

City of Aurora
Building Codes Division
15151 E Alameda Pkwy
Aurora, CO 80012
(303) 739-7420



Notice

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pursuant to Federal Law:
17 United States Code
Section 106.**



Permit Application: Building Division ♦ Fence ♦ Sign ♦ Public Improvements

15151 E Alameda Pkwy ♦ Ste 2400 ♦ Aurora, CO 80012 ♦ (303) 739-7420

Email buildingplans@auroragov.org

Project Address: 1411 S. Potomac St. Unit # 100 Zip code: _____
 Project Name/Subdivision: DaVita Remodel
 Contractor: EJCM LLC Phone: 803-573-5678 Fax: 803-573-5823
 Contact Person: Bill Brauer Email: bbrauer@ejcm.com
 Phone: 803-573-5678 ext. 112 Fax: 803-573-5823
 Owner: (Required for CO) CS Richard Ellis
 Owner address: _____ Valuation / FDA: \$ 56,373.00
 Email: _____ materials 33,800.00 **OK RDR**

Required for projects using an Architect and/or Engineer:

Architect or Engineer Name: Keency Design Email: _____
 Phone #: 303-871-1970 Fax #: _____

Describe the work you will be doing: Tenant Finish / Remodel - EXISTING
TEENANT

Sign Permit: Monument sign? ☐ Yes ☐ No Is height from grade more than 6? ☐ Yes ☐ No
 Illuminated ☐ Yes ☐ No: Quantity of existing sign sq. footage: _____ Building Frontage: _____
 Describe proposed sign(s): _____

Fence Permit: Describe fence: _____
 Greater than 50% open: ☐ Less than 50% open: ☐ Height _____ in. Materials: _____

Public Improvements: TCP Required ☐ Yes ☐ No
 General Contractor: _____ Sub contractor (1): _____
 Sub contractor (2): _____ Sub contractor (3): _____
 Sub contractor (4): _____ Sub contractor (5): _____

Sprinkler & Alarm permits are brought in as separate submittals. "FDA" is NOT included in main permit.

◆◆◆ THIS SPACE FOR OFFICE USE ONLY ◆◆◆

Fee Determination Assessment: \$ _____

Change of occupancy/use: ☐ Yes ☒ No

Reviews

- ☒ Structural
- ☒ Mechanical
- ☒ Plumbing
- ☒ Electrical
- ☒ Fire Life Safety
- ☒ Bldg Life Safety

Inspections

- ☒ Structural
- ☒ Mechanical
- ☒ Plumbing
- ☒ Electrical
- ☒ Life Safety
- ☐ Gate/Haz.

Sign Review? ☐ Yes ☒ No

* Pre-approval(s): Water: ☒ Zoning: ☒ RR No exterior work

Exterior changes?: ☐ Yes ☒ No Initial: _____

Homeowner Verified: ☐

Permit Type: TF

Mid roof / Avg. bldg height: _____

Parent Permit RSN: _____

Sub Type: _____

RSN: 593218 / 2011-530245

Intake Date: 04/11/11

Plans Examiner: R. Ritter

Balance Due: \$ _____

Plans Picked up by: _____

Company Name: _____

Phone #: _____

Bill Brauer

Print Name:

Bill Brauer

Signature:

4-11-11

Date:

BOARD OF APPEALS - Contractor's Appeals and Standards Board. Applicants have the right to have the board hear appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of the building code. Any application for appeal to the board shall be based on a claim that the true intent of the code or the rules legally adopted there under have been incorrectly interpreted, the provisions of the building code do not fully apply or an equally good or better form of construction is proposed.

Floor Plan Legend

- Existing structure, wall or partition to remain
- Existing wall or partition to be removed
- New interior partition (building standard - floor to ceiling) - see Detail A/TA-1
- New one-hour rated partition (floor to structural deck) - see Detail B/TA-1
- New partition to deck - see Detail C/TA-1
- New sound attenuating interior partition (floor to ceiling) - see Detail D/TA-1
- New partial height partition - see Detail E/TA-1
- New or existing glass partition as indicated

Door Schedule

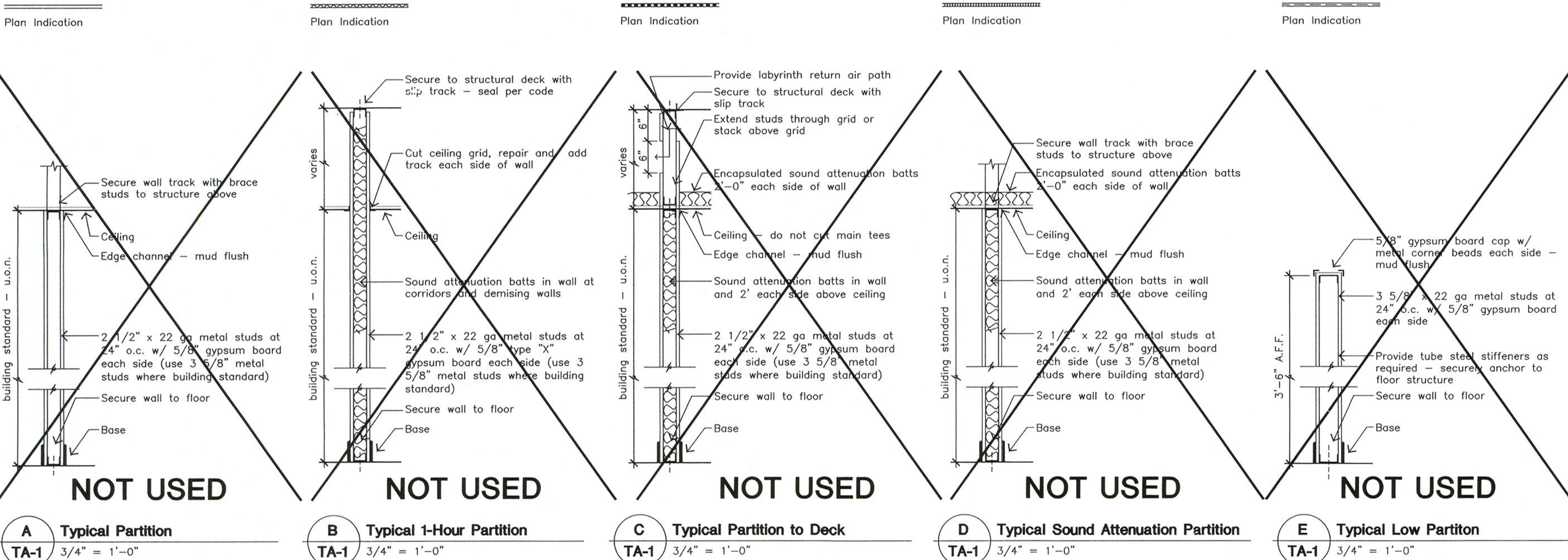
1	New building standard suite entry door and frame (3'-0" wide - u.o.n.) _____ rated and labeled
2	New building standard pair of suite entry doors and frame (3'-0" wide leaves - u.o.n.) _____ rated and labeled
3	New rated building standard interior door and frame (3'-0" wide - u.o.n.) _____ rated and labeled
4	New building standard pair of interior doors and frame (3'-0" wide leaves - u.o.n.)
5	New building standard interior door and frame (3'-0" wide - u.o.n.)
6	New building standard wood bi-fold/bi-pass door (_____ wide/_____ leaves _____ wide each)
7	New building standard pair of suite entry door panels (only) - re-use existing frame (if possible-V.I.F.). (2 equal leaves - u.o.n.) 20 MINUTE FIRE-RESISTIVE DOOR REQUIRED *
8	New building standard interior door and frame (4'-0" wide - u.o.n.) * REQUIRED FOR MATCHING ORIGINAL CONSTRUCTION AS INDICATED IN STELLANT RECORDS #109703

Hardware Schedule

A	Lockset, hinges, frame silencers, stop
B	Lockset, hinges, closer, frame silencers, stop
C	Lockset, hinges, closer, smoke/draft seals, stop, and additional hardware as required for rated opening indicated
D	Passage latchset, hinges, frame silencers, stop
E	Passage latchset, hinges, closer, frame silencers, stop
F	Passage latchset, hinges, closer, smoke/draft seals, stop, and additional hardware as required for rated opening indicated
G	Mortise deadbolt lock, building standard push/pull hardware, and automatic door operator: DOR-0-MATIC model: 4642-CS (or equal) with (2) push button actuators/boxes located per note 94/TA-3 on ACTIVE leaf, automatic flush bolts and closer on INACTIVE leaf, hinges, smoke/draft seals, astragal, coordinator, stops, and durable sign above door opening stating in 1" high letters in contrasting color: "THIS DOOR TO REMAIN UNLOCKED DURING BUSINESS HOURS"
H	Standard bi-fold/bi-pass hardware package with "U" pulls
J	Building standard push/pull hardware, automatic door operator: DOR-0-MATIC model: 4642-CS (or equal) with (2) push button actuators/boxes located per note 94/TA-3, hinges, frame silencers, stop.

NOTE:	1	Hardware style, finish, and mounting heights shall be building standard - u.o.n. Lever hardware required per ANSI A117.1. See Floor Plan notes.
	2	At doors with closers, hinges shall have ball bearings. Adjust closer force and delay per ANSI A117.1.
	3	Bi-pass doors shall have 1" overlap (minimum).
	4	Egress path doors shall be operable from within in a single action not requiring the use of key, special knowledge, or effort.

Wall Types



Reflected Ceiling Legend

- Recessed fluorescent troffer
- Shading indicates unswitched night-light circuit
- Recessed direct/indirect fixture
- Fluorescent strip fixture
- Recessed compact fluorescent downlight fixture
- Recessed compact fluorescent wall wash fixture
- Surface-mounted compact fluorescent fixture - PC indicates pulchra
- Wall-mounted compact fluorescent fixture
- Track lighting
- Illuminated exit sign fixture - shading indicates illuminated face
- Switch - 3 indicates 3-way, D indicates dimmer
- Fan - TF indicates Transfer Fan, EF indicates Exhaust Fan

Electrical Legend

- Duplex wall outlet
- Duplex wall outlet 6" above countertop u.o.n.
- Duplex wall outlet on semi-dedicated circuit
- Fourplex wall outlet
- 220 V. wall outlet
- Duplex floor outlet (4 indicates fourplex) - flush mount u.o.n.
- Telephone outlet
- Wall telephone outlet - height per ADA
- Telephone floor outlet - flush mount u.o.n.
- CRT/Data outlet
- Combined Telephone/Data outlet
- Double Combo Telephone/Data outlet: 4 square box with 3/4" diameter conduit and single gang plaster ring
- CRT/Data floor outlet - flush mount u.o.n.
- Cable/satellite TV outlet
- Junction box
- Plugmold - 1 outlet/12" u.o.n.
- Telephone backboard with semi-dedicated outlet - verify plywood size with Tenant's telephone vendor
- Power Pole

NOTE:	E	indicates existing to remain
	R	indicates relocated existing (or raised per ADA)
	X	indicates existing to be removed
	N	indicates new
	B	indicates existing outlet to receive blank cover plate
	P	indicates outlet on panel system (by others)
	(blank)	indicates Contractor shall verify new/existing status and quantity required

General Legend

- Flag Note
- Finish Mark
- Revision Number
- Section
- Elevation
- Detail
- Column Grid
- Door and frame number
- Hardware group letter

Abbreviations

AC	Above Counter
ADA	Americans with Disabilities Act
A.F.F.	Above Finished Floor
Anod.	Anodized
Bldg.	Building
Cig.	Ceiling
Clr.	Clear
Cont.	Continuous
Dr.	Deep, Dedicated
Dwg.	Drawing
Eq.	Each
EW	Electric Water Cooler
Elev.	Elevation or Elevator
EP	End Panel
Eq.	Equal
Exist.	Existing
FEC	Fire Extinguisher Cabinet
Fin.	Finish
Fir.	Fire
Fl.	Foot
G	Grommet
GC	General Contractor
GFI	Ground Fault Interruptor
Gyp. Bd.	Gypsum Board
H.C.	Hollow Core
HDCP	Handicapped, Handicap
H/Ht.	High/Height
H.M.	Hollow Metal
HVAC	Heating, Ventilation & Air Cond.
IP	Intermediate Panel
Max.	Maximum
MDF	Medium Density Fiberboard
Mfr.	Manufacturer
Min.	Minimum
MU.	Metal
N.I.C.	Not in Contract
NL	Night Light
N.T.S.	Not to Scale
O.C.	On Center
Opp.	Opposite
P. Lam.	Plastic Laminated
Plywd.	Plywood
Req.	Required, Requirement
S.C.	Solid Core
Sim.	Similar
Sq.	Square
Std.	Standard
Stl.	Steel
SS	Stainless Steel
Typ.	Typical
U.O.N.	Unless Otherwise Noted
V	Volt
V.I.F.	Verify in Field
V.C.T.	Vinyl Composition Tile
W	Wide/Width
W	With
WC	Wallcovering
Wd	Wood
Yd.	Yard

Code Data

Jurisdiction	AURORA
Occupancy	B
Construction Type	II A 1 Hour
Number of Stories	3
Fire Sprinklers	THROUGHOUT
Floor Area	7,705 USABLE Sq. Ft.
City of Aurora Plan Review	Project <u>TENANT IMPROVEMENT</u> Address <u>411 S. POTOMAC ST. UNIT 100</u> Contractor <u>ELCM</u> RSN <u>593218</u> Permit Number <u>2011-530245 TF</u> Bldg. Codes: <u>2006 I Codes + 2008 N.E.C.</u>

Finishes

NOTE: FINISHES/MATERIALS ARE SUBJECT TO VERIFICATION. THE CONTRACTOR SHALL SUBMIT SAMPLES OF ALL FINISHES/MATERIALS TO THE TENANT FOR APPROVAL PRIOR TO ORDERING. KEENEY DESIGN ASSUMES NO RESPONSIBILITY FOR FINISH SELECTIONS OR MATERIALS ORDERED.

Mk.	Mfr.	Material	Pattern/Color	Remarks
C-1	-	CARPET	-	-
RS-1	-	SOLID RESILIENT SHEET	MEDINTECH HOMOGENEOUS	-
RB-1	-	RUBBER BASE	-	-
P-1	-	PAINT	-	-
WC-1	-	WALL COVERING	-	-
PL-1	-	PLASTIC LAMINATE	-	-
PL-2	-	PLASTIC LAMINATE	-	-
CT-1	-	CERAMIC TILE	-	12"X12"
CT-2	-	CERAMIC TILE	-	MATCH EXISTING IN TOILET 110
COORDINATE AND VERIFY FINISHES WITH TENANT				

Finish Notes

See General Notes for additional requirements.

- Contractor shall be responsible for field inspection of the surfaces to receive paint or other finish treatment and for ensuring that such surfaces are acceptable for finish application prior to initiating actual finish work. No paint or finish shall be applied on any surface which is unfinished, improperly prepared, or otherwise not fully acceptable for the finish application. All roughness or other irregularities that may appear after priming shall be thoroughly filled and sanded out or otherwise corrected to provide a smooth, even surface for painting and finishing. Finished application and wall appearance shall be free of surface and color irregularities.
- All drywall finish shall be smooth u.o.n.
- Drywall point, unless otherwise noted, shall be acrylic latex, low-sheen eggshell finish (not flat) not susceptible to burnishing under normal office and commercial wear.
- All point finish of metal parts of frames, doors, perimeter enclosures, etc. and all painted millwork shall be semi-gloss enamel u.o.n. Door frames, not prefinished, shall be painted to match color of adjacent painted walls unless building standards indicate otherwise u.o.n. Where adjacent walls have wallcovering or liquid vinyl, door frames shall be painted as specified. All doors shall be same finish both sides u.o.n. All A/C ceiling diffusers and registers shall be prefinished to match ceiling u.o.n. - touch up as required.
- Paint shall be roller-applied to non-metallic surfaces, using short-nap (1/2" or less), lint-free roller covers and shall cover fully, not less than three coats (sealer/primer, two finish coats) as recommended by the paint manufacturer and "The Modern Guide to Painting Specifications", latest edition.
- Flame spread ratings for interior finishes shall be Class I in vertical exitways (including elevator cabs), Class II or better in other exitways, and Class III or better in rooms or other areas.
- All surfaces shall be properly prepared prior to installing wallcovering.
- Wallcovering contractor shall coordinate all wallcovering application that affects other trades including millwork, etc. Wrap all electrical device plates with wallcovering to match wall.
- Contractor shall provide and install metal edge trim: Modaburg Duran 1/8" x 36" gal metal or equal where wallcovering is terminated on outside corners u.o.n. Must flange flush prior to installing wallcovering.
- All window coverings shall extend from ceiling to top of sill/connector u.o.n. All pulls for transverse tracks shall be on right side u.o.n.
- Carpet installation shall comply with the workmanship guidelines as published by the Carpet and Rug Institute, latest edition, and shall be in strict accordance with the manufacturer's recommendations, providing an attractive, wrinkle-free appearance. Carpet seams shall be butt matched with the pile nap running in the same direction.
- Flooring contractor shall provide and install resilient edge strip where carpet and resilient flooring meet u.o.n.
- Flash-patch/floor stone all areas where floor is not level or true prior to flooring installation.
- Provide and install _____ 4" high _____ STRAIGHT _____ base at all carpeted areas u.o.n. Provide and install _____ 4" high _____ base at all resilient floor areas u.o.n. Provide and install _____ 6" high matching line cover base at all tile floor areas u.o.n.
- Floor covering and base in closets shall be the same as that of the space into which the closet opens u.o.n.

Index

TA-1	COVER SHEET
TA-2	DEMOLITION PLAN
TA-3	FLOOR PLAN
TA-4	DETAILS
M-1	HVAC SPECIFICATIONS & LEGEND
M-2	HVAC PLAN
E-1	GENERAL NOTES & LEGEND
E-2	1ST FLOOR ELECTRICAL DEMOLITION PLAN
E-3	1ST FLOOR POWER PLAN

Code violations found during inspection are required to be corrected. Plan/Permit issuance does not grant approval of a code violation. 2006 IBC 105.4.

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED G. MACY
DATED APR 12 2011

General Notes

- All work shall be performed in strict conformance with all laws, the ADA, all codes, ordinances, rules, and regulation of all governing authorities having jurisdiction.
- These plans are based upon the Architect's best interpretations of the Americans with Disabilities Act (ADA). The ADA is subject to interpretation by the courts. Therefore, the Architect, Keeney Design, Inc., and its agents, assume no liability or responsibility for interpretations or application of the ADA to this project nor for work understood deficiencies.
- These plans are based upon the existing conditions readily observable at the time of issue. Therefore, the Architect, Keeney Design, Inc., and its consultants, assume no liability or responsibility for design and/or construction costs resulting from conditions or circumstances hidden from immediate observation.
- The Contractor for the project shall be responsible for obtaining all required permits.
- Before commencement of the work, the general Contractor and his subcontractors shall field verify all existing conditions and dimensions with the contract documents. Any deviations, discrepancies, and/or conflicts shall be reported to Keeney Design prior to proceeding with construction. Any questions or clarifications regarding building standards construction or materials shall be directed to Keeney Design prior to proceeding with construction. Should the Contractor proceed without contacting Keeney Design, the Contractor may, at no cost to the Owner, Tenant, Keeney Design, or the like, be required to repair, replace and correct any and all defects and problems arising due to its proceeding without contact, clarification and/or recommendation.
- Do not scale drawings: dimensions govern, large scale details govern over small scale.
A. New gypsum board partitions are dimensioned from face of stud to face of stud unless otherwise noted on plans (i.e., "finish" or "clear").
B. Existing partitions are dimensioned to finished surfaces.
C. Masonry units are dimensioned to rough wall surface.
D. Window walls are dimensioned from centerline of mullion to centerline of mullion. Glass sizes shown on drawings are nominal. Actual sizes may be smaller.
- The presence of a Keeney Design representative on the job site does not imply concurrence with or approval of the work.
- The Contractor shall halt the work when notified of a proposed change or if unsatisfactory results are anticipated. Proceed only after receiving additional information and instructions from Keeney Design.
- The Contractor shall perform high quality professional work. Materials shall be joined uniformly and accurately so they meet with neat, straight lines, free of blemishes or overlaps. Install exposed materials appropriately level, plumb, and at accurate right angles, or flush with adjoining materials as appropriate. Work of each trade shall meet or exceed all national standards published by or for that trade.
- The Contractor shall coordinate all work performed by the Owner, Tenant, and their Agents. When information is inadequate, request further instructions before proceeding.

