

MO-FLEX FARROWING BUILDING PLAN  
 PREPARED FOR: MISSOURI PLAN SERVICE  
 PLAN NUMBER: M03-726-94C1

DEVELOPED BY:

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AGRICULTURAL ENGINEERING DEPARTMENT  
 UNIVERSITY OF MISSOURI - COLUMBIA

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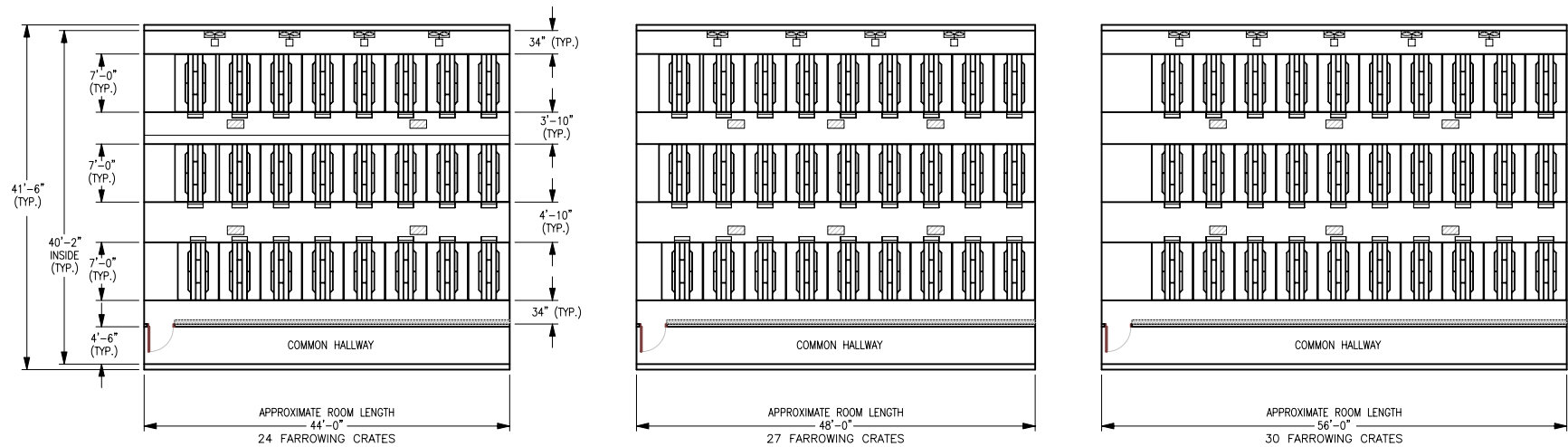
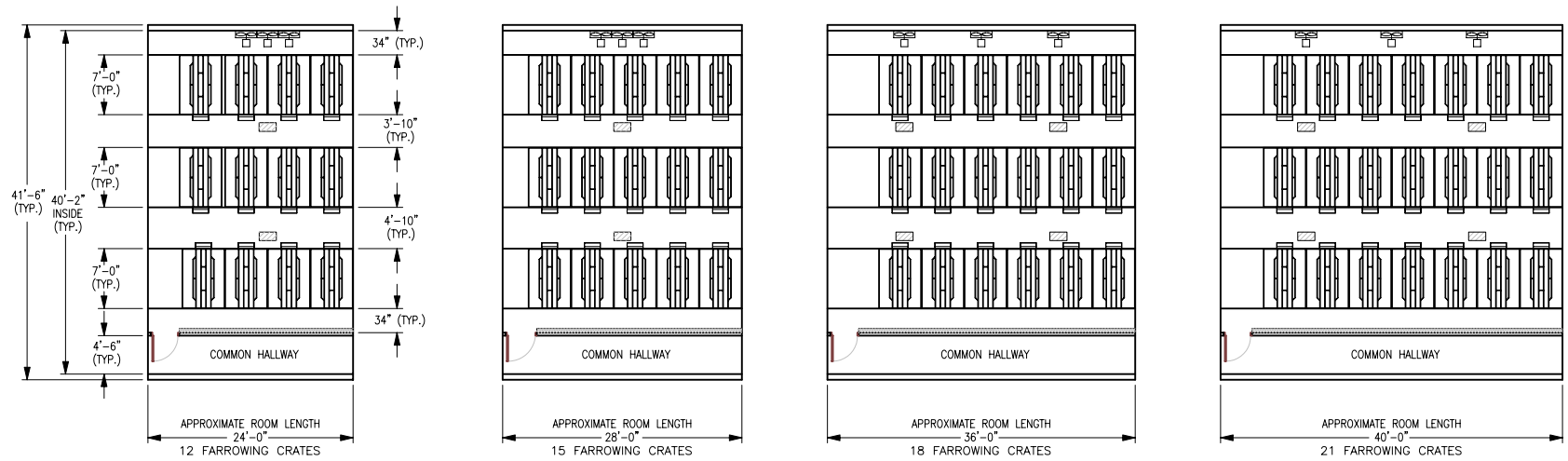
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- ASSURANCE OF COMPLIANCE WITH LOCAL CODES AND REGULATIONS;
- DEVELOPMENT AND/OR REVIEW OF SPECIFICATIONS FOR MATERIALS AND EQUIPMENT;
- SELECTION OF PROPER SITE PROVIDING ADEQUATE NATURAL RESOURCE BASE;
- SUPERVISION OF SITE PREPARATION, BID LETTING AND CONSTRUCTION;
- DEVELOPMENT OF A MANURE STORAGE SYSTEM AND MANURE MANAGEMENT PLAN;
- AND PROVISIONS FOR UTILITIES, ROADS AND/OR OTHER ACCESS.



**FARROWING ROOM FLOOR PLANS**

SCALE: 1" = 10'-0"

**LEGEND FOR VENTILATION LAYOUT**

-  **EXHAUST FAN LOCATION**
-  **WINTER CEILING INLET LOCATION**
-  **SUMMER INLET LOCATION**

NOTES: 1. SEE MANUAL FOR ADDITIONAL DISCUSSION OF VENTILATION SYSTEM REQUIREMENTS AND PERFORMANCE RECOMMENDATIONS.  
 2. SELECTED MANURE HANDLING OPTION IMPACTS WINTER MINIMUM VENTILATION DESIGN REQUIREMENTS. SEE MANUAL FOR ADDITIONAL DISCUSSION.

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**FARROWING ROOM FLOOR PLAN OPTIONS**

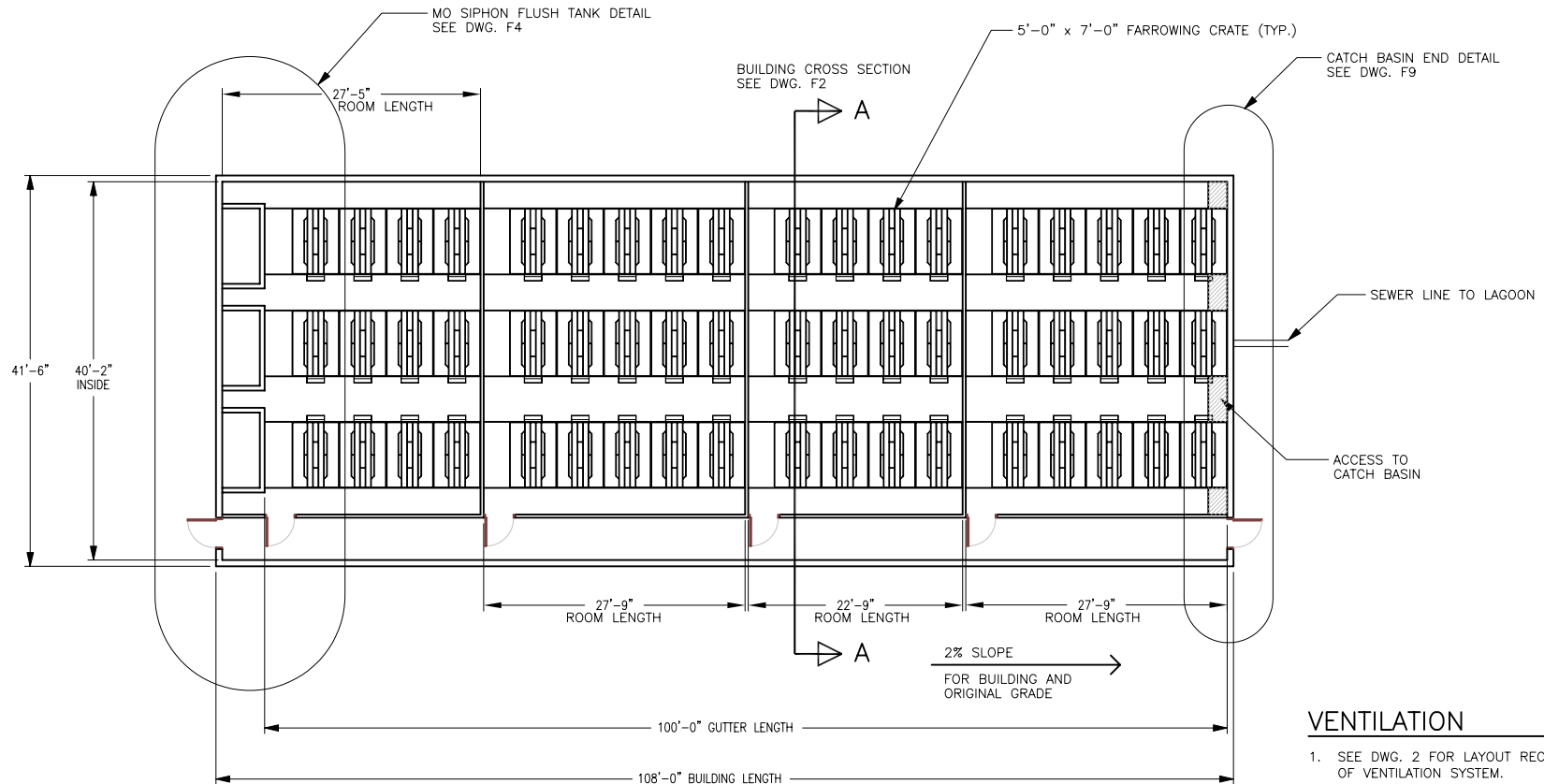
**MO-FLEX FARROWING BUILDING PLAN**

COOPERATIVE EXTENSION SERVICE  
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 UNIVERSITY EXTENSION — COMMERCIAL AGRICULTURE PROGRAM  
 UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

DESIGNED BY: <b>JMZ</b>	DRAWN BY: <b>TDT/CMA</b>	CHECKED BY: <b>JMZ</b>
PLAN NO.: <b>MO3-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>1"=10'-0"</b>	SHEET <b>2 : 2 OF 20</b>	

# MO-FLEX FARROWING BUILDING FLUSH SYSTEM USING MO SIPHON TANKS

REVIEW ACCOMPANYING MANUAL FOR DISCUSSION ON MODIFYING BUILDING SIZE AND HOW TO INCLUDE MULTIPLE ROOMS



**FLUSH BUILDING FLOOR PLAN**

SCALE: 1" = 10'-0"

## VENTILATION

- SEE DWG. 2 FOR LAYOUT RECOMMENDATION OF VENTILATION SYSTEM.
- SEE MANUAL FOR VENTILATION SYSTEM PERFORMANCE RECOMMENDATIONS USING FLUSH SYSTEM.

