

DISADVANTAGES:
1. Extensive cutting and patching at outside wall for PTAC opening - aesthetic concerns.
2. Perimeter soffit required for hot water and condensate piping loop.
3. Subject to central heating system shutdown - lack of redundancy.
4. Moderately high maintenance costs.
5. High initial and life cycle costs.
6. Diversified maintenance at guest rooms.

OPTION D: Water-Cooled Variable Refrigerant Flow with Central Boiler and Fluid Cooler.

DESCRIPTION:
This option will provide water-cooled VRF(variable refrigerant flow) condensers in the mechanical room with ductless fan coil units mounted either at the inside walls or as floor-mounted units similar to the fan coils from phase 1. The VRF system will allow independent heating and cooling operation in each guest room with the capabilities of heat recovery between units. A glycol-water condenser loop with be provided with a roof-mounted fluid cooler for heat rejection and a hot water-glycol water heat tube/shell exchanger for heat injection to the loop. Hot water convectors will be added at non-guest room spaces with exterior exposures. The ductless fan coil units will be provided with an interior condensate collection system to existing condensate risers. Ductless fan coil units will be controlled by a non-programmable wall thermostat with network capabilities.

ADVANTAGES:
1. Independent heating and cooling autonomous from the central system equipment, year around.
2. Compatible with existing boiler system.
3. Minimal ceiling height requirements for refrigerant distribution
4. Low install costs in existing building
5. Low operating costs with heat recovery potential.
6. Simple to operate.
7. Low life cycle costs.
8. Reduces cooling load on current central chiller system.

DISADVANTAGES:
1. Moderate initial costs.
2. Second system type to understand and maintain.
3. Controls are not fully integrated with central DDC system.

MEP Summary - South Wing 2-7

HVAC OPTION SUMMARY TABLE (4th floor N-E Wings only)

		First Cost	Maint. Cost	Energy Cost	25-yr PVLCC
OPTION A:	*4-Pipe Fan Coil*	*$ 70,500*	*$ 2,100/yr*	*$1,725/yr*	*$ 156,900*
OPTION B:	*PTAC w Electric Heat*	*$ 79,000*	*$ 2,400/yr*	*$3,312/yr*	*$ 213,100*
OPTION C:	*PTAC w HW Heat*	*$ 97,400*	*$ 2,900yr*	*$1,918/yr*	*$ 210,600*
OPTION D	*VRF with Ductless FC*	*$ 75,100*	*$ 2,700yr*	*$1,771/yr*	*$ 179,100*

SUMMARY HVAC RECOMMENDATION:
Per the request of the Owner to have a single system type for ease of maintenance the recommended system would be to continue the existing 4-pipe system, extending the existing concept from floors 5-7 to the remainder of the building.

MEP Summary – Selected System

4-PIPE INSTALLATION DESCRIPTION:

1. Demolish and remove HVAC equipment, ductwork and related piping on the 1st floor sleeping rooms, and the 2nd, 3rd, 4th, 5th, 6th and 7th floor South wing to prepare for new HVAC plan.
2. Provide a new 100% make-up air handler with chilled water and hot water coils rated for 2,000 CFM to serve 2nd, 3rd and 4th floor supply air to each guest room (40 CFM); refer to schematic design drawings M100, M101 and M102. *(disregard the new sleeping rooms on 4th floor Northeast, this scope was not accepted)*
3. Extend existing make-up air ductwork to the 5th, 6th and 7th floor South wing guest rooms(40 CFM) and rebalance existing AHU's; refer to schematic design drawings M101.
4. Cut in new ceiling exhaust fans (100 CFM; 4"dia) at each existing bathroom at the 1st floor area of work and on the 2nd, 3rd, 4th, 5th, 6th and 7th floor South wing and connect to the existing exhaust riser with a fire damper and access panel. Replace existing power roof ventilators (6) for south wing and balance exhaust for 35 CFM continuous with fan off. Control exhaust fans from electronic timer switch on the wall.
5. Extend new hot water, chilled water and condensate piping from new risers on 2nd, 3rd, 4th, 5th, 6th and 7th floor South wing floor to new 4-pipe fan coils as indicated on schematic design drawing M104. Concept for 1st floor sleeping rooms similar to M103.
6. Extend new hot water, chilled water and condensate piping from mechanical room sub-basement connections to new risers at 1st floor ceiling South wing floor for new 4-pipe fan coils as indicated on schematic design drawing M105.
7. New fan coils shall be provided DDC controller located at the fan coil enclosure with remote sensor on the wall as indicated. Wall sensor shall have adjustable temperature setting, fan speed control and LED space/outside temperature readout.
8. Network fan coil controls for remote monitoring on building data network for BACnet protocol.
9. Clean existing exhaust duct risers on the south wing and provide new power roof ventilators on existing curbs.
10. Test, Adjust and Balance air and water systems system.

DESCRIPTION OF GENERAL CONSTRUCTION RELATED TO HVAC REMODELING SCOPE:

1. Remove and replace 1st floor ceilings for new piping distribution at ceiling of South wing
2. Remove and replace Ground floor ceilings for new piping distribution at ceiling below 1st floor Sleeping rooms.
3. Provide new wall piping chases for all new fan coil units.
4. Provide new vertical piping enclosures for new vertical pipe risers.
5. Remove and replace 2nd, 3rd, 4th, 5th, 6th and 7th floor corridor ceilings for new ductwork on South wing.

Refer to Appendix for drawings

STUDY REPORT

DIVISION OF STATE FACILITIES
101 East Wilson Street
7TH Floor, PO Box 7866
Madison, WI 53707-7866

Date:	May 4, 2012	**Project # 10J1H**
Revised	November 15, 2013	
Project Title:	Lowell Center HVAC Study University of Wisconsin- Extension Madison, Wisconsin	
For the:	University of Wisconsin System	
Project Manager:	Jon Jenson, AIA, LEED AP 608.267.7985	
Architect:	Destree Design Architects, Inc., Madison, WI 608.268.1499	
Type of Project:	Remodeling	

1. Project Description:

This project is multifaceted, it upgrades the elevator lobbies on 2nd -7th floors to meet current Accessibility requirements, as well as upgrades the existing HVAC to a new 4-pipe mechanical system in (72) existing south wing guest rooms on floors 2,3,4,5,6, and 7 as well as the existing sleeping rooms on 1st floor. At the completion of this project all sleeping rooms will have a 4-pipe system with complete HVAC controls.

2. Authorized Budget and Funding Source:

The requested budget amount is $2,760,627

3. Space Summary:

Interior Space Remodeled GSF:	28,232 sf
Assignable Square footage ASF:	22,216 sf
Efficiency	79 %

4. Schedule:

Hire A/E:	February 2014
Submission of Final Documents:	June 2014
Bid Opening:	August 2014
Start of Construction:	December 2014
Substantial Completion:	April 2015

5. Budget Summary:

BUDGET	A/E Request
South Wing 2-7	$1,490,000
First Floor Sleeping rms/Offices	$238,147
Haz Mat Abatement	$444,000
Total Construction Cost	**$2,172,147**
Contingency (15%)	$325,822
A/E Fee (8%)	$173,772
DSF Mgmt (4%)	$86,886
Plan Review	$2,000
Moveable Equipment	$0
Total	**$2,760,627**
Construction Remodeling Cost /GSF	$77
Total Project Cost / GSF	$98

Budget Notes:
See Supporting Documents for Estimate of Probable Cost.

DESTREE
architecture & design

November 7, 2013

Re: The Lowell Center
South Wing 2nd – 7th & 1st Floor Sleeping Rooms
HVAC Renovation and Related Work
Schematic Design Study

This Letter is an amendment to the Construction Estimate of Probable Cost provided by Ideal Builders on May 4, 2011 which included the South wing 2-7 floors as well as the renovation of the 4th floor North east wing into 15 sleeping rooms. The 15 new sleeping rooms have been removed from the scope of the project to focus on the much needed HVAC improvements to the South Wing. In addition the 1st Floor Sleeping Rooms HVAC upgrades have been added to the scope of work. The following are construction estimate revisions to reflect the change in the scope of work.

- Remove 4th floor North East area from Scope of work and all affected areas
- Abatement work ($444,000 budget) is a separate line item in the Budget Summary (p12). The abatement budget reflects full abatement and phased removal in the affected areas.
- Construction Budget is estimated at $248,000 per floor for the South Wing 2-7
- Elevator vestibule finish upgrades included in scope of work

The Revised Estimate of Probable Cost for the South Wing 2nd-7th is $1,490,000. The additional HVAC work to the 2900 sf of First floor is $238,147 for a Total Construction Estimate of Probable Cost of $1,728,147.

Sincerely,

Melissa Destree, AIA, IIDA
Destree Design Architects, Inc.

IDEAL BUILDERS

NOTE:

Includes 4th Floor NE wing, which was removed from scope.

May 4, 2011

Mr. Tyler Smith
Destree Architecture & Design
222 W. Washington Ave, Suite 310
Madison, WI 53703

RE: Lowell Center 4th Floor Study - #10J1H.04

Tyler,

We are pleased to provide you with this budget proposal for the renovation project at Lowell Hall. The scope of the work is based on the 4th Floor Study drawing, the Lowell Hall Guest Room Remodeling plans from a past project, and Hein Engineering Group's mechanical design information. The scope is also per the clarifications below:

GENERAL CONDITIONS

1. State and local building permits.
2. Dumpsters for construction waste.
3. Trash chute on 4th floor for debris removal.
4. On site job supervision, as required, by an Ideal Builders superintendent.
5. Project management fees.
6. Temporary walk off mats in building common areas.
7. Final cleaning to include floors, washing windows, cleaning cabinetry and countertops.

DEMOLITION / ABATEMENT

1. General demolition of all walls and finishes on the North-East wings.
2. Ceiling removal at the North-East wings on 4th floor.
3. Ceiling removal at the South wing on 2nd, 3rd, 5th, 6th, and 7th floors.
4. $345,000 allowance for abatement work.

GENERAL CARPENTRY

1. Structural steel reinforcement for new 60 ton fluid cooler on the roof.
2. Roofing work related to the new 60 ton fluid cooler on the roof.
3. Cabinetry and countertops.
   - Seventeen (17) solid surface lavatories in the new bathrooms.
   - Solid surface window sills at the North-East wings on the 4th floor.
   - Kitchenette cabinetry.
4. Hallway paneling per drawing I240 at the North-East wings on the 4th floor.
5. Wood blocking as required.
6. Soffits & Chases as required for new HVAC system.

DOORS AND WINDOWS

1. Remove and reinstall an exterior window for exhaust ventilation during abatement and for debris removal.
2. Hollow metal door frames with solid core wood doors.
3. Door hardware.

FINISHES

1. Flooring
   - Carpeting on the North-East wings per the finish schedule on sheet I250.
   - Floor and wall tile on the North-East wings per the finish schedule on sheet I250.
2. Ceilings
   - New acoustical ceilings at public space work areas.
   - Drywall ceilings on 3rd floor for new plumbing work.
   - Cutting and patching existing drywall ceilings as necessary for HVAC work.
   - Acoustic Spray texture applied to the ceilings of guest room work areas.
3. Walls
   - Steel stud interior walls and ceilings similar to those shown on sheet A230.
   - Wall covering on the North-East wings per the finish schedule on sheet I250.

