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DAYLOR CONSULTING GROUP, INC.

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CODE STUDY

MASSACHUSETTS STATE BUILDING CODE REVIEW, 780 CMR 609, EDITION

PROJECT DESCRIPTION: 2 STORY BUILDING 36'-0" HIGH, 93,827 S.F.

CHAPTER 3 - USE GROUP CLASSIFICATION: BUSINESS USE

CHAPTER 5 - GENERAL BUILDING LIMITATIONS
CONSTRUCTION TYPE 2C - UNPROTECTED

AREA MODIFICATIONS TO TABLE 502:	
502.2 INCREASE FOR OPEN PERIMETER	100%
502.3 INCREASE FOR AUTOMATIC SPRINKLERS	200%
502.4 DECREASE FOR MULTI-STORY BUILDINGS	0%
	300%

HEIGHT AND AREA LIMITATION SUMMARY:
14,400 S.F. X 200% = 47,520 S.F. FLOOR ALLOWED. PROPOSED FIRST FLOOR AREA OF 69,819 S.F. WILL BE SEPARATED BY A FIREWALL INTO FIRE AREAS OF 41,078 S.F. AND 28,839 S.F. IN ORDER TO COMPLY WITH AREA LIMITATION

(504.2) 3 STORY (40') ALLOWS BUILDING HEIGHT INCREASE OF ONE STORY AND 20 FEET RESULTING IN 4 STORIES AND 80' ALLOWABLE. PROPOSED BUILDING TO BE 3 STORIES 36'-0"

CHAPTER 6 - TYPES OF CONSTRUCTION

TABLE 602: CONSTRUCTION TYPE 2C - UNPROTECTED

- 0 LOADBEARING EXTERIOR WALLS
- 0 NON-LOADBEARING EXTERIOR WALLS
- 2 FIRE WALLS AND PARTY WALLS

FIRE SEPARATION ASSEMBLIES

- 1 FIRE ENCL. COURSES OF DOORS
- 1 EXIT HALLWAY AND STAIRWAY
- 1 SHAFTS AND ELEVATOR HOISTWAYS

FIRE PARTITIONS

- 1 EXIT ACCESS CORRIDORS
- 0 SEPARATIONS (TENANT & NONBEARING PARTITIONS)
- 0 INTERIOR BEARING WALLS, BEARING PARTITIONS, COLUMNS AND FRAMING
- 1 SMOKE BARRIERS
- 0 STRUCTURAL MEMBERS SUPPORTING WALLS
- 0 FLOOR CONSTRUCTION INCLUDING BEAMS
- 0 ROOF CONSTRUCTION

CHAPTER 10: MEANS OF EGRESS

LENGTH OF EXIT ACCESS TRAVEL: 257 PER TABLE 1006.1

OCCUPANT LOAD TABLE 1006.1.2

ACTUAL METHOD IS USED
187 OCCUPANTS ON FIRST FLOOR
54 OCCUPANTS ON SECOND FLOOR

EGRESS WIDTH PER OCCUPANT TABLE 1006.1.2 (SECOND FLOOR)

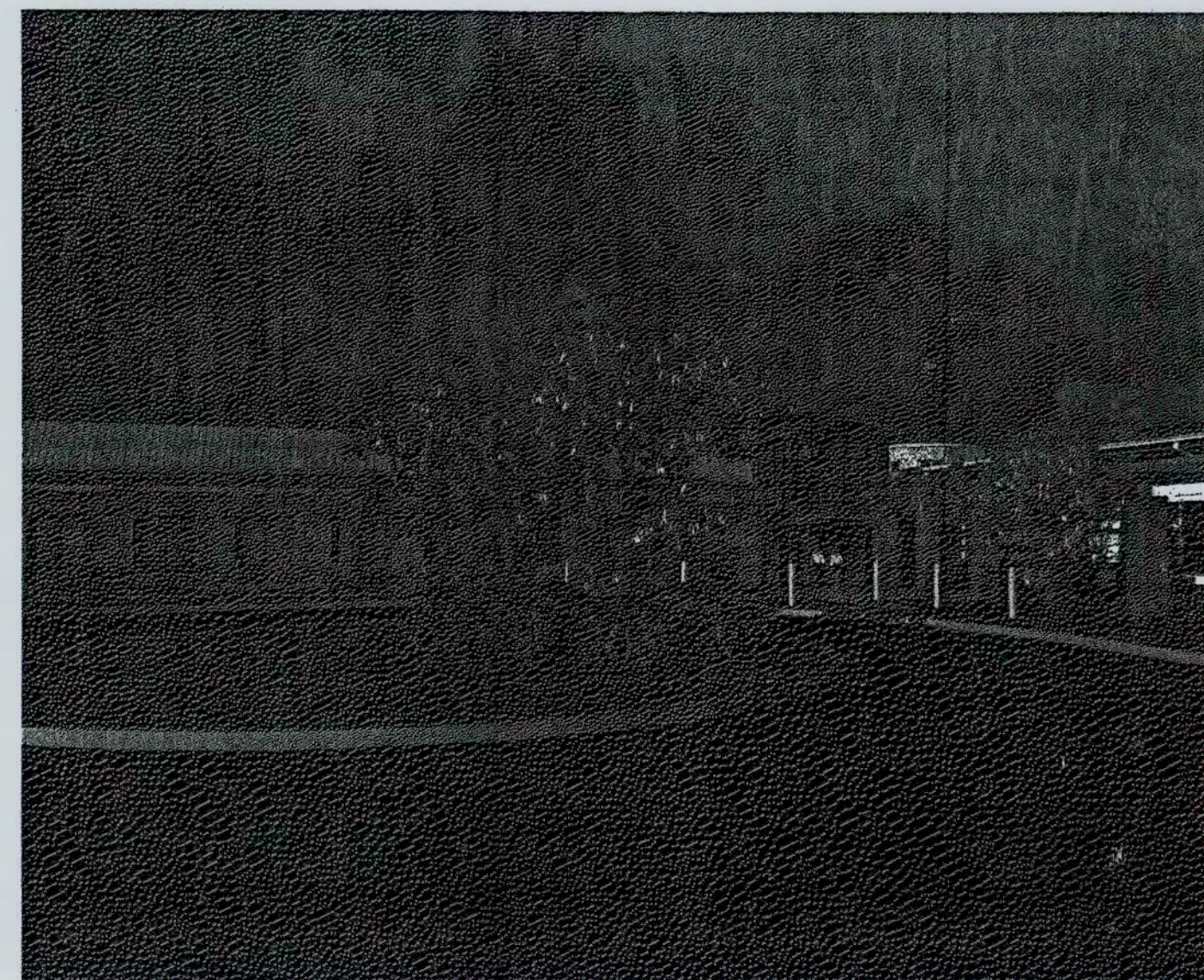
54'-2" = 11' INCHES OF STAIR EGRESS WIDTH REQUIRED
ACTUAL 44' INCHES OF STAIR WIDTH PROVIDED
REQUIRED DOOR WIDTH 24' X 15' = 36'-2" ; ACTUAL 4'-7"

PLUMBING FIXTURE COUNT SUMMARY

TOILET ROOM DESIGN TABLE 210, 243 CMR

FIXTURE COUNT BASED UPON MAXIMUM OCCUPANTS = 241
241 PEOPLE TOTAL (2 = 121 MEN AND 121)

TOILETS (WOMEN) 12/120 = 8 REQUIRED; 16 PROVIDED
TOILETS (MEN) 12/125 = 8 REQUIRED; 9 PROVIDED
URINALS (10 TOILETS) = 2 REQUIRED; 3 PROVIDED
LAVATORIES PER SEX: 12/120 = 2; 3 PROVIDED
DRINKING FOUNTAINS: 1 REQUIRED PER FLOOR
2 PROVIDED AT FIRST FLOOR; 1 PROVIDED AT SECOND FLOOR
SERVICE SINKS: 1 REQUIRED PER FLOOR
2 PROVIDED AT FIRST FLOOR; 1 PROVIDED AT SECOND FLOOR



DRAWING LIST

SITE/CIVIL

DRAWINGS ISSUED SEPARATELY BY
DAYLOR CONSULTING GROUP, INC.

ARCHITECTURAL

- D.1 DEMOLITION - CAMPUS PLAN
- D.2 DEMOLITION - BUILDINGS D & E
- A0.1 ABBREVIATIONS, PARTITIONS TYPES AND LEGEND
- A0.2 DOOR & HARDWARE SCHEDULES, DOOR DETAILS
- A1.1 FIRST FLOOR PLAN KEY PLAN
- A1.2 SECOND FLOOR KEY PLAN
- A1.3 ROOF PLAN & NOTES
- A2.0 BASEMENT FLOOR PLAN - BUILDING D
- A2.1a PARTIAL FIRST FLOOR PLAN - BUILDINGS C, D, E
- A2.1b PARTIAL FIRST FLOOR PLAN - BUILDING F
- A2.2 SECOND FLOOR PLAN - BUILDING F
- A3.1 EXTERIOR ELEVATIONS - SOUTH ELEVATION
- A3.2 EXTERIOR ELEVATIONS - NORTH ELEVATION
- A3.3 EXTERIOR ELEVATIONS - WEST ELEVATION
- A3.4 EXTERIOR ELEVATIONS - PARTIAL ELEVATIONS
- A4.1 TRELLIS DETAILS, KISTLER PLATE DETAILS
- A4.2 WINDOW SCHEDULE
- A5.1 BUILDING SECTIONS
- A5.2 BUILDING SECTIONS
- A5.3 WALL SECTIONS
- A5.4 WALL SECTIONS
- A5.5 WALL SECTIONS
- A5.6 WALL SECTIONS
- A6.1 ADHERED ROOFING DETAILS
- A6.2 ENLARGED DETAILS
- A6.3 ENLARGED DETAILS
- A6.4 ENLARGED DETAILS
- A6.5 ENLARGED DETAILS
- A6.6 ENLARGED DETAILS
- A7.1 PLAN DETAILS
- A7.2 PLAN DETAILS
- A7.3 PLAN DETAILS
- A7.4 PLAN DETAILS
- A8.1 ENLARGED STAIR PLANS, SECTIONS AND DETAILS
- A9.1 ENLARGED ELEVATOR PLANS, SECTIONS, & DETAILS
- A10.1 TOILET CORE PLAN AND DETAILS
- A11.1 ENLARGED PLAN - INDUSTRIAL HYGIENE LAB
- A11.2 ENLARGED PLAN - SUPPORT LABS
- A12.1a PARTIAL REFLECTED CEILING PLAN - FIRST FLOOR
- A12.1b PARTIAL REFLECTED CEILING PLAN - FIRST FLOOR
- A12.2 REFLECTED CEILING PLAN - SECOND FLOOR
- A13.1 FIRST FLOOR INTERIOR ELEVATIONS
- A13.2 FIRST FLOOR INTERIOR ELEVATIONS
- A13.3 SECOND FLOOR INTERIOR ELEVATIONS
- A13.4 SECOND FLOOR INTERIOR ELEVATIONS
- A13.5 SECOND FLOOR INTERIOR ELEVATIONS
- A14.1a FIRST FLOOR FINISH PLAN, BUILDINGS C, D, E
- A14.1b FIRST FLOOR FINISH PLAN, BUILDING F
- A14.2 SECOND FLOOR FINISH PLAN, BUILDING F
- A15.1a FIRST FLOOR EQUIPMENT PLAN, BUILDINGS C, D, E
- A15.1b FIRST FLOOR EQUIPMENT PLAN, BUILDING F
- A15.2 SECOND FLOOR EQUIPMENT PLAN, BUILDING F
- A16.1 FIRST FLOOR MILLWORK ELEVATIONS
- A16.2 FIRST FLOOR MILLWORK ELEVATIONS
- A16.3 SECOND FLOOR MILLWORK ELEVATIONS
- A16.4 MILLWORK DETAILS
- A17.0 MISCELLANEOUS DETAILS & SECTIONS

STRUCTURAL

- S1.1 GENERAL NOTES
- S2.1 FOUNDATION PLAN - BUILDINGS C, D, E
- S2.2 FOUNDATION PLAN - BUILDING F
- S2.3 ROOF FRAMING PLAN - BUILDINGS C, D, E
- S2.3a ROOF SCREEN FRAMING PLAN
- S2.4 SECOND FLOOR ROOF FRAMING PLAN - BUILDING F
- S2.5 LOW ROOF FRAMING PLAN - BUILDING F
- S2.5a ROOF SCREEN FRAMING PLAN - BUILDING F
- S2.6 HIGH ROOF FRAMING PLAN - BUILDING F
- S3.1 LATERAL FRAME ELEVATIONS - BUILDING F
- S3.2 LATERAL FRAME ELEVATIONS - BUILDING C
- S4.1 TYPICAL CONCRETE DETAILS I
- S4.2 TYPICAL CONCRETE DETAILS II
- S5.1 TYPICAL STEEL DETAILS I
- S5.2 TYPICAL STEEL DETAILS II
- S5.3 TYPICAL STEEL DETAILS III
- S6.1 SECTIONS AND DETAILS I
- S6.2 SECTIONS & DETAILS II
- S6.3 SECTIONS & DETAILS III

ENGINEERING

FIRE PROTECTION:

- FP1.0 FIRE PROTECTION LEGEND AND NOTES
- FP2.0 FIRE PROTECTION FIRST FLOOR - BUILDINGS C,D,E
- FP3.0 FIRE PROTECTION FIRST FLOOR - BUILDING F
- FP4.0 FIRE PROTECTION SECOND FLOOR - BUILDING F
- FP5.0 FIRE PROTECTION DETAILS

PLUMBING:

- P1.0 PLUMBING LEGEND AND NOTES
- P2.0 PLUMBING FIRST FLOOR PLAN - BUILDINGS C,D,E
- P3.0 PLUMBING FIRST FLOOR PLAN - BUILDING F
- P4.0 PLUMBING SECOND FLOOR PLAN - BUILDING F
- P5.0 PLUMBING LAB AREA ENLARGED FLOOR PLAN
- P6.0 PLUMBING ROOF PLAN - BUILDINGS C,D,E
- P7.0 PLUMBING ROOF PLAN - BUILDING F
- P8.0 PLUMBING SCHEDULES & DETAILS

MECHANICAL:

- M1.0 MECHANICAL LEGEND, SYMBOLS AND GENERAL NOTES
- M2.0 MECHANICAL FIRST FLOOR DUCTWORK PLAN - BUILDINGS C,D,E
- M3.0 MECHANICAL FIRST FLOOR DUCTWORK PLAN - BUILDING F
- M4.0 MECHANICAL FIRST FLOOR PIPING PLAN - BUILDINGS C,D,E
- M5.0 MECHANICAL FIRST FLOOR PIPING PLAN - BUILDING F
- M6.0 MECHANICAL SECOND FLOOR DUCTWORK PLAN - BUILDING F
- M7.0 MECHANICAL SECOND FLOOR PIPING PLAN - BUILDING F
- M8.0 MECHANICAL PART PLANS
- M9.0 MECHANICAL ROOF PLAN - BUILDINGS C,D,E
- M10.0 MECHANICAL EQUIPMENT SCHEDULES SHEET
- M11.0 MECHANICAL EQUIPMENT SCHEDULES SHEET
- M12.0 MECHANICAL DETAILS SHEET
- M13.0 MECHANICAL DETAILS SHEET

