

FOURTH FLOOR PLUMBING PLAN

1 Overlay
Scale: 1/8" = 1'-0"

GENERAL NOTES :

1. REVIT File of ISO is available upon request.
2. System is engineered and needs to be installed as it was designed.
3. Initial vertical drop under drain is from top of the roof membrane to the center of elbow.
4. All other dimensions are center to center.
5. Tolerance is limited to pipe length :
+/- 4" for pipe ≤ 4"Ø
+/- 8" for pipe > 4"Ø
6. Any changes beyond tolerance and on configuraion should be recalculated.
Send any marked-up changes to HydroMax@Mifab.com
7. Eccentric and concentric couplings are both allowed.
8. Cleanouts are not required at every change of direction.
9. Install Test-Type/In Line cleanouts in vertical anytime pipe goes underground.
10. Air break is required at point of siphonic termination (please refer to drawings)
A. increasing pipe diameter back to gravity sized pipe.
B. Reinroduce atmosphere.

PIPE MATERIAL : PVC sch 40 solid

DESIGN RAINFALL RATE :

REVISION DATE : 10-30-2023

Woodhill Station East PH3

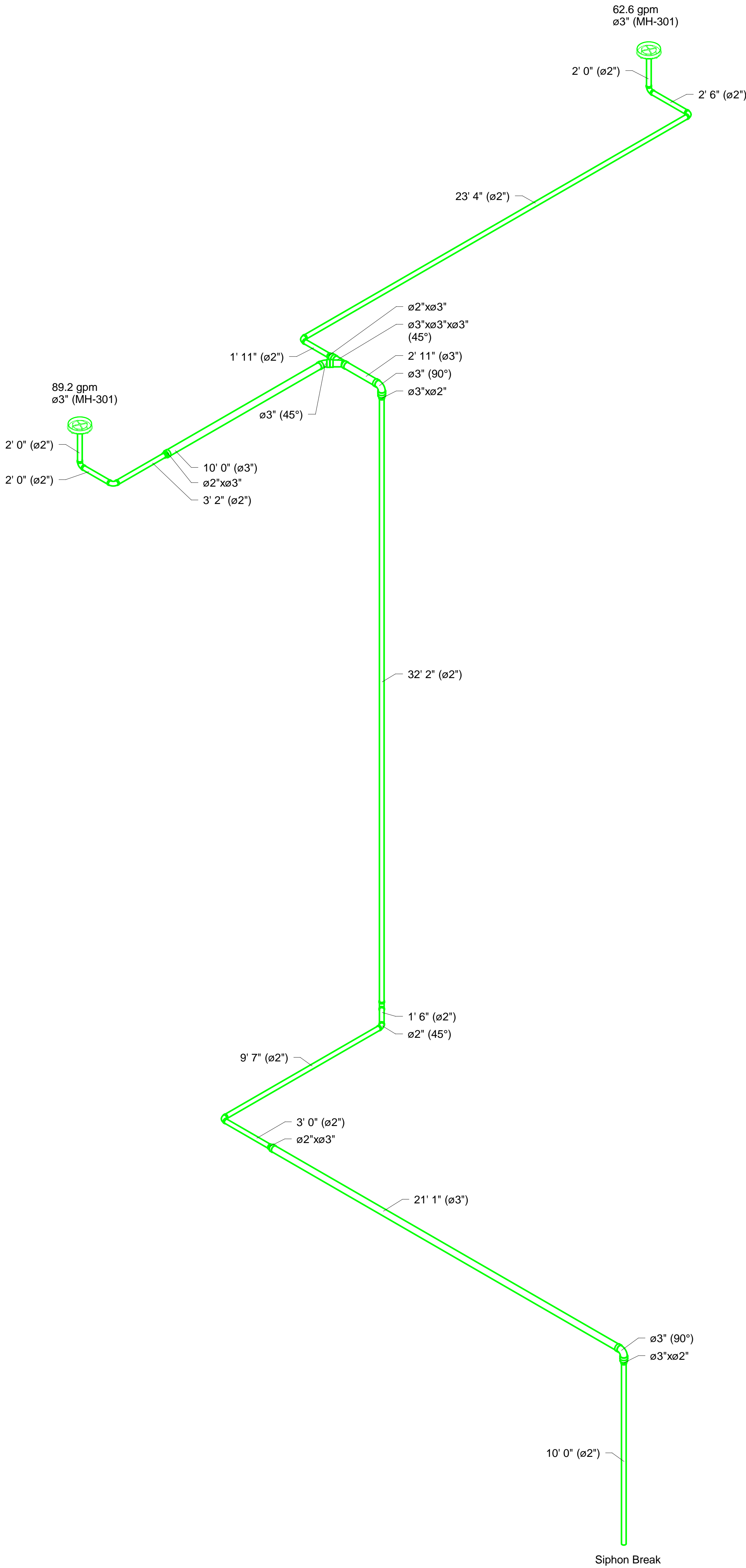
PROJECT NO.

PROJECT DATE

Overlay

DWG. NO.

P100



1 Lower Level ORD 10-30-2023 KG
Scale: 3/8" = 1'-0"

- GENERAL NOTES :
- REVIT File of ISO is available upon request.
 - System is engineered and needs to be installed as it was designed.
 - Initial vertical drop under drain is from top of the roof membrane to the center of elbow.
 - All other dimensions are center to center.
 - Tolerance is limited to pipe length :
+/- 4" for pipe ≤ 4'Ø
+/- 8" for pipe > 4'Ø
 - Any changes beyond tolerance and on configuraition should be recalculated.
Send any marked-up changes to HydroMax@Mifab.com
 - Eccentric and concentric couplings are both allowed.
 - Cleanouts are not required at every change of direction.
 - Install Test-Type/In Line cleanouts in vertical anytime pipe goes underground.
 - Air break is required at point of siphonic termination (please refer to drawings)
A. increasing pipe diameter back to gravity sized pipe.
B. Reinroduce atmosphere.

PIPE MATERIAL : PVC sch 40 solid

DESIGN RAINFALL RATE :

REVISION DATE : 10-30-2023

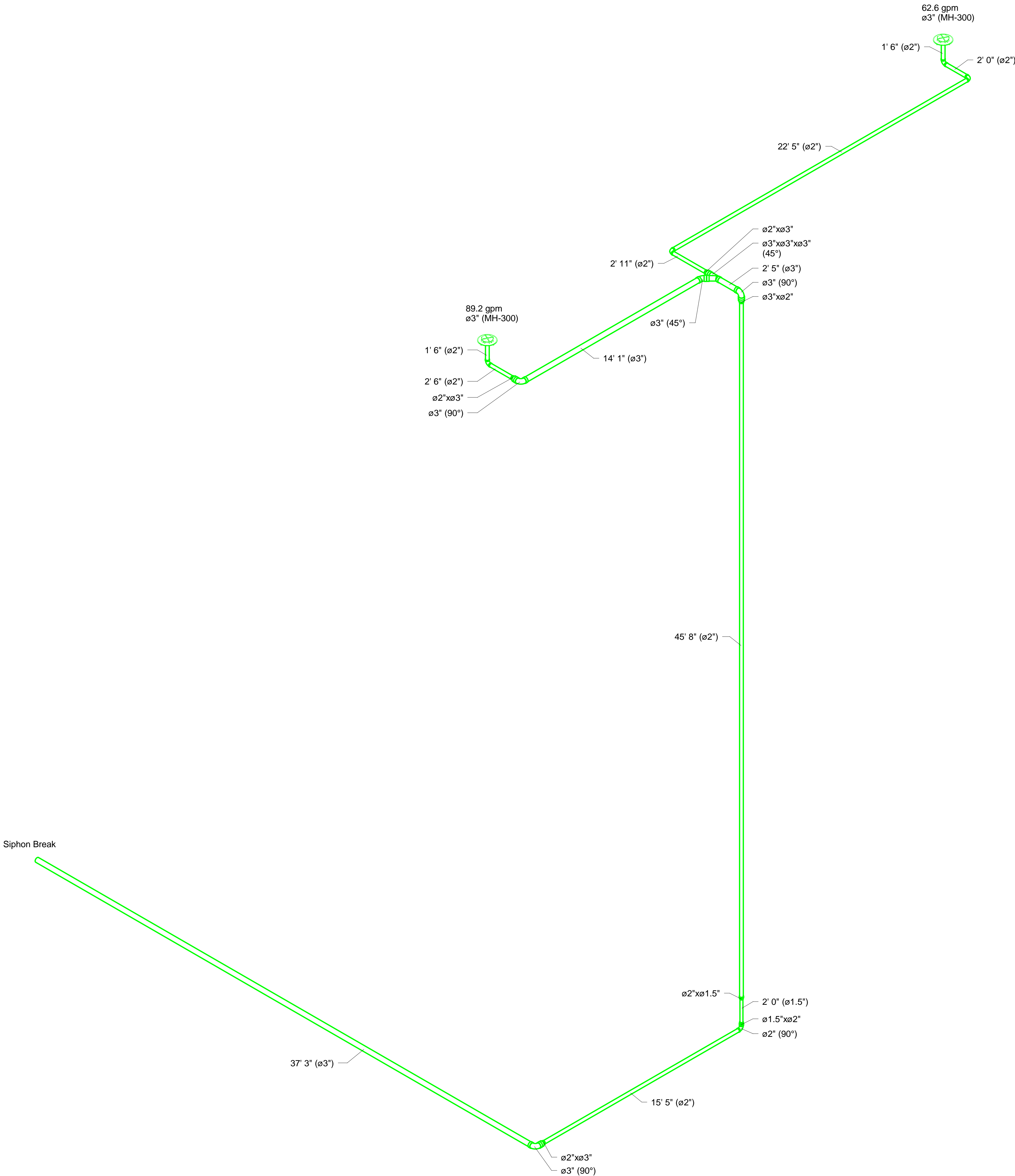
Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

Lower Level ORD
10-30-2023 KG

DWG NO.
P101



- GENERAL NOTES :
- REVIT File of ISO is available upon request.
 - System is engineered and needs to be installed as it was designed.
 - Initial vertical drop under drain is from top of the roof membrane to the center of elbow.
 - All other dimensions are center to center.
 - Tolerance is limited to pipe length :
+/- 4" for pipe ≤ 4'Ø
+/- 8" for pipe > 4'Ø
 - Any changes beyond tolerance and on configuraition should be recalculated.
 - Send any marked-up changes to HydroMax@Mifab.com
 - Eccentric and concentric couplings are both allowed.
 - Cleanouts are not required at every change of direction.
 - Install Test-Type/In Line cleanouts in vertical anytime pipe goes underground.
 - Air break is required at point of siphonic termination (please refer to drawings)
A. increasing pipe diameter back to gravity sized pipe.
B. Reinroduce atmosphere.

PIPE MATERIAL : PVC sch 40 solid

DESIGN RAINFALL RATE :

REVISION DATE : 10-30-2023

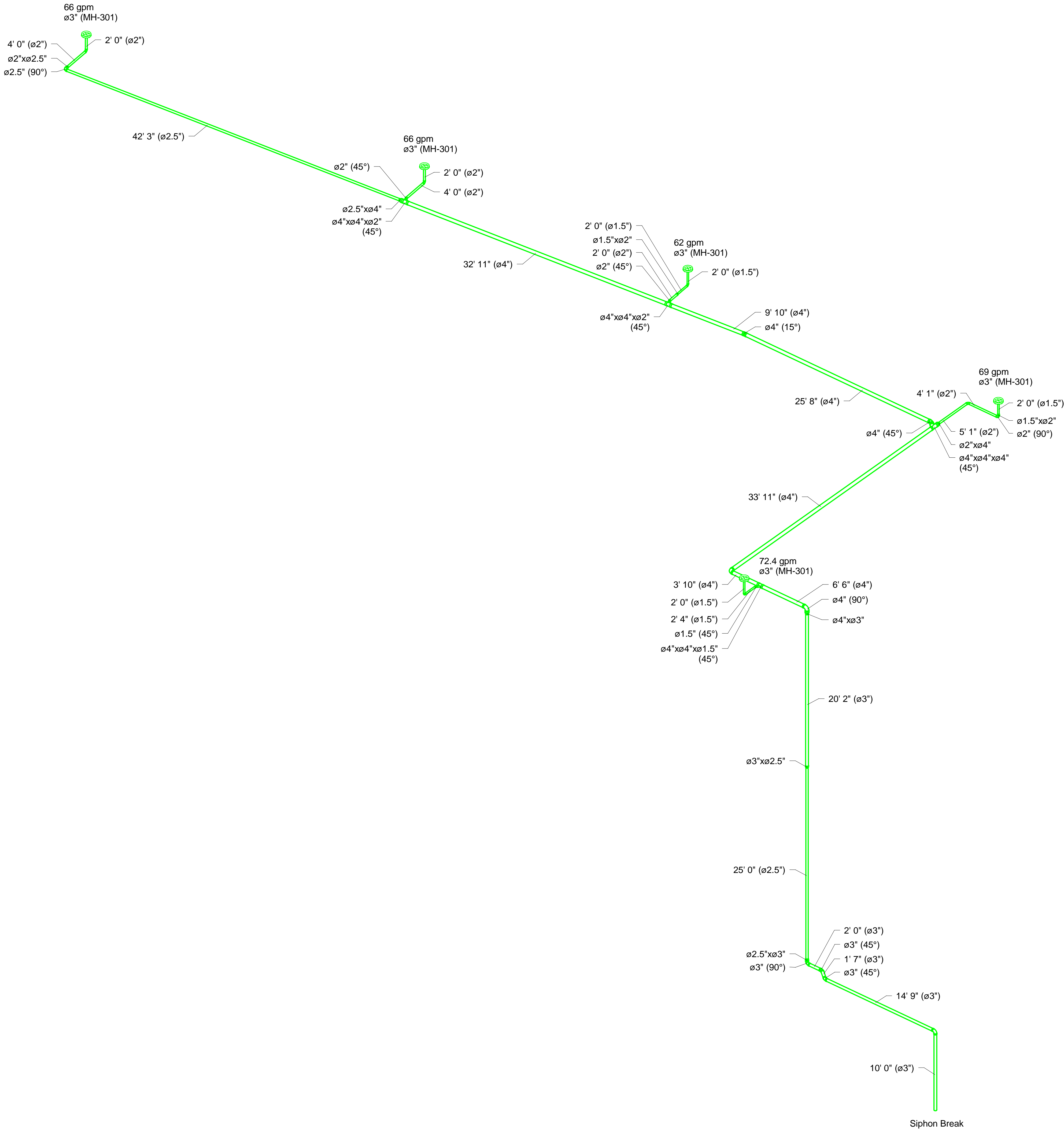
Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

Lower Level RD
10-30-2023 KG

DWG NO.
P102



GENERAL NOTES :

1. REVIT File of ISO is available upon request.
2. System is engineered and needs to be installed as it was designed.
3. Initial vertical drop under drain is from top of the roof membrane to the center of elbow.
4. All other dimensions are center to center.
5. Tolerance is limited to pipe length :
+/- 4" for pipe ≤ 4'Ø
+/- 8" for pipe > 4'Ø
6. Any changes beyond tolerance and on configuraition should be recalculated.
Send any marked-up changes to HydroMax@Mifab.com
7. Eccentric and concentric couplings are both allowed.
8. Cleanouts are not required at every change of direction.
9. Install Test-Type/In Line cleanouts in vertical anytime pipe goes underground.
10. Air break is required at point of siphonic termination (please refer to drawings)
A. Increasing pipe diameter back to gravity sized pipe.
B. Reinroduce atmosphere.

PIPE MATERIAL : PVC sch 40 solid

DESIGN RAINFALL RATE :

REVISION DATE : 10-30-2023

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

Upper Level ORD
10-30-2023 KG

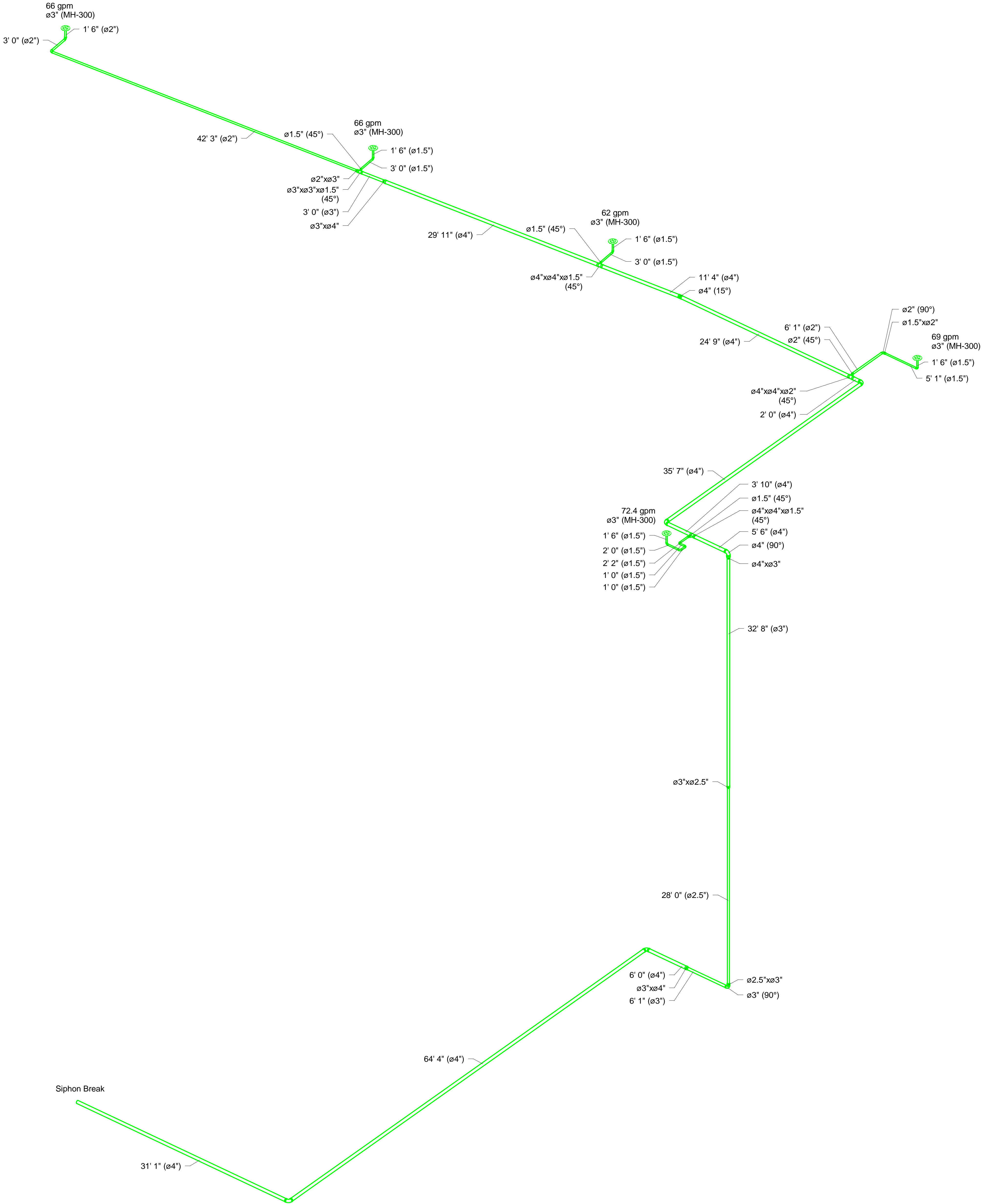
DWG. NO.