SPECIALITIES

1. Bathroom accessories sheet I240.
2. Corner guards at all outside drywall corners.

PLUMBING

1. Plumbing scope per HEIN Engineering Group's Mechanical / Electrical Description dated 8/17/11.

FIRE PROTECTION

1. Fire protection scope per HEIN Engineering Group's Mechanical / Electrical Description dated 8/17/11.

HVAC

1. HVAC scope per HEIN Engineering Group's Mechanical / Electrical Description dated 5/4/11.

ELECTRICAL

1. Electrical scope per HEIN Engineering Group's Mechanical / Electrical Description dated 8/17/11.

BASE BUDGET COST BREAKDOWN

General Conditions	$94,112	
Demolition/Abatement	$693,000	
General Carpentry	$255,416	
Doors and Windows	$83,239	
Finishes	$403,534	
Specialties	$18,250	
Plumbing	$148,900	
Fire Protection	$11,200	
HVAC	$959,700	(see attached breakdown)
Electrical	$321,404	
Subtotal	$2,988,755	
Contractor Fee (5%)	$149,438	
Contractor Contigency (5%)	$149,438	
Total	$3,287,631	

INFORMATIONAL PRICING

4TH Floor Work Only

1. Remove from base budget all scope of work related to the other floors.
2. $520,000 budget for HVAC work on 4th floor only

TOTAL BUDGET: $1,850,000

HVAC Informational Price #1

1. Provide new water-cooled variable refrigerant system on the 2nd and 3rd floor North-East office wing.
2. Provide new make-up air handler on the 3rd floor mechanical room to serve both 3rd and 4th floors.
3. Connect to existing hot water and chilled water riser in the mechanical room.
4. Increase fluid cooler and condenser loop capacity to 90 tons.
5. Remove and replace hallway ceilings.
6. Relocate branches and sprinkler heads on 2nd and 3rd floor North-East wing corridors as part of remodeling the corridors for the HVAC improvements.
7. Add power to water-cooled variable refrigerant system on 2nd and 3rd floor North-East as part of expanded HVAC system in those areas.
8. Demolition and remounting lights and devices in the corridor.
9. $20,000 allowance for asbestos abatement

ADD: $535,877

HVAC Informational Price #2

1. Increase the new water-cooled variable refrigerant system on 4th floor North-East wing to 8 ton units each.
2. Provide six corridor fan coils at the ends of each corridor on floors 4, 5, and 6 at the North-East wing corridors.
3. Increase power to water-cooled variable refrigerant system on 4th floor North-east as part of increased capacity of HVAC system in that area.
4. Provide power to fan coils on the 5th, 6th, and 7th floors.

ADD: $98,000

HVAC Informational Price #3

1. Increase fluid cooler by 70 ton to accommodate closed loop condenser loop for the existing 70 ton reciprocating chiller in the basement

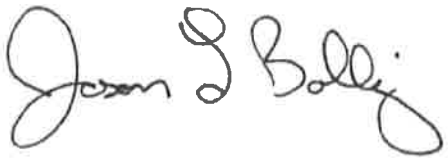
ADD: $76,800

EXCLUSIONS / CLARIFICATIONS

1. Furniture and appliances are not included in this budgeting.

We appreciate the opportunity to provide you with budgeting on this project. If you require additional information or have any questions, please contact us.

Sincerely,



Jason L. Bollig
Vice President

Lowell Center Renovation - HVAC Cost Estimate (4-pipe amendment)

NOTE:

Includes 4th Floor NE wing, which was removed from scope.

NE Wing - 4th Floor		
Ductwork	1800# @ $8.00/#	$ 14,400
Ductwork Fittings	180# @ $10.00/#	$ 1,800
Ductwork Connections	4" 160ft @ $15 /ft	$ 2,400
Ductwork Insulation	1500 SF @ $ 3.50/SF	$ 5,250
Piping	1620 Ft @ $ 15/ft	$ 24,300
Condensate Piping	600 Ft @ $ 10/ft	$ 6,000
Piping Ftgs	120 @ $ 40/ea	$ 4,800
Piping Insulation	2220 Ft @ $ 5/ft	$ 11,100
AHU/louver	2000 CFM @ $ 8./CFM	$ 13,200
AHU Piping, Ftgs & Connections		$ 5,400
Clg Exhaust Fans	15 @ $ 250/ea	$ 3,750
Fire Dampers	14 @ $ 250/ea	$ 3,500
Grilles & Duct Access	16 @ $ 100/ea	$ 1,600
Electronic Time Clocks	15 @ $ 50/ea	$ 800
South Wing - 2nd, 3rd, 4th , 5th, 6th & 7th		
Ductwork	5700# @ $8.00/#	$ 45,600
Ductwork Fittings	570# @ $10.00/#	$ 5,700
Ductwork Connections	4" 720ft @ $15 /ft	$ 10,800
Ductwork Insulation	5200 SF @ $ 3.50/SF	$ 18,200
Piping	3900 Ft @ $ 15/ft	$ 58,500
Condensate Piping	1130 Ft @ $ 10/ft	$ 11,300
Piping Ftgs	500 @ $ 40/ea	$ 20,000
Piping Insulation	5030 Ft @ $ 5/ft	$ 25,200
Clg Exhaust Fans	72 @ $ 250/ea	$ 18,000
Fire Dampers	72 @ $ 250/ea	$ 18,000
Grilles & Duct Access	72 @ $ 100/ea	$ 72,000
Electronic Time Clocks	72 @ $ 50/ea	$ 3,600
Fan Coils & Piping Rough-in	92 @ $ 2100/ea	$193,200
Convectors & Piping Rough-in	5 @ $ 1500/ea	$ 7,500
Controls		
Fan Coils	87 @ $ 1000/ea	$ 87,000
Convector	5 @ $ 500/ea	$ 2,500
Network Wiring	1000 ft @ $ 2/ft	$ 2,000
Software and Programming		$ 5,000
Clean Exhaust Risers	18 @ $ 500/ea	$ 9,000
Test & Balance		
Water	92 @ $ 50/ea	$ 4,600
Air	88 @ $ 25/ea	$ 2,200
Fans	18 @ $ 100/ea	$ 1,800
AHU	1 @ $ 500	$ 500
Demolition - HVAC		$ 40,000
Cutting & Patching - HVAC		$ 10,000
Crane		$ 10,000
HVAC Construction Estimate	=	$ 780,500
15% OH& P	=	$ 117,100
Permits	=	$ 9,100
Start-up & Warranty	=	$ 7,300
		$ 914,000
Contingency 5%	=	$ 45,700
Project Construction Cost Estimate w/ Contingency	=	**$ 959,700**

* * *

DESTREE
architecture & design

October 11, 2013

Re: The Lowell Center 1st Floor HVAC for Sleeping Rooms and Related Offices

This Letter is an Estimate of Probable cost to upgrade the balance of sleeping rooms on 1st floor as well as the related offices adjacent.

The Estimate of Probable Cost is $318,521. These Costs have been included in the total Budget on Page 11.

BUDGET	**A/E Request**
1st floor Sleeping Rooms HVAC 4-Pipe	$217,147
Finish Repair	$21,000
Total Construction Cost	**$238,147**
Contingency (10%)	$23,815
A/E Fee (9%)	$21,433
DSF Mgmt (4%)	$9,526
Plan Review	$1,600
Haz Mat Abatement	$24,000
Moveable Equipment	$0
Total	**$318,521**
Costruction Remodeling Cost /GSF	$82
Total Project Cost / GSF	$110

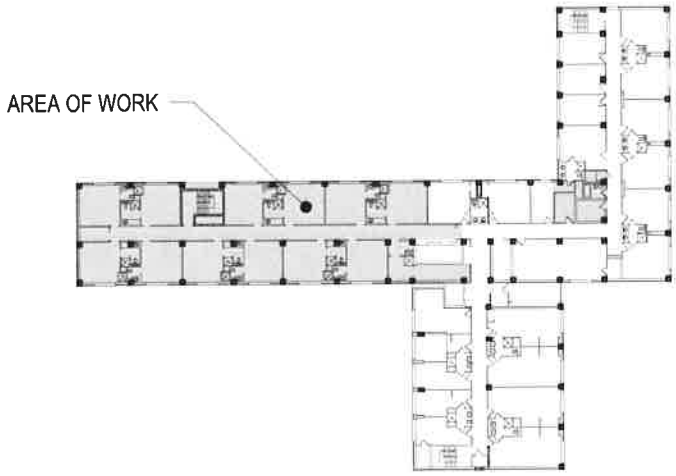
Budget Notes:
See Attached itemized HVAC budget.
This estimate does not include finish material upgrades in the rooms only repairs.

Sincerely,

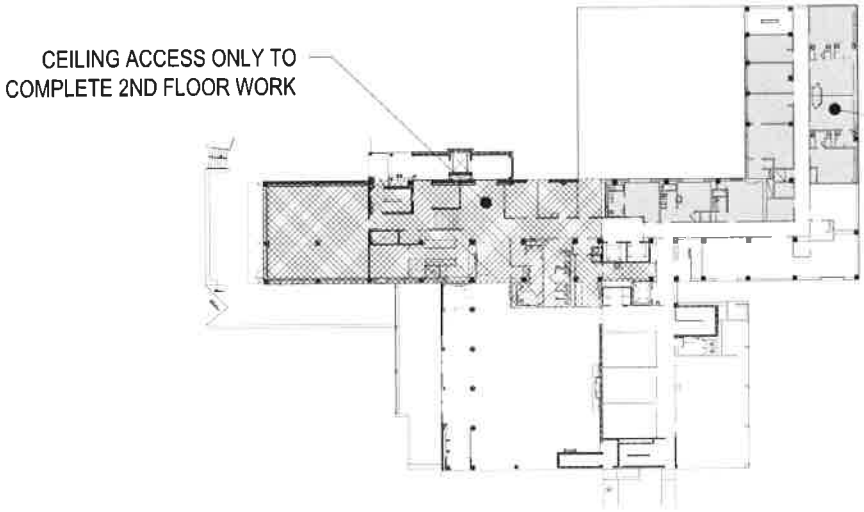
Melissa Destree, AIA, IIDA
Destree Design Architects, Inc.

