

# CONSTRUCTION STANDARDS

## FAYETTE COUNTY, INDIANA (Including City of Connersville)

### DIRECTIONS FOR USE

- Any New Development Or Redevelopment Within The City Of Connersville Or The Jurisdiction Of The Fayette County Area Plan Commission Shall Be Designed And Constructed In Accordance With The Construction Standards Shown Herein.
- The Approving Agency Shall Be The Fayette County Commissioners Or The Connersville Board Of Public Works And Safety.
- The Entire Set Of Full Size Standards Shall Be Attached To The Construction Drawings And Shall Be Considered Part Thereof. Partial Set May Be Used For Small Projects When Approved By The Fayette County APC.
- Individual Standards That Do Not Apply May Be Crossed-Out By Design Engineer Through The Placement Of A Single Large X Over Detail. Minor Reference Notations May Be Placed Adjacent To Individual Standard Titles For Coordination However, The Standards Themselves Shall Not Be Modified In Any Way.
- Details Prepared By Outside Sources Covering Work Which Is Not Covered By Standards Are The Sole Responsibility Of The Design Engineer And Shall Be Placed On Sheets Other Than These Standards Sheets.

### GENERAL NOTES

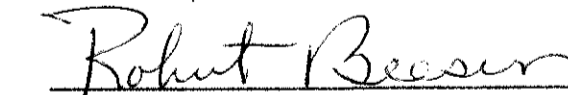
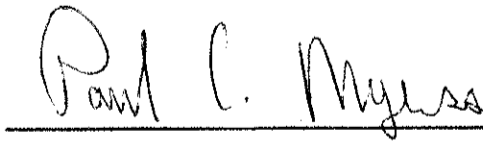
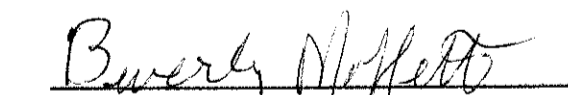
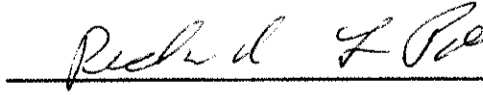

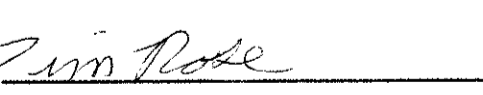
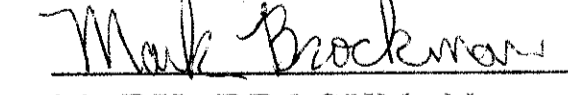
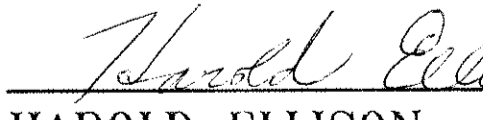
- All Subdivision Development Proposed To The Fayette County APC Must Use The Urban Right-of-Way Guidelines (Sheet 2) For All Interior Subdivision Streets.
- Contractor Shall Verify The Exact Location Of All Existing Utilities At Least 48 Hours Prior To Any Construction Or Excavation. During Construction, All Utilities Shall Be Adequately Supported To Minimize Damage. The Contractor Shall Be Responsible For Repairing Or Replacing Damaged Utilities To The Satisfaction Of The Approving Agency And The Owner Of The Affected Utility.

### UTILITY NOTES

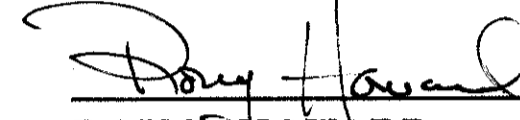
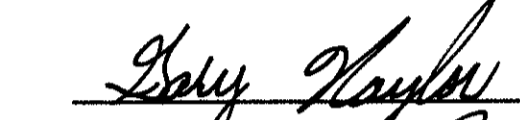
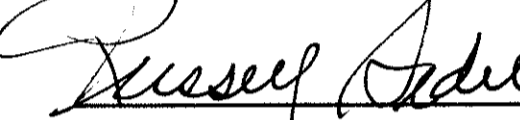
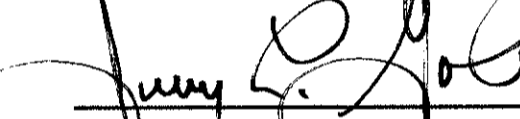
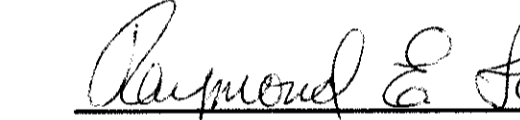
- Utility Construction (Sanitary Sewers And Water Mains) Within The City Of Connersville Or Fayette County Shall Use The Construction Standards On Sheets 12 - 16 As Shown.
- Whenever Trench Opening Encroaches Within 5' Of An Existing Or Proposed Street Or Sidewalk, "B"-Borrow Compacted In Accordance With The Most Recent INDOT Standard Specifications Shall Be Required. Approved Backfill May Be Used Under Proposed Sidewalks Provided Sidewalks Are Constructed 6 Months After Backfilling Of Trench.
- Installation Of Or Provisions For The Installation Of All Underground Utilities (Including Service Laterals) To Be Placed Under Pavement Areas Shall Be Established Prior To The Construction Of The Pavements. (See Utilities Construction Standards For Sanitary Sewer And Water Main Construction Details.)

REVISION LOG						
SHEET NO.	SHEET DESCRIPTION	ISSUED	REVISED	REVISED	REVISED	REVISED
SHEET 1	DIRECTIONS FOR USE, GENERAL NOTES & REVISION LOG					
SHEET 2	URBAN RIGHT-OF-WAY, UTILITY EASEMENT & STREET LIGHTING GUIDELINES					
SHEET 3	RURAL RIGHT-OF-WAY GUIDELINES					
SHEET 4	PAVEMENT DETAILS AND NOTES					
SHEET 5	STREET CUT DETAILS					
SHEET 6	SIDEWALK, CURB AND HANDICAP RAMP DETAILS AND NOTES					
SHEET 7	PLACEMENT OF UTILITIES					
SHEET 8	URBAN PRIVATE DRIVE DETAILS AND SUBDIVISION REAR SWALE DETAILS					
SHEET 9	RURAL PRIVATE DRIVES, GUARDRAIL DETAILS & TYPICAL SIGNAGE PLACEMENT					
SHEET 10	STORM SEWER AND CULVERT BEDDING DETAILS AND NOTES					
SHEET 11	STORM SEWER DETAILS AND NOTES					
SHEET 12	WATER MAIN DETAILS AND NOTES					
SHEET 13	WATER MAIN BEDDING DETAILS AND NOTES					
SHEET 14	SANITARY SEWER DETAILS AND NOTES					
SHEET 15	SANITARY SEWER BEDDING DETAILS AND NOTES					
SHEET 16	SANITARY SEWER LIFT STATION STANDARDS AND GUIDELINES					

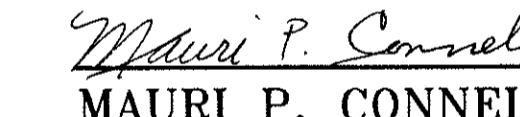
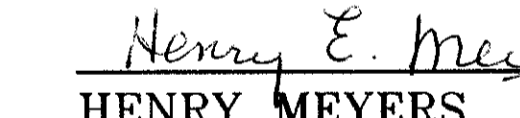




### CONNERSVILLE UTILITIES

 ROBERT BEESON	CHAIRMAN	 PAUL MYERS	MEMBER
 BEVERLY MOFFETT	VICE-CHAIRMAN	 RICHARD POE	MEMBER
 JIM BARRETT	MEMBER	 TIM ROSE	MEMBER
 MARK BROCKMAN	MEMBER	 HAROLD ELLISON	DIRECTOR OF ADMINISTRATION

### FAYETTE COUNTY

 DOUG HOWARD	COMMISSIONER
 GARY NAYLOR	COMMISSIONER
 RUSSELL SIDELL, JR.	COMMISSIONER
 JERRY L. GOBIN, L.S.	SURVEYOR
 RAY LOVINS	DIRECTOR, APC

### CITY OF CONNERSVILLE

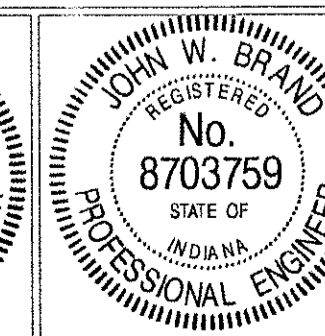
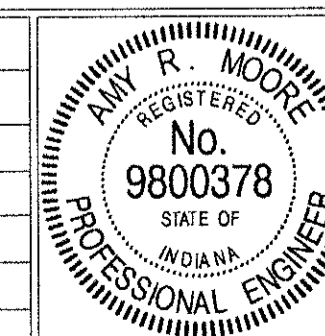
 MAURI P. CONNELL	MAYOR
 HENRY MEYERS	BOARD OF PUBLIC WORKS & SAFETY MEMBER
 TREVA CUNNINGHAM	BOARD OF PUBLIC WORKS & SAFETY MEMBER
 HENRIETTA RIPBERGER	CLERK-TREASURER
 TOM THOMPSON	CITY ATTORNEY
 GLEN R. SMITH	CITY ENGINEER


1-800-382-5544  
HOLEY MOLEY SAYS CALL




AT LEAST TWO FULL  
WORKING DAYS BEFORE  
YOU DIG

REVISIONS		
Rev. No.	Description	Date



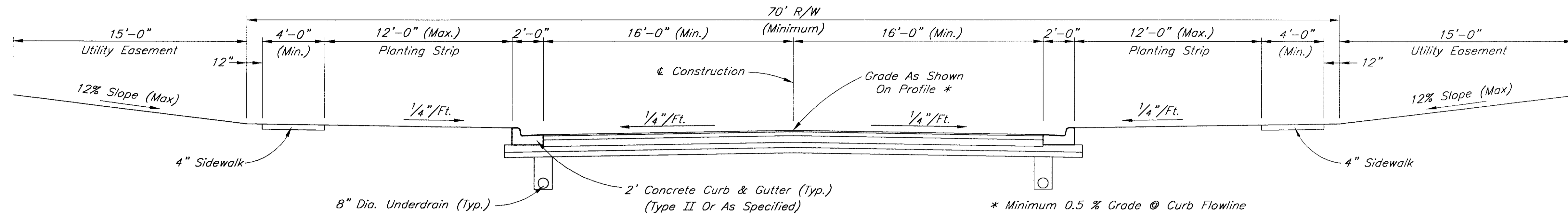
RECOMMENDED FOR APPROVAL  
  
DESIGN ENGINEER  
7/1/02  
DATE

RECOMMENDED FOR APPROVAL  
  
DESIGN ENGINEER  
5/20/02  
DATE

FAYETTE COUNTY &  
THE CITY OF CONNERSVILLE  
DIRECTIONS FOR USE, GENERAL  
NOTES & REVISION LOG

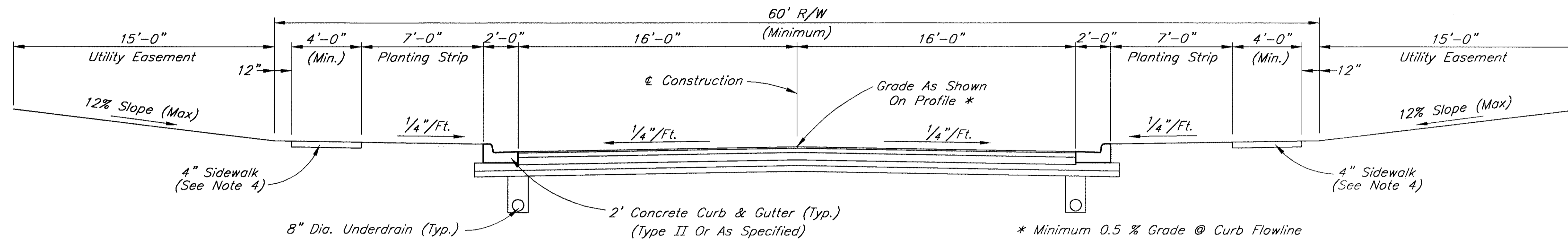
SHEET  
1  
OF  
16

Minimum R/W Width Is 100 Feet. See Secondary Arterial For Street Section  
**URBAN PRIMARY ARTERIAL & BY-PASS ROUTES**



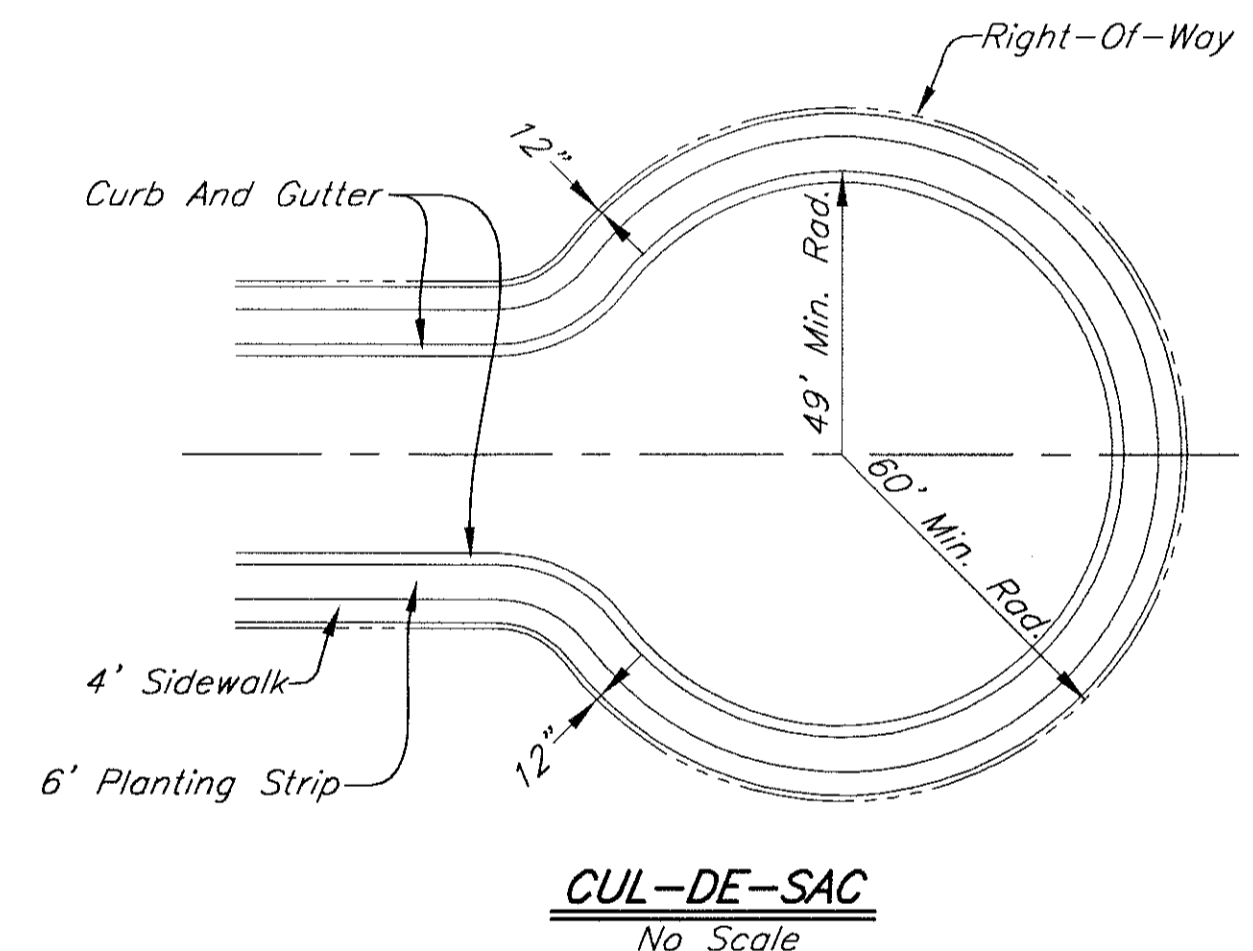
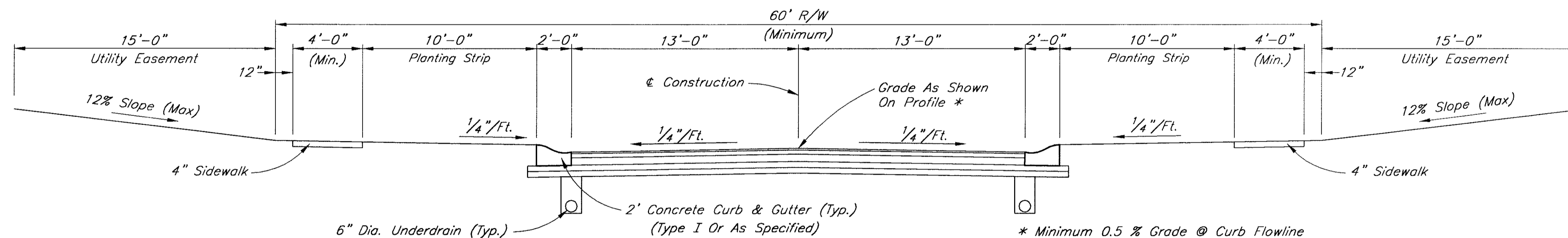
**URBAN SECONDARY ARTERIAL**

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



**URBAN FEEDER STREETS**

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



**URBAN RESIDENTIAL STREETS**

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

**DESIGN GUIDELINES**

- Each Horizontal Curve Shall Have A Minimum Radius Length As Shown Below:  
 Arterial Streets 500 Feet  
 Feeder Streets and Parkways 300 Feet  
 Residential Streets 150 Feet
- The Minimum Tangent Length Between Reverse Horizontal Curves Is:  
 Arterial Streets 100 Feet  
 Feeder And Residential Streets 40 Feet
- Vertical Curves Shall Be Used At All Change In Grade And Shall Allow For A Minimum Sight Distance As Listed Below:  
 Arterial Streets 500 Feet  
 Feeder Streets and Parkways 300 Feet  
 Residential Streets 150 Feet
- Pavement Grade Shall Be Within The Following Range:  

	Minimum	Maximum
Arterial Streets	0.5%	6.0%
Feeder And Residential Streets	0.5%	10.0%
- Right-of-Way Corners At Intersections Of Two Streets Shall Have A Radius Of 15 Feet Or A Chord Of A 15-Foot Arc. At Intersections Of A Street And An Alley, The Right-of-Way Corners Shall Have A Radius Of 20 Feet Or A Chord Of A 20-Foot Arc.
- Maximum Cul-de-Sac Street Length Is 1000 Feet.

**GENERAL NOTES**

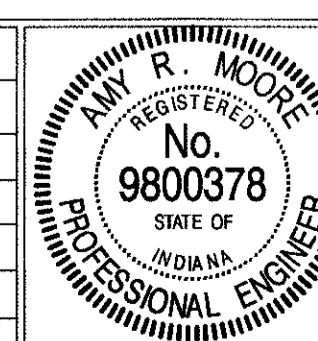
- The Right-Of-Way Widths, Pavement Widths And Easements Widths Indicated On This Sheet Are Minimum Distances Required By The Fayette County Area Plan Commission, Greater Widths May Be Provided. The Contractor Shall Review The Plat And The Plans To Confirm The Various Widths Indicated On This Sheet And Shall Report Any Discrepancy To The Fayette County Area Planning Commission Director Prior To Proceeding With Construction.
- Primary Arterial Streets And By-Pass Routes Are To Be Coordinated With The Fayette County Area Planning Commission And Shall Be In Accordance With The Minimum Design Standards Outlined By The Subdivision Control Ordinance.
- A Written Request For Variance May Be Submitted To The Fayette County Area Planning Commission To Allow For The Deletion Of The 4 Foot Wide Sidewalk From Commercial Feeder Streets. The Sidewalks Shall Be Constructed Unless A Written Variance Is Issued By The Fayette County Area Planning Commission.
- Where New Sidewalk Connects To Existing Sidewalk, The Width Of New Sidewalk Shall Match Width Of Existing Sidewalk Or Be A Minimum Of 4 Feet, Whichever Is Greater.

**STREET LIGHTING**

- Street Lighting Is Required On All Streets. Street Lights, On New Local Streets Being Constructed With A Plat, Shall Be Shown On The Lighting Plan At Intersections, Within Cul-De-Sacs And At Specified Locations Requiring Additional Lighting. Lighting Plans Shall Be Submitted To The Fayette County Planning Commission.
- Except As Stated In No. 1 Above, There Is No Minimum Requirement For Lighting Levels On Local Streets.
- The Developer Shall Be Responsible For Installing The Street Lights As Part Of The Development Construction. The Monthly Maintenance Costs Shall Be The Responsibility Of The Homeowners' Association As Established Within Covenants And Restrictions Recorded With The Final Plat.
- All Lighting Plans Submitted For Approval Shall Include, But Are Not Limited To, The Following:  
 a.) Location Of Each Light Standard And The Transformer Or Junction Box Serving Each Luminaire.

\* Interior Subdivision Streets In Unincorporated Fayette County Must Be Constructed To Urban Section Standard.

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i>	3/1/02
DESIGN ENGINEER		DATE
APPROVED	<i>Maury P. Conwell</i>	DATE
CONNEVILLE BOARD OF PUBLIC WORKS AND SAFETY		DATE
APPROVED	<i>Doug Howard</i>	DATE
FAYETTE COUNTY COMMISSIONERS		DATE

FAYETTE COUNTY* & THE CITY OF CONNEVILLE		SHEET 2
URBAN RIGHT-OF-WAY, UTILITY EASEMENT & STREET LIGHTING GUIDELINES		OF 16

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**GENERAL NOTES**

- 1.) The Right-Of-Way Widths, Pavement Widths And Easements Widths Indicated On This Sheet Are Minimum Distances Required By The Fayette County Area Planning Commission. Greater Widths May Be Provided. The Contractor Shall Review The Plat And The Plans To Confirm The Various Widths Indicated On This Sheet And Shall Report Any Discrepancy To The Fayette County Area Planning Commission Prior To Proceeding With Construction.
- 2.) Primary Arterial Streets And By-Pass Routes Are To Be Coordinated With The Fayette County Area Planning Commission.
- 3.) A Written Request For Variance May Be Submitted To The Fayette County Surveyor To Allow For The Deletion Of The 8" Dia. Swale Underdrain From Rural Feeder Roads And/Or Rural Local Roads. The Written Request For Variance Shall Be Accompanied With A Geotechnical Report, Which Supports The Omission Of Swale Underdrains. The 8" Dia. Swale Underdrain, As Shown On Sheet 4, Shall Be Constructed Unless A Written Variance Is Issued By The Fayette County Surveyor.
- 4.) 94' Minimum Pavement Width, Measured From Edge Of Pavement To The Edge Of Pavement For Rural Area, Shall Be Constructed For All Cul-De-Sacs.
- 5.) When Right-Of-Way Conditions Do Not Warrant A 3:1 Swale Side Slope, A 2:1 Side Slope May Be Used. Otherwise, A Written Request For Variance Shall Be Submitted To The Fayette County Surveyor For Design Approval.
- 6.) For A Rural Local Road With Guardrail, Use 3'-0" In Lieu Of 12" To Allow For Guardrail Installation In Accordance With Sheet 9.

**DESIGN GUIDELINES**

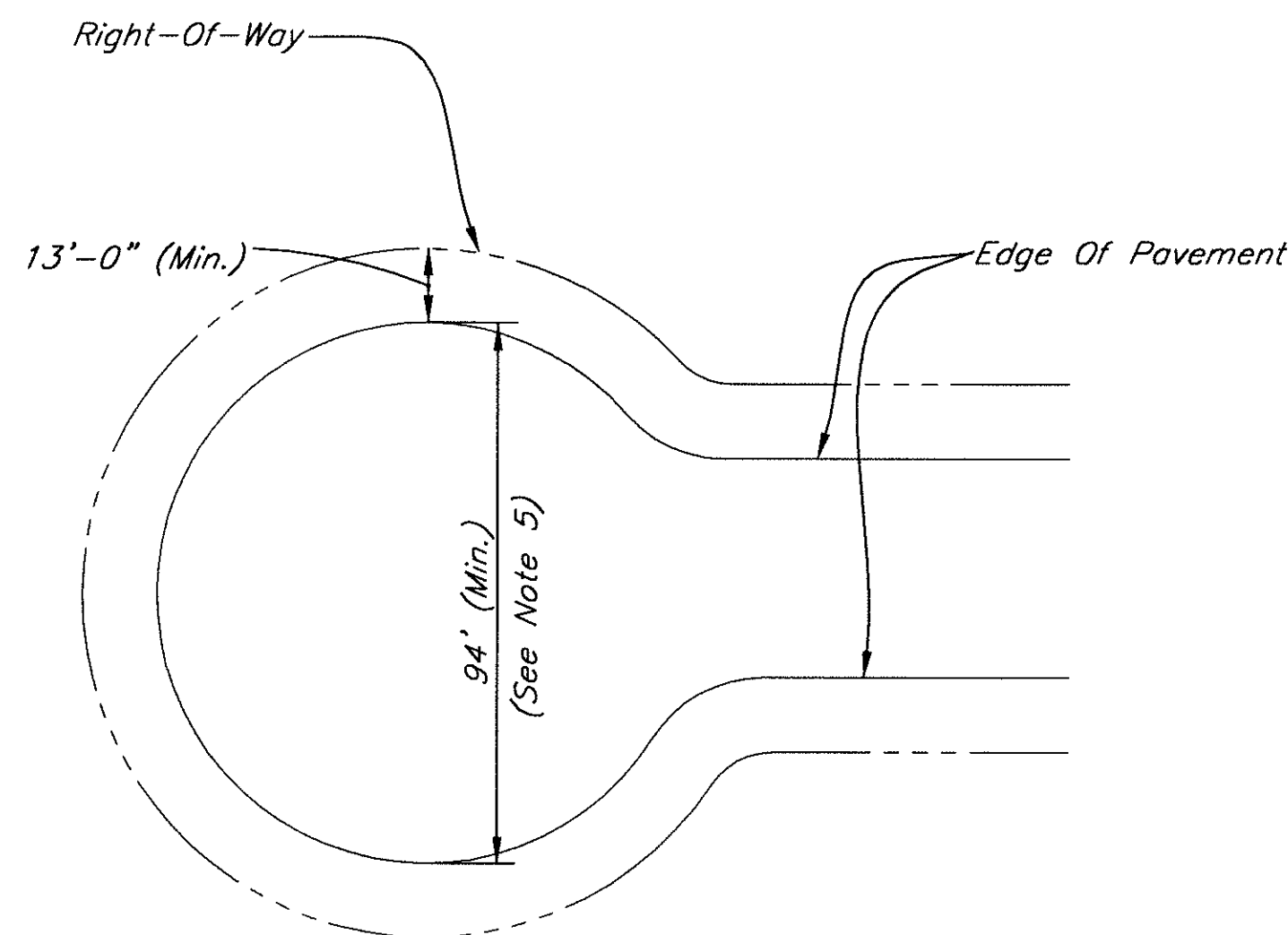
- 1.) Each Horizontal Curve Shall Have A Minimum Radius Length As Shown Below:
 

Arterial Streets	500 Feet
Feeder Streets and Parkways	300 Feet
Residential Streets	150 Feet
- 2.) The Minimum Tangent Length Between Reverse Horizontal Curves Is:
 

Arterial Streets	100 Feet
Feeder And Residential Streets	40 Feet
- 3.) Vertical Curves Shall Be Used At All Change In Grade And Shall Allow For A Minimum Sight Distance As Listed Below:
 

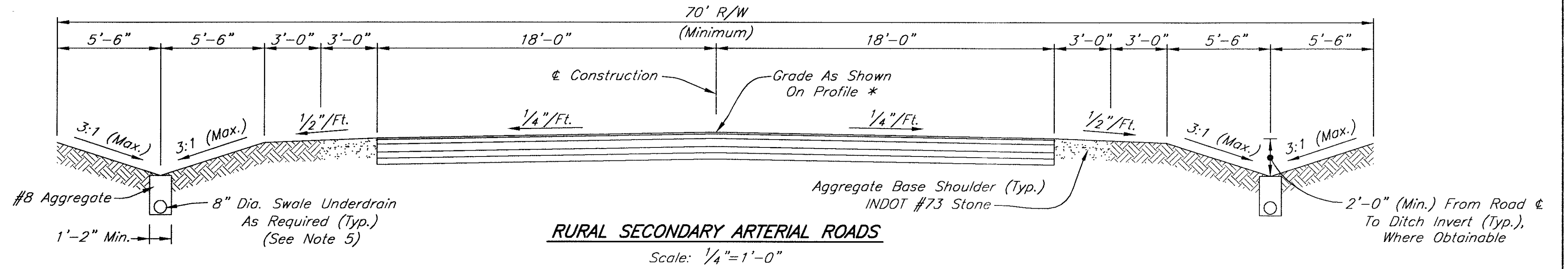
Arterial Streets	500 Feet
Feeder Streets and Parkways	300 Feet
Residential Streets	150 Feet
- 4.) Pavement Grade Shall Be Within The Following Range:
 

	Minimum	Maximum
Arterial Streets	0.5%	6.0%
Feeder And Residential Streets	0.5%	10.0%
- 5.) Right-of-Way Corners At Intersections Of Two Streets Shall Have A Radius Of 15 Feet Or A Chord Of A 15-Foot Arc. At Intersections Of A Street And An Alley, The Right-of-Way Corners Shall Have A Radius Of 20 Feet Or A Chord Of A 20-Foot Arc.
- 6.) Maximum Cul-de-Sac Street Length Is 1000 Feet.



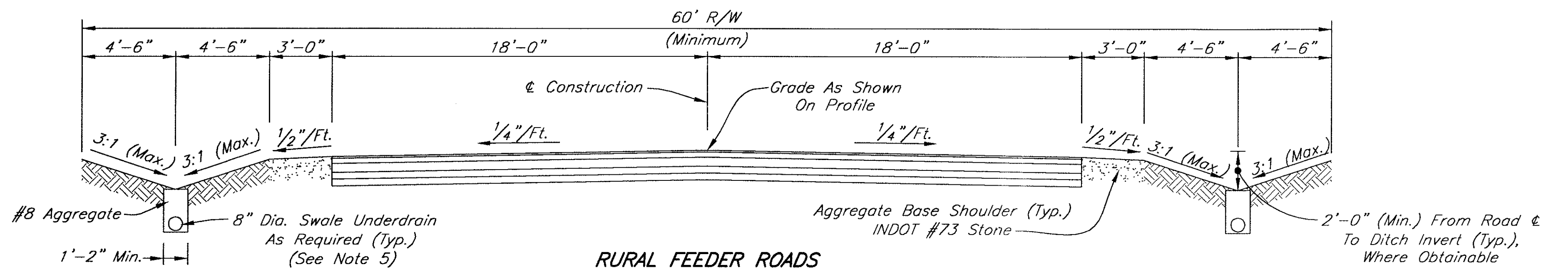
**CUL-DE-SAC**  
No Scale

Minimum R/W Width Is 100 Feet. See Rural Secondary Arterial For Minimum Road Section  
**RURAL PRIMARY ARTERIAL AND BY-PASS ROUTES**



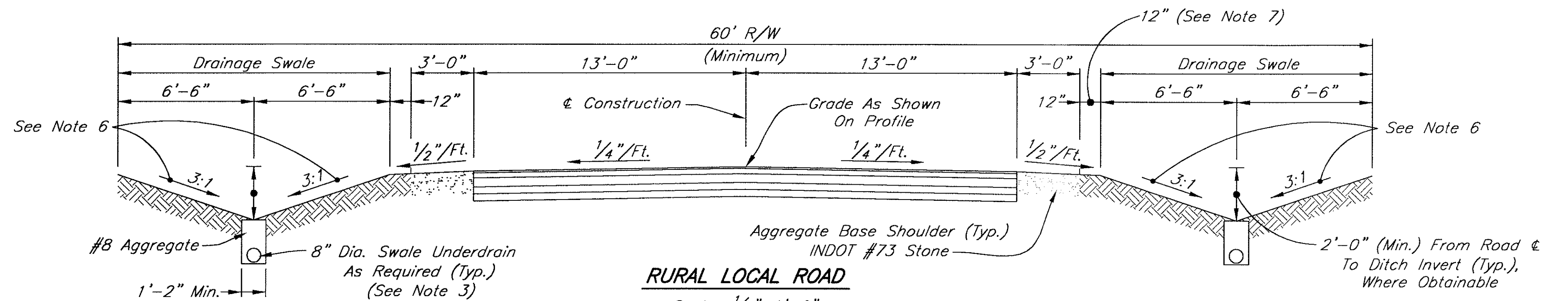
**RURAL SECONDARY ARTERIAL ROADS**

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



**RURAL FEEDER ROADS**

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

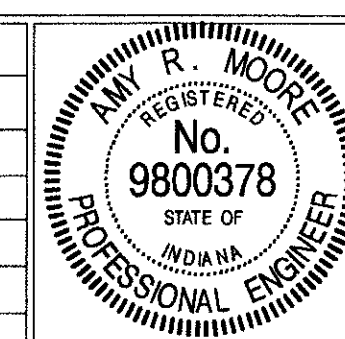


**RURAL LOCAL ROAD**

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

Rural Roadways For Use In Unincorporated Areas Of Fayette County, Or As Approved By The Fayette County APC And Incorporated Agency.

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL: *Amy R. Moore*, 3/1/02, DESIGN ENGINEER  
 APPROVED: *Doug Hurd*, DATE: \_\_\_\_\_, FAYETTE COUNTY COMMISSIONERS

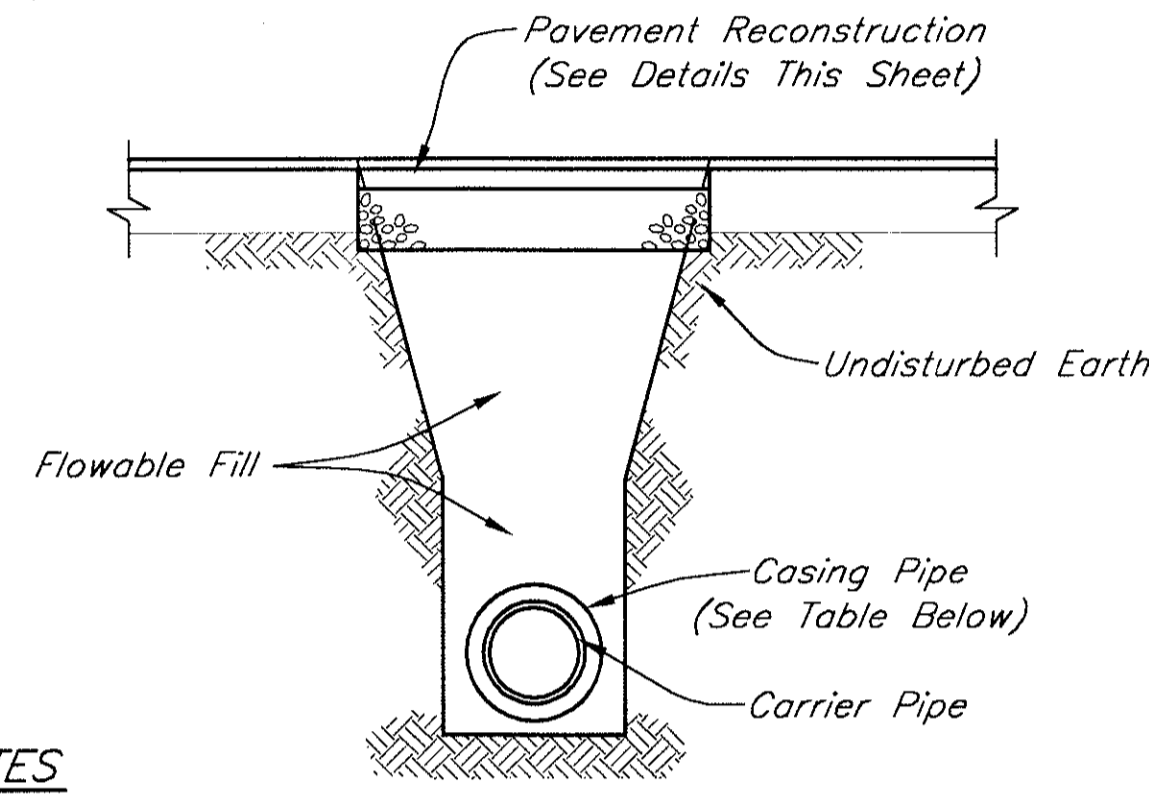
FAYETTE COUNTY  
 RURAL RIGHT-OF-WAY GUIDELINES  
 SHEET 3 OF 16

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**GENERAL NOTES**

- 1.) Trench Backfill Within Streets, Alleys Or Sidewalks Shall Be Type I Or Type II As Shown.
- 2.) Type II Backfill May Be Used If The Trench Has Adequate Space To Allow The Entrance Of Proper Equipment And Materials To Achieve The Required 95% Compaction.
- 3.) The Fayette County Surveyor Or The Connersville City Engineer Shall Have The Authority To Require Type I Trench Backfill When, In His Opinion, Minimum Compaction Cannot Be Obtained.
- 4.) The Contractor Shall Notify The Fayette County Surveyor/Connersville City Engineer At Least 24 Hours Prior To Beginning Backfill Of Excavation, If The Permanent Patch Placement Is To Be A Separate Operation, The Contractor Shall Also Notify The Fayette County Surveyor/Connersville City Engineer 24 Hours Prior To Placement Of Patch.
- 5.) The Contractor Shall Be Responsible For Maintaining And Repairing Any And All Open Cuts Permitted Within Fayette County And/Or City Of Connersville For A Period Of One Year Upon Final Acceptance By The County/City.
- 6.) Trench Backfill And Pavement Restoration Shall Be Conducted In A Prompt Manner.