## LIVESTOCK EQUIPMENT

- 2 - 12 CRATE FARROWING ROOMS
- 2 - 15 CRATE FARROWING ROOMS

## SITE SELECTION AND PREPARATION INFORMATION

- SOIL BUILDING PAD SHOULD BE ABOUT 10'-0" TO 20'-0" LONGER AND 10'-0" WIDER THAN BUILDING.
- SOIL BUILDING PAD SHOULD SLOPE 2% FROM TANK END TO BASIN END FOR GOOD FLUSHING PERFORMANCE.
- NO SLOPE ACROSS WIDTH OF SOIL BUILDING PAD SHOULD EXIST.
- BUILDING PROXIMITY TO OTHER SWINE BUILDINGS IMPACTS PIG PERFORMANCE AND SHOULD BE CONSIDERED.

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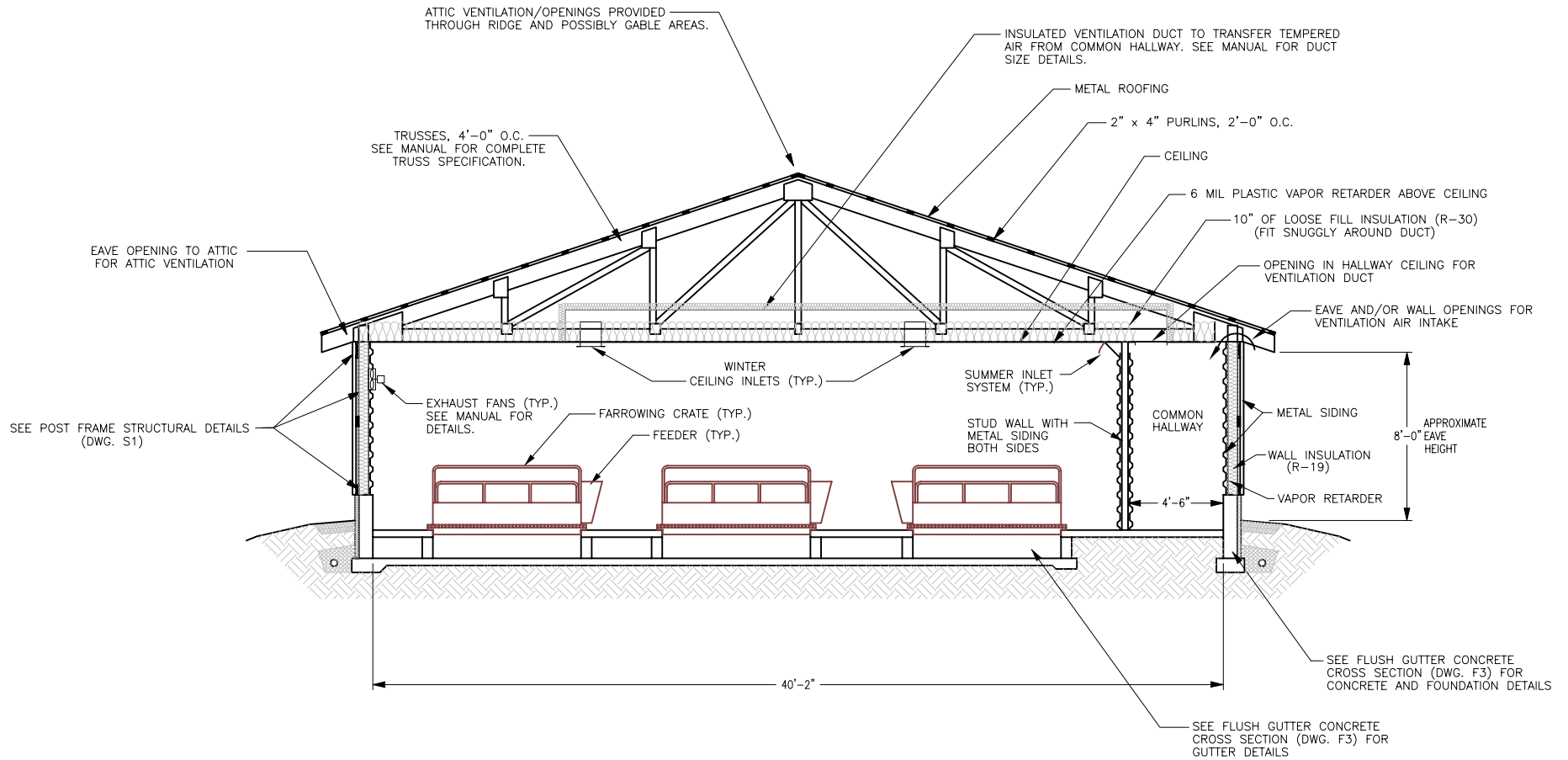
## FLOOR PLAN USING FLUSH AND MO SIPHON TANKS

### MO-FLEX FARROWING BUILDING PLAN

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UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>1"=10'-0"</b>	SHEET <b>F1 : 3 OF 20</b>	

# FLUSH BUILDING



FLUSH BUILDING CROSS SECTION

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

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## FLUSH BUILDING CROSS SECTION

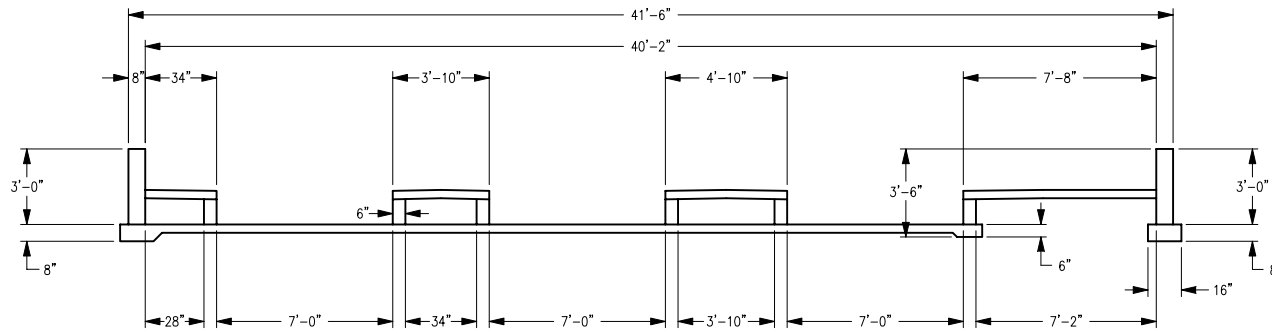
MO-FLEX FARROWING BUILDING PLAN

DESIGNED BY: **JMZ** DRAWN BY: **TDT/CMA** CHECKED BY: **JMZ**

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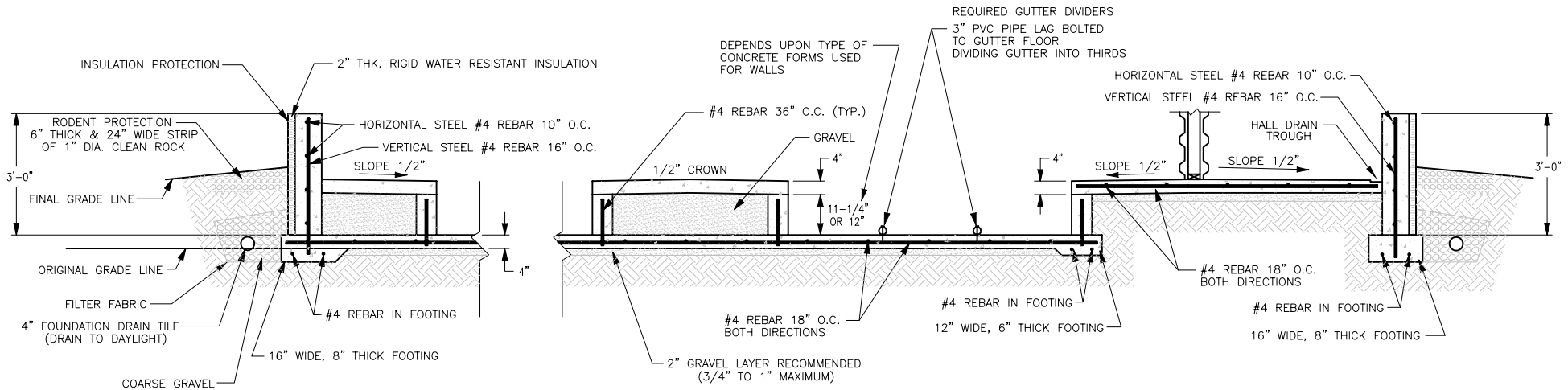
PLAN NO.: **M03-726-94C1** DATE: **9/94**

SCALE: **1/4"=1'-0"** SHEET **F2 : 4 OF 20**



**FLUSH GUTTER CONCRETE CROSS SECTION**

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



**SIDEWALL, GUTTER & GUTTER WALL DETAILS**

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

NOTE: 3-1/2" WIDE HALL DRAIN TROUGH SLOPES TO 2" DRAIN PIPES WHICH TRANSFER WATER FROM HALLWAY TO FLUSH GUTTER. DRAIN PIPES HAVE P-TRAPS AND ARE SPACED NO MORE THAN 20' APART.

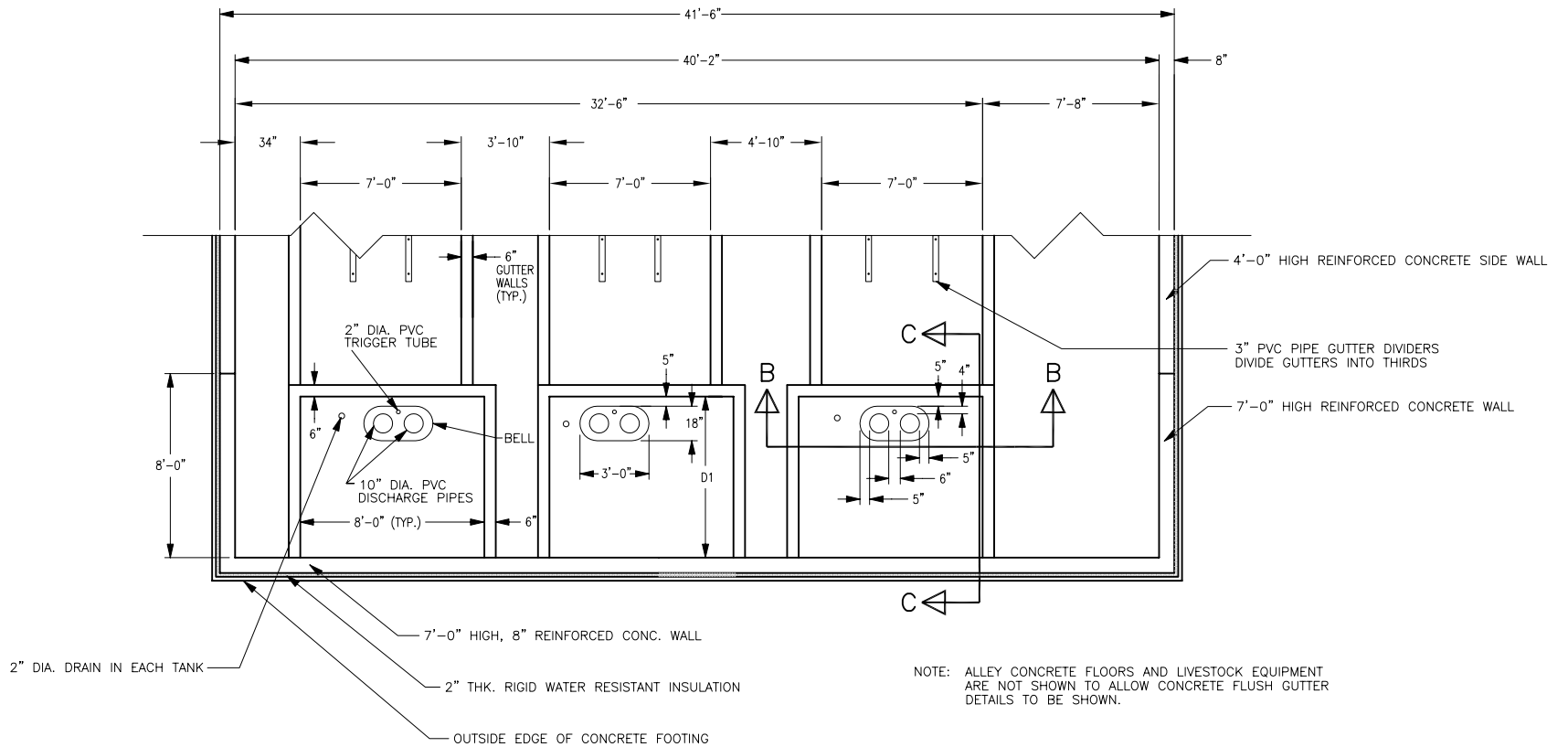
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**FLUSH GUTTER CONCRETE CROSS SECTION**