P103

1

Upper Level ORD 10-30-2023 KG

Scale: 3/16" = 1'-0"



- GENERAL NOTES :
- REVIT File of ISO is available upon request.
 - System is engineered and needs to be installed as it was designed.
 - Initial vertical drop under drain is from top of the roof membrane to the center of elbow.
 - All other dimensions are center to center.
 - Tolerance is limited to pipe length :
+/- 4" for pipe ≤ 4'Ø
+/- 8" for pipe > 4'Ø
 - Any changes beyond tolerance and on configuraition should be recalculated.
Send any marked-up changes to HydroMax@Mifab.com
 - Eccentric and concentric couplings are both allowed.
 - Cleanouts are not required at every change of direction.
 - Install Test-Type/In Line cleanouts in vertical anytime pipe goes underground.
 - Air break is required at point of siphonic termination (please refer to drawings)
A. increasing pipe diameter back to gravity sized pipe.
B. Reinroduce atmosphere.

PIPE MATERIAL : PVC sch 40 solid

DESIGN RAINFALL RATE :

REVISION DATE : 10-30-2023

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

Upper Level RD
10-30-2023 KG

DWG NO.

P104

1

Upper Level RD 10-30-2023 KG

Scale: 3/16" = 1'-0"

ASPE 45:

- 9.9.1 When a siphonic roof drainage system is connected to an underground strom sewer system, the siphonic action shall be broken before the system is connected the main storm sewer system.
- 9.9.2 Siphonic roof drainage system should tie into a vented manhole or sump structure with free area of at least twice the cross-sectional area of the siphonic discharge pipe. This may be accomplished by substituing a standard manhole cover with a catch basin grate. Where a catch basin grate or other vented cover is not possible(e.g., the manhole is inside a building and be sealed tight against possible overflow), a vent pipe of a minimum diameter equivalent to the siphonic discharge pipe may be extended from the manhole structure and terminate in an area approved by the governing plumbing code.

Breaking a siphonic system requires 2 actions:

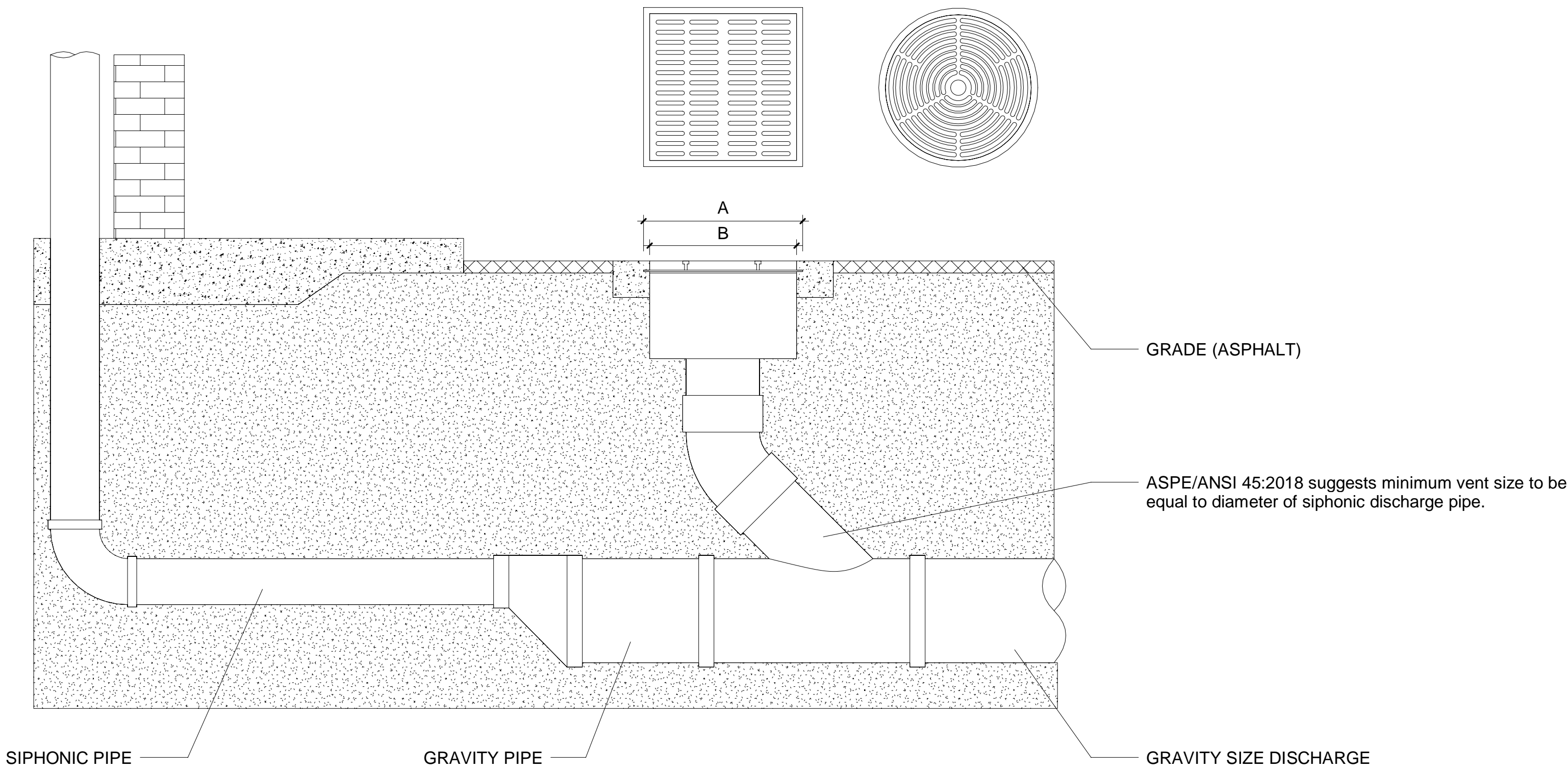
1. Increase pipe diameter back to gravity flow following local sizing requirements.
2. Reintroduce atmosphere back into the system.

Free Area Requirement for Each Pipe Diameter

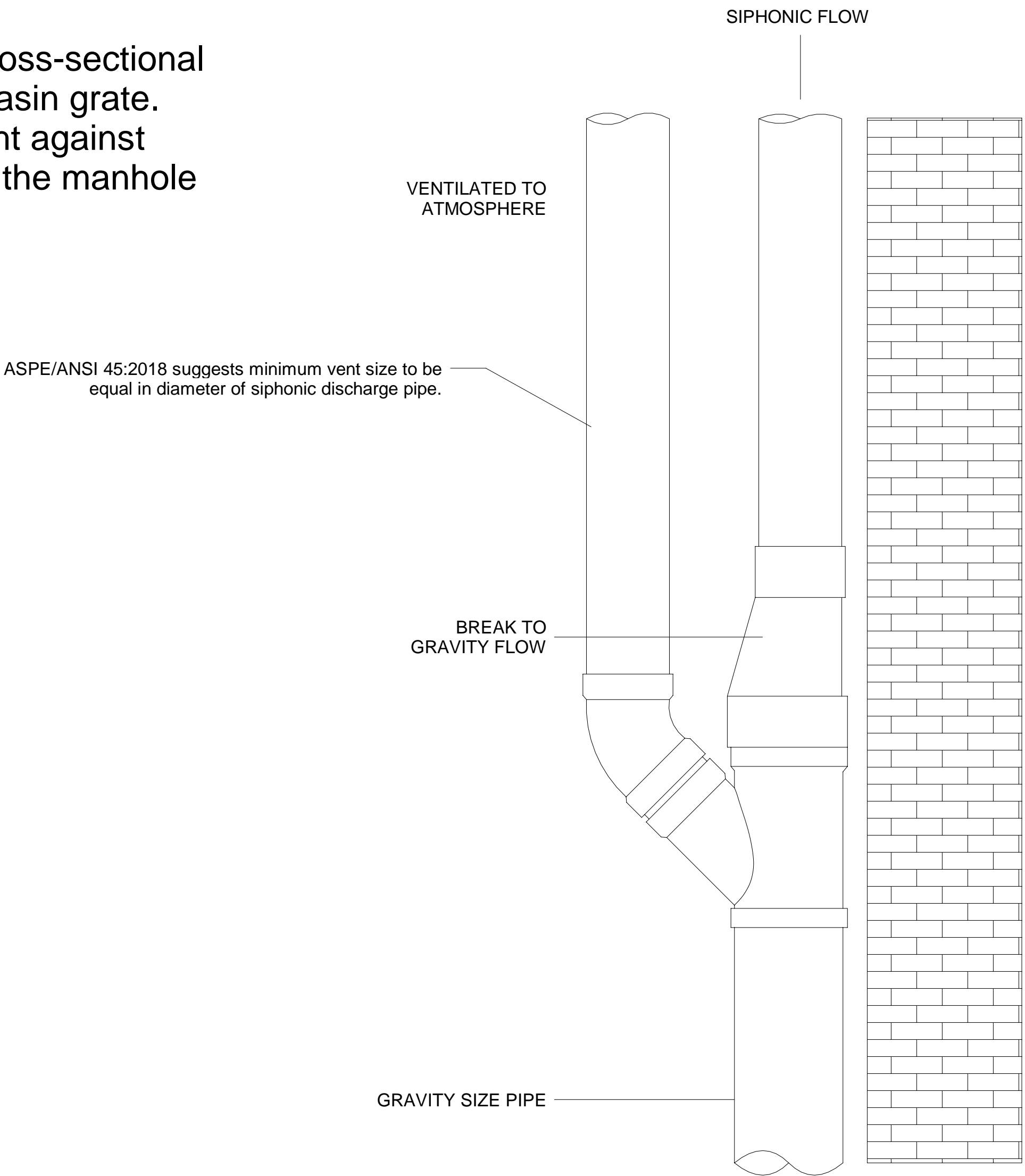
Pipe Diameter	Radius(r)	Free Area(2πr ²)
1.5"	0.75"	3.54 sq in
2"	1"	6.294 sq in
3"	1.5"	14.162 sq in
4"	2"	25.176 sq in
6"	3"	56.646 sq in
8"	4"	100.704 sq in
10"	5"	157.35 sq in
12 "	6"	226.584 sq in
14"	7"	308.406 sq in
16"	8"	402.816 sq in
18"	9"	509.814 sq in
20"	10"	629.4 sq in

EX: (2) 4" siphonic pipes NOT assuming 4"+4" = 8"
25sq in + 25sq in = 50sq in which would be oversized.

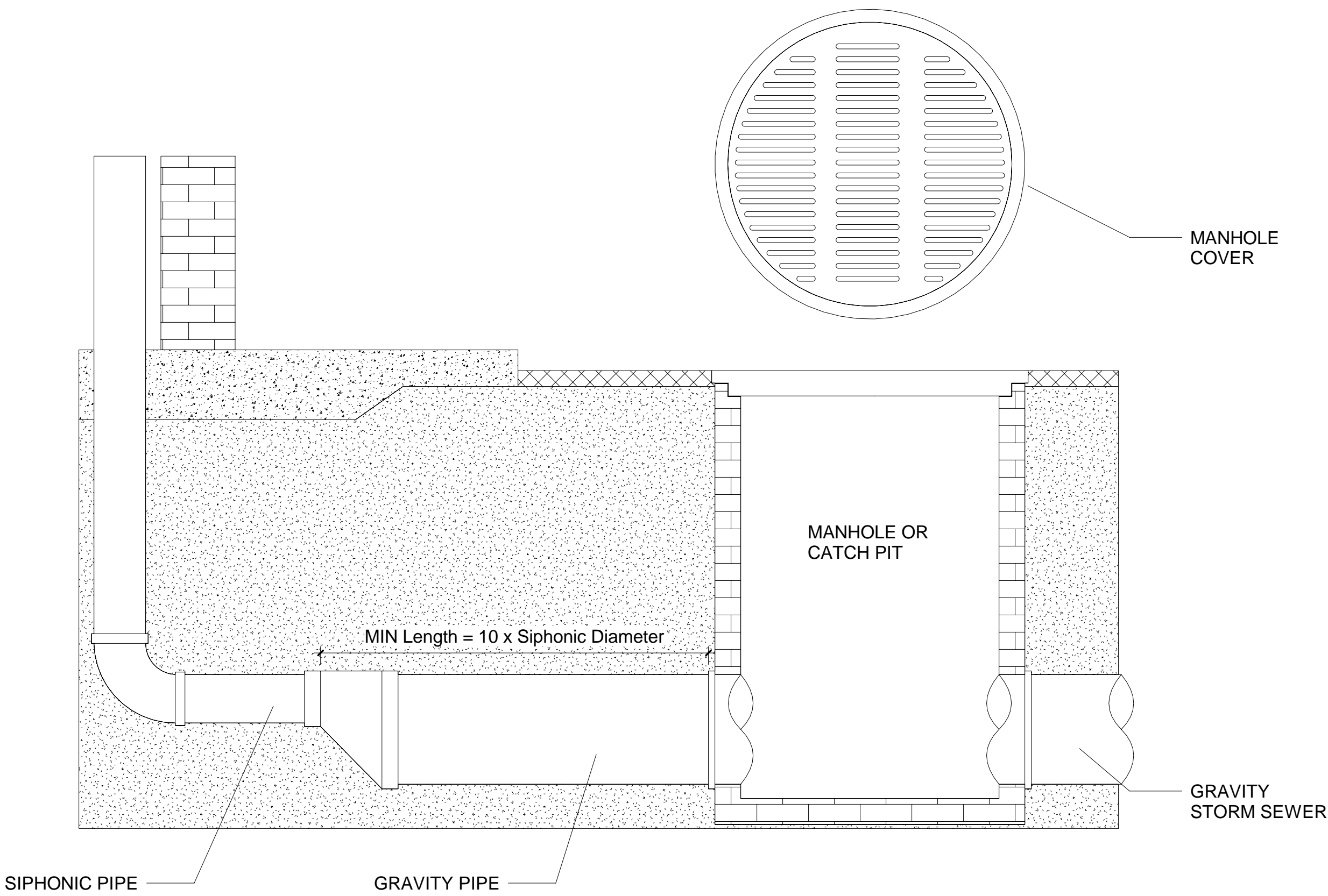
Grate Shape	1-Pipe Only Siphonic Discharge Diameter	Vent Part Number	Free Area	Drian Body A Dim	Grate B Dim
Round	>6"	MIFAB HydroMax MH-F1340	68in ²	15"	13"
Round	>8"	MIFAB HydroMax MH-F1360	105in ²	15"	16"
Square	>6"	MIFAB HydroMax MH-F1460	75in ²	19"	16"
Square	8" - 12"	MIFAB HydroMax MH-F1580	200in ²	27"	24"



1 SIPHON BREAK IN HORIZONTAL



2 SIPHON BREAK IN VERTICAL



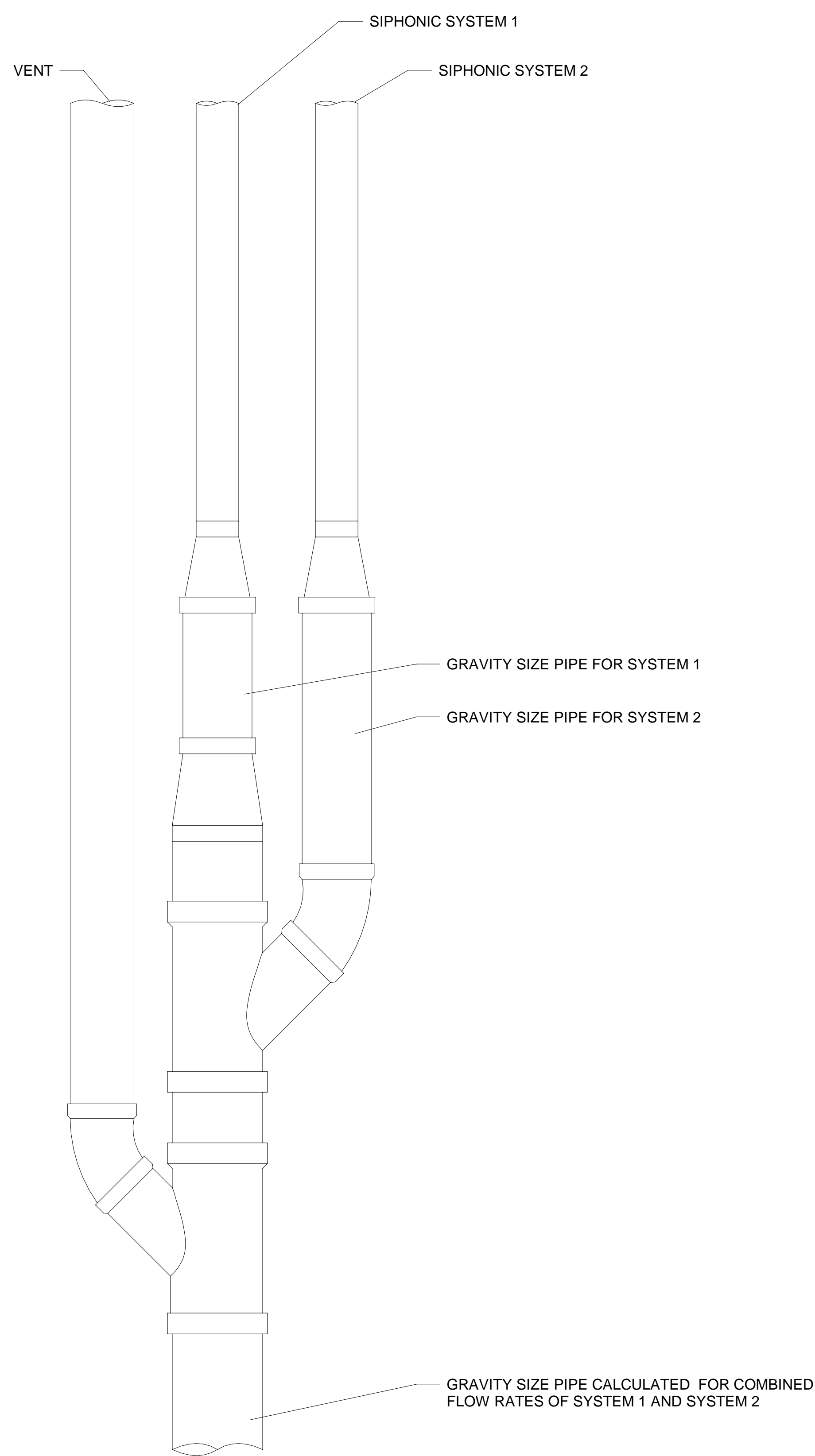
3 SIPHON BREAK TO MANHOLE

ASPE 45:

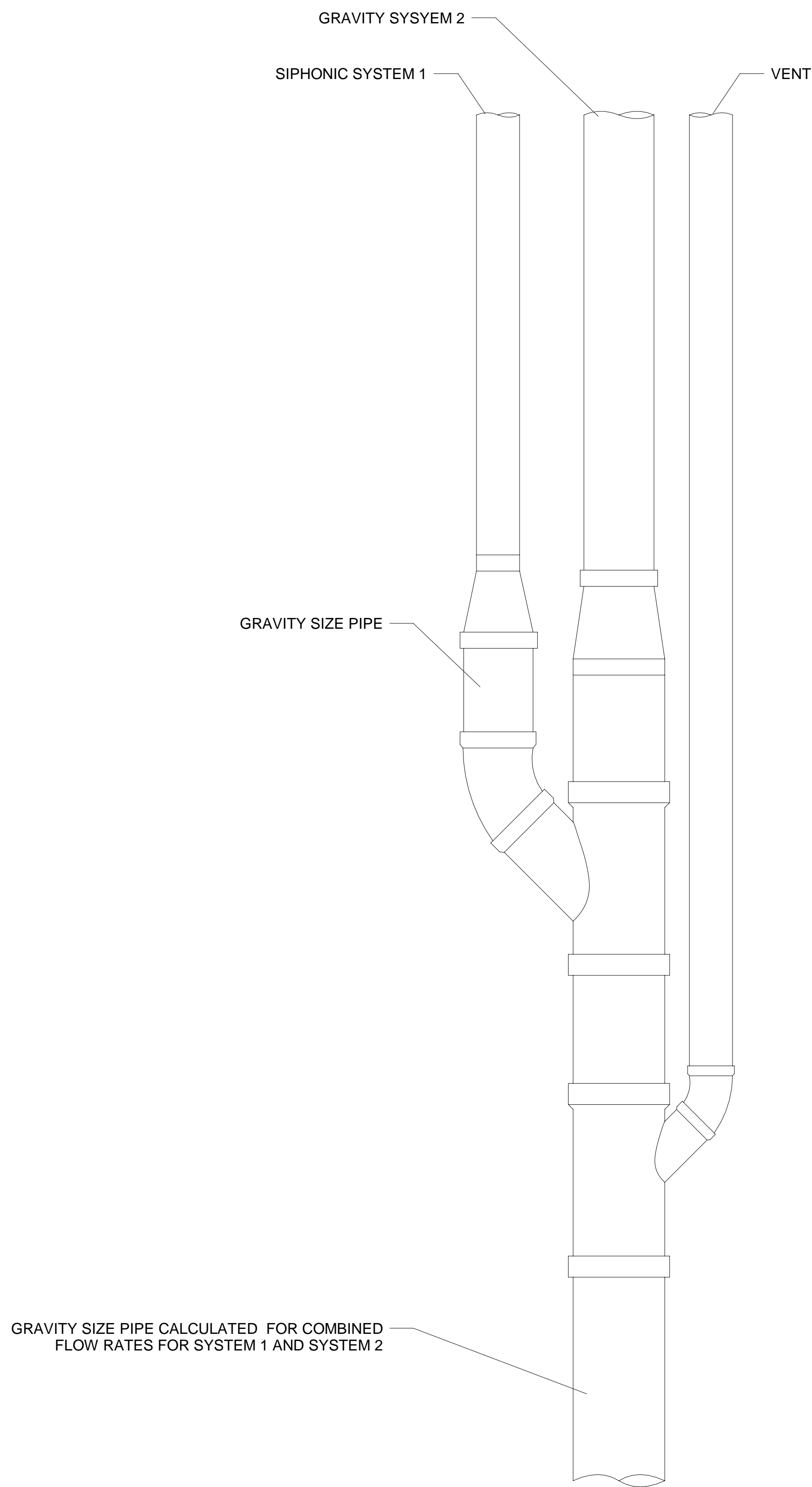
- 9.9.3 Flare out the discharge piping 10 or more pipe diameter prior to the vented manhole or sump. The resulting pipe diameter should be sufficient to return the system to open channel flow.

ASPE 45:

9.9.2 A vent pipe of a minimum diameter equivalent to the siphonic discharge pipe may be extended from the manhole structure and terminate in an area approved by the governing plumbing code.



① SIPHONIC + SIPHONIC COMBINATION
Scale: NTS



② SIPHONIC + GRAVITY COMBINATION
Scale: NTS

Woodhill Station East PH3

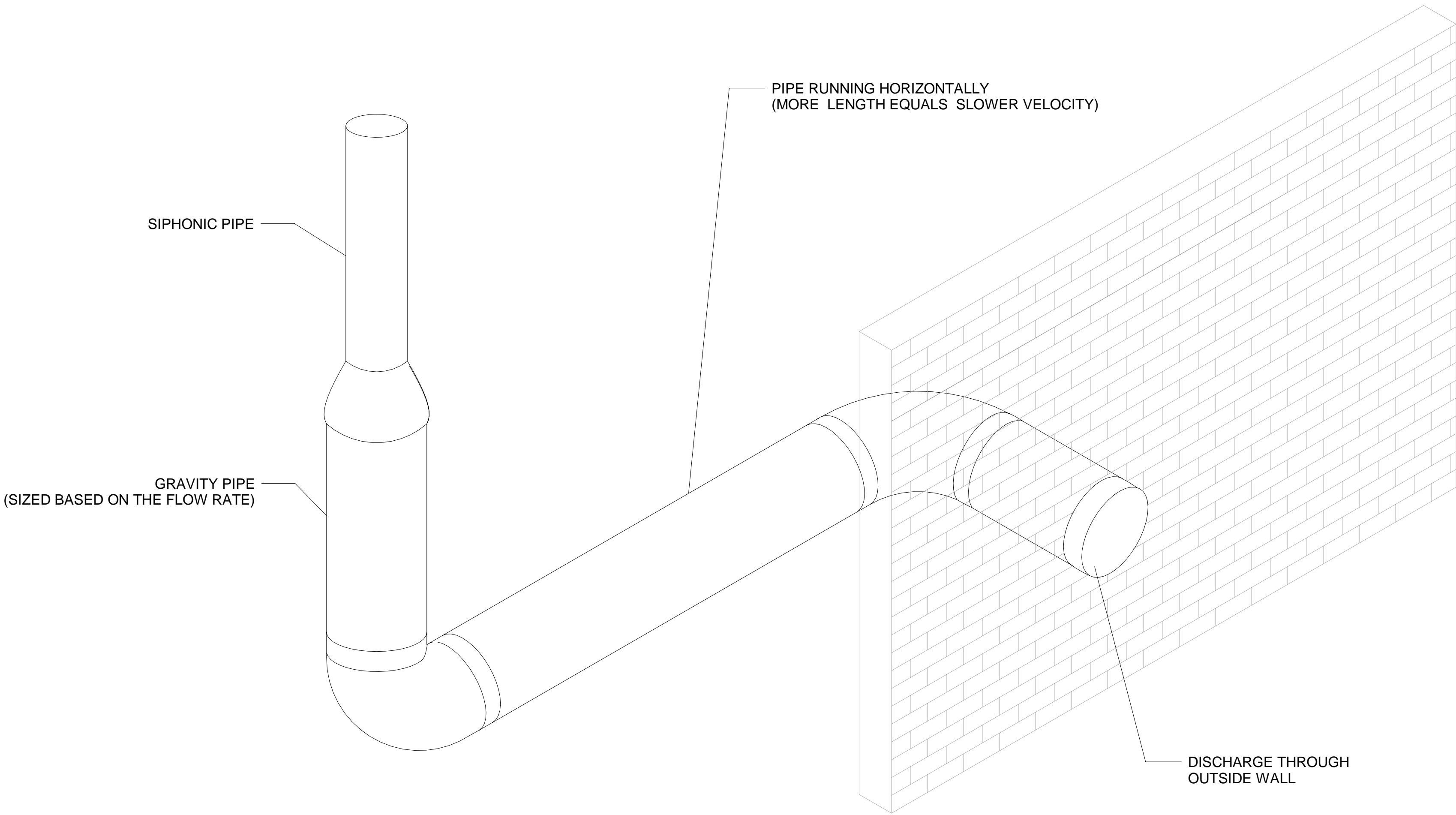
PROJECT NO.

PROJECT DATE

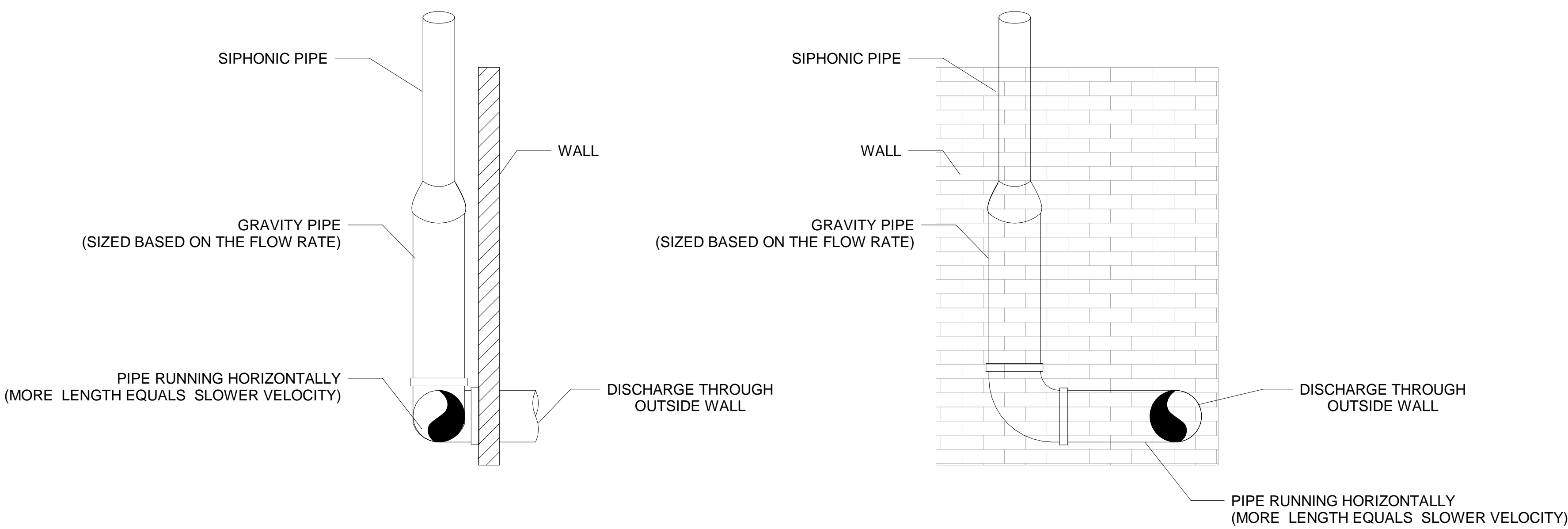
COMBINING STROM
SYSTEMS

DWG. NO.
P106

MIFAB Recommendaion :
Increasing pipe diameter only does so much; create friction by adding change of directions on the gravity sized pipe where possible.

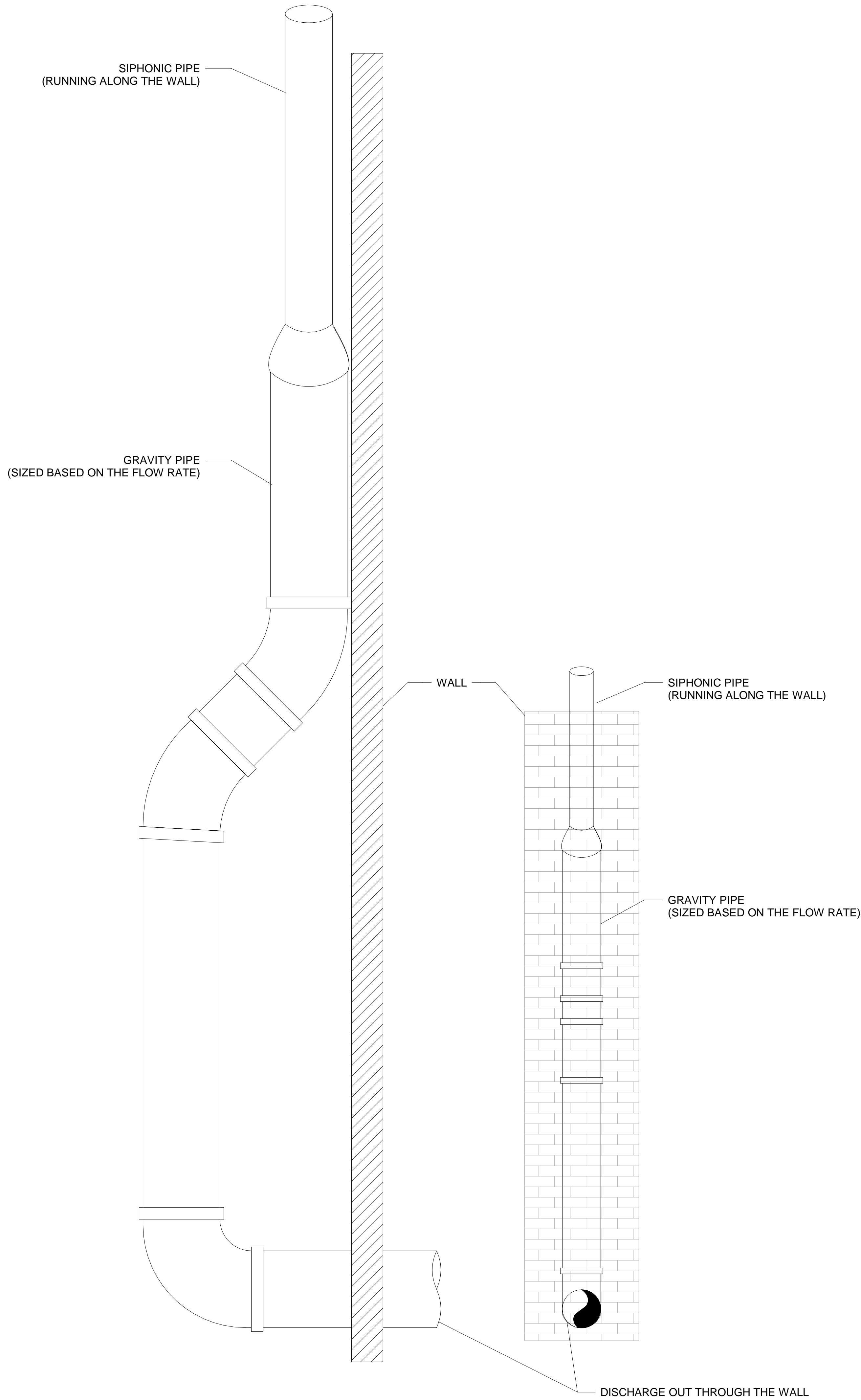


VIEW - 1



VIEW - 2

1 OVERFLOW DISCHARGE RECOMMENDATION - OFFSET TO THE SIDE OF WALL
Scale: NTS



VIEW - 1

VIEW - 2

2 OVERFLOW DISCHARGE RECOMMENDATION - OFFSET AWAY FROM THE WALL
Scale: NTS

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

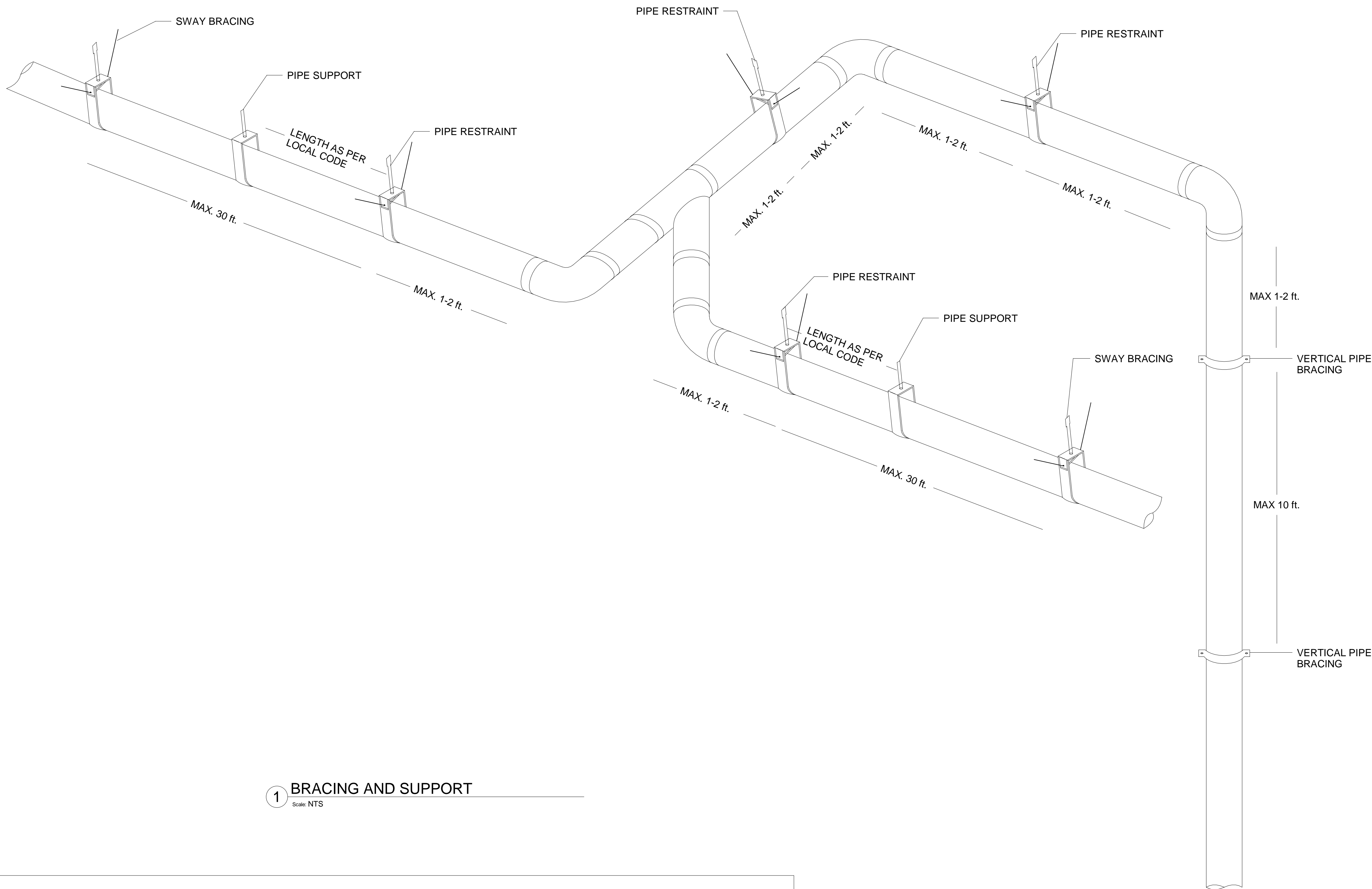
OVERFLOW
DISCHARGE DETAILS

DWG NO.
P107

ASPE 45:

9.3.3 PROVIDE APPROPRIATE THRUST RESTRAINTS AND ANCHORS IN THE PARTS OF THE SYSTEM EXPERIENCING THESE FORCES.
RESTRAINTS AND ANCHORS MAY BE ATTACHED TO THE PIPE HANGER ONLY WHEN IS RIGIDLY ATTACHED TO THE PIPE.

