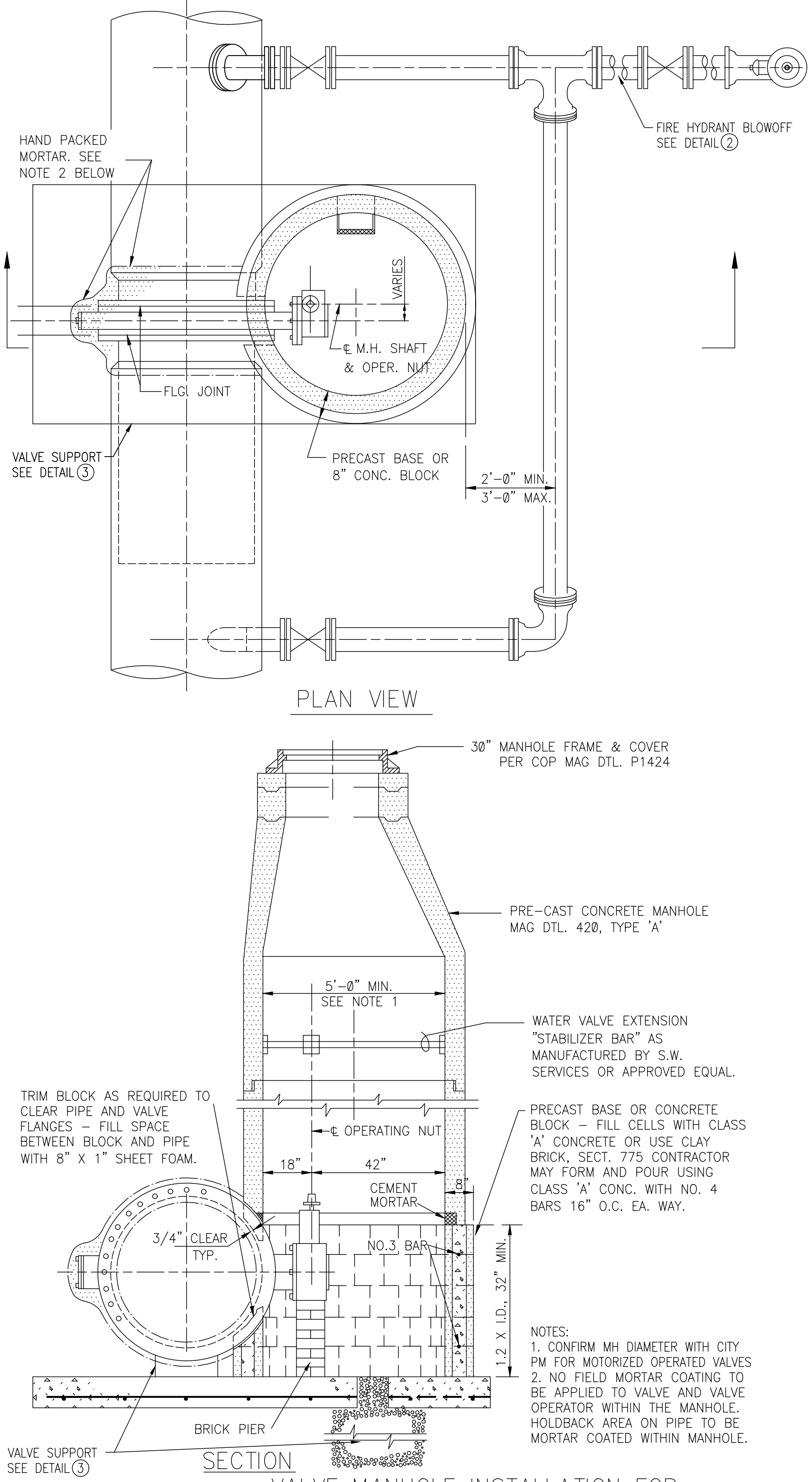
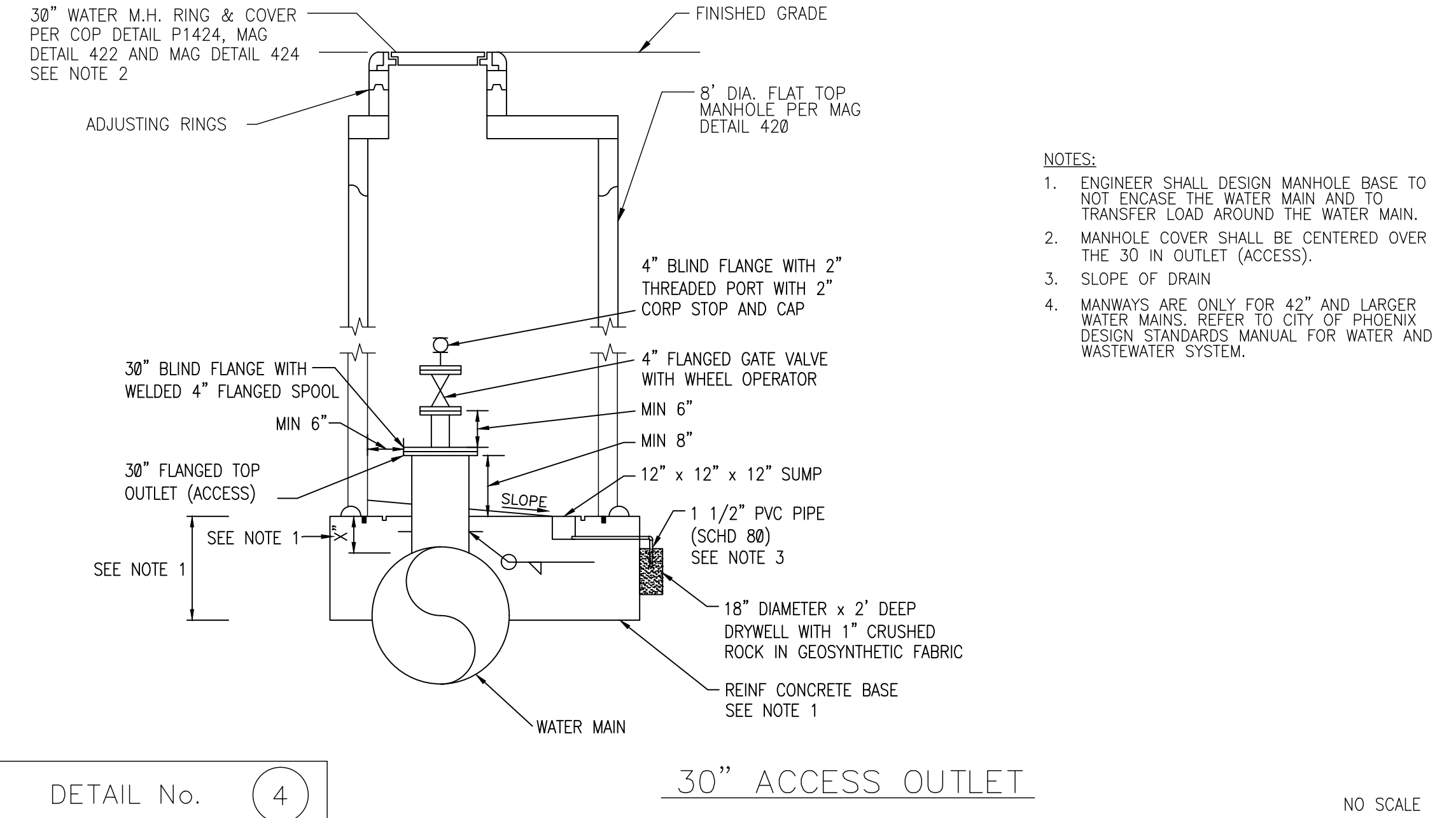