MO-FLEX FARROWING BUILDING PLAN

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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>AS SHOWN</b>	SHEET: <b>P3 : 5 OF 20</b>	



### MO SIPHON FLUSH TANK DETAIL

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

GUTTER LENGTH	TANK LENGTH D1	DIST. FROM FOOTER TO SUMP D2
UP TO 160'	4'-0"	14"
160'-200'	5'-0"	26"
201'-240'	6'-0"	38"
241'-280'	7'-0"	50"

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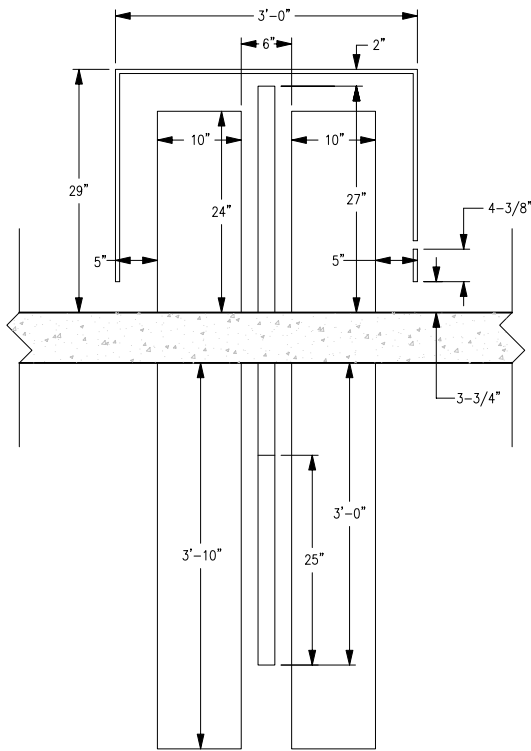
### MO SIPHON FLUSH TANK DETAIL

MO-FLEX FARROWING BUILDING PLAN

DESIGNED BY: **JMZ** DRAWN BY: **JMZ** CHECKED BY: **JMZ**

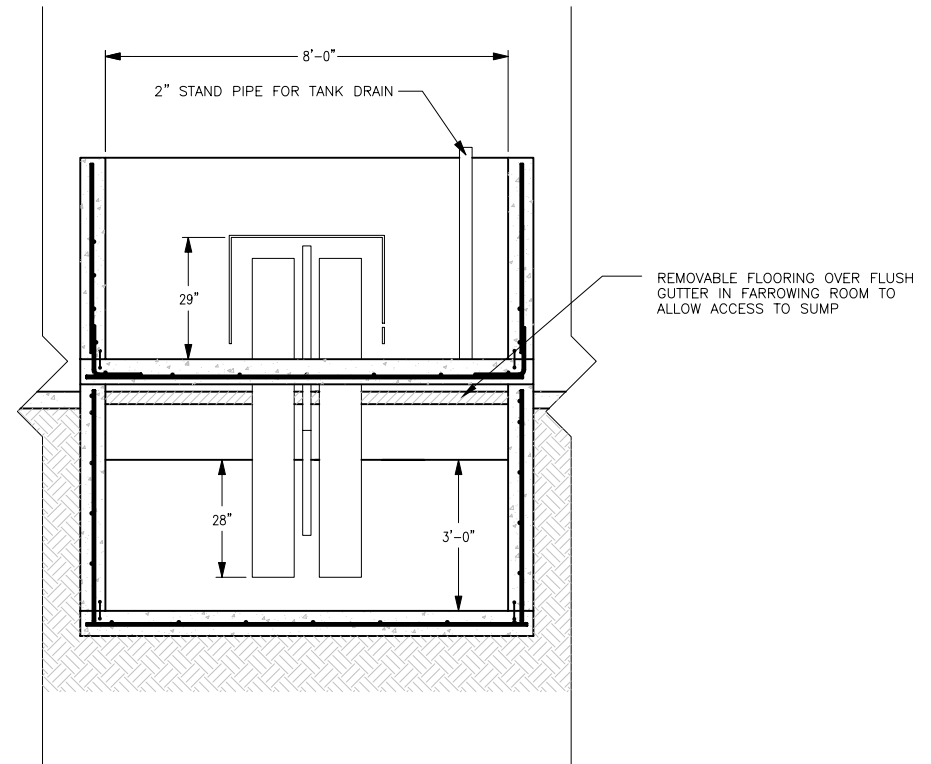
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PLAN NO.: **M03-726-94C1** DATE: **9/94**  
 SCALE: **AS SHOWN** SHEET: **F4 : 6 OF 20**



**PIPING DIMENSIONS**

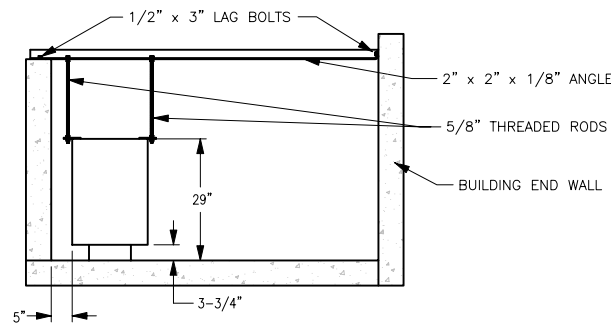
SCALE: 1" = 1'-0"



**SIPHON FLUSH TANK SECTION**

(SIPHON DETAILS)

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



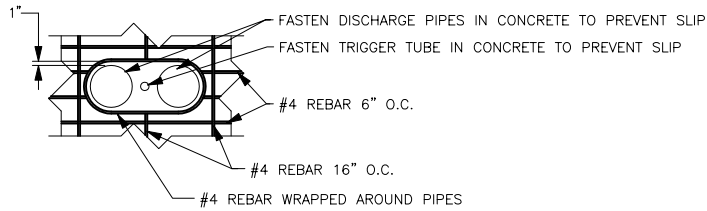
**BELL SECURING DETAIL**

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

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**TANK AND SUMP LONGITUDINAL SECTION (PART 1)**

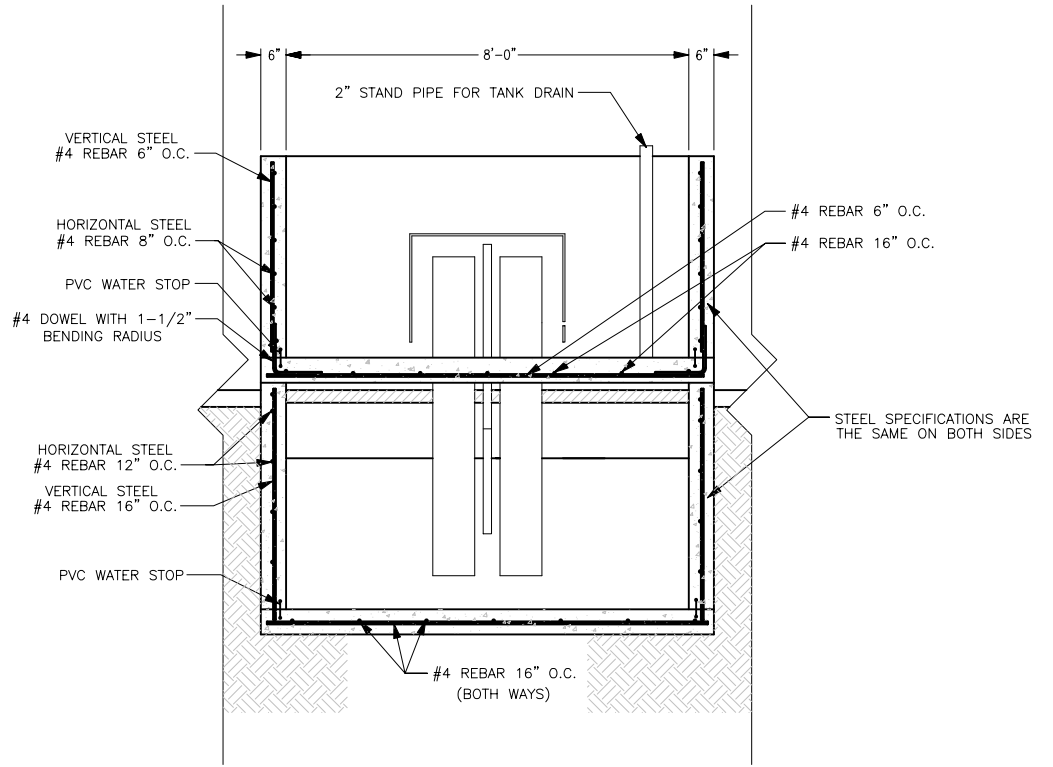
<b>MO-FLEX FARROWING BUILDING PLAN</b> COOPERATIVE EXTENSION SERVICE AGRICULTURAL ENGINEERING DEPARTMENT-UNIVERSITY OF MISSOURI-COLUMBIA UNIVERSITY EXTENSION - COMMERCIAL AGRICULTURE PROGRAM UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING	DESIGNED BY: <b>JMZ</b>	DRAWN BY: <b>JMZ/DDW</b>	CHECKED BY: <b>JMZ</b>
	PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
	SCALE: <b>AS SHOWN</b>	SHEET: <b>P5 : 7 OF 20</b>	



NOTE: ALL STEEL SHOULD BE TIED TOGETHER AT JOINTS.

**STEEL DETAILS AROUND PIPING**

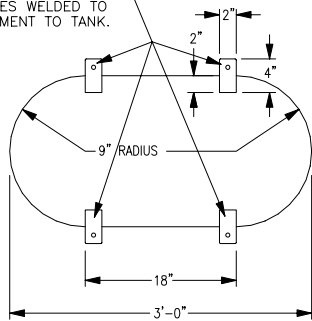
SCALE: 1/2" = 1'-0"



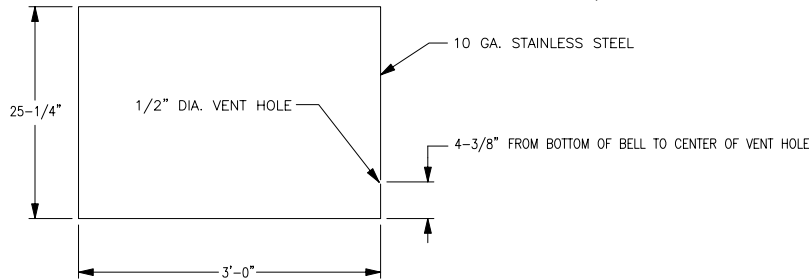
**SIPHON FLUSH TANK SECTION  
 (CONCRETE DETAILS)**

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

2" x 4" x 1/4" FLAT STEEL WITH 11/16" HOLES WELDED TO BELL FOR ATTACHMENT TO TANK.