9.3.4: IF THE DISTANCE FROM THE TOP OF A SUSPENDED PIPE TO THE POINT OF CONNECTION OF THE HANGER ROD IS GREATER THAN 18", LATERAL RESTRAINS SHALL BE INSTALLED EVER 30' AT EACH BRANCH TAKE-OFF AND AT EACH CHANGE OF THE DIRECTION.



1 BRACING AND SUPPORT
Scale: NTS

NEW REQUIREMENTS TO FOLLOW:

1. PIPE BRACING 1-2ft AWAY FROM EVERY CHANGE OF DIRECTION (i.e. A WYE HAS 3 BRACES).
2. SWAY BRACING EVERY 30ft. (IF PIPE GREATER THAN 18" BELOW CEILING).

STANDARD REQUIREMENTS(SAME AS GRAVIT) :

3. PIPE SUPPORT IN THE HORIZONTAL (FOLLOW CISPI OR PVC STANDARD).
4. PIPE BRACING IN THE VERTICAL EVERY 10ft.

IPC 2015 CODE

1107.1 GENERAL SIPHONIC ROOF DRAINS AND DRAINAGE SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH ASME A112.6.9 AND ASPE 45.

UPC 2018 CODE

1106.2 SIPHONIC ROOF DRAINAGE SYSTEMS THE DESIGN OF A SIPHONIC ROOF DRAINAGE SYSTEM SHALL COMPLY WITH ASPE 45.

1106.3 SIPHONIC ROOF DRAINS SIPHONIC ROOF DRAINS SHALL COMPLY WITH ASME A112.6.9

Woodhill Station East PH3

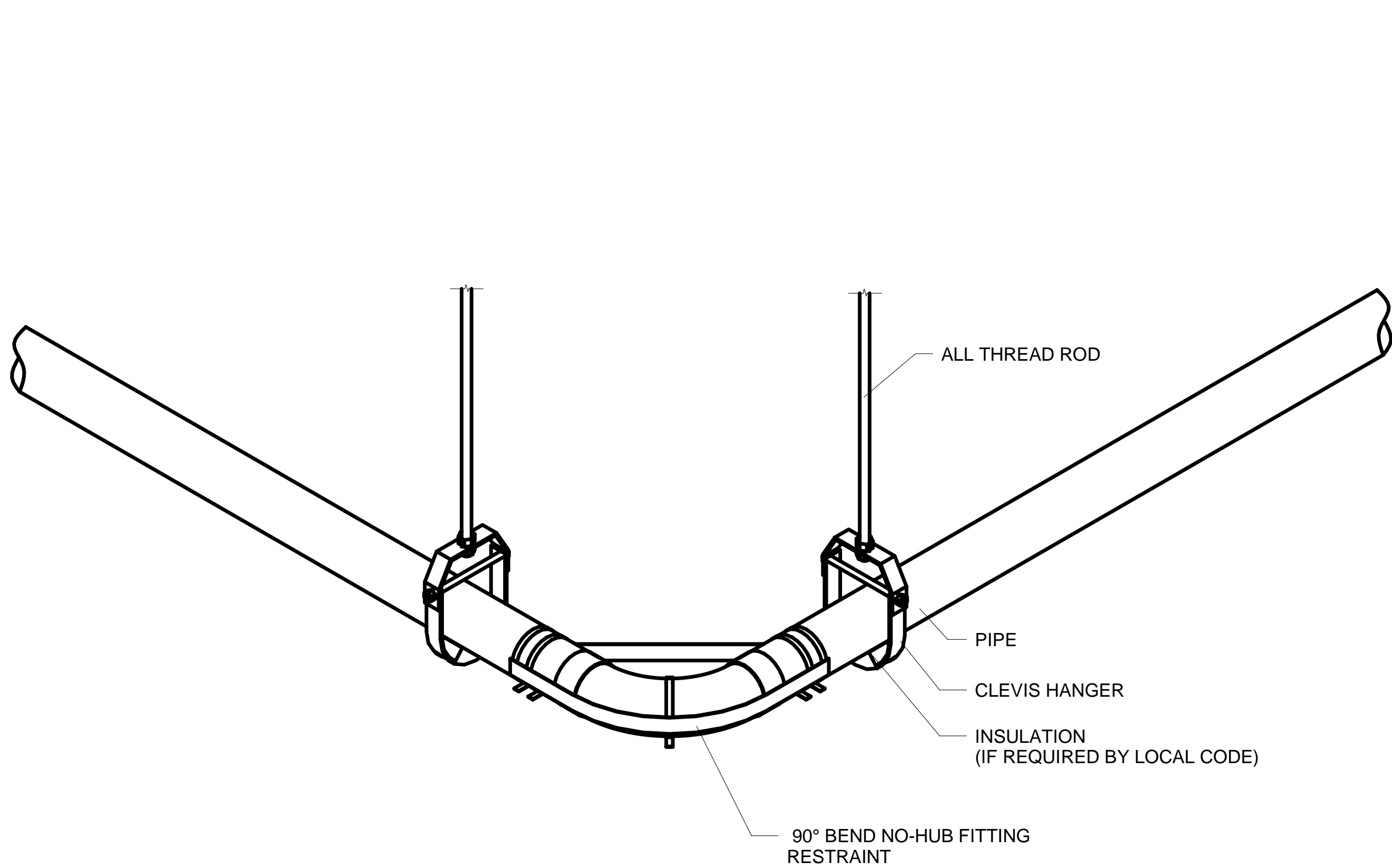
PROJECT NO.

PROJECT DATE

BRACING AND
SUPPORT

DWG. NO.

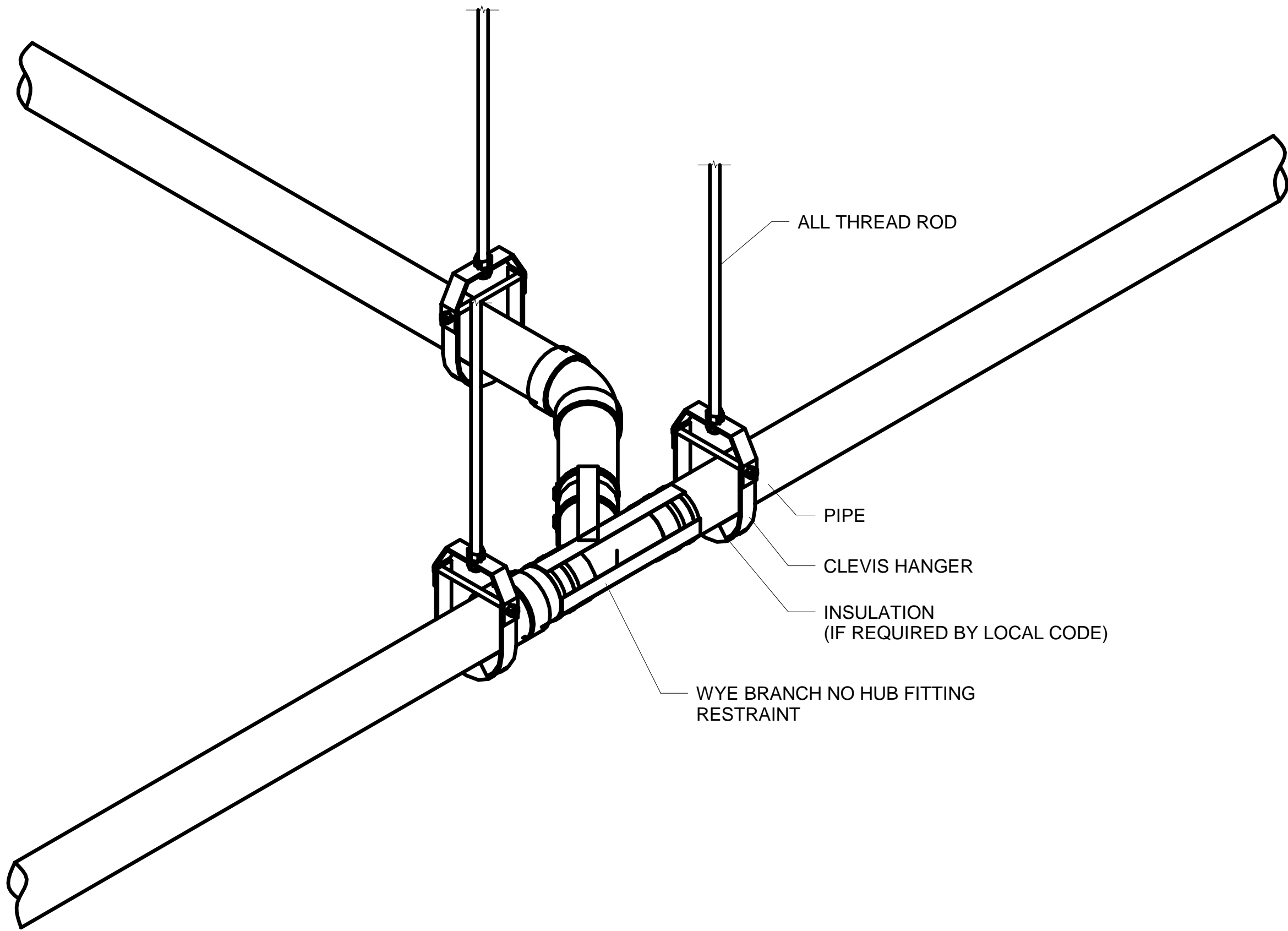
P108



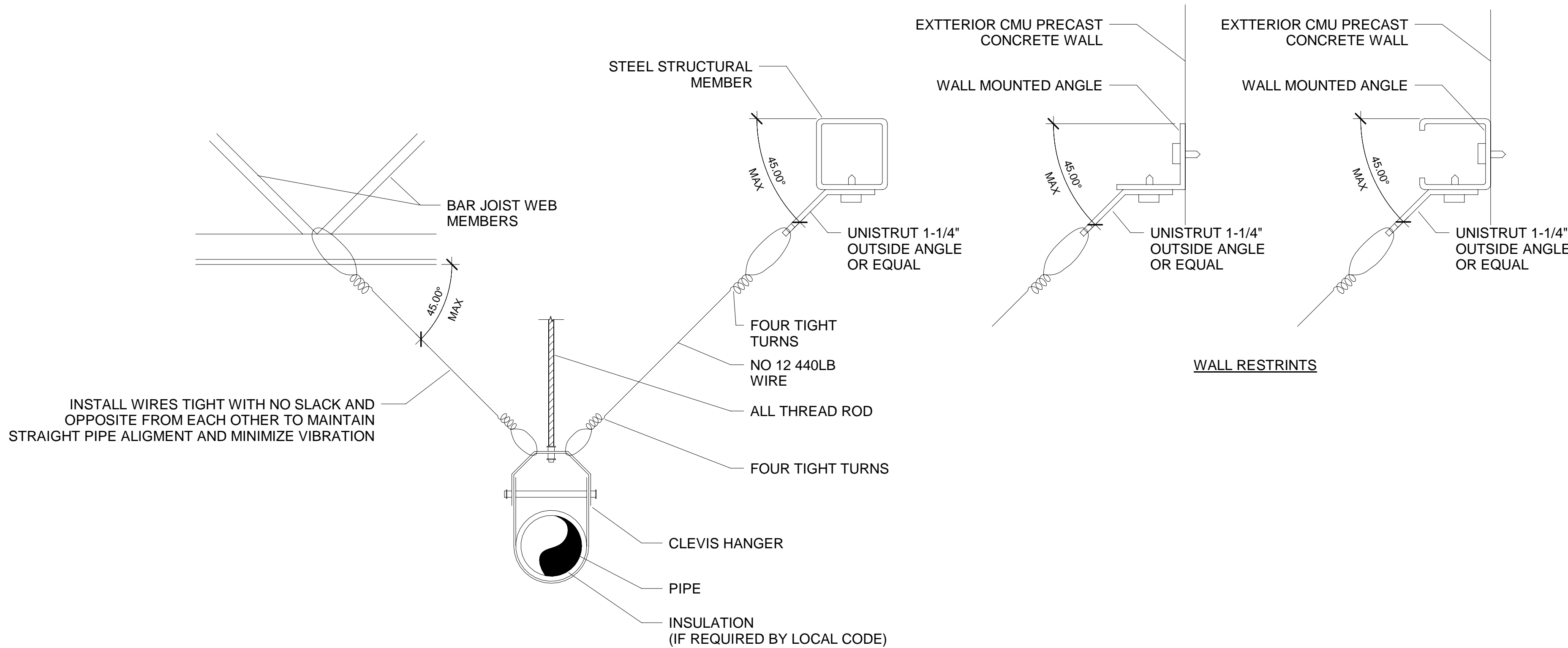
NOTES :

1. RESTRAIN SIPHONIC DRAIN LINES TO SATISFY THE REQUIREMENTS OF ASPE 45.
2. DRAIN LINES SHALL BE RESTRAINED AT EACH BRANCH TAKE-OFF, AND EACH CHANGE OF DIRECTION.
3. LATERAL SUPPORTS SHALL BE PROVIDED AT EACH DRAIN TAILPIECE AS CLOSE TO DRAIN CONNECTION AS POSSIBLE.

FITTING RESTRAINT



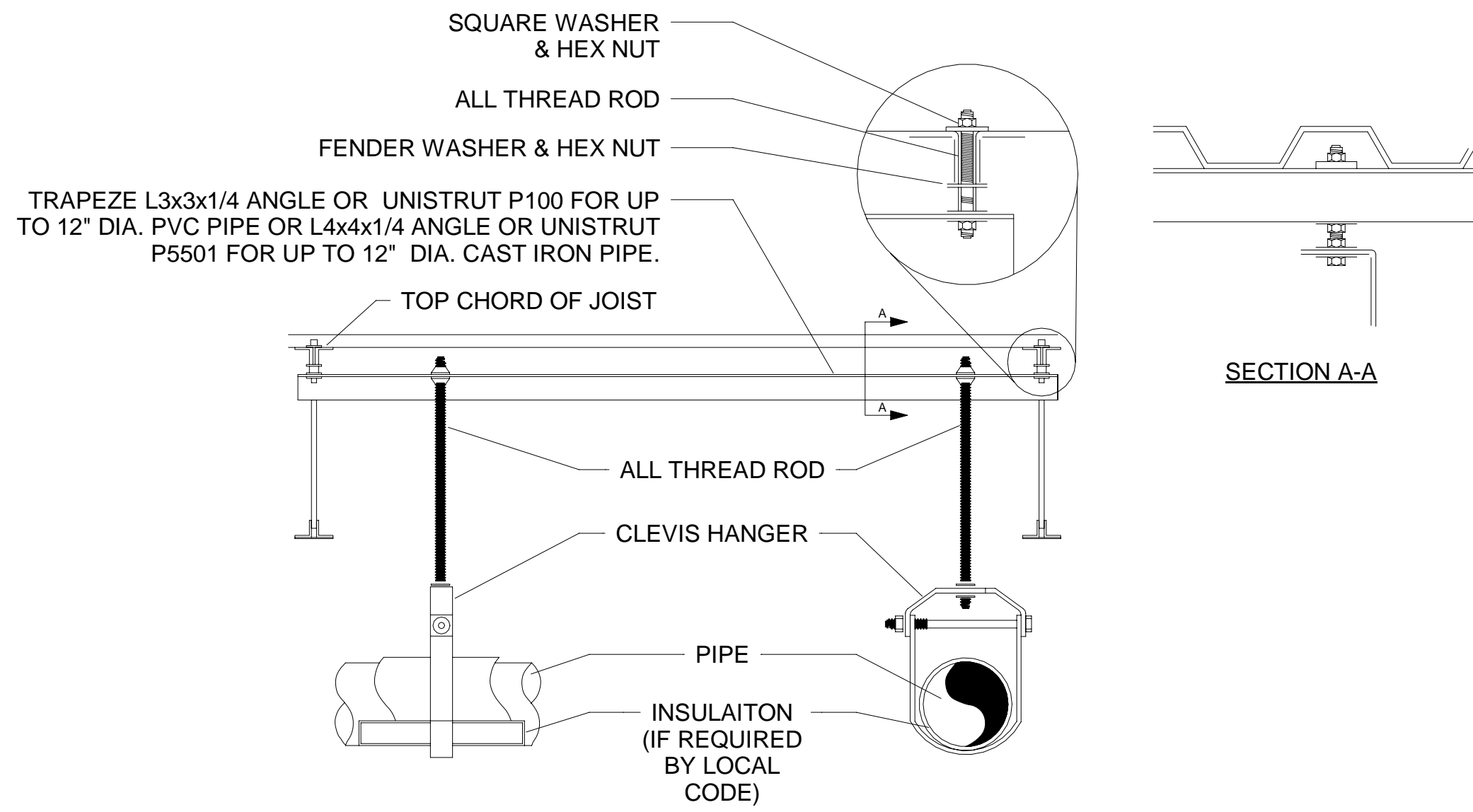
FITTING RESTRAINT



NOTES :

1. RESTRAIN SIPHONIC DRAIN LINES TO SATISFY THE REQUIREMENTS OF ASPE 45.
2. DRAIN LINES SHALL BE RESTRAINED AT INTERVALS NOT EXCEEDING 30 FT.
3. TWO OPPOSING LATERAL SUPPORTS SHALL BE PROVIDED.

PIPE RESTRAINT



NOTE:

1. SPACE HANGERS AND SUPPORTS IN ACCORDANCE WITH SPECIFICATIONS.
2. DO NOT SUPPORT PIPING FROM BOTTOM CHORD OF BAR JOISTS.
3. DO NOT HANG 2 OR MORE 8 INCH OR LARGER PIPE BETWEEN THE SAME JOIST SPACE.
4. THE USE OF BEAM CLAMPS IS NOT PERMITTED.