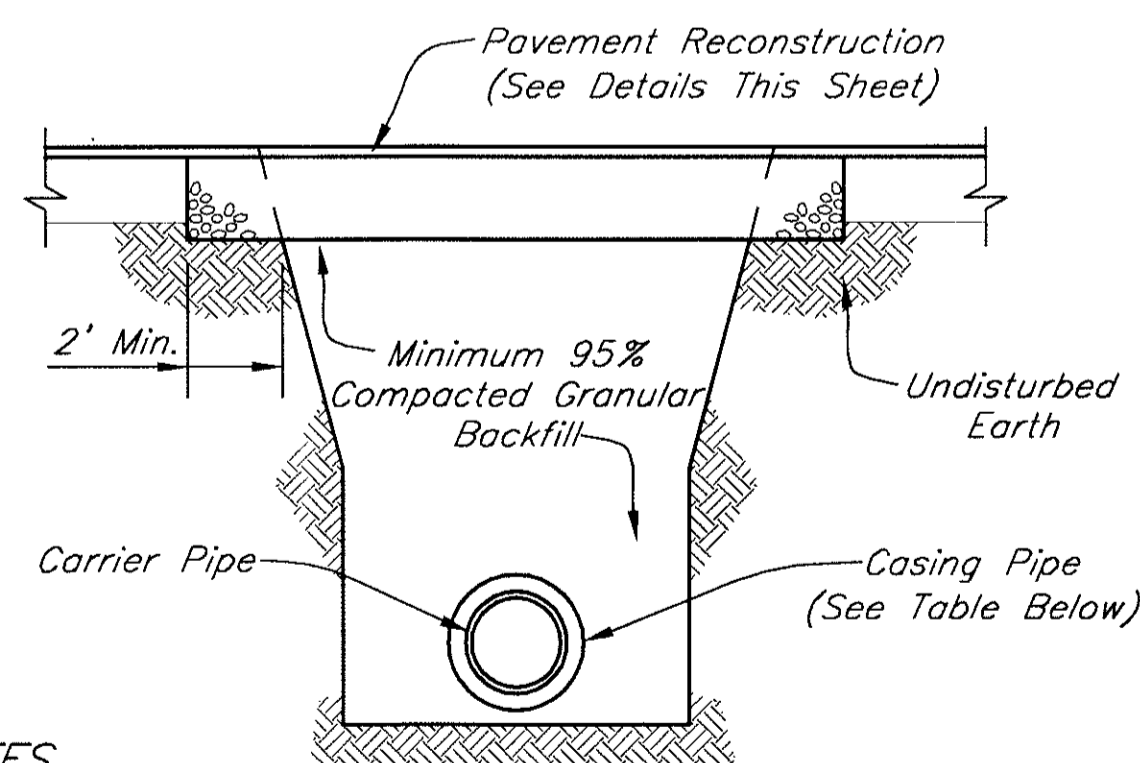


**NOTES**

1. Trench Spoil Is To Be Removed From The Work Site And Disposed Of Out Of The Right-Of-Way.
2. Flowable Fill Is To Be Poured Into The Trench To Serve As Backfill, To The Dimensions And Specifications Listed In This Detail.
3. The Flowable Fill Mix Design Shall Have Been Previously Reviewed And Approved By The Fayette County Surveyor/Connersville City Engineer.
4. The Compressive Strength Of The Flowable Fill Shall Not Be Less Than 50 PSI Nor Greater Than 100 PSI At 28 Days.
5. When Type I Trench Backfill Is Used, The Existing Paved Surface Is Not Required To Be Over-Cut 2 Feet Minimum Each Side. Provide A Vertical, Neat Saw-Cut Edge.
6. Flowable Fill Shall Be Mixed And Placed As Specified In The Latest Standard INDOT Specifications, Section 213.

**TRENCH BACKFILL - TYPE I FLOWABLE FILL DETAIL**

Scale: None

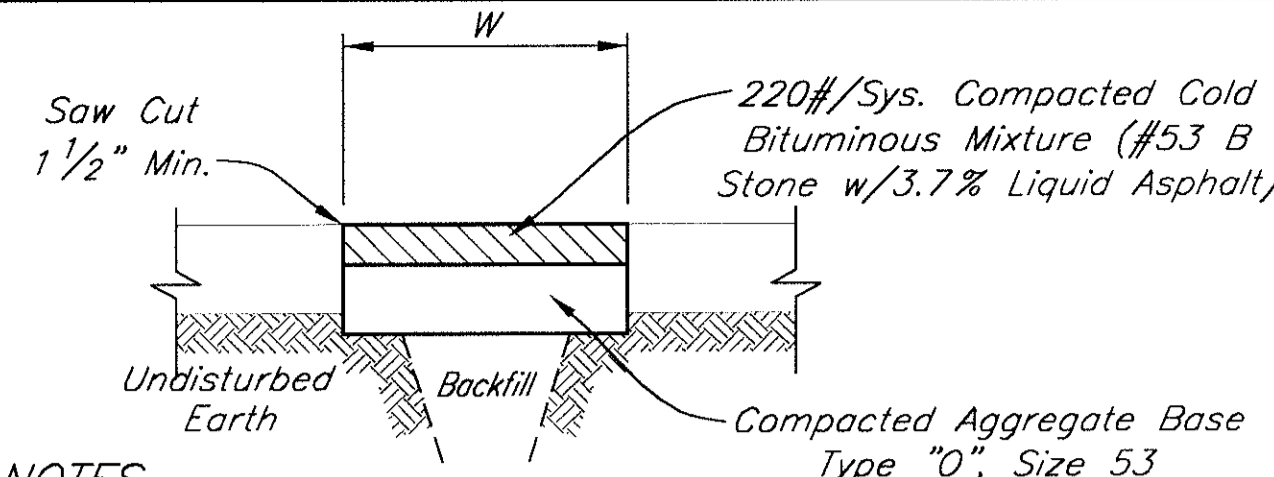


**NOTES**

1. Saw Cut Existing Pavement So That Cut Provides A Vertical, Neat And Uniform Edge.
2. Trench Spoil Is To Be Removed From The Work Site And Disposed Of Out Of The Right-Of-Way.
3. Contractor Shall Place Backfill In 6 Inch Loose Lifts. Each Lift Shall Be Compacted To 95% Of Maximum Dry Density.

**TRENCH BACKFILL - TYPE II GRANULAR FILL DETAIL**

Scale: None



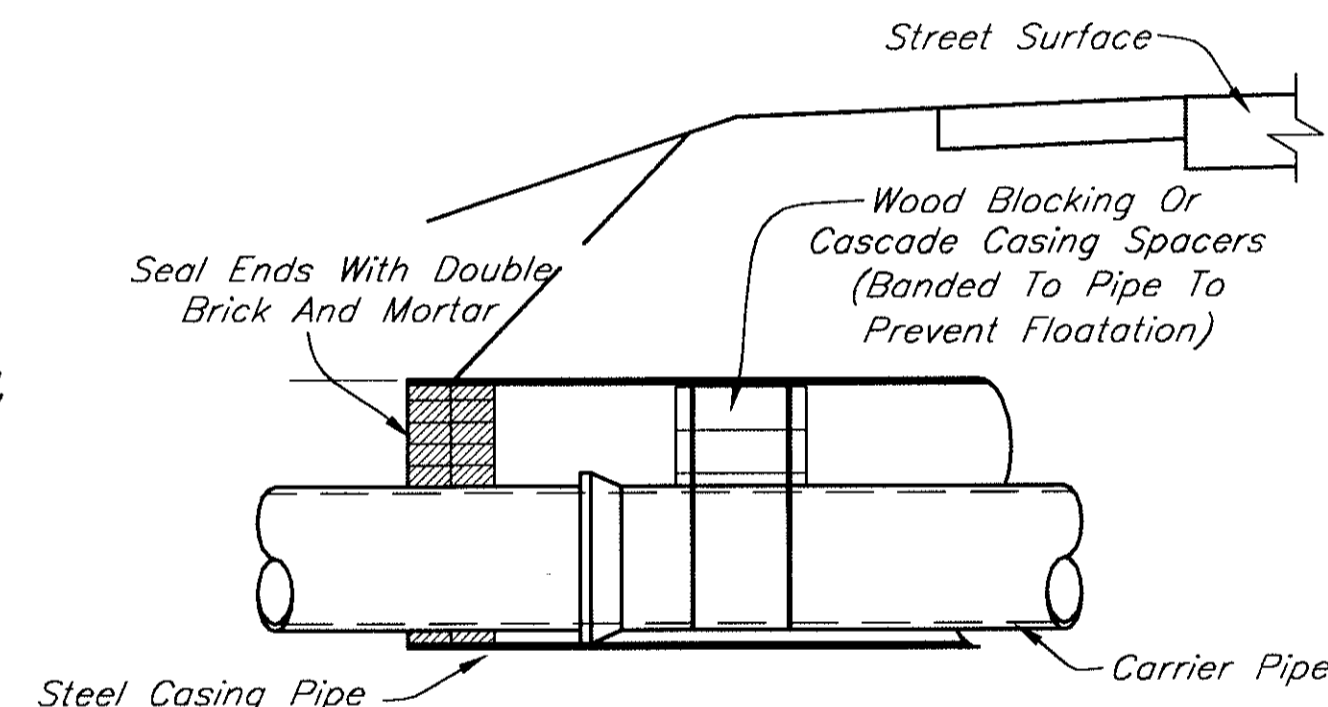
**NOTES**

1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Fayette County Surveyor/Connersville City Engineer.
3. The Contractor Shall Seek Direction From The Fayette County Surveyor/Connersville City Engineer As To The Required Thickness Of The Compacted Aggregate Base.
4. Temporary Repair Patch Is Required When Restoration Work Occurs Between November 15 And April 15.

**FOR TEMPORARY REPAIR PATCH**

PAVEMENT RESTORATION TABLE	
UTILITY DEPTH RANGE (FEET)	MAXIMUM TRENCH WIDTH AT FINISHED GRADE, W (FEET)
0 To 5	I. D. +5
5 To 8	I. D. +8
8 To 10	I. D. +10
10 To 12	I. D. +12
12 To 14	I. D. +14
14 To 16	I. D. +16
16 To 18	I. D. +18
18 To 20	I. D. +20

I.D. = Casing Pipe Inside Diameter

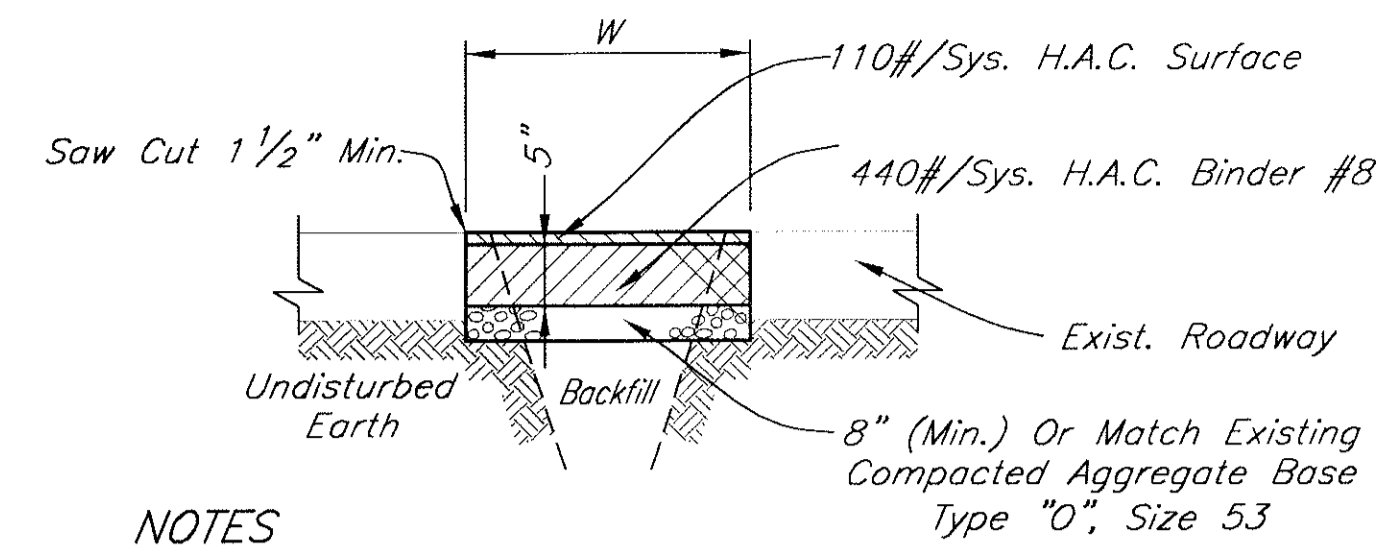


**TYPICAL STREET CASING DETAIL**

Scale: None

REQUIRED CASING PIPE SIZE AND THICKNESS		
CARRIER PIPE O.D. (Inches)	CASING PIPE	
	I.D. (Inches)	THICKNESS (Inches)
≤ 4"	6"	0.25"
> 4" ≤ 6"	8"	0.25"
> 6" ≤ 10"	12"	0.25"
> 10" ≤ 12"	18"	0.25"
> 12" ≤ 20"	24"	0.312"
> 20"	Consult The Fayette County Highway Department/Connersville City Engineer	

- 1.) Bored Or Jacked Crossings Require Intimate Knowledge Of Site Conditions; Therefore, Construction Is Subject To Certified Special Provisions Prepared By The Design Engineer.
- 2.) Casings Depicted Hereon Do Not Necessarily Comply With INDOT Permit Requirements, But Are Intended To Be Used For Crossings Of Public Roads Under The Jurisdiction Of Fayette County/City Of Connersville When Open Cut Of Such Roads Is Not Permitted.



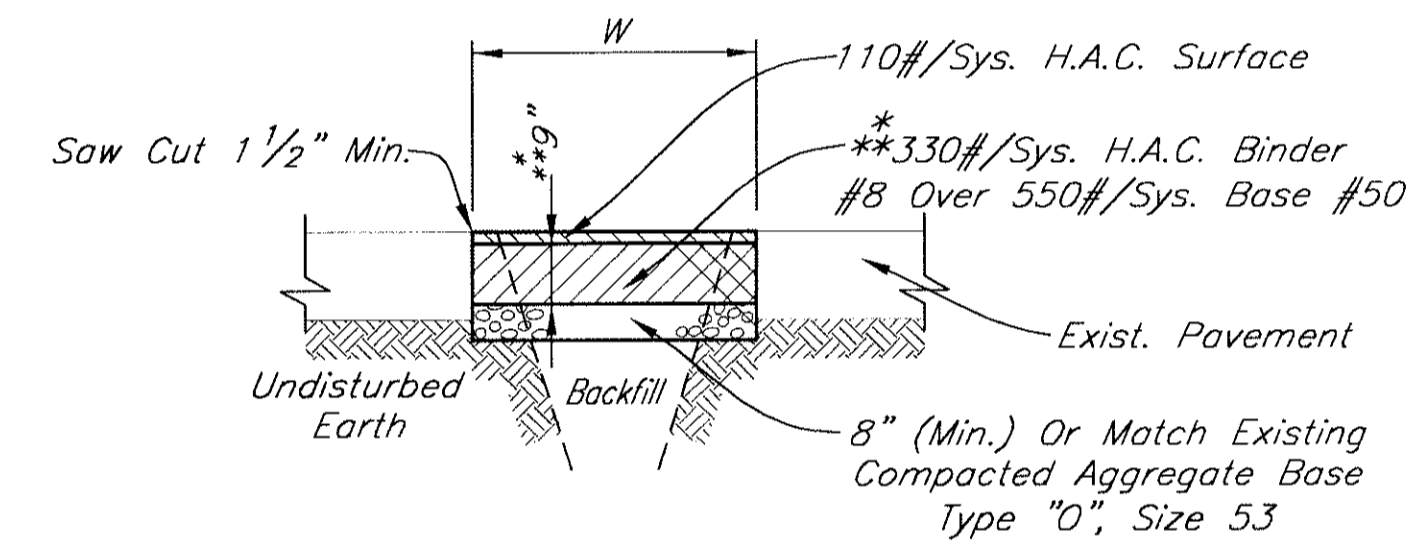
**NOTES**

1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Fayette County Surveyor/Connersville City Engineer.
3. The Existing Vertical Edge Of Pavement Is To Be Tack Coated Prior To The Laying Of New Asphalt. Tack Coat Is To Be Applied As Specified In The Latest Standard INDOT Specifications, Sections 406 And 902.
4. The New Surface Pavement Grade Shall Match The Existing Surface Pavement Grade.
5. A 2 (Two) Inch Wide Band Of Crack Sealant Is To Be Applied Along The Joint Between The Existing And New Asphalt Surface. Sealant Is To Be Applied In Accordance With INDOT Specifications, Section 305.
6. Refer To Pavement Restoration Table For W.

**BITUMINOUS PATCH**

Scale: None

**FOR CUTS WITHIN CHIP & SEAL ROADS**



- \* If Existing Pavement Is Thicker Than 8"; An Additional Lift Of Base #5 Is To Be Used To Match The Existing Pavement Thickness.
- \*\* For Collector, Arterial And Industrial Streets, Contractor Shall Increase Asphalt Binder #8 To 4" And Base #5 To 8" Thickness To Obtain A Total Pavement Thickness Of 13".

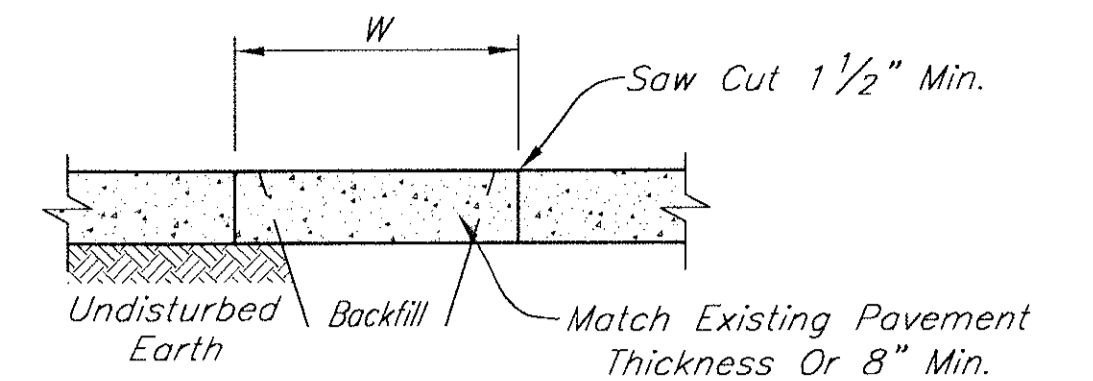
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1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Fayette County Surveyor/Connersville City Engineer.
3. The Existing Vertical Edge Of Pavement Is To Be Tack Coated Prior To The Laying Of New Asphalt. Tack Coat Is To Be Applied As Specified In The Latest Standard INDOT Specifications, Sections 406 And 902.
4. The New Surface Pavement Grade Shall Match The Existing Surface Pavement Grade.
5. A 2 (Two) Inch Wide Band Of Crack Sealant Is To Be Applied Along The Joint Between The Existing And New Asphalt Surface. Sealant Is To Be Applied In Accordance With INDOT Specifications, Section 305.
6. Refer To Pavement Restoration Table For W.

**BITUMINOUS PATCH**

Scale: None

**FOR CUTS WITHIN BITUMINOUS STREETS**



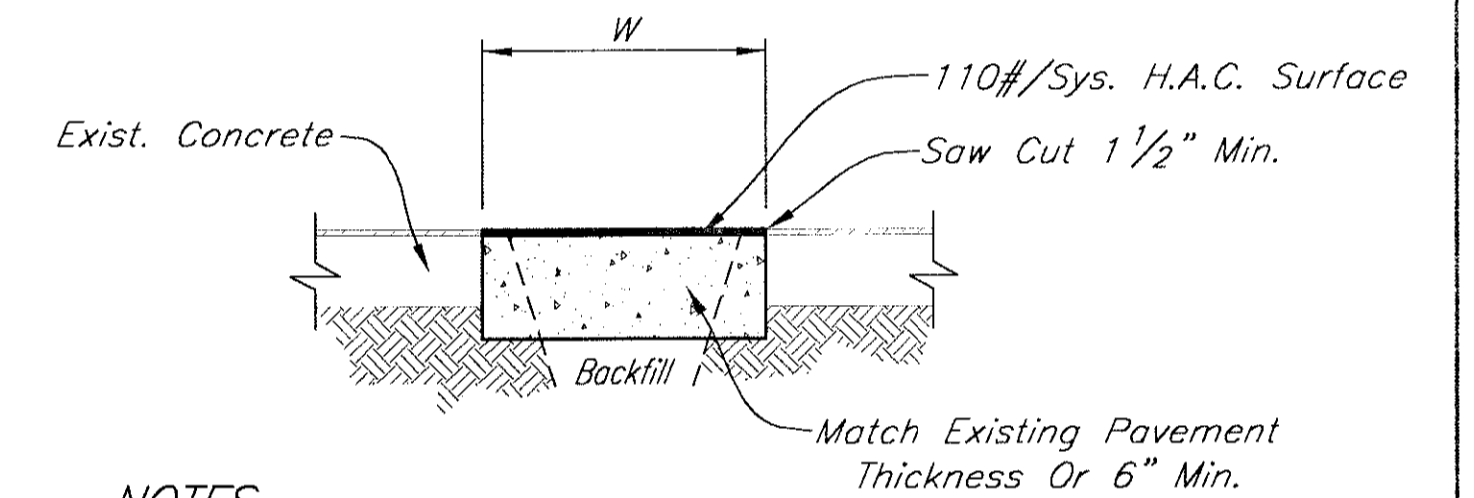
**NOTES**

1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Fayette County Surveyor/Connersville City Engineer.
3. Surface Of Repair Shall Be Broom Finish At Right Angles To Traffic Flow.
4. All Concrete Shall Be Air Entrained (5%±1%)—6 Bags Per Cubic Yard, Minimum 4000 PSI Compressive Strength Concrete.
5. Contractor Shall Contact The Fayette County Surveyor/Connersville City Engineer To Determine If Anchors Are Required On Existing Concrete Pavement Repairs.
6. Refer To Pavement Restoration Table For W.

**CONCRETE PATCH**

Scale: None

**FOR CUTS WITHIN CONCRETE STREETS**



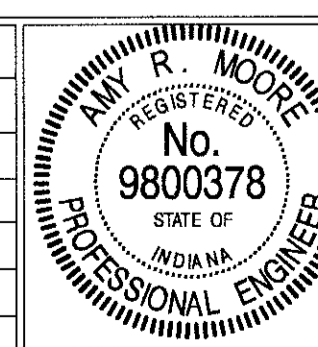
**NOTES**

1. Saw Cuts Shall Provide A Vertical, Neat And Uniform Edge.
2. All Materials Shall Comply With Specifications As Required By The Fayette County Surveyor/Connersville City Engineer.
3. Concrete Surface Shall Be Broom Finish At Right Angles To Traffic Flow.
4. All Concrete Shall Be Air Entrained (5%±1%)—6 Bags Per Cubic Yard Minimum 4000 PSI Compressive Strength Concrete.
5. Contractor Shall Contact The Fayette County Surveyor/Connersville City Engineer To Determine If Anchors Are Required On Existing Concrete Pavement Repairs.
6. The Concrete Pavement And The Existing Vertical Edge Of Pavement Are To Be Tack Coated Prior To The Laying Of New Asphalt. Tack Coat Is To Be Applied As Specified In The Latest Standard INDOT Specifications, Sections 406 And 902.
7. The New Surface Pavement Grade Shall Match The Existing Surface Pavement Grade.
8. A 2 (Two) Inch Wide Band Of Crack Sealant Is To Be Applied Along The Joint Between The Existing And New Asphalt Surface. Sealant Is To Be Applied In Accordance With INDOT Specifications, Section 305.
9. Refer To Pavement Restoration Table For W.

**CONCRETE W/BITUMINOUS SURFACE PATCH**

Scale: None

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i>	DESIGN ENGINEER	3/1/62	DATE
APPROVED	<i>Murray P. Cornell</i>	CONNEVILLE BOARD OF PUBLIC WORKS AND SAFETY		DATE
APPROVED	<i>Don Hurd</i>	FAYETTE COUNTY COMMISSIONERS		DATE

FAYETTE COUNTY & THE CITY OF CONNEVILLE

STREET CUT DETAILS

SHEET 5 OF 16

12-11-01 AT 06:55 R:\3768\AUTOCAD\DWG\CONSET1\3768C006.dwg

**HANDICAP RAMP CONSTRUCTION**

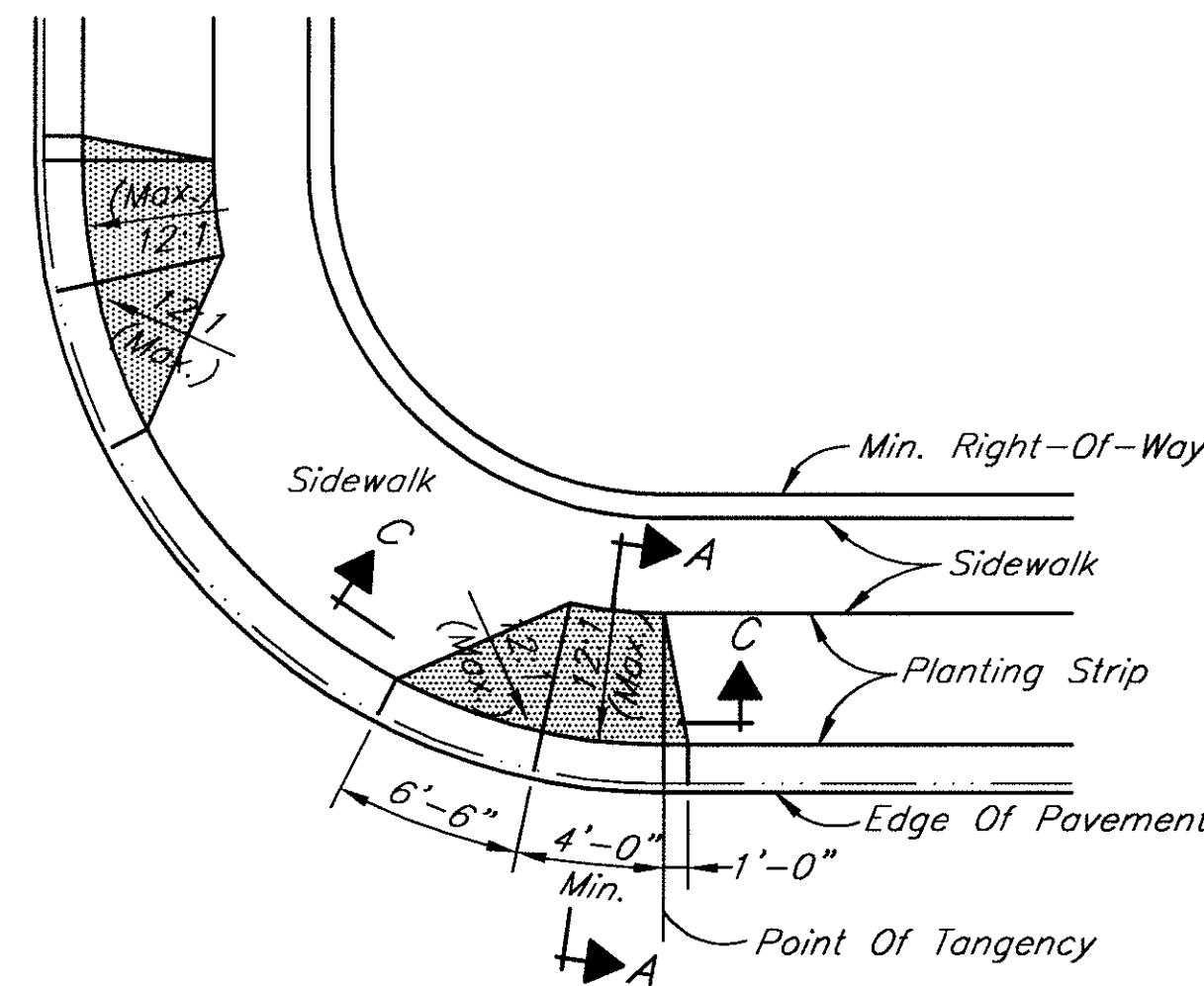
- 1.) All Handicap Ramps Shall Meet The Requirements Of The American Disabilities Act, The Most Recent INDOT Standard Specifications, And The Requirements Set Forth By The Fayette County Commissioners And The City Of Connersville. Curb Swipes Required For Handicap Ramps Shall Be Provided At The Time Of Initial Construction.
- 2.) Minimum Width Of Curb Ramp Shall Be 4 Feet, Not Including Flares. Maximum Slope Of Ramps Shall Be 12:1.
- 3.) Handicap Ramps Are To Be Located As Shown On The Plans Or As Directed By The Connersville City Engineer/Fayette County Surveyor.
- 4.) Type D Ramps Shall Be Provided At The Point Of Tangency Of The Radius At All Corners Of Every Street Intersection Where There Is An Existing Or Proposed Sidewalk And Curb. In Case Of "T"-Intersection, A Type C Ramp Shall Be Provided Adjacent To Each Corner Ramp. Type C Ramps Also Shall Be Provided At Walk Locations At Mid-Block In Vicinity Of Hospitals, Medical Centers Or Athletic Stadiums. The Use Of Details Contrary To These Shown Hereon Shall Require The Prior Written Approval Of The Fayette County Area Plan Commission.
- 5.) Surface Texture Of The Ramp Shall Be That Obtained By A Coarse Brooming Transverse To The Slope Of The Ramp.
- 6.) Ramps Shall Be Provided Where The Driveway Curb Extends Across The Sidewalk.
- 7.) Care Shall Be Taken To Assure A Uniform Grade On All Ramps With No Breaks In Grade.
- 8.) Drainage Structures Shall Not Be Placed In Line With The Ramps Except Where Existing Drainage Structures Are Being Utilized In The New Construction. Location Of The Ramps Shall Take Precedence Over Location Of Drainage Structures.
- 9.) The Normal Gutter Line Profile Shall Be Maintained Through The Area Of The Ramp.
- 10.) Expansion Joint For The Ramp Shall Be A Maximum 1/2" Wide. The Top Of The Joint Filler For All Ramp Types Shall Be Flush With Adjacent Concrete.
- 11.) Crosswalk And Stop Line Marking, If Used, Shall Be So Located As To Stop Traffic Short Of Ramp Crossing.
- 12.) Slope Of Ramp May Be Warped When Field Conditions Warrant And When Approved By The Connersville City Engineer/Fayette County Surveyor.

**SIDEWALK AND RAMP CONSTRUCTION**

- 1.) Sidewalks and Handicap Ramps Shall Be Constructed In Accordance With The Dimensions And Details Shown Herein And Section 604 Of The INDOT (1999) Standard Specifications. Class 'A' Concrete, In Accordance With Section 702 Of The Standard Specifications, Shall Be Used.

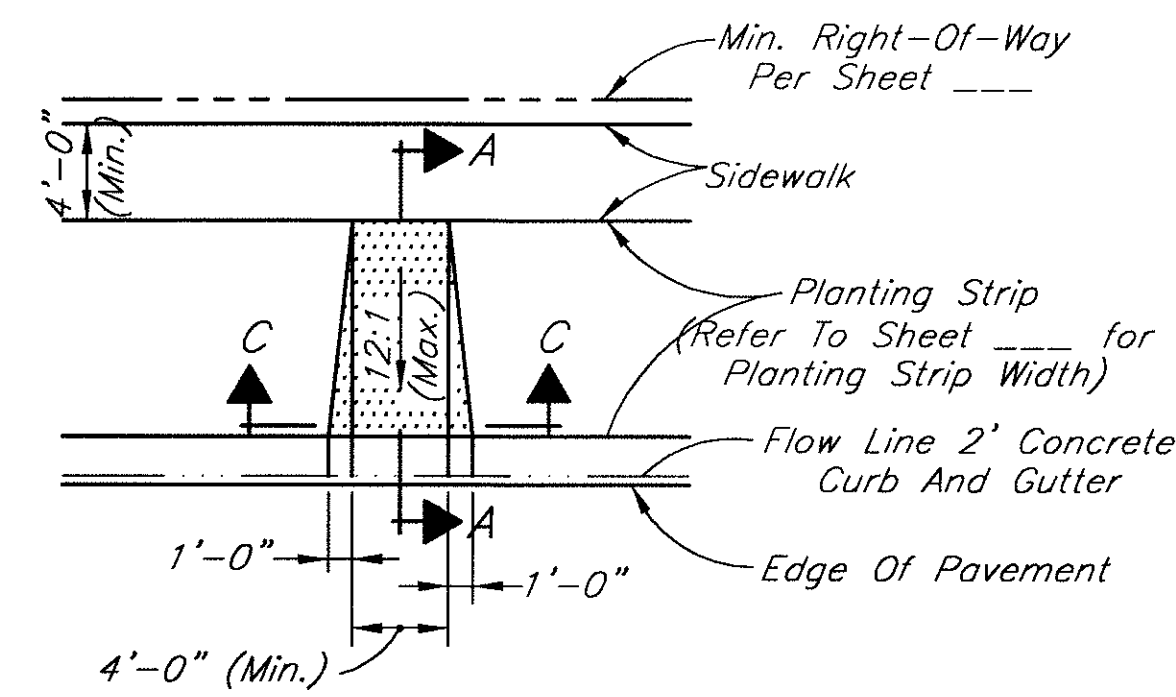
**CURB CONSTRUCTION**

- 1.) Type I Curb Shall Only Be Used On Residential Streets.
- 2.) Type II Curb Shall Be Used On All Non-Residential Urban Streets.
- 3.) Curb Shall Be Constructed In Accordance With The Dimensions And Details Shown Herein And Section 605.04 Of The INDOT (1999) Standard Specifications. Class 'A' Concrete, In Accordance With Section 702 Of The Standard Specifications, Shall Be Used.

