

LAYOUT & MECHANIZATION SCHEMATIC

This plan was developed and prepared by:

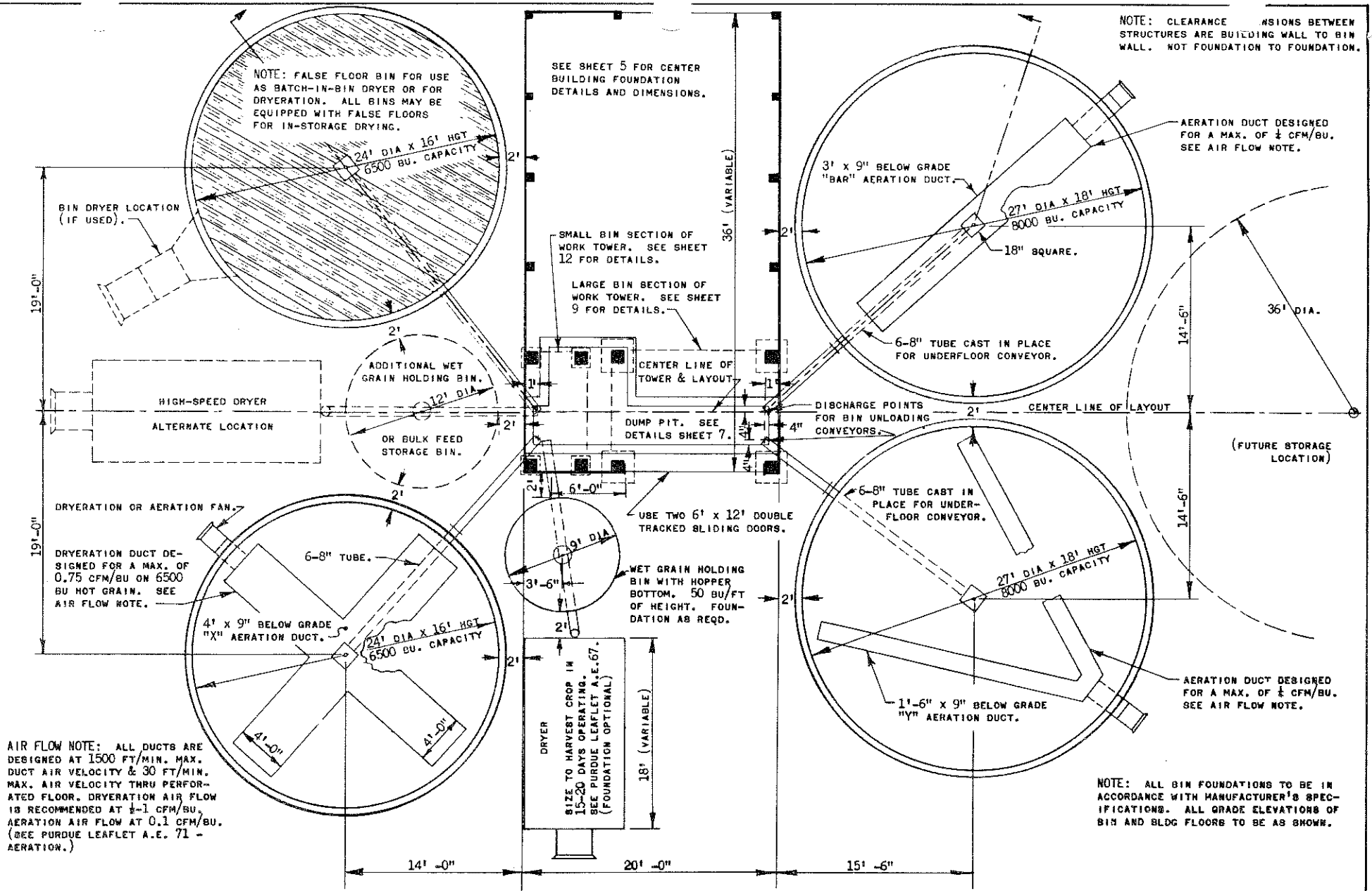
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Agricultural Engineering Department,
Purdue University, Lafayette, Indiana.

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MWPS 73293

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| COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS | | |
| STATE OF FLORIDA | | |
| UNIVERSITY OF FLORIDA | | |
| AND UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING | | |
| GRAIN-FEED HANDLING CENTER | | |
| IND. | '69 | EX. 6069 |
| | | SHEET 1 OF 14 |
| EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA | | |

NOTE: CLEARANCE SPACINGS BETWEEN STRUCTURES ARE BUILDING WALL TO BIN WALL. NOT FOUNDATION TO FOUNDATION.



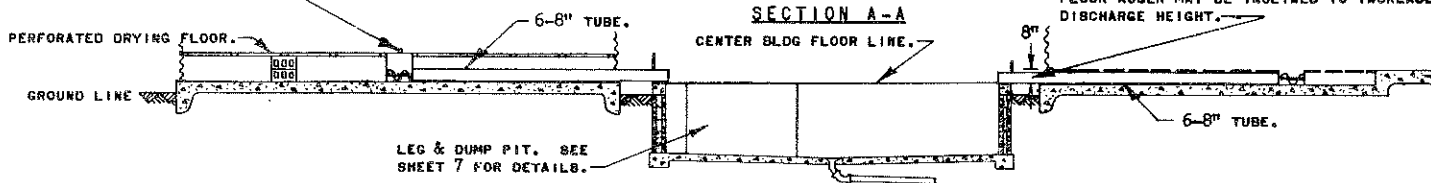
AIR FLOW NOTE: ALL DUCTS ARE DESIGNED AT 1500 FT/MIN. MAX. DUCT AIR VELOCITY & 30 FT/MIN. MAX. AIR VELOCITY THRU PERFORATED FLOOR. DRYERATION AIR FLOW IS RECOMMENDED AT 1/2 CFM/BU. AERATION AIR FLOW AT 0.1 CFM/BU. (SEE PURDUE LEAFLET A.E. 71 - AERATION.)

NOTE: ALL BIN FOUNDATIONS TO BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL GRADE ELEVATIONS OF BIN AND BLDG FLOORS TO BE AS SHOWN.

PLAN VIEW 30,000 BU. FACILITY

BIN FLOOR ELEVATION 8" MIN. ABOVE CENTER BLDG FLOOR GRADE FOR 6" AUGER. ADJUST AS REQUIRED FOR OTHER AUGER DIA. UNDERFLOOR AUGER MAY BE INCLINED TO INCREASE DISCHARGE HEIGHT.

PIVOT PIN FOR UNLOADER MOUNTED ON SKELETON FRAME.



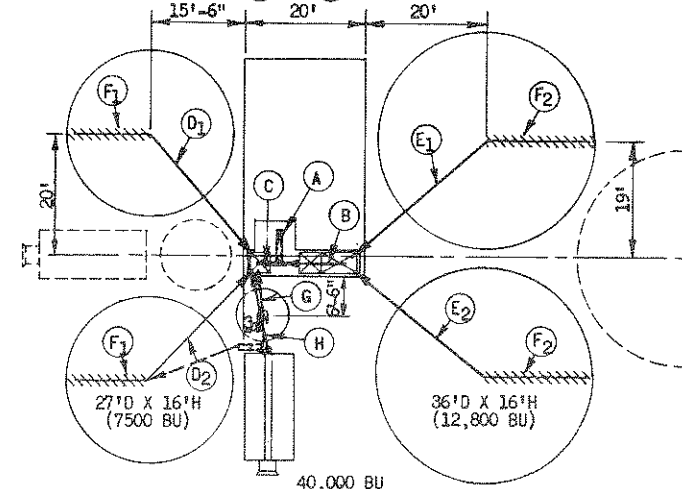
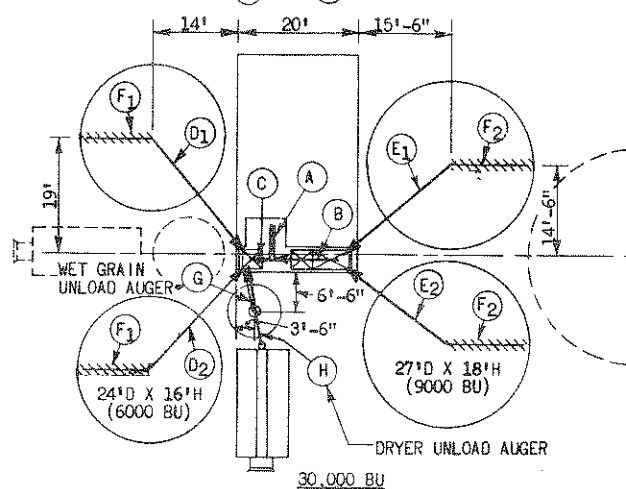
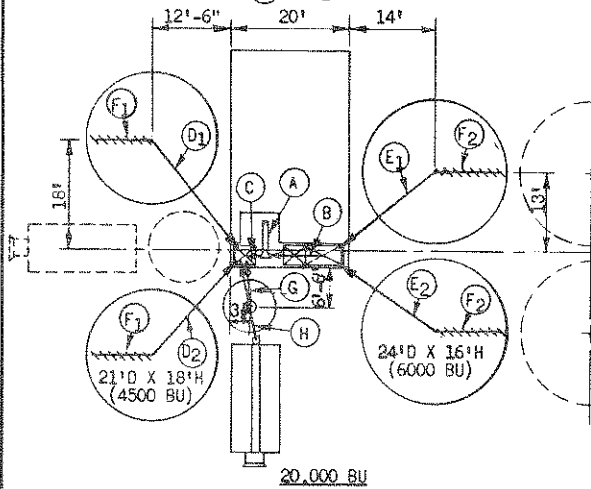
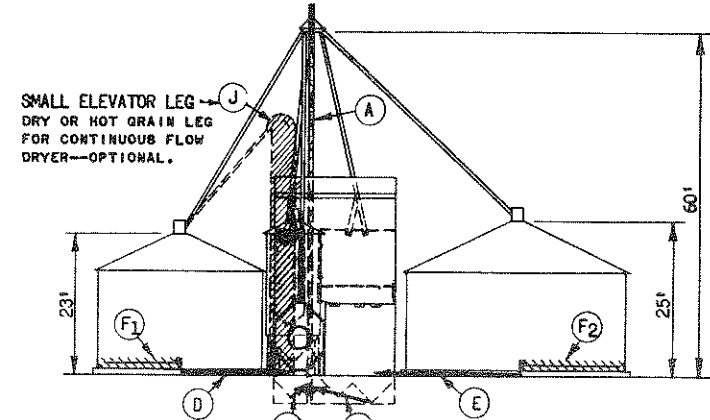
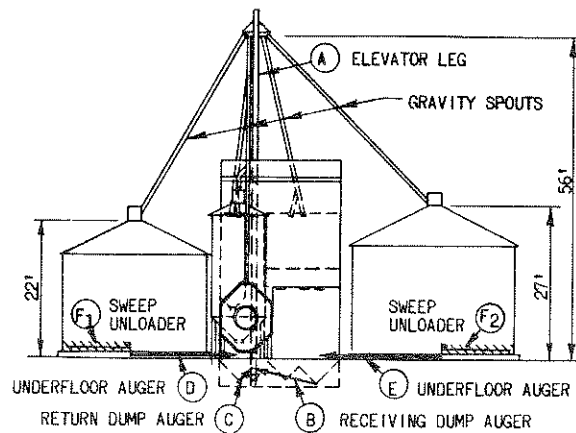
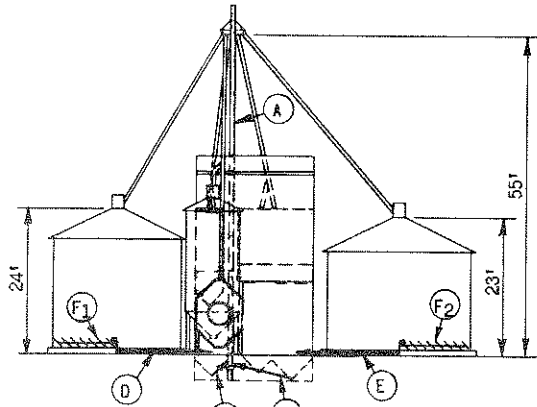
COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS

STATE OF FLORIDA
UNIVERSITY OF FLORIDA
AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

GRAIN-FEED HANDLING CENTER

| | | |
|----------|----------|---------------|
| IND. '69 | EX. 6069 | SHEET 2 OF 14 |
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EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA



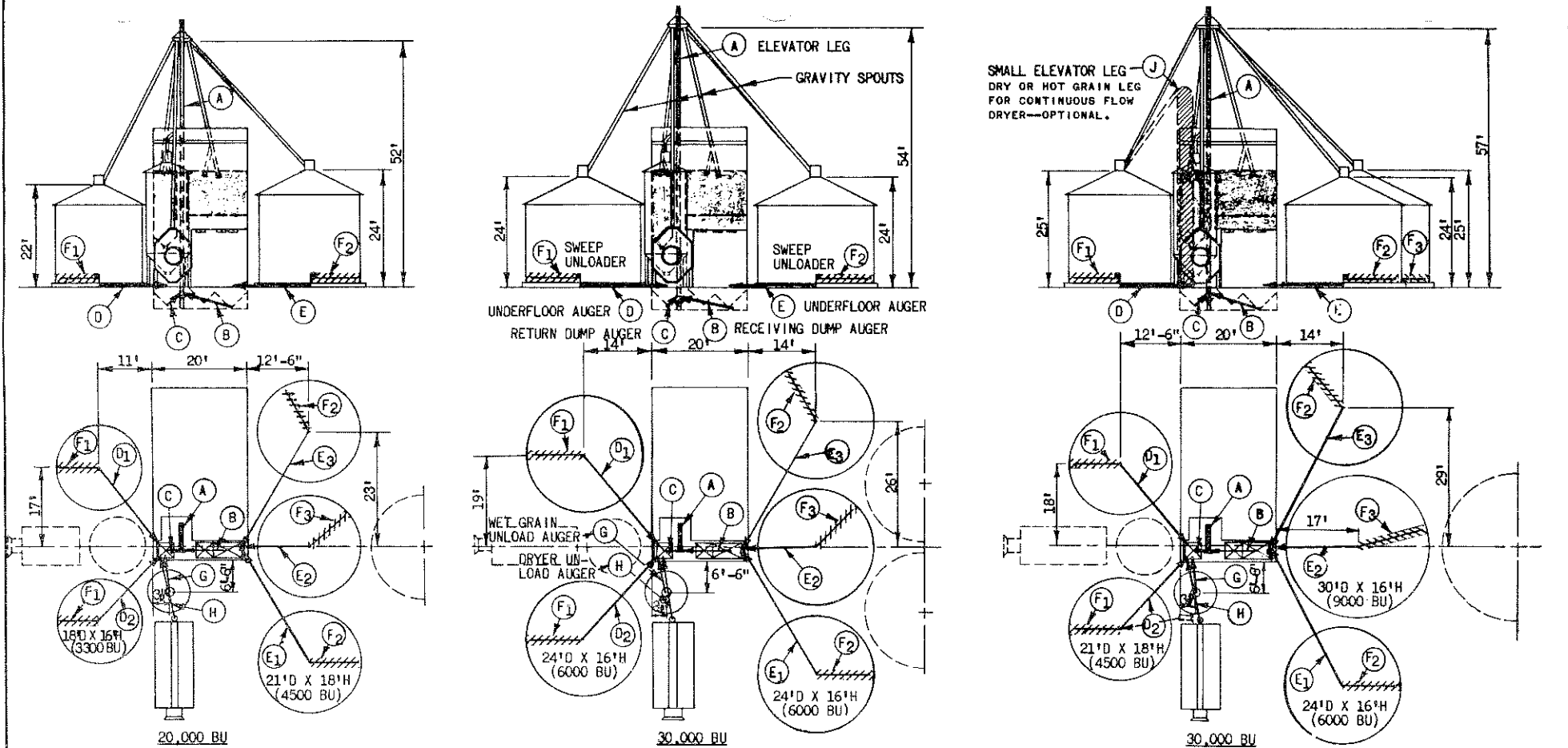
| APPROXIMATE TOTAL CAPACITY-- ALTERNATIVE HANDLING RATES-- | 20,000 BU | | | | | 30,000 BU | | | | | 40,000 BU | | | | | 1. HANDLING FLOW RATES ILLUSTRATED ARE WORKABLE COMBINATIONS AND NOT LIMITED TO EACH SPECIFIC FACILITY. 2. AUGER INTAKE EXPOSURE MATCHED TO CAPACITY--MINIMUM EXPOSURE = AUGER DIAM.; MAXIMUM EXPOSURE 2 1/2*. ADDITIONAL EXPOSURE INCREASES HORSEPOWER NOT CAPACITY. 3. SWEEP UNLOADER CAPACITIES GIVEN FOR UNITS WITH GRAIN SHIELDS BEHIND AUGER. 4. FLAT STORAGE STRUCTURES CAN BE SUBSTITUTED FOR BIN ON RIGHT SIDE OF LAYOUT. DOTTED BINS SHOWN FOR FUTURE EXPANSION ARE INTERCHANGABLE FOR ALL LAYOUTS. |
|--|-----------|------------------|-------------|--------------------------|-------|-----------|------------------|-----------------|--------------------------|-------|-----------|------------------|---------|--------------------------|-------|--|
| | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P | |
| ELEVATOR LEG | A | 55' | 7x5" | 1000-1200 | 2-3 | A | 56' | 8x5 OR 9x5 1/2" | 1500-2000 | 3-5 | A | 60' | 9x6" | 2500-3000 | 7 1/2 | |
| GRAVITY SPOUTS | | | 6" | | | | | | | | | | 8" | | | |
| RECEIVING DUMP AUGER | B | 11' | 8" | 1200(WET) | 2-3 | B | 11' | 10" | | 3-5 | B | 11' | 12" 14" | | 3-5 | |
| RETURN DUMP AUGER | C | 4' | 8" | 1200(WET) | 1 | C | 4' | 10" | | 1 | C | 4' | 12" | | 1 1/2 | |
| UNDERFLOOR AUGER | D1 | 23' | 6" | 1000-1200 | 2 | D1 | 24' | 6" | 1500 | 3 | D1 | 26' | 8" | 2500 | 5 | |
| UNDERFLOOR AUGER | D2 | 21' | 6" | 1000-1200 | 2 | D2 | 22' | 6" | 1500 | 3 | D2 | 24' | 8" | 2500 | 5 | |
| UNDERFLOOR AUGER | E1 | 20' | 6" | 1000-1200 | 2 | E1 | 22' | 6" | 1500 | 3 | E1 | 30' | 8" | 2500 | 5 | |
| UNDERFLOOR AUGER | E2 | 18' | 6" | 1000-1200 | 2 | E2 | 20' | 6" | 1500 | 3 | E2 | 28' | 8" | 2500 | 5 | |
| SWEEP UNLOADERS | F1 | 10' | 40R6" | 1000 | 1 | F1 | 11 1/2' | 6" | 1000-1200 | 1 | F1 | 13' | 6" | 1000-1200 | 1 1/2 | |
| SWEEP UNLOADERS | F2 | 11 1/2' | 40R6" | 1000 | 1 | F2 | 13' | 6" | 1000-1200 | 1 1/2 | F2 | 17 1/2' | 6" | 1000-1200 | 2 | |
| WET GRAIN UNLOAD AUGER | G | 8' | 8" | 1000-1200 | 1 1/2 | G | 8' | 10" | 1500-2000 | 2-3 | G | 8' | 12" | | 2 | |
| DRYER UNLOAD AUGER | H | 14' | 6" | 1000-1200 | 1 1/2 | H | 14' | 6" 8" | 1500 2000 | 2 3 | H | 14' | 8" | 2500 | 3 | |
| SMALL ELEVATOR LEG (FOR CONTINUOUS FLOW DRYER) | J | 39' | (SEE RIGHT) | | | J | 38' | (SEE RIGHT) | | | J | 41' | 4x6" | 500-700 | 1 | |

