

This plan was developed and prepared by:
 BRUCE A. MCKENZIE AND JOHN E. MENTZER,
 Extension Agricultural Engineers, and
 W. H. FRIDAY, Assistant Professor,
 Agricultural Engineering Department,
 Purdue University, Lafayette, Indiana.

It was originally published by Purdue
 University as Plan No. P/3294 and is
 reprinted with approval.

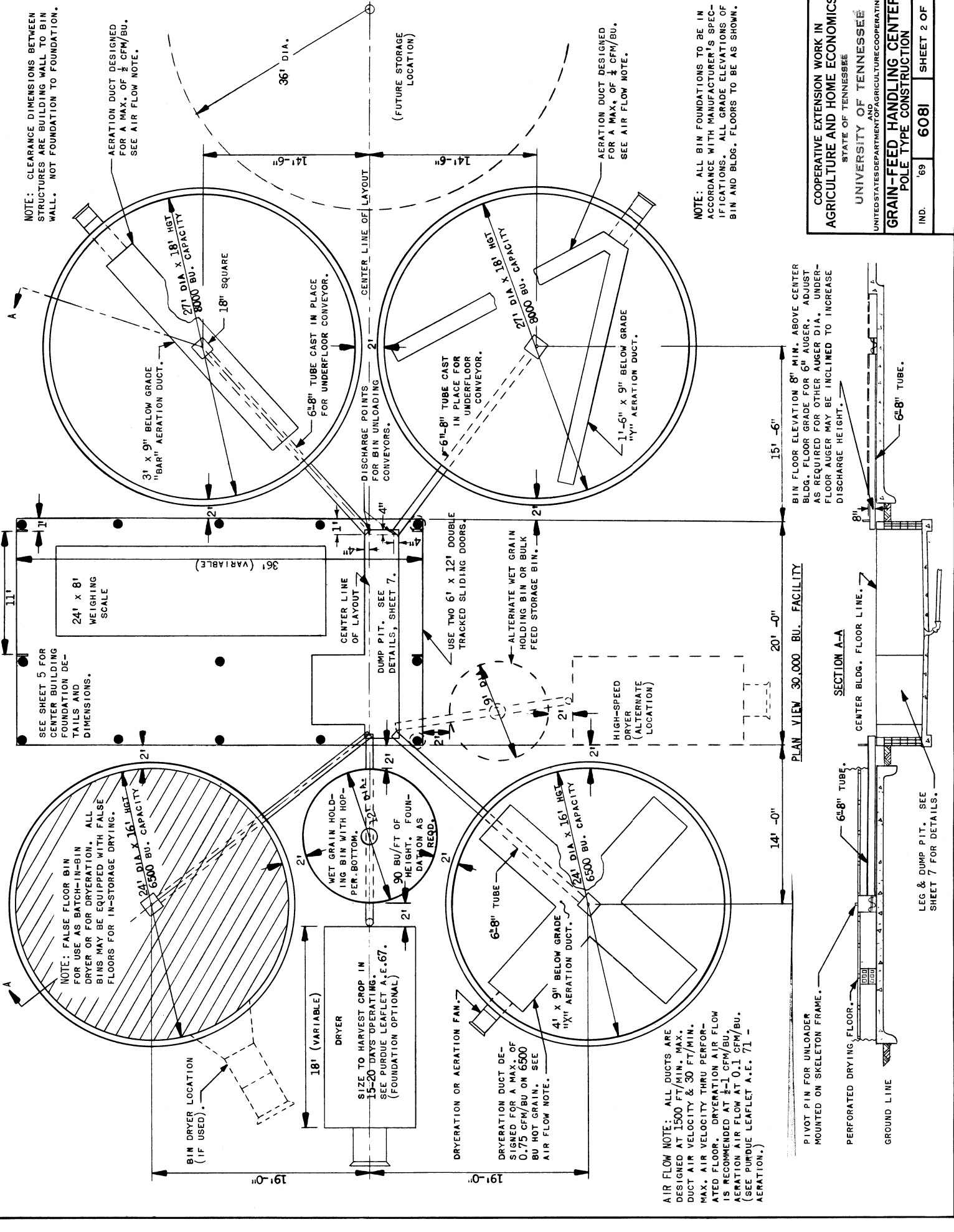
COOPERATIVE EXTENSION WORK IN
 AGRICULTURE AND HOME ECONOMICS
 STATE OF TENNESSEE
 UNIVERSITY OF TENNESSEE
 UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

GRAIN-FEED HANDLING CENTER
 POLE-TYPE CONSTRUCTION

IND. '69 6081 SHEET 1 OF 9

LAYOUT & MECHANIZATION SCHEMATIC

MF5 73294



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

AERATION DUCT DESIGNED FOR A MAX. OF $\frac{1}{2}$ CFM/BU. SEE AIR FLOW NOTE.

AERATION DUCT DESIGNED FOR A MAX. OF $\frac{1}{2}$ CFM/BU. SEE AIR FLOW NOTE.

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

SEE SHEET 5 FOR CENTER BUILDING FOUNDATION DETAILS AND DIMENSIONS.

24' x 8' WEIGHING SCALE

NOTE: FALSE FLOOR BIN FOR USE AS BATCH-IN-BIN DRYER OR FOR DRYERATION. ALL BINS MAY BE EQUIPPED WITH FALSE FLOORS FOR IN-STORAGE DRYING.

BIN DRYER LOCATION (IF USED).