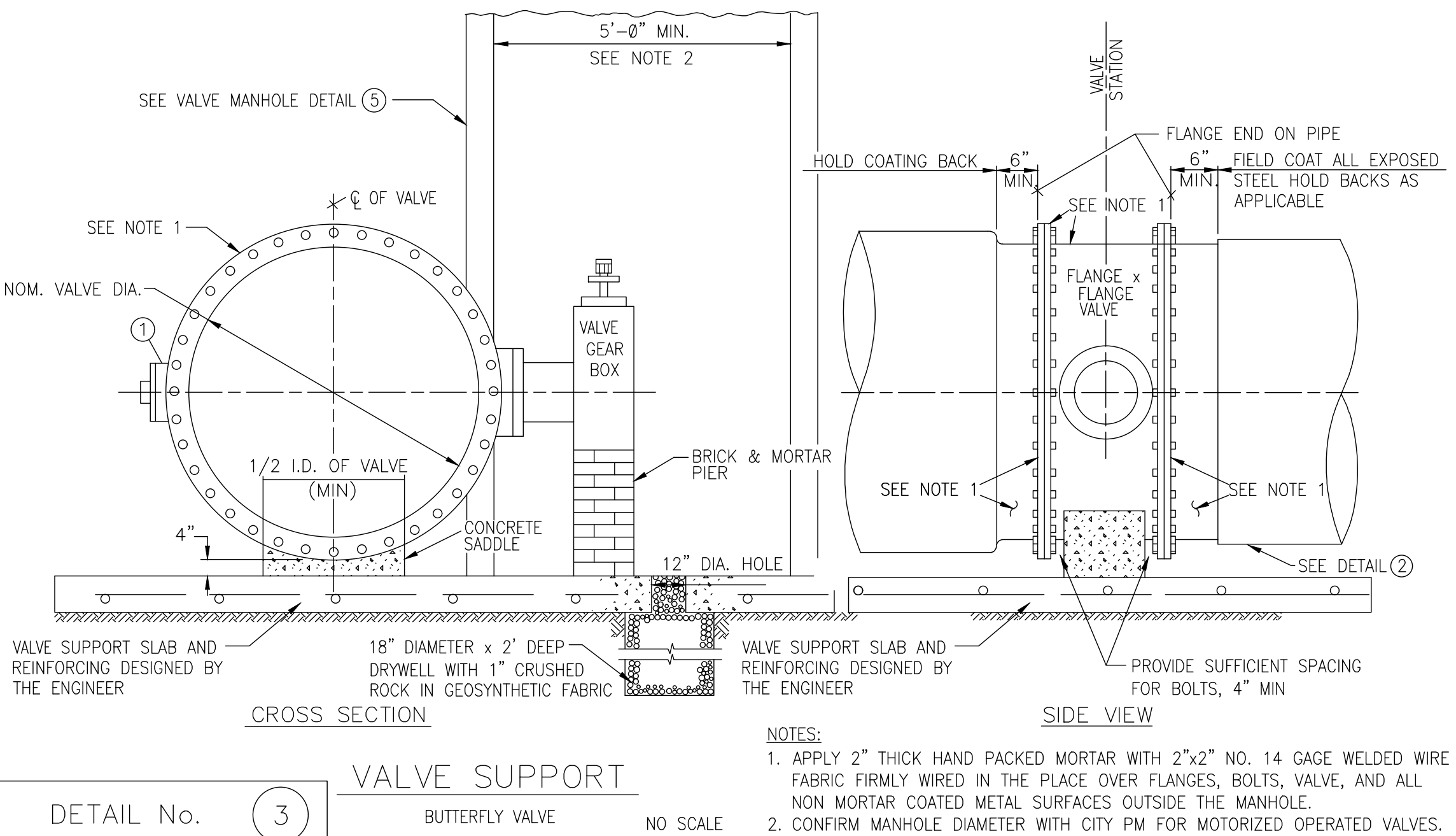
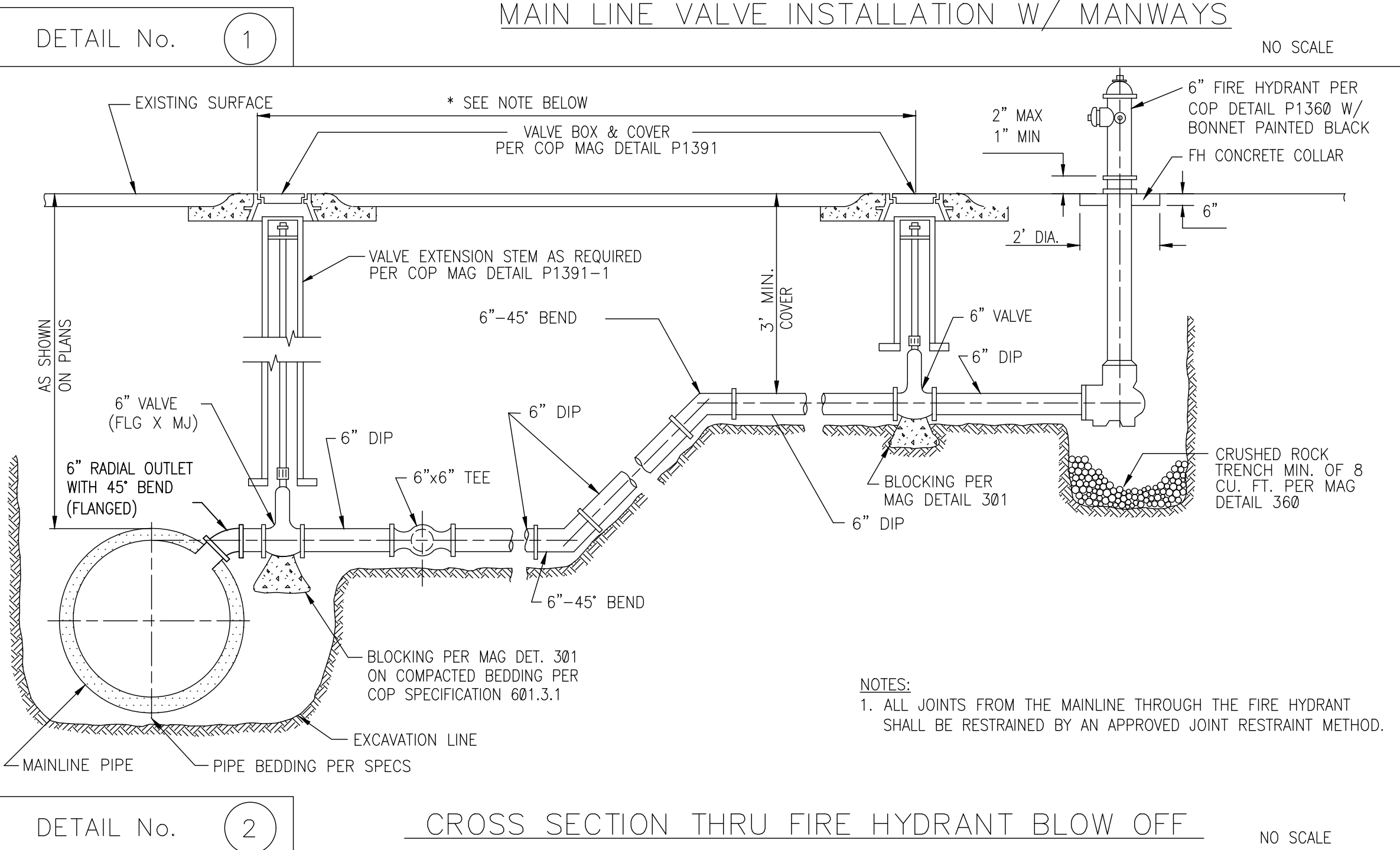