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GRAIN-FEED HANDLING CENTER

| | | | |
|------|-----|---------|---------------|
| IND. | '69 | EX.6069 | SHEET 3 OF 14 |
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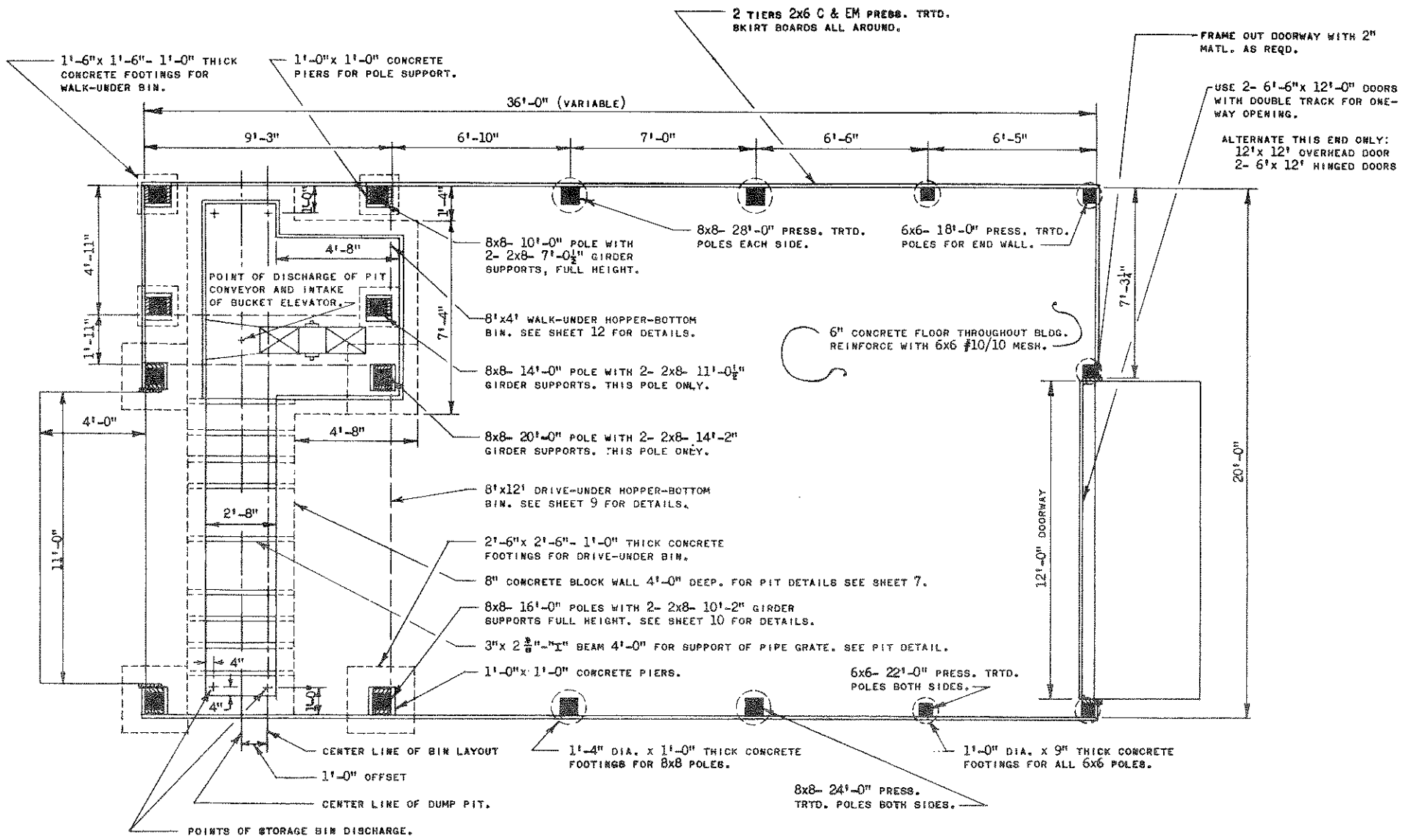
EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA



| APPROXIMATE TOTAL CAPACITY-- ALTERNATIVE HANDLING RATES-- | 20,000 BU 1000-1200 BU/HR FLOW RATE | | | | | 30,000 BU 1500-2000 BU/HR FLOW RATE | | | | | 30,000 BU 2500-3000 BU/HR FLOW RATE | | | | |
|--|--|------------------------|-------------|--------------------------------|-----|--|------------------------|-------------|--------------------------------|-----|--|------------------------|------------|--------------------------------|-----|
| | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P | CODE | LENGTH OR HEIGHT | SIZE | ESTIMATED CAPACITY BU/HR | H-P |
| ELEVATOR LEG | A | 52' | 7x5" | 1000-1200 | 2-3 | A | 54' | 8x5" | 1500-2000 | 3-5 | A | 57' | 9x6" | 2500-3000 | 7½ |
| GRAVITY SPOUTS | | | 6" | | | | | 6" | | | | | 8" | | |
| RECEIVING DUMP AUGER | B | 11' | 8" | 1200(WET) | 2-3 | B | 11' | 10" | | 3-5 | B | 11' | 12" 14" | | 3-5 |
| RETURN DUMP AUGER | C | 4' | 8" | 1200(WET) | 1 | C | 4' | 10" | | 1 | C | 4' | 12" | | 1½ |
| UNDERFLOOR AUGER | D ₁ | 20' | 6" | 1000-1200 | 2 | D ₁ | 24' | 6" | 1500 | 3 | D ₁ | 22' | 8" | 2500 | 3 |
| UNDERFLOOR AUGER | D ₂ | 22' | 6" | 1000-1200 | 2 | D ₂ | 26' | 6" | 1500 | 3 | D ₂ | 24' | 8" | 2500 | 3 |
| UNDERFLOOR AUGER | E ₁ | 29' | 6" | 1000-1200 | 3 | E ₁ | 30' | 6" | 1500 | 3 | E ₁ | 31' | 8" | 2500 | 5 |
| UNDERFLOOR AUGER | E ₂ | 14' | 6" | 1000-1200 | 1½ | E ₂ | 16' | 6" | 1500 | 2 | E ₂ | 19' | 8" | 2500 | 3 |
| UNDERFLOOR AUGER | E ₃ | 27' | 6" | 1000-1200 | 3 | E ₃ | 28' | 6" | 1500 | 3 | E ₃ | 29' | 8" | 2500 | 5 |
| SWEEP UNLOADERS | F ₁ | 8½' | 4" | | ¾ | F ₁ | 11½' | 6" | 1000-1200 | 1 | F ₁ | 10' | 6" | 1000-1200 | 1 |
| SWEEP UNLOADERS | F ₂ | 10' | 6" | 1000 | 1 | F ₂ | 11½' | 6" | 1000-1200 | 1 | F ₂ | 11½' | 6" | 1000-1200 | 1 |
| SWEEP UNLOADERS | F ₃ | 10' | 6" | 1000 | 1 | F ₃ | 11½' | 6" | 1000-1200 | 1 | F ₃ | 14½' | 6" | 1000-1200 | 1½ |
| WET GRAIN UNLOAD AUGER | G | 8' | 8" | 1200(WET) | 1½ | G | 8' | 10" | 1500-2000 | 2-3 | G | 8' | 10" | 1500-2000 | 2-3 |
| DRYER UNLOAD AUGER | H | 14' | 6" | 1000-1200 | 1½ | H | 14' | 6" | 1500 | 2 | H | 14' | 8" | 2500 | 3 |
| SMALL ELEVATOR LEG (FOR CONTINUOUS FLOW DRYER) | J | 34' | (SEE RIGHT) | | | J | 40' | (SEE RIGHT) | | | J | 38' | 4x6" | 500-700 | 1 |

1. HANDLING FLOW RATES ILLUSTRATED ARE WORKABLE COMBINATIONS AND NOT LIMITED TO EACH SPECIFIC FACILITY
2. AUGER INTAKE EXPOSURE MATCHED TO CAPACITY--MINIMUM EXPOSURE = AUGER DIAM.; MAXIMUM EXPOSURE 2'±. ADDITIONAL EXPOSURE INCREASES HORSEPOWER NOT CAPACITY.
3. SWEEP UNLOADER CAPACITIES GIVEN FOR UNITS WITH GRAIN SHIELDS BEHIND AUGER.
4. FLAT STORAGE STRUCTURES CAN BE SUBSTITUTED FOR BIN ON RIGHT SIDE OF LAYOUT. DOTTED BINS SHOWN FOR FUTURE EXPANSION ARE INTERCHANGABLE FOR ALL LAYOUTS.

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GRAIN-FEED HANDLING CENTER
 IND. '69 EX. 6069 SHEET 4 OF 14
 EXT. AGR. ENGINEER — GAINESVILLE, FLORIDA



FLOOR & FOUNDATION PLAN
 SCALE $\frac{3}{8}$ " = 1'-0"