DRYER
SIZE TO HARVEST CROP IN 15-20 DAYS OPERATING. SEE PURDUE LEAFLET A.E. 67. (FOUNDATION OPTIONAL).

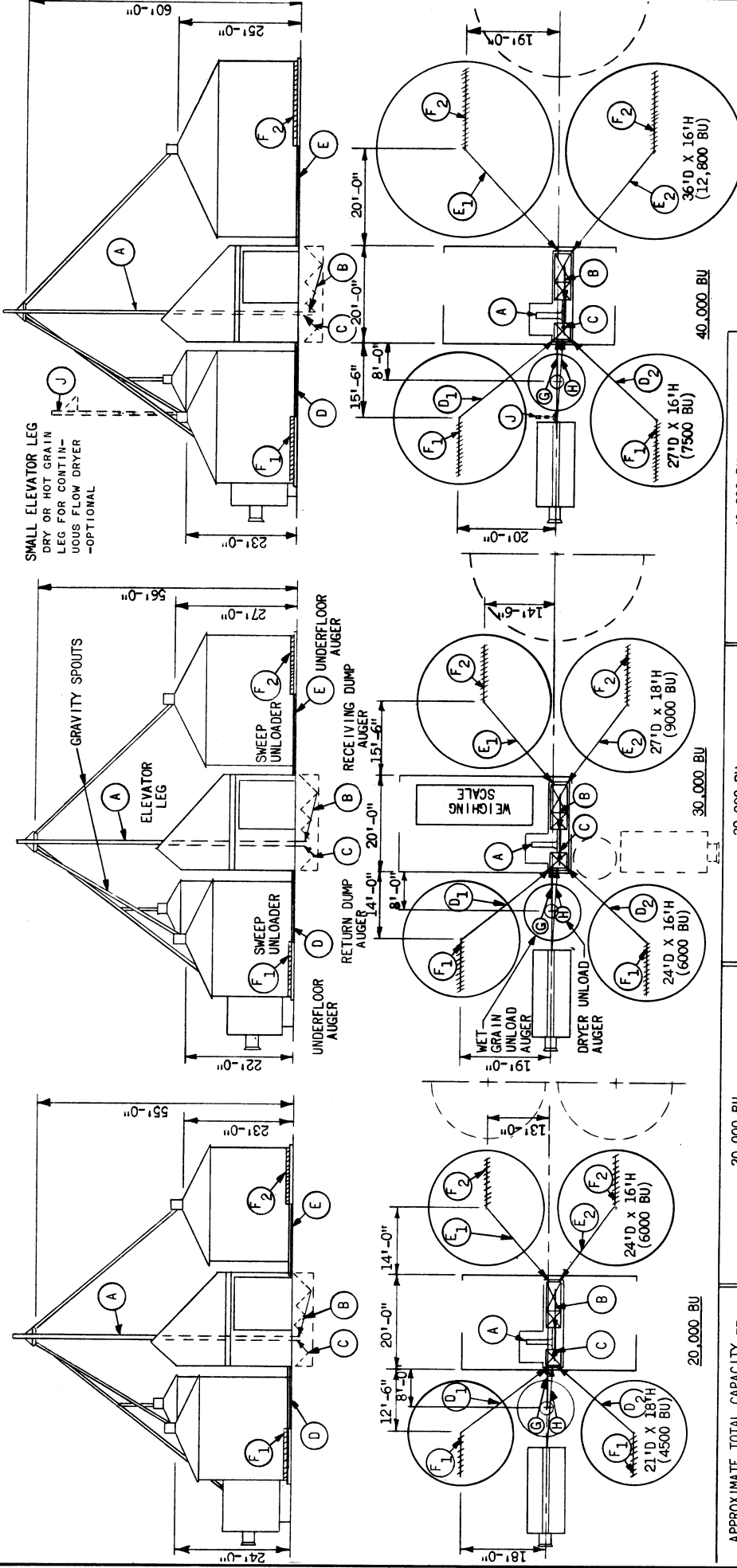
DRYERATION OR AERATION FAN.
DRYERATION DUCT DESIGNED FOR A MAX. OF 0.75 CFM/BU ON 6500 BU HOT GRAIN. SEE AIR FLOW NOTE.

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 $\frac{1}{2}$ -1 CFM/BU. AERATION AIR FLOW AT 0.1 CFM/BU. (SEE PURDUE LEAFLET A.E. 71 - AERATION.)

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

SECTION A-A

LEG & DUMP PIT. SEE SHEET 7 FOR DETAILS.