DRAWINGS/SUBMITTALS

- The Contractor shall submit all proposed substitutions to Keeney Design before they may be used. If the Contractor, the Owner, or the Owner's representative substitute a material, revise a construction detail, method of attachment or in any way alter the work so that it does not conform with these documents without Keeney Design's approval; such action will relieve Keeney Design of any responsibility or liability as a result of said substitution.
- The Contractor shall submit one (1) reproducible and two (2) blueprints of all shop drawings and three (3) copies of all samples, cut sheets, and specs for Keeney Design review:
A. Contractor shall submit to Keeney Design shop drawings or cut sheets of all custom millwork, hardware, signage, and other trades as requested and samples of all wallcoverings, paint, plastic laminates and millwork finishes.
B. Keeney Design will review submissions with reasonable promptness so as to minimize delay. Review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action taken does not release the Contractor or fabricator from compliance with plans and specifications as to function, dimensions, quality and quantity. Review of an individual item shall not indicate a review of an assembly in which the item functions. Submissions that contain excessive errors or that are incomplete will be returned unchecked and any delay thereby will be the responsibility of the Contractor.
C. The Contractor shall make any revisions as noted by Keeney Design and shall submit and resubmit the required number of corrected copies until no exceptions are taken.
D. No portion of the work requiring a shop drawing or sample submission shall be commenced until the submission has been reviewed and released by Keeney Design. All such portions of the work shall be in accordance with shop drawings and samples reviewed by same.

MILLWORK

- All custom cabinet work is to be furnished, shop finished, delivered and installed by the millwork contractor in accordance with the current edition of Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program, published by the Architectural Woodwork Institute (AWI). No rotary cut veneers will be acceptable unless specifically noted.

FINISHES

- The Contractor shall be responsible for advising Keeney Design of any questions regarding the finish selections, systems, method of application, or scope of work prior to proceeding with the work in question.

MECHANICAL/PLUMBING

- The mechanical contractor shall field verify existing conditions and shall familiarize himself with all work and dimensions. The Contractor shall notify Keeney Design of any conditions or discrepancies adversely affecting the design and lighting installation prior to proceeding with the work (including conflicts with mechanical ducts, sprinkler lines, plumbing lines, and structure).
- The Contractor shall not place ceiling registers or diffusers within 12" of partitions or where wall cabinets, shelving, files, or overfile units are indicated on the drawings.
- All plumbing fixtures (built-in and freestanding) shall be supplied and installed by plumbing contractor u.o.n. Plumbing contractor to supply all necessary information for cut outs to be performed by millwork contractor.
- Thermostats shall be mounted with top of coverplate at 54" A.F.F. and in vertical alignment with any nearby light switches u.o.n. See engineering drawings for location.

ELECTRICAL

- The electrical contractor shall field verify existing conditions and shall familiarize himself with all work and dimensions. The Contractor shall notify Keeney Design of any conditions or discrepancies adversely affecting the design and lighting installation prior to proceeding with the work (including conflicts with mechanical ducts, sprinkler trunk lines, plumbing lines, and structure).
- Keeney Design's drawings for lighting, power and telephone are for location and quantities only. See engineering drawings for technical information. Notify Keeney Design of any discrepancies between engineering drawings and Keeney Design drawings prior to proceeding with the work.
- For location of all devices, the architectural drawings supersede the engineering drawings. Floor outlet locations are particularly critical; verify locations with Tenant prior to installation.
- All dimensions are to center line of outlet groups or single outlet. Where two or more devices are indicated, each device in a group is to be located immediately adjacent to the next device.
- Plan locations for electrical devices may vary up to 6" (six inches) to avoid conflicts with stud location u.o.n. Add box supports where necessary.
- All outlets shall be mounted to match building standard height and orientation but at least 15" A.F.F. to bottom u.o.n. Outlet above countertop (AC) shall be mounted horizontally with bottom of coverplate at 6" above countertop u.o.n. All light switches shall be mounted at 48" A.F.F. to top of switch u.o.n.
- CLEANING/PROTECTION
- The Contractor shall take absolute care to protect new and existing materials, millwork, built-ins and finishes and shall repair or replace damaged items at the Architect's option.
- The Contractor and his subcontractors shall turn the project over to the Owner or his representative: A. Free from all construction debris, scraps, material, and equipment.
B. All glass free from all manufacturer's labels, etc. and cleaned on both sides.
C. All millwork, doors and built-ins wiped down and free of dirt and dust.
D. All wallcovering material free of dirt, dust, and other foreign matter.
E. All bases wiped down.
F. All carpets vacuumed.
G. All resilient floors cleaned of labeling and wet mopped with mild detergent solution per manufacturer's recommendations, and all bases wiped down.

ASBESTOS

- As there may be asbestos or other hazardous materials present in any existing building, especially older buildings, it shall be the Contractor's responsibility to verify its presence and coordinate with the governing authorities having jurisdiction. Comply with said authorities' requirements for safe and legal removal and disposal.



WE DESIGN SPACE

575 Logan Street
Denver, CO 80203
303-871-1970

PROJECT:

DaVita
Remodel
Suite 100

1411 S. Potomac St.
Aurora, CO



4.7.11

REVISIONS:

DESCRIPTION: BY: DATE:

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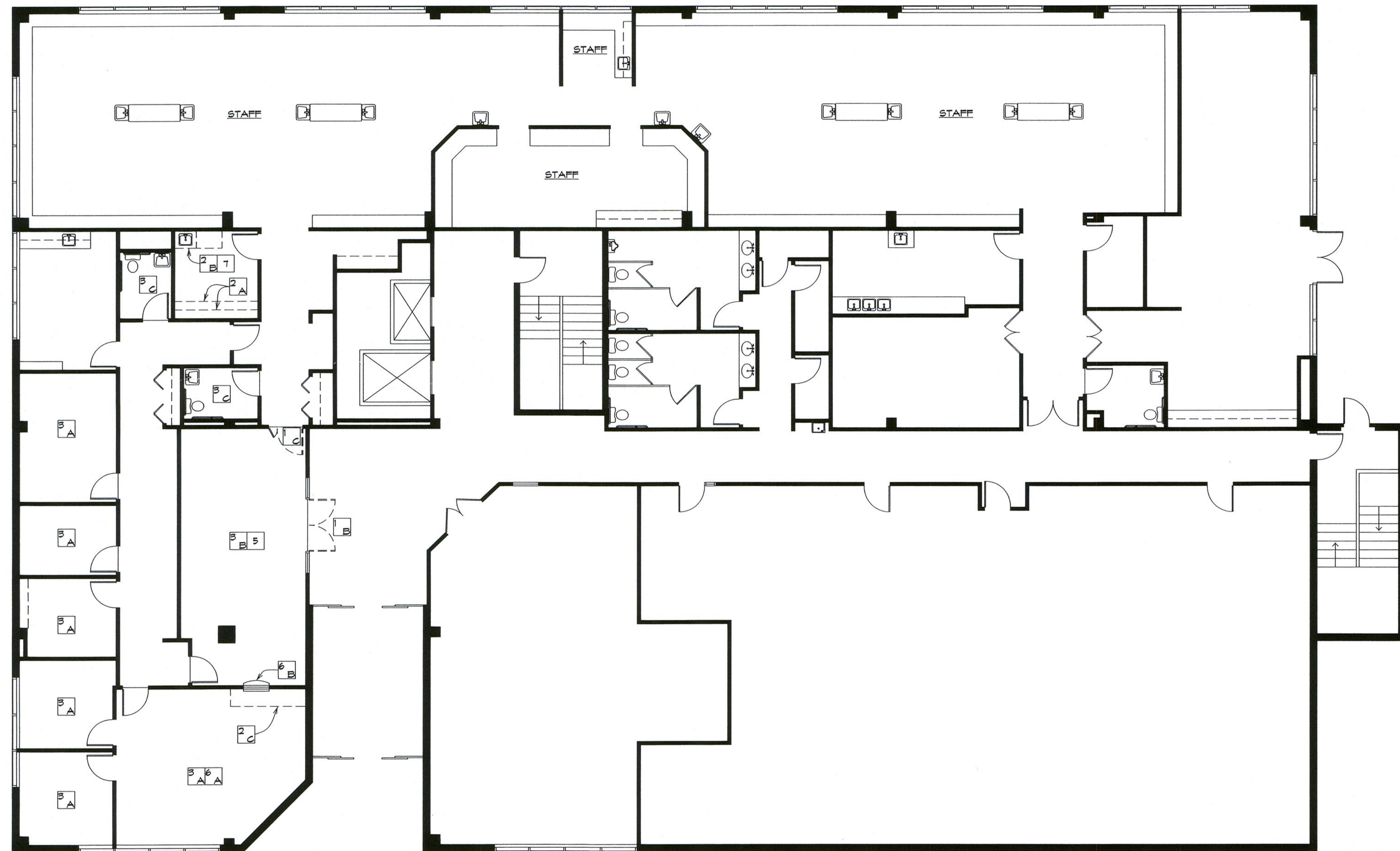
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PROJECT NO.:
141.09

ISSUE DATE:
04/03/11

DRAWN BY: MS CHECKED BY: BLS

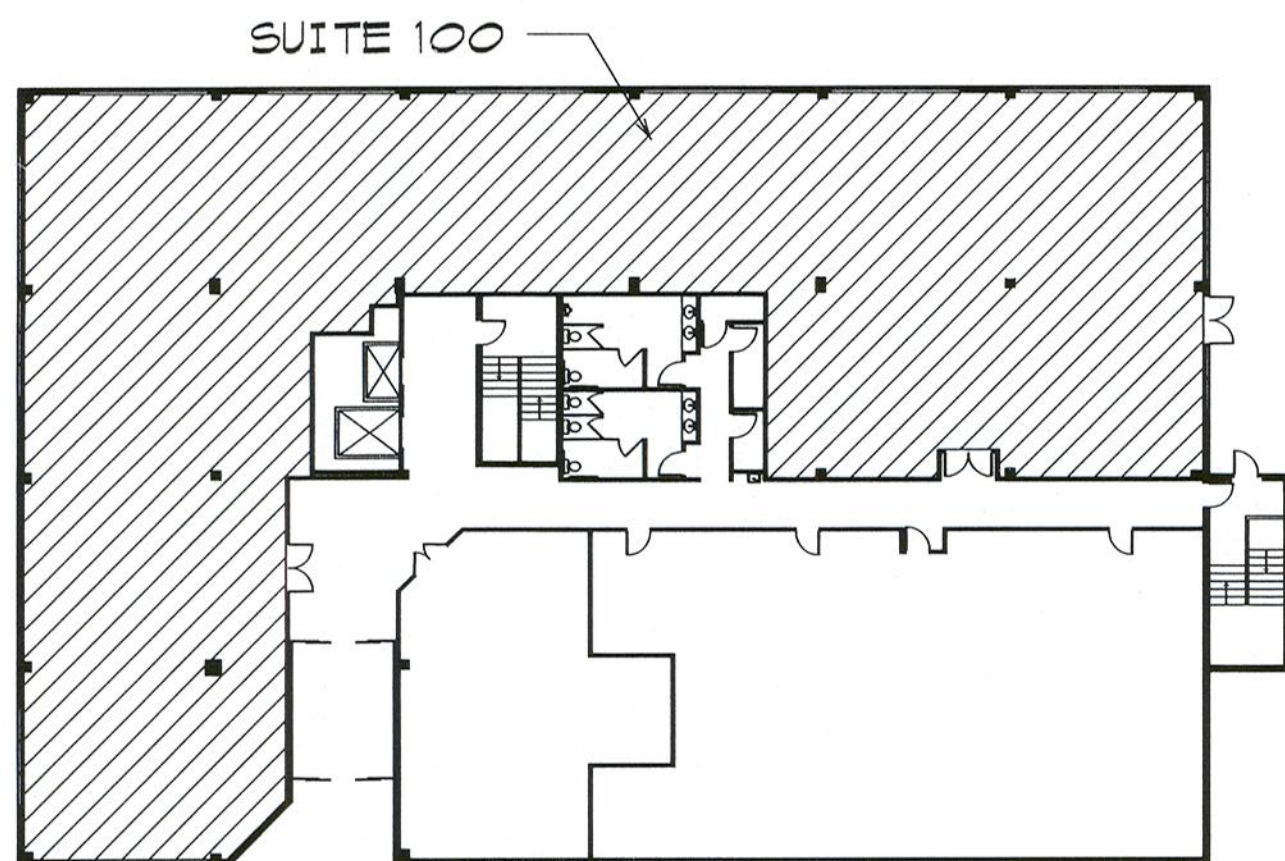
Cover Sheet
TA-1



Demolition Plan

1/8" = 1'-0"

1 A 4 B 9



Key Plan

Not to Scale

Notes

WARNING: All subcontractors and suppliers are responsible for information and notes on ALL drawing sheets and MUST work from FULL sets (see Index on sheet TA-1).

Since the numbering of notes is grouped by type of work, some numbers may be skipped on any given project or drawing sheet.

Contractor shall coordinate with the Property Manager to schedule all construction, any work in other suites, and any interruption of plumbing, HVAC, power or telephone service to any tenants.

Use building standard construction throughout; including carpet, wall base, paint, doors and hardware, ceiling, lighting, etc.; unless otherwise noted (u.o.n.).

Since this suite is currently occupied, THIS WORK WILL BE DONE IN PHASES OR AFTER HOURS. Coordinate all work through the Property Manager.

DEMOLITION (ones)

This plan is a general guide ONLY - coordinate with Floor Plan/TA-4 for exact extent of demolition - protect all work to remain.

1A. NO PARTITION DEMOLITION is required for this project at this time.

1B. Remove existing door leaves and hardware only - store per Property Manager's instructions.

1C. Remove existing door, frame, and hardware - store per Property Manager's instructions.

2A. BID ALTERNATE NO. 1. : Remove existing countertop and shelving above complete with supports and associated hardware - salvage per Property Manager's instructions.

2B. PART of BID ALTERNATE NO. 1. : Remove existing base and wall cabinets with countertop - salvage per Property Manager's instructions.

2C. Remove existing desk complete with cabinets, supports and associated hardware - salvage per Property Manager's instructions.

3A. Remove existing carpet within this room/area.

3B. Remove existing resilient flooring in this room/area.

3C. Remove existing sheet flooring with integral base within this room/area.

4. Remove all existing resilient base throughout suite u.o.n.

5. Remove/skimcoat all existing wallcovering within this room.

6A. Remove all existing modular systems furniture complete with accessories from this room - salvage per Property Manager's instructions.

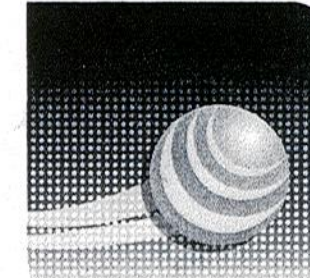
6B. Remove plastic laminate from this work counter - prepare counter for new plastic laminate, see note 36/TA-3.

7. PART of BID ALTERNATE NO. 1. : Remove existing sink with accessories and attachments - salvage per Property Manager's instructions. Cap and remove existing plumbing lines - relocate waste and vent as required per code. See engineering drawings. Coordinate with Property Manager PRIOR to access to floor below.

8. Remove all unused and all non-teslon coated low-voltage cabling from above ceiling - coordinate with Tenant's cabling vendor.

9. Existing ceiling to remain u.o.n.

KEENEY DESIGN



WE DESIGN SPACE

575 Logan Street
Denver, CO 80203
303-871-1970

PROJECT:

**DaVita
Remodel
Suite 100**

1411 S. Potomac St.
Aurora, CO



4.7.11

REVISIONS:

DESCRIPTION: BY: DATE:

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PROJECT NO.:

141.09

ISSUE DATE:

04/03/11

DRAWN BY:

MS

CHECKED BY:

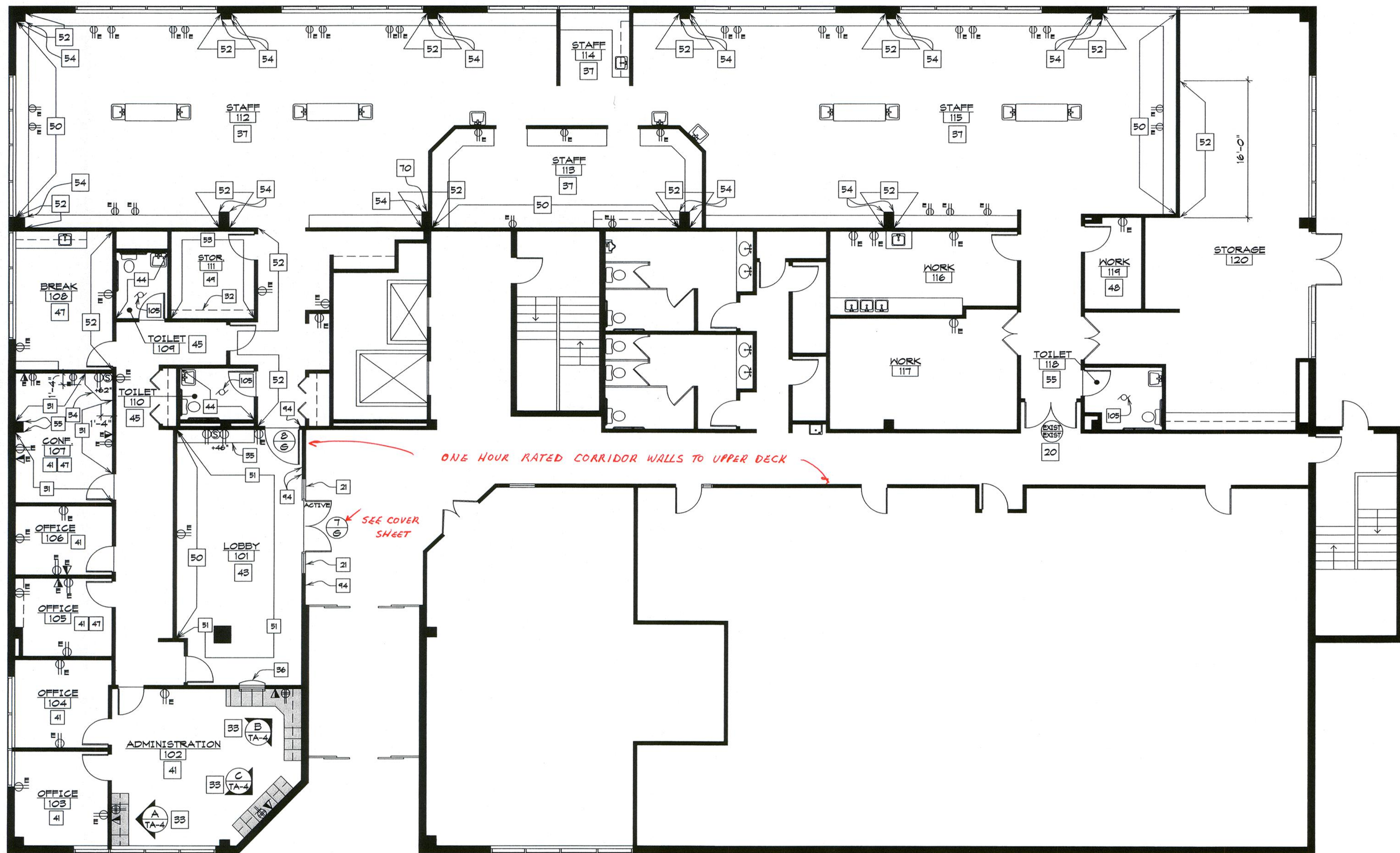
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#11-530245

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED C. MACI
DATED APR 12 2011

