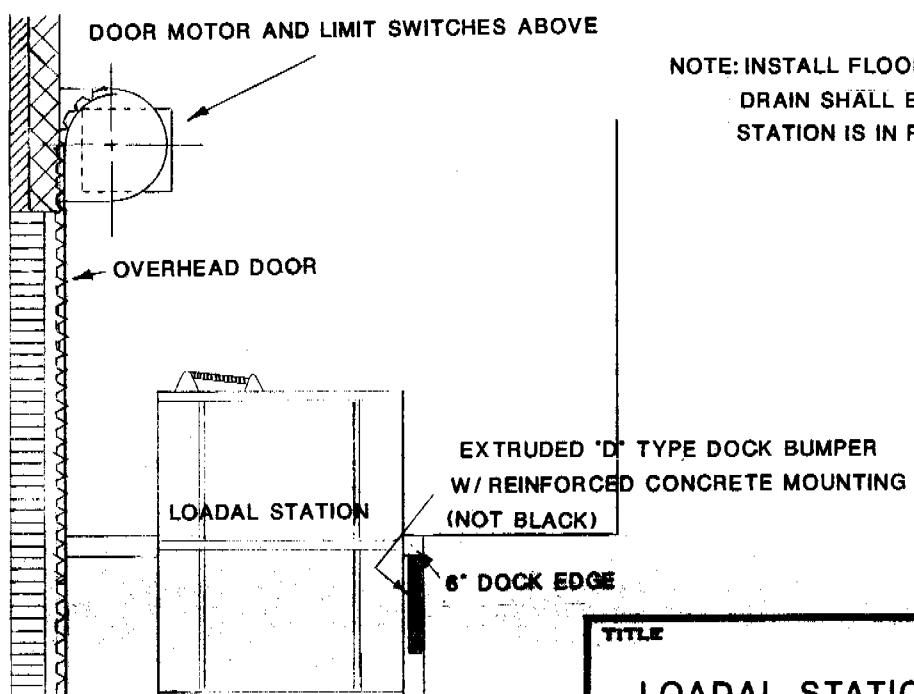
**ELECTRICAL SYMBOLS**

- PUSHBUTTON STATION
- K PUSHBUTTON STATION (KEYED)
- FUSED SAFETY SWITCH
- MOTOR
- LIMIT SWITCH
- 120V. CONVENIENCE OUTLET
- DOCK BUMPERS

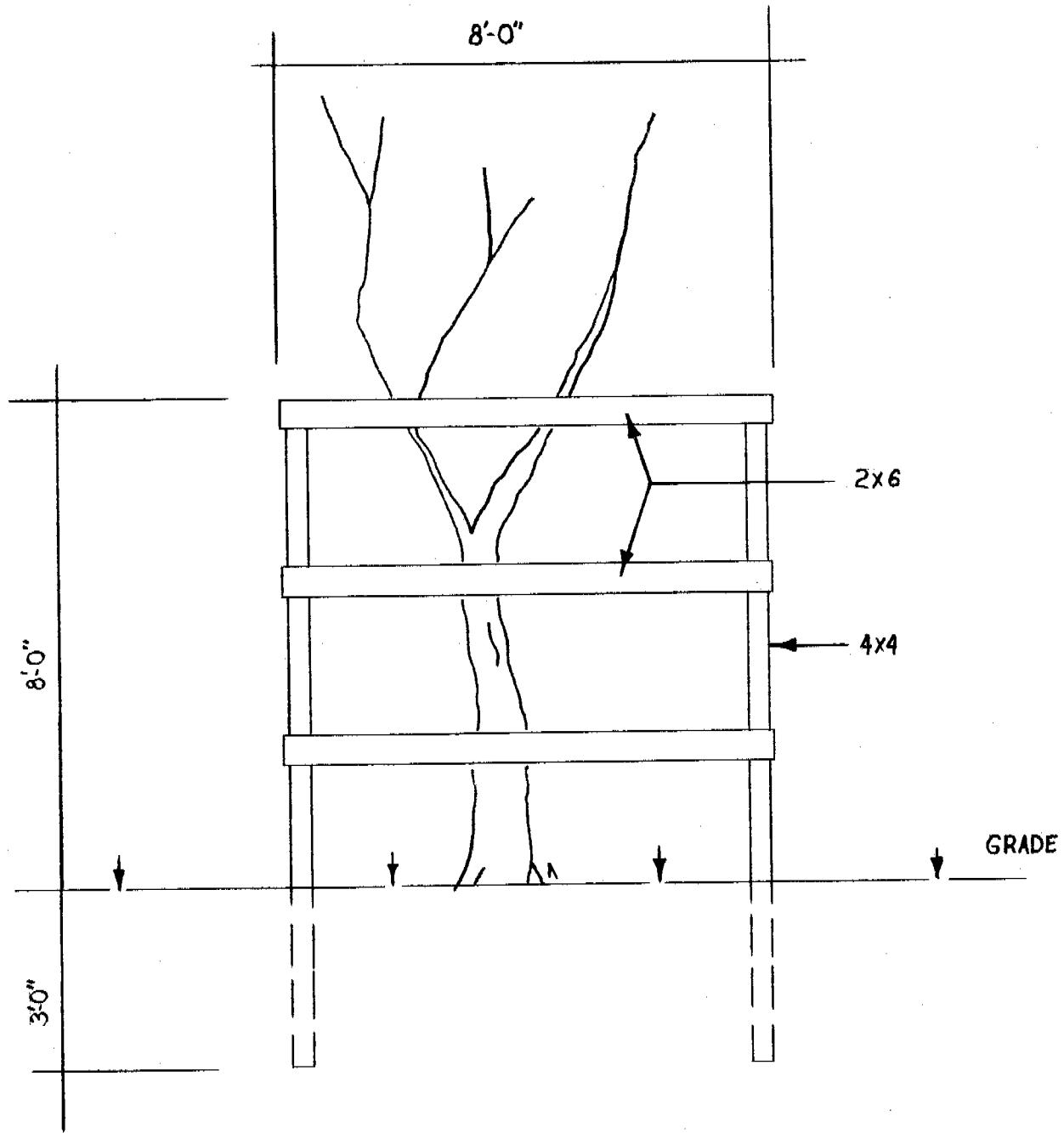


NOTE: INSTALL FLOOR DRAIN TO SANITARY SEWER.  
DRAIN SHALL BE ACCESSABLE WHEN LOADAL STATION IS IN PLACE.

0-1

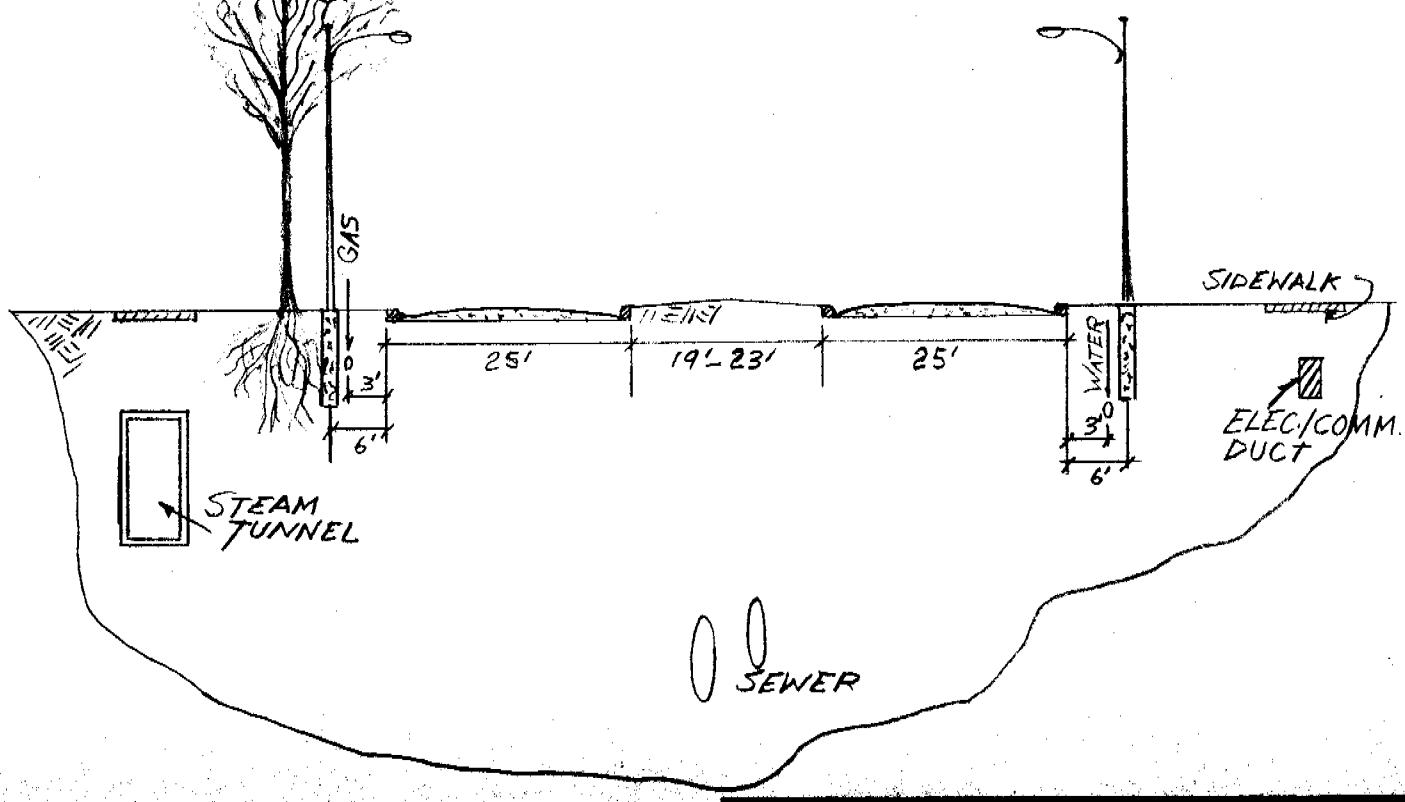
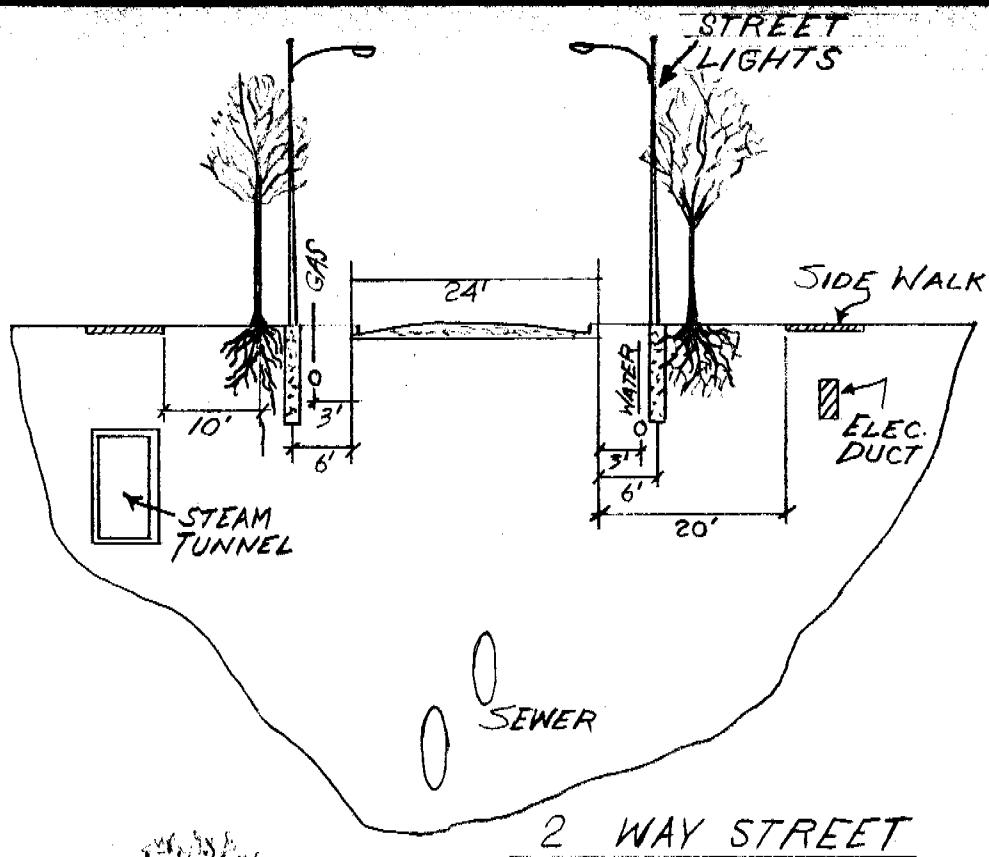
TITLE	DWN BY: T.R.P.
	APP'D BY:
LOADAL STATION ROOM	DATE: 8/20/85
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT	SCALE: AS NOTED
	DWG NO:
	FILE NO. STANDARDS





2-1

TITLE		DRAWN BY: R.E.H.
TREE PROTECTION		APP'D BY:
		DATE: 8-20-85
MICHIGAN STATE UNIVERSITY		SCALE: $\frac{1}{2}'' = 1'-0''$
PHYSICAL PLANT DIVISION		DWG NO.:
ENGINEERING SERVICES DEPARTMENT		FILE NO. STANDARDS

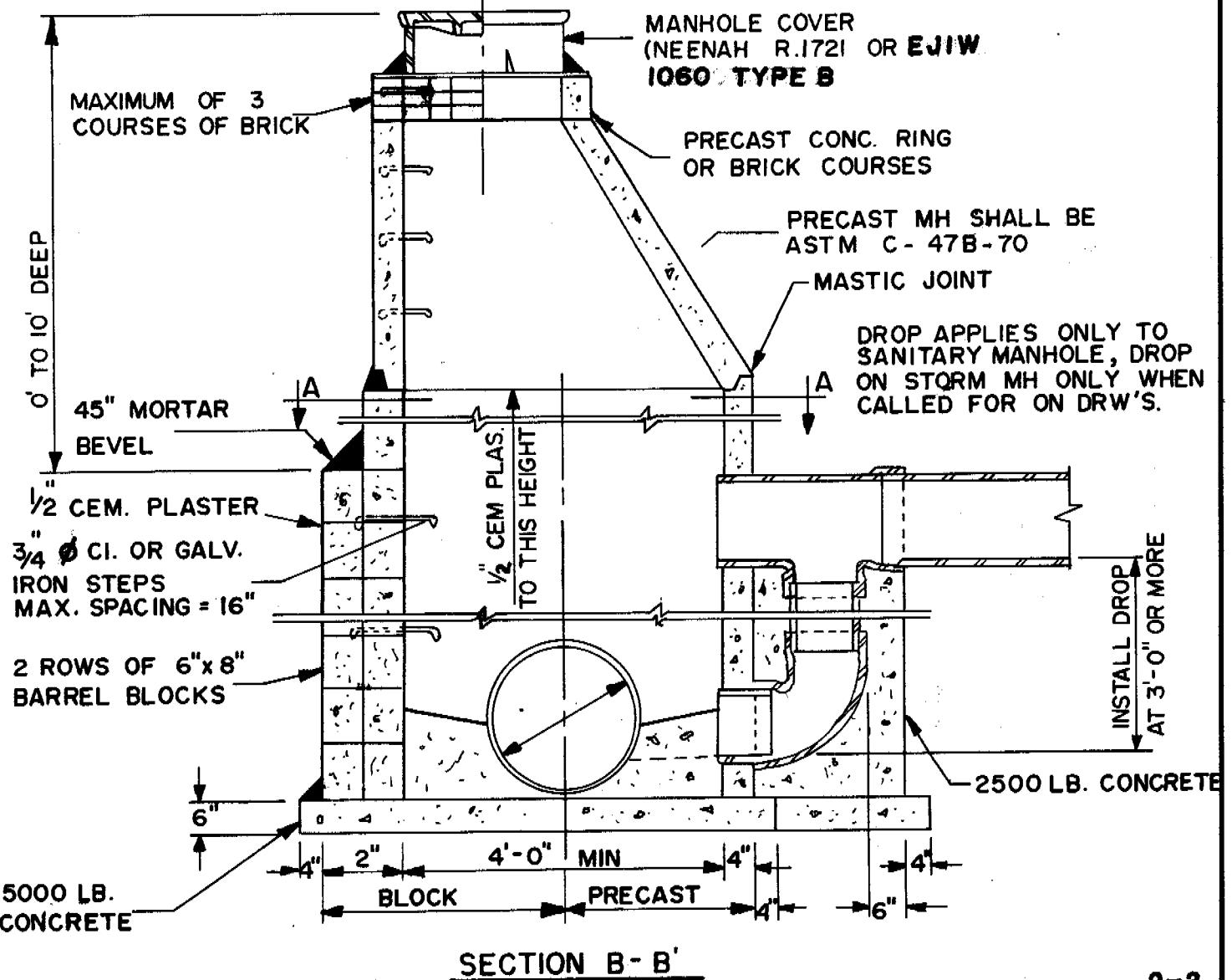
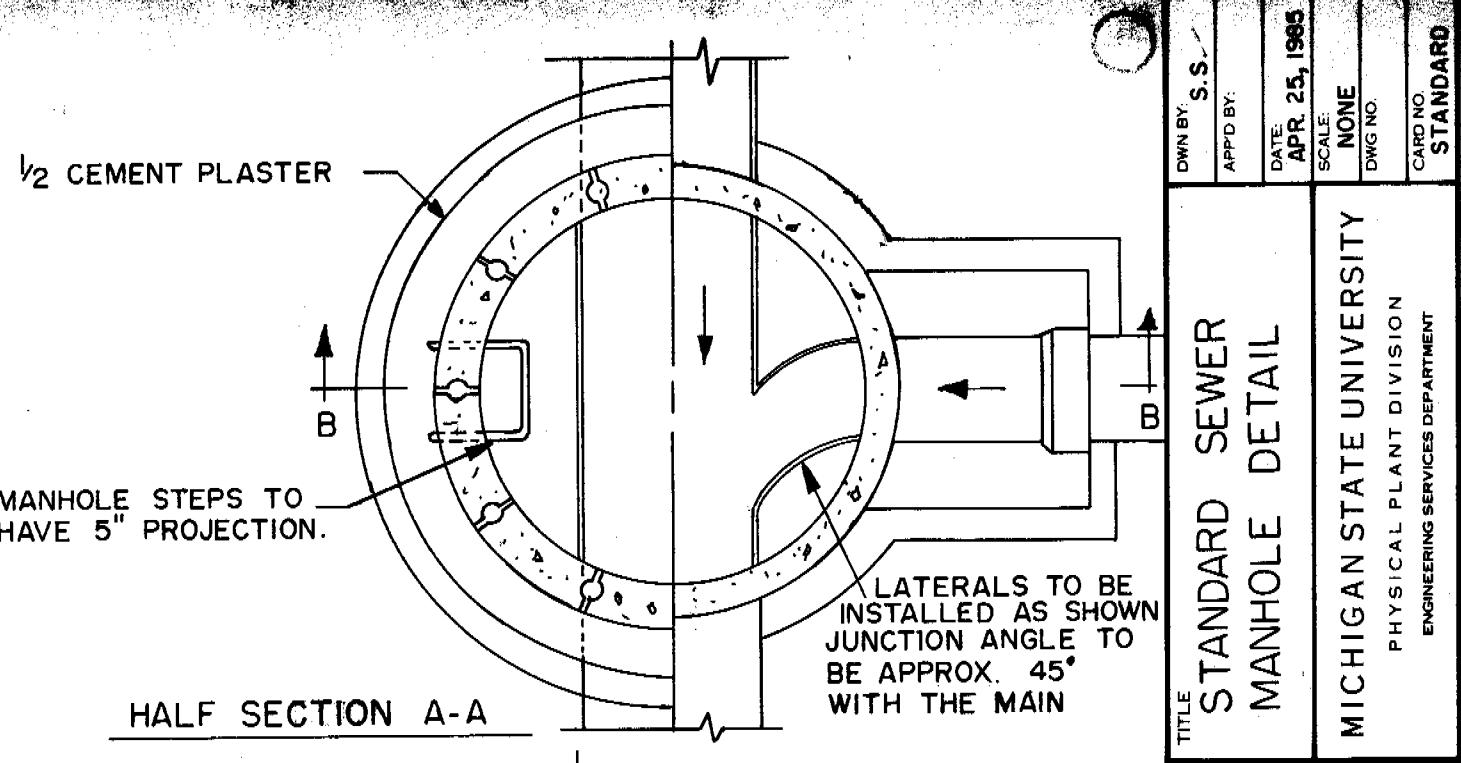


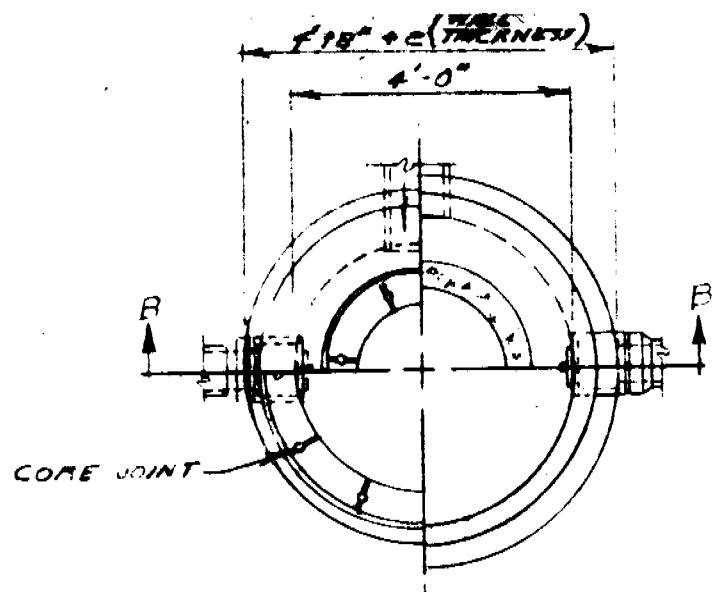
2-2

TYPICAL BOULEVARDTYPICAL ROADWAY  
CROSS SECTIONS

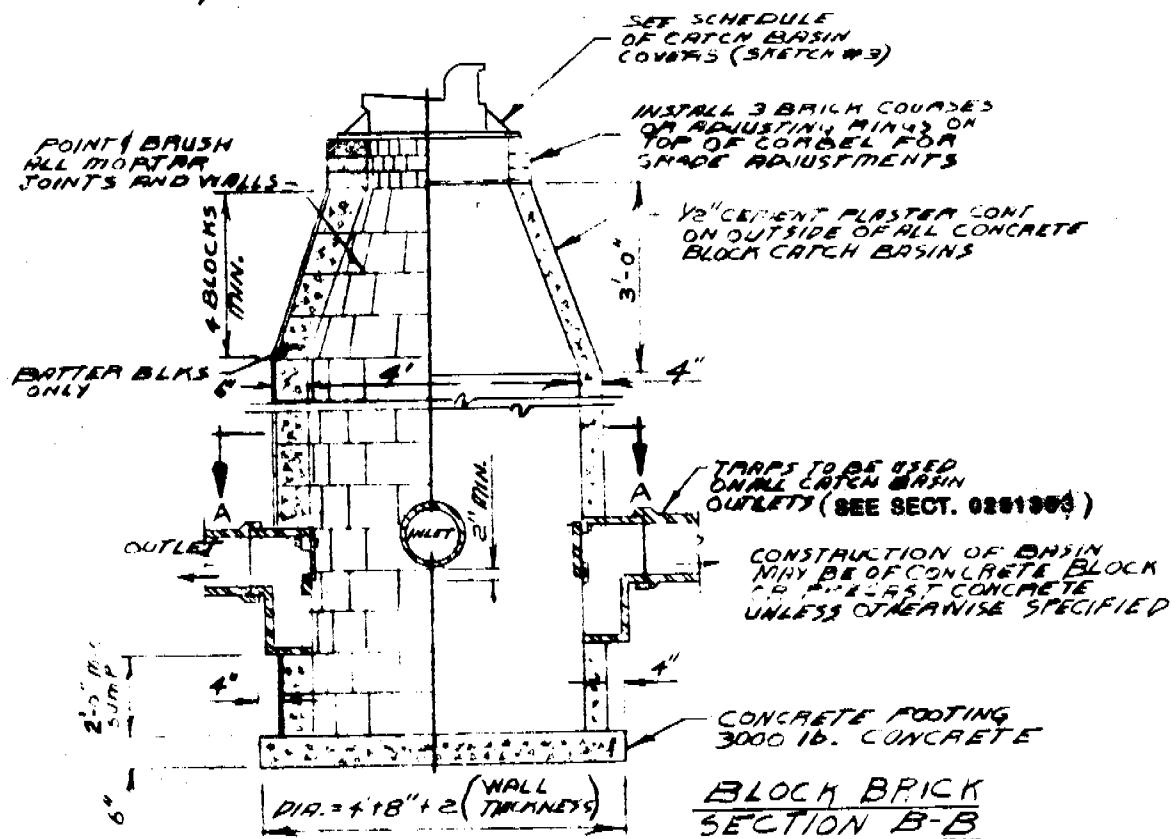
MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

DRAWN BY:	K.Y.
APP'D BY:	
DATE:	8-20-85
SCALE:	1" = 20'-0"
DWG NO.:	
FILE NO.:	STANDARDS





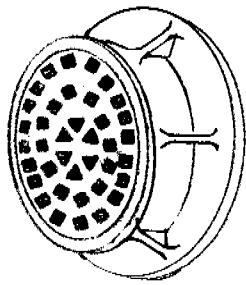
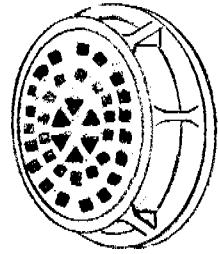
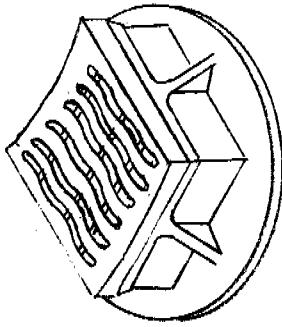
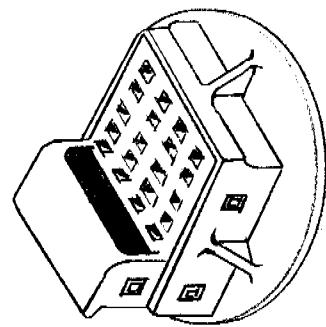
HALF PLAN VIEW  
HALF SECTION A-A



2-4

TITLE <b>TYPICAL TRAP AND CATCH BASIN DETAIL</b>	DWN BY: B. GULLETT
	APP'D BY:
DATE: 8/12/82	
	SCALE: NO SCALE
DWG NO.:	
	FILE NO. STANDARD

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



**USE**      **IN STRAIGHT CURB & GUTTER**

**IN LAWN AREA<sup>8</sup>**

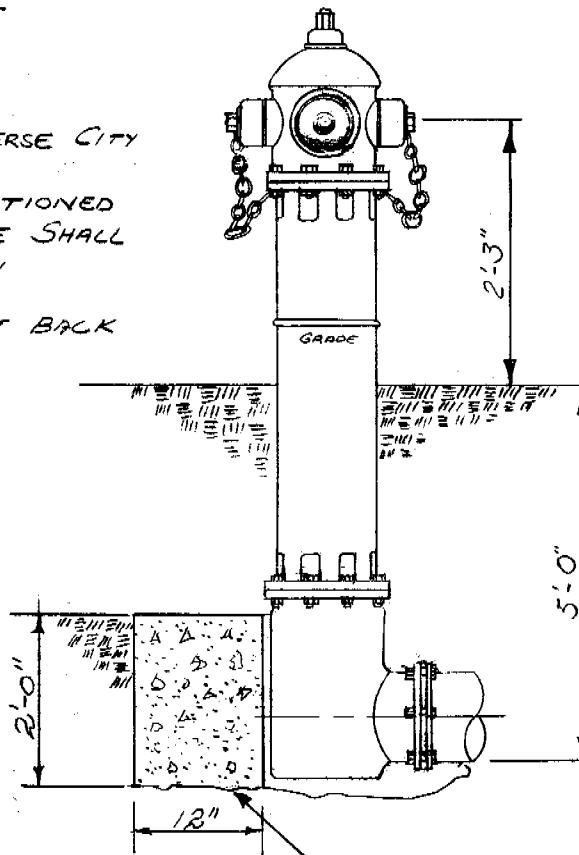
**PAVED SINGLE POINT  
DRAINAGE BASIN**

DEPTH OF FRAME	9.14"	6"	4"	8.5"
O.D. OF FLANGE	36"	36"	28.25"	36"
WEIGHT	475#	435#	240#	355#
ZINN CAT NO.	7045	5105	1130-M2	1060-M2
SEENAH NO.	R3031A	R3036B	R-2510	R-1784 W/ PERFORATED LID

TITLE	<b>TYPICAL CATCH BASIN COVERS</b>		
OWN BY:	MK		
APP'D BY:			
DATE:	4-27-84		
SCALE:	NO SCALE		
DWG NO.			
CARD NO.			
STANDARDS			
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT			

1. HYDRANT SIZE: DIAMETER OF VALVE OPENING TO BE 5".
2. SIZE OF CONNECTING MAIN TO BE 6" MECHANICAL JOINT.
3. NOZZLES: TWO - 2 1/2" NOZZLES; ONE 4" PUMPER NOZZLE.
4. THREADS: 2 1/2" & 4" NATIONAL STANDARD.
5. DEPTH OF PIPE COVER: 4'-6"
6. OPERATING NUT: PENTAGON NUT MEASURING 1 1/2" FLAT TO POINT.
7. DIRECTION OF OPENING SHALL BE COUNTER CLOCKWISE.
8. HYDRANT SHALL BE TYPE TRAVERSE CITY IRON WORKS.
9. ALL HYDRANTS SHALL BE POSITIONED SUCH THAT THE PUMPER NOZZLE SHALL FACE CURB, OR AS DIRECTED BY ENGINEER.
10. LOCATE FIRE HYDRANT 6 FEET BACK OF CURB.