TOP VIEW



SIDE VIEW

**TANK BELL CONSTRUCTION DETAILS**

SCALE: 1" = 1'-0"

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**TANK AND SUMP LONGITUDINAL SECTION (PART 2)**

MO-FLEX FARROWING BUILDING PLAN

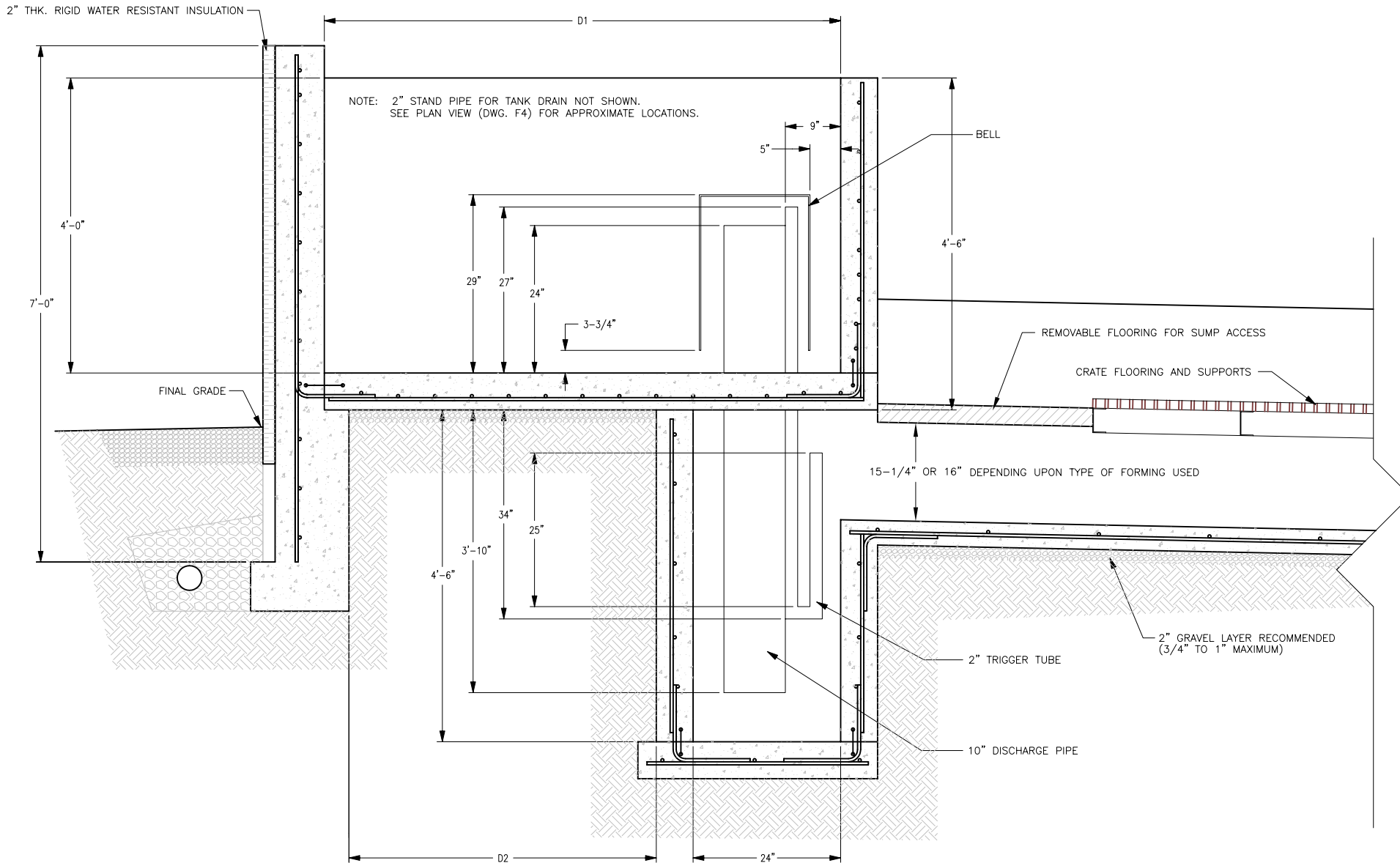
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PLAN NO.: **M03-726-94C1** DATE: **9/94**

SCALE: **AS SHOWN** SHEET: **P6 : 8 OF 20**





**c** MO SIPHON FLUSH TANK SECTION  
**c** (SIPHON DETAILS)

SCALE: 1" = 1'-0"

GUTTER LENGTH	TANK LENGTH D1	DIST. FROM FOOTER TO SUMP D2
UP TO 160'	4'-0"	14"
161'-200'	5'-0"	26"
201'-240'	6'-0"	38"
241'-280'	7'-0"	50"

NOTE:  
 GUTTER LENGTH IS THE DISTANCE FROM THE FRONT OF THE TANK TO THE FAR END WALL.

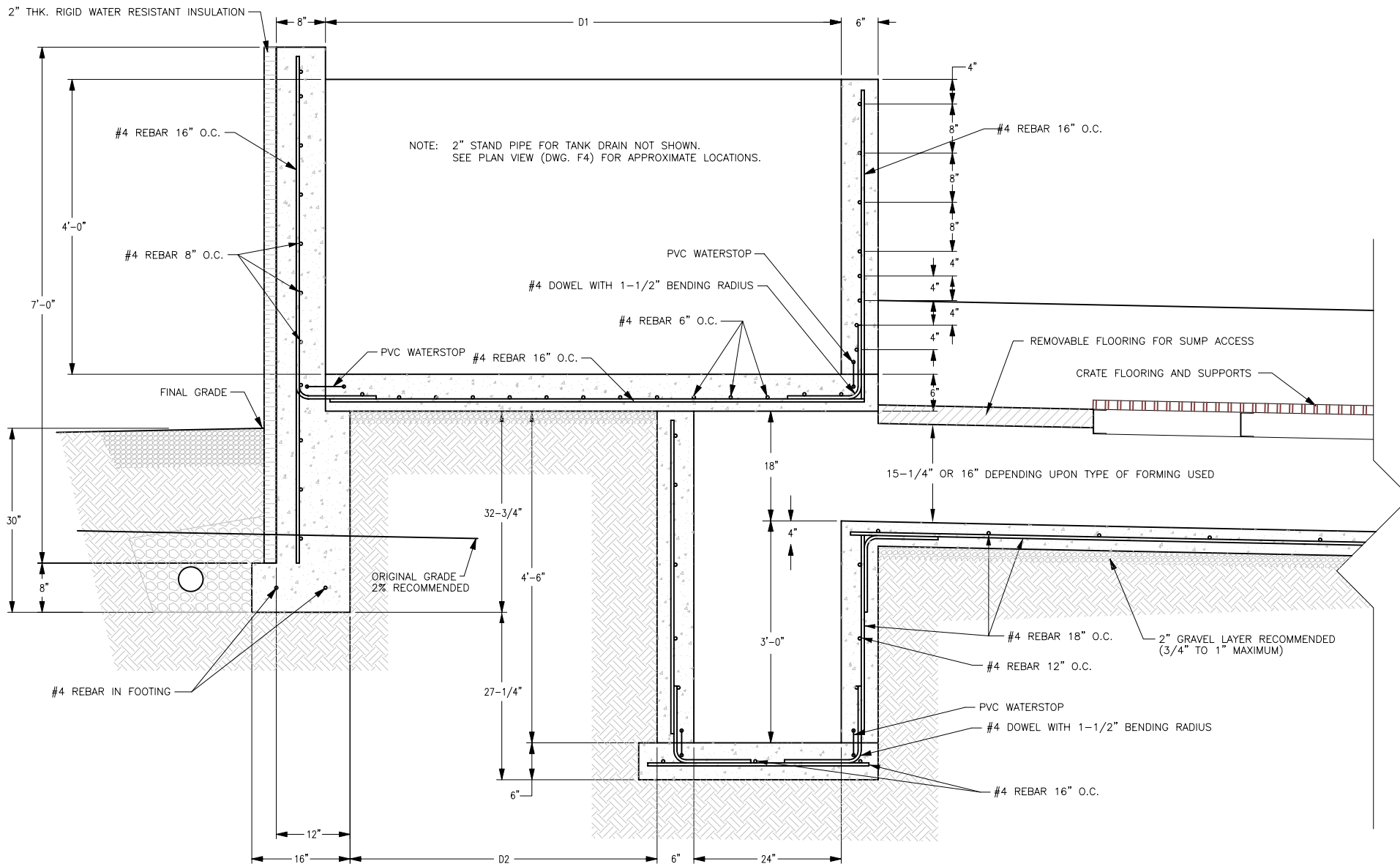
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**TANK AND SUMP CROSS SECTION (PART 1)**

**MO-FLEX FARROWING BUILDING PLAN**

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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>1"=1'-0"</b>	SHEET: <b>F7 : 9 OF 20</b>	



**c** MO SIPHON FLUSH TANK SECTION  
(CONCRETE DETAILS)

SCALE: 1" = 1'-0"

GUTTER LENGTH	TANK LENGTH D1	DIST. FROM FOOTER TO SUMP D2
UP TO 160'	4'-0"	14"
161'-200'	5'-0"	26"
201'-240'	6'-0"	38"
241'-280'	7'-0"	50"

NOTE:  
GUTTER LENGTH IS THE DISTANCE FROM THE FRONT OF THE TANK TO THE FAR END WALL.

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**TANK AND SUMP CROSS SECTION (PART 2)**

MO-FLEX FARROWING BUILDING PLAN

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SCALE: <b>1"=1'-0"</b>	SHEET	<b>P8 : 10 OF 20</b>

**GENERAL NOTES**

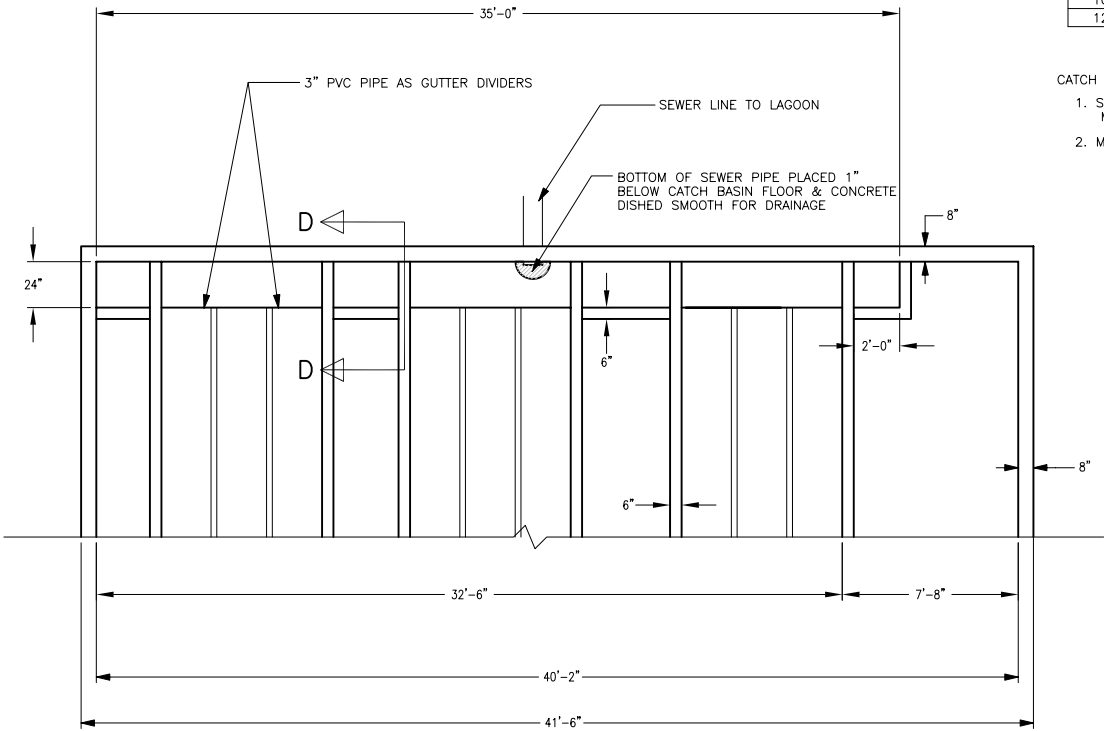
SEWER INFORMATION:

- 1. SEWER LINE SLOPE - 2% .
- 2. SEWER LINE CAN BE LOCATED ANYWHERE IN CATCH BASIN TO SIMPLIFY RETURN TO LAGOON.