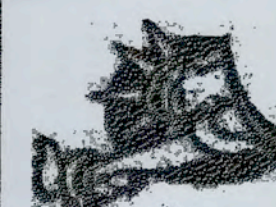
ELECTRICAL:

- E1.0 ELECTRICAL LEGEND, LIGHTING FIXTURE SCHEDULE AND NOTES
- E2.0 ELECTRICAL SITE PLAN
- E3.0 BUILDINGS "C", "D" AND "E" ELECTRICAL LIGHTING PLAN
- E4.0 BUILDINGS "C", "D" AND "E" ELECTRICAL POWER PLAN
- E5.0 BUILDING "F" FIRST FLOOR LIGHTING PLAN
- E6.0 BUILDING "F" SECOND FLOOR LIGHTING PLAN
- E7.0 BUILDING "F" FIRST FLOOR POWER PLAN
- E8.0 BUILDING "F" SECOND FLOOR POWER PLAN
- E9.0 BUILDINGS "C", "D" AND "E" ELECTRICAL ROOF PLAN
- E10.0 BUILDING "F" ELECTRICAL ROOF PLAN
- E11.0 ELECTRICAL RISER DIAGRAM AND SCHEDULES
- E12.0 ELECTRICAL DIAGRAMS
- E13.0 ENLARGED PART PLANS

LIBERTY MUTUAL RESEARCH CENTER

100% CONSTRUCTION DOCUMENTS
19 SEPTEMBER, 2002
Job No. 1348.00

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CODE STUDY

MASSACHUSETTS STATE BUILDING CODE REVIEW, 780 CMR 909, EDITION
PROJECT DESCRIPTION: 2 STORY BUILDING 35'-0" HIGH, 93,527 sq.ft.
CHAPTER 3 - USE GROUP CLASSIFICATION: BUSINESS USE
CHAPTER 5 - GENERAL BUILDING LIMITATIONS
CONSTRUCTION TYPE 2C - UNPROTECTED
AREA MODIFICATIONS TO TABLE 503:
503.2 INCREASE FOR OPEN PERIMETER 130%
503.3 INCREASE FOR AUTOMATIC SPRINKLERS 200%
503.4 DECREASE FOR MULTI-STORY BUILDINGS 0%
503.5 DECREASE FOR MULTI-STORY BUILDINGS 330%
HEIGHT AND AREA LIMITATION SUMMARY:
14,400 S.F. X 330% = 47,520 S.F. FLOOR ALLOWED. PROPOSED FIRST FLOOR AREA OF 66,816 S.F. WILL BE SEPARATED BY A FIREWALL INTO FIRE AREAS OF 41,076 S.F. AND 25,739 S.F. IN ORDER TO COMPLY WITH AREA LIMITATION
(504.2) 3 STORY (40') ALLOWS BUILDING HEIGHT INCREASE OF ONE STORY AND 30 FEET RESULTING IN 4 STORIES AND 80' ALLOWABLE. PROPOSED BUILDING TO BE 2 STORIES 35'-0"

CHAPTER 6 - TYPES OF CONSTRUCTION
TABLE 602: CONSTRUCTION TYPE 2C - UNPROTECTED
0 LOADBEARING EXTERIOR WALLS
0 NON-LOADBEARING EXTERIOR WALLS
2 FIRE WALLS AND PARTY WALLS
FIRE SEPARATION ASSEMBLIES
1 FIRE ENCLOSURES OF EXITS, EXIT HALLWAY AND STAIRWAY
1 SHAFTS AND ELEVATOR HOISTWAYS
FIRE PARTITIONS
1 EXIT ACCESS CORRIDORS
0 SEPARATIONS (TENANT & NONBEARING PARTITIONS)
0 INTERIOR BEARING WALLS, BEARING PARTITIONS, COLUMNS AND FRAMINGS
1 SMOKE BARRIERS
0 STRUCTURAL MEMBERS SUPPORTING WALLS
0 FLOOR CONSTRUCTION INCLUDING BEAMS
0 ROOF CONSTRUCTION
CHAPTER 10: MEANS OF EGRESS
LENGTH OF EXIT ACCESS TRAVEL 257 PER TABLE 1006.5
OCCUPANT LOAD TABLE 1006.1.2
ACTUAL METHOD IS USED
157 OCCUPANTS ON FIRST FLOOR
54 OCCUPANTS ON SECOND FLOOR
EGRESS WIDTH PER OCCUPANT TABLE 1006.1.2 (SECOND FLOOR)
54 x 2 = 11 INCHES OF STAIR EGRESS WIDTH REQUIRED
ACTUAL 14 INCHES OF STAIR WIDTH PROVIDED
REQUIRED DOOR WIDTH 241 X 15 = 36.2" ; ACTUAL >72"

PLUMBING FIXTURE COUNT SUMMARY
TOILET ROOM DESIGN TABLE 210, 244 CMR
FIXTURE COUNT BASED UPON MAXIMUM OCCUPANTS = 241
241 PEOPLE TOTAL (210 MEN AND 131)
TOILETS (MEN) 12:00 = 8 REQUIRED, 16 PROVIDED
TOILETS (WOMEN) 12:00 = 5 REQUIRED, 9 PROVIDED
URINALS (10 TOILETS) = 2 REQUIRED, 8 PROVIDED
LAVATORIES PER SEX: 12:00 = 2, 3 PROVIDED
DRINKING FOUNTAINS: 1 REQUIRED PER FLOOR
2 PROVIDED AT FIRST FLOOR, 1 PROVIDED AT SECOND FLOOR
SERVICE SINKS: 1 REQUIRED PER FLOOR
2 PROVIDED AT FIRST FLOOR, 1 PROVIDED AT SECOND FLOOR



DRAWING LIST

SITE/CIVIL

DRAWINGS ISSUED SEPARATELY BY
DAYLOR CONSULTING GROUP, INC.

ARCHITECTURAL

- D.1 DEMOLITION - CAMPUS PLAN
- D.2 DEMOLITION - BUILDINGS D & E
- A0.1 ABBREVIATIONS, PARTITIONS TYPES AND LEGEND
- A0.2 DOOR & HARDWARE SCHEDULES, DOOR DETAILS
- A1.1 FIRST FLOOR PLAN KEY PLAN
- A1.2 SECOND FLOOR KEY PLAN
- A1.3 ROOF PLAN & NOTES
- A2.0 BASEMENT FLOOR PLAN - BUILDING D
- A2.1a PARTIAL FIRST FLOOR PLAN - BUILDINGS C, D, E
- A2.1b PARTIAL FIRST FLOOR PLAN - BUILDING F
- A2.2 SECOND FLOOR PLAN - BUILDING F
- A3.1 EXTERIOR ELEVATIONS - SOUTH ELEVATION
- A3.2 EXTERIOR ELEVATIONS - NORTH ELEVATION
- A3.3 EXTERIOR ELEVATIONS - WEST ELEVATION
- A3.4 EXTERIOR ELEVATIONS - PARTIAL ELEVATIONS
- A4.1 TRELLIS DETAILS, KISTLER PLATE DETAILS
- A4.2 WINDOW SCHEDULE
- A5.1 BUILDING SECTIONS
- A5.2 BUILDING SECTIONS
- A5.3 WALL SECTIONS
- A5.4 WALL SECTIONS
- A5.5 WALL SECTIONS
- A5.6 WALL SECTIONS
- A6.1 ADHERED ROOFING DETAILS
- A6.2 ENLARGED DETAILS
- A6.3 ENLARGED DETAILS
- A6.4 ENLARGED DETAILS
- A6.5 ENLARGED DETAILS
- A6.6 ENLARGED DETAILS
- A7.1 PLAN DETAILS
- A7.2 PLAN DETAILS
- A7.3 PLAN DETAILS
- A7.4 PLAN DETAILS
- A8.1 ENLARGED STAIR PLANS, SECTIONS AND DETAILS
- A9.1 ENLARGED ELEVATOR PLANS, SECTIONS, & DETAILS
- A10.1 TOILET CORE PLAN AND DETAILS
- A11.1 ENLARGED PLAN - INDUSTRIAL HYGIENE LAB
- A11.2 ENLARGED PLAN - SUPPORT LABS
- A12.1a PARTIAL REFLECTED CEILING PLAN - FIRST FLOOR
- A12.1b PARTIAL REFLECTED CEILING PLAN - FIRST FLOOR
- A12.2 REFLECTED CEILING PLAN - SECOND FLOOR
- A13.1 FIRST FLOOR INTERIOR ELEVATIONS
- A13.2 FIRST FLOOR INTERIOR ELEVATIONS
- A13.3 SECOND FLOOR INTERIOR ELEVATIONS
- A13.4 SECOND FLOOR INTERIOR ELEVATIONS
- A13.5 SECOND FLOOR INTERIOR ELEVATIONS
- A14.1a FIRST FLOOR FINISH PLAN, BUILDINGS C, D, E
- A14.1b FIRST FLOOR FINISH PLAN, BUILDING F
- A14.2 SECOND FLOOR FINISH PLAN, BUILDING F
- A15.1a FIRST FLOOR EQUIPMENT PLAN, BUILDINGS C, D, E
- A15.1b FIRST FLOOR EQUIPMENT PLAN, BUILDING F
- A15.2 SECOND FLOOR EQUIPMENT PLAN, BUILDING F
- A16.1 FIRST FLOOR MILLWORK ELEVATIONS
- A16.2 FIRST FLOOR MILLWORK ELEVATIONS
- A16.3 SECOND FLOOR MILLWORK ELEVATIONS
- A16.4 MILLWORK DETAILS
- A17.0 MISCELLANEOUS DETAILS & SECTIONS

STRUCTURAL

- S1.1 GENERAL NOTES
- S2.1 FOUNDATION PLAN - BUILDINGS C, D, E
- S2.2 FOUNDATION PLAN - BUILDING F
- S2.3 ROOF FRAMING PLAN - BUILDINGS C, D, E
- S2.3a ROOF SCREEN FRAMING PLAN
- S2.4 SECOND FLOOR/ROOF FRAMING PLAN - BUILDING F
- S2.5 LOW ROOF FRAMING PLAN - BUILDING F
- S2.5a ROOF SCREEN FRAMING PLAN - BUILDING F
- S2.6 HIGH ROOF FRAMING PLAN - BUILDING F
- S3.1 LATERAL FRAME ELEVATIONS - BUILDING F
- S3.2 LATERAL FRAME ELEVATIONS - BUILDING C
- S4.1 TYPICAL CONCRETE DETAILS I
- S4.2 TYPICAL CONCRETE DETAILS II
- S5.1 TYPICAL STEEL DETAILS I
- S5.2 TYPICAL STEEL DETAILS II
- S5.3 TYPICAL STEEL DETAILS III
- S6.1 SECTIONS AND DETAILS I
- S6.2 SECTIONS & DETAILS II
- S6.3 SECTIONS & DETAILS III

ENGINEERING

- FIRE PROTECTION:**
- FP1.0 FIRE PROTECTION LEGEND AND NOTES
 - FP2.0 FIRE PROTECTION FIRST FLOOR - BUILDINGS C,D,E
 - FP3.0 FIRE PROTECTION FIRST FLOOR - BUILDING F
 - FP4.0 FIRE PROTECTION SECOND FLOOR - BUILDING F
 - FP5.0 FIRE PROTECTION DETAILS
- PLUMBING:**
- P1.0 PLUMBING LEGEND AND NOTES
 - P2.0 PLUMBING FIRST FLOOR PLAN - BUILDINGS C,D,E
 - P3.0 PLUMBING FIRST FLOOR PLAN - BUILDING F
 - P4.0 PLUMBING SECOND FLOOR PLAN - BUILDING F
 - P5.0 PLUMBING LAB AREA ENLARGED FLOOR PLAN
 - P6.0 PLUMBING ROOF PLAN - BUILDINGS C,D,E
 - P7.0 PLUMBING ROOF PLAN - BUILDING F
 - P8.0 PLUMBING SCHEDULES & DETAILS
- MECHANICAL:**
- M1.0 MECHANICAL LEGEND, SYMBOLS AND GENERAL NOTES
 - M2.0 MECHANICAL FIRST FLOOR DUCTWORK PLAN - BUILDINGS C,D,E
 - M3.0 MECHANICAL FIRST FLOOR DUCTWORK PLAN - BUILDING F
 - M4.0 MECHANICAL FIRST FLOOR PIPING PLAN - BUILDINGS C,D,E
 - M5.0 MECHANICAL FIRST FLOOR PIPING PLAN - BUILDING F
 - M6.0 MECHANICAL SECOND FLOOR DUCTWORK PLAN - BUILDING F
 - M7.0 MECHANICAL SECOND FLOOR PIPING PLAN - BUILDING F
 - M8.0 MECHANICAL PART PLANS
 - M9.0 MECHANICAL ROOF PLAN - BUILDINGS C,D,E
 - M10.0 MECHANICAL EQUIPMENT SCHEDULES SHEET
 - M11.0 MECHANICAL EQUIPMENT SCHEDULES SHEET
 - M12.0 MECHANICAL DETAILS SHEET
 - M13.0 MECHANICAL DETAILS SHEET
- ELECTRICAL:**
- E1.0 ELECTRICAL LEGEND, LIGHTING FIXTURE SCHEDULE AND NOTES
 - E2.0 ELECTRICAL SITE PLAN
 - E3.0 BUILDINGS "C", "D" AND "E" ELECTRICAL LIGHTING PLAN
 - E4.0 BUILDINGS "C", "D" AND "E" ELECTRICAL POWER PLAN
 - E5.0 BUILDING "F" FIRST FLOOR LIGHTING PLAN
 - E6.0 BUILDING "F" SECOND FLOOR LIGHTING PLAN
 - E7.0 BUILDING "F" FIRST FLOOR POWER PLAN
 - E8.0 BUILDING "F" SECOND FLOOR POWER PLAN
 - E9.0 BUILDINGS "C", "D" AND "E" ELECTRICAL ROOF PLAN
 - E10.0 BUILDING "F" ELECTRICAL ROOF PLAN
 - E11.0 ELECTRICAL RISER DIAGRAM AND SCHEDULES
 - E12.0 ELECTRICAL DIAGRAMS
 - E13.0 ENLARGED PART PLANS

LIBERTY MUTUAL RESEARCH CENTER

100% CONSTRUCTION DOCUMENTS
19 SEPTEMBER, 2002
Job No. 1348.00

71 FRANKLAND ROAD
HOPKINTON, MA 01748



Revisions:

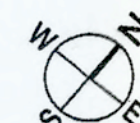
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fax:
617.443.0582



100%
CONSTRUCTION
DOCUMENTS
9/19/02

Title:
**FIRST FLOOR
KEY PLAN**

Scale
1/16"=1'-0"

Sheet

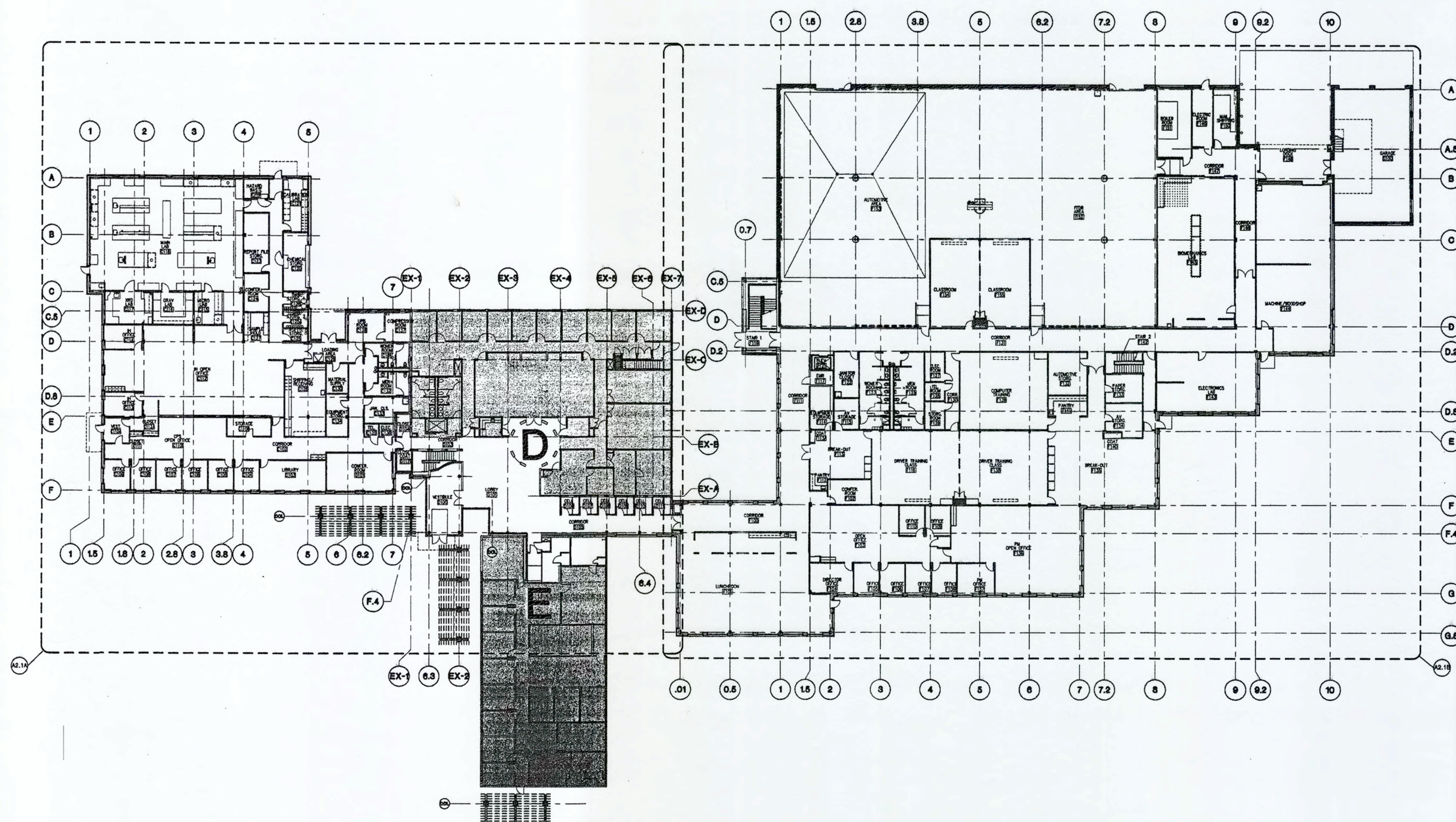
Date
8 MARCH, 2002

Drawn

Checked
RV, MM

Job No.
1348.00

A1.



Revisions:

[illegible]

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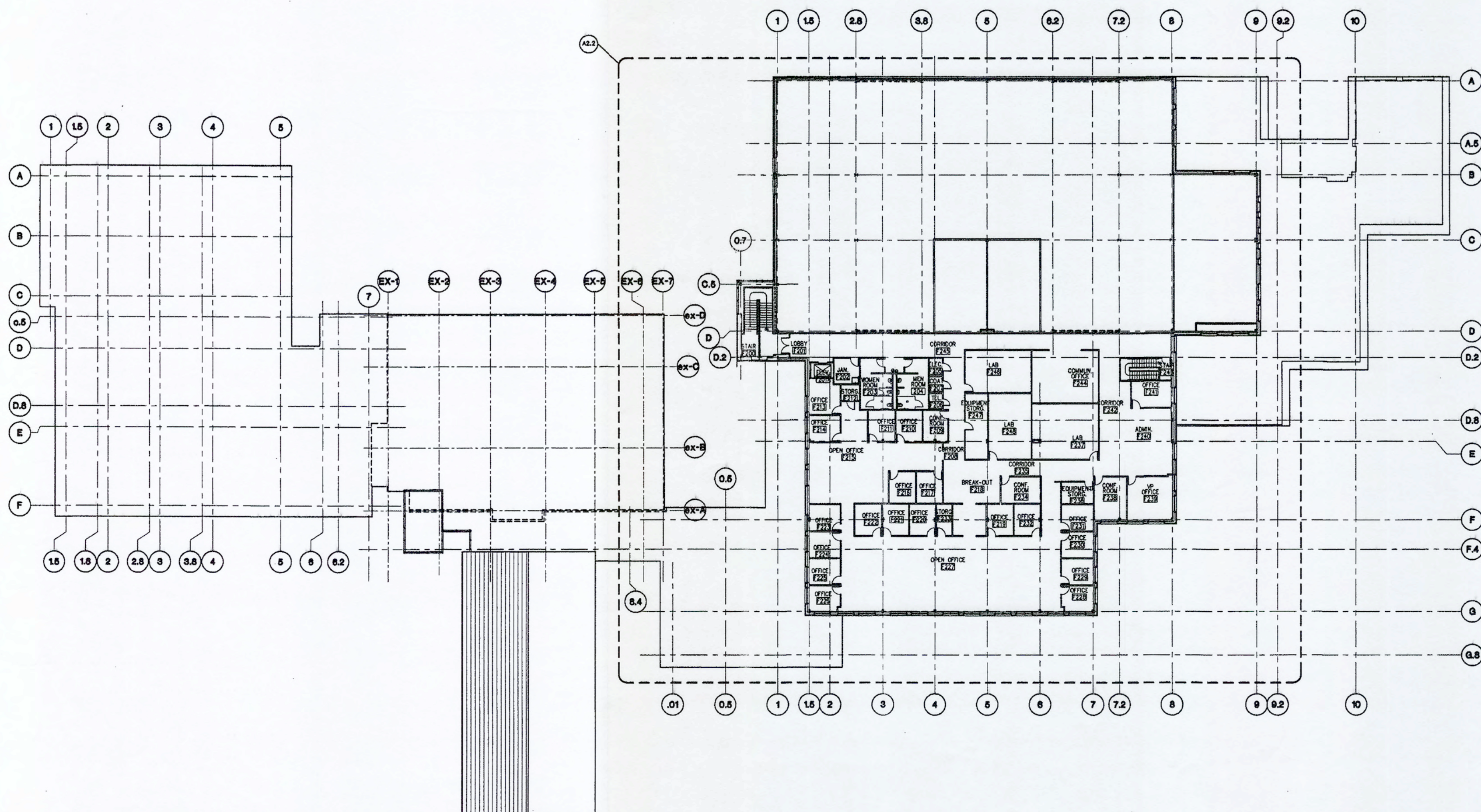


100%
CONSTRUCTION
DOCUMENTS
9/19/02

Title:
**SECOND FLOOR
KEY PLAN**

Scale 1/16"=1'-0" Sheet
Date 8 MARCH, 2002
Drawn

Checked
RV, MM
Job No.
1348.00



Revisions:

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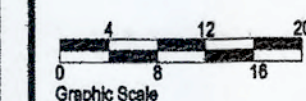
Spagnoli, Burgess & Associates
200 High Street
Boston, MA 02110
phone
617.443.0850
fax
617.443.0858



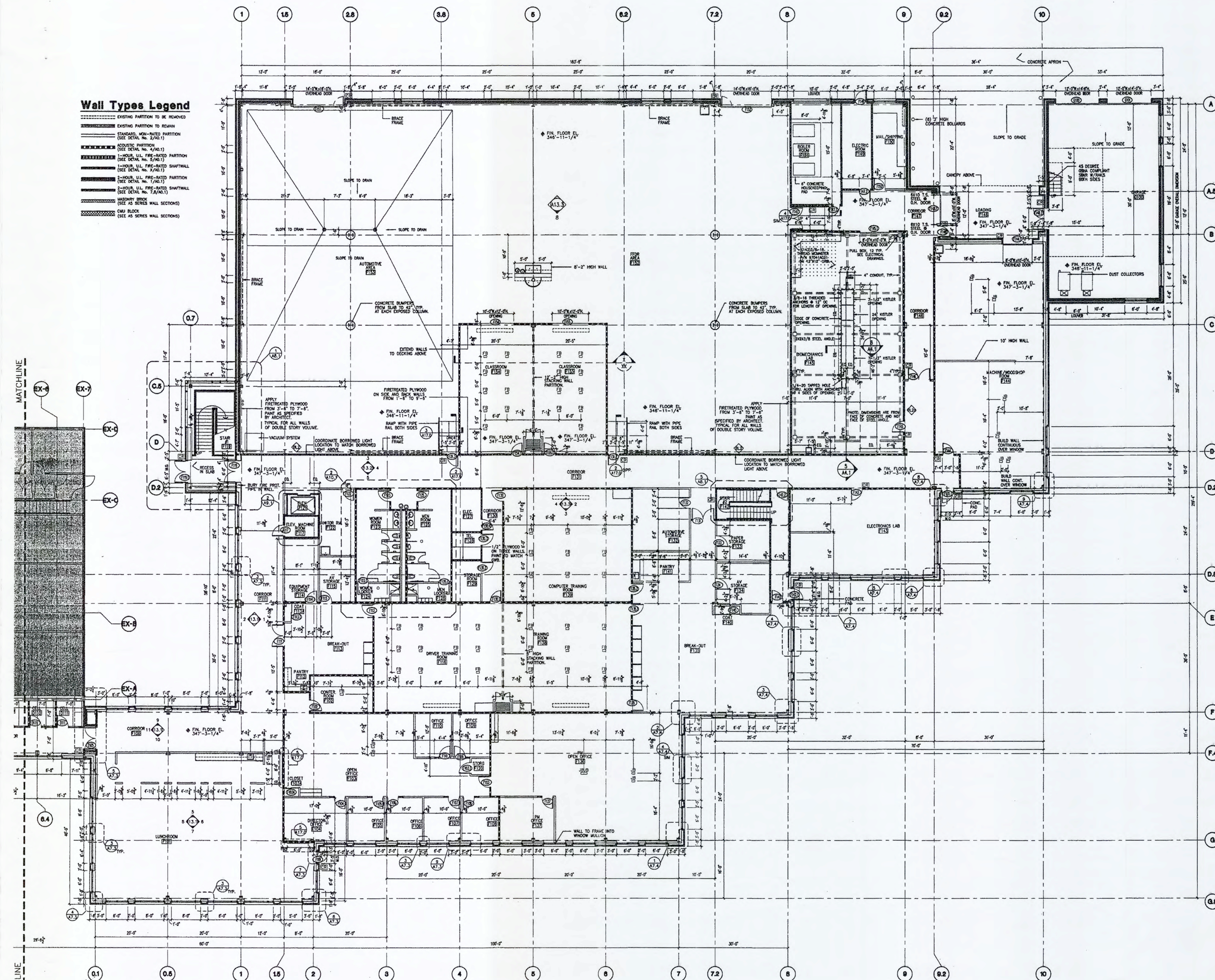
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CONSTRUCTION
DOCUMENTS
9/19/02

Title:

**FIRST FLOOR
PLAN
BUILDING F**



Scale 1/8"=1'-0"
Date 8 MARCH, 2002
Drawn
Checked RV, MM
Job No. 1348.00 **A2.1b**

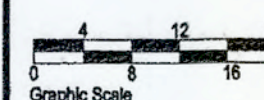


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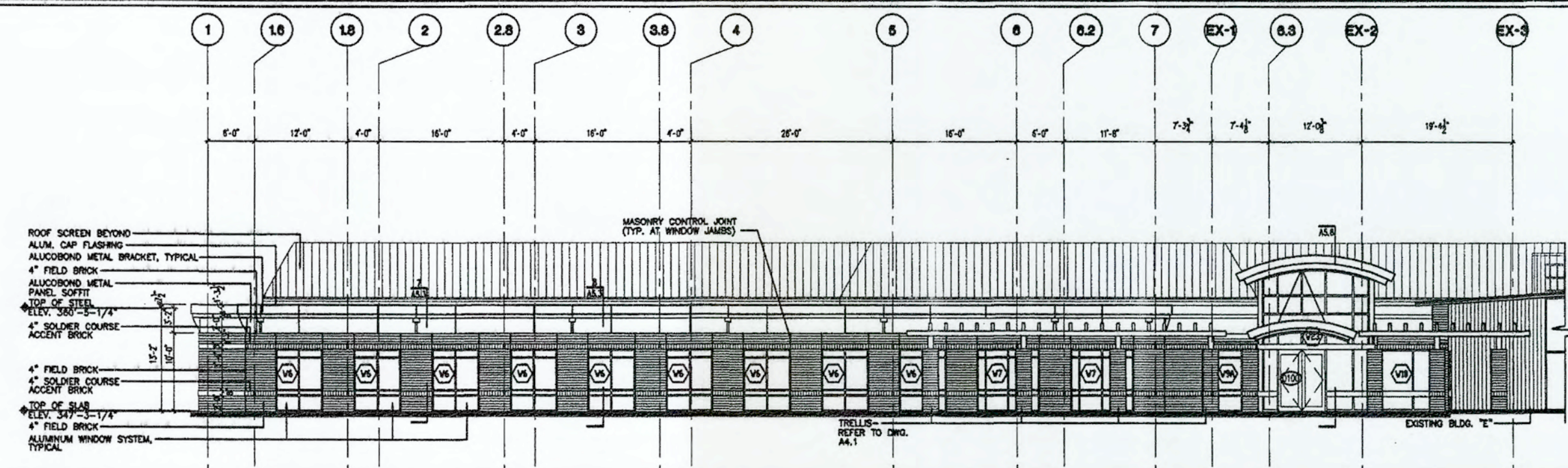
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CONSTRUCTION
DOCUMENTS
9/19/02