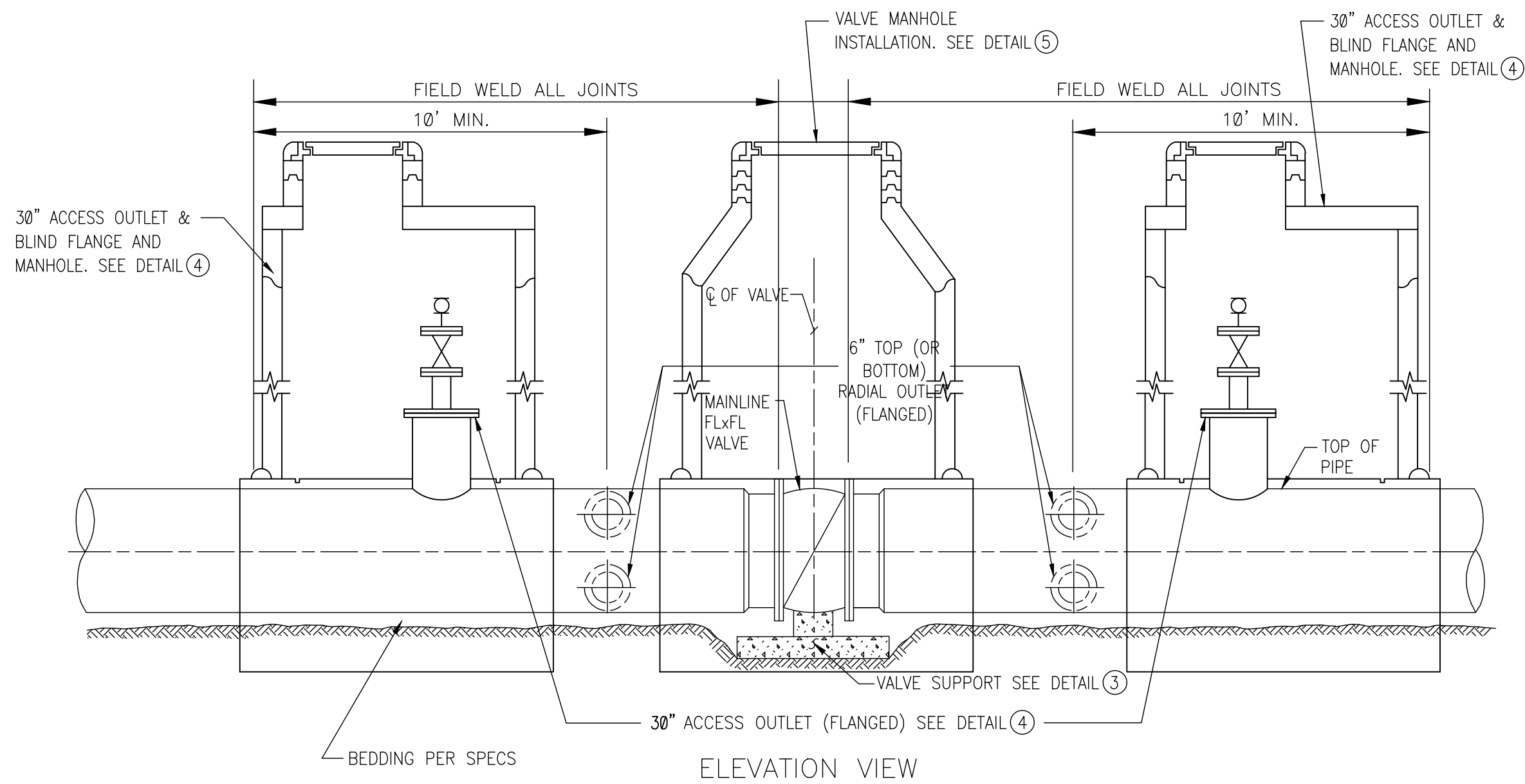
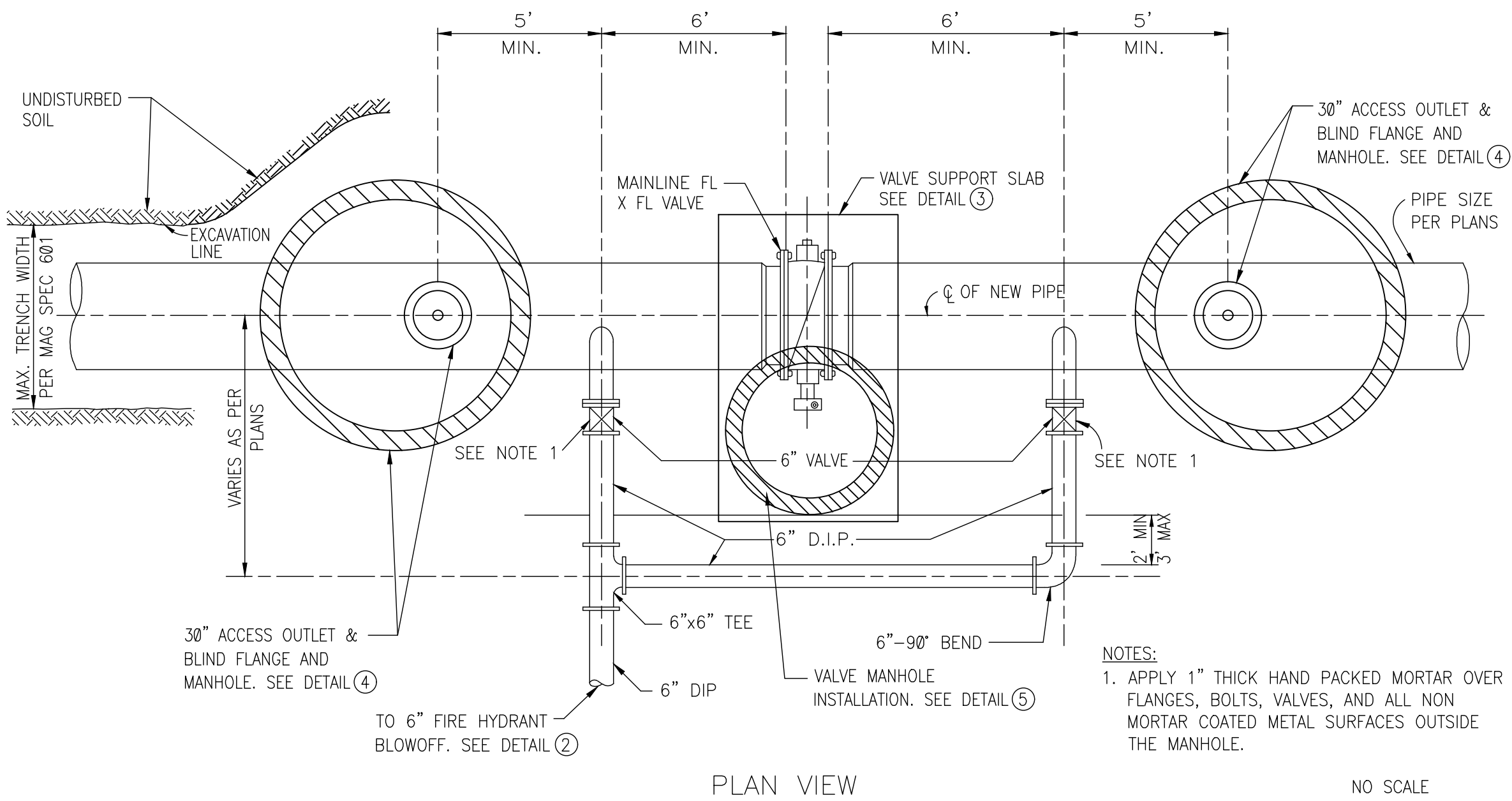