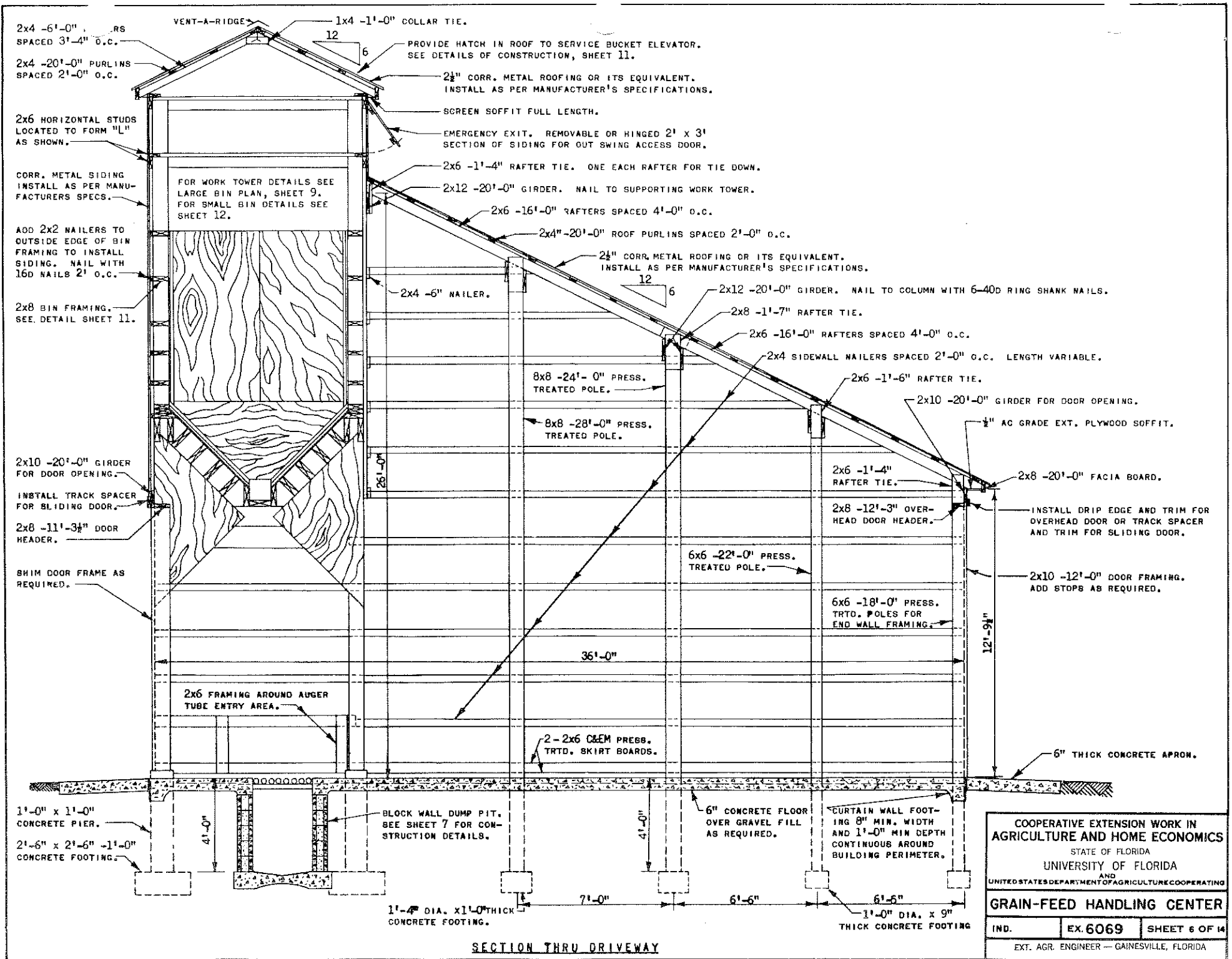
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STATE OF FLORIDA
 UNIVERSITY OF FLORIDA
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GRAIN-FEED HANDLING CENTER

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| IND. | '69 | EX 6069 | SHEET 5 OF 14 |
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EXT. AGR. ENGINEER — GAINESVILLE, FLORIDA



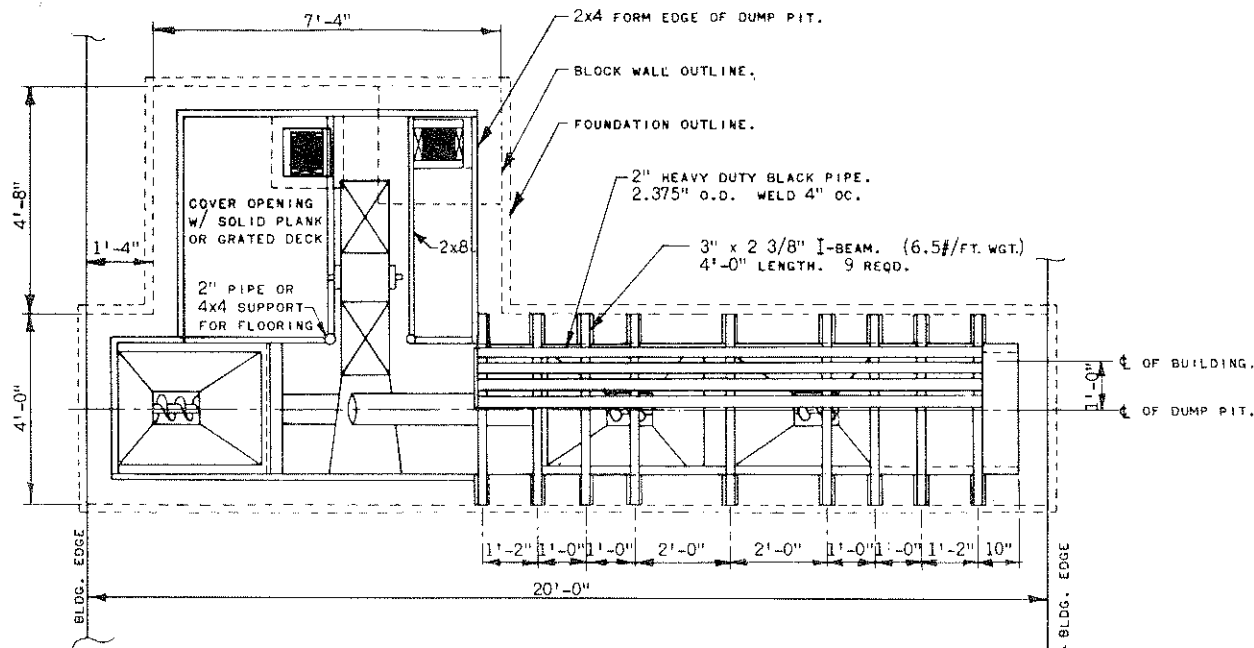
SECTION THRU DRIVEWAY

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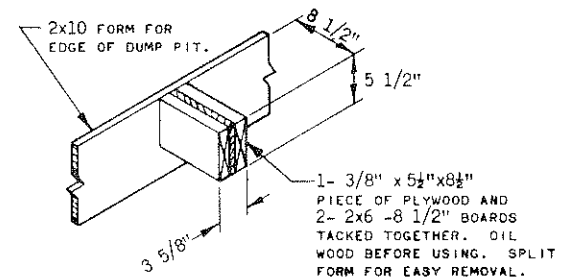
GRAIN-FEED HANDLING CENTER

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| IND. | EX. 6069 | SHEET 6 OF 14 |
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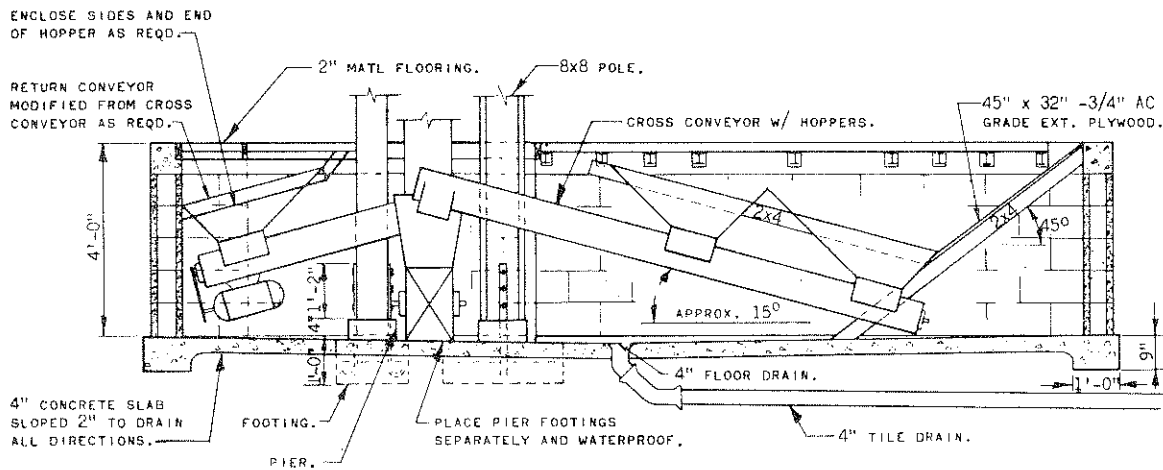
EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA



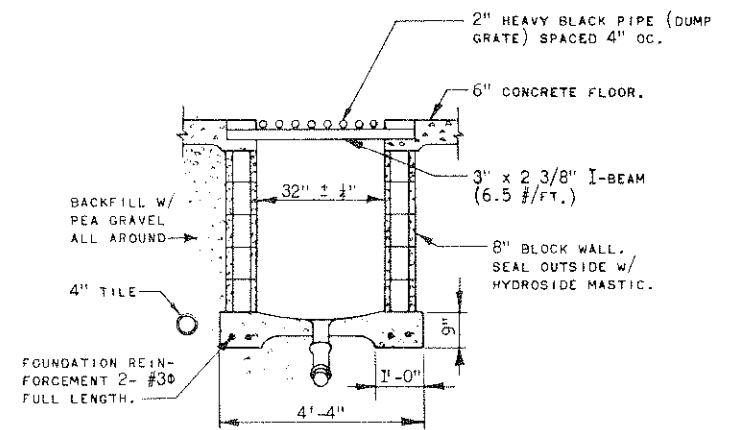
PLAN VIEW



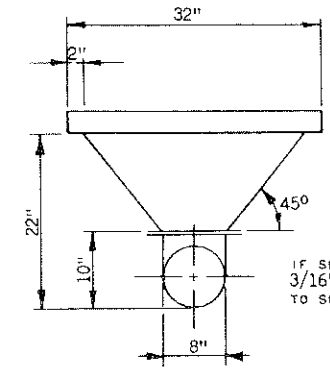
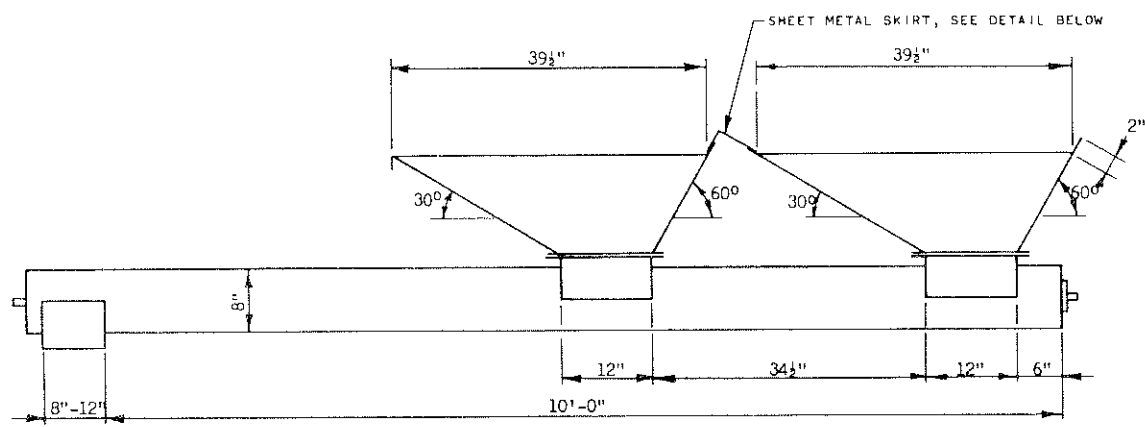
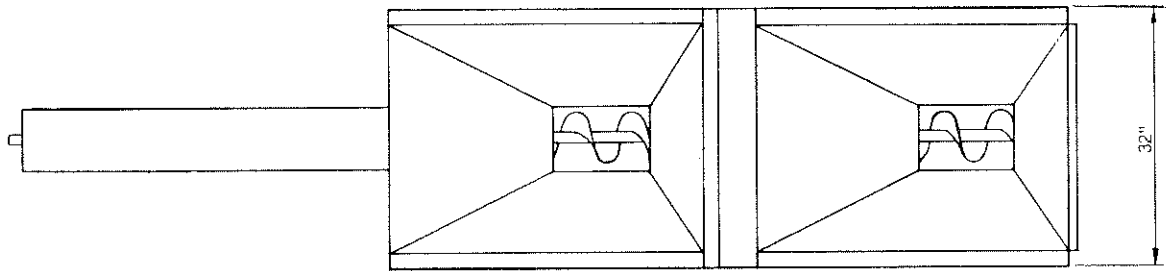
I-BEAM NOTCH FORMING DETAIL