Title:
**EXTERIOR
ELEVATIONS
SOUTH
ELEVATION**



Scale
1/8"=1'-0"
Date
8 MARCH, 2002
Drawn
JMB
Checked
RV, MM
Job No.
1348.00

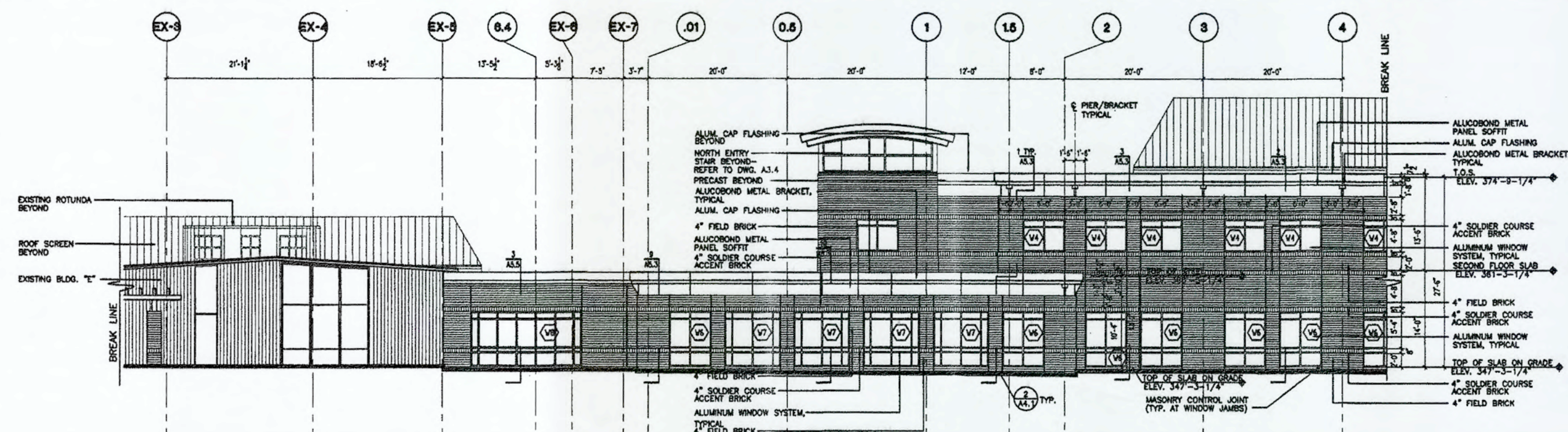
A3.1



PARTIAL SOUTH ELEVATION

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

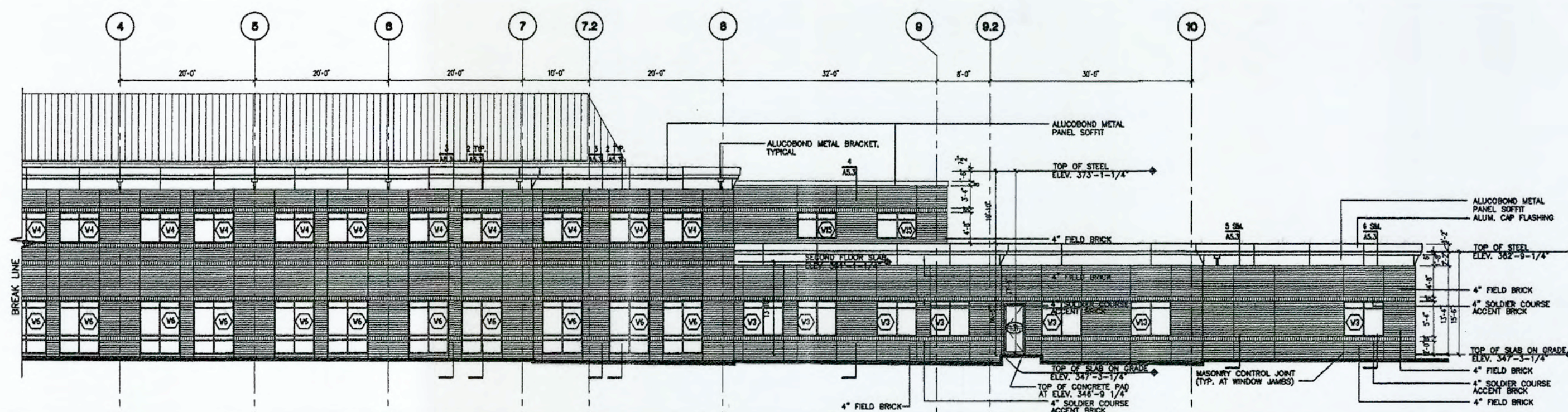
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PARTIAL SOUTH ELEVATION

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

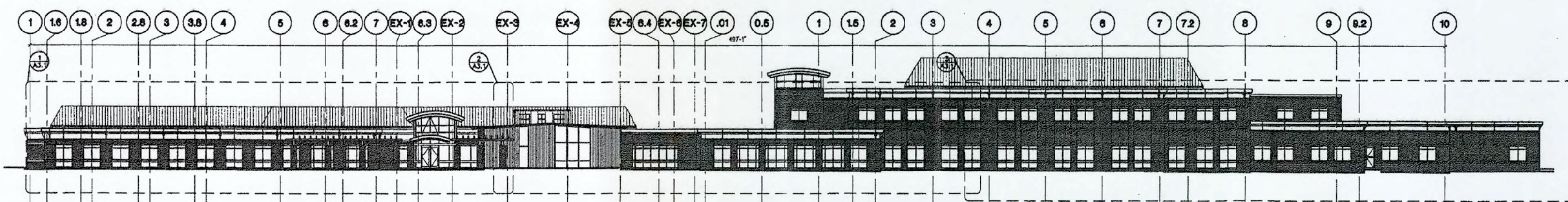
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PARTIAL SOUTH ELEVATION

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

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SOUTH ELEVATION KEY

SCALE: 1/16"=1'-0"

57

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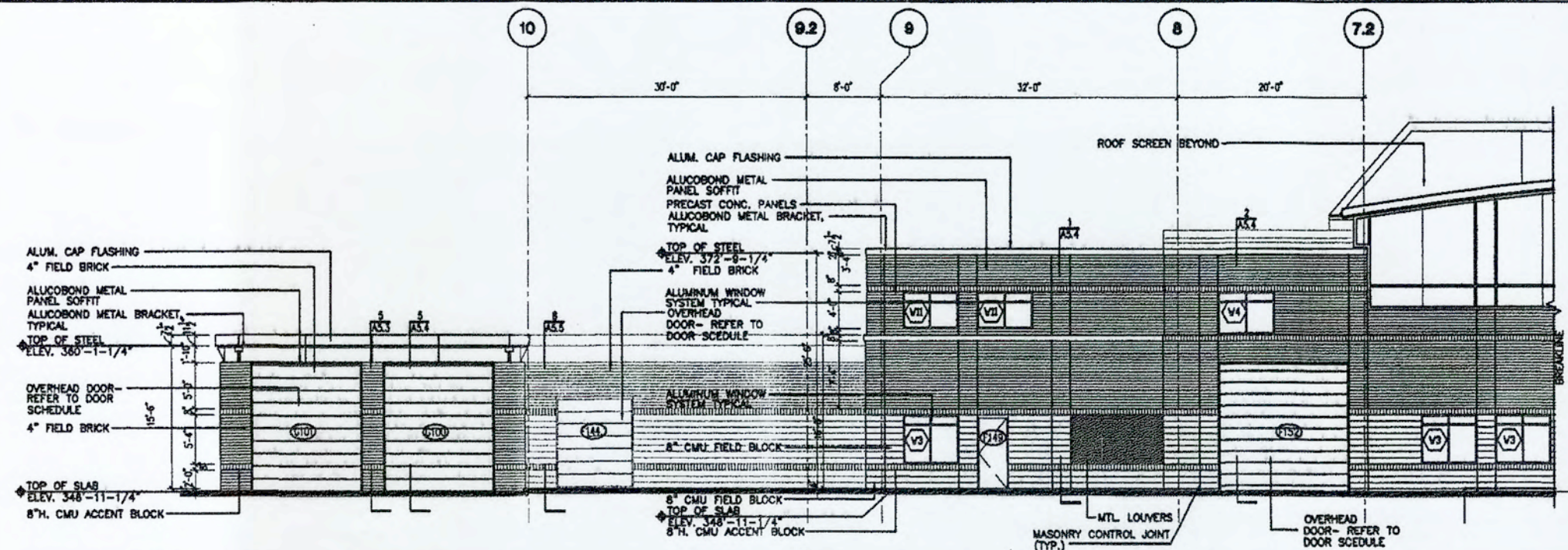
No.	Date	Description	By

sga
Sponberg Group Associates
200 High Street
Boston, MA 02110
617.443.0860
617.443.0865

100%
CONSTRUCTION
DOCUMENTS
9/19/02

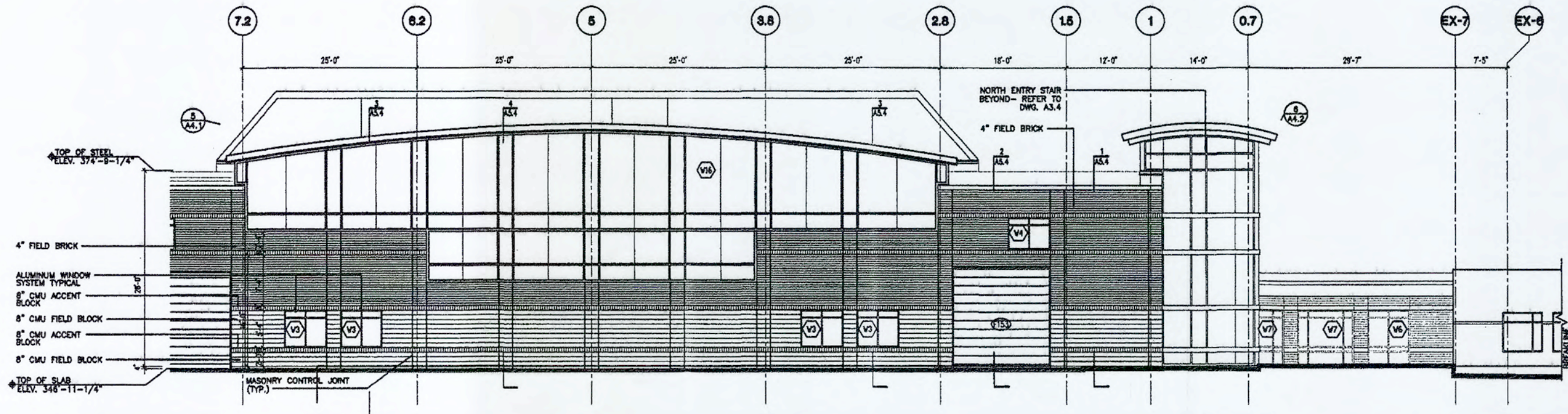
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**EXTERIOR
ELEVATIONS
NORTH
ELEVATIONS**

Graphic Scale
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Scale
1/8"=1'-0"
Date
8 MARCH, 2002
Drawn
JMB
Checked
RV, MM
Job No.
1348.00
A3.2



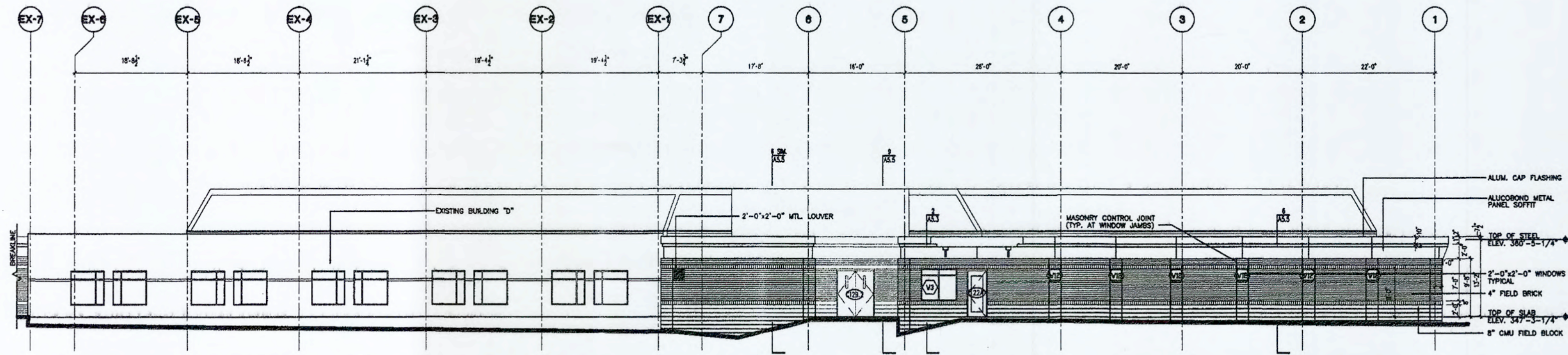
PARTIAL NORTH ELEVATION

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



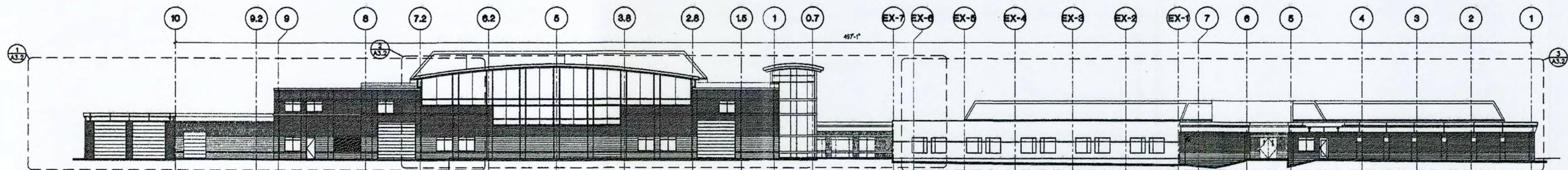
PARTIAL NORTH ELEVATION

SCALE: 1/8"=1'-0" 2



PARTIAL NORTH ELEVATION

SCALE: 1/8"=1'-0" 3



NORTH ELEVATION KEY

SCALE: 1/16"=1'-0" 4

Revisions:

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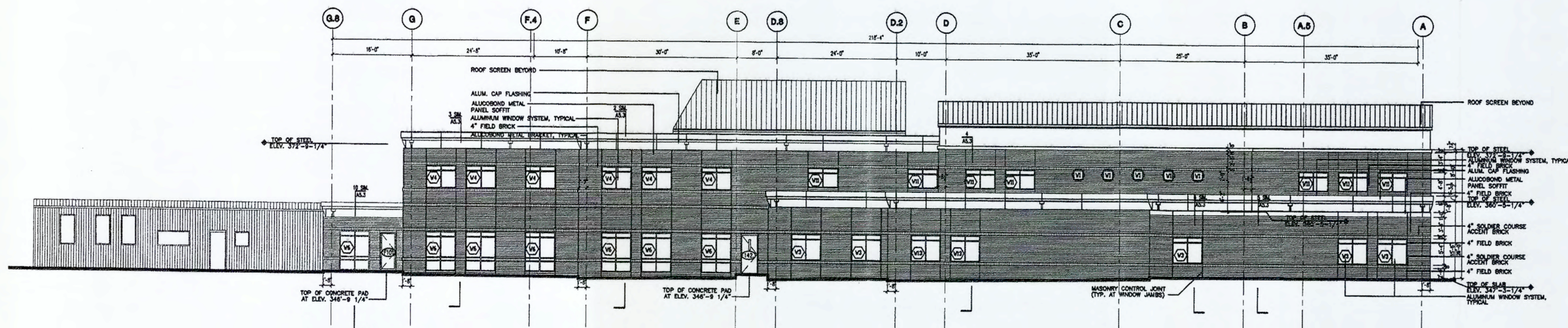
Spagnoli Business Associates

200 High Street
Boston, MA 02110
617.443.0680
617.443.0689

100%
CONSTRUCTION
DOCUMENTS
9/19/02

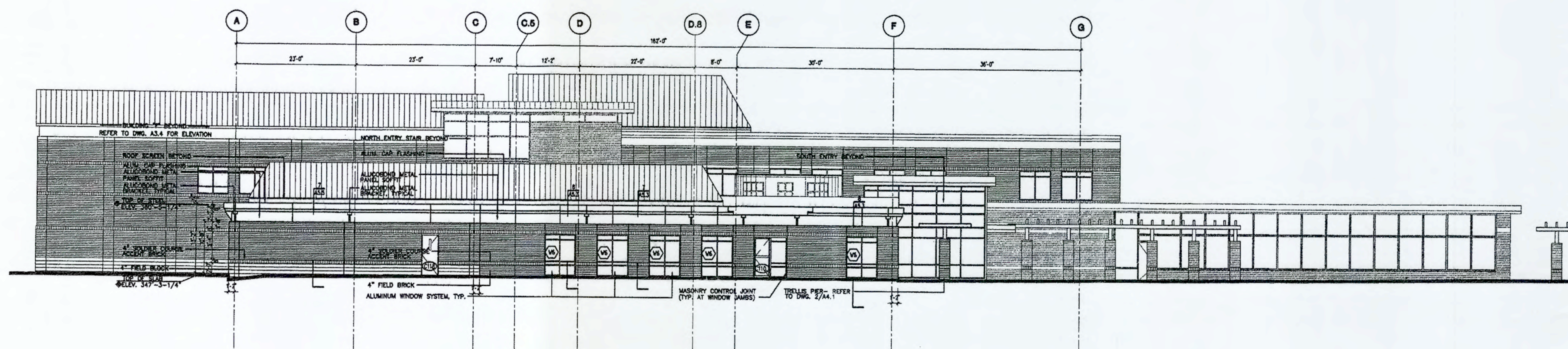
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**EXTERIOR
ELEVATIONS**
**WEST
ELEVATION**


 Graphic Scale
 Scale 1/8" = 1'-0"
 Date 8 MARCH, 2002
 Drawn JMB
 Checked RV, MM
 Job No. 1348.00
A3.3



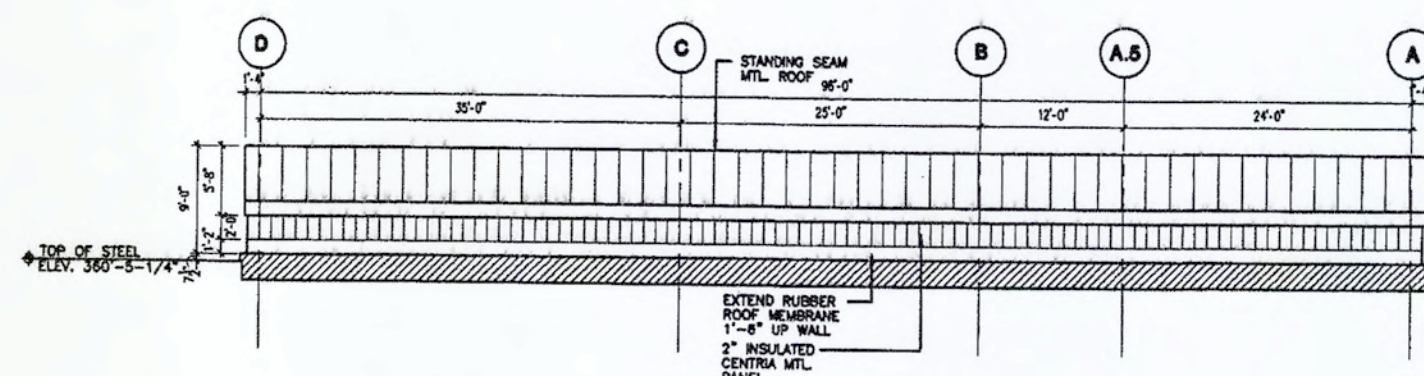
EAST ELEVATION

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

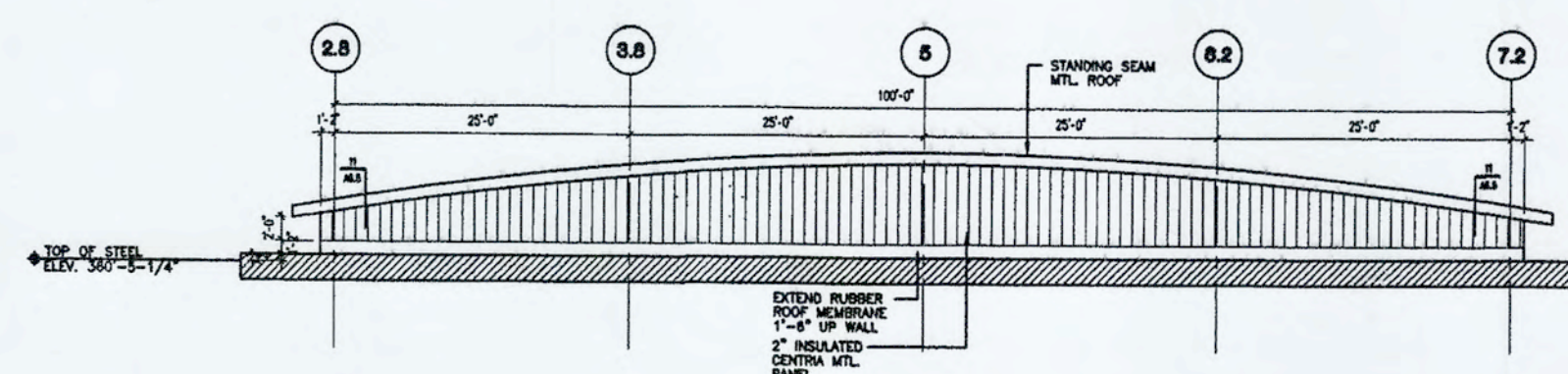


WEST ELEVATION

SCALE: 1/16"=1'-0" **2**



WEST ELEVATION



SCALE: 1/16"=1'-0" **2**

Revisions:

No.	Date	Description	By

sg&a
Spangher Group Associates
200 High Street
Boston, MA 02110
617.448.0825
617.448.0826

100%
CONSTRUCTION
DOCUMENTS
9/19/02

Title:
**BUILDING
SECTIONS**

Scale
AS NOTE
Date
8 MARCH, 2002
Drawn
OL
Checked
RV, MM
Job No.
1348.00
A5.1

Sheet

BUILDING SECTION THRU BUILDING "F"

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

1

BUILDING SECTION THRU BUILDING "F"

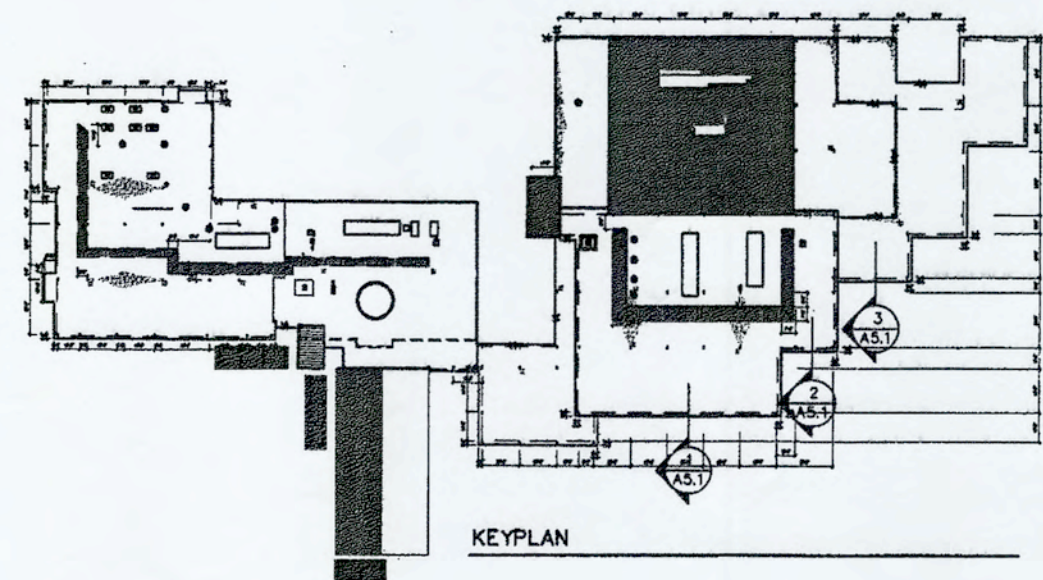
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BUILDING SECTION THRU BUILDING "F"

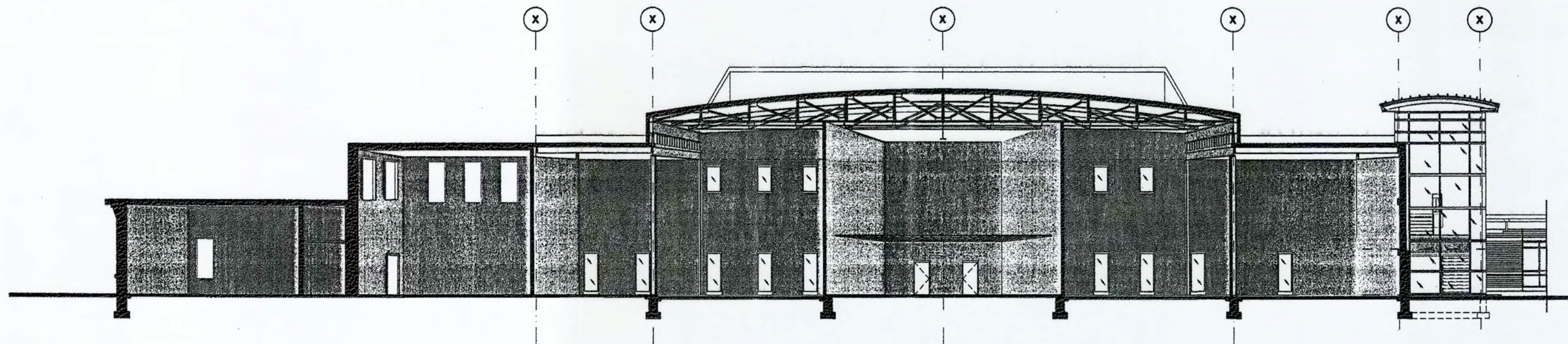
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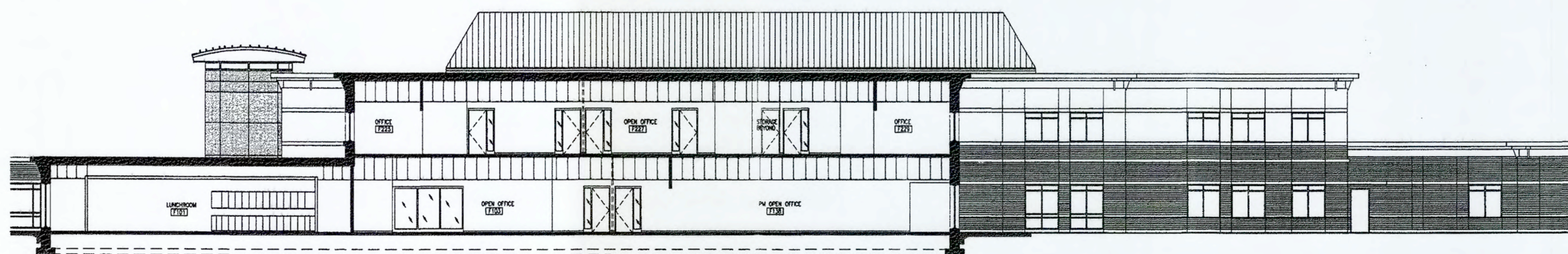


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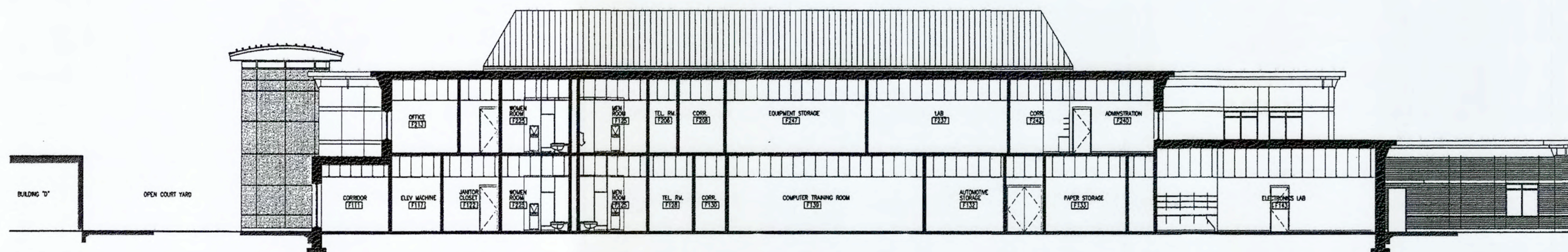
sg&a
Spagnoli & Associates
address
200 High Street
Boston, MA 02110
phone
617.443.0880
fax
617.443.0889