NO.	DESCRIPTION	REV. BY	CHKD. BY	DATE

NO.	DESCRIPTION	REV. BY	CHKD. BY	DATE

NO.	DESCRIPTION	REV. BY	CHKD. BY	DATE
1	AS SHOWN	RM	10/94	
2	REVISED DETAIL 2	R.H.	1/97	
3	REVISED ALL DETAILS	BC	9/25	



USE OF THESE STANDARD DETAILS

THE USE OF THESE STANDARD DETAILS IN AN ENGINEERING DESIGN PROVIDES FOR MORE CONSISTENCY BY DEFINING KEY CHARACTERISTICS SUCH AS CONFIGURATION, DIMENSIONS AND MATERIAL REQUIREMENTS WITH DUE CONSIDERATION FOR SAFETY, OPERABILITY, MAINTAINABILITY, LONG TERM DURABILITY AND GENERAL GOOD PRACTICE. THE DETAILS REQUIRED FOR A PROJECT SHOULD BE INCORPORATED INTO PROJECT PLANS AFTER CAREFUL REVIEW BY THE DESIGN ENGINEER OF SPECIFIC PROJECT NEEDS. NOT ALL DETAILS HEREIN WILL APPLY TO ALL PROJECTS.

WHILE THE GOAL OF THESE STANDARD DETAILS IS TO PROVIDE A MINIMUM LEVEL OF QUALITY AND STANDARDIZATION, THEY ARE NOT INTENDED TO LIMIT CREATIVE OR INNOVATIVE DESIGNS WHICH MAY BETTER MEET PROJECT OBJECTIVES, RESULT IN BETTER QUALITY AND/OR COST SAVINGS. DEVIATIONS FROM THESE STANDARDS MUST BE APPROVED IN WRITING BY THE WATER SERVICES DEPARTMENT PROJECT MANAGER.

THESE DETAILS ARE NOT A SUBSTITUTE FOR GOOD ENGINEERING JUDGMENT. THESE STANDARD DETAILS ARE NOT TO BE CONSIDERED COMPLETE NOR IS IT A SUBSTITUTE FOR THE REQUIREMENTS OF APPLICABLE LAWS. UNIQUE CONDITIONS WILL ARISE THAT ARE OUTSIDE THE SCOPE OF THESE STANDARDS. WHEN THIS HAPPENS, PROFESSIONAL ENGINEERS ARE REQUIRED TO USE THEIR JUDGMENT TO AMEND THESE STANDARD DETAILS TO BEST MEET SITE-SPECIFIC PROJECT NEEDS IN ACCORDANCE WITH THE RULES SET FORTH BY THE STATE OF ARIZONA AND THE ARIZONA STATE BOARD OF TECHNICAL REGISTRATION.

