

Comments on Conceptual Solution

Project: **Iowa Hotel 2003**

Location: **Iowa**

Company:

Date: **2003**

Engineer: **Steel Solutions
Center**

The structural system for the Iowa Hotel 2003 is composed of the steel super-structure whose quantities and geometry are defined through the preliminary framing plans & elevations, plus tonnage and piece takeoffs.

Five items should be noted in regards to this study. First, only the tower portion of the structure was included in this Solution, and no design was completed for the first-floor lobby/ballroom/exhibition areas. Second, the second-floor of the tower is framed using typical structural steel sections due to an increase in loading for the meeting rooms, and the above hotel floors use Girder-Slab structural steel sections. Third, the slab system for both the meeting rooms and hotel areas is composed of an 8-inch thick, concrete plank, which does not include a topping within its design. Fourth, the lateral system uses braced-frames (around the centrally-located elevator core and near the exterior stair towers) in the East/West direction, and it uses both moment frames (located on the perimeter of the building) and braced-frames (around the centrally-located elevator core) in the North/South direction. Finally, the mechanical room located on the roof level was not taken into account with this Solution due to lack of dimensional information.

All wide flange shapes are A992, Gr. 50.

Loading Parameters per IBC 2000-

Superimposed Dead Load-

Typical: 60 psf (8" thick plank)
Roof: 10 psf (for roofing)

Live Load-

Typical: 40 psf
Partition: 20 psf
Corridor: 100 psf
Meeting Rooms 100 psf
Roof: 30 psf
Façade: 500 plf

Basic Wind Speed: 90 mph

Seismic Parameters-

S_1 6 % of g
 S_s 10 % of g
R 3.0 (which requires no seismic detailing)



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TONNAGE & PIECE TAKEOFF SHEET

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The following quantity estimate is based on a total building area of 164,250 ft²:

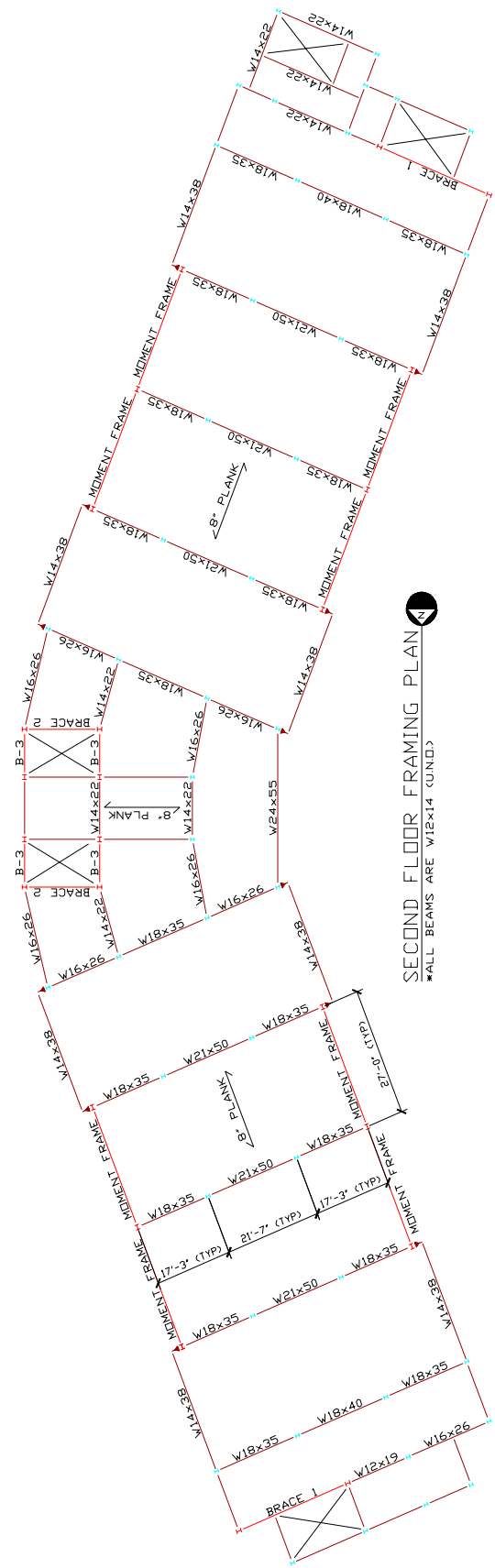
Columns (gravity)	113 tons	1.38 psf	396 Pieces
Beams (gravity)	201 tons	2.45 psf	693 Pieces
Columns (lateral)	144 tons	1.75 psf	216 Pieces
Beams (lateral)	92 tons	1.12 psf	144 Pieces
Braces (lateral)	50 tons	0.61 psf	108 Pieces
TOTAL	600 tons	7.3 psf	1557 Pieces