Demolition
Plan

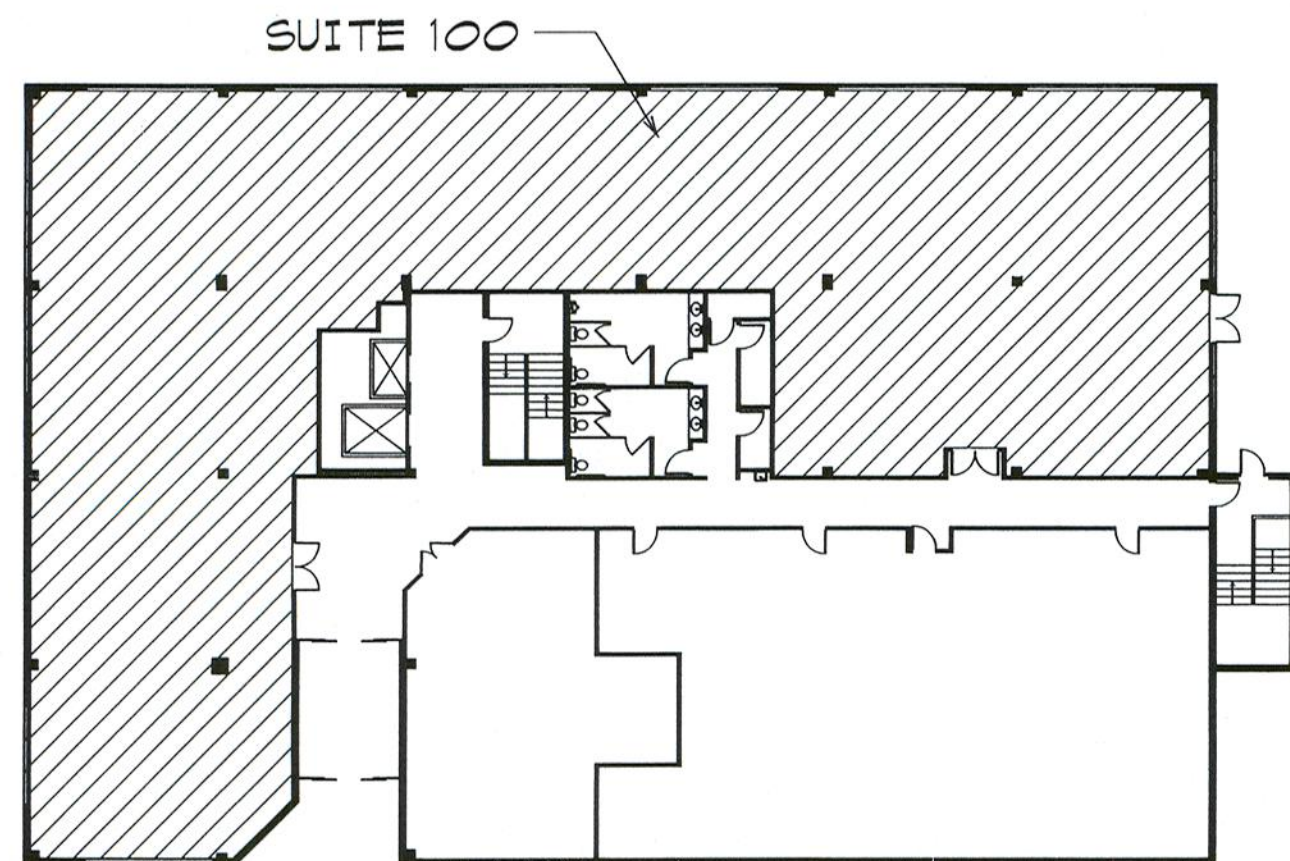
TA-2



Floor Plan

1/8" = 1'-0"

10	11	30	34	40	42	46	56	80	81
40	41	42	43	100	101	102	103	104	



Key Plan

Not to Scale

Provide U.L. Class 2A 10 BC minimum rating fire extinguishers at a maximum 75'-0" travel distance prior to the Certificate of Occupancy issuance (2006 IFC Table 906.3(1) and 2002 NFPA 10)

Separate Life Safety construction documents are required for new Fire Alarm Systems or alterations to existing systems. Documents shall include device locations, one-line diagrams, battery calculations, and product cut sheets. Approval of documents is required prior to request for inspection.

Separate Life Safety construction documents are required for new Automatic Fire Sprinkler Systems or alterations to existing systems. Documents shall include sprinkler head locations, piping sizes, hydraulic calculations (if needed), and product cut sheets. Approval of documents is required prior to request for inspection.

SPECIALTIES (seventies)

70. Provide locking flip-cover box over existing fan controls at this location, manufacturer: NEWARK ELECTRONICS, part 35C3026 (or equal depending on size of box needed).

MECHANICAL (eighties)

80. Mechanical loads are to be based on standard occupant load and on other loads and equipment as noted (information provided by the Tenant) - any additional HVAC will be at the Tenant's expense. See ceiling notes below and engineering drawings for additional requirements and information.

81. All plumbing fixtures shown throughout are EXISTING to remain u.o.n. - protect during construction.

ELECTRICAL (nineties)

90. Electrical outlets shown and other electrical requirements indicated are based on information provided by the Tenant - any additional electrical will be at the Tenant's expense. Mount all new outlets at 15" A.F.F. minimum u.o.n.; mount all new switches at 48" A.F.F. maximum u.o.n.; as required by ANSI A117.1 - see also Building Standards. All existing outlets not indicated to remain shall be removed and wiring terminated per code - patch and finish walls to match adjacent surfaces. See ceiling notes below and engineering drawings for additional requirements and information.

91. Update electrical panel legend(s) to reflect new and altered circuiting as a result of this project - legend(s) shall be typed.

92. Circuit computers and other sensitive electronic equipment separately from copiers and other heavy or intermittent loads. See engineering drawings.

93. All telephone, data, and CRT cabling, terminations, faceplates, and faceplate labeling by Tenant's vendor (N.I.C.). See note 103 below and engineering drawings.

94. Provide junction box this location at 42" A.F.F. to centerline for push-button actuator of automatic door operator on adjacent door - see engineering drawings.

CEILING (hundreds)

100. Existing ceiling to remain - protect during construction.

101. All existing light fixtures throughout suite to remain in current locations - protect during construction - clean.

102. All electrical power cabling and conduit above ceiling shall be INDEPENDENTLY supported from structure.

103. All exposed low voltage wiring above ceiling shall be plenum rated (Teflon coated) and INDEPENDENTLY supported from structure.

104. Clean and supply diffusers and return air grilles throughout suite.

105. Provide exhaust fan for this room - switch with lights - see engineering drawings.

Notes

WARNING: All subcontractors and suppliers are responsible for information and notes on ALL drawing sheets and MUST work from FULL sets (see index on sheet TA-1).

Since the numbering of notes is grouped by type of work, some numbers may be skipped on any given project or drawing sheet.

Contractor shall coordinate with the Property Manager to schedule all construction, any work in other suites, and any interruption of plumbing, HVAC, power or telephone service to any tenants.

Use building standard construction throughout; including carpet, wall base, paint, doors and hardware, ceiling, lighting, etc.; unless otherwise noted (u.o.n.).

Since this suite is currently occupied, THIS WORK WILL BE DONE IN PHASES OR AFTER HOURS. Coordinate all work through the Property Manager.

PARTITIONS (tens)

10. NO NEW PARTITIONS are required for this project at this time.

11. Provide adequate fire retardant treated wood blocking as required for secure support of countertops, shelving, cabinets, etc. - see Millwork, Furnishings, and Specialties notes below for specific items, weights, mounting heights, etc. at each location.

DOORS/GLAZING (twenties)

20. Remove existing deadbolt lock hardware from this door - salvage per Property Manager's instructions. Provide new escutcheon/trim plate to cover/fill hardware holes in door leaf - match finish of existing door hardware.

21. Existing entry sidelight to remain - protect during construction.

MILLWORK (thirties)

See note 39 below for millwork specifications.

30. Millwork shown throughout suite is existing to remain u.o.n. - protect during construction.

31. New chair rail on this wall - match size, profile, finish, and height A.F.F. of existing in Lobby 101.

32. PART of BID ALTERNATE NO. 1.: (5) 18" deep 3/4" thick "Melamine" adjustable shelves with finished edges on commercial-duty standards and brackets - surface mount 72" standards at 24" o.c. (maximum) at 12" A.F.F. to bottom - securely anchor to studs or to fire-retardant treated blocking.

33. New 24" deep plastic laminate (PL-1) countertop with plastic laminate (PL-2) casework above and below - securely anchor to studs or fire-retardant treated blocking - paint ledgers to match wall. Provide 3" diameter grommet(s) (G) located directly above electrical outlet(s). See note 39 below and elevation notes.

34. New plastic laminate (PL-2) media cabinet - securely anchor to studs or fire-retardant treated blocking. See note 39 below and elevation D/TA-4.

35. New plastic laminate (PL-2) wall unit - securely anchor to studs or fire-retardant treated blocking. See note 39 below and elevation E/TA-4.

36. New plastic laminate (PL-1) on existing transaction counter.

37. Replace ALL drawer and door pulls of existing cabinets in this room/area with NEW per note 39 below.

39. Millwork Specifications are as follows:

All millwork: AWI "Premium" standards u.o.n.

Casework: Flush overlay construction.

Wall cabinets to be 13" deep with two adjustable shelves behind doors, u.o.n.

Base cabinets to be 24" deep with box drawer(s) above doors with one 18" deep adjustable shelf behind u.o.n.

Surfaces: For plastic laminate products all exposed surfaces, all semi-exposed surfaces, and all balancing faces of laminated panels shall be plastic laminate. All other interior surfaces shall be "Melamine" or approved equal cabinet liner. Minimum veneer and overlay thickness: Tops and self edge: 0.050" thick minimum Vertical surfaces: 0.028" thick minimum Horizontal surfaces: 0.050" thick minimum Cabinet liner: 0.020" thick minimum - color: White

Hinges: MELPA DS-Klip System, 1300 opening, concealed/self-closing

Drawer glides: ACCURIDE model 4034 (file), 3005 (box), 2006 (pencil)

Locks: TIMBERLINE SUPPLY "System 150" (pedestals)

4" wire pulls - all drawers & doors, finish: Brushed Aluminum

Grommets: DOUG MOCKETT model EDP, color: Brushed Aluminum

FINISHES (forties and fifties)

All work involving Polymyx, Zolatone, lacquers, stains, strippers, or other odorous products, shall be done after hours u.o.n. - coordinate with Property Manager.

Note: Finishes and materials are subject to verification. Contractor shall submit samples of all finishes/materials to the Tenant for approval PRIOR to ordering.

40. Patch/repair/floorstone floor to SMOOTH LEVEL surface before installing new flooring. VERY IMPORTANT: Floorstone or otherwise adjust substrate elevation as required to eliminate ANY change in finish elevation between adjacent materials.

41. New carpet (C-1) in this room/area.

42. New rubber base (RB-1) throughout suite u.o.n. Remove any residual base adhesive and prepare wall as required for smooth finish prior to installing new base.

43. New ceramic tile (CT-1) flooring with 6" high cove wall base to match (CT-1) in this room. Thin-set and seal all grout joints. Provide transition strips at all changes in flooring material and elevation.

44. New ceramic tile (CT-2) wainscot from top of wall base to 48" A.F.F. on this wall to extent shown. Thin-set and seal all grout joints.

45. New nonabsorbent SOLID resilient sheet flooring (RS-1) in this room - extend 6" A.F.F. up adjacent walls to form integral base with cove stick and cap trim - heat weld all seams to provide seamless floor and base. Provide transition strips at all changes in flooring material and elevation.

46. Touch-up point where blemished, discolored or damaged to match existing as required throughout suite, u.o.n.

47. Patch and prepare all walls of this room as required to a smooth finish and point (P-1).

48. Prepare all walls of this room as required to an appropriate finish and point (P-1) - do NOT paint FRP wall panels.

49. PART of BID ALTERNATE NO. 1.: Patch and prepare walls of this room as required to a smooth surface and point (P-1).

50. Patch and prepare this wall to a smooth surface and point (P-2) to extent shown.

51. Patch and prepare wall as required to a smooth surface and install new wallcovering (WC-1) on this wall to extent shown.

52. Patch and prepare wall as required and install new fiberglass reinforced polyester (FRP) panels from floor to 4'-0" A.F.F. on this wall to extent shown. Provide seal strips at panel seams and cap strip at top edges of wall panels. Panel manufacturer: MARLITE or equal, color: to be selected by Tenant.

53. PART of BID ALTERNATE NO. 1.: Patch and prepare wall as required and install new fiberglass reinforced polyester (FRP) panels from floor to 4'-0" A.F.F. on this wall to extent shown. Provide seal strips at panel seams and cap strip at top edges of wall panels. Panel manufacturer: MARLITE or equal, color: to be selected by Tenant.

54. New corner guards to 48" A.F.F. at this corner - match size, profile, and finish of existing in Staff 112.

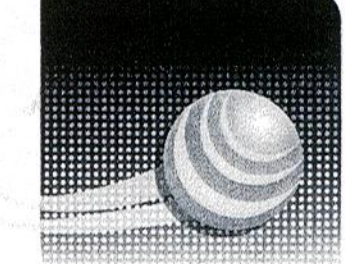
55. Existing resilient floor and ceramic wall tile in this room to remain - protect during construction. Replace any missing or damaged tiles to match existing - repair any loose or missing grout to match existing - clean.

56. Existing building standard window coverings at all building exterior windows to remain - protect during construction - repair (or replace) as required to good working condition and appearance.

#11-530245

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED S.MACT
DATED APR 17 2011

KEENEY
DESIGN



WE DESIGN
SPACE

575 Logan Street
Denver, CO 80203
303-871-1970

PROJECT:

DaVita
Remodel
Suite 100

1411 S. Potomac St.
Aurora, CO



REVISIONS:

DESCRIPTION:	BY:	DATE:

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PROJECT NO.:

144.09

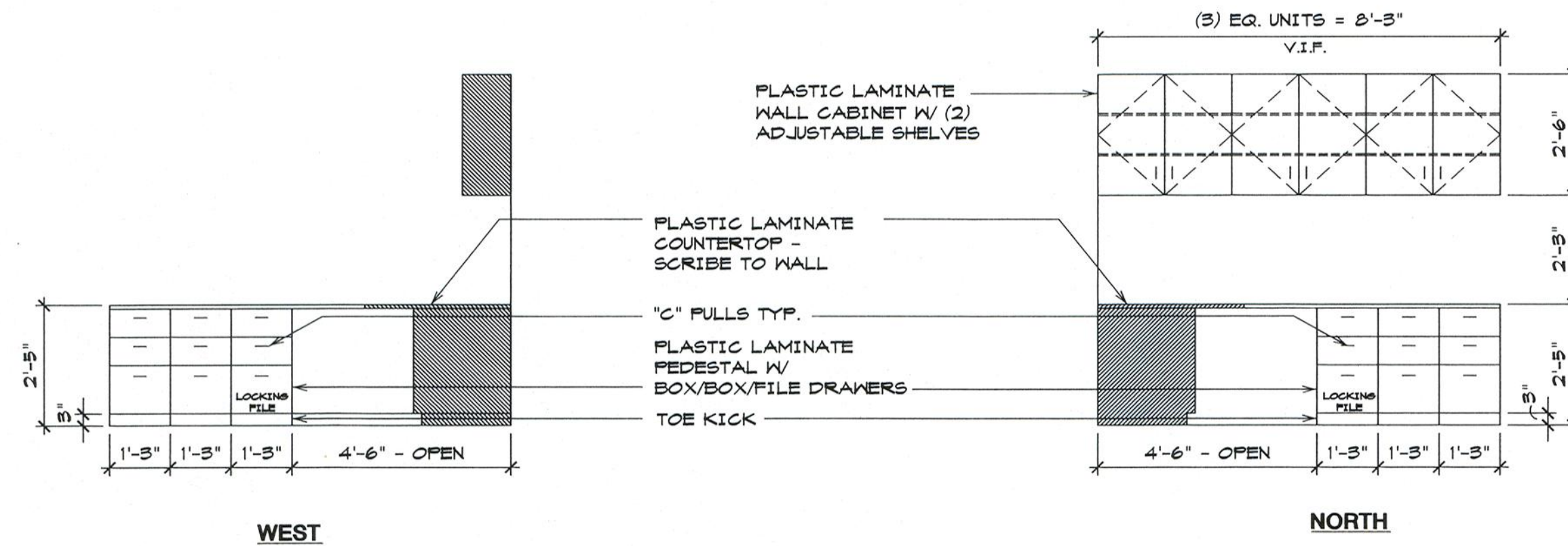
ISSUE DATE:

04/03/11

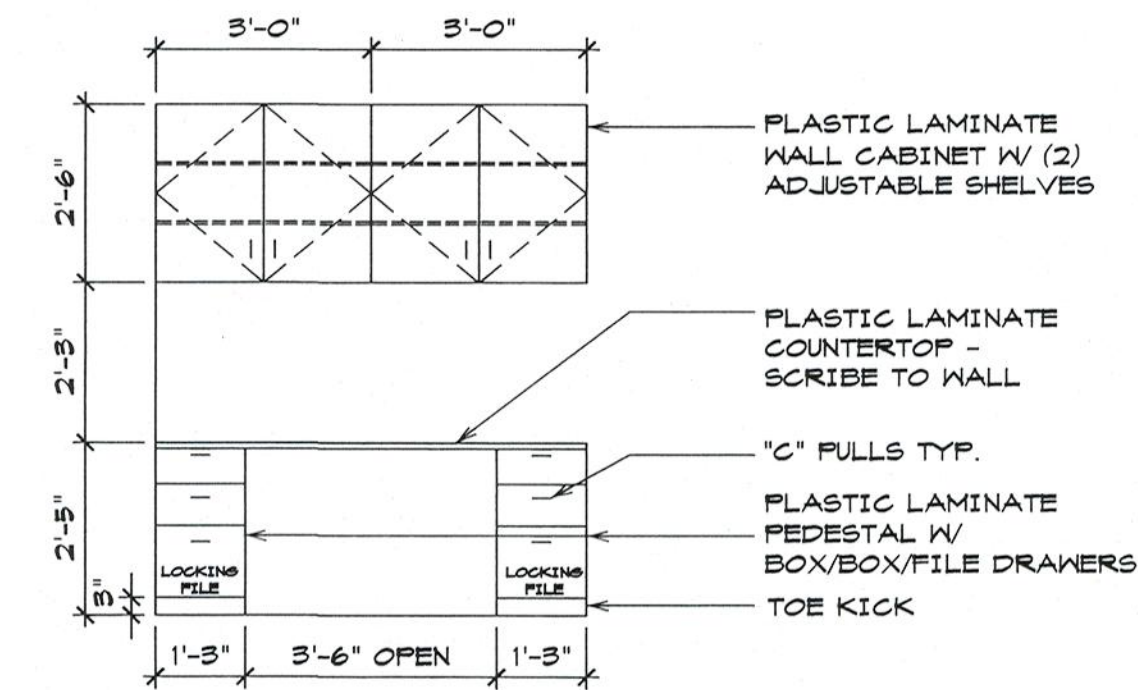
DRAWN BY: CHECKED BY:
MS BLS

Floor Plan

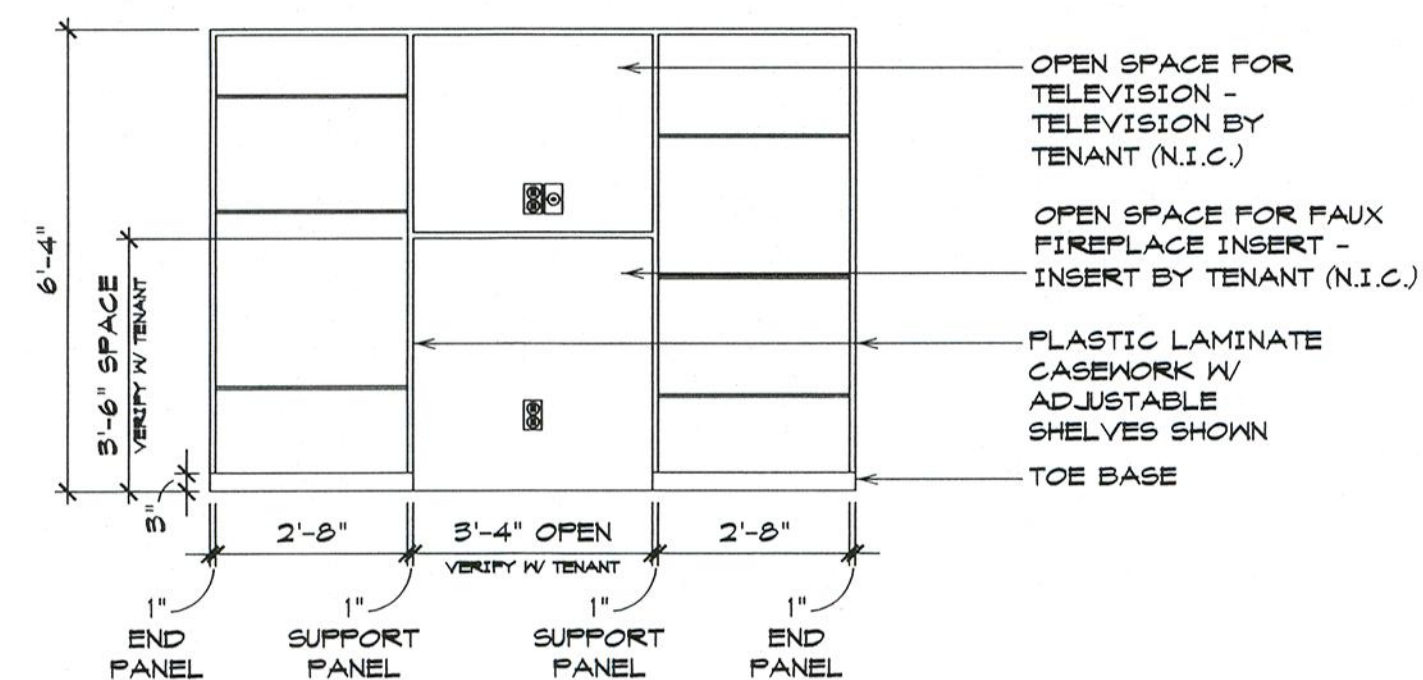
TA-3



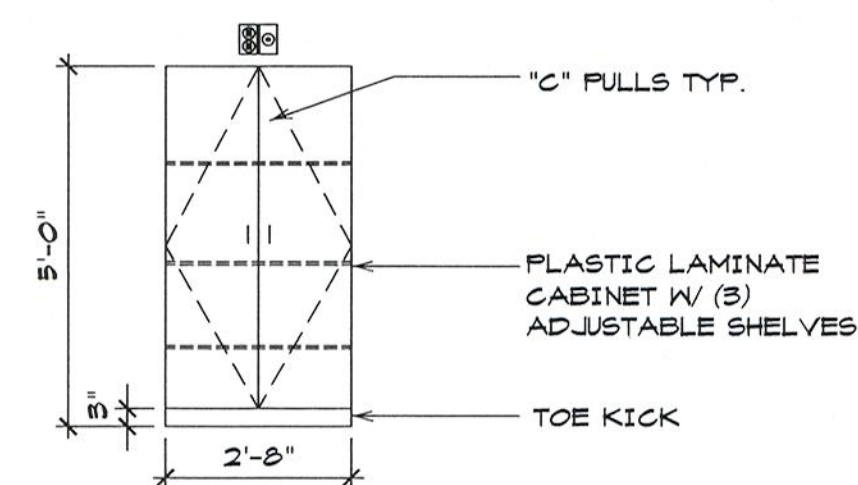
B Workstation Elevation
TA-4 3/8" = 1'-0"



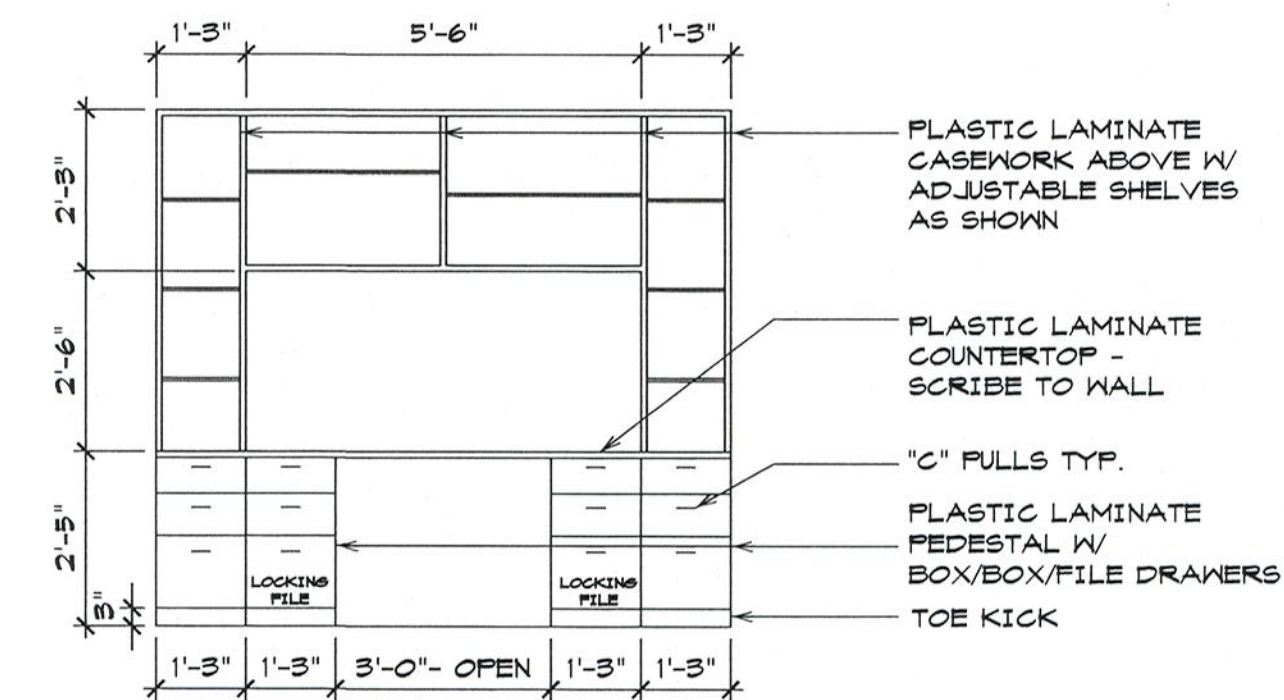
A Workstation Elevation
TA-4 3/8" = 1'-0"



E Wall Unit Elevation
TA-4 3/8" = 1'-0"



D Media Cabinet Elevation
TA-4 3/8" = 1'-0"



C Work Station Elevation
TA-4 3/8" = 1'-0"

#11-530245

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED *G. MACY*
DATED APR 17 2011

KEENEY
DESIGN



WE DESIGN
SPACE

575 Logan Street
Denver, CO 80203
303-871-1970

PROJECT:
**DaVita
Remodel**
Suite 100

1411 S. Potomac St.
Aurora, CO



4.7.11

REVISIONS:

DESCRIPTION:	BY:	DATE:

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PROJECT NO.:

141.09

ISSUE DATE:

04/03/11

DRAWN BY: CHECKED BY:

MS BLS

Details

TA-4

DIVISION 15 - MECHANICAL SPECIFICATIONS

BASIC MECHANICAL REQUIREMENTS

- QUALITY ASSURANCE.
- IF MANUFACTURER'S MATERIAL OR EQUIPMENT IS LISTED IN SCHEDULES OR ON DRAWINGS, THEY ARE TYPES TO BE PROVIDED FOR ESTABLISHMENT OF SIZE, CAPACITY, GRADE, AND QUALITY. IF OTHER ACCEPTABLE MANUFACTURERS ARE USED, COST OF ANY CHANGE IN CONSTRUCTION REQUIRED BY THEIR USE SHALL BE BORNE BY CONTRACTOR.
 - EQUIPMENT SHALL CONFORM TO STATE AND/OR LOCAL ENERGY CONSERVATION STANDARDS.
- INTENT AND INTERPRETATIONS:
- IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO RESULT IN A COMPLETE MECHANICAL INSTALLATION IN COMPLETE ACCORDANCE WITH ALL APPLICABLE LOCAL CODES AND ORDINANCES.
 - DRAWINGS ARE DIAGNRAMATIC IN CHARACTER AND DO NOT NECESSARILY INDICATE EVERY REQUIRED PIPE, OFFSET, TRANSITION, ETC. ITEMS NOT SPECIFICALLY MENTIONED IN THE SPECIFICATION OR NOTED ON THE DRAWINGS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE WORKING INSTALLATION, SHALL BE INCLUDED.
 - DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY. WHATEVER IS CALLED FOR IN EITHER IS BINDING AS THOUGH CALLED FOR IN BOTH. IF THERE IS A CONFLICT IN THE CONTRACT DOCUMENTS, THE MORE DEMANDING AND COSTLY DESIGN SHALL BE SELECTED FOR BIDDER PURPORT. IF THERE IS A CONFLICT PRESENT THE CONFLICT FOUND IN THE CONTRACT DOCUMENTS TO THE ARCHITECT/ENGINEER FOR RESOLUTION. IF THE RESOLUTION FAVORS A LESS COSTLY DESIGN, THE CONTRACTOR WILL BE REQUIRED TO REIMBURSE THE DIFFERENCE IN COST.
 - DRAWINGS SHALL NOT BE SCALED FOR ROUGH-IN MEASUREMENTS OR USED AS SHOP DRAWINGS. WHERE DRAWINGS ARE REQUIRED, THESE DRAWINGS OR HAVE TO BE MADE FROM FIELD MEASUREMENTS, TAKE THE NECESSARY MEASUREMENTS AND PREPARE THE DRAWINGS.
 - BEFORE ANY WORK IS INSTALLED, DETERMINE THAT EQUIPMENT WILL PROPERLY FIT THE SPACE, THAT REQUIRED CLEARANCES CAN BE MAINTAINED AND THAT EQUIPMENT CAN BE LOCATED WITHOUT INTERFERENCE BETWEEN SYSTEMS, WITH STRUCTURAL ELEMENTS, OR WITH THE WORK OF OTHER TRADES.

- JOB CONDITIONS:
- CONFER, COOPERATE, AND COORDINATE WORK WITH OTHER TRADES. COORDINATE CEILING CAVITY SPACE CAREFULLY WITH ALL TRADES. IN EVENT OF CONFLICT, INSTALL MECHANICAL AND ELECTRICAL SYSTEMS WITHIN CAVITY SPACE IN FOLLOWING ORDER OF PRIORITY:
 - PLUMBING WASTE AND VENT PIPING.
 - ROOF DRAIN PIPING.
 - CUT WORK.
 - ELECTRICAL CONDUIT AND LIGHTING.
 - DOMESTIC HOT AND COLD WATER PIPING.
 - FIRE SPRINKLER PIPING.

- PERMITS AND FEES:
- ARRANGE AND PAY FOR ALL INSPECTIONS, PERMITS, LICENSES, CERTIFICATES, AND FEES REQUIRED IN CONNECTION WITH WORK.

- SUBMITTALS AND SHOP DRAWINGS:
- CONFORM TO REQUIREMENTS OF DIVISION I AND FOLLOWING PARAGRAPHS.
 - SUBMITTALS SHALL INCLUDE CATALOG CUT-SHEETS AND MANUFACTURER'S DATA SHEETS.
 - PRIOR TO ORDERING EQUIPMENT OR BEGINNING INSTALLATION WORK, ASSEMBLE, PREPARE, AND FURNISH SUBMITTALS AND SHOP DRAWINGS REQUIRED FOR PROJECT. FURNISH SUBMITTALS AND SHOP DRAWINGS AS REQUIRED BY INDIVIDUAL SECTIONS OF SPECIFICATIONS.
 - CONTRACTOR SHALL THOROUGHLY CHECK SUBCONTRACTORS' OR VENDORS' SUBMITTALS AND SHOP DRAWINGS AND, AFTER APPROVING THEM, SUBMIT THEM FOR REVIEW. SUBMITTALS AND SHOP DRAWINGS THAT DO NOT BEAR CONTRACTORS REVIEW STAMP WILL BE RETURNED NOT REVIEWED.
 - IF DISCREPANCIES BETWEEN SUBMITTALS, SHOP DRAWINGS, AND CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SUBMITTALS AND SHOP DRAWINGS ARE REVIEWED, REQUIREMENTS OF CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. SUBMITTALS AND SHOP DRAWINGS WHICH ARE SUBMITTED, BUT WHICH ARE NOT REQUIRED BY CONTRACT DOCUMENTS, WILL BE RETURNED NOT REVIEWED.
 - SUBMITTALS AND SHOP DRAWINGS SHALL IDENTIFY SPECIFIC EQUIPMENT WITH NUMBERS OR LETTERS IDENTICAL TO THOSE LISTED OR SCHEDULED ON THE DRAWINGS OR SPECIFICATIONS.

- RECORD DOCUMENTS:
- KEEP IN CUSTODY DURING ENTIRE PERIOD OF CONSTRUCTION, A CURRENT SET OF DOCUMENTS INDICATING CHANGES THAT HAVE BEEN MADE TO THE CONTRACT DOCUMENTS.
 - UPON COMPLETION OF WORK, SUBMIT THE COMPLETE SET OF RECORD DOCUMENTS TO THE ARCHITECT.

- PROTECTION OF EQUIPMENT:
- PROTECT MATERIALS AND EQUIPMENT FROM PHYSICAL DAMAGE, CONSTRUCTION DIRT, AND THE ELEMENTS FROM TIME OF SHIPMENT TO TIME INSTALLATION IS ACCEPTED BY OWNER.

- GUARANTEE:
- GUARANTEE MATERIALS, WORKMANSHIP, AND OPERATION OF EQUIPMENT INSTALLED FOR PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF ENTIRE WORK. REPAIR OR REPLACE ANY PART OF WORK WHICH SHOWS DEFECT DURING THAT TIME.
 - BE RESPONSIBLE FOR DAMAGE TO PROPERTY OF OWNER OR TO WORK OF OTHER CONTRACTORS DURING CONSTRUCTION AND GUARANTEE PERIOD.
 - FURNISH EQUIPMENT WARRANTIES TO OWNER.

- MECHANICAL EQUIPMENT WIRING AND CONNECTIONS:
- VOLTAGE CHARACTERISTICS SHALL BE AS IN ELECTRICAL DIVISION OF SPECIFICATIONS AND ON ELECTRICAL DRAWINGS.

- TEMPORARY FACILITIES:
- USE OF EXISTING EQUIPMENT FOR TEMPORARY HEATING OR COOLING. DO NOT USE NEW OR EXISTING BUILDING EQUIPMENT WITHOUT WRITTEN PERMISSION FROM OWNER.

- INSPECTIONS:
- DO NOT COVER UP OR ENCLOSE WORK UNTIL INSPECTED, TESTED, AND APPROVED. ANY WORK ENCLOSED OR COVERED UP BEFORE SUCH APPROVAL SHALL BE UNCOVERED, TESTED, AND APPROVED.

- ACCESS DOORS:
- FURNISH HINGED STEEL ACCESS DOORS WITH CONCEALED LATCH, WHETHER SHOWN OR NOT, IN WALLS AND PLASTER, OR GYPSUM BOARD CEILINGS FOR ACCESS TO CONCEALED VALVES, SHOCK ARRESTERS, AIR VENTS, MOTORS, FANS, BALANCING VALVES, OR OTHER OPERATING DEVICES REQUIRING ADJUSTMENT OR SERVICING.
 - ACCESS DOOR SHALL BE SIZE OF EQUIPMENT TO BE REMOVED OR 24" BY 24" IF USED FOR SERVICE ONLY.

- SUPERVISION:
- SUPERVISE WORK TO PROCEED IN PROPER SEQUENCE WITHOUT DELAY TO OTHER CONTRACTORS. KEEP SUPERVISOR ON PREMISES AT ALL TIMES TO ENSURE THAT INTENT OF DRAWINGS AND SPECIFICATIONS IS BEING FOLLOWED.

- INSTALLATION:
- WORKMANSHIP SHALL BE FIRST QUALITY. APPEARANCE OF WORK SHALL BE OF EQUAL IMPORTANCE TO ITS MECHANICAL OPERATION. LACK OF QUALITY WORKMANSHIP SHALL BE REASON FOR REJECTION OF SYSTEM IN PART OR IN WHOLE.
 - INSTALL SO THAT ALL VALVES AND EQUIPMENT CAN BE EASILY ACCESSSED AND SERVICED BY ADEQUATE CLEARANCE, INSTALLATION OF ACCESS DOORS, UNIONS IN PIPING, OR OTHER METHODS.
 - COMPLETE INSTALLATION SHALL FUNCTION SMOOTHLY AND NOISELESSLY.
 - INSTALL EQUIPMENT AND MATERIALS PER MANUFACTURERS' RECOMMENDATIONS AND LOCAL CODES OR REGULATIONS.
 - PLACE OR REPLACE ALL EQUIPMENT MATERIALS WHERE THEY CAN BE SEEN AND READ WITHOUT DIFFICULTY.
 - FLUSH PIPES FREE OF FOREIGN SUBSTANCES BEFORE INSTALLING VALVES OR MAKING FINAL CONNECTIONS. CLEAN ALL PIPING AND EQUIPMENT.

- COMPLETION:
- CLEAN INSULATION COVERINGS, DUCTS, PIPES, EQUIPMENT, AND ACCESSORIES TO RECEIVE PRIME COAT OF PAINT. CLEAN EQUIPMENT RECEIVED WITH PRIME COAT TO RECEIVE FINAL COAT.
 - REPLACE AIR FILTERS IF UNITS WERE OPERATED DURING CONSTRUCTION. CLEAN DUCTS, FLOORS, AND COILS IF UNITS WERE OPERATED WITHOUT FILTERS DURING CONSTRUCTION.
 - INSTRUCT OWNER IN OPERATION AND MAINTENANCE OF MECHANICAL SYSTEMS. MINIMUM PARTICIPANTS SHALL INCLUDE MECHANICAL CONTRACTOR AND CONTROLS CONTRACTOR REPRESENTATIVES.
 - AFTER TESTS AND ADJUSTMENTS HAVE BEEN MADE AND SYSTEMS PRONOUNCED SATISFACTORY FOR PERMANENT OPERATION, REFINISH DAMAGED FINISH AND LEAVE EVERYTHING IN PROPER WORKING ORDER AND APPEARANCE.
 - ON COMPLETION OF WORK, REMOVE TOOLS, SCAFFOLDING, DEBRIS, ETC., FROM GROUNDS AND LEAVE PREMISES CLEAN.

BASIC MECHANICAL REQUIREMENTS (CONTINUED)

- OPERATION AND MAINTENANCE MANUALS:
- PRIOR TO COMPLETION OF PROJECT, SUBMIT THREE (3) SETS OF MAINTENANCE MANUALS COVERING OPERATION AND MAINTENANCE OF MECHANICAL EQUIPMENT WITH MOVING OR MOVABLE PARTS, INCLUDING PLUMBING SYSTEMS. INSTRUCTIONS SHALL BE IN PAMPHLET OR TYPEWRITTEN FORM IN THREE RING BINDERS. INSTRUCTIONS FOR EACH UNIT SHALL BE INDICATED BY SEPARATE TAB.
 - INCLUDE TEST AND BALANCE REPORT.
 - INCLUDE STARTING, STOPPING, LUBRICATION, PREVENTATIVE MAINTENANCE SCHEDULE, AND ADJUSTMENT INFORMATION FOR EACH PIECE OF EQUIPMENT.
 - INCLUDE GUARANTEES AND WARRANTIES OF ALL EQUIPMENT.

PIPE AND PIPE FITTINGS

- PIPE AND TUBE
- COPPER REFRIGERANT TUBE: ASTM B280-03, SEAMLESS.
 - COPPER DRAINAGE TUBE (DNV): ASTM B306-88.
- PIPE AND TUBE JOINTS AND FITTINGS:
- COPPER AND BRASS PIPE FITTINGS: ASME B16.23, PRESSURE FITTINGS; ASME B16.24, DRAINAGE FITTINGS.

- GENERAL:
- COOLING COIL CONDENSATE DRAIN PIPING: MAINTAIN PIPE SLOPE 1/8" DOWN PER LINEAR FOOT IN THE DIRECTION OF FLOW UNLESS OTHERWISE NOTED ON DRAWINGS.
 - MAKE CONNECTIONS TO EQUIPMENT WITH UNIONS OR FLANGES.
 - COOLING COIL CONDENSATE DRAIN PIPING SHALL BE EQUAL TO OR LARGER THAN THE EXIT DIAMETER OF THE DRAIN PAN DRAIN CONNECTION.
 - FLUSH EACH PIPING SYSTEM AND PROVE CLEAN.