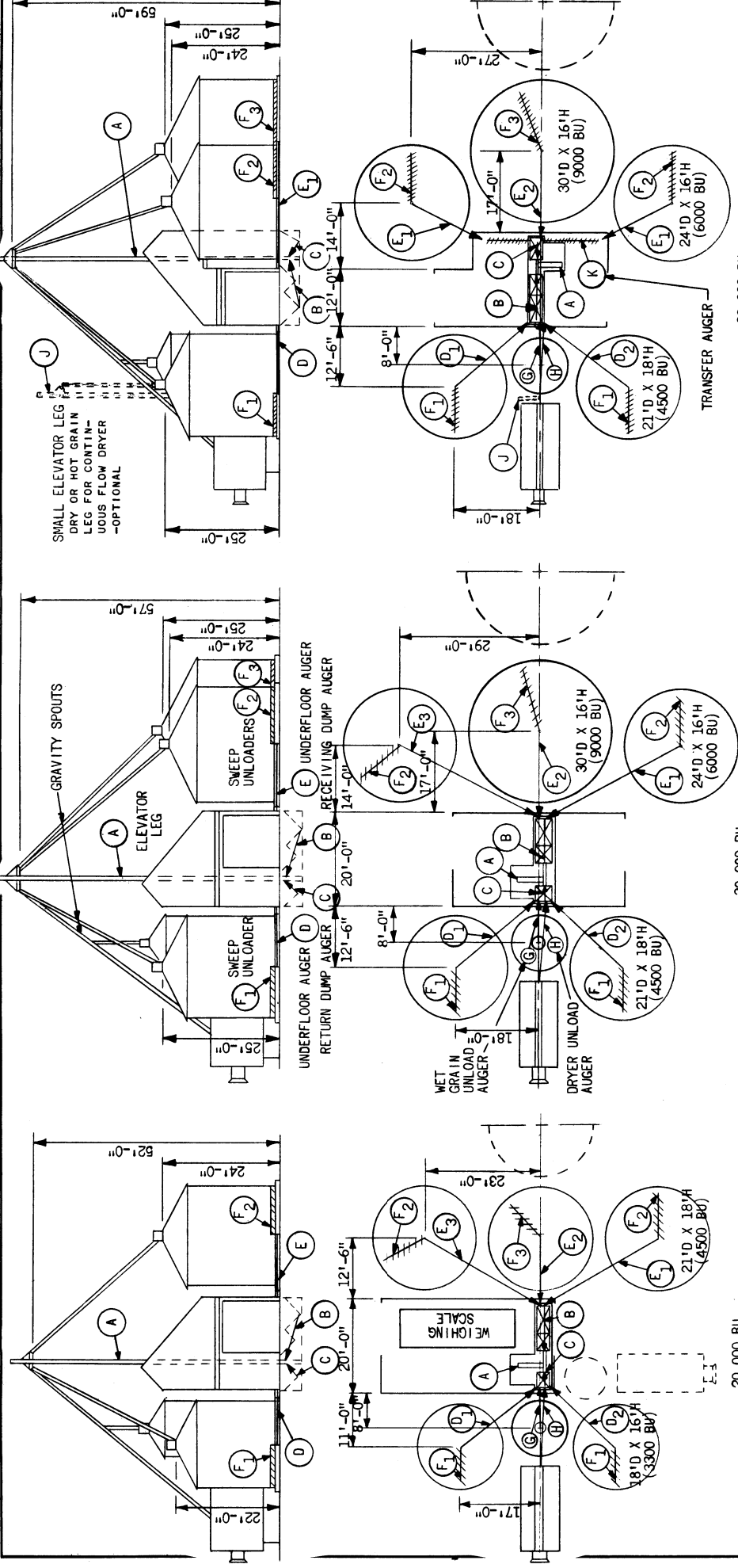
- HANDLING FLOW RATES ILLUSTRATED ARE WORKABLE COMBINATIONS AND NOT LIMITED TO EACH SPECIFIC FACILITY.
- AUGER INTAKE EXPOSURE MATCHED TO CAPACITY--MINIMUM EXPOSURE = AUGER DIA.; MAXIMUM EXPOSURE 2 1/2'. ADDITIONAL EXPOSURE INCREASES HORSEPOWER, NOT CAPACITY.
- SWEEP UNLOADER CAPACITIES GIVEN FOR UNITS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

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
STATE OF TENNESSEE
UNIVERSITY OF TENNESSEE
AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

GRAIN-FEED HANDLING CENTER
POLE TYPE CONSTRUCTION

IND. '69 **6081** SHEET 3 OF 9

APPROXIMATE TOTAL CAPACITY -- ALTERNATIVE HANDLING RATES --	20,000 BU			30,000 BU			40,000 BU		
	CODE	LENGTH OR HEIGHT	ESTIMATED CAPACITY BU/HR	CODE	LENGTH OR HEIGHT	ESTIMATED CAPACITY BU/HR	CODE	LENGTH OR HEIGHT	ESTIMATED CAPACITY BU/HR
ELEVATOR LEG	A	55'	1000-1200	A	56'	1500-2000	A	60'	2500-3000
GRAVITY SPOUTS	B	11'	1200(WET)	B	11'	3-5	B	11'	3-5
RECEIVING DUMP AUGER	C	4'	1200(WET)	C	4'	1	C	4'	1 1/2
RETURN DUMP AUGER	D1	23'	1000-1200	D1	24'	3	D1	26'	5
UNDERFLOOR AUGER	D2	21'	1000-1200	D2	22'	3	D2	24'	5
UNDERFLOOR AUGER	E1	20'	1000-1200	E1	22'	3	E1	30'	5
UNDERFLOOR AUGER	E2	18'	1000-1200	E2	20'	3	E2	28'	5
SWEEP UNLOADERS	F1	10'	1000	F1	11 1/2'	1000-1200	F1	13'	1 1/2
SWEEP UNLOADERS	F2	11 1/2'	1000	F2	13'	1000-1200	F2	17 1/2'	2
WET GRAIN UNLOAD AUGER	G	10'	1000-1200	G	10'	1500-2000	G	10'	2
DRYER UNLOAD AUGER	H	18'	1000-1200	H	18'	2	H	18'	3
SMALL ELEVATOR LEG (FOR CONT. FLOW DRYER)	J	45'	(SEE RIGHT)	J	44'	3	J	48'	1