PIPE SUPPORT

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

SUPPORT DETAILS

DWG. NO.
P109

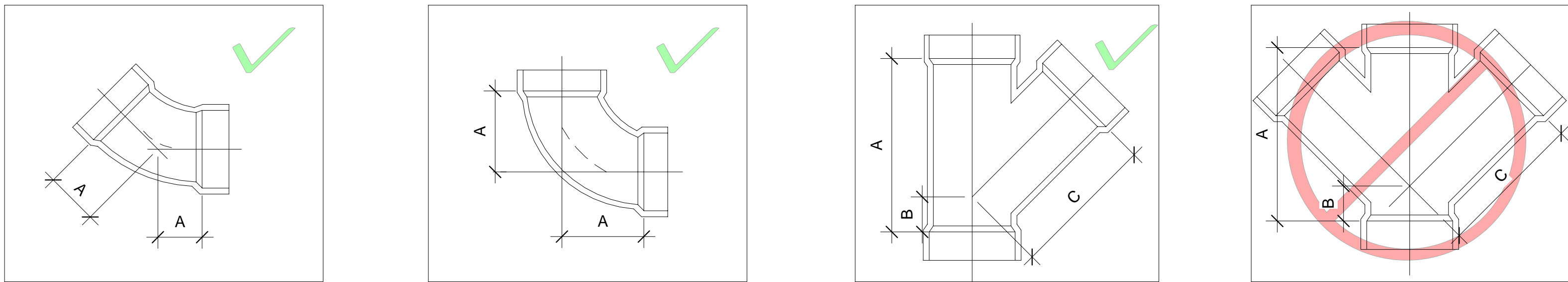
Fittings Approved For Siphonic Drainage

Bends should be:
- 90° (¼) Long Radius
- DWV swept 90° (¼)
- 45° (⅛)

All branches have to single be 45° Wye's
- Knuckle Bends are NOT permitted
- Double or combination branches are NOT permitted
- **Concentric and Eccentric reducers both allowed**

ASPE 45:

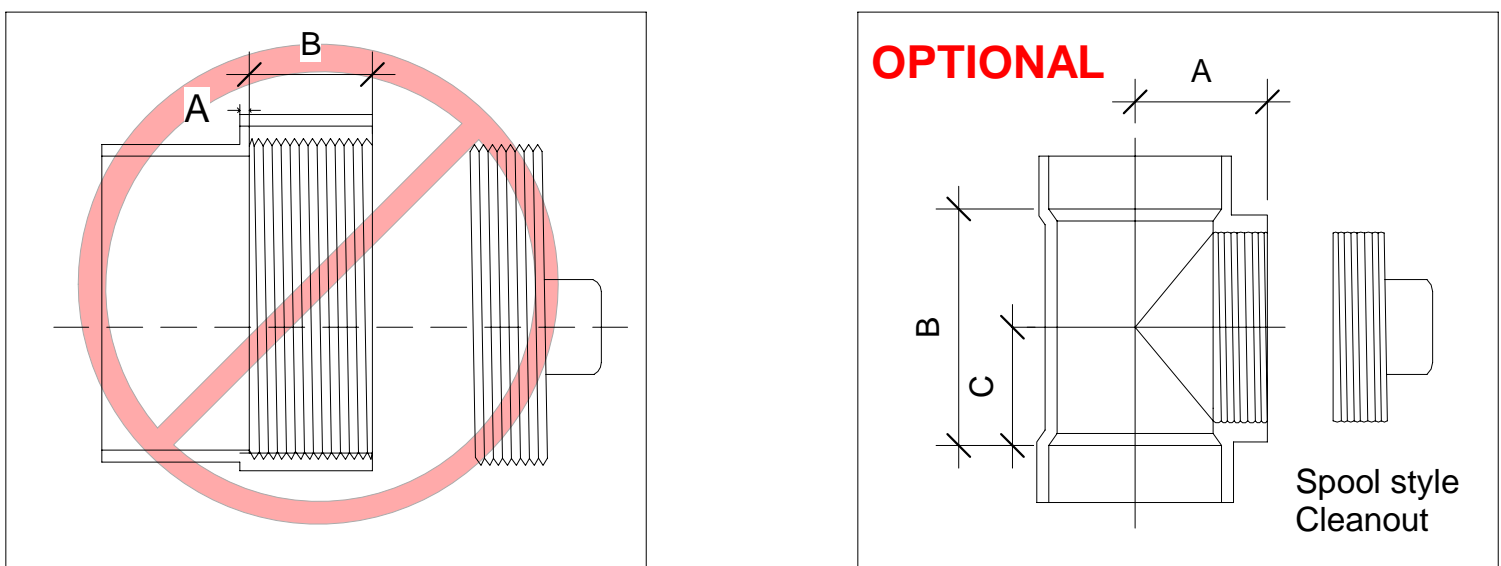
- 2.2.5 All changes in direction in the horizontal plane shall be sweep radius elbows or a combination of eighth-bend elbows or an eighth-bend elbow and lateral wye.
- 2.2.6 Change from vertical to horizontal shall be sweep radius elbows or a combination of eighth-bend elbows. If combinations of eight-bend elbows are used, they should be directly connected without a pipe section between them.



Cleanouts not required by ASPE 45 standard and are optional
Use spool style cleanout to eliminate air pocket if desired

ASPE 45:

- 9.5.2 Clean out fittings creating an air pocket or a discontinuity in pipe flow should be avoided wherever possible.
- 9.5.3 If cleanouts are to be included, they should be designed as a removable spool piece or fitting by means of an approved mechanical coupling.



ASPE 45:

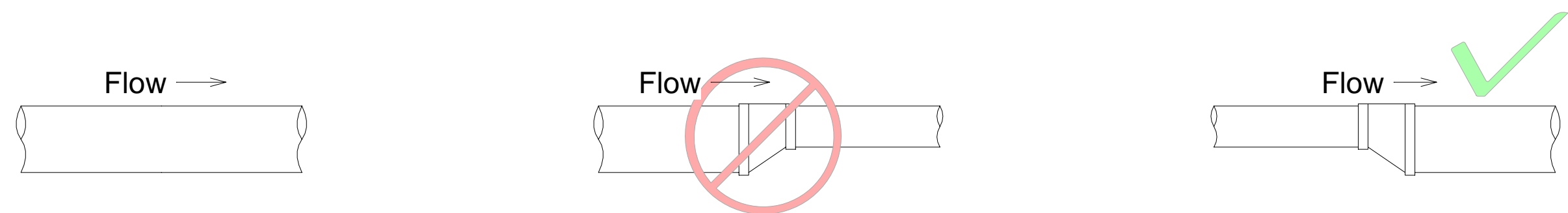
- 7.10.4 In general, use increasers only in the horizontal orientation to transition to a larger pipe diameter. Use reducers only in the vertical orientation to transition to a smaller pipe diameter.
- 9.6.2 When eccentric reducers are used, they shall be installed with the flat side oriented with the pipe crowns and the sloped side with the invert.
- 9.6.3 Eccentric reducers placed in the vertical just after an elbow turning down shall have the flat side oriented with the outside radius of the elbow.

Piping Rules for Siphonic Drainage

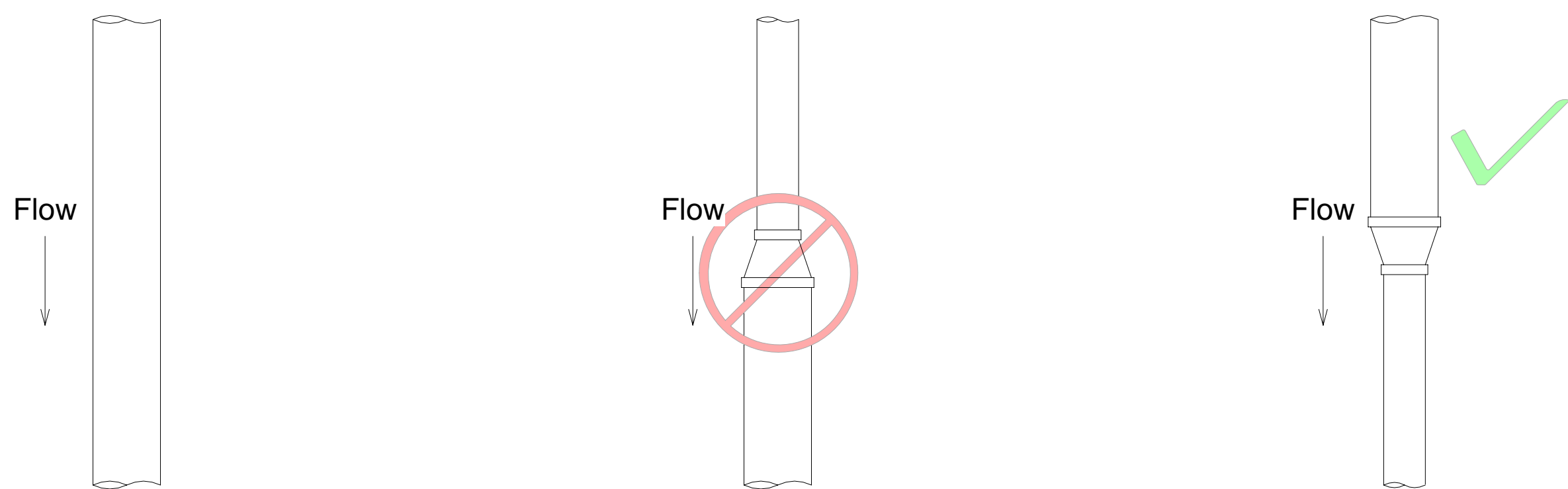
ASPE 45:

- 1.1.3 Local building and plumbing code requirements for pipe cleanouts, changes in direction, pitch of the piping and prohibitions for reductions in pipe size in the direction of fluid flow shall not apply to siphonic roof drainage design.
- 1.1.4 Pipe and drain sizing methodologies prescribed in locally adopted state plumbing codes shall not apply to the pipe sizing of siphonic roof drainage systems.

Horizontal Pipework: OKAY to increase pipe size; do NOT decrease pipe size

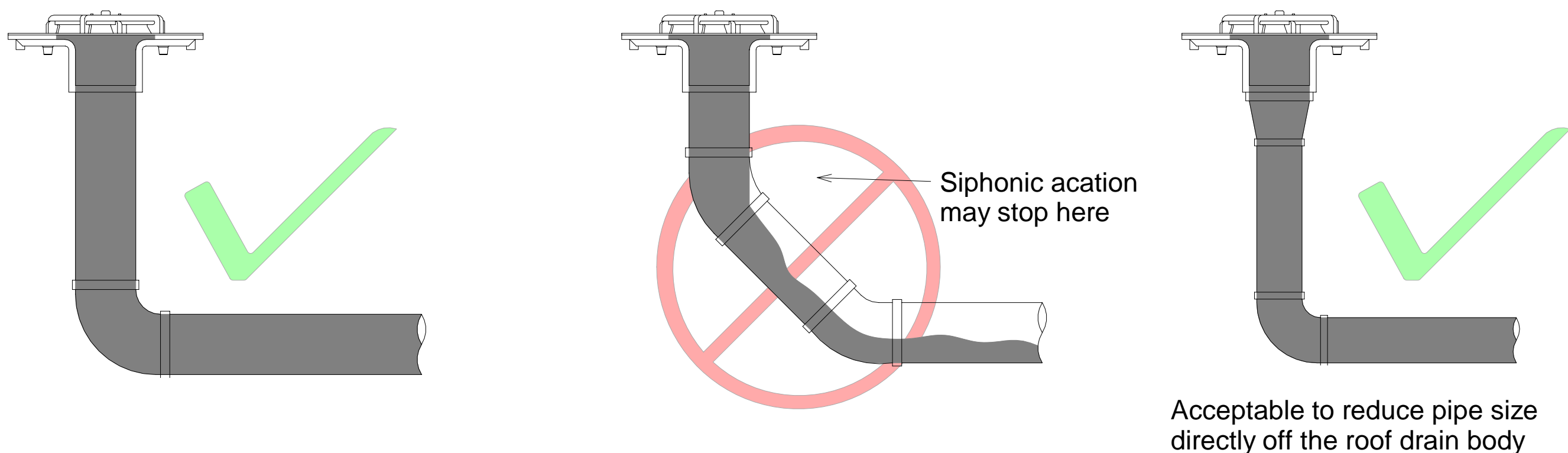


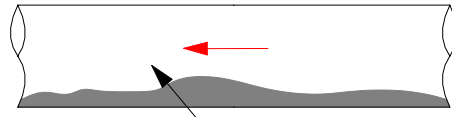
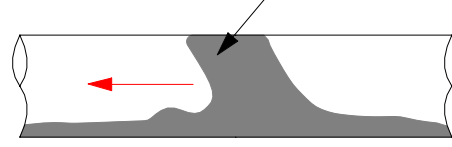
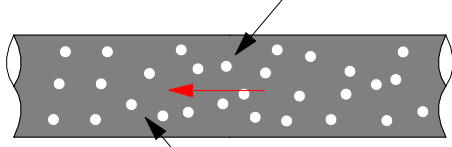
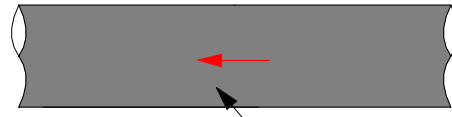
Vertical Pipework: OKAY to decrease pipe size; do NOT increase pipe size

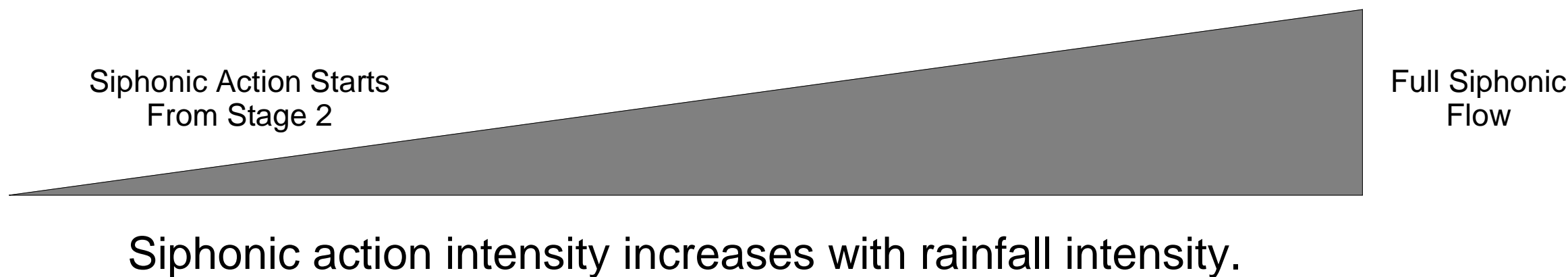


Tailpipe Design: Use only vertical/horizontal pipe

A bend creates turbulence
forcing vertical to **PRIME**



Priming and Four Flow Patterns of Siphonic Drainage			
Stage 1 : Gravity Flow	Stage 2 : Plug Flow	Stage 3 Bubble Flow	Stage 4 : Full-Bore Flow
Light Rainfall Approx. 0-10% of design	Moderate Rainfall Approx. 10-40% of design	Heavy Rainfall Approx. 40-70% of design	Intense Rainfall Approx. 70-100% of design
Gravity flow in pipework  Air above water Water finds its way to the vertical and runs down the pipe.	Plug of water filling whole pipe at high velocities which achieves self-cleansing.  Air pockets driven down pipework Tests have shown that self-cleansing can be achieved at as low as 10% to 15% of the design rainfall rate.	Water filling whole pipe  Air bubbles in suspension carried at high velocity	No more air entry  Air within pipe now fully purged



Woodhill Station East PH3

PROJECT NO.

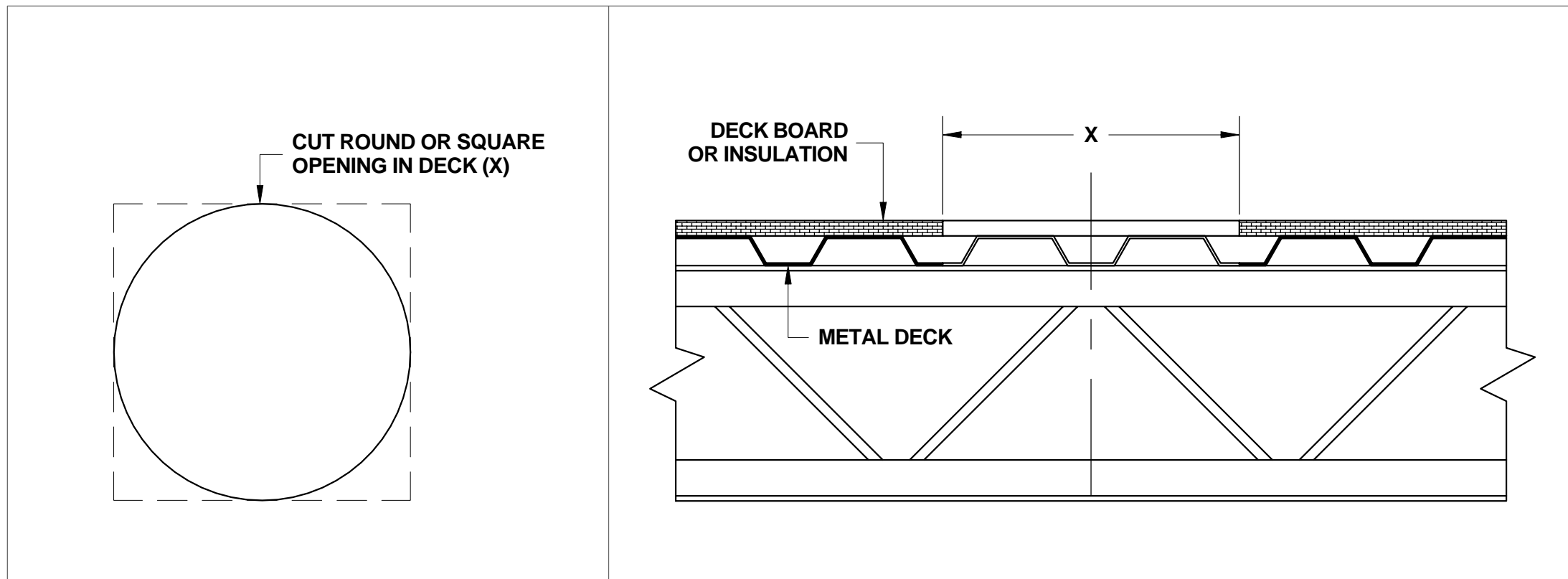
PROJECT DATE

FITTING AND PIPING
RULES FOR SIPHONIC
DRAINAGE

DWG NO.
P110

Step 1: **SIPHONIC ROOF DRAIN
Direct Cut**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