SEWER LINE	GUTTER LENGTH
8"	UP TO 200'
10"	201' TO 240'
12"	241' TO 280'

CATCH BASIN:

- 1. SLOPE BASIN FLOOR TO SEWER LINE A MINIMUM OF 1/8"/FT.
- 2. MAXIMUM BASIN DEPTH IS 24".



NOTE: ALLEY CONCRETE FLOORS AND LIVESTOCK EQUIPMENT ARE NOT SHOWN TO ALLOW FLUSH GUTTER CONCRETE DETAILS TO BE SHOWN.

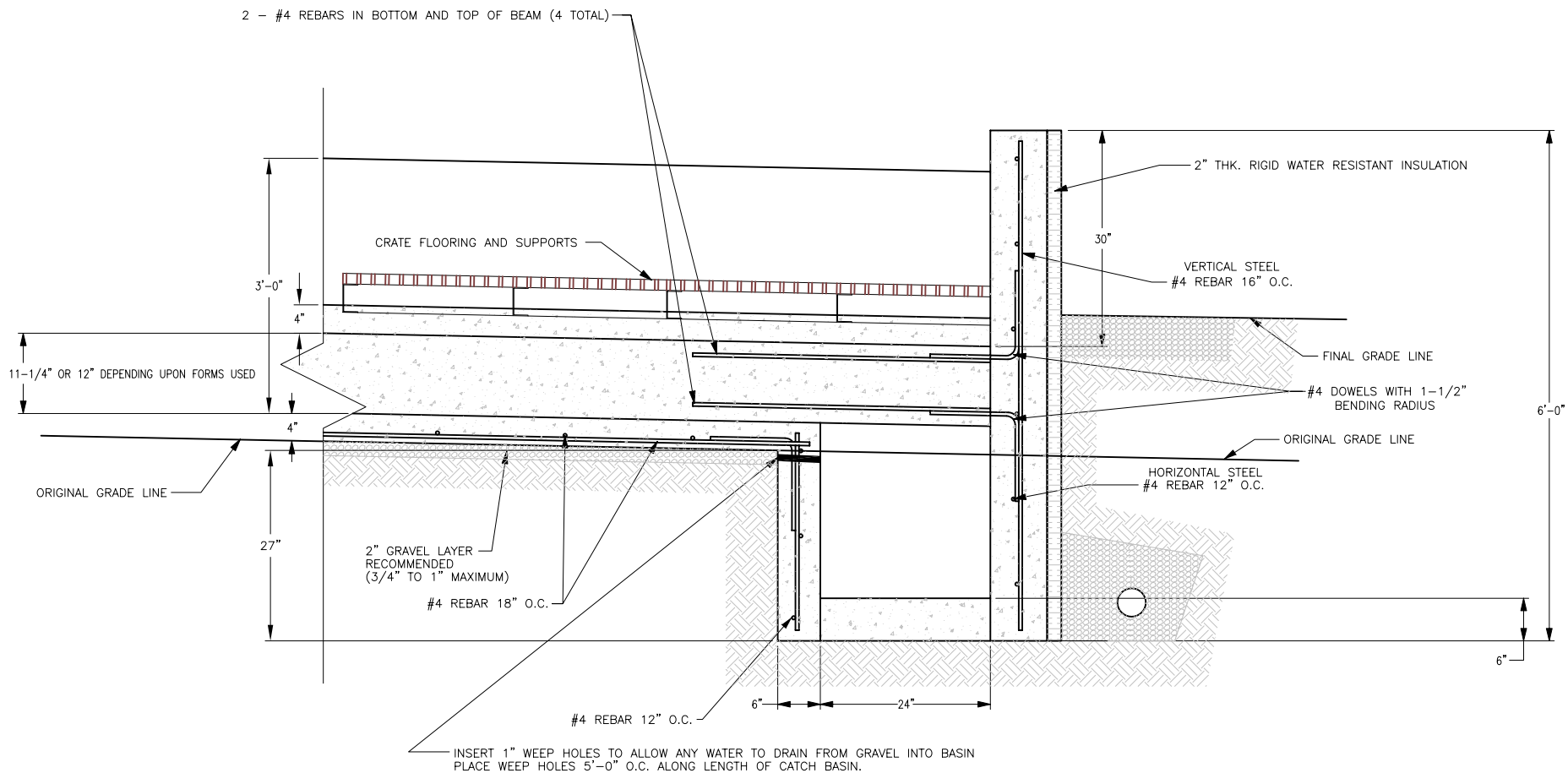
**CATCH BASIN DETAIL**

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

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**CATCH BASIN END DETAIL**

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		<b>JMZ</b>	<b>JMZ</b>	<b>JMZ</b>
	PLAN NO.:	DATE:		
	<b>M03-726-94C1</b>	<b>9/94</b>		
SCALE:	SHEET			
<b>1/4"=1'-0"</b>	<b>P9 : 11 OF 20</b>			



**D** CATCH BASIN CROSS SECTION

SCALE: 1" = 1'-0"

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**CATCH BASIN CROSS SECTION**

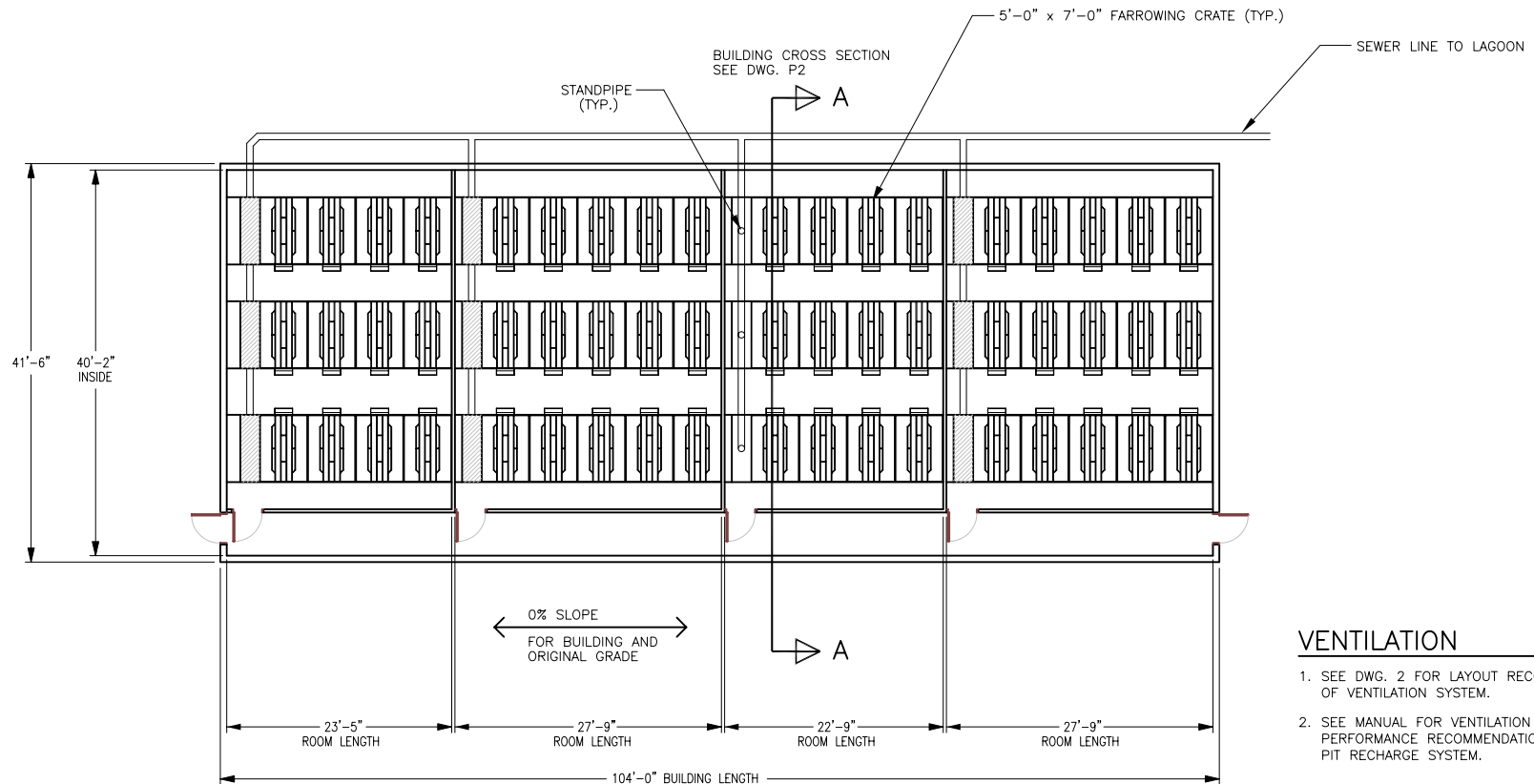
**MO-FLEX FARROWING BUILDING PLAN**

COOPERATIVE EXTENSION SERVICE  
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SCALE: <b>1"=1'-0"</b>	SHEET <b>F10 : 12 OF 20</b>	

# MO-FLEX FARROWING BUILDING PIT RECHARGE MANURE SYSTEM

REVIEW ACCOMPANYING MANUAL FOR DISCUSSION ON MODIFYING BUILDING SIZE AND HOW TO INCLUDE MULTIPLE ROOMS



PIT RECHARGE BUILDING FLOOR PLAN

SCALE: 1" = 10'-0"

## VENTILATION

1. SEE DWG. 2 FOR LAYOUT RECOMMENDATION OF VENTILATION SYSTEM.
2. SEE MANUAL FOR VENTILATION SYSTEM PERFORMANCE RECOMMENDATIONS USING PIT RECHARGE SYSTEM.

## LIVESTOCK EQUIPMENT

- 2 - 12 CRATE FARROWING ROOMS
- 2 - 15 CRATE FARROWING ROOMS

## SITE SELECTION AND PREPARATION INFORMATION

1. SOIL BUILDING PAD SHOULD BE ABOUT 10'-0" TO 20'-0" LONGER AND 10'-0" WIDER THAN BUILDING.
2. NO SLOPE ACROSS WIDTH OR LENGTH OF SOIL BUILDING PAD SHOULD EXIST.
3. BUILDING PROXIMITY TO OTHER SWINE BUILDINGS IMPACTS PIG PERFORMANCE AND SHOULD BE CONSIDERED.