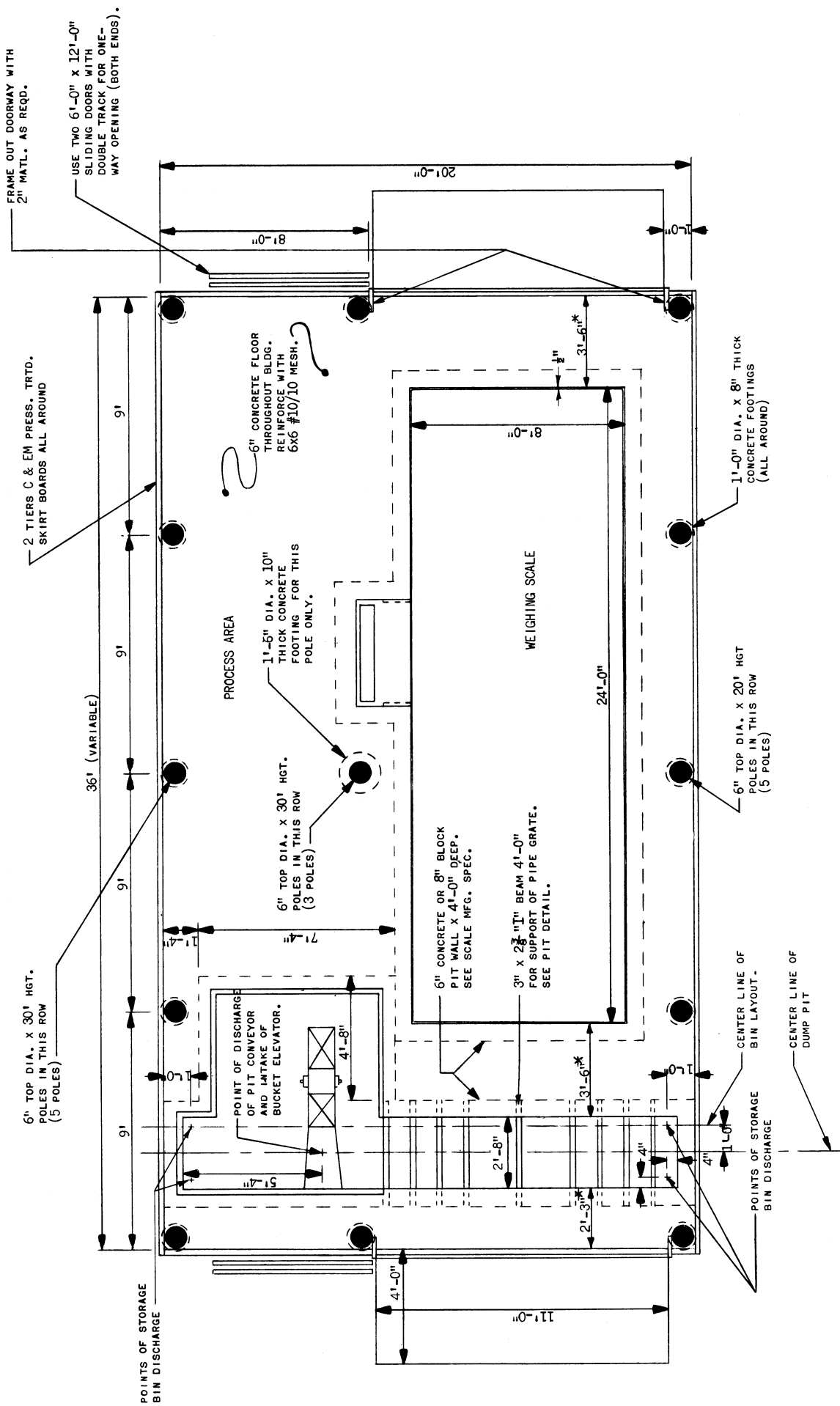
GRAIN HANDLING EQUIPMENT	20,000 BU			30,000 BU			30,000 BU			
	APPROXIMATE TOTAL CAPACITY-- ALTERNATIVE HANDLING RATES--	1000-1200 BU/HR FLOW RATE	2500-3000 BU/HR FLOW RATE	2500-3000 BU/HR FLOW RATE	3000-3000 BU/HR FLOW RATE	2500-3000 BU/HR FLOW RATE	3000-3000 BU/HR FLOW RATE	3000-3000 BU/HR FLOW RATE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

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

COOPERATIVE EXTENSION WORK IN
 AGRICULTURE AND HOME ECONOMICS
 STATE OF TENNESSEE
 UNIVERSITY OF TENNESSEE
 UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

**GRAIN-FEED HANDLING CENTER
 POLE TYPE CONSTRUCTION**

IND. '69 6081 SHEET 4 OF 9



FRAME OUT DOORWAY WITH 2" MATL. AS REQD.

USE TWO 6'-0" X 12'-0" SLIDING DOORS WITH DOUBLE TRACK FOR ONE-WAY OPENING (BOTH ENDS).

2 TIERS C & EM PRESS. TRTD. SKIRT BOARDS ALL AROUND

6" TOP DIA. X 30' HGT. POLES IN THIS ROW (5 POLES)

361 (VARIABLE)

POINTS OF STORAGE BIN DISCHARGE

PROCESS AREA

6" CONCRETE FLOOR THROUGHOUT BLDG. REINFORCE WITH 6X6 #10/10 MESH.

1 1/2" DIA. X 10" THICK CONCRETE FOOTING FOR THIS POLE ONLY.

6" TOP DIA. X 30' HGT. POLES IN THIS ROW (3 POLES)

POINT OF DISCHARGE OF PIT CONVEYOR AND INTAKE OF BUCKET ELEVATOR.