ADDITIONAL DESIGN IS REQUIRED BY THE ENGINEER OF RECORD

THESE DETAILS APPLY TO EXISTING TRANSMISSION MAIN BEING EXPANDED, MODIFIED, UPGRADED, AND REHABILITATED AS WELL AS TO THE CONSTRUCTION OF NEW TRANSMISSION MAINS. THESE DETAILS ARE NOT INTENDED TO BE USED AS-IS FOR CONSTRUCTION. THE ENGINEER OF RECORD (EOR) SHALL REVIEW THESE DETAILS FOR INCORPORATION INTO THE PROJECTS PLANS AND COMPLETE THE ADDITIONAL DESIGN FOR PROJECT SPECIFIC AND SITE-SPECIFIC REQUIREMENTS. ADDITIONAL CONSIDERATIONS TO BE ADDRESSED BY THE EOR COULD INCLUDE, BUT ARE NOT LIMITED TO, GEOTECHNICAL CONDITIONS, CONNECTIONS TO EXISTING SYSTEMS, PRESENCE OF OTHER SUBSURFACE UTILITIES, DESIGN OF CORROSION PROTECTION SYSTEMS, ISOLATION OF DISSIMILAR METALS, WELDS, CLEARANCES REQUIRED FOR OPERATION AND MAINTENANCE, AND STRUCTURAL DESIGN (ENCASEMENTS, CONCRETE SLABS, PIPE SUPPORTS).

THE DETAILS ARE SPECIFIC TO STEEL, PRESTRESSED CONCRETE CYLINDER PIPE (PCCP), AND CONCRETE CYLINDER PIPE (CCP). IF DUCTILE IRON PIPE (DIP) IS TO BE USED FOR A PROJECT, ADDITIONAL FITTINGS AND OTHER MODIFICATIONS WILL BE REQUIRED FOR THESE DETAILS. THE EOR SHALL DEVELOP A COMPLETE DESIGN AND PROVIDE SUITABLE DRAWINGS TO THE CITY PROJECT MANAGER FOR REVIEW.



CITY OF PHOENIX, ARIZONA
WATER SERVICES DEPARTMENT

COP INDEX NO.

PROJECT TITLE

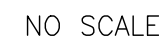
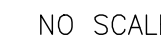
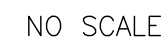
STANDARD DETAILS FOR 18" AND LARGER PIPE

DRN:	DATE:	SCALE	SHEETS
DRN:	DATE:		
CKD:	DATE:		

TO BE SEALED BY
THE ENGINEER OF RECORD

NO. OF

REVISIONS BY CITY OF PHOENIX				
NO.	DESCRIPTION	REV. BY	CHKD. BY	DATE
1	A9-04-003.DWG	RSY	RM	10/94
2	REVISED ALL DETAILS	BC	CITY	9/25



P:\Phoenix, City of\137504 - PCOP Assessment\Reprictization\Drawings\WW-2-sheets\F-FIGURES\A94040E_updated.dwg

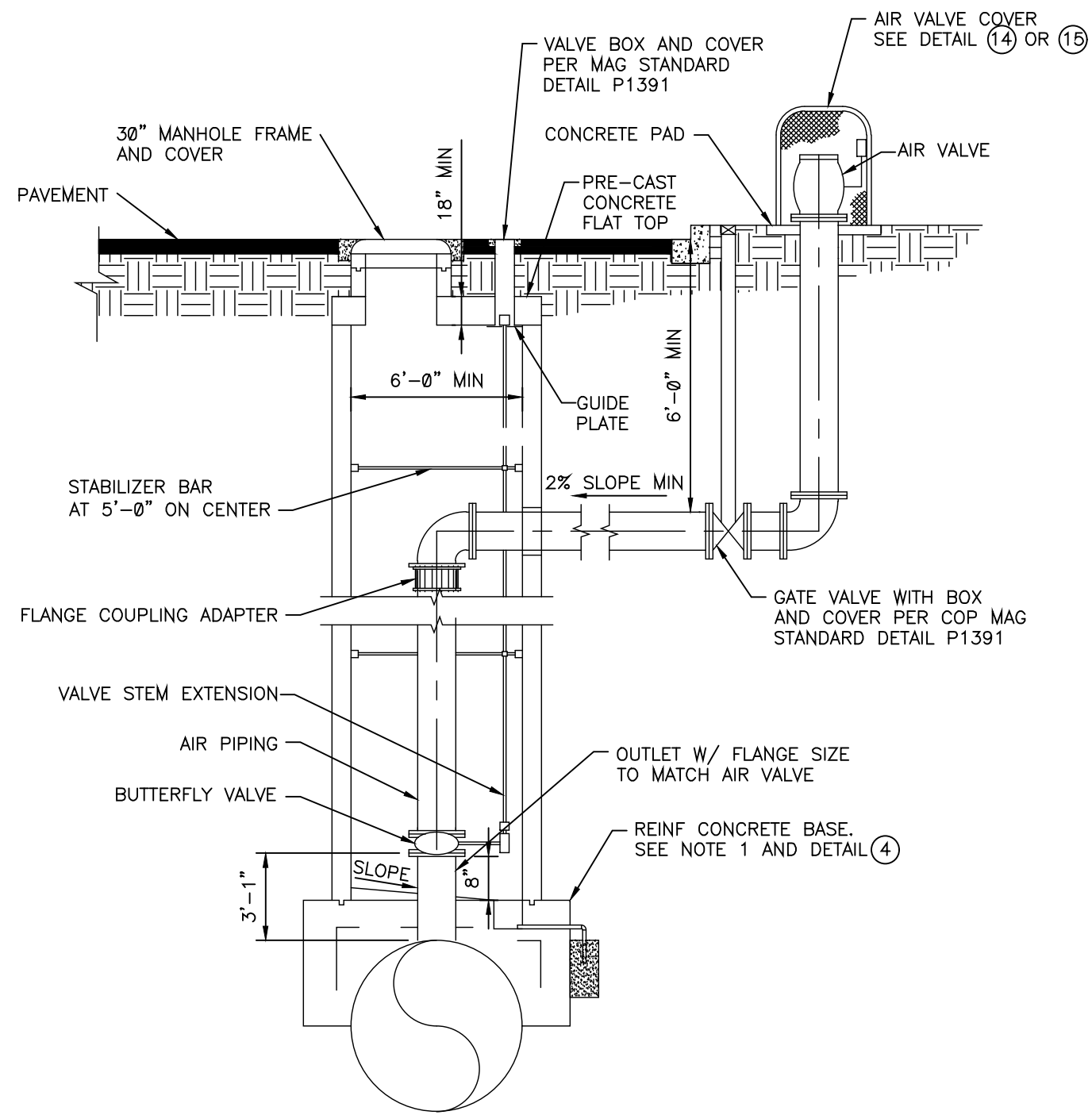
REVISIONS BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV. BY	DATE
1	A94040A.DWG	RM	10/04
2	REVISED ALL DETAILS	BC	9/25