Lowell Center Renovation - HVAC Cost Estimate

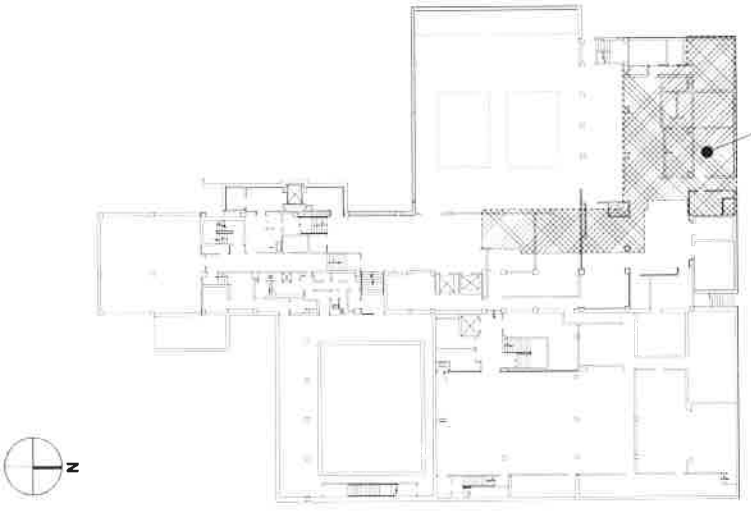
1st Flr Sleeping Rms + related Offices	units	Cost per unit	Total
Ductwork	1600 ft	$8	$12,800
Ductwork Fittings	160	$10	$1,600
Ductwork Connections	140 ft	$15	$2,100
Ductwork Inuslation	1400 sf	$3	$4,200
Piping	1520 ft	$15	$22,800
Condensate Piping	520 ft	$10	$5,200
Piping Ftgs	108	$40	$4,320
Piping Inulation	1920 ft	$5	$9,600
AHU/Louver	2000 cfm	$8	$16,000
AHU Piping, Ftgs, Connections			$5,400
Clg Exhaust Fans	8	$250	$2,000
Fire Dampers	10	$250	$2,500
Grilles & Duct Access	12	$100	$1,200
Electronic Time Clocks	14	$50	$700
Fan coils & Piping Rough-in	14	$2,100	$29,400
Convectors & Piping Rough-in	1	$1,500	$1,500
Controls			
Fan Coils	14	$1,000	$14,000
Convector	1	$500	$500
Network Wiring	800 ft	$2	$1,600
Software & Programming			$5,000
Clean Exhaust Risers	7	$1,000	$7,000
Test and Balance			
Water	14	$50	$700
Air	14	$50	$700
Fans	7	$150	$1,050
AHU	1	$500	$500
Demolition - HVAC			$14,000
Cutting & Patching - HVAC			$5,000
Crane			$10,000
		Subtotal	$181,370
OH&P		10%	$18,137
permit (Not Included)			
Start-up & Warranty			$7,300
			$206,807
contingency		5%	$10,340
			$217,147



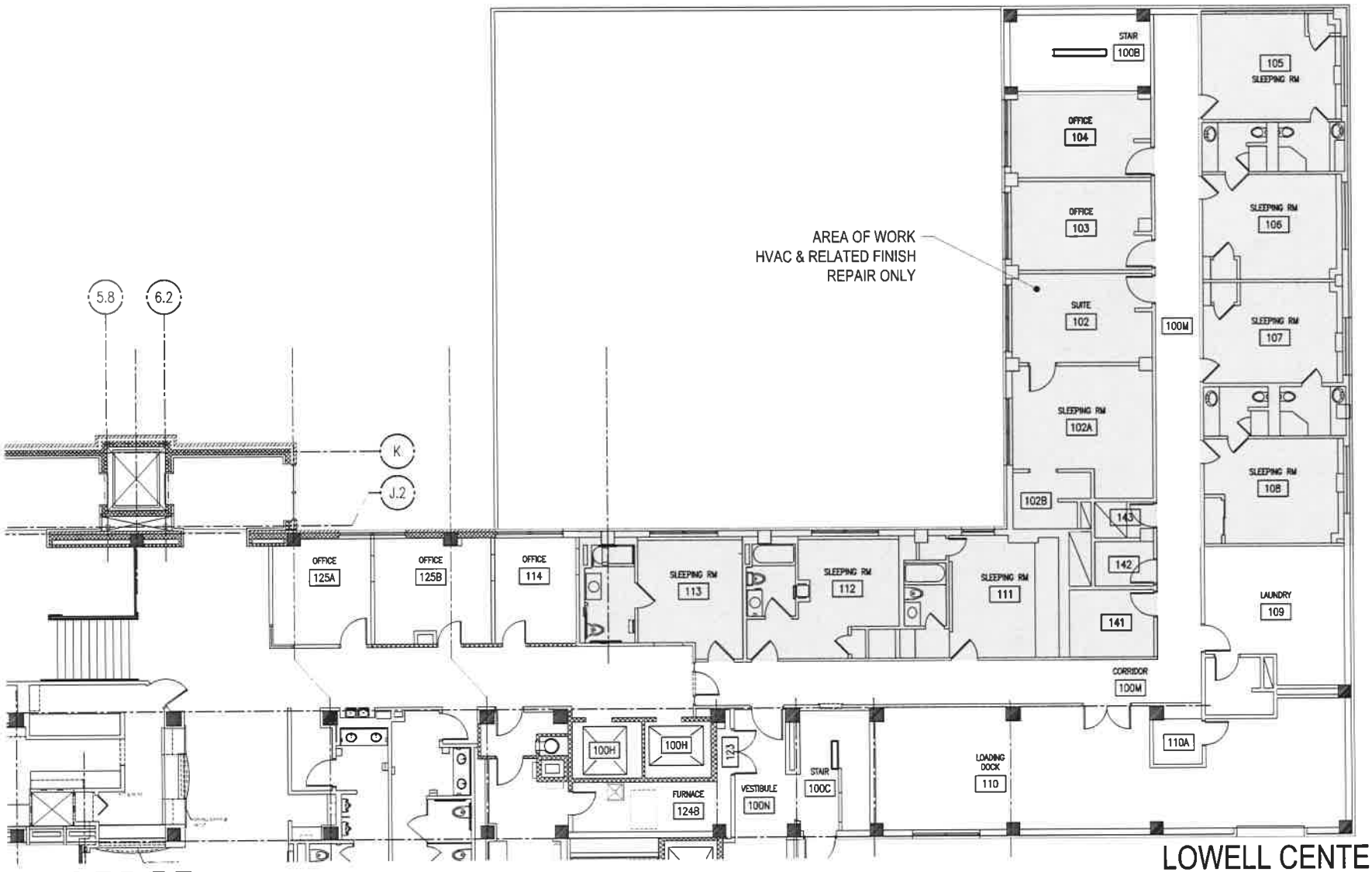
TYPICAL FLOORS 2-7



FIRST FOOR



GROUND LEVEL



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FIRST FLOOR

LOWELL CENTER
UW EXTENSION

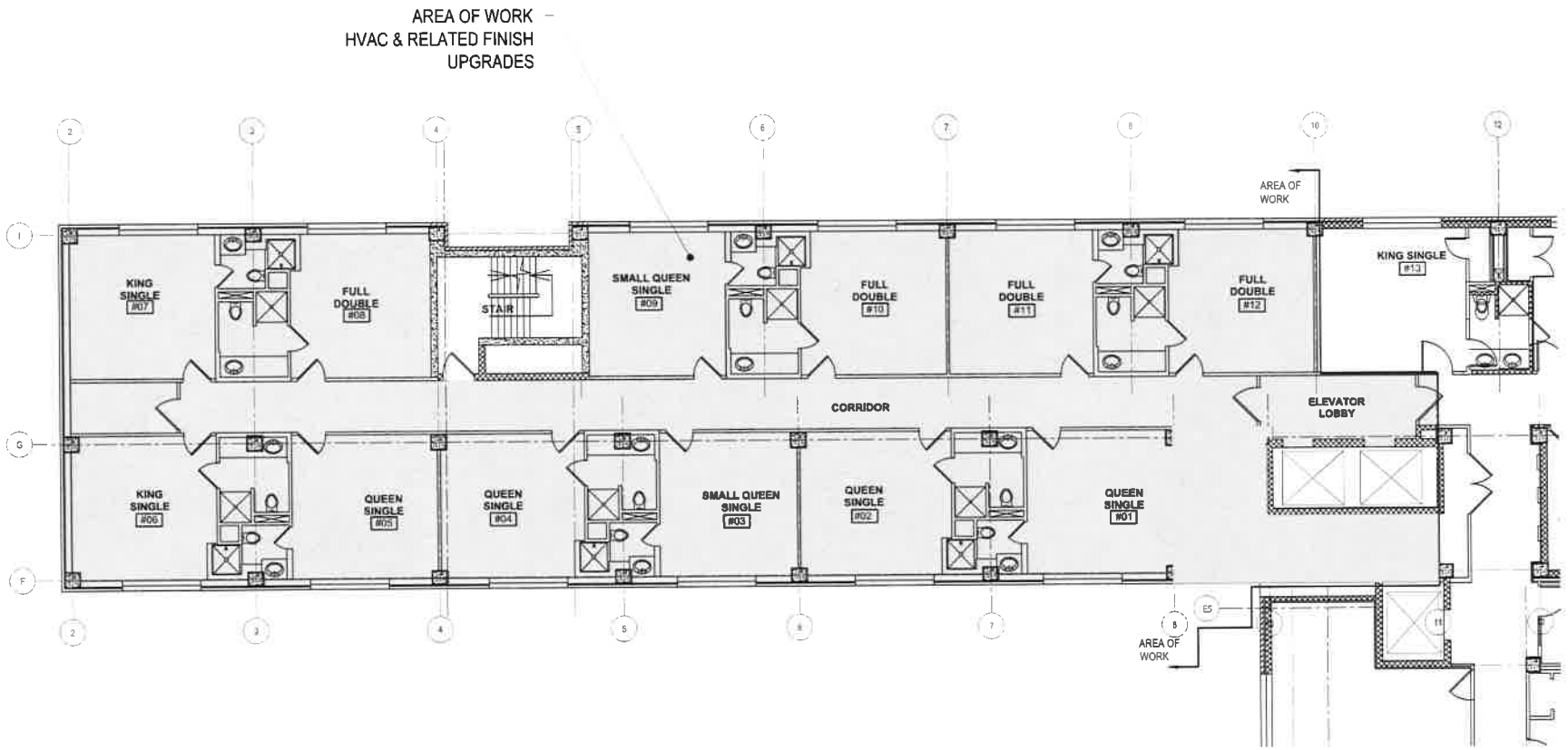
09.23.11

SCALE : 3/32" = 1'-0"

FIRST FLOOR EXISTING SLEEPING ROOMS

0' 5'-4" 10'-8" 21'-4"

PROJECT # 10J1H.04



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EXISTING TYPICAL FLOORS 2-7

EXISTING SOUTH WING

0' 5'-4" 10'-8" 21'-4"