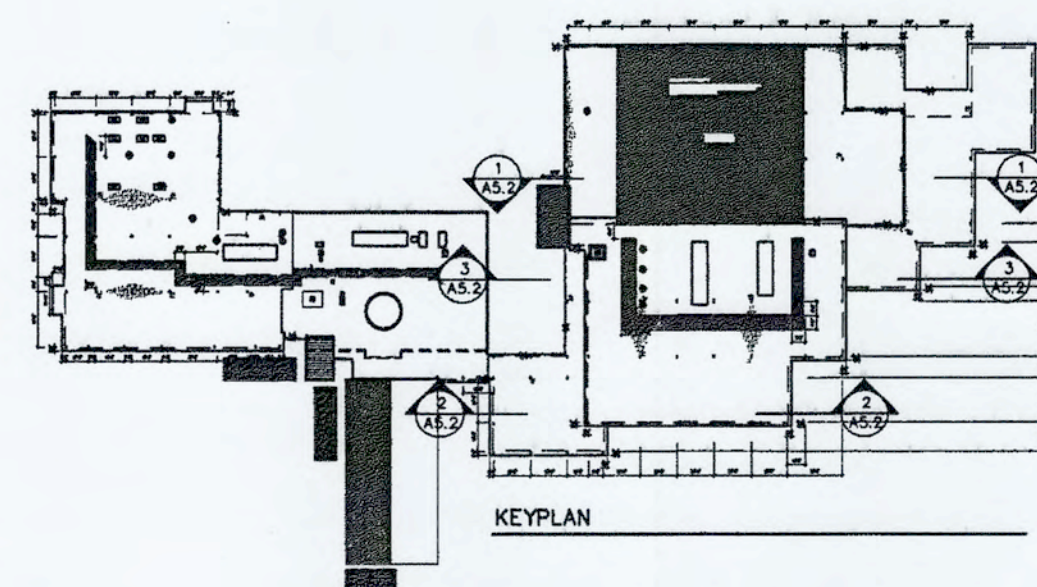
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SCALE: 1/8" = 1'-0"



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



Title:
**BUILDING
SECTIONS**

Scale AS NOTED Sheet
Date 8 MARCH, 2002
Drawn
QL
Checked
RV, MM
Job No. 1348.00 **A5.2**

Revisions:

No.	Date	Description	By

sga
Spangone Associates
200 High Street
Boston, MA 02110
617-449-0885
617-449-0886

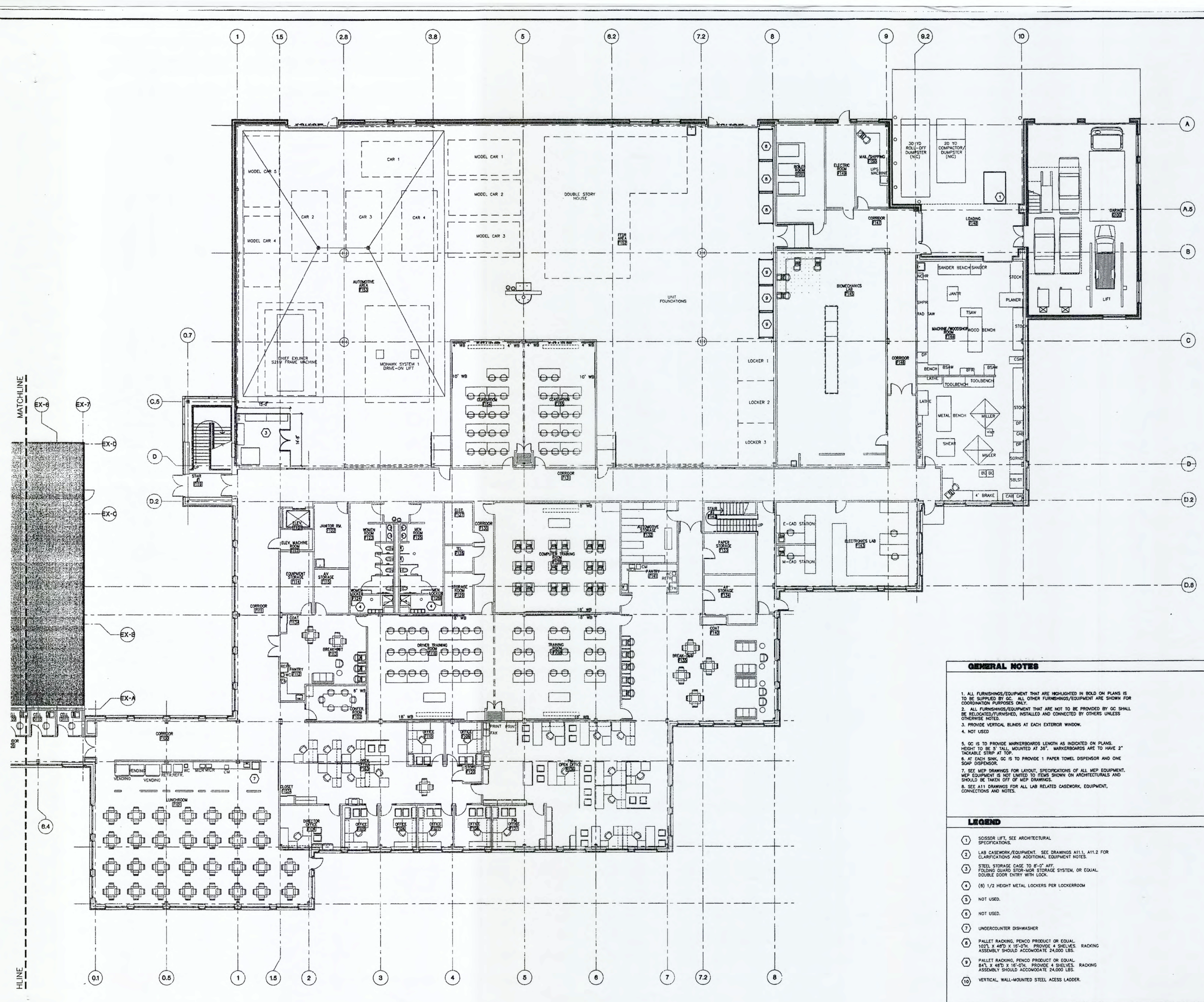


100%
CONSTRUCTION
DOCUMENTS
9/19/02

Title:

FIRST FLOOR
EQUIPMENT
PLAN
BUILDING F

Scale
1/8"=1'-0"
Date
8 MARCH, 2002
Drawn
RV
Checked
RV, MM
Job No.
1348.00
A15.1b



GENERAL NOTES

1. ALL FURNISHINGS/EQUIPMENT THAT ARE HIGHLIGHTED IN BOLD ON PLANS IS TO BE SUPPLIED BY GC. ALL OTHER FURNISHINGS/EQUIPMENT ARE SHOWN FOR COORDINATION PURPOSES ONLY.
2. ALL FURNISHINGS/EQUIPMENT THAT ARE NOT TO BE PROVIDED BY GC SHALL BE RELOCATED/FURNISHED, INSTALLED AND CONNECTED BY OTHERS UNLESS OTHERWISE NOTED.
3. PROVIDE VERTICAL BLINDS AT EACH EXTERIOR WINDOW.
4. NOT USED.
5. GC IS TO PROVIDE MARKERBOARDS LENGTH AS INDICATED ON PLANS. HEIGHT TO BE 5' TALL, MOUNTED AT 36". MARKERBOARDS ARE TO HAVE 2" TACKABLE STRIP AT TOP.
6. AT EACH SINK, GC IS TO PROVIDE 1 PAPER TOWEL DISPENSOR AND ONE SOAP DISPENSOR.
7. SEE MEP DRAWINGS FOR LAYOUT, SPECIFICATIONS OF ALL MEP EQUIPMENT. MEP EQUIPMENT IS NOT LIMITED TO ITEMS SHOWN ON ARCHITECTURALS AND SHOULD BE TAKEN OFF OF MEP DRAWINGS.
8. SEE A11 DRAWINGS FOR ALL LAB RELATED CASEWORK, EQUIPMENT, CONNECTIONS AND NOTES.

LEGEND

- 1 SCISSOR LIFT, SEE ARCHITECTURAL SPECIFICATIONS.
- 2 LAB CASEWORK/EQUIPMENT. SEE DRAWINGS A11.1, A11.2 FOR CLARIFICATIONS AND ADDITIONAL EQUIPMENT NOTES.
- 3 STEEL STORAGE CAGE TO 8'-0" AFF. FOLDING GUARD STOP-MON STORAGE SYSTEM, OR EQUAL. DOUBLE DOOR ENTRY WITH LOCK.
- 4 (8) 1/2 HEIGHT METAL LOCKERS PER LOCKERROOM
- 5 NOT USED.
- 6 NOT USED.
- 7 UNDERCOUNTER DISHWASHER
- 8 PALLET RACKING, Penco PRODUCT OR EQUAL. 102"L X 48"D X 16'-0"H. PROVIDE 4 SHELVES. RACKING ASSEMBLY SHOULD ACCOMMODATE 24,000 LBS.
- 9 PALLET RACKING, Penco PRODUCT OR EQUAL. 84"L X 48"D X 16'-0"H. PROVIDE 4 SHELVES. RACKING ASSEMBLY SHOULD ACCOMMODATE 24,000 LBS.
- 10 VERTICAL, WALL-MOUNTED STEEL ACCESS LADDER.

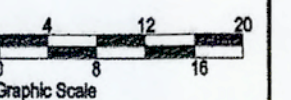
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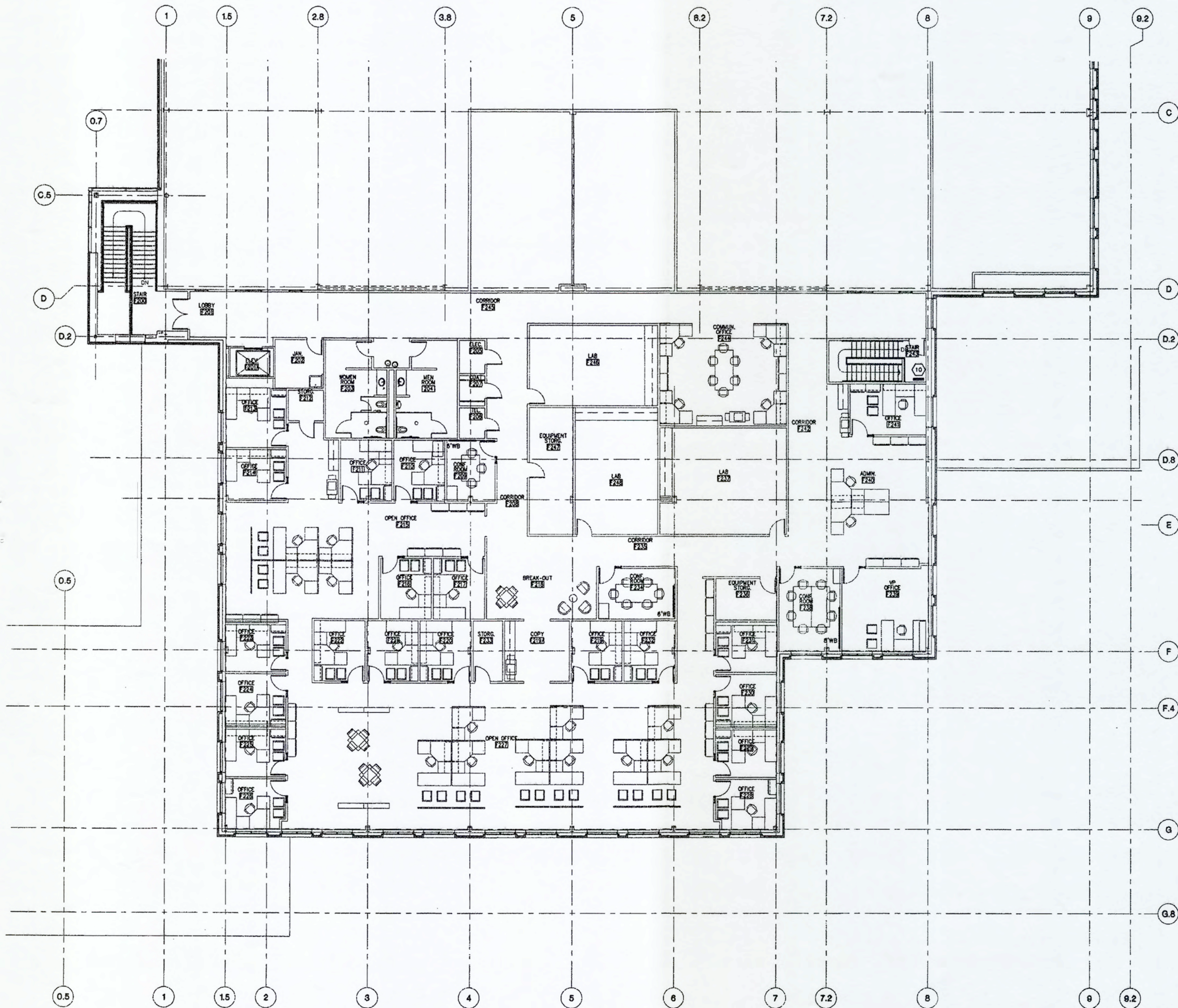
100%
CONSTRUCTION
DOCUMENTS
9/19/02

Title:

**SECOND FLOOR
EQUIPMENT
PLAN
BUILDING F**



Scale 1/8"=1'-0"
Date 8 MARCH, 2002
Drawn RV
Checked RV, MM
Job No. 1348.00 **A15.2**