6" CONCRETE OR 8" BLOCK PIT WALL X 41'-0" DEEP. SEE SCALE MFG. SPEC.

3" X 2 3/8" BEAM 41'-0" FOR SUPPORT OF PIPE GRATE. SEE PIT DETAIL.

WEIGHING SCALE

24'-0"

6" TOP DIA. X 20' HGT POLES IN THIS ROW (5 POLES)

1 1/2" DIA. X 8" THICK CONCRETE FOOTINGS (ALL AROUND)

CENTER LINE OF BIN LAYOUT.

CENTER LINE OF DUMP PIT

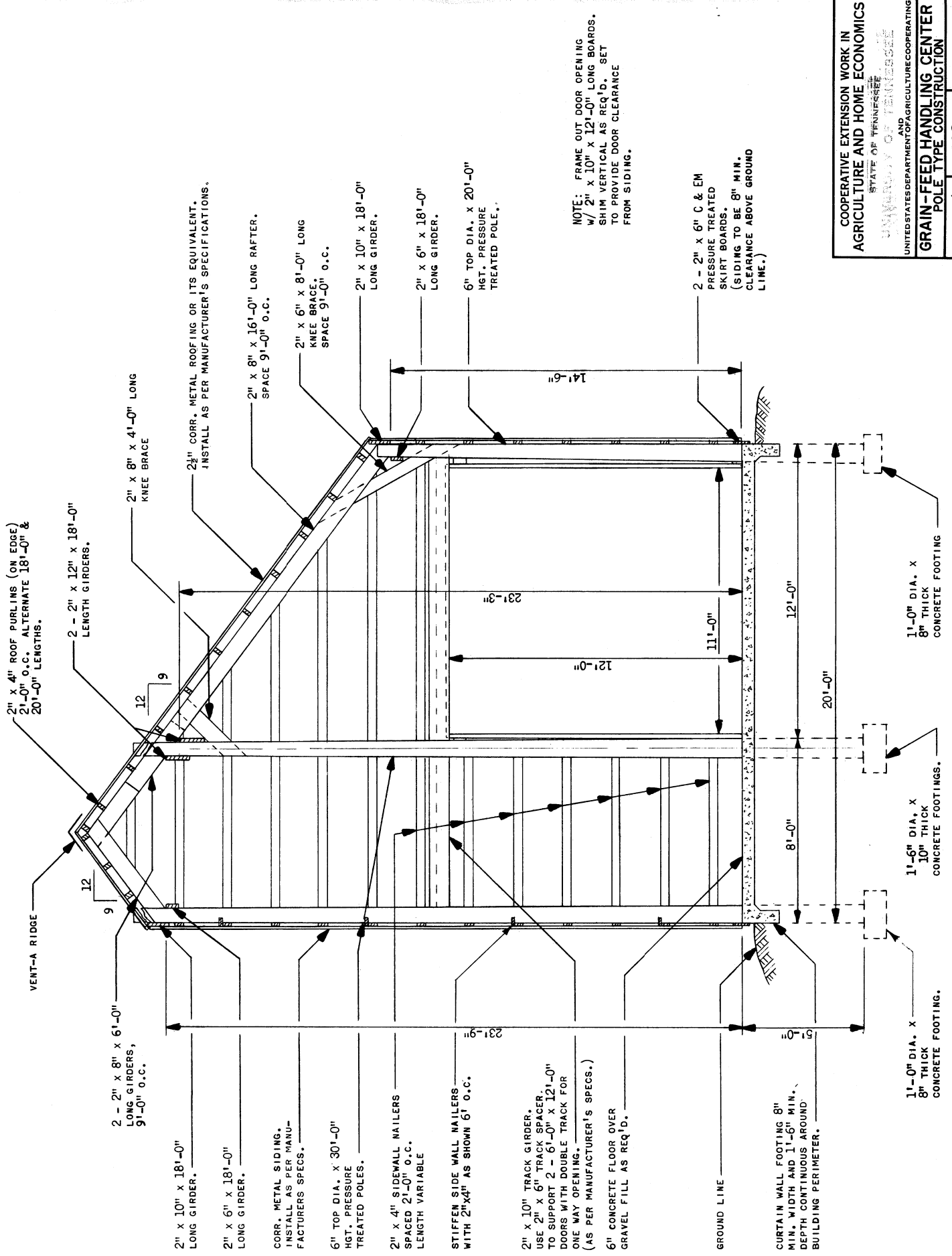
FLOOR & FOUNDATION PLAN

*NOTE: 4'-0" CLEARANCE IS MORE DESIRABLE TO REDUCE SNOW AND GRAIN FLOW PATTERNS. INCREASE BUILDING LENGTH TO ACCOMPLISH.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS STATE OF TENNESSEE UNIVERSITY OF TENNESSEE UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

GRAIN-FEED HANDLING CENTER POLE-TYPE CONSTRUCTION

IND. '69 6081 SHEET 5 OF 9



NOTE: FRAME OUT DOOR OPENING
w/ 2" x 10" x 12'-0" LONG BOARDS.
SHIM VERTICAL AS REQ'D. SET
TO PROVIDE DOOR CLEARANCE
FROM SIDING.

2" x 4" ROOF PURLINS (ON EDGE)
21'-0" O.C. ALTERNATE 18'-0" &
20'-0" LENGTHS.

2 - 2" x 12" x 18'-0"
LENGTH GIRDERS.

2" x 8" x 4'-0" LONG
KNEE BRACE

2 1/2" CORR. METAL ROOFING OR ITS EQUIVALENT.
INSTALL AS PER MANUFACTURER'S SPECIFICATIONS.