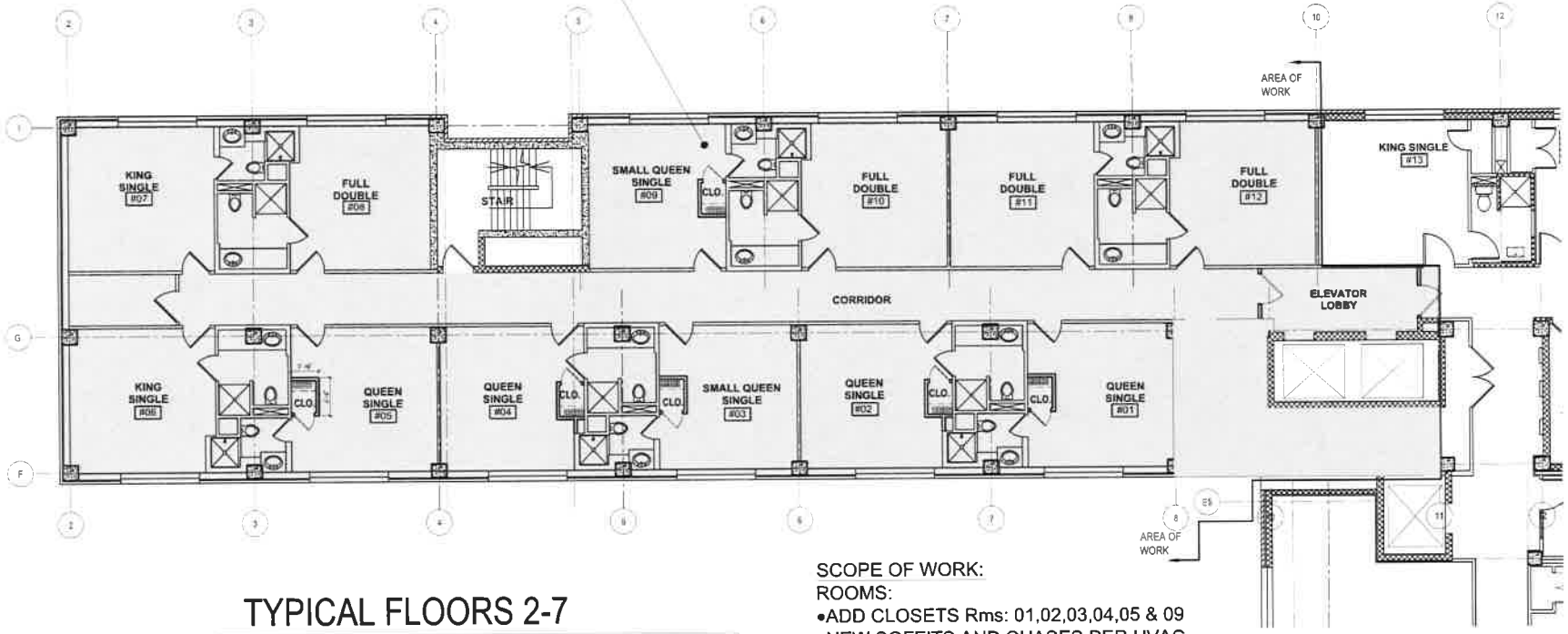
LOWELL CENTER
UW EXTENSION

09.23.11

SCALE : 3/32" = 1'-0"

PROJECT # 10J1H.04

AREA OF WORK
HVAC & RELATED FINISH
UPGRADES



TYPICAL FLOORS 2-7

SOUTH WING: EXISTING RM MATRIX = 12 RM	
SLEEPING ROOMS	QUANTITY
QUEEN SINGLE	6
SMALL QUEEN SINGLE	2
FULL DOUBLE	4
TOTAL	12

SCOPE OF WORK:
ROOMS:
- ADD CLOSETS Rms: 01,02,03,04,05 & 09
- NEW SOFFITS AND CHASES PER HVAC
- NEW SILLS
- NEW CEILING TREATMENT
- NEW WALL COVERING
- REUSE CARPET

COORIDOR/ELEVATOR LOBBY
- NEW ADA OPERATOR & DOORS
- NEW WALL COVERING & CARPET
- NEW ACT TILE
- NEW WALL SCONCE LIGHTING
- ONLY EXHAUST WORK IN TOILET ROOMS

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LOWELL CENTER
UW EXTENSION

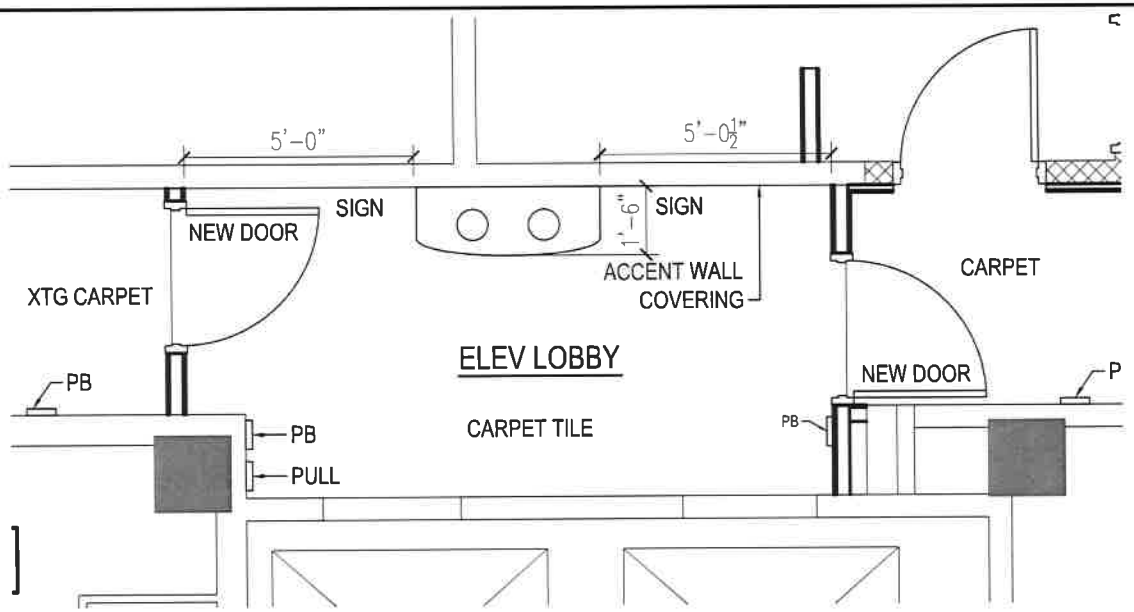
11.08.13

SCALE : 3/32" = 1'-0"

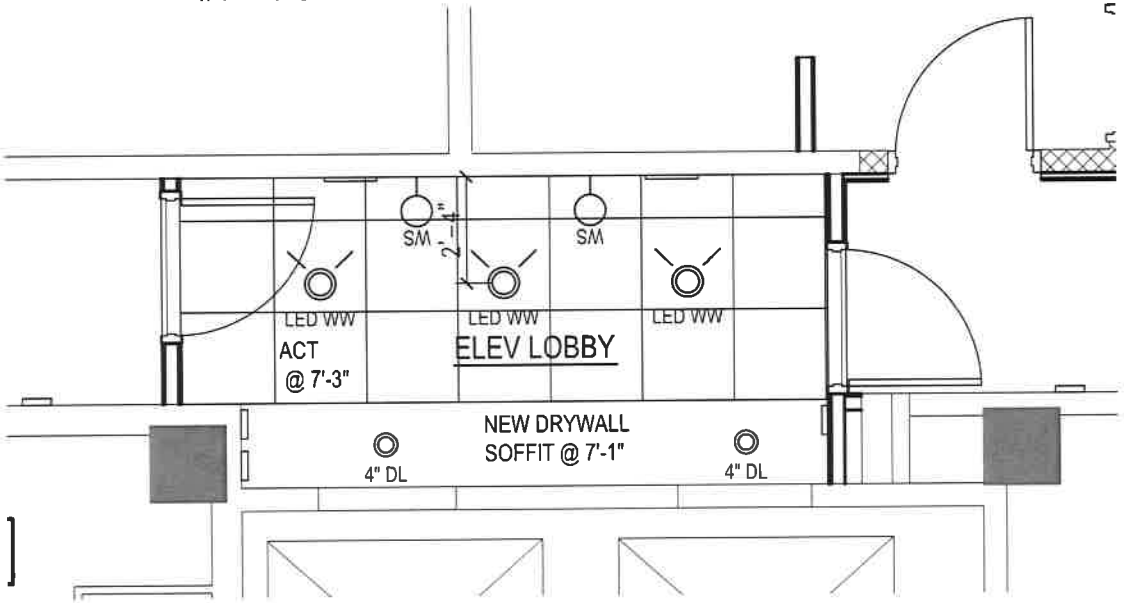
AREA OF WORK - SOUTH WING & ELEVATOR LOBBY

0' 5'-4" 10'-8" 21'-4"

PROJECT # 10J1H.04



2 FLOOR PLAN
1/4" = 1'-0"



1 REFLECTED CEILING PLAN
1/4" = 1'-0"

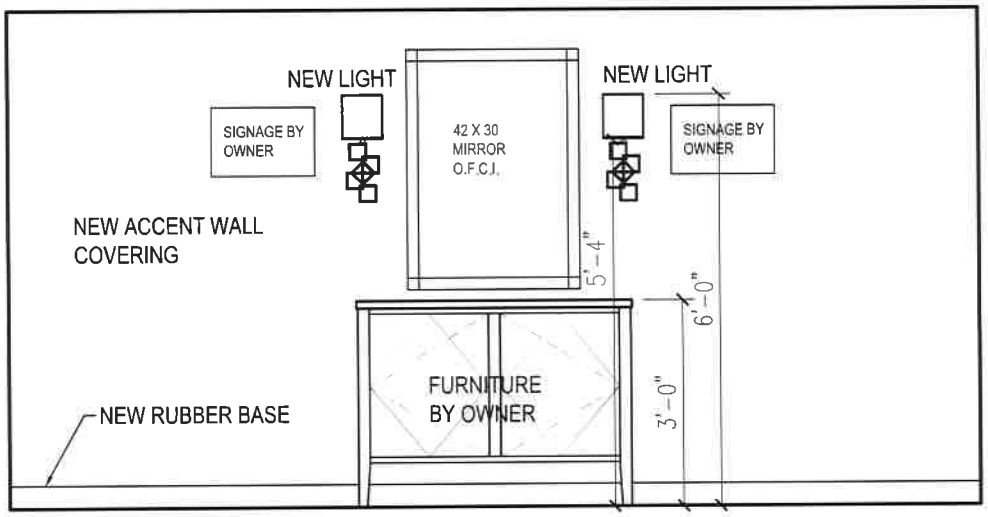
DESTREE
architecture & design
222 West Washington Ave. Suite 310,
Madison, WI 53703
ph: 608.268.1499 fax: 608.268.1498

LOWELL HALL

ELEVATOR RENOVATION

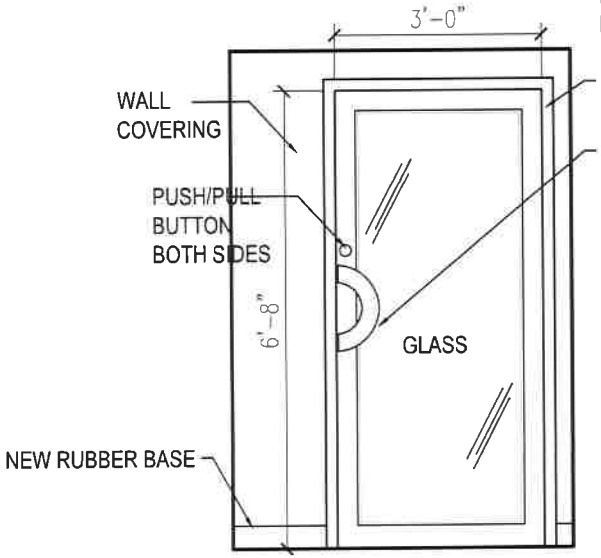
PROJECT:	
NUMBER:	101111.00
DATE:	06.01.11
ISSUANCES:	
---	---
REV:	07.06.11

25



NOTE: FURNITURE TO HAVE STAINLESS STEEL RINGS WITH RECYCLING & TRASH MARKED

2 INTERIOR ELEVATION
3/8" = 1'-0"



AUTOMATIC OPENER: STANLEY MAGIC-FORCE BOTTOM LOAD SINGLE DOOR CONCEALED.