GENERAL NOTES

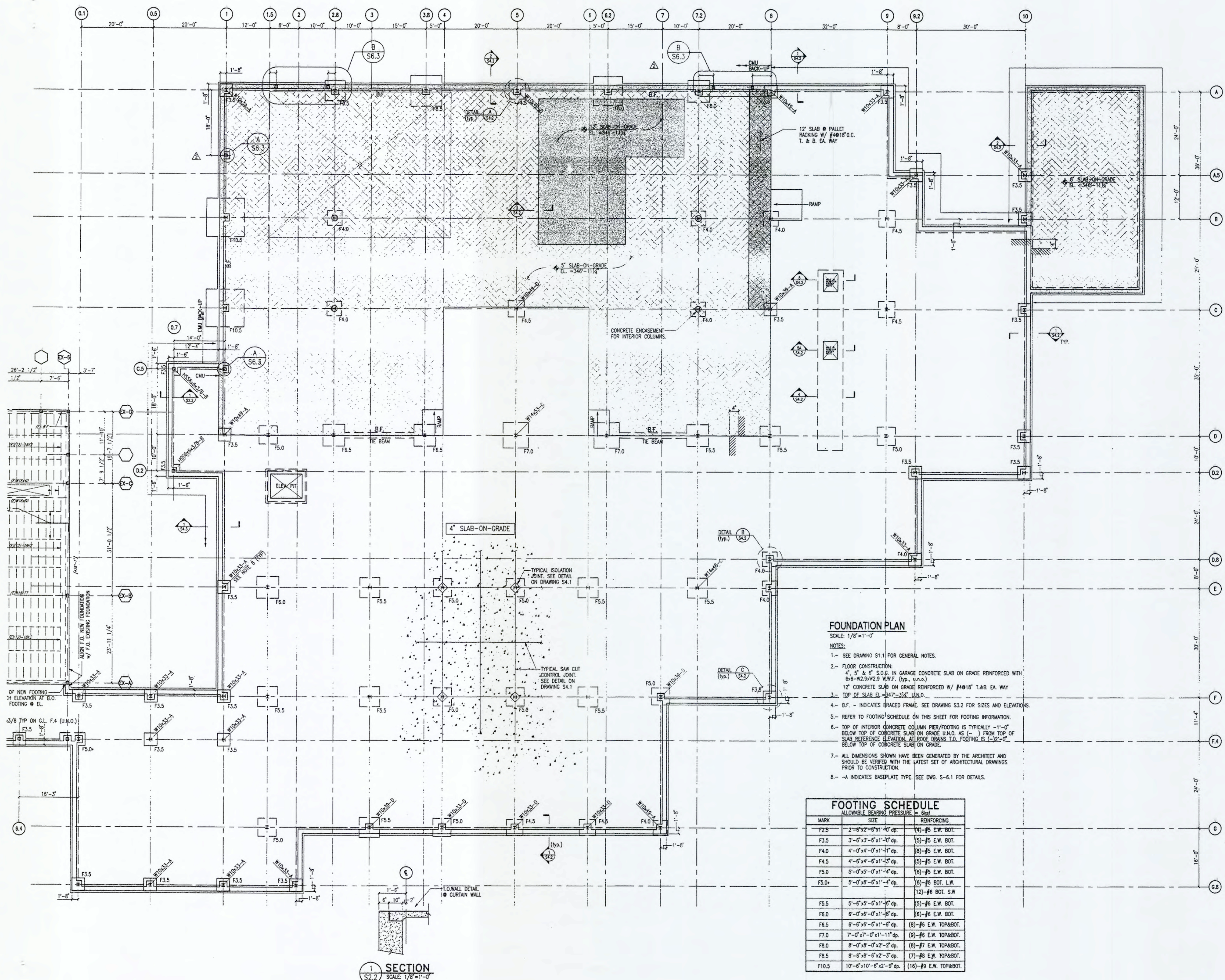
1. ALL FURNISHINGS/EQUIPMENT THAT ARE HIGHLIGHTED IN BOLD ON PLANS IS TO BE SUPPLIED BY GC. ALL OTHER FURNISHINGS/EQUIPMENT ARE SHOWN FOR COORDINATION PURPOSES ONLY.
2. ALL FURNISHINGS/EQUIPMENT THAT ARE NOT TO BE PROVIDED BY GC SHALL BE RELOCATED/FURNISHED, INSTALLED AND CONNECTED BY OTHERS UNLESS OTHERWISE NOTED.
3. PROVIDE VERTICAL BLINDS AT EACH EXTERIOR WINDOW.
4. NOT USED
5. GC IS TO PROVIDE MARKERBOARDS LENGTH AS INDICATED ON PLANS. HEIGHT SHALL BE 1' TALL, MOUNTED AT 1" TOP. MARKERBOARDS ARE TO HAVE 2" TACKABLE STRIP AT TOP.
6. AT EACH SHINK, GC IS TO PROVIDE 1 PAPER TOWEL DISPENSER AND ONE SHAMPOO DISPENSER.
7. SEE MEP DRAWINGS FOR LAYOUT, SPECIFICATIONS OF ALL MEP EQUIPMENT. MEP EQUIPMENT IS NOT LIMITED TO ITEMS SHOWN ON ARCHITECTURALS AND SHOULD BE TAKEN OFF OF MEP DRAWINGS.
8. SEE ALL DRAWINGS FOR ALL LAP RELATED CASEWORK, EQUIPMENT, CONNECTIONS AND NOTES.

PLAN NOTES

- 1 SCISSOR LIFT. SEE ARCHITECTURAL SPECIFICATIONS.
- 2 LAB CASEWORK/EQUIPMENT. SEE DRAWINGS A11.1, A11.2 FOR CLARIFICATIONS AND ADDITIONAL EQUIPMENT NOTES.
- 3 STEEL STORAGE CAGE TO 8'-0" AFF. FOLDING GUARD STOP-WOR STORAGE SYSTEM, OR EQUAL. DOUBLE DOOR ENTRY WITH LOCK.
- 4 (B) 1/2 HEIGHT METAL LOCKERS PER LOCKERROOM
- 5 NOT USED.
- 6 NOT USED.
- 7 UNDERCOUNTER DISHWASHER
- 8 PALLET RACKING, PENCO PRODUCT OR EQUAL. 100X 4 48D X 15'-0". PROVIDE 4 SHELVES. RACKING ASSEMBLY SHOULD ACCOMMODATE 24,000 LBS.
- 9 PALLET RACKING, PENCO PRODUCT OR EQUAL. 84X 4 48D X 15'-0". PROVIDE 4 SHELVES. RACKING ASSEMBLY SHOULD ACCOMMODATE 24,000 LBS.
- 10 VERTICAL, WALL-MOUNTED STEEL ACCESS LADDER.

Revisions:

No.	Date	Description	By



FOUNDATION PLAN

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

NOTES:

- SEE DRAWING S1.1 FOR GENERAL NOTES.
- FLOOR CONSTRUCTION:
4", 5" & 6" S.O.G. IN GARAGE CONCRETE SLAB ON GRADE REINFORCED WITH 6x6-W2.5xW2.9 W.W.F. (typ. u.n.o.)
12" CONCRETE SLAB ON GRADE REINFORCED W/ #4@18" T.&B. EA. WAY
TOP OF SLAB EL. = 347'-3 1/2" U.N.O.
- B.F. - INDICATES BRACED FRAME. SEE DRAWING S3.2 FOR SIZES AND ELEVATIONS.
- REFER TO FOOTING SCHEDULE ON THIS SHEET FOR FOOTING INFORMATION.
- TOP OF INTERIOR CONCRETE COLUMN PIER/FOOTING IS TYPICALLY -1'-0" BELOW TOP OF CONCRETE SLAB ON GRADE U.N.O. AS (-) FROM TOP OF SLAB REFERENCE ELEVATION. AT ROOF DRAIN T.O. FOOTING IS (-)2'-0" BELOW TOP OF CONCRETE SLAB ON GRADE.
- ALL DIMENSIONS SHOWN HAVE BEEN GENERATED BY THE ARCHITECT AND SHOULD BE VERIFIED WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
- A INDICATES BASEPLATE TYPE. SEE DWG. S-6.1 FOR DETAILS.

FOOTING SCHEDULE

ALLOWABLE BEARING PRESSURE = 6ksf

MARK	SIZE	REINFORCING
F2.5	2'-6" x 2'-6" x 1'-10" dp.	(4)-#5 E.W. BOT.
F3.5	3'-6" x 3'-6" x 1'-10" dp.	(5)-#5 E.W. BOT.
F4.0	4'-0" x 4'-0" x 1'-11" dp.	(8)-#5 E.W. BOT.
F4.5	4'-6" x 4'-6" x 1'-11" dp.	(5)-#5 E.W. BOT.
F5.0	5'-0" x 5'-0" x 1'-11" dp.	(6)-#5 E.W. BOT.
F5.0+	5'-0" x 8'-6" x 1'-4" dp.	(6)-#6 BOT. L.W. (12)-#6 BOT. S.W.
F5.5	5'-6" x 5'-6" x 1'-6" dp.	(5)-#6 E.W. BOT.
F6.0	6'-0" x 6'-0" x 1'-6" dp.	(6)-#6 E.W. BOT.
F6.5	6'-6" x 6'-6" x 1'-9" dp.	(8)-#6 E.W. TOP&BOT.
F7.0	7'-0" x 7'-0" x 1'-11" dp.	(8)-#6 E.W. TOP&BOT.
F8.0	8'-0" x 8'-0" x 2'-2" dp.	(8)-#7 E.W. TOP&BOT.
F8.5	8'-6" x 8'-6" x 2'-3" dp.	(7)-#8 E.W. TOP&BOT.
F10.5	10'-6" x 10'-6" x 2'-9" dp.	(16)-#9 E.W. TOP&BOT.

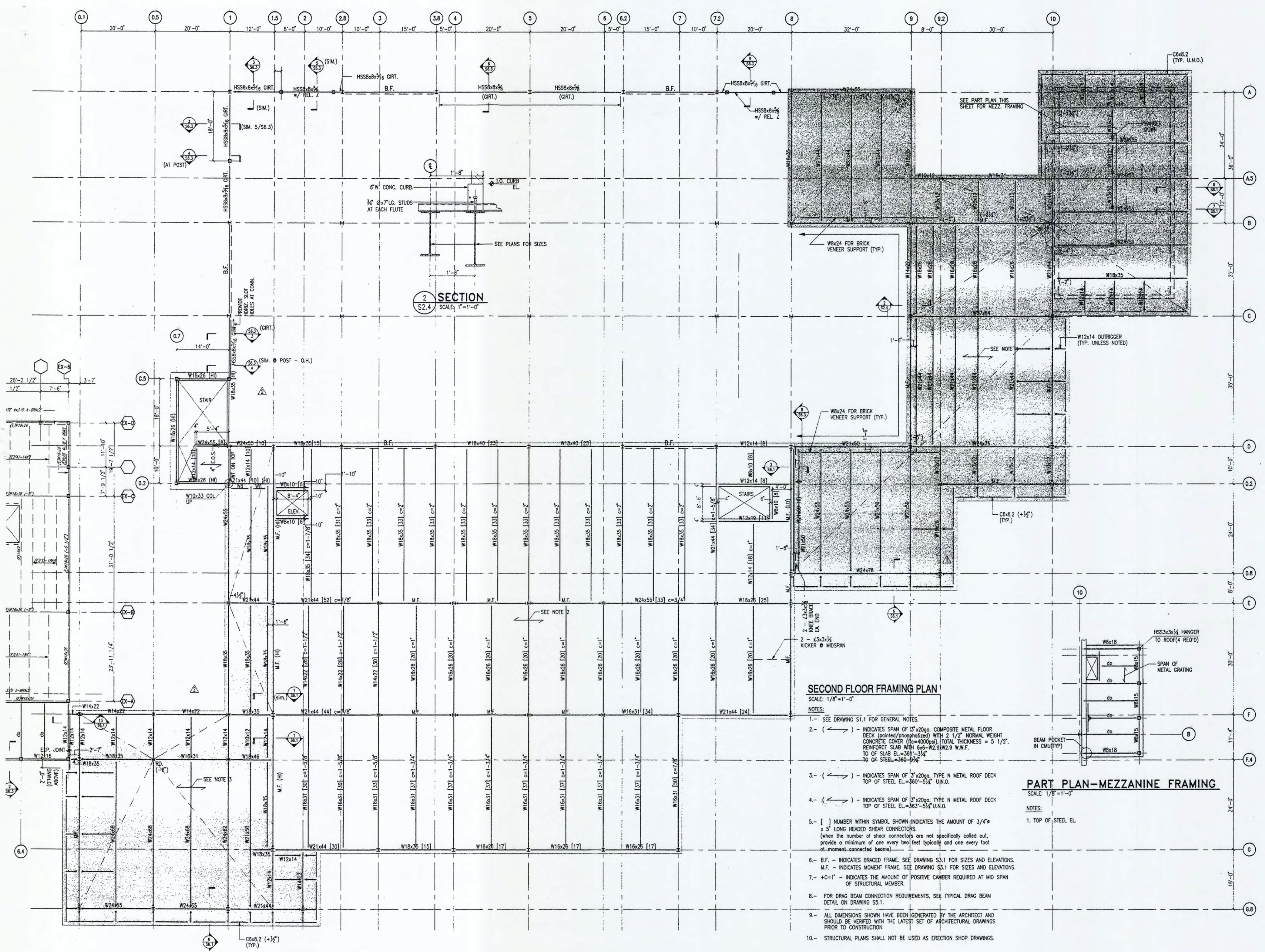
Revisions:

No.	Date	Description	By



Title:

SECOND FLOOR
FRAMING PLAN



SECOND FLOOR FRAMING PLAN

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

- NOTES:
1. - SEE DRAWING S1.1 FOR GENERAL NOTES.
 2. - () - INDICATES SPAN OF 15'x20ga. COMPOSITE METAL FLOOR DECK (painted/phosphatized) WITH 2 1/2" NORMAL WEIGHT CONCRETE COVER (11c=400psi). TOTAL THICKNESS = 5 1/2". REINFORCE SLAB WITH 6x6-W2.9/W2.9 W.W.F. TO OF SLAB EL.=361'-3 1/4" TO OF STEEL=360'-9 3/4"
 3. - () - INDICATES SPAN OF 3'x20ga. TYPE N METAL ROOF DECK TOP OF STEEL EL.=360'-5 1/4" U.N.O.
 4. - () - INDICATES SPAN OF 3'x20ga. TYPE N METAL ROOF DECK TOP OF STEEL EL.=363'-5 1/4" U.N.O.
 5. - [] NUMBER WITHIN SYMBOL SHOWN INDICATES THE AMOUNT OF 3/4" x 5" LONG HEADED SHEAR CONNECTORS. (When the number of shear connectors are not specifically called out, provide a minimum of one every two feet typically and one every foot at moment-connected beams)
 6. - B.F. - INDICATES BRACED FRAME. SEE DRAWING S3.1 FOR SIZES AND ELEVATIONS.
M.F. - INDICATES MOMENT FRAME. SEE DRAWING S3.1 FOR SIZES AND ELEVATIONS.
 7. - +c=1" - INDICATES THE AMOUNT OF POSITIVE CAMBER REQUIRED AT MID SPAN OF STRUCTURAL MEMBER.
 8. - FOR DRAG BEAM CONNECTION REQUIREMENTS, SEE TYPICAL DRAG BEAM DETAIL ON DRAWING S3.1.
 9. - ALL DIMENSIONS SHOWN HAVE BEEN GENERATED BY THE ARCHITECT AND SHOULD BE VERIFIED WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
 10. - STRUCTURAL PLANS SHALL NOT BE USED AS ERECTION SHOP DRAWINGS.

PART PLAN-MEZZANINE FRAMING

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

- NOTES:
1. TOP OF STEEL EL.