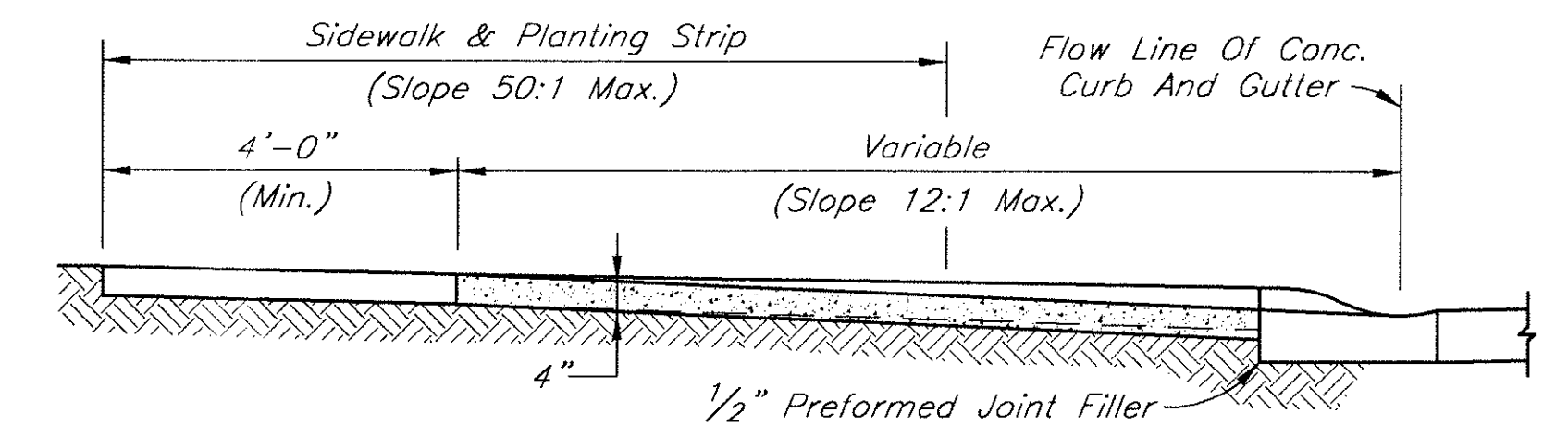


**CURB RAMP, TYPE D**  
Scale: 1/8" = 1'-0"

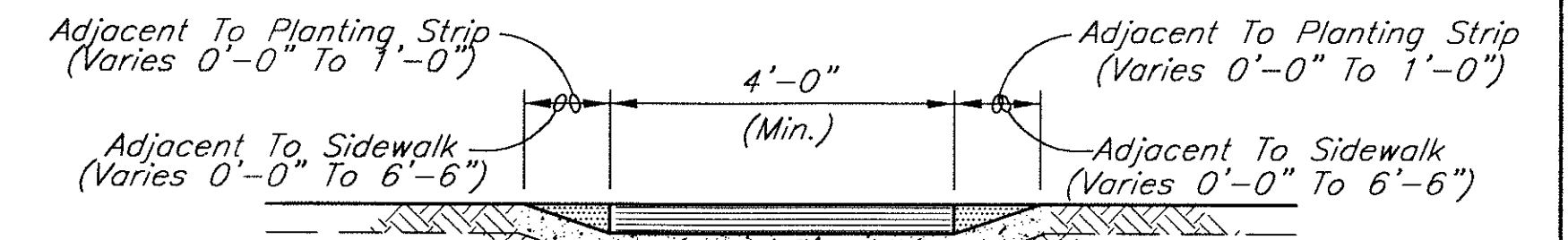
**HANDICAP RAMP CONSTRUCTION**



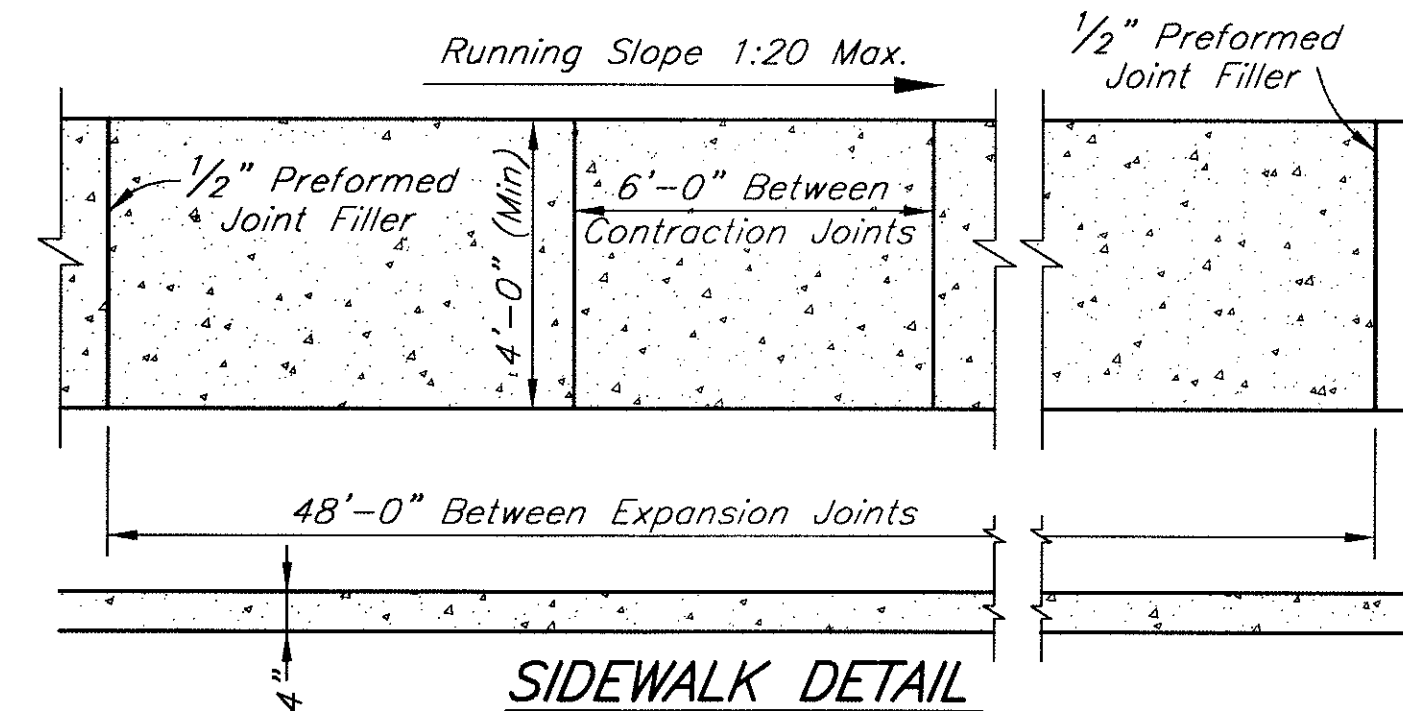
**CURB RAMP, TYPE C**  
Scale: 1/8" = 1'-0"



**SECTION A-A**  
Scale: 1/2" = 1'-0"



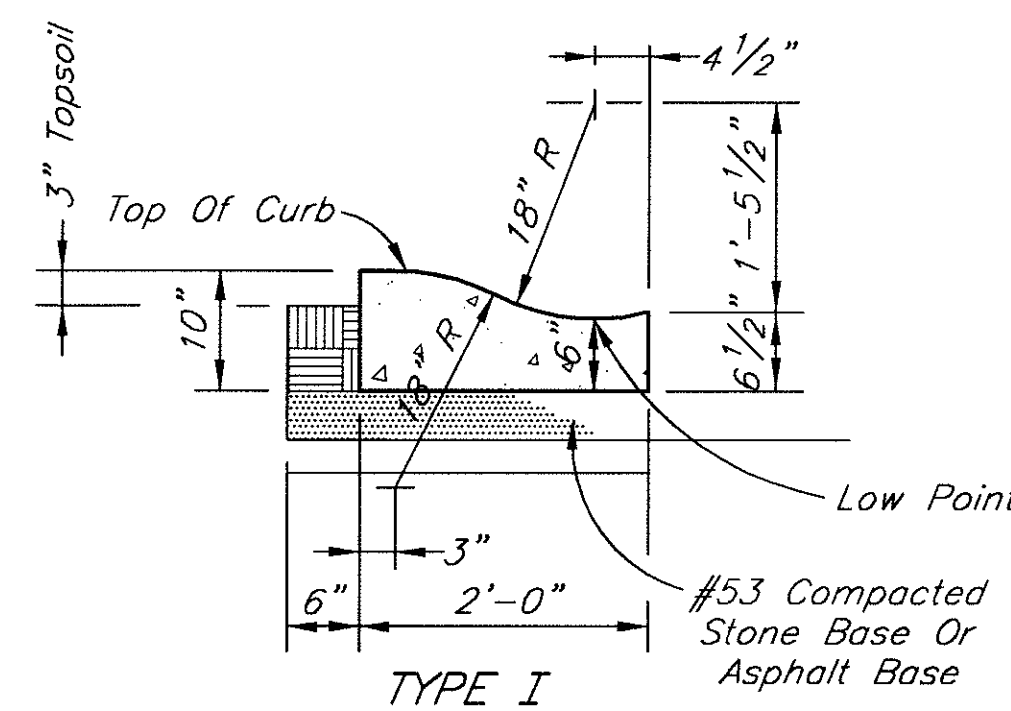
**SECTION C-C**  
Scale: 1/2" = 1'-0"



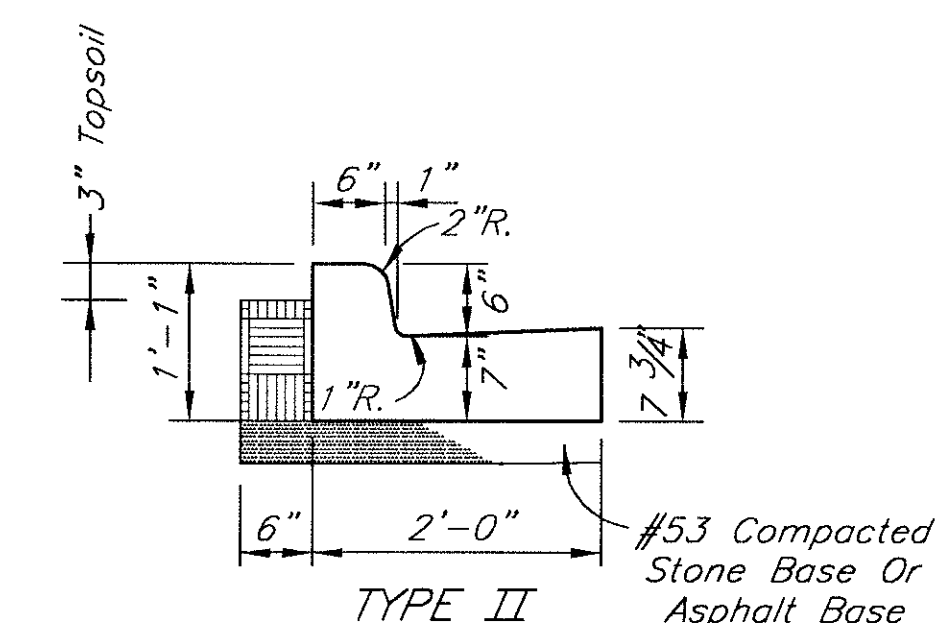
**SIDEWALK DETAIL**

Not to Scale

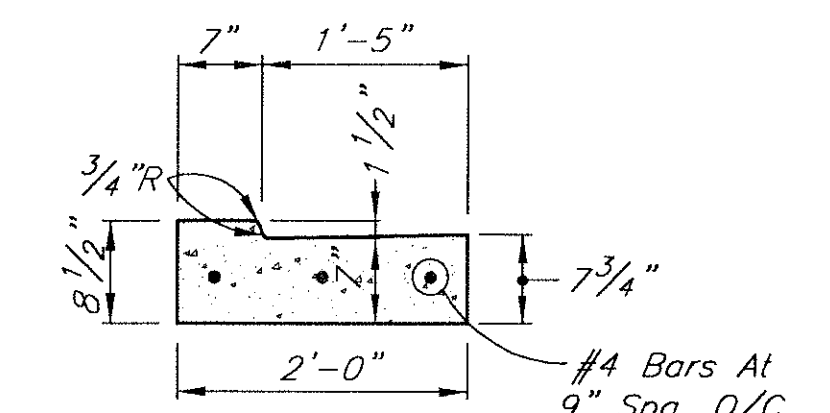
See Fayette County / Connersville Land Usage Ordinance, Section 152.09 (1) for Sidewalk Locations Requirements



**2' CONCRETE ROLL CURB & GUTTER**  
Scale: 3/4" = 1'-0"



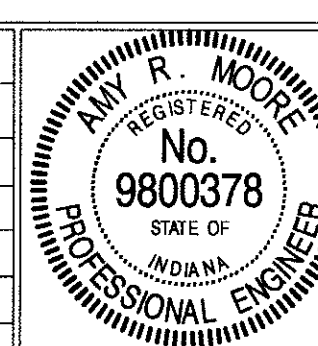
**2' COMBINED CONCRETE CURB & GUTTER**  
Scale: 3/4" = 1'-0"



**NOTE:**  
Reinforced Concrete Gutter Is Required At All Private Drives That Intersect An Urban Public Road With Type II 2' Combined Concrete Curb And Gutter Or Similar.

**REINFORCED CONCRETE GUTTER**  
Scale: 3/4" = 1'-0"

REVISIONS		
Rev. No.	Description	Date

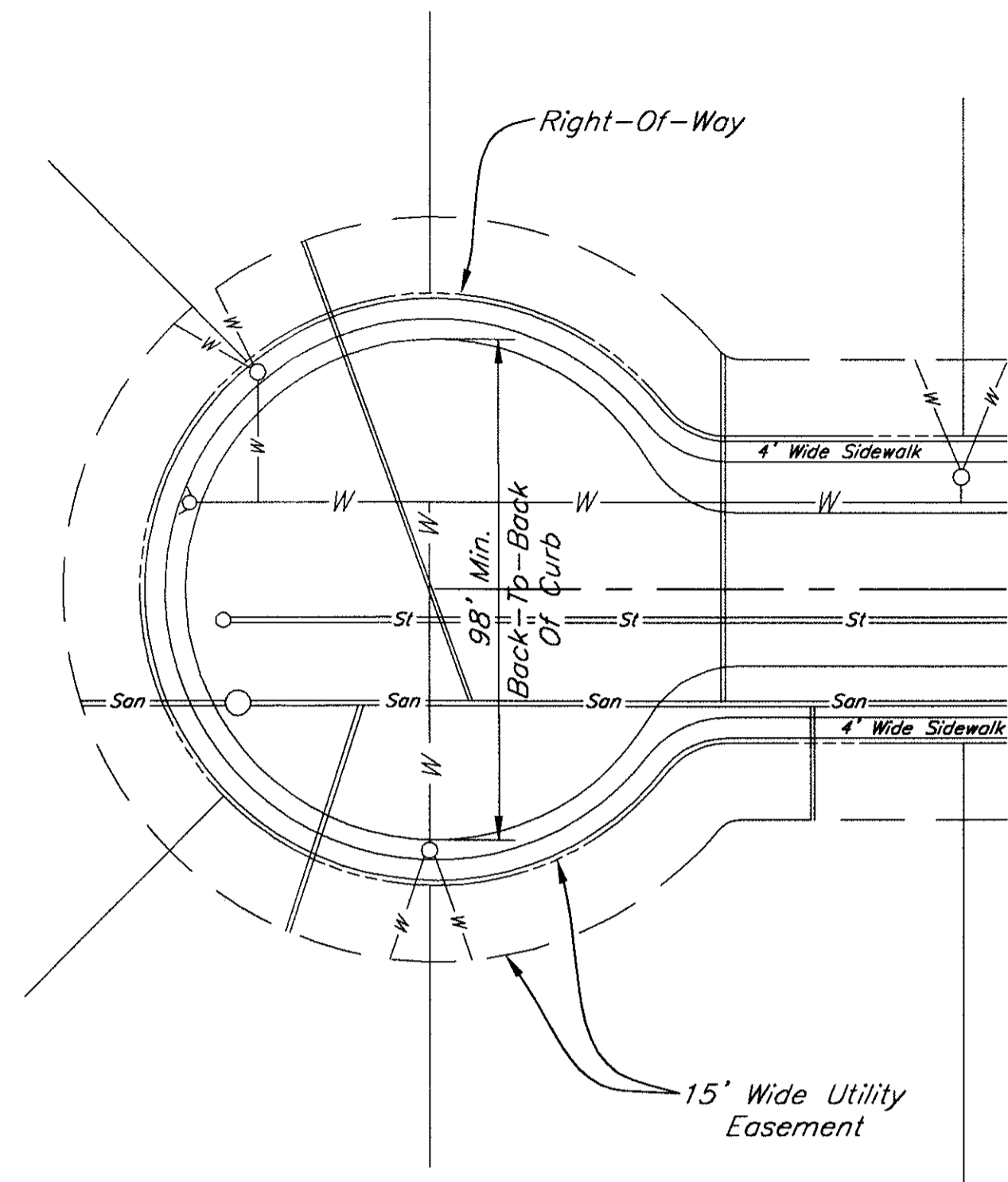


RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i> DESIGN ENGINEER	3/1/02 DATE
APPROVED	<i>Spavi P. Conwell</i> CONNERSVILLE BOARD OF PUBLIC WORKS AND SAFETY	DATE
APPROVED	<i>David Howard</i> FAYETTE COUNTY COMMISSIONERS	DATE

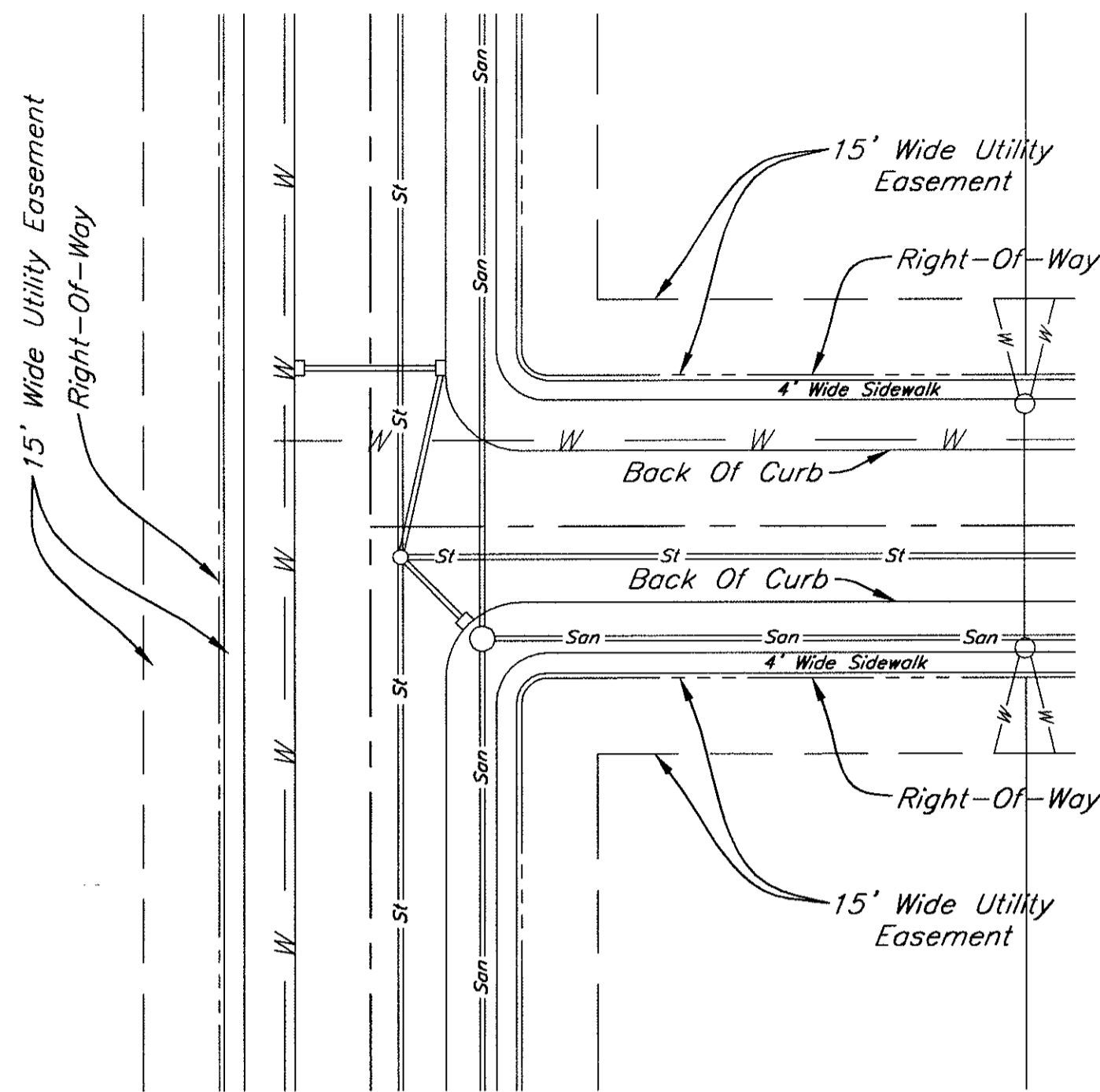
FAYETTE COUNTY &  
THE CITY OF CONNERSVILLE  
SIDEWALK, CURB AND HANDICAP  
RAMP DETAILS AND NOTES

SHEET  
6  
OF  
16

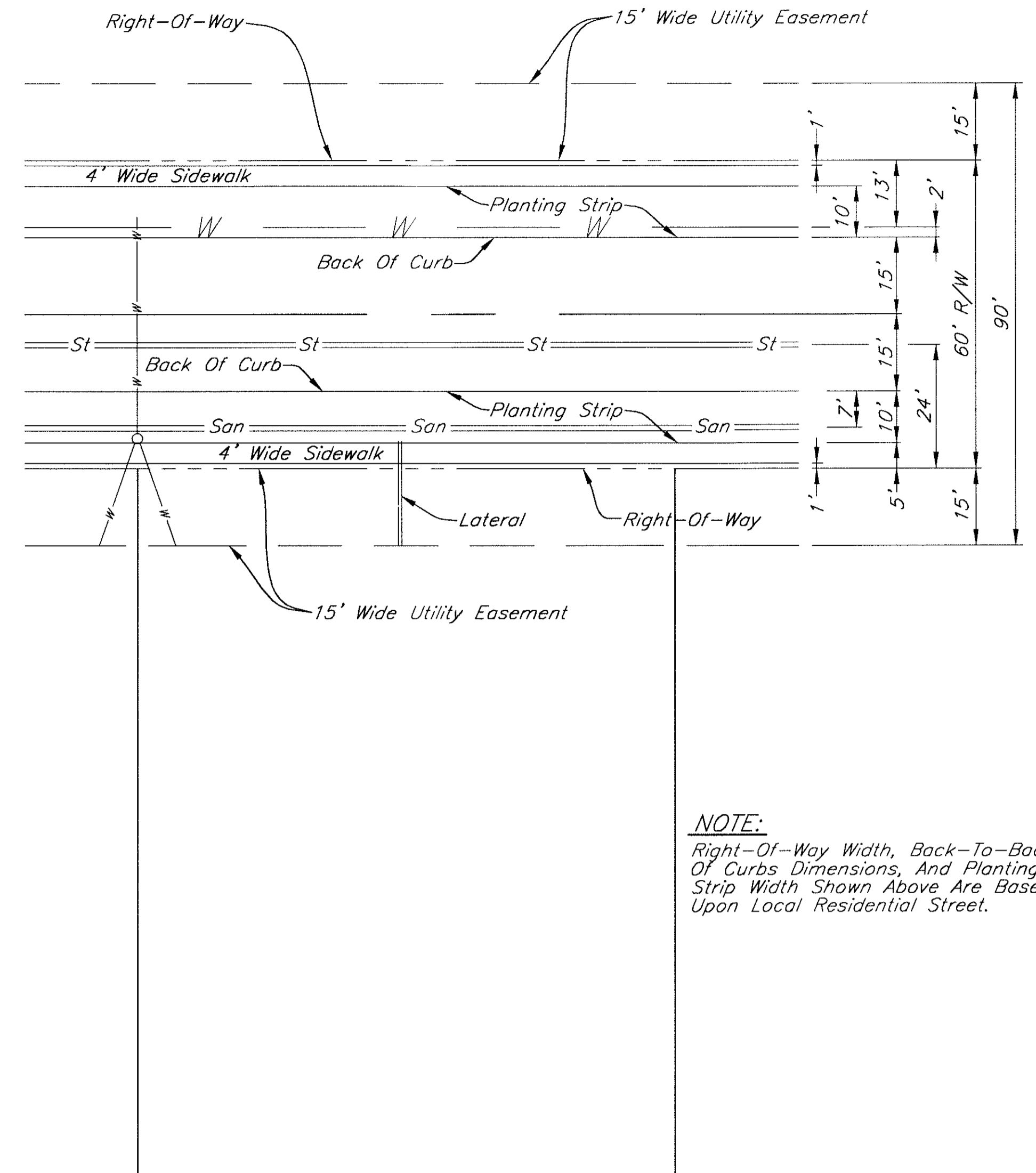
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**CUL-DE-SAC**  
Scale: 1"=30'



**T-INTERSECTION**  
Scale: 1"=30'

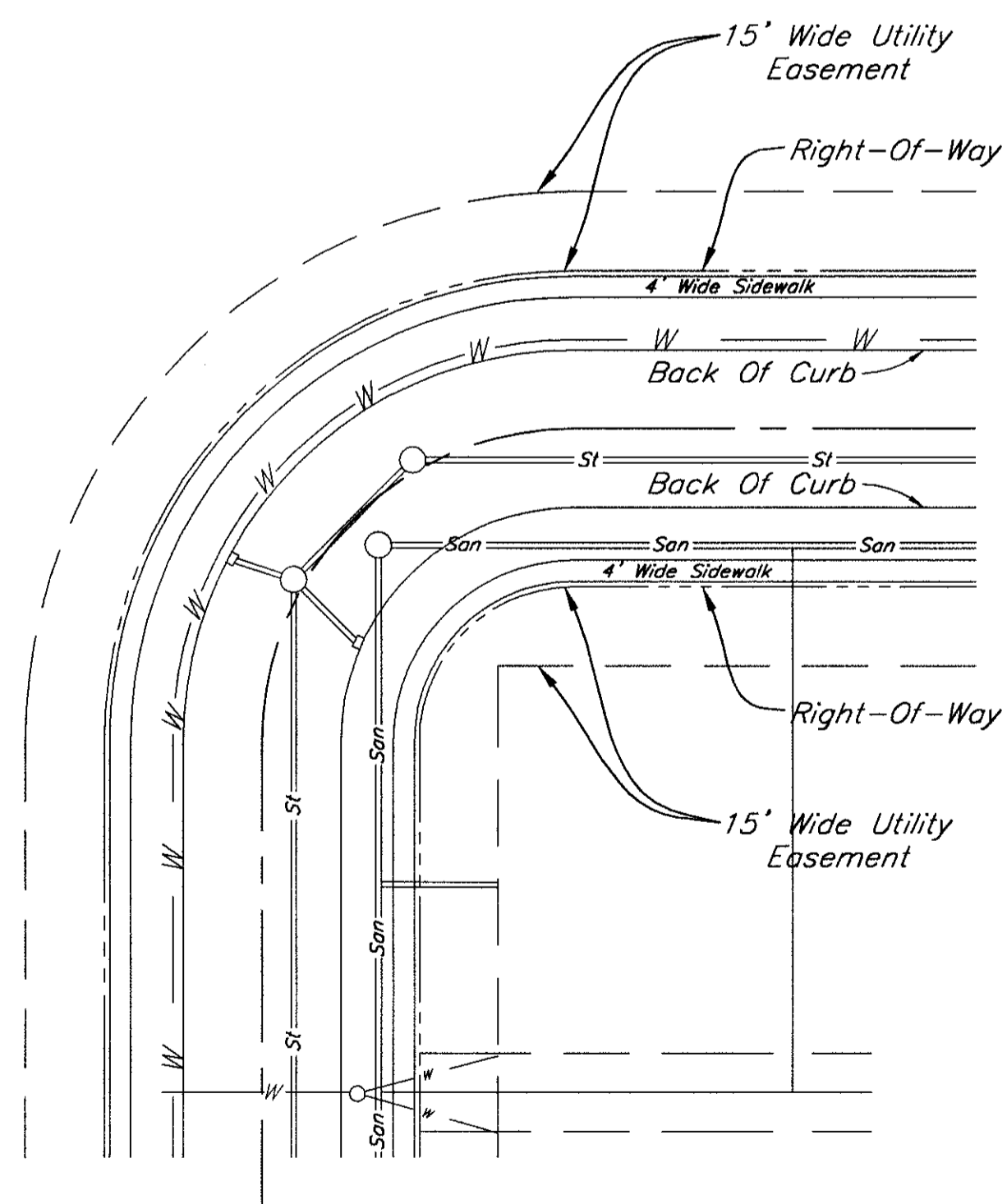


**TYPICAL LOT DETAIL**  
Scale: 1"=20'

**NOTE:**  
Right-Of-Way Width, Back-To-Back Of Curbs Dimensions, And Planting Strip Width Shown Above Are Based Upon Local Residential Street.

**GENERAL NOTES:**

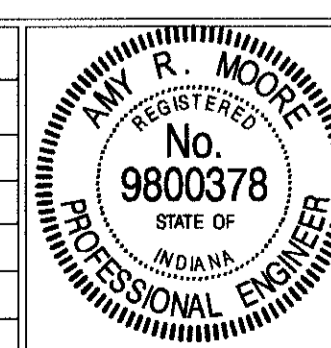
- 1.) The location of Proposed Utilities As Indicated Hereon Arer Based Upon The Experience Of Fayette County And The City Of Connorsville And Are So Indicated To Insure The Orderly Development Of The Land. Strict Adherence To The Indicated Location Is Required. Requests To Change The Location Of The Proposed Utilities Shall Be Submitted In Writing To The Utilities Manager. Utilities Not Meeting These Requirements Shall Be Removed And Replaced As Directed By The Utilities Manager.
- 2.) Utility Construction Standards (Sanitary Sewer And Water Mains) Are Available Under Separate Cover From The Fayette County Area Planning Office.



**HORIZONTAL CURVE**  
Scale: 1"=30'

**LEGEND**  
 W Water Main  
 St Storm Sewer  
 San Sanitary Sewer

REVISIONS		
Rev. No.	Description	Date

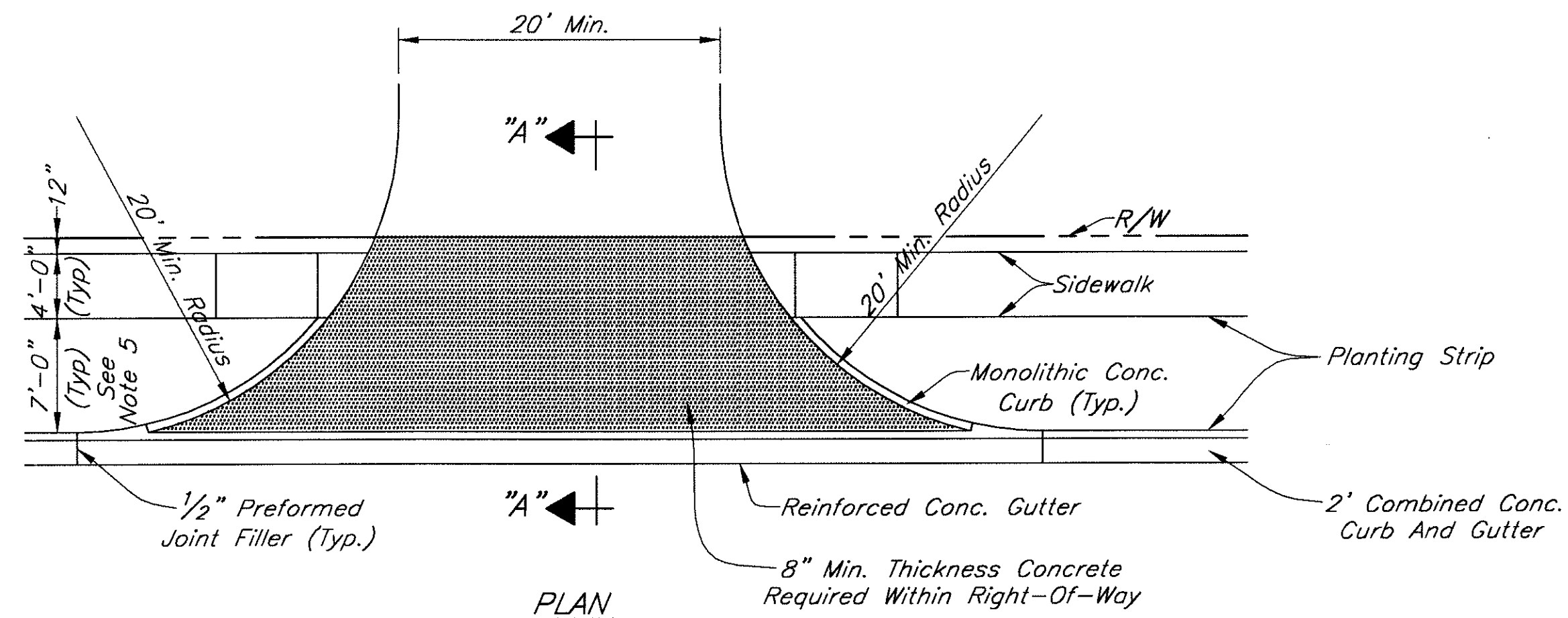
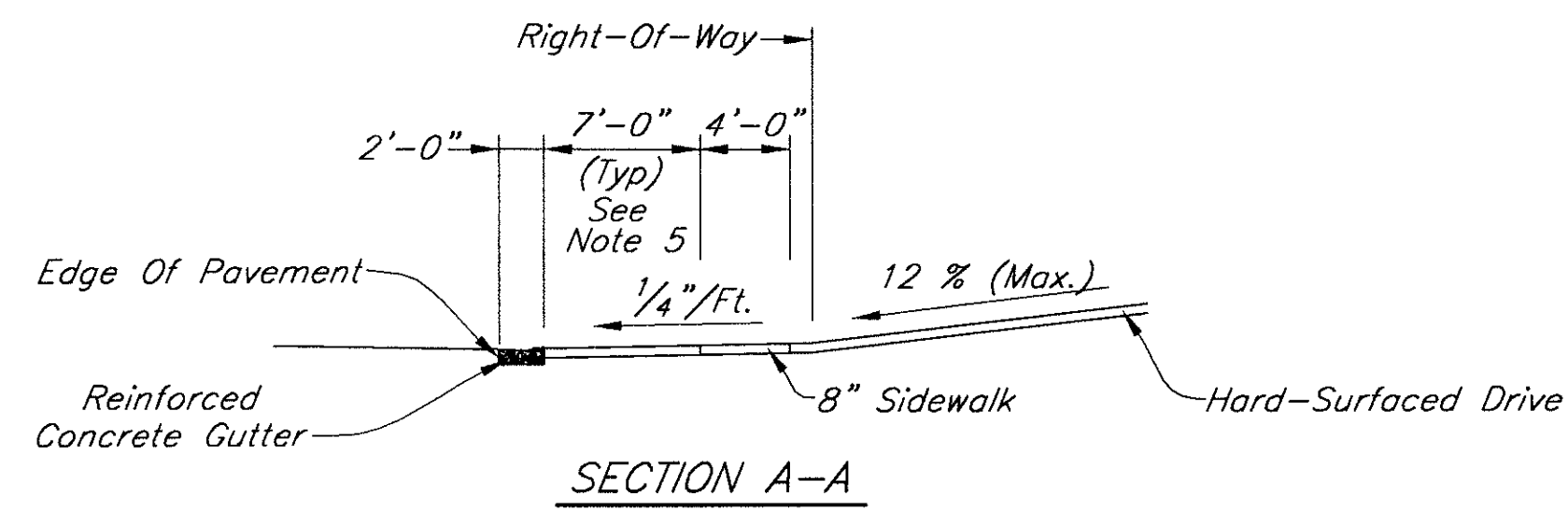


RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i> DESIGN ENGINEER	3/1/02 DATE
APPROVED	<i>Stephen P. Consett</i> CONNORSVILLE BOARD OF PUBLIC WORKS AND SAFETY	DATE
APPROVED	<i>Steve Havel</i> FAYETTE COUNTY COMMISSIONERS	DATE

FAYETTE COUNTY &  
THE CITY OF CONNORSVILLE

PLACEMENT OF UTILITIES

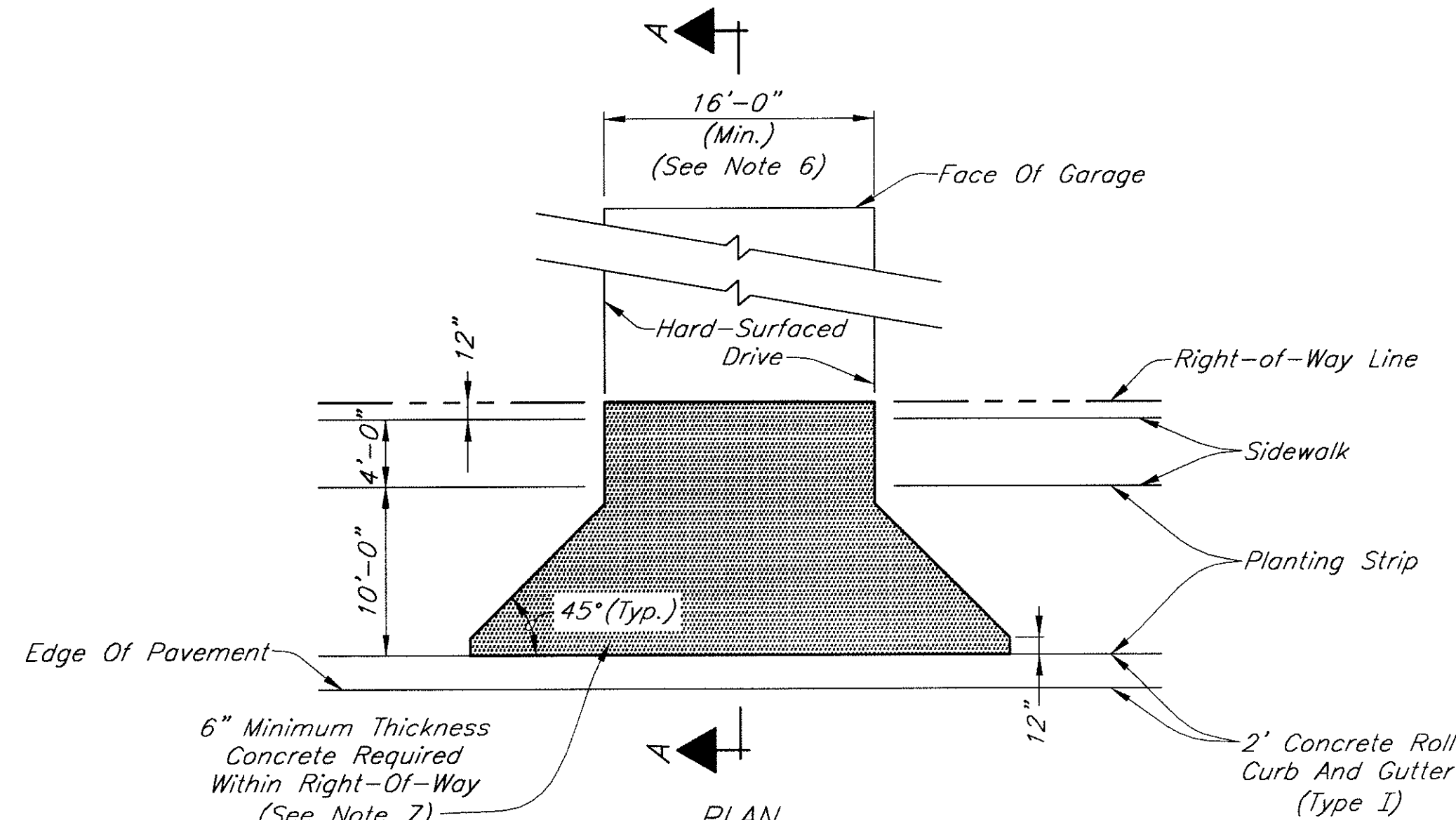
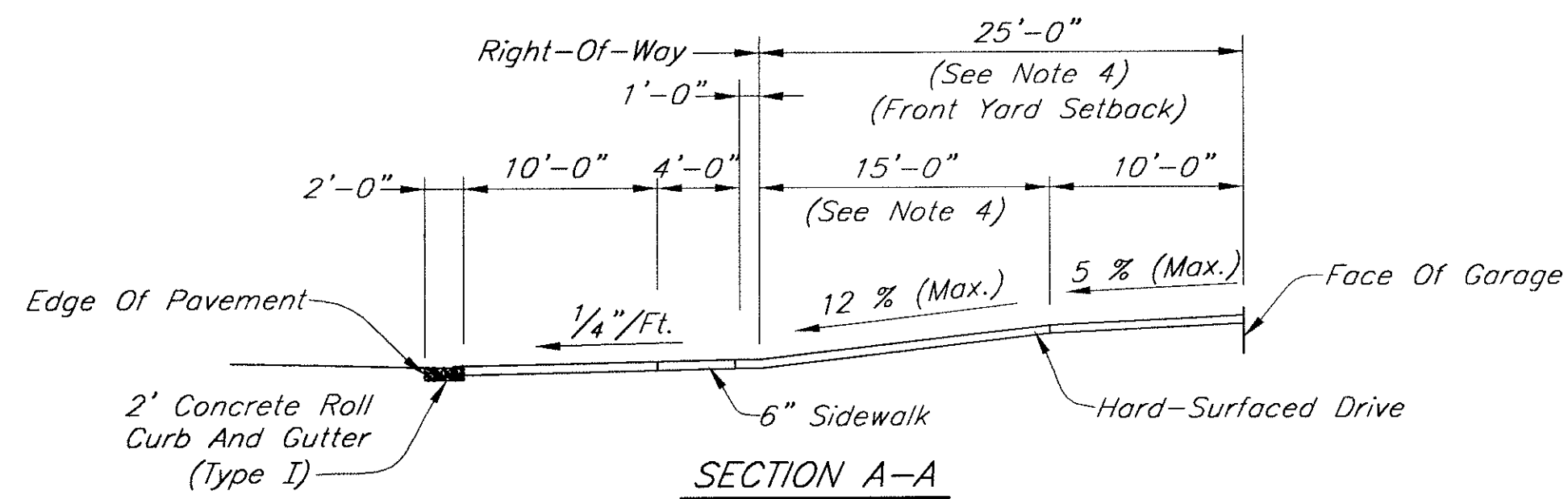
SHEET  
7  
OF  
16



**TYPICAL COMMERCIAL PRIVATE DRIVE**

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

- 1.) The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crest Vertical Curves, Nor 10% For Sag Vertical Curves.
- 2.) Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- 3.) Use Actual Setback As Shown On Plat And As Provided By The Fayette County Zoning Ordinance.
- 4.) The City Engineer Or County Surveyor May Approve Alternate Paving Materials.
- 5.) Use Actual Planting Strip Width As Shown On Plat And/Or As Provided By Sheet 2 Based Upon Classification Of Street.