2" HM FRAME TO BE PAINTED WITH SCUFFMASTER PAINT

HANDLE : FORMS AND SURFACES ARA HDARA5131 FINISH US32D SATIN STAINLESS STEEL

DOOR: EFCO 1 3/4" STANDARD ALUMINUM SWING D300 MEDIUM STYLE FINISH CHAMPAGNE, CLASS 1 DARK RANGE

1 INTERIOR ELEVATIONS
3/8" = 1'-0"

DESTREE architecture & design
222 West Washington Ave. Suite 310,
Madison, WI 53703
ph: 608.268.1499 fax: 608.268.1498

LOWELL HALL

ELEVATOR RENOVATION

PROJECT:	
NUMBER:	101111.00
DATE:	06.01.11
ISSUANCES:	
—	—
REV:	07.06.11

4th Floor Renovation - Lowell Center

SELECTED OPTION

OPTION A: Fan Coil 4-Pipe with Central Chiller and Boiler.

DESCRIPTION: This option will provide 4-pipe fan coil units at the outside walls of each guest room with heating and cooling coils connected to the central chilled and hot water system. New hot water and chilled water piping will be routed over the perimeter similar to the earlier phase work. Hot water convectors will be added at non-guest room spaces with exterior exposures. The fan coil units will be provided with an interior condensate collection system to existing condensate risers. Fan coil unit control valves and fan will be controlled by a non-programmable wall thermostat with network capabilities.

CONSTRUCTION COST ESTIMATE

1.	Fan Coil Units 16 @ $800	=	$	12,800
2.	Controls 16 @ $1000 + 6 @ $300	=	$	17,800
3.	HW Convectors 6 @ $700	=	$	4,200
4.	HW & CHW Piping	=	$	15,000
5.	Condensate Piping	=	$	3,600
6.	Electrical	=	$	3,000
	Construction Estimate	=	$	56,400
	25% OH&P	=	$	14,100
	Option Cost Estimate	=	$	70,500

NOTE:

Includes 4th Floor NE wing, which was removed from scope.

ANNUAL MAINTENANCE COST ESTIMATES:

1.	Fan Coil Annual Maintenance Costs(3%)	=	$	2,100/yr

REPLACEMENT-REPAIR COST ESTIMATES:

1.	Fan Coil Replacement @ year 15	=	$	12,800

ANNUAL ENERGY COST ESTIMATES:

Assumptions:

- Seasonal heating efficiency = 70%(HW boilers)
- Hot Water Pumping = 40 ft head = 810 KWH/yr
- Seasonal cooling efficiency = 0.72 KW/ton + 0.10 KW/ton pump & CT = 0.82 KW/ton
- Heating season thermal requirements = 76.5 million BTU/yr
- Cooling season thermal requirements = 128.7 million BTU/yr
- Natural Gas cost = $ 0.70/therm
- Electricity costs = $ 0.10/KWH

1.	Annual Heating Costs(boiler)	=	1,092 Therms/yr	=	$	765yr
2.	Annual Heating Costs(pumping)	=	810 KWH/yr	=	$	81yr
3.	Annual Cooling Costs	=	8,790 KWH/yr	=	$	879/yr
			Total Annual Energy Costs	=	$	1,725/yr

PRESENT VALUE LIFE CYCLE COSTS(PVLCC):

Assumptions:

- 25-year life
- interest rate = 3 %
- fuel escalation rate = 3 % PVF = 24.27
- maintenance cost escalation rate = 1% PVF = 17.30
- 15-year repair/replacement PVF = 0.6419

PVLCC = $70,500 + $2,100x17.30 + $12,800x0.6419 + $1,725x24.27
= $ 156,900

OPTION NOT SELECTED

OPTION B: PTAC(Packaged Thru-wall Air Conditioning with Electric Heat).

DESCRIPTION: This option will provide install PTAC units at the outside walls of each guest room for self-contained heating and cooling independent of the central system. The existing outside wall be cut and patched for the condenser openings(16"x42"). Hot water convectors will be added at non-guest room spaces with exterior exposures. The PTAC units will be provided with an interior condensate collection system to existing condensate risers. PTAC units will be controlled by a non-programmable wall thermostat with network capabilities.

CONSTRUCTION COST ESTIMATE

1.	PTAC Units 16 @ $1500	=	$	24,000
2.	C&P outside wall for PTAC condenser openings	=	$	19,200
3.	Controls 16 @ $ 400 + 6 @ $ 300	=	$	8,200
4.	HW Convectors 6 @ $700	=	$	4,200
5.	Condensate Piping	=	$	3,600
6.	Electrical	=	$	4,000
	Construction Estimate	=	$	63,200
	25% OH&P	=	$	15,800
	Option Cost Estimate	=	$	79,000

ANNUAL MAINTENANCE COST ESTIMATES:

1.	PTAC Annual Maintenance Costs(3%)	=	$	2,400/yr

REPLACEMENT-REPAIR COST ESTIMATES:

1.	PTAC Replacement @ year 15	=	$	24,000

ANNUAL ENERGY COST ESTIMATES:

Assumptions:

- Seasonal heating efficiency SCOP = 1.0(electric heat)
- Seasonal cooling efficiency SEER = 12.0
- Heating season thermal requirements = 76.5 million BTU/yr
- Cooling season thermal requirements = 128.7 million BTU/yr
- Natural Gas cost = $ 0.70/therm
- Electricity costs = $ 0.10/KWH

1.	Annual Heating Costs	=	22,400 KWH/yr	=	$	2,240/yr
2.	Annual Cooling Costs	=	10,720 KWH/yr	=	$	1,072/yr
			Total Annual Energy Costs	=	$	3,312/yr

PRESENT VALUE LIFE CYCLE COSTS(PVLCC):

Assumptions:

- 25-year life
- interest rate = 3 %
- fuel escalation rate = 3 % PVF = 24.27
- maintenance cost escalation rate = 1% PVF = 17.30
- 15-year repair/replacement PVF = 0.6419

PVLCC = $79,000 + $2,400x17.30 + $24,000x0.6419 + $3,312x24.27
= $ 213,100

OPTION NOT SELECTED

OPTION C: PTAC(Packaged Thru-wall Air Conditioning with Central Hot Water Heat).

DESCRIPTION: This option will provide install PTAC units at the outside walls of each guest room for self-contained cooling independent of the central system with hot water heating piped from the central boiler system . The existing outside wall be cut and patched for the condenser openings(16"x42"). New hot water piping will be routed over the perimeter similar to the earlier phase work. Hot water convectors will be added at non-guest room spaces with exterior exposures. The PTAC units will be provided with an interior condensate collection system to existing condensate risers. PTAC units will be controlled by a non-programmable wall thermostat with network capabilities.

CONSTRUCTION COST ESTIMATE

1.	PTAC Units 16 @ $1500	=	$	25,600
2.	C&P outside wall for PTAC condenser openings	=	$	19,200
3.	Controls 16 @ $ 750 + 6 @ $ 300	=	$	13,800
4.	HW Convectors 6 @ $700	=	$	4,200
5.	HW Piping	=	$	7,500
5.	Condensate Piping	=	$	3,600
6.	Electrical	=	$	4,000
	Construction Estimate	=	$	77,900
	25% OH&P	=	$	19,500
	Option Cost Estimate	=	$	97,400

ANNUAL MAINTENANCE COST ESTIMATES:

1.	PTAC Annual Maintenance Costs(3%)	=	$	2,900/yr

REPLACEMENT-REPAIR COST ESTIMATES:

1.	PTAC Replacement @ year 15	=	$	25,600

ANNUAL ENERGY COST ESTIMATES:

Assumptions:

- Seasonal heating efficiency = 70%(HW boilers)
- Hot Water Pumping = 40 ft head = 810 KWH/yr
- Seasonal cooling efficiency SEER = 12.0
- Heating season thermal requirements = 76.5 million BTU/yr
- Cooling season thermal requirements = 128.7 million BTU/yr
- Natural Gas cost = $ 0.70/therm
- Electricity costs = $ 0.10/KWH

1.	Annual Heating Costs(boiler)	=	1,092 Therms/yr	=	$	765yr
2.	Annual Heating Costs(pumping)	=	810 KWH/yr	=	$	81yr
3.	Annual Cooling Costs	=	10,720 KWH/yr	=	$	1,072/yr
			Total Annual Energy Costs	=	$	1,918/yr

PRESENT VALUE LIFE CYCLE COSTS(PVLCC):

Assumptions:

- 25-year life
- interest rate = 3 %
- fuel escalation rate = 3 % PVF = 24.27
- maintenance cost escalation rate = 1% PVF = 17.30
- 15-year repair/replacement PVF = 0.6419

PVLCC = $97,400 + $2,900x17.30 + $25,600x0.6419 + $1,918x24.27
= $ 210,600

4th Floor Renovation - Lowell Center

OPTION NOT SELECTED

OPTION D: Water-Cooled Variable Refrigerant Flow with Central Boiler and Fluid Cooler.

DESCRIPTION: This option will provide two(2) 7-ton water-cooled VRF(variable refrigerant flow) condensers in the mechanical room with ductless fan coil units mounted either at the inside walls or as floor-mounted units similar to the fan coils from phase 1. The VRF system will allow independent heating and cooling operation in each guest room with the capabilities of heat recovery between units. The water-cooled condenser loop, fluid cooler and heat exchanger costs are not included in this project costs. Hot water convectors will be added at non-guest room spaces with exterior exposures. The ductless fan coil units will be provided with an interior condensate collection system to existing condensate risers. Ductless fan coil units will be controlled by a non-programmable wall thermostat with network capabilities.

CONSTRUCTION COST ESTIMATE

1.	Ductless Fan Coil Units 16 @ $800	=	$	12,800
2.	Water-cooled Condensers 2 @ 7-ton	=	$	17,500
2.	Controls 16 @ $400 + 6 @ $300	=	$	8,200
3.	HW Convectors 6 @ $700	=	$	4,200
4.	Condenser Piping	=	$	1,200
5.	Refrigerant Piping	=	$	6,600
6.	Condensate Piping	=	$	3,600
7.	Electrical	=	$	6,000
	Construction Estimate	=	$	60,100
	25% OH&P	=	$	15,000
	Option Cost Estimate	=	$	75,100

ANNUAL MAINTENANCE COST ESTIMATES:

1.	Fan Coil Annual Maintenance Costs(3%)	=	$	2,200/yr
2.	Condenser Maintenance Costs(3%)	=	$	525/yr

REPLACEMENT-REPAIR COST ESTIMATES:

1.	Fan Coil Replacement @ year 15	=	$	12,800
2.	Condenser Compressor Replacement @ year 15	=	$	8,800

ANNUAL ENERGY COST ESTIMATES:

Assumptions:

- Seasonal heating efficiency = 70%(HW boilers) - Supplemental Heat
- Seasonal heating efficiency SCOP(VRF) = 4.7
- Condenser Pumping = 40 ft head = 1858 KWH/yr
- Seasonal cooling efficiency SEER = 18.0
- VRF Heat Recovery Effect = 20%
- Heating season thermal requirements = 76.5 million BTU/yr
- Cooling season thermal requirements = 128.7 million BTU/yr
- Natural Gas cost = $ 0.70/therm
- Electricity costs = $ 0.10/KWH