Revisions:

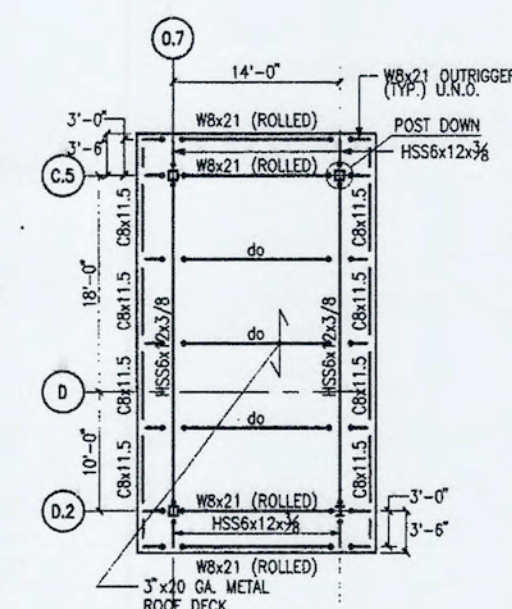
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CONSTRUCTION
DOCUMENTS
9/19/02

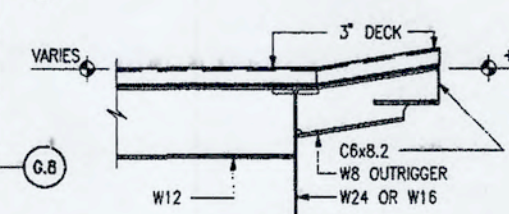
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LOW ROOF FRAMING PLAN

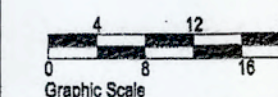
Graphic Scale
Scale
AS NOTED
Date
8 MARCH, 2001
Drawn
N.A.A.
Checked
C.J.M.
Job No.
21055.00



PART PLAN - STAIR ROOF
SCALE: 1/8" = 1'-0"



1 SECTION
S2.5 SCALE: 3/4" = 1'-0"



Graphic Scale

Scale	Sheet
AS NOTED	
Date	
8 MARCH, 2001	
Drawn	
N.A.A.	
Checked	
C.J.M.	
Job No.	S-2.5
21055.00	

S-2.5

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Revisions:

No.	Date	Description	By

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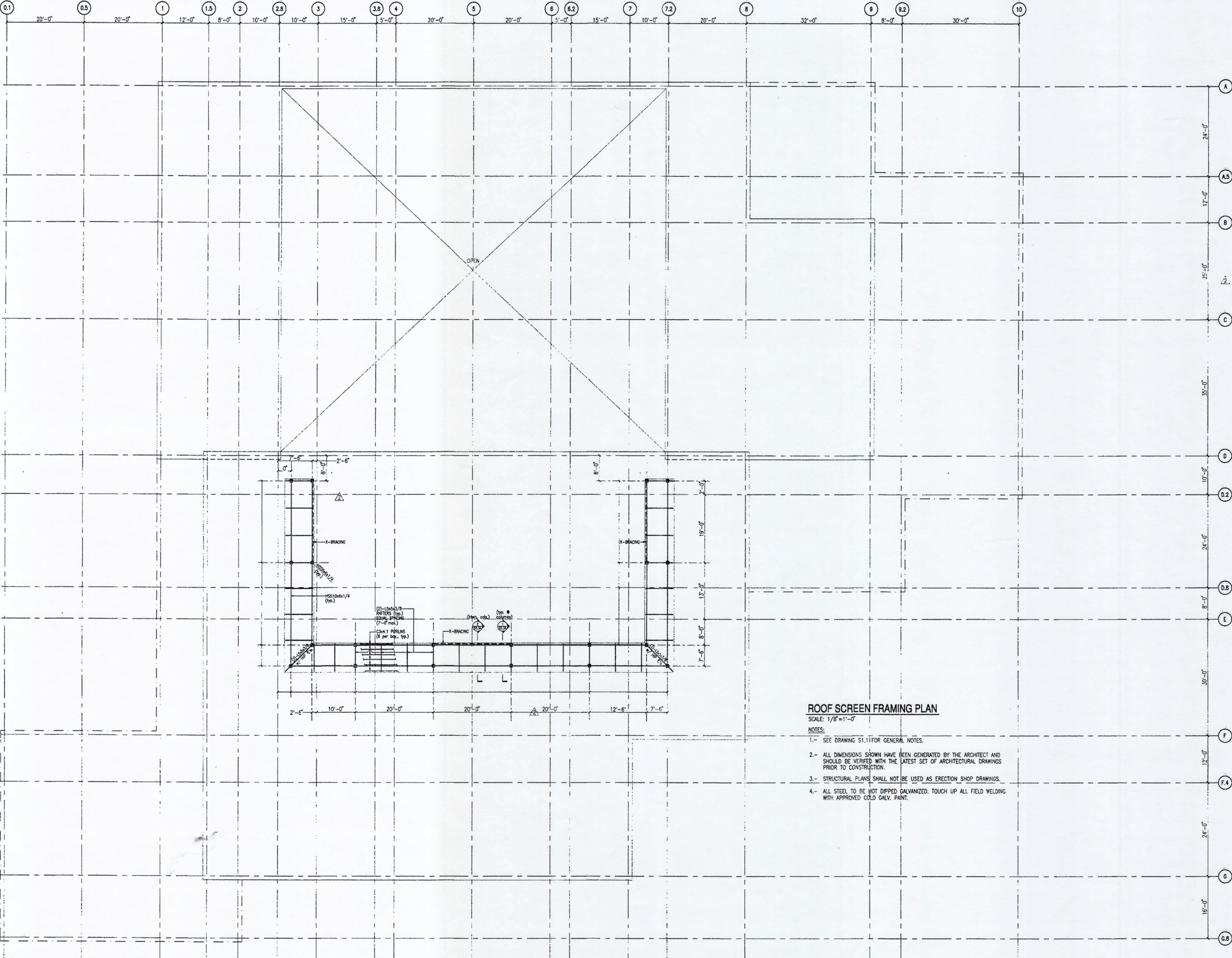


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9/19/02

Title:

ROOF SCREEN
FRAMING PLAN

Graphic Scale
Scale AS NOTED
Date 8 MARCH, 2001
Drawn N.A.A.
Checked C.J.M.
Job No. 21055.00
Sheet S-2.5A

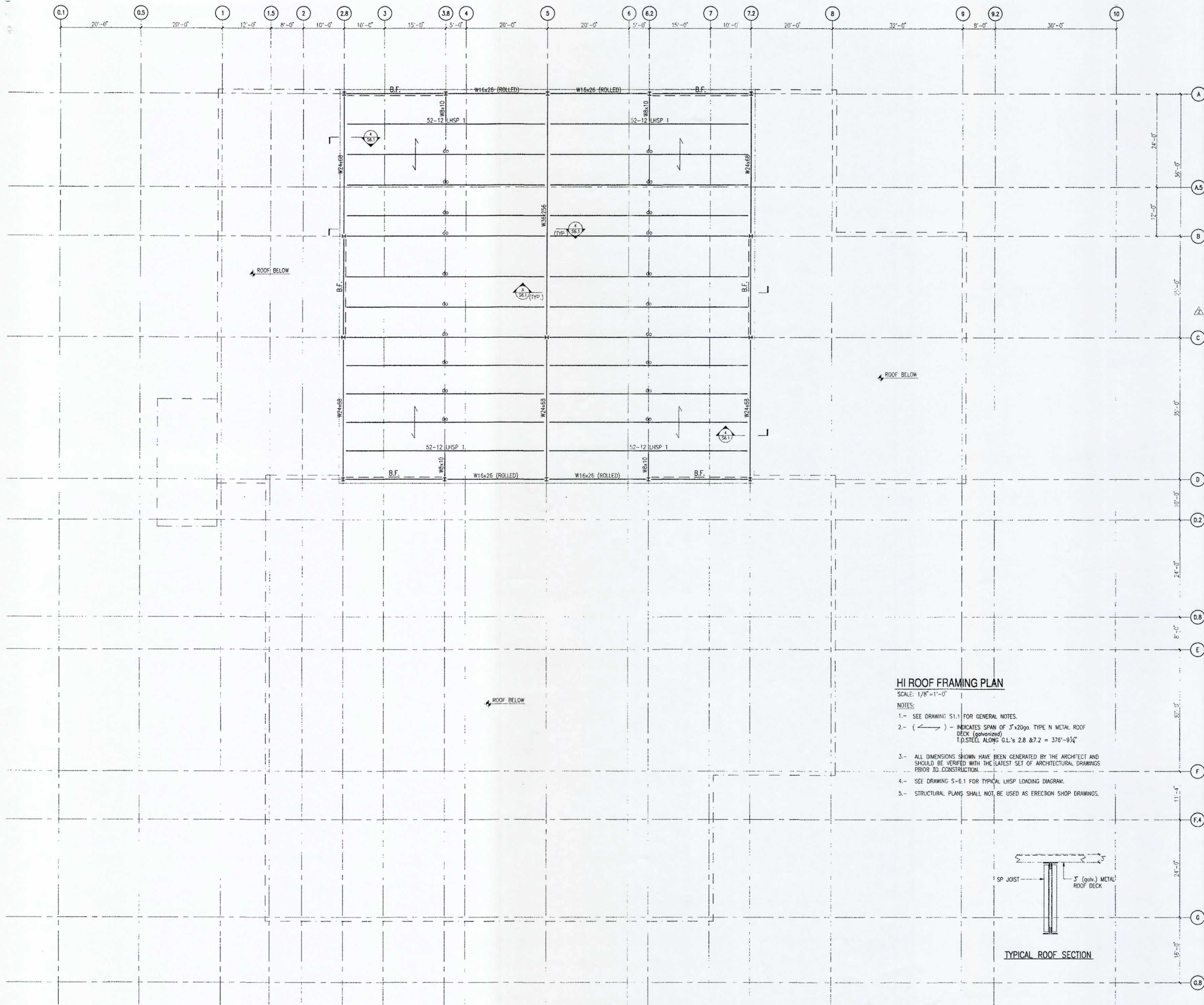


ROOF SCREEN FRAMING PLAN

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

NOTES:

1. SEE DRAWING S1.1 FOR GENERAL NOTES.
2. ALL DIMENSIONS SHOWN HAVE BEEN GENERATED BY THE ARCHITECT AND SHOULD BE VERIFIED WITH THE LATEST SET OF ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION.
3. STRUCTURAL PLANS SHALL NOT BE USED AS ERECTION SHOP DRAWINGS.
4. ALL STEEL TO BE HOT DIPPED GALVANIZED. TOUCH UP ALL FIELD WELDING WITH APPROVED COLD GALV. PAINT.



Revisions:

No.	Date	Description	By



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Title:
 HI ROOF FRAMING
 PLAN

Graphic Scale
 Scale AS NOTED
 Date 8 MARCH, 2001
 Drawn N.A.A.
 Checked C.J.M.
 Job No. 21055.00
 Sheet S-2.6

Revisions:

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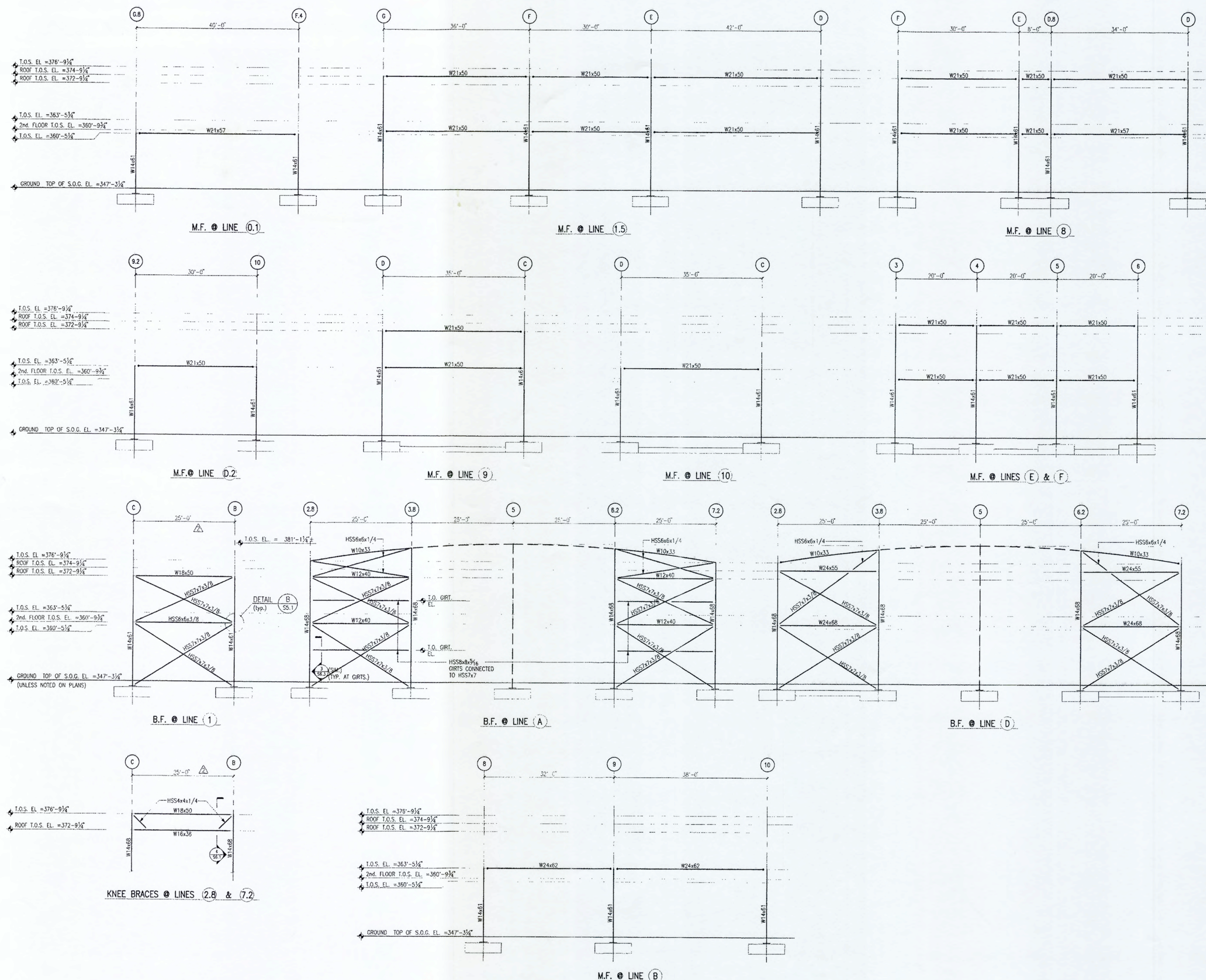
160 Federal St.
Boston, MA 02110 USA
617-737-0040 617-737-0042 Fax

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DOCUMENTS
9/19/02

Title:

**LATERAL FRAME
ELEVATIONS
(Training Bldg.)**

Scale AS NOTED Sheet
Date 8 MARCH, 2001
Drawn N.A.A.
Checked C.J.M.
Job No. 21055.00 **S-3.1**



LATERAL FRAME ELEVATIONS @ TRAINING BUILDING

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

NOTE:

1.- ALL BRACE FRAME GIRDERS TO HAVE SHEAR STUDS SPACED @12" o.c.
WHERE CONCRETE EXISTS U.N.O.