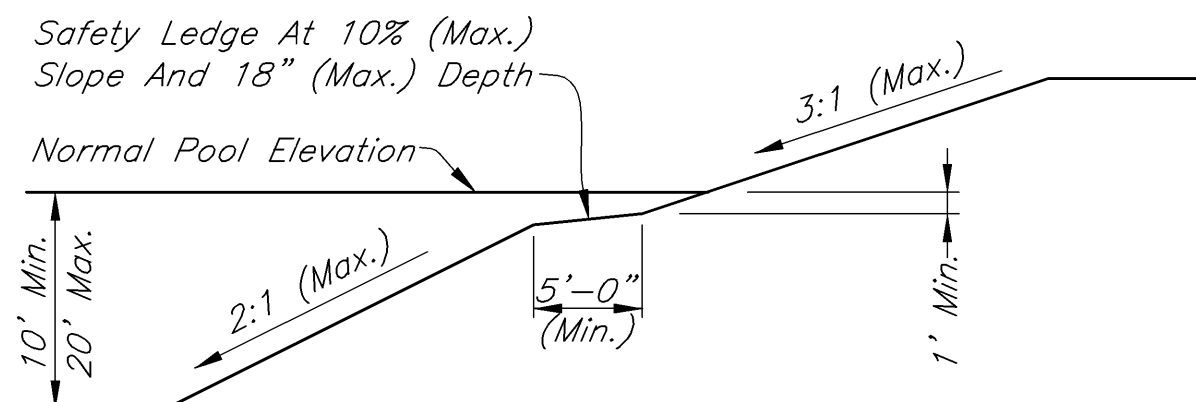


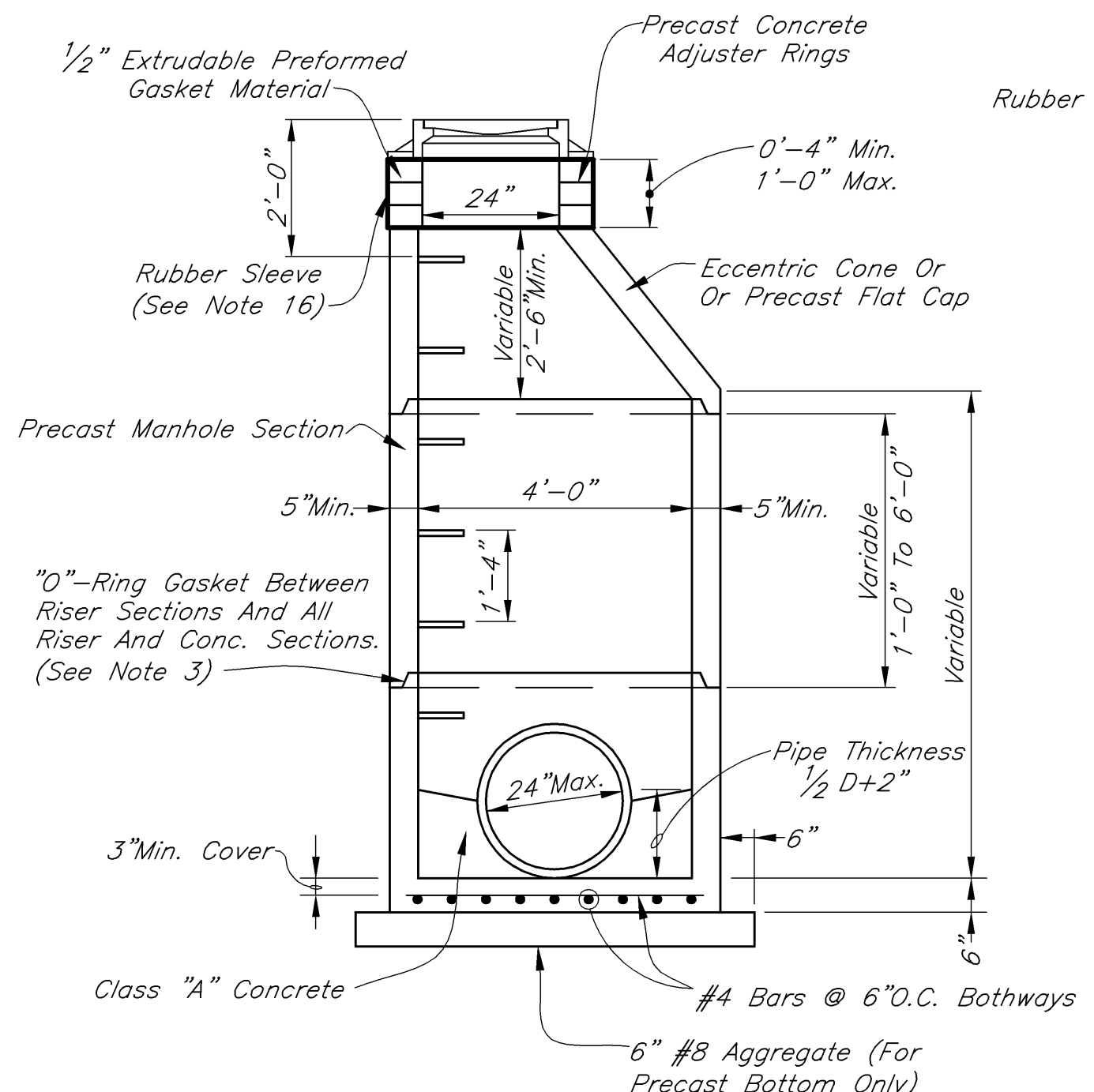
GENERAL NOTES

- Swales Shall Be Constructed With A Minimum 0.3 Percent Profile Grade Provided That A 6 Inch Diameter Underdrain Is Provided For Residential Swales With Less Than A 1.0 Percent Profile Grade And Commercial/Industrial Swales With Less Than A 0.5 Percent Profile Grade.
- Type J, K, L, M And N Manholes As Detailed Herein Require A Certain Minimum Depth. In Cases Where The Depth Of The Storm Sewer Is Not Sufficient To Meet The Minimum Depth As Required By The Detail, "F" Diameter Manhole Section May Be Used Throughout The Depth Of The Manhole.
- Manholes Shall Conform To ASTM C-478. Joints Shall Conform To ASTM C-443 The Use Of Cast-In-Place Concrete Structures Shall Require The Prior Written Approval Of Lebanon Utilities. Regardless Of The Type Of Casting Used, The Casting Shall Be Centered Over The Manhole Steps.
- Manholes Shall Be Installed At Distances Not Greater Than 400 Feet For Mainline Pipe Less Than 48" Diameter Or 500 Feet For Mainline Pipe Greater Than Or Equal To 48" Diameter.
- Manhole Steps Shall Be Neenah R-1981-J, East Jordan No. 8512, M.A. Industries PS 1-PF, Or As Approved By Lebanon Utilities.
- Castings Which Drain Roll Curb And Gutter, Type I Curbing Shall Be Neenah R-3501-TR Or R-3501-TL, East Jordan No. 7495M1 Or 7495M2 Or As Approved By Lebanon Utilities. Catch Basin Type C Required. Manholes Shall Not Be Used To Drain Type I Curbing.
- Castings Which Drain Combined Curb And Gutter, Type II Curbing Shall Be Neenah R-3287-15V, East Jordan No. 7565 T1 Or As Approved By Lebanon Utilities. Catch Basin Type B Required. Manholes Shall Not Be Used To Drain Type II Curbing.
- Castings Which Drain Combined Curb And Gutter, Type II Curbing Shall Be Neenah R-3287-10V, East Jordan No. 7505 M1, T2 Or As Approved By Lebanon Utilities. Catch Basin Type B Required. Manholes Shall Not Be Used To Drain Type II Curbing.