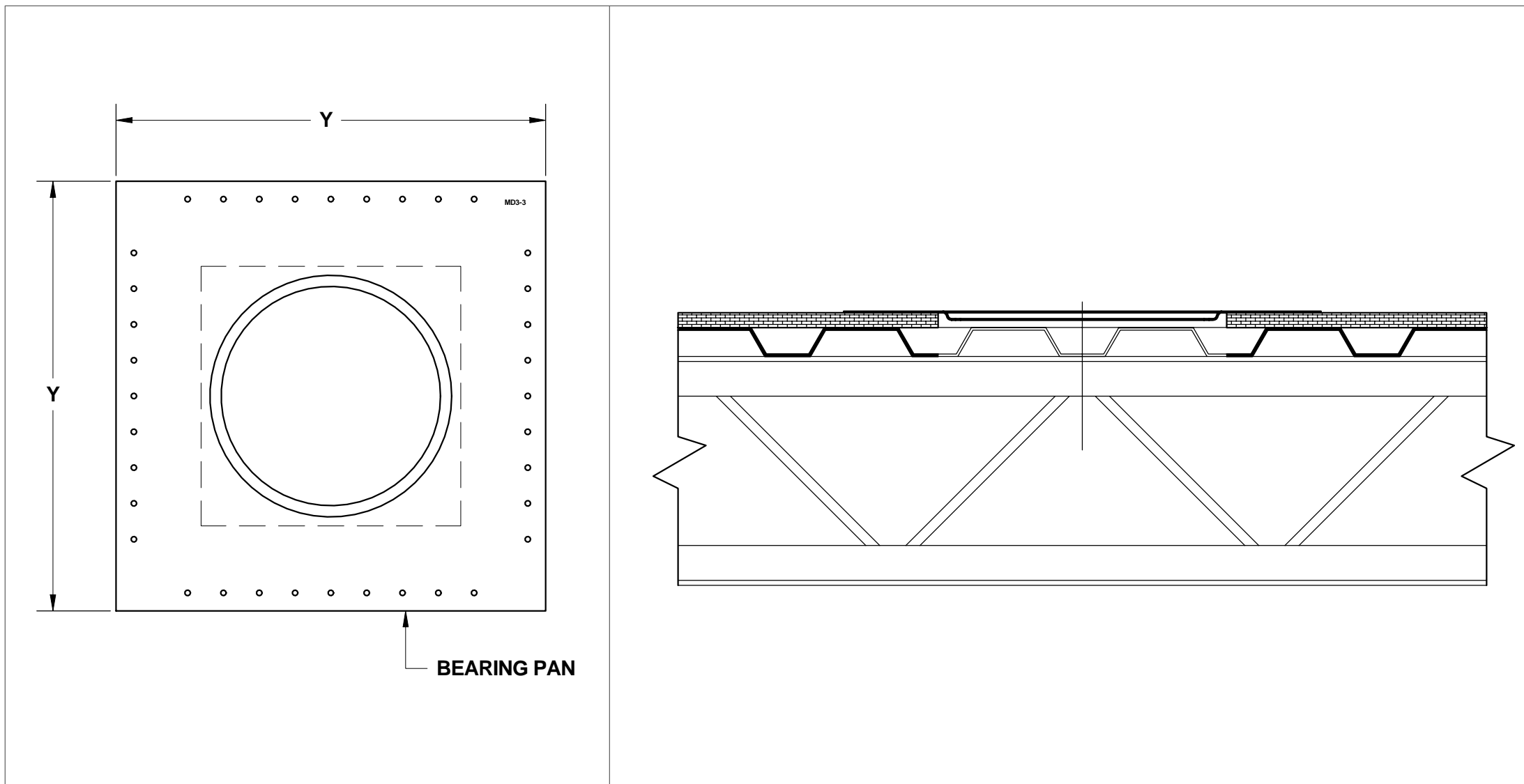
CATALOG NUMBER	PIPE SIZE	X (DECK OPENING)
MH-300	3 (75)	8 1/2 (216)
MH-400	4 (100)	13 (330)
MH-500	5 (125)	13 (330)
MH-600	6 (150)	16 (406)

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

1. AT THE PREDETERMINED LOCATION LOCATE THE CENTER FOR THE DRAIN OPENING & SCRIBE TO 'X' DIMENSION
2. VERIFY THAT THERE ARE NO OBSTRUCTIONS UNDER THE AREA WHERE THE DRAIN IS TO BE LOCATED.
3. CHECK TO INSURE THAT THE LOCATION IS TO THE SYSTEM ENGINEERED PLANS. A SIPHONIC SYSTEM MUST BE LOCATED PRECISELY - DO NOT DEVIATE FROM PLANS.
4. IF THE SPECIFIED LOCATION HAS INTERFERENCES OR IF A LOCATION CHANGE IS DESIRED, DO NOT PROCEED. CONSULT WITH THE ENGINEERING AUTHORITY RESPONSIBLE FOR THE DESIGN SO THE CHANGE CAN BE RECALCULATED.
5. IF NO PROBLEMS EXISTS AT THE PREDETERMIND SITE, CUT A ROUND OR SQUARE OPENING IN THE DECK (X - DIMENSION)

Step 2: **SIPHONIC ROOF DRAIN
Installing Bearing Pan**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



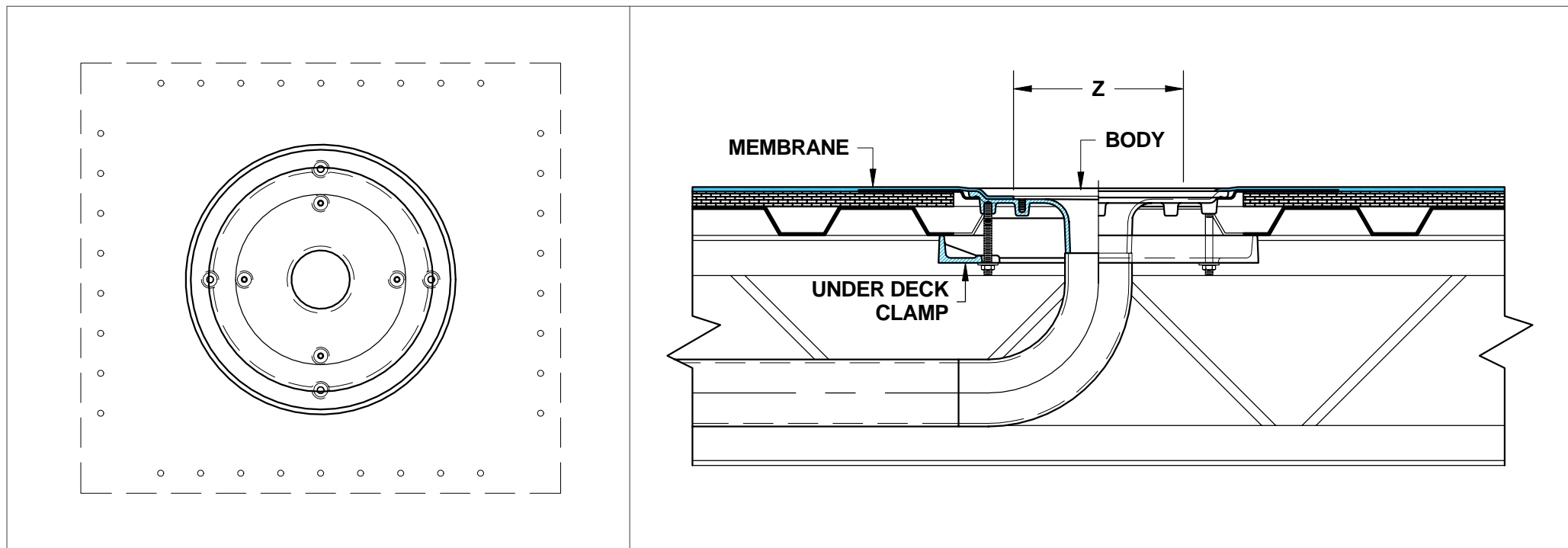
CATALOG NUMBER	PIPE SIZE	Y (DECK OPENING)
MH-300	3 (75)	24 (610)
MH-400	4 (100)	27 (686)
MH-500	5 (125)	27 (686)
MH-600	6 (150)	33 (838)

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

- (SKIP TO STEP 4 IF NO BEARING PAN USED)
1. REFFER TO DIRECT CUT INSTALL SHEET FOR HOLE DIMENSIONS.
 2. INSTALL THE BEARING PAN (SUMP RECEIVER) INTO PRE CUT DECK OPENING.
 3. THE BEARING PAN HAS PERIMETER HOLES FOR SECURING TO THE DECK. DECK SCREWS CAN BE USED TO SECURE THE BEARING PAN (IF DESIRED).

Step 3: **SIPHONIC ROOF DRAIN
Installing Drain Body**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



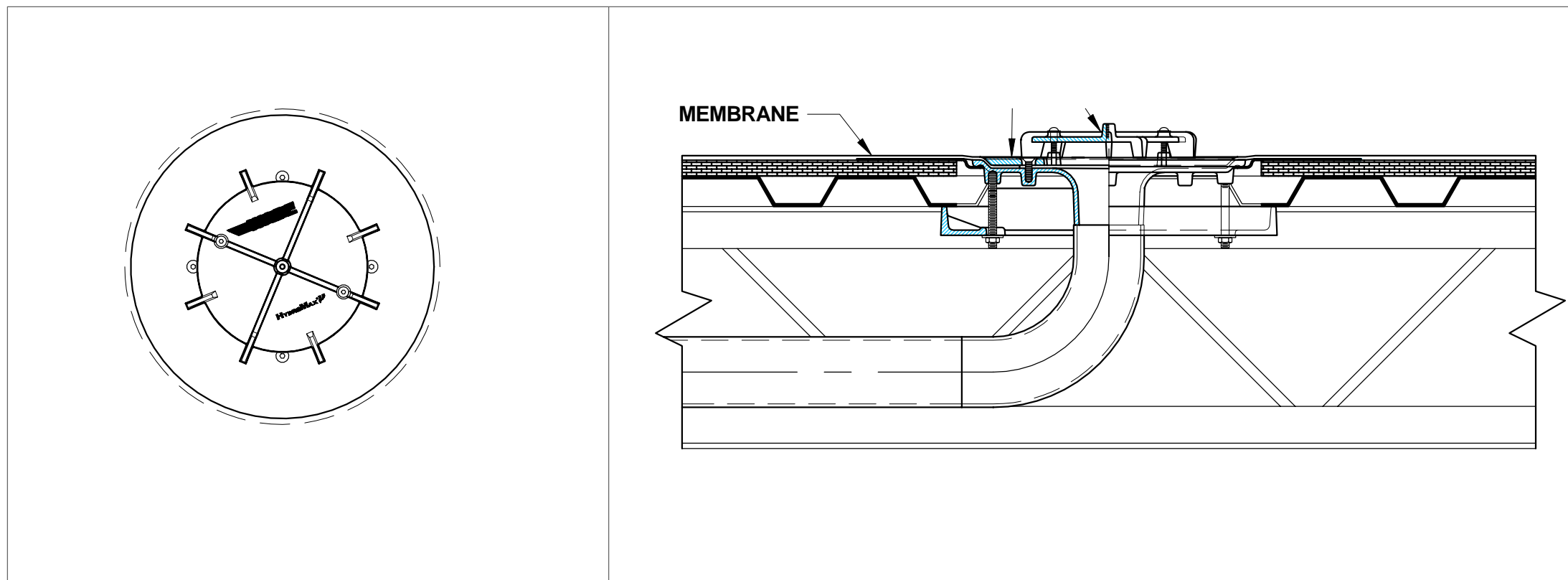
CATALOG NUMBER	PIPE SIZE	Z (DECK OPENING)
MH-300	3 (75)	8 1/2 (216)
MH-400	4 (100)	13 (330)
MH-500	5 (125)	13 (330)
MH-600	6 (150)	16 (406)

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

1. INSTALL SIPHONIC DRAIN BODY INTO BEARING PAN RECESS.
2. FROM UNDERSIDE, INSTALL UNDER DECK CLAMPS AND TIGHTEN SECURELY.
3. INSTALLATION OF PIPE MAY THEN PROCEED. MAKE SURE TO FOLLOW PIPE ROUTES EXACTLY TO THE ENGINEERING PLANS FOR THE SYSTEM. NO DEVIATION IS ALLOWED AS THIS IS AN ENGINEERED SYSTEM. ANY MODIFICATION TO THE PIPING ARRANGEMENT MUST BE SUBMITTED TO THE ENGINEER FOR EVALUATION.
4. FROM THE ROOF SIDE, THE WATERPROOF MEMBRANE CAN BE INSTALLED. APPLY THE MEMBRANE TO THE MANUFACTURERS RECOMMENDATIONS.
5. CUT THE MEMBRANE IN A CIRCULAR PATTERN TO THE 'Z' DIMENSION IN THE CENTER OF THE DRAIN.

Step 4: **SIPHONIC ROOF DRAIN
Securing Membrane Clamp**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



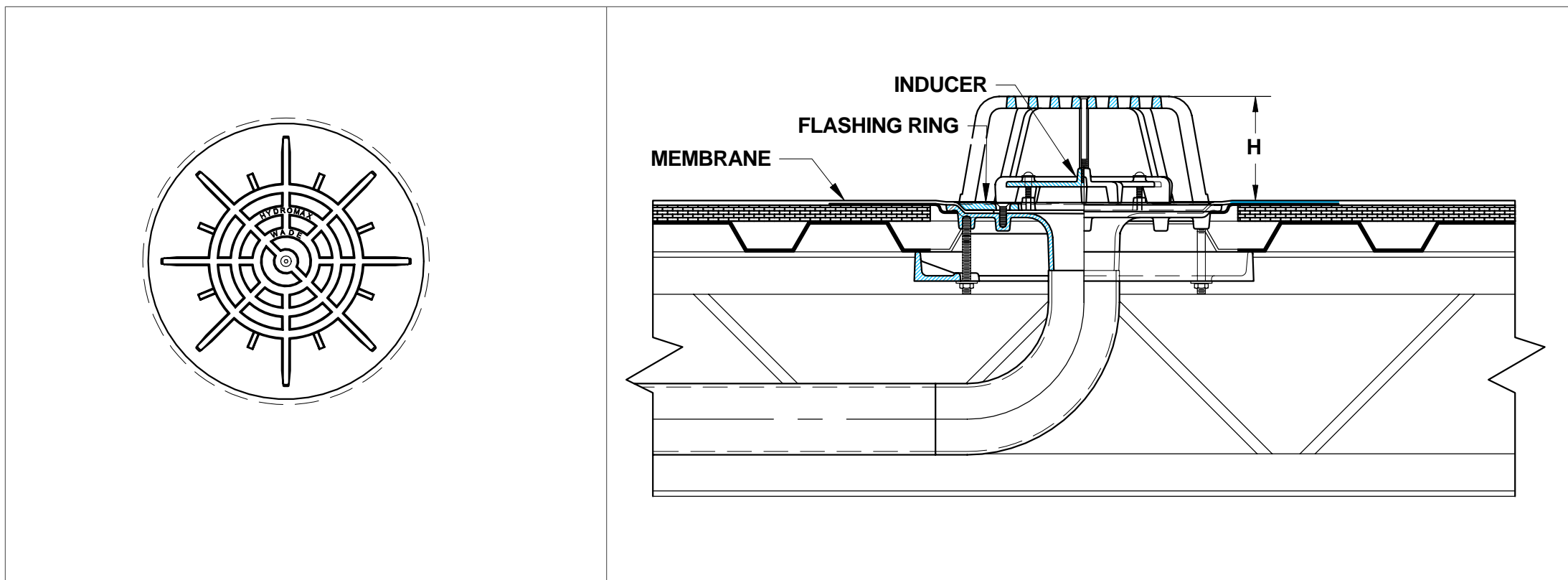
CATALOG NUMBER	PIPE SIZE
MH-300	3 (75)
MH-400	4 (100)
MH-500	5 (125)
MH-600	6 (150)

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

1. (IF NO BEARING PAN USED) FROM UNDERSIDE, INSTALL UNDER DECK CLAMPS AND TIGHTEN SECURELY.
2. FROM THE ROOF SIDE, THE WATERPROOF MEMBRANE CAN BE INSTALLED. APPLY THE MEMBRANE TO THE MANUFACTURERS RECOMMENDATIONS.
3. INSTALL THE FLASHING RING WITH THE HARDWARE PROVIDED. INSURE THAT THE SCREWS ARE TIGHT.
4. INSTALL THE INDUCER ON TOP OF THE FLASHING RING WITH THE HARDWARE PROVIDED. THE INDUCER SECURES TO THE FLASHING RING WITH (2) SCREWS.

Optional: **SIPHONIC ROOF DRAIN
Adding Debris Guard**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



CATALOG NUMBER	PIPE SIZE	H
MH-300	3 (75)	5 (125)
MH-400	4 (100)	5 (125)
MH-500	5 (125)	5 (125)
MH-600	6 (150)	5 (125)

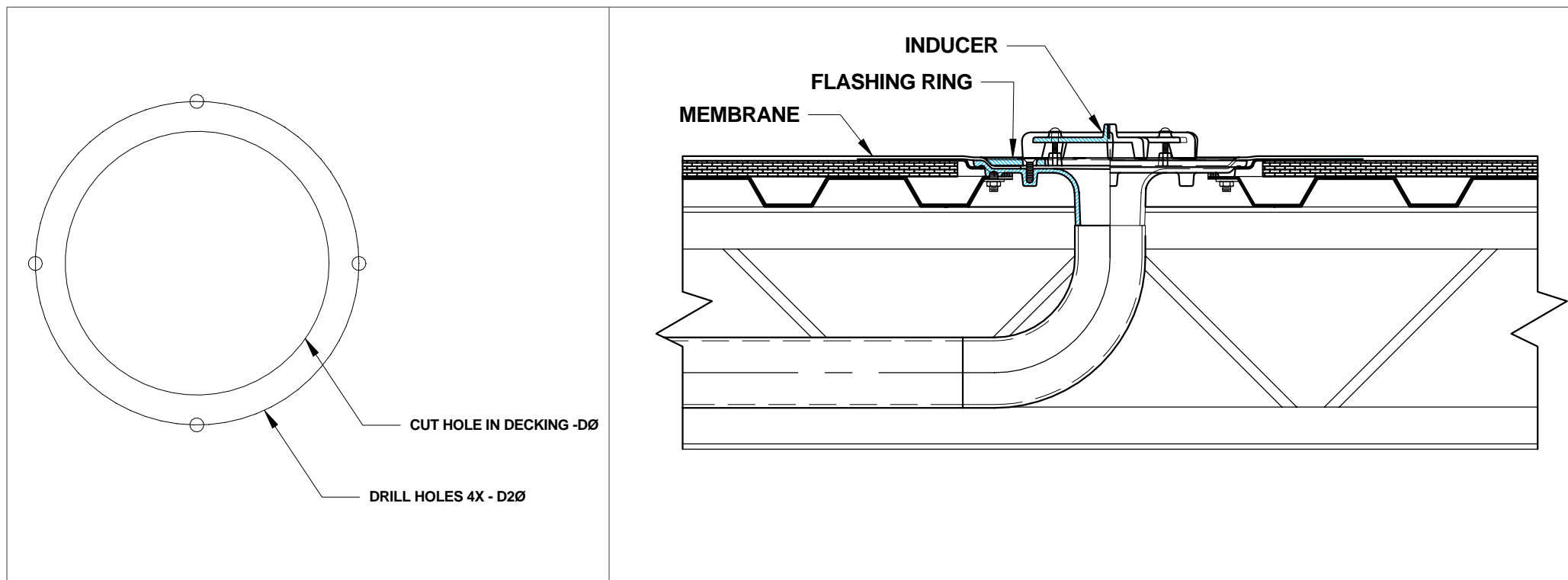
MIFAB® Hydromax Hydromax siphonic roof drains E with optional dome (debris guard) are compliant with IPC (International Plumbing Code) Section 1105.