1.	Annual Heating Costs(boiler-suppl) =	699 Therms/yr	=	$	489yr
2.	Annual Heating Costs(VRF) =	3,813 KWH/yr	=	$	381yr
3.	Annual Condenser Pumping Costs =	1,858 KWH/yr	=	$	186yr
3.	Annual Cooling Costs =	7,150 KWH/yr	=	$	715/yr
		Total Annual Energy Costs	=	$	1,771/yr

PRESENT VALUE LIFE CYCLE COSTS(PVLCC):

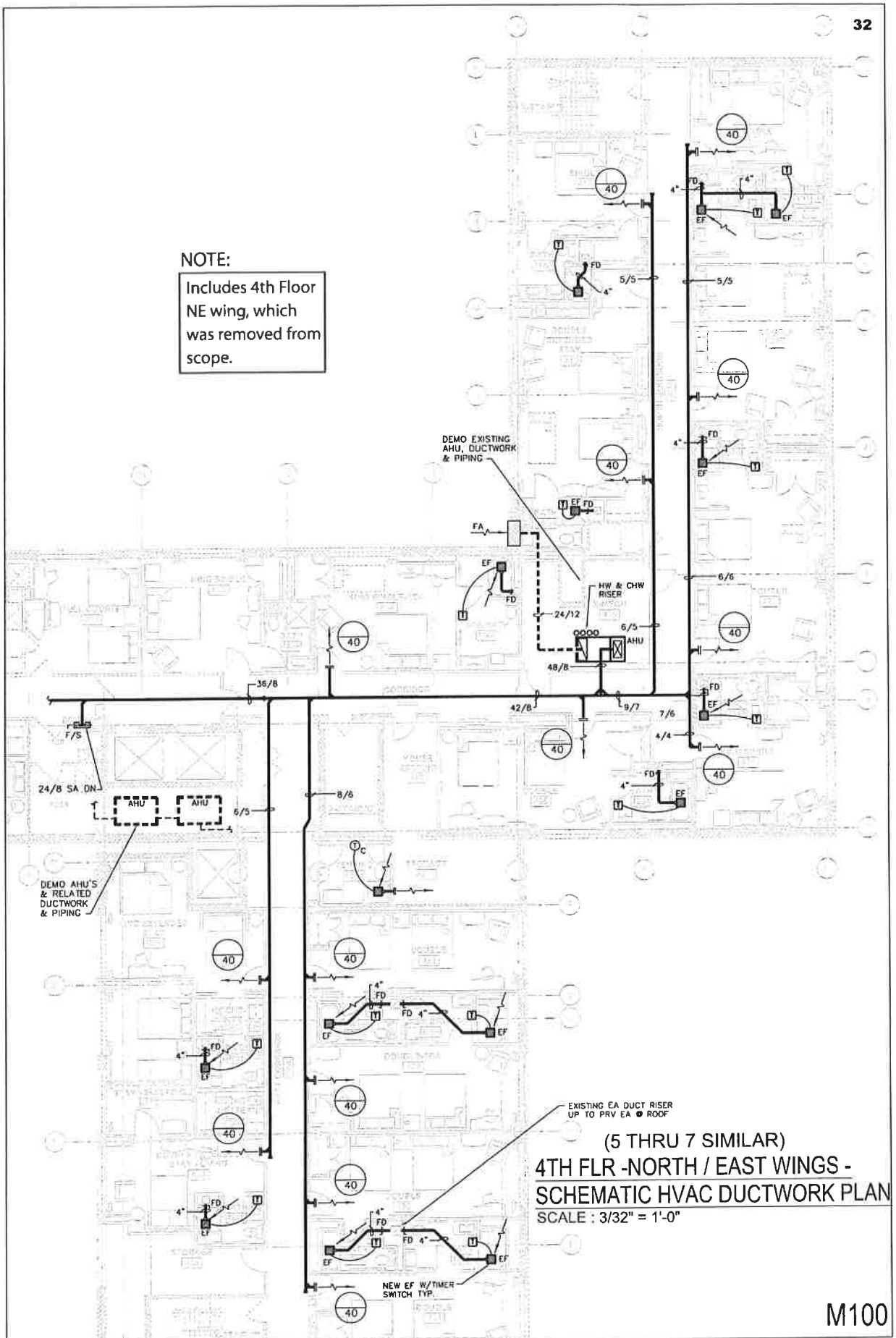
Assumptions:

- 25-year life
- Interest rate = 3 %
- fuel escalation rate = 3 %

PVF = 24.27

- maintenance cost escalation rate = 1% PVF = 17.30
- 15-year repair/replacement PVF = 0.6419

PVLCC = $75,100 + $2,725x17.30 + $21,600x0.6419 + $1,771x24.27
= $ 179,100



(5 THRU 7 SIMILAR)

4TH FLR -NORTH / EAST WINGS - SCHEMATIC HVAC DUCTWORK PLAN

SCALE : 3/32" = 1'-0"

M100

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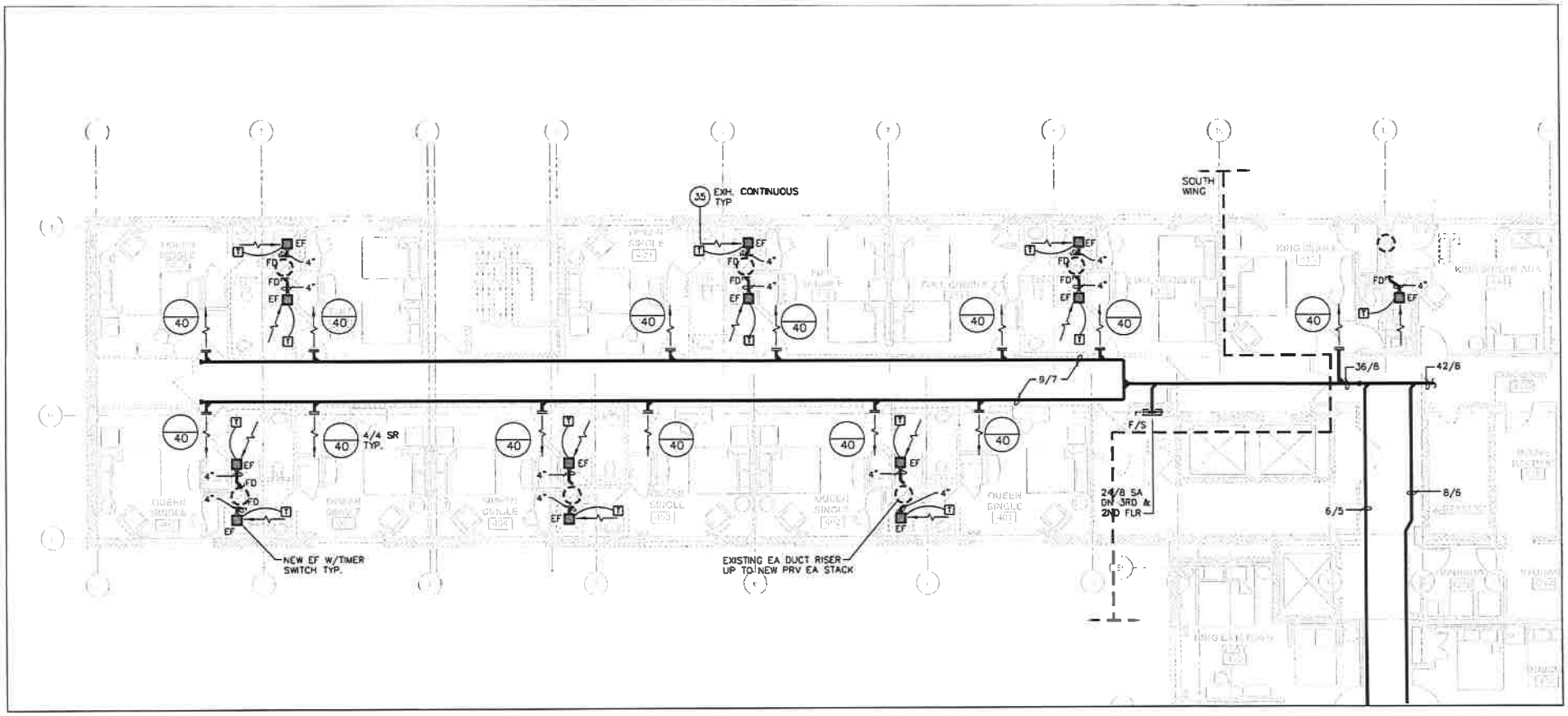
CONSULTING ENGINEERS:
HEIN Engineering Group
319 W. BELTLINE HWY, SUITE 111
MADISON, WI 53713
Phone: (608) 288-9260
Fax: (608) 288-9282
E-Mail: hein@chorus.net

05/02/2012

LOWELL CENTER
UW EXTENSION



NOTE:

Includes 4th Floor NE wing, which was removed from scope.

(5 THRU 7 SIMILAR) SOUTH WING - SCHEMATIC HVAC DUCTWORK PLAN

SCALE : 3/32" = 1'-0"

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05/02/2012

CONSULTING ENGINEERS:
HEIN Engineering Group
319 W. BELTLINE HWY, SUITE 111
MADISON, WI 53713
Phone: (608) 288-9260
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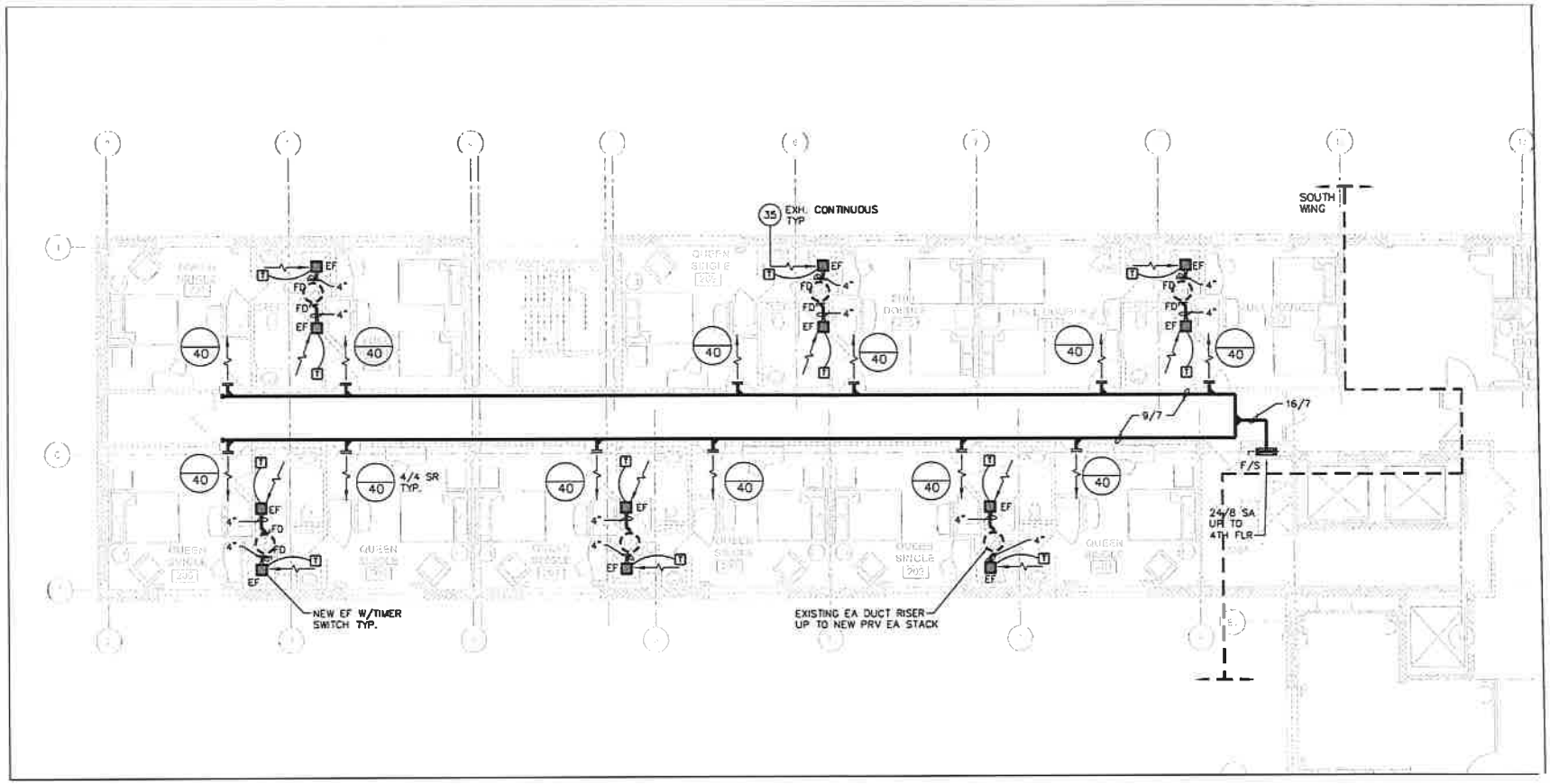
E-Mail: hein@chorus.net