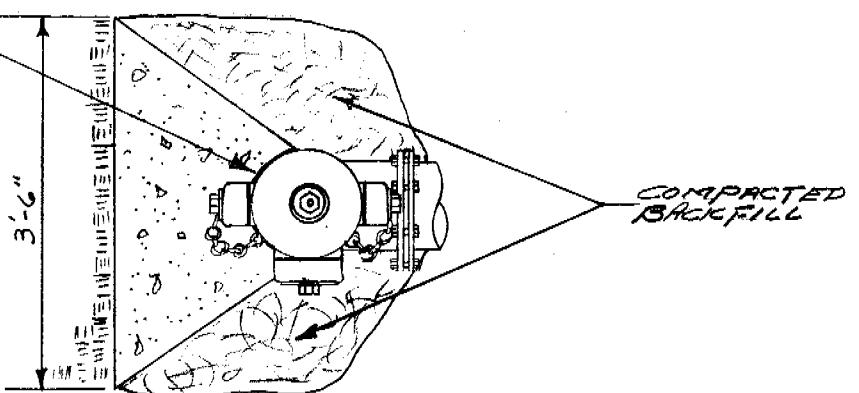
DRAWN BY: R. ELLERHOIST	APPROVED BY: J. Z. ELLERHOIST
DATE: 2-12-64	SCALE: NONE
DWG NO.	FILE NO.
STANDARD	
HYDRANT DETAIL	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT	



THRUST BLOCK SHALL BEAR ON UNDISTURBED SOIL.

PLACE BUILDERS FELT BETWEEN BLOCK AND HYDRANT TO PREVENT BONDING.

APPROX. VOLUME OF 2500# CONCRETE - 1/4 CUBIC YARD.



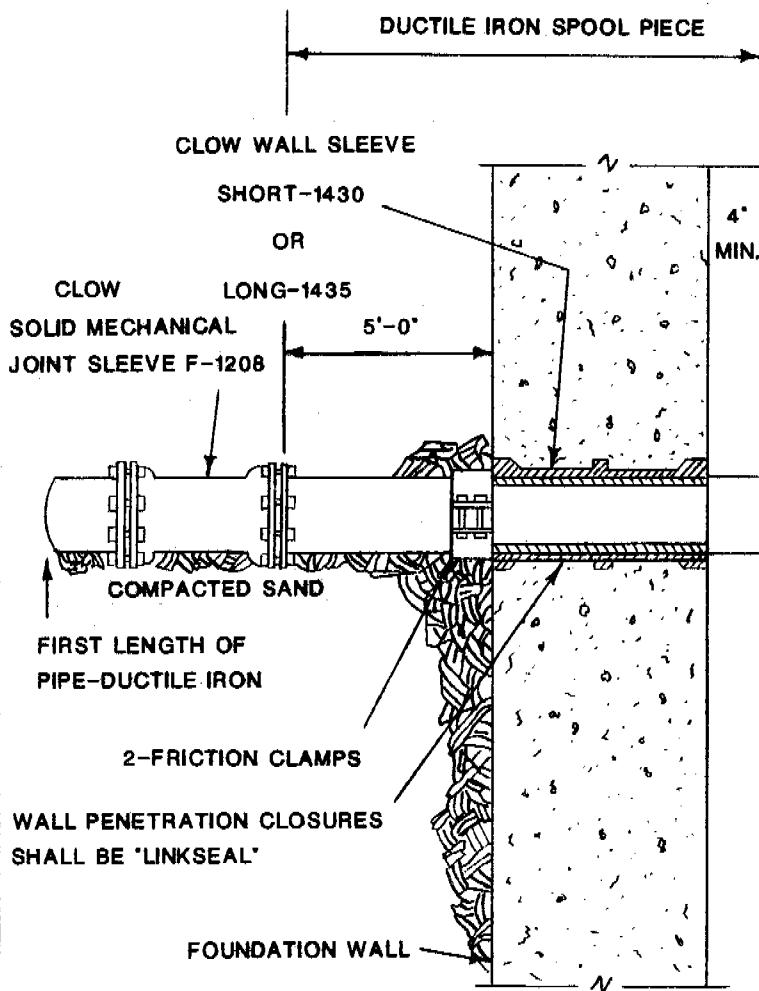
PLAN

**NOTE**

ANY VARIATION OF THIS CONNECTION

SHALL INCLUDE

1. 2" DRAIN AND DRAIN VALVE
2. FIRE LINE TAKE OFF AHEAD OF  
BUILDING VALVE WHEN REQUIRED
3. BUILDING VALVE



2" PIPE      2" VALVE

CAP  
NIPPLE

BUILDING VALVE

TEE FOR FIRE LINE

90° ELBOW

FLANGE CONN.

2" PIPE

2" VALVE

NIPPLE

CAP

**NOTE**

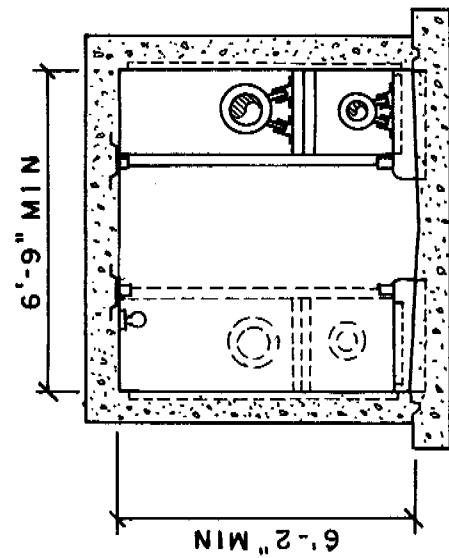
CONNECTION BY UTILITY CONTRACTOR 5' FROM WALL

ALL DUCTILE IRON SHALL BE PLAINLY MARKED

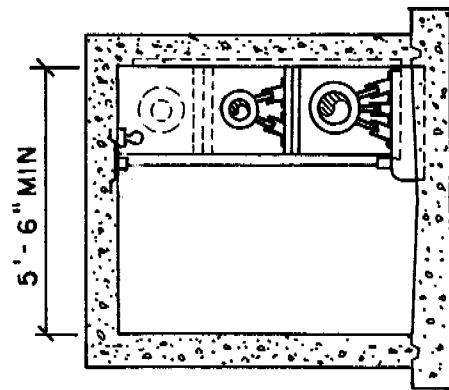
DUCTILE IRON SHALL BE EQUAL TO ASA  
A2151-1965 AND HAVE A WALL THICKNESS  
CLASS OF 3

**2-7**

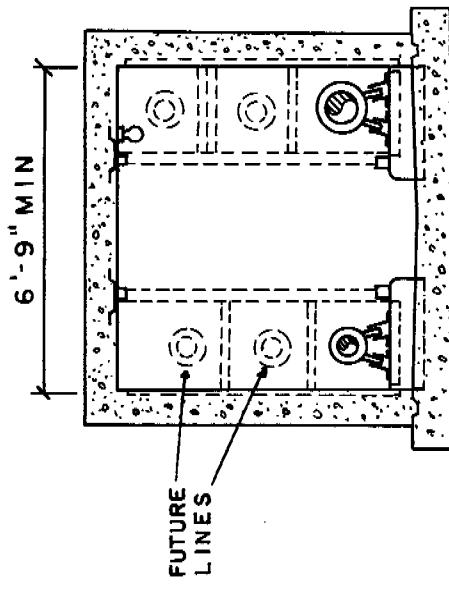
<b>TITLE</b>		DWN BY: R.E.H.
WATER MAIN CONNECTIONS		APP'D BY:
THROUGH CONCRETE WALL		DATE: 8-20-85
MICHIGAN STATE UNIVERSITY		SCALE: 3 1/4-1"
PHYSICAL PLANT DIVISION		DWG NO.:
ENGINEERING SERVICES DEPARTMENT		FILE NO. STANDARDS



TYPE "A"



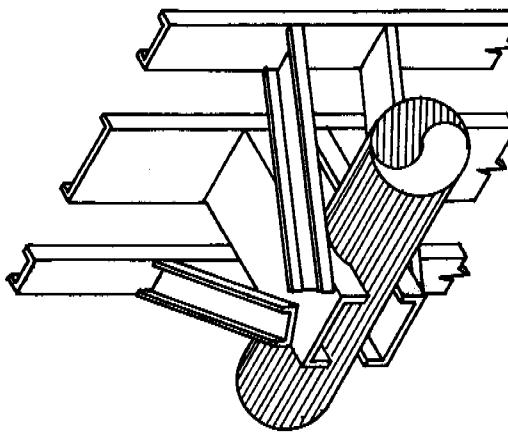
TYPE "B"



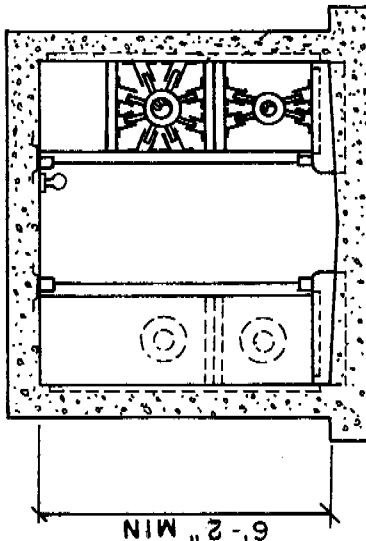
TYPE "C"

STRUCTURAL DESIGN

8' OF EARTH FILL OR 5' OF  
EARTH FILL & TRUCK SURCHARGE.  
CONCRETE - 3000 P.S.I.  
STEEL - 24,000 P.S.I. A432

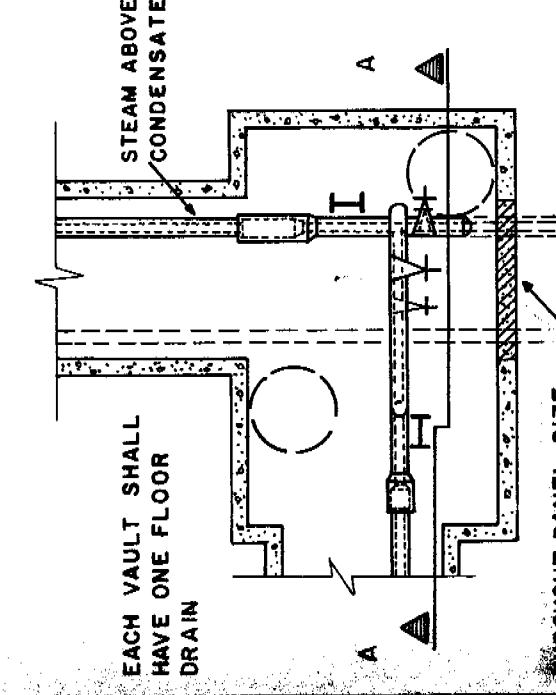


TYPICAL  
TUNNEL  
ANCHOR

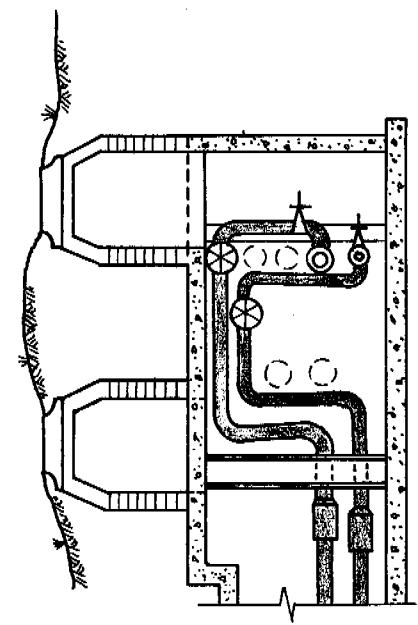


TYPICAL "A" SECTION  
AT PIPE GUIDES

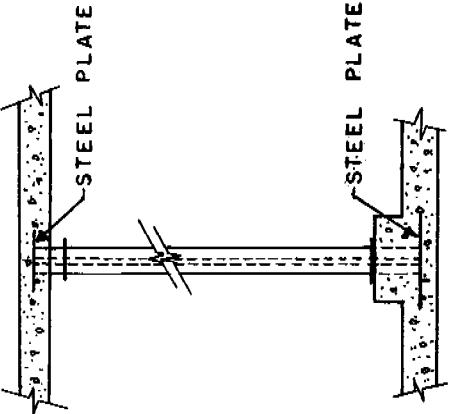
OWN. BY: M. LARGO	APPROVED: <i>R. Price</i>
DATE: 12/3/68	SCALE: 1/4" = 1' 0"
DWG. NO.	FILE NO.
PHYSICAL PLANT DIVISION	STANDARDS
ENGINEERING DEPARTMENT	



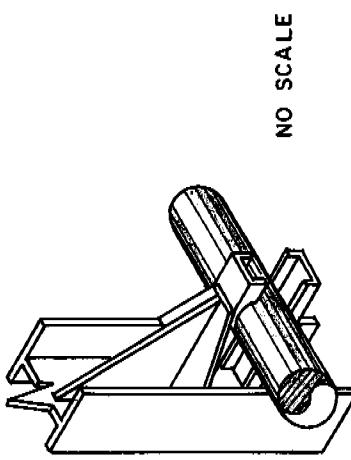
TYPICAL VAULT PLAN



TYPICAL SECTION "A-A"

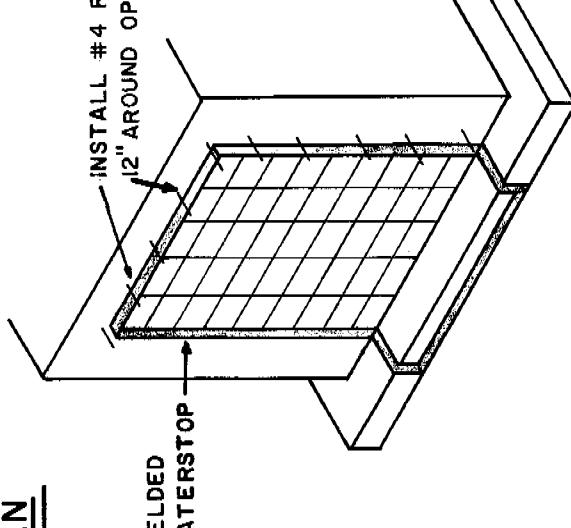


TYPICAL VAULT  
ANCHOR  
CONSTRUCTION

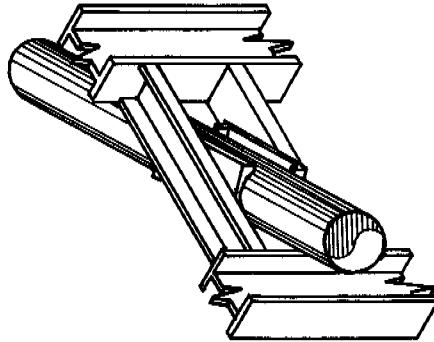


TYPICAL TYPE I VAULT ANCHOR

DRAWN BY:	M LARGO
SIGNED:	N. French
DATE:	12/3/68
SCALE:	1/8" = 1'-0"
DWG. NO.	
FILE NO.	
STANDARDS	



TYPICAL FUTURE  
VAULT OPENING



TYPICAL TYPE II  
90° TURN ANCHOR

NO SCALE



TOP BRACKET TO BE  $\frac{1}{2}$ " Ø  
ROD LAID IN MORTAR JOINT.  
WELD ROD TO  $\frac{1}{2}$ " # AND

FABRICATED LID  
SEE DETAIL

MANHOLE RING  
SEE SECT. 02557.22

3 COURSES OF  
BRICK ON TOP  
OF BLOCK

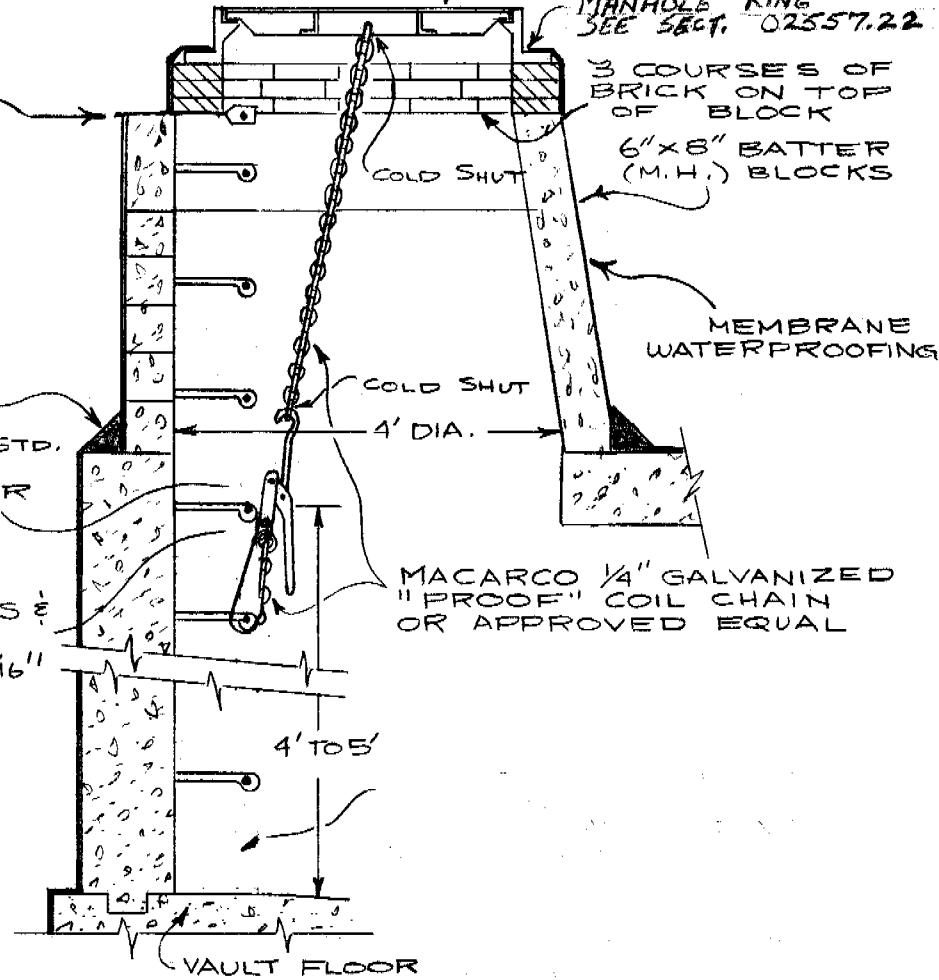
6" X 8" BATTER  
(M.H.) BLOCKS

MEMBRANE  
WATERPROOFING

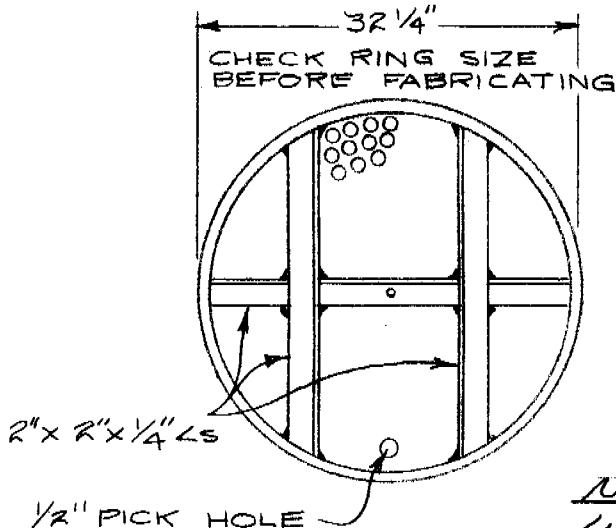
45° MORTAR  
BEVEL

McMASTER STD.  
MALLEABLE  
LOAD BINDER  
NO 2970 SI  
OR EQUAL

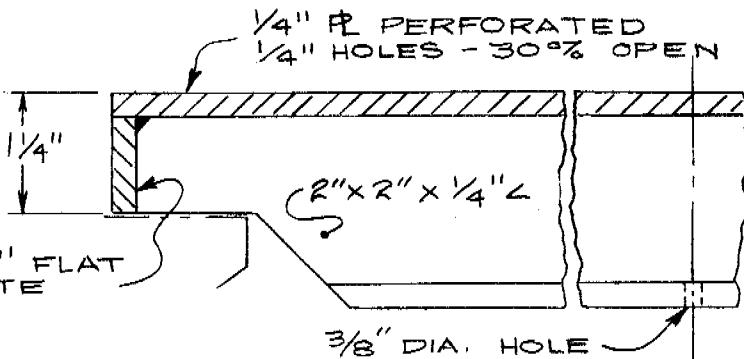
REMOVE CLEVIS &  
REPLACE WITH  
McMASTER 5/16"  
COLD SHUT  
NO 357X913  
OR EQUAL.  
3 REQ'D



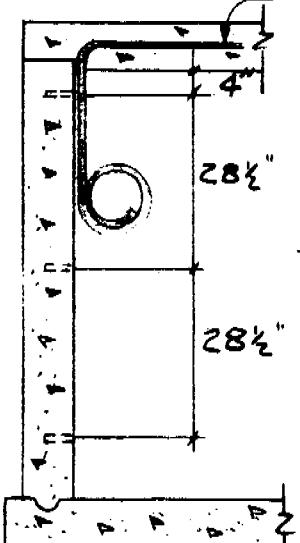
OWN BY $\frac{1}{2}$ P.R.D.	APP'D BY:	DATE: 6-2
SCALE: NONE	DWG. NO.	FILE NO.
STANDARD	STEAM TUNNEL	STANDARDS
MANHOLE DETAIL	MICHIGAN STATE UNIVERSITY	PHYSICAL PLANT DIVISION
	ENGINEERING DEPARTMENT	



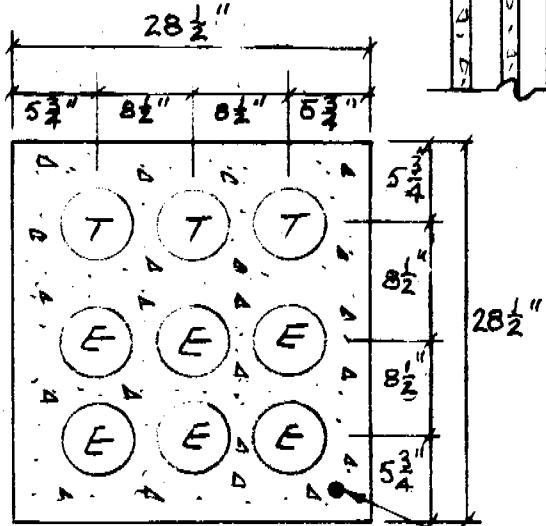
NOTE:  
LIDS TO BE  
COR-TEN STEEL



INSTALL  $\frac{1}{16}'' \times \frac{3}{8}''$  PLAIN  
RIBBON BONDING  
(5 SPOOLS) LEAVE  
5' LOOQ EACH  
SIDE OF MANHOLE



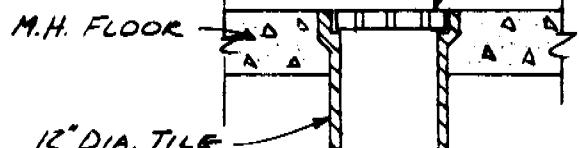
SECTION "A"



DUCT SECTION

NO SCALE

NEENAH R-9040 GRATES



SUMP DETAIL  
 $-\frac{1}{2}'' = 1'-0''-$

INSTALL STAR  
#2535,  $2\frac{3}{8}$ " CONC.  
INSERTS FOR CABLE  
RACKS. (BOLT SIZE  
 $\frac{1}{2}'' \times 2\frac{1}{4}''$ )

REVISED 7/13

TITLE  
TYPICAL ELECTRIC AND  
TELEPHONE MANHOLE PLAN

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING DEPARTMENT

FILE NO.  
Dwg. No.  
2-12

STANDARDS

(15)