**TYPICAL RESIDENTIAL SUBDIVISION PRIVATE DRIVE**

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

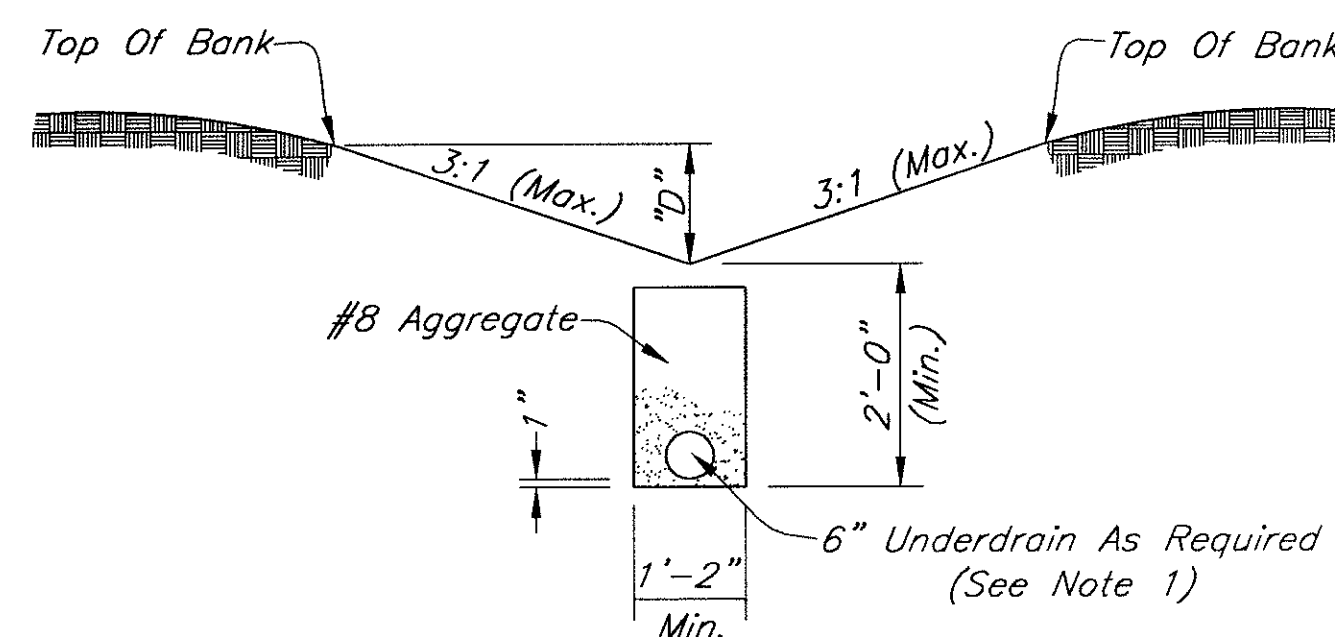
**RESIDENTIAL PRIVATE DRIVE NOTES**

- 1.) The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crest Vertical Curves, Nor 10% For Sag Vertical Curves.
- 2.) The Frontage Of All Lots Shall Drain To Adjacent Streets Except With The Prior Approval Of The City Engineer / Fayette County Surveyor.
- 3.) Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- 4.) Use Actual Setback As Shown On Plat And As Provided By The Fayette County Zoning Ordinance.
- 5.) City Engineer / Fayette County Surveyor May Approve Depressed Curb And Alternate Paving Materials.
- 6.) A Written Request For Variance May Be Submitted To The Fayette County Area Planning Department To Allow For A Reduction Of The 16' - 0" Minimum Private Drive Width. The Private Drive Shall Be Constructed As Shown Unless A Written Variance Is Issued By The Fayette County Area Planning Department.
- 7.) Where Residential Drive Construction Is Of Asphaltic Concrete, The Pavement Section Shall Consist Of 110#/Sys. H.A.C. Surface Over 440#/Sys. H.A.C. #8 Binder, Or Match Existing Roadway Pavement Section Thickness, Whichever Is Greater.

**SWALE REGULATIONS ON DEVELOPED LOTS**

- 1.) Swales shall not be constructed in front yards. The front portion of lots shall be graded toward the street and/or side yard lines.
- 2.) Swales shall be constructed with a minimum 0.5 percent profile grade provided that a 6-inch diameter underdrain is provided for swales with less than 1.0 - percent profile grade. See Detail on Sheet 11 of 16.
- 3.) Maximum swale depth "D" shall be in accordance with the following table:

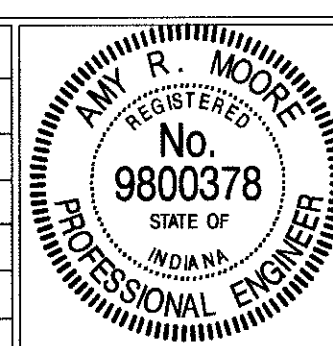
Lot Area (square feet)	Maximum Swale Depth "D" (inches)	Minimum Usable Rear Yard Depth (feet)
6000 - 8000	24	20
greater than 8000	36	25
greater than 10,000	48	30
- 4.) Minimum usable rear yard depth must lie between the furthest rear portion of the residence and the top of bank of the rear swale slope. The maximum slope in this area shall be 5.0 - percent.
- 5.) Swales must be graded with side slopes no steeper than 3H:1V and lay totally within the drainage easement limits.



**SWALE UNDERDRAIN DETAIL**

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

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i>	3/1/02
DESIGN ENGINEER		DATE
APPROVED	<i>Mari P. Conwell</i>	
CONNEVILLE BOARD OF PUBLIC WORKS & SAFETY		DATE
APPROVED	<i>Don Haxel</i>	
FAYETTE COUNTY COMMISSIONERS		DATE

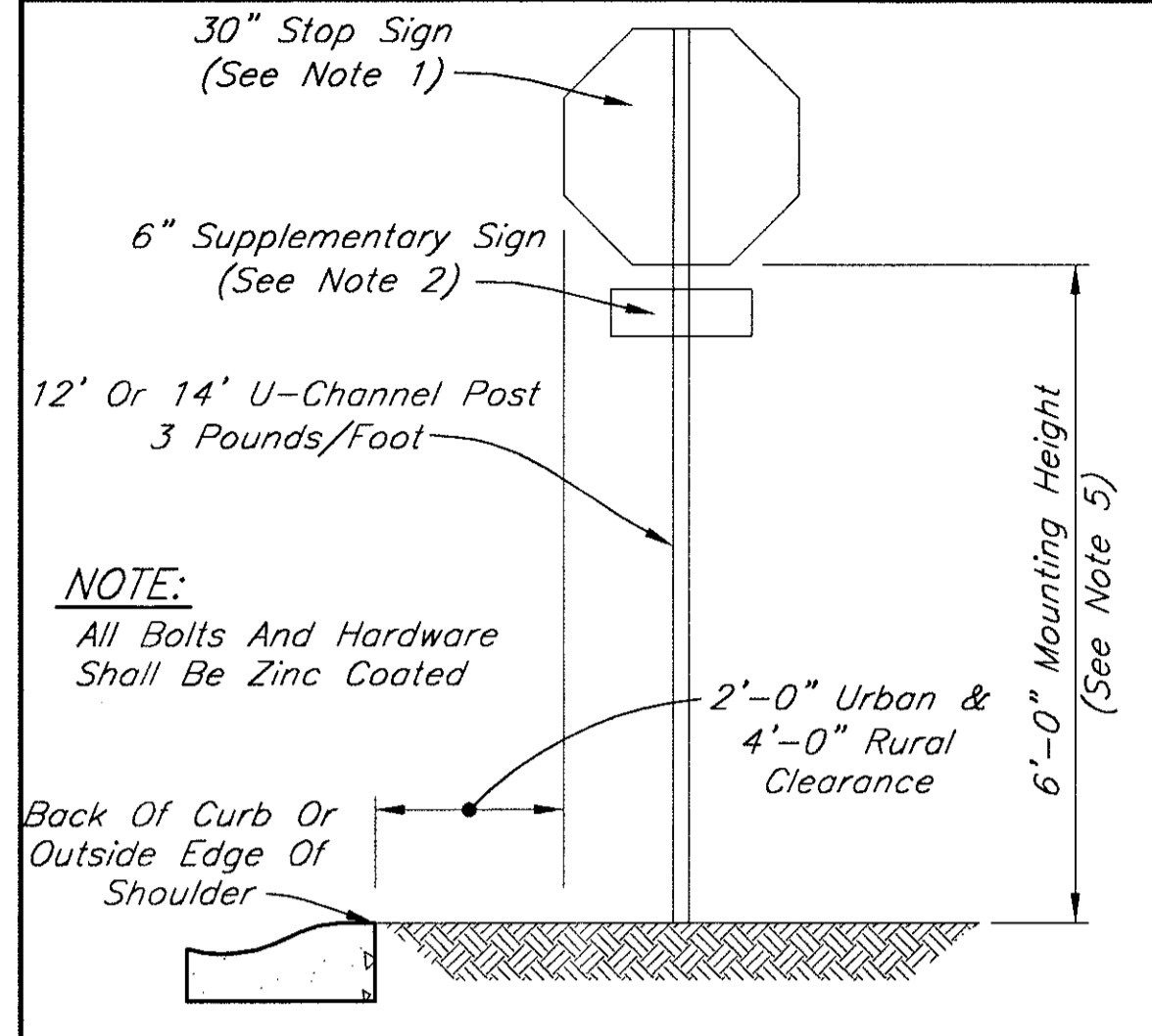
FAYETTE COUNTY &  
THE CITY OF CONNERSVILLE

URBAN PRIVATE DRIVE DETAILS  
& SUBDIVISION REAR SWALE DETAILS

SHEET  
8  
OF  
16

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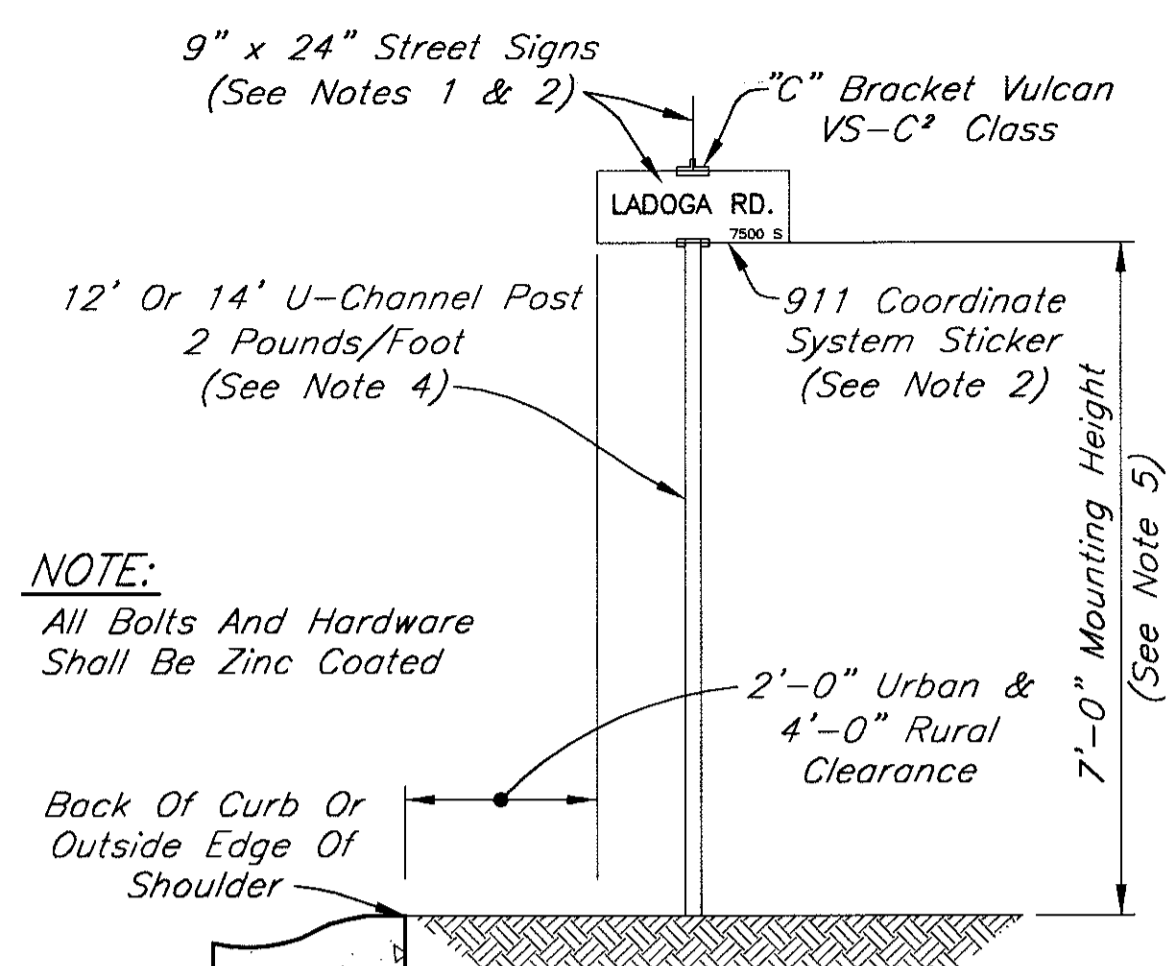




**TYPICAL STOP SIGN REQUIREMENTS**

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

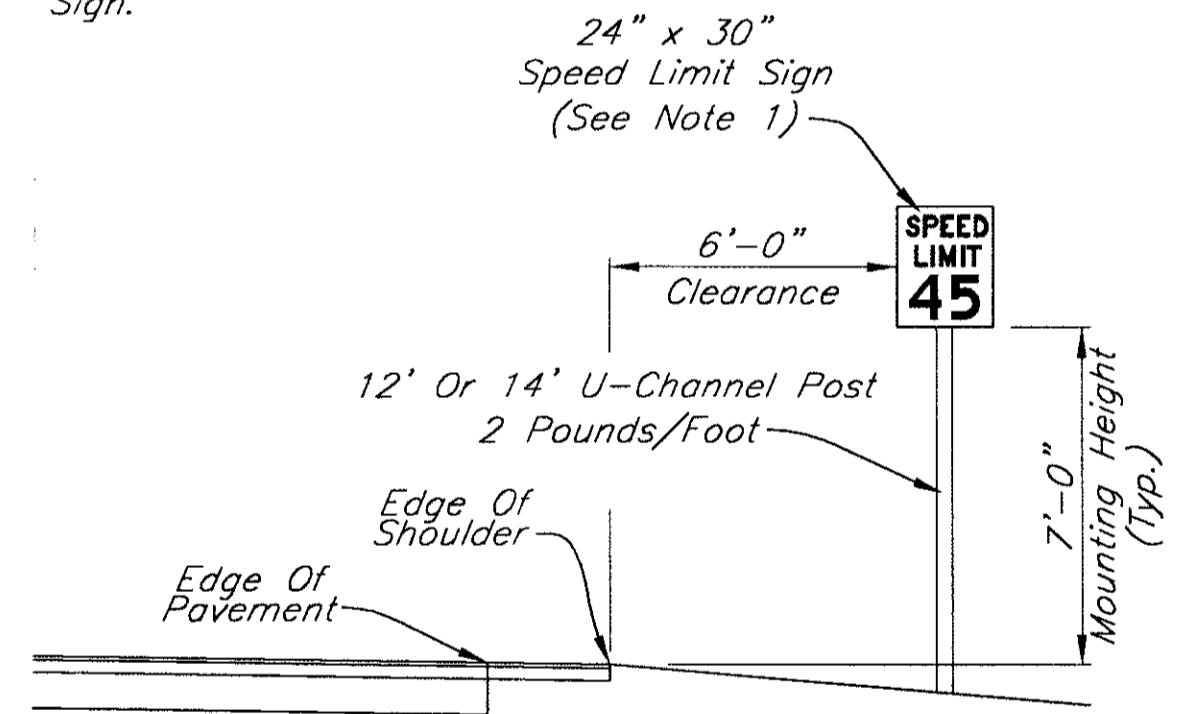
- 1.) Stop Sign Shall Be High Intensity And In Accordance With Most Recent Indiana Manual On Uniform Traffic Control Devices.
- 2.) A Multi-Way Stop Intersection Requires An "ALL WAY" Supplementary Sign 12" Wide By 6" Tall.
- 3.) Contractor Shall Supply And Install All Posts, Signs, Bolts And Hardware.
- 4.) A 24" Wide White Thermoplastic Stop Bar Shall Extend Across Approach Lane. Stop Bar Shall Be Placed Directly Adjacent To Stop Sign. Both Stop Sign And Stop Bar Shall Be Located Such That A Minimum 200 Feet Perpendicular Sight Distance Is Maintained At All Times. Greater Sight Distances May Be Required By The Fayette County Commissioners/Connersville City Engineer.
- 5.) At Rural Road Locations, Mounting Height Shall Be Measured From Pavement Edge To Bottom Of Regulatory Sign.



**TYPICAL STREET SIGN REQUIREMENTS**

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

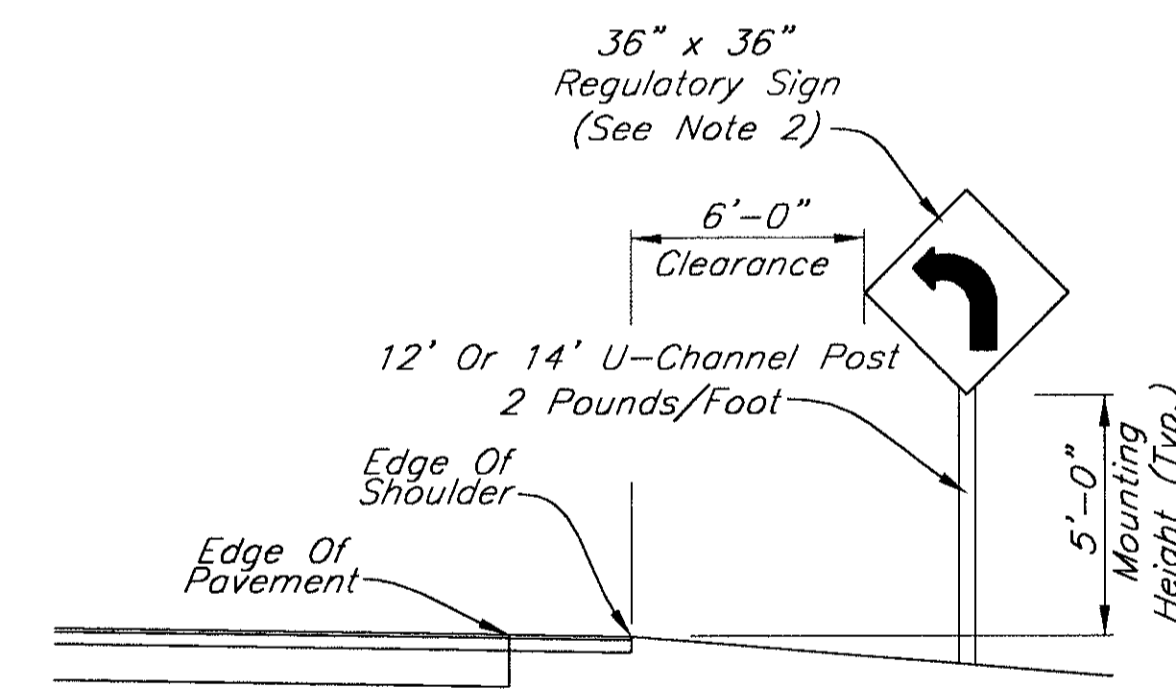
- 1.) Streets Shall Be Signed At Non-Signalized Intersections With Two Such Street Sign Assemblies Typically Required.
- 2.) Street Signs Shall Be 9" x 24" Tall Extruded Aluminum (6063-16) Green Background 3M Scotchlite 1177 Or Equal With 6" Tall White Letters 3M Scotchlite White 3870 Or Equal.
- 3.) Contractor Shall Supply And Install All Posts, Signs, Bolts And Hardware.
- 4.) Street Signs, Shall Be Mounted On 12' Or 14' U-Channel Posts (2 Pounds/Foot).
- 5.) At Rural Road Intersections, Mounting Height Shall Be Measured From Pavement Edge To Bottom Of Regulatory Sign.



**TYPICAL SPEED LIMIT SIGN REQUIREMENT**

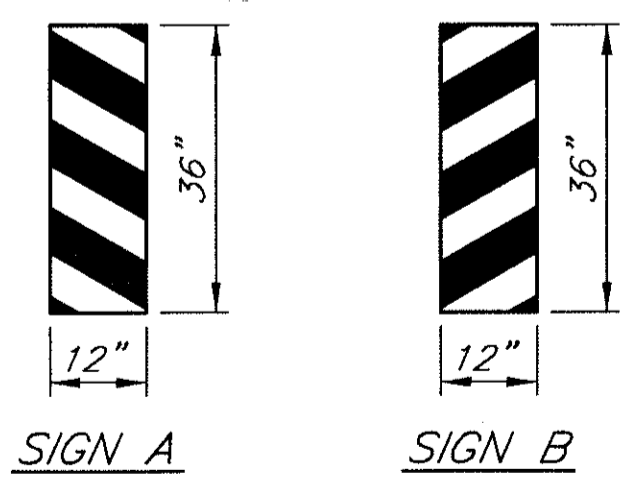
Scale: 1/4"=1'-0"

- 1.) Speed Limit Sign Shall Be High Intensity And In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices. Consult The Fayette County Commissioners/Connersville City Engineer For Speed Limit Of Each Road.
- 2.) Regulatory Signs Shall Be 36" By 36" In Size And In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices.
- 3.) At Rural Road Locations, Mounting Height Shall Be Measured From Pavement Edge To Bottom Of Regulatory Sign.
- 4.) Contractor Shall Supply And Install All Posts, Signs, Bolts And Hardware.
- 5.) Location Of Speed Limit Signs Shall Be Approved By The Fayette County Commissioners/Connersville City Engineer.



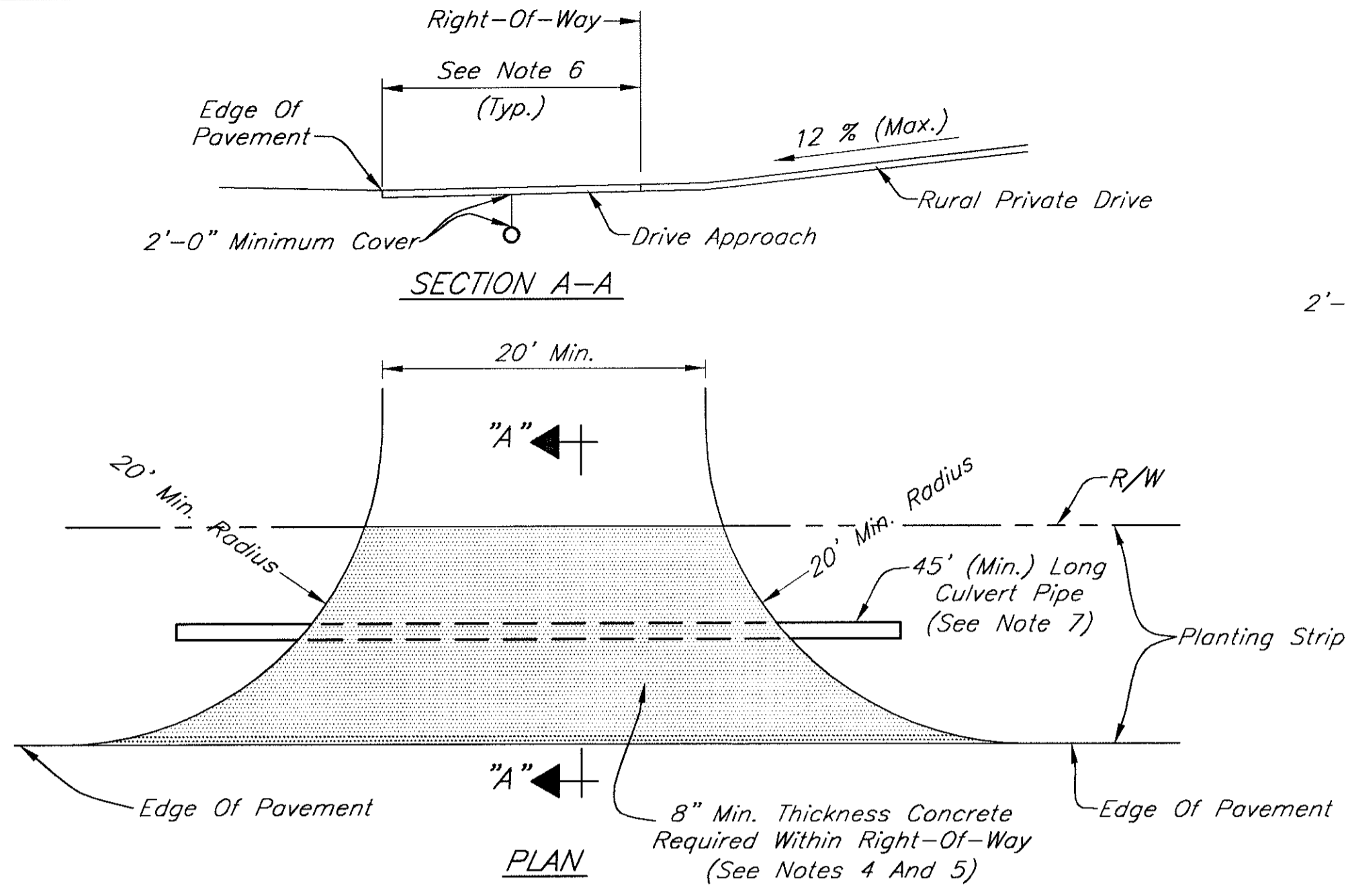
**TYPICAL REGULATORY SIGN REQUIREMENTS**

Scale: none



**TYPICAL TYPE 3 OBJECT MARKERS**

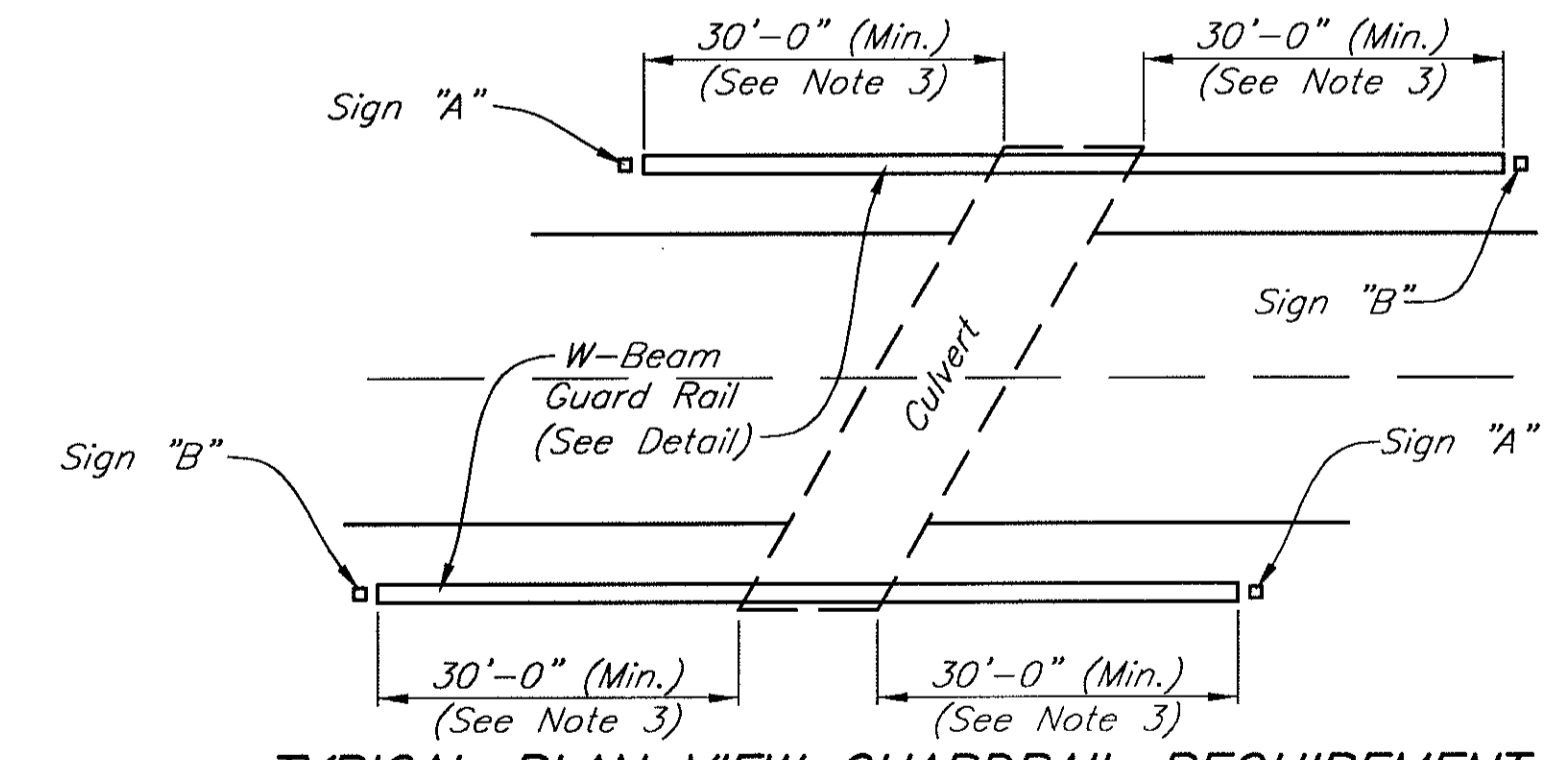
Scale: 1/2"=1'-0"



**TYPICAL RURAL COMMERCIAL PRIVATE DRIVE**

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

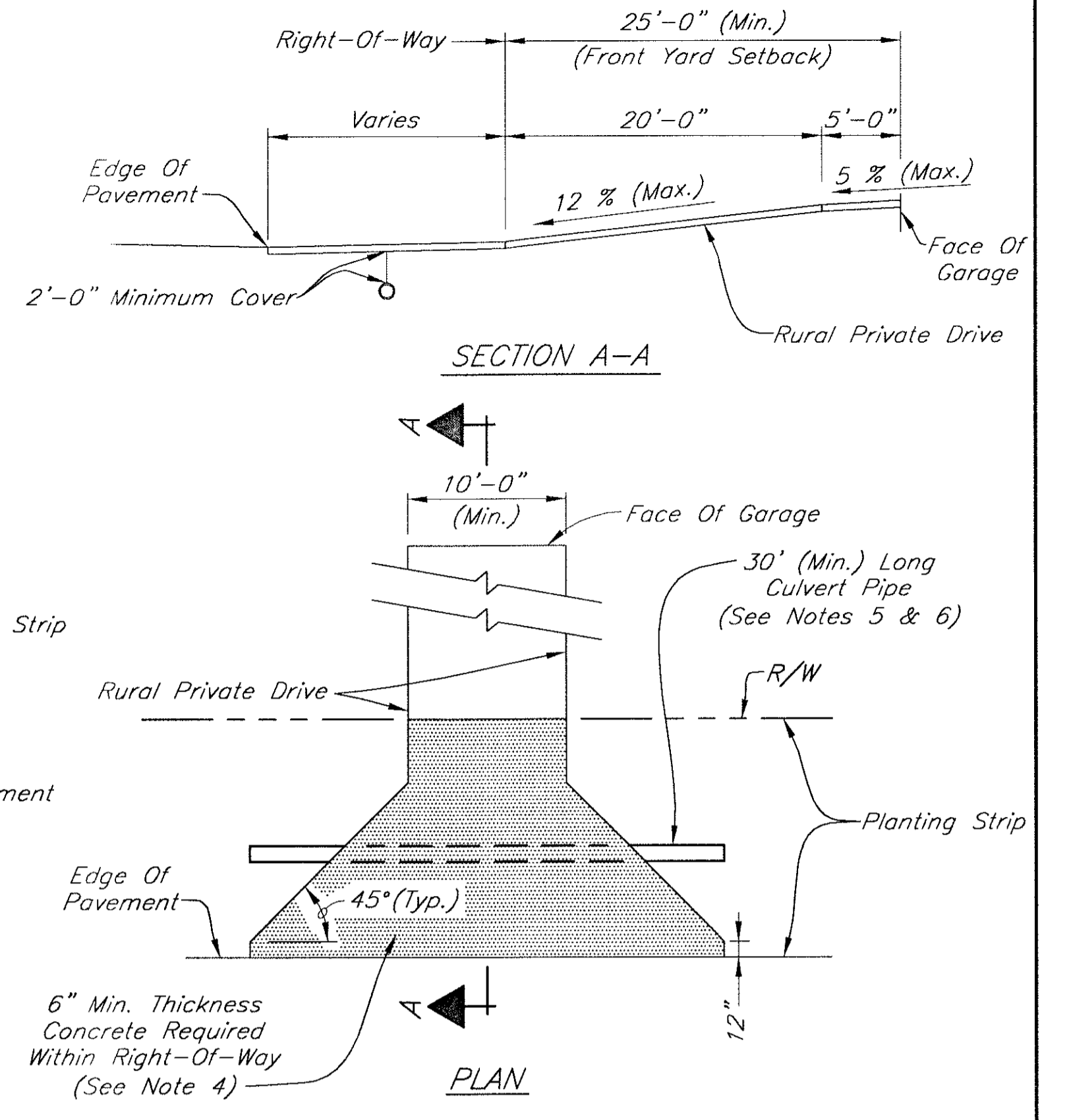
- 1.) The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crest Vertical Curves, Nor 10% For Sag Vertical Curves.
- 2.) Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- 3.) The Fayette County Area Planning Department Shall Be Contacted For Actual Setback Distance Requirements.
- 4.) Where A New Commercial Drive Is Asphaltic Concrete And Connected To An Existing Street/Roadway, The Pavement Section Shall Consist Of Either 110#/Sys. H.A.C. Surface Over 330#/Sys. H.A.C. Binder #8 Over 440#/Sys. H.A.C. Base #5 Over 440#/Sys. H.A.C. Base #5D Or 110#/Sys. H.A.C. Surface Over 330#/Sys. H.A.C. Binder #8 Over 440#/Sys. Of Base #5D Over 8" Of Compacted Aggregate Base #53, Or 110#/Sys. H.A.C. Surface Over 7" Of Concrete, Or Match Existing Commercial Driveway Pavement Section Thickness, Whichever Is Greater.
- 5.) Where A New Commercial Drive Is To Be Connected To A New Street/Roadway, The Commercial Drive Pavement Section Shall Match The Street/Roadway Pavement Section Within The Right-Of-Way.
- 6.) For Planting Strip Width, Refer To Typical Right-Of-Way Sections Shown On Sheet 3.
- 7.) Reinforced Concrete Pipe Shall Comply With Requirements Shown On Sheet 10. Culvert Pipe Size Shall Be Supported By Runoff Rates Calculated By Design Engineer And Approved By The Fayette County Drainage Board.