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

1. WITH THE INDUCER IN PLACE AND SECURED, INSTALL THE DOME (LEAFGUARD) ALIGNING THE LEGS BETWEEN THE INDUCER VANES. SECURE THE DOME WITH THE HARDWARE PROVIDED.

Direct Method: **SIPHONIC ROOF DRAIN
Screw from Underdeck**
MH-300, MH-400, MH-500, MH-600

FOR USE IN ENGINEERED SIPHONIC ROOF DRAINAGE SYSTEMS, FURNISHED STANDARD WITH EPOXY COATED CAST IRON BODY, MEMBRANE CLAMP DEVICE AND AIR BAFFLE/ INDUCER, 304 STAINLESS STEEL HARDWARE AND NO-HUB BOTTOM OUTLET.



CATALOG NUMBER	PIPE SIZE	D Ø	D-2 Ø
MH-300	3 (75)	9"	11-1/16
MH-400	4 (100)	14"	17-3/32
MH-500	5 (125)	14"	17-3/32
MH-600	6 (150)	20"	20-11/16

MIFAB® Hydromax siphonic roof drains are compliant with ANSI/ASME A112.6.9 and are IAPMO Listed (file No. 6009).

1. AT THE PREDETERMINED LOCATION LOCATE THE CENTER FOR THE DRAIN OPENING & SCRIBE TO 'D Ø' DIMENSION
2. VERIFY THAT THERE ARE NO OBSTRUCTIONS UNDER THE AREA WHERE THE DRAIN IS TO BE LOCATED.
3. CHECK TO INSURE THAT THE LOCATION IS TO THE SYSTEM ENGINEERED PLANS. A SIPHONIC SYSTEM MUST BE LOCATED PRECISELY - DO NOT DEVIATE FROM PLANS.
4. IF THE SPECIFIED LOCATION HAS INTERFERENCES OR IF A LOCATION CHANGE IS DESIRED, DO NOT PROCEED. CONSULT WITH THE ENGINEERING AUTHORITY RESPONSIBLE FOR THE DESIGN SO THE CHANGE CAN BE RECALCULATED.
5. DRILL HOLES AT THE 'D-2 Ø' DIMENSION THEN SECURELY TIGHTEN SCREWS FROM THE UNDERSIDE
6. FROM THE ROOF SIDE, THE WATERPROOF MEMBRANE CAN BE INSTALLED. APPLY THE MEMBRANE TO THE MANUFACTURERS RECOMMENDATIONS.
7. INSTALL THE FLASHING RING WITH THE HARDWARE PROVIDED. INSURE THAT THE SCREWS ARE TIGHT.
8. INSTALL THE INDUCER ON TOP OF THE FLASHING RING WITH THE HARDWARE PROVIDED. THE INDUCER SECURES TO THE FLASHING RING WITH (2) SCREWS.

SIPHON PIPE DISCLAIMERS

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO ALL APPLICABLE LOCAL CODES AND REGULATIONS.
2. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED. FOLLOW DRAWINGS IN LAYING OUT WORK AND CHECK DRAWINGS OF OTHER TRADES RELATING TO WORK TO VERIFY SPACE IN WHICH WORK WILL BE INSTALLED. MAINTAIN HEADROOM AND SPACE CONDITIONS AT ALL TIMES.
3. COORDINATE PLUMBING SYSTEMS WITH WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. PROVIDE ALL FITTINGS, OFFSETS, AND TRANSITIONS AS REQUIRED FOR A COMPLETE WORKABLE INSTALLATION.
4. THE CONTRACTOR SHALL VISIT THE JOB SITE TO DETERMINE EXISTING CONDITIONS, BECOME FULLY FAMILIAR WITH ANY EXISTING SPRINKLER INSTALLATION, COMPARE SAME WITH DRAWINGS AND SPECIFICATIONS AND SATISFY THEMSELES OF ALL CONDITIONS PRIOR TO SUBMISSION OF A BID PROPOSAL. SUBMISSION OF A COST PROPOSAL (BID) WILL BE JUDGED AS EVIDENCE THAT SITE EXAMINATION HAS BEEN MADE. CLAIMS FOR EXTRA COSTS FOR LABOR, EQUIPMENT, OR MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH EXAMINATION BEEN MADE WILL NOT BE RECOGNIZED.
5. EXISTING PLUMBING PIPING SYSTEMS SHOWN ON THESE DRAWINGS ARE BASED ON INFORMATION TAKEN FROM EXISTING DESIGN DRAWINGS AND SURVEY OF ACCESSIBLE LOCATIONS AND ARE INDICATIVE ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING SYSTEMS, EXACT LOCATION AND SERVICE CONDITIONS. DISCREPANCIES BETWEEN THE INTENT OF THESE DRAWINGS AND THAT WHICH EXISTS IN THE FIELD SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER PRIOR TO START OF WORK.
6. CONTRACTOR SHALL REFER TO ALL THE ARCHITECTURAL OR MECHANICAL DRAWINGS FOR PLUMBING RELATED WORK.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS INCLUDING BUT NOT LIMITED TO ENTERING MANHOLES, USE OF WATER FROM LOW PRESSURE HYDRANTS, DEMOLITION AND NEW WORK, ETC. PRIOR TO COMMENCE OF WORK.
8. CONTRACTOR SHALL MAINTAIN THE EXISTING SANITARY AND STORM WATER SYSTEM IN OPERATION AT ALL TIMES.



1321 W 119TH ST
CHICAGO, IL 60643
hydromax@mifab.com

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

SIPHON PIPE
DISCLAIMERS

DWG NO.
P112

Calculation Report for "Lower Level ORD 10-30-2023 KG"

[\[Export to Excel\]](#)

Project Information

Project:

System:

Client:

Reference:

Designer:

Date:

System Designed By

Mifab HydroMax Design Team IN

Mifab HydroMax Design Team

kapilrudmal@gmail.com

Design Software Supplied By

MIFAB, Inc

1321 West 119th Street

Chicago

IL

60643-5109

USA

1-800-465-2736

1-773-341-3049

hydromax@mifab.com

Hydraulic Calculation Summary

Current	0.607 ft
Out of Balance	-7.411 ft
Minimum Pressure	8.509 ft
Maximum Pressure	3.871 ft/sec
Minimum Velocity	5.985 ft/sec
Minimum Vertical Velocity	14.514 ft/sec
Maximum Velocity	14.514 ft/sec
Discharge Velocity	14.514 ft/sec
Fill time	14 seconds
Pass/Fail?	PASS
Tail Pressures	1 -1.19 ft
	2 -1.797 ft

- Part 30 : Velocity is below the Minimum Vertical Velocity.
- Part 31 : Velocity is below the Minimum Vertical Velocity.

Material Parameters

Material	Actual Diameter	Nominal Diameter	K/Roughness
PVC sch 40 solid	3"	3"	0.15
PVC sch 40 solid	2"	2"	0.15

Overall Parameters

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
0	Discharge	2"	0			151.8 gpm	14.51 ft/sec	3' 3/32"	0 ft	0 lb/ft
1	Pipe	2"	5'	5'	+Z	151.8 gpm	14.51 ft/sec	2' 6/32"	-2.475 ft	2 lb/ft
2	Pipe	2"	9'	9'	+Z	151.8 gpm	14.51 ft/sec	2' 6/32"	-4.949 ft	2 lb/ft
3	Reducer	2"	0			151.8 gpm	14.51 ft/sec	10/32"	-4.079 ft	2 lb/ft

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
4	90° radius bend	3"	0			151.8 gpm	6.59 ft/sec	2/32"	-1.278 ft	4.4 lb/ft
5	Pipe	3"	21' 1"	0	-Y	151.8 gpm	6.59 ft/sec	1' 4/32"	0.093 ft	4.4 lb/ft
6	Expansion	2"	0			151.8 gpm	14.51 ft/sec	11/32"	-1.53 ft	2 lb/ft
7	Pipe	2"	3'	0	-Y	151.8 gpm	14.51 ft/sec	1' 6"	-0.014 ft	2 lb/ft
8	90° radius bend	2"	0			151.8 gpm	14.51 ft/sec	1"	0.967 ft	2 lb/ft
9	Pipe	2"	5'	0	+X	151.8 gpm	14.51 ft/sec	2' 10/32"	3.493 ft	2 lb/ft
10	Pipe	2"	4' 7"	0	+X	151.8 gpm	14.51 ft/sec	2' 4"	5.808 ft	2 lb/ft
11	45° elbow	2"	0			151.8 gpm	14.51 ft/sec	11/32"	6.77 ft	2 lb/ft
12	Pipe	2"	1' 6"	0	+X -Y	151.8 gpm	14.51 ft/sec	9"	7.527 ft	2 lb/ft
13	90° radius bend	2"	0			151.8 gpm	14.51 ft/sec	1"	5.509 ft	2 lb/ft
14	Pipe	2"	16' 11"	16' 1"	+Z	151.8 gpm	14.51 ft/sec	8' 1/32"	0.549 ft	2 lb/ft
15	Pipe	2"	16' 11"	16' 1"	+Z	151.8 gpm	14.51 ft/sec	8' 1/32"	-7.411 ft	2 lb/ft
16	Reducer	2"	0			151.8 gpm	14.51 ft/sec	10/32"	-6.541 ft	2 lb/ft
17	90° radius bend	3"	0			151.8 gpm	6.59 ft/sec	2/32"	-3.74 ft	4.4 lb/ft
18	Pipe	3"	1'	0	-Y	151.8 gpm	6.59 ft/sec	1"	-3.675 ft	4.4 lb/ft
19	Pipe	3"	1' 11"	0	-Y	151.8 gpm	6.59 ft/sec	1/32"	-3.55 ft	4.4 lb/ft
20	Junction	3"	0			62.6 gpm	2.72 ft/sec	3"	-2.76 ft	4.4 lb/ft
21	Expansion	2"	0			62.6 gpm	5.99 ft/sec	2"	-3.035 ft	2 lb/ft
22	Pipe	2"	1' 11"	0	-Y	62.6 gpm	5.99 ft/sec	2"	-2.864 ft	2 lb/ft
23	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-2.698 ft	2 lb/ft
24	Pipe	2"	10'	0	+X	62.6 gpm	5.99 ft/sec	10/32"	-1.806 ft	2 lb/ft
25	Pipe	2"	13' 4"	0	+X	62.6 gpm	5.99 ft/sec	1' 2/32"	-0.616 ft	2 lb/ft
26	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-0.449 ft	2 lb/ft
27	Pipe	2"	1' 3"	0	-Y	62.6 gpm	5.99 ft/sec	1/32"	-0.338 ft	2 lb/ft
28	Pipe	2"	1' 3"	0	-Y	62.6 gpm	5.99 ft/sec	1/32"	-0.226 ft	2 lb/ft
29	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-0.059 ft	2 lb/ft
30	Pipe	2"	1'	1"	+Z	62.6 gpm	5.99 ft/sec	1"	-0.97 ft	2 lb/ft
31	Pipe	2"	9'	9"	+Z	62.6 gpm	5.99 ft/sec	1"	-1.645 ft	2 lb/ft
32	Flexible joint (reducer)	2"	0			62.6 gpm	5.99 ft/sec	1/32"	-1.508 ft	0 lb/ft
33	MH-301 (23 to 415 GPM)	3"	0			62.6 gpm	2.92 ft/sec	0	-1.19 ft	0 lb/ft
34	Branch	3"	0			89.2 gpm	3.87 ft/sec	2/32"	-2.917 ft	4.4 lb/ft
35	45° elbow	3"	0			89.2 gpm	3.87 ft/sec	1"	-2.824 ft	4.4 lb/ft
36	Pipe	3"	10'	0	-X	89.2 gpm	3.87 ft/sec	3"	-2.592 ft	4.4 lb/ft
37	Expansion	2"	0			89.2 gpm	8.53 ft/sec	4"	-3.152 ft	2 lb/ft
38	Pipe	2"	3' 2"	0	-X	89.2 gpm	8.53 ft/sec	7"	-2.589 ft	2 lb/ft
39	90° radius bend	2"	0			89.2 gpm	8.53 ft/sec	4"	-2.25 ft	2 lb/ft
40	Pipe	2"	1'	0	-Y	89.2 gpm	8.53 ft/sec	2"	-2.072 ft	2 lb/ft
41	Pipe	2"	1'	0	-Y	89.2 gpm	8.53 ft/sec	2"	-1.894 ft	2 lb/ft
42	90° radius bend	2"	0			89.2 gpm	8.53 ft/sec	4"	-1.555 ft	2 lb/ft
43	Pipe	2"	1'	1"	+Z	89.2 gpm	8.53 ft/sec	2"	-2.378 ft	2 lb/ft
44	Pipe	2"	9'	9"	+Z	89.2 gpm	8.53 ft/sec	1/32"	-2.987 ft	2 lb/ft
45	Flexible joint (reducer)	2"	0			89.2 gpm	8.53 ft/sec	3/32"	-2.708 ft	0 lb/ft
46	MH-301 (23 to 415 GPM)	3"	0			89.2 gpm	4.16 ft/sec	1/2"	-1.757 ft	0 lb/ft

Report for "Lower Level ORD 10-30-2023 KG"

Generated in 0.016039 seconds

Calculation Report for "Lower Level RD 10-30-2023 KG"

[\[Export to Excel\]](#)

Project Information

Project:

System:

Client:

Reference:

Designer:

Date:

System Designed By

Mifab HydroMax Design Team IN

Mifab HydroMax Design Team

kapilrudmal@gmail.com

Design Software Supplied By

MIFAB, Inc

1321 West 119th Street

Chicago

IL

60643-5109

USA

1-800-465-2736

1-773-341-3049

hydromax@mifab.com

Hydraulic Calculation Summary

Current	1.262 ft
Out of Balance	-8.122 ft
Minimum Pressure	9.777 ft
Maximum Pressure	3.871 ft/sec
Minimum Velocity	5.985 ft/sec
Minimum Vertical Velocity	23.923 ft/sec
Maximum Velocity	6.588 ft/sec
Discharge Velocity	20 seconds
Fill time	PASS
Pass/Fail?	PASS
Tail Pressures	1 -1.515 ft
	2 -2.777 ft

- Part 27 : Velocity is below the Minimum Vertical Velocity.

Material Parameters

Material	Actual Diameter	Nominal Diameter	K/Roughness
PVC sch 40 solid	3"	3"	0.15
PVC sch 40 solid	2"	2"	0.15
PVC sch 40 solid	1 1/2"	1 1/2"	0.15

Overall Parameters

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
0	Discharge	3"	0			151.8 gpm	6.59 ft/sec	8"	0 ft	0 lb/ft
1	Pipe	3"	35' 3"	0	+Y	151.8 gpm	6.59 ft/sec	2' 3/32"	2.292 ft	4.4 lb/ft
2	Pipe	3"	2'	0	+Y	151.8 gpm	6.59 ft/sec	1/32"	2.422 ft	4.4 lb/ft
3	90° radius bend	3"	0			151.8 gpm	6.59 ft/sec	2/32"	2.854 ft	4.4 lb/ft

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
4	Expansion	2"	0			151.8 gpm	14.51 ft/sec	11/32"	1.002 ft	2 lb/ft
5	Pipe	2"	10'	0	+X	151.8 gpm	14.51 ft/sec	5' 1/2"	6.052 ft	2 lb/ft
6	Pipe	2"	5' 5"	0	+X	151.8 gpm	14.51 ft/sec	2' 9"	8.788 ft	2 lb/ft
7	90° radius bend	2"	0			151.8 gpm	14.51 ft/sec	1"	9.77 ft	2 lb/ft
8	Expansion	1 1/2"	0			151.8 gpm	23.92 ft/sec	1' 4/32"	5.527 ft	0.5 lb/ft
9	Pipe	1 1/2"	2'	2"	+Z	151.8 gpm	23.92 ft/sec	3' 9"	7.286 ft	0.5 lb/ft
10	Reducer	1 1/2"	0			151.8 gpm	23.92 ft/sec	17"	6.882 ft	0.5 lb/ft
11	Pipe	2"	45' 8"	45' 8"	+Z	151.8 gpm	14.51 ft/sec	23' 1"	-8.122 ft	2 lb/ft
12	Reducer	2"	0			151.8 gpm	14.51 ft/sec	10/32"	-7.251 ft	2 lb/ft
13	90° radius bend	3"	0			151.8 gpm	6.59 ft/sec	2/32"	-4.451 ft	4.4 lb/ft
14	Pipe	3"	1'	0	-Y	151.8 gpm	6.59 ft/sec	1"	-4.386 ft	4.4 lb/ft
15	Pipe	3"	1' 5"	0	-Y	151.8 gpm	6.59 ft/sec	1"	-4.293 ft	4.4 lb/ft
16	Junction	3"	0			62.6 gpm	2.72 ft/sec	3"	-3.503 ft	4.4 lb/ft
17	Expansion	2"	0			62.6 gpm	5.99 ft/sec	2"	-3.778 ft	2 lb/ft
18	Pipe	2"	1'	0	-Y	62.6 gpm	5.99 ft/sec	1"	-3.689 ft	2 lb/ft
19	Pipe	2"	1' 11"	0	-Y	62.6 gpm	5.99 ft/sec	2"	-3.518 ft	2 lb/ft
20	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-3.351 ft	2 lb/ft
21	Pipe	2"	10'	0	+X	62.6 gpm	5.99 ft/sec	10/32"	-2.459 ft	2 lb/ft
22	Pipe	2"	12' 5"	0	+X	62.6 gpm	5.99 ft/sec	1' 1/32"	-1.352 ft	2 lb/ft
23	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-1.185 ft	2 lb/ft
24	Pipe	2"	1'	0	-Y	62.6 gpm	5.99 ft/sec	1"	-1.096 ft	2 lb/ft
25	Pipe	2"	1'	0	-Y	62.6 gpm	5.99 ft/sec	1"	-1.006 ft	2 lb/ft
26	90° radius bend	2"	0			62.6 gpm	5.99 ft/sec	2"	-0.84 ft	2 lb/ft
27	Pipe	2"	1' 3"	1' 3"	+Z	62.6 gpm	5.99 ft/sec	1/32"	-1.97 ft	2 lb/ft
28	Flexible joint (reducer)	2"	0			62.6 gpm	5.99 ft/sec	1/32"	-1.832 ft	0 lb/ft
29	MH-300 (23 to 415 GPM)	3"	0			62.6 gpm	2.92 ft/sec	0	-1.515 ft	0 lb/ft
30	Branch	3"	0			89.2 gpm	3.87 ft/sec	2/32"	-3.66 ft	4.4 lb/ft
31	45° elbow	3"	0			89.2 gpm	3.87 ft/sec	1"	-3.567 ft	4.4 lb/ft
32	Pipe	3"	7'	0	-X	89.2 gpm	3.87 ft/sec	2"	-3.404 ft	4.4 lb/ft
33	Pipe	3"	7' 11"	0	-X	89.2 gpm	3.87 ft/sec	2"	-3.24 ft	4.4 lb/ft
34	90° radius bend	3"	0			89.2 gpm	3.87 ft/sec	1"	-3.17 ft	4.4 lb/ft
35	Expansion	2"	0			89.2 gpm	8.53 ft/sec	4"	-3.73 ft	2 lb/ft
36	Pipe	2"	1' 3"	0	-Y	89.2 gpm	8.53 ft/sec	2/32"	-3.508 ft	2 lb/ft
37	Pipe	2"	1' 3"	0	-Y	89.2 gpm	8.53 ft/sec	2/32"	-3.285 ft	2 lb/ft
38	90° radius bend	2"	0			89.2 gpm	8.53 ft/sec	4"	-2.947 ft	2 lb/ft
39	Pipe	2"	1' 3"	1' 3"	+Z	89.2 gpm	8.53 ft/sec	2/32"	-3.967 ft	2 lb/ft
40	Flexible joint (reducer)	2"	0			89.2 gpm	8.53 ft/sec	3/32"	-3.688 ft	0 lb/ft
41	MH-300 (23 to 415 GPM)	3"	0			89.2 gpm	4.16 ft/sec	1/2"	-2.777 ft	0 lb/ft

Report for "Lower Level RD 10-30-2023 KG"

Generated in 0.015828 seconds

Woodhill Station East PH3

PROJECT NO.