* The quantities are based on centerline dimensions

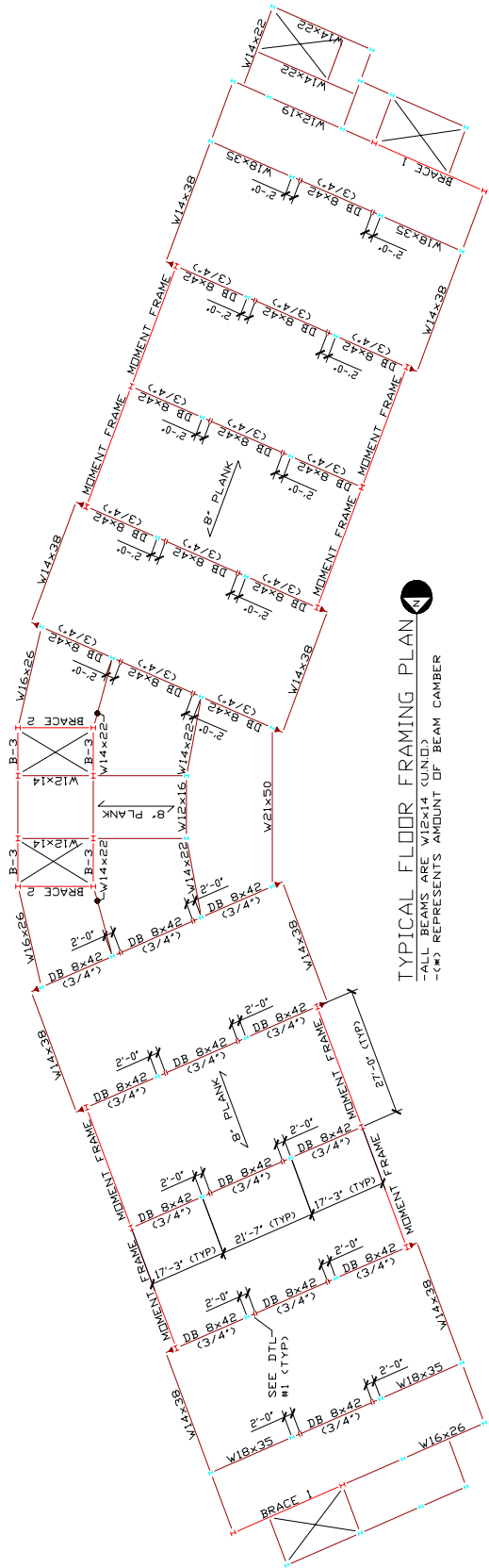
**Miscellaneous steel is not included in the above-mentioned total tonnage. Miscellaneous steel includes such items as: framing for openings, connection material, slab edge material, screen walls, base plates, and architectural elements (i.e. façade attachments, stairs, lintels, etc.).



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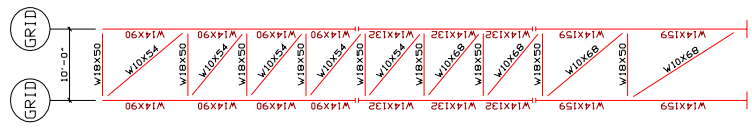


SECOND FLOOR FRAMING PLAN
 ALL BEAMS ARE W12x14 (UND)