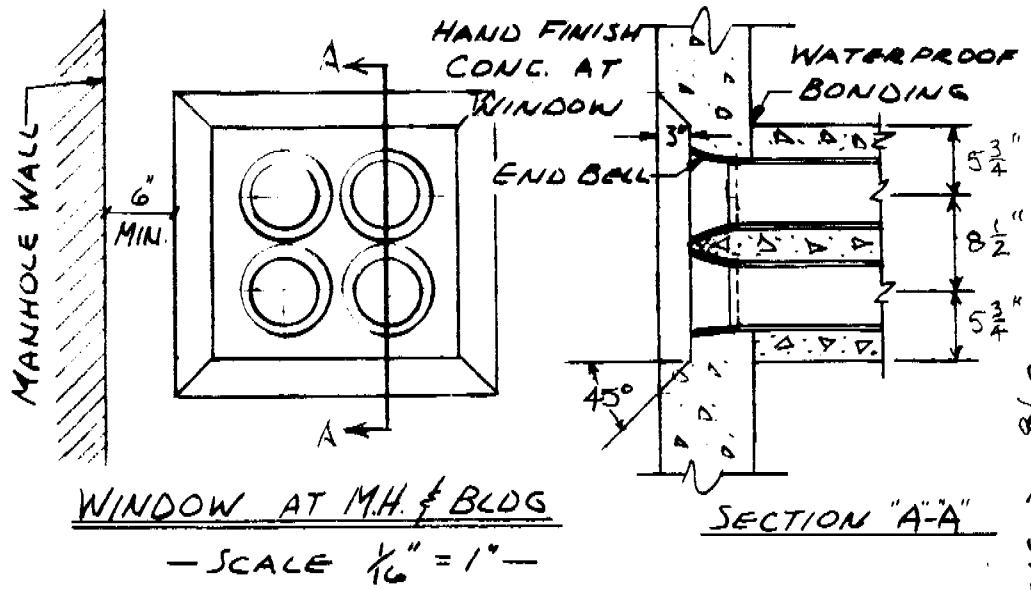
JUN. ENG.  
JAMES ATHAN  
APR 20 1966

2-12

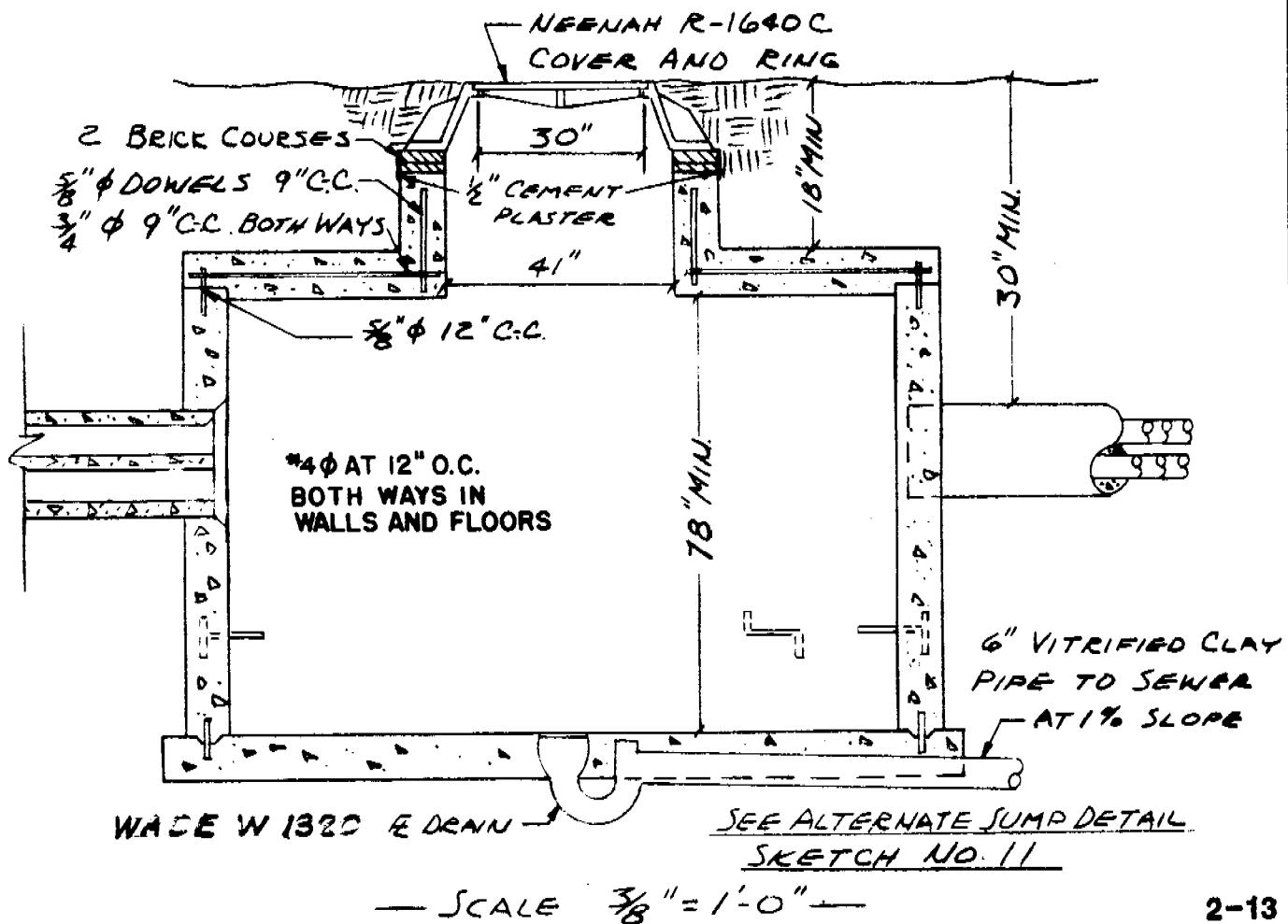
AS Handed

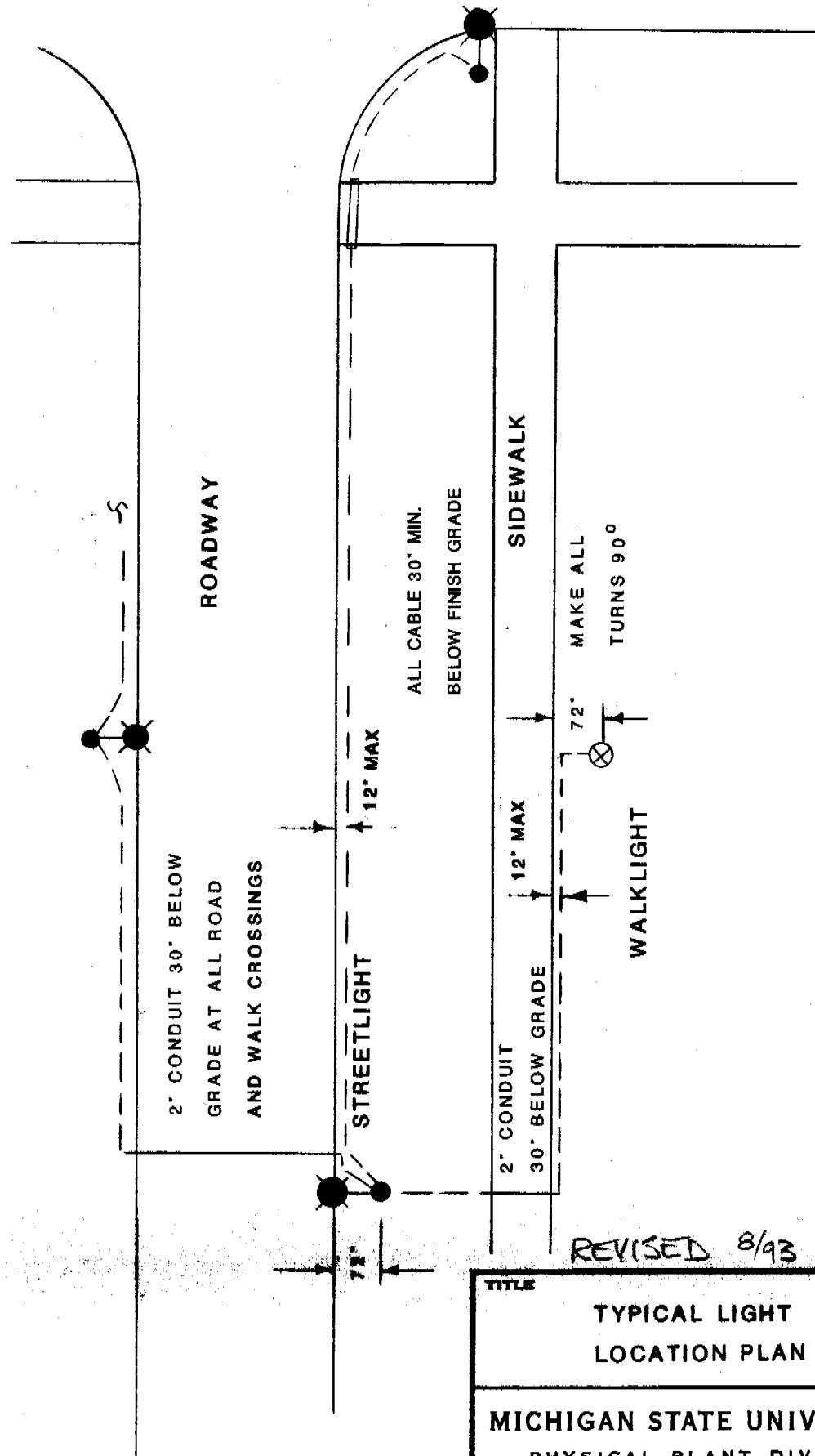
FILE NO.

Dwg. No.



DRAWN BY: SAGEAT HEN	APPROVED BY: DATE: 2-25-66
SCALE: AS NOTED	DWS. NO.
FILE NO.	STANDARDS
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING DEPARTMENT	

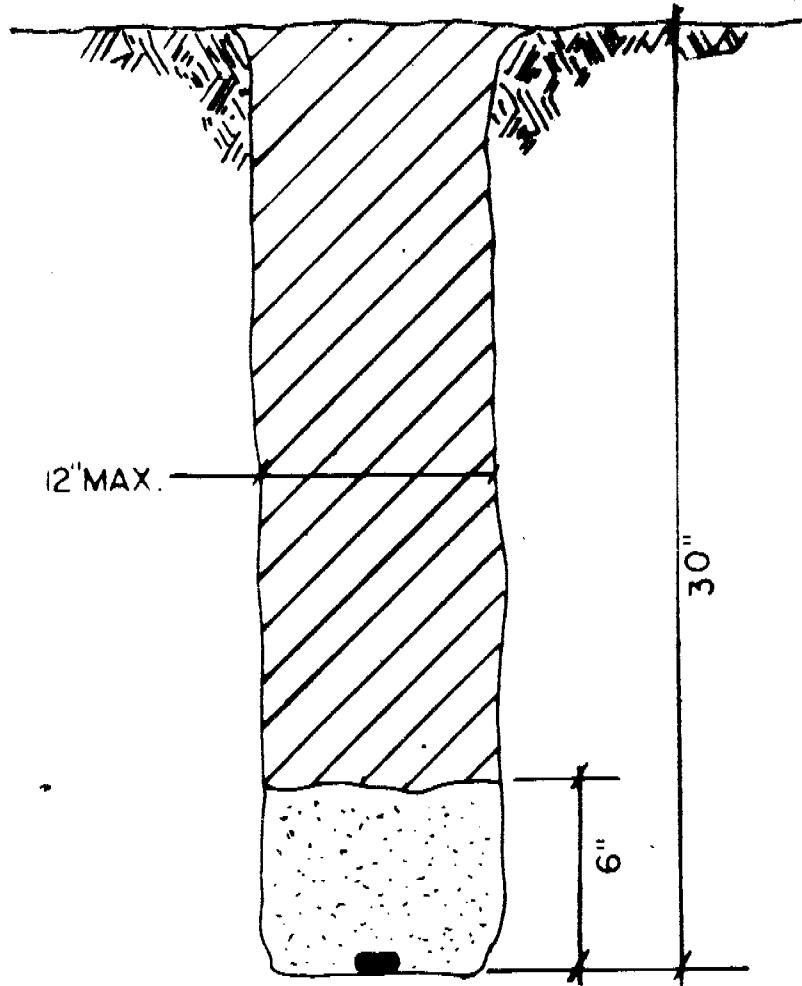




REVISED 8/93

2-14

TITLE	OWN BY: R.E.H.
TYPICAL LIGHT LOCATION PLAN	
APP'D BY:	
DATE: 8-20-85	
SCALE: 1"=20'-0"	
DWG NO.:	
FILE NO. STANDARDS	
MICHIGAN STATE UNIVERSITY	
PHYSICAL PLANT DIVISION	
ENGINEERING SERVICES DEPARTMENT	



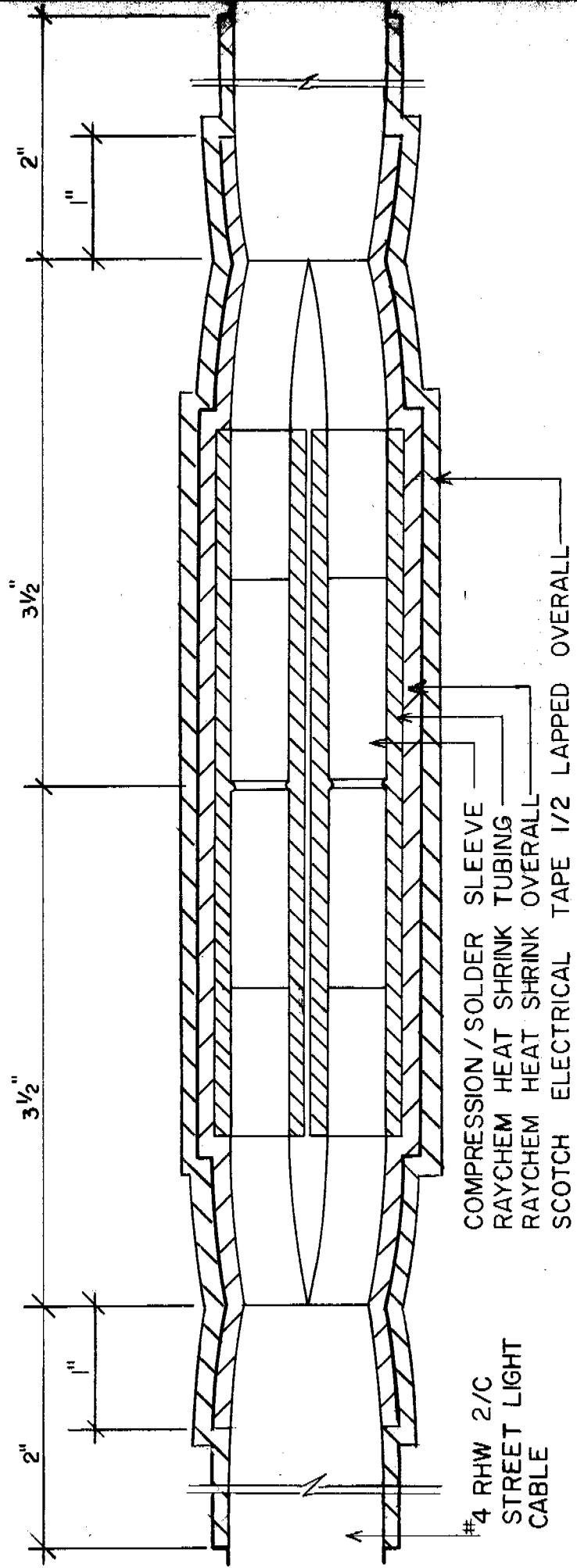
NOTE

DO NOT CROSS  
CABLES IN TRENCH

FILL FIRST 6" WITH SAND. EARTH REMOVED  
MAY ONLY BE USED IN THIS FIRST 6" IF IT IS  
HAND SHOVELLED, FREE OF STONES AND  
OTHER DEBRIS.

COMPACT TRENCH

OPEN BY:	BLW
APPROV'D BY:	
DATE:	4/17/68
SCALE:	1"
DWG. NO.:	
TITLE:	TRENCH DETAIL
MICHIGAN STATE UNIVERSITY	
PHYSICAL PLANT DIVISION	
ENGINEERING DEPARTMENT	
STANDBY	



#### INSULATING PROCEDURE

1. CLEAN & ROUGH NEOPRENE JACKET 2" EACH WAY FROM SPLICE. CLEAN WITH PENETONE, CHLOROTHENE OR EQUAL.
2. APPLY RAYCHEM HEAVY WALL HEAT SHRINK TUBING AS SHOWN.
3. APPLY RAYCHEM HEAT SHRINK OVERALL
4. APPLY SCOTCH ELECTRICAL TAPE 1/2 LAPPED OVERALL

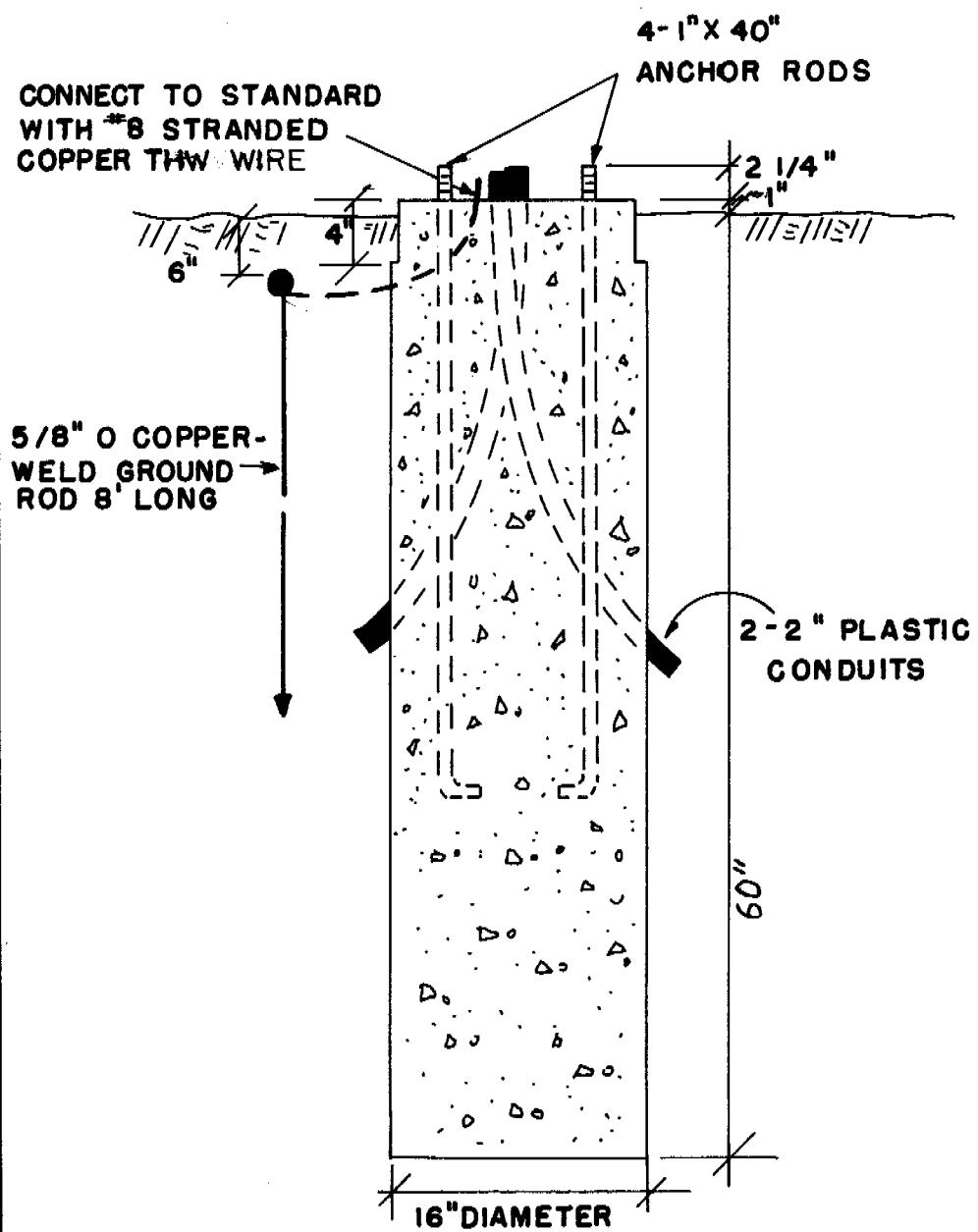
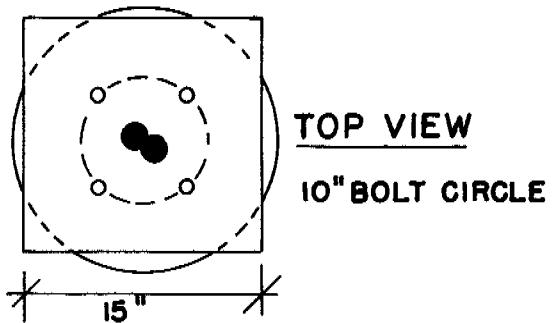
REVISED 8/93

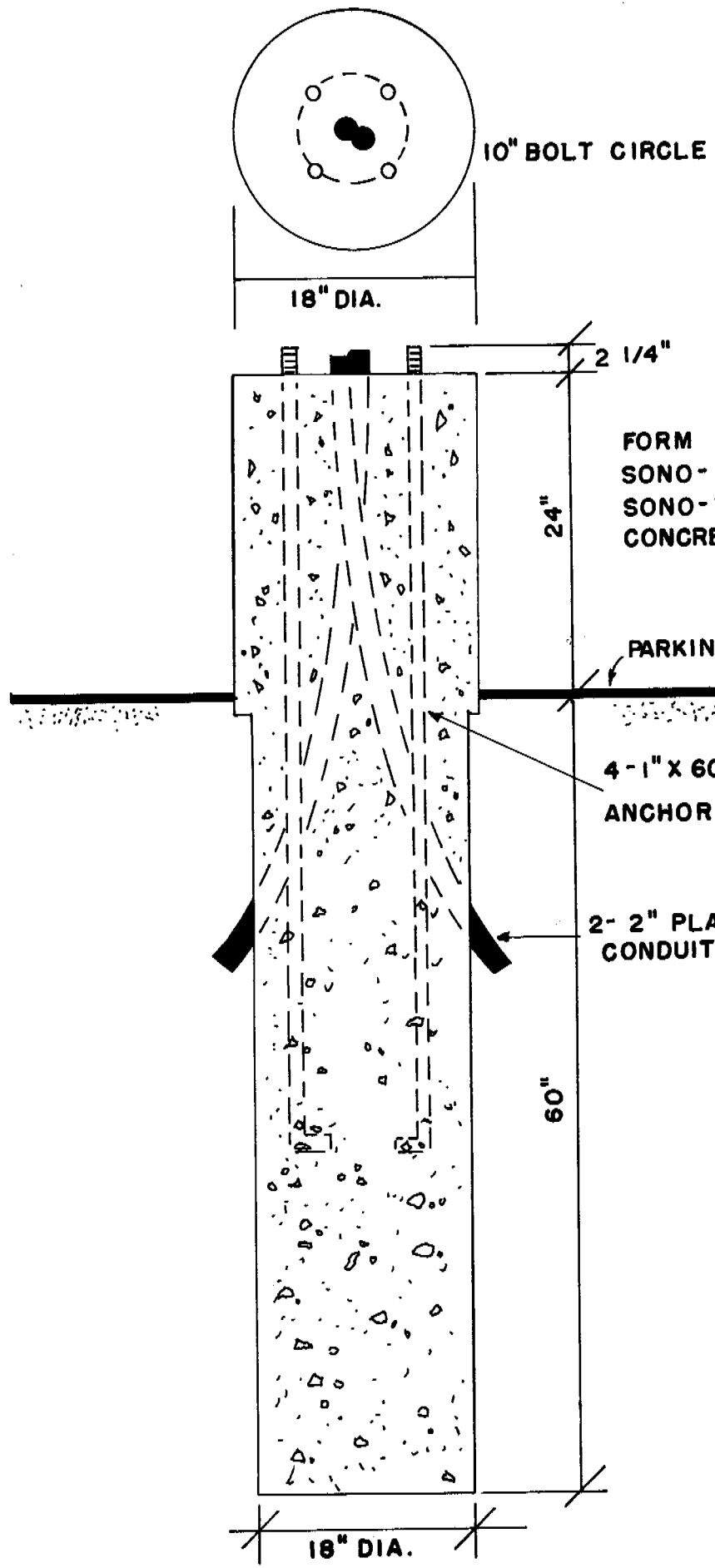
TITLE	STREET LIGHT CABLE SPLICE	DRAWN BY: SJ.S
APPROVED BY:		DATE: 5-20-83
SCALE: FULL	DWG NO.	CARD NO.
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT		
STANDARDS		

DRAWN BY:	JDW
APP'D BY:	
DATE:	3/4/66
SCALE:	
DWG NO.	
CARD NO.	
STANDARDS	

**TITLE**  
**CONCRETE BASE FOR 25'**  
**STREET LIGHT-(LAWN**  
**AREA)**

**MICHIGAN STATE UNIVERSITY**  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

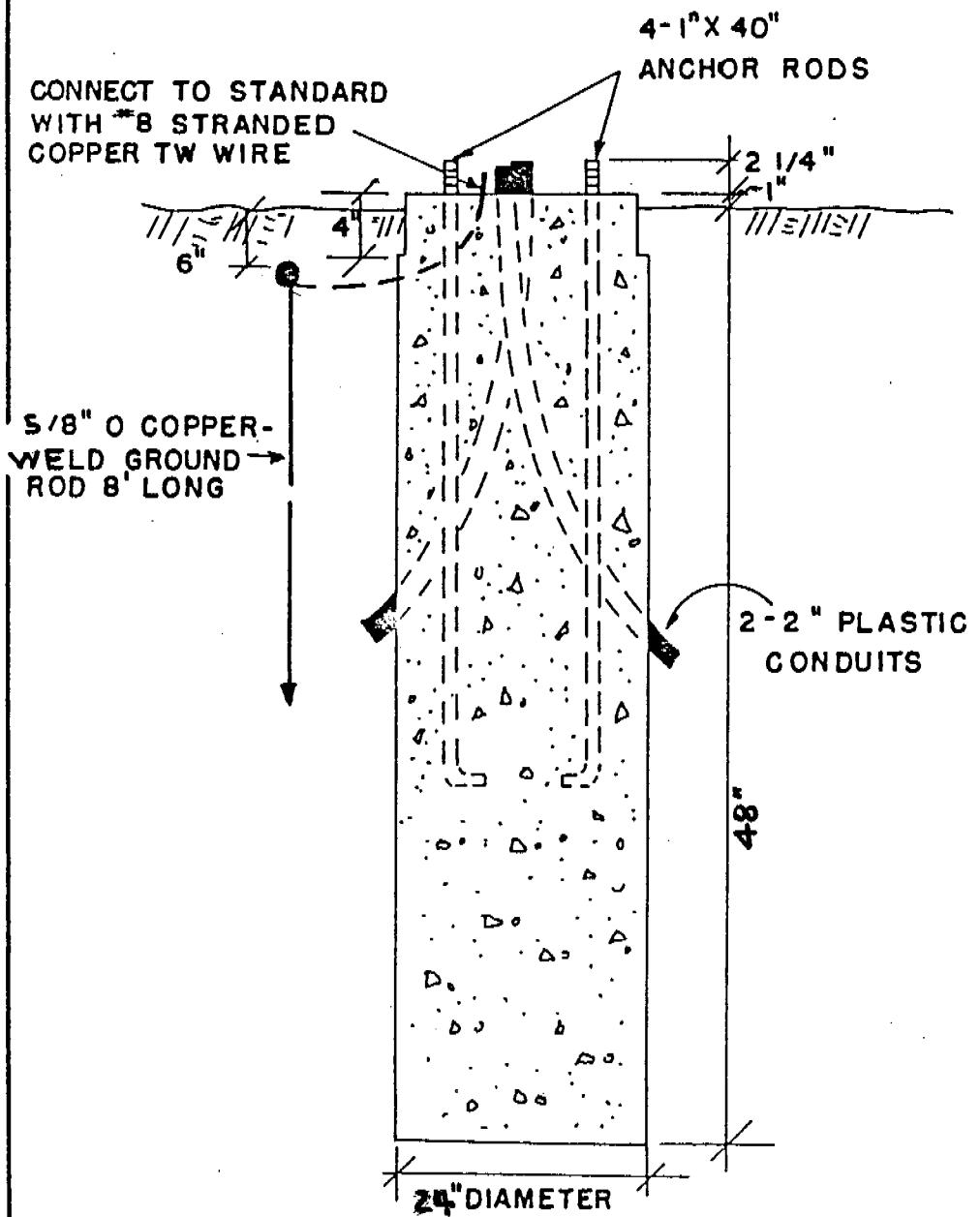
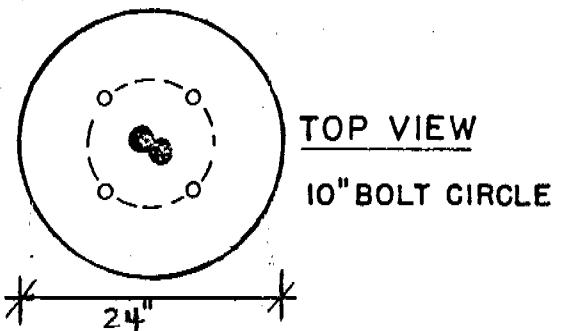


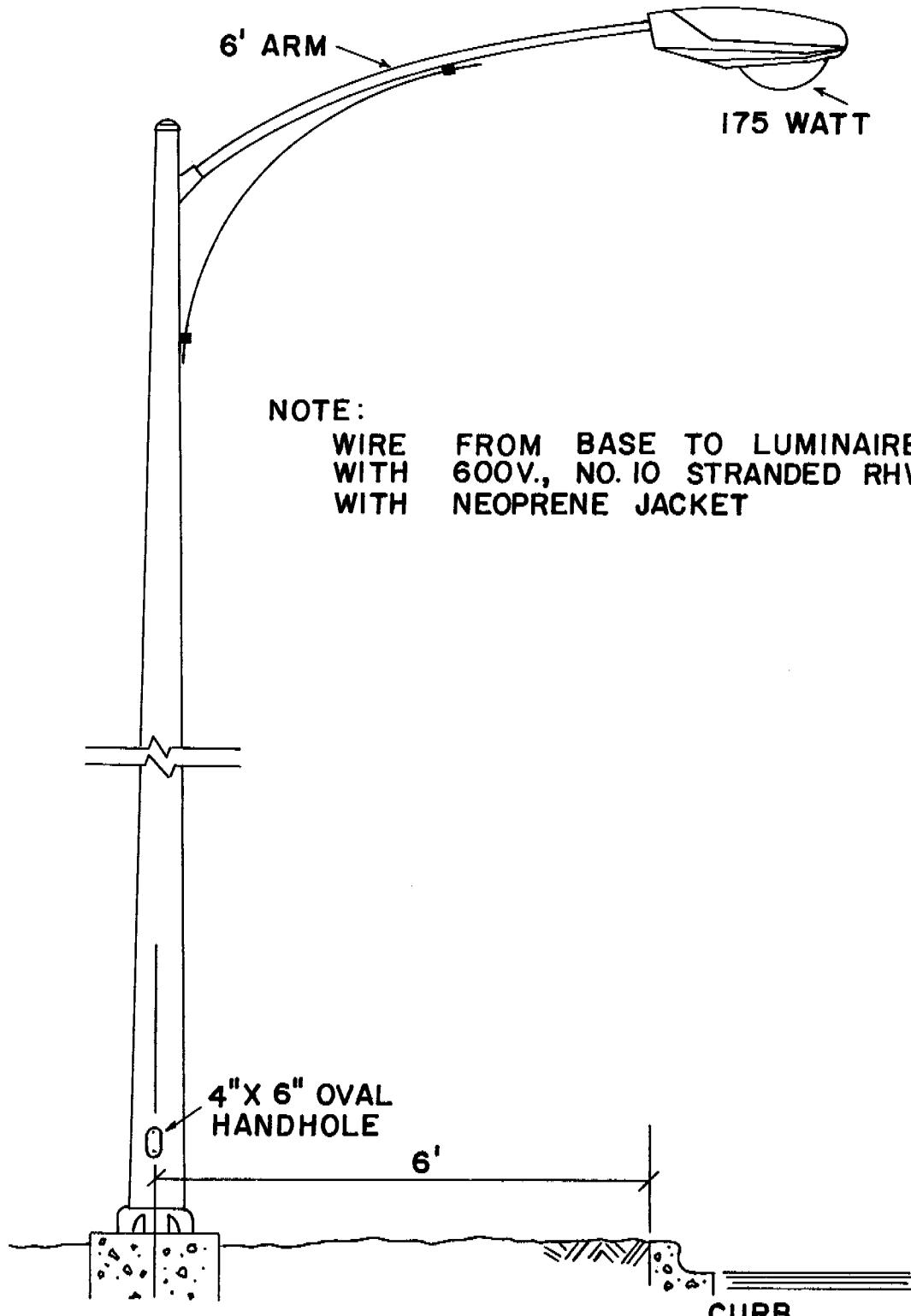


TITLE	CONCRETE BASE FOR 25' STREET LIGHT (PARKING AREA)	DRAWN BY	JDW
APP'D BY:		DATE:	3-4-65
SCALE:		DWG NO.	
CARD NO.		ENGINEERING SERVICES DEPARTMENT	
STANDARDS		MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION	