- Castings For Inlets Which Drain Open Pavement Areas Without Curbing Shall Be Neenah R-3405, East Jordan No. 5250 Or As Approved By Lebanon Utilities.
- Castings For Manholes Which Drain Open Pavement Areas Without Curbing Shall Be Neenah R-1772-G, East Jordan No. 1022-M2 Or As Approved By Lebanon Utilities.
- Castings For Use On Inlets Or Manholes Which Drain Swales Or Dry Bottom Detention Basins Shall Be Neenah R-4342, East Jordan No. 6489 Or As Approved By Lebanon Utilities.
- Castings For Manholes Which Do Not Drain Surface Water Shall Be Neenah R-1772-C, East Jordan No. 1022-2 Or As Approved By Lebanon Utilities. All Covers Shall Be Stamped "STORM SEWER" With 2" Raised Letters.
- A 2' Sump Below Downstream Pipe Is Required On Any Catch Basin, Type A, B, Or C Which Drains Directly To A Mainline Pipe. Catch Basin Connections Shall Occur At A Manhole. Manholes Which Connect Catch Basins And Mainline Pipe Shall, As A Minimum, Be Located At Each Street Intersection.
- The Contractor Shall Remove Soils Under A Precast Bottom, Which In Its Natural State, Have Good Bearing Strength And Which Have Had Its Characteristics Adversely Changed By The Contractor's Operations And Replace With 6 Inches Of #2 Stone.
- For Type C Manholes, The Base And First Riser Section Of The Precast Concrete Manhole Shall Be Integrally Cast As One Complete Unit.
- Non-Shrink Grout Required In Annular Space And Place 6" Collar On Exterior Of Manhole.
- Contractor Shall Install An External Rubber Sleeve Sealing System Wrapped Over The Flange Of The Manhole Frame To 2-Inches Below The Bottom Of The Lowest Adjusting Ring. The External Rubber Sealing Sleeve Shall Have A Minimum Thickness Of 60 Mils And Meet The Requirements Of ASTM C-923, ASTM C-443 And ASTM F-477. The Rubber Sleeve Shall Be Infi-Shield External Manhole Seal, Or As Approved By The Lebanon Utilities.