- COPPER PIPE CONNECTIONS
- USE 15% SILVER BRAZING ALLOY AND SILVER BRAZING FLUX ON CONCEALED JOINTS.
- REFRIGERANT COPPER PIPE CONNECTIONS
- 2-5/8" O.D. AND SMALLER: 95% TIN, 5% ANTIMONY LEAD-FREE SOLDER.
 - 3-1/8" O.D. AND LARGER, HOT GAS PIPING, BURIED PIPING: 15% SILVER BRAZING ALLOY.
 - CONTINUOUSLY PURGE PIPING WITH DRY NITROGEN DURING SILVER BRAZING PROCESS.

- PIPE TESTING
- TEST ALL PIPING SYSTEMS, CORRECT LEAKS BY REMAKING JOINTS. REMOVE EQUIPMENT NOT ABLE TO WITHSTAND TEST PRESSURE FROM SYSTEM DURING TEST. CONSULT GOVERNING CODES FOR SPECIAL SYSTEM REQUIREMENTS.
 - TEST PIPING BEFORE BEING PERMANENTLY ENCLOSED.
 - OBTAIN CERTIFICATES OF APPROVAL, ACCEPTANCE, COMPLIANCE WITH REGULATIONS OF AGENCIES HAVING JURISDICTION. SUBMIT TO OWNER.
 - REFRIGERANT PIPING SYSTEM TEST: TEST WITH NITROGEN AT 300 PSIG ON HIGH SIDE OF SYSTEM AND AT 150 PSIG ON LOW SIDE, MAINTAIN PRESSURE FOR 4 HOURS. AFTER TEST, EVACUATE PIPING WITH VACUUM PUMP FOR MINIMUM 24 HOURS OR UNTIL SYSTEM HAS BEEN COMPLETELY EVACUATED.

SUPPORTS, ANCHORS, SEALS

- WORK INCLUDED:
- DUCT HANGERS AND SUPPORTS.
 - EQUIPMENT BASES AND SUPPORTS.
 - FLASHING FOR MECHANICAL EQUIPMENT.
 - SLEEVING FOR MECHANICAL EQUIPMENT.

- REFERENCE STANDARDS:
- PIPE SUPPORTS: ANSI B31.1, POWER PIPING.
 - DUCT HANGERS AND REINFORCEMENT: SMACNA DUCT MANUALS.
 - FIRE BARRIER PRODUCTS: ASTM E119-00a, ASTM E814-02, ASTM E84-04, AND UL 1418.
- SUBMITTALS:
- FURNISH MANUFACTURER'S SUBMITTAL DATA FOR PREFABRICATED EQUIPMENT SUPPORTS.

- DUCT HANGERS AND SUPPORTS:
- HANGERS: GALVANIZED STEEL BAND, ROLLED ANGLE, OR UNISTRUT TYPE MEMBERS WITH THREADED RODS.
 - WALL SUPPORTS: GALVANIZED STEEL BAND IRON OR FABRICATED ANGLE BRACKET.
 - VERTICAL SUPPORT AT FLOOR: ROLLED ANGLE.
 - RIGID ROUND DUCTWORK: 1" MIN GALVANIZED STEEL STRAPS; QUANTITY, SPACING, AND GAUGE PER SMACNA STANDARDS.
 - FLEXIBLE DUCTWORK: 1" MIN GALVANIZED STEEL STRAPS. MAXIMUM ALLOWABLE SAG 1/2" PER FOOT.
 - SPACING AND GAUGE OF HANGERS PER UNIFORM MECHANICAL CODE, SMACNA STANDARDS, AND DUCT MANUFACTURER'S RECOMMENDATIONS.
 - PROVIDE A MINIMUM OF TWO FASTENERS INTO DUCT AND INTO TOP ATTACHMENT FOR ALL DUCTS WITH LONG SIDE EXCEEDING 10'.

- PREFABRICATED EQUIPMENT SUPPORTS:
- SOLID TOP EQUIPMENT BASE WITH INTEGRAL DUCT CURB AND STEPPED CANT TO MATCH ROOF INSULATION PITCH BASE TO MATCH ROOF PITCH, PROVIDE LEVEL INSTALLATION.

- EXECUTION/INSTALLATION:
- USE INSERTS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS AND SIDES OF REINFORCED CONCRETE BEAMS.
 - SET INSERTS IN POSITION IN ADVANCE OF CONCRETE WORK. PROVIDE REINFORCEMENT ROD IN CONCRETE FOR INSERTS CARRYING PIPE OVER 4" OR DUCTS OVER 60" WIDE.
 - WHERE CONCRETE SLABS FORM FINISHED CEILING, FINISH INSERTS FLUSH WITH SLAB SURFACE.
 - WHERE INSERTS ARE OMITTED, DRILL THROUGH CONCRETE SLAB FROM BELOW AND PROVIDE ROD WITH RECESSED SQUARE STEEL PLATE AND NUT ABOVE SLAB. OBTAIN WRITTEN PERMISSION OF LOCATION AND PROCEDURE FROM STRUCTURAL ENGINEER PRIOR TO COMMENCING WORK.
 - ANCHORS:
 - USE ANCHORS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS, AND SIDES OF REINFORCED CONCRETE BEAMS.
 - REVIEW ANCHOR LOCATIONS, DEPTHS WITH ARCHITECT AND STRUCTURAL ENGINEER BEFORE INSTALLATION.
 - INSTALL PER MANUFACTURER'S DESIGN CRITERIA, INSTALLATION INSTRUCTIONS.

- DUCT HANGERS AND SUPPORTS:
- SUPPORT DUCTWORK IN ACCORDANCE WITH INTERNATIONAL MECHANICAL CODE, SMACNA, AND ASHRAE REQUIREMENTS AND RECOMMENDATIONS.

- EQUIPMENT BASES:
- CONCRETE BASES FOR EQUIPMENT WILL BE PROVIDED BY OTHERS ONLY IF SHOWN ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. ALL OTHER BASES SHALL BE FABRICATED BY THE CONTRACTOR.
 - BASES SHALL BE 4" THICK MINIMUM, EXTENDED 6" BEYOND MACHINERY BEDPLATES. LOCKEN CONCRETE AT ANCHOR BOLTS IF IMBEDDED EXCEEDS 2".
 - SIZE AND LOCATE ALL BASES. FURNISH ALL REQUIRED ANCHOR BOLTS AND SLEEVES.
 - SECURE EQUIPMENT OR VIBRATION ISOLATION DEVICES FOR EQUIPMENT TO BASES WITH ANCHOR BOLTS. ANCHOR BOLTS SHALL BE PROVIDED BY EQUIPMENT MANUFACTURER OR SPECIFIED BY EQUIPMENT MANUFACTURER AND SUPPLIED BY CONTRACTOR. BOLTS SHALL BE SECURELY IMBEDDED IN THE CONCRETE BASE. GROUT MACHINERY UNDER ENTIRE BEARING SURFACE UNLESS ISOLATED FOR VIBRATION. AFTER GROUT HAS SET, REMOVE ALL WEDGES, SHIMS, JACK BOLTS, FILL SPACE WITH NONSHRINKING GROUT. PROVIDE LEAD WASHERS AT EQUIPMENT ANCHOR BOLTS.
 - FABRICATE EQUIPMENT SUPPORTS OF STRUCTURAL STEEL MEMBERS OR STEEL PIPE AND FITTINGS. BRACE AND FASTEN WITH FLANGES BOLTED TO STRUCTURE.

- FLASHING AND SAFING:
- WHERE EXPOSED PIPING AND DUCTWORK PASSES THROUGH WALLS, FLOORS, ROOFS, PROVIDE CHROME PLATED OR STAINLESS STEEL ESCUTCHEON FOR PIPING AND A MINIMUM 26 GAUGE GALVANIZED ANGLE FRAME FOR DUCTWORK. ROLL FRAME TO MATCH THE DIAMETER OF ROUND DUCT.
 - PROVIDE SOUND RATED FLASHING AROUND DUCTS AND PIPES PASSING FROM EQUIPMENT ROOMS INSTALLED PER MANUFACTURER'S DATA FOR SOUND CONTROL TO MEET THE ATTENUATION SPECIFIED ON ARCHITECTURAL DRAWINGS FOR THE DESIGNATED WALL.

SUPPORTS, ANCHORS, SEALS (CONTINUED)

- FLASHING AND SAFING (CONTINUED):
- FLASH AND COUNTERFLASH WHERE MECHANICAL EQUIPMENT PASSES THROUGH WEATHER- OR WATER-PROOFED WALLS, FLOORS, ROOFS.

- SLEEVES:
- PROVIDE FRAMED 16 GAUGE GALVANIZED SHEET METAL SLEEVES FOR DUCTWORK. UNLESS OTHERWISE INDICATED, SLEEVES SHALL BE OF SIZE TO PROVIDE FROM 1/4" CLEARANCE BETWEEN BASE PIPE OR DUCT AND SLEEVE OR BETWEEN INSULATION JACKET AND SLEEVE. WHERE PIPE OR DUCT PASSES THROUGH CONCRETE FLOOR, EXTEND SLEEVE MINIMUM 1" ABOVE FINISHED FLOOR.
 - SLEEVES IN BEARING WALLS, WATERPROOF MEMBRANE FLOORS, MEET AREAS SHALL BE STEEL PIPE OR CAST IRON PIPE FOR SMALL ROUND DUCTS AND PIPES, 16 GAUGE GALVANIZED SHEET METAL FOR DUCTS. SLEEVES IN NON-BEARING WALLS, FLOORS, CEILINGS SHALL BE STEEL PIPE, CAST IRON PIPE, OR GALVANIZED SHEET METAL WITH LOCK-TYPE LONGITUDINAL SEAM.
 - WHERE DUCTS PENETRATE BEARING WALLS (EXCLUDING FOUNDATIONS), FIRE RATED WALLS, PARTITIONS, FLOORS, PACK AND SEAL ENTIRE SPACE BETWEEN DUCT AND SLEEVE WITH DOW CORNING 3454B SILICONE RTV FOAM OR 1" MINIMUM THICKNESS OF 3M FIRE BARRIER, CP-25 CALK, OR 303 PUTTY ON EACH SIDE OF OPENING.
 - WHERE DUCT PENETRATIONS OCCUR IN NON-FIRE RATED FLOORS OR WALLS, PACK SPACE BETWEEN DUCT AND SLEEVE OR INSULATION INSERT AND SLEEVE ON EACH END WITH MINERAL WOOL OR OTHER NON-COMBUSTIBLE MATERIAL.

INSULATION

- FURNISH AND INSTALL INSULATION FOR ALL DUCTWORK SYSTEMS. LOW PRESSURE DUCTWORK INSULATION: 1" PRESSURE DUCTWORK INSULATION: 1-1/2" EXTERIOR DUCT WRAP. ALL EQUIPMENT INSULATION SHALL INCLUDE A VAPOR BARRIER.
- FURNISH AND INSTALL INSULATION FOR ALL REFRIGERANT PIPING SYSTEMS. REFRIGERANT LIQUID AND INDOOR REFRIGERATED SUCTION PIPING, ALL SIZES, 1" THICKNESS. REFRIGERANT PIPING OUTDOORS, ALL SIZES: 3/4" THICKNESS.

DUCTWORK

- FLEXIBLE AIR DUCT:
 - LISTED UNDER UL-181 STANDARDS AS CLASS I AIR DUCT MATERIAL. MAXIMUM OPERATING PRESSURE 6" W.G., MAXIMUM WORKING VELOCITY 4000 FPM. MATERIAL SHALL BE APPROVED BY AUTHORITY HAVING JURISDICTION.
 - INSULATED: METAL OR ALUMINUM LAMINATE INNER CORE, 1" THICK 3/4 LB. DENSITY FIBERGLASS INSULATION (MINIMUM K-VALUE 0.25), METAL OR APPROVED METALLIZED POLY-ESTER OR SCUFF-RESISTANT POLY-SPRINT OUTER JACKET (MAXIMUM VAPOR TRANSMISSION RATE 0.05 PERMS).
 - NON-INSULATED: DEAD SOFT SPIRAL CORRUGATED ALUMINUM SHEET OR ALUMINUM OVER A STEEL SPRING HELIX.
- SPIN-IN FITTINGS: FLARED INLET; MANUAL VOLUME DAMPER AND REGULATOR WHERE NOTED.
- FABRICATION:
 - DUCT PRESSURE AND LEAKAGE CLASSIFICATIONS.
 - FABRICATE ALL DUCTWORK PER THE REQUIREMENTS OF THE FOLLOWING PRESSURE CLASSIFICATIONS TABLE.

DUCTWORK PRESSURE CHART			
DUCTWORK		MIN. DUCT PRESSURE	MIN. LEAKAGE
		CLASSIFICATION (W.G.)	CLASSIFICATION
VARIABLE AIR VOLUME SUPPLY DUCTWORK	FROM FAN OUTLET TO TERMINAL UNIT		
	RECTANGULAR	4"	6
	ROUND OR OVAL	4"	3
VARIABLE AIR VOLUME SUPPLY DUCTWORK	FROM TERMINAL UNIT TO AIR DEVICES	1"	12
RETURN DUCTWORK		-1"	12
EXHAUST DUCTWORK	FROM AIR DEVICES TO FAN INLET	-1"	6
	FROM FAN OUTLET TO DISCHARGE POINT	1/2"	6

- MINIMUM LEAKAGE CLASSIFICATION IS AS DEFINED IN THE LATEST EDITION OF THE ASHRAE FUNDAMENTALS HANDBOOK, DUCT DESIGN CHAPTER.
- MAKE EQUIVALENT DUCT SIZE CHANGES FROM ASHRAE TABLE OF EQUIVALENT RECTANGULAR AIR FLOW AND ROUND DUCTS. NO VARIATION OF DUCT CONFIGURATION OR SIZES PERMITTED EXCEPT BY WRITTEN PERMISSION.
- CROSS BREAK OR BEAD ALL DUCTS IN EXCESS OF 10'.
- LAP METAL DUCTS IN DIRECTION OF AIR FLOW. HAMMER DOWN EDGES AND SLIPS TO LEAVE SMOOTH DUCT INTERIOR. PROVIDE CORNER CLOSURES.
- BRANCH CONNECTIONS IN RECTANGULAR DUCTWORK SHALL BE 45 DEGREE ENTRY TYPE WITH 4" MINIMUM CONNECTOR LENGTH.
- CONSTRUCT TEES, BENDS, ELBOWS WITH MINIMUM CENTER LINE RADIUS 1-1/2" TIMES MIDTH OF DUCT. WHERE NOT POSSIBLE AND WHERE RECTANGULAR ELBOWS USED, PROVIDE TURNING VANES.
- INCREASE DUCT SIZES MAXIMUM 15 DEGREE DIVERGENCE WHEREVER POSSIBLE. MAXIMUM DIVERGENCE: 20 DEGREE UPSTREAM OF EQUIPMENT, 30 DEGREE DOWNSTREAM.
- RIGIDLY CONSTRUCT METAL DUCTS WITH JOINTS MECHANICALLY TIGHT, AIRTIGHT, BRACED AND STIFFENED.
- SEAL ALL DUCTWORK (USING LIQUIDS, MASTICS, OR GASKETS, AS APPLICABLE) PER THE FOLLOWING TABLE.

DUCTWORK SEALING CHART	
STATIC PRESSURE CLASSIFICATION (W.G.)	REQUIRED SEALING
GREATER THAN 2"	ALL TRAVERSE JOINTS, LONGITUDINAL SEAMS AND DUCT WALL PENETRATIONS
2" AND LESS	TRAVERSE AND LONGITUDINAL JOINTS

- JOINTS IN RECTANGULAR DUCTWORK MAY BE MADE WITH DUCTMATE SYSTEM, NEXUS 4 BOLT DUCT CONNECTION SYSTEM, OR TDC.
- WORK INCLUDES ACCESS DOOR, BALANCING DAMPER, FLEXIBLE CONNECTION AND TURNING VANES.
- ACCESS DOORS SHALL BE UL LABELED. FABRICATE PER ASHRAE AND SMACNA. FURNISH MANUFACTURER'S SUBMITTAL DATA FOR THE ACCESS DOORS, BALANCING DAMPERS, FLEXIBLE CONNECTIONS AND TURNING VANES.
- ACCESS DOOR SHALL RATED FOR SAME STATIC PRESSURE AS DUCTWORK AND SHALL BE FRAMED, HINGED, GASKETED TYPE WITH SASH LOCKS; FULLY INSULATED.
- PROVIDE ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, FIRE OR COMBINATION. FIRE/SMOKE DAMPERS, AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS WITH ARCHITECT PRIOR TO PROVIDING ACCESS DOORS FOR INSPECTION AT BALANCING DAMPERS AND TURNING VANES.
- VOLUME DAMPER SHALL BE MULTIPLE OPPOSED BLADE TYPE, CLOSE FITTED IN DUCTS, SUITABLE FOR STATIC PRESSURE IN DUCTWORK AT INSTALLED LOCATION. DAMPERS 12" OR LESS IN HEIGHT SHALL HAVE SINGLE BLADE. DAMPER BLADES SHALL BE STAMPED 16 GAUGE GALVANIZED STEEL, MAXIMUM LENGTH 40". SHAFT SPACING SHALL NOT EXCEED 4". BEARINGS SHALL BE MOLDED SYNTHETIC. POSITIONING DEVICE SHALL BE LOCKING LEVER AND QUADRANT TYPE, LEVER PARALLEL TO BLADE LOCKED TO QUADRANT. THRESHOLD AT OTHER END OF SHAFT IS TO BE LOCKED PARALLEL TO DAMPER POSITION. CONSTRUCT DAMPER BLADES FOR MEDIUM AND HIGH PRESSURE SYSTEMS WITH END BEARINGS OR OTHER SEALING DEVICES. SUPPLY LOCKING TYPE HANDLES.
- NOT ALL BALANCING DAMPERS REQUIRED FOR THE BALANCING WORK ARE SHOWN ON THE DRAWINGS PROVIDE BALANCING DAMPERS AT POINTS ON LOW PRESSURE SUPPLY, RETURN, EXHAUST SYSTEMS WHERE BRANCHES ARE TAKEN FROM LARGER DUCTS AND AS REQUIRED FOR AIR BALANCING. COORDINATE WITH BALANCING CONTRACTOR AND PROVIDE ANY ADDITIONAL BALANCING DAMPERS REQUIRED. INSTALL DAMPERS IN ACCESSIBLE LOCATION.
- FLEXIBLE CONNECTION SHALL BE NEOPRENE COATED, 30 OZ. FIBERGLASS, FABRIC, 6" NID, TIGHTLY GRIFFED INTO METAL EDGING STRIP, ATTACHED TO DUCTING AND EQUIPMENT BY SCREWS OR BOLTS AT 6" INTERVALS, PLENUM RATED WHERE REQUIRED. FLEXIBLE CONNECTIONS EXPOSED TO WEATHER SHALL BE COATED WITH DEWPOINT RHYALON.
- TURNING VANES SHALL BE INSTALL IN SUPPLY, RETURN, OR EXHAUST MITERED ELBOWS. PROVIDE ACCESS DOOR ON UPSTREAM SIDE OF TURNING VANE. THEY SHALL BE FORMED SINGLE WALL (36" MAXIMUM LENGTH) OR DOUBLE WALL (GREATER THAN 36" LENGTH) GALVANIZED STEEL BLADES. FOR METAL DUCTWORK OTHER THAN STEEL USE SAME TYPE MATERIAL. AS DUCT DURING IN UNUSUAL ELBOWS, ADJUSTABLE TYPE THAT REMAINS ALIGNED TO AIRSTREAM IN ALL POSITIONS.
- FURNISH ACCESS DOOR ON UPSTREAM SIDE OF TURNING VANE. THEY SHALL BE FORMED SINGLE WALL (36" MAXIMUM LENGTH) OR DOUBLE WALL (GREATER THAN 36" LENGTH) GALVANIZED STEEL BLADES. FOR METAL DUCTWORK OTHER THAN STEEL USE SAME TYPE MATERIAL. AS DUCT DURING IN UNUSUAL ELBOWS, ADJUSTABLE TYPE THAT REMAINS ALIGNED TO AIRSTREAM IN ALL POSITIONS.