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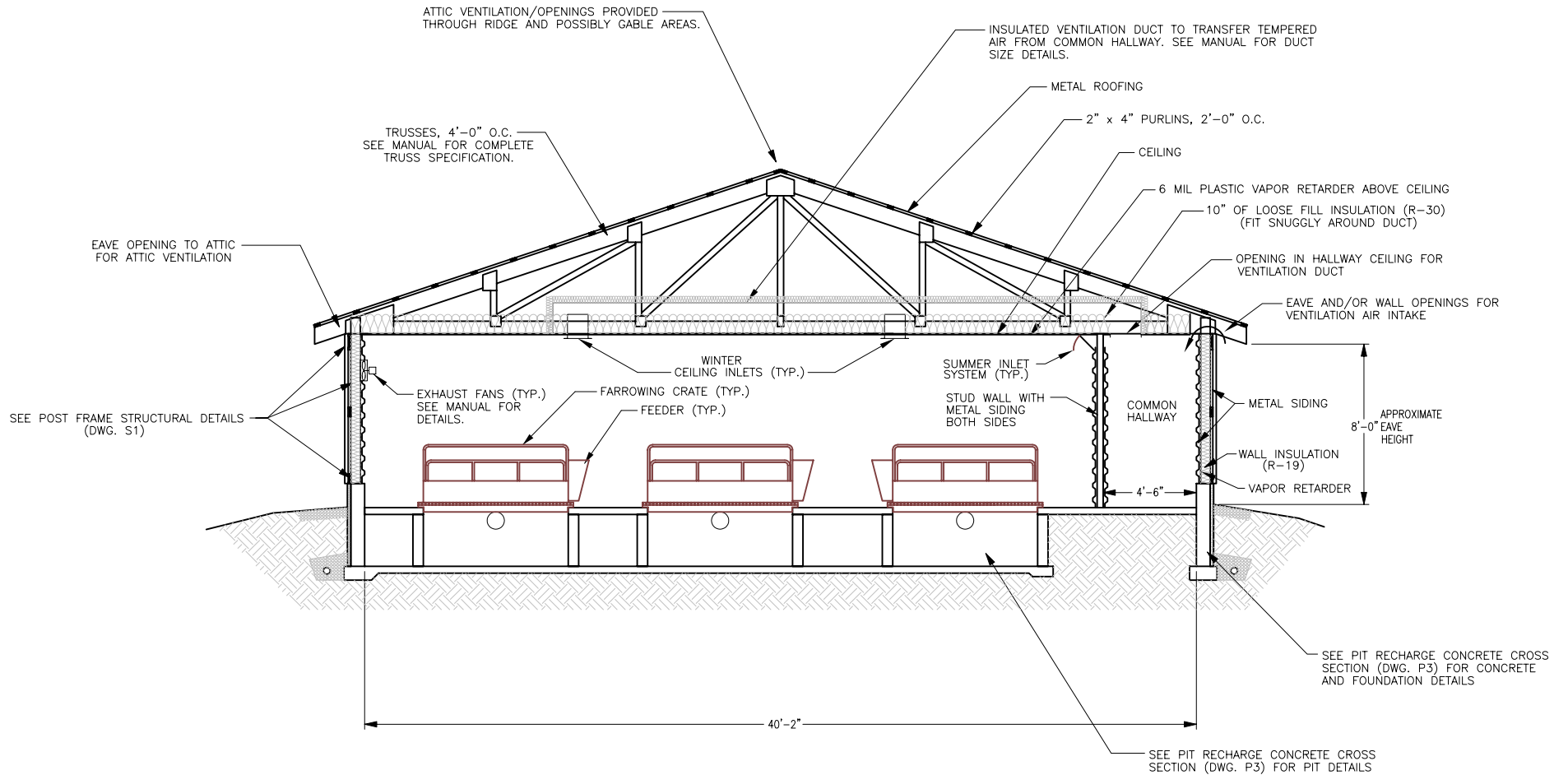
## FLOOR PLAN USING PIT RECHARGE MANURE SYSTEM

### MO-FLEX FARROWING BUILDING PLAN

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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>1"=10'-0"</b>	SHEET <b>P1</b>	<b>13 OF 20</b>

# PIT RECHARGE BUILDING

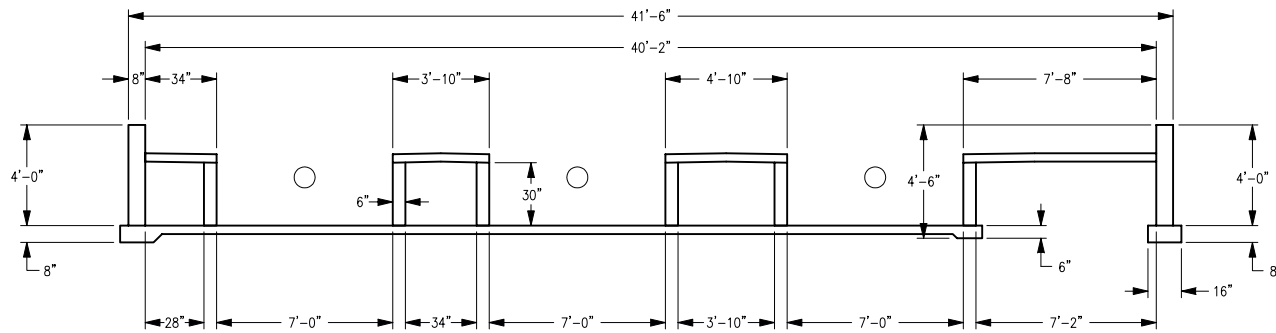


PIT RECHARGE BUILDING CROSS SECTION

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

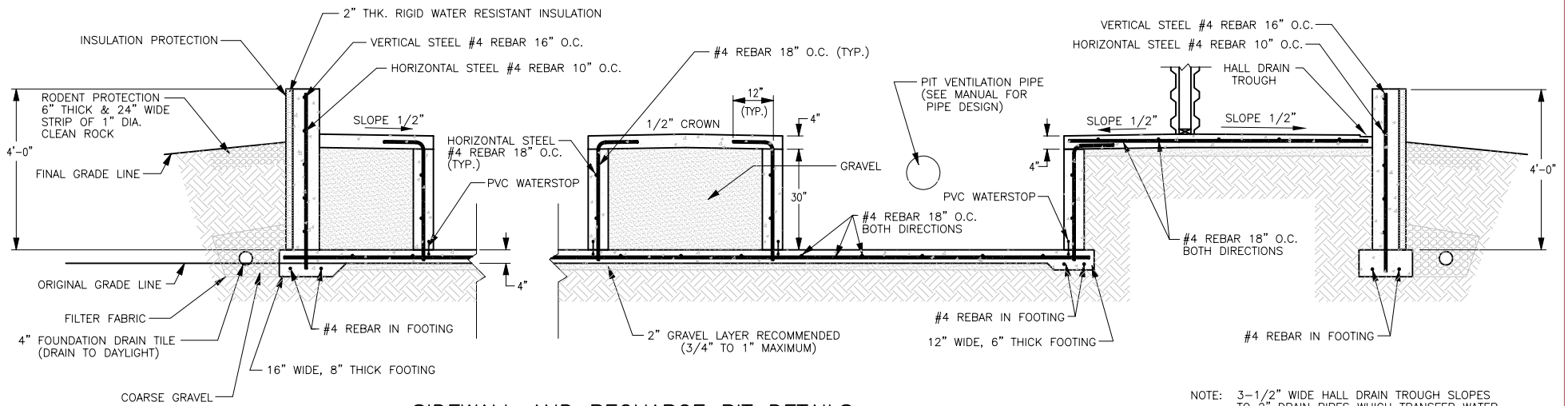
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<b>PIT RECHARGE BUILDING CROSS SECTION</b>			
<b>MO-FLEX FARROWING BUILDING PLAN</b>			
DESIGNED BY: <b>JMZ</b>	DRAWN BY: <b>TDT/CMA</b>	CHECKED BY: <b>JMZ</b>	
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		SCALE: <b>1/4"=1'-0"</b>	SHEET <b>P2 : 14 OF 20</b>



**PIT RECHARGE CONCRETE CROSS SECTION**

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



**SIDEWALL AND RECHARGE PIT DETAILS**

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

NOTE: 3-1/2" WIDE HALL DRAIN TROUGH SLOPES TO 2" DRAIN PIPES WHICH TRANSFER WATER FROM HALLWAY TO RECHARGE PIT. DRAIN PIPES HAVE P-TRAPS AND ARE SPACED NO MORE THAN 20' APART.

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**PIT RECHARGE CONCRETE CROSS SECTION**

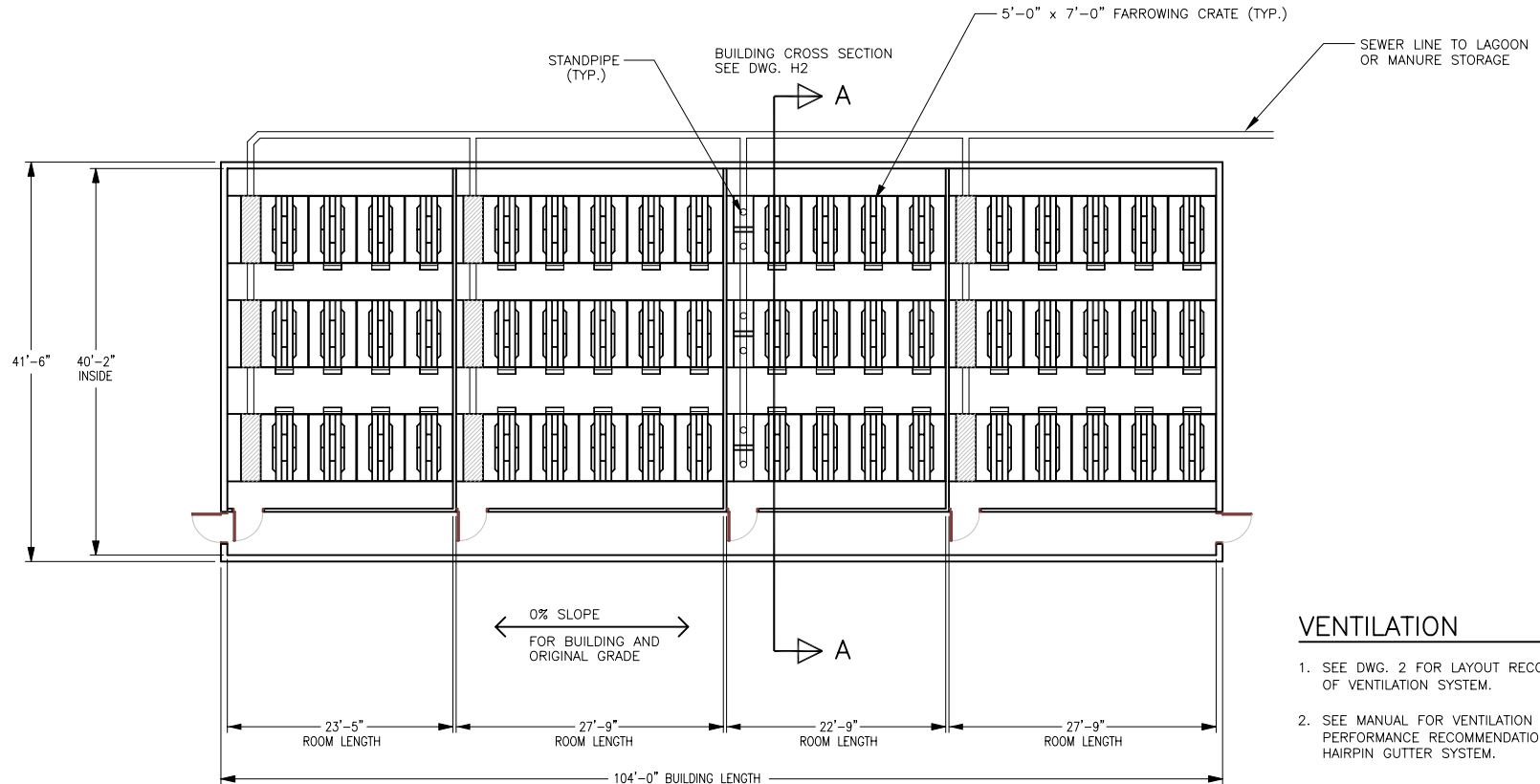
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PLAN NO.:	M03-726-94C1	DATE:	9/94		
SCALE:	AS SHOWN	SHEET:	P3	15 OF 20	

# MO-FLEX FARROWING BUILDING HAIRPIN GUTTER MANURE SYSTEM

REVIEW ACCOMPANYING MANUAL FOR DISCUSSION ON MODIFYING BUILDING SIZE AND HOW TO INCLUDE MULTIPLE ROOMS



## VENTILATION

1. SEE DWG. 2 FOR LAYOUT RECOMMENDATION OF VENTILATION SYSTEM.
2. SEE MANUAL FOR VENTILATION SYSTEM PERFORMANCE RECOMMENDATIONS USING HAIRPIN GUTTER SYSTEM.