TYPICAL DETENTION POND SECTION
Scale: 1/8"=1'-0"

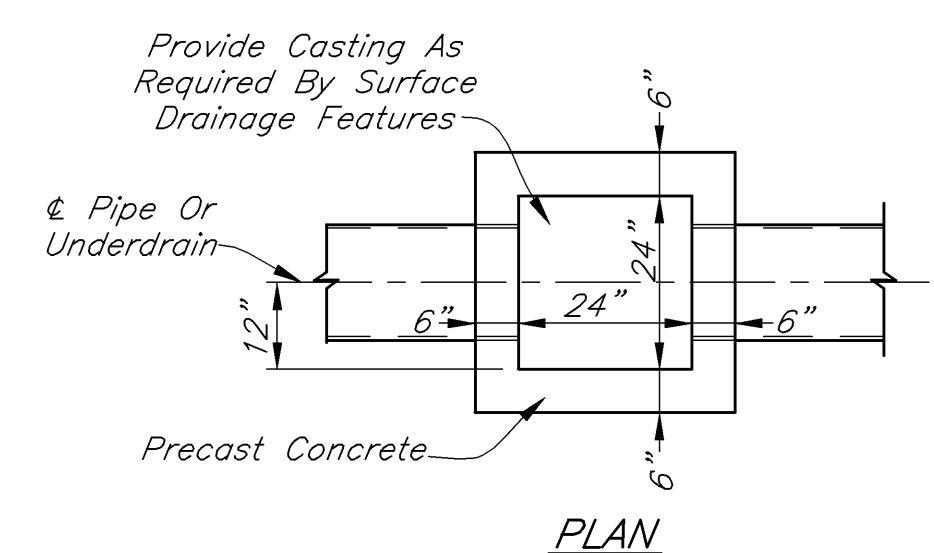
- Detention Ponds And Detention Basins Shall Be Designed So That Inlet Pipe(s) Are No Closer To The Facility Outlet Than 1/2 The Perimeter Of The Pond Normal Pool Or Dry Basin Bottom, Respectively. A Suitable Sediment Trap Is Required At The Inlet.
- Dry Bottom Basins Shall Be Subject To The Maximum Of 3:1 Slope Above The Basin Floor. The Longitudinal Grade Shall Be Subject To The Ditch Requirements As Set Out On This Sheet. The Transverse Grade Shall Be 2% Minimum.
- If A Swale Underdrain Is Needed Per The Swale Underdrain Detail And General Note 1, The Outlet From The Dry Basin Shall Be Such As To Ensure Positive Outlet For Underdrain.



MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting At 0'-45' Bend	24"
Pipe Entering / Pipe Exiting At 45'-90' Bend	21"

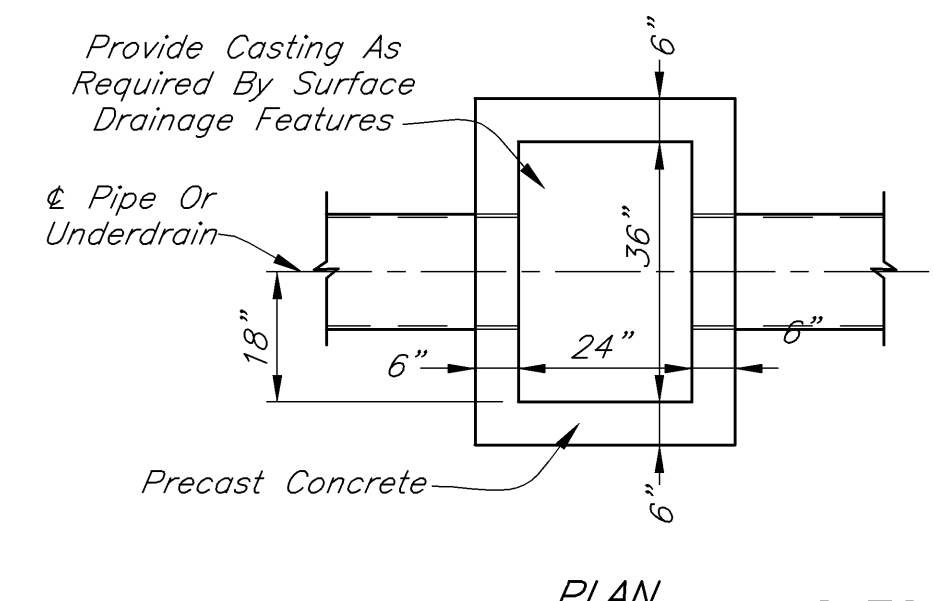
MANHOLE TYPE C

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