2" x 8" x 16'-0" LONG RAFTER,
SPACE 9'-0" O.C.

2" x 6" x 8'-0" LONG
KNEE BRACE,
SPACE 9'-0" O.C.

2" x 10" x 18'-0"
LONG GIRDER.

2" x 6" x 18'-0"
LONG GIRDER.

6" TOP DIA. x 20'-0"
HGT. PRESSURE
TREATED POLE.

2 - 2" x 6" C & EM
PRESSURE TREATED
SKIRT BOARDS.
(SIDING TO BE 8" MIN.
CLEARANCE ABOVE GROUND
LINE.)

VENT-A-RIDGE

2 - 2" x 8" x 6'-0"
LONG GIRDERS,
9'-0" O.C.

2" x 10" x 18'-0"
LONG GIRDER.

2" x 6" x 18'-0"
LONG GIRDER.

CORR. METAL SIDING,
INSTALL AS PER MANU-
FACTURERS SPECS.

6" TOP DIA. x 30'-0"
HGT. PRESSURE
TREATED POLES.

2" x 4" SIDEWALL NAILERS
SPACED 2'-0" O.C.
LENGTH VARIABLE

STIFFEN SIDE WALL NAILERS
WITH 2"x4" AS SHOWN 6' O.C.

2" x 10" TRACK GIRDER.
USE 2" x 6" TRACK SPACER.
TO SUPPORT 2 - 6'-0" x 12'-0"
DOORS WITH DOUBLE TRACK FOR
ONE WAY OPENING.
(AS PER MANUFACTURER'S SPECS.)

6" CONCRETE FLOOR OVER
GRAVEL FILL AS REQ'D.

GROUND LINE

CURTAIN WALL FOOTING 8"
MIN. WIDTH AND 1'-6" MIN.
DEPTH CONTINUOUS AROUND
BUILDING PERIMETER.

1'-6" DIA. x
10" THICK
CONCRETE FOOTINGS.

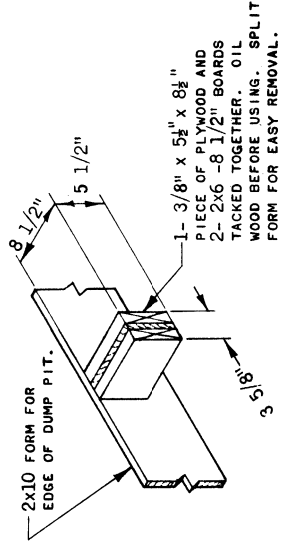
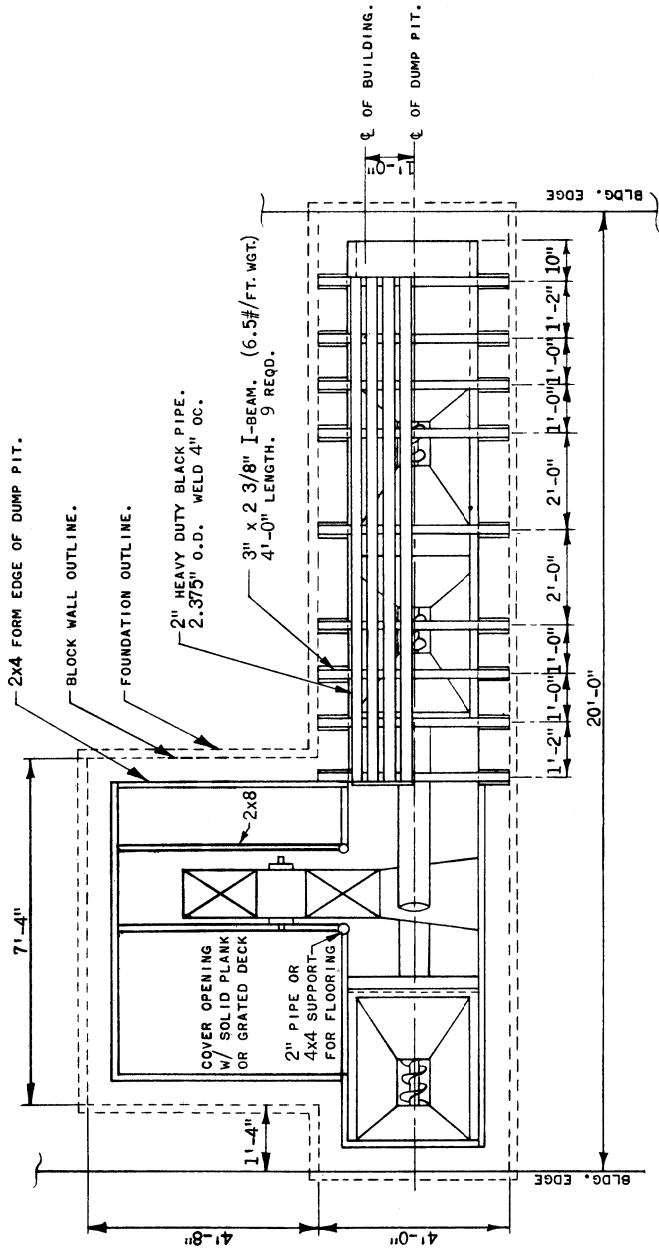
1'-0" DIA. x
8" THICK
CONCRETE FOOTING