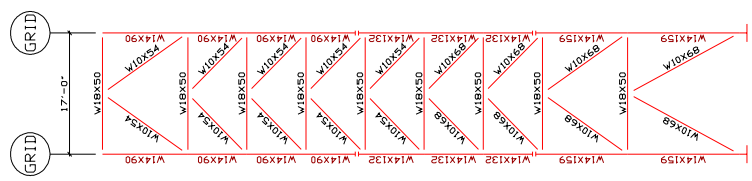


TYPICAL FLOOR FRAMING PLAN

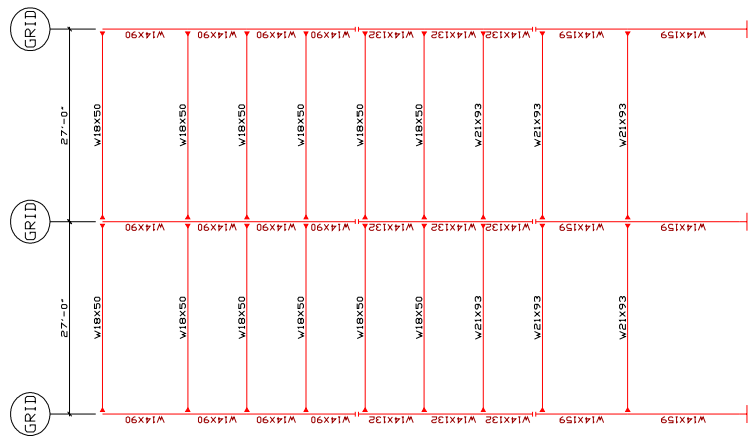
-ALL BEAMS ARE W12X14 (UNID)
 -(*) REPRESENTS AMOUNT OF BEAM CAMBER



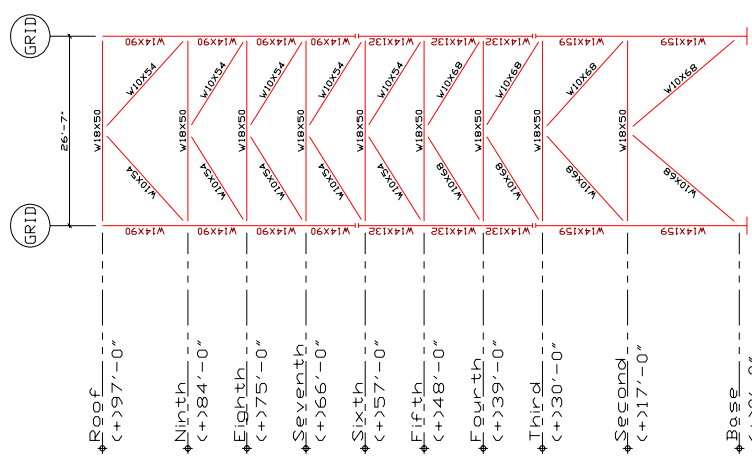