DUCTWORK (CONTINUED)

- ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL WITH INSULATION PER SPECIFICATIONS. FLEX DUCTS SHALL BE INSULATED AND NOT MORE THAN 5'-0" LONG.
- PAINT ALL DUCTWORK ABOVE CEILING RETURN GRILLES FLAT BLACK.
- STATIC FIRE DAMPER:
 - STATIC FIRE DAMPER WITH CURTAIN STYLE BLADES MEETING REQUIREMENTS OF UL STANDARD 555 SIXTH EDITION, GALVANIZED STEEL OR PRIME COATED STEEL. PROVIDE REINFORCEMENT IN CORNERS TO PROVIDE MAXIMUM RESISTANCE TO RACKING.
 - FIRE RESISTANCE: DAMPERS SHALL HAVE A UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
 - FIRE CLOSURE TEMPERATURE: EACH FIRE DAMPER SHALL BE EQUIPPED WITH A FACTORY INSTALLED HEAT RESPONSE DEVICE (FUSIBLE LINK) RATED TO CLOSE THE DAMPER WHEN TEMPERATURE AT THE DAMPER REACHES 165 F.
 - WHERE DAMPERS SHALL HAVE BLADES RETAINED IN A RECESS SO FREE AREA OF CONNECTING DUCTWORK IS NOT REDUCED (TYPE B).
- DYNAMIC FIRE DAMPERS:
 - DYNAMIC FIRE DAMPERS WITH STEEL 3-V BLADES MEETING REQUIREMENTS OF UL STANDARD 555, SIXTH EDITION, GALVANIZED STEEL OR PRIME COATED BLACK STEEL. PROVIDE REINFORCEMENT TO CORNERS TO PROVIDE MAXIMUM RESISTANCE TO RACKING.
 - FIRE RESISTANCE: DAMPERS SHALL HAVE UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
 - FIRE CLOSURE TEMPERATURE: EACH FIRE DAMPER SHALL BE EQUIPPED WITH A FACTORY INSTALLED HEAT RESPONSE DEVICE (FUSIBLE LINK) RATED TO CLOSE THE DAMPER WHEN TEMPERATURE AT THE DAMPER REACHES 165 F.
 - DIFFERENTIAL PRESSURE: DAMPERS SHALL HAVE A MINIMUM UL 555 DIFFERENTIAL PRESSURE RATING OF 4 INCHES W.G.
 - VELOCITY: DAMPERS SHALL HAVE A MINIMUM UL 555 VELOCITY RATING OF 3000 FPM.
- COMBINATION SMOKE AND FIRE DAMPER:
 - COMBINATION FIRE SMOKE DAMPERS WITH STEEL 3-V BLADES MEETING REQUIREMENTS OF UL STANDARD 555, SIXTH EDITION AND UL STANDARD 555a, SIXTH EDITION, ACTUATED BY FUSIBLE LINK AND SMOKE DETECTOR. 6A MAXIMUM BLADE WIDTH. GALVANIZED STEEL OR PRIME COATED BLACK STEEL. REINFORCE CORNERS TO MAXIMIZE RESISTANCE TO RACKING.
 - LEAKAGE RATING: CLASS I (DUCT STATIC PRESSURE EXCEEDS 2" W.G.) OR CLASS II (DUCT STATIC PRESSURE LESS THAN 2" W.G.)
 - FIRE RESISTANCE: DAMPERS SHALL HAVE A UL 555 FIRE RESISTANCE RATING OF 1-1/2 HOURS.
 - FIRE CLOSURE TEMPERATURE: EACH COMBINATION FIRE SMOKE DAMPER SHALL BE EQUIPPED WITH A THERMOSTAT TO CLOSE THE DAMPER AT 165 F.
 - DIFFERENTIAL PRESSURE: DAMPERS SHALL HAVE A MINIMUM UL 555a DIFFERENTIAL PRESSURE RATING OF 4 INCHES W.G.
 - VELOCITY: DAMPERS SHALL HAVE A MINIMUM UL 555a VELOCITY RATING OF 3000 FPM.
 - OPERATING SHAFT: 90 DEGREES BETWEEN CLOSED AND OPEN, SUITABLE FOR LINKING TO AND OPERATION BY DAMPER OPERATOR, WITH END SWITCH TO SIGNAL FULL OPEN POSITION.
 - ACTUATORS: TYPE: ELECTRIC, 120 VOLT AC, 60 HZ, 2-POSITION, FAIL CLOSE, EXTERNAL MOUNTED.

- AA. PROVIDE ACCESS DOORS FOR INSPECTION AND CLEANING BEFORE AND AFTER FILTERS, COILS, FANS, AUTOMATIC DAMPERS, FIRE OR COMBINATION FIRE/SMOKE DAMPERS, AND ELSEWHERE AS INDICATED. REVIEW LOCATIONS WITH ARCHITECT PRIOR TO FABRICATION.

- AB. PROVIDE 6" X 6" QUICK OPENING ACCESS DOORS FOR INSPECTION AT BALANCING DAMPERS AND TURNING VANES.

- AC. PROVIDE FIRE OR COMBINATION FIRE/SMOKE DAMPERS AT LOCATIONS SHOWN AND WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.

TEMPERATURE CONTROL SYSTEMS

- ALL CONTROLS TO BE PROVIDED BY AN INDEPENDANT CONTROLS CONTRACTOR.
- PROVIDE ALL CONTROLS FOR A COMPLETE OPERATIONAL SYSTEM. PROVIDE ALL INTERLOCKING EQUIPMENT AS INDICATED OR AS REQUIRED FOR PROPER OPERATION OF THE EQUIPMENT.
- CONCEAL WIRING WITHIN BUILDING CONSTRUCTION EXCEPT IN MECHANICAL ROOMS AND AREAS WHERE OTHER CONDUIT AND PIPING ARE EXPOSED. INSTALL CONTROL WIRING SYSTEM IN CONDUIT WHERE EXPOSED OR SUBJECT TO DAMAGE. THE USE OF WIREMOLD SHALL NOT BE PERMITTED.
- ALL CONTROL WIRING SHALL BE INSTALLED IN A NEAT AND WORKSMANLIKE MANNER PARALLEL TO BUILDING LINES WITH ADEQUATE SUPPORT. BOTH CONDUIT AND PLENUM WIRING SHALL BE SUPPORTED FROM OR ANCHORED TO STRUCTURAL MEMBERS. CONDUIT OR PLENUM WIRING SUPPORTED FROM OR ANCHORED TO PIPING, DUCT SUPPORTS, THE CEILING SUSPENSION SYSTEM, OR THE ELECTRICAL CONDUITS IS NOT ACCEPTABLE.
- UL PLENUM RATED CABLE SHALL BE ALLOWABLE IN AIR PLENUMS AS APPROVED BY LOCAL CODES.
- INSTALL SYSTEMS, COMPONENTS AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- TIME CLOCKS REQUIRED TO COMPLETE THE TEMPERATURE CONTROL SYSTEMS SHALL BE 1-DAY, 24-HOUR ELECTRONIC TYPE. EQUIP THE CLOCKS WITH BATTERY BACKUP TO MAINTAIN PROGRAMMING IN CASE OF POWER FAILURE.
- INSTRUCT OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF ELECTRIC CONTROL SYSTEMS.

TESTING AND BALANCING

- WORK INCLUDES TESTING AND BALANCING OF AIR DISTRIBUTION SYSTEMS AND EQUIPMENT. TESTING AND BALANCING SHALL BE RESPONSIBILITY OF ONE FIRM. MINIMUM STANDARDS: CHAPTER 36, 1994 EDITION OF ASHRAE HVAC APPLICATIONS HANDBOOK.
- CONTRACTOR SHALL PROVIDE TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS. TESTING AND BALANCING WORK SHALL BE DIRECTLY SUPERVISED AND RESULTS REPORTED TO ARCHITECT BY A REGISTERED PROFESSIONAL ENGINEER WHO SHALL REPRESENT TESTING AND BALANCING FIRM IN PROGRESS MEETINGS AS REQUESTED, AND SHALL BE AVAILABLE FOR INTERPRETING MATERIAL IN BALANCE REPORT.
- DO NOT BEGIN TESTING AND BALANCING WORK UNTIL SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER. PUT SYSTEMS AND EQUIPMENT INTO FULL OPERATION AND CONTINUE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. ASCERTAIN PRELIMINARY TAB REQUIREMENTS PRIOR TO COMMENCEMENT OF WORK THROUGH REVIEW OF AVAILABLE DRAWINGS AND SPECIFICATIONS. MAKE VISUAL OBSERVATIONS AT SITE DURING CONSTRUCTION TO DETERMINE LOCATION AND SUITABILITY OF REQUIRED BALANCING DEVICES.
- BEFORE AIR BALANCE WORK IS STARTED, CHECK SYSTEM FOR DUCT LEAKAGE. UNNEEDED RETURN AIR PATH, CLEAN FILTERS INSTALLED, CORRECT FAN ROTATION, EQUIPMENT VIBRATION, PROPER OPERATION OF AUTOMATIC DAMPERS, VOLUME CONTROL DAMPERS AND AIR DEVICES OPEN, REPORT ANY DEFICIENCIES TO CONTRACTOR FOR PROVIDED CORRECTION OR RESOLUTION.
- BALANCE AIR SYSTEMS STATIONS WITH PATH PRESENTING GREATEST RESISTANCE TO THE FLOW, FULLY OPEN AND UNOBSSTRUCTED. MAKE ALL NECESSARY SHEAVE REPLACEMENTS TO ACHIEVE ABOVE. DO NOT USE BALANCING DEVICES IN LIEU OF SHEAVE REPLACEMENT TO ACHIEVE DESIGN AIR FLOW.
- ADJUST ALL AIR DEVICES FOR OPTIMUM, DRAFT-FREE AIR DISTRIBUTION PATTERN. ADJUST LINEAR CEILING DIFFUSERS FOR HORIZONTAL DISCHARGE ALONG THE CEILING AND VERTICAL DISCHARGE AT AN OUTSIDE WALL.
- INSPECT TEMPERATURE CONTROL SYSTEM FOR PROPER SEQUENCE OF OPERATION AND APPROXIMATE CALIBRATION. REPORT ANY DEFICIENCIES TO CONTRACTOR IMMEDIATELY.
- BALANCE ALL AIR FLOWS WITHIN 10% OF DESIGN. MEASURE AND RECORD AIR QUANTITIES FOR EACH AIR DEVICE, AIR HANDLING UNITS INCLUDING SUPPLY, RETURN, MIXED, OUTSIDE AIR TEMPERATURES AND FAN DATA INCLUDING CFM, STATIC PRESSURE, RPM, MOTOR RUNNING AND FULL LOAD AMPERAGE BEFORE AND AFTER FINAL BALANCE. SET AIR DISTRIBUTION PATTERNS TO MINIMIZE OBJECTIONABLE DRAFTS AND NOISE.
- SUBMIT TWO (2) BOUND COPIES OF FINAL TESTING AND BALANCING REPORT PRIOR TO COMMENCEMENT OF OCCUPANCY. REPORT MUST BE SIGNED BY SUPERVISING ENGINEER AND AFFIXED WITH HIS CERTIFICATION SEAL.
- SET UP AND CALIBRATE THERMOSTATS. SET THERMOSTAT AT T4 DEG. F +/- 2 DEG. F.
- UPON COMPLETION OF WORK, SUBMIT INFORMAL DOCUMENTATION TO OWNER ITEMIZING ALL DEFICIENCIES DISCOVERED AND REPORTED TO OWNER'S MAINTENANCE STAFF, AND TIME AND DESCRIPTION OF SOLUTION.

MECHANICAL LEGEND

NOT ALL ITEMS LISTED BELOW ARE USED ON THIS SET OF MECHANICAL DRAWINGS

DOUBLE LINE DUCTWORK

SYMBOL DESCRIPTION

	RECTANGULAR SUPPLY AIR DUCT UP
	RECTANGULAR SUPPLY AIR DUCT DOWN
	RECTANGULAR RETURN AIR / EXHAUST DUCT UP
	RECTANGULAR RETURN AIR / EXHAUST DUCT DOWN
	ROUND DUCT UP
	ROUND DUCT DOWN
	BRANCH DUCT 45° TAKE-OFF
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	FLEX CONNECTION

CONTROL DEVICES AND DAMPERS

SYMBOL DESCRIPTION

	HUMIDISTAT
	PRESSURE SENSOR
	SENSOR
	WALL MOUNTED THERMOSTAT
	UNIT MOUNTED THERMOSTAT
	SWITCH
	FIRE DAMPER
	COMBINATION FIRE AND SMOKE DAMPER
	MANUAL VOLUME DAMPER
	W/locking QUADRANT
	MOTORIZED DAMPER

GENERAL

SYMBOL DESCRIPTION

	REFERENCE BUBBLE
	MECHANICAL/ELECTRICAL EQUIPMENT DESIGNATION
	REMOVE EXISTING
	UNDERCUT DOOR
	CONNECT NEW TO EXISTING

PIPING

SYMBOL ABBV. DESCRIPTION

	PC PIPED CONDENSATE
	D EQUIPMENT DRAIN
	RL REFRIGERANT LIQUID
	RS REFRIGERANT SUCTION

PIPING SYMBOLS

SYMBOL DESCRIPTION

	ARROW IN LINE INDICATES DIRECTION OF FLOW
	INDICATES PIPE SLOPE DOWN
	BOTTOM PIPE CONNECTION
	PIPING UP
	PIPING DOWN
	PIPING CAP OR PLUG
	PUMP

SINGLE LINE DUCTWORK

SYMBOL DESCRIPTION

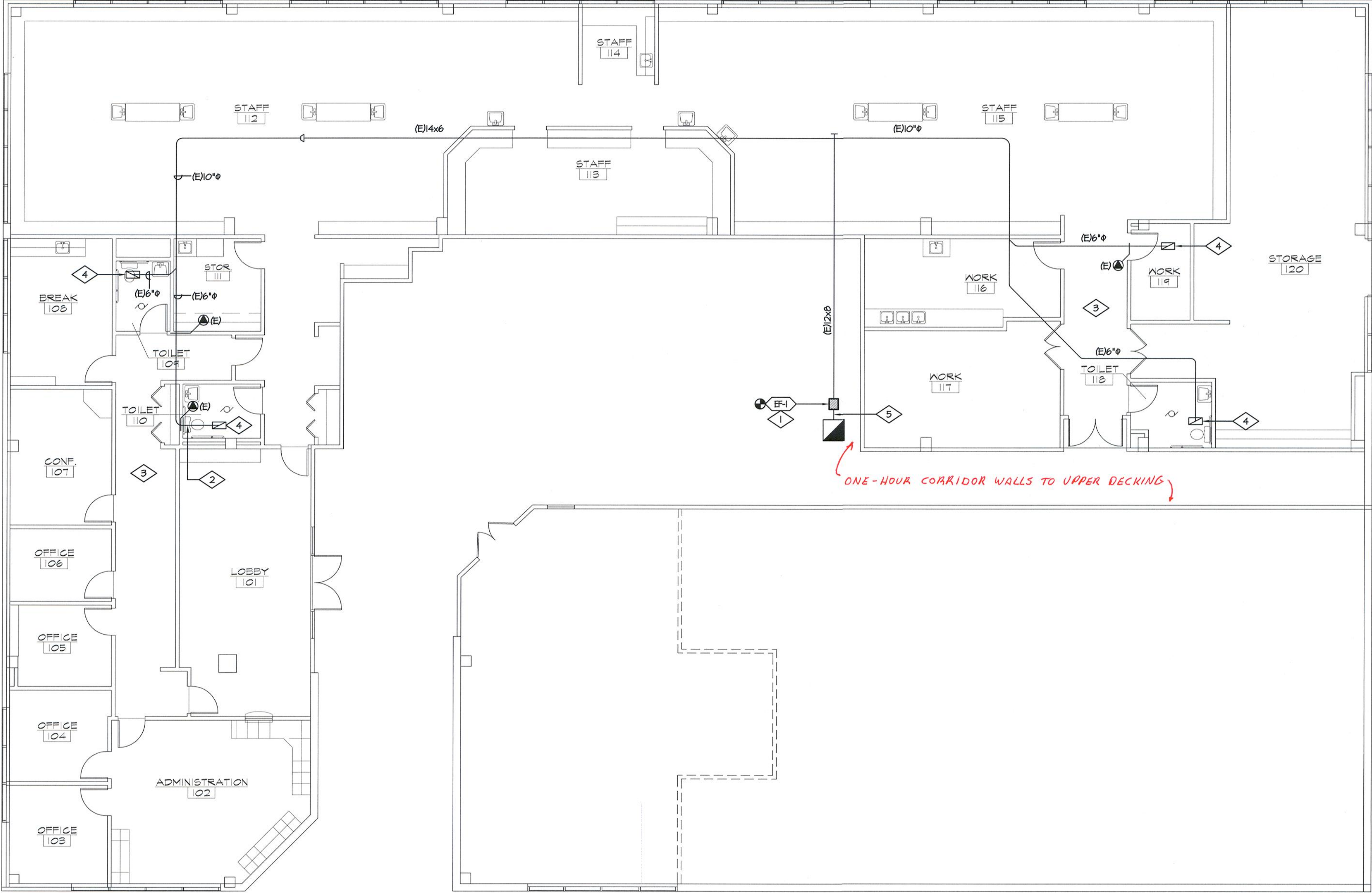
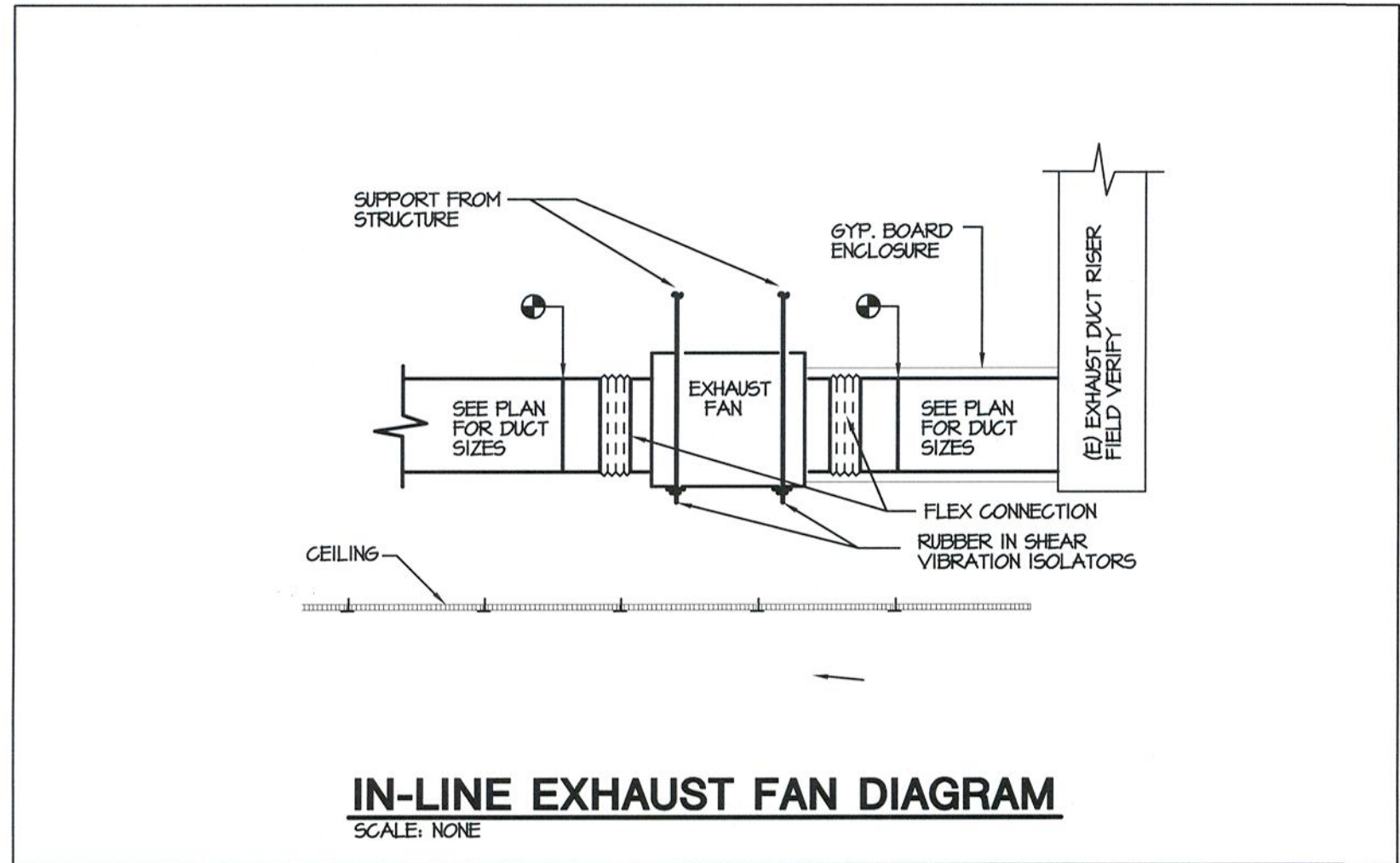
	RECTANGULAR DUCT ELBOW WITH TURNING VANES
	RADIUS ELBOW RECTANGULAR/ROUND DUCT
	DUCT TRANSITION
	CONICAL SPIN-IN FITTING
	CONICAL SPIN-IN FITTING w/DAMPER
	FLEXIBLE DUCT