1'-0" DIA. x
8" THICK
CONCRETE FOOTING

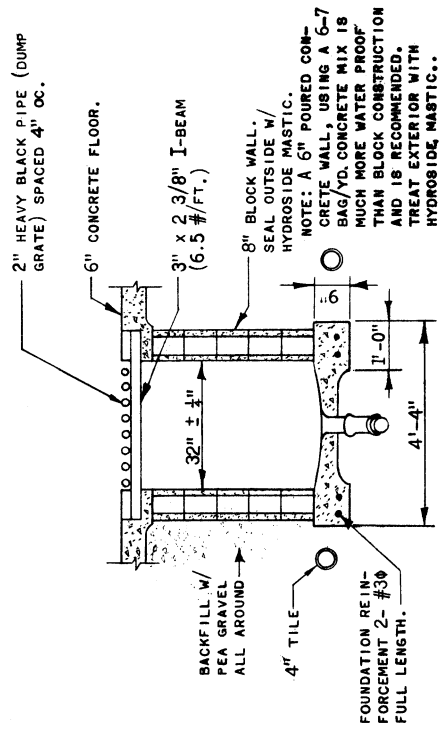
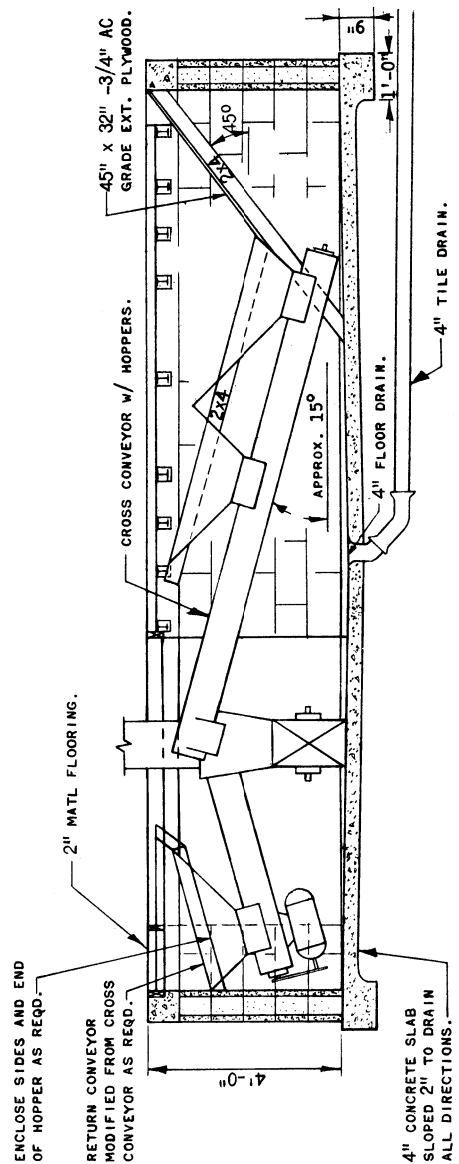
TYPICAL SECTION VIEW

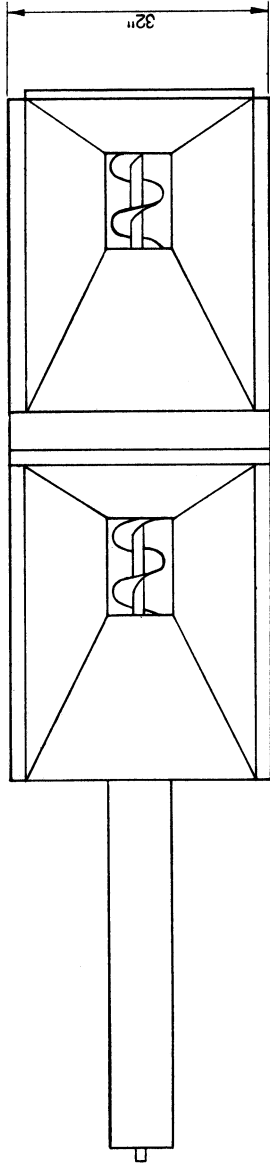
COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
STATE OF TENNESSEE
UNIVERSITY OF TENNESSEE
AND
UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

IND. '69 6081 SHEET 6 OF 9

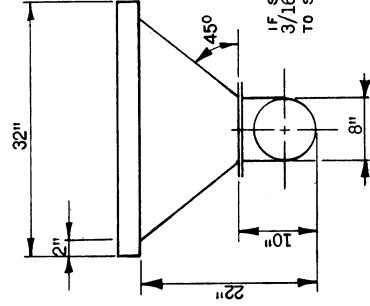
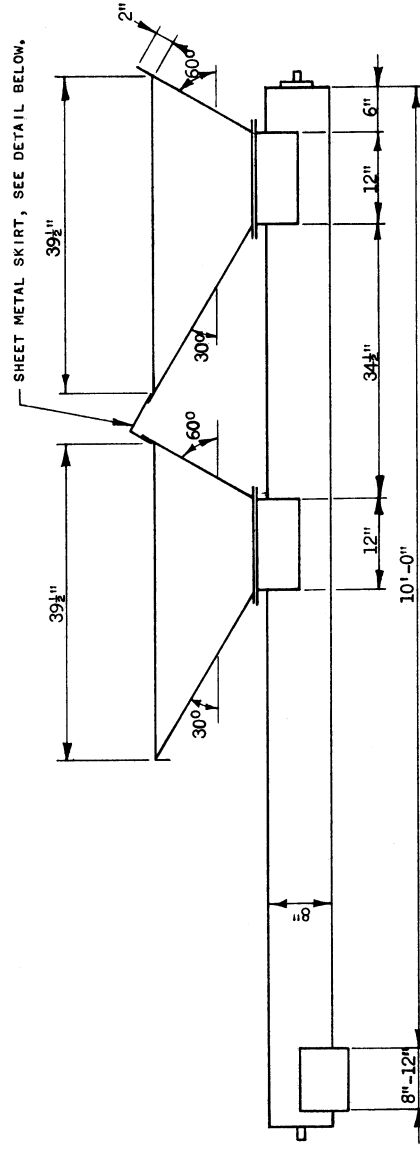