OWN BY:	APPD BY:
DATE:	SCALE:
DWG NO.:	CARD NO.:
STANDARDS	

**MICHIGAN STATE UNIVERSITY**  
**PHYSICAL PLANT DIVISION**  
**HISTORICAL LANTERN**  
 ENGINEERING SERVICES DEPARTMENT

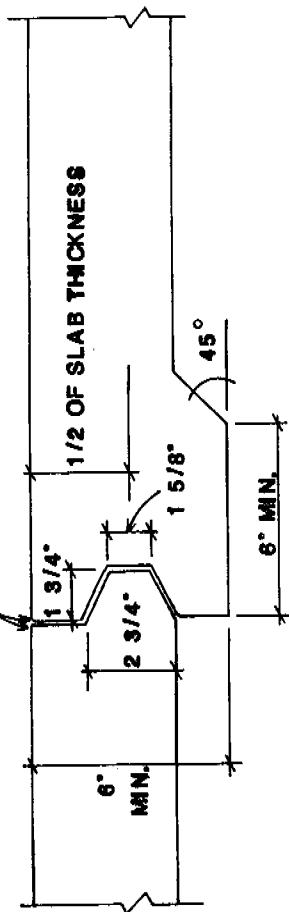




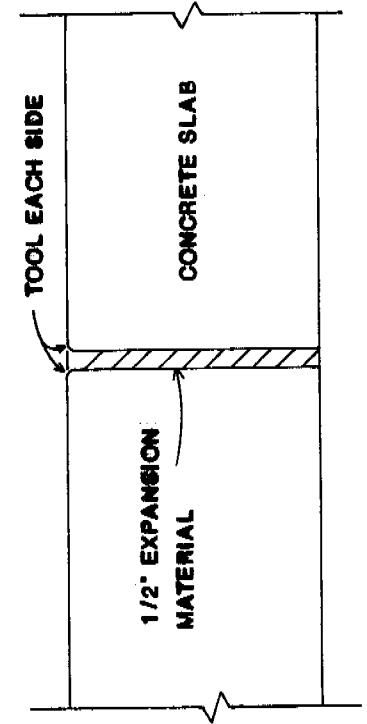
2-24

TITLE	DWN BY: BD
25' STREET LIGHT	APP'D BY:
	DATE: 4/17/85
	SCALE: 1/2" = 1'-0"
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT	DWG NO.:
	FILE NO. STANDARDS

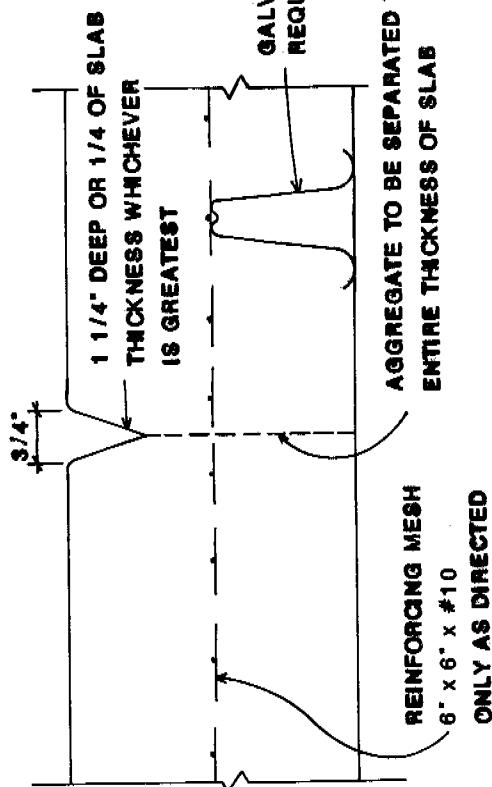
TOOL EDGES



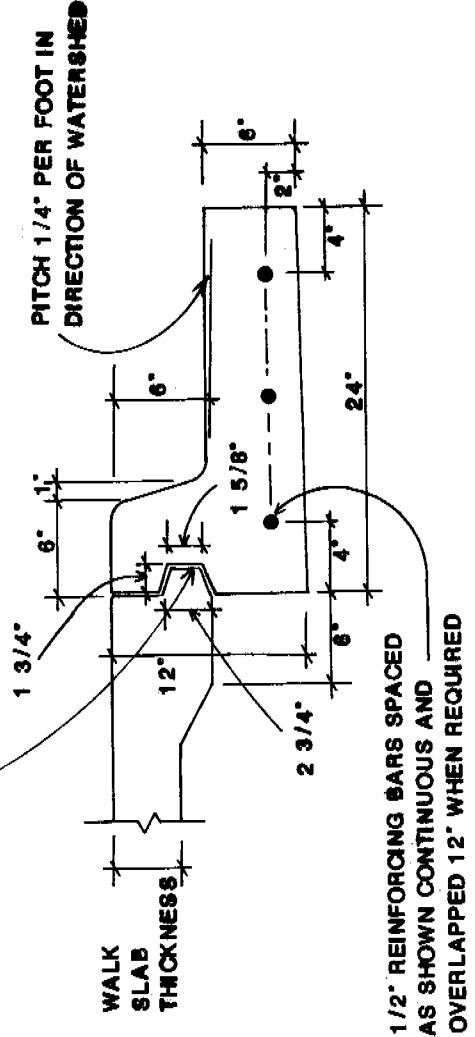
CONSTRUCTION JOINT - SECTION DETAIL



ISOLATION (EXPANSION) JOINT - SECTION DETAIL



CONTROL (CONTRACTION) JOINT - SECTION DETAIL



WALK, CURB, AND GUTTER - SECTION DETAIL

**TITLE**  
**WALK, CURB, AND GUTTER**  
**STANDARD DETAILS**

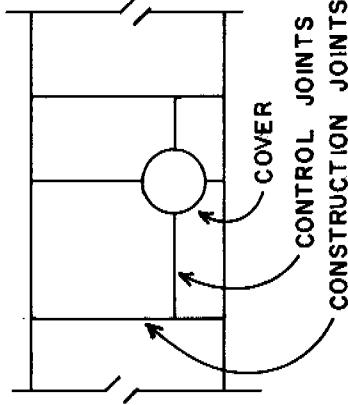
OWN BY: M.R.W.
APP'D BY:
DATE: 5-31-86
SCALE: NONE
DWG NO.:
CARD NO.:
STANDARD

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

**NOTES**

THE CONTROL JOINTS SHALL BE PERPENDICULAR TO TANGENTS,  
CONSTRUCTION JOINTS AND EDGE OF WALK.

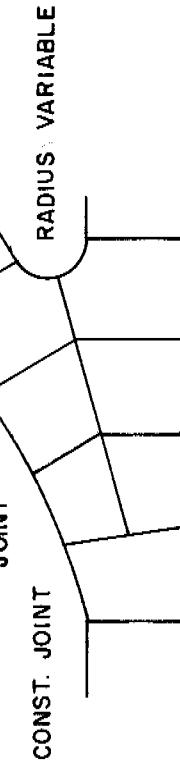
UTILITY COVERS POSITIONED IN OTHER LOCATIONS SHALL FOLLOW  
THIS BASIC PLAN TO ELIMINATE POTENTIAL CRACKING AROUND STRUCTURE.



TYPICAL WALK JOINT PLAN AT UTILITY COVERS

**ISOLATION JOINTS**

ISOLATION JOINTS SHALL BE USED WHERE 2 OR MORE  
WALKS MEET AND BETWEEN BUILDINGS, STEPS, VAULTS,  
AND EXISTING WALKS.



TYPICAL WALK INTERSECTION JOINT PLAN

TITLE	DWN BY:
TYPICAL WALK DETAIL	
SCALE: $1'' = 1'-0''$	APPROV'D BY:
DWG NO.	DATE:
MICHIGAN STATE UNIVERSITY	CARD NO. STD
PHYSICAL PLANT DIVISION	
ENGINEERING SERVICES DEPARTMENT	

NOTES:

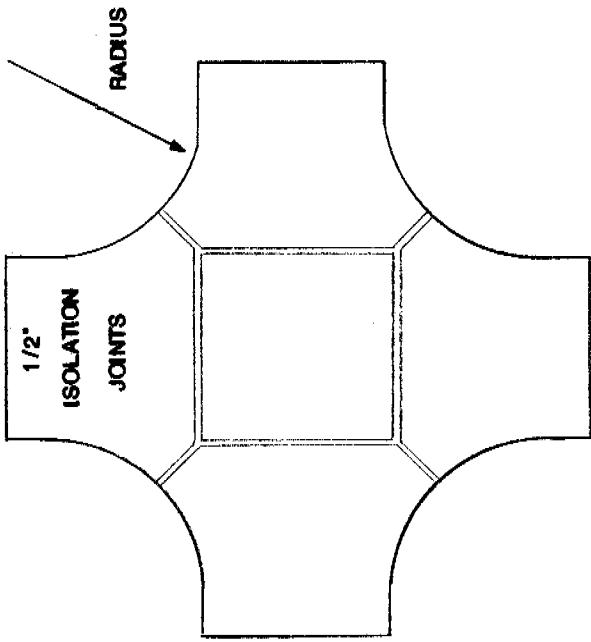
ISOLATION JOINTS 4 WAYS AND ON DIAGONALS AT ALL INTERSECTIONS.

ISOLATION JOINTS SHALL BE RIGIDLY HELD IN PLACE DURING POUR AND SHALL BE TRUE TO POSITION.

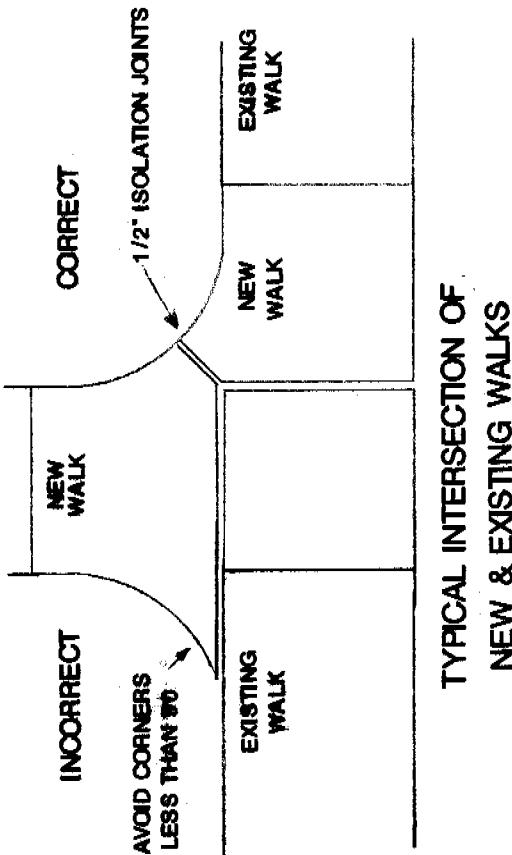
WHERE WALKS OF DIFFERENT WIDTHS INTERSECT USE RADIUS AS SPECIFIED FOR WALK OF GREATER WIDTH.  
IN MODIFIED SITUATIONS, FOLLOW DETAIL AS CLOSELY AS POSSIBLE.

CORNER RADII FOR:	WALK	RADIUS
	5	3
	6	4
	7	4 1/2
	8	5

WALK BLOCKS TO BE NO LONGER THAN WIDTH OF WALK.  
ISOLATION JOINTS TO BE PLACED AT LEAST EVERY 50', WIDTH VARIABLE ACCORDING TO PLANS.



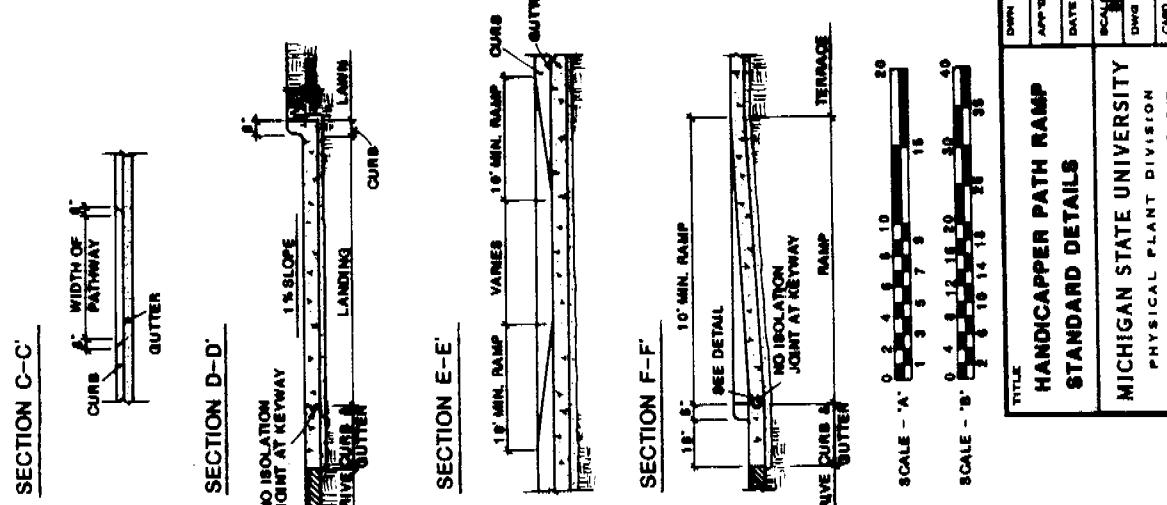
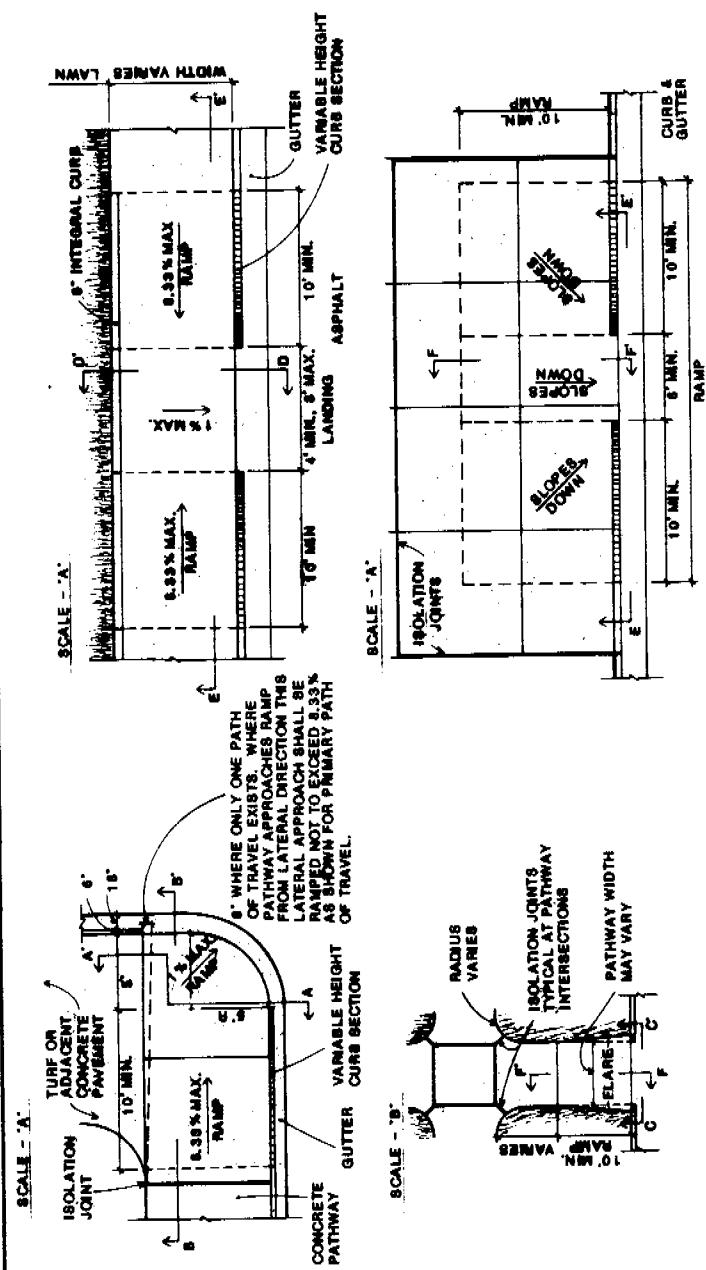
TYPICAL INTERSECTION



TYPICAL INTERSECTION OF  
NEW & EXISTING WALKS

TITLE		TYPICAL WALK INTERSECTION DETAILS	
DRAWN BY:	RJB	APPD BY:	
DATE:	6/23/08	SCALE:	1/4"=1'-0"
DWG NO.		CARD NO.	
STANDARDS			

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



## NOTES

1. SIZE AND SHAPE OF RAMP NEED NOT COINCIDE WITH EXISTING OR PROPOSED joint pattern.
  2. ISOLATION JOINTS SHALL NOT BE PLACED WITHIN THE RAMP AREA, INCLUDING BEHIND THE CURB. ISOLATION JOINTS SHALL ISOLATE AND SURROUND THE RAMP AND ADJACENT CURBS FROM ADJOINING PAVEMENT AND CURB AND GUTTER.
  3. DIMENSIONS SHOWN ARE ONLY MINIMUM REQUIREMENTS. IF THERE IS SUFFICIENT SPACE, A LARGE RAMP SHALL BE CONSTRUCTED TO REDUCE THE OVERALL SLOPE OF THE RAMP.
  4. DRAINAGE STRUCTURES SHALL NOT BE LOCATED IN LINE WITH THE RAMPS.
  5. MAINTAIN A UNIFORM GRADE ON RAMP FREE OF SAGS AND FREE OF ABRUPT GRADE CHANGES.
  6. CERTAIN DESIGN SITUATIONS REQUIRE THAT TYPICAL DETAILS 'B' AND 'D' BE USED IN COMBINATION.
  7. AT 12' WIDE PATHWAYS, RAMP OPENING SHALL NOT EXCEED 8'.
  8. AT EXISTING CURB, REMOVE CURB AND GUTTER AT THE NEAREST GOOD JOINT. SAWCUT.

A rectangular parking permit card with a blue header and a white body. The header contains "MICHIGAN STATE UNIVERSITY" and "PARKING PERMIT". The body has four sections: "DRIVING DIVISION", "DWA NO.", "CAB NO.", and "STANDARDS". Below these sections is a large area for "EXPIRATION DATE".

24"

1-1/4"

2-1 2

3/4

2'

1"

1-1/4"

1"

1- /4"

1"

1-1/4"

1"

1"

1-1/2"

1-1/4"

# RESERVED PARKING

## HANDICAPPERS ONLY



MSU OR STATE

HANDICAPPER

PERMIT REQUIRED

TOW AWAY ZONE

18"

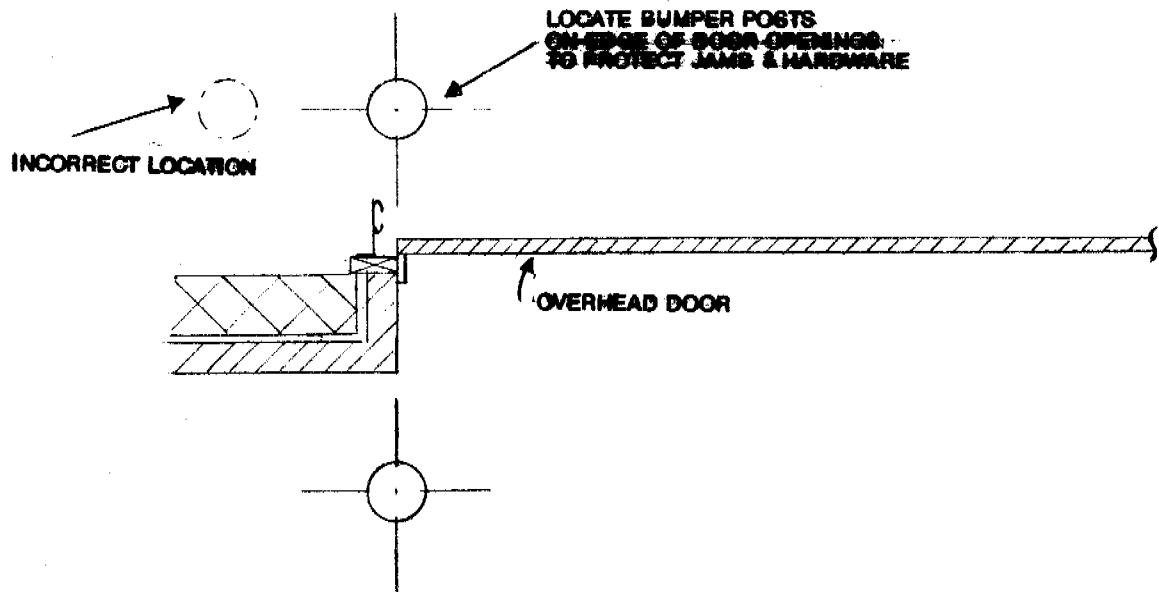
DO NOT SCALE

- ALUMINUM SIGN BLANK .081" THICK
- BORDER 5/8" WIDE, 3/8" FROM EDGE
- WHITE SCOTCHLITE WITH GREEN LETTERING & BORDER
- 3/8" HOLES ON CENTER FOR MOUNTING ON STANDARD POSTS

-USE STANDARD HANDICAPPER SYMBOL

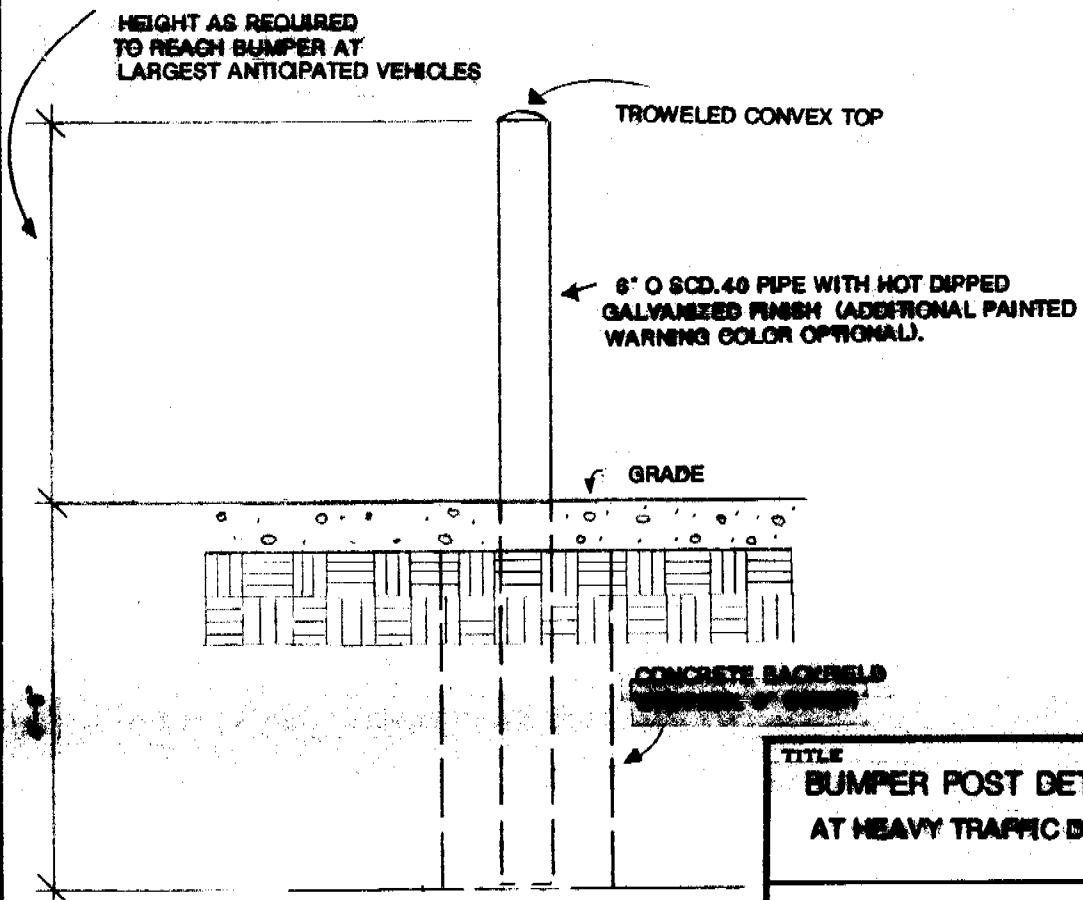
2-29

TITLE	DWN BY:
STANDARD HANDICAPPER	APP'D BY:
PARKING SIGN	DATE:
MICHIGAN STATE UNIVERSITY	SCALE:
PHYSICAL PLANT DIVISION	DWG NO.:
ENGINEERING SERVICES DEPARTMENT	FILE NO. STANDARD



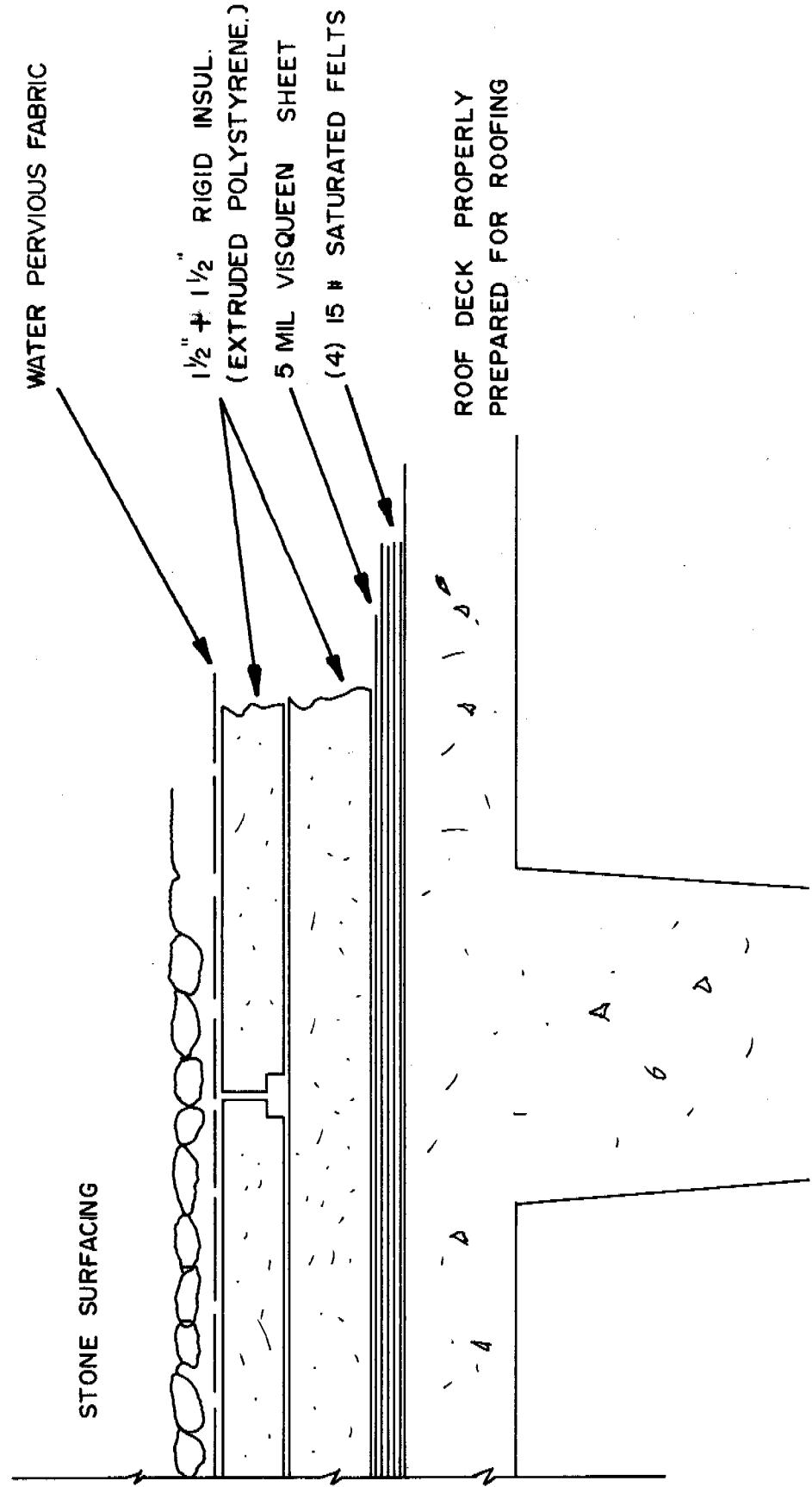
### TYPICAL PLAN

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



2-30

TITLE <b>BUMPER POST DETAIL AT HEAVY TRAFFIC DOOR OPENINGS</b>	OWN BY: RS
	APP'D BY:
	DATE: 6/17/88
SCALE: AS NOTED	
DWG NO.:	
FILE NO. STANDARDS	



TITLE	DRAWN BY: S.S.
TYPICAL BUILT-UP (IRMA) INVERTED ROOF SECTION 1	
APPROVED BY:	
DATE: 4-25-85	
SCALE: NONE	DWG NO.
MICHIGAN STATE UNIVERSITY	CARD NO.
PHYSICAL PLANT DIVISION	STANDARDS
ENGINEERING SERVICES DEPARTMENT	

NOTE - PIPE LEG SUPPORT FLASHING MAY BE  
RECTANGULAR OR ROUND. KEEP UNIT HIGH ENOUGH  
SO AREA UNDER UNIT MAY BE REROOFED AT A  
LATER DATE.