## HAIRPIN GUTTER BUILDING FLOOR PLAN

SCALE: 1" = 10'-0"

## LIVESTOCK EQUIPMENT

- 2 - 12 CRATE FARROWING ROOMS
- 2 - 15 CRATE FARROWING ROOMS

## SITE SELECTION AND PREPARATION INFORMATION

1. SOIL BUILDING PAD SHOULD BE ABOUT 10'-0" TO 20'-0" LONGER AND 10'-0" WIDER THAN BUILDING.
2. NO SLOPE ACROSS WIDTH OR LENGTH OF SOIL BUILDING PAD SHOULD EXIST.
3. BUILDING PROXIMITY TO OTHER SWINE BUILDINGS IMPACTS PIG PERFORMANCE AND SHOULD BE CONSIDERED.

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## FLOOR PLAN USING HAIRPIN GUTTER LIQUID MANURE SYSTEM

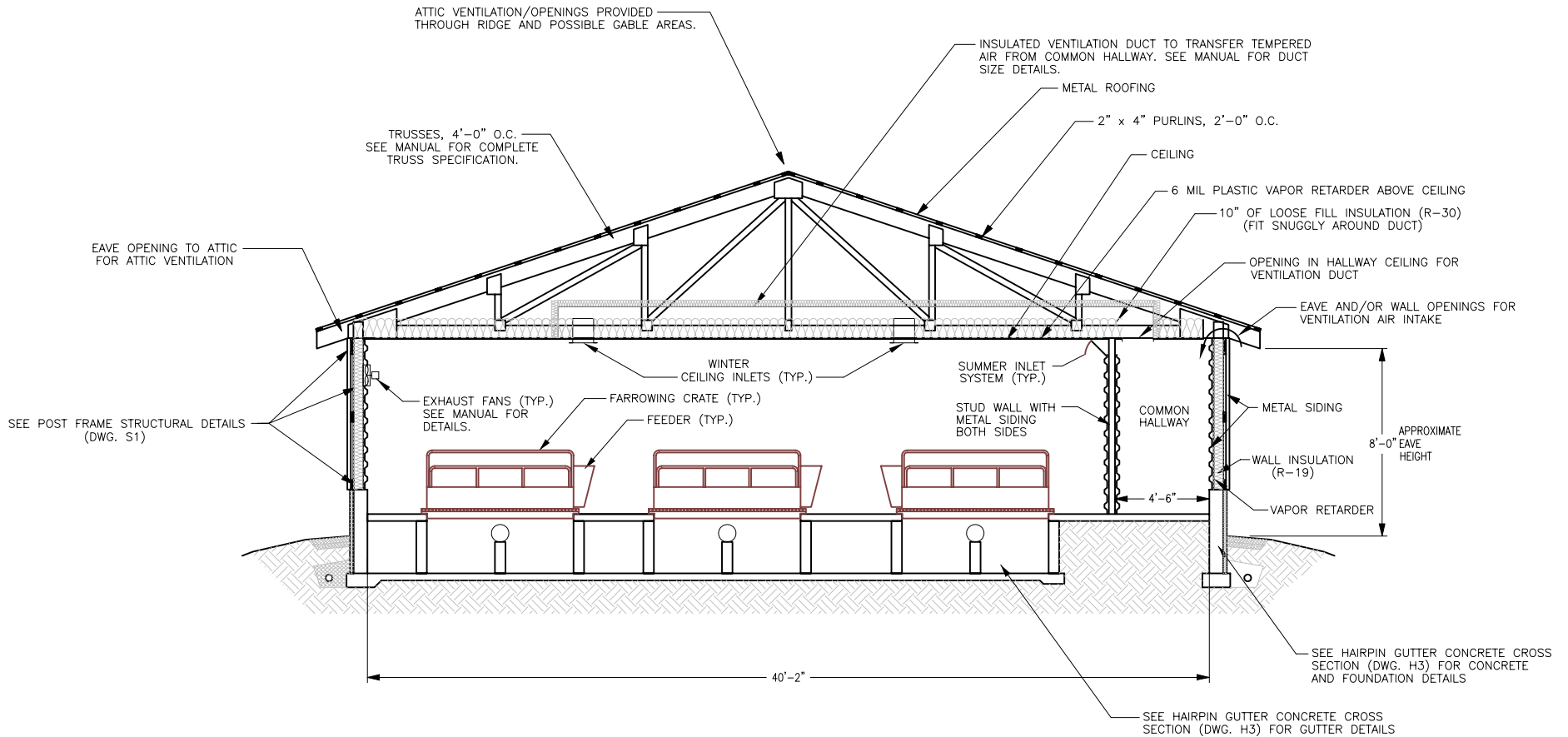
### MO-FLEX FARROWING BUILDING PLAN

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 UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

DESIGNED BY: <b>JMZ</b>	DRAWN BY: <b>TDT/CMA</b>	CHECKED BY: <b>JMZ</b>
PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>1"=10'-0"</b>	SHEET	<b>H1 : 16 OF 20</b>



# HAIRPIN GUTTER BUILDING

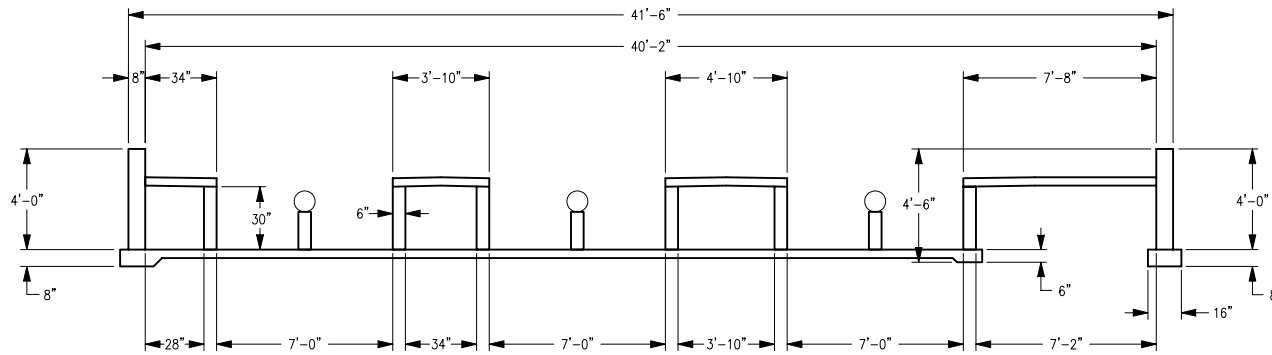


**HAIRPIN GUTTER BUILDING CROSS SECTION**

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

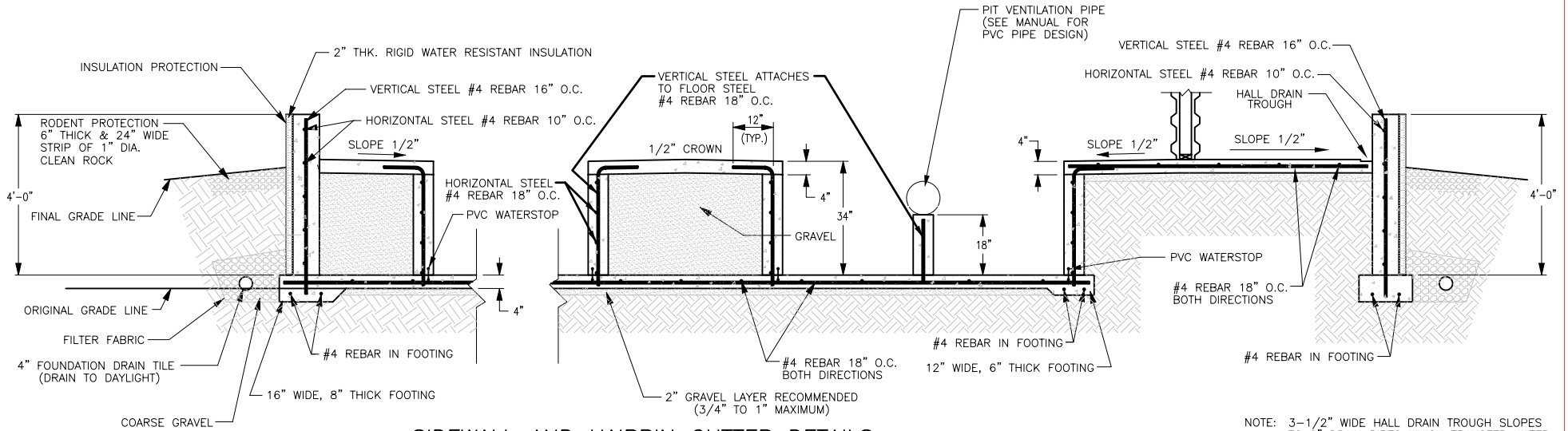
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<b>HAIRPIN GUTTER BUILDING CROSS SECTION</b>			
<b>MO-FLEX FARROWING BUILDING PLAN</b>		DESIGNED BY: <b>JMZ</b>	CHECKED BY: <b>JMZ</b>
COOPERATIVE EXTENSION SERVICE AGRICULTURAL ENGINEERING DEPARTMENT-UNIVERSITY OF MISSOURI-COLUMBIA UNIVERSITY EXTENSION - COMMERCIAL AGRICULTURE PROGRAM UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING		DRAWN BY: <b>TDT/CMA</b>	DATE: <b>9/94</b>
PLAN NO.: <b>M03-726-94C1</b>		SCALE: <b>1/4"=1'-0"</b>	SHEET <b>H2 : 17 OF 20</b>



**HAIRPIN GUTTER CONCRETE CROSS SECTION**

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



**SIDEWALL AND HAIRPIN GUTTER DETAILS**

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

NOTE: 3-1/2" WIDE HALL DRAIN TROUGH SLOPES TO 2" DRAIN PIPES WHICH TRANSFER WATER FROM HALLWAY TO HAIRPIN GUTTER. DRAIN PIPES HAVE P-TRAPS AND ARE SPACED NO MORE THAN 20' APART.