ABBREVIATIONS

AFP	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR	RA	RETURN AIR
AP	ACCESS PANEL	(N)	NEW	SA	REFER TO
C	COMMON	NIC	NORMALLY CLOSED	SRV	SUPPLY AIR
(E)	EXISTING	NO	NOT IN CONTRACT	TCC	SAFETY RELIEF VALVE
ELEV	ELEVATION	NTS	NORMALLY OPEN		TEMPERATURE CONTROL
EQ	EQUIPMENT	OA	NOT TO SCALE		CONTRACTOR
GC	GENERAL CONTRACTOR	PRV	OUTSIDE AIR	TYP	TYPICAL
			PRESSURE REDUCING VALVE		

NOTE:

FAN SCHEDULE														
SYMBOL	MODEL	MANF.	FAN TYPE	SERVICE	CFM ● 5400'	S.P. IN. W.C. ● 5'L.	APPROX. RPM	MIN. HP	ELEG	DRIVE TYPE	DAMPER TYPE	SONES	HEIGHT LBS	REMARKS
EF-1	B5Q-80	GREENHECK	INLINE	1ST FLOOR	400	0.75	1725	1/4	27T-1	DIRECT	GRAVITY	12.3	80	1
1. ACCEPTABLE MANUFACTURERS: ACME, GARNES, COOK, GREENHECK, PENN, AND THIN CITY.														
SPECIFICATIONS:														
A. PROVIDE FAN WITH UNIT MOUNTED SPEED CONTROL SWITCH.														
B. DISCHARGE DUCT COLLAR.														
C. HOUSING: ACOUSTICALLY INSULATED STEEL.														
D. FAN WHEEL: CENTRIFUGAL TYPE.														
E. FAN WHEEL AND MOTOR ASSEMBLY: MOUNTED ON VIBRATION ISOLATORS; TOTALLY REMOVABLE FROM HOUSING.														
SEQUENCE OF OPERATION:														
FAN SHALL BE INTERLOCKED WITH TIMECLOCK. FAN SHALL OPERATE DURING OCCUPIED HOURS. DEACTIVATED DURING UNOCCUPIED HOURS. COORDINATE WITH EC.														



HVAC PLAN
SCALE: 1/8" = 1'-0"

DRAWING NOTES

1. INSTALL NEW IN-LINE EXHAUST FAN EF-1 AT LOCATION SHOWN. IN-LINE EXHAUST FAN SHALL BE LOCATED AS CLOSE TO EXHAUST DUCT RISER AS POSSIBLE. REMOVE AND RECONNECT (E) EXHAUST DUCTWORK AS REQUIRED FOR INSTALLATION. SUPPORT EXHAUST FAN FROM STRUCTURE. RE: DIAGRAM.
2. REPAIR (E) EXHAUST DUCTWORK AT LOCATION SHOWN. DUCTWORK HAS SEPARATED. PATCH/REPAIR CEILING TO MATCH EXISTING.
3. CONTRACTOR SHALL VERIFY AND MAINTAIN (E) FIRE-RATING THROUGHOUT CORRIDOR.
4. BALANCE (E) EXHAUST REGISTER TO 100 CFM.
5. PROVIDE GYPSUM BOARD ENCLOSURE FROM EXHAUST FAN DISCHARGE TO EXHAUST DUCT RISER. SEE DIAGRAM THIS SHEET.

#11-530245

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED G. MACY
DATED APR 12 2011



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REVISIONS:

DESCRIPTION:	BY:	DATE:

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03/31/11

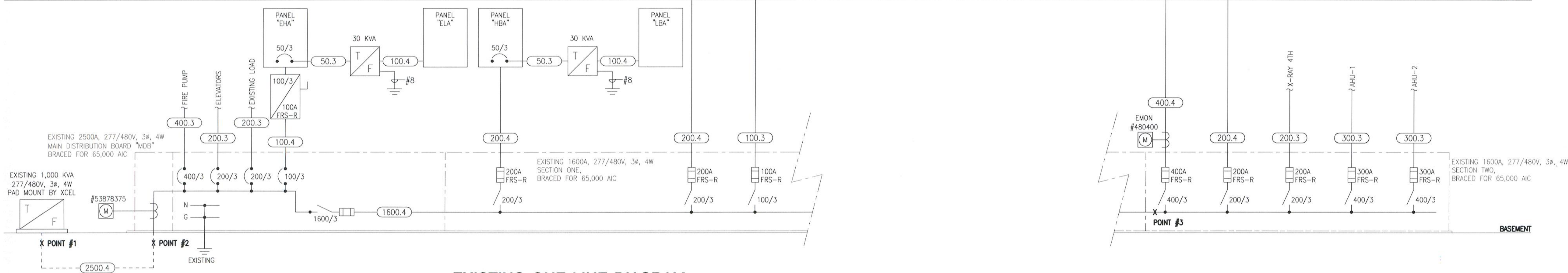
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HVAC PLAN

M-2

3ø FAULT CALCULATION	
POINT #1, AT THE UTILITY TRANSFORMER;	
$I_{sc} = \frac{2500}{\sqrt{3}} = 22,600$	A
POINT #2, AT THE MAIN DISTRIBUTION BOARD "MDB";	
$f = \frac{1.73 \times \text{Length}}{100} \times \frac{I_{sc}(\text{source})}{22600} \times \frac{L-L \text{ Volts}}{480} \times \text{Wire Factor}$	
$f = \frac{1.73 \times 100}{0.04} \times \frac{22600}{22600} \times \frac{480}{480} \times 186942$	
$M = \frac{1}{1+f} = \frac{1}{1+0.04} = 0.96$	
$I_{sc} = M \times I_{sc}(\text{source}) = 0.96 \times 22600 = 21,656$	A
POINT #3, AT THE 400A SWITCH;	
$f = \frac{1.73 \times \text{Length}}{15} \times \frac{I_{sc}(\text{source})}{21656} \times \frac{L-L \text{ Volts}}{480} \times \text{Wire Factor}$	
$f = \frac{1.73 \times 15}{0.01} \times \frac{21656}{21656} \times \frac{480}{480} \times 80118$	
$M = \frac{1}{1+f} = \frac{1}{1+0.01} = 0.99$	
$I_{sc} = M \times I_{sc}(\text{source}) = 0.99 \times 21656 = 21,344$	A
POINT #4, AT PANEL "H1B";	
$f = \frac{1.73 \times \text{Length}}{80} \times \frac{I_{sc}(\text{source})}{21344} \times \frac{L-L \text{ Volts}}{480} \times \text{Wire Factor}$	
$f = \frac{1.73 \times 80}{0.22} \times \frac{21344}{21344} \times \frac{480}{480} \times 27846$	
$M = \frac{1}{1+f} = \frac{1}{1+0.22} = 0.82$	
$I_{sc} = M \times I_{sc}(\text{source}) = 0.82 \times 21344 = 17,481$	A

COPPER FEEDER SCHEDULE		NOTE: BASED ON THHN CONDUCTORS					
FEEDER TYPE	RATING	# OF SETS	PHASE COND.	NEUTRAL	GROUND	CONDUIT	SCHED 80 CONDUIT
2500.4	2500	7	(3) 500 KCMIL	500 KCMIL	350 KCMIL	3-1/2"	4"
1600.4	1600	5	(3) 400 KCMIL	400 KCMIL	#4/0	3"	3-1/2"
400.4	400	2	(3) #3/0	#3/0	#2	2"	2-1/2"
400.3	400	2	(3) #3/0	-	#2	2"	2"
300.3	300	1	(3) 350 KCMIL	-	#4	2-1/2"	3"
200.4	200	1	(3) #3/0	#3/0	#6	2"	2-1/2"
200.3	200	1	(3) #3/0	-	#6	2"	2"
150.4	150	1	(3) #1/0	#1/0	#6	2"	2"
120.3	120	2	(3) #6	-	#10	2"	
100.4	100	1	(3) #2	#2	#8	1-1/4"	1-1/2"
100.3	100	1	(3) #2	-	#8	1-1/4"	1-1/4"
60.3	60	1	(3) #6	-	#10	3/4"	1"



EXISTING ONE-LINE DIAGRAM

SCALE: NONE

GENERAL NOTES:

A. ALL EQUIPMENT IS EXISTING TO REMAIN

ELECTRICAL GENERAL NOTES

- PRIOR TO SUBMITTING BIDS THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE TO VERIFY EXISTING ELECTRICAL EQUIPMENT CONDITIONS AND DIFFICULTIES THAT WILL AFFECT EXECUTION OF THE WORK. FIELD VERIFY QUANTITIES OF EXISTING LIGHT FIXTURES, ELECTRICAL DEVICES, COMMUNICATION DEVICES, FIRE ALARM DEVICES, AND ELECTRICAL EQUIPMENT. NOTIFY THE ARCHITECT AND ENGINEER OF ANY EXISTING CONDITIONS WHICH MODIFY THE SCOPE OF WORK AS SHOWN ON THE CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR MOBILIZATION, LABOR, EQUIPMENT, AND/OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.
- ELECTRICAL CONTRACTOR SHALL FULLY COORDINATE WITH OWNER REPRESENTATIVES. ALL ELECTRICAL WORK PERFORMED UNDER THIS CONTRACT SHALL CONFORM WITH LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE, INTERNATIONAL BUILDING CODE, LOCAL BUILDING AND FIRE DEPARTMENT REQUIREMENTS. PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF OWNER REPRESENTATIVE.
- ELECTRICAL CONTRACTOR SHALL MAINTAIN ON THE JOB AN UP TO DATE SET OF WORKING DRAWINGS, MARKED UP TO SHOW ELECTRICAL SYSTEMS AS INSTALLED. PROVIDE TENANT REPRESENTATIVE WITH ONE SET OF REPRODUCIBLE DRAWINGS WITH "AS BUILT" PROJECT RECORD INFORMATION CLEARLY INDICATED. ELECTRICAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LOCAL FEES, PERMITS, AND SERVICES OF INSPECTION AUTHORITIES REQUIRED BY ELECTRICAL WORK FOR THIS ELECTRICAL CONSTRUCTION.
- REFER TO ARCHITECTURAL AND MECHANICAL EQUIPMENT DRAWINGS FOR EXACT LOCATIONS OF ELECTRICAL DEVICES. DO NOT SCALE FROM THE ELECTRICAL PLANS, ADDITIONAL ELECTRICAL REQUIREMENTS ON ARCHITECTURAL PLANS, KITCHEN EQUIPMENT PLANS, AND MECHANICAL PLANS SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BID.
- THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL WORK. LOCATIONS ARE APPROXIMATE AND SHALL BE SUBJECT TO MINOR MODIFICATIONS AS DIRECTED BY THE GENERAL CONTRACTOR AND OWNER REPRESENTATIVES. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT FITTING OF ALL MATERIALS, EQUIPMENT, ETC. IN THE BUILDING AND TENANT SPACE. ALL DIMENSIONS SHALL BE VERIFIED ON THE JOB. ELECTRICAL CONTRACTOR SHALL CUT, CHANNEL, CHASE, AND/OR DRILL FLOORS, WALLS, ANCHORAGE, ETC., OR WORK.
- ELECTRICAL CONTRACTOR SHALL NOTIFY THE ARCHITECT AND ENGINEER OF ANY CHANGES REQUIRED BY THE BUILDING MANAGEMENT AND TENANT REPRESENTATIVES.
- DEMOLITION OR ABANDONING ANY ELECTRICAL AND COMMUNICATIONS CONDUIT, WIRING, CABLEING, OR DEVICE MEANS TO REMOVE IN ITS ENTIRETY. REMOVE UNUSED CONDUITS FROM CEILING SPACES IN AREAS OF WORK. ABANDONED OUTLET JUNCTION BOXES ARE TO BE REMOVED AND COVERED WITH NEW GYPSUM BOARD. RETURN UNUSED ELECTRICAL EQUIPMENT AND LIGHT FIXTURES TO BUILDING MANAGEMENT FOR STORAGE AND/OR REMOVAL FROM SITE AS DIRECTED BY OWNERS.
- ELECTRICAL CONTRACTOR SHALL REUSE EXISTING BRANCH CIRCUIT CONDUIT AND WIRING WHERE POSSIBLE. REUSE EXISTING PREFABRICATED LIGHTING SYSTEM CONDUIT AND WIRING WHERE POSSIBLE. RE-ROUTE AND EXTEND AS NECESSARY FOR THIS TENANT FINISH CONSTRUCTION. PROVIDE ADDITIONAL NEW CONDUIT, WIRING, COMPONENTS, AND CONNECTIONS AS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS.
- PROVIDE COMPLETE AND ACCURATE TYPED PANEL BOARD CIRCUIT DIRECTORIES AT THE COMPLETION OF WORK PER NEC 408.4. CLEAN EXPOSED PANEL BOARD SURFACES AND CHECK TIGHTNESS OF ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AS REQUIRED AND PROVIDE CLOSURE PLATES FOR VACANT SPACES. ALL NEW PANELS SHALL BE DOOR-IN-DOOR CONSTRUCTION TYPE.
- WIRING DEVICES SHALL BE SPECIFICATION GRADE; 20 AMP FOR GENERAL APPLICATION, 20 AMP OR GREATER FOR DEDICATED CIRCUITS AND AS REQUIRED BY CIRCUIT LOAD. ISOLATED GROUND RECEPTACLES SHALL BE ORANGE. MATCH COLOR AND TYPE TO EXISTING BUILDING STANDARD. PROVIDE MATCHING NYLON COVER PLATES FOR ALL OUTLETS. ELECTRICAL CONTRACTOR SHALL VERIFY ALL OUTLETS WITH ARCHITECTURAL PLANS AND TENANT BEFORE ORDERING AND PURCHASING OF MATERIALS.
- FIRE RESISTIVE WALLS AND PARTITIONS MAY HAVE OPENINGS FOR STEEL ELECTRICAL OUTLET BOXES NOT EXCEEDING 16 SQUARE INCHES IN AREA, PROVIDED THE AGGREGATE AREA OF SUCH OPENINGS IS NOT MORE WITH THAN 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL. A HORIZONTAL DISTANCE OF AT LEAST 24 INCHES SHALL SEPARATE OUTLET BOXES ON OPPOSITE SIDES OF FIRE RESISTIVE WALLS AND PARTITIONS.
- ALL WIRING SHALL BE COPPER, TYPE THHN OR THWN INSULATION. MINIMUM SIZE SHALL BE #12 AWG. PROVIDE WIRE COLOR CODING AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AND USING STANDARD CONDUCTOR COLOR CODES:
120/208 VOLTAGE:
A: BLACK
B: RED
C: BLUE
N: WHITE
G: GREEN
ISO G: GREEN W/ YELLOW STRIPES
277/480 VOLTAGE:
A: BROWN
B: ORANGE
C: YELLOW
N: GRAY
G: GREEN
- ALL WIRING SHALL BE RUN CONCEALED. ALL HOMERUNS SHALL BE EXT. ELECTRICAL CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM ENGINEER FOR USE OF "MC" AND "AC" TYPE CABLEING IN "HOME RUN" APPLICATIONS. "MC" AND "AC" TYPE CABLE WITH INTERNAL GROUND WIRES SHALL BE PERMITTED FOR BRANCH CIRCUIT WIRING WHERE APPROVED BY BUILDING MANAGEMENT AND THE LOCAL AHJ ONLY AND INSTALLED PER NATIONAL ELECTRICAL CODE AND LOCAL BUILDING DEPARTMENT REQUIREMENTS. USE LISTED AND APPROVED TYPE COUPLINGS AND CONNECTORS. PROVIDE CONDUIT SUPPORTS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE AS A MINIMUM. ALL EMPTY CONDUITS SHALL BE SUPPLIED WITH PULL WIRES AND BUSHINGS.
- VOLTAGE DROP: THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT VOLTAGE DROP FOR FEEDERS TO DISTRIBUTION EQUIPMENT DOES NOT EXCEED 2% AND VOLTAGE DROP IN BRANCH CIRCUITING DOES NOT EXCEED 3% FOR OVERALL VOLTAGE DROP OF 5% (MAXIMUM). FEEDERS LISTED ON SCHEDULES AND THE ELECTRICAL ONE-LINE DIAGRAM ARE A BASE FEEDER/BRANCH CIRCUIT SIZE AND SHALL BE ADJUSTED AS NEEDED BASED ON ACTUAL LENGTHS OF CONDUCTORS.
- ALL JUNCTION BOX COVERS SHALL BE INDELIBLY LABELED WITH PANEL DESIGNATION AND BRANCH CIRCUIT NUMBER OF EACH WIRE WITHIN THE JUNCTION BOX.
- NEUTRALS, RACEWAYS, AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN FULL ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE HARD WIRE GROUND CONNECTIONS TO ALL DEVICES AND SEPARATE INSULATED GROUND WIRE CONTINUOUS IN EACH CIRCUIT (#12 CU MINIMUM "GREEN" TRACER GROUND).
- RECEPTACLES FOR COMPUTERS, COPIERS, AND PRINTERS, WHICH ARE SEMI-DEDICATED, DEDICATED, OR ISOLATED, SHALL HAVE A SEPARATE NEUTRAL AND DEDICATED GROUND CONDUCTOR RUN FROM THE BRANCH CIRCUIT PANEL BOARD.
- ALL NEW MULTI-WIRE BRANCH CIRCUITS SHALL INCLUDE SEPARATE NEUTRAL CONDUCTORS OR TIE BREAKERS AS REQUIRED BY 2008 NEC SECTION 210.4 (B).
- ALL NEW POWER OUTLETS, TELEVISION OUTLETS, AND COMMUNICATIONS OUTLETS SHALL MEET THE REQUIREMENTS FOR AMERICANS WITH DISABILITIES (ADA) MOUNTING HEIGHTS AND ORIENTATIONS, TYPICAL UNLESS OTHERWISE NOTED. RECEPTACLES SHALL BE A MINIMUM OF 15" A.F.F. AND SWITCHES A MAXIMUM OF 48" A.F.F. TO CENTERLINE, TYPICAL UNLESS OTHERWISE NOTED.
- COORDINATE MOUNTING HEIGHTS AND LOCATIONS OF ALL ELECTRICAL DEVICES LOCATED WITHIN, ABOVE, OR NEAR MILLWORK WITH ARCHITECTURAL DRAWINGS, APPROVED "SHOP DRAWINGS", AND MILLWORK CONTRACTOR. MAINTAIN CONSISTENT MOUNTING PRACTICES FOR A UNIFORM APPEARANCE. VERIFY ALL OUTLET REQUIREMENTS PRIOR TO ROUGH IN.
- MINIMUM WORKING CLEARANCES PER THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE SHALL BE PROVIDED AROUND AND IN FRONT OF ALL ELECTRICAL EQUIPMENT.
- ALL CIRCUIT BREAKER LUGS SHALL BE RATED FOR A MINIMUM OF 75 DEGREES CELSIUS.