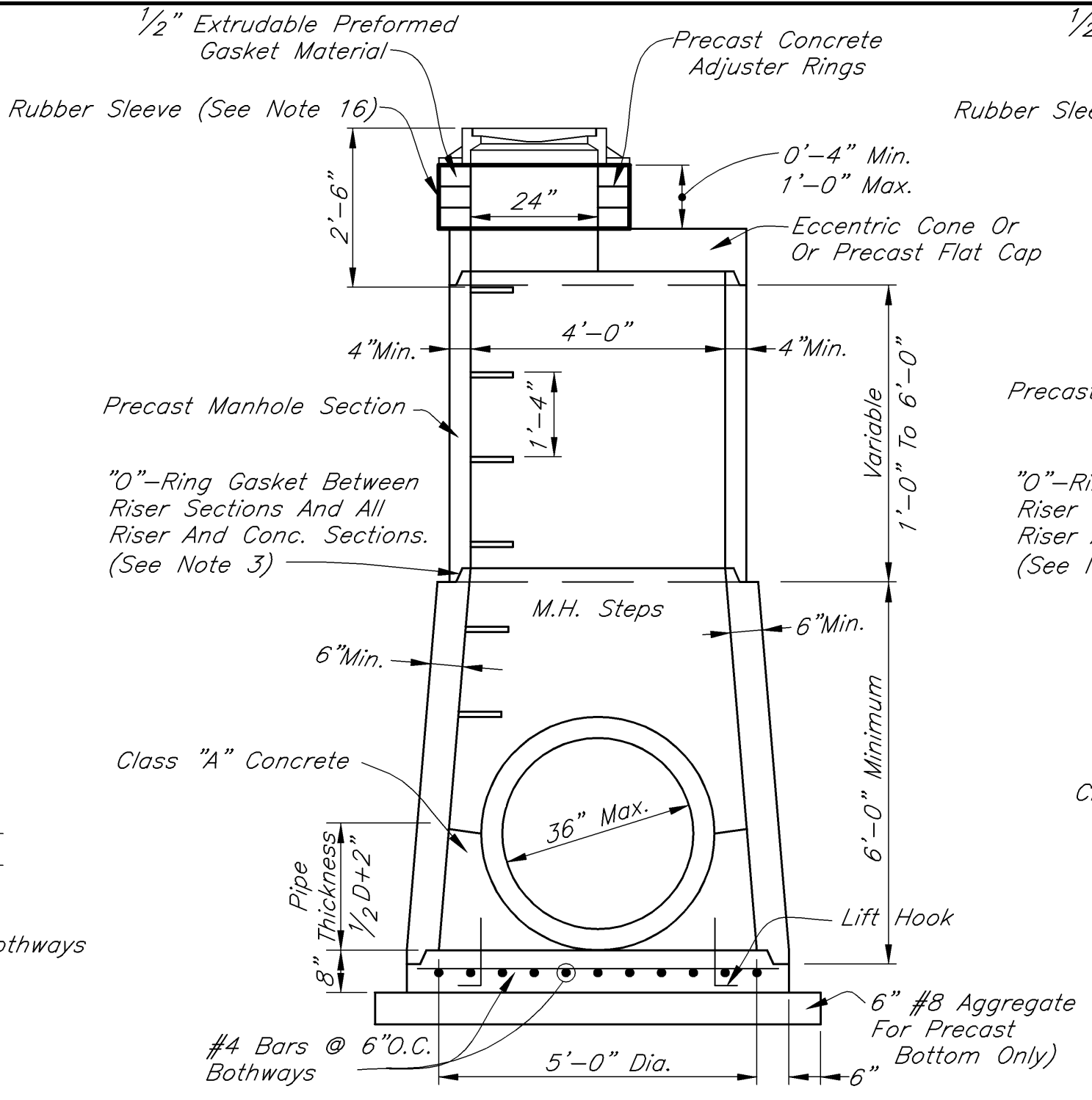
CATCH BASIN, TYPE A

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



CATCH BASIN, TYPE B

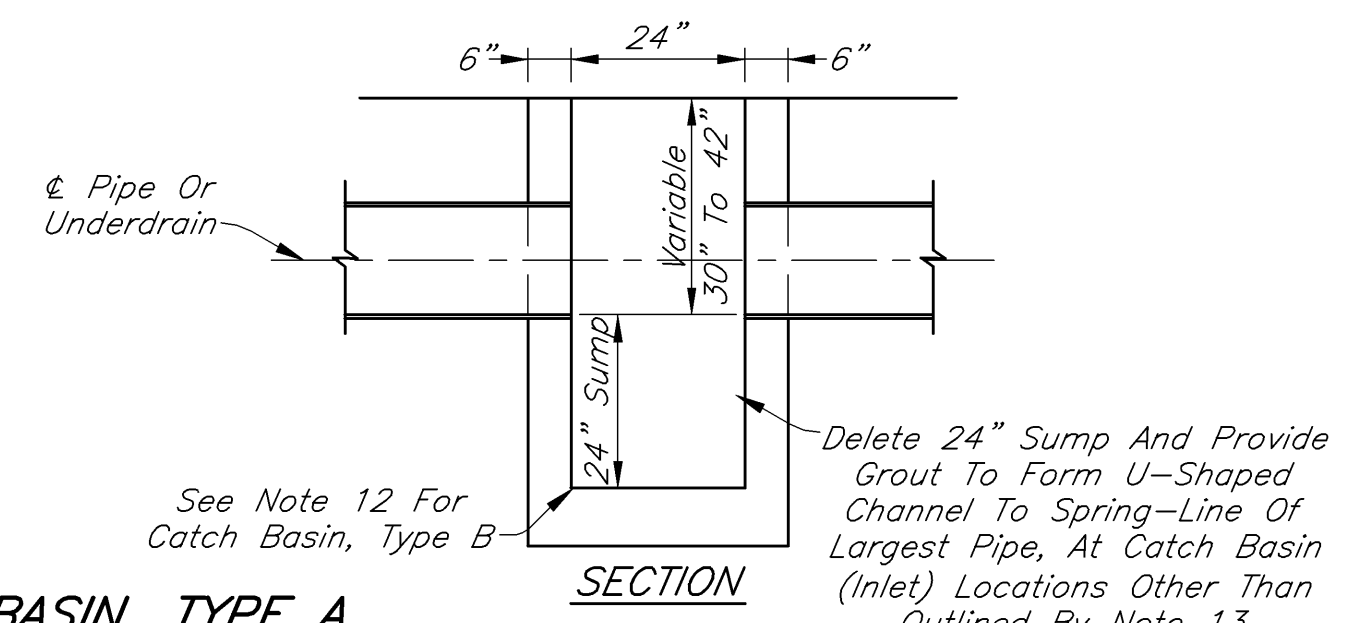
Scale: 1/2"=1'-0"