**TYPICAL PLAN VIEW GUARDRAIL REQUIREMENT**

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

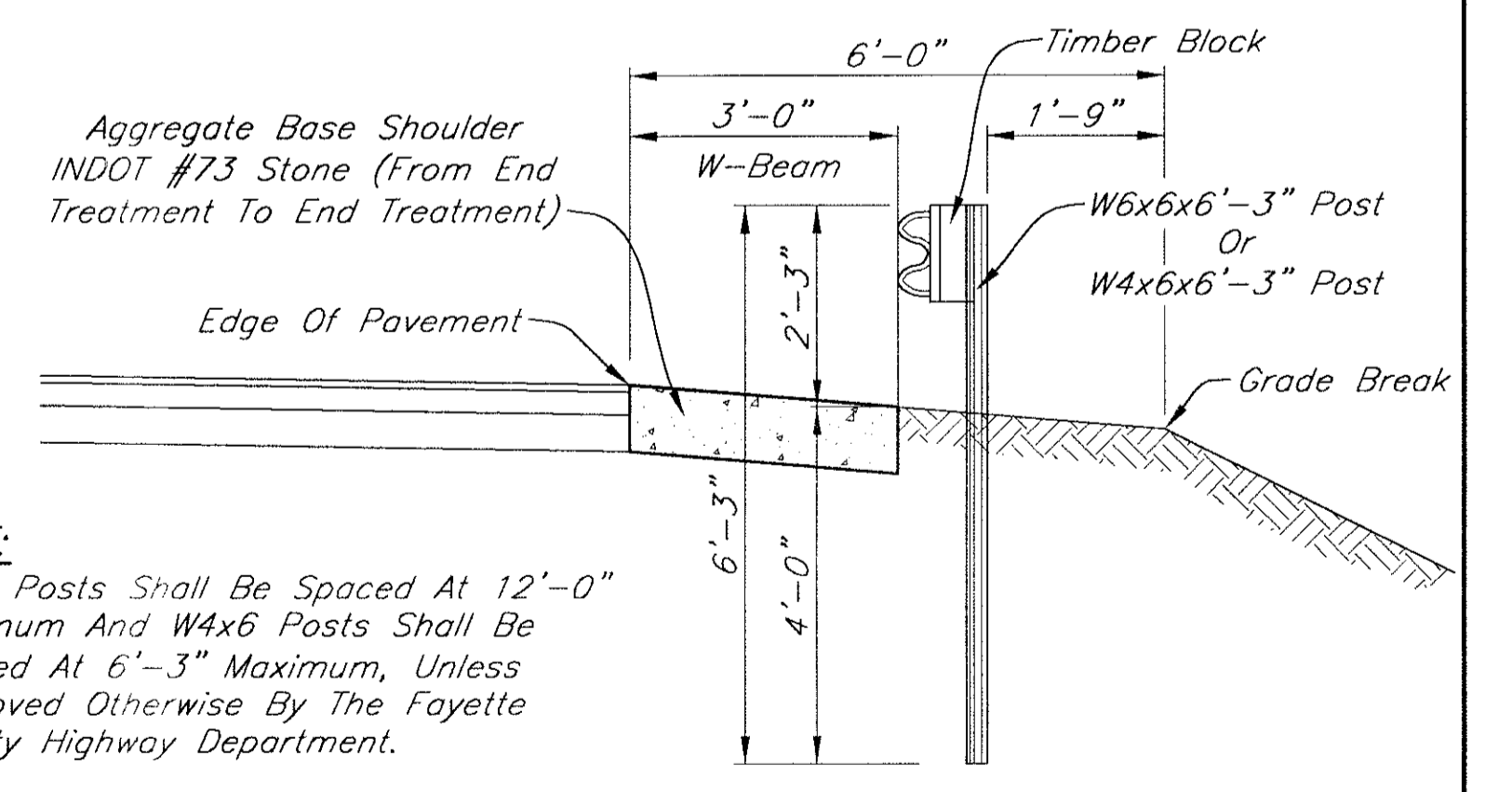
- 1.) Guard Rail End Treatment Shall Consist Of Setting Posts In Concrete To A Depth Of 4'-9". Interim Posts Need Not Be Set In Concrete.
- 2.) Sign A And Sign B Shall Be Yellow And Black High Intensity And In Accordance With The Most Recent Indiana Manual On Uniform Traffic Control Devices, Typical Type 3 Object Markers.
- 3.) Length Of Guardrail May Vary. Contractor Shall Contact The Fayette County Highway Department For The Required Guardrail Length.



**TYPICAL RURAL RESIDENTIAL PRIVATE DRIVE**

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

- 1.) The Maximum Algebraic Difference In Grades For Any 10 Foot Interval Shall Not Exceed 8% For Crest Vertical Curves, Nor 10% For Sag Vertical Curves.
- 2.) The Frontage Of All Lots Shall Drain To Adjacent Streets Except With The Prior Written Approval Of The Fayette County Surveyor.
- 3.) Concrete Drives Require Control Joints At A Maximum Of Every 10 Feet Each Way.
- 4.) Where Residential Drive Construction Is Of Asphaltic Concrete, The Pavement Section Shall Consist Of 110#/Sys. H.A.C. Surface Over 660#/Sys. H.A.C. #5D Base, Or Match Existing Driveway Pavement Section Thickness, Which Ever Is Greater.
- 5.) Culvert Pipe Length May Be Reduced To 24' Length If Concrete Headwalls Are Used.
- 6.) Reinforced Concrete Pipe Or 16 Gauge CMP Shall Comply With Requirements Shown On Sheet 10. Culvert Pipe Size Shall Be Supported By Runoff Rates Calculated By Design Engineer And Approved By The Fayette County Drainage Board.

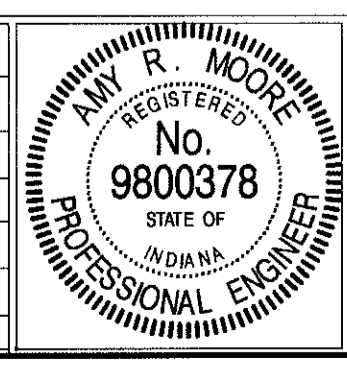


**GUARD RAIL W-BEAM DETAIL**

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

- NOTE:**
- 1.) W6x6 Posts Shall Be Spaced At 12'-0" Maximum And W4x6 Posts Shall Be Spaced At 6'-3" Maximum, Unless Approved Otherwise By The Fayette County Highway Department.

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL: *Amy R. Moore*, DESIGN ENGINEER, 3/1/02 DATE

APPROVED: *Mami P. Connell*, CONNERSVILLE BOARD OF PUBLIC WORKS & SAFETY, DATE

APPROVED: *Greg Howard*, FAYETTE COUNTY COMMISSIONER, DATE

FAYETTE COUNTY & THE CITY OF CONNERSVILLE

RURAL PRIVATE DRIVES, GUARDRAIL DETAILS, TYPICAL SIGNAGE PLACEMENT

SHEET 9 OF 16

12-11-01 AT 0657  
 17561 AUTOCAD LAYOUT (PLOT) 17561.dwg  
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## STORM SEWER PIPE METHODS AND MATERIALS

### STORM SEWER GENERAL NOTES

- 1.) Additional Pipe Materials Meeting INDOT Specifications, Latest Edition, Shall Be Allowable If Found In 1999 Specification Sections 907.08, or 907.23. Storm Sewer Pipe Of Other Material Or Material Not Meeting These Specifications Shall Require The Prior Written Approval Of The Fayette County Surveyor.
- 2.) The Contractor Shall Submit Information To The Fayette County Surveyor Showing Conformance With These Specifications Upon Request.
- 3.) Contractor Shall Allow The Fayette County Surveyor The Opportunity To Inspect The Installation Of The Pipe And Bedding Material Prior To Proceeding With Backfilling An Open Trench. The Fayette County Surveyor Shall Be Given 48 Hours Notice Of The Contractor's Intent To Install Storm Sewer Piping And Structures.
- 4.) The Smallest Permissible Storm Sewer Pipe Diameter Is 12 Inches.
- 5.) Drawings And Calculations For Runoff, Retention And Discharge Rates Shall Be Provided To The Fayette County Surveyor For Drainage Review By The Fayette County Drainage Board. Drawings And Calculations Shall Be Certified By Either A Registered Professional Engineer Or A Registered Land Surveyor.
- 6.) All Projects With Storm Sewer Systems Must Be Approved By The Fayette County Drainage Board, As Indicated By Signature.
- 7.) As-Built Drawings Shall Be Submitted To The Fayette County Surveyor For His Records, In Both Paper And Electronic Format. An Acceptable Form Of Electronic Format Is Autocad-Release 14. Contractor Shall Submit As-Built Drawings Within 30 Days Of Successful Completion Of All Testing Requirements.
- 8.) Prior To Construction, Detailed Erosion Control Drawings Shall Be Submitted To The Fayette County Area Plan Commission. Said Drawings Shall Clearly Illustrate The Location Of All Erosion Control Measures. Erosion Control Measures Shall Be Used To Protect Natural Waterways And Storm Sewer Collection Systems From Sediment And Foreign Debris. No Work Permitted Without Written Approval Of An Erosion Control Plan.

### STORM SEWER REINFORCED CONCRETE PIPE

- 1.) Reinforced Concrete Pipe Shall Be Class III, IV, Or V As Specified In ASTM C-76.

DEPTH OF FILL OVER PIPE	CLASS
2 Feet Or Less	V
Between 2 Feet And 10 Feet	III
Between 10 Feet And 16 Feet	IV
16 Feet Or Greater	V

- 2.) Reinforced Elliptical Concrete Pipe Shall Be Class HE-III Or HE-IV As Specified In ASTM C-507.

DEPTH OF FILL OVER PIPE	CLASS
3 Feet Or Less	HE-IV
Between 3 Feet And 8 Feet	HE-III

## STORM DRAINAGE CULVERT PIPE METHODS AND MATERIALS

### CULVERT GENERAL NOTES

- 1.) Culvert Pipe Materials Meeting INDOT Specifications, Latest Edition, Shall Be Allowable If Found In 1999 Specification Sections 907.19 (HDPE), 907.23 (PVC), or 908.04 (Aluminized Corrugated Metal Pipe). Culvert Pipe Made Of Other Material Or Material Not Meeting These Specifications Shall Require The Prior Written Approval Of The Fayette County Surveyor.
- 2.) The Contractor Shall Submit Information To The Fayette County Surveyor Showing Conformance With These Specifications Upon Request.
- 3.) Fittings And Specialties Shall Be In Accordance With The Specifications For The Type Of Pipe Being Used.
- 4.) Drawings And Calculations For Runoff, Retention And Discharge Rates Shall Be Provided To The Fayette County Surveyor For Drainage Review By The Fayette County Drainage Board. Drawings And Calculations Shall Be Certified By Either A Registered Professional Engineer Or A Registered Land Surveyor.
- 5.) A Second Storm Culvert Pipe Shall Be Installed, When Required By The Fayette County Surveyor.
- 3.) HDPE And PVC Pipe For Culverts Shall Comply With Requirements Listed Above For Storm Sewer Pipe.

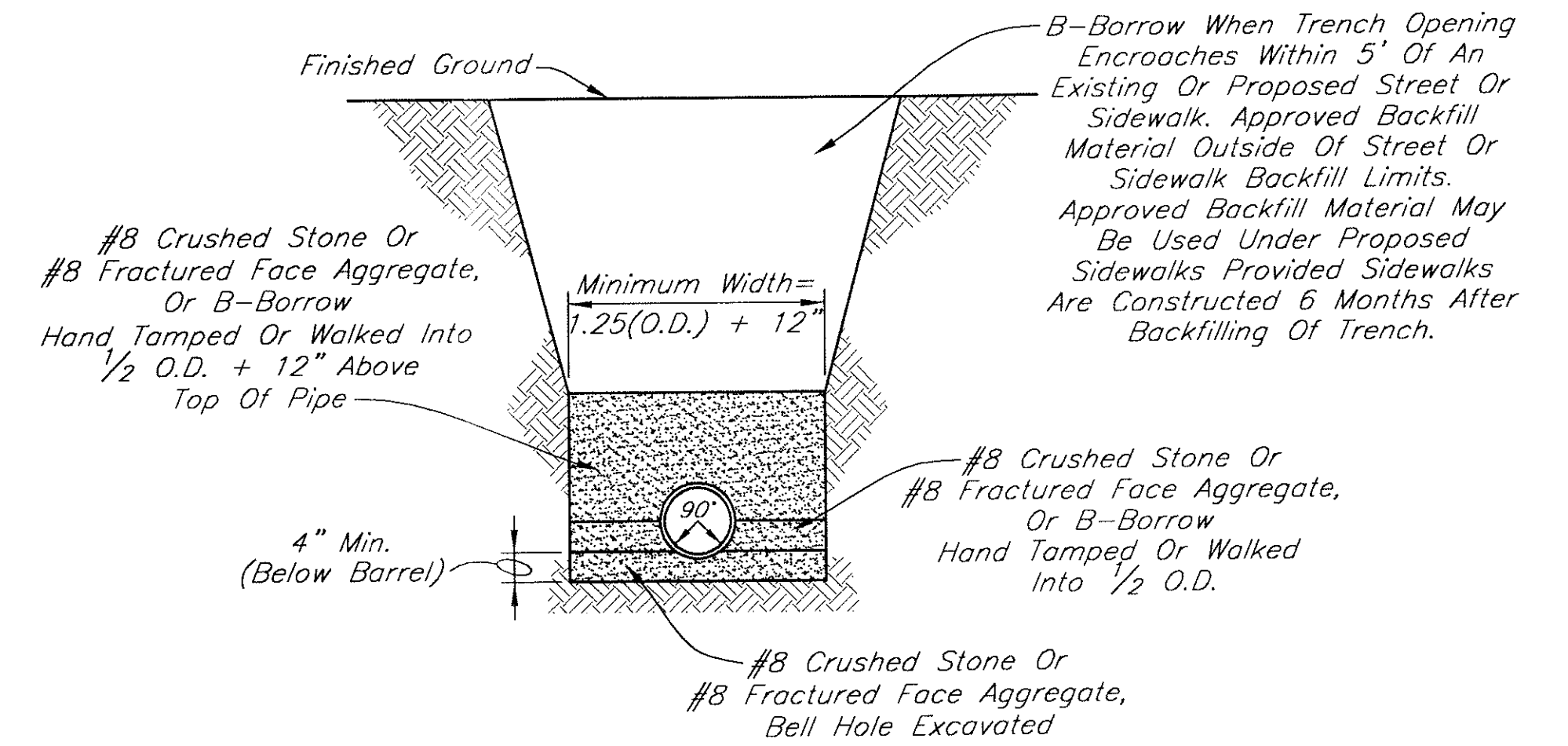
- 3.) Lift Holes Are Not Allowed For Pipe Less Than 24 Inches In Diameter. A Maximum Of Two Lift Holes Are Allowed For Pipe 24 Inches In Diameter Or Larger. Lift Holes Shall Be Repaired In Accordance With The Most Recent INDOT Standard Specification.
- 4.) Each Pipe Section Shall Be Marked With Date Of Manufacturer, Size And Class Of Pipe, Specification Designation, Manufacturer And Plant Identification.
- 5.) Pipe Shall Be Furnished With A Bell Or Groove On One End Of A Unit Of Pipe And A Spigot Or Tongue On The Adjacent End Of The Adjoining Pipe. All Joints Shall Have A Groove On The Spigot For Placement Of A Rubber "O"-Ring Or Profile Gasket In Accordance With ASTM C-443. The Gasket Shall Be A Continuous Ring Which Fits Snugly Into The Annular Space Between The Overlapping Surfaces Of The Assembled Pipe Joint.

### STORM SEWER HIGH DENSITY POLYETHYLENE (H.D.P.E.) CORRUGATED PIPE

- 1.) Requirements For Test Methods, Dimensions And Markings Are Those Found In A.A.S.H.T.O. Specifications M-252 And M-294.
- 2.) Pipe And Fittings Shall Be Made Of Polyethylene Compounds Which Meet Or Exceed The Requirements Of Type III, Category 4 Or 5, Grade P33 Or P34, Class C Per ASTM D-1248.
- 3.) Minimum Pipe Stiffness Values Shall Be In Accordance With A.A.S.H.T.O. Specifications M-294.
- 4.) The H.D.P.E. Corrugated Pipe Shall Have An Integrally Formed Smooth Interior.
- 5.) Male And Female Pipe Ends Which Allow The Construction Of Overlapping, Gasket Joints, Shall Be Made In Conformance With ASTM D-3212. Neoprene Gaskets Shall Meet ASTM F-477.
- 6.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.
- 7.) H.D.P.E. Pipe Greater Than 36 Inches In Diameter Shall Not Be Allowed For Use In The Fayette County, Without Written Approval From The Fayette County Surveyor.

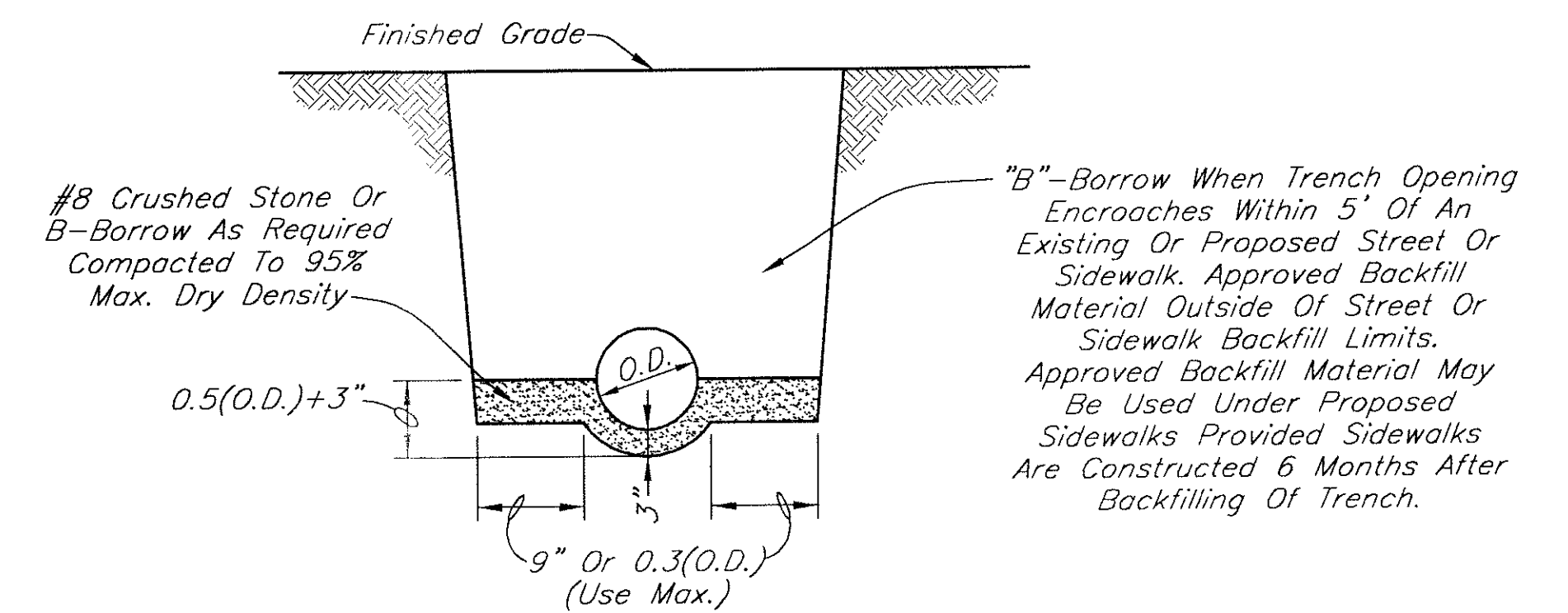
### STORM SEWER H.D.P.E. & P.V.C. DEFLECTION TESTING

- 1.) The Fayette Surveyor Shall Be Given A 48 Hour Written Notice Of The Required Deflection Testing Procedure To Be Performed By The Contractor. An In-Place Deflection Test Shall Be Performed On All Flexible Storm Sewer Pipe Installed Within Fayette County With Manholes At End Of The Pipe Run. An Allowable Deflection Of 5 Percent Internal Pipe Diameter Will Be Acceptable After Backfilling Has Been In Place For 30 Days. A Nine-Point, "Go-No-Go" Mandrel Shall Be Used For The Deflection Test. A Proving Ring Shall Be Provided For Each Mandrel.
- 2.) All Pipe Exceeding The Allowable Deflection Shall Be Replaced Or Rerounded. The Replaced Or Rerounded Section Shall Be Retested 30 Days After Replacement Or Rerounding. The Contractor Shall Bear All Costs For Testing And Testing Equipment. The "Go-No-Go" Mandrel Shall Be Manually Pulled Without The Use Of Any Winching Or Other Mechanical Device.



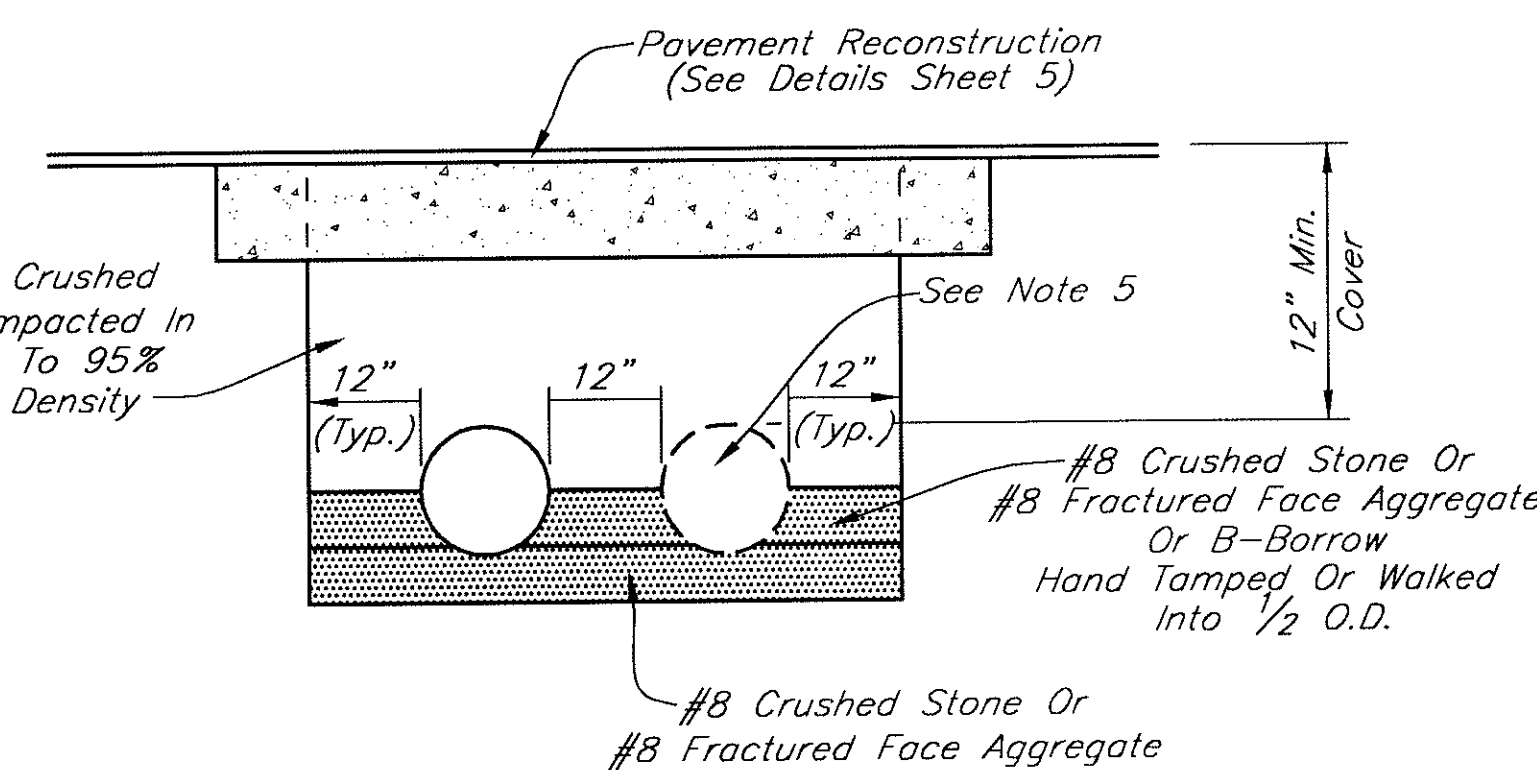
**FLEXIBLE (HDPE/PVC) PIPE BEDDING DETAIL**

Scale: None



**RCP PIPE BEDDING DETAIL**

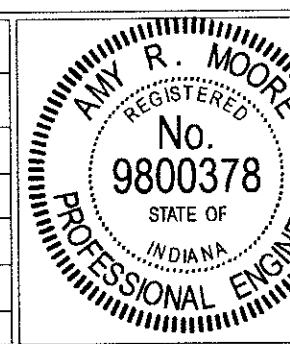
Scale: None



**STORM CULVERT PIPE DETAIL**

Scale: None

Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amey Moore</i> DESIGN ENGINEER	7/1/02 DATE
APPROVED	<i>Walter P. Conwell</i> CONNERSVILLE BOARD OF PUBLIC WORKS AND SAFETY	DATE
APPROVED	<i>David Howard</i> FAYETTE COUNTY COMMISSIONERS	DATE

FAYETTE COUNTY &  
THE CITY OF CONNERSVILLE

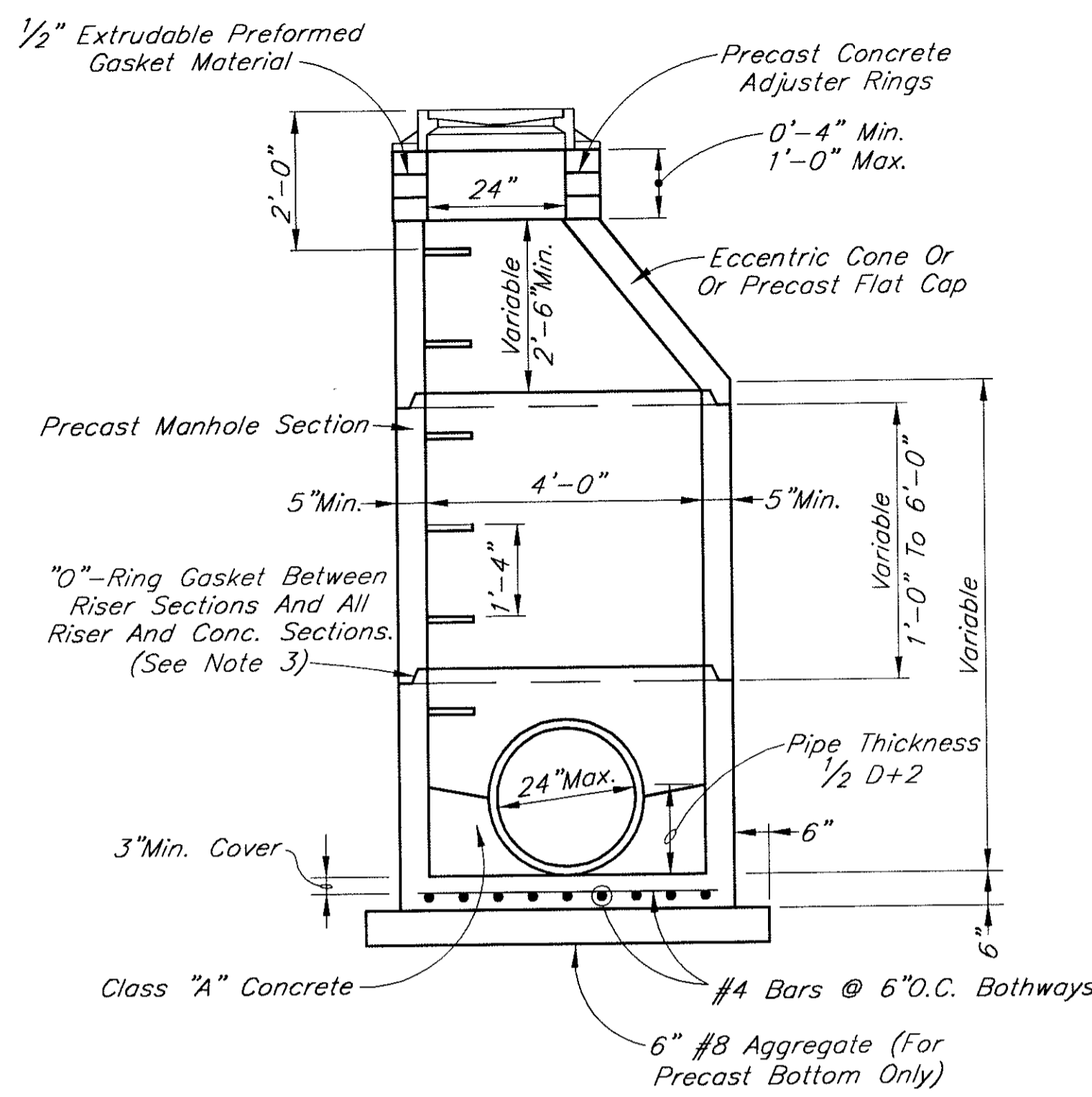
STORM SEWER & CULVERT  
BEDDING DETAILS AND NOTES

SHEET  
10  
OF  
16

**GENERAL NOTES**

- Construction Of Drainage Swales Shall Comply With The Detail Shown On This Sheet And Shall Only Be Permitted When Complying With The Following Criteria:
 

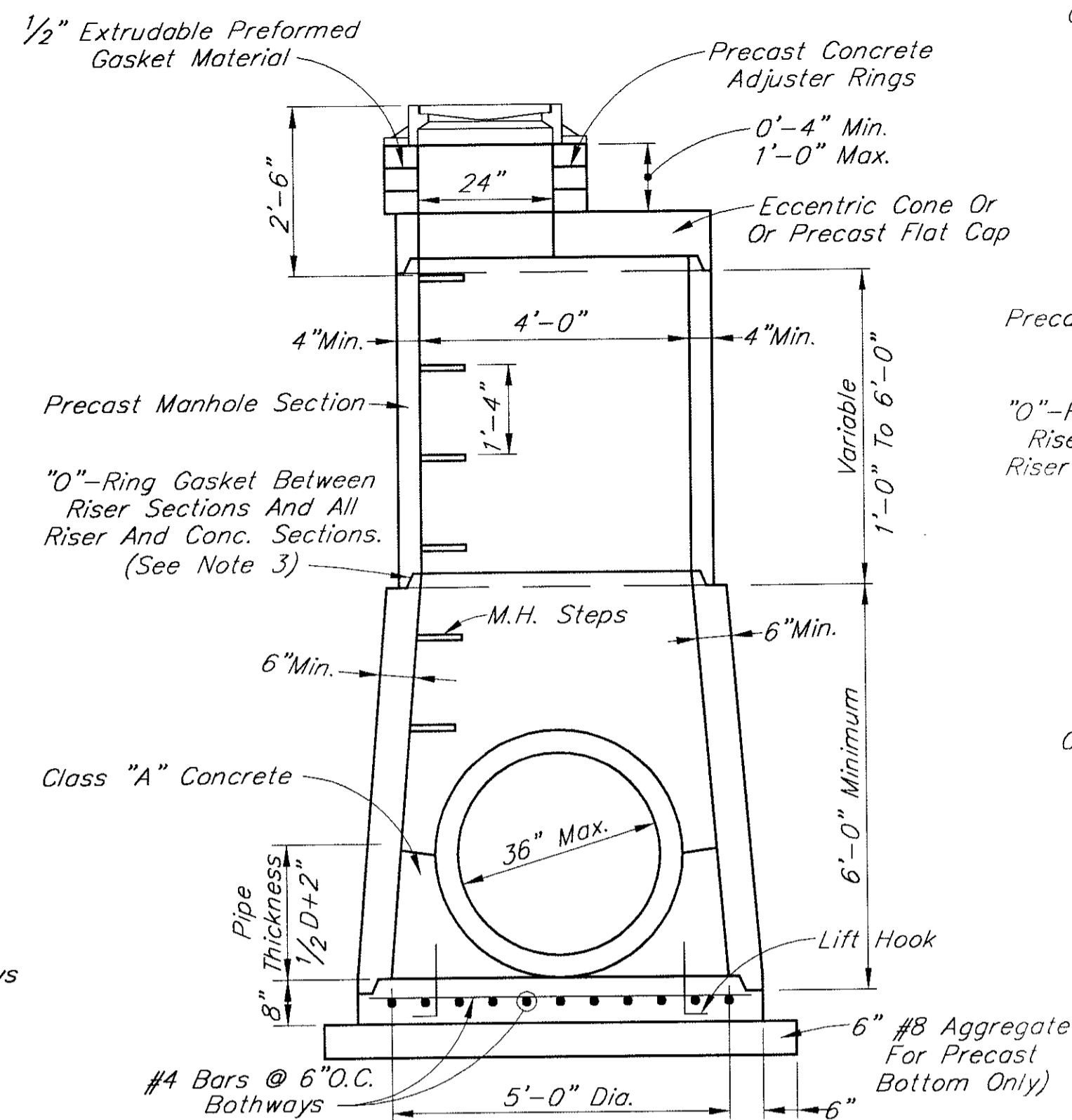
TYPE OF DEVELOPMENT	DITCH GRADE WITH UNDERDRAIN, %	DITCH GRADE WITHOUT UNDERDRAIN, %
Residential	0.3 to 0.99	1.0 and Greater
Commercial/Industrial	0.5 to 0.99	1.0 and Greater
- Type J, K, L, M And N Manholes As Detailed Herein Require A Certain Minimum Depth. In Cases Where The Depth Of The Storm Sewer 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 The Connersville City Engineer/Fayette County Surveyor 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. Inlets Or Catch Basins Shall Be Installed At Distances Not Greater Than 400 Feet.
- Manhole Steps Shall Be Neenah R-1981-J, East Jordan No. 8512, M.A. Industries PS 1-PF, Or As Approved By The Connersville City Engineer/Fayette County Surveyor.
- 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 The Connersville City Engineer/Fayette County Surveyor. Catch Basin Type A Or Inlet Type A 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-3246-F, East Jordan No. 7030 With M2 Grate And Type T1 Back Or As Approved By The Connersville City Engineer/Fayette County Surveyor. Catch Basin Type B Or Inlet 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 The Connersville City Engineer/Fayette County Surveyor.
- Castings For Manholes Which Drain Open Pavement Areas Without Curbing Shall Be Neenah R-1772-C, East Jordan No. 1022-2 Or As Approved By The Connersville City Engineer/Fayette County Surveyor.
- 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 The Connersville City Engineer/Fayette County Surveyor.
- Castings For Manholes Which Do Not Drain Surface Water Shall Be Neenah R-1772-C, East Jordan No. 1022-2 Or As Approved By The Connersville City Engineer/Fayette County Surveyor. All Covers Shall Be Stamped "STORM SEWER" With 2" Raised Letters.
- Manholes Which Connect Catch Basins/Inlets And Mainline Sewer Shall, As A Minimum, Be Located At Each Street Intersection.
- Mainline Pipe Shall Not Connect To Catch Basins Or Inlets. Catch Basins Are Required And Shall Only Be Used Immediately Upstream Of Mainline Manhole Connections. Connections To Mainline Pipe Shall Occur At A Manhole. Mainline Pipe Is Pipe Downstream Of A Single Set Of Inlets/Catch Basins Or Any Pipe Larger Than Or Equal To 15-Inch Diameter Which Drains One Swale Inlet. Pipe Which Drains A Swale Inlet May Be Connected To Inlets When The Invert Depth Is Not Greater Than That Shown On Inlet Detail.
- 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.