BRACE FRAME #1



BRACE FRAME #2



MOMENT FRAME



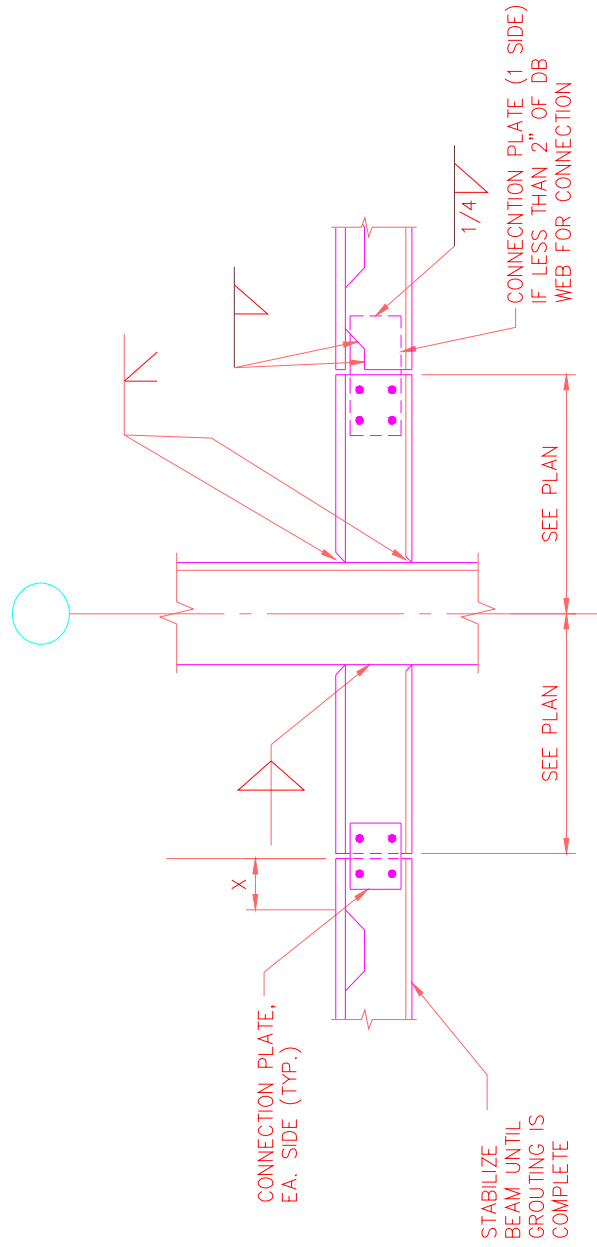
BRACE FRAME #3



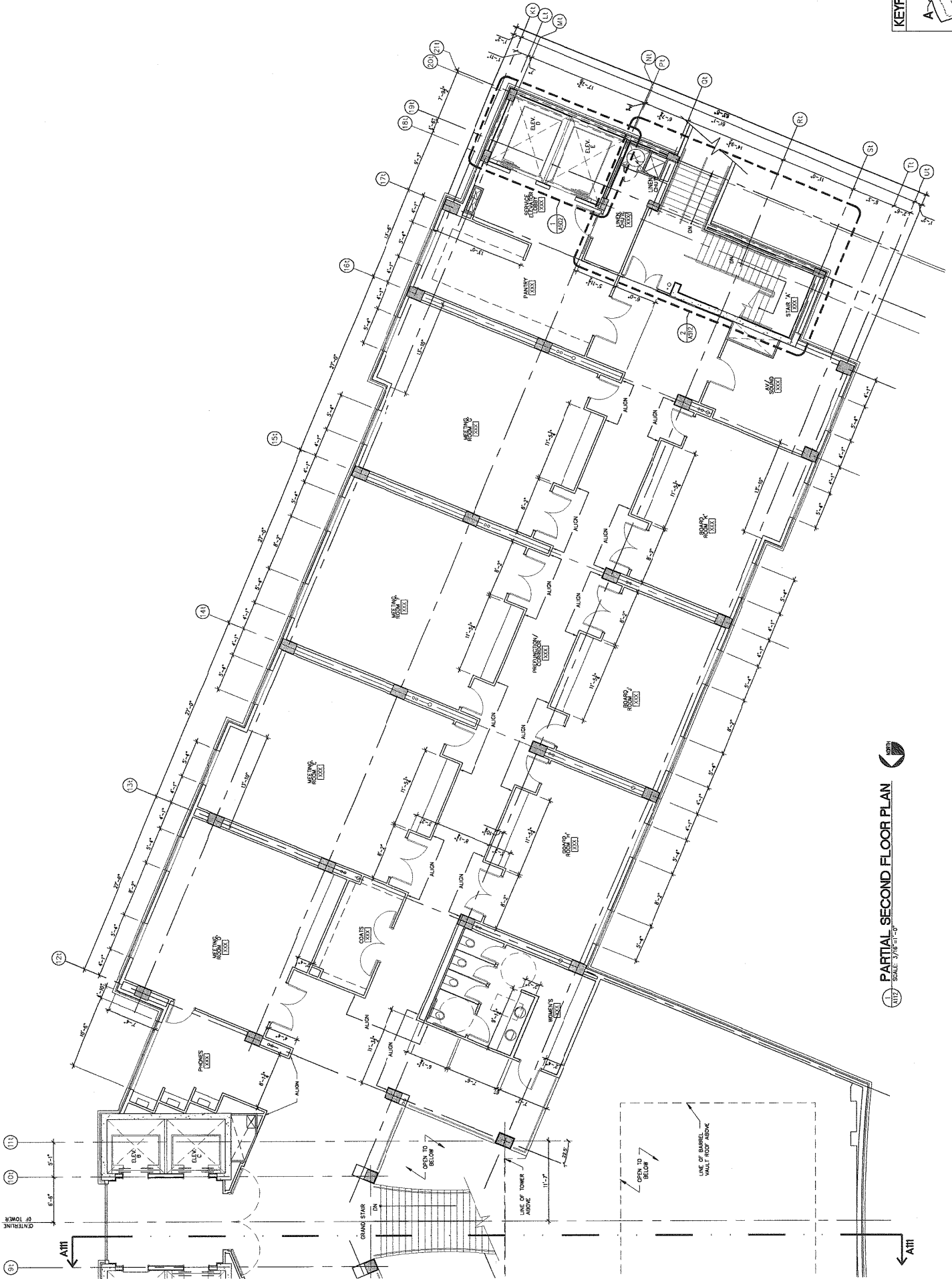
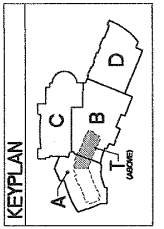
BRACE FRAME #4