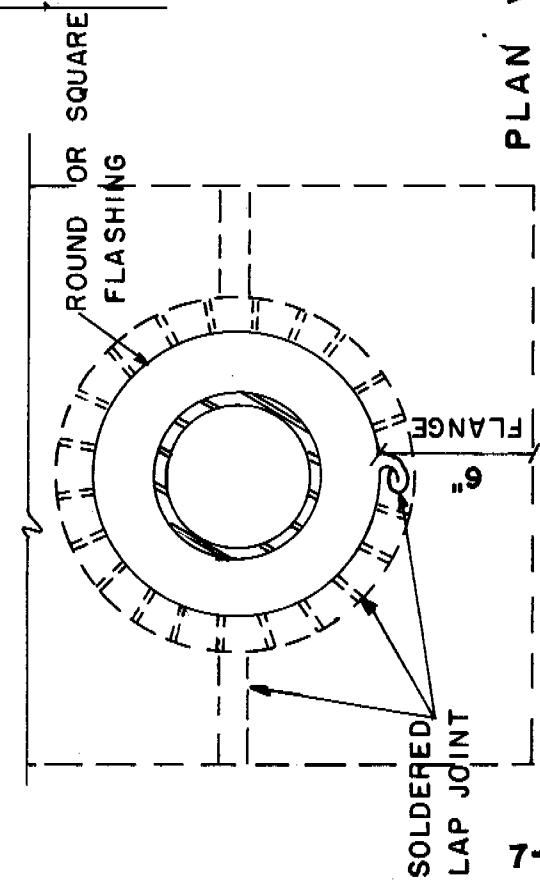
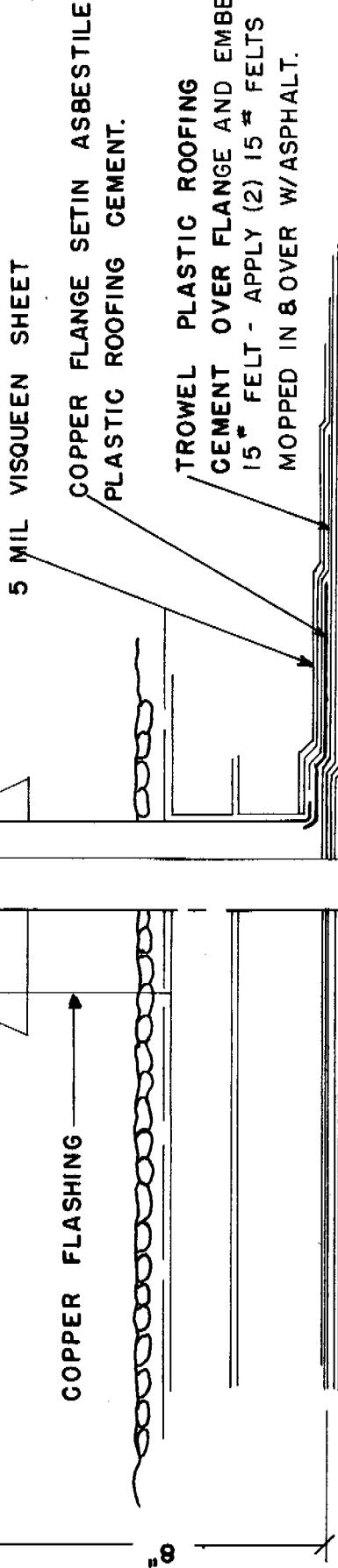
PIPE LEG OF SUPPORT  
FRAME

COPPER COUNTER FLASHING  
(SOLDERED LAP JOINTS)

ALL JOINTS SHALL BE SOLDERED.

CAULKING

S.S. HOSE CLAMP



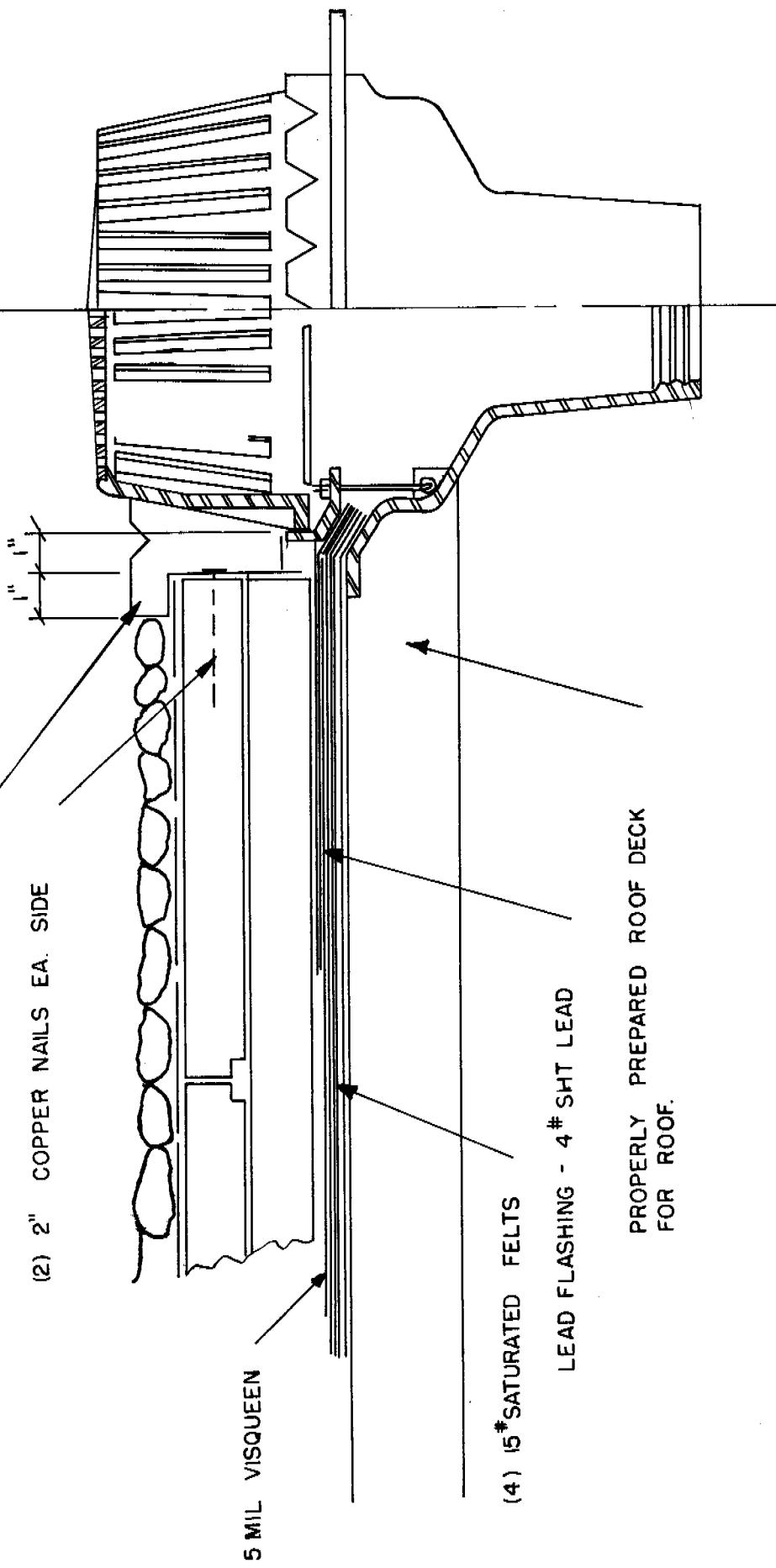
7-2

TITLE	TYPICAL ROOF PIPE SUPPORT LEG FLASHING		
DWN BY:	BD	APP'D BY:	
DATE:	5/7/85	SCALE:	—
DWG NO.		CARD NO.	
STANDARDS			

MICHIGAN STATE UNIVERSITY  
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ENGINEERING SERVICES DEPARTMENT

GRAVEL GUARD AROUND DRAIN.  
32 OZ. COPPER ANGLE W/  $\frac{3}{4}$ " DEEP  
NOTCHES AT 2" O.C.

(2) 2' COPPER NAILS EA. SIDE

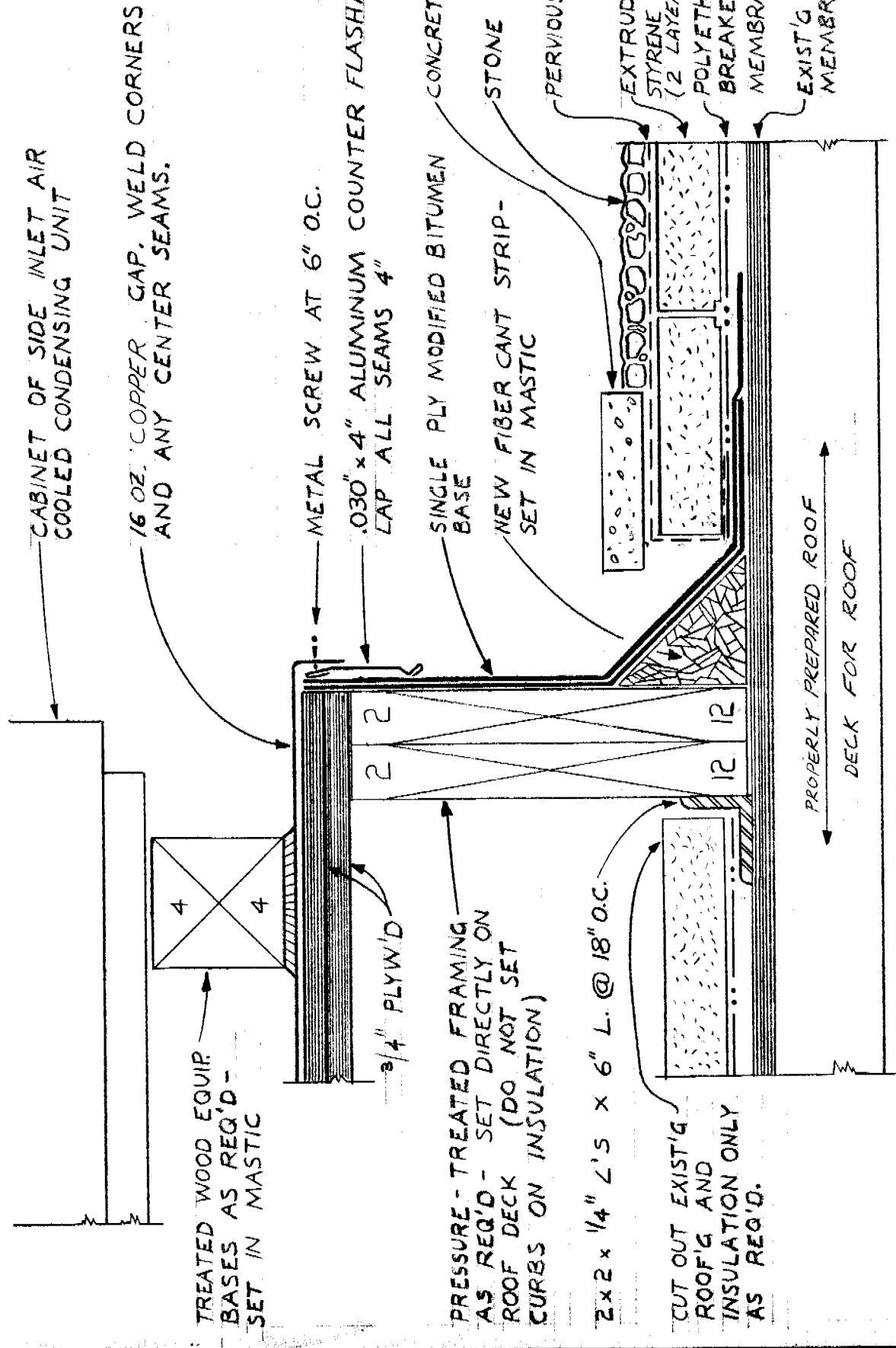


PROPERLY PREPARED ROOF DECK  
FOR ROOF.  
LEAD FLASHING - 4# SHT LEAD

5 MIL VISQUEEN

(4) 15# SATURATED FELTS

TITLE	TYPICAL ROOF DRAIN INSTALLATION		
DRAWN BY:	SS		
APPR'D BY:			
DATE:	4-30-85		
SCALE:	NONE		
DWG NO.			
CARD NO.			
STANDARDS			



TITLE	DWN BY: MC
TYPICAL SITE-FABRICATED	
SMALL AREA ROOF CURB	
NOTES:	APP'D BY:
TOP OF CURB SHALL BE PITCHED FOR DRAINAGE - LEVEL EQUIPT. BETWEEN 4 x 4 AND LEGS.	
DATE: 7/25/84	SCALE:
DWG NO.	CARD NO.
STANDARDS	

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PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

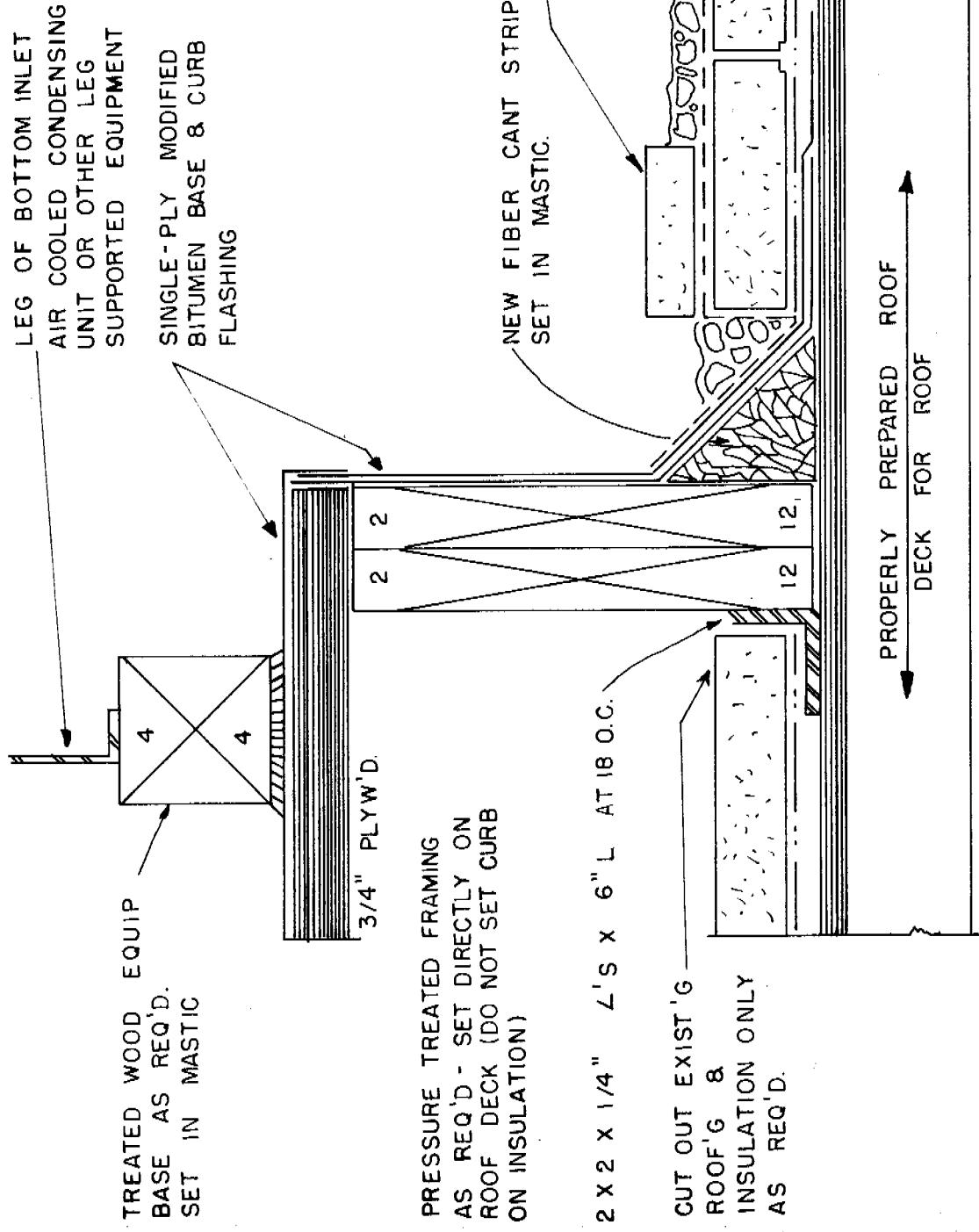
NOTES:

- LEG OF BOTTOM INLET  
AIR COOLED CONDENSING  
UNIT OR OTHER LEG  
SUPPORTED EQUIPMENT  
TREATED WOOD EQUIP  
BASE AS REQ'D.  
SET IN MASTIC  
3/4" PLYW'D.

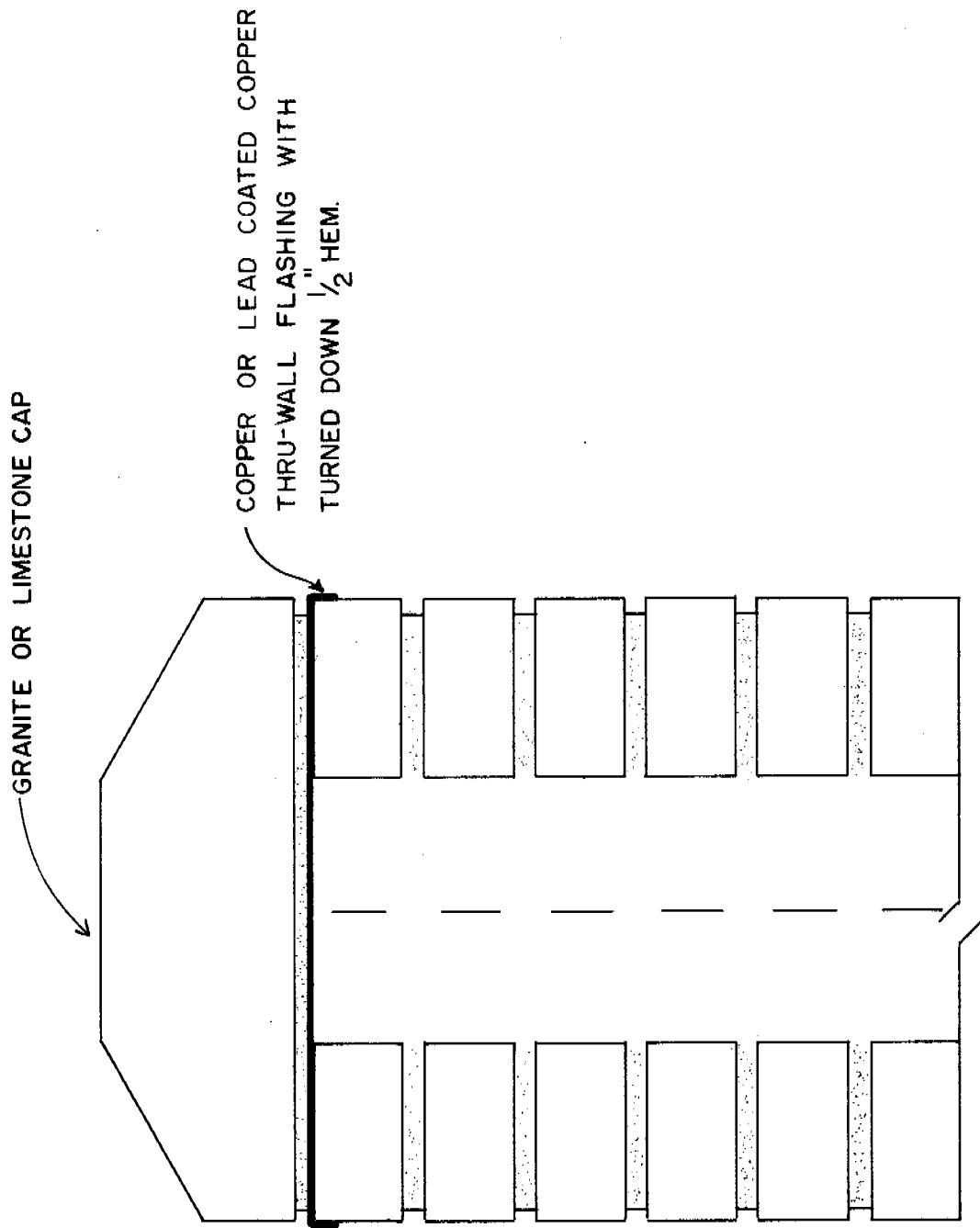
SINGLE-PLY MODIFIED  
BITUMEN BASE & CURB  
FLASHING

EQUIPMENT SHALL NOT BE  
LESS THAN 1/5 THE WIDTH  
OF THE EQUIPMENT TO A  
MAXIMUM OF 2'-0".

TOP OF CURB SHALL BE  
PITCHED FOR DRAINAGE -  
LEVEL EQUIPMENT BETW.  
4 X 4 AND EQUIPMENT LEGS.



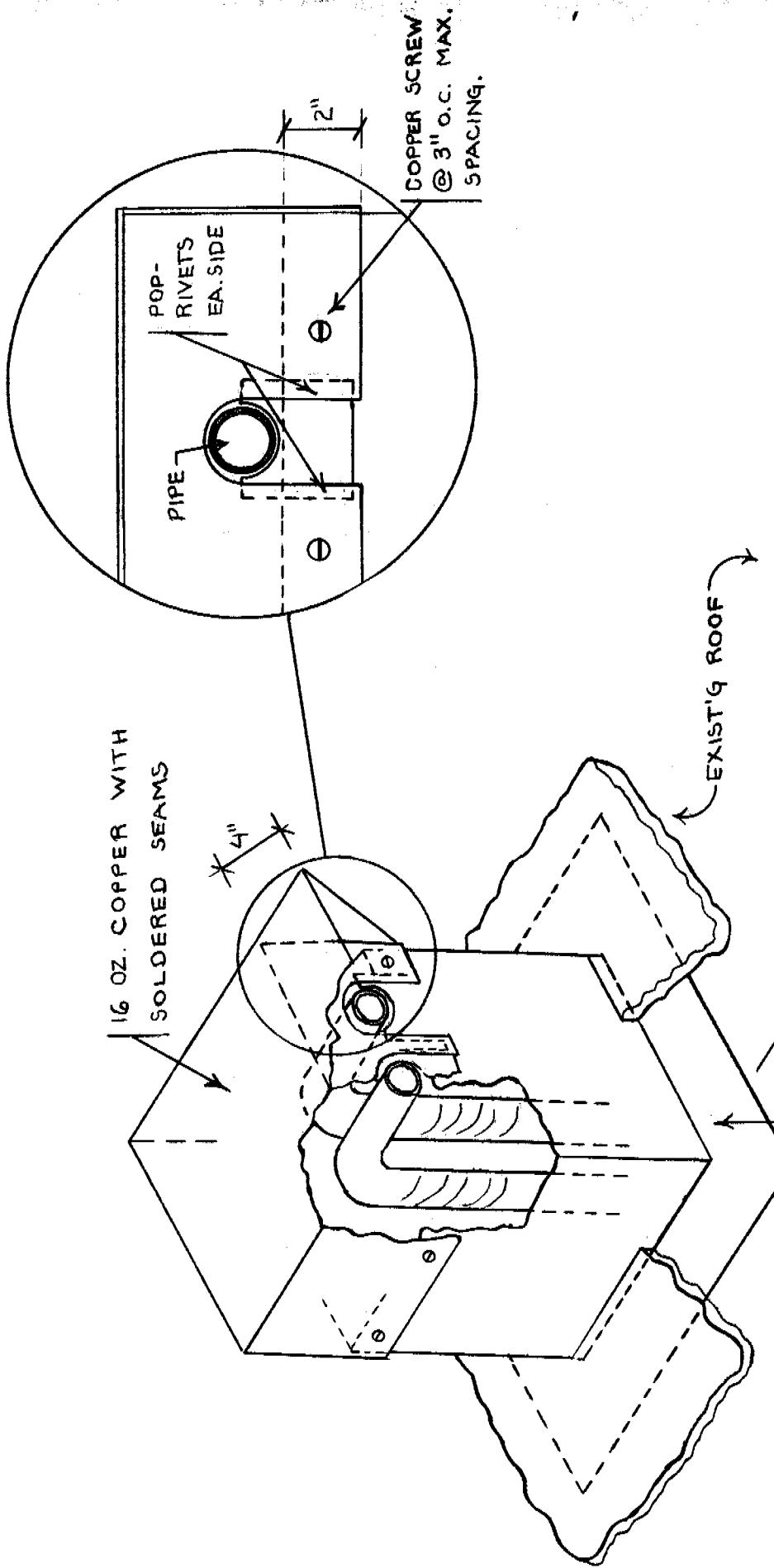
TITLE	TYPICAL SITE - FABRICATED LARGE AREA ROOF CURB		
DWN BY	BD	APPD BY:	
DATE	5-1-85	SCALE:	
DWG NO.		CARD NO.	
STANDARDS			



TITLE  
FREESTANDING WALL SECTION  
(TYPICAL)

DRAWN BY: KM
APPR'D BY:
DATE: 5-1-85
SCALE: 3" = 1'-0"
DWG NO.
CARD NO.
STANDARD

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PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