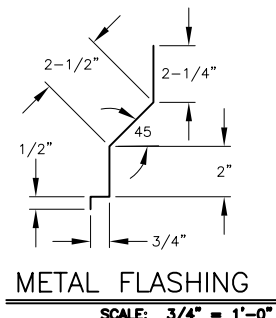
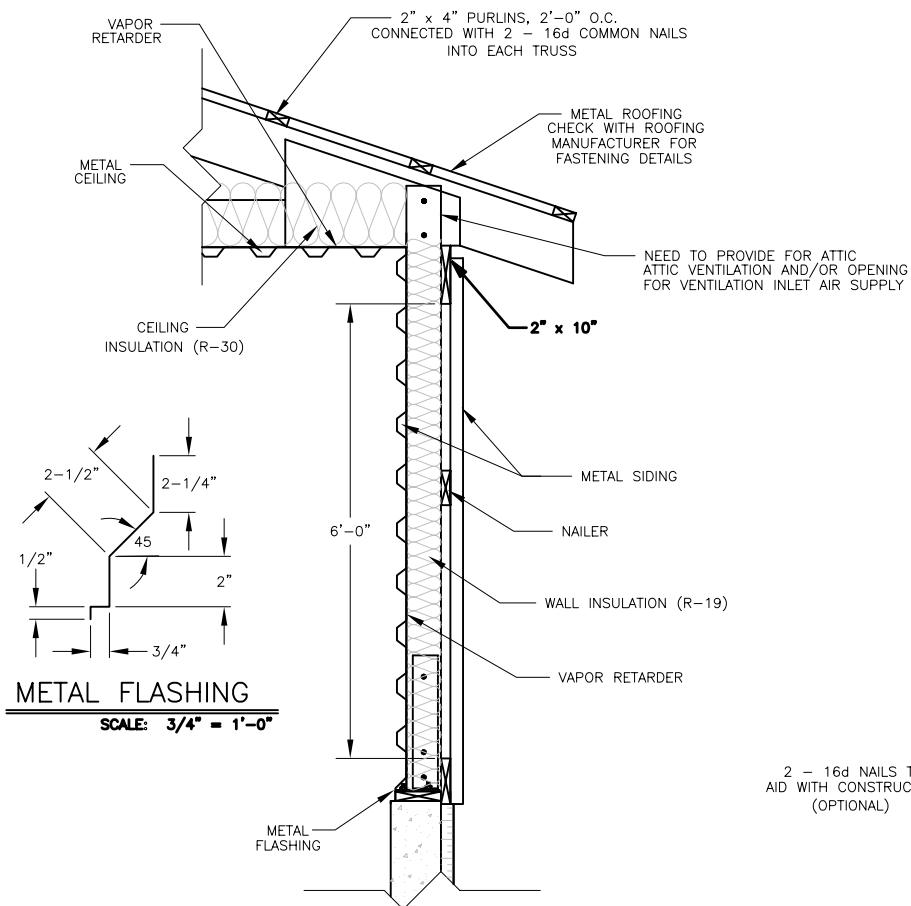
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**HAIRPIN GUTTER CONCRETE CROSS SECTION**

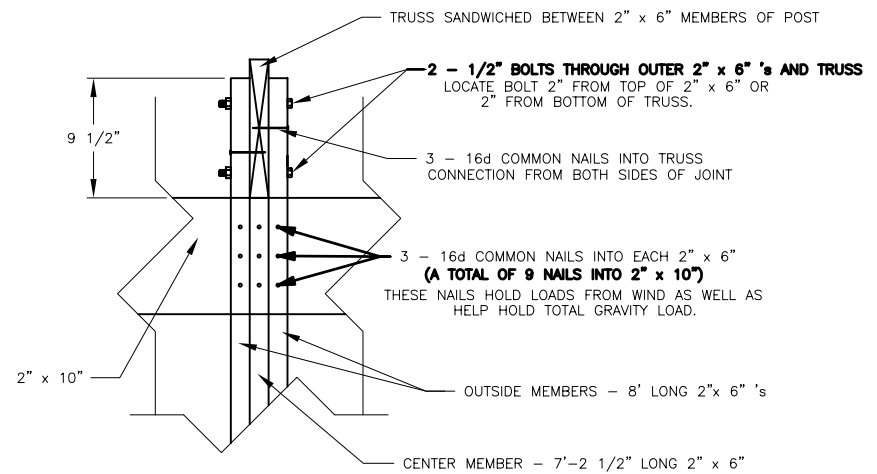
**MO-FLEX FARROWING BUILDING PLAN**

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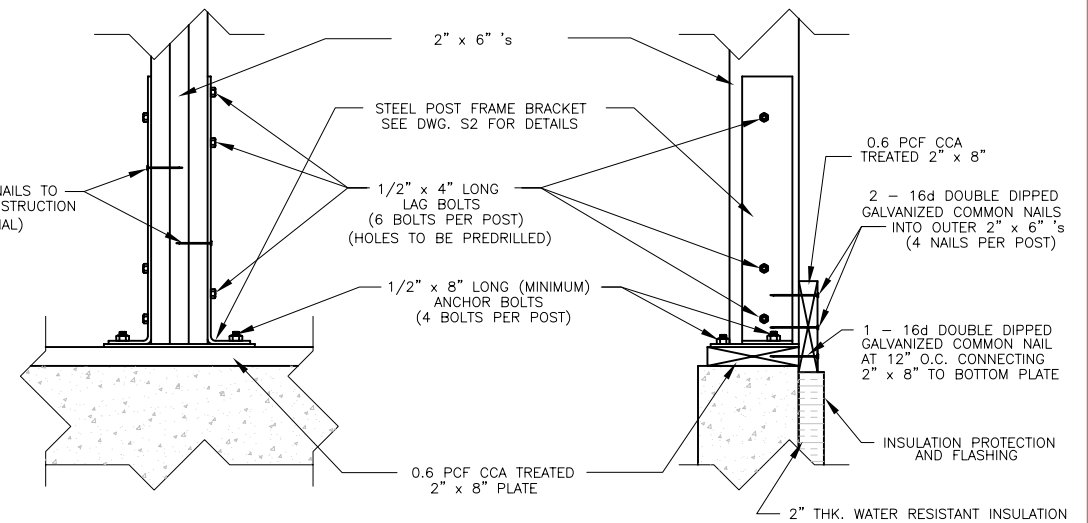
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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>AS SHOWN</b>	SHEET: <b>H3 : 18 OF 20</b>	



**POST FRAME WALL SECTION**  
SCALE: 3/4" = 1'-0"

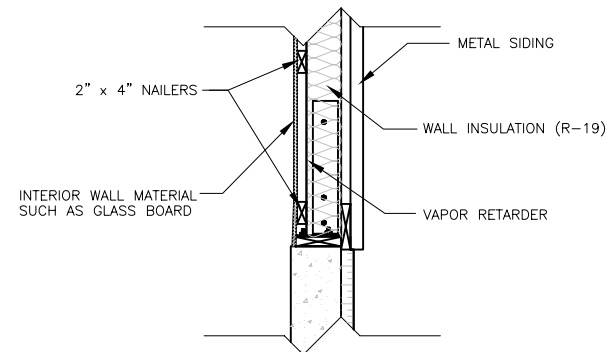


**TRUSS CONNECTION DETAIL**  
SCALE: 1 1/2" = 1'-0"



**POST BASE CONNECTION DETAILS**  
SCALE: 1 1/2" = 1'-0"

NOTE: LUMBER QUALITY FOR ALL STRUCTURAL MEMBERS (2" x 6" POST MEMBERS, BOTTOM PLATE, 2" x 8" BOTTOM GIRT, AND 2" x 10" TOP GIRT) IS TO BE NUMBER 2 SOUTHERN PINE OR BETTER.



**ALTERNATE POST FRAME WALL CONSTRUCTION**  
SCALE: 3/4" = 1'-0"

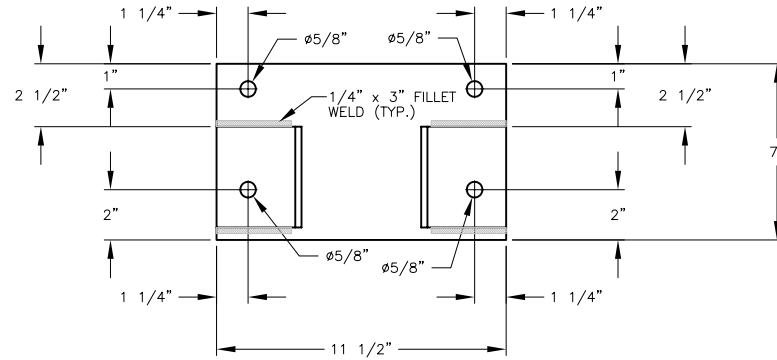
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**POST FRAME STRUCTURAL DETAILS**

**MO-FLEX FARROWING BUILDING PLAN**

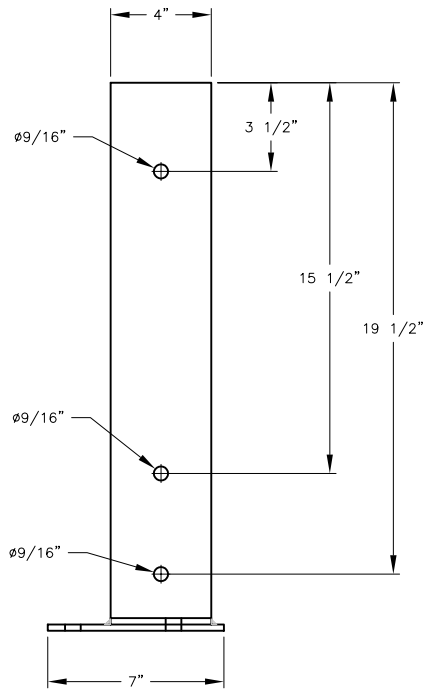
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PLAN NO.: <b>M03-726-94C1</b>	DATE: <b>9/94</b>	
SCALE: <b>AS SHOWN</b>	SHEET: <b>S1</b>	<b>19 OF 20</b>



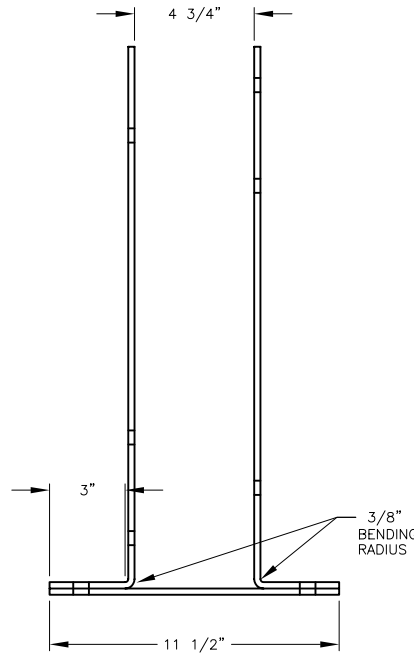
TOP VIEW

SCALE: 3" = 1'-0"



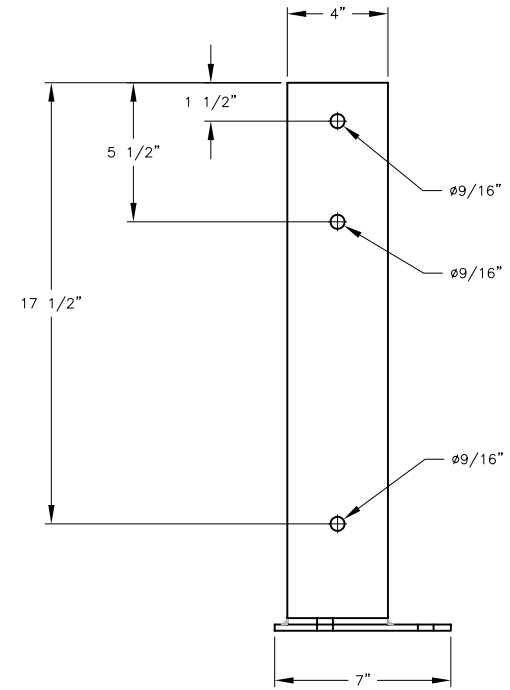
LEFT SIDE VIEW

SCALE: 3" = 1'-0"



FRONT VIEW

SCALE: 3" = 1'-0"



RIGHT SIDE VIEW

SCALE: 3" = 1'-0"

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GENERAL NOTES

1. BOTTOM STEEL PLATE - 1/4" x 7" FLAT PLATE A36 STEEL
2. VERTICAL STEEL PIECES - 1/4" x 4" FLAT PLATE A36 STEEL
3. 1/4" FILLET WELDS USING E 60 XX ELECTRODES

POST FRAME STEEL BRACKET

MO-FLEX FARROWING BUILDING PLAN

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SCALE: <b>3"=1'-0"</b>	SHEET	<b>S2 : 20 OF 20</b>