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

**MANHOLE TYPE C**

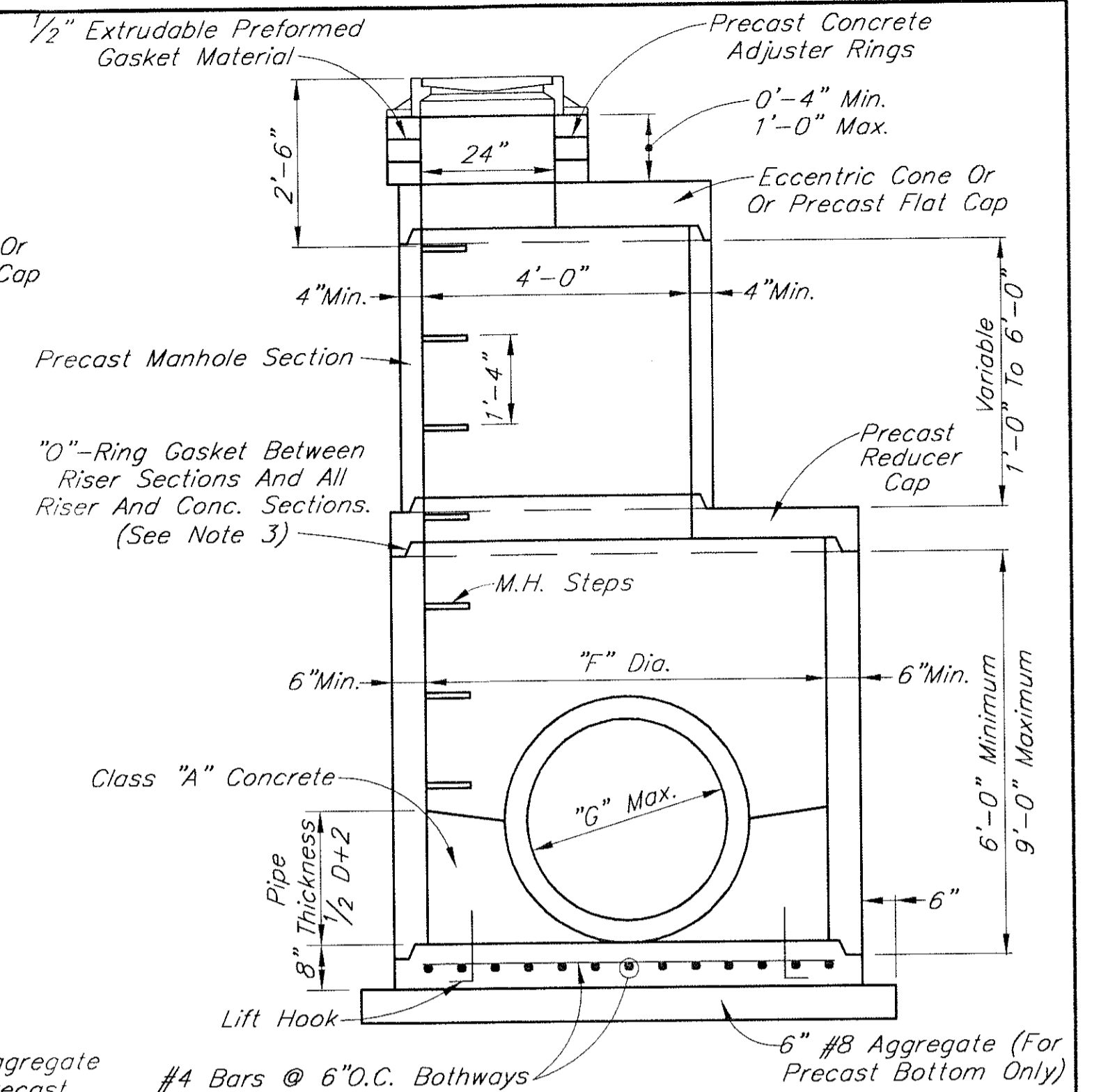
Scale: 1/2" = 1'-0"



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

**MANHOLE TYPE H**

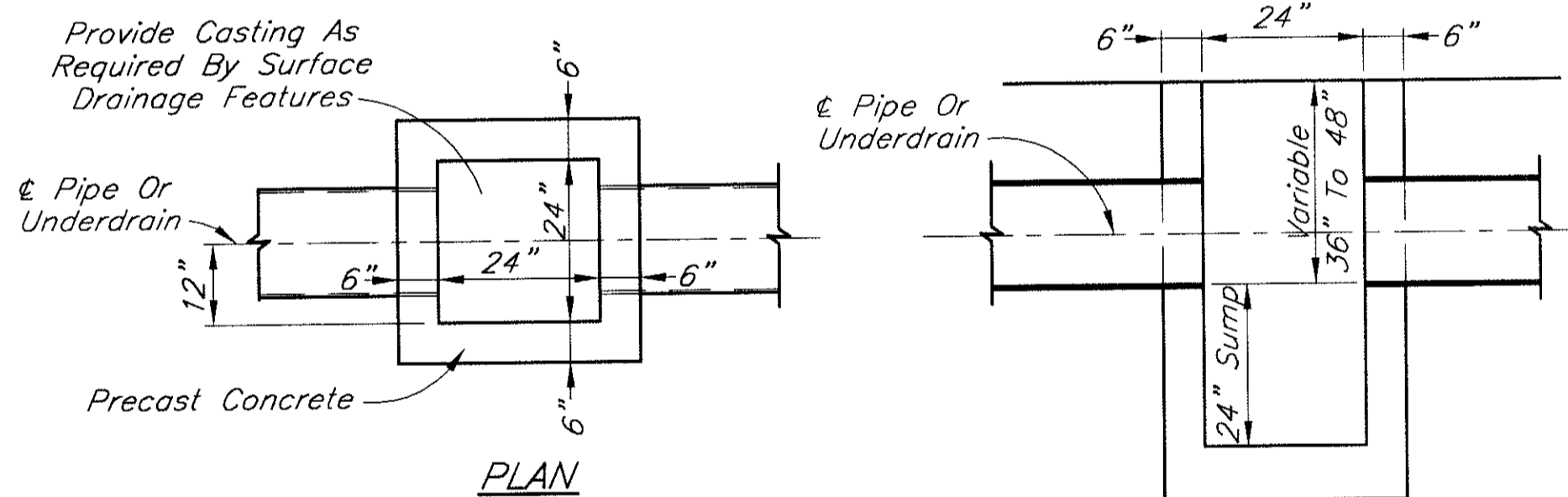
Scale: 1/2" = 1'-0"



Manhole Type	Manhole Diameter "D"	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"

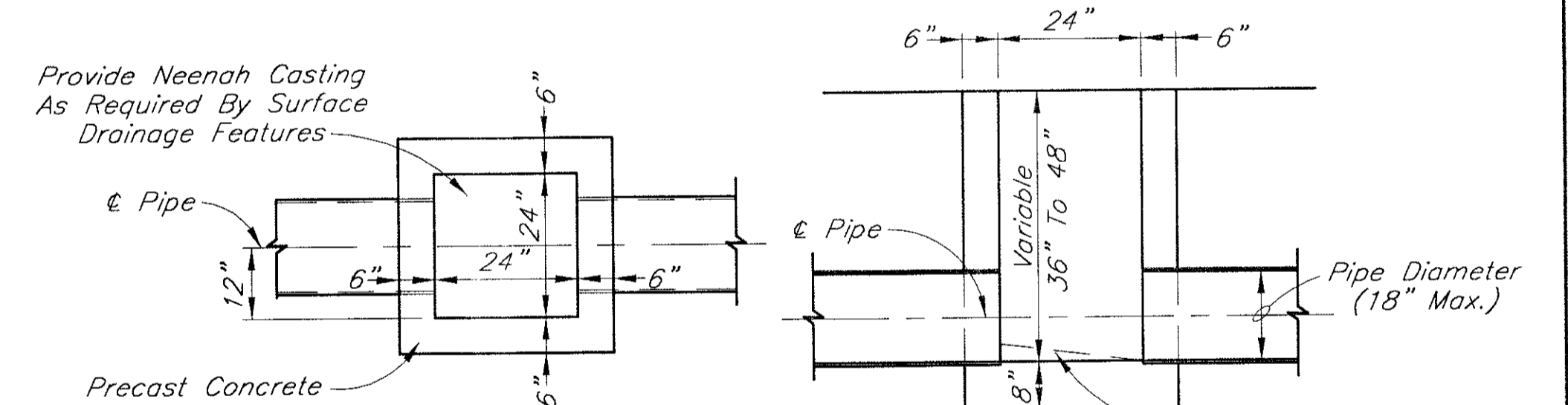
**MANHOLES— TYPE J, K, L, M & N**

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



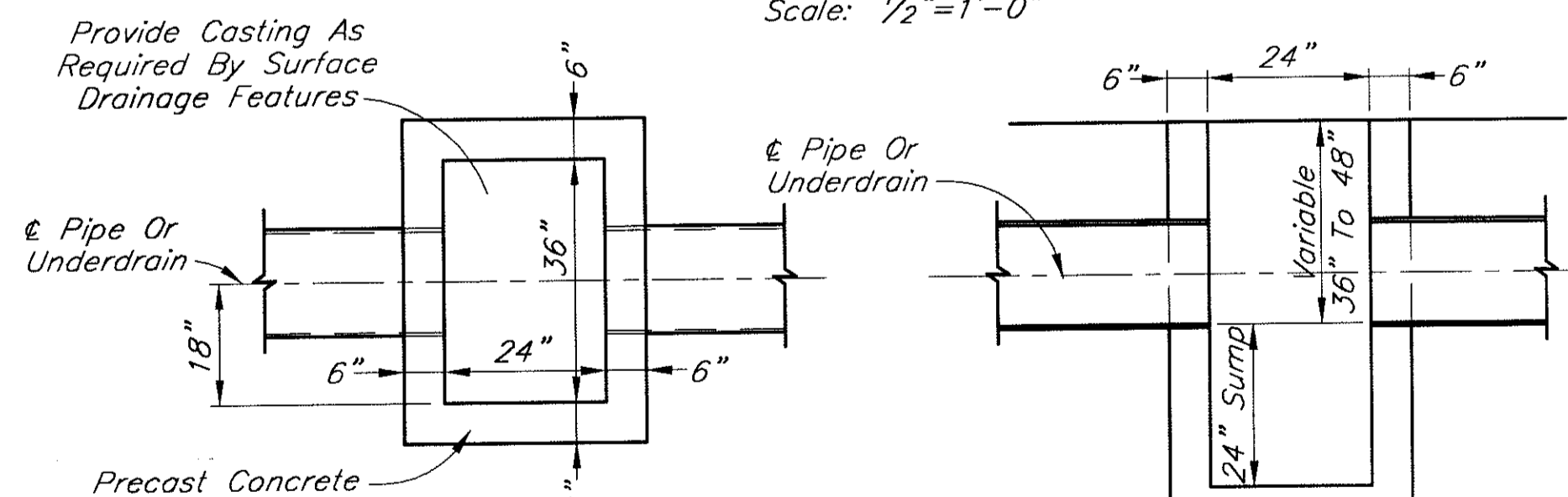
**CATCH BASIN, TYPE A**

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



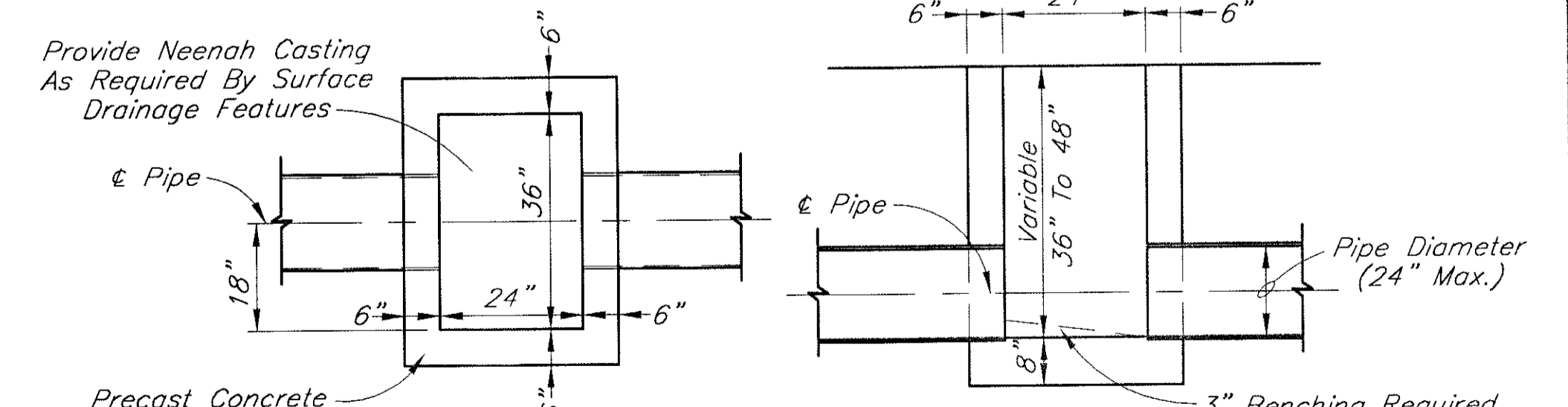
**INLET, TYPE A**

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



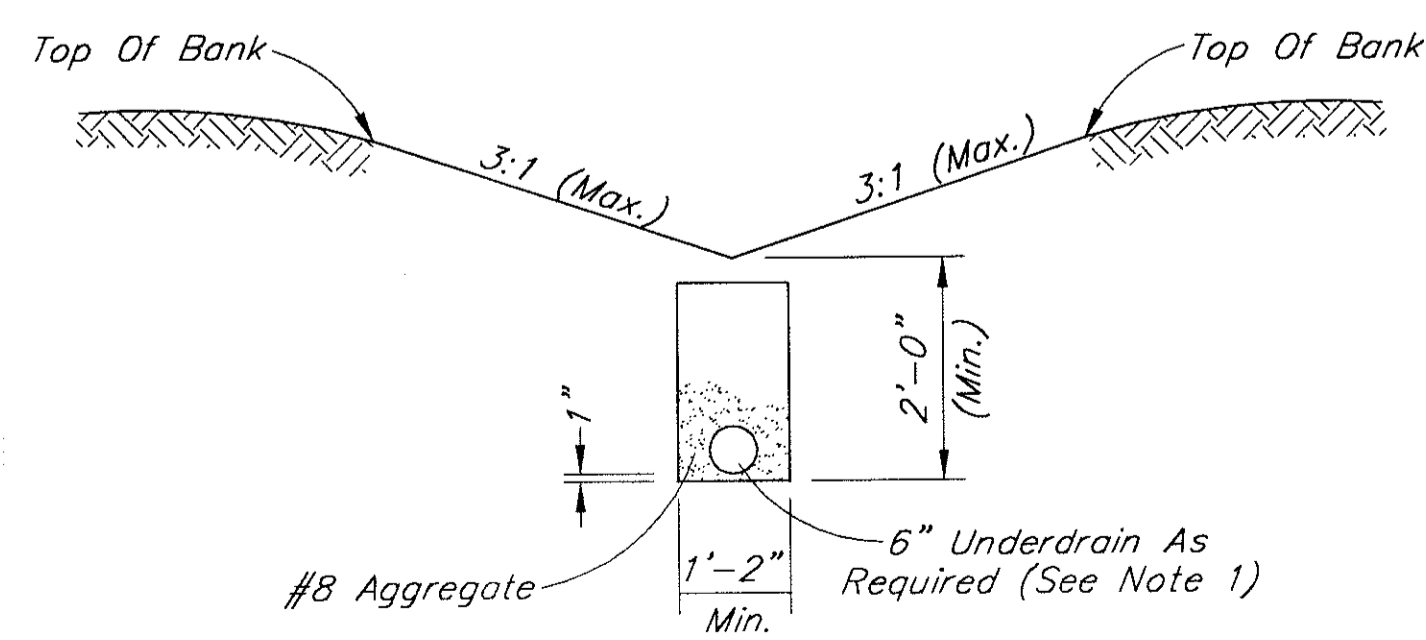
**CATCH BASIN, TYPE B**

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



**INLET, TYPE B**

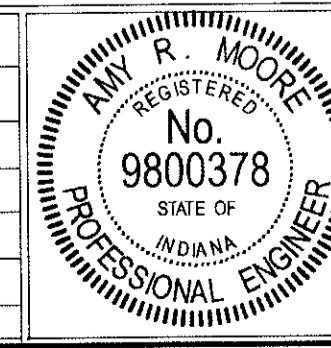
Scale: 1/2" = 1'-0"



**SWALE UNDERDRAIN DETAIL**

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

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL: *Amy R. Moore*, DESIGN ENGINEER, 3/1/12 DATE

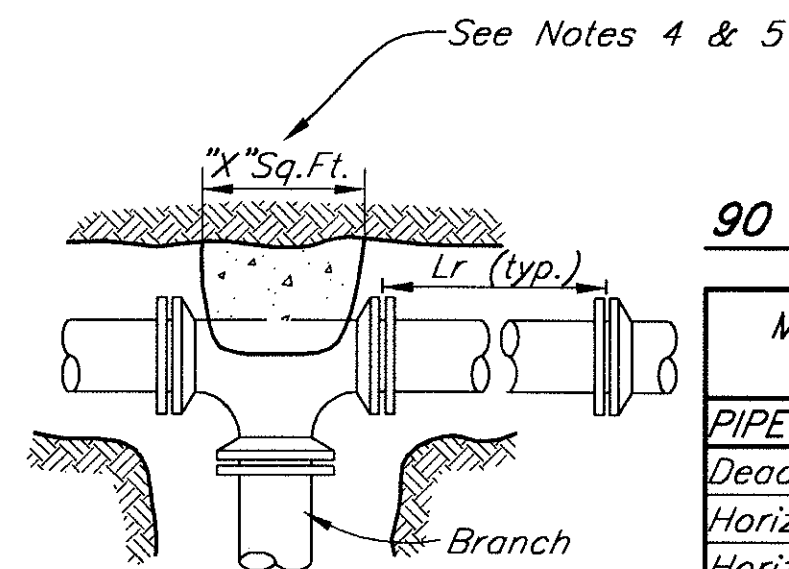
APPROVED: *Mari P. Conwell*, CONNERSVILLE BOARD OF PUBLIC WORKS AND SAFETY, DATE

APPROVED: *Don H. ...*, FAYETTE COUNTY COMMISSIONERS, DATE

FAYETTE COUNTY & THE CITY OF CONNERSVILLE

STORM SEWER DETAILS AND NOTES

SHEET 11 OF 16



**90 DEGREE BEND, TEE, OR DEAD-END CROSS**

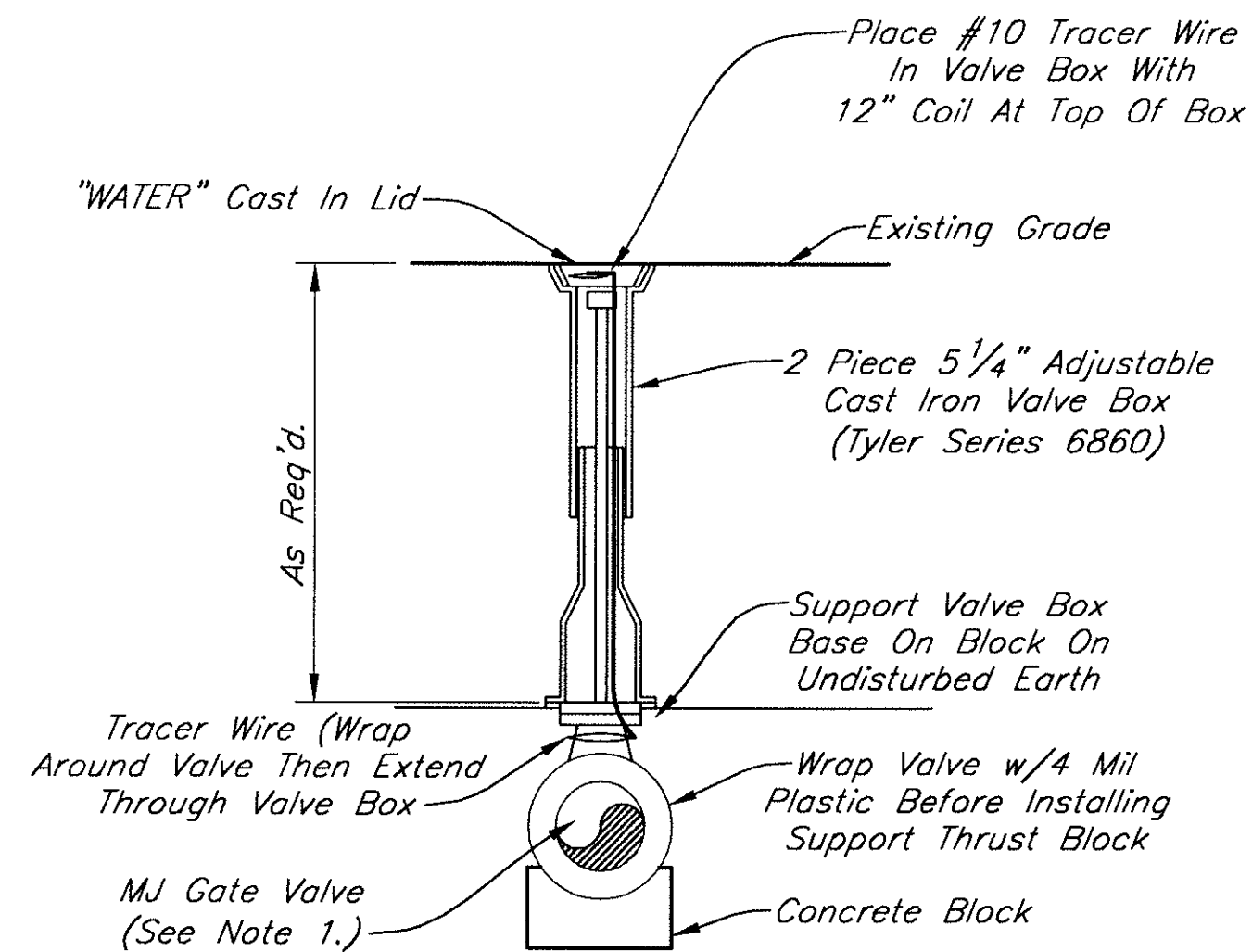
PIPE SIZE	6"	8"	10"	12"	16"
Dead End With Thrust Block (See Note 5)	37	46	54	61	76
Horizontal 90° OR Vertical 45° Down	18	23	27	31	38
Horizontal 45° OR Vertical 22 1/2° Down	9	11	13	15	18
Horizontal 22 1/2° OR Vertical 11 1/4° Down	5	6	7	8	9
Horizontal 11 1/4°	2	2	3	3	4
Tee With Thrust Block (See Note 5)					
2 ≤ Lr < 5	29	38	46	54	69
5 ≤ Lr < 10	17	27	35	43	58
Lr ≥ 10	0	8	17	25	41

**NOTES:**

- Length Of Restraint Measured From Centerline Of Fitting Requiring Restraint. Length Of Restraint For Vertical Bends Up Are Equal To That For Horizontal Bends.
- Length Of Restraint Based Upon 48" Cover, 150 PSI Pressure, And ASTM D2487 Soil Types CL, ML, SC, SM, SP, SW, GC, GM, GP, & GW. For Less Cover, Higher Pressure, Or ASTM D2487 Soil Types PT, OH, CH, MH, & OL, Consult Connersville Utilities.
- Restraint To Be Accomplished With Romac Series 600 Or Ebba Iron Series 1600 Or 2800 For Push-On Joints, Anchoring Coupling For Valves And Adjacent Tees, Romac Grip Ring Or Megalug Series 2000 PV For All Mechanical Joints, Or As Approved By Connersville Utilities.
- Concrete Thrust Blocks In Lieu Of Mechanical Restraint May Be Used Only With The Written Approval Of Connersville Utilities.
- 90° Bends, Tees And Dead-End Crosses Require Concrete Thrust Blocks In Addition To Branch Restraint Length. "X" Area For Concrete Thrust Blocks Per Detail Shall Be As Follows: 8, 13, 19, 27, & 44 Square Feet For 6, 8, 10, 12, & 16 Inch Pipe, Respectively Other Than Restraint Of MJ Fittings Adjacent To Tee, No Run Restraint Length Is Required.
- Concrete Shall Not Be Allowed To Come In Contact With Any Joint, Flanges, Gaskets, Bolts Or Nuts. Four Mil High Density Polyethylene Plastic Shall Be Used To Cover All Fittings, Piping And Valves Prior To Pouring The Thrust Block.

**JOINT RESTRAINT DETAIL**

Scale: None



**Note:**

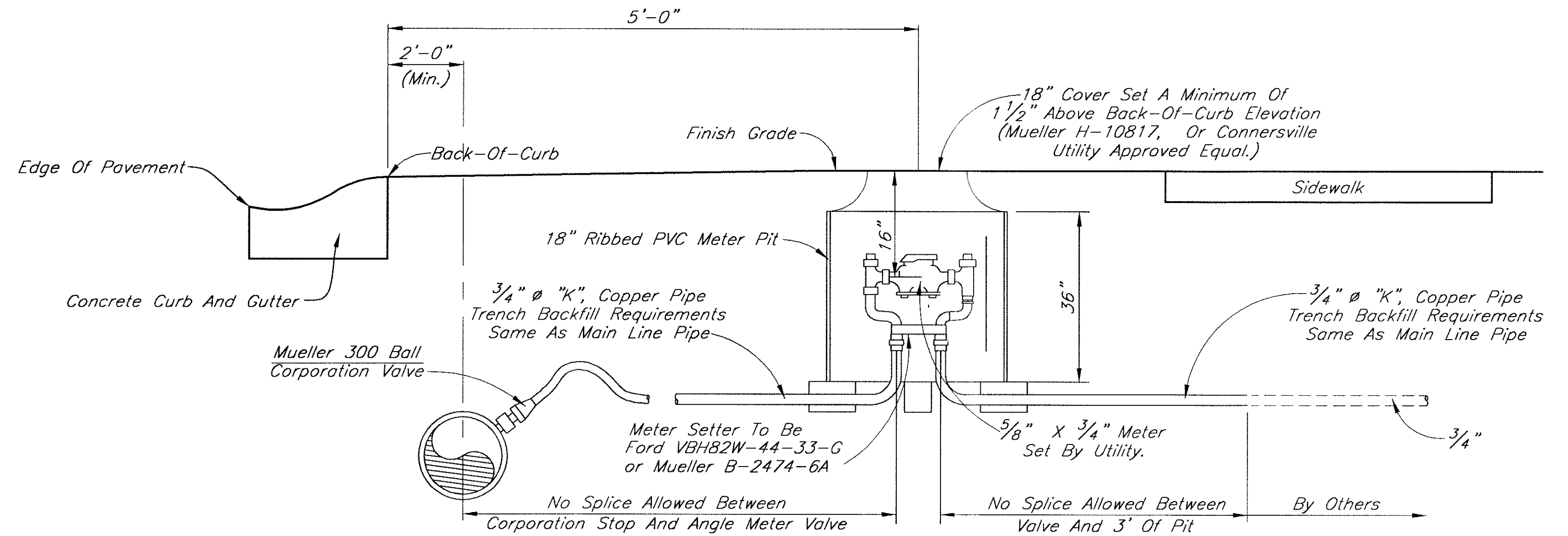
For Valves With Bury Depth 8' Or Greater, A Ductile Iron Or PVC Pipe May Be Used Between Valve Box Riser And Base.

**TYPICAL VALVE INSTALLATION DETAIL**

Scale: None

**NOTES:**

- All Gate Valves Shall Be Either Mueller Model No. A236020, or Equal Model Manufactured By Kennedy, With Prior Utility Approval.
- All Valves Shall Open Counterclockwise.

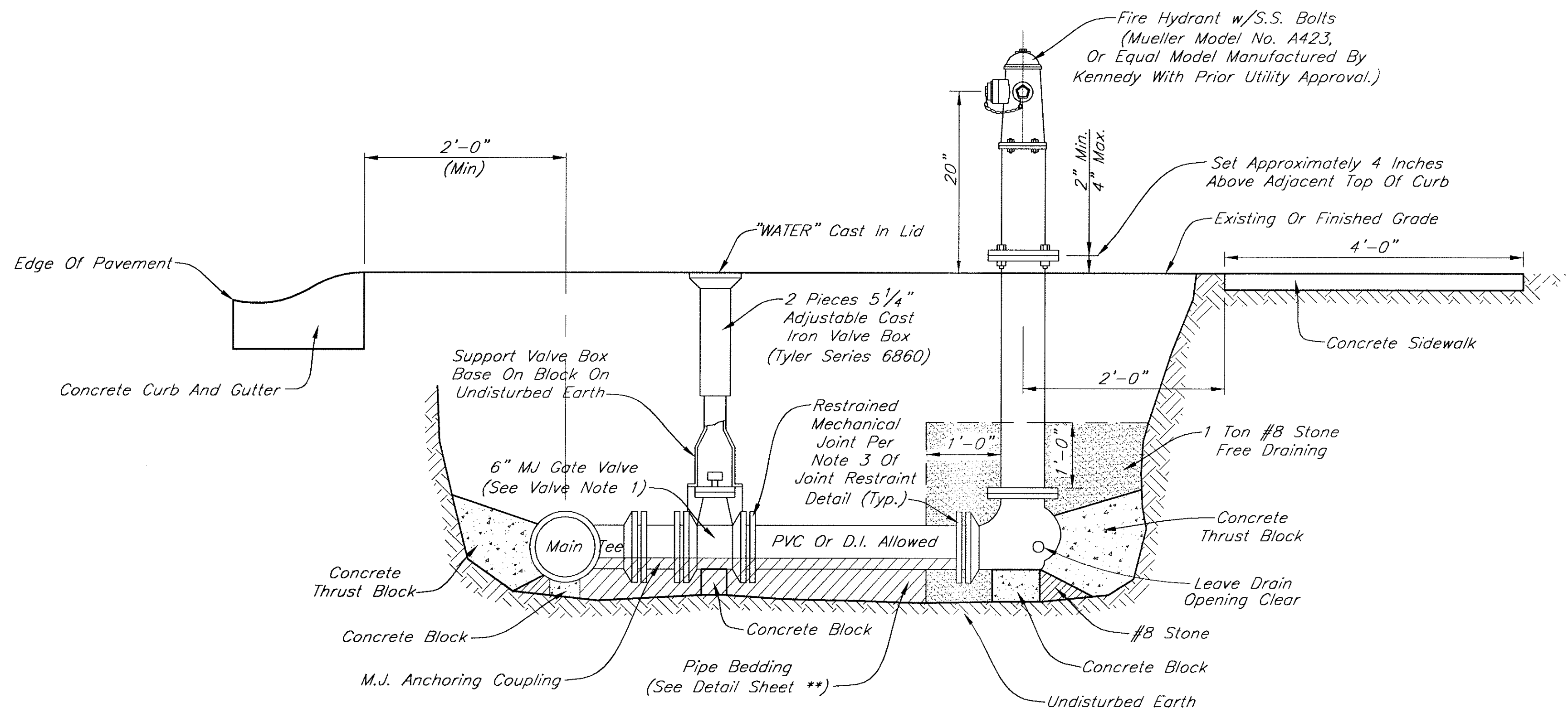


**TYPICAL METER SETTING DETAIL**

Scale: None

**Note:**

All Main Taps For Residential Meters Shall Be Constructed By The Connersville Utility.



**TYPICAL HYDRANT INSTALLATION DETAIL**

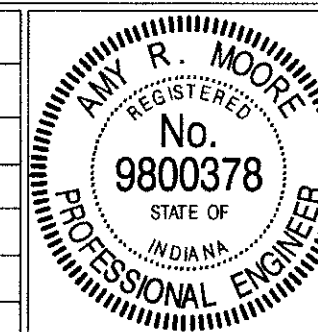
Scale: None

**NOTES:**

- Hydrants Shall Be Provided At Each Street Intersection And At Intermediate Points Between Intersections Or As Directed By Connersville Utilities Or The Connersville Fire Department.
- Generally, Hydrants Shall Be Spaced At No Greater Than 600 Feet.

SEE UTILITY NOTES, SHEET 1, FOR USE DIRECTIONS

Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i>	3/1/02
APPROVED	<i>Harold J. Ellison</i>	5/28/02
APPROVED	<i>Harold J. Ellison</i>	5/28/02

CONNERSVILLE UTILITIES	SHEET 12 OF 16
WATER MAIN DETAILS & NOTES	

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**WATER MAIN MATERIALS**

- 1.) Polyvinyl Chloride (P.V.C.) Pipe For Water Mains Shall Conform To The Latest Revision Of ANSI/AWWA C900, ANSI/AWWA C905, ASTM Specification D-1784, "Rigid Polyvinyl Chloride And Chlorinated Polyvinyl Chloride Compounds," And ASTM Specifications D-2241, "Standard Specifications For Polyvinyl Chloride (P.V.C.) Pressure-rated (SDR Series)." The Appropriate ASTM Cell Classification Shall Be Either 12454-A Or 12454-B. Polyvinyl Chloride Pipe Shall Be Furnished In Standard Laying Lengths Of 20 Feet. P.V.C. Pipe Up To & Including 4 Inch Pipe Shall Be SDR 25, 6 Inch Pipe & Larger Shall Be Pressure Class 150, SDR 18.
- 2.) Ductile Iron Fittings, 3 Inches Through 48 Inches, Shall Conform To The Latest Revision Of ANSI Specification A21.10 And AWWA C110. Ductile Iron Compact Fittings, 3 Inches Through 16 Inches Shall Conform To The Latest Revision Of ANSI Specification A21.53 And AWWA C153. Fittings In And Within 2 Feet Of Structures Shall Be Flanged. All Other Fittings Shall Be Mechanical Joint Type.
- 3.) Ductile Iron Pipe And Fittings Shall Be Coated In Conformance With The Latest Revision Of ANSI A21.51, AWWA C-151, And ANSI A21.4, AWWA C-104. Interior Pipe Lining Shall Be Cement-Mortar With Asphaltic Seal Coat. Exterior Pipe Coating Shall Be Standard Asphaltic Coating, Except Exposed Piping Within Structures, Shall Receive Shop Priming Compatible With Finish Painting.
- 4.) Mechanical Joints And Accessories Shall Conform To The Latest Revision Of ANSI Specification A21.10 And AWWA C110. Rubber Gaskets Shall Be Vulcanized Synthetic Rubber And Shall Conform To The Latest Revision Of ANSI Specifications A21.11 And AWWA C111.
- 5.) Service Pipe Shall Be 3/4-Inch Copper Water Tube, Type K, Soft Temper, For Underground Service, Conforming To ASTM B-88 And B-251, And In Accordance With AWWA C-800. The Pipe Shall Be Marked With The Manufacturer's Name Or Trademark And Mark Indicative Of The Type Of Pipe. The Outside Diameter Of The Pipe And Minimum Weight Per Foot Of The Pipe Shall Not Be Less Than That Listed In ASTM B-251, Table II.
- 6.) For PVC Water Main, The Contractor Shall Install Insulated #10 Solid Copper Wire. The #10 Solid Copper Wire Shall Be Laid Directly Over The Main And Shall Be Attached To The Pipe At Regular Intervals To Ensure It Remains In Place During Backfilling. All Connections On The Wire Are To Be Made With A Connector As Required By The Utility. Connections Shall Be Taped With Electrical Moisture Sealant Patches. At Each Valve And Hydrant The Wire Shall Be Brought To Ground Level. At Hydrants The Wire Shall Be Connected To The Loop Ring Below The Steamer Cap And The Wire Shall Be Extended To Within 1-Foot Of Finished Grade Inside The Valve Box. The Wire Shall Have A Minimum Of 24 Inches Of Looped Wire. Refer To The Typical Valve Installation Detail On Sheet ---- For Additional Details.