**TITLE**  
**TYPICAL PIPE FLASHING  
AT ROOF**

**DRAWN BY:**  
**ANNA**

**APPROVED BY:**  
**N.T.G.**

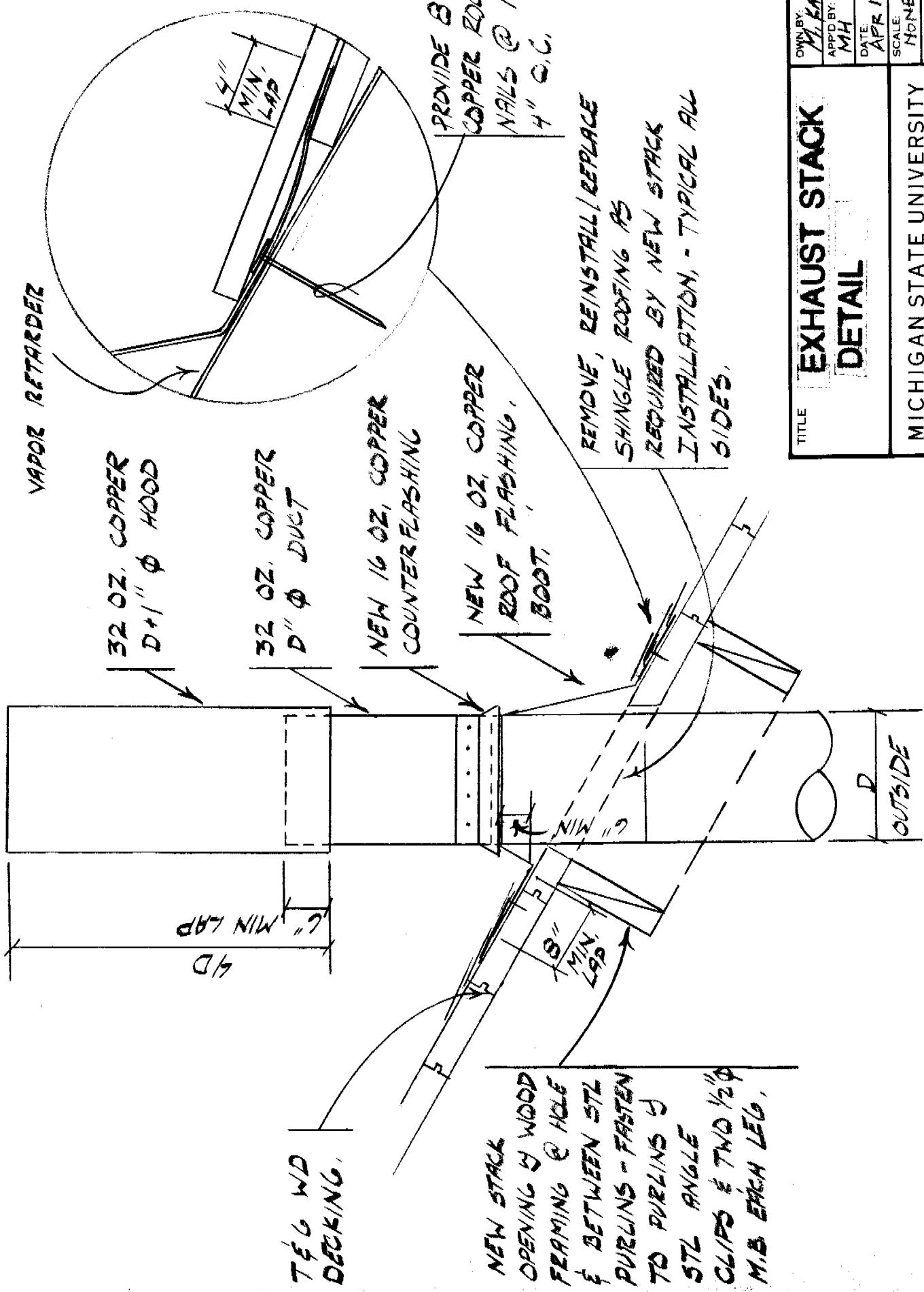
**DATE:**  
**3-26-71**

**SCALE:**  
**N.T.S.**

**DWG NO.:**  
**516798**

**CARD NO.:**  
**STANDARD**

**MICHIGAN STATE UNIVERSITY**  
**PHYSICAL PLANT DIVISION**  
**ENGINEERING SERVICES DEPARTMENT**



## EXHAUST STACK DETAIL

TITLE

DRAWN BY  
M. KNEZICK

APPR'D BY  
MH

DATE  
APR 15, 1989

SCALE  
NONE

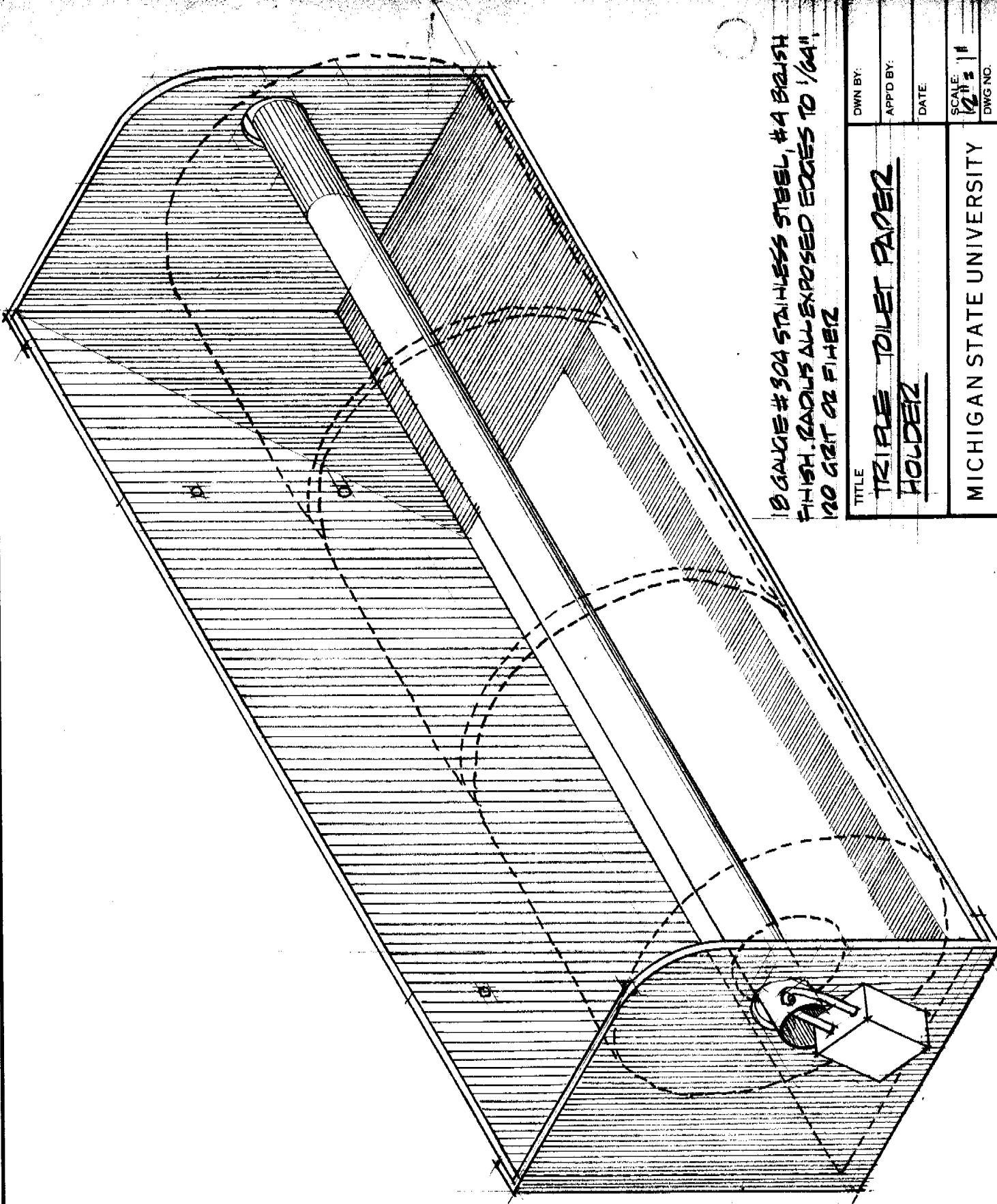
DWG NO.

CARD NO.  
STANDARDS

MICHIGAN STATE UNIVERSITY

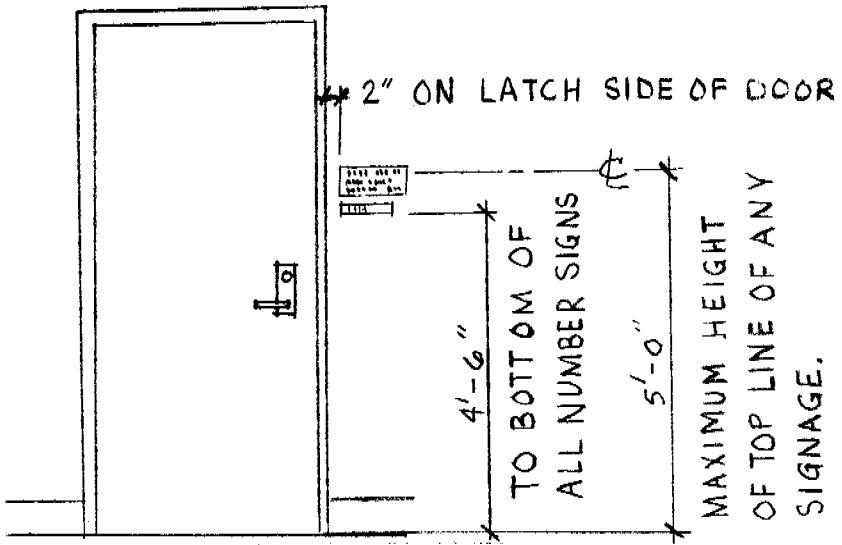
PHYSICAL PLANT DIVISION

ENGINEERING SERVICES DEPARTMENT



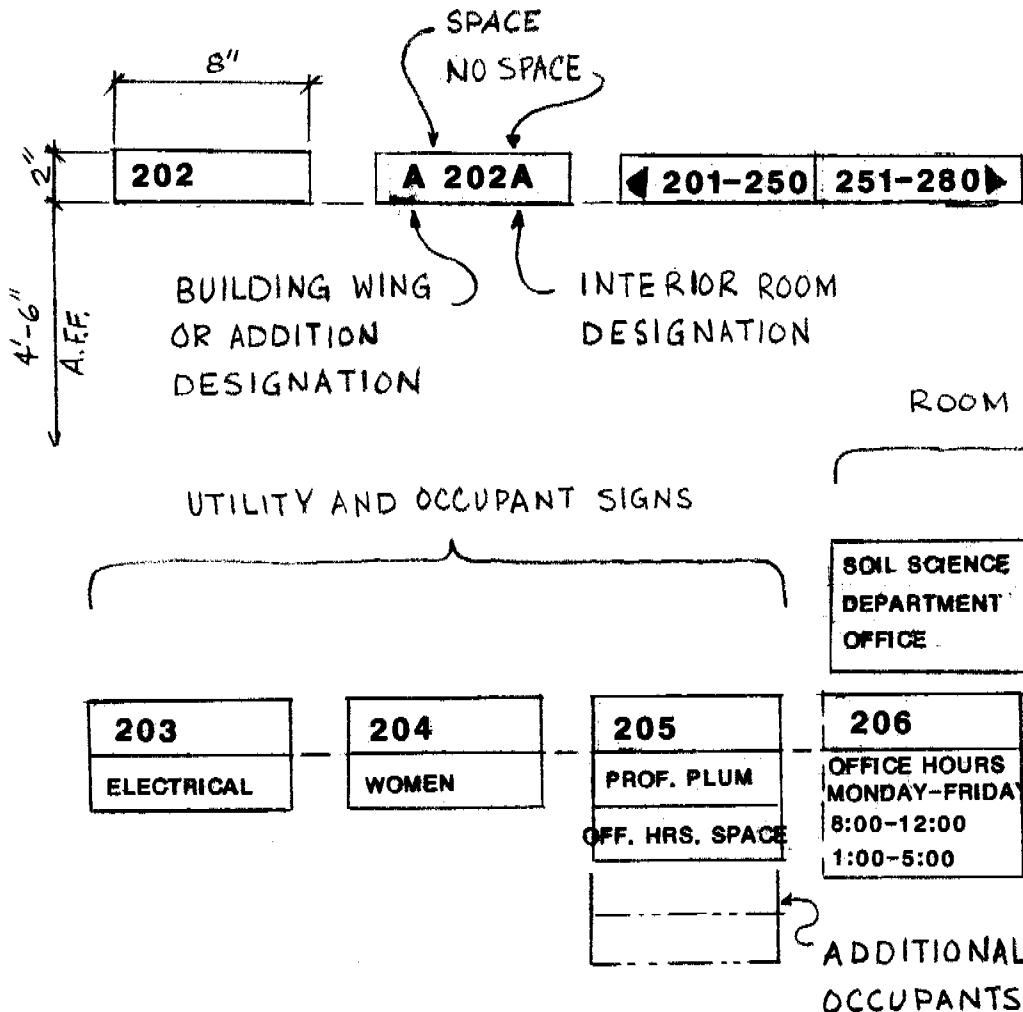
OWN BY:	APPROVED BY:
DATE:	
SCALE:	1/2 = 1'
DWG NO.	
CARD NO.	STAN/04/2024

MICHIGAN STATE UNIVERSITY  
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ENGINEERING SERVICES DEPARTMENT



### SIGN LOCATION ELEVATION

$$SC. \frac{3}{8} = 1'-0"$$



NOTE: SEE SECTION 10440 - SIGNS

TITLE	OWN BY: TLS
	APPRD BY: PM
	DATE: JAN. 10, 89
	SCALE: AS NOTED
	DWG NO. _____
	CARD NO. _____

**TYPICAL SIGN LAYOUTS & LOCATIONS**

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

10-2

17-10440

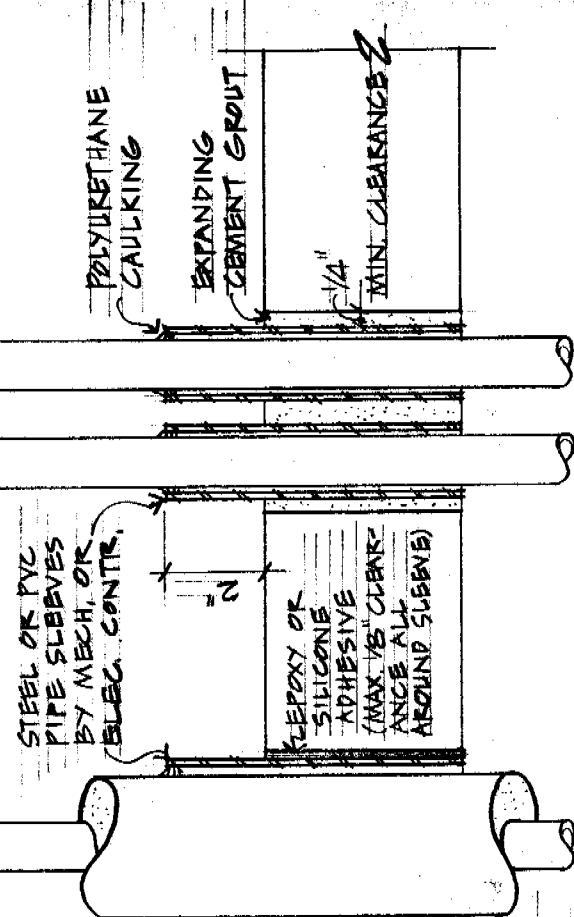
SINGLE PIPE/SLEEVES  
(MULTIPLE PIPES/  
SLEEVES NOT PERMITTED)

INSULATED & UNINSULATED  
PIPING

RIGID ELECTRICAL  
CONDUIT (ALL ALUM.)  
EMT CONDUIT MUST  
BE SLEEVED.

LATEX MODIFIED  
CONCRETE CURB  
OPTIONAL AS  
NOTED

BASE-  
OPTIONAL AS  
NOTED

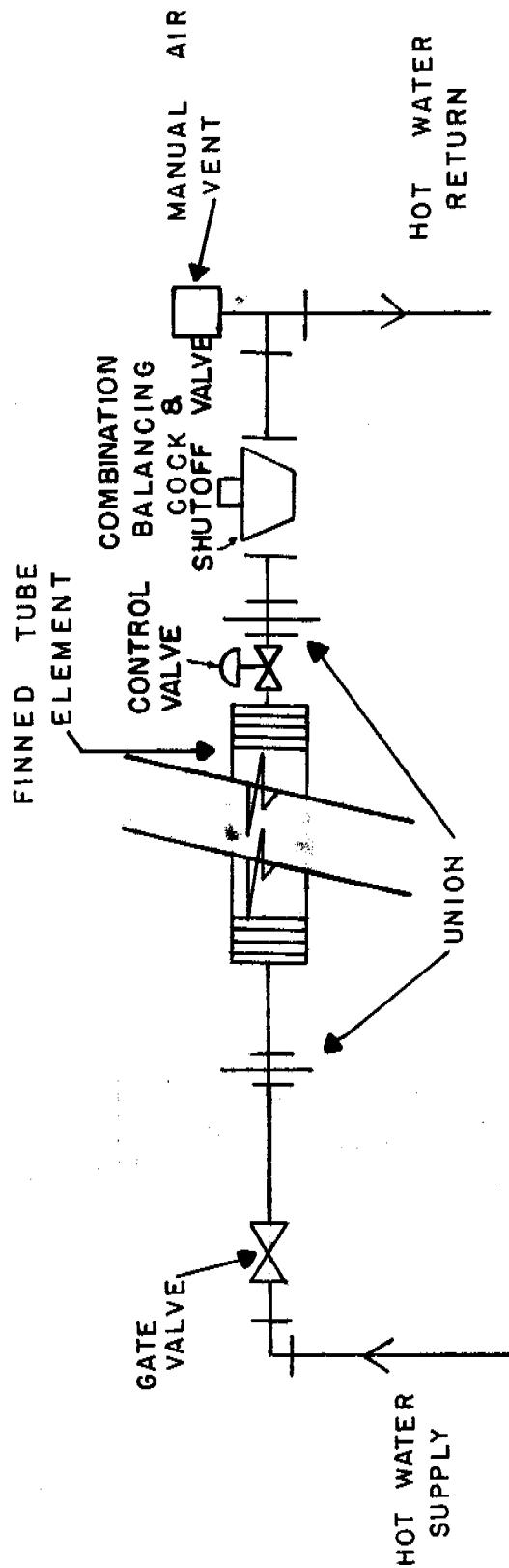


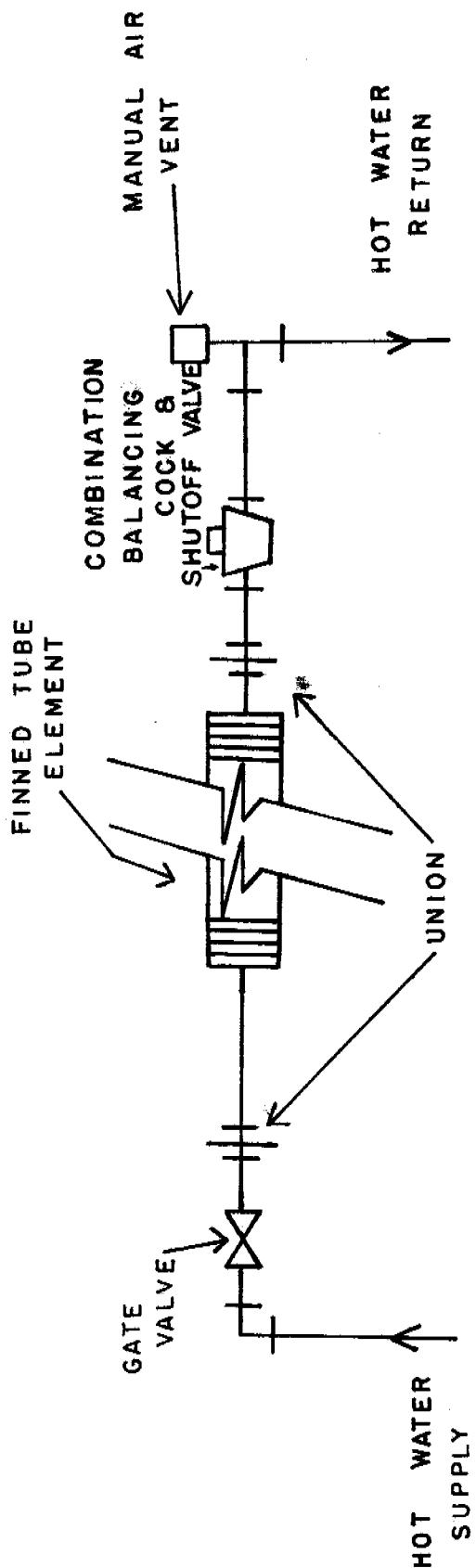
SLEEVE INSTALLATION  
IN CLOSE FIT CORE  
DRILLED HOLE

SLEEVE INSTALLATION IN  
HAMMERED HOLE

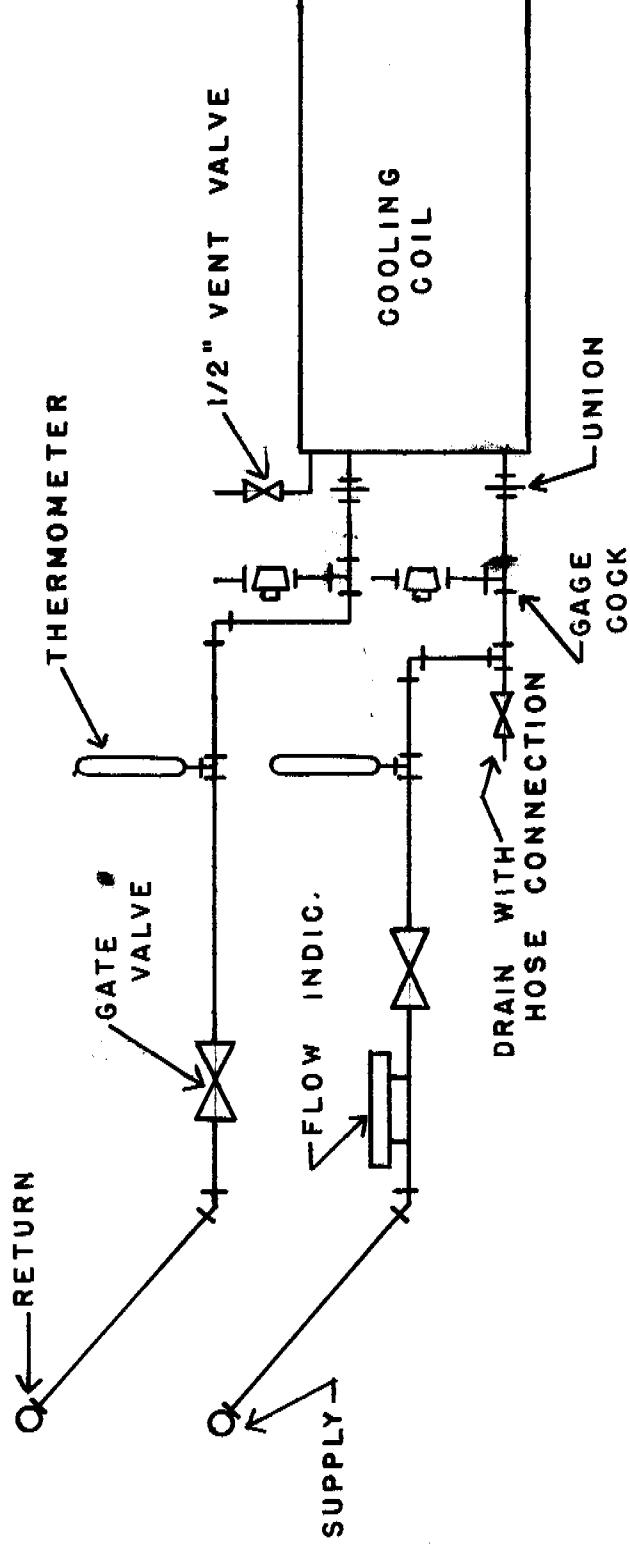
TITLE	15-1
DWY. N.Y.	APP'D BY:
-PM	DATE: 1-23-85
SCALE: 1/4"	DWG. NO.
EXISTING FLOORS	FILE NO.
MICHIGAN STATE UNIVERSITY	
PHYSICAL PLANT DIVISION	
ENGINEERING SERVICES DEPARTMENT	

DWN BY:	T.W.H.
APP'D BY:	
DATE:	16 MAY 74
SCALE:	NONE
DWG NO.:	
FILE NO.:	
STANDARDS	

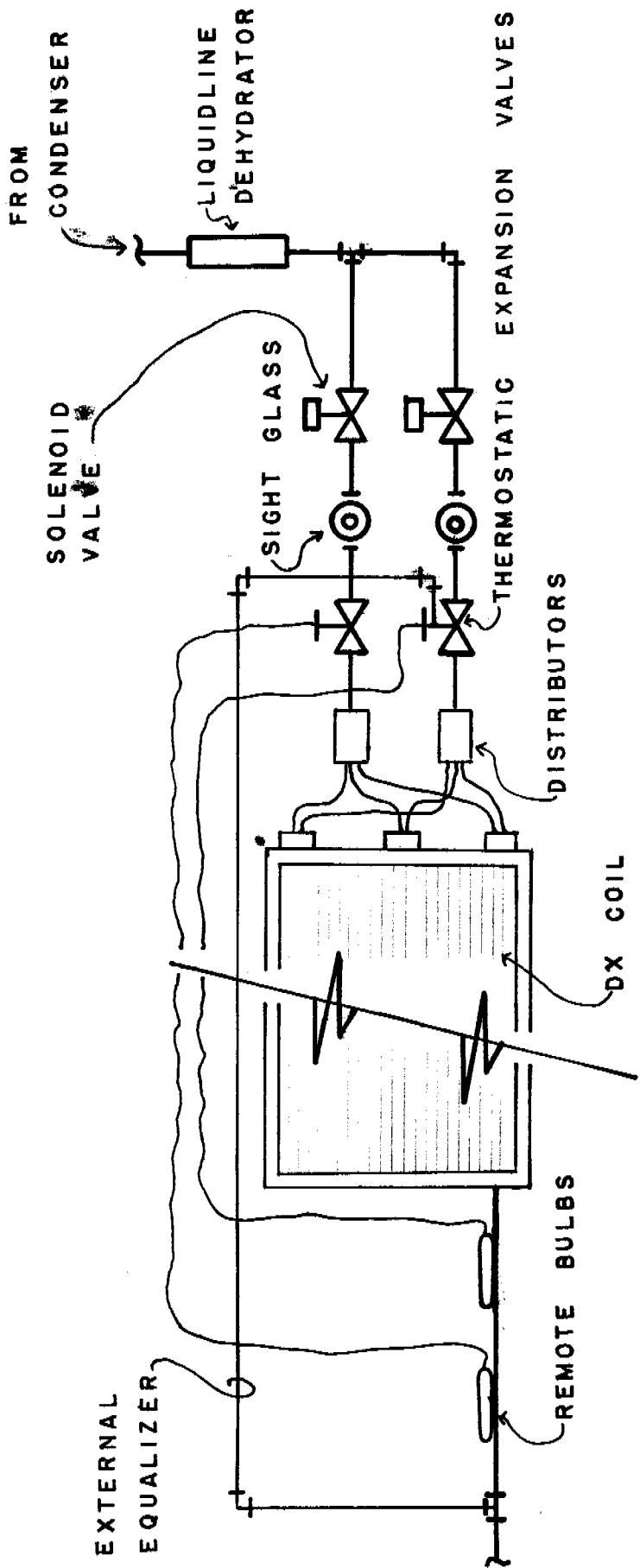




TITLE	HOT WATER FINNED TUBE PIPING	DWN BY:	T.M.H.
APP'D BY:		DATE:	16 MAY 74
SCALE:	NONE	DWG NO.:	
FILE NO.		STANDARDS	
MICHIGAN STATE UNIVERSITY			PHYSICAL PLANT DIVISION
ENGINEERING SERVICES DEPARTMENT			