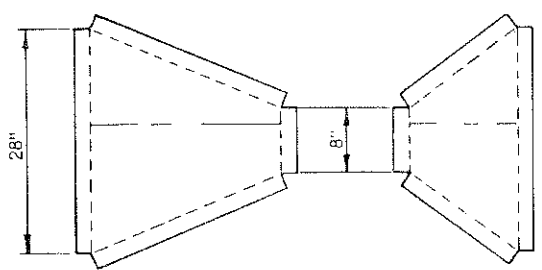
ELEVATION VIEW



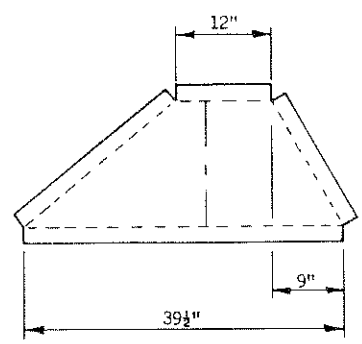
END SECTION OF DUMP PIT



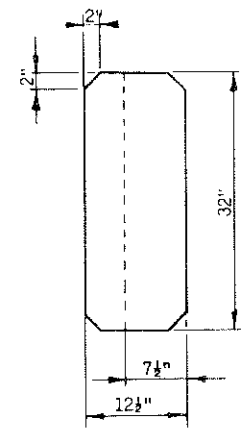
IF SLIDE IS DESIRED, USE 3/16" X 3/4" BAR STOCK TO SPACE EACH SIDE.



HOPPER END PANELS



HOPPER SIDE PANELS



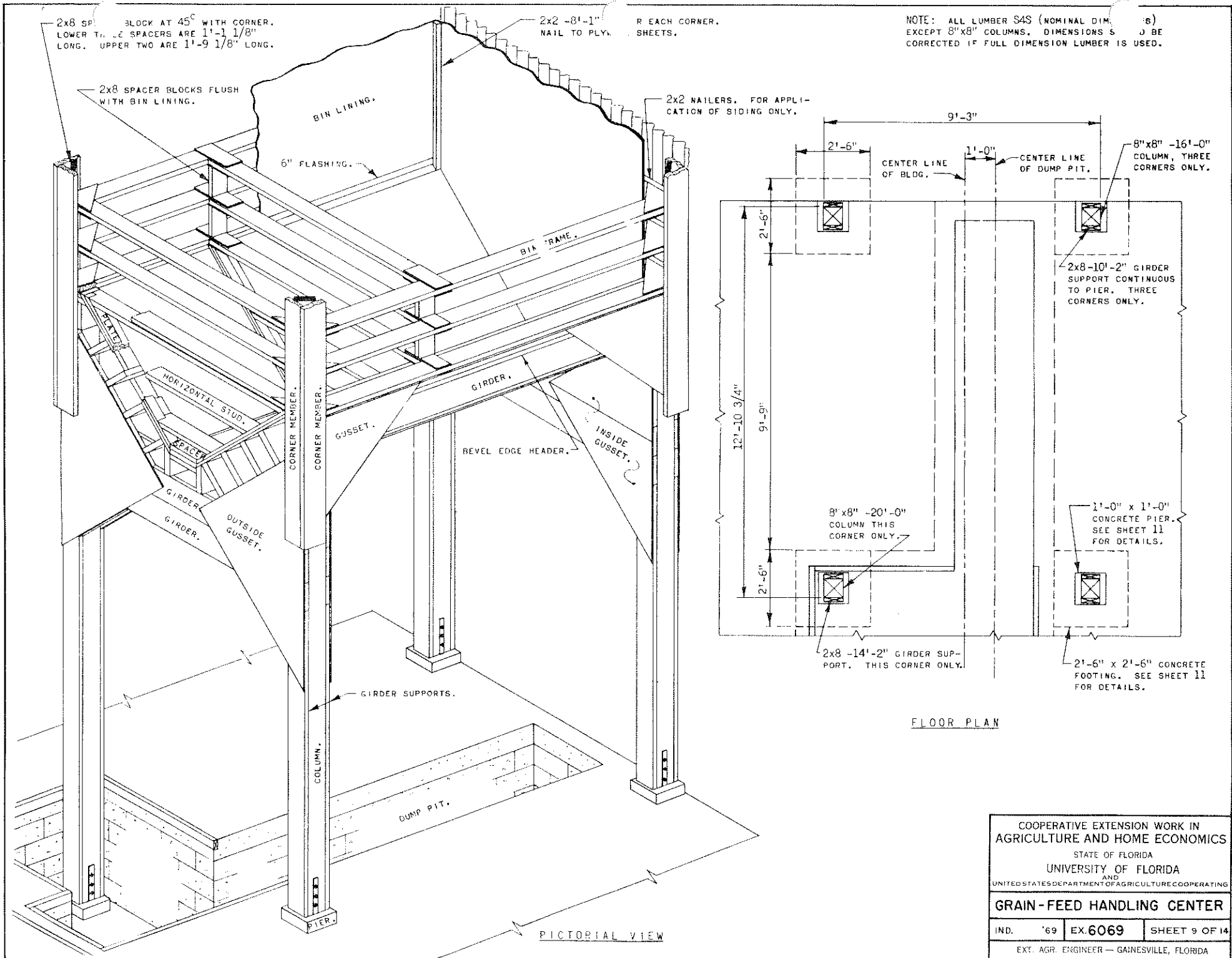
SKIRT BETWEEN HOPPERS

NOTE: ALL FLANGES ARE DRAWN 2", BUT MAY BE MODIFIED TO EASE FABRICATION. 16 GAGE STEEL IS SUGGESTED. MODIFICATIONS MAY BE NECESSARY TO ADAPT TO A PARTICULAR SCREW CONVEYOR.

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GRAIN-FEED HANDLING CENTER

| | | | |
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| IND. | '69 | EX. 6069 | SHEET 8 OF 14 |
| EXT. AGR. ENGINEER — GAINESVILLE, FLORIDA | | | |

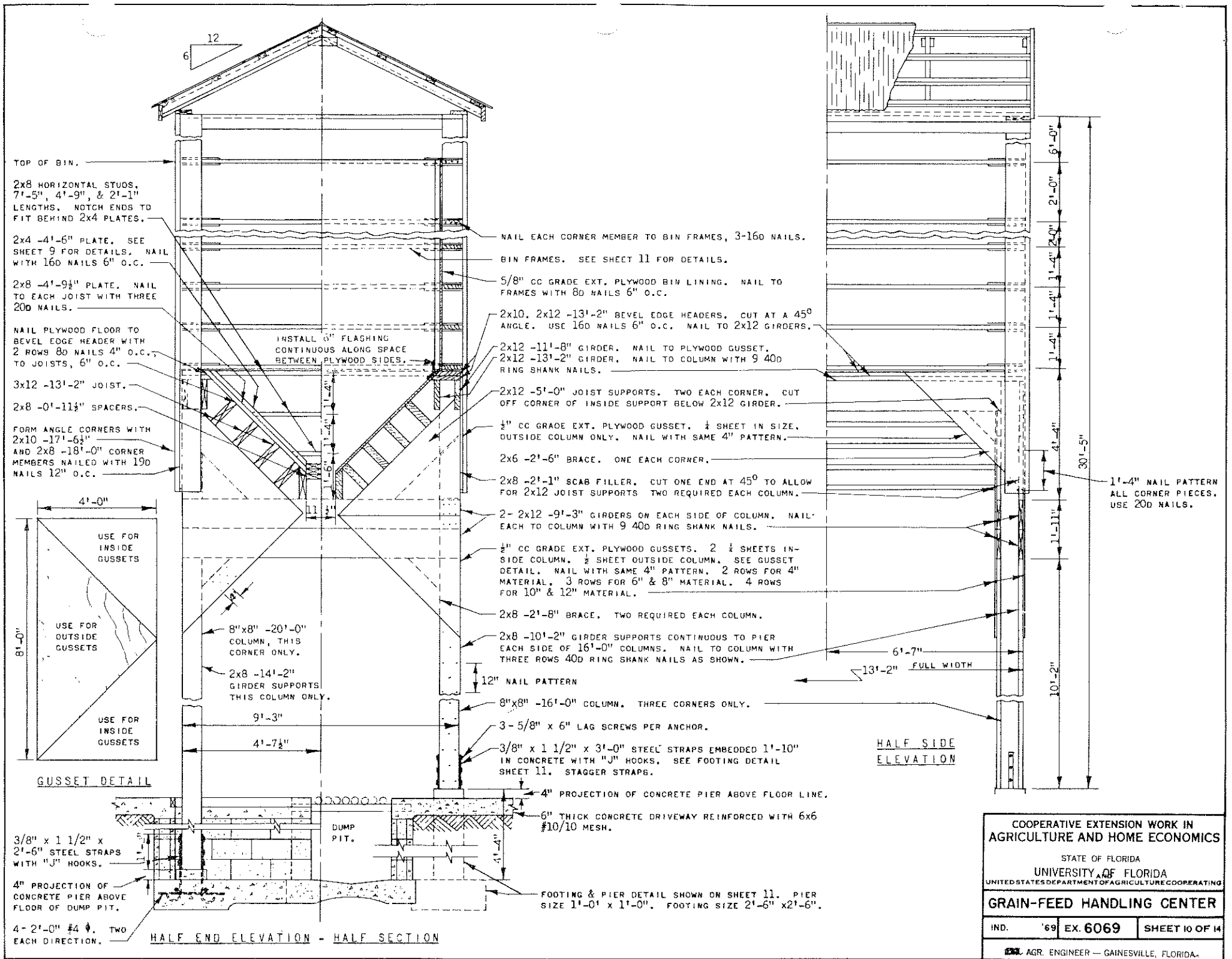


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GRAIN-FEED HANDLING CENTER

IND. '69 EX.6069 SHEET 9 OF 14

EXT. AGR. ENGINEER — GAINESVILLE, FLORIDA



TOP OF BIN.
 2x8 HORIZONTAL STUDS,
 7'-5", 4'-9", & 2'-1"
 LENGTHS. NOTCH ENDS TO
 FIT BEHIND 2x4 PLATES.