**WATER MAIN DISINFECTION AND BACTERIOLOGICAL TESTING**

- 1.) The Connersville Utilities Shall Be Given 24 Hour Written Notice Of The Required Disinfection. All Flushing And Disinfection Procedures Are To Be Performed By The Contractor. All Newly Installed Water Mains Shall Be Disinfected In Accordance With ANSI/AWWA C-651. Liquid Chlorine, High-test Calcium Hypochlorite (70 Percent Chlorine), Or High-Test Sodium Hypochlorite (14.7 Percent Chlorine) May Be Used To Provide An Initial Minimum Concentration Of 25 MG/L Of Free Chlorine In All Newly Installed Mains.
- 2.) A Minimum Concentration Of 10 MG/L Of Free Chlorine Shall Be Maintained In All Parts Of The Newly Installed Mains For 24 Hours Of Contact Time.
- 3.) Following The Initial 24 Hour Contact Time But Prior To 48 Hours Of Contact Time, All Treated Water Shall Be Thoroughly Flushed From The Newly Laid Pipe At Its Extremity Until The Replacement Water Has A Chlorine Residual Of Less Than 2 MG/L.
- 4.) After Flushing, Water Samples Collected By The Utility On Two Successive Days From The Treated Piping System Shall Show Satisfactory Bacteriological Results.
- 5.) The Taking Of Samples And The Bacteriological Testing Shall Be Carried Out By The Connersville Utilities.

**WATER MAIN PRESSURE AND LEAKAGE TESTING**

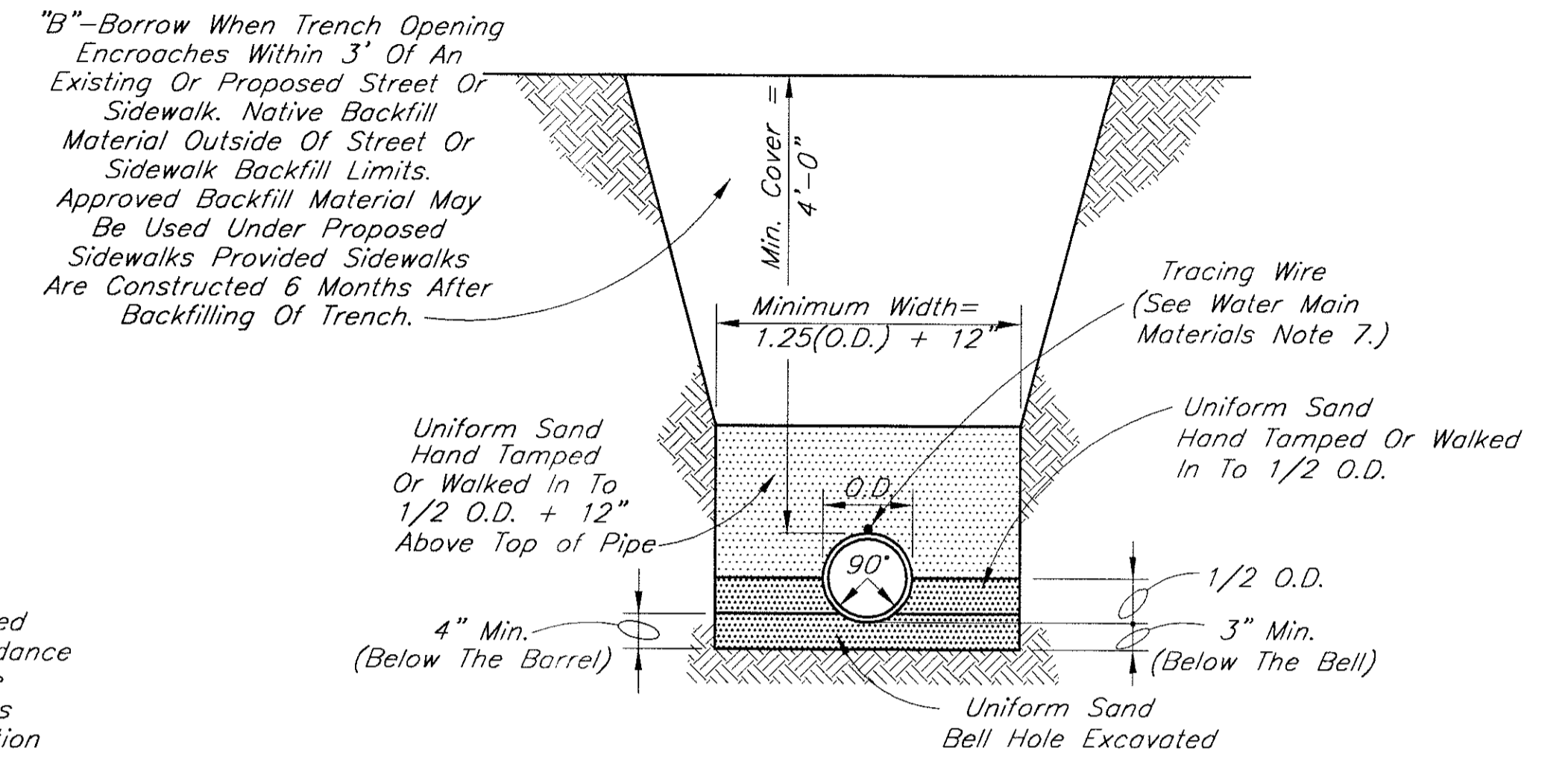
- 1.) The Connersville Utilities Shall Be Given 24 Hour Written Notice Of The Required Pressure And Leakage Test. The Pressure And Leakage Testing Shall Be Performed By The Contractor. The Pressure And Leakage Test Shall Be Performed In Accordance With The Basic Provisions Of AWWA C600 And AWWA C605. The Testing Procedure Shall Assume An 80 PSIG Working Pressure. The Test Pressure Shall Not Be Less Than 1.25 Times The Working Pressure At The Highest Point Along The Test Section Or Not Less Than 1.5 Times The Working Pressure At The Point Of Testing. Test Pressure Shall Not Exceed Pipe Or Thrust-restraint Design Pressures Or Rated Pressures Of The Valves. The Test Pressure Of 125 PSIG Shall Not Vary By More Than +5 Pounds Per Square Inch For The 2 Hour Duration Of The Test.
- 2.) Valves Shall Not Be Operated In Either Direction At Differential Pressures Exceeding The Rated Valve Working Pressure.
- 3.) It Is Good Practice To Allow The System To Stabilize At The Test Pressure Before Conducting The Minimum 2 Hour Duration Leakage Test. During The Leakage Test The Contractor Shall Measure And Record The Quantity Of Water Pumped Into The Test Section To Maintain The Test Pressure At 125 PSIG. The Test Section Will Be Considered Satisfactory If It Meets Following Specification:

Pipe Size (Inches)	Allowable Leakage (Gal./Hr./1000 Ft.)
6	0.45
8	0.60
10	0.76
12	0.91
14	1.06
16	1.21

- 4.) If The Leakage From A Test Section Is Greater Than The Allowable Leakage, The Contractor Shall Locate And Repair The Defective Joints, Mains, And Appurtenances. The Pressure And Leakage Test Shall Then Be Repeated Until Satisfactory Results Are Obtained. All Labor And Materials Required To Meet The Requirements Of The Pressure And Leakage Testing Shall Be At The Expense Of The Contractor.
- 5.) The Operation Of The Connersville Utilities Water System Valves And Hydrants Shall Be Conducted By Authorized Connersville Utilities Personnel Only.

**AS-BUILT DRAWINGS AND WARRANTIES**

- 1.) As-Built Drawings Shall As A Minimum Provide Two Perpendicular Horizontal Measurements And A Vertical Measurement To All Fittings, Valves, And Deflections In Pipe. Where Applicable, Contractor Shall Dimension The Location Of The Water Main From Back Of Curb. As-Built Drawings Shall Be Submitted To The Superintendent Of Connersville Utilities, 216 Vine Street, Within 30 Days Of Construction And Testing Completion.
- 2.) The Contractor Is Responsible For All Leaks, Faulty Hydrants, Broken Mains, Etc. For One Year After The Date Of Acceptance By The Utility.



**PVC PIPE BEDDING DETAIL**

Scale: None

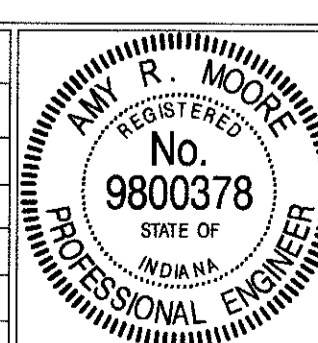
Pipe Size	8" TO 14"	16" And Over
Bedding Below The Pipe Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"

**WATER MAIN GENERAL NOTES**

- 1.) Provide A Valve On All Runs And Branches Per The Connection Details On Sheet \_\_\_ Of The Connersville Standards. Provide Valve Even When Such Runs Or Branches Are Stubs For Future Extension.
- 2.) All Water Pipe Shall Be Installed In Accordance With AWWA C605 And With A Minimum Depth Of Cover Of 48 Inches.
- 3.) Terminate Dead-End Mains With A Mainline Valve Followed By A Fire Hydrant Assembly. For Cul-De-Sacs, Eliminate Hydrant Assembly Tee And Terminate With 6" Valve & Fire Hydrant.
- 4.) Unless Unavoidable As Determined By Connersville Utilities, Double Tees Shall Not Be Permitted. Utilize A Cross At Intersection Of Four Water Mains With Cross Sized To Match The Largest Pipe.

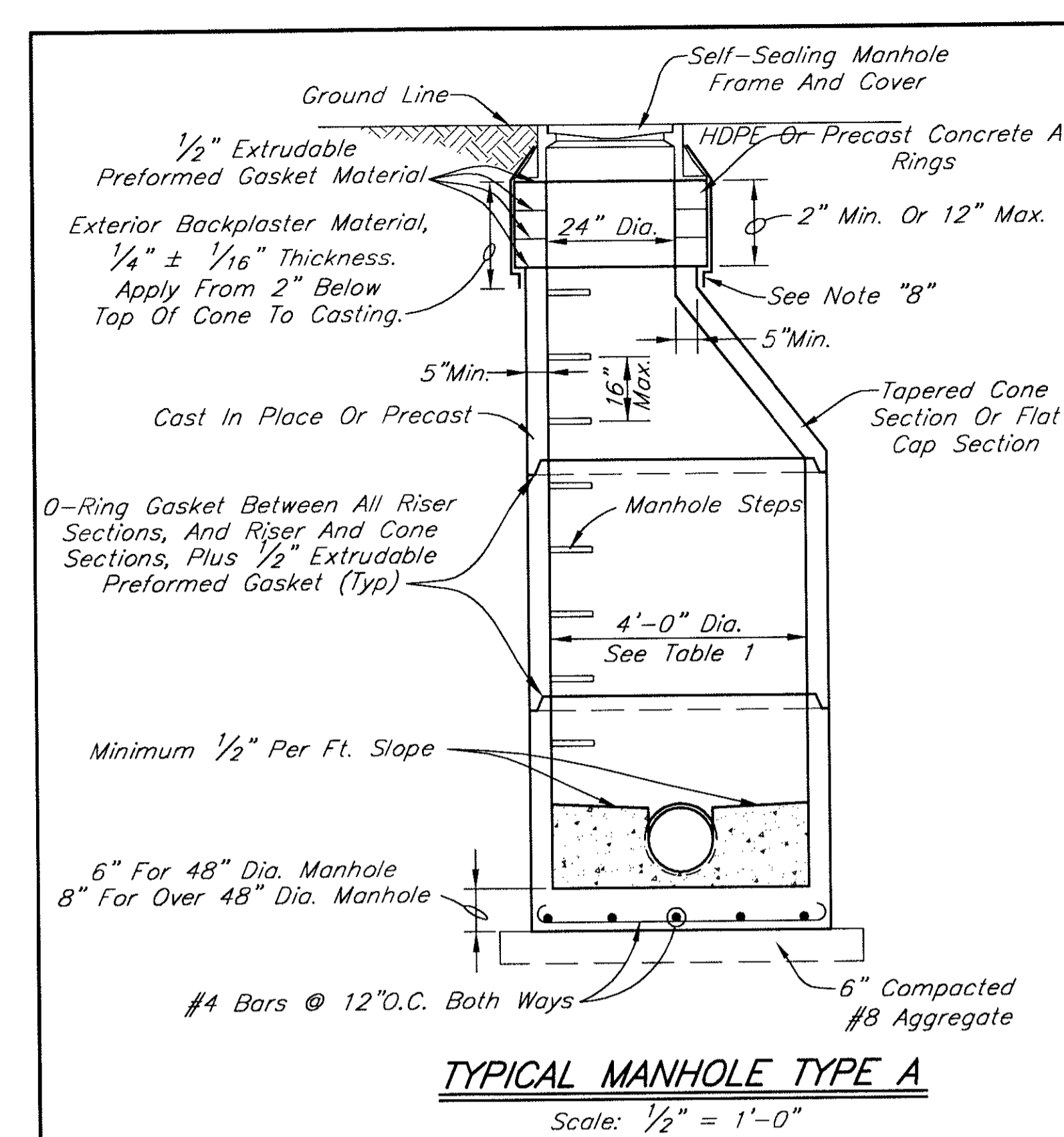
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REVISIONS		
Rev. No.	Description	Date

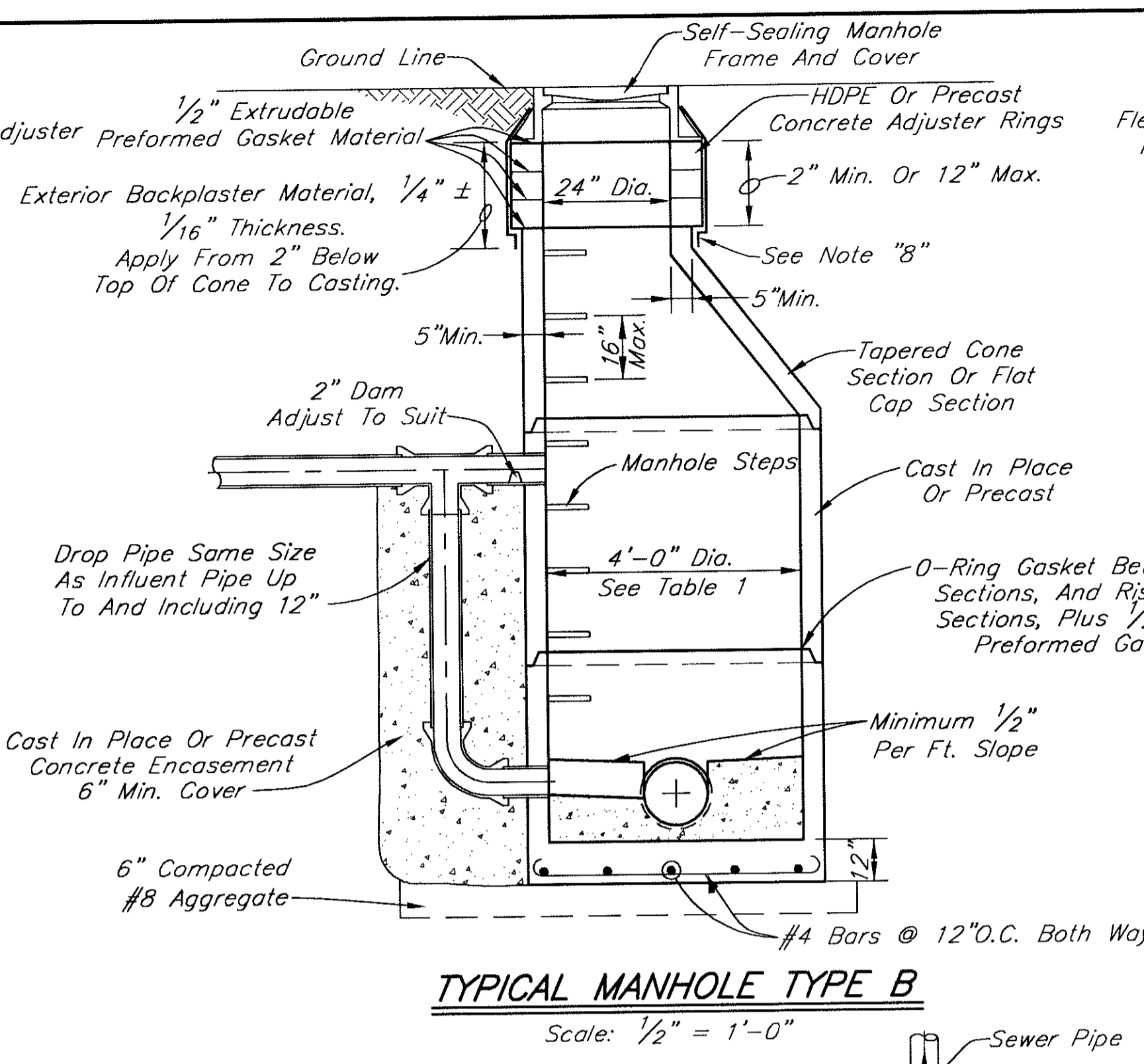


RECOMMENDED FOR APPROVAL	<i>Amy C. Moore</i>	DESIGN ENGINEER	9/1/02	DATE
APPROVED	<i>Narrell Allison</i>	DIRECTOR, CONNERSVILLE UTILITIES	9/24/02	DATE
APPROVED	<i>Narrell Allison</i>	WATER SUPERINTENDENT	9/24/02	DATE

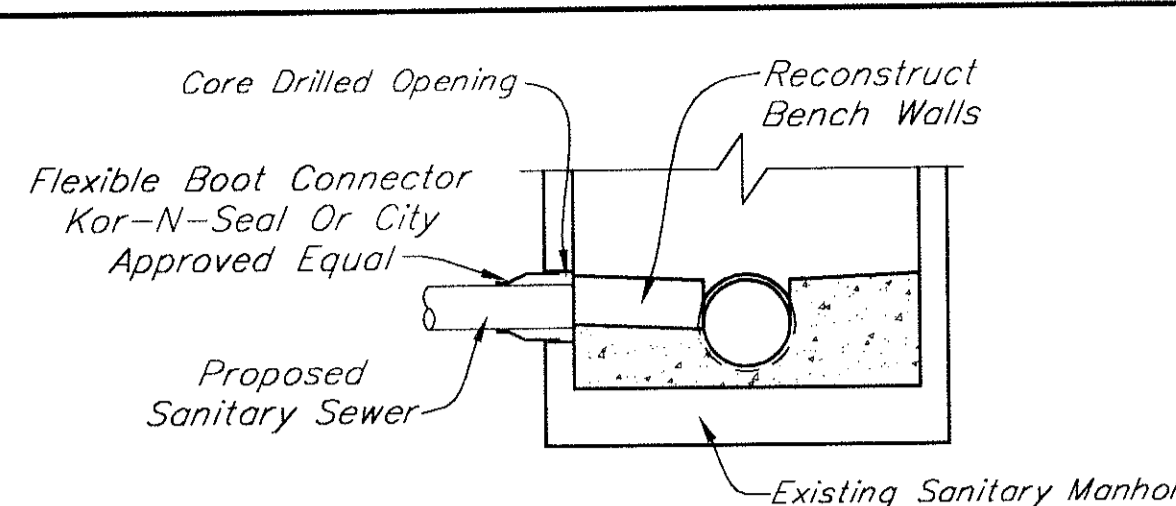
SEE UTILITY NOTES, SHEET 1, FOR USE DIRECTIONS	
CONNERSVILLE UTILITIES	SHEET 13 OF 16
WATER MAIN BEDDING DETAILS AND NOTES	



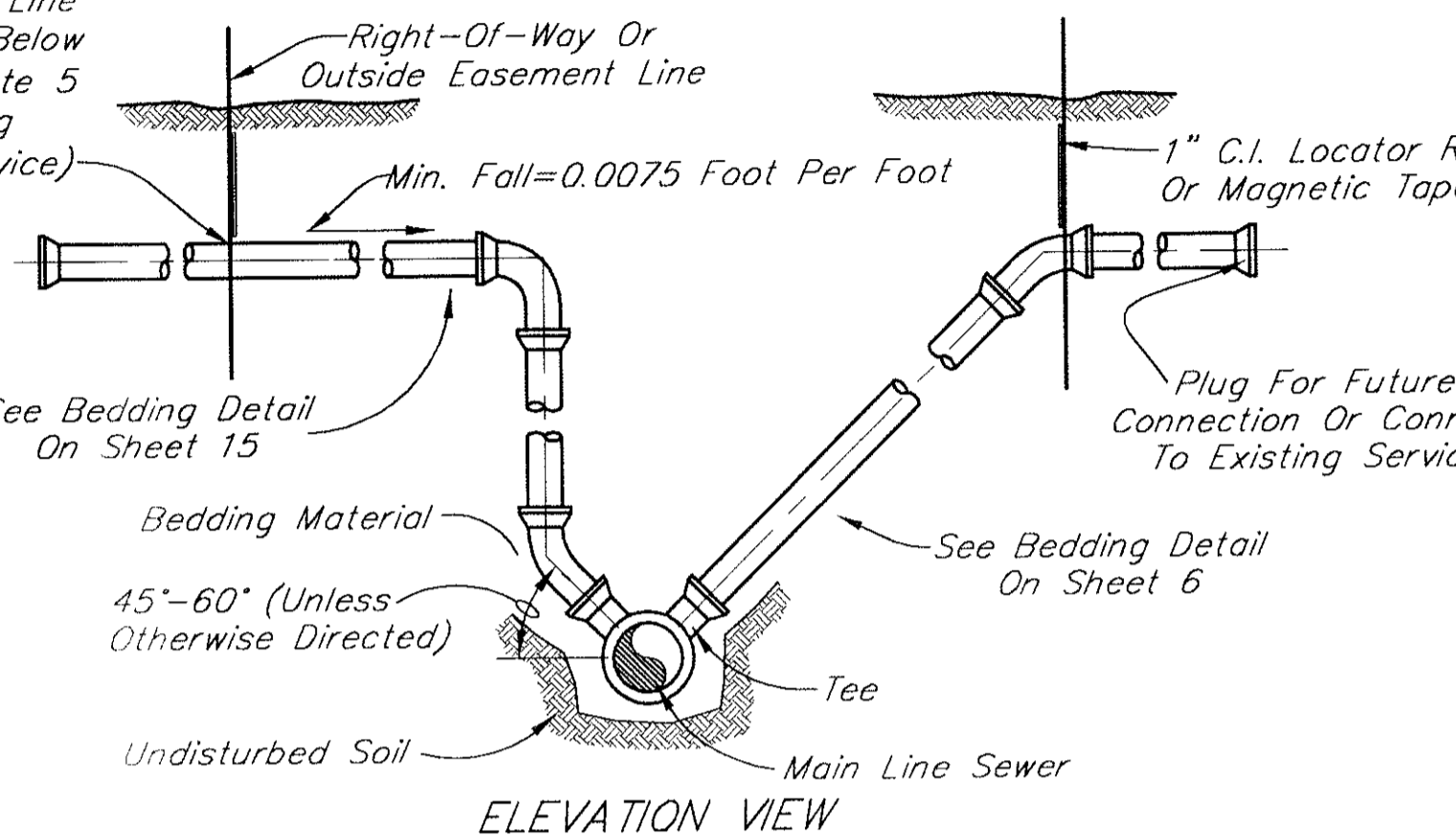
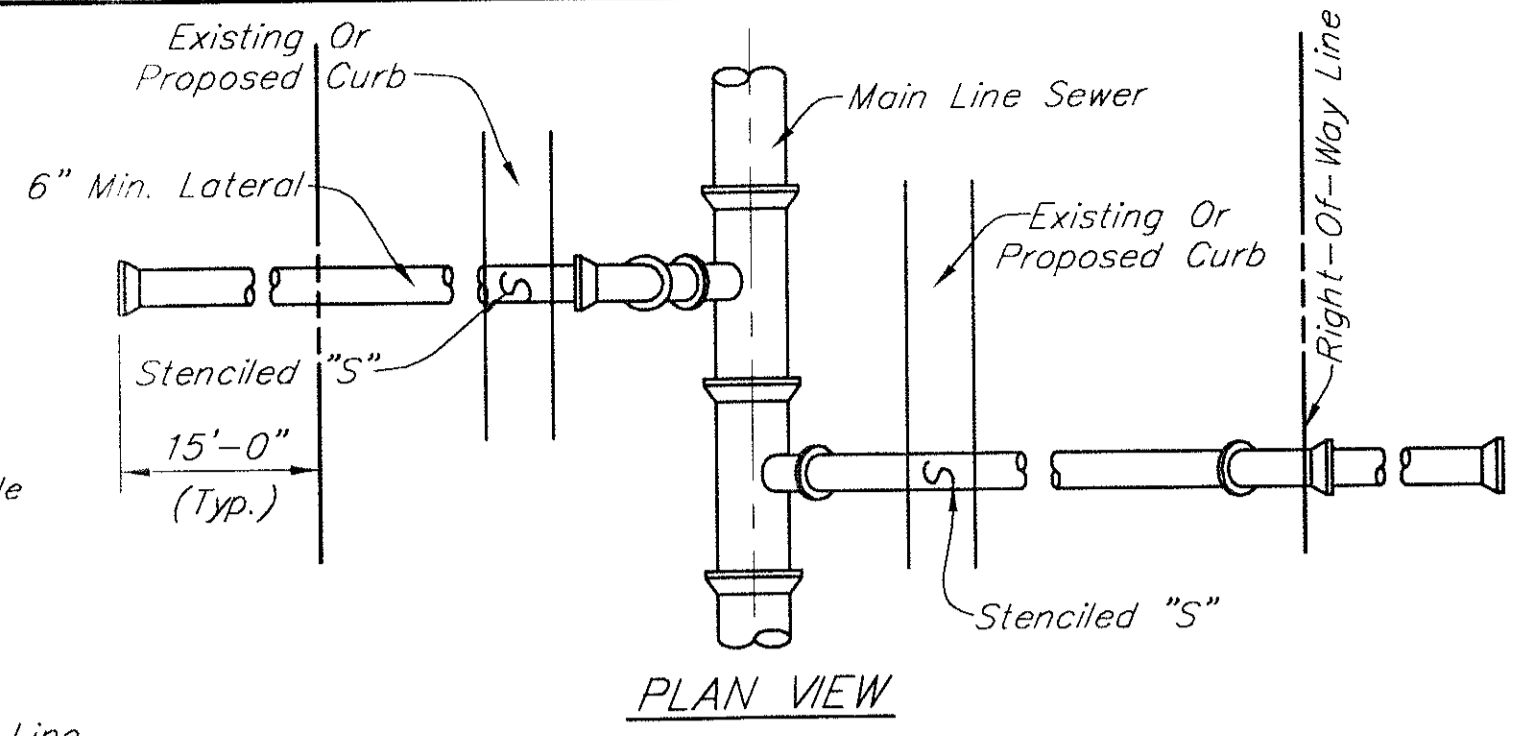
**TYPICAL MANHOLE TYPE A**  
Scale: 1/2" = 1'-0"



**TYPICAL MANHOLE TYPE B**  
Scale: 1/2" = 1'-0"



**EXISTING MANHOLE CONNECTION DETAIL**  
Scale: 1/2" = 1'-0"



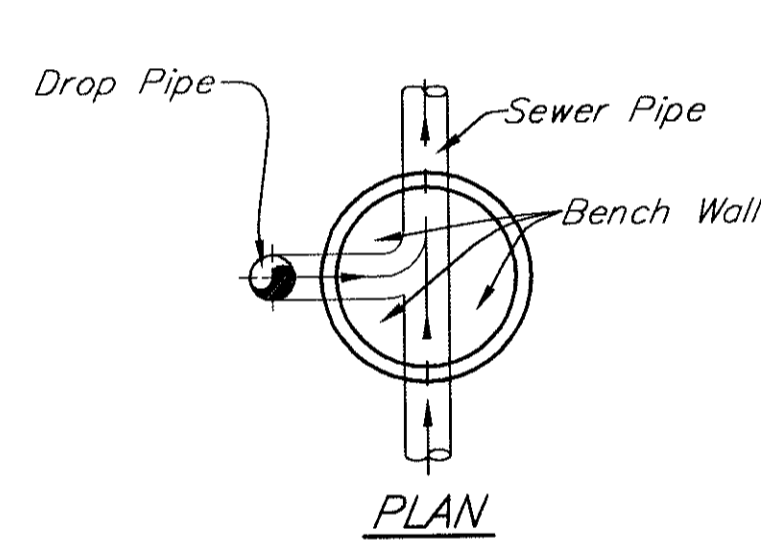
**SERVICE CONNECTION FOR DEEP SEWERS (15' DEEP AND OVER)**  
Not To Scale.

**TABLE 1**  
MINIMUM MANHOLE DIAMETER

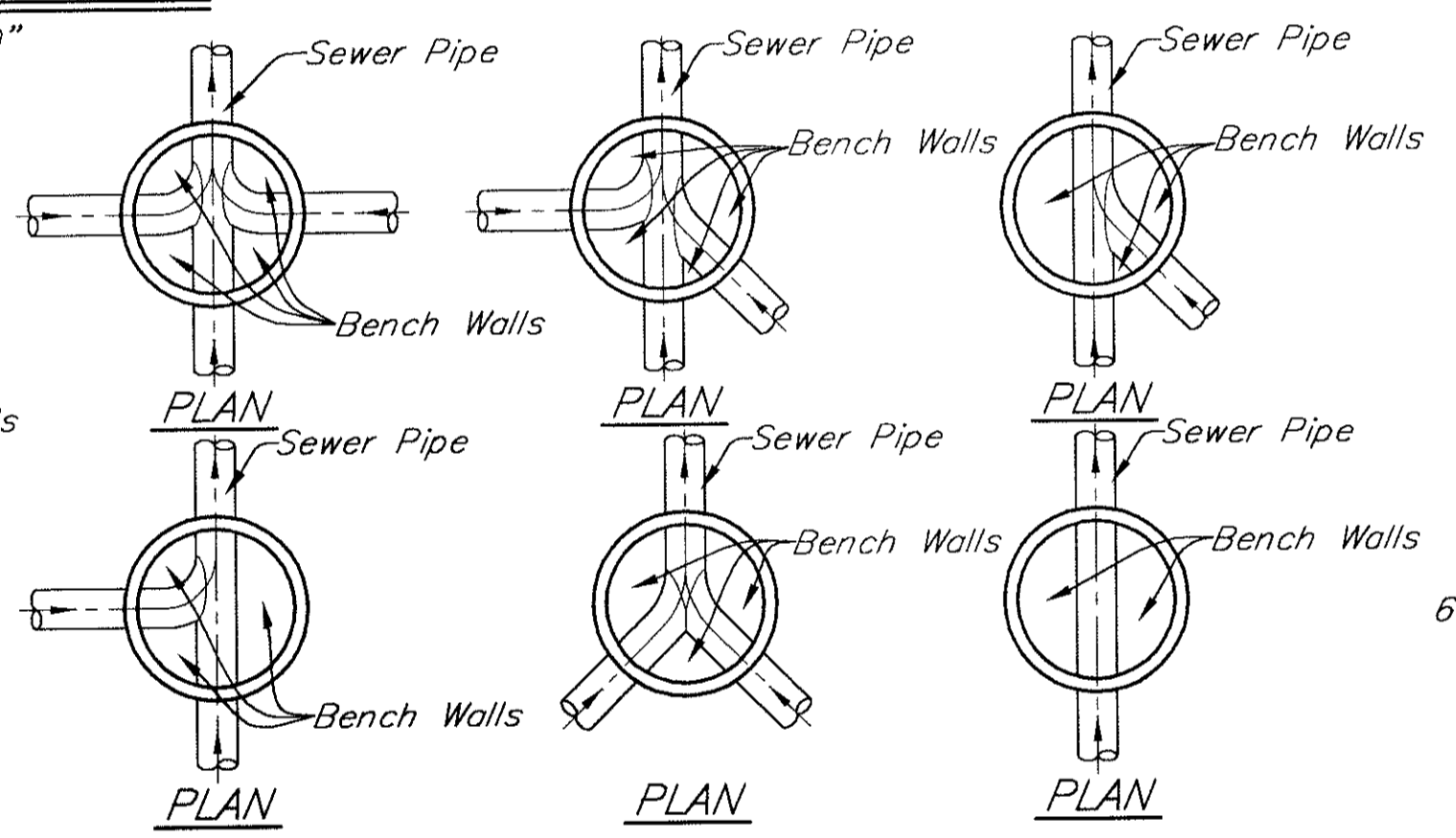
Pipe Size	Pipe Entering/ Pipe Exiting At 0° To 45° Bend	Pipe Entering/ Pipe Exiting At 45° To 90° Bend
8"-21"	48"	48"
24"	48"	60"
27"-30"	60"	60"
33"-36"	60"	72"

\* 72" With A-Lock Connector

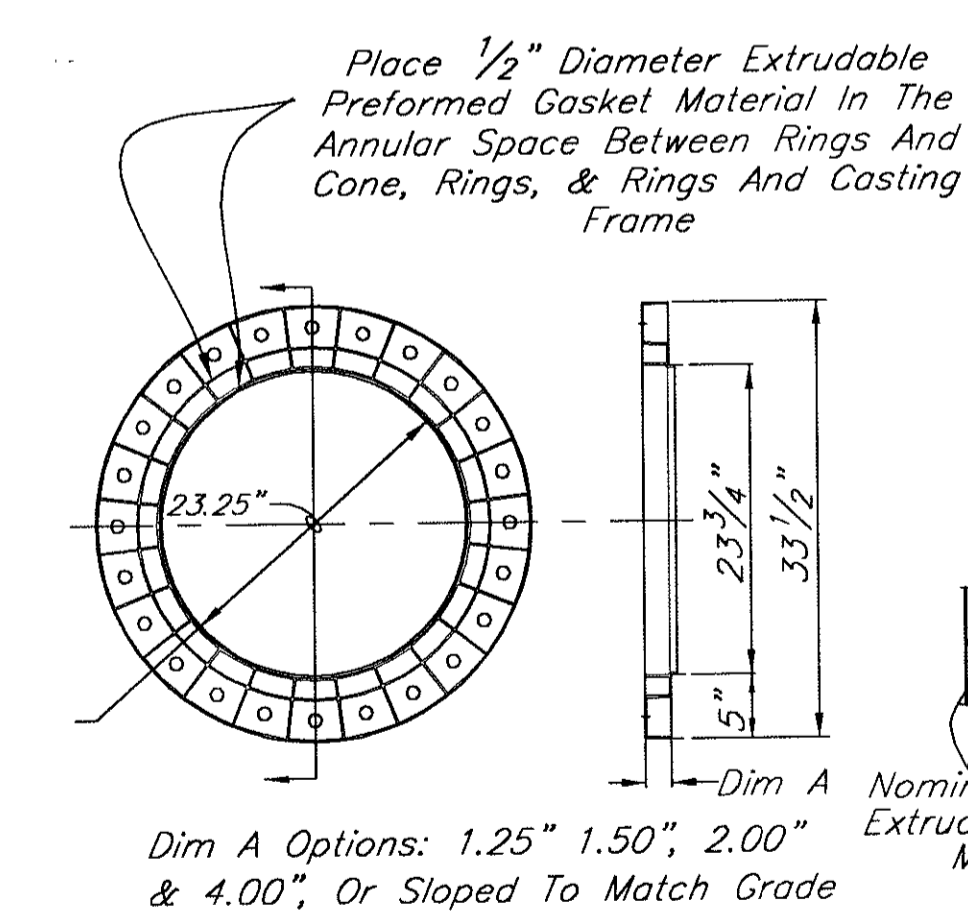
- MANHOLES**
- Precast concrete manholes shall conform to ASTM C-478, with rubber type gaskets equal to ASTM C-443. Monolithic cast-in-place manholes shall only be used with the prior written approval of the Connersville Utilities. The base and first riser section of the present concrete manhole shall integrally cast as one complete unit. Precast concrete cones shall be of the eccentric cone type. No "see through" lift holes shall be allowed on precast concrete manholes 48 inches in diameter or less. In addition to the rubber type gaskets all joints shall receive a 1/2 inch diameter nonasphaltic mastic (Kent-Seal or the Connersville Utilities approved equal) conforming to AASHTO M-198 and Federal Specifications SS-S-210A. Pipe connection to manhole shall be watertight flexible connector (KOR-N-SEAL, A-LOK, Dura-Seal) or the Connersville Utilities approved equal.
  - Final adjustment in elevation of the frame and cover shall be accomplished by the use of a 2 inch use minimum thickness adjustment ring as detailed herein to a maximum combined thickness of 12 inches. Brick or block shall NOT be used in the construction of a manhole or to adjust the elevation of the frame and cover.
  - Manhole ladder rungs shall be Neenah No. R-1981-J, East Jordan Iron Works No. 8512, M. A. Industries No. PS 1-PF or as approved by the Connersville Utilities.
  - Manhole frame and cover shall be Neenah R-1772-C with gasketed lid, East Jordan 1022-Z1 with heavy duty gasketed lid, or as approved by the Connersville Utilities. When watertight frame and cover is required by the Connersville Utilities or the developer, Neenah R-1772-C with locking lid, East Jordan 1022-Z1WT, or as approved by the Connersville Utilities shall be provided. All covers shall be stamped "SANITARY SEWER" with 2-inch raised letters.
  - The lowest elevation to receive gravity sanitary service must be one (1) foot above the top of manhole casting elevation of either the first upstream or downstream manhole on the public sewer to which connection is to be made. Those portions of the building not meeting the stated gravity sanitary service requirement shall be provided with a grinder pump system, (to be maintained by the property owner), or the Connersville Utilities approved equal discharging to the gravity building connection outside of the public right-of-way.
  - Building sewers subject to flooding or ponding conditions shall be provided with drain plugs or valves to protect the building sewers and the property owners' building during heavy rain or high water periods. These backflow devices shall be designed to prevent wastewater or storm water from back flowing into said building sewers and buildings. The drain plugs or valves proposed for installation shall require the approval of the utilities manager. Exposed drain lines shall be protected from freezing as directed by the utilities manager.
  - Inside drop manholes are not allowed.
  - Manholes shall be installed at distances not greater than 400 feet.
  - 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 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 Connersville Utilities.
  - Apply bituminous coating, Hydrocide 700 Mastic, on the external face at all manhole section joints. Hydrocide mastic shall be applied to 6" above and below each joint.
  - In accordance with an alternate technical standard to 327 IAC 3-6-16 approved by IDEM, manhole vacuum testing is required in Connersville on ten percent (10%) of all manholes, with a minimum requirement of one (1) per project. Visual inspection for leakage is required following backfilling for all manholes on a project. Manholes with evidence of leakage shall be repaired to the satisfaction of the Connersville Utilities.