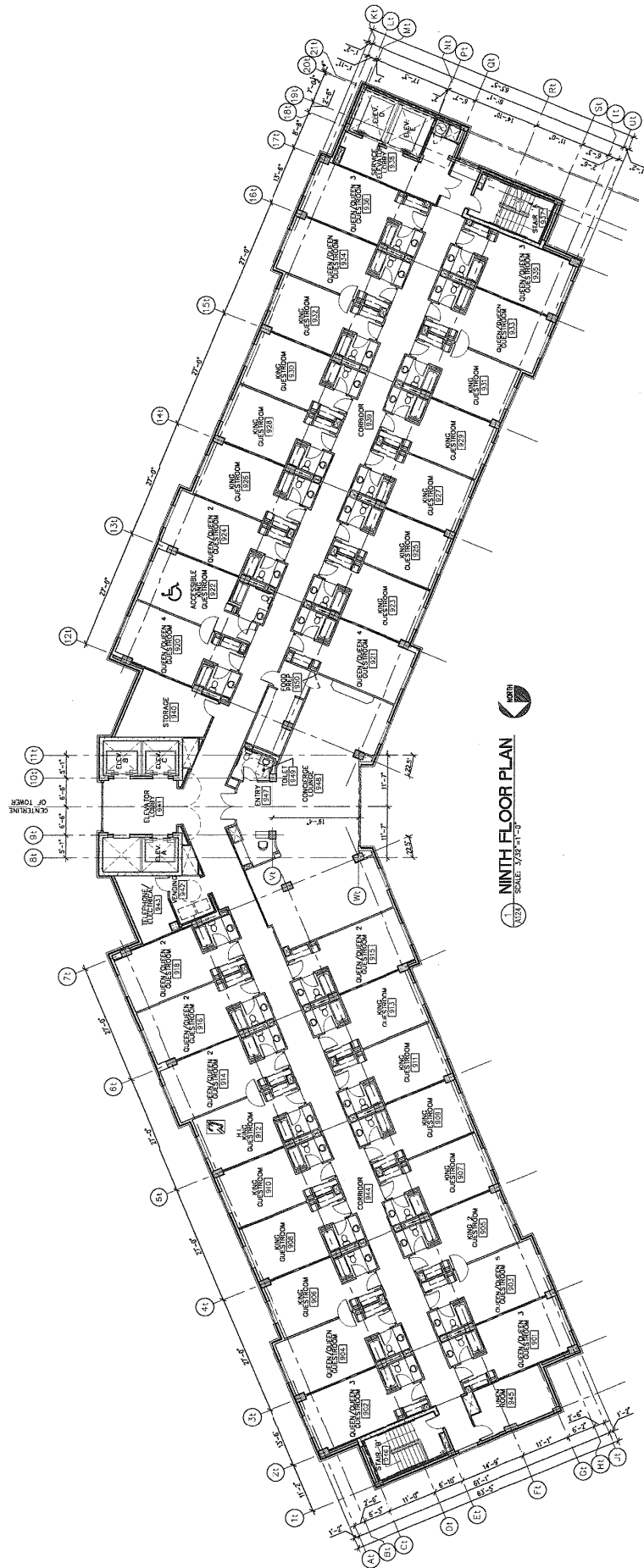
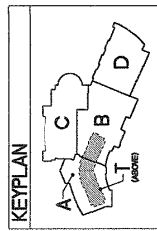
BRACE FRAME #5



1 TYPICAL DB CONNECTION @ "TREE COLUMN"



PARTIAL SECOND FLOOR PLAN
SCALE: 3/8" = 1'-0"



NINTH FLOOR PLAN
SCALE: 7/32" = 1'-0"