2x4 -4'-6" PLATE. SEE
 SHEET 9 FOR DETAILS. NAIL
 WITH 16D NAILS 6" O.C.

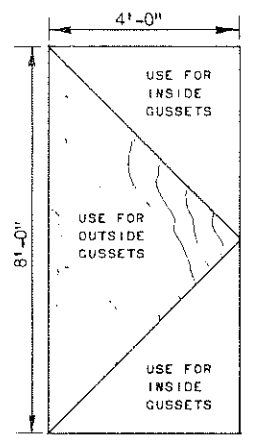
2x8 -4'-9 1/2" PLATE. NAIL
 TO EACH JOIST WITH THREE
 20D NAILS.

NAIL PLYWOOD FLOOR TO
 BEVEL EDGE HEADER WITH
 2 ROWS 8D NAILS 4" O.C.,
 TO JOISTS, 6" O.C.

3x12 -13'-2" JOIST.

2x8 -0'-11 1/2" SPACERS.

FORM ANGLE CORNERS WITH
 2x10 -17'-6 1/2"
 AND 2x8 -18'-0" CORNER
 MEMBERS NAILED WITH 19D
 NAILS 12" O.C.



GUSSET DETAIL

INSTALL 0" FLASHING
 CONTINUOUS ALONG SPACE
 BETWEEN PLYWOOD SIDES.

NAIL EACH CORNER MEMBER TO BIN FRAMES, 3-16D NAILS.

BIN FRAMES. SEE SHEET 11 FOR DETAILS.

5/8" CC GRADE EXT. PLYWOOD BIN LINING. NAIL TO
 FRAMES WITH 8D NAILS 6" O.C.

2x10, 2x12 -13'-2" BEVEL EDGE HEADERS. CUT AT A 45°
 ANGLE. USE 16D NAILS 6" O.C. NAIL TO 2x12 GIRDERS.

2x12 -11'-8" GIRDER. NAIL TO PLYWOOD GUSSET.
 2x12 -13'-2" GIRDER. NAIL TO COLUMN WITH 9 40D
 RING SHANK NAILS.

2x12 -5'-0" JOIST SUPPORTS. TWO EACH CORNER. CUT
 OFF CORNER OF INSIDE SUPPORT BELOW 2x12 GIRDER.

1/2" CC GRADE EXT. PLYWOOD GUSSET. 1/2 SHEET IN SIZE.
 OUTSIDE COLUMN ONLY. NAIL WITH SAME 4" PATTERN.

2x6 -2'-6" BRACE. ONE EACH CORNER.

2x8 -2'-1" SCAB FILLER. CUT ONE END AT 45° TO ALLOW
 FOR 2x12 JOIST SUPPORTS. TWO REQUIRED EACH COLUMN.

2- 2x12 -9'-3" GIRDERS ON EACH SIDE OF COLUMN. NAIL
 EACH TO COLUMN WITH 9 40D RING SHANK NAILS.

1/2" CC GRADE EXT. PLYWOOD GUSSETS. 2 1/2 SHEETS IN-
 SIDE COLUMN. 1/2 SHEET OUTSIDE COLUMN. SEE GUSSET
 DETAIL. NAIL WITH SAME 4" PATTERN. 2 ROWS FOR 4"
 MATERIAL. 3 ROWS FOR 6" & 8" MATERIAL. 4 ROWS
 FOR 10" & 12" MATERIAL.

2x8 -2'-8" BRACE. TWO REQUIRED EACH COLUMN.

2x8 -10'-2" GIRDER SUPPORTS CONTINUOUS TO PIER
 EACH SIDE OF 16'-0" COLUMNS. NAIL TO COLUMN WITH
 THREE ROWS 40D RING SHANK NAILS AS SHOWN.

12" NAIL PATTERN

8"x8" -16'-0" COLUMN. THREE CORNERS ONLY.

3- 5/8" x 6" LAG SCREWS PER ANCHOR.

3/8" x 1 1/2" x 3'-0" STEEL STRAPS EMBEDDED 1'-10"
 IN CONCRETE WITH "J" HOOKS. SEE FOOTING DETAIL
 SHEET 11. STAGGER STRAPS.

4" PROJECTION OF CONCRETE PIER ABOVE FLOOR LINE.

6" THICK CONCRETE DRIVEWAY REINFORCED WITH 6x6
 #10/10 MESH.

FOOTING & PIER DETAIL SHOWN ON SHEET 11. PIER
 SIZE 1'-0" x 1'-0". FOOTING SIZE 2'-6" x 2'-6".

3/8" x 1 1/2" x
 2'-6" STEEL STRAPS
 WITH "J" HOOKS.

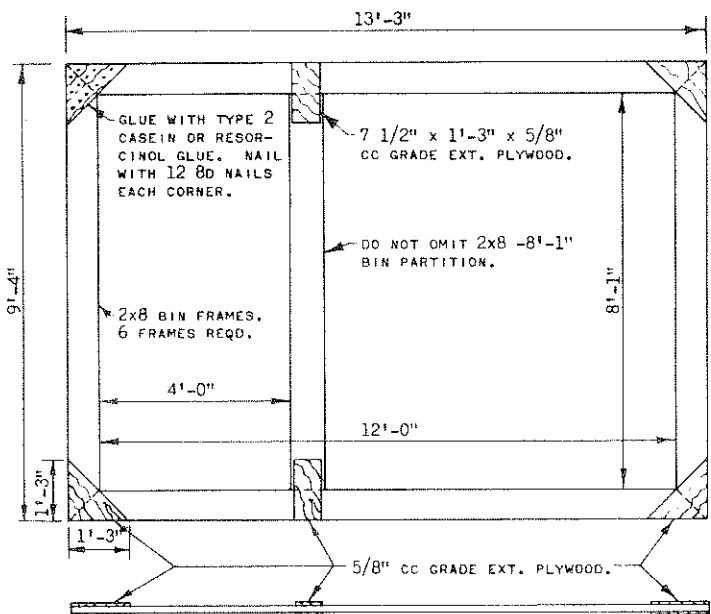
4" PROJECTION OF
 CONCRETE PIER ABOVE
 FLOOR OF DUMP PIT.

4- 2'-0" #4. TWO
 EACH DIRECTION.

HALF END ELEVATION - HALF SECTION

HALF SIDE
 ELEVATION

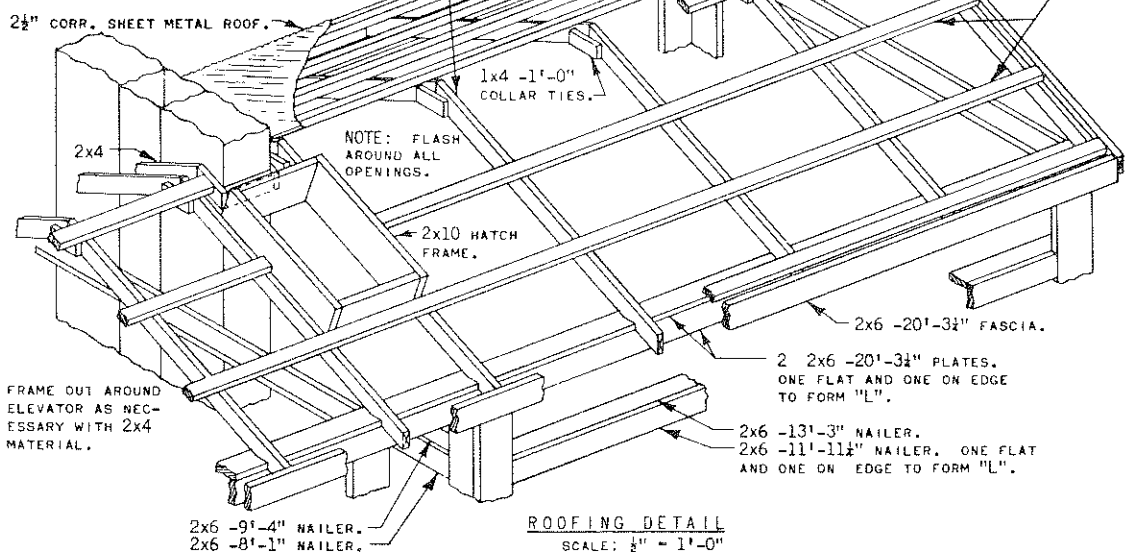
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| COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS | | |
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| GRAIN-FEED HANDLING CENTER | | |
| IND. | '69 EX. 6069 | SHEET 10 OF 14 |
| AGR. ENGINEER - GAINESVILLE, FLORIDA. | | |