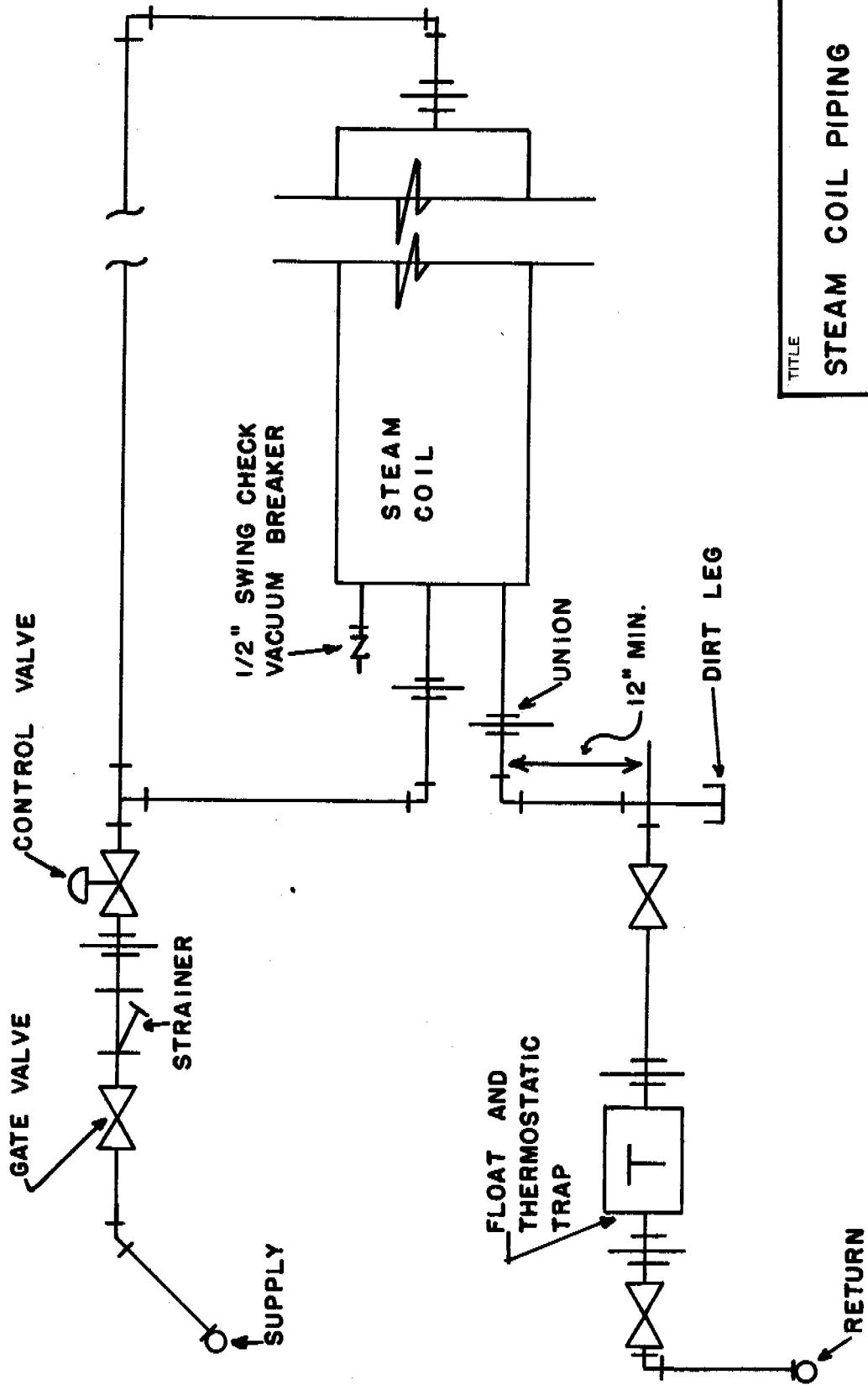


TITLE	COOLING COIL PIPING	OWN BY:	T.M.H.
		APP'D BY:	
		DATE:	21 MAY 74
		SCALE:	NONE
		DWG NO.:	
		FILE NO.:	
		STANDARDS	
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT			



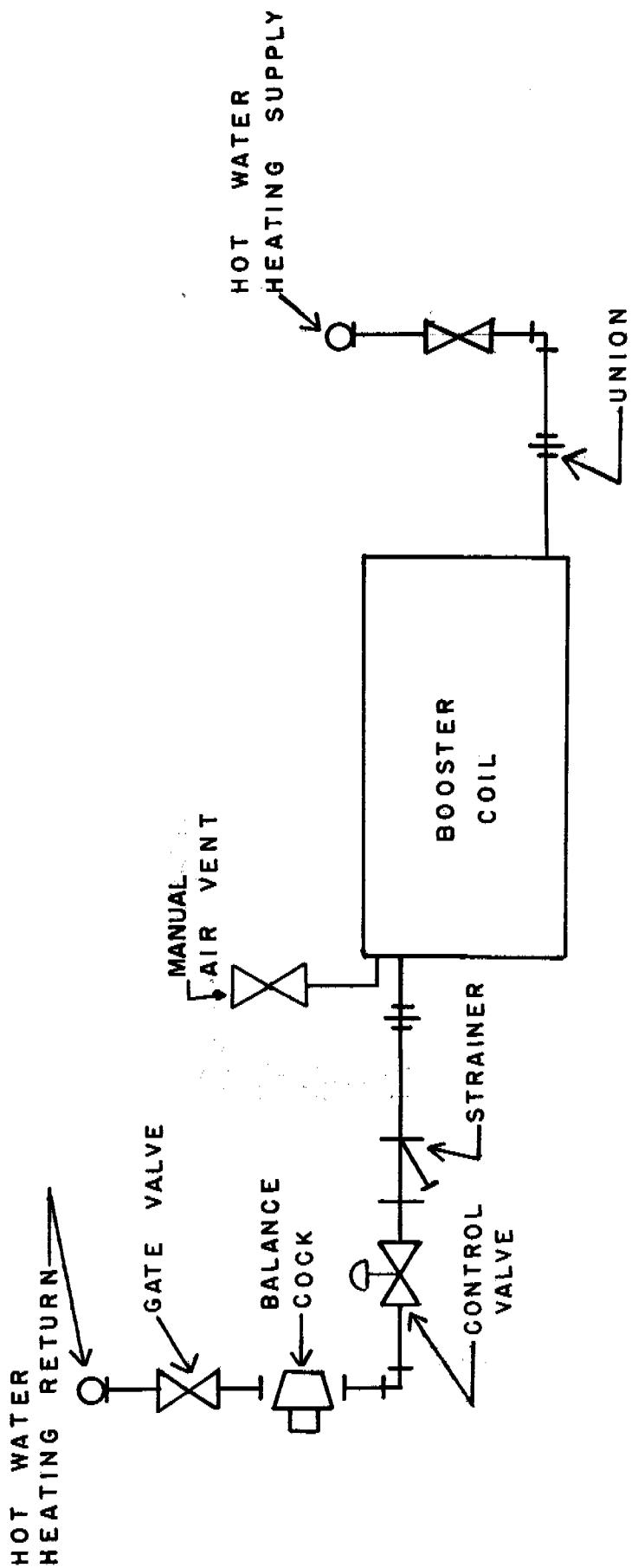
TITLE DX COIL PIPING	OWN BY: T.M.H.
INDUAL EXPANSION VALVES	APP'D BY:
	DATE: 28 MAY 74
	SCALE: NONE
	DWG NO.
	FILE NO.
	STANDARDS

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PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

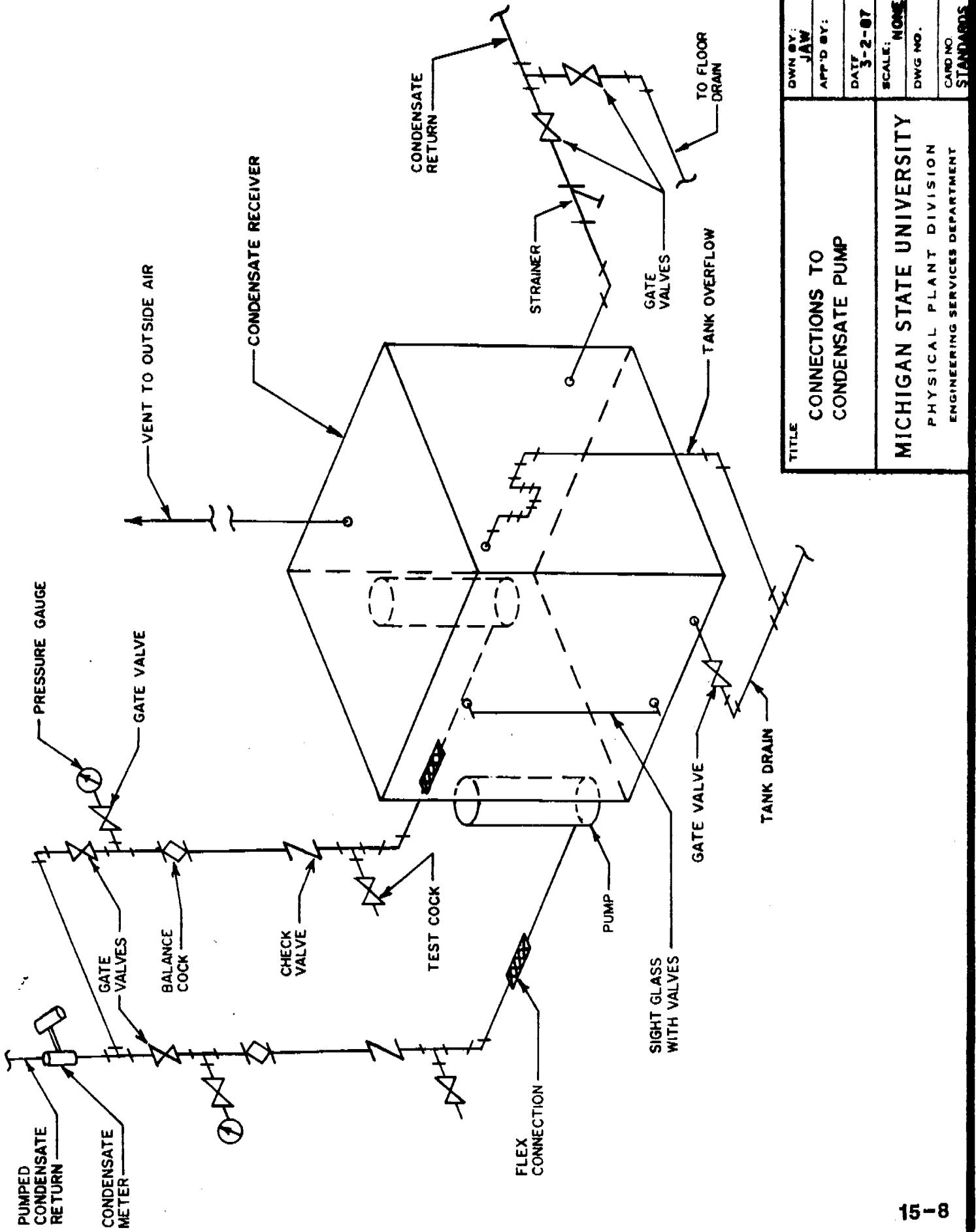


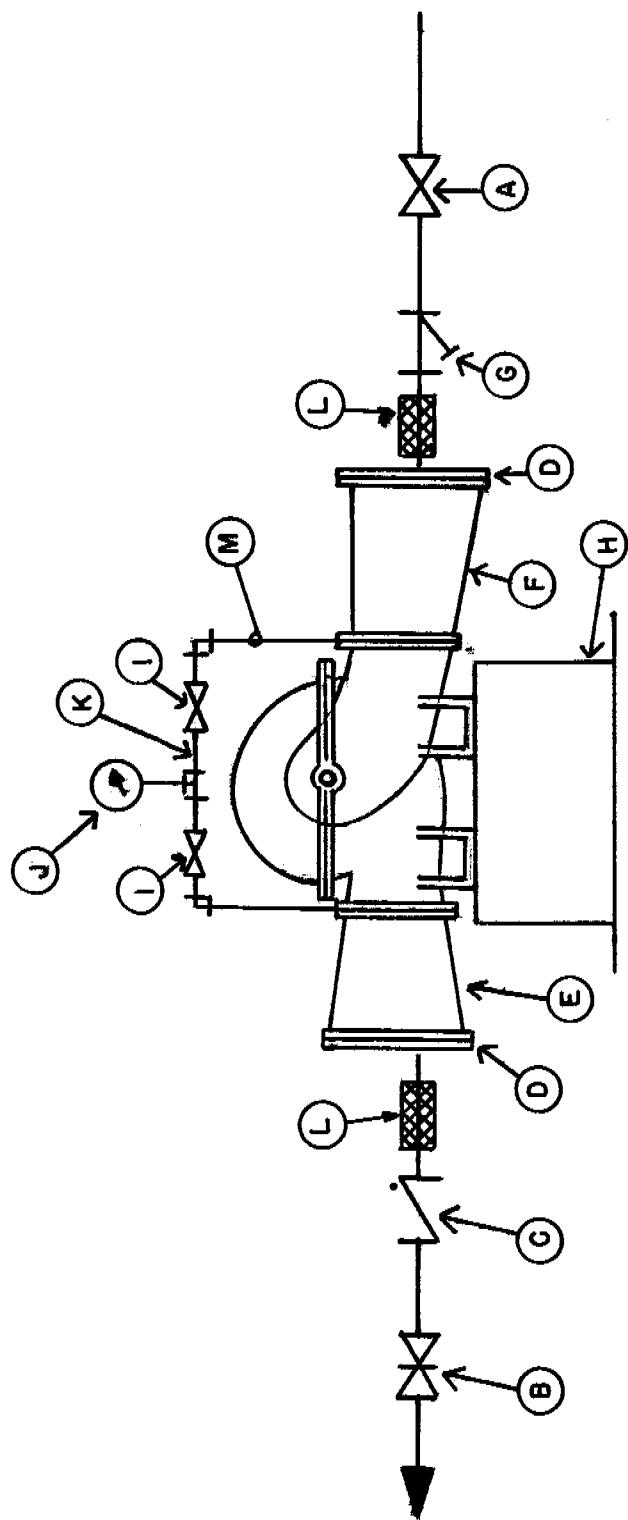
TITLE	DRAWN BY T.M.H.
APP'D BY	
DATE	21 MAY 74
SCALE	NONE
DWG NO.	
CARD NO.	
STANDARDS	

**STEAM COIL PIPING**  
 MICHIGAN STATE UNIVERSITY  
 PHYSICAL PLANT DIVISION  
 ENGINEERING SERVICES DEPARTMENT



TITLE	HOT WATER HEATING BOOSTER COIL CONNECTION		
OWN BY:	T.M.H.	APP'D BY:	
DATE:	22 MAY 74	SCALE:	None
SCALED:	None	DWG NO.:	
FILE NO.:		STANDARDS	
MICHIGAN STATE UNIVERSITY			
PHYSICAL PLANT DIVISION			
ENGINEERING SERVICES DEPARTMENT			





(A) GATE VALVE      (B) THROTTLING TYPE BUTTERFLY VALVE      (C) NON-SLAMMING CHECK VALVE      (D) FLEXIBLE CONNECTORS      (E) CONCENTRIC INCREASER - TO BE COMPLETELY REMOVABLE      (F) ECCENTRIC REDUCER - TO BE COMPLETELY REMOVABLE

(G) STRAINER      (H) CONCRETE MOUNTING BASE      (I) GAUGE COCK OR NEEDLE VALVE

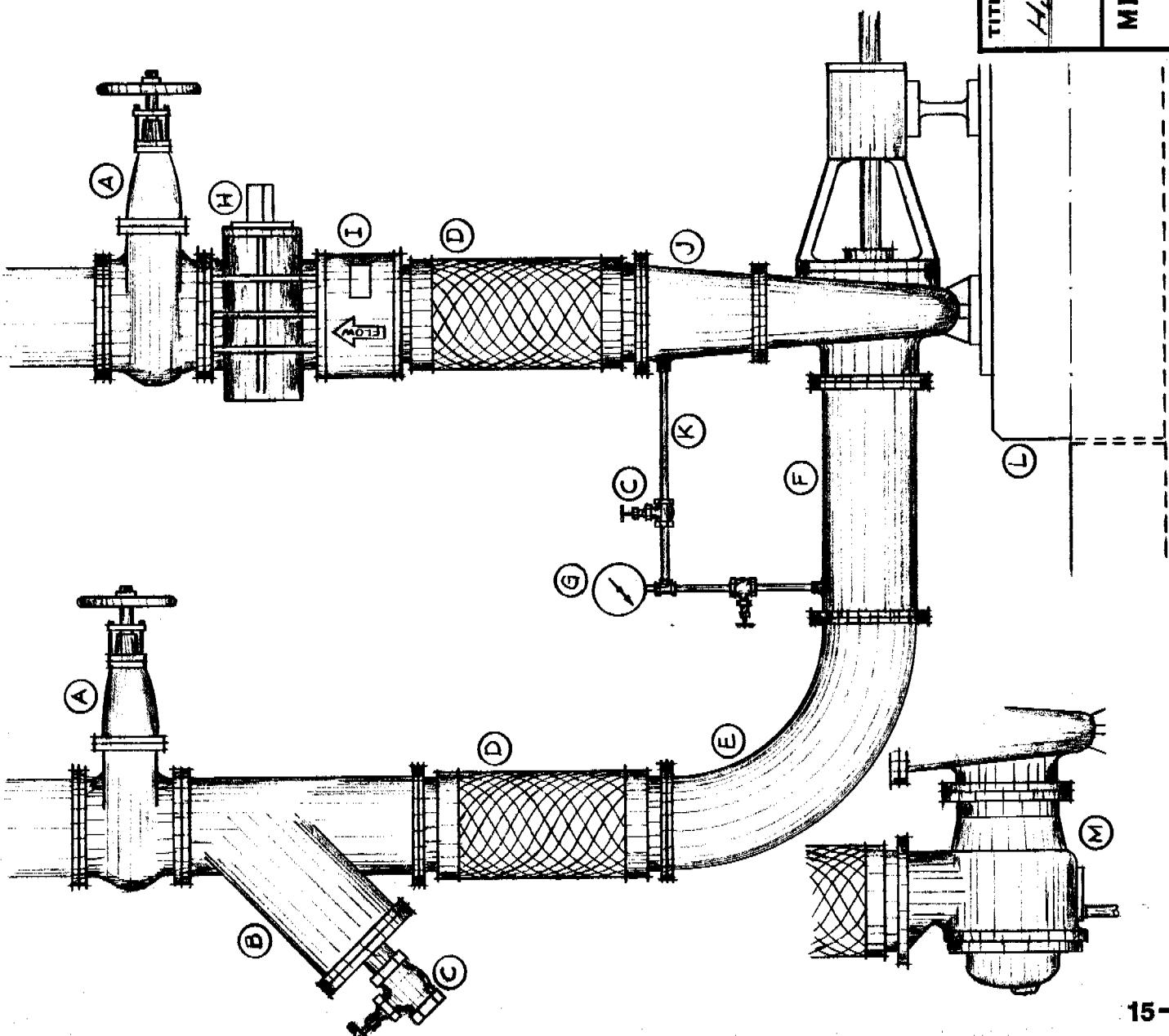
(J) PRESSURE GAUGE      (K) 1/4" GAUGE LINE      (L) 1/2" GAUGE PIPING (FOR STRENGTH)      (M) 1/2" GAUGE PIPING (FOR STRENGTH)

IF ELBOWS ARE NEEDED  
AT THE PUMP THEY ARE  
NOTE TO BE LONG RADIUS TYPE  
UNION FOR EASE OF  
DISASSEMBLY

TITLE	HORIZONTAL BASE MOUNTED CENTRIFUGAL PUMP PIPING	DWN BY:	T.M.H.
APP'D BY:		DATE:	23 MAY 74
SCALE:	NONE	DWG NO.:	
FILE NO.:		STANDARDS	

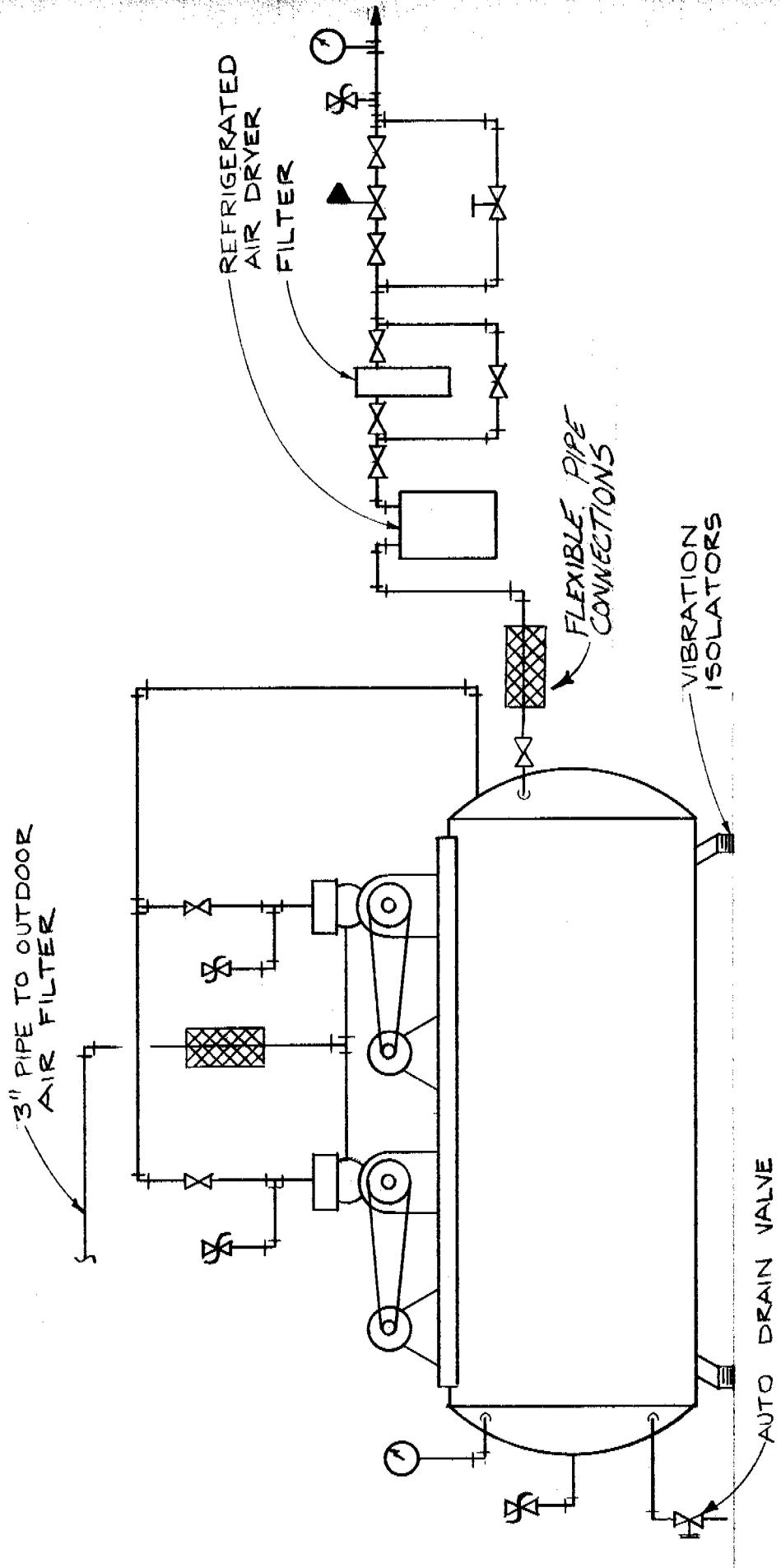
- (A) GATE VALVES
- (B) STRAINER
- (C) NEEDLE VALVES
- (D) FLEXIBLE VIBRATION CONNECTIONS
- (E) CONG RADIUS ELBOW
- (F) 5000' PIECE - MINIMUM DIA. IN LENGTH OR FIVE (5) PIPE DIA. IN LENGTH
- (G) PRESSURE GAUGE - RANGE TO SUIT.
- (H) SUBDIVIDED PLUG-TYPE BALANCING VALVE
- (I) NON SWINGING CHECK VALVE
- (J) CONCENTRIC INCREASED IMMEDIATELY AT PUMP DISCHARGE
- (K)  $\frac{1}{2}$ " GAUGE PIPING
- (L) CONCRETE BASE - 150' FROM SLAB ON ANY FLOOR
- (M) SUCTION DIFFUSER - USED IN LINE OF STRAINER, L.R. ELBOW, & SPACED PIECE

NOTE: (A), (H) AND (I) CAN BE  
REPLACED BY A TRIPLE DUTY VALVE



TITLE	SINGLE SUCTION H.W. CIRCULATING Pump PIPING	DWN BY:	R.J.B.
APP'D BY:		DATE:	7-5-67
SCALE:	NOVA	DWG. NO.	J
FILE NO.			
STANDARDS			

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING DEPARTMENT



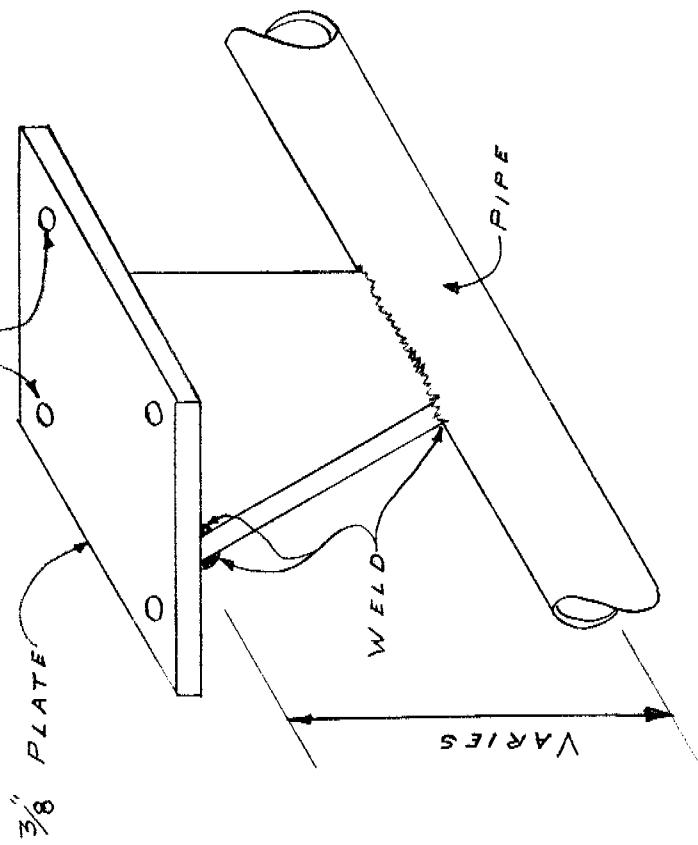
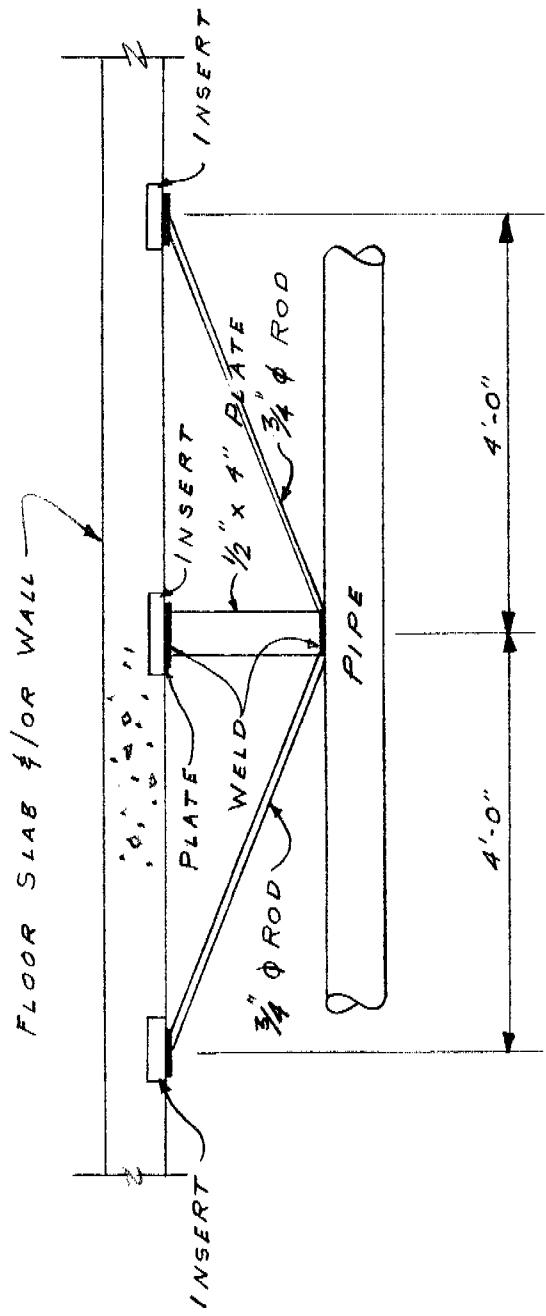
### VALVE DESIGNATIONS

- ↗ PRESSURE RELIEF VALVE
- ↖ PRESSURE REDUCING VALVE
- NEEDLE VALVE
- ↔ GATE VALVE

OWN BY: P. JOLIAT	APPROVED BY: T. H. KIR.
DATE: MAY 25, 1978	SCALE: NONE
DWG NO.:	FILE NO.:
ENGINEERING SERVICES DEPARTMENT	STANDARDS