PROJECT DATE

Calculation Report

DWG. NO.

P113

Calculation Report for "Upper Level ORD 10-30-2023 KG"

[Export to Excel](#)

Project Information

Project:

System:

Client:

Reference:

Designer:

Date:

System Designed By

Mifab HydroMax Design Team IN

Mifab HydroMax Design Team

kapirudmal@gmail.com

Design Software Supplied By

MIFAB, Inc

1321 West 119th Street

Chicago

IL

60643-5109

USA

1-800-465-2736

1-773-341-3049

hydromax@mifab.com

Hydraulic Calculation Summary

Current
Out of Balance 1.28 ft
Minimum Pressure -10,342 ft
Maximum Pressure 2,528 ft
Minimum Velocity 3.327 ft/sec
Minimum Vertical Velocity 6.31 ft/sec
Maximum Velocity 22.476 ft/sec
Discharge Velocity 14.556 ft/sec
Fill time 25 seconds
Pass/Fail? PASS

Tail Pressures

1	-2.121 ft
2	-1.183 ft
3	-2.306 ft
4	-1.165 ft
5	-2.446 ft

* Part 58 : Velocity is below the Minimum Vertical Velocity.

* Part 59 : Velocity is below the Minimum Vertical Velocity.

* Part 67 : Velocity is below the Minimum Vertical Velocity.

* Part 69 : Velocity is below the Minimum Vertical Velocity.

Material Parameters

Material	Actual Diameter	Nominal Diameter	K/Roughness
PVC sch 40 solid	2"	3"	0.15
PVC sch 40 solid	1 1/2"	1 1/2"	0.15
PVC sch 40 solid	2 1/2"	2 1/2"	0.15

Calculation Report for "Upper Level RD 10-30-2023 KG"

[Export to Excel](#)

Project Information

Project:

System:

Client:

Reference:

Designer:

Date:

System Designed By

Mifab HydroMax Design Team IN

Mifab HydroMax Design Team

kapirudmal@gmail.com

Design Software Supplied By

MIFAB, Inc

1321 West 119th Street

Chicago

IL

60643-5109

USA

1-800-465-2736

1-773-341-3049

hydromax@mifab.com

Hydraulic Calculation Summary

Current
Out of Balance 1.453 ft
Minimum Pressure -12,127 ft
Maximum Pressure 9,533 ft
Minimum Velocity 3.327 ft/sec
Minimum Vertical Velocity 6.31 ft/sec
Maximum Velocity 22.476 ft/sec
Discharge Velocity 8.453 ft/sec
Fill time 60 seconds
Pass/Fail? PASS

Tail Pressures

1	-0.099 ft
2	-0.602 ft
3	-1.552 ft
4	-1.138 ft
5	-0.54 ft

* Part 46 : Velocity is below the Minimum Vertical Velocity.

Material Parameters

Material	Actual Diameter	Nominal Diameter	K/Roughness
PVC sch 40 solid	3"	3"	0.15
PVC sch 40 solid	4"	4"	0.15
PVC sch 40 solid	2"	2"	0.15
PVC sch 40 solid	1 1/2"	1 1/2"	0.15
PVC sch 40 solid	2 1/2"	2 1/2"	0.15

Overall Parameters

Material	Actual Diameter	Nominal Diameter	K/Roughness
PVC sch 40 solid	3"	3"	0.15
PVC sch 40 solid	4"	4"	0.15

Overall Parameters

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
0	Discharge	4"	0	0	0	335.4 gpm	14.56 ft/sec	3' 3 1/2"	-3.463 ft	4.4 lb/ft
1	Pipe	3"	5'	5'	+Z	335.4 gpm	14.56 ft/sec	1' 6 1/2"	-9.928 ft	4.4 lb/ft
2	Pipe	3"	5'	5'	+Z	335.4 gpm	14.56 ft/sec	1' 6 1/2"	-9.928 ft	4.4 lb/ft
3	90° radius bend	3"	0	0	0	335.4 gpm	14.56 ft/sec	1'	-9.928 ft	4.4 lb/ft
4	Pipe	3"	10'	0	-Y	335.4 gpm	14.56 ft/sec	3' 1"	-2.865 ft	4.4 lb/ft
5	Pipe	3"	4' 9"	0	-Y	335.4 gpm	14.56 ft/sec	1' 5 1/2"	-1.404 ft	4.4 lb/ft
6	45° elbow	3"	0	0	0	335.4 gpm	14.56 ft/sec	11"	-0.483 ft	4.4 lb/ft
7	Pipe	3"	1' 7"	0	+X-Y	335.4 gpm	14.56 ft/sec	6"	0.034 ft	4.4 lb/ft
8	45° elbow	3"	0	0	0	335.4 gpm	14.56 ft/sec	11"	0.925 ft	4.4 lb/ft
9	Pipe	3"	1'	0	-Y	335.4 gpm	14.56 ft/sec	3 1/2"	1.233 ft	4.4 lb/ft
10	Pipe	3"	1'	0	-Y	335.4 gpm	14.56 ft/sec	3 1/2"	1.54 ft	4.4 lb/ft
11	90° radius bend	3"	0	0	0	335.4 gpm	14.56 ft/sec	1'	2.528 ft	4.4 lb/ft
12	Expansion	2 1/2"	0	0	0	335.4 gpm	22.48 ft/sec	11 1/2"	-1.054 ft	3.2 lb/ft
13	Pipe	2 1/2"	25'	25'	+Z	335.4 gpm	22.48 ft/sec	23' 10 1/2"	-2.165 ft	3.2 lb/ft
14	Reducer	2 1/2"	0	0	0	335.4 gpm	22.48 ft/sec	1' 3"	-0.3 ft	3.2 lb/ft
15	Pipe	3"	20' 2"	20' 2"	+Z	335.4 gpm	14.56 ft/sec	6' 2 1/2"	+10.342 ft	4.4 lb/ft
16	Reducer	3"	0	0	0	335.4 gpm	14.56 ft/sec	7 1/2"	-9.704 ft	4.4 lb/ft
17	90° radius bend	4"	0	0	0	335.4 gpm	8.45 ft/sec	4"	-7.189 ft	7.3 lb/ft
18	Pipe	4"	3' 3"	0	-Y	335.4 gpm	8.45 ft/sec	3"	-6.945 ft	7.3 lb/ft
19	Pipe	4"	3' 3"	0	-Y	335.4 gpm	8.45 ft/sec	3"	-6.701 ft	7.3 lb/ft
20	Junction	4"	0	0	0	263 gpm	6.63 ft/sec	-15'	-6.302 ft	7.3 lb/ft
21	Pipe	4"	2'	0	-Y	263 gpm	6.63 ft/sec	1' 1"	-6.209 ft	7.3 lb/ft
22	Pipe	4"	1' 10'	0	-Y	263 gpm	6.63 ft/sec	1"	-6.123 ft	7.3 lb/ft
23	90° radius bend	4"	0	0	0	263 gpm	6.63 ft/sec	2 1/2"	-5.918 ft	7.3 lb/ft
24	Pipe	4"	28' 11"	0	+X	263 gpm	6.63 ft/sec	1' 2"	-4.568 ft	7.3 lb/ft
25	Pipe	4"	5'	0	+X	263 gpm	6.63 ft/sec	3"	-4.334 ft	7.3 lb/ft
26	Junction	4"	0	0	0	69 gpm	1.74 ft/sec	1 1/2"	-3.587 ft	7.3 lb/ft
27	Expansion	2"	0	0	0	69 gpm	6.6 ft/sec	4 1/2"	-3.849 ft	2 lb/ft
28	Pipe	2"	3'	0	+X	69 gpm	6.6 ft/sec	4"	-3.526 ft	2 lb/ft
29	Pipe	2"	2' 1"	0	+X	69 gpm	6.6 ft/sec	2 1/2"	-3.302 ft	2 lb/ft
30	90° radius bend	2"	0	0	0	69 gpm	6.6 ft/sec	2 1/2"	-3.099 ft	2 lb/ft
31	Pipe	2"	2'	0	+Y	69 gpm	6.6 ft/sec	2 1/2"	-2.983 ft	2 lb/ft
32	Pipe	2"	2' 1"	0	+Y	69 gpm	6.6 ft/sec	2 1/2"	-2.659 ft	2 lb/ft
33	90° radius bend	2"	0	0	0	69 gpm	6.6 ft/sec	2 1/2"	-2.456 ft	2 lb/ft
34	Expansion	1 1/2"	0	0	0	69 gpm	10.87 ft/sec	3 1/2"	-3.32 ft	0.5 lb/ft
35	Pipe	1 1/2"	1'	1'	+Z	69 gpm	10.87 ft/sec	4 1/2"	-3.938 ft	0.5 lb/ft
36	Pipe	1 1/2"	9'	9'	+Z	69 gpm	10.87 ft/sec	3 1/2"	-4.387 ft	0.5 lb/ft
37	Flexible joint (reducer)	1 1/2"	0	0	0	69 gpm	10.87 ft/sec	6"	-3.723 ft	0 lb/ft
38	MH-301 (23 to 415 GPM)	3"	0	0	0	69 gpm	3.22 ft/sec	0	-2.121 ft	0 lb/ft
39	Branch	4"	0	0	0	194 gpm	4.89 ft/sec	3"	-3.783 ft	7.3 lb/ft
40	45° elbow	4"	0	0	0	194 gpm	4.89 ft/sec	1 1/2"	-3.657 ft	7.3 lb/ft
41	Pipe	4"	11' 1"	0	-Y	194 gpm	4.89 ft/sec	3"	-3.366 ft	7.3 lb/ft
42	Pipe	4"	15' 6"	0	-Y	194 gpm	4.89 ft/sec	5"	-2.992 ft	7.3 lb/ft
43	15° elbow	4"	0	0	0	194 gpm	4.89 ft/sec	0	-2.977 ft	7.3 lb/ft
44	Pipe	4"	6'	0	-X-Y	194 gpm	4.89 ft/sec	2"	-2.622 ft	7.3 lb/ft
45	Pipe	4"	3' 10'	0	-X-Y	194 gpm	4.89 ft/sec	1"	-2.723 ft	7.3 lb/ft
46	Junction	4"	0	0	0	132 gpm	3.33 ft/sec	-0	-2.527 ft	7.3 lb/ft
47	Pipe	4"	29' 11"	0	-X-Y	132 gpm	3.33 ft/sec	4"	-2.182 ft	7.3 lb/ft
48	Pipe	4"	5'	0	-X-Y	132 gpm	3.33 ft/sec	1/2"	-2.12 ft	7.3 lb/ft
49	Junction	4"	0	0	0	66 gpm	1.66 ft/sec	-1"	-2.092 ft	7.3 lb/ft
50	Expansion	2 1/2"	0	0	0	66 gpm	4.42 ft/sec	1 1/2"	-2.225 ft	3.2 lb/ft
51	Pipe	2 1/2"	20'	0	-X-Y	66 gpm	4.42 ft/sec	9 1/2"	-1.442 ft	3.2 lb/ft
52	Pipe	2 1/2"	22' 3"	0	-X-Y	66 gpm	4.42 ft/sec	10 1/2"	-0.581 ft	3.2 lb/ft
53	2 x 45° radius bend	2 1/2"	0	0	0	66 gpm	4.42 ft/sec	1"	-0.47 ft	3.2 lb/ft
54	Expansion	2"	0	0	0	66 gpm	6.31 ft/sec	1/2"	-0.729 ft	2 lb/ft
55	Pipe	2"	2'	0	+X-Y	66 gpm	6.31 ft/sec	2 1/2"	-0.532 ft	2 lb/ft
56	Pipe	2"	2'	0	+X-Y	66 gpm	6.31 ft/sec	2 1/2"	-0.334 ft	2 lb/ft
57	90° radius bend	2"	0	0	0	66 gpm	6.31 ft/sec	2"	-0.146 ft	2 lb/ft
58	Pipe	2"	1'	1'	+Z	66 gpm	6.31 ft/sec	1"	-1.05 ft	2 lb/ft
59	Pipe	2"	9'	9'	+Z	66 gpm	6.31 ft/sec	1"	-1.717 ft	2 lb/ft
60	Flexible joint (reducer)	2"	0	0	0	66 gpm	6.31 ft/sec	2"	-1.565 ft	0 lb/ft
61	MH-301 (23 to 415 GPM)	3"	0	0	0	66 gpm	3.08 ft/sec	0	-1.163 ft	0 lb/ft

No.	Type	Diameter	Length	Height	Direction	Flowrate	Velocity	Headloss	Pressure	Loading
62	Branch	2"	0	0	0	66 gpm	6.31 ft/sec	8 1/2"	-2.092 ft	2 lb/ft
63	45° elbow	2"	0	0	0	66 gpm	6.31 ft/sec	3"	-1.653 ft	2 lb/ft
64	Pipe	2"	2'	0	+X-Y	66 gpm	6.31 ft/sec	2 1/2"	-1.653 ft	2 lb/ft
65	Pipe	2"	2'	0	+X-Y	66 gpm	6.31 ft/sec	2 1/2"	-1.457 ft	2 lb/ft
66	90° radius bend	2"	0	0	0	66 gpm	6.31 ft/sec	2"	-1.272 ft	2 lb/ft
67	Pipe	2"	1'	1'	+Z	66 gpm	6.31 ft/sec	1"	-1.173 ft	2 lb/ft
68	Pipe	2"	9'	9'	+Z	66 gpm	6.31 ft/sec	1"	-2.841 ft	2 lb/ft
69	Flexible joint (reducer)	2"	0	0	0	66 gpm	6.31 ft/sec	2"	-2.688 ft	0 lb/ft
70	MH-301 (23 to 415 GPM)	3"	0	0	0	66 gpm	3.08 ft/sec	0	-2.306 ft	0 lb/ft
71	Branch	2"	0	0	0	62 gpm	5.93 ft/sec	4 1/2"	-2.527 ft	2 lb/ft
72	45° elbow	2"	0	0	0	62 gpm	5.93 ft/sec	2 1/2"	-2.312 ft	2 lb/ft
73	Pipe	2"	2'	0	+X-Y	62 gpm	5.93 ft/sec	2"	-2.137 ft	2 lb/ft
74	Expansion	1 1/2"	0	0	0	62 gpm	9.77 ft/sec	3"	-2.844 ft	0.5 lb/ft
75	Pipe	1 1/2"	2'	0	+X-Y	62 gpm	9.77 ft/sec	7 1/2"	-2.205 ft	0.5 lb/ft
76	90° radius bend	1 1/2"	0	0	0	62 gpm	9.77 ft/sec	8 1/2"	-1.76 ft	0.5 lb/ft
77	Pipe	1 1/2"	1'	1'	+Z	62 gpm	9.77 ft/sec	4"	-2.44 ft	0.5 lb/ft
78	Pipe	1 1/2"	9'	9'	+Z	62 gpm	9.77 ft/sec	3"	-2.944 ft	0.5 lb/ft
79	Flexible joint (reducer)	1 1/2"	0	0	0	62 gpm	9.77 ft/sec	6 1/2"	-2.408 ft	0 lb/ft
80	MH-301 (23 to 415 GPM)	3"	0	0	0	62 gpm	2.89 ft/sec	0	-1.165 ft	0 lb/ft
81	Branch	1 1/2"	0	0	0	72.4 gpm	11.41 ft/sec	1' 3 1/2"	-6.302 ft	0.5 lb/ft
82	45° elbow	1 1/2"	0	0	0	72.4 gpm	11.41 ft/sec	8 1/2"	-5.597 ft	0.5 lb/ft
83	Pipe	1 1/2"	1' 2"	0	-X	72.4 gpm	11.41 ft/sec	6"	-5.092 ft	0.5 lb/ft
84	Pipe	1 1/2"	1' 2"	0	-X	72.4 gpm	11.41 ft/sec	6"	-4.565 ft	0.5 lb/ft
85	90° radius bend	1 1/2"	0	0	0	72.4 gpm	11.41 ft/sec	7 1/2"	-3.979 ft	0.5 lb/ft
86	Pipe	1 1/2"	1'	1'	+Z	72.4 gpm	11.41 ft/sec	5"	-4.545 ft	0.5 lb/ft
87	Pipe	1 1/2"	9'	9'	+Z	72.4 gpm	11.41 ft/sec	4"	-4.985 ft	0.5 lb/ft
88	Flexible joint (reducer)	1 1/2"	0	0	0	72.4 gpm	11.41 ft/sec	9"	-2.35 ft	0 lb/ft
89	MH-301 (23 to 415 GPM)	3"	0	0	0	72.4 gpm	3.38 ft/sec	1/2"	-2.445 ft	0 lb/ft

Report for "Upper Level ORD 10-30-2023 KG"

Generated in 0.0156186 seconds

No.