MAXIMUM PIPE SIZE	
Pipe Entering / Pipe Exiting At 0'-45' Bend	36"
Pipe Entering / Pipe Exiting At 45'-90' Bend	30"

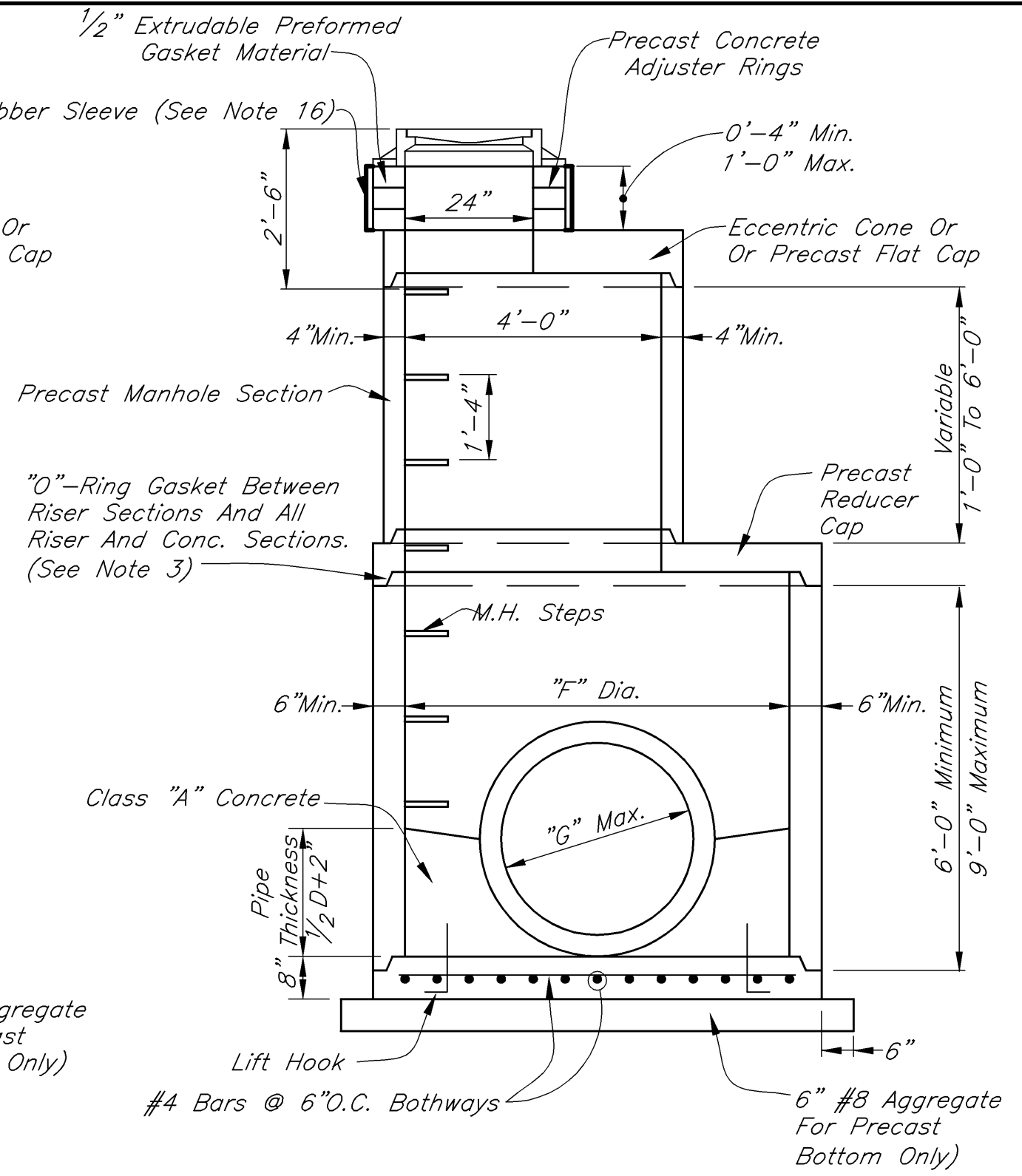
MANHOLE TYPE H

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



CATCH BASIN, TYPE C

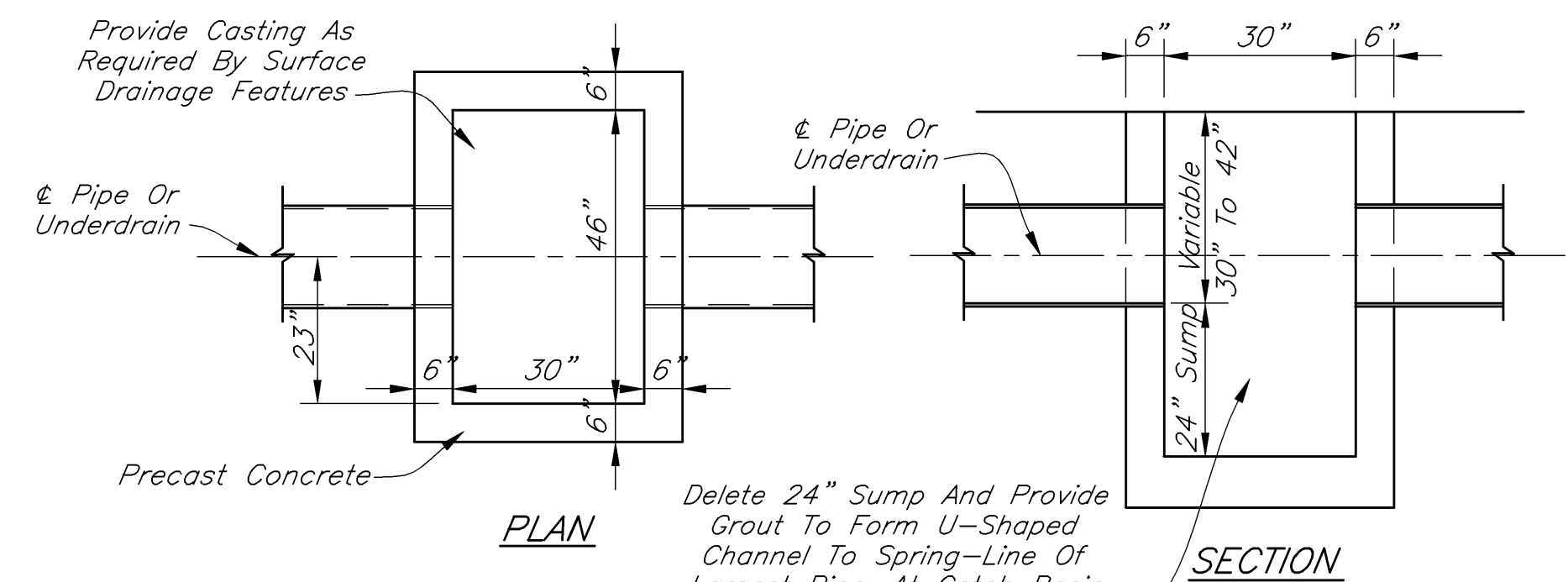
Scale: 1/2"=1'-0"



Manhole Type	Manhole Diameter "F"	MAXIMUM PIPE SIZE "G"	
		Pipe Entering / Pipe Exiting At 0'-45' Bend	Pipe Entering / Pipe Exiting At 45'-90' Bend
J	60"	36"	33"
K	72"	48"	36"
L	96"	54"	48"
M	102"	72"	66"
N	108"	84"	72"

MANHOLES- TYPE J, K, L, M & N

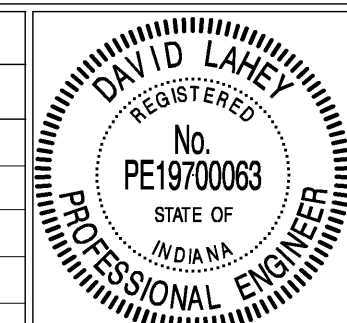
Scale: 1/2" = 1'-0"



CATCH BASIN, TYPE C

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

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL: *David Lane* DESIGN ENGINEER 5-4-2006 DATE

APPROVED: *[Signature]* STREET COMMISSIONER 6-21-06 DATE

CITY OF LEBANON

STORM SEWER DETAILS AND NOTES

SHEET 8 OF 18

C-CARTER
03-24-06 AT 11:07
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