REVISIONS BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV. BY	DATE

REVISIONS BY CITY OF PHOENIX			
NO.	DESCRIPTION	REV. BY	DATE

PLATE 1 OF 4

DETAIL

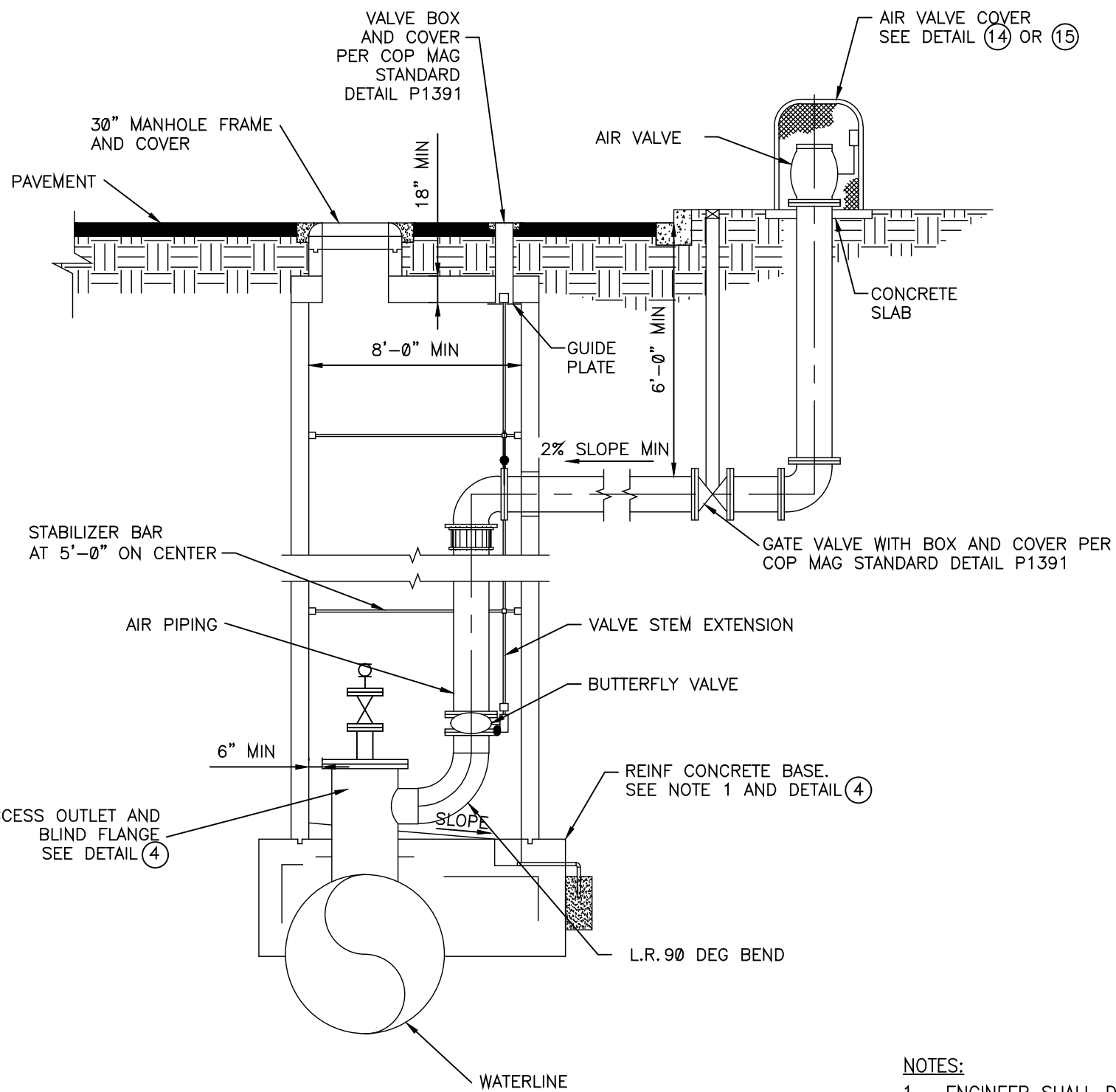


- NOTES:
- ENGINEER SHALL DESIGN MANHOLE BASE TO NOT ENCASE THE WATER MAIN AND TO TRANSFER LOAD AROUND THE WATER MAIN.