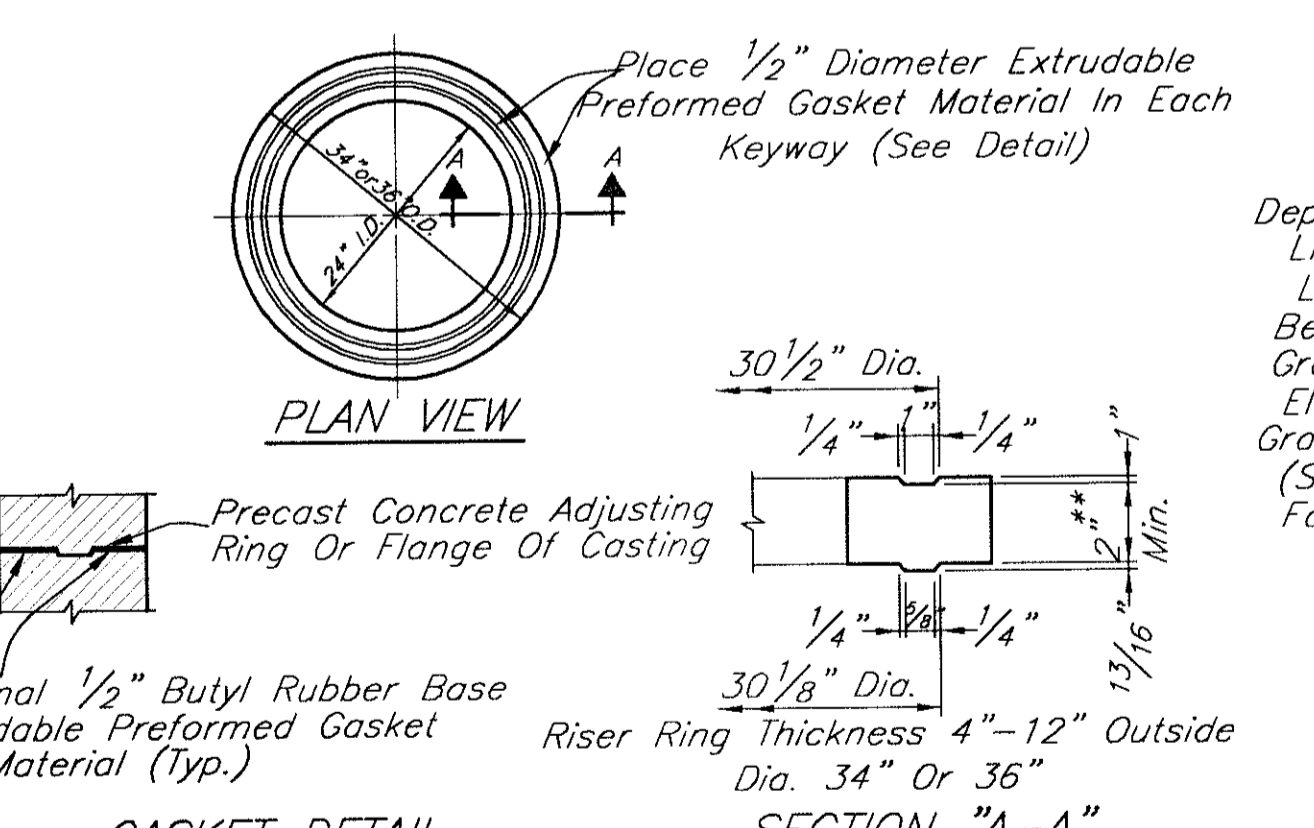
**BENCH WALL DETAIL**



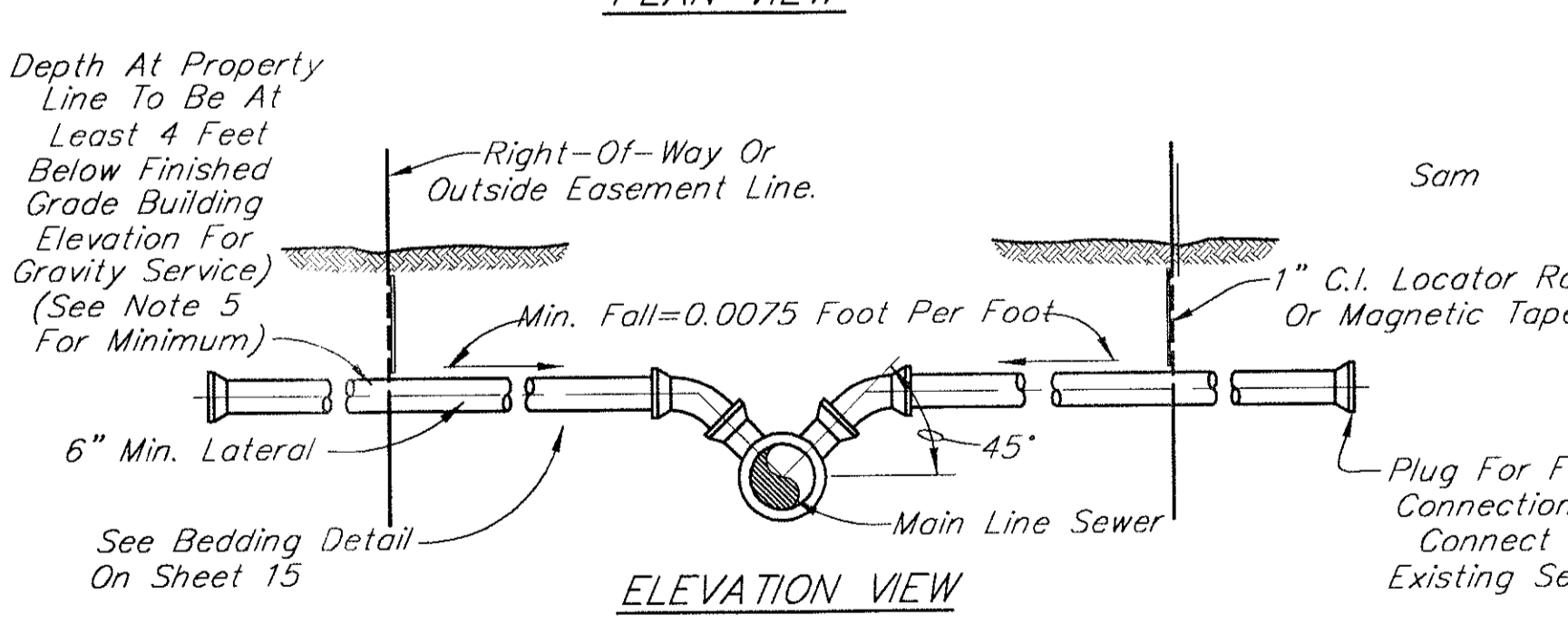
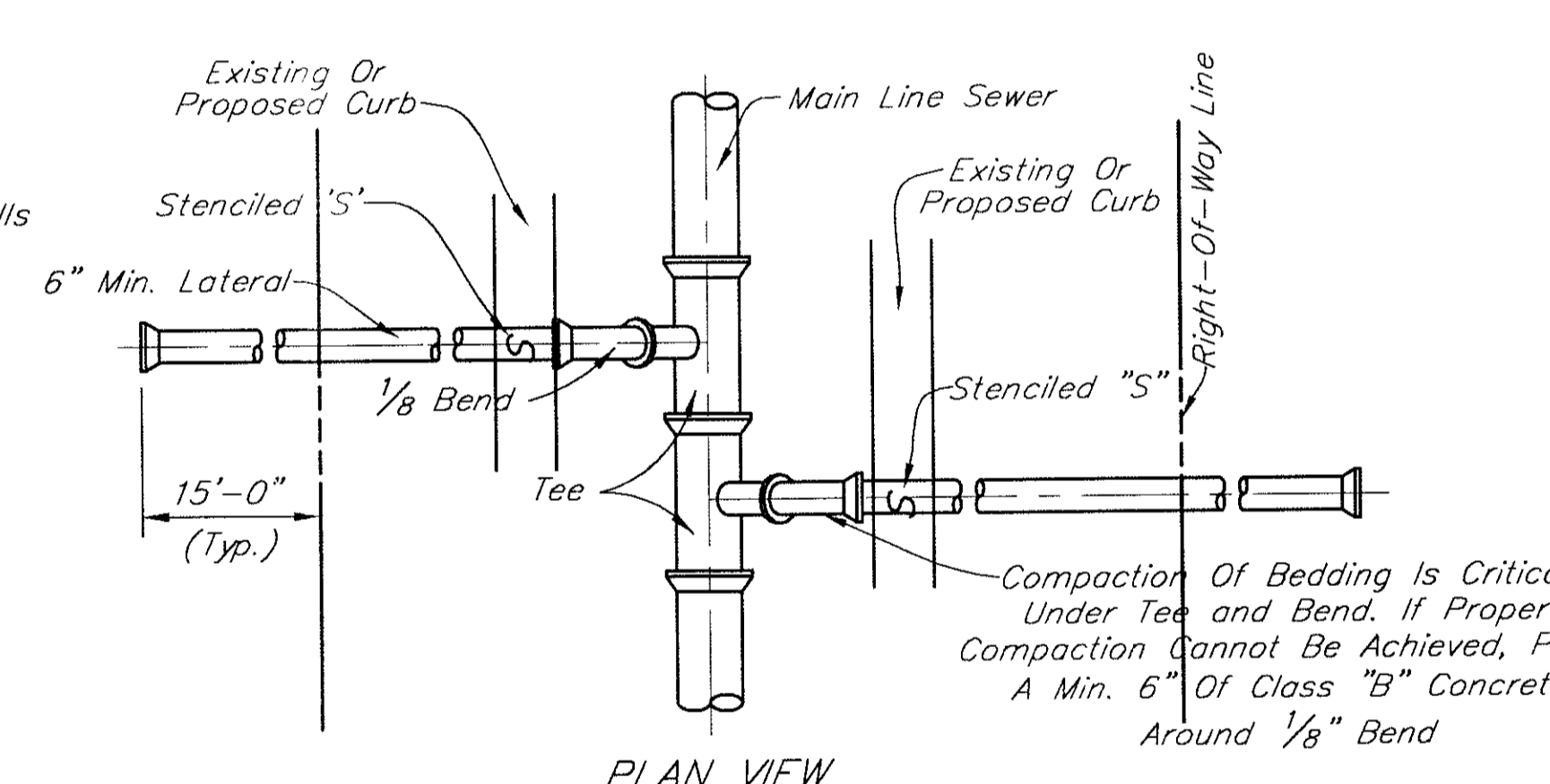
**BENCH WALL DETAILS**  
Not To Scale.



**HDPE ADJUSTING RING**  
Not To Scale.



**GASKET DETAIL**  
**PRECAST ADJUSTING RING**  
Not To Scale.

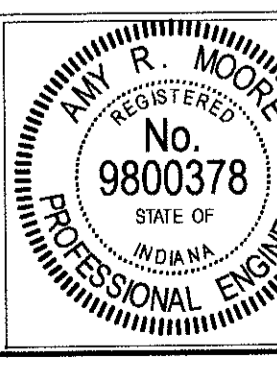


**SERVICE CONNECTION FOR SHALLOW SEWERS (LESS THAN 15' DEPTH)**  
Not To Scale.

- NOTES**
- The Connersville Utilities prefers the use of HDPE adjusting rings. Precast concrete adjusting rings are also permitted with the approval from the Connersville Utilities.
  - HDPE rings shall be injection molded - recycled HDPE as manufactured by LADTECH, Inc., or approved equal, and installed in accordance with the manufacturer's recommendations.

**REVISIONS**

Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL: *Amber Moon*, DESIGN ENGINEER, DATE: 3/1/02

APPROVED: *Walter Williams*, DIRECTOR, CONNERSVILLE UTILITIES, DATE: 4/10/02

APPROVED: *Walter Williams*, WASTEWATER SUPERINTENDENT, DATE: 6/1/02

SEE UTILITY NOTES, SHEET 1, FOR USE DIRECTIONS

CONNERSVILLE UTILITIES SHEET 14 OF 16

SANITARY SEWER DETAILS AND NOTES SHEET 16

**SANITARY SEWER POLYVINYL CHLORIDE (P.V.C.) PIPE**

- 1.) P.V.C. Pipe Diameters Of 6 Inches Through 15 Inches Shall Meet Or Exceed All The Requirements Of ASTM D-3034, And Shall Have A Cell Classification Of 12454-B, 12454-C, 12364-C Or 13364-B. Reference Should Be Made To ASTM D-1784 For A Summarization Of Cell Class Properties. P.V.C. Pipe Diameters Greater Than 15 Inches Shall Meet Or Exceed All Requirements Of ASTM F-679, And Shall Have A Minimum Cell Classification Of 12454-C Or 12364-C.
- 2.) The Minimum Wall Thickness Of P.V.C. Pipe, 6 Inches Through 15 Inches In Diameter, Shall Conform To SDR-35, Type PSM, As Specified In ASTM D-3034 (See Note 5 For Fittings). The Minimum Wall Thickness For P.V.C. Pipe Greater Than 15 Inches Shall Conform To T-1 Or T-2, As Specified In ASTM F-679. P.V.C. SDR-35 Pipe Shall Have A Minimum Pipe Stiffness Of 46 Pounds Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412.
- 3.) P.V.C. Open Profile Or Closed Profile Sewer Pipe Shall Meet Or Exceed All Requirements Of ASTM F-794 Or ASTM F-949, And Shall Have A Minimum Cell Classification Of 12454-C And A Minimum Uniform Pipe Stiffness Of 50 Pounds Per Square Inch For Each Diameter When Measured At Five Percent Deflection And Tested In Accordance With ASTM D-2412 (See Note 5 For Fittings). Contractor May Only Use P.V.C. Open Profile Or Closed Profile Pipe Where Sewer Pipe Diameter Is 18 Inches Through 36 Inches.
- 4.) Pipe Joints Shall Have A Bell Wall, Gasket Groove And Spigot Which Is Integral With The Pipe. The Assembly Of Joints Shall Be In Accordance With Pipe Manufacturers' Recommendations And ASTM D-3212. Solvent Cement Joints Shall Not Be Allowed For Mainline Pipe.
- 5.) Pipe Fittings Shall Be SDR-35 Manufactured Fittings Made Of P.V.C. Plastic Having A Cell Classification Of 12454-B, 12454-C, Or 13343-C, As Defined In ASTM D-1784. Saddle Connections Shall Not Be Allowed For New Construction. Lateral Connections Shall Occur At SDR-26 Tees.
- 6.) Each Pipe Section Shall Be Marked With The Name Of Manufacturer, Trademark Or Trade Name, Nominal Pipe Size, Production/Extrusion Code, Material And Cell Classification, And ASTM Number.
- 7.) Installation Shall Be In Accordance With ASTM Recommended Practice D-2321.

**SANITARY SEWER REINFORCED CONCRETE PIPE**

- 1.) Reinforced Concrete Pipe For Use As Sanitary Sewers Shall Be Greater Than 18 Inches In Pipe Diameter And May Be Used With The Approval Of The Connersville Utilities. Lift Holes Shall Not Be Permitted. Reinforced Concrete Pipe For Use As Sanitary Sewer Shall Be Class III, IV, Or V As Specified By Design Engineer Per ASTM C-76.
- 2.) Each Section Of Reinforced Concrete Pipe Shall Be Vacuum Tested By The Manufacturer Prior To Delivery To The Job Site. Only Pipe Sections Passing Vacuum Test Shall Be Marked As "Vacuum Tested". Vacuum Test Requirements Are As Follows:
  - a. Each Section Of Pipe Shall Be Tested By Bringing The Internal Pressure Within The Pipe To 3.5 PSIG Below Atmospheric Pressure And The Pressure Must Not Drop To Less Than 2.5 PSIG Below Atmospheric Pressure Within The Time Limitation As Determined By The Following:  

$$T = \frac{0.022 D^2 L}{2}$$
 Where: T = Time In Seconds  
 D = Diameter Of Pipe In Inches  
 L = Length Of Pipe In Feet
  - b. Any Pipe Section Failing To Meet This Test Shall Not Be Permitted For Use As Sanitary Sewers In The City Of Connersville.
- 3.) Lateral Connections Shall Be Made With KOR-N-Tee, Inserta-Tee Or Connersville Utilities Approved Equal.
- 4.) Each Pipe Section Shall Be Marked With The Date Of Manufacture, Size And Class Of Pipe, Specification Designation, Manufacturer And Plant Identification.
- 5.) Pipe Shall Be Furnished With A Bell Or Groove On One End Of A Unit Of Pipe And A Spigot Or Tongue On The Adjacent End Of The Adjoining Pipe. All Joints Shall Have A Groove On The Spigot For Placement Of A Rubber "O"-Ring Or Profile Gasket In Accordance With ASTM C-443. The Gasket Shall Be A Continuous Ring Which Fits Snugly Into The Annular Space Between The Overlapping Surfaces Of The Assembled Pipe Joint To Form A Flexible Watertight Joint Under All Conditions Of Service And Adequate For Hydrostatic Pressures Up To 13 psi Without Leakage.

**TABLE 1**

SPECIFICATION TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015

Pipe Diameter (In.)	Minimum Time (Min.:Sec.)	Length For Minimum Time (Ft.)	Time For Longer Length (Sec.)	Specification Time For Length (L) Shown (Min.:Sec.)								
				100 Ft.	150 Ft.	200 Ft.	250 Ft.	300 Ft.	350 Ft.	400 Ft.	450 Ft.	
4	3:46	597	.380L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	.854L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24	
8	7:34	298	1.520L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	
10	9:26	239	2.374L	9:26	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	
15	14:10	159	5.342L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	
18	17:00	133	7.692L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	
21	19:50	114	10.470L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	
24	22:40	99	13.674L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	
27	25:30	88	17.306L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	
30	28:20	80	21.366L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	
33	31:10	72	25.852L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	
36	34:00	66	30.768L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	

**NOTE:**

For More Efficient Testing Of Long Test Sections And/Or Sections Of Larger Diameter Pipes, A Timed Pressure Drop Of 0.5 PSIG May Be Used In Lieu Of The 1.0 PSIG Timed Pressure Drop. If A 0.5 PSIG Pressure Drop Is Used, The Required Test Time Shall Be Exactly Half As Long As Those Shown Above.

**SANITARY SEWER LATERAL PIPE AND FITTINGS**

- 1.) In The Application The Owner, His Agent, Or His Representative Shall Agree To Construct And Maintain The Building Sewer And Connections In Accordance With The Provisions Of Connersville Ordinance 51.27 Or Any Other City Regulations Regulating The Same.
- 2.) Service Laterals Shall Be Either SDR-26 Or Schedule 40 P.V.C. Pipe From The Sewer Main To The Property Line. Service Laterals Shall Be Either SDR-26, SDR-35 Or Schedule 40 P.V.C. Pipe Outside Of The Right-Of-Way.
- 3.) Joints Shall Be Flexible Gasket Push-On-Compression Type conforming To ASTM D-3212 And ASTM F-477. No Solvent Cement Joints Shall Be Allowed.
- 4.) Lateral Size Shall Be A Minimum Of 6 Inches In Diameter Between Mainline Sewer And Right-Of-Way. Building Sewers Shall Have A Minimum Cover Of Not Less Than 36 Inches In Private Property And 48 Inches In Public Right-Of-Way Or Private Access Roads. Approved Slopes For 6 Inch Laterals Shall Be Not Less Than Nine Inches Per 100 Feet.
- 5.) All Laterals Shall Be Inspected By Connersville Utilities Prior To Backfilling. The City Sewer Inspection Dept., Phone 825-2158, Shall Be Notified When The Building Sewer Construction For Each Installation Is To Begin. Both The Connection To The Public Sewer And The Pipe Joint At The Building Outlet Shall Be Made Under Supervision Of The Utilities Manager.
- 6.) A Minimum Of One Clean-Out Shall Be Installed For Each Lateral. Where The Length Of A Lateral Exceeds 100 Feet, Then One Clean-Out Shall Be Installed For Every 100 Feet Of Lateral Length.
- 7.) Contractor Shall, When Curbs Are Available, Engrave A 3-Inch High By 1/8-Inch Deep "S" On The Curb Directly Above Each Service Lateral. Where Curbs Are Not Available, Contractor Shall Notch The Sidewalk Directly Above Each Service Lateral.

**SANITARY SEWER LEAKAGE TESTING**

- 1.) Connersville Utilities Shall Be Given 24 Hour Written Notice Of The Required Leakage Testing Procedure To Be Performed By The Contractor. Low Pressure Air Shall Be Slowly Introduced Into The Sealed Line Until The Internal Air Pressure Reaches 4 PSIG Plus The Groundwater Head Divided By 2.31 (Maximum Test Pressure Is 9 PSIG).
- 2.) At A Stable Internal Air Pressure Within 0.5 PSIG Of The Initial Internal Air Pressure, Timing Shall Commence With A Stopwatch Or Similar Device Of 99.8 Percent Accuracy. Timing Shall End When The Internal Air Pressure Drops 1 PSIG Below The Stable Internal Air Pressure.
- 3.) The Line Shall Be Accepted If The Time Shown In Table 1 For The Designated Pipe Size And Length Elapses Before The Air Pressure Drops 1 PSIG Below The Stable Internal Air Pressure At Which Time The Test Can Be Discontinued For The Accepted Line.

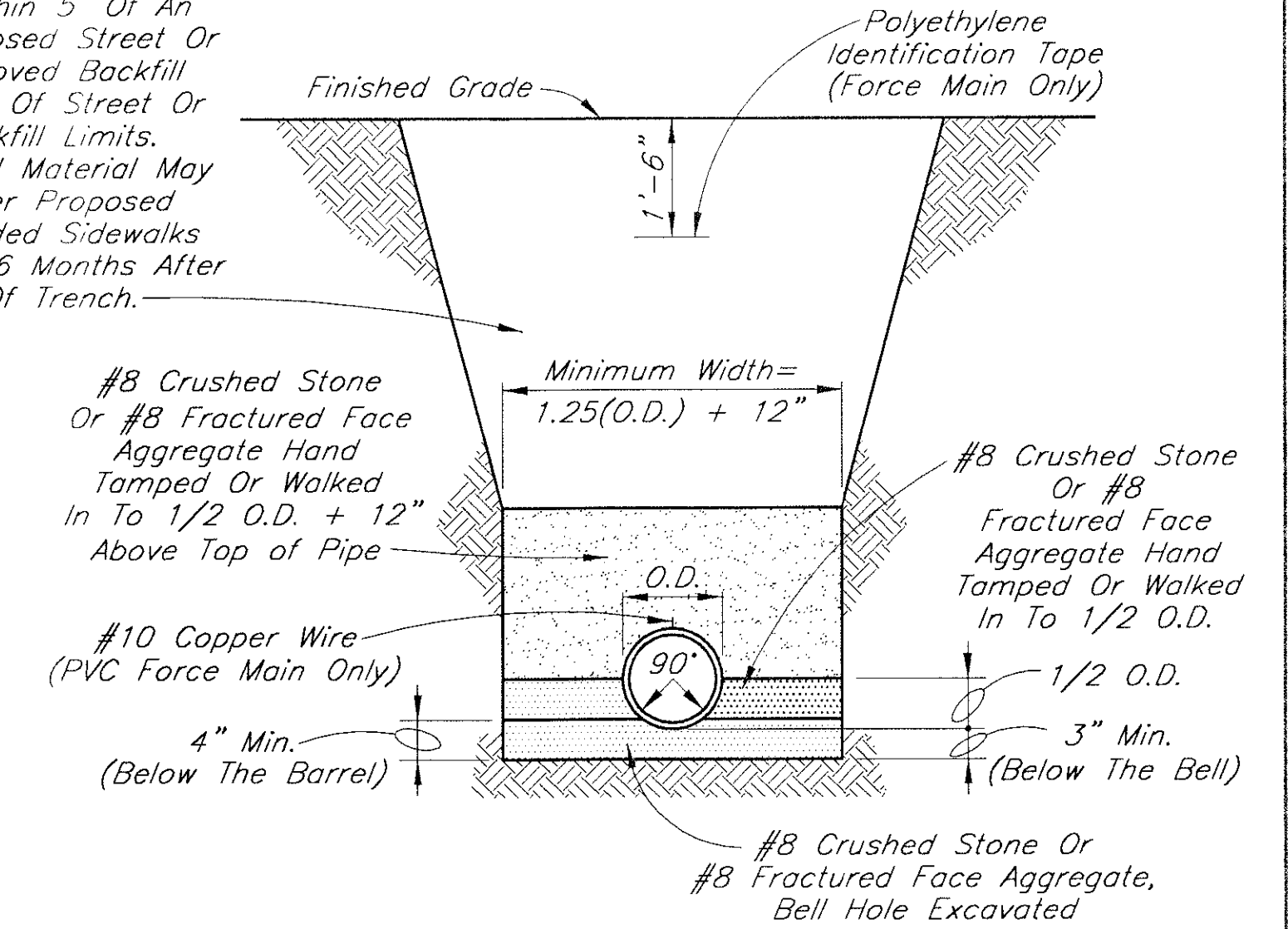
**SANITARY SEWER DEFLECTION TESTING AND TELEVISIONING**

- 1.) Deflection Testing Is Required For All Mainline Flexible Pipe Installed In The City Of Connersville. Connersville Utilities Shall Be Given 24 Hour Written Notice Of The Time The Contractor Will Perform The Deflection Testing. An Allowable Deflection Of 5 Percent Internal Pipe Diameter Will Be Acceptable After All Backfilling Has Been In Place For 30 Days. A Nine-Point, "Go-No-Go" Mandrel Shall Be Used For The Deflection Test. A Proving Ring Shall Be Provided For Each Mandrel. All Pipe Exceeding The Allowable Deflection Shall Be Televised To Determine The Extent Of Replacement Or Rerounding Required. The Reworked Section Shall Be Retested 30 Days After Completion. Contractor Shall Bear All Testing Costs. The "Go-No-Go" Mandrel Shall Be Manually Pulled Without The Use Of Any Winching Or Mechanical Devices.
- 2.) Televisioning Is Required For Pipe That Fails Leakage Or Mandrel Testing, Or As Directed By The Connersville Utilities. The Connersville Utilities Shall Be Given 24 Hour Written Notice Of Televisioning To Be Performed By The Contractor. A Camera Equipped With Remote Control Devices To Adjust The Light Intensity And 1,000 Linear Feet Of Sewer Cable Shall Be Provided. The Camera Shall Transmit A Continuous Image To The Television Monitor As It Is Being Pulled Through The Pipe. The Image Shall Be Clear Enough To Enable The Connersville Utility Representative And Others Viewing The Monitor To Easily Evaluate The Interior Condition Of The Pipe. The Camera Shall Stamp The Video Tape With Linear Footage And Project Number. An Audio Voice-Over Shall Be Made During The Inspection Identifying Any Problems. Contractor Shall Bear All Televisioning Costs.
- 3.) The Pipe Shall Be Thoroughly Cleaned Before The Camera Is Installed And Televisioning Is Commenced.
- 4.) If Any Pipe And/Or Joint Is Found To Be Leaking, The Contractor Shall Repair That Portion Of The Work To The Satisfaction And Approval Of The City Of Connersville.

**SANITARY SEWER GENERAL NOTES**

- 1.) Contractor Shall Allow Connersville Utilities The Opportunity To Inspect The Installation Of The Pipe And Bedding Material Prior To Proceeding With Backfilling An Open Trench. Connersville Utilities Shall Be Given 24 Hours Notice Of The Contractor's Intent To Install Sanitary Sewer Piping And Structures.
- 2.) For PVC Force Mains, Contractor Shall Place Both 10 Gauge Insulated, Solid Copper Wire And Polyethylene Identification Tape. Both Items Shall Be Highly Resistant To Alkalis, Acids And Other Destructive Agents Found In Soil. The 10 Gauge Tracer Wire Shall Be Attached Directly To The Outside Of The Force Main Every 10 Feet. The Polyethylene Identification Tape Shall Have A Minimum Thickness Of 4 Mils And Shall Clearly Identify The Type Of Utility Underground. Polyethylene Tape Shall Be Placed Directly Over Pipe 1'-6" Below Final Grade.
- 3.) As-Built Drawings, Including The Location And Distance Of Each Lateral From The Downstream Manhole, Shall Be Made By The Contractor. As-Built Shall Be Delivered To The Connersville Utilities Within 30 Days After All Testing Has Been Successfully Completed.

"B"-Borrow When Trench Opening Encroaches Within 5' Of An Existing Or Proposed Street Or Sidewalk. Approved Backfill Material Outside Of Street Or Sidewalk Backfill Limits. Approved Backfill Material May Be Used Under Proposed Sidewalks Provided Sidewalks Are Constructed 6 Months After Backfilling Of Trench.

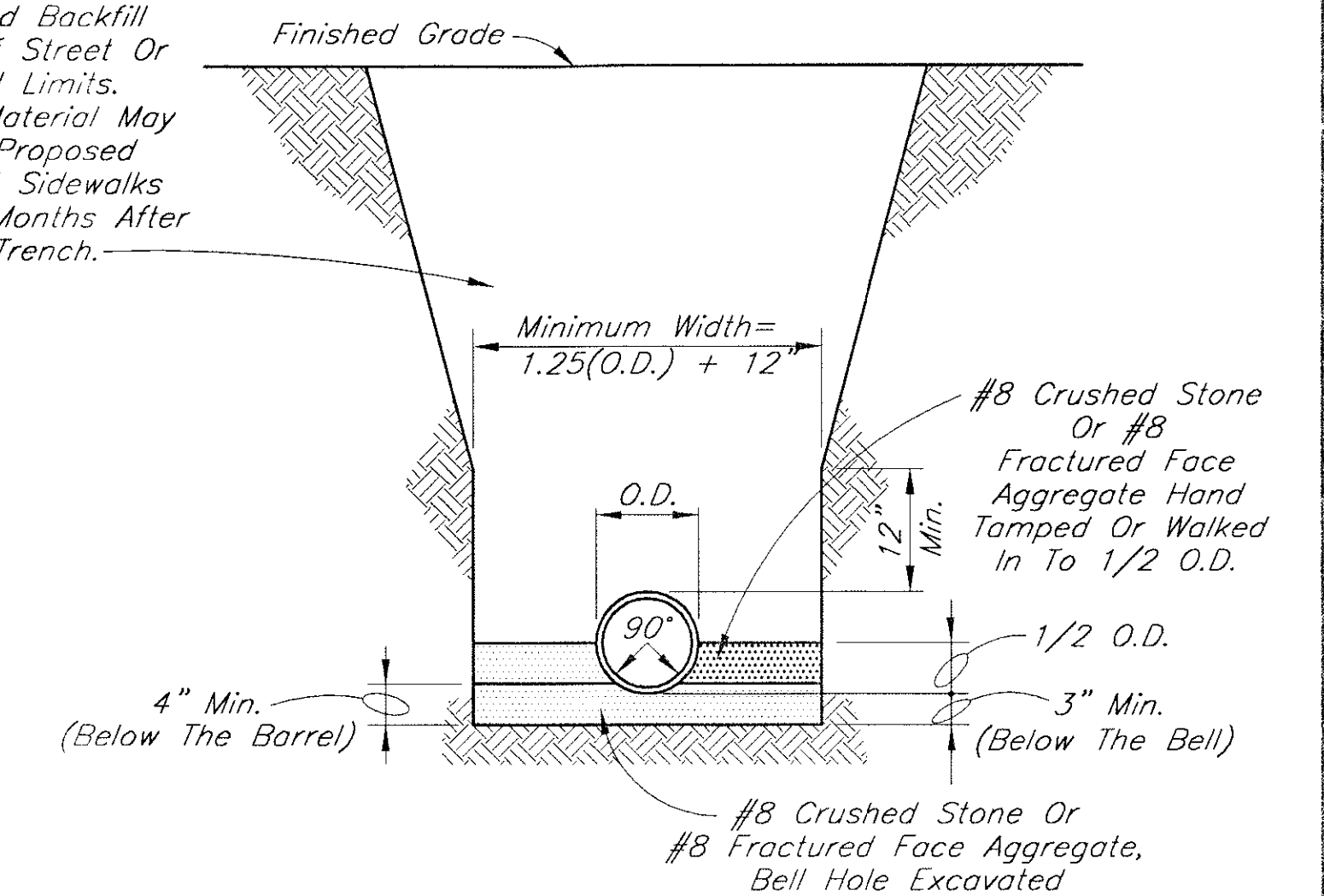


Pipe Size	8" TO 15"	18" And Over
Bedding Below The Pipe Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"

**PVC PIPE BEDDING DETAIL**

Scale: None

"B"-Borrow When Trench Opening Encroaches Within 5' Of An Existing Or Proposed Street Or Sidewalk. Approved Backfill Material Outside Of Street Or Sidewalk Backfill Limits. Approved Backfill Material May Be Used Under Proposed Sidewalks Provided Sidewalks Are Constructed 6 Months After Backfilling Of Trench.



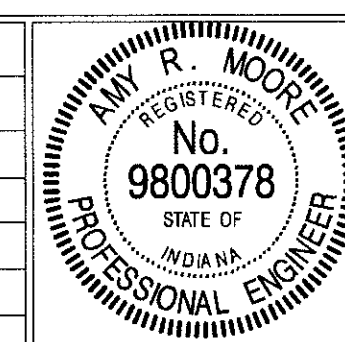
Pipe Size	8" TO 15"	18" And Over
Bedding Below The Pipe Barrel	O.D./4 Min.=4"	O.D./4 Max.=8"

**RCP BEDDING DETAIL**

Scale: None

SEE UTILITY NOTES, SHEET 1, FOR USE DIRECTIONS

REVISIONS		
Rev. No.	Description	Date



RECOMMENDED FOR APPROVAL	<i>Amy R. Moore</i>	DESIGN ENGINEER	3/1/02	DATE
APPROVED	<i>David Williams</i>	DIRECTOR CONNERSVILLE UTILITIES		DATE
APPROVED	<i>Harold Bellman</i>	WASTEWATER SUPERINTENDENT		DATE

CONNERSVILLE UTILITIES	SHEET
SANITARY SEWER BEDDING DETAILS AND NOTES	15
	OF
	16