M101
LOWELL CENTER
UW EXTENSION



NOTE:

Includes 4th Floor NE wing, which was removed from scope.

(2 THRU 4 SIMILAR)- SOUTH WING - SCHEMATIC HVAC DUCTWORK PLAN

SCALE : 3/32" = 1'-0"

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05/02/2012

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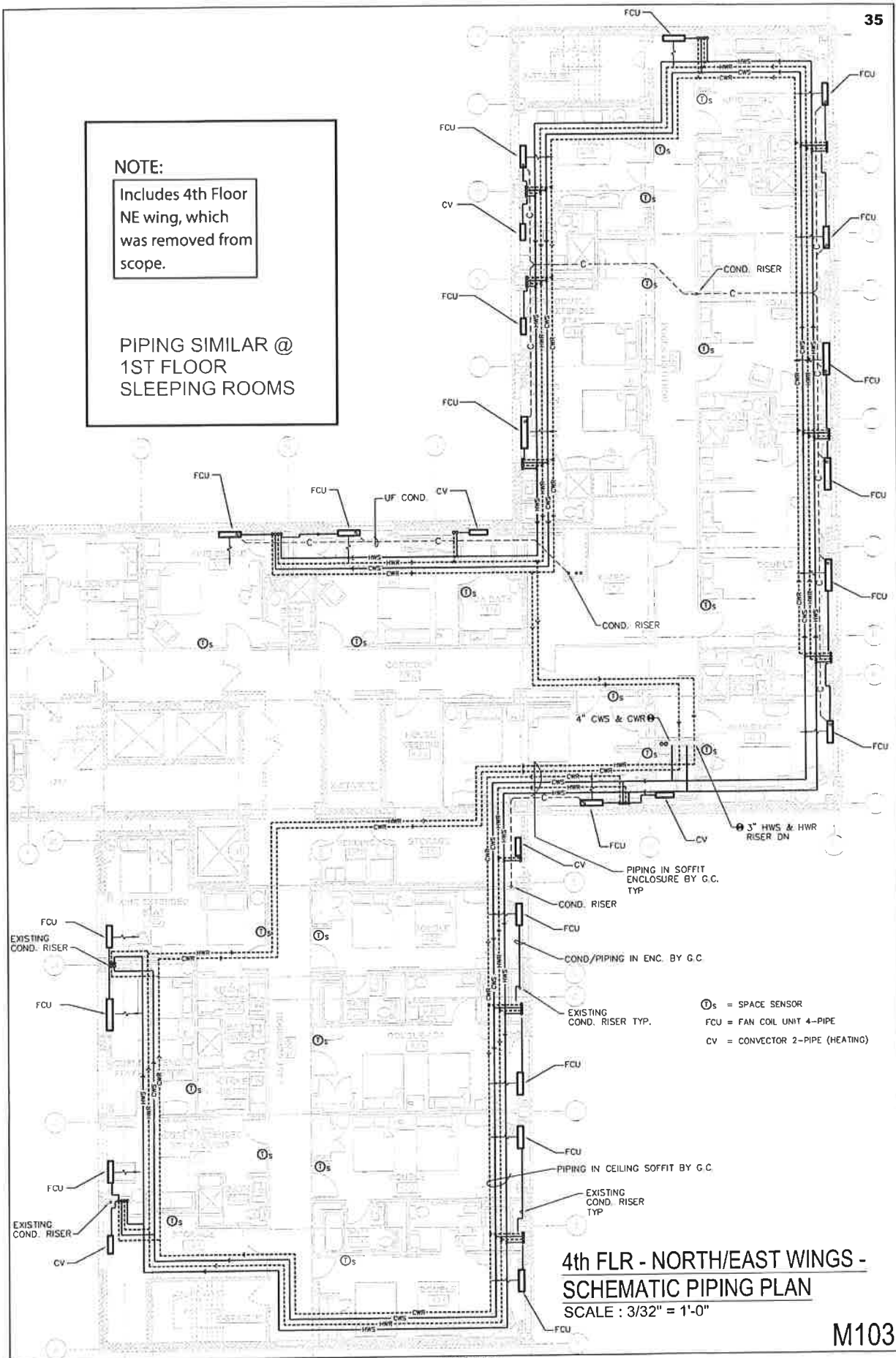
M102
LOWELL CENTER
UW EXTENSION



4th FLR - NORTH/EAST WINGS - SCHEMATIC PIPING PLAN

SCALE : 3/32" = 1'-0"

M103

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CONSULTING ENGINEERS:
HEIN Engineering Group
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MADISON, WI 53713
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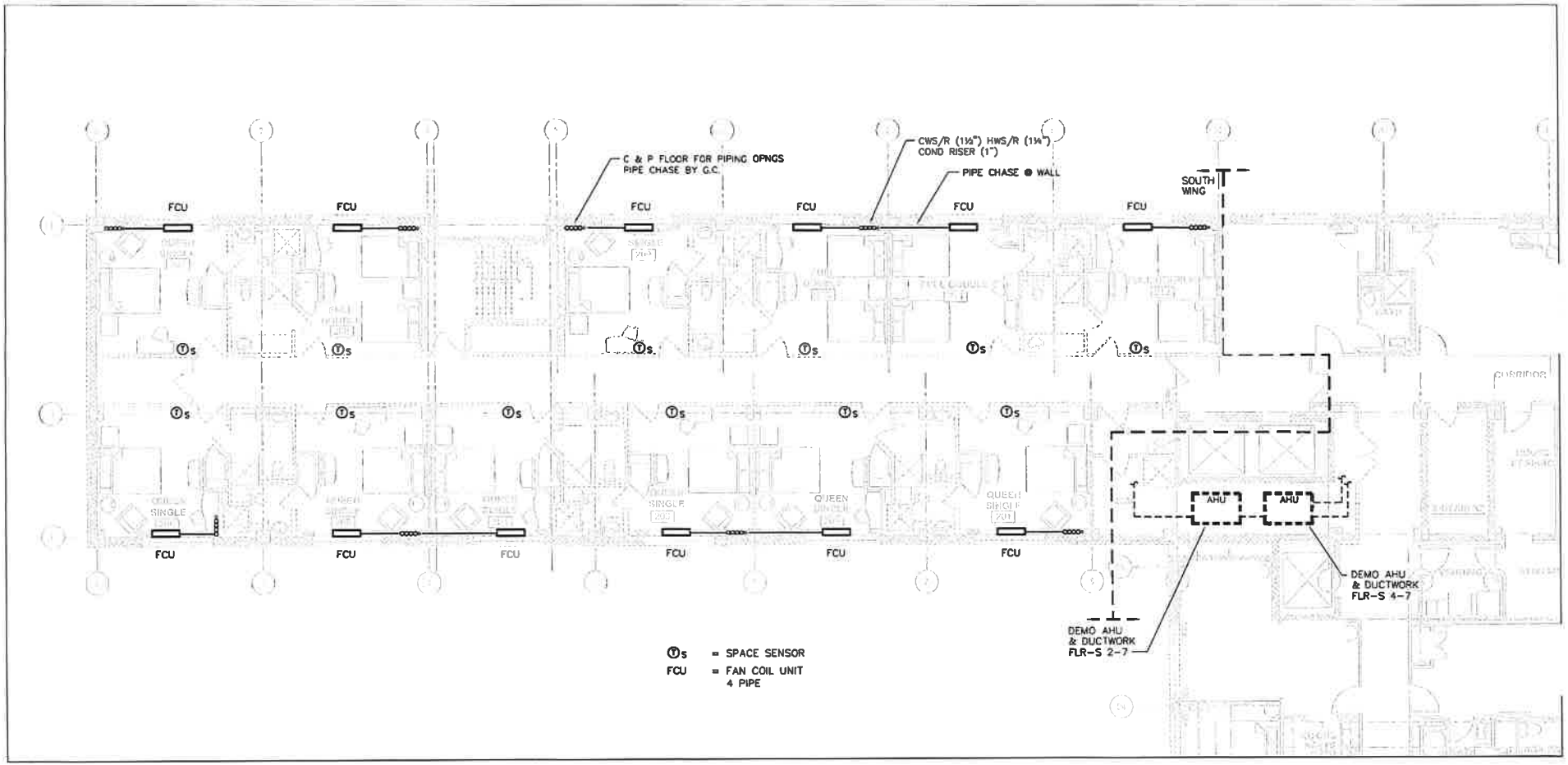
E-Mail: hein@chorus.net

05/2/2012

LOWELL CENTER
UW EXTENSION



2ND-7TH FLR - SOUTH WING - SCHEMATIC HVAC PIPING PLAN

SCALE : 3/32" = 1'-0"