12" AND LARGER AIR RELEASE VALVE

DETAIL No. 12

NO SCALE

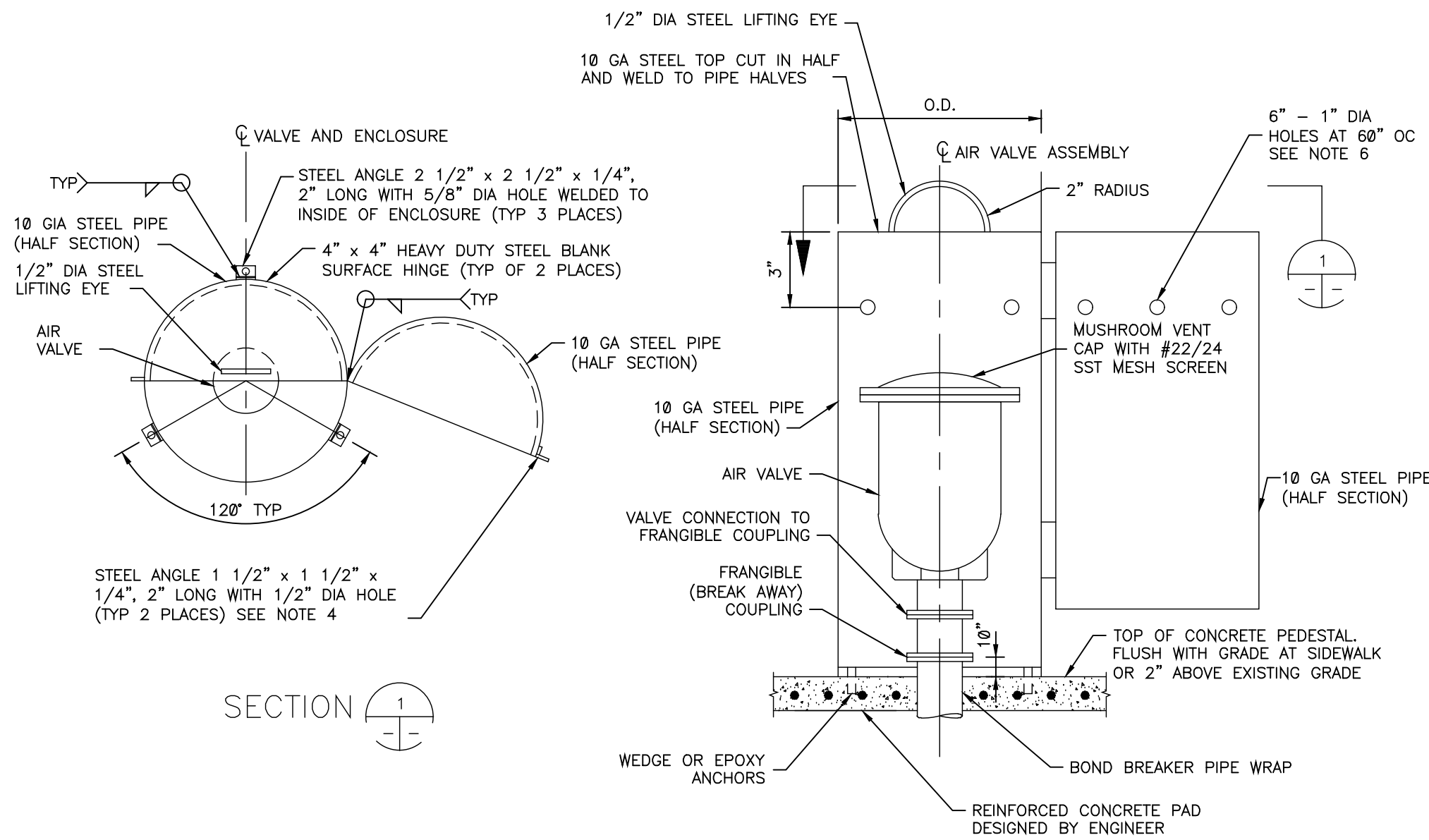


- NOTES:
- ENGINEER SHALL DESIGN MANHOLE BASE TO NOT ENCASE THE WATER MAIN AND TO TRANSFER LOAD AROUND THE WATER MAIN.

12" AND LARGER AIR RELEASE VALVE W/ MANWAY

DETAIL No. 13

NO SCALE

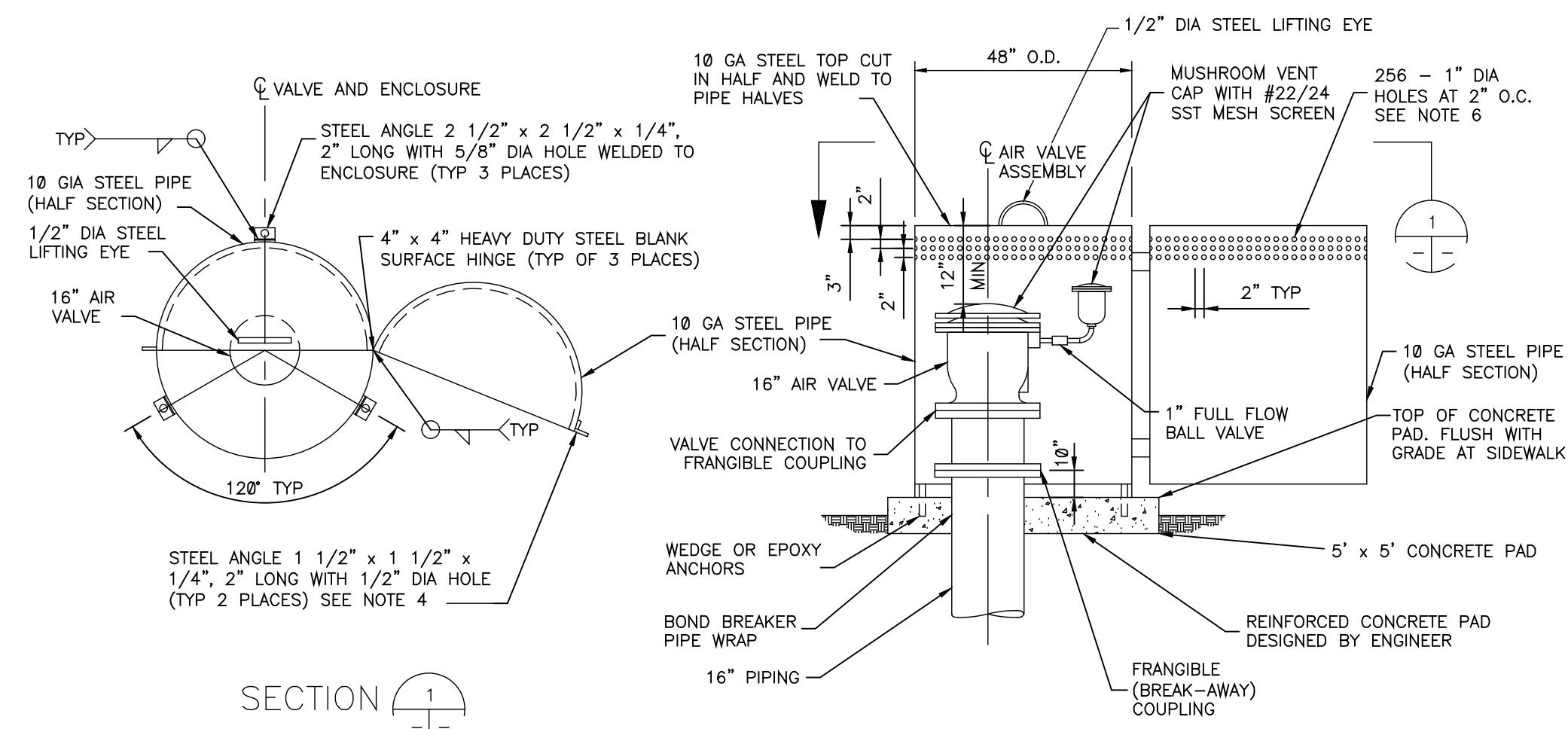


- NOTES:
- VALVE ENCLOSURE ASSEMBLY SHALL BE POWDER COATED. COORDINATE COLOR WITH CITY PROJECT MANAGER.
 - PROVIDE 2" MIN CLEARANCE BETWEEN TOP OF AIR VALVE AND INSIDE OF ENCLOSURE.
 - REINFORCE ENCLOSURE AS REQUIRED SO DOOR SWINGS FREELY WITHOUT BINDING OR SAGGING.
 - FACES OF ANGLES TO FIT FLUSH WHEN DOOR IS CLOSED TO ALLOW INSTALLATION OF PADLOCK.
 - NOTE ENCLOSURE CAN BE PURCHASED INSTEAD OF BEING FABRICATED; BOP1 GUARD SHACK ENCLOSURE IS AN ACCEPTABLE ALTERNATE.
 - ENGINEER TO ENSURE QUANTITY AND SIZE OF HOLES ALLOW FOR VENTING CAPACITY EQUAL TO 1.5 TIMES THE VENTING OR INFLOW CAPACITY OF THE AIR VALVE WHICHEVER IS LARGEST.