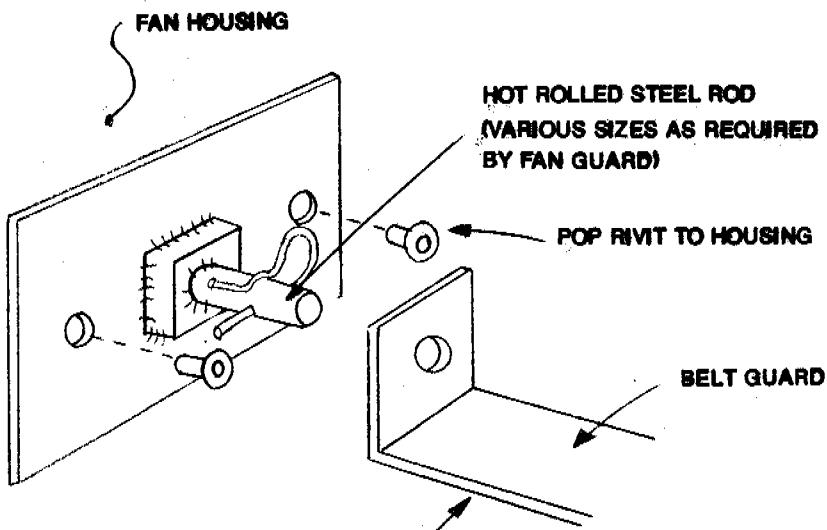
TITLE  
DUPLEX AIR COMPRESSOR

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

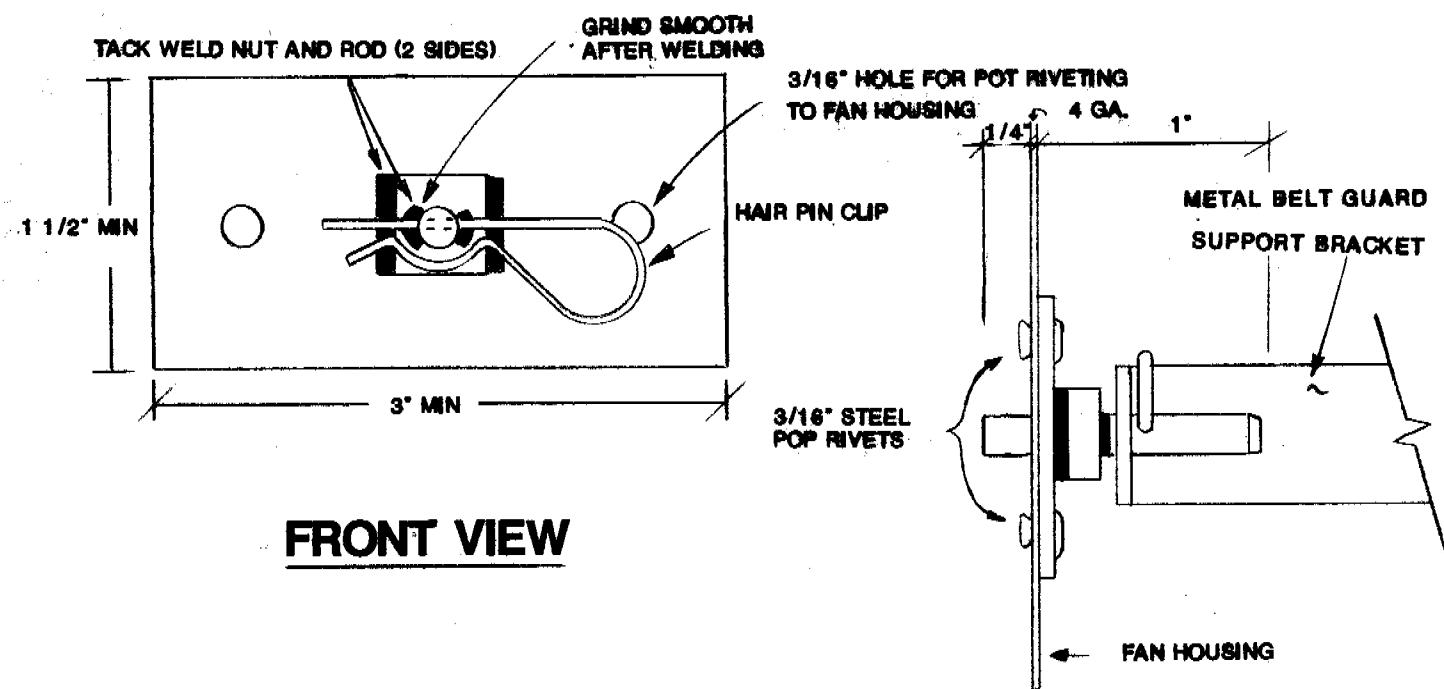


TITLE	<u>TYPICAL PIPE</u>		
ANCHOR DETAILS	<u>ANCHOR DETAILS</u>		
DRAWN BY:	R.E.B.	APP'D BY:	
SCALE:	1/4"	DATE:	JAN 28, 70
DWG NO.:		FILE NO.:	
STANDARDS:			

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



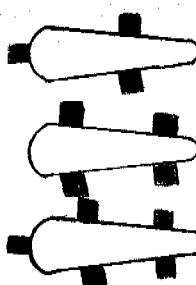
### ISOMETRIC VIEW



### FRONT VIEW

### ASSEMBLY DRAWING

NO. OF REQ'D SUP.

DISTANCE BETWEEN  
SHAFT CENTERS

LESS THAN 4 FEET

4 TO 8 FEET

GREATER THAN 8 FEET

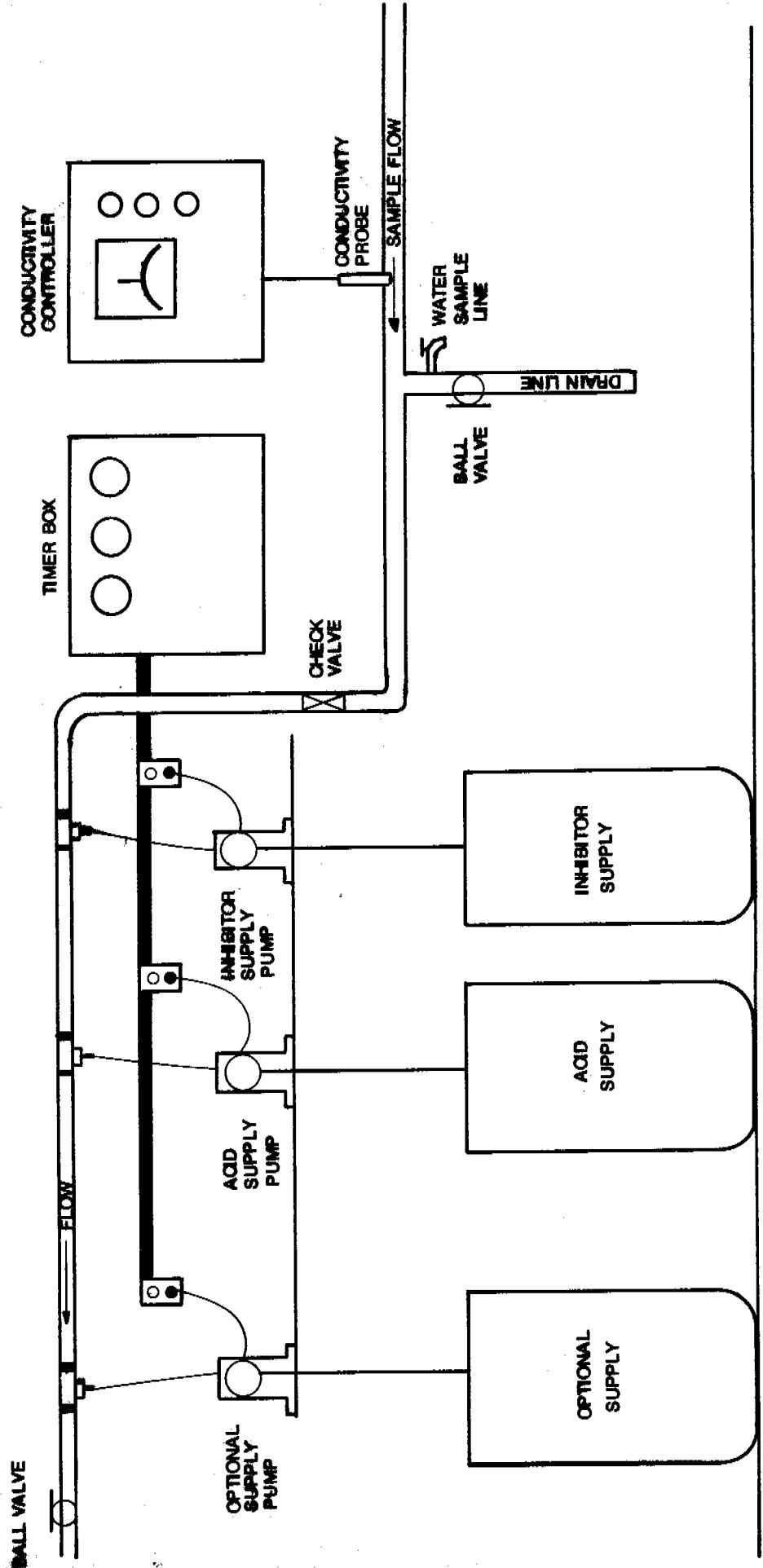
15-13

NOTE: PAINT SUPPORTS TO MATCH FAN HOUSING

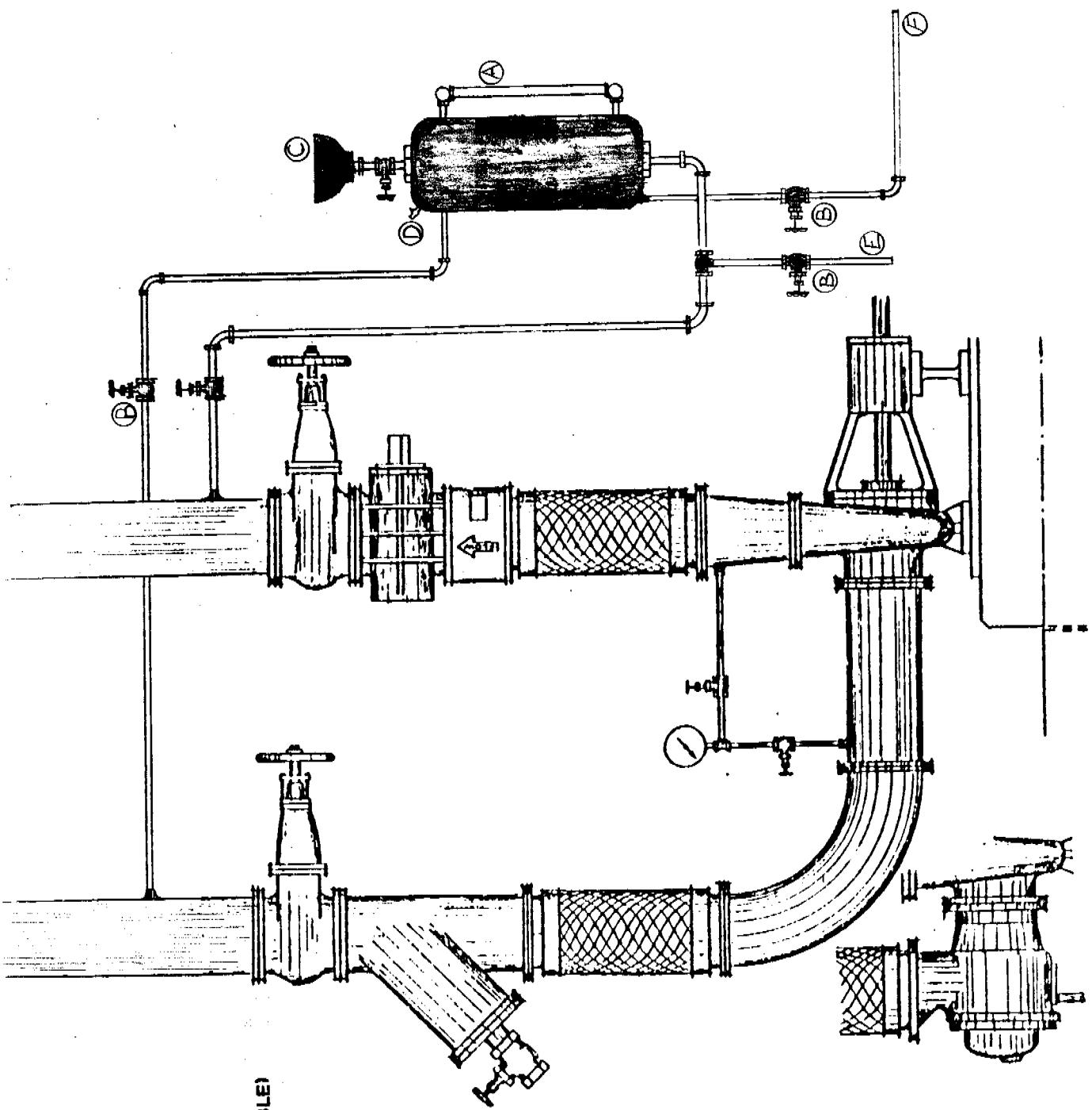
TITLE: **FAN BELT GUARD  
QUICK ATTACH SYSTEM**

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT

DWN BY:	R.J.B.
APP'D BY:	
DATE:	8/23/68
SCALE:	FULL
DWG NO.:	
FILE NO.	STANDARDS



OWN BY:	PS
APPD BY:	
DATE:	6/2/98
SCALE:	NONE
DWG NO:	
CARD NO:	
STANDARDS:	
<b>TITLE</b>	<b>Typical Cooling Tower Water Treatment System</b>
<b>MICHIGAN STATE UNIVERSITY</b>	
Physical Plant Division	
Engineering Services Department	

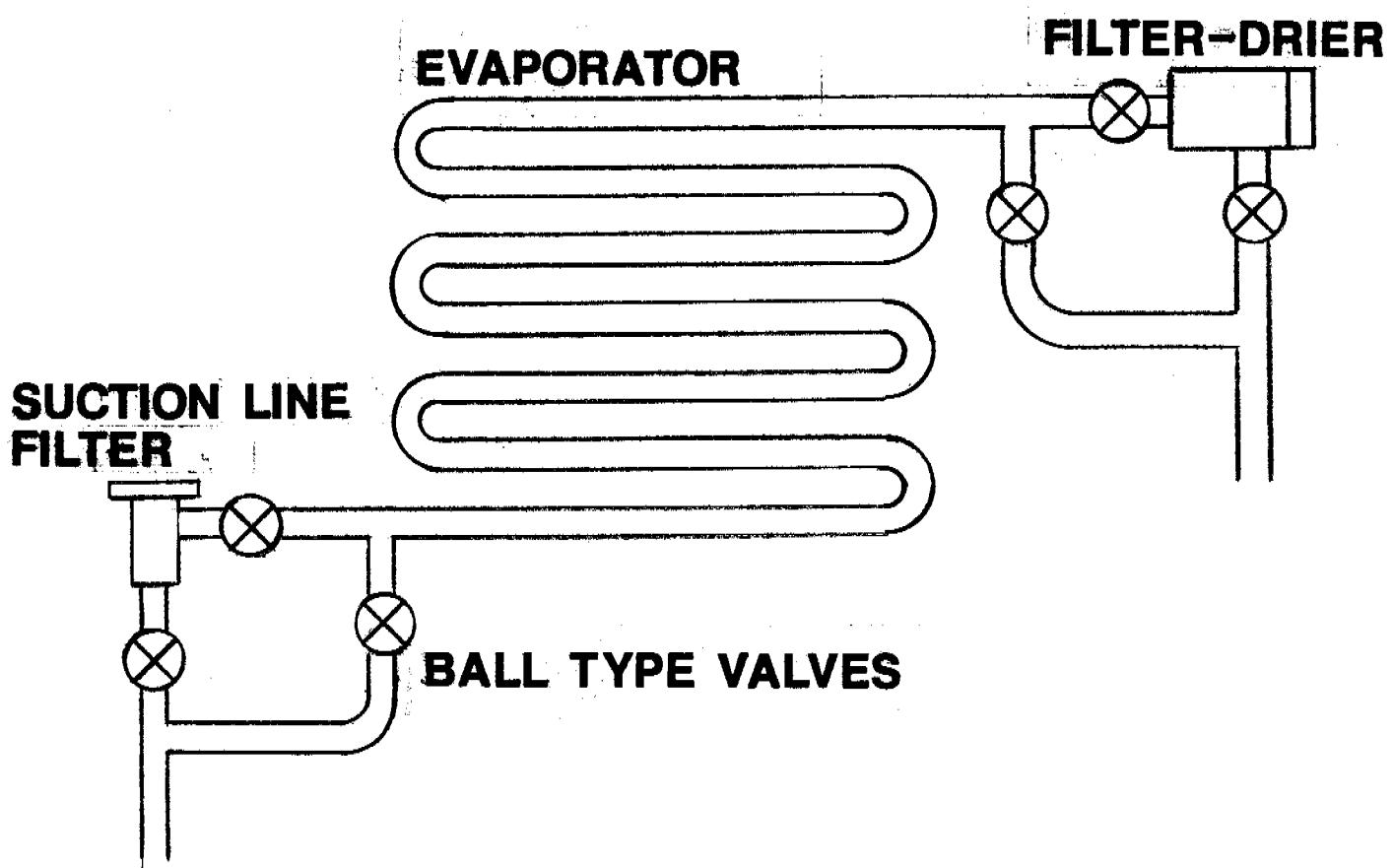


- (A) GAUGE GLASS
- (B) SHUT-OFF VALVE
- (C) FUNNEL
- (D) AIR COCK
- (E) SAMPLE LINE
- (F) TO FLOOR DRAIN(IF AVAILABLE)

15-15

<b>TITLE TYPICAL SHOT FEEDER INSTALLATION FOR CLOSED WATER SYSTEM</b>		OWN BY: <i>MK</i>
		APP'D BY:
		DATE: 4-20-89
		SCALE: NONE
		DWG NO.:
		FILE NO. <b>STANDARDS</b>

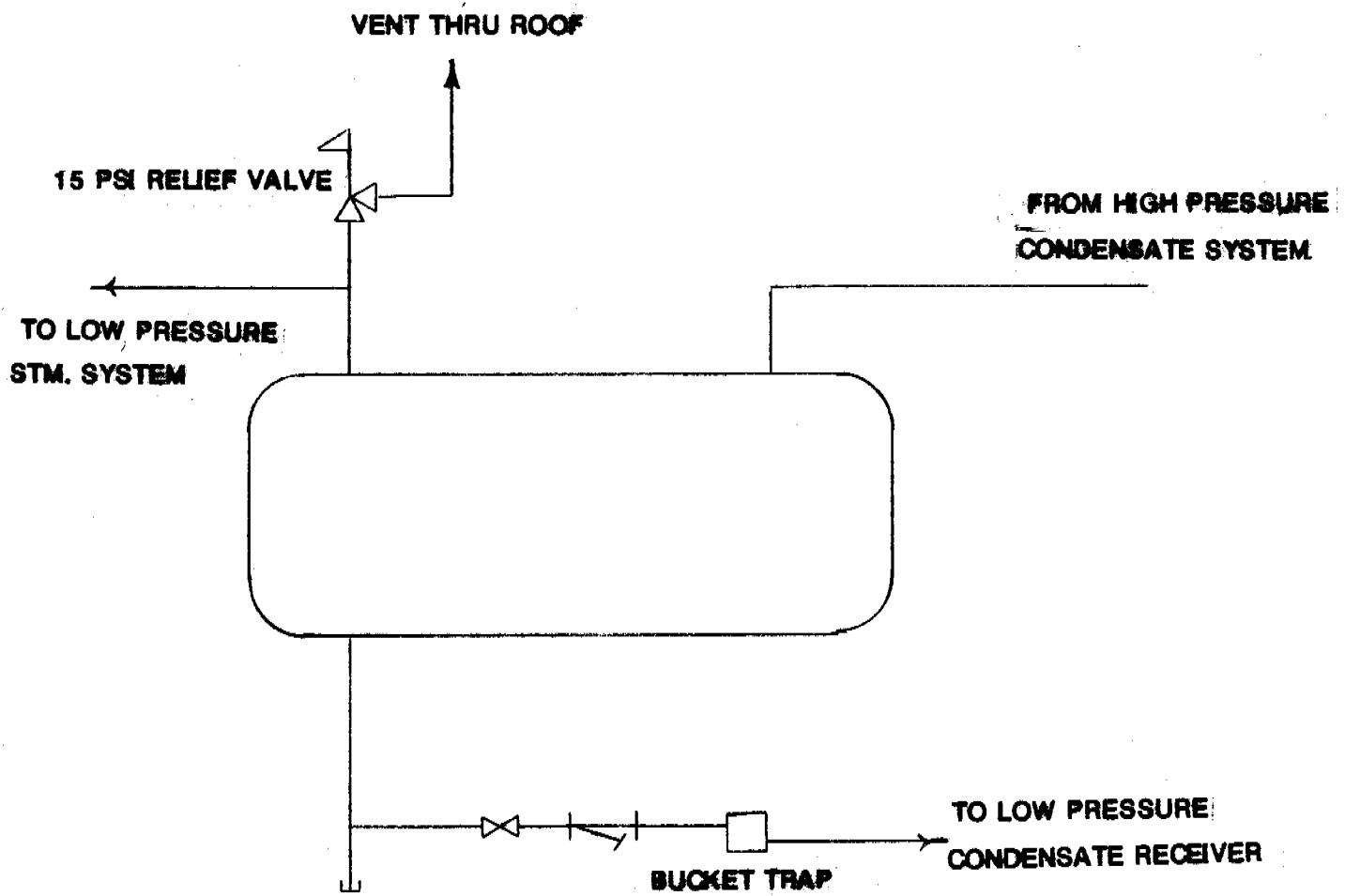
MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



15-16

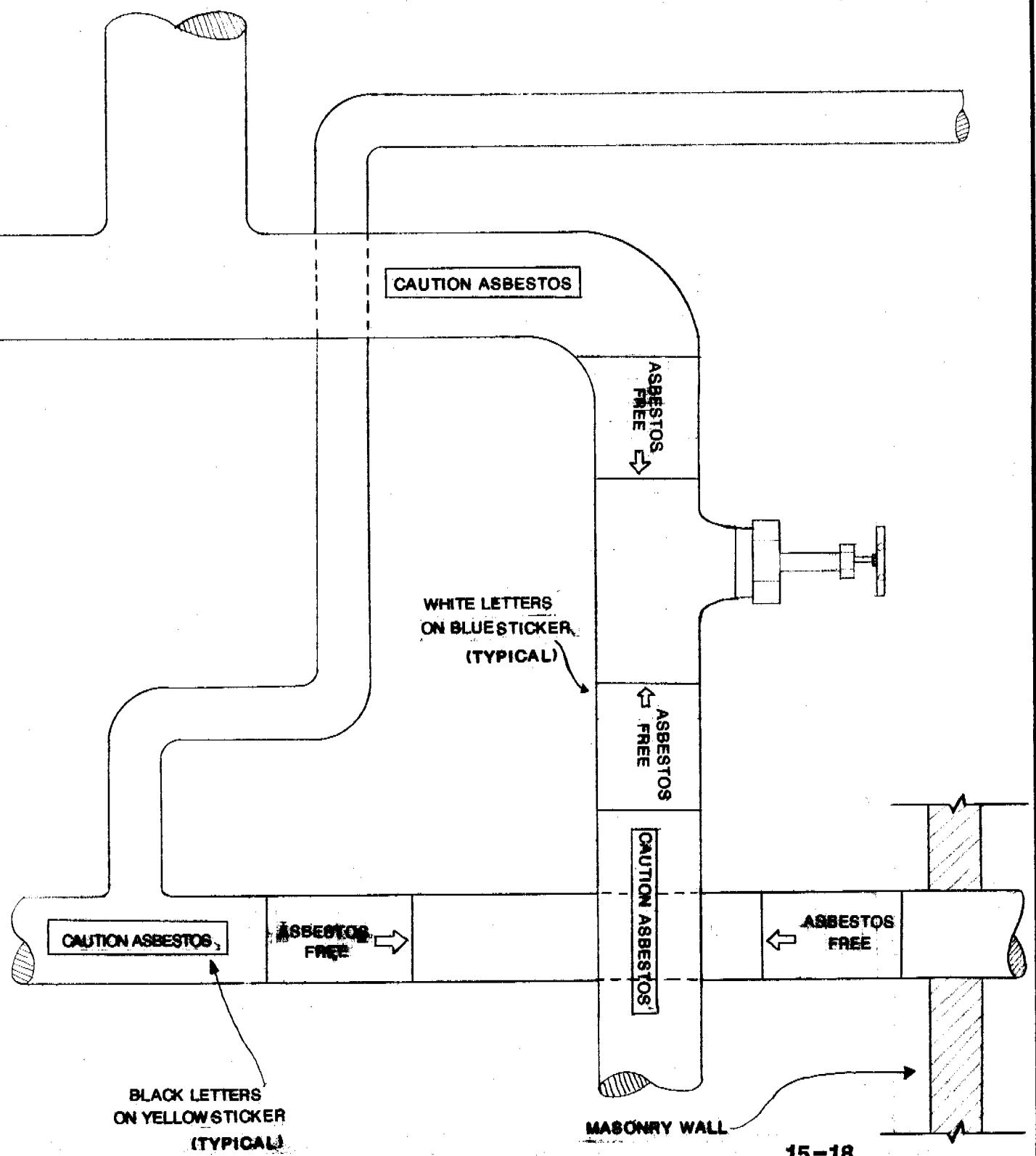
TITLE:	REFRIGERANT FILTER-DRIER INSTALLATION	DWN BY: MK
APP'D BY:		
DATE:	4-18-88	
SCALE:		
DWG NO.:		
FILE NO.	STANDARDS	

MICHIGAN STATE UNIVERSITY  
PHYSICAL PLANT DIVISION  
ENGINEERING SERVICES DEPARTMENT



15-17

TITLE		DWN BY <i>MR</i>
FLASH TANK DETAIL		APP'D BY:
		DATE: 4-24-88
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT		SCALE: NO SCALE
		DWG NO:
		FILE NO. STANDARDS



TITLE <b>PIPE INSULATION SIGNAGE</b> ASBESTOS & NON-ASBESTOS		OWN BY: APPROVED BY: DATE: 1/14/91
MICHIGAN STATE UNIVERSITY PHYSICAL PLANT DIVISION ENGINEERING SERVICES DEPARTMENT		SCALE: NONE DWG NO.: 56 FILE NO.: CONST17

**SERVICE**

P570 - POWER 570 SYSTEM  
 DATA P - DATA PROCESSING  
 ITV - INSTRUC. TV  
 COMP - COMPUTER CENTER  
 IMC - INSTRUC. MEDIA CENTER

**CABLE TYPE**

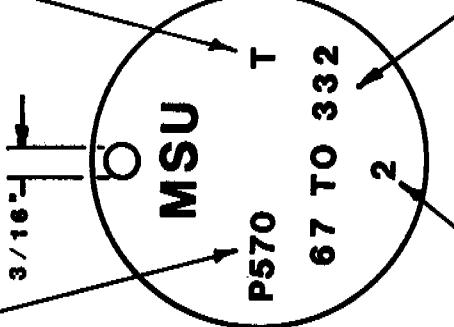
T - TRUNK  
 IC - INTERCOM  
 RP - REMOTE PRINTER  
 TM - TERMINAL

**CABLE TYPE**

- \*1 - TWIN - AX CABLE, BELDEN #9250
- \*2 - TWISTED SHIELDED PAIR  
BELDEN #8760
- \*3 - TWISTED SHIELDED PAIR,  
ALPHA #2412
- \*4 - 3 PAIR INDIVIDUALLY SHIELDED  
CABLE , BELDEN #8777
- \*5 - 6 PAIR, INDIVIDUALLY SHIELDED  
CABLE , BELDEN #8778
- \*6 - 9 PAR, INDIVIDUALLY SHIELDED CABLE,  
BELDEN #8774
- \*7 - 12 PAIR, INDIVIDUALLY SHIELDED CABLE, BELDEN #9768
- \*8 - 27 PAIR, INDIVIDUALLY SHIELDED CABLE, BELDEN #8773

**NOTES**

1. TAGS TO BE 1 3/4" (4.5 CM) DIA. BRASS OR LEAD, ATTACHED TO CABLES W/ SELF-LOCKING 'TIE-WRAP'.
2. ALL LETTERS & NUMBERS TO BE STAMPED.
3. NOT PRINTED OR PAINTED.
4. TAGS TO BE INSTALLED ON RESPECTED RESPECTIVE CABLES IN ALL MANHOLES & IN BLDG. AT CABLE ENTRY POINT.
5. CABLE TAGS TO BE APPROVED BY ENGINEERING SERVICES DEPT. PRIOR TO INSTALLATION



**CABLE ROUTE**

(EXAMPLE : BLDG. 67  
TO BLDG 332)

TITLE	STANDARD TAGGING OF COMMUNICATION CABLES	OWN BY:	TAB
APP'D BY:		DATE:	5/2/85
SCALE:	FULL	DWG NO.:	
CARD NO.:	STANDARD	ENGINEERING SERVICES DEPARTMENT	

MICHIGAN STATE UNIVERSITY  
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 ENGINEERING SERVICES DEPARTMENT