ELECTRICAL LEGEND

	HOMERUN, SOLID 120/208 V, OPEN 277/480 V		RECESSED FLUORESCENT FIXTURE
	CIRCUIT; RUN CONCEALED IN WALL OR CEILING		SURFACE FLUORESCENT FIXTURE
	CIRCUIT; RUN CONCEALED IN FLOOR OR GRADE		PENDANT FLUORESCENT FIXTURE
	CONDUIT RISER; TURNED UP, TURNED DOWN		FLUORESCENT STRIP FIXTURE
	JUNCTION BOX; CEILING MOUNTED		FLUORESCENT WALL BRACKET
	JUNCTION BOX; WALL MOUNTED		UNDER CABINET FLUORESCENT FIXTURE
	JUNCTION BOX; WITH COVER PLATE		FLUORESCENT ON EMERGENCY CIRCUIT
	PULLBOX		DOWNLIGHT FIXTURE
	SIMPLEX RECEPTACLE		WALL MOUNTED FIXTURE
	DUPLEX RECEPTACLE		WALLWASH FIXTURE
	DOUBLE DUPLEX RECEPTACLE		EMERGENCY FIXTURE
	DUPLEX RECEPTACLE ON DEDICATED CIRCUIT		TRACK LIGHTING
	SPECIAL RECEPTACLE - AS NOTED ON PLANS		EXIT SIGNS; WALL, CEILING MOUNTED
	TELEPHONE OUTLET, SINGLE GANG BOX, 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.		EMERGENCY BATTERY PACK FIXTURE
	DATA OUTLET, SINGLE GANG BOX, 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.		POLE MOUNTED OUTDOOR FIXTURE
	TELEPHONE/DATA OUTLET, DOUBLE GANG BOX, 3/4" CONDUIT STUB TO ACCESSIBLE CEILING.		SWITCH, SINGLE POLE
	TELEVISION CABLE OUTLET		TWO POLE SWITCH
	COMBINATION POWER/COMMUNICATIONS FLOOR BOX		THREE WAY SWITCH
	PLUGMOLD		FOUR WAY SWITCH
	DUPLEX FLOOR RECEPTACLE		MOTION SENSOR SWITCH
	COMBINATION TELEPHONE/DATA FLOOR OUTLET		KEYSWITCH
	TELEPHONE FLOOR OUTLET		DIMMER SWITCH
	CRT OR DATA FLOOR OUTLET		SWITCH WITH PILOT LIGHT
	PANELBOARD		THERMAL OVERLOAD SWITCH
	SWITCHBOARD		ABOVE FINISHED FLOOR
	DISCONNECT SWITCH, NON-FUSED		ABOVE COUNTER
	DISCONNECT SWITCH, FUSED		EMPTY CONDUIT
	TRANSFORMER		GROUND FAULT CIRCUIT INTERRUPTER
	MOTOR STARTER		ELECTRIC WATER HEATER
	COMBINATION MOTOR STARTER & DISC. SW.		GROUND
	MOTOR		NIGHT LIGHT
	COMBINATION LIGHT EXHAUST FAN		POWER; J-BOX
	TIME CLOCK		RELOCATED DEVICE OR EQUIPMENT
	METER		TELE/DATA; J-BOX
	DISCONNECT SWITCH & FUSE (DIAGRAMMATIC)		WEATHER PROOF
	CURRENT TRANSFORMER; CT'S (DIAGRAMMATIC)		FIRE HORN WITH STROBE LIGHT
	CIRCUIT BREAKER (DIAGRAMMATIC)		MANUAL PULL STATION
	WATER HEATER		SMOKE DETECTOR
	MOTION SENSOR		HEAT DETECTOR
	OCCUPANCY SENSOR		CEILING MOUNTED FIRE ALARM SPEAKER
	FIRE/SMOKE DAMPER		CEILING MOUNTED FIRE ALARM SPEAKER/STROBE
	THERMOSTAT		CEILING MOUNTED FIRE ALARM STROBE
	PAGER OR MUSIC SPEAKER		REMOTE LAMP
	PHOTOCELL		FIRE ALARM STROBE LIGHT
			DUCT DETECTOR

KEENEY
DESIGN

WE DESIGN
SPACE

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Denver, CO 80203
303-871-1970

PROJECT:

DaVita
Suite 100



1411 S. Potomac St.
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Englewood, Colorado 80112
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REVISIONS:

DESCRIPTION: BY: DATE:

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PROJECT NO.:

11086

ISSUE DATE:

03/31/11

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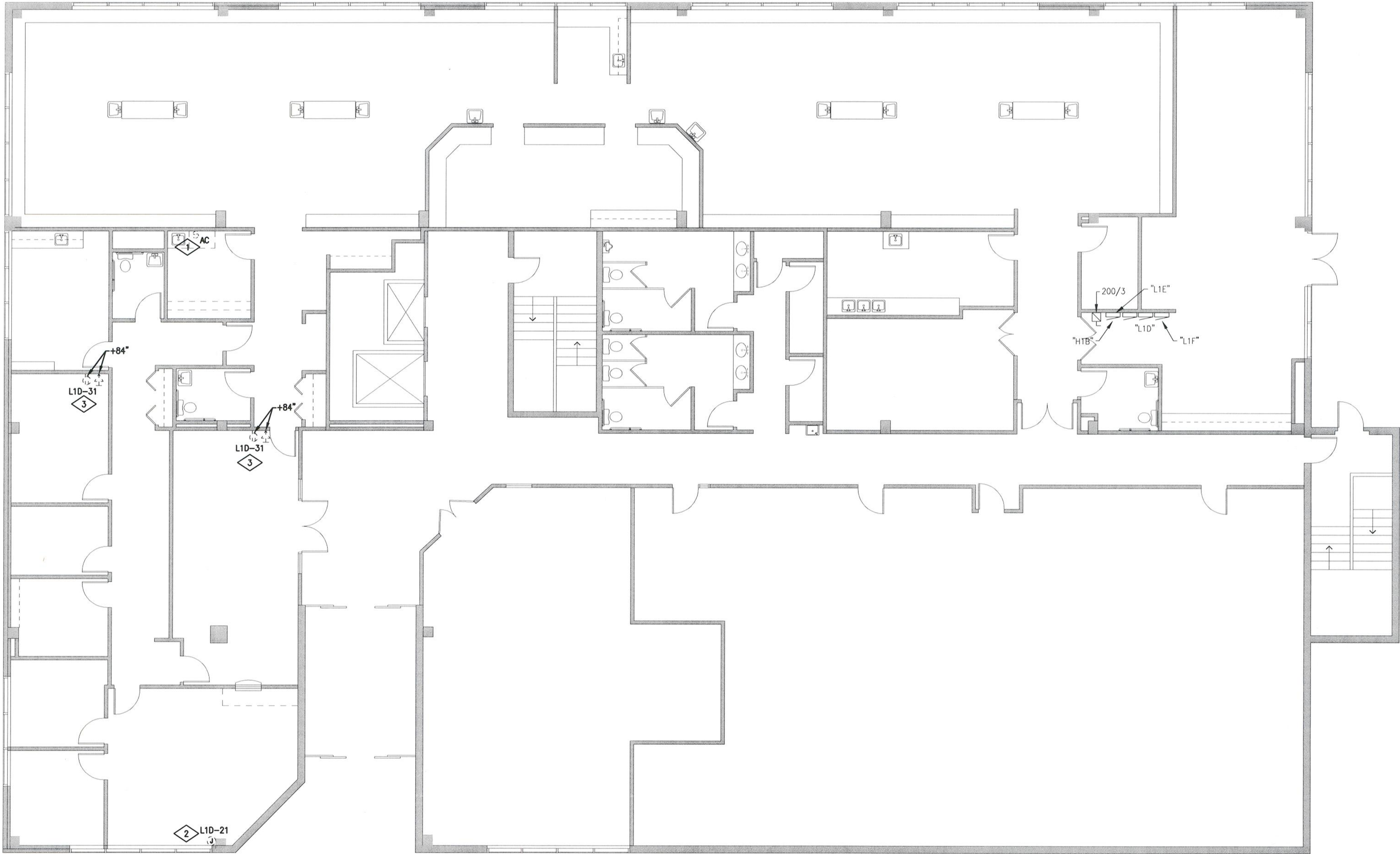
TE

CHECKED BY:

SLS

General Notes
and Legend

E-1



FIRST FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8"=1'-0"

GENERAL NOTES:

A. REMOVED ITEMS SHOWN AS DASHED AND LIGHT

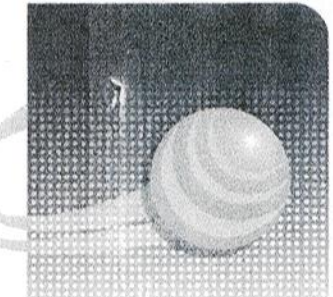
DETAIL NOTES

- 1 REMOVE SWITCH AND WIRING THAT CONTROLS THE RECEPTACLE USED BY THE GARBAGE DISPOSAL. VERIFY BOTH OUTLETS ON THE RECEPTACLE REMAIN HOT.
- 2 REMOVE J-BOX, CONDUIT AND WIRING CONNECTED TO FURNITURE SYSTEM BEING REMOVED. SALVAGE CIRCUIT IN THIS AREA FOR RECONNECTION. REFER TO POWER PLAN FOR MORE INFORMATION.
- 3 SALVAGE CIRCUIT IN THIS AREA FOR CONNECTION TO NEW RECEPTACLE IN THIS AREA. REFER TO POWER PLAN FOR MORE INFORMATION.

AURORA BUILDING INSPECTION
ELECTRICAL SECTION
APPROVED
SUBJECT TO COMMENTS AS NOTED
AND FIELD INSPECTIONS

CITY OF AURORA
BUILDING DIVISION
APPROVED AS NOTED
DATE 4/12/11

**KEENEY
DESIGN**



**WE DESIGN
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575 Logan Street
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**1st Floor Electrical
Demolition Plan**

E-2

SUPPLIED FROM: "M06"												
PANEL "H1B" (EXISTING)				VOLTAGE 277 / 480 V				3 # 4 W				
FLUSH				M.C.B.				MLO X I.G. BAR				
SURFACE X				BUS 400A CU				A.I.C. 22,000				
								MANF. SQUARE D				
								C.B. BOLT ON				
TYPE	DESCRIPTION	BKR	CIR	LOAD (VOLT AMPS) / PHASE				CIR	BKR	DESCRIPTION	TYPE	
				A	B	C						
G	R.O. WATER HEATER	70	1	12595	0		2	20	SPACE			
G	FLUSH	3	3	12595	300		4	20	EXHAUST FAN/TIME CLOCK	**		
G	WATER HEATER	20	7	3598	4680		8	60	PANEL "L1E"	R		
G	WATER HEATER	20	9		3598	3990	10					
G	WATER HEATER	20	11			3598	5100	12	3		VIA 45 KVA RM	
L	ADMISSION AREA LTG	20	13	2500	0		14		SPACE			
L	STORAGE LTG	20	15		1500	500	16	20	NIGHT LIGHTS	L		
L	TREATMENT AREA LTG	20	17			2500	1500	18	20	TREATMENT AREA LTG	L	
M	TRASH COMPACTOR	20	19	3598	19567		20	60	PANEL "L1D"	RMKG		
M	TRASH COMPACTOR	20	21		3598	20835	22					
M	TRASH COMPACTOR	20	23			3598	20133	24	3		VIA 45 KVA RMKG	
G	R.O. WATER HEATER	50	25	8996	0		26		SPACE			
G	R.O. WATER HEATER	50	27		8996	0	28		SPACE			
G	R.O. WATER HEATER	50	29			8996	0	30		SPACE		
G	SPACE		31	0	0		32		SPACE			
G	SPACE		33	0	0		34		SPACE			
G	SPACE		35	0	0		36		SPACE			
G	SPACE		37	0	0		38		SPACE			
G	SPACE		39	0	0		40		SPACE			
G	SPACE		41	0	0		42		SPACE			
				55534	55912	58020						
LOAD TYPE				CONNECTED KVA	TOTAL	FACTOR	DEMAND KVA		TOTAL			
		A	B	C	ALL PHASES		A	B	C	ALL PHASES		
LIGHTING				2.5	2.0	4.0	8.5	125%	3.1	2.5	5.0	10.6
RECEPTACLE (10KVA OR LESS)				3.3	3.3	3.3	10.0	100%	3.3	3.3	3.3	10.0
RECEPTACLE (OVER 10KVA)				8.6	10.5	8.4	27.4	50%	4.3	5.2	4.2	13.7
HVAC/MOTOR				7.2	10.5	8.7	26.3	100%	7.2	10.5	8.7	26.3
MOTOR(LARGEST)				0.0	0.0	0.0	0.0	125%	0.0	0.0	0.0	0.0
KITCHEN EQUIPMENT				1.8	0.0	2.1	3.9	100%	1.8	0.0	2.1	3.9
MISCELLANEOUS				32.1	29.6	31.5	93.3	100%	32.1	29.6	31.5	93.3
TOTAL KVA				55.5	55.9	58.0	169.5	TOTAL KVA	51.9	51.2	54.8	157.9
WITH GROUND BUS								TOTAL AMPS	187.3	184.7	198.0	189.9
LEGEND L = LIGHTING R = RECEPTACLE M = HVAC / MOTOR K = KITCHEN G = MISCELLANEOUS												

* PROVIDE SPACE COVER PLATE

** PROVIDE NEW CIRCUIT BREAKER SHOWN. MATCH EXISTING TYPE AND AIC RATING.

SUPPLIED FROM: PANEL "H1B"												
PANEL "L10" (EXISTING)				VOLTAGE 120 / 208 V				3 # 4 W				
FLUSH				M.C.B. 150/3		MLO X		I.G. BAR		MANF. SQUARE D		
SURFACE X				BUS 225A CU		FEED THRU L1F		A.I.C. 10,000		C.B. BOLT ON		
TYPE	DESCRIPTION	BKR	CIR	LOAD (VOLT AMPS) / PHASE				CIR	BKR	DESCRIPTION	TYPE	
				A B C								
G	TOILET SENSOR REC.	20	1	300	360			2	20	STORAGE REC	R	
G	SENSOR REC.	20	3		300	720		4	20	WORK AREA REC	R	
G	SPARE	20	5				0 720	6	20	WORK AREA REC	R	
G	SENSOR REC.	20	7	300	540			8	20	REUSE REC	R	
R	NURSES STATION REC	20	9		720	540		10	20	REUSE REC	R	
R	NURSES STATION REC	20	11				720 360	12	20	MEDS GF1	R	
R	NURSES STATION REC	20	13	720	840			14	20	MEDS REFRIG REC	K	
R	DED REC.	20	15		500	720		16	20	NURSES STATION REC	R	
R	NURSES STATION REC	20	17				720 720	18	20	WORK AREA REC	R	
R	COPIER	20	19	1000	720			20	20	WORK AREA REC	R	
R	MODULAR FURNITURE	20	21		720	720		22	20	WORK AREA REC	R	
R	CONFERENCE RM REC	20	23				540 720	24	20	NURSES STATION REC	R	
R	OFFICE REC	20	25	1080	540			26	20	TREATMENT REC	R	
R	OFFICE REC	20	27		1080	540		28	20	TREATMENT REC	R	
G	VIDEO EQUIP REC.	20	29				750 1000	30	30	EXISTING LOAD	G	
R	TELEVISION RECS.	20	31	800	1000			32	2		G	
R	WAITING RM REC	20	33		540	540		34	20	TREATMENT REC	R	
R	LOUNGE GF1 REC	20	35				360 720	36	20	NURSES STATION REC	R	
K	LOUNGE REFRIG	20	37	1000	500			38	20	SENSOR FAUCETS	G	
G	LOUNGE TIME CLOCK	20	39		500	1080		40	20	WORK AREA REC	R	
K	LOUNGE DISPOSER	20	41				1146 960	42	20	WORK UC REF/FZR	K	
				"L10"	9700	9220	9436					
				"L11"	9867	11615	10697					
TOTAL				19567	20835	20133						
LOAD TYPE				CONNECTED KVA	TOTAL	FACTOR	DEMAND KVA	TOTAL				
		A	B	C	ALL PHASES		A	B	C	ALL PHASES		
LIGHTING				0.0	0.0	0.0	125%	0.0	0.0	0.0	0.0	
RECEPTACLE (10KVA OR LESS)				3.3	3.3	3.3	10.0%	3.3	3.3	3.3	10.0	
RECEPTACLE (OVER 10KVA)				3.9	7.3	4.8	50%	1.9	3.6	2.4	7.9	
HVAC/MOTOR				3.6	5.9	3.6	13.0%	3.6	5.9	3.6	13.0	
MOTOR(LARGEST)				0.0	0.0	0.0	0.0	125%	0.0	0.0	0.0	
KITCHEN EQUIPMENT				1.8	0.0	2.1	3.9	100%	1.8	0.0	2.1	3.9
MISCELLANEOUS				6.9	4.4	6.3	17.7	100%	6.9	4.4	6.3	17.7
TOTAL KVA				19.6	20.8	20.1	60.5	TOTAL KVA	17.6	17.2	17.7	52.6
WITH GROUND BUS								TOTAL AMPS	146.9	143.4	147.9	146.0
LEGEND L = LIGHTING R = RECEPTACLE M = HVAC / MOTOR K = KITCHEN G = MISCELLANEOUS												

* CIRCUIT REVISED THIS CONTRACT. NO LOAD CHANGE.

** CIRCUIT REVISED THIS CONTRACT. SPARE CIRCUIT BREAKER USED.

SUPPLIED FROM: PANEL "H1B"											
PANEL "L1E" (EXISTING)				VOLTAGE 120 / 208 V				3 # 4 W			
FLUSH				M.C.B. 150/3				MLO X I.G. BAR MANF. SQUARE D			
SURFACE X				BUS 225A CU				A.I.C. 10,000 C.B. BOLT ON			
TYPE	DESCRIPTION	BKR	CIR	LOAD (VOLT AMPS) / PHASE			CIR	BKR	DESCRIPTION	TYPE	
				A	B	C					
R	TREATMENT RM GF1	20	1	360	360		2	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	3		360	360	4	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	5			360	360	6	20	TREATMENT RM GF1	R
R	TREATMENT RM GF1	20	7	360	360		8	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	9		360	360	10	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	11			360	360	12	20	TREATMENT RM GF1	R
R	TREATMENT RM GF1	20	13	360	360		14	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	15		360	360	16	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	17			360	1500	18	20	CEILING FANS	M
R	ADMIN RECEIPTS	20	19	720	360		20	20	TREATMENT RM GF1	R	
R	ADA DOOR OPENERS	20	21		750	360	22	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	23		360	360	24	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	25	360	360		26	20	TREATMENT RM GF1	R	
R	TREATMENT RM GF1	20	27			360	0	28	SPACE		
R	TREATMENT RM GF1	20	29			360	0	30	SPACE		
R	TREATMENT RM GF1	20	31	360	0		32	SPACE			
R	TREATMENT RM GF1	20	33			360	0	34	SPACE		
R	TREATMENT RM GF1	20	35			360	360	36	20	TREATMENT RM GF1	R
R	TREATMENT RM GF1	20	37	360	0		38	SPACE			
SPACE			39		0	0	40	SPACE			
SPACE			41			0	0	42	SPACE		
				4680	3990	5100					
LOAD TYPE				CONNECTED KVA	TOTAL	FACTOR	DEMAND KVA	TOTAL			
		A	B	C	ALL PHASES		A	B	C	ALL PHASES	
LIGHTING				0.0	0.0	0.0	0.0	125%	0.0	0.0	0.0
RECEPTACLE (10KVA OR LESS)				3.3	3.2	3.3	10.0	100%	3.3	3.2	3.3
RECEPTACLE (OVER 10KVA)				1.4	0.0	0.3	1.5	50%	0.7	0.0	0.1
HVAC/MOTOR				0.0	0.8	1.5	2.3	100%	0.0	0.8	1.5
MOTOR(LARGEST)				0.0	0.0	0.0	0.0	125%	0.0	0.0	0.0
KITCHEN EQUIPMENT				0.0	0.0	0.0	0.0	100%	0.0	0.0	0.0
MISCELLANEOUS				0.0	0.0	0.0	0.0	100%	0.0	0.0	0.0
TOTAL KVA				4.7	4.0	5.1	13.8	TOTAL KVA	4.0	4.0	13.0
WITH GROUND BUS				TOTAL AMPS			33.4	33.3	41.4	36.0	
LEGEND L = LIGHTING R = RECEPTACLE M = HVAC / MOTOR K = KITCHEN G = MISCELLANEOUS											