12" AND LESS AIR VALVE ASSEMBLY ENCLOSURE

DETAIL No. 14

NO SCALE

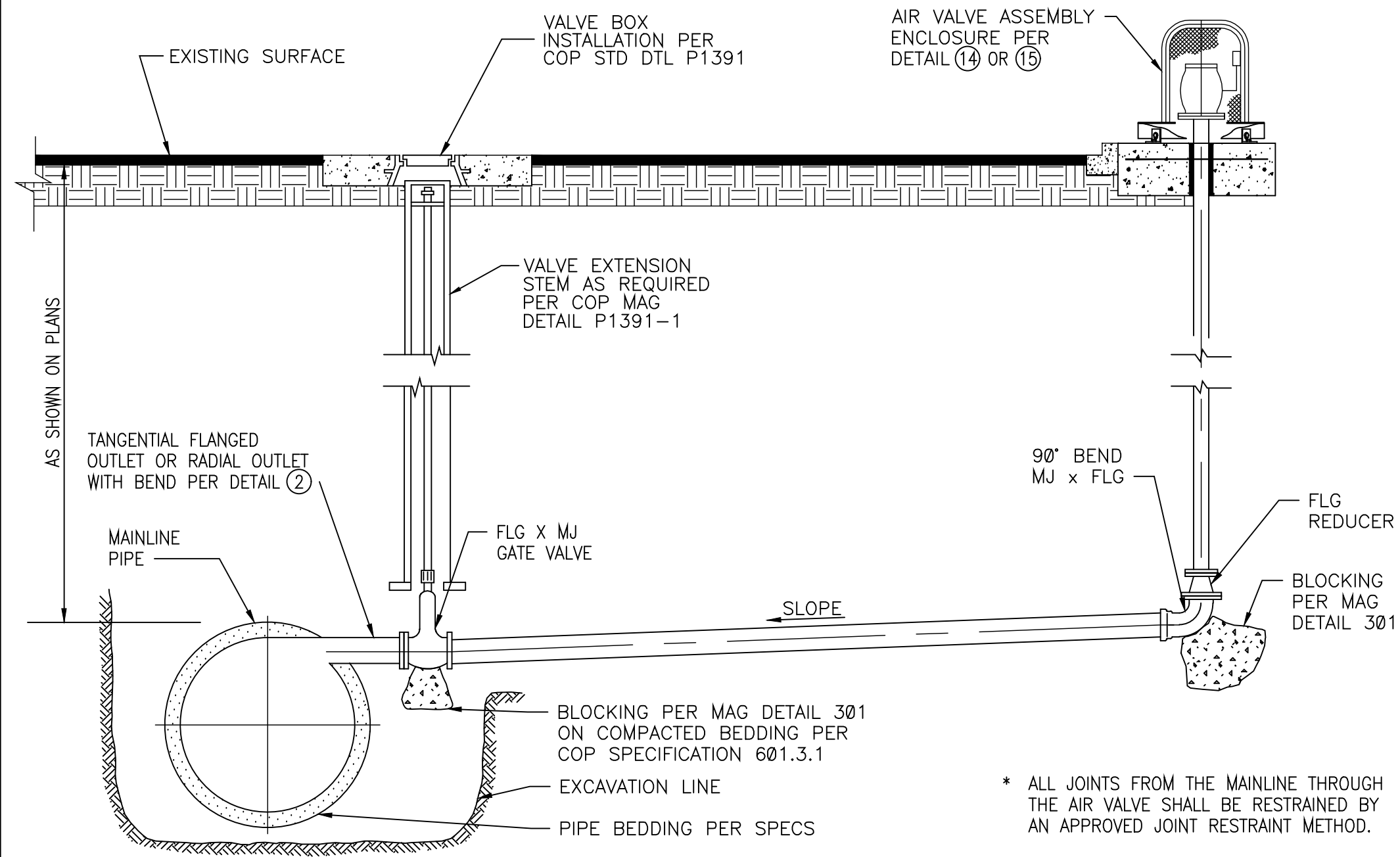


- NOTES:
- VALVE ENCLOSURE ASSEMBLY SHALL BE POWDER COATED. COORDINATE COLOR WITH CITY PROJECT MANAGER.
 - PROVIDE 2" MIN CLEARANCE BETWEEN TOP OF AIR VALVE AND INSIDE OF ENCLOSURE.
 - REINFORCE ENCLOSURE AS REQUIRED SO DOOR SWINGS FREELY WITHOUT BINDING OR SAGGING.
 - FACES OF ANGLES TO FIT FLUSH WHEN DOOR IS CLOSED TO ALLOW INSTALLATION OF PADLOCK.
 - NOTE ENCLOSURE CAN BE PURCHASED INSTEAD OF BEING FABRICATED; BOP1 GUARD SHACK ENCLOSURE IS AN ACCEPTABLE ALTERNATE.
 - ENGINEER TO ENSURE QUANTITY AND SIZE OF HOLES ALLOW FOR VENTING CAPACITY EQUAL TO 1.5 TIMES THE VENTING OR INFLOW CAPACITY OF THE AIR VALVE WHICHEVER IS LARGEST.

16" AIR VALVE ASSEMBLY ABOVE GRADE ENCLOSURE

DETAIL No. 15

NO SCALE



DETAIL No. 16

AIR VALVE WITHOUT MANWAY ACCESS

NO SCALE



CITY OF PHOENIX, ARIZONA
WATER SERVICES DEPARTMENT

COP INDEX NO.

PROJECT TITLE

TO BE SEALED BY
THE ENGINEER OF RECORD

STANDARD DETAILS FOR 18" AND LARGER PIPE

DRN:	DATE:	SCALE	SHEETS
DRN:	DATE:		
CKD:	DATE:		

No. OF