I-BEAM NOTCH FORMING DETAIL

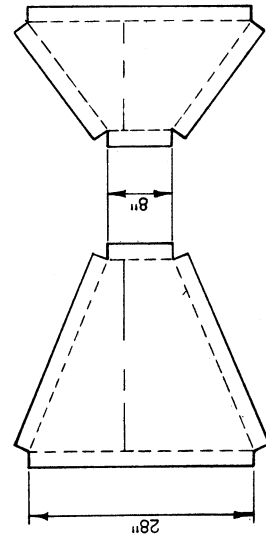




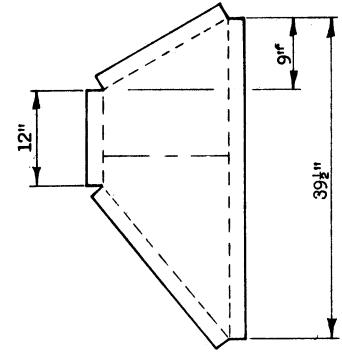
SHEET METAL SKIRT, SEE DETAIL BELOW.



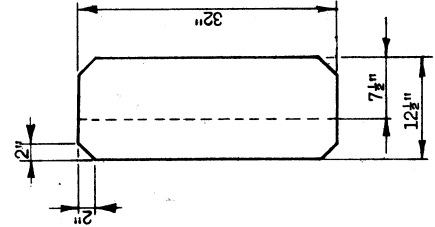
IF SLIDE IS DESIRED, USE 3/16" X 3/4" BAR STOCK TO SPACE EACH SIDE.



HOPPER END PANELS

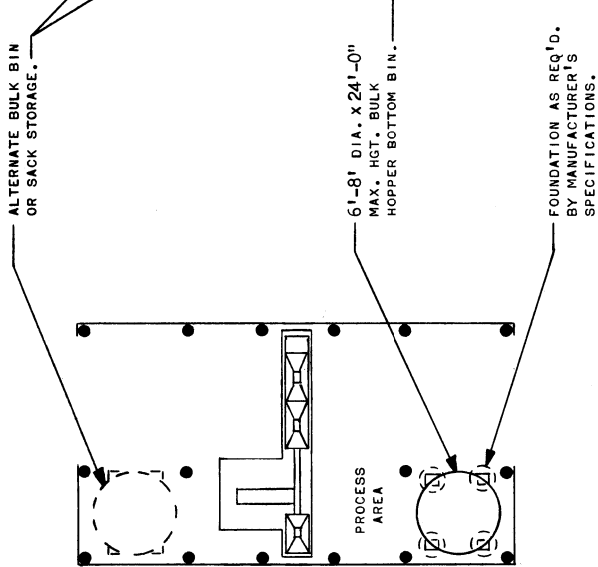
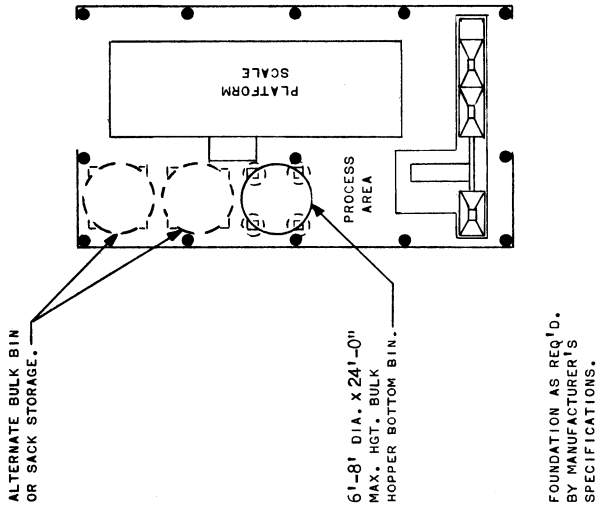
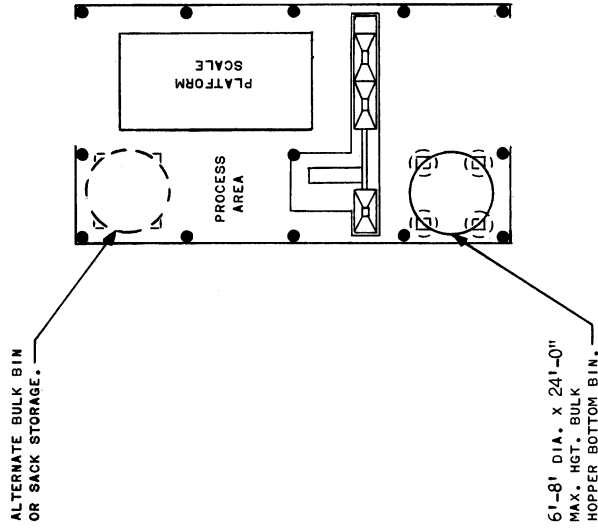


HOPPER SIDE PANELS



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.



FOUNDATION AS REQ'D. BY MANUFACTURER'S SPECIFICATIONS.