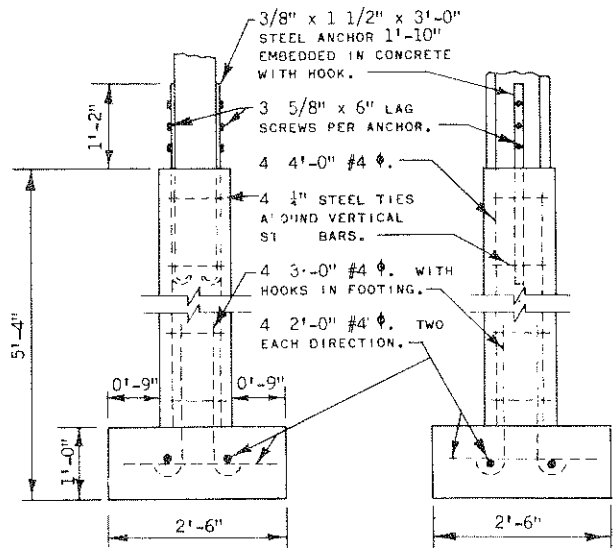
BIN FRAME DETAIL
SCALE: 1/2" = 1'-0"



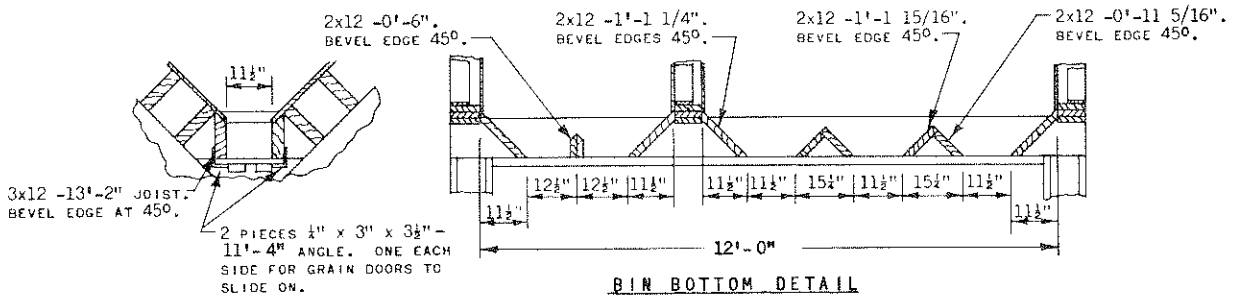
HATCH DOOR DETAIL



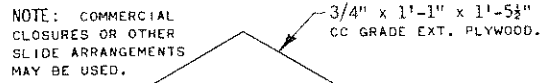
ROOFING DETAIL
SCALE: 1/2" = 1'-0"



FOOTING DETAIL
SCALE: 3/4" = 1'-0"

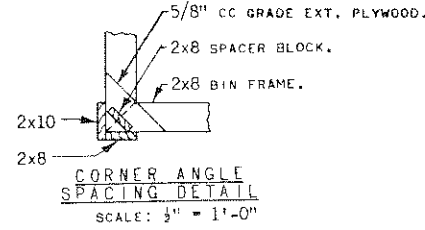


BIN BOTTOM DETAIL



GRAIN DOOR DETAIL
SCALE: 1" = 1'-0"

5 REQD FOR LARGE BIN.



CORNER ANGLE SPACING DETAIL
SCALE: 1/2" = 1'-0"

SEE SHEET 10 FOR THE SHORT FOOTING DETAIL.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS

STATE OF FLORIDA

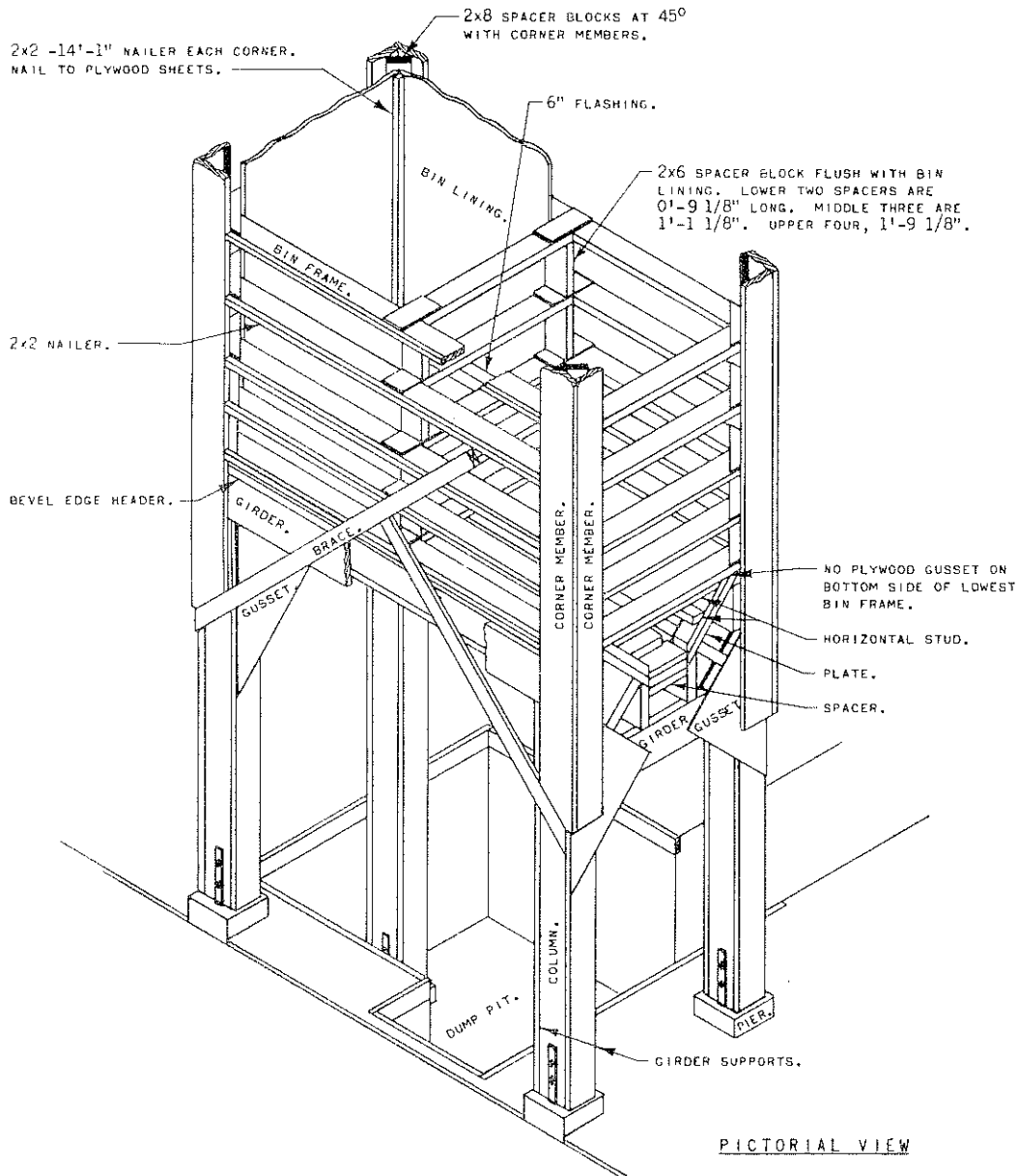
UNIVERSITY OF FLORIDA

UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

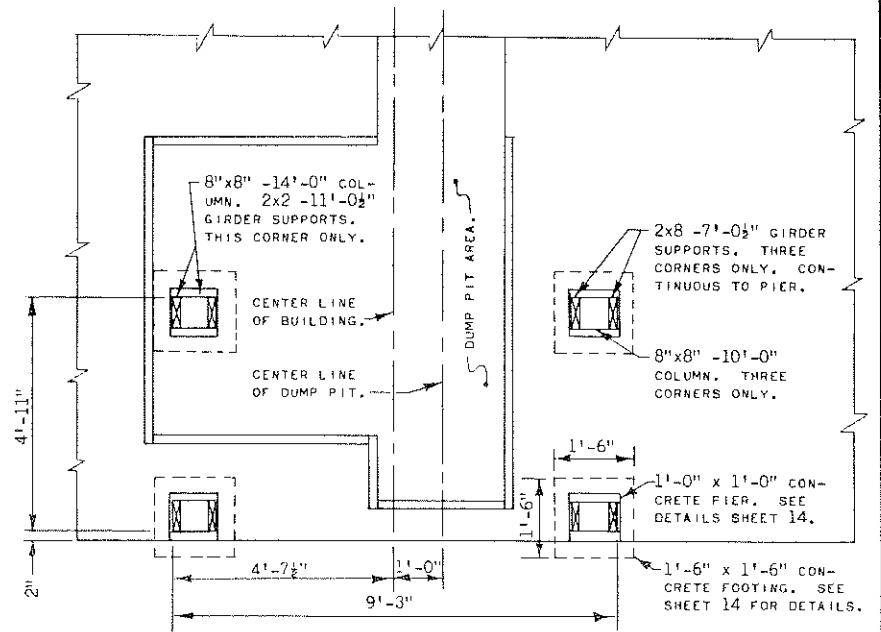
GRAIN-FEED HANDLING CENTER

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| IND. | '69 | EX. 6069 | SHEET 11 OF 14 |
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EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA



PICTORIAL VIEW



FLOOR PLAN

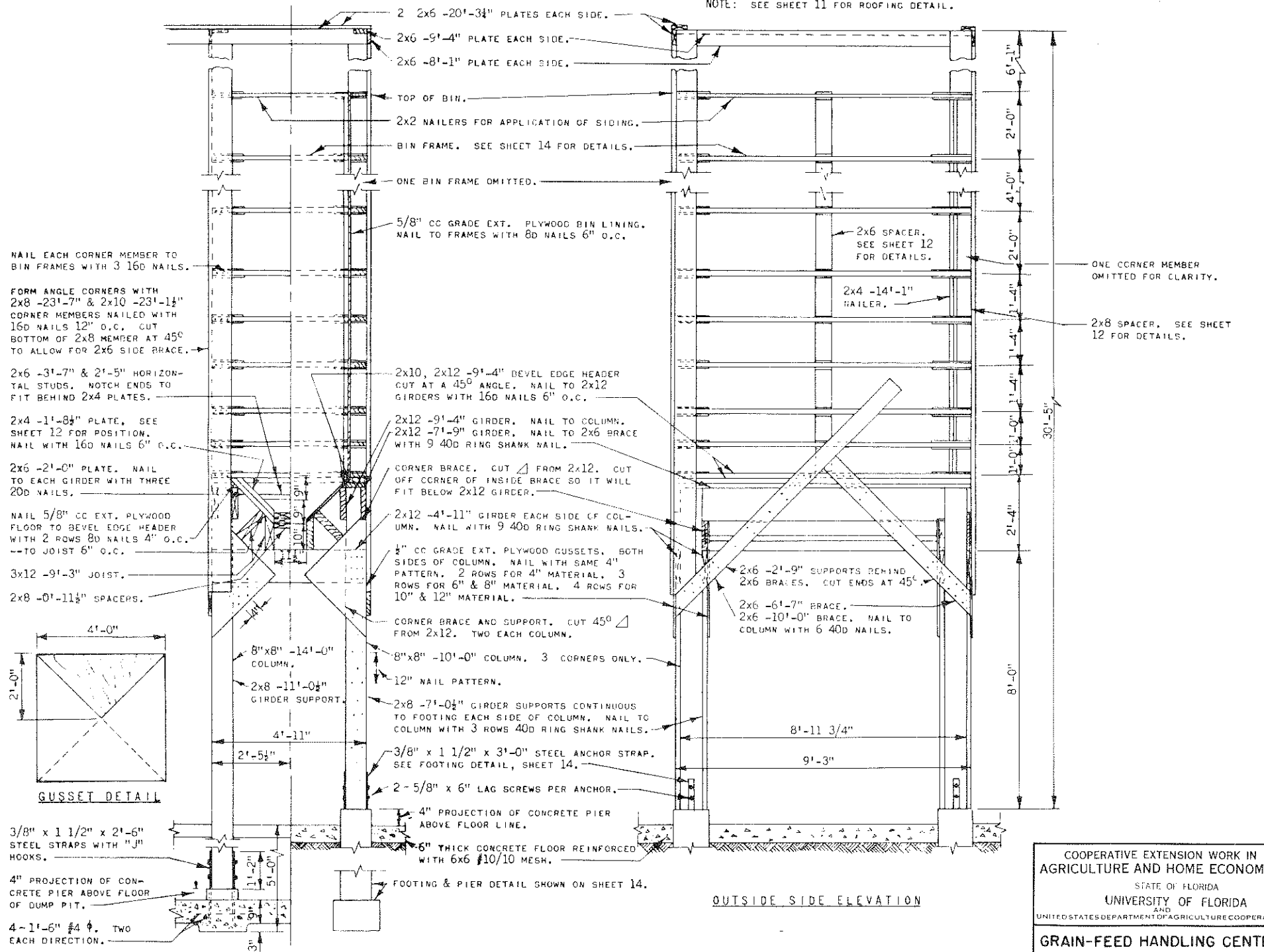
COOPERATIVE EXTENSION WORK IN
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IND. '69 EX. 6069 SHEET 12 OF 14

NOTE: SEE SHEET 11 FOR ROOFING DETAIL.



NAIL EACH CORNER MEMBER TO BIN FRAMES WITH 3 16D NAILS.

FORM ANGLE CORNERS WITH 2x8 -23'-7" & 2x10 -23'-1 1/4" CORNER MEMBERS NAILED WITH 16D NAILS 12" O.C. CUT BOTTOM OF 2x8 MEMBER AT 45° TO ALLOW FOR 2x6 SIDE BRACE.

2x6 -3'-7" & 2'-5" HORIZONTAL STUDS. NOTCH ENDS TO FIT BEHIND 2x4 PLATES.

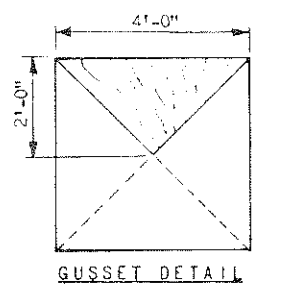
2x4 -1'-8 1/2" PLATE. SEE SHEET 12 FOR POSITION. NAIL WITH 16D NAILS 6" O.C.

2x6 -2'-0" PLATE. NAIL TO EACH GIRDER WITH THREE 20D NAILS.

NAIL 5/8" CC EXT. PLYWOOD FLOOR TO BEVEL EDGE HEADER WITH 2 ROWS 8D NAILS 4" O.C. -- TO JOIST 6" O.C.

3x12 -9'-3" JOIST.

2x8 -0'-11 1/2" SPACERS.



3/8" x 1 1/2" x 2'-6" STEEL STRAPS WITH "J" HOOKS.

4" PROJECTION OF CONCRETE PIER ABOVE FLOOR OF DUMP PIT.

4 - 1'-6" #4 φ. TWO EACH DIRECTION.

HALF END ELEVATION - HALF SECTION

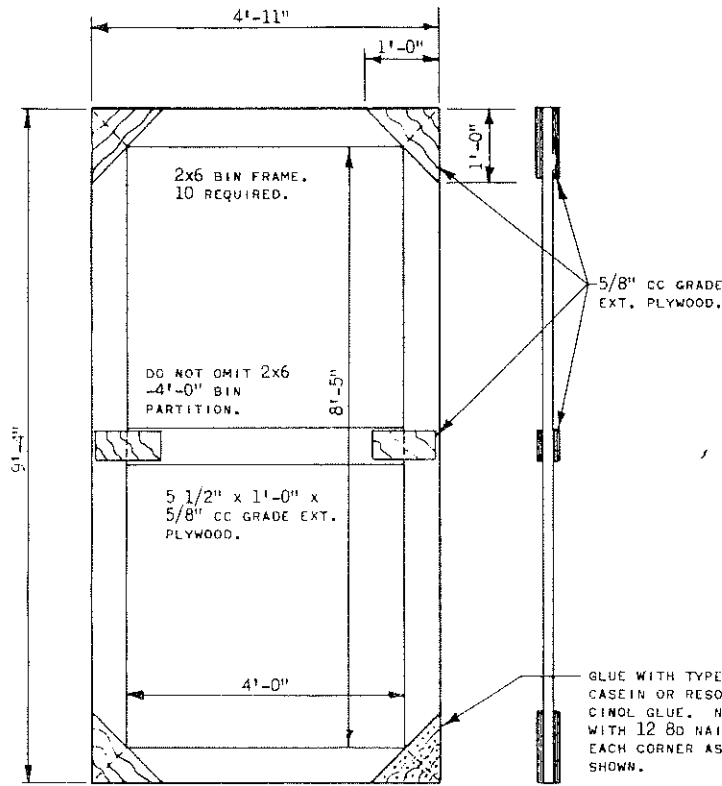
OUTSIDE SIDE ELEVATION

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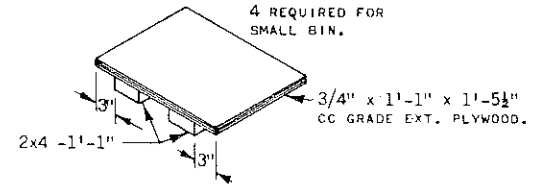
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| IND. | '69 | EX. 6069 | SHEET 13 OF 14 |
| EXT. AGR. ENGINEER - GAINESVILLE, FLORIDA | | | |

NOTE: THE BOTTOM BIN FRAME IS CONSTRUCTED WITH PLYWOOD ONE SIDE ONLY. SEE SECTION DETAIL SHEET 13.

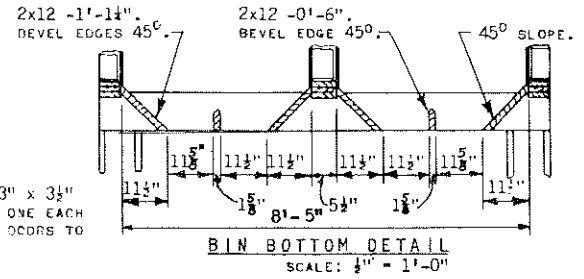
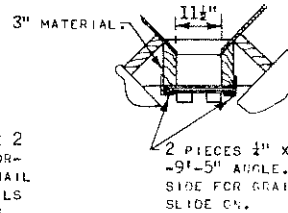


BIN FRAME DETAIL
SCALE: 3/4" = 1'-0"

NOTE: COMMERCIAL CLOSURES OR OTHER SLIDE ARRANGEMENT MAY BE USED.

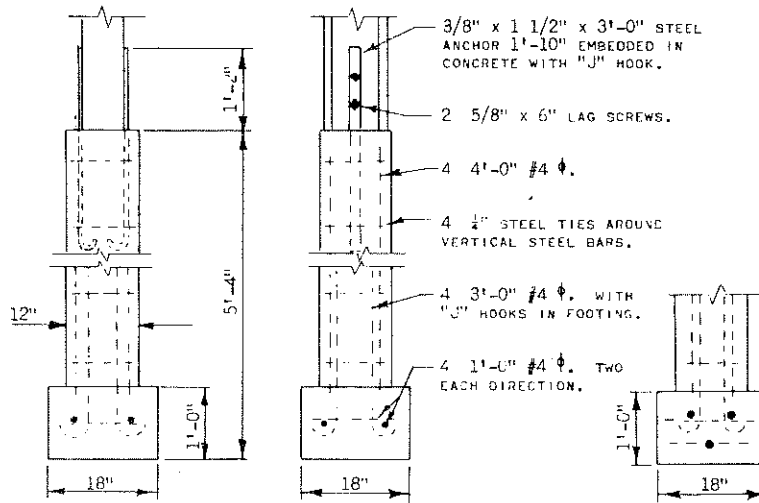


GRAIN DOOR DETAIL
SCALE: 1' = 1'-0"

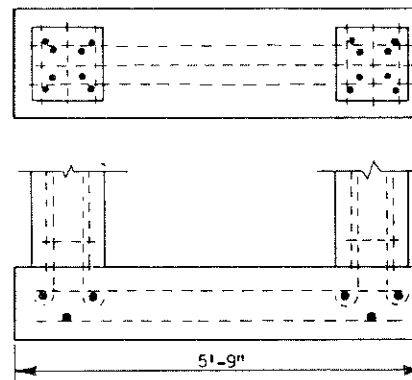


BIN BOTTOM DETAIL
SCALE: 1/2" = 1'-0"

SEE SHEET 13 FOR DETAILS OF THE SHORT FOOTING.



FOOTING DETAIL
SCALE: 3/4" = 1'-0"



OPTIONAL FOOTING DETAIL
SCALE: 3/4" = 1'-0"

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