M104

LOWELL CENTER
UW EXTENSION

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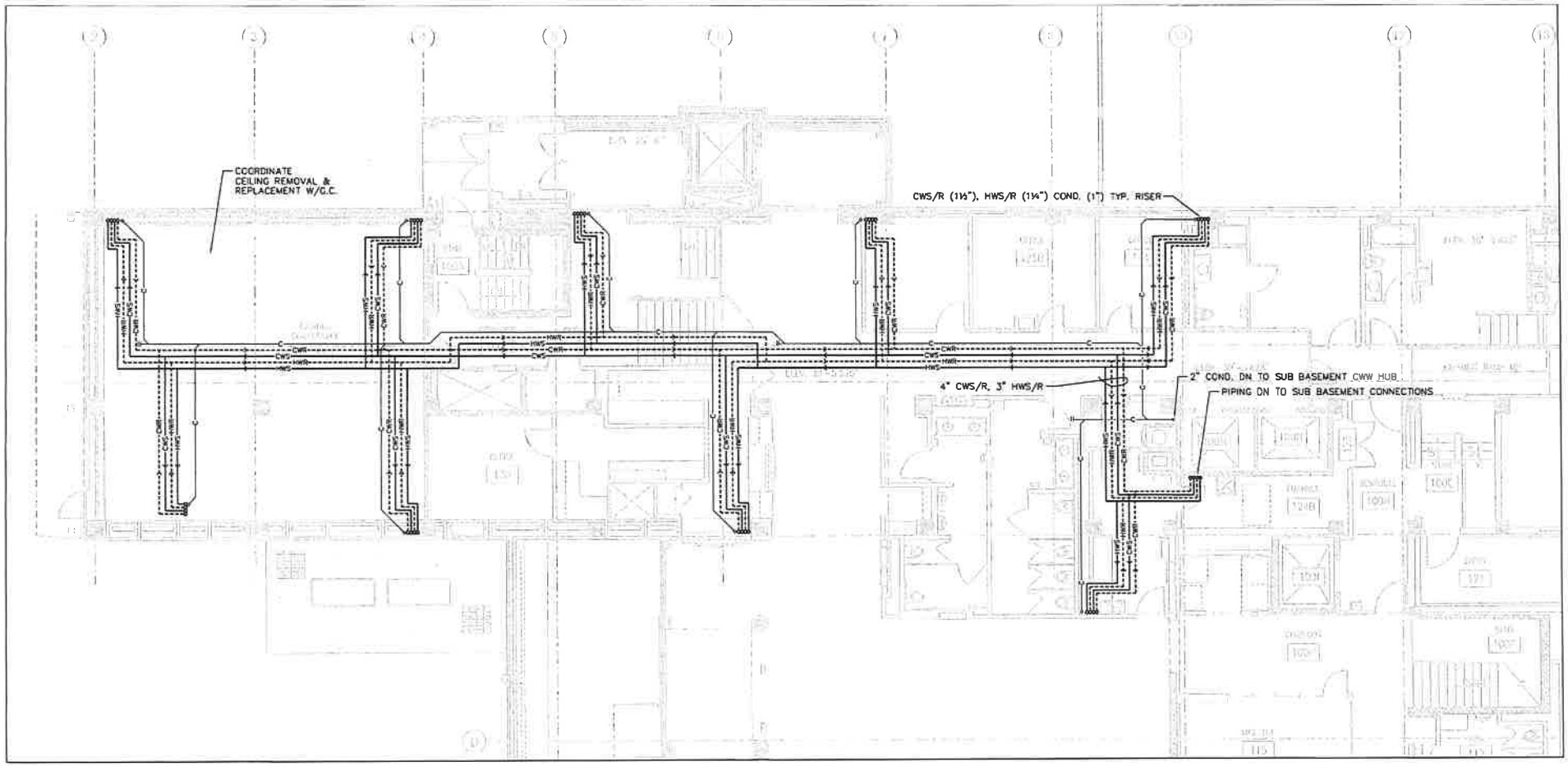

1st FLR - SOUTH WING - SCHEMATIC PIPING PLAN @ CEILING

SCALE : 3/32" = 1'-0"

DESTREE
architecture & design

05/2/2012

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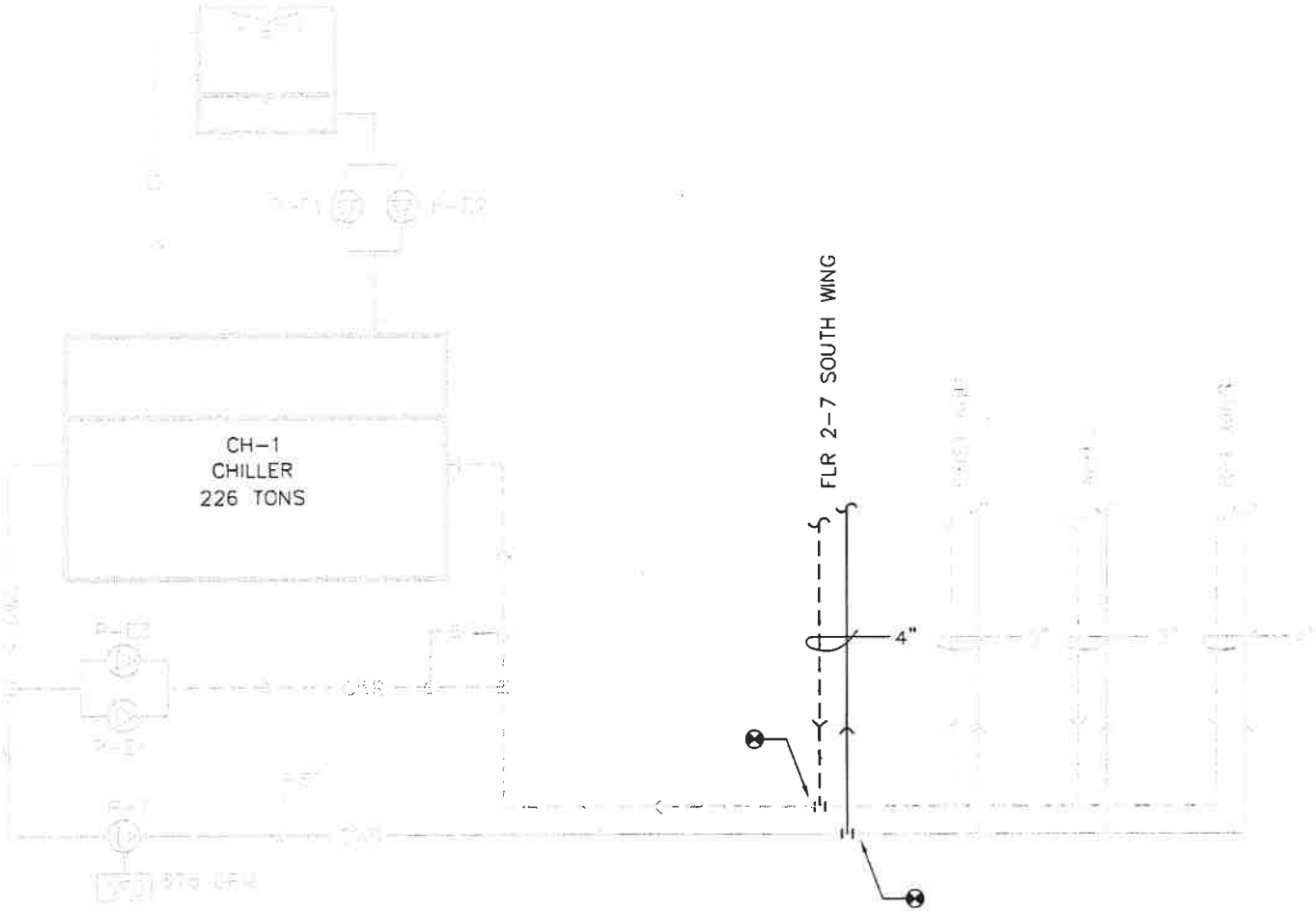
M105
LOWELL CENTER
UW EXTENSION



CHILLED WATER PIPING SCHEMATIC

M200

LOWELL CENTER
UW EXTENSION

DESTREE
architecture & design

05/02/2012

CONSULTING ENGINEERS:
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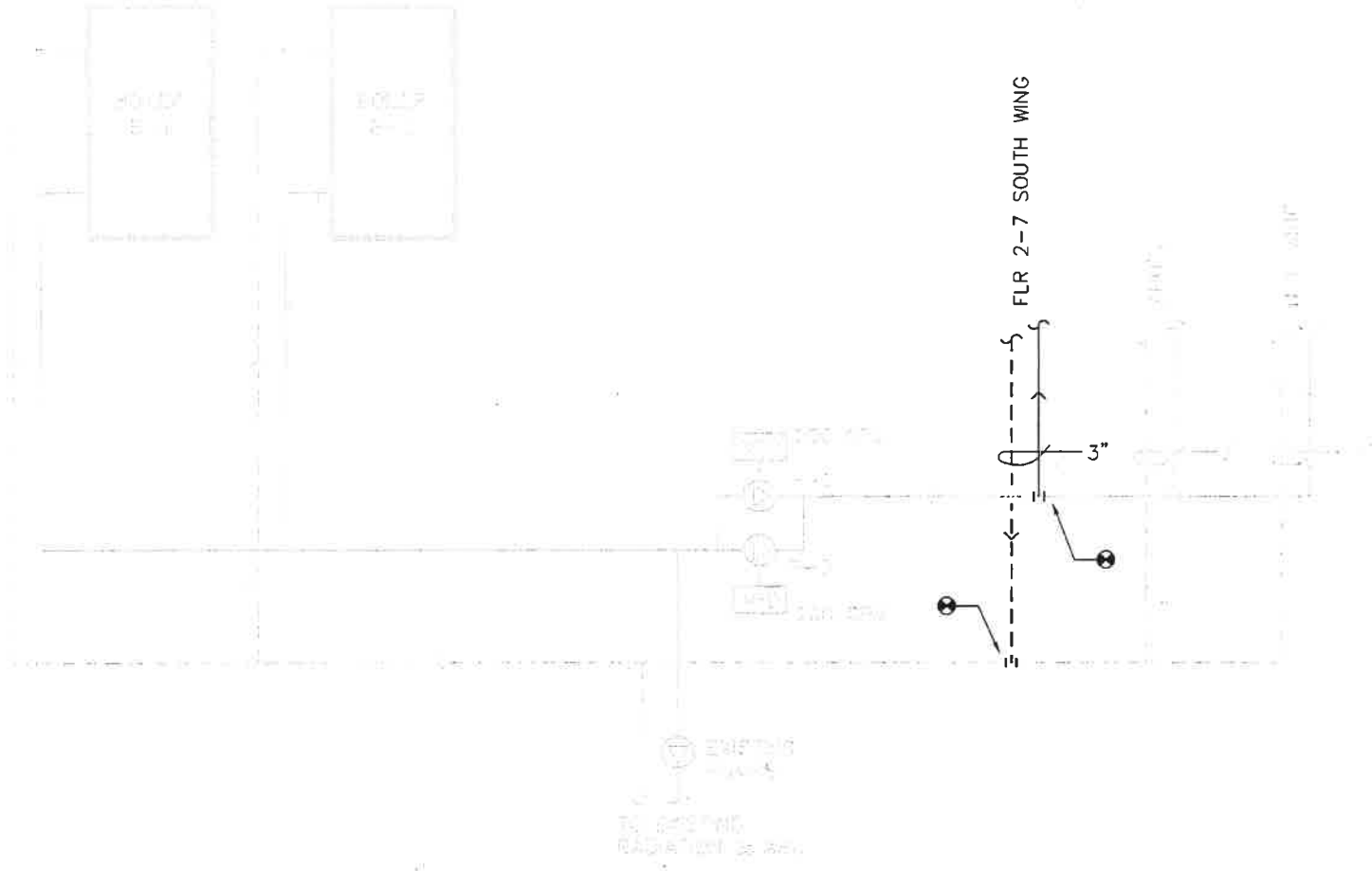

HOT WATER PIPING SCHEMATIC

M201

DESTREE
architecture & design

05/